



Catherine E. Heigel, Director

Promoting and protecting the health of the public and the environment

October 12, 2015

JENNIFER R HUGHES
EQC REGION 5 AIKEN
206 BEAUFORT ST NE
AIKEN, SOUTH CAROLINA 29801

Re: Laboratory I. D. # 02202
Certificate # 02202001

Dear Ms. Hughes:

The report of the on-site laboratory evaluation performed on August 25, 2015 by the South Carolina Department of Health and Environmental Control is enclosed.

The report format provides a brief overview of the equipment and practices in place at the laboratory and lists the findings noted. If a response is required, please follow the report format by using the corresponding heading and finding number(s). Mail your response to the Office of Environmental Laboratory Certification at 2600 Bull Street, Columbia, SC 29201.

Your cooperation was greatly appreciated. Please contact me at 803-896-0862, if you have any questions concerning this report.

Sincerely,


Nydia F Burdick
Office of Environmental Laboratory Certification
Bureau of Environmental Health Services

cc: Carol F. Smith, Director
Office of Environmental Laboratory Certification

Register on our website at www.scdhec.gov/labcert to receive e-mail updates for the Laboratory Certification Program. Subscribing is easy and you'll automatically receive new posts to our website.

Introduction

On August 25, 2015 in accordance with State Regulation 61-81, Nydia F Burdick, Paul M Miller, and Susan E Butts, Laboratory Certification Officers with the South Carolina Department of Health and Environmental Control conducted an on-site laboratory evaluation of EQC Region 5 Aiken. Jennifer Hughes, Tabatha Corley, Crystal Robertson, Travis Fuss, and Brant Anderson. were available for the on-site evaluation.

The on-site evaluation includes a review of the record keeping practices, methodology, equipment, and quality control procedures. The evaluation was based on the applicable methodology as published in the Federal Register 40 CFR Parts 122, 136, 503, et. al.; 40 CFR Parts 141,143 and the EPA's "Manual for the Certification of Laboratories Analyzing Drinking Water"; 40 CFR Part 260; and SW-846. Other regulations, as applicable, are also used to evaluate the laboratory practices. The sample preservation, types of containers, and maximum holding times specified in these regulations are considered minimum requirements of the program.

State Regulation 61-81 requires the formal certification of all laboratories reporting data to the Department. Certification is issued on an analyte-by-analyte basis. Certification is maintained by undergoing an on-site evaluation at least once every three years. Appropriate records must be retained to demonstrate that analytical proficiency and the required standard of quality are maintained throughout the certification period. Laboratory participation in annual Proficiency Testing (PT) studies is required for all applicable parameters for which it is certified.

Laboratories that are not issued certification for specific parameters will be required to contract those analyses to an approved laboratory with the required parameter certification. Environmental monitoring data submitted to the Department is subject to review to ensure the reporting laboratory has the necessary certification. Data reported by laboratories without proper certification will be handled by the enforcement programs.

This report reflects the conditions which existed at the laboratory at the time of the evaluation. The findings and recommendations discussed on the day of the evaluation are listed below. The findings included in this report were those observed during this on-site evaluation. Others may exist and their omission from this report does not constitute endorsement by this Office. The laboratory is encouraged to correct any existing deficiencies even if they are not included in this report. Please address each request for documentation.

Personnel and Training Records

A current personnel list with responsibilities must be maintained and available upon request. A signature page should also be available for each person performing analyses with their printed name, signature, and initials used in the analysis records.

Training records must be maintained for all personnel. These records should include all job-related formal education and training taken by the analyst that pertains to any aspect to his/her responsibilities, including but not limited to analytical methodology, SOP review, laboratory safety, sampling, quality assurance, and data analysis.

Current Personnel

At the time of the evaluation the laboratory certification officer was provided a current personnel listing for all analysts performing analyses in the field or laboratory. See attached personnel listing.

Proficiency Testing (PT) Studies

The laboratory is reminded that Water Pollution (WP) and/or Water Supply (WS) Studies must be performed each year in order to maintain certification for the time period specified on the certification certificate. It is important that the laboratory participate in these studies as early as possible to avoid potential loss of certification. The studies must be part of an official WP and/or WS study, begin and end within the calendar year, and be graded and reported by the PT Provider to this Office no later than December 31 of each calendar year. Results received after December 31 cannot be used for compliance with the PT requirement. Split studies may be used for recertifying a laboratory but may not be used to meet the annual PT requirement. Split studies are those studies that open in one year and are graded and reported the following year or open in one year and close in another year. If the laboratory has questions regarding the submission of PT data, the acceptability of specific studies, or has questions about the annual requirement, please contact this Office.

Please also note that if you fax, e-mail, or enter your results on-line, we strongly recommend that you also mail them via postal mail or contact the Provider to ensure that the e-mail, internet data entry, or fax was received in its entirety. There have been instances where the PT Provider did not receive the results and the laboratory was decertified.

Refer to our website at www.scdhec.gov/labcert for the required PTs and additional information.

Proficiency Testing Studies Reviewed

Proficiency testing (PT) sample results analyzed in the past year and applicable calibration and analysis records were available for review: WS-214 and WP-232 by ERA.

Finding: Staff are not identifying the PT vendor and study identification in the analysis records.

Requirement: Staff must identify both the PT vendor and study in all analysis records. **In the response indicate that staff have been trained on this requirement.**

Note: During the evaluation it was noted that the phenol PT was duplicated. The results obtained were 4.1816 mg/L and 3.5369 mg/L for the sample and duplicate respectively. Both of these results were acceptable. It was noted that the laboratory reported the second or duplicate result. The PT SOP states that PT duplicates are not averaged, but this SOP does not address how to report PT sample results when duplicates are analyzed.

Sample Collection, Handling, and Preservation

Chain-of-Custody

Chain-of-custody forms (completed) for all types of samples collected for regulatory compliance determinations were available for review at the time of the evaluation. The forms documented the required information.

Field Analyses

The following analyses are being performed in the field at the time of sample collection: pH, Total Residual Chlorine, and DO.

Contract Laboratories

The chain-of-custody records for the contract laboratories being used for regulatory analyses documented the required information and the Certificates of Analysis were available for review. At the time of the evaluation the following contract laboratories were being used for the documented parameters.

Lab Id	Lab Name	Parameters
23105001	ROGERS & CALLCOTT ENGINEERS INC	THMs and HAAs
	ARESD	Trace Metals, Nutrients, Organics, and etc.

Quality Assurance Plan

A Quality Assurance Plan with the date of last revision was available and provided to the laboratory certification officer at the time of the evaluation. Periodically this document must be updated to reflect any changes in the laboratory operations.

Laboratory Ethics and Fraud Detection/Deterrence

Laboratories are encouraged to have an ethics policy and implement a fraud detection and deterrence policy/program. A laboratory's ethics program would include a policy statement, training, and signed code of conduct. Laboratories are encouraged to have a Laboratory Ethics SOP which documents where employees can report suspected fraud.

Standard Operating Procedures (SOP) Manual

A Standard Operating Procedure (SOP) must be available for each certified method. Copies of the SOPs with current revision dates were provided to the evaluator at the time of the evaluation. The SOPs should periodically be updated to reflect changes in the procedure, equipment, and reagents. Each time the SOP is updated, the revision date must be updated and a copy with the changes identified submitted to our office for review.

The SOPs provided to the evaluator at the time of the evaluation are complete and up-to-date.

CLEAN WATER ACT

DISSOLVED OXYGEN - SM 4500-O G-2011

Laboratory instrumentation and/or equipment: Field: YSI 55 (3) and YSI 550A (1), Lab: YSI 5100

No Finding.

BIOCHEMICAL OXYGEN DEMAND(BOD) - SM 5210 B-2011
CARBONACEOUS BOD - SM 5210 B-2011

Laboratory instrumentation and/or equipment: YSI 5100, Thermo Precision Incubator (2), Polyseed, HACH buffer pillows, HACH nitrification inhibitor

Finding: The laboratory is not following the SOP (Section 5.4) and is not using wide-bore (or large tip) pipettes to measure and transfer seed to the sample dilutions.

Requirement: Wide-bore pipettes are required by the method to ensure that the seed is completely transferred. **In your response indicate that the laboratory is now using wide-bore pipettes.**

ALKALINITY - SM 2320 B-2011

Laboratory instrumentation and/or equipment: 25 mL buret with 0.1 mL increments

No Finding.

HYDROGEN-ION CONC. (PH) - SM 4500-H B-2011

Laboratory instrumentation and/or equipment: Orion Star A221 (2), Orion 230A+ (2), BDH Buffers

Finding 1: A set of field duplicates analyzed on 6/4/15 by field staff exceeded the 0.2 S.U. acceptance criteria.

Requirement: The SOP requires that sample duplicates must be within ± 0.2 S.U. **In the response, indicate that field staff have been trained on this requirement.**

Finding 2: Field staff are sometimes putting the pH electrode into the same aliquot of sample a second time to serve as the duplicate analysis.

Requirement: Two aliquots of the same sample are required for pH sample and duplicate analysis. **In the response, indicate that field staff have been trained on this requirement.**

TURBIDITY - EPA 180.1 (1993)

Laboratory instrumentation and/or equipment: HACH 2100N Turbidimeter, HACH Stabcal primary standards, HACH Gelex secondary standards.

No Finding.

PHENOLICS, TOTAL RECOVERABLE - EPA 420.1 (1978)

Laboratory instrumentation and/or equipment: HACH DR 2700 Spectrophotometer, LabChem and Ricca phenol standards

Finding: The laboratory performed the MDL study using 9 replicates, and calculated the MDL using the student t value for seven replicates.

Requirement: The correct student t value is required for the MDL calculation. 40CFR Part 136 Appendix B requires seven replicates using the student t value of 3.143. **Pick the last seven replicates of the MDL study and, using the t value of 3.143, calculate the MDL from those seven replicates. Submit this newly calculated MDL as part of your response to this report. In your response indicate that the laboratory will use only seven replicates in future MDL studies.**

TEMPERATURE - SM 2550 B-2010

Laboratory instrumentation and/or equipment: NIST-traceable reference thermometer -1-51°C in 0.1 degree increments

No Finding.

RESIDUAL CHLORINE - SM 4500-CL G-2011

Laboratory instrumentation and/or equipment: HACH Pocket Colorimeter (4) and HACH Pocket Colorimeter II (4)

Finding: Field staff are not always recording the DPD lot number in the field log.

Requirement: The DPD lot number must be recorded with all sample and standard analysis records for traceability. **A response is not required. This was corrected during the evaluation.**

RESIDUE, NONFILTERABLE (TSS) - SM 2540 D-2011

Laboratory instrumentation and/or equipment: Thermo 658 Oven, Whatman AH filters, Mettler-Toledo ML 204 balance

No Finding.

SAFE DRINKING WATER ACT

ALKALINITY - SM 2320 B-2011

See "Alkalinity" under the CWA.

HYDROGEN-ION CONC. (PH) - SM 4500-H B-2011

See "pH" under the CWA.

TURBIDITY - EPA 180.1 (1993)

See "Turbidity" under the CWA.

TEMPERATURE - SM 2550 B-2010

See "Temperature" under the CWA.

RESIDUAL CHLORINE - SM 4500-CL G-2011

See "Residual Chlorine" under the CWA.

CLEAN WATER ACT - FECAL COLIFORM (MPN) - COLILERT-18 ATP
CLEAN WATER ACT - FECAL COLIFORM (MPN) - SM 9221-C E-2006
CLEAN WATER ACT - E.COLI (MPN) - SM 9223 B-2004
SAFE DRINKING WATER ACT - TOTAL COLIFORM/E.COLI - COLISURE TEST
SAFE DRINKING WATER ACT - HETEROTROPHIC BACTERIA - SIMPLATE
SAFE DRINKING WATER ACT - HETEROTROPHIC BACTERIA - SM 9215 B-2004
SAFE DRINKING WATER ACT - TOTAL COLIFORM/E.COLI - SM 9223 B-2004

Laboratory instrumentation and/or equipment: Quanti-Tray 2X, Thermo Precision water bath, Market Forge autoclave, Thermo Scientific GPR refrigerator (sample storage), 2-Thermo Scientific Precision dry air incubators, Precision Scientific water bath, Attest Steam incubator, GE refrigerator (media storage), BT Sure spore ampules, IDEXX sample bottles, Model UVL-56 UV light, Spectroline UV light and box, Corning sterile water, Hardy LTB medium and Hach EC medium, Hardy Diagnostics buffered dilution water, Fisher Acculite Colony Counter, Simplate medium and plates, Colilert, Colilert-18, and Colisure media

Finding #1: The Attest steam incubator thermometer has not been verified for accuracy against a NIST-traceable reference thermometer since 5/28/14.

Requirement: All thermometers must be verified against a NIST-traceable reference thermometer annually. **Submit the comparison records for this thermometer against the NIST-traceable reference thermometer.**

Finding #2: The laboratory is incubating the spore ampules for 48 hours instead of the prescribed 24 hour incubation time.

Requirement: The manufacturer incubation instructions state to incubate the spore ampules for 24 hours. **A response is not required.**

Note: The laboratory does not have a spore ampule SOP that describes the procedure for using the spore ampules, the incubation, and the interpretation of results.

Note: A drinking water well sample was invalidated on 6/22/15, but a reason was not documented in the sample analysis records. The reason for invalidation should be documented in the sample analysis records.

Conclusion

The laboratory will have a thirty-day period upon receipt of this report to address the recommendations, adjustments, and requests for documentation listed in the report. The laboratory response should be received by November 12, 2015.


Nadia F Burdick
Laboratory Certification Officer
Bureau of Environmental Health Services


Paul M Miller
Laboratory Certification Officer
Bureau of Environmental Health Services


Susan E Butts
Laboratory Certification Officer
Bureau of Environmental Health Services

Personnel Listing for Midlands Aiken Laboratory
August 2015

Laboratory Staff:

Brant Anderson- Chemist, Back-Up Microbiologist (9 years)

Tabatha Corley- Fill-in Microbiologist (21 years)

Field Staff:

Travis Fuss- Drinking Water, Ambient Stream Monitoring, Wastewater (Team Leader)
*pH, Chlorine, DO, Temperature (14 years)

Marcus Harris- Drinking Water, Ambient Stream Monitoring
*pH, Chlorine, DO, Temperature (2 years water, 8 years total)

Crystal Robertson- Drinking Water, Ambient Stream Monitoring
* pH, Chlorine, DO, Temperature (2 years water, 6 years total)

Robert Wilhite- Drinking Water, Ambient Stream Monitoring, Wastewater
* pH, Chlorine, DO, Temperature (1 year, 7 years total)

Josh Yon- Drinking Water
*Chlorine analyses (8 years)

Luke Williams- New (7 months in water, 8 years total) - no independent field work yet

Jessica Fuller- New (start date of 8-3-15) - no independent field work yet