Summary of City of Flint (City) Actions
In Response to the
EPA Emergency Administrative Order
Updated: June 30, 2016

Chapters 52, 57, 59a & 59b: Weekly Conference Call Regarding Flint Water Plant Operations June 30, 2016.

EPA Order Due Date: Weekly

MDEQ (NAME) and the Flint Water Treatment Plant staff met today to review and discuss the summary of water quality and corrosion control parameters reported on the City's June operation report completed to date, a summary of water quality parameters collected in the distribution system, and some other matters pertaining to operation of the city's water supply. Included with this submission are the daily worksheets for the phosphoric acid and sodium hypochlorite feed systems documenting the City's oversight of this corrosion control treatment.

The following observations were noted:

- The supplemental phosphate dosage was consistent and ranged between 2.19 and 2.27 milligrams per liter (mg/l). However, the phosphate residual measured at the point of entry on June 22nd indicated only 1.33 mg/l entering the distribution system even though 1.22 mg/l were detected in the incoming water and a dosage of 2.21 mg/l was being applied. The City may want to review the laboratory sheets to determine if any data entry errors exist.
- All but one of the phosphate residuals at the 10 weekly distribution system sites were above the minimum of 3.1 mg/l, ranging between 3.12 and 3.52 mg/l. The one weekly site remaining below 3.1 mg/l was at MLK Boulevard, where the phosphate residual was 2.91 mg/l. This site has historically reported the lowest (but acceptable) residuals for both phosphate and chlorine. In response to low residuals at this site in previous weeks, the City has responded by stating, "*It should be noted that water quality indicators have been problematic at the site."*
- Results of the monitoring at 15 additional sites that are conducted quarterly also reported phosphate residuals below the minimum level of 3.1 mg/l at 8 of the 15 sites, ranging from as low as 1.86 to 3.05 mg/l. The City was advised to flush taps/hydrants/piping in the vicinity of these sites and resample all of them with low phosphate residuals. At this point, the only site that has been resampled was MLK Boulevard, where the phosphate residual improved from 2.91 to 2.96 mg/l. Other sites will be retested in the next few days. However, it is difficult to remedy this situation with limitations placed on flushing distribution pipes.
- All pH measurements were greater than 7.0 at the Enhanced Water Quality Monitoring (EWQM) sites and the Point of Entry (Control Station #2) to the system. The pH levels ranged from 7.43 to 7.53 in the water received from Great Lakes Water Authority (GLWA) and from 7.27 to 7.57 at the 25 distribution system sites.
- Iron levels were not reported at EWQM sites. Plant tap iron concentrations ranged from 0.02 to 0.03 mg/l in the last week.
- There were no lead results reported from the EWQM sites last week.
- The chlorine feed at Control Station #2 has been available since June 10th, and has been dosing ~0.3 mg/l to the water received from GLWA.

- The City is continuing their plans for installation of a caustic soda feed system for pH adjustment, although recent monitoring has shown increasing pH levels in the distribution system without applying any chemicals.
- The City continues to work with NAME to prepare an up-to-date disinfection byproducts monitoring plan.
- The Flint WTP is assessing the laboratory equipment and staff training necessary to initiate additional corrosion control monitoring as recommended by NAME.

In addition to the above comments and observations, NAME submitted the following information that summarizes the discussions that took place while he was visiting the Flint Water Treatment Plant:

1. **Vent screen replacement at the Cedar Street Reservoir (with Name)** – Name and I went to the Cedar Street Reservoir and looked at the vent screens. The reservoir is constructed in two sections. The original 10 million gallon (MG) section had all new screens; however, the cover plates on several vents were missing one or two bolts. NAME was advised that the bolts should be replaced or, as a minimum, the holes should be caulked to prevent the potential entrance of contaminants. The screens on the newer 10 MG section were not replaced; however, NAME was advised that one of them definitely needs to be, since it has developed a small tear. All screens should be routinely inspected for integrity.
2. **Revised monthly operation report (MOR) to include incoming chlorine residual (at CS-2), chlorine dosage at CS-2, and plant tap chlorine residual (with Name and Name)** – NAME has revised the MOR, and it looks satisfactory. The incoming and plant tap free chlorine residuals were already being shown on the MOR (columns 22 and 27, respectively). The mg/l chlorine applied at CS-2 has been added as column 18. The calculated dosage has been very steady at 0.3 mg/l, + or – 0.02 mg/l. It would therefore be expected that the plant tap free chlorine residual would be approximately 0.3 mg/l higher than that measured at CS-2; however, the difference has only been about 0.1 mg/l. We met with NAME in the lab to see if there were any sample technique or analysis issues that would explain the apparent discrepancy. NAME indicated that grab samples are collected at CS-2 and are carried into the lab for analysis using a Hach SL 1000 colorimeter, and that the same instrument is used for the plant tap sample (therefore, the discrepancy is apparently not due to different analytical equipment). I have not had time to research this lab instrument to see if it has any operational issues that need to be accounted for. If sample collection is not the issue, another possibility is that the dosage calculation needs to be adjusted (due to inaccurate inputs for NaOCl strength or incoming GLWA flow). Another possibility is that, due to the large-diameter yard and in-plant piping, there is a decline in chlorine residual by the time water reaches the plant tap. NAME and I discussed the possibility of monitoring chlorine residual closer to the point where the in-plant piping tees off from the yard piping. There is a location just after the plant piping enters the basement wall. The pipe at this location is already tapped with a corporation stop. It is possible that this location can be fitted with a sample tap for grab or continuous monitoring.
3. **Discussion about phosphate residuals in the distribution system, and whether to increase phosphate dosage at this time (Name by telephone, Name, Name, and Name)** – The weekly monitoring from June 21 showed phosphate residuals below the minimum of 3.1 mg/l at one routine location (Site Name, 2.91 mg/l), and in eight of the expanded quarterly sites. Name requested that we wait for the June 26 weekly results to be compiled to see whether ongoing flushing has restored the residuals, or whether

the feed rate should be increased. The updated results were provided to me during the meeting and indicated slight (up to 0.20 mg/l) increases in residual at most locations, or very slight (up to 0.09 mg/l) decreases at a few locations. The only significant change was at the West Side Reservoir, which increased by 0.44 mg/l (from 3.19 mg/l to 3.63 mg/l). This tends to indicate that reservoir management is a significant factor. (Site Name) was up slightly to 2.96 mg/l, but was still below the target residual. We discussed distribution system practices (specifically flushing) with Name and
Name to see whether additional distribution efforts might improve the residual near (Site Name). They are of the opinion that there is a hydraulic issue near that sample location that is causing (or at least contributing to) the situation. There is a gate valve at the intersection of Pasadena and Iriquois which is frozen, and they suspect it is in the closed position. They feel that fixing that valve (scheduled for the week of July 11) will alter the flow patterns and bring fresher water to that area. Since all other sampling locations are above the target phosphate residual, it is possible we could wait for the valve repair to be completed and evaluate the improvement (if any). Samples could also be collected from some of the expanded sites to see whether residuals were raised above the target as a result of the recent flushing.

4. **Consumer Confidence Report (Name by phone)** – I assisted NAME with drafting the CCR. There are a few information gaps she needs to address. It is still her belief that she can get the CCR posted to the City's web site by July 1 and issue a press release indicating its availability, with direct mail delivery at a later date. She is aware that arrangement does not meet the direct mail delivery requirements, but it is an effort in keeping the public informed.

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