

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: **SM 4500 Cl G-2011**

Equipment:

Spectrophotometer (type): _____ or Colorimeter (type): _____	Sample Cell Size: _____	Volumetric Pipets, Class A
OriFlo filter assembly (optional)	Pour-thru cell (optional)	Mechanical pipets
Filters (optional)		

Reagents:

DPD Powder Packet Size: _____ Exp date: _____	Phosphate Buffer solution Exp date: _____	Potassium Permanganate Exp date: _____
Sealed Gel/Liquid Standards	DPD Indicator Exp date: _____	Liquid Chlorine Standards Exp date: _____

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	L A B	S O P	EXPLANATION
1	Is the SOP reviewed at least every 2 years? What is the most recent review/revision date of the SOP? [15A NCAC 02H .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? [15A NCAC 02H .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	Is there North Carolina data available for review?			If not, review PT data
4	Are the following items documented with each analysis? [15A NCAC 02H .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 [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			If different than the Laboratory ID
	Parameter analyzed [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			

	Statement that samples are filtered (if applicable) [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	Curve verification or calibration date [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	PRESERVATION and STORAGE	L A B	S O P	EXPLANATION
5	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	L A B	S O P	EXPLANATION
6	What program or wavelength does the laboratory verify? Program/wavelength:			
7	Is the meter's factory-set calibration verified initially and any time the optics are serviced? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
8	How often is the meter's factory-set calibration verified on an ongoing basis? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] (Circle One) Daily OR Every 12 months			
9	What standard concentrations are used? List Standard Concentrations:			
10	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.
11	Do the observed values for the standard concentrations vary no more than $\pm 25\%$ for concentrations $< 50 \mu\text{g/L}$ and $\pm 10\%$ for concentrations $\geq 50 \mu\text{g/L}$? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
12	Is a method blank analyzed with the calibration verification? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	PROCEDURE – User Generated Calibration Curve	L A B	S O P	EXPLANATION
13	What program or wavelength does the laboratory calibrate? Program/wavelength:			
14	Is the meter calibrated initially and any time the optics are serviced? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
15	How often is the meter calibrated on an ongoing basis? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] (Circle One) Daily OR Every 12 months			

16	What standard concentrations are used? List Standard Concentrations:			
17	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.
18	Do the recoveries of the back-calculated standards vary no more than $\pm 25\%$ for concentrations $< 50 \mu\text{g/L}$ and $\pm 10\%$ for $\geq 50 \mu\text{g/L}$? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
19	Is the calibration verified with a second source standard? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
20	Does the second source standard read within $\pm 10\%$ of its true value for standards $\geq 50 \mu\text{g/L}$ and within $\pm 25\%$ of its true value for standards $< 50 \mu\text{g/L}$? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
21	Is a method blank analyzed with the calibration curve? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
	PROCEDURE – Sample Analysis	L A B	S O P	EXPLANATION
22	Is the meter zeroed with a blank each day before analysis? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] Type of blank used:			
23	Are sample results read 3-6 minutes after the buffer and DPD indicator are added? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
24	Do the samples require filtration? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			Turbidity may be mitigated by filtering the sample prior to analysis.
25	Do the samples require sample blanking? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			Color may be mitigated by zeroing the meter (after analyzing the Daily Check Standard) with the sample before adding the buffer and DPD.
	QUALITY ASSURANCE	L A B	S O P	EXPLANATION
26	Are automatic pipettors used for critical measurements?			Critical measurements include PT sample preparation and calibration standard preparation.
27	Are automatic pipettors calibrated every 12 months? [15A NCAC 02H .0805 (g) (10)]			
28	Is the meter calibration checked daily with a standard? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
29	What is the concentration of the daily check standard? Concentration:			
30	Is the time of the daily meter calibration check documented? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			
31	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? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]			

32	If a gel-type standard is not used, how is the liquid check standard prepared? Instructions:		
33	What is the acceptance criterion for the daily check standard? [NC WW/GW LCB 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 $\pm 10\%$ of the true value of the Daily Check Standard for standards $\geq 50 \mu\text{g/L}$ and within $\pm 25\%$ of its true value for standards $< 50 \mu\text{g/L}$.
34	What corrective actions are taken if the check standard does not meet the acceptance criterion? [15A NCAC 02H .0805 (g) (8)]		
35	Is a post-analysis check standard analyzed at the end of the run any time the meter is transported by vehicle to another location after calibration verification? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]		
36	What is the acceptance criterion? Criterion:		The value obtained for the Daily Check Standard must read within $\pm 10\%$ of the true value of the Daily Check Standard for standards $\geq 50 \mu\text{g/L}$ and within $\pm 25\%$ of its true value for standards $< 50 \mu\text{g/L}$.
37	What corrective actions are taken if the check standard does not meet the acceptance criterion? [15A NCAC 02H .0805 (g) (8)] Answer:		
38	Is a method blank analyzed if a PT sample or prepared standard is analyzed or a sample is diluted? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]		
39	What is the acceptance criterion of the method blank? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)] Criterion:		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.
40	What corrective actions are taken if the method blank does not meet the acceptance criterion? 15A NCAC 02H .0805 (g) (8)] Answer:		
41	Are sample results below the reporting limit reported as <RL? [NC WW/GW LCB Approved Procedure for the Analysis of TRC (DPD Colorimetric by SM 4500 Cl G-2011)]		
42	Are results qualified to indicate quality control failures or sample anomalies when reporting results? [15A NCAC 02H .0805 (e) (5)]		Reported data associated with Quality Control failures, improper sample collection, holding time exceedances, or improper preservation shall be qualified as such.

Additional Comments:

Inspector: _____ Date: _____