

StreamWatch

Water Quality Assessment Framework

The 2025 StreamWatch Water Quality Assessment primarily uses data collected between January 2020 and December 2024.

1 Chemical/Physical Parameters

All sites have at least 8 measurements for each chemical parameter.

1.1 Water Temperature:

1.1.1 Method: LaMotte Armored Alcohol Thermometer

Measurement range: -5.0 – 45.0 degrees Celsius; Regulatory method NFM 6.1.3.B

1.1.2 Method: Hanna Multiparameter meter HI98194

Measurement range: -5.0 – 55.0 degrees Celsius

Score	Assessment Framework
Excellent	No samples at 28 degrees Celsius or greater
Good	No samples at 31 degrees Celsius or greater
Fair	1-2 more samples at 31 degrees Celsius or greater
Poor	3+ samples at 31 degrees Celsius or greater

1.2 pH:

1.2.1 Method: LaMotte Precision pH Test Kit #5858-01

Measurement range: 3.0 – 10.5 standard units

1.2.2 Method: Hanna Multiparameter meter HI98194

Measurement range: 0.00 – 14.00 standard units; Regulatory method EPA-NERL 150.1

Score	Assessment Framework
Excellent	No samples below 6.5 or above 8.5
Good	1 sample below 6.5 or above 8.5
Fair	2 samples below 6.5 or above 8.5
Poor	3+ samples below 6.5 or above 8.5

1.3 Dissolved oxygen:

1.3.1 Method: LaMotte Dissolved Oxygen Test Kit #5860-01

Measurement range: 0.0 – 10.0 mg/L; Regulatory method EPA-NERL 360.2

1.3.2 Method: Hanna Multiparameter meter HI98194

Measurement range: 0.0 – 500.0 %; 0.00 – 50.00 mg/L; Regulatory methods SM 4500-OG, EPA 360.1

Score	Assessment Framework
Excellent	No samples at or below 5.0 mg/L
Good	1 sample at or below 5.0 mg/L
Fair	At least 2 samples at 5.0 mg/L or below
Poor	At least 1 sample at 4.0 mg/L or below

1.4 Turbidity:

1.4.1 Method: LaMotte Turbidity Test Kit #7519-01

Measurement range: 5 - 200 Jackson Turbidity Units (JTUs)

1.4.2 Method: HACH 2100-P Turbidimeter

Measurement range: 0 – 1000 Nephelometric Turbidity Units (NTUs); Regulatory method EPA 180.1

NTUs are approximately equal to JTUs, but not identical.

Score	Assessment Framework
Excellent	No samples greater than 15 NTUs or JTUs
Good	No samples at 50 NTUs or JTUs or greater
Fair	1-2 samples at 50 NTUs or JTUs or greater
Poor	3+ samples at 50 NTUs or JTUs or greater

1.5 Nitrate (as N):

1.5.1 Method: LaMotte Nitrate-N and Phosphate Low-Range Test Kit #3119-01

Measurement range: <0.2 – 4.0 mg/L

1.5.2 Method: Thermo Scientific Gallery colorimetric hydrazine method (Total Oxidized Nitrogen as N and Nitrate by calculation (TON-Nitrite))

Measurement range: 0.0115 – 25 mg/L; Regulatory methods EPA 353.1, ISO 15923-1, ISBN 0117515930, SM 4500-NO3 H

Since there is no existing water quality standard protecting aquatic life and preventing eutrophication from nitrate, the following sources were used to develop this framework:

- <https://nepis.epa.gov/Exe/ZyPDF.cgi/20003CVP.PDF?Dockey=20003CVP.PDF>
- <http://ceqg-rcqe.ccme.ca/download/en/197>

Score	Assessment Framework
Excellent	No samples at or greater than 1.5 mg/L
Good	No samples at or greater than 3.0 mg/L
Fair	1-2 samples at or greater than 3.0 mg/L
Poor	3+ samples at or greater than 3.0 mg/L

1.6 Phosphate

1.6.1 Method: LaMotte Nitrate-N and Phosphate Low-Range Test Kit #3119-01

Measurement range: <0.2 – 1.0 mg/L

Score	Assessment Framework
Excellent	Cannot score due to method detection limit
Good	Cannot score due to method detection limit
Fair	0-2 samples at 0.2 mg/L or greater
Poor	3+ samples at 0.2 mg/L or greater

1.6.2 Method: Thermo Scientific Gallery colorimetric analysis with ammonium molybdate and antimony potassium tartrate

Measurement range: <0.01 – 10.0 mg/L; Regulatory methods EPA 365.1, EN ISO 6878, ISO 15923-1, ISBN 0117515825, SM 4500 P-E

Score	Assessment Framework
Excellent	No samples at or greater than 0.05 mg/L
Good	No samples at or greater than 0.1 mg/L LAKES ONLY: 1 sample at or greater than 0.05 mg/L
Fair	1-2 samples at 0.1 mg/L or greater LAKES ONLY: 2 samples at or greater than 0.05 mg/L
Poor	3+ samples at 0.1 mg/L or greater LAKES ONLY: 3+ samples at or greater than 0.05 mg/L

1.7 Chloride:

1.7.1 Method: Hach Quantab Titrators for Chloride (Low Range)

Measurement range: 30 – 600 mg/L

1.7.2 Method: Thermo Scientific Gallery colorimetric analysis with mercury (II) thiocyanate

Measurement range: 20 – 500 mg/L; Regulatory methods EPA 325.2, EN ISO 15682, ISO 15923-1, ISBN 0117516260, SM 4500-CI-E

Score	Assessment Framework
Excellent	No samples greater than 100 mg/L
Good	1 sample at 230 mg/L or greater
Fair	2 samples at 230 mg/L or greater
Poor	3+ samples at 230 mg/L or greater

2 BACTERIAL PARAMETERS

There must be at least 5 samples within a 90 day period to calculate a geometric mean. Sites with differing scores between years will be assigned its lowest score attained during the assessment period.

2.1 E. coli:

2.1.1 Method: Colisure with Quanti-tray 2000 Most Probable Number Quantification

Measurement range: 0 – >2,419 colonies per 100 mL water; Regulatory method SM 9223B

Score	Assessment Framework
Excellent	No samples greater than 320 colonies/100 mL AND geometric mean is 100 colonies/100 mL or less
Good	<10% samples greater than 320 colonies/100 mL BUT geometric mean is 100 colonies/100 mL or less
Fair	≥10% samples greater than 320 colonies/100 mL OR geometric mean is greater than 100 colonies/100 mL
Poor	≥10% samples greater than 320 colonies/100 mL AND geometric mean is greater than 100 colonies/100 mL

3 BIOLOGICAL PARAMETERS

3.1 Macroinvertebrate Population Pollution Tolerance:

3.1.1 Method: Multihabitat D-net sampling

Measurement range: 90-110 organisms

Score	Assessment Framework			
	HGMI GENUS Level Index (used for sites in the piedmont region)	CPMI GENUS Level Index (used for sites in the coastal plain)	HGMI FAMILY Level Index (used for sites in the piedmont region)	New Jersey Impairment Score (used for sites in the coastal plain)
Excellent	63 – 100	22 – 30	63 – 100	22.5 – 30
Good	42 - <63	12 – 20	42 – <63	15 – < 22.5
Fair	21 - <42	6 – 10	21 – <42	7.5 – < 15
Poor	< 21	< 6	< 21	< 7.5

When scores exist for multiple indices, assess sites in this order:

1. HGMI (genus)
2. CPMI (genus)
3. HGMI (family)
4. NJIS (family)

4 SUBWATERSHED & MUNICIPAL ASSESSMENTS

4.1 Minor Subwatershed & Municipal Assessments

Sites are scored on a four-unit scale: Excellent, Good, Fair, and Poor. These scores have been assigned a value of 4, 3, 2, and 1, respectively. For subwatersheds and municipalities with multiple sites, the geometric mean of scored values is calculated to determine the score for the region as a whole according to the following table. If a site is scored on just one parameter, except if that parameter is for aquatic life, it is not included in the overall site score.

Rating	Geometric Mean of Sites' Scored Values
Excellent	> 3.25
Good	2.50 – 3.25
Fair	1.75 - < 2.50
Poor	< 1.75