NC DEQ/DWR WASTEWATER/GROUNDWATER LABORATORY CERTIFICATION BRANCH

LABORATORY NAME:		CERT #:	
PRIMARY ANALYST:		DATE:	
NAME OF PERSON COMPLETING CHECKLIST (PRINT):			
SIGNATURE OF PERSON COMPLETING CHECKLIST:			

Parameter: **Total Residual Chlorine, DPD Colorimetric**
Method: **Standard Methods, 4500 Cl G-2011**

Equipment:

	Spectrophotometer (type):_____ or Colorimeter (type): _____		DPD Powder (Packet Size: _____) Exp date: _____		Potassium Permanganate Exp date: _____
	Sample Cell Size: _____		**OR**		Liquid Chlorine Standards Exp date: _____
	Volumetric Pipets, Class A		Phosphate Buffer solution Exp date: _____		Sealed Gel/Liquid Standards
	Mechanical pipets		DPD Indicator Exp date: _____		
	OriFlo filter assembly (optional)		Filters (optional)		Pour-thru cell (optional)

PLEASE COMPLETE CHECKLIST IN INDELIBLE INK
Please mark Y, N or NA in the column labeled LAB to indicate the common lab practice and in the column labeled SOP to indicate whether it is addressed in the SOP.

	GENERAL	LAB	SOP	EXPLANATION
1	Is the SOP reviewed at least every 2 years? What is the most recent review/revision date of the SOP? [Non-field: 15A NCAC 2H .0805 (a) (7)] [Field: 15A NCAC 2H .0805 (g) (4)]			**Date:** Quality assurance, quality control, and Standard Operating Procedure documentation shall indicate the effective date of the document and be reviewed every two years and updated if changes in procedures are made. Verify proper method reference. During review notate deviations from the approved method and SOP.
2	Are all review/revision dates and procedural edits tracked and documented? [Non-field: 15A NCAC 2H .0805 (a) (7)] [Field: 15A NCAC 2H .0805 (g) (4)]			Each laboratory shall have a formal process to track and document review dates and any revisions made in all quality assurance, quality control and SOP documents.
3	Has the laboratory developed and implemented a documented training program? [Non-field: 15A NCAC 2H .0805 (a) (7) (P)] [Field: 15A NCAC 2H .0805 (g) (5)]			Each laboratory shall develop and implement a documented training program that includes documentation that: (i) [or (A)] that staff have the education, training, experience, or demonstrated skills needed to generate quality control results within method-specified limits and that meet the requirements of these Rules; (ii) [or (B)] that staff have read the laboratory quality assurance manual or applicable Standard Operating Procedures; (iii) [or (C)] that staff have obtained acceptable results on Proficiency Testing samples pursuant to Rule .0803(1) of this Section or other demonstrations of proficiency (e.g., side-by-side comparison with a trained analyst, acceptable results on a single-blind performance evaluation sample, an initial demonstration of capability study prescribed by the reference method).
4	Is there North Carolina data available for review?			If not, review PT data

5	Are ALL analytical records, including **original observations** maintained for 5 years? [Non-field: 15A NCAC 2H .0805 (a) (7) (E)] [Field:15A NCAC 2H .0805 (g) (1)]			
6	Are all manual data and log entries written in indelible ink? [Non-field:15A NCAC 2H .0805 (a) (7) (E)] [Field:15A NCAC 2H .0805 (g) (1)]			
7	Are error corrections performed properly? [Non-field:15A NCAC 2H .0805 (a) (7) (E)] [Field:15A NCAC 2H .0805 (g) (1)]			All documentation errors shall be corrected by drawing a single line through the error so that the original entry remains legible. Entries shall not be obliterated by erasures or markings. Wite-Out®, correction tape, or similar products designed to obliterate documentation shall not to be used; instead, the correction shall be written adjacent to the error. The correction shall be initialed by the responsible individual and the date of change documented.
8	Are the following items documented with each analysis? [Non-field:15A NCAC 2H .0805 (a) (7) (F)] [Field:15A NCAC 2H .0805 (g) (2)]			
	The method or SOP reference			
	Laboratory identification			
	Instrument identification			
	Sample collector			
	Signature or initials of the analyst			
	Date of sample collection			
	Time of sample collection			
	Date of sample analysis			
	Time of sample analysis			
	Sample identification			
	Proper units of measure			
	Final value to be reported			
	Facility name or permit number [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	Parameter analyzed [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	Statement that samples are filtered (if applicable) [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	Curve verification or calibration date [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	PRESERVATION and STORAGE	**LAB**	**SOP**	**EXPLANATION**
9	Is the sample analyzed within 15 minutes of collection? [40 CFR Part 136.3, Table II and footnote 2]			Sample analysis begins when the reagents are added to the sample.
Complete either Calibration Curve Verification or User Generated Calibration Curve Section				
	PROCEDURE – Calibration Curve Verification	**LAB**	**SOP**	**EXPLANATION**
10	What program or wavelength does the laboratory verify? **Program/wavelength:**			
11	Is the meter's factory-set calibration verified initially and any time the optics are serviced? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
12	How often is the meter's factory-set calibration verified on an ongoing basis? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] **(Circle One)** **Daily OR Every 12 months**			

13	What standard concentrations are used? **List Standard Concentrations:**			
14	Is the lowest standard concentration lower than the facility's permit limit? [15A NCAC 02B .0505 (e) (4)] **Permit Limit:** **Reporting Limit:**			All test procedures must produce detection and reporting levels that are below the permit discharge requirements and all data generated must be reported to the approved detection level or lower reporting level of the procedure.
15	Do the observed values for the standard concentrations vary no more than ± 25% for concentrations < 50 µg/L and ± 10% for concentrations ≥ 50 µg/L? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
16	Is a method blank analyzed with the calibration verification? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	PROCEDURE – User Generated Calibration Curve	**LAB**	**SOP**	**EXPLANATION**
17	What program or wavelength does the laboratory calibrate? **Program/wavelength:**			
18	Is the meter calibrated initially and any time the optics are serviced? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
19	How often is the meter calibrated on an ongoing basis? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] **(Circle One)** **Daily OR Every 12 months**			
20	What standard concentrations are used? **List Standard Concentrations:**			
21	Is the lowest standard concentration lower than the facility's permit limit? [15A NCAC 02B .0505 (e) (4)] **Permit Limit:** **Reporting Limit:**			All test procedures must produce detection and reporting levels that are below the permit discharge requirements and all data generated must be reported to the approved detection level or lower reporting level of the procedure.
22	Do the recoveries of the back-calculated standards vary no more than ± 25% for concentrations < 50 µg/L and ± 10% for ≥ 50 µg/L? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
23	Is the calibration verified with a second source standard? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
24	Does the second source standard read within ± 10% of its true value for standards ≥50 µg/L and within ±25% of its true value for standards <50 µg/L? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
25	Is a method blank analyzed with the calibration curve? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			

	PROCEDURE – Sample Analysis	LAB	SOP	EXPLANATION
26	Is the meter zeroed with a blank each day before analysis? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] **Type of blank used:**			
27	Are sample results read 3-6 minutes after the buffer and DPD indicator are added? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
28	Do the samples require filtration?			
29	Do the samples require sample blanking?			
	QUALITY ASSURANCE	**LAB**	**SOP**	**EXPLANATION**
30	Are automatic pipettors used for critical measurements?			Critical measurements include PT sample preparation and calibration standard preparation.
31	Are automatic pipettors calibrated every 12 months? [15A NCAC 02H .0805 (g) (10)]			
32	Is the meter calibration checked daily with a standard? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
33	What is the concentration of the daily check standard? **Concentration:**			
34	Is the time of the daily meter calibration check documented? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
35	If a gel-type standard is used for daily check standard, is a true value assigned every 12 months by analyzing the standard 3 times and averaging the results? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
36	If a gel-type standard is not used, how is the liquid check standard prepared? **Instructions:**			
37	What is the acceptance criterion for the daily check standard? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] **Criterion:**			The value obtained for the Daily Check Standard must read within ±10% of the true value of the Daily Check Standard for standards ≥50 µg/L and within ±25% of its true value for standards <50 µg/L.
38	What corrective actions are taken if the check standard does not meet the acceptance criterion? [Non-field: 15A NCAC 2H .0805 (a) (7) (B)] [Field: 15A NCAC 2H .0805 (g) (8)]			
39	If samples are analyzed at multiple sample sites, is a post-analysis check standard analyzed? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
40	What is the acceptance criterion? **Criterion:**			The value obtained for the Daily Check Standard must read within ±10% of the true value of the Daily Check Standard for standards ≥50 µg/L and within ±25% of its true value for standards <50 µg/L.
41	What corrective actions are taken if the check standard does not meet the acceptance criterion? [Non-field: 15A NCAC 2H .0805 (a) (7) (B)] [Field: 15A NCAC 2H .0805 (g) (8)]			

42	Is a method blank analyzed if a PT sample or prepared standard is analyzed or a sample is diluted? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
43	What is the acceptance criterion of the method blank? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			The concentration of the Method Blank must not exceed 50% of the reporting limit (i.e., the lowest calibration or calibration verification standard concentration), unless otherwise specified by the reference method, or corrective action must be taken.
44	What corrective actions are taken if the method blank does not meet the acceptance criterion? [Non-field: 15A NCAC 2H .0805 (a) (7) (B)] [Field: 15A NCAC 2H .0805 (g) (8)]			
45	Are sample results below the reporting limit reported as <RL? [Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
46	Is the data qualified on the Discharge Monitoring Report (DMR) or client report if Quality Control (QC) requirements are not met? [Non-field: 15A NCAC 2H .0805 (a) (7) (B)] [Field: 15A NCAC 2H .0805 (g) (8)]			

Additional Comments:

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Inspector: _____Date:_____