OSSIPEE WATER QUALITY REPORT 2025

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RIVERS Parameters

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

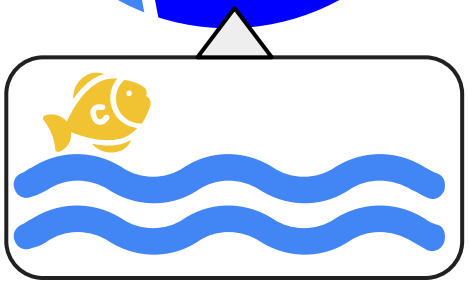
pH
- Pure water has pH 7
- Most NH streams have pH 6.5
- Ideal range for aquatic organisms is 6.5-8.2

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

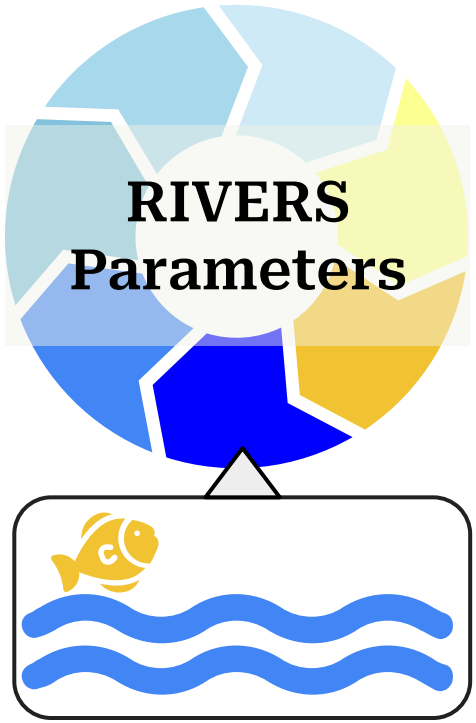
Calcium
- Occurs naturally
- Essential for plants and animals
- Used to measure hardness

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.

Beech River (GO-1)

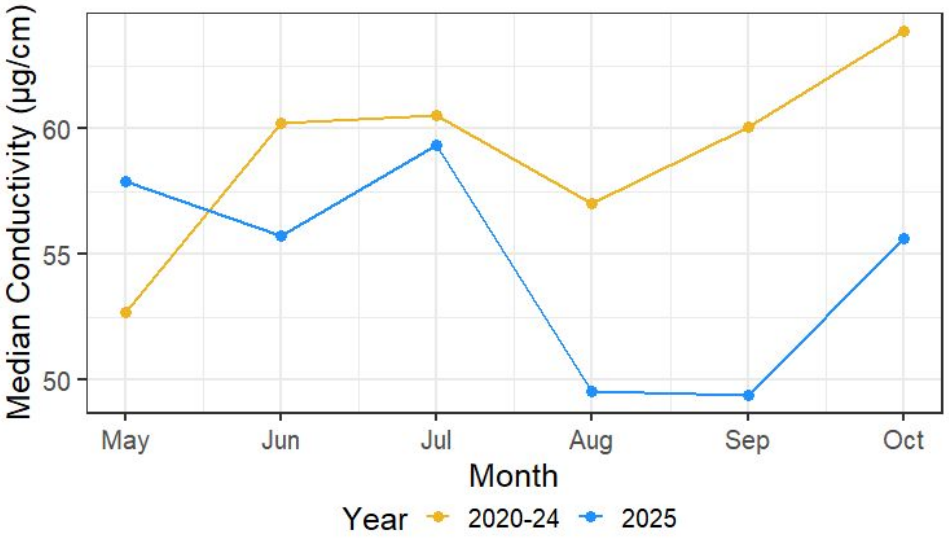
Data analyzed from May 2020 - Oct 2025

- 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

Values were lower in 2025 than in previous years except for the month of May. All values fell within the ideal range.



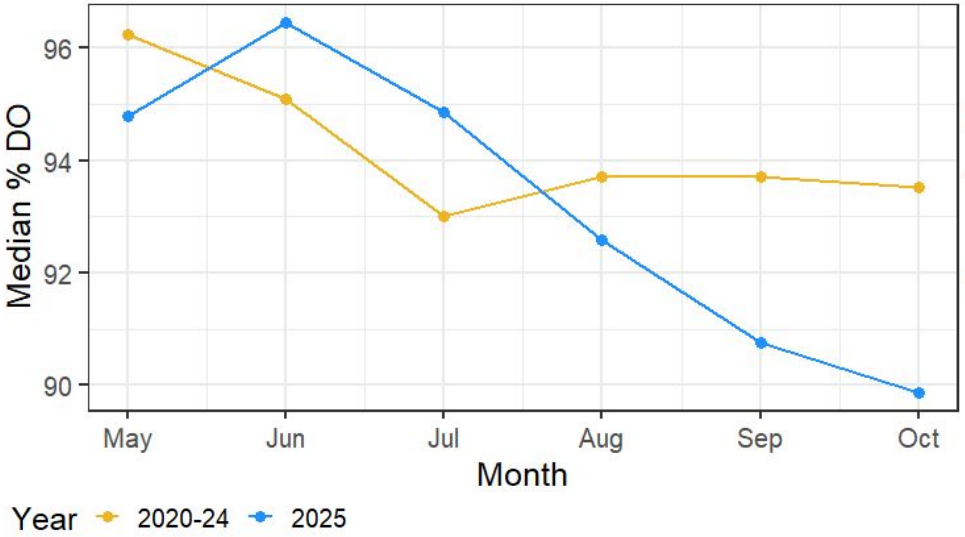
*values only available up to Nov 2025

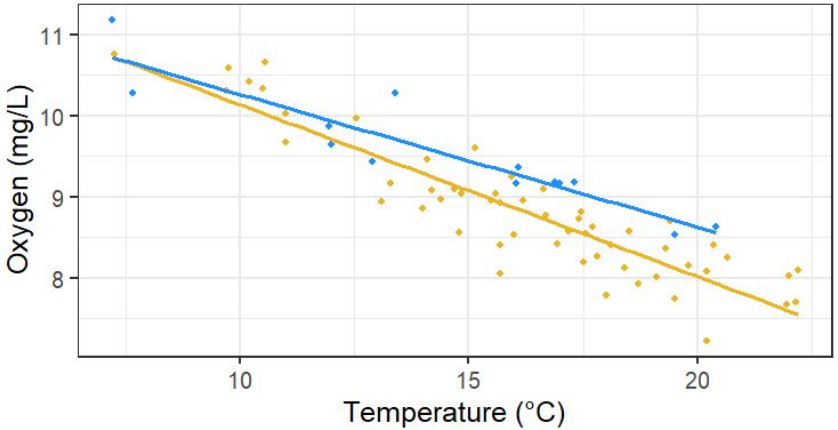
% Dissolved Oxygen

% DO values in 2025 were lower than those in previous years except for in Jun and Jul. % DO values increased before steadily decreasing in 2025 unlike 2020-24 where values decreased then increased. All values fell within the ideal range.

DO & Temperature

There is a slightly stronger inverse relationship between parameters in previous years than in 2025, although both are ideal. All values stayed within the ideal range.





Frenchman Brook (GO-2)

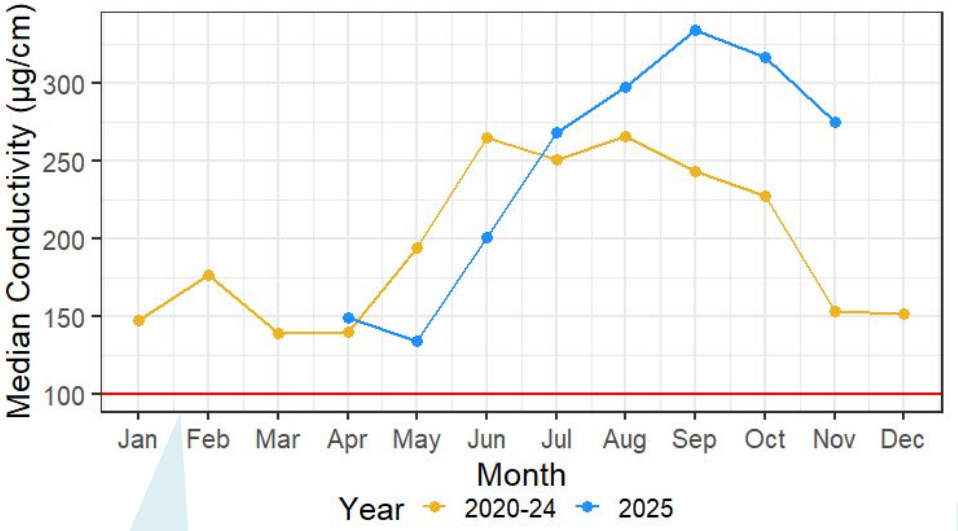
Data analyzed from Jan 2020 - Dec 2025

- Monitored since 2002
- 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

Values in 2025 were higher than previous years from Jul-Nov. Values in 2025 also followed the general trend of previous years of an increase in the summer followed by a decrease. All values were higher than the ideal range.



No samples taken because river was frozen over Dec and Jan-Mar.

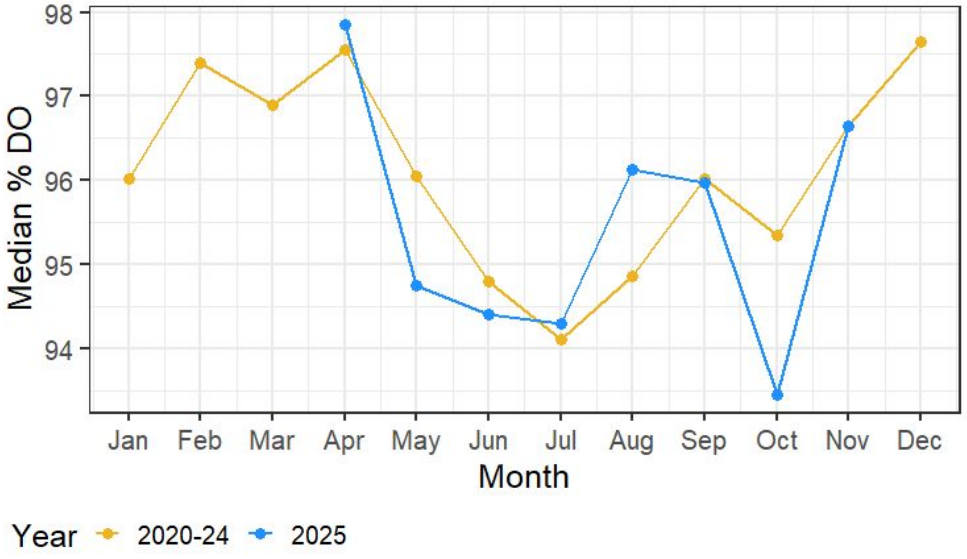
*values only available up to Nov 2025

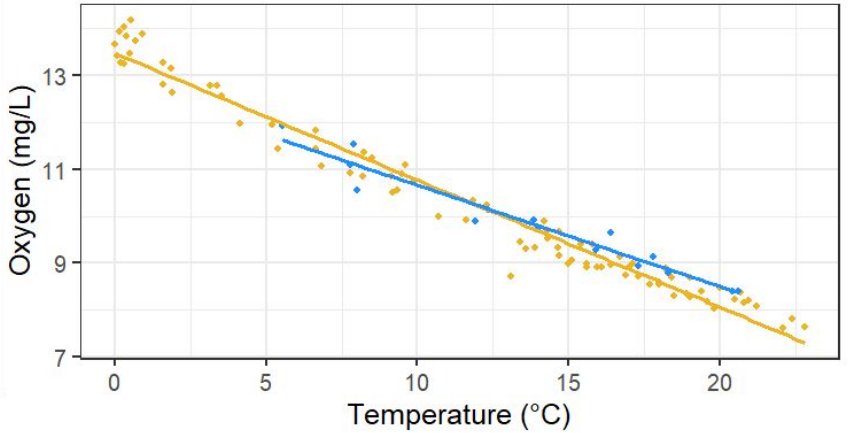
% Dissolved Oxygen

% DO followed the same trend in 2025 as in previous years, decreasing from Apr to Jul, increasing in Aug and Sep, then decreasing in Oct before increasing again. All values fell within the ideal range.

DO & Temperature

There is a slightly stronger inverse relationship between parameters in previous years than in 2025, although both are ideal. All values stayed within the ideal range.





Frenchman Brook (GO-2)

**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, Apr-May 2025, Aug 2025
Dissolved Organic Carbon	1-10 mg/L	In range
Total Dissolved Nitrogen	< 0.5 mg/L	Exceeded standard in Dec
Nitrate	< 0.05 mg/L	Exceeded standard Aug-Dec 2024, Jun-Aug 2025
Chloride	< 10 mg/L	Exceeded standard Aug-Dec 2024, Apr-Aug 2025
Sulfate	< 80 mg/L	In range
Sodium	< 50 mg/L	Exceeded standard Aug 2025
Potassium	< 10 mg/L	In range
Magnesium	1-100 mg/L	Below 1 mg/L Aug-Sep 2024, Nov-Dec 2024, Apr-Jun 2025
Calcium	< 15 mg/L	In range

*site not sampled Jan-Mar 2025

Bearcamp River (GO-5)

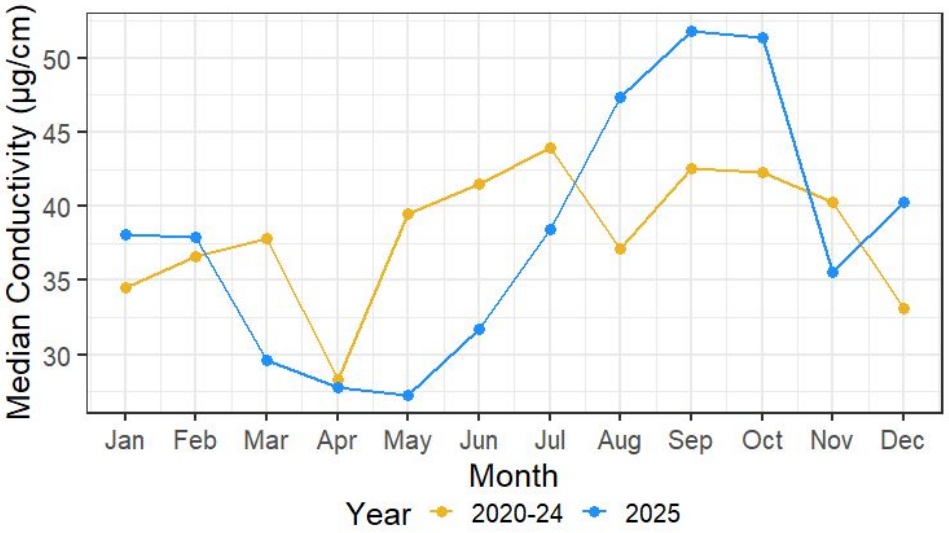
Data analyzed from Jan 2020 - Dec 2025

- Monitored since 2004
- 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

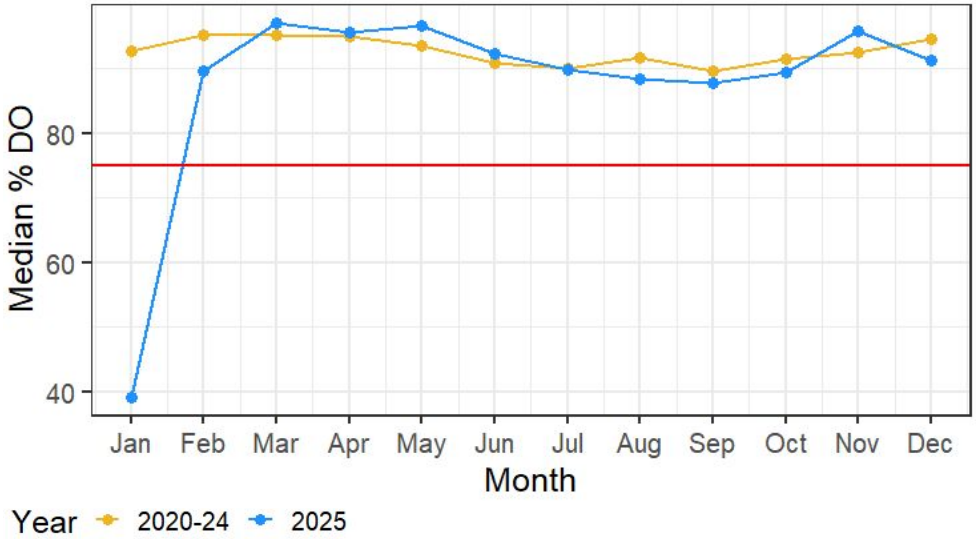
Values in 2025 followed the same general trend as previous years with a decrease in the spring followed by a peak in summer before decreasing again. All values fell within the ideal range.



*values only available up to Nov 2025

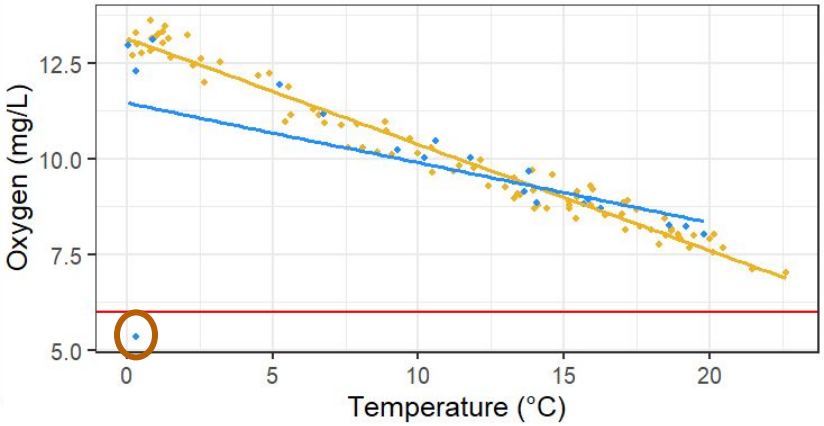
% Dissolved Oxygen

% DO values followed the same general trend in 2025 as in previous years, although the value was significantly lower and fell outside the ideal range in Jan 2025 than Jan 2020-24. All other values fell within the ideal range.



DO & Temperature

There is a much stronger inverse relationship between parameters in previous years than in 2025, although this is likely due to the outlier value. All other values stayed within the ideal range.



Bearcamp River (GO-5)

**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, Jan, Feb, May, Jun
Dissolved Organic Carbon	1-10 mg/L	In range
Total Dissolved Nitrogen	< 0.5 mg/L	Exceeded standard in Jan
Nitrate	< 0.05 mg/L	Exceeded standard in Sep, Oct, Jan, Feb, Jul
Chloride	< 10 mg/L	In range
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 entire year
Calcium	< 15 mg/L	In range

Ossipee Lake Outflow (GO-7)

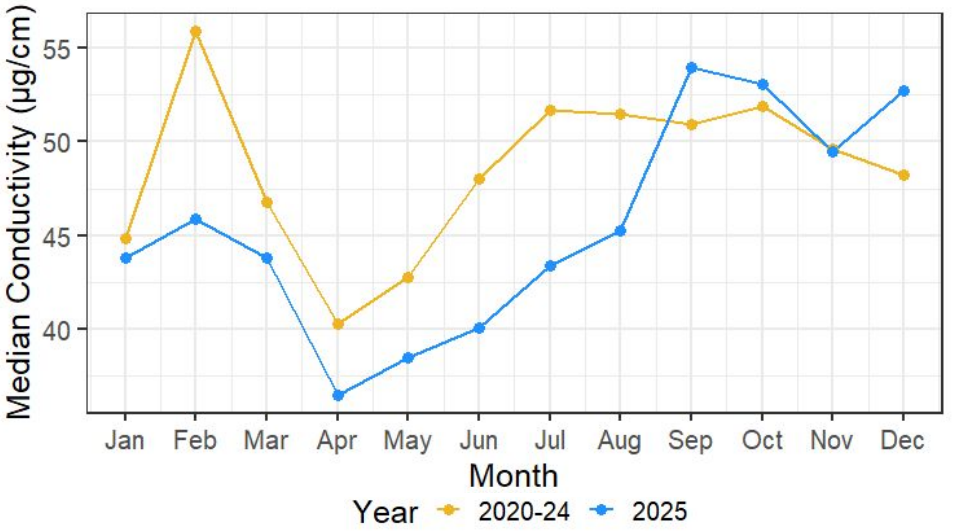
Data analyzed from Jan 2020 - Dec 2025

- Monitored since 2012
- 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

Values were lower in 2025 than in previous years for entire sampling period except Sep, Oct, and Dec. 2025 Values also followed the general trend of 2020-24 with a decrease to Apr before increasing to Oct. All values fell within the ideal range.



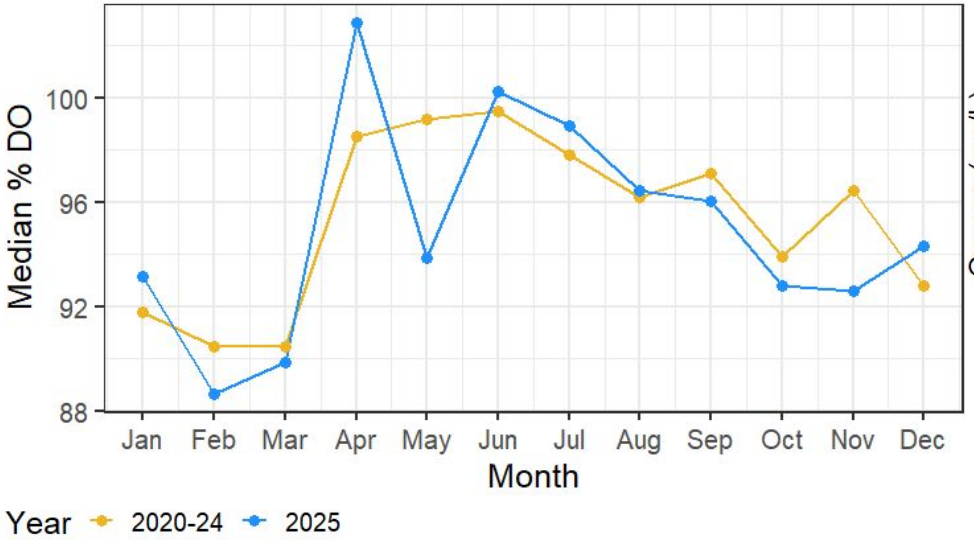
*values only available up to Nov 2025

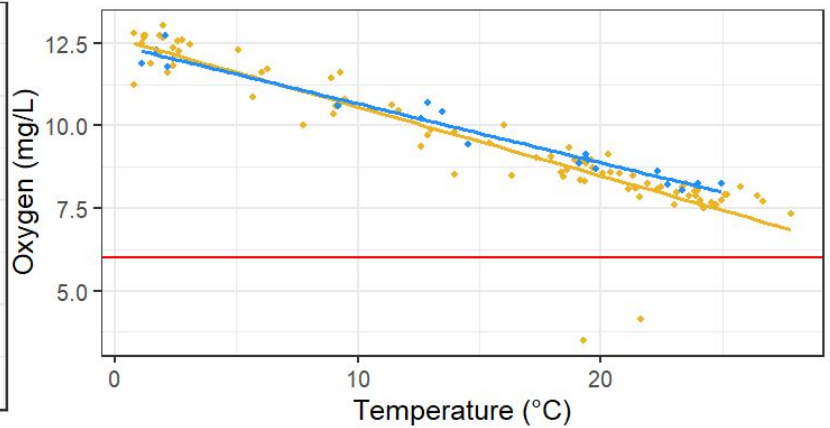
% Dissolved Oxygen

% DO followed the same trend in 2025 as in previous years besides a large decrease in May after spiking in Apr. All values fell within the ideal range.

DO & Temperature

There is a much stronger inverse relationship between parameters in 2025 than in previous years. All values stayed within the ideal range in 2025.





Ossipee Lake Outflow (GO-7)

**Data from Aug 2024 - Aug 2025

Parameter	Limit/Standard	Status
Ammonium	< 200 µg/L	In range
Orthophosphate	< 10 µg/L	Exceeded standard in Sep, Oct, Jan-May, Jul
Dissolved Organic Carbon	1-10 mg/L	In range
Total Dissolved Nitrogen	< 0.5 mg/L	Exceeded standard in Feb
Nitrate	< 0.05 mg/L	Exceeded standard in Oct, Jan, Feb
Chloride	< 10 mg/L	Exceeded standard in Oct, Feb, Mar
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-Nov 2024, Jan-Aug 2025
Calcium	< 15 mg/L	In range

Lovell River (OL-4u)

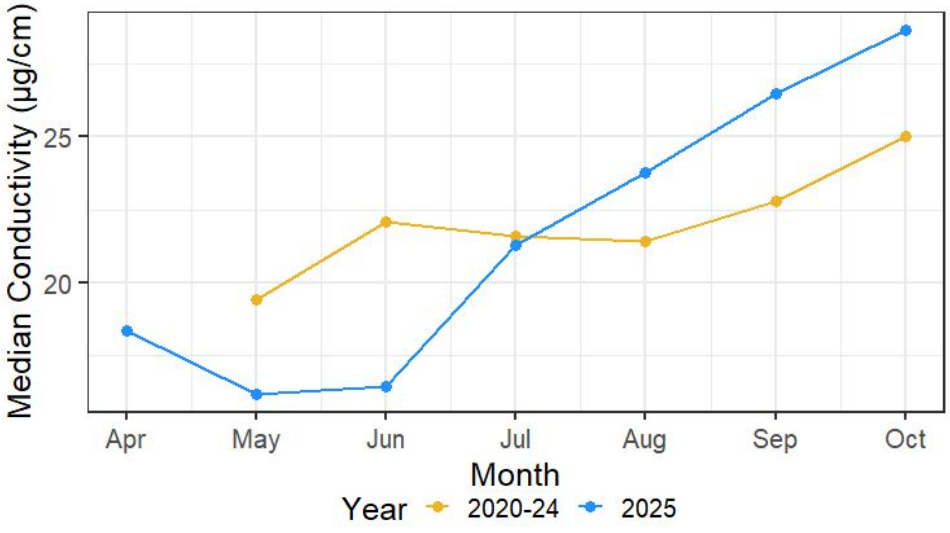
Data analyzed from May 2020 - Oct 2025

- Monitored since 2005
- 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	No change from 2024

Conductivity

Conductivity increased throughout the sampling period in 2025 like previous years, with 2025 values staying below 2020-24 values until Aug. All values were within the ideal range.



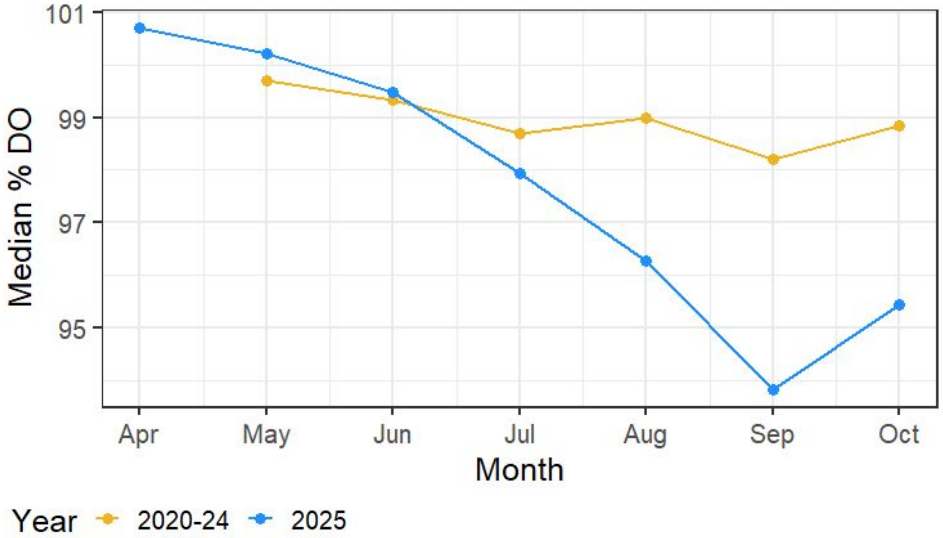
*values only available up to Nov 2025

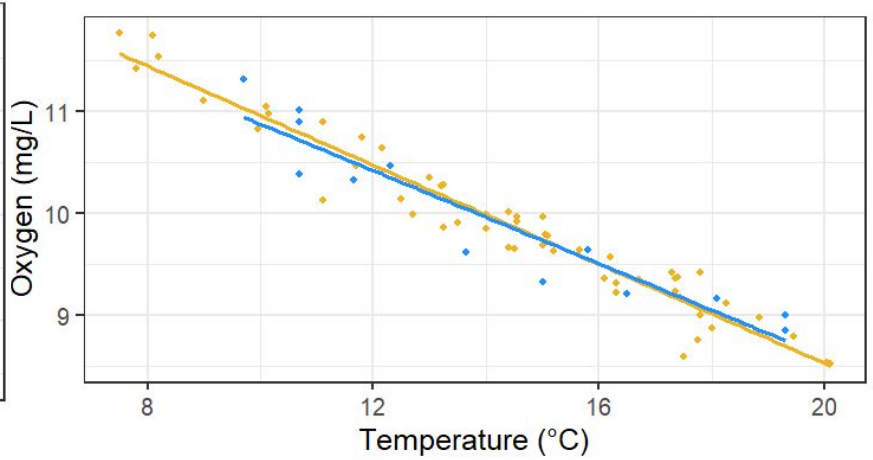
% Dissolved Oxygen

% DO decreased steadily to Sep before increasing in Oct in 2025, unlike 2020-24 where values remained more consistent. All values were within the ideal range.

DO & Temperature

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

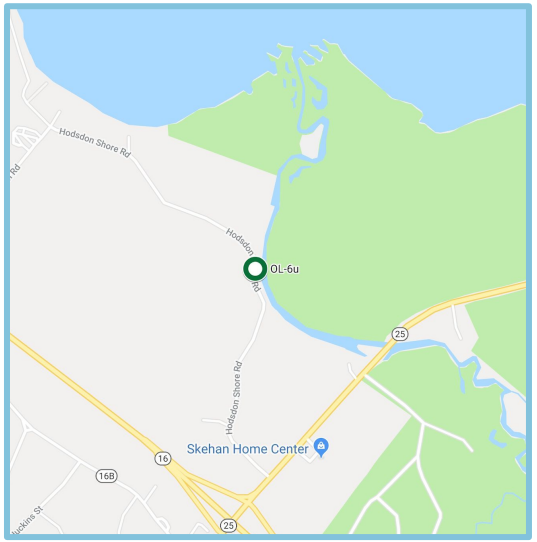




Pine River (OL-6u)

Data analyzed from May 2020 - Oct 2025

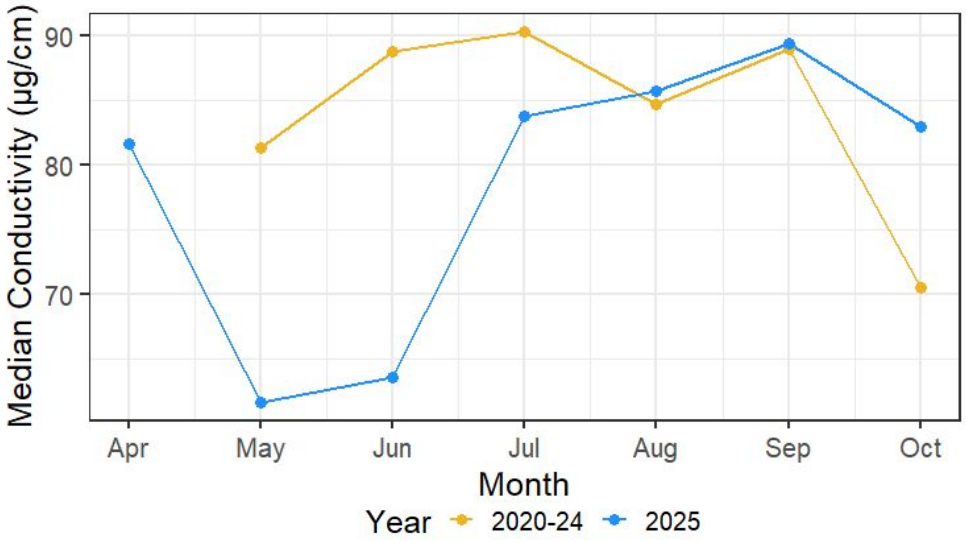
- Monitored since 2013
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP



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 increased from May to Sep before dipping in Oct 2025 similar to 2020-24. All values fell within the ideal range.



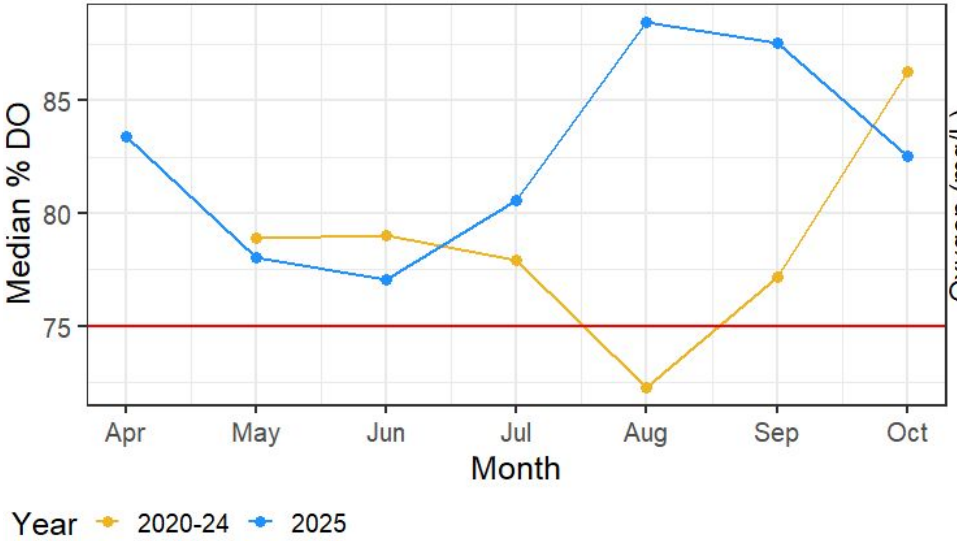
*values only available up to Nov 2025

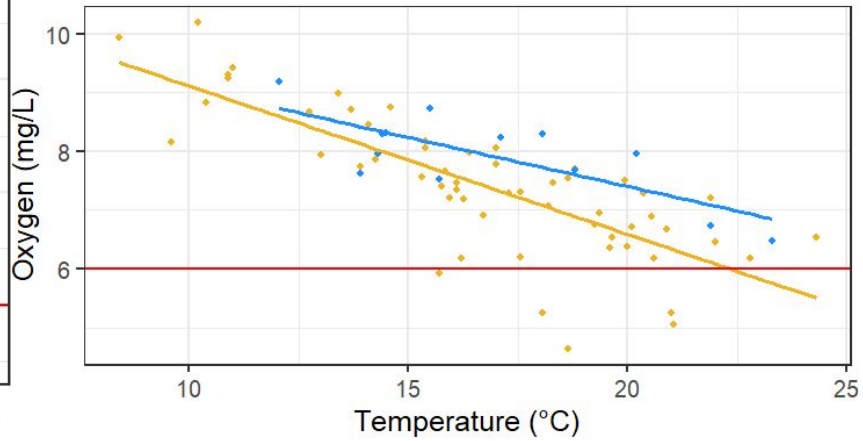
% Dissolved Oxygen

% DO values in 2025 showed an opposite trend to 2020-24 throughout the sampling period, increasing to a peak in Aug before decreasing to Oct. Unlike previous years, values in 2025 remained within the ideal range.

DO & Temperature

There is a slightly stronger inverse relationship between parameters in 2020-24 than in 2025. All values stayed within the ideal range in 2025 unlike previous years.





Red Brook (OL-7)

Data analyzed from May 2020 - Oct 2025

- Monitored since 2003
- Next to a wetland**
- Parameters measured: pH, turbidity, temperature, conductivity, DO, TP

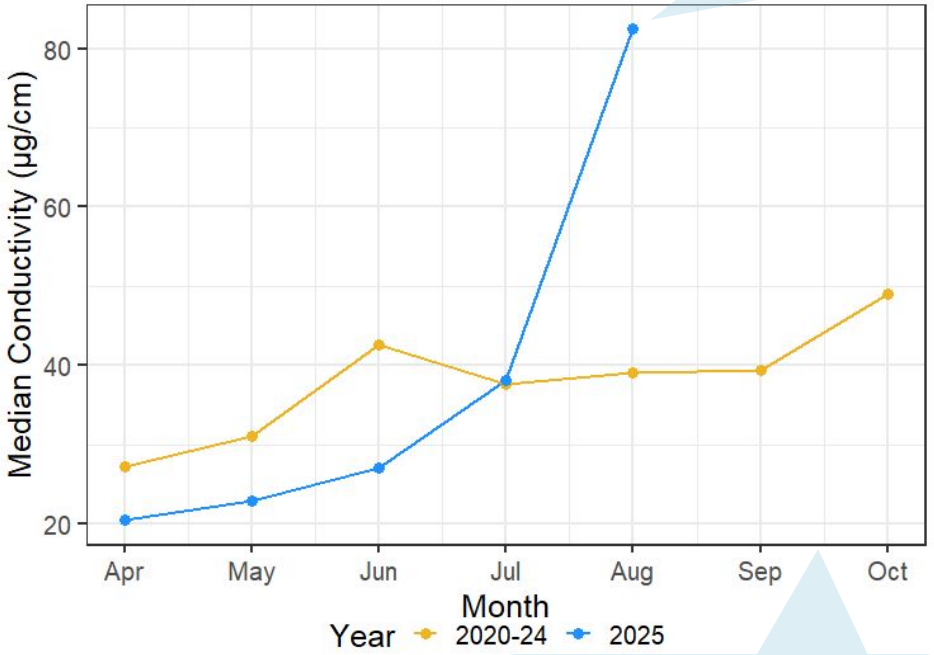
Red Brook (OL-7)

May 2020 - Oct 2025

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

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

As the amount of water in a river decreases (for example, during a drought) the concentration of salt increases since the water to salt ratio decreases. This would **increase conductivity** because the water is more saturated.



No samples taken because river was not flowing.

Conductivity

Unlike previous years where the parameter increased slowly, conductivity increased drastically to Aug, although this is likely due to the drought. All values were in the ideal range.

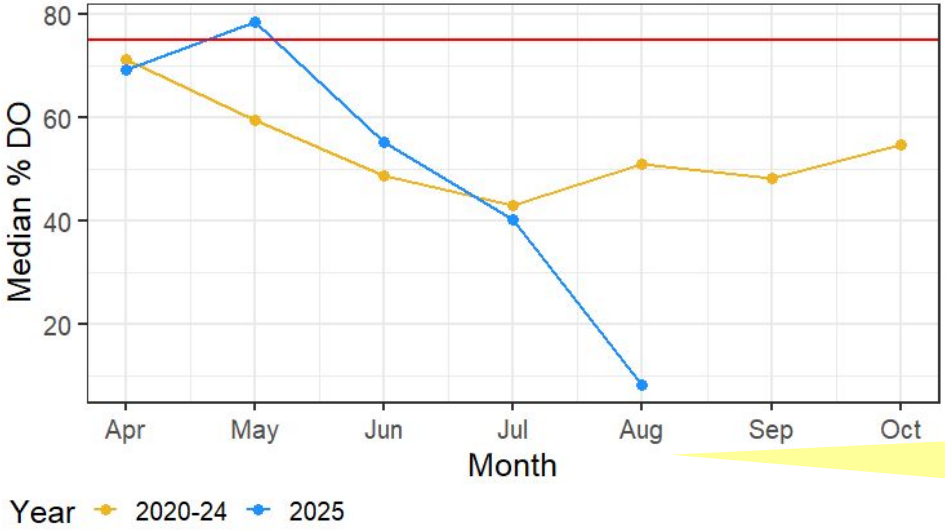
*values only available up to Nov 2025

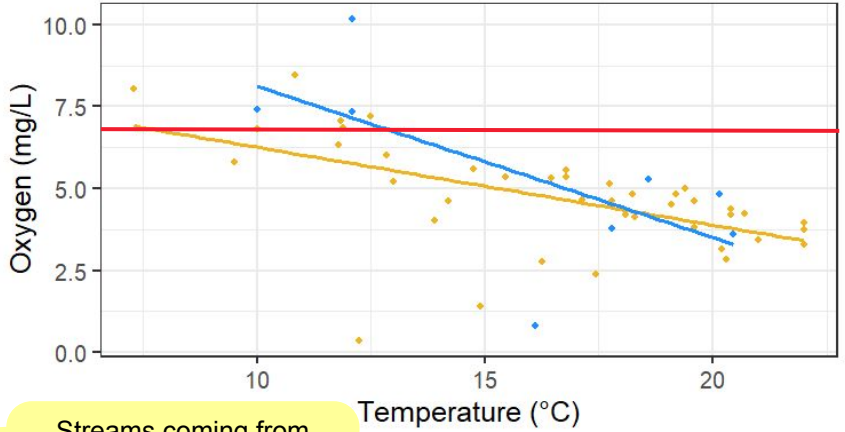
% Dissolved Oxygen

% DO decreased steeply from May to Aug 2025 unlike previous years. The parameter only fell within the ideal range in May 2025. All other values fell outside of the ideal range.

DO & Temperature

The relationship between temperature and oxygen is slightly stronger in 2025 than in previous years. The majority of values fell below the ideal range.





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

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 trend to previous years although with some unique high values (**sites OL-7, GO-2**). All values fell within the ideal range except for **GO-2** which was outside the ideal range for the entire sampling period.
Turbidity	All sites had a small decrease in turbidity. All fell within ideal range.
pH	All sites had a small decrease in pH. All sites fell within ideal range except for **OL-7**.
% Dissolved Oxygen	Followed similar trends to previous years although with a unique low values that fell outside the ideal range (**GO-5**). All other sites fell within the ideal range except for **OL-7**.
DO & Temperature	Consistent inverse relationships.
Total Phosphorus (TP)	Change varied across sites with a majority experiencing a decrease in TP. All fell within ideal range, although **OL-7** approached the limit (27.2 µg/L).

What can Ossipee do to protect its water?

In Towns

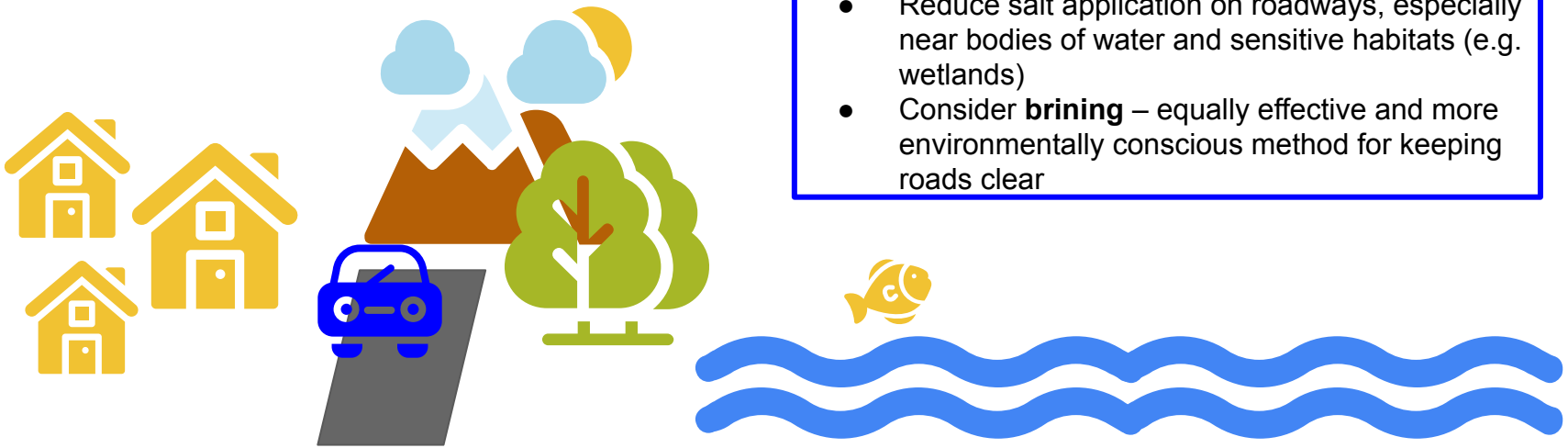
- Monitor the effectiveness of culverts
- Work to replace culverts posing as safety and environmental hazards
- Maintain riparian areas (Streamside Management Zones) and monitor habitats near bodies of water for major changes

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