



**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**  
**August 2018 Survey**

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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 Exova Labs, Surrey, B.C.
- Fluoride (HF) analysis conducted at ALS Environmental in Burnaby, B.C.
- Nitrous Oxide (N<sub>2</sub>O) analysis conducted at Maxxam Analytics, Mississauga, Ont.
- Particulate analysis conducted at A. Lanfranco and Associates Inc., Surrey, BC.
- THC/VOC analysis conducted at ALS Environmental in Simi Valley, California
- Hexavalent Chromium (Cr<sup>+6</sup>) conducted at ALS Environmental in Edmonton, AB
- Chain of Custody protocols followed for all samples.
- Excellent blank values for all sample types. All samples blank corrected.

| Sample Type          | Blank Value |          |          |
|----------------------|-------------|----------|----------|
| Third Survey 2018    | Unit 1      | Unit 2   | Unit 3   |
| Filter               | 0.4 mg      | 1.2 mg   | 0.9 mg   |
| Front Half Washings  | 0.6 mg      | 0.1 mg   | 0.6 mg   |
| Mercury Front        | <0.02 ug    | <0.02 ug | <0.02 ug |
| Mercury Back         | <0.16 ug    | <0.18 ug | <0.08 ug |
| Trace Metals Front * | <139 ug     | <135 ug  | <135 ug  |
| Trace Metals Back*   | <59.4 ug    | <6.9 ug  | <5.7 ug  |
| Fluoride             | <2.6 ug     | <2.5 ug  | <2.5 ug  |

Sum of all reported elements except Hg\*



**APPENDIX - B**

**LABORATORY RESULTS**

## Report Transmission Cover Page

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

Attn: Missy

Sampled By:

Company:

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

Lot ID: **1293240**  
Control Number:  
Date Received: Aug 21, 2018  
Date Reported: Sep 27, 2018  
Report Number: 2327079

| 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: <a href="mailto:mark.lanfranco@alanfranco.com">mark.lanfranco@alanfranco.com</a> |
| <u>Delivery</u>                       | <u>Format</u>             | <u>Deliverables</u>                                                                                                                                                                   |
| Email - Merge Reports                 | PDF                       | COC / Test Report                                                                                                                                                                     |
| Email - Multiple Reports By Agreement | PDF                       | COA                                                                                                                                                                                   |
| Email - Single Report                 | PDF                       | COR                                                                                                                                                                                   |
| Missy                                 | A. Lanfranco & Associates | #101, 9488 - 189 Street<br>Surrey, BC V4N 4W7<br>Phone: (604) 881-2582 Fax: (604) 881-2581<br>Email: <a href="mailto:missy@alanfranco.com">missy@alanfranco.com</a>                   |
| <u>Delivery</u>                       | <u>Format</u>             | <u>Deliverables</u>                                                                                                                                                                   |
| Email - Single Report                 | PDF                       | Invoice                                                                                                                                                                               |

### Notes To Clients:

- Sep 27, 2018 - Report was issued to correct order of analytes on samples 1293240-1 to 9 as requested by Shawn Harrington on Sept 27/18. Previous report 2316545.

## Analytical Report

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

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

Lot ID: **1293240**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327079

|                                      |                | Reference Number   | 1293240-1                                               | 1293240-2                                               | 1293240-3                                               |
|--------------------------------------|----------------|--------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
|                                      |                | Sample Date        | Aug 13, 2018                                            | Aug 14, 2018                                            | Aug 14, 2018                                            |
|                                      |                | Sample Time        | NA                                                      | NA                                                      | NA                                                      |
|                                      |                | Sample Location    |                                                         |                                                         |                                                         |
|                                      |                | Sample Description | Unit 1 Run 1 (beaker<br>(MV Unit 1 R-1) + 4<br>bottles) | Unit 1 Run 2 (beaker<br>(MV Unit 1 R-2) + 4<br>bottles) | Unit 1 Run 3 (beaker<br>(MV 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                 | 10                                                      | 10                                                      | 5                                                       |
| Antimony                             | µg             | <2                 | 3                                                       | <2                                                      | 2.5                                                     |
| Arsenic                              | µg             | 2                  | 1                                                       | <1                                                      | 1                                                       |
| Cadmium                              | µg             | <0.3               | <0.3                                                    | <0.3                                                    | 0.25                                                    |
| Chromium                             | µg             | 1.2                | 1.4                                                     | 1.5                                                     | 0.2                                                     |
| Cobalt                               | µg             | <0.3               | 0.4                                                     | <0.3                                                    | 0.25                                                    |
| Copper                               | µg             | 4.7                | <0.3                                                    | 0.9                                                     | 0.25                                                    |
| Lead                                 | µg             | <2                 | 2.7                                                     | <2                                                      | 1.5                                                     |
| Manganese                            | µg             | 0.3                | 0.3                                                     | 0.4                                                     | 0.25                                                    |
| Nickel                               | µg             | 1                  | 1                                                       | 2                                                       | 0.5                                                     |
| Phosphorus                           | µg             | 130                | 130                                                     | 130                                                     | 2.5                                                     |
| Selenium                             | µg             | <2                 | 2                                                       | 2                                                       | 1.5                                                     |
| Tellurium                            | µg             | <2                 | <2                                                      | <2                                                      | 2                                                       |
| Thallium                             | µg             | <2                 | <2                                                      | 2.8                                                     | 1.5                                                     |
| Vanadium                             | µg             | <1                 | <1                                                      | <1                                                      | 1                                                       |
| Zinc                                 | µg             | 4.9                | 6.0                                                     | 9.9                                                     | 0.5                                                     |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                         |                                                         |                                                         |
| Aluminum                             | µg             | 43                 | 97                                                      | 10                                                      | 5                                                       |
| Antimony                             | µg             | <2                 | <2                                                      | <2                                                      | 2.5                                                     |
| Arsenic                              | µg             | <0.9               | <0.9                                                    | <0.9                                                    | 1                                                       |
| Cadmium                              | µg             | <0.2               | <0.2                                                    | <0.2                                                    | 0.25                                                    |
| Chromium                             | µg             | 0.48               | 1.2                                                     | 0.50                                                    | 0.2                                                     |
| Cobalt                               | µg             | <0.2               | <0.2                                                    | <0.2                                                    | 0.25                                                    |
| Copper                               | µg             | <0.2               | <0.2                                                    | <0.2                                                    | 0.25                                                    |
| Lead                                 | µg             | 1                  | <1                                                      | <1                                                      | 1.5                                                     |
| Manganese                            | µg             | 9.1                | 2                                                       | 0.2                                                     | 0.25                                                    |
| Nickel                               | µg             | 0.6                | 0.8                                                     | <0.4                                                    | 0.5                                                     |
| Phosphorus                           | µg             | <2                 | 4                                                       | <2                                                      | 2.5                                                     |
| Selenium                             | µg             | <1                 | <1                                                      | 3.3                                                     | 1.5                                                     |
| Tellurium                            | µg             | <2                 | <2                                                      | <2                                                      | 2                                                       |
| Thallium                             | µg             | <1                 | <1                                                      | <1                                                      | 1.5                                                     |
| Vanadium                             | µg             | <0.9               | <0.9                                                    | <0.9                                                    | 1                                                       |
| Zinc                                 | µg             | 17                 | 19                                                      | 6.4                                                     | 0.5                                                     |
| Volume                               | Sample         | mL                 | 850                                                     | 780                                                     | 825                                                     |
| Volume                               | aliquot volume | mL                 | 800                                                     | 730                                                     | 775                                                     |
| <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:  
 Project Name: Metro Vancouver WTE  
 Project Location: Metals and Hg  
 LSD:  
 P.O.:  
 Proj. Acct. code:

Lot ID: **1293240**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327079

| Reference Number            |                | 1293240-1                                               | 1293240-2                                               | 1293240-3                                               |                            |  |
|-----------------------------|----------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|----------------------------|--|
| Sample Date                 |                | Aug 13, 2018                                            | Aug 14, 2018                                            | Aug 14, 2018                                            |                            |  |
| Sample Time                 |                | NA                                                      | NA                                                      | NA                                                      |                            |  |
| Sample Location             |                |                                                         |                                                         |                                                         |                            |  |
| Sample Description          |                | Unit 1 Run 1 (beaker<br>(MV Unit 1 R-1) + 4<br>bottles) | Unit 1 Run 2 (beaker<br>(MV Unit 1 R-2) + 4<br>bottles) | Unit 1 Run 3 (beaker<br>(MV 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 255                                                  | 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 0.35                                               | 0.56                                                    | 0.48                                                    | 0.05                       |  |
| Dilution Factor             | As Tested      | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL 850                                                  | 780                                                     | 825                                                     |                            |  |
| Volume                      | aliquot volume | mL 25                                                   | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL 40                                                   | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 2B    | µg/sample 0.5                                           | 0.7                                                     | 0.6                                                     |                            |  |
| Mercury                     | As Tested      | µg/L <0.05                                              | 0.07                                                    | <0.05                                                   | 0.05                       |  |
| Dilution Factor             | As Tested      | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL 148                                                  | 180                                                     | 190                                                     |                            |  |
| Volume                      | aliquot volume | mL 25                                                   | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL 40                                                   | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 3A    | µg/sample <0.01                                         | 0.02                                                    | <0.02                                                   |                            |  |
| Mercury                     | As Tested      | µg/L 0.20                                               | 0.22                                                    | 0.09                                                    | 0.05                       |  |
| Dilution Factor             | As Tested      | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL 1000                                                 | 1000                                                    | 1000                                                    |                            |  |
| Volume                      | aliquot volume | mL 25                                                   | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL 40                                                   | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 3B    | µg/sample 0.3                                           | 0.4                                                     | 0.1                                                     |                            |  |
| Mercury                     | As Tested      | µg/L <0.05                                              | <0.05                                                   | <0.05                                                   | 0.05                       |  |
| Dilution Factor             | As Tested      | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL 200                                                  | 200                                                     | 200                                                     |                            |  |
| Volume                      | aliquot volume | mL 25                                                   | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL 40                                                   | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 3C    | µg/sample <0.02                                         | <0.02                                                   | <0.02                                                   |                            |  |

## Analytical Report

|                                                                                                       |                                                                                                                                                                     |                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bill To:</b> A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | <b>Project ID:</b><br><b>Project Name:</b> Metro Vancouver WTE<br><b>Project Location:</b> Metals and Hg<br><b>LSD:</b><br><b>P.O.:</b><br><b>Proj. Acct. code:</b> | <b>Lot ID:</b> <b>1293240</b><br><b>Control Number:</b><br><b>Date Received:</b> Aug 21, 2018<br><b>Date Reported:</b> Sep 27, 2018<br><b>Report Number:</b> 2327079 |
| <b>Attn:</b> Missy                                                                                    |                                                                                                                                                                     |                                                                                                                                                                      |
| <b>Sampled By:</b>                                                                                    |                                                                                                                                                                     |                                                                                                                                                                      |
| <b>Company:</b>                                                                                       |                                                                                                                                                                     |                                                                                                                                                                      |

|                                      |                | Reference Number   | 1293240-4                                               | 1293240-5                                               | 1293240-6                                               |
|--------------------------------------|----------------|--------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
|                                      |                | Sample Date        | Aug 16, 2018                                            | Aug 17, 2018                                            | Aug 17, 2018                                            |
|                                      |                | Sample Time        | NA                                                      | NA                                                      | NA                                                      |
|                                      |                | Sample Location    |                                                         |                                                         |                                                         |
|                                      |                | Sample Description | Unit 2 Run 1 (beaker<br>(MV Unit 2 R-1) + 4<br>bottles) | Unit 2 Run 2 (beaker<br>(MV Unit 2 R-2) + 4<br>bottles) | Unit 2 Run 3 (beaker<br>(MV 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             | 10                 | 8                                                       | 20                                                      | 5                                                       |
| Antimony                             | µg             | 6                  | 3                                                       | 6                                                       | 2.5                                                     |
| Arsenic                              | µg             | <1                 | <1                                                      | <1                                                      | 1                                                       |
| Cadmium                              | µg             | 0.9                | 0.7                                                     | 1                                                       | 0.25                                                    |
| Chromium                             | µg             | 9.10               | 0.82                                                    | 7.38                                                    | 0.2                                                     |
| Cobalt                               | µg             | <0.3               | <0.3                                                    | <0.3                                                    | 0.25                                                    |
| Copper                               | µg             | 7.0                | 2.9                                                     | 8.1                                                     | 0.25                                                    |
| Lead                                 | µg             | 12                 | 2.5                                                     | 7.4                                                     | 1.5                                                     |
| Manganese                            | µg             | 0.8                | <0.3                                                    | 1                                                       | 0.25                                                    |
| Nickel                               | µg             | 3.5                | 0.9                                                     | 5.1                                                     | 0.5                                                     |
| Phosphorus                           | µg             | 130                | 110                                                     | 130                                                     | 2.5                                                     |
| Selenium                             | µg             | 4.2                | <2                                                      | 2                                                       | 1.5                                                     |
| Tellurium                            | µg             | <2                 | <2                                                      | <2                                                      | 2                                                       |
| Thallium                             | µg             | <2                 | <2                                                      | <2                                                      | 1.5                                                     |
| Vanadium                             | µg             | <1                 | <1                                                      | <1                                                      | 1                                                       |
| Zinc                                 | µg             | 88.1               | 33.1                                                    | 85.5                                                    | 0.5                                                     |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                         |                                                         |                                                         |
| Aluminum                             | µg             | 27                 | 10                                                      | 20                                                      | 5                                                       |
| Antimony                             | µg             | <2                 | <2                                                      | <2                                                      | 2.5                                                     |
| Arsenic                              | µg             | <0.9               | 2.5                                                     | <0.9                                                    | 1                                                       |
| Cadmium                              | µg             | <0.2               | 0.4                                                     | <0.2                                                    | 0.25                                                    |
| Chromium                             | µg             | 0.51               | 0.88                                                    | 0.83                                                    | 0.2                                                     |
| Cobalt                               | µg             | <0.2               | <0.2                                                    | <0.2                                                    | 0.25                                                    |
| Copper                               | µg             | <0.2               | 1                                                       | 0.7                                                     | 0.25                                                    |
| Lead                                 | µg             | <1                 | 2.5                                                     | <1                                                      | 1.5                                                     |
| Manganese                            | µg             | 0.8                | 1                                                       | 1                                                       | 0.25                                                    |
| Nickel                               | µg             | 0.5                | 0.7                                                     | 2                                                       | 0.5                                                     |
| Phosphorus                           | µg             | <2                 | 3                                                       | <2                                                      | 2.5                                                     |
| Selenium                             | µg             | <1                 | <1                                                      | <1                                                      | 1.5                                                     |
| Tellurium                            | µg             | <2                 | <2                                                      | <2                                                      | 2                                                       |
| Thallium                             | µg             | 4.3                | <1                                                      | <1                                                      | 1.5                                                     |
| Vanadium                             | µg             | <0.9               | <0.9                                                    | <0.9                                                    | 1                                                       |
| Zinc                                 | µg             | 13                 | 29.3                                                    | 8.7                                                     | 0.5                                                     |
| Volume                               | Sample         | mL                 | 765                                                     | 790                                                     | 790                                                     |
| Volume                               | aliquot volume | mL                 | 715                                                     | 740                                                     | 740                                                     |
| <b>Mercury by CVAA</b>               |                |                    |                                                         |                                                         |                                                         |
| Mercury                              | As Tested      | µg/L               | 0.28                                                    | <0.05                                                   | 0.21                                                    |
|                                      |                |                    |                                                         |                                                         | 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:  
 Project Name: Metro Vancouver WTE  
 Project Location: Metals and Hg  
 LSD:  
 P.O.:  
 Proj. Acct. code:

Lot ID: **1293240**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327079

|                             |                | Reference Number   | 1293240-4                                               | 1293240-5                                               | 1293240-6                                               |                            |  |
|-----------------------------|----------------|--------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|----------------------------|--|
|                             |                | Sample Date        | Aug 16, 2018                                            | Aug 17, 2018                                            | Aug 17, 2018                                            |                            |  |
|                             |                | Sample Time        | NA                                                      | NA                                                      | NA                                                      |                            |  |
|                             |                | Sample Location    |                                                         |                                                         |                                                         |                            |  |
|                             |                | Sample Description | Unit 2 Run 1 (beaker<br>(MV Unit 2 R-1) + 4<br>bottles) | Unit 2 Run 2 (beaker<br>(MV Unit 2 R-2) + 4<br>bottles) | Unit 2 Run 3 (beaker<br>(MV 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          | 0.1                                                     | <0.02                                                   | 0.08                                                    |                            |  |
| Mercury                     | As Tested      | µg/L               | 0.53                                                    | 0.50                                                    | 0.55                                                    | 0.05                       |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL                 | 765                                                     | 790                                                     | 790                                                     |                            |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 2B    | µg/sample          | 0.7                                                     | 0.6                                                     | 0.7                                                     |                            |  |
| Mercury                     | As Tested      | µg/L               | 0.05                                                    | <0.05                                                   | <0.05                                                   | 0.05                       |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL                 | 144                                                     | 194                                                     | 170                                                     |                            |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 3A    | µg/sample          | 0.01                                                    | <0.02                                                   | <0.01                                                   |                            |  |
| Mercury                     | As Tested      | µg/L               | <0.05                                                   | 0.06                                                    | 0.10                                                    | 0.05                       |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL                 | 1000                                                    | 500                                                     | 500                                                     |                            |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 3B    | µg/sample          | <0.08                                                   | 0.04                                                    | 0.08                                                    |                            |  |
| Mercury                     | As Tested      | µg/L               | <0.05                                                   | <0.05                                                   | <0.05                                                   | 0.05                       |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                            |  |
| Volume                      | Sample         | mL                 | 200                                                     | 200                                                     | 200                                                     |                            |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                            |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                            |  |
| Mercury                     | Fraction 3C    | µg/sample          | <0.02                                                   | <0.02                                                   | <0.02                                                   |                            |  |

## Analytical Report

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

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

Lot ID: **1293240**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327079

|                                      |                | Reference Number   | 1293240-7                                               | 1293240-8                                               | 1293240-9                                               |
|--------------------------------------|----------------|--------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
|                                      |                | Sample Date        | Aug 15, 2018                                            | Aug 16, 2018                                            | Aug 16, 2018                                            |
|                                      |                | Sample Time        | NA                                                      | NA                                                      | NA                                                      |
|                                      |                | Sample Location    |                                                         |                                                         |                                                         |
|                                      |                | Sample Description | Unit 3 Run 1 (beaker<br>(MV Unit 3 R-1) + 4<br>bottles) | Unit 3 Run 2 (beaker<br>(MV Unit 3 R-2) + 4<br>bottles) | Unit 3 Run 3 (beaker<br>(MV 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             | 10                 | 8                                                       | 7                                                       | 5                                                       |
| Antimony                             | µg             | <2                 | 3                                                       | 3                                                       | 2.5                                                     |
| Arsenic                              | µg             | <1                 | <1                                                      | <1                                                      | 1                                                       |
| Cadmium                              | µg             | <0.3               | <0.3                                                    | <0.3                                                    | 0.25                                                    |
| Chromium                             | µg             | 7.12               | 4.17                                                    | 40.5                                                    | 0.2                                                     |
| Cobalt                               | µg             | <0.3               | <0.3                                                    | 0.8                                                     | 0.25                                                    |
| Copper                               | µg             | 0.6                | <0.3                                                    | 1                                                       | 0.25                                                    |
| Lead                                 | µg             | <2                 | 2                                                       | <2                                                      | 1.5                                                     |
| Manganese                            | µg             | 0.6                | 0.4                                                     | 7.6                                                     | 0.25                                                    |
| Nickel                               | µg             | 5.4                | 4.0                                                     | 40.3                                                    | 0.5                                                     |
| Phosphorus                           | µg             | 130                | 130                                                     | 130                                                     | 2.5                                                     |
| Selenium                             | µg             | <2                 | 4.1                                                     | <2                                                      | 1.5                                                     |
| Tellurium                            | µg             | <2                 | <2                                                      | <2                                                      | 2                                                       |
| Thallium                             | µg             | 2.8                | <2                                                      | <2                                                      | 1.5                                                     |
| Vanadium                             | µg             | <1                 | <1                                                      | <1                                                      | 1                                                       |
| Zinc                                 | µg             | 4.3                | 3.2                                                     | 6.4                                                     | 0.5                                                     |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                         |                                                         |                                                         |
| Aluminum                             | µg             | 10                 | 20                                                      | 9                                                       | 5                                                       |
| Antimony                             | µg             | <2                 | <2                                                      | <2                                                      | 2.5                                                     |
| Arsenic                              | µg             | 0.9                | 1.0                                                     | <0.9                                                    | 1                                                       |
| Cadmium                              | µg             | 0.2                | <0.2                                                    | <0.2                                                    | 0.25                                                    |
| Chromium                             | µg             | 0.77               | 0.75                                                    | 0.65                                                    | 0.2                                                     |
| Cobalt                               | µg             | <0.2               | 0.2                                                     | <0.2                                                    | 0.25                                                    |
| Copper                               | µg             | <0.2               | <0.2                                                    | 0.3                                                     | 0.25                                                    |
| Lead                                 | µg             | <1                 | <1                                                      | <1                                                      | 1.5                                                     |
| Manganese                            | µg             | 0.6                | 2.4                                                     | 0.7                                                     | 0.25                                                    |
| Nickel                               | µg             | 0.5                | 0.5                                                     | <0.4                                                    | 0.5                                                     |
| Phosphorus                           | µg             | <2                 | <2                                                      | <2                                                      | 2.5                                                     |
| Selenium                             | µg             | <1                 | 3.3                                                     | <1                                                      | 1.5                                                     |
| Tellurium                            | µg             | <2                 | <2                                                      | <2                                                      | 2                                                       |
| Thallium                             | µg             | 2                  | 1                                                       | <1                                                      | 1.5                                                     |
| Vanadium                             | µg             | <0.9               | <0.9                                                    | <0.9                                                    | 1                                                       |
| Zinc                                 | µg             | 9.4                | 7.3                                                     | 4.6                                                     | 0.5                                                     |
| Volume                               | Sample         | mL                 | 755                                                     | 750                                                     | 730                                                     |
| Volume                               | aliquot volume | mL                 | 705                                                     | 700                                                     | 680                                                     |
| <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:

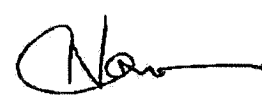
Company:

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

Lot ID: **1293240**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327079

|                             |                | Reference Number   | 1293240-7                                               | 1293240-8                                               | 1293240-9                                               |                         |  |  |
|-----------------------------|----------------|--------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|-------------------------|--|--|
|                             |                | Sample Date        | Aug 15, 2018                                            | Aug 16, 2018                                            | Aug 16, 2018                                            |                         |  |  |
|                             |                | Sample Time        | NA                                                      | NA                                                      | NA                                                      |                         |  |  |
|                             |                | Sample Location    |                                                         |                                                         |                                                         |                         |  |  |
|                             |                | Sample Description | Unit 3 Run 1 (beaker<br>(MV Unit 3 R-1) + 4<br>bottles) | Unit 3 Run 2 (beaker<br>(MV Unit 3 R-2) + 4<br>bottles) | Unit 3 Run 3 (beaker<br>(MV Unit 3 R-3) + 4<br>bottles) |                         |  |  |
|                             |                | Matrix             | Stack Samples                                           | Stack Samples                                           | Stack Samples                                           |                         |  |  |
| Analyte                     |                | Units              | Results                                                 | Results                                                 | Results                                                 | Nominal Detection Limit |  |  |
| Mercury by CVAA - Continued |                |                    |                                                         |                                                         |                                                         |                         |  |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                         |  |  |
| Volume                      | Sample         | mL                 | 250                                                     | 250                                                     | 250                                                     |                         |  |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                         |  |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                         |  |  |
| Mercury                     | Fraction 1B    | µg/sample          | <0.02                                                   | <0.02                                                   | <0.02                                                   |                         |  |  |
| Mercury                     | As Tested      | µg/L               | 0.36                                                    | 0.25                                                    | 0.27                                                    | 0.05                    |  |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                         |  |  |
| Volume                      | Sample         | mL                 | 755                                                     | 750                                                     | 750                                                     |                         |  |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                         |  |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                         |  |  |
| Mercury                     | Fraction 2B    | µg/sample          | 0.4                                                     | 0.3                                                     | 0.3                                                     |                         |  |  |
| Mercury                     | As Tested      | µg/L               | <0.05                                                   | <0.05                                                   | <0.05                                                   | 0.05                    |  |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                         |  |  |
| Volume                      | Sample         | mL                 | 192                                                     | 160                                                     | 180                                                     |                         |  |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                         |  |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                         |  |  |
| Mercury                     | Fraction 3A    | µg/sample          | <0.02                                                   | <0.01                                                   | <0.01                                                   |                         |  |  |
| Mercury                     | As Tested      | µg/L               | 0.06                                                    | <0.05                                                   | 0.06                                                    | 0.05                    |  |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                         |  |  |
| Volume                      | Sample         | mL                 | 500                                                     | 1000                                                    | 1000                                                    |                         |  |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                         |  |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                         |  |  |
| Mercury                     | Fraction 3B    | µg/sample          | 0.04                                                    | <0.08                                                   | 0.10                                                    |                         |  |  |
| Mercury                     | As Tested      | µg/L               | <0.05                                                   | <0.05                                                   | <0.05                                                   | 0.05                    |  |  |
| Dilution Factor             | As Tested      |                    | 1                                                       | 1                                                       | 1                                                       |                         |  |  |
| Volume                      | Sample         | mL                 | 200                                                     | 200                                                     | 200                                                     |                         |  |  |
| Volume                      | aliquot volume | mL                 | 25                                                      | 25                                                      | 25                                                      |                         |  |  |
| Volume                      | Final          | mL                 | 40                                                      | 40                                                      | 40                                                      |                         |  |  |
| Mercury                     | Fraction 3C    | µg/sample          | <0.02                                                   | <0.02                                                   | <0.02                                                   |                         |  |  |

Approved by:

  
 Carol Nam, Dipl. T.  
 Quality Officer



## Methodology and Notes

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

Attn: Missy

Sampled By:

Company:

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

Lot ID: **1293240**  
Control Number:  
Date Received: Aug 21, 2018  
Date Reported: Sep 27, 2018  
Report Number: 2327079

## Method of Analysis

| Method Name                                   | Reference | Method                                         | Date Analysis Started | Location     |
|-----------------------------------------------|-----------|------------------------------------------------|-----------------------|--------------|
| Mercury in Air (Surrey) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 4, 2018           | Exova Surrey |
| Mercury in Air (Surrey) - 2B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 24, 2018          | Exova Surrey |
| Mercury in Air (Surrey) - 3A                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 5, 2018           | Exova Surrey |
| Mercury in Air (Surrey) - 3B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 12, 2018          | Exova Surrey |
| Mercury in Air (Surrey) - 3C                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 5, 2018           | Exova Surrey |
| Metals in Stack Samples - Back half (Surrey)  | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 24, 2018          | Exova Surrey |
| Metals in Stack Samples - Front half (Surrey) | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 23, 2018          | Exova Surrey |

*\* Reference Method Modified*

## References

EMC Emission Measurement Center of EPA

## Comments:

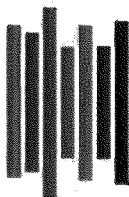
- Sep 27, 2018 - Report was issued to correct order of analytes on samples 1293240-1 to 9 as requested by Shawn Harrington on Sept 27/18. Previous report 2316545.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

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

# Exova



Testing  
Advising  
Assuring

LOT: [ Lot: 1293240 COC



Sheet  
with analysis

|                                                                                                                                                                                                                                                       |  |                                                                                                           |                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Billing Address:</b><br>Company: A. Lanfranco and Associates<br>Address: Unit 101 9488 189 St<br>Surrey, BC V4N 4W7<br><br>Attention: Mark Lanfranco<br>Phone: 604-881-2582<br>Fax: 604-881-2581<br>Cell:<br>e-mail: mark.lanfranco@alanfranco.com |  | <b>Copy of Report To:</b><br>Company:<br>Address:<br><br>Attention:<br>Phone:<br>Fax:<br>Cell:<br>e-mail: | <b>Copy of invoice:</b><br>Mail invoice to this<br>address for approval<br><br>Report Result:<br>Fax<br>Mail<br>Courier<br>e-mail<br>e-Service |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Information to be included on Report and Invoice</b><br>Project ID:<br>Project Name: Metro Vancouver WTE<br>Project Location: Metals and Hg<br>Legal Location:<br>PO#:<br>Proj. Acct. Code:<br>Agreement ID: | <b>RUSH</b> Please contact the laboratory to confirm rush dates and times before submitting samples.<br>Upon filling out this section, client accepts that surcharges will be attached to this analysis<br>RUSH required on: <input type="checkbox"/> All Analysis <input type="checkbox"/> or <input type="checkbox"/> As indicated<br>Date Required:<br>Signature:<br>Exova Authorization: | <b>Sample Custody (Please Print)</b><br>Sampled by:<br>Company Signature<br>I authorize Exova to proceed with the work work indicated on this form:<br>Date: Initial:<br>Received by: Sample Temp. 26.9°C<br>Waybill #: Date<br>Company Time |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                                                                                                                                                                                          |                                                                                |                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Special Instructions / Comments</b><br>*Front and Back ICAP as per EPA Method 29<br>*Hg analysis as per EPA Method 29<br>* Please report ug/sample<br><br>Please indicate which regulations you are required to meet: | <b>FOR LAB USE ONLY</b><br>Condition of containers/coolers upon arrival at lab | <input type="checkbox"/> Check here if Exova is required to report results directly to a regulatory body (Please include contact information)<br><input type="checkbox"/> Check here if you are testing <b>POTABLE WATER</b> for <b>HUMAN CONSUMPTION</b> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|    | Sample Identification                             | Location | Depth |    |   | Date/Time Sampled | Matrix | Sampling Method | Number of Containers | Enter tests above (✓ relevant samples below) |           |          |         |       |       |  |  |
|----|---------------------------------------------------|----------|-------|----|---|-------------------|--------|-----------------|----------------------|----------------------------------------------|-----------|----------|---------|-------|-------|--|--|
|    |                                                   |          | IN    | CM | M |                   |        |                 |                      | Front ICAP                                   | Back ICAP | Front Hg | Back Hg | 5A Hg | 5B Hg |  |  |
| 1  | Unit 1 Run 1 (Beaker (MV Unit 1 R-1) + 4 Bottles) |          |       |    |   | 13-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 2  | Unit 1 Run 2 (Beaker (MV Unit 1 R-2) + 4 Bottles) |          |       |    |   | 14-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 3  | Unit 1 Run 3 (Beaker (MV Unit 1 R-3) + 4 Bottles) |          |       |    |   | 14-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 4  |                                                   |          |       |    |   |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |
| 5  | Unit 2 Run 1 (Beaker (MV Unit 2 R-1) + 4 Bottles) |          |       |    |   | 16-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 6  | Unit 2 Run 2 (Beaker (MV Unit 2 R-2) + 4 Bottles) |          |       |    |   | 17-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 7  | Unit 2 Run 3 (Beaker (MV Unit 2 R-3) + 4 Bottles) |          |       |    |   | 17-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 8  |                                                   |          |       |    |   |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |
| 9  | Unit 3 Run 1 Beaker (MV Unit 3 R-1) + 4 Bottles)  |          |       |    |   | 15-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 10 | Unit 3 Run 2 Beaker (MV Unit 3 R-2) + 4 Bottles)  |          |       |    |   | 16-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 11 | Unit 3 Run 3 Beaker (MV Unit 3 R-3) + 4 Bottles)  |          |       |    |   | 16-Aug-18         |        |                 | 5                    | ✓                                            | ✓         | ✓        | ✓       | ✓     | ✓     |  |  |
| 12 |                                                   |          |       |    |   |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |
| 13 |                                                   |          |       |    |   |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |
| 14 |                                                   |          |       |    |   |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |
| 15 |                                                   |          |       |    |   |                   |        |                 |                      |                                              |           |          |         |       |       |  |  |

NOTE: All hazardous samples must be labelled according to WHIMIS guidelines.

Page \_\_\_\_ of \_\_\_\_

## Report Transmission Cover Page

|                                                                                                               |                                                                                                                          |                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7<br>Attn: Missy | Project ID:<br>Project Name: Metro Vancouver WTE<br>Project Location: Field Blanks<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1293197</b><br>Control Number:<br>Date Received: Aug 21, 2018<br>Date Reported: Sep 27, 2018<br>Report Number: 2327052 |
| 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               |

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

| Delivery              | Format | Deliverables |
|-----------------------|--------|--------------|
| Email - Single Report | PDF    | Invoice      |

### Notes To Clients:

- Sep 27, 2018 - Report was issued to correct order of analytes on samples 1293197-1 to 3 as requested by Shawn Harrington on Sept 27/18. Previous report 2316497.

## Analytical Report

|                                           |                                          |                                    |
|-------------------------------------------|------------------------------------------|------------------------------------|
| <b>Bill To:</b> A. Lanfranco & Associates | <b>Project ID:</b>                       | <b>Lot ID:</b> 1293197             |
| #101, 9488 - 189 Street                   | <b>Project Name:</b> Metro Vancouver WTE | <b>Control Number:</b>             |
| Surrey, BC, Canada                        | <b>Project Location:</b> Field Blanks    | <b>Date Received:</b> Aug 21, 2018 |
| V4N 4W7                                   | <b>LSD:</b>                              | <b>Date Reported:</b> Sep 27, 2018 |
| <b>Attn:</b> Missy                        | <b>P.O.:</b>                             | <b>Report Number:</b> 2327052      |
| <b>Sampled By:</b>                        | <b>Proj. Acct. code:</b>                 |                                    |
| <b>Company:</b>                           |                                          |                                    |

|                                      |                | Reference Number   | 1293197-1                                                       | 1293197-2                                                       | 1293197-3                                                       |
|--------------------------------------|----------------|--------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
|                                      |                | Sample Date        | Aug 14, 2018                                                    | Aug 14, 2018                                                    | Aug 14, 2018                                                    |
|                                      |                | Sample Time        | NA                                                              | NA                                                              | NA                                                              |
|                                      |                | Sample Location    |                                                                 |                                                                 |                                                                 |
|                                      |                | Sample Description | Field Blank Unit 1<br>(Beaker (MV Unit 1<br>Blank) + 4 Bottles) | Field Blank Unit 2<br>(Beaker (MV Unit 2<br>Blank) + 4 Bottles) | Field Blank Unit 3<br>(Beaker (MV Unit 3<br>Blank) + 4 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             | 6                  | 10                                                              | <5                                                              | 5                                                               |
| Antimony                             | µg             | <2                 | <2                                                              | <2                                                              | 2.5                                                             |
| Arsenic                              | µg             | <1                 | <1                                                              | <1                                                              | 1                                                               |
| Cadmium                              | µg             | <0.3               | <0.3                                                            | <0.3                                                            | 0.25                                                            |
| Chromium                             | µg             | 0.35               | 0.53                                                            | 0.54                                                            | 0.2                                                             |
| Cobalt                               | µg             | <0.3               | <0.3                                                            | 1                                                               | 0.25                                                            |
| Copper                               | µg             | 2                  | 1                                                               | <0.3                                                            | 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             | 130                | 120                                                             | 130                                                             | 2.5                                                             |
| Selenium                             | µg             | <2                 | <2                                                              | 2                                                               | 1.5                                                             |
| Tellurium                            | µg             | <2                 | <2                                                              | <2                                                              | 2                                                               |
| Thallium                             | µg             | <2                 | 2                                                               | <2                                                              | 1.5                                                             |
| Vanadium                             | µg             | <1                 | <1                                                              | <1                                                              | 1                                                               |
| Zinc                                 | µg             | <0.5               | 0.7                                                             | 0.9                                                             | 0.5                                                             |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                                                                 |                                                                 |                                                                 |
| Aluminum                             | µg             | 6                  | <5                                                              | <5                                                              | 5                                                               |
| Antimony                             | µg             | <2                 | <2                                                              | <2                                                              | 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               | 0.38                                                            | 0.42                                                            | 0.2                                                             |
| Cobalt                               | µg             | <0.2               | <0.2                                                            | <0.2                                                            | 0.25                                                            |
| Copper                               | µg             | <0.2               | <0.2                                                            | <0.2                                                            | 0.25                                                            |
| Lead                                 | µg             | <1                 | <1                                                              | <1                                                              | 1.5                                                             |
| Manganese                            | µg             | 47.9               | 2                                                               | 0.4                                                             | 0.25                                                            |
| Nickel                               | µg             | <0.5               | <0.5                                                            | <0.5                                                            | 0.5                                                             |
| Phosphorus                           | µg             | <2                 | <2                                                              | <2                                                              | 2.5                                                             |
| Selenium                             | µg             | 3.0                | <1                                                              | 2                                                               | 1.5                                                             |
| Tellurium                            | µg             | <2                 | <2                                                              | <2                                                              | 2                                                               |
| Thallium                             | µg             | <1                 | 2                                                               | 2                                                               | 1.5                                                             |
| Vanadium                             | µg             | <0.9               | <0.9                                                            | <0.9                                                            | 1                                                               |
| Zinc                                 | µg             | 2.5                | 0.5                                                             | 0.8                                                             | 0.5                                                             |
| Volume                               | Sample         | mL                 | 338                                                             | 355                                                             | 338                                                             |
| Volume                               | aliquot volume | mL                 | 288                                                             | 305                                                             | 288                                                             |
| <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:  
 Project Name: Metro Vancouver WTE  
 Project Location: Field Blanks  
 LSD:  
 P.O.:  
 Proj. Acct. code:

Lot ID: **1293197**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327052

|                             |                | Reference Number   | 1293197-1                                                       | 1293197-2                                                       | 1293197-3                                                       |                            |
|-----------------------------|----------------|--------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|----------------------------|
|                             |                | Sample Date        | Aug 14, 2018                                                    | Aug 14, 2018                                                    | Aug 14, 2018                                                    |                            |
|                             |                | Sample Time        | NA                                                              | NA                                                              | NA                                                              |                            |
|                             |                | Sample Location    |                                                                 |                                                                 |                                                                 |                            |
|                             |                | Sample Description | Field Blank Unit 1<br>(Beaker (MV Unit 1<br>Blank) + 4 Bottles) | Field Blank Unit 2<br>(Beaker (MV Unit 2<br>Blank) + 4 Bottles) | Field Blank Unit 3<br>(Beaker (MV Unit 3<br>Blank) + 4 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               | 0.09                                                            | 0.09                                                            | 0.08                                                            | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                                               | 1                                                               | 1                                                               |                            |
| Volume                      | Sample         | mL                 | 338                                                             | 355                                                             | 338                                                             |                            |
| Volume                      | aliquot volume | mL                 | 25                                                              | 25                                                              | 25                                                              |                            |
| Volume                      | Final          | mL                 | 40                                                              | 40                                                              | 40                                                              |                            |
| Mercury                     | Fraction 2B    | µg/sample          | 0.05                                                            | 0.05                                                            | 0.04                                                            |                            |
| Mercury                     | As Tested      | µg/L               | <0.05                                                           | <0.05                                                           | <0.05                                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                                               | 1                                                               | 1                                                               |                            |
| Volume                      | Sample         | mL                 | 134                                                             | 135                                                             | 143                                                             |                            |
| 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                                                           | 0.08                                                            | <0.05                                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                                               | 1                                                               | 1                                                               |                            |
| Volume                      | Sample         | mL                 | 1000                                                            | 1000                                                            | 500                                                             |                            |
| Volume                      | aliquot volume | mL                 | 25                                                              | 25                                                              | 25                                                              |                            |
| Volume                      | Final          | mL                 | 40                                                              | 40                                                              | 40                                                              |                            |
| Mercury                     | Fraction 3B    | µg/sample          | <0.08                                                           | 0.1                                                             | <0.04                                                           |                            |
| Mercury                     | As Tested      | µg/L               | <0.05                                                           | <0.05                                                           | <0.05                                                           | 0.05                       |
| Dilution Factor             | As Tested      |                    | 1                                                               | 1                                                               | 1                                                               |                            |
| Volume                      | Sample         | mL                 | 200                                                             | 200                                                             | 200                                                             |                            |
| Volume                      | aliquot volume | mL                 | 25                                                              | 25                                                              | 25                                                              |                            |
| Volume                      | Final          | mL                 | 40                                                              | 40                                                              | 40                                                              |                            |
| Mercury                     | Fraction 3C    | µg/sample          | <0.02                                                           | <0.02                                                           | <0.02                                                           |                            |

Approved by:

Carol Nam, Dipl. T.  
 Quality Officer

## Methodology and Notes

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

Attn: Missy

Sampled By:

Company:

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

Lot ID: **1293197**  
Control Number:  
Date Received: Aug 21, 2018  
Date Reported: Sep 27, 2018  
Report Number: 2327052

## Method of Analysis

| Method Name                                   | Reference | Method                                         | Date Analysis Started | Location     |
|-----------------------------------------------|-----------|------------------------------------------------|-----------------------|--------------|
| Mercury in Air (Surrey) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 4, 2018           | Exova Surrey |
| Mercury in Air (Surrey) - 2B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 24, 2018          | Exova Surrey |
| Mercury in Air (Surrey) - 3A                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 5, 2018           | Exova Surrey |
| Mercury in Air (Surrey) - 3B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 12, 2018          | Exova Surrey |
| Mercury in Air (Surrey) - 3C                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 5, 2018           | Exova Surrey |
| Metals in Stack Samples - Back half (Surrey)  | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 24, 2018          | Exova Surrey |
| Metals in Stack Samples - Front half (Surrey) | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 23, 2018          | Exova Surrey |

*\* Reference Method Modified*

## References

EMC Emission Measurement Center of EPA

## Comments:

- Sep 27, 2018 - Report was issued to correct order of analytes on samples 1293197-1 to 3 as requested by Shawn Harrington on Sept 27/18. Previous report 2316497.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

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

# Exova

Lot: 1293197<sup>COC</sup>Control Number  Advising  
Assuring

## Environmental Sample Information Sheet

Proper completion of this form is required in order to proceed with analysis

|                                                                                                                                                                                                                                                          |  |                                                                                                                                                                                                                                                  |                                                                                                           |  |                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Billing Information</b><br>Company: A. Lanfranco and Associates<br>Address: Unit 101 9498 189 St<br>Surrey, BC V4N 4W7<br><br>Attention: Mark Lanfranco<br>Phone: 604-881-2582<br>Fax: 604-881-2581<br>Cell:<br>e-mail: mark.lanfranco@alanfranco.com |  | <b>QA/QC Report</b> <input type="checkbox"/><br><br>Report Result:<br>Fax <input type="checkbox"/><br>Mail <input type="checkbox"/><br>Courier <input type="checkbox"/><br>e-mail <input type="checkbox"/><br>e-Service <input type="checkbox"/> | <b>Copy of Report To:</b><br>Company:<br>Address:<br><br>Attention:<br>Phone:<br>Fax:<br>Cell:<br>e-mail: |  | <b>Copy of Invoice:</b> <input type="checkbox"/><br>Mail invoice to this address for approval <input type="checkbox"/><br><br>Report Result:<br>Fax <input type="checkbox"/><br>Mail <input type="checkbox"/><br>Courier <input type="checkbox"/><br>e-mail <input type="checkbox"/><br>e-Service <input type="checkbox"/> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Information to be included on Report and Invoice**

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

Upon filling out this section, client accepts that surcharges will be attached to this analysis

RUSH required on: ☐ All Analysis ☐ As indicated ☐  
Date Required: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Exova Authorization: \_\_\_\_\_

**Sample Custody (Please Print)**

Sampled by: \_\_\_\_\_  
Company: \_\_\_\_\_ Signature: \_\_\_\_\_  
I authorize Exova to proceed with the work work indicated on this form:  
Date: \_\_\_\_\_ Initial: \_\_\_\_\_  
Received by: \_\_\_\_\_ Sample ID: **RECEIVED**  
Waybill #: 23 \_\_\_\_\_ Date: **AUG 21 2018**  
Company: \_\_\_\_\_ Time: \_\_\_\_\_

**Special Instructions / Comments**

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

Condition of containers/coolers upon arrival at lab

☐ Check here if Exova is required to report results directly to a regulatory body (Please include contact information):

☐ Check here if you are testing **POTABLE WATER for HUMAN CONSUMPTION**

Please indicate which regulations you are required to meet: \_\_\_\_\_

|    | Sample Identification                                     | Location | Depth |    |   | Date/Time Sampled | Matrix | Sampling Method | Number of Containers | Enter tests above (✓ relevant samples below) |         |       |  |  |  |
|----|-----------------------------------------------------------|----------|-------|----|---|-------------------|--------|-----------------|----------------------|----------------------------------------------|---------|-------|--|--|--|
|    |                                                           |          | IN    | CM | M |                   |        |                 |                      | Back ICAP                                    | Back Hg | 5B Hg |  |  |  |
| 1  | Field Blank Unit 1 (Beaker (MV Unit 1 Blank) + 4 Bottles) |          |       |    |   | 14-Aug-18         |        |                 | 5                    | ✓                                            | ✓       | ✓     |  |  |  |
| 2  |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 3  | Field Blank Unit 2 (Beaker (MV Unit 2 Blank) + 4 Bottles) |          |       |    |   | 15-Aug-18         |        |                 | 5                    | ✓                                            | ✓       | ✓     |  |  |  |
| 4  |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 5  | Field Blank Unit 3 (Beaker (MV Unit 3 Blank) + 4 Bottles) |          |       |    |   | 16-Aug-18         |        |                 | 5                    | ✓                                            | ✓       | ✓     |  |  |  |
| 6  |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 7  |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 8  |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 9  |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 10 |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 11 |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 12 |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 13 |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 14 |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |
| 15 |                                                           |          |       |    |   |                   |        |                 |                      |                                              |         |       |  |  |  |

**NOTE:** All hazardous samples must be labelled according to WHIMIS guidelines.

Page \_\_\_\_ of \_\_\_\_

**Report Transmission Cover Page**

|                                                                                                                                          |                                                                                                                                   |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7<br>Attn: Missy<br>Sampled By:<br>Company: | Project ID:<br>Project Name: Metro Vancouver WTE<br>Project Location: Filter Reagent Blanks<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1293209</b><br>Control Number:<br>Date Received: Aug 21, 2018<br>Date Reported: Sep 6, 2018<br>Report Number: 2316512 |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

| 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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## Analytical Report

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

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

Lot ID: **1293209**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 6, 2018  
 Report Number: 2316512

|                                      |                | Reference Number   | 1293209-1                                    | 1293209-2                                    | 1293209-3                                    |
|--------------------------------------|----------------|--------------------|----------------------------------------------|----------------------------------------------|----------------------------------------------|
|                                      |                | Sample Date        | Aug 13, 2018                                 | Aug 13, 2018                                 | Aug 13, 2018                                 |
|                                      |                | 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                 | <5                                           | <5                                           | 5                                            |
| Antimony                             | µg             | <2                 | <2                                           | <2                                           | 2.5                                          |
| Arsenic                              | µg             | <1                 | <1                                           | <1                                           | 1                                            |
| Cadmium                              | µg             | <0.3               | <0.3                                         | <0.3                                         | 0.25                                         |
| Chromium                             | µg             | 0.50               | 0.38                                         | 0.49                                         | 0.2                                          |
| Cobalt                               | µg             | 0.3                | <0.3                                         | <0.3                                         | 0.25                                         |
| Copper                               | µg             | <0.3               | 0.8                                          | <0.3                                         | 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             | 120                | 130                                          | 130                                          | 2.5                                          |
| Selenium                             | µg             | 5.1                | 2                                            | 2                                            | 1.5                                          |
| Tellurium                            | µg             | <2                 | 2                                            | <2                                           | 2                                            |
| Thallium                             | µg             | <2                 | <2                                           | <2                                           | 1.5                                          |
| Vanadium                             | µg             | <1                 | <1                                           | <1                                           | 1                                            |
| Zinc                                 | µg             | 7.9                | <0.5                                         | <0.5                                         | 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:



Mathieu Simoneau  
 Operations Manager

Data have been validated by Analytical Quality Control and Exova's Integrated Data Validation System (IDVS).  
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## Methodology and Notes

|                                                                                                                                          |                                                                                                                                   |                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7<br>Attn: Missy<br>Sampled By:<br>Company: | Project ID:<br>Project Name: Metro Vancouver WTE<br>Project Location: Filter Reagent Blanks<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1293209</b><br>Control Number:<br>Date Received: Aug 21, 2018<br>Date Reported: Sep 6, 2018<br>Report Number: 2316512 |
|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

## Method of Analysis

| Method Name                                   | Reference | Method                                         | Date Analysis Started | Location     |
|-----------------------------------------------|-----------|------------------------------------------------|-----------------------|--------------|
| Mercury in Air (Surrey) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 4, 2018           | Exova Surrey |
| Metals in Stack Samples - Front half (Surrey) | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 23, 2018          | Exova Surrey |

*\* Reference Method Modified*

## References

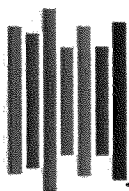
EMC      Emission Measurement Center of EPA

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

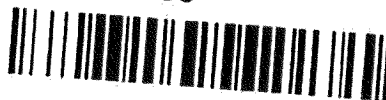
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# Exova



Testing  
Advising  
Assuring

LC Lot: 1293209 COC



on Sheet

Proceed with analysis

|                                       |                                            |                           |                          |                         |                          |
|---------------------------------------|--------------------------------------------|---------------------------|--------------------------|-------------------------|--------------------------|
| <b>Billing Address:</b>               |                                            | <b>Copy of Report To:</b> |                          | <b>Copy of invoice:</b> |                          |
| Company:                              | A. Lanfranco and Associates                | Company:                  |                          | Mail invoice to this    |                          |
| Address:                              | Unit 101 9488 189 St<br>Surrey, BC V4N 4W7 | Address:                  |                          | address for approval    |                          |
| QA/QC Report <input type="checkbox"/> |                                            | Report Result:            |                          | Report Result:          |                          |
| Attention:                            | Mark Lanfranco                             | Fax                       | <input type="checkbox"/> | Fax                     | <input type="checkbox"/> |
| Phone:                                | 604-881-2582                               | Mail                      | <input type="checkbox"/> | Mail                    | <input type="checkbox"/> |
| Fax:                                  | 604-881-2581                               | Courier                   | <input type="checkbox"/> | Courier                 | <input type="checkbox"/> |
| Cell:                                 |                                            | e-mail                    | <input type="checkbox"/> | e-mail                  | <input type="checkbox"/> |
| e-mail:                               | mark.lanfranco@alanfranco.com              | e-Service                 | <input type="checkbox"/> | e-Service               | <input type="checkbox"/> |

### Information to be included on Report and Invoice

Project ID:  
Project Name: Metro Vancouver WTE  
Project Location: Filter Reagent Blanks  
Legal Location:  
PO#:  
Proj. Acct. Code:  
Agreement ID:

**RUSH** Please contact the laboratory to confirm rush dates and times before submitting samples.

Upon filling out this section, client accepts that surcharges will be attached to this analysis

RUSH required on: ☐ All Analysis ☐ or ☐ As indicated  
Date Required: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Exova Authorization: \_\_\_\_\_

### Sample Custody (Please Print)

Sampled by: \_\_\_\_\_  
Company: \_\_\_\_\_ Signature: \_\_\_\_\_  
I authorize Exova to proceed with the work work indicated on this form:  
Date: \_\_\_\_\_ Initial: \_\_\_\_\_  
Received by: LC Sample Temp. 27.0  
Waybill #: \_\_\_\_\_ Date: \_\_\_\_\_  
Company: \_\_\_\_\_ Time: \_\_\_\_\_

### Special Instructions / Comments

\* Please report ug/sample

### FOR LAB USE ONLY

Condition of containers/coolers upon arrival at lab

☐ Check here if Exova is required to report results directly to a regulatory body (Please include contact information)  
☐ Check here if you are testing **POTABLE WATER** for **HUMAN CONSUMPTION**

| Number of Containers | ICAP | Hg |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------------|------|----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 1                    | ✓    | ✓  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|    | Sample Identification                     | Location | Depth |    |   | Date/Time Sampled | Matrix | Sampling Method | ↓ | Enter tests above (✓ relevant samples below) |    |  |  |  |  |  |  |  |  |
|----|-------------------------------------------|----------|-------|----|---|-------------------|--------|-----------------|---|----------------------------------------------|----|--|--|--|--|--|--|--|--|
|    |                                           |          | IN    | CM | M |                   |        |                 |   | ICAP                                         | Hg |  |  |  |  |  |  |  |  |
| 1  | Reagent Blank Unit 1 Container 1 (filter) |          |       |    |   | 13-Aug-18         |        |                 | 1 | ✓                                            | ✓  |  |  |  |  |  |  |  |  |
| 2  |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 3  | Reagent Blank Unit 2 Container 1 (filter) |          |       |    |   | 13-Aug-18         |        |                 | 1 | ✓                                            | ✓  |  |  |  |  |  |  |  |  |
| 4  |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 5  | Reagent Blank Unit 3 Container 1 (filter) |          |       |    |   | 13-Aug-18         |        |                 | 1 | ✓                                            | ✓  |  |  |  |  |  |  |  |  |
| 6  |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 7  |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 8  |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 9  |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 10 |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 11 |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 12 |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 13 |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 14 |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |
| 15 |                                           |          |       |    |   |                   |        |                 |   |                                              |    |  |  |  |  |  |  |  |  |

NOTE: All hazardous samples must be labelled according to WHIMIS guidelines.

Page \_\_\_\_ of \_\_\_\_

## Report Transmission Cover Page

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

Attn: Missy

Sampled By:

Company:

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

Lot ID: **1293220**  
Control Number:  
Date Received: Aug 21, 2018  
Date Reported: Sep 27, 2018  
Report Number: 2327078

| 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: <a href="mailto:mark.lanfranco@alanfranco.com">mark.lanfranco@alanfranco.com</a> |

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

|       |                           |                                                                                                                                                                     |
|-------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Missy | A. Lanfranco & Associates | #101, 9488 - 189 Street<br>Surrey, BC V4N 4W7<br>Phone: (604) 881-2582 Fax: (604) 881-2581<br>Email: <a href="mailto:missy@alanfranco.com">missy@alanfranco.com</a> |
|-------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|

| Delivery              | Format | Deliverables |
|-----------------------|--------|--------------|
| Email - Single Report | PDF    | Invoice      |

### Notes To Clients:

- Sep 27, 2018 - Report was issued to correct order of analytes on samples 1293220-1 to 3 as requested by Shawn Harrington on Sept 27/18. Previous report 2316525.

## Analytical Report

|                                    |                                   |                             |
|------------------------------------|-----------------------------------|-----------------------------|
| Bill To: A. Lanfranco & Associates | Project ID:                       | Lot ID: <b>1293220</b>      |
| #101, 9488 - 189 Street            | Project Name: Metro Vancouver WTE | Control Number:             |
| Surrey, BC, Canada                 | Project Location: Reagent Blanks  | Date Received: Aug 21, 2018 |
| V4N 4W7                            | LSD:                              | Date Reported: Sep 27, 2018 |
| Attn: Missy                        | P.O.:                             | Report Number: 2327078      |
| Sampled By:                        | Proj. Acct. code:                 |                             |
| Company:                           |                                   |                             |

|                                      |                | Reference Number   | 1293220-1            | 1293220-2            | 1293220-3               |
|--------------------------------------|----------------|--------------------|----------------------|----------------------|-------------------------|
|                                      |                | Sample Date        | Aug 13, 2018         | Aug 13, 2018         | Aug 13, 2018            |
|                                      |                | 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             | <2                 | <2                   | <2                   | 2.5                     |
| Arsenic                              | µg             | <1                 | <1                   | <1                   | 1                       |
| Cadmium                              | µg             | <0.3               | <0.3                 | <0.3                 | 0.25                    |
| Chromium                             | µg             | 0.33               | 0.31                 | 0.2                  | 0.2                     |
| Cobalt                               | µg             | <0.3               | <0.3                 | <0.3                 | 0.25                    |
| Copper                               | µg             | 2                  | 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             | <2                 | <2                   | <2                   | 2.5                     |
| Selenium                             | µg             | 3.1                | 5.8                  | <2                   | 1.5                     |
| Tellurium                            | µg             | <2                 | <2                   | <2                   | 2                       |
| Thallium                             | µg             | 3.4                | <2                   | <2                   | 1.5                     |
| Vanadium                             | µg             | <1                 | <1                   | <1                   | 1                       |
| Zinc                                 | µg             | 5.3                | <0.5                 | <0.5                 | 0.5                     |
| <b>Back Half Metals Fraction 2A</b>  |                |                    |                      |                      |                         |
| Aluminum                             | µg             | <5                 | 6                    | 10                   | 5                       |
| Antimony                             | µg             | <3                 | <3                   | <3                   | 2.5                     |
| Arsenic                              | µg             | 2                  | 3.5                  | <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             | <0.3               | <0.3                 | <0.3                 | 0.25                    |
| Lead                                 | µg             | <2                 | <2                   | <2                   | 1.5                     |
| Manganese                            | µg             | <0.3               | 0.6                  | <0.3                 | 0.25                    |
| Nickel                               | µg             | <0.5               | <0.5                 | <0.5                 | 0.5                     |
| Phosphorus                           | µg             | <3                 | <3                   | 4                    | 2.5                     |
| Selenium                             | µg             | <2                 | <2                   | <2                   | 1.5                     |
| Tellurium                            | µg             | <2                 | <2                   | <2                   | 2                       |
| Thallium                             | µg             | 3                  | <2                   | <2                   | 1.5                     |
| Vanadium                             | µg             | <1                 | <1                   | <1                   | 1                       |
| Zinc                                 | µg             | <0.5               | 2.7                  | 0.8                  | 0.5                     |
| Volume                               | Sample         | mL                 | 205                  | 203                  | 205                     |
| Volume                               | aliquot volume | mL                 | 155                  | 153                  | 155                     |
| <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:  
 Project Name: Metro Vancouver WTE  
 Project Location: Reagent Blanks  
 LSD:  
 P.O.:  
 Proj. Acct. code:

Lot ID: **1293220**  
 Control Number:  
 Date Received: Aug 21, 2018  
 Date Reported: Sep 27, 2018  
 Report Number: 2327078

|                             |                | Reference Number   | 1293220-1            | 1293220-2            | 1293220-3            |                         |
|-----------------------------|----------------|--------------------|----------------------|----------------------|----------------------|-------------------------|
|                             |                | Sample Date        | Aug 13, 2018         | Aug 13, 2018         | Aug 13, 2018         |                         |
|                             |                | 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 |
| Mercury by CVAA - Continued |                |                    |                      |                      |                      |                         |
| 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               | 0.08                 | 0.08                 | 0.11                 | 0.05                    |
| Dilution Factor             | As Tested      |                    | 1                    | 1                    | 1                    |                         |
| Volume                      | Sample         | mL                 | 205                  | 203                  | 205                  |                         |
| Volume                      | aliquot volume | mL                 | 25                   | 25                   | 25                   |                         |
| Volume                      | Final          | mL                 | 50                   | 45                   | 40                   |                         |
| Mercury                     | Fraction 2B    | µg/sample          | 0.03                 | 0.03                 | 0.04                 |                         |
| Mercury                     | As Tested      | µg/L               | <0.05                | <0.05                | <0.05                | 0.05                    |
| Dilution Factor             | As Tested      |                    | 1                    | 1                    | 1                    |                         |
| Volume                      | Sample         | mL                 | 102                  | 104                  | 102                  |                         |
| Volume                      | aliquot volume | mL                 | 25                   | 25                   | 25                   |                         |
| Volume                      | Final          | mL                 | 40                   | 40                   | 40                   |                         |
| Mercury                     | Fraction 3A    | µg/sample          | <0.008               | <0.008               | <0.008               |                         |
| Mercury                     | As Tested      | µg/L               | 0.07                 | 0.06                 | 0.18                 | 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 3B    | µg/sample          | 0.03                 | 0.02                 | 0.07                 |                         |
| Mercury                     | As Tested      | µg/L               | <0.05                | <0.05                | <0.05                | 0.05                    |
| Dilution Factor             | As Tested      |                    | 1                    | 1                    | 1                    |                         |
| Volume                      | Sample         | mL                 | 200                  | 200                  | 200                  |                         |
| Volume                      | aliquot volume | mL                 | 25                   | 25                   | 25                   |                         |
| Volume                      | Final          | mL                 | 40                   | 40                   | 40                   |                         |
| Mercury                     | Fraction 3C    | µg/sample          | <0.02                | <0.02                | <0.02                |                         |

Approved by:

  
 Carol Nam, Dipl. T.  
 Quality Officer

## Methodology and Notes

|                                                                                                |                                                                                                                            |                                                                                                                                   |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Bill To: A. Lanfranco & Associates<br>#101, 9488 - 189 Street<br>Surrey, BC, Canada<br>V4N 4W7 | Project ID:<br>Project Name: Metro Vancouver WTE<br>Project Location: Reagent Blanks<br>LSD:<br>P.O.:<br>Proj. Acct. code: | Lot ID: <b>1293220</b><br>Control Number:<br>Date Received: Aug 21, 2018<br>Date Reported: Sep 27, 2018<br>Report Number: 2327078 |
| Attn: Missy<br>Sampled By:<br>Company:                                                         |                                                                                                                            |                                                                                                                                   |

## Method of Analysis

| Method Name                                   | Reference | Method                                         | Date Analysis Started | Location     |
|-----------------------------------------------|-----------|------------------------------------------------|-----------------------|--------------|
| Mercury in Air (Surrey) - 1B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 4, 2018           | Exova Surrey |
| Mercury in Air (Surrey) - 2B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 24, 2018          | Exova Surrey |
| Mercury in Air (Surrey) - 3A                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 5, 2018           | Exova Surrey |
| Mercury in Air (Surrey) - 3B                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 12, 2018          | Exova Surrey |
| Mercury in Air (Surrey) - 3C                  | EMC       | * Metals Emissions from Stationary Sources, 29 | Sep 5, 2018           | Exova Surrey |
| Metals in Stack Samples - Back half (Surrey)  | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 24, 2018          | Exova Surrey |
| Metals in Stack Samples - Front half (Surrey) | EMC       | * Metals Emissions from Stationary Sources, 29 | Aug 23, 2018          | Exova Surrey |

*\* Reference Method Modified*

## References

EMC Emission Measurement Center of EPA

## Comments:

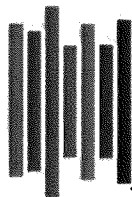
- Sep 27, 2018 - Report was issued to correct order of analytes on samples 1293220-1 to 3 as requested by Shawn Harrington on Sept 27/18. Previous report 2316525.

Please direct any inquiries regarding this report to our Client Services Group or to the Operations Manager at the coordinates indicated at the top left of this page.

Results relate only to samples as submitted.

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

# Exova



Testing  
Advising  
Assuring

LOT: Lot: 1293220 COC



Sheet

d with analysis

|                                                                                                                                                           |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------------|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|----------------------|------------|-----------|----------|---------|-------|-------|----------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>Billing Address:</b>                                                                                                                                   |                              |                 |                         | <b>Copy of Report To:</b>                                                                                                                                                                                                                                                                                                                                                                                      |               |                        |                                              | <b>Copy of invoice:</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Company: A. Lanfranco and Associates<br>Address: Unit 101 9488 189 St<br>Surrey, BC V4N 4W7                                                               |                              |                 |                         | Company:<br>Address:                                                                                                                                                                                                                                                                                                                                                                                           |               |                        |                                              | Mail invoice to this address for approval                                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| QA/QC Report <input type="checkbox"/>                                                                                                                     |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Attention: Mark Lanfranco<br>Phone: 604-881-2582<br>Fax: 604-881-2581<br>Cell:<br>e-mail: mark.lanfranco@alanfranco.com                                   |                              |                 |                         | Report Result:<br>Fax <input type="checkbox"/><br>Mail <input type="checkbox"/><br>Courier <input type="checkbox"/><br>e-mail <input type="checkbox"/><br>e-Service <input type="checkbox"/>                                                                                                                                                                                                                   |               |                        |                                              | Attention:<br>Phone:<br>Fax:<br>Cell:<br>e-mail:                                                                                                                                                                                                                                                                                                                                                                                              |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                           |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              | Report Result:<br>Fax <input type="checkbox"/><br>Mail <input type="checkbox"/><br>Courier <input type="checkbox"/><br>e-mail <input type="checkbox"/><br>e-Service <input type="checkbox"/>                                                                                                                                                                                                                                                  |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Information to be included on Report and Invoice</b>                                                                                                   |                              |                 |                         | <b>RUSH</b> Please contact the laboratory to confirm rush dates and times before submitting samples.<br>Upon filling out this section, client accepts that surcharges will be attached to this analysis<br>RUSH required on: <input type="checkbox"/> All Analysis <input type="checkbox"/> or <input type="checkbox"/> As indicated<br>Date Required: _____<br>Signature: _____<br>Exova Authorization: _____ |               |                        |                                              | <b>Sample Custody (Please Print)</b><br>Sampled by:<br>Company _____ Signature _____<br>I authorize Exova to proceed with the work work indicated on this form:<br>Date: _____ Initial: _____<br>Received by: _____ Sample Temp. 27°C<br>Waybill #: _____ Date _____<br>Company _____ Time _____                                                                                                                                              |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Special Instructions / Comments</b><br><br>*Front and Back ICAP as per EPA Method 29<br>*Hg analysis as per EPA Method 29<br>* Please report ug/sample |                              |                 |                         | <b>FOR LAB USE ONLY</b><br>Condition of containers/coolers upon arrival at lab                                                                                                                                                                                                                                                                                                                                 |               |                        |                                              | <input type="checkbox"/> Check here if Exova is required to report results directly to a regulatory body (Please include contact information)<br><input type="checkbox"/> Check here if you are testing <b>POTABLE WATER</b> for <b>HUMAN CONSUMPTION</b>                                                                                                                                                                                     |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Please indicate which regulations you are required to meet: _____                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              | <table border="1" style="width:100%"><tr><td rowspan="2">Number of Containers</td><td rowspan="2">Front ICAP</td><td rowspan="2">Back ICAP</td><td rowspan="2">Front Hg</td><td rowspan="2">Back Hg</td><td rowspan="2">5A Hg</td><td rowspan="2">5B Hg</td><td colspan="6">Enter tests above (✓ relevant samples below)</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> |   |   |   | Number of Containers | Front ICAP | Back ICAP | Front Hg | Back Hg | 5A Hg | 5B Hg | Enter tests above (✓ relevant samples below) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Number of Containers                                                                                                                                      | Front ICAP                   | Back ICAP       | Front Hg                | Back Hg                                                                                                                                                                                                                                                                                                                                                                                                        | 5A Hg         | 5B Hg                  | Enter tests above (✓ relevant samples below) |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                           |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                           | <b>Sample Identification</b> | <b>Location</b> | <b>Depth</b><br>IN CM M | <b>Date/Time Sampled</b>                                                                                                                                                                                                                                                                                                                                                                                       | <b>Matrix</b> | <b>Sampling Method</b> | <b>↓</b>                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1                                                                                                                                                         | Reagent Blank Unit 1         |                 |                         | 13-Aug-18                                                                                                                                                                                                                                                                                                                                                                                                      |               |                        | 5                                            | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                             | ✓ | ✓ | ✓ | ✓                    | ✓          |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2                                                                                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3                                                                                                                                                         | Reagent Blank Unit 2         |                 |                         | 13-Aug-18                                                                                                                                                                                                                                                                                                                                                                                                      |               |                        | 5                                            | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                             | ✓ | ✓ | ✓ | ✓                    | ✓          |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4                                                                                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5                                                                                                                                                         | Reagent Blank Unit 3         |                 |                         | 13-Aug-18                                                                                                                                                                                                                                                                                                                                                                                                      |               |                        | 5                                            | ✓                                                                                                                                                                                                                                                                                                                                                                                                                                             | ✓ | ✓ | ✓ | ✓                    | ✓          |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6                                                                                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7                                                                                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8                                                                                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9                                                                                                                                                         |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10                                                                                                                                                        |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11                                                                                                                                                        |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12                                                                                                                                                        |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13                                                                                                                                                        |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14                                                                                                                                                        |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 15                                                                                                                                                        |                              |                 |                         |                                                                                                                                                                                                                                                                                                                                                                                                                |               |                        |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |   |   |                      |            |           |          |         |       |       |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**NOTE: All hazardous samples must be labelled according to WHIMIS guidelines.**

Page \_\_\_\_ of \_\_\_\_





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[www.alsglobal.com](http://www.alsglobal.com)

## LABORATORY REPORT

August 29, 2018

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

**RE: Metro Vancouver WTE**

Dear Mark:

Enclosed are the results of the samples submitted to our laboratory on August 17, 2018. For your reference, these analyses have been assigned our service request number P1804283.

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

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

Respectfully submitted,

**ALS | Environmental**

By Kate Kaneko at 3:32 pm, 08/29/18

Kate Kaneko  
Project Manager



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[www.alsglobal.com](http://www.alsglobal.com)

Client: A. Lanfranco and Associates Inc.  
Project: Metro Vancouver WTE

Service Request No: P1804283

## CASE NARRATIVE

The samples were received intact under chain of custody on August 17, 2018 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

### C3 through C6 Hydrocarbon Analysis

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

### Methane, Ethane, Ethene and Acetylene Analysis

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

*The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.*

*Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.*



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### ALS Environmental – Simi Valley

#### CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

| Agency                 | Web Site                                                                                                                                                                                                                                            | Number                     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| Alaska DEC             | <a href="http://dec.alaska.gov/eh/lab.aspx">http://dec.alaska.gov/eh/lab.aspx</a>                                                                                                                                                                   | 17-019                     |
| Arizona DHS            | <a href="http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home">http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home</a> | AZ0694                     |
| Florida DOH (NELAP)    | <a href="http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html">http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html</a>                                               | E871020                    |
| Louisiana DEQ (NELAP)  | <a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>                                                                                                                         | 05071                      |
| Maine DHHS             | <a href="http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml">http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml</a>                                                             | 2016036                    |
| Minnesota DOH (NELAP)  | <a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>                                                                                                                                               | 1347317                    |
| New Jersey DEP (NELAP) | <a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>                                                                                                                                                 | CA009                      |
| New York DOH (NELAP)   | <a href="http://www.wadsworth.org/labcert/elap/elap.html">http://www.wadsworth.org/labcert/elap/elap.html</a>                                                                                                                                       | 11221                      |
| Oregon PHD (NELAP)     | <a href="http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>                           | 4068-005                   |
| Pennsylvania DEP       | <a href="http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx">http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx</a>                                           | 68-03307<br>(Registration) |
| PJLA (DoD ELAP)        | <a href="http://www.pjlabs.com/search-accredited-labs">http://www.pjlabs.com/search-accredited-labs</a>                                                                                                                                             | 65818<br>(Testing)         |
| Texas CEQ (NELAP)      | <a href="http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html</a>                                                                                                         | T104704413-18-9            |
| Utah DOH (NELAP)       | <a href="http://health.utah.gov/lab/lab_cert_env">http://health.utah.gov/lab/lab_cert_env</a>                                                                                                                                                       | CA01627201<br>7-8          |
| Washington DOE         | <a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>                                                                                                         | C946                       |

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

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

# ALS ENVIRONMENTAL

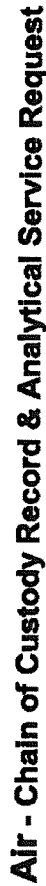
## DETAIL SUMMARY REPORT

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

Service Request: P1804283

Date Received: 8/17/2018  
Time Received: 09:15

| Client Sample ID           | Lab Code     | Matrix | Date Collected | Time Collected | Container ID | Pil (psig) | Pfl (psig) | TO-3 Modified - C1C6+ Can | TO-3 Modified - MEEPP Can |
|----------------------------|--------------|--------|----------------|----------------|--------------|------------|------------|---------------------------|---------------------------|
| Metro Van WTE Unit 1 Run 1 | P1804283-001 | Air    | 8/15/2018      | 10:00          | SC02227      | -3.50      | 13.00      | X                         | X                         |
| Metro Van WTE Unit 1 Run 2 | P1804283-002 | Air    | 8/15/2018      | 11:02          | SC01740      | -3.56      | 3.72       | X                         | X                         |
| Metro Van WTE Unit 1 Run 3 | P1804283-003 | Air    | 8/15/2018      | 12:03          | SC01715      | -3.07      | 3.78       | X                         | X                         |
| Metro Van WTE Unit 2 Run 1 | P1804283-004 | Air    | 8/15/2018      | 10:51          | SC00369      | -3.81      | 3.87       | X                         | X                         |
| Metro Van WTE Unit 2 Run 2 | P1804283-005 | Air    | 8/15/2018      | 12:05          | SC00292      | -3.13      | 3.58       | X                         | X                         |
| Metro Van WTE Unit 2 Run 3 | P1804283-006 | Air    | 8/15/2018      | 13:15          | SC00102      | -2.83      | 3.62       | X                         | X                         |
| Metro Van WTE Unit 3 Run 1 | P1804283-007 | Air    | 8/15/2018      | 10:13          | SC00651      | -3.36      | 3.92       | X                         | X                         |
| Metro Van WTE Unit 3 Run 2 | P1804283-008 | Air    | 8/15/2018      | 11:14          | SC01898      | -4.35      | 3.66       | X                         | X                         |
| Metro Van WTE Unit 3 Run 3 | P1804283-009 | Air    | 8/15/2018      | 12:17          | SC01838      | -3.79      | 3.70       | X                         | X                         |



Page 1 of 1

[illegible]

**ALS Environmental**  
**Sample Acceptance Check Form**

Client: A. Lanfranco and Associates Inc. Work order: P1804283  
Project: Metro Vancouver WTE  
Sample(s) received on: 8/17/18 Date opened: 8/17/18 by: ADAVID

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

- |                                                                                                                 | <u>Yes</u>                          | <u>No</u>                           | <u>N/A</u>                          |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1 Were <b>sample containers</b> properly marked with client sample ID?                                          | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 2 Did <b>sample containers</b> arrive in good condition?                                                        | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 3 Were <b>chain-of-custody</b> papers used and filled out?                                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 4 Did <b>sample container labels</b> and/or tags agree with custody papers?                                     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5 Was <b>sample volume</b> received adequate for analysis?                                                      | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 6 Are samples within specified holding times?                                                                   | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 7 Was proper <b>temperature</b> (thermal preservation) of cooler at receipt adhered to?                         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 8 Were <b>custody seals</b> on outside of cooler/Box/Container?                                                 | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Location of seal(s) _____ Sealing Lid?                                                                          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were signature and date included?                                                                               | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were seals intact?                                                                                              | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 9 Do containers have appropriate <b>preservation</b> , according to method/SOP or Client specified information? | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Is there a client indication that the submitted samples are <b>pH</b> preserved?                                | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Were <b>VOA vials</b> checked for presence/absence of air bubbles?                                              | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it?       | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 10 <b>Tubes:</b> Are the tubes capped and intact?                                                               | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 11 <b>Badges:</b> Are the badges properly capped and intact?                                                    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Are dual bed badges separated and individually capped and intact?                                               | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

| Lab Sample ID   | Container Description | Required pH * | Received pH | Adjusted pH | VOA Headspace (Presence/Absence) | Receipt / Preservation Comments |
|-----------------|-----------------------|---------------|-------------|-------------|----------------------------------|---------------------------------|
| P1804283-001.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-002.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-003.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-004.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-005.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-006.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-007.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-008.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
| P1804283-009.01 | 6.0 L Source Can      |               |             |             |                                  |                                 |
|                 |                       |               |             |             |                                  |                                 |
|                 |                       |               |             |             |                                  |                                 |
|                 |                       |               |             |             |                                  |                                 |
|                 |                       |               |             |             |                                  |                                 |
|                 |                       |               |             |             |                                  |                                 |
|                 |                       |               |             |             |                                  |                                 |

Explain any discrepancies: (include lab sample ID numbers): \_\_\_\_\_

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

### Acetylene

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890A/GC10/FID  
**Analyst:** Wade Henton  
**Sampling Media:** 6.0 L Summa Canister(s)  
**Test Notes:**

**Date(s) Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/21/18

| Client Sample ID           | ALS Sample ID | Injection<br>Volume<br>ml(s) | Container<br>Dilution<br>Factor | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|----------------------------|---------------|------------------------------|---------------------------------|----------------|-------------|-------------------|
| Metro Van WTE Unit 1 Run 1 | P1804283-001  | 0.50                         | 2.47                            | ND             | 0.62        |                   |
| Metro Van WTE Unit 1 Run 2 | P1804283-002  | 0.50                         | 1.65                            | ND             | 0.41        |                   |
| Metro Van WTE Unit 1 Run 3 | P1804283-003  | 0.50                         | 1.59                            | ND             | 0.40        |                   |
| Metro Van WTE Unit 2 Run 1 | P1804283-004  | 0.50                         | 1.71                            | ND             | 0.43        |                   |
| Metro Van WTE Unit 2 Run 2 | P1804283-005  | 0.50                         | 1.58                            | ND             | 0.40        |                   |
| Metro Van WTE Unit 2 Run 3 | P1804283-006  | 0.50                         | 1.54                            | ND             | 0.39        |                   |
| Metro Van WTE Unit 3 Run 1 | P1804283-007  | 0.50                         | 1.64                            | ND             | 0.41        |                   |
| Metro Van WTE Unit 3 Run 2 | P1804283-008  | 0.50                         | 1.77                            | ND             | 0.44        |                   |
| Metro Van WTE Unit 3 Run 3 | P1804283-009  | 0.50                         | 1.69                            | ND             | 0.42        |                   |
| Method Blank               | P180821-MB    | 0.50                         | 1.00                            | ND             | 0.25        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

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

**Client Sample ID:** Lab Control Sample

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P180821-LCS

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Date Collected:** NA

**Date Received:** NA

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** NA ml(s)

| CAS #   | Compound  | Spike Amount<br>ppmV | Result<br>ppmV | % Recovery | ALS                  | Data<br>Qualifier |
|---------|-----------|----------------------|----------------|------------|----------------------|-------------------|
|         |           |                      |                |            | Acceptance<br>Limits |                   |
| 74-86-2 | Acetylene | 1.50                 | 1.21           | 81         | 70-130               |                   |



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 1 Run 1

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-001

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC02227

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.50      **Final Pressure (psig):** 13.00

**Container Dilution Factor:** 2.47

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 2.5         |                   |
| 74-85-1 | Ethene   | ND             | 0.62        |                   |
| 74-84-0 | Ethane   | ND             | 0.62        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 1 Run 2

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-002

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC01740

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.56

**Final Pressure (psig):** 3.72

**Container Dilution Factor:** 1.65

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | 2.2            | 1.7         |                   |
| 74-85-1 | Ethene   | ND             | 0.41        |                   |
| 74-84-0 | Ethane   | ND             | 0.41        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 1 Run 3

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-003

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC01715

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.07      **Final Pressure (psig):** 3.78

**Container Dilution Factor:** 1.59

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.6         |                   |
| 74-85-1 | Ethene   | ND             | 0.40        |                   |
| 74-84-0 | Ethane   | ND             | 0.40        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Metro Van WTE Unit 2 Run 1  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P1804283-004

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890A/GC10/FID  
**Analyst:** Wade Henton  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** SC00369

**Date Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/21/18  
**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.81      **Final Pressure (psig):** 3.87

**Container Dilution Factor:** 1.71

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | 7.5            | 1.7         |                   |
| 74-85-1 | Ethene   | ND             | 0.43        |                   |
| 74-84-0 | Ethane   | ND             | 0.43        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

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**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Metro Van WTE Unit 2 Run 2  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
 ALS Sample ID: P1804283-005

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890A/GC10/FID  
**Analyst:** Wade Henton  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** SC00292

**Date Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/21/18  
**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.13      **Final Pressure (psig):** 3.58

**Container Dilution Factor:** 1.58

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.6         |                   |
| 74-85-1 | Ethene   | ND             | 0.40        |                   |
| 74-84-0 | Ethane   | ND             | 0.40        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Metro Van WTE Unit 2 Run 3  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P1804283-006

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890A/GC10/FID  
**Analyst:** Wade Henton  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** SC00102

**Date Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/21/18  
**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -2.83      **Final Pressure (psig):** 3.62

**Container Dilution Factor:** 1.54

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.5         |                   |
| 74-85-1 | Ethene   | ND             | 0.39        |                   |
| 74-84-0 | Ethane   | ND             | 0.39        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 3 Run 1

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-007

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC00651

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.36      **Final Pressure (psig):** 3.92

**Container Dilution Factor:** 1.64

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.6         |                   |
| 74-85-1 | Ethene   | ND             | 0.41        |                   |
| 74-84-0 | Ethane   | ND             | 0.41        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 3 Run 2

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-008

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC01898

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -4.35

**Final Pressure (psig):** 3.66

**Container Dilution Factor:** 1.77

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.8         |                   |
| 74-85-1 | Ethene   | ND             | 0.44        |                   |
| 74-84-0 | Ethane   | ND             | 0.44        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.



# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 3 Run 3

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-009

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC01838

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.79      **Final Pressure (psig):** 3.70

**Container Dilution Factor:** 1.69

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.7         |                   |
| 74-85-1 | Ethene   | ND             | 0.42        |                   |
| 74-84-0 | Ethane   | ND             | 0.42        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## RESULTS OF ANALYSIS

Page 1 of 1

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

**Client Sample ID:** Method Blank

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P180821-MB

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Date Collected:** NA

**Date Received:** NA

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

| CAS #   | Compound | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|---------|----------|----------------|-------------|-------------------|
| 74-82-8 | Methane  | ND             | 1.0         |                   |
| 74-85-1 | Ethene   | ND             | 0.25        |                   |
| 74-84-0 | Ethane   | ND             | 0.25        |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# ALS ENVIRONMENTAL

## LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

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

**Client Sample ID:** Lab Control Sample

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P180821-LCS

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Date Collected:** NA

**Date Received:** NA

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** NA ml(s)

| CAS #   | Compound | Spike Amount<br>ppmV | Result<br>ppmV | % Recovery | ALS                  | Data<br>Qualifier |
|---------|----------|----------------------|----------------|------------|----------------------|-------------------|
|         |          |                      |                |            | Acceptance<br>Limits |                   |
| 74-82-8 | Methane  | 1.50                 | 1.64           | 109        | 70-130               |                   |
| 74-85-1 | Ethene   | 1.50                 | 1.38           | 92         | 70-130               |                   |
| 74-84-0 | Ethane   | 1.50                 | 1.37           | 91         | 70-130               |                   |

# ALS ENVIRONMENTAL

## LABORATORY DUPLICATE SUMMARY RESULTS

Page 1 of 1

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

**Client Sample ID:** Metro Van WTE Unit 3 Run 3

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-009DUP

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890A/GC10/FID

**Analyst:** Wade Henton

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC01838

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 0.50 ml(s)

**Initial Pressure (psig):** -3.79      **Final Pressure (psig):** 3.70

**Container Dilution Factor:** 1.69

| CAS #   | Compound | Sample Result<br>ppmV | Duplicate<br>Sample Result<br>ppmV | Average | % RPD | RPD<br>Limit | Data<br>Qualifier |
|---------|----------|-----------------------|------------------------------------|---------|-------|--------------|-------------------|
| 74-82-8 | Methane  | ND                    | ND                                 | -       | -     | 15           |                   |
| 74-85-1 | Ethene   | ND                    | ND                                 | -       | -     | 15           |                   |
| 74-84-0 | Ethane   | ND                    | ND                                 | -       | -     | 15           |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Metro Van WTE Unit 1 Run 1**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-001

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Container ID:** SC02227

Date Collected: 8/15/18

Date Received: 8/17/18

Date Analyzed: 8/20/18

Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -3.50

Final Pressure (psig): 13.00

Container Dilution Factor: 2.47

| Compound                     | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane    | ND             | 1.2         |                   |
| C <sub>4</sub> as n-Butane   | ND             | 1.2         |                   |
| C <sub>5</sub> as n-Pentane  | ND             | 1.2         |                   |
| C <sub>6</sub> as n-Hexane   | ND             | 1.2         |                   |
| C <sub>6</sub> + as n-Hexane | ND             | 2.5         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

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**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Metro Van WTE Unit 1 Run 2**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-002

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Container ID:** SC01740**Date Collected:** 8/15/18**Date Received:** 8/17/18**Date Analyzed:** 8/20/18**Volume(s) Analyzed:** 1.0 ml(s)**Initial Pressure (psig):** -3.56**Final Pressure (psig):** 3.72**Container Dilution Factor:** 1.65

| Compound                     | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane    | ND             | 0.83        |                   |
| C <sub>4</sub> as n-Butane   | ND             | 0.83        |                   |
| C <sub>5</sub> as n-Pentane  | ND             | 0.83        |                   |
| C <sub>6</sub> as n-Hexane   | ND             | 0.83        |                   |
| C <sub>6</sub> + as n-Hexane | ND             | 1.7         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Metro Van WTE Unit 1 Run 3  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P1804283-003

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890 II/GC8/FID  
**Analyst:** Gilbert Gutierrez  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** SC01715

**Date Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/20/18  
**Volume(s) Analyzed:** 1.0 ml(s)

**Initial Pressure (psig):** -3.07      **Final Pressure (psig):** 3.78

**Container Dilution Factor:** 1.59

| Compound                     | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane    | ND             | 0.80        |                   |
| C <sub>4</sub> as n-Butane   | ND             | 0.80        |                   |
| C <sub>5</sub> as n-Pentane  | ND             | 0.80        |                   |
| C <sub>6</sub> as n-Hexane   | ND             | 0.80        |                   |
| C <sub>6</sub> + as n-Hexane | ND             | 1.6         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

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**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Metro Van WTE Unit 2 Run 1**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-004

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Container ID:** SC00369**Date Collected:** 8/15/18**Date Received:** 8/17/18**Date Analyzed:** 8/20/18**Volume(s) Analyzed:** 1.0 ml(s)**Initial Pressure (psig):** -3.81**Final Pressure (psig):** 3.87**Container Dilution Factor:** 1.71

| Compound                     | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane    | ND             | 0.86        |                   |
| C <sub>4</sub> as n-Butane   | ND             | 0.86        |                   |
| C <sub>5</sub> as n-Pentane  | ND             | 0.86        |                   |
| C <sub>6</sub> as n-Hexane   | ND             | 0.86        |                   |
| C <sub>6</sub> + as n-Hexane | ND             | 1.7         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.



## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Metro Van WTE Unit 2 Run 2  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P1804283-005

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890 II/GC8/FID  
**Analyst:** Gilbert Gutierrez  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** SC00292

**Date Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/20/18  
**Volume(s) Analyzed:** 1.0 ml(s)

**Initial Pressure (psig):** -3.13      **Final Pressure (psig):** 3.58

**Container Dilution Factor:** 1.58

| Compound                                | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|-----------------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane               | ND             | 0.79        |                   |
| C <sub>4</sub> as n-Butane              | ND             | 0.79        |                   |
| C <sub>5</sub> as n-Pentane             | ND             | 0.79        |                   |
| C <sub>6</sub> as n-Hexane              | ND             | 0.79        |                   |
| C <sub>6</sub> <sup>+</sup> as n-Hexane | ND             | 1.6         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Metro Van WTE Unit 2 Run 3  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P1804283-006

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890 II/GC8/FID  
**Analyst:** Gilbert Gutierrez  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**  
**Container ID:** SC00102

**Date Collected:** 8/15/18  
**Date Received:** 8/17/18  
**Date Analyzed:** 8/20/18  
**Volume(s) Analyzed:** 1.0 ml(s)

**Initial Pressure (psig):** -2.83      **Final Pressure (psig):** 3.62

**Container Dilution Factor:** 1.54

| Compound                                | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|-----------------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane               | ND             | 0.77        |                   |
| C <sub>4</sub> as n-Butane              | ND             | 0.77        |                   |
| C <sub>5</sub> as n-Pentane             | ND             | 0.77        |                   |
| C <sub>6</sub> as n-Hexane              | ND             | 0.77        |                   |
| C <sub>6</sub> <sup>+</sup> as n-Hexane | ND             | 1.5         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Metro Van WTE Unit 3 Run 1**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-007

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Container ID:** SC00651**Date Collected:** 8/15/18**Date Received:** 8/17/18**Date Analyzed:** 8/20/18**Volume(s) Analyzed:** 1.0 ml(s)**Initial Pressure (psig):** -3.36**Final Pressure (psig):** 3.92**Container Dilution Factor:** 1.64

| Compound                                | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|-----------------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane               | ND             | 0.82        |                   |
| C <sub>4</sub> as n-Butane              | ND             | 0.82        |                   |
| C <sub>5</sub> as n-Pentane             | ND             | 0.82        |                   |
| C <sub>6</sub> as n-Hexane              | ND             | 0.82        |                   |
| C <sub>6</sub> <sup>+</sup> as n-Hexane | ND             | 1.6         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Metro Van WTE Unit 3 Run 2**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-008

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Container ID:** SC01898**Date Collected:** 8/15/18**Date Received:** 8/17/18**Date Analyzed:** 8/21/18**Volume(s) Analyzed:** 1.0 ml(s)**Initial Pressure (psig):** -4.35**Final Pressure (psig):** 3.66**Container Dilution Factor:** 1.77

| Compound                                | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|-----------------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane               | ND             | 0.89        |                   |
| C <sub>4</sub> as n-Butane              | ND             | 0.89        |                   |
| C <sub>5</sub> as n-Pentane             | ND             | 0.89        |                   |
| C <sub>6</sub> as n-Hexane              | ND             | 0.89        |                   |
| C <sub>6</sub> <sup>+</sup> as n-Hexane | ND             | 1.8         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# RESULTS OF ANALYSIS

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

**Client Sample ID:** Metro Van WTE Unit 3 Run 3

**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P1804283-009

**Test Code:** EPA TO-3 Modified

**Instrument ID:** HP5890 II/GC8/FID

**Analyst:** Gilbert Gutierrez

**Sampling Media:** 6.0 L Summa Canister

**Test Notes:**

**Container ID:** SC01838

**Date Collected:** 8/15/18

**Date Received:** 8/17/18

**Date Analyzed:** 8/21/18

**Volume(s) Analyzed:** 1.0 ml(s)

**Initial Pressure (psig):** -3.79

**Final Pressure (psig):** 3.70

**Container Dilution Factor:** 1.69

| Compound                     | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane    | ND             | 0.85        |                   |
| C <sub>4</sub> as n-Butane   | ND             | 0.85        |                   |
| C <sub>5</sub> as n-Pentane  | ND             | 0.85        |                   |
| C <sub>6</sub> as n-Hexane   | ND             | 0.85        |                   |
| C <sub>6</sub> + as n-Hexane | ND             | 1.7         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Method Blank**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P180820-MB

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Date Collected:** NA**Date Received:** NA**Date Analyzed:** 8/20/18**Volume(s) Analyzed:** 1.0 ml(s)

| Compound                     | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane    | ND             | 0.50        |                   |
| C <sub>4</sub> as n-Butane   | ND             | 0.50        |                   |
| C <sub>5</sub> as n-Pentane  | ND             | 0.50        |                   |
| C <sub>6</sub> as n-Hexane   | ND             | 0.50        |                   |
| C <sub>6</sub> + as n-Hexane | ND             | 1.0         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

## RESULTS OF ANALYSIS

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.**Client Sample ID:** Method Blank**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283

ALS Sample ID: P180821-MB

**Test Code:** EPA TO-3 Modified**Instrument ID:** HP5890 II/GC8/FID**Analyst:** Gilbert Gutierrez**Sampling Media:** 6.0 L Summa Canister**Test Notes:****Date Collected:** NA**Date Received:** NA**Date Analyzed:** 8/21/18**Volume(s) Analyzed:** 1.0 ml(s)

| Compound                                | Result<br>ppmV | MRL<br>ppmV | Data<br>Qualifier |
|-----------------------------------------|----------------|-------------|-------------------|
| C <sub>3</sub> as Propane               | ND             | 0.50        |                   |
| C <sub>4</sub> as n-Butane              | ND             | 0.50        |                   |
| C <sub>5</sub> as n-Pentane             | ND             | 0.50        |                   |
| C <sub>6</sub> as n-Hexane              | ND             | 0.50        |                   |
| C <sub>6</sub> <sup>+</sup> as n-Hexane | ND             | 1.0         |                   |

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

# LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P180820-LCS

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890 II/GC8/FID  
**Analyst:** Gilbert Gutierrez  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 8/20/18  
**Volume(s) Analyzed:** NA ml(s)

| Compound  | Spike Amount<br>ppmV | Result<br>ppmV | % Recovery | ALS<br>Acceptance<br>Limits | Data<br>Qualifier |
|-----------|----------------------|----------------|------------|-----------------------------|-------------------|
| Propane   | 1,000                | 1,050          | 105        | 95-118                      |                   |
| n-Butane  | 1,000                | 1,040          | 104        | 93-119                      |                   |
| n-Pentane | 1,000                | 1,010          | 101        | 90-115                      |                   |
| n-Hexane  | 1,000                | 1,080          | 108        | 95-125                      |                   |



# LABORATORY CONTROL SAMPLE SUMMARY

Page 1 of 1

**Client:** A. Lanfranco and Associates Inc.  
**Client Sample ID:** Lab Control Sample  
**Client Project ID:** Metro Vancouver WTE

ALS Project ID: P1804283  
ALS Sample ID: P180821-LCS

**Test Code:** EPA TO-3 Modified  
**Instrument ID:** HP5890 II/GC8/FID  
**Analyst:** Gilbert Gutierrez  
**Sampling Media:** 6.0 L Summa Canister  
**Test Notes:**

**Date Collected:** NA  
**Date Received:** NA  
**Date Analyzed:** 8/21/18  
**Volume(s) Analyzed:** NA ml(s)

| Compound  | Spike Amount<br>ppmV | Result<br>ppmV | % Recovery | ALS                  | Data<br>Qualifier |
|-----------|----------------------|----------------|------------|----------------------|-------------------|
|           |                      |                |            | Acceptance<br>Limits |                   |
| Propane   | 1,000                | 1,070          | 107        | 95-118               |                   |
| n-Butane  | 1,000                | 1,060          | 106        | 93-119               |                   |
| n-Pentane | 1,000                | 1,030          | 103        | 90-115               |                   |
| n-Hexane  | 1,000                | 1,110          | 111        | 95-125               |                   |

Your Project #: B867648  
Your C.O.C. #: B867648-ONTV-01-01

**Attention: Tanya Eugene**

Maxxam Analytics  
4606 Canada Way  
Burnaby, BC  
CANADA V5G 1K5

**Report Date: 2018/08/28**  
**Report #: R5377337**  
**Version: 1 - Final**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B8K8085**

**Received: 2018/08/15, 10:29**

Sample Matrix: Tedlar Bag  
# Samples Received: 9

| Analyses          | Date     |           | Date Analyzed | Laboratory Method | Reference |
|-------------------|----------|-----------|---------------|-------------------|-----------|
|                   | Quantity | Extracted |               |                   |           |
| Nitrous Oxide (1) | 9        | N/A       | 2018/08/15    | CAM SOP-00203     | GC/ECD    |

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

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

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

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Maxxam, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Date Analyzed is the date the analytical batch was created. Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard, where applicable.

Your Project #: B867648  
Your C.O.C. #: B867648-ONTV-01-01

**Attention: Tanya Eugene**

Maxxam Analytics  
4606 Canada Way  
Burnaby, BC  
CANADA V5G 1K5

**Report Date: 2018/08/28**  
**Report #: R5377337**  
**Version: 1 - Final**

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B8K8085**

**Received: 2018/08/15, 10:29**

Encryption Key

*Cristina Bacchus*

Cristina (Maria) Bacchus  
Project Manager  
28 Aug 2018 17:26:17

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Jade Browne, Project Manager Assistant - Air

Email: [jbrowne@maxxam.ca](mailto:jbrowne@maxxam.ca)

Phone# (905) 817-5700

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**COMPRESSED GAS PARAMETERS (TEDLAR BAG)**

|                                                                                                                  |              |                            |                                    |                            |            |                 |
|------------------------------------------------------------------------------------------------------------------|--------------|----------------------------|------------------------------------|----------------------------|------------|-----------------|
| <b>Maxxam ID</b>                                                                                                 |              | HMB729                     | HMB729                             | HMB730                     |            |                 |
| <b>Sampling Date</b>                                                                                             |              | 2018/08/13                 | 2018/08/13                         | 2018/08/13                 |            |                 |
| <b>COC Number</b>                                                                                                |              | B867648-ONTV-01-01         | B867648-ONTV-01-01                 | B867648-ONTV-01-01         |            |                 |
|                                                                                                                  | <b>UNITS</b> | <b>UB3873-UNIT#1 RUN#1</b> | <b>UB3873-UNIT#1 RUN#1 Lab-Dup</b> | <b>UB4057-UNIT#1 RUN#2</b> | <b>RDL</b> | <b>QC Batch</b> |
| Nitrous Oxide                                                                                                    | ppmv         | 4.8                        | 4.1                                | 2.4                        | 0.25       | 5681680         |
| RDL = Reportable Detection Limit<br>QC Batch = Quality Control Batch<br>Lab-Dup = Laboratory Initiated Duplicate |              |                            |                                    |                            |            |                 |

|                                                                      |              |                            |                            |                            |            |                 |
|----------------------------------------------------------------------|--------------|----------------------------|----------------------------|----------------------------|------------|-----------------|
| <b>Maxxam ID</b>                                                     |              | HMB731                     | HMB732                     | HMB733                     |            |                 |
| <b>Sampling Date</b>                                                 |              | 2018/08/13                 | 2018/08/13                 | 2018/08/13                 |            |                 |
| <b>COC Number</b>                                                    |              | B867648-ONTV-01-01         | B867648-ONTV-01-01         | B867648-ONTV-01-01         |            |                 |
|                                                                      | <b>UNITS</b> | <b>UB4058-UNIT#1 RUN#3</b> | <b>UB4059-UNIT#2 RUN#1</b> | <b>UB4060-UNIT#2 RUN#2</b> | <b>RDL</b> | <b>QC Batch</b> |
| Nitrous Oxide                                                        | ppmv         | 3.4                        | 6.9                        | 4.0                        | 0.25       | 5681680         |
| RDL = Reportable Detection Limit<br>QC Batch = Quality Control Batch |              |                            |                            |                            |            |                 |

|                                                                      |              |                            |                            |                            |            |                 |
|----------------------------------------------------------------------|--------------|----------------------------|----------------------------|----------------------------|------------|-----------------|
| <b>Maxxam ID</b>                                                     |              | HMB734                     | HMB735                     | HMB736                     |            |                 |
| <b>Sampling Date</b>                                                 |              | 2018/08/13                 | 2018/08/13                 | 2018/08/13                 |            |                 |
| <b>COC Number</b>                                                    |              | B867648-ONTV-01-01         | B867648-ONTV-01-01         | B867648-ONTV-01-01         |            |                 |
|                                                                      | <b>UNITS</b> | <b>UB4061-UNIT#2 RUN#3</b> | <b>UB4062-UNIT#3 RUN#1</b> | <b>UB4063-UNIT#3 RUN#2</b> | <b>RDL</b> | <b>QC Batch</b> |
| Nitrous Oxide                                                        | ppmv         | 4.6                        | 6.7                        | 11                         | 0.25       | 5681680         |
| RDL = Reportable Detection Limit<br>QC Batch = Quality Control Batch |              |                            |                            |                            |            |                 |

|                                                                      |              |                            |            |                 |
|----------------------------------------------------------------------|--------------|----------------------------|------------|-----------------|
| <b>Maxxam ID</b>                                                     |              | HMB737                     |            |                 |
| <b>Sampling Date</b>                                                 |              | 2018/08/13                 |            |                 |
| <b>COC Number</b>                                                    |              | B867648-ONTV-01-01         |            |                 |
|                                                                      | <b>UNITS</b> | <b>UB4064-UNIT#3 RUN#3</b> | <b>RDL</b> | <b>QC Batch</b> |
| Nitrous Oxide                                                        | ppmv         | 8.5                        | 0.25       | 5681680         |
| RDL = Reportable Detection Limit<br>QC Batch = Quality Control Batch |              |                            |            |                 |

### TEST SUMMARY

**Maxxam ID:** HMB729  
**Sample ID:** UB3873-UNIT#1 RUN#1  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB729 Dup  
**Sample ID:** UB3873-UNIT#1 RUN#1  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB730  
**Sample ID:** UB4057-UNIT#1 RUN#2  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB731  
**Sample ID:** UB4058-UNIT#1 RUN#3  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB732  
**Sample ID:** UB4059-UNIT#2 RUN#1  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB733  
**Sample ID:** UB4060-UNIT#2 RUN#2  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB734  
**Sample ID:** UB4061-UNIT#2 RUN#3  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

Maxxam Job #: B8K8085  
Report Date: 2018/08/28

Maxxam Analytics  
Client Project #: B867648

### TEST SUMMARY

**Maxxam ID:** HMB735  
**Sample ID:** UB4062-UNIT#3 RUN#1  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB736  
**Sample ID:** UB4063-UNIT#3 RUN#2  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**Maxxam ID:** HMB737  
**Sample ID:** UB4064-UNIT#3 RUN#3  
**Matrix:** Tedlar Bag

**Collected:** 2018/08/13  
**Shipped:**  
**Received:** 2018/08/15

| Test Description | Instrumentation | Batch   | Extracted | Date Analyzed | Analyst         |
|------------------|-----------------|---------|-----------|---------------|-----------------|
| Nitrous Oxide    | GC/ECD          | 5681680 | N/A       | 2018/08/15    | Neng (Cathy) Li |

**GENERAL COMMENTS**

Results relate only to the items tested.

## QUALITY ASSURANCE REPORT

Maxxam Analytics  
Client Project #: B867648

| QC Batch | Parameter     | Date       | Method Blank |       | RPD       |           |
|----------|---------------|------------|--------------|-------|-----------|-----------|
|          |               |            | Value        | UNITS | Value (%) | QC Limits |
| 5681680  | Nitrous Oxide | 2018/08/15 | <0.1         | ppmv  | 15        | N/A       |

N/A = Not Applicable

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

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



### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Tom Mitchell, B.Sc, Supervisor, Compressed Gases

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



A. Lanfranco & Associates Inc.  
ATTN: Mark Lanfranco  
Unit # 101 9488 - 189 St.  
Surrey BC V4N 4W7

Date Received: 17-AUG-18  
Report Date: 24-AUG-18 12:37 (MT)  
Version: FINAL

Client Phone: 604-881-2582

## Certificate of Analysis

Lab Work Order #: L2149248  
Project P.O. #: HF  
Job Reference: METRO VANCOUVER WTE  
C of C Numbers:  
Legal Site Desc:

---

Brent Mack, B.Sc.  
Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700  
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# ALS ENVIRONMENTAL ANALYTICAL REPORT

|                         |                          | Sample ID           | L2149248-1          | L2149248-2          | L2149248-3      | L2149248-4          | L2149248-5      |
|-------------------------|--------------------------|---------------------|---------------------|---------------------|-----------------|---------------------|-----------------|
|                         |                          | Description         | WATER               | WATER               | WATER           | WATER               | WATER           |
|                         |                          | Sampled Date        | 14-AUG-18           | 14-AUG-18           | 14-AUG-18       | 15-AUG-18           | 15-AUG-18       |
|                         |                          | Sampled Time        |                     |                     |                 |                     |                 |
|                         |                          | Client ID           | 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 |
| Grouping                | Analyte                  |                     |                     |                     |                 |                     |                 |
| STACK                   |                          |                     |                     |                     |                 |                     |                 |
| Anions and<br>Nutrients | Fluoride (F) (ug/sample) | <20 <sup>DLDS</sup> | <20 <sup>DLDS</sup> | <18 <sup>DLDS</sup> | <3.8            | <17 <sup>DLDS</sup> |                 |
|                         | Volume (Anions) (mL)     | 405                 | 395                 | 355                 | 380             | 340                 |                 |

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

|                      |                          | Sample ID           | L2149248-6          | L2149248-7          | L2149248-8          | L2149248-9      |
|----------------------|--------------------------|---------------------|---------------------|---------------------|---------------------|-----------------|
|                      |                          | Description         | WATER               | WATER               | WATER               | WATER           |
|                      |                          | Sampled Date        | 15-AUG-18           | 16-AUG-18           | 16-AUG-18           | 16-AUG-18       |
|                      |                          | Sampled Time        |                     |                     |                     |                 |
|                      |                          | Client ID           | UNIT 2 HF RUN 3     | UNIT 3 HF RUN 1     | UNIT 3 HF RUN 2     | UNIT 3 HF RUN 3 |
| Grouping             | Analyte                  |                     |                     |                     |                     |                 |
| <b>STACK</b>         |                          |                     |                     |                     |                     |                 |
| Anions and Nutrients | Fluoride (F) (ug/sample) | <42 <sup>DLDS</sup> | <18 <sup>DLDS</sup> | <16 <sup>DLDS</sup> | <20 <sup>DLDS</sup> |                 |
|                      | Volume (Anions) (mL)     | 415                 | 360                 | 320                 | 405                 |                 |

\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Individual Parameters Listed:

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

### Test Method References:

| ALS Test Code                                                                              | Matrix | Test Description                | Method Reference** |
|--------------------------------------------------------------------------------------------|--------|---------------------------------|--------------------|
| F-IMP-UG-VA                                                                                | Stack  | Fluoride in Water from Impinger | EPA 300.1 (mod)    |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |        |                                 |                    |

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

| Laboratory Definition Code | Laboratory Location                                     |
|----------------------------|---------------------------------------------------------|
| VA                         | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate* - A compound that is similar in behaviour 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.

*mg/kg* - milligrams per kilogram based on dry weight of sample.

*mg/kg wwt* - milligrams per kilogram based on wet weight of sample.

*mg/kg lwt* - milligrams per kilogram based on lipid-adjusted weight of sample.

*mg/L* - milligrams per litre.

*<* - Less than.

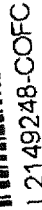
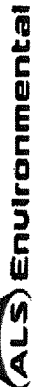
*D.L.* - The reported Detection Limit, also known as the Limit of Reporting (LOR).

*N/A* - Result not available. Refer to qualifier code and definition for explanation.

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

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Page 1 of 1

**GENF 20.00 Front**



A. Lanfranco & Associates Inc.  
ATTN: Mark Lanfranco  
Unit # 101 9488 - 189 St.  
Surrey BC V4N 4W7

Date Received: 17-AUG-18  
Report Date: 24-AUG-18 12:36 (MT)  
Version: FINAL

Client Phone: 604-881-2582

## Certificate of Analysis

Lab Work Order #: L2149247  
Project P.O. #: HF  
Job Reference: METRO VANCOUVER WTE  
C of C Numbers:  
Legal Site Desc:

---

Brent Mack, B.Sc.  
Account Manager

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|                         |                          |                                                                                      |                                                                        |                                                                        |                                                                        |  |  |
|-------------------------|--------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|--|--|
|                         |                          | <div>Sample ID<br/>Description<br/>Sampled Date<br/>Sampled Time<br/>Client ID</div> | <div>L2149247-1<br/>WATER<br/>14-AUG-18<br/><br/>UNIT 1 HF BLANK</div> | <div>L2149247-2<br/>WATER<br/>15-AUG-18<br/><br/>UNIT 2 HF BLANK</div> | <div>L2149247-3<br/>WATER<br/>16-AUG-18<br/><br/>UNIT 3 HF BLANK</div> |  |  |
| Grouping                | Analyte                  |                                                                                      |                                                                        |                                                                        |                                                                        |  |  |
| STACK                   |                          |                                                                                      |                                                                        |                                                                        |                                                                        |  |  |
| Anions and<br>Nutrients | Fluoride (F) (ug/sample) | <2.6                                                                                 | <2.5                                                                   | <2.5                                                                   |                                                                        |  |  |
|                         | Volume (Anions) (mL)     | 255                                                                                  | 245                                                                    | 245                                                                    |                                                                        |  |  |



## Reference Information

### Test Method References:

| ALS Test Code                                                                              | Matrix | Test Description                | Method Reference** |
|--------------------------------------------------------------------------------------------|--------|---------------------------------|--------------------|
| F-IMP-UG-VA                                                                                | Stack  | Fluoride in Water from Impinger | EPA 300.1 (mod)    |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. |        |                                 |                    |

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location                                     |
|----------------------------|---------------------------------------------------------|
| VA                         | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour 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.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg ww - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

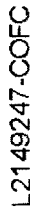
*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

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

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



#COC

Page 1 of 1

[illegible]

**GENF 20.00 Front**



A. Lanfranco & Associates Inc.  
ATTN: Mark Lanfranco  
Unit # 101 9488 - 189 St.  
Surrey BC V4N 4W7

Date Received: 23-AUG-18  
Report Date: 04-SEP-18 11:51 (MT)  
Version: FINAL

Client Phone: 604-881-2582

## Certificate of Analysis

Lab Work Order #: L2152459  
Project P.O. #: NOT SUBMITTED  
Job Reference: MV WTE UNIT 1  
C of C Numbers:  
Legal Site Desc:

---

Brent Mack, B.Sc.  
Account Manager

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\* Please refer to the Reference Information section for an explanation of any qualifiers detected.

## Reference Information

### Qualifiers for Sample Submission Listed:

| Qualifier | Description                                  |
|-----------|----------------------------------------------|
| SPL       | Sample was Preserved at the laboratory - CR6 |

### Test Method References:

| ALS Test Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Matrix | Test Description             | Method Reference**                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------------------------------|-------------------------------------|
| CR-CR6-ED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Water  | Chromium, Hexavalent (Cr +6) | APHA 3500-Cr C (Ion Chromatography) |
| This analysis is carried out using procedures adapted from method 3500-Cr C in "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from Method 1636 published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.<br>Results are based on an un-filtered, field-preserved sample. |        |                              |                                     |
| VOLUME-ED                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Water  | Volume                       | -                                   |
| Sample volume is measured prior to any sub-sampling.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |        |                              |                                     |

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location                           |
|----------------------------|-----------------------------------------------|
| ED                         | ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA |

### Chain of Custody Numbers:

#### GLOSSARY OF REPORT TERMS

*Surrogate - A compound that is similar in behaviour 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.*

*mg/kg - milligrams per kilogram based on dry weight of sample.*

*mg/kg wwt - milligrams per kilogram based on wet weight of sample.*

*mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.*

*mg/L - milligrams per litre.*

*< - Less than.*

*D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).*

*N/A - Result not available. Refer to qualifier code and definition for explanation.*

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

**UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.**

*Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.*



# **APPENDIX - C**

## **COMPUTER GENERATED RESULTS**

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

**Date:** 13-Aug-18  
**Run:** 1 - Particulate / Metals  
**Run Time:** 11:46 - 13:52

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.03 mg/dscm            | 0.00001 gr/dscf            |
|                    | 0.02 mg/Acm             | 0.00001 gr/Acf             |
|                    | 0.03 mg/dscm (@ 11% O2) | 0.00001 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.002 Kg/hr | 0.005 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1139 dscm/min  | 40212 dscf/min |
|             | 18.98 dscm/sec | 670 dscf/sec   |
|             | 2084 Acm/min   | 73585 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.635 m/sec | 44.73 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 154.4 oC | 309.8 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 16.2 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 10.1 % O2  |
|                     | 10.3 % CO2 |

30.042 Mol. Wt (g/gmole) Dry  
28.086 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |              |
|----------------------|---------------|--------------|
| <b>Sample Volume</b> | 2.9349 dscm   | 103.647 dscf |
| <b>Sample Time</b>   | 120.0 minutes |              |
| <b>Isokineticity</b> | 105.0 %       |              |

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



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

Date: 13-Aug-18  
 Run: 1 - Particulate / Metals  
 Run Time: 11:46 - 13:52

Control Unit (Y) 1.0012  
 Nozzle Diameter (in.) 0.3207  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 29.90  
 Static Press. (in. H2O) -19.50  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

Collection:  
 Filter (grams) 0.00005  
 Washings (grams) 0.00005  
 Total (grams) 0.00010

| Gas Analysis (Vol. %): |       |
|------------------------|-------|
| CO2                    | O2    |
| 10.17                  | 10.23 |
| 10.33                  | 9.87  |
| 10.25                  | 10.05 |

| Condensate Collection: |       |
|------------------------|-------|
| Impinger 1             | 214.0 |
| Impinger 2             | 132.0 |
| Impinger 3             | 46.0  |
| Impinger 4             | 14.0  |
| Impinger 5             | 2.0   |
| Impinger 6             | 1.0   |
| Gel                    | 18.0  |
| Gain (grams)           | 427.0 |

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (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                | 0.0         | 474.050             |                    |                      |                                |                                 |                  |                  |                  |             |
| 2                | 5.0         | 477.780             | 0.28               | 1.85                 | 80                             | 80                              | 4                | 304              | 1.5              | 105.4       |
| 3                | 10.0        | 481.640             | 0.30               | 1.98                 | 82                             | 82                              | 4                | 304              | 4.7              | 105.0       |
| 4                | 15.0        | 485.630             | 0.32               | 2.12                 | 82                             | 82                              | 4                | 304              | 8.4              | 105.1       |
| 5                | 20.0        | 489.980             | 0.38               | 2.51                 | 83                             | 83                              | 4                | 306              | 12.5             | 105.2       |
| 6                | 25.0        | 494.440             | 0.40               | 2.64                 | 83                             | 83                              | 5                | 307              | 17.7             | 105.3       |
| 7                | 30.0        | 498.900             | 0.40               | 2.64                 | 84                             | 84                              | 5                | 308              | 25.2             | 105.1       |
| 8                | 35.0        | 503.780             | 0.48               | 3.17                 | 85                             | 85                              | 5                | 308              | 45.6             | 105.0       |
| 9                | 40.0        | 508.670             | 0.48               | 3.17                 | 85                             | 85                              | 5                | 309              | 53.2             | 105.2       |
| 10               | 45.0        | 513.400             | 0.45               | 2.97                 | 85                             | 85                              | 5                | 310              | 58.3             | 105.2       |
| 11               | 50.0        | 518.080             | 0.44               | 2.91                 | 86                             | 86                              | 5                | 310              | 62.5             | 105.0       |
| 12               | 55.0        | 522.320             | 0.36               | 2.38                 | 86                             | 86                              | 5                | 306              | 66.1             | 104.8       |
| 12               | 60.0        | 526.060             | 0.28               | 1.85                 | 86                             | 86                              | 5                | 302              | 69.4             | 104.4       |
| Traverse 2       |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 0.0         | 526.060             |                    |                      |                                |                                 |                  |                  |                  |             |
| 2                | 5.0         | 529.920             | 0.30               | 1.98                 | 86                             | 86                              | 5                | 308              | 1.5              | 104.5       |
| 3                | 10.0        | 533.780             | 0.30               | 1.98                 | 86                             | 86                              | 5                | 310              | 4.7              | 104.7       |
| 4                | 15.0        | 537.590             | 0.29               | 1.92                 | 87                             | 87                              | 5                | 310              | 8.4              | 104.9       |
| 5                | 20.0        | 541.770             | 0.35               | 2.31                 | 87                             | 87                              | 5                | 312              | 12.5             | 105.0       |
| 6                | 25.0        | 545.820             | 0.33               | 2.18                 | 88                             | 88                              | 5                | 313              | 17.7             | 104.6       |
| 7                | 30.0        | 549.990             | 0.35               | 2.31                 | 88                             | 88                              | 5                | 313              | 25.2             | 104.6       |
| 8                | 35.0        | 555.230             | 0.55               | 3.64                 | 87                             | 87                              | 5                | 314              | 45.6             | 105.4       |
| 9                | 40.0        | 560.690             | 0.60               | 3.97                 | 88                             | 88                              | 5                | 315              | 53.2             | 105.1       |
| 10               | 45.0        | 566.150             | 0.60               | 3.97                 | 88                             | 88                              | 5                | 315              | 58.3             | 105.1       |
| 11               | 50.0        | 571.430             | 0.56               | 3.70                 | 88                             | 88                              | 5                | 316              | 62.5             | 105.2       |
| 12               | 55.0        | 576.060             | 0.43               | 2.84                 | 87                             | 87                              | 5                | 316              | 66.1             | 105.3       |
| 12               | 60.0        | 580.410             | 0.38               | 2.51                 | 88                             | 88                              | 5                | 316              | 69.4             | 105.0       |
| Average:         |             |                     | 0.400              | 2.646                | 85.6                           | 85.6                            | 4.8              | 309.8            |                  | 105.0       |

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

**Date:** 14-Aug-18  
**Run:** 2 - Particulate / Metals  
**Run Time:** 09:06 - 11:08

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.08 mg/dscm            | 0.00004 gr/dscf            |
|                    | 0.05 mg/Acm             | 0.00002 gr/Acf             |
|                    | 0.08 mg/dscm (@ 11% O2) | 0.00003 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.006 Kg/hr | 0.013 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1155 dscm/min  | 40791 dscf/min |
|             | 19.25 dscm/sec | 680 dscf/sec   |
|             | 2078 Acm/min   | 73397 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.600 m/sec | 44.62 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 153.2 oC | 307.8 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 15.1 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.9 % O2   |
|                     | 10.1 % CO2 |

30.010 Mol. Wt (g/gmole) Dry  
28.191 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |              |
|----------------------|---------------|--------------|
| <b>Sample Volume</b> | 2.9483 dscm   | 104.119 dscf |
| <b>Sample Time</b>   | 120.0 minutes |              |
| <b>Isokineticity</b> | 104.0 %       |              |

**\* 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 1

Date: 14-Aug-18  
 Run: 2 - Particulate / Metals  
 Run Time: 09:06 - 11:08

Control Unit (Y) 1.0012  
 Nozzle Diameter (in.) 0.3207  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 29.90  
 Static Press. (in. H2O) -19.00  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

Collection:  
 Filter (grams) 0.00020  
 Washings (grams) 0.00005  
 Total (grams) 0.00025

Gas Analysis (Vol. %):  
 CO2 O2  
 Traverse 1 10.00 10.07  
 Traverse 2 10.17 9.77  
 10.09 9.92

Condensate Collection:  
 Impinger 1 216.0  
 Impinger 2 122.0  
 Impinger 3 28.0  
 Impinger 4 12.0  
 Impinger 5 2.0  
 Impinger 6 1.0  
 Gel 14.0  
 Gain (grams) 395.0

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (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         | 581.114             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 585.100             | 0.32               | 2.12                 | 76                             | 76                              | 5                | 307              | 1.5              | 105.2       |
| 2                | 10.0        | 588.830             | 0.28               | 1.85                 | 76                             | 76                              | 5                | 306              | 4.7              | 105.1       |
| 3                | 15.0        | 592.690             | 0.30               | 1.98                 | 77                             | 77                              | 5                | 306              | 8.4              | 104.9       |
| 4                | 20.0        | 597.040             | 0.38               | 2.51                 | 77                             | 77                              | 5                | 308              | 12.5             | 105.3       |
| 5                | 25.0        | 601.620             | 0.42               | 2.78                 | 77                             | 77                              | 5                | 308              | 17.7             | 105.5       |
| 6                | 30.0        | 606.190             | 0.42               | 2.78                 | 78                             | 78                              | 5                | 308              | 25.2             | 105.1       |
| 7                | 35.0        | 611.030             | 0.47               | 3.11                 | 78                             | 78                              | 6                | 308              | 45.6             | 105.3       |
| 8                | 40.0        | 615.870             | 0.47               | 3.11                 | 80                             | 80                              | 6                | 309              | 53.2             | 105.0       |
| 9                | 45.0        | 620.490             | 0.43               | 2.84                 | 81                             | 81                              | 7                | 308              | 58.3             | 104.5       |
| 10               | 50.0        | 624.950             | 0.40               | 2.64                 | 82                             | 82                              | 7                | 309              | 62.5             | 104.4       |
| 11               | 55.0        | 629.680             | 0.45               | 2.97                 | 82                             | 82                              | 8                | 308              | 66.1             | 104.4       |
| 12               | 60.0        | 634.250             | 0.42               | 2.78                 | 83                             | 83                              | 8                | 308              | 69.4             | 104.1       |
| Traverse 2       | 0.0         | 634.250             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 637.980             | 0.28               | 1.85                 | 84                             | 84                              | 6                | 308              | 1.5              | 103.7       |
| 2                | 10.0        | 641.970             | 0.32               | 2.12                 | 85                             | 85                              | 6                | 308              | 4.7              | 103.6       |
| 3                | 15.0        | 645.940             | 0.32               | 2.12                 | 85                             | 85                              | 6                | 308              | 8.4              | 103.1       |
| 4                | 20.0        | 649.930             | 0.32               | 2.12                 | 86                             | 86                              | 6                | 308              | 12.5             | 103.4       |
| 5                | 25.0        | 653.790             | 0.30               | 1.98                 | 88                             | 88                              | 6                | 308              | 17.7             | 102.9       |
| 6                | 30.0        | 657.570             | 0.29               | 1.92                 | 88                             | 88                              | 6                | 308              | 25.2             | 102.5       |
| 7                | 35.0        | 662.260             | 0.44               | 2.91                 | 89                             | 89                              | 7                | 308              | 45.6             | 103.3       |
| 8                | 40.0        | 667.140             | 0.48               | 3.17                 | 90                             | 90                              | 7                | 308              | 53.2             | 102.8       |
| 9                | 45.0        | 672.020             | 0.48               | 3.17                 | 91                             | 91                              | 8                | 307              | 58.3             | 102.5       |
| 10               | 50.0        | 677.010             | 0.50               | 3.31                 | 91                             | 91                              | 8                | 307              | 62.5             | 102.8       |
| 11               | 55.0        | 682.090             | 0.52               | 3.11                 | 91                             | 91                              | 8                | 307              | 66.1             | 102.5       |
| 12               | 60.0        | 687.570             | 0.60               | 3.97                 | 92                             | 92                              | 8                | 309              | 69.4             | 103.1       |
| Average:         |             |                     | 0.400              | 2.634                | 83.6                           | 83.6                            | 6.4              | 307.8            |                  | 104.0       |

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

**Date:** 14-Aug-18  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:25 - 13:30

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**Concentrations:**

|                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>Particulate</b> | 0.3 mg/dscm            | 0.0001 gr/dscf            |
|                    | 0.2 mg/Acm             | 0.0001 gr/Acf             |
|                    | 0.2 mg/dscm (@ 11% O2) | 0.0001 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.019 Kg/hr | 0.042 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1156 dscm/min  | 40837 dscf/min |
|             | 19.27 dscm/sec | 681 dscf/sec   |
|             | 2073 Acm/min   | 73206 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.564 m/sec | 44.50 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 155.1 oC | 311.2 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 14.5 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.8 % O2   |
|                     | 10.3 % CO2 |

30.046 Mol. Wt (g/gmole) Dry  
28.305 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |              |
|----------------------|---------------|--------------|
| <b>Sample Volume</b> | 2.8947 dscm   | 102.228 dscf |
| <b>Sample Time</b>   | 120.0 minutes |              |
| <b>Isokineticity</b> | 102.0 %       |              |

**\* 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 1

Date: 14-Aug-18  
 Run: 3 - Particulate / Metals  
 Run Time: 11:25 - 13:30

Control Unit (Y) 1.0012  
 Nozzle Diameter (in.) 0.3207  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 29.90  
 Static Press. (in. H2O) -19.00  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

Collection:  
 Filter (grams) 0.00040  
 Washings (grams) 0.00040  
 Total (grams) 0.00080

Gas Analysis (Vol. %):  
 CO2 O2  
 Traverse 1 10.00 10.10  
 Traverse 2 10.67 9.50  
 10.34 9.80

Condensate Collection:  
 Impinger 1 102.0  
 Impinger 2 148.0  
 Impinger 3 70.0  
 Impinger 4 24.0  
 Impinger 5 5.0  
 Impinger 6 3.0  
 Gel 15.0  
 Gain (grams) 367.0

| 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         | 688.300             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 692.030             | 0.28               | 1.85                 | 91                             | 91                              | 6                | 310              | 1.5              | 101.9       |
| 2                | 10.0        | 696.020             | 0.32               | 2.12                 | 91                             | 91                              | 6                | 311              | 4.7              | 102.1       |
| 3                | 15.0        | 700.000             | 0.32               | 2.12                 | 92                             | 92                              | 6                | 311              | 8.4              | 101.6       |
| 4                | 20.0        | 704.290             | 0.37               | 2.45                 | 92                             | 92                              | 6                | 312              | 12.5             | 102.0       |
| 5                | 25.0        | 708.580             | 0.37               | 2.45                 | 92                             | 92                              | 8                | 312              | 17.7             | 102.0       |
| 6                | 30.0        | 712.750             | 0.35               | 2.31                 | 92                             | 92                              | 8                | 311              | 25.2             | 101.9       |
| 7                | 35.0        | 717.440             | 0.44               | 2.91                 | 92                             | 92                              | 8                | 311              | 45.6             | 102.3       |
| 8                | 40.0        | 722.010             | 0.42               | 2.78                 | 92                             | 92                              | 8                | 308              | 53.2             | 101.8       |
| 9                | 45.0        | 726.590             | 0.42               | 2.78                 | 92                             | 92                              | 8                | 310              | 58.3             | 102.2       |
| 10               | 50.0        | 731.160             | 0.42               | 2.78                 | 92                             | 92                              | 8                | 310              | 62.5             | 101.9       |
| 11               | 55.0        | 735.740             | 0.42               | 2.78                 | 92                             | 92                              | 8                | 305              | 66.1             | 101.8       |
| 12               | 60.0        | 740.200             | 0.40               | 2.64                 | 93                             | 93                              | 8                | 303              | 69.4             | 101.3       |
| Traverse 2       | 0.0         | 740.200             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 744.190             | 0.32               | 2.12                 | 92                             | 92                              | 8                | 308              | 1.5              | 101.7       |
| 2                | 10.0        | 748.060             | 0.30               | 1.98                 | 93                             | 93                              | 8                | 310              | 4.7              | 101.8       |
| 3                | 15.0        | 751.930             | 0.30               | 1.98                 | 93                             | 93                              | 8                | 310              | 8.4              | 101.8       |
| 4                | 20.0        | 755.920             | 0.32               | 2.12                 | 92                             | 92                              | 8                | 311              | 12.5             | 101.9       |
| 5                | 25.0        | 759.900             | 0.32               | 2.12                 | 93                             | 93                              | 8                | 312              | 17.7             | 101.5       |
| 6                | 30.0        | 764.190             | 0.37               | 2.45                 | 93                             | 93                              | 8                | 313              | 25.2             | 101.9       |
| 7                | 35.0        | 769.270             | 0.52               | 3.43                 | 93                             | 93                              | 10               | 315              | 45.6             | 102.2       |
| 8                | 40.0        | 774.500             | 0.55               | 3.64                 | 93                             | 93                              | 10               | 316              | 53.2             | 102.4       |
| 9                | 45.0        | 779.870             | 0.58               | 3.83                 | 93                             | 93                              | 12               | 316              | 58.3             | 102.4       |
| 10               | 50.0        | 785.240             | 0.58               | 3.83                 | 92                             | 92                              | 12               | 314              | 62.5             | 102.5       |
| 11               | 55.0        | 790.030             | 0.46               | 3.04                 | 92                             | 92                              | 12               | 314              | 66.1             | 102.4       |
| 12               | 60.0        | 794.490             | 0.40               | 2.64                 | 93                             | 93                              | 12               | 316              | 69.4             | 102.1       |
| Average:         |             |                     | 0.398              | 2.631                | 92.3                           | 92.3                            | 8.5              | 311.2            |                  | 102.0       |

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

**Date:** 16-Aug-18  
**Run:** 1 - Particulate / Metals  
**Run Time:** 12:13 - 14:16

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**Concentrations:**

|                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>Particulate</b> | 2.4 mg/dscm            | 0.0010 gr/dscf            |
|                    | 1.3 mg/Acm             | 0.0006 gr/Acf             |
|                    | 2.2 mg/dscm (@ 11% O2) | 0.0010 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.158 Kg/hr | 0.349 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1107 dscm/min  | 39106 dscf/min |
|             | 18.46 dscm/sec | 652 dscf/sec   |
|             | 2013 Acm/min   | 71086 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.172 m/sec | 43.21 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 153.1 oC | 307.5 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 16.2 % |
|-----------------|--------|

|                     |           |
|---------------------|-----------|
| <b>Gas Analysis</b> | 10.1 % O2 |
|                     | 9.6 % CO2 |

29.936 Mol. Wt (g/gmole) Dry  
28.005 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.5613 dscm   | 90.452 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 103.3 %       |             |

**\* 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: 16-Aug-18  
 Run: 1 - Particulate / Metals  
 Run Time: 12:13 - 14:16

Control Unit (Y) 0.9997  
 Nozzle Diameter (in.) 0.3062  
 Pitot Factor 0.8388  
 Baro. Press. (in. Hg) 30.02  
 Static Press. (in. H2O) -20.00  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

Collection:  
 Filter (grams) 0.00480  
 Washings (grams) 0.00130  
 Total (grams) 0.00610

Gas Analysis (Vol. %):  
 CO2 O2  
 Traverse 1 9.83 10.17  
 Traverse 2 9.33 10.00  
 9.58 10.09

Condensate Collection:  
 Impinger 1 167.0  
 Impinger 2 142.0  
 Impinger 3 28.0  
 Impinger 4 14.0  
 Impinger 5 3.0  
 Impinger 6 1.0  
 Gel 16.0  
 Gain (grams) 371.0

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (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         | 233.500             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 237.550             | 0.43               | 2.05                 | 73                             | 73                              | 6                | 298              | 1.5              | 103.4       |
| 2                | 10.0        | 241.620             | 0.44               | 2.07                 | 74                             | 74                              | 6                | 308              | 4.7              | 103.2       |
| 3                | 15.0        | 245.980             | 0.50               | 2.36                 | 75                             | 75                              | 6                | 308              | 8.4              | 103.6       |
| 4                | 20.0        | 250.290             | 0.49               | 2.31                 | 76                             | 76                              | 6                | 309              | 12.5             | 103.3       |
| 5                | 25.0        | 254.750             | 0.52               | 2.45                 | 77                             | 77                              | 6                | 311              | 17.7             | 103.7       |
| 6                | 30.0        | 258.980             | 0.47               | 2.21                 | 77                             | 77                              | 6                | 312              | 25.2             | 103.5       |
| 7                | 35.0        | 262.360             | 0.30               | 1.42                 | 79                             | 79                              | 6                | 312              | 45.6             | 102.9       |
| 8                | 40.0        | 265.630             | 0.28               | 1.32                 | 80                             | 80                              | 6                | 312              | 53.2             | 102.9       |
| 9                | 45.0        | 268.960             | 0.29               | 1.37                 | 80                             | 80                              | 5                | 313              | 58.3             | 103.0       |
| 10               | 50.0        | 272.360             | 0.30               | 1.42                 | 81                             | 81                              | 5                | 312              | 62.5             | 103.2       |
| 11               | 55.0        | 275.650             | 0.28               | 1.33                 | 82                             | 82                              | 5                | 314              | 66.1             | 103.2       |
| 12               | 60.0        | 278.640             | 0.23               | 1.10                 | 84                             | 84                              | 5                | 312              | 69.4             | 103.0       |
| Traverse 2       | 0.0         | 278.640             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 281.850             | 0.26               | 1.25                 | 85                             | 85                              | 5                | 304              | 1.5              | 103.3       |
| 2                | 10.0        | 284.990             | 0.25               | 1.21                 | 85                             | 85                              | 5                | 304              | 4.7              | 103.0       |
| 3                | 15.0        | 288.080             | 0.24               | 1.16                 | 86                             | 86                              | 4                | 305              | 8.4              | 103.3       |
| 4                | 20.0        | 291.030             | 0.22               | 1.06                 | 86                             | 86                              | 4                | 306              | 12.5             | 103.1       |
| 5                | 25.0        | 294.190             | 0.25               | 1.21                 | 87                             | 87                              | 4                | 304              | 17.7             | 103.3       |
| 6                | 30.0        | 297.420             | 0.26               | 1.26                 | 87                             | 87                              | 4                | 304              | 25.2             | 103.5       |
| 7                | 35.0        | 301.660             | 0.45               | 2.18                 | 88                             | 88                              | 4                | 305              | 45.6             | 103.4       |
| 8                | 40.0        | 306.120             | 0.50               | 2.42                 | 88                             | 88                              | 4                | 306              | 53.2             | 103.3       |
| 9                | 45.0        | 311.140             | 0.63               | 3.05                 | 89                             | 89                              | 6                | 306              | 58.3             | 103.6       |
| 10               | 50.0        | 315.980             | 0.58               | 2.83                 | 89                             | 89                              | 6                | 302              | 62.5             | 103.8       |
| 11               | 55.0        | 320.850             | 0.59               | 2.86                 | 90                             | 90                              | 7                | 306              | 66.1             | 103.6       |
| 12               | 60.0        | 325.790             | 0.61               | 2.96                 | 90                             | 90                              | 7                | 307              | 69.4             | 103.4       |
| Average:         |             |                     | 0.390              | 1.869                | 82.8                           | 82.8                            | 5.3              | 307.5            |                  | 103.3       |

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

**Date:** 17-Aug-18  
**Run:** 2 - Particulate / Metals  
**Run Time:** 09:24 - 11:26

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.79 mg/dscm            | 0.00035 gr/dscf            |
|                    | 0.44 mg/Acm             | 0.00019 gr/Acf             |
|                    | 0.67 mg/dscm (@ 11% O2) | 0.00029 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.052 Kg/hr | 0.116 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1107 dscm/min  | 39082 dscf/min |
|             | 18.44 dscm/sec | 651 dscf/sec   |
|             | 1998 Acm/min   | 70547 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.072 m/sec | 42.89 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 154.1 oC | 309.4 oF |
|--------------------|----------|----------|

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

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.3 % O2   |
|                     | 10.8 % CO2 |

30.090 Mol. Wt (g/gmole) Dry  
28.173 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.4044 dscm   | 84.912 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 103.0 %       |             |

**\* 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-Aug-18  
**Run:** 2 - Particulate / Metals  
**Run Time:** 09:24 - 11:26

Control Unit (Y) 0.9997  
 Nozzle Diameter (in.) 0.3050  
 Pitot Factor 0.8435  
 Baro. Press. (in. Hg) 30.18  
 Static Press. (in. H2O) -20.00  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

**Collection:**  
 Filter (grams) 0.00090  
 Washings (grams) 0.00100  
**Total (grams) 0.00190**

| Gas Analysis (Vol. %): |      |
|------------------------|------|
| CO2                    | O2   |
| 10.50                  | 9.50 |
| 11.00                  | 9.00 |
| 10.75                  | 9.25 |

**Condensate Collection:**  
 Impinger 1 192.0  
 Impinger 2 78.0  
 Impinger 3 36.0  
 Impinger 4 16.0  
 Impinger 5 2.0  
 Impinger 6 1.0  
 Gel 15.0  
**Gain (grams) 340.0**

| Traverse / Point | Time (min.) | Dry Gas Meter (lit) | Pitot ΔP (in. H2O) | Orifice ΔH (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         | 327.320             |                    | 1.45                 | 67                             | 67                              | 4                | 282              | 1.5              | 103.3       |
| 2                | 10.0        | 330.690             | 0.30               | 1.36                 | 69                             | 69                              | 4                | 298              | 4.7              | 102.3       |
| 3                | 15.0        | 333.950             | 0.29               | 1.87                 | 68                             | 68                              | 4                | 302              | 8.4              | 103.5       |
| 4                | 20.0        | 337.800             | 0.40               | 1.30                 | 68                             | 68                              | 4                | 303              | 12.5             | 102.7       |
| 5                | 25.0        | 341.000             | 0.28               | 1.21                 | 68                             | 68                              | 6                | 304              | 17.7             | 102.7       |
| 6                | 30.0        | 344.080             | 0.26               | 1.21                 | 68                             | 68                              | 6                | 303              | 25.2             | 103.4       |
| 7                | 35.0        | 347.190             | 0.26               | 2.10                 | 69                             | 69                              | 6                | 306              | 45.6             | 102.9       |
| 8                | 40.0        | 351.260             | 0.45               | 2.34                 | 71                             | 71                              | 6                | 305              | 53.2             | 103.6       |
| 9                | 45.0        | 355.580             | 0.50               | 2.71                 | 72                             | 72                              | 6                | 306              | 58.3             | 103.1       |
| 10               | 50.0        | 360.210             | 0.58               | 2.39                 | 74                             | 74                              | 6                | 308              | 62.5             | 102.9       |
| 11               | 55.0        | 364.560             | 0.51               | 2.25                 | 74                             | 74                              | 6                | 307              | 66.1             | 102.8       |
| 12               | 60.0        | 368.780             | 0.48               | 2.11                 | 75                             | 75                              | 6                | 310              | 69.4             | 103.4       |
| 12               | 60.0        | 372.890             | 0.45               | 2.11                 | 75                             | 75                              | 6                | 310              | 69.4             | 103.4       |
| Traverse 2       |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 372.890             |                    | 2.42                 | 78                             | 78                              | 7                | 319              | 1.5              | 103.8       |
| 2                | 10.0        | 377.320             | 0.52               | 2.51                 | 78                             | 78                              | 7                | 320              | 4.7              | 103.1       |
| 3                | 15.0        | 381.800             | 0.54               | 2.35                 | 79                             | 79                              | 5                | 313              | 8.4              | 103.1       |
| 4                | 20.0        | 386.140             | 0.50               | 2.05                 | 79                             | 79                              | 5                | 318              | 12.5             | 102.8       |
| 5                | 25.0        | 390.190             | 0.44               | 1.96                 | 79                             | 79                              | 5                | 319              | 17.7             | 103.4       |
| 6                | 30.0        | 394.170             | 0.42               | 1.73                 | 80                             | 80                              | 5                | 318              | 25.2             | 103.5       |
| 7                | 35.0        | 397.920             | 0.37               | 1.59                 | 80                             | 80                              | 5                | 315              | 45.6             | 103.2       |
| 8                | 40.0        | 401.510             | 0.34               | 1.51                 | 81                             | 81                              | 5                | 313              | 53.2             | 102.4       |
| 9                | 45.0        | 404.980             | 0.32               | 1.41                 | 81                             | 81                              | 5                | 314              | 58.3             | 102.8       |
| 10               | 50.0        | 408.350             | 0.30               | 1.18                 | 81                             | 81                              | 5                | 314              | 62.5             | 101.8       |
| 11               | 55.0        | 411.400             | 0.25               | 0.94                 | 82                             | 82                              | 5                | 315              | 66.1             | 102.5       |
| 12               | 60.0        | 414.150             | 0.20               | 0.85                 | 83                             | 83                              | 5                | 313              | 69.4             | 101.8       |
| 12               | 60.0        | 416.750             | 0.18               | 0.85                 | 83                             | 83                              | 5                | 313              | 69.4             | 101.8       |
| Average:         |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
|                  |             |                     | 0.381              | 1.783                | 75.3                           | 75.3                            | 5.3              | 309.4            |                  | 103.0       |

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

**Date:** 17-Aug-18  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:39 - 13:42

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**Concentrations:**

|                    |                        |                           |
|--------------------|------------------------|---------------------------|
| <b>Particulate</b> | 1.8 mg/dscm            | 0.0008 gr/dscf            |
|                    | 1.0 mg/Acm             | 0.0004 gr/Acf             |
|                    | 1.6 mg/dscm (@ 11% O2) | 0.0007 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |            |             |
|--------------------|------------|-------------|
| <b>Particulate</b> | 0.12 Kg/hr | 0.259 lb/hr |
|--------------------|------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1095 dscm/min  | 38667 dscf/min |
|             | 18.25 dscm/sec | 644 dscf/sec   |
|             | 1962 Acm/min   | 69281 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 12.837 m/sec | 42.12 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 157.2 oC | 314.9 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 14.6 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.6 % O2   |
|                     | 10.9 % CO2 |

30.130 Mol. Wt (g/gmole) Dry  
28.356 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.7391 dscm   | 96.732 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 101.9 %       |             |

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

**Date:** 17-Aug-18  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:39 - 13:42

|                               |              |
|-------------------------------|--------------|
| <b>Condensate Collection:</b> |              |
| Impinger 1                    | 102.0        |
| Impinger 2                    | 128.0        |
| Impinger 3                    | 76.0         |
| Impinger 4                    | 20.0         |
| Impinger 5                    | 5.0          |
| Impinger 6                    | 2.0          |
| Gel                           | 19.0         |
| <b>Gain (grams)</b>           | <b>352.0</b> |

A. Lanfranco and Associates Inc. (604-881-2582)

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

**Date:** 15-Aug-18  
**Run:** 1 - Particulate / Metals  
**Run Time:** 11:09 - 13:12

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.40 mg/dscm            | 0.00017 gr/dscf            |
|                    | 0.23 mg/Acm             | 0.00010 gr/Acf             |
|                    | 0.36 mg/dscm (@ 11% O2) | 0.00016 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.030 Kg/hr | 0.065 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1251 dscm/min  | 44179 dscf/min |
|             | 20.85 dscm/sec | 736 dscf/sec   |
|             | 2192 Acm/min   | 77394 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 14.340 m/sec | 47.05 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 151.0 oC | 303.8 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 15.0 % |
|-----------------|--------|

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

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

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.4036 dscm   | 84.884 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 102.5 %       |             |

**\* 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 3

**Date:** 15-Aug-18  
**Run:** 1 - Particulate / Metals  
**Run Time:** 11:09 - 13:12

Control Unit (Y) 1.0076  
 Nozzle Diameter (in.) 0.2802  
 Pitot Factor 0.8435  
 Baro. Press. (in. Hg) 30.50  
 Static Press. (in. H2O) -19.50  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

**Collection:**  
 Filter (grams) 0.00005  
 Washings (grams) 0.00090  
**Total (grams) 0.00095**

**Gas Analysis (Vol. %):**  
 CO2 O2  
 Traverse 1 10.00 10.00  
 Traverse 2 10.00 10.00

**Condensate Collection:**  
 Impinger 1 168.0  
 Impinger 2 94.0  
 Impinger 3 28.0  
 Impinger 4 12.0  
 Impinger 5 2.0  
 Impinger 6 1.0  
 Gel 13.0  
**Gain (grams) 318.0**

10.00 10.00

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (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         | 635.000             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 638.730             | 0.50               | 2.06                 | 80                             | 80                              | 4                | 304              | 1.5              | 104.3       |
| 2                | 10.0        | 642.570             | 0.53               | 2.18                 | 81                             | 81                              | 4                | 304              | 4.7              | 104.2       |
| 3                | 15.0        | 646.720             | 0.62               | 2.55                 | 82                             | 82                              | 4                | 305              | 8.4              | 104.1       |
| 4                | 20.0        | 650.800             | 0.60               | 2.47                 | 82                             | 82                              | 4                | 305              | 12.5             | 104.0       |
| 5                | 25.0        | 654.890             | 0.60               | 2.47                 | 82                             | 82                              | 4                | 306              | 17.7             | 104.3       |
| 6                | 30.0        | 659.120             | 0.64               | 2.64                 | 82                             | 82                              | 4                | 307              | 25.2             | 104.6       |
| 7                | 35.0        | 662.370             | 0.38               | 1.57                 | 84                             | 84                              | 5                | 303              | 45.6             | 103.3       |
| 8                | 40.0        | 665.620             | 0.38               | 1.57                 | 86                             | 86                              | 5                | 302              | 53.2             | 102.9       |
| 9                | 45.0        | 668.740             | 0.35               | 1.44                 | 87                             | 87                              | 5                | 302              | 58.3             | 102.7       |
| 10               | 50.0        | 671.620             | 0.30               | 1.24                 | 88                             | 88                              | 5                | 300              | 62.5             | 102.0       |
| 11               | 55.0        | 674.520             | 0.30               | 1.24                 | 88                             | 88                              | 5                | 300              | 66.1             | 102.7       |
| 12               | 60.0        | 677.210             | 0.26               | 1.07                 | 89                             | 89                              | 5                | 301              | 69.4             | 102.2       |
| Traverse 2       | 0.0         | 677.210             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 680.330             | 0.35               | 1.44                 | 90                             | 90                              | 5                | 307              | 1.5              | 102.5       |
| 2                | 10.0        | 683.540             | 0.37               | 1.52                 | 92                             | 92                              | 5                | 308              | 4.7              | 102.3       |
| 3                | 15.0        | 686.970             | 0.42               | 1.73                 | 93                             | 93                              | 5                | 308              | 8.4              | 102.4       |
| 4                | 20.0        | 690.520             | 0.45               | 1.85                 | 93                             | 93                              | 5                | 307              | 12.5             | 102.4       |
| 5                | 25.0        | 693.780             | 0.37               | 1.52                 | 94                             | 94                              | 6                | 307              | 17.7             | 103.4       |
| 6                | 30.0        | 696.710             | 0.32               | 1.32                 | 95                             | 95                              | 6                | 307              | 25.2             | 99.7        |
| 7                | 35.0        | 700.330             | 0.47               | 1.94                 | 96                             | 96                              | 6                | 304              | 45.6             | 101.4       |
| 8                | 40.0        | 704.210             | 0.54               | 2.22                 | 96                             | 96                              | 6                | 305              | 53.2             | 101.5       |
| 9                | 45.0        | 708.240             | 0.58               | 2.39                 | 96                             | 96                              | 6                | 304              | 58.3             | 101.7       |
| 10               | 50.0        | 712.390             | 0.62               | 2.55                 | 97                             | 97                              | 6                | 300              | 62.5             | 100.9       |
| 11               | 55.0        | 716.540             | 0.62               | 2.55                 | 98                             | 98                              | 7                | 296              | 66.1             | 100.5       |
| 12               | 60.0        | 720.620             | 0.60               | 2.47                 | 98                             | 98                              | 7                | 298              | 69.4             | 100.5       |
| Average:         |             |                     | 0.465              | 1.917                | 89.5                           | 89.5                            | 5.2              | 303.8            |                  | 102.5       |

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

**Date:** 16-Aug-18  
**Run:** 2 - Particulate / Metals  
**Run Time:** 09:23 - 11:26

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.14 mg/dscm            | 0.00006 gr/dscf            |
|                    | 0.08 mg/Acm             | 0.00003 gr/Acf             |
|                    | 0.13 mg/dscm (@ 11% O2) | 0.00006 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.011 Kg/hr | 0.023 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1259 dscm/min  | 44456 dscf/min |
|             | 20.98 dscm/sec | 741 dscf/sec   |
|             | 2220 Acm/min   | 78395 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 14.526 m/sec | 47.66 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 150.5 oC | 302.9 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 14.4 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 10.2 % O2  |
|                     | 10.0 % CO2 |

30.007 Mol. Wt (g/gmole) Dry  
28.284 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.5129 dscm   | 88.742 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 103.2 %       |             |

**\* 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 3

**Date:** 16-Aug-18  
**Run:** 2 - Particulate / Metals  
**Run Time:** 09:23 - 11:26

Control Unit (Y) 1.0076  
 Nozzle Diameter (in.) 0.2847  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 30.10  
 Static Press. (in. H2O) -20.00  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

**Collection:**  
 Filter (grams) 0.00005  
 Washings (grams) 0.00030  
**Total (grams) 0.00035**

Traverse 1  
 Traverse 2

**Gas Analysis (Vol. %):**  
 CO2 O2  
 10.17 10.17  
 9.83 10.17

10.00 10.17

**Condensate Collection:**  
 Impinger 1 210.0  
 Impinger 2 80.0  
 Impinger 3 8.0  
 Impinger 4 5.0  
 Impinger 5 1.0  
 Impinger 6 1.0  
 Gel 11.0  
**Gain (grams) 316.0**

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (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         | 721.400             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 725.340             | 0.52               | 2.31                 | 72                             | 72                              | 3                | 298              | 1.5              | 104.0       |
| 2                | 10.0        | 729.290             | 0.52               | 2.31                 | 72                             | 72                              | 3                | 298              | 4.7              | 104.3       |
| 3                | 15.0        | 733.530             | 0.60               | 2.67                 | 73                             | 73                              | 3                | 300              | 8.4              | 104.2       |
| 4                | 20.0        | 737.940             | 0.65               | 2.89                 | 74                             | 74                              | 3                | 300              | 12.5             | 104.0       |
| 5                | 25.0        | 742.180             | 0.60               | 2.67                 | 74                             | 74                              | 3                | 305              | 17.7             | 104.4       |
| 6                | 30.0        | 746.200             | 0.54               | 2.40                 | 75                             | 75                              | 3                | 305              | 25.2             | 104.1       |
| 7                | 35.0        | 749.570             | 0.38               | 1.69                 | 75                             | 75                              | 4                | 303              | 45.6             | 103.7       |
| 8                | 40.0        | 752.590             | 0.30               | 1.34                 | 76                             | 76                              | 4                | 304              | 53.2             | 104.4       |
| 9                | 45.0        | 755.620             | 0.30               | 1.34                 | 77                             | 77                              | 4                | 300              | 58.3             | 104.2       |
| 10               | 50.0        | 758.770             | 0.33               | 1.47                 | 77                             | 77                              | 4                | 299              | 62.5             | 103.3       |
| 11               | 55.0        | 761.740             | 0.30               | 1.34                 | 78                             | 78                              | 5                | 297              | 66.1             | 101.8       |
| 12               | 60.0        | 764.640             | 0.27               | 1.20                 | 78                             | 78                              | 5                | 295              | 69.4             | 104.6       |
| Traverse 2       | 0.0         | 764.640             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 767.730             | 0.32               | 1.42                 | 80                             | 80                              | 6                | 303              | 1.5              | 102.6       |
| 2                | 10.0        | 770.970             | 0.35               | 1.56                 | 80                             | 80                              | 6                | 302              | 4.7              | 102.8       |
| 3                | 15.0        | 774.220             | 0.35               | 1.56                 | 81                             | 81                              | 6                | 302              | 8.4              | 102.9       |
| 4                | 20.0        | 777.470             | 0.35               | 1.56                 | 82                             | 82                              | 6                | 303              | 12.5             | 102.8       |
| 5                | 25.0        | 780.490             | 0.30               | 1.34                 | 83                             | 83                              | 5                | 304              | 17.7             | 103.0       |
| 6                | 30.0        | 783.420             | 0.29               | 1.29                 | 83                             | 83                              | 5                | 304              | 25.2             | 101.6       |
| 7                | 35.0        | 787.450             | 0.54               | 2.40                 | 84                             | 84                              | 5                | 307              | 45.6             | 102.7       |
| 8                | 40.0        | 791.890             | 0.66               | 2.94                 | 85                             | 85                              | 5                | 309              | 53.2             | 102.5       |
| 9                | 45.0        | 796.470             | 0.70               | 3.12                 | 86                             | 86                              | 5                | 307              | 58.3             | 102.4       |
| 10               | 50.0        | 801.220             | 0.75               | 3.34                 | 86                             | 86                              | 5                | 308              | 62.5             | 102.7       |
| 11               | 55.0        | 805.860             | 0.72               | 3.20                 | 87                             | 87                              | 3                | 308              | 66.1             | 102.1       |
| 12               | 60.0        | 810.370             | 0.68               | 3.03                 | 86                             | 86                              | 3                | 309              | 69.4             | 102.4       |
| Average:         |             |                     | 0.472              | 2.100                | 79.3                           | 79.3                            | 4.3              | 302.9            |                  | 103.2       |

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

**Date:** 16-Aug-18  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:48 - 13:52

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**Concentrations:**

|                    |                         |                            |
|--------------------|-------------------------|----------------------------|
| <b>Particulate</b> | 0.41 mg/dscm            | 0.00018 gr/dscf            |
|                    | 0.23 mg/Acm             | 0.00010 gr/Acf             |
|                    | 0.38 mg/dscm (@ 11% O2) | 0.00016 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |             |             |
|--------------------|-------------|-------------|
| <b>Particulate</b> | 0.029 Kg/hr | 0.064 lb/hr |
|--------------------|-------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1194 dscm/min  | 42166 dscf/min |
|             | 19.90 dscm/sec | 703 dscf/sec   |
|             | 2094 Acm/min   | 73961 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.704 m/sec | 44.96 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 152.8 oC | 307.0 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 13.4 % |
|-----------------|--------|

|                     |           |
|---------------------|-----------|
| <b>Gas Analysis</b> | 10.2 % O2 |
|                     | 9.9 % CO2 |

29.993 Mol. Wt (g/gmole) Dry  
28.382 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.3272 dscm   | 82.185 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 100.7 %       |             |

**\* 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 3

**Date:** 16-Aug-18  
**Run:** 3 - Particulate / Metals  
**Run Time:** 11:48 - 13:52

Control Unit (Y) 1.0076  
 Nozzle Diameter (in.) 0.2847  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 30.10  
 Static Press. (in. H2O) -20.00  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

**Collection:**  
 Filter (grams) 0.00005  
 Washings (grams) 0.00090  
**Total (grams) 0.00095**

**Gas Analysis (Vol. %):**

|            | CO2   | O2    |
|------------|-------|-------|
| Traverse 1 | 10.00 | 10.17 |
| Traverse 2 | 9.83  | 10.17 |

9.92 10.17

**Condensate Collection:**

|            |       |
|------------|-------|
| Impinger 1 | 152.0 |
| Impinger 2 | 86.0  |
| Impinger 3 | 12.0  |
| Impinger 4 | 6.0   |
| Impinger 5 | 2.0   |
| Impinger 6 | 1.0   |
| Gel        | 12.0  |

**Gain (grams) 271.0**

| Traverse / Point  | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (in. H2O) | Dry Gas Temperature Inlet (oF) | Dry Gas Temperature Outlet (oF) | Vacuum (in. Hg.) | Stack Temp. (oF) | Wall Dist. (in.) | Isokin. (%) |
|-------------------|-------------|---------------------|--------------------|----------------------|--------------------------------|---------------------------------|------------------|------------------|------------------|-------------|
| <b>Traverse 1</b> |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                 | 5.0         | 811.300             |                    |                      |                                |                                 |                  |                  |                  |             |
| 2                 | 10.0        | 814.540             | 0.35               | 1.56                 | 86                             | 86                              | 4                | 313              | 1.5              | 101.5       |
| 3                 | 15.0        | 817.690             | 0.33               | 1.47                 | 86                             | 86                              | 4                | 313              | 4.7              | 101.6       |
| 4                 | 20.0        | 820.830             | 0.33               | 1.47                 | 86                             | 86                              | 4                | 313              | 8.4              | 101.3       |
| 5                 | 25.0        | 823.970             | 0.33               | 1.47                 | 86                             | 86                              | 4                | 311              | 12.5             | 101.1       |
| 6                 | 30.0        | 826.820             | 0.27               | 1.20                 | 87                             | 87                              | 4                | 310              | 17.7             | 101.2       |
| 7                 | 35.0        | 829.960             | 0.33               | 1.47                 | 87                             | 87                              | 4                | 310              | 25.2             | 100.9       |
| 8                 | 40.0        | 833.990             | 0.54               | 2.40                 | 88                             | 88                              | 4                | 309              | 45.6             | 101.2       |
| 9                 | 45.0        | 838.300             | 0.62               | 2.76                 | 88                             | 88                              | 4                | 308              | 53.2             | 101.0       |
| 10                | 50.0        | 842.440             | 0.57               | 2.54                 | 88                             | 88                              | 6                | 307              | 58.3             | 101.1       |
| 11                | 55.0        | 846.580             | 0.57               | 2.54                 | 89                             | 89                              | 6                | 306              | 62.5             | 100.9       |
| 12                | 60.0        | 850.820             | 0.60               | 2.67                 | 90                             | 90                              | 6                | 306              | 66.1             | 100.5       |
| 12                | 60.0        | 855.130             | 0.62               | 2.76                 | 90                             | 90                              | 6                | 307              | 69.4             | 100.6       |
| <b>Traverse 2</b> |             |                     |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                 | 5.0         | 855.130             |                    |                      |                                |                                 |                  |                  |                  |             |
| 2                 | 10.0        | 858.990             | 0.50               | 2.23                 | 89                             | 89                              | 6                | 306              | 1.5              | 100.3       |
| 3                 | 15.0        | 862.920             | 0.52               | 2.31                 | 90                             | 90                              | 6                | 306              | 4.7              | 100.0       |
| 4                 | 20.0        | 866.870             | 0.52               | 2.31                 | 90                             | 90                              | 6                | 307              | 8.4              | 100.6       |
| 5                 | 25.0        | 870.810             | 0.52               | 2.31                 | 91                             | 91                              | 6                | 306              | 12.5             | 100.1       |
| 6                 | 30.0        | 874.690             | 0.50               | 2.23                 | 90                             | 90                              | 6                | 305              | 17.7             | 100.6       |
| 7                 | 35.0        | 878.400             | 0.46               | 2.05                 | 89                             | 89                              | 6                | 304              | 25.2             | 100.4       |
| 8                 | 40.0        | 881.550             | 0.33               | 1.47                 | 88                             | 88                              | 5                | 304              | 45.6             | 100.6       |
| 9                 | 45.0        | 884.580             | 0.30               | 1.34                 | 88                             | 88                              | 5                | 303              | 53.2             | 101.4       |
| 10                | 50.0        | 887.420             | 0.27               | 1.20                 | 89                             | 89                              | 5                | 303              | 58.3             | 100.0       |
| 11                | 55.0        | 890.100             | 0.24               | 1.07                 | 88                             | 88                              | 5                | 304              | 62.5             | 100.3       |
| 12                | 60.0        | 892.550             | 0.20               | 0.89                 | 88                             | 88                              | 5                | 304              | 66.1             | 100.4       |
| 12                | 60.0        | 895.120             | 0.22               | 0.98                 | 89                             | 89                              | 5                | 303              | 69.4             | 100.2       |
| <b>Average:</b>   |             |                     | 0.418              | 1.863                | 88.3                           | 88.3                            | 5.1              | 307.0            |                  | 100.7       |

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

**Date:** Aug.21, 2018  
**Run:** 1 - Cr<sup>+6</sup>  
**Run Time:** 10:57-13:02

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**Concentrations:**

|                            |                        |                           |
|----------------------------|------------------------|---------------------------|
| <b>Hexavalent Chromium</b> | 0.0 mg/dscm            | 0.0000 gr/dscf            |
|                            | 0.0 mg/Acm             | 0.0000 gr/Acf             |
|                            | 0.0 mg/dscm (@ 11% O2) | 0.0000 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |            |             |
|--------------------|------------|-------------|
| <b>Particulate</b> | 0.00 Kg/hr | 0.000 lb/hr |
|--------------------|------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1172 dscm/min  | 41380 dscf/min |
|             | 19.53 dscm/sec | 690 dscf/sec   |
|             | 1995 Acm/min   | 70450 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.054 m/sec | 42.83 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 143.4 oC | 290.0 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 12.7 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.1 % O2   |
|                     | 10.3 % CO2 |

30.002 Mol. Wt (g/gmole) Dry  
28.480 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.6280 dscm   | 92.808 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 101.0 %       |             |

**\* 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 1

Date: Aug.21, 2018  
 Run: 1 - Cr+6  
 Run Time: 10:57-13:02

Control Unit (Y) 0.9997  
 Nozzle Diameter (in.) 0.3050  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 30.03  
 Static Press. (in. H2O) -19.50  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

Collection:  
 Cr+6 (grams) 0.0000005  
 Total (grams) 0.0000005

Gas Analysis (Vol. %):  
 CO2 10.50  
 O2 8.80  
 10.00 9.30

Condensate Collection:  
 Impinger 1 40.0  
 Impinger 2 193.0  
 Impinger 3 26.0  
 Impinger 4 5.0  
 Impinger 5 0.0  
 Impinger 6 0.0  
 Gel 22.5  
 Gain (grams) 286.5

10.25 9.05

| 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         | 519.222             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 522.640             | 0.29               | 1.45                 | 77                             | 77                              | 4                | 289              | 1.5              | 100.9       |
| 2                | 10.0        | 525.990             | 0.28               | 1.39                 | 77                             | 77                              | 4                | 290              | 4.7              | 100.7       |
| 3                | 15.0        | 529.280             | 0.27               | 1.34                 | 77                             | 77                              | 3.5              | 290              | 8.4              | 100.7       |
| 4                | 20.0        | 532.330             | 0.23               | 1.15                 | 78                             | 78                              | 3.5              | 290              | 12.5             | 100.9       |
| 5                | 25.0        | 535.440             | 0.24               | 1.20                 | 78                             | 78                              | 3.5              | 289              | 17.7             | 100.6       |
| 6                | 30.0        | 538.760             | 0.27               | 1.36                 | 80                             | 80                              | 3.5              | 287              | 25.2             | 100.8       |
| 7                | 35.0        | 542.500             | 0.34               | 1.72                 | 82                             | 82                              | 4                | 287              | 45.6             | 100.9       |
| 8                | 40.0        | 546.560             | 0.40               | 2.05                 | 83                             | 83                              | 4                | 287              | 53.2             | 100.9       |
| 9                | 45.0        | 550.410             | 0.36               | 1.82                 | 83                             | 83                              | 4                | 285              | 58.3             | 100.7       |
| 10               | 50.0        | 554.580             | 0.42               | 2.13                 | 84                             | 84                              | 4                | 284              | 62.5             | 100.8       |
| 11               | 55.0        | 558.920             | 0.45               | 2.29                 | 85                             | 85                              | 4                | 285              | 66.1             | 101.2       |
| 12               | 60.0        | 563.400             | 0.48               | 2.45                 | 86                             | 86                              | 4.5              | 284              | 69.4             | 101.0       |
| Traverse 2       | 0.0         | 563.400             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 566.840             | 0.28               | 1.44                 | 87                             | 87                              | 3.5              | 282              | 1.5              | 101.0       |
| 2                | 10.0        | 570.390             | 0.30               | 1.53                 | 87                             | 87                              | 3.5              | 286              | 4.7              | 100.9       |
| 3                | 15.0        | 574.430             | 0.39               | 1.99                 | 87                             | 87                              | 3.5              | 286              | 8.4              | 100.9       |
| 4                | 20.0        | 578.770             | 0.45               | 2.29                 | 87                             | 87                              | 3.5              | 287              | 12.5             | 101.0       |
| 5                | 25.0        | 582.770             | 0.38               | 1.93                 | 88                             | 88                              | 4                | 289              | 17.7             | 101.2       |
| 6                | 30.0        | 587.350             | 0.50               | 2.53                 | 88                             | 88                              | 4                | 292              | 25.2             | 101.3       |
| 7                | 35.0        | 592.090             | 0.54               | 2.73                 | 88                             | 88                              | 4                | 294              | 45.6             | 101.1       |
| 8                | 40.0        | 596.560             | 0.48               | 2.43                 | 88                             | 88                              | 4                | 294              | 53.2             | 101.1       |
| 9                | 45.0        | 601.330             | 0.55               | 2.76                 | 89                             | 89                              | 5                | 300              | 58.3             | 101.0       |
| 10               | 50.0        | 605.650             | 0.45               | 2.26                 | 90                             | 90                              | 5                | 302              | 62.5             | 101.0       |
| 11               | 55.0        | 609.930             | 0.44               | 2.21                 | 91                             | 91                              | 5                | 302              | 66.1             | 101.0       |
| 12               | 60.0        | 614.180             | 0.43               | 2.17                 | 91                             | 91                              | 5                | 300              | 69.4             | 101.3       |
| Average:         |             |                     | 0.384              | 1.943                | 84.6                           | 84.6                            | 4.0              | 290.0            |                  | 101.0       |

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

**Date:** Aug.21, 2018  
**Run:** 2 - Cr<sup>+6</sup>  
**Run Time:** 09:37-11:44

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**Concentrations:**

|                            |                        |                           |
|----------------------------|------------------------|---------------------------|
| <b>Hexavalent Chromium</b> | 0.0 mg/dscm            | 0.0000 gr/dscf            |
|                            | 0.0 mg/Acm             | 0.0000 gr/Acf             |
|                            | 0.0 mg/dscm (@ 11% O2) | 0.0000 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |            |             |
|--------------------|------------|-------------|
| <b>Particulate</b> | 0.00 Kg/hr | 0.000 lb/hr |
|--------------------|------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1250 dscm/min  | 44148 dscf/min |
|             | 20.84 dscm/sec | 736 dscf/sec   |
|             | 2131 Acm/min   | 75259 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 13.945 m/sec | 45.75 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 151.0 oC | 303.8 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 11.3 % |
|-----------------|--------|

|                     |           |
|---------------------|-----------|
| <b>Gas Analysis</b> | 9.8 % O2  |
|                     | 9.8 % CO2 |

29.950 Mol. Wt (g/gmole) Dry  
28.605 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |             |
|----------------------|---------------|-------------|
| <b>Sample Volume</b> | 2.8162 dscm   | 99.453 dscf |
| <b>Sample Time</b>   | 120.0 minutes |             |
| <b>Isokineticity</b> | 101.4 %       |             |

**\* 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 1

**Date:** Aug.21, 2018  
**Run:** 2 - Cr+6  
**Run Time:** 09:37-11:44

Control Unit (Y) 0.9997  
 Nozzle Diameter (in.) 0.3050  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 30.05  
 Static Press. (in. H2O) -19.50  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

**Collection:**  
 Cr+6 (grams) 0.0000005  
 Total (grams) 0.0000005

Traverse 1  
 Traverse 2

**Gas Analysis (Vol. %):**  
 CO2 O2  
 9.20 10.30  
 10.30 9.20

9.75 9.75

**Condensate Collection:**  
 Impinger 1 -8.0  
 Impinger 2 222.0  
 Impinger 3 20.0  
 Impinger 4 11.0  
 Impinger 5 0.0  
 Impinger 6 0.0  
 Gel 23.0  
**Gain (grams) 268.0**

| 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         | 615.313             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 619.130             | 0.36               | 1.82                 | 74                             | 74                              | 4                | 303              | 1.5              | 101.3       |
| 2                | 10.0        | 622.980             | 0.37               | 1.87                 | 75                             | 75                              | 4                | 305              | 4.7              | 100.8       |
| 3                | 15.0        | 627.110             | 0.42               | 2.12                 | 76                             | 76                              | 4                | 306              | 8.4              | 101.4       |
| 4                | 20.0        | 631.440             | 0.46               | 2.33                 | 76                             | 76                              | 4                | 305              | 12.5             | 101.6       |
| 5                | 25.0        | 635.580             | 0.42               | 2.13                 | 77                             | 77                              | 4                | 305              | 17.7             | 101.4       |
| 6                | 30.0        | 639.890             | 0.45               | 2.29                 | 79                             | 79                              | 4                | 304              | 25.2             | 101.6       |
| 7                | 35.0        | 644.200             | 0.45               | 2.30                 | 80                             | 80                              | 4                | 303              | 45.6             | 101.3       |
| 8                | 40.0        | 648.680             | 0.48               | 2.46                 | 82                             | 82                              | 4                | 303              | 53.2             | 101.6       |
| 9                | 45.0        | 653.250             | 0.50               | 2.56                 | 83                             | 83                              | 4                | 305              | 58.3             | 101.5       |
| 10               | 50.0        | 657.430             | 0.42               | 2.16                 | 84                             | 84                              | 4                | 305              | 62.5             | 101.0       |
| 11               | 55.0        | 661.690             | 0.43               | 2.22                 | 85                             | 85                              | 4                | 304              | 66.1             | 101.5       |
| 12               | 60.0        | 666.000             | 0.44               | 2.28                 | 86                             | 86                              | 4                | 302              | 69.4             | 101.2       |
| Traverse 2       | 0.0         | 666.000             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 669.470             | 0.28               | 1.46                 | 88                             | 88                              | 4                | 301              | 1.5              | 101.5       |
| 2                | 10.0        | 672.860             | 0.27               | 1.40                 | 88                             | 88                              | 4                | 303              | 4.7              | 101.1       |
| 3                | 15.0        | 676.730             | 0.35               | 1.82                 | 89                             | 89                              | 4                | 303              | 8.4              | 101.3       |
| 4                | 20.0        | 680.080             | 0.26               | 1.36                 | 91                             | 91                              | 4                | 302              | 12.5             | 101.2       |
| 5                | 25.0        | 683.730             | 0.31               | 1.61                 | 91                             | 91                              | 4                | 304              | 17.7             | 101.2       |
| 6                | 30.0        | 687.330             | 0.30               | 1.56                 | 91                             | 91                              | 4                | 304              | 25.2             | 101.4       |
| 7                | 35.0        | 691.890             | 0.48               | 2.51                 | 92                             | 92                              | 4                | 303              | 45.6             | 101.6       |
| 8                | 40.0        | 696.740             | 0.54               | 2.83                 | 93                             | 93                              | 4                | 303              | 53.2             | 101.7       |
| 9                | 45.0        | 701.690             | 0.56               | 2.93                 | 93                             | 93                              | 5                | 304              | 58.3             | 102.1       |
| 10               | 50.0        | 706.920             | 0.63               | 3.29                 | 94                             | 94                              | 5                | 305              | 62.5             | 101.6       |
| 11               | 55.0        | 711.980             | 0.59               | 3.10                 | 95                             | 95                              | 5                | 304              | 66.1             | 101.3       |
| 12               | 60.0        | 717.140             | 0.61               | 3.24                 | 96                             | 96                              | 5                | 306              | 69.4             | 101.6       |
| <b>Average:</b>  |             |                     | 0.433              | 2.235                | 85.8                           | 85.8                            | 4.2              | 303.8            |                  | 101.4       |

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

**Date:** Aug.21, 2018  
**Run:** 3 - Cr<sup>+6</sup>  
**Run Time:** 12:37-14:39

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**Concentrations:**

|                            |                        |                           |
|----------------------------|------------------------|---------------------------|
| <b>Hexavalent Chromium</b> | 0.0 mg/dscm            | 0.0000 gr/dscf            |
|                            | 0.0 mg/Acm             | 0.0000 gr/Acf             |
|                            | 0.0 mg/dscm (@ 11% O2) | 0.0000 gr/dscf (@ 11% O2) |

**Emission Rates:**

|                    |            |             |
|--------------------|------------|-------------|
| <b>Particulate</b> | 0.00 Kg/hr | 0.000 lb/hr |
|--------------------|------------|-------------|

**Flue Gas Characteristics:**

|             |                |                |
|-------------|----------------|----------------|
| <b>Flow</b> | 1282 dscm/min  | 45256 dscf/min |
|             | 21.36 dscm/sec | 754 dscf/sec   |
|             | 2226 Acf/min   | 78608 Acf/min  |

|                 |              |             |
|-----------------|--------------|-------------|
| <b>Velocity</b> | 14.565 m/sec | 47.79 f/sec |
|-----------------|--------------|-------------|

|                    |          |          |
|--------------------|----------|----------|
| <b>Temperature</b> | 154.7 oC | 310.5 oF |
|--------------------|----------|----------|

|                 |        |
|-----------------|--------|
| <b>Moisture</b> | 12.1 % |
|-----------------|--------|

|                     |            |
|---------------------|------------|
| <b>Gas Analysis</b> | 9.5 % O2   |
|                     | 10.2 % CO2 |

30.004 Mol. Wt (g/gmole) Dry  
28.546 Mol. Wt (g/gmole) Wet

**Sample Parameters:**

|                      |               |              |
|----------------------|---------------|--------------|
| <b>Sample Volume</b> | 2.9399 dscm   | 103.822 dscf |
| <b>Sample Time</b>   | 120.0 minutes |              |
| <b>Isokineticity</b> | 103.3 %       |              |

**\* 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 1

Date: Aug.21, 2018  
 Run: 3 - Cr+6  
 Run Time: 12:37-14:39

Control Unit (Y) 0.9997  
 Nozzle Diameter (in.) 0.3050  
 Pitot Factor 0.8489  
 Baro. Press. (in. Hg) 30.05  
 Static Press. (in. H2O) -19.50  
 Stack Height (ft) 30  
 Stack Diameter (in.) 70.90  
 Stack Area (sq.ft.) 27.417  
 Minutes Per Reading 5.0  
 Minutes Per Point 5.0

Collection:  
 Cr+6 (grams) 0.0000005  
 Total (grams) 0.0000005

| Gas Analysis (Vol. %): |      |
|------------------------|------|
| CO2                    | O2   |
| 10.00                  | 9.80 |
| 10.30                  | 9.20 |
| 10.15                  | 9.50 |

| Condensate Collection: |       |
|------------------------|-------|
| Impinger 1             | -10.0 |
| Impinger 2             | 243.0 |
| Impinger 3             | 46.0  |
| Impinger 4             | 4.0   |
| Impinger 5             | 0.0   |
| Impinger 6             | 0.0   |
| Gel                    | 22.0  |
| Gain (grams)           | 305.0 |

| Traverse / Point | Time (min.) | Dry Gas Meter (ft3) | Pitot ΔP (in. H2O) | Orifice ΔH (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         | 717.624             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 721.480             | 0.34               | 1.79                 | 90                             | 90                              | 5                | 308              | 1.5              | 103.5       |
| 2                | 10.0        | 725.380             | 0.35               | 1.84                 | 91                             | 91                              | 5                | 310              | 4.7              | 103.1       |
| 3                | 15.0        | 729.440             | 0.38               | 2.00                 | 91                             | 91                              | 5.5              | 310              | 8.4              | 103.1       |
| 4                | 20.0        | 733.390             | 0.36               | 1.89                 | 91                             | 91                              | 5.5              | 311              | 12.5             | 103.1       |
| 5                | 25.0        | 737.120             | 0.32               | 1.69                 | 92                             | 92                              | 5.5              | 311              | 17.7             | 103.0       |
| 6                | 30.0        | 741.030             | 0.35               | 1.85                 | 92                             | 92                              | 6.5              | 310              | 25.2             | 103.2       |
| 7                | 35.0        | 745.890             | 0.54               | 2.85                 | 93                             | 93                              | 6.5              | 310              | 45.6             | 103.4       |
| 8                | 40.0        | 751.280             | 0.66               | 3.49                 | 94                             | 94                              | 6.5              | 310              | 53.2             | 103.7       |
| 9                | 45.0        | 756.580             | 0.64               | 3.38                 | 94                             | 94                              | 7.5              | 311              | 58.3             | 103.5       |
| 10               | 50.0        | 761.720             | 0.60               | 3.18                 | 95                             | 95                              | 7.5              | 311              | 62.5             | 103.5       |
| 11               | 55.0        | 766.910             | 0.61               | 3.24                 | 96                             | 96                              | 7.5              | 311              | 66.1             | 103.5       |
| 12               | 60.0        | 772.220             | 0.64               | 3.39                 | 97                             | 97                              | 7.5              | 313              | 69.4             | 103.3       |
| Traverse 2       | 0.0         | 772.220             |                    |                      |                                |                                 |                  |                  |                  |             |
| 1                | 5.0         | 776.550             | 0.42               | 2.25                 | 97                             | 97                              | 6                | 306              | 1.5              | 103.2       |
| 2                | 10.0        | 780.920             | 0.43               | 2.28                 | 97                             | 97                              | 6                | 312              | 4.7              | 103.4       |
| 3                | 15.0        | 785.390             | 0.45               | 2.39                 | 97                             | 97                              | 6                | 311              | 8.4              | 103.3       |
| 4                | 20.0        | 789.950             | 0.47               | 2.50                 | 97                             | 97                              | 6                | 312              | 12.5             | 103.2       |
| 5                | 25.0        | 794.610             | 0.49               | 2.61                 | 98                             | 98                              | 6                | 312              | 17.7             | 103.2       |
| 6                | 30.0        | 799.180             | 0.47               | 2.50                 | 98                             | 98                              | 6                | 311              | 25.2             | 103.2       |
| 7                | 35.0        | 803.660             | 0.45               | 2.40                 | 99                             | 99                              | 7                | 311              | 45.6             | 103.2       |
| 8                | 40.0        | 808.050             | 0.43               | 2.30                 | 99                             | 99                              | 7                | 310              | 53.2             | 103.4       |
| 9                | 45.0        | 812.730             | 0.49               | 2.62                 | 99                             | 99                              | 7                | 309              | 58.3             | 103.2       |
| 10               | 50.0        | 817.220             | 0.45               | 2.40                 | 99                             | 99                              | 7                | 310              | 62.5             | 103.4       |
| 11               | 55.0        | 821.550             | 0.42               | 2.24                 | 99                             | 99                              | 7                | 311              | 66.1             | 103.2       |
| 12               | 60.0        | 825.780             | 0.40               | 2.14                 | 99                             | 99                              | 7                | 310              | 69.4             | 103.2       |
| Average:         |             |                     | 0.465              | 2.468                | 95.6                           | 95.6                            | 6.4              | 310.5            |                  | 103.3       |

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

| <b>Sample Type:</b> HF |                               |               |                |               |  |
|------------------------|-------------------------------|---------------|----------------|---------------|--|
| <b>Parameter</b>       |                               | <b>Test 1</b> | <b>Test 2</b>  | <b>Test 3</b> |  |
| Test Date              |                               | 14-Aug-18     | 14-Aug-18      | 14-Aug-18     |  |
| Test Time              |                               | 09:41-10:41   | 10:49-11:49    | 11:58-12:58   |  |
| Test Duration          | (min.)                        | 60            | 60             | 60            |  |
| Baro. Press.           | (in. Hg)                      | 29.90         | 29.90          | 29.90         |  |
| DGM Factor             | (Y)                           | 0.9651        | 0.9651         | 0.9651        |  |
| Initial Reading        | (Cubic Feet)                  | 217.074       | 217.683        | 218.292       |  |
| Final Reading          | (Cubic Feet)                  | 217.676       | 218.285        | 218.893       |  |
| Temp. Outlet           | (Avg. oF)                     | 82.5          | 91.3           | 92.3          |  |
| Orifice Press.         | (ΔH in.H2O)                   | 0.50          | 0.50           | 0.50          |  |
| Gas Volume             | (Sm <sup>3</sup> )            | 0.57          | 0.56           | 0.55          |  |
| HF                     | (mg)                          | 0.011         | 0.011          | 0.009         |  |
| Oxygen                 | (Vol. %)                      | 10.1          | 9.9            | 9.8           |  |
| HF                     | (mg/Sm <sup>3</sup> )         | 0.019         | 0.019          | 0.017         |  |
| HF                     | (mg/Sm <sup>3</sup> @ 11% O2) | 0.017         | 0.017          | 0.015         |  |
| Moisture               | (Vol. %)                      | 16.2          | 15.1           | 14.5          |  |
| Tstd. (oF)             |                               | 68            | Pstd. (in. Hg) | 29.92         |  |



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

| Sample Type: HF              |                                     | Test 1        | Test 2        | Test 3        |
|------------------------------|-------------------------------------|---------------|---------------|---------------|
| Parameter                    |                                     |               |               |               |
| Test Date                    |                                     | 15-Aug-18     | 15-Aug-18     | 15-Aug-18     |
| Test Time                    |                                     | 09:51 - 10:51 | 11:05 - 12:05 | 12:15 - 13:15 |
| Test Duration                | (min.)                              | 60            | 60            | 60            |
| Baro. Press.                 | (in. Hg)                            | 30.50         | 30.50         | 30.50         |
| DGM Factor                   | (Y)                                 | 0.9651        | 0.9651        | 0.9651        |
| Initial Reading              | (Cubic Feet)                        | 218.903       | 219.572       | 220.215       |
| Final Reading                | (Cubic Feet)                        | 219.565       | 220.208       | 220.859       |
| Temp. Outlet                 | (Avg. oF)                           | 87.3          | 93.1          | 98.4          |
| Orifice Press.               | (ΔH in.H2O)                         | 0.50          | 0.50          | 0.50          |
| Gas Volume                   | (Sm <sup>3</sup> )                  | 0.62887       | 0.59801       | 0.59950       |
| HF                           | (mg)                                | 0.002         | 0.009         | 0.022         |
| Oxygen                       | (Vol. %)                            | 10.1          | 9.3           | 9.6           |
| <b>HF</b>                    | <b>(mg/Sm<sup>3</sup>)</b>          | <b>0.003</b>  | <b>0.015</b>  | <b>0.037</b>  |
| <b>HF</b>                    | <b>(mg/Sm<sup>3</sup> @ 11% O2)</b> | <b>0.003</b>  | <b>0.013</b>  | <b>0.032</b>  |
| <b>Moisture (isokinetic)</b> | <b>(Vol. %)</b>                     | <b>16.2</b>   | <b>15.9</b>   | <b>14.6</b>   |

\*Wet Basis Calculated on moisture from isokinetic tests  
Tstd. (oF) 68

Pstd. (in. Hg) 29.92

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

|                                                         |                                     |               |                |               |
|---------------------------------------------------------|-------------------------------------|---------------|----------------|---------------|
| <b>Sample Type:</b>                                     | HF                                  |               |                |               |
| <b>Parameter</b>                                        |                                     | <b>Test 1</b> | <b>Test 2</b>  | <b>Test 3</b> |
| Test Date                                               |                                     | 16-Aug-18     | 16-Aug-18      | 16-Aug-18     |
| Test Time                                               |                                     | 09:34 - 10:34 | 10:45 - 11:45  | 11:54 - 12:54 |
| Test Duration                                           | (min.)                              | 60            | 60             | 60            |
| Baro. Press.                                            | (in. Hg)                            | 30.10         | 30.10          | 30.10         |
| DGM Factor                                              | (Y)                                 | 0.9651        | 0.9651         | 0.9651        |
| Initial Reading                                         | (Cubic Feet)                        | 220.870       | 221.510        | 222.171       |
| Final Reading                                           | (Cubic Feet)                        | 221.503       | 222.164        | 222.814       |
| Temp. Outlet                                            | (Avg. oF)                           | 77.9          | 86.4           | 88.7          |
| Orifice Press.                                          | (ΔH in.H2O)                         | 0.50          | 0.50           | 0.50          |
| Gas Volume                                              | (Sm <sup>3</sup> )                  | 0.60424       | 0.61357        | 0.60224       |
| HF                                                      | (mg)                                | 0.009         | 0.008          | 0.010         |
| Oxygen                                                  | (Vol. %)                            | 10.0          | 10.2           | 10.2          |
| <b>HF</b>                                               | <b>(mg/Sm<sup>3</sup>)</b>          | <b>0.015</b>  | <b>0.013</b>   | <b>0.017</b>  |
| <b>HF</b>                                               | <b>(mg/Sm<sup>3</sup> @ 11% O2)</b> | <b>0.014</b>  | <b>0.012</b>   | <b>0.016</b>  |
| <b>Moisture (isokinetic)</b>                            | <b>(Vol. %)</b>                     | <b>15.0</b>   | <b>14.4</b>    | <b>13.4</b>   |
| *Wet Basis Calculated on moisture from isokinetic tests |                                     |               |                |               |
|                                                         | Tstd. (oF)                          | 68            | Pstd. (in. Hg) | 29.92         |

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

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

**Molecular Weight:** 44.00 grams/mol  
**Lab Detection Limit:** 0.1 ppm      **Reportable Detection Limit:** 0.18

| Sample ID      | Date      | Time        | N <sub>2</sub> O | N <sub>2</sub> O   | N <sub>2</sub> O                        |
|----------------|-----------|-------------|------------------|--------------------|-----------------------------------------|
|                |           |             | ppm              | mg/Sm <sup>3</sup> | mg/Sm <sup>3</sup> @ 11% O <sub>2</sub> |
| Unit 1 Run 1   | 13-Aug-18 | 10:35-11:35 | 4.80             | 8.79               | 8.0                                     |
| Unit 1 Run 2   | 13-Aug-18 | 11:36-12:36 | 2.40             | 4.39               | 4.0                                     |
| Unit 1 Run 3   | 13-Aug-18 | 12:37-13:37 | 3.40             | 6.22               | 5.6                                     |
| <b>Average</b> |           |             |                  |                    | 5.8                                     |
| Unit 2 Run 1   | 13-Aug-18 | 09:05-10:05 | 6.90             | 12.63              | 11.6                                    |
| Unit 2 Run 2   | 13-Aug-18 | 10:07-11:07 | 4.00             | 7.32               | 6.2                                     |
| Unit 2 Run 3   | 13-Aug-18 | 11:09-12:09 | 4.60             | 8.42               | 7.4                                     |
| <b>Average</b> |           |             |                  |                    | 8.4                                     |
| Unit 3 Run 1   | 13-Aug-18 | 10:55-11:55 | 6.70             | 12.26              | 11.1                                    |
| Unit 3 Run 2   | 13-Aug-18 | 11:57-12:57 | 11.00            | 20.13              | 18.6                                    |
| Unit 3 Run 3   | 13-Aug-18 | 12:59-13:59 | 8.50             | 15.56              | 14.4                                    |
| <b>Average</b> |           |             |                  |                    | 14.7                                    |

**APPENDIX - D**

**FIELD DATA SHEETS**

| CLIENT                                | NOZZLE       |      | DIAMETER, IN. |         | IMPINGING | INITIAL | FINAL   | TOTAL GAIN |
|---------------------------------------|--------------|------|---------------|---------|-----------|---------|---------|------------|
| SOURCE                                | PROBE        | Cp   | Imp. #1       | Imp. #2 | Imp. #3   | Imp. #4 | Imp. #5 | Imp. #6    |
| M.V.R.D.                              | 7C           | 3297 | 100           | 100     | 100       | 100     | 100     | 100        |
| PARAMETER / RUN No                    | Unit #1      |      |               |         |           |         |         |            |
| DATE                                  | Aug 13/18    |      |               |         |           |         |         |            |
| OPERATOR                              | J.C.L.A.S.G. |      |               |         |           |         |         |            |
| CONTROL UNIT                          | SI CAS 2     |      |               |         |           |         |         |            |
| PORT LENGTH                           | 19.50        |      |               |         |           |         |         |            |
| STATIC PRESSURE, IN. H <sub>2</sub> O | 19.90        |      |               |         |           |         |         |            |
| STACK DIAMETER                        | 30.90        |      |               |         |           |         |         |            |
| STACK HEIGHT                          | 30.90        |      |               |         |           |         |         |            |
| INITIAL LEAK TEST                     | 0.018 @ 15"  |      |               |         |           |         |         |            |
| FINAL LEAK TEST                       | 0.008 @ 15"  |      |               |         |           |         |         |            |
| UPSTREAM DIAMETERS                    |              |      |               |         |           |         |         |            |
| DOWNSTREAM DIAMETERS                  |              |      |               |         |           |         |         |            |

| Point | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pilot ΔP IN. H <sub>2</sub> O | Orifice ΔH IN. H <sub>2</sub> O | Temperature °F |       |     | Impinger Exit | Pump Vac. IN. Hg | Fyrites                |                       |
|-------|------------|-------------------------------|-------------------------------|---------------------------------|----------------|-------|-----|---------------|------------------|------------------------|-----------------------|
|       |            |                               |                               |                                 | Stack          | Probe | Box |               |                  | CO <sub>2</sub> Vol. % | O <sub>2</sub> Vol. % |
| 1     | 11:46      | 174.050                       | 1.85                          | 1.85                            | 304            | 250   | 250 | 60            | 4                | 10.0                   | 10.2                  |
| 2     |            | 477.78                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 4                |                        |                       |
| 3     |            | 481.64                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 4     |            | 485.63                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 5     |            | 489.64                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 6     |            | 494.14                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 7     |            | 498.90                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 8     |            | 503.79                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 9     |            | 508.67                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 10    |            | 513.40                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 11    |            | 518.09                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 12    |            | 522.52                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 13    |            | 526.06                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 14    |            | 529.90                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 15    |            | 533.78                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 16    |            | 537.57                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 17    |            | 541.77                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 18    |            | 545.88                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 19    |            | 549.90                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 20    |            | 553.92                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 21    |            | 557.94                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 22    |            | 561.96                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 23    |            | 565.98                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 24    |            | 569.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 25    |            | 573.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 26    |            | 577.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 27    |            | 581.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 28    |            | 585.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 29    |            | 589.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 30    |            | 593.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 31    |            | 597.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 32    |            | 601.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 33    |            | 605.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 34    |            | 609.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 35    |            | 613.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 36    |            | 617.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 37    |            | 621.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 38    |            | 625.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 39    |            | 629.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 40    |            | 633.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 41    |            | 637.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 42    |            | 641.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 43    |            | 645.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 44    |            | 649.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 45    |            | 653.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 46    |            | 657.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 47    |            | 661.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 48    |            | 665.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 49    |            | 669.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 50    |            | 673.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 51    |            | 677.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 52    |            | 681.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 53    |            | 685.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 54    |            | 689.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 55    |            | 693.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 56    |            | 697.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 57    |            | 701.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 58    |            | 705.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 59    |            | 709.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 60    |            | 713.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 61    |            | 717.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 62    |            | 721.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 63    |            | 725.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 64    |            | 729.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 65    |            | 733.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 66    |            | 737.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 67    |            | 741.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 68    |            | 745.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 69    |            | 749.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 70    |            | 753.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 71    |            | 757.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 72    |            | 761.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 73    |            | 765.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 74    |            | 769.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 75    |            | 773.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 76    |            | 777.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 77    |            | 781.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 78    |            | 785.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 79    |            | 789.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 80    |            | 793.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 81    |            | 797.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 82    |            | 801.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 83    |            | 805.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 84    |            | 809.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 85    |            | 813.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 86    |            | 817.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 87    |            | 821.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 88    |            | 825.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 89    |            | 829.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 90    |            | 833.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 91    |            | 837.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 92    |            | 841.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 93    |            | 845.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 94    |            | 849.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 95    |            | 853.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 96    |            | 857.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 97    |            | 861.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 98    |            | 865.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 99    |            | 869.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |
| 100   |            | 873.99                        | 1.85                          | 1.85                            | 304            | 250   | 250 | 62            | 5                |                        |                       |

17.05 6.61ΔH

SH

J.H.

A. Lanfranco and Associates Inc.

 $\sqrt{7.05}$  6.61 ΔH

|                             |                       |                          |             |               |      |                      |         |       |            |
|-----------------------------|-----------------------|--------------------------|-------------|---------------|------|----------------------|---------|-------|------------|
| CLIENT                      | M.V.R.D.              | NOZZLE                   | 106         | DIAMETER, IN. | 3207 | IMPINGER             | INITIAL | FINAL | TOTAL GAIN |
| SOURCE                      | Upst #1               | PROBE                    | 7C          | Cp            | 8489 | VOLUMES              | (mL)    | (mL)  | (mL)       |
| PARAMETER / RUN No          | Run 2 Metals/Particle | PORT LENGTH              |             |               |      | Imp. #1              | 0       | 216   | 216        |
| DATE                        | Aug. 14 718           | STATIC PRESSURE, IN. H2O | -19.00      |               |      | Imp. #2              | 100     | 302   | 122        |
| OPERATOR:                   | E.L. + J.G. + M.G.    | STACK DIAMETER           | 30.90       |               |      | Imp. #3              | 100     | 128   | 28         |
| CONTROL UNIT                | STC AE 2              | STACK HEIGHT             | 30.90       |               |      | Imp. #4              | 0       | 12    | 12         |
|                             | ΔH@                   |                          |             |               |      | Imp. #5              | 100     | 102   | 2          |
|                             |                       |                          |             |               |      | Imp. #6              | 100     | 101   | 1          |
| BAROMETRIC PRESSURE, IN. Hg | 29.90                 | INITIAL LEAK TEST        | 0.002 @ 15" |               |      | Upstream Diameters   |         |       |            |
| ASSUMED MOISTURE, Bw        | 15%                   | FINAL LEAK TEST          | 0.002 @ 15" |               |      | Downstream Diameters |         |       |            |

| Point | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pilot ΔP<br>IN. H <sub>2</sub> O | Orifice ΔH<br>IN. H <sub>2</sub> O | Dry Gas<br>Outlet | Stack | Temperature °F |          | Box | Impinger<br>Exit | Pump Vac.<br>IN. Hg | Fyrites                   |                          |  |
|-------|------------|-------------------------------|----------------------------------|------------------------------------|-------------------|-------|----------------|----------|-----|------------------|---------------------|---------------------------|--------------------------|--|
|       |            |                               |                                  |                                    |                   |       | Probe          | Impinger |     |                  |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |  |
| 1     | 09:06      | 581.114                       | 1.28                             | 2.12                               | 79                | 307   | 250            | 250      | 58  | 5                |                     |                           |                          |  |
| 2     |            | 585.10                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 5                |                     | 10.0                      | 10.5                     |  |
| 3     |            | 588.69                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 5                |                     |                           |                          |  |
| 4     |            | 597.64                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 5                |                     |                           |                          |  |
| 5     |            | 601.62                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 5                |                     |                           |                          |  |
| 6     |            | 606.19                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 6                |                     | 10.0                      | 9.7                      |  |
| 7     |            | 611.03                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 7                |                     |                           |                          |  |
| 8     |            | 615.67                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 7                |                     |                           |                          |  |
| 9     |            | 620.49                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     | 10.0                      | 10.0                     |  |
| 10    |            | 624.93                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 11    |            | 629.63                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 12    |            | 634.25                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 1     |            | 637.98                        | 1.28                             | 1.85                               | 79                | 306   | 250            | 250      | 60  | 6                |                     |                           |                          |  |
| 2     |            | 641.97                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 6                |                     | 10.0                      | 9.7                      |  |
| 3     |            | 645.97                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 6                |                     |                           |                          |  |
| 4     |            | 649.93                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 59  | 6                |                     |                           |                          |  |
| 5     |            | 653.77                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 58  | 7                |                     | 10.5                      | 9.6                      |  |
| 6     |            | 657.57                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 7     |            | 661.41                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 8     |            | 665.26                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 9     |            | 669.02                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     | 10.0                      | 10.0                     |  |
| 10    |            | 672.81                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 11    |            | 676.57                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |
| 12    | 11:08      | 680.37                        | 1.28                             | 2.12                               | 79                | 306   | 250            | 250      | 60  | 8                |                     |                           |                          |  |

S.H.

 $\sqrt{705}$  6.61 ΔH

| CLIENT                      | M.V.L.D.              | NOZZLE | DIAMETER, IN. | IMPINGER, INITIAL    | FINAL | TOTAL GAIN |
|-----------------------------|-----------------------|--------|---------------|----------------------|-------|------------|
| SOURCE                      | UNIT #1               | PROBE  | Cp            | VOLUMES              | (mL)  | (mL)       |
| PARAMETER / RUN NO          | RVA 3 Metals / Partic |        |               | Imp. #1              | 0     | 103        |
| DATE                        | Aug. 14 / 18          |        |               | Imp. #2              | 100   | 248        |
| OPERATOR                    | C.J. + S.G. + M.G.    |        |               | Imp. #3              | 100   | 40         |
| CONTROL UNIT                | STC 2                 |        |               | Imp. #4              | 0     | 24         |
|                             | ΔH @ 1.0012           |        |               | Imp. #5              | 100   | 103        |
|                             |                       |        |               | Imp. #6              | 100   | 3          |
| BAROMETRIC PRESSURE, IN. Hg | 29.90                 |        |               | Upstream Diameters   |       |            |
| ASSUMED MOISTURE, Bw        | 15.3                  |        |               | Downstream Diameters |       |            |

| Point | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pitot ΔP IN. H <sub>2</sub> O | Orifice ΔH IN. H <sub>2</sub> O | Temperature °F |       |       | Impinger Exit | Pump Vac. IN. Hg | Fyrites |                        |
|-------|------------|-------------------------------|-------------------------------|---------------------------------|----------------|-------|-------|---------------|------------------|---------|------------------------|
|       |            |                               |                               |                                 | Dry Gas Outlet | Stack | Probe |               |                  | Box     | CO <sub>2</sub> Vol. % |
| 1     | 11:25      | 688.300                       | 1.28                          | 1.86                            | 319            | 350   | 350   | 64            | 6                |         |                        |
| 2     |            | 692.03                        | 1.33                          | 2.12                            | 311            | 350   | 350   | 62            | 6                | 10.0    | 10.3                   |
| 3     |            | 696.00                        | 1.34                          | 2.15                            | 311            | 350   | 350   | 62            | 8                |         |                        |
| 4     |            | 704.29                        | 1.37                          | 2.45                            | 311            | 350   | 350   | 62            | 8                |         |                        |
| 5     |            | 708.25                        | 1.37                          | 2.31                            | 311            | 350   | 350   | 62            | 8                |         |                        |
| 6     |            | 712.74                        | 1.41                          | 2.91                            | 311            | 350   | 350   | 62            | 8                | 10.0    | 10.0                   |
| 7     |            | 722.09                        | 1.43                          | 2.70                            | 310            | 350   | 350   | 62            | 8                |         |                        |
| 8     |            | 726.51                        | 1.42                          | 2.70                            | 310            | 350   | 350   | 62            | 8                |         |                        |
| 9     |            | 731.19                        | 1.45                          | 2.70                            | 310            | 350   | 350   | 64            | 8                | 10.0    | 10.0                   |
| 10    |            | 735.74                        | 1.42                          | 2.74                            | 305            | 350   | 350   | 64            | 8                |         |                        |
| 11    |            | 740.26                        | 1.40                          | 2.64                            | 303            | 350   | 350   | 64            | 8                |         |                        |
| 12    |            | 744.19                        | 1.32                          | 2.17                            | 308            | 350   | 350   | 62            | 8                |         |                        |
| 13    |            | 748.06                        | 1.30                          | 1.90                            | 310            | 350   | 350   | 60            | 8                | 10.5    | 10.0                   |
| 14    |            | 751.93                        | 1.30                          | 1.90                            | 310            | 350   | 350   | 60            | 8                |         |                        |
| 15    |            | 755.80                        | 1.32                          | 2.13                            | 311            | 350   | 350   | 62            | 8                |         |                        |
| 16    |            | 759.67                        | 1.34                          | 2.17                            | 312            | 350   | 350   | 62            | 8                | 10.5    | 9.5                    |
| 17    |            | 763.54                        | 1.30                          | 2.17                            | 312            | 350   | 350   | 62            | 10               |         |                        |
| 18    |            | 767.41                        | 1.30                          | 2.17                            | 312            | 350   | 350   | 62            | 12               |         |                        |
| 19    |            | 771.28                        | 1.30                          | 2.17                            | 312            | 350   | 350   | 62            | 12               | 11.0    | 9.0                    |
| 20    |            | 775.15                        | 1.26                          | 2.17                            | 314            | 350   | 350   | 62            | 12               |         |                        |
| 21    |            | 779.02                        | 1.26                          | 2.17                            | 314            | 350   | 350   | 62            | 12               |         |                        |
| 22    | 13:30      | 782.89                        | 1.26                          | 2.17                            | 314            | 350   | 350   | 62            | 12               |         |                        |
| 23    |            | 786.76                        | 1.26                          | 2.17                            | 316            | 350   | 350   | 62            | 12               |         |                        |
| 24    |            | 790.63                        | 1.26                          | 2.17                            | 316            | 350   | 350   | 62            | 12               |         |                        |
| 25    |            | 794.50                        | 1.26                          | 2.17                            | 316            | 350   | 350   | 62            | 12               |         |                        |

SH<sub>2</sub>

|                              |                          |                               |                               |                                 |                  |       |       |     |               |                        |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
|------------------------------|--------------------------|-------------------------------|-------------------------------|---------------------------------|------------------|-------|-------|-----|---------------|------------------------|---------------------------------------|-----------------------|--|--------------------|-------------|--|--|--|---------|--|--|--|-------|----------------------|--|--|------------|--|--|--|--|--|--|
| PLANT                        | M.I.L. W.T.E             |                               |                               |                                 |                  |       |       |     |               |                        | PROBE TIP DIAMETER, IN.               |                       |  |                    | IMPINGER    |  |  |  | INITIAL |  |  |  | FINAL |                      |  |  | TOTAL GAIN |  |  |  |  |  |  |
| RUN No                       | 1 - Metals / Particulate |                               |                               |                                 |                  |       |       |     |               |                        | PROBE LENGTH, FT / Cp                 |                       |  |                    | VOLUMES     |  |  |  | (mL)    |  |  |  | (mL)  |                      |  |  | (mL)       |  |  |  |  |  |  |
| LOCATION                     | Unit #2                  |                               |                               |                                 |                  |       |       |     |               |                        | ALGMO / 0.8388                        |                       |  |                    | Imp. # 1    |  |  |  | 0       |  |  |  | 167   |                      |  |  | 167        |  |  |  |  |  |  |
| DATE                         | AUG 16, 2018             |                               |                               |                                 |                  |       |       |     |               |                        | STATIC PRESSURE, IN. H <sub>2</sub> O |                       |  |                    | Imp. # 2    |  |  |  | 100     |  |  |  | 247   |                      |  |  | 147        |  |  |  |  |  |  |
| OPERATOR: Daryl Sampson + SE | AH e 1-713               |                               |                               |                                 |                  |       |       |     |               |                        | 70.9"                                 |                       |  |                    | Imp. # 3    |  |  |  | 100     |  |  |  | 128   |                      |  |  | 28         |  |  |  |  |  |  |
| CONTROL UNIT / Y             | AV 15 / 0.9997           |                               |                               |                                 |                  |       |       |     |               |                        | 30.0'                                 |                       |  |                    | Imp. # 4    |  |  |  | 0       |  |  |  | 14    |                      |  |  | 14         |  |  |  |  |  |  |
| BAROMETRIC PRESSURE, IN. Hg  | 30.02                    |                               |                               |                                 |                  |       |       |     |               |                        | INITIAL LEAK TEST                     |                       |  |                    | 0.002 @ 15" |  |  |  | 100     |  |  |  | 103   |                      |  |  | 3          |  |  |  |  |  |  |
| ASSUMED MOISTURE, Bw         | 15%                      |                               |                               |                                 |                  |       |       |     |               |                        | FINAL LEAK TEST                       |                       |  |                    | 0.007 @ 15" |  |  |  | 100     |  |  |  | 101   |                      |  |  | 1          |  |  |  |  |  |  |
|                              |                          |                               |                               |                                 |                  |       |       |     |               |                        |                                       |                       |  | Upstream Diameters |             |  |  |  |         |  |  |  |       | Downstream Diameters |  |  |            |  |  |  |  |  |  |
| Point                        | Clock Time               | Dry Gas Meter Ft <sup>3</sup> | Pitot IN. H <sub>2</sub> O ΔP | Orifice ΔH IN. H <sub>2</sub> O | Dry Gas Temp. °F | Stack | Probe | Box | Impinger Exit | Pump Vac. IN. Hg Gauge | CO <sub>2</sub> Vol. %                | O <sub>2</sub> Vol. % |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 5                            | 12:13                    | 233.50                        | 0.43                          | 2.05                            | 73               | 298   | 232   | 242 | 62            | 5.5                    | 9.5                                   | 10.5                  |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 1                            |                          | 237.55                        | 0.44                          | 2.07                            | 74               | 308   | 262   | 254 | 60            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 2                            |                          | 241.62                        | 0.50                          | 2.36                            | 75               | 309   | 250   | 252 | 60            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 3                            |                          | 245.98                        | 0.49                          | 2.31                            | 76               | 311   | 251   | 251 | 64            | 5                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 4                            |                          | 250.29                        | 0.52                          | 2.45                            | 77               | 312   | 251   | 250 | 62            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 5                            |                          | 254.75                        | 0.47                          | 2.21                            | 77               | 312   | 251   | 250 | 62            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 6                            |                          | 258.98                        | 0.30                          | 1.42                            | 79               | 312   | 251   | 250 | 62            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 7                            |                          | 262.36                        | 0.28                          | 1.32                            | 80               | 313   | 251   | 251 | 64            | 5                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 8                            |                          | 265.63                        | 0.29                          | 1.37                            | 80               | 312   | 251   | 250 | 65            | 5                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 9                            |                          | 268.96                        | 0.30                          | 1.42                            | 81               | 314   | 251   | 250 | 65            | 5                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 10                           |                          | 272.36                        | 0.28                          | 1.33                            | 82               | 312   |       |     |               |                        |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 11                           |                          | 275.65                        | 0.23                          | 1.10                            | 84               | 312   |       |     |               |                        |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 12                           |                          | 278.64                        |                               |                                 |                  |       |       |     |               |                        |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 1                            |                          | 281.85                        | 0.26                          | 1.25                            | 85               | 304   | 250   | 251 | 62            | 5                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 2                            |                          | 284.99                        | 0.25                          | 1.21                            | 85               | 304   | 251   | 251 | 64            | 4                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 3                            |                          | 288.08                        | 0.24                          | 1.16                            | 86               | 305   | 251   | 250 | 62            | 4                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 4                            |                          | 291.03                        | 0.22                          | 1.06                            | 86               | 306   | 250   | 250 | 62            | 4                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 5                            |                          | 294.19                        | 0.25                          | 1.21                            | 87               | 304   | 250   | 250 | 62            | 4                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 6                            |                          | 297.42                        | 0.26                          | 1.26                            | 87               | 304   | 250   | 250 | 62            | 4                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 7                            |                          | 301.66                        | 0.45                          | 2.18                            | 88               | 305   | 250   | 250 | 62            | 4                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 8                            |                          | 306.12                        | 0.50                          | 2.42                            | 88               | 306   | 250   | 250 | 64            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 9                            |                          | 311.14                        | 0.63                          | 3.05                            | 89               | 306   | 250   | 250 | 64            | 6                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 10                           |                          | 315.98                        | 0.58                          | 2.83                            | 89               | 307   | 250   | 252 | 65            | 7                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 11                           |                          | 320.85                        | 0.59                          | 2.86                            | 90               | 306   | 250   | 252 | 65            | 7                      |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |
| 12                           | 14:16                    | 325.79                        | 0.61                          | 2.96                            | 90               | 307   |       |     |               |                        |                                       |                       |  |                    |             |  |  |  |         |  |  |  |       |                      |  |  |            |  |  |  |  |  |  |



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|                             |               |  |                          |            |               |       |          |         |       |            |
|-----------------------------|---------------|--|--------------------------|------------|---------------|-------|----------|---------|-------|------------|
| CLIENT                      | Metrex        |  | NOZZLE                   | W202       | DIAMETER, IN. | 3.050 | IMPINGER | INITIAL | FINAL | TOTAL GAIN |
| SOURCE                      | Unit #2       |  | PROBE                    | 7A1        | Cp            | 8435  | VOLUMES  | (mL)    | (mL)  | (mL)       |
| PARAMETER / RUN No          | Metrex Run #2 |  | PORT LENGTH              |            |               |       |          |         |       |            |
| DATE                        | Aug 17, 2016  |  | STATIC PRESSURE, IN. H2O | -20.0"     |               |       |          |         |       |            |
| OPERATOR                    | MEX           |  | STACK DIAMETER           |            |               |       |          |         |       |            |
| CONTROL UNIT                | AUF           |  | STACK HEIGHT             |            |               |       |          |         |       |            |
|                             | Y 0907        |  |                          |            |               |       |          |         |       |            |
|                             | ΔH@ 1.73      |  |                          |            |               |       |          |         |       |            |
| BAROMETRIC PRESSURE, IN. Hg | 30.18         |  | INITIAL LEAK TEST        | 0003 @ 15" |               |       |          |         |       |            |
| ASSUMED MOISTURE, Bw        | 16%           |  | FINAL LEAK TEST          | 0010 @ 15" |               |       |          |         |       |            |
|                             | 110           |  | 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    |       |       |     | Impinger<br>Exit | Box | Pump Vac.<br>IN. Hg | Fyrites                   |                          |
|-------|------------|-------------------------------|----------------------------------|------------------------------------|-------------------|-------|-------|-----|------------------|-----|---------------------|---------------------------|--------------------------|
|       |            |                               |                                  |                                    | Dry Gas<br>Outlet | Stack | Probe |     |                  |     |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |
|       | 9:24       | 327.32                        | 30                               | 1.45                               | 61                | 282   | 261   | 245 | 53               |     |                     |                           |                          |
|       |            | 330.62                        | 30                               | 1.30                               | 61                | 283   | 261   | 245 | 53               |     |                     | 10.0                      | 9.3                      |
|       |            | 333.95                        | 30                               | 1.30                               | 61                | 283   | 254   | 255 | 54               | 4   |                     | 8                         |                          |
|       |            | 337.80                        | 30                               | 1.30                               | 61                | 283   | 254   | 255 | 54               | 4   |                     |                           |                          |
|       |            | 341.00                        | 30                               | 1.30                               | 61                | 283   | 255   | 255 | 55               |     |                     | 10.5                      | 9.5                      |
|       |            | 344.03                        | 30                               | 1.21                               | 61                | 283   | 255   | 255 | 55               |     |                     |                           |                          |
|       |            | 347.10                        | 30                               | 1.21                               | 61                | 283   | 255   | 255 | 55               |     |                     |                           |                          |
|       |            | 351.20                        | 30                               | 2.10                               | 61                | 283   | 250   | 251 | 56               | 6   |                     |                           |                          |
|       |            | 355.50                        | 30                               | 2.34                               | 61                | 283   | 250   | 251 | 56               |     |                     |                           |                          |
|       |            | 360.21                        | 30                               | 2.71                               | 61                | 283   | 250   | 256 | 55               | 6   |                     |                           |                          |
|       |            | 364.40                        | 30                               | 2.34                               | 61                | 283   | 250   | 256 | 55               |     |                     | 11.0                      | 9.5                      |
|       |            | 369.10                        | 30                               | 2.25                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 373.80                        | 30                               | 2.11                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 378.00                        | 30                               | 2.42                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 382.30                        | 30                               | 2.51                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 386.60                        | 30                               | 2.25                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 390.90                        | 30                               | 2.05                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 395.20                        | 30                               | 1.90                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 399.50                        | 30                               | 1.73                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 403.80                        | 30                               | 1.50                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 408.10                        | 30                               | 1.51                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 412.40                        | 30                               | 1.41                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 416.70                        | 30                               | 1.21                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 421.00                        | 30                               | 1.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 425.30                        | 30                               | 0.81                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 429.60                        | 30                               | 0.61                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 433.90                        | 30                               | 0.41                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 438.20                        | 30                               | 0.21                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 442.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 446.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 451.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 455.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 459.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 464.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 468.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 472.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 476.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 481.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 485.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 489.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 494.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 498.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 502.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 507.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 511.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 515.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 519.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 524.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 528.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 532.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 537.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 541.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 545.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 550.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 554.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 558.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 562.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 567.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 571.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 575.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 580.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 584.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 588.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 593.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 597.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 601.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 605.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 610.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 614.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 618.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 623.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 627.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 631.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 636.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 640.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 644.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 648.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 653.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 657.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 661.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 666.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 670.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 674.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 679.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 683.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 687.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 691.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 696.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 700.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 704.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 709.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 713.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 717.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 722.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 726.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 730.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 734.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 739.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 743.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 747.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 752.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 756.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 760.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 765.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 769.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 773.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 777.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 782.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 786.50                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 790.80                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 795.10                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 799.40                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 803.70                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 808.00                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 812.30                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 816.60                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 820.90                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 825.20                        | 30                               | 0.01                               | 61                | 283   | 248   | 251 | 55               |     |                     |                           |                          |
|       |            | 829.50                        | 30                               |                                    |                   |       |       |     |                  |     |                     |                           |                          |

PA.

A. Lanfranco and Associates Inc.

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|                             |                   |  |                          |       |               |        |                      |      |       |      |            |
|-----------------------------|-------------------|--|--------------------------|-------|---------------|--------|----------------------|------|-------|------|------------|
| CLIENT                      | McLagan           |  | NOZZLE                   | 106   | DIAMETER, IN. | 1.50   | IMPINGER, INITIAL    | 100  | FINAL | 100  | TOTAL GAIN |
| SOURCE                      | DAILY             |  | PROBE                    | 7C    | Cp            | 0.0006 | VOLUMES              | (mL) | (mL)  | (mL) | (mL)       |
| PARAMETER / RUN No          | DR. METALS RUN #3 |  | PORT LENGTH              |       |               |        | Imp. #1              | 100  | 100   | 100  | 100        |
| DATE                        | Aug 17, 2018      |  | STATIC PRESSURE, IN. H2O | -10   |               |        | Imp. #2              | 100  | 100   | 100  | 100        |
| OPERATOR                    | N. G. F.          |  | STACK DIAMETER           |       |               |        | Imp. #3              | 100  | 100   | 100  | 100        |
| CONTROL UNIT                | AUG               |  | STACK HEIGHT             |       |               |        | Imp. #4              | 100  | 100   | 100  | 100        |
|                             | Y 9997            |  |                          |       |               |        | Imp. #5              | 100  | 100   | 100  | 100        |
|                             | ΔH@ 1.713         |  |                          |       |               |        | Imp. #6              | 100  | 100   | 100  | 100        |
| BAROMETRIC PRESSURE, IN. Hg | 30.18             |  | INITIAL LEAK TEST        | 00030 | 0.15          |        | Upstream Diameters   |      |       |      |            |
| ASSUMED MOISTURE, Bw        | 10.5              |  | FINAL LEAK TEST          | 00030 | 0.15          |        | Downstream Diameters |      |       |      |            |

| Point | Clock Time | Dry Gas Meter ft <sup>3</sup> | Pilot ΔP IN. H <sub>2</sub> O | Orifice ΔH IN. H <sub>2</sub> O | Temperature °F |       |       | Impinger Exit | Pump Vac. IN. Hg | Fyrites |                        |
|-------|------------|-------------------------------|-------------------------------|---------------------------------|----------------|-------|-------|---------------|------------------|---------|------------------------|
|       |            |                               |                               |                                 | Dry Gas Outlet | Stack | Probe |               |                  | Box     | CO <sub>2</sub> Vol. % |
|       | 11:39      | 417.005                       | 40                            | 2.34                            | 311            | 253   | 257   |               |                  |         |                        |
|       |            | 421.413                       | 42                            | 2.15                            | 314            | 257   | 258   | 54            |                  | 11.0    | 9.5                    |
|       |            | 425.810                       | 42                            | 2.04                            | 315            |       |       |               |                  |         |                        |
|       |            | 430.209                       | 42                            | 1.90                            | 318            |       |       |               | 6                |         |                        |
|       |            | 434.577                       | 42                            | 1.78                            | 314            | 252   | 256   | 55            |                  | 11.0    | 10.0                   |
|       |            | 438.924                       | 42                            | 1.65                            | 314            |       |       |               |                  |         |                        |
|       |            | 442.252                       | 42                            | 1.51                            | 314            | 250   | 255   | 56            |                  |         |                        |
|       |            | 446.50                        | 42                            | 1.37                            | 313            | 250   |       |               |                  |         |                        |
|       |            | 450.70                        | 42                            | 1.23                            | 314            | 251   | 257   | 56            | 6                | 11.0    | 9.5                    |
|       |            | 453.79                        | 42                            | 1.10                            | 315            | 257   |       |               |                  |         |                        |
|       |            | 457.12                        | 42                            | 1.00                            | 316            | 257   | 250   | 56            |                  |         |                        |
|       |            | 460.46                        | 42                            | 0.87                            | 316            |       |       |               |                  |         |                        |
|       |            | 462.76                        | 42                            | 0.76                            | 315            |       |       |               |                  |         |                        |
|       |            | 466.502                       | 42                            | 0.63                            | 314            | 251   | 246   | 55            |                  |         |                        |
|       |            | 470.74                        | 42                            | 0.51                            | 315            | 250   | 248   | 55            | 7                | 11.0    | 9.5                    |
|       |            | 475.21                        | 42                            | 0.40                            | 315            | 250   | 250   | 56            |                  |         |                        |
|       |            | 479.32                        | 42                            | 0.31                            | 315            | 252   | 252   | 55            | 8                |         |                        |
|       |            | 483.11                        | 42                            | 0.23                            | 315            | 254   | 253   | 56            |                  | 10.5    | 9.5                    |
|       |            | 486.70                        | 42                            | 0.17                            | 316            | 254   | 253   | 56            | 8                |         |                        |
|       |            | 491.32                        | 42                            | 0.11                            | 316            | 253   | 252   | 56            | 8                | 11.0    | 9.5                    |
|       |            | 496.47                        | 42                            | 0.06                            | 316            |       |       |               |                  |         |                        |
|       |            | 501.45                        | 42                            | 0.03                            | 316            |       |       |               |                  |         |                        |
|       |            | 506.33                        | 42                            | 0.01                            | 316            | 253   | 252   | 56            |                  |         |                        |
|       |            | 511.02                        | 42                            | 0.00                            | 317            |       |       |               |                  |         |                        |
|       | 13:42      | 515.55                        | 42                            | 0.00                            |                |       |       |               |                  |         |                        |

|                    |            |                             |        |               |       |                      |         |       |            |
|--------------------|------------|-----------------------------|--------|---------------|-------|----------------------|---------|-------|------------|
| CLIENT             | M.V.R. D   | NOZZLE MV                   | 280    | DIAMETER, IN. | 1.002 | IMPINGER             | INITIAL | FINAL | TOTAL GAIN |
| SOURCE             | Unit #3    | PROBE                       | 7A-1   | Cp            | 8433  | VOLUMES              | (mL)    | (mL)  | (mL)       |
| PARAMETER / RUN No | Unit #3    | PORT LENGTH                 |        |               |       | Imp. #1              | 0       | 100   | 100        |
| DATE               | Aug. 15/18 | STATIC PRESSURE, IN. H2O    | -19.50 |               |       | Imp. #2              | 100     | 100   | 100        |
| OPERATOR           | JCL + J.G  | STACK DIAMETER              | 70.90  |               |       | Imp. #3              | 100     | 100   | 100        |
| CONTROL UNIT       | 501A       | STACK HEIGHT                | 30'    |               |       | Imp. #4              | 0       | 100   | 100        |
|                    | ΔH@        |                             |        |               |       | Imp. #5              | 100     | 100   | 100        |
|                    |            |                             |        |               |       | Imp. #6              | 100     | 100   | 100        |
|                    |            | BAROMETRIC PRESSURE, IN. Hg | 30.50  |               |       | Upstream Diameters   |         |       |            |
|                    |            | ASSUMED MOISTURE, Bw        | 15%    |               |       | 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 of    |       |       | Impinger<br>Exit | Pump Vac.<br>IN. Hg | Fyrites |                           |
|-------|------------|-------------------------------|----------------------------------|------------------------------------|-------------------|-------|-------|------------------|---------------------|---------|---------------------------|
|       |            |                               |                                  |                                    | Dry Gas<br>Outlet | Stack | Probe |                  |                     | Box     | CO <sub>2</sub><br>Vol. % |
| 1     | 11:09      | 635.000                       |                                  |                                    |                   |       |       |                  |                     |         |                           |
| 2     |            | 638.13                        | 1.50                             | 3.06                               | 001               | 004   | 250   | 52               | 4                   |         |                           |
| 3     |            | 642.57                        | 1.53                             | 3.10                               | 001               | 004   | 250   | 54               | 4                   | 10.0    | 10.0                      |
| 4     |            | 646.72                        | 1.60                             | 3.17                               | 001               | 004   | 250   | 60               | 4                   |         |                           |
| 5     |            | 650.80                        | 1.64                             | 3.24                               | 001               | 004   | 250   | 62               | 4                   |         |                           |
| 6     |            | 654.89                        | 1.68                             | 3.27                               | 001               | 004   | 250   | 62               | 5                   |         |                           |
| 7     |            | 659.13                        | 1.70                             | 3.30                               | 001               | 004   | 250   | 62               | 5                   | 10.0    | 10.0                      |
| 8     |            | 663.57                        | 1.74                             | 3.37                               | 001               | 004   | 250   | 62               | 5                   |         |                           |
| 9     |            | 668.69                        | 1.78                             | 3.44                               | 001               | 004   | 250   | 62               | 5                   | 10.0    | 10.0                      |
| 10    |            | 674.62                        | 1.80                             | 3.47                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 11    |            | 679.52                        | 1.86                             | 3.57                               | 001               | 004   | 250   | 64               | 5                   | 10.0    | 10.0                      |
| 12    |            | 684.71                        | 1.90                             | 3.67                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 13    |            | 689.34                        | 1.92                             | 3.71                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 14    |            | 693.91                        | 1.94                             | 3.74                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 15    |            | 698.53                        | 1.98                             | 3.80                               | 001               | 004   | 250   | 64               | 5                   | 10.0    | 10.0                      |
| 16    |            | 703.70                        | 2.02                             | 3.87                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 17    |            | 708.71                        | 2.04                             | 3.94                               | 001               | 004   | 250   | 64               | 5                   | 10.0    | 10.0                      |
| 18    |            | 713.24                        | 2.08                             | 4.01                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 19    |            | 718.34                        | 2.12                             | 4.08                               | 001               | 004   | 250   | 64               | 5                   | 10.0    | 10.0                      |
| 20    |            | 723.52                        | 2.16                             | 4.15                               | 001               | 004   | 250   | 64               | 5                   |         |                           |
| 21    |            | 728.62                        | 2.20                             | 4.22                               | 001               | 004   | 250   | 64               | 5                   | 10.0    | 10.0                      |
| 22    | 13:12      | 733.71                        | 2.24                             | 4.29                               | 001               | 004   | 250   | 64               | 7                   | 10.0    | 10.0                      |
| 23    |            | 738.82                        | 2.28                             | 4.36                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 24    |            | 743.91                        | 2.32                             | 4.43                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 25    |            | 749.01                        | 2.36                             | 4.50                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 26    |            | 754.11                        | 2.40                             | 4.57                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 27    |            | 759.21                        | 2.44                             | 4.64                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 28    |            | 764.31                        | 2.48                             | 4.71                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 29    |            | 769.41                        | 2.52                             | 4.78                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 30    |            | 774.51                        | 2.56                             | 4.85                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 31    |            | 779.61                        | 2.60                             | 4.92                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 32    |            | 784.71                        | 2.64                             | 4.99                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 33    |            | 789.81                        | 2.68                             | 5.06                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 34    |            | 794.91                        | 2.72                             | 5.13                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 35    |            | 799.91                        | 2.76                             | 5.20                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 36    |            | 805.01                        | 2.80                             | 5.27                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 37    |            | 810.11                        | 2.84                             | 5.34                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 38    |            | 815.21                        | 2.88                             | 5.41                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 39    |            | 820.31                        | 2.92                             | 5.48                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 40    |            | 825.41                        | 2.96                             | 5.55                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 41    |            | 830.51                        | 3.00                             | 5.62                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 42    |            | 835.61                        | 3.04                             | 5.69                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 43    |            | 840.71                        | 3.08                             | 5.76                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 44    |            | 845.81                        | 3.12                             | 5.83                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 45    |            | 850.91                        | 3.16                             | 5.90                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 46    |            | 856.01                        | 3.20                             | 5.97                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 47    |            | 861.11                        | 3.24                             | 6.04                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 48    |            | 866.21                        | 3.28                             | 6.11                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 49    |            | 871.31                        | 3.32                             | 6.18                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 50    |            | 876.41                        | 3.36                             | 6.25                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 51    |            | 881.51                        | 3.40                             | 6.32                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 52    |            | 886.61                        | 3.44                             | 6.39                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 53    |            | 891.71                        | 3.48                             | 6.46                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 54    |            | 896.81                        | 3.52                             | 6.53                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 55    |            | 901.91                        | 3.56                             | 6.60                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 56    |            | 907.01                        | 3.60                             | 6.67                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 57    |            | 912.11                        | 3.64                             | 6.74                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 58    |            | 917.21                        | 3.68                             | 6.81                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 59    |            | 922.31                        | 3.72                             | 6.88                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 60    |            | 927.41                        | 3.76                             | 6.95                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 61    |            | 932.51                        | 3.80                             | 7.02                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 62    |            | 937.61                        | 3.84                             | 7.09                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 63    |            | 942.71                        | 3.88                             | 7.16                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 64    |            | 947.81                        | 3.92                             | 7.23                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 65    |            | 952.91                        | 3.96                             | 7.30                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 66    |            | 958.01                        | 4.00                             | 7.37                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 67    |            | 963.11                        | 4.04                             | 7.44                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 68    |            | 968.21                        | 4.08                             | 7.51                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 69    |            | 973.31                        | 4.12                             | 7.58                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 70    |            | 978.41                        | 4.16                             | 7.65                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 71    |            | 983.51                        | 4.20                             | 7.72                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 72    |            | 988.61                        | 4.24                             | 7.79                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 73    |            | 993.71                        | 4.28                             | 7.86                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 74    |            | 998.81                        | 4.32                             | 7.93                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 75    |            | 1003.91                       | 4.36                             | 8.00                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 76    |            | 1009.01                       | 4.40                             | 8.07                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 77    |            | 1014.11                       | 4.44                             | 8.14                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 78    |            | 1019.21                       | 4.48                             | 8.21                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 79    |            | 1024.31                       | 4.52                             | 8.28                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 80    |            | 1029.41                       | 4.56                             | 8.35                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 81    |            | 1034.51                       | 4.60                             | 8.42                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 82    |            | 1039.61                       | 4.64                             | 8.49                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 83    |            | 1044.71                       | 4.68                             | 8.56                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 84    |            | 1049.81                       | 4.72                             | 8.63                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 85    |            | 1054.91                       | 4.76                             | 8.70                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 86    |            | 1060.01                       | 4.80                             | 8.77                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 87    |            | 1065.11                       | 4.84                             | 8.84                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 88    |            | 1070.21                       | 4.88                             | 8.91                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 89    |            | 1075.31                       | 4.92                             | 8.98                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 90    |            | 1080.41                       | 4.96                             | 9.05                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 91    |            | 1085.51                       | 5.00                             | 9.12                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 92    |            | 1090.61                       | 5.04                             | 9.19                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 93    |            | 1095.71                       | 5.08                             | 9.26                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 94    |            | 1100.81                       | 5.12                             | 9.33                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 95    |            | 1105.91                       | 5.16                             | 9.40                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 96    |            | 1111.01                       | 5.20                             | 9.47                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 97    |            | 1116.11                       | 5.24                             | 9.54                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 98    |            | 1121.21                       | 5.28                             | 9.61                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 99    |            | 1126.31                       | 5.32                             | 9.68                               | 001               | 004   | 250   | 64               |                     |         |                           |
| 100   |            | 1131.41                       | 5.36                             | 9.75                               | 001               | 004   | 250   | 64               |                     |         |                           |

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5.47 - 4.45 -

|                             |                    |  |                                       |            |  |               |       |  |                   |       |  |            |
|-----------------------------|--------------------|--|---------------------------------------|------------|--|---------------|-------|--|-------------------|-------|--|------------|
| CLIENT                      | M.V.R.D.           |  | NOZZLE                                | G-280      |  | DIAMETER, IN. | 28.77 |  | IMPINGER, INITIAL | FINAL |  | TOTAL GAIN |
| SOURCE                      | Unit #3            |  | PROBE                                 | 7C         |  | Cp            | 18.18 |  | (mL)              | (mL)  |  | (mL)       |
| PARAMETER / RUN No          | 2 No. 13 / Partic  |  | PORT LENGTH                           |            |  |               |       |  |                   |       |  |            |
| DATE                        | Aug. 16 / 10       |  | STATIC PRESSURE, IN. H <sub>2</sub> O | -20.00"    |  |               |       |  |                   |       |  |            |
| OPERATOR:                   | C.L.F. S.G. & S.F. |  | STACK DIAMETER                        | 19.90"     |  |               |       |  |                   |       |  |            |
| CONTROL UNIT                | 3014               |  | STACK HEIGHT                          | 30'        |  |               |       |  |                   |       |  |            |
|                             | Y                  |  | INITIAL LEAK TEST                     | 0.0020.15" |  |               |       |  |                   |       |  |            |
|                             | ΔH@                |  | FINAL LEAK TEST                       | 0.0020.15" |  |               |       |  |                   |       |  |            |
| BAROMETRIC PRESSURE, IN. Hg | 30.10              |  |                                       |            |  |               |       |  |                   |       |  |            |
| ASSUMED MOISTURE, Bw        | 15.6               |  |                                       |            |  |               |       |  |                   |       |  |            |
|                             |                    |  | 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    |       |       |     | Impinger<br>Exit | Pump Vac.<br>IN. Hg | Fyrites                   |                          |
|-------|------------|-------------------------------|----------------------------------|------------------------------------|-------------------|-------|-------|-----|------------------|---------------------|---------------------------|--------------------------|
|       |            |                               |                                  |                                    | Dry Gas<br>Outlet | Stack | Probe | Box |                  |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |
| 1     | 09:03      | 721.400                       | 1.32                             | 2.31                               | 229               | 250   | 250   | 250 | 43               | 6                   | 10.5                      | 10.0                     |
| 2     |            | 729.34                        | 1.32                             | 2.31                               | 229               | 250   | 250   | 250 | 50               | 6                   |                           |                          |
| 3     |            | 730.27                        | 1.30                             | 2.67                               | 229               | 250   | 250   | 250 | 50               | 6                   |                           |                          |
| 4     |            | 732.10                        | 1.30                             | 2.67                               | 229               | 250   | 250   | 250 | 52               | 8                   |                           |                          |
| 5     |            | 742.20                        | 1.30                             | 2.40                               | 229               | 250   | 250   | 250 | 52               | 8                   |                           |                          |
| 6     |            | 749.27                        | 1.30                             | 1.34                               | 229               | 250   | 250   | 250 | 52               | 6                   |                           |                          |
| 7     |            | 752.59                        | 1.30                             | 1.34                               | 229               | 250   | 250   | 250 | 52               | 6                   |                           |                          |
| 8     |            | 758.62                        | 1.30                             | 1.34                               | 229               | 250   | 250   | 250 | 52               | 6                   |                           |                          |
| 9     |            | 760.77                        | 1.30                             | 1.34                               | 229               | 250   | 250   | 250 | 52               | 6                   |                           |                          |
| 10    |            | 761.64                        | 1.27                             | 1.30                               | 229               | 250   | 250   | 250 | 52               | 6                   | 10.0                      | 10.0                     |
| 1     |            | 767.73                        | 1.32                             | 1.42                               | 229               | 250   | 250   | 250 | 54               | 6                   |                           |                          |
| 2     |            | 770.67                        | 1.30                             | 1.36                               | 229               | 250   | 250   | 250 | 54               | 6                   | 9.5                       | 10.5                     |
| 3     |            | 774.22                        | 1.30                             | 1.36                               | 229               | 250   | 250   | 250 | 54               | 6                   |                           |                          |
| 4     |            | 777.46                        | 1.30                             | 1.34                               | 229               | 250   | 250   | 250 | 56               | 6                   |                           |                          |
| 5     |            | 780.74                        | 1.30                             | 1.34                               | 229               | 250   | 250   | 250 | 56               | 6                   |                           |                          |
| 6     |            | 783.18                        | 1.29                             | 1.29                               | 229               | 250   | 250   | 250 | 56               | 6                   |                           |                          |
| 7     |            | 787.40                        | 1.24                             | 2.40                               | 229               | 250   | 250   | 250 | 56               | 6                   | 10.0                      | 10.0                     |
| 8     |            | 791.89                        | 1.26                             | 2.44                               | 229               | 250   | 250   | 250 | 56               | 8                   |                           |                          |
| 9     |            | 796.47                        | 1.20                             | 2.37                               | 229               | 250   | 250   | 250 | 56               | 8                   |                           |                          |
| 10    |            | 801.22                        | 1.22                             | 2.37                               | 229               | 250   | 250   | 250 | 56               | 8                   | 10.0                      | 10.0                     |
| 1     |            | 805.22                        | 1.22                             | 2.39                               | 229               | 250   | 250   | 250 | 56               | 8                   |                           |                          |
| 2     | 11:26      | 810.57                        | 1.25                             | 3.00                               | 229               | 250   | 250   | 250 | 56               | 8                   |                           |                          |

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A. Lanfranco and Associates Inc.

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|                             |                   |  |                          |       |  |               |       |                      |                   |       |  |            |
|-----------------------------|-------------------|--|--------------------------|-------|--|---------------|-------|----------------------|-------------------|-------|--|------------|
| CLIENT                      | M.V.R.O.          |  | NOZZLE                   | 580   |  | DIAMETER, IN. | 2.817 |                      | IMPINGER, INITIAL | FINAL |  | TOTAL GAIN |
| SOURCE                      | Unit #3           |  | PROBE                    | 7C    |  | Cp            | 18489 |                      | Imp. #1           | 0     |  | (mL)       |
| PARAMETER / RUN No          | 3 Metals / Partic |  | PORT LENGTH              |       |  |               |       |                      | Imp. #2           | 100   |  | 152        |
| DATE                        | Aug. 16 / 10      |  | STATIC PRESSURE, IN. H2O | 20.00 |  |               |       |                      | Imp. #3           | 100   |  | 152        |
| OPERATOR                    | C.L. J.G. S.F.    |  | STACK DIAMETER           | 30.00 |  |               |       |                      | Imp. #4           | 0     |  | 0          |
| CONTROL UNIT                | 30 Vt             |  | STACK HEIGHT             | 30.00 |  |               |       |                      | Imp. #5           | 100   |  | 102        |
|                             |                   |  |                          |       |  |               |       |                      | Imp. #6           | 100   |  | 101        |
| BAROMETRIC PRESSURE, IN. Hg | 30.10             |  | INITIAL LEAK TEST        | 0.00  |  | 0.15          |       | Upstream Diameters   |                   |       |  |            |
| ASSUMED MOISTURE, Bw        | 153               |  | FINAL LEAK TEST          | 0.00  |  | 0.15          |       | 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    |       |       |     | Impinger<br>Exit | Pump Vac.<br>IN. Hg | Fyrites                   |                          |
|-------|------------|-------------------------------|----------------------------------|------------------------------------|-------------------|-------|-------|-----|------------------|---------------------|---------------------------|--------------------------|
|       |            |                               |                                  |                                    | Dry Gas<br>Outlet | Stack | Probe | Box |                  |                     | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |
| 1     | 11:40      | 811.300                       | 3.35                             | 1.56                               | 313               | 313   | 250   | 250 | 62               | 4                   | 10.0                      | 10.0                     |
| 2     |            | 814.54                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 64               | 4                   |                           |                          |
| 3     |            | 817.69                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 64               | 4                   |                           |                          |
| 4     |            | 820.84                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 5     |            | 823.99                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 6     |            | 827.14                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 7     |            | 830.29                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 8     |            | 833.44                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 9     |            | 836.59                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 10    |            | 839.74                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 11    |            | 842.89                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 12    |            | 846.04                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 13    |            | 849.19                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 14    |            | 852.34                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 15    |            | 855.49                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 16    |            | 858.64                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 17    |            | 861.79                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 18    |            | 864.94                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 19    |            | 868.09                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 20    |            | 871.24                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 21    |            | 874.39                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 22    |            | 877.54                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 23    |            | 880.69                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 24    |            | 883.84                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 25    |            | 886.99                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 26    |            | 890.14                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 27    |            | 893.29                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 28    |            | 896.44                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 29    |            | 899.59                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 30    |            | 902.74                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 31    |            | 905.89                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 32    |            | 909.04                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 33    |            | 912.19                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 34    |            | 915.34                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 35    |            | 918.49                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 36    |            | 921.64                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 37    |            | 924.79                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 38    |            | 927.94                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 39    |            | 931.09                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 40    |            | 934.24                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 41    |            | 937.39                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 42    |            | 940.54                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 43    |            | 943.69                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 44    |            | 946.84                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 45    |            | 950.00                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 46    |            | 953.15                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 47    |            | 956.30                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 48    |            | 959.45                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 49    |            | 962.60                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 50    |            | 965.75                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 51    |            | 968.90                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 52    |            | 972.05                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 53    |            | 975.20                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 54    |            | 978.35                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 55    |            | 981.50                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 56    |            | 984.65                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 57    |            | 987.80                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 58    |            | 990.95                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 59    |            | 994.10                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 60    |            | 997.25                        | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 61    |            | 1000.40                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 62    |            | 1003.55                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 63    |            | 1006.70                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 64    |            | 1009.85                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 65    |            | 1013.00                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 66    |            | 1016.15                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 67    |            | 1019.30                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 68    |            | 1022.45                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 69    |            | 1025.60                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 70    |            | 1028.75                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 71    |            | 1031.90                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 72    |            | 1035.05                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 73    |            | 1038.20                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 74    |            | 1041.35                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 75    |            | 1044.50                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 76    |            | 1047.65                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 77    |            | 1050.80                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 78    |            | 1053.95                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 79    |            | 1057.10                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 80    |            | 1060.25                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 81    |            | 1063.40                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 82    |            | 1066.55                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 83    |            | 1069.70                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 84    |            | 1072.85                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 85    |            | 1076.00                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 86    |            | 1079.15                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 87    |            | 1082.30                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 88    |            | 1085.45                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 89    |            | 1088.60                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 90    |            | 1091.75                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 91    |            | 1094.90                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 92    |            | 1098.05                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 93    |            | 1101.20                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 94    |            | 1104.35                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 95    |            | 1107.50                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 96    |            | 1110.65                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 97    |            | 1113.80                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 98    |            | 1116.95                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 99    |            | 1120.10                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 100   |            | 1123.25                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 101   |            | 1126.40                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 102   |            | 1129.55                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 103   |            | 1132.70                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 104   |            | 1135.85                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 105   |            | 1139.00                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 106   |            | 1142.15                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 107   |            | 1145.30                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 108   |            | 1148.45                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 109   |            | 1151.60                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 110   |            | 1154.75                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 111   |            | 1157.90                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 112   |            | 1161.05                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 113   |            | 1164.20                       | 3.33                             | 1.47                               | 313               | 313   | 250   | 250 | 65               | 4                   |                           |                          |
| 114   |            | 116                           |                                  |                                    |                   |       |       |     |                  |                     |                           |                          |

WJL

| PLANT                           |  | P.V. W.T.E.   |  | PROBE TIP DIAMETER, IN. |  | MU-02/0.3050 |  | IMPINGER |  | INITIAL  |  | FINAL |  | TOTAL GAIN |  |
|---------------------------------|--|---------------|--|-------------------------|--|--------------|--|----------|--|----------|--|-------|--|------------|--|
|                                 |  |               |  | PROBE LENGTH, FT / Cp   |  | 7C / 0.8489  |  | VOLUMES  |  | (mL)     |  | (mL)  |  | (mL)       |  |
| RUN No                          |  | 1 - Cr 6      |  | FILTER NUMBER           |  |              |  | Imp. # 1 |  | 150      |  | 190   |  | 40         |  |
| LOCATION                        |  | Unit #1       |  |                         |  |              |  | Imp. # 2 |  | 75       |  | 268   |  | 193        |  |
| DATE                            |  | Aug. 20, 2018 |  |                         |  |              |  | Imp. # 3 |  | 75       |  | 101   |  | 26         |  |
| OPERATOR: Dady Sampson, L + J G |  |               |  |                         |  |              |  | Imp. # 4 |  | 0        |  | 5     |  | 5          |  |
| CONTROL UNIT / Y                |  | AV15 / 0.9997 |  |                         |  |              |  |          |  | cel 2009 |  |       |  |            |  |
|                                 |  |               |  |                         |  |              |  |          |  |          |  |       |  |            |  |
| BAROMETRIC PRESSURE, IN. Hg     |  | ΔH @ 1.713    |  |                         |  |              |  |          |  |          |  |       |  |            |  |
| ASSUMED MOISTURE, Bw            |  | 30.03         |  |                         |  |              |  |          |  |          |  |       |  |            |  |
|                                 |  | 15%           |  |                         |  |              |  |          |  |          |  |       |  |            |  |
|                                 |  |               |  |                         |  |              |  |          |  |          |  |       |  |            |  |
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|                                 |  |               |  |                         |  |              |  |          |  |          |  |       |  |            |  |
|                                 |  |               |  |                         |  |              |  |          |  |          |  |       |  |            |  |
|                                 |  |               |  |                         |  |              |  |          |  |          |  |       |  |            |  |



[illegible]

| Point    | Clock Time | Dry Gas Meter Ft <sup>3</sup> | Pitot<br>IN. H <sub>2</sub> O ΔP | Orifice ΔH<br>IN. H <sub>2</sub> O | Dry Gas Temp. |       | Temperature °F |     |                  | Pump Vac.<br>IN. Hg Gauge | Fyrites                   |                          |
|----------|------------|-------------------------------|----------------------------------|------------------------------------|---------------|-------|----------------|-----|------------------|---------------------------|---------------------------|--------------------------|
|          |            |                               |                                  |                                    | Outlet<br>°F  | Stack | Probe          | Box | Impinger<br>Exit |                           | CO <sub>2</sub><br>Vol. % | O <sub>2</sub><br>Vol. % |
| 5<br>msw | 09:37      | 615.313                       | 0.36                             | 1.82                               | 79            | 303   | N/A            | N/A | 4                | 9.0                       | 10.5                      |                          |
| 1        |            | 619.13                        | 0.37                             | 1.87                               | 75            | 305   | ↓              | ↓   | 4                |                           |                           |                          |
| 2        |            | 622.98                        | 0.42                             | 2.12                               | 76            | 306   |                |     |                  |                           |                           |                          |
| 3        |            | 627.11                        | 0.46                             | 2.33                               | 76            | 305   |                |     |                  |                           |                           |                          |
| 4        |            | 631.44                        | 0.42                             | 2.13                               | 77            | 305   |                |     |                  |                           |                           |                          |
| 5        |            | 635.58                        | 0.45                             | 2.29                               | 79            | 304   |                |     |                  |                           |                           |                          |
| 6        |            | 639.89                        | 0.45                             | 2.30                               | 80            | 303   |                |     | 4                | 9.0                       | 10.5                      |                          |
| 7        |            | 644.20                        | 0.48                             | 2.46                               | 82            | 303   |                |     |                  |                           |                           |                          |
| 8        |            | 648.68                        | 0.50                             | 2.56                               | 83            | 305   |                |     | 5                |                           |                           |                          |
| 9        |            | 653.25                        | 0.42                             | 2.16                               | 84            | 305   |                |     |                  |                           |                           |                          |
| 10       |            | 657.43                        | 0.43                             | 2.22                               | 85            | 304   |                |     | 4.5              |                           |                           |                          |
| 11       |            | 661.69                        | 0.44                             | 2.28                               | 86            | 302   |                |     |                  | 9.5                       | 10.0                      |                          |
| 12       |            | 666.00                        |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
| 1        |            | 669.47                        | 0.28                             | 1.46                               | 88            | 301   | N/A            | N/A | 4                |                           |                           |                          |
| 2        |            | 672.86                        | 0.27                             | 1.40                               | 88            | 303   |                |     |                  |                           |                           |                          |
| 3        |            | 676.73                        | 0.35                             | 1.82                               | 89            | 303   | ↓              | ↓   | 4                | 10.0                      | 9.5                       |                          |
| 4        |            | 680.08                        | 0.26                             | 1.36                               | 91            | 302   |                |     |                  |                           |                           |                          |
| 5        |            | 683.73                        | 0.31                             | 1.61                               | 91            | 304   | ↓              | ↓   | 4                |                           |                           |                          |
| 6        |            | 687.33                        | 0.30                             | 1.56                               | 91            | 304   |                |     | 5                |                           |                           |                          |
| 7        |            | 691.89                        | 0.48                             | 2.51                               | 92            | 303   |                |     |                  | 10.5                      | 9.0                       |                          |
| 8        |            | 696.74                        | 0.54                             | 2.83                               | 93            | 303   |                |     | 5                |                           |                           |                          |
| 9        |            | 701.69                        | 0.66                             | 2.93                               | 93            | 304   |                |     |                  |                           |                           |                          |
| 10       |            | 706.92                        | 0.63                             | 3.29                               | 94            | 305   |                |     | 5                |                           |                           |                          |
| 11       |            | 711.93                        | 0.59                             | 3.10                               | 95            | 304   |                |     |                  |                           |                           |                          |
| 12       | 11:44      | 717.14                        | 0.61                             | 3.24                               | 96            | 306   |                |     | 5                | 10.5                      | 9.0                       |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
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|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
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|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
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|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
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|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  |                           |                           |                          |
|          |            |                               |                                  |                                    |               |       |                |     |                  | </                        |                           |                          |

WJ

| PLANT                        |  | PROBE TIP DIAMETER, IN.               |  | IMPIINGER            |  | INITIAL |  | FINAL |  | TOTAL GAIN |  |
|------------------------------|--|---------------------------------------|--|----------------------|--|---------|--|-------|--|------------|--|
| M.V. W.T.F.                  |  | MV-02 / 0.30SD                        |  | VOLUMES              |  | (mL)    |  | (mL)  |  | (mL)       |  |
| RUN No                       |  | PROBE LENGTH, FT / Cp                 |  | Imp. # 1             |  | 150     |  | 140   |  | -10        |  |
| LOCATION                     |  | FILTER NUMBER                         |  | Imp. # 2             |  | 75      |  | 318   |  | 243        |  |
| DATE                         |  | STATIC PRESSURE, IN. H <sub>2</sub> O |  | Imp. # 3             |  | 75      |  | 121   |  | 46         |  |
| OPERATOR: Daryl Sampson + JG |  | STACK DIAMETER                        |  | Imp. # 4             |  | 0       |  | 4     |  | 4          |  |
| CONTROL UNIT / Y             |  | STACK HEIGHT                          |  | Gel                  |  | 200g    |  |       |  |            |  |
| BAROMETRIC PRESSURE, IN. Hg  |  | INITIAL LEAK TEST                     |  | Upstream Diameters   |  |         |  |       |  |            |  |
| ASSUMED MOISTURE, Bw         |  | FINAL LEAK TEST                       |  | Downstream Diameters |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |
|                              |  |                                       |  |                      |  |         |  |       |  |            |  |



21

|        |          |              |             |
|--------|----------|--------------|-------------|
| Client | MV       | Operator     | Jeremy      |
| Source | Unit # 1 | Control Unit | γ γm-A 9151 |
| Date   | 8-14-18  | Cp           | Pbar 70.9   |
| Dia.   | Up       | Dwn          | Static      |

| Leak Check | Run 1 | Run 2 | Run 3 |
|------------|-------|-------|-------|
| Initial    | 0002  | 0002  | 0002  |
| Final      | 1902  | 0002  | 0002  |

| Test No. | Time (hhmm) | DGM Vol. (m <sup>3</sup> ) | DGM Temp. Out (°F) | Stack Temp. Ts (°F) | ΔP |    |    |
|----------|-------------|----------------------------|--------------------|---------------------|----|----|----|
|          |             |                            |                    |                     | R1 | R2 | R3 |
| 1        | 09:47       | 217.0740                   | 74                 |                     |    |    |    |
|          | 09:51       | 217.1720                   | 76                 |                     |    |    |    |
|          | 10:01       | 217.2750                   | 81                 |                     |    |    |    |
|          | 10:11       | 217.3775                   | 84                 |                     |    |    |    |
|          | 10:21       | 217.4798                   | 87                 |                     |    |    |    |
|          | 10:31       |                            |                    |                     |    |    |    |
|          | 10:41       | 217.6760                   | 91                 |                     |    |    |    |
| 2        | 10:40       | 217.6830                   | 90                 |                     |    |    |    |
|          | 10:51       | 217.7860                   | 89                 |                     |    |    |    |
|          | 11:09       |                            |                    |                     |    |    |    |
|          | 11:19       |                            |                    |                     |    |    |    |
|          | 11:29       |                            |                    |                     |    |    |    |
|          | 11:39       |                            |                    |                     |    |    |    |
|          | 11:49       | 218.2846                   | 95                 |                     |    |    |    |
| 3        | 11:58       | 218.2920                   | 92                 |                     |    |    |    |
|          | 12:08       |                            |                    |                     |    |    |    |
|          | 12:18       |                            |                    |                     |    |    |    |
|          | 12:28       |                            |                    |                     |    |    |    |
|          | 12:38       |                            |                    |                     |    |    |    |
|          | 12:48       |                            |                    |                     |    |    |    |
|          | 12:58       | 218.8930                   | 93                 |                     |    |    |    |

|        |                         |        |
|--------|-------------------------|--------|
| Client | Operator                |        |
| Source | Control Unit / $\gamma$ |        |
| Date   | Cp                      |        |
| Dia.   | Up                      | Dwn    |
|        |                         | Static |

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

| Test No. | Time (hhmm) | DGM Vol. (m <sup>3</sup> ) | DGM Temp. Out (°F) | Stack Temp. Ts (°F) | ΔP IN. H <sub>2</sub> O |    |    |
|----------|-------------|----------------------------|--------------------|---------------------|-------------------------|----|----|
|          |             |                            |                    |                     | R1                      | R2 | R3 |
| 1        |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
| 2        |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
| 3        |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |
|          |             |                            |                    |                     |                         |    |    |



A. Lanfranco and Associates Inc.

Client MV WTE Y LMV-A(0.9651)  
 Source UNIT #3 Cp  
 Parameter Hf Pbar 30.10 Static -20  
 Date 08/16/18 Operator SE

Client \_\_\_\_\_ Y \_\_\_\_\_  
 Source \_\_\_\_\_ Cp \_\_\_\_\_  
 Parameter \_\_\_\_\_ Pbar \_\_\_\_\_ Static \_\_\_\_\_  
 Date \_\_\_\_\_ Operator \_\_\_\_\_

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

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

| 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        | 0934        | 220.8695                  | 70               |       | 100            |                         |    |    |
|          | 0944        |                           | 73               |       | 100            |                         |    |    |
|          | 0954        |                           | 77               |       | 0              |                         |    |    |
|          | 1004        |                           | 79               |       | 66             |                         |    |    |
|          | 1014        |                           | 81               |       |                |                         |    |    |
|          | 1024        |                           | 82               |       |                |                         |    |    |
|          | 1034        | 221.5027                  | 83               |       |                |                         |    |    |
| 2        | 1045        | 221.5104                  | 93               |       | 100            |                         |    |    |
|          | 1055        | 221.6232                  | 83               |       | 100            |                         |    |    |
|          | 1105        |                           | 84               |       | 0              |                         |    |    |
|          | 1115        |                           | 87               |       | 66             |                         |    |    |
|          | 1125        |                           | 89               |       |                |                         |    |    |
|          | 1135        |                           | 89               |       |                |                         |    |    |
|          | 1145        | 222.1636                  | 90               |       |                |                         |    |    |
| 3        | 1154        | 222.1706                  | 88               |       | 100            |                         |    |    |
|          | 1204        |                           |                  |       | 100            |                         |    |    |
|          | 1214        |                           |                  |       | 0              |                         |    |    |
|          | 1224        | 222.4900                  | 88               |       | 66             |                         |    |    |
|          | 1234        |                           |                  |       |                |                         |    |    |
|          | 1244        |                           |                  |       |                |                         |    |    |
|          | 1254        | 222.8114                  | 90               |       |                |                         |    |    |

| 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        |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
| 2        |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
| 3        |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |
|          |             |                           |                  |       |                |                         |    |    |

SH

Client Metro Vancouver W.T.E.Source Unit #1Date Aug. 15, 2018

|                     | Run 1   | Run 2   | Run 3   | Run 4 | Run 5 |
|---------------------|---------|---------|---------|-------|-------|
| Pbar (in. Hg)       | 29.91   | 29.91   | 29.91   |       |       |
| Canister Number     | SC02227 | SC01740 | SC01715 |       |       |
| Controller Number   | 0A00698 | 0A00152 | 0A02136 |       |       |
| Gauge Number        |         |         |         |       |       |
| Initial: Start Time | 9:00    | 10:02   | 11:03   |       |       |
| Flask Vac. (in. Hg) | -33.0"  | -29.0"  | -29.0"  |       |       |
| Final: End Time     | 10:00   | 11:02   | 12:03   |       |       |
| Flask Vac. (in. Hg) | -8.0"   | -6.5"   | -6.0"   |       |       |

Source Unit #3Date Aug. 15, 2018

|                     | Run 1   | Run 2   | Run 3   | Run 4 | Run 5 |
|---------------------|---------|---------|---------|-------|-------|
| Pbar (in. Hg)       | 29.91   | 29.91   | 29.91   |       |       |
| Canister Number     | SC00651 | SC00898 | SC01838 |       |       |
| Controller Number   | 0A02136 | 0A00152 | 0A00698 |       |       |
| Gauge Number        |         |         |         |       |       |
| Initial: Start Time | 09:13   | 10:14   | 11:17   |       |       |
| Flask Vac. (in. Hg) | -28.0"  | -30.5"  | -32.0"  |       |       |
| Final: End Time     | 10:13   | 11:14   | 12:17   |       |       |
| Flask Vac. (in. Hg) | -6.5"   | -9.0"   | -9.5"   |       |       |

Source \_\_\_\_\_

Date \_\_\_\_\_

|                     | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |
|---------------------|-------|-------|-------|-------|-------|
| Pbar (in. Hg)       |       |       |       |       |       |
| Canister Number     |       |       |       |       |       |
| Controller Number   |       |       |       |       |       |
| Gauge Number        |       |       |       |       |       |
| Initial: Start Time |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |
| Final: End Time     |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |

Source \_\_\_\_\_

Date \_\_\_\_\_

|                     | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |
|---------------------|-------|-------|-------|-------|-------|
| Pbar (in. Hg)       |       |       |       |       |       |
| Canister Number     |       |       |       |       |       |
| Controller Number   |       |       |       |       |       |
| Gauge Number        |       |       |       |       |       |
| Initial: Start Time |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |
| Final: End Time     |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |

Client MV UTESource Unit #2Date 08/15/18

|                     | Run 1   | Run 2   | Run 3   | Run 4 | Run 5 |
|---------------------|---------|---------|---------|-------|-------|
| Pbar (in. Hg)       | 30.50   | 30.50   | 30.50   |       |       |
| Canister Number     | 0A01370 | SC00292 | SC00102 |       |       |
| Controller Number   | 8C00369 | 0A01191 | 0A00175 |       |       |
| Gauge Number        |         |         |         |       |       |
| Initial: Start Time | 951     | 1105    | 1215    |       |       |
| Flask Vac. (in. Hg) | -30     | -30     | -30     |       |       |
| Final: End Time     | 1051    | 1205    | 1315    |       |       |
| Flask Vac. (in. Hg) | -9      | -7      | -6      |       |       |

Source \_\_\_\_\_

Date \_\_\_\_\_

|                     | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |
|---------------------|-------|-------|-------|-------|-------|
| Pbar (in. Hg)       |       |       |       |       |       |
| Canister Number     |       |       |       |       |       |
| Controller Number   |       |       |       |       |       |
| Gauge Number        |       |       |       |       |       |
| Initial: Start Time |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |
| Final: End Time     |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |

Source \_\_\_\_\_

Date \_\_\_\_\_

|                     | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |
|---------------------|-------|-------|-------|-------|-------|
| Pbar (in. Hg)       |       |       |       |       |       |
| Canister Number     |       |       |       |       |       |
| Controller Number   |       |       |       |       |       |
| Gauge Number        |       |       |       |       |       |
| Initial: Start Time |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |
| Final: End Time     |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |

Source \_\_\_\_\_

Date \_\_\_\_\_

|                     | Run 1 | Run 2 | Run 3 | Run 4 | Run 5 |
|---------------------|-------|-------|-------|-------|-------|
| Pbar (in. Hg)       |       |       |       |       |       |
| Canister Number     |       |       |       |       |       |
| Controller Number   |       |       |       |       |       |
| Gauge Number        |       |       |       |       |       |
| Initial: Start Time |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |
| Final: End Time     |       |       |       |       |       |
| Flask Vac. (in. Hg) |       |       |       |       |       |

**APPENDIX – E**

**CALIBRATION SHEETS and**

**TECHNICIAN CERTIFICATES**

# A.Lanfranco & Associates inc.

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

Model #: ST CAE2  
Serial #: 0028-072911-1

Date: 11-Jul-18  
Barometric Pressure: 30.14 (in. Hg)  
Theoretical Critical Vacuum: 14.22 (in. Hg)

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)(in. Hg)<sup>1/2</sup> (min).

| -CRITICAL ORIFICE READINGS-    |                                         |                             |                    |                  |                                   |  |  |  |  |
|--------------------------------|-----------------------------------------|-----------------------------|--------------------|------------------|-----------------------------------|--|--|--|--|
| Orifice<br>Serial#<br>(number) | K Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | Initial<br>(deg F) | Final<br>(deg F) | Average<br>Temperature<br>(deg F) |  |  |  |  |
| 40                             | 0.2408                                  | 20.5                        | 74.0               | 76.0             | 75.0                              |  |  |  |  |
| 48                             | 0.3560                                  | 18.9                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 55                             | 0.4606                                  | 17.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 63                             | 0.5956                                  | 16.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 73                             | 0.6185                                  | 14.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |

| -CRITICAL ORIFICE READINGS-    |                                         |                             |                    |                  |                                   |  |  |  |  |
|--------------------------------|-----------------------------------------|-----------------------------|--------------------|------------------|-----------------------------------|--|--|--|--|
| Orifice<br>Serial#<br>(number) | K Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | Initial<br>(deg F) | Final<br>(deg F) | Average<br>Temperature<br>(deg F) |  |  |  |  |
| 40                             | 0.2408                                  | 20.5                        | 74.0               | 76.0             | 75.0                              |  |  |  |  |
| 48                             | 0.3560                                  | 18.9                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 55                             | 0.4606                                  | 17.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 63                             | 0.5956                                  | 16.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 73                             | 0.6185                                  | 14.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |

| -CRITICAL ORIFICE READINGS-    |                                         |                             |                    |                  |                                   |  |  |  |  |
|--------------------------------|-----------------------------------------|-----------------------------|--------------------|------------------|-----------------------------------|--|--|--|--|
| Orifice<br>Serial#<br>(number) | K Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | Initial<br>(deg F) | Final<br>(deg F) | Average<br>Temperature<br>(deg F) |  |  |  |  |
| 40                             | 0.2408                                  | 20.5                        | 74.0               | 76.0             | 75.0                              |  |  |  |  |
| 48                             | 0.3560                                  | 18.9                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 55                             | 0.4606                                  | 17.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 63                             | 0.5956                                  | 16.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |
| 73                             | 0.6185                                  | 14.0                        | 72.0               | 74.0             | 73.0                              |  |  |  |  |

| TEMPERATURE CALIBRATION                       |                                          |                      |                        |  |  |  |  |  |  |
|-----------------------------------------------|------------------------------------------|----------------------|------------------------|--|--|--|--|--|--|
| Omega Model CL23A S/N:T-218768                |                                          |                      |                        |  |  |  |  |  |  |
| Reference Temperature<br>Set-Point<br>(deg F) | Temperature Device<br>Reading<br>(deg F) | 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 H<sub>2</sub>O 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 Devices, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Mat Harrington

Signature:

*Mat Harrington*

Date: July 11, 2018

# BAROMETER CALIBRATION FORM

| Device | Cal Date      | Pbar Env Canada |                | Device (inches of Hg) |                        | Difference<br>(Env Can - Elv Corr) |
|--------|---------------|-----------------|----------------|-----------------------|------------------------|------------------------------------|
|        |               | (kPa)           | (inches of Hg) | Reading               | Elevation<br>Corrected |                                    |
| LA     | July 17, 2018 | 101.6           | 30.01          | 29.90                 | 29.97                  | 0.04                               |
| DS     | July 17, 2018 | 101.6           | 30.01          | 29.91                 | 29.98                  | 0.03                               |
| CL     | July 17, 2018 | 101.6           | 30.01          | 29.89                 | 29.96                  | 0.05                               |
| ML     | July 17, 2018 | 101.6           | 30.01          | 29.90                 | 29.97                  | 0.04                               |
| MH     | July 17, 2018 | 101.6           | 30.01          | 29.91                 | 29.98                  | 0.03                               |
| SH     | July 17, 2018 | 101.6           | 30.01          | 29.91                 | 29.98                  | 0.03                               |
| JB     | July 17, 2018 | 101.6           | 30.01          | 29.97                 | 30.04                  | -0.03                              |
| SF     | July 17, 2018 | 101.6           | 30.01          | 29.99                 | 30.06                  | -0.05                              |
| JG     | July 17, 2018 | 101.6           | 30.01          | 29.89                 | 29.96                  | 0.05                               |
| SB     | July 17, 2018 | 101.6           | 30.01          | 29.89                 | 29.96                  | 0.05                               |
|        |               |                 |                |                       |                        |                                    |
|        |               |                 |                |                       |                        |                                    |

Calibrated by: Daryl Sampson

Signature: D/S

Date: July 17, 2018

## 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)



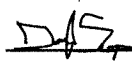
# A. LANFRANCO and ASSOCIATES INC.

## ENVIRONMENTAL CONSULTANTS

### GLASS NOZZLE DIAMETER CALIBRATION FORM

Calibrated by: Michael Goods

Date: June 22, 2018

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                          |
| P-20        | 0.1855       | 0.1865       | 0.1835       | 0.0030               | 0.1852                 | 0.0001870                          |
| 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                          |
| P-22        | 0.1910       | 0.1890       | 0.1900       | 0.0020               | 0.1900                 | 0.0001969                          |
| P-13        | 0.2070       | 0.2080       | 0.2075       | 0.0010               | 0.2075                 | 0.0002348                          |
| L           | 0.2112       | 0.2120       | 0.2105       | 0.0015               | 0.2112                 | 0.0002434                          |
| G-215       | 0.2160       | 0.2150       | 0.2130       | 0.0030               | 0.2147                 | 0.0002513                          |
| Q           | 0.2190       | 0.2170       | 0.2185       | 0.0020               | 0.2182                 | 0.0002596                          |
| V-07        | 0.2430       | 0.2460       | 0.2450       | 0.0030               | 0.2447                 | 0.0003265                          |
| P-24        | 0.2515       | 0.2525       | 0.2540       | 0.0025               | 0.2527                 | 0.0003482                          |
| G-250       | 0.2480       | 0.2500       | 0.2555       | 0.0075               | 0.2512                 | 0.0003441                          |
| P           | 0.2580       | 0.2570       | 0.2575       | 0.0010               | 0.2575                 | 0.0003616                          |
| G-278       | 0.2775       | 0.2785       | 0.2790       | 0.0015               | 0.2783                 | 0.0004225                          |
| P-2         | 0.2790       | 0.2780       | 0.2790       | 0.0010               | 0.2787                 | 0.0004235                          |
| G-280       | 0.2850       | 0.2840       | 0.2850       | 0.0010               | 0.2847                 | 0.0004420                          |
| V-03        | 0.3000       | 0.3010       | 0.3005       | 0.0010               | 0.3005                 | 0.0004925                          |
| G-306       | 0.3060       | 0.3060       | 0.3065       | 0.0005               | 0.3062                 | 0.0005113                          |
| V-06        | 0.3200       | 0.3210       | 0.3210       | 0.0010               | 0.3207                 | 0.0005608                          |
| G-323       | 0.3225       | 0.3225       | 0.3230       | 0.0005               | 0.3227                 | 0.0005679                          |
| G-337       | 0.3380       | 0.3355       | 0.3365       | 0.0025               | 0.3367                 | 0.0006182                          |
| P-27        | 0.3390       | 0.3380       | 0.3390       | 0.0010               | 0.3387                 | 0.0006256                          |
| G-343       | 0.3430       | 0.3440       | 0.3435       | 0.0010               | 0.3435                 | 0.0006435                          |
| P-9         | 0.3650       | 0.3640       | 0.3655       | 0.0015               | 0.3648                 | 0.0007260                          |
| G-368       | 0.3685       | 0.3665       | 0.3690       | 0.0025               | 0.3680                 | 0.0007386                          |
| G-372       | 0.3710       | 0.3730       | 0.3740       | 0.0030               | 0.3727                 | 0.0007575                          |
| I           | 0.3785       | 0.3785       | 0.3785       | 0.0000               | 0.3785                 | 0.0007814                          |
| O           | 0.3910       | 0.3915       | 0.3905       | 0.0010               | 0.3910                 | 0.0008338                          |
| P-14        | 0.3910       | 0.3935       | 0.3920       | 0.0025               | 0.3922                 | 0.0008388                          |
| P-17        | 0.4070       | 0.4075       | 0.4065       | 0.0010               | 0.4070                 | 0.0009035                          |
| C           | 0.4255       | 0.4225       | 0.4235       | 0.0030               | 0.4238                 | 0.0009798                          |
| #21         | 0.4305       | 0.4325       | 0.4315       | 0.0020               | 0.4315                 | 0.0010155                          |
| G-434       | 0.4345       | 0.4335       | 0.4350       | 0.0015               | 0.4343                 | 0.0010289                          |
| G-437       | 0.4340       | 0.4350       | 0.4360       | 0.0020               | 0.4350                 | 0.0010321                          |
| G-468       | 0.4680       | 0.4670       | 0.4680       | 0.0010               | 0.4677                 | 0.0011929                          |
| P-29        | 0.4650       | 0.4860       | 0.4660       | 0.0210               | 0.4723                 | 0.0012168                          |
| 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                          |
| MV-248      | 0.2485       | 0.2490       | 0.2485       | 0.0005               | 0.2487                 | 0.0003373                          |
| MV-281      | 0.2805       | 0.2805       | 0.2805       | 0.0000               | 0.2805                 | 0.0004291                          |
| MV-280      | 0.2800       | 0.2795       | 0.2810       | 0.0015               | 0.2802                 | 0.0004281                          |
| MV-286      | 0.2865       | 0.2855       | 0.2865       | 0.0010               | 0.2862                 | 0.0004466                          |
| MV-02       | 0.3040       | 0.3070       | 0.3040       | 0.0030               | 0.3050                 | 0.0005074                          |
| MV-01       | 0.3050       | 0.3060       | 0.3070       | 0.0020               | 0.3060                 | 0.0005107                          |
| MV-307      | 0.3055       | 0.3075       | 0.3070       | 0.0020               | 0.3067                 | 0.0005129                          |
| MV-346      | 0.3445       | 0.3460       | 0.3465       | 0.0020               | 0.3457                 | 0.0006517                          |

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: 11-Jul-18  
Pbar (in.Hg): 29.69

Temp (R): 530  
Dn (in.): 0.25

Pitot ID: 7A

| Reference Pitot<br>(in H2O) | S-Type Pitot<br>(in H2O) | Air Velocity<br>(ft/s) | Pitot Coeff.<br>Cp | Deviation<br>(absolute) |
|-----------------------------|--------------------------|------------------------|--------------------|-------------------------|
| 0.290                       | 0.400                    | 35.8                   | 0.8430             | 0.0006                  |
| 0.360                       | 0.500                    | 39.9                   | 0.8400             | 0.0035                  |
| 0.460                       | 0.640                    | 45.1                   | 0.8393             | 0.0042                  |
| 0.570                       | 0.790                    | 50.2                   | 0.8409             | 0.0026                  |
| 0.700                       | 0.940                    | 55.6                   | 0.8543             | 0.0108                  |
| Average :                   |                          |                        | 0.8435             | 0.0043                  |

Pitot ID:

| Reference Pitot<br>(in H2O) | S-Type Pitot<br>(in H2O) | Air Velocity<br>(ft/s) | Pitot Coeff.<br>Cp | Deviation<br>(absolute) |
|-----------------------------|--------------------------|------------------------|--------------------|-------------------------|
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
| Average :                   |                          |                        | #DIV/0!            | #DIV/0!                 |

Pitot ID: 7B

| Reference Pitot<br>(in H2O) | S-Type Pitot<br>(in H2O) | Air Velocity<br>(ft/s) | Pitot Coeff.<br>Cp | Deviation<br>(absolute) |
|-----------------------------|--------------------------|------------------------|--------------------|-------------------------|
| 0.120                       | 0.160                    | 23.0                   | 0.8574             | 0.0111                  |
| 0.260                       | 0.370                    | 33.9                   | 0.8299             | 0.0164                  |
| 0.410                       | 0.550                    | 42.6                   | 0.8548             | 0.0085                  |
| 0.530                       | 0.740                    | 48.4                   | 0.8378             | 0.0085                  |
| 0.640                       | 0.865                    | 53.2                   | 0.8516             | 0.0053                  |
| Average :                   |                          |                        | 0.8463             | 0.0099                  |

Pitot ID:

| Reference Pitot<br>(in H2O) | S-Type Pitot<br>(in H2O) | Air Velocity<br>(ft/s) | Pitot Coeff.<br>Cp | Deviation<br>(absolute) |
|-----------------------------|--------------------------|------------------------|--------------------|-------------------------|
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
|                             |                          | 0.0                    | #DIV/0!            | #DIV/0!                 |
| Average :                   |                          |                        | #DIV/0!            | #DIV/0!                 |

Pitot ID: 7 AL GVRD

| Reference Pitot<br>(in H2O) | S-Type Pitot<br>(in H2O) | Air Velocity<br>(ft/s) | Pitot Coeff.<br>Cp | Deviation<br>(absolute) |
|-----------------------------|--------------------------|------------------------|--------------------|-------------------------|
| 0.290                       | 0.400                    | 35.8                   | 0.8430             | 0.0041                  |
| 0.350                       | 0.480                    | 39.3                   | 0.8454             | 0.0065                  |
| 0.470                       | 0.670                    | 45.6                   | 0.8292             | 0.0097                  |
| 0.600                       | 0.840                    | 51.5                   | 0.8367             | 0.0021                  |
| 0.720                       | 1.000                    | 56.4                   | 0.8400             | 0.0012                  |
| Average :                   |                          |                        | 0.8388             | 0.0047                  |

Pitot ID:

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

Pitot ID: 7C

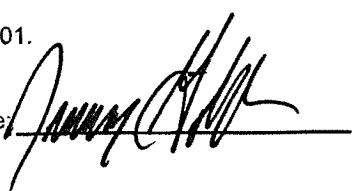
| Reference Pitot<br>(in H2O) | S-Type Pitot<br>(in H2O) | Air Velocity<br>(ft/s) | Pitot Coeff.<br>Cp | Deviation<br>(absolute) |
|-----------------------------|--------------------------|------------------------|--------------------|-------------------------|
| 0.260                       | 0.360                    | 33.9                   | 0.8413             | 0.0076                  |
| 0.320                       | 0.440                    | 37.6                   | 0.8443             | 0.0046                  |
| 0.400                       | 0.550                    | 42.0                   | 0.8443             | 0.0046                  |
| 0.510                       | 0.680                    | 47.5                   | 0.8574             | 0.0084                  |
| 0.660                       | 0.880                    | 54.0                   | 0.8574             | 0.0084                  |
| Average :                   |                          |                        | 0.8489             | 0.0068                  |

Pitot ID:

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

\* Average absolute deviation must not exceed 0.01.

Calibrated by: Jeremy Gibbs

Signature: 

Date: July 11, 2018

# 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: 9-Jul-18  
Barometric Pressure: 30.05 (in. Hg)  
Theoretical Critical Vacuum: 14.17 (in. Hg)

!!!!!!!  
IMPORTANT  
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, (in<sup>3</sup>/3 (deg F)<sup>0.5</sup>/(in.Hg) (min).

| ***** DRY GAS METER 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.<br>(deg F) | Outlet<br>(deg F) | Inlet<br>(deg F) | Final Temps.<br>(deg F) | Outlet<br>(deg F) |
| 3.50                               | 14.00         | 479.000                      | 493.900                    | 14.900                     | 76.0                      | 76.0              | 76.0             | 77.0                    | 77.0              |
| 1.85                               | 15.00         | 494.200                      | 505.917                    | 11.717                     | 77.0                      | 77.0              | 78.0             | 78.0                    | 78.0              |
| 1.12                               | 16.00         | 506.000                      | 515.730                    | 9.730                      | 78.0                      | 78.0              | 80.0             | 80.0                    | 80.0              |
| 0.63                               | 18.00         | 516.000                      | 524.338                    | 8.338                      | 79.0                      | 79.0              | 79.0             | 79.0                    | 79.0              |
| 0.30                               | 15.00         | 524.400                      | 529.141                    | 4.741                      | 79.0                      | 79.0              | 80.0             | 80.0                    | 80.0              |

| ***** CRITICAL ORIFICE READINGS ***** |                                          |                             |                    |                  |                    |  |  |  |  |
|---------------------------------------|------------------------------------------|-----------------------------|--------------------|------------------|--------------------|--|--|--|--|
| Orifice<br>Serial#<br>(number)        | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | Initial<br>(deg F) | Final<br>(deg F) | Average<br>(deg F) |  |  |  |  |
| 73                                    | 0.8185                                   | 18.2                        | 77.0               | 77.0             | 77.0               |  |  |  |  |
| 63                                    | 0.5956                                   | 20.8                        | 77.0               | 81.0             | 79.0               |  |  |  |  |
| 55                                    | 0.4606                                   | 22.2                        | 79.0               | 81.0             | 80.0               |  |  |  |  |
| 48                                    | 0.3560                                   | 23.2                        | 80.0               | 82.0             | 81.0               |  |  |  |  |
| 40                                    | 0.2408                                   | 25.0                        | 82.0               | 82.0             | 82.0               |  |  |  |  |

| ***** RESULTS *****                                      |                                                          |                                                          |                                                          |                                                          |                    |                       |                 |                   |                       |
|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|--------------------|-----------------------|-----------------|-------------------|-----------------------|
| --- DRY GAS METER ---                                    |                                                          |                                                          |                                                          |                                                          | --- ORIFICE ---    |                       |                 |                   |                       |
| VOLUME<br>CORRECTED<br>V <sub>cor</sub> (std)<br>(cu ft) | VOLUME<br>CORRECTED<br>V <sub>cor</sub> (std)<br>(cu ft) | VOLUME<br>CORRECTED<br>V <sub>cor</sub> (std)<br>(cu ft) | VOLUME<br>CORRECTED<br>V <sub>cor</sub> (std)<br>(cu ft) | VOLUME<br>CORRECTED<br>V <sub>cor</sub> (std)<br>(cu ft) | Value<br>(number)  | Variation<br>(number) | dh@<br>(mm H2O) | Value<br>(in H2O) | Variation<br>(in H2O) |
| 14.848                                                   | 420.5                                                    | 14.859                                                   | 420.8                                                    | 15.053                                                   | 1.001              | 0.001                 | 43.87           | 1.727             | 0.014                 |
| 11.608                                                   | 328.7                                                    | 11.564                                                   | 327.5                                                    | 11.758                                                   | 0.996              | -0.003                | 43.88           | 1.727             | 0.014                 |
| 9.595                                                    | 271.7                                                    | 9.530                                                    | 269.9                                                    | 9.708                                                    | 0.993              | -0.006                | 44.38           | 1.747             | 0.034                 |
| 8.213                                                    | 232.6                                                    | 8.279                                                    | 234.5                                                    | 8.449                                                    | 1.008              | 0.008                 | 41.86           | 1.648             | -0.065                |
| 4.662                                                    | 132.0                                                    | 4.662                                                    | 132.0                                                    | 4.767                                                    | 1.000              | 0.000                 | 43.61           | 1.717             | 0.004                 |
| Average Y → 0.9997                                       |                                                          |                                                          |                                                          |                                                          | Average dh@ → 43.5 |                       |                 |                   |                       |
|                                                          |                                                          |                                                          |                                                          |                                                          | Average Ko → 0.733 |                       |                 |                   |                       |

| TEMPERATURE CALIBRATION                       |                                          |                      |                                   |
|-----------------------------------------------|------------------------------------------|----------------------|-----------------------------------|
| Calibration Standard →                        | Omega Model CL23A S/N T-218788           |                      |                                   |
| Reference Temperature<br>Set-Point<br>(deg F) | Temperature Device<br>Reading<br>(deg F) | Variation<br>(deg F) | Results<br>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 Devices, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Mat Harrington

Signature:

*Mat Harrington*

Date: July 9, 2018

# A.Lanfranco & Associates inc.

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

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

Date: 10-Jul-18  
Barometric Pressure: 30.15 (in. Hg)  
Theoretical Critical Vacuum: 14.22 (in. Hg)

!!!!!!!  
IMPORTANT  
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, (R<sup>3</sup>/deg R<sup>3</sup>/V<sup>0.5</sup>/(in. Hg)<sup>2</sup>/(mm).

| ----- DRY GAS METER 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<br>Inlet<br>(deg F) | Initial Temps<br>Outlet<br>(deg F) | Final Temps<br>Inlet<br>(deg F) | Final Temps<br>Outlet<br>(deg F) | Orifice<br>Serial#<br>(number) |
| 4.15                               | 17.00         | 300.000                      | 317.934                    | 17.934                     | 68.0                              | 68.0                               | 69.0                            | 69.0                             | 73                             |
| 2.15                               | 15.00         | 318.300                      | 329.812                    | 11.512                     | 68.0                              | 68.0                               | 69.0                            | 69.0                             | 63                             |
| 1.32                               | 19.00         | 823.600                      | 834.907                    | 11.307                     | 68.0                              | 68.0                               | 69.0                            | 69.0                             | 55                             |
| 0.75                               | 17.00         | 339.050                      | 346.770                    | 7.720                      | 69.0                              | 69.0                               | 71.0                            | 71.0                             | 48                             |
| 0.35                               | 15.00         | 346.900                      | 351.551                    | 4.651                      | 72.0                              | 72.0                               | 72.0                            | 72.0                             | 40                             |

| ----- CRITICAL ORIFICE READINGS ----- |                                         |                             |                    |                                           |                    |  |  |  |  |
|---------------------------------------|-----------------------------------------|-----------------------------|--------------------|-------------------------------------------|--------------------|--|--|--|--|
| Orifice<br>Serial#<br>(number)        | K Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | Initial<br>(deg F) | Ambient Temperature -<br>Final<br>(deg F) | Average<br>(deg F) |  |  |  |  |
| 73                                    | 0.8185                                  | 19.2                        | 69.0               | 70.0                                      | 69.5               |  |  |  |  |
| 63                                    | 0.5956                                  | 21.5                        | 70.0               | 70.0                                      | 70.0               |  |  |  |  |
| 55                                    | 0.4606                                  | 23.8                        | 73.0               | 75.0                                      | 74.0               |  |  |  |  |
| 48                                    | 0.3560                                  | 24.5                        | 71.0               | 73.0                                      | 72.0               |  |  |  |  |
| 40                                    | 0.2408                                  | 26.0                        | 72.0               | 74.0                                      | 73.0               |  |  |  |  |

| \*\*\*\*\* RESULTS \*\*\*\*\* | | | | | | | | | |
| --- DRY GAS METER --- | | | | | --- ORIFICE --- | | | | |
| VOLUME CORRECTED Vr(Std) (cu ft) | VOLUME CORRECTED Vr(Std) (liters) | VOLUME CORRECTED Vr(Std) (cu ft) | VOLUME CORRECTED Vr(Std) (liters) | VOLUME NOMINAL Vcr (cu ft) | Value (number) | Variation (number) | Value (in H2O) | Variation (in H2O) | Ko (value) |
| 18.230 | 516.3 | 18.231 | 516.3 | 18.151 | 1.000 | -0.008 | 2.043 | 51.90 | 0.031 |
| 11.646 | 329.8 | 11.700 | 331.4 | 11.680 | 1.005 | -0.003 | 2.001 | 50.83 | -0.011 |
| 11.415 | 323.3 | 11.418 | 323.4 | 11.464 | 1.000 | -0.007 | 2.070 | 52.57 | 0.058 |
| 7.781 | 219.8 | 7.911 | 224.0 | 7.913 | 1.019 | 0.012 | 1.956 | 49.67 | -0.056 |
| 4.654 | 131.8 | 4.717 | 133.6 | 4.727 | 1.014 | 0.006 | 1.991 | 50.57 | -0.021 |
| Average Y-----> 1.0076 | | | | | Average dH@-----> 2.012 | | | | |
|  | | | | | Average Ko-----> 0.676 | | | | |

| 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) | Variation<br>(deg F) | Percent of<br>Absolute<br>Results |
| 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: Mat Harrington

Signature:

*Shaun Harrington*

Date: July 10, 2018

# A. Lanfranco & Associates inc.

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

**Model #:** LMU-A  
**Serial #:** Kimmon 186  
**Date:** 10-Jul-18  
**Barometric Pressure:** 30.15 (in. Hg)  
**Theoretical Critical Vacuum:** 14.22 (in. Hg)

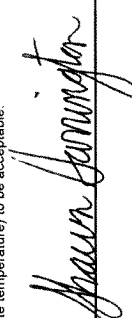
For valid test results, the Actual Vacuum should be 1 to 2 in. Hg greater than the Theoretical Critical Vacuum shown above.  
The Critical Orifice Coefficient, K', must be entered in English units, (ft)<sup>3</sup>/(deg R)<sup>0.5</sup>((in. Hg)<sup>3</sup>(min)).

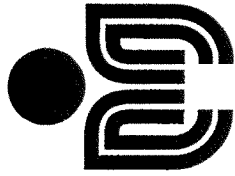
| ***** DRY GAS METER READINGS ***** |               |                                        |                                      |                            |                                    |                                     |                                  |                                   |                                | -CRITICAL ORIFICE READINGS-              |                             |                    |                  |                    |
|------------------------------------|---------------|----------------------------------------|--------------------------------------|----------------------------|------------------------------------|-------------------------------------|----------------------------------|-----------------------------------|--------------------------------|------------------------------------------|-----------------------------|--------------------|------------------|--------------------|
| dH<br>(in H2O)                     | Time<br>(min) | Volume<br>Initial<br>(m <sup>3</sup> ) | Volume<br>Final<br>(m <sup>3</sup> ) | Volume<br>Total<br>(cu ft) | Initial Temps.<br>Inlet<br>(deg F) | Initial Temps.<br>Outlet<br>(deg F) | Final Temps.<br>Inlet<br>(deg F) | Final Temps.<br>Outlet<br>(deg F) | Orifice<br>Serial#<br>(number) | K' Orifice<br>Coefficient<br>(see above) | Actual<br>Vacuum<br>(in Hg) | Initial<br>(deg F) | Final<br>(deg F) | Average<br>(deg F) |
| 0.00                               | 15.00         | 207.6200                               | 207.8250                             | 7.240                      | 69.0                               | 69.0                                | 69.0                             | 69.0                              | 48                             | 0.3560                                   | 14.0                        | 63.0               | 64.0             | 63.5               |
| 0.00                               | 15.00         | 207.8300                               | 208.0355                             | 7.257                      | 70.0                               | 70.0                                | 71.0                             | 71.0                              | 48                             | 0.3560                                   | 14.0                        | 65.0               | 65.0             | 65.0               |
| 0.00                               | 20.00         | 208.0400                               | 208.3145                             | 9.694                      | 70.0                               | 70.0                                | 72.0                             | 72.0                              | 48                             | 0.3560                                   | 14.0                        | 66.0               | 69.0             | 67.5               |

| ***** RESULTS *****   |                     |                    |                     |                    |                     |                     |                     |                      |                     |                     |                   |                   |                       |        |
|-----------------------|---------------------|--------------------|---------------------|--------------------|---------------------|---------------------|---------------------|----------------------|---------------------|---------------------|-------------------|-------------------|-----------------------|--------|
| --- DRY GAS METER --- |                     |                    |                     |                    | ----- ORIFICE ----- |                     |                     |                      |                     | -- DRY GAS METER -- |                   |                   |                       |        |
| VOLUME<br>CORRECTED   | VOLUME<br>CORRECTED | Vm(std)<br>(cu ft) | Vm(std)<br>(liters) | Vm(std)<br>(cu ft) | VOLUME<br>CORRECTED | VOLUME<br>CORRECTED | Vcr(std)<br>(cu ft) | Vcr(std)<br>(liters) | Vcr(std)<br>(cu ft) | VOLUME<br>NOMINAL   | Vcr<br>(cu ft)    | Value<br>(number) | Variation<br>(number) | Y      |
| 7.278                 | 206.1               | 206.1              | 206.1               | 206.1              | 7.037               | 199.3               | 7.037               | 199.3                | 6.926               | 6.926               | 6.926             | 0.967             | 0.002                 | 0.002  |
| 7.276                 | 206.0               | 206.0              | 206.0               | 206.0              | 7.027               | 199.0               | 7.027               | 199.0                | 6.936               | 6.936               | 6.936             | 0.966             | 0.001                 | 0.001  |
| 9.709                 | 275.0               | 275.0              | 275.0               | 275.0              | 9.347               | 264.7               | 9.347               | 264.7                | 9.270               | 9.270               | 9.270             | 0.963             | -0.002                | -0.002 |
| Average Y----->       |                     |                    |                     |                    |                     |                     |                     |                      |                     | 0.9651              | 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 Device, the reading must be within 1.5% of certified calibration standard (absolute temperature) to be acceptable.

Calibrated by: Mat Harrington  
Signature:   
Date: July 10, 2018



# **MOUNT ROYAL COLLEGE**

**Faculty of Continuing Education and Extension**

**Carter Lanfranco**

has successfully completed

**Stack Sampling**

**May 2009**

**Date**

*Norma H. Macdonald*

**Dean**

**Faculty of Continuing Education and Extension**

# 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



# Walter Smith & Associates, Inc.

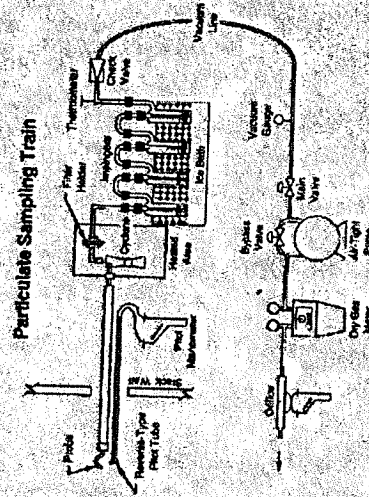
is hereby granted to:

**Louis Agassiz**

to certify that they have completed to satisfaction

## Source Sampling & CEMS Workshop

Granted: March 11, 2011



*Walter S. Smith*

Walter S. Smith, PE, DEE 3.5 CEU