



RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



C. HEIDI GREETHER  
DIRECTOR

December 27, 2016

VIA E-MAIL

Ms. JoLisa McDay  
Supervisor  
Flint Water Treatment Plant  
4500 North Dort Highway  
Flint, Michigan 48505

WSSN: 02310

Dear Ms. McDay:

**SUBJECT:** Status of Enhanced Water Quality Monitoring and Optimal Corrosion Control Treatment

The Michigan Department of Environmental Quality (MDEQ), Office of Drinking Water and Municipal Assistance (ODWMA), is sending this correspondence to report on the status of the optimal corrosion control treatment (OCCT) and water quality parameter (WQP) monitoring that has been conducted by the City of Flint (City) since the City began to treat the water received from the Great Lakes Water Authority in December 2015.

At that time, the United States Environmental Protection Agency's (USEPA) Flint Safe Drinking Water Task Force recommended that drinking water entering the distribution system be treated with supplemental orthophosphate at a dosage necessary to maintain a minimum orthophosphate residual of 3.1 milligrams per liter (mg/L) in the distribution system. The purpose of this treatment was to restore a protective barrier on pipe walls, thereby reducing the amount of lead and copper dissolving from service lines and household plumbing. The ODWMA agreed with this recommendation, and in a correspondence sent to the City, established the minimum orthophosphate residual of 3.1 mg/L, as well as a minimum pH level of 7.0, that the City should maintain in the distribution system. We also established specific monitoring requirements to demonstrate compliance with these recommendations.

We are pleased to report that significant improvement in water quality throughout the City's distribution system has been achieved since these treatment objectives were established. As summarized below, water quality has improved noticeably as demonstrated by data collected from a variety of sources during this past year:

- Lead sampling throughout the City has consistently demonstrated improvement since last January. The monitoring results from designated sentinel sites throughout the City reported decreasing lead levels during the months of May, June, July, August, September and November, so much so that the 90th percentile value is below the USEPA Lead Action Level of 15 parts per

billion (ppb). Many of these sentinel sites are used to determine compliance at the end of each six-month monitoring period.

- When comparing lead levels reported in residential samples from September 2016, to the levels in samples in January 2016, there has been an increase of over 400 percent in the number of samples now reporting lead values less than or equal to 1.0 ppb.
- Over this same period of time, there has also been an 86 percent decrease in the number of samples with lead levels above the USEPA Action Level of 15 ppb.

In addition, USEPA's most recent data confirms the supplemental orthophosphate dosing has helped the system improve significantly. The City is to be commended for the improvements that have been accomplished to date.

It is important for the City to maintain close supervision of the orthophosphate treatment system to ensure continued improved water quality. The City needs to maintain acceptable levels of orthophosphate and pH throughout the distribution system to demonstrate that ongoing corrosion control treatment is adequate and to provide reasonable assurance that leaching from service lines and plumbing components is minimized.

Since the City began weekly WQP monitoring, there have been occasions when the orthophosphate residual was below the minimum level established at one or more locations. Fortunately, these excursions were not significantly below the recommended level and they were of a short duration. Based on the demonstrated improvement in overall water quality, these excursions did not have a substantial impact on restoration of the protective coating. However, it should be a priority to minimize future WQP excursions. To do so, the City must develop standard operating procedures (SOPs) to identify response actions for future excursions. When a pH or orthophosphate result is below the minimum level, actions should include resampling as soon as possible and, if appropriate, making treatment adjustments and/or operational changes. The City's SOPs should establish a process for determining when it may be necessary to adjust the pH or orthophosphate dosage and the criteria that authorize an operator to make treatment changes or implement operational changes, and to what extent. Enclosed is a sample communication the City may use in reporting water quality status to the residents of Flint.

With the continued monitoring and implementation of SOPs to respond promptly to excursions, the City can be reasonably assured that lead and copper leaching from service lines and plumbing will be minimized, reducing the concentration of lead and copper at customer taps.

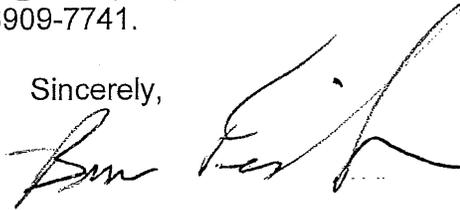
There is still work to be done to assure a long-term supply of safe drinking water, including the accelerated restoration of the Flint Water Treatment Plant in preparation to treat Lake Huron water from the Karegnondi Water Authority. Until then, the City should

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be making every effort to comply with the USEPA Lead Action Level in the monitoring period ending December 31, 2016, and to be in compliance with all of the provisions of the Lead and Copper Rule in both the current monitoring period and by the end of the subsequent period that runs from January through June 2017.

If you have any questions or wish to discuss these matters in more detail, please contact me at 517-284-6544; feighnerb@michigan.gov; or MDEQ, ODWMA, P.O. Box 30241, Lansing, Michigan 48909-7741.

Sincerely,

A handwritten signature in black ink, appearing to read "Bryce Feighner". The signature is fluid and cursive, with a large initial "B" and "F".

Bryce Feighner, P.E., Chief  
Office of Drinking Water and Municipal Assistance

Enclosure

cc/enc: Mayor Karen Weaver, City of Flint  
Mr. Mark Adas, City of Flint  
Mr. Sylvester Jones, City of Flint  
Mr. Robert Kaplan, Acting Regional Administrator, USEPA, Region 5  
Mr. Christopher Korleski, USEPA, Region 5  
Mr. Richard Baird, Governor's Office  
Mr. Keith Creagh, Director, Michigan Department of Natural Resources  
Ms. C. Heidi Grether, Director, MDEQ  
Mr. Robert Wagner, Program Deputy Director, MDEQ  
Mr. Richard Benzie, MDEQ  
Mr. George Krisztian, MDEQ

## Improved Drinking Water Quality in the City of Flint

The City of Flint is providing this communication to report on the city's water quality since December of 2015, when the city began to once again receive water from the Great Lakes Water Authority (GLWA) and began to treat it with orthophosphate for additional corrosion control. The U.S. Environmental Protection Agency's (USEPA) Flint Safe Drinking Water Task Force recommended the water coming from the GLWA be treated with enough orthophosphate to maintain a minimum residual of 3.1 milligrams per liter (mg/L) in our distribution system. The purpose of this treatment was to restore a protective barrier on pipe walls, thereby reducing the amount of lead and copper dissolving from service lines and household plumbing.

### HERE IS WHAT YOU SHOULD KNOW:

We are very pleased to report significant improvement in water quality throughout the city's distribution system has been achieved since these treatment objectives were established. The improvement is demonstrated by data collected from a variety of sources including city-wide residential self-serve and sentinel testing:

- Lead sampling throughout the city has consistently demonstrated improvement in lead levels since January 2016. The monitoring results for the previous 6 months from sentinel sampling sites throughout the city have demonstrated a marked improvement, so much so that the 90th percentile value is below the USEPA Lead Action Level of 15 parts per billion (ppb). Many of these sites are the highest risk sites that are used to determine compliance at the end of each 6-month monitoring period.
- When we compare results of recent samples taken in September 2016, with results of samples taken in January 2016, when we had just started adding orthophosphate, we can see there has been an 86 percent decrease in the number of samples with lead levels reported above the USEPA Action Level of 15 ppb.
- Over the same period of time, the number of test samples with lead results less than 1 ppb increased by 400 percent.

### HOW WE ENSURE PROPER CORROSION CONTROL:

To monitor our corrosion control treatment, we sample water on a weekly basis for water quality parameters (WQPs) such as pH (acidity) and orthophosphate, before it enters the distribution system and throughout the city at 10 distribution system sites. We also sample an additional 15 distribution system locations for these parameters on a quarterly basis. We maintain these parameters at or above state-designated levels so we can be reasonably assured that leaching from service lines and plumbing is minimized, reducing the lead and copper concentrations at your tap.

While significant improvement has been accomplished, we are continuing to work at optimizing our treatment process. Since the city began weekly monitoring last January, there have been occasions when the orthophosphate residual was below the established minimum level at one or more locations. These instances were not significantly below the recommended level and they were for a short duration. Based on the demonstrated improvement in overall water quality, these instances did not have a significant impact on the goal of restoring the protective coating on service lines and household plumbing. Nevertheless, the city water department is developing additional standard operating procedures with the assistance of consultants that will provide additional guidance for both maintaining our corrosion control treatment and responding promptly to minimize future instances when corrosion control was not at recommended levels.

### WHAT WE ARE DOING TO ENSURE COMPLIANCE AND SAFETY:

The city still has work to do to assure a long-term supply of safe drinking water, including the continued replacement of lead service lines, and the restoration of the Flint Water Treatment Plant to provide acceptable water quality when it begins treating Lake Huron water from the Karegnondi Water Authority. Until then, the city will be making every effort to not only comply with the Lead Action Level, but to surpass that standard by providing corrosion control treatment that minimizes leaching of lead and copper to the extent reasonably possible, thereby reducing lead and copper levels in homes and businesses.

If you have any questions, please contact \_\_\_\_\_ or visit the following website for additional information: \_\_\_\_\_.

*Please share this information with all the other people who drink Flint 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.*