EFFINGHAM WATER QUALITY REPORT 2025

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RIVERS Parameters

Turbidity
- Water clarity
- Determined by amount of suspended particles and sediment

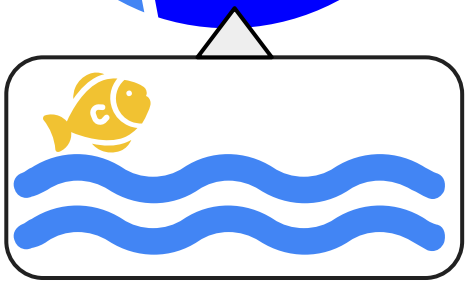
pH
- Pure water has pH 7
- Most NH streams have pH 6.5
- Ideal range for aquatic organisms is 6.5-8.2

Dissolved Oxygen (DO)
- Measure of how much oxygen is available to aquatic species
- Different species need different amounts

Stream & Site Characteristics
- Substrate (i.e. river bottom)
- Weather
- Water scent & appearance
- General observations

Temperature
Influences:
- Plant growth & animal activity
- DO levels
- Rate of chemical reactions

Conductivity
- Ability of water to pass electrical charge
- Based on amount of charged compounds or ions (Na+, Cl-, NO_3-, etc.)
- Can be used to interpret amount of salt in water



Phosphorus & Nitrogen
- Critical nutrient for plant and algae growth growth
- High levels indicate more decomposition (i.e. sewage) or human inputs (e.g. fertilizer runoff)

RIVERS Parameters

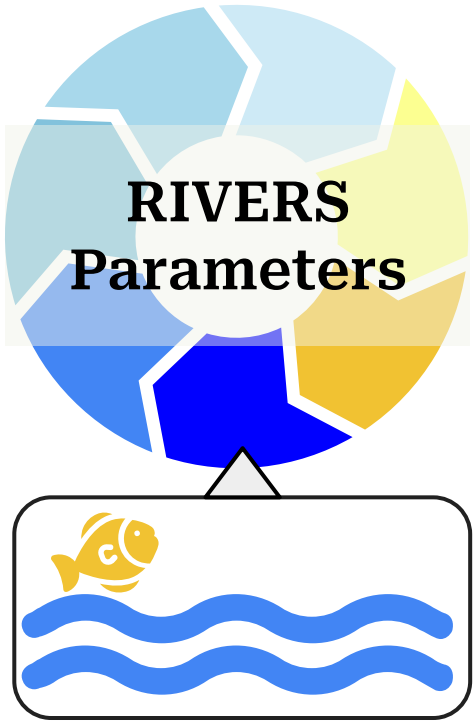
Calcium
- Occurs naturally
- Essential for plants and animals
- Used to measure hardness

Dissolved Organic Carbon
- Occurs naturally from organic decomposition
- Elevated levels from runoff and sewage

Sulfate
- Occurs naturally from weathering
- Elevated levels from mines, smelters, paper mills

Sodium
- Present in water in low concentrations, vary based on geology
- Elevated concentrations from road salt runoff

Magnesium
- Occurs naturally
- Essential nutrition for plants and animals
- Used to measure hardness



Chloride
- Present in water in low concentrations, vary based on geology
- Elevated concentrations from road salt runoff, sewage, or farming

Potassium
- Occurs naturally from weathering or plant decomposition
- Elevated levels from pollution, leaky septic tanks, fertilizer runoff

RIVERS Parameters - Water Quality Standards & Allowable Limits

Parameter	Limit/Standard
Conductivity	< 100 µg/cm
Turbidity	< 10 NTU
pH	6-8 preferably 6.5 in NH
Dissolved Oxygen (DO) & Percent DO	6-11 mg/L 75% - 120%
Temperature	No standard, monitored for major changes
Total Phosphorus (TP)	< 30 µg/L
Nitrogen	Variable

- Based on NHDES & EPA criteria
- Each site will vary in these values due to differences in surrounding plant life, land use, riverbed geology, infrastructure, etc.

We measure temperature to visualize its relationship with DO, which should be **inverse** in a healthy stream (**as temp. increases, DO decreases**).

Dependent on what form of nitrogen is being tested.

RIVERS Parameters - Water Quality Standards & Allowable Limits

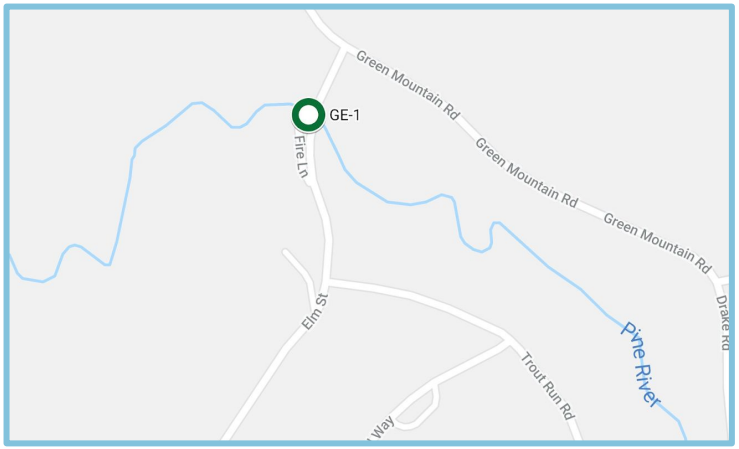
Parameter	Limit/Standard
Chloride	< 10 mg/L
Sodium	< 50 mg/L
Dissolved Organic Carbon	1-10 mg/L
Calcium	< 15 mg/L
Sulfate	< 80 mg/L
Magnesium	1-100 mg/L
Potassium	< 10 mg/L

- Based on NHDES & EPA criteria
- Each site will vary in these values due to differences in surrounding plant life, land use, riverbed geology, infrastructure, etc.

Pine River (GE-1)

Data analyzed from May 2020 - Oct 2025

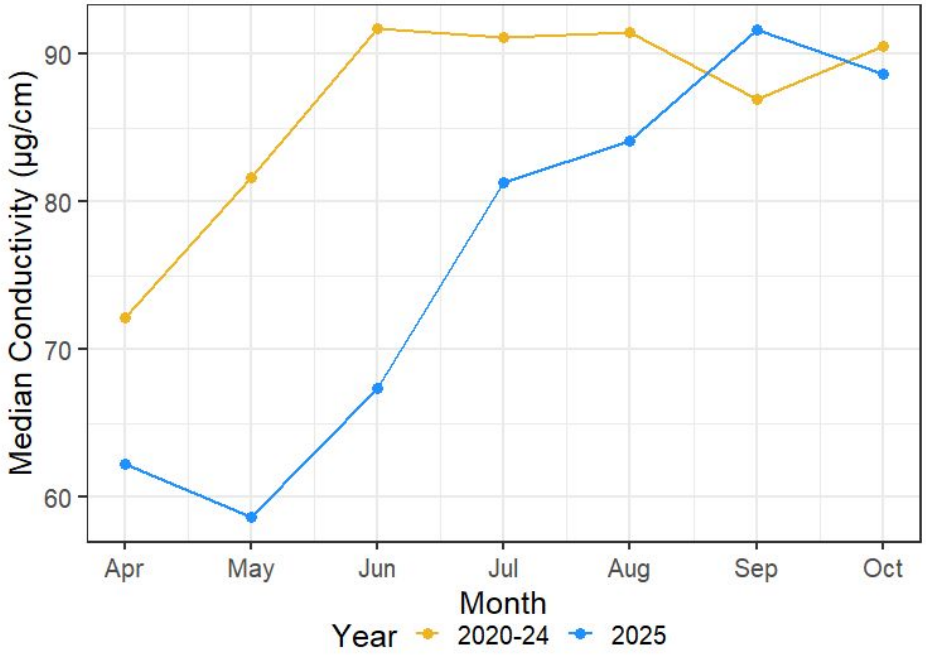
- Monitored since 2002
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP



Parameter	Status	Change
pH	Within ideal range	Small decrease from 2024
Turbidity	Within ideal range	Small decrease from 2024
Total Phosphorus*	Within ideal range	Small decrease from 2024

Conductivity

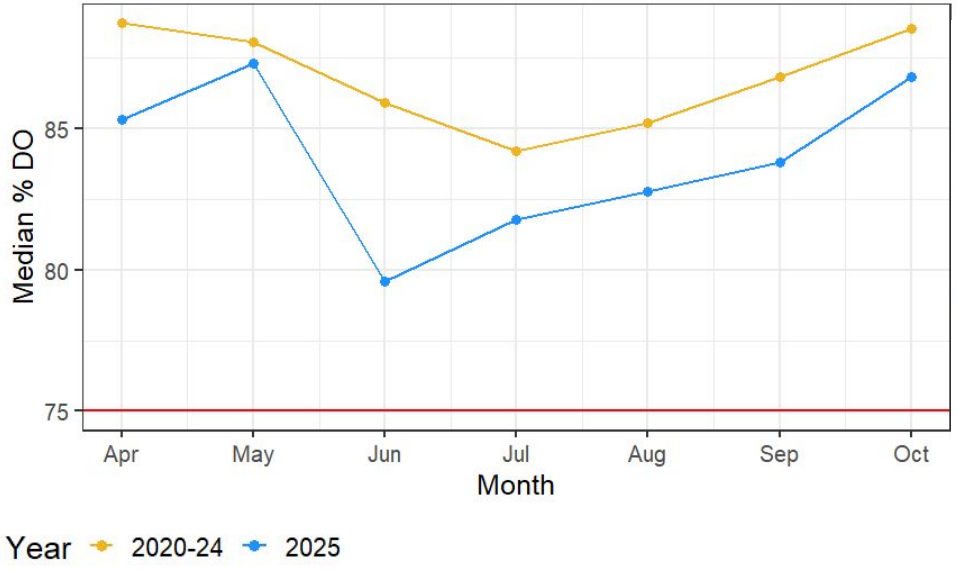
2025 conductivity values followed the same general trend as 2020-24, increasing steadily over the sampling period. However, values were lower in Apr-Aug 2025 than previous years. All values fell within the ideal range.



*values only available up to Nov 2025

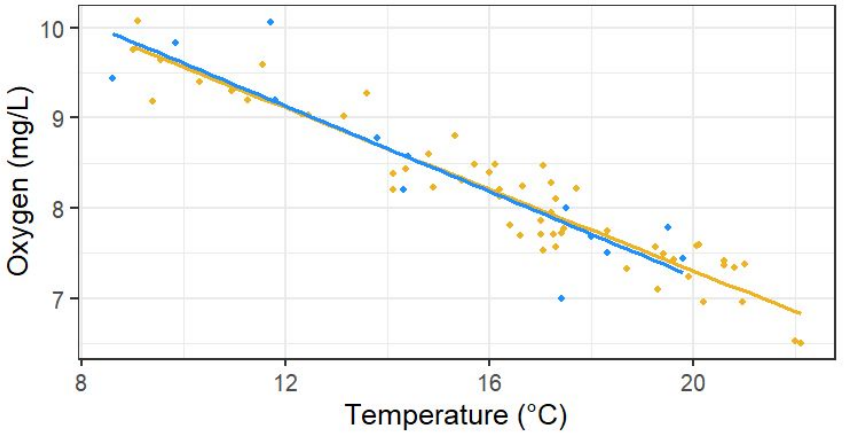
% Dissolved Oxygen

% DO in 2025 followed the same trend seen in 2020-24, with a steady fall and rise over the sampling period. However, values dip much lower in 2025. All values fell within the ideal range.



DO & Temperature

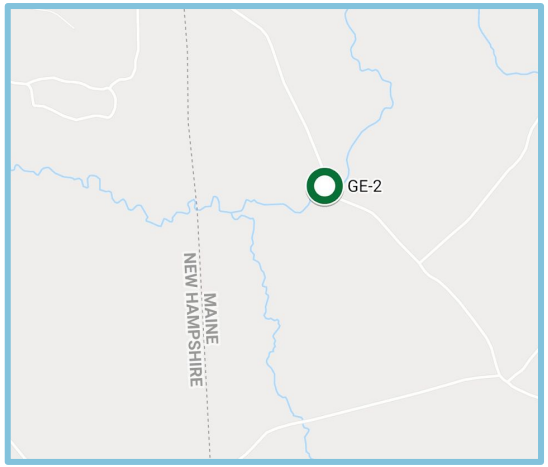
There is a consistent inverse relationship between parameters in 2020-24 and 2025. All values stayed within the ideal range.



South River (GE-2)

Data analyzed from May 2020 - Oct 2025

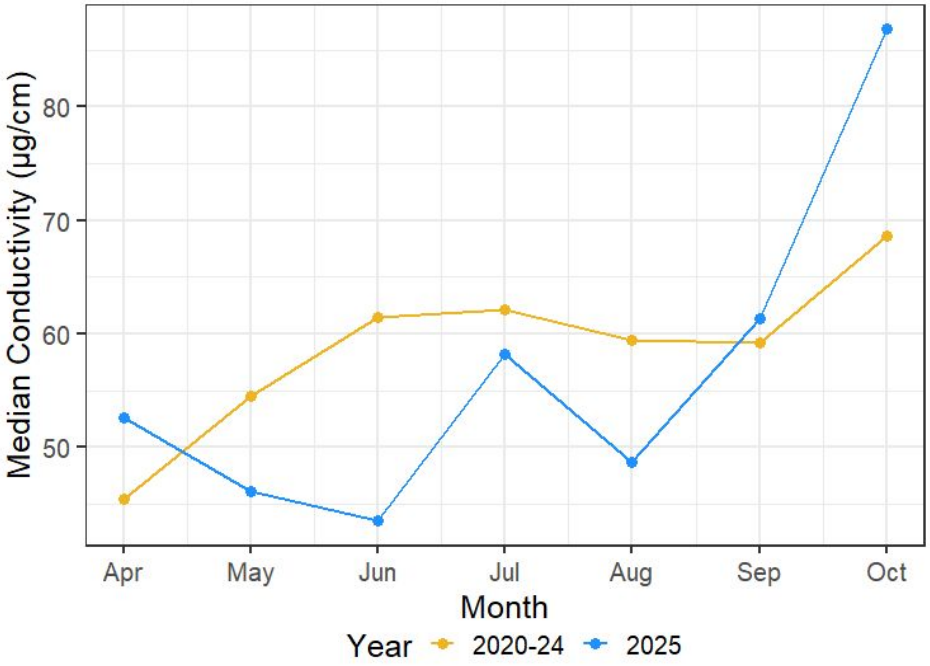
- Monitored since 2002
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP



Parameter	Status	Change
pH	Within ideal range	Small decrease from 2024
Turbidity	Within ideal range	Small decrease from 2024
Total Phosphorus*	Within ideal range	Small decrease from 2024

Conductivity

Conductivity values were lower from May-Aug 2025 compared to previous years before spiking higher in Sep-Oct 2025 than previous years. All values fell within the ideal range.



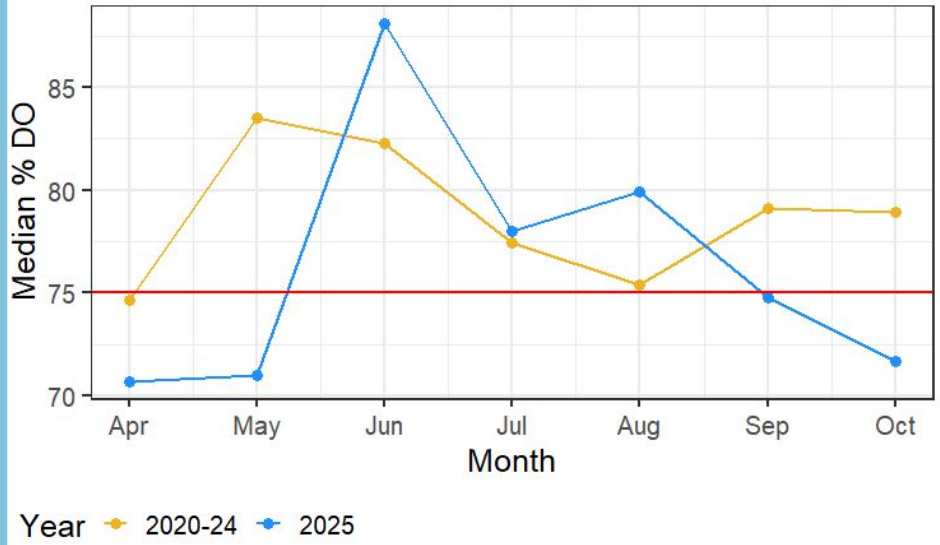
*values only available up to Nov 2025

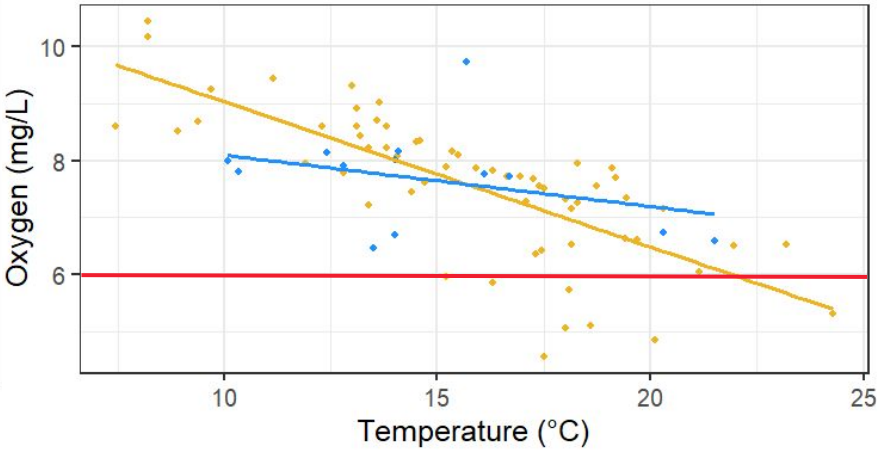
% Dissolved Oxygen

Similar to previous years, % DO began below the ideal range at the beginning of the sampling period before increasing to ideal values. However, unlike previous years the parameter dipped below the ideal range at the end of the sampling period.

DO & Temperature

The inverse relationship between temperature and oxygen is much weaker in 2025 compared to previous years, although all values stayed within the ideal range unlike previous years.





Ossipee River (GE-3)

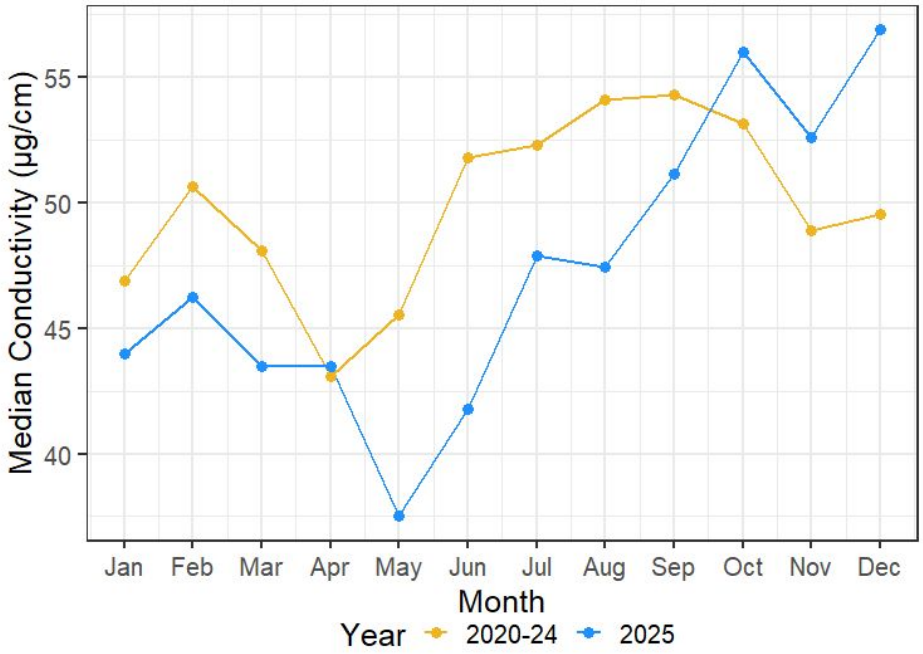
Data analyzed from Jan 2020 - Dec 2025

- Monitored since 2003
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP, ions

Parameter	Status	Change
pH	Within ideal range	Small decrease from 2024
Turbidity	Within ideal range	Small decrease from 2024
Total Phosphorus*	Within ideal range	Small decrease from 2024

Conductivity

Conductivity in 2025 followed the same general trend from past years with a peak in Feb followed by a steady decrease to Apr/May before increasing again. 2025 values stayed below 2020-24 until the end of the year. All values were within the ideal range.



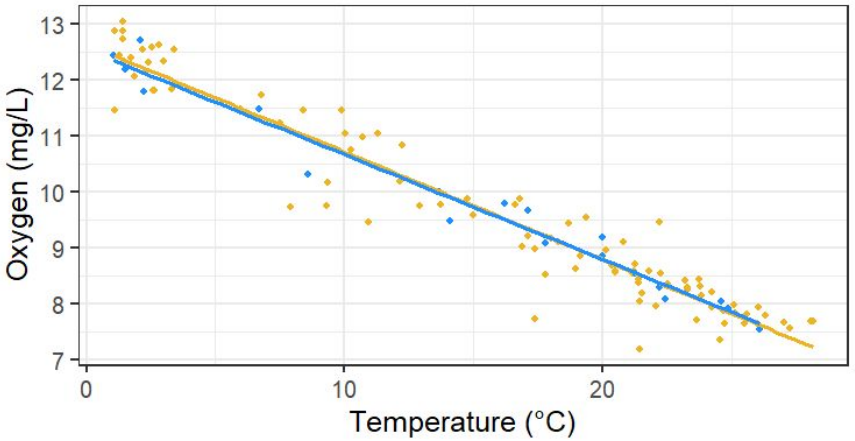
*values only available up to Nov 2025

% Dissolved Oxygen

% DO followed the same trend in 2025 as in previous years, peaking in May and decreasing to a low in Nov before spiking in Dec. All values fell within the ideal range.

DO & Temperature

There is a consistent inverse relationship between parameters in 2020-24 and 2025. All values stayed within the ideal range.



Ossipee River (GE-3)

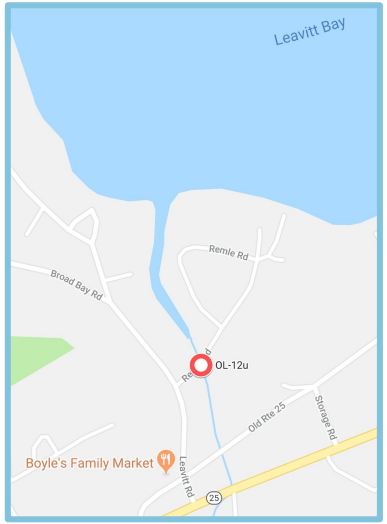
**Data from Aug 2024 - Aug 2025

Parameter	Limit/Standard	Status
Ammonium	< 200 µg/L	In range
Orthophosphate	< 10 µg/L	Exceeded standard in Feb, Apr
Dissolved Organic Carbon	1-10 mg/L	In range
Total Dissolved Nitrogen	< 0.5 mg/L	In range
Nitrate	< 0.05 mg/L	Exceeded standard in Nov, Jan-Mar
Chloride	< 10 mg/L	Exceeded standard in Feb, Aug 2025
Sulfate	< 80 mg/L	In range
Sodium	< 50 mg/L	In range
Potassium	< 10 mg/L	In range
Magnesium	1-100 mg/L	Below 1 mg/L Aug-Dec 2024, Feb-Aug 2025
Calcium	< 15 mg/L	In range

Phillips Brook (OL-12u)

Data analyzed from Jan 2020 - Dec 2025

- Monitored since 2005
- Next to a wetland**
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP, ions



Philips Brook (OL-12u)

Jan 2020 - Dec 2025

Parameter	Status	Change
pH	Outside ideal range	Small decrease from 2024
Turbidity	Stable	Small decrease from 2024
Total Phosphorus*	Within ideal range	Small decrease from 2024

Streams coming from wetlands tend to have **lower pH** and **higher phosphorus**.

No samples taken because river was not flowing **Aug-Oct**.

No samples taken because river was frozen over in **Dec**.

Conductivity

Values decreased in the spring before peaking in the summer in 2025 similar to 2020-24, although the peak in 2025 was much higher than the peak in 2020-24. All values were outside the ideal range except for Mar-May.

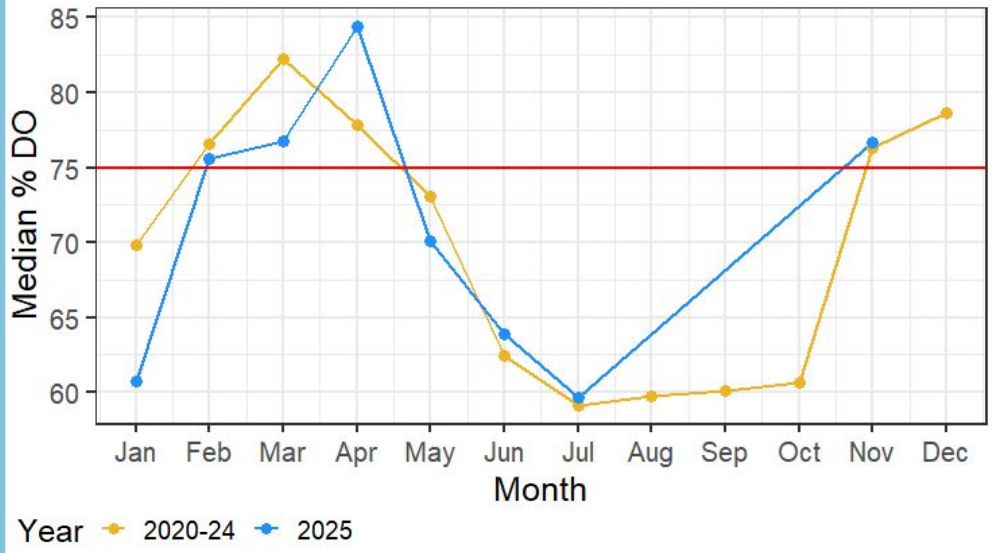
**values only available up to Nov 2025*

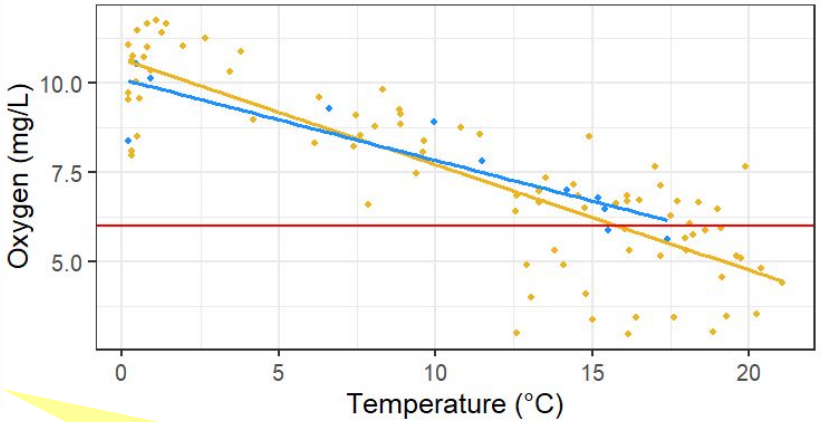
% Dissolved Oxygen

% DO increased in early spring before dipping below the ideal range throughout the summer in both 2025 and 2020-24. All values except for Feb-May and Nov were below the ideal range.

DO & Temperature

There is a slightly stronger inverse relationship between parameters in 2025 than in 2020-24. Some values dipped below the ideal range in 2025 and 2020-24.





Streams coming from wetlands tend to have **low dissolved oxygen** due to high decomposition rates.

Philips Brook (OL-12u)

**Data from Aug 2024 - Aug 2025

Parameter	Limit/Standard	Status
Ammonium	< 200 µg/L	In range
Orthophosphate	< 10 µg/L	Exceeded standard in Aug 2024-Feb 2025, Apr-Jul 2025
Dissolved Organic Carbon	1-10 mg/L	Exceeded standard in Aug 2024, Oct 2024, Mar-Jun 2025
Total Dissolved Nitrogen	< 0.5 mg/L	Exceeded standard in Aug-Sep 2024, Nov 2024, May-Jun 2025, Aug 2025
Nitrate	< 0.05 mg/L	Exceeded standard in Aug-Dec 2024, Feb 2025, Jul-Aug 2025
Chloride	< 10 mg/L	Exceeded standard entire year
Sulfate	< 80 mg/L	In range
Sodium	< 50 mg/L	Exceeded standard in Aug 2025
Potassium	< 10 mg/L	In range
Magnesium	1-100 mg/L	Below 1 mg/L Aug 2024-Jul 2025
Calcium	< 15 mg/L	In range

Streams coming from wetlands tend to have **higher dissolved organic carbon**.

Leavitt Brook (OL-13)

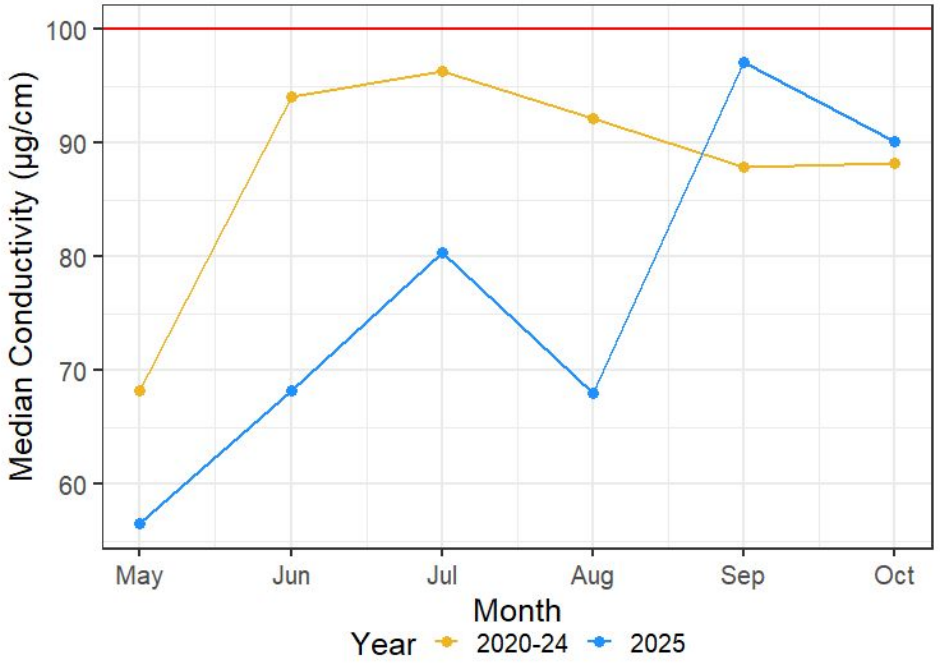
Data analyzed from May 2020 - Oct 2025

- Monitored since 2003
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP

Parameter	Status	Change
pH	Within ideal range	Small decrease from 2024
Turbidity	Within ideal range	Small decrease from 2024
Total Phosphorus*	Within ideal range	Small decrease from 2024

Conductivity

Values in 2025 were lower than previous years before surpassing 2020-24 values at the end of the sampling period. All values fell within the ideal range.



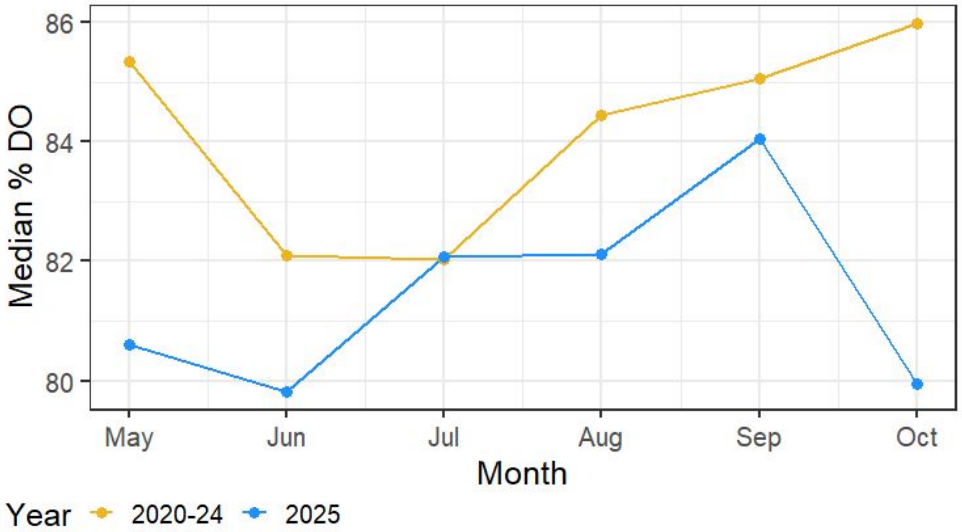
*values only available up to Nov 2025

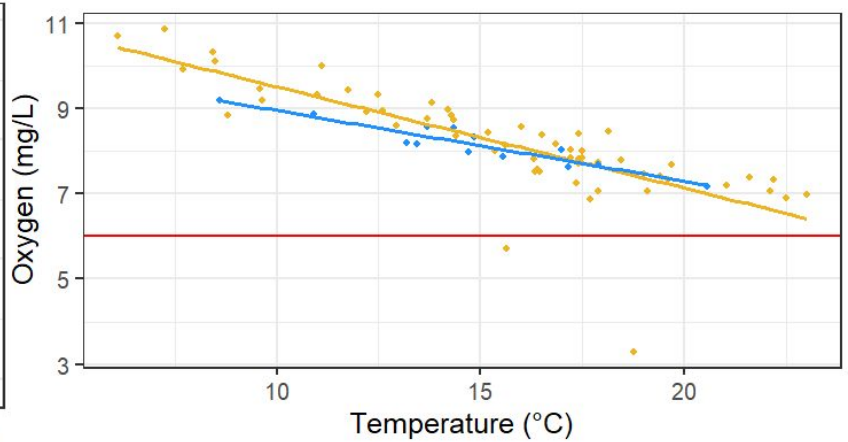
% Dissolved Oxygen

% DO values were lower in 2025 than in previous years and decreased at the end of the sampling period unlike previous years. All values fell within the ideal range.

DO & Temperature

The inverse relationship between temperature and oxygen was stronger in 2025 than in previous years. All values in 2025 were within the ideal range.





Overview of Findings

The majority of parameters tested fell within the acceptable limits for surface waters set by the New Hampshire Department of Environmental Services (NHDES) and/or the Environmental Protection Agency. Our findings do not indicate any trends or incidences of concern.

Parameter	Summary
Conductivity	Similar trends to previous years with some high values outside the ideal range (**site OL-12u**), although this is normal for that site.
Turbidity	All sites had a small decrease and fell within the ideal range.
pH	All sites had a small decrease in pH and fell within the ideal range except for **site OL-12u**, although this is normal for the site.
% Dissolved Oxygen	Majority followed similar trends to previous years although with some unique low values outside the ideal range (**site GE-2**) likely due to the drought.
DO & Temperature	Consistent inverse relationships.
Total Phosphorus (TP)	All sites experienced a decrease in TP. All fell within the ideal range.

What can Effingham do to protect its water?

In Towns

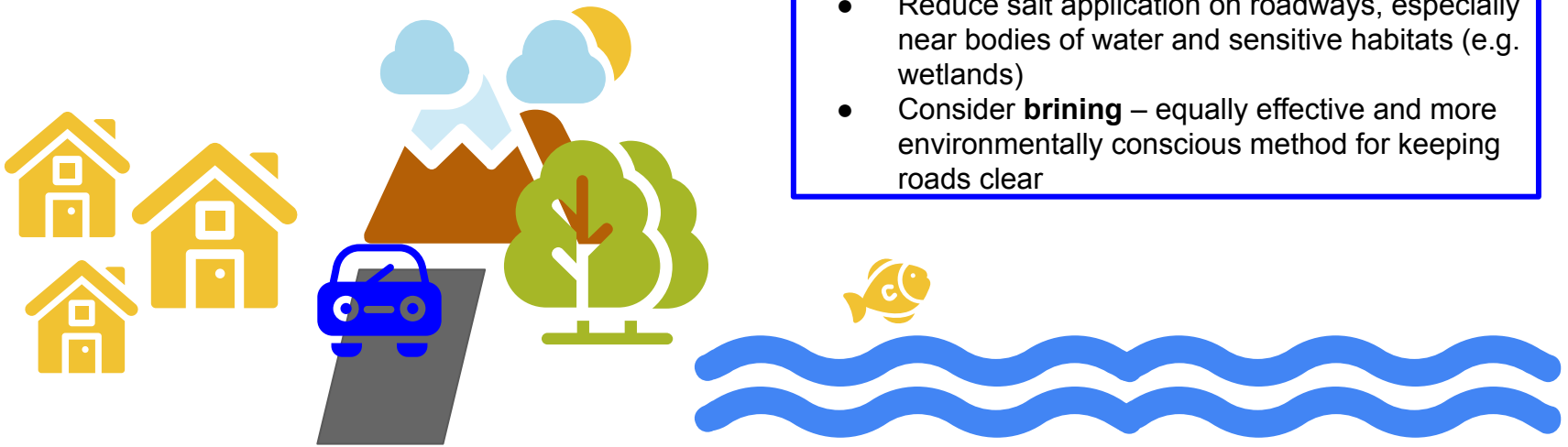
- Monitor the effectiveness of culverts
- Work to replace culverts posing as safety and environmental hazards
- Maintain riparian areas (Streamside Management Zones) and monitor habitats near bodies of water for major changes

At Home

- Encourage residents to get their septic systems regularly checked and maintained
- Use Best Management practices (BMPs) for proper disposal of chemicals and waste materials

On Roads

- Reduce salt application on roadways, especially near bodies of water and sensitive habitats (e.g. wetlands)
- Consider **brining** – equally effective and more environmentally conscious method for keeping roads clear



THANK YOU FOR YOUR TIME!

Report respectfully submitted by:

J. Emerson, *Staff Scientist*

C. Gersten, *Water Quality Resource Assistant*

AmeriCorps

GREEN MOUNTAIN CONSERVATION GROUP