Quality Assurance Policies for Field Laboratories (NC WW/GW LC Policy 10/01/2013)

The following policies are required quality assurance practices. These policies, issued by the North Carolina Wastewater/Groundwater Laboratory Certification (NC WW/GW LC) program, apply to analyses performed by field laboratories and are intended to insure data produced are accurate, reliable and documented appropriately. They are meant to clarify existing legislative rules or to provide guidance where a legislative rule does not exist.

Mechanical Volumetric Liquid-Dispensing Devices Calibration

Mechanical volumetric liquid-dispensing devices (e.g., fixed and adjustable auto-pipettors, bottle-top dispensers, etc.), used for critical measurements, must be calibrated at least every twelve months and documented. Each liquid-dispensing device must meet the manufacturer's statement of accuracy. For variable volume devices used at more than one setting, check the accuracy at the maximum, middle and minimum values. Testing at more than three volumes is optional. When a device capable of variable settings is dedicated to dispense a single specific volume, calibration is required at that setting only. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy.

Error Corrections

All documentation errors must be corrected by drawing a single line through the error so that the original entry remains legible. Entries shall not be obliterated by erasures or markings. Wite-Out®, correction tape or similar products designed to obliterate documentation are not to be used. Write the correction adjacent to the error. The correction must be initialed by the responsible individual and the date of change documented. All data and log entries must be written in indelible ink. Pencil entries are not acceptable. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy.

Chemical, Reagent and Consumable Expiration Dates

Adherence to manufacturer expiration dates is required. Chemicals, reagents, standards, consumables exceeding the expiration date can no longer be considered reliable. If the expiration is only listed as a month and year (with no specific day of the month), the last day of the month will be considered the actual date of expiration. Monitor materials for changes in appearance or consistency. Any changes may indicate potential contamination and the item should be discarded even if the expiration date is not exceeded. If no expiration date is given, the laboratory must have a policy for assigning an expiration date. If no date received or expiration date can be determined, the item should be discarded. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy based upon Standard Methods, 18th Edition - Method 1070 C. (3) (c).

Traceability of Chemicals, Reagents, Standards and Consumables

All chemicals, reagents, standards and consumables used by the laboratory must have the following information documented: Date Received, Date Opened (in use), Vendor, Lot Number, and Expiration Date. A system (e.g., traceable identifiers) must be in place that links standard/reagent preparation information to analytical batches in which the solutions are used. Documentation of solution preparation must include the analyst's initials, date of preparation, the volume or weight of standard(s) used, the solvent and final volume of the solution. This information as well as the

vendor and/or manufacturer, lot number, and expiration date must be retained for chemicals, reagents, standards and consumables used for a period of five years. Consumable materials such as pH buffers and lots of pre-made standards are included in this requirement. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy.

Qualifying Data

When quality control (QC) failures occur, the laboratory must attempt to determine the source of the problem and must apply corrective action. Part of the corrective action is notification to the end user. If data qualifiers are used to qualify samples not meeting QC requirements, the data may not be useable for the intended purposes. It is the responsibility of the laboratory to provide the client or end-user of the data with sufficient information to determine the usability of the qualified data.

Where applicable, a notation must be made on the Discharge Monitoring Report (DMR) form, in the comment section, when any required sample quality control does not meet specified criteria and another sample cannot be obtained. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy based upon Standard Methods, 20th Edition – Method 1020 B. (14).

Analyzing Proficiency Testing Samples in the Same Manner as Environmental Samples

The analysis of proficiency testing (PT) samples is designed to evaluate the entire process used to routinely report environmental analytical results. Therefore, PT samples must be analyzed and the process documented in the same manner as environmental samples. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy.

For example, for colorimetric (DPD) procedures, Total Residual Chlorine (TRC) PT samples must be analyzed on the same spectrophotometric program (i.e., the sample wavelength) using the same procedure that is used for sample analysis. There are two options for achieving this:

1. If a regular level TRC performance evaluation sample is analyzed, it must be diluted to the verified range of the low level curve. The reported result must then be calculated using the dilution factor and the TRC value obtained.

2. Since the dilution factor in option 1 may introduce error, it is recommended that the low level TRC sample be analyzed. These are currently available from many approved vendors. This sample should be within the range of your verified curve on the low level program.

Housekeeping

A best effort must be made to perform analyses in a manner where possible sources of contamination or error will not be introduced. Ref: North Carolina Wastewater/Groundwater Laboratory Certification Policy. For example:

- Dirty interior work area.
- Weather conditions such as rain.
- Unclean cuvettes.