

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: **pH**  
 Method: **SM 4500 H<sup>+</sup> B-2021 & SW-846 9040 C (Aqueous)**

Equipment:

pH meter (type):	pH buffers (S.U.)	
	Value:	Exp:
	Value:	Exp:
	Value:	Exp:

**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			One time may be documented for sample collection and analysis if there is documentation showing that the analysis is performed <i>in situ</i> , or immediately on the sample site.
	Sample identification			
	Proper units of measure			S.U.
	Final value to be reported			
	Facility ID or permit number [NC WW/GW LCB Approved Procedure for the Analysis of pH]			If different than the Laboratory ID
	Parameter analyzed [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
	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]			

PROCEDURE – Meter Calibration		L A B	S O P	EXPLANATION
6	Is the meter calibrated daily before sample analysis? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			Instruments are to be calibrated according to the manufacturer’s calibration procedure prior to analysis of samples each day compliance monitoring is performed.
7	What pH buffers are used for meter calibration? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>List:</b>			Calibration must include at least two buffers.
8	Are the following items documented with each calibration: [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
	Time of meter calibration			
	True values of buffers used for calibration			
	True value for the check standard buffer			
	Value obtained for the check standard buffer			
	True value of the post-analysis calibration verification(s), where applicable			
	Value obtained for the post-analysis calibration verification(s), where applicable			
	Indication of when the post-analysis calibration verification was performed (e.g., time of analysis, end-of-day analysis, etc.)			
9	How is the pH probe stored when not in use? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>Answer:</b>			The pH probe must be stored and operated according to manufacturer’s instructions.
PROCEDURE – Sample Analysis		L A B	S O P	EXPLANATION
10	Are the samples gently stirred during measurement? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
11	Is the pH sensing portion and reference junction completely immersed? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
12	What steps are taken to eliminate cross contamination between measurements? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>Answer:</b>			
13	Are pH values reported in tenths (0.1)? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			The units of measure for pH analyses are Standard Units (S.U.). It is recommended that pH be read and documented in one-hundredths (0.01). Values must be reported in tenths (0.1). It should be noted that many Proficiency Testing (PT) providers require samples be reported to one-hundredths.
14	How is pH reported when more than one pH concentration has been taken for a particular day? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>Answer:</b>			If more than one pH concentration has been taken for a particular day, these values cannot be averaged due to the logarithmic nature of pH concentration. All values must be reported on the eDMR, either in the daily cell or the comments section. The following convention must be followed when deciding which value to report in the daily cell: <ul style="list-style-type: none"> <li>- Any value in violation of permit limits must be reported in the daily cell. If multiple samples yielded noncompliant results, the most extreme noncompliant value must be reported in the daily cell.</li> <li>- If all values taken during the day were compliant with the permit limits, the value closest to the bounds of the limit range (high or low) must be reported in the daily cell.</li> </ul>

	QUALITY ASSURANCE	L A B	S O P	EXPLANATION
15	Is a check standard buffer analyzed after meter calibration, before sample analysis? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
16	What is the true value of the check standard buffer? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>Answer:</b>			
17	Is the acceptance criterion for the check standard buffer $\pm 0.1$ S.U. of true value? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
18	Is the evaluation of the check standard buffer(s) clearly documented? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			This may be accomplished with documenting the check buffer acceptance range (i.e., 6.9 – 7.1 S.U. or $\pm 0.1$ S.U.) and measured value. A check box or Y/N (circle one) option may also be added for clarity.  Bottom line: is the benchsheet documentation clear whether the check buffer passed?  Results must be within $\pm 0.1$ S.U. of the true value to be acceptable.
19	What corrective action is taken if the check buffer does not meet the acceptance criterion? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>Answer:</b>			Check again with a freshly poured buffer. If the buffer still does not meet the criterion, recalibrate the instrument.
20	Is a post-analysis check buffer analyzed at the end of the run any time the meter is transported by vehicle to another location after calibration? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
21	Is the acceptance criterion for the post-analysis check standard buffer $\pm 0.1$ S.U. of true value? [NC WW/GW LCB Approved Procedure for the Analysis of pH]			
22	What corrective action is taken if the post-analysis check buffer does not meet the acceptance criterion? [NC WW/GW LCB Approved Procedure for the Analysis of pH] <b>Answer:</b>			Check again with a freshly poured buffer. If the buffer still does not meet the criterion, recalibrate the instrument.
23	Is the data qualified on the Discharge Monitoring Report (DMR) or client report if Quality Control (QC) requirements are not met? [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:

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Inspector: \_\_\_\_\_ Date: \_\_\_\_\_