



January 19, 2017

Project Number: 161-16014-00

Mr. Paul Pawlowski  
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**Subject: Environmental Appeal Board Memorandum of Understanding between Fiddes, et al and The Director (Environmental Management Act, B.C) and Pinnacle Renewable Energy Inc.**

**EAB Appeal File: 2015-EMA-002**

**Site:** Pinnacle Pellet, Lavington, British Columbia.

**Source:** STELA Laxhuber Gmbh Biomass Belt Dryer #1, Site reference number E300070.

**Permit Parameter Reference:** 2.1.3 – Total Particulate Matter.

**Method Reference:** 1.1.10 – EPA Method 5, 202, Oregon Method 7 or equivalent.

To the Parties of the Memorandum of Understanding (MOU):

This letter refers to Section 1 of your MOU of June 17, 2016. WSP Canada Inc. (WSP) understands its role as having three parts:

- 1) PM 10/2.5 consultation with McCall Environmental to attempt to conduct an EPA approved particle size speciation on the belt dryer exhaust at Lavington Pellet during the Q4 2016 stack test

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- 2) Site visit to audit the McCall Environmental testing procedures and methodology on the belt dryer at Lavington Pellet during the Q4 2016 stack test
- 3) Review of the test report for Lavington Pellet as related to the Q4 2016 stack test

## 1. STATEMENT OF CONSULTATION

“McCall Environmental will consult with WSP (which acquired Levelton Consultants Ltd. as of July 2015) regarding the techniques it (Levelton) used to determine the PM 10/2.5 size fraction ratios at the Merritt pellet plant.”

- a. The Levelton report states the Merritt pellet plant bed dryer stack was tested according to EPA Method 5 with a cascade impactor and Method 202.

Method 5 with the cascade impactor collects the filterable particulate matter (PM) on its glass fibre filters. The Condensable Particulate Matter (CPM) is collected using Method 202 where the CPM passes through the filters and then condenses for collection and analysis into organics and inorganics, thus providing the total CPM. The results from Method 5 with the cascade impactor and 202 are then combined to provide Total Particulate Matter (TPM).

The cascade impactor sized the sample into the various size fractions indicated in Appendix A in the Levelton report.

- b. Consultation between McCall Environmental and WSP regarding PM 10/2.5 Size Fraction testing at the Lavington Pellet dryer stacks:

EPA Method 201A is a sampling method for PM 10/2.5 in non-saturated stacks. In saturated (high moisture) stacks such as in Lavington, WSP and McCall concurred that Method 201A is not the appropriate sampling method for the following reasons:

1. Particulate Matter (PM) is assumed to be spherical in Method 201A. Water droplet/saturated aerosols (PM) do not act spherically, biasing the results under 201A.
2. Saturated aerosols can cause conglomerations of the PM, biasing the results.

3. Saturated aerosols can cause the PM to adhere to the cyclone walls, biasing the results.

The following is the EPA statement on the non-applicability of Method 201A in saturated stacks:

“METHOD 201A—DETERMINATION OF PM10 AND PM2.5 EMISSIONS FROM STATIONARY SOURCES (CONSTANT SAMPLING RATE PROCEDURE)

1.5 Limitations. You cannot use this method to measure emissions in which water droplets are present because the size separation of the water droplets may not be representative of the dry particle size released into the air. To measure filterable PM10 and PM2.5 in emissions where water droplets are known to exist, we recommend that you use Method 5 of appendix A-3 to part 60.”

The BC accepted measurements of fine particulates in saturated stacks are EPA Methods 5 and 202 or State of Oregon Method 7, which adds the total filterable PM and the condensable PM to produce the final Total Particulate Matter.

Conclusion: Since this is a compliance test, WSP-McCall agreed Method 201A could not be submitted as a compliant test method and would conduct the tests according to The Province of British Columbia approved Oregon Method 7. It should be further noted that the CPM from the Lavington test can be assumed to be 100% PM2.5; however, it is not possible to determine the filterable front half PM2.5/10 size fractions due to the saturated stack conditions.

The cascade impactor method was not considered for use at Lavington to conduct speciation as this is not an EPA promulgated method.

## 2. STATEMENT OF SITE AUDIT RESULTS:

WSP conducted a site audit of the November 16, 2016 McCall Environmental stack test of the Biomass STELA Laxhuber GmbH Belt Dryer #1, Site reference number E300070.



WSP observed that the stack test was conducted in accordance with the State of Oregon Method 7. Oregon Method 7 differs from EPA Method 5 and 202 in that Method 7 does not speciate between inorganics and organics prior to determining total CPM, providing a single combined final weight for the CPM, as specified in Permit (#107369).

This CPM is added to the PM to provide the final Total Particulate Matter.

In WSP's view all procedures being followed and employed at Lavington's facility are in compliance with the applicable methodologies and no notable issues were observed that would contradict the possibility of valid, credible data.

### 3. STATEMENT OF REPORT REVIEW RESULTS:

WSP further reviewed the report from this test and finds it in accordance with the test observations and the industry standard reporting procedures and protocols.

Yours truly,

**WSP Canada Inc.**

A handwritten signature in black ink that reads "David Plewes".

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