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James H McCarthy, MSc CFP
Senior Associate Biologist, Ecosystem NL Group Lead
Wood PLC
St. John's, NL

RE: AGAT Laboratories' Methylmercury Reference Method and QA/QC Procedures.

Jim

As requested, we are sending the requested information regarding our Methylmercury analysis method and QA/QC procedures.

The reference method used for the methyl mercury analysis is: ***USEPA Method 1630, Methyl Mercury in Water by Distillation, Aqueous Ethylation, Purge and Trap, and CVAFS***. This method has been assessed and accredited by CALA; this includes a site visit and review of the method as performed in the lab as well as successful performance in a proficiency testing program. Our standard QA/QC procedures also include the following:

1. **Method Blanks:** Method blanks are blanks brought through the entire sample preparation/digestion/distillation process. We currently prepare a filter method blank with each batch of samples received from Wood for the Muskrat Falls project to ensure our filtration and preservation procedure provides little to no contamination.
 - a. Currently our St. John's laboratory is doing the initial preparation for the methyl mercury analysis to ensure the 48 hour hold-time is met. A clean room specifically for these samples was designed and a filter method blank with each batch of samples is prepared.
2. **Calibration/Reagent Blanks:** These blanks ensure the lab grade water and reagents used in the analysis are not contributing to the measured result. Elevated calibration/reagent blanks would trigger a maintenance/recalibration and/or preparation of fresh reagent.

3. **Duplicate Analysis:** One sample per analytical batch is prepared and analyzed in duplicate.
4. **Matrix Spike:** One sample in every 10 samples is prepared with a spiking solution. For each batch, one sample spike/sample spike duplicate must be analyzed.
5. **On-Going Precision and Recovery (OPR) QC Standard:** A second source standard is prepared to verify the calibration and to determine the efficiency of the digestion/distillation process.
6. **Laboratory Control Sample:** A water sample of known concentration is carried through the analytical process. The results of analysis of these samples must meet established acceptance criteria. Analytical results that are outside of these criteria trigger an investigation to identify corrective actions as well as reanalysis of the analytical batch.
7. **Batch Set-up:** With the current instrument set-up, each sample aliquot is analyzed twice. This provides additional confidence in the analytical data reported and allows the lab to identify any anomalous results prior to data reporting.
8. **Comparison to Total and Dissolved Hg:** Results for Total MeHg and Dissolved MeHg for each location are compared to ensure Total MeHg is greater than the dissolved aliquot. If this is not the case, the data is reviewed, and sample analysis is repeated on a fresh aliquot.
9. **Review of Data with Historical Results:** AGAT has been providing this analysis either through a subcontract lab or internally for several years. Analytical results for current samples are compared with historically reported values. Any data points that are not in line with historic data will be reviewed and/or reanalyzed for confirmation.

These items are quite standard to all laboratory procedures. Based on CCME protocols and reference methods there is acceptance criteria for each QA/QC component. Any values outside the acceptance criteria will trigger data review and /or re analysis.

In addition, analysis is carried out by a Senior Laboratory Analyst with 15 years' experience working in the lab at various levels. This analyst is a member of the NunatuKavut community and has an in-depth knowledge of the sampling program used for the Muskrat Falls project, as well as a strong knowledge of the geographical region of which provides the analyst of an understanding of the sites, and significance of each result. Lastly, the senior laboratory analyst has been monitoring the trends (seasonal) and staying well informed of events that may potentially cause anomalies (flooding) in the data.

I trust this of assistance. Please contact me if you have any additional questions.

Best Regards



James MacDonald
Technical Services Manager – Atlantic Canada