Public Works Department

2015
YEAR END REPORT
WATER/WASTEWATER TREATMENT PLANTS

Madison's water and wastewater treatment operations specialists are highly trained professionals who strive to give the citizens of Madison the best possible service. Our operators are fully certified in both water and wastewater treatment as required by the United States Environmental Protection Agency and the South Dakota Department of Environment and Natural Resources. Operators also attend continuing education classes and seminars to meet training and certification requirements. In addition to normal operations and treatment, operators are responsible for the majority of the maintenance involved with both plants.

Water Treatment Plant

Well #8

Operators at the Water Treatment Plant produced and treated 245,141,000 gallons of drinking water to be distributed to the residents of Madison during 2015. Madison has a total of eleven wells which pump raw water to the treatment plant. The water treatment processes in the facility includes aeration, partial softening, recarbonation for pH adjustment, filtration, and chlorine disinfection. The facility also has the ability to add ammonia along with chlorine for chloramine disinfection. The partial softening process uses lime to raise the pH of the water and precipitate the carbonate hardness.

The hardness in the water reacts with the lime forming a precipitate which settles to the bottom of the clarifier basin and is removed as lime sludge. The partially softened water flows from the solids contact clarifier to the recarbonation basin where the pH is reduced to a stable level using carbon dioxide. Fluoride is also added at this point. After the pH adjustment the water is filtered in sand filters to remove any particulate matter that may have carried over the weirs of the clarifier basins. The water is then disinfected and sent to the system for consumption.

Operators perform daily laboratory testing to ensure the treatment processes are operating efficiently. Water characteristics such as hardness, alkalinity, iron, manganese, and turbidity levels are tested before and after treatment to determine treatment efficiency. Chlorine and fluoride levels are also tested daily to ensure the water is safe for consumption. Samples are also collected and sent to the South Dakota Department of Environment and Natural Resources to be tested for various regulated contaminants.

Solids Contact Clarifier

A by-product of the treatment process is the lime sludge produced during the softening process. The lime sludge is pumped to two large storage beds for drying and temporary storage. Reinicke Construction was contracted to remove lime sludge in 2015 from one of the storage beds. A total of 3,218 tons of sludge was removed, completely emptying one lagoon.

Lime Beds

GSF Floor Failure

In addition to normal operations and maintenance, staff had to work through some unanticipated events in 2015. Crews noticed leaking around the GSR foundation, a one million gallon storage tank constructed during a 2013 upgrade, shortly after it was put into service. It was decided the leak would be investigated further when the one year inspection was performed in 2015. The tank was taken out of service in early October of 2015. It was determined the tank floor was leaking due to failures in the floor caused by cold weather during the concrete pouring process. Weak spots in the floor were removed and repaired. Then a coating was applied to the floor to hopefully form a watertight seal. The tank was put back into service on December 24th, and will be monitored closely to determine the effectiveness of the coating.

A water main break also occurred in 2015, causing operators to lose a part of the well system until repairs could be made. Distribution crews installed a new valve needed to isolate the leak to a small area, then completed the repair in the broken main.

Cracked Main

Repaired Main

Looking ahead to 2016, the City of Madison is anticipating the construction of a new meter building and supplemental piping which will deliver Lewis and Clark water through a "wheeling option" which has been developed. Treated water originating from the Lewis and Clark system will be delivered through other systems temporarily until funding allows for a direct connection between Madison and Lewis and Clark. This will make it necessary for operators at the water treatment plant to start disinfecting with chloramines to match the incoming water from Lewis and Clark. The water delivered from the "wheeling option" will be blended with Madison's existing well water.

WASTEWATER TREATMENT PLANT

The Wastewater Treatment Plant treated an average daily flow of 808,274 gallons per day during 2015. A properly functioning wastewater treatment plant is designed to remove between 85% -95% of the BOD strength and suspended solids in wastewater, which are measures of the contaminants in the water. Madison's plant continues to function very efficiently, removing an average of 92.0% of the BOD strength and 92.0% of the suspended solids during 2015.

Primary Clarifier

The wastewater treatment facility provides preliminary, primary, and secondary treatment of the influent wastewater prior to discharge. Preliminary treatment occurs in the pretreatment process area, where the wastewater passes through a mechanically cleaned barscreen to remove large debris and rags for disposal. Next, the wastewater flows into an aerated grit chamber to remove grit while allowing organic material to continue to the next process for treatment.

Oxidation Ditch

Next the wastewater is routed to the primary clarifier for primary treatment. Here the heavier organic solids settle to the bottom of the clarifier and are pumped to aerobic digesters for further treatment. The clarified wastewater flows over the peripheral effluent weir into a channel and to the effluent box which directs the flow to the oxidation screw pumps. The screw pumps discharge the wastewater to an activated sludge oxidation ditch where biological treatment of the wastewater takes place. The oxidation ditch is designed to accomplish treatment by maintaining conditions (temperature, dissolved oxygen, pH, adequate food, etc.) which are favorable for growth and maintenance of a microbiological population, which feed on the organic matter in the wastewater.

Following mixing and aeration, the wastewater flows to the final clarifier where the solids in the wastewater settle to the bottom to form a sludge blanket, with the clarified wastewater flowing over the weir to the infiltration/percolation (I/P) system. The I/P system is a land treatment process in which the soil and soil bacteria provide further treatment as the wastewater passes through the soil profile. The term "infiltration" refers to the initial passing of water through the soil surface. The term "percolation" refers to the movement of wastewater down through the soil profile until it joins the groundwater contained in the aquifer beneath the I/P cells.

Final Clarifier

In addition to routine maintenance, the primary clarifier was bypassed and drained for inspection in 2015. This was the tank's first inspection since its mechanical upgrade in 2009. The inspection revealed no signs of problems with the equipment and the tank was put back into service with no issues.

Primary Clarifier Inspection

Two major projects are anticipated for 2016. The final clarifier is scheduled to be taken out of service and inspected. Also, the City plans to install a structure to provide safe access to three plug valves located up to 23 feet below ground level. One of the valves needs repairs, which cannot be accomplished without a major and expensive excavation. The City has decided to provide an access structure to avoid major excavations in the future.

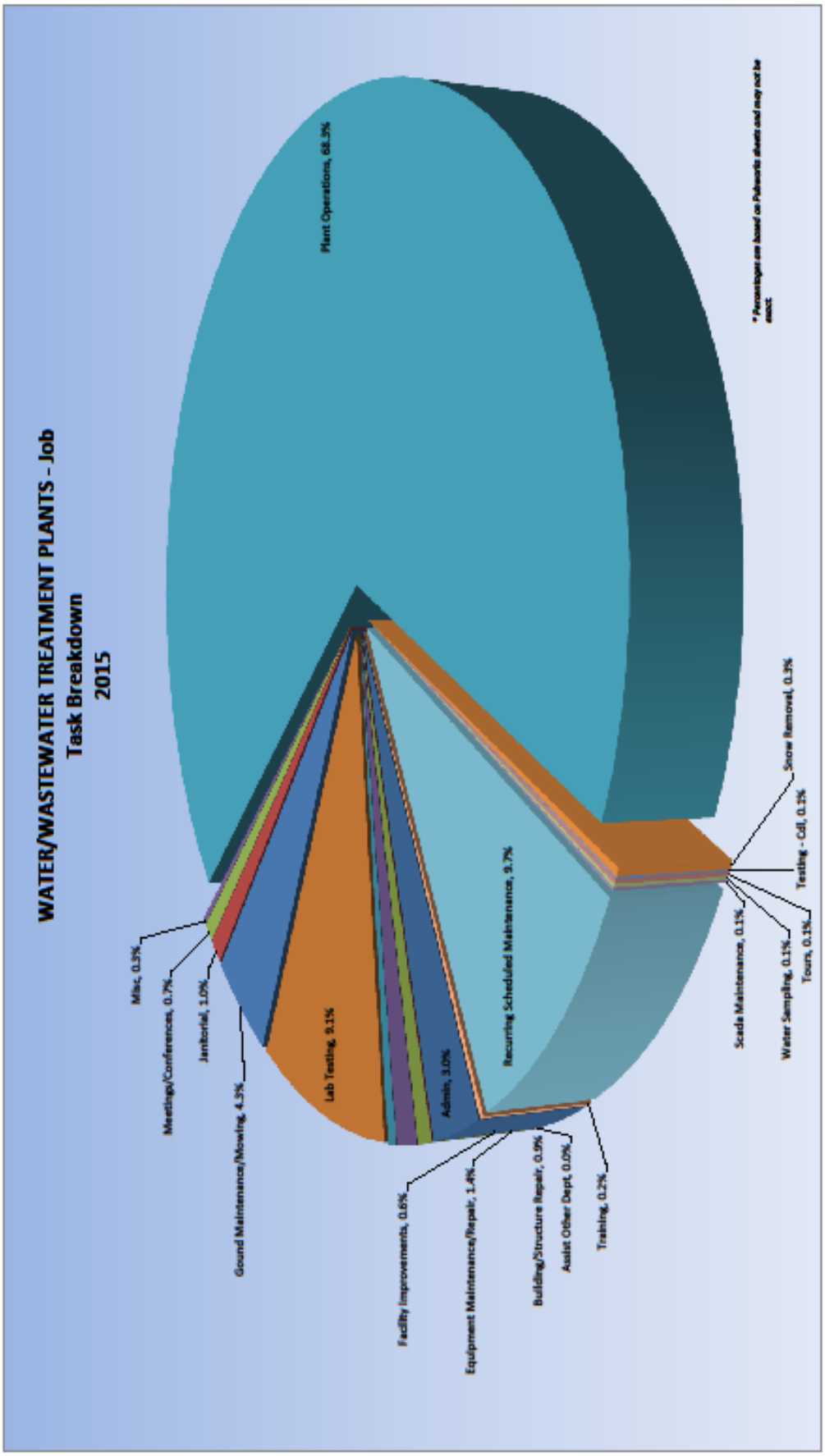
Respectfully Submitted,

Rick Nighbert, Foreman

City of Madison Public Works

2015 Water Plant & Waste Water Plants Task Summary

Task	Activities	Labor Hours	Labor Cost	Eqp Cost	Mat Cost	Total Cost
Admin	156	269.50	$9,986.46	$0.00	$0.00	$9,986.46
Assist Other Departments	1	2.00	$74.64	$0.00	$0.00	$74.64
Building/Structure Repair	14	33.00	$1,078.70	$0.00	$0.00	$1,078.70
Equipment Maintenance/Repair	51	123.00	$4,650.94	$0.00	$0.00	$4,650.94
Facility Improvements	18	50.00	$1,620.12	$0.00	$0.00	$1,620.12
Inspections/Contractor	2	4.00	$149.20	$0.00	$0.00	$149.20
Install New Water Main	1	3.00	$111.90	$0.00	$0.00	$111.90
Janitorial	43	86.00	$2,445.80	$30.00	$0.00	$2,475.80
Lab Testing	507	819.50	$26,140.53	$987.50	$0.00	$27,128.03
Leave	295	1,565.50	$46,887.22	$0.00	$0.00	$46,887.22
Meetings/Conferences	40	66.50	$2,158.57	$0.00	$0.00	$2,158.57
Misc	11	16.25	$580.85	$202.50	$0.00	$783.35
Mowing/Ground Maintenance	149	389.00	$11,604.00	$6,082.50	$0.00	$17,686.50
Painting	17	49.50	$1,613.72	$0.00	$0.00	$1,613.72
Plant Operations	1,404	6,171.25	$191,890.95	$6,710.00	$0.00	$198,600.95
Recurring Scheduled Maintenance	280	873.50	$25,471.36	$5,570.00	$0.00	$31,041.36
Scada Maintenance	12	9.00	$305.24	$0.00	$0.00	$305.24
Snow Removal	11	24.00	$720.81	$380.00	$0.00	$1,100.81
Testing - Cdl/Drug/Alcohol	2	6.00	$169.90	$60.00	$0.00	$229.90
Tours	5	12.00	$401.33	$0.00	$0.00	$401.33
Training	18	20.00	$587.62	$0.00	$0.00	$587.62
Water Sampling	7	9.50	$326.82	$0.00	$0.00	$326.82
Tasks:	**3,044**	**10,602**	**328,977**	**20,023**	**0**	**348,999**


WATER/WASTEWATER TREATMENT PLANTS - Job
Task Breakdown
2015
Plant Operations, 68.3%
Recurring Scheduled Maintenance, 9.7%
Lab Testing, 9.1%
Admin, 3.0%
Misc, 0.3%
Meetings/Conferences, 0.7%
Janitorial, 1.0%
Gound Maintenance/Mowing, 4.3%
Facility Improvements, 0.6%
Equipment Maintenance/Repair, 1.4%
Building/Structure Repair, 0.9%
Assist Other Dept, 0.0%
Training, 0.2%
Scada Maintenance, 0.1%
Water Sampling, 0.1%
Tours, 0.1%
Testing - Cdl, 0.1%
Snow Removal, 0.3%
* Percentages are based on Pulsworks sheets and may not be exact

2015
Chemical Usage/Cost Breakdown

CARBON DIOXIDE = $289.41/Ton

= 15774 total lbs. or 7.89 tons
= 43.2 lbs. / day
= 63.6 lbs. per million gallons produced
= 7.72 ppm
= $9.21 per million gallons produced

LIME = $161.00/Ton

= 641736 total lbs. or 320.87 tons
= 1758 lbs. / day
= 2587 lbs. per million gallons produced
= 314 ppm
= $208.29 per million gallons produced

FERRIC CHLORIDE = $5.44/Gal

= 22394 total lbs
= 22394/11.31 = 1980 gallons
= 5.42 gal/day or 61.4 lbs/day
= 7.98 gal/MG or 90.3 lbs/MG
= 10.95 ppm
= $43.42 per million gallons produced

CHLORINE = $0.485/lb.

= 6827 total lbs
= 18.7 lbs/day
= 27.53 lbs per million gallons produced
= 3.34 ppm
= $13.35 per million gallons produced

FLOURIDE = $3.857/Gal

= 1197 total gallons
= 1197 x 10.24 = 12257 total lbs.
= 3.28 gal/day or 33.6 lbs/day
= 4.83 gal/MG or 49.4 lbs/MG
= 6.00 ppm
= $18.62 per million gallons produced

MADISON WASTEWATER TREATMENT PLANT

2015

MONTH	FLOW TOTAL	ELECTRIC	NATURAL GAS	S.SOLIDS RAW	S.SOLIDS FINAL	S.SOLIDS EFF%	B.O.D. RAW	B.O.D. FINAL	B.O.D. EFF%
January	20,320,000	90,400	1913	183	17	91.0%	168	13	92.1%
February	18,460,000	80,200	2000	239	18	92.5%	209	20	90.3%
March	20,010,000	76,600	1125	172	24	86.2%	178	25	86.0%
April	19,660,000	75,800	2770	176	15	91.6%	211	15	93.1%
May	21,630,000	76,000	3	219	14	93.7%	220	12	94.6%
June	26,700,000	79,800	0	138	26	81.0%	122	19	84.5%
July	30,300,000	84,400	0	158	9	94.1%	105	11	89.9%
August	35,400,000	77,600	0	125	9	92.5%	110	9	91.8%
September	29,270,000	77,600	1	153	8	94.5%	133	5	95.9%
October	26,600,000	82,200	116	119	5	96.0%	145	6	95.9%
November	23,450,000	82,200	1117	135	7	94.8%	130	7	95.0%
December	23,220,000	82,400	1726	160	7	95.6%	167	10	94.30%
TOTAL	295,020,000	965,200	10,771	165	13	92.0%	158	13	92.0%
DAILY AVERAGE	808,274								

2015
WELL HOURS/GALLONS
TOTALS

WELL #	GAL/MIN	HOURS	TOTAL GALLONS
#1	310	1526	28,383,600
#3	260	1632	25,459,200
#8	470	1559	43,963,800
#9	640	1306	37,239,500
#10	255	1086	16,615,800
#11	230	1617	22,314,600
#21	380	938	21,386,400
#22	250	1542	23,130,000
#23	190	1061	12,095,400
#24	400	874	20,976,000
#25	420	3	75,600
		Total =	251,639,900

Northern Skunk Creek Aquifer = 191,733,500 gallons
Howard Aquifer = 59,906,400 gallons
Plant Use #1 = 527,250 gallons
Plant Use #2 = 13,147,000 gallons

Aerobic Digester Operating Data

Location: Madison, SD — Digester Volume @ 21.5' SWD = 333,962 gal
Date: 17-Jun-11
Project: Madison Aerobic Digester Operation
BAI 20613.01.01

Date	Raw Wastewater				Primary Digester						Secondary Digester					
	Total Solids (%)	Volatile Solids (%)	WAS (gal)	PC Underflow (gal)	Total Solids (%)	Volatile Solids (%)	Ammonia (mg/L)	Alkalinity (mg/L)	Temp. °C	VS Destruction (%)	Total Solids (%)	Volatile Solids (%)	Ammonia (mg/L)	Alkalinity (mg/L)	Temp. °C	VS Destruction (%)
1/7/15	3.30%	74.4%	11469	4500	1.57%	64.2%	0.22	102	23.8	38.30%	2.18%	56.9%	4.60	112	22.0	26.4%
1/14/15	3.10%	75.5%	11489	4500	1.61%	63.0%	0.54	112	22.6	44.75%	2.01%	55.6%	0.17	96	20.3	26.5%
1/21/15	3.61%	78.8%	9660	4050	1.56%	66.0%	0.14	106	25.2	47.78%	1.85%	60.6%	0.12	64	21.1	20.8%
1/28/15	3.80%	70.5%	10749	4050	1.85%	65.7%	0.15	102	25.8	19.85%	1.68%	58.6%	0.08	82	21.8	26.1%
2/4/15	3.58%	75.2%	13262	4500	1.72%	63.5%	0.22	126	24.5	42.63%	1.71%	56.6%	0.19	40	21.5	25.0%
2/11/15	3.47%	76.9%	13285	5400	1.41%	65.3%	0.29	74	25.1	43.47%	1.96%	60.5%	0.21	168	22.2	18.6%
2/18/15	3.46%	76.2%	14024	5400	1.73%	64.3%	0.24	138	23.4	43.74%	1.98%	58.4%	0.15	146	21.4	22.1%
2/25/15	3.41%	74.5%	13310	4050	1.86%	67.3%	0.10	132	22.3	29.55%	1.87%	59.1%	0.09	130	20.6	29.8%
3/4/15	3.92%	77.8%	11890	4500	1.80%	68.6%	0.13	138	22.1	37.66%	1.79%	61.4%	0.05	122	20.1	27.2%
3/11/15	3.92%	70.7%	11176	4500	1.81%	66.4%	0.14	106	23.2	18.10%	1.90%	58.4%	0.07	128	23.8	29.0%
3/18/15	3.15%	80.6%	8284	4500	1.69%	68.0%	0.15	152	23.7	48.85%	1.91%	64.4%	0.11	134	21.6	14.9%
3/25/15	3.03%	75.9%	8280	4500	1.63%	64.9%	0.14	140	22.6	41.29%	1.79%	60.7%	0.12	126	21.1	16.5%
4/1/15	3.37%	77.8%	8236	4050	1.69%	67.5%	0.16	128	23.1	40.74%	1.78%	64.5%	0.05	114	21.2	12.5%
4/8/15	3.47%	80.6%	9657	4050	1.66%	68.7%	0.12	96	22.7	47.17%	1.81%	63.6%	0.06	116	21.0	20.4%
4/15/15	3.43%	79.4%	9670	4050	1.59%	68.6%	0.08	122	23.6	43.32%	1.83%	62.4%	0.07	124	21.6	24.0%
4/22/15	3.03%	79.0%	10737	3600	1.57%	69.1%	0.50	140	24.5	40.56%	1.82%	61.5%	0.08	112	22.4	28.6%
4/29/15	3.27%	74.0%	11514	4950	1.64%	63.3%	0.18	128	25.4	39.40%	1.85%	57.1%	0.08	106	23.2	22.8%
5/6/15	3.51%	80.2%	11488	4950	1.77%	70.7%	1.93	176	24.8	40.43%	1.79%	65.8%	0.11	116	23.7	20.3%
5/13/15	3.92%	74.2%	11497	420	1.81%	68.8%	0.06	166	23.3	23.33%	1.82%	65.4%	0.05	102	22.6	14.3%
5/20/15	3.25%	79.2%	11509	4500	1.63%	70.7%	0.13	140	23.7	36.63%	1.74%	67.5%	0.32	138	22.1	13.9%
5/27/15	3.39%	75.0%	11503	4500	1.57%	66.8%	0.13	156	25.0	32.93%	1.70%	70.2%	0.56	142	22.8	-17.1%
6/3/15	2.83%	78.7%	11513	4500	1.45%	69.0%	0.13	126	26.2	39.76%	1.56%	64.0%	0.05	124	24.3	20.1%
6/10/15	2.97%	80.0%	8496	4500	1.45%	68.5%	0.44	140	26.8	45.63%	1.62%	66.4%	0.25	126	26.8	9.1%
6/17/15	3.63%	75.8%	6139	4500	1.37%	67.4%	0.25	158	30.4	33.99%	1.57%	65.5%	0.35	102	28.3	8.2%
6/24/15	1.62%	75.6%	6146	4950	1.48%	67.2%	0.13	150	29.8	33.88%	1.47%	64.3%	0.05	88	28.9	12.1%
7/1/15	3.43%	77.3%	6116	3150	1.38%	66.1%	0.38	120	30.4	42.74%	1.42%	63.0%	0.45	130	30.2	12.7%
7/8/15	3.84%	77.3%	6120	4050	1.16%	64.0%	0.41	128	29.8	47.79%	1.35%	63.0%	2.11	128	30.5	4.2%
7/15/15	3.50%	76.4%	7918	3600	1.29%	64.2%	0.09	142	30.8	44.60%	1.23%	59.9%	0.09	84	31.2	16.7%
7/22/15	3.11%	76.9%	9470	4500	1.40%	65.3%	0.17	130	30.1	43.47%	1.30%	60.3%	0.07	80	31.3	19.3%
7/29/15	3.84%	72.1%	11178	4500	1.27%	64.7%	0.33	138	30.9	29.08%	1.46%	61.5%	0.15	144	31.6	12.8%
8/5/15	3.17%	75.3%	16944	5400	1.36%	64.9%	0.25	116	32.1	39.35%	1.34%	60.3%	0.15	100	31.3	17.9%
8/12/15	2.78%	73.9%	16955	5850	1.85%	69.1%	4.28	140	32.4	21.02%	1.31%	58.4%	0.11	78	31.8	37.2%
8/19/15	3.35%	76.4%	5480	5400	1.14%	63.6%	0.08	84	32.0	46.03%	1.40%	60.7%	0.07	150	31.5	11.6%
8/26/15	2.43%	76.9%	13372	1800	1.33%	62.5%	0.20	142	30.4	49.93%	1.26%	58.9%	0.47	150	29.8	14.0%
9/2/15	3.37%	82.8%	13360	4950	1.31%	63.0%	0.10	172	33.4	64.63%	1.36%	63.3%	0.05	144	31.2	-1.3%
9/9/15	3.16%	79.5%	14066	4500	1.45%	64.1%	0.08	164	32.9	53.96%	1.43%	59.4%	0.08	142	31.8	18.1%
9/16/15	2.92%	80.2%	14064	5850	1.62%	65.1%	0.11	134	30.5	53.95%	1.52%	59.6%	0.06	112	30.8	20.9%
9/23/15	2.79%	86.5%	16940	5400	1.60%	66.3%	0.15	86	31.2	69.30%	1.56%	60.5%	0.05	110	29.1	22.1%
9/30/15	2.96%	80.4%	16951	4950	1.44%	66.3%	0.32	158	31.1	52.04%	1.76%	62.3%	0.08	128	29.6	16.0%
10/7/15	2.78%	80.3%	16947	4950	1.60%	67.1%	0.24	144	30.1	49.96%	1.60%	61.6%	0.17	112	28.3	21.3%
10/14/15	2.77%	81.7%	16943	5400	1.47%	67.1%	0.17	136	29.3	54.32%	1.81%	61.5%	0.28	100	27.5	21.7%
10/21/15	3.13%	75.8%	16941	4950	1.38%	65.6%	0.71	88	30.4	39.12%	1.71%	58.9%	0.34	116	27.6	24.9%
10/28/15	3.14%	79.6%	16958	5400	1.65%	67.6%	0.17	146	28.5	46.53%	1.52%	61.4%	0.05	116	26.5	23.8%
11/4/15	2.44%	80.8%	16951	5400	1.61%	68.2%	0.09	136	27.9	49.04%	1.55%	61.2%	0.04	114	25.6	26.5%
11/11/15	2.88%	77.7%	16942	4500	1.39%	66.3%	0.35	64	29.3	43.54%	1.51%	62.3%	0.14	102	26.1	16.0%
11/18/15	2.89%	81.1%	16937	4950	1.46%	67.8%	1.95	142	30.5	50.93%	1.58%	63.9%	0.09	130	27.2	15.9%
12/2/15	2.56%	79.6%	16934	5400	1.47%	67.1%	0.29	114	28.2	47.73%	1.48%	63.0%	0.10	114	26.5	16.5%
12/9/15	2.85%	78.8%	16957	5850	1.41%	66.2%	0.14	100	27.6	47.31%	1.48%	62.5%	0.11	80	26.4	14.9%
12/16/15	2.87%	78.7%	16962	4950	1.49%	67.4%	0.28	104	27.7	44.04%	1.52%	62.2%	0.08	114	26.2	20.4%
12/23/15	3.37%	77.8%	16968	5400	1.42%	66.9%	0.13	106	27.3	42.33%	1.52%	62.9%	0.06	116	25.4	16.1%
12/30/15	3.30%	74.9%	15760	4950	1.44%	66.8%	0.17	184	27.2	32.57%	1.67%	64.1%	0.11	148	24.9	11.3%

MONTHLY RECORDS
2015

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Chemical/Water Usage													
Raw Water-gal	19,096,000	17,030,000	19,067,000	20,812,000	21,912,000	20,925,000	22,684,000	23,092,000	22,371,000	20,808,000	18,540,000	18,804,000	245,141,000
Treated Water-gal	19,258,000	17,183,000	19,325,000	21,098,000	22,067,000	20,743,000	22,870,000	23,280,000	23,018,000	21,434,000	18,941,000	18,798,000	248,015,000
Plant Use 1-gal	33,750	30,000	34,500	40,500	39,750	38,250	45,750	45,000	66,000	41,250	39,750	30,750	485,250
Plant Use 2-gal	943,000	802,000	932,000	1,079,000	1,063,000	1,021,000	1,136,000	1,175,000	1,150,000	943,000	1,012,000	1,042,000	12,298,000
Backwash gal.	1,338,000	920,000	1,042,000	1,234,000	1,231,000	1,384,000	1,407,000	1,356,000	1,242,000	1,125,000	1,126,000	1,451,000	14,856,000
Fluoride-gal	78	81	93	115	112	97	104	107	116	100	99	95	1,197
Lime-lbs	52,524	44,005	52,884	52,090	55,389	55,907	64,161	66,790	55,711	53,091	44,295	44,889	641,736
Soda Ash-lbs													0
Chlorine-lbs	529	430	470	566	608	657	684	598	597	542	574	572	6,827
Ferric Chloride-gal													
Carbon Dioxide-lbs	1,444	1,581	1,790	1,393	1,927	1,210	1,071	1,222	1,135	1,124	886	991	15,774
Chemical Expense													
Fluoride	$539.98		$327.85	$443.56	$482.13	$520.70	$424.27		$617.12	$636.41	$462.84	$482.13	$4,936.99
Lime	$2,543.64		$2,702.50	$1,603.64	$2,642.34	$2,720.36	$2,600.04	$2,659.26	$2,207.12	$2,766.42	$2,572.78	$2,734.46	$27,752.56
Lime-fraight chgs.	$1,813.02		$1,926.25	$1,143.02	$1,883.37	$1,938.98	$1,853.22	$1,895.43	$1,573.16	$1,971.81	$1,833.79	$1,949.03	$19,781.08
Soda Ash													$0.00
Chlorine	$436.50		$291.00	$291.00	$291.00	$363.75	$363.75		$436.50	$363.75	$291.00	$363.75	$3,492.00
Ferric Chloride			$1,794.86		$1,794.86		$1,794.86		$1,794.86	$1,794.86		$1,794.86	$10,769.16
Carbon Dioxide			$3,472.92										$3,472.92
CO2 misc. fees													0.00
TOTAL COST FOR YR.													**$70,204.71**
Run Times													
High Ser. #1	0	238	20	0	337	0	0	317	1	0	422	28	1,363
High Ser. #2	8	0	261	2	0	319	1	0	398	1	0	367	1,357
High Ser. #3	284	20	0	309	2	0	475	25	0	457	16	0	1,588
Low Ser. #1	228	133	143	199	165	171	152	153	155	6	3	46	1,554
Low Ser. #2	0	100	158	170	188	148	174	185	184	9	8	52	1,376
Low Ser. #3	224	163	147	172	175	157	158	180	179	4	5	38	1,602
Reclaim Pump 1	36	30	26	36	33	41	35	35	32	26	27	35	392
Reclaim Pump 2	37	30	25	37	32	42	35	35	31	24	26	38	392
WELL HOURS													
Well 1	0	157	364	0	0	0	0	0	526	462	17	0	1526
Well 3	396	233	0	0	0	0	0	0	525	461	17	0	1632
Well 8	0	0	0	0	399	263	0	0	0	0	433	464	1559
Well 9	0	0	92	535	70	6	71	529	3	0	0	0	1306
Well 10	220	108	1	3	78	0	71	529	0	0	54	22	1086
Well 11	0	158	365	0	397	263	0	0	0	417	17	0	1617
Well 21	221	66	0	0	0	211	423	0	0	0	0	17	938
Well 22	0	0	93	535	68	0	0	0	1	0	405	440	1542
Well 23	0	158	365	0	11	0	0	0	525	2	0	0	1061
Well 24	174	0	0	0	68	210	422	0	0	0	0	0	874
Well 25	0	0	0	0	0	0	3	0	0	0	0	0	3