2023 Water Quality Report

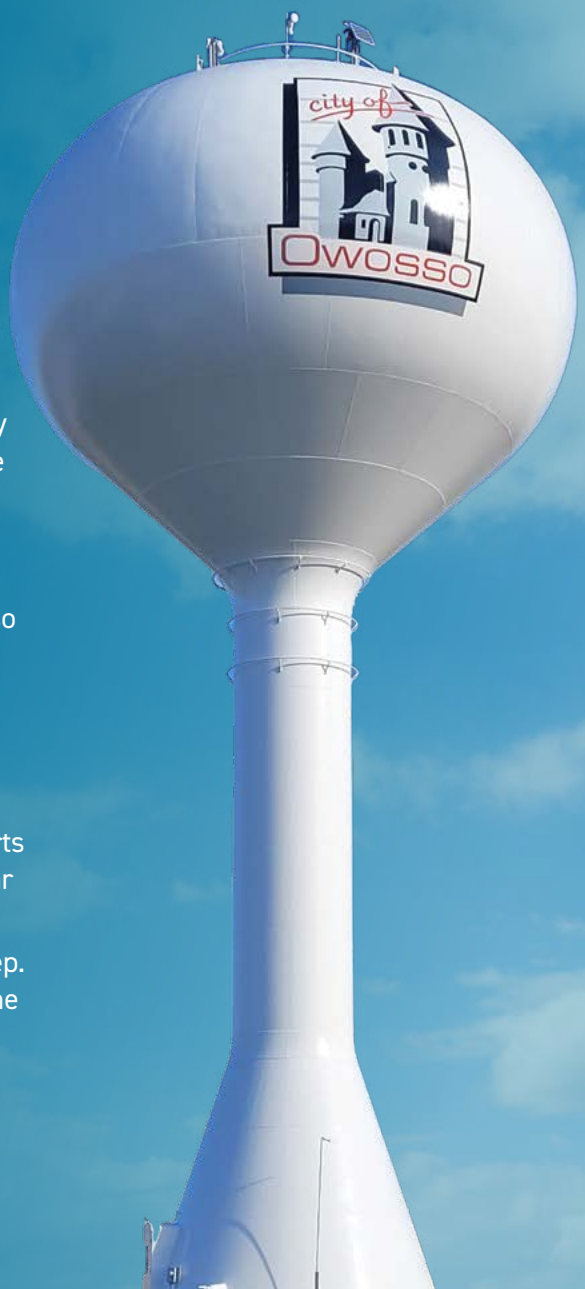
Water Supply Serial Number: 05120

Municipal tap water is the *life source* of every community.

Our dependable water supply contributes to public health, keeps citizens safe from waterborne illness, drives economic prosperity, and is vital for everyday life. The Owosso Water Filtration Plant treated over 592 million gallons of water to over 16,353 residents in the City of Owosso during 2023. This report covers the drinking water quality for City of Owosso Water Supply for the 2023 calendar year. This information is a snapshot of the quality of the water that we provided to you in 2023. Included are details about where your water comes from, what it contains, and how it compares to United States Environmental Protection Agency (USEPA) and state standards.

At Owosso's water filtration plant, water is tested continuously. Operators also conduct quality assurance and quality control processes to ensure accuracy. State Certified Operators in the water quality laboratory conduct hourly tests from the treatment process. In addition, weekly and monthly they test samples from water sites throughout the city. The staff works with Michigan Department of Environment, Great Lakes, and Energy (EGLE) to ensure water regulatory and safety guidelines are met. Owosso's team of water quality experts go to great lengths to deliver great-tasting tap water. It's a 24/7, 365-day-a-year responsibility that they take very seriously.

Your water comes from five active groundwater wells, each over 80 feet deep. In 2018, EGLE performed an assessment of our source water to determine the susceptibility or the relative potential of contamination. The susceptibility rating is on a seven-tiered scale from "very-low" to "very-high" based on geologic sensitivity, well construction, water chemistry, and contamination sources. The susceptibility of our well source is high to very high.



© 2024 Goldstreet Design Agency, Inc. All Rights Reserved

Projects & Maintenance


One of four New filter turbidity units

- Maintenance at the water plant is a continuous exercise. There are many parts and pieces of equipment that make up the different processes. All of the equipment has an expected useful life which we try to prolong with preventive maintenance. Our Asset Management Plan and Capital Improvement Plan guides us on when to repair/replace more expensive items and how to budget for them. In 2023, a warranty inspection was completed on the all the paint work in both Storage Tanks. The West Tower was in excellent condition, but the Standpipe was found to have defects in the new paint coating. Warranty repair work was scheduled for spring of 2024.
- The City of Owosso in 2021 started the process of replacing one of our wells near Hopkins Lake and developing another new well site on city property near Osburn Lakes. During 2022, the City obtained permits from EGLE to construct both well sites. The production capacity of both well sites are approved for a capacity of 1,800 gallons per minute. Construction planning and design was completed in 2022 along with plans for obtaining funding in 2023. In 2023 construction began on two well buildings with new well pumps and controls for these new well sites, along with raw water mains connecting the wells to the existing system. These wells are expected to be operational by the fall of 2024. These two wells will ensure water supply capacity and water quality for future generations in Owosso.


Clarifier

- Annual service to our clarifiers and lime silo continued in 2023. Worn out parts were replaced by staff.
- Another major investment in 2022 was the rehabilitation of both water storage tanks. This was a major accomplishment, as epoxy and steel supply chain shortages were occurring during this project. Routine inspections of both tanks are included in our future budget to maintain both of these tanks for the next 15 to 20 years. In 2023 during an ROV inspection of the standpipe tank, numerous defects in the interior paint were detected. This prompted the City to involve the engineering company responsible for the work to fix the defects that are covered under warranty. This warranty work is to be completed in 2024.


New vacuum pump system for WTP high-service pumps

- A new 150 HP high service pump motor was installed to replace a faulty motor. The high service pumps are a vital component to the distribution system. These high service pumps are how water is transferred to the distribution system and into residents homes. The high service pumps have a total pumping capacity of 8 million gallons per day!
- An additional installation was completed with the help of DPW and a local contractor. The installation was that of a new valve and connection to move the used lime residual further into the existing residual lagoons. This installation gives us the ability to extend the useful life of each lagoon and combat the problem of yearly removal.


Sludge discharge adapter installed by DPW at the WTP

- Another project competed at the plant was the installation of surge protection for our drive components operating our filter backwash motors. The new surge protection will ensure longevity of these costly drive components for years to come. Backwash pumps clean the filters at the plant by establishing a reverse flow that cleans the filter media and returns the filter to optimal operation.


One of two surge protection installations to protect WTP backwash VFD's

- During 2023, the City was required to complete another Lead and Copper Rule sampling period. We would like to thank everyone involved in collecting samples, filling out paperwork, and returning everything tin a timely manner. You helped make this regulatory requirement easier to accomplish. In 2023, even though our 90th percentile value was below the lead action level, there was one individual sample location that was above the action level. The City is glad to report that at locations where elevated lead and copper results are obtained, that service line became a priority to ensure all piping going into the residence has safe compliant materials.

Water Treatment Plant Projects


Communication tower base being installed at the WTP

During 2023, as part of a State Drinking Water Revolving Fund (DWRF) loan project, the City completed the following engineering plans and evaluations.

- WTP filter improvements project plan to update and repair our filtration units at the plant.
- WTP control system upgrade contracts and pre-construction meeting.
- Palmer 3A and Juniper well building construction contracts and pre-construction meeting.

The following projects were completed in 2023 and funded by the Water Fund.

- Fishbeck Engineering completed a Water Reliability Study
- Fishbeck Engineering completed a General Plan Update
- Fishbeck Engineering completed a WTP Performance and Membrane Softening Evaluation
- The 2018 Asset Management Program was updated in 2023 by OHM Engineering as part of a State Drinking Water Asset Management Grant (DWAM) that targets the distribution and water service lines.

Distribution Projects


Inside and outside of new well building to be completed in 2024

The 2018 Asset Management Program was updated in 2023 by OHM Engineering as part of a State Drinking Water Asset Management Grant (DWAM) that targets the distribution and water service lines.

In 2023, the following water mains were replaced:

- North St from Shiawassee St (M-52) to Hickory St
- Clyde St from Walnut St to Shiawassee St (M-52)
- Huron St from Huggins St to the east end
- Lee St from Clark Ave to Ada St
- Lynn St from Howell St to west end
- Milwaukee St from Lyon St to Cedar St

In 2023, there were 360 lead service line replacements.

Distribution System

The City of Owosso has over 113 miles of water mains, including raw and potable distribution piping ranging in size from 1.5″ to 24″. The majority of water distribution system mains are 50 to 65 years old, with some mains 80 to 100 years old. There are over 2,388 water system valves throughout the system and over 799 fire hydrants. Owosso serves over 6,478 residential households and commercial customers with meter sizes ranging from 3/4″ to 8″. Also, the distribution system includes 2 water storage facilities.

Lead service line being replaced at a residence

Large service being installed downtown

Fishbeck Engineering completed a Water Treatment Plant Performance Evaluation and gave a Special Presentation at a Special Counsel Session held on October 30th, 2023.

Current Evaluation and Condition Assessment

The WTP building dates back to the 1930s. It was put into operation in the early 1940s with a treatment equipment update in 2004. Many of the components now require frequent replacement and repair. Our annual chemical costs have increased from $107,000 annually in 2005 to $250,000 annually as of 2023. An average of 70% of that cost is the lime product used. The cost of disposal of the used lime product is as much as the total chemical cost annually. The current plant design makes it impossible to support high-use customers, which has made corporations pick different locations to do their business. The jobs that could have been provided to the community went elsewhere. The current treatment design also makes it impossible to treat new contaminants when it may be required. Fishbeck Engineering completed a recent Study on the reliability of existing WTP equipment and costs to maintain that equipment for the next 20 years. The study focus was in depth including plant operations efficiency, equipment reliability, and upgrades to existing equipment in order to keep the plant producing water. They concluded that a cost of $54,885,000 in capital improvements would be needed to keep the plant operational at today's costs over the next 20 years.

New Membrane Softening Plant Recommendation

An alternative to maintaining the current plant was to build a new facility utilizing membrane filtration. The construction of a new plant would address the problem of escalating maintenance and repair costs by providing a newly constructed facility. Membrane plants can operate with the same production volume at a tenth of the building size, saving on costs and staffing. The more efficient plant would address the rising chemical costs by using less chemical, with no further need to purchase lime or dispose of used lime. Membrane softening plants are expandable and can offer potential high-volume users the water that they need to support their business. This means a plant could be built to existing capacity and expanded when future demands are needed. Membranes offer a broader range of treatment to address any new contaminates that may require treatment. The cost of a new plant is estimated to be $69,000,000. A new plant would take two years to engineer and two to three years to build, and would utilize high-pressure filtration followed by membrane filtration. The new plant would lower capital improvement cost once the plant was constructed. This study was presented to the city council. The general consensus was that building a new plant would make more sense than spending $54,885,000 to keep the existing plant operating over the next 20 years. At the end of 20 years, there would be additional large expenses to keep the existing plant in operation.

Applications for Federal Appropriations have been submitted for the construction of a membrane plant. Replacement of the reservoir, related facilities, and two additional smaller projects needed to maintain our water supply system were also included in the appropriations submittal.

Contaminants in the 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 USEPA's Safe Drinking Water Hotline (800-426-4791).

Contaminants that may be in source water:

- 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 stormwater 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 and residential uses.
- Radioactive contaminants, which can be naturally occurring or the result of oil and gas production and mining activities.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- To ensure that tap water is safe to drink, the USEPA prescribes regulations that limit the levels of certain contaminants in water provided by public water systems. Federal Food and Drug Administration regulations establish limits for contaminants in bottled water, which provide the same protection for public health.

Water Supply

In 2023, certified labs tested our water for general chemistry, Lead and Copper, Nitrate, PFAS, Gross Alpha (Rad), and Total Trihalomethanes - Haloacetic Acids. Our ground water sources were also tested for general chemistry, Arsenic, Complete Minerals and Metals, and VOC's. We continue to protect our sources by using an updated Wellhead Protection Program (WHPP) to ensure safe drinking water to the public and protect the drinking water from potential sources of contamination by following the WHPP program guidelines set forth by EGLE.

Vulnerability of Sub-Populations

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune systems 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. USEPA/Center for Disease Control 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).

Sources of Drinking Water

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. Our water comes from 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.

Information 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. The City of Owosso Water Supply 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 have a lead service line, it is recommended that you run your water for at least 5 minutes to flush water from both your home plumbing and the lead service line. 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.

Infants and children who drink water containing lead could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Our water supply has 328 lead service lines and 3,915 service lines of unknown material out of a total of 6,478 service lines.

Water Quality Data

The table below lists all the drinking water contaminants that we detected during the 2023 calendar year. The presence of these 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 January 1 through December 31, 2023. The State allows us to monitor for certain contaminants less than once per year because the concentrations of these contaminants are not expected to vary significantly from year to year. All the data is representative of the water quality, but some are more than one year old.

Regulated Contaminant	MCL	MCLG	Level Detected	Range	Year Sampled	Violation (Yes/No)	Typical Source of Contaminant
Barium (ppm)	2	2	0.14	0.07-0.14	08/2023	No	Discharge from oil drilling wastes and from metal refineries; erosion of natural deposits
Ethylbenzene (ppm)	0.7	N/A	0.0006	N/A	8/2023	No	Compounds used for industrial and manufacturing purposes
Fluoride (ppm)	4	4	0.55	0.38-0.55	07/2023	No	Erosion of natural deposits. Discharge from fertilizer and aluminum factories. *Water additive which promotes strong teeth.
HAA5 Haloacetic Acids (ppb)	60	N/A	5	1-5	08/2023	No	Byproduct of drinking water disinfection.
M&p-Xylene (ppm)	10	N/A	0.0027	0.0006-0.0026	8/2023	No	Compounds used for industrial and manufacturing purposes
TTHM - Total Trihalomethanes(ppb)	80	N/A	62	21-62	08/2023	No	Byproduct of drinking water disinfection.
Chlorine* (ppm)	MRDL 4	MRDLG 4	1.07	0.55-1.07	2023	No	Water additive used to control microbes.
Bromodichloromethane (ppm)	0.080	N/A	0.018	0.0064-0.018	08/2023	No	Byproduct of drinking water disinfection.
Bromoform (ppm)	0.080	N/A	0.0063	0.0023-0.0063	08/2023	No	Byproduct of drinking water disinfection.
Chlorodibromomethane (ppm)	0.080	N/A	0.015	0.011 - 0.015	08/2023	No	Byproduct of drinking water disinfection.
Chloroform (ppm)	0.080	N/A	0.0083	0.0042-0.031	08/2023	No	Byproduct of drinking water disinfection.
o-Xylene (ppm)	10	N/A	0.0026	N/A	8/2023	No	Compounds used for industrial and manufacturing purposes
Styrene (ppm)	0.1	N/A	0.0008	N/A	8/2023	No	Compounds used for industrial and manufacturing purposes

*Chlorine was calculated using the running annual average.

Microbiological Contaminant	MCL	MCLG	Level Detected	Range	Year Sampled	Violation (Yes/No)	Typical Source of Contaminant
Total Coliform (total number or % of positive samples/month)	TT	N/A	N/A	N/A	2023	No	Naturally present in the environment
E. coli in the distribution system (positive samples)	See E. coli note *	0	0	N/A	2023	No	Human and animal fecal waste
Fecal Indicator – E. coli at the source (positive samples)	TT	N/A	0	N/A	2023	No	Human and animal fecal waste

* E. coli MCL violation occurs if: (1) routine and repeat samples are total coliform-positive and either is E. coli-positive, or (2) the supply fails to take all required repeat samples following E. coli-positive routine sample, or (3) the supply fails to analyze total coliform-positive repeat sample for E. coli.

Inorganic Contaminant Subject to ALs	AL	MCLG	Your Water*	Range of Results	Year Sampled	Number of Samples Above AL	Typical Source of Contaminant
Lead (ppb)	15	0	6 ppb	0 ppb - 65 ppb	2023	1	Lead service lines, corrosion of household plumbing including fitting and fixtures; Erosion of natural desposits.
Copper (ppm)	1.3	1.3	0.1 ppm	0 ppm - 0.1 ppm	2023	0	Corrosion of household plumbing systems; Erosion of natural desposits.

*Ninety (90) percent of the samples collected were at or below the level reported for our water.

TERMS & ABBREVIATIONS

Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Level 1 Assessment: A study of the water supply to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.

Maximum Contaminant Level (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 treatment technology.

Maximum Contaminant Level Goal (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 (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 (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.

N/A: Not applicable

ND: not detectable at testing limit

ppb: parts per billion or micrograms per liter

ppm: parts per million or milligrams per liter

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

Additional Monitoring

Unregulated contaminants are those for which the USEPA has not established drinking water standards. Monitoring helps the USEPA determine where certain contaminants occur and whether regulation of those contaminants is needed.

Unregulated Contaminant Name	Average Level Detected	Range	Year Sampled	Comments
Sodium (ppm)	43.2	35-47	6/2023	Typical source is erosion of natural deposits.
Chloride (ppm)	89	86-94	6/2023	Naturally occurring or indicative of road salt contamination.
Sulfate (ppm)	126.4	115-136	6/2023	Naturally occurring.
Magnesium (ppm)	20.75	11-29	6/2023	Naturally occurring.
Hardness of CaCO3 (ppm)	179.8	160-194	6/2023	Naturally occurring.
Calcium (ppm)	37.5	30-46	6/2023	Naturally occurring.

Unregulated Contaminant Name	Average Level Detected	Year Sampled	Comments **See EPA Website:** https://www.epa.gov/dwucmr/fourth-unregulated-contaminant-monitoring-rule
Germanium (ug/L)	<0.300	1/21/2020	Metal.
Manganese (ug/L)	<0.400	1/21/2020	Metal.
BHA (ug/L)	<0.0300	1/21/2020	Semi-Volatile Organic Compounds
o- Toluidine (ug/L)	<0.0070	1/21/2020	Semi-Volatile Organic Compounds
Quinoline (ug/L)	<0.0200	1/21/2020	Semi-Volatile Organic Compounds
HAA6Br (six brominated haloacetic acids) (ug/L)	11.000	1/07/2020	Disinfection Byproducts
HAA9 (nine haloacetic acids) (ug/L)	18.300	1/07/2020	Disinfection Byproducts
alpha-BHC (alpha-Hexachlorocyclohexane) (ug/L)	<0.010	1/07/2020	Pesticide
Chlorpyrifs (ug/L)	<0.030	1/07/2020	Pesticide
Dimethipin (ug/L)	<0.200	1/07/2020	Pesticide
Ethoprop (ug/L)	<0.030	1/07/2020	Pesticide
Oxyfluorfen (ug/L)	<0.050	1/07/2020	Pesticide
Profenofos (ug/L)	<0.300	1/07/2020	Pesticide
Tebuconazole (ug/L)	<0.200	1/07/2020	Pesticide
Permethrin (ug/L)	<0.040	1/07/2020	Pesticide
Tribufos (ug/L)	<0.070	1/07/2020	Pesticide
1-Butanol (ug/L)	<2.000	1/07/2020	Alchohol
2-Methoxyethanol (ug/L)	<0.400	1/07/2020	Alchohol
2-Propen-1-ol (ug/L)	<0.500	1/07/2020	Alchohol

Unregulated Contaminant	Average Level Detected	Range	Year	Comments
Lithium (ppb)	14.5	11.6-17.4	5/2023-11/2023	Compounds used for industrial and manufacturing purposes
Methyl Isobutyl Ketone (ppm)	0.0050	N/A	8/2023	Compounds used for industrial and manufacturing purposes

We will update this report annually and will keep customers informed of any problems that may occur throughout the year, as required. Copies are available at City Hall. We invite public participation in decisions that affect drinking water quality. Public comment may be provided at City Hall during regularly scheduled City council meetings held at 7:30 p.m., on the first and third Mondays of each month.

For more information about your water or the contents of this report, contact the Water Plant Superintendent, David Haut at 989-725-0560, or email: david.haut@ci.owosso.mi.us. Further, the City web site at http://www.ci.owosso.mi.us/Utilities is available for inquiries and comment. Finally, the Director of Public Services and Utilities is available for information and inquiries at 989-725-0555, or email at ryan.suchanek@ci.owosso.mi.us. For more information about safe drinking water, visit the U.S. EPA at http://www.epa.gov/safewater/.

IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Monitoring Requirements Not Met for the City of Owosso

The city of Owosso is required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not our drinking water meets health standards. During the monitoring period of August 1, 2023, to August 31, 2023, we did not complete monitoring for total trihalomethanes (TTHM) and haloacetic acids five (HAA5) and therefore, cannot be sure of the quality of your drinking water during that time. The violation **does not** pose a threat to the quality of the supply's water.

What should I do? There is nothing you need to do at this time. This is not an emergency. You do not need to boil water or use an alternative source of water at this time. Even though this is not an emergency, as our customers, you have a right to know what happened and what we are doing to correct the situation.

The table below lists the contaminants we did not properly test for, how often we are supposed to sample for these contaminants, how many samples we are supposed to take, how many samples we took, when samples should have been taken, and the date follow-up samples will be collected.

Contaminants	Required sampling frequency	Number of samples taken	Date sample should have been collected	Date sample will be collected by
TTHM[1] and HAA5[2]	2 Every Year	0	August 1, 2023 to August 31, 2023	August 1, 2024 – August 31, 2024

What happened? What is being done? We collected our TTHM and HAA5 samples on June 27, 2023, however they were not taken during the August 1, 2023, and August 31, 2023, monitoring period so they were not accepted for compliance. We will collect the required follow-up sample between August 1, 2024, and August 31, 2024. Our staff is making every effort to assure this does not happen again.

For more information, please contact **David Haut** at **989-725-0560**.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

More information about your drinking water is available from the U.S. Environmental Protection Agency Office of Water home page at: http://www.epa.gov/safewater/dwinfo.htm. This notice is being sent to you by the City of Owosso.

[1] TTHMs are tested by collecting one sample and testing that sample for all the TTHMs. TTHMs include bromodichloromethane, bromoform, chlorodibromomethane, and chloroform.

[2] HAA5s are tested by collecting one sample and testing that sample for all the HAA5s. HAA5s include monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid.

CERTIFICATION: WSSN: 05120

I certify that this water supply has fully complied with the public notification regulations in the Michigan Safe Drinking Water Act, 1976 PA 399, as amended, and the administrative rules.

Signature: David A. Haut Title: Filtration Plant Supervisor Date Distributed: 07/01/2024