



# Monthly Operating REPORT

September 2015



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So. Sangamon

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COMMITMENT & INTEGRITY DRIVE RESULTS

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## EXECUTIVE SUMMARY

Safety is the number 1 priority at Woodard and Curran. We continue to provide safety training for personnel at the plant. During the month of September, Dan Held attended a CPR/First Aid class and both Dan Held and Keith Sommers attended an electric safety class. In addition, weekly safety updates are emailed to the plant and safety videos are assigned to all employees and are required to be completed. There were no Loss of Time accidents at the plant and all required safety training was completed. We continue to address the items identified in the safety audit from mid-May 2015. These items are approximately 59% complete.

For the month of September, the finished water met all regulatory requirements. All regulatory reporting and sampling requirements were performed for the month. The plant pumped 44.5 million gallons of raw water and produced 37.1 million gallons of finished water. There were no disruptions of service during the month. We continue to exceed the limit for chlorine in the lagoon discharge as allowed by the NPDES permit. Woodard and Curran Engineering staff have developed a proposal to address this issue. This proposal will be discussed with the commission once costs and a timeframe for implementation are completed. Test results on both the raw and finished water for the month of September are included in this document as well as the test results from the lagoon discharge.

There were no emergency service calls for the month of September and 1 service call. Henson Robinson has completed installation of the sampling stations in the well field and they are in operation now. Brine Tank #2 cleaning has been completed and is back on line. Cleaning of the Detention/Mixing Tank and Clear Well has been completed. We received one customer complaint/inquiry for the month of September. Mike Sommerfield completed mowing of the well field on September 5, 2015. For the month of September, we had three different instances where maintenance was required on the WesTech System: 1) a fitting broke and was spraying water on the floor. A replacement part was ordered and shipped overnight to repair the leak. 2) Valve 104 would not open during the backwash cycle. We adjusted the valve but water leaks past it now. 3) the air regulator broke and required replacement. Illinois Electric Works was on-site to do vibration analysis on high service pumps 3, 4 and 5 as well as the backwash pumps. They also examined the high chloride pumps and are working with Keith Sommers on what maintenance activities needed to keep these pumps in excellent working condition.

Woodard and Curran continues to provide corporate support the operation of the plant. During the month of September, Joe Hurley, Celina Melhaus, Jenn Anders, Jason Dennis, Bobby Nichols and Marc Thomas were on-site to support the project.

A financial summary of the first five months of the year indicates the project is approximately \$85,000 under budget. We are still working to complete the work in the well fields, and are waiting for invoices for the cleaning of the Brine Tank #2 and a few other big ticket items.

Woodard and Curran is working with Mecco Engineering to update and prioritize the Capital Improvement Plan. A recent inspection of the SSWC plant by the Illinois Environmental Protection Agency has necessitated an update and will require guidance from the SSWC board. The Capital Improvement Plan will be updated and disbursed once current costs and timeframes can be completed.



## **1. SAFETY**

### **1.1 SAFETY TRAINING**

Woodard and Curran continues to provide safety training for personnel at the plant.

- Dan Held and Keith Sommers attended Electrical Safety Training Class on September 14, 2015.
- Dan Held attended First Aid/CPR training on September 25, 2015. Keith Sommers was already certified in First Aid/CPR prior to employment with Woodard and Curran.

In addition, 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 September 2015.

### **1.3 SAFETY AUDIT**

On September 24, 2015, Marc Thomas, Dan Held and Keith Sommers participated in a conference call regarding the Safety Audit that was performed earlier in the year. To date, approximately 59-percent of the items identified have been addressed.

### **1.4 MISCELLANEOUS SAFETY**

There are no miscellaneous safety issues for September 2015



## 2. COMPLIANCE, FLOWS, AND LOADINGS

### 2.1 COMPLIANCE

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

We continue to experience Chlorine exceedance allowed by the NPDES discharge permit. Brine Tank #2 was taken off line and drained on September 8, 2015. This cleaning exercise causes the level of contaminants to spike temporarily and then return to normal.

Lead and Copper sample bottles were distributed to five (5) locations along the distribution line between the plant and the ground reservoir on September 9, 2015. All samples were received by September 15, 2015 and forwarded to the lab for analysis. The samples were required by IEPA to be obtained by September 30, 2015 with the results reported no later than October 13, 2015.

Dan Held prepared and mailed the Semi-Annual Report to the Springfield Metropolitan Sanitary District as required by the permit to discharge high chloride waste in Chatham.

Paul Juranek from Fife Chemical was on-site September 21, 2015 to do bench testing on the plant influent to evaluate whether Sodium Permanganate would be a better oxidizer of iron and manganese prior to the membranes.

A representative from Tonka Water was on-site September 22, 2015 to do additional pilot testing for Green Sand Filters.

Mr. Troy Mott from Water Solutions Unlimited was here to remove coupons from the rack on the west side of the plant for analysis on September 24, 2015.

## 2.2 INFLUENT FLOWS AND LOADINGS

The total water produced for the month of September 2015 was 44.5 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	7.77	15.40	0.81	0.212	0.22	362	280	1.698
2	7.80	15.20	0.82	0.212	0.20	362	280	1.583
3	7.80	15.20	0.88	0.222	0.23	360	282	1.655
4	7.73	15.20	0.82	0.223	0.14	360	276	1.751
5	7.75	15.30	0.74	0.219	0.20	360	282	1.771
6	7.77	15.40	0.82	0.213	0.21	358	280	1.690
7	7.78	15.20	0.84	0.227	0.24	356	278	1.687
8	7.80	15.30	0.82	0.223	0.23	360	280	1.664
9	7.73	15.40	0.84	0.225	0.22	360	280	1.354
10	7.75	15.20	0.70	0.223	0.23	362	282	1.356
11	7.79	15.30	0.75	0.230	0.23	360	280	1.254
12	7.81	15.20	0.80	0.225	0.22	368	280	1.251
13	7.80	15.10	0.76	0.230	0.24	362	280	1.204
14	7.81	15.70	0.63	0.217	0.19	366	280	1.468
15	7.79	15.40	0.79	0.223	0.18	360	288	1.306
16	7.79	14.90	0.82	0.223	0.19	360	280	1.378
17	7.80	15.30	0.79	0.224	0.22	366	280	1.645
18	7.80	15.10	0.78	0.219	0.24	362	280	1.324
19	7.82	15.20	0.83	0.231	0.15	368	278	1.393
20	7.98	16.00	0.67	0.203	0.23	360	280	1.245
21	7.82	14.70	0.76	0.216	0.24	364	280	1.615
22	7.79	15.00	0.82	0.211	0.21	364	280	1.365
23	7.83	15.00	0.81	0.212	0.23	370	280	1.497
24	7.83	15.30	0.69	0.212	0.21	366	278	1.548
25	7.79	15.00	0.84	0.221	0.28	364	274	1.396
26	7.81	14.90	0.89	0.217	0.19	364	276	1.444
27	7.82	15.10	0.88	0.211	0.25	360	276	1.680
28	7.78	15.10	0.77	0.210	0.25	364	276	1.401
29	7.78	14.90	0.82	0.215	0.24	366	276	1.487
30	7.82	14.80	0.79	0.226	0.25	360	280	1.405
31	7.77	15.40	0.81	0.212	0.22	362	280	1.698
<b>Min.</b>	<b>7.73</b>	<b>14.7</b>	<b>0.630</b>	<b>0.203</b>	<b>0.14</b>	<b>356</b>	<b>274</b>	<b>1.204</b>
<b>Max.</b>	<b>7.98</b>	<b>16.0</b>	<b>0.890</b>	<b>0.231</b>	<b>0.28</b>	<b>370</b>	<b>288</b>	<b>1.771</b>
<b>Avg.</b>	<b>7.80</b>	<b>15.2</b>	<b>0.790</b>	<b>0.219</b>	<b>0.22</b>	<b>362</b>	<b>279</b>	<b>1.484</b>
<b>Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>44.515</b>

## 2.3 EFFLUENT CONCENTRATIONS

The facility produced 37.1 MG during the month with a daily average of 1.24 MG and a min/max of 1.0/1.5 MG.

Date	Free Cl <sub>2</sub>	Total Cl <sub>2</sub>	pH	Temp	Iron	Manganese	Fluoride	Hardness	Alkalinity	Phosphate
1	1.3	1.3	7.82	15.10	0.01	0.040	1.11	120	272	1.07
2	1.3	1.3	7.93	15.10	0.01	0.043	0.42	120	276	1.06
3	1.3	1.3	7.83	15.20	0.01	0.047	1.12	122	280	1.08
4	1.2	1.3	7.80	15.10	0.00	0.048	1.05	118	270	1.17
5	1.2	1.3	7.77	14.80	0.01	0.049	1.17	120	272	1.01
6	1.2	1.3	7.80	15.10	0.01	0.038	1.32	122	282	1.24
7	1.3	1.4	7.83	15.30	0.01	0.041	1.02	116	262	1.14
8	1.2	1.3	7.90	15.40	0.01	0.042	0.27	118	278	1.08
9	1.2	1.3	7.77	15.30	0.01	0.044	1.29	116	272	1.17
10	1.2	1.2	7.77	15.10	0.01	0.047	1.21	120	280	1.04
11	1.3	1.3	7.84	14.90	0.00	0.046	1.17	116	264	1.07
12	1.2	1.3	7.81	14.90	0.01	0.042	1.09	114	278	1.02
13	1.3	1.3	7.84	14.90	0.00	0.048	1.10	120	254	1.10
14	1.2	1.2	7.78	15.50	0.01	0.055	1.13	130	290	1.28
15	1.2	1.3	7.82	15.20	0.01	0.043	1.23	120	288	1.14
16	1.2	1.2	7.83	14.90	0.01	0.036	1.15	126	272	1.13
17	1.2	1.3	7.84	15.00	0.01	0.042	1.15	120	276	1.16
18	1.3	1.3	7.82	15.00	0.01	0.055	1.10	166	278	1.24
19	1.3	1.3	7.83	15.20	0.01	0.045	1.14	114	284	1.04
20	1.3	1.3	7.82	15.20	0.01	0.041	0.81	120	276	0.98
21	1.3	1.3	7.85	14.50	0.01	0.043	1.02	120	268	1.04
22	1.3	1.3	7.81	14.60	0.00	0.051	1.60	120	268	1.17
23	1.3	1.3	7.86	15.20	0.01	0.045	1.20	122	260	1.23
24	1.3	1.3	7.91	15.20	0.01	0.040	0.35	120	260	1.10
25	1.2	1.3	7.81	14.80	0.01	0.039	1.23	120	260	1.21
26	1.3	1.4	7.86	14.80	0.01	0.036	0.99	120	250	1.17
27	1.3	1.3	7.81	14.90	0.01	0.041	1.07	120	268	1.14
28	1.3	1.3	7.79	14.90	0.01	0.038	1.07	120	276	1.10
29	1.3	1.3	7.81	14.90	0.00	0.039	1.50	120	268	1.00
30	1.3	1.3	7.81	14.70	0.01	0.035	1.08	120	268	1.17
31	1.3	1.3	7.82	15.10	0.01	0.040	1.11	120	272	1.07
Min	1.2	1.2	7.77	14.50	0.00	0.035	0.27	114	250	0.98
Max	1.3	1.4	7.93	15.50	0.01	0.055	1.60	166	290	1.28
Avg	1.3	1.3	7.83	15.02	0.01	0.043	1.07	121	272	1.12



## 2.4 LAGOON DISCHARGE CONCENTRATIONS

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

**Table 2.4 Weekly Grab Sample Analysis Results**

<b>Lagoon Effluent Results</b>						
<b>Date</b>	<b>Fe (mg/l)</b>	<b>Mn (mg/l)</b>	<b>Chloride (mg/l)</b>	<b>Cl<sup>2</sup> (mg/l)</b>	<b>pH (S.U.)</b>	<b>TSS (mg/l)</b>
09/08/2015	0.394	0.239	264	.393	7.73	0.0
09/14/2015	2.140	0.678	612	.415	7.78	13.0
09/21/2015	0.576	0.164	462	.201	7.77	0.0
09/28/2015	2.360	0.851	408	.163	7.81	0.0
N/A	-	-	-	-	-	-
Minimum	0.394	0.164	264	.163	7.73	0.0
Maximum	2.360	0.851	612	.415	7.81	13.0
Average	1.370	0.480	437	.290	7.77	3.25
<b>Monthly Avg Limit</b>	<b>2.0</b>	<b>1.0</b>	-	-	-	<b>15</b>
<b>Daily Limit</b>	<b>4.0</b>	<b>2.0</b>	<b>500</b>	<b>0.05</b>	<b>6.0-9.0</b>	<b>30</b>

The Chloride sample for the month of September 2015, performed by the Springfield Metropolitan Sanitary District, was 14,600 mg/L. The limit for chloride discharge to the sanitary district is 30,000 mg/L.

### 3. OPERATIONS

#### 3.1 EVENTS IMPACTING OPERATIONS

Henson Robinson was on-site September 10, 2015 to begin installation of the sampling stations in the well field. This work was completed on September 16, 2015. On September 24, 2015, the new sampling stations were utilized to pull well samples for the month of September. All samples came back clean.

Liquid Engineering was on-site September 18, 2015 to clean and inspect the Clear Well and Mixing/Detention Tank. Both tanks showed no evidence of corrosion and are in great shape. There was no disruption of service during this cleaning.

Henson Robinson was at on-site September 26, 2015 to clean Brine Tank #2.

#### 3.2 EMERGENCY & SERVICE CALLS

##### Service Calls:

- On September 5, 2015, we received a WesTech Ultra Filter Common Alarm at approximately 6:45 p.m. Valve 104 was wasn't opening during the backwash cycle and was causing Filter Bank #1 to shut down. We adjusted the valve and watched it through several backwash cycles and the valve was operating. The necessary adjustment does allow water to leak past the valve into the backwash pit while the bank is in operation. There was no impact to water quality.

##### 3.2.1 Emergency Call-outs

There were no emergency call-outs for September 2015.

#### 3.3 CUSTOMER COMPLAINTS

We received one (1) customer inquiry during September 2015. Mr. Tim Agoudemos, a Milwaukee native, who has relocated to Chatham, Illinois wanted to know if we test for Cryptosporidium in the drinking water. Cryptosporidium is usually found in rivers and streams. Since the SSWC utilizes ground water, it is unlikely Cryptosporidium would be in our water source. However, the WesTech filters would remove Cryptosporidium.

## 4. MAINTENANCE AND REPAIR

### 4.1 PREVENTATIVE AND PREDICTIVE MAINTENANCE

Mike Sommerfield completed mowing of the well field on September 5, 2015.

Mr. Don Scattero and Mr. Chad Travnicek from Illinois Electric Works were on-site September 16, 2015 to evaluate the pumps inside the plant and the high chloride pumps. On September 24, 2015, Mr. Dave Dixon was on-site and performed vibration analysis on each of three (3) high service pumps. This establishes a base-line and the pumps will be checked again over the winter months to determine if additional work is needed on these pumps.

There are a number of fittings on the east side of the building that were left over with construction of the plant and the distribution line to Chatham. It has been suggested that perhaps these fittings could be taken to a recycling center for cash. Woodard and Curran is seeking direction from the SSWC board as to whether or not you would like to pursue this option.

Keith Sommers drained Brine Tank #2 on September 8, 2015. Once the tank was cleaned, he inspected the tank components and found a cracked fitting on the line that provides water to the tank. The replacement part was ordered and installed upon arrival. The tank is back on line and is back in service as of October 14, 2015.

### 4.2 CORRECTIVE REPAIRS

On September 3, 2015, Dan Held came to the plant and found a fitting on the WesTech Filter Bank #1 had broken overnight and was spraying water all over the floor. We put together a temporary fitting from parts we had at the plant and put the skid back in operation. Replacement parts were ordered from WesTech and shipped Next Day Air to the plant. On September 4, 2015, Keith Sommers and Dan Held replaced the broken fitting.

On September 3, 2015, the air regulator on Filter Bank #1 broke. We took Filter Bank #1 off line and replaced the air regulator and put the bank back in service.

## 5. PROJECT MANAGEMENT & SUPPORT

### 5.1 STAFFING & TRAINING

- Dan Held and Keith Sommers participated in a conference call regarding the Hach SEMS software that is utilized to track maintenance and repair at the SSWC plant.

### 5.2 CORPORATE SUPPORT

- Marc Thomas, Dan Held and Bobby Nichols attended the Chatham Village Board meeting on September 1, 2015.
- Dan Held met with Troy Mott from Water Solutions Unlimited, and with Dustin Patterson and Patrick McCarthy from the village of Chatham to discuss sampling at the plant and in the distribution system on September 8, 2015.
- Joe Hurley was on-site September 8, 2015 through September 15, 2015 to work on the high service pump issues here at the plant in preparation for the reprogramming of the master PLC.
- Celina Melhaus from Woodard and Curran's Monterey, Tennessee plant was here to assist Joe Hurley with work on the high service pump controls and programming modifications.
- Jenn Anders, Jason Dennis and Bobby Nichols were on-site September 9, 2015 to discuss possible remedies to the high chlorine in the lagoon discharge issue.
- Dan Held participated in a conference call regarding chemical optimization. The main topic was feeding sodium permanganate prior to the WesTech Filters.
- Dan Held and Marc Thomas participated in the Midwest Conference Call on September 24, 2015.
- Woodard and Curran has performed a Mass Balance of the plant to further define treatment capabilities and treatment efficiencies. The technical support staff are working with on-site staff to use it as a tool to determine where the plant lacks redundancy, and what factors limit the capacity or water quality. Woodard and Curran and Mecor Engineering are working through all this information in an attempt to identify priorities over the five-year time frame to minimize financial impacts to the SSWC customers.

### 5.3 BUDGET

The first five months financial summary is provided below in Table 4.1 showing the costs are \$84,784 under budget for the year to date. Treatment of Wells 3, 4 and 8 has yet to be completed. The invoice for cleaning Brine Tank #2 and other high dollar projects have yet to be completed.

**Table 4.1 Budget Table**

<b>Budget Category</b>	<b>Month Budget</b>	<b>Month Actual</b>	<b>YTD Budget</b>	<b>YTD Actual</b>	<b>Annual Budget</b>	<b>Over (under)</b>	<b>% of budget</b>
Labor (D.L. + OH)	\$19,187	\$19,642	\$95,935	\$81,893	\$230,244	(\$14,042)	36%
Utilities	\$8,320	\$6,279	\$41,600	\$30,455	\$99,840	(\$11,145)	31%
Chemicals	\$16,388	\$17,985	\$81,940	\$70,275	\$196,655	(\$11,665)	36%
Maintenance & Repair	\$8,299	\$4,997	\$41,494	\$11,427	\$99,585	(\$30,067)	11%
Sludge	\$13,813	\$11,360	\$69,067	\$46,722	\$165,760	(\$22,345)	28%
Lab Supplies and Equipment	\$1,530	\$2,024	\$7,648	\$7,230	\$18,355	(\$418)	39%
Office Supplies	\$188	\$205	\$938	\$2,861	\$2,250	\$1,924	127%
Miscellaneous Expenses	\$1,213	\$4,062	\$6,063	\$9,318	\$14,550	\$3,256	64%
Other Operating Costs	\$278	\$113	\$1,391	\$1,110	\$3,339	(\$281)	33%
<b>Subtotal of Costs for Contract Year 2</b>	<b>\$69,215</b>	<b>\$66,667</b>	<b>\$346,074</b>	<b>\$261,291</b>	<b>\$830,578</b>	<b>(\$84,784)</b>	<b>31%</b>
Fixed Fee for Contract Year 2	\$6,922	\$6,922	\$34,608	\$34,608	\$83,059	\$0	42%
<b>Year One Transition</b>	<b>\$4,096</b>	<b>\$3,519</b>	<b>\$20,481</b>	<b>\$47,418</b>	<b>\$49,155</b>	<b>\$26,937</b>	<b>96%</b>
<b>Total</b>	<b>\$80,233</b>	<b>\$77,108</b>	<b>\$401,163</b>	<b>\$343,317</b>	<b>\$962,792</b>	<b>(\$57,847)</b>	<b>36%</b>

## 6. CAPITAL PLANNING

### 6.1 APPROVED CIP PROJECTS CURRENT STATUS

Installation of the well injection port extensions are complete. The donut rings have been installed and are complete. The well sampling stations are installed and completed.

### 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.

On September 21, 2015, the Illinois Environmental Protection Agency (IEPA) forwarded a copy of its Engineering Evaluation of the SSWC plant. The evaluation took place on August 20, 2015. The IEPA conducts these evaluations to determine if your community water supply meets the requirements of the Illinois Pollution Control Board's public water supply rules, regulations and related standards. The letter lists deficiencies and includes reminders and recommended improvements.

The deficiencies identified were:

1. Maintain the fluoride ion concentration in the finished water between 0.9 and 1.2 mg/L.
2. Provide treatment to the waste lagoon discharge water to meet Total Residual Chlorine as listed in the NPDES.
3. Provide finished water storage to maintain a minimum pressure on the transmission main between the treatment plant and Chatham.
4. Provide daily chemical test results on the monthly operating report for iron and manganese from the membrane effluent line, prior to ion exchange.

The reminders and recommendations were:

1. Complete the well injection port extensions to facilitate cleaning per construction permit.
2. Testing to determine if the wells are Groundwater under the Direct Influence of Surface Water.
3. Provide water that meets the National Secondary Drinking Water Regulations Standards, at a minimum, for Iron and Manganese of 0.3 mg/L and 0.05 mg/L respectively.
4. Remove and dispose of the Agua Ammonia no longer being used in the treatment process.
5. Initiate a routine hydrant flushing program whereby all hydrants on the distribution system are operated at least every twelve months.
6. Investigate the differences in what SSWC pumps to Chatham and what Chatham indicates they are pumping.

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