

# Annual Water Quality Report

Reporting Year  
2022



## Concord Water System

PWS ID# 0501010



## INTRODUCTION

### *What is a Consumer Confidence Report?*

The City of Concord's Water Department is pleased to present the 2023 Annual Water Quality Report. This report summarizes the results of drinking water tests performed between 01/01/2022 to 12/31/2022 and is provided to keep you informed about the quality of the water you rely on every day. An extensive amount of information is provided in this report. Feel free to contact us if you would like help understanding the information provided or have suggestions for future reports.

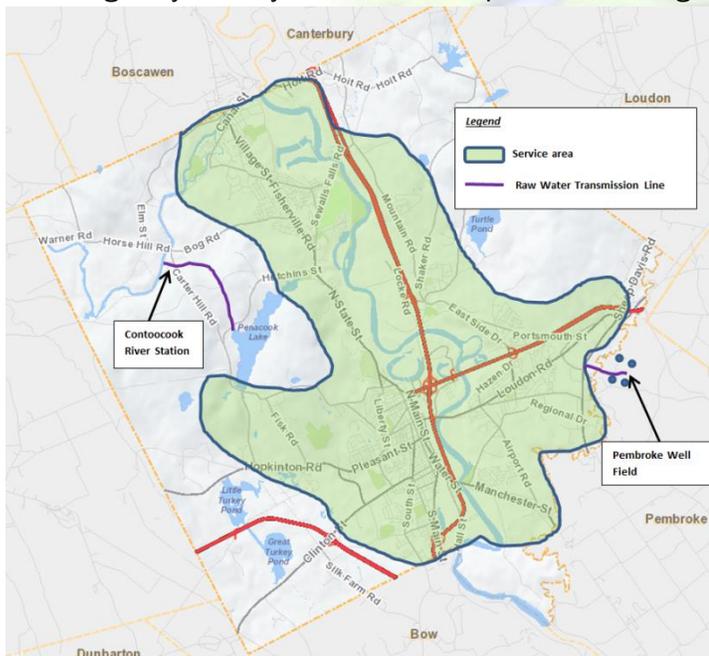
Our mission is to provide the community of Concord with drinking water that is of higher quality than all current State and Federal drinking water quality standards. To follow through on this commitment we have joined the American Water Works Association (AWWA) Partnership for Safe Water. This is a voluntary program for systems looking to provide a higher quality than the minimum Federal requirements. This ensures the water being provided to all our consumers and businesses is of the highest quality possible.

The Concord Water Department is continuously monitoring our finished water to verify its safety and consistency. We remain committed to not only meet water quality standards but also to additional goals of source water protection, water efficiency, system improvements, fire service capability and community education. One example, is our EPA Water Sense Partner Program. This is a voluntary program for water systems looking to educate and support water conservation throughout their community.

## SOURCE & TREATMENT

### *Where does my water come from?*

Water supplied to Concord water system customers comes from the Hutchins Street Water Treatment Plant, on the shores of Penacook Lake in West Concord. Penacook Lake is a surface water supply that has been the primary source of water for the City since 1872. The current water treatment plant was constructed in 1974 after the Safe Drinking Water Act was passed. Penacook Lake has a 2500 acre drainage area called a watershed. This watershed is managed by the City of Concord and protected through limited use and zoning restrictions to minimize possible



### SOURCE WATER ASSESSMENT SUMMARY

In 2003 the NH Department of Environmental Services evaluated Concord's three sources of water for 14 risk factors that could affect water quality. Examples of these risk factors include; proximity of highways, proximity of known contamination, and percentage of urban land cover.

*Penacook Lake received 11 low and 1 medium risk factor.*

*Contoocook River received 3 low, 6 medium, and 2 high risk factors.*

*Sanders Wells received 8 low, 2 medium, and 2 high risk factors.*

The complete Source Assessment Report is available for review at the Department of General Services. For more information, call (603) 228-2737, or visit the NHDES Drinking Water Source Assessment website at <https://www.des.nh.gov/organization/divisions/water/dwgb/dwspp/reports/documents/concord.pdf>

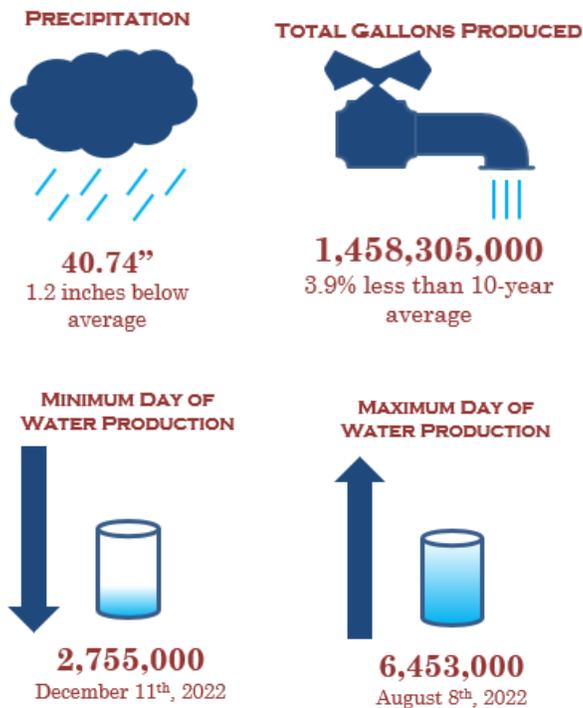
contaminants to the lake. The lake has a safe yield of 2.5 Million Gallons per Day (MGD) and an average annual daily use of 4.0 MGD. Because of this, there are certain times the watershed cannot supply enough water for the city. During these times water is transferred from the Contoocook River into Penacook Lake. In addition, Concord has a 1.0 MGD backup well supply in Pembroke in case of emergencies.

### *How do you clean water?*

At the Hutchins Street Water Treatment Plant, water is cleaned through a conventional treatment process with 5 key steps, coagulation, flocculation, sedimentation, filtration, and disinfection. The filter media is a mix of Silica Sand and Granular Activated Carbon. After filtration the water is then disinfected with Sodium Hypochlorite, Fluoride (hydrofluorosilicic acid) is added prior to entering the clearwell. After leaving the clearwell, pH is adjusted with Sodium Hydroxide and CO<sub>2</sub> for corrosion control and alkalinity adjustment. Finally,

ammonium sulfate is added to create a long lasting secondary disinfectant, called monochloramines, which protects the treated water from microbial recontamination on the way to homes and businesses. The water sent out into the distribution system flows through a network of almost 200 miles of water main and into five water storage tanks (our tanks have a combined storage capacity of 7.5 Million Gallons). This process is a 24/7/365 commitment from the water department to our customers.

## 2022 BY THE NUMBERS



### How do CIP projects affect water quality?

Concord believes in sustainability through re-investments in its Capital Improvement Plan (CIP). Capital improvement projects will increase the resiliency and quality of the water system. Here are some of Concord's CIP projects that have either been recently completed or are currently underway...

- ❖ Distribution system replacement projects in step with the City of Concord's pavement replacement program.
- ❖ A replacement high lift pumping station is near completion. This new station will replace our existing 1940s station.
- ❖ Upgraded meters are being installed throughout the city as well which will reduce reading time and provide accurate reading well into the future.

Continued re-investment will ensure that the City has an up to date and reliable water system that will support the community as it flourishes and thrives.

## ABOUT DRINKING WATER

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-

## Penacook Lake Raw Water Quality Results 2022

	Contaminant (Unit of Measure)	Violation	Level Measured	Range
Unregulated Substances	Bromide (ppm) 2019	No	Highest Measurement: 0.012	0.012
	Total Organic Carbon (ppm) 2019	No	Highest Measurement: 2.7	2.71
LT2 Round 2	Giardia (Field Filtered) 2018	No	Average: 0.015	0 - 0.09
	Cryptosporidium (Field Filtered) 2018	No	Average: 0.015	0 - 0.09
	MPN 2018	No	Average: 253.7	27.5 - 1119.9
	E. coli 2018	No	Average: 0	0-1
Additional Testing	Alkalinity (ppm)	No	Average: 7.3	7 - 8
	Aluminum (ppm)	No	Average: 0.0041	<0.05 - 0.0086
	Calcium (ppm)	No	Average: 4.2	3.8 - 4.5
	Chloride (ppm)	No	Average: 26	25 - 27
	Color	No	Average: 12.2	9 - 24
	Conductivity (umhos/cm)	No	Average: 118	114 - 122
	DOC (ppm)	No	Average: 2.61	2.42 - 2.87
	Dissolved Oxygen - 5ft from surface (ppm)	No	Average: 8.97	7.99 - 11.04
	Hardness (ppm)	No	Average: 11.5	9.5 - 15.4
	Iron (ppm)	No	Average: 0.042	<0.05 - 0.110
	Magnesium (ppm)	No	Average: 0.3	<1.0 - 1.0
	Manganese (ppm)	No	Average: 0.020	0.012 - 0.034
	pH	No	Average: 6.85	6.71 - 6.96
	Secchi Disk (ft)	No	Average: 19.7	16.0 - 22.9
	Sodium (ppm)	No	Average: 15.5	14.8 - 16.0
	Sulfate (ppm)	No	Average: 5.3	5 - 6
	TOC (ppm)	No	Average: 2.63	2.46 - 2.93
	Turbidity (NTU)	No	Average: 0.54	0.35 - 1.64
	UV Absorption (cm-1)	No	Average: 0.044	0.032 - 0.053
	Zinc (ppb)	No	Average: 5.4	2.9 - 7.9

occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in source water include:

**Microbial contaminants**, such as bacteria and viruses, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

**Inorganic contaminants**, such as salts and metals, which can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.

**Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

**Organic chemical contaminants**, including per- and polyfluoroalkyl substances, synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.

**Radioactive contaminants**, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that tap water is safe to drink, EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The US Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

### *Why are there contaminants in my water?*

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline at 1-800-426-4791.

### *Do I need to take special precautions?*

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at 1-800-426-4791.

## Definitions

**Action Level or AL:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which water systems must follow.

**Maximum Contaminant Level or MCL:** The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available technology.

**Maximum Contaminant Level Goal or MCLG:** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

**Maximum Residual Disinfectant Level or MRDL:** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

**Maximum Residual Disinfectant Level Goal or MRDLG:** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

**Treatment Technique or TT:** A required process intended to reduce the level of a contaminant in drinking water.

## Abbreviations

**HAA5:** Haloacetic Acids.

**mg/L:** milligrams per Liter, also known as ppm: parts per million.

**n/a:** not applicable.

**ng/L:** nanogram per Liter, also known as ppt: parts per trillion.

**NTU:** Nephelometric Turbidity Unit.

**pCi/L:** picoCurie per Liter.

**TTHM:** Total Trihalomethanes.

**ug/L:** micrograms per Liter, also known as ppb: parts per billion.



New Hampshire Water Works  
Young Professionals Committee

NH Water Works Association- Young  
Professionals hosted its 2<sup>nd</sup> annual reservoir  
clean up event in September 2022.

Thank you to everyone who helped clean up  
Concord's watershed!

## WATER QUALITY MONITORING

### *What is the Unregulated Contaminant Monitoring Rule?*

The EPA is required to monitor for new substances that have the potential to become problems in drinking water. Under the UCMR, public water systems nationwide test every five years for the new possible contaminants. From these results EPA determines if additional drinking water regulations are needed. Concord has just finished testing its UCMR4 requirements for the years 2018-2020. Some of the contaminants tested were Metals, Pesticides, Alcohols, SVOCs, HAA groups, and Cyanotoxins. After all the water systems have finished their testing the EPA will announce whether the substances tested will need to be addressed further.

### Distribution Water Quality Results 2019-2020

Unregulated Contaminant		Violation	Average Level	Range
Briar Pipe	HAA5 Group (ug/L)	No	19.3	9.50 - 37.7
	HAA6Br Group (ug/L)	No	6.6	2.9 - 16.8
	HAA9 Group (ug/L)	No	25.5	12.5 - 53.2
Hall St WWTP	HAA5 Group (ug/L)	No	13.8	8.9 - 18.5
	HAA6Br Group (ug/L)	No	3.5	3.2 - 3.8
	HAA9 Group (ug/L)	No	17.3	12.1 - 22.3
EJP	HAA5 Group (ug/L)	No	15.6	11.0 - 18.3
	HAA6Br Group (ug/L)	No	3.2	2.8 - 3.9
	HAA9 Group (ug/L)	No	18.8	14.1 - 22.2
Agway	HAA5 Group (ug/L)	No	17.8	14.3 - 19.8
	HAA6Br Group (ug/L)	No	3.3	2.9 - 4.1
	HAA9 Group (ug/L)	No	21.1	17.2 - 23.9

### *What are PFC's?*

Per- and Polyfluoroalkyl Substances (PFAS) Per- and polyfluoroalkyl substances (PFAS), sometimes called PFCs, are a group of chemicals that are resistant to heat, water, and oil. PFAS have been classified by the United States Environmental Protection Agency (U.S. EPA) as an emerging contaminant on the national landscape. For decades, they have been used in many industrial applications and consumer products such as carpeting, waterproof clothing, upholstery, food paper wrappings, fire-fighting foams, and metal plating just to name a few. PFC's are still used today. PFAS have been found at low levels both in the environment and in blood samples from the general U.S. population. These chemicals are persistent, which means they do not break down in the environment.

### *Does my water have PFC's?*

The Concord water system has tested the raw and finished water at the water treatment plant and received results below detectable limits (laboratories are required to analyze down to at least 2 ppt or lower). The Pembroke wellfield, which consists of 4 separate wells, has also been tested. 3 of the 4 wells had results below detectable limits, and the 4th well showed a positive result for PFOA only, with an average level of 3.10 ppt. See the table for a summary of the results.



### PFC Water Quality Results 2020

Contaminant (Unit of Measure)		Violation	Level Measured	MCL	MCLG
Hutchins St Raw	PFHxS (ppt)	No	Highest Measurement: <2	18	0
	PFNA (ppt)	No	Highest Measurement: <2	11	0
	PFOA (ppt)	No	Highest Measurement: <2	12	0
	PFOS (ppt)	No	Highest Measurement: <2	15	0
Hutchins St Finished	PFHxS (ppt)	No	Highest Measurement: <2	18	0
	PFNA (ppt)	No	Highest Measurement: <2	11	0
	PFOA (ppt)	No	Highest Measurement: <2	12	0
	PFOS (ppt)	No	Highest Measurement: <2	15	0
Sanders Station Wells	PFHxS (ppt)	No	Highest Measurement: <2	18	0
	PFNA (ppt)	No	Highest Measurement: <2	11	0
	PFOA (ppt)	No	Highest Measurement: 3.51	12	0
	PFOS (ppt)	No	Highest Measurement: <2	15	0

### *Is there fluoride in my water?*

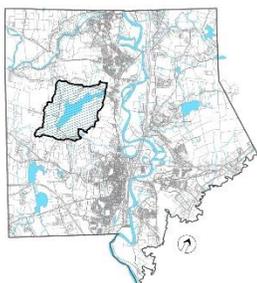
"Your public water supply is fluoridated. According to the Centers for Disease Control and Prevention, if your child under the age of 6 months is exclusively consuming infant formula reconstituted with fluoridated water, there may be an increased chance of dental fluorosis. Consult your child's health care provider for more information."

### *What is Turbidity? Why do we measure it?*

Turbidity is a measure of the cloudiness in a sample of water. Surface water systems monitor turbidity because it's a good indicator of water quality and the general effectiveness of the treatment process.

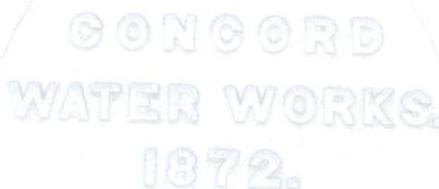
### What is water system efficiency?

Water system efficiency is a measurement of how much water produced by the treatment plant, goes through a customer meter or other approved source. Concord takes water system efficiency very seriously. In fact we are the only water utility in New Hampshire with a conservation technician on staff. The national average water system efficiency is 85%. This means that 15% of all water produced nationwide is unaccounted for. This could be from small leaks that do not surface, inaccurate metering devices from aged equipment, or water theft. Concord's system efficiency in 2022 was 86.4%, leaving only 13.6% unaccounted for. In 2022 Concord was a recipient of the NHDES Leak Detection grant. Concord is committed to continuously improving the efficiencies of our water system and will be replacing many older meters in 2023, and beyond, to further improve the system efficiency.



### Water Quality Parameters 2022

	Parameter	Average Level	Results Range	Secondary Drinking Water Standard SMCL
Secondary Contaminants	Chloride (ppm)	32.2	31 - 33	250
	Iron (ppm)	0.017	<0.05 - 0.065	0.3
	Manganese (ppm)	0.0144	<0.005 - 0.0245	0.05
	pH	9.2	9.02 - 9.36	6.5 - 8.5
	Sodium (ppm)	29.4	29 - 30	250
	Sulfate (ppm)	6.9	6.7 - 7.0	250
	Zinc (ppm)	0.0074	0.002 - 0.028	5
Additional Testing	Alkalinity as calcium carbonate (ppm)	29.8	29 - 31	
	Calcium	4.4	4.1 - 4.7	
	Hardness	12.1	10 - 16	



### Sanders Station Wells (Emergency Backup) Water Quality Results 2022

	Contaminant (Unit of Measure)	Violation	Level Measured	Range	MCL	MCLG	Likely Source
Inorganic Contaminants	Barium (ppb) (2021)	No	Average: 2.6	2.6	2000	2000	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
	Chloride (ppm) (2021)	No	Average: 41	41.0	250	n/a	Wastewater, road salt, water softeners, corrosion
	Chromium (ppb) (2021)	No	Average: 1.4	1.4	100	100	Discharge from steel and pulp mills; erosion of natural deposits
	Copper (ppm) (2021)	No	Average: 0.0087	0.0	1	n/a	Corrosion of household plumbing; erosion of natural deposits
	Iron (ppm) (2021)	No	Average: 1.1	1.1	0.3	n/a	Geological
	Lead (ppb)	No	Average: 1.8	1.0 - 2.7	AL: 15	AL: 15	Corrosion of household plumbing; erosion of natural deposits
	Nitrate as Nitrogen (ppm)	No	Average: 3.17	0.22 - 6.52	10	10	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
	pH (2021)	No	Average: 7.56	7.56	6.5-8.5	n/a	Precipitation and geology
	Sodium (ppm) (2021)	No	Average: 27	27	250	n/a	Road salt, septic systems (salt from water softeners)
	Sulfate (ppm) (2021)	No	Average: 6.7	6.7	250	n/a	Naturally occurring
Radioactive Contaminants	Compliance Gross Alpha (pCi/L) 2016	No	Highest Measurement: 0.7	<0.0 - 1.8	15	0	Erosion of natural deposits
	Combined Radium 226, 228 (pCi/L) 2016	No	Highest Measurement: 0.4	0.2 - 0.5	5	0	Erosion of natural deposits
PFC *	PFHxA (ppt) 2020	No	Average: 1.83	<2 - 2.92	n/a	n/a	Man-made contaminant
	PFOA (ppt) 2020	No	Average: 3.10	2.69 - 3.51	12	0	Man-made contaminant

## Hutchins Street Water Treatment Plant Water Quality Results for 2022

Contaminant (Unit of Measure)		Violation	Level Measured	Range	MCL	MCLG	Likely Source
<b>Microbiological Contaminants</b>	Total Coliform Bacteria	No	Of the 600 distribution system samples that were collected and analyzed in 2022, <b>NO</b> total coliform bacteria were detected.				Naturally present in the environment
	Turbidity (NTU)	No	Average: 0.12	0.07 - 0.28	1	n/a	Soil runoff
	Turbidity (Lowest monthly percent of samples meeting limit)	No	100%	n/a	TT: 95% of samples ≤ 0.3 NTU	n/a	Soil runoff
	Total Organic Carbon (% removal)	No	Average % Removal: 46%	38% - 65%	TT: Minimum removal 26%	n/a	Naturally present in the environment
<b>Inorganic Contaminants</b>	Aluminum (ppb)	No	Average: 11.5	7.8 - 18.4	50	n/a	
	Barium (ppb)	No	Highest Measurement: 5.6	5.6	2000	2000	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
	Chloramines (mg/L)	No	Average: 2.01	1.66 - 2.11	MRDL: 4	MRDLG: 4	Water additive used to control microbes.
	Fluoride (ppm)	No	Average: 0.68	0.63 - 0.73	4	4	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
	Copper (ppm) 2020	No	90th Percentile: 0.044 (0 of 33 sites were above AL)	n/a	n/a	n/a	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
		No	Average: 0.028	0.003 - 0.068	AL: 1.3	AL: 1.3	
Lead (ppb) 2020	No	90th Percentile: 5 (0 of 33 sites were above AL)	n/a	n/a	n/a	Corrosion of household plumbing systems, erosion of natural deposits	
	No	Average: 1	<1 - 8	AL: 15	AL: 15		
<b>Radioactive Contaminants</b>	Compliance Gross Alpha (pCi/L) 2016	No	Highest Measurement: 0.2	n/a	15	0	Erosion of natural deposits
	Combined Radium 226, 228 (pCi/L) 2016	No	Highest Measurement: 0.9	n/a	5	0	Erosion of natural deposits
<b>Disinfection Byproducts</b>	Haloacetic Acids (HAA) (ppb)	No	Highest Annual Average: 16.9	10 - 24	60	n/a	By-product of drinking water disinfection
	Total Trihalomethanes (TTHM) (ppb)	No	Highest Annual Average: 27.4	16 - 39	80	n/a	By-product of drinking water chlorination
<b>Unregulated Substances</b>	Manganese (ppb)	No	Average: 9.4	<5 - 25	n/a	n/a	Naturally-occurring element; used in steel production, fertilizer, batteries and fireworks; drinking water and wastewater treatment chemical; essential nutrient

### *What do I need to know about Lead?*

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. This water system is responsible for high quality drinking water, but cannot control the variety of materials used in your plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing cold water from your tap for at least 30 seconds before using water for drinking or cooking. Do not use hot water for drinking and cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://water.epa.gov/drink/info/lead/index.cfm>



Concord General Services  
Water Treatment Division  
311 North State Street  
Concord, NH 03301

## GET INVOLVED

Give us your feedback! Concord works hard to provide you with safe and clean drinking water and is constantly looking for ways to improve our process and report. If you have questions or would like more information about your drinking water, please contact

- ❖ Marco Philippon, Water Treatment Plant Superintendent 603-225-8696
- ❖ Chip Chesley, General Services Director 603-228-2737

Public Meetings/City Council Meetings are held the second Monday of every month. Stop on by or join in virtually. <http://concordnh.gov/282/City-Council>

## WATER EDUCATION

The New Hampshire Drinking Water Festival has educated and inspired fourth graders to conserve and protect our water resources for 29 years. To keep everyone safe, the 2022 festival was held as a virtual resource.

Concord has created three educational videos to help their cause- including a Water Treatment Plant Tour! Check out their website to see all three videos! <https://nhwaterfestival.org/>

