

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: **Salinity**  
Method: **Standard Methods, 2520 B-2011 (Aqueous)**

Equipment:

<u>Conductivity meter</u> Make: _____ Model: _____	<u>Salinity standards:</u> Value: _____ Exp: _____ Value: _____ Exp: _____
Conductivity cell (electrode)	Second-Source Standard 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? [Non-field: 15A NCAC 2H .0805 (a) (7)] [Field: 15A NCAC 2H .0805 (g) (4)]  <b>Date:</b>			Verify proper method reference. During review notate deviations from the approved method and SOP. Recommend an annual review. Update SOPs any time changes are made to procedure and make a list or highlight any changes that were made to methodology.
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			
	Sample identification			
	Proper units of measure (parts per thousand or ppt)			ppt is equivalent to Practical Salinity Units (PSU).
	Final value to be reported			
	Facility ID or Permit number [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			
	Parameter analyzed [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			
	<b>PRESERVATION and STORAGE</b>	<b>L A B</b>	<b>S O P</b>	<b>EXPLANATION</b>
9	Are samples iced to above freezing but $\leq 6^{\circ}\text{C}$ during shipment? [40 CFR 136.3 Table II and footnote 18] [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			40 CFR footnote 2 allows 15 minutes for sample preservation, including thermal. This means that if a sample is received in the lab within 15 minutes it is not required to be on ice. Document temperature downward trend for short transport samples.
10	Are samples refrigerated above freezing to $6^{\circ}\text{C}$ during storage? [40 CFR 136.3 Table II and footnote 18] [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			Samples analyzed within 15 minutes of collection require no thermal preservation.
11	Are samples analyzed within 28 days of collection? [40 CFR 136.3 Table II] [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			Samples must be analyzed within 28 days of collection based on the holding time of Conductivity in 40 CFR Part 136.3 Table II per EPA Region 4.
	<b>PROCEDURE – Meter Calibration</b>	<b>L A B</b>	<b>S O P</b>	<b>EXPLANATION</b>
12	Is the meter calibrated according to the manufacturer's instructions prior to analysis of samples each day compliance monitoring is performed? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			Calibrate with KCl or standard seawater with a known conductivity relative to KCl.
13	Is the probe rinsed with one or more portions (three recommended) of the calibration standard prior to calibration? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			A portion of the standard should not be used for more than one calibration. Discard any used standard portions.
14	What standard concentration is used for meter calibration? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]  <b>Standard concentration:</b>			Potassium Chloride (KCl) Conductivity standards may be purchased or prepared according to Table 2510:1 of SM 2510 A - 2011. In addition to these standards, standard seawater, commercially available with a Salinity of 35 at $15^{\circ}\text{C}$ may be purchased. Alternatively, a standard may be prepared at this concentration by dissolving 32.4356 g of KCl in 1 L of deionized water.
	<b>PROCEDURE – Sample Analysis</b>	<b>L A B</b>	<b>S O P</b>	<b>EXPLANATION</b>
15	Is the probe rinsed with one or more portions of the sample prior to analysis? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			
16	Are salinity samples ever diluted? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			Salinity samples must not be diluted

	QUALITY ASSURANCE	L A B	S O P	EXPLANATION
17	Is the upper limit of the operational range of the meter determined before using this method or before using a new instrument? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			Before using this method or a new instrument, determine its operational range (upper and lower limits), or at least verify the intended range of use. For each analyte, use standard concentrations that provide increasing instrument or other test response. The minimum reporting level (MRL) is set at or above the lowest standard used in the analysis. Quantitation at the MRL must be verified initially and at least quarterly (preferable daily) by analyzing a QC sample. The standard must read within $\pm 10\%$ of the true value.
18	What is the acceptance criterion of the verification standard used to determine the upper limit of the operational range? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]  <b>ANSWER:</b>			
19	Is the lower limit of the operational range of the meter determined before using this method, before using a new instrument and at least quarterly? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			It is preferable to verify this each day that samples are analyzed.
20	What is the acceptance criterion of the verification standard used to determine the lower limit of the operational range? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]  <b>ANSWER:</b>			
21	What is the laboratory's reporting limit for Salinity? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]  <b>ANSWER:</b>			
22	Is the reporting limit at or above the concentration of the standard used to verify the lower limit of the operational range? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			
23	Is the calibration verified with a second-source calibration verification check standard immediately after calibration? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			It is recommended that the concentration of this standard approximate the expected range of sample values measured.
24	Is the probe rinsed with one or more portions (three recommended) of the second-source calibration verification check standard prior to analysis? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			
25	What is the true value of the second-source calibration verification check standard?  <b>Check standard value:</b>			
26	Is the acceptance criterion of the second-source calibration verification check standard $\pm 10\%$ of the true value? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			If the obtained value is not $\pm 10\%$ of the true value, corrective action must be taken.
27	What corrective action is taken if the second-source calibration verification check standard does not meet the acceptance criterion? [Non-field: 15A NCAC 2H .0805 (a) (7) (B)] [Field: 15A NCAC 2H .0805 (g) (8)]  <b>ANSWER:</b>			

28	When performing analyses at multiple locations, is a post-analysis calibration verification standard analyzed at the end of the sample set? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			It is recommended that a mid-day or a mid-batch calibration verification be performed when samples are analyzed over an extended period of time.
29	Is the acceptance criterion of the post-analysis calibration verification standard $\pm 10\%$ of the true value? [NC WW/GW LCB Approved Procedure for the Analysis of Salinity]			If the obtained value is not $\pm 10\%$ of the true value, corrective action must be taken. If recalibration is necessary, all samples analyzed since the last acceptable calibration verification must be reanalyzed, if possible. If samples cannot be reanalyzed, the data must be qualified.
30	What corrective action is taken if the post-analysis calibration verification standard does not meet the acceptance criterion? [Non-field: 15A NCAC 2H .0805 (a) (7) (B)] [Field: 15A NCAC 2H .0805 (g) (8)]  <b>ANSWER:</b>			
31	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)]			If the sample cannot be reanalyzed, or if the quality control results continue to fall outside established limits or show an analytical problem, the results shall be qualified as such. If data qualifiers are used to qualify samples not meeting QC requirements, the data may not be useable for the intended purposes. It is the responsibility of the laboratory to provide the client or end-user of the data with sufficient information to determine the usability of the qualified data.

Additional Comments:

---



---



---



---



---



---



---

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