December 1, 2015

Tolko Industries Lavington c/o
Lavington Pellet Limited Partnership
9900 School Road
Coldstream, B.C.,
V1B 3C7

Attention: **Andrew Meyer, Paul Pawlowski**
Re: **Air Emission Testing of November 11-12, 2015**
PA-2001, ME15-491

As requested our firm provided a series of air emission tests at your facility in Lavington BC.

Testing Parameters

- CF-13
    - Total Particulate Testing (including Condensable Organics) State of Oregon Method 7

All testing procedures were conducted in accordance with acceptable methodologies as listed in the latest revision of the BC Field Sampling Manual. A copy of the method and/or Sampling Manual are digitally available upon request. All lab analysis for back half condensable organic fractions was analyzed by EXOVA Laboratories in Surrey BC. A copy of their report can be found in the Appendix of this report.

Results are summarized immediately following this cover letter. Please note that all results are expressed on a dry basis and reference conditions of 20 deg C, 1 atm pressure. Production Data provided by mill personnel is also included in the Appendices of this report.

If you have any questions or concerns please don't hesitate to contact us at your earliest convenience.

Sincerely,

MCCALL ENVIRONMENTAL
Matt McCall
Digitally signed by Matt McCall
DN: cn=Matt McCall, o=McCall Environmental, ou, email=matt@mccallenvironmental.net, c=CA
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Summary of Test Results

CF-13 November 12, 2015 Summary of Tests 1-3

Gas Temperature:	60	^{o}F	16	^{o}C
Moisture Content (by volume):	0.27	%		
Average Stack Gas Velocity:	70.9	ft/sec	21.62	m/sec
Total Actual Gas Flow Rate:	83532	ACFM		
Dry Gas flow Rate at Reference Conditions:	80571	SCFM	38.03	m^3/sec
Total Particulate Concentration:				
Dry Basis Actual at Reference Conditions	0.001	gr/ft^3	2.3	mg/m^3
Front Half Particulate	0.000	gr/ft^3	0.6	mg/m^3
Back Half Condensibles	0.001	gr/ft^3	1.8	mg/m^3
Mass Emission Rate	0.73	lbs/hr	0.32	kg/hr

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Pinnacle Pellet /Tolko **12-Nov-15**

CF-13 **Permit Number: PA-2001**

Lavington BC

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	60 ^{o}F	16 ^{o}C
Moisture Content (by volume):	0.27 %	
Average Stack Gas Velocity:	70.9 ft/sec	21.62 m/sec
Total Actual Gas Flow Rate:	83532 ACFM	
Dry Gas flow Rate at Reference Conditions:	80571 SCFM	38.03 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.001 gr/ft^3	2.3 mg/m^3
Front Half Particulate	0.000 gr/ft^3	0.6 mg/m^3
Back Half Condensibles	0.001 gr/ft^3	1.8 mg/m^3
Mass Emission Rate	0.70 lbs/hr	0.32 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	61 ^{o}F	16 ^{o}C
Moisture Content (by volume):	.3 %	
Average Stack Gas Velocity:	70.5 ft/sec	21.5 m/sec
Total Actual Gas Flow Rate:	83050 ACFM	
Dry Gas flow Rate at Reference Conditions:	79958 SCFM	37.7 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.002 gr/ft^3	3.9 mg/m^3
Front Half Particulate	.000 gr/ft^3	.8 mg/m^3
Back Half Condensibles	.001 gr/ft^3	3.0 mg/m^3
Mass Emission Rate	1.15 lbs/hr	0.52 kg/hr

TEST 2:

Gas Temperature:	59 ^{o}F	15 ^{o}C
Moisture Content (by volume):	.2 %	
Average Stack Gas Velocity:	70.8 ft/sec	21.6 m/sec
Total Actual Gas Flow Rate:	83341 ACFM	
Dry Gas flow Rate at Reference Conditions:	80736 SCFM	38.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.001 gr/ft^3	1.9 mg/m^3
Front Half Particulate	.000 gr/ft^3	.4 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.5 mg/m^3
Mass Emission Rate	0.58 lbs/hr	0.26 kg/hr

TEST 3:

Gas Temperature:	62 ^{o}F	16 ^{o}C
Moisture Content (by volume):	.3 %	
Average Stack Gas Velocity:	71.5 ft/sec	21.8 m/sec
Total Actual Gas Flow Rate:	84204 ACFM	
Dry Gas flow Rate at Reference Conditions:	81020 SCFM	38.2 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.001 gr/ft^3	1.2 mg/m^3
Front Half Particulate	.000 gr/ft^3	.5 mg/m^3
Back Half Condensibles	.000 gr/ft^3	.8 mg/m^3
Mass Emission Rate	0.37 lbs/hr	0.17 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet /Tolko**
Plant Location:	**Lavington BC**
Process:	**CF-13**
Permit Number:	**PA-2001**
Job Number:	**ME15-491**
Pollution Control Permit:	**15.0 mg/m3**
Number of Tests:	**3 tests**
Minutes per Point:	**2.5 minutes**

	TEST 1	TEST 2	TEST 3
Filter Number:	4	5	6
Date of Test:	12-Nov-15	12-Nov-15	12-Nov-15
Start Time:	9:15	10:37	12:00
Stop Time:	10:25	11:46	1:08
On-line Sampling Time:	60	60	60
Testing Personnel:	DL/JP	DL/JP	DL/JP
Sampler Model:	1012	1012	1012
Barometric Pressure("Hg):	28.45	28.45	28.45
Static Pressure("H_2O):	1.00	1.00	1.00
%CO_2:	0.0	0.0	0.1
%O_2:	21.0	21.0	20.9
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.182	0.182	0.182
Meter Factor:	0.9979	0.9979	0.9979
Type-S Pitot Tube Coefficient:	0.80670	0.80670	0.80670
Cross Sectional Area of Stack(ft^2):	19.63	19.63	19.63
Impinger Condensate(g):	2	1	2
Weight of Moisture in Silica Gel(g):	1.0	1.0	1.0
Weight of Filter Particulate(g):	0.0009	0.0004	0.0003
Weight of Probe Washings(g):	0.0002	0.0001	0.0003
Weight of Impinger Content Organic(g):	0.0040	0.0020	0.0010
Total Weight of Particulate(g):	0.0051	0.0025	0.0016

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Sampling Data for - *TEST 1*
Pinnacle Pellet /Tolko
CF-13
Lavington BC

12-Nov-15

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^oF)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^oF)	TEMP OUT (^oF)			
A-12	1.50	1.35	61	62	63	0.00	1.05
A-11	1.50	1.35	59	60	62	1.90	1.06
A-10	1.65	1.48	59	60	60	3.82	1.02
A-9	1.70	1.53	59	59	62	5.76	1.07
A-8	1.80	1.62	60	60	62	7.82	1.05
A-7	1.85	1.67	62	62	61	9.91	1.05
A-6	1.75	1.54	64	63	59	12.04	1.06
A-5	1.65	1.52	68	66	58	14.14	1.05
A-4	1.60	1.47	68	68	59	16.17	1.05
A-3	1.65	1.52	70	69	59	18.18	1.06
A-2	1.55	1.43	74	71	60	20.23	1.07
A-1	1.50	1.39	74	73	61	22.25	1.05
B-12	1.55	1.44	78	75	61	24.21	1.06
B-11	1.60	1.49	78	76	62	26.22	1.06
B-10	1.60	1.49	80	79	63	28.27	1.06
B-9	1.70	1.58	80	80	63	30.32	1.06
B-8	1.75	1.65	84	83	64	32.45	1.08
B-7	1.85	1.73	84	83	64	34.65	1.04
B-6	1.75	1.64	85	85	63	36.83	1.06
B-5	1.75	1.65	86	86	63	39.00	1.07
B-4	1.65	1.56	87	86	62	41.20	1.05
B-3	1.60	1.52	89	88	60	43.30	1.08
B-2	1.55	1.48	91	91	60	45.43	1.07
B-1	1.55	1.48	92	91	59	47.52	1.07
						49.62	

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Sampling Data for - *TEST 2*
Pinnacle Pellet /Tolko
CF-13
Lavington BC

12-Nov-15

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^oF)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^oF)	TEMP OUT (^oF)			
B-12	1.60	1.53	87	88	58	0.00	1.04
B-11	1.60	1.51	80	90	60	2.06	1.04
B-10	1.65	1.57	81	87	57	4.11	1.02
B-9	1.70	1.61	81	88	57	6.15	1.04
B-8	1.80	1.71	84	90	59	8.27	1.03
B-7	1.85	1.77	85	89	57	10.42	1.02
B-6	1.75	1.67	87	91	58	12.60	1.04
B-5	1.70	1.63	88	92	59	14.75	1.03
B-4	1.60	1.53	89	92	59	16.86	1.02
B-3	1.65	1.58	90	92	58	18.89	1.01
B-2	1.60	1.54	92	93	59	20.94	1.03
B-1	1.50	1.44	93	94	59	22.99	1.02
A-12	1.55	1.49	94	95	60	24.97	1.03
A-11	1.60	1.55	95	96	58	26.99	1.02
A-10	1.70	1.65	96	98	58	29.04	1.03
A-9	1.75	1.70	97	99	59	31.17	1.02
A-8	1.80	1.75	98	100	58	33.33	1.02
A-7	1.90	1.85	99	101	58	35.52	1.02
A-6	1.75	1.71	99	101	59	37.78	1.04
A-5	1.75	1.71	101	103	59	39.98	1.07
A-4	1.65	1.61	101	102	59	42.25	1.01
A-3	1.60	1.56	102	103	59	44.33	1.05
A-2	1.55	1.52	101	103	59	46.46	1.05
A-1	1.50	1.47	101	103	59	48.55	1.03
						50.58	

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Sampling Data for - *TEST 3*
Pinnacle Pellet /Tolko
CF-13
Lavington BC

12-Nov-15

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^oF)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^oF)	TEMP OUT (^oF)			
A-12	1.6	1.55	98	99	61	0.00	1.03
A-11	1.6	1.52	84	98	62	2.07	1.04
A-10	1.65	1.58	87	99	62	4.14	1.03
A-9	1.7	1.62	86	97	61	6.22	1.03
A-8	1.8	1.72	88	98	62	8.33	1.03
A-7	1.85	1.77	88	96	60	10.50	1.02
A-6	1.85	1.77	91	98	61	12.69	1.04
A-5	1.8	1.73	89	98	61	14.92	1.02
A-4	1.7	1.63	92	98	61	17.08	1.06
A-3	1.7	1.64	92	97	60	19.26	1.03
A-2	1.6	1.54	94	99	62	21.38	1.06
A-1	1.55	1.49	93	98	60	23.50	1.01
B-12	1.55	1.49	95	99	63	25.50	1.03
B-11	1.60	1.54	94	99	61	27.53	1.02
B-10	1.70	1.64	95	100	61	29.58	1.04
B-9	1.70	1.64	95	100	61	31.74	1.02
B-8	1.80	1.74	96	101	62	33.86	1.05
B-7	1.90	1.84	95	100	61	36.10	1.01
B-6	1.80	1.74	97	101	62	38.30	1.05
B-5	1.75	1.69	96	101	62	40.55	1.01
B-4	1.75	1.69	98	102	63	42.68	1.04
B-3	1.65	1.60	97	102	62	44.86	1.04
B-2	1.60	1.55	98	103	63	46.99	1.04
B-1	1.50	1.48	98	102	63	49.09	1.04
						51.12	

Pinnacle Pellet /Tolko
CF-13
Pinnacle Pellet /Tolko

Data for ***TEST 1***

OVERALL ISOKINETICS - TEST 1: 1.058

Delta P:	**1.648**	**"H_2O**	**Us avg:**	**70.51 ft/sec**
Delta H:	**1.524**		**ACFM:**	**83050 ft^3/min**
Tm avg:	**534.3**	**^oR**	**SDCFM:**	**79958 ft^3/min**
Ts avg:	**521.3**	**^oR**	**Vm std:**	**46.71 ft^3**
Bwo:	**0.003**		**Vm corr:**	**49.52 ft^3**
Md:	**28.84**		**Vm:**	**49.62 ft^3**
Ms:	**28.81**		**MF:**	**0.9979**
Pb:	**28.45**	**"Hg**	**PCON:**	**3.86 mg/m^3**
Pm:	**28.56**	**"Hg**	**ERAT:**	**0.52 kg/hr**
Ps:	**28.52**	**"Hg**		

Data for ***TEST 2***

OVERALL ISOKINETICS - TEST 2: 1.030

Delta P:	**1.669**	**"H_2O**	**Us avg:**	**70.76 ft/sec**
Delta H:	**1.611**		**ACFM:**	**83341 ft^3/min**
Tm avg:	**554.0**	**^oR**	**SDCFM:**	**80736 ft^3/min**
Ts avg:	**518.5**	**^oR**	**Vm std:**	**45.93 ft^3**
Bwo:	**0.002**		**Vm corr:**	**50.47 ft^3**
Md:	**28.84**		**Vm:**	**50.58 ft^3**
Ms:	**28.82**		**MF:**	**0.9979**
Pb:	**28.45**	**"Hg**	**PCON:**	**1.92 mg/m^3**
Pm:	**28.57**	**"Hg**	**ERAT:**	**0.26 kg/hr**
Ps:	**28.52**	**"Hg**		

Data for ***TEST 3***

OVERALL ISOKINETICS - TEST 3: 1.034

Delta P:	**1.694**	**"H_2O**	**Us avg:**	**71.49 ft/sec**
Delta H:	**1.633**		**ACFM:**	**84204 ft^3/min**
Tm avg:	**556.3**	**^oR**	**SDCFM:**	**81020 ft^3/min**
Ts avg:	**521.5**	**^oR**	**Vm std:**	**46.24 ft^3**
Bwo:	**0.003**		**Vm corr:**	**51.01 ft^3**
Md:	**28.85**		**Vm:**	**51.12 ft^3**
Ms:	**28.82**		**MF:**	**0.9979**
Pb:	**28.45**	**"Hg**	**PCON:**	**1.22 mg/m^3**
Pm:	**28.57**	**"Hg**	**ERAT:**	**0.17 kg/hr**
Ps:	**28.52**	**"Hg**		

Air Emission Monitoring Procedure

Particulate Sampling (Napp-Baldwin Model 31 Sampler)

Particulate sampling and gas velocity measurements were conducted using a Napp-Baldwin Model 31 stack sampler in accordance with the methods specified in EPA Method 5 (See Figure 1).

The air discharge was sampled isokinetically at the centroid of a series of equal area segments across the duct or stack. The stack gas velocity and temperature was recorded during the sample collection period with a calibrated pitot tube and thermocouple mounted on the sampling probe. The sample was delivered from the probe to a cyclone and a filter holder containing a 110mm Type A glass fiber filter. The gas sample was then drawn in through a series of four glass impingers which condensed and absorbed the water from the gas. A leakless vacuum pump carried he sampled gas through a dry gas test meter where the volume, temperature, and pressure were measured; and finally through a flow indicating orifice which allowed for the rapid adjustment to isokinetic sampling rates.

At the end of each test, the probe interior, cyclone and connecting tubing from the probe to the filter housing were rinsed with distilled water and acetone. These washings were evaporated to dryness and the resulting solids were weighed. The weight of the cyclone flask and the filter was used together with the weight of solids in the washings to calculate the particulate concentration. The moisture content of the stack gas was determined from the quantity of water condensed in the impingers and absorbed in the silica gel.

O_2, CO_2, CO (where applicable)

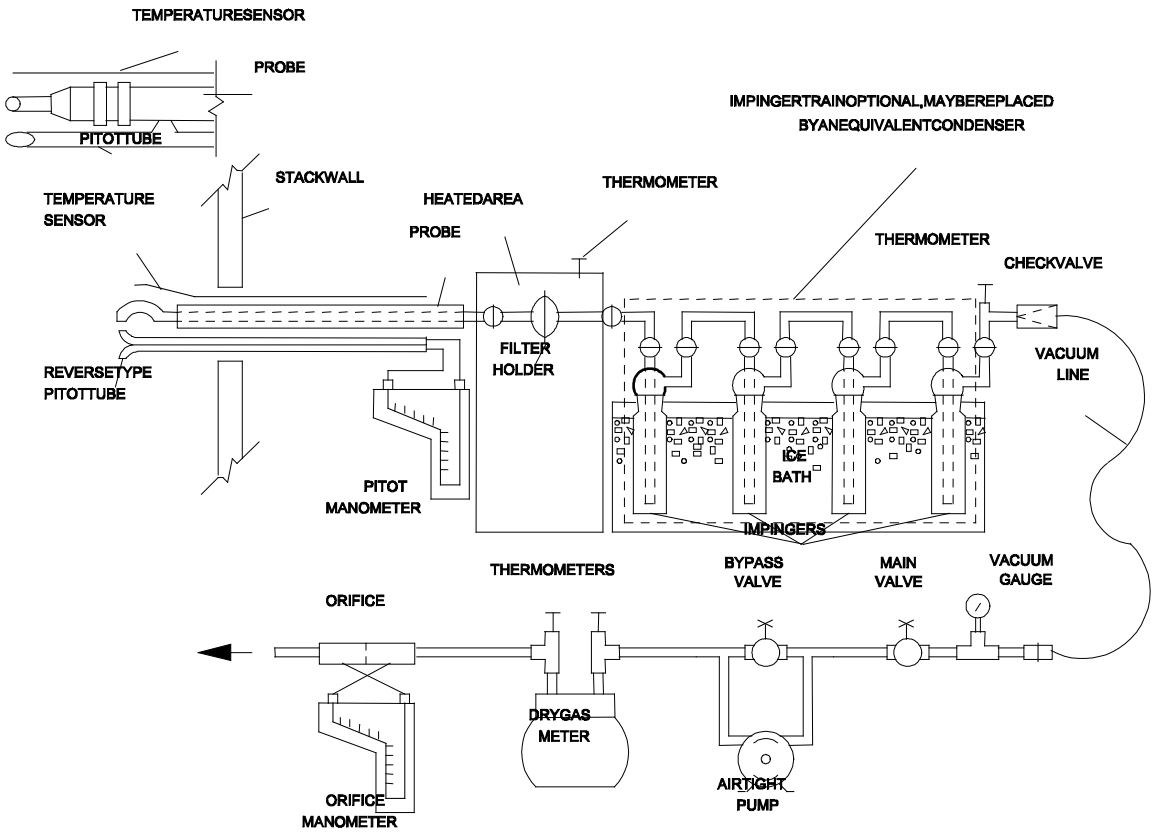
O_2, CO_2, and CO were found using either Fuji Analytical Analyzer by means of infrared and paramagnetic technology (EPA 3A) or by fyrite (EPA Method 3).

NOx (where applicable)

NOx was found using and API Model 252 NOx analyzer that utilizes chemiluminescent technology. Stack gas was Samples were taken over a minimum period of three hours.

VOC's (where applicable)

Hydrocarbons were measured in accordance with EPA method 25A. Samples were drawn in one hour test runs using a total hydrocarbon analyzer that utilizes Flame Ionization Technology.



EPA Method 5 Diagram- Figure 1

CALCULATIONS

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after the final calculation. Other forms of the equations may be used as long as they give equivalent results.

Nomenclature.

A_n = Cross-sectional area of nozzle, m^2 (ft^2).
B_{ws} = Water vapor in the gas stream, proportion by volume.
C_a = Acetone blank residue concentration, mg/g.
c_s = Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, g/dscm (g/dscf).
I = Percent of isokinetic sampling.
L_a = Maximum acceptable leakage rate for either a pretest leak check or for a leak check following a component change; equal to 0.00057 m^3/min (0.02 cfm) or 4 percent of the average sampling rate, whichever is less.
L_i = Individual leakage rate observed during the leak check conducted prior to the "i^{th}" component change (i = l, 2, 3...n), m^3/min (cfm).
L_p = Leakage rate observed during the post-test leak check, m^3/min (cfm).
m_a = Mass of residue of acetone after evaporation, mg.
m_n = Total amount of particulate matter collected, mg.
M_w = Molecular weight of water, l8.0 g/g-mole (l8.0 lb/lb-mole).
P_{bar} = Barometric pressure at the sampling site, mm Hg (in. Hg).
P_s = Absolute stack gas pressure, mm Hg (in. Hg).
P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).
R = Ideal gas constant, 0.06236 [(mmHg)(m^3)]/[(°K)(g-mole)] {2l.85 [(in. Hg)(ft^3)]/[(°R)(lb-mole)]}.
T_m = Absolute average DGM temperature (see Figure 5-2), °K (°R).
T_s = Absolute average stack gas temperature (see Figure 5-2), °K (°R).
T_{std} = Standard absolute temperature, 293°K (528°R).
V_a = Volume of acetone blank, ml.
V_{aw} = Volume of acetone used in wash, ml.
V_{lc} = Total volume liquid collected in impingers and silica gel (see Figure 5-3), ml.
V_m = Volume of gas sample as measured by dry gas meter, dcm (dcf).
$V_{m(std)}$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscm (dscf).
$V_{w(std)}$ = Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).
v_s = Stack gas velocity, calculated by Method 2, Equation 2-9, using data obtained from Method 5, m/sec (ft/sec).
W_a = Weight of residue in acetone wash, mg.
Y = Dry gas meter calibration factor.
ΔH = Average pressure differential across the orifice meter (see Figure 5-2), mm H_20 (in. H_20).
ρ_a = Density of acetone, mg/ml (see label on bottle).
ρ_w = Density of water, 0.9982 g/ml (0.00220l lb/ml).
θ = Total sampling time, min.
θ_l = Sampling time interval, from the beginning of a run until the first component change, min.
θ_i = Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, min.
θ_p = Sampling time interval, from the final (n^{th}) component change until the end of the sampling run, min.
l3.6 = Specific gravity of mercury.
60 = Sec/min.
l00 = Conversion to percent.

Average Dry Gas Meter Temperature and Average Orifice Pressure Drop.

Dry Gas Volume. Correct the sample volume measured by the dry gas meter to standard conditions (20°C, 760 mm Hg or 68°F, 29.92 in. Hg) by using Equation 5-l.

$$V_{m(std)} = V_m Y \left(\frac{T_{std}}{T_m} \right) \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{P_{std}} \right] \qquad \text{Eq. 5-1}$$

$$= K_1 V_m Y \frac{P_{bar} + \left(\frac{\Delta H}{13.6} \right)}{T_m}$$

where:

K_l = 0.3858 °K/mm Hg for metric units,

= l7.64 °R/in. Hg for English units.

NOTE: Equation 5-l can be used as written unless leakage rate observed during any of the mandatory leak checks (i.e., the post-test leak check or leak checks conducted prior to component changes) exceeds L_a. If L_p or L_i exceeds L_a, Equation 5-l must be modified as follows:

(a) Case I. No component changes made during sampling run. In this case, replace V_m in Equation 5-l with the expression:

$$[V_m - (L_p - L_a)\,\theta]$$

(b) Case II. One or more component changes made during the sampling run. In this case, replace V_m in Equation 5-l by the expression:

$$\left[V_m - (L_1 - L_a)\theta_1 - \sum_{i=2}^{n} (L_i - L_a)\theta_i - (L_p - L_a)\theta_p \right]$$

and substitute only for those leakage rates (L_i or L_p) which exceed L_a.

Volume of Water Vapor.

$$V_{w(std)} = \frac{V_{lc}\,\rho_w\,R\,T_{std}}{M_w\,P_{std}} = K_2\,V_{lc} \qquad \text{Eq. 5-2}$$

where:

K_2 = 0.00l333 m^3/ml for metric units,

= 0.04707 ft^3/ml for English units.

Moisture Content.

$$B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}} \qquad \text{Eq. 5-3}$$

Acetone Blank Concentration.

$$C_a = \frac{m_a}{V_a \rho_a} \qquad \text{Eq. 5-4}$$

Acetone Wash Blank.

$$W_a = C_a V_{aw} \rho_a \qquad \text{Eq. 5-5}$$

Total Particulate Weight. Determine the total particulate matter catch from the sum of the weights obtained from Containers l and 2 less the acetone blank (see Figure 5-3).

Particulate Concentration.

$$C_s = (0.001 g/mg)(m_n / V_{m(std)}) \qquad \text{Eq. 5-6}$$

Conversion Factors:

From	To	Multiply by
scf	m^3	0.02832
g/ft^3	gr/ft^3	l5.43
g/ft^3	lb/ft^3	2.205×10^{-3}
g/ft^3	g/m^3	35.3l

Isokinetic Variation.

Calculation from Raw Data.

$$I = \frac{100 T_s \left[K_3 V_{1c} + (V_m Y / T_m)(P_{bar} + \Delta H/13.6)\right]}{60\theta V_s P_s A_n} \qquad \text{Eq. 5-7}$$

where:

K_3 = 0.003454 [(mm Hg)(m^3)]/[(ml)(°K)] for metric units,

= 0.002669 [(in. Hg)(ft^3)]/[(ml)(°R)] for English units.

Calculation from Intermediate Values.

$$I = \frac{100\, T_s\, V_{m(std)}\, P_{std}}{60\, T_{std}\, v_s\, \theta\, A_n\, P_s\, (1 - B_{ws})} = \frac{K_4\, T_s\, V_{m(std)}}{P_s\, v_s\, A_n\, \theta (1 - B_{ws})} \qquad \text{Eq.5-8}$$

where:

K_4 = 4.320 for metric units,

= 0.09450 for English units.

Acceptable Results. If 90 percent ≤ I ≤ ll0 percent, the results are acceptable. If the PM results are low in comparison to the standard, and "I" is over 110 percent or less than 90 percent, the Administrator may opt to accept the results. Citation 4 in the Bibliography may be used to make acceptability judgments. If "I" is judged to unacceptable, reject the results, and repeat the test.

Average Stack Gas Velocity.

$$v_s = K_p\, C_p\, (\sqrt{\Delta p})_{avg} \sqrt{\frac{T_{s(avg)}}{P_s\, M_s}}$$

Average Stack Gas Dry Volumetric Flow Rate.

$$Q_{sd} = 3{,}600 (1 - B_{ws})\, v_s\, A\, \frac{T_{std}}{T_{s(avg)}}\, \frac{P_s}{P_{std}}$$

where:

A	=	Cross-sectional area of stack, m^2 (ft^2).
B_{ws}	=	Water vapor in the gas stream (from Method 5 or Reference Method 4), proportion by volume.
C_p	=	Pitot tube coefficient, dimensionless.
K_p	=	Pitot tube constant,
M_d	=	Molecular weight of stack gas, dry basis (see Section 3.6), g/gmole (lb/lb-mole).
M_s	=	Molecular weight of stack gas, wet basis, g/g-mole (lb/lb-mole).

$$= M_d (1 - B_{ws}) + 18.0\, B_{ws} \qquad \text{Eq. 2-5}$$

P_{bar}	=	Barometric pressure at measurement site, mm Hg (in. Hg).
P_g	=	Stack static pressure, mm Hg (in. Hg).
P_s	=	Absolute stack pressure, mm Hg (in. Hg),

$$= P_{bar} + P_g$$

P_{std}	=	Standard absolute pressure, 760 mm Hg (29.92 in. Hg).
Q_{sd}	=	Dry volumetric stack gas flow rate corrected to standard conditions, dsm^3/hr (dscf/hr).
t_s	=	Stack temperature, □C (□F).
T_s	=	Absolute stack temperature, □K (□R).

Calibration Certificate for S-Type Pitot Tube

Date: Jan 7/15

Barometric Pressure ("Hg): 29.9

Pitot I.D.: **107**

Wind Tunnel Temperature (^{O}F): 66.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
11.72	0.03161	0.04242	0.85459
26.28	0.15880	0.22190	0.83748
42.45	0.41433	0.57741	0.83863
58.04	0.77446	1.06033	0.84609
82.87	1.57900	2.18794	0.84102
98.54	2.23250	3.15269	0.83309

Average= 0.84182

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 7/15

Barometric Pressure ("Hg): 30.05

Pitot I.D.: **126**

Wind Tunnel Temperature (^{O}F): 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
18.00	0.07434	0.09688	0.86723
20.50	0.09642	0.13255	0.84437
37.39	0.32060	0.45527	0.83077
57.44	0.75665	1.05584	0.83807
84.53	1.63871	2.26076	0.84287
103.68	2.46546	3.36693	0.84716

Average= 0.84508

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 9/15

Barometric Pressure ("Hg): 30.01

Pitot I.D.: **128**

Wind Tunnel Temperature (^{O}F): 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
11.36	0.02955	0.04275	0.82305
26.90	0.16569	0.24741	0.81017
40.09	0.36809	0.52994	0.82508
60.68	0.84333	1.18797	0.83412
80.87	1.49781	2.10805	0.83449
100.21	2.29978	3.31383	0.82473

Average= 0.82527

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 7/15

Barometric Pressure ("Hg): 30.05

Pitot I.D.: **140**

Wind Tunnel Temperature (^{O}F): 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
13.96	0.04470	0.05733	0.87412
19.79	0.08982	0.12082	0.85361
42.36	0.41144	0.58576	0.82971
59.59	0.81441	1.17118	0.82555
80.40	1.48260	2.12088	0.82773
101.66	2.37016	3.46311	0.81901

Average= 0.83829

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 7/15

Barometric Pressure ("Hg): 29.74

Pitot I.D.: **148**

Wind Tunnel Temperature (^{O}F): 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
13.70	0.04262	0.06065	0.82988
19.15	0.08321	0.11798	0.83141
41.62	0.39311	0.56173	0.82819
63.14	0.90476	1.26630	0.83683
81.31	1.50057	2.07940	0.84100
99.41	2.24318	3.18588	0.83072

Average= 0.83300

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 7/15

Barometric Pressure ("Hg): 29.78

Pitot I.D.: **152**

Wind Tunnel Temperature (^{O}F): 64.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
13.28	0.04053	0.05797	0.82785
24.59	0.13902	0.20424	0.81678
57.01	0.74719	1.03491	0.84120
80.85	1.50254	2.11524	0.83439
100.28	2.31163	3.24400	0.83571
130.09	3.89031	5.48834	0.83350

Average= 0.83157

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 8/15

Barometric Pressure ("Hg): 29.78

Pitot I.D.: **200**

Wind Tunnel Temperature (^{O}F): 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
17.53	0.06982	0.10114	0.82249
41.78	0.39667	0.56684	0.82817
50.67	0.58346	0.81271	0.83883
60.32	0.82699	1.14880	0.83997
86.08	1.68407	2.38761	0.83144
101.99	2.36401	3.27573	0.84102

Average= 0.83365

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 8/15

Barometric Pressure ("Hg): 29.78

Pitot I.D.: **271**

Wind Tunnel Temperature (^{O}F): 70.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
12.09	0.03322	0.04750	0.82791
19.82	0.08927	0.12920	0.82292
40.74	0.37718	0.53379	0.83219
63.09	0.90465	1.24591	0.84359
81.80	1.52066	2.09085	0.84428
102.88	2.40539	3.30056	0.84515

Average= 0.83601

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: Jan 7/15

Barometric Pressure ("Hg): 29.9

Pitot I.D.: **151**

Wind Tunnel Temperature (^{O}F): 66.0

Nozzle: 0.250

Wind Velocity (ft/sec)	*Ref.Pitot ("H_2O)*	*S-Type Pitot ("H_2O)*	*Pitot Factor*
12.79	0.03761	0.05454	0.82212
24.92	0.14279	0.21005	0.81625
67.01	1.03247	1.39509	0.85168
84.54	1.64317	2.24046	0.84783
111.45	2.85599	3.84337	0.85341
129.35	3.84685	5.20987	0.85070

Average= 0.84033

Note: The new pitot tip should be installed so that the serial number engraved is aligned directly into the gas stream.

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: July 14/15

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1038

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	70.0	70.0	70.0
P=Pres. Differential at WTM ("Hg)	0.0699	0.1361	0.1876
Pb= Atmospheric Pressure ("Hg)	29.90	29.90	29.90
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7390	0.7390	0.7390
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	85.0	81.0	86.0
To= Dry Test Meter Outlet Temp. (oF.)	84.0	78.0	85.0
Ri= Initial Dry Test volume (ft3)	88.45	82.47	94.00
Rf= Final Dry Test Volume (ft3)	93.44	87.42	98.93
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	29.8301	29.7639	29.7124
Pd= Pb + (^H/13.59) "Hg	29.9736	30.0472	30.1208
Tw= Ta +460 (oR.)	530.0	530.0	530.0
Td= [(Ti + To)/2] + 460 (oR.)	544.5	539.5	545.5
Bw= Pv/Pb ("Hg)	0.0247	0.0247	0.0247
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	0.9914	0.9856	0.9964

Y (MEAN)(WTMF) = 0.9911

MCCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: July 14/15

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-980

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	70.0	70.0	70.0
P=Pres. Differential at WTM ("Hg)	0.0920	0.1619	0.2244
Pb= Atmospheric Pressure ("Hg)	29.90	29.90	29.90
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7390	0.7390	0.7390
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	88.0	86.0	89.0
To= Dry Test Meter Outlet Temp. (oF.)	87.0	86.0	88.0
Ri= Initial Dry Test volume (ft3)	27.05	21.35	32.33
Rf= Final Dry Test Volume (ft3)	32.05	26.29	37.30
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	29.8080	29.7381	29.6756
Pd= Pb + (^H/13.59) "Hg	29.9736	30.0472	30.1208
Tw= Ta +460 (oR.)	530.0	530.0	530.0
Td= [(Ti + To)/2] + 460 (oR.)	547.5	546.0	548.5
Bw= Pv/Pb ("Hg)	0.0247	0.0247	0.0247
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
ated Y Value)(WTMF)	0.9941	0.9986	0.9926

Y (MEAN)(WTMF) = 0.9951

N.R. MCCALL & ASSOCIATES LTD.

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: 14-Jul-15

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1021

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	70.0	70.0	70.0
P=Pres. Differential at WTM ("Hg)	0.0725	0.1156	0.2675
Pb= Atmospheric Pressure ("Hg)	29.90	29.90	29.90
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7390	0.7390	0.7390
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	72.0	73.0	74.0
To= Dry Test Meter Outlet Temp. (oF.)	72.0	73.5	76.9
Ri= Initial Dry Test volume (ft3)	28.24	36.78	47.79
Rf= Final Dry Test Volume (ft3)	32.95	41.67	52.81
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	29.8275	29.7844	29.6325
Pd= Pb + (^H/13.59) "Hg	29.9736	30.0472	30.1208
Tw= Ta +460 (oR.)	530.0	530.0	530.0
Td= [(Ti + To)/2] + 460 (oR.)	532.0	533.3	535.5
Bw= Pv/Pb ("Hg)	0.0247	0.0247	0.0247
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	1.0261	0.9868	0.9579

Y (MEAN)(WTMF) = 0.9903

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: July 14/15

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1039

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	70.0	70.0	70.0
P=Pres. Differential at WTM ("Hg)	0.0957	0.1656	0.2465
Pb= Atmospheric Pressure ("Hg)	29.90	29.90	29.90
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.7390	0.7390	0.7390
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	82.0	78.0	80.0
To= Dry Test Meter Outlet Temp. (oF.)	78.0	75.0	76.0
Ri= Initial Dry Test volume (ft3)	26.80	21.55	32.08
Rf= Final Dry Test Volume (ft3)	31.77	26.45	36.98
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	29.8043	29.7344	29.6535
Pd= Pb + (^H/13.59) "Hg	29.9736	30.0472	30.1208
Tw= Ta +460 (oR.)	530.0	530.0	530.0
Td= [(Ti + To)/2] + 460 (oR.)	540.0	536.5	538.0
Bw= Pv/Pb ("Hg)	0.0247	0.0247	0.0247
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
ated Y Value)(WTMF)	0.9863	0.9891	0.9868

Y (MEAN)(WTMF) = 0.9874

MCCALL ENVIRONMENTAL

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: Jan 8/15

CONSOLE MANUF.: Apex Instruments

CONSOLE I.D.:

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	59.0	59.0	59.0
P=Pres. Differential at WTM ("Hg)	0.0736	0.1325	0.1913
Pb= Atmospheric Pressure ("Hg)	29.80	29.80	29.80
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.50320	0.50320	0.50320
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	60.0	59.0	61.0
To= Dry Test Meter Outlet Temp. (oF.)	60.0	59.0	61.0
Ri= Initial Dry Test volume (ft3)	65.11	58.14	70.40
Rf= Final Dry Test Volume (ft3)	69.89	63.13	75.62
Vi= Initial Wet Test Volume (ft3)	0.0	0.0	0.0
Vf= Final Wet Test Volume (ft3)	5.000	5.000	5.000
Pw= Pb - (^P/13.59) "Hg	29.7264	29.6675	29.6087
Pd= Pb + (^H/13.59) "Hg	29.8736	29.9472	30.0208
Tw= Ta +460 (oR.)	519.0	519.0	519.0
Td= [(Ti + To)/2] + 460 (oR.)	520.0	519.0	521.0
Bw= Pv/Pb ("Hg)	0.0169	0.0169	0.0169
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	1.0173	0.9683	0.9251

Y (MEAN)(WTMF) = 0.9702

MCCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: July 14/15

CONSOLE I.D. C-1038

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9914	0.9914	0.9856
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	1.4	3.4	6.2
Rf=final gas meter vol.	3.26	6.05	9.44
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.3688008	0.525442	0.6386688
Tm=meter out temp. (oF)	85	86	86
Tm=meter out temp. (oR.)	545	546	546
Pm=Pb + ^H	29.936792	29.973584	30.010375
SQRT(Tm/Pm*H/Md)	0.5605687	0.7930037	0.9706317
Ko=orifice const.	0.6579047	0.6625971	0.6579929

Ko MEAN = 0.6594983

Ko*4*144= 379.87099

McCALL ENVIRONMENTAL

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: July 14/15

CONSOLE I.D. C-1038

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9856	0.9964	0.9964
Delta H=	2	2.5	3
Ri=int. gas meter vol.	9.6	13.4	17.7
Rf=final gas meter vol.	13.24	17.55	22.22
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.7175168	0.827012	0.9007456
Tm=meter out temp. (oF)	87	87	88
Tm=meter out temp. (oR.)	547	547	548
Pm=Pb + ^H	30.047167	30.083959	30.120751
SQRT(Tm/Pm*H/Md)	1.1211278	1.2526923	1.3726703
Ko=orifice const.	0.6399955	0.6601877	0.6561995

Ko MEAN = 0.6521276

Ko*4*144= 375.62547

McCALL ENVIRONMENTAL

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: July 14/15

CONSOLE I.D. C-1039

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9863	0.9863	0.9892
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	37.4	40.2	43.5
Rf=final gas meter vol.	39.66	43.31	47.29
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.4458076	0.6134786	0.7498136
Tm=meter out temp. (oF)	82	83	84
Tm=meter out temp. (oR.)	542	543	544
Pm=Pb + ^H	29.936792	29.973584	30.010375
SQRT(Tm/Pm*H/Md)	0.5590237	0.7908221	0.9688524
Ko=orifice const.	0.7974752	0.7757479	0.7739194

Ko MEAN = 0.7823808

Ko*4*144= 450.65136

McCALL ENVIRONMENTAL

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: July 14/15

CONSOLE I.D. C-1039

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9892	0.9868	0.9868
Delta H=	2	2.5	3
Ri=int. gas meter vol.	47.4	51.9	56.9
Rf=final gas meter vol.	51.73	56.77	62.28
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.8566472	0.9611432	1.0617968
Tm=meter out temp. (oF)	85	86	87
Tm=meter out temp. (oR.)	545	546	547
Pm=Pb + ^H	30.047167	30.083959	30.120751
SQRT(Tm/Pm*H/Md)	1.1190764	1.2515467	1.3714173
Ko=orifice const.	0.7654949	0.7679643	0.7742332

Ko MEAN = 0.7692308

Ko*4*144= 443.07692

McCALL ENVIRONMENTAL

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 15-Jul-15

CONSOLE I.D. C-1021

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9903	0.9903	0.9903
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	74.6	77.62	80.5
Rf=final gas meter vol.	76.45	80.31	83.63
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.366411	0.5327814	0.6199278
To=meter outlet Temp (oF)	55	56	58
Tm=meter out temp. (oR)	515	516	518
Pm=Pb + ^H	29.936792	29.973584	30.010375
SQRT(Tm/Pm*H/Md)	0.5449219	0.7709101	0.9454162
Ko=orifice const.	0.6724102	0.691107	0.6557195

Ko MEAN = 0.6730789

Ko*4*144= 387.69344

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 15-Jul-15

CONSOLE I.D. C-1021

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9903	0.9903	0.9903
Delta H=	2	2.5	3
Ri=int. gas meter vol.	84.7	94.8	1.36
Rf=final gas meter vol.	88.43	98.9	5.84
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.7387638	0.812046	0.8873088
To=meter outlet Temp (oF)	59	62	63
Tm=meter out temp. (oR)	519	522	523
Pm=Pb + ^H	30.047167	30.083959	30.120751
SQRT(Tm/Pm*H/Md)	1.0920566	1.2237311	1.3409939
Ko=orifice const.	0.6764886	0.663582	0.6616799

Ko MEAN = 0.6672502

Ko*4*144= 384.33611

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: July 14/15

CONSOLE I.D. C-980

	RUN 1	RUN 2	RUN 3
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9941	0.9941	0.9986
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	37.7	40.2	43.4
Rf=final gas meter vol.	39.87	43.26	47.14
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.4314394	0.6083892	0.7469528
To=meter outlet Temp (oF)	87	89	89
Tm=meter out temp. (oR)	547	549	549
Pm=Pb + ^H	29.936792	29.9735835	30.0103753
SQRT(Tm/Pm*H/Md)	0.5615964	0.79517932	0.97329463
Ko=orifice const.	0.7682375	0.76509686	0.76744777

Ko MEAN = 0.7669274

Ko*4*144= 441.75018

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: July 14/15

CONSOLE I.D. C-980

	RUN 4	RUN 5	RUN 6
MD= mol. wt. dry air	28.967	28.967	28.967
Pb=bar. pressure "Hg	29.9	29.9	29.9
Y=gas meter factor	0.9986	0.9926	0.9926
Delta H=	2	2.5	3
Ri=int. gas meter vol.	47.4	51.8	56.7
Rf=final gas meter vol.	51.61	56.45	61.79
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.8408212	0.923118	1.0104668
Tm=meter out temp. (oF)	90	91	91
Tm=meter out temp. (oR.)	550	551	551
Pm=Pb + ^H	30.047167	30.083959	30.120751
SQRT(Tm/Pm*H/Md)	1.124198	1.2572642	1.3764225
Ko=orifice const.	0.7479298	0.7342275	0.7341254

Ko MEAN = 0.7387609

Ko*4*144= 425.52629

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

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Exova

Analytical Report

Bill To:	McCall Environmental	Project:		Lot ID:	**1106304**
Report To:	McCall Environmental	ID:	Lavington Pellet	Control Number:	C0027395
	5100 Nightingale Road	Name:		Date Received:	Nov 13, 2015
	Prince George, BC, Canada	Location:		Date Reported:	Nov 16, 2015
	V2K 5V9	LSD:		Report Number:	2061180
Attn:	Matt McCall	P.O.:			
Sampled By:		Acct code:			
Company:					

		Reference Number	1106304-4	1106304-5	1106304-6	
		Sample Date	Nov 11, 2015	Nov 11, 2015	Nov 11, 2015	
		Sample Time	NA	NA	NA	
		Sample Location				
		Sample Description	CF-13 / Test 1	CF-13 / Test 2	CF-13 / Test 3	
		Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	4	2	1	1
Volume	Sample volume	mL	310	310	320	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	