CITY OF ST. JOSEPH WATER FILTRATION PLANT

OPERATIONAL REPORT

AUGUST 2014

Mission Statement

WSJOB- The City and Authority working together to provide safe drinking water of the highest quality to all of our customers at the lowest possible price.

WATER PLANT REPORT-AUGUST 2014

Water demand in August was down by 20,028,000 gallons or 10% from last year. This year 182,591,246 gallons were delivered which compares to 202,618,956 gallons delivered in August of 2013. Interestingly, while down from 2014 this usage is very close to that seen in 2011 and 2012 if Fairplain usage is subtracted. The 2014 August pumpage ranked 22nd in the 30 year tabulation dating back to 1985.

GENERAL ACTIVITIES

Water Plant Security

Simplex Grinnell was approved to install security cameras and card access at the water plant. The equipment is on order and is expected by sometime in September. The plan is for Mead & White and water plant staff to route and run conduit and for Simplex Grinnell to furnish and install the equipment. Plant staff met with representatives from Simplex Grinell on September 3rd.

Strategic Capital Improvement Plan

Plant staff met with the full team from CH2M Hill at the water plant in July. Hill brought in experts in mechanical, architectural and electrical systems to complete the condition assessment phase of the plan. To date the Asset Hierarchy and Process Assessment have been completed. The anticipated completion date is in October. Plan staff will meet with Hill engineers in Milwaukee during the week of September 29th to review the plan. Plant tours of the Milwaukee and Oak Creek Water Plants are planned during the visit.

Benton Harbor Emergency Interconnect

The bolt replacement work at the M63 Interconnect is now complete. The project included all of the bolts on the pipe flanges and valve housings on the 16" line located in a valve vault owned by the City of St. Joseph. which had to be cut out by means of a torch due to advanced corrosion. Staff is looking into the replacement of the roof slab and reinforcement of the walls. The City of Benton Harbor has expressed interest in contributing to this effort.

In addition, the Cities of St. Joseph and Benton Harbor completed a draft emergency interconnect agreement. The agreement provides for the provision of water in the event of an emergency in either water supply. Below I have outlined the major points of the agreement.

- The City of St. Joseph shall be responsible for appropriate maintenance and exercise of the Interconnection in a reasonable and workmanlike manner.
- The City of St. Joseph and the City of Benton Harbor shall share equally in all costs of maintenance, including all part replacement and utilities to the connections.

- The Party receiving the water shall be responsible for paying the Party supplying the water an amount metered, or calculated, at the highest consumption rate customarily charged by either party. Currently, the City of Benton Harbor charges $3.80/ccf and the City of St. Joseph charges $1.80/ccf. Hence, the charge for water would be $3.80/ccf regardless of who was supplying the water.

- All requests to utilize the Interconnection to supply water shall be made by and to the City Manager or appropriate personnel in lawful charge of the operations of each Party's water plant.

- A Party which has requested an emergency water supply will use its best efforts to minimize nonessential water usage.

- If either Party is requested to supply water to the other Party during a time of scarcity or emergency, the Party requested to supply water may do so to the extent it deems possible, if at all, using its sole and absolute discretion.

- The term of the agreement is for a period of ten (10) years with a six (6) month termination notice. There is an automatic extension for two consecutive periods of five years.

A site plan of the interconnect including a floor plan of the valve vault was prepared by Abonmarch and is attached as an exhibit to the agreement. The draft will go before the City of Benton Harbor Commission on September 15th and the City of St. Joseph City Commission on the 22nd of September.

Unregulated Contaminant Monitoring (UCMR) III – 2013 Testing Results

As part of the federal drinking water program, USEPA issues a list of currently unregulated contaminants to be tested by Public Water Systems throughout the nation. This process occurs every five years pursuant to the Unregulated Contaminant Monitoring Rule (UCMR). The purpose of the UCMR program is to determine the prevalence of unregulated contaminants in drinking water. Results of this testing help USEPA determine whether or not to regulate new contaminants for protection of public health.

There have been three cycles of monitoring: UCMR 1 (2001-2003), UMCR 2 (2008-2010), and UCMR 3 (2013-2015). The City of St. Joseph was not required to participate in UCMR 1 and of the 37 contaminants tested in UCMR 2 none were detected. The City also participated in the current UCMR 3 in 2013. The City tested 21 contaminants on USEPA's List 2 (Screening Survey). Of the 21 contaminants tested, 17 were non-detected and five had results. The detected contaminants and results appear on the Water Quality Data table under *Special Monitoring and Unregulated Contaminants* in our 2013 CCR issued on June 27th.

Stage 2 D/DBP Monitoring Results-Authority

The Stage 2 DBP rule is one part of the Microbial and Disinfection Byproducts Rules (MDBPs), which are a set of interrelated regulations that address risks from microbial pathogens and disinfectants/disinfection byproducts. The stage 2 DBP rule focuses on public health protection by

limiting exposure to DBP's, specifically total trihalomethanes (TTHM) and five haloacetic acids (HAA5) which can form in water through disinfectants used to control microbial pathogens. The St. Joseph Water Plant utilizes chlorine as a disinfectant.

In April the HAA5 level recorded was elevated at 72 ppb at site #2 (Lincoln Township Hall). This was likely due to high organics from Spring runoff and the lack of mixing in the lake given the unusually long ice cover. Community water supplies cannot exceed 60 ppb as a running annual average. Given the seasonal nature of HAA5, production, we expected the running annual average to remain well below the limit and they did. In July an HAA5 result of 25.8 ppb which yielded an annual running average of 39.7 ppb.

Positive Routine Distribution Sample

On July 7th we recorded a positive routine distribution sample. Coliform was detected. Repeat samples were taken the next day and were fine. We will report the detection of coliform and the highest monthly percentage detected in our annual 2014 Water Quality Report. Coliform bacteria can survive treatment and the presence of a chlorine residual. Community water supplies are allowed a monthly maximum of 5%. Water Plant staff typically collects 50-60 water samples per month at MDEQ approved sites in our distribution system. Below you find description of the Coliform Rule which is published in EPA's Guidance Manual.

> The Total Coliform Rule (TCR), a National Primary Drinking Water Regulation (NPDWR), was published in 1989 and became effective in 1990. The rule set both a health goal (Maximum Contaminant Level Goal, or MCLG) and legal limits (Maximum Contaminant Levels, or MCLs) for the presence of total coliforms in drinking water. EPA set the MCLG for total coliforms at zero because there have been waterborne disease outbreaks in which researchers found very low levels of coliforms, so any level indicates some health risk. The MCL levels are based on the positive sample tests for total coliforms (monthly MCL), or for total coliforms and Escherichia coli (E. coli) or fecal coliforms (acute MCL).
>
> The purpose of the 1989 TCR is to protect public health by ensuring the integrity of the drinking water distribution system and monitoring for the presence of microbial contamination. The rule requires all public water systems (PWSs) to monitor for the presence of total coliforms in the distribution system at a frequency proportional to the number of people served. Systems which serve fewer than 1,000 people may test once a month or less frequently, while systems with 50,000 customers test at least 60 times per month and those with 2.5 million customers test at least 420 times per month. Water systems often take more than the required number of samples as a precaution.
>
> To comply with the monthly MCL for total coliforms, PWSs must not find coliforms in more than five percent of the samples they take each month to meet EPA's standards. If more than five percent of the samples contain coliforms, PWS operators must report this violation to the state and the public. If a sample tests positive for total coliforms, the system must collect a set of repeat samples located within 5 or fewer sampling sites adjacent to the location of the routine positive sample within 24 hours. When a routine or repeat sample tests positive for total coliforms, it must also be analyzed for fecal coliforms or E. coli, which are types of coliform bacteria that are directly associated with fresh feces. A positive result for fecal coliforms or E. coli can signify an acute MCL violation, which necessitates rapid state and public notification because it represents a direct health risk. Often, an acute violation due to the presence of fecal coliform or E. coli will

result in a "boil water" notice. The system must also take at least 5 routine samples the next month of operation if any sample tests positive for total coliforms. To read the full requirements of the TCR, please see the Federal Register Notice of the rule from the link below.

All samples collected in August were negative for Total Coliform and E. coli. The City of St. Joseph remains in full compliance with PA 399 as amended (Safe Drinking Water Act).

Blue Green Algae

On August 1st, algal blooms in Lake Erie gained national attention when the City of Toledo issued a drinking water ban due to high levels of the blue green algal toxin Microcystin in its finished water. Microcystin is produced by Blue Green algae Microcystis (Genus name). Upon learning of this we looked into whether this could occur in Lake Michigan and if so whether the water plant could remove it as well as how the toxin could be detected. Early on it became apparent that the conditions in Lake Erie differed markedly from those of Lake Michigan and the likelihood of high levels of Microcystis would be remote. This algae requires warm temperatures (generally above 77 degrees F), and high phosphorus levels. Given the depth of Lake Michigan and the low relative phosphorus concentrations, the conditions are simply not favorable for any significant algal growth. The Lake Erie watershed which is fed predominantly by the Maumee River in terms of phosphorus is heavily influenced by agricultural runoff containing phosphorus rich fertilizers and pesticides.

In spite of the low risk of Microcystis we did analysis both our raw and tap water for this toxin and found none present. On an operational basis we are now monitoring daily satellite imagery from NASA of chlorophyll content in Lake Michigan. If chlorophyll levels on the East Shore increase to unacceptable levels we will test for algal toxins again and initiate operational changes to maximize removal. In addition, a low power microscope and visual monitor interface were ordered and placed into service on September 2nd. Staff is currently seeking training in algal identification. To date we have not been successful since the cancellation of Central Michigan University's Algae course on Beaver Island.

Cross Connection Control Inspections

Hydro Designs completed 32 inspections in the City during the weeks of August 4th and 11th. I accompanied the inspector on several inspections in the field including the new Harbor Village, Azul Restaurant, City Hall and the Joint Wastewater Plant.

High Service VFD #5

As I mentioned in the July meeting, VFD #5 failed in late June. Staff had obtained competitive bids for its replacement and a quote for the replacement of the drive only and we were planning to bring them before the board in August and to the City Commission subsequent to WSJOB approval. However, on August 3rd, the failure of high service #3 forced us to obtain emergency authorization from the City

Manager and Commission to replace the drive. Schnieder Electric furnished a quote in the amount of $16,995 for the replacement of the drive only (switchgear and cabinet to stay).

Schneider installed the drive during the week of August 8th. However, they were unable to complete the install due to an incorrect rectifier cable which had to be fabricated at the factory thereby delaying completion until September 3rd. High Service #5 is rated at 5 MGD.

This VFD was installed in 2007. I may note that life expectancy of VFD's is typically 10-20 years and that the shortened lifespan of this drive was likely due to the elevated temperatures in the old lab where it is located. Staff installed an air-conditioner in 2009 which improved the operating environment. Nonetheless, current temperatures approach 80F and staff is exploring other options which will be informed by the SCIP.

High Service #3

On August 1st, High Service #3 failed. Specifically the babbit bearing in the motor seized. The motor was last rebuilt in 2002. Peerless Midwest was called in to pull the motor. Competitive bids are being solicited and received for the replacement of the motor and base from two suppliers. A recommendation will be presented to the WSJOB on September 17th and the St. Joseph City Commission on September 22nd. High Service #3 is rated at 4 MGD. The total high service capacity of the St. Joseph Water Plant is 24 MGD.

Reclaim Pump #2

On August 3rd, Reclaim Pump #2 failed due to a reclaim sensor failure. Peerless pulled this pump while here to pull High Service #3. Emergency authorization to hire Peerless to rebuild the pump was sought and granted by the City Manager on August 15th. This is urgent since the plant is now dependent on the other reclaim pump until #2 is rebuilt. The reclaim pump functions to pump reclaim water back into the process. Without them, reclaim water which originates as filter backwash water would overflow to Lake Michigan. The plant holds an NPDES permit for backwash water discharge to the lake which is limited to 240,000 gallons per day. Average day backwash water in July was 72,000 gallons per day.

Reclaim Pump #2 was installed on August 28th and is performing satisfactorily.

Reclaim Basin Cleaning
Staff is currently planning to clean the reclaim basin. The basin has not been cleaned for several years. While down it will be inspected.

South Reservoir Cleaning and Inspection
In late September the South Reservoir will be drained, cleaned and inspected. It was last inspected in 1987. Due to the inoperability of the influent and effluent isolation valves, inflatable plugs and blind flanges will be utilized to stop inflow of water during the work. You may recall that our North Reservoir was drained for the installation of baffle walls in 2009. This project will be conducted in the same manner and with the same equipment given the experience gained at that time. The South Reservoir was constructed in 1955 when plant capacity was increased from 4 MGD to 8 MGD.

ST. JOSEPH WATER FILTRATION PLANT
1701 LIONS PARK DRIVE
SAINT JOSEPH, MI. 49085

AUGUST 2014

By: Greg Alimenti

St. Joseph Water Plant

700 Broad St.

Saint Joseph, MI. 49085-1276

(269) 983-1240

DISTRIBUTION:	
Total Gallons	182,591,246
Average Day	5,890,040
Maximum Day	7,310,516
Minimum Day	4,649,473

TREATMENT:	
Total Low Service	186,657,793
Wash Water Gals.	2,590,940
Wash Water %	1.42%
Plant Use Gals.	1,609,272
Plant Use %	0.88%

FILTRATION:		
Ave. Filter Run	125.0	hours
Ave. Filter Rate	2.05	g/sqft/min
Filter Eff. Index	241.1	
Ave. Loss of Head	3.5	feet
Plant Sewer Useage		

LABRATORY REPORT		
Average of	Raw	Tap
Chlorides mg/L	19.5	19.6
Fluoride mg/L	0.12	0.94
Alkalinity mg/L	104	94
Hardness mg/L	132	130
pH	7.9	7.3
Calcium mg/L	36	36
Magnesium mg/L	10	10
Turbidity NTU	1.49	0.03
Temperature `F	69	
Total Coliform		0.0
Chlorine Residual		mg/L Free
Mixing Basin		1.56
Applied		1.69
Tap		1.52
Distribution		0.97

TREATMENT CHEMICAL SUMMARY:

	Applied mg/L	Total Lbs.	Cost	Inventory lbs.	Days Supply
		CHEMICAL			
Alum (Al^{+3})	1.39	2,145	$6,242.01	5,551	80
Chlorine (Cl_2)	3.17	4,928	$1,281.28	4,055	26
Fluoride (F_2)	0.68	1,051	$3,151.53	6,968	206

Total Cost all Chemicals	$10,674.82
Chemical Cost per Mil. Gallon Treated	$57.19
Chemical Cost per Mil. Gallon Delivered	$58.46

PLANT UTILITIES SUMMARY

Electric:	
Total KWH	5,440
Total Power Cost	$426.06
Power Cost per Million Gallon Treated	$116.66
Power Cost per Million Gallon Delivered	$130.37
Gallons Pumped per KWH	33565
Natural Gas:	
Metered Cubic Feet	0
Natural Gas Cost	-
Emergency Power Diesel Fuel Inv., Gals.	

REMARKS:

***includes measure of melted snow

visit the City of Saint Joseph's Home page at www.sjcity.com

e-mail comments to either: operator@sjcity.com or galimenti@sjcity.com

WEATHER CONDITIONS AT THE PLANT		Air Temp. 'F		
SJWW Weather Computer		Avg.	72.1	
Rain Guage, Inches	1.88	Max.	84.3	
days it rained***	9	Min.	66.2	
Wind Speed, Avg	4.4	Lake Temp.'F		
Wind Speed, Max	72	Avg.	69.1	
Prevailing Wind Dir.	North	Max	75.1	
Lake Level (USACE)	579.1	Min	53.5	

Monthly Maintenance Notes

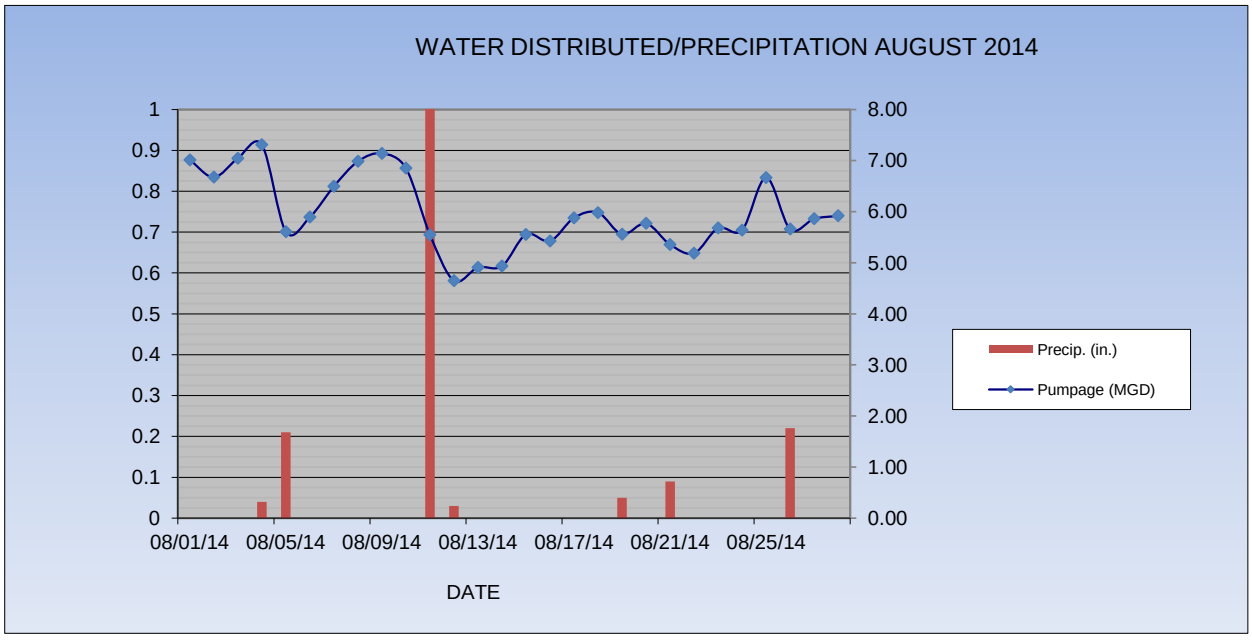
AUGUST 2014

Normal PM Maint. done Monthly	Check all High Service and Low Service Pumps, BPS pumps, Service BPS Chlorinators, Change out air filters on VFD Drives and Air Handlers. Mow and Grounds Maintenance at Plant, Booster Stations and Towers
08/01/14	Cleaned out reclaim level indicator holder, used City Vac Truck to remove excess sludge build up around holder pipe and pumps.
08/05/14	Peerless Midwest - Pulled High Service Pump # 3 Motor for Rebuild
08/05/14	Peerless Midwest - Pulled Reclaim Pump # 2 for Rebuild
08/11/14	Changed Oil in Vacuum Primer Pumps
8/12 to 8/13/14	Repaired Packing Glands on Hilltop BPS Pumps #1 & # 2
08/18/18	Removed broken window A/C unit in old lab and installed A/C from maintenance office
08/25/14	Brookside Nursery - Hydro seeded East Hill by 1931 section of plant
08/26/14	Corpro - Annual Inspection of Cathotic Protection System for the (3) Plant Clarifiers and Authority Towers
08/29/14	Peerless Midwest - Installed Rebuilt Reclaim Pump # 2

ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL
AUGUST 2014

				Day to Day Comparison 2014/2013	
DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	RAINFALL (in)	2014	2013
08/01/14	7,013,772	*7.01*	0	7,013,772	6,596,242
08/02/14	6,674,509	*6.67*	0	6,674,509	6,188,137
08/03/14	7,046,286	*7.05*	0	7,046,286	5,519,737
08/04/14	7,310,516	*7.31*	0.04	7,310,516	6,340,314
08/05/14	5,608,318	*5.61*	0.21	5,608,318	6,142,442
08/06/14	5,892,861	*5.89*	0	5,892,861	5,610,812
08/07/14	6,495,866	*6.50*	0	6,495,866	5,065,015
08/08/14	6,985,141	*6.99*	0	6,985,141	6,350,569
08/09/14	7,142,649	*7.14*	0	7,142,649	6,450,851
08/10/14	6,851,803	*6.85*	0	6,851,803	7,095,933
08/11/14	5,550,005	*5.55*	1.19	5,550,005	6,642,052
08/12/14	4,649,473	*4.65*	0.03	4,649,473	6,362,485
08/13/14	4,908,089	*4.91*	0	4,908,089	4,940,058
08/14/14	4,934,446	*4.93*	0	4,934,446	5,539,555
08/15/14	5,555,318	*5.56*	0	5,555,318	5,865,344
08/16/14	5,423,708	*5.42*	0	5,423,708	7,152,048
08/17/14	5,880,216	*5.88*	0	5,880,216	6,991,905
08/18/14	5,981,934	*5.98*	0	5,981,934	7,155,279
08/19/14	5,556,304	*5.56*	0.05	5,556,304	7,772,557
08/20/14	5,771,403	*5.77*	0	5,771,403	8,005,779
08/21/14	5,356,456	*5.36*	0.09	5,356,456	8,261,486
08/22/14	5,187,019	*5.19*	0	5,187,019	6,232,848
08/23/14	5,680,390	*5.68*	0	5,680,390	5,527,970
08/24/14	5,638,998	*5.64*	0	5,638,998	6,055,332
08/25/14	6,666,639	*6.67*	0	6,666,639	6,399,031
08/26/14	5,658,877	*5.66*	0.22	5,658,877	7,858,083
08/27/14	5,860,673	*5.86*	0	5,860,673	7,040,553
08/28/14	5,918,690	*5.92*	0	5,918,690	7,228,199
08/29/14	5,270,089	*5.27*	0.03	5,270,089	6,931,986
08/30/14	5,033,499	*5.03*	0.02	5,033,499	7,218,898
08/31/14	5,087,298	*5.09*	0	5,087,298	6,077,457
TOTAL	182,591,246	182.59	1.88	182,591,246	202,618,956

Average Day	**5,890,040**
Maximum Day	**7,310,516**
Minimum Day	**4,649,473**



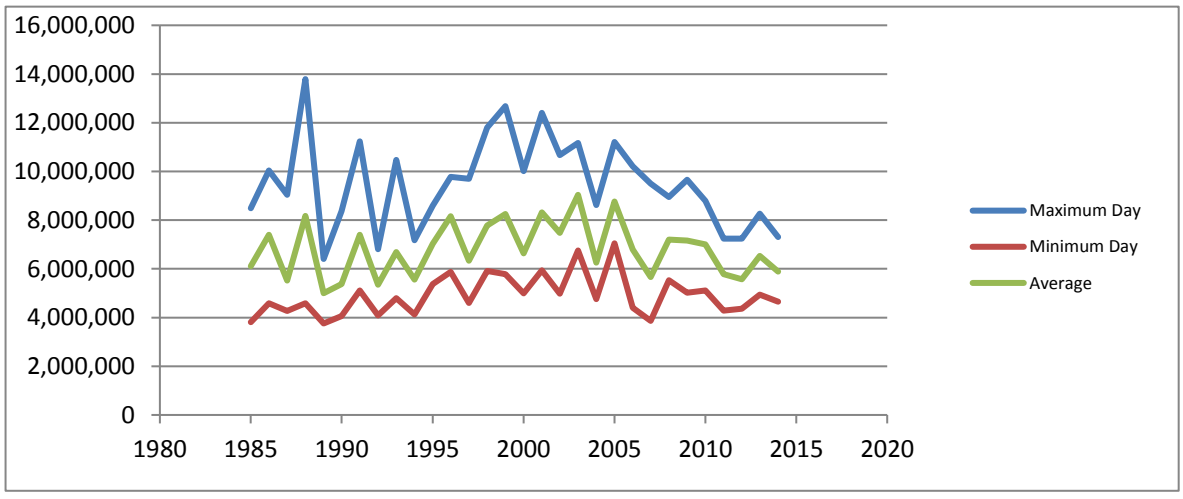
ST. JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

AUGUST 2014

Year	Average	Maximum Day	Minimum Day	Monthly Total
1985	6,103,739	8,491,400	3,814,200	189,215,900
1986	7,393,723	10,037,900	4,588,500	229,205,400
1987	5,518,048	9,041,700	4,264,300	171,059,500
1988	8,166,742	13,790,300	4,579,700	253,169,000
1989	4,998,858	6,406,100	3,756,600	154,964,600
1990	5,370,532	8,375,600	4,056,300	166,486,500
1991	7,392,468	11,239,000	5,109,200	229,166,500
1992	5,346,310	6,811,600	4,083,000	165,735,600
1993	6,691,755	10,468,500	4,790,400	207,444,400
1994	5,561,642	7,170,500	4,130,300	172,410,900
1995	7,034,273	8,593,600	5,372,900	218,062,470
1996	8,158,177	9,772,200	5,867,700	252,903,500
1997	6,330,674	9,696,100	4,605,450	196,250,900
1998	7,773,318	11,795,100	5,917,750	240,972,850
1999	8,255,698	12,680,200	5,783,800	255,926,650
2000	6,629,348	10,009,700	4,989,500	205,509,800
2001	8,322,605	12,404,900	5,933,100	258,000,750
2002	7,478,446	10,672,950	4,983,000	231,831,820
2003	9,037,933	11,170,890	6,752,480	280,175,910
2004	6,250,413	8,623,040	4,755,000	193,762,800
2005	8,764,049	11,214,800	7,047,450	271,685,510
2006	6,798,473	10,203,500	4,397,500	210,752,660
2007	5,666,680	9,494,940	3,866,010	175,667,080
2008	7,203,586	8,951,090	5,526,180	223,311,180
2009	7,166,000	9,659,870	5,023,750	222,153,750
2010	7,009,806	8,789,707	5,116,885	217,304,014
2011	5,782,834	7,245,993	4,280,792	179,267,863
2012	5,566,518	7,236,370	4,361,455	172,562,086
2013	6,536,095	8,261,486	4,940,058	202,618,956
2014	5,890,040	7,310,516	4,649,473	182,591,246

Monthly Rank-August 1985-2014

Ranking	Year	Monthly Total
1	2003	280,175,910
2	2005	271,685,510
3	2001	258,000,750
4	1999	255,926,650
5	1988	253,169,000
6	1996	252,903,500
7	1998	240,972,850
8	2002	231,831,820
9	1986	229,205,400
10	1991	229,166,500
11	2008	223,311,180
12	2009	222,153,750
13	1995	218,062,470
14	2010	217,304,014
15	2006	210,752,660
16	1993	207,444,400
17	2000	205,509,800
18	2013	202,618,956
19	1997	196,250,900
20	2004	193,762,800
21	1985	189,215,900
22	2014	182,591,246
23	2011	179,267,863
24	2007	175,667,080
25	2012	172,562,086
26	1994	172,410,900
27	1987	171,059,500
28	1990	166,486,500
29	1992	165,735,600
30	1989	154,964,600



DISTRIBUTION REPORT ***For the Month of August 2014***

Activity	Number	Description
Water Main Breaks	3	
MISS DIGS	412	
Delinquent Shut Off	15	City of St. Joseph, Royalton Township
Delinquent Shut Off (Broken Payment Plans)	3	
Hydrants (Repaired/Replaced)	14	Frozen caps, leaking, will not open, etc.
Valves	1	Replaced 6" at 2885 Veronica (City). Broken Valve
Taps (1")	8	393 E. John Beers Road (RCT) New house
		1473 Kristen Path (SJCT) New house
		1431 Stone Creek Ct. (LCT) New house
		6716 Stevensville/Baroda Rd (LC Well bad
		2143 Winters Way (RCT) Well bad
		5038 Dickenson Court RCT New house
		4048 Silver Oaks Drive (RCT) New house
Service Work		5000 Pheasant Way (LCT) New house
Water Service Repairs	1	2" (Hit by soil boring company, improp marked by PS)
		2627 Niles Ave (City)
Repair of Curb box/Shut-Off Valves	1	819 Wisconsin (Repaired curb stop). Broken
Water Quality Complaint(s)	0	
Hydrant Flushing to maintain water quality	0	
Staff Education/Training	0	
Overtime-Total	55	(Including Sanitary and Storm)
Turn Off	7	(Note: This number does not include delinquent Shut off)
Turn On	10	
Finals	129	
Meter Repair		
Meter Repair/Replacement	41	Verify Read
Per detail		New Installation 4
Meter leaking		New Installation-Benton Harbor
Stopped Meter		Replaced/various reasons
Faulty Register		Rockwell Replacement
Frozen Meter		Mxu Replaced
Move Meter Inside		Sprinkler meter removed/line capped
Hard to read		Removals 5
Replace/Adding Sprinkler Meter		Curb box location
Damage to Trt		Broken Remote
New Plumbing		Noisy Meter
New siding		Upgrade 5/8" to 3/4"
Meter sent out for testing		Meter Change/Benton Harbor

CITY OF ST. JOSEPH WATER MAIN BREAK REPORT

For the Month/Year of: August 2014

#	Date	Location	Main Size	Gallons Lost	Break Type	Valves Turned	City Twp	Labor	Remarks
1	8/27/2014	Niles Ave (Brunn & Hickory Creek)	16	42,000	Hole	5	SJCT	35	Baseball size hole, B&Z (3"), clay soil
2	8/28/2014	Niles Ave (Brunn & Hickory Creek)	16	15,000	Hole	5	SJCT	32	Small hole, B&Z (1"), clay soil, corrosion evident
3	8/28/2014	Niles Ave (Brunn & Hickory Creek)	16	20,000		5	SJCT		Softball size hole (4"), clay soil, corrosion evident
4									
5									
6									
		Total Gallons Lost		77,000					

WSSN 3726

August 2014

CLEVELAND BOOSTER STATION									HILLTOP BOOSTER STATION							BOTH
DATE	MGD TREATED	FEED METER GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl_2 RES PRE mg/l	Cl_2 RES POST mg/l	Cl_2 RES MON mg/l		MGD TREATED	FEED METER GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl_2 RES PRE mg/l	Cl_2 RES POST mg/l	Cl_2 RES MON mg/l	MGD TREATED BOTH
1-Aug	2.665	54	7.66	0.34	1.51	1.78	1.82		1.774	29	4.11	0.28	1.48	1.75	1.78	4.438
2-Aug	2.860	86	12.19	0.51					2.062	20	2.84	0.16				4.922
3-Aug	2.860	86	12.19	0.51					2.062	20	2.84	0.16				4.922
4-Aug	2.860	86	12.19	0.51	1.38	1.35	1.40		2.062	20	2.84	0.16	1.39	1.54	1.57	4.922
5-Aug	2.632	86	12.19	0.56	1.40	1.63	1.60		1.969	45	6.38	0.39	1.43	1.71	1.76	4.601
6-Aug	1.181	44	6.24	0.63	1.55	1.84	1.94		2.611	45	6.38	0.29	2.17	1.85	1.87	3.792
7-Aug	2.334	87	12.33	0.63	1.41	1.68	1.73		1.261	16	2.27	0.22	1.39	1.56	1.61	3.595
8-Aug	2.566	104	14.75	0.69	1.33	1.64	1.70		1.983	44	6.24	0.38	1.38	1.65	1.71	4.550
9-Aug	2.716	117	16.59	0.73					2.036	19	2.69	0.16				4.752
10-Aug	2.716	117	16.59	0.73					2.036	19	2.69	0.16				4.752
11-Aug	2.716	117	16.59	0.73	1.44	1.60	1.75		2.036	19	2.69	0.16	1.39	1.64	1.75	4.752
12-Aug	1.395	54	7.66	0.66	1.41	1.68	1.78		1.770	39	5.53	0.37	1.38	1.71	1.84	3.166
13-Aug	1.974	85	12.05	0.73	1.71	1.64	1.59		1.696	24	3.40	0.24	1.36	1.68	1.77	3.670
14-Aug	1.974	79	11.20	0.68	1.39	1.62	1.71		1.461	30	4.25	0.35	1.43	1.68	1.76	3.435
15-Aug	1.372	42	5.95	0.52	1.91	1.68	1.74		0.764	19	2.69	0.42	2.19	1.70	1.78	2.136
16-Aug	3.014	89	12.62	0.50					0.833	11	1.56	0.22				3.847
17-Aug	3.014	89	12.62	0.50					0.833	11	1.56	0.22				3.847
18-Aug	3.014	89	12.62	0.50	1.39	1.73	1.92		0.833	11	1.56	0.22	1.39	1.75	1.94	3.847
19-Aug	2.073	63	8.93	0.52	1.81	1.63	1.60		1.313	30	4.25	0.39	2.11	1.79	1.84	3.386
20-Aug	2.835	117	16.59	0.70	1.37	1.60	1.69		1.111	17	2.41	0.26	1.37	1.65	1.73	3.947
21-Aug	2.635	114	16.16	0.74	1.75	1.64	1.67		0.341	10	1.42	0.50	2.03	1.58	1.65	2.976
22-Aug	1.880	72	10.21	0.65	1.37	1.66	1.72		1.395	29	4.11	0.35	1.37	1.54	1.71	3.275
23-Aug	2.429	105	14.89	0.73					1.415	24	3.40	0.29				3.844
24-Aug	2.429	105	14.89	0.73					1.415	24	3.40	0.29				3.844
25-Aug	2.429	105	14.89	0.73	1.33	1.65	1.71		1.415	24	3.40	0.29	1.37	1.71	1.79	3.844
26-Aug	2.580	116	16.45	0.76	1.34	1.62	1.69		1.567	36	5.10	0.39	1.33	1.59	1.71	4.146
27-Aug	2.328	100	14.18	0.73	1.33	1.63	1.74		1.030	25	3.54	0.41	1.68	1.55	1.74	3.358
28-Aug	3.082	131	18.57	0.72	1.38	1.57	1.73		0.475	15	2.13	0.54	2.19	1.55	1.61	3.557
29-Aug	3.879	176	24.95	0.77	1.41	1.69	1.79		0.000	0	0.00	0.00	1.24	1.27	1.29	3.879
30-Aug	3.142	142	20.13	0.77					0.111	3	0.43	0.46				3.252
31-Aug	3.142	142	20.13	0.77					0.111	3	0.43	0.46				3.252
TOTAL	78.724	2,999	425.20						41.780	681	96.55					120.505
AVE DAY	2.539		13.72	0.65	1.4724	1.6457	1.7152		1.3477		3.11	0.30	1.57	1.64	1.72	3.887
MAX	3.879		24.95	0.77	1.91	1.84	1.94		2.6110		6.38	0.54	2.19	1.85	1.94	4.922
MIN	1.181		5.95	0.34	1.33	1.35	1.4		0.0000		0.00	0.00	1.24	1.27	1.29	2.136

MONTHLY TOTALS:	Cleveland	Total MG	78.724	SJCT EAST		Hilltop	Total MG	41.780	Cleveland Pump Station:	78.724
		Treated	78.724	Total Month	6.698		Treated	41.780	Hilltop Pump Station:	41.78
Total Authority Flow:	127.203	Untreated	0.000	Average Day	0.216		Untreated	0.000	TOTAL AUTHORITY (Trted.)	120.504

MONTHLY CLIMATOLOGICAL SUMMARY **AUGUST** **2014**

NAME: sjwwweather **St. Joseph Water Plant - 1701 Lions Park Drive - St. Joseph, MI**

DAY	MEAN TEMP	NORM MEAN TEMP	HIGH TEMP	TIME	NORM HIGH TEMP	REC HIGH TEMP	YEAR	LOW TEMP	TIME	NORM LOW TEMP	REC LOW TEMP	YEAR	HEAT DEG DAYS	COOL DEG DAYS	RAIN	AVG WIND SPEED	HIGH	TIME	DOM DIR
1	71.8	71	**75.9**	5:00p	82	98	1988	**68.2**	7:00a	60	41	1990	0	7	**0**	**3.5**	**12**	5:00p	WSW
2	70.4	71	**72.4**	4:00p	82	99	1988	**67.3**	6:00a	60	38	1948	0	4.9	**0**	**2.6**	**10**	5:00p	N
3	72.4	71	**76.9**	4:00p	82	98	1991	**66.7**	7:00a	60	45	1990	0	6.8	**0**	**2.8**	**13**	11:00a	SW
4	73.8	71	**76.6**	6:00p	82	97	1956	**71**	11:00p	60	45	1951	0	8.8	**0.04**	**4.6**	**32**	10:00p	WSW
5	71.9	71	**74.6**	4:00p	82	97	1988	**70**	6:00a	59	42	1957	0	7.3	**0.21**	**4.3**	**32**	1:00a	N
6	71.4	71	**73.3**	5:00p	82	91	1965	**70**	6:00a	59	44	1948	0	6.7	**0**	**3.9**	**18**	5:00p	NE
7	71.2	71	**74.8**	6:00p	82	91	1984	**67.5**	6:00a	59	39	1989	0	6.2	**0**	**3.4**	**14**	4:00p	NNE
8	73.3	71	**80.4**	5:00p	82	96	1988	**66.8**	7:00a	59	40	1990	0	8.6	**0**	**2.2**	**16**	6:00p	E
9	74.2	71	**79.9**	5:00p	82	97	1988	**68.5**	7:00a	59	41	1964	0	9.2	**0**	**2**	**14**	9:00a	ENE
10	72.7	71	**75.9**	4:00p	81	92	1984	**68.5**	7:00a	59	46	1964	0	7.2	**0**	**3**	**15**	1:00p	NNE
11	71.4	71	**75.3**	1:00a	81	89	1995	**68.7**	12:00m	59	45	1982	0	7	**1.19**	**2.4**	**18**	8:00a	NNE
12	65.4	70	**70.4**	1:00a	81	95	1988	**62.6**	2:00p	59	43	1992	0	1.5	**0.03**	**14.7**	**36**	4:00p	N
13	66	70	**69.7**	2:00p	81	95	1988	**61.3**	5:00a	58	45	1986	0	0.5	**0**	**4.3**	**14**	5:00p	N
14	63.4	70	**66.2**	1:00a	81	93	1995	**60.6**	7:00a	58	39	1990	1.6	0	**0**	**7.6**	**29**	1:00p	N
15	64.7	70	**70.6**	7:00p	81	93	1995	**57.5**	7:00a	58	38	1964	1	0	**0**	**5**	**18**	12:00p	SE
16	69.5	70	**75**	5:00p	81	97	1988	**63**	5:00a	58	43	1979	0	4	**0**	**6.9**	**18**	12:00m	SW
17	70.3	70	**73.2**	1:00a	81	100	1988	**67.9**	12:00m	58	40	1992	0	5.5	**0**	**6.9**	**21**	6:00p	NNE
18	70.9	70	**73.3**	8:00p	81	97	1988	**68.1**	1:00a	58	42	1958	0	5.7	**0**	**2.4**	**11**	2:00p	WSW
19	74.1	69	**78.5**	6:00p	80	95	1983	**70.4**	8:00a	58	44	1992	0	9.5	**0.05**	**8.5**	**72**	2:00p	SSW
20	74.4	69	**78.6**	5:00p	80	95	1983	**71.6**	6:00a	57	39	1992	0	10.1	**0**	**4.1**	**16**	12:00m	WSW
21	74.9	69	**77.7**	1:00p	80	98	1983	**73**	7:00a	57	43	1950	0	10.3	**0.09**	**4.6**	**18**	3:00a	SW
22	76	69	**78.6**	6:00p	80	91	1948	**73.1**	4:00a	57	40	1985	0	10.8	**0**	**2.3**	**13**	4:00a	WSW
23	78	69	**82.2**	2:00p	80	95	1948	**75.4**	6:00a	57	46	1949	0	13.8	**0**	**1.5**	**12**	8:00p	E
24	78.8	69	**84.3**	5:00p	80	95	1948	**73.5**	8:00a	57	41	1984	0	13.9	**0**	**2**	**14**	5:00a	ESE
25	77.9	69	**82.1**	1:00p	80	93	1948	**74.7**	12:00m	57	40	1956	0	13.4	**0**	**3.3**	**45**	2:00p	SSE
26	73.6	68	**76.6**	12:00p	79	96	1948	**70.9**	12:00m	56	45	1963	0	8.8	**0.22**	**4.7**	**55**	1:00p	SSE
27	70.4	68	**72.1**	3:00p	79	94	1953	**68**	12:00m	56	47	1988	0	5	**0**	**5.6**	**21**	4:00p	N
28	69.2	68	**74.4**	7:00p	79	94	1953	**63.5**	8:00a	56	37	1982	0	4	**0**	**3.7**	**17**	4:00p	ENE
29	73.5	68	**79.8**	5:00p	79	94	1953	**69.2**	8:00a	56	38	1982	0	9.5	**0.03**	**3**	**14**	5:00p	SSE
30	75.2	68	**78.6**	2:00p	79	93	1953	**73.5**	1:00a	56	40	1986	0	11	**0.02**	**7.6**	**24**	12:00p	SW
31	74.3	67	**77.3**	5:00p	78	95	1953	**70.5**	6:00a	55	46	1989	0	8.9	**0**	**3.6**	**13**	2:00a	SSW
AVE	**72.1**	**70**											**0.1**	**7.3**	**0.1**	**4.4**	**21.8**		N
MAX	**78.8**	**71**	**84.3**			**100**		**75.4**		**60**	**47**		**1.6**	**13.9**	**1.19**	**14.7**	**72.0**		
MIN	**63.4**	**67**	**66.2**					**57.5**		**55**	**37**		**0**	**0**	**0**	**1.5**	**10**		
TOTAL															**1.88**				

Max Rain: 1.19 ON 08/11/14
Days of Rain: 9 (>.01 in) 3 (>.1 in) 1 (>1 in)