



North Carolina Wastewater/Groundwater Laboratory
Certification Program

Proficiency Testing Requirements

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Revision 1.2

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Section 1.0 Introduction

This document is a guide to the proficiency testing (PT) sample requirements of the North Carolina Wastewater/Groundwater Laboratory Certification (NC WW/GW LC) Program. In addition to clarifying the regulatory requirements for proficiency testing, this document answers many common questions concerning evaluation of proficiency testing sample results. Also included are important deadlines, penalties and corrective actions for proficiency testing sample failures, and links to the current lists of all accredited proficiency testing sample providers.

Proficiency testing samples are samples analyzed by a laboratory to evaluate its ability to perform analyses for specified analytes by a particular parameter method technology accurately. They are an integral part of a laboratory's quality management system and the laboratory certification process. The NC WW/GW LC Program uses the results of these samples to assess a laboratory's analytical performance between on-site evaluations. All laboratories must submit acceptable proficiency testing sample results annually to maintain their certifications. The laboratory must obtain samples from a proficiency testing sample provider recognized by The NELAC Institute (TNI) and approved by the NC WW/GW LC program. These samples may be part of an official study, a supplemental study or quick turnaround type samples. Proficiency testing samples from providers not approved by TNI and the NC WW/GW LC program cannot be accepted. Currently, there are two Proficiency Testing Provider Accreditors that are recognized by TNI and approved by the NC WW/GW LC program – American Association for Laboratory Accreditation (A2LA) and ACLASS. A list of approved PT providers may be found on the A2LA website at <http://www.a2la.org/pt/ProficiencyTesting.cfm>. A list of approved PT providers may be found on the ACLASS website at <http://www.aiclasscorp.com/search-accredited-companies.aspx>? (search for *Proficiency Test Provider – TNI Vol. 3* under the *Accreditation Standard* field). A list of required PT samples per parameter, method and technology is updated annually and can be found on the following Laboratory Certification Proficiency Testing Requirements web pages:

Field Laboratory PT Requirements	http://portal.ncdenr.org/web/wq/lab/cert/field/pt
Non-field Laboratory PT Requirements	http://portal.ncdenr.org/web/wq/lab/cert/nonfield/pt

The NC WW/GW LC program reserves the right to determine acceptable performance of a laboratory in a PT program which includes, but is not limited to, the elements contained in this policy. A laboratory's certification status is determined not only by its performance in acceptable proficiency tests but by a combination of criteria including qualifications of personnel, its performance in on-site inspections, and, in the case of laboratories located outside of North Carolina seeking initial certification by reciprocity, the status of its certification from its resident state. For more information about the North Carolina wastewater/groundwater laboratory certification process and requirements, visit www.dwqlab.org.

¹NOTE: ACLASS and the American Association for Laboratory Accreditation (A2LA) have been designated Proficiency Testing Oversight Bodies (PTOB)/Proficiency Testing Provider Accreditors (PTBA) by The NELAC Institute (TNI). You may see the terms “A2LA-accredited provider”, “A2LA TNI PTPA/PTOB Program” and “A2LA-accredited TNI proficiency testing provider” used interchangeably. In any case, when accessing the list of providers on the A2LA website above, select from the “A2LA-accredited TNI proficiency testing provider” list. **Laboratories should check this list each time PT samples are ordered since the lists change periodically.**

Section 2.0 Definitions

- 2.1 Acceptable Results:** Those results on PT samples that are within the specified acceptable range as indicated by an Accredited Proficiency Testing Sample Provider.
- 2.2 Acceptance Limits:** Limits established by an accredited proficiency testing provider, based upon the US EPA National Standards for Water Proficiency Testing Program Criteria Document (NERL-Ci-0045), which are used to determine if a laboratory has analyzed a proficiency testing sample successfully. For the Water Pollution Program (WP), EPA Acceptance Limits are defined as \pm three EPA Standard Deviations from the EPA Mean.
- 2.3 Accredited Proficiency Testing Sample Provider:** Where the North Carolina Administrative Code requires use of an accredited provider, this shall mean a proficiency testing program accredited by A2LA or the ANSI-ASQ National Accreditation Board/ACLASS for the design, preparation, and operation of PT schemes that meet the requirements that are derived from ISO/IEC 17043:2010, TNI EL-V3-2009, relevant sections of ISO Guide 34:2009 and ISO/IEC 17025: 2005. See also **NELAC-accredited Proficiency Testing Sample Provider.**
- 2.4 Analysis Date:** The calendar date of analysis associated with the analytical result reported for certification requirements.
- 2.5 Analyte:** The chemical substance, physical property or organism being analyzed in a reference sample.
- 2.6 Analyte Group:** A set of chemical substances possessing structural and reactive similarities that are analyzed as a group using the same method of analysis or technology (e.g., VOCs, PCBs, etc.).
- 2.7 Certification:** A declaration by the state that the personnel, equipment, records, quality control procedures, and methodology cited by the applicant are accurate and that the applicant's proficiency has been considered and found to be acceptable pursuant to NC Administrative Code 15A NCAC 2H .0800.
- 2.8 Certified Data:** Any analytical result, including the supporting documentation, obtained through the use of a method or procedure, which has been deemed acceptable by the State of North Carolina for Laboratory Certification purposes pursuant to NC Administrative Code 15A NCAC 2H .0800.
- 2.9 Commercial Laboratory:** Any laboratory, including its agents or employees, which is seeking to analyze or is analyzing samples, including Field Parameters, for others for a fee.
- 2.10 Corrective Action Report (CAR):** A report detailing the measures taken to eliminate or prevent the recurrence of the causes of an existing out-of-control event, nonconformity or undesirable condition. It is a retrievable documentation of those actions and follow-up monitoring to ensure resolution. A good corrective action report addresses and documents the following: the existing problem, the root cause of the problem, corrective actions

taken to correct the problem, actions taken to prevent recurrence, future monitoring to check resolution and data that required qualification or rejection as a result of this problem. References to corrective action reports in this document relate to proficiency testing evaluations.

- 2.11 Decertification:** Loss of certification.
- 2.12 Discharge Monitoring Report–Quality Assurance (DMR-QA) Proficiency Testing (PT) Study Program:** The DMR-QA PT Study Program evaluates the analytical and reporting ability of the laboratories that routinely perform inorganic chemistry and whole effluent toxicity self-monitoring analyses required by their National Pollutant Discharge Elimination System (NPDES) permit. North Carolina permittees are exempt from the DMR-QA Proficiency Testing Program.
- 2.13 EPA:** Acronym for the United States Environmental Protection Agency.
- 2.14 EPA Lab Code:** A laboratory identification system used to identify participant laboratories in proficiency testing studies when grading and reporting results. EPA Lab Codes are assigned by EPA.
- 2.15 Field Laboratory:** A laboratory, including its agents or employees, which is seeking certification to analyze or is analyzing samples for Field Parameters only.
- 2.16 Field Parameters:** For the purpose of the North Carolina Wastewater/Groundwater Laboratory Certification Rules (15A NCAC 2H .0800), field parameters shall include Total Residual Chlorine, Conductivity, Dissolved Oxygen, pH, Settleable Residue, and Temperature.
- 2.17 Industrial Laboratory:** A laboratory, including its agents or employees, operated by an industry to analyze samples, including Field Parameters, from its wastewater or wastewater from its water treatment plant(s).
- 2.18 Multi-analyte Group Reference Sample:** A proficiency testing sample containing more than one analyte of interest where certification is granted for the analytes as a group based on acceptable results for all of the existing analytes.
- 2.19 Multi-analyte Reference Sample:** A proficiency testing sample containing more than one analyte of interest where certification is granted for an analyte based on methodology.
- 2.20 Municipal Laboratory:** A laboratory, including its agents or employees, operated by a municipality or other local government to analyze samples, including Field Parameters, from its wastewater or wastewater from its water treatment plant(s).
- 2.21 NELAC-accredited Proficiency Testing Sample Provider:** The American Association for Laboratory Accreditation (A2LA) and the ANSI-ASQ National Accreditation Board/ACLASS have been designated Proficiency Testing Oversight Bodies (PTOB)/Proficiency Testing Provider Accreditors (PTBA) by The NELAC Institute

(TNI). You may see the terms “A2LA-accredited provider” “TNI-accredited proficiency testing provider” and “NELAC-accredited provider” used interchangeably.

- 2.22 Not Acceptable:** Those results on PT samples that exceed the specified acceptable range as indicated by an Accredited Proficiency Testing Sample Provider, as well as, any false negative or false positive results.
- 2.23 Other Laboratory:** A facility that does not require laboratory certification as part of its routine operation and does not analyze samples for a fee, or is doing business as a nonprofit facility.
- 2.24 Parameter Method Technology:** A type of analytical technology used to measure a parameter which is significantly different from other analytical technologies used to measure the same parameter.
- 2.25 Practical Quantitation Limit:** The Practical Quantitation Limit (PQL) is defined and proposed as "the lowest level achievable among laboratories within specified limits during routine laboratory operation". The PQL is about three to five times the calculated Method Detection Limit (MDL) and represents a practical and routinely achievable detection limit with a relatively good certainty that any reported value is reliable". For methods requiring a calibration curve, a calibration standard must be analyzed at the PQL concentration.
- 2.26 Primary Analyte List:** The list of analytes in the scope of a published method.
- 2.27 Proficiency Testing Calendar Year:** For the purposes of performance evaluation, the calendar year is defined as January 1 to September 30.
- 2.28 Proficiency Testing (PT) Samples:** Proficiency testing samples are blind samples supplied by an accredited proficiency testing sample provider. Proficiency testing samples are also known as Performance Evaluation (PE) Samples or Reference Samples.
- 2.29 Proficiency Testing Study:** A single complete sequence of circulation of PT samples to all participants in a PT program.
- 2.30 Proficiency Testing Study Closing Date:** The calendar date for which analytical results for a PT sample shall be received by the PT provider from the laboratory.
- 2.31 Provisional Certification:** A temporary conditional status of certification which requires a laboratory to qualify specified individual analyte results as “estimated” until acceptable performance is demonstrated or until parameter certification is dropped or revoked. This provisional status is initiated when two consecutive unacceptable results are obtained for one or more individual analytes, in a multi-analyte PT sample, when the parameter evaluation is graded acceptable (refer to the 80% Rule in Sections 4.2.1 and 4.2.2).
- 2.32 Quick Response PT Sample:** A blind PT sample that is not part of a scheduled study, but the results are evaluated and reported back to the participant laboratory within a short time after the results are reported. They may also be referred to as a **Rapid Turnaround Time (TAT) or Rapid Response PT Samples.**

- 2.33 Remedial PT Sample:** A proficiency testing sample, analyzed as a follow-up to samples for which unacceptable results were obtained, intended to demonstrate correction or improvement of the analysis of a specific parameter method technology. A remedial PT sample also applies to a follow-up PT sample analyzed when the September 30 deadline was exceeded and counted as a first unacceptable result.
- 2.34 Root Cause Analysis (RCA):** A technique used in problem solving to identify the underlying reason why something has gone wrong or why a difficulty has occurred. It is a step-by-step method that leads to the discovery of a fault's first or core cause. In environmental testing, the root cause analysis often takes the investigator back to the laboratory's quality system protocols.
- 2.35 Round Robin Study:** A sample testing study involving multiple independent analysts and/or laboratories performing analytical testing for a given parameter with the use of the same method with different equipment, or a variety of methods and equipment. This type study is used to measure the precision of the measurement of a given target analyte or group of analytes and/or relative performance of the participating entities. The overall objective is to make test results from different testing laboratories comparable creating the necessary confidence in the accuracy of test results between the parties involved.
- 2.36 Single Analyte Reference Sample:** A reference sample containing only one analyte of interest where certification is granted for an analyte based on methodology.
- 2.37 Split Sample:** A split sample is one that has been equally divided into two or more sub-samples. Split samples are submitted to different analysts or laboratories and are used to measure the precision of the measurement of a given target analyte or group of analytes and/or relative performance of the participating entities.
- 2.38 State:** The North Carolina Department of Environment and Natural Resources, or its successor.
- 2.39 State Laboratory:** The Laboratory Section of the North Carolina Division of Water Quality, or its successor.
- 2.40 Study:** This term applies to a Proficiency Testing Study or Supplemental Study.
- 2.41 Supplemental Proficiency Testing Study:** A PT sample that may be from a lot previously released by a PT provider that meets the requirements for supplemental PT samples, but that does not have a pre-determined opening date and closing date.
- 2.42 Unacceptable Results:** Those results on performance evaluation samples that exceed the specified acceptable range as indicated by an accredited proficiency testing sample provider, as well as, any false positive or false negative results.
- 2.43 Uncertified Data:** Any analytical result, including the supporting documentation, obtained using a method or procedure, which is not acceptable to the State Laboratory pursuant to NC Administrative Code 15A NCAC 2H .0800.

Section 3.0 Proficiency Testing Requirements

All certified laboratories (i.e., commercial, industrial, municipal, field and other) are required to demonstrate technical competence through proficiency testing sufficient to cover the scope of their accreditation. Proficiency testing samples are required for initial certification, certification maintenance/renewal and recertification. At least once in each 10-month Proficiency Testing Calendar Year, and more often if requested by the NC WW/GW LC program, each laboratory must have at least one laboratory analyst demonstrate proficiency by successfully analyzing a blind proficiency-testing sample provided by an accredited provider. Additional proficiency testing sample results submitted voluntarily at any time during the proficiency testing calendar year (including Water Supply (WS) study samples when the appropriate method is employed during analysis) will be graded similarly.

The NC WW/GW LC program shall make available a list of approved PT providers and/or provide access to the list on the NC Division of Water Quality Laboratory Section website for Field Laboratory PT requirements and Non-field Laboratory PT Requirements (see URLs below). Accredited providers offer several reference sample options that will meet NC WW/GW LC Program initial certification, maintenance/renewal and recertification requirements. These include the quick response proficiency testing samples (e.g., ²ERA-Quick Response and others) and Water Supply (WS) study samples when the appropriate parameter method technology is employed during analysis. Corrective-action PTs, that are provided with the true values in a sealed envelope, are not considered blind samples and do not meet the proficiency testing requirements outlined in 15A NCAC 2H .0800. For a detailed list of the proficiency testing samples required for initial certification, maintenance/renewal, remedial requirements and recertification, consult the following Laboratory Certification Proficiency Testing Requirements web pages:

Field Laboratory PT Requirements <http://portal.ncdenr.org/web/wq/lab/cert/field/pt>
Non-field Laboratory PT Requirements <http://portal.ncdenr.org/web/wq/lab/cert/nonfield/pt>

When such proficiency testing samples are not available or relevant to the scope of accreditation, NC WW/GW LC will rely on the laboratory's quality system checks in accordance with state regulations or the approved methodology for assuring the quality of testing, calibration results and/or split samples provided by the Division of Water Quality. Quality control checks include (but are not limited to) the following types of activities: regular use of certified reference materials and/or internal quality control using secondary reference materials; replicate tests or calibrations using the same or different methods; re-testing or re-calibration of retained items; and correlation of results for different characteristics of an item. The results of these quality control checks do not need to be provided to this office but must be retained so that they are readily available for examination during on-site inspection according to NC WW/GW LC mandated record retention schedules. Split sample testing or round robin testing may also be required.

Laboratories must have a documented plan (this is usually detailed in the laboratory's Quality Assurance Manual) of how they intend to cover the applicable program requirements for proficiency testing per their scope of accreditation. This plan shall cover any commercially available proficiency testing and any inter-laboratory organized studies, as applicable. The laboratory must also be able to explain when proficiency testing is not possible for certain parameters and provide a description of what the laboratory is doing in lieu of proficiency

testing. This shall be detailed in the plan. The plan must also address the laboratory's process for submission of proficiency testing results and related corrective action responses.

NOTE: *While a documented plan is not currently required for Field Laboratories, it is recommended.*

² The mention of trade names or commercial products does not constitute any endorsement or recommendation for use. They are listed as examples only.

Section 3.1 Initial Certification

The North Carolina Wastewater/Groundwater Laboratory Certification program regulations for the certification and operation of environmental laboratories in the North Carolina Administrative Code, 15A NCAC 2H .0800 state that a laboratory applying for certification must satisfactorily analyze samples from a proficiency testing program accredited by A2LA or ACLASS and approved by The NELAC Institute and the NC WW/GW LC program for the parameters, analytes, technologies and matrices (only when a method is matrix-specific such as for SW-846 Method 9071B) for which certification is sought. The study dates of all testing rounds submitted with applications must have occurred within the six months prior to the date of application. When determining whether PTs are sufficiently recent, the NC WW/GW LC program counts back 6 months (i.e., 180 days) from the date the application is received in our office. Any PT result submitted with an application must have a study close date no earlier than this date. A laboratory must submit an amendment application each time it wishes to become certified for an additional parameter method technology, even if it is already currently certified for other parameter and/or parameter method technologies. Parameters for which certification may be requested are excerpted from 15A NCAC 2H .0804 below.

(a) Commercial laboratories are required to obtain certification for parameters, which will be reported by the client to comply with State surface water monitoring, groundwater, and pretreatment Rules. Municipal and Industrial Laboratories are required to obtain certification for parameters which will be reported to the State to comply with State surface water monitoring, groundwater, and pretreatment Rules. Commercial, Municipal, Industrial and Other facilities are required to obtain certification for field parameters, which will be reported by the client to comply with State surface water, groundwater, and pretreatment Rules.

(b) A listing of certifiable inorganic parameters follows:

- (1) Alkalinity*
- (2) Aquatic Humic Substances*
- (3) BOD*
- (4) COD*
- (5) Chloride*
- (6) Chlorine, Total Residual*
- (7) Chlorophyll*
- (8) Coliform, Fecal*
- (9) Coliform, Total*
- (10) Color*
- (11) Conductivity*
- (12) Cyanide*
- (13) Dissolved Oxygen*

- (14) Fluoride
- (15) Hardness, Total
- (16) MBAS
- (17) Ammonia Nitrogen
- (18) Total Kjeldahl Nitrogen (TKN)
- (19) Nitrate plus Nitrite Nitrogen
- (20) Nitrate Nitrogen
- (21) Nitrite Nitrogen
- (22) Total Phosphorus
- (23) Orthophosphate
- (24) Oil and Grease
- (25) pH
- (26) Phenols
- (27) Residue, Settleable
- (28) Residue, Total
- (29) Residue, Total Dissolved 180 °C
- (30) Residue, Total Suspended
- (31) Salmonella
- (32) Sulfate
- (33) Sulfide
- (34) Sulfite
- (35) Temperature
- (36) Total Organic Carbon (TOC)
- (37) Turbidity
- (38) Leachate Procedures
- (39) Vector Attraction Reduction - All Options

(c) *Metals: Each of the following will be considered a certifiable Metals analyte:*

- (1) Aluminum
- (2) Antimony
- (3) Arsenic
- (4) Barium
- (5) Beryllium
- (6) Cadmium
- (7) Calcium
- (8) Chromium, Total
- (9) Chromium, Hexavalent
- (10) Cobalt
- (11) Copper
- (12) Iron
- (13) Lead
- (14) Magnesium
- (15) Manganese
- (16) Mercury
- (17) Molybdenum
- (18) Nickel
- (19) Selenium
- (20) Silver
- (21) Thallium

- (22) *Tin*
- (23) *Vanadium*
- (24) *Zinc*

(d) *Each of the analytical categories listed in this Paragraph shall be considered a certifiable parameter. Analytical methods shall be determined from the sources listed in Rule .0805(a)(1) of this Section. A listing of certifiable organic parameters follows:*

- (1) *Purgeable Halocarbons*
- (2) *Purgeable Aromatics*
- (3) *Acrolein, Acrylonitrile, Acetonitrile*
- (4) *Phenols*
- (5) *Benzidines*
- (6) *Phthalate Esters*
- (7) *Nitrosamines*
- (8) *Organochlorine Pesticides*
- (9) *Polychlorinated Biphenyls*
- (10) *Nitroaromatics and Isophorone*
- (11) *Polynuclear Aromatic Hydrocarbons*
- (12) *Haloethers*
- (13) *Chlorinated Hydrocarbons*
- (14) *Purgeable Organics*
- (15) *Base/Neutral and Acid Organics*
- (16) *Chlorinated Acid Herbicides*
- (17) *Organophosphorus Pesticides*
- (18) *Total Petroleum Hydrocarbons - (TPH) Diesel Range Organics*
- (19) *Total Petroleum Hydrocarbons - (TPH) Gasoline Range Organics*
- (20) *Nonhalogenated Volatile Organics*
- (21) *N-Methylcarbamates*
- (22) *1,2-Dibromoethane (EDB)*
- (23) *Extractable Petroleum Hydrocarbons*
- (24) *Volatile Petroleum Hydrocarbons*
- (25) *Chlorinated Phenolics*
- (26) *Adsorbable Organic Halides*

Additional parameters that are not listed in 15A NCAC 02H .0804, but have been added to the list of certifiable parameters by approval from the Director of the Division of Water Quality include:

- (27) *Strontium*
- (28) *Titanium*
- (29) *Lithium*
- (30) *Silica*
- (31) *CBOD*
- (32) *DOC*
- (33) *Volatile Suspended Solids*
- (34) *E. coli*
- (35) *Enterococci*
- (36) *Volatile Solids*
- (37) *Salinity*

Section 3.2 Maintenance/Renewal

To renew certification each year, laboratories must submit acceptable PT sample results to the NC WW/GW LC Program for each parameter, analyte, technology and matrix (where a method is matrix-specific) by September 30. Laboratories are encouraged to have these results reported directly by the PT provider to the NC WW/GW LC Program by early September to avoid delays in processing the renewal of their certification.

NOTE: Even if a laboratory analyzes PT samples prior to September 30, it does not mean that those samples will be graded and reported to the NC WW/GW LC Program by the September 30 deadline. Laboratories must choose a study that meets all reporting and posting deadlines. Most PT studies are open for 45 days from the day the PTs are shipped to the laboratories. After a study closes, PT providers may take up to 30 days to issue reports to participating laboratories and their designated authorities. This means, that in order to meet the September 30 deadline, laboratories should participate in a PT study that begins no later than Mid-July, unless using “Rapid Response” type samples.

The results must be obtained from proficiency testing samples analyzed during the current proficiency testing calendar year (i.e., January 1 – September 30). The NC WW/GW LC program will not accept PT results directly from the participant laboratories. When a PT sample is not reported by the PT provider to this office before the September 30 deadline, the laboratory will be notified in writing (see Attachment 1) and the omission will be counted as a first unacceptable result for that proficiency testing calendar year. A corrective action report must be submitted and a remedial PT sample must then be analyzed and a satisfactory result must then be obtained prior to December 31 to maintain certification for that parameter method technology.

When two samples for the same parameter method technology are submitted and analyzed at the same time, an unacceptable result on one or both samples will be considered the first unacceptable result for certification purposes and a remedial sample must be submitted in accordance with 15A NCAC 2H .0805 (a) (2) (B).

A laboratory that fails a PT sample, for a parameter method technology or for an individual analyte when multi-analyte parameter PTs are analyzed and greater than 80% are acceptable, must:

- Take steps to identify the root cause of the failure (see Attachment 17 for an example),
- Take corrective action,
- Report the corrective action taken to this office, and
- Participate in a second PT study meeting the criteria listed previously in this policy

The corrective action response must include the laboratory’s root cause analysis and a copy of any objective evidence (e.g., calibration curves, revised procedures, records, training records, standard operating procedures, etc.) to indicate that the corrective actions have been implemented/completed. The results of the remedial PT and a corrective action report must be received in this office within 90 days from the date the failed results are issued by the accredited proficiency testing provider. A laboratory failing the second (or remedial) PT study may be decertified for that parameter method technology (not necessarily for all technologies for that parameter), pursuant to 15A NCAC 2H .0807. At this point, the NC WW/GW LC program may initiate an assessment of the laboratory’s quality control records to determine if reported data has

been adversely affected and evaluate if further corrective actions are needed. A laboratory may also be decertified for failing to provide a corrective action report pursuant to 15A NCAC 2H .0807 (13). If the remedial PT results are acceptable and an acceptable corrective action report is received, no further action is necessary.

NOTE: *While the NC WW/GW LC program only requires matrix-specific PTs for parameter method technologies that are matrix-specific, if an unacceptable result is obtained for a specific matrix, the remedial PT must be of same matrix.*

NOTE: *Laboratories must report all analytes for multi-analyte group reference sample remedial PTs when less than 80% of the constituent analytes are graded acceptable. Analyzing only a single failed constituent for the analyte group is acceptable only when greater than 80% of the constituent analytes are acceptable. Refer to sections 4.2.1 and 4.2.2 for additional information.*

For multi-analyte parameters (e.g., organic analyses), when greater than 80% of analytes are acceptable, but one or more individual analytes are graded unacceptable, acceptable performance has been demonstrated for the parameter method technology. The laboratory must, however, analyze a remedial PT for the individual analytes that were graded unacceptable. **NOTE:** *The analyte does not have to be spiked in the remedial PT, but must be appropriately reported as “less than”.* When a remedial PT is graded unacceptable for an individual analyte (constituting a second unacceptable result), the laboratory must qualify data for those individual analytes as “estimated” (whether detected or not) until acceptable results are obtained on two consecutive remedial PTs for the analyte in question. Notification will be sent from this office of this single analyte provisional certification outlining the effective date. The laboratory must complete and return the Provisional Certification Form within 30 days of receipt (see Attachment 15). Refer to sections 4.2.1 and 4.2.2 for additional information.

Section 3.3 Decertification

A laboratory’s failure of two PT studies in a row indicates the corrective action taken earlier by the laboratory was inadequate and may signal major problems with the laboratory’s system for testing that analyte or group of analytes. After a second unacceptable result, decertification for a period of 60 days may be recommended. Further corrective action must be taken by the laboratory and documentation of that action sent to this office for approval before the laboratory can request recertification. After reviewing the corrective action documentation submitted by a laboratory and prior to remedial PT analyses, an auditor may conduct an on-site inspection/audit of the laboratory, may recommend training for laboratory staff, and/or may recommend that the laboratory obtain third-party assistance in laboratory analytical technique, quality control and instrument operation.

If the results of an initial PT are not received in this office by September 30, this will be evaluated as a first unacceptable result. If the results of a remedial PT analyzed beyond the September 30 deadline is unsatisfactory (i.e., the September 30 deadline was missed and counted as a first unacceptable result), decertification for that parameter method technology may be recommended. A laboratory that reports no PT study data in a calendar year for any parameter method technology for which it is certified may be decertified for that parameter method technology for a period of up to one year pursuant to 15A NCAC 2H .0807. The laboratory’s scope of accreditation found on the certificate attachment (i.e., certified parameter list) will be revised to reflect any decertifications. A laboratory that reports no PT study data in a proficiency

testing calendar year for all parameter method technologies for which it is certified may be decertified for all parameters for a period of up to one year. An initial notice of intent to issue a decertification is sent either electronically or by mail to the laboratory (see example in Attachment 2). Notices of decertification with effective dates are sent via certified mail to the laboratory (see example in Attachment 3).

***NOTE:** Notices of decertification with effective dates are generally sent within two weeks of the initial notice of intent to issue decertification; however, the laboratory should take immediate corrective action once a problem has been identified (i.e., as soon as a second consecutive unacceptable PT result is received). The laboratory should suspend analysis immediately or qualify reported values until a contract/subcontract arrangement is made.*

If a laboratory submits, to this program, results of more than one PT study per parameter method technology in a calendar year, the above certification evaluation scheme and criteria shall apply to all studies (i.e., a laboratory submitting results of one PT study must pass one study; a laboratory submitting results of two studies must pass two studies, and so on).

A laboratory may appeal a recommended decertification within 10 business days of receipt of the notice of intent to decertify. This appeal may be made in writing to the NC WW/GW LC Branch Manager and/or Section Chief, who will review the case and submit a ruling within one week of the appeal. A laboratory may also appeal a 60-day parameter decertification anytime after issuance of the notice of the effective date of the decertification. This decertification appeal may be made to the N.C. Office of Administrative Hearings (<http://www.ncoah.com/hearings/>) in accordance with Chapter 150B of the N.C. General Statutes.

When a laboratory is decertified for any or all parameter method technologies, the laboratory is required to report certain information to this office within 30 days of the effective date of the 60-day decertification period. This includes the clients for whom State required monitoring analyses are performed, a copy of the notification of decertification sent to clients, and the certified laboratory or subcontract laboratory to be used (see Decertified Laboratory Report forms in Attachments 4, 5 and 6). Failure to complete and return the supplied form and requested information may result in further enforcement actions (e.g., decertification – see Attachment 7) pursuant to 15A NCAC 2H .0807 (a) (13).

No testing for the revoked parameter method technology shall be performed by the laboratory for permittees, clients or wastewater treatment plants reporting to this Department for purposes of State water, wastewater, or groundwater monitoring required under Article 21 of G.S. 143.

A revised certificate attachment (i.e., certified parameter list) that omits the decertified parameter method technology(s) will be issued to the laboratory and will remain effective until certification is regained.

A decertified municipal, industrial, field or other laboratory is required to have samples for the revoked parameter method technology(s) analyzed by a certified laboratory and supply the State Laboratory the name of the laboratory to be used pursuant to 15A NCAC 2H .0807 (e) (1) through (5).

A decertified commercial laboratory must supply written notification of the decertification to clients with NC Department of Environment and Natural Resources (e.g., Division of Water

Quality and NC Division of Waste Management Underground Storage Tank section) reporting requirements. Within thirty days, the decertified laboratory must supply the State Laboratory with a list of clients involved and copies of the notices sent to each. A decertified commercial laboratory that has received a parameter method technology decertification may make arrangements to supply analysis through another certified laboratory during the decertification period. The decertified laboratory must supply the State Laboratory with the name and NC WW/GW LC number of the laboratory to be used. The decertified laboratory must also supply clients with the name of the laboratory to be used. A commercial laboratory decertified for all parameters cannot subcontract samples for analyses to other certified laboratories during the decertification period pursuant to 15A NCAC 2H .0807 (e) (1) through (4).

Section 3.4 Recertification

A laboratory decertified in accordance with 15A NCAC 2H .0807 (a) may be recertified at the end of the decertification period by showing, to the satisfaction of the State Laboratory, that it has corrected the deficiency(ies). Upon approval, a letter with the effective date of the certification reinstatement will be sent from this office (see Attachment 8).

A laboratory decertified for a parameter due to unacceptable results on two consecutive performance evaluation samples submitted by an accredited vendor, or on two consecutive split samples may be recertified after 60 days by reporting acceptable results on two consecutive proficiency testing samples submitted by an accredited vendor in accordance with 15A NCAC 2H .0808 (b). Recertification samples may be requested from an accredited vendor at any time during the effective decertification period; however, recertification must be requested in writing by completing an *Amendment to Laboratory Certification Application* (found at <http://portal.ncdenr.org/web/wq/lab/cert/field/forms> for field labs and <http://portal.ncdenr.org/web/wq/lab/cert/nonfield/forms> for non-field labs).

***NOTE:** In addition to the two consecutive acceptable PTs, recertification will not be issued until an acceptable corrective action report and payment of the recertification invoice are submitted.*

The study dates of all testing rounds submitted with applications for recertification must have occurred within the six months prior to the date of application. When determining whether PTs are sufficiently recent, the NC WW/GW LC program counts back 6 months (i.e., 180 days) from the date the recertification application is received in our office. Any PT result submitted with an application for recertification must have a study close date no earlier than this date.

After two years, if a laboratory has not requested recertification for a decertified parameter method technology or if a laboratory voluntarily drops certification to avoid a decertification, any requests for certification for that parameter method technology will be considered as an initial certification request and the requirements for initial certification must be met.

Section 3.5 EPA Lab Code

Since different accreditation programs use a wide array of laboratory identification systems, the PT providers need a singular means of identifying participant labs when grading and reporting PT results. Therefore, each certified laboratory must have an EPA Lab Code.

NOTE: The EPA Lab Code is not the same as the NC laboratory identification number assigned to each laboratory by this Office or NPDES permit number. Do not report PT results using only the NC laboratory identification number or permit number.

The EPA Lab Code assigned to the laboratory performing the analysis must be documented on the results to the proficiency testing provider. Without this EPA Lab Code, the NC WW/GW LC program may be unable to credit the PT results to the correct laboratory. The EPA contact, for Lab Code assignments for PT studies, is:

Mr. Charles Feldmann
US EPA, M/S 140
26 W. Martin Luther King Drive
Cincinnati, OH 45268

Email: feldmann.charles@epa.gov
Phone: 513-569-7671
Fax: 513-569-7191

Section 3.6 General PT Analysis and Reporting Requirements

A laboratory must obtain PT samples from an accredited proficiency testing sample provider. A laboratory may use more than one PT provider in order to obtain PT samples for all parameters, analytes, methods and technologies for which it is certified or is seeking certification by the program. Check your certificate attachment (i.e., certified parameter list) before analyzing and reporting PT results to make sure you have all technologies covered for a given analyte before submitting your results to the PT provider. You can report results from several different technologies for any given PT. The only limitation is the volume of PT sample available for analysis. This happens frequently with wet chemistry methods.

Although this policy requires a laboratory to analyze a PT sample for each analyte by each technology on the laboratory's certificate attachment (i.e., certified parameter list) for a parameter, a laboratory is not necessarily required to analyze a separate PT sample for each method for a single analyte. The same PT sample may be analyzed for one or more technologies. Conversely, a single method may be used to demonstrate proficiency for multiple methods of similar technology. For example, there are five different method codes listed for total residual chlorine by colorimetric (DPD) technology. Only one PT result is required for colorimetric analysis. An acceptable score for that test method will be acceptable for all test methods that use that same technology. Conversely, when a lab reports an analytical result for a parameter by more than one test method using the same technology, an unacceptable score for any of those test methods will result in an unacceptable score for all test methods of that same technology. A list of required PT samples per parameter, method and technology can be found on the following Laboratory Certification Proficiency Testing Requirements web pages:

Field Laboratory PT Requirements <http://portal.ncdenr.org/web/wq/lab/cert/field/pt>
Non-field Laboratory PT Requirements <http://portal.ncdenr.org/web/wq/lab/cert/nonfield/pt>

Compare your certificate attachment (i.e., certified parameter list) to the appropriate list and use the list as a check sheet to indicate the parameter method technologies for which you need PT samples.

PT samples must be entered into the laboratory sample receipt log as samples and tracked through the laboratory as routine environmental samples. The laboratory records used to track PT samples (e.g., chain-of-custody, sample transmittal forms, etc.) can be initiated by laboratory

personnel such as the Quality Assurance Officer. PT samples received as ampules are diluted according to the PT provider's instructions. It is important to remember to document the preparation of PT samples in a traceable log or other traceable format. The diluted PT sample becomes a routine environmental sample and is added to a routine sample batch for analysis.

***NOTE:** For those laboratories that do not have adequate glassware for PT sample preparation, and have another lab assist with making up the PT sample, it is the participant laboratory's responsibility to retain the PT sample preparation documentation.*

As specified in 15A NCAC 2H .0800, in order to meet the minimum standards for certification, laboratories must use acceptable analytical methods. The acceptable methods are those defined or referenced in the current state and federal regulations for the environmental matrix being tested. All samples, (including PT samples) that are or that may be used for certification purposes, must be analyzed using approved methods only. All PT samples are to be analyzed and the results reported in a manner consistent with the routine analysis and reporting requirements of compliance samples and any other samples analyzed according to the requirements of 15A NCAC 2H .0800. Laboratories must document any exceptions. All PT sample analyses must be recorded in the daily analysis records as for any environmental sample. This serves as the permanent laboratory record.

The program has opted not to require use of solid or hazardous waste PTs for parameters that are not matrix-specific to soil analyses. A laboratory may; however, elect to analyze one or more matrices for a given parameter. For parameter method technologies that may be used for both aqueous and solid matrices, a single PT in either matrix shall suffice for demonstration of proficiency for that parameter method technology. A specific matrix PT is required only in cases where a method is matrix specific (e.g., EPA 9071 B). If unacceptable results are obtained, remedial PTs must; however, represent the same matrix as the failed PT. If the remedial PT is unacceptable, decertification may be recommended for the parameter method technology in any matrix, not just the matrix analyzed for those PTs. The same principle is applied to provisional certifications.

Laboratories shall conduct proficiency tests in accordance with their routine testing, calibration and reporting procedures, unless otherwise specified in the instructions supplied by the PT provider. This means that they are to be logged in and analyzed using the same staff, sample tracking systems, standard operating procedures including the same equipment, reagents, calibration techniques, analytical methods and preparatory techniques such as digestions, distillations and extractions. They shall not be analyzed with additional quality control or replicated beyond what is routine for environmental sample analysis. Results from multiple analyses (when this is the routine procedure) must be calculated in the same manner as routine environmental samples. The same quality control acceptance criteria must also be used.

***NOTE:** Corrective-action PTs, that are provided with the true values in a sealed envelope, are not considered blind samples and do not meet the proficiency testing requirements outlined in 15A NCAC 2H .0800. In general, laboratories should not analyze non-blind quality control PTs with blind PTs as this is not the routine testing protocol for environmental samples. This is not to say that they cannot be used for troubleshooting purposes before analyzing a remedial PT. This would be considered part of the corrective action plan.*

Laboratory Standard Operating Procedures (SOPs) must address how low level samples will be analyzed, including concentration of the sample or adjustment of the normality of a titrant. These instructions shall be followed when the concentration of a PT sample falls below the range of their routine analytical method. Instructions shall also be included in the laboratory's SOP for how high level samples will be analyzed, including preparation of multiple dilutions of the sample. These instructions will be followed when the concentration of a PT falls above the range of their routine analytical method.

***NOTE:** Standard Operating Procedures are not currently required for field laboratories; however, they are recommended.*

Laboratories shall also ensure that PT samples are equally distributed among personnel trained and qualified for the relevant tests, which represent the routine operation of the work group at the time the PT study is conducted.

Before the close of a PT study, a laboratory must arrange with the PT provider for the study results to be sent **directly from the PT provider to the North Carolina Wastewater/Groundwater Laboratory Certification office** before or at the same time that results are released to the laboratory. We cannot accept PT results faxed, emailed or mailed from the participant laboratory. The NELAC-accredited PT providers should have the NC WW/GW LC office address on file and an area to select this office as a PT report recipient in the data-reporting packet. Contact your PT provider if there is any question about this. If you designate our office to receive a report and there was an error on the PT provider's part, then we must receive a letter from the PT provider identifying the error that occurred. The NC WW/GW LC mailing address is as follows:

**NC WW/GW Laboratory Certification
1623 Mail Service Center
Raleigh, NC 27699-1623**

Each laboratory must report their EPA Lab Code and the NC WW/GW LC number with the reported data. If this information is not included, the laboratory may not receive proper credit for the PT analyses. If you are unsure of your EPA Lab Code, refer to Section 3.4 of this document. If you are unsure of your NC WW/GW LC number, contact this office at (919) 733-3908.

Laboratories must also be careful to designate the correct method code(s) being used for each PT sample result. To ensure that you are reporting the correct method, review your certificate attachment (i.e., certified parameter list). If you are using a method that is not listed on your certificate attachment (i.e., certified parameter list), please contact your auditor so that your certificate can be updated. The method must include the entire method reference as is written on your certificate attachment (i.e., certified parameter list). For instance, for pH, you must write or enter (when electronic submission of data results is employed) the entire method (e.g., SM 18th 4500 H⁺ B). Writing SM 4500, SM 4500 B, SM 4500 H, 4500 H, or any other incomplete combination is not correct. When a PT provider utilizes a web-based submittal system, where the laboratory selects the analytical method from a pull-down list, it may be necessary to edit the choices given. Technical difficulties should be addressed with the PT provider. You must also indicate the correct edition or revision of a method (e.g., 18th edition or 8015 C) where listed on your certificate attachment (i.e., certified parameter list). If the incorrect edition or revision is noted on the PT study results, you may receive a letter notifying you that there is a discrepancy

and may not receive proper credit for the result. When certified for multiple methods for a single parameter, results from a single PT analysis may be reported for multiple methods when a similar technology is employed. For example, the result obtained for COD (manual colorimetric) method EPA 410.4 may be reported for other manual colorimetric methods such as, Standard Methods, 5220 D, Hach 8000 and ASTM D1252-95, 00(B). Additionally, when merging organics methods (e.g., 600 series and 8000 series methods) by adhering to the most stringent quality control from the two methods, results from a single PT analysis may be reported for the multiple methods. Results must be reported for each method to receive proper credit.

In cases where there is more than one laboratory in your network (e.g., corporate organizations, multiple permitted facilities, etc.), each laboratory must be treated independently. Samples must be obtained, analyzed, and reported by each individual laboratory. Individual laboratories are determined by their state laboratory certification number and associated certificate attachments (i.e., certified parameter list). If separate certificate numbers are issued by the NC WW/GW LC program, then separate PT samples are required. The PT sample reports must reference the proper laboratory certification number and EPA Lab Code. It is not acceptable to report one result for any sample for two different laboratories. It is also not acceptable to split a sample between laboratories. If you work at two locations, you must analyze one sample at the first location using all of the equipment and reagents at the first location. You must then order and analyze another sample at the second location using the equipment and reagents at the second location. Exceptions must be approved by this office prior to participation in a PT study.

Results must be reported to the PT provider prior to the study close date and time using the reporting format specified by the PT provider. Any results provided after the close date and time will not be accepted even if the PT provider accepts and grades the data. In general, changes to the reported data submitted to the PT provider after the study close date will not be accepted for certification purposes even when the PT provider submits an amended report; however, amended reports will be evaluated by this program on an individual basis. Most providers make results available shortly after the study close date so that laboratories can grade their own data and order remedial samples as necessary. Prior to the study close date and time, the laboratory shall authorize the PT provider to release the laboratory's final evaluation report directly to the NC WW/GW LC program.

A laboratory must not send or subcontract analysis of any PT sample, or a portion of a PT sample, to another laboratory for any analysis for which it is certified or seeking certification unless the practice represents the routine analysis and reporting scheme utilized by the laboratory. Conversely, a lab must not knowingly receive and analyze any PT sample or portion of a PT sample from another laboratory for which the results of the PT sample are intended for use for initial or continued certification.

A laboratory must not communicate with any other laboratory (including laboratories within the same company) or person regarding the results obtained from the analysis of the PT sample, before the PT provider releases the study results (i.e., prior to the closing date of the study).

A laboratory must not attempt to obtain the assigned value of any PT sample used to satisfy initial or continued certification requirements prior to the closing date of the study.

Section 3.7 Parameter-specific PT requirements

3.7.1 Total Residual Chlorine (low level)

For colorimetric (DPD) procedures, Total Residual Chlorine (TRC) PT samples must be analyzed on the same spectrophotometric program (i.e., the 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. This sample should be within the range of your verified curve on the low level program.

Some vendors provide a low-level TRC PT in select Water Pollution (WP) studies.

3.7.2 Microbiological Samples

Only quantitative microbiological PT samples will be accepted for coliform, Enterococci and Salmonella. The results for microbiology samples (i.e., total coliform, fecal coliform, *E. coli*, Enterococci and Salmonella) must be reported as a number of colonies per 100 mL (CFU/100 mL or MPN/100 mL). This applies to both Membrane Filtration (MF) methods and Most Probable Number (MPN) methods. Microbiology samples for the Water Supply (WS) study are reported as presence/absence and are not acceptable for demonstrating proficiency for the NC WW/GW LC program.

3.7.3 Biochemical Oxygen Demand (BOD)

Laboratories are reminded that the pH of BOD PT samples must be adjusted prior to dilution. In order to obtain accurate results for this test, the analysis must be performed at a pH between 6.0 and 8.5. In some municipal labs, adjusting the pH of “real” samples is never required as they always fall in the method-defined range and when PT samples are analyzed, this step may be overlooked. Vendors must prepare the DEMAND concentrate with acid in order to produce a homogenous, stable PT. After the sample is prepared according to manufacturer’s instructions, the sample pH will still be slightly acidic. If the pH of this sample is not adjusted prior to preparing analytical dilutions, there is a significant risk of failing the sample. The best way to adjust the pH is to use a dilute solution of sodium hydroxide (~0.2 molar) and add it one drop at a time to the diluted sample, mixing and then checking the pH after each addition until the pH is between 6.5 and 7.5.

NOTE: Luminescence Dissolved Oxygen (LDO) is a separate parameter method technology and requires a separate PT.

3.7.4 Chlorophyll *a*

Because of the lack of commercially-prepared proficiency testing samples for chlorophyll *a*, NC DWQ will conduct chlorophyll *a* round robin studies in the spring of each year, and follow-up studies in the fall as needed, for laboratories certified for this parameter. The round robin studies will also include volunteer academic and governmental laboratories to increase the data pool for statistical evaluation purposes. The Division will use the results of the round robin studies to assess laboratory performance and comparability. Laboratories will be notified and given instruction prior to each study. The Chlorophyll *a* Round Robin Study Standard Operating Procedure can be found on the NC WW/GW LC website at <http://portal.ncdenr.org/web/wq/lab/cert/nonfield/pt>.

Section 3.8 DMR-QA PT Study Exemption for NC Permittees

In 2008, the NC WW/GW LC program appealed to the US EPA Clean Water Enforcement Branch, Water Protection Division for permittee exemption from the National Pollution Discharge Elimination System (NPDES) DMR-QA PT program. After a thorough review of the NC WW/GW LC program, it was deemed that the NCDENR proficiency testing program provides adequate quality assurance to replace EPA's DMR-QA PT study program. Therefore, all NC dischargers; classified as both Major and Minor, are exempt from the DMR-QA PT Study program as of May 13, 2009. NC dischargers will no longer receive DMR-QA PT study reporting packages from EPA. (See Attachment 9 for the EPA letter granting exemption to NC permittees from the DMR-QA PT study). In accordance with this agreement, the NC WW/GW LC program will submit annual reports (similar to a DMR-QA pass/fail report) to EPA Region 4, which includes the following statistical information for the program with regard to DMR-QA analytes:

- Pass/fail rates for laboratories
- Pass/fail rates for analytes
- Number of laboratories in the program
- Number of audits conducted

The NC WW/GW LC Program will accept DMR-QA reference samples for certification maintenance as long as the results are made available to the NC WW/GW LC by September 30.

If DMR-QA results will not be available by September 30, laboratories must purchase PT samples from another proficiency testing study and acceptable results must be reported to NC WW/GW LC by September 30.

NOTE: *Just because a laboratory analyzes DMR-QA PT samples prior to September 30, it does not mean that those samples will be graded and reported to the NC WW/GW LC Program by the September 30 deadline. Laboratories must choose a study that meets all reporting and posting deadlines. Every PT study is open for 45 days from the day the PTs are shipped to the laboratories. After a study closes, PT providers may take up to 30 days to issue reports to participating laboratories and their designated authorities. This means, that in order to meet the September 30 deadline, laboratories must participate in a PT study that begins no later than Mid-August, unless using "Rapid Response" type samples which typically cost much more than a routine study.*

Not all of the analytes listed on a NPDES permit may be included in the DMR-QA PT study; however, each laboratory must analyze a PT for every parameter on the certificate attachment (i.e., certified parameter list), where available, to satisfy NC WW/GW LC certification requirements. Additional PT samples may need to be ordered. For this reason and the fact that the WP study reporting procedures are easier and results are generally obtained in a more timely fashion, most labs opt not to continue participation in the DMR-QA PT Study.

Refer to Section 6.0 for additional information on NC WW/GW LC assessor oversight and tracking of laboratory participation in the proficiency testing process.

Section 3.9 PT Sample Record Retention

The laboratory shall retain all records necessary to facilitate historical reconstruction of the analysis and reporting of analytical results for PT samples. This means the laboratory must have available and retain for five years [pursuant to 15A NCAC 2H .0805 (a) (7) (G)] all of the raw data, including benchsheets, instrument printouts and calibration data, for all PT analyses and the associated quality control analyses conducted by all method technologies.

These records shall include a copy of the reporting forms used by the laboratory to report the analytical results to the PT provider. If the analytical results for the PT samples were entered or uploaded electronically to a provider website, the laboratory shall retain a copy of the on-line data entry summary or similar documentation of entry of the PT results from the PT provider website.

The laboratory shall make these records available for review upon request by the NC WW/GW LC program. Auditors will review PT records during on-site evaluations.

Section 4.0 Evaluating and Grading PT Sample Results

The NC WW/GW LC program will follow the 2009 TNI Standard for PT reporting and grading. The 2009 TNI standard evaluations of less than (<) values are listed below:

- a) As “Acceptable” when the assigned value is greater than “0” and the value reported with the less than (<) sign is greater than the lower acceptance limit.
- b) As “Not Acceptable” when the assigned value is greater than “0” and the value reported with the less than (<) sign is less than the lower acceptance limit.
- c) As “Acceptable” when the assigned value is equal to < PTRL (Proficiency Testing Reporting Limit).

This means that the laboratory shall report the analytical results for PT samples as follows:

For instrument technologies that employ a multi-point calibration, the laboratory shall report the analytical result to the value of the lowest calibration standard established for the test method used to analyze the PT sample. The working range of the calibration under which the PT sample is analyzed shall be the same range as used for routine environmental samples.

- A result for any PT at a concentration above or equal to the lowest calibration standard shall be reported as the resultant value.
- A result for any PT at a concentration less than the lowest calibration standard shall be reported as less than the value of the lowest calibration standard.

For instrument technologies (e.g., ICP-AES or ICP-MS) that employ standardization with a zero point and a single point calibration standard, the laboratory shall evaluate the analytical result to the established practical quantitation limit (this may be a laboratory's Limit of Quantitation or LOQ) established for the test method used to analyze the PT sample.

- A result for any PT at a concentration above or equal to the PQL shall be reported as the resultant value.
- A result for any PT at a concentration less than the PQL shall be reported as less than the value of the PQL.

For Water Pollution (**WP**) studies, the proficiency testing sample providers use the same pooled-result grading system used formally by EPA when determining whether a result is scored "Acceptable" or "Not Acceptable".

An "**Acceptable**" PT result is one where the reported value falls within the acceptance limits.

A "**Not Acceptable**" grade is assigned when the submitted result falls outside the acceptance limits.

Any test or measurement results that are evaluated as "Not Acceptable", "Unacceptable", "Fail", or any other term used to indicate exceedances of the acceptable limit by the PT provider, using its stated evaluation protocol, require a corrective action response and remedial PT and described in the following sections.

Each time the State Laboratory receives and evaluates PT results for a laboratory, an electronic or hard copy letter of acknowledgement with the State Laboratory's evaluation and instructions for remedial actions, if required, will be sent to the participant laboratory. Examples of these notices can be found in Attachments 10, 11 and 12 with optional verbiage often used in these letters in Attachment 13.

Section 4.1 Single-Analyte PT Samples

For single-analyte samples, laboratories must report acceptable results for that analyte.

Section 4.2 Multi-Analyte Group PT Samples

Multi-analyte evaluation applies to the various analyte groups for which certification is offered by this program. These include:

Purgeable Halocarbons
Purgeable Aromatics
Acrolein, Acrylonitrile, Acetonitrile
Phenols
Benzidines
Phthalate Esters
Nitrosamines
Organochlorine Pesticides
Polychlorinated Biphenyls
Nitroaromatics and Isophorone

Polynuclear Aromatic
Hydrocarbons
Haloethers
Chlorinated Hydrocarbons
Purgeable Organics
Base/Neutral and Acid Organics
Chlorinated Acid Herbicides
Organophosphorus Pesticides
Nonhalogenated Volatile Organics
N-Methylcarbamates

Extractable Petroleum
Hydrocarbons
Volatile Petroleum Hydrocarbons
Chlorinated Phenolics
Adsorbable Organic Halides
TCLP metals
TCLP organics

Section 4.2.1 80% Rule

For multi-analyte groups containing five or more analytes, laboratories must report acceptable results for **greater than or equal to** 80% of each of the individual analytes in the reference sample for the cumulative result to be evaluated by the State Laboratory as acceptable. This is called the “80% Rule.” For example, if acceptable results are reported for 9 of 15 Volatile Organic Compounds (VOCs) in a given reference sample, the cumulative result is not acceptable because only 60% of the analyte results reported fell within the established acceptance limits. The laboratory needs to report correct results for at least 12 of the 15, or 80%, of the analytes in the reference sample for the result to be considered acceptable. Results for all spiked components from the primary list of the target group must be reported. If a component is spiked and in the primary list of the target group and the laboratory elects not to report that component, it counts as an individual failure towards the 80% rule.

Alternatively, the laboratory may appeal to report an abbreviated list if they can demonstrate that the abbreviated list is a routine reporting scheme for their NC data reporting. Abbreviated lists must be submitted to the office prior to analyzing the PT sample when reporting an abbreviated list. Conversely, constituents that are not in the primary list of the target group and are reported voluntarily will be counted toward the 80% rule.

It is also important to understand how false positive and false negative results affect the acceptability of multi-analyte group reference samples:

- A *false positive* result occurs when a laboratory incorrectly reports an analyte concentration greater than the limit of detection when that analyte is **not** present in the reference sample. Each false positive counts as an individual failure towards the 80% rule.
- A *false negative* result occurs when a laboratory incorrectly reports an analyte concentration less than the limit of detection for an analyte that is **actually present** in the reference sample. Each false negative counts as an individual failure towards the 80% rule. Unreported results for analytes present in the reference sample are also considered false negatives and count as individual failures toward the 80% rule unless reporting of an abbreviated list has been previously approved by the State Laboratory.

Determining the overall percentage may become more complicated when these type errors are encountered. Consider the following example:

A laboratory submits PT results for the Base/Neutral and Acid Organics (BNAs) analyte group. The PT contained a total of 40 primary list analytes and the laboratory submitted acceptable results for 35 of the analytes and obtained unacceptable results for 2 analytes. Three spiked analytes were not reported and, therefore, considered false negatives. The laboratory also reported 4 compounds that were not present (i.e., false positives).

The overall evaluation is determined by the following equation:

$$\begin{aligned}\% \text{ Acceptable} &= [(Total - (Unacceptable + False Negatives + False Positives)) / Total] \times 100\% \\ &= [(40 - (2 + 3 + 4)) / 40] \times 100 \\ &= [(40 - (9)) / 40] \times 100 \\ &= [31 / 40] \times 100 \\ &= 77.5\%\end{aligned}$$

The four false positives, the three false negatives and the two unacceptable results count against the number of acceptable results reported (i.e., 40-9) and since the false positives are not in the PT, they are not added to the total number of analytes (i.e., 40). Since the overall evaluation yielded less than 80%, the laboratory must analyze another PT successfully within 90 days of the report date to maintain certification for that analyte group.

NOTE: *Analytes not spiked in a PT sample and appropriately reported as less than (<) values will be counted toward the number of acceptable analytes.*

Laboratories must analyze an entirely new PT sample if they do not attain a score of at least 80%. In this case, the results of ***all*** individual analytes detected in the remedial proficiency testing sample must be reported – ***not just the individual analytes that were graded unacceptable in the first proficiency testing sample.***

Section 4.2.2 Individual Analyte Corrective Actions and Provisional Certification

When a score of 80% or better is obtained, but one or more individual analytes are graded unacceptable, the laboratory must successfully analyze a remedial PT for those analytes within 90 days of the report date to demonstrate there is not a systemic problem with the analysis of those specific analytes.

After two consecutive unacceptable results are obtained for an individual analyte, the laboratory should immediately begin qualifying data as “estimated”. Upon receipt of the provisional certification notification (sent via certified mail), the laboratory must qualify any reported results for those analytes as “estimated”. The laboratory must also complete a Provisional Certification Form (See Attachment 15), within 30 days of receipt, identifying North Carolina clients for which affected data may be reported. Failure to complete and return this form by the date due may result in further enforcement actions. The laboratory must then obtain acceptable results on two consecutive PT samples for the specific analyte in order to remove the provisional certification status. Upon approval, a letter with the effective date of rescission of the provisional certification status will be sent to the laboratory (see Attachment 16). If the laboratory is unable to obtain acceptable

results on two consecutive PT samples, decertification for the entire parameter method technology may be recommended. Failing to report results or to submit a corrective action report by the date due may result in a recommendation for decertification for the parameter. If acceptable results are obtained on two consecutive PT samples, the provisional certification status for those analytes will be removed and the PT requirements for that PT calendar year will be met. A notification letter with effective dates will be issued from this Office (See Attachment 13).

Section 4.3 Multiple Matrices and Concentration Levels

When a PT sample study for a parameter includes multiple ampules with each one containing a different concentration level or different matrix, the >50% Rule is applied to determine the overall acceptability of the study. The >50% Rule requires passing >50% of the matrices or concentration levels to be considered acceptable (i.e., if 2 levels are analyzed, you must obtain acceptable results on both levels).

When a PT sample study for a parameter includes multiple ampules with each one containing a different concentration level or different matrix, the results reported for each level are first graded separately using the 80% rule. Once the acceptability of each level has been determined, the >50% Rule is applied to determine the overall acceptability of the study.

The acceptability of the study is not determined by the average acceptability rate of the multiple levels.

Example 1 - A laboratory submits results for a two-level BNA PT sample study and 92% of the analytes in one study level are reported correctly, but only 70% of the analytes in the other level are reported correctly, the overall study result is unacceptable because only 50% of the individual levels satisfy the 80% rule. The 81% average acceptability rate between the two levels does not influence the acceptability of the study.

Example 2 – A laboratory submits results for PCBs in oil and PCBs in water. The PCBs in oil is reported as acceptable, but the PCBs in water is graded unacceptable. The NC WW/GW LC program would evaluate this as unacceptable since it fails the >50% Rule.

Section 4.4 Parameter-Specific PT Evaluations

Parameter evaluations that do not follow the schemes detailed in sections 4.1 through 4.3 are described in this section.

- **Toxicity Characteristic Leaching Procedures (TCLP)**

TCLP PT samples must be analyzed for both TCLP-metals and TCLP-organics when a laboratory is certified for both TCLP-metals and TCLP-organics.

TCLP Metals

TCLP PT samples are evaluated according to what the PT vendor provides in the mix. If 5 or more RCRA metals are spiked in the PT sample (see Table 1 below), apply the 80% Rule. The guidelines in Section 4.2.2 regarding individual analyte

corrective actions and provisional certification also apply. If less than or equal to 4 RCRA metals are spiked, apply the 100% Rule.

Table 1. EPA Region 4 RCRA Metals

EPA Region 4 RCRA* Metals	
Arsenic	Lead
Barium	Mercury
Cadmium	Selenium
Chromium	Silver

*RCRA – Resource Conservation and Recovery Act

Elements other than these RCRA metals that are reported voluntarily will be evaluated as described above.

TCLP Organics

Any analyte group available from a vendor may be used (e.g., TCLP Acid Herbicides, TCLP Volatile Organics and TCLP Organochlorine Pesticides). Look at the primary list of the method and apply standard grading criteria. The guidelines in Section 4.2.2 regarding individual analyte corrective actions and provisional certification also apply.

NOTE: TCLP PT results are evaluated for the TCLP parameter (i.e., EPA Method 1311) only and not the individual metals (e.g., EPA Method 200.7) or organics (e.g., EPA Method 625) parameters.

- **Extractable Petroleum Hydrocarbons (EPH) and Volatile Petroleum Hydrocarbons (VPH)**

To obtain or maintain certification for EPH and VPH, acceptable results must be obtained from the analysis of each range included in the EPH/VPH PT sample (minimum of three ranges). To be evaluated as acceptable, all ranges must be graded acceptable. A laboratory that fails to satisfactorily analyze one or more of these carbon ranges must correctly analyze and report all ranges in a remedial EPH/VPH PT, not just the range for which unacceptable results were obtained initially.

Table 2. EPH and VPH Reportable Carbon Ranges

Extractable Petroleum Hydrocarbons (EPH)	Ranges*
	C9-C18 Aliphatics
	C19-C36 Aliphatics
	C11-C22 Aromatics
Volatile Petroleum Hydrocarbons (VPH)	Ranges*
	C5-C8 Aliphatics
	C9-C12 Aliphatics
	C9-C10 Aromatics

*The laboratory should follow the PT provider’s instructions for preparation and reporting of EPH and VPH samples and results (including whether values are “adjusted” versus “unadjusted” for surrogates, internal standards and concentrations of other ranges eluting within the reported range). NC WW/GW LC will evaluate the laboratory’s performance on the grade assigned by the PT provider. Laboratories are not required to report individual constituents.

- **1,2-Dibromomethane (EDB)**

To obtain or maintain certification for the methods used to analyze and report EDB, acceptable results must be obtained for all constituent analytes in the reference method cited. Refer to Table 3 below.

Table 3. EDB Required Analytes

Method	Analytes Required
EPA 504.1	1,2-Dibromoethane (EDB), 1,2-Dibromo-3-Chloropropane (DBCP), 1,2,3- Trichloropropane (123-TCP)
SW-846 8011	1,2-Dibromoethane (EDB), 1,2-Dibromo-3-Chloropropane (DBCP)

Some regulatory agencies require reporting of EDB only by EPA 504.1. To report EDB as a single analyte, the laboratory must demonstrate that this is the routine reporting scheme for NC clients and obtain prior approval from this office.

- **Multi-Analyte PTs Containing Less Than or Equal to Four Analytes**

For these multi-analyte groups containing four analytes, laboratories must report acceptable results for **100%** of each of the individual analytes in the reference sample for the cumulative result to be acceptable.

Section 4.5 Multiple Studies Analyzed at the Same Time

When multiple studies are reported at about the same time, the closing date of the individual proficiency testing studies will be used to determine the sequence of the analytical results. When studies are concurrent, the >50% Rule (see Section 4.3) will be applied.

5.0 Complaint Resolution

The laboratory shall submit questions about PT samples or evaluations made by the PT provider to the PT provider. If the PT provider is not able or is unwilling to resolve the question to the satisfaction of the laboratory, the laboratory shall refer those questions to the PT provider’s Proficiency Testing Provider Accreditor.

6.0 Auditor Oversight and Tracking

Certified laboratories and laboratories seeking certification are assigned to an auditor, in general, by region. There are two Laboratory Certification Supervisors who oversee three

or four auditor positions each. Each auditor is assigned to the laboratories in one or more of the following regions:

- Asheville Region
- Fayetteville Region
- Mooresville Region
- Raleigh Region
- Washington Region
- Wilmington Region
- Winston-Salem Region
- Washington Region
- Out-of-state Labs

The auditors are responsible for tracking and evaluating the performance testing analyses and results for each of their assigned laboratories to verify the requirements of 15A NCAC 2H .0800 and this document are adequately satisfied.

The auditors are responsible for ensuring:

- Each laboratory has an assigned EPA Lab Code.
- PT samples are entered into the laboratory sample receipt log as samples and are tracked through the laboratory as routine environmental samples.
- Each laboratory has successfully analyzed a PT sample for each parameter method technology on their certificate attachment (i.e., certified parameter list), where a PT sample is available. If the laboratory has not analyzed a PT for all parameter method technologies on their certificate attachment (i.e., certified parameter list), then the assigned assessor shall notify the laboratory. The assessor will not recommend initial certification for parameter method technologies for which the laboratory has not completed satisfactory proficiency testing within the last six months.
- Each laboratory has analyzed a PT sample such that the results are reported directly to this office by September 30 each year.
- Each laboratory has analyzed a blind PT sample and reported results to the PT provider prior to the closing date or deadline issued by the provider.
- Each laboratory takes corrective action for any unacceptable results. The assessor is also responsible for providing technical assistance during troubleshooting when asked or as deemed necessary. This may involve initiating an on-site inspection of the laboratory facilities or records.
- Each laboratory analyzes any remedial PT samples and the results received in this office within 90 days of the date the unacceptable results report was issued.
- Decertification is issued or certification is changed to provisional status, depending upon the circumstances, any time the requirements of 15A NCAC 2H .0800 or this document are not met and ensure the analyses are contracted to or performed by a certified laboratory.
- Each laboratory successfully analyzes two consecutive PT samples for a particular parameter method technology before certification for that parameter method technology is re-issued.
- PT data is reviewed during on-site inspections to check compliance with the requirements outlined in 15A NCAC 2H .0800 and this document (e.g., appropriately analyzed and documented, appropriately qualified when under provisional certification status, appropriately subcontracted when decertified,

etc.). Refer to Attachments 19 and 20 for the Proficiency Testing (PT) Checklist and Field Parameter On-Site Inspection Checklist (which contains a PT section).

- PT results are entered into a central PT tracking spreadsheet (See Attachment 18).

Laboratory Certification Supervisors are responsible for directing and supervising the monitoring of certificate holder's analysis of proficiency testing samples for all certified parameter method technologies including remedial PTs. They assure that certificate holders are informed as to their status under the Laboratory Certification rules. The Laboratory Certification Supervisors will also recommend parameter method technology decertification to the Branch Manager for those parameter method technologies that do not have acceptable results under the NC DWQ WW/GW LC rules.

The Branch Manager has authority to issue decertification and recertification. The Branch Manager is also responsible for preparing and submitting an annual report (similar to a DMR-QA pass/fail report) to EPA Region 4, which includes the statistical information listed in Section 3.8 of this document.

This document and subsequent revisions will be posted on the Laboratory Certification website at www.dwqlab.org. Hard copies may be requested from this office. At the beginning of each Proficiency Testing Calendar Year, a memorandum will be sent to each certified laboratory detailing any changes to this document or the proficiency testing requirements pertinent to this program. The memorandum may be sent to certified laboratories in either electronic (for laboratories that have an email address on file) or hard copy (for laboratories that do not have an email address on file) format.

7.0 References

- 7.1 North Carolina Administrative Code Title 15, Department of Environment and Natural Resources Chapter 2, Environmental Management Division, Subchapter 2H, Procedures for Permits, Approvals, Section .0800 Laboratory Certification.
- 7.2 United States Code of Federal Regulations. Title 40 chapter I. Subchapter D. Part 136 *et. seq.* Guidelines Establishing Test Procedures for the Analysis of Pollutants. U.S. Government Printing Office. Washington, D.C.
- 7.3 US EPA NERL-Ci-0045 "National Standards for Water Proficiency Testing Studies, Criteria Document," December 30, 1998.

8.0 Revision History

Revision Number	Date Revised	Revision Summary
1.0	01/18/2011	Section 4.2.1, pg. 24 – An error in the example PT evaluation was corrected. The equation was changed to %Acceptable = [(35-6)/40] x 100% = 72.5% and “false negative” was corrected to read

		“false positive”.
1.1	02/14/2011	<p>Sections 2.2.1, pg. 5 and 2.4.1, pg. 7 – Added false positives and false negatives to the definitions of Not Acceptable and Unacceptable.</p> <p>Section 2.3.1, pg. 6 – It was found that some Quick Response PT Samples have deadlines for reporting, so this was removed from the definition.</p> <p>Section 3.4, pg. 15 – Added the requirements for recertification when a lab voluntarily drops certification to avoid decertification.</p> <p>Section 3.6, pg. 17 – Omitted the reference to matrix-matched samples since this is covered two paragraphs preceding which states that PT samples must be analyzed in the same manner as routine environmental samples.</p> <p>Section 4.2.1, pg. 24 – An error in the example PT evaluation was corrected with input from EPA Region 4. The equation was changed to %Acceptable = $[(40-9)/40] \times 100\% = 77.5\%$</p> <p>Attachments 7 and 18 were added and the remaining attachments appropriately renumbered.</p>
1.2	02/20/2012	<p>Sections 1.0, pg. 3; 2.3 pg. 4; 2.21 pg. 5; 3.1, pg. 10 – ACLASS was added as an approved PT Provider Accreditor.</p> <p>Section 2.10, pg. 4 – A definition of Corrective Action Report (CAR) was added.</p> <p>Section 2.27, pg. 6 – The Proficiency Testing Calendar Year was redefined as January 1 to September 30, moving the PT deadline up one month to accommodate the 90-day remedial PT deadline.</p> <p>Sections 2.33, pg. 7; 3.2, pg. 13; 3.3, pg. 14; 3.8, pg. 22; 6.0, pg. 30 – All references to the initial PT deadline were changed from October 31 to September 30.</p> <p>Section 3.2, pg. 13; 4.2.1, pg. 26; 4.2.2, pg. 26 – The remedial PT deadline was changed from 60 to 90 days.</p> <p>Section 3.3, pg. 15 – Added that labs must take immediate corrective action (in the form of qualifying data results, suspending analysis, etc.) once it is known a second PT failure has occurred and not wait for the provisional or decertification effective date.</p> <p>Section 3.6, pg. 18 - For those laboratories that do not have adequate glassware for PT sample preparation, and have another lab assist with making up the PT sample, it is the participant</p>

	<p>laboratory's responsibility to retain the PT sample preparation documentation.</p> <p>Section 3.6, pg. 18 – Decertification and provisional certifications will be issued for the parameter method technology, not just the matrix of the PT failed.</p> <p>Section 3.7, pg. 22 – The website address for the Chlorophyll <i>a</i> Round Robin Study SOP was added.</p> <p>Section 3.9, pg. 23 – Added 2009 TNI Standard PT grading requirement.</p> <p>Section 4.2.2, pg. 27 – Added 30-day deadline for Provisional Certification Form.</p> <p>Section 4.4, pg. 28 – Added reference to Section 4.2.2 guidelines to TCLP Metals section.</p> <p>Section 6.0, pg. 30 – Added reference to the <i>Proficiency Testing Checklist</i> and the <i>Field Parameter On-site Inspection Checklist</i>.</p> <p>Attachments 1, 2, 3, 7, 8, 10, 11, 12, 13, 14 and 16 were updated to the new deadline requirements and new DWQ Director.</p> <p>Attachment 17 was updated to include a description of the Corrective Action Report and an example Corrective Action Report Form.</p> <p>Attachments 19 and 20 were added.</p>
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Attachment 1. Notification of Missed Deadline Letter



North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

Subject: North Carolina Wastewater/Groundwater Laboratory Certification
Proficiency Testing Results

Dear :

According to our records, we have not received results for:

Study/Ampule	Parameter	Method Technology	Comment	Remedial PT Due Date
			First due date September 30,	
			First due date September 30,	
			First due date September 30,	

If your laboratory has already analyzed a proficiency testing sample for these parameter method technology(s) this year, please supply this office with a copy of the results. Failure to report these required PT results by the September 30th deadline will be considered as a first unacceptable result for certification purposes.

Contact me at if you have questions or if I can be of further assistance.

Sincerely,

Certification Auditor
Laboratory Section

cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrqlab.org

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Attachment 2. Notice of Intent to Decertify Letter



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

Subject: Sixty-Day Parameter Method Technology Decertification

Dear _____ :

The rerun result(s) for the below parameter method technology(s) by your laboratory for the North Carolina Wastewater/ Groundwater Laboratory Certification performance evaluation was unsatisfactory and a sixty-day parameter decertification will be recommended. The results reported and the true values as they appear in our records are as follows:

Ampule/ Study	Parameter Method Technology	Units	Reported	True Value	Acceptance Range	Performance
						UNACCEPTABLE
						UNACCEPTABLE

This is to notify you that the Laboratory Certification Branch of the Division of Water Quality, Laboratory Section, is considering recommending a parameter method technology(s) decertification to the Laboratory Section Chief. The recommendation concerns the above mentioned violation(s). **This is not a decertification; it is a notification of our intent to consider decertification. You will be informed in a separate communication if decertification is issued.**

Contact us immediately at _____ if your records do not agree with ours or if you have questions.

Sincerely,

Certification Unit Supervisor
Laboratory Section

Enclosure

cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwglab.org

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Attachment 3. Notice of Decertification Letter



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

CERTIFIED MAIL #
RETURN RECEIPT REQUESTED

SUBJECT: Parameter Decertification

Dear _____ :

Please be advised that under provisions of Regulations 15A NCAC 02H .0807 (b) (1) and the powers duly delegated to me, a sixty day parameter decertification notice is hereby issued to the laboratory for the above parameter(s) effective _____. No testing for the above parameter(s) shall be performed at your laboratory for clients or wastewater treatment plants reporting to this Department for purposes of State water, wastewater, or groundwater monitoring required under Article 21 of G.S. 143. Sixty days thereafter you may again apply for parameter recertification as detailed in 15A NCAC 02H .0808 (b) of the regulations.

The results your laboratory reported on evaluation samples for the above parameter(s) are shown on our letter dated _____ (copy attached). These results lie outside the acceptable variation limit from the true value set forth as acceptable in the Laboratory Certification Regulation 15A NCAC 02H .0803 (15).

This decertification may be appealed to the N.C. Office of Administrative Hearings in accordance with Chapter 150B of the General Statutes.

Attached is our Decertified Laboratory Report form which requests, as a result of this parameter decertification, that certain information be reported concerning your laboratory and/or clients for whom State required monitoring analysis are performed. The attached form must be completed and returned within thirty days of the decertification effective date. Failure to complete and return this form may result in further enforcement actions.

Also enclosed is a revised certified parameter listing for your certificate that removes the decertified parameter(s) from your certification.

If you have questions or need additional information concerning this matter, please contact me at (919) 733-3908.

Sincerely,

J. Kent Wiggins
Laboratory Section Chief
Laboratory Section

Attachments
cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwglab.org

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Attachment 4. Decertified Laboratory Report (For Commercial Laboratories)

DECERTIFIED LABORATORY REPORT

Laboratory Name:

Effective Date:

Decertified Parameter(s):

Cert #:

Laboratory Type - Commercial

As a result of the above decertification, you are required to furnish information about this wastewater facility and/or clients for whom state required wastewater monitoring analysis are performed. A decertified commercial laboratory must supply written notification of the decertification to clients with Division of Water Quality (including the Underground Storage Tank section in the Division of Waste Management) reporting requirements. Within thirty days, the decertified laboratory must supply the State Laboratory with a list of clients involved and copies of the notices sent to each. A decertified commercial laboratory that has received a parameter decertification may make arrangements to supply analysis through another certified laboratory during any decertification periods. The decertified laboratory must supply the State Laboratory with the name of the laboratory to be used.

Please complete the following:

- Client data for the decertified parameter(s) will be furnished by subcontracting to another certified laboratory. () Yes () No
If yes, enter name and certificate number of the laboratory to be used. Please note: The designated laboratory must be certified with North Carolina Wastewater/Groundwater Laboratory Certification for the subcontracted parameter.
If no, please explain.

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

- Clients have been notified about the decertification. () Yes () No If no, explain why.

Note: Copies of the notification must be submitted along with this form. The clients involved are listed below:

Client Name	Address

If necessary, attach additional pages.

Within thirty days of the decertification effective date, Return to:

DENR/DWQ
Laboratory Section / Attn: J. Kent Wiggins
1623 Mall Service Center
Raleigh, North Carolina 27699-1623

Laboratory Supervisor Name (please print)

Laboratory Supervisor Signature

Date

Attachment 5. Decertified Laboratory Report (For Municipal, Industrial and Other Laboratories)

DECERTIFIED LABORATORY REPORT

LABORATORY NAME: _____ EFFECTIVE DATE: _____

DECERTIFIED PARAMETER(s): _____ CERT #: _____

LABORATORY TYPE - **Municipal/Industrial**

As a result of the above decertification, you are required to furnish information about this wastewater facilities for whom state required wastewater monitoring analysis are performed.

Municipal or Industrial Laboratories - During any decertification period, the decertified laboratory is required to have samples analyzed by another certified laboratory and supply the State Laboratory the name of the laboratory to be used.

Please respond to the following:

Arrangements have been made to have samples for the decertified parameter(s) analyzed by another certified laboratory.

() Yes () No

If yes, enter name and NC WW/GW LC number of the laboratory to be used.

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

If no, explain:

If necessary, attach additional pages.

Within thirty days of the decertification effective date, Return to:

DENR/DWQ
Laboratory Section / Attn: J. Kent Wiggins
1623 Mail Service Center
Raleigh, North Carolina 27699-1623

Laboratory Supervisor Name (please print)

Laboratory Supervisor Signature

Date

Attachment 6. Decertified Laboratory Report (For Field Laboratories)

DECERTIFIED LABORATORY REPORT

LABORATORY NAME:

EFFECTIVE DATE:

DECERTIFIED PARAMETER(s):

CERT #:

LABORATORY TYPE – **Field Parameter**

As a result of the above decertification, you are required to furnish information about this wastewater facilities for whom state required wastewater monitoring analysis are performed.

Field Parameter Laboratories - During any decertification period, the decertified laboratory is required to have samples analyzed by another certified laboratory and supply the State Laboratory the name of the laboratory to be used.

Please respond to the following:

Arrangements have been made to have samples for the decertified parameter(s) analyzed by another certified laboratory.

() Yes () No

If yes, enter name and NC WW/GW LC number of the laboratory to be used.

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

If no, explain:

If necessary, attach additional pages.

Within thirty days of the decertification effective date, Return to:

DENR/DWQ
Laboratory Section / Attn: J. Kent Wiggins
1623 Mail Service Center
Raleigh, North Carolina 27699-1623

Laboratory Supervisor Name (please print)

Laboratory Supervisor Signature

Date

Attachment 7. Decertification Letter for Failure to Submit a Decertified Laboratory Report



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

CERTIFIED MAIL #
RETURN RECEIPT REQUESTED

SUBJECT: Decertification for failure to submit a Decertified Laboratory Report form

Dear _____ :

Please be advised that under provisions of Regulations 15A NCAC 2H .0807 (a) (13) and the powers duly delegated to me, a one year decertification notice is hereby issued to the laboratory for the above cited parameter(s) effective _____. No testing shall be performed at your laboratory for clients reporting to this Department for purposes of State water, wastewater, or groundwater monitoring required under Article 21 of G.S. 143. In addition and in accordance with our regulation NCAC 2H .0807 (f), Civil Penalties may be assessed against a laboratory which violates or fails to act in accordance with any terms, conditions, or requirements of the Rules in this Section or of a laboratory certification. A laboratory is subject to both civil penalties and decertification.

A final notice to your laboratory requesting submittal of the Decertified Laboratory Report form was shown in our letter dated _____ (copy attached). This reply was to be submitted immediately upon your receipt of the letter.

This decertification may be appealed to the N.C. Office of Administrative Hearings in accordance with Chapter 150B of the General Statutes.

Attached is our Decertified Laboratory Report form which requests, as a result of this parameter decertification, that certain information be reported concerning your laboratory and/or clients for whom State required monitoring analysis are performed. The attached form must be completed and returned within thirty days of the decertification effective date. Failure to complete and return this form may result in further enforcement actions.

If you have questions or need additional information concerning this matter, please contact us at (919) 733-3908.

Sincerely,

J. Kent Wiggins
Laboratory Section Chief

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwgqlab.org

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Attachment 8. Recertification Letter



North Carolina Department of Environment and Natural Resources

Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

SUBJECT: Parameter Recertification -

Dear _____ :

Under the authority delegated to me, I hereby issue a parameter recertification to _____, for analysis of the above mentioned parameter(s) effective _____. This laboratory has satisfactorily complied with the requirements for recertification found in 15 NCAC 2H .0808(b) of the Laboratory Certification Regulation; therefore, the parameter decertification made _____, is rescinded. Enclosed is an amended certificate that includes the recertified parameter(s).

Contact us at 919-733-3908, if you have any questions.

Sincerely,

J. Kent Wiggins
Laboratory Section Chief
Laboratory Section

Enclosure

cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrq/ab.org

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Attachment 9. EPA DMR-QA PT Study Exemption Letter



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAY 8 2009

4SESD-MTSB-QAS

RECEIVED

Mr. Pat Donnelly, Branch Manager
WW/GW Laboratory Certification Branch
NC DWQ Laboratory Section
1623 Mail Service Center
Raleigh, North Carolina 27699-1623

MAY 13 2009

DWQ
LABORATORY CERTIFICATION

Dear Mr. Donnelly:

Your request for exemption from U.S. Environmental Protection Agency's (EPA) National Pollution Discharge Elimination System's (NPDES) Discharge Monitoring Report – Quality Assurance (DMR-QA) program has been reviewed by EPA, Region 4. The information you provided indicates that the North Carolina Department of Environment and Natural Resources (DENR) proficiency testing (PT) program provides adequate QA to replace EPA's DMR-QA study program. The State program components cover all areas required by EPA's program. These areas are:

1. Requirements through State codes or regulations that cover all analyses for NPDES compliance at the permittee level.
2. A proficiency testing program that requires all NPDES and/or other program laboratories to successfully analyze PT samples annually for all analyses and tests by required methodology (40 CFR 136.3 Tables 1A – 1H).
3. A database that tracks all laboratories and their PT results, noting any partial responding or non-responding permittees.
4. A program with sufficient equipment for reanalysis of failed PT sample results and the ability to decertify laboratories that have not completed a successful study within the program's allotted time frame.

DENR's Certification Program satisfies all of the above and provides QA procedures that are as stringent as EPA's DMR-QA study program. However, proper oversight of the program will still be required for DENR to be exempt from the DMR-QA program. Annual reports (similar to a DMR-QA pass/fail report) shall be submitted to EPA Region 4, which includes the statistical information for North Carolina's WW/GW certification program with regard to DMR-QA analytes. This statistical information should include pass/fail rates for laboratories, pass/fail rates for analytes, number of laboratories in the program and number of audits conducted. Also, a review of the system after a year of operation, including an on-site assessment, will provide the information necessary to verify that the requirements of the

Region 4 DMR-QA study program have been maintained. This assessment will be performed by the Region 4 DMR-QA coordinator. After the first year, if the program adequately performs as a viable substitute for the DMR-QA program, an on-site assessment will only be made every three years, similar to the State Drinking Water Certification Program Assessments.

If these requirements are met, North Carolina's Laboratory Certification Program will continue to be a viable substitute for US EPA's DMR-QA program.

If you have any questions please contact Mr. Ray Terhune, Region 4 DMR-QA Coordinator (706) 355-8557.

Sincerely,



Douglas F. Mundrick, Chief
Clean Water Enforcement Branch
Water Protection Division

cc: Patrick Yellin
Danny France
Marilyn Maycock
Ray Terhune
Christopher Plymale
Cesar Zapata

Attachment 10. PT Evaluation Report – Unacceptable Results



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

Subject: North Carolina Wastewater/Groundwater Laboratory Certification
Proficiency Testing Results

Dear _____ :

The North Carolina Wastewater/Groundwater Laboratory Certification (NC WW/GW LC) program has received the results from _____ that were submitted to our office. In accordance with the provisions of the North Carolina Administrative Code, 15A NCAC 2H .0805, all certified laboratories are required to successfully analyze proficiency testing (PT) samples for each parameter method technology at least annually to maintain certification. A blind (i.e., unknown) proficiency testing sample must be analyzed for all parameters that currently appear on the laboratory's certificate attachment. Laboratories must also analyze remedial proficiency testing samples for any parameter method technology(s) graded unacceptable. Additional PT sample results, submitted voluntarily at any time during the year, will be graded similarly.

The study report(s) did not contain acceptable values for the following analyte(s) and/or parameter method technology(s):

Study/Ampule	Parameter/ Analyte	Method Technology	Comment	Remedial PT Due Date
			Unacceptable parameter; <80% of all analytes acceptable	
			Unacceptable; no value provided by deadline	
			Unacceptable results	
			Unacceptable analyte; ≥80% of all analytes acceptable	

As a result of the unacceptable PT(s) result referenced above you are required to submit the following: 1) a remedial PT result and 2) a written corrective action report. All remedial PT results and corrective action reports must be completed and the graded result submitted by the vendor directly to this office within 90 days from the date the report was issued. You may want to consider a quick turnaround type PT sample. Failure to submit corrective action reports and remedial PT results within this time period will result in a second unacceptable result and decertification or provisional certification may be recommended. Failure to obtain acceptable results on the remedial PT may also result in a recommendation for decertification or provisional certification.

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrqlab.org



Addressee
Date
Page 2 of 2

Contact me at [redacted] if you have questions concerning these program requirements.

Sincerely,

Certification Auditor
Laboratory Section

cc:

Attachment 11. PT Evaluation Report – Acceptable Results Complete



North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

Subject: North Carolina Wastewater/Groundwater Laboratory Certification
Proficiency Testing Results

Dear :

This is to acknowledge that we have received your proficiency testing (PT) results from .
Congratulations on obtaining acceptable results. **This completes all proficiency testing requirements for your North Carolina Wastewater/Groundwater Laboratory Certification for**

If additional proficiency testing results are submitted voluntarily during this proficiency testing calendar year, they will be evaluated similarly and remedial PTs will be required for any results graded unacceptable.

Contact me at if you have questions or if I can be of further assistance.

Sincerely,

Certification Auditor
Laboratory Section

cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrqlab.org

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Attachment 12. PT Evaluation Report – Acceptable Results Incomplete



North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

Subject: North Carolina Wastewater/Groundwater Laboratory Certification
Proficiency Testing Results

Dear :

This is to acknowledge that we have received your proficiency testing (PT) results from .
Congratulations on obtaining acceptable results. According to our records, we have not received results for:

Parameter	Method Technology	Comment
Iron	EPA 200.7	First due date September 30,
	SW 846 6010 C	First due date September 30,
		First due date September 30,

If your laboratory has already analyzed a proficiency testing sample for these parameter method technology(s) this year, please have the vendor send this office a copy of the results. If a proficiency testing sample has not been analyzed, results must be sent directly to this office by an accredited vendor on or before September 30, . Failure to report these required PT results by the October 31 deadline will be considered as a first unacceptable result for certification purposes.

Contact me at if you have questions or if I can be of further assistance.

Sincerely,

Certification Auditor
Laboratory Section

cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrqlab.org

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Attachment 13. Optional PT Letter Verbiage

Optional PT Letter Verbiage

Format for References to Vendor Studies

Any reference to the PT study must be in the following format (use the vendor's title):

ERA Study WP-184
ERA Project Number 070810D
ERA Study Soil-70
NSI Study MP-186
Wibby Study WP0710
Wibby Study UST010
Wibby Study HW010

According To Our Records

According to our records, we have not received results for:

Parameter	Method Technology	Comment
Iron	EPA 200.7	First due date September 30,
	SW 846 6010 C	First due date September 30,
		First due date September 30,

NOTE: A lab may report the same value for two different methods of similar technology; however, each method on the certificate attachment must have a value reported. See Iron example above.

If your laboratory has already analyzed a proficiency testing sample for these parameter method technology(s) this year, please have the vendor send this office a copy of the results. If a proficiency testing sample has not been analyzed, results must be sent directly to this office by an accredited vendor on or before September 30, . Failure to report these required PT results by the September 30th deadline will be considered as a first unacceptable result for certification purposes.

Total Residual Chlorine PTs - NonField

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 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 proficiency testing 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.

Keep this policy in mind when ordering samples next year.

Total Residual Chlorine PTs - Field

The analysis of performance testing (PT) samples is designed to evaluate the entire process used to routinely report environmental analytical results. Therefore, PT samples must be analyzed in the same manner as environmental samples. Ref: Quality Assurance Policies for Field Laboratories.

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 proficiency testing 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.

Keep this policy in mind when ordering samples next year.

EPA Lab Code

Your proficiency testing report from _____ did not list an EPA Lab Code. Since different accreditation programs use a wide array of laboratory identification systems, the PT providers need a singular means of identifying participant labs when grading and reporting PT results. Therefore, each certified laboratory must have an EPA Lab Code. The EPA Lab Code assigned to the laboratory performing the analysis must be documented on the results to the proficiency testing provider. Without this EPA Lab Code, the NC WW/GW LC program may be unable to credit the PT results to the correct laboratory. The EPA contact for Lab Code assignments is:

Mr. Charles Feldmann
US EPA, M/S 140
26 W. Martin Luther King Drive
Cincinnati, OH 45268
feldmann.charles@epa.gov
Phone: 513-569-7671
Fax: 513-569-7191

Incorrect Method Codes

Your proficiency testing report from _____ contained Method Descriptions that are not compatible with your laboratory's current certificate attachment. The following discrepancies were noted:

Certificate attachment lists pH SM 4500 H B Reported as EPA Method 150.1
Certificate attachment lists SW-846 8260 B Reported as SW-846 8260 C

In the future, please refer to your certificate attachment (i.e., certified parameter list) when selecting the appropriate method for PT results reporting. This will ensure you receive proper credit for the parameter method technologies on your current certificate attachment.

Abbreviated Analyte List

I noticed that you reported a reduced analyte list for _____. Our new *Proficiency Testing Requirements* document requires, "Alternatively, the laboratory may appeal to report an abbreviated list if they can demonstrate that the abbreviated list is a routine reporting scheme for their NC data reporting. Approval from this Office must be obtained prior to analyzing the PT sample and reporting an abbreviated list." Please confirm by response to this email that the abbreviated list reported for the PT sample is the routine reporting scheme employed by your laboratory for those methods.

Corrective Action Report Due

At this time, we have not received a corrective action report for the unacceptable result(s) for _____. The response is due by _____. Failure to submit a corrective action report may result in parameter decertification.

EPH/VPH and EDB Single Misses

NOTE: To be evaluated as acceptable, all ranges must be graded acceptable. A laboratory that fails to satisfactorily analyze one or more of these carbon ranges must correctly analyze and report all ranges in a remedial EPH/VPH PT, not just the range for which unacceptable results were obtained initially.

NOTE: For multi-analyte groups containing four analytes, laboratories must report acceptable results for 100% of each of the individual analytes in the reference sample for the cumulative result to be acceptable. Some regulatory agencies require reporting of EDB only by EPA 504.1. To report EDB as a single analyte, the laboratory must demonstrate that this is the routine reporting scheme for North Carolina clients and obtain prior approval from this office.

Attachment 14. Provisional Certification Notification Letter



North Carolina Department of Environment and Natural Resources
Division of Water Quality
Charles Wakild, P.E.
Director

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

CERTIFIED MAIL #
RETURN RECEIPT REQUESTED

SUBJECT: Provisional Certification -

Dear _____ :

Please be advised that under provisions of Regulations 15A NCAC 2H .0805 (a) (2) and 15A NCAC 2H .0807 and the powers duly delegated to me, a provisional certification notice is hereby issued to the laboratory for the above analyte(s)/method technology(s) effective _____. Consecutive unacceptable results were reported. The results reported and the true values as they appear in our records are as follows:

Ampule/ Study	Analyte	Units	Reported	True Value	Acceptance Range	Performance
						UNACCEPTABLE
						UNACCEPTABLE

During this provisional certification period, the laboratory must qualify any reported results for the subject analyte(s) as "estimated" for data reported to this Department for purposes of State water, wastewater, or groundwater monitoring required under Article 21 of G.S. 143.

The laboratory must submit a written corrective action report and obtain acceptable results on two consecutive proficiency testing (PT) samples for the specific analyte(s) in order to rescind the provisional certification status. If the laboratory is unable to obtain acceptable results on two consecutive PT samples, decertification for the entire parameter method technology may be recommended. If acceptable results are obtained on two consecutive PT samples, the provisional certification status for those analytes will be rescinded and the PT requirements for that PT calendar year will be met.

The results your laboratory reported on evaluation samples for the above analyte(s) are attached. These results lie outside the acceptable variation limit from the true value set forth as acceptable in the Laboratory Certification Regulation 15A NCAC 02H .0803 (15).

Attached is our Provisional Certification Form which requests, as a result of the Proficiency Testing Evaluation(s) cited above, that certain information be reported concerning your laboratory and/or clients for whom North Carolina state required monitoring analysis are performed. The attached form must be completed and returned within thirty days of receipt. Failure to complete and return this form by the date due may result in further enforcement actions.

If you have questions or need additional information concerning this matter, please contact me at (919) 733-3908.

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrqlab.org

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Sincerely,

J. Kent Wiggins
Laboratory Section Chief
Laboratory Section

Attachments

cc:

Attachment 15. Provisional Certification Form

Provisional Certification Form

Laboratory Name:

Effective Date:

Provisional Certification Analyte(s):

Cert #:

Laboratory Type - Commercial

As a result of the above provisional certification status, you are required to furnish the following information within thirty days. The laboratory may either 1) make arrangements to supply analysis for the subject analyte through another certified laboratory or 2) report the subject analyte with qualification during the provisional certification period.

Please complete the following (as it applies):

1. Client data for the analyte(s) listed above will be furnished by subcontracting to another certified laboratory. () Yes () No

If yes, enter name and certificate number of the laboratory to be used. Please note: The designated laboratory must be certified with North Carolina Wastewater/Groundwater Laboratory Certification for the subcontracted parameter.

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

Cert.# _____ Name: _____

Address: _____

Certification verified (NC WW/GW LC Office use only)

OR

2. Data reports will be qualified for the affected analyte(s). () Yes () No Record the qualification to be used below.

The clients involved are listed below:

Client Name	Address

If necessary, attach additional pages.

Within thirty days of the decertification effective date,

Return to:

DENR/DWG

Laboratory Section / Attn: J. Kent Wiggins

1623 Mail Service Center

Raleigh, North Carolina 27699-1623

Laboratory Supervisor Name (please print)

Laboratory Supervisor Signature

Date

Attachment 16. Provisional Certification Rescission Letter



North Carolina Department of Environment and Natural Resources
Division of Water Quality

Beverly Eaves Perdue
Governor

Charles Wakild, P. E.
Director

Dee Freeman
Secretary

SUBJECT: Provisional Certification Rescinded -

Dear _____ :

This is to acknowledge that we have received your proficiency testing (PT) results from _____. Congratulations on obtaining acceptable results. This laboratory has satisfactorily analyzed the required remedial PTs; therefore, the provisional certification status made effective _____, is rescinded. You may report the subject analyte(s) without qualification beginning immediately.

Contact us at 919-733-3908, if you have any questions.

Sincerely,

J. Kent Wiggins
Laboratory Section Chief
Laboratory Section

cc:

DENR DWQ Laboratory Section NC Wastewater/Groundwater Laboratory Certification Branch
1623 Mail Service Center, Raleigh, North Carolina 27699-1623
Location: 4405 Reedy Creek Road, Raleigh, North Carolina 27607-6445
Phone: 919-733-3908 | FAX: 919-733-6241
Internet: www.dwrq/ab.org

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Attachment 17. Example Root Cause Analysis

Root Cause Analysis (RCA) is a technique used in problem solving to identify the underlying reason why something has gone wrong or why a difficulty has occurred. It is a step-by-step method that leads to the discovery of a fault's first or core cause. In environmental testing, the root cause analysis often takes the investigator back to the laboratory's quality system protocols.

Root cause analysis may include the following actions and checks: Raw data and calculations, laboratory reagent water criteria, the suitability of chemical reagents used in the test, the expiration dates of calibration and check standards, instrument calibration, responses and maintenance, sample conditions upon delivery to the laboratory and storage conditions or preservation if applicable, workplace cleanliness, staff training and competency, standard operating procedures, data entry and review processes, undue job pressures, etc.

There are a variety of problem-solving tools that may be employed to diagnose the problem including flowcharts, cause and effect diagrams (also referred to as fishbone diagrams) or any combination used to drill down to cause of the problem. A simplified iterative process often used in root cause analysis is the *Five Whys* method. An investigator would continue asking "Why did this happen?" until they arrive at the root cause. Refer to the following example:

The laboratory obtains unacceptable results on a semivolatile organic proficiency testing (PT) sample and asks the following:

Why did this happen? A review of the raw data package reveals that the software improperly integrated a peak.

Why? The result was reported from this integration because the analyst was not aware that when this occurs, manual integration must be performed.

Why? Manual integration is not addressed in the standard operating procedure or in a stand-alone procedure and training in manual integration using the software has not been provided.

Why? The new organic unit supervisor has also not been trained in the software with respect to the ability to manually integrate peaks when necessary.

Why? A documented system for training in all aspects of calibration and quantitation of semivolatile organic target analytes has not been implemented in the laboratory's quality system.

The corrective action plan would then include steps to eliminate failure at each of these points in the process, beginning with the root cause. The ultimate goal of Root Cause Analysis (RCA) is to eliminate the core cause of the problem. If a corrective action, or a series of actions, is implemented and only corrects the symptoms and does not eliminate the cause – the process leaves the possibility of recurrence.

Corrective Action Report (CAR)

A Corrective Action Report is a report detailing the measures taken to eliminate or prevent the recurrence of the causes of an existing out-of-control event, nonconformity or undesirable condition. It is a retrievable documentation of those actions and follow-up monitoring to ensure resolution.

A good corrective action report addresses and documents the following:

- the existing problem – describe the problem referencing specific data and dates,
- the root cause of the problem,
- corrective actions taken to correct the problem and actions taken to prevent recurrence,
- future monitoring to check resolution – describe quality of data after corrective action implementation referencing specific data and dates – is further corrective action needed, and
- data that required qualification or rejection as a result of this problem.

The format of this report is up to the individual laboratory. It may be written in a narrative format, entered into a table or documented on a template form. An example CAR form is given below.

Example Corrective Action Report Form

Lab Name	Corrective Action Report (CAR)
	Document Control #:
	Effective Date:
Non-conformance type:	<input type="checkbox"/> Sampling <input type="checkbox"/> Sample Receiving <input type="checkbox"/> Proficiency Testing <input type="checkbox"/> Calibration <input type="checkbox"/> Analysis <input type="checkbox"/> QC <input type="checkbox"/> External Audit <input type="checkbox"/> Other:
CAR Initiated by:	Date Initiated:
Description of Non-conformance:	
Description of Root Cause Analysis:	
Corrective Actions Taken to Prevent Recurrence:	
Sample Data Requiring Qualification/Rejection:	
Follow-up Investigation/Continuous Monitoring:	
Corrective Action Successful: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Supporting Documents Attached: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Date CAR Closed:	

Attachment 18. PT Sample Tracking Spreadsheet

Cert #	Inspector	Lab Name	Lab Type	Unacceptable Parameters	Missed Deadline	Unacceptable Result	Remedial PT Accept/Unacc	Corr. Action Received	Decertifications
1	TC	Beacham Laboratories							
7	TS	Fayetteville Cross Creek WWTP Lab							
10	TC	Environment 1, Inc.							
11	TS	Microbac Laboratories, Inc.							
12	CEW	Pace Analytical Services, Inc.-Huntersville							
19	TC	Town of Morehead City WW Lab.							
20	CEW	PAR Laboratories, Inc.							
22	TC	Vann Laboratories							
25	DGL	Davis & Floyd, Inc.							
27	CEW	Rogers & Callcott Engineers, Inc.							
34	GWF	Research & Analytical Laboratories							
37	TS	TBL							
40	JMS	PACE Analytical Services, Inc. Asheville							
43	GWF	Lexington Regional WWTP Laboratory							
50	JMS	Water Tech Labs, Inc.							
51	JRA	Raleigh Neuse River WW Lab.							
55	GWF	High Point Central Lab Services							
57	JMS	Environmental, Inc.							
59	CEW	Albemarle Water & Sewer Lab.							
64	JMS	TestAmerica Laboratories, Inc.- Knoxville							
65	GWF	City of Greensboro- Osborne WWTP Laboratory							
67	JRA	Tritest, Inc.							
68	GWF	Unifi, Inc. - Reidsville							
69	GWF	Archie Elledge WWTP Laboratory							
70	TC	Roanoke Rapids, Roanoke River WWTP							
71	JMS	Lower Creek Wastewater Treatment Plant Laboratory							
75	TC	Tritest- Wilmington							
79	JRA	CompuChem Division of Liberty Analytical Corp.							
86	GWF	Asheboro WWTP Laboratory							
87	TS	Anson County WWTP Laboratory							
92	GWF	City of Thomasville- Hamby Creek WWTP Laboratory							
93	DGL	Heritage Environmental Services, LLC							
94	TC	Environmental Chemists, Inc. (Envirochem)							
97	JRA	Surtronics, Inc.							

Attachment 19. Proficiency Testing (PT) Checklist for Non-Field Labs

Proficiency Testing (PT) Checklist

Laboratory: _____ Inspection Date: _____
 Lab Cert. #: _____ Q.A. Contact: _____
 Inspector: _____ Inspector: _____

Have PT results been submitted for all parameters on the certificate attachment for the current or previous (circle one) PT Calendar Year?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are/were PT results submitted to this office by September 30?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Does the laboratory use an approved PT provider accredited by: A2LA or ACLASS (circle one)? List the PT provider here:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are known PTs analyzed with initial blind PTs? [NOTE: Known PTs are acceptable for troubleshooting purposes with remedial PTs but should not be analyzed with the maintenance PTs if this is not routine for environmental samples.]	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Does the laboratory have a PT Standard Operating Procedure (Non-field labs only)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Does the PT SOP address low-level and high-level PT sample analyses?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT results reported to NC WW/GW LC directly from the PT provider?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are remedial PTs analyzed within 90 days of the initial failed PT report issue date?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are remedial PTs analyzed in the same matrix as the failed PT?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are individual analytes under provisional status qualified as estimated?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are Provisional Certification Forms returned within 30 days?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are Decertified Laboratory Report Forms returned within 30 days?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Does the lab have an EPA Lab Code? Note the EPA Lab Code here:	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is the EPA Lab Code reported with PT results?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Is PT sample preparation documented?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT samples entered into the laboratory sample tracking system?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT sample analyses documented in the same manner as routine environmental samples?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT samples analyzed in the same manner as routine environmental samples (e.g., without additional QC, single analysis, etc.)?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT samples equally distributed among qualified personnel from year to year?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Comments:		
Are PT sample results reported with the correct method codes?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT sample results reported to the routine PQLs?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
If PT results are submitted to the vendor electronically, is a hard copy of the data entry retained?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are PT records retained for five years?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have abbreviated lists been submitted to this office for organic parameters where needed?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Did the lab receive the annual PT letter?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Have lab personnel reviewed or have access to the PT Guidance Doc.? Revision #:	<input type="checkbox"/> Yes	<input type="checkbox"/> No

Additional Comments: _____

Inspector: _____ Date: _____

Attachment 20. Field Parameter On-Site Inspection Checklist

Field Proficiency Testing (PT) Checklist

Laboratory: _____ Inspection Date: _____
 Lab Cert. #: _____ Q.A. Contact: _____
 Inspector: _____ Inspector: _____

Have PT results been submitted for all parameters on the certificate attachment for the current or previous (circle one) PT Calendar Year?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are/were PT results submitted to this office by September 30?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the laboratory use an approved PT provider accredited by: A2LA or ACLASS (circle one)? List the PT provider here:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are known PTs analyzed with initial blind PTs? [NOTE: Known PTs are acceptable for troubleshooting purposes with remedial PTs but should not be analyzed with the maintenance PTs if this is not routine for environmental samples.]	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PT results reported to NC WW/GW LC directly from the PT provider?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are remedial PTs analyzed within 90 days of the initial failed PT report issue date?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does the lab have an EPA Lab Code? Note the EPA Lab Code here:	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is the EPA Lab Code reported with PT results?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Is PT sample preparation documented?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PT sample analyses documented in the same manner as routine environmental samples?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PT samples analyzed in the same manner as routine environmental samples (e.g., without additional QC, single analysis, etc.)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PT samples equally distributed among qualified personnel from year to year?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Comments:	
Are PT sample results reported with the correct method codes?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PT sample results reported to the routine PQLs?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If PT results are submitted to the vendor electronically, is a hard copy of the data entry retained?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are PT records retained for five years?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the lab receive the annual PT letter?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Have lab personnel reviewed or have access to the PT Guidance Doc.? Revision #:	<input type="checkbox"/> Yes <input type="checkbox"/> No

Additional Comments: _____

Inspector: _____ Date: _____