WOODARD &CURRAN

Monthly Operating Report

June 2016

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So. Sangamon

July 19, 2016

woodardcurran.com

COMMITMENT & INTEGRITY DRIVE RESULTS

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EXECUTIVE SUMMARY

Safety is the number one priority at Woodard and Curran. We continue to provide monthly training for employees at the plant, provide weekly safety updates and safety videos are assigned to all employees. There were no lost time accidents in the month of May. Laura Bonk, Joanna Wallace's successor, continues to monitor the progress of the Safety Audit from Portland, Maine. Approximately 85 percent of the items identified in the safety audit performed in May 2015 have been completed.

The finished water quality was within regulatory limits and all reporting and sampling requirements were met for June.

We continue to experience a slight exceedance of the maximum allowable Chlorine residual allowed by the NPDES discharge permit. The construction permit for this project was received from the Illinois EPA on April 27, 2016. Total cost of the project is estimated to be $43,000. Construction is currently under way and anticipated to be completed by August 2016.

The plant produced 42.2 million gallons of finished water for the month.

For the month of June 2016, there were 5 inspections, 12 preventative and 6 corrective maintenance activities completed. There was one alarm that required personnel at the plant after normal operating hours. There was three (3) customer inquiries for the month.

There is no financial table available for FY 2016-2017 as of the date of this report.

The MCPE Committee made preliminary results of their findings for the water plant available on March 30, 2016. The final report was submitted to the IEPA on April 21, 2016. On May 27, 2016 a letter was received from the IEPA requesting an implementation schedule for the recommendations in the MCPE. The implementation schedule is required by July 26, 2016. A draft response with the appropriate scheduling information will be prepared by Woodard and Curran for the Commission.

A Special Exemption Permit (SEP) dated June 7, 2016 was received via email on June 8, 2016. The SEP outlines the reporting requirements for SSWC moving forward. Joel Sander, Dan Held, Keith Sommers, Marc Thomas and Patrick McCarthy met with David Cook and John Bartolomucci on June 29, 2016 to discuss the details and for clarification.

Brotcke Well and Pump provided a report on the routine maintenance for Wells 1 and 2. As with previous treatments, the Specific Capacity of the wells are better than when they went on-line.

Woodard and Curran is working with Meco Engineering to update and prioritize the Capital Improvement Plan. The CIP is a planning document that includes all projects anticipated to exceed $5,000 in cost over the next five years. The CIP is an ongoing process and will be refined from time to time as projects are completed and new issues are identified.

1. SAFETY

1.1 SAFETY TRAINING

Woodard and Curran continues to provide safety training for personnel at the plant. This is accomplished by requiring daily safety meetings, weekly safety updates are emailed to the plant and safety videos are assigned to all employees and are required to be completed.

1.2 LOST TIME ACCIDENTS

There were no lost time accidents in the month of June, 2016.

1.3 SAFETY AUDIT

To date, approximately 85 percent of the items identified have been addressed.

1.4 MISCELLANEOUS SAFETY

There were no miscellaneous safety items for the month of June 2016.

2. COMPLIANCE, FLOWS AND LOADINGS

2.1 COMPLIANCE

The finished water quality was within regulatory limits and all reporting and sampling requirements were met for June.

We continue to experience a slight exceedance of the maximum allowable Chlorine residual allowed by the NPDES discharge permit. The construction permit for this project was received on April 27, 2016. The estimated cost for the project is $43,000.

On February 22, 2016, the Illinois Environmental Protection Agency (IEPA) sent a letter to the South Sangamon Water Commission directing them to conduct a Composite Correction Program (CCP). On March 28, 2016, work began on the CPE. Mike and Andy Curry from Curran and Associates along with John Bartolomucci from the Illinois EPA and Shane Hill from the village of Chatham make-up the committee performing the CPE. The CPE Committee made preliminary results of their findings for the water plant available on March 30, 2016. The final report was submitted to the IEPA on April 21, 2016. On May 27, 2016 a letter was received from the IEPA requesting an implementation schedule for the recommendations in the MCPE. The implementation schedule is required by July 26, 2016. A draft response with the appropriate scheduling information will be prepared by Woodard and Curran for the Commission.

Water Solutions Unlimited was on-site June 2, 2016 to remove the coupons from the latest test for corrosion. The corrosion rates are very good. When comparing the copper corrosion rates to those in Chatham, the rates are a little higher at the plant. This is likely due to a stronger chlorine residual as the water leaves the plant. A copy of Water Solutions Report can be found at the end of this report at Attachment D.

A Special Exemption Permit (SEP) dated June 7, 2016 was received via email on June 8, 2016. The SEP outlines the reporting requirements for SSWC moving forward. Joel Sander, Dan Held, Keith Sommers, Marc Thomas and Patrick McCarthy met with David Cook and John Bartolomucci on June 29, 2016 to discuss the details and for clarification. See Attachment B in this document for a copy of the SEP

Brotcke Well and Pump provided a report on the routine maintenance for Wells 1 and 2. As with previous treatments, the Specific Capacity of the wells are better than when they went on-line. A copy of Brotcke Well and Pump's Report can be found at the end of this report as Attachment C.

2.2 INFLUENT FLOWS AND LOADINGS

The total water produced for the month of June, 2016 was 49.3 MG and the influent parameters were all within the normal range.

The influent flow and loadings are summarized below in Table 2.2

Table 2.2 Influent Concentrations and Flow

Day	pH	Temp	FE	Mn	Fluoride	Hardness	Alkalinity	Well Flow Gals (k)
1	7.41	13.7	0.930	0.213	0.19	364	280	1.252
2	7.30	13.7	0.660	0.212	0.20	360	280	1.316
3	7.30	13.7	0.580	0.210	0.24	364	282	1.184
4	7.39	14.0	2.190	0.246	0.25	362	284	1.142
5	7.46	14.0	1.790	0.239	0.08	360	284	1.201
6	7.48	14.6	1.310	0.224	0.24	370	282	1.644
7	7.34	13.7	0.680	0.235	0.13	360	284	1.223
8	7.37	13.6	0.590	0.231	0.25	360	284	1.364
9	7.42	14.1	0.640	0.227	0.31	362	284	1.550
10	7.33	13.9	0.680	0.211	0.20	360	282	1.656
11	7.47	14.7	0.740	0.214	0.31	370	290	1.695
12	7.36	14.2	0.610	0.220	0.22	364	280	1.753
13	7.38	13.9	0.690	0.226	0.18	362	284	1.513
14	7.49	14.8	0.650	0.214	0.33	370	290	1.655
15	7.32	14.1	0.730	0.226	0.24	360	280	1.413
16	7.51	14.3	0.760	0.226	0.18	360	282	1.675
17	7.36	14.3	0.740	0.220	0.22	360	284	1.652
18	7.47	14.1	0.880	0.232	0.19	362	284	1.794
19	7.34	13.8	0.900	0.231	0.21	360	286	1.777
20	7.41	14.5	0.870	0.227	0.22	362	280	1.807
21	7.31	14.0	0.870	0.216	0.19	360	284	1.869
22	7.31	14.4	0.800	0.219	0.23	360	280	1.834
23	7.37	14.2	0.900	0.228	0.16	360	280	1.858
24	7.54	14.1	0.760	0.221	0.26	366	282	1.881
25	7.21	14.1	1.180	0.225	0.22	364	284	1.871
26	7.17	13.8	0.910	0.223	0.18	360	282	1.877
27	7.28	14.3	0.920	0.227	0.19	360	282	1.957
28	7.47	14.2	0.920	0.219	0.14	360	280	1.956
29	7.17	13.6	0.920	0.226	0.23	360	284	2.008
30	7.46	14.2	1.100	0.223	0.19	360	280	1.953
31	-	-	-	-	-	-	-	-
Max.	**7.54**	**14.8**	**2.19**	**0.246**	**0.33**	**370**	**290**	**2.008**
Min.	**7.17**	**13.6**	**0.58**	**0.210**	**0.08**	**360**	**280**	**1.142**
Avg.	**7.37**	**14.1**	**0.90**	**0.224**	**0.21**	**362**	**283**	**1.644**
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**49.330**

2.3 EFFLUENT CONCENTRATIONS

The facility produced 42.2 MG during the month with a daily average of 1.41 MG and a min/max of 1.74/0.95 MG.

Table 2.3 Finished Water Quality

Date	Fre CL2	Total CL2	pH	Temp	Iron	Manganese	Fluoride	Hardness	Alkalinity	Phosphate
1	1.4	1.5	7.81	13.8	0.01	0.015	0.67	124	272	0.8
2	1.4	1.5	7.75	14.1	0.01	0.014	0.91	120	260	0.7
3	1.4	1.5	7.75	13.8	0.00	0.015	0.90	120	270	0.7
4	1.4	1.5	7.75	14.2	0.01	0.012	1.11	120	270	0.7
5	1.5	1.6	7.74	14.3	0.01	0.011	1.01	120	270	0.7
6	1.4	1.5	7.94	14.5	0.00	0.011	0.81	122	278	0.7
7	1.5	1.6	7.68	13.9	0.01	0.012	0.82	120	264	0.7
8	1.4	1.6	7.73	13.6	0.01	0.012	0.91	122	264	0.9
9	1.4	1.5	7.74	14.1	0.01	0.014	0.91	118	260	0.8
10	1.4	1.5	7.74	14.1	0.01	0.010	0.85	120	260	0.7
11	1.5	1.4	7.77	15.1	0.00	0.010	1.05	116	282	0.7
12	1.4	1.5	7.71	14.4	0.01	0.013	0.98	118	264	0.7
13	1.4	1.6	7.78	14.4	0.01	0.014	0.82	118	266	0.7
14	1.5	1.5	7.69	14.9	0.00	0.016	1.15	120	276	0.8
15	1.5	1.6	7.71	14.6	0.01	0.017	1.11	120	270	0.8
16	1.4	1.5	7.74	14.5	0.00	0.016	0.91	120	264	0.7
17	1.4	1.5	7.76	14.6	0.01	0.011	1.01	120	270	0.7
18	1.5	1.5	7.82	13.9	0.01	0.013	0.86	124	266	0.7
19	1.4	1.5	7.74	14.0	0.01	0.009	0.94	118	270	0.8
20	1.4	1.6	7.78	14.2	0.01	0.014	0.83	120	268	0.7
21	1.5	1.6	7.71	14.3	0.01	0.009	0.79	120	260	0.8
22	1.5	1.6	7.68	14.5	0.01	0.018	1.01	120	270	0.7
23	1.5	1.6	7.78	14.5	0.01	0.013	0.95	120	268	0.7
24	1.5	1.6	7.83	15.0	0.02	0.015	1.05	116	278	0.7
25	1.5	1.6	7.73	14.5	0.01	0.008	0.90	120	264	0.8
26	1.4	1.5	7.67	14.3	0.01	0.018	0.77	122	272	0.9
27	1.4	1.6	7.72	14.7	0.00	0.012	0.82	120	270	0.8
28	1.5	1.6	7.75	14.1	0.01	0.011	0.93	120	260	0.8
29	1.5	1.6	7.67	13.7	0.01	0.014	0.87	122	270	0.8
30	1.5	1.6	7.68	14.1	0.01	0.014	0.96	120	260	0.7
31	-	-	-	-	-	-	-	-	-	0.8
Max	**1.5**	**1.6**	**7.94**	**15.1**	**0.02**	**0.018**	**1.15**	**124**	**282**	**0.87**
Min	**1.4**	**1.4**	**7.67**	**13.6**	**0.00**	**0.008**	**0.67**	**116**	**260**	**0.65**
Avg	**1.4**	**1.5**	**7.75**	**14.3**	**0.01**	**0.013**	**0.92**	**120**	**268**	**0.75**

2.4 LAGOON DISCHARGE CONCENTRATIONS

The results for the NPDES lagoon discharge permit are summarized below.

Table 2.4 Weekly Grab Sample Analysis Results

Lagoon Effluent Results						
Date	**Fe (mg/l)**	**Mn (mg/l)**	**Chloride (mg/l)**	**Cl^2 (mg/l)**	**pH (S.U.)**	**TSS (mg/l)**
06/06/2016	0.454	1.810	337	1.450	7.95	0.00
06/13/2016	0.122	0.261	355	0.519	8.09	0.00
06/20/2016	0.422	0.773	280	0.175	7.96	4.50
06/27/2016	0.143	0.460	273	0.774	7.76	0.00
n/a	-	-	-	-	-	-
Minimum	0.122	0.261	273	0.175	7.76	0.00
Maximum	0.454	1.810	355	1.450	8.09	4.50
Average	0.285	0.826	311	0.730	7.94	1.13
Monthly Avg Limit	***2.0***	***1.0***	***-***	***-***	***-***	***15***
Daily Limit	***4.0***	***2.0***	***500***	***0.05***	***6.0-9.0***	***30***

The Chloride sample for the month of June 2016, performed by the Springfield Metropolitan Sanitary District, was 13,800 mg/L. The limit for chloride discharge to the sanitary district is 30,000 mg/L.

3. OPERATIONS

3.1 EVENTS IMPACTING OPERATIONS

WesTech Engineering was on site May 31, June 1 and June 2, 2016. The main purpose of the site visit was to install pipe spools for the air scour line, pipe spools for the PDT line and install new air filter system. Other work accomplished during their visit was programming modifications to implement use of the new Neptune citric acid pump for CIP and maintenance cleaning, programming modifications for the VAF strainers to flush the higher pressure on Filter Banks 1 and 2, review alarm set points. Pictured below are pictures taken while the work was in progress.

During the June 2016 commission meeting, there were a few questions regarding flushing, why you do it and how it's done. For your convenience, we have included an article from Opflow Magazine that appeared in last month's issue. See Attachment A at the end of this report.

3.2 EMERGENCY & SERVICE CALLS

Service Calls:

- On June 13, 2016, Ray Giguere was here to replace the N-tron 8 port switch in the BOP panel. While making that repair the SCADA computer in the conference room. Using a spare computer here at the plant, Ray installed IFix version 5.1, installed IGS driver, Rebuilt all tags in the IGS configuration, reinstall and reconfigured WIN-911, reinstalled and reconfigured Multi-Tech cell modem for SMS alarming, reinstalled and reconfigured Multi-Tech cell modem for SMS alarming, reinstalled and reconfigured Ultra VNC server for remote access, test control, monitoring, alarming, and remote access and backed up all applications. The plant continued to run while this work took place.

3.2.1 Emergency Call-outs

- There were no emergency call-outs for June 2016.

3.3 CUSTOMER INQUIRIES

Mr. Sharf called because his meter showed zero flow. We changed out the recorder on top of the meter and gathered new readings for Laura VanProyan on June 10, 2016.

Shane Hill from the village of Chatham forwarded a request for information on June 30, 2016. Commissioner Sander answered the email on July 5, 2016.

Received a telephone call from Mr. Larry Kane. He had water in the ditch near his house and was concerned there may be a leak. Upon inspection, we found the valve on the fire hydrant was slightly open. We closed the valve and the ditch dried up.

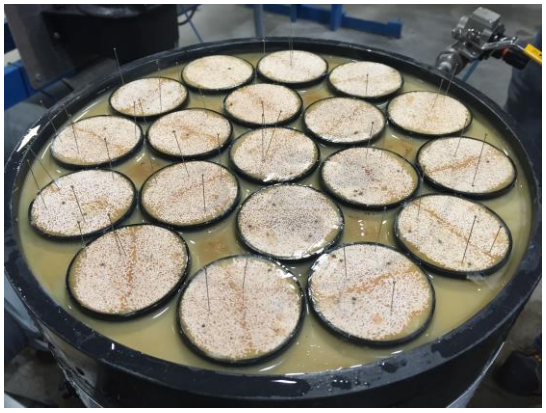
4. MAINTENANCE AND REPAIR

4.1 PREVENTATIVE AND PREDICTIVE MAINTENANCE

For the month of June 2016, there were 5 inspections, 12 preventative and 6 corrective maintenance activities for the month.

4.2 CORRECTIVE REPAIRS

As part of the Special Exemption Permit for operation of the plant, pinning of the filters is required on a routine basis to maintain 3-log removal. Pictured below is a filter with pins ready to be installed. Routine pinning of the filters was done on June 3, 15, 22, 23 and 26, 2016 by Keith Sommers, Celina McManus, Dave Marston and Mike Mackey.



The fire hydrant at the corner of Old Route 54 and Loami Bates Road has been damaged. Dan Held and Keith Sommers picked up the hydrant and brought it back to the plant. We will schedule repairs to the hydrant as soon as possible. Pictured below is the hydrant to be repaired.

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5. PROJECT MANAGEMENT & SUPPORT

5.1 STAFFING & TRAINING

- Woodard and Curran continues to train and provide staffing to the plant as needed.

5.2 CORPORATE SUPPORT

- Dan Held, Keith Sommers and Marc Thomas participated in a conference call on June 8, 2016 regarding the Special Exemption Permit.
- Ms. Becky Corbin assisted in the preparation of paper work to dispose of the old chlorine from the bulk tank.
- Mr. Ray Giguere was on-site June 13, 2016 to make repairs to the SCADA system.

5.3 BUDGET

No financial table is available at this time.

Table 5.3 Budget Table

Budget Category	Month Budget	Month Actual	YTD Budget	YTD Actual	Annual Budget	Over (under)	% of budget
Labor (D.L. + OH)							
Utilities							
Chemicals							
Maintenance & Repair							
Chloride							
Lab Supplies and Equipment							
Office Supplies							
Miscellaneous Expenses							
Other Operating Costs							
Subtotal of Costs for Contract Year 2							
Fixed Fee for Contract Year 2							
Year One Transition							
Total							

6. CAPITAL PLANNING

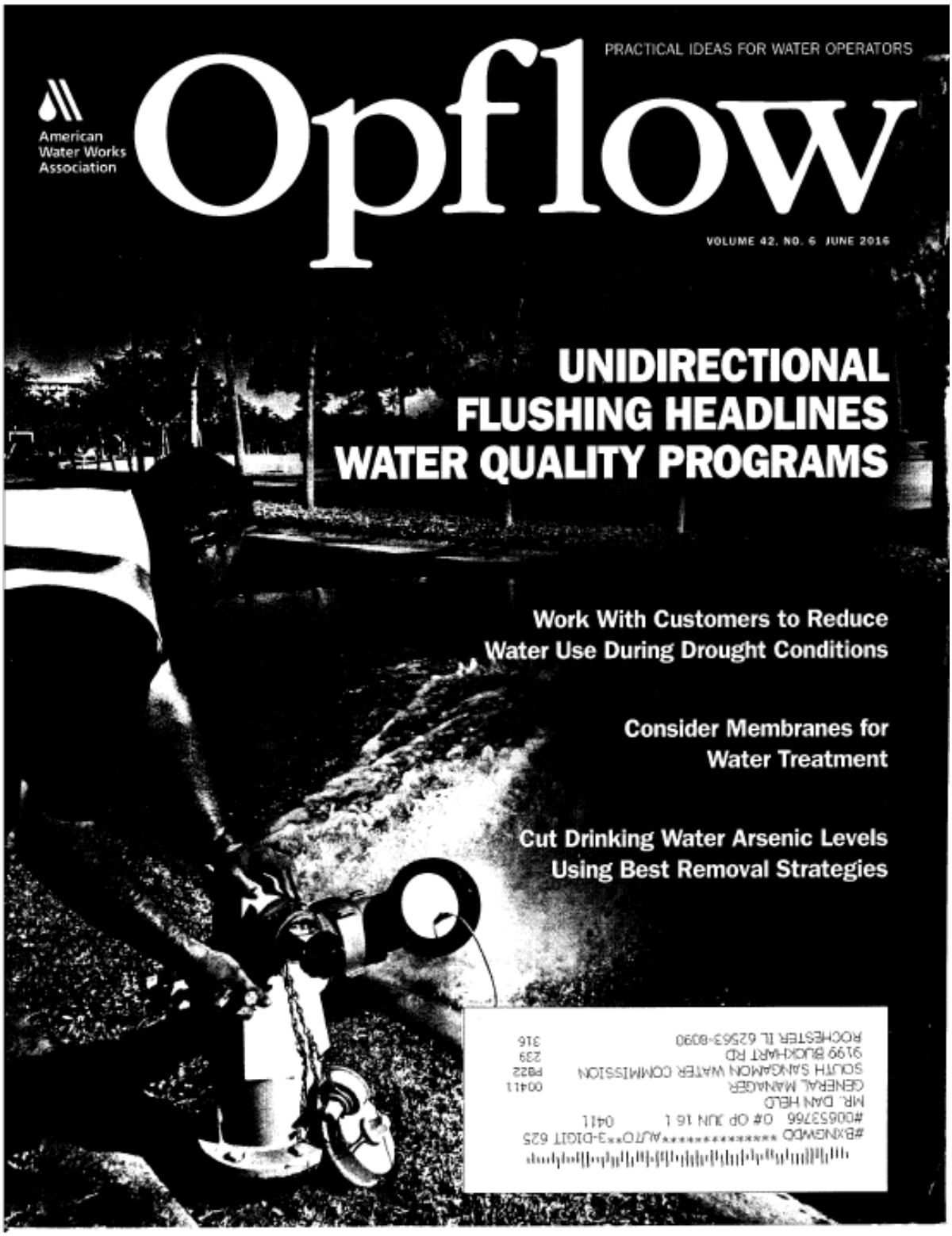
6.1 APPROVED CAPITAL IMPROVEMENT PROJECTS

Construction is under way on the project that will dechlorinate the lagoon effluent water from the plant. Construction is anticipated to be completed in August 2016.

6.2 DRAFT CAPITAL IMPROVEMENT PLAN

The CIP is a planning document that includes all projects anticipated to exceed $5,000 in cost over the next five years.

The CIP is an ongoing process and will be refined from time to time as projects are completed and new issues are identified.


PRACTICAL IDEAS FOR WATER OPERATORS
American Water Works Association
Opflow
VOLUME 42, NO. 6 JUNE 2016
UNIDIRECTIONAL FLUSHING HEADLINES WATER QUALITY PROGRAMS
Work With Customers to Reduce Water Use During Drought Conditions
Consider Membranes for Water Treatment
Cut Drinking Water Arsenic Levels Using Best Removal Strategies

http://dx.doi.org/10.5991/OPF.2016.42.0032

Charles Duncan, PE, and Brenda Estrada, PE, are with West Yost Associates (www.westyost.com), Davis, Calif.

Distribution

Unidirectional flushing scours pipes to remove sediment, scale, and biofilm and moves high-velocity water through pipes in a single direction to improve hydraulic and water quality conditions. BY CHARLES DUNCAN, PE, AND BRENDA ESTRADA, PE

UNIDIRECTIONAL FLUSHING HEADLINES WATER QUALITY PROGRAMS

A MAIN-FLUSHING PROGRAM can address a wide range of concerns. The method of unidirectional flushing (UDF), however, removes more mineral and biological deposits in water distribution pipelines than conventional main-flushing methods do. UDF achieves higher water velocities within pipelines being flushed through isolating pipeline segments by systematically opening and closing pipeline valves.

Optimal flushing velocity for a UDF program ranges from 5 ft per second (ft/s) to 10 ft/s—more than three times the 1 ft/s to 3 ft/s velocities used during conventional flushing. These high velocities make UDF an excellent tool for addressing distribution system water quality, providing more scouring to flush debris and dirty water out of distribution system pipelines. Specifically, an effective flushing program using UDF can address the following water quality issues, among others:

- System dead ends
- Hydraulically locked-out water storage tanks
- Stagnant water in oversized pipelines
- Areas where it's difficult to maintain a chlorine residual

Although UDF is a "star" in addressing water quality, it can also play a strong supporting role in an agency's asset management program. A UDF program can increase and maintain the life of water mains by discovering missing and broken valves, assisting in hydrant and valve maintenance, reducing damage from corrosion, and effectively restoring flows and pressure in a distribution system.

PHOTOGRAPHS: WEST YOST ASSOCIATES

Distribution

SETTING THE STAGE FOR UDF

Once you've determined your system could benefit from a UDF program the question remains on where and how to begin. A good place to start is by assessing the feasibility of flushing for your system. This involves answering certain questions:

- Can required velocities be achieved?
- Is enough water available?
- What are the disposal requirements?
- What are the estimated costs (labor, power, equipment)?
- Will flushing address particular water quality issues?

You'll also want to consider if the entire system needs to be flushed. A systemwide flushing program will have long-term water quality and preventive maintenance benefits. However, a systemwide program can be an overwhelming place to start, especially if you don't already have solid answers to the questions above.

A spot flushing program can be implemented in targeted areas to respond to localized complaints or to address stagnant areas with deadends or low demand. However, a spot-flushing program will not provide a proactive approach to avoid future problems or the asset management benefits of a more consistent systemwide flushing program.

A third approach is to conduct a UDF pilot program. A well-planned and implemented pilot program, which focuses on problem areas and more typical system configuration areas, offers benefits such as the following:

- Provides real-world insights of potential costs and benefits.
- Confirms required personnel and equipment needs.
- Assesses the necessary effort for more "difficult" flushing areas versus more typical configuration loops.
- Uses staff-learned lessons to cost-effectively implement and develop a systemwide program.

AUDITIONING A UDF PILOT PROGRAM

The first step in developing a UDF pilot program is to review available geographic information system (GIS) geodatabase and water distribution system maps, including street configuration; pipeline configuration; water system appurtenances such as hydrants, valves, and blowoff locations; and locations of storm drain catch basins.

Information from the GIS and a distribution system model can be used to divide the distribution system into sectors or loops. These loops should be established to assure the following:

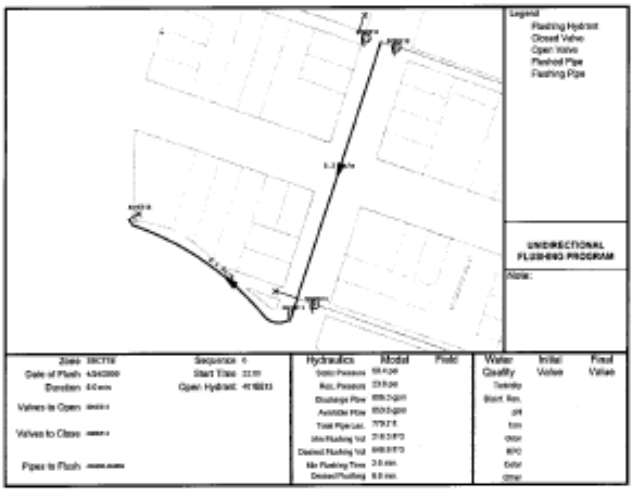
- Flushing always moves water from clean to "dirty" areas.
- The size of each loop represents an area that can be completed by a flushing crew in one working day.
- A minimum flushing velocity can be maintained in the pipeline to be flushed.
- Sufficient flow and pressure (typically 20 psi) is maintained in surrounding areas to support basic service and fire flows.

The goal for determining loop size and configuration is to be able to completely flush each individual loop or multiple loops within a flushing crew's predetermined workshift (often a night shift). This allows a crew to reopen all valves used to isolate a loop during the UDF process and avoids keeping normally open valves closed for extended periods.

A sequence is created within each loop. When the loops are flushed in such sequential order, water will always be moving from clean to dirty areas. Hydraulic modeling software is available to develop effective UDF sequences that progress from clean sources to a system's periphery and from large-diameter mains to small-diameter mains. The modeling software is also used to ensure

Field Map and Procedures Sheet

A UDF field map book provides information on each loop to be flushed and procedures for opening and closing valves.



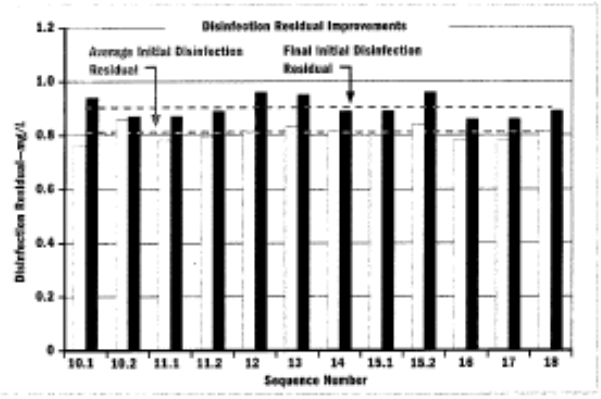
Distribution

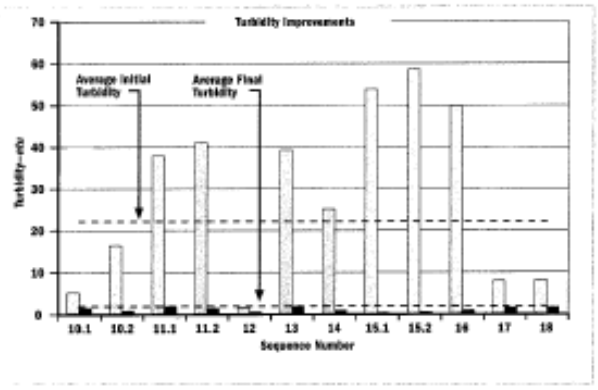
CASE STUDY

COMPARING WATER QUALITY RESULTS

Disinfection residual and turbidity improvements were measured in a recent unidirectional flushing (UDF) pilot program at a water system in Northern California. As illustrated in the figures below, the initial chlorine residual was consistently low before each flushing sequence and inconsistent. However, at the UDF sequence's completion, the final residual was more stable and, in most cases, actually increased after all flushing sequences were completed.

The results were similar for the water turbidity in each of the sequences. As shown, once the flushing of the sequences began, the turbidity decreased significantly and dropped as much as 20 nephelometric turbidity units on average. These results immediately validated the success of using UDF for this particular agency.





excessive pressure drops are avoided and no customers are cut off from their water supply.

The following items are also developed for each sequence: minimum flushing time, total flushing volume and pipeline length, flushing velocity of every pipeline in the sequence, and minimum valves to operate plus available flow at the minimum residual pressure. The hydraulic impact of each flushing sequence is also monitored to ensure the desired minimum pressure is maintained throughout the flush zone.

DEVELOPING AN IMPLEMENTATION SCRIPT

The next step in developing a UDF pilot program is to prepare step-by-step flushing procedures that provide precise instructions on the sequence for opening and closing valves and hydrants. For each loop an average of 10–12 specific, detailed steps may be developed. Accompanying each step is a loop-specific, color-coded map that clearly shows valve and hydrant status during each step of the UDF process. The figure on page 12 is an example of a detailed field map and procedures sheet for a UDF loop.

As shown in the figure, an effective UDF field map book provides information on each loop to be flushed and detailed sequencing diagrams to follow when flushing that loop. The detailed sequencing diagrams clearly show which pipelines have already been flushed (shown here in light blue) and the pipelines that are being flushed (shown here in dark blue).

Each individual sequence sheet has step-by-step procedures for opening and closing valves listed on the bottom left-hand side of the sheet. The bottom right-hand side of the sheet provides space for documenting the hydraulic and water quality information, which is collected by crews while performing the UDF procedures in the field. The sequencing diagrams also provide information from the hydraulic model, indicating

UDF achieves higher water velocities within pipelines being flushed through isolating pipeline segments by systematically opening and closing pipeline valves.

what hydraulic pressures (psi) should be expected during the hydrant flow (gal/min) and provides space to record actual hydrant flow achieved in the field. Validating these hydraulic model and field conditions is important for determining flushing velocity, and thus the success of flushing in any given loop or loop segment.

SHOW TIME—WHAT TO KNOW IN THE FIELD

Similar to all field work, UDF in the field requires a focus on safety—safety for staff implementing the program and safety for the community. Customers should be notified before flushing begins. This is particularly important for sensitive customers, such as hospitals and food-processing facilities, and manufacturers, such as bottling companies and microchip producers.

Because many agencies prefer to flush at night, when system demands are lowest, and in or near city streets, staff safety is also a high priority. Flushing crews should have accident prevention and first aid training, appropriate personal protective equipment (e.g., reflective clothing and flashlights), and traffic control must be carefully planned and fully implemented.

A pre-flushing site visit is also mandatory and will make the process go safer, faster, and smoother. Visiting the site during the day to mark hydrants, clean valve boxes, exercise valves, and identify problems before flushing begins will reduce surprises and accidents.

Don't forget about customer service or public perceptions. Whether you're running a flushing program during the day or night, customers are going to notice and will likely ask questions. Field staff should be well prepared and informed to provide answers that focus the work back on the benefits to the customers, including better water quality, improved pipeline capacity, and maintenance to ensure longer asset life.

IN THE FIELD

WHAT'S IN YOUR PIPES?

You never know what may come out of your distribution pipelines while conducting a unidirectional flushing (UDF) program during which increased velocities are able to move relatively heavier objects. Materials dislodged during UDF can be as straightforward as a tapping coupon left in the pipeline from the "hot tap" of a distribution main (top right) or remnants of the coated linings that break off over time and are deposited at the bottom of your distribution mains (bottom right).

Uncommon items, such as socket wrenches, pipe wrenches, rags, blocks of wood, large-diameter backfill materials, or even a screwdriver, can also be dislodged under high-velocity flushing and can wreak havoc on your UDF testing equipment. It's important, even necessary, to always carry spare pitot tubes and other replacement parts with you in the field.

DROUGHT CONSIDERATIONS

UDF BOLSTERS WATER CONSERVATION

UDF uses less water than a conventional flushing program.

A frequent topic of concern regarding flushing programs is perceived water waste. It's important to know that unidirectional flushing (UDF) typically uses less than 40 percent of the water used by a conventional flushing program. By increasing flushing velocities, UDF provides better scouring of pipelines in less time, using smaller volumes of water. In addition, more agencies are investing in no-discharge flushing equipment to assist with flushing their distribution mains under water conservation mandates and drought conditions. Some agencies have even received water conservation grants to help fund this equipment.

Typically, no-discharge flushing is implemented using a truck-mounted unit that flushes and filters the water before recirculating the water back into the distribution system. The unit (or truck) is parked between two fire hydrants with hoses connecting each hydrant back to the unit, creating a temporary closed loop in a small section of the water distribution system. A pump on the unit then circulates water through this loop at a velocity fast enough to scour the inside of the water main. This water is filtered through the unit, which removes the sediment and biofilm that has been intentionally dislodged.

These units are typically capable of filtering out particles down to 1 micron absolute —approximately 100 times smaller than the diameter of a human hair. The units can also add disinfectant during the process to further improve water quality and safety.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 • (217) 782-3397
Bruce Rauner, Governor Lisa Bonnett, Director

Special Exception Permit (SEP) – Monthly Operational Report (MOR)
Per 35 Administrative Code Section 611.110

June 7, 2016

Mr. Joel Sander, Chairman
South Sangamon Water Commission
P.O. Box 83
New Berlin, Illinois 62670-0083

Re: South Sangamon Water Commission (Sangamon County - IL1670080)
Special Exception Permit (SEP) – Monthly Operational Report (MOR)

Dear Mr. Sander:

Your Community Water Supply (CWS) is required to maintain and submit Monthly Operating Reports (MORs) to the Springfield Regional Office at the end of each month. These reports are to contain information regarding water usage, quantity of each chemical used in the treatment process, distribution system residual results and analytical test results for various water quality parameters. To insure the MORs submitted are complete, this SEP details the minimum information that is required to be recorded by your MORs.

The items listed on Attachment A of this SEP must be recorded **daily** each month, unless otherwise noted. For purposes of this MORs SEP, "daily" means seven days a week including weekends and holidays. It is recommended that data be collected at approximately the same time each day.

Each chemical used in the treatment process must be included in the MORs. In addition, the quantity of each chemical used (in pounds or gallons) and the calculated dosage, calculated in units of milligrams per liter (mg/L), must be included in the MORs. The calculated dosage of each chemical in the finished water is determined using the amount of water pumped, quantity of actual chemical solution used and the concentration of the chemical solution fed.

The data collected and recorded for each month must be reported on MOR forms provided or approved by the Illinois EPA and submitted to the Springfield Regional Office within 30 days following the last day of each month as required by Section 18 of the Illinois Environmental Protection Act, (415 ILCS 5/18), 35 Ill. Adm. Code 611.831. The first MORs required under this SEP must include operational data for the month of July 2016. Subsequent MORs are due 30 days following the last day of each month.

4302 N. Main St., Rockford, IL 61103 (815) 987-7760
595 S. State, Elgin, IL 60123 (847) 608-3131
2125 S. First St., Champaign, IL 61820 (217) 278-5800
2009 Mall St., Collinsville, IL 62234 (618) 346-5120
9511 Harrison St., Des Plaines, IL 60016 (847) 294-4000
412 SW Washington St., Suite D, Peoria, IL 61602 (309) 671-3022
2309 W. Main St., Suite 116, Marion, IL 62959 (618) 993-7200
100 W. Randolph, Suite 10-300, Chicago, IL 60601

Special Exception Permit (SEP) – Monthly Operational Report (MOR)
South Sangamon Water Commission (Sangamon County - IL1670080)
Page 2

Should you have any questions regarding this SEP, please contact this office. The mailing address and phone number are: Illinois Environmental Protection Agency, Springfield Field Office - MC #10, 1021 North Grand Avenue East, Springfield, Illinois 62794-9276, phone (217) 557-8761.

Sincerely,

David C. Cook, P.E.
Springfield Region Manager
Field Operations Section
Division of Public Water Supplies

DCC/TB/wordN:\BUC5\Springfield\SEP_BOW\SPF_BOW_SHARED\PWS\MOR SEP's\South Sangamon Water Commission.docx)

Enclosures

cc: DPWS/FOS - Springfield Region
DPWS/Division File 01

cc: Marc Thomas, Woodard-Curran Consultants
Daniel L. Held, Certified Operator

Special Exception Permit (SEP) – Monthly Operational Report (MOR)
South Sangamon Water Commission (Sangamon County - IL1670080)
Attachment A, Page 1
June 7, 2016

Attachment A

The items listed below must be recorded daily, unless otherwise noted, and included on the MOR:

- Facility Name, ID number (IL1670080), Month and Year.
- Time Meter Read and Meter Reading number.
- Total number of hours plant in operation per day.
- Quantity of Raw Water and Finished Water pumped. At the end of the month the minimum, maximum and average daily water usage is determined and reported.
- Quantity (lbs. or gallons), concentration fed (%) and calculated dosage (mg/L) of each chemical used in the treatment process.
- Raw water test results, in mg/l, for temperature, pH, alkalinity, hardness, Iron and Manganese.
- Total and Soluble Manganese testing at membrane influent to verify proper sodium permanganate dosage and manganese removal is being accomplished by the membranes. Total Manganese at membrane effluent.
- Softeners: gallons of water softened, gallons bypassed, hours since previous regeneration, pounds of salt used and gallons of wash water used.
- Chloride from each softener after each regeneration cycle prior to return to service. Use a spectrophotometer.
- Finished Water test results, in mg/l, for Chlorine (Total and Free), pH, Hardness (Total), Alkalinity, Iron, Manganese (Total), Orthophosphate and Fluoride.
- Turbidity of Membrane Effluent.
- Perform Integrity Testing (Pressure Decay Test) on the Membrane Filters every two weeks minimum.
- Information for filtration including: filter run times (hours) per filter since previous backwash and gallons of wash water used.
- Finished Water Stability testing for Temperature, Total Dissolved Solids, pH, Alkalinity, Calcium Hardness, Chloride and Sulfate in the distribution system every two weeks.
- Calibrate all instrumentation per manufacturer's specifications or a minimum of quarterly.
- This list shall be considered minimum testing parameters. Additional testing may be required on a daily basis to verify water quality.
- Remarks when necessary

Attachment B

Special Exception Permit (SEP) – Monthly Operational Report (MOR)
South Sangamon Water Commission (Sangamon County - IL1670080)
Attachment A, Page 2
June 7, 2016

MORs are due 30 days following the last day of each month. Please mail your reports to:

Illinois Environmental Protection Agency
Springfield Field Office – MC#10
1021 North Grand Avenue East
Springfield, Illinois 62794

The data collected and recorded for each month must be included on MOR forms provided or approved by the Illinois EPA. Please refer to our standard operating report forms on our website for reference on what is required. Website location: http://www.epa.state.il.us/water/field-ops/drinking-water/daily-perating.html.

If you need further assistance completing your MOR, please call John Bartolomucci at the number provided.

BROTCKE WELL & PUMP

June 30, 2016

Mr. Dan Held
South Sangamon Water Commission
9199 Buckhart Rd
Rochester, IL 62563

RE: Well Treatment Results

Dear Dan:

We have completed the Well Treatment results on Wells No 1 and 2.

Presented below are the results.

Specific Capacity (GPM/Foot)

Well No.	Present	New	% Increase	Before Treatment	% Increase
1	20	18	11%	11	82%
2	28	25	12%	13	115%

Well No. 1 This well had never been treated since it was installed in 2012. The SC had dropped to an 11. The treatment brought the well up to an SC of 20.

Well No. 2 This well had never been treated since it was installed in 2012. The SC had dropped to a 13. The treatment brought the SC up to a 28.

Pump Condition (GPM)

Well No.	Present	Design	% Loss
1	250	250	0%
2	210	250	16%

Well No. 1 The pump for well 1 has design points of 250 gpm at 148' tdh. The pump is operating at 250 gpm at its design head which is at its pump capacity. The pump does not require any maintenance at this time.

Well No. 2 The pump for well 2 has design points of 250 gpm at 148' tdh. The pump is operating at 210 gpm at its design head which is 84% of its pump capacity. The pump does not require any maintenance at this time.

PO Box 1168, 750 Merus Court, Fenton, Missouri 63026
ph 636-343-3029 • ph 800-969-3029 • fx 636-343-3773
Visit us at www.brotcke.com

In summary, the treatment for wells 1 and 2 were successful. The SC for all the wells has been increased from when they were new. This is not uncommon, and is likely due to developing drilling mud out of the wells. The pumps for the wells are operating near their design points as well. Pump test sheet and pump curves are attached for your files.

If you have any questions please feel free to contact me.

Sincerely,
BROTCKE WELL & PUMP INC.

Todd Thomas

G:\DR\Todd Letters 16\south sangamon\South Sanagmon-PTResult-5-24-16 for wells 1 and 2.doc

Dan Held

From: Troy Mott <tmott@getwsu.com>
Sent: Tuesday, June 21, 2016 10:06 PM
To: Dan Held; Marc Thomas
Subject: Fwd: South Sangamon, IL coupon report
Attachments: South Sangamon, IL 062116.xlsx

Please see the attached corrosion coupon data. The corrosion rates are still nice and low. You will notice that the copper corrosion rates are a little higher at the plant then the Chatham results. When we see this it is typically due to a stronger chlorine residual at the plant.

Thanks,
Troy
---------- Forwarded message ----------
From: **Brian Bardy** <bbardy@getwsu.com>
Date: Tue, Jun 21, 2016 at 2:01 PM
Subject: South Sangamon, IL coupon report
To: Troy Mott <tmott@getwsu.com>

Brian Bardy

Water Solutions Unlimited

P.O. Box 347

295 Industrial Drive

Franklin, IN 46131

1-800-359-3570

Cell 317-714-8470

1

South Sangamon, IL - Corrosion Coupon Record

7/14/2016

Copper

Coupon Serial No.	Date Installed	Date Removed	Original Weight (g)	Final Weight (g)	Exposure	Weight Loss (g)	Exposure (hours)	Mils per Year 45 days	60 days	90 days	120 days
L 3013	23-Jan-13	25-Feb-13	11.977	11.797	33 days	0.18	792	4.06			
L2980	25-Feb-13	1-Apr-13	12.275	12.107	35 days	0.168	840	3.57			
L3012	23-Jan-13	1-Apr-13	11.916	11.67	68 days	0.246	1632		2.69		
L3110	19-Feb-15	6-Apr-15	12.097	11.801	46 days	0.296	1104	4.79			
L3112	6-Apr-15	21-May-15	11.916	11.669	45 days	0.247	1080	4.09			
L3111	19-Feb-15	21-May-15	11.914	11.468	91 days	0.446	2184			3.65	
A25133	10-Aug-15	24-Sep-15	13.0836	12.795	45 days	0.2886	1080	4.78			
A38143	7-Mar-16	20-Apr-16	11.9296	11.656	44 days	0.2736	1056	4.63			
A38194	20-Apr-16	2-Jun-16	12.0492	11.743	43 days	0.3062	1032	5.30			
A38142	7-Mar-16	2-Jun-16	11.7515	11.277	87 days	0.4745	2088			4.06	

South Sangamon IL 062116Copper

South Sangamon, IL - Corrosion Coupon Record

7/14/2016

Steel

Coupon Serial No.	Date Installed	Date Removed	Original Weight (g)	Final Weight (g)	Exposure	Weight Loss (g)	Exposure (hours)	Mils per Year			
								45 days	60 days	90 days	120 days
A 82323	23-Jan-13	25-Feb-13	11.034	10.994	33 days	0.04	792	1.02			
A77596	25-Feb-13	1-Apr-13	11.369	11.340	35 days	0.029	840	0.70			
A82324	23-Jan-13	1-Apr-13	11.090	11.045	68 days	0.045	1632		0.56		
C62950	19-Feb-15	6-Apr-15	10.917	10.833	46 days	0.0835	1104	1.52			
C62952	6-Apr-15	21-May-15	10.771	10.732	45 days	0.0394	1080	0.74			
C62951	19-Feb-15	21-May-15	10.642	10.601	91 days	0.041	2184			0.38	
D12021	10-Aug-15	24-Sep-15	11.114	10.963	45 days	0.1511	1080	2.82			
D27448	7-Mar-16	20-Apr-16	10.953	10.926	44 days	0.0274	1056	0.52			
D37154	20-Apr-16	2-Jun-16	10.624	10.588	43 days	0.0357	1032	0.70			
D27449	7-Mar-16	2-Jun-16	10.899	10.864	87 days	0.035	2088			0.34	

South Sangamon IL 052116Steel