

CITY OF ST. JOSEPH WATER FILTRATION PLANT
OPERATIONAL REPORT
APRIL 2016



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-APRIL 2016

Water demand in April was up by 9,225,233 gallons or 10.7% from last year. This year 95,729,302 gallons were delivered which compares to 86,504,069 gallons delivered April of 2015. The April 2016 pumpage ranked 26th in the thirty year tabulation dating back to 1987.

GENERAL ACTIVITIES

Spring Intake Inspections/Repair

The repair of the south intake riser located 1000 ft west of the pump station and in 22 ft. of water is now complete. Underwater construction located the riser and discovered 12” of sand on the temporary steel plate which had been laid on top of the open spool in the 24” diameter intake pipe. The plate and grout bags were intact. Over the course of two days and three dives the sand was removed by jetting, the plate removed and a permanent circular plate cut to dimension and welded in place. The riser was left on the lake bottom alongside the pipe and will not be reused. It will serve as a locational marker. There is no need for this riser since the south intake serves as a backup to the North intake which is also equipped with an emergency riser. Divers also inspected the south intake structures and reported no change from last fall when a vertical clearance of 5’-6’ was found from the lake bottom to the top of the four structures.

An inspection of the north intake structures and emergency riser is planned for late May. Given past experience it is not likely that divers will be able to enter the 48” pipe inlets in the ‘Y’ due to sand accumulation. A pipe penetration dive will be done from the emergency riser at 1500’ inward from the intake structures. The diver will swim out from the riser toward the intake to determine the level of sand accumulation. Last year 3-4” of sand was found at the riser.

Phase 1 SCIP

The RFP for the filtration rate capacity study was revised based upon WSJOB recommendations and advertised publicly on March 10th. The bid opening was on April 1st. The bids were publicly opened by the City of St. Joseph Deputy Clerk. Five bids were received and are transcribed from the bid tab as follows:

Fishbeck, Thompson, Carr & Huber	\$45,800
Jones & Henry	\$25,930
CH2M Hill	\$35,670
Donahue & Associates	\$34,500
SEH	\$29,850

The filtration rate capacity study was identified in the Strategic Capital Improvement Plan (SCIP). This study will address hydraulic limitations in the filter piping and assess the feasibility of rerating filters 5-12 to handle the increased flow upon retirement of filters 1-4. A hydraulic study will also be done on the filter piping to determine whether it can handle the flow. A new DWRP project plan will have to be done for the SCIP. The last project plan was completed in 2007 and included the intake, E&P

improvements and clarifier upgrades. The DWRP project plan will include the City of St. Joseph distribution system and be submitted in late 2016 upon completion of the filter study. The bid review committee recommended CH2M Hill. The WSJOB and St. Joseph City Commission approved the recommendation. Filter trial runs will begin in May. The study will be complete by November 2016.

MDEQ Sanitary Survey City of St. Joseph WSSN 6310

MDEQ District Engineer Gary Wozniak completed his fourth site visit as part of the 2016 Sanitary Survey of the City of St. Joseph community water supply. The Southwest Michigan Sanitary Sewer & Water Authority was evaluated in 2015. The City of St. Joseph community water supply includes the water plant and city owned water distribution system including the water tower located on Cleveland road north of Hilltop. To date filter banks 1-4 and 9-12 have been test washed, a breach in the raw water intake screens has been identified and corrected and file forms have been updated. Mr. Wozniak will return on May 12th to evaluate the water plant laboratory and distribution system. The sanitary survey is a triennially inspection required of all community water supplies under Michigan's Public Act 399 as Amended (Safe Drinking Water Act) which is authorized by the federal SDWA enacted in 1974.

Authority Sanitary Inspection

On May 12th Mr. Wozniak conducted a brief sanitary inspection of the Authority system. This is necessary since chlorine is fed at the booster stations. The Cleveland booster station was inspected.

Pipe Insulation Project

The pipe insulation project is now complete. The work completed included the insulation of pipe located in the middle filter bays and clarifier rooms. Prism Science & Technology was retained to perform a pre-renovation assessment for asbestos-containing materials (ACM). The assessment found that the Brown Pipe Wrap Elbow (4" and 6" O.D.) located in the second floor maintenance shop and the Silver Pipe Wrap "T", Elbow, and Unions located in the steam boiler tunnel on the first floor of the building contained Friable ACM. These areas are not identified for replacement and are intact and considered safe. Of note, no asbestos was found in the large high service suction pipe wrap in the located in the 1931 section of the water plant. This area of the plant is scheduled for demolition in Phase III of the SCIP.

Lead & Copper Rule

Water Plant staff conducted a pipe material survey of the homes in our sample pool to verify that the plumbing in the homes is in compliance with the Lead & Copper Rule. Site visits were conducted and information was gathered regarding pipe material, water filters and softeners. (Samples taken downstream of filters and softeners are not permitted). Compliance sampling is done every three years and is due again in 2017.

The City of St. Joseph last sampled for Lead and Copper during the summer of 2014. We were notified by the MDEQ of our compliance with the Safe Drinking Water Act. Our results of 2.0 parts per billion (ppb) for Lead is considerably lower than the action level of 15 ppb for compliance with the SDWA.

Travel & Training

Staff attended the Spring Regional meeting of the Michigan Section AWWA in Kalamazoo and Mt. Pleasant. Registrations were submitted for staff attendance at the Lead & Copper Workshop and Laboratory Practices Seminar in May as well as the AWWA Conference and Exposition to be held in June at McCormick Place in Chicago.

Fairplain Interconnect Project

The Fairplain interconnect project which was postponed in October is underway and should be complete by May 2016.

WATER PLANT FILTER CAPACITY STUDY

City of St. Joseph, MI

2015 Strategic Capital Improvement Plan

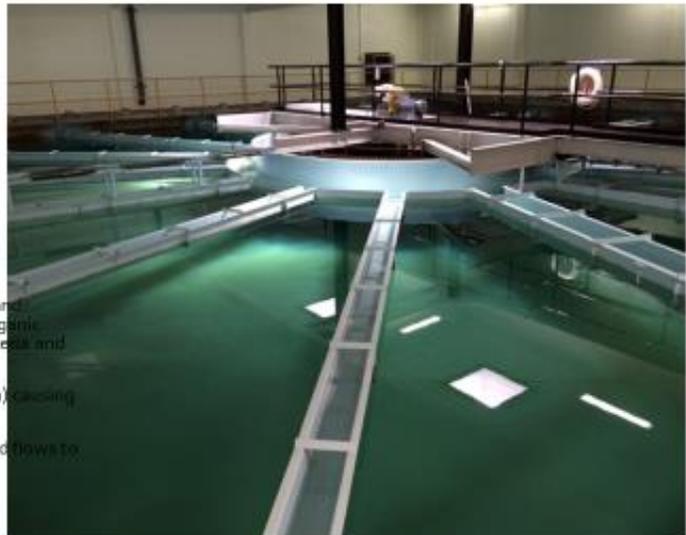
- Alum and Fluoride Feed
- Chlorine Feed
- High Service Pump Station
- Reservoir Improvements
- Electrical Motor Control Panel P7
- Filter Improvements
- Clarifier Replacement
- UV Disinfection

SCIP Recommendation: Retire Filters 1-4 and Rerate Filters 5-12 Filtration Rate (Capacity) Study.....

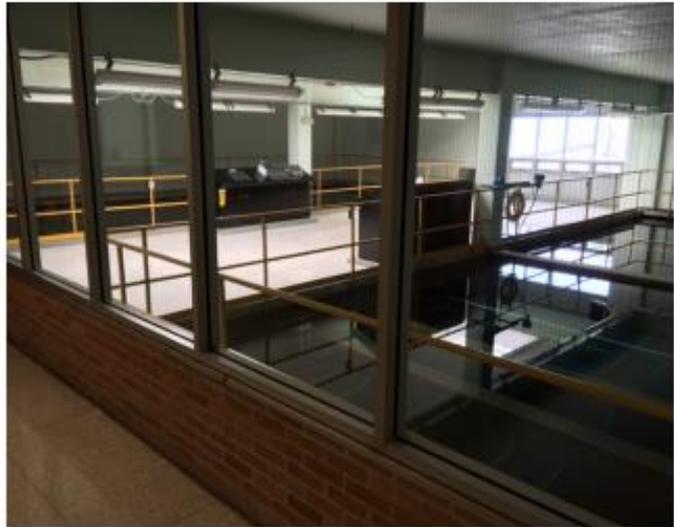
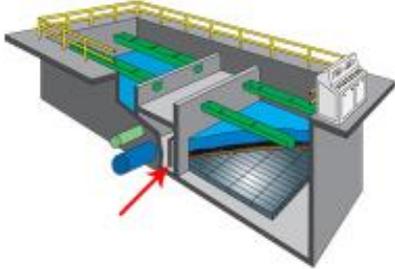
- Increase Filtration Rates from 2-3 gal/sq ft/min to 3.33-4 gal/sq./min to achieve 16-18 MGD.
- Hydraulic Improvements (Piping Improvements Needed?).
- Complete Filter Capacity Study by November 2016 to meet DWRF Project Plan deadline of 5/1/2017 for financing of SCIP Phase I in 2018.

Clarifier

- A Coagulant (Alum) is added to remove suspended and dissolved organic (of plant or animal origin) and inorganic (mineral) material, and biological forms such as bacteria and plankton.
- Particles chemically stabilized (charge neutralization) causing them to clump together and settle to the bottom.
- Effluent water is collected in the weirs ("spokes") and flows to the Filters.



Rapid Sand Filter



Selection Process

Criteria and Methodology

- Qualifications of Firm
- Qualifications of Individuals
- Hours assigned to senior engineers (174 hours or 85% of total)
- Surface Water Treatment Experience
- Filter Rate Study Experience and Relevance to SJWTP
- References (Oak Creek, WI, Grand Haven, MI, Ann Arbor, MI)
- MDEQ
- Cost and Cost Effectiveness
- Performance Testing of All SJWTP Filters

Monthly Maintenance Notes

APRIL 2016

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 work at Plant, Booster Stations and Water Towers
4/5 to 4/6/16	Double O - Repaired window section in upper foyer that broke loose during the high winds on 4/2/16. Re-anchored frame and installed support brackets on all windows installed in 2013.
04/06/16	Installed new level transmitter in City Tower. Original transmitter failed on 4/5/16.
04/07/16	Installed New control board in distilled water unit
04/08/16	Installed new Leeson Wash Down style motor on Clarifier # 3 Scraper Drive
04/12/16	Corpro - Annual inspection of cathodic protection system in Clarifiers (Clarifiers # 1 & # 2 = Wet Inspection, Clarifier # 3 = Dry Inspection)
04/14/16	Installed New Leeson Wash Down style motor on Clarifier # 2 Scraper Drive
4/14 to 4/18/16	D A Dodd - Installed New Piping for Applied Chlorine to Clarifiers 2 & 3 and Installed New Piping for 30" Raw Water Chlorine Line.
04/15/16	Installed New Pipe Hangers for boiler lines in Clarifier # 1 room
4/14 to 4/19/16	Johnson Insulation - Installed new insulation on boiler lines in Clarifier # 1 room and new chlorine supply lines to 30" Raw water and Applied to Clarifiers 2 & 3.
04/19/16	Hach - Quarterly service and calibration for TOC machine and all filter turbidimeters.
04/26/16	Kone - Load Test for Maintenance Elevator per State Inspection
04/26/16	Installed new oilers for rollers and gear drive on Clarifier # 3
04/27/16	Changed Oil and Oil & Oil Filter on "Z" Mower
04/27/16	Installed new air hose reel in garage
04/28/16	Installed New CL17 Chlorine Analyzer at Hilltop BPS
04/29/16	Filled Clarifier # 3 (Back in Service)

DISTRIBUTION REPORT

For the Month of April 2016

Activity		Number/Description	
Water Main Breaks		0	
MISS DIGS		338	
Delinquent Shut Off		19	(LCT)
Delinquent Shut Off (Broken Payment Plans)		2	
Hydrants (Repaired/Replaced)		1	(Cleveland & Clearwood-hit by a car), LCT
Valves		0	
Taps (1")		3	1975 Elm Terrace (SJCTE) New Construction
			505 Golden Bear Ct (SJ) New Construction
			1192 Forestbrook Dr. (LCT) New Construction
			5639 Golden Crest (LCT) Well changout
Cross Connection Control (Hydro Designs)			
Repair of Curb box/Shut-Off Valves		0	
Service Repair		2	1715 Niles Ave (City), Moved service from bored sanitary insertion
Service Replacements		2	2610 Willa (SJ) (Main to curb stop Ld serv Leak, copper cust side)
Water Quality Complaint(s)		0	
Hydrant Flushing to maintain water quality		0	
Hydrant Flushing (Stage 2 Rule)		55,930	
Service line complaints (customer side)			
Staff Education/Training		1	Confined Space Training
Overtime-Total		54	(Including Sanitary and Storm)
Turn Off		8	(Note: For delinquent Shut off see above)
Turn On		18	
Finals		118	
Meter Repair/Replacement			
		Audit Meter	
		Verify Read	2
Meter Repair		Move Mxu Box	
Per detail		New Installation	10
Meter leaking	8	New Installation-Benton Harbor	
Stopped Meter	8	Replaced/various reasons (e.g.downsize, defective)	4
Faulty Register		Rockwell Replacement	
Frozen Meter	1	Mxu Replaced	2
Move Meter Inside	1	Sprinkler meter removed/line capped	3
Hard to read	6	Removals/demo	
Replace/Adding Sprinkler Meter	1	Curb box location	
Damage to Trt	1	Broken Remote	
New Plumbing	1	Noisy Meter	
New siding		Upgrade 5/8" to 3/4" (upgrade to 1")	1
Meter sent out for testing		Meter Change/Benton Harbor	

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

**By: Greg Alimenti
St. Joseph Water Plant
700 Broad St.
Saint Joseph, MI. 49085-1276
(269) 983-1240**

APRIL 2016

DISTRIBUTION:	
Total Gallons	95,729,302
Average Day	3,190,977
Maximum Day	3,753,489
Minimum Day	2,664,076

TREATMENT:	
Total Low Service	98,376,977
Wash Water Gals.	1,073,913
Wash Water %	1.09%
Plant Use Gals.	1,589,722
Plant Use %	1.64%

FILTRATION:		
Ave. Filter Run	69.4	hours
Ave. Filter Rate	2.03	g/sqft/min
Filter Eff. Index	664.3	
Ave. Loss of Head	0.7	feet
Plant Sewer Usage		

LABORATORY REPORT		
Average of	Raw	Tap
Chlorides mg/L	15.6	16.6
Fluoride mg/L	0.16	0.75
Alkalinity mg/L	126	109
Hardness mg/L	156	152
pH	8.0	7.4
Calcium mg/L	43	43
Magnesium mg/L	12	11
Turbidity NTU	1.12	0.03
Temperature °F	48	
Total Coliform		0.0
Chlorine Residual		
		mg/L Free
Mixing Basin		1.00
Applied		1.71
Tap		1.46
Distribution		1.09

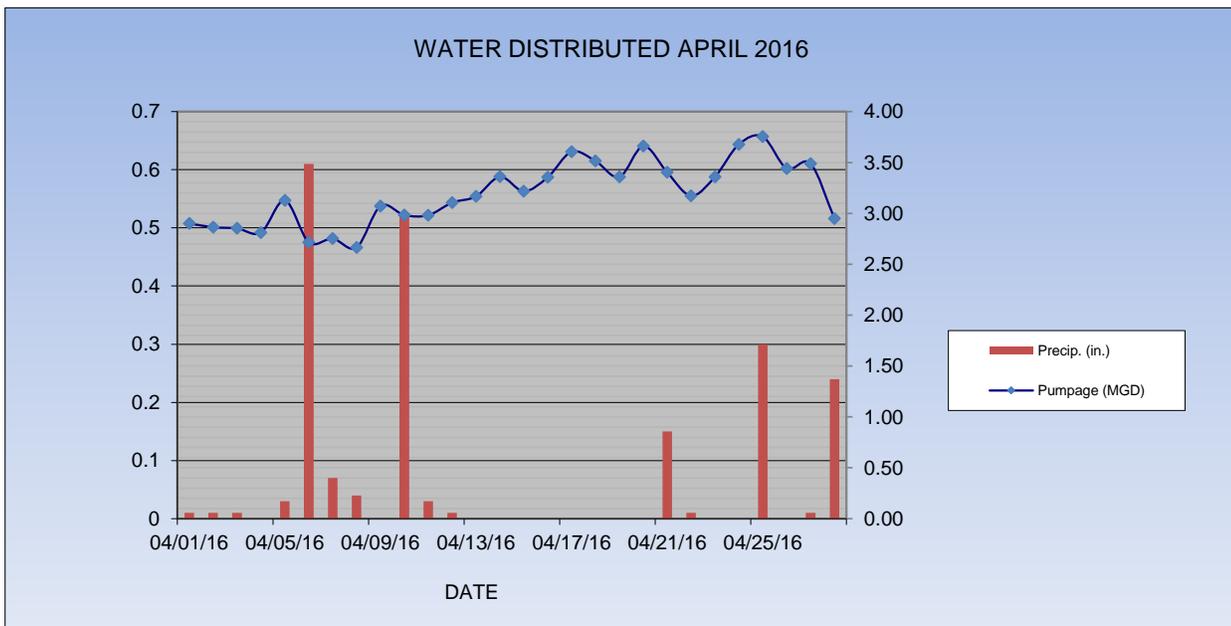
TREATMENT CHEMICAL SUMMARY:					
	Applied mg/L	Total Lbs.	Cost	Inventory lbs.	Days Supply
		CHEMICAL			
Alum (Al ⁺³)	2.09	1,698	\$5,590.41	133,626	2361
Chlorine (Cl ₂)	2.82	2,321	\$623.65	11,277	146
Fluoride (F ₂)	0.70	573	\$1,003.69	25,043	1311

		REMARKS:			
Total Cost all Chemicals	\$7,217.75				
Chemical Cost per Mil. Gallon Treated	\$73.37				
Chemical Cost per Mil. Gallon Delivered	\$75.40				
PLANT UTILITIES SUMMARY					
Electric:					
Total KWH	203,400	***includes measure of melted snow			
Total Power Cost	\$ 14,238.00	visit the City of Saint Joseph's Home page at www.sjcity.com			
Power Cost per Million Gallon Treated	\$ 144.73	e-mail comments to either: operator@sjcity.com or galiment@sjcity.com			
Power Cost per Million Gallon Delivered	\$ 162.45	WEATHER CONDITIONS AT THE PLANT		Air Temp. °F	
Gallons Pumped per KWH	425	SJWW Weather Computer		Avg.	48.11
		Rain Guage, Inches	2.47	Max.	77.9
		days it rained***	17	Min.	24.2
Natural Gas:		Wind Speed, Avg	8.3	Lake Temp. °F	
Metered Cubic Feet	4920	Wind Speed, Max	54	Avg.	48.2
Natural Gas Cost	\$2,648.09	Prevailing Wind Dir.	North	Max	52.6
Emergency Power Diesel Fuel Inv., Gals.	North (F) 2400	Lake Level (USACE)	580.09	Min	45.2
	South (F) 800				

**ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL
APRIL 2016**

DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	Rainfall (in)	Day to Day Comparison 2016/2015	
				2016	2015
04/01/16	2,900,757	2.90	0.01	2,900,757	2,875,820
04/02/16	2,864,053	2.86	0.01	2,864,053	2,899,687
04/03/16	2,852,075	2.85	0.01	2,852,075	2,949,405
04/04/16	2,811,639	2.81	0	2,811,639	3,074,921
04/05/16	3,127,723	3.13	0.03	3,127,723	2,992,712
04/06/16	2,716,051	2.72	0.61	2,716,051	2,980,078
04/07/16	2,751,935	2.75	0.07	2,751,935	2,960,675
04/08/16	2,664,076	2.66	0.04	2,664,076	3,422,810
04/09/16	3,071,770	3.07	0	3,071,770	2,560,707
04/10/16	2,982,756	2.98	0.52	2,982,756	2,850,802
04/11/16	2,981,531	2.98	0.03	2,981,531	3,246,628
04/12/16	3,105,694	3.11	0.01	3,105,694	2,660,346
04/13/16	3,166,368	3.17	0	3,166,368	2,991,609
04/14/16	3,359,975	3.36	0	3,359,975	2,882,980
04/15/16	3,216,692	3.22	0	3,216,692	3,020,088
04/16/16	3,354,666	3.35	0	3,354,666	2,806,075
04/17/16	3,605,456	3.61	0	3,605,456	3,004,189
04/18/16	3,514,014	3.51	0	3,514,014	3,055,591
04/19/16	3,357,126	3.36	0	3,357,126	2,897,060
04/20/16	3,660,402	3.66	0	3,660,402	2,732,432
04/21/16	3,402,816	3.40	0.15	3,402,816	2,852,811
04/22/16	3,172,828	3.17	0.01	3,172,828	3,331,139
04/23/16	3,359,077	3.36	0	3,359,077	2,868,980
04/24/16	3,677,964	3.68	0	3,677,964	3,066,739
04/25/16	3,753,489	3.75	0.3	3,753,489	2,773,639
04/26/16	3,440,940	3.44	0	3,440,940	2,988,077
04/27/16	3,488,626	3.49	0.01	3,488,626	3,296,507
04/28/16	2,949,296	2.95	0.24	2,949,296	3,094,438
04/29/16	3,561,345	3.56	0.01	3,561,345	3,171,991
04/30/16	2,858,164	2.86	0.41	2,858,164	3,195,132
TOTAL	95,729,302	95.73	2.47	95,729,302	89,504,069

Average Day	3,190,977
Maximum Day	3,753,489
Minimum Day	2,664,076

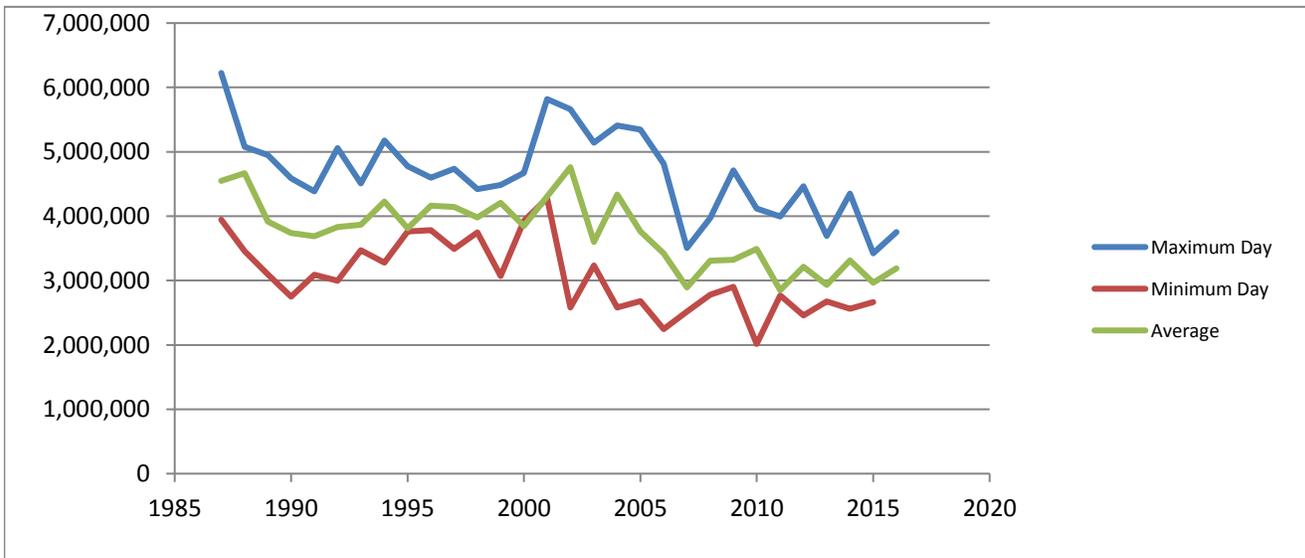


ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

APRIL 2016

Year	Average	Maximum Day	Minimum Day	Monthly Total
1987	4,546,330	6,224,600	3,270,800	136,389,900
1988	4,668,567	5,078,400	3,946,400	140,057,000
1989	3,916,507	4,946,600	3,457,900	117,495,200
1990	3,736,903	4,586,800	3,093,000	112,107,100
1991	3,688,830	4,384,400	2,751,300	110,664,900
1992	3,830,540	5,058,100	3,092,500	114,916,200
1993	3,867,257	4,510,000	2,995,700	116,017,700
1994	4,226,717	5,175,600	3,468,700	126,801,500
1995	3,813,150	4,775,300	3,278,300	114,394,500
1996	4,160,767	4,600,100	3,760,250	124,823,000
1997	4,143,047	4,737,000	3,782,950	124,291,400
1998	3,982,177	4,422,050	3,492,300	119,465,300
1999	4,208,870	4,483,600	3,749,750	126,266,100
2000	3,846,682	4,673,250	3,070,300	115,400,450
2001	4,308,365	5,820,850	3,927,950	129,250,950
2002	4,760,498	5,661,000	4,278,600	142,814,950
2003	3,598,427	5,143,250	2,580,250	107,952,820
2004	4,336,191	5,410,250	3,232,750	130,085,740
2005	3,761,613	5,342,000	2,579,750	112,848,390
2006	3,421,883	4,813,020	2,680,500	102,656,500
2007	2,894,947	3,508,000	2,244,000	86,848,410
2008	3,306,528	3,968,250	2,514,750	99,195,850
2009	3,321,686	4,712,250	2,777,150	99,650,580
2010	3,490,279	4,120,407	2,901,472	104,708,365
2011	2,849,967	3,996,000	2,015,000	85,499,000
2012	3,212,837	4,463,210	2,767,357	96,385,121
2013	2,934,656	3,695,486	2,458,231	88,039,671
2014	3,311,996	4,349,621	2,672,815	99,359,878
2015	2,969,177	3,422,810	2,560,707	86,504,069
2016	3,190,977	3,753,489	2,664,076	95,729,302

Rank	Year	Monthly Total
1	2002	142,814,950
2	1988	140,057,000
3	1987	136,389,900
4	2004	130,085,740
5	2001	129,250,950
6	1994	126,801,500
7	1999	126,266,100
8	1996	124,823,000
9	1997	124,291,400
10	1998	119,465,300
11	1989	117,495,200
12	1993	116,017,700
13	2000	115,400,450
14	1992	114,916,200
15	1995	114,394,500
16	2005	112,848,390
17	1990	112,107,100
18	1991	110,664,900
19	2003	107,952,820
20	2010	104,708,365
21	2006	102,656,500
22	2009	99,650,580
23	2014	99,359,878
24	2008	99,195,850
25	2012	96,385,121
26	2016	95,729,302
27	2013	88,039,671
28	2007	86,848,410
29	2015	86,504,069
30	2011	85,499,000



SOUTHWEST MICHIGAN REGIONAL SANITARY SEWER & WATER AUTHORITY
CLEVELAND BOOSTER STATION

HILLTOP BOOSTER STATION

DATE	FLOW MGD	FEED GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl ₂ PRE mg/l	Cl ₂ POST mg/l	Cl ₂ MON mg/l	FLOW MGD	FEED GAL	CHL LBS/DAY	CHLORINE APPLIED mg/l	Cl ₂ PRE mg/l	Cl ₂ POST mg/l	Cl ₂ MON mg/l	BOOSTER MGD
1-Apr	0.000	0	0.00	0.00	1.52	1.51	1.69	1.712	0	0.00	0.00	2.20	1.77	1.99	1.712
2-Apr	1.087	58	8.22	0.91				0.572	53	7.51	1.57				1.659
3-Apr	1.087	58	8.22	0.91				0.572	53	7.51	1.57				1.659
4-Apr	1.087	58	8.22	0.91	2.19	1.97	2.11	0.572	53	7.51	1.57	1.88	1.76	1.96	1.659
5-Apr	0.000	0	0.00	0.00	1.86	1.87	1.97	1.667	75	10.63	0.76	1.95	1.69	1.81	1.667
6-Apr	1.568	92	13.04	1.00	2.19	1.86	2.02	0.000	0	0.00	0.00	1.61	1.58	1.68	1.568
7-Apr	0.000	0	0.00	0.00	1.77	1.81	1.87	1.971	95	13.47	0.82	2.11	1.83	2.03	1.971
8-Apr	1.218	65	9.22	0.91	2.36	2.08	2.51	0.000	0	0.00	0.00	1.55	1.47	1.55	1.218
9-Apr	0.540	28	3.97	0.88				1.159	51	7.23	0.75				1.699
10-Apr	0.540	28	3.97	0.88				1.159	51	7.23	0.75				1.699
11-Apr	0.540	28	3.97	0.88	1.65	1.52	1.64	1.159	51	7.23	0.75	1.83	1.67	1.83	1.699
12-Apr	1.808	95	13.47	0.89	2.20	1.85	2.07	0.000	0	0.00	0.00	1.35	1.39	1.55	1.808
13-Apr	0.927	46	6.52	0.84				0.909	38	5.39	0.71				1.836
14-Apr	0.927	46	6.52	0.84	1.97	1.75	2.06	0.909	38	5.39	0.71	1.50	1.44	1.62	1.836
15-Apr	0.000	0	0.00	0.00	1.61	1.53	1.67	1.976	99	14.04	0.85	1.91	1.47	1.65	1.976
16-Apr	1.413	71	10.07	0.85				0.681	25	3.54	0.62				2.094
17-Apr	1.413	71	10.07	0.85				0.681	25	3.54	0.62				2.094
18-Apr	1.413	71	10.07	0.85	1.23	1.37	1.46	0.681	25	3.54	0.62	1.31	1.48	1.57	2.094
19-Apr	0.000	0	0.00	0.00	1.10	1.03	1.25	2.360	93	13.19	0.67	2.17	1.82	2.03	2.360
20-Apr	2.103	95	13.47	0.77	1.67	1.74	1.88	0.001	0	0.00	0.00	1.37	1.52	1.52	2.104
21-Apr	2.151	114	16.16	0.90	1.80	1.54	1.85	0.000	0	0.00	0.00	1.31	1.38	1.56	2.151
22-Apr	0.000	0	0.00	0.00	1.49	1.41	1.54	2.036	88	12.48	0.73	1.88	1.61	1.70	2.036
23-Apr	2.141	38	5.39	0.30				0.001	0	0.00	0.00				2.142
24-Apr	2.141	38	5.39	0.30				0.001	0	0.00	0.00				2.142
25-Apr	2.141	38	5.39	0.30	1.02	1.11	1.25	0.001	0	0.00	0.00	1.00	1.05		2.142
26-Apr	2.189	110	15.60	0.85	1.79	1.63	1.72	0.000	0	0.00	0.00	1.11	1.26		2.189
27-Apr	2.124	111	15.74	0.89	1.75	1.53	1.65	0.000	0	0.00	0.00	1.30	1.42		2.124
28-Apr	1.837	96	13.61	0.89	1.91	1.69	1.86	0.000	0	0.00	0.00	1.40	1.52		1.837
29-Apr	0.000	0	0.00	0.00	1.69	1.61	1.69	1.973	78	11.06	0.67	1.83	1.93	1.97	1.973
30-Apr	0.000	0	0.00	0.00				2.149	89	12.62	0.70				2.149
TOTAL	32.395	1,455	206.3					24.902	1,080	153.12					57.297
AVE DAY	1.080		6.9	0.59	1.7	1.6	1.8	0.8301		5.1	0.52	1.63	1.55	1.75	1.910
MAX	2.189		16.2	1.00	2.4	2.1	2.5	2.3602		14.0	1.57	2.2	1.93	2.03	2.360
MIN	0.000		0.0	0.00	1.0	1.0	1.3	0.0000		0.0	0.00	1	1.05	1.52	1.218
MONTHLY TOTALS:	Cleveland	Total MG Treated			SJCT EAST				Hilltop	Total MG Treated		Cleveland Pump Station:			32.395
		32.395			Average Day			0.202		23.186		Hilltop Pump Station:			23.186
Total Authority Flow:	59.5963	Untreated	0.000		Month Total			6.053		1.716		TOTAL AUTHORITY (Trted.)			55.581

STAGE 2 D/DBPR MONITORING-TTHM

APRIL 2016

WSSN 3726

Date	07/17/15	07/17/15
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Bromodichloromethane	9.3	10
Bromoform	<0.5	<0.5
Chloroform	20	31
Dibromochloromethane	3.7	4
<i>Total Trihalomethanes</i>	33	45

Date	10/07/15	10/07/15
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Bromodichloromethane	7.3	8.6
Bromoform	<0.5	<0.5
Chloroform	16	27
Dibromochloromethane	2.8	3.2
<i>Total Trihalomethanes</i>	26.1	38.8

Date	01/20/16	01/20/16
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Bromodichloromethane	12	10
Bromoform	<0.5	<0.5
Chloroform	46	33
Dibromochloromethane	2.8	3
<i>Total Trihalomethanes</i>	60.8	46

Date	04/20/16	04/20/16
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Bromodichloromethane	11	12
Bromoform	<0.5	<0.5
Chloroform	24	42
Dibromochloromethane	2.5	2.9
<i>Total Trihalomethanes</i>	37.5	56.9

	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
RAA (ppb)	39.4	46.7

STAGE 2 D/DBPR MONITORING-HALOACETIC ACIDS

APRIL 2016

WSSN 3726

Date	07/17/15	07/17/15
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Dibromoacetic acid	1.1	1.1
Dichloroacetic acid	14	17
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	2.5
Trichloroacetic acid	8.6	12
Total HAA5	23.7	32.6

Date	10/07/15	10/07/15
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Dibromoacetic acid	2	1.2
Dichloroacetic acid	13	16
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	<2
Trichloroacetic acid	10	14
Total HAA5	25	31.2

Date	01/20/16	10/07/15
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Dibromoacetic acid	<1	
Dichloroacetic acid	18	16
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	<2
Trichloroacetic acid	25	21
Total HAA5	43	37.0

Date	04/20/16	04/20/16
Site	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
Dibromoacetic acid	<1	<1
Dichloroacetic acid	14	23
Monobromoacetic acid	<1	<1
Monochloroacetic acid	<2	<2
Trichloroacetic acid	19	29
Total HAA5	33	52.0

	Lincoln Twp Hall (DBP-1)	Dane (DBP-2)
RAA (ppb)	31.2	38.2

APRIL 2016

CITY OF ST. JOSEPH

WSSN 6310

	TOC Compliance							
	Treated	Source	Formula		Req. TOC	Actual	Alternative	Compl. Perf.
	Tap	Tap	Ratio	Alka- linity	Removal	Ratio/ Remov	Criteria Complied Y/N	
May	1.33	1.71	22.2	123	15	1.48	N(Removal)	1.48
June	1.26	1.50	16.0	109	25	0.64	Yes	1.00
July	1.23	1.67	26.3	110	25	1.05	N(Removal)	1.05
August 2015	1.34	1.60	16.3	108	25	0.65	Yes	1.00
September	1.22	1.55	21.3	108	25	0.85	Yes	1.00
October	1.23	1.58	22.2	109	25	0.89	Yes	1.00
November	1.21	1.56	22.4	113	25	0.90	Yes	1.00
December	1.27	1.46	13.0	111	25	0.52	Yes	1.00
January 2016	1.38	1.86	25.8	111	25	1.03	N(Removal)	1.03
February	1.27	1.76	27.8	122	15	1.86	N(Removal)	1.86
March	1.62	2.32	30.2	140	15	2.01	N(Removal)	2.01
April	2.07	2.39	13.4	130	15	0.89	Yes	1.00
Quarter Avg.								
Annual Avg.	1.37	1.75						1.22

2/22/2016

3/15/2016

4/12/2016

MONTHLY CLIMATOLOGICAL SUMMARY

January

2016

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	30.5	26	35.6	11:30p	33	51	1952	26.1	8:30a	19	-10	1964	34.5	0	0	24.3	43	2:00a	WSW
2	33.9	26	36.7	5:00p	33	50	1950	31.1	6:00a	19	0	1968	31.1	0	0	22.2	45	9:30p	W
3	34	26	36.5	8:30a	33	66	1950	30.7	12:00m	18	-3	1979	31	0	0	18.9	35	1:00a	N
4	27.4	26	34.4	7:30a	33	59	1997	17.1	12:00m	18	-2	1979	37.6	0	0.01	9	35	9:00a	NNE
5	22.9	26	32.2	3:30p	33	62	1997	15	3:30a	18	-15	1999	42.1	0	0	5.1	23	11:30a	SE
6	30	26	38.4	4:00p	33	55	1998	22.2	3:00a	18	-2	1979	35	0	0.02	5.8	16	5:30a	SE
7	38.2	26	42.5	3:30p	33	51	1965	34.4	5:30a	18	-10	1988	26.8	0	0	3.4	13	4:30a	SE
8	40.9	25	45.6	11:30p	33	62	1965	37.5	9:00a	18	-13	1988	24.1	0	0.11	4.5	20	12:00m	ESE
9	39.5	25	45.3	12:30a	33	61	1965	35.7	10:00p	17	-1	1979	25.5	0	0.27	8.9	29	12:00m	N
10	26.3	25	37.1	1:00a	33	60	1975	16	12:00m	17	-7	1962	38.7	0	0.01	27.4	48	7:00a	N
11	15.7	25	25.7	12:00m	32	59	1975	9.8	11:30a	17	-10	1962	49.3	0	0	11.7	37	4:00a	SSE
12	20.6	25	29.2	12:30a	32	58	1960	17.1	10:30a	17	-1	1997	44.4	0	0	28.4	54	6:00a	WNW
13	16.5	25	33	12:00m	32	59	1950	8	10:00a	17	-7	1977	48.5	0	0	11.7	36	11:30p	SSE
14	36.7	25	46.5	11:30p	32	53	1950	24.7	5:30a	17	-1	1988	28.3	0	0.01	8.6	32	12:30a	SSE
15	40.6	25	46.5	1:30a	31	60	1949	33.3	10:30p	17	-7	1972	24.4	0	0.08	11	30	7:00p	SSE
16	31	25	33.8	12:30a	31	60	1949	25	12:00m	17	-17	1994	34	0	0.01	18.8	40	11:30p	W
17	14	25	25	12:30a	31	59	1952	10.6	2:30p	17	-7	1957	51	0	0	23.8	44	3:00p	WNW
18	13.7	24	15.2	7:30p	31	57	1996	12	2:30a	17	-7	1994	51.4	0	0	20.7	38	2:00a	W
19	16.9	24	19.8	10:00a	31	57	1996	14.3	10:30p	16	-17	1994	48.1	0	0	10	29	12:30a	WNW
20	20.6	24	26.3	8:00p	31	52	1954	15	12:30a	16	-10	1985	44.4	0	0	5.4	17	12:00m	SE
21	24.4	24	28	5:30p	31	50	1957	19.9	4:00a	16	-13	1984	40.6	0	0	6.6	19	1:30a	SSE
22	27.6	24	31.3	1:30p	31	56	1957	24.8	12:00m	16	-9	1970	37.4	0	0	4.3	18	7:00p	NNE
23	26.1	24	31.1	1:00p	31	56	1967	21.2	9:00a	16	-4	1963	38.9	0	0	4.1	15	12:00m	NE
24	28.2	24	33.6	4:00p	31	64	1967	22.4	9:00a	16	-6	1963	36.8	0	0	8.4	31	11:00a	SW
25	35.9	24	44.3	12:00m	31	68	1950	29.1	6:00a	16	-8	1961	29.1	0	0.05	5.3	29	12:00m	SSE
26	33.8	24	44.2	12:30a	31	66	1950	30.3	8:30p	16	-5	1987	31.2	0	0	24.3	47	4:00a	WSW
27	30.3	24	32.7	12:00m	32	54	1973	28	2:00p	16	2	1986	34.7	0	0	14.5	33	10:00p	W
28	34.9	25	37.3	4:00p	32	52	1970	32.7	12:30a	16	-7	1977	30.1	0	0.01	18.9	35	3:00a	SSW
29	30.3	25	34.7	12:00m	32	49	1975	26.6	9:00a	16	-8	1955	34.7	0	0	11.3	33	12:30a	N
30	40.1	25	46.3	12:00m	32	56	1988	34.6	12:30a	16	-8	1949	24.9	0	0	8.2	27	5:00a	SSW
31	43.2	25	51.1	1:00p	32	62	1989	36.9	8:30p	16	-3	1949	21.8	0	0.04	8.6	24	1:30a	SE
AVE	29.184	24.9032	35.481										35.8	0.0	0.0	12.7	31.5		SE
MAX	43.2	26	51.1			68		37.5		19	2		51.4	0	0.27	28.4	54.0		
MIN	13.7	24	15.2					8		16	-17		24.1	0	0	3.4	13		
TOTAL															0.62				

Max Rain: 0.27 ON 01/09/16
 Days of Rain: 6 (>.01 in) 2 (>.1 in) 0 (>1 in)

MONTHLY CLIMATOLOGICAL SUMMARY

February 2016

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	36.6	25	43.3	4:30p	32	64	1989	32.7	11:30p	16	-3	1996	28.4	0	0	3.9	17	11:30a	N
2	37.4	25	44.9	11:30p	32	50	1968	32.8	1:30a	16	-12	1951	27.6	0	0.72	3.9	28	3:00p	ENE
3	37.1	25	47.2	3:00a	32	56	1991	33.3	12:00m	17	-10	1996	27.9	0	0	16.5	34	3:30p	SW
4	28.8	25	33.8	12:30a	32	52	1991	25.1	10:00p	17	-6	1985	36.2	0	0	12.7	31	9:00a	W
5	30	25	33	1:00p	33	50	1964	27.1	7:30a	17	-7	1996	35	0	0	6.6	19	1:30p	SSE
6	32.9	25	38.2	8:30p	33	53	1964	27.2	5:30a	17	-6	1979	32.1	0	0	9.7	25	10:00a	SW
7	38.8	26	43.1	11:30a	33	51	1965	35.8	12:30a	17	-13	1978	26.2	0	0	10.4	28	10:00a	SSW
8	33.4	26	37.1	12:30a	33	60	1990	30.5	11:00p	17	-8	1978	31.6	0	0	13.8	30	12:00m	WNW
9	27.4	26	31.9	3:00a	33	58	1990	23.5	12:00m	17	-12	1985	37.6	0	0	22.1	39	11:30p	WNW
10	21.5	26	24.7	1:00a	34	56	1999	18.8	8:30p	17	-12	1994	43.5	0	0	19.2	39	3:30a	WNW
11	21	26	23.7	1:00p	34	70	1999	16.2	10:30p	18	-4	1994	44	0	0	12.4	29	6:00a	WNW
12	22.4	26	25.8	6:00a	34	70	1999	16.4	12:30a	18	2	1967	42.6	0	0	21.9	44	7:00p	W
13	16.2	27	17.9	11:30p	34	56	1984	14.4	7:00a	18	-8	1955	48.8	0	0	14.7	38	12:30a	NW
14	16.2	27	19.8	3:00p	35	58	1954	9.6	8:30a	18	3	1970	48.8	0	0	3.8	21	11:00a	ESE
15	24.4	27	30.1	12:00m	35	65	1954	18.7	12:30a	18	2	1963	40.6	0	0	3.6	18	12:30a	SSE
16	31.5	27	32.9	12:00m	35	64	1954	29.9	4:30a	19	-4	1985	33.6	0	0.02	5.2	17	10:30p	SE
17	31.1	28	34.2	1:00p	35	53	1994	23.1	11:30p	19	-8	1979	33.9	0	0	7.8	22	8:00a	N
18	31	28	40.1	10:30p	36	63	1961	19.1	7:30a	19	0	1978	34	0	0	5.2	30	10:00p	SSE
19	45.9	28	58.6	12:30p	36	63	1994	37.8	12:00m	19	-1	1993	19.1	0	0	16.9	49	12:30p	SSE
20	43.5	29	53.2	4:30p	36	63	1983	37.2	12:30a	20	-5	1979	21.5	0	0	9.4	34	7:30a	SSW
21	36.5	29	39.3	12:30a	37	61	1983	33.1	12:00m	20	1	1963	28.5	0	0	8.5	20	7:30p	NNE
22	35	29	43.8	3:30p	37	61	1984	28.8	9:30a	20	-4	1963	30	0	0	4.2	19	1:30a	NNE
23	35.7	29	47.2	2:30p	37	65	1984	28.7	7:30a	20	-1	1989	29.3	0	0	4.3	18	4:30p	E
24	33.9	30	37.2	12:30a	38	64	1984	31.8	11:00a	21	1	1989	31.1	0	0.04	19.8	53	6:30p	NNE
25	32.5	30	33.6	3:00a	38	64	1976	31.2	5:30p	21	-2	1993	32.5	0	0.01	27.5	47	1:30a	N
26	32.5	30	34.3	4:00p	38	60	1996	31	7:30a	21	-5	1963	32.5	0	0	13.3	30	2:00a	WSW
27	37.8	31	48.5	12:00m	39	71	1976	30.6	7:30a	22	-6	1994	27.2	0	0	14.5	31	12:00m	SSW
28	48.1	31	57.6	2:30p	39	63	1976	33.9	11:00p	22	2	1989	16.9	0	0.06	16.2	41	1:00p	SSW
29	35.1		40.9	4:30p				28.5	12:00m				29.9	0	0.03	14.1	34	4:30p	SW
30																			
31																			
AVE	32.214	27.3571											32.8	0.0	0.0	11.8	30.5		N
MAX	48.1	31	58.6			71		37.8		22	3		48.8	0	0.72	27.5	53.0		
MIN	16.2	25	17.9					9.6		16	-13		16.9	0	0	3.6	17		
TOTAL															0.88				

Max Rain: 0.72 ON 02/02/16
 Days of Rain: 5 (>.01 in) 1 (>.1 in) 0 (>1 in)

MONTHLY CLIMATOLOGICAL SUMMARY

APRIL

2016

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	41.6	43	45.8	7:00p	53	83	1986	39.3	5:00a	33	17	1984	23.4	0	0.01	10.4	41	8:00p	N
2	36.3	44	41.8	12:30a	53	79	1963	30.7	8:30p	33	20	1992	28.7	0	0.01	23.9	54	4:00p	NNW
3	44	44	63.1	8:30p	54	80	1956	33	3:30a	33	18	1954	21	0	0.01	15.2	51	9:00p	SSW
4	35.6	45	43	12:30a	54	75	1956	32.9	10:00p	34	15	1993	29.4	0	0	19.3	33	7:30p	N
5	35.9	45	46	6:00p	55	82	1988	24.2	8:00a	34	18	1982	29.1	0	0.03	5	27	12:30a	SSE
6	43.8	45	48.3	11:00a	55	82	1988	39.7	7:00a	34	14	1982	21.2	0	0.61	8.2	30	7:30p	SSE
7	37.9	46	42.2	12:30a	55	78	1991	35.3	11:00a	35	9	1982	27.1	0	0.07	18.3	39	4:30p	NNW
8	37.3	46	39.8	9:30a	56	77	1991	32.7	12:00m	35	15	1972	27.7	0	0.04	13.8	41	12:00m	WNW
9	31.6	46	34.6	5:00p	56	74	1967	28.1	6:30a	35	15	1985	32.7	0	0	17.1	48	1:30a	N
10	39	47	49.5	9:00p	57	80	1977	30.7	5:30a	36	15	1997	26	0	0.52	7.8	26	10:30a	SSE
11	44	47	47.9	1:30a	57	79	1977	40.2	12:00m	36	18	1952	21	0	0.03	8.9	21	12:00m	N
12	38.7	47	40.4	5:00p	57	82	1971	34.7	12:00m	36	21	1982	26.3	0	0.01	10.4	25	2:30a	N
13	42.9	48	52.9	12:30p	58	77	1960	34	2:30a	36	18	1950	22.1	0	0	4.7	20	2:00p	NNE
14	49.1	48	63.3	3:00p	58	79	1976	38.5	7:30a	37	21	1982	15.9	0	0	4.2	17	5:30p	ESE
15	53.5	48	70.1	2:00p	59	83	1976	42.3	7:30a	37	16	1957	11.7	0.2	0	4.2	17	5:00p	E
16	58.1	49	73.1	12:00p	59	86	1976	49.1	7:30a	37	24	1990	7.3	0.4	0	4.5	18	5:00p	NNE
17	62.5	49	73.9	11:30a	59	84	1976	53.6	7:30a	38	25	1949	3.4	0.9	0	4.5	14	4:00p	NNE
18	65	49	71.9	7:00p	60	86	2002	58.6	3:30a	38	19	1990	1.9	1.9	0	4	13	6:30a	NNE
19	61.1	50	71	3:30p	60	84	1985	48.5	5:30a	38	18	1988	4.8	0.9	0	3.9	20	5:00p	ENE
20	64	50	75.8	3:00p	60	84	1985	53	7:30a	39	22	1951	3.9	2.9	0	4.4	25	10:00a	ESE
21	57.5	50	67.5	7:30p	61	86	1985	53.5	7:00a	39	23	1953	7.6	0.1	0.15	3.5	24	11:00p	SSW
22	46.8	51	56.6	1:00a	61	86	1985	42.7	8:00p	39	21	1993	18.3	0	0.01	11.2	25	12:00p	N
23	48.4	51	57.3	12:00p	62	85	1980	43.3	12:30a	39	18	1986	16.6	0	0	5.1	15	4:30p	N
24	59.8	51	75.1	7:30p	62	85	1990	47.6	6:30a	40	28	1999	6.9	1.7	0	4.1	19	10:00a	SE
25	67	52	77.9	9:00p	62	86	1990	56.6	11:30p	40	25	1949	1.3	3.2	0.3	7.6	39	11:30p	SSW
26	46.3	52	58	12:30a	63	88	1986	42	6:30a	40	24	1997	18.7	0	0	8.8	24	1:30a	N
27	50.8	52	61.6	5:00p	63	87	1994	43.7	2:30a	41	27	1988	14.2	0	0.01	3.9	20	7:30p	ENE
28	49.3	53	54.4	5:00p	64	85	1990	43.2	9:30a	41	24	1992	15.7	0	0.24	3.8	23	9:00a	ENE
29	47	53	49.1	12:00p	64	82	1970	44.8	6:30p	41	27	1979	18	0	0.01	5	18	8:00p	N
30	48.5	53	51.6	12:00p	64	87	1962	45.6	5:30a	42	30	1971	16.5	0	0.41	2.8	17	3:00p	NE
31																			
AVE	48.11	48.4667											17.3	0.4	0.1	8.3	26.8		N
MAX	67	53	77.9			88		58.6		42	30		32.7	3.2	0.61	23.9	54.0		
MIN	31.6	43	34.6					24.2		33	9		1.3	0	0	2.8	13		
TOTAL															2.47				

Max Rain: 0.61 ON 04/06/16
 Days of Rain: 10 (>.01 in)6 (>.1 in) 0 (>1 in)

MONTHLY CLIMATOLOGICAL SUMMARY

MARCH

2016

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	27.6	33	30.6	8:30a	53	83	1986	24.5	3:30p	33	17	1984	37.4	0	0	13.2	39	9:30p	NNE
2	27.3	31.3	30.9	6:00p	53	79	1963	25.3	8:30a	33	20	1992	37.7	0	0.01	9.8	33	12:30a	W
3	28.7	31.3	32.8	3:30p	54	80	1956	24.7	5:00a	33	18	1954	36.3	0	0.01	3.2	16	10:00p	E
4	29.9	35.7	38.5	5:30p	54	75	1956	21.3	7:30a	34	15	1993	35.1	0	0.07	3.8	16	11:00p	E
5	33.4	34	36.2	4:00p	55	82	1988	28.5	1:30a	34	18	1982	31.6	0	0.05	5.9	17	6:30p	N
6	39.9	35.1	48	12:00m	55	82	1988	33.9	6:30a	34	14	1982	25.1	0	0	5.9	28	10:30p	SSE
7	54.3	35.9	62.4	12:30p	55	78	1991	47.4	7:30a	35	9	1982	10.7	0	0	8.3	26	1:00a	SSE
8	61.2	37.1	67	12:30p	56	77	1991	54.3	4:00p	35	15	1972	3.9	0.1	0	9.9	28	11:30p	S
9	56.7	42.3	64	12:30a	56	74	1967	47.5	11:00p	35	15	1985	8.3	0	0	8.1	39	7:00a	SSW
10	40.4	53	48.3	12:30a	57	80	1977	37	11:00p	36	15	1997	24.6	0	0	7.2	16	3:30a	NNE
11	39.4	51.4	43.4	5:30p	57	79	1977	35.4	7:30a	36	18	1952	25.6	0	0	5.4	16	2:00p	NNE
12	45.5	36.3	53.5	12:00m	57	82	1971	37.6	7:00a	36	21	1982	19.5	0	0	3.5	12	3:00a	NNE
13	49.8	32.6	53.9	4:00a	58	77	1960	47.5	4:30p	36	18	1950	14.5	0	0.56	3.5	20	10:00a	E
14	42	36.2	50.1	2:30a	58	79	1976	38.4	8:00p	37	21	1982	23	0	0.01	4.6	19	4:30a	N
15	51	38.1	67.4	4:30p	59	83	1976	36.1	8:00a	37	16	1957	14.2	0.2	0	3.6	20	9:00p	E
16	47.8	37.6	57.8	4:30a	59	86	1976	43.9	12:00m	37	24	1990	17.2	0	0.15	20.2	42	9:00p	SW
17	44.5	38.3	47.9	7:00p	59	84	1976	41.1	8:00a	38	25	1949	20.5	0	0	14.7	31	1:00a	SW
18	39.5	35.5	44	12:30a	60	86	2002	36.1	12:00m	38	19	1990	25.5	0	0	11.8	34	5:30a	N
19	37.5	33.2	42.3	3:30p	60	84	1985	34	7:30a	38	18	1988	27.5	0	0	5.2	27	8:00p	NNE
20	34.3	30.8	37.6	7:00p	60	84	1985	28.9	7:30a	39	22	1951	30.7	0	0	7.3	24	5:00p	N
21	39.2	30.5	43	7:30p	61	86	1985	36.2	12:30a	39	23	1953	25.8	0	0	8.7	26	8:30a	N
22	49.4	34.3	59.2	7:00p	61	86	1985	40	12:30a	39	21	1993	15.6	0	0	6.6	31	12:00p	SSE
23	45.8	35	55	3:30p	62	85	1980	40.8	5:30a	39	18	1986	19.2	0	0.01	5.4	22	6:00p	ENE
24	44.1	38.5	56.4	2:00p	62	85	1990	34.3	12:00m	40	28	1999	20.9	0	0.57	11.5	48	3:00p	E
25	36.1	36	41.4	6:00p	62	86	1990	33.7	6:30a	40	25	1949	28.9	0	0	12.6	42	2:00a	N
26	41.2	36.8	51.2	10:00p	63	88	1986	32.8	7:30a	40	24	1997	23.8	0	0	4.2	16	4:00p	ESE
27	49.1	40.6	68.5	4:30p	63	87	1994	41	7:00a	41	27	1988	16.1	0.1	0.22	6.9	26	5:30p	ESE
28	41.1	40.9	42.4	6:30p	64	85	1990	39.3	9:00p	41	24	1992	23.9	0	0.03	13.5	36	5:30a	WNW
29	43.6	43.1	52.3	3:00p	64	82	1970	37.3	2:00a	41	27	1979	21.4	0	0	3.1	14	6:30a	N
30	51.8	52.8	61.3	5:00p	64	87	1962	43.2	8:00a	42	30	1971	13.2	0	0.1	7.1	33	9:30p	SSE
31	54.5	50.6	64.2	2:00p	64	84	1986	40.5	12:00m	42	18	1954	10.5	0	0.39	11.5	36	6:30a	SSW
AVE	42.794	37.9935											22.2	0.0	0.1	7.9	26.9		N
MAX	61.2	53	68.5			88		54.3		42	30		37.7	0.2	0.57	20.2	48.0		
MIN	27.3	30.5	30.6					21.3		33	9		3.9	0	0	3.1	12		
TOTAL															2.18				

Max Rain: 0.57 ON 03/24/16
 Days of Rain: 9 (>.01 in)5 (>.1 in) 0 (>1 in)