

CITY OF ST. JOSEPH WATER FILTRATION PLANT
OPERATIONAL REPORT
MARCH 2015



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-MARCH 2015

Water demand in March was down by 33,430,271 gallons or 26% from last year. This year 93,751,947 gallons were delivered which compares to 127,182,218 gallons delivered in March of 2014. Most of the disparity in the numbers is likely due to the fact that the March 2014 pumpage reflects the water lost from the main breaks last year. The March 2015 pumpage ranks 28th in the 30 year tabulation dating back to 1986.

GENERAL ACTIVITIES

Strategic Capital Improvement Plan

The SCIP was presented to the St. Joseph City Commission on March 16th at their March study session by Mr. Tony Myers of CH2M Hill. A very good but curiously titled article followed the next day in the Herald Palladium-“*Water Plant Needs Major Repairs*”. Commissioners had also been invited to the water plant prior to the meeting and several tours were given during the week of March 9th. The next step in the process will be the development of a preliminary engineering report on Phase I of the plan.

SCADA/Instrumentation

On March 13th the computer screens on filters 9-12 failed and resulted in a loss of control to those filters. West Michigan Instrumentation and Advanced Boiler Control Systems were called in to assist plant staff to resolve the issue. The hard drives in both computers were replaced and were reprogrammed to enable local control of the filters from the process computer in the control room. In addition, WMI at our request created a backup screen whereby SDWA required filter water quality (turbidity) could be recorded and logged independently. By doing so, manual control of the filters in the event of local computer failure was enabled. In the event of such a failure in the future plant staff would be able to manually run the filter at constant rate while monitoring turbidity. This is important since filters 9-12 account for one half of the water plant's capacity.

WMI also programmed in ground level pressure readings at all three water towers. This capability restores what was lost with the decommissioning of the Stevensville pressure gauge. In addition, ground level pressure and elevation are important for instances when system pressure is dramatically reduced due to a large main break. In such cases water level in the towers which is currently measured from the bottom of the bowl becomes useless while ground level pressure yields vital information. These readings are also important in the event of an interconnection with the City of Benton Harbor which effectively operates at a hydraulic grade line that is 32 ft below that of St. Joseph. In such an instance ground level pressure would be the only means available to know system pressure since our towers would essentially be empty.

(North) Wet Well Temperature Gauge

A raw water temperature gauge was installed in the intake chamber of the wet well to capture true raw water temperature. Historically, raw water temperature was measured in the 30” raw water line in the building just upstream of the clarifiers. Our suspicion was that the temperature readings from this location were erroneous due to the effects of ambient air temperature on the raw water pipe and wet well. The gauge was just recently placed into service and calibration is needed but preliminary indications are that there is a significant difference between the gauges of approximately that ranges from one to three degrees Fahrenheit.

Authority Tower Alarms

WMI programmed the door alarms to the SCADA computer. This capability had been lost with the decommissioning of the Stevensville pressure gauge which the signal was routed through. The alarm function did formerly and still exists on the Authority panel in the control room at the WTP.

Water Tower Inspections

Dixon Engineering is scheduled to do ROV (Remotely Operated Vehicle) wet inspections of all three water towers. The impetus for this work was the recommendation from Corpro that cathodic protection be installed in the City tower. The City had planned for cathodic but did not install it based on Dixon's recommendation that it would not be needed until the paint coating on the interior of the tank began failing which is typically 10-15 years. In consultation with Dixon, staff learned that the unusually cold winters of late had brought about ice damage in several towers around the state. Given this information it was decided to inspect the Authority towers as well. The City tower will be inspected on May 7th and the Authority towers will be inspected on May 8th. The inspections will be done while the towers are full and in service.

Water Plant Operator

The open operator position was filled in March. Steven Robards of Stevensville will start on April 11th. Typically new operators are trained on shift by our staff operators and Chief Operator Shawn Orlaske. The training period varies but generally runs six to eight weeks. Steve will also be required pass the MDEQ F-4 Operator Examination. In the interim, the City will apply for a temporary training license from MDEQ that will have a term of one year. At the expiration of the certificate, the City will be required to fill the position with a licensed F-4 operator. Given Steve's strong background and the Water Plant staff's track record of having successfully prepared operators for the examination over the past several years we are confident that he will succeed.

Fairplain Interconnects

Staff met with Alan Smaka of Wightman & Associates representing St. Joseph Charter Township and Stewart Beach, Benton Harbor Utility Services Department Director on January 9th and January 22nd to select a suitable meter and vault detail and review plans. In addition, Wightman field crews conducted field inspections of the existing interconnections in the Fairplain service area. Benton Charter Township Distribution Foreman Mike Baldwin attended the earlier meeting. The disposition of the various interconnects between jurisdictions was discussed. All interconnections that are retained with the shared system will be metered as required in the St. Joseph rules and regulations. Interconnections that are not needed will be capped. Upon project award construction should begin sometime in late April and be complete by Fall. The final completion date is November 1st. These interconnections will provide a means to obtain water from an adjacent water supply in the event of an emergency.

The St. Joseph/Benton Harbor interconnection on M-63 has proved itself to be a vital source of water since its installation in 1950. Most recently, the interconnects in Fairplain located along Colfax at Napier, Elmside and Nickerson assured uninterrupted water supply to Benton Township customers in January of 2013 when the control board battery backup failed at the water plant.

Spring Intake Inspections

As soon as weather permits divers will be called in to inspect both intakes. The focus will be on checking the raw water sample line in the North intake and troubleshooting the blockage in the South intake. In addition, the extent of the sand accumulation in the pipe and structures will be quantified and videotaped for use in an RFP for seasonal cleaning.

Cross Connection Control Inspections

The three year contract with Hydro Designs was approved by the City Commission on February 9th. Field Inspector Steve Oleszkiewicz who has been our inspector for the last several years will return in March to begin the inspection cycle. He conducted twenty site inspections and will return on April 9th.

Stage 2 Disinfectants and Disinfection Byproduct Rule-City of St. Joseph March Monitoring

Disinfectants such as chlorine are an essential element of drinking water treatment because of the barrier they provide against waterborne disease-causing microorganisms. However, disinfection byproducts (DBPs) form when disinfectants used to treat drinking water react with naturally occurring materials in the water (e.g., decomposing plant material).

Total trihalomethanes (TTHM – chloroform, bromoform, bromodichloromethane, and dibromochloromethane) and haloacetic acids (HAA5 – monochloro-, dichloro-, trichloro-, monobromo-, dibromo-) are widely occurring classes of DBPs formed during disinfection with chlorine and chloramine. The amount of trihalomethanes and haloacetic acids in drinking water from one water system can change from day to day, depending on the season, water temperature, amount of chlorine added, the amount of plant material in the water, and a variety of other factors.

At this time, EPA believes that the best way to control DBPs is both to regulate known byproducts and to limit the quantity of disinfection byproduct precursors (e.g., decomposing plant material) allowed to react with disinfectants. TTHM and HAA5 are useful indicators for measuring DBPs in chlorinated drinking water because they commonly occur at levels that can be easily measured.

As we have reported the system struggled to control DBP's back in October during the seasonal Fall turnover in Lake Michigan. By shifting the chlorination feed ratio from 90/10 wet well/applied to 50/50 a marked improvement in both HAA5 and TTHM levels was achieved in our finished water. The March results for the City of St. Joseph came in at 14.5 ppb for HAA5 and 20.6 ppb for TTHM. The regulatory limit for these compounds is 60 ppb for HAA5 and 80 ppb for TTHM. As recently as December the City result for TTHM was 68.3 ppb and 54 ppb for HAA5. Even more dramatic reductions were found in our Authority samples which was reported in February. We just learned that the City of South Haven has experienced similar success with by utilizing the same treatment strategy. Both utilities have been invited to participate in a roundtable discussion of Disinfection Byproduct/Microbial Control Strategies at the annual Michigan Section AWWA meeting in Sault Ste. Marie this coming September.

Travel & Training

Mark Thornton is enrolled in Water Chemistry which is being taught by our MDEQ District Engineer Gary Wozniak. Classes are being held at the Lake Township Water Plant in Bridgman. We are very pleased that this course is being held in Berrien County and that Gary is teaching it. All of us at one time or another have taken his courses locally and I believe they have provided a direct benefit to us and the water plant.

Water Plant Security

Installation of the security system is nearly complete. Two weather rated high resolution cameras were received in January and will be installed once a service date can be coordinated with the vendor. At this time plant staff is busy with winter maintenance projects. The security system is now on line and has been operating well.

Monthly Maintenance Notes

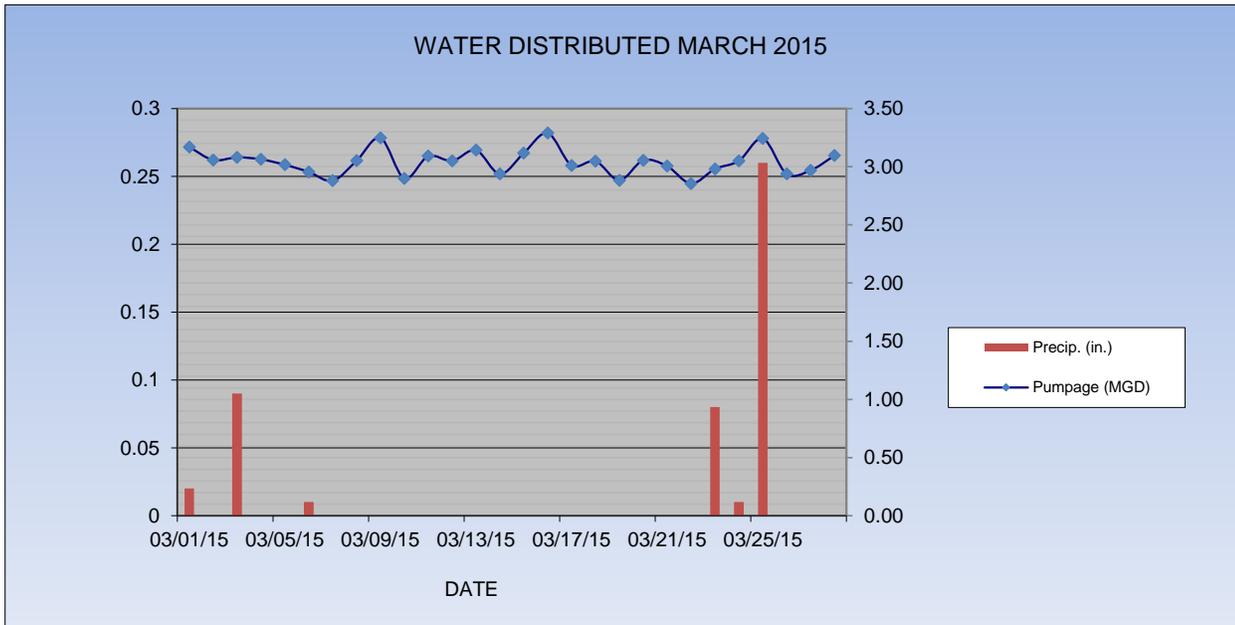
March 2015

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. Snow Removal at Plant, Booster Stations and Water Towers
3/2 to 3/3/15	Shut Down Clarifier # 3 and Drained for Yearly Maintenance Work
3/4 to 3/5/15	Cleaned Clarifier # 3
03/05/15	Hach - Service Call, Repaired Filter # 1 Turbidimeter, installed new photocell
03/06/15	Installed New sump pump in pit under High Service Pumps 4 & 5
03/09/15	Cummins Bridgeway - Load Bank Test and PM Inspection per service agreement on Hilltop and Cleveland BPS Generators
3/10 to 3/20/15	Yearly Maintenance on Clarifier # 3, Changed Oil in Rotor Gear Drive, did NOT change Dodge Coupling on Scraper Drive (OK), Installed New Belt on Rotor Drive. (Did Not rebuild Drives). Installed new Thrust Bearings for the wing arms. Bushings in both pulleys were OK for the chain counter weight, bolts were also OK. Installed New Thrust bearings for wing, Bolts and Bushings were OK. Installed New Bushing and Bolt for wheel (1.500 OD x .812 ID x 2.5 lg)
03/13/15	Repaired roof top exhaust fan for garage area
03/16/15	ABCS - Repaired Filter # 9 Effluent Valve, Reset open and closed position limits.
03/17/15	Cummins Bridgeway - Load Bank Test and PM Inspection per service agreement Plant and Low Service Generators
03/18/15	Repaired Lab Vacuum Pump
03/19/15	Rebuilt Fluoride Pump # 1 installed new head and diaphragm
03/19/15	Corrpro - Wet Inspection of Cathodic Protection System on Clarifiers #1 & #2, Dry Inspection on Clarifier # 3
03/19/15	Installed new wet end pump assemblies on both chlorinator circulation pumps and the booster stations.
03/24/15	Installed new controls on Clarifier # 3 ON/OFF Switches for Rotor and Scraper Drives

**ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED/RAINFALL
MARCH 2015**

DATE	PUMPAGE (gallons)	PUMPAGE (MGD)	Rainfall (in)	Day to Day Comparison 2015/2014	
				2015	2014
03/01/15	3,169,314	3.17	0.02	3,169,314	3,798,149
03/02/15	3,057,944	3.06	0	3,057,944	4,005,426
03/03/15	3,080,765	3.08	0.09	3,080,765	4,380,736
03/04/15	3,063,674	3.06	0	3,063,674	4,125,408
03/05/15	3,016,862	3.02	0	3,016,862	3,896,546
03/06/15	2,955,544	2.96	0.01	2,955,544	4,006,845
03/07/15	2,879,636	2.88	0	2,879,636	4,134,868
03/08/15	3,051,116	3.05	0	3,051,116	4,129,433
03/09/15	3,247,004	3.25	0	3,247,004	3,911,458
03/10/15	2,899,137	2.90	0	2,899,137	4,305,702
03/11/15	3,090,980	3.09	0	3,090,980	4,264,363
03/12/15	3,050,080	3.05	0	3,050,080	3,848,623
03/13/15	3,141,973	3.14	0	3,141,973	4,083,767
03/14/15	2,937,223	2.94	0	2,937,223	4,154,147
03/15/15	3,117,887	3.12	0	3,117,887	4,103,115
03/16/15	3,289,056	3.29	0	3,289,056	3,984,898
03/17/15	3,010,897	3.01	0	3,010,897	4,255,383
03/18/15	3,047,958	3.05	0	3,047,958	4,353,846
03/19/15	2,882,691	2.88	0	2,882,691	4,155,638
03/20/15	3,055,335	3.06	0	3,055,335	3,925,586
03/21/15	3,004,689	3.00	0	3,004,689	4,209,111
03/22/15	2,855,133	2.86	0	2,855,133	4,391,302
03/23/15	2,981,135	2.98	0.08	2,981,135	4,016,194
03/24/15	3,050,640	3.05	0.01	3,050,640	4,179,665
03/25/15	3,242,822	3.24	0.26	3,242,822	4,167,618
03/26/15	2,938,442	2.94	0	2,938,442	4,191,064
03/27/15	2,968,888	2.97	0	2,968,888	4,161,199
03/28/15	3,095,305	3.10	0	3,095,305	4,089,937
03/29/15	2,576,655	2.58	0.03	2,576,655	3,719,580
03/30/15	3,083,496	3.08	0.06	3,083,496	4,050,567
03/31/15	2,909,666	2.91	0	2,909,666	4,182,045
TOTAL	93,751,947	85.18	0.56	93,751,947	127,182,218

Average Day	3,024,256
Maximum Day	3,289,056
Minimum Day	2,576,655

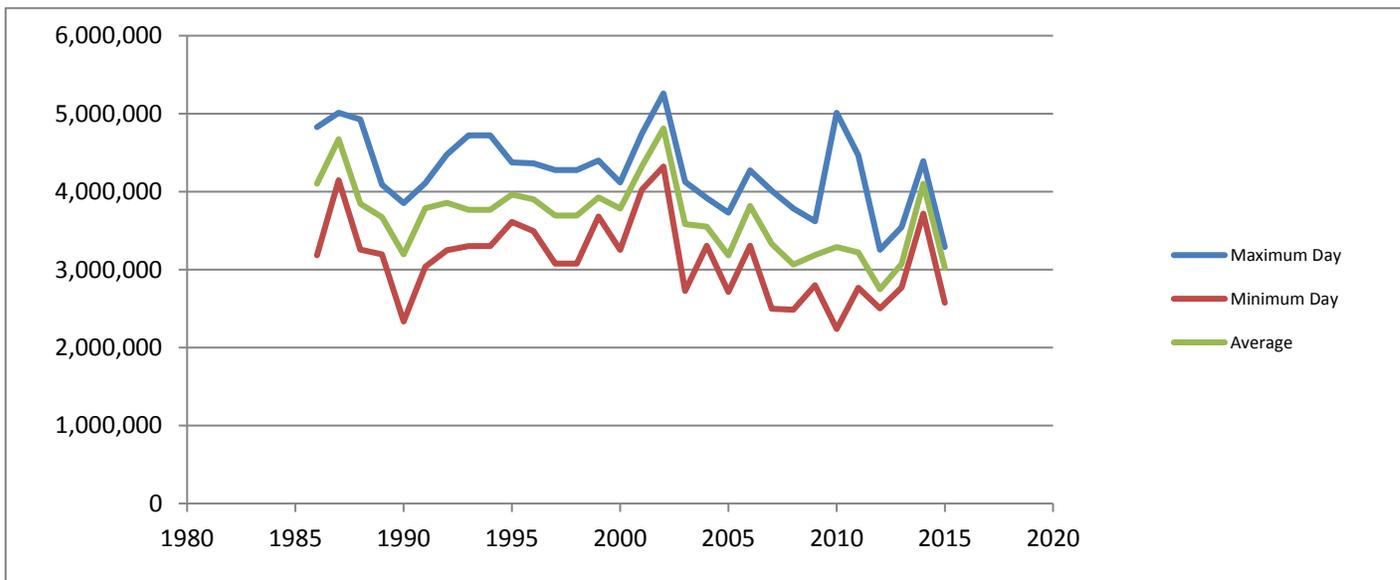


ST JOSEPH WATER PLANT PUMPAGE-WATER DELIVERED

MARCH 2015

Year	Average	Maximum Day	Minimum Day	Monthly Total
1986	4,102,639	4,829,500	3,181,600	115,046,139
1987	4,671,958	5,010,700	4,148,400	130,492,458
1988	3,845,203	4,924,600	3,256,700	107,872,703
1989	3,672,381	4,088,800	3,197,500	102,101,781
1990	3,195,848	3,854,100	2,333,200	88,167,548
1991	3,789,048	4,110,800	3,036,600	106,819,948
1992	3,854,777	4,475,600	3,246,600	106,036,477
1993	3,767,950	4,721,800	3,303,450	106,411,450
1994	3,767,950	4,721,800	3,303,450	106,411,450
1995	3,964,081	4,375,000	3,613,500	111,268,831
1996	3,903,450	4,361,425	3,495,400	121,006,950
1997	3,693,095	4,275,600	3,076,400	114,485,950
1998	3,693,095	4,275,600	3,076,400	114,485,950
1999	3,927,223	4,401,000	3,679,400	121,743,900
2000	3,785,211	4,118,750	3,251,000	117,341,550
2001	4,322,940	4,742,950	4,023,550	134,011,150
2002	4,810,127	5,259,500	4,322,000	149,113,940
2003	3,582,904	4,124,400	2,727,000	111,070,020
2004	3,549,125	3,917,380	3,304,250	110,022,870
2005	3,184,715	3,728,500	2,713,320	98,726,150
2006	3,817,435	4,273,500	3,304,000	118,340,490
2007	3,329,752	4,013,000	2,498,500	103,222,310
2008	3,065,748	3,783,500	2,486,080	95,038,200
2009	3,188,871	3,621,750	2,800,750	98,855,000
2010	3,290,833	5,010,100	2,238,370	102,015,838
2011	3,218,895	4,463,210	2,767,357	99,785,760
2012	2,748,710	3,254,721	2,500,973	85,210,003
2013	3,074,176	3,547,491	2,769,880	95,299,463
2014	4,102,652	4,391,302	3,719,580	127,182,218
2015	3,024,256	3,289,056	2,576,655	93,751,947

Rank	Year	Monthly Total
1	2002	149,113,940
2	2001	134,011,150
3	1987	130,492,458
4	2014	127,182,218
5	1999	121,743,900
6	1996	121,006,950
7	2006	118,340,490
8	2000	117,341,550
9	1986	115,046,139
10	1997	114,485,950
11	1998	114,485,950
12	1995	111,268,831
13	2003	111,070,020
14	2004	110,022,870
15	1988	107,872,703
16	1991	106,819,948
17	1993	106,411,450
18	1994	106,411,450
19	1992	106,036,477
20	2007	103,222,310
21	1989	102,101,781
22	2010	102,015,838
23	2011	99,785,760
24	2009	98,855,000
25	2005	98,726,150
26	2013	95,299,463
27	2008	95,038,200
28	2015	93,751,947
29	1990	88,167,548
30	2012	85,210,003



DISTRIBUTION REPORT

For the Month of March 2015

Activity	Number/Description	
Water Main Breaks	5	
MISS DIGS	164	
Delinquent Shut Off	22	St. Joseph Township-West
Delinquent Shut Off (Broken Payment Plans)	0	
Hydrants (Repaired/Replaced)	0	
Valves	0	
Taps (1")	0	
Frozen Services March	3	
February	3	
Cross Connection Control (Hydro Designs)		
Service Work (System Valves)		
Repair of Curb box/Shut-Off Valves	5	4 in SJCTE, 1 in City.
Repair of Curb box/Shut-Off Valves-2" comm.	1	2" Water Service valve. Replaced. Broke while shut off.
Water Quality Complaint(s)	0	
Unidirectional Flushing Program (City)	0	
Hydrant Flushing to maintain water quality	0	
Hydrant Flushing (Stage 2 Rule)		
Staff Education/Training	0	
Overtime-Total	111.5	(Including Sanitary and Storm)
Turn Off	11	(Note: This number does not include delinquent Shut off)
Turn On	13	
Finals	98	
Meter Repair/Replacement		
		Verify Read
		3
Meter Repair		Move Mxu Box
Per detail		New Installation
		8
Meter leaking	1	New Installation-Benton Harbor
Stopped Meter	4	Replaced/various reasons
		2
Faulty Register		Rockwell Replacement
Frozen Meter	9	Mxu Replaced
		1
Move Meter Inside	1	Sprinkler meter removed/line capped
		1
Hard to read	10	Removals/demo
		1
Replace/Adding Sprinkler Meter		Curb box location
Damage to Trt		Broken Remote
New Plumbing	2	Noisy Meter
		1
New siding		Upgrade 5/8" to 3/4"
		1
Meter sent out for testing		Meter Change/Benton Harbor
		1

CITY OF ST. JOSEPH WATER MAIN BREAK REPORT									
For the Month/Year of: March 2015									
#	Date	Location	Main Size	Gallons Lost	Break Type	Valves Turned	City Twp	Labor	Remarks
1	3/5/2015	South State & Botham	6	6000	Circumferential	5	City		6" Hydrant lead
2	3/9/2015	316 Forres	6	5,000	radial crack	3	City		Under 50 gpm. Other utilities (storm, etc) in close proximity.
3	3/20/2015	4060 Glen Orchard Dr.	6	10,000	Crack	2	LCT	15.0	Loamy clay/sand soil
4	3/28/2015	2943 Division St.	6	10,000	Hole	2	City	22.0	Tennis ball size hole, clay soil
5									
6									
7									
TOTALS				31,000		7			

MONTHLY CLIMATOLOGICAL SUMMARY

March

2015

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	22	33	25.4	4:00p	8:00p	83	1986	19.2	6:00a	33	17	1984	42.7	0	0.02	6	24	9:00p	SSE
2	26.5	31.3	30.1	4:00p	9:00a	79	1963	24	8:00a	33	20	1992	38	0	0	5.5	25	1:00a	WNW
3	30.5	31.3	33.9	4:00p	7:00a	80	1956	26.8	8:00a	33	18	1954	34.7	0	0.09	8.3	32	4:00p	SSE
4	27.1	35.7	32.6	1:00a	8:00a	75	1956	21.8	12:00m	34	15	1993	37.8	0	0	10.7	28	3:00p	NNW
5	19.9	34	24.1	3:00p	12:00m	82	1988	16.1	12:00m	34	18	1982	44.9	0	0	5.6	22	2:00a	N
6	17.7	35.1	25.1	6:00p	1:00a	82	1988	9.2	8:00a	34	14	1982	47.8	0	0	8.7	25	7:00p	SSW
7	30.8	35.9	38.3	4:00p	12:00m	78	1991	23.5	1:00a	35	9	1982	34.1	0	0.01	5.9	16	10:00a	SW
8	33.6	37.1	36.2	8:00p	8:00a	77	1991	30.6	6:00a	35	15	1972	31.6	0	0	5.2	14	8:00p	SW
9	37	42.3	41.9	6:00p	4:00a	74	1967	32.8	8:00a	35	15	1985	27.6	0	0	3.1	11	2:00a	SW
10	41.2	53	44.7	10:00p	1:00a	80	1977	37	3:00a	36	15	1997	24.1	0	0	5	17	12:00m	SSW
11	37.7	51.4	40.8	1:00a	12:00m	79	1977	35.4	7:00a	36	18	1952	26.9	0	0	3.4	14	1:00a	NNE
12	42.7	36.3	50.2	5:00p	12:00m	82	1971	37.1	4:00a	36	21	1982	21.4	0	0	2.8	19	11:00a	ESE
13	45.3	32.6	51.3	7:00p	9:00a	77	1960	40.7	7:00a	36	18	1950	19	0	0	3.3	17	1:00a	SSE
14	42.1	36.2	47.3	1:00a	1:00a	79	1976	40	6:00a	37	21	1982	21.4	0	0	2.5	17	4:00a	SW
15	43.3	38.1	52.8	8:00p	2:00a	83	1976	36.3	10:00a	37	16	1957	20.5	0	0	4.5	22	12:00m	SW
16	50	37.6	63	6:00p	1:00p	86	1976	41	12:00m	37	24	1990	13	0	0	10.1	26	2:00a	SSW
17	35.5	38.3	41	1:00a	6:00a	84	1976	32.3	12:00m	38	25	1949	28.4	0	0	12.3	45	7:00a	N
18	35.3	35.5	39.3	12:00m	12:00m	86	2002	31.4	7:00a	38	19	1990	29.7	0	0	3.2	11	9:00a	SW
19	41.9	33.2	45.3	4:00p	9:00a	84	1985	38.5	6:00a	38	18	1988	23.1	0	0	1.5	15	11:00a	ESE
20	40.8	30.8	44.9	6:00p	12:00p	84	1985	37.7	10:00a	39	22	1951	23.7	0	0	5.5	20	6:00p	SW
21	37.4	30.5	40.9	6:00a	1:00a	86	1985	34.5	11:00p	39	23	1953	27.3	0	0	7.1	19	3:00p	NNE
22	33.3	34.3	36.6	1:00a	7:00a	86	1985	30.6	7:00p	39	21	1993	31.4	0	0	5.8	22	6:00p	NNE
23	33	35	34.3	5:00p	6:00a	85	1980	31.3	10:00a	39	18	1986	32.2	0	0.08	2.5	15	9:00a	ENE
24	34.8	38.5	41	4:00p	3:00a	85	1990	28	7:00a	40	28	1999	30.5	0	0.01	2.2	18	12:00m	E
25	37.7	36	42.2	8:00a	2:01a	86	1990	36	12:00m	40	25	1949	25.9	0	0.26	10.1	31	5:00p	WSW
26	36.4	36.8	38.4	4:00p	8:02a	88	1986	31.9	12:00m	40	24	1997	29.8	0	0	7	27	12:00m	N
27	26.7	40.6	31.9	1:00a	5:02a	87	1994	24.7	7:00p	41	27	1988	36.7	0	0	16.6	38	4:00p	NNE
28	25.9	40.9	28.8	9:00p	6:00a	85	1990	22.4	8:00a	41	24	1992	39.4	0	0	3.3	13	12:00p	N
29	34.5	43.1	43.1	8:00p	6:00a	82	1970	26.2	3:00a	41	27	1979	30.4	0	0.03	10.1	34	7:00p	SSW
30	40.1	52.8	47	6:00p	5:02a	87	1962	35.7	7:00a	42	30	1971	23.6	0	0.06	6.7	23	1:00a	SW
31	40	50.6	48.9	2:00a	11:02p	84	1986	35.7	6:00p	42	18	1954	22.7	0	0	5	21	2:00a	N
AVE	34.9	38.0											29.7	0.0	0.0	6.1	22.0		SW
MAX	50	53	63			88		41		42	30		47.8	0	0.26	16.6	45.0		
MIN	17.7	30.5	24.1					9.2		33	9		13	0	0	1.5	11		
TOTAL															0.56				

Max Rain: 0.26 ON 03/25/15
 Days of Rain: 6 (>.01 in) 1 (>.1 in) 0 (>1 in)