CITY OF MASON
WATER QUALITY REPORT FOR CALENDAR YEAR 2013

The City of Mason is very pleased to provide the 2013 Annual Water Quality Report. City water is obtained from five wells located within the City of Mason. The City's wells are relatively deep with the water drawn from the Saginaw Sandstone Formation. The depth of the rock wells range from 215 feet to 400 feet. Each well has considerable impermeable material above the water bearing formation which protects the quality of the water from surface contaminants.

The City has implemented a Wellhead Protection Program and a Source Water Assessment Plan to manage the wellhead protection areas around the City of Mason water production wells. These programs help protect the City's water supply.

The Michigan Department of Environmental Quality rated city water moderately high for "Susceptibility" in 2007. That year, Well No. 2, the only well within a high risk area, was abandoned and plugged. Well No. 1 was a drift well and quite shallow; this well was abandoned in 2011 and plugged in 2012. Both wells were plugged in accordance to state guidelines. Well #3 is in standby position as there is no raw water main that attaches this well to our water treatment system. After taking these actions it is expected that a lower rating will be given on the next review.

In 2011, the City of Mason underwent a "System Wide Evaluation" by the Michigan Department of Environmental Quality. The City's water system was given a "Satisfactory" rating. This is the highest rating available. Our Source Water Assessment Plan and System Wide Evaluation are on file at the Mason Water Treatment Plant Office located at 1413 Avery Lane.

The City of Mason routinely monitors for constituents in the drinking water, according to Federal and State laws. These tables show the monitoring results for the period of January 1, 2013 to December 31, 2013.

DEFINITION OF TERMS USED

The following water treatment terms and definitions are listed to assist with interpreting the Water Quality Report for those who are unfamiliar with water treatment terminology.

Non-Detects (ND) - laboratory analysis indicates that the constituent is not present.

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 (mc/l) - one part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.

Picocuries per liter (pCi/L) - Pico curies per liter is a measure of the radioactivity in water.

Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

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

Maximum Contaminant Level (MCL) 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 (MCLG) - 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 (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.

Running Annual Average (RAA) - Four quarter running annual average for chlorine residual in the distribution system

MCL's are set at very stringent levels. The MCL's are set such that out of every 10,000 or 1,000,000 people (depends upon how the MCL was developed) drinking 2 liters of water every day for a lifetime, only 1 of those people may experience the described health effect.

CONTAMINANT INFORMATION

The Federal Safe Drinking Water Act by definition says that everything in drinking water other than H_2O is a contaminant. While this makes it easier for the U.S. Environmental Protection Agency (EPA) to write regulations, it means we all see and hear about contaminants in our drinking water. These contaminants include hardness, iron, and manganese which may cause aesthetic problems for consumers when present. These aesthetic constituents which are present in the City of Mason's drinking water are not related to health considerations.

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. 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. Information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline *(800) 426-4791.*

The State allows the City 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 of the data is representative of the water quality, but some are more than one year old.

INORGANIC CHEMICAL CONTAMINANTS

Table No. 1 Water Quality Report for 2013 City of Mason – CCR

*Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.

Containment	MCL	MCLG	Highest Measured Concentration	Range	Major Source in Drinking Water
Fluoride* Before Treatment ppm	4	4	0.39 2013	0. - 0.39	Erosion of Natural Deposits
Nitrate as N ppm	10	10	ND 2013	ND	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite as N ppm	1	1	ND 2013	ND	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
*Selenium ppb	50	50	1 (2008)	1	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines

Table No. 2 Water Quality Report for 2013 City of Mason -CCR

Regulated Contaminant	MCL	MCLG	Highest Level Detected	Range	Sample Date	Violation Yes / No	Typical Source of Contaminant
Arsenic ppb	10	0	ND	0	9/24/12	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Barium ppm	2	2	.16	0.0-.16	9/09/08	No	Discharge of drilling wastes; Discharge of metal refineries; Erosion of natural deposits
Chromium ppb	100	100	ND	ND	9/09/08	No	Discharge from steel and pulp mills; Erosion of natural deposits
Fluoride ppm	4	4	.90	.53-.90	2013	No	Erosion of natural deposits. Discharge from fertilizer and aluminum factories.
TTHM - Total Trihalomethanes	.080 ppm	N/A	.011	.006-.011	9/24/12	No	Byproduct of drinking water disinfection
HAA-5 Halo acetic Acids	.060 ppm	N/A	.007	.002-.007	9/24/12	No	Byproduct of drinking water disinfection
Chlorine ppm	**MRDL** 4	**MRDLG** 4	1.17	.90 -1.17	2013	No	Water additive used to control microbes
Bromodichloromethane ppm	.080	0	.0015	.0015-.0033	2012	No	Byproduct of drinking water disinfection
Chloroform ppm	.080	.080	.0062	.0018-.0062	2012	No	Byproduct of drinking water disinfection
Chlorodibromomethane ppm	.080	N/A	.0016	.0009-.0016	2012	No	Byproduct of drinking water disinfection
Bromochloroacitic Acid ppm	N/A	N/A	.002	N/D-.002	2012	No	Byproduct of drinking water disinfection
Dibromoacitic Acid ppm	N/A	N/A	.001	N/D-.001	2012	No	Byproduct of drinking water disinfection
Dichloroacitic Acid ppm	N/A	N/A	.003	.001-.003	2012	No	Byproduct of drinking water disinfection
Trichloroacitic Acid ppm	N/A	N/A	.003	.001-.003	2012	No	Byproduct of drinking water disinfection

Table No. 3 Water Quality Report for 2013 City of Mason CCR

Radioactive Contaminant	MCL	MCLG	Highest Level Detected	Range	Sample Date	Violation Yes / No	Typical Source of Contaminant
Alpha emitters (pCi/L)	15	15	1.6	1.6	8/12/2012	No	Erosion of natural deposits
Combined Radium (pCi/L)	5	5	1.2	1.2	6/11/2013	No	Erosion of natural deposits

Special Monitoring and Unregulated Contaminant **	Average Level Detected	Range	Sample Date	Typical Source of Contaminant
**Sodium (ppm)	12	12	2013	Erosion of natural deposits
**Hardness (ppm)	382	360-420	2013	Erosion of natural deposits
**Iron (ppm)	<.01	<.01 - .12	2013	Erosion of natural deposits
**Chloride (ppm)	18	18	2013	Erosion of natural deposits
**Sulfate (ppm)	45	45	2013	Erosion of natural deposits

Contaminant Subject to AL	MCL	MCLG	90% of Samples ≤ This Level	Range	Sample Date	Violation Yes / No	Number of Samples Above AL	Typical Source of Contaminant
Lead (ppb)	15	15	1.0	0-4	6/1/2013-9/30/2013	NO	0	Corrosion of household plumbing systems; Erosion of natural deposits
Copper (ppm)	1.3	1.3	.96	0-1.22	6/1/2013-9/30/2013	NO	0	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives

In 2013 the finished water was tested for iron, chloride, hardness, sodium, and sulfate, which are chemical constituents often found in groundwater. These are of aesthetic concern rather than health concern.

** 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.

MICROBIOLOGICAL CONTAMINANTS

The routine test to evaluate the bacteriological quality of drinking water is to analyze water samples for the presence of Total Coliform Bacteria, which is an indicator organism that is used as a health standard. The City of Mason's monitoring schedule for bacteria requires the collection of nine water samples from the distribution system each month to be analyzed for Total Coliform Bacteria in a properly certified laboratory. This means the City collected 108 required samples from the water distribution system this year. All 108 samples came back negative for the presence of Total Coliform Bacteria. The City of Mason also voluntarily collects samples (for additional safety) from all operating and standby wells, water treatment plant raw water, and finish water taps each month. All test results reported negative for the presence of Total Coliform Bacteria.

Microbial Contaminants	MCL	Number Detected	Violation Yes / No	Typical Source of Contaminant
Total Coliform Bacteria	1 positive monthly sample (5% of monthly samples positive)	0	No	Naturally present in the environment
Fecal Coliform and *E. coli*	Routine and repeat sample total coliform positive, and one is also fecal or *E. coli* positive	0	No	Human and animal fecal waste

The test results reported in the tables within this report reflect that the City's drinking water distribution system remains violation free and meets or exceeds all Federal and State requirements. We have learned through our monitoring and testing that some constituents have been detected. The EPA has determined that your water IS SAFE at these levels.

Combined Radium 226/228:
Some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

Raw Water:
Raw water is water that comes from all the wells to the water plant in one pipe before treatment. The raw water coming into the plant was tested for Herbicides, Pesticides, and Carbamates in 2009 all results were "Non Detects." There was one positive test result for nitrate in 2008. However, the one positive result was before the treatment plant was on-line at only 1.1 ppm which is well below the MCL of 10 ppm. Nitrate and Nitrite were tested for in the finish water in 2013 and both samples came back Non Detect.

Finished Water:
Finished Water is water that has been treated and is going out to the costumer. Water quality testing, and Partial Chemistry, were completed in 2013, and all results were well below the "MCLs" or "Non Detect."

Distribution System Water:
Tests for Total Trihalomethanes and Total Haloacitic Acids were performed on water from the distribution system. These tests are for monitoring disinfection by-products in the distribution system in 2012.

Sodium:
For people concerned about their sodium intake, the results of sodium testing were 12 ppm.

Sulfate:
The EPA has considered developing a maximum contaminant level (MCL) for sulfate since high concentrations may cause diarrhea. The EPA requires that customers be notified of the sulfate concentrations in the City's water even though the sulfate concentration in the water from the finished water is far below the Secondary MCL of 250 ppm

LEAD AND COPPER:
Water systems are required to collect samples or have samples collected from customers' taps after the water has been held in the internal home piping system for at least six hours. There is no measurable lead or copper in the water as it leaves the water plant. Historical monitoring indicates no lead or copper in the water within the distribution system either. Therefore, this is actually a check on the corrosivity of the water in the home piping system. This monitoring is normally completed by asking selected customers to collect the samples from their home taps at the first flush of the water in the morning. The selection of customers to collect these samples is based on the type of piping in the house and the location within the distribution system.

The federal action level requires that 90% of the samples collected be less than 15 ppb for lead and 1.3 ppm for copper.

This monitoring program assesses an absolutely worst case situation. EPA requires samples be collected after the water has been in the pipe/faucet for at least six hours. Then, a first flush sample is drawn. The action level is based on a person potentially obtaining an entire day's drinking water from the first flush coming from the tap.

The City continues to work to improve its corrosion control treatment since the action level for copper has been slightly exceeded in some previous monitoring cycles. The analyses for lead was far below the action level. The samples for lead and copper analysis are collected by homeowners, and their cooperation in this activity is critical. A follow-up investigation of the sample points analytical results that were above the 1.3 ppm action level for copper indicated some of the samples were of softened water. Water treated in home zeolite softeners tends to be more corrosive. The water department staff will maintain increased efforts to assure that future samples are not of water treated in a home softener or samples collected from basement taps which have not routinely been in use for extended periods of time. In the most recent round of 20 sample points, the 90th percentile for lead was 1 ppb which is below the action level of 15 ppb. The 90th percentile for copper was.96 ppm which is below the action level of 1.3 ppm. The treatment techniques utilized at the water treatment plant are proving successful, when

comparing test results from previous monitoring cycles. The latest test results show continued improvement of lowering these levels of lead and copper in samples taken from selected homes in the city's distribution system.

COPPER:
Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's disease should consult their personal doctor.

LEAD:
Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Mason is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. Infants and young children are typically more vulnerable to lead in drinking water than the general population. Infants and children who drink water containing lead in excess of the action level 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.

It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline *(800-426-4791*).

If you are concerned with the copper content of your home's drinking water, it is suggested you allow the water run 30 seconds to 2 minutes before drawing water for drinking or cooking.

ORGANIC CHEMICAL CONTAMINANTS:
In accordance with a prescribed monitoring schedule from the Michigan Department of Environmental Quality, 68 tests were collected at the water treatment plant finish water tap and distribution taps and tested for, Arsenic, Iron, and Nitrate as N, Nitrite as N, Carbamates, Herbicides, and Pesticides all results came back as Non Detect.

Disinfection bi-product and Volatile Organic Compound tests including Total Trihalomethanes and Haloacetic Acids (5) were performed on samples taken from two distribution sample taps in 2012. The results from these test samples were 69 Non-Detects and 13 very slight detections.

RADIOACTIVE CONTAMINANTS:
The City of Mason's drinking water was tested in 2013 for Radium 226 + Radium 228 in accordance with State and Federal regulations. The results from annual testing at the water treatment plant show Radium 226 =1.2 (+-.3)pCi/L and Radium 228=0.0 (+-.6)pCi/L for a combined level of 1.2 pCi/L which is well under the MCL of 5pCi/L This shows that the water treatment plant process is working very good. This MCL has been established at, or near, the lower limit of detection for the laboratories. Radium is a natural contaminant in groundwater.

What does this mean?
This is not an immediate risk. If it had been, you would have been notified immediately. However, some people who drink water containing radium 226 or 228 in excess of the MCL over many years may have an increased risk of getting cancer.

EPA REQUIRED HEALTH INFORMATION

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).

All sources of drinking water are subject to potential contamination by substances that are naturally occurring or manmade. These substances can be microbes, inorganic or organic chemicals and radioactive substances. All 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 the 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.

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, 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

- 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 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 storm water runoff, 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. 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 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 (800-426-4791).

PROBLEMS OVERCOME DURING 2013

Well numbers 8 and 9 have had shale cave-ins in 2012-2013. The City of Mason has hired a hydro geologist to help find a way to best deal with this problem. The City is moving forward with well number 9's raw water main from the well to the drinking water plant and finishing up the final stages of putting well No. 9 on line for 2014.

OTHER IMPORTANT ACTIVITIES OF YOUR WATER DEPARTMENT PROFESSIONALS

The City of Mason's Water Department Staff continues to maintain a Well Head Protection Program along with the Storm Water Management Program in 2013-2014.

The City's Water Department Staff routinely performs a flushing program to maximize the aesthetic quality of drinking water in the water system. The water treatment plant is continuing to produce high quality water that is being sent out to the distribution system which is resulting in better quality water throughout the City. Some isolated aesthetic problems may occur even with the current treatment and flushing program.

During 2013, the 1st quarter was over and the 2nd and 3rd quarter Radium tests revealed that Well No. 3 is back under the MCL of 5pCi/L. Well No. 3 will remain off-line. The City's water department staff will continue to perform Department of Environmental Quality mandated testing. Only in the event of extreme emergency will Well No. 3 be brought on-line to pump water to the distribution system. If this were to occur, notification of the City of Mason's population and Department of Environmental Quality would take place.

SUMMARY

The water supply for the City of Mason meets or exceeds State and Federal drinking water quality standards. Regulations at the Federal level, in particular, are continuing to become more detailed and stringent.

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.

Where Do I Get This Report

This report will be posted on the City of Mason web site at http://www.mason.mi.us/publicworksmain.htm This report is also available at Mason City Hall, 201 West Ash Street Mason, MI 48854. This report will not be mailed. A reference to this report will also be posted on the City of Mason's TV Channel 21, and on the bottom of your water bills.

TELEPHONE CONTACT FOR THE SYSTEM

Mr. Ken Baker, Superintendent of Public Works, is responsible for the operation of the water system and can be reached at (517) 676-1319