General Quality System Requirements Checklist * for BOD, TSS, Ammonia and Phosphorus REV. 11/17/23

Based on NR 149 (2021)

Some questions may not be applicable to every lab. If applicable, all answers must be "yes" to be in compliance.

***This checklist was created for the aid of registered laboratories. It is only an internal audit guideline; it is not meant to be comprehensive of all regulatory requirements, to dictate DNR audit format, or to include all acceptable code options. Laboratories must comply with all applicable code and method requirements whether listed on this checklist or not. Additional method requirements are on separate checklists.**

	Equipment	Y	N	Notes	Citation
1	Are all thermometers unexpired (i.e., calibrated or verified annually or within the calibration due date on the certificate)?				NR 149.44 (3)(a), (3)(d)(1)
2	If verifying thermometers, is the thermometer being verified compared to an NIST traceable, unexpired thermometer, or is the thermometer verified to ice-point and/or boiling point?				NR 149.44 (3)(a), (3)(d)(1)
3	Is the temperature recorded daily (on work days) for the refrigerators (sample storage and chemical storage)?				NR 149.44 (3)(d)(4), NR 149.45
4	Is the balance checked monthly with a class 2 or better weight?				NR 149.44 (3)(d)(3), (3)(d)(3)(b)
5	Has the class 2 or better weight been calibrated or verified within 5 years of the weight certificate calibration date?				NR 149.44 (3)(d)(3)(b)
6	If using mechanical pipettes, are they calibrated or verified every quarter?				NR 149.44 (3)(d)(2)
7	Are there tolerances or criteria for balance verifications and pipette verifications?				NR 149.44 (3)(c)(3)

	Corrective Actions	Y	N	Notes	Citation
8	When QC limits are exceeded, is corrective action taken and followed up on?				NR 149.38 (1)
9	Is corrective action taken when there are any other instances of departures from quality systems (e.g., temperatures exceeded, hold time exceedances, PT failures, etc.)?				NR 149.38 (1)
10	Are all of the following documented for corrective action: the problem, most probable cause, what was done to fix the problem, and verification that the problem was solved?				NR 149.38 (2), (3)
11	Does corrective action include qualification of data on test reports and the DMR?				NR 149.47 (5)

	Records and Documents	Y	N	Notes	Citation
12	Are all lab records available (including thermometer records, weight certificates, raw data, etc.) for the last 3 years?				NR 149.39 (1)(c)
13	Are records kept in secure manner, recorded in ink, and electronic records backed up?				NR 149.39 (1)(f), (1)(g)
14	Are all referenced methods available?				NR 149.39 (2)(d)

15	Are all methods currently approved? *(see NR 219 Table B or 40 CFR Part 136)*				NR 149.41 (1)
16	Are SOPs documenting all methods and lab procedures available, up to date, and followed?				NR 149.40 (1)
17	Do written SOPs include all of the required elements: • Referenced method • Potential interferences and how to treat • Equipment and instruments • Supplies and chemicals • Sample preservation, storage, and hold time • QC and frequency • Calibration and standardization • Procedure • Acceptance criteria for QC • Corrective actions and contingencies • Date of issue or revision				NR 149.40 (4), (5)
18	Is the quality manual available, up-to-date, and followed?				NR 149.37 (1)
19	Unless included in other SOPs, does the quality manual include all of the required elements: • Procedures for retention, control, and maintenance of documents • Procedures for achieving traceability of chemicals and reference materials • Procedures for handling samples • Procedures for calibration, verification, and maintenance of support equipment • Procedures for evaluating QC samples • Procedures for initiating, following up on, and documenting corrective action • Date of issue or revision				NR 149.37 (3), (4)
20	Is there a procedure for the maintenance of analytical instruments?				NR 149.44 (4)(b)
21	Is there a written policy stating what is required for the initial demonstration of capability (IDC) including criteria?				NR 149.36 (2)(b)
22	Are IDC records kept for each analyst and each parameter, and do they it meet the lab's (or method) IDC criteria?				NR 149.36 (2)(b)
23	For all purchased chemicals, are the dates of expiration (when provided), lot numbers, vendors, chemical names, and concentrations documented?				NR 149.39 (3)(b)
24	For all prepared chemicals, are the preparer, dates of preparation, dates of expirations, links to the stocks, and preparation details documented?				NR 149.39 (3)(c)
25	When lab staff collect samples, is the sampling start date and time and collection date and time documented, along with the person who performed the sampling?				NR 149.45; WPDES Permit

	MDLs (only applicable to total phosphorus and ammonia analyses) *This section only lists the most frequent MDL issues. See the separate checklist or EPA procedure for additional MDL requirements. The department considers the MDL to be equivalent to the LOD.*	**Y**	**N**	**Notes**	**Citation**
26	Do all of the MDL spiked blanks and method blanks go through all steps of the method?				NR 149.48 (2)(b); 40 CFR Part 136 Appendix B (I)(1)
27	Is the initial MDL only performed for new methods, if there was a significant change, or if the lab believes the sensitivity has changed significantly (i.e., an "initial" MDL isn't done every year)?				NR 149.48 (2)(f); 40 CFR Part 136 Appendix B (II)(2), (II)(3)(d), (II)(4)(b)
28	Is the MDL recalculated at least every 13 months?				NR 149.48 (2)(b); 40 CFR Part 136 Appendix B (II)(4)(a)
29	For the ongoing MDL, were at least 2 blank spikes run in separate batches each quarter?				40 CFR Part 136 Appendix B (II)(3)(a)
30	For the ongoing MDL, were all spiked blanks from the last 2 years (no more, no less) used in the MDL_s determination, including the initial MDL data if within 2 years of the recalculation date?				40 CFR Part 136 Appendix B (II)(4)(b), (II)(4)(c)
31	Were all method blanks from the last 2 years used in the MDL_b determination (or were the last six months or last 50 method blanks used, whichever of these two options yielded more data)?				40 CFR Part 136 Appendix B (II)(4)(e)
32	Are negative results included in the MDL_b determination?				40 CFR Part 136 Appendix B (II)(2)(d)(iii)(A)
33	Is the MDL set to the greater of the MDL_s or MDL_b?				40 CFR Part 136 Appendix B (II)(4)(f)
34	If the new, recalculated MDL is not within 0.5 - 2 times the existing MDL or ≥ 3% of the method blanks were above the existing MDL, was the MDL set to the newly determined MDL?				40 CFR Part 136 Appendix B (II)(4)(f)
35	Is the MDL below permit or regulatory limits? *(if not, contact Lab Cert staff)*				NR 149.48 (2)(c)
36	Are all reported MDLs adjusted for any dilution (i.e., adjust when the sample amounts used are different than those used for the MDL determination)?				NR 149.48 (2)(d)

	Miscellaneous	**Y**	**N**	**Notes**	**Citation**
37	Are all reagent containers labeled with the expiration date, chemical name, and concentration?				NR 149.39 (3)(a)
38	Are samples stored separately from all standards, reagents, food, and other potentially contaminating sources?				NR 149.442 (4)(c)
39	Are expired chemicals not used for analysis?				NR 149.39 (3)(d)
40	If the lab is paid to do any compliance testing that requires certification (e.g., BOD, TSS, ammonia, phosphorus), is the lab certified (not registered)?				NR 149.03 (21), (63), NR 149.05 (1), NR 149.13 (1)
41	If the lab performs testing for pretreatment samples, are approved methods used and NR 211 and NR 149 code requirements met?				NR 149.02 (5), NR 149.05 (1)

	Requirements for Certified Labs ONLY (lab that performs testing for other facilities)	Y	N	Notes	Citation
42	Is a written sample acceptance policy available that clearly outlines the conditions under which samples will be accepted, rejected, or reported with qualifiers?				NR 149.442 (1)(a)
43	Are all of the following documented upon sample receipt: • Identity of client • Collection date • Collection time (for BOD) • Unique sample ID • Link between lab's sample ID and client's sample ID • Requested analyses • pH verification (for NH3 and phosphorus) • Sample/cooler temperature				NR 149.442 (3)
44	If analyzing BOD for other facilities, are those samples seeded, or is documentation maintained that the facility does not perform disinfection on the samples?				NR 149.50 (1)(g)
45	Is there a written agreement with the client(s) on file or does the lab report all of the required NR 149 elements in the reports to the client? Required elements: • Name of the lab • Lab's FID • Sample ID provided by the client • Methods used • Collection date • Collection and analysis times for BOD • Indication if non-aqueous samples are reported on dry weight or wet weight basis • LODs and LOQs • Indication that LODs and LOQ were adjusted for dilutions • Units of measurement • Date of test report • Any qualifiers (needed even if have a client agreement) • ID of any subcontracted results				NR 149.47 (2)(b), (2)(d)

	Documentation and Records - Are all of the following documents or records available, if applicable?	Y	N	Notes	Citation
46	Sample collection date, time, and sample collector				NR 149.45; WPDES Permit
47	Thermometer certificates or records of calibration/verification				NR 149.45
48	Equipment (samplers, refrigerators, incubators, ovens, furnaces, digestion blocks) temperatures				NR 149.45
49	Balance checks				NR 149.45
50	Balance weight certificates				NR 149.45
51	Mechanical pipette verifications				NR 149.45
52	LOD/MDL determination (analytical method, units, matrix, rationale for removal of outliers, dates of prep (e.g., distillation, digestion), dates of analysis, and MDL calculation date)				NR 149.45; 40 CFR Part 136 Appendix B (III)

53	Referenced methods (e.g., SM 5210)				NR 149.39 (2)(d)
54	SOPs				NR 149.40 (1)
55	Quality manual				NR 149.37 (1)
56	Initial demonstration of capability (IDC)				NR 149.39 (2)(c), NR 149.45
57	Purchased chemicals				NR 149.39 (3)(b), NR 149.45
58	Prepared chemicals				NR 149.39, (3)(c), NR 149.45
59	Corrective actions taken (e.g., when temperatures are out of range, analyzed past hold time, QC failures, etc.)				NR 149.38 (3), NR 149.45

Other Observations

WI DNR Resources
DNR Website (which includes the resources below): Laboratory Certification | Wisconsin DNR
Example quality manual template
Example pH SOP template
Example total residual chlorine SOP template
Example E.coli SOP template
LOD/MDL benchsheets and instructions
Example auto-pipette quarterly verification log
Example thermometer annual verification log
Example analytical balance monthly verification log
Example daily equipment temperature measurements log
Example equipment maintenance log
Example sample collection log
Example initial demonstration of capability log
Example prepared and purchased chemical tracking logs
Example general corrective action log
Lab activity reminder checklist
Lab Accreditation Program staff - contact any staff with questions or concerns, especially if there are ongoing QC issues