



Hometown People. Hometown Power.

Lansing Board of Water & Light 2015 Annual Water Quality Report

Dear Customer,

We are pleased to present the 18th annual report summarizing the quality of the drinking water provided to you during the past year. This Consumer Confidence Report is required by the Federal and State of Michigan Safe Drinking Water Acts (SDWA). This report discusses the source of your tap water, the results of tests that we regularly conduct to assure the quality of your water and additional information that you may wish to know about your drinking water. We update this report annually before July 1st, with information about the previous calendar year's water supply.

As a publicly-owned utility the Lansing Board of Water & Light (BWL) encourages public interest and participation in decisions affecting the community's drinking water. The BWL's Board of Commissioners meet on the fourth Tuesday of every other month at our REO Town Depot Facility, 1201 S. Washington Avenue in Lansing. Meeting dates and times are published in advance and may be accessed on the BWL's website at www.lbwl.com/BWL-Governance or by calling us at 517-702-6006. Our board meetings are open to the public.

The Bottom Line

During 2015, BWL drinking water **continues to meet or exceed** all quality standards issued by the U.S. Environmental Protection Agency (EPA) and the Michigan Department of Environmental Quality (MDEQ).

About Us

The BWL was established in 1885 by a vote of the people of Lansing to fund a publicly owned utility to meet their need for adequate fire protection, proper sanitation and improved street lighting for the city. The Lansing community and the BWL service territory has been very fortunate to be located over the center of the Saginaw Aquifer, which has been called one of the finest natural sources of groundwater ever discovered.

BWL Facts:

- 125 Wells, approximately 400 feet deep
- 2 water conditioning plants
- 55,000 customers
- Average usage of 21 million gallons a day
- 800 miles of water mains

Recognitions:

In 2014 the John F. Dye Water Conditioning Plant was recognized as a National Waterworks Landmark by the American Water Works Association and the plant was also presented with a Clean Corporate Citizen Award by the MDEQ for its environmental stewardship.

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Important Information About Lead

Lead is a common, naturally occurring metal that is found throughout the environment in lead-based paint, air, soil, household dust and occasionally water. Lead can pose a significant risk to your health if too much enters your body.

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water comes primarily from materials and components associated with water service lines and home plumbing. The BWL is responsible for providing high-quality drinking water, but cannot control the variety of materials used in plumbing components. Constant exposure of water to lead in plumbing can cause lead to become dissolved in the water. This can occur when water sits in a pipe for too long. If water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for thirty seconds to two minutes before using the 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 (800-426-4791) or at <http://water.epa.gov/drink/info/lead/index.cfm>.

Lead in Drinking Water

Lead in drinking water, although rarely the sole cause of lead poisoning, can increase a person's total lead exposure, particularly the exposure of infants who drink baby formula and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20% or more of a person's total exposure to lead.

How Lead Enters Our Water

There is no detectable lead in BWL drinking water when it leaves our conditioning plants. However, since water is naturally corrosive small amounts of lead can dissolve into your drinking water if your water sits for several hours in plumbing fixtures or service lines that contain lead. Lead levels in drinking water are likely to be highest in homes with:

- Lead service lines connecting the water main to the house.
- Lead indoor plumbing.
- Copper plumbing with lead solder.
- Brass fixtures.

Lead Service Lines

From the early 20th century through the early 1950s, the BWL and other water utilities across the country commonly used lead service lines to deliver water from the distribution mains to individual customers. Even though the BWL is in compliance with the EPA's lead regulations and is not required to remove lead service lines, the BWL has removed more than 13,500 of these lines since 2004 and expects to remove all by June 30, 2017. The BWL believes it is in the best interest of our customers and our utility to eliminate lead service lines from our system.



Protecting Against Lead Exposure

The EPA provides the following guidelines for minimizing exposure to lead in drinking water.

1. Flush your pipes before drinking and only use cold water for consumption. Any time the water in a particular faucet has not been used for six hours or longer, flush your cold-water pipes by running the water until it no longer becomes colder. This could take as little as five to thirty seconds if there has been recent heavy water use such as showering or bathing, washing clothes or toilet flushing. Otherwise, it could take two minutes or longer. The longer water has been sitting in your home's pipes, the more lead it may contain.

While this advice is appropriate for customers with standard copper service lines, tests conducted for the BWL by a national consulting firm have concluded that customers with lead service lines should flush their water longer. Customers with lead service lines should flush their water for seven minutes before using water for drinking or cooking if the water has been sitting idle in plumbing for six hours or longer. Following high-water usage, customers should flush pipes for at least two minutes. To avoid this longer flushing requirement, the BWL provides free water filters and replacement cartridges to its customers with lead service lines.

2. Use only water from the cold-water tap for drinking, cooking and especially for making baby formula. Hot water is likely to contain higher levels of lead.

The actions recommended above are very important to the health of your family. They will reduce lead exposure levels because most of the lead in household water comes from the plumbing in your house or, if you have one, the lead service line serving your house, not from the local water supply.

Lead sampling was conducted by the BWL during the summer of 2014. Monitoring results for lead can be found on the tables of this report under the heading, "Substances Measured in Homes and Businesses."

Please visit our website at www.lbw.com/water for more information about lead.



How to Read These Tables

The BWL tests the water frequently and the following tables show the results of all detected contaminants, even in the smallest traces, in the tables below. These tables contain the name of each substance, the highest level allowed if regulated, the ideal goals for public health if established, the amount detected, the usual sources of such contamination, footnotes explaining our findings and a key to units of measurement.

The BWL is allowed to monitor for certain contaminants less often than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. While all the data are representative of the BWL's water quality, some results are more than a year old.

The tables do not list the hundreds of contaminants for which the BWL tested but did not detect a presence.

Key to Tables:

AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.
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.
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.
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.
MRDLG	Maximum Residual Disinfectant Level Goal: The level of a disinfectant in drinking water 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 contamination.
PPM	Parts Per Million , or milligrams per liter (mg/l) (equivalent to one penny in \$10,000).
PPB	Parts Per Billion , or micrograms per liter (ug/l) (equivalent to one penny in \$10,000,000).

Substances We Measured at the Water Conditioning Plant

Substance	Unit	MCL	MCLG	Highest Detected Level	Range of Detected Levels	Major Sources	Violation?
Barium	PPM	2	2	0.027	0.022 to 0.027	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.	No
Fluoride	PPM	4	4	0.68	0 to 0.68	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminium factories.	No
Sodium	PPM	Not Established		56	51-56	Natural constituent of groundwater	No

Water Quality Table Footnote:

The fluoride range is from the July 2015, Partial Chemistry report. Wise Conditioning Plant was not feeding fluoride from Jan 1 - June 3, 2015 while the fluoride feed equipment was down for repair at the water conditioning plant.

Fluoride

The raw water coming into the BWL's two water conditioning plants has a naturally occurring level of fluoride at approximately 0.35 ppm. The BWL adds fluoride to the water to bring it to the optimal level of 0.7 ppm recommended by the Center for Disease Control and Prevention and the U.S. Public Health Service and approved by the EPA. As stated by the CDC, the "CDC monitors the public health benefits and risks of community water fluoridation from studies published by panels of experts from health and scientific fields. The reviews, conducted over many years, have concluded that water fluoridation is both safe and effective."

Further information about fluoride in drinking water, including specific information about infants, can be obtained from the CDC website at www.cdc.gov/fluoridation.

Radium 226 and 228

In 2003, we monitored for both radium 226 and radium 228 and neither was detected. Our next sampling round for radium will be conducted in July, 2016.



Substances Measured in Homes and Businesses*

Substance	Unit	AL	9 out of 10 homes were below a level of:	Number of samples above the action level:	Major Sources	Violation?
Copper	PPM	**1.3 at 90th percentile	0.02	0	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives	No
Lead	PPB	***15 at 90th percentile	7.8	2	Corrosion of household plumbing systems; Erosion of natural deposits	No

Water Quality Table Footnotes:

* Lead and copper were last sampled in June 2014

** 9 out of 10 homes tested must show a concentration equal to or lower than 1.3 parts per million

*** 9 out of 10 homes tested must show a concentration equal to or lower than 15 parts per billion

If you're concerned about lead, have the water tested. Arrangements can be made for water testing through the Ingham County Health Department at 517-887-4312 and each test costs about \$20. Or, you may choose to install a water filter that is NSF-certified for lead removal. If a water filter is installed, replace it at least as often as recommended by the manufacturer.



Substances We Measured in the Distribution System

Substance	Unit	MCL	MCLG	Highest Detected Level	Major Sources	Violation?
Total Coliform	Samples	P5% of monthly samples are positive	0	0.8%	Naturally present in the environment	No
E. Coli Bacteria	Samples	0	0	0	Human or animal fecal waste	No

Disinfectants and Disinfection By-Products

The BWL adds chloramine to its water at the conditioning plant to protect against bacterial growth. Chloramine is used instead of other disinfectant options because it minimizes the number and level of chlorination by-products, persists better in the distribution system and leaves little or no unpleasant odor and taste. The following table lists the chloramine levels and disinfection by-products created by the reaction of our chloramine treatment and naturally occurring organic compounds. The chloramine levels and the disinfection by-products were measured in the distribution system.

Substance	Unit	MCL	MCLG	Average Detected Level	Range of Detected Levels	Major Sources	Violation?
Haloacetic Acids (HAA5)	PPB	60	60	2.0	0 to 2	By-product of drinking water chlorination	No
Total Trihalomethanes (THMs)	PPB	80	80	3.0	2.3 to 3.2	By-product of drinking water chlorination	No
Chloramine	PPM	4	4	1.7	1.2 to 1.9	Water additive for microbe control	No

Unregulated Contaminants

Unregulated contaminants are those that do not have an MCL or MCLG but are reported to and evaluated by the MDEQ and EPA. Monitoring helps the EPA determine in which areas of the country these contaminants are being detected and whether they should be regulated. As our customers, you may request the results of our tests by contacting [Angie Goodman at 517-702-7059](mailto:Angie.Goodman@lbwl.com) or ame1@lbwl.com

Unregulated Monitoring Rule 3 Contaminants That Were Detected

Substance	Unit	Average Detected Level	Range	Major Sources	Violation?
Chromium	PPB	0.2	0.2-0.3	Natural constituent of groundwater	No
Molybdenum	PPB	1.1	0-1.2	Industrial activities; naturally occurring sources	No
Strontium	PPB	166	120-210	Industrial activities; naturally occurring sources	No
Vanadium	PPB	0.3	0.2-0.4	Industrial activities; naturally occurring sources	No
Chromium, Hexavalent	PPB	0.2	0.14-0.24	Industrial activities; naturally occurring sources	No
Chlorate	PPB	174	32-330	By product of disinfection	No
1,4-Dioxane	PPB	0.14	0.14-0.14	Groundwater contamination from manufacturing process & landfills	No

Radon:

Radon is a naturally occurring gas present in some ground water. It poses a lung cancer risk when the radon gas is released from water into air (occurs during showering, bathing, or washing dishes or clothes), and a stomach cancer risk when your drinking water contains radon. Radon gas released from drinking water is a relatively small part of the total radon in air. Other sources of radon gas are soils which enter homes through foundations and radon inhaled directly while smoking cigarettes. Experts are not sure exactly what the cancer risk is from a given level of radon in drinking water.

The BWL tested for radon in 2000, and found concentrations to be between 140 and 150 picocuries per liter (pCi/l). This is a relatively low level compared to the EPA's proposed standard of 300 pCi/l. If you are concerned about radon in your home, test kits are available to determine your total exposure level. For additional information on how to have your home tested, contact your state radon program (1-800-RADON GAS/1-800-723-6642) or the EPA's Radon Hotline (800-SOS-RADON).

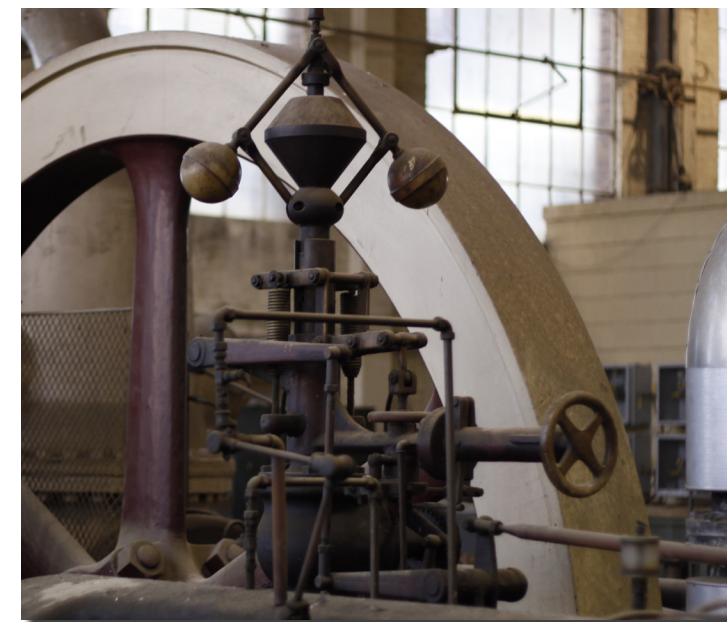
Additional Water Quality Parameters of BWL Conditioned Water

The BWL performs an average of 16,000 tests per year. This table represents results of typical concentrations and ranges of other parameters present in your water supply. All of these results are within acceptable ranges. These results can vary depending on the wells that are in use, the time of the year and the different areas of the water distribution system. For a pdf version of this list, please visit the BWL website at www.lbwl.com/water and click the Typical Analysis of Conditioned Water.

Parameter	Units	Your Water Results	
		Typical Concentration	Range
Calcium (as CaCO3)	PPM	57	50-65
Magnesium (as CaCO3)	PPM	42	33-54
Hardness* (as CaCO3)	PPM	100	85-110
	Grains per gallon	5.8	4.9-6.4
Carbonate (as CaCO3)	PPM	20	15-30
Bicarbonate (as CaCO3)	PPM	15	10-15
Total Alkalinity (as CaCO3)	PPM	35	30-45
Sodium*	PPM	52	35-88
Iron*	PPM	0.1	0.1-0.7
Sulfate*	PPM	90	45-80
Chloride*	PPM	60	10-100
Phosphate, Tot (as P)	PPM	0.6	0.2-0.8
Phosphate, Ortho (as P)	PPM	0.3	0.2-0.4
pH	pH units	9.2	9.0-9.8
Turbidity	NTU	0.1	0.1-0.5
Conductivity*	uS/cm	480	380-620

*These parameters will typically be at the high end of the range during high demand periods in the summer months of June, July and August

★ The BWL has ZERO Violations! ★



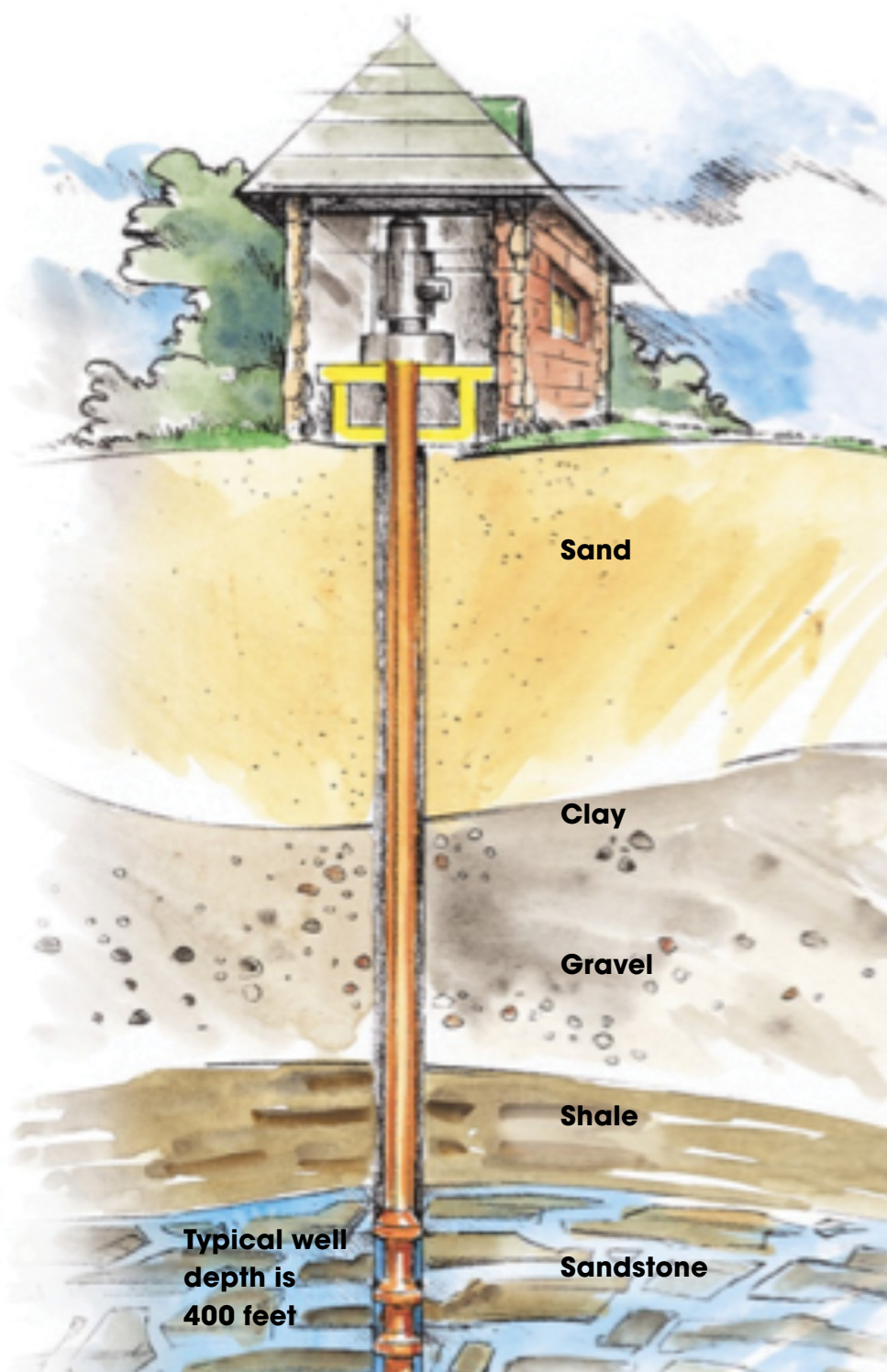
Water Source

BWL drinking water comes from 125 groundwater wells that are approximately 400 feet deep. The source of this plentiful supply is an underground aquifer called the Saginaw Formation, which underlies much of the mid-Michigan region. Water from BWL wells is transported through large transmission mains to one of two water conditioning plants.

The plants soften the water by removing about 80% of the hardness. The softened water is then chlorinated, fluoridated, treated with corrosion control, filtered and stored in reservoirs for distribution to customers. Lansing is one of the largest communities in the country to rely exclusively on groundwater to meet its drinking water requirements.



Protect Your Water Supply



Lansing's drinking water source is largely protected from contamination or direct contact with surface waters by layers of clay and shale. There are areas at the surface, however, that directly contribute to the aquifer without the protection of clay and shale layers. During 2003, the MDEQ conducted an assessment of the vulnerability of the aquifer to impacts from human activities. Because there are several known and potential sources of contamination in and near the BWL's wellhead protection areas, the aquifer in this region has been assessed as "highly susceptible" to contamination. If you desire more information on this local Source Water Assessment, contact [Angie Goodman](mailto:Angie.Goodman@lbwl.com) at 517-702-7059 or ame1@lbwl.com.

The BWL actively supports regional wellhead protection activities. The United States Geological Survey has developed a regional aquifer computer model of the mid-Michigan area that provides important information about the groundwater supplies. Major support for the project was provided through a state-administered wellhead protection grant to the BWL.

A model of the Saginaw Aquifer is on display at the Impression 5 Museum, 200 Museum Dr., Lansing MI 48933.

Actions taken on the surface can impact the groundwater we drink.

Help protect this essential resource!

Conserve: saving water reduces energy costs and helps keep more water in our lakes, rivers and groundwater supply.

Waste Disposal: Dispose of waste properly: gasolines, oils, pesticides, paints, and antifreeze. Toxic substances poured/spilled on the ground or down a drain can contaminate the water you drink.

Protect your water source

Never Flush: many items containing toxins, are non-biodegradable. They clog pipes, destroy protective bacteria and wreak havoc at the Wastewater Treatment Plant. For a complete list, visit water.epa.gov/septicmart.

Medications are NOT safe to flush. They break down in the water and wastewater treatment plants are not equipped to remove them and they end up back in our water supply.

Check www.takebackyourmeds.org to find a place to dispose of them properly.

General Health Information Provided by the EPA

To ensure that tap water is safe to drink, the EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. United States Food and Drug Administration (FDA) regulations also establish limits for contaminants in bottled 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 EPA's Safe Drinking Water Hotline (800-426-4791).

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 can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

1. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations and wildlife.
2. Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
3. Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff and residential uses.
4. Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban stormwater runoff and septic systems.
5. 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, the EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-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 of infections. These people should seek advice about drinking water from their healthcare providers. Guidelines from the EPA Centers for Disease Control on the risk of infection from *Cryptosporidium* are available from the Safe Drinking Water Hotline (800-426-4791).

National Primary Drinking Water Regulation Compliance

For more information about our water quality, please contact [Angie Goodman at \(517\)-702-7059 or ame1@lbwl.com](mailto:ame1@lbwl.com). Learn more about the BWL water system at www.lbwl.com/water. For more information about safe drinking water, visit the U.S. Environmental Protection Agency (EPA) at www.epa.gov/safewater/.



Water as a Destructive Element, Frank Cassara 1940



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