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MINUTES
March 3, 2022

MEMBER PRESENT: Co-Chair Marcia McKenna; Co-Chair Ralph Lutjen; Planning Board Representative Marc Ohlson; Robert Stone, Ted Slader, Alternate

MEMBER EXCUSED: Selectmen's Representative Bill Lord; Emily Bass; Alternate Noreen Downs

OTHERS PRESENT: Green Mountain Conservation Commission's Jill Emerson and Caitlin Noseworthy; Town Administrator Linda Shackford; Mad TV Moselle Spiller

MEETING POSTED: February 28, 2022 at Madison Town Hall Upper & Lower, Madison & Silver Lake Post Offices.

CALL TO ORDER: McKenna called the meeting to order at 7:00pm

ELEVATE ALTERNATE: **Motion** by McKenna, seconded by Lutjen to elevate Slader to a voting member for this evening's meeting. The motion passed unanimously.

APPROVAL OF MINUTES: **Motion** by Lutjen, seconded by Slader to accept the minutes of the March 10, 2022 meeting as written. The motion passed **unanimously**.

McKenna added to the agenda Discussion of Commission Officer Recommendations

PUBLIC COMMENTS: There were none.

OLD BUSINESS:

Chain of Ponds – McKenna is meeting with Upper Sacco Valley Land Trust on March 18th to discuss the purchase of the property. Discussion is to include how much involvement the Town would offer and financing of the purchase.

Updated Conservation Property Site Inspection Form – Lutjen was able to find an old form used by the Commission for property inspections. It was suggested to have the form on the website for ease of use. During review of the form thoughts of items to incorporate were discussed and those included location of kiosks, signage and availability of trail maps. Consideration of eliminating “how long to hike the trail” as it varies amongst the hiker’s skill level. Lutjen will attempt to modify the form and make it available for review by the commission.

McNair Property – McKenna reported that Tim Nolin was able to go out on the McNair easement and locate the monuments still there that outline the easement boundaries. There were stretches without markers but the boundaries appeared obvious to Nolin. McKenna attended the 02/22/2022 BOS meeting and the Selectmen asked for the boundaries to be blazed. McKenna will contact the new owners, Whitaker and Fadden, after the blazing is complete to ask them to take a look. There has been no intent to cut submitted for the property yet. Nolin suggested protection of the wetlands using 100’ best management practices that include the stream along East Madison Road. Eventually McKenna assumes the property will be back on the market and hopes that the Town can secure it stating that is a situation that show a reason for passing the petition warrant article next week regarding RSA 36.

McKenna discovered today that the commission’s \$5,000 warrant article was not on this year’s warrant. McKenna stated that Lord said it goes on every year but somehow it was omitted from the warrant after being on for the last 10-12 years except for 1 year that the commission offered not to put it up.

NOMINATION OF OFFICERS: McKenna noted that Bass, Downs and Ohlson’s terms are up this year making the assumption that all would like to be re-appointed. McKenna asked that the BOS re-appoint them.

McKenna offered to serve as the chairperson for the coming year and also offered to step aside if someone else would like the position. It was suggested that McKenna and Lutjen serve as co-chairs. **Motion** by Ohlson, seconded by Slader to re-appoint McKenna and Lutjen as co-chairs for the next year. The motion passed unanimously.

NEW BUSINESS:

GMCG Water Quality Testing and Educational Programs Presentation – Jill Emerson and Caitlin Noseworthy presented to the Board the results of the 2021 water sampling.

- See Report attached

OLD HOME WEEK: The Board discussed the plan for the annual Old Home Week presentation with Lutjen reminding all of the great success of last year’s presentation. There are several places to check into interactive programs with Squam Lake Science Center and Loon Center being suggested. McKenna asked the member to do some research online.

DOWN’S EMAIL: An email containing a request that the commission review warrant article #20 regarding the adoption of RSA 36-A:4-a for concern that there is not a coherent understanding of its

history and purpose was received from Noreen Downs. McKenna explained that adoption of this article will assist in the purchase of larger more expensive parcels of land that the Town cannot afford on their own through partnerships with other entities. The wording of the RSA has been modified in the article to stipulate that the donation can only be for land within the town of Madison.

Lutjen noted that the BOS did not support this article with McKenna adding that she feared Josh Shackford did not understand the reason for the article.

Lutjen feels it would be important to indicate qualifications for the donation and outline it for Town Meeting. McKenna feels the taxpayers deserve to know of any contributions with Ohlson adding it would be beneficial to explain to the public the reason for this coming up now; the Chain of Ponds, David Pond and McNair Easement properties.

NHDES PFAS: Code Officer Boyd found some information regarding PFAS but the members were not sure what the information meant. The members hoped to obtain more information with hopes that Boyd can educate them and give an updated status.

WETLANDS APPLICATION: Notification was received of an NHDES wetlands application for the construction of a boardwalk. The subject property is the home at the corner of Route 113 and Winter Road. Ohlson commented that had that area been previously deemed a prime wetland it may have prevented this application.

SELECTMEN'S REPORT: No items

PLANNING BOARD REPORT: Ohlson reported that the Planning Board met last night for a preliminary review of a 3-lot cluster subdivision on Danforth Lane.

ADMINISTRATIVE CORRESPONDENCE:
NHDES Supply Lines with the Source Newsletter

ADJOURNMENT: Ohlson made a **Motion** to adjourn; Stone seconded. All Approved. The meeting adjourned at 8:25pm.

Respectfully Submitted,

Linda Shackford
Town Administrator



Madison Water Quality Overview

Jill Emerson and Caitlin Noseworthy

Water Quality Coordinator and Water Quality Americorps Assistant

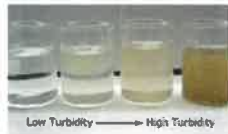
Green Mountain Conservation Group

RIVERS parameters

GMCG volunteers tested parameters

- **Turbidity**

- Clarity of the fluid
- Higher level of suspended particles = higher temperature



- **Temperature**

- Metabolism increases with higher temperatures, which can result in lower DO readings
- Different organisms prefer different temperatures

- **pH**

- Pure water is 7.0
- Most natural water in NH is slightly acidic
- Aquatic life prefers pH between 6.5 and 8.2



- **Dissolved Oxygen**

- Measures ability to support life
- VBAP school program looks for various macroinvertebrates which are intolerant to low DO readings

- **Conductivity**

- Ability of water to pass an electrical charge
- Based on other elements in the water that have positive (Mg^+ , Ca^+) or negative (Cl^- , NO_3^-) charges
- Proxy for road salt ($NaCl$ or $CaCl_2$)

- **Total Phosphorus (TP)**

- With nitrogen, the two most important nutrients for plant and microbe life
- Environmental increases indicate decomposition (i.e. sewage)

- **General changes to their site**

- Road work
- New construction/demolition



Water Quality Standards – Acceptable limits

Either from NHDES or EPA*

- Dissolved O₂: between 6-11mg/L and between 75% and 120%
- Conductivity: below 100 uS/cm
- pH: between 6-8, preferably close to 6.5, unless naturally occurring as less, then no more than 1 pH shift
- Turbidity: less than 10 NTU, unless baseline data indicates naturally occurring turbidity, then standard is less than 10 NTU above background levels (in our cases, there are no sites with naturally occurring turbidity above 10 NTU)
- Temperature: No standard, but monitored for changes
- Total P: under 30ug/L, over this is considered “nuisance levels”

Each site we monitor will have naturally occurring differences due to geology, plant life, etc.

*The EPA and NHDES have slight differences between their acceptable limits

**UNH COVID 19 protocols limited laboratory testing and sampling processing in 2020

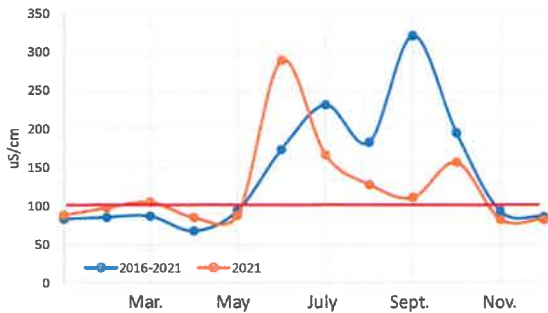
GM-1 Banfield Brook (monitored since 2002) 2016-2021 Data Snapshot

Collecting for: pH, turbidity, TP (*data through Spring 2021), temperature, conductivity, dissolved O₂, TDN, cations, anions, silica, DOC



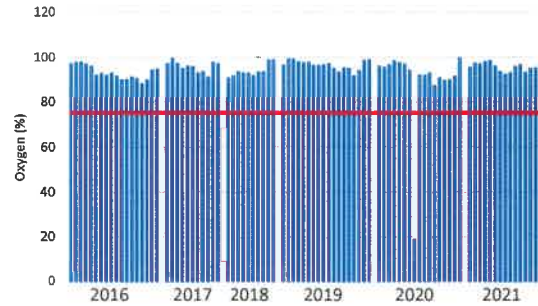
Parameter	Status
pH	Stable
Turbidity	Stable
Total P*	Improved in 2020-2021; low variability and values compared to past years

Conductivity by Month



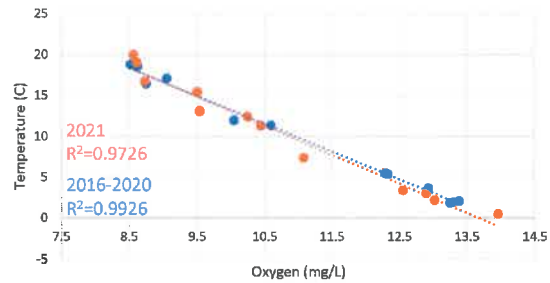
Conductivity values in late summer and early fall were lower than expected. However, multiple points were at or above 100 uS/cm with a peak nearing 300 uS/cm. These values indicate that conductivity is having a negative impact on water quality.

Dissolved Oxygen Percent Saturation



New Hampshire State DO standard for Class A waters is **above 75%** during the months GMCG tests.

Dissolved Oxygen vs. Temperature



Dissolved Oxygen (DO) has an inverse relationship with temperature: as temperature increases, DO decreases. The R² values from 2021 (orange) show a similar value compared to combined 2016-2020 values (blue) which indicates not much change overall for DO levels.

**GM-1 Banfield Brook (monitored since 2002)
2016-2020* Data Snapshot**

*Data through July 2020

Parameter	Status
Ammonium	Stable
Nitrate	Stable
Total Dissolved Nitrogen	Stable
Dissolved Organic Nitrogen	Stable
Sodium	Stable; occasionally neared typical surface water concentrations (50 mg/L)
Chloride	Consistently above typical surface water concentrations (50 mg/L)
Dissolved Organic Carbon	Stable
Calcium	Decreased; values nearing 1.5 mg/L threshold that some species need to survive**

**Weyhenmeyer, 2019

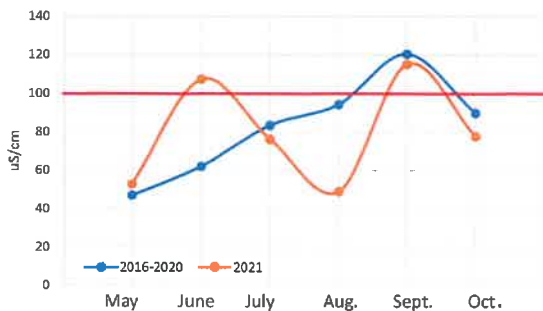
GM-3 Forrest Brook (monitored since 2004) 2016-2021 Data Snapshot

Collecting for: pH, turbidity, TP (*data through 2019), temperature, conductivity, dissolved O₂



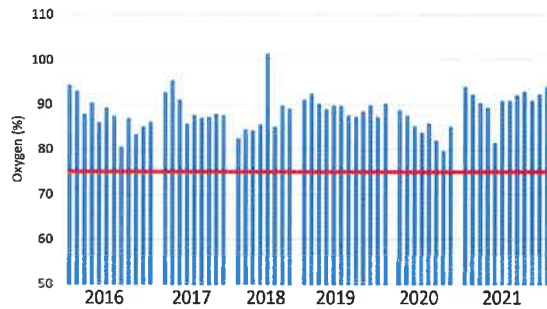
Parameter	Status
pH	Stable
Turbidity	Stable
Total P*	Worsening; Highest value seen in the last 5 years and increasing trend over that time span.

Conductivity by Month



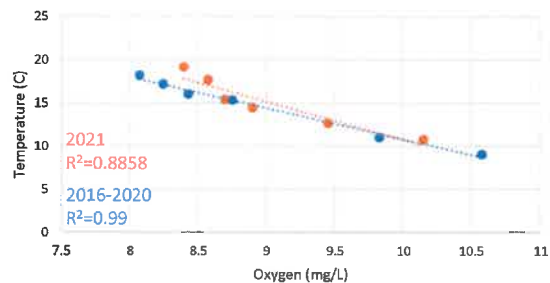
Conductivity was more variable at OL-9u in 2021 compared to 2016-2020. Values above 100 uS/cm are considered above the NH minimal disturbance levels.

Dissolved Oxygen Percent Saturation



New Hampshire State DO standard for Class A waters is **above 75%** during the months GMCG tests.

Dissolved Oxygen vs. Temperature



Dissolved Oxygen (DO) has an inverse relationship with temperature: as temperature increases DO decreases. The R² values from 2021 (orange) show a similar value compared to combined 2016-2020 values (blue) which indicates not much change overall for DO levels.

GM-4 Ferrin Brook (monitored since 2013) 2016-2021* Data Snapshot

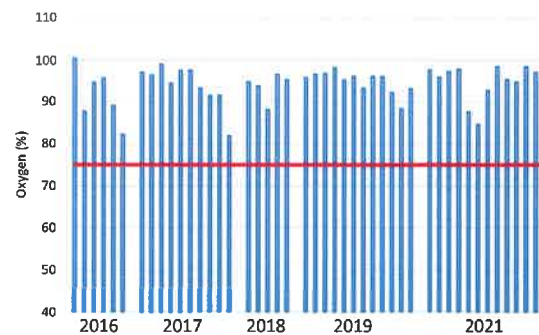
*Flow not maintained in 2020 due to drought conditions

Collecting for: pH, turbidity, TP (**data through 2019), temperature, conductivity, dissolved O₂



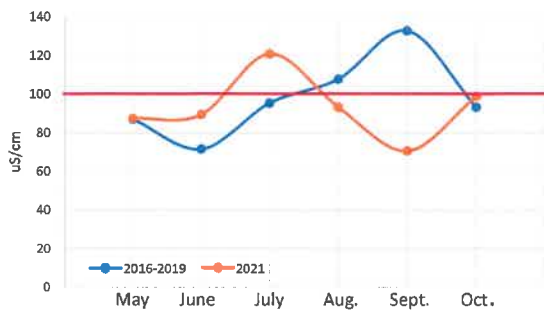
Parameter	Status
pH	Stable
Turbidity	Increased in 2021; still well below nuisance levels
Total P**	Some of the highest values seen in 5 years but still below nuisance levels

Dissolved Oxygen Percent Saturation



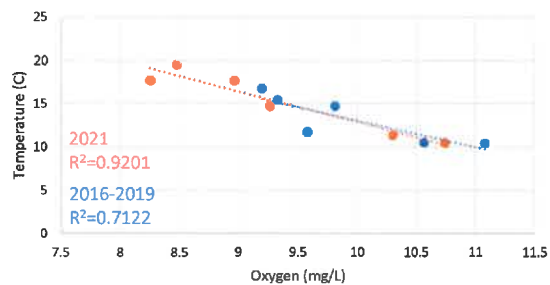
New Hampshire State DO standard for Class A waters is **above 75%** during the months GMCG tests.

Conductivity by Month



Conductivity was much lower in September than expected at GM-4 in 2021 compared to 2016-2019. Values above 100 uS/cm are considered above the NH minimal disturbance levels.

Dissolved O₂ vs. Temperature



Dissolved Oxygen (DO) has an inverse relationship with temperature: as temperature increases, DO decreases. The R² values from 2021 (orange) show a higher value compared to combined 2016-2019 values (blue) which indicating there was a more pronounced relationship between the factors in 2021.

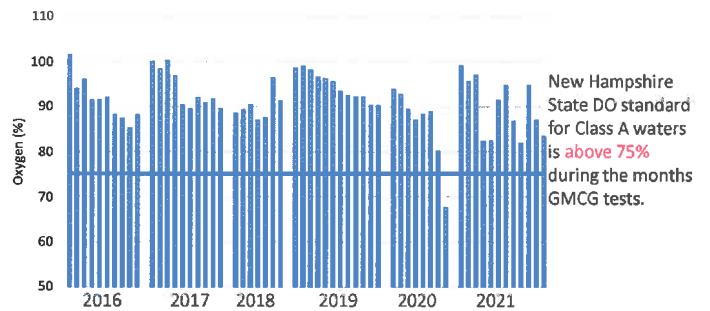
GM-5 Mill Brook (monitored since 2013) 2016-2021 Data Snapshot

Collecting for: pH, turbidity, TP (*data through 2019), temperature, conductivity, dissolved O₂

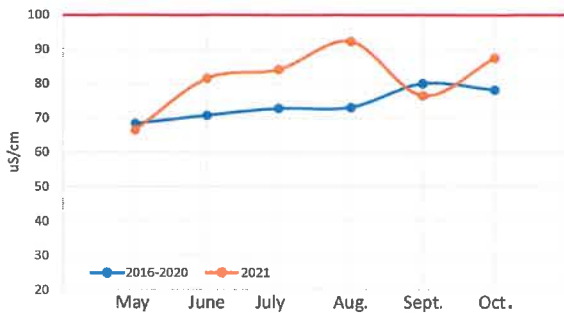


Parameter	Status
pH	Stable
Turbidity	Stable
Total P*	Worsening; Highest value seen in 5 years; spiking above 50 ug/L which is above nuisance levels

Dissolved Oxygen Saturation

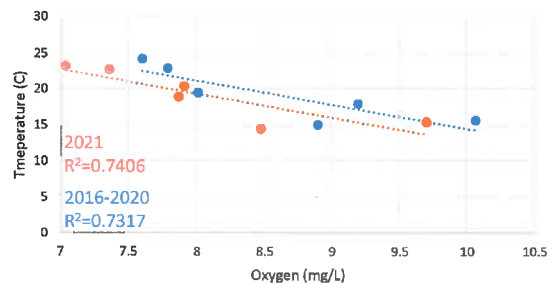


Conductivity by Month



Conductivity was higher at GM-5 in 2021 compared to 2016-2020. Values were still below 100 uS/cm which indicates good water quality in respect to salt levels.

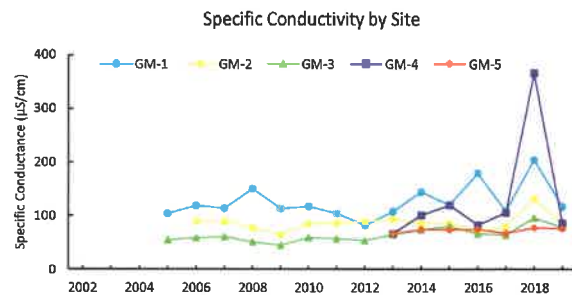
Dissolved O₂ vs. Temperature



Dissolved Oxygen (DO) has an inverse relationship with temperature: as temperature increases DO decreases. The R² values from 2021 (orange) show a similar value compared to combined 2016-2020 values (blue) which indicates not much change overall for DO levels.

15 Year Water Quality Report Notes

- All sites have remained stable with pH values between 6-7
- There was a slight increase in turbidity at GM-3 and GM-1 but the values are still low
- Dissolved oxygen concentration had a decreasing trend at GM-3 and there was a slight decrease in dissolved oxygen percent saturation at GM-01
- GM-1 conductivity values consistently above 100 $\mu\text{S}/\text{cm}$, GM-4 saw large spike in levels in the summer of 2018



<https://www.gmcg.org/15-year-water-quality-report/>

Water Quality Summary

- GMCG monitors four sites in Madison. Sampling has been discontinued at GM-2 as of July 2021 and is omitted from this report. Overall, each of the sites have had good water quality over the last five years.
- Areas of concern
 - GT-1 pH levels: 2021 values were consistently below 6 which is the minimum standard for freshwater
 - GT-1 had some total phosphorus values above nuisance levels
 - GM-1 has high chloride levels
 - GM-1 calcium levels have decreased over the last five years. Calcium levels should continue to be monitored as values have neared the 1.5 mg/L minimum needed for some aquatic species' survival
 - Continue to monitor conductivity to look for impacts of road salt
 - GM-1 conductivity levels peaked at almost 300 uS/cm. GM-3 and GM-4 levels were sometimes at or above 100 uS/cm. GM-5 levels neared 100 uS/cm
 - Total phosphorus levels should continue to be closely monitored as 3 of the 4 sites saw a increase in 2021.

What can Madison do to protect its waters?

1. Encourage residents to get their septic systems checked
2. Reduce salt usage in roadways, especially those near or around bodies of water
3. Maintain riparian habitats around bodies of water
4. Use best management practices (BMPs) for any home/business on or near surface waters
5. Monitor the effectiveness of culverts in your town and replace those as needed



Report respectfully submitted by J. Emerson and C. Noseworthy, Water Quality Coordinator and AmeriCorps Water Quality Resources Assistant at GMCG