



Royal Oak

Agenda

Water System Advisory Council Meeting

Wednesday, November 20, 2024, 7:00 p.m.

City Hall, Room 122

203 S. Troy Street

Royal Oak, Michigan 48067

Anyone planning to attend the meeting who has need of special assistance under the Americans with Disabilities Act (ADA) is asked to contact the city clerk's office at 248-246-3050 at least two (2) business days prior to the meeting.

Pages

1. Call to Order	
2. Approval of Agenda	
3. Approval of Minutes	2
4. Public Comment	
5. Presentation of Annual Activity Report and Status of Water System Material Inventory	4
6. Adjournment	



Minutes

Royal Oak Environmental Advisory Board Meeting and Water System Advisory Council Meeting

Royal Oak Farmers Market
316 E. 11 Mile Road
Royal Oak, MI 48067

Wednesday, November 29, 2023
7:00pm

1. Meeting of the Water System Advisory Council (WSAC) was called to order at 7:10 pm.
 - Director Filipski provided an update of DPS' water service line inventory work, lead service line replacement work, and the annual lead and copper monitoring and addressed general questions about the work.
 - WSAC meeting concluded at approximately 7:40 pm.
2. Royal Oak Environmental Advisory Board Meeting called to order at 7:40 pm.
3. The agenda was approved unanimously.
4. October 2023 meeting minutes were approved unanimously.
5. Public Comment
 - Chuck Altman discussed S-CAP metrics and noted difficulties finding related information on the website.
 - Mike Bunch inquired about service on the EAB as a board member; noted interest in pursuing native planting projects.
 - Janice Wagman noted that WSAC summary was not included as a link in the agenda; would like agenda updated and reports included moving forward.
 - Frank Komola inquired about how visitors to EAB meetings have learned about the meetings; questioned whether and how city development projects require or encourage the inclusion of sustainable features.
6. No items were discussed in the New Business portion of the meeting.
7. Director Filipski briefly reported on staff efforts toward implementation of EVs for city fleet vehicles.
8. Sustainability Manager Fox provided additional detail on staff efforts to implement EVs for city staff and discussed use of grant funds for that purpose.
9. City Commissioner Amanda Herzog her new role as commissioner, her various board assignments, and her commitment to supporting the board's efforts.
10. Unfinished Business

- Updates/Discussion

- Member Julie Lyons-Bricker discussed Oakland County's "Oakland Saves" program
- Member Jennifer Acevedo commented on State of Michigan Climate Pollution Reduction Grants and recent Michigan climate-related legislation.
- Member Julie Lyons-Bricker mentioned Alchemy's "Make Food not Waste" program and noted that the restaurant would be interested in potentially hosting the EAB.
- Member Tessa Benzinger discussed community composting initiatives.
- Member Tom Regan engaged the public attendees about how they learned of the EAB group/meetings.

11. Non-Action Items

- SOCRRA Refuse/Recycling Tonnage Report

12. The chair noted that the next meeting would take place on January 24, 2024 at the Royal Oak Farmer's Market and would include the election of board officers.

13. Motion to adjourn was adopted unanimously at 8:20 pm.

Water System Advisory Council – 2024 Update
11.14.2024

Per the revised Michigan Safe Drinking Water Act (MSDWA), water distribution system operators are required to meet at least once annually for the purpose of providing public updates to its operations and address public concerns and inquiries. Because of their focus on environmental health concerns, members of Royal Oak Environmental Advisory board are designated to perform this function.

This report provides an update on the number of lead and/or galvanized water line replacements to date, detail on the water system materials inventory, sample public communications, and annual reports.

Complete Distribution System Material Inventory (CDSMI)

The purpose of the CDSMI is to characterize, record, and maintain a comprehensive inventory of distribution system materials, including service line materials on both public and private property. Maintenance of an accurate inventory of distribution materials supports effective asset management planning, lead service line replacement efforts, and notification of those served by a lead service line.

The MSDWA rule update required municipalities to produce a CDSMI by October 15, 2024; Royal Oak has submitted its data set and has made it publicly accessible at: <https://romi.gov/1873/Comprehensive-Water-Distribution-System->, which will be updated annually in October.

Staff will sustain efforts to verify, revise, and update this data set through online self-reporting, annual mailings to all locations where materials are not known, and visual verification by staff during water main work and meter service appointments. Attached are several examples of the communication methods used to alert residents of unknown materials and provide guidance on how to reduce potential exposure to lead from drinking water.

Figure 1 illustrates the current total inventory of service lines by material type.

Lead Service Line Replacements

As lead lines are discovered during the inventory process homeowners are promptly notified, advised on how to reduce exposure to lead, provided the requisite access agreements and instructions to facilitate replacement, and added to the replacement queue. Currently, DPS schedules 3 replacement programs annually, with an average of 90 replacements each. This pace exceeds the state mandate of 100 replacements per year.

In 2024, 267 lead and/or galvanized water lines were replaced, as indicated in figure 2.

The work of replacing water lines also complements inventory work. For example, records may indicate that a particular address is known to have a lead line on the 'private side', but the

'public side' may be unknown. During the course of replacement, we will learn the composition of the unknown materials and update our records accordingly.

Based on the updated inventory summary in figure 1 below, known lead and/or galvanized services total 1101. The increase from 1,086 in 2023 reflects additional known lead and/or galvanized services lines identified during inventory and verification work. Among the 1222 locations of unknown materials, staff estimates the proportion of lead and galvanized services could total as many as 648. Thus, the total estimated number of future replacements is 1,734 – a reduction of approximately 297 from the 2023 estimate.

Each replacement costs an average of \$4500, resulting in an estimated expenditure of approximately \$7.8M between now and the mandated completion date of 2040. At the current pace, the goal is to complete this work by 2033. As the inventory is further refined, the city may be able to achieve this sooner. Funding for this work is projected to remain stable.

2024 Lead and Copper Sampling Results

DPS staff conducted annual testing for lead and copper at 30 targeted sample sites throughout the city, and based on a preliminary assessment and calculation by staff, did not result in an 'action level exceedance' for either lead or copper. The Department of Public Services submitted the results to EGLE (attached) which has not yet provided its official analysis/results letter.

All participants in the testing program were advised of their results.

2024 Material Type and Replacement Figures

Figure 1 - Water Service Line Materials by Type

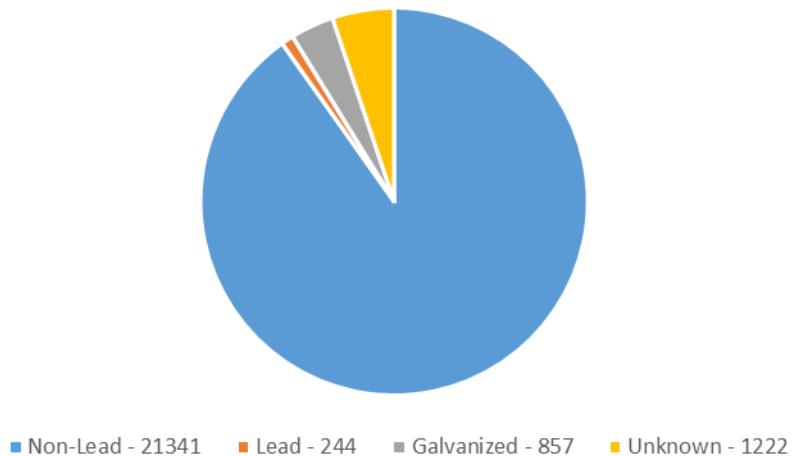
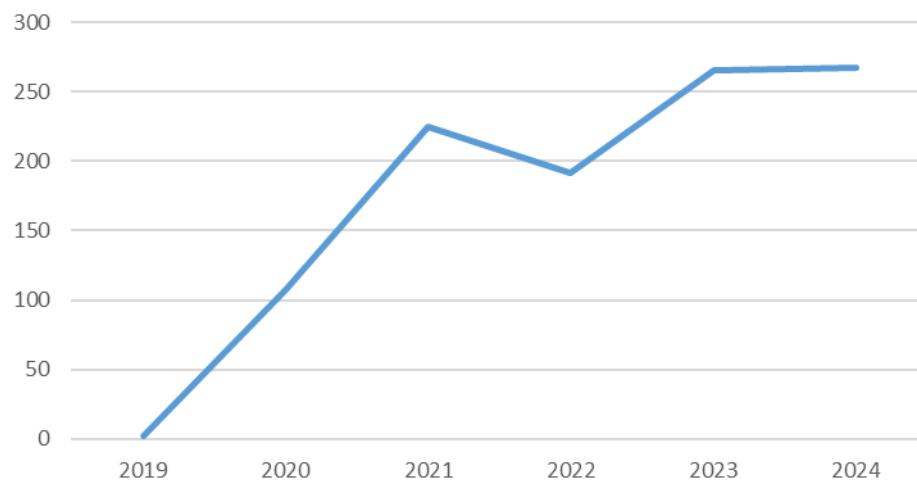
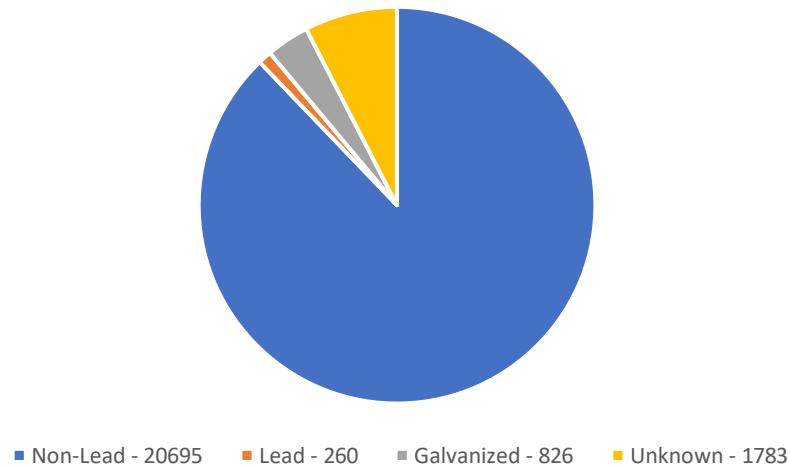


Figure 2 - Lead/Galvanized Replacements by Year



2023 Material Type Figures

Figure 1 - Water System Materials Inventory



CITY OF ROYAL OAK

2023 CONSUMERS ANNUAL REPORT ON WATER QUALITY

ATTENTION: THIS IS AN IMPORTANT REPORT ON WATER QUALITY AND SAFETY

The City of Royal Oak, The Southeastern Oakland County Water Authority (SOCWA) and the Great Lakes Water Authority (GLWA) are proud of the fine drinking water they supply and are honored to provide this report to you. The 2023 Consumers Annual Report on Water Quality shows the sources of our water, lists the results of our tests, and contains important information about water and health. We will notify you immediately if there is ever any reason for concern about our water. We are pleased to show you how we have surpassed water quality standards as mandated by the Environmental Protection Agency (EPA) and the Michigan Department of Environment, Great Lakes, and Energy (EGLE).

About the System

The City of Royal Oak purchases water from the Southeastern Oakland County Water Authority (SOCWA) at thirteen locations. SOCWA provides GLWA water through its member distribution systems to a population of 210,000 within a 56 square mile area. Current members are Berkley, Beverly Hills, Bingham Farms, Birmingham, Clawson, Huntington Woods, Lathrup Village, Pleasant Ridge, Royal Oak, Southfield, and Southfield Township.

Your source water comes from the Detroit River, situated within the Lake St. Clair, Clinton River, Detroit River, Rouge River, Ecorse River, watersheds in the U.S. and parts of the Thames River, Little River, Turkey Creek and Sydenham watersheds in Canada. The Michigan Department of Environmental Quality in partnership with the U.S. Geological Survey, the Detroit Water and Sewerage Department, and the Michigan Public Health Institute performed a source water assessment in 2004 to determine the susceptibility of GLWA's Detroit River source water for potential contamination. The susceptibility rating is based on a seven-tiered scale and ranges from very low to very high determined primarily using geologic sensitivity, water chemistry, and potential contaminant sources. The report described GLWA's Detroit River intakes as highly susceptible to potential contamination. GLWA's water treatment plants Northeast and Springwells that draw water from the Detroit River has historically provided satisfactory treatment and meets drinking water standards.

And/or

Your source water comes from the lower Lake Huron watershed. The watershed includes numerous short, seasonal streams that drain to Lake Huron. The Michigan Department of Environmental Quality in partnership with the U.S. Geological Survey, the Detroit Water and Sewerage Department, and the Michigan Public Health Institute performed a source water assessment in 2004 to determine the susceptibility of potential contamination. The susceptibility rating is a seven-tiered scale ranging from "very low" to "very high" based primarily on geologic sensitivity, water chemistry, and contaminant sources. The Lake Huron source water intake is categorized as having a moderately low susceptibility to potential contaminant sources. The Lake Huron water treatment plant has historically provided satisfactory treatment of this source water to meet drinking water standards.

GLWA has initiated source-water protection activities that include chemical containment, spill response, and a mercury reduction program. GLWA participates in the National Pollutant Discharge Elimination System permit discharge program and has an emergency response management plan. GLWA has an updated Surface Water Intake Protection plan for the Lake Huron water intake. The plan has seven elements that include: roles and duties of government units and water supply agencies, delineation of a source water protection areas, identification of potential sources of contamination, management approaches for protection, contingency plans, siting of new water sources, public participation, and public education activities. If you would like to know more

information about the Source Water Assessment Report, please, contact GLWA at (313 926-8127).

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 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 can dissolve naturally occurring minerals and, in some cases, radioactive materials, and 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 runoff, industrial or domestic wastewater discharge, 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 the water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water, which must provide the same protection for public health.

Key to the Detected Contaminants Table

Symbol	Abbreviation	Definition/Explanation
AL	Action Level	The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements which a water system must follow.
°C	Celsius	A scale of temperature in which water freezes at 0° and boils at 100° under standard conditions.
>	Greater than	
HAA5	Haloacetic Acids	HAA5 is the total of bromoacetic, chloroacetic, Dibromoacetic, dichloroacetic, and trichloroacetic acids. Compliance is based on the total.
Level 1	Level 1 Assessment	A study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in the water system.
LRAA	Locational Running Annual Average	The average of analytical results for samples at a particular monitoring location during the previous four quarters.
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 contaminant in drinking water below which there is no known or expected risk to health.
MRDL	Maximum Residual Disinfectant Level	The highest level of 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 drinking water disinfectant below which there is no known or expected risk to health. MRLDG's do not reflect the benefits of the use of disinfectants to control microbial contaminants.
n/a	not applicable	
ND	Not Detected	Below the detection limit of the method
NTU	Nephelometric Turbidity Units	Measures the cloudiness of water.
pCi/L	Picocuries Per Liter	A measure of radioactivity
ppb	Parts Per Billion (one in one billion)	The ppb is equivalent to micrograms per liter. A microgram = 1/1000 milligram.
ppm	Parts Per Million (one in one million)	The ppm is equivalent to milligrams per liter. A milligram = 1/1000 gram.
RAA	Running Annual Average	The average of analytical results for all samples during the previous four quarters.
SMCL	Secondary Maximum Contaminant Level	An MCL which involves a biological, chemical or physical characteristic of water that may adversely affect the taste, odor, color or appearance (aesthetics), which may thereby affect public confidence or acceptance of the drinking water.
TT	Treatment Technique	A required process intended to reduce the level of a contaminant in drinking water.
TTHM	Total Trihalomethanes	Total Trihalomethanes is the sum of chloroform, bromodichloromethane, dibromochloromethane and bromoform. Compliance is based on the total.
µmhos	Micromhos	Measure of electrical conductance of water

2023 Springwells Regulated Detected Contaminants Table

2023 Inorganic Chemicals - Annual Monitoring at Plant Finished Tap								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level Detected	Range of Detection	Violation	Major Sources in Drinking Water
Fluoride	04-11-2023	ppm	4	4	0.86	n/a	no	Erosion of natural deposit; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	04-11-2023	ppm	10	10	0.63	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

2023 Disinfection Residual - Monitoring in the Distribution System

Regulated Contaminant	Test Date	Unit	Health Goal MRDLG	Allowed Level MRDL	Highest Level RAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
Chlorine Residual	2023	ppm	4	4	0.74	0.67-0.81	no	Water additive used to control microbes

2023 Turbidity - Monitored Every 4 Hours at the Plant Finished Water Tap

Highest Single Measurement Cannot Exceed 1 NTU	Lowest Monthly % of Samples Meeting Turbidity Limit of 0.3 NTU (minimum 95%)	Violation	Major Sources in Drinking Water
0.09 NTU	100%	no	Soil Runoff

Regulated Contaminant	Treatment Technique	Typical Source of Contaminant
Total Organic Carbon ppm	The Total Organic Carbon (TOC) removal ratio is calculated as the ratio between the actual TOC removal and the TOC removal requirements. The TOC is measured each quarter and because the level is low, there is no requirement for TOC removal.	Erosion of natural deposits

2023 Special Monitoring

Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	04-11-2023	ppm	n/a	n/a	7.0	Erosion of natural deposits

These tables are based on tests conducted by GLWA in the year 2023 or the most recent testing done within the last five calendar years. GLWA conducts tests throughout the year only tests that show the presence of a substance or require special monitoring are presented in these tables. 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. The data is representative of the water quality, but some are more than one year old.

2023 Springwells Tap Water Mineral Analysis

Parameter	Units	Max.	Min.	Avg.	Parameter	Units	Max.	Min.	Avg.
Turbidity	NTU	1.08	0.03	0.14	Phosphorus	ppm	0.61	0.37	0.49
Total Solids	ppm	153	115	138	Free Carbon Dioxide	ppm	11.6	4.4	8.4
Total Dissolved Solids	ppm	156	102	129	Total Hardness	ppm	146	90	116
Aluminum	ppm	0.077	0.018	0.038	Total Alkalinity	ppm	94	70	77
Iron	ppm	0.4	0.2	0.3	Carbonate Alkalinity	ppm	ND	ND	ND
Copper	ppm	0.003	ND	0.001	Bi-Carbonate Alkalinity	ppm	94	70	77
Magnesium	ppm	8.4	7.2	7.9	Non-Carbonate Hardness	ppm	66	10	39
Calcium	ppm	28.5	25.3	26.9	Chemical Oxygen Demand	ppm	11.1	ND	4.5
Sodium	ppm	7.0	4.6	5.3	Dissolved Oxygen	ppm	20.0	7.2	11.4
Potassium	ppm	1.3	1.0	1.0	Nitrite Nitrogen	ppm	ND	ND	0.0
Manganese	ppm	0.001	ND	ND	Nitrate Nitrogen	ppm	0.63	0.32	0.38
Lead	ppm	ND	ND	ND	Fluoride	ppm	0.86	0.10	0.59
Zinc	ppm	0.003	ND	0.001	pH		7.52	7.09	7.28
Silica	ppm	2.9	1.1	2.1	Specific Conductance @ 25 °C	µmhos	219	180	191
Sulfate	ppm	32.3	22.5	25.0	Temperature	°C	23.4	3.4	13.2
Chloride	ppm	11.5	9.5	10.4					

2023 Northeast Regulated Detected Contaminants Table

2023 Inorganic Chemicals - Annual Monitoring at Plant Finished Tap								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level Detected	Range of Detection	Violation	Major Sources in Drinking Water
Fluoride	04-11-2023	ppm	4	4	0.65	n/a	no	Erosion of natural deposit; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	04-11-2023	ppm	10	10	0.64	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

2023 Disinfection Residual - Monitoring in the Distribution System

Regulated Contaminant	Test Date	Unit	Health Goal MRDLG	Allowed Level MRDL	Highest Level RAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
Chlorine Residual	2023	ppm	4	4	0.69	0.55-0.76	no	Water additive used to control microbes

2023 Turbidity - Monitored Every 4 Hours at the Plant Finished Water Tap

Highest Single Measurement Cannot Exceed 1 NTU	Lowest Monthly % of Samples Meeting Turbidity Limit of 0.3 NTU (minimum 95%)	Violation	Major Sources in Drinking Water
0.11 NTU	100%	no	Soil Runoff

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

Regulated Contaminant	Treatment Technique	Typical Source of Contaminant
Total Organic Carbon ppm	The Total Organic Carbon (TOC) removal ratio is calculated as the ratio between the actual TOC removal and the TOC removal requirements. The TOC is measured each quarter and because the level is low, there is no requirement for TOC removal.	Erosion of natural deposits

2023 Special Monitoring

Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	04-11-2023	ppm	n/a	n/a	7.3	Erosion of natural deposits

These tables are based on tests conducted by GLWA in the year 2023 or the most recent testing done within the last five calendar years. GLWA conducts tests throughout the year only tests that show the presence of a substance or require special monitoring are presented in these tables. 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. The data is representative of the water quality, but some are more than one year old.

2023 Northeast Tap Water Mineral Analysis

Parameter	Units	Max.	Min.	Avg.	Parameter	Units	Max.	Min.	Avg.
Turbidity	NTU	3.00	0.03	0.30	Phosphorus	ppm	0.66	0.36	0.47
Total Solids	ppm	157	113	133	Free Carbon Dioxide	ppm	16.4	6.7	10.0
Total Dissolved Solids	ppm	159	101	129	Total Hardness	ppm	138	98	113
Aluminum	ppm	0.071	0.018	0.038	Total Alkalinity	ppm	94	68	81
Iron	ppm	0.4	0.2	0.3	Carbonate Alkalinity	ppm	ND	ND	ND
Copper	ppm	0.003	0.001	0.001	Bi-Carbonate Alkalinity	ppm	94	68	80
Magnesium	ppm	8.3	6.7	7.7	Non-Carbonate Hardness	ppm	48	8	32
Calcium	ppm	28.6	24.9	26.6	Chemical Oxygen Demand	ppm	9.2	ND	4.6
Sodium	ppm	7.3	4.6	5.4	Dissolved Oxygen	ppm	13.5	7.3	10.2
Potassium	ppm	1.3	0.9	1.0	Nitrite Nitrogen	ppm	ND	ND	0.0
Manganese	ppm	ND	ND	ND	Nitrate Nitrogen	ppm	0.64	0.30	0.38
Lead	ppm	ND	ND	ND	Fluoride	ppm	0.86	0.50	0.63
Zinc	ppm	0.003	ND	ND	pH		7.35	7.03	7.21
Silica	ppm	2.8	1.6	2.1	Specific Conductance @ 25 °C.	µmhos	262	177	213
Sulfate	ppm	34.9	22.3	25.8	Temperature	°C	23.2	6.7	15.0
Chloride	ppm	14.0	7.5	10.4					

2023 Lake Huron Regulated Detected Contaminants Table

2023 Inorganic Chemicals - Annual Monitoring at Plant Finished Tap								
Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level Detected	Range of Detection	Violation	Major Sources in Drinking Water
Fluoride	04-11-2023	ppm	4	4	0.70	n/a	no	Erosion of natural deposit; Water additive, which promotes strong teeth; Discharge from fertilizer and aluminum factories.
Nitrate	04-11-2023	ppm	10	10	0.38	n/a	no	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.

2023 Disinfection Residual - Monitoring in the Distribution System

Regulated Contaminant	Test Date	Unit	Health Goal MRDLG	Allowed Level MRDL	Highest Level RAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
Total Chlorine Residual	2023	ppm	4	4	0.76	0.68 – 0.84	no	Water additive used to control microbes

2023 Turbidity - Monitored Every 4 Hours at the Plant Finished Water Tap

Highest Single Measurement Cannot Exceed 1 NTU	Lowest Monthly % of Samples Meeting Turbidity Limit of 0.3 NTU (minimum 95%)	Violation	Major Sources in Drinking Water
0.14 NTU	100 %	no	Soil Runoff

Turbidity is a measure of the cloudiness of water. We monitor it because it is a good indicator of the effectiveness of our filtration system.

Regulated Contaminant	Treatment Technique	Typical Source of Contaminant
Total Organic Carbon ppm	The Total Organic Carbon (TOC) removal ratio is calculated as the ratio between the actual TOC removal and the TOC removal requirements. The TOC is measured each quarter and because the level is low, there is no requirement for TOC removal.	Erosion of natural deposits

2023 Special Monitoring

Contaminant	Test Date	Unit	MCLG	MCL	Highest Level Detected	Source of Contaminant
Sodium	04-11-2023	ppm	n/a	n/a	4.8	Erosion of natural deposits

These tables are based on tests conducted by GLWA in the year 2023 or the most recent testing done within the last five calendar years. GLWA conducts tests throughout the year only tests that show the presence of a substance or require special monitoring are presented in these tables. 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. The data is representative of the water quality, but some are more than one year old.

2023 Lake Huron Tap Water Mineral Analysis

Parameter	Units	Max.	Min.	Avg.	Parameter	Units	Max.	Min.	Avg.
Turbidity	N.T.U.	0.09	0.05	0.07	Phosphorus	mg/L	0.56	0.40	0.45
Total Solids	mg/L	146	61	122	Free Carbon Dioxide	mg/L	8.4	4.4	6.2
Total Dissolved Solids	mg/L	153	103	123	Total Hardness (3), (4), (5)	mg/L	140	96	113
Aluminum	mg/L	0.071	0.018	0.042	Total Alkalinity (3)	mg/L	92	74	81
Iron	mg/L	0.4	0.2	0.3	Carbonate Alkalinity (3)	mg/L	ND	ND	ND
Copper	mg/L	0.001	ND	ND	Bi-Carbonate Alkalinity (3)	mg/L	92	74	81
Magnesium	mg/L	7.9	7.0	7.7	Non-Carbonate Hardness (3)	mg/L	58	16	31
Calcium	mg/L	27.2	25.0	25.9	Chemical Oxygen Demand	mg/L	12.8	ND	4.7
Sodium	mg/L	5.5	4.5	4.9	Dissolved Oxygen	mg/L	13.3	8.5	10.8
Potassium	mg/L	1.1	0.9	1.0	Nitrite Nitrogen	mg/L	ND	ND	ND
Manganese	mg/L	ND	ND	ND	Nitrate Nitrogen	mg/L	0.55	0.33	0.38
Lead	mg/L	ND	ND	ND	Fluoride	mg/L	0.79	0.59	0.73
Zinc	mg/L	0.008	ND	0.002	pH		7.56	7.34	7.43
Silica	mg/L	2.5	2.0	2.2	Specific Conductance @ 25 °C.	µmhos	210	166	197
Sulfate	mg/L	21.0	17.9	19.2	Temperature	°C	23.7	2.7	15.1
Chloride	mg/L	10.0	8.5	9.3					

CITY OF ROYAL OAK

2023 Microbiological Contaminants – Monthly Monitoring in Distribution System

Regulated Contaminant	MCLG	MCL	Highest Number Detected	Violation yes/no	Major Sources in Drinking Water
Total Coliform Bacteria	0	Presence of Coliform bacteria > 5% of monthly samples	0	no	Naturally present in the environment
E. coli Bacteria	0	A routine sample and a repeat sample are total coliform positive, and one is also E.coli positive.	0	no	Sanitary defects

2023 Disinfection By-Products - Stage 2 Disinfection By-Products Monitoring in the Distribution System

Regulated Contaminant	Test Date	Unit	Health Goal MCLG	Allowed Level MCL	Highest Level LRAA	Range of Quarterly Results	Violation	Major Sources in Drinking Water
(TTHM) Total Trihalomethanes	2023	ppb	n/a	80	32	15 - 54	no	By-product of drinking water chlorination
(HAA5) Haloacetic Acids	2023	ppb	n/a	60	19	11 - 21	no	By-product of drinking water chlorination

Lead and Copper Monitoring at the Customer's Tap in 2023

Regulated Contaminant	Unit	Year Sampled	Health Goal MCLG	Action Level AL	90 th Percentile Value*	Range of Individual Samples Results	Number of Samples Over AL	Major Sources in Drinking Water
Lead	ppb	2023	0	15	12	0 - 30	2	Lead services lines, corrosion of household plumbing including fittings and fixtures; Erosion of natural deposits.
Copper	ppm	2023	1.3	1.3	0.1	0.0 - 0.2	0	Corrosion of household plumbing systems; Erosion of natural deposits

* The 90th percentile value means 90 percent of the homes tested have lead and copper levels below the given 90th percentile value. If the 90th percentile value is above the AL additional requirements must be met.

2022 Number of Water Service Connections by Service Line Material

Number of Lead Service Lines	Number of Service Lines of Unknown Material	Total Number of Service Lines
1184	1294	23561

About Unregulated Contaminant Monitoring

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

In 2023 The city of Royal Oak participated in the Fifth Unregulated Contaminant Monitoring Rule. During this monitoring period 29 per – and polyfluoroalkyl substances and lithium were analyzed. For the four quarters of monitoring all 29 per – and polyfluoroalkyl substances and lithium sampling results reported as non-detect. All systems are required to report their data to the EPA. The analytical results from the UCMR are stored in the National Contaminant Occurrence Database for drinking water. For a summary of the UCMR results, please refer to the UCMR Occurrence Data webpage.

Important Health Information

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 Royal Oak 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 the water for drinking or cooking. If you have a service that is lead, galvanized previously connected to lead, or unknown but likely to be lead, it is recommended that you run your water for at least 5 minutes to flush water from both your home plumbing and 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 1-800-462-4791 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.

People with Special Health Concerns

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 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 at (800) 426-4791.

IMPORTANT ADDENDUM - 6.10.2024 – Re: Springwells Water Treatment Plant

Great Lakes Water Authority (GLWA) is required to notify water users of any unresolved significant deficiencies identified by the Michigan Department of Environment, Great Lakes, and Energy, Drinking Water and Environment Health Division (EGLE). Below is the status of significant deficiencies in the GLWA water system identified by EGLE:

Date Identified by EGLE	Description	Compliance Agreement Deadline	Status
05-25-2022	Inoperable rapid mixing equipment at the Springwells 1930's water plant	12-31-2023	Completed in December 2023.
05-25-2022	Inoperable flocculation equipment at the 1958 Springwells water plant	11-11-2027	Phase I - Construction phase in progress and is scheduled to be completed in 2025

Questions:

- Local Distribution: City of Royal Oak (248) 246-3300
- Southeastern Oakland County Water Supply System – Water Authority offices: (248) 288-5150. Visit our web site at www.socwa.org
- Great Lakes Water Authority – www.glwwater.org
- Michigan Department of Environment, Great Lakes, and Energy (EGLE) - (586) 753-3755 – www.michigan.gov/egle
- U.S. Environmental Protection Agency – Safe Drinking Water Hotline: (800) 426-4791.
- Water quality data for community water systems throughout the United States is available at [https://www.epa.gov/wqs-tech](http://www.epa.gov/wqs-tech)

November 1, 2024

SUBJECT: Notification that your water service line is made of galvanized previously connected to lead materials.

Dear Water Customer:

It has been determined that some or all of your water service line is made of galvanized previously connected to lead materials. People living in homes with a galvanized previously connected to lead service line have an increased risk of exposure to lead from their drinking water. This letter serves to notify you of this risk and provides information to help you reduce your risk of lead exposure. Please share this information with anyone who drinks and/or cooks using water at this property.

Health effects of lead.

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of persons who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

Steps you can take to reduce your exposure to lead in your water.

Below are recommended actions you may take, separately or in combination, to reduce your exposure to lead in your drinking water. The list also includes where you may find more information and is not intended to be a complete list or to imply that all actions equally reduce lead in drinking water.

- **Consider using a lead-reducing filter.** The Michigan Department of Health and Human Services (MDHHS) recommends Michigan households use a certified lead-reducing drinking water filter if your home has or if you are uncertain if it has a source of lead, such as one of the following:
 - A lead service line, or galvanized previously connected to lead service line, carrying water from the street to your residence.
 - Lead or galvanized plumbing.
 - Copper plumbing with lead solder before 1988 (EGLC recommendation).
 - Old faucets and fittings that were sold before 2014.
- Use the filter until you are able to remove sources of household lead plumbing, such as:
 - Replace pre-2014 faucets.
 - Get a lead inspection and replace needed plumbing.
- Look for filters that are tested and certified to NSF/ANSI Standard 53 for lead reduction and NSF/ANSI Standard 42 for particulate reduction (Class I).
- For filters to work properly, follow the manufacturer's instructions.

- **Run your water to flush out lead-containing water.** The more time water has been sitting in your home's pipes, the more lead it may contain. Therefore, if your water has not been used for several hours, run the water before using it for drinking or cooking. This flushes lead-containing water from the pipes. Because your home has a galvanized service line that was previously connected to lead, run the water for at least five minutes to flush water from your home or building's plumbing and the lead service line.
- **Use cold water for drinking and cooking.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water.
- **Boiling water does not remove lead from water.** Filter cold water, then boil the filtered water as necessary.
- **Clean your aerator.** The aerator on the end of your faucet is a screen that will catch debris. This debris could include particulate lead. The aerator should be removed at least every six months to rinse out any debris.
- **Check for other sources of lead.** In addition to your service line, other plumbing in your home may contain lead and could increase the levels of lead in your drinking water. These may include faucets, valves, and soldered joints. It is recommended that homeowners contact a licensed plumber and have a plumbing assessment done to determine if your in-home plumbing is a source of lead in your drinking water.
- **Test your water for lead.** If you wish to get your drinking water tested, call your water supply or use a certified lab. To find a certified lab, go to Michigan.gov/EGLElab and click on "Certifications."
- **Learn about construction in your neighborhood.** Construction may cause more lead to be released from a lead service line or galvanized service line if present. Contact us to find out about any construction or maintenance work that may disturb your service line.
- **Learn about your drinking water.** Read your water supply's Annual Water Quality Report (Consumer Confidence Report) that is mailed to you each year or find it at your local water utility's website.

Get your child tested to determine lead levels in their blood.

A family doctor or pediatrician can perform a blood test for lead and provide information about the health effects of lead. State, city, or county departments of health can also provide information about how you can have your child's blood tested for lead. The Centers for Disease Control (CDC) and Prevention recommends public health actions when the level of lead in a child's blood is 3.5 micrograms per deciliter (ug/dL) or more. For more information and links to CDC's website, please visit <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

Replacing lead service lines.

All water supplies in Michigan are actively identifying and replacing service lines that contain lead and galvanized previously connected to lead. All portions of the service line that contain lead and galvanized previously connected to lead that the water system owns, as well as the

homeowner's portion, must be replaced at the water supply's expense. Contact us to learn about our service line replacement plan and timeline.

Partial replacement of service lines, where there is still lead or galvanized previously connected to lead materials remaining when service is restored, are banned due to increased lead exposure and potential health risks, except in the case of emergencies like a leak or loss of pressure.

If you have an issue with your side of the service line (generally, from the curb stop to the inside of your home), contact your water supply **first** to coordinate efforts and fully replace the service line. If an emergency repair is necessary, take additional precautionary measures to reduce potential exposure to lead during replacement or construction.

Contact us.

Please contact our water system materials analyst at 248.246.3331 if you have questions regarding this letter or disagree with the material determination.

For additional information about your water system contact the Public Services office at 248.246.3300.

For a copy of Royal Oak's Annual Water Quality Report, please visit <https://www.romi.gov/1500/Water-Quality>.

Sincerely,

Drew Gellasch
Water Maintenance Division Supervisor
248.246.3300

November 1, 2024

SUBJECT: Notification that your water service line is made of lead.

Dear Water Customer:

It has been determined that some or all of your water service line is made of lead. People living in homes with a lead service line have an increased risk of exposure to lead from their drinking water. This letter serves to notify you of this risk and provides information to help you reduce your risk of lead exposure. Please share this information with anyone who drinks and/or cooks using water at this property.

Health effects of lead.

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of persons who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

Steps you can take to reduce your exposure to lead in your water.

Below are recommended actions you may take, separately or in combination, to reduce your exposure to lead in your drinking water. The list also includes where you may find more information and is not intended to be a complete list or to imply that all actions equally reduce lead in drinking water.

- Consider using a lead-reducing filter. The Michigan Department of Health and Human Services (MDHHS) recommends Michigan households use a certified lead-reducing drinking water filter if your home has or if you are uncertain if it has a source of lead, such as one of the following:
 - A lead service line carrying water from the street to your residence.
 - Lead or galvanized plumbing.
 - Copper plumbing with lead solder before 1988 (EGLE recommendation).
 - Old faucets and fittings that were sold before 2014.
- Use the filter until you are able to remove sources of household lead plumbing, such as:
 - pre-2014 faucets.
 - Lead-based interior plumbing
- Look for filters that are tested and certified to NSF/ANSI Standard 53 for lead reduction and NSF/ANSI Standard 42 for particulate reduction (Class I).
- For filters to work properly, follow the manufacturer's instructions.
- Run your water to flush out lead-containing water. The more time water has been sitting in your home's pipes, the more lead it may contain. Therefore, if your water has not been used for several hours, run the water before using it for drinking or cooking. This flushes lead-containing water from the pipes. Because your home has a lead service line, run

the water for at least five minutes to flush water from your home or building's plumbing and the lead service line.

- Use cold water for drinking and cooking. Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water.
- Boiling water does not remove lead from water. Filter cold water, then boil the filtered water as necessary.
- Clean your aerator. The aerator on the end of your faucet is a screen that will catch debris. This debris could include particulate lead. The aerator should be removed at least every six months to rinse out any debris.
- Check for other sources of lead. In addition to your service line, other plumbing in your home may contain lead and could increase the levels of lead in your drinking water. These may include faucets, valves, and soldered joints. It is recommended that homeowners contact a licensed plumber and have a plumbing assessment done to determine if your in-home plumbing is a source of lead in your drinking water.
- Test your water for lead. If you wish to get your drinking water tested, call your water supply or use a certified lab. To find a certified lab, go to Michigan.gov/EGLElab and click on "Certifications."
- Learn about construction in your neighborhood. Construction may cause more lead to be released from a lead service line or galvanized service line if present. Contact us to find out about any construction or maintenance work that may disturb your service line.
- Learn about your drinking water. Read your water supply's Annual Water Quality Report (Consumer Confidence Report) that is mailed to you each year or find it at your local water utility's website.

Get your child tested to determine lead levels in their blood.

A family doctor or pediatrician can perform a blood test for lead and provide information about the health effects of lead. The Oakland County Health Division can also provide information about how you can have your child's blood tested for lead.

The Centers for Disease Control (CDC) and Prevention recommends public health actions when the level of lead in a child's blood is 3.5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) or more. For more information and links to CDC's website, please visit <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

Replacing lead service lines.

All water supplies in Michigan are actively identifying and replacing service lines that contain lead and galvanized previously connected to lead. All portions of the service line that contain lead and galvanized previously connected to lead that the water system owns, as well as the homeowner's portion, must be replaced at the water supply's expense. Contact us to learn about our service line replacement plan and timeline.

Partial replacement of service lines, where there is still lead or galvanized previously connected to lead materials remaining when service is restored, are banned due to increased lead exposure and potential health risks, except in the case of emergencies like a leak or loss of pressure.

If you have an issue with your side of the service line (generally, from the curb stop to the inside of your home), contact your water supply first to coordinate efforts and fully replace the service

line. If an emergency repair is necessary, take additional precautionary measures to reduce potential exposure to lead during replacement or construction.

Contact us.

Please contact our water system materials analyst at 248.246.3331 if you have questions regarding this letter or disagree with the material determination.

For additional information about your water system contact the Public Services office at 248.246.3300.

For a copy of Royal Oak's Annual Water Quality Report, please visit
<https://www.romi.gov/1500/Water-Quality>.

Sincerely,

Drew Gellasch
Water Maintenance Division Supervisor
City of Royal Oak
248.246.3300

November 1, 2024

SUBJECT: Notification that your water service line material is unknown and may contain lead.

Dear Water Customer:

Your drinking water service line material is unknown, but we are working toward identifying service line materials throughout the water supply. Because your service line material is unknown, there is the potential that some or all of the line could be made of lead or galvanized pipe that was previously connected to lead. People living in homes with a lead, or galvanized pipe previously connected to lead, service line have an increased risk of exposure to lead from their drinking water. This letter serves to notify you of this risk and provides information to help you reduce your risk of lead exposure. Please share this information with anyone who drinks and/or cooks using water at this property.

Health effects of lead.

Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of persons who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney or nervous system problems.

Steps you can take to reduce your exposure to lead in your water.

Below are recommended actions you may take, separately or in combination, to reduce your exposure to lead in your drinking water. The list also includes where you may find more information and is not intended to be a complete list or to imply that all actions equally reduce lead in drinking water.

- **Consider using a lead-reducing filter.** The Michigan Department of Health and Human Services (MDHHS) recommends Michigan households use a certified lead-reducing drinking water filter if your home has or if you are uncertain if it has a source of lead, such as one of the following:
 - A lead service line, or galvanized service line previously connected to lead, carrying water from the street to your residence.
 - Lead or galvanized plumbing.
 - Copper plumbing with lead solder before 1988 (EGLE recommendation).
 - Old faucets and fittings that were sold before 2014.
- Use the filter until you are able to remove sources of household lead plumbing, such as:
 - Replace pre-2014 faucets.
 - Get a lead inspection and replace needed plumbing.
- Look for filters that are tested and certified to NSF/ANSI Standard 53 for lead reduction and NSF/ANSI Standard 42 for particulate reduction (Class I).

- For filters to work properly, follow the manufacturer's instructions.
- **Run your water to flush out lead-containing water.** The more time water has been sitting in your home's pipes, the more lead it may contain. Therefore, if your water has not been used for several hours, run the water before using it for drinking or cooking. This flushes lead-containing water from the pipes. Because it is not known whether your home has a lead service line or galvanized service line that was previously connected to lead, run the water for at least five minutes to flush water from your home or building's plumbing and the lead service line.
- **Use cold water for drinking and cooking.** Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water.
- **Boiling water does not remove lead from water.** Filter cold water, then boil the filtered water as necessary.
- **Clean your aerator.** The aerator on the end of your faucet is a screen that will catch debris. This debris could include particulate lead. The aerator should be removed at least every six months to rinse out any debris.
- **Check for other sources of lead.** In addition to your service line, other plumbing in your home may contain lead and could increase the levels of lead in your drinking water. These may include faucets, valves, and soldered joints. It is recommended that homeowners contact a licensed plumber and have a plumbing assessment done to determine if your in-home plumbing is a source of lead in your drinking water.
- **Test your water for lead.** If you wish to get your drinking water tested, call your water supply or use a certified lab. To find a certified lab, go to Michigan.gov/EGLElab and click on "Certifications."
- **Learn about construction in your neighborhood.** Construction may cause more lead to be released from a lead service line or galvanized service line if present. Contact us to find out about any construction or maintenance work that may disturb your service line.
- **Learn about your drinking water.** Read your water supply's Annual Water Quality Report (Consumer Confidence Report) that is mailed to you each year or find it at your local water utility's website.

Get your child tested to determine lead levels in their blood.

A family doctor or pediatrician can perform a blood test for lead and provide information about the health effects of lead. State, city, or county departments of health can also provide information about how you can have your child's blood tested for lead. The Centers for Disease Control (CDC) and Prevention recommends public health actions when the level of lead in a child's blood is 3.5 micrograms per deciliter ($\mu\text{g}/\text{dL}$) or more. For more information and links to CDC's website, please visit <https://www.epa.gov/ground-water-and-drinking-water/basic-information-about-lead-drinking-water>.

Contact us.

For information about getting your service line material identified please contact our water system materials analyst at 248.246.3331.

For additional information about your water system contact the Public Services office at 248.246.3300.

For a copy of Royal Oak's Annual Water Quality Report, please contact visit <https://www.romi.gov/1500/Water-Quality>.

Sincerely,

Drew Gellasch
Water Maintenance Division Supervisor
City of Royal Oak
248.246.3300



Your Home May Qualify for a Free Water Service Line Replacement

Under the Michigan Safe Drinking Water Act "Lead and Copper Rule," the city is obligated to replace all lead and galvanized water services on private property, at no cost to the property owner.

The State of Michigan requires The City to maintain an accurate inventory of all water service lines. Please help us update our records for your home. We need to know if the pipe is galvanized, lead, copper or plastic where it first enters the house.

The program covers the water service pipe entering the home through the floor or wall, before the first valve.

Please take a moment to TEXT your address along with a picture of the water pipe where it first enters the home, to City of Royal Oak cell # 248-459-8187

Or, if you prefer, e-mail your information and picture to jeffp@romi.gov.

We are also happy to stop by to check the pipe if that is preferred. Text request to 248-459-8187.

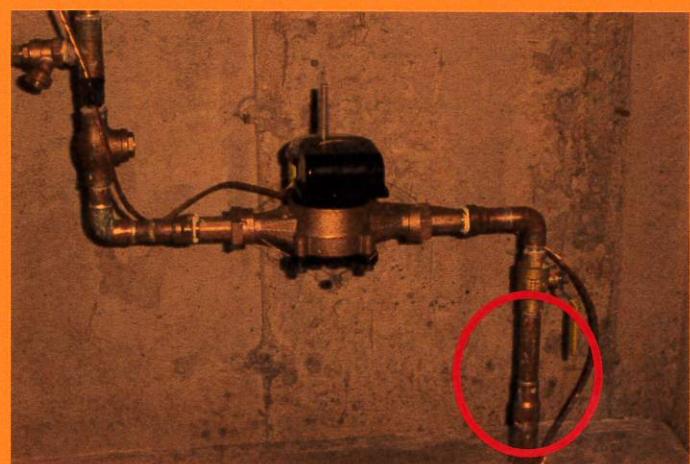
If your private water service was determined to be galvanized or lead, you will be contacted with information about future pipe replacement.

If you have any questions or need help with the process, please contact R.O. Public Service at 248-246-3331.

Below is a picture of a typical water meter installation.

The material of the pipe coming up from the bottom of the picture is what we need to know.

Thank you for your help.





Royal Oak PUBLIC SERVICES

Private Water Service Replacement - Access Agreement

1. Where investigation indicates that water services with lead piping, galvanized piping, or copper piping with soldered joints are present, they will be replaced with new copper water service materials. Replacement of this piping will take place up to the first shut-off valve inside the building or to 18 inches inside the building, whichever is shorter.
2. All lawn areas disturbed by the service line replacement will be restored with topsoil and seed that must be watered and maintained by the property owner. If any specialty landscaping, trees, pavers, stones, etc. must be removed to allow for this work, the homeowner will be responsible for its replacement.
3. Piping inside buildings beyond the repair limits is the responsibility of the property owner and will not be replaced. The property owner or an authorized representative who is 18 years or older must be present while the service replacement is taking place.
4. The property owners shall provide 10 feet of open space around the water meter to allow the contractor work access. New piping will be brought in through the floor of the basement. Floor penetrations will be restored with concrete. No specialty flooring, tile, carpet, etc. will be replaced by the contractor.
5. The property owner will continue to be the owner of the water service line on private property after replacement.
6. The cost of replacing water service materials will be the City's responsibility.
7. The permissive rights set forth herein shall start as of the date the property owner signs this release and shall terminate on the date that the contractor completes the work described. The work shall be free from defects in material and workmanship for a period of one year from the final date of installation.

Authorization:

In accordance with the Michigan Lead and Copper Rule, the undersigned hereby **gives permission** to the City of Royal Oak and/or its employees, agents and/or contractors to excavate, investigate, and replace water service(s) with lead piping, galvanized piping, or copper piping with soldered joints on the following property:

Tax Parcel: _____

Street Address: _____

This instrument contains the entire permit agreement. No other promises have been made except as shown herein.

Name/Property Owner (print)

Signature

Date

Phone number (for scheduling)

E-Mail Address (for scheduling)

OR

Access Denied:

In accordance with the Michigan Lead and Copper Rule, the undersigned **does not give permission** to the City of Royal Oak to replace water service(s) with lead piping, galvanized piping, or copper piping with soldered joints on the following property.

Tax Parcel: _____

Street Address: _____

Name/Property Owner (print)

Signature

Date

Your water will be shut off for a period of approximately 4 to 12 hours while the line is being replaced. The contractor will make every effort to have your water restored the same day that installation begins.

If you have any questions, contact the Department of Public Services – Water Service Division at **248.246.3300**.
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