Northern Lake Service Inc.
ENVIRONMENTAL ANALYTICAL LABORATORY

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Ultra-Low and Low-Level Mercury Sample Collection

Low-Level Mercury Detection:

- Northern Lake Service (NLS) uses two Low-level Analytical Methods for the determination of Mercury. The first method we define as our Low-Level method, which has a Limit of Detection (LOD) of 0.86 ng/L and is analyzed by EPA Method 245.7. The second method we define as our Ultra Low-Level method, which has an LOD of 0.12 ng/L and is analyzed by EPA Method 1631E.

- The Low-level Mercury Method is generally used for the analysis of **Influent Samples** and may use a **Trip Blank**, a bottle of lab water that accompanies the samples. The Trip Blank bottle is NOT opened and is used to determine contamination during the sample's trip to and from the laboratory.

- The Ultra Low-Level Method is generally used for the analysis of **Effluent Samples** and uses a **Field Blank**, which is a sample of lab water that is poured from its original bottle into a sample bottle at the sampling site. The Field Blank sample is used to determine if there is contamination caused by the sampling environment.

- Both methods require sample preservation at the laboratory after they are collected and prior to analysis.

Sample Collection:

1. The bottle kits are contained in a large zip seal bag. Inside you will find a pair of disposable gloves with each sample bottle, and one to three double-bagged sample bottles. If requested, one bottle will be filled with lab reagent water **(Trip Blank)**, the other bottle(s) are empty and may be used for samples (e.g. - Influent and Effluent samples). Note: There may be a bit of residual rinse water in the sample bottles.

2. It is recommended that two people work together in the collection of samples. At the sampling location, one person ("Dirty Hands") opens the bottle kit bag. The other person ("Clean Hands") removes the two pairs of gloves, puts one pair on and hands the other pair to "Dirty Hands". After putting on the gloves, "Dirty Hands" pulls out the double-bagged sample bottles and then opens the outer of the two bags for each sample bottle. "Clean Hands" then opens the inner, labeled bubble wrap bags and removes a sample bottle.

3. Only the empty bottles will be used for sample collection. The sample bottle should be filled to the top. If possible, it is recommended that the sample bottle be completely submerged in the sample stream during collection. Ideally, "Clean Hands" would submerge the bottle, remove the cap, fill the bottle, and replace the cap. Place the sample bottle in the bubble-wrap inner bag and identify the sample on the bag label. Place this labeled bag in the outer zip seal bag. Complete the documentation necessary on the Chain of Custody form. Both the Trip Blank bottle and the sample bottles may be placed back in the original large Bottle Kit bag and returned to the lab ASAP. It is <u>not</u> necessary to ship the samples on ice. Repeat this entire process at the next sampling location.

4. If a "Field Blank" is required, as it is for the Ultra Low-Level method, pour the contents of the bottle filled with lab water into an empty bottle and tightly cap both bottles. The newly filled bottle is then returned to the inner bubble wrap bag, and the label is marked as **"Field Blank"**. The labeled bag is then placed in the outer zip seal bag. When collecting multiple samples, if you choose to submit only one field blank for analysis, it should be done while collecting the effluent sample. The remaining empty bottles will be used for sample collection.

5. If you are unsure which Mercury method to select, please check with your regulator to determine the appropriate Method Detection Limit (MDL) or Limit of Detection (LOD) requirement, as well as the need for Field Blanks, or Trip Blanks.