

Annual Drinking Water Quality Report

January through December 2020

TOWN OF NAUVOO WATER WORKS BOARD

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We are pleased to present to you this year's Annual Water Quality Report. This report is designed to inform you about the quality water and services we deliver to you every day. We want you to understand the efforts we make to continually improve the water treatment process and protect our water resources. We are committed to ensuring the quality of your water

Town of Nauvoo water source is purchased water from Lynn Water Work (Upper Bear Creek Reservoir). Nauvoo has approximately 710 number of customers. Nauvoo has one 35,000 capacity storage tank.

We want our valued customers to be informed about their water utility. If you want to learn more, please attend any of our regularly scheduled Board meetings. They are held on the Third Monday of the month at 6:00 P.M. in the office of Nauvoo Town Hall

Council Members

 **Mayor: Sheila Sizemore**  **Mayor Pro Tem.: Debrorah Barton**  **Regenia Manning**

 **Phil Jodoin**  **Keith Sizemore**  **Helen Mote**

Employees

 **Town Clerk: Nicole Byars**  **Water Clerk: Susan Davis**
 **Operator: Zeb Cobb**  **Operator: Aaron Buchanan**

Source Water Assessment

In compliance with the Alabama Department of Environmental Management (ADEM), a Source Water Assessment has been performed on our source water. This plan will assist in protecting our water sources. This plan provides additional information such as potential sources of contamination. It includes a susceptibility analysis, which classifies potential contaminants as high, moderate, or non-susceptible to contaminating the water source. All of the potential contaminants sited in the study area were rated as low risk to our water supply. The assessment has been performed, public notification has been completed, and the plan has been approved by ADEM.

Please help us make this effort worthwhile by protecting our source water. Carefully follow instructions on pesticides and herbicides you use for your lawn and garden, and properly dispose of household chemicals, paints and waste oil.

General Information

All drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. MCL's, defined in a List of Definitions in this report, are set at very stringent levels. To understand the possible health effects described for many regulated constituents, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

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 occurring minerals and radioactive material, and it 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 viruses and bacteria, 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 run-off, 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, storm water run-off, and residential uses.

Organic chemical contaminants, including 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 prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water. Based on a study conducted by ADEM with the approval of the EPA a statewide waiver for the monitoring of asbestos and dioxin was issued. Thus, monitoring for these contaminants was not required.

The Bear Creek Reservoir is tested for pathogens, such as *Cryptosporidium* and *Giardia*. These pathogens can enter the water from animal or human waste. All test results were well within state and federal standards. For people who may be immune-compromised, a guidance document developed jointly by the Environmental Protection Agency and the Center for Disease Control is available online at www.epa.gov/safewater/crypto.html or from the Safe Drinking Water Hotline at 800-426-4791. This language does not indicate the presence of cryptosporidium in our drinking water.

Some people may be more vulnerable to contaminants in drinking water than the general population. People who are immune-compromised such as cancer patients undergoing chemotherapy, organ transplant recipients, HIV/AIDS positive or other immune system disorders, some elderly, and infants can be particularly at risk from infections. People at risk should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

Based on a study conducted by ADEM with the approval of the EPA a statewide waiver for the monitoring of asbestos and dioxin was issued. Thus, monitoring for these contaminants was not required.

Information about Lead

Lead in drinking water is rarely found in source water but is primarily from materials and components associated with service lines and home plumbing. Your water system is responsible for providing high quality drinking water but cannot control the variety of materials used in plumbing components.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Use *only* water from the cold-water tap for drinking, cooking, and *especially for making baby formula*. Hot water is more likely to cause leaching of lead from plumbing materials. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. These recommended actions are very important to the health of your family.

Lead levels in your drinking water are likely to be higher if:

- Your home or water system has lead pipes, or
- Your home has faucets or fittings made of brass which contains some lead, or
- Your home has copper pipes with lead solder and you have naturally soft water, and
- Water often sits in the pipes for several hours.

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 www.epa.gov/safewater/lead.

PLAIN LANGUAGE DEFINITION

- **Not Required (NR)** – Laboratory analysis not required due to waiver granted by the Environmental Protection Agency for the State of Alabama.
- **Parts per million (ppm) or Milligrams per liter (mg/l)** - one part per million corresponds to one minute in two years or a single penny in \$10,000.
- **Parts per billion (ppb) or Micrograms per liter** - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.
- **Parts per trillion (ppt) or Nanograms per liter (nanograms/l)** - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.
- **Parts per quadrillion (ppq) or Picograms per liter (picograms/l)** - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in \$10,000,000,000,000.
- **Picocuries per liter (pCi/L)** - picocuries per liter is a measure of the radioactivity in water.
- **Millirems per year (mrem/yr)** - measure of radiation absorbed by the body.
- **Nephelometric Turbidity Unit (NTU)** - nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.
- **Variances & Exemptions (V&E)** - State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
- **Action Level – (AL)** the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Treatment Technique (TT)** - (mandatory language) A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.
- **Maximum Contaminant Level** - (mandatory language) The "Maximum Allowed" (**MCL**) is 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 treatment technology.
- **Maximum Contaminant Level Goal** - (mandatory language) The "Goal" (**MCLG**) is 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 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.
- **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.

Contaminants that may be present in source water include:

- **Microbial contaminants**, such as viruses and bacteria, 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 run-off, 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, storm water run-off, and residential uses.
- **Organic chemical contaminants**, including 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 run-off, and septic systems.
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

The tables below list all of the drinking water contaminants that were detected during the calendar year of this report. The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. Unless otherwise noted, the data presented in this table is from testing done in the calendar year of the report.

The EPA or ADEM requires us to monitor for certain contaminants less than once per year because the concentrations of these contaminants do not change frequently.

Table of Primary Contaminants

At high levels some primary contaminants are known to pose a health risks to humans. This table provides a quick glance of any primary contaminant detections.

CONTAMINANT	MCL	AMOUNT DETECTED	CONTAMINANT	MCL	AMOUNT DETECTED
Bacteriological			Endothall(ppb)	100	ND
Total Coliform Bacteria	< 5%	ND	Endrin(ppb)	2	ND
Turbidity	TT	0.30	Epichlorohydrin	TT	ND
Fecal Coliform & E. coli	0	ND	Ethylbenzene(ppb)	700	ND
Radiological			Ethylene dibromide(ppt)	50	ND
Beta/photon emitters (mrem/yr)	4	ND	Glyphosate(ppb)	700	ND
Alpha emitters (pci/l) (2010)	15	1.70	Haloacetic Acids(ppb)	60	48.75
Combined radium (pci/l) (2010)	5	ND	Heptachlor(ppt)	400	ND

Uranium(pci/l)	30	ND	Heptachlor epoxide(ppt)	200	ND
Inorganic			Hexachlorobenzene(ppb)	1	ND
Antimony (ppb)	6	ND	Hexachlorocyclopentadiene(ppm)	50	ND
Arsenic (ppb)	10	ND	Lindane(ppt)	200	ND
Asbestos (MFL)	7	ND	Methoxychlor(ppb)	40	ND
Barium (ppm)	2	0.02	Oxamyl [Vydate](ppb)	200	ND
Beryllium (ppb)	4	ND	Pentachlorophenol(ppb)	1	ND
Bromate(ppb)	10	ND	Picloram(ppb)	500	ND
Cadmium (ppb)	5	ND	PCBs(ppt)	500	ND
Chloramines(ppm)	4	ND	Simazine(ppb)	4	ND
Chlorine(ppm)	4	1.4	Styrene(ppb)	100	ND
Chlorine dioxide(ppb)	800	ND	Tetrachloroethylene(ppb)	5	ND
Chlotite(ppm)	1	ND	Toluene(ppm)	1	ND
Chromium (ppb)	100	ND	TOC	TT	2.33
Copper (ppm) (2020)	AL=1.3	0.06	TTHM(ppb)	80	61.13
Cyanide (ppb)	200	ND	Toxaphene(ppb)	3	ND
Fluoride (ppm)	4	0.58	2,4,5-TP (Silvex)(ppb)	50	ND
Lead (ppb) (2020)	AL=15	ND	1,2,4-Trichlorobenzene(ppb)	70	ND
Mercury (ppb)	2	ND	1,1,1-Trichloroethane(ppb)	200	ND
Nickel (ppm)	0.1	ND	1,1,2-Trichloroethane(ppb)	5	ND
Nitrate (ppm)	10	0.16	Trichloroethylene(ppb)	5	ND
Nitrite (ppm)	1	ND	Vinyl Chloride(ppb)	2	ND
Total Nitrate & Nitrite	10	0.16	Xylenes(ppm)	10	ND
Selenium(ppb)	50	ND			
Thallium(ppb)	2	ND			
Organic Chemicals					
Acrylamide	TT	ND			
Alachlor(ppb)	2	ND			
Atrazine(ppb)	3	ND			
Benzene(ppbv)	5	ND			
Benzo(a)pyrene[PHAs](ppt)	200	ND			
Carbofuran(ppb)	40	ND			
Carbon Tetrachloride(ppb)	5	ND			
Chlordane(ppb)	2	ND			
Chlorobenzene(ppb)	100	ND			
2,4-D	70	ND			
Dalapon(ppb)	200	ND			
Dibromochloropropane(ppt)	200	ND			
o-Dichlorobenzene(ppb)	600	ND			
p-Dichlorobenzene(ppb)	75	ND			
1,2-Dichloroethane(ppb)	5	ND			
1,1-Dichloroethylene(ppb)	7	ND			
Cis-1,2-Dichloroethylene(ppb)	70	ND			
trans-1,2-Dichloroethylene(ppb)	100	ND			
Dichloromethane(ppb)	5	ND			
1,2-Dichloropropane(ppb)	5	ND			
Di-(2-ethylhexyl)adipate(ppb)	400	ND			
Di(2-ethylhexyl)phthlates(ppb)	6	ND			
Dinoseb(ppb)	7	ND			
Dioxin[2,3,7,8-TCDD](ppq)	30	ND			
Diquat(ppb)	20	ND			

Table of Detected Drinking Water Contaminants

CONTAMINANT	MCLG	MCL	Range			Amount Detected		Likely Source of Contamination
Bacteriological Contaminants January - December 2020								
Turbidity	0	TT				0.24	NTU	Soil runoff
Radiological Contaminants January - December 2020								
Alpha emitters (2019)	0	15				1.70	pCi/L	Erosion of natural deposits
Inorganic Contaminants January - December 2020								
Chlorine	MRDLG 4	MRDL 4	0.70	-	1.5	1.4	ppm	Water additive used to control microbes
Copper (2020)	1.3	AL=1.3	No. of Sites above action level 0			0.06	ppm	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Fluoride	4	4	ND	-	0.53	0.53	ppm	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Lead (2020)	0	AL=15	No. of Sites above action level 0			ND	ppb	Corrosion of household plumbing systems, erosion of natural deposits
Nitrate (as N)	10	10	ND	-	0.43	0.43	ppm	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Total Nitrate & Nitrite	10	10	ND	-	0.43	0.43	ppm	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Turbidity	N/A	TT				0.24	NTU	Soil runoff
Organic Contaminants January - December 2020								
Haloacetic Acids (HAA5)	N/A	60	27.0	-	100.0	48.75	ppb	By-product of drinking water chlorination
Total Organic Carbon (TOC)	N/A	TT	1.00	-	1.80	1.80	ppm	Naturally present in the environment
Total trihalomethanes (TTHM)	0	80	37.0	-	100.0	61.13	ppb	By-product of drinking water chlorination
Secondary Contaminants January - December 2020								
Chloride (2020)	N/A	250	ND	-	10.3	0.80	ppm	Naturally occurring in the environment or as a result of agricultural runoff

Color	N/A	15	ND	-	5.00	5.00	PCU	Naturally occurring in the environment or as a result of treatment with water additives
Iron	N/A	0.3	ND	-	0.04	0.04	ppm	Erosion of natural deposits
Magnesium (2020)	N/A	0.05	10.10	-	10.10	10.10	ppm	Erosion of natural deposits
Sulfate (2020)	N/A	250	9.70	-	9.70	9.90	ppm	Naturally occurring in the environment
Total Dissolved Solids	N/A	500	35.0	-	35.0	35.0	ppm	Erosion of natural deposits
Zinc	N/A	5	ND	-	0.28	0.28	ppm	Erosion of natural deposits
Special Contaminants January - December 2020								
Calcium	N/A	N/A	44.60	-	44.60	44.60	ppm	Erosion of natural deposits
Carbon Dioxide	N/A	N/A	10.50	-	10.50	10.50	ppm	Erosion of natural deposits
Manganese	N/A	N/A	ND	-	0.11	0.11	ppm	Erosion of natural deposits
pH	N/A	N/A	7.20	-	7.20	7.20	SU	Naturally occurring in the environment or as a result of treatment with water additives
Sodium	N/A	N/A	1.56	-	1.56	1.56	ppm	Naturally occurring in the environment
Specific Conductance	N/A	<500	303.00	-	303.00	303.00	umhos	Naturally occurring in the environment or as a result of treatment with water additives
Sulfate (2020)	N/A	N/A	9.70	-	9.70	9.70	ppm	Naturally occurring in the environment
Temperature	N/A	N/A	15.00	-	22.00	22.00	°C	Naturally occurring in the environment
Total Alkalinity	N/A	N/A	137.00	-	164.00	164.00	ppm	Erosion of natural deposits
Total Hardness (as CaCO ₃) (2020)	N/A	N/A	35.5	-	35.5	35.5	ppm	Naturally occurring in the environment or as a result of treatment with water additives
Unregulated Contaminants January - December 2020								
Bromodichloromethane	N/A	N/A	3.50	-	6.50	4.88	ppb	Naturally occurring in the environment or as a result of industrial discharge or agricultural runoff; by-product of chlorination
Chlorodibromomethane	N/A	N/A	ND	-	ND	ND	ppb	Naturally occurring in the environment or as a result of industrial discharge or agricultural runoff; by-product of chlorination

Chloroform	N/A	N/A	33.00	-	97.00	56.38	ppb	Naturally occurring in the environment or as a result of industrial discharge or agricultural runoff; by-product of chlorination
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GENERAL INFORMATION

*Cryptosporidium monitoring/testing was performed on the RAW WATER at each water source for each respective water treatment plant (i.e. MS & WS) at a frequency of once per month for twenty-four (24) consecutive months (May, 2006 thru April, 2008).

** Cryptosporidium monitoring/testing is currently being conducted at Highpoint WTP Raw Water source at a frequency of once per month for twenty-four (24) consecutive months (February, 2011 thru January, 2013).

Cryptosporidium is a significant concern in drinking water because it contaminates surface waters used as drinking water sources, it is resistant to chlorine and other disinfectants, and it has caused waterborne disease outbreaks. Consuming water with Cryptosporidium, a contaminant in drinking water sources, can cause gastrointestinal illness, which may be severe in people with weakened immune systems (e.g. infants and the elderly) and sometimes fatal in people with severely compromised immune systems (e.g. cancer and AIDS patients).

The purpose of the LT2 rule is to reduce disease incidence associated with Cryptosporidium and other pathogenic microorganisms in your drinking water. The rule applies to ALL public water systems that use surface water or ground water that is under the direct influence of surface water.

Cryptosporidium was detected in the **RAW WATER ONLY!** and **NOT** in the **Finished Drinking Water**.

MCL's are set at very stringent levels. To understand the possible health effects described for many regulated contaminants, a person would have to drink 2 liters of water every day at the MCL level for a lifetime to have a one-in-a-million chance of having the described health effect.

Based on a study conducted by ADEM with the approval of the EPA a statewide waiver for the monitoring of asbestos and dioxin was issued. Thus monitoring for these contaminants was not required.

Total Coliform: The Total Coliform Rule requires water systems to meet a stricter limit for coliform bacteria. Coliform bacteria are usually harmless, but their presence in water can be an indication of disease-causing bacteria. When coliform bacteria are found, special follow-up tests are done to determine if harmful bacteria are present in the water supply. If this limit is exceeded, the water supplier must notify the public by newspaper, television or radio. To comply with the stricter regulation, we have increased the average amount of chlorine in the distribution system.

As you can see by the tables, our system had no violations of allowable limits of contaminants in drinking water. We're proud that your drinking water meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some contaminants have been detected. The EPA has determined that your water IS SAFE at these levels.

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

Some people may be more vulnerable to contaminants in drinking water than the general population. People who are immuno-compromised such as cancer patients undergoing chemotherapy, organ transplant recipients, HIV/AIDS positive or other immune system disorders, some elderly, and infants can be particularly at risk from infections. People at risk 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 microbiological contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

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. The Town of Nauvoo is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or 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://www.epa.gov/safewater/lead>.

In our continuing efforts to maintain a safe and dependable water supply it may be necessary to make improvements in your water system. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements.

Thank you for allowing us to continue providing your family with clean, quality water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. These improvements are sometimes reflected as rate structure adjustments. Thank you for understanding.

We at The Town of Nauvoo work around the clock to provide top quality water to every tap. We ask that all our customers help us protect our water sources, which are the heart of our community, our way of life and our children's future.