Response to 59a of the Environmental Protection Agency Order

Plan for Optimization of Corrosion Control

On August 17, 2015, the MDEQ require the City of Flint, while utilizing the Flint River as a water source, to optimize corrosion control treatment in accordance with the Safe Drinking Water Act. Below is an excerpt of the August 17, 2015, letter. Subsequent to this determination, the City of Flint returned on October 16, 2015, to the water source that they formally purchased from DWSD. DWSD water was fully optimized and was on a maintenance dose of orthophosphate.

While the City's LCR compliance monitoring has continued to meet action level requirements, the LCR also requires all large systems (those serving over 50,000 people) to optimize corrosion control regardless of their 90th percentile lead concentration. One way to demonstrate fully optimized corrosion control treatment is through two consecutive six month rounds of LCR compliance monitoring in which the difference between the 90th percentile level and the highest source water lead concentration is less than the Practical Quantitative Level for lead (0.005 milligrams per liter). Since the City did not meet these criteria in both the July – December 2014, and January – June 2015, sampling periods, the City must now recommend a treatment to fully optimize corrosion control treatment within six months in accordance with requirements under Act 399, Administrative Rule 604f (R 325.10604f). **This recommendation must be provided to our office as soon as possible, but no later than January 1, 2016.**

However, given the past use of phosphate treatment by the Detroit Water and Sewerage Department (DWSD) to fully optimize corrosion control treatment when the City was a wholesale customer of DWSD, the ODWMA recommends the City select this as its recommended treatment option, and begin implementation as soon as possible to address ongoing concerns by customers regarding lead levels within their premise plumbing systems. Under the second step of this Rule, the DEQ can specify optimal corrosion control treatment.

Our office will inform you when monitoring needs to be conducted as part of the optimization of the implemented corrosion control treatment. Customer requested samples for lead shall continue to be collected and analyzed. Please make every attempt to select the same sites used in the previous monitoring period, giving Tier 1 sites first priority. If original sites are unavailable, select replacement sites based on the Tier 1, 2, and 3 criteria.

Because the City of Flint had been on Flint River water for 18 months without corrosion control treatment, discussions were held with EPA on October 22, 2015, to determine the best course of action for obtaining optimal corrosion control treatment for the purchased water from DWSD. Because DWSD water was at a maintenance dose of orthophosphate, and it was anticipated that the distribution system in Flint would need a supplemental dose in order to enhance the pipe passivation, it was determined that the City shall dose additional

orthophosphate to increase the distribution system phosphate residual to a minimum of 3.1mg/l as PO4. The City obtained a water system construction permit for installation of the treatment equipment at Control Station 2 and Pump Station 4, which was issued on October 28, 2015. The City was also directed to do the following in support of optimizing their corrosion control treatment:

Daily monitoring of incoming DWSD water for pH and for orthophosphate residual

Daily monitoring of additional orthophosphate dosage

Daily monitoring of water entering the City distribution system for pH and for orthophosphate residual

Placement of all information requested on the monthly operation report

Enhanced water quality parameter monitoring at 25 stations for turbidity, iron, orthophosphate, pH, total alkalinity, calcium, chloride, temperature, and conductivity.

At 10 of the 25 stations, the city shall also conduct weekly monitoring for the same parameters at the time that total coliform bacterial and chlorine residual monitoring is conducted to further assess water stability.

The City is recommended to confirm the effectiveness of corrosion control treatment and the City's operations by constructing, installing and monitoring corrosion control treatment test loops. EPA has indicated a willingness to assist the City with this effort.

In addition to these requirements and recommendations the City must identify lead service lines that exist throughout the City. The available spread sheet identifies those locations that are believed to have lead service lines, however the inventory is incomplete, and likely lacks accuracy. In order to accomplish this effort construction drawings were obtained to digitize those areas that had a high probability of having lead service lines. Additionally basemaps showing the pre 1960 housing and the location and results of water testing that has been conducted as of October, and the information on lead blood levels have all been mapped. As homes are visited a quick plumbing assessment should be made so that homes with lead service lines can be verified. This may be able to be accomplished when residents are provided water testing kits to evaluate their tap water for lead. This is a free service for analytical data that is be provided by the state laboratory. The MDEQ has proposed establishing sentinel sites and will be visiting over 400 homes, at which time their teams can identify the type of service line for that home. The water sampling should provide an indication of the homes that may have lead service lines without having to excavate areas in order to determine the service line

type. At the same time residents are being advised to run their water daily to ensure that the passivation efforts can be effective in recoating their pipes and fixtures.

In order to determine the effectiveness of introducing orthophosphate into the system to amend the maintenance dose of the DWSD water, the sentinel sites that have been identified will be monitored on a regular basis (every 2 to 3 weeks) to evaluate the trends that are being observed with lead levels throughout the system. As new samples are received from residents for free lead analysis, they will be evaluated and those sites will be visited within 48 hours if their lead levels are over 150 ppb and within 7 days if their lead levels are over 100 ppb. These homes can be assessed at that time to determine if the service line coming into the home is made of lead. At that time residents will be advised to run the water throughout their homes daily so that the passivation of their pipes can be completed. Additional chlorine sampling site are being established by EPA. EPA is also sequential sampling a number of sites that reported higher than 150 ppb of lead to determine if they also have lead service lines.

When lead service lines can be confirmed, the City remains responsible for completing their lead and copper rule compliance monitoring program. Two sets of samples from a pool of Tier 1 sites will be collected and evaluated consistent with the requirement of the rule for lead and copper contamination. Analytical results from the samples being collected and submitted by residents this far have shown approximately 87% of the sample locations at 5 ppm or under for lead and 93% of the sample locations at 15 ppm or under for lead.

It is anticipated that by December of this year that the City of Flint will transition to KWA source water. KWA's intake in Lake Huron is approximately 6 miles north of where DWSD's intake is and as such it is anticipated that the sources will be very similar to the water currently being purchased by Flint. Nevertheless, the City has been advised to complete an assessment of water quality that can be achieved by their treatment system and optimize the water for corrosion control. Full scale testing of the treatment trains at the Flint Water Treatment Plant will be necessary before any of the treated KWA water can be placed into the distribution system. This evaluation may take anywhere from 2 weeks to 3 months to show that the treatment plan can provide water that meets the necessary stability to be placed into the system. Pipe racks that are to be constructed at the treatment plant with the assistance of EPA should provide good information relative to the optimization of the KWA water for corrosion control. Additional water quality parameter studies are expected to take place this spring utilizing the Saginaw/Midland supply as a surrogate for pilot tests. Once KWA raw water is available to the city, large scale shakedown of the treatment plant will begin. The city is challenged in getting the KWA raw water supply to the plant for full scale testing, Plans are currently being developed that anticipate bringing in a sufficient supply of KWA raw water for

testing and also providing for an interconnect system with the County's treated water. This effort will eliminate the need for retaining the Flint River as an emergency stand by.