

**CITY OF BAD AXE
2016
WATER QUALITY REPORT**

In 1996, Congress amended the Safe Drinking Water Act which added a provision requiring that all community water systems provide their customers a brief annual water quality report. The City of Bad Axe is pleased to provide this information about the quality of the drinking water we provide you. Our goal is to provide you with a safe and dependable supply of drinking water.

Another amendment to the Safe Drinking Water Act was to reduce the allowable concentration of arsenic in drinking water. The City's existing ground water supply would not meet this requirement which went into affect on January 23, 2006. The Bad Axe City Council(s) chose to develop the Huron Regional Water Authority with the Village of Port Austin to provide treated surface water from Lake Huron. The project took nearly ten years to complete and is made up of Port Austin's newer intake system, a new micro filtration water treatment plant and three pumping stations to overcome the 150 foot elevation difference between Bad Axe and Port Austin. The new system also included over twenty miles of new water mains the majority of which is twenty inches in diameter and a new 500,000 gallon water tower. Some of the cost was covered with grant money, but the majority of the project was paid for with a forty year loan from the Rural Development Association. The cost of the City's share of this debt is reflected on your water bill as the "Ready to Serve" charge. The operation and maintenance of the City's distribution system which includes the pipeline along M53 starting just south of Port Austin, the three pumping stations, the 500,000 gallon and 300,000 gallon water towers, the water mains and the backup well in the City and the City's share of the operation and maintenance of the new water treatment plant are covered by the metered usage portion of your bill.

Where does my water come from?

As of January 2006, the city's drinking water has been supplied by the system described above.

The largest capacity groundwater well, of the city's original three, is maintained as an emergency backup to the new water system. This well is approximately 265' deep drawing water from bedrock and Marshall Sandstone aquifers. The well is flushed and sampled for bacteria each month. It is also tested according to MDEQ requirements as if it were providing your drinking water on a regular basis. You will be notified using public media sources such as newspaper and radio if we ever have to use the well to supply drinking water as the water from the well will not meet the current arsenic requirements and will have less desirable aesthetic qualities. Well #3 and #2 were capped and abandoned in 2007 and 2011, respectively, due to the cost of maintaining them considering their mechanical condition, water quality and capacity.

Is my water safe?

The water you receive is routinely tested for over 80 contaminants. The contaminants detected are listed in the table located in this report. As you can see by the table, our system had no violations. Your drinking water meets or exceeds all Federal and State requirements. The EPA has determined that your water IS SAFE at these levels.

In 2015 the City participated in the EPA's UCMR3 (Unregulated Contaminant Monitoring Regulation) water sampling. Unregulated contaminants are those for which EPA has not

established drinking water standards. Monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants. The contaminants detected are shown in the table below. The complete results can be found on the City's website; www.cityofbadaxe.com click on "UCMR3 Results" or by contacting City Hall at 989-269-7681.

Why are there contaminants in my drinking 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 (EPA) Safe Drinking Water Hotline (800-426-4791). The sources of drinking water (both tap 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, in some cases radioactive material and can pick up substances resulting from the presence of animals or from human activity.

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

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

Pesticides and herbicides may come from a variety of sources such as agriculture, storm water runoff and residential uses.

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

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

Do I need to take special precautions?

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 City of Bad Axe 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 (1-800-426-4791) or at <http://www.epa.gov/safewater/lead>.

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 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/Centers for Disease Control (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 (800-426-4791).

Contaminants	Susceptible Vulnerable Subpopulation	Level of Concern
Fecal Coliform/E. Coli	Infants, young children, and people with severely compromised immune systems	Confirmed presence (any confirmed detect)
Copper	People with Wilson's Disease	1.3 mg/l (ppm)
Fluoride	Children	4.0 mg/l (ppm)
Lead	Infants and children	15.0 ug/l (ppb)
Nitrate	Infants below the age of 6 months.	10.0 mg/l (ppm)
Nitrite	Infants below the age of 6 months	1.0 mg/l (ppm)

In order to ensure that tap water is safe to drink, EPA prescribes regulations that 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 which must provide the same protection for public health.

How can I get involved?

The Bad Axe City Council meets on the first and third Monday of each month. The Huron Regional Water Authority (HRWA) currently meets on the second Thursday of each month. Contact the Bad Axe City Hall at 989-269-7681 for current schedules and locations for these and various other committee meetings.

Source Water Assessment reports prepared by the MDEQ were provided for both water sources. These assessments were conducted in 2003. The purpose of these assessments is to analyze the sensitivity and susceptibility of our drinking water sources. Sensitivity is determined from the natural setting of the source water and indicates natural protection afforded the source water. Susceptibility identifies factors within the source water area that may pose a risk to the water supply.

Bad Axe well: Sensitivity is moderate. Susceptibility is moderately high.
 HRWA: Sensitivity is moderate. Susceptibility is moderately high.

To obtain a copy of the report for the Bad Axe well contact City Hall at 989-269-7681.
 To obtain a copy of the report for the HRWA contact their office at 989-738-4180.

The following tables define the various terms and abbreviations you may not be familiar with in the water quality chart.

Unit Descriptions	
Term	Definition
ppm	ppm: parts per million, or milligrams per liter (mg/L) One penny in \$10,000
ppb	ppb: parts per billion, or micrograms per liter (µg/L) One penny in \$10,000,000
pCi/L	pCi/L: picocuries per liter (a measure of radioactivity)
MFL	MFL: million fibers per liter, used to measure asbestos concentration
NTU	NTU: Nephelometric Turbidity Units. Turbidity is a measure of the cloudiness of the water. We monitor it because it is a good indicator of the effectiveness of our filtration system.
Positive samples	positive samples/yr: The number of positive samples taken that year
NA	NA: not applicable
ND	ND: Not detected
NR	NR: Monitoring not required, but recommended.

Important Drinking Water Definitions	
Term	Definition
MCLG	MCLG: Maximum Contaminant Level Goal: 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.
MCL	MCL: Maximum Contaminant Level: 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. See note below.
TT	TT: Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	AL: Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.
MRDLG	MRDLG: Maximum residual disinfection level goal. 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.
MRDL	MRDL: Maximum residual disinfectant level. 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.
MNR	MNR: Monitored Not Regulated
MPL	MPL: State Assigned Maximum Permissible Level

MCL's 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 (about one-half gallon) 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. Visit www.epa.gov/safewater/contaminants/index.html to see a list of contaminants and their potential health effect.

Please contact the City of Bad Axe, Director of Public Works, Scott Boshart at 989-269-9132 or City Manager, Dale Vandevusse at 989-269-7681 if you have questions regarding this report. The report is also available on the City's web site at www.cityofbadaxe.com.

2016 WATER QUALITY TABLE

This table lists the contaminants detected in the 2016 calendar year. A few contaminants were tested in years previous to 2016 as the EPA/State require us to monitor less than annually because concentrations of certain contaminants do not change frequently.

Contaminants (Sample Source)	MCLG or MRDLG	MCL, TT or MRDL	Your Water	Range		Sample Date	Violation	Typical Source
				Low	High			
Disinfectants & Disinfection By-Products								
There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.								
Chlorine as Cl ₂ , ppm (Dist)	4	4	0.55	0.05	1.74	2016	No	Water additive used to control microbes
Haloacetic Acids-HAA5, ppb (Dist)	NA	60	17	8	24	2016	No	By-product of drinking water chlorination
Total Trihalomethanes-TTHMs, ppb (Dist)	NA	80	44	41	52	2016	No	By-product of drinking water chlorination
Inorganic Contaminants								
Barium, ppm (HRWA)	NA	2	0.01	NA	NA	2016	No	Discharge of drilling wastes, discharge from metal refineries, erosion of natural deposits
Fluoride, ppm (HRWA)	4	4	0.1	NA	NA	2016	No	Erosion of natural deposits; Water additive which promotes strong teeth; The HRWA does not add fluoride to the water.
Nitrate as Nitrogen, ppm (HRWA)	10	10	0.4	----	----	2016	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Sodium, ppm (HRWA) **	NA	NA	8	----	----	2016	No	Erosion of natural deposits; Leaching
Sulfate, ppm (HRWA) **	NA	NA	12	----	----	2016	No	
Hardness, ppm CaCO ₃ (HRWA) **	NA	NA	109	92	141	2016	No	
Strontium, ppb (Dist) UCMR3**	NA	NA	108	99	118	2015	No	
Chromium-6, ppb (Dist) UCMR3**	NA	NA	0.10	0.08	0.14	2015	No	
Chlorate, ppb (Dist) UCMR3**	NA	NA	125	51	229	2015	No	
Vanadium, ppb (Dist) UCMR3**	NA	NA	0.25	<0.2*	0.30	2015	No	
Microbiological Contaminants								
Total Coliform/E. Coli, positive samples *** (Dist and HRWA)	0	0	0	NA	NA	2016	No	Human and animal fecal waste
Radioactive Contaminants								
Alpha emitters, pCi/L (HRWA)	0	15	ND	NA	NA	2015	No	Erosion of natural deposits
Radium combined 226/228, pCi/L (HRWA)	0	5	ND	NA	NA	2015	No	Erosion of natural deposits
Turbidity								
Turbidity, NTU (HRWA)	NA	TT 0.5	0.037	0.030	0.058	2016	No	Soil runoff
Contaminants (Sample Source)	MCLG	AL	Your Water	# of Samples Exceeding AL		Sample Date	Exceeds AL	Typical Source
Inorganic Contaminants								
Copper-action level at consumer taps, ppb (Dist)	1300	1300	370	0		2015	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead-action level at consumer taps, ppb (Dist)	0	15	2	0		2015	No	Corrosion of household plumbing systems; Erosion of natural deposits

* Value is less than the minimum reporting level.

** Unregulated contaminants are those for which EPA has not established drinking water standards. Monitoring helps EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.

*** A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive and one is also fecal or E. Coli positive.