Pinnacle Pellet Inc.
Dryer Stacks 1-4
June 17, 2021
Permit 17557
Williams Lake, B.C.

Our Job Number: ME2021-211

Report Author: Matt McCall
McCall Environmental

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July 19, 2021

Pinnacle Pellet Inc.
1160 South Lakeside Dr.
Williams Lake, B.C.
V2J 6K9

Attention: **Mr. Bill Carson**

Reference: **Parameters Tested –** Total Particulate & Cond. Organics
Test Date(s) – June 17, 2021
Permit – PA-17557
McCall File Number – ME2021-211

As requested our firm has performed a series of air emission tests at your facility in Williams Lake BC.

Testing Parameters

Dryer Stacks 1-4

- Total Particulate and Condensable Organics State of Oregon Method

Key Personnel

- Report Generation: Matt McCall 250-542-5118
- Sr Field Tech: Danny Lawrence 250-857-5713
- Field Tech: Dave Brandle and Nick Angus 250-564-9106
- Plant Personnel: Bill Carson 250-267-7580

All stacks have been examined for cyclonic flow and determined to be tested as laminar in nature.

Test results are summarized immediately following this cover letter.

Lab analysis for condensable organic fractions was carried out by Element Labs in Surrey, B.C. A copy of their report is included in the Appendix of this report.

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

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Matt McCall Digitally signed by Matt McCall
Date: 2021.07.20 10:36:50 -07'00'

Matt McCall

Summary of Test Results

Dryer Results June 17, 2021

Total Particulate **Average of Triplicate Tests**

Parameter	Stack 1	Stack2	Stack 3	Stack 4	Average / Total	Permit
Test Date	17-Jun-21	17-Jun-21	17-Jun-21	17-Jun-21	N/A	
Gas Temperature (°C)	24.7	24.8	30.4	39.9	30.0	
% Moisture	2.60	1.96	3.20	3.53	2.82	
Velocity (m/sec)	9.19	9.67	7.86	8.42	8.79	
ACFM	57001	59968	48743	52193	217905	
Std. Dry Flow Rate (m^3/sec)	24.43	25.85	20.37	21.07	91.72	90.00
Tot Part. Dry Basis ref. Cond. (mg/m^3)	11.28	21.63	21.67	21.53	19.03	15.00
Front Half Particulate (mg/m^3)	9.55	19.76	21.46	18.86	17.41	
Back Half Condensibles (mg/m^3)	1.73	1.87	0.20	2.67	1.62	
Mass Emission Rate (kg/hr)	0.99	2.01	1.59	1.63	6.23	

* Mass Emission Rates (Flow, kg/hr are a total combined value, concentration, temp etc is averaged)

Discussion Of Test Results

Test results are all in compliance with permitted limits.

Last time this sources was tested in May of 2021 the average velocity was 82.97 m^3/sec and at a concentration of 11.58 mg/m^3.

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Pinnacle Pellet **17-Jun-21**
Dryer Stack 1 **Permit Number: RA-17557**
Williams Lake

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	76 ^{o} F	25 ^{o} C
Moisture Content (by volume):	2.60 %	
Average Stack Gas Velocity:	30.2 ft/sec	9.2 m/sec
Total Actual Gas Flow Rate:	57001 ACFM	
Dry Gas flow Rate at Reference Conditions:	51755 SCFM	24.4 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.005 gr/ft^3	11.28 mg/m^3
Front Half Particulate	0.004 gr/ft^3	9.5 mg/m^3
Back Half Condensibles	0.001 gr/ft^3	1.7 mg/m^3
Mass Emission Rate	2.19 lbs/hr	0.99 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	77 ^{o} F	25 ^{o} C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	30.1 ft/sec	9.2 m/sec
Total Actual Gas Flow Rate:	56861 ACFM	
Dry Gas flow Rate at Reference Conditions:	51557 SCFM	24.3 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft^3	10.7 mg/m^3
Front Half Particulate	.004 gr/ft^3	8.9 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.7 mg/m^3
Mass Emission Rate	2.06 lbs/hr	0.93 kg/hr

TEST 2:

Gas Temperature:	76 ^{o} F	25 ^{o} C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	30.1 ft/sec	9.2 m/sec
Total Actual Gas Flow Rate:	56907 ACFM	
Dry Gas flow Rate at Reference Conditions:	51667 SCFM	24.4 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft^3	10.7 mg/m^3
Front Half Particulate	.004 gr/ft^3	9.0 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.7 mg/m^3
Mass Emission Rate	2.07 lbs/hr	0.94 kg/hr

TEST 3:

Gas Temperature:	76 ^{o} F	24 ^{o} C
Moisture Content (by volume):	2.6 %	
Average Stack Gas Velocity:	30.3 ft/sec	9.2 m/sec
Total Actual Gas Flow Rate:	57234 ACFM	
Dry Gas flow Rate at Reference Conditions:	52041 SCFM	24.6 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.005 gr/ft^3	12.5 mg/m^3
Front Half Particulate	.005 gr/ft^3	10.7 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.7 mg/m^3
Mass Emission Rate	2.43 lbs/hr	1.10 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet**		
Plant Location:	**Williams Lake**		
Process:	**Dryer Stack 1**		
Permit Number:	**RA-17557**		
Job Number:	**ME2021-211**		
Pollution Control Permit:	**15.0**	**mg/m3**	22.5 **m3/sec**
Number of Tests:	**3**	**tests**	
Minutes per Point:	**2.5**	**minutes**	

	TEST 1	TEST 2	TEST 3
Filter Number:	M2	M3	M4
Date of Test:	17-Jun-21	17-Jun-21	17-Jun-21
Start Time:	8:39	9:48	10:57
Stop Time:	9:40	10:49	11:58
On-line Sampling Time:	60	60	60
Testing Personnel:	DB/NA	DB/NA	DB/NA
Sampler Model:	1021	1021	1021
Barometric Pressure("Hg):	28.35	28.35	28.35
Static Pressure("H_2O):	-0.21	-0.21	-0.21
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.275	0.275	0.275
Meter Factor:	1.0124	1.0124	1.0124
Type-S Pitot Tube Coefficient:	0.83867	0.83867	0.83867
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	13	11	14
Weight of Moisture in Silica Gel(g):	2.4	2.9	2.1
Weight of Filter Particulate(g):	0.0001	0.0001	0.0002
Weight of Probe Washings(g):	0.0102	0.0103	0.0122
Weight of Impinger Content Organic(g):	0.0020	0.0020	0.0020
Total Weight of Particulate(g):	0.0123	0.0124	0.0144

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Sampling Data for - *TEST 1*
Pinnacle Pellet
Dryer Stack 1
Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
A-12	0.25	1.63	65	68	79	98.54	1.01
A-11	0.25	1.65	70	69	76	100.25	1.03
A-10	0.24	1.58	70	69	76	102.00	1.00
A-9	0.22	1.45	70	69	76	103.68	1.02
A-8	0.19	1.25	73	68	77	105.31	0.99
A-7	0.18	1.20	80	69	78	106.79	1.00
A-6	0.19	1.26	81	70	79	108.25	1.00
A-5	0.22	1.46	83	70	79	109.75	1.03
A-4	0.26	1.73	85	70	79	111.42	1.02
A-3	0.27	1.80	86	71	79	113.22	1.00
A-2	0.28	1.87	87	72	79	115.01	0.97
A-1	0.28	1.87	90	73	80	116.79	1.00
B-12	0.40	2.68	92	74	81	118.63	1.01
B-11	0.40	2.69	94	75	81	120.85	1.01
B-10	0.41	2.77	96	78	81	123.07	1.00
B-9	0.39	2.65	98	79	79	125.32	1.01
B-8	0.31	2.13	99	83	77	127.53	1.00
B-7	0.28	1.93	101	86	76	129.51	1.01
B-6	0.27	1.87	102	87	74	131.42	0.98
B-5	0.24	1.37	102	88	73	133.25	1.01
B-4	0.27	1.88	102	89	73	135.03	1.00
B-3	0.25	1.74	102	90	74	136.89	1.00
B-2	0.21	1.47	103	91	73	138.68	1.04
B-1	0.20	1.40	105	92	72	140.39	1.01
						142.02	

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Sampling Data for - *TEST 2*
Pinnacle Pellet
Dryer Stack 1
Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
B-12	0.26	1.82	90	89	73	43.00	1.02
B-11	0.25	1.76	95	92	74	44.84	0.99
B-10	0.24	1.69	102	93	74	46.61	1.03
B-9	0.20	1.42	103	94	74	48.42	1.02
B-8	0.18	1.28	104	94	74	50.07	0.99
B-7	0.20	1.43	105	95	74	51.59	1.00
B-6	0.21	1.50	106	96	75	53.21	1.08
B-5	0.23	1.64	106	97	75	55.00	0.99
B-4	0.27	1.93	107	98	76	56.72	1.02
B-3	0.27	1.93	107	98	76	58.64	0.99
B-2	0.28	1.99	107	99	77	60.51	1.01
B-1	0.29	2.07	108	99	77	62.44	0.99
A-12	0.39	2.79	108	100	78	64.38	1.00
A-11	0.40	2.86	109	101	77	66.65	1.02
A-10	0.40	2.86	110	102	77	68.99	1.01
A-9	0.38	2.72	113	102	76	71.32	1.02
A-8	0.30	2.15	114	103	78	73.61	1.00
A-7	0.28	2.01	114	104	78	75.62	1.00
A-6	0.26	1.87	114	104	78	77.55	1.01
A-5	0.25	1.80	115	105	78	79.43	0.98
A-4	0.28	2.01	116	106	78	81.22	1.02
A-3	0.24	1.73	116	106	79	83.20	1.01
A-2	0.21	1.51	117	107	79	85.02	1.00
A-1	0.20	1.44	117	107	79	86.71	1.01
						88.38	

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Sampling Data for - *TEST 3*
Pinnacle Pellet
Dryer Stack 1
Williams Lake

17-Jun-21

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	0.27	1.92	102	100	75	89.00	1.01
A-11	0.25	1.78	105	102	75	90.89	1.03
A-10	0.23	1.64	109	103	75	92.77	1.00
A-9	0.2	1.43	111	104	76	94.53	1.02
A-8	0.19	1.37	113	105	76	96.20	1.01
A-7	0.2	1.45	115	105	76	97.81	1.03
A-6	0.22	1.59	116	106	76	99.50	1.00
A-5	0.22	1.59	116	106	76	101.23	1.02
A-4	0.26	1.88	117	107	76	103.00	1.02
A-3	0.27	1.96	118	107	76	104.92	0.95
A-2	0.28	2.03	119	108	76	106.75	1.01
A-1	0.28	2.03	120	108	76	108.72	0.98
B-12	0.39	2.84	120	108	75	110.64	0.97
B-11	0.39	2.85	120	109	75	112.88	1.00
B-10	0.40	2.92	120	109	75	115.18	0.97
B-9	0.39	2.85	120	109	76	117.45	1.00
B-8	0.31	2.26	121	110	76	119.76	0.97
B-7	0.30	2.19	121	112	76	121.76	1.05
B-6	0.29	2.12	122	112	76	123.89	0.99
B-5	0.25	1.82	122	112	76	125.88	1.00
B-4	0.26	1.90	122	112	76	127.74	0.95
B-3	0.27	1.98	123	113	75	129.55	0.98
B-2	0.23	1.69	123	113	75	131.44	1.00
B-1	0.20	1.47	123	113	75	133.22	0.99
						134.87	

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Pinnacle Pellet
Dryer Stack 1
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 1.006**

Delta P:	**0.265**	**"H_2O**	**Us avg:**	**30.09**	**ft/sec**
Delta H:	**1.805**		**ACFM:**	**56861**	**ft^3/min**
Tm avg:	**543.0**	**^oR**	**SDCFM:**	**51557**	**ft^3/min**
Ts avg:	**537.1**	**^oR**	**Vm std:**	**40.74**	**ft^3**
Bwo:	**0.026**		**Vm corr:**	**44.02**	**ft^3**
Md:	**28.84**		**Vm:**	**43.48**	**ft^3**
Ms:	**28.56**		**MF:**	**1.0124**	
Pb:	**28.35**	**"Hg**	**PCON:**	**10.66**	**mg/m^3**
Pm:	**28.48**	**"Hg**	**ERAT:**	**0.93**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 1.009**

Delta P:	**0.266**	**"H_2O**	**Us avg:**	**30.11**	**ft/sec**
Delta H:	**1.925**		**ACFM:**	**56907**	**ft^3/min**
Tm avg:	**564.0**	**^oR**	**SDCFM:**	**51667**	**ft^3/min**
Ts avg:	**536.4**	**^oR**	**Vm std:**	**40.95**	**ft^3**
Bwo:	**0.026**		**Vm corr:**	**45.94**	**ft^3**
Md:	**28.84**		**Vm:**	**45.38**	**ft^3**
Ms:	**28.56**		**MF:**	**1.0124**	
Pb:	**28.35**	**"Hg**	**PCON:**	**10.69**	**mg/m^3**
Pm:	**28.49**	**"Hg**	**ERAT:**	**0.94**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 0.998**

Delta P:	**0.270**	**"H_2O**	**Us avg:**	**30.28**	**ft/sec**
Delta H:	**1.982**		**ACFM:**	**57234**	**ft^3/min**
Tm avg:	**572.7**	**^oR**	**SDCFM:**	**52041**	**ft^3/min**
Ts avg:	**535.6**	**^oR**	**Vm std:**	**40.77**	**ft^3**
Bwo:	**0.026**		**Vm corr:**	**46.44**	**ft^3**
Md:	**28.84**		**Vm:**	**45.87**	**ft^3**
Ms:	**28.56**		**MF:**	**1.0124**	
Pb:	**28.35**	**"Hg**	**PCON:**	**12.47**	**mg/m^3**
Pm:	**28.50**	**"Hg**	**ERAT:**	**1.10**	**kg/hr**
Ps:	**28.33**	**"Hg**			

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Pinnacle Pellet **17-Jun-21**
Dryer Stack 2 **Permit Number: RA-17557**
Williams Lake, BC **AVERAGE OF AIR EMISSION TESTS 1 TO 3**

Gas Temperature:	77 ^{o} F	25 ^{o} C
Moisture Content (by volume):	1.96 %	
Average Stack Gas Velocity:	31.7 ft/sec	9.7 m/sec
Total Actual Gas Flow Rate:	59968 ACFM	
Dry Gas flow Rate at Reference Conditions:	54777 SCFM	25.9 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.009 gr/ft^3	21.63 mg/m^3
Front Half Particulate	0.009 gr/ft^3	19.8 mg/m^3
Back Half Condensibles	0.001 gr/ft^3	1.9 mg/m^3
Mass Emission Rate	4.44 lbs/hr	2.01 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	78 ^{o} F	25 ^{o} C
Moisture Content (by volume):	2.2 %	
Average Stack Gas Velocity:	31.9 ft/sec	9.7 m/sec
Total Actual Gas Flow Rate:	60291 ACFM	
Dry Gas flow Rate at Reference Conditions:	54837 SCFM	25.9 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.006 gr/ft^3	14.8 mg/m^3
Front Half Particulate	.005 gr/ft^3	12.4 mg/m^3
Back Half Condensibles	.001 gr/ft^3	2.4 mg/m^3
Mass Emission Rate	3.05 lbs/hr	1.38 kg/hr

TEST 2:

Gas Temperature:	78 ^{o} F	26 ^{o} C
Moisture Content (by volume):	2.0 %	
Average Stack Gas Velocity:	31.7 ft/sec	9.7 m/sec
Total Actual Gas Flow Rate:	59899 ACFM	
Dry Gas flow Rate at Reference Conditions:	54562 SCFM	25.8 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.009 gr/ft^3	20.2 mg/m^3
Front Half Particulate	.008 gr/ft^3	18.6 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.6 mg/m^3
Mass Emission Rate	4.13 lbs/hr	1.87 kg/hr

TEST 3:

Gas Temperature:	74 ^{o} F	24 ^{o} C
Moisture Content (by volume):	1.7 %	
Average Stack Gas Velocity:	31.6 ft/sec	9.6 m/sec
Total Actual Gas Flow Rate:	59715 ACFM	
Dry Gas flow Rate at Reference Conditions:	54932 SCFM	25.9 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.013 gr/ft^3	29.9 mg/m^3
Front Half Particulate	.012 gr/ft^3	28.3 mg/m^3
Back Half Condensibles	.001 gr/ft^3	1.6 mg/m^3
Mass Emission Rate	6.15 lbs/hr	2.79 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet**	
Plant Location:	**Williams Lake, BC**	
Process:	**Dryer Stack 2**	
Permit Number:	**RA-17557**	
Job Number:		
Pollution Control Permit:	**15.0 mg/m3**	22.5 **m3/sec**
Number of Tests:	**3 tests**	
Minutes per Point:	**2.5 minutes**	

	TEST 1	TEST 2	TEST 3
Filter Number:	M5	M6	M7
Date of Test:	17-Jun-21	17-Jun-21	17-Jun-21
Start Time:	8:53	10:02	11:09
Stop Time:	9:55	11:04	12:11
On-line Sampling Time:	60	60	0:00
Testing Personnel:	DB	DB	DB
Sampler Model:	980	980	980
Barometric Pressure("Hg):	28.35	28.35	28.35
Static Pressure("H_2O):	-0.22	-0.22	-0.22
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.280	0.280	0.280
Meter Factor:	1.0009	1.0009	1.0009
Type-S Pitot Tube Coefficient:	0.83829	0.83829	0.83829
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	16	14	11
Weight of Moisture in Silica Gel(g):	5.3	5.0	5.0
Weight of Filter Particulate(g):	0.0002	0.0001	0.0001
Weight of Probe Washings(g):	0.0153	0.0231	0.0352
Weight of Impinger Content Organic(g):	0.0030	0.0020	0.0020
Total Weight of Particulate(g):	0.0185	0.0252	0.0373

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Sampling Data for - *TEST 1*

Pinnacle Pellet

Dryer Stack 2

Williams Lake, BC

17-Jun-21

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	0.36	2.09	61	61	76	7.24	0.94
A-11	0.32	1.86	70	60	81	9.24	1.00
A-10	0.30	1.75	76	63	82	11.24	1.05
A-9	0.24	1.41	80	63	82	13.29	1.02
A-8	0.22	1.29	82	66	82	15.09	0.95
A-7	0.24	1.41	84	66	83	16.69	1.07
A-6	0.29	1.72	88	68	82	18.58	0.99
A-5	0.31	1.84	90	69	82	20.52	0.92
A-4	0.31	1.85	94	71	82	22.39	1.00
A-3	0.27	1.62	95	73	81	24.42	0.98
A-2	0.26	1.57	96	74	79	26.28	0.99
A-1	0.24	1.46	97	76	77	28.14	1.01
B-12	0.39	2.38	98	78	76	29.97	0.95
B-11	0.42	2.60	105	80	74	32.18	0.96
B-10	0.42	2.60	106	80	74	34.50	0.98
B-9	0.39	2.42	106	82	74	36.89	0.96
B-8	0.38	2.36	106	83	73	39.13	0.99
B-7	0.31	1.93	107	84	73	41.43	0.96
B-6	0.28	1.75	107	85	73	43.44	1.02
B-5	0.26	1.62	107	88	74	45.48	0.94
B-4	0.23	1.43	107	88	76	47.29	1.02
B-3	0.24	1.49	107	88	75	49.14	1.02
B-2	0.26	1.62	109	89	75	51.04	0.96
B-1	0.30	1.88	109	90	74	52.89	1.01
						54.99	

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Sampling Data for - *TEST 2*

Pinnacle Pellet

Dryer Stack 2

Williams Lake, BC

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.35	2.11	91	89	94	55.58	1.00
A-11	0.31	1.94	102	93	80	57.75	0.95
A-10	0.30	1.88	104	90	79	59.74	1.00
A-9	0.26	1.63	107	90	80	61.81	0.94
A-8	0.21	1.32	107	90	80	63.63	1.02
A-7	0.25	1.57	106	91	79	65.39	1.04
A-6	0.30	1.89	109	91	79	67.35	1.02
A-5	0.30	1.90	113	92	79	69.47	0.98
A-4	0.32	2.03	113	92	79	71.51	1.00
A-3	0.28	1.78	112	93	78	73.67	0.95
A-2	0.25	1.44	111	94	79	75.58	0.94
A-1	0.24	1.52	111	94	78	77.37	1.03
B-12	0.40	2.54	113	95	79	79.29	1.01
B-11	0.40	2.55	115	96	79	81.73	0.94
B-10	0.42	2.68	116	96	79	84.01	0.97
B-9	0.40	2.57	117	98	76	86.41	1.02
B-8	0.36	2.32	117	97	75	88.90	0.97
B-7	0.30	1.94	117	98	74	91.14	1.09
B-6	0.27	1.74	117	98	74	93.44	0.99
B-5	0.20	1.29	116	98	74	95.43	0.93
B-4	0.24	1.54	115	98	75	97.04	1.06
B-3	0.25	1.61	116	99	75	99.04	1.00
B-2	0.25	1.61	115	99	74	100.97	0.98
B-1	0.29	1.87	116	99	74	102.87	0.98
						104.90	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 3*

Pinnacle Pellet

Dryer Stack 2

Williams Lake, BC

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.36	2.29	102	98	76	6.25	0.90
A-11	0.31	1.97	109	98	78	8.31	0.96
A-10	0.3	1.91	111	98	78	10.35	0.94
A-9	0.25	1.60	110	100	78	12.32	1.05
A-8	0.22	1.41	113	99	77	14.34	0.92
A-7	0.23	1.47	114	99	76	16.00	1.03
A-6	0.28	1.80	116	99	76	17.91	1.03
A-5	0.3	1.94	118	99	75	20.02	1.00
A-4	0.31	2.00	118	99	75	22.15	1.00
A-3	0.26	1.68	118	100	74	24.30	0.97
A-2	0.26	1.68	117	100	74	26.22	1.04
A-1	0.23	1.49	120	100	74	28.28	0.95
B-12	0.40	2.59	120	100	74	30.05	0.99
B-11	0.42	2.73	120	101	74	32.47	0.97
B-10	0.40	2.60	120	101	73	34.90	0.97
B-9	0.40	2.60	120	101	74	37.28	0.99
B-8	0.36	2.34	120	101	73	39.71	0.93
B-7	0.32	2.08	119	101	73	41.89	1.00
B-6	0.28	1.82	120	101	72	44.10	0.96
B-5	0.25	1.63	118	102	72	46.08	0.99
B-4	0.22	1.43	118	101	72	48.01	1.09
B-3	0.25	1.63	118	102	72	50.00	1.04
B-2	0.26	1.69	119	102	73	52.03	1.05
B-1	0.29	1.89	119	103	73	54.11	0.92
						56.05	

MCCALL ENVIRONMENTAL

Pinnacle Pellet
Dryer Stack 2
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 0.987**

Delta P:	**0.299**	**"H_2O**	**Us avg:**	**31.90**	**ft/sec**
Delta H:	**1.831**		**ACFM:**	**60291**	**ft^3/min**
Tm avg:	**545.7**	**^oR**	**SDCFM:**	**54837**	**ft^3/min**
Ts avg:	**537.5**	**^oR**	**Vm std:**	**44.03**	**ft^3**
Bwo:	**0.022**		**Vm corr:**	**47.79**	**ft^3**
Md:	**28.84**		**Vm:**	**47.75**	**ft^3**
Ms:	**28.60**		**MF:**	**1.0009**	
Pb:	**28.35**	**"Hg**	**PCON:**	**14.84**	**mg/m^3**
Pm:	**28.48**	**"Hg**	**ERAT:**	**1.38**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 0.992**

Delta P:	**0.295**	**"H_2O**	**Us avg:**	**31.69**	**ft/sec**
Delta H:	**1.886**		**ACFM:**	**59899**	**ft^3/min**
Tm avg:	**563.0**	**^oR**	**SDCFM:**	**54562**	**ft^3/min**
Ts avg:	**538.0**	**^oR**	**Vm std:**	**44.08**	**ft^3**
Bwo:	**0.020**		**Vm corr:**	**49.36**	**ft^3**
Md:	**28.84**		**Vm:**	**49.32**	**ft^3**
Ms:	**28.62**		**MF:**	**1.0009**	
Pb:	**28.35**	**"Hg**	**PCON:**	**20.19**	**mg/m^3**
Pm:	**28.49**	**"Hg**	**ERAT:**	**1.87**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 0.987**

Delta P:	**0.295**	**"H_2O**	**Us avg:**	**31.60**	**ft/sec**
Delta H:	**1.928**		**ACFM:**	**59715**	**ft^3/min**
Tm avg:	**568.4**	**^oR**	**SDCFM:**	**54932**	**ft^3/min**
Ts avg:	**534.4**	**^oR**	**Vm std:**	**44.09**	**ft^3**
Bwo:	**0.017**		**Vm corr:**	**49.84**	**ft^3**
Md:	**28.84**		**Vm:**	**49.80**	**ft^3**
Ms:	**28.66**		**MF:**	**1.0009**	
Pb:	**28.35**	**"Hg**	**PCON:**	**29.87**	**mg/m^3**
Pm:	**28.49**	**"Hg**	**ERAT:**	**2.79**	**kg/hr**
Ps:	**28.33**	**"Hg**			

MCCALL ENVIRONMENTAL

Pinnacle Pellet **17-Jun-21**
Dryer Stack 3 **Permit Number: RA-17557**
Williams Lake

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	87 ^{o} F	30 ^{o} C
Moisture Content (by volume):	3.20 %	
Average Stack Gas Velocity:	25.8 ft/sec	7.9 m/sec
Total Actual Gas Flow Rate:	48743 ACFM	
Dry Gas flow Rate at Reference Conditions:	43162 SCFM	20.4 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.009 gr/ft^3	21.67 mg/m^3
Front Half Particulate	0.009 gr/ft^3	21.5 mg/m^3
Back Half Condensibles	0.000 gr/ft^3	0.2 mg/m^3
Mass Emission Rate	3.50 lbs/hr	1.59 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	86 ^{o} F	30 ^{o} C
Moisture Content (by volume):	3.1 %	
Average Stack Gas Velocity:	25.7 ft/sec	7.8 m/sec
Total Actual Gas Flow Rate:	48581 ACFM	
Dry Gas flow Rate at Reference Conditions:	43159 SCFM	20.4 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.010 gr/ft^3	22.5 mg/m^3
Front Half Particulate	.010 gr/ft^3	22.3 mg/m^3
Back Half Condensibles	.000 gr/ft^3	.2 mg/m^3
Mass Emission Rate	3.65 lbs/hr	1.65 kg/hr

TEST 2:

Gas Temperature:	86 ^{o} F	30 ^{o} C
Moisture Content (by volume):	3.3 %	
Average Stack Gas Velocity:	25.9 ft/sec	7.9 m/sec
Total Actual Gas Flow Rate:	48908 ACFM	
Dry Gas flow Rate at Reference Conditions:	43305 SCFM	20.4 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.010 gr/ft^3	22.2 mg/m^3
Front Half Particulate	.010 gr/ft^3	22.0 mg/m^3
Back Half Condensibles	.000 gr/ft^3	.2 mg/m^3
Mass Emission Rate	3.60 lbs/hr	1.63 kg/hr

TEST 3:

Gas Temperature:	88 ^{o} F	31 ^{o} C
Moisture Content (by volume):	3.2 %	
Average Stack Gas Velocity:	25.8 ft/sec	7.9 m/sec
Total Actual Gas Flow Rate:	48740 ACFM	
Dry Gas flow Rate at Reference Conditions:	43021 SCFM	20.3 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.009 gr/ft^3	20.2 mg/m^3
Front Half Particulate	.009 gr/ft^3	20.0 mg/m^3
Back Half Condensibles	.000 gr/ft^3	.2 mg/m^3
Mass Emission Rate	3.26 lbs/hr	1.48 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet**	
Plant Location:	**Williams Lake**	
Process:	**Dryer Stack 3**	
Permit Number:	**RA-17557**	
Job Number:		
Pollution Control Permit:	**15.0 mg/m3**	22.5 **m3/sec**
Number of Tests:	**3 tests**	
Minutes per Point:	**2.5 minutes**	

	TEST 1	TEST 2	TEST 3
Filter Number:	M8	M9	M10
Date of Test:	17-Jun-21	17-Jun-21	17-Jun-21
Start Time:	12:50	2:02	3:10
Stop Time:	1:51	3:03	4:12
On-line Sampling Time:	60	60	60
Testing Personnel:	DB/NA	DB/NA	DB/NA
Sampler Model:	1021	1021	1021
Barometric Pressure("Hg):	28.35	28.35	28.35
Static Pressure("H_2O):	-0.11	-0.11	-0.11
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.275	0.275	0.275
Meter Factor:	1.0124	1.0124	1.0124
Type-S Pitot Tube Coefficient:	0.83867	0.83867	0.83867
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	20	22	21
Weight of Moisture in Silica Gel(g):	3.4	3.2	3.4
Weight of Filter Particulate(g):	0.0002	0.0003	0.0002
Weight of Probe Washings(g):	0.0217	0.0213	0.0194
Weight of Impinger Content Organic(g):	0.0002	0.0002	0.0002
Total Weight of Particulate(g):	0.0221	0.0218	0.0198

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 1*

Pinnacle Pellet

Dryer Stack 3

Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP ($^{\circ}$ F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN ($^{\circ}$ F)	TEMP OUT ($^{\circ}$ F)			
A-12	0.21	1.44	90	90	85	35.03	1.04
A-11	0.20	1.38	93	91	85	36.70	1.03
A-10	0.19	1.32	97	91	85	38.32	1.03
A-9	0.16	1.11	99	92	86	39.90	1.00
A-8	0.16	1.11	102	92	86	41.32	0.98
A-7	0.17	1.18	103	93	86	42.71	1.02
A-6	0.18	1.25	104	94	87	44.20	1.01
A-5	0.16	1.11	105	94	87	45.73	0.98
A-4	0.19	1.32	106	94	87	47.12	1.02
A-3	0.19	1.33	107	95	86	48.71	1.05
A-2	0.19	1.33	109	97	86	50.34	1.06
A-1	0.20	1.40	110	98	86	52.00	1.03
B-12	0.21	1.48	111	99	86	53.66	0.99
B-11	0.20	1.41	112	101	86	55.29	1.01
B-10	0.17	1.20	113	102	86	56.92	1.02
B-9	0.16	1.13	113	103	85	58.44	1.08
B-8	0.19	1.35	114	103	85	60.00	1.03
B-7	0.18	1.28	115	104	85	61.62	1.01
B-6	0.17	1.21	116	105	85	63.18	1.01
B-5	0.17	1.21	116	105	85	64.70	1.01
B-4	0.19	1.35	115	105	85	66.22	1.02
B-3	0.24	1.71	115	106	85	67.83	1.04
B-2	0.26	1.85	114	106	85	69.68	1.01
B-1	0.25	1.78	114	107	85	71.55	1.01
						73.39	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 2*

Pinnacle Pellet

Dryer Stack 3

Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
B-12	0.20	1.40	101	101	85	74.01	1.01
B-11	0.20	1.40	104	101	85	75.62	1.01
B-10	0.19	1.34	109	102	85	77.23	1.01
B-9	0.17	1.20	111	104	85	78.81	1.03
B-8	0.16	1.14	113	105	85	80.34	1.02
B-7	0.17	1.20	114	105	85	81.82	1.03
B-6	0.18	1.28	115	106	85	83.36	1.06
B-5	0.17	1.21	116	106	85	85.00	1.00
B-4	0.19	1.35	117	106	86	86.50	1.01
B-3	0.19	1.35	117	107	86	88.10	1.02
B-2	0.20	1.42	117	107	86	89.72	1.02
B-1	0.21	1.50	117	107	86	91.38	1.00
A-12	0.21	1.50	118	108	86	93.04	1.02
A-11	0.19	1.35	118	108	87	94.74	1.02
A-10	0.18	1.28	119	109	87	96.35	1.03
A-9	0.17	1.21	119	109	87	97.94	1.02
A-8	0.18	1.28	119	109	87	99.47	1.05
A-7	0.18	1.28	120	110	87	101.10	1.05
A-6	0.17	1.22	121	110	87	102.72	0.98
A-5	0.18	1.28	121	111	87	104.20	1.01
A-4	0.20	1.43	121	111	87	105.77	0.98
A-3	0.25	1.79	121	111	87	107.38	1.01
A-2	0.25	1.79	121	111	87	109.22	1.02
A-1	0.25	1.79	122	112	88	111.08	1.05
						113.00	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 3*

Pinnacle Pellet

Dryer Stack 3

Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (° F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (° F)	TEMP OUT (° F)			
A-12	0.21	1.47	105	105	87	13.36	1.02
A-11	0.2	1.40	110	106	90	15.04	1.02
A-10	0.19	1.34	115	109	91	16.68	0.99
A-9	0.18	1.27	115	109	91	18.24	1.02
A-8	0.16	1.13	115	109	90	19.81	1.04
A-7	0.16	1.13	116	109	90	21.32	1.01
A-6	0.17	1.20	117	109	90	22.78	1.01
A-5	0.18	1.27	117	110	90	24.30	1.02
A-4	0.18	1.27	118	110	90	25.88	1.01
A-3	0.18	1.27	118	110	90	27.44	1.03
A-2	0.19	1.36	119	111	89	29.03	1.03
A-1	0.2	1.43	119	111	88	30.66	0.99
B-12	0.21	1.50	120	111	88	32.28	1.03
B-11	0.20	1.43	120	111	88	34.00	1.00
B-10	0.17	1.22	120	111	87	35.63	1.01
B-9	0.17	1.22	120	111	87	37.15	1.05
B-8	0.18	1.29	120	111	87	38.73	1.02
B-7	0.18	1.29	121	112	87	40.31	1.09
B-6	0.17	1.22	121	112	87	42.00	1.01
B-5	0.18	1.29	121	113	87	43.53	1.01
B-4	0.20	1.43	120	113	87	45.10	1.03
B-3	0.24	1.72	120	113	87	46.78	1.02
B-2	0.25	1.79	121	113	87	48.61	1.03
B-1	0.24	1.72	121	113	87	50.50	1.05
						52.38	

MCCALL ENVIRONMENTAL

Pinnacle Pellet
Dryer Stack 3
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 1.020**

Delta P:	**0.190**	**"H_2O**	**Us avg:**	**25.70 ft/sec**
Delta H:	**1.343**		**ACFM:**	**48581 ft^3/min**
Tm avg:	**563.3**	**^oR**	**SDCFM:**	**43159 ft^3/min**
Ts avg:	**545.6**	**^oR**	**Vm std:**	**34.61 ft^3**
Bwo:	**0.031**		**Vm corr:**	**38.84 ft^3**
Md:	**28.84**		**Vm:**	**38.36 ft^3**
Ms:	**28.51**		**MF:**	**1.0124**
Pb:	**28.35**	**"Hg**	**PCON:**	**22.55 mg/m^3**
Pm:	**28.45**	**"Hg**	**ERAT:**	**1.65 kg/hr**
Ps:	**28.34**	**"Hg**		

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 1.019**

Delta P:	**0.193**	**"H_2O**	**Us avg:**	**25.88 ft/sec**
Delta H:	**1.375**		**ACFM:**	**48908 ft^3/min**
Tm avg:	**571.8**	**^oR**	**SDCFM:**	**43305 ft^3/min**
Ts avg:	**546.2**	**^oR**	**Vm std:**	**34.66 ft^3**
Bwo:	**0.033**		**Vm corr:**	**39.47 ft^3**
Md:	**28.84**		**Vm:**	**38.99 ft^3**
Ms:	**28.48**		**MF:**	**1.0124**
Pb:	**28.35**	**"Hg**	**PCON:**	**22.21 mg/m^3**
Pm:	**28.45**	**"Hg**	**ERAT:**	**1.63 kg/hr**
Ps:	**28.34**	**"Hg**		

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 1.022**

Delta P:	**0.191**	**"H_2O**	**Us avg:**	**25.79 ft/sec**
Delta H:	**1.361**		**ACFM:**	**48740 ft^3/min**
Tm avg:	**574.2**	**^oR**	**SDCFM:**	**43021 ft^3/min**
Ts avg:	**548.4**	**^oR**	**Vm std:**	**34.54 ft^3**
Bwo:	**0.032**		**Vm corr:**	**39.50 ft^3**
Md:	**28.84**		**Vm:**	**39.02 ft^3**
Ms:	**28.49**		**MF:**	**1.0124**
Pb:	**28.35**	**"Hg**	**PCON:**	**20.24 mg/m^3**
Pm:	**28.45**	**"Hg**	**ERAT:**	**1.48 kg/hr**
Ps:	**28.34**	**"Hg**		

MCCALL ENVIRONMENTAL

Pinnacle Pellet **17-Jun-21**
Dryer Stack 4 **Permit Number: RA-17557**
Williams Lake

AVERAGE OF AIR EMISSION TESTS 1 TO 3

Gas Temperature:	104 ^{o} F	40 ^{o} C
Moisture Content (by volume):	3.53 %	
Average Stack Gas Velocity:	27.6 ft/sec	8.4 m/sec
Total Actual Gas Flow Rate:	52193 ACFM	
Dry Gas flow Rate at Reference Conditions:	44644 SCFM	21.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	0.009 gr/ft^3	21.53 mg/m^3
Front Half Particulate	0.008 gr/ft^3	18.9 mg/m^3
Back Half Condensibles	0.001 gr/ft^3	2.7 mg/m^3
Mass Emission Rate	3.60 lbs/hr	1.63 kg/hr

SUMMARY OF AIR EMISSION TESTS

TEST 1:

Gas Temperature:	102 ^{o} F	39 ^{o} C
Moisture Content (by volume):	3.4 %	
Average Stack Gas Velocity:	27.5 ft/sec	8.4 m/sec
Total Actual Gas Flow Rate:	52049 ACFM	
Dry Gas flow Rate at Reference Conditions:	44778 SCFM	21.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.009 gr/ft^3	20.4 mg/m^3
Front Half Particulate	.008 gr/ft^3	17.8 mg/m^3
Back Half Condensibles	.001 gr/ft^3	2.7 mg/m^3
Mass Emission Rate	3.43 lbs/hr	1.55 kg/hr

TEST 2:

Gas Temperature:	102 ^{o} F	39 ^{o} C
Moisture Content (by volume):	3.6 %	
Average Stack Gas Velocity:	27.6 ft/sec	8.4 m/sec
Total Actual Gas Flow Rate:	52094 ACFM	
Dry Gas flow Rate at Reference Conditions:	44681 SCFM	21.1 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.009 gr/ft^3	21.4 mg/m^3
Front Half Particulate	.008 gr/ft^3	18.7 mg/m^3
Back Half Condensibles	.001 gr/ft^3	2.7 mg/m^3
Mass Emission Rate	3.58 lbs/hr	1.63 kg/hr

TEST 3:

Gas Temperature:	108 ^{o} F	42 ^{o} C
Moisture Content (by volume):	3.6 %	
Average Stack Gas Velocity:	27.7 ft/sec	8.5 m/sec
Total Actual Gas Flow Rate:	52435 ACFM	
Dry Gas flow Rate at Reference Conditions:	44474 SCFM	21.0 m^3/sec
Total Particulate Concentration:		
Dry Basis Actual at Reference Conditions	.010 gr/ft^3	22.7 mg/m^3
Front Half Particulate	.009 gr/ft^3	20.1 mg/m^3
Back Half Condensibles	.001 gr/ft^3	2.7 mg/m^3
Mass Emission Rate	3.79 lbs/hr	1.72 kg/hr

DATA FOR TESTS 1 TO 3

Client:	**Pinnacle Pellet**		
Plant Location:	**Williams Lake**		
Process:	**Dryer Stack 4**		
Permit Number:	**RA-17557**		
Job Number:			
Pollution Control Permit:	**15.0**	**mg/m3**	22.5 **m3/sec**
Number of Tests:	**3**	**tests**	
Minutes per Point:	**2.5**	**minutes**	

	TEST 1	TEST 2	TEST 3
Filter Number:	M11	M12	M13
Date of Test:	17-Jun-21	17-Jun-21	17-Jun-21
Start Time:	12:39	1:48	2:55
Stop Time:	1:41	2:50	3:57
On-line Sampling Time:	60	60	60
Testing Personnel:	DB	DB	DB
Sampler Model:	980	980	980
Barometric Pressure("Hg):	28.35	28.35	28.35
Static Pressure("H_2O):	-0.24	-0.24	-0.24
%CO_2:	0.0	0.0	0.0
%O_2:	21.0	21.0	21.0
%CO:	0.0	0.0	0.0
%N_2:	79.0	79.0	79.0
Diameter of Nozzle(inches):	0.290	0.290	0.290
Meter Factor:	1.0009	1.0009	1.0009
Type-S Pitot Tube Coefficient:	0.83829	0.83829	0.83829
Cross Sectional Area of Stack(ft^2):	31.5	31.5	31.5
Impinger Condensate(g):	25	27	27
Weight of Moisture in Silica Gel(g):	4.6	4.4	4.5
Weight of Filter Particulate(g):	0.0002	0.0003	0.0002
Weight of Probe Washings(g):	0.0199	0.0207	0.0222
Weight of Impinger Content Organic(g):	0.0030	0.0030	0.0030
Total Weight of Particulate(g):	0.0231	0.0240	0.0254

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 1*
Pinnacle Pellet
Dryer Stack 4
Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
A-12	0.30	2.05	88	88	101	56.62	1.02
A-11	0.27	1.86	99	89	102	58.77	0.98
A-10	0.26	1.79	101	89	105	60.75	1.01
A-9	0.24	1.66	103	90	104	62.76	1.00
A-8	0.22	1.52	105	90	104	64.68	1.09
A-7	0.19	1.31	106	90	105	66.68	0.94
A-6	0.19	1.32	106	91	104	68.28	1.08
A-5	0.18	1.25	108	92	103	70.12	1.00
A-4	0.18	1.26	108	92	101	71.79	1.04
A-3	0.19	1.33	109	93	102	73.53	1.05
A-2	0.19	1.33	110	93	102	75.33	1.02
A-1	0.21	1.47	107	90	98	77.08	1.08
B-12	0.20	1.41	113	93	99	79.03	1.04
B-11	0.20	1.40	113	95	102	80.87	1.01
B-10	0.21	1.48	113	96	100	82.66	1.01
B-9	0.21	1.47	114	97	103	84.50	1.01
B-8	0.20	1.41	115	98	100	86.34	1.02
B-7	0.19	1.34	115	98	103	88.17	1.03
B-6	0.18	1.27	115	98	100	89.96	0.97
B-5	0.18	1.28	115	100	100	91.61	1.05
B-4	0.20	1.42	116	99	100	93.39	1.04
B-3	0.22	1.56	116	100	101	95.25	1.01
B-2	0.25	1.77	118	100	101	97.15	1.09
B-1	0.26	1.86	119	101	98	99.33	0.94
						101.25	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 2*
Pinnacle Pellet
Dryer Stack 4
Williams Lake

17-Jun-21

SAMPLE POINT	VELOCITY HEAD ("H_2O)	ORIFICE PRESSURE ("H_2O)	DRY GAS METER		STACK GAS TEMP (^{o} F)	GAS SAMPLE VOLUME (ft^3)	ISOKINETICS
			TEMP IN (^{o} F)	TEMP OUT (^{o} F)			
A-12	0.29	1.99	99	97	100	1.92	1.04
A-11	0.28	1.92	109	98	104	4.12	0.96
A-10	0.25	1.74	112	98	99	6.13	1.01
A-9	0.24	1.67	114	100	99	8.14	1.00
A-8	0.23	1.60	114	98	99	10.09	1.00
A-7	0.20	1.38	115	98	103	12.00	0.97
A-6	0.19	1.31	114	98	105	13.72	1.04
A-5	0.18	1.25	115	99	101	15.51	1.05
A-4	0.18	1.25	115	99	103	17.28	1.02
A-3	0.20	1.38	115	100	104	19.00	1.05
A-2	0.20	1.38	117	100	106	20.86	0.99
A-1	0.20	1.39	117	102	102	22.63	1.00
B-12	0.19	1.32	117	101	103	24.42	1.07
B-11	0.19	1.32	117	101	101	26.28	0.96
B-10	0.21	1.46	118	101	103	27.95	1.00
B-9	0.20	1.40	118	103	101	29.79	1.03
B-8	0.20	1.38	119	103	108	31.63	1.01
B-7	0.19	1.32	118	103	105	33.44	1.03
B-6	0.19	1.32	118	102	105	35.23	1.02
B-5	0.18	1.26	118	104	100	37.00	1.00
B-4	0.20	1.40	118	103	102	38.71	1.03
B-3	0.21	1.48	119	103	98	40.56	1.00
B-2	0.26	1.83	119	103	98	42.40	1.07
B-1	0.26	1.83	120	103	98	44.59	1.01
						46.66	

MCCALL ENVIRONMENTAL

Sampling Data for - *TEST 3*
Pinnacle Pellet
Dryer Stack 4
Williams Lake

17-Jun-21

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	0.3	2.05	91	99	104	47.24	0.97
A-11	0.28	1.90	102	100	111	49.30	1.03
A-10	0.26	1.77	110	100	112	51.42	0.99
A-9	0.25	1.70	114	99	113	53.41	1.01
A-8	0.21	1.43	115	100	112	55.40	1.01
A-7	0.2	1.36	116	100	113	57.22	1.03
A-6	0.19	1.29	115	100	113	59.04	1.01
A-5	0.19	1.29	115	100	113	60.78	1.00
A-4	0.18	1.23	115	100	111	62.50	0.95
A-3	0.19	1.31	116	100	108	64.09	1.05
A-2	0.2	1.38	115	101	108	65.91	1.05
A-1	0.2	1.37	118	101	111	67.77	1.03
B-12	0.19	1.31	118	101	110	69.59	1.04
B-11	0.20	1.37	118	102	112	71.39	1.00
B-10	0.21	1.44	118	102	110	73.17	1.04
B-9	0.21	1.45	119	102	109	75.07	1.01
B-8	0.22	1.53	119	103	106	76.92	1.04
B-7	0.20	1.39	119	103	104	78.87	0.99
B-6	0.19	1.32	120	103	104	80.64	1.04
B-5	0.18	1.25	121	104	105	82.46	0.99
B-4	0.19	1.33	120	104	102	84.15	1.10
B-3	0.20	1.39	119	104	104	86.07	0.92
B-2	0.24	1.69	120	104	100	87.71	1.05
B-1	0.25	1.76	122	104	100	89.78	1.02
						91.84	

MCCALL ENVIRONMENTAL

Pinnacle Pellet
Dryer Stack 4
Pinnacle Pellet

Data for ***TEST 1*** **OVERALL ISOKINETICS - TEST 1 1.021**

Delta P:	**0.212**	**"H_2O**	**Us avg:**	**27.54**	**ft/sec**
Delta H:	**1.493**		**ACFM:**	**52049**	**ft^3/min**
Tm avg:	**562.0**	**^oR**	**SDCFM:**	**44778**	**ft^3/min**
Ts avg:	**561.6**	**^oR**	**Vm std:**	**39.92**	**ft^3**
Bwo:	**0.034**		**Vm corr:**	**44.67**	**ft^3**
Md:	**28.84**		**Vm:**	**44.63**	**ft^3**
Ms:	**28.47**		**MF:**	**1.0009**	
Pb:	**28.35**	**"Hg**	**PCON:**	**20.43**	**mg/m^3**
Pm:	**28.46**	**"Hg**	**ERAT:**	**1.55**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Data for ***TEST 2*** **OVERALL ISOKINETICS - TEST 2 1.014**

Delta P:	**0.212**	**"H_2O**	**Us avg:**	**27.56**	**ft/sec**
Delta H:	**1.483**		**ACFM:**	**52094**	**ft^3/min**
Tm avg:	**568.2**	**^oR**	**SDCFM:**	**44681**	**ft^3/min**
Ts avg:	**562.0**	**^oR**	**Vm std:**	**39.58**	**ft^3**
Bwo:	**0.036**		**Vm corr:**	**44.78**	**ft^3**
Md:	**28.84**		**Vm:**	**44.74**	**ft^3**
Ms:	**28.45**		**MF:**	**1.0009**	
Pb:	**28.35**	**"Hg**	**PCON:**	**21.41**	**mg/m^3**
Pm:	**28.46**	**"Hg**	**ERAT:**	**1.63**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Data for ***TEST 3*** **OVERALL ISOKINETICS - TEST 3 1.015**

Delta P:	**0.213**	**"H_2O**	**Us avg:**	**27.74**	**ft/sec**
Delta H:	**1.471**		**ACFM:**	**52435**	**ft^3/min**
Tm avg:	**568.6**	**^oR**	**SDCFM:**	**44474**	**ft^3/min**
Ts avg:	**568.1**	**^oR**	**Vm std:**	**39.43**	**ft^3**
Bwo:	**0.036**		**Vm corr:**	**44.64**	**ft^3**
Md:	**28.84**		**Vm:**	**44.60**	**ft^3**
Ms:	**28.45**		**MF:**	**1.0009**	
Pb:	**28.35**	**"Hg**	**PCON:**	**22.75**	**mg/m^3**
Pm:	**28.46**	**"Hg**	**ERAT:**	**1.72**	**kg/hr**
Ps:	**28.33**	**"Hg**			

Air Emission Monitoring Procedure
State Of Oregon Method 7

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 State of Oregon Method 7 (See Figure 1). The State of Oregon Method 7 sampling train is a modified Method 5 sample train with the addition of a non heated filter in-between the third and fourth impinger.

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 were 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 the 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 filterable 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.

Condensable Organics are collected in the impinger train and a rinsing procedure is employed utilizing solvents such as Hexane or Methylene Chloride in between tests. The rinsings and condensate are forwarded to a laboratory accredited to perform the analysis in accordance with the method and a copy of that report is included in the Appendix of any report issued.

O_2, CO_2, CO (where applicable)

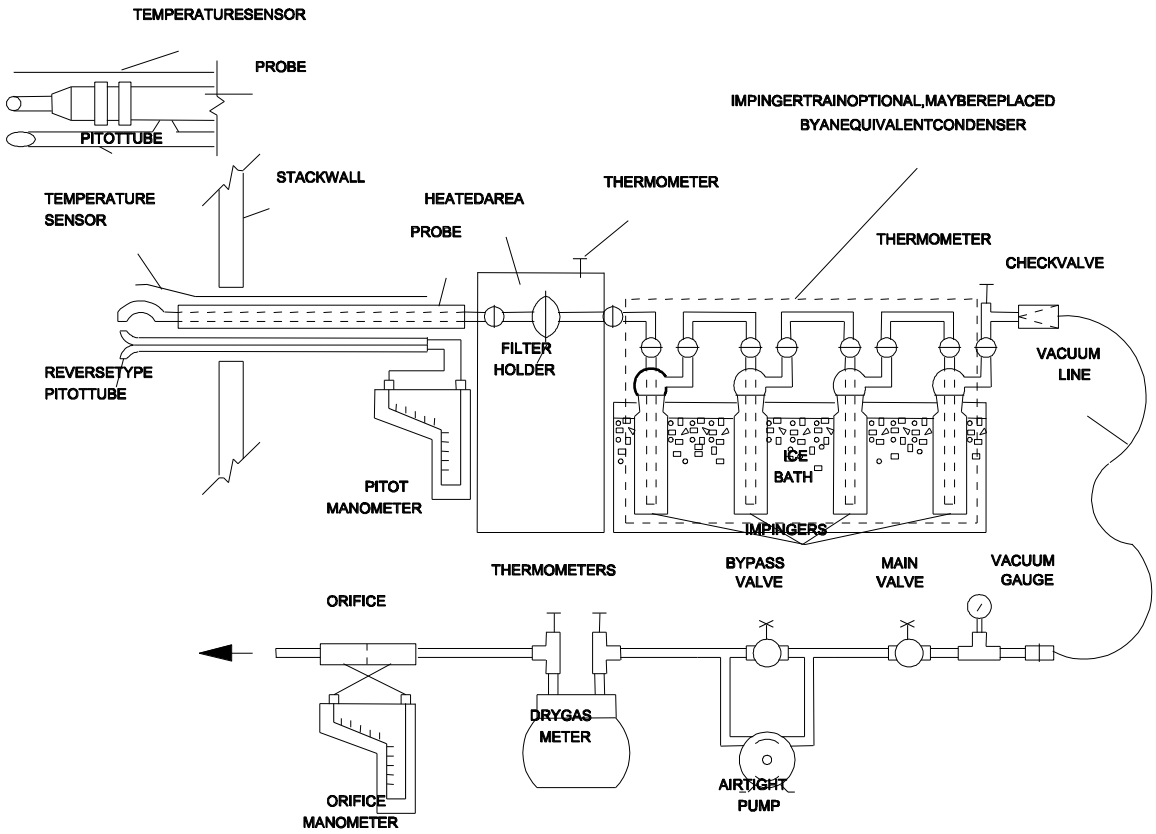
O_2, CO_2, and CO were found using either Fuji Analytical Analyzer by means of infrared and paramagnetic technology (EPA 3A) or by fyrite (EPA Method 3).

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.



Modified EPA Method 5 Diagram (State of Oregon Method 7)- 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
DRY GAS METER

DATE: 17-Jan-21

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-1021

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	62.0	62.0	62.0
P=Pres. Differential at WTM ("Hg)	0.0662	0.1250	0.1839
Pb= Atmospheric Pressure ("Hg)	28.80	28.80	28.80
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.5598	0.5598	0.5598
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	89.8	92.0	95.9
To= Dry Test Meter Outlet Temp. (oF.)	79.9	83.0	84.9
Ri= Initial Dry Test volume (ft3)	103.76	97.29	109.79
Rf= Final Dry Test Volume (ft3)	108.72	102.30	114.80
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	28.7338	28.6750	28.6161
Pd= Pb + (^H/13.59) "Hg	28.8736	28.9472	29.0208
Tw= Ta +460 (oR.)	522.0	522.0	522.0
Td= [(Ti + To)/2] + 460 (oR.)	544.9	547.5	550.4
Bw= Pv/Pb ("Hg)	0.0194	0.0194	0.0194
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
(Calculated Y Value)(WTMF)	1.0187	1.0088	1.0095

Y (MEAN)(WTMF) = 1.0124

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Calibrating Technician Signature: 

ORIFICE METER CALIBRATION

DATE: 17-Jan-21

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	28.8	28.8	28.8
Y=gas meter factor	1.0187	1.0187	1.0088
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	102.11	104.21	107.11
Rf=final gas meter vol.	103.98	106.81	110.31
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.3809938	0.529724	0.645632
To=meter outlet Temp (oF)	84	85	85
Tm=meter out temp. (oR)	544	545	545
Pm=Pb + ^H	28.836792	28.873584	28.910375
SQRT(Tm/Pm*H/Md)	0.5706361	0.8072279	0.9880189
Ko=orifice const.	0.6676651	0.6562261	0.6534612

Ko MEAN = 0.6591175

Ko*4*144= 379.65166

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: 17-Jan-21

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	28.8	28.8	28.8
Y=gas meter factor	1.0088	1.0095	1.0095
Delta H=	2	2.5	3
Ri=int. gas meter vol.	10.51	14.81	19.51
Rf=final gas meter vol.	14.27	19.07	24.17
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.7586176	0.860094	0.940854
To=meter outlet Temp (oF)	91	91	91
Tm=meter out temp. (oR)	551	551	551
Pm=Pb + ^H	28.947167	28.983959	29.020751
SQRT(Tm/Pm*H/Md)	1.1463995	1.2808999	1.4022658
Ko=orifice const.	0.6617393	0.6714764	0.6709527

Ko MEAN = 0.6680561

Ko*4*144= 384.80031

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

CALIBRATION CERTIFICATE
DRY GAS METER

DATE: 17-Jan-21

CONSOLE MANUF.: NAPP MODEL 31

CONSOLE I.D.: C-980

PARAMETER SUMMARY	RUN #1	RUN #2	RUN #3
Ta = Ambient (WTM) Temperature (oF.)	62.0	62.0	62.0
P=Pres. Differential at WTM ("Hg)	0.0713	0.1442	0.2163
Pb= Atmospheric Pressure ("Hg)	28.80	28.80	28.80
Pv= Vapour Pressure Water at Temp. Ta ("Hg)	0.5598	0.5598	0.5598
H=Pres. Differential at Orifice	1.0	2.0	3.0
Ti= Dry Test Meter Inlet Temp. (oF.)	74.0	68.0	78.0
To= Dry Test Meter Outlet Temp. (oF.)	71.0	66.0	75.0
Ri= Initial Dry Test volume (ft3)	7.50	1.20	13.60
Rf= Final Dry Test Volume (ft3)	12.40	6.06	18.55
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	28.7287	28.6558	28.5837
Pd= Pb + (^H/13.59) "Hg	28.8736	28.9472	29.0208
Tw= Ta +460 (oR.)	522.0	522.0	522.0
Td= [(Ti + To)/2] + 460 (oR.)	532.5	527.0	536.5
Bw= Pv/Pb ("Hg)	0.0194	0.0194	0.0194
WET TEST METER FACTOR (WTMF)	0.9922	0.9922	0.9922
ated Y Value)(WTMF)	1.0077	1.0004	0.9948

Y (MEAN)(WTMF) = 1.0009

N.R. MCCALL & ASSOCIATES LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: Jan 17/2021

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	28.8	28.8	28.8
Y=gas meter factor	1.0077	1.0077	1.0004
Delta H=	0.5	1	1.5
Ri=int. gas meter vol.	20.1	23.02	23.4
Rf=final gas meter vol.	22.29	26.1	27.08
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.4413726	0.6207432	0.7362944
To=meter outlet Temp (oF)	77	83	85
Tm=meter out temp. (oR)	537	543	545
Pm=Pb + ^H	28.836792	28.8735835	28.9103753
SQRT(Tm/Pm*H/Md)	0.5669528	0.80574536	0.98801891
Ko=orifice const.	0.7784997	0.77039625	0.74522298

Ko MEAN = 0.7647063

Ko*4*144= 440.47084

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

ORIFICE METER CALIBRATION

DATE: Jan 17/2021

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	28.8	28.8	28.8
Y=gas meter factor	1.0004	0.9948	0.9948
Delta H=	2	2.5	3
Ri=int. gas meter vol.	28.05	32.55	38
Rf=final gas meter vol.	32.28	37.21	43.12
min. samp	5	5	5
Qm=Y(Rf-Ri)/^T(FT3/MIN)	0.8463384	0.9271536	1.0186752
Tm=meter out temp. (oF)	86	87	88
Tm=meter out temp. (oR.)	546	547	548
Pm=Pb + ^H	28.947167	28.983959	29.020751
SQRT(Tm/Pm*H/Md)	1.1411862	1.2762421	1.3984432
Ko=orifice const.	0.7416304	0.7264716	0.7284352

Ko MEAN = 0.7321791

Ko*4*144= 421.73513

McCALL ENVIRONMENTAL LTD.

Calibrating Technician Signature:

Calibration Certificate for S-Type Pitot Tube

Date: 05-Jan-21 *Barometric Pressure ("Hg):* 29.78

Pitot I.D.: **217** *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*
13.51	0.04147	0.05467	0.86230
19.93	0.09031	0.12262	0.84962
41.60	0.39339	0.54073	0.84442
62.13	0.87726	1.25293	0.82840
79.94	1.45249	2.09036	0.82524
101.14	2.32467	3.37170	0.82204

Average= 0.83867

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: 05-Jan-21 *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:

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V3S 8P8, Canada

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W: www.element.com

Analytical Report

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By: NA/DB/CB
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1500628**
Control Number:
Date Received: Jun 21, 2021
Date Reported: Jun 25, 2021
Report Number: 2634399

Reference Number	1500628-1	1500628-2	1500628-3
Sample Date	Jun 17, 2021	Jun 17, 2021	Jun 17, 2021
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 1 / Test 1	Dryer Stack 1 / Test 2	Dryer Stack 1 / Test 3
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	<2	<2	<2	2
Volume	Sample volume	mL	310	310	300	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

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Analytical Report

Bill To: McCall Environmental
6733 Buchanan Road
Coldstream, BC, Canada
V1B 3C5
Attn: Accounts Payable
Sampled By: NA/DB/CB
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1500628**
Control Number:
Date Received: Jun 21, 2021
Date Reported: Jun 25, 2021
Report Number: 2634399

	Reference Number	1500628-4	1500628-5	1500628-6	
	Sample Date	Jun 17, 2021	Jun 17, 2021	Jun 17, 2021	
	Sample Time	NA	NA	NA	
	Sample Location				
	Sample Description	Dryer Stack 2 / Test 1	Dryer Stack 2 / Test 2	Dryer Stack 2 / Test 3	
	Matrix	Water	Water	Water	
Analyte		**Units**	**Results**	**Results**	**Results**	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	3	2	2	2
Volume	Sample volume	mL	310	310	300	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

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Analytical Report

Bill To: McCall Environmental
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Attn: Accounts Payable
Sampled By: NA/DB/CB
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1500628**
Control Number:
Date Received: Jun 21, 2021
Date Reported: Jun 25, 2021
Report Number: 2634399

Reference Number	1500628-7	1500628-8	1500628-9
Sample Date	Jun 17, 2021	Jun 17, 2021	Jun 17, 2021
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 3 / Test 1	Dryer Stack 3 / Test 2	Dryer Stack 3 / Test 3
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	<2	<2	<2	2
Volume	Sample volume	mL	300	310	300	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

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Analytical Report

Bill To: McCall Environmental
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Attn: Accounts Payable
Sampled By: NA/DB/CB
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1500628**
Control Number:
Date Received: Jun 21, 2021
Date Reported: Jun 25, 2021
Report Number: 2634399

Reference Number	1500628-10	1500628-11	1500628-12
Sample Date	Jun 17, 2021	Jun 17, 2021	Jun 17, 2021
Sample Time	NA	NA	NA
Sample Location			
Sample Description	Dryer Stack 4 / Test 1	Dryer Stack 4 / Test 2	Dryer Stack 4 / Test 3
Matrix	Water	Water	Water

Analyte		Units	Results	Results	Results	Nominal Detection Limit
Aggregate Organic Constituents						
Oil and Grease	Total	mg/sample	3	3	3	2
Volume	Sample volume	mL	310	310	300	
pH adjustment	required prior to O&G extraction		Yes	Yes	Yes	

Approved by:

Carol Nam, Dipl. T.
Quality Officer

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

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Methodology and Notes

Bill To: McCall Environmental
6733 Buchanan Road
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V1B 3C5
Attn: Accounts Payable
Sampled By: NA/DB/CB
Company:

Project ID:
Project Name: Pinnacle Pellet
Project Location: Williams Lake
LSD:
P.O.:
Proj. Acct. code:

Lot ID: **1500628**
Control Number:
Date Received: Jun 21, 2021
Date Reported: Jun 25, 2021
Report Number: 2634399

Method of Analysis

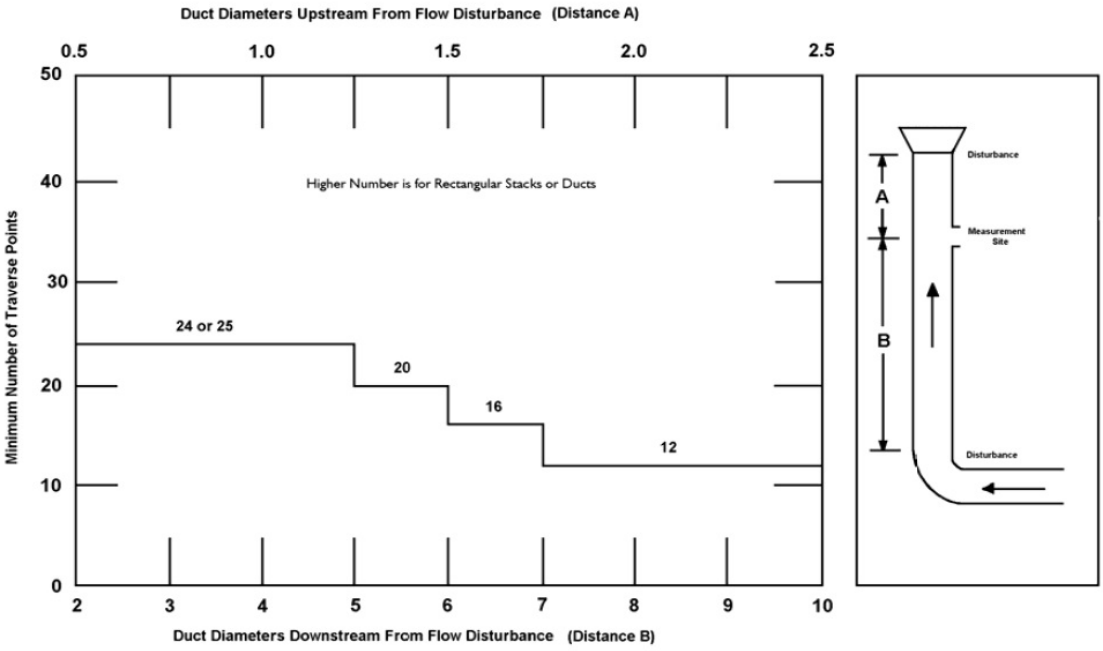
Method Name	Reference		Method	Date Analysis Started	Location
Oil and Grease in water (VAN)	BCELM	*	Oil & Grease in Water - Direct Hexane Extraction, Oil & Grease	Jun 23, 2021	Element Vancouver
Oil and Grease in water (VAN)	BCELM	*	Oil & Grease in Water - Direct Hexane Extraction, Oil & Grease	Jun 24, 2021	Element Vancouver

** Reference Method Modified*

References

BCELM	B.C. Environmental Laboratory Manual

Site Diagram & Sample Point Selection



Client:	Pinnacle Pellet Williams Lake	Traverse Points (in):	
Source:	Dryer Stacks 1-4	PT-1	1.6
Pollution Abatement Equipment:		PT-2	5.1
Duct Diameters Up (A):	>2	PT-3	8.97
Duct Diameters Down (B):	4	PT-4	13.45
Area of Stack (ft):	31.5	PT-5	19
Stack Diameter (in):	76	PT-6	26.98
Zero (in):	4	PT-7	49.02
Number of Points:	24	PT-8	57
		PT-9	62.55
Cyclonic Angle:	5^{0}	PT-10	67.03
		PT-11	70.91
		PT-12	74.4

BCIT

This is to verify that

Matthew McCall

has successfully completed

a course of study in

Source Testing for Particulates

(35 hours)

Endorsed by
The B.C. Ministry of Environment

Dated at Burnaby, British Columbia, Canada
December 14, 1990

DEAN

REGISTRAR

BRITISH COLUMBIA INSTITUTE OF TECHNOLOGY

MOUNT ROYAL COLLEGE

Faculty of Continuing Education and Extension

David Brandle

has successfully completed

The program of studies and is awarded the certificate in

STACK SAMPLING

May 3 – May 7, 2004

May, 2004
Date

Donna Spaulding
Dean
Faculty of Continuing Education and Extension

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 1
Test Number:	1
Date:	June 17 2021
Start Time	839
Finish Time	9'40
Starting Vol.	300
Final Vol.	313
Flask:	M2
Console:	1021
Stack Diameter	

BP	28.35
DN	.275
CP	83867
MF	1.0124
Moist.	3%
PM	28.46
AS	
Ko	.5680
Pitot	217
Port	
Static	-.21
PS	28.33

CO_2	O_2	CO	N_2
0	21		

Personnel: DB NA CB

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: 004 Finish: 001

125

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.25	1.63	65	68	79	98.54	1	270	1cd	
11	.25	1.65	70	69	76	100.25				
10	.24	1.58	70	69	76	102.00				
9	.27	1.45	70	69	76	103.68				
8	.19	1.25	73	68	77	105.31				
7	.18	1.20	80	69	78	106.79				
6	.19	1.26	81	70	79	108.25	1			
5	.22	1.46	83	70	79	109.75				
4	.26	1.73	85	70	79	111.42				
3	.27	1.80	86	71	79	113.22				
2	.28	1.87	87	72	79	115.01				
1	.28	1.87	90	73	80	116.79				
B12	.40	2.68	92	74	81	118.63				
11	.40	2.69	94	75	81	120.85				
10	.41	2.77	96	78	81	123.07				
9	.39	2.66	98	79	79	125.32	1			
8	.31	2.13	99	83	77	127.53				
7	.28	1.93	101	86	76	129.51				
6	.27	1.87	102	87	74	131.42				
5	.24	1.67	102	88	73	133.25				
4	.27	1.88	102	89	73	135.03				
3	.25	1.74	102	90	74	136.89				
2	.21	1.47	103	91	73	138.68	1			
1	.20	1.40	105	92	72	140.39	1			
						142.02				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer stack 1
Test Number:	2
Date:	June 17 2021
Start Time	9:48
Finish Time	10:49
Starting Vol.	300
Final Vol.	311
Flask:	M-3
Console:	1021
Stack Diameter	

BP	2835
DN	.275
CP	.83867
MF	1.0124
Moist.	.02
PM	28.46
AS	
Ko	.6680
Pitot	217
Port	
Static	-.21
PS	28.33

CO_2	O_2	CO	N_2
0	21		

Personnel: RB

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: .002 Finish: .003

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.26	1.82	90	89	73	43.00	1	270	ICED	
11	.25	1.76	95	92	74	44.94				
10	.24	1.69	102	93	74	46.61				
9	.20	1.42	103	94	74	48.42				
8	.18	1.29	104	94	74	50.07				
7	.20	1.43	105	95	74	51.59	1			
6	.21	1.50	106	96	75	53.21				
5	.23	1.64	106	97	75	55.00				
4	.27	1.93	107	98	76	56.72				
3	.27	1.93	107	98	76	58.64	1			
2	.28	1.99	107	99	77	60.51				
1	.29	2.07	108	99	77	62.44				
B12	.39	2.79	109	100	78	64.38	1			
11	.40	2.86	109	101	77	66.65				
10	.40	2.86	110	102	77	68.99				
9	.38	2.72	113	102	76	71.32	1			
8	.30	2.15	114	103	78	73.61				
7	.28	2.01	114	104	78	75.62				
6	.26	1.87	114	104	78	77.55	1			
5	.25	1.80	115	105	78	79.43				
4	.28	2.01	116	106	78	81.22				
3	.24	1.73	116	106	79	83.20	1			
2	.21	1.51	117	107	79	85.02				
1	.20	1.44	117	107	79	86.71	1	4210	FROZEN	
						88.38				

Client Name: Pinnacle Pellet Williams Lake

Process: Dryer Stack 1

Test Number: 3

Date: June 17 2021

Start Time 10:57

Finish Time 11:58

Starting Vol. 300

Final Vol. 314

Flask: M-4

Console: C-1021

Stack Diameter

BP 28.35

DN .975

CP .83867

MF 1.0124

Moist. 2%

PM 28.46

AS

Ko .6680

Pitot 217

Port

Static -.21

PS 28.33

CO_2	O_2	CO	N_2
0	21		

Personnel: DB

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: .003 Finish: .001

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.27	1.92	102	100	75	89.00	0	270	ICED	
11	.25	1.78	105	102	75	90.89				
10	.23	1.64	109	103	75	92.77				
9	.20	1.43	111	104	76	94.55				
8	.19	1.37	113	105	76	96.20				
7	.20	1.45	115	105	76	97.81				
6	.22	1.59	116	106	76	99.50				
5	.22	1.59	116	106	76	101.23	0			
4	.26	1.89	117	107	76	103.00				
3	.27	1.96	118	107	76	104.92				
2	.28	2.03	119	108	76	106.75				
1	.28	2.03	120	108	76	108.72				
B-12	.39	2.84	120	108	75	110.64	1			
11	.39	2.85	120	109	75	112.88				
10	.40	2.92	120	109	75	115.18				
9	.39	2.85	120	109	76	117.45				
8	.31	2.26	121	110	76	119.76	1			
7	.30	2.19	121	112	76	121.76				
6	.29	2.12	122	112	76	123.89				
5	.25	1.82	122	112	76	125.88				
4	.26	1.90	122	112	76	127.74				
3	.27	1.98	123	113	75	129.55	1			
2	.23	1.69	123	113	75	131.44				
1	.20	1.47	123	113	75	133.22	1	270	ICED	
						134.87				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 2
Test Number:	1
Date:	June 17 2021
Start Time	853
Finish Time	955
Starting Vol.	300
Final Vol.	316
Flask:	MS
Console:	980
Stack Diameter	

BP	28.35
DN	.780
CP	.83829
MF	1.0009
Moist.	3%
PM	28.46
AS	
Ko	.7321
Pitot	140
Port	
Static	-.22
PS	28.33

CO_2	O_2	CO	N_2
0	21		

Personnel: PB NA CB

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: .012 Finish: .011

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.36	2.09	61	61	76	7.24	2	270	100	
11	.32	1.86	70	60	81	9.24				
10	.30	1.75	76	63	82	11.24	2			
9	.24	1.41	80	63	82	13.29				
8	.22	1.29	82	66	82	15.09	1			
7	.24	1.41	84	66	83	16.69				
6	.29	1.72	88	68	82	18.58	2			
5	.31	1.84	90	69	82	20.52				
4	.31	1.85	94	71	82	22.39	2			
3	.27	1.62	95	73	81	24.42				
2	.26	1.57	96	74	79	26.28	2			
1	.24	1.46	97	76	77	28.14				
B12	.39	2.38	98	78	76	29.97	2			
11	.42	2.60	105	80	74	32.18				
10	.42	2.60	106	80	74	34.50	3			
9	.39	2.42	106	82	74	36.89				
8	.38	2.36	106	83	73	39.13	3			
7	.31	1.93	107	84	73	41.43				
6	.25	1.75	107	85	73	43.44	2			
5	.26	1.62	107	88	74	45.48				
4	.23	1.43	107	88	76	47.29	2			
3	.24	1.49	107	88	75	49.14				
2	.26	1.62	109	89	75	51.04	2			
1	.30	1.88	109	90	74	52.89				
						54.99				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 2
Test Number:	2
Date:	June 17 2021
Start Time	1002
Finish Time	1104
Starting Vol.	300
Final Vol.	314
Flask:	M6
Console:	480
Stack Diameter	

BP	28.35
DN	.280
CP	.83829
MF	1.0009
Moist.	2%
PM	28.46
AS	
Ko	.7321
Pitot	140
Port	
Static	-.22
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Personnel: DB NA CB

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: .007 Finish: .005

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.25	2.11	91	89	94	55.58	4			
11	.31	1.94	102	93	80	57.75				
10	.30	1.88	104	90	79	59.74	3			
9	.26	1.63	107	90	80	61.81				
8	.21	1.32	107	90	80	63.63	3			
7	.25	1.57	106	91	79	65.39				
6	.30	1.89	109	91	79	67.35	3			
5	.30	1.90	113	92	79	69.47				
4	.32	2.03	113	92	79	71.51	3			
3	.28	1.78	112	93	78	73.67				
2	.25	1.44	111	94	79	75.58	4			
1	.24	1.52	111	94	78	77.37				
B12	.40	2.54	113	95	79	79.29	3			
11	.40	2.55	115	96	79	81.73				
10	.42	2.68	116	96	79	84.01	3			
9	.40	2.57	117	98	76	86.41				
8	.36	2.32	117	97	75	88.90	4			
7	.30	1.94	117	98	74	91.14				
6	.27	1.74	117	98	74	93.44	4			
5	.20	1.29	116	98	74	95.43				
4	.24	1.54	115	98	75	97.04	2			
3	.25	1.61	116	99	75	99.04				
2	.25	1.61	115	99	74	100.97	3			
1	.29	1.87	116	99	74	102.87				
						104.90				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 2
Test Number:	3
Date:	June 17 2021
Start Time	1109
Finish Time	1211
Starting Vol.	300
Final Vol.	311
Flask:	M7
Console:	980
Stack Diameter	

BP	28.35
DN	.280
CP	.83829
MF	1.0009
Moist.	2%
PM	28.46
AS	
Ko	.7321
Pitot	140
Port	
Static	-.22
PS	28.33

CO_2	O_2	CO	N_2
0	21		

Personnel: CB DB NH

Leakage Rate @ 15 inches

Load:

Duct Diameters Up-Stream

Duct Diameters Downstream

Mean Yaw Angle

Start: .008 Finish: .010

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.36	2.29	102	98	76	6.25	4	270	ICE	
11	.31	1.97	109	98	78	8.31				
10	.30	1.91	111	98	78	10.35	2			
9	.25	1.60	110	100	78	12.32				
8	.22	1.41	113	99	77	14.34	3			
7	.23	1.47	114	99	76	16.00				
6	.28	1.80	116	99	76	17.91	3			
5	.30	1.94	115	99	75	20.02				
4	31	2.00	118	99	75	22.15	4			
3	.26	1.68	118	100	74	24.30				
2	.26	1.68	117	100	74	26.23	4			
1	.23	1.49	120	100	74	28.28				
B12	.40	2.59	120	100	74	30.05	3			
11	.42	2.73	120	101	74	32.47				
10	.40	2.60	120	101	73	34.90	5			
9	.40	2.60	120	101	74	37.28				
8	.36	2.34	120	101	73	39.71	5			
7	.32	2.08	119	101	73	41.89				
6	.28	1.82	120	101	72	44.10	5			
5	.25	1.63	118	102	72	46.08				
4	.22	1.43	118	101	72	48.01	4			
3	.25	1.63	118	102	72	50.00				
2	.26	1.69	119	102	73	52.03	4			
1	.29	1.89	119	103	73	54.11				
						56.05				

Client Name: Pinnacle Pellet
Williams Lake
Process: Dryer Stack 3
Test Number: 01
Date: June 17, 2021
Start Time 12:50
Finish Time 1:51
Starting Vol. 300
Final Vol. 320
Flask: H-8
Console: C-1021
Stack Diameter

BP 28.35
DN .275
CP .83867
MF 1.0124
Moist. 2%
PM 28.46
AS
Ko .6680
Pitot .217
Port
Static -.11
PS 28.34

CO_2	O_2	CO	N_2
0	21		

Personnel: DB/

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: .001 Finish: .01

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.21	1.44	90	90	85	35.03	4"	270		
11	.20	1.38	93	91	85	36.70				
10	.19	1.32	97	91	85	38.32				
9	.16	1.11	99	92	86	39.90				
8	.16	1.11	102	92	86	41.32				
7	.17	1.19	103	93	86	42.71				
6	.18	1.25	104	94	87	44.20				
5	.16	1.11	105	94	87	45.73				
4	.19	1.32	106	94	87	47.12				
3	.19	1.33	107	95	86	48.71				
2	.19	1.33	109	97	86	50.34				
1	.20	1.40	110	98	86	52.00				
B-12	.21	1.48	111	99	86	53.66				
11	.20	1.41	112	101	86	55.29	4"			
10	.17	1.20	113	102	86	56.92				
9	.16	1.13	113	103	85	58.44				
8	.19	1.35	114	103	85	60.00				
7	.18	1.28	115	104	85	61.62				
6	.17	1.21	116	105	85	63.18				
5	.17	1.21	116	105	85	64.70				
4	.19	1.35	113	105	85	66.22				
3	.24	1.71	115	106	85	67.83				
2	.26	1.85	114	106	85	69.68				
1	.25	1.78	114	107	85	71.55				
						73.39				

Client Name: Pinnacle Pellet
William Lake
Process: Dryer Stack 3
Test Number: 2
Date: June 17, 2021
Start Time 2:02
Finish Time 3:03
Starting Vol. 300
Final Vol. 322
Flask: M-9
Console: C-C1021
Stack Diameter

BP 28.35
DN .275
CP .83867
MF 1.0124
Moist. .02
PM 28.46
AS
Ko .6680
Pitot 217
Port
Static -.11
PS 28.34

CO_2	O_2	CO	N_2
0	21		

Personnel: ~~JT~~ JB

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: 10 / Finish: 9

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.20	1.40	101	101	85	74.01		220		
11	.20	1.40	104	101	85	75.62				
10	.19	1.34	109	102	85	77.23				
9	.17	1.20	111	104	85	78.81	3			
8	.16	1.14	113	105	85	80.34				
7	.17	1.20	114	105	85	81.82				
6	.18	1.28	115	106	85	83.36				
5	.17	1.21	116	106	85	85.00				
4	.19	1.35	117	106	86	86.90				
3	.19	1.35	117	107	86	88.10				
2	.20	1.42	117	107	86	89.72				
1	.21	1.50	117	107	86	91.38				
B-12	.21	1.50	118	108	86	93.04				
11	.19	1.35	118	108	87	94.74				
10	.18	1.28	119	109	87	96.35				
9	.17	1.21	119	109	87	97.94	4			
8	.18	1.28	119	109	87	99.47				
7	.19	1.28	120	110	87	101.10				
6	.17	1.22	121	110	87	102.72				
5	.18	1.28	121	111	87	104.20				
4	.20	1.43	121	111	87	105.77				
3	.25	1.79	121	111	87	107.38				
2	.25	1.79	121	111	87	109.22				
1	.25	1.79	122	112	88	111.08				
						113.01				

Client Name: Pinnacle Pellet
Williams Lake
Process: Dryer stack 3
Test Number: 3
Date: June 17, 2021
Start Time 3:10
Finish Time 4:12
Starting Vol. 300
Final Vol. 321
Flask: M-10
Console: C-1021
Stack Diameter

BP 28.35
DN .275
CP .83867
MF 1.0124
Moist. 2%
PM 28.46
AS
Ko .6680
Pitot .217
Port
Static -.11
PS 29.34

CO_2	O_2	CO	N_2
0	21		

Personnel: DB

Leakage Rate @ 15 inches

Load:

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Mean Yaw Angle

Start: .1861 Finish: .0

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A-12	.21	1.47	105	105	87	13.36	2"	210		
11	.20	1.40	110	106	90	15.04				
10	.19	1.34	115	109	91	16.63				
9	.18	1.27	115	109	91	18.24				
8	.16	1.13	115	109	90	19.81				
7	.16	1.13	116	109	90	21.32				
6	.17	1.20	117	109	90	22.78				
5	.18	1.27	117	110	90	24.30				
4	.18	1.27	118	110	90	25.85				
3	.18	1.27	118	110	90	27.44				
2	.19	1.36	119	111	89	29.03				
1	.20	1.43	119	111	88	30.66	1"			
B-12	.21	1.50	120	111	88	32.28				
11	.20	1.43	120	111	88	34.00				
10	.17	1.22	120	111	87	35.63				
9	.17	1.22	120	111	87	37.15				
8	.18	1.29	120	111	87	38.73				
7	.18	1.29	121	112	87	40.31				
6	.17	1.22	121	112	87	42.00				
5	.18	1.29	121	113	87	43.53				
4	.20	1.43	120	113	87	45.10				
3	.24	1.72	120	113	87	46.78				
2	.25	1.79	121	113	87	48.61				
1	.24	1.72	121	113	87	50.50				
						52.38				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 4
Test Number:	1
Date:	June 17 2021
Start Time	1239
Finish Time	141
Starting Vol.	300
Final Vol.	325
Flask:	M 11
Console:	980
Stack Diameter	

BP	28.35
DN	.290
CP	.83829
MF	1.0009
Moist.	2%
PM	28.46
AS	
Ko	.7321
Pitot	1.40
Port	
Static	-.24
PS	28.33

CO_2	O_2	CO	N_2
0	21		

Duct Diameters Up-Stream

Duct Diameters Downstream

Personnel: CB NA DB

Mean Yaw Angle

Leakage Rate @ 15 inches Start: .011 Finish: .012

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.30	2.05	88	88	101	56.62	2	270	ICE	
11	.27	1.86	99	89	102	58.77				
10	.26	1.79	101	89	105	60.75	2			
9	.24	1.66	103	90	104	62.76				
8	.22	1.52	105	90	104	64.68	1			
7	.19	1.31	106	90	105	66.68				
6	.19	1.32	106	91	104	68.28	1			
5	.18	1.25	108	92	103	70.12				
4	.18	1.26	108	92	101	71.79	1			
3	.19	1.33	109	93	102	73.53				
2	.19	1.33	110	93	102	75.33	1			
1	.21	1.47	107	90	98	77.08				
B12	.20	1.41	113	93	99	79.03	2			
11	.20	1.40	113	95	102	80.87				
10	.21	1.48	113	96	100	82.66	2			
9	.21	1.47	114	97	103	84.50				
8	.20	1.41	115	98	100	86.34	2			
7	.19	1.34	115	98	103	88.17				
6	.18	1.27	115	98	100	89.96	2			
5	.18	1.28	115	100	100	91.61				
4	.20	1.42	116	99	100	93.39	2			
3	.22	1.56	116	100	101	95.25				
2	.25	1.77	118	100	101	97.15	2			
1	.26	1.86	119	101	98	99.33				
						101.25				

Client Name:	Pinnacle Pellet Williams Lake
Process:	Dryer Stack 4
Test Number:	2
Date:	June 17 2021
Start Time	148
Finish Time	250
Starting Vol.	300
Final Vol.	327
Flask:	M12
Console:	980
Stack Diameter	

BP	28.35
DN	.990
CP	.83829
MF	1.0009
Moist.	3%
PM	28.46
AS	
Ko	.7321
Pitot	140
Port	
Static	-.22
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Personnel: CB IVA DB

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .005 Finish: .005

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.29	1.99	99	97	100	1.92	2	270	ICEd	
11	.28	1.92	109	98	104	4.12				
10	.25	1.74	112	98	99	6.13	1			
9	.24	1.67	114	100	99	8.14				
8	.23	1.60	114	98	99	10.09	1			
7	.20	1.38	115	98	103	12.00				
6	.19	1.31	114	98	105	13.72	1			
5	.18	1.25	115	99	101	15.51				
4	18	1.25	115	99	103	17.28	1			
3	.20	1.38	115	100	104	19.00				
2	.20	1.38	117	100	106	20.86	2			
1	.20	1.39	117	102	102	22.63				
B12	.19	1.32	117	101	103	24.42	1			
11	.19	1.32	117	101	101	26.28				
10	.21	1.46	118	101	103	27.95	1			
9	.20	1.40	118	103	101	29.79				
8	.20	1.38	119	103	108	31.63	2			
7	.19	1.32	118	103	105	33.44				
6	.19	1.32	118	102	105	35.23	2			
5	.18	1.26	118	104	100	37.00				
4	.20	1.40	118	103	102	38.71	2			
3	.21	1.48	119	103	98	40.56				
2	.26	1.83	119	103	98	42.40	2			
1	.26	1.83	120	103	98	44.59				
						46.66				

Client Name:	Pinnacle Pellet
	Williams Lake
Process:	Dryer Stack # 4
Test Number:	3
Date:	June 17 2021
Start Time	255
Finish Time	357
Starting Vol.	300
Final Vol.	327
Flask:	M13
Console:	980
Stack Diameter	

BP	28.35
DN	.990
CP	.83829
MF	1.0009
Moist.	3%
PM	28.46
AS	
Ko	.7321
Pitot	140
Port	
Static	-.22
PS	28.23

CO_2	O_2	CO	N_2
0	21		

Duct Diameters
Up-Stream

Duct Diameters
Downstream

Personnel: CB DB NA

Mean Yaw Angle

Leakage Rate @ 15 inches

Start: .008 Finish: .009

Load:

Sample Points	Delta P	Delta H	Temp. In	Temp. Out	Stack Temp.	Gas Volume	Pump Vacuum	Box Temp.	Last Imp. Temp.	Points
A12	.30	2.05	107	99	104	47.24	2	270	ICED	
11	.28	1.90	110	100	111	49.30				
10	.26	1.77	114	100	112	51.42	2			
9	.25	1.70	115	99	113	53.41				
8	.21	1.43	116	100	112	55.40	3			
7	.20	1.36	115	100	113	57.22				
6	.19	1.29	115	100	113	59.04	3			
5	.19	1.29	115	100	113	60.78				
4	.18	1.23	116	100	111	62.50	2			
3	.19	1.31	115	100	108	64.09				
2	.20	1.38	118	101	108	65.91	2			
1	.20	1.37	118	101	111	67.77				
B12	.19	1.31	118	101	110	69.59	2			
11	.20	1.37	118	102	112	71.39				
10	.21	1.44	119	102	110	73.17	2			
9	.21	1.45	119	102	109	75.07				
8	.22	1.53	119	103	106	76.92	2			
7	.20	1.39	120	103	104	78.87				
6	.19	1.32	121	103	104	80.64	2			
5	.18	1.25	120	104	105	82.46				
4	.19	1.33	119	104	102	84.15	2			
3	.20	1.39	120	104	104	86.07				
2	.24	1.69	120	104	100	87.71	3			
1	.25	1.76	122	104	100	89.78				
						91.84				

Pinnacle.
RENEWABLE ENERGY INC.
PRINCE GEORGE | VANCOUVER

Pinnacle Renewable Energy Inc.
Williams Lake

Daily production rate June 17th	28.5 MT/hr
Average for the previous calendar month	24.8 MT/hr
90th percentile production rate	28.2 MT/hr
Average Dryer Fan 1 exit gas temperature	24.8 °C
Average Dryer Fan 2 exit gas temperature	26.1 °C
Average Dryer Fan 3 exit gas temperature	25.5 °C
Average Dryer Fan 4 exit gas temperature	33.6 °C

Average Cyclofilter exit gas temperature, [°C]	Included in Stack Test
Volumetric emission flow rates, [m^3/hour]	Included in Stack Test
TPM, [mg/m^3]	Included in Stack Test
PM, [mg/m^3]	Included in Stack Test