

## **Summary of City of Flint (City) Actions In Response to the EPA Emergency Administrative Order Updated: June 24, 2016**

Chapters 52, 57, 59a & 59b: Weekly Conference Call Regarding Flint Water Plant Operations June 24, 2016.

EPA Order Due Date: Weekly

MDEQ and the Flint Water Treatment Plant staff held the weekly call to review and discuss the summary of water quality and corrosion control parameters reported on the city's June operation report completed to date, and on a summary of water quality parameters collected in the distribution system during the week of June 19<sup>th</sup>. These reports are being used to monitor the city's corrosion control treatment. Included with this submission are the daily worksheets for the phosphoric acid feed system documenting the city's hourly oversight of this corrosion control treatment.

The following observations were noted:

- The supplemental phosphate dosage was consistent and ranged between 2.21 and 2.27 milligrams per liter.
- All but one of the phosphate residuals in the distribution system were above the minimum of 3.1 milligrams per liter, ranging between 3.12 and 3.53 milligrams per liter, which is a dramatic improvement from last week when 8 of the 10 sites were below 3.1 milligrams per liter due to fluctuations in the phosphate levels received from Great Lakes Water Authority (GLWA).
- The one site remaining below 3.1 milligrams per liter was at MLK Boulevard, where the phosphate residual was 2.91 milligrams per liter. This site has historically reported the lowest (but acceptable) residuals for both phosphate and chlorine. The city submitted the following information in response to this matter: *"Please be advised that the PO4 level at Site #6 – (Name/Address omitted) MLK Boulevard had a phosphate residual of 2.91 and has not met the requirement. I am including (Name) in this communication. (Name) is the supervisor for the distribution system and will assist the water plant by ensuring that flushing in this area is increased to hopefully realize an improvement in that area. Please be mindful that the pH in this area is 7.49. Chlorine residuals in the area have improved but are still low. I will also request that lab staff perform HPC testing at the site. It should be noted that water quality indicators have been problematic at the site."*
- 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 7.40 to 7.45 in the water received from Great Lakes Water Authority (GLWA) and from 7.30 to 7.57 at the distribution system sites, which is also an improvement from recent weeks.
- Iron levels ranged between 0.01 and 0.10 milligrams per liter at EWQM sites. Plant tap iron concentrations ranged from 0.02 to 0.05 in the last week.
- The results of the lead samples collected from the EWQM sites last week have not yet been entered on this summary, but all but one reported no lead detected. Site #8, reported 4 milligrams per liter of lead.
- The chlorine feed at Control Station #2 has been available since June 10<sup>th</sup>, and has been dosing 0.3 milligrams per liter to the water received from GLWA for a trial period.

- 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.
- A revised Bacteriological Sampling Plan that addresses the requirements of the Revised Total Coliform Rule has been prepared by the city with the assistance of (Name). They continue 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).

The corrosion control treatment has improved from last week when a disruption in phosphate levels occurred, resulting in varying water quality conditions in the Flint distribution system. These water quality parameters and the results of the lead and copper monitoring throughout the distribution system are demonstrating the city's corrosion control efforts.

## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: 6-15-16      |                 |       |                 |              |        | Location of PO <sub>4</sub>         |            |          |  |
|--------------------|-----------------|-------|-----------------|--------------|--------|-------------------------------------|------------|----------|--|
|                    | PO <sub>4</sub> | CS 2  | PO <sub>4</sub> | Pump Setting |        | CS 2                                | Train Shed | Operator |  |
|                    | ml/min          | MGD   | PPM             | MA \ MA EXT  | Stroke | Gallons on Hand                     |            |          |  |
| 0:00               | 75              | 15.4  | 2.18            | 9.1 33       | 80     | 225                                 | 923        | MW       |  |
| 1:00               | 75              | 15.4  | 2.18            | 9.2 33       | 80     |                                     |            | MW       |  |
| 2:00               | 75              | 15.5  | 2.17            | 9.2 33       | 80     |                                     |            | MW       |  |
| 3:00               | 75              | 15.4  | 2.18            | 9.2 33       | 80     |                                     |            | MW       |  |
| 4:00               | 75              | 15.4  | 2.18            | 9.2 33       | 80     |                                     |            | MW       |  |
| 5:00               | 75              | 15.4  | 2.18            | 9.1 32       | 80     |                                     |            | MW       |  |
| 6:00               | 65              | 13.9  | 2.10            | 8.6 29       | 80     |                                     |            | MW       |  |
| 7:00               | 65              | 13.6  | 2.15            | 8.5 28       | 80     | 216                                 | 923        | MW       |  |
| 8:00               | 70              | 13.7  | 2.29            | 8.5 28       | 80     | 215                                 | 923        | TB       |  |
| 9:00               | 70              | 13.6  | 2.29            | 8.6 28       | 80     |                                     |            | AG       |  |
| 10:00              | 60              | 13.0  | 2.07            | 8.4 28       | 80     |                                     |            | TD       |  |
| 11:00              | 60              | 13.1  | 2.06            | 8.4 28       | 80     |                                     |            | DS       |  |
| 12:00              | 60              | 13.1  | 2.06            | 8.3 27       | 80     |                                     |            | TB       |  |
| 13:00              | 60              | 13.2  | 2.05            | 8.4 28       | 80     |                                     |            | DS       |  |
| 14:00              | 65              | 13.1  | 2.23            | 8.4 28       | 80     |                                     |            | TB       |  |
| 15:00              | 65              | 13.2  | 2.04            | 8.4 28       | 80     | 206                                 | 923        | RS       |  |
| 16:00              | 60              | 12.2  | 2.23            | 8.2 26       | 80     | 205                                 | 923        | EJ       |  |
| 17:00              | 60              | 12.2  | 2.23            | 8.1 26       | 80     |                                     |            | EJ       |  |
| 18:00              | 65              | 13.0  | 2.25            | 8.4 28       | 80     |                                     |            | EJ       |  |
| 19:00              | 65              | 13.2  | 2.21            | 8.5 28       | 80     |                                     |            | EJ       |  |
| 20:00              | 65              | 13.5  | 2.16            | 8.6 28       | 80     |                                     |            | EJ       |  |
| 21:00              | 70              | 14.1  | 2.23            | 8.7 29       | 80     |                                     |            | EJ       |  |
| 22:00              | 70              | 14.1  | 2.23            | 8.8 30       | 80     |                                     |            | EJ       |  |
| 23:00              | 75              | 15.1  | 2.23            | 9.2 32       | 80     | 200                                 | 923        | EJ       |  |
| ml/min average :   |                 | 67.50 |                 |              |        | Total gallons PO <sub>4</sub> Used: |            | 25 gal   |  |
| MGD average :      |                 | 13.89 |                 |              |        |                                     |            |          |  |
| PPM average :      |                 | 2.17  |                 |              |        | Days of PO <sub>4</sub> on Hand:    |            | 45 days  |  |
| (Train Shed + CS2) |                 |       |                 |              |        |                                     |            |          |  |
| Notes:             |                 |       |                 |              |        |                                     |            |          |  |

## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: 6-16-16      |                 |       |                 |              |        | Location of PO <sub>4</sub>               |            |          |    |
|--------------------|-----------------|-------|-----------------|--------------|--------|-------------------------------------------|------------|----------|----|
|                    | PO <sub>4</sub> | CS 2  | PO <sub>4</sub> | Pump Setting |        | CS 2                                      | Train Shed | Operator |    |
|                    | ml/min          | MGD   | PPM             | MA \ MA EXT  | Stroke | Gallons on Hand                           |            |          |    |
| 0:00               | 80              | 15.4  | 2.33            | 9.2          | 33     | 80                                        | 200        | 923      | MW |
| 1:00               | 75              | 15.4  | 2.18            | 9.1          | 32     | 80                                        |            |          | MW |
| 2:00               | 70              | 14.7  | 2.14            | 8.8          | 30     | 80                                        |            |          | MW |
| 3:00               | 70              | 14.8  | 2.12            | 8.8          | 30     | 80                                        |            |          | MW |
| 4:00               | 75              | 14.7  | 2.29            | 9.0          | 31     | 80                                        |            |          | MW |
| 5:00               | 75              | 14.7  | 2.29            | 8.9          | 31     | 80                                        |            |          | MW |
| 6:00               | 70              | 14.4  | 2.18            | 8.7          | 29     | 80                                        |            |          | MW |
| 7:00               | 70              | 14.5  | 2.17            | 8.7          | 29     | 80                                        | 190        | 923      | MW |
| 8:00               | 65              | 13.2  | 2.21            | 8.3          | 27     | 80                                        | 189        | 923      | DS |
| 9:00               | 65              | 13.3  | 2.19            | 8.4          | 28     | 80                                        |            |          | DS |
| 10:00              | 65              | 13.3  | 2.19            | 8.4          | 28     | 80                                        |            |          | DS |
| 11:00              | 67              | 13.2  | 2.28            | 8.5          | 20     | 80                                        |            |          | DS |
| 12:00              | 60              | 12.5  | 2.15            | 8.1          | 26     | 80                                        |            |          | DS |
| 13:00              | 61              | 12.2  | 2.26            | 8.1          | 26     | 80                                        |            |          | AB |
| 14:00              | 61              | 12.3  | 2.23            | 8.2          | 26     | 80                                        |            |          | AB |
| 15:00              | 60              | 11.7  | 2.30            | 7.9          | 24     | 80                                        | 180        | 923      | AR |
| 16:00              | 60              | 11.5  | 2.34            | 7.9          | 24     | 80                                        | 179        | 923      | TB |
| 17:00              | 60              | 11.9  | 2.26            | 7.9          | 25     | 80                                        |            |          | TB |
| 18:00              | 60              | 11.8  | 2.28            | 7.9          | 24     | 80                                        |            |          | TB |
| 19:00              | 60              | 11.7  | 2.30            | 8.0          | 24     | 80                                        |            |          | TB |
| 20:00              | 55              | 11.5  | 2.15            | 7.9          | 24     | 80                                        |            |          | TB |
| 21:00              | 55              | 11.5  | 2.15            | 7.9          | 24     | 80                                        |            |          | TB |
| 22:00              | 55              | 11.5  | 2.15            | 7.9          | 24     | 80                                        |            |          | TB |
| 23:00              | 55              | 11.4  | 2.13            | 7.9          | 24     | 80                                        | 176        | 923      | TB |
| ml/min average :   |                 | 64.5  |                 |              |        | Total gallons PO <sub>4</sub> Used: 24gal |            |          |    |
| MGD average :      |                 | 13.05 |                 |              |        |                                           |            |          |    |
| PPM average :      |                 | 2.21  |                 |              |        | Days of PO <sub>4</sub> on Hand: 40       |            |          |    |
| (Train Shed + CS2) |                 |       |                 |              |        |                                           |            |          |    |
| Notes:             |                 |       |                 |              |        |                                           |            |          |    |

## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: <u>6-17-16</u> |                 |       |                 |              |        | Location of PO <sub>4</sub>                                       |            |          |  |
|----------------------|-----------------|-------|-----------------|--------------|--------|-------------------------------------------------------------------|------------|----------|--|
|                      | PO <sub>4</sub> | CS 2  | PO <sub>4</sub> | Pump Setting |        | CS 2                                                              | Train Shed | Operator |  |
|                      | ml/min          | MGD   | PPM             | MA \ MA EXT  | Stroke | Gallons on Hand                                                   |            |          |  |
| 0:00                 | 57              | 11.7  | 2.19            | 7.8 24       | 80     | 175                                                               | 923        | BE       |  |
| 1:00                 | 62              | 12.3  | 2.26            | 8.1 26       | 80     |                                                                   |            | BE       |  |
| 2:00                 | 61              | 12.17 | 2.16            | 8.1 26       | 80     |                                                                   |            | df       |  |
| 3:00                 | 65              | 13.3  | 2.19            | 8.4 28       | 80     |                                                                   |            | BE       |  |
| 4:00                 | 65              | 13.3  | 2.19            | 8.5 28       | 80     |                                                                   |            | BE       |  |
| 5:00                 | 70              | 14.4  | 2.18            | 8.8 30       | 80     |                                                                   |            | BE       |  |
| 6:00                 | 72              | 14.7  | 2.20            | 9.0 31       | 80     |                                                                   |            | BE       |  |
| 7:00                 | 70              | 14.2  | 2.21            | 8.8 30       | 80     | 169                                                               | 923        | BE       |  |
| 8:00                 | 70              | 14.1  | 2.23            | 8.7 29       | 80     | 168                                                               | 923        | TB       |  |
| 9:00                 | 70              | 13.7  | 2.29            | 8.5 28       | 80     |                                                                   |            | AG       |  |
| 10:00                | 60              | 11.3  | 2.39            | 7.8 24       | 80     |                                                                   |            | AG       |  |
| 11:00                | 50              | 10.2  | 2.20            | 7.5 22       | 80     |                                                                   |            | DS       |  |
| 12:00                | 50              | 10.2  | 2.20            | 7.4 21       | 80     |                                                                   |            | AG       |  |
| 13:00                | 50              | 10.0  | 2.25            | 7.4 21       | 80     |                                                                   |            | AG       |  |
| 14:00                | 50              | 10.0  | 2.25            | 7.4 21       | 80     |                                                                   |            | AG       |  |
| 15:00                | 50              | 10.0  | 2.25            | 7.4 21       | 80     | 160                                                               | 923        | DS       |  |
| 16:00                | 50              | 10.2  | 2.20            | 7.4 21       | 80     | 159                                                               | 923        | TB       |  |
| 17:00                | 50              | 10.0  | 2.24            | 7.4 21       | 80     |                                                                   |            | TB       |  |
| 18:00                | 50              | 10.0  | 2.24            | 7.5 22       | 80     |                                                                   |            | TB       |  |
| 19:00                | 50              | 9.9   | 2.27            | 7.4 21       | 80     |                                                                   |            | TB       |  |
| 20:00                | 50              | 9.9   | 2.27            | 7.4 21       | 80     |                                                                   |            | TB       |  |
| 21:00                | 50              | 9.9   | 2.27            | 7.3 21       | 80     |                                                                   |            | TB       |  |
| 22:00                | 55              | 10.4  | 2.37            | 7.5 22       | 80     |                                                                   |            | TB       |  |
| 23:00                | 60              | 12.4  | 2.17            | 8.2 26       | 80     | 154                                                               | 923        | TD       |  |
| ml/min average :     |                 | 57    |                 |              |        | Total gallons PO <sub>4</sub> Used: 21921                         |            |          |  |
| MGD average :        |                 | 11.61 |                 |              |        |                                                                   |            |          |  |
| PPM average :        |                 | 2.23  |                 |              |        | Days of PO <sub>4</sub> on Hand: <sup>BE 6-17-16</sup> 40 51 DAYS |            |          |  |
| (Train Shed + CS2)   |                 |       |                 |              |        |                                                                   |            |          |  |
| Notes:               |                 |       |                 |              |        |                                                                   |            |          |  |

## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: 6-18-16      |                       |                 |                 |                                     |        | Location of PO <sub>4</sub> |            |          |    |
|--------------------|-----------------------|-----------------|-----------------|-------------------------------------|--------|-----------------------------|------------|----------|----|
|                    | PO <sub>4</sub>       | CS 2            | PO <sub>4</sub> | Pump Setting                        |        | CS 2                        | Train Shed | Operator |    |
|                    | ml/min                | MGD             | PPM             | MA \ MA EXT                         | Stroke | Gallons on Hand             |            |          |    |
| 0:00               | 70                    | 14.4            | 2.18            | 8.7                                 | 30     | 80                          | 153        | 923      | BE |
| 1:00               | 72                    | 14.8            | 2.18            | 9.0                                 | 31     | 80                          |            |          | BE |
| 2:00               | 72                    | 14.7            | 2.20            | 8.9                                 | 31     | 80                          |            |          | BE |
| 3:00               | 80                    | 15.9            | 2.24            | 9.4                                 | 33     | 80                          |            |          | BE |
| 4:00               | 82                    | 16.5            | 2.23            | 9.7                                 | 36     | 80                          |            |          | BE |
| 5:00               | 90                    | 18.0            | 2.24            | 10.0                                | 38     | 80                          |            |          | BE |
| 6:00               | 90                    | 18.1            | 2.23            | 10.0                                | 38     | 80                          |            |          | BE |
| 7:00               | 82 <sup>6-15-16</sup> | <del>14.8</del> | 2.16            | 9.7                                 | 36     | 80                          | 146        | 923      | BE |
| 8:00               | 85                    | 16.7            | 2.28            | 9.7                                 | 35     | 80                          | 145        | 923      | TB |
| 9:00               | 85                    | 16.7            | 2.28            | 9.6                                 | 34     | 80                          | 270        | 798      | TB |
| 10:00              | 85                    | 16.9            | 2.26            | 9.6                                 | 35     | 80                          |            |          | TB |
| 11:00              | 80                    | 16.4            | 2.19            | 9.5                                 | 34     | 80                          |            |          | TB |
| 12:00              | 70                    | 15.1            | 2.08            | 9.0                                 | 31     | 80                          |            |          | TB |
| 13:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          |            |          | TB |
| 14:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          |            |          | TB |
| 15:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          | 262        | 798      | TB |
| 16:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          | 261        | 798      | TB |
| 17:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          |            |          | SB |
| 18:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          |            |          | SB |
| 19:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          |            |          | SB |
| 20:00              | 75                    | 14.9            | 2.26            | 9.0                                 | 31     | 80                          |            |          | SB |
| 21:00              | 75                    | 14.8            | 2.29            | 8.8                                 | 30     | 80                          |            |          | SB |
| 22:00              | 75                    | 13.9            | 2.43            | 8.8                                 | 30     | 80                          |            |          | SB |
| 23:00              | 80                    | 15.8            | 2.27            | 9.3                                 | 33     | 80                          | 253        | 798      | SB |
| ml/min average :   |                       | 78              |                 | Total gallons PO <sub>4</sub> Used: |        | 25 gal                      |            |          |    |
| MGD average :      |                       | 15.6            |                 |                                     |        |                             |            |          |    |
| PPM average :      |                       | 2.24            |                 | Days of PO <sub>4</sub> on Hand:    |        | 40                          |            |          |    |
| (Train Shed + CS2) |                       |                 |                 |                                     |        |                             |            |          |    |
| Notes:             |                       |                 |                 |                                     |        |                             |            |          |    |

## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: <u>6/19/16</u>    |                 |                         |                         |              |        | Location of PO <sub>4</sub>            |            |          |    |
|-------------------------|-----------------|-------------------------|-------------------------|--------------|--------|----------------------------------------|------------|----------|----|
|                         | PO <sub>4</sub> | CS 2                    | PO <sub>4</sub>         | Pump Setting |        | CS 2                                   | Train Shed | Operator |    |
|                         | ml/min          | MGD                     | PPM                     | MA \ MA EXT  | Stroke | Gallons on Hand                        |            |          |    |
| 0:00                    | 85              | 17.0                    | 2.24                    | 9.7          | 36     | 80                                     | 252        | 798      | TB |
| 1:00                    | 85              | 17.0                    | 2.24                    | 9.7          | 36     | 80                                     |            |          | TB |
| 2:00                    | 85              | 17.0                    | 2.24                    | 9.8          | 36     | 80                                     |            |          | TB |
| 3:00                    | 90              | 17.5                    | 2.31                    | 9.9          | 37     | 80                                     |            |          | TB |
| 4:00                    | 90              | 17.7                    | 2.28                    | 9.8          | 37     | 80                                     |            |          | TB |
| 5:00                    | 80              | 15.6                    | 2.30                    | 9.4          | 34     | 80                                     |            |          | TB |
| 6:00                    | 70              | 14.6                    | <del>2.30</del><br>2.19 | 8.9          | 31     | 80                                     |            |          | TB |
| 7:00                    | 70              | 14.0                    | 2.24                    | 8.7          | 29     | 80                                     | 243        | 798      | TB |
| 8:00                    | 70              | 13.5                    | 2.38                    | 8.6          | 28     | 80                                     | 240        | 798      | BE |
| 9:00                    | 68              | 13.2                    | 2.31                    | 8.4          | 28     | 80                                     |            |          | BE |
| 10:00                   | 66              | 13.2                    | 2.24                    | 8.4          | 28     | 80                                     |            |          | BE |
| 11:00                   | 67              | 13.3                    | 2.26                    | 8.4          | 28     | 80                                     |            |          | BE |
| 12:00                   | 65              | 13.1                    | 2.23                    | 8.4          | 28     | 80                                     |            |          | BE |
| 13:00                   | 66              | 13.0                    | 2.28                    | 8.4          | 28     | 80                                     |            |          | BE |
| 14:00                   | 67              | 13.2                    | 2.18                    | 8.5          | 28     | 80                                     |            |          | BE |
| 15:00                   | 66              | 13.2                    | 2.15                    | 8.4          | 28     | 80                                     | 235        | 798      | BE |
| 16:00                   | 66              | 13.4                    | 2.21                    | 8.5          | 28     | 80                                     | 234        | 798      | BE |
| 17:00                   | 68              | 13.3                    | 2.29                    | 8.5          | 28     | 80                                     |            |          | BE |
| 18:00                   | 70              | 13.6                    | 2.31                    | 8.6          | 28     | 80                                     |            |          | BE |
| 19:00                   | 70              | 13.7                    | 2.29                    | 8.6          | 29     | 80                                     |            |          | BE |
| 20:00                   | 65              | 13.3                    | 2.19                    | 8.5          | 28     | 80                                     |            |          | BE |
| 21:00                   | 65              | 13.2                    | 2.21                    | 8.4          | 28     | 80                                     |            |          | BE |
| 22:00                   | 60              | 12.6                    | 2.14                    | 8.2          | 26     | 80                                     |            |          | BE |
| 23:00                   | 82              | <del>15.8</del><br>16.5 | 2.23                    | 9.5          | 34     | 80                                     | 226        | 1798     | BE |
| ml/min average : 72.333 |                 |                         |                         |              |        | Total gallons PO <sub>4</sub> Used: 26 |            |          |    |
| MGD average : 14.404    |                 |                         |                         |              |        |                                        |            |          |    |
| PPM average : 2.245     |                 |                         |                         |              |        | Days of PO <sub>4</sub> on Hand: 39    |            |          |    |
| (Train Shed + CS2)      |                 |                         |                         |              |        |                                        |            |          |    |
| Notes:                  |                 |                         |                         |              |        |                                        |            |          |    |

## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: 6-20-16          |                 |      |                            |              |        | Location of PO <sub>4</sub>                |            |          |    |
|------------------------|-----------------|------|----------------------------|--------------|--------|--------------------------------------------|------------|----------|----|
|                        | PO <sub>4</sub> | CS 2 | PO <sub>4</sub>            | Pump Setting |        | CS 2                                       | Train Shed | Operator |    |
|                        | ml/min          | MGD  | PPM                        | MA \ MA EXT  | Stroke | Gallons on Hand                            |            |          |    |
| 0:00                   | 95              | 18.4 | 2.32                       | 10.1         | 38     | 80                                         | 224        | 798      | MW |
| 1:00                   | 95              | 18.6 | 2.29                       | 10.2         | 38     | 80                                         |            |          | MW |
| 2:00                   | 95              | 18.6 | 2.29                       | 10.3         | 39     | 80                                         |            |          | MW |
| 3:00                   | 95              | 18.7 | 2.28                       | 10.3         | 39     | 80                                         |            |          | MW |
| 4:00                   | 95              | 18.8 | 2.27                       | 10.3         | 39     | 80                                         |            |          | MW |
| 5:00                   | 95              | 18.8 | 2.27                       | 10.3         | 39     | 80                                         |            |          | MW |
| 6:00                   | 80              | 15.3 | 2.35                       | 9.1          | 32     | 80                                         |            |          | MW |
| 7:00                   | 80              | 15.2 | 2.36                       | 9.1          | 32     | 80                                         | 213        | 798      | MW |
| 8:00                   | 75              | 14.9 | 2.37                       | 9.0          | 31     | 80                                         | 212        | 798      | BE |
| 9:00                   | 70              | 14.2 | 2.21                       | 8.5          | 28     | 80                                         |            |          | BE |
| 10:00                  | 68              | 13.3 | 2.29                       | 8.1          | 28     | 80                                         |            |          | BE |
| 11:00                  | 65              | 13.2 | 2.21                       | 8.4          | 28     | 80                                         |            |          | BE |
| 12:00                  | 68              | 13.5 | 2.26                       | 8.4          | 28     | 80                                         |            |          | BE |
| 13:00                  | 71              | 13.6 | 2.34                       | 8.6          | 28     | 80                                         |            |          | BE |
| 14:00                  | 62              | 12.0 | 2.32                       | 8.1          | 26     | 80                                         |            |          | BE |
| 15:00                  | 58              | 12.0 | 2.17                       | 8.0          | 26     | 80                                         | 205        | 798      | BE |
| 16:00                  | 57              | 11.6 | <del>1.93</del><br>2.20 BE | 7.9          | 24     | 80                                         | 204        | 798      | BE |
| 17:00                  | 58              | 11.4 | 2.28                       | 7.9          | 24     | 80                                         |            |          | BE |
| 18:00                  | 60              | 11.7 | 2.30                       | 8.0          | 25     | 80                                         |            |          | BE |
| 19:00                  | 48              | 9.3  | 2.32                       | 7.2          | 20     | 80                                         |            |          | BE |
| 20:00                  | 45              | 9.2  | 2.19                       | 7.2          | 19     | 80                                         |            |          | BE |
| 21:00                  | 65              | 13.2 | 2.21                       | 8.3          | 27     | 80                                         |            |          | BE |
| 22:00                  | 65              | 13.3 | 2.19                       | 8.3          | 27     | 80                                         |            |          | BE |
| 23:00                  | 92              | 18.3 | 2.21                       | 10.2         | 39     | 80                                         | 199        | 798      | BE |
| ml/min average : 73.20 |                 |      |                            |              |        | Total gallons PO <sub>4</sub> Used: 25 gal |            |          |    |
| MGD average : 14.46    |                 |      |                            |              |        |                                            |            |          |    |
| PPM average : 2.27     |                 |      |                            |              |        | Days of PO <sub>4</sub> on Hand: 40 days   |            |          |    |
| (Train Shed + CS2)     |                 |      |                            |              |        |                                            |            |          |    |
| Notes:                 |                 |      |                            |              |        |                                            |            |          |    |



## 24hr Flow Paced Record of Ortho-Phosphate Used

| Date: 6-21-16      |                 |       |                 |              |        | Location of PO <sub>4</sub>         |            |          |      |
|--------------------|-----------------|-------|-----------------|--------------|--------|-------------------------------------|------------|----------|------|
| <del>Time</del>    | PO <sub>4</sub> | CS 2  | PO <sub>4</sub> | Pump Setting |        | CS 2                                | Train Shed | Operator |      |
|                    | ml/min          | MGD   | PPM             | MA \ MA EXT  | Stroke | Gallons on Hand                     |            |          |      |
| 0:00               | 95              | 18.4  | 2.32            | 10.1         | 38     | 80                                  | 198        | 798      | MW   |
| 1:00               | 100             | 19.7  | 2.28            | 10.6         | 41     | 80                                  |            |          | MW   |
| 2:00               | 100             | 19.5  | 2.30            | 10.5         | 41     | 80                                  |            |          | MW   |
| 3:00               | 100             | 19.4  | 2.31            | 10.5         | 41     | 80                                  |            |          | MW   |
| 4:00               | 100             | 19.5  | 2.30            | 10.5         | 40     | 80                                  |            |          | MW   |
| 5:00               | 90              | 18.4  | 2.19            | 10.1         | 38     | 80                                  |            |          | MW   |
| 6:00               | 70              | 16.0  | 1.96            | 9.3          | 33     | 80                                  |            |          | MW   |
| 7:00               | 65              | 13.0  | 2.25            | 8.3          | 27     | 80                                  | 186        | 798      | MW   |
| 8:00               | 62              | 12.3  | 2.26            | 8.1          | 26     | 80                                  | 185        | 798      | RF   |
| 9:00               | 62              | 12.1  | 2.30            | 8.1          | 26     | 80                                  |            |          | JM   |
| 10:00              | 60              | 11.6  | 2.32            | 7.9          | 24     | 80                                  |            |          | JM   |
| 11:00              | 58              | 11.5  | 2.27            | 7.9          | 24     | 80                                  |            |          | RF   |
| 12:00              | 58              | 11.5  | 2.27            | 7.8          | 24     | 80                                  |            |          | JM   |
| 13:00              | 57              | 11.5  | 2.23            | 7.5          | 24     | 80                                  |            |          | done |
| 14:00              | 57              | 11.6  | 2.20            | 7.5          | 24     | 80                                  |            |          | MW   |
| 15:00              | 57              | 11.6  | 2.20            | 7.9          | 24     | 80                                  | 182        | 798      | RF   |
| 16:00              | 55              | 11.4  | 2.17            | 7.8          | 24     | 80                                  | 179        | 798      | RF   |
| 17:00              | 60              | 11.6  | 2.32            | 7.9          | 24     | 80                                  |            |          | RF   |
| 18:00              | 60              | 11.6  | 2.32            | 7.9          | 24     | 80                                  |            |          | RF   |
| 19:00              | 57              | 11.5  | 2.27            | 7.9          | 24     | 80                                  |            |          | RF   |
| 20:00              | 55              | 11.4  | 2.17            | 7.8          | 24     | 80                                  |            |          | RF   |
| 21:00              | 55              | 11.4  | 2.17            | 7.8          | 24     | 80                                  |            |          | RF   |
| 22:00              | 65              | 13.0  | 2.25            | 8.3          | 27     | 80                                  |            |          | RF   |
| 23:00              | 65              | 13.2  | 2.21            | 8.5          | 28     | 80                                  | 173        | 798      | RF   |
| ml/min average :   |                 | 69.29 |                 |              |        | Total gallons PO <sub>4</sub> Used: |            | 25       |      |
| MGD average :      |                 | 13.86 |                 |              |        |                                     |            |          |      |
| PPM average :      |                 | 2.24  |                 |              |        | Days of PO <sub>4</sub> on Hand:    |            | 38 days  |      |
| (Train Shed + CS2) |                 |       |                 |              |        |                                     |            |          |      |
| Notes:             |                 |       |                 |              |        |                                     |            |          |      |