Summary of City of Flint (City) Actions
In Response to the
EPA Emergency Administrative Order
Updated: July 14, 2016

Chapters 52, 57, 59a & 59b: Weekly Conference Call Regarding Flint Water Plant Operations July 14, 2016.

EPA Order Due Date: Weekly

MDEQ and the Flint Water Treatment Plant staff held the weekly call on July 14th to review and discuss the summary of water quality and corrosion control parameters reported on the city's July operation report completed to date, a summary of water quality parameters collected on July 10th in the distribution system, and some other matters pertaining to operation of the city's water supply.

The following observations were noted:

- The supplemental phosphate dosage was consistent and ranged between 2.18 and 2.23 milligrams per liter. The phosphate residuals measured at the plant tap ranged from 3.24 to 3.62 milligrams per liter entering the distribution system.
- Only one of the weekly distribution system sites (#6) reported a residual below 3.1 milligrams per liter, at 3.08 mg/l. When applying the rules of significant figures, this measurement should be reported as 3.1 milligrams per liter. All other remaining weekly sites ranged between 3.32 and 3.58 milligrams per liter of phosphate.
- 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 7.33 to 7.49 in the water received from Great Lakes Water Authority (GLWA) and from 7.35 to 7.47 at the 10 distribution system sites.
- Iron levels at EWQM sites ranged from 0.01 to 0.09 milligrams per liter. Plant tap iron concentrations ranged from 0.02 to 0.03 in the last week.
- All lead results reported from the EWQM sites on this week's report were not detected.
- The chlorine feed at Control Station #2 was consistently maintained at 0.70 milligrams per liter, with only one variation in dosage at 0.69 mg/l. The chlorine residuals at the 10 EWQM sites ranged from 0.38 to 1.30 milligrams per liter.
- A tap for a continuous chlorine residual analyzer, located downstream of CS #2 and in the far-east corner of the filter gallery has been installed. The location of the tap will give the city a better location for the continuous monitoring of the residuals leaving CS #2 than what is being seen at the operations and plant labs.
- The Flint WTP operators have been adjusting the hypochlorite feed rate to maintain the same feed rate based on the flow rate from the GLWA. They now understand they should be adjusting the dosage rate to consistently maintain the same plant tap concentration regardless of flow. DEQ will be working with the WTP staff to reach and then maintain a plant tap free chlorine residual of 1.3 to 1.5 mg/l.
- A combined, single spreadsheet is being developed for the inclusion of all chlorination information.
- 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.

- The city worked with HACH Chemical Company this week to review instrumentation for possible installation at the plant and in the distribution system for water quality monitoring. An automatized display tied to one of the new HACH multichannel instruments will be installed in the water treatment plant lab. The various channels will record the free and total chlorine residual, total phosphate, pH temperature, UV254, chloride and Dissolved Oxygen.
- A similar system, with fewer channels will be added to at least four locations in the distribution system. All of these HACH instruments will be sending the data to the plant's SCADA system.
- The HACH representative will also check on the possibility of adding a sulfate monitoring system as well.
- WTP staff is working with DEQ staff to modify bench sheets with the goal of improving data evaluation.

The pH levels seem to be improving system-wide, but the city will need to continue efforts to obtain equipment to allow for pH adjustment at CS #2 should it become necessary. The chlorine residuals are also improving with the boost in chlorine dose from 0.3 to 0.7 milligrams per liter at CS #2.

These water quality parameters are demonstrating the city's corrosion control efforts are currently providing acceptable water quality.

24 hr Feed Rates of NaOCL

Date: 7/7/2016						Location of NaOCL		
% effective chlorine: .135	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	183	16.0	0.69	77	75	116	1315	MW
1:00	183	15.9	0.70	77	75			MW
2:00	185	15.9	0.71	77	75			MW
3:00	185	16.0	0.70	77	75			MW
4:00	185	16.1	0.70	76	75			MW
5:00	185	16.2	0.69	76	75			MW
6:00	185	16.1	0.70	76	75			MW
7:00	132	11.5	0.70	55	75	94	1315	MW
8:00	135	11.7	0.70	56	75	98	1315	JM
9:00	130	11.2	0.70	54	75			JM
10:00	130	11.2	0.70	55	75			SD
11:00	126	10.9	0.70	53	75			JM
12:00	122	10.8	0.70	51	75			JM
13:00	121	10.8	0.70	51	75			RF
14:00	126	11.2	0.70	53	75			JM
15:00	127	11.2	0.70	53	75	83	1315	JM
16:00	129	11.4	0.71	54	75	81	1315	ET
17:00	127	11.2	0.71	54	75		1315	ET
18:00	123	11.3	0.70	51	75			ET
19:00	123	11.1	0.69	51	75			ET
20:00	123	11.1	0.69	51	75			ET
21:00	125	11.2	0.70	52	75			ET
22:00	152	14.0	0.70	63	75			SD
23:00	159	14.5	0.69	66	75	66	1315	ET

ml/min average:	145.88	Total gallons NaOCL Used:	50
MGD average:	12.85		
PPM average:	0.70	Days of NaOCL on Hand:	26.3
		(Train Shed + CS2)	

Notes:

24 hr Feed Rates of NaOCL

Date: 7/8/2016						Location of NaOCL		
% effective chlorine: 13.25	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	175	15.9	0.69	75	75	65	1315	ET
1:00	185	16.6	0.70	77	75			ET
2:00	185	16.6	0.70	77	75			ET
3:00	193	16.9	0.71	79	75			ET
4:00	196	17.3	0.71	80	75			ET
5:00	196	17.4	0.70	80	75			ET
6:00	196	14.9	0.70	70	75			ET
7:00	161	14.5	0.69	68	75	46	1315	ET
8:00	140	12.8	0.70	58	75	46	1315	RF
9:00	140	12.5	0.70	58	75			RF
10:00	132	11.7	0.70	55	75			RF
11:00	130	11.5	0.70	53	75			RF
12:00	129	11.5	0.70	53	75			JM
13:00	140	12.5	0.70	58	75			JM
14:00	144	12.7	0.70	59	75			JM
15:00	142	12.5	0.71	59	75			SD
16:00	140	12.5	0.68	58	75	20	1315	BE
17:00	144	12.6	0.70	60	75			BE
18:00	148	12.8	0.70	62	75			BE
19:00	152	13.1	0.70	63	75			BE
20:00	152	13.2	0.70	63	75			BE
21:00	152	13.2	0.70	64	75	3	1095	BE
22:00	156	13.7	0.71	65	75	220	1095	BE
23:00	176	15.5	0.69	75		218	1095	BE

ml/min average:	158.50	Total gallons NaOCL Used:	64
MGD average:	13.93		
PPM average:	0.70	Days of NaOCL on Hand:	20.51
		(Train Shed + CS2)	

Notes:

24 hr Feed Rates of NaOCL

Date: 7/9/2016						Location of NaOCL		
% effective chlorine: 132	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	200	17.7	0.69	82	75	217	1095	BE
1:00	194	17.2	0.69	81	75			BE
2:00	194	17.0	0.70	81	75			BE
3:00	196	17.3	0.69	81	75			BE
4:00	198	17.3	0.70	82	75			BE
5:00	198	17.2	0.70	81	75			BE
6:00	192	16.7	0.70	79	75			BE
7:00	168	14.6	0.70	70	75	CANT SEE LEVEL	1095	BE
8:00	166	14.4	0.70	70	75	?	1095	TB
9:00	168	14.1	0.72	70	75			TB
10:00	165	14.3	0.69	69	75			TB
11:00	165	14.0	0.71	69	75			TB
12:00	163	13.6	0.72	68	75			TB
13:00	150	13.1	0.69	62	75			TB
14:00	150	12.6	0.72	62	75			TB
15:00	150	13.1	0.69	62	75	?	1095	TB
16:00	166	14.2	0.71	69	75		1095	ET
17:00	164	14.1	0.71	68	75			ET
18:00	142	12.2	0.71	59	75			ET
19:00	138	11.9	0.69	57	75			ET
20:00	140	12.1	0.70	58	75			ET
21:00	138	11.9	0.69	57	75			ET
22:00	148	12.8	0.71	62	75			ET
23:00	160	13.5	0.72	66	75		1095	ET

ml/min average:	167.21	Total gallons NaOCL Used:	?
MGD average:	14.5		
PPM average:	0.70	Days of NaOCL on Hand:	?
		(Train Shed + CS2)	

Notes:

24 hr Feed Rates of NaOCL

Date: 7/10/2016						Location of NaOCL		
% effective chlorine: 13.1	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	195	16.8	0.70	81	75	140?	1095	MW
1:00	196	16.7	0.71	81	75			MW
2:00	195	16.8	0.70	81	75			MW
3:00	195	16.8	0.70	81	75			MW
4:00	196	16.7	0.71	81	75			MW
5:00	196	16.9	0.70	81	75			MW
6:00	195	16.8	0.70	81	75			MW
7:00	167	14.4	0.70	70	75	116	1095	MW
8:00	166	14.3	0.70	70	75	115	1095	BE
9:00	168	14.5	0.70	71	75			BE
10:00	168	14.5	0.70	71	75			BE
11:00	168	14.6	0.69	71	75			BE
12:00	166	14.2	0.70	69	75			BE
13:00	166	14.2	0.70	69	75			BE
14:00	162	13.9	0.70	67	75			BE
15:00	166	14.3	0.70	69	75	97	1095	BE
16:00	158	13.5	0.71	64	75		1095	ET
17:00	155	13.4	0.70	64	75			ET
18:00	155	13.4	0.70	64	75			ET
19:00	155	13.5	0.70	64	75			ET
20:00	155	13.5	0.70	64	75			ET
21:00	166	14.2	0.71	69	75			ET
22:00	162	13.9	0.71	67	75			ET
23:00	168	14.5	0.71	70	75	78	1095	ET

ml/min average:	172.46	Total gallons NaOCL Used:	62
MGD average:	14.85		
PPM average:	0.70	Days of NaOCL on Hand:	18
		(Train Shed + CS2)	

Notes:

24 hr Feed Rates of NaOCL

Date: 7/11/2016						Location of NaOCL		
% effective chlorine: .130	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	195	16.8	0.70	81	75	75	1095	MW
1:00	196	16.8	0.70	81	75			MW
2:00	196	16.9	0.70	81	75			MW
3:00	196	16.7	0.71	81	75			MW
4:00	196	16.8	0.70	81	75			MW
5:00	197	16.8	0.71	81	75			MW
6:00	196	16.6	0.71	81	75			MW
7:00	156	13.4	0.70	64	75	55	1095	MW
8:00	153	12.8	0.70	63	75	54	1095	JM
9:00	153	12.8	0.70	63	75			RF
10:00	153	12.8	0.70	63	75			JM
11:00	150	12.8	0.70	62	75			JM
12:00	150	12.8	0.70	62	75			JM
13:00	148	12.8	0.69	61	75			JM
14:00	149	12.8	0.70	61	75			JM
15:00	149	12.8	0.70	61	75	31	1095	JM
16:00	148	12.9	0.69	61	75		1095	ET
17:00	145	12.4	0.70	59	75			ET
18:00	145	12.4	0.70	59	75			ET
19:00	117	10.2	0.69	49	75			ET
20:00	115	10.1	0.69	49	75	219	876	ET
21:00	115	10.1	0.69	49	75			ET
22:00	123	10.5	0.71	52	75			ET
23:00	123	10.6	0.70	52	75	?	876	ET

ml/min average:	156.83	Total gallons NaOCL Used:	60
MGD average:	13.43		
PPM average:	0.70	Days of NaOCL on Hand:	14.6
		(Train Shed + CS2)	

Notes:

24 hr Feed Rates of NaOCL

Date: 7/12/2016						Location of NaOCL		
% effective chlorine: 12.6	NaOCL	CSW2	NaOCL	Pump Setting		CS2	Train Shed	Operator
	ml/min	MGD	PPM	Speed	Stroke	Gallons on Hand		
0:00	176	15.2	0.69	74	75	218	876	MW
1:00	176	15.1	0.70	75	75			MW
2:00	176	15.2	0.69	75	75			MW
3:00	177	15.2	0.70	75	75			MW
4:00	178	15.1	0.70	75	75			MW
5:00	178	15.3	0.70	75	75			MW
6:00	132	11.5	0.69	55	75			MW
7:00	132	11.2	0.70	55	75	193	876	MW
8:00	138	11.8	0.70	57	75	192	876	RF
9:00	145	12.0	0.70	61	75			TB
10:00	136	11.3	0.70	57	75			TB
11:00	137	11.3	0.70	57	75			TB
12:00	137	11.4	0.70	57	75			JM
13:00	142	11.7	0.70	59	75			RF
14:00	140	11.6	0.70	58	75			JM
15:00	144	12.0	0.70	59	75	175	876	JM
16:00	142	11.6	0.71	59	75	175	876	TB
17:00	142	11.8	0.70	59	75			TB
18:00	142	11.6	0.71	59	75			TB
19:00	142	11.6	0.71	59	75			TB
20:00	142	11.6	0.71	59	75			TB
21:00	139	11.5	0.70	58	75			TB
22:00	136	11.3	0.70	57	75			TB
23:00	136	11.2	0.70	57	75	159	876	TB

ml/min average:	148.54	Total gallons NaOCL Used:	59
MGD average:	12.46		
PPM average:	0.70	Days of NaOCL on Hand:	17.5
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/6/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA\MA EXT	Stroke	Gallons on Hand		
0:00	50	10.5	2.14	7.5 22	80	261	357	MW
1:00	70	14.4	2.18	8.8 30	80			MW
2:00	71	14.5	2.20	8.8 30	80			MW
3:00	70	14.4	2.18	8.8 30	80			MW
4:00	70	14.4	2.18	8.8 30	80			MW
5:00	71	14.3	2.23	8.8 31	80			MW
6:00	70	14.4	2.18	8.8 30	80			MW
7:00	56	14.5	2.19	7.8 24	80	253	357	MW
8:00	56	10.9	2.31	7.7 23	80	253	357	RF
9:00	56	10.8	2.33	7.6 23	80			RF
10:00	56	10.8	2.33	7.6 23	80			JM
11:00	52	10.8	2.16	7.6 23	80			RF
12:00	52	10.8	2.16	7.6 23	80			JM
13:00	55	11.1	2.22	7.7 23	80			RF
14:00	58	11.5	2.27	7.9 24	80			JM
15:00	58	11.4	2.28	7.8 24	80	246	357	JM
16:00	59	11.7	2.27	8.0 25	80	245	357	ET
17:00	58	11.9	2.19	7.9 24	80			ET
18:00	58	11.5	2.27	7.9 24	80			ET
19:00	61	12.3	2.23	8.1 25	80			ET
20:00	62	12.6	2.21	8.1 26	80			ET
21:00	61	12.3	2.23	8.1 25	80			ET
22:00	61	12.2	2.26	8.1 25	80			ET
23:00	70	14.2	2.23	8.5 29	80	239	357	ET

ml/min average:	60.88	Total gallons PO4 Used:	22
MGD average:	12.43		
PPM average:	2.23	Days of PO4 on Hand:	27
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/7/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA/MA EXT	Stroke	Gallons on Hand		
0:00	80	16.0	2.24	9.3 33	80	237	357	MW
1:00	80	15.9	2.26	9.3 33	80			MW
2:00	80	15.9	2.26	9.2 33	80			MW
3:00	80	16.0	2.24	9.3 33	80			MW
4:00	80	16.1	2.23	9.4 34	80			MW
5:00	80	16.2	2.22	9.4 33	80			MW
6:00	80	16.1	2.23	9.3 34	80			MW
7:00	55	11.5	2.15	7.9 24	80	229	357	MW
8:00	58	11.7	2.22	7.9 24	80	228	357	JM
9:00	56	11.2	2.24	7.7 23	80			JM
10:00	55	11.2	2.21	7.7 23	80			SD
11:00	55	10.9	2.26	7.7 23	80			JM
12:00	55	10.8	2.28	7.6 23	80			JM
13:00	53	10.8	2.20	7.6 23	80			RF
14:00	58	11.2	2.32	7.8 24	80			JM
15:00	58	11.2	2.32	7.7 23	80	223	357	JM
16:00	59	11.4	2.32	7.9 24	80	222	357	ET
17:00	58	11.2	2.32	7.7 23	80			ET
18:00	53	11.3	2.11	7.8 24	80			SD
19:00	53	11.1	2.14	7.8 24	80			ET
20:00	53	11.1	2.14	7.9 24	80			ET
21:00	58	11.2	2.32	7.9 24	80			ET
22:00	65	14.0	2.09	8.7 29	80			SD
23:00	71	14.5	2.21	8.8 30	80	215	357	ET

ml/min average:	**63.88**	**Total gallons PO4 Used:**	**22**
MGD average:	**12.85**		
PPM average:	**2.23**	**Days of PO4 on Hand:**	**16.2**
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/8/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA\MA EXT	Stroke	Gallons on Hand		
0:00	79	15.9	2.24	9.4 \ 34	80	214	357	ET
1:00	80	16.6	2.16	9.6 \ 35	80			ET
2:00	80	16.6	2.16	9.5 \ 36	80			ET
3:00	81	16.9	2.15	9.6 \ 36	80			ET
4:00	84	17.3	2.18	9.7 \ 36	80			ET
5:00	84	17.4	2.17	9.7 \ 36	80			ET
6:00	70	14.9	2.11	8.9 \ 31	80			ET
7:00	69	14.5	2.14	8.8 \ 30	80	205	357	ET
8:00	63	12.8	2.26	8.3 \ 27	80	205	357	RF
9:00	60	12.5	2.15	8.1 \ 26	80			RF
10:00	58	11.7	2.22	7.9 \ 24	80			RF
11:00	53	11.5	2.07	7.9 \ 24	80			RF
12:00	54	11.5	2.10	7.8 \ 24	80			JM
13:00	65	12.5	2.33	8.3 \ 27	80			JM
14:00	64	12.7	2.26	8.3 \ 27	80			JM
15:00	60	2.5	2.16	8.2 \ 26	80	199	357	SD
16:00	62	12.5	2.22	8.3 \ 27	80	198	357	BE
17:00	62	12.6	2.21	8.2 \ 26	80			BE
18:00	60	12.8	2.11	8.2 \ 27	80			BE
19:00	62	13.1	2.12	8.4 \ 28	80			BE
20:00	62	13.2	2.11	8.4 \ 27	80			BE
21:00	64	13.2	2.18	8.6 \ 28	80			BE
22:00	68	13.7	2.28	8.7 \ 29	80			BE
23:00	80	13.5	2.32	9.1 \ 32	80	190	357	BE

ml/min average:	67.67	Total gallons PO4 Used:	24
MGD average:	13.43		
PPM average:	2.18	Days of PO4 on Hand:	22.79
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/9/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA\MA EXT	Stroke	Gallons on Hand		
0:00	90	17.7	2.28	9.9 37	80	189	357	BE
1:00	82	17.2	2.14	9.7 36	80			BE
2:00	80	17.0	2.11	9.6 36	80			BE
3:00	82	17.3	2.13	9.8 36	80			BE
4:00	82	17.3	2.13	9.7 35	80			BE
5:00	80	17.2	2.09	9.5 35	80			BE
6:00	80	16.7	2.15	9.5 34	80			BE
7:00	70	14.6	2.15	8.9 31	80	179	357	BE
8:00	70	14.4	2.18	8.8 30	80	178	357	TB
9:00	70	14.1	2.23	8.8 29	80			TB
10:00	70	14.3	2.20	8.9 30	80			TB
11:00	70	14.0	2.24	8.6 29	80			TB
12:00	70	13.6	2.31	8.5 28	80			TB
13:00	65	13.1	2.23	8.4 28	80			TB
14:00	60	12.6	2.14	8.3 26	80			TB
15:00	65	13.1	2.23	8.3 27	80	172	357	TB
16:00	69	14.2	2.19	8.8 29	80	173	357	ET
17:00	69	14.1	2.19	8.9 29	80			ET
18:00	60	12.2	2.23	7.9 25	80			ET
19:00	59	11.9	2.23	8.0 25	80			ET
20:00	60	12.1	2.23	8.0 24	80			ET
21:00	59	11.9	2.23	8.0 25	80			ET
22:00	63	12.8	2.23	8.6 28	80			ET
23:00	66	13.5	2.19	8.6 29	80	164	357	ET

ml/min average:	70.46	Total gallons PO4 Used:	25
MGD average:	14.45		
PPM average:	2.19	Days of PO4 on Hand:	20.8
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/10/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA\MA EXT	Stroke	Gallons on Hand		
0:00	82	16.8	2.19	9.5 34	80	162	357	MW
1:00	81	16.7	2.18	9.6 35	80			MW
2:00	83	16.8	2.22	9.6 35	80			MW
3:00	83	16.8	2.22	9.6 34	80			MW
4:00	82	16.7	2.20	9.5 35	80			MW
5:00	83	16.9	2.20	9.6 35	80			MW
6:00	81	16.8	2.16	9.5 34	80			MW
7:00	72	14.4	2.24	8.8 30	80	153	357	MW
8:00	70	14.3	2.20	8.8 30	80	152	357	BE
9:00	70	14.5	2.17	8.9 31	80			BE
10:00	72	14.5	2.23	8.9 31	80			BE
11:00	72	14.6	2.21	8.9 31	80			BE
12:00	71	14.2	2.24	8.7 30	80			BE
13:00	70	14.2	2.21	8.7 29	80			BE
14:00	68	13.9	2.19	8.7 29	80			BE
15:00	70	14.3	2.20	8.7 29	80	144	357	BE
16:00	67	13.5	2.23	8.5 28	80	143	357	ET
17:00	67	13.4	2.25	8.5 28	80			ET
18:00	67	13.4	2.25	8.5 27	80			ET
19:00	67	13.5	2.23	8.5 28	80			ET
20:00	67	13.5	2.23	8.4 28	80			ET
21:00	68	14.2	2.16	8.7 29	80			ET
22:00	68	13.9	2.19	8.7 28	80			ET
23:00	72	14.5	2.23	8.9 31	80	135	357	ET

ml/min average:	73.04	Total gallons PO4 Used:	27
MGD average:	14.85		
PPM average:	2.21	Days of PO4 on Hand:	18
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/11/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA\MA EXT	Stroke	Gallons on Hand		
0:00	82	16.8	2.19	9.6 \ 35	80	133	357	MW
1:00	84	16.8	2.25	9.6 \ 35	80			MW
2:00	85	16.9	2.26	9.6 \ 35	80			MW
3:00	81	16.7	2.18	9.5 \ 35	80			MW
4:00	83	16.8	2.22	9.5 \ 34	80			MW
5:00	84	16.8	2.25	9.6 \ 34	80			MW
6:00	81	16.6	2.19	9.5 \ 34	80			MW
7:00	65	13.4	2.18	8.4 \ 28	80	125	357	MW
8:00	62	12.8	2.11	8.4 \ 28	80	125	357	JM
9:00	62	12.8	2.11	8.4 \ 28	80			RF
10:00	62	12.8	2.11	8.3 \ 27	80			JM
11:00	61	12.8	2.14	8.2 \ 26	80			JM
12:00	62	12.8	2.11	8.3 \ 27	80			JM
13:00	64	12.8	2.24	8.3 \ 27	80			JM
14:00	62	12.8	2.24	8.3 \ 27	80			JM
15:00	62	12.8	2.24	8.3 \ 27	80	117	357	JM
16:00	65	12.9	2.26	8.3 \ 27	80	116	357	ET
17:00	62	12.4	2.25	8.1 \ 26	80			ET
18:00	62	12.4	2.25	8.2 \ 26	80	114		ET
19:00	50	10.2	2.23	7.3 \ 21	80	210	266	ET
20:00	50	10.1	2.23	7.2 \ 21	80			ET
21:00	50	10.1	2.23	7.3 \ 21	80			ET
22:00	53	10.5	2.27	7.5 \ 23	80			ET
23:00	53	10.6	2.27	7.5 \ 22	80	205	266	ET

ml/min average:	66.13	Total gallons PO4 Used:	24
MGD average:	13.43		
PPM average:	2.21	Days of PO4 on Hand:	19
		(Train Shed + CS2)	

Notes:

24 hr Flow Paced Record of Orthophosphate Used

Date: 7/12/2016						Location of PO_4		
	PO_4	CS 2	PO_4	Pump Setting		CS 2	Train Shed	Operator
	ml/min	MGD	PPM	MA\MA EXT	Stroke	Gallons on Hand		
0:00	75	15.2	2.21	9.2 33	80	204	266	MW
1:00	75	15.1	2.23	9.1 32	80			MW
2:00	72	15.2	2.12	9.1 32	80			MW
3:00	73	15.2	2.15	9.0 31	80			MW
4:00	73	15.1	2.17	9.1 32	80			MW
5:00	75	15.3	2.20	9.1 32	80			MW
6:00	51	11.5	1.99	7.7 23	80			MW
7:00	55	11.2	2.20	7.7 23	80	196	266	MW
8:00	60	11.8	2.28	7.9 24	80	195	266	JM
9:00	60	12.0	2.24	8.0 25	80			TB
10:00	55	11.3	2.18	7.9 24	80			TB
11:00	55	11.3	2.18	7.8 24	80			TB
12:00	58	11.4	2.28	7.9 24	80			JM
13:00	60	11.7	2.30	7.9 24	80			JM
14:00	60	11.6	2.32	7.9 24	80			JM
15:00	62	12.0	2.32	8.0 25	80	189	266	JM
16:00	60	11.6	2.32	8.0 25	80	188	266	TB
17:00	60	11.8	2.28	7.9 24	80			TB
18:00	55	11.6	2.13	7.9 24	80			TB
19:00	55	11.6	2.13	7.9 24	80			TB
20:00	55	11.6	2.13	7.8 24	80			TB
21:00	55	11.5	2.15	7.8 24	80			TB
22:00	55	11.3	2.18	7.8 24	80			TB
23:00	60	11.2	2.40	7.8 24	80	182	266	TB

ml/min average:	61.42	Total gallons PO4 Used:	22
MGD average:	12.46		
PPM average:	2.21	Days of PO4 on Hand:	20
		(Train Shed + CS2)	

Notes: