Appendix B
2017 CSO Flow Monitoring Data for Representative CSOs

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q1 – 2017

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

July 2017
Revised October 2017

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q1 – 2017

July 2017
Revised October 2017

C&S ENGINEERS, INC.
499 Colonel Eileen Collins Blvd.
Syracuse, N.Y. 13212

Quarterly Flow Report
CSO Flow Monitoring Program
Q1 – 2017

Revised 10/13/17

Performance Period:

This quarterly flow report is for the period of January 1 through March 31, 2017. This report was prepared by CDM Smith for C&S Engineers and Onondaga County.

CSO Flow Monitoring Summary:

This report includes data and graphics for flow at 10 CSO locations in the City of Syracuse, New York. The overflow volume for CSO 080 is not included in this report as it is calculated by a formula agreed upon by the New York State Department of Environmental Conversation (NYSDEC). Below is a summary of monthly overflow volumes for the 10 CSOs included in this report.

CSO 034 experienced some backflow from high levels in Onondaga Creek in February and March which entered the conveyance sewer. The Clinton Storage Facility was not full during the days in question, therefore the metered flow was determined not to be an overflow and the data in the tables below reflect that determination.

Flows for CSO 060 were calculated by Hach Company, Loveland, Colorado based on quality control data to compensate for sensor power/calibration issues during the months of February and March. Because of the outdoor positioning of the sensors, flow readings for days with sub-freezing temperatures and significant snowfall/snowpack accumulation were determined to be non-representative and are not included in the summaries.

For CSO 063, the flow meter detected flow in the overflow pipe on numerous occasions during the first quarter, however none of these events could be verified as actual overflows to Harbor Brook. The Harbor Brook Storage Tank was not full at any point in the first quarter, therefore the flow data measured is attributed to standing water movement within the overflow structure's shallow sump due to air releases from the upstream regulator during storm conveyance in the Hiawatha Conveyance Sewer.

The flow data measured for CSO 075 was also subject to continual surcharged conditions from high levels in Onondaga Creek. Due to these surcharged conditions for the first quarter, the flow data was determined to be non-representative and removed from the summary table below.

The flow for the CSO 078 is calculated from a combination of 2 devices within a manhole several hundred feet downstream of the permitted overflow location on the corner of Velasko Road and Bellevue Avenue. The manhole has two inlet connections (the CSO 078 overflow sewer to the south and a lateral connection from a laundromat/car wash to the west) and one outlet to the north. The flow data received is from the overflow sewer to the south. This flow combines with the other sanitary flow inlet prior to exiting the structure. The flow that exits this manhole is then regulated once again in a downstream structure on West Onondaga Street with normal flow being directed to the HBIS and surcharged storm flow being discharged to Harbor Brook. As a result, the flow data for the current 078 monitoring point cannot be verified as a discharge to Harbor Brook.

The raw data for all CSOs including 080 is included as an electronic attachment to this report in Microsoft Excel format.

CSO Overflow Volume (in gallons) per Month

CSO Location	January	February	March
CSO Overflow Volume (in gallons) per Month			
003	0	0	0
004	0	0[6]	0
014	9,523	924,892	1,328,998
027[1]	964,912	1,311,644	1,998,161
034	0	0[7]	0[7]
052	946	64,333	103,031
060[2]	22,700	2,225,281	1,052,656
063[3]	0	0	0
075[4]	--	--	--
078[5]	--	--	--
CSO Overflow Events per Month			
003	0	0	0
004	0	0[6]	0
014	2	7	4
027[1]	3	2	5
034	0	0[7]	0[7]
052	1	8	12
060[2]	1	12	11
063[3]	0	0	0
075[4]	--	--	--
078[5]	--	--	--
CSO Overflow Duration in hours per Month			
003	0	0	0
004	0	0[6]	0
014	1.75	11.75	14.50
027[1]	10.50	16.00	22.00
034	0	0[7]	0[7]
052	1.50	36.00	72.45
060[2]	0.75	22.75	12.25
063[3]	0	0	0
075[4]	--	--	--
078[5]	--	--	--

Notes:

1 – Overflow volume is calculated by subtracting regulator flow from trunk sewer flow only when regulator pipe is at capacity or surcharged.

2 – The outdoor positioning of the sensors, flow readings for days with sub-freezing temperatures and significant snowfall/snowpack accumulation were determined to be non-representative and are not included in the totals.

3 – The Harbor Brook Storage Tank was not full at any point in the first quarter, therefore the flow data measured is attributed to standing water movement within the CSO 063 overflow structure's shallow sump due to air releases from the upstream regulator during storm conveyance in the Hiawatha Conveyance Sewer.

4 – Flow meter location was continually surcharge from Onondaga Creek which resulted in both positive and negative flow rates. Flow data cannot indicate combined sewer overflow from this location.

5 – Due to manhole and overflow sewer configuration, the flow data measured does not represent actual overflow to Harbor Brook.

6 – The meter detected an overflow volume on 2/3, 2/5, and 2/6; however, the storage facility was not full so an overflow could not occur.

7 – Flow meter location was subject to backflow from high levels in Onondaga Creek on February 25-26, and March 27-29. In addition, the Clinton CSO Storage Facility was not full on these dates. Therefore, the flow detected was determined not to be overflow.

Meter Performance Summary:

The table below is a summary of meter performance. The percentage is based upon the number of valid 15-minute flow data points divided by the number of 15-minute flow data points per month. The up-time goal for each site is 90% or greater per month. Monthly readings that fall below that percentage are highlighted in the table.

Meter Up-time per Month

CSO Location	January	February	March
003	100%	100%	100%
004	100%	100%	100%
014	100%	100%	100%
027	***61.79%***	***61.21%***	100%
034	100%	100%	100%
052	100%	100%	100%
060	100%	99.96%	99.93%
063	100%	100%	100%
075	100%	100%	100%
078	100%	100%	100%
080	100%	100%	100%

List of Attached Graphs and Tables:

Table - CSO 003 Daily Overflow Volume January thru March 2017
Graph – CSO 003 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 003 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 004 Daily Overflow Volume January thru March 2017
Graph – CSO 004 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 004 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 014 Daily Overflow Volume January thru March 2017
Graph – CSO 014 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 014 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 027 Daily Overflow Volume January thru March 2017
Graph – CSO 027 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 027 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 034 Daily Overflow Volume January thru March 2017
Graph – CSO 034 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 034 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 052 Daily Overflow Volume January thru March 2017
Graph – CSO 052 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 052 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 060 Daily Overflow Volume January thru March 2017
Graph – CSO 060 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 060 Scatter graph of Level and Velocity by Day for January thru March 2017

List of Attached Graphs and Tables (cont'd):

Table - CSO 063 Daily Overflow Volume January thru March 2017
Graph – CSO 063 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 063 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 075 Daily Overflow Volume January thru March 2017
Graph – CSO 075 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 075 Scatter graph of Level and Velocity by Day for January thru March 2017
Table - CSO 078 Daily Overflow Volume January thru March 2017
Graph – CSO 078 Hydrograph of Volume and Rainfall by Day for January thru March 2017
Graph – CSO 078 Scatter graph of Level and Velocity by Day for January thru March 2017

CSO 003 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
1/1/2017	N/A	0.05	0.05	
1/2/2017	N/A	0.01	0.01	
1/3/2017	N/A	0.67	0.15	
1/4/2017	N/A	0.05	0.02	
1/5/2017	N/A	0.02	0.01	
1/6/2017	N/A	0.01	0.01	
1/7/2017	N/A	0	0	
1/8/2017	N/A	0.05	0.02	
1/9/2017	N/A	0	0.01	
1/10/2017	N/A	0.23	0.07	
1/11/2017	N/A	0.16	0.11	
1/12/2017	N/A	0.32	0.14	
1/13/2017	N/A	0	0	
1/14/2017	N/A	0	0	
1/15/2017	N/A	0	0	
1/16/2017	N/A	0	0	
1/17/2017	N/A	0.94	0.29	
1/18/2017	N/A	0.11	0.04	
1/19/2017	N/A	0.01	0.01	
1/20/2017	N/A	0.02	0.01	
1/21/2017	N/A	0	0	
1/22/2017	N/A	0	0	
1/23/2017	N/A	0.09	0.05	
1/24/2017	N/A	0.46	0.08	
1/25/2017	N/A	0.01	0.01	
1/26/2017	0	0.11	0.05	
1/27/2017	0	0	0	
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0	0	0	
2/4/2017	0	0	0	
2/5/2017	0	0	0	
2/6/2017	0	0	0	
2/7/2017	0	0.59	0.14	
2/8/2017	0	0.06	0.03	
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	
2/11/2017	0	0.01	0.01	

CSO 003 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

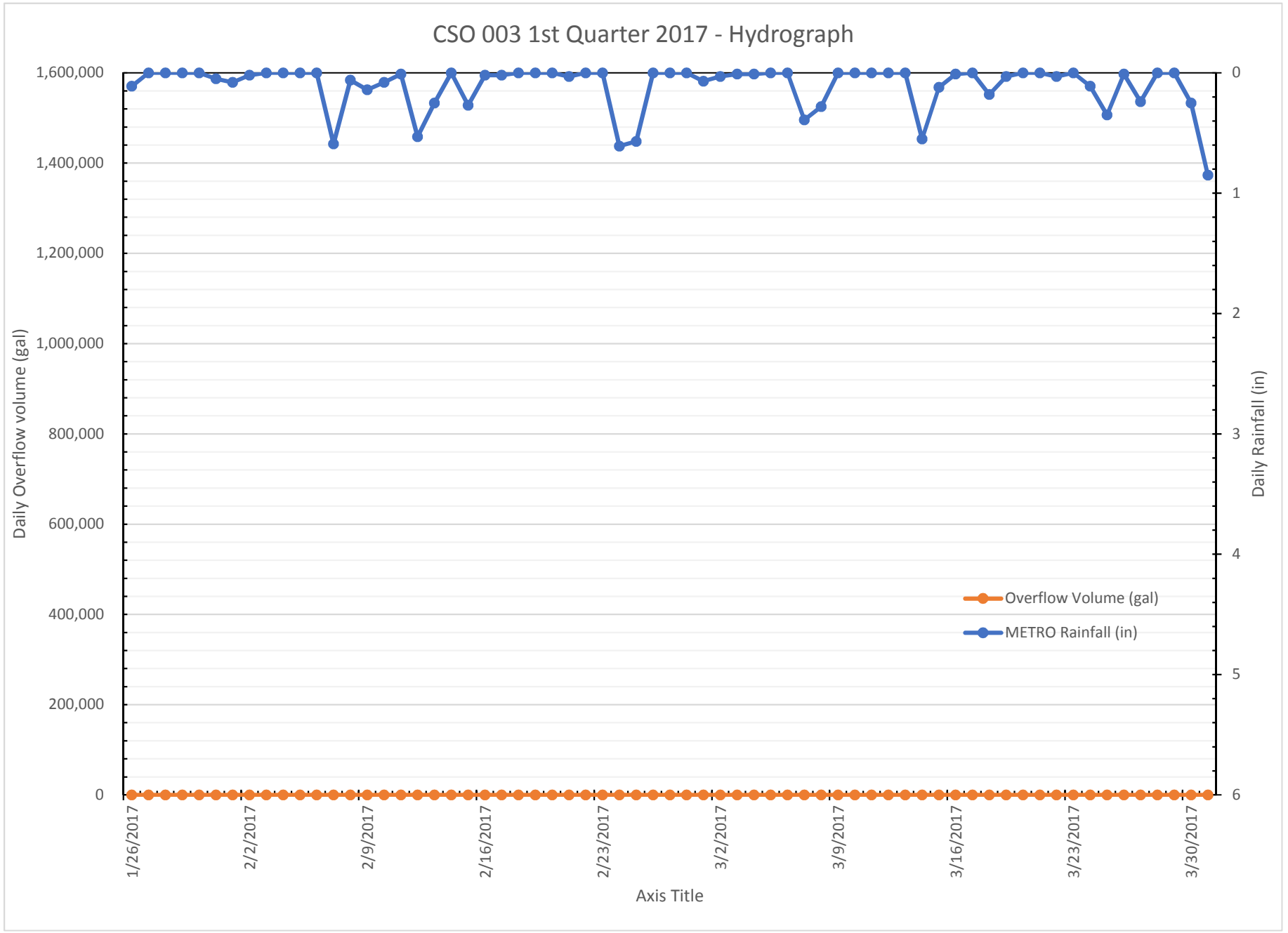
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
2/12/2017	0	0.53	0.15	
2/13/2017	0	0.25	0.06	
2/14/2017	0	0	0	
2/15/2017	0	0.27	0.11	
2/16/2017	0	0.02	0.01	
2/17/2017	0	0.02	0.02	
2/18/2017	0	0	0	
2/19/2017	0	0	0	
2/20/2017	0	0	0	
2/21/2017	0	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	0	0	0	
2/24/2017	0	0.61	0.56	
2/25/2017	0	0.57	0.23	
2/26/2017	0	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	0	0.03	0.01	
3/3/2017	0	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	0	0.39	0.11	
3/8/2017	0	0.28	0.13	
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	0	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	
3/15/2017	0	0.12	0.02	
3/16/2017	0	0.01	0.01	
3/17/2017	0	0	0	
3/18/2017	0	0.18	0.04	
3/19/2017	0	0.03	0.01	
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	0	0.03	0.02	
3/23/2017	0	0	0	
3/24/2017	0	0.11	0.07	
3/25/2017	0	0.35	0.1	

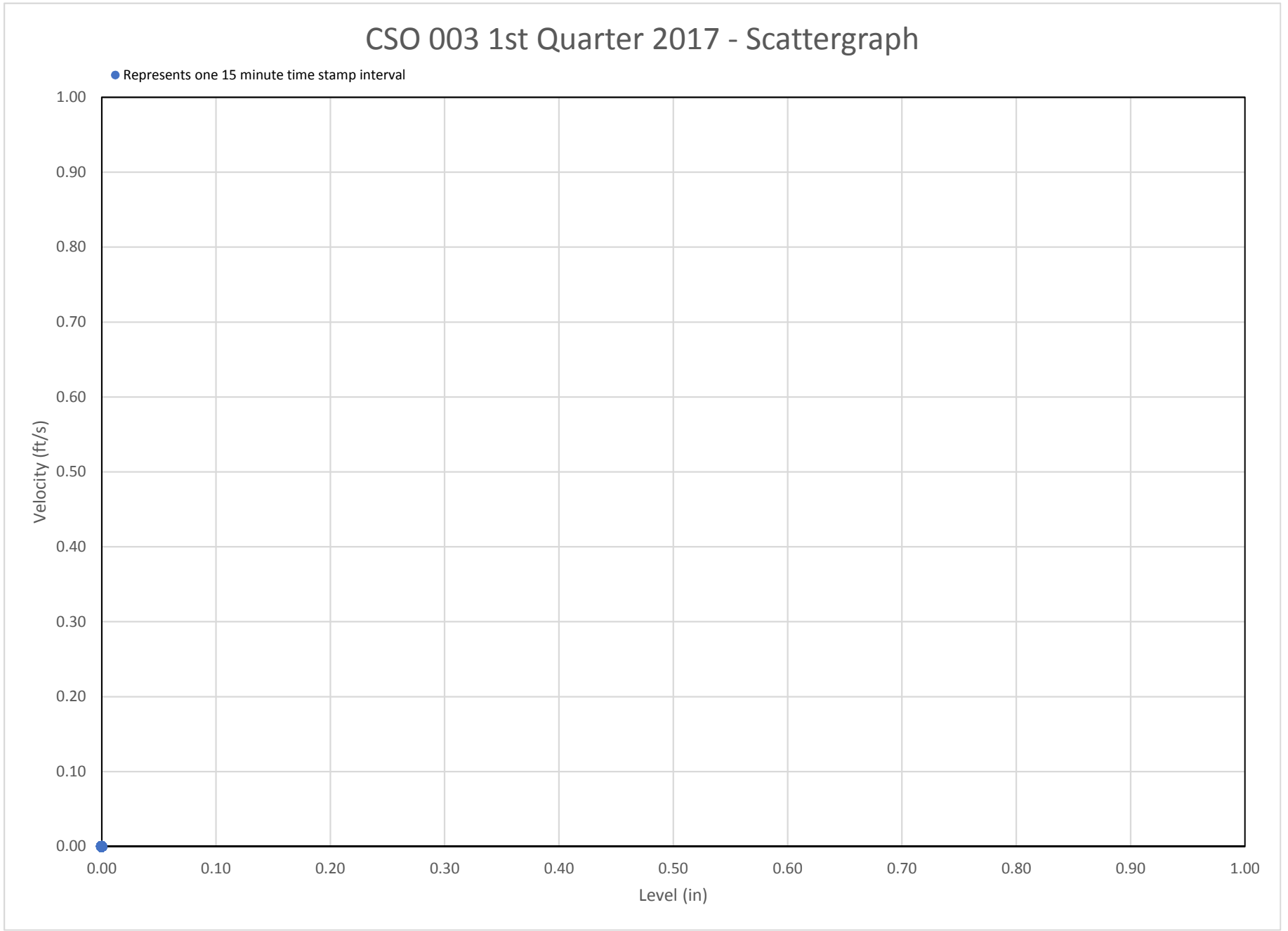
CSO 003 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
3/26/2017	0	0.01	0.01	
3/27/2017	0	0.24	0.16	
3/28/2017	0	0	0	
3/29/2017	0	0	0	
3/30/2017	0	0.25	0.13	
3/31/2017	0	0.85	0.1	

January Total	0	3.37
February Total	0	3.28
March	0	3.52

1Q Total	0	10.17


CSO 003 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Daily Rainfall (in)
0
1
2
3
4
5
6
1/26/2017
2/2/2017
2/9/2017
2/16/2017
2/23/2017
3/2/2017
3/9/2017
3/16/2017
3/23/2017
3/30/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 003 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
0.10
0.20
0.30
0.40
0.50
0.60
0.70
0.80
0.90
1.00
Level (in)

CSO 004 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
1/1/2017	N/A	0.05	0.05	
1/2/2017	N/A	0.01	0.01	
1/3/2017	N/A	0.67	0.15	
1/4/2017	N/A	0.05	0.02	
1/5/2017	N/A	0.02	0.01	
1/6/2017	N/A	0.01	0.01	
1/7/2017	N/A	0	0	
1/8/2017	N/A	0.05	0.02	
1/9/2017	N/A	0	0.01	
1/10/2017	N/A	0.23	0.07	
1/11/2017	N/A	0.16	0.11	
1/12/2017	N/A	0.32	0.14	
1/13/2017	N/A	0	0	
1/14/2017	N/A	0	0	
1/15/2017	N/A	0	0	
1/16/2017	N/A	0	0	
1/17/2017	N/A	0.94	0.29	
1/18/2017	N/A	0.11	0.04	
1/19/2017	N/A	0.01	0.01	
1/20/2017	N/A	0.02	0.01	
1/21/2017	N/A	0	0	
1/22/2017	N/A	0	0	
1/23/2017	N/A	0.09	0.05	
1/24/2017	N/A	0.46	0.08	
1/25/2017	0	0.01	0.01	
1/26/2017	0	0.11	0.05	
1/27/2017	0	0	0	
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0[1]	0	0	
2/4/2017	0	0	0	
2/5/2017	0[1]	0	0	
2/6/2017	0[1]	0	0	
2/7/2017	0	0.59	0.14	
2/8/2017	0	0.06	0.03	
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	
2/11/2017	0	0.01	0.01	

CSO 004 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
2/12/2017	0	0.53	0.15	
2/13/2017	0	0.25	0.06	
2/14/2017	0	0	0	
2/15/2017	0	0.27	0.11	
2/16/2017	0	0.02	0.01	
2/17/2017	0	0.02	0.02	
2/18/2017	0	0	0	
2/19/2017	0	0	0	
2/20/2017	0	0	0	
2/21/2017	0	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	0	0	0	
2/24/2017	0	0.61	0.56	
2/25/2017	0	0.57	0.23	
2/26/2017	0	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	0	0.03	0.01	
3/3/2017	0	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	0	0.39	0.11	
3/8/2017	0	0.28	0.13	
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	0	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	
3/15/2017	0	0.12	0.02	
3/16/2017	0	0.01	0.01	
3/17/2017	0	0	0	
3/18/2017	0	0.18	0.04	
3/19/2017	0	0.03	0.01	
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	0	0.03	0.02	
3/23/2017	0	0	0	
3/24/2017	0	0.11	0.07	
3/25/2017	0	0.35	0.1	

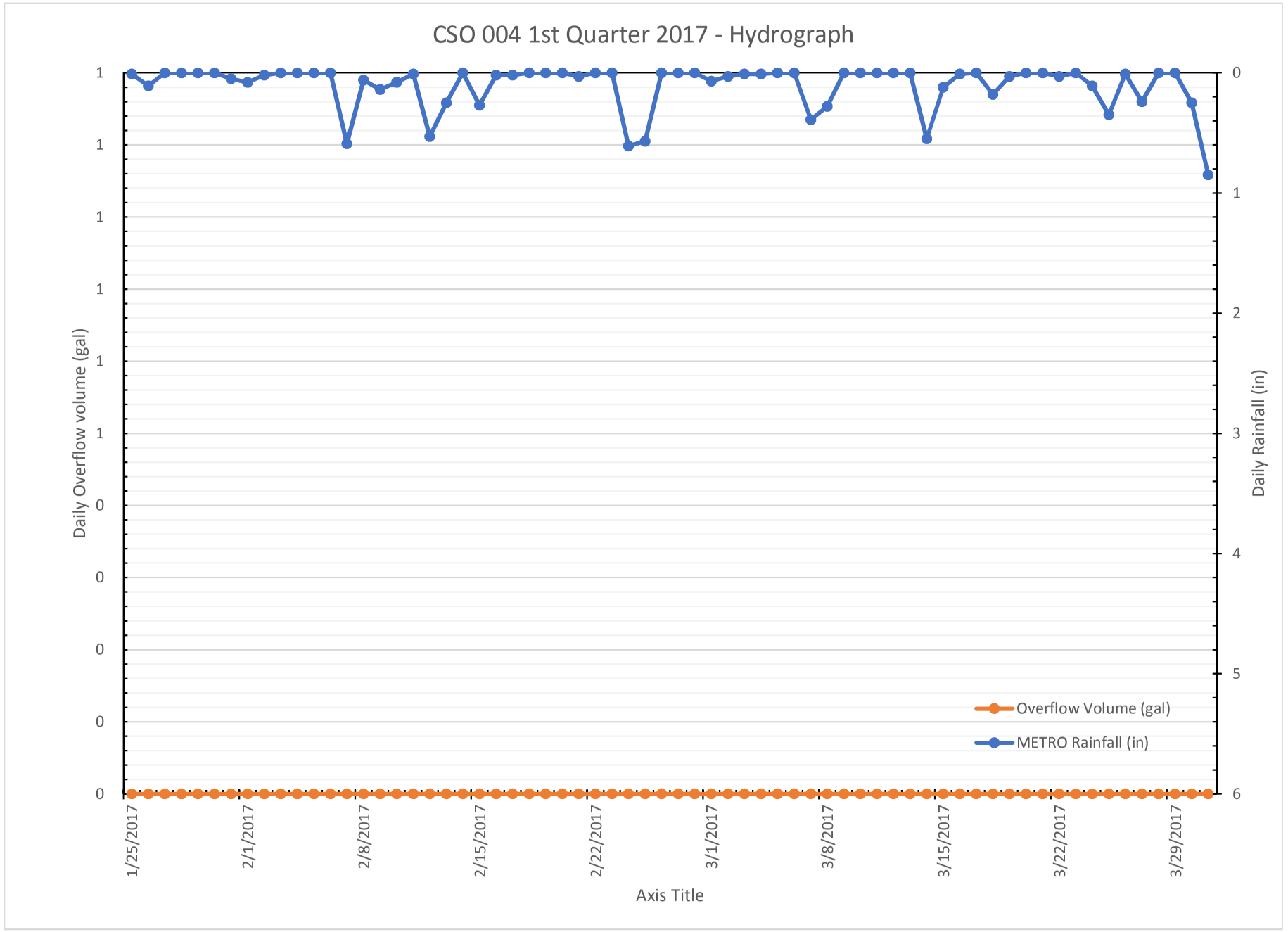
CSO 004 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
3/26/2017	0	0.01	0.01	
3/27/2017	0	0.24	0.16	
3/28/2017	0	0	0	
3/29/2017	0	0	0	
3/30/2017	0	0.25	0.13	
3/31/2017	0	0.85	0.1	

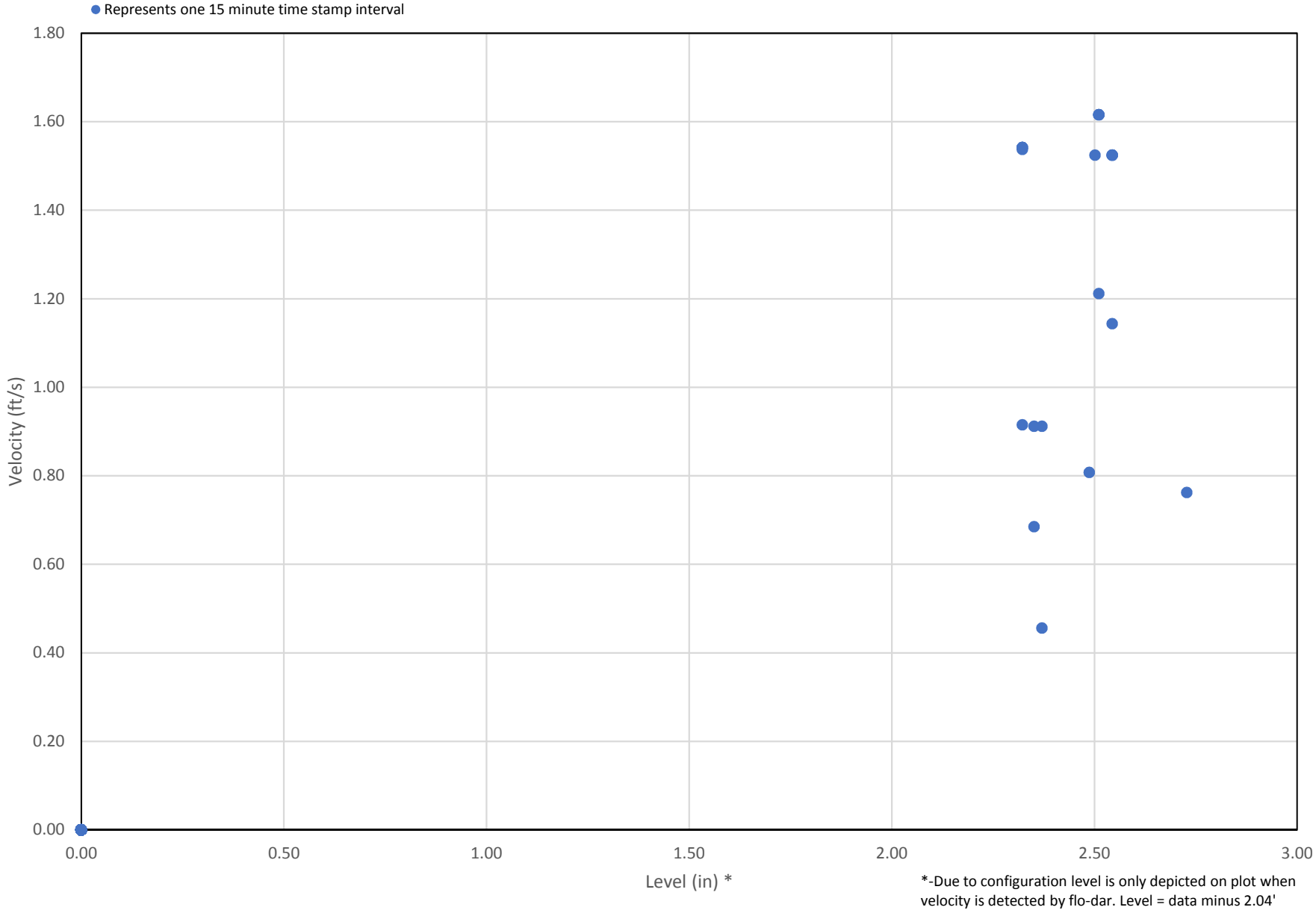
January Total	0	3.37
February Total	0	3.28
March	0	3.52

1Q Total	0	10.17

Notes:
1 - The meter detected an overflow volume on 2/3, 2/5, and 2/6; however the storage facility was not full so an overflow could not occur. As a result, we are deeming these flows as a meter malfuntion.


CSO 004 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
Overflow Volume (gal)
METRO Rainfall (in)
1/25/2017
2/1/2017
2/8/2017
2/15/2017
2/22/2017
3/1/2017
3/8/2017
3/15/2017
3/22/2017
3/29/2017
Axis Title

CSO 004 1st Quarter 2017 - Scattergraph



*-Due to configuration level is only depicted on plot when velocity is detected by flo-dar. Level = data minus 2.04'

CSO 014 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
1/1/2017	N/A	0.05	0.05	
1/2/2017	N/A	0.01	0.01	
1/3/2017	N/A	0.67	0.15	
1/4/2017	N/A	0.05	0.02	
1/5/2017	N/A	0.02	0.01	
1/6/2017	N/A	0.01	0.01	
1/7/2017	N/A	0	0	
1/8/2017	N/A	0.05	0.02	
1/9/2017	N/A	0	0.01	
1/10/2017	N/A	0.23	0.07	
1/11/2017	N/A	0.16	0.11	
1/12/2017	N/A	0.32	0.14	
1/13/2017	N/A	0	0	
1/14/2017	N/A	0	0	
1/15/2017	N/A	0	0	
1/16/2017	N/A	0	0	
1/17/2017	N/A	0.94	0.29	
1/18/2017	N/A	0.11	0.04	
1/19/2017	N/A	0.01	0.01	
1/20/2017	0	0.02	0.01	
1/21/2017	0	0	0	
1/22/2017	0	0	0	
1/23/2017	0	0.09	0.05	
1/24/2017	577	0.46	0.08	
1/25/2017	0	0.01	0.01	
1/26/2017	0	0.11	0.05	
1/27/2017	9,523	0	0	
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0	0	0	
2/4/2017	0	0	0	
2/5/2017	0	0	0	
2/6/2017	0	0	0	
2/7/2017	73,244	0.59	0.14	
2/8/2017	0	0.06	0.03	
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	
2/11/2017	0	0.01	0.01	

CSO 014 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

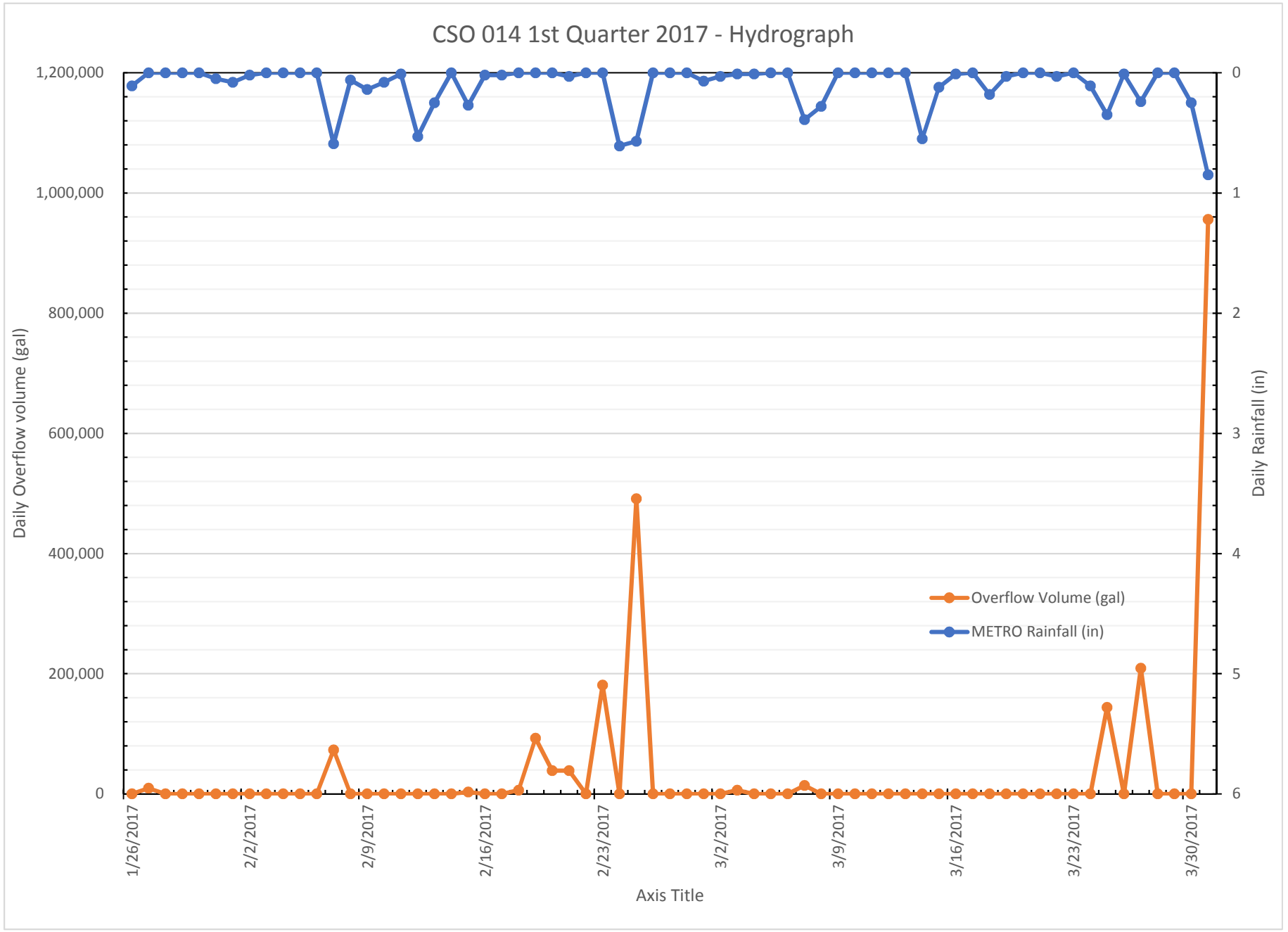
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
2/12/2017	0	0.53	0.15	
2/13/2017	0	0.25	0.06	
2/14/2017	0	0	0	
2/15/2017	3,142	0.27	0.11	
2/16/2017	0	0.02	0.01	
2/17/2017	0	0.02	0.02	
2/18/2017	6,039	0	0	
2/19/2017	92,510	0	0	
2/20/2017	38,623	0	0	
2/21/2017	38,933	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	181,094	0	0	
2/24/2017	0	0.61	0.56	
2/25/2017	491,306	0.57	0.23	
2/26/2017	0	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	0	0.03	0.01	
3/3/2017	6,037	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	13,904	0.39	0.11	
3/8/2017	0	0.28	0.13	
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	0	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	
3/15/2017	0	0.12	0.02	
3/16/2017	0	0.01	0.01	
3/17/2017	0	0	0	
3/18/2017	0	0.18	0.04	
3/19/2017	0	0.03	0.01	
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	0	0.03	0.02	
3/23/2017	0	0	0	
3/24/2017	0	0.11	0.07	
3/25/2017	143,928	0.35	0.1	

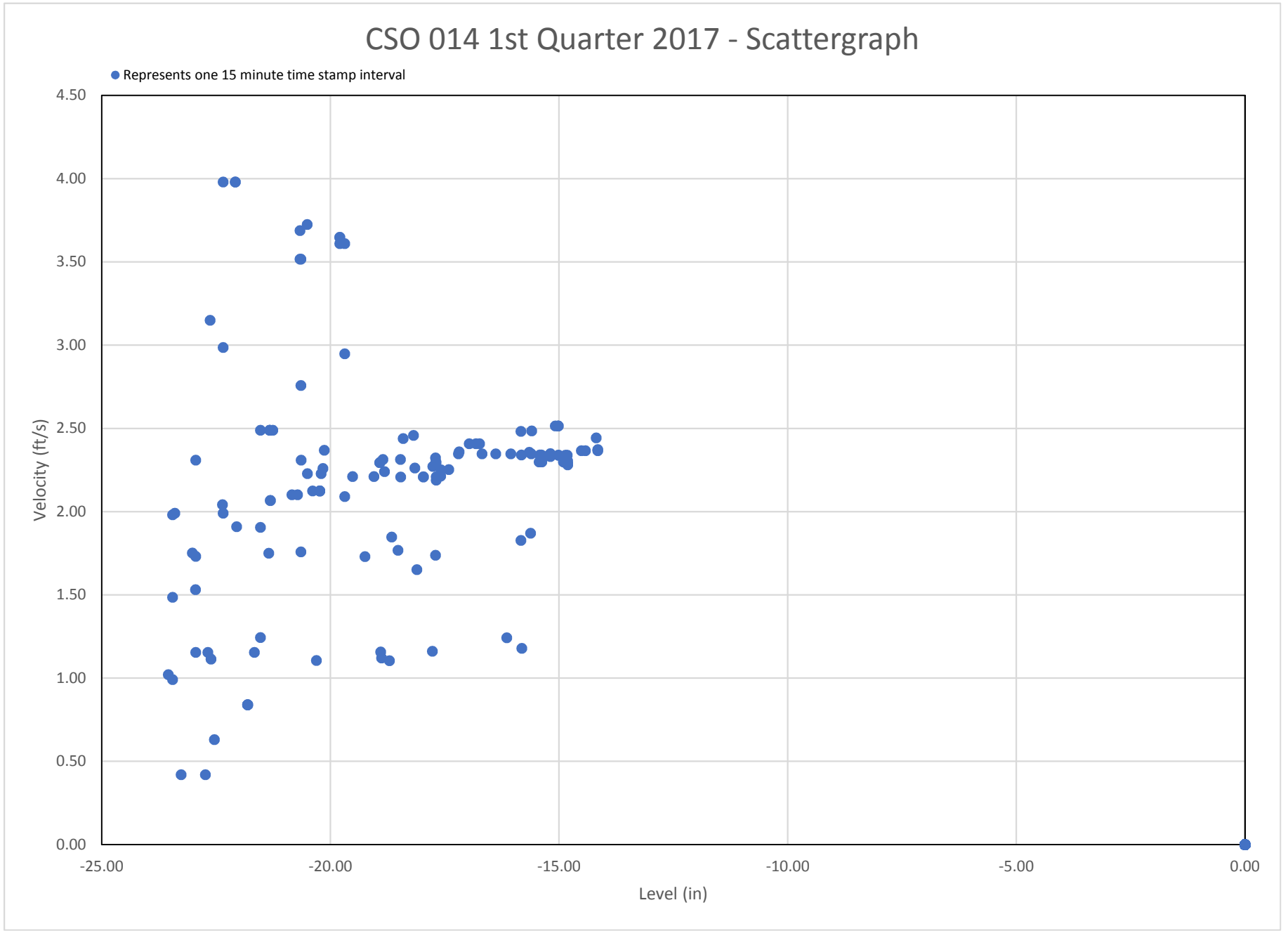
CSO 014 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
3/26/2017	0	0.01	0.01	
3/27/2017	209,063	0.24	0.16	
3/28/2017	0	0	0	
3/29/2017	0	0	0	
3/30/2017	0	0.25	0.13	
3/31/2017	956,067	0.85	0.1	

January	9,523	3.37
February	924,892	3.28
March	1,328,998	3.52

1Q Total	2,263,413	10.17


CSO 014 1st Quarter 2017 - Hydrograph
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
Daily Overflow volume (gal)
0
1
2
3
4
5
6
Daily Rainfall (in)
1/26/2017
2/2/2017
2/9/2017
2/16/2017
2/23/2017
3/2/2017
3/9/2017
3/16/2017
3/23/2017
3/30/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 014 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
-25.00
-20.00
-15.00
-10.00
-5.00
0.00
Level (in)

CSO 027 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
1/1/2017	0	0.05	0.05	
1/2/2017	0	0.01	0.01	
1/3/2017	724,715	0.67	0.15	
1/4/2017	0	0.05	0.02	
1/5/2017	0	0.02	0.01	
1/6/2017	0	0.01	0.01	
1/7/2017	0	0	0	
1/8/2017	0	0.05	0.02	
1/9/2017	0	0	0.01	
1/10/2017	0	0.23	0.07	
1/11/2017	0	0.16	0.11	
1/12/2017	213,125	0.32	0.14	
1/13/2017	0	0	0	
1/14/2017	0	0	0	
1/15/2017	0	0	0	
1/16/2017	0	0	0	
1/17/2017	0	0.94	0.29	
1/18/2017	0	0.11	0.04	
1/19/2017	0	0.01	0.01	
1/20/2017	0	0.02	0.01	
1/21/2017	0	0	0	
1/22/2017	0	0	0	
1/23/2017	0	0.09	0.05	
1/24/2017	27,072	0.46	0.08	
1/25/2017	0	0.01	0.01	
1/26/2017	0	0.11	0.05	
1/27/2017	0	0	0	
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0	0	0	
2/4/2017	0	0	0	
2/5/2017	0	0	0	
2/6/2017	0	0	0	
2/7/2017	150,207	0.59	0.14	
2/8/2017	0	0.06	0.03	
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	

CSO 027 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

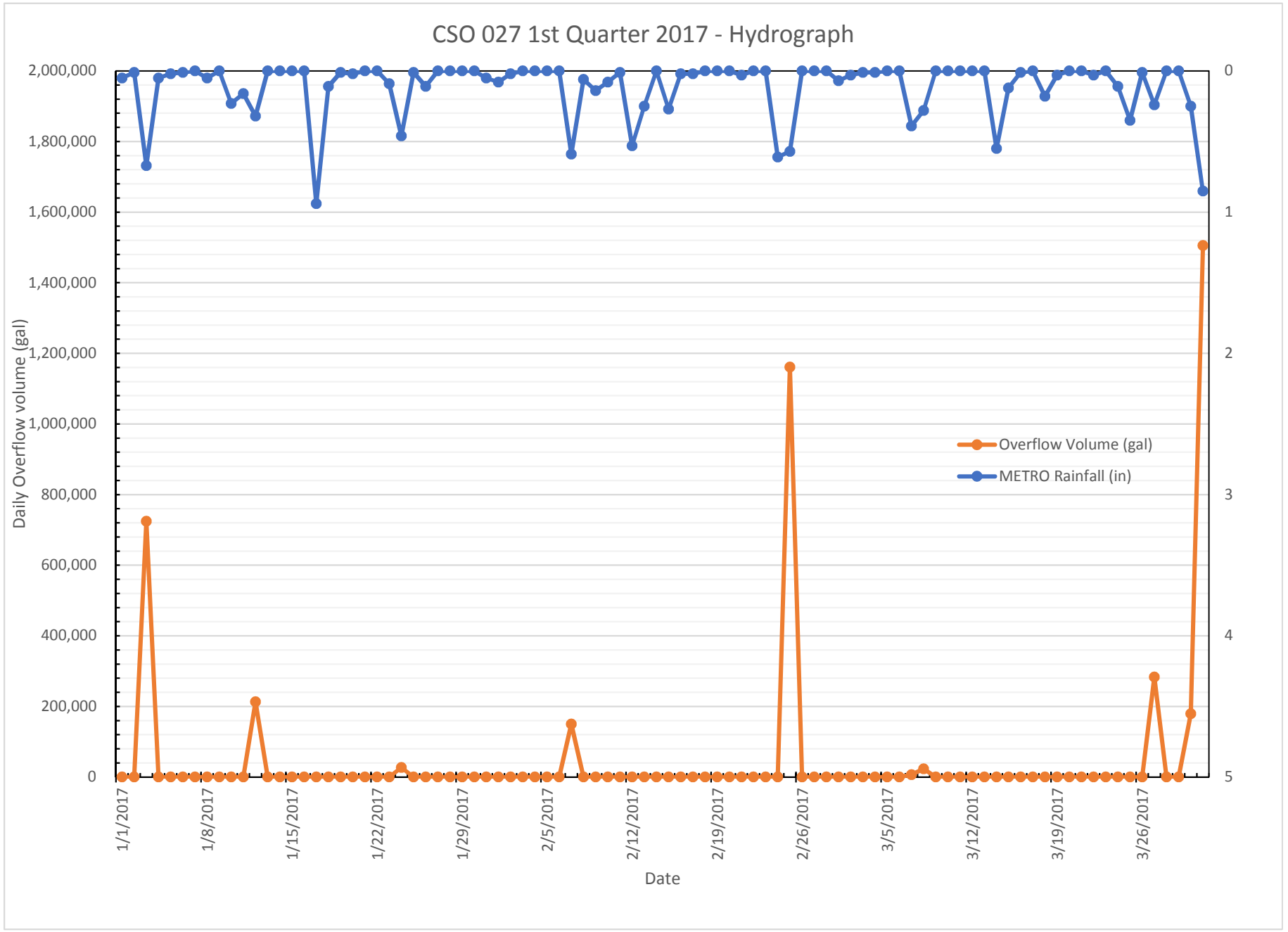
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
2/11/2017	0	0.01	0.01	
2/12/2017	0	0.53	0.15	
2/13/2017	0	0.25	0.06	
2/14/2017	0	0	0	
2/15/2017	0	0.27	0.11	
2/16/2017	0	0.02	0.01	
2/17/2017	0	0.02	0.02	
2/18/2017	0	0	0	
2/19/2017	0	0	0	
2/20/2017	0	0	0	
2/21/2017	0	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	0	0	0	
2/24/2017	0	0.61	0.56	
2/25/2017	1,161,437	0.57	0.23	
2/26/2017	0	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	0	0.03	0.01	
3/3/2017	0	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	6,901	0.39	0.11	
3/8/2017	23,398	0.28	0.13	
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	0	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	
3/15/2017	0	0.12	0.02	
3/16/2017	0	0.01	0.01	
3/17/2017	0	0	0	
3/18/2017	0	0.18	0.04	
3/19/2017	0	0.03	0.01	
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	0	0.03	0.02	
3/23/2017	0	0	0	

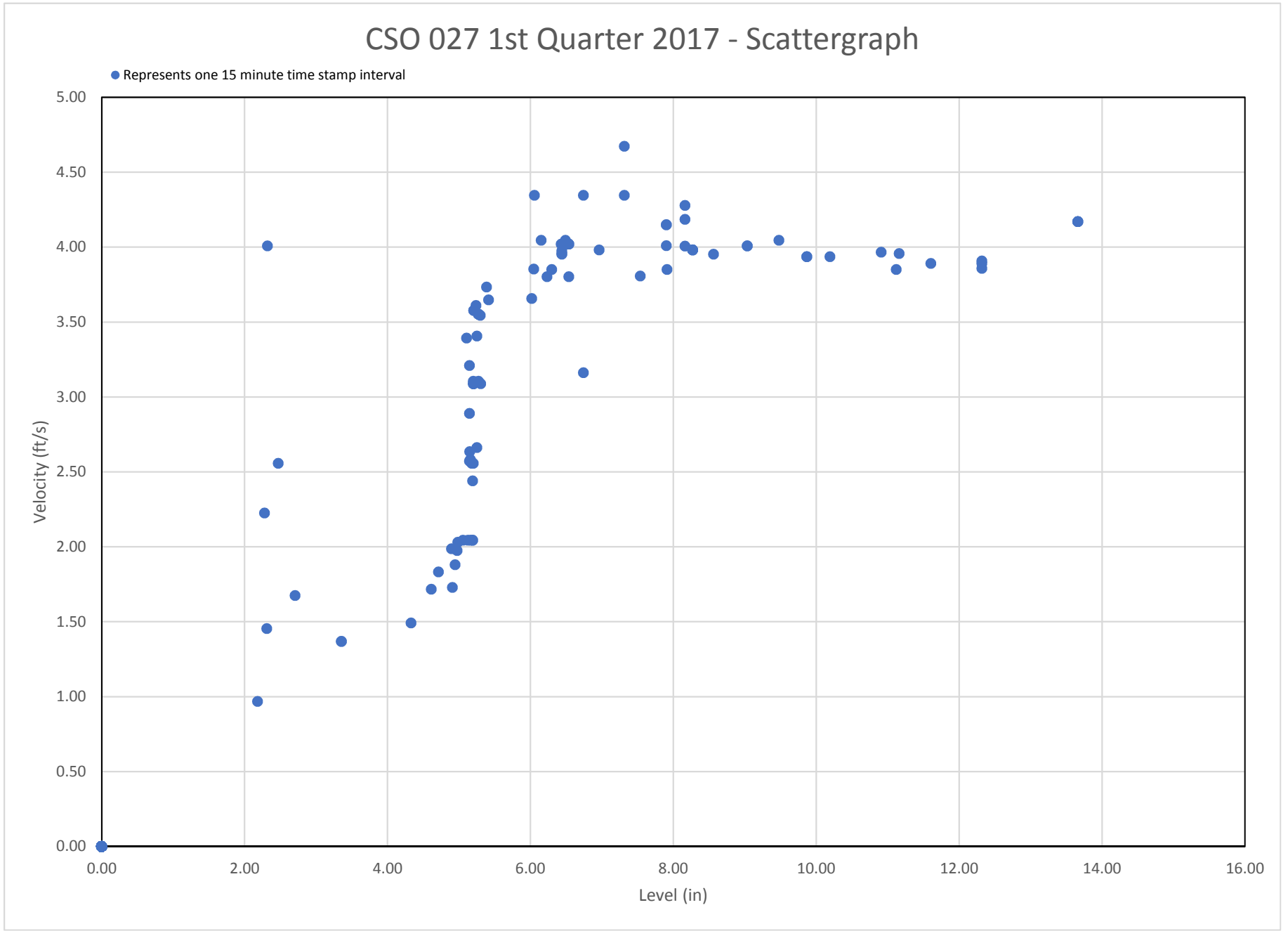
CSO 027 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
3/24/2017	0	0.11	0.07	
3/25/2017	0	0.35	0.1	
3/26/2017	0	0.01	0.01	
3/27/2017	283,361	0.24	0.16	
3/28/2017	0	0	0	
3/29/2017	0	0	0	
3/30/2017	179,256	0.25	0.13	
3/31/2017	1,505,245	0.85	0.1	

January Total	964,912	3.37
February Total	1,311,644	3.28
March	1,998,161	3.52

1Q Total	4,274,716	10.17


CSO 027 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,000,000
1,800,000
1,600,000
1,400,000
1,200,000
1,000,000
800,000
600,000
400,000
200,000
0
0
1
2
3
4
5
1/1/2017
1/8/2017
1/15/2017
1/22/2017
1/29/2017
2/5/2017
2/12/2017
2/19/2017
2/26/2017
3/5/2017
3/12/2017
3/19/2017
3/26/2017
Date
Overflow Volume (gal)
METRO Rainfall (in)


CSO 027 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
16.00
Level (in)

CSO 034 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
1/1/2017	N/A	0.05	0.05	
1/2/2017	N/A	0.01	0.01	
1/3/2017	N/A	0.67	0.15	
1/4/2017	N/A	0.05	0.02	
1/5/2017	N/A	0.02	0.01	
1/6/2017	N/A	0.01	0.01	
1/7/2017	N/A	0	0	
1/8/2017	N/A	0.05	0.02	
1/9/2017	N/A	0	0.01	
1/10/2017	N/A	0.23	0.07	
1/11/2017	N/A	0.16	0.11	
1/12/2017	N/A	0.32	0.14	
1/13/2017	N/A	0	0	
1/14/2017	N/A	0	0	
1/15/2017	N/A	0	0	
1/16/2017	N/A	0	0	
1/17/2017	N/A	0.94	0.29	
1/18/2017	N/A	0.11	0.04	
1/19/2017	N/A	0.01	0.01	
1/20/2017	N/A	0.02	0.01	
1/21/2017	N/A	0	0	
1/22/2017	N/A	0	0	
1/23/2017	N/A	0.09	0.05	
1/24/2017	N/A	0.46	0.08	
1/25/2017	0	0.01	0.01	
1/26/2017	0	0.11	0.05	
1/27/2017	0	0	0	
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0	0	0	
2/4/2017	0	0	0	
2/5/2017	0	0	0	
2/6/2017	0	0	0	
2/7/2017	0	0.59	0.14	
2/8/2017	0	0.06	0.03	
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	

CSO 034 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)	
				>0.9	
2/11/2017	0	0.01	0.01		
2/12/2017	0	0.53	0.15		
2/13/2017	0	0.25	0.06		
2/14/2017	0	0	0		
2/15/2017	0	0.27	0.11		
2/16/2017	0	0.02	0.01		
2/17/2017	0	0.02	0.02		
2/18/2017	0	0	0		
2/19/2017	0	0	0		
2/20/2017	0	0	0		
2/21/2017	0	0.03	0.02		
2/22/2017	0	0	0		
2/23/2017	0	0	0		
2/24/2017	0	0.61	0.56		
2/25/2017	0	0.57	0.23	*	
2/26/2017	0	0	0	*	
2/27/2017	0	0	0		
2/28/2017	0	0	0		
3/1/2017	0	0.07	0.06		
3/2/2017	0	0.03	0.01		
3/3/2017	0	0.01	0.01		
3/4/2017	0	0.01	0.01		
3/5/2017	0	0	0		
3/6/2017	0	0	0		
3/7/2017	0	0.39	0.11		
3/8/2017	0	0.28	0.13		
3/9/2017	0	0	0		
3/10/2017	0	0	0		
3/11/2017	0	0	0		
3/12/2017	0	0	0		
3/13/2017	0	0	0		
3/14/2017	0	0.55	0.08		
3/15/2017	0	0.12	0.02		
3/16/2017	0	0.01	0.01		
3/17/2017	0	0	0		
3/18/2017	0	0.18	0.04		
3/19/2017	0	0.03	0.01		
3/20/2017	0	0	0		
3/21/2017	0	0	0		
3/22/2017	0	0.03	0.02		
3/23/2017	0	0	0		

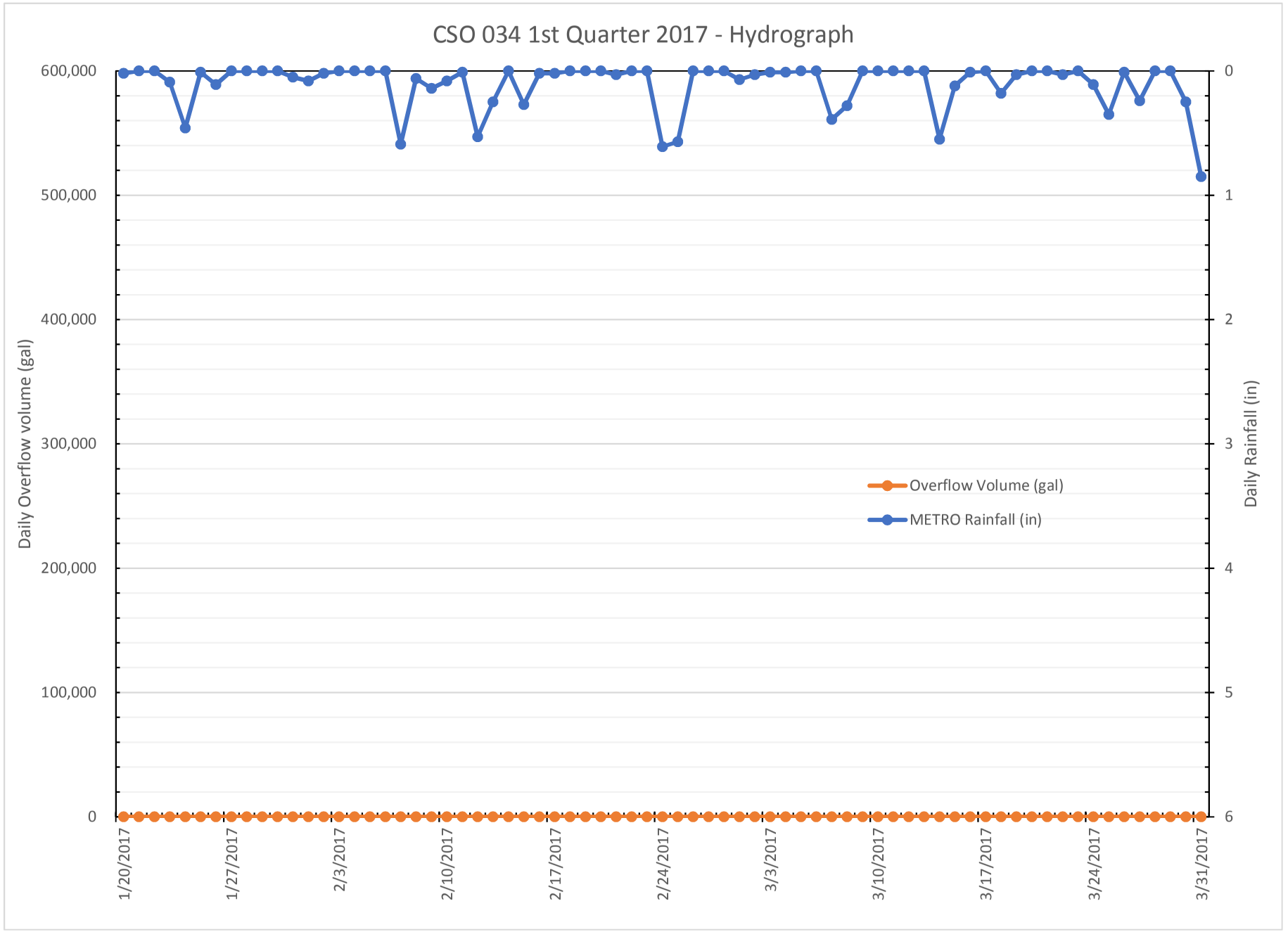
CSO 034 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

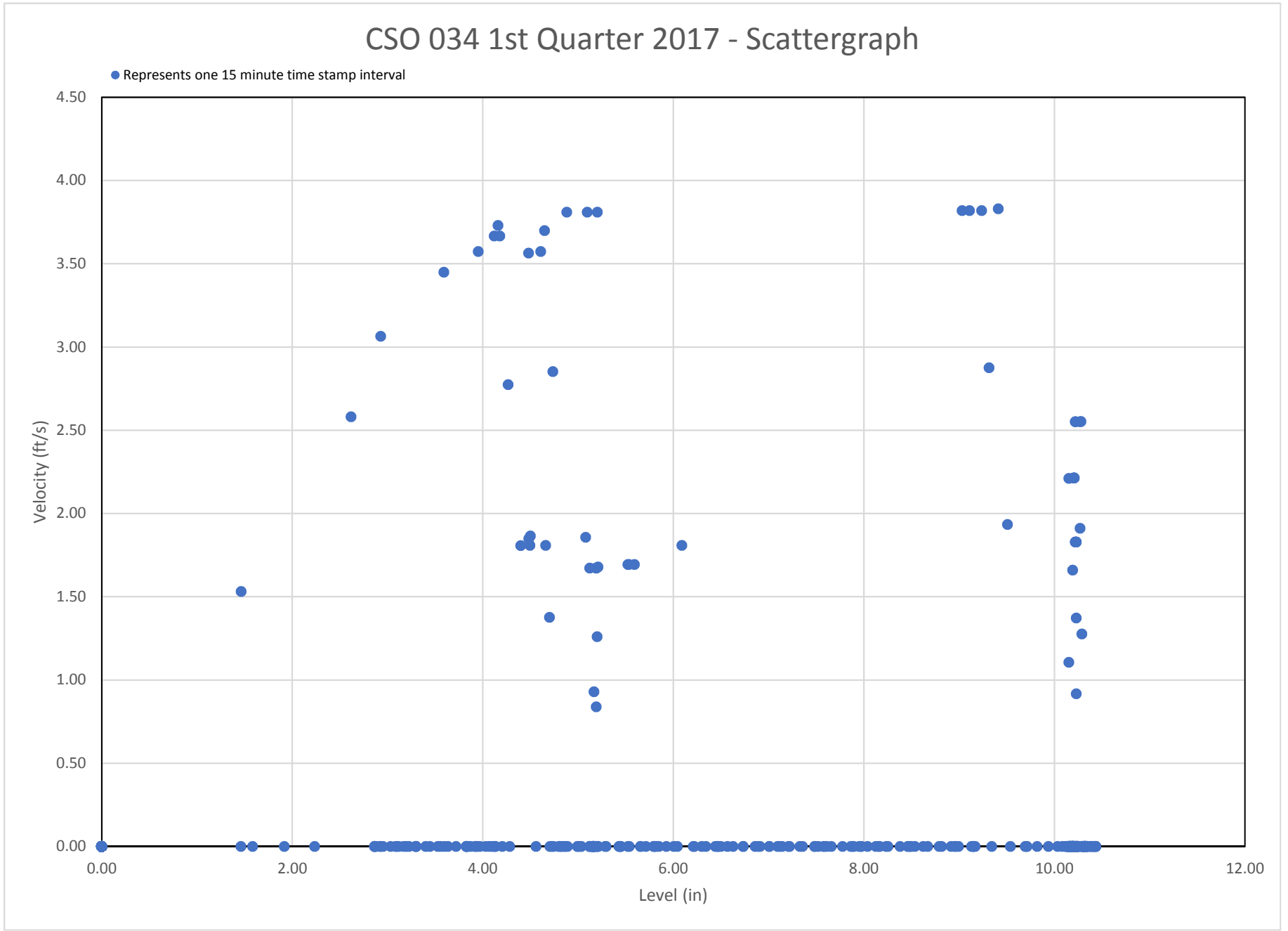
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)	
				>0.9	
3/24/2017	0	0.11	0.07		
3/25/2017	0	0.35	0.1		
3/26/2017	0	0.01	0.01		
3/27/2017	0	0.24	0.16		*
3/28/2017	0	0	0		*
3/29/2017	0	0	0		*
3/30/2017	0	0.25	0.13		
3/31/2017	0	0.85	0.1		

January	0	3.37
February	0	3.28
March	0	3.52

1Q Total	0	10.17

* – Flow meter location was subject to backflow from Onondaga Creek on February 25-26, and March 27-29. In addition, the Clinton CSO Storage Facility was not full on these dates. Therefore the flow detected was not an overflow and will be reflected as no overflow volume in the report.


CSO 034 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
600,000
500,000
400,000
300,000
200,000
100,000
0
0
1
2
3
4
5
6
Overflow Volume (gal)
METRO Rainfall (in)
1/20/2017
1/27/2017
2/3/2017
2/10/2017
2/17/2017
2/24/2017
3/3/2017
3/10/2017
3/17/2017
3/24/2017
3/31/2017


CSO 034 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
Level (in)

CSO 052 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
1/1/2017	N/A	0.05	0.05	
1/2/2017	N/A	0.01	0.01	
1/3/2017	N/A	0.67	0.15	
1/4/2017	N/A	0.05	0.02	
1/5/2017	N/A	0.02	0.01	
1/6/2017	N/A	0.01	0.01	
1/7/2017	N/A	0	0	
1/8/2017	N/A	0.05	0.02	
1/9/2017	N/A	0	0.01	
1/10/2017	N/A	0.23	0.07	
1/11/2017	N/A	0.16	0.11	
1/12/2017	N/A	0.32	0.14	
1/13/2017	N/A	0	0	
1/14/2017	N/A	0	0	
1/15/2017	N/A	0	0	
1/16/2017	N/A	0	0	
1/17/2017	N/A	0.94	0.29	
1/18/2017	N/A	0.11	0.04	
1/19/2017	N/A	0.01	0.01	
1/20/2017	N/A	0.02	0.01	
1/21/2017	N/A	0	0	
1/22/2017	N/A	0	0	
1/23/2017	N/A	0.09	0.05	
1/24/2017	N/A	0.46	0.08	
1/25/2017	0	0.01	0.01	
1/26/2017	946	0.11	0.05	
1/27/2017	0	0	0	
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0	0	0	
2/4/2017	0	0	0	
2/5/2017	0	0	0	
2/6/2017	0	0	0	
2/7/2017	10,543	0.59	0.14	
2/8/2017	0	0.06	0.03	
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	

CSO 052 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

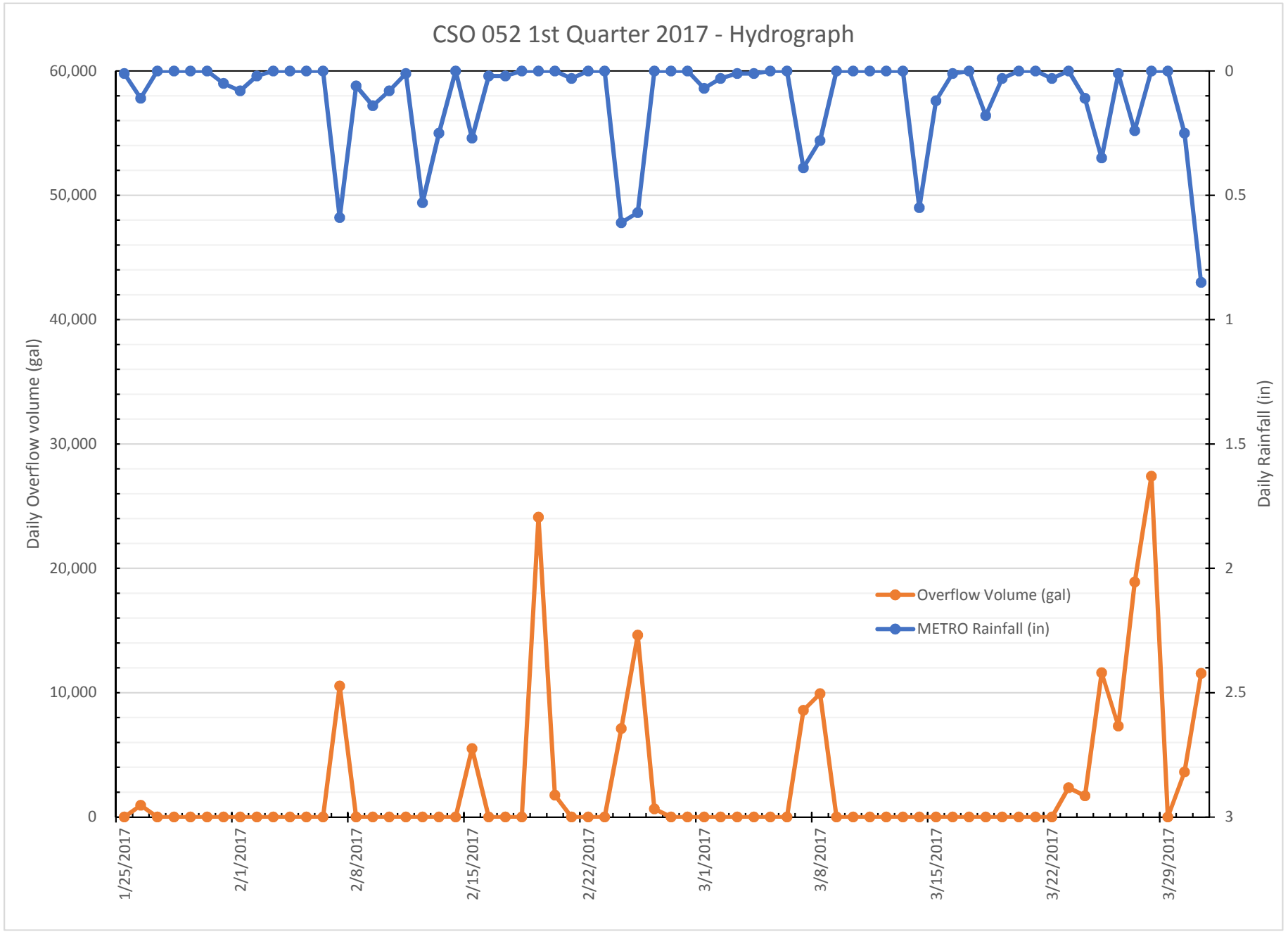
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
2/11/2017	0	0.01	0.01	
2/12/2017	0	0.53	0.15	
2/13/2017	0	0.25	0.06	
2/14/2017	0	0	0	
2/15/2017	5,504	0.27	0.11	
2/16/2017	0	0.02	0.01	
2/17/2017	0	0.02	0.02	
2/18/2017	0	0	0	
2/19/2017	24,108	0	0	
2/20/2017	1,772	0	0	
2/21/2017	0	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	0	0	0	
2/24/2017	7,122	0.61	0.56	
2/25/2017	14,632	0.57	0.23	
2/26/2017	652	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	0	0.03	0.01	
3/3/2017	0	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	8,592	0.39	0.11	
3/8/2017	9,918	0.28	0.13	
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	0	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	
3/15/2017	0	0.12	0.02	
3/16/2017	0	0.01	0.01	
3/17/2017	0	0	0	
3/18/2017	0	0.18	0.04	
3/19/2017	0	0.03	0.01	
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	0	0.03	0.02	
3/23/2017	2,356	0	0	

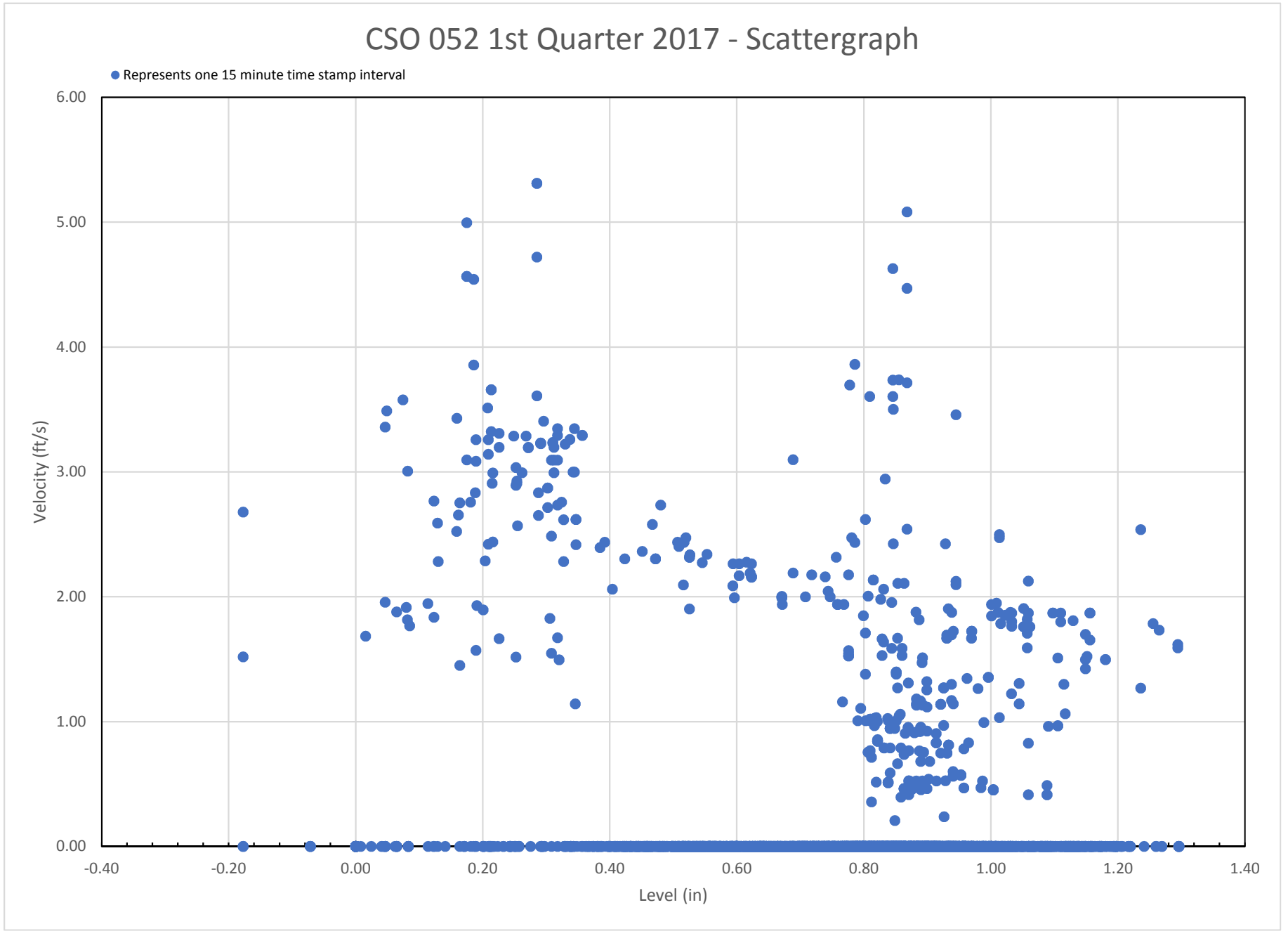
CSO 052 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
3/24/2017	1,706	0.11	0.07	
3/25/2017	11,617	0.35	0.1	
3/26/2017	7,329	0.01	0.01	
3/27/2017	18,911	0.24	0.16	
3/28/2017	27,415	0	0	
3/29/2017	0	0	0	
3/30/2017	3,625	0.25	0.13	
3/31/2017	11,564	0.85	0.1	

January	946	3.37
February	64,333	3.28
March	103,031	3.52

1Q Total	168,310	10.17


CSO 052 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
60,000
50,000
40,000
30,000
20,000
10,000
0
0
0.5
1
1.5
2
2.5
3
1/25/2017
2/1/2017
2/8/2017
2/15/2017
2/22/2017
3/1/2017
3/8/2017
3/15/2017
3/22/2017
3/29/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 052 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
-0.40
-0.20
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
Level (in)

CSO 060 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)	
				0.2	
1/1/2017	N/A	0.05	0.05		
1/2/2017	N/A	0.01	0.01		
1/3/2017	N/A	0.67	0.15		
1/4/2017	N/A	0.05	0.02		
1/5/2017	N/A	0.02	0.01		
1/6/2017	N/A	0.01	0.01		
1/7/2017	N/A	0	0		
1/8/2017	N/A	0.05	0.02		
1/9/2017	N/A	0	0.01		
1/10/2017	N/A	0.23	0.07		
1/11/2017	N/A	0.16	0.11		
1/12/2017	N/A	0.32	0.14		
1/13/2017	N/A	0	0		
1/14/2017	N/A	0	0		
1/15/2017	N/A	0	0		
1/16/2017	N/A	0	0		
1/17/2017	N/A	0.94	0.29		
1/18/2017	N/A	0.11	0.04		
1/19/2017	N/A	0.01	0.01		
1/20/2017	N/A	0.02	0.01		
1/21/2017	N/A	0	0		
1/22/2017	N/A	0	0		
1/23/2017	N/A	0.09	0.05		
1/24/2017	N/A	0.46	0.08		
1/25/2017	N/A	0.01	0.01		
1/26/2017	0	0.11	0.05		
1/27/2017	0	0	0		
1/28/2017	0	0	0		
1/29/2017	0	0	0		
1/30/2017	0	0	0		
1/31/2017	22,700	0.05	0.03		
2/1/2017	101,543	0.08	0.05		
2/2/2017	57,345	0.02	0.01		
2/3/2017	0	0	0		
2/4/2017	0	0	0		
2/5/2017	0	0	0		
2/6/2017	0	0	0		
2/7/2017	281,266	0.59	0.14		
2/8/2017	0	0.06	0.03		
2/9/2017	0	0.14	0.05	*	
2/10/2017	0	0.08	0.03	*	

CSO 060 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
2/11/2017	102,020	0.01	0.01	
2/12/2017	0	0.53	0.15	*
2/13/2017	0	0.25	0.06	*
2/14/2017	161,698	0	0	
2/15/2017	268,338	0.27	0.11	
2/16/2017	0	0.02	0.01	*
2/17/2017	0	0.02	0.02	
2/18/2017	56,206	0	0	
2/19/2017	50,677	0	0	
2/20/2017	0	0	0	
2/21/2017	31,255	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	0	0	0	
2/24/2017	808,563	0.61	0.56	
2/25/2017	225,821	0.57	0.23	
2/26/2017	80,550	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	12,490	0.03	0.01	
3/3/2017	0	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	108,714	0.39	0.11	
3/8/2017	176,850	0.28	0.13	
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	16,106	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	*
3/15/2017	0	0.12	0.02	*
3/16/2017	0	0.01	0.01	
3/17/2017	68,990	0	0	
3/18/2017	119,467	0.18	0.04	
3/19/2017	8,058	0.03	0.01	
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	109,414	0.03	0.02	
3/23/2017	0	0	0	

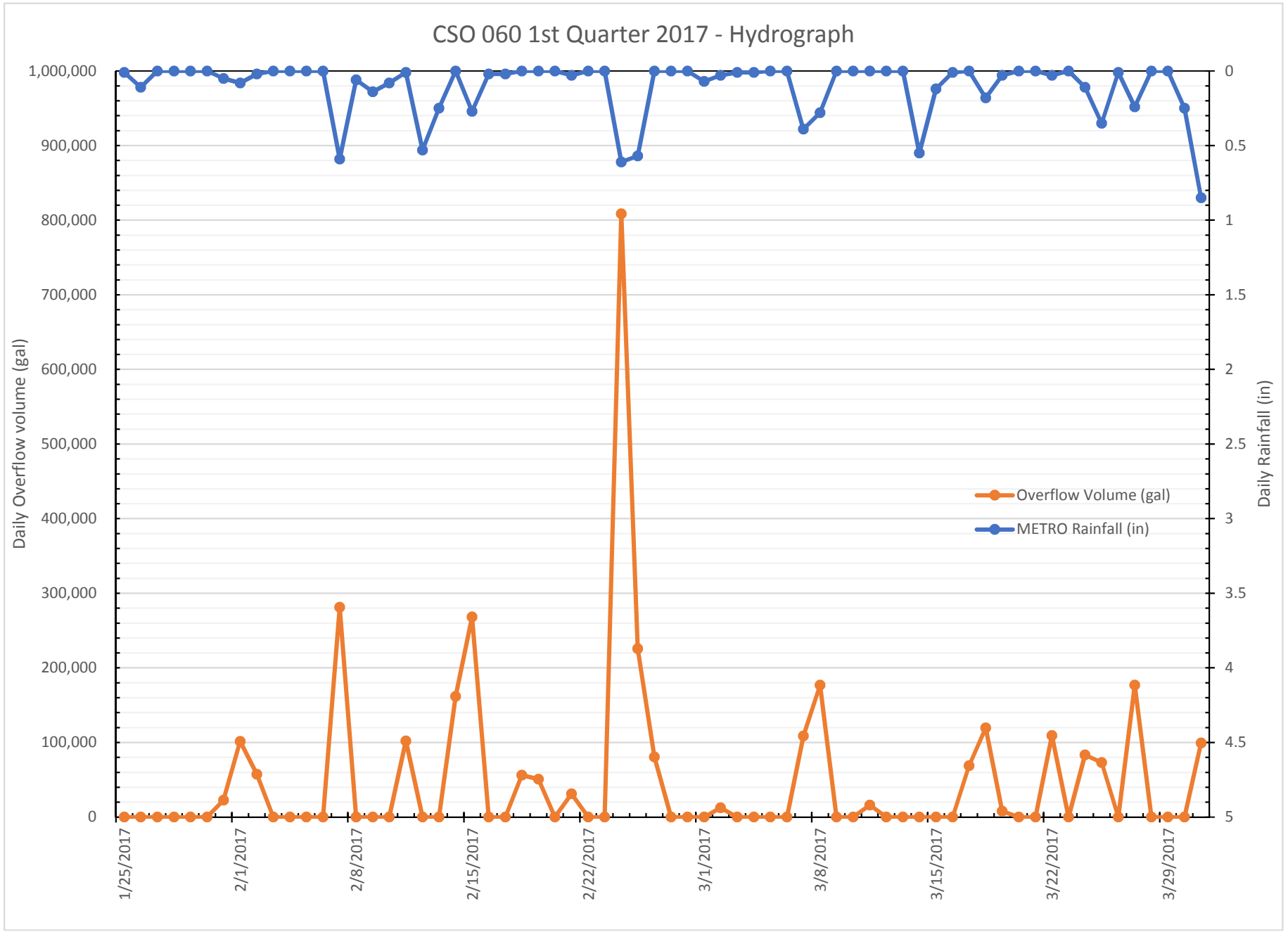
CSO 060 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

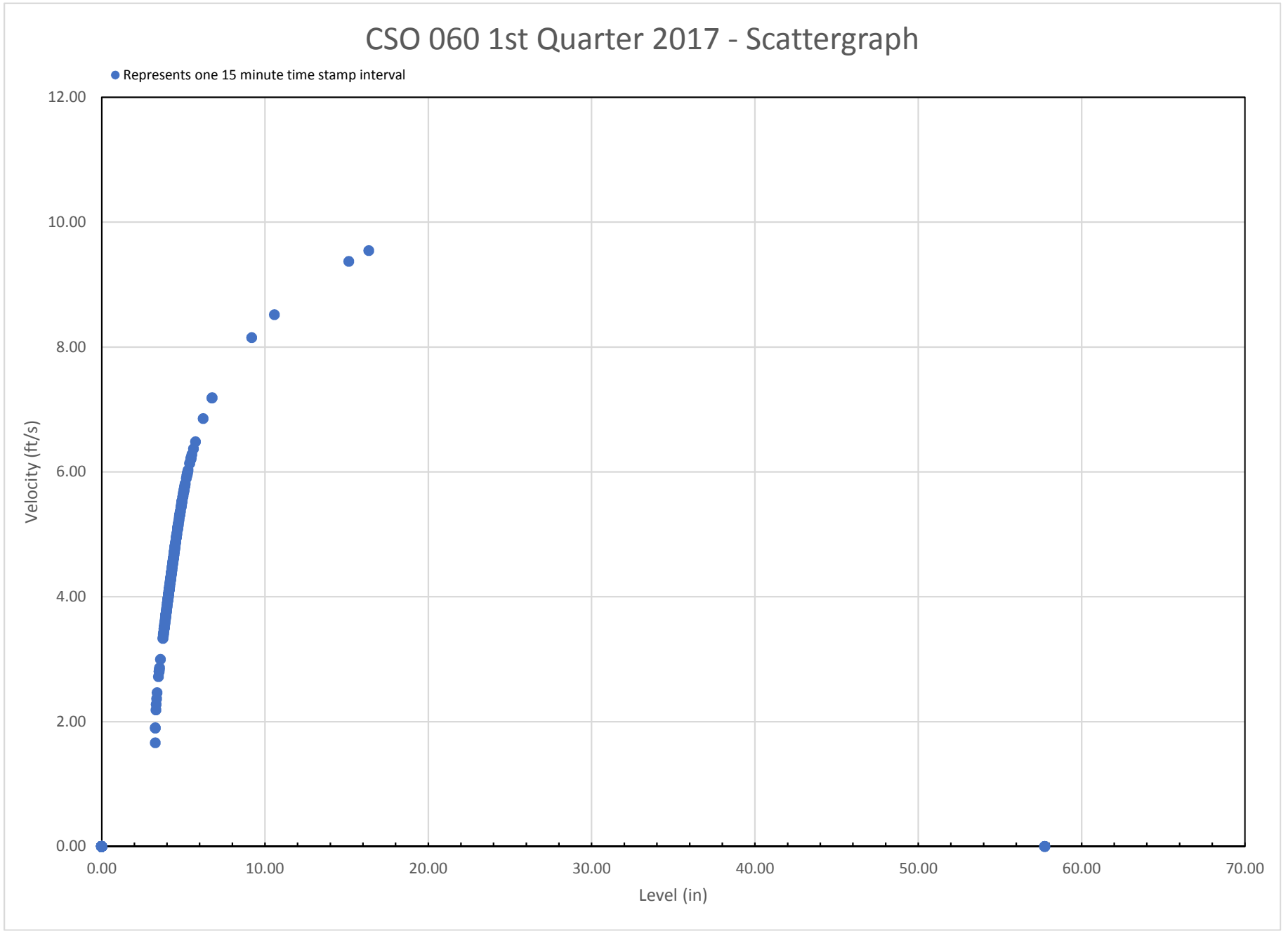
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
3/24/2017	83,330	0.11	0.07	
3/25/2017	73,244	0.35	0.1	
3/26/2017	0	0.01	0.01	
3/27/2017	176,765	0.24	0.16	
3/28/2017	0	0	0	
3/29/2017	0	0	0	
3/30/2017	0	0.25	0.13	
3/31/2017	99,229	0.85	0.1	

January	22,700	3.37
February	2,225,281	3.28
March	1,052,656	3.52

1Q Total	3,300,638	10.17

* Due to the outdoor positioning of the sensors, flow readings for days with sub-freezing temperatures and significant snowfall/snowpack accumulation were determined to be non-representative and are not included in the summaries.


CSO 060 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
1/25/2017
2/1/2017
2/8/2017
2/15/2017
2/22/2017
3/1/2017
3/8/2017
3/15/2017
3/22/2017
3/29/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 060 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
12.00
10.00
8.00
6.00
4.00
2.00
0.00
Velocity (ft/s)
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
Level (in)

CSO 063 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
1/1/2017	N/A	0.05	0.05	
1/2/2017	N/A	0.01	0.01	
1/3/2017	N/A	0.67	0.15	
1/4/2017	N/A	0.05	0.02	
1/5/2017	N/A	0.02	0.01	
1/6/2017	N/A	0.01	0.01	
1/7/2017	N/A	0	0	
1/8/2017	N/A	0.05	0.02	
1/9/2017	N/A	0	0.01	
1/10/2017	N/A	0.23	0.07	
1/11/2017	N/A	0.16	0.11	
1/12/2017	N/A	0.32	0.14	
1/13/2017	N/A	0	0	
1/14/2017	N/A	0	0	
1/15/2017	N/A	0	0	
1/16/2017	N/A	0	0	
1/17/2017	N/A	0.94	0.29	
1/18/2017	N/A	0.11	0.04	
1/19/2017	N/A	0.01	0.01	
1/20/2017	N/A	0.02	0.01	
1/21/2017	N/A	0	0	
1/22/2017	N/A	0	0	
1/23/2017	N/A	0.09	0.05	
1/24/2017	N/A	0.46	0.08	
1/25/2017	N/A	0.01	0.01	
1/26/2017	0	0.11	0.05	*
1/27/2017	0	0	0	*
1/28/2017	0	0	0	
1/29/2017	0	0	0	
1/30/2017	0	0	0	
1/31/2017	0	0.05	0.03	
2/1/2017	0	0.08	0.05	
2/2/2017	0	0.02	0.01	
2/3/2017	0	0	0	
2/4/2017	0	0	0	
2/5/2017	0	0	0	
2/6/2017	0	0	0	
2/7/2017	0	0.59	0.14	*
2/8/2017	0	0.06	0.03	*
2/9/2017	0	0.14	0.05	
2/10/2017	0	0.08	0.03	

CSO 063 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
2/11/2017	0	0.01	0.01	
2/12/2017	0	0.53	0.15	*
2/13/2017	0	0.25	0.06	*
2/14/2017	0	0	0	*
2/15/2017	0	0.27	0.11	*
2/16/2017	0	0.02	0.01	
2/17/2017	0	0.02	0.02	
2/18/2017	0	0	0	
2/19/2017	0	0	0	
2/20/2017	0	0	0	
2/21/2017	0	0.03	0.02	
2/22/2017	0	0	0	
2/23/2017	0	0	0	
2/24/2017	0	0.61	0.56	
2/25/2017	0	0.57	0.23	*
2/26/2017	0	0	0	
2/27/2017	0	0	0	
2/28/2017	0	0	0	
3/1/2017	0	0.07	0.06	
3/2/2017	0	0.03	0.01	
3/3/2017	0	0.01	0.01	
3/4/2017	0	0.01	0.01	
3/5/2017	0	0	0	
3/6/2017	0	0	0	
3/7/2017	0	0.39	0.11	
3/8/2017	0	0.28	0.13	*
3/9/2017	0	0	0	
3/10/2017	0	0	0	
3/11/2017	0	0	0	
3/12/2017	0	0	0	
3/13/2017	0	0	0	
3/14/2017	0	0.55	0.08	
3/15/2017	0	0.12	0.02	
3/16/2017	0	0.01	0.01	
3/17/2017	0	0	0	
3/18/2017	0	0.18	0.04	
3/19/2017	0	0.03	0.01	*
3/20/2017	0	0	0	
3/21/2017	0	0	0	
3/22/2017	0	0.03	0.02	*
3/23/2017	0	0	0	

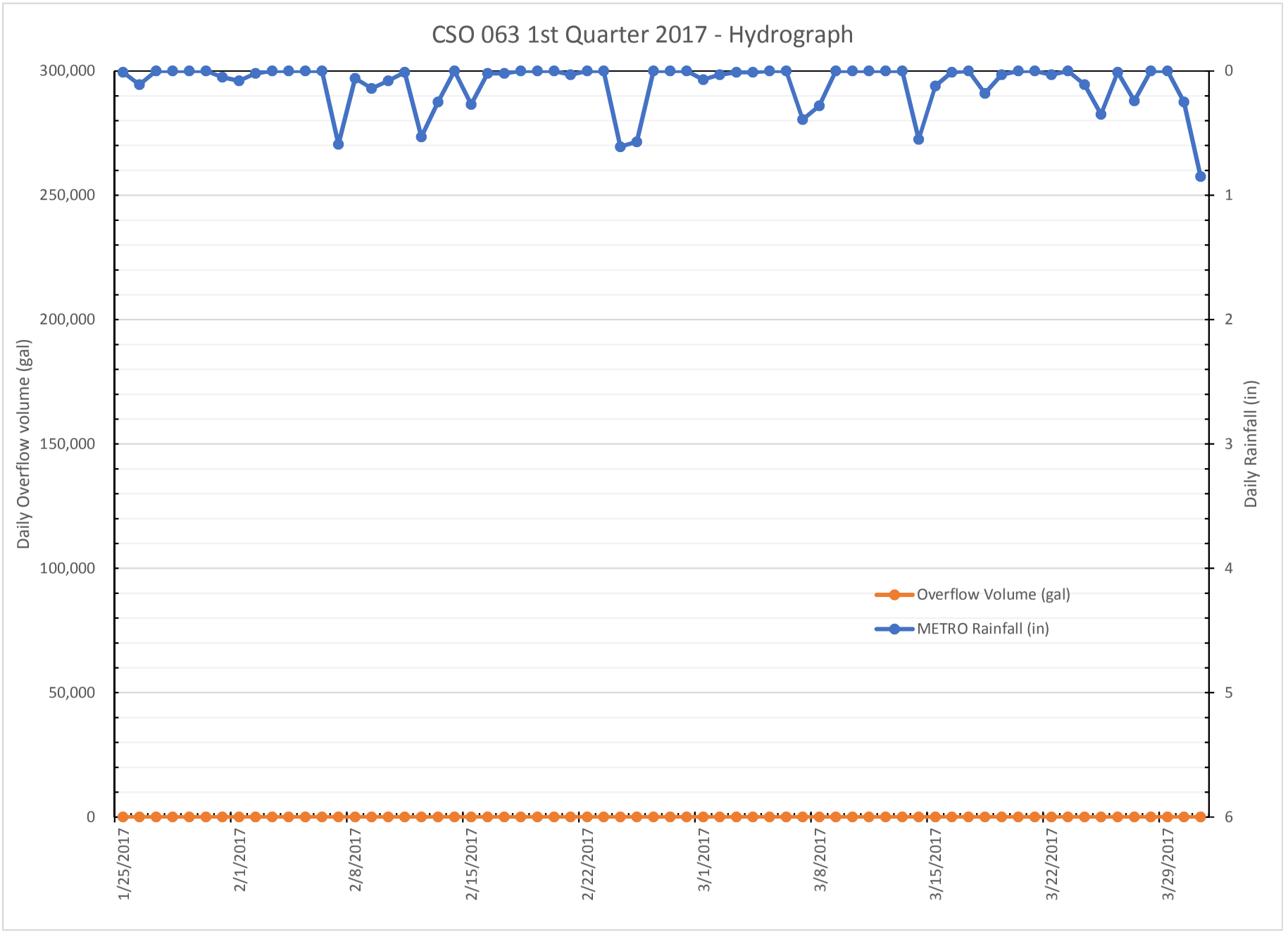
CSO 063 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

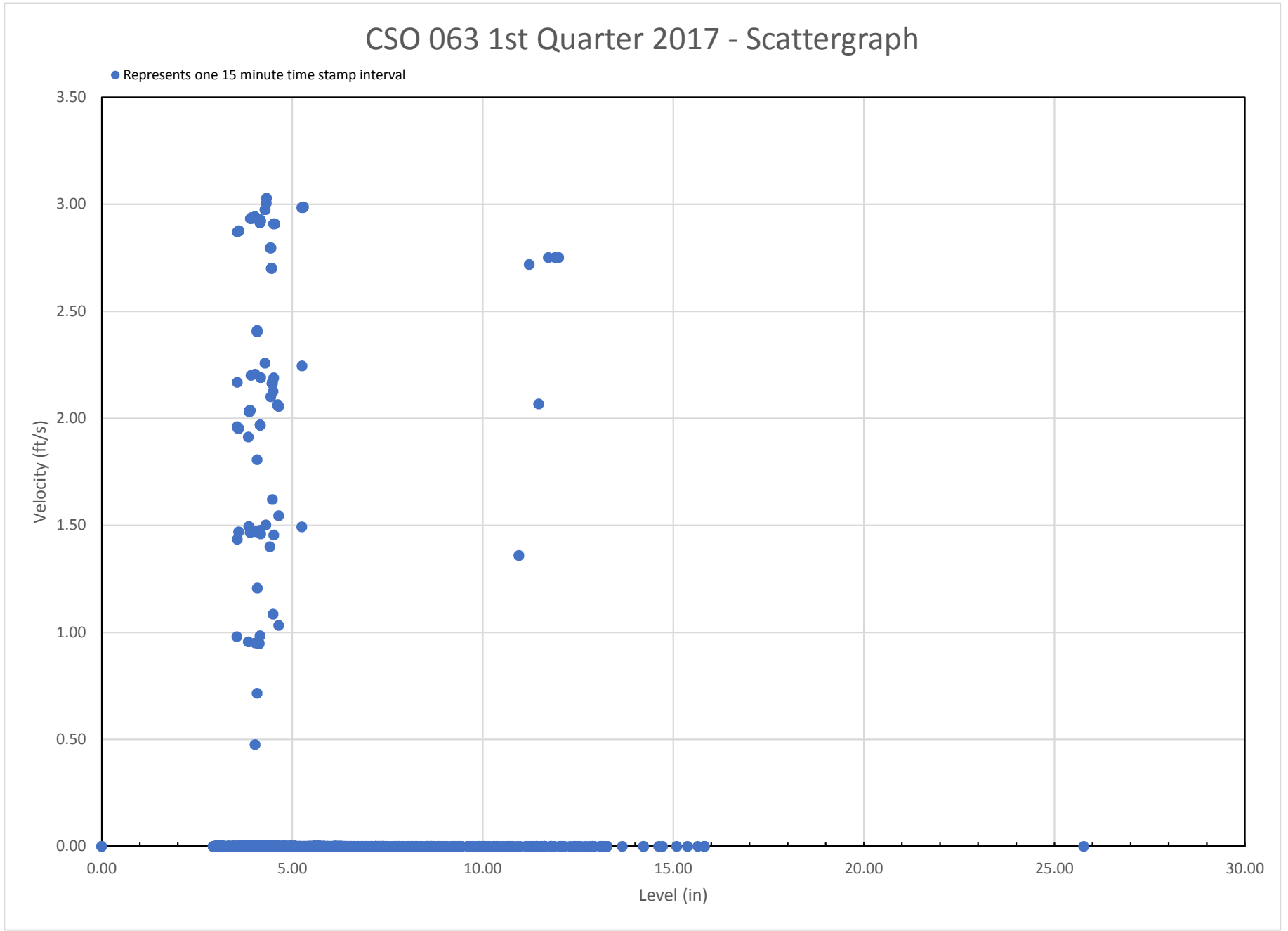
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)	
				>0.9	
3/24/2017	0	0.11	0.07		*
3/25/2017	0	0.35	0.1		
3/26/2017	0	0.01	0.01		
3/27/2017	0	0.24	0.16		
3/28/2017	0	0	0		
3/29/2017	0	0	0		
3/30/2017	0	0.25	0.13		
3/31/2017	0	0.85	0.1		*

January	0	3.37
February	0	3.28
March	0	3.52

1Q Total	0	10.17

* – The Harbor Brook Storage Tank was not full at any point in the first quarter, therefore the flow data measured is attributed to standing water movement within the overflow structure's shallow sump due to air releases from the upstream regulator during storm conveyance in the Hiawatha Conveyance Sewer.


CSO 063 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
1
2
3
4
5
6
1/25/2017
2/1/2017
2/8/2017
2/15/2017
2/22/2017
3/1/2017
3/8/2017
3/15/2017
3/22/2017
3/29/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 063 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Level (in)

CSO 075 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
1/1/2017	179,175	0.05	0.05	
1/2/2017	734,787	0.01	0.01	
1/3/2017	576,019	0.67	0.15	
1/4/2017	(345,328)	0.05	0.02	
1/5/2017	(373,402)	0.02	0.01	
1/6/2017	(827,356)	0.01	0.01	
1/7/2017	(798,564)	0	0	
1/8/2017	(183,368)	0.05	0.02	
1/9/2017	(450,136)	0	0.01	
1/10/2017	(65,624)	0.23	0.07	
1/11/2017	27,118	0.16	0.11	
1/12/2017	(565,677)	0.32	0.14	
1/13/2017	(1,012,219)	0	0	
1/14/2017	(1,807,413)	0	0	
1/15/2017	(431,699)	0	0	
1/16/2017	(393,190)	0	0	
1/17/2017	648,285	0.94	0.29	
1/18/2017	(1,380,843)	0.11	0.04	
1/19/2017	978,480	0.01	0.01	
1/20/2017	(1,908,329)	0.02	0.01	
1/21/2017	(670,313)	0	0	
1/22/2017	(412,371)	0	0	
1/23/2017	136,692	0.09	0.05	
1/24/2017	311,894	0.46	0.08	
1/25/2017	(654,020)	0.01	0.01	
1/26/2017	468,921	0.11	0.05	
1/27/2017	(608,944)	0	0	
1/28/2017	(2,216,036)	0	0	
1/29/2017	(948,430)	0	0	
1/30/2017	(1,505,564)	0	0	
1/31/2017	(1,056,836)	0.05	0.03	
2/1/2017	1,110,083	0.08	0.05	
2/2/2017	51,397	0.02	0.01	
2/3/2017	332,165	0	0	
2/4/2017	386,984	0	0	
2/5/2017	428,303	0	0	
2/6/2017	53,944	0	0	
2/7/2017	(501,144)	0.59	0.14	
2/8/2017	(1,474,758)	0.06	0.03	
2/9/2017	(522,415)	0.14	0.05	
2/10/2017	(422,603)	0.08	0.03	

CSO 075 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
2/11/2017	(159,227)	0.01	0.01	
2/12/2017	(708,641)	0.53	0.15	
2/13/2017	26,852	0.25	0.06	
2/14/2017	(189,724)	0	0	
2/15/2017	(231,110)	0.27	0.11	
2/16/2017	11,138	0.02	0.01	
2/17/2017	(18,645)	0.02	0.02	
2/18/2017	(256,226)	0	0	
2/19/2017	(849,092)	0	0	
2/20/2017	(199,989)	0	0	
2/21/2017	(191,211)	0.03	0.02	
2/22/2017	(352,711)	0	0	
2/23/2017	224,767	0	0	
2/24/2017	1,036,435	0.61	0.56	
2/25/2017	608,892	0.57	0.23	
2/26/2017	(692,058)	0	0	
2/27/2017	(1,406,850)	0	0	
2/28/2017	(462,483)	0	0	
3/1/2017	(1,406,776)	0.07	0.06	
3/2/2017	(484,158)	0.03	0.01	
3/3/2017	503,241	0.01	0.01	
3/4/2017	(381,374)	0.01	0.01	
3/5/2017	(748,969)	0	0	
3/6/2017	(872,305)	0	0	
3/7/2017	(545,573)	0.39	0.11	
3/8/2017	3,862	0.28	0.13	
3/9/2017	2,678,061	0	0	
3/10/2017	(119,725)	0	0	
3/11/2017	(189,407)	0	0	
3/12/2017	(234,923)	0	0	
3/13/2017	(47,952)	0	0	
3/14/2017	(503,423)	0.55	0.08	
3/15/2017	(338,271)	0.12	0.02	
3/16/2017	2,484	0.01	0.01	
3/17/2017	(1,123,300)	0	0	
3/18/2017	(797,656)	0.18	0.04	
3/19/2017	(106,214)	0.03	0.01	
3/20/2017	(98,837)	0	0	
3/21/2017	(211,563)	0	0	
3/22/2017	(104,546)	0.03	0.02	
3/23/2017	(704,938)	0	0	

CSO 075 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

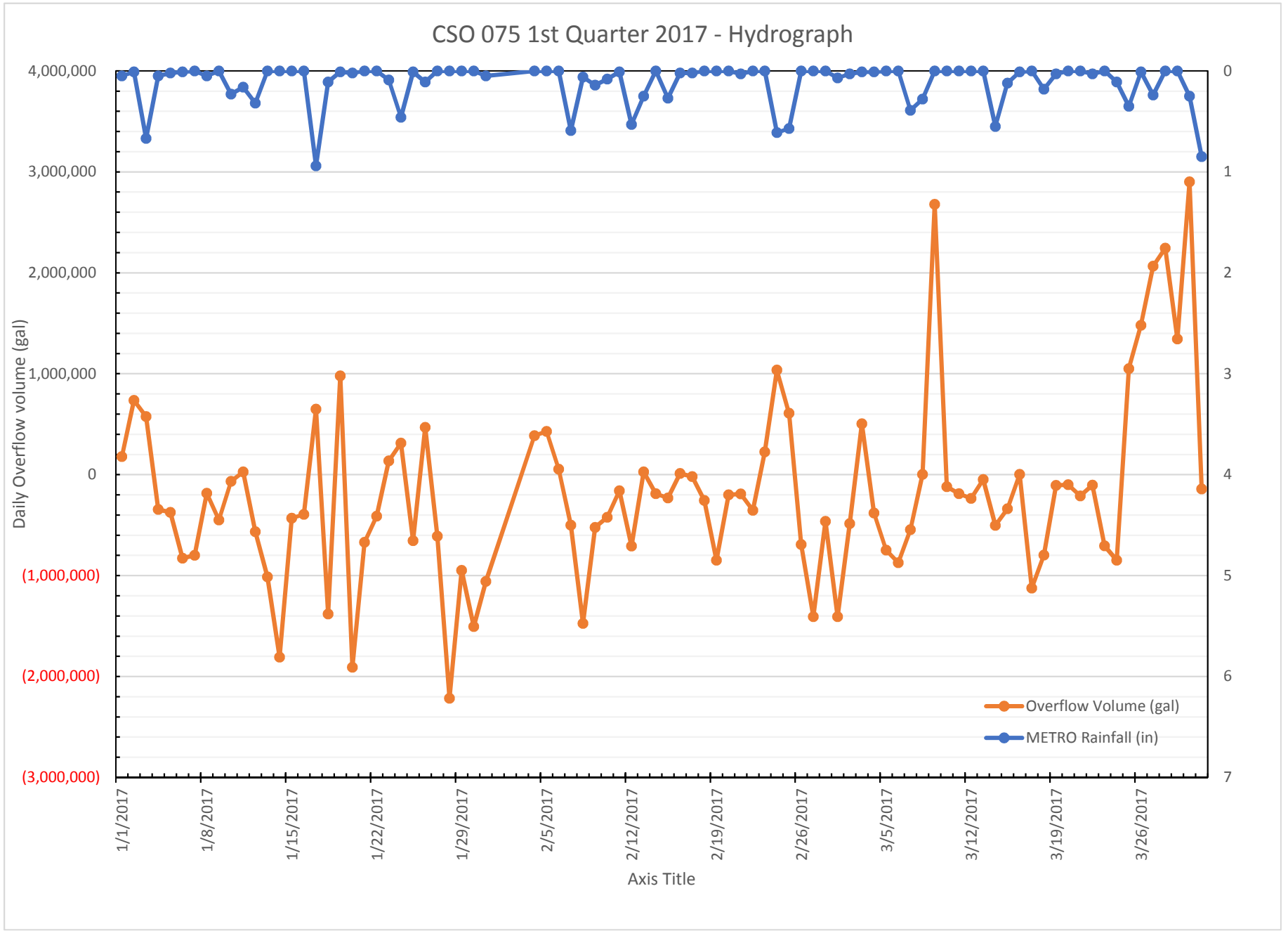
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
3/24/2017	(848,276)	0.11	0.07	
3/25/2017	1,049,372	0.35	0.1	
3/26/2017	1,479,703	0.01	0.01	
3/27/2017	2,064,701	0.24	0.16	
3/28/2017	2,242,998	0	0	
3/29/2017	1,343,910	0	0	
3/30/2017	2,900,977	0.25	0.13	
3/31/2017	(142,627)	0.85	0.1	

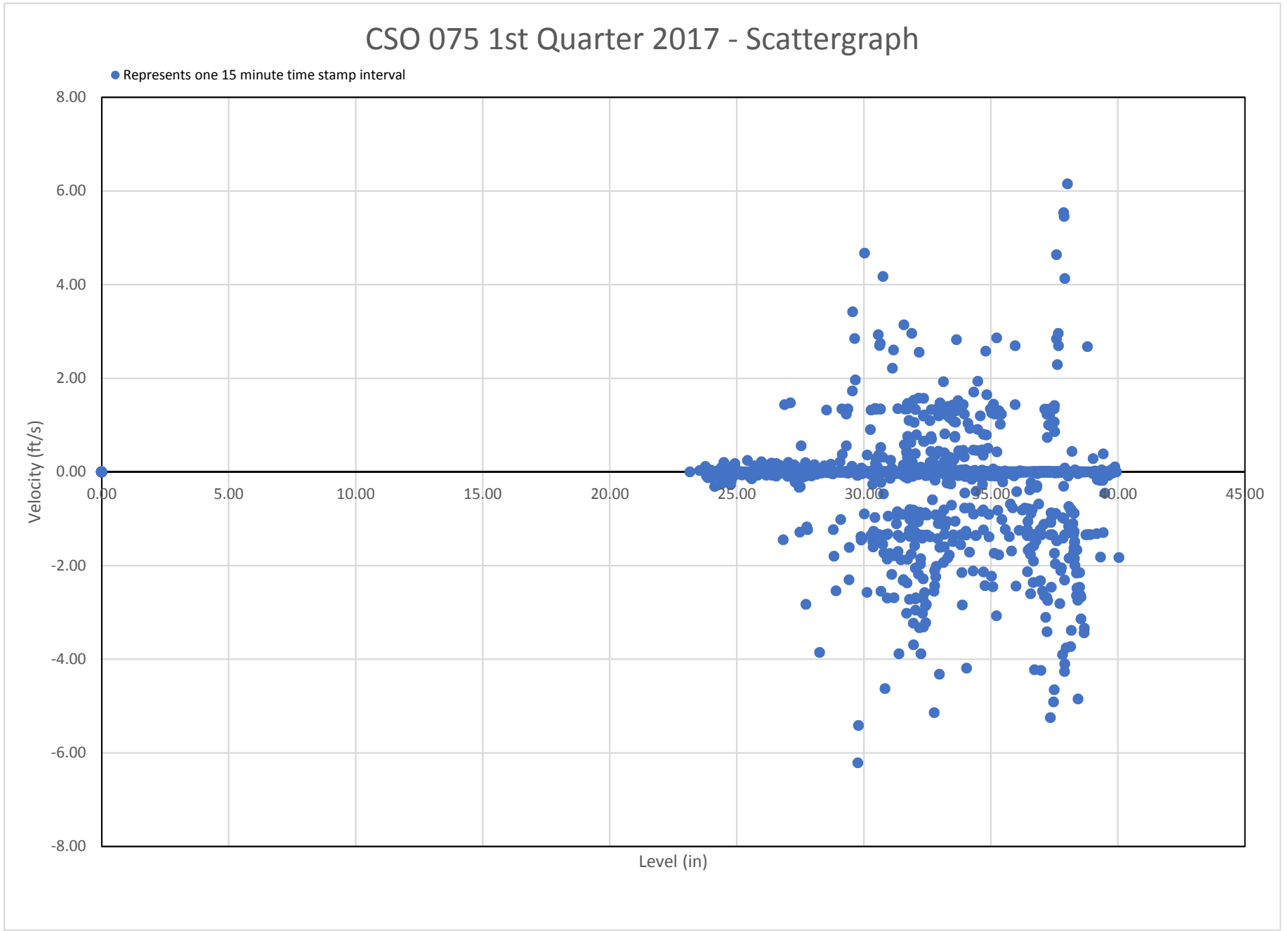
January Total	(14,554,291)	3.37
February Total	(4,367,930)	3.28
March	4,258,496	3.52

1Q Total	(14,663,725)	10.17

Note:

The monitoring manhole for CSO 075 appeared to be in a surcharged condition most of the time. Flow values in red indicate negative velocity readings from the Area/Velocity meter which are typically associated with inflow during surcharge.


CSO 075 1st Quarter 2017 - Hydrograph
4,000,000
3,000,000
2,000,000
1,000,000
0
(1,000,000)
(2,000,000)
(3,000,000)
Daily Overflow volume (gal)
0
1
2
3
4
5
6
7
1/1/2017
1/8/2017
1/15/2017
1/22/2017
1/29/2017
2/5/2017
2/12/2017
2/19/2017
2/26/2017
3/5/2017
3/12/2017
3/19/2017
3/26/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 075 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
Velocity (ft/s)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
Level (in)

CSO 078 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
1/1/2017	30,698	0.05	0.05	
1/2/2017	28,157	0.01	0.01	
1/3/2017	28,858	0.67	0.15	
1/4/2017	29,207	0.05	0.02	
1/5/2017	26,693	0.02	0.01	
1/6/2017	31,756	0.01	0.01	
1/7/2017	37,022	0	0	
1/8/2017	40,383	0.05	0.02	
1/9/2017	42,830	0	0.01	
1/10/2017	35,116	0.23	0.07	
1/11/2017	37,933	0.16	0.11	
1/12/2017	37,326	0.32	0.14	
1/13/2017	33,957	0	0	
1/14/2017	36,563	0	0	
1/15/2017	37,379	0	0	
1/16/2017	32,495	0	0	
1/17/2017	46,426	0.94	0.29	
1/18/2017	25,186	0.11	0.04	
1/19/2017	28,127	0.01	0.01	
1/20/2017	30,058	0.02	0.01	
1/21/2017	29,781	0	0	
1/22/2017	32,443	0	0	
1/23/2017	31,636	0.09	0.05	
1/24/2017	34,784	0.46	0.08	
1/25/2017	35,441	0.01	0.01	
1/26/2017	35,619	0.11	0.05	
1/27/2017	36,541	0	0	
1/28/2017	37,534	0	0	
1/29/2017	37,110	0	0	
1/30/2017	35,792	0	0	
1/31/2017	34,650	0.05	0.03	
2/1/2017	39,481	0.08	0.05	
2/2/2017	34,834	0.02	0.01	
2/3/2017	38,404	0	0	
2/4/2017	37,685	0	0	
2/5/2017	36,223	0	0	
2/6/2017	33,482	0	0	
2/7/2017	32,941	0.59	0.14	
2/8/2017	32,981	0.06	0.03	
2/9/2017	31,503	0.14	0.05	
2/10/2017	33,018	0.08	0.03	

CSO 078 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
2/11/2017	31,333	0.01	0.01	
2/12/2017	30,054	0.53	0.15	
2/13/2017	34,499	0.25	0.06	
2/14/2017	38,147	0	0	
2/15/2017	38,587	0.27	0.11	
2/16/2017	41,437	0.02	0.01	
2/17/2017	39,533	0.02	0.02	
2/18/2017	38,673	0	0	
2/19/2017	37,528	0	0	
2/20/2017	36,872	0	0	
2/21/2017	36,875	0.03	0.02	
2/22/2017	36,069	0	0	
2/23/2017	35,086	0	0	
2/24/2017	67,731	0.61	0.56	
2/25/2017	28,886	0.57	0.23	
2/26/2017	36,403	0	0	
2/27/2017	39,257	0	0	
2/28/2017	39,784	0	0	
3/1/2017	38,930	0.07	0.06	
3/2/2017	38,163	0.03	0.01	
3/3/2017	38,577	0.01	0.01	
3/4/2017	40,719	0.01	0.01	
3/5/2017	42,691	0	0	
3/6/2017	41,879	0	0	
3/7/2017	42,902	0.39	0.11	
3/8/2017	44,844	0.28	0.13	
3/9/2017	43,536	0	0	
3/10/2017	42,657	0	0	
3/11/2017	42,048	0	0	
3/12/2017	42,370	0	0	
3/13/2017	42,445	0	0	
3/14/2017	43,401	0.55	0.08	
3/15/2017	43,837	0.12	0.02	
3/16/2017	43,229	0.01	0.01	
3/17/2017	43,451	0	0	
3/18/2017	43,969	0.18	0.04	
3/19/2017	41,812	0.03	0.01	
3/20/2017	43,396	0	0	
3/21/2017	36,702	0	0	
3/22/2017	37,796	0.03	0.02	
3/23/2017	37,730	0	0	

CSO 078 DAILY OVERFLOW VOLUME
1ST QUARTER 2017

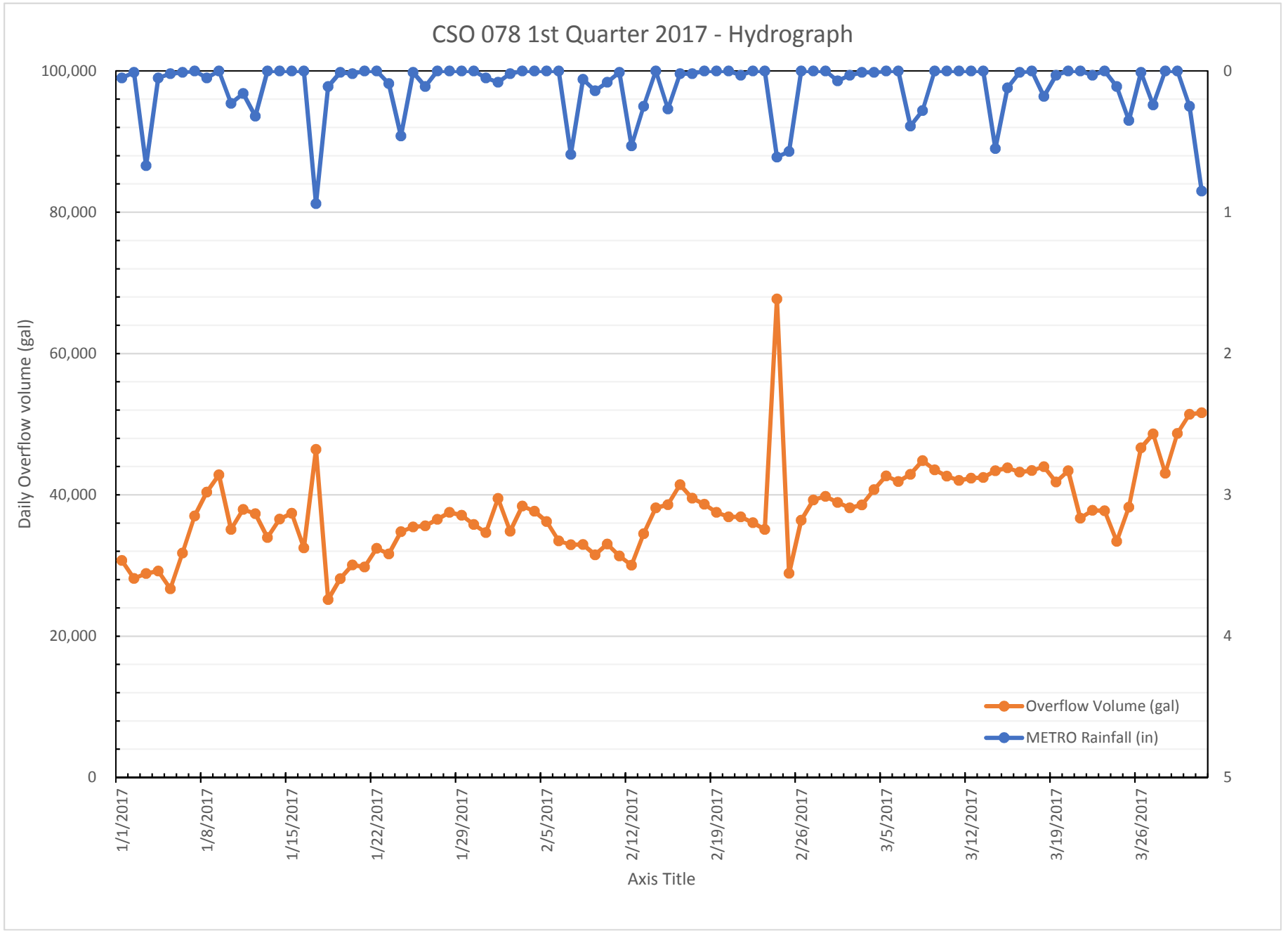
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
3/24/2017	33,415	0.11	0.07	
3/25/2017	38,251	0.35	0.1	
3/26/2017	46,638	0.01	0.01	
3/27/2017	48,611	0.24	0.16	
3/28/2017	43,045	0	0	
3/29/2017	48,678	0	0	
3/30/2017	51,404	0.25	0.13	
3/31/2017	51,625	0.85	0.1	

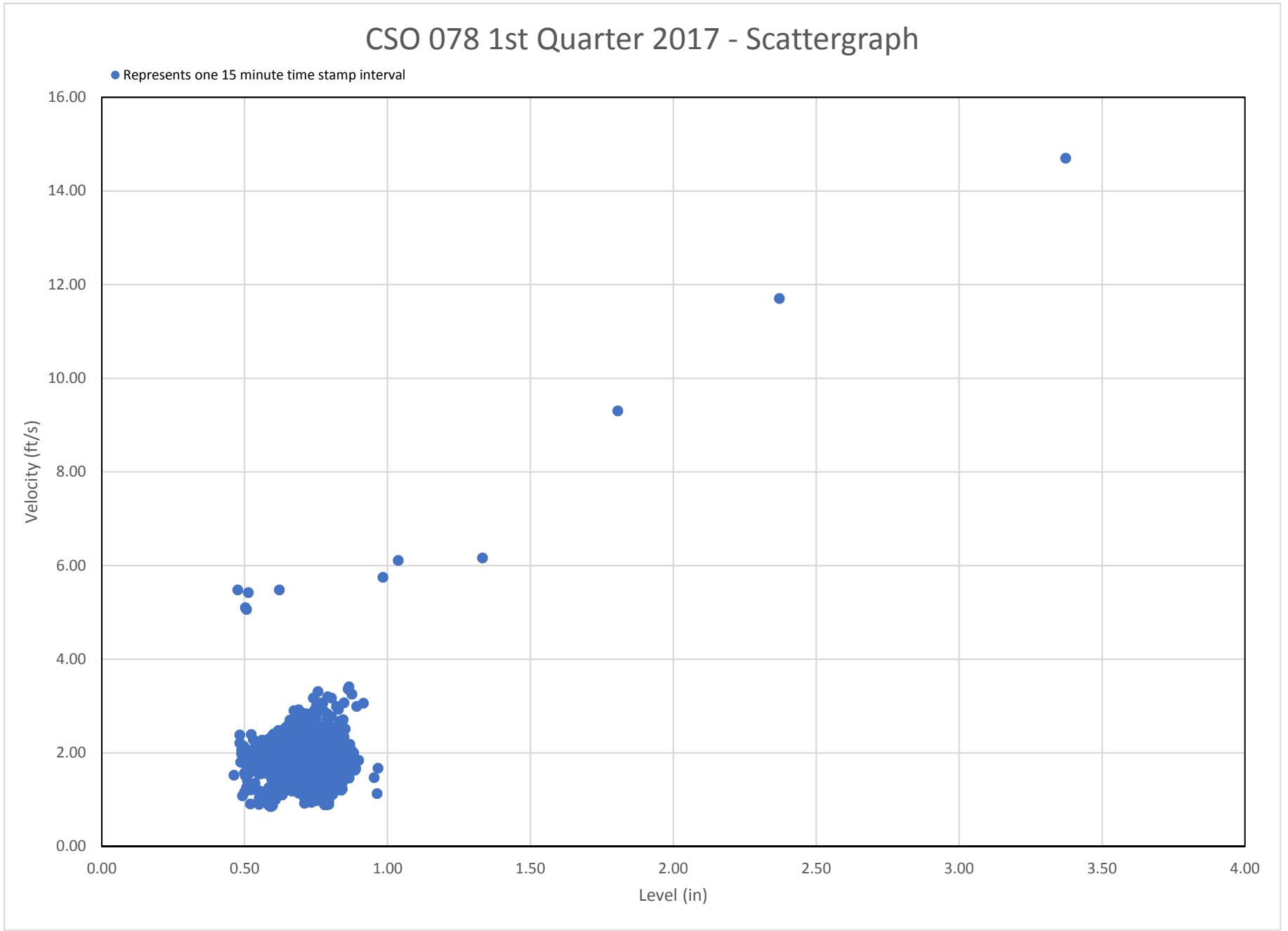
January Total	1,057,502	3.37
February Total	1,037,305	3.28
March	1,318,750	3.52

1Q Total	3,413,556	10.17

Note:

Due to manhole and overflow sewer configuration on the CSO 078 outfall pipe, the flow data measured does not represent actual overflow to Harbor Brook.


CSO 078 1st Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
100,000
80,000
60,000
40,000
20,000
0
0
1
2
3
4
5
1/1/2017
1/8/2017
1/15/2017
1/22/2017
1/29/2017
2/5/2017
2/12/2017
2/19/2017
2/26/2017
3/5/2017
3/12/2017
3/19/2017
3/26/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 078 1st Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
0.50
1.00
1.50
2.00
2.50
3.00
3.50
4.00
Level (in)

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q2 – 2017

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

December 2017

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q2 – 2017

December 2017

C&S ENGINEERS, INC.
499 Colonel Eileen Collins Blvd.
Syracuse, N.Y. 13212

Quarterly Flow Report
CSO Flow Monitoring Program
Q2 – 2017

Performance Period:

This quarterly flow report is for the period of April 1 through June 30, 2017. This report was prepared by CDM Smith for C&S Engineers and Onondaga County.

CSO Flow Monitoring Summary:

This report includes data and graphics for flow at 10 CSO locations in the City of Syracuse, New York. The overflow volume for CSO 080 is not included in this report as it is calculated by a formula agreed upon by the New York State Department of Environmental Conversation (NYSDEC). A summary of monthly overflow volumes for the 10 CSOs included in this report is presented below. Please note the following observations regarding this data:

The meter at CSO 004 was not functioning between May 31st and June 29th, 2017.

The meter at CSO 014 detected overflows on a few dates where no rainfall was measured at Metro. The overflow volume shown on 5/9/17 was a continuation of the overflow event from the previous day. The overflows detected on 4/5, 4/8, 4/9, and 6/7 also appear to be attributed to ongoing precedent storm drainage due to falling head conditions in the Brook and the operation of the flap gate. As the stream stage levels decrease, the flap gate can open further allowing the system to drain. A redundant A/V probe will be added to this location to aid in assessing flow patterns.

The meter at CSO 034 indicated an overflow on nine occasions in April and June. The Clinton Storage Facility was not full during the days in question and the County pressure transducer indicated no activity. Also, based on interpolation of USGS stage data from the Dorwin and Spencer stations, creek stage was elevated above the level of the outfall invert, which is indicative of backflow conditions. Therefore, the metered flow on those days was determined not to be an overflow and the data in the summary tables below reflect that determination. The ultrasonic level sensor for this site will be relocated within the regulator to help indicate the onset of overflow conditions.

Flows for CSO 060 were calculated by Hach Company, Loveland, Colorado based on updated information on discharge pipe profile/shape and additional level information derived from Hach quality control data to compensate for sensor power/calibration issues. This flow data is included in the attached electronic files. The data also indicated overflow on several days when there was no rain recorded at Metro (6/1, 6/10, 6/17, and 6/28). All occurred at approximately the same time and duration in the evening on a recurring basis during June and have not repeated since then. The nature of these discharges is unknown but they are not believed to be related to rainfall events. In order to differentiate between outdoor weather events and overflow conditions, the outdoor Flo-Dar sensing unit will be relocated to the inside of the outfall pipe and a redundant A/V probe will be added.

For CSO 063, the flow meter detected flow in the overflow pipe on thirteen occasions during the second quarter, however the only event that could be verified as an actual overflow to Harbor Brook was on June 30th when the Lower Harbor Brook storage tank was full. Visual inspection of the meter location

shows that the manhole is subject to backflow from Harbor Brook. Based upon as-built information and stream data from the USGS station approximately 900 feet upstream from the outfall, the overflow pipe at CSO 063 was partially submerged by Harbor Brook on these other occasions indicative of surcharge conditions. Therefore, those flows were not classified as overflow events. An ultrasonic level sensor for this site will be installed within the upstream regulator structure to help indicate the onset of overflow conditions from the Hiawatha Conveyance Sewer (HWCS) extension.

The flow data measured for CSO 075 was also subject to continual surcharge conditions from high levels in Onondaga Creek. Due to these surcharged conditions for the second quarter, the flow data was determined to be non-representative and was not included in the summary tables below.

The flow for the CSO 078 is calculated from a combination of 2 devices within a manhole several hundred feet downstream of the permitted overflow location on the corner of Velasko Road and Bellevue Avenue. The manhole has two inlet connections (the CSO 078 overflow sewer to the south and a lateral connection from a laundromat/car wash to the west) and one outlet to the north. The flow data received is from the overflow sewer to the south. This flow combines with the other sanitary flow inlet prior to exiting the structure. The flow that exits this manhole is then regulated once again in a downstream structure on West Onondaga Street with normal flow being directed to the HBIS and surcharged storm flow being discharged to Harbor Brook. As a result, the flow data for the current 078 monitoring point cannot be verified as a discharge to Harbor Brook.

The data utilized for all CSOs (including 080) is included as an electronic attachment to this report in Microsoft Excel format.

CSO Overflow Volume (in gallons) per Month

CSO Location	April	May	June
CSO Overflow Volume (in gallons) per Month			
003	5,088,658	235,790	0
004	0	0	695,057
014	4,096,868	4,765,484	1,241,886
027[1]	10,051,505	5,409,985	5,285,595
034	0[5]	0	0[5]
052	267,166	125,868	109,533
060	4,840,414	1,367,168	1,848,375
063[2]	0	0	55,942
075[3]	--	--	--
078[4]	--	--	--
CSO Overflow Events per Month			
003	1	1	0
004	0	0	1
014	11	11	4
027[1]	9	10	11
034	0[5]	0	0[5]
052	16	19	13
060	10	13	20
063[2]	0	0	1
075[3]	--	--	--
078[4]	--	--	--

CSO Overflow Duration in hours per Month			
003	23.45	1.50	0
004	0	0	1.50
014	46.00	76.50	11.50
027[1]	62.75	34.25	25.00
034	0[5]	0	0[5]
052	181.75	57.75	106.50
060	36.00	18.75	34.00
063[2]	0	0	1.50
075[3]	--	--	--
078[4]	--	--	--

Notes:

1 – Overflow volume is calculated by subtracting regulator flow from trunk sewer flow only when regulator pipe is at capacity or surcharged.

2 – Some overflow volumes detected in this quarter could not be verified as the storage facility was not full on those days so it is unlikely an overflow occurred. Visual inspection of the meter location shows that the manhole is subject to backflow from Harbor Brook. The outfall pipe does have a check valve; however, it may need to be inspected due to the backflow. The backflow does not enter the conveyance sewer.

3 – Flow meter location was continually surcharged from Onondaga Creek which resulted in both positive and negative flow rates. Flow data cannot indicate combined sewer overflow from this location.

4 – Due to manhole and overflow sewer configuration, the flow data measured does not represent actual overflow to Harbor Brook.

5 – The meter detected a flow volume on 4/1, 4/5, 4/7, 4/8, 4/9, 4/21, 4/22, 6/7 and 6/8. The Clinton Storage Facility was not full during the days in question, and creek stage was elevated above the level of the outfall invert, which is indicative of backflow conditions.

Meter Performance Summary:

The table below is a summary of meter performance. The percentage is based upon the number of valid 15-minute flow data points divided by the number of 15-minute flow data points per month. The up-time goal for each site is 90% or greater per month. Monthly readings that fall below that percentage are highlighted in the table.

Meter Up-time per Month

CSO Location	April	May	June
003	99.83%	100%	100%
004	98.33%	98.15%	***6.14%***
014	100%	99.97%	99.97%
027	99.83%	99.93%	99.17%
034	100%	99.87%	100%
052	98.68%	99.93%	100%
060	99.76%	100%	99.86%
063	100%	100%	100%
075	100%	100%	91.22%
078	100%	100%	100%
080	100%	100%	99.03%

List of Attached Graphs and Tables:

Table - CSO 003 Daily Overflow Volume April thru June 2017
Graph – CSO 003 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 003 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 004 Daily Overflow Volume April thru June 2017
Graph – CSO 004 Hydrograph of Volume and Rainfall by Day for April thru June 2017

List of Attached Graphs and Tables (cont'd):

Graph – CSO 004 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 014 Daily Overflow Volume April thru June 2017
Graph – CSO 014 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 014 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 027 Daily Overflow Volume April thru June 2017
Graph – CSO 027 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 027 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 034 Daily Overflow Volume April thru June 2017
Graph – CSO 034 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 034 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 052 Daily Overflow Volume April thru June 2017
Graph – CSO 052 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 052 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 060 Daily Overflow Volume April thru June 2017
Graph – CSO 060 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 060 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 063 Daily Overflow Volume April thru June 2017
Graph – CSO 063 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 063 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 075 Daily Overflow Volume April thru June 2017
Graph – CSO 075 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 075 Scatter graph of Level and Velocity by Day for April thru June 2017
Table - CSO 078 Daily Overflow Volume April thru June 2017
Graph – CSO 078 Hydrograph of Volume and Rainfall by Day for April thru June 2017
Graph – CSO 078 Scatter graph of Level and Velocity by Day for April thru June 2017

CSO 003 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
4/1/2017	0	0.03	0.01	
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	2,890,570	1.43	0.6	
4/5/2017	2,198,088	0	0	
4/6/2017	0	0.96	0.22	
4/7/2017	0	0.41	0.04	
4/8/2017	0	0	0	
4/9/2017	0	0	0	
4/10/2017	0	0	0	
4/11/2017	0	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	0	0.38	0.24	
4/20/2017	0	0.65	0.33	
4/21/2017	0	0.25	0.29	
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	0	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	0	0.81	0.53	
5/2/2017	0	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	0	1.06	0.14	
5/6/2017	0	0.81	0.22	
5/7/2017	0	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	
5/12/2017	0	0	0	

CSO 003 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

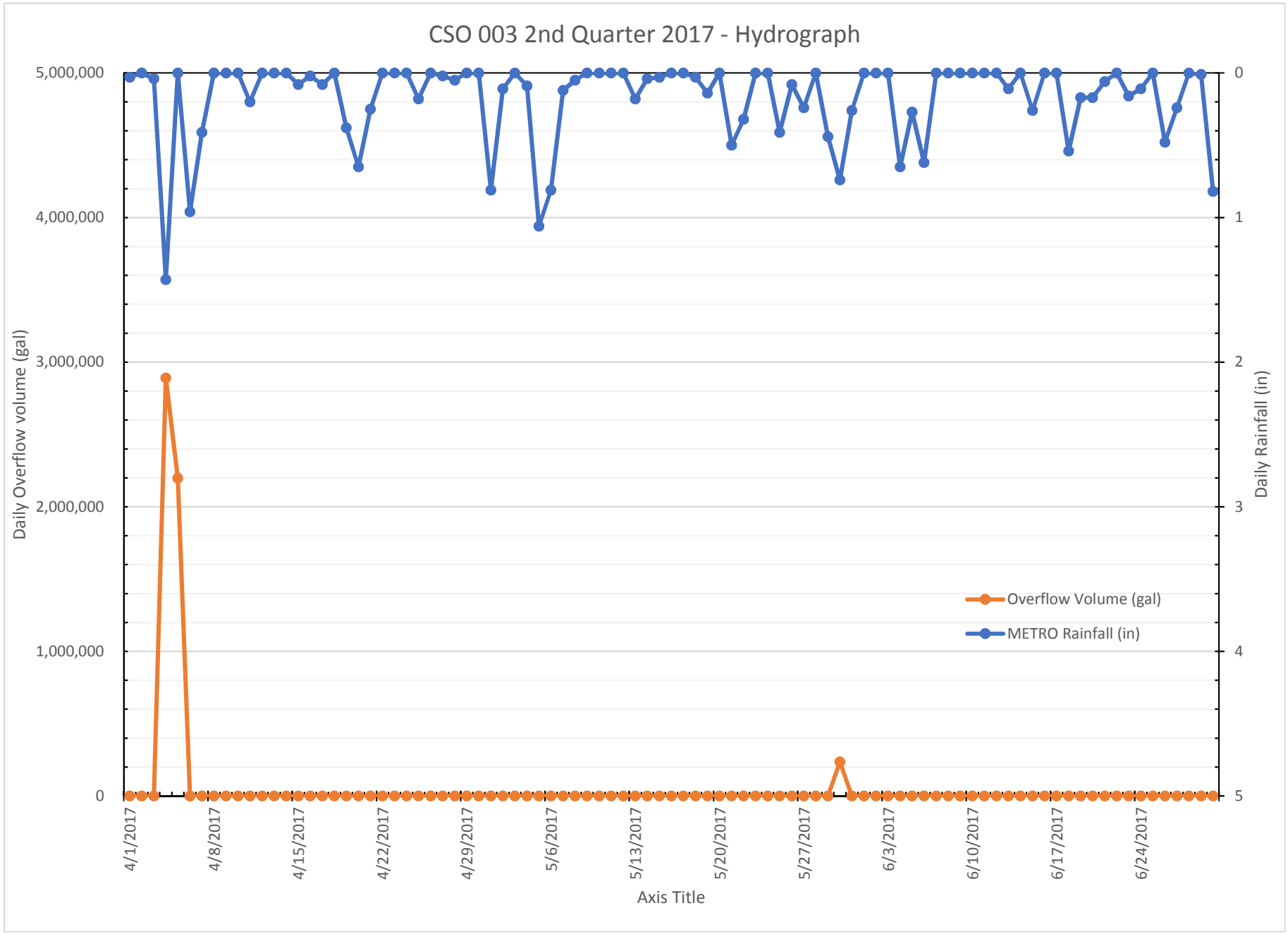
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	0	0	0	
5/18/2017	0	0.03	0.02	
5/19/2017	0	0.14	0.14	
5/20/2017	0	0	0	
5/21/2017	0	0.5	0.21	
5/22/2017	0	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	0	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	0	0.24	0.07	
5/28/2017	0	0	0	
5/29/2017	0	0.44	0.18	
5/30/2017	235,790	0.74	0.59	
5/31/2017	0	0.26	0.14	
6/1/2017	0	0	0	
6/2/2017	0	0	0	
6/3/2017	0	0	0	
6/4/2017	0	0.65	0.2	
6/5/2017	0	0.27	0.13	
6/6/2017	0	0.62	0.14	
6/7/2017	0	0	0	
6/8/2017	0	0	0	
6/9/2017	0	0	0	
6/10/2017	0	0	0	
6/11/2017	0	0	0	
6/12/2017	0	0	0	
6/13/2017	0	0.11	0.11	
6/14/2017	0	0	0	
6/15/2017	0	0.26	0.1	
6/16/2017	0	0	0.02	
6/17/2017	0	0	0	
6/18/2017	0	0.54	0.29	
6/19/2017	0	0.17	0.04	
6/20/2017	0	0.17	0.17	
6/21/2017	0	0.06	0.05	
6/22/2017	0	0	0	
6/23/2017	0	0.16	0.11	

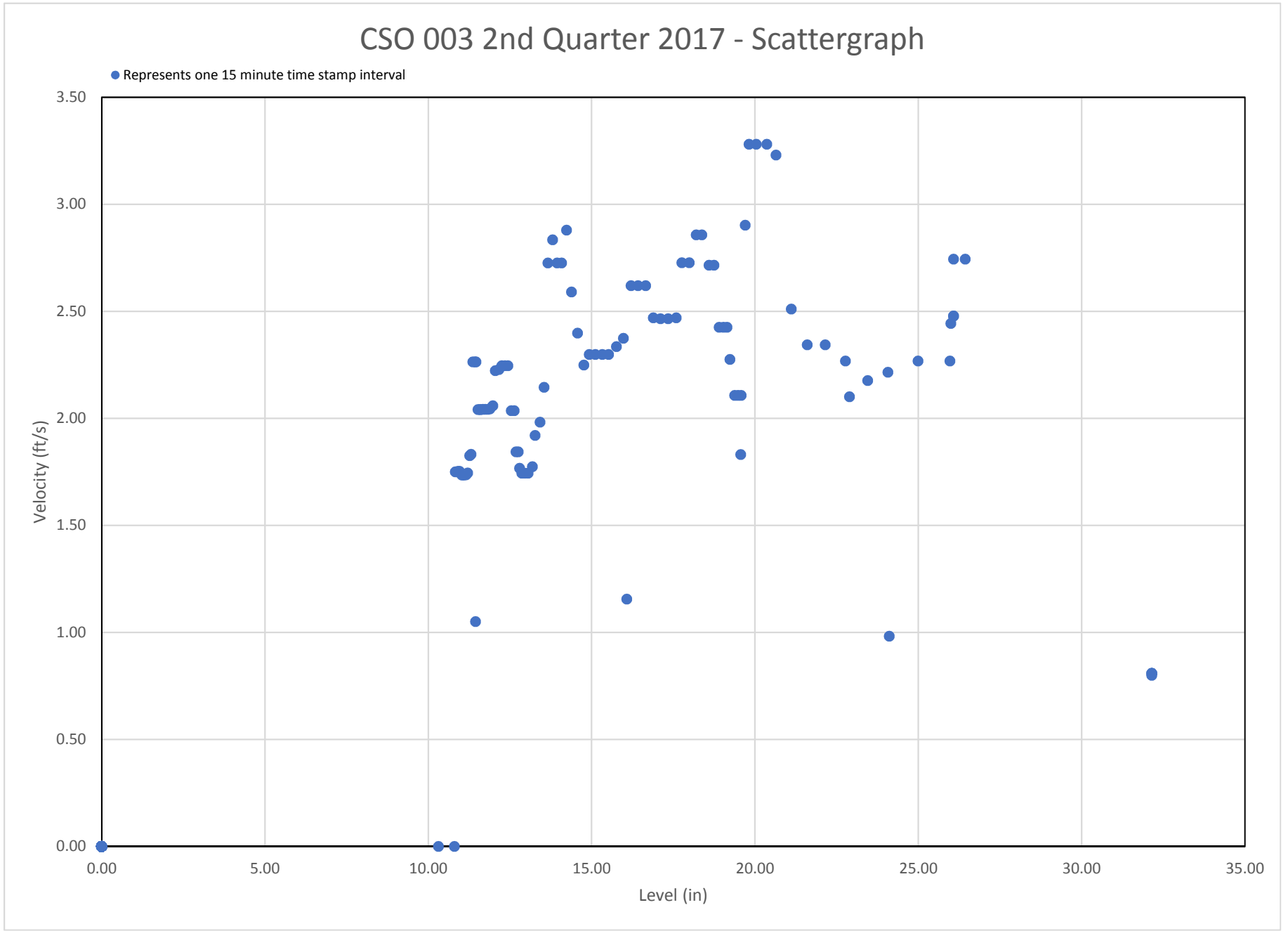
CSO 003 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
6/24/2017	0	0.11	0.08	
6/25/2017	0	0	0	
6/26/2017	0	0.48	0.31	
6/27/2017	0	0.24	0.11	
6/28/2017	0	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	0	0.82	0.68	

April Total	5,088,658	4.78
May Total	235,790	6.46
June Total	0	4.67

2Q Total	5,324,448	15.91


CSO 003 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0
1
2
3
4
5
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 003 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
Level (in)

CSO 004 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
4/1/2017	0	0.03	0.01	
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	0	1.43	0.6	
4/5/2017	0	0	0	
4/6/2017	0	0.96	0.22	
4/7/2017	0	0.41	0.04	
4/8/2017	0	0	0	
4/9/2017	0	0	0	
4/10/2017	0	0	0	
4/11/2017	0	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	0	0.38	0.24	
4/20/2017	0	0.65	0.33	
4/21/2017	0	0.25	0.29	
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	0	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	0	0.81	0.53	
5/2/2017	0	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	0	1.06	0.14	
5/6/2017	0	0.81	0.22	
5/7/2017	0	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	
5/12/2017	0	0	0	

CSO 004 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	0	0	0	
5/18/2017	0	0.03	0.02	
5/19/2017	0	0.14	0.14	
5/20/2017	0	0	0	
5/21/2017	0	0.5	0.21	
5/22/2017	0	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	0	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	0	0.24	0.07	
5/28/2017	0	0	0	
5/29/2017	0	0.44	0.18	
5/30/2017	0	0.74	0.59	
5/31/2017	*	0.26	0.14	
6/1/2017	*	0	0	
6/2/2017	*	0	0	
6/3/2017	*	0	0	
6/4/2017	*	0.65	0.2	
6/5/2017	*	0.27	0.13	
6/6/2017	*	0.62	0.14	
6/7/2017	*	0	0	
6/8/2017	*	0	0	
6/9/2017	*	0	0	
6/10/2017	*	0	0	
6/11/2017	*	0	0	
6/12/2017	*	0	0	
6/13/2017	*	0.11	0.11	
6/14/2017	*	0	0	
6/15/2017	*	0.26	0.1	
6/16/2017	*	0	0.02	
6/17/2017	*	0	0	
6/18/2017	*	0.54	0.29	
6/19/2017	*	0.17	0.04	
6/20/2017	*	0.17	0.17	
6/21/2017	*	0.06	0.05	
6/22/2017	*	0	0	
6/23/2017	*	0.16	0.11	

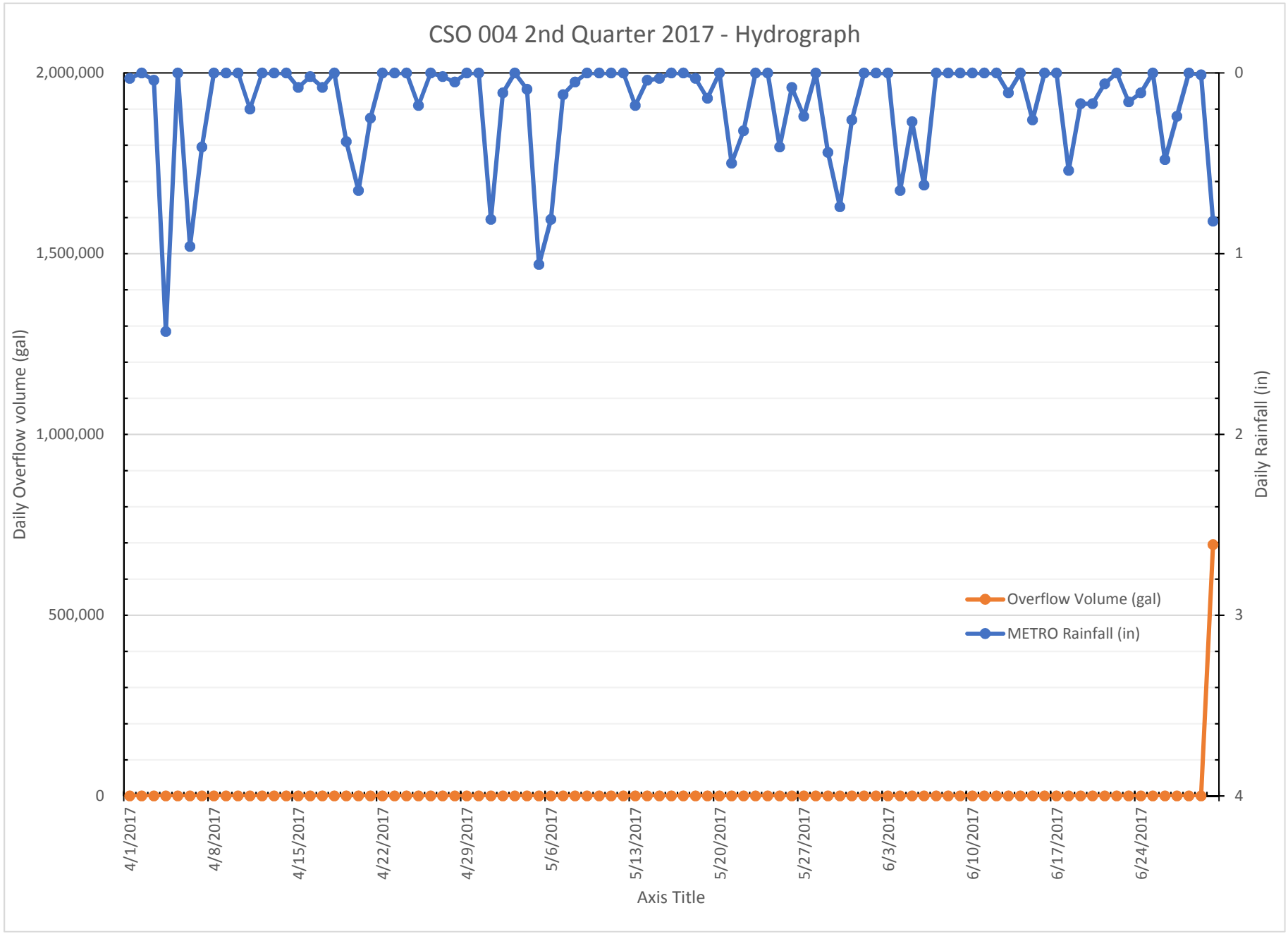
CSO 004 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

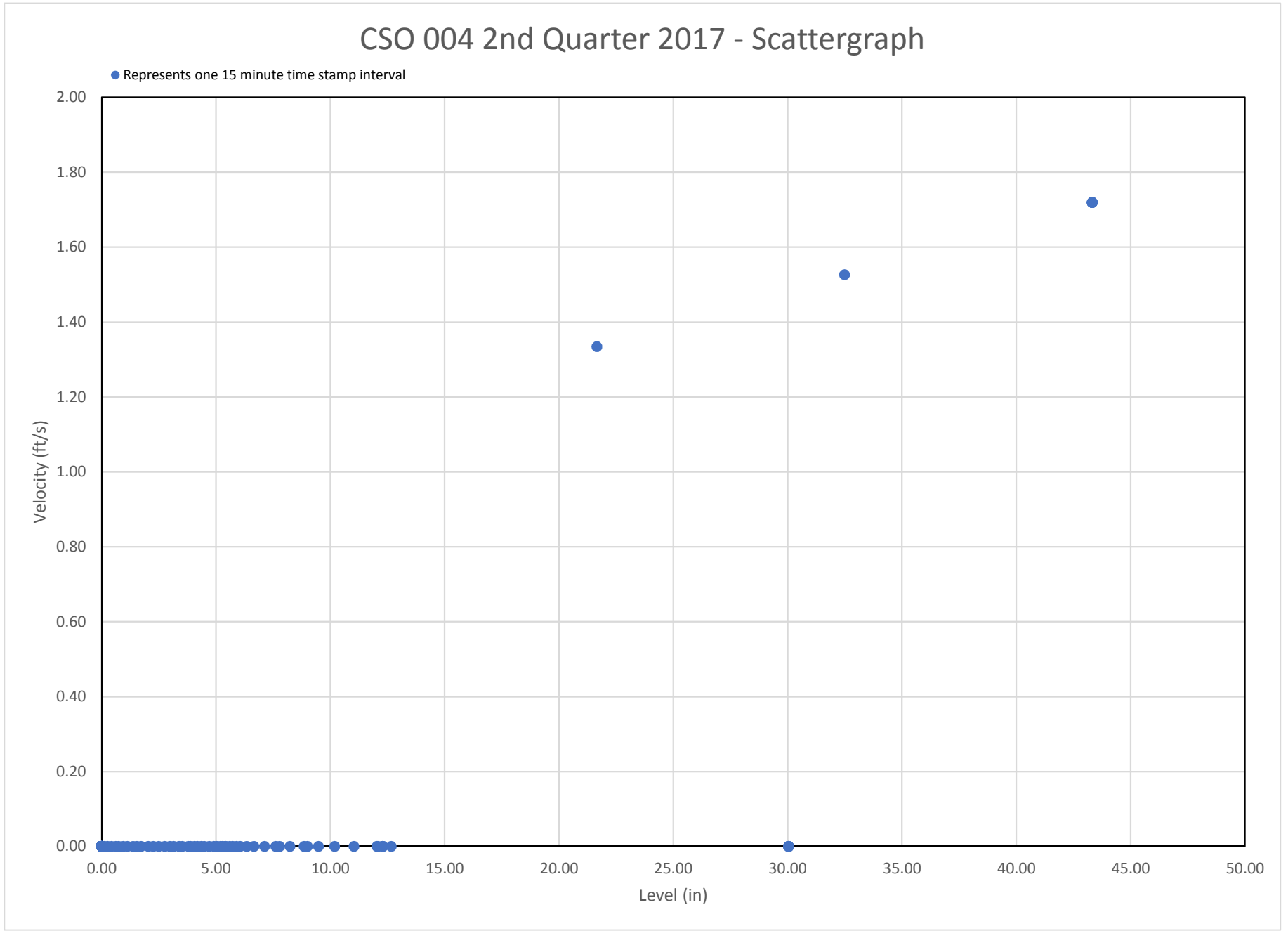
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
6/24/2017	*	0.11	0.08	
6/25/2017	*	0	0	
6/26/2017	*	0.48	0.31	
6/27/2017	*	0.24	0.11	
6/28/2017	*	0	0	
6/29/2017	*	0.01	0.01	
6/30/2017	695,057	0.82	0.68	

April Total	0	4.78
May Total	0	6.46
June Total	695,057	4.67

2Q Total	695,057	15.91

* The meter at CSO 004 was not functioning between May 31st and June 29th, 2017.


CSO 004 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
1
2
3
4
Overflow Volume (gal)
METRO Rainfall (in)
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Axis Title


CSO 004 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
2.00
1.80
1.60
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
Level (in)

CSO 014 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
4/1/2017	130,656	0.03	0.01	
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	563,063	1.43	0.6	
4/5/2017	62,139	0	0	
4/6/2017	425,816	0.96	0.22	
4/7/2017	1,686,167	0.41	0.04	
4/8/2017	910,013	0	0	
4/9/2017	87,257	0	0	
4/10/2017	0	0	0	
4/11/2017	71,136	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	0	0.38	0.24	
4/20/2017	105,359	0.65	0.33	
4/21/2017	55,263	0.25	0.29	
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	0	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	339,073	0.81	0.53	
5/2/2017	89,560	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	851,944	1.06	0.14	
5/6/2017	1,619,542	0.81	0.22	
5/7/2017	1,238,519	0.12	0.03	
5/8/2017	456,067	0.05	0.05	
5/9/2017	6,908	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	
5/12/2017	0	0	0	

CSO 014 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

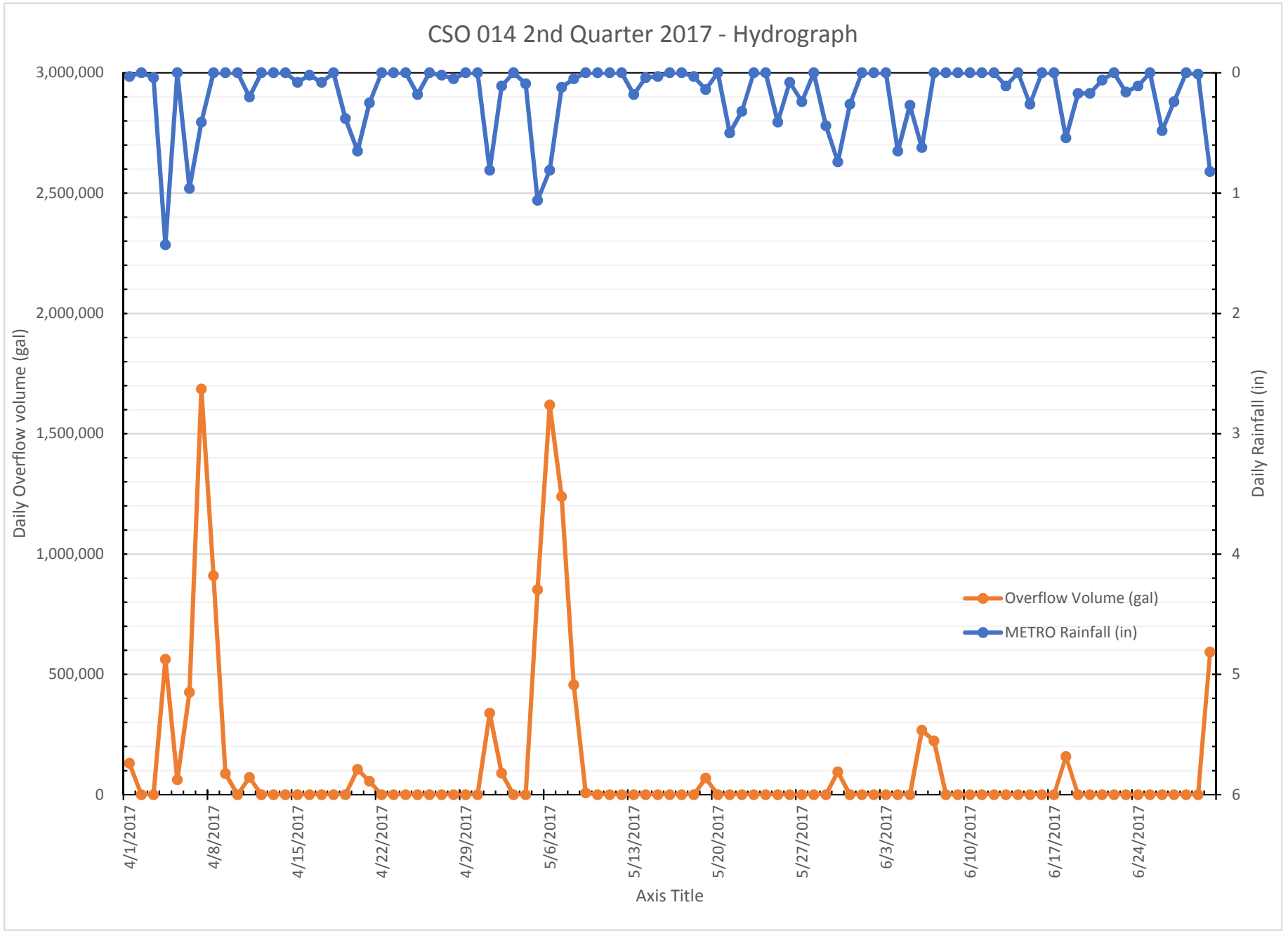
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	0	0	0	
5/18/2017	0	0.03	0.02	
5/19/2017	68,842	0.14	0.14	
5/20/2017	0	0	0	
5/21/2017	0	0.5	0.21	
5/22/2017	0	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	0	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	0	0.24	0.07	
5/28/2017	0	0	0	
5/29/2017	0	0.44	0.18	
5/30/2017	95,029	0.74	0.59	
5/31/2017	0	0.26	0.14	
6/1/2017	0	0	0	
6/2/2017	0	0	0	
6/3/2017	0	0	0	
6/4/2017	0	0.65	0.2	
6/5/2017	0	0.27	0.13	
6/6/2017	267,561	0.62	0.14	
6/7/2017	223,527	0	0	
6/8/2017	0	0	0	
6/9/2017	0	0	0	
6/10/2017	0	0	0	
6/11/2017	0	0	0	
6/12/2017	0	0	0	
6/13/2017	0	0.11	0.11	
6/14/2017	0	0	0	
6/15/2017	0	0.26	0.1	
6/16/2017	0	0	0.02	
6/17/2017	0	0	0	
6/18/2017	158,105	0.54	0.29	
6/19/2017	0	0.17	0.04	
6/20/2017	0	0.17	0.17	
6/21/2017	0	0.06	0.05	
6/22/2017	0	0	0	
6/23/2017	0	0.16	0.11	

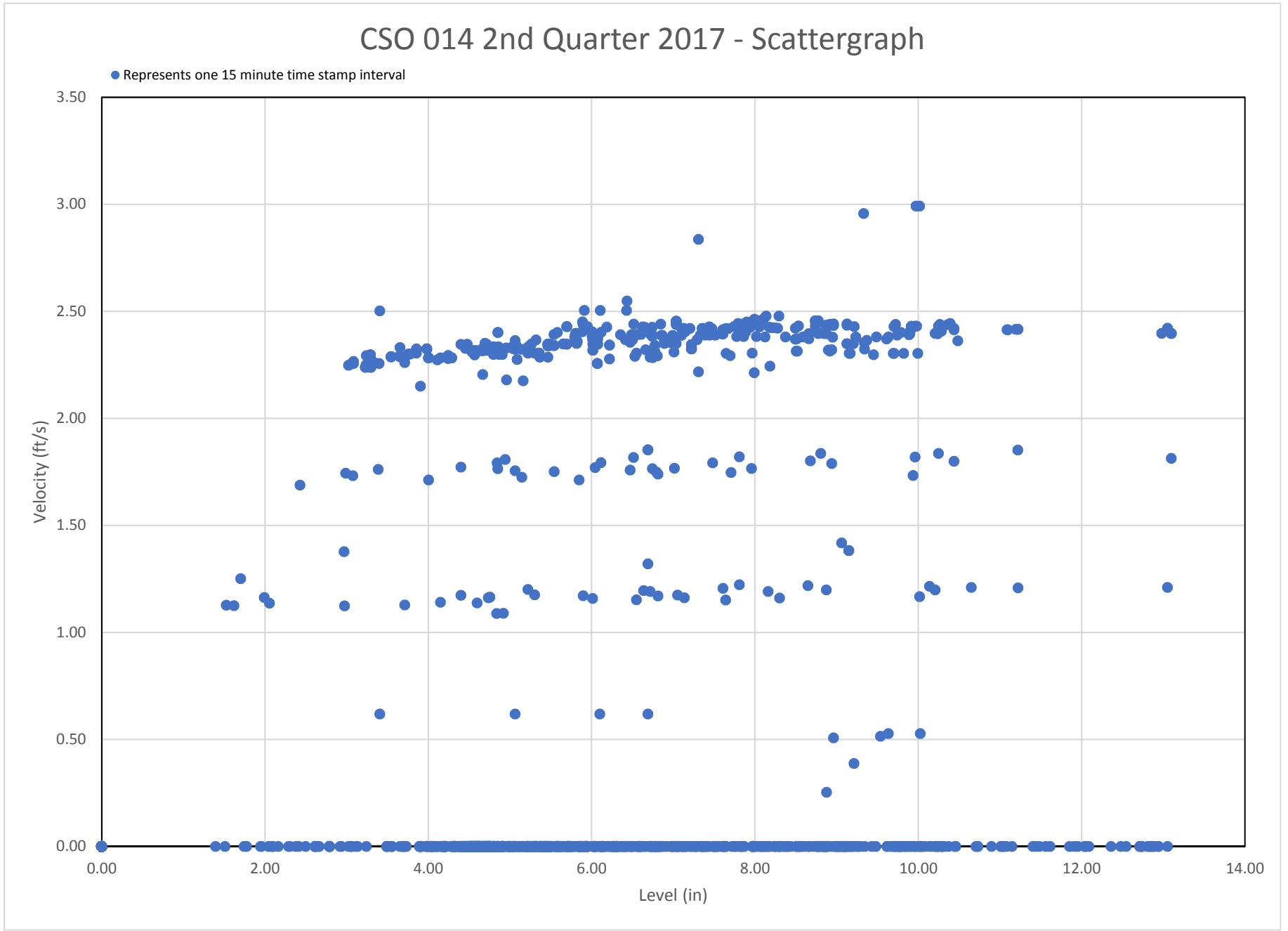
CSO 014 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
6/24/2017	0	0.11	0.08	
6/25/2017	0	0	0	
6/26/2017	0	0.48	0.31	
6/27/2017	0	0.24	0.11	
6/28/2017	0	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	592,693	0.82	0.68	

April Total	4,096,868	4.78
May Total	4,765,484	6.46
June Total	1,241,886	4.67

2Q Total	10,104,238	15.91


CSO 014 2nd Quarter 2017 - Hydrograph
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Daily Overflow volume (gal)
0
1
2
3
4
5
6
Daily Rainfall (in)
Overflow Volume (gal)
METRO Rainfall (in)
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Axis Title


CSO 014 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
Level (in)

CSO 027 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
4/1/2017	167,576	0.03	0.01	
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	2,976,939	1.43	0.6	
4/5/2017	0	0	0	
4/6/2017	2,381,566	0.96	0.22	
4/7/2017	2,355,594	0.41	0.04	
4/8/2017	0	0	0	
4/9/2017	0	0	0	
4/10/2017	0	0	0	
4/11/2017	24,377	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	3,904	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	216,422	0.38	0.24	
4/20/2017	1,141,125	0.65	0.33	
4/21/2017	784,004	0.25	0.29	
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	0	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	1,544,049	0.81	0.53	
5/2/2017	0	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	993,176	1.06	0.14	
5/6/2017	1,929,565	0.81	0.22	
5/7/2017	0	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	
5/12/2017	0	0	0	

CSO 027 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

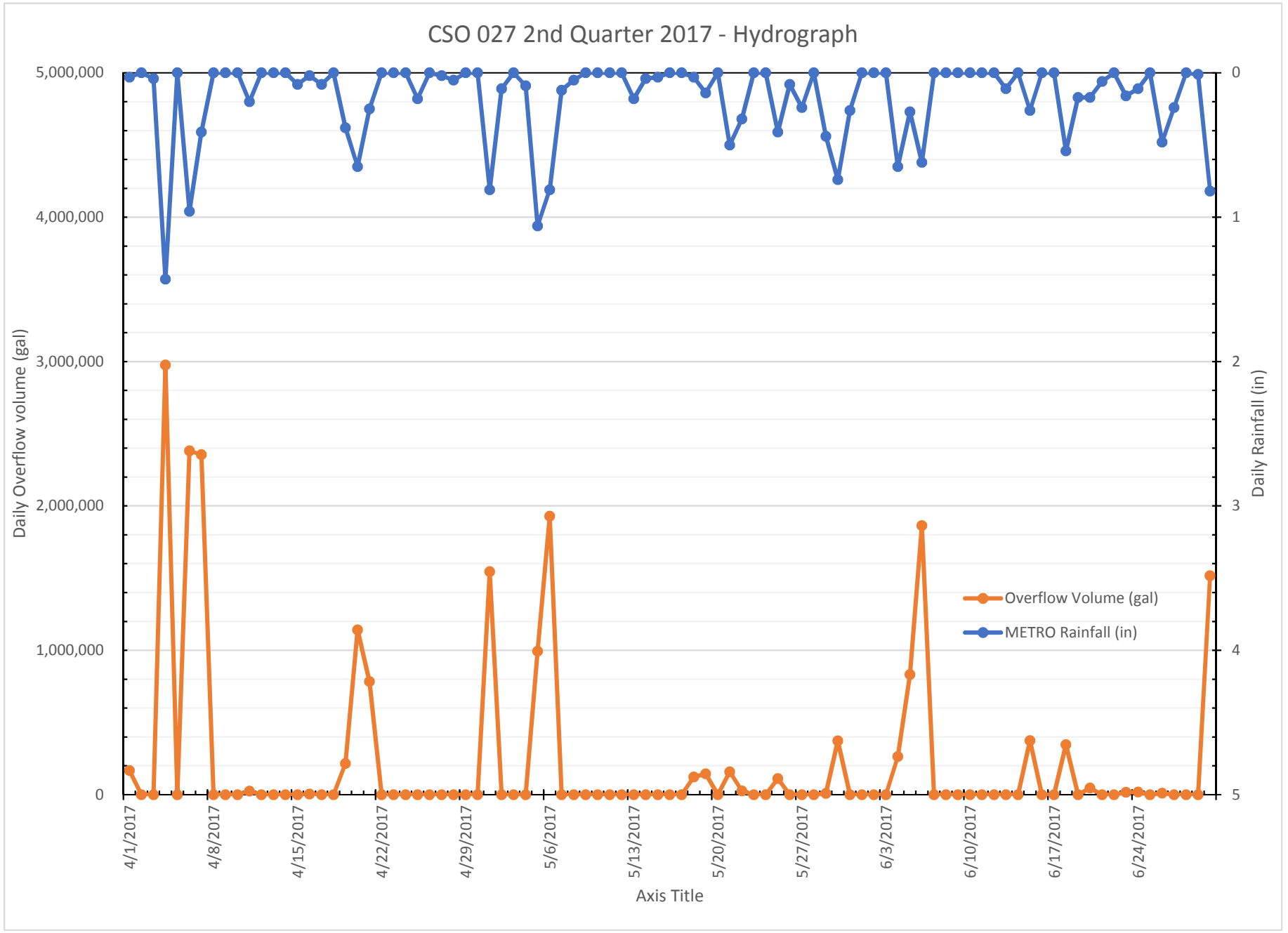
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	0	0	0	
5/18/2017	123,013	0.03	0.02	
5/19/2017	144,043	0.14	0.14	
5/20/2017	0	0	0	
5/21/2017	157,789	0.5	0.21	
5/22/2017	25,379	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	111,720	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	0	0.24	0.07	
5/28/2017	0	0	0	
5/29/2017	8,523	0.44	0.18	
5/30/2017	372,728	0.74	0.59	
5/31/2017	0	0.26	0.14	
6/1/2017	0	0	0	
6/2/2017	0	0	0	
6/3/2017	0	0	0	
6/4/2017	263,397	0.65	0.2	
6/5/2017	831,607	0.27	0.13	
6/6/2017	1,863,642	0.62	0.14	
6/7/2017	0	0	0	
6/8/2017	0	0	0	
6/9/2017	0	0	0	
6/10/2017	0	0	0	
6/11/2017	0	0	0	
6/12/2017	0	0	0	
6/13/2017	0	0.11	0.11	
6/14/2017	0	0	0	
6/15/2017	373,879	0.26	0.1	
6/16/2017	0	0	0.02	
6/17/2017	0	0	0	
6/18/2017	345,877	0.54	0.29	
6/19/2017	0	0.17	0.04	
6/20/2017	45,938	0.17	0.17	
6/21/2017	0	0.06	0.05	
6/22/2017	0	0	0	
6/23/2017	16,351	0.16	0.11	

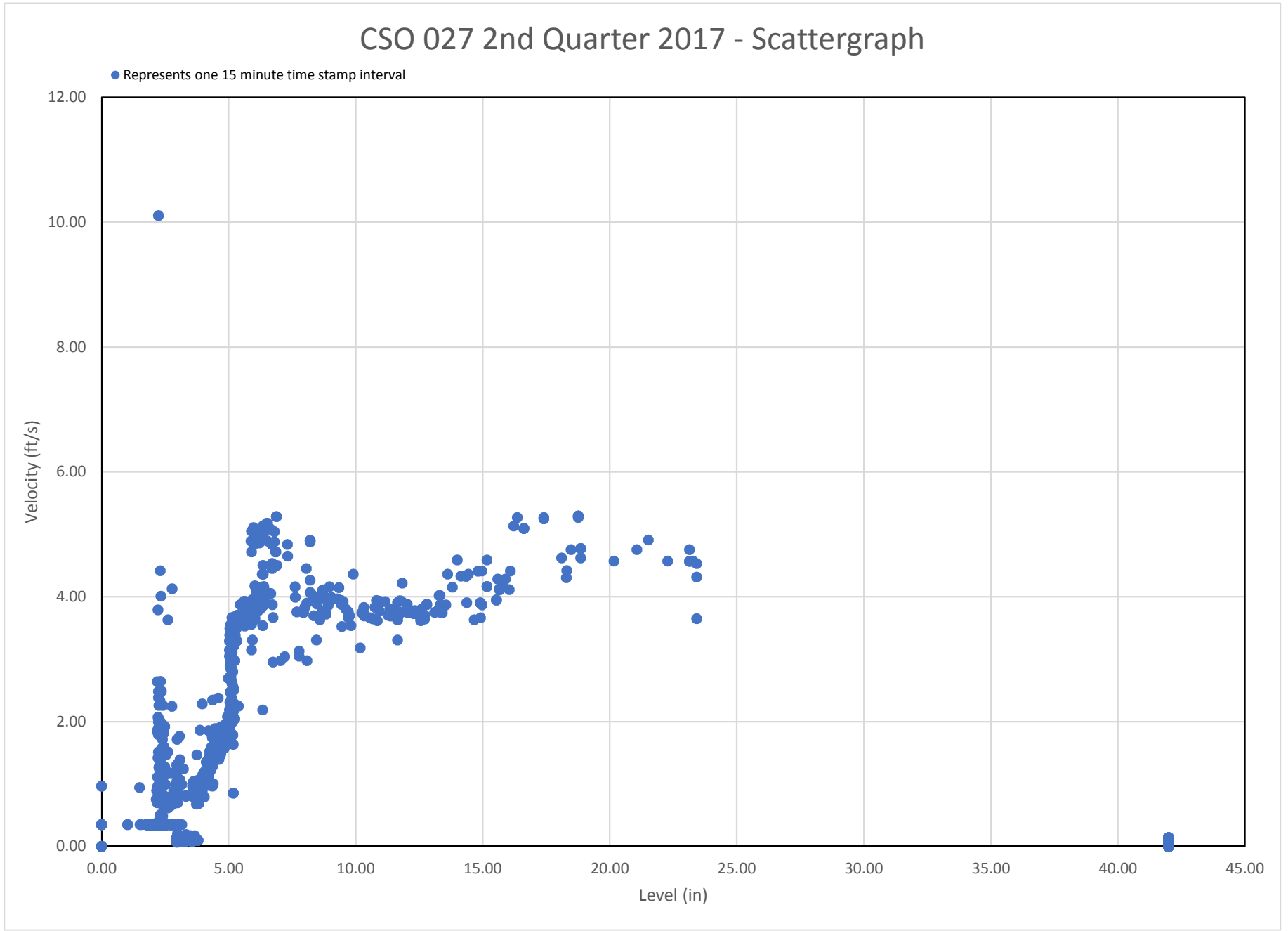
CSO 027 DAILY OVERFLOW VOLUME
2ND QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
6/24/2017	18,202	0.11	0.08	
6/25/2017	0	0	0	
6/26/2017	10,037	0.48	0.31	
6/27/2017	0	0.24	0.11	
6/28/2017	0	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	1,516,665	0.82	0.68	

April Total	10,051,505	4.78
May Total	5,409,985	6.46
June Total	5,285,595	4.67

2Q Total	20,747,084	15.91


CSO 027 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0
1
2
3
4
5
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 027 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
Level (in)

CSO 034 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
4/1/2017	0	0.03	0.01	*
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	0	1.43	0.6	
4/5/2017	0	0	0	*
4/6/2017	0	0.96	0.22	
4/7/2017	0	0.41	0.04	*
4/8/2017	0	0	0	*
4/9/2017	0	0	0	*
4/10/2017	0	0	0	
4/11/2017	0	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	0	0.38	0.24	
4/20/2017	0	0.65	0.33	
4/21/2017	0	0.25	0.29	*
4/22/2017	0	0	0	*
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	0	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	0	0.81	0.53	
5/2/2017	0	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	0	1.06	0.14	
5/6/2017	0	0.81	0.22	
5/7/2017	0	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	

CSO 034 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)	
				>0.9	
5/12/2017	0	0	0		
5/13/2017	0	0.18	0.06		
5/14/2017	0	0.04	0.04		
5/15/2017	0	0.03	0.03		
5/16/2017	0	0	0		
5/17/2017	0	0	0		
5/18/2017	0	0.03	0.02		
5/19/2017	0	0.14	0.14		
5/20/2017	0	0	0		
5/21/2017	0	0.5	0.21		
5/22/2017	0	0.32	0.13		
5/23/2017	0	0	0		
5/24/2017	0	0	0		
5/25/2017	0	0.41	0.16		
5/26/2017	0	0.08	0.03		
5/27/2017	0	0.24	0.07		
5/28/2017	0	0	0		
5/29/2017	0	0.44	0.18		
5/30/2017	0	0.74	0.59		
5/31/2017	0	0.26	0.14		
6/1/2017	0	0	0		
6/2/2017	0	0	0		
6/3/2017	0	0	0		
6/4/2017	0	0.65	0.2		
6/5/2017	0	0.27	0.13		
6/6/2017	0	0.62	0.14		
6/7/2017	0	0	0	*	
6/8/2017	0	0	0	*	
6/9/2017	0	0	0		
6/10/2017	0	0	0		
6/11/2017	0	0	0		
6/12/2017	0	0	0		
6/13/2017	0	0.11	0.11		
6/14/2017	0	0	0		
6/15/2017	0	0.26	0.1		
6/16/2017	0	0	0.02		
6/17/2017	0	0	0		
6/18/2017	0	0.54	0.29		
6/19/2017	0	0.17	0.04		
6/20/2017	0	0.17	0.17		
6/21/2017	0	0.06	0.05		

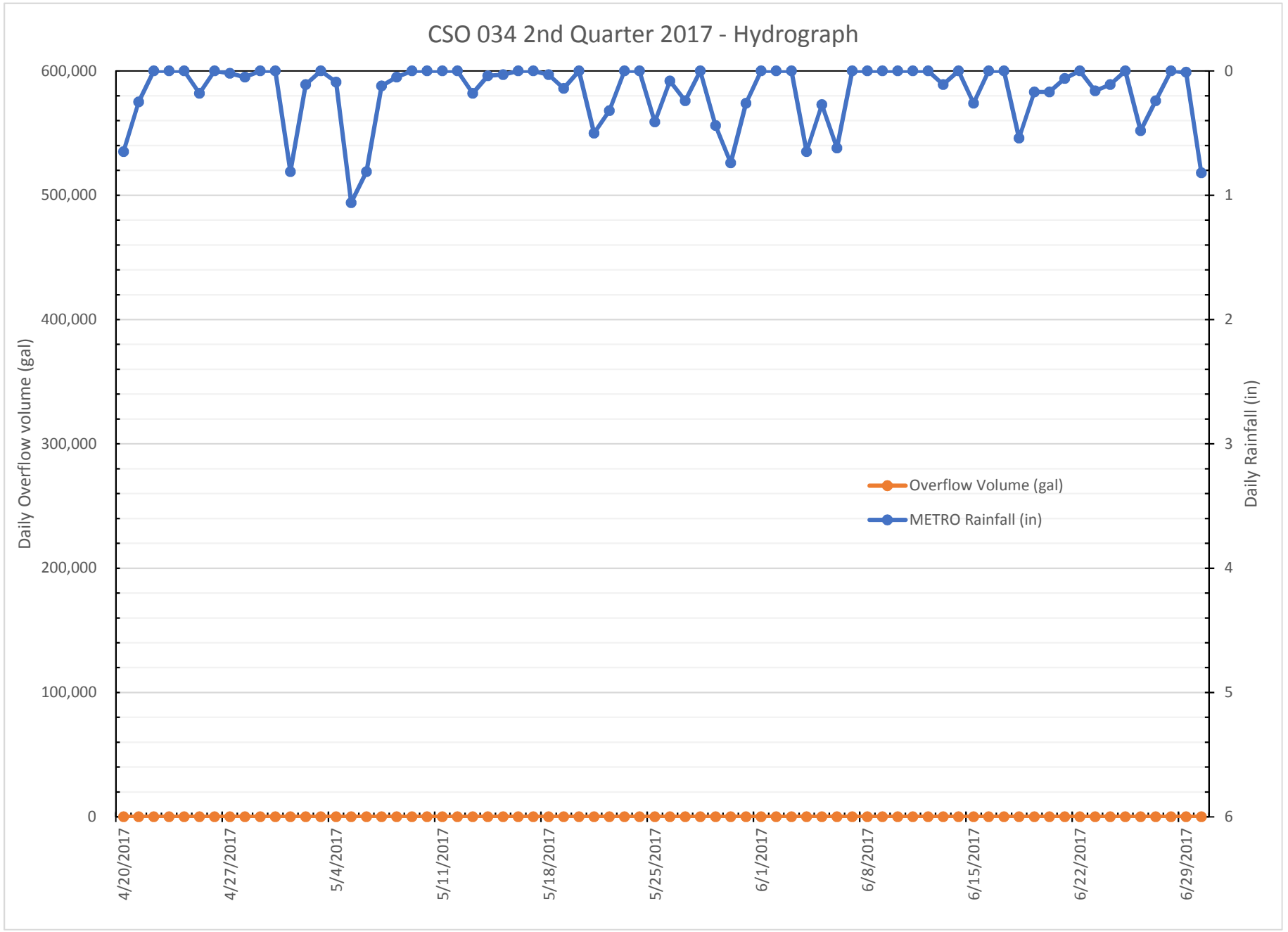
CSO 034 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

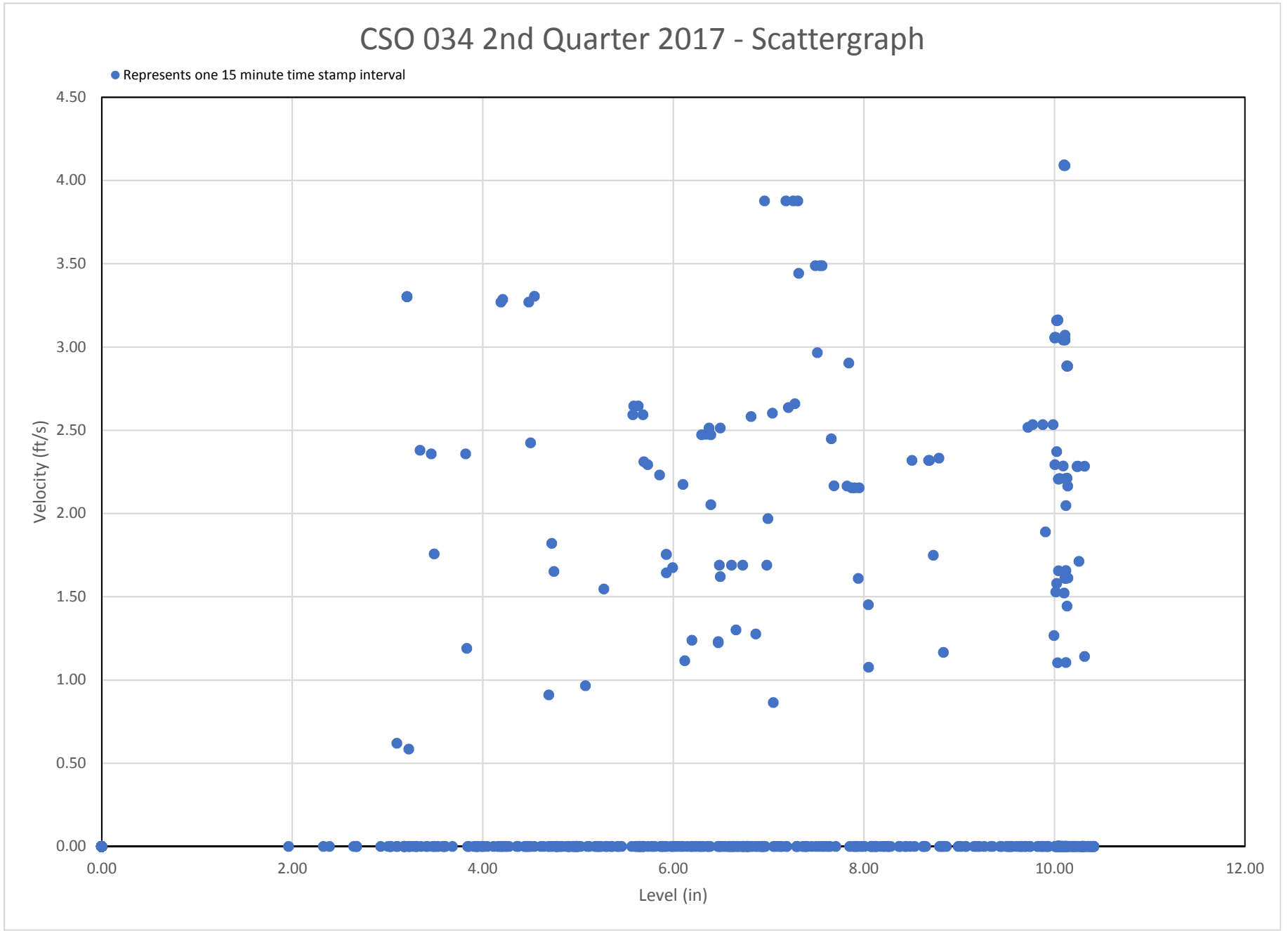
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
6/22/2017	0	0	0	
6/23/2017	0	0.16	0.11	
6/24/2017	0	0.11	0.08	
6/25/2017	0	0	0	
6/26/2017	0	0.48	0.31	
6/27/2017	0	0.24	0.11	
6/28/2017	0	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	0	0.82	0.68	

April	0	4.78
May	0	6.46
June	0	4.67

2Q Total	0	15.91

* – Flow meter indicated flow on these dates. However, data from the stroage facility showed the facility was not full. In addition, the ultrasonic indicator on the overflow weir did not show a level meaning it is unlikely an overflow was occurring.


CSO 034 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
600,000
500,000
400,000
300,000
200,000
100,000
0
0
1
2
3
4
5
6
Overflow Volume (gal)
METRO Rainfall (in)
4/20/2017
4/27/2017
5/4/2017
5/11/2017
5/18/2017
5/25/2017
6/1/2017
6/8/2017
6/15/2017
6/22/2017
6/29/2017


CSO 034 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
Level (in)

CSO 052 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
4/1/2017	25,101	0.03	0.01	
4/2/2017	1,915	0	0	
4/3/2017	2,004	0.04	0.04	
4/4/2017	26,464	1.43	0.6	
4/5/2017	39,154	0	0	
4/6/2017	21,662	0.96	0.22	
4/7/2017	0	0.41	0.04	
4/8/2017	372	0	0	
4/9/2017	18,568	0	0	
4/10/2017	37,226	0	0	
4/11/2017	32,650	0.2	0.1	
4/12/2017	17,112	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	8,091	0.38	0.24	
4/20/2017	5,623	0.65	0.33	
4/21/2017	28,449	0.25	0.29	
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	908	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	850	0.02	0.02	
4/28/2017	1,015	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	5,928	0.81	0.53	
5/2/2017	0	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	19,719	1.06	0.14	
5/6/2017	24,479	0.81	0.22	
5/7/2017	4,634	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	

CSO 052 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

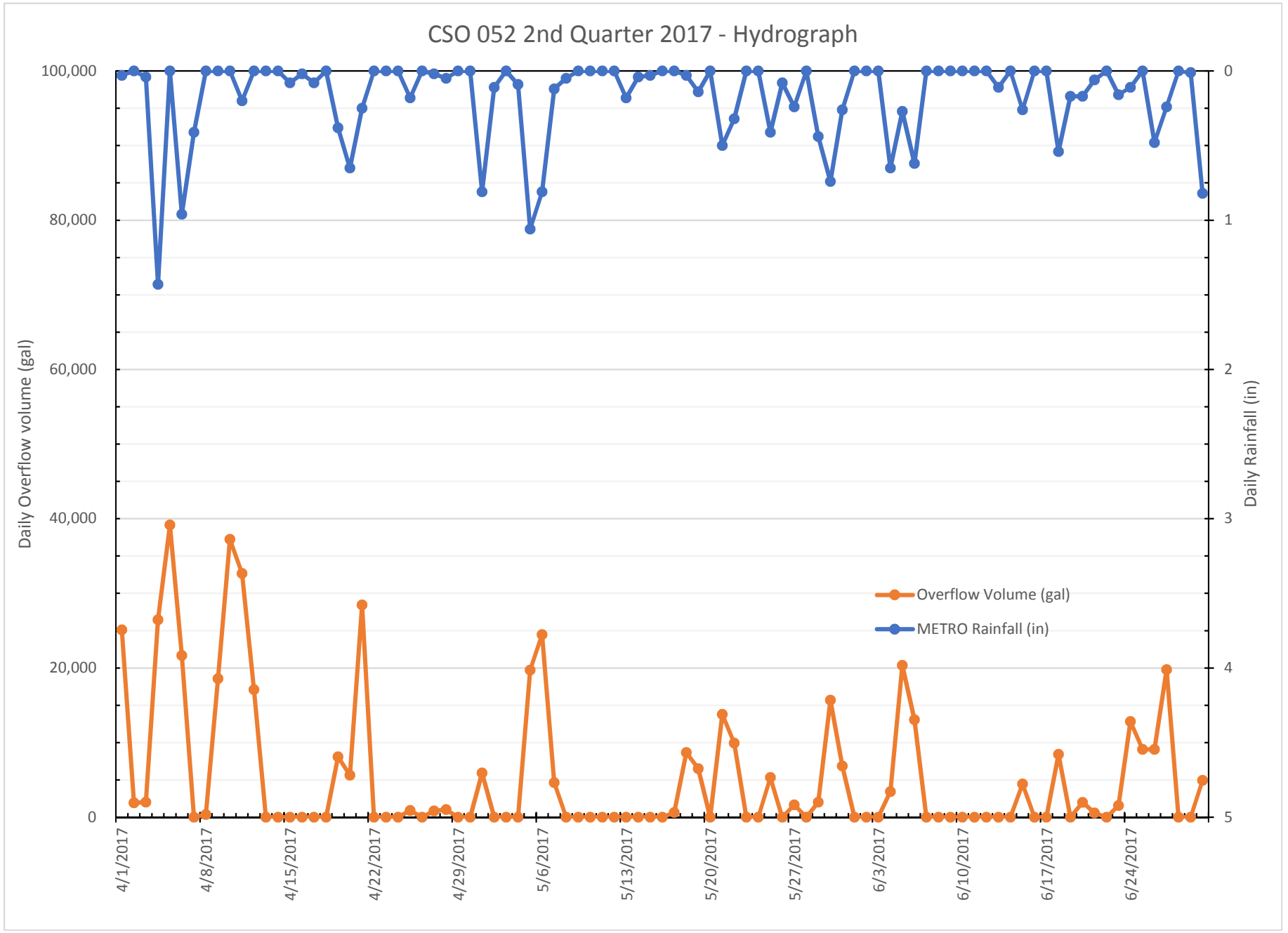
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
5/12/2017	0	0	0	
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	646	0	0	
5/18/2017	8,682	0.03	0.02	
5/19/2017	6,500	0.14	0.14	
5/20/2017	0	0	0	
5/21/2017	13,774	0.5	0.21	
5/22/2017	9,936	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	5,342	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	1,665	0.24	0.07	
5/28/2017	0	0	0	
5/29/2017	2,024	0.44	0.18	
5/30/2017	15,684	0.74	0.59	
5/31/2017	6,855	0.26	0.14	
6/1/2017	0	0	0	
6/2/2017	0	0	0	
6/3/2017	0	0	0	
6/4/2017	3,430	0.65	0.2	
6/5/2017	20,363	0.27	0.13	
6/6/2017	13,054	0.62	0.14	
6/7/2017	0	0	0	
6/8/2017	0	0	0	
6/9/2017	0	0	0	
6/10/2017	0	0	0	
6/11/2017	0	0	0	
6/12/2017	0	0	0	
6/13/2017	0	0.11	0.11	
6/14/2017	0	0	0	
6/15/2017	4,443	0.26	0.1	
6/16/2017	0	0	0.02	
6/17/2017	0	0	0	
6/18/2017	8,420	0.54	0.29	
6/19/2017	0	0.17	0.04	
6/20/2017	1,972	0.17	0.17	
6/21/2017	576	0.06	0.05	

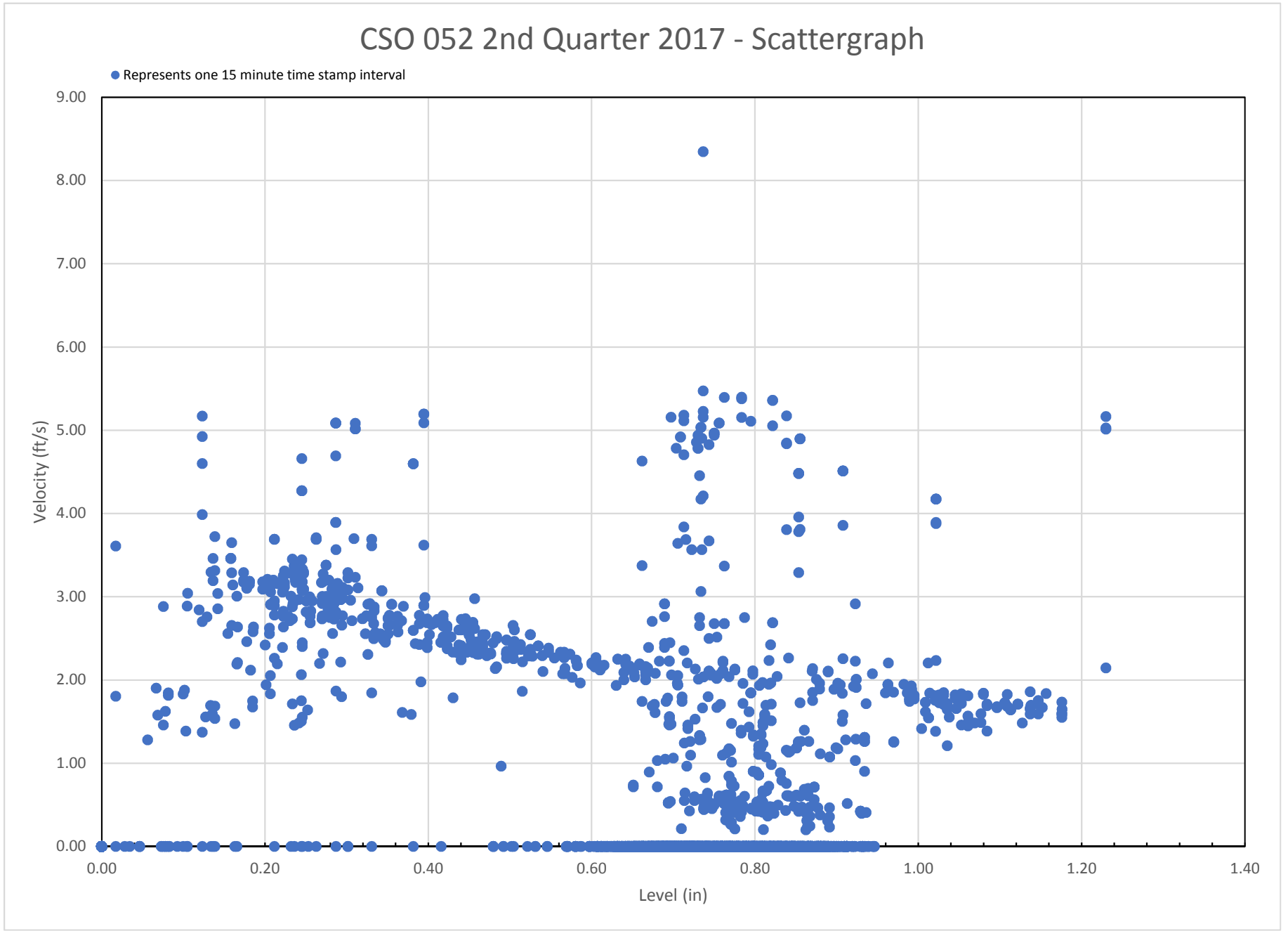
CSO 052 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
6/22/2017	0	0	0	
6/23/2017	1,569	0.16	0.11	
6/24/2017	12,825	0.11	0.08	
6/25/2017	9,078	0	0	
6/26/2017	9,090	0.48	0.31	
6/27/2017	19,781	0.24	0.11	
6/28/2017	0	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	4,932	0.82	0.68	

April	267,166	4.78
May	125,868	6.46
June	109,533	4.67

2Q Total	502,566	15.91


CSO 052 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
100,000
80,000
60,000
40,000
20,000
0
0
1
2
3
4
5
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 052 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
0.20
0.40
0.60
0.80
1.00
1.20
1.40
Level (in)

CSO 060 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
4/1/2017	0	0.03	0.01	
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	1,641,323	1.43	0.6	
4/5/2017	0	0	0	
4/6/2017	809,460	0.96	0.22	
4/7/2017	846,317	0.41	0.04	
4/8/2017	0	0	0	
4/9/2017	0	0	0	
4/10/2017	0	0	0	
4/11/2017	41,532	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	587,204	0.38	0.24	
4/20/2017	718,910	0.65	0.33	
4/21/2017	184,000	0.25	0.29	
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	11,668	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	441,616	0.81	0.53	
5/2/2017	5,003	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	247,472	1.06	0.14	
5/6/2017	384,691	0.81	0.22	
5/7/2017	0	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	

CSO 060 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

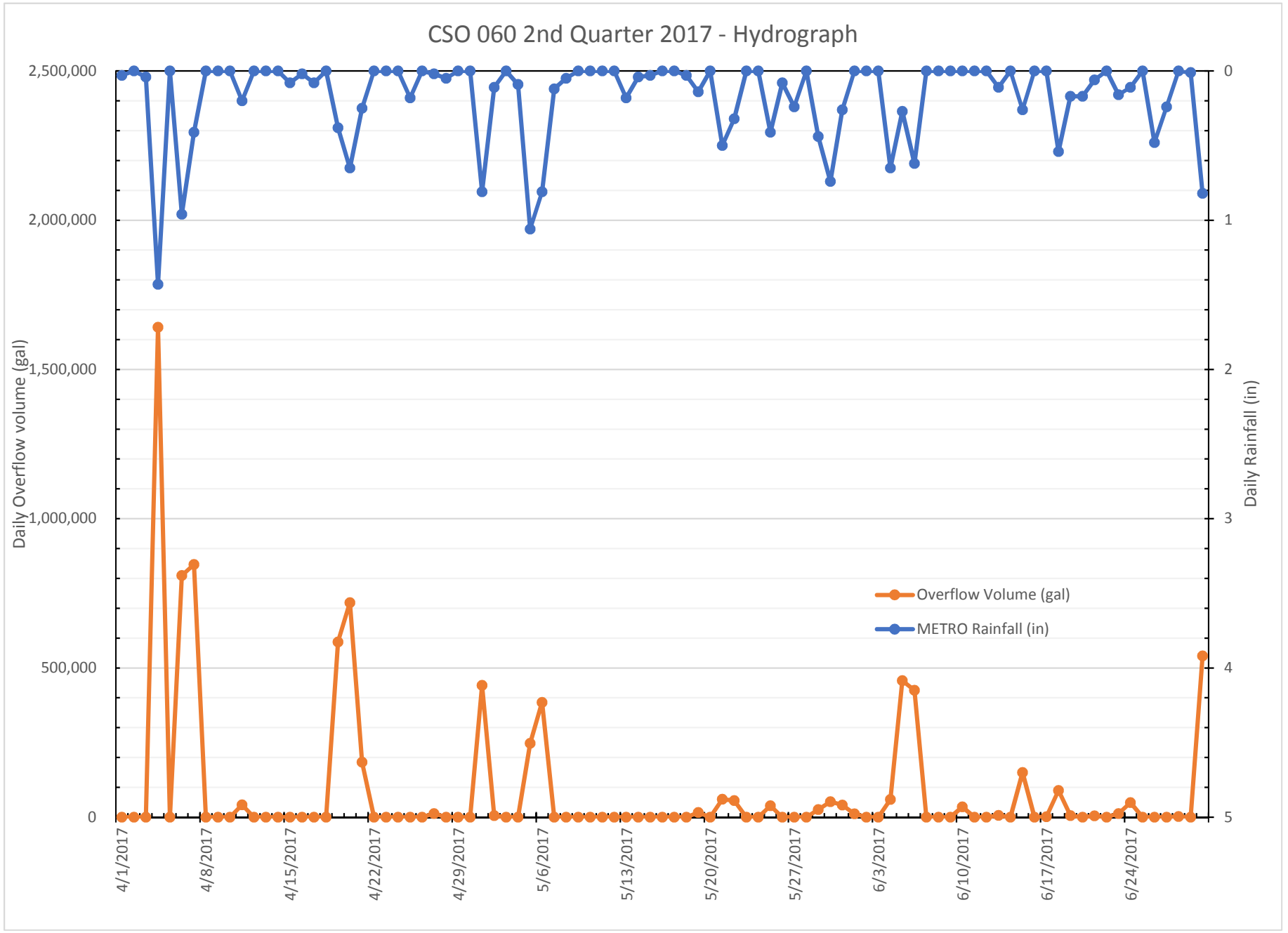
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
5/12/2017	0	0	0	
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	0	0	0	
5/18/2017	0	0.03	0.02	
5/19/2017	15,892	0.14	0.14	
5/20/2017	0	0	0	
5/21/2017	59,858	0.5	0.21	
5/22/2017	55,878	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	38,726	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	0	0.24	0.07	
5/28/2017	0	0	0	
5/29/2017	25,614	0.44	0.18	
5/30/2017	51,556	0.74	0.59	
5/31/2017	40,862	0.26	0.14	
6/1/2017	11,178	0	0	
6/2/2017	0	0	0	
6/3/2017	0	0	0	
6/4/2017	59,227	0.65	0.2	
6/5/2017	457,346	0.27	0.13	
6/6/2017	424,842	0.62	0.14	
6/7/2017	0	0	0	
6/8/2017	0	0	0	
6/9/2017	0	0	0	
6/10/2017	34,771	0	0	
6/11/2017	0	0	0	
6/12/2017	0	0	0	
6/13/2017	5,680	0.11	0.11	
6/14/2017	0	0	0	
6/15/2017	150,051	0.26	0.1	
6/16/2017	0	0	0.02	
6/17/2017	1,589	0	0	
6/18/2017	89,824	0.54	0.29	
6/19/2017	5,262	0.17	0.04	
6/20/2017	0	0.17	0.17	
6/21/2017	4,533	0.06	0.05	

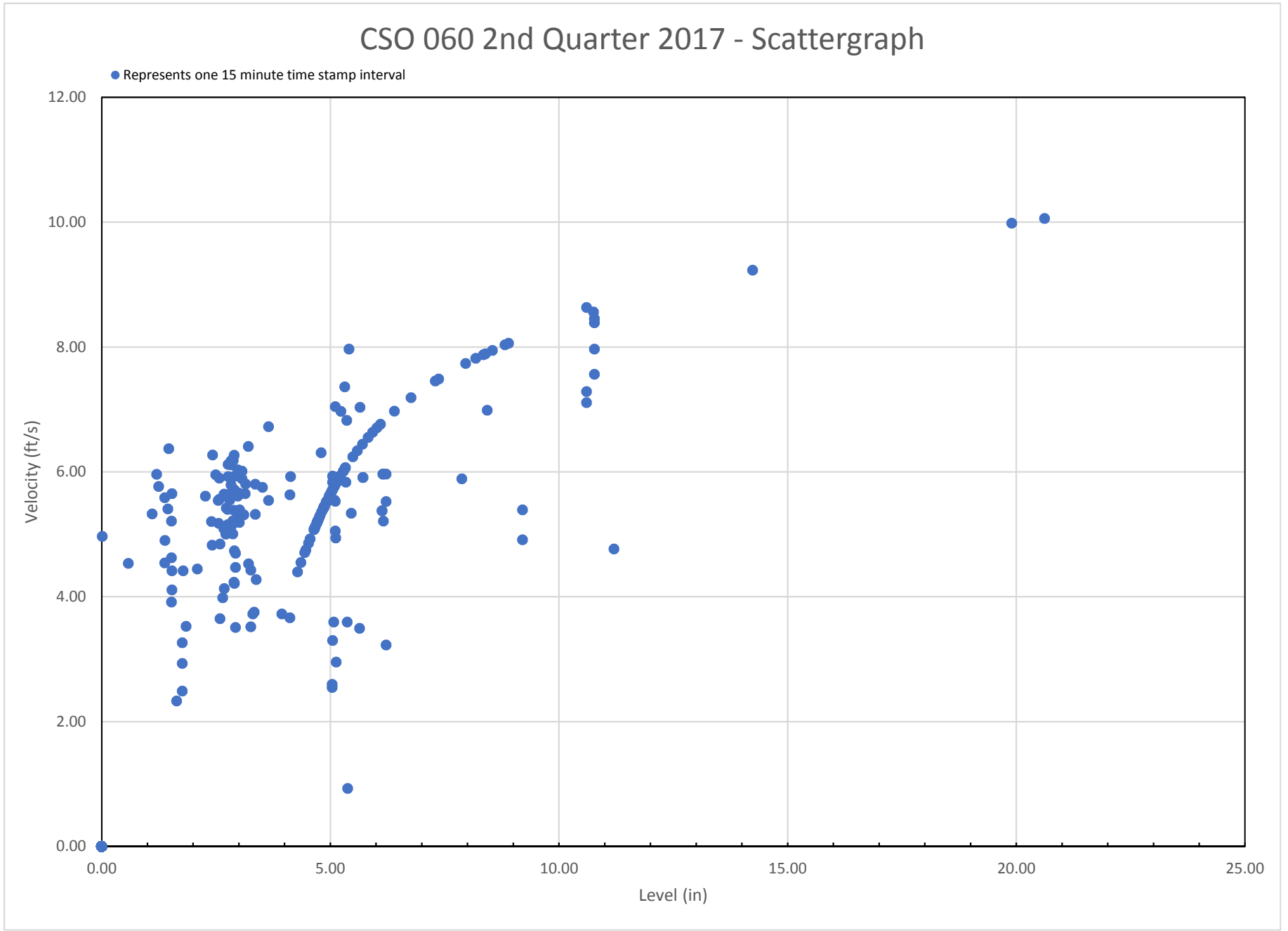
CSO 060 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
6/22/2017	0	0	0	
6/23/2017	12,331	0.16	0.11	
6/24/2017	49,194	0.11	0.08	
6/25/2017	0	0	0	
6/26/2017	0	0.48	0.31	
6/27/2017	0	0.24	0.11	
6/28/2017	2,379	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	540,167	0.82	0.68	

April	4,840,414	4.78
May	1,367,168	6.46
June	1,848,375	4.67

2Q Total	8,055,957	15.91


CSO 060 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017


CSO 060 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Level (in)

CSO 063 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
4/1/2017	0	0.03	0.01	
4/2/2017	0	0	0	
4/3/2017	0	0.04	0.04	
4/4/2017	0	1.43	0.6	
4/5/2017	0	0	0	
4/6/2017	0	0.96	0.22	
4/7/2017	0	0.41	0.04	
4/8/2017	0	0	0	
4/9/2017	0	0	0	
4/10/2017	0	0	0	
4/11/2017	0	0.2	0.1	
4/12/2017	0	0	0	
4/13/2017	0	0	0	
4/14/2017	0	0	0	
4/15/2017	0	0.08	0.07	
4/16/2017	0	0.02	0.02	
4/17/2017	0	0.08	0.07	
4/18/2017	0	0	0	
4/19/2017	0	0.38	0.24	
4/20/2017	0	0.65	0.33	
4/21/2017	0	0.25	0.29	*
4/22/2017	0	0	0	
4/23/2017	0	0	0	
4/24/2017	0	0	0	
4/25/2017	0	0.18	0.07	
4/26/2017	0	0	0	
4/27/2017	0	0.02	0.02	
4/28/2017	0	0.05	0.03	
4/29/2017	0	0	0	
4/30/2017	0	0	0	
5/1/2017	0	0.81	0.53	*
5/2/2017	0	0.11	0.05	
5/3/2017	0	0	0	
5/4/2017	0	0.09	0.03	
5/5/2017	0	1.06	0.14	
5/6/2017	0	0.81	0.22	
5/7/2017	0	0.12	0.03	
5/8/2017	0	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	0	0	0	

CSO 063 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
5/12/2017	0	0	0	*
5/13/2017	0	0.18	0.06	
5/14/2017	0	0.04	0.04	
5/15/2017	0	0.03	0.03	
5/16/2017	0	0	0	
5/17/2017	0	0	0	
5/18/2017	0	0.03	0.02	*
5/19/2017	0	0.14	0.14	*
5/20/2017	0	0	0	
5/21/2017	0	0.5	0.21	
5/22/2017	0	0.32	0.13	
5/23/2017	0	0	0	
5/24/2017	0	0	0	
5/25/2017	0	0.41	0.16	
5/26/2017	0	0.08	0.03	
5/27/2017	0	0.24	0.07	*
5/28/2017	0	0	0	*
5/29/2017	0	0.44	0.18	
5/30/2017	0	0.74	0.59	*
5/31/2017	0	0.26	0.14	
6/1/2017	0	0	0	*
6/2/2017	0	0	0	
6/3/2017	0	0	0	
6/4/2017	0	0.65	0.2	
6/5/2017	0	0.27	0.13	
6/6/2017	0	0.62	0.14	
6/7/2017	0	0	0	
6/8/2017	0	0	0	
6/9/2017	0	0	0	
6/10/2017	0	0	0	
6/11/2017	0	0	0	
6/12/2017	0	0	0	
6/13/2017	0	0.11	0.11	
6/14/2017	0	0	0	
6/15/2017	0	0.26	0.1	
6/16/2017	0	0	0.02	
6/17/2017	0	0	0	
6/18/2017	0	0.54	0.29	
6/19/2017	0	0.17	0.04	
6/20/2017	0	0.17	0.17	
6/21/2017	0	0.06	0.05	

CSO 063 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

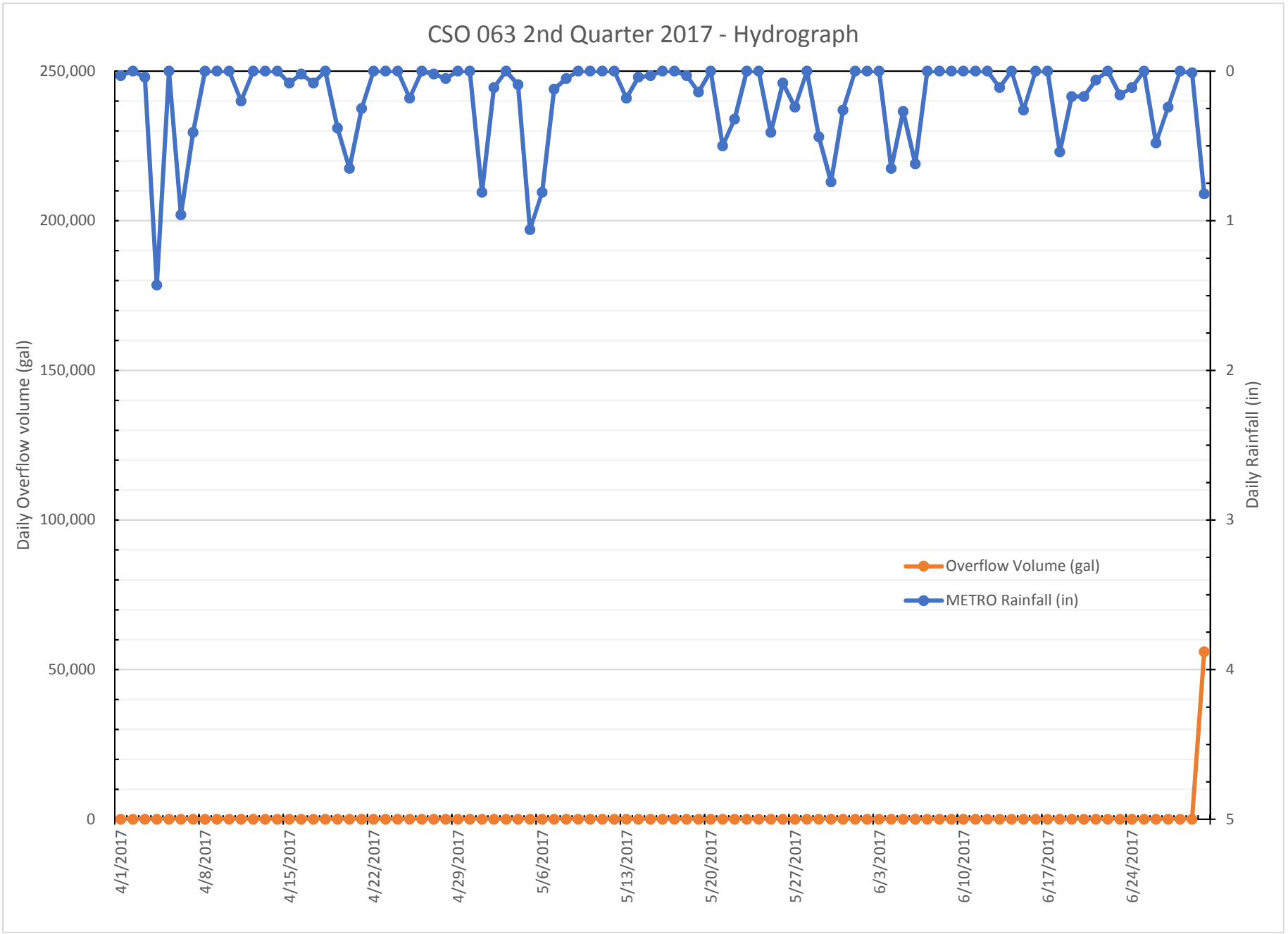
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
6/22/2017	0	0	0	
6/23/2017	0	0.16	0.11	*
6/24/2017	0	0.11	0.08	
6/25/2017	0	0	0	
6/26/2017	0	0.48	0.31	*
6/27/2017	0	0.24	0.11	*
6/28/2017	0	0	0	
6/29/2017	0	0.01	0.01	
6/30/2017	55,942	0.82	0.68	*

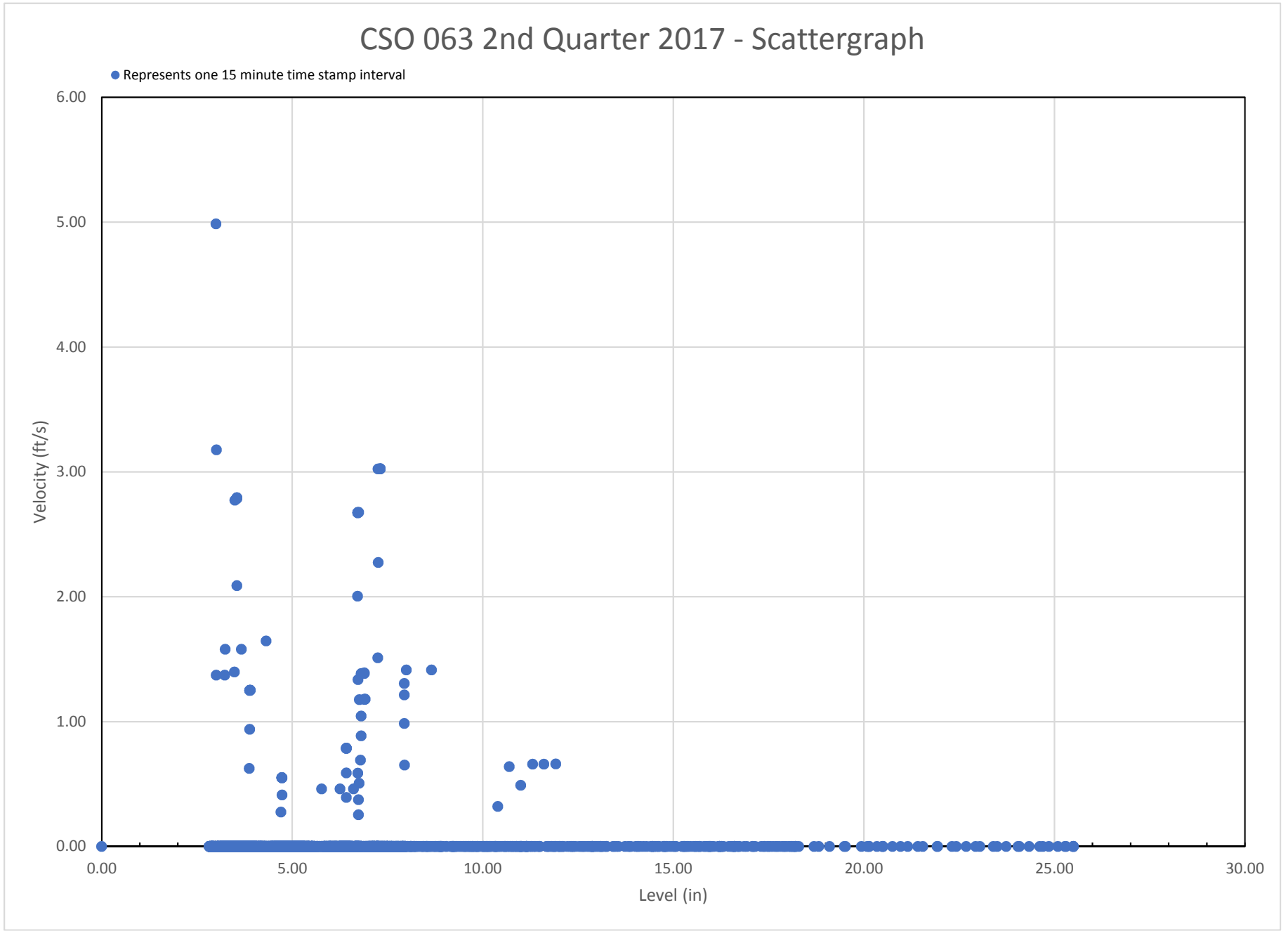
April	0	4.78
May	0	6.46
June	55,942	4.67

2Q Total	55,942	15.91

Note:

* - Overflow volume on these days could not be verified.


CSO 063 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
250,000
200,000
150,000
100,000
50,000
0
0
1
2
3
4
5
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 063 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Level (in)

CSO 075 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
4/1/2017	(1,783,048)	0.03	0.01	
4/2/2017	1,296,259	0	0	
4/3/2017	2,818,879	0.04	0.04	
4/4/2017	111,084	1.43	0.6	
4/5/2017	(585,183)	0	0	
4/6/2017	299,198	0.96	0.22	
4/7/2017	(227,571)	0.41	0.04	
4/8/2017	(1,554,428)	0	0	
4/9/2017	(1,552,861)	0	0	
4/10/2017	(1,333,376)	0	0	
4/11/2017	(662,761)	0.2	0.1	
4/12/2017	(61,833)	0	0	
4/13/2017	(203,893)	0	0	
4/14/2017	699	0	0	
4/15/2017	10,464	0.08	0.07	
4/16/2017	(5,544)	0.02	0.02	
4/17/2017	(78,410)	0.08	0.07	
4/18/2017	(17,078)	0	0	
4/19/2017	(29,310)	0.38	0.24	
4/20/2017	315,360	0.65	0.33	
4/21/2017	32,841	0.25	0.29	
4/22/2017	(6,501)	0	0	
4/23/2017	0	0	0	
4/24/2017	(4,185)	0	0	
4/25/2017	6,289	0.18	0.07	
4/26/2017	(34,679)	0	0	
4/27/2017	(138,327)	0.02	0.02	
4/28/2017	(503,912)	0.05	0.03	
4/29/2017	(47,488)	0	0	
4/30/2017	(569,142)	0	0	
5/1/2017	(446,904)	0.81	0.53	
5/2/2017	(2,579,997)	0.11	0.05	
5/3/2017	1,020,582	0	0	
5/4/2017	192,306	0.09	0.03	
5/5/2017	312,115	1.06	0.14	
5/6/2017	405,678	0.81	0.22	
5/7/2017	(1,520)	0.12	0.03	
5/8/2017	(1,930)	0.05	0.05	
5/9/2017	0	0	0	
5/10/2017	0	0	0	
5/11/2017	38,358	0	0	

CSO 075 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
5/12/2017	414,791	0	0	
5/13/2017	14,170	0.18	0.06	
5/14/2017	936,116	0.04	0.04	
5/15/2017	332,289	0.03	0.03	
5/16/2017	140,618	0	0	
5/17/2017	25,150	0	0	
5/18/2017	465,810	0.03	0.02	
5/19/2017	121,846	0.14	0.14	
5/20/2017	(274,920)	0	0	
5/21/2017	45,253	0.5	0.21	
5/22/2017	(762,297)	0.32	0.13	
5/23/2017	(1,451,929)	0	0	
5/24/2017	152,205	0	0	
5/25/2017	1,230,171	0.41	0.16	
5/26/2017	(3,619,021)	0.08	0.03	
5/27/2017	(1,398,507)	0.24	0.07	
5/28/2017	(1,267,615)	0	0	
5/29/2017	26,882	0.44	0.18	
5/30/2017	356,915	0.74	0.59	
5/31/2017	(217,032)	0.26	0.14	
6/1/2017	(1,472,920)	0	0	
6/2/2017	(114,062)	0	0	
6/3/2017	(24,068)	0	0	
6/4/2017	(70,823)	0.65	0.2	
6/5/2017	0	0.27	0.13	
6/6/2017	0	0.62	0.14	
6/7/2017	74,753	0	0	
6/8/2017	(280,621)	0	0	
6/9/2017	(197,591)	0	0	
6/10/2017	(160,825)	0	0	
6/11/2017	(37,202)	0	0	
6/12/2017	(46,421)	0	0	
6/13/2017	21,767	0.11	0.11	
6/14/2017	(118,083)	0	0	
6/15/2017	(293,247)	0.26	0.1	
6/16/2017	343,959	0	0.02	
6/17/2017	(84,288)	0	0	
6/18/2017	(662,604)	0.54	0.29	
6/19/2017	(496,945)	0.17	0.04	
6/20/2017	1,092,967	0.17	0.17	
6/21/2017	(634,994)	0.06	0.05	

CSO 075 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

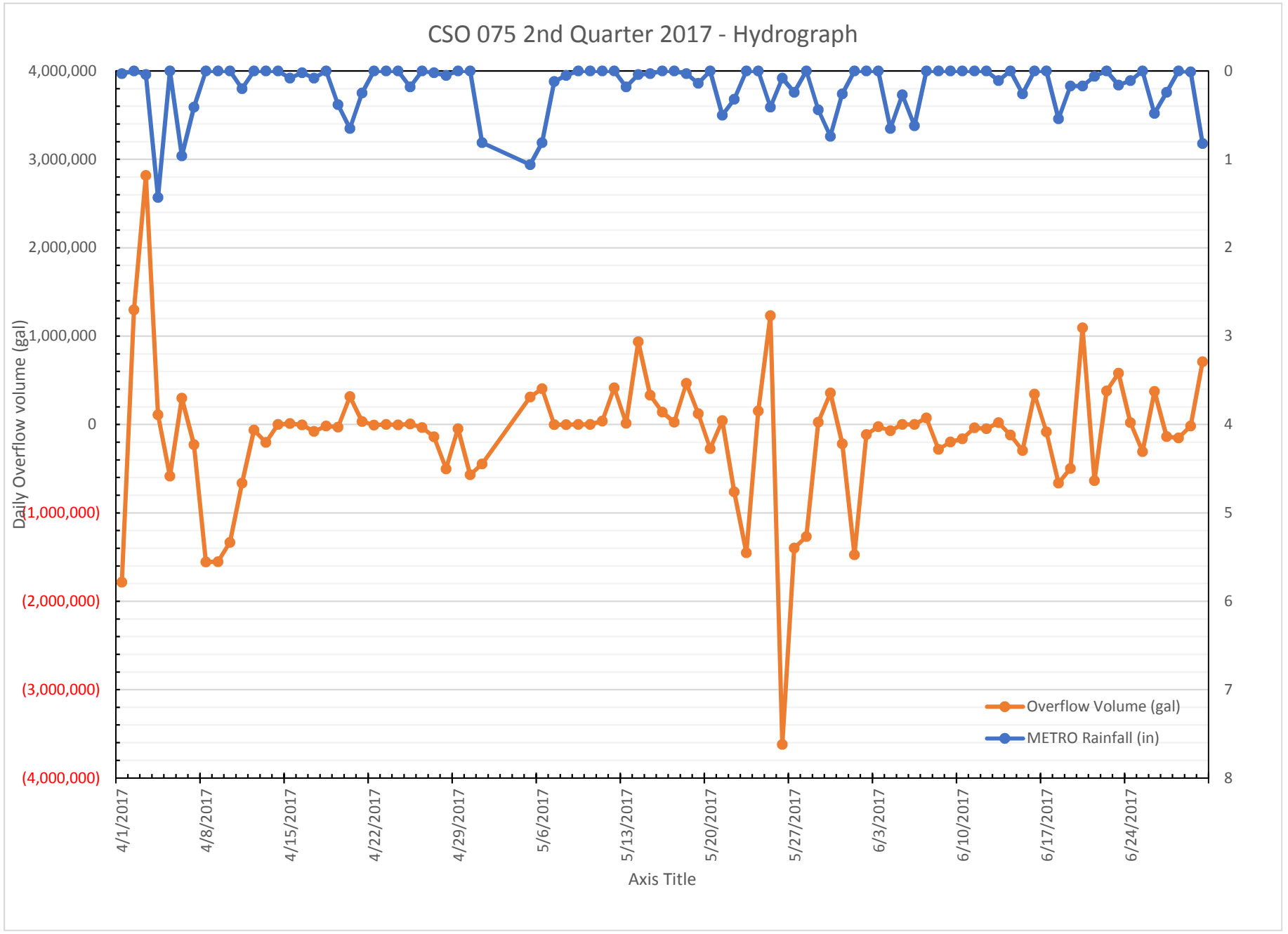
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
6/22/2017	380,761	0	0	
6/23/2017	581,480	0.16	0.11	
6/24/2017	20,373	0.11	0.08	
6/25/2017	(307,708)	0	0	
6/26/2017	374,480	0.48	0.31	
6/27/2017	(136,278)	0.24	0.11	
6/28/2017	(152,378)	0	0	
6/29/2017	(16,476)	0.01	0.01	
6/30/2017	709,499	0.82	0.68	

April	(4,508,456)	4.78
May	(5,790,416)	6.46
June	(1,707,494)	4.67

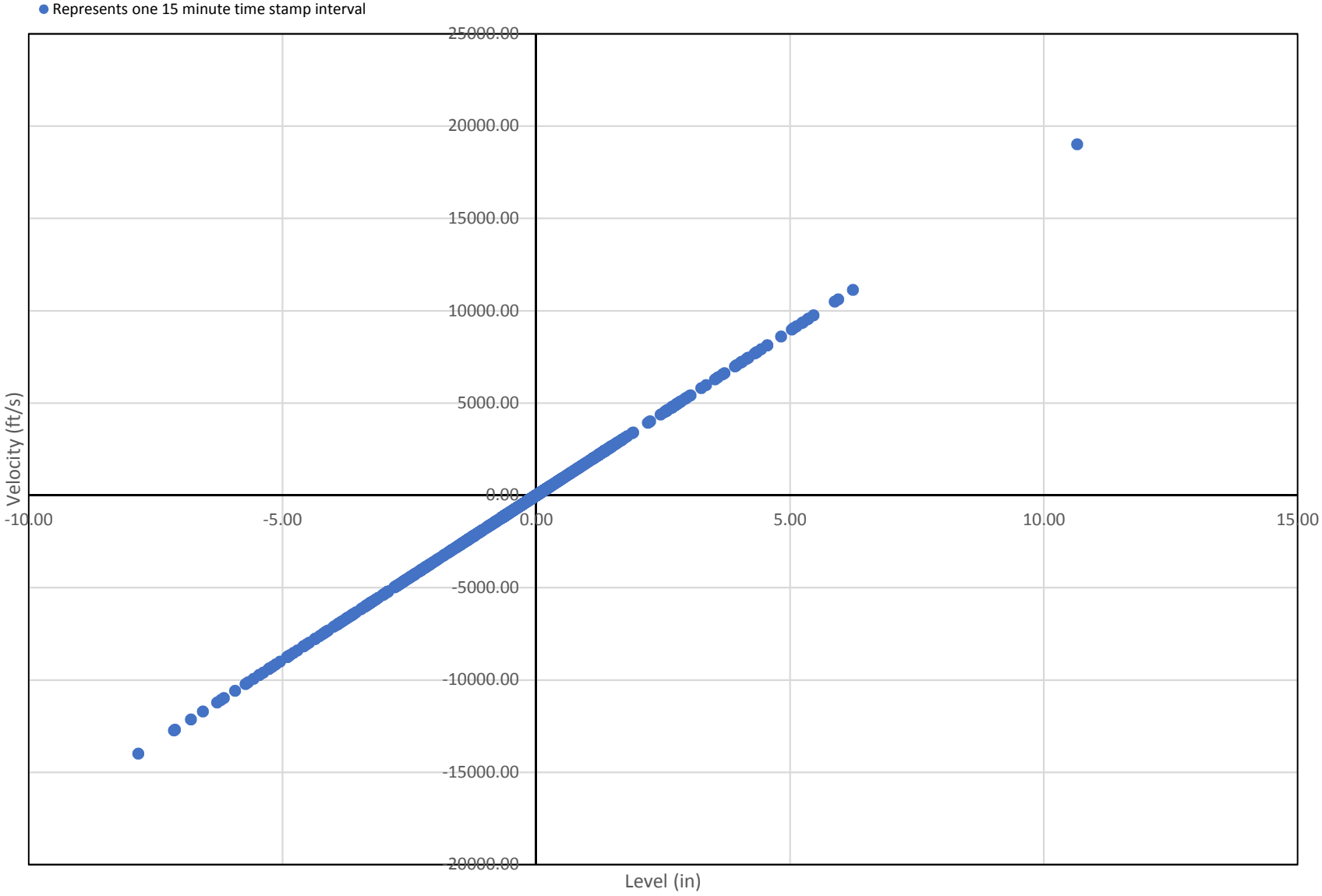
2Q Total	(12,006,366)	15.91

Note:

The monitoring manhole for CSO 075 appeared to be in a surcharged condition most of the time. Flow values in red indicate negative velocity readings from the Area/Velocity meter which are typically associated with inflow during surcharge.


CSO 075 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
4,000,000
3,000,000
2,000,000
1,000,000
0
(1,000,000)
(2,000,000)
(3,000,000)
(4,000,000)
0
1
2
3
4
5
6
7
8
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)

CSO 075 2nd Quarter 2017 - Scattergraph



CSO 078 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
4/1/2017	51,912	0.03	0.01	
4/2/2017	51,792	0	0	
4/3/2017	55,037	0.04	0.04	
4/4/2017	128,065	1.43	0.6	
4/5/2017	44,361	0	0	
4/6/2017	99,110	0.96	0.22	
4/7/2017	55,366	0.41	0.04	
4/8/2017	64,407	0	0	
4/9/2017	68,974	0	0	
4/10/2017	71,258	0	0	
4/11/2017	69,575	0.2	0.1	
4/12/2017	67,076	0	0	
4/13/2017	65,285	0	0	
4/14/2017	63,594	0	0	
4/15/2017	62,743	0.08	0.07	
4/16/2017	63,180	0.02	0.02	
4/17/2017	58,789	0.08	0.07	
4/18/2017	57,389	0	0	
4/19/2017	64,276	0.38	0.24	
4/20/2017	79,288	0.65	0.33	
4/21/2017	56,446	0.25	0.29	
4/22/2017	49,242	0	0	
4/23/2017	49,965	0	0	
4/24/2017	47,829	0	0	
4/25/2017	45,817	0.18	0.07	
4/26/2017	46,861	0	0	
4/27/2017	46,422	0.02	0.02	
4/28/2017	45,653	0.05	0.03	
4/29/2017	44,793	0	0	
4/30/2017	44,515	0	0	
5/1/2017	44,093	0.81	0.53	
5/2/2017	31,442	0.11	0.05	
5/3/2017	28,605	0	0	
5/4/2017	24,783	0.09	0.03	
5/5/2017	32,291	1.06	0.14	
5/6/2017	49,289	0.81	0.22	
5/7/2017	36,622	0.12	0.03	
5/8/2017	36,635	0.05	0.05	
5/9/2017	35,634	0	0	
5/10/2017	39,816	0	0	
5/11/2017	43,177	0	0	

CSO 078 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
5/12/2017	42,396	0	0	
5/13/2017	40,435	0.18	0.06	
5/14/2017	43,762	0.04	0.04	
5/15/2017	45,129	0.03	0.03	
5/16/2017	42,538	0	0	
5/17/2017	40,990	0	0	
5/18/2017	61,813	0.03	0.02	
5/19/2017	34,544	0.14	0.14	
5/20/2017	35,324	0	0	
5/21/2017	35,220	0.5	0.21	
5/22/2017	35,926	0.32	0.13	
5/23/2017	35,780	0	0	
5/24/2017	34,430	0	0	
5/25/2017	34,540	0.41	0.16	
5/26/2017	34,173	0.08	0.03	
5/27/2017	30,402	0.24	0.07	
5/28/2017	30,119	0	0	
5/29/2017	30,100	0.44	0.18	
5/30/2017	35,845	0.74	0.59	
5/31/2017	27,337	0.26	0.14	
6/1/2017	25,431	0	0	
6/2/2017	23,885	0	0	
6/3/2017	24,978	0	0	
6/4/2017	24,029	0.65	0.2	
6/5/2017	54,918	0.27	0.13	
6/6/2017	22,230	0.62	0.14	
6/7/2017	23,558	0	0	
6/8/2017	25,036	0	0	
6/9/2017	24,918	0	0	
6/10/2017	22,229	0	0	
6/11/2017	23,663	0	0	
6/12/2017	24,485	0	0	
6/13/2017	25,557	0.11	0.11	
6/14/2017	27,568	0	0	
6/15/2017	88,291	0.26	0.1	
6/16/2017	19,719	0	0.02	
6/17/2017	20,919	0	0	
6/18/2017	36,976	0.54	0.29	
6/19/2017	20,572	0.17	0.04	
6/20/2017	20,757	0.17	0.17	
6/21/2017	22,928	0.06	0.05	

CSO 078 DAILY OVERFLOW VOLUME
2nd QUARTER 2017

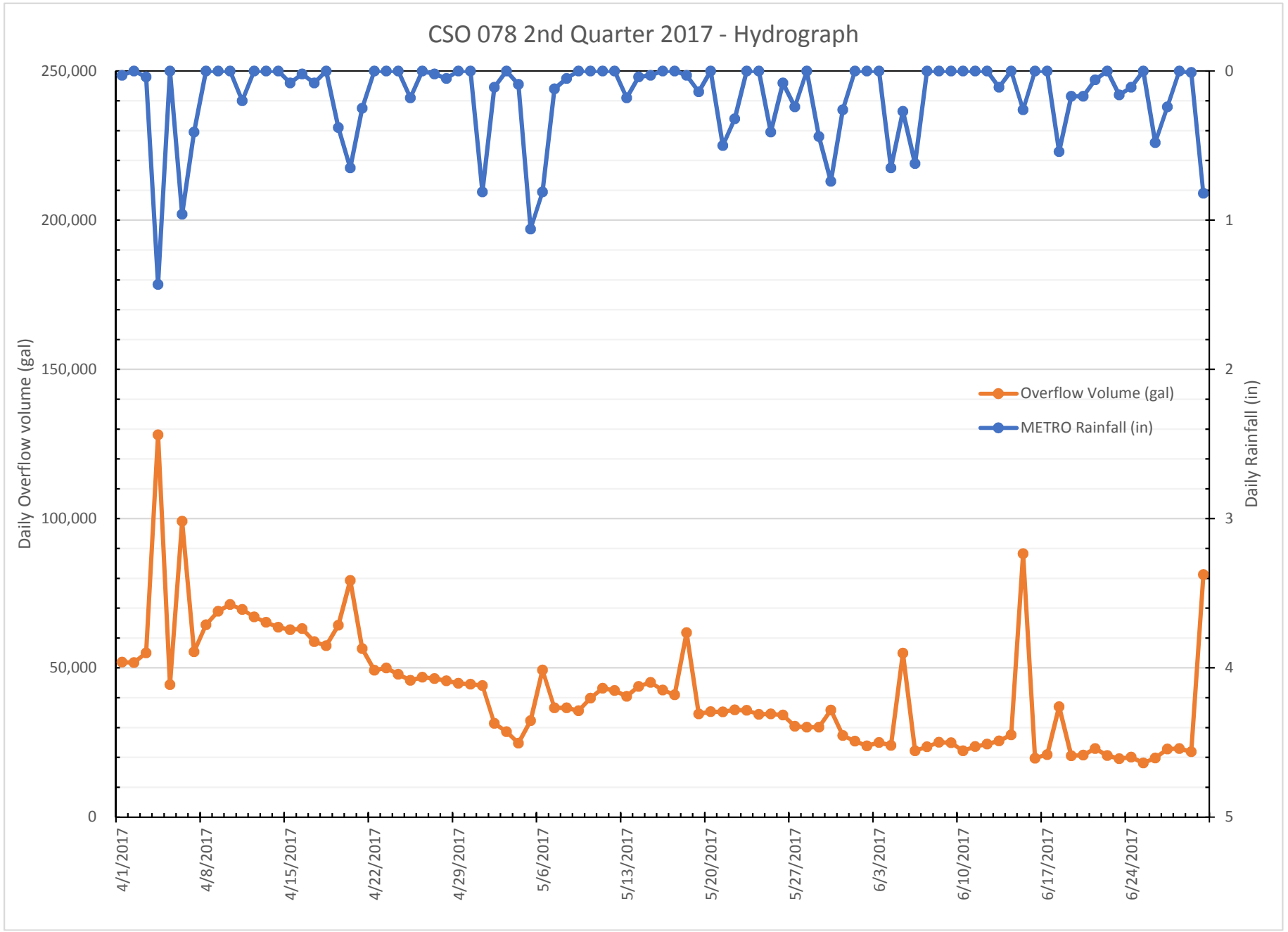
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
6/22/2017	20,658	0	0	
6/23/2017	19,603	0.16	0.11	
6/24/2017	20,067	0.11	0.08	
6/25/2017	18,149	0	0	
6/26/2017	19,802	0.48	0.31	
6/27/2017	22,780	0.24	0.11	
6/28/2017	22,938	0	0	
6/29/2017	21,869	0.01	0.01	
6/30/2017	81,256	0.82	0.68	

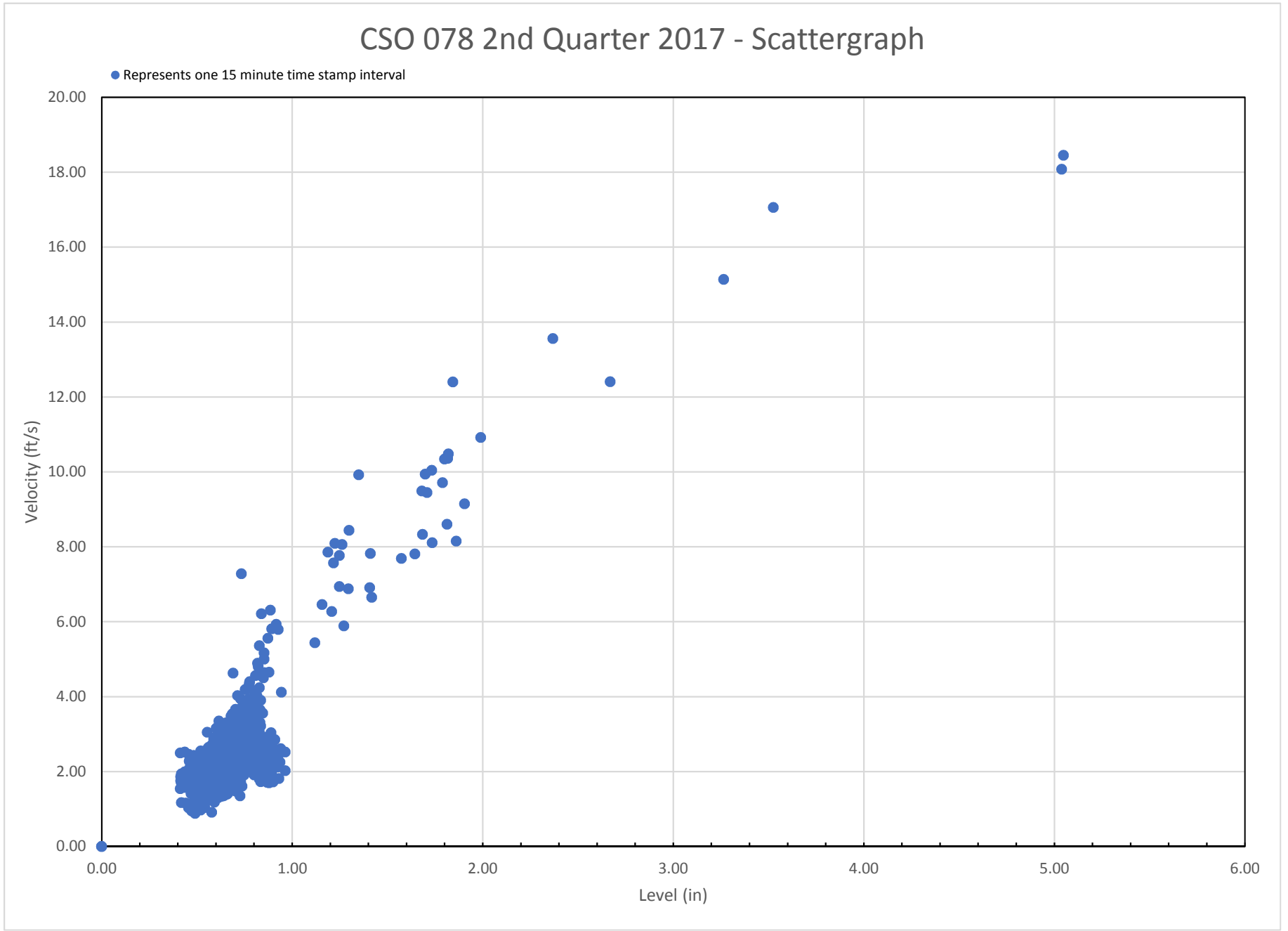
April	1,819,020	4.78
May	1,153,191	6.46
June	849,772	4.67

2Q Total	3,821,983	15.91

Note:

Due to manhole and overflow sewer configuration, the flow data measured does not represent actual overflow to Harbor Brook.


CSO 078 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
250,000
200,000
150,000
100,000
50,000
0
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
4/1/2017
4/8/2017
4/15/2017
4/22/2017
4/29/2017
5/6/2017
5/13/2017
5/20/2017
5/27/2017
6/3/2017
6/10/2017
6/17/2017
6/24/2017


CSO 078 2nd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
Level (in)

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q3 – 2017

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

February 12, 2018

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q3 – 2017

February 12, 2018

C&S ENGINEERS, INC.
499 Colonel Eileen Collins Blvd.
Syracuse, N.Y. 13212

Quarterly Flow Report
CSO Flow Monitoring Program
Q3 – 2017

Performance Period:

This quarterly flow report is for the period of July 1 through September 30, 2017. This report was prepared by CDM Smith for C&S Engineers and Onondaga County.

CSO Flow Monitoring Summary:

This report includes data and graphics for flow at 10 CSO locations in the City of Syracuse, New York. The overflow volume for CSO 080 is not included in this report as it is calculated by a formula agreed upon by the New York State Department of Environmental Conversation (NYSDEC). A summary of monthly overflow volumes for the 10 CSOs included in this report is presented below. Please note the following observations regarding this data:

- The meter at CSO 003 indicated a large overflow on 8/11, however there was no rain event this day and the storage facility at Lower Harbor Brook was not full. On 8/7, we were notified by Hach that the sensor on the flow meter needed replacement. The sensor was replaced on 8/11 at the same time the meter indicated flow, therefore this event indication was attributed to the sensor replacement activity and was not related to an actual overflow.

- The meter at CSO 014 was functioning intermittently between 9/2 and 9/6 and then not functioning at all from 9/6 through 9/15.

- The meter at CSO 027 had communication issues in late August and early September, but the data was still logging for this period. In addition, there was debris affecting the Flo-Dar unit on the regulator sewer during this period. Prior to the new A/V probe being installed in early September, the overflow volume was calculated based upon the measured flow of the incoming trunk sewer when the regulator sewer was full. However, there were times when the level of the incoming sewer could not produce an overflow to Onondaga Creek. Dates when this occurred were 7/6 – 7, 7/21 – 23, 7/27, 8/3, and 8/10 – 12. To gain a clearer picture of the overflow characteristics, the installation was modified on 9/9/17, retaining the Flo-Dar unit with Surcharge Velocity Sensor (SVS) on the 12" exit regulator sewer to document onset of surcharge conditions and potential for an overflow, coupled with a Sigma A/V sensor installed in the overflow line to measure the actual overflow volume during an event.

- Overflows for CSO 034 were observed on 7/2 thru 7/4 after a major overflow event that occurred from the afternoon of 7/1 to the early morning hours of 7/2. Flow observed later in the day on 7/2 and on 7/3 and 7/4 is most likely related to inflow from Onondaga Creek. The creek level was estimated to be 1 to 2.5 feet above the invert of the CSO 034 outfall pipe from 7/2 through 7/5.

- The meter at CSO 052 observed flows on 7/4, 7/18 – 19, 7/22 – 23, 7/29 – 7/31, 8/2, 8/10 – 11, 8/13, and 8/16 – 17 when no rainfall occurred. On 7/10 and 7/15 the meter at 052 measured an overflow. No rainfall was measured by the Metro rain gauge, however the rain gauge at Wadsworth Park which is just west of the CSO 052 area did measure rainfall, therefore the observed flows could be explained. On 8/23 a new A/V sensor was installed on the outfall pipe as the primary measuring device. A redundant Flo-Dar unit was left in place for back up and calibration purposes. On the day of installation, an overflow was measured by the Flo-Dar. This event indication was attributed to the sensor replacement activity and was not related to an actual overflow. After 8/23, on numerous occasions when no rainfall was measured at Metro, the back-up Flo-Dar measured an overflow but the new A/V primary sensor did not.

- For CSO 063, the flow meter detected flow in the overflow pipe on four occasions during the third quarter, however the only event that could be verified as an actual overflow to Harbor Brook was on 7/1 when the Lower Harbor Brook storage tank was full. Visual inspection of the meter location shows that the manhole is subject to backflow from Harbor Brook. Based upon as-built information and stream data from the USGS station approximately 900 feet upstream from the outfall, the overflow pipe at CSO 063 was partially submerged by Harbor Brook on these other occasions indicative of surcharge conditions. Therefore, those flows were not classified as overflow events. An ultrasonic level sensor for this site will be located within the upstream regulator structure to help indicate the onset of actual overflow conditions from the Hiawatha Conveyance Sewer (HWCS) extension.

- The flow data measured for CSO 075 was subject to continual surcharge conditions from high levels in Onondaga Creek from 7/1 through 8/22. Due to these surcharged conditions for most of the second quarter, the flow data was determined to be non-representative and not included in the summary tables below for this period. On 8/24, the A/V probe was reinstalled in a new upstream location on Solar Street and the data is now more representative. As a result, the data after 8/24 was included in the tables below.

- The flow for the CSO 078 was calculated from a combination of 2 devices within a manhole located several hundred feet downstream of the permitted overflow location on the corner of Velasko Road and Bellevue Avenue. The manhole has two inlet connections (the CSO 078 overflow sewer to the south and a lateral connection from a laundromat/car wash to the west) and one outlet to the north. The flow data received is from the overflow sewer to the south. This flow combines with flow from the other sanitary inlet prior to exiting the structure. The flow that exits this manhole is then regulated once again in a downstream structure on West Onondaga Street with dry weather flow being directed to the HBIS and surcharged combined sewage flow being discharged to Harbor Brook. As a result, the flow data for the current 078 monitoring point cannot be verified as a discharge to Harbor Brook.

- The data utilized for all CSOs (including 080) is included as an electronic attachment to this report in Microsoft Excel format.

CSO Overflow Volume (in gallons) per Month

CSO Location	July	August	September
CSO Overflow Volume (in gallons) per Month			
003	1,614,810	0	0
004	125,201	0	0
014	568,841	0	0
027[1]	6,113,800	863,044	310,356
034	604,850[5]	0	0
052	68,569	10,556	29,736
060	727,135	1,201,487	654,094
063[2]	712,390	0	0
075[3]	--	--	132,405
078[4]	--	--	--
CSO Overflow Events per Month			
003	1	0	0
004	1	0	0
014	2	0	0
027[1]	4	2	1
034	1[5]	0	0
052	11	6	6
060	2	2	2
063	1[2]	0[2]	0
075[3]	--	--	1
078[4]	--	--	--
CSO Overflow Duration (in hours) per Month			
003	7.25	0	0
004	1.50	0	0
014	5.75	0	0
027[1]	41.00	10.50	2.25
034	12.25[5]	0	0
052	69.00	10.25	29.50
060	4.00	1.25	1.25’
063	1.50[2]	0[2]	0
075[3]	--	--	2.50
078[4]	--	--	--

Notes:

1 – Overflow volume calculated by subtracting regulator flow from trunk sewer flow when regulator pipe is at capacity or surcharged until new A/V meter was added to the outfall pipe on 9/9.

2 – Some flows detected by the meter this quarter could not be verified as overflows, as the storage facility was not full on those days. Visual inspection of the meter location shows the manhole is subject to backflow from Harbor Brook, but the backflow does not enter the conveyance sewer.

3 – Flow meter location was continually surcharged from Onondaga Creek until 8/22, which resulted in both positive and negative flow rates, therefore flow data does not indicate combined sewer overflow from this location. New location on Solar St. is not subject to creek surcharging.

4 – Due to manhole and overflow sewer configuration, the flow data measured does not represent actual overflow to Harbor Brook.

5 – The meter detected flow volume from 7/2 through 7/4. The Clinton Storage Facility was not full during this time, and creek stage was elevated above the level of the outfall invert, which is indicative of backflow conditions.

Meter Performance Summary:

The table below is a summary of meter performance. The percentage is based upon the number of valid 15-minute flow data points divided by the number of 15-minute flow data points per month. The up-time goal for each site is 90% or greater per month. Monthly readings that fall below that percentage are **in bold**.

Meter Up-time per Month

CSO Location	July	August	September
003	99.80%	100%	100%
004	97.98%	99.97%	100%
014	100%	98.76%	***60.47%***
027	99.93%	99.93%	98.82%
034	100%	97.08%	98.85%
052	100%	98.56%	100%
060	100%	99.60%	98.50%
063	100%	100%	100%
075	100%	93.08%	100%
078	100%	100%	100%
080	100%	100%	99.03%

List of Attached Graphs and Tables:

Table - CSO 003 Daily Overflow Volume July thru September 2017
Graph – CSO 003 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 003 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 004 Daily Overflow Volume July thru September 2017
Graph – CSO 004 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 004 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 014 Daily Overflow Volume July thru September 2017
Graph – CSO 014 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 014 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 027 Daily Overflow Volume July thru September 2017
Graph – CSO 027 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 027 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 034 Daily Overflow Volume July thru September 2017
Graph – CSO 034 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 034 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 052 Daily Overflow Volume July thru September 2017
Graph – CSO 052 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 052 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 060 Daily Overflow Volume July thru September 2017
Graph – CSO 060 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 060 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 063 Daily Overflow Volume July thru September 2017
Graph – CSO 063 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 063 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 075 Daily Overflow Volume July thru September 2017

Graph – CSO 075 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 075 Scatter graph of Level and Velocity by Day for July thru September 2017
Table - CSO 078 Daily Overflow Volume July thru September 2017
Graph – CSO 078 Hydrograph of Volume and Rainfall by Day for July thru September 2017
Graph – CSO 078 Scatter graph of Level and Velocity by Day for July thru September 2017

CSO 003 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
7/1/2017	1,614,810	1.2	0.35	
7/2/2017	0	0	0	
7/3/2017	0	0	0	
7/4/2017	0	0	0	
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	0	1.04	0.75	
7/9/2017	0	0	0	
7/10/2017	0	0	0	
7/11/2017	0	0.33	0.29	
7/12/2017	0	0.03	0.03	
7/13/2017	0	0.73	0.39	
7/14/2017	0	0.28	0.23	
7/15/2017	0	0	0	
7/16/2017	0	0	0	
7/17/2017	0	0.12	0.12	
7/18/2017	0	0	0	
7/19/2017	0	0	0	
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	
7/23/2017	0	0	0	
7/24/2017	0	0.75	0.4	
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	0	0.38	0.15	
7/28/2017	0	0	0	
7/29/2017	0	0	0	
7/30/2017	0	0	0	
7/31/2017	0	0	0	
8/1/2017	0	0	0	
8/2/2017	0	0	0	
8/3/2017	0	0.02	0.02	
8/4/2017	0	0.37	0.19	
8/5/2017	0	0.06	0.06	
8/6/2017	0	0	0	
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	
8/10/2017	0	0	0	
8/11/2017	0	0	0	**

CSO 003 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
8/12/2017	0	0.12	0.12	
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	0	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	0	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	0	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	
9/21/2017	0	0	0	
9/22/2017	0	0	0	

CSO 003 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

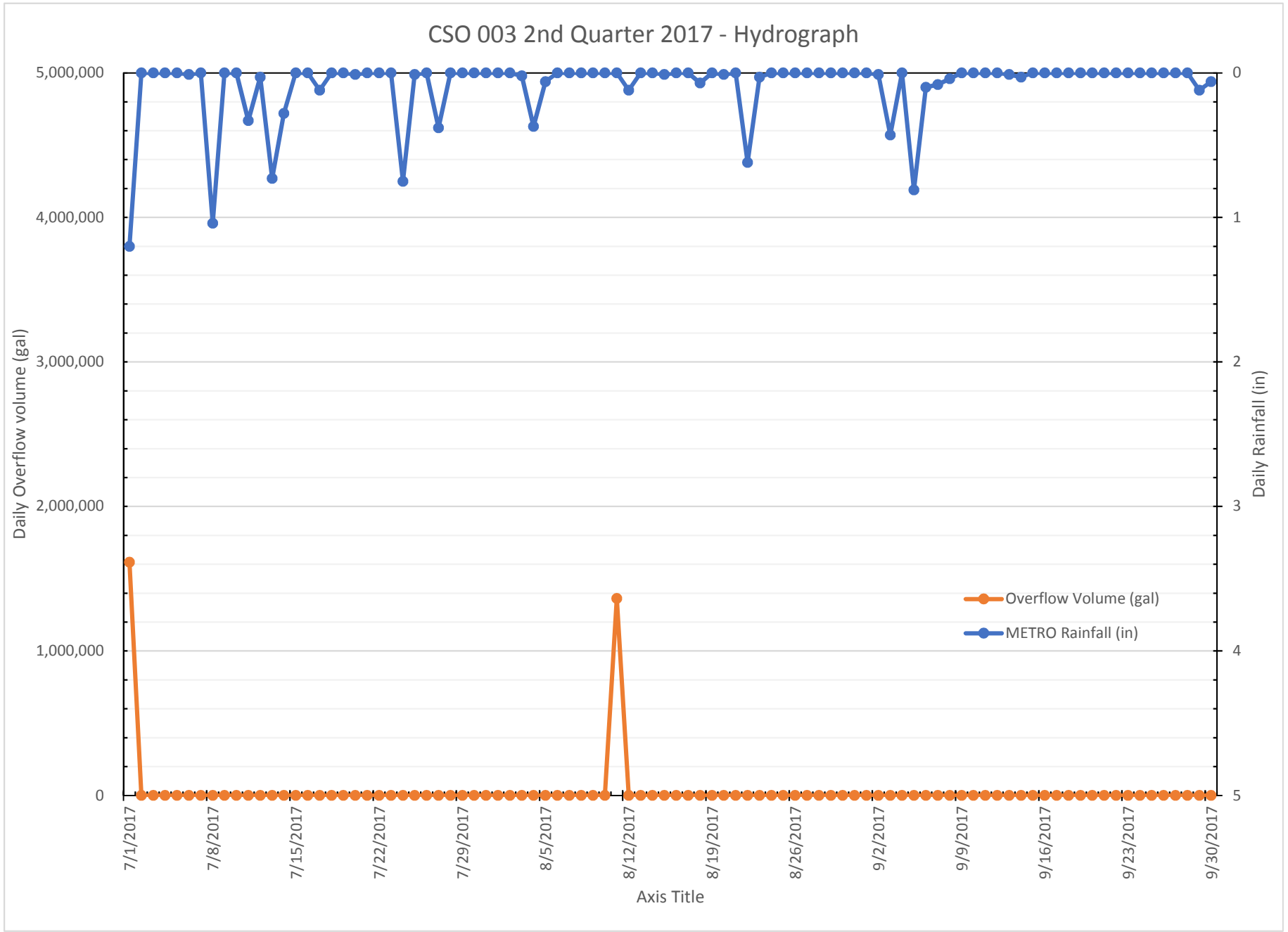
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

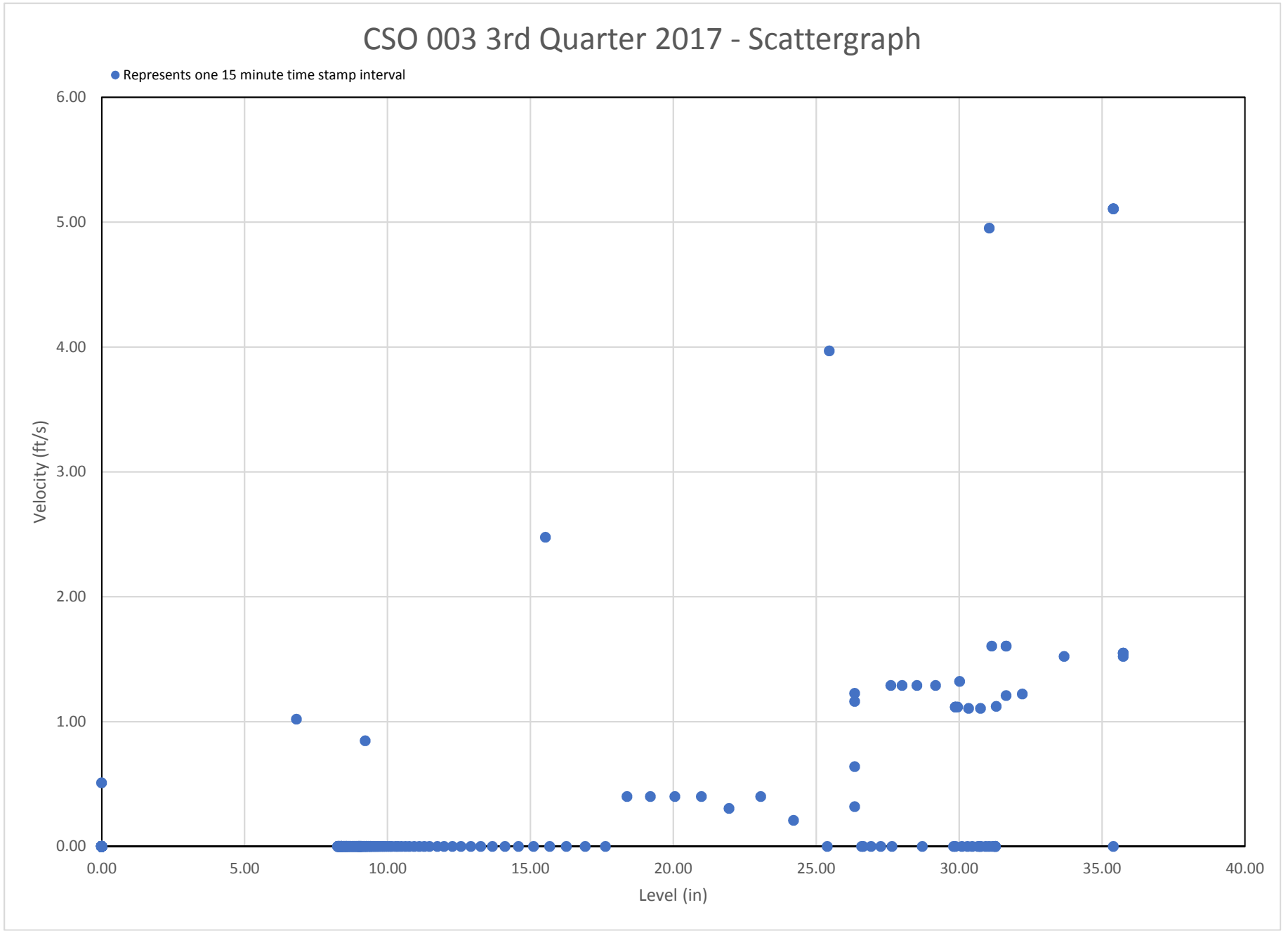
July	1,614,810	4.89
August	0	1.31
September	0	1.69

3Q Total	1,614,810	7.89

Notes:

** - Meter measured overflow event, but the sensor was being serviced at the time. Therefore, no event should be recorded


CSO 003 2nd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Daily Rainfall (in)
0
1
2
3
4
5
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 003 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
Level (in)

CSO 004 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
7/1/2017	125,201	1.2	0.35	
7/2/2017	0	0	0	
7/3/2017	0	0	0	
7/4/2017	0	0	0	
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	0	1.04	0.75	
7/9/2017	0	0	0	
7/10/2017	0	0	0	
7/11/2017	0	0.33	0.29	
7/12/2017	0	0.03	0.03	
7/13/2017	0	0.73	0.39	
7/14/2017	0	0.28	0.23	
7/15/2017	0	0	0	
7/16/2017	0	0	0	
7/17/2017	0	0.12	0.12	
7/18/2017	0	0	0	
7/19/2017	0	0	0	
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	
7/23/2017	0	0	0	
7/24/2017	0	0.75	0.4	
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	0	0.38	0.15	
7/28/2017	0	0	0	
7/29/2017	0	0	0	
7/30/2017	0	0	0	
7/31/2017	0	0	0	
8/1/2017	0	0	0	
8/2/2017	0	0	0	
8/3/2017	0	0.02	0.02	
8/4/2017	0	0.37	0.19	
8/5/2017	0	0.06	0.06	
8/6/2017	0	0	0	
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	
8/10/2017	0	0	0	
8/11/2017	0	0	0	

CSO 004 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

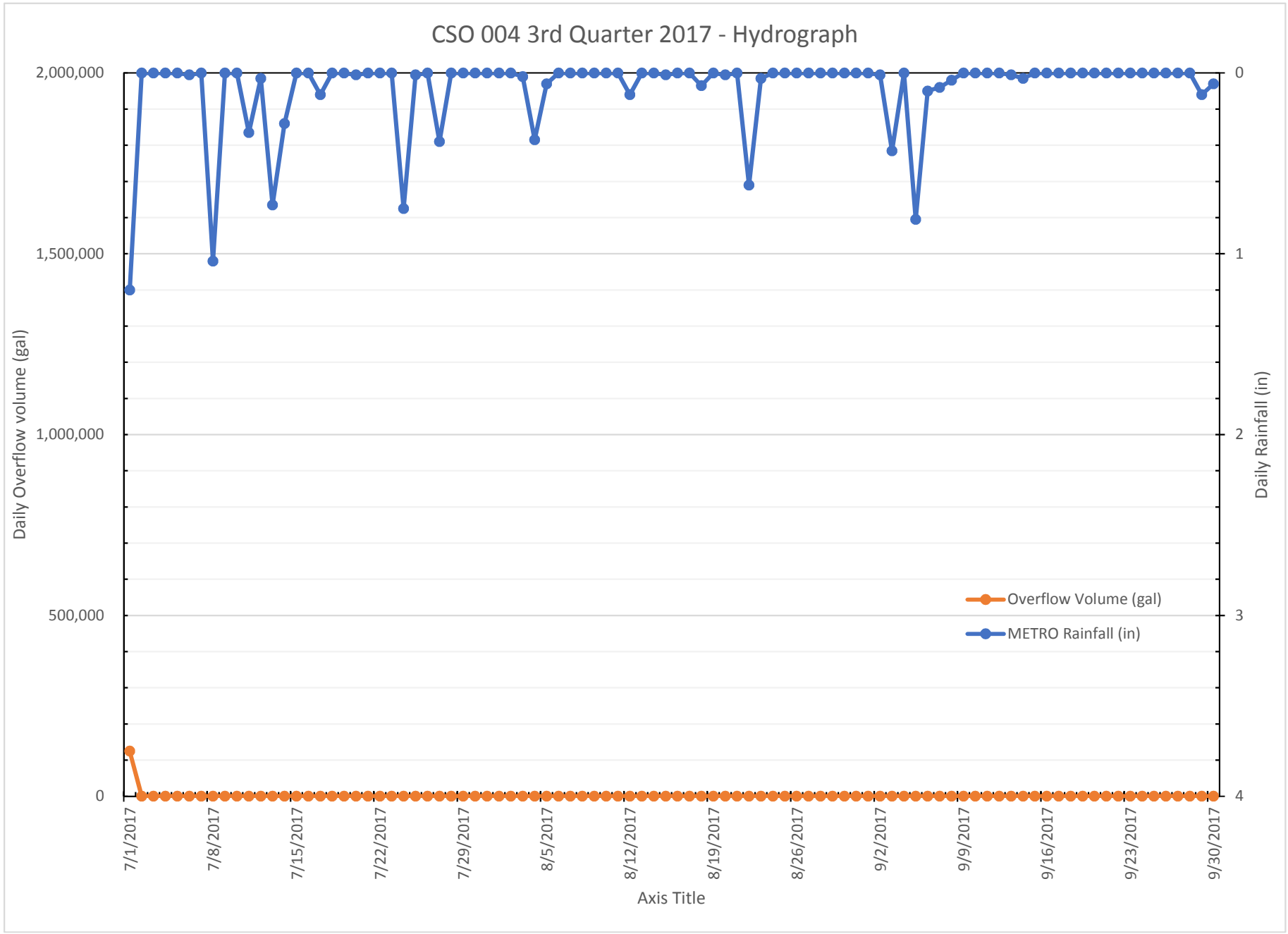
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
8/12/2017	0	0.12	0.12	
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	0	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	0	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	0	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	
9/21/2017	0	0	0	
9/22/2017	0	0	0	

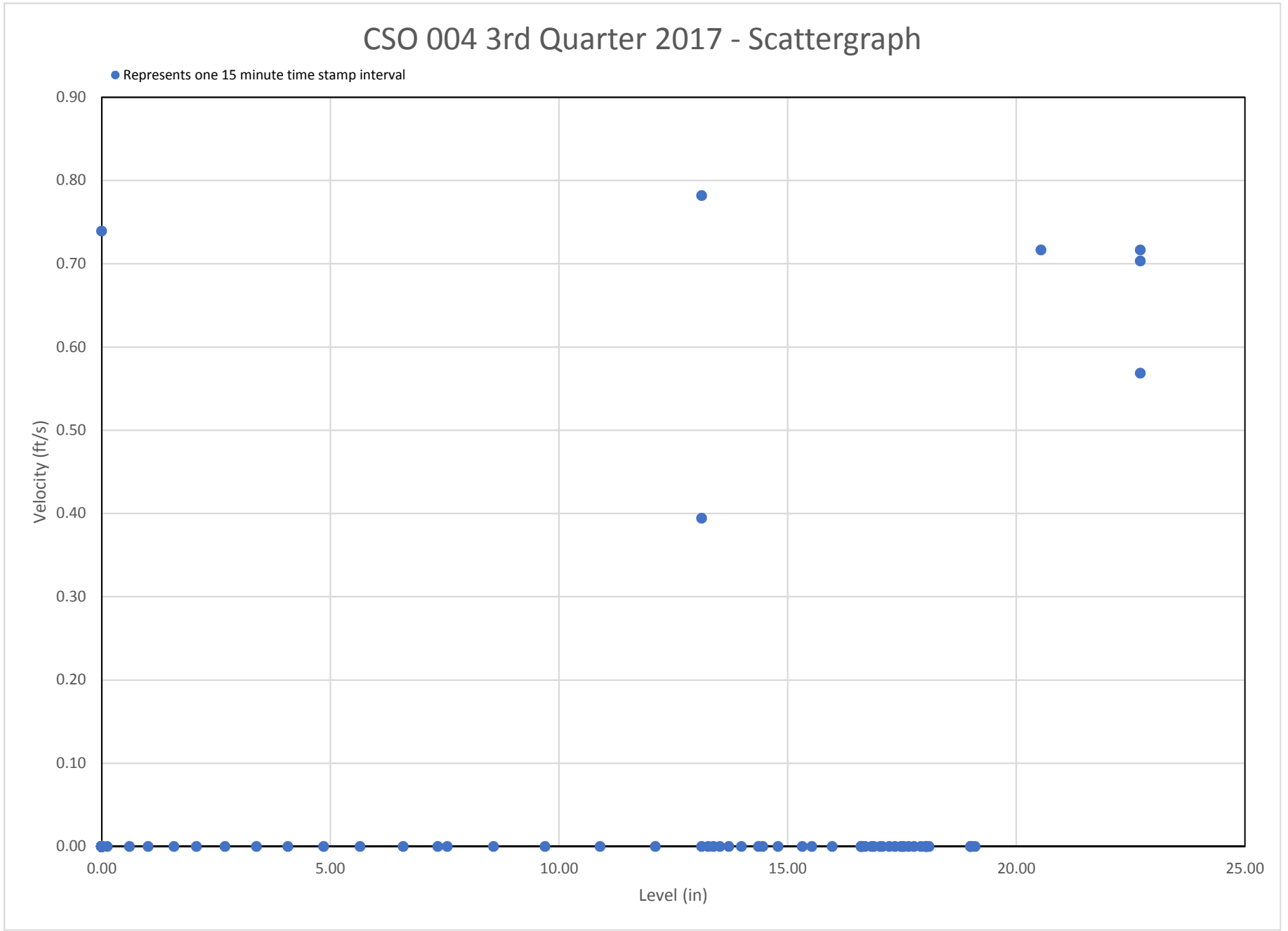
CSO 004 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

July	125,201	4.89
August	0	1.31
September	0	1.69

3Q Total	125,201	7.89


CSO 004 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
1
2
3
4
Overflow Volume (gal)
METRO Rainfall (in)
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Axis Title


CSO 004 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Level (in)

CSO 014 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
7/1/2017	433,853	1.2	0.35	
7/2/2017	0	0	0	
7/3/2017	0	0	0	
7/4/2017	0	0	0	
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	0	1.04	0.75	
7/9/2017	0	0	0	
7/10/2017	0	0	0	
7/11/2017	134,988	0.33	0.29	
7/12/2017	0	0.03	0.03	
7/13/2017	0	0.73	0.39	
7/14/2017	0	0.28	0.23	
7/15/2017	0	0	0	
7/16/2017	0	0	0	
7/17/2017	0	0.12	0.12	
7/18/2017	0	0	0	
7/19/2017	0	0	0	
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	
7/23/2017	0	0	0	
7/24/2017	0	0.75	0.4	
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	0	0.38	0.15	
7/28/2017	0	0	0	
7/29/2017	0	0	0	
7/30/2017	0	0	0	
7/31/2017	0	0	0	
8/1/2017	0	0	0	
8/2/2017	0	0	0	
8/3/2017	0	0.02	0.02	
8/4/2017	0	0.37	0.19	
8/5/2017	0	0.06	0.06	
8/6/2017	0	0	0	
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	
8/10/2017	0	0	0	
8/11/2017	0	0	0	

CSO 014 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

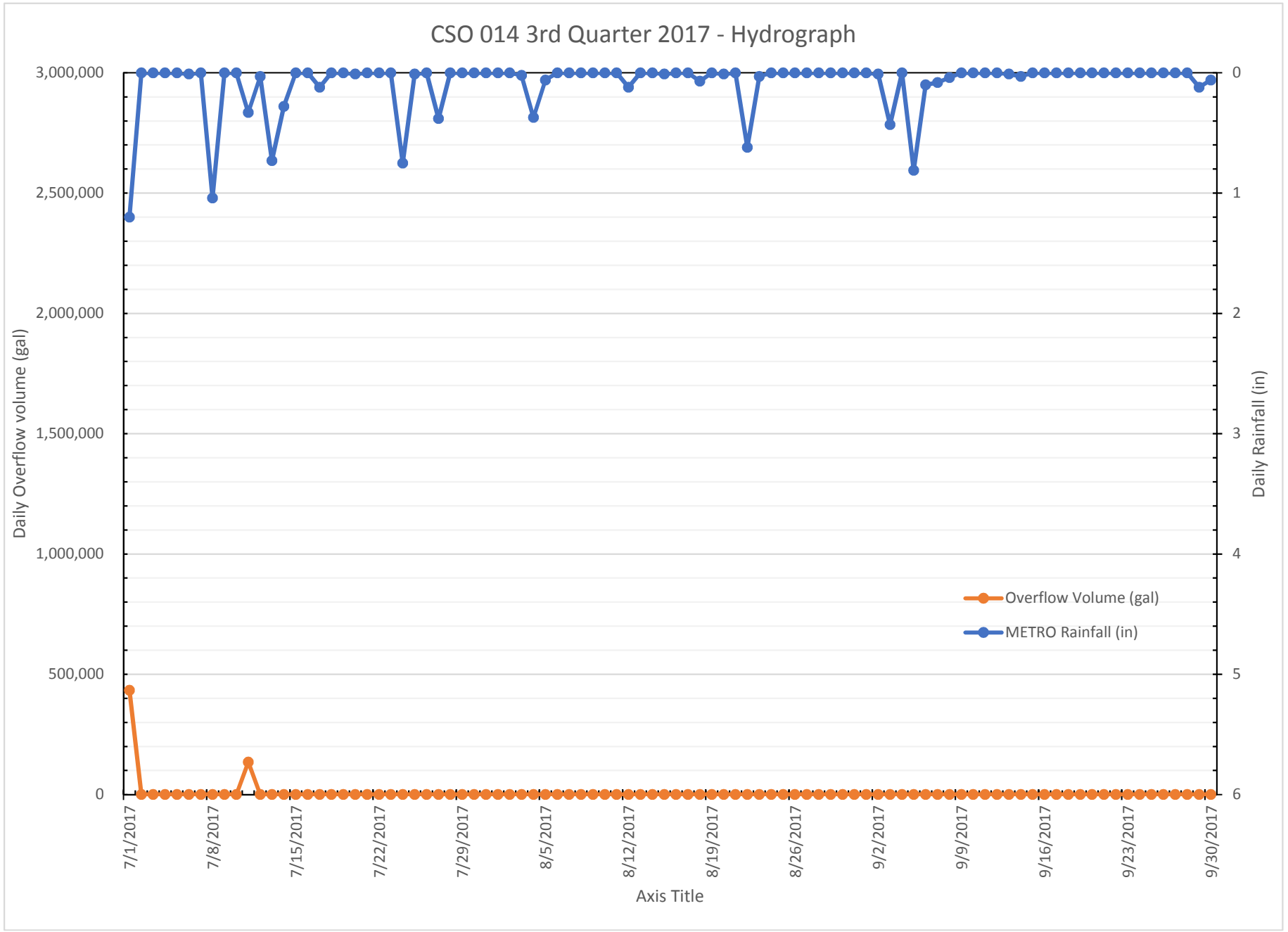
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
8/12/2017	0	0.12	0.12	
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	0	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	0	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	0	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	
9/21/2017	0	0	0	
9/22/2017	0	0	0	

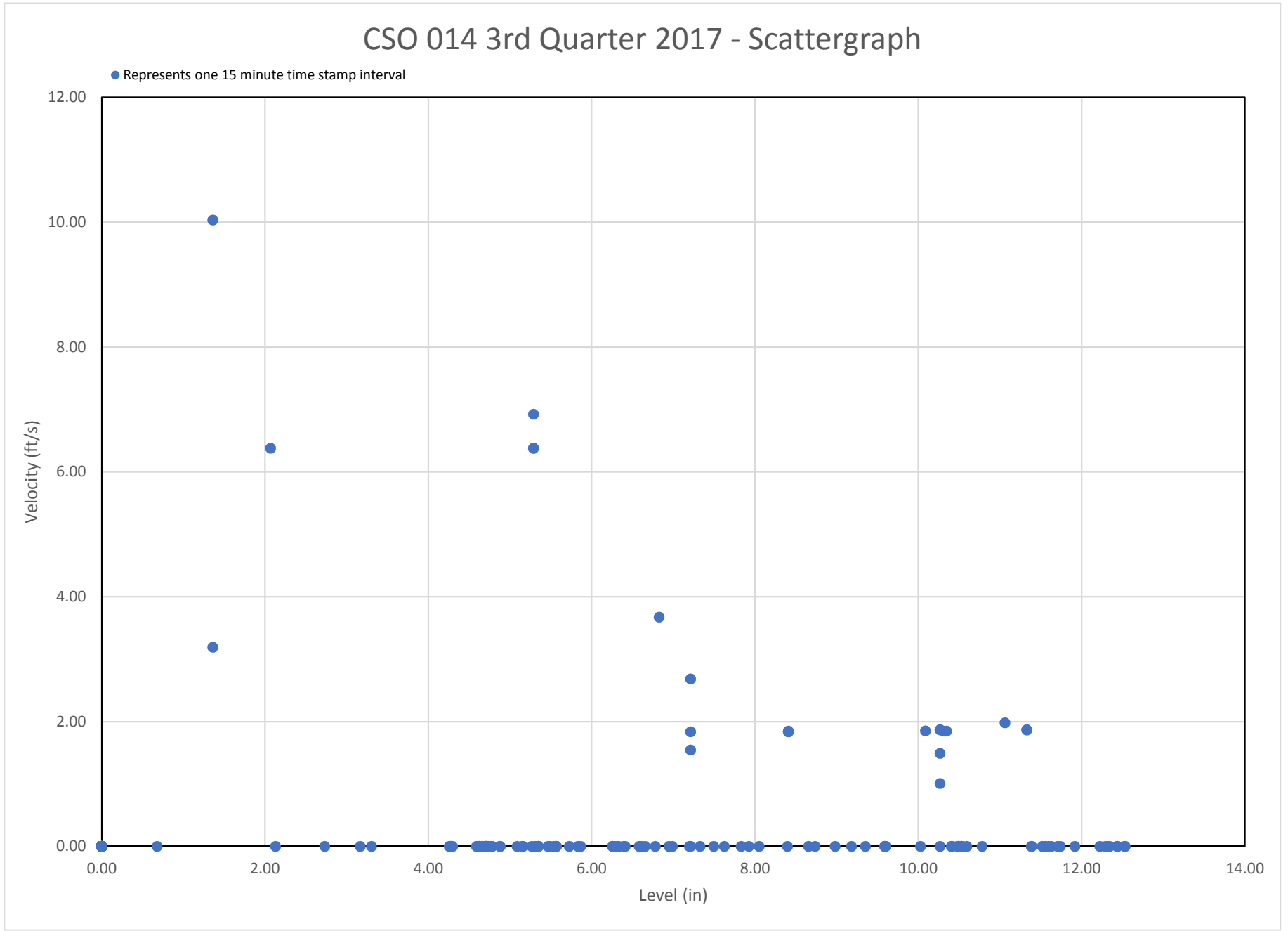
CSO 014 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

July	568,841	4.89
August	0	1.31
September	0	1.69

3Q Total	568,841	7.89


CSO 014 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
1
2
3
4
5
6
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 014 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
2.00
4.00
6.00
8.00
10.00
12.00
14.00
Level (in)

CSO 027 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)	
				0.1	
7/1/2017	4,013,633	1.2	0.35		
7/2/2017	0	0	0		
7/3/2017	0	0	0		
7/4/2017	0	0	0		
7/5/2017	0	0	0		
7/6/2017	0	0.01	0.01		*
7/7/2017	0	0	0		*
7/8/2017	940,071	1.04	0.75		
7/9/2017	0	0	0		
7/10/2017	0	0	0		
7/11/2017	656,898	0.33	0.29		
7/12/2017	0	0.03	0.03		
7/13/2017	366,753	0.73	0.39		
7/14/2017	0	0.28	0.23		
7/15/2017	0	0	0		
7/16/2017	0	0	0		
7/17/2017	0	0.12	0.12		
7/18/2017	0	0	0		
7/19/2017	0	0	0		
7/20/2017	0	0.01	0.01		
7/21/2017	0	0	0		*
7/22/2017	0	0	0		*
7/23/2017	0	0	0		*
7/24/2017	136,445	0.75	0.4		
7/25/2017	0	0.01	0.01		
7/26/2017	0	0	0		
7/27/2017	0	0.38	0.15		*
7/28/2017	0	0	0		
7/29/2017	0	0	0		
7/30/2017	0	0	0		
7/31/2017	0	0	0		
8/1/2017	0	0	0		
8/2/2017	0	0	0		
8/3/2017	0	0.02	0.02		*
8/4/2017	0	0.37	0.19		
8/5/2017	0	0.06	0.06		
8/6/2017	0	0	0		
8/7/2017	0	0	0		
8/8/2017	0	0	0		
8/9/2017	0	0	0		
8/10/2017	0	0	0		*
8/11/2017	0	0	0		*

CSO 027 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
8/12/2017	0	0.12	0.12	*
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	440,839	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	422,205	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	310,356	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	
9/21/2017	0	0	0	
9/22/2017	0	0	0	

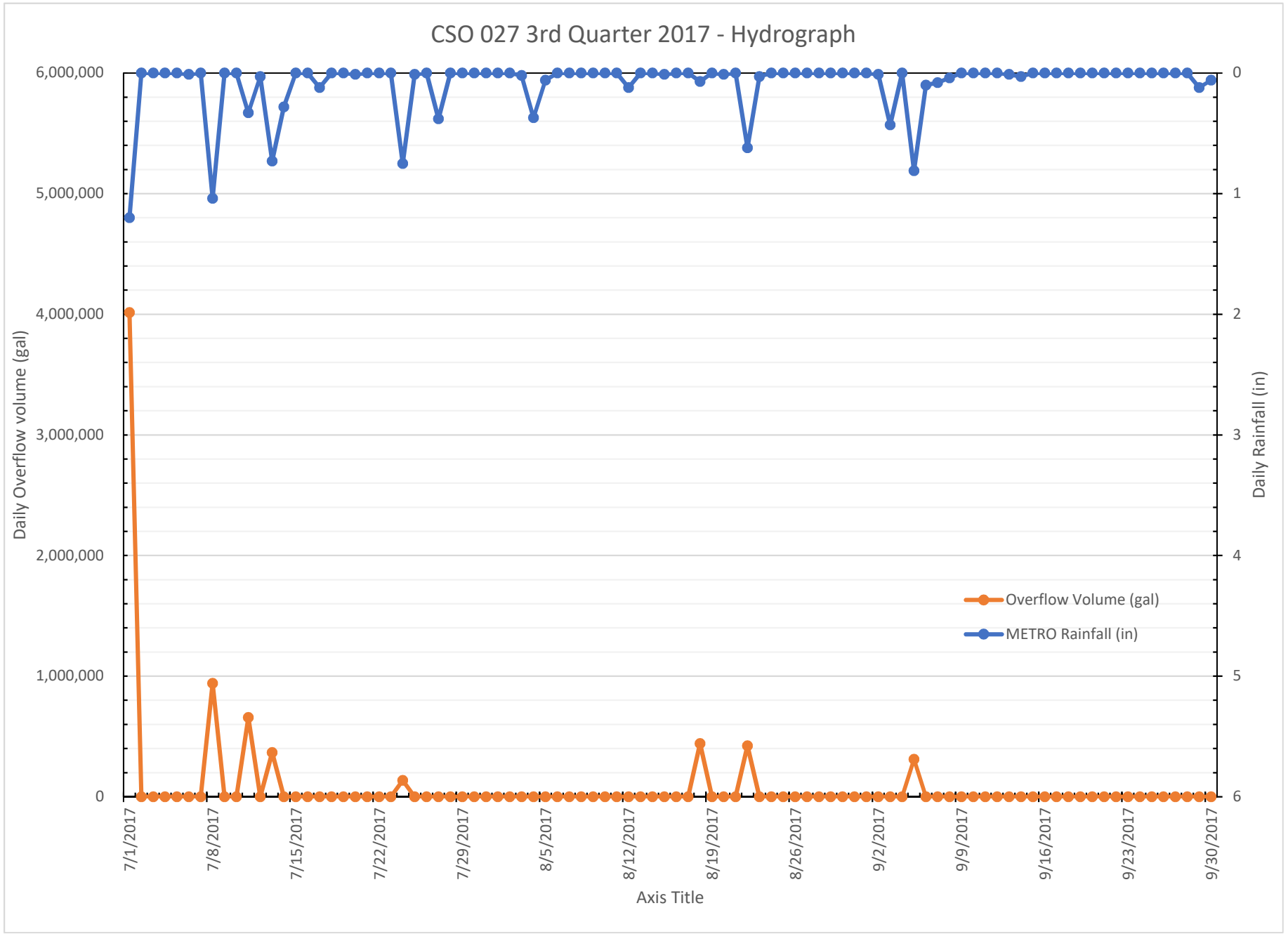
CSO 027 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

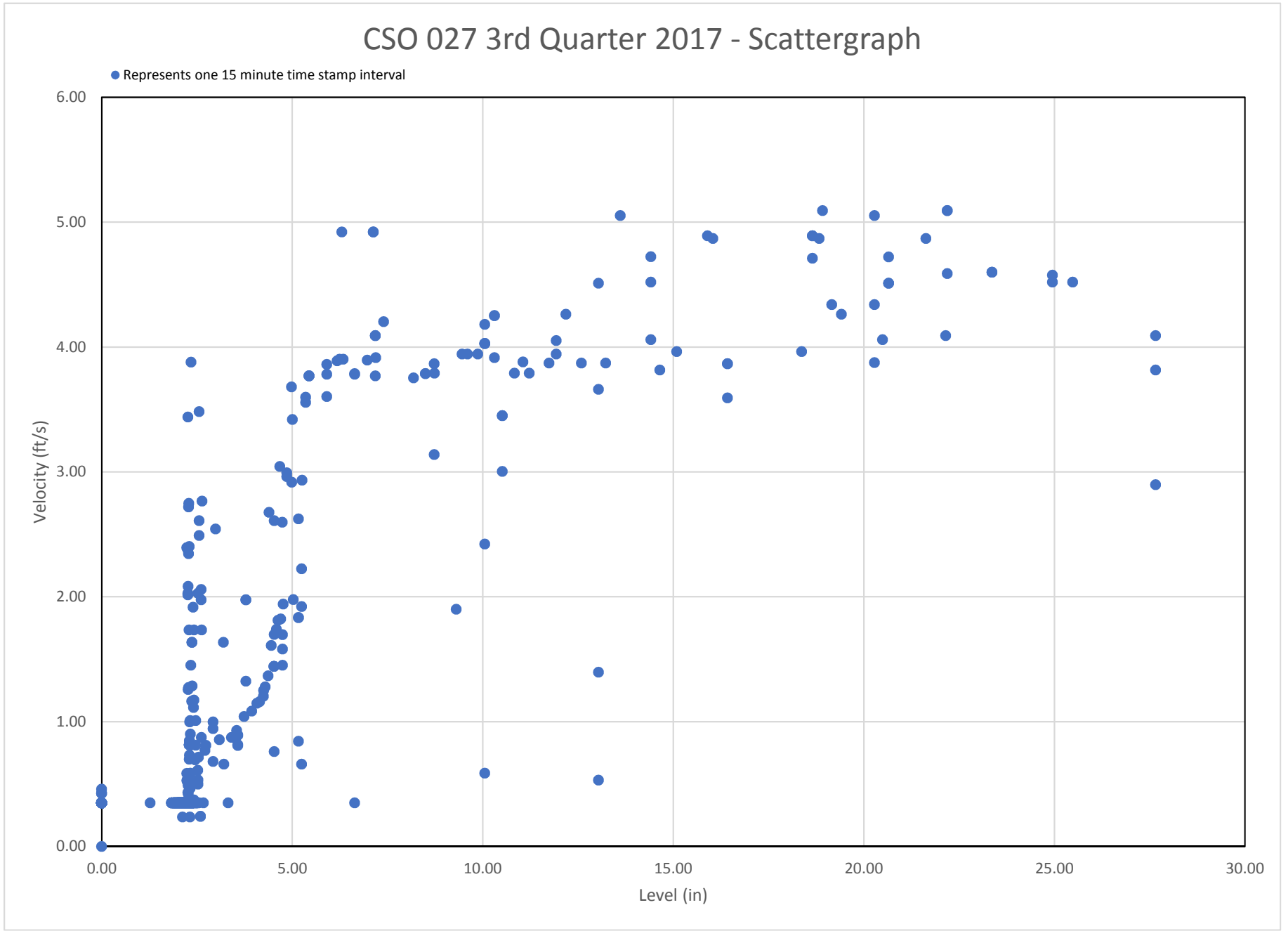
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

July	6,113,800	4.89
August	863,044	1.31
September	310,356	1.69

3Q Total	7,287,200	7.89

Note:
* - Dates with this note designation were days when the level of flow the incoming sewer could not produce an overflow even though the regulator pipe was running full.


CSO 027 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
0
1
2
3
4
5
6
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 027 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
Level (in)

CSO 034 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				>0.9
7/1/2017	456,116	1.2	0.35	
7/2/2017	148,734	0	0	*1, 2*
7/3/2017	0	0	0	*2*
7/4/2017	0	0	0	*2*
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	0	1.04	0.75	
7/9/2017	0	0	0	
7/10/2017	0	0	0	
7/11/2017	0	0.33	0.29	
7/12/2017	0	0.03	0.03	
7/13/2017	0	0.73	0.39	
7/14/2017	0	0.28	0.23	
7/15/2017	0	0	0	
7/16/2017	0	0	0	
7/17/2017	0	0.12	0.12	
7/18/2017	0	0	0	
7/19/2017	0	0	0	
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	
7/23/2017	0	0	0	
7/24/2017	0	0.75	0.4	
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	0	0.38	0.15	
7/28/2017	0	0	0	
7/29/2017	0	0	0	
7/30/2017	0	0	0	
7/31/2017	0	0	0	
8/1/2017	0	0	0	
8/2/2017	0	0	0	
8/3/2017	0	0.02	0.02	
8/4/2017	0	0.37	0.19	
8/5/2017	0	0.06	0.06	
8/6/2017	0	0	0	
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	

CSO 034 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				>0.9
8/10/2017	0	0	0	
8/11/2017	0	0	0	
8/12/2017	0	0.12	0.12	
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	0	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	0	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	0	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	

CSO 034 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

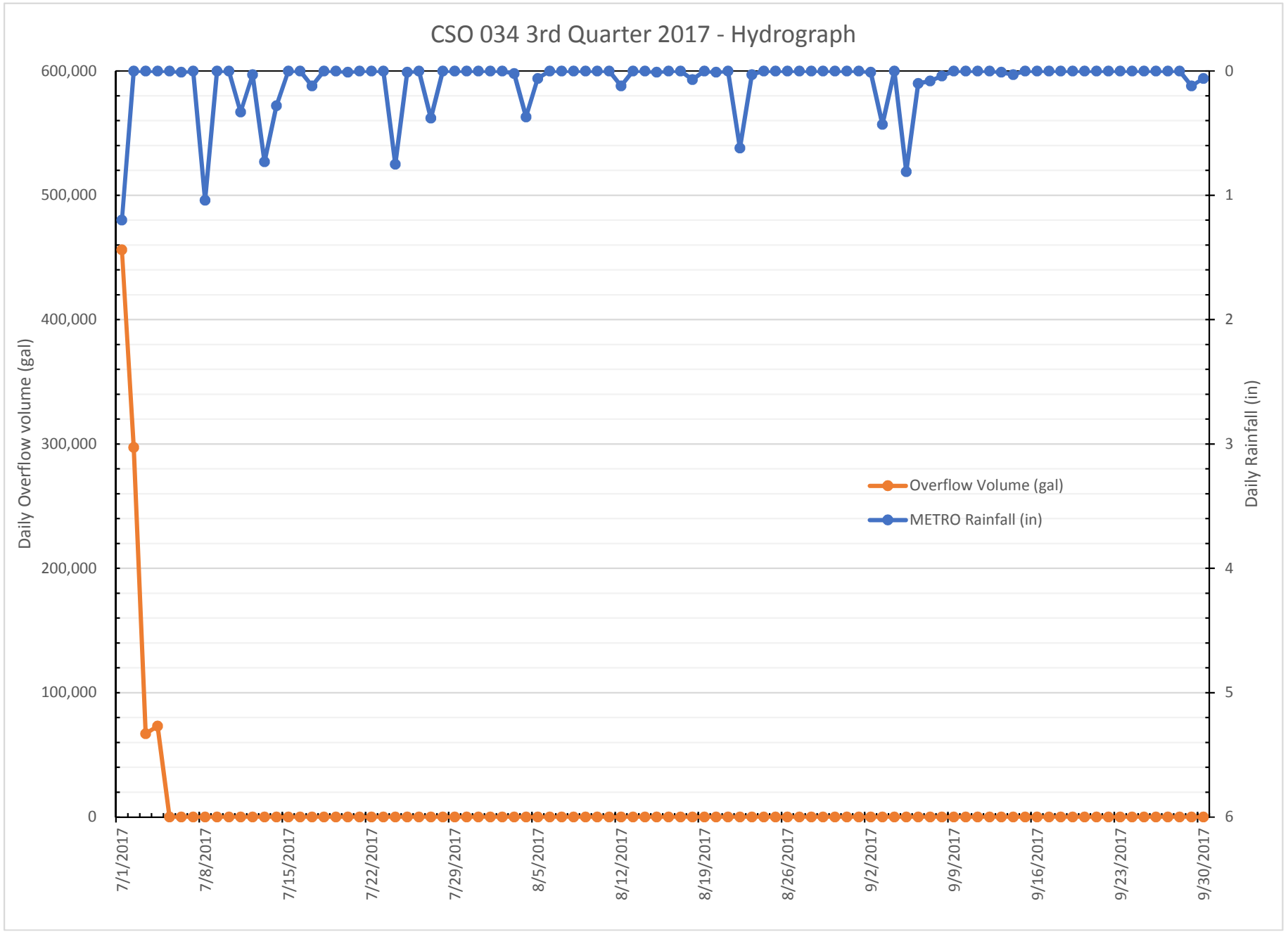
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				>0.9
9/19/2017	0	0	0	
9/20/2017	0	0	0	
9/21/2017	0	0	0	
9/22/2017	0	0	0	
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

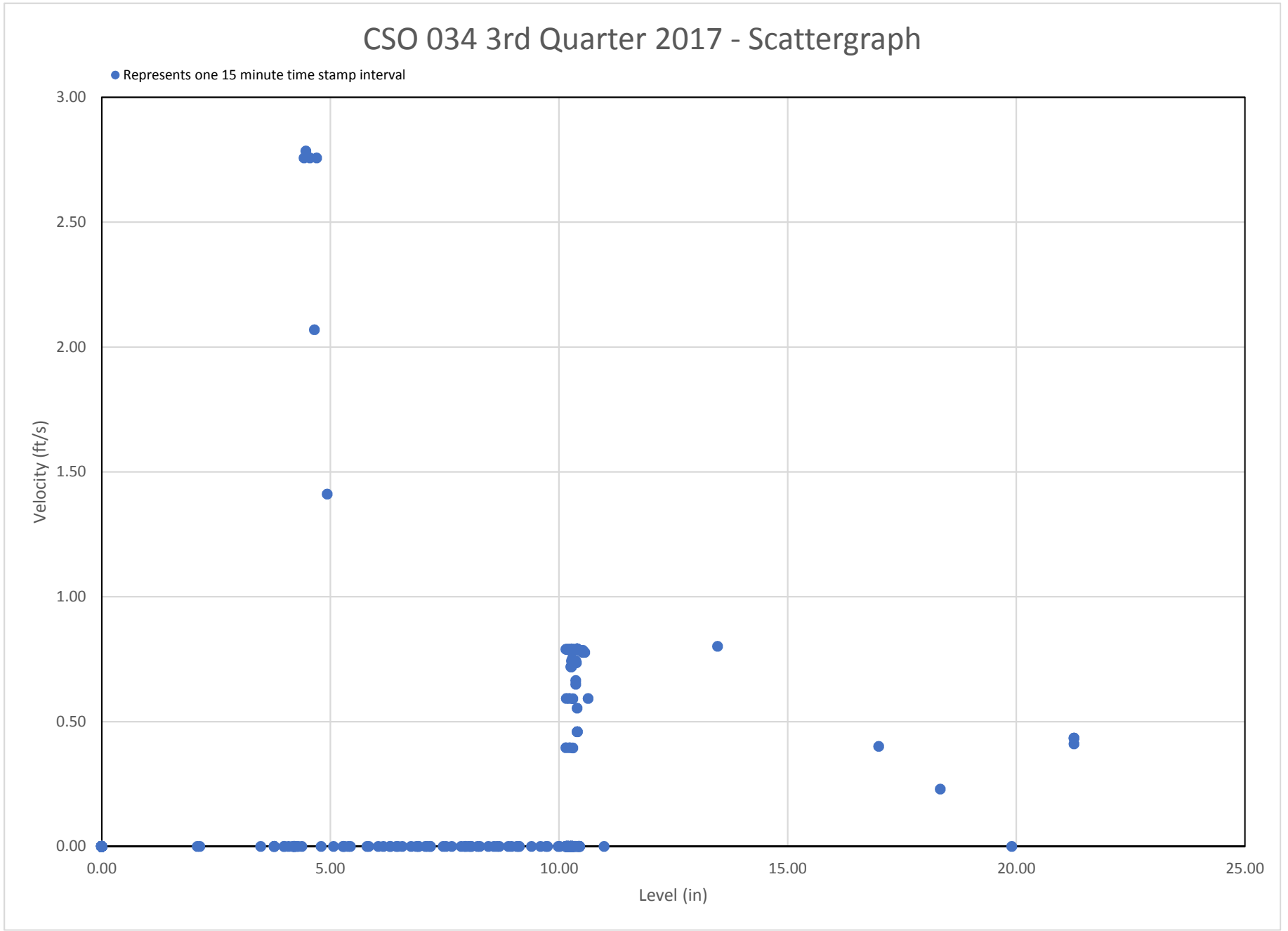
July	604,850	4.89
August	0	1.31
September	0	1.69

3Q Total	604,850	7.89

1 – Overflow event continuation from previous day.

2 - Flow meter indicated additional flow on these dates. However, data from the stroage facility showed the facility was being dewatered from a previous rain event. In addition, the ultrasonic indicator on the overflow weir did not show a level meaning it is unlikely an overflow was occurring.


CSO 034 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
600,000
500,000
400,000
300,000
200,000
100,000
0
0
1
2
3
4
5
6
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 034 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Level (in)

CSO 052 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				0.1
7/1/2017	19,147	1.2	0.35	
7/2/2017	0	0	0	
7/3/2017	0	0	0	
7/4/2017	0	0	0	*1*
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	10,362	1.04	0.75	
7/9/2017	0	0	0	
7/10/2017	1,541	0	0	*2*
7/11/2017	3,554	0.33	0.29	
7/12/2017	2,029	0.03	0.03	
7/13/2017	7,758	0.73	0.39	
7/14/2017	4,667	0.28	0.23	
7/15/2017	1,104	0	0	*2*
7/16/2017	0	0	0	
7/17/2017	5,152	0.12	0.12	
7/18/2017	0	0	0	*1*
7/19/2017	0	0	0	*1*
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	*1*
7/23/2017	0	0	0	*1*
7/24/2017	7,825	0.75	0.4	
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	5,431	0.38	0.15	
7/28/2017	0	0	0	
7/29/2017	0	0	0	*1*
7/30/2017	0	0	0	*1*
7/31/2017	0	0	0	*1*
8/1/2017	0	0	0	
8/2/2017	0	0	0	*1*
8/3/2017	0	0.02	0.02	
8/4/2017	839	0.37	0.19	
8/5/2017	661	0.06	0.06	

CSO 052 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				0.1
8/6/2017	0	0	0	
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	
8/10/2017	0	0	0	*1*
8/11/2017	0	0	0	*1*
8/12/2017	579	0.12	0.12	
8/13/2017	0	0	0	*1*
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	*1*
8/17/2017	0	0	0	*1*
8/18/2017	1,381	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	6,559	0.62	0.4	
8/23/2017	0	0.03	0.03	*3*
8/24/2017	0	0	0	*4*
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	*4*
8/29/2017	0	0	0	*4*
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	*4*
9/2/2017	0	0.01	0.01	
9/3/2017	12,734	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	11,908	0.81	0.35	
9/6/2017	615	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	892	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	

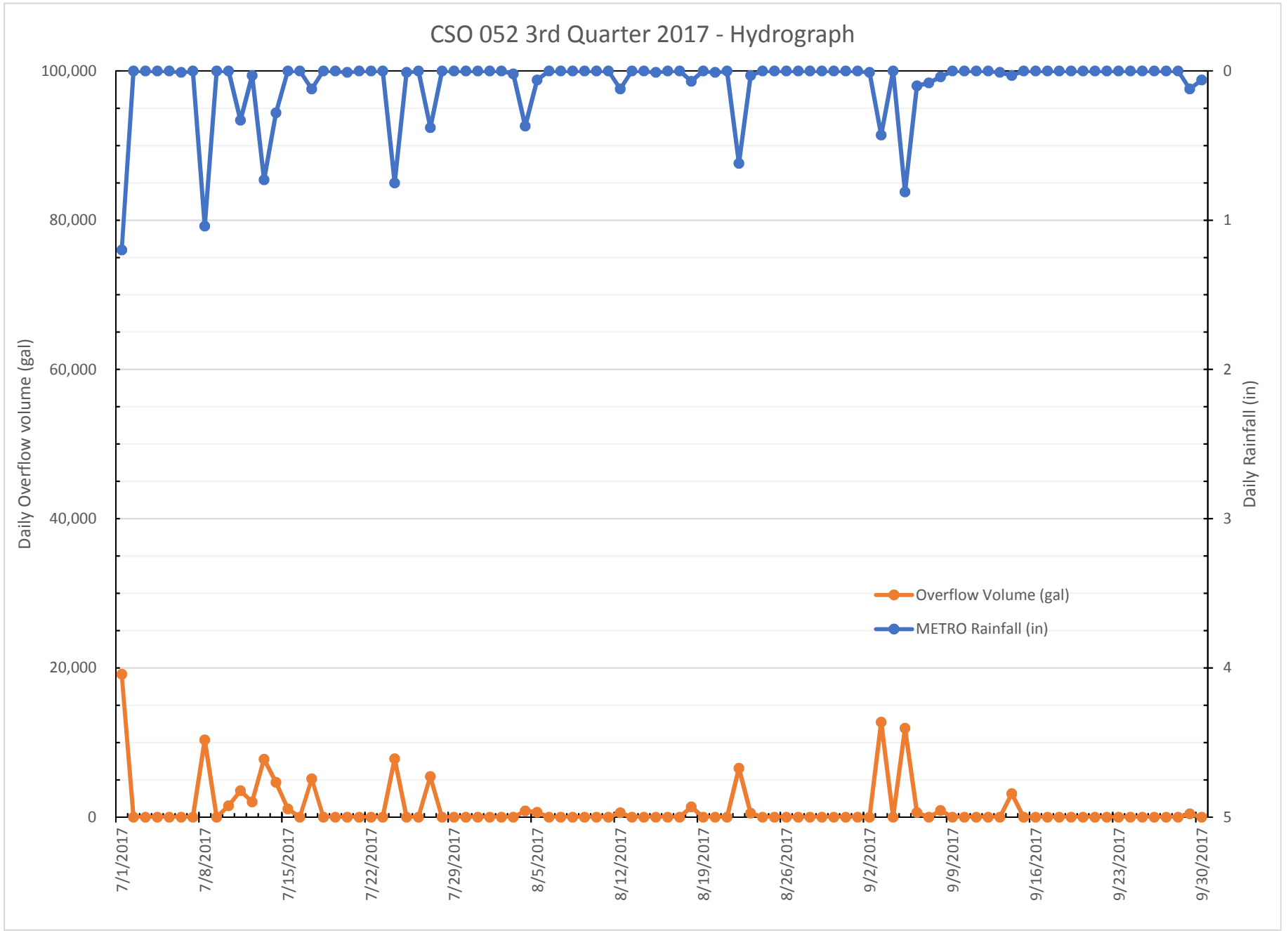
CSO 052 DAILY OVERFLOW VOLUME
3RD QUARTER 2017

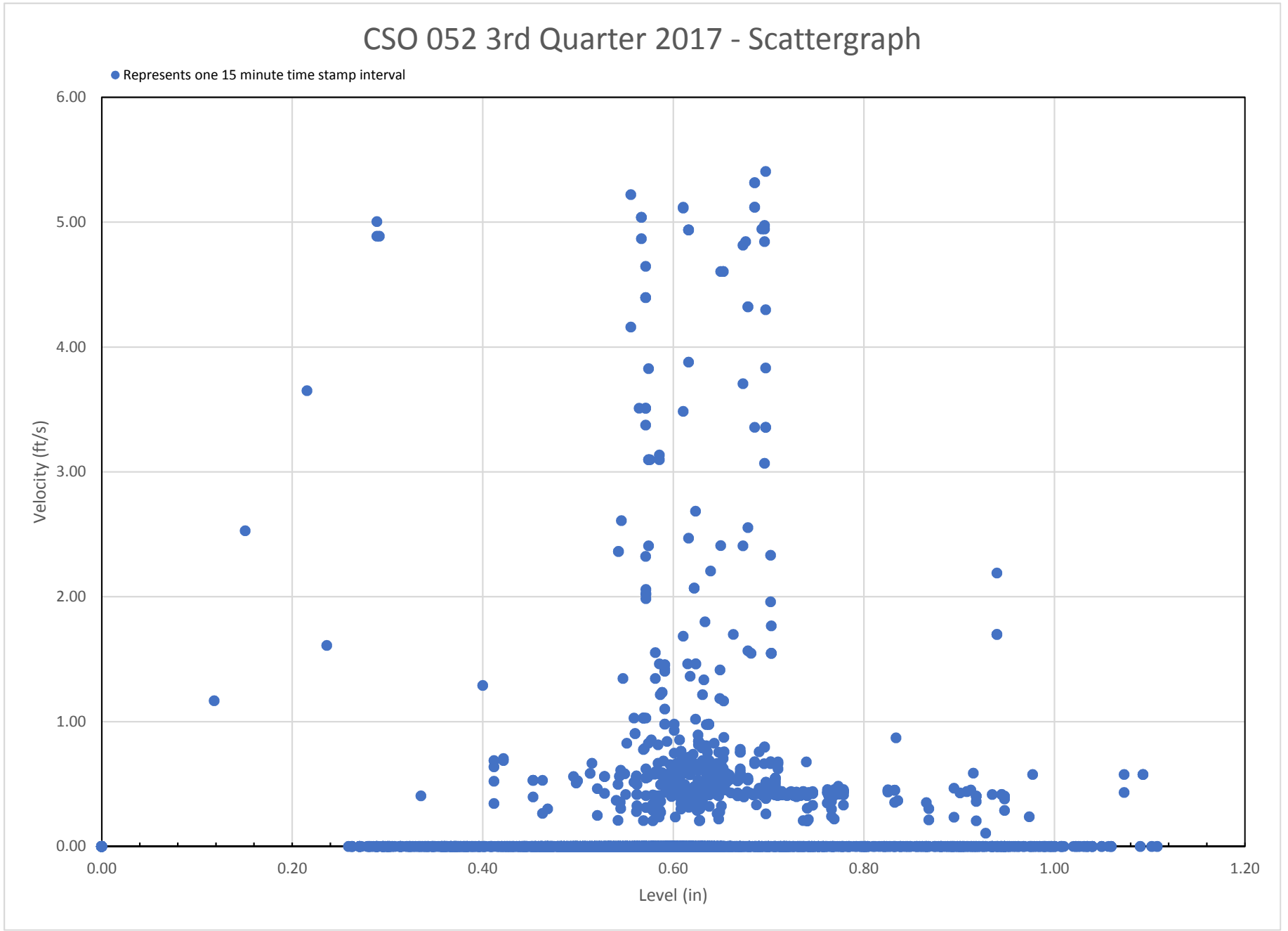
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				0.1
9/11/2017	0	0	0	
9/12/2017	0	0	0	*4*
9/13/2017	0	0.01	0.01	
9/14/2017	3,160	0.03	0.03	
9/15/2017	0	0	0	*4*
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	*4*
9/19/2017	0	0	0	
9/20/2017	0	0	0	*4*
9/21/2017	0	0	0	
9/22/2017	0	0	0	
9/23/2017	0	0	0	*4*
9/24/2017	0	0	0	*4*
9/25/2017	0	0	0	
9/26/2017	0	0	0	*4*
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	427	0.12	0.08	
9/30/2017	0	0.06	0.04	

July	68,569	4.89
August	10,019	1.31
September	29,736	1.69

3Q Total	108,324	7.89

Notes:
1 - Overflow volume measured not consistent with a rainfall event
2 - No rain at Metro, however Wadsworth Park rain guage did detect rainfall
3 - Flow detected while meter was being reinstalled. This is not representative of an overflow to the creek.
4 - Overflow volume measured by back up Flodar but not by new A/V primary meter installed 8/23


CSO 052 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
100,000
80,000
60,000
40,000
20,000
0
0
1
2
3
4
5
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 052 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
0.20
0.40
0.60
0.80
1.00
1.20
Level (in)

CSO 060 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
7/1/2017	722,415	1.2	0.35	
7/2/2017	0	0	0	
7/3/2017	0	0	0	
7/4/2017	0	0	0	
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	4,735	1.04	0.75	
7/9/2017	0	0	0	
7/10/2017	0	0	0	*1*
7/11/2017	0	0.33	0.29	
7/12/2017	0	0.03	0.03	
7/13/2017	0	0.73	0.39	
7/14/2017	0	0.28	0.23	
7/15/2017	0	0	0	
7/16/2017	0	0	0	
7/17/2017	0	0.12	0.12	
7/18/2017	0	0	0	
7/19/2017	0	0	0	
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	
7/23/2017	0	0	0	
7/24/2017	0	0.75	0.4	
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	0	0.38	0.15	
7/28/2017	0	0	0	
7/29/2017	0	0	0	
7/30/2017	0	0	0	
7/31/2017	0	0	0	
8/1/2017	0	0	0	
8/2/2017	0	0	0	
8/3/2017	0	0.02	0.02	
8/4/2017	0	0.37	0.19	
8/5/2017	0	0.06	0.06	
8/6/2017	0	0	0	
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	
8/10/2017	0	0	0	

CSO 060 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

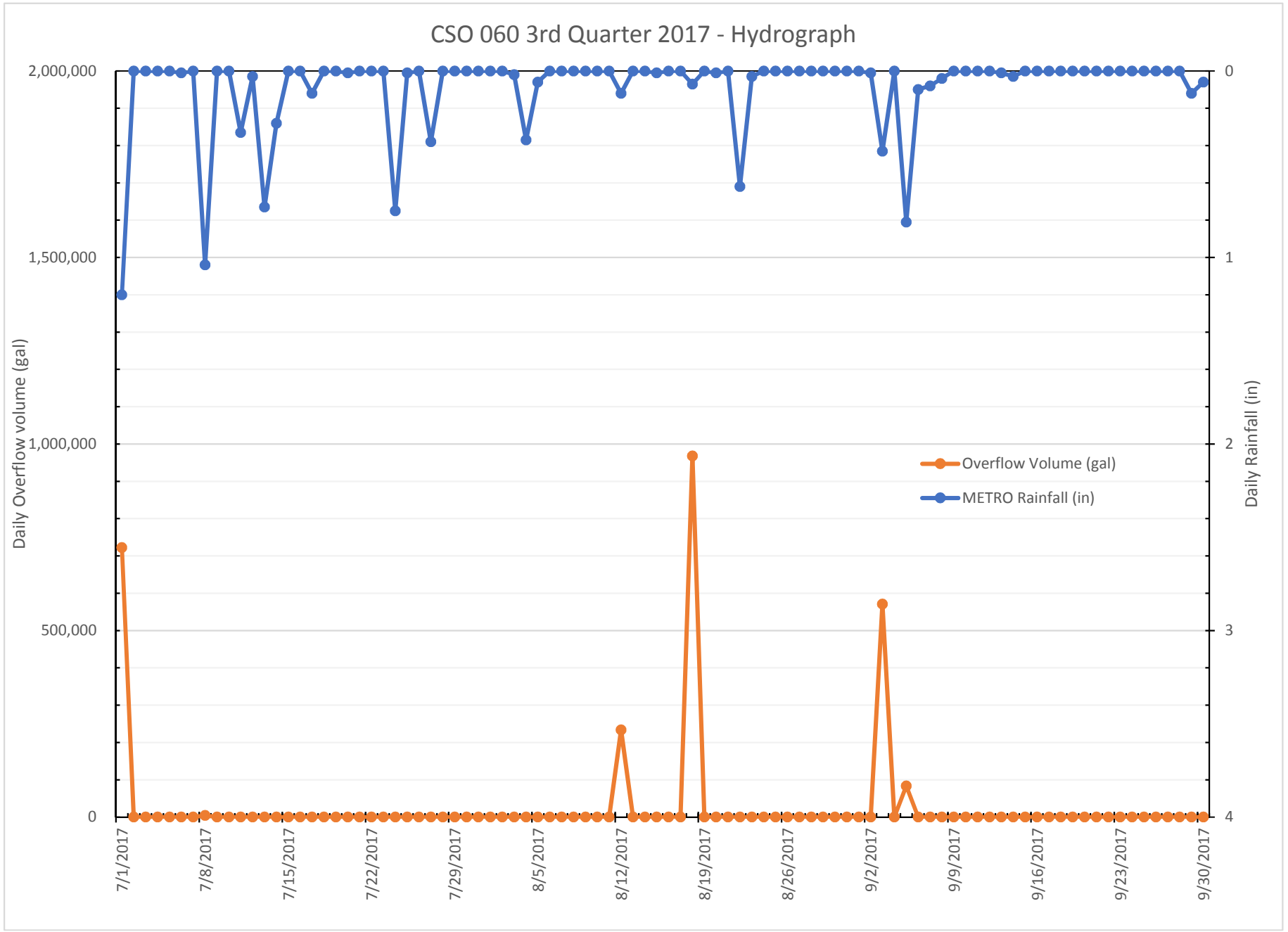
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
8/11/2017	0	0	0	
8/12/2017	233,711	0.12	0.12	
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	967,777	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	0	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	570,755	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	83,339	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	

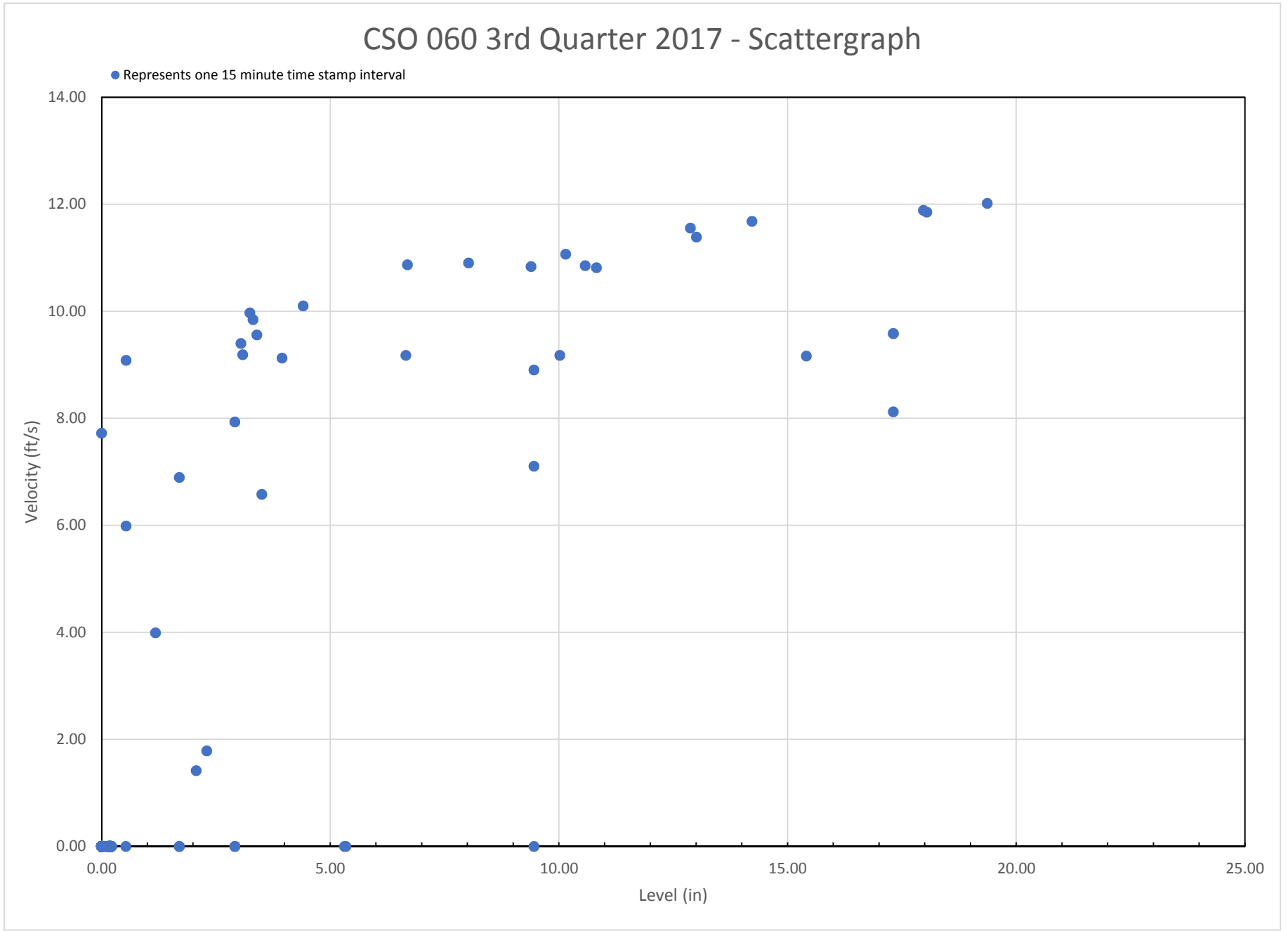
CSO 060 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
9/21/2017	0	0	0	
9/22/2017	0	0	0	
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

July	727,150	4.89
August	1,201,487	1.31
September	654,094	1.69

3Q Total	2,582,731	7.89


CSO 060 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
2,000,000
1,500,000
1,000,000
500,000
0
0
1
2
3
4
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 060 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Level (in)

CSO 063 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
7/1/2017	712,390	1.2	0.35	
7/2/2017	0	0	0	*1*
7/3/2017	0	0	0	*1*
7/4/2017	0	0	0	*1*
7/5/2017	0	0	0	
7/6/2017	0	0.01	0.01	
7/7/2017	0	0	0	
7/8/2017	9	1.04	0.75	*1*
7/9/2017	0	0	0	
7/10/2017	0	0	0	
7/11/2017	0	0.33	0.29	
7/12/2017	0	0.03	0.03	
7/13/2017	9	0.73	0.39	*1*
7/14/2017	0	0.28	0.23	
7/15/2017	0	0	0	
7/16/2017	0	0	0	
7/17/2017	0	0.12	0.12	
7/18/2017	0	0	0	
7/19/2017	0	0	0	
7/20/2017	0	0.01	0.01	
7/21/2017	0	0	0	
7/22/2017	0	0	0	*1*
7/23/2017	0	0	0	
7/24/2017	0	0.75	0.4	*1*
7/25/2017	0	0.01	0.01	
7/26/2017	0	0	0	
7/27/2017	0	0.38	0.15	*1*
7/28/2017	0	0	0	
7/29/2017	0	0	0	
7/30/2017	0	0	0	
7/31/2017	0	0	0	
8/1/2017	0	0	0	
8/2/2017	0	0	0	
8/3/2017	0	0.02	0.02	
8/4/2017	0	0.37	0.19	*1*
8/5/2017	0	0.06	0.06	
8/6/2017	0	0	0	

CSO 063 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
8/7/2017	0	0	0	
8/8/2017	0	0	0	
8/9/2017	0	0	0	
8/10/2017	0	0	0	
8/11/2017	0	0	0	
8/12/2017	0	0.12	0.12	
8/13/2017	0	0	0	
8/14/2017	0	0	0	
8/15/2017	0	0.01	0.01	
8/16/2017	0	0	0	
8/17/2017	0	0	0	
8/18/2017	0	0.07	0.04	
8/19/2017	0	0	0	
8/20/2017	0	0.01	0.01	
8/21/2017	0	0	0	
8/22/2017	0	0.62	0.4[1]	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	0	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	

CSO 063 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

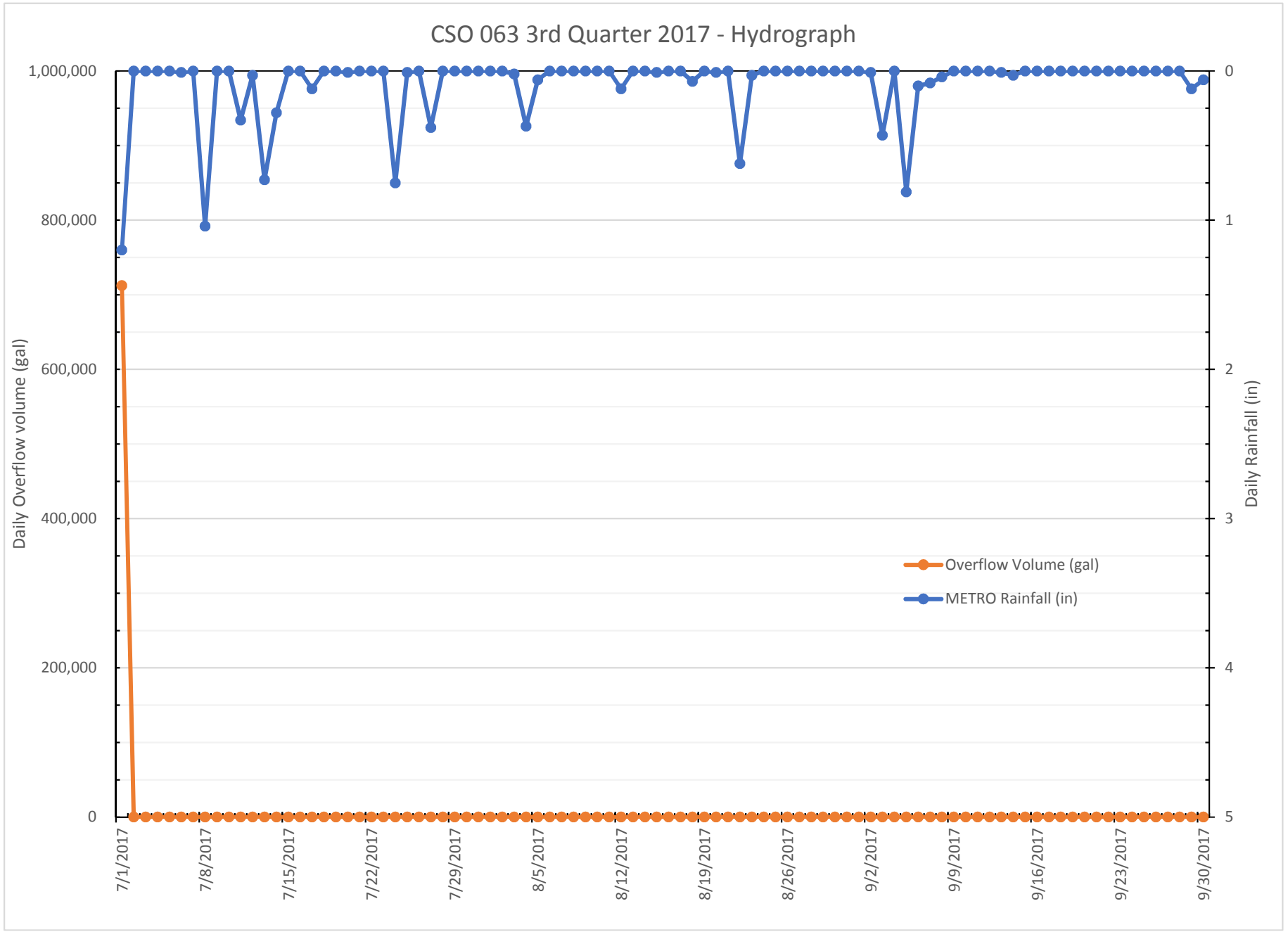
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	
9/21/2017	0	0	0	
9/22/2017	0	0	0	
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

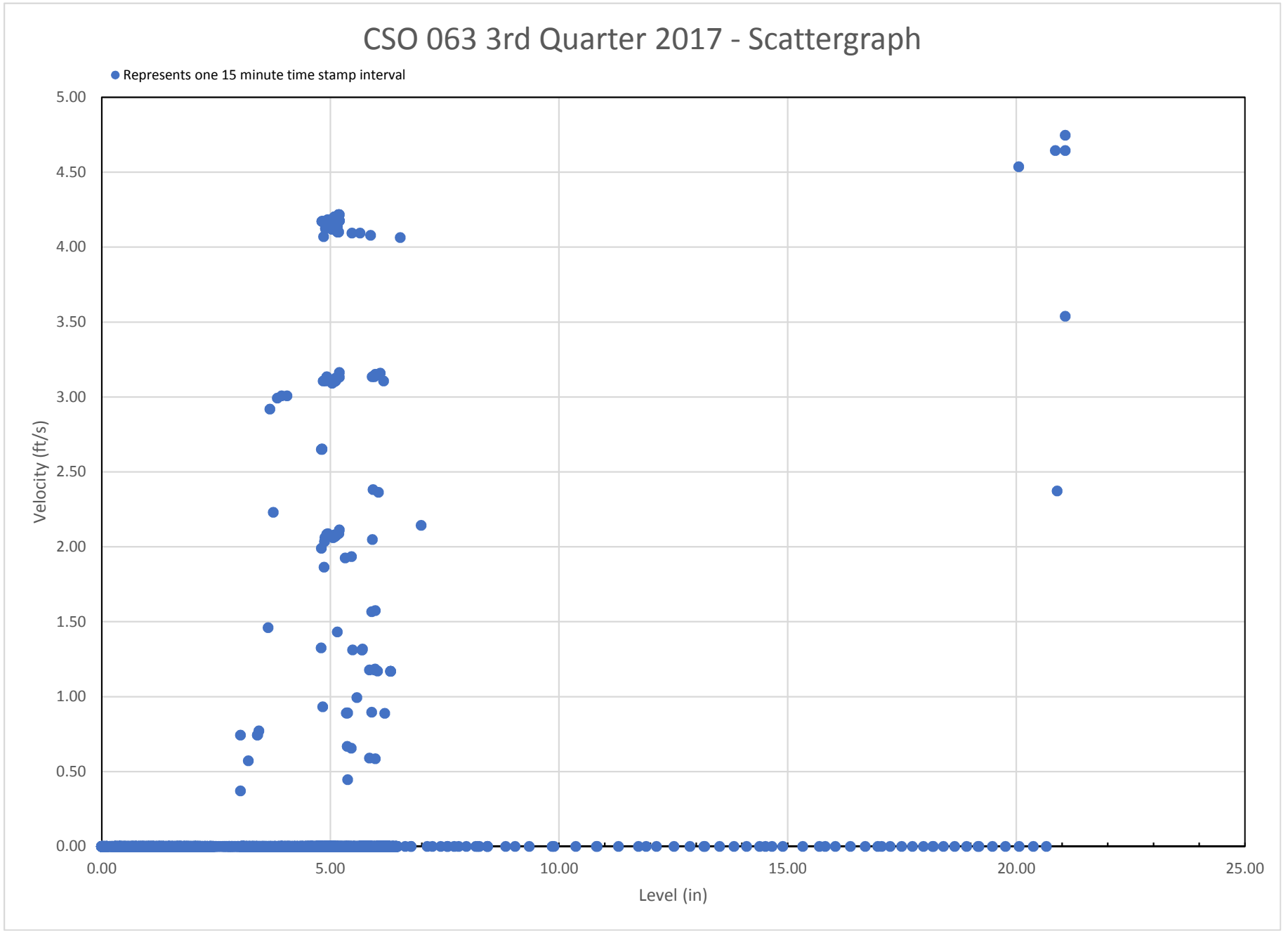
July	712,408	4.89
August	0	1.31
September	0	1.69

3Q Total	712,408	7.89

Note:

1 - Overflow volume on these days could not be verified.


CSO 063 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
1,000,000
800,000
600,000
400,000
200,000
0
0
1
2
3
4
5
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Overflow Volume (gal)
METRO Rainfall (in)


CSO 063 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.00
5.00
10.00
15.00
20.00
25.00
Level (in)

CSO 075 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
7/1/2017	667,138	1.2	0.35	
7/2/2017	1,901,851	0	0	
7/3/2017	2,751,456	0	0	
7/4/2017	2,007,396	0	0	
7/5/2017	1,633,003	0	0	
7/6/2017	78,393	0.01	0.01	
7/7/2017	14,677	0	0	
7/8/2017	491,788	1.04	0.75	
7/9/2017	(115,794)	0	0	
7/10/2017	158,856	0	0	
7/11/2017	(36,247)	0.33	0.29	
7/12/2017	(128,690)	0.03	0.03	
7/13/2017	426,339	0.73	0.39	
7/14/2017	214,931	0.28	0.23	
7/15/2017	(960,682)	0	0	
7/16/2017	113,295	0	0	
7/17/2017	(1,245,027)	0.12	0.12	
7/18/2017	(193,785)	0	0	
7/19/2017	540,131	0	0	
7/20/2017	1,074,833	0.01	0.01	
7/21/2017	903,061	0	0	
7/22/2017	(23,711)	0	0	
7/23/2017	(183,629)	0	0	
7/24/2017	335,195	0.75	0.4	
7/25/2017	(446,646)	0.01	0.01	
7/26/2017	(94,042)	0	0	
7/27/2017	(5,285)	0.38	0.15	
7/28/2017	(493,475)	0	0	
7/29/2017	(19,876)	0	0	
7/30/2017	(37,951)	0	0	
7/31/2017	(51,541)	0	0	
8/1/2017	(864,252)	0	0	
8/2/2017	(237,311)	0	0	
8/3/2017	(988,732)	0.02	0.02	
8/4/2017	(39,076)	0.37	0.19	
8/5/2017	912,442	0.06	0.06	
8/6/2017	(355,805)	0	0	
8/7/2017	(188,517)	0	0	
8/8/2017	314,313	0	0	
8/9/2017	235,699	0	0	
8/10/2017	247,201	0	0	

CSO 075 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
8/11/2017	23,392	0	0	
8/12/2017	(31,225)	0.12	0.12	
8/13/2017	(13,265)	0	0	
8/14/2017	(48,892)	0	0	
8/15/2017	27,096	0.01	0.01	
8/16/2017	123,717	0	0	
8/17/2017	136,962	0	0	
8/18/2017	124,683	0.07	0.04	
8/19/2017	132,256	0	0	
8/20/2017	(70,654)	0.01	0.01	
8/21/2017	310,641	0	0	
8/22/2017	0	0.62	0.4	
8/23/2017	0	0.03	0.03	
8/24/2017	0	0	0	
8/25/2017	0	0	0	
8/26/2017	0	0	0	
8/27/2017	0	0	0	
8/28/2017	0	0	0	
8/29/2017	0	0	0	
8/30/2017	0	0	0	
8/31/2017	0	0	0	
9/1/2017	0	0	0	
9/2/2017	0	0.01	0.01	
9/3/2017	0	0.43	0.1	
9/4/2017	0	0	0	
9/5/2017	132,405	0.81	0.35	
9/6/2017	0	0.1	0.05	
9/7/2017	0	0.08	0.05	
9/8/2017	0	0.04	0.04	
9/9/2017	0	0	0	
9/10/2017	0	0	0	
9/11/2017	0	0	0	
9/12/2017	0	0	0	
9/13/2017	0	0.01	0.01	
9/14/2017	0	0.03	0.03	
9/15/2017	0	0	0	
9/16/2017	0	0	0	
9/17/2017	0	0	0	
9/18/2017	0	0	0	
9/19/2017	0	0	0	
9/20/2017	0	0	0	

CSO 075 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

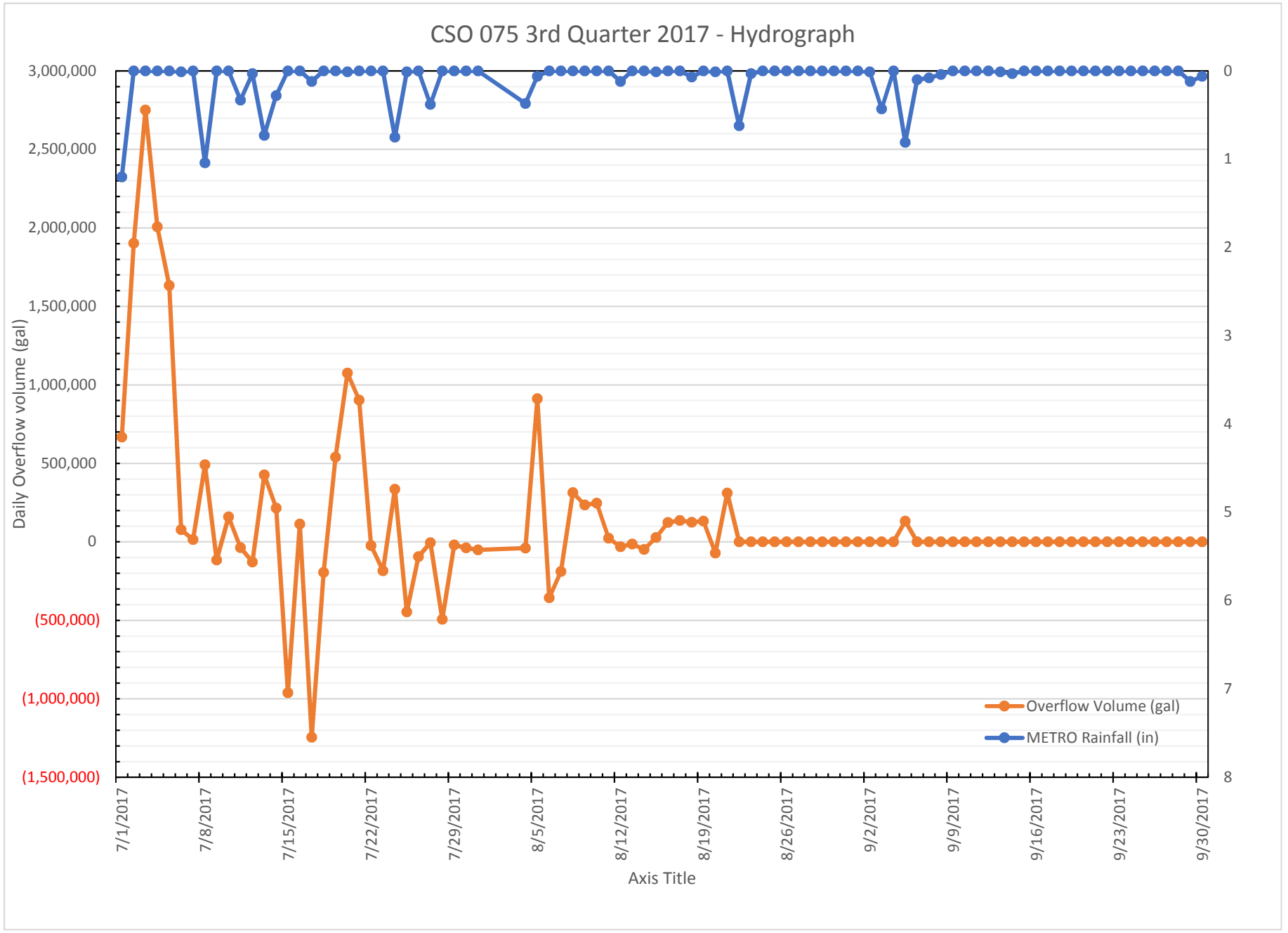
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
9/21/2017	0	0	0	
9/22/2017	0	0	0	
9/23/2017	0	0	0	
9/24/2017	0	0	0	
9/25/2017	0	0	0	
9/26/2017	0	0	0	
9/27/2017	0	0	0	
9/28/2017	0	0	0	
9/29/2017	0	0.12	0.08	
9/30/2017	0	0.06	0.04	

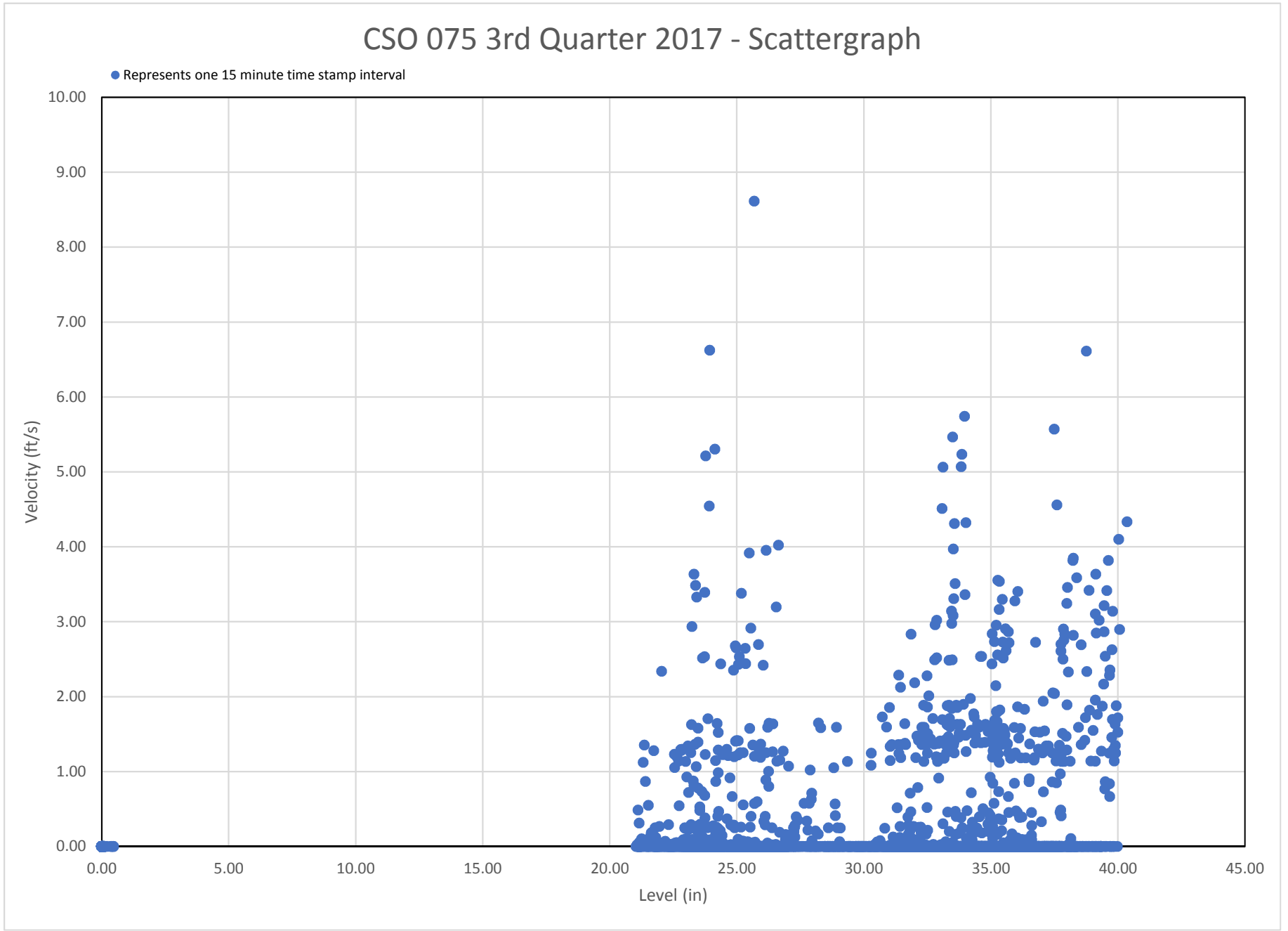
July	---	4.89
August	0	1.31
September	132,405	1.69

3Q Total	132,405	7.89

Note:

The monitoring manhole for CSO 075 appeared to be in a surcharged condition most of the time. Flow values in red indicate negative velocity readings from the Area/Velocity meter which are typically associated with inflow during surcharge. As a result of this condition, the meter was removed on 8/22/17 and reinstalled on 8/24/17 in a new manhole. After this date, the data received appears to be representative based upon rainfall events.


CSO 075 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
(500,000)
(1,000,000)
(1,500,000)
0
1
2
3
4
5
6
7
8
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)


CSO 075 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
Level (in)

CSO 078 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
7/1/2017	76,607	1.2	0.35	
7/2/2017	22,060	0	0	
7/3/2017	20,493	0	0	
7/4/2017	20,575	0	0	
7/5/2017	23,120	0	0	
7/6/2017	24,663	0.01	0.01	
7/7/2017	23,945	0	0	
7/8/2017	29,597	1.04	0.75	
7/9/2017	16,702	0	0	
7/10/2017	47,924	0	0	
7/11/2017	17,935	0.33	0.29	
7/12/2017	20,387	0.03	0.03	
7/13/2017	19,808	0.73	0.39	
7/14/2017	19,258	0.28	0.23	
7/15/2017	18,989	0	0	
7/16/2017	17,636	0	0	
7/17/2017	19,664	0.12	0.12	
7/18/2017	21,262	0	0	
7/19/2017	22,158	0	0	
7/20/2017	22,472	0.01	0.01	
7/21/2017	21,091	0	0	
7/22/2017	20,081	0	0	
7/23/2017	18,350	0	0	
7/24/2017	50,812	0.75	0.4	
7/25/2017	18,432	0.01	0.01	
7/26/2017	20,331	0	0	
7/27/2017	19,120	0.38	0.15	
7/28/2017	17,266	0	0	
7/29/2017	18,275	0	0	
7/30/2017	18,165	0	0	
7/31/2017	18,821	0	0	
8/1/2017	16,983	0	0	
8/2/2017	24,565	0	0	
8/3/2017	16,796	0.02	0.02	
8/4/2017	14,619	0.37	0.19	
8/5/2017	19,292	0.06	0.06	
8/6/2017	17,302	0	0	
8/7/2017	16,640	0	0	
8/8/2017	17,622	0	0	
8/9/2017	21,749	0	0	
8/10/2017	33,267	0	0	

CSO 078 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
8/11/2017	17,826	0	0	
8/12/2017	32,589	0.12	0.12	
8/13/2017	38,202	0	0	
8/14/2017	21,043	0	0	
8/15/2017	19,610	0.01	0.01	
8/16/2017	20,354	0	0	
8/17/2017	22,238	0	0	
8/18/2017	29,302	0.07	0.04	
8/19/2017	48,493	0	0	
8/20/2017	20,091	0.01	0.01	
8/21/2017	21,065	0	0	
8/22/2017	25,423	0.62	0.4	
8/23/2017	21,503	0.03	0.03	
8/24/2017	23,817	0	0	
8/25/2017	24,883	0	0	
8/26/2017	25,719	0	0	
8/27/2017	21,492	0	0	
8/28/2017	19,615	0	0	
8/29/2017	18,825	0	0	
8/30/2017	23,026	0	0	
8/31/2017	19,921	0	0	
9/1/2017	22,587	0	0	
9/2/2017	19,927	0.01	0.01	
9/3/2017	89,986	0.43	0.1	
9/4/2017	36,861	0	0	
9/5/2017	31,953	0.81	0.35	
9/6/2017	49,137	0.1	0.05	
9/7/2017	42,258	0.08	0.05	
9/8/2017	24,172	0.04	0.04	
9/9/2017	19,249	0	0	
9/10/2017	21,081	0	0	
9/11/2017	20,902	0	0	
9/12/2017	23,460	0	0	
9/13/2017	25,127	0.01	0.01	
9/14/2017	16,850	0.03	0.03	
9/15/2017	23,405	0	0	
9/16/2017	15,748	0	0	
9/17/2017	16,829	0	0	
9/18/2017	17,041	0	0	
9/19/2017	15,377	0	0	
9/20/2017	20,020	0	0	

CSO 078 DAILY OVERFLOW VOLUME
3rd QUARTER 2017

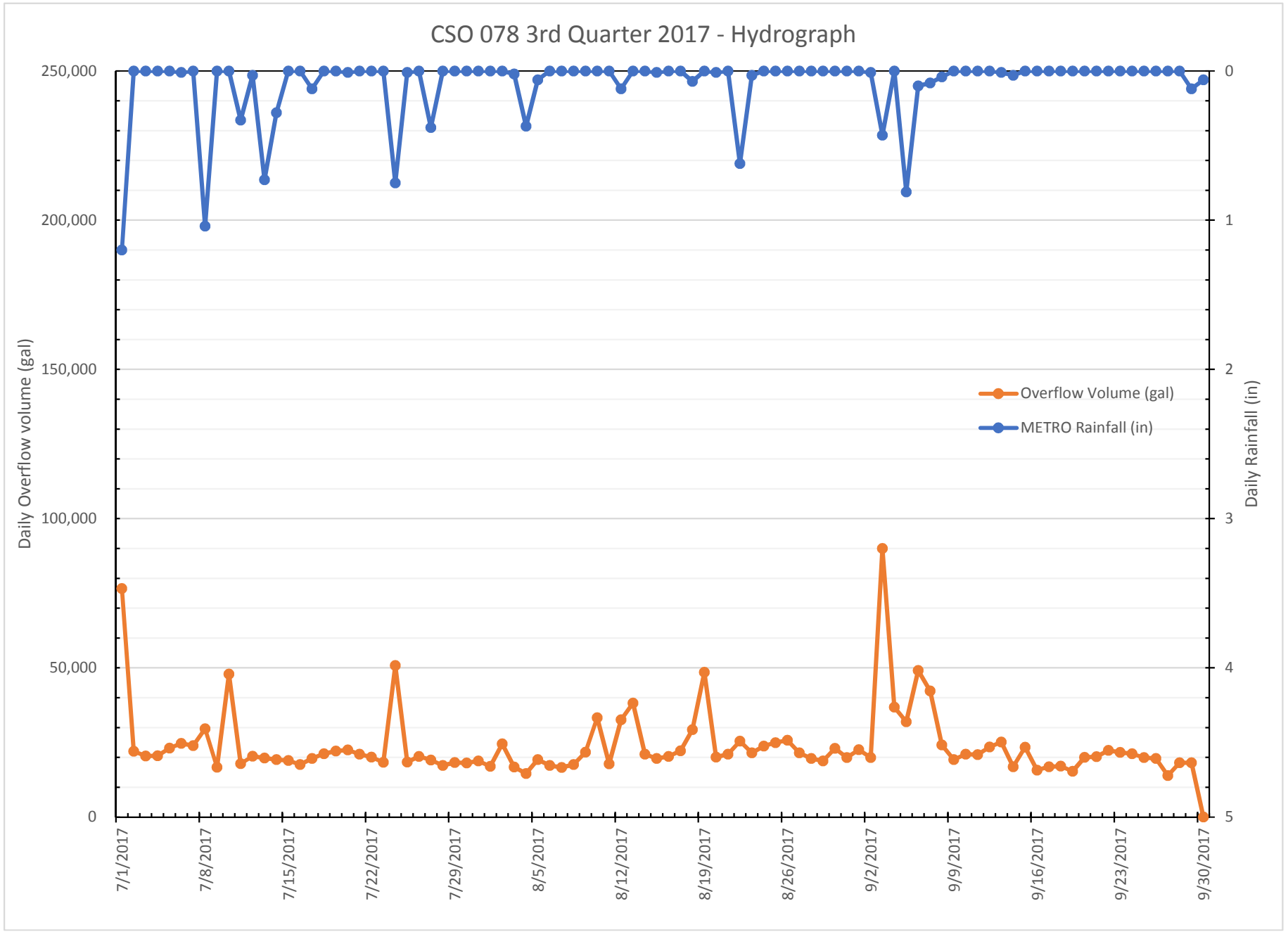
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
9/21/2017	20,209	0	0	
9/22/2017	22,343	0	0	
9/23/2017	21,665	0	0	
9/24/2017	21,194	0	0	
9/25/2017	19,963	0	0	
9/26/2017	19,612	0	0	
9/27/2017	13,907	0	0	
9/28/2017	18,229	0	0	
9/29/2017	18,213	0.12	0.08	
9/30/2017	0	0.06	0.04	

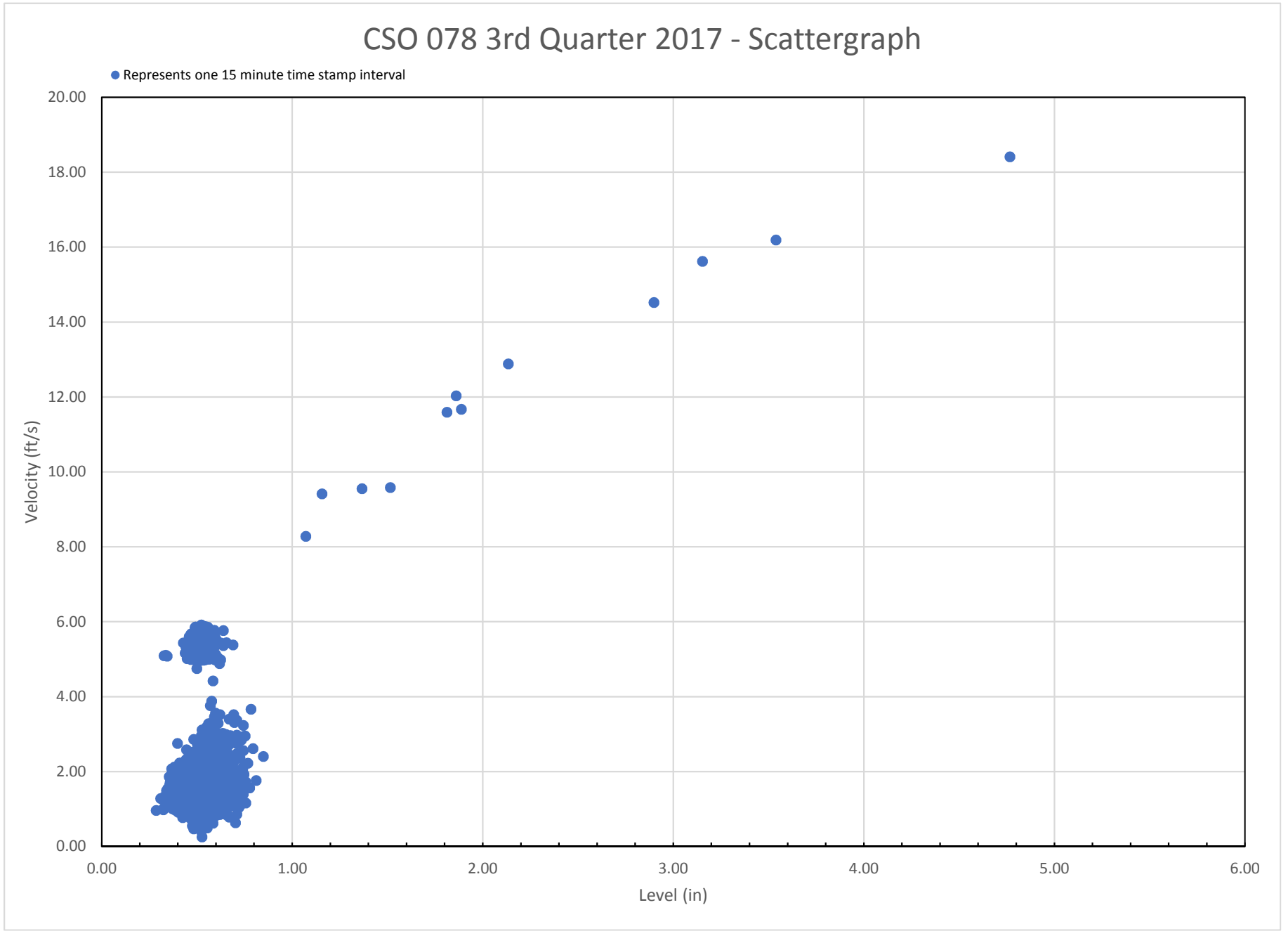
July	727,177	4.89
August	712,771	1.31
September	747,227	1.69

3Q Total	2,187,175	7.89

Note:

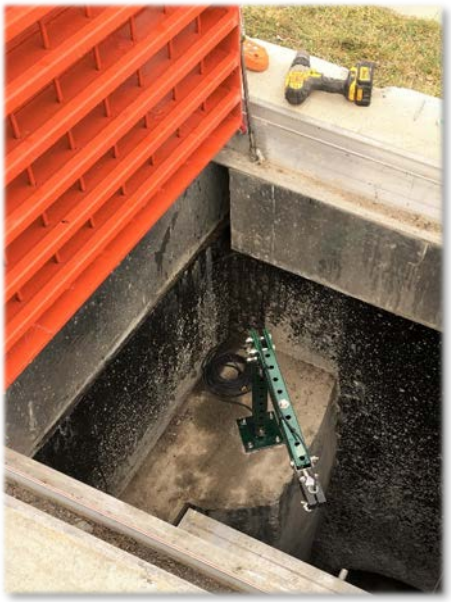
Due to manhole and overflow sewer configuration, the flow data measured does not represent actual overflow to Harbor Brook.


CSO 078 3rd Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
250,000
200,000
150,000
100,000
50,000
0
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
7/1/2017
7/8/2017
7/15/2017
7/22/2017
7/29/2017
8/5/2017
8/12/2017
8/19/2017
8/26/2017
9/2/2017
9/9/2017
9/16/2017
9/23/2017
9/30/2017


CSO 078 3rd Quarter 2017 - Scattergraph
Represents one 15 minute time stamp interval
Velocity (ft/s)
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
Level (in)

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q4 – 2017

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK



March 15, 2018

ONONDAGA COUNTY
DEPARTMENT OF WATER ENVIRONMENT PROTECTION
ONONDAGA COUNTY, NEW YORK

QUARTERLY FLOW REPORT
CSO FLOW MONITORING PROGRAM
Q4 – 2017

March 15, 2018

C&S ENGINEERS, INC.
499 Colonel Eileen Collins Blvd.
Syracuse, N.Y. 13212

Quarterly Flow Report
CSO Flow Monitoring Program
Q4 – 2017

Performance Period:

This quarterly flow report is for the period of October 1 through December 31, 2017. This report was prepared by CDM Smith for C&S Engineers and Onondaga County.

CSO Flow Monitoring Summary:

This report includes data and graphics for flow at 10 CSO locations in the City of Syracuse, New York. The overflow volume for CSO 080 is not included in this report as it is calculated by a formula agreed upon by the New York State Department of Environmental Conversation (NYSDEC). A summary of monthly overflow volumes for the 10 CSOs included in this report is presented below. Please note the following observations regarding this data:

- The meter at CSO 003 indicated a large overflow event from 10/30 through 11/1/17. The HBIS storage facility discharged flow to Harbor Brook on 10/30/17. A flow level in the CSO 003 overflow pipe remained until 7:30 AM on 11/1/17.
- The meter at CSO 027 had a service interruption from 10/12 through 10/20/17, where one of the meters was not logging data. The overflow data presented below and on the attached tables was measured by the A/V sensor within the CSO 027 outfall pipe and was supported by the readings from the Flo-Dar located on the regulator pipe, which was shown to be running full.
- The meter at CSO 052 observed flows on 10/2, 10/6, 10/10, and 10/14 when no rainfall occurred. On numerous occasions in Q4, the back-up Flo-Dar unit recorded an overflow but the new A/V primary meter did not on days where no rainfall was measured at Metro. A service interruption began on 11/14 and the A/V meter probe was replaced on 11/17/18. Data from the two meters did not correlate well through 12/31/17. Therefore, the quality of the data during that interval is suspect and not reported for the period of 11/14/18 through 12/31/18.
- For CSO 063, the flow meter detected flow in the overflow pipe on 10/30, 11/2, 11/5, and 11/8. Visual inspection of the meter location shows that the manhole is subject to backflow from Harbor Brook. Based upon inspection of the telltale indicator located on the weir in the CSO 063 diversion manhole, the as-built information and stream data from the USGS station approximately 900 feet upstream from the outfall, the overflow pipe at CSO 063 was partially submerged by the Harbor Brook on these occasions indicative of surcharge conditions. Therefore, those flows were not classified as overflow events. In addition to the telltale indicator, an ultrasonic level sensor for this site was installed on 12/4/17 within the upstream diversion structure to provide remote indication of the onset of overflow conditions from the Hiawatha Conveyance Sewer (HWCS) extension.
- Until 11/29/17, the flow for the CSO 078 was calculated from a combination of 2 devices within a manhole several hundred feet downstream of the permitted overflow location on the corner of Velasko Road and Bellevue Avenue. The manhole had two inlet connections (the CSO 078 overflow sewer to the south and a lateral connection from a laundromat/car wash to the west) and one outlet to the north. The flow data received was from the overflow sewer to the south. This flow combined with the other sanitary flow inlet prior to exiting the structure. The flow that exited this manhole was

then regulated once again in a downstream structure on West Onondaga Street with normal flow being directed to the HBIS and surcharged storm flow being discharged to Harbor Brook. As a result, the flow data for the original 078 monitoring point could not be verified as a discharge to Harbor Brook. On 11/29/17, the meters were removed because the manhole they were installed in collapsed and was going to be replaced. It was also decided that the configuration of the metering of CSO 078 would change going forward with approval from NYSDEC. On 12/28/17, the flow meter was installed in the CSO 078 regulator vault at the Bellevue Avenue and Velasko Road intersection utilizing an A/V probe and data logger. From 12/28/17 to 12/31/17, data was suspect due to apparent temperature probe failure and not reported.

The data utilized for all CSOs (including 080) is included as an electronic attachment to this report in Microsoft Excel format.

CSO Overflow Volume (in gallons) per Month

CSO Location	October	November	December
CSO Overflow Volume (in gallons) per Month			
003	4,059,611[1]	342,449[1]	0
004	1,298,674	0	0
014	689,330	0	0
027	14,316,754	0	0
034	121,880	0	0
052	71,907	49,165[2]	--[2]
060	1,484,326	277,836	0
063[3]	0	0	0
075	1,934,222	411,539	3,448
078[4]	--	--	--
CSO Overflow Events per Month			
003	1[1]	0[1]	0
004	1	0	0
014	1	0	0
027	4	0	0
034	1	0	0
052	9	3	--[2]
060	4	2	0
063[3]	0	0	0
075	5	2	1
078[4]	--	--	--
CSO Overflow Duration in hours per Month			
003	47.50[1]	7.00[1]	0.00
004	5.75	0.00	0.00
014	12.50	0.00	0.00
027	19.25	0.00	0.00
034	4.50	0.00	0.00
052	51.50	31.50	--[2]
060	8.25	2.75	0.00
063[3]	0.00	0.00	0.00
075	39.75	11.00	0.75
078[4]	--	--	--

Notes:
1 – Overflow volume shown for 10/31 and 11/1 appears to be an extension of the overflow event from 10/30.
2 – The data quality for the period 11/14 through 12/31/17 was low due to a service interruption and meter dislocation, and therefore not reported.
3 – Some overflow volumes detected in this quarter could not be verified, as the storage facility was not full on those days so it is unlikely an overflow occurred. Visual inspection of the meter location shows that the manhole is subject to backflow from Harbor Brook. The outfall pipe does have a check valve; however, it may need to be inspected due to the backflow. The backflow does not enter the conveyance sewer.
4 – Due to manhole, overflow sewer and regulator configuration, the flow data measured does not necessarily represent an overflow to Harbor Brook though 11/29/17.

Meter Performance Summary:

The table below is a summary of meter performance. The percentage is based upon the number of valid 15-minute flow data points divided by the number of 15-minute flow data points per month. The up-time goal for each site is 90% or greater per month. Monthly readings that fall below that percentage are highlighted in the table.

Meter Up-time per Month

CSO Location	October	November	December
003	99.98%	100%	100%
004	100%	100%	100%
014	100%	98.92%	100%
027	***73.62%***	99.76%	100%
034	100%	100%	100%
052	99.90%	***44.15%***	***0.00%***
060	98.71%	99.90%	99.44%
063	100%	100%	99.93%
075	99.93%	100%	100%
078	99.97%	94.65%[1]	***0.00%***[1]
080	99.93%	99.97%	100%

Notes:
1 – Monitoring interrupted from 11/29/17 through 12/27/17 due to sewer collapse and subsequent manhole replacement.

List of Attached Graphs and Tables:

Table - CSO 003 Daily Overflow Volume October thru December 2017
Graph – CSO 003 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 003 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 004 Daily Overflow Volume October thru December 2017
Graph – CSO 004 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 004 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 014 Daily Overflow Volume October thru December 2017
Graph – CSO 014 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 014 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 027 Daily Overflow Volume October thru December 2017
Graph – CSO 027 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 027 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 034 Daily Overflow Volume October thru December 2017
Graph – CSO 034 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 034 Scatter graph of Level and Velocity by Day for October thru December 2017

Table - CSO 052 Daily Overflow Volume October thru December 2017
Graph – CSO 052 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 052 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 060 Daily Overflow Volume October thru December 2017
Graph – CSO 060 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 060 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 063 Daily Overflow Volume October thru December 2017
Graph – CSO 063 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 063 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 075 Daily Overflow Volume October thru December 2017
Graph – CSO 075 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 075 Scatter graph of Level and Velocity by Day for October thru December 2017
Table - CSO 078 Daily Overflow Volume October thru December 2017
Graph – CSO 078 Hydrograph of Volume and Rainfall by Day for October thru December 2017
Graph – CSO 078 Scatter graph of Level and Velocity by Day for October thru December 2017

CSO 003 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	0	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	0	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	0	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	0	2.16	0.27	
10/30/2017	2,860,810	1.43	0.49	
10/31/2017	1,198,801	0.18	0.07	
11/1/2017	342,449	0.47	N/A[1]	
11/2/2017	0	0.48	N/A[1]	
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	0	0.77	0.25	
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	

CSO 003 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	
12/23/2017	0	0.54	0.09	

CSO 003 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

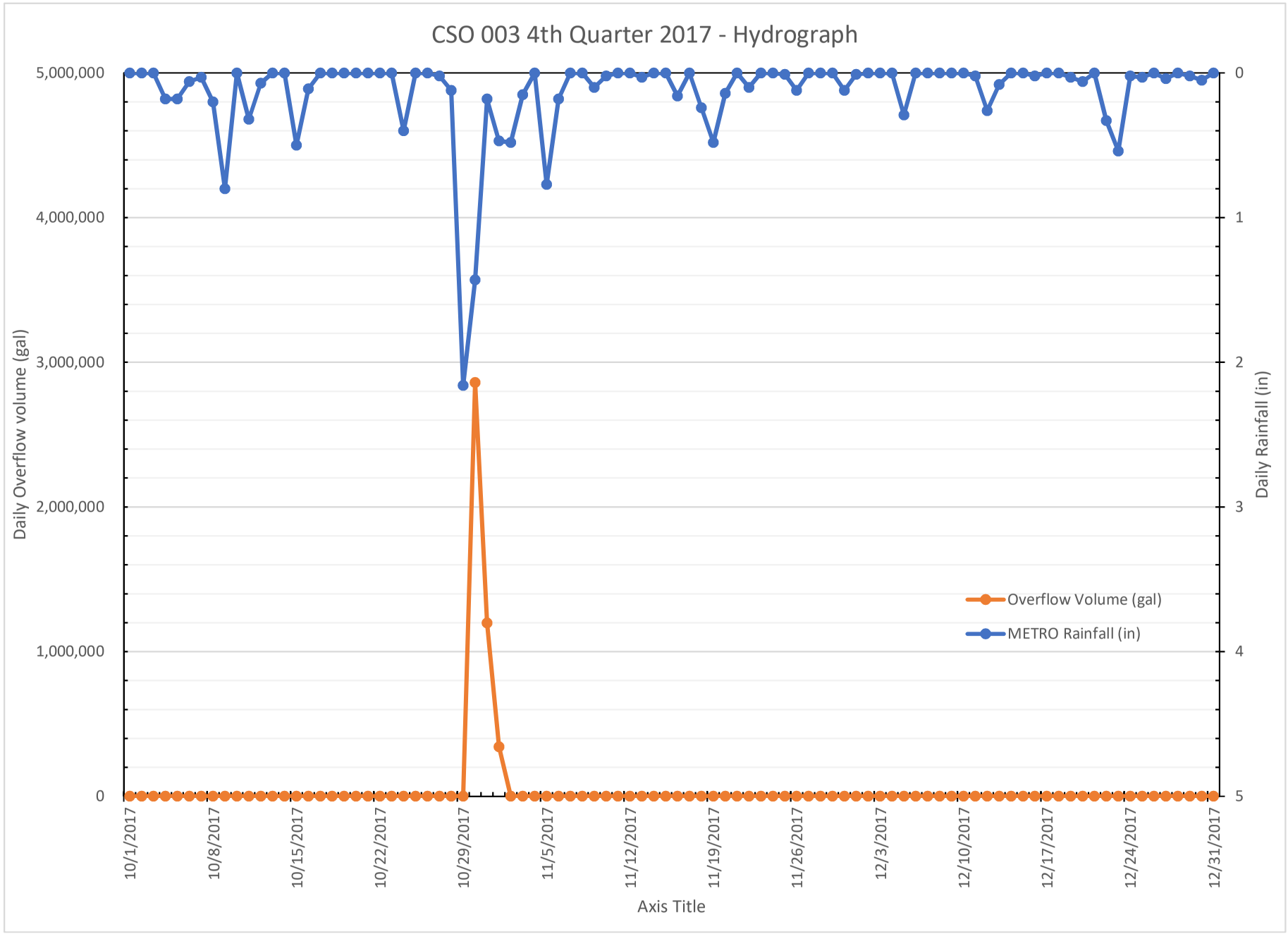
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.9
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

October	4,059,611	6.76
November	342,449	3.57
December	0	1.80

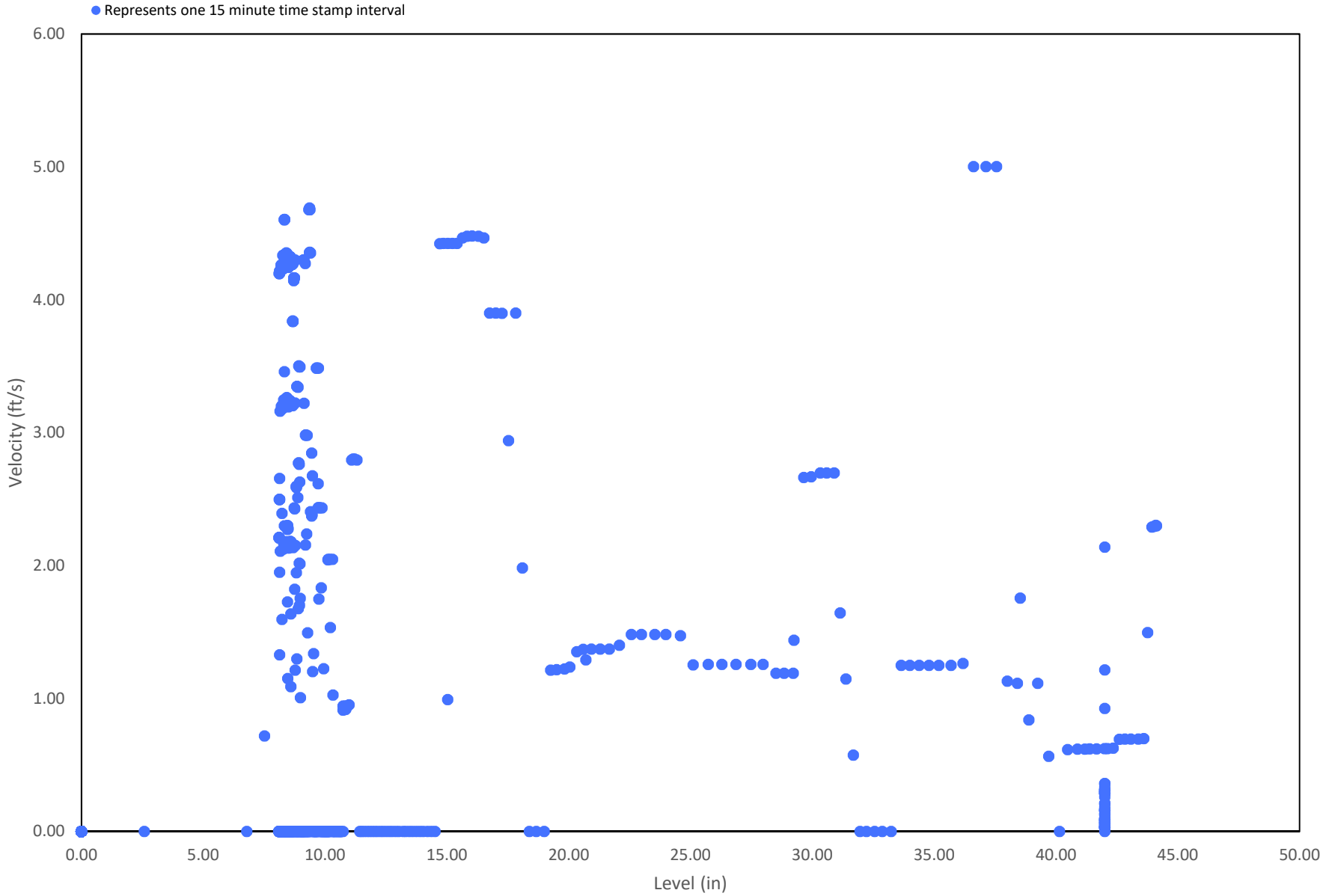
4Q Total	4,402,061	12.13

Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 003 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
Daily Rainfall (in)
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017
Axis Title

CSO 003 4th Quarter 2017 - Scattergraph



CSO 004 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	0	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	0	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	0	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	0	2.16	0.27	
10/30/2017	1,298,674	1.43	0.49	
10/31/2017	0	0.18	0.07	
11/1/2017	0	0.47	N/A[1]	
11/2/2017	0	0.48	N/A[1]	
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	0	0.77	0.25	
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	

CSO 004 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	
12/23/2017	0	0.54	0.09	

CSO 004 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

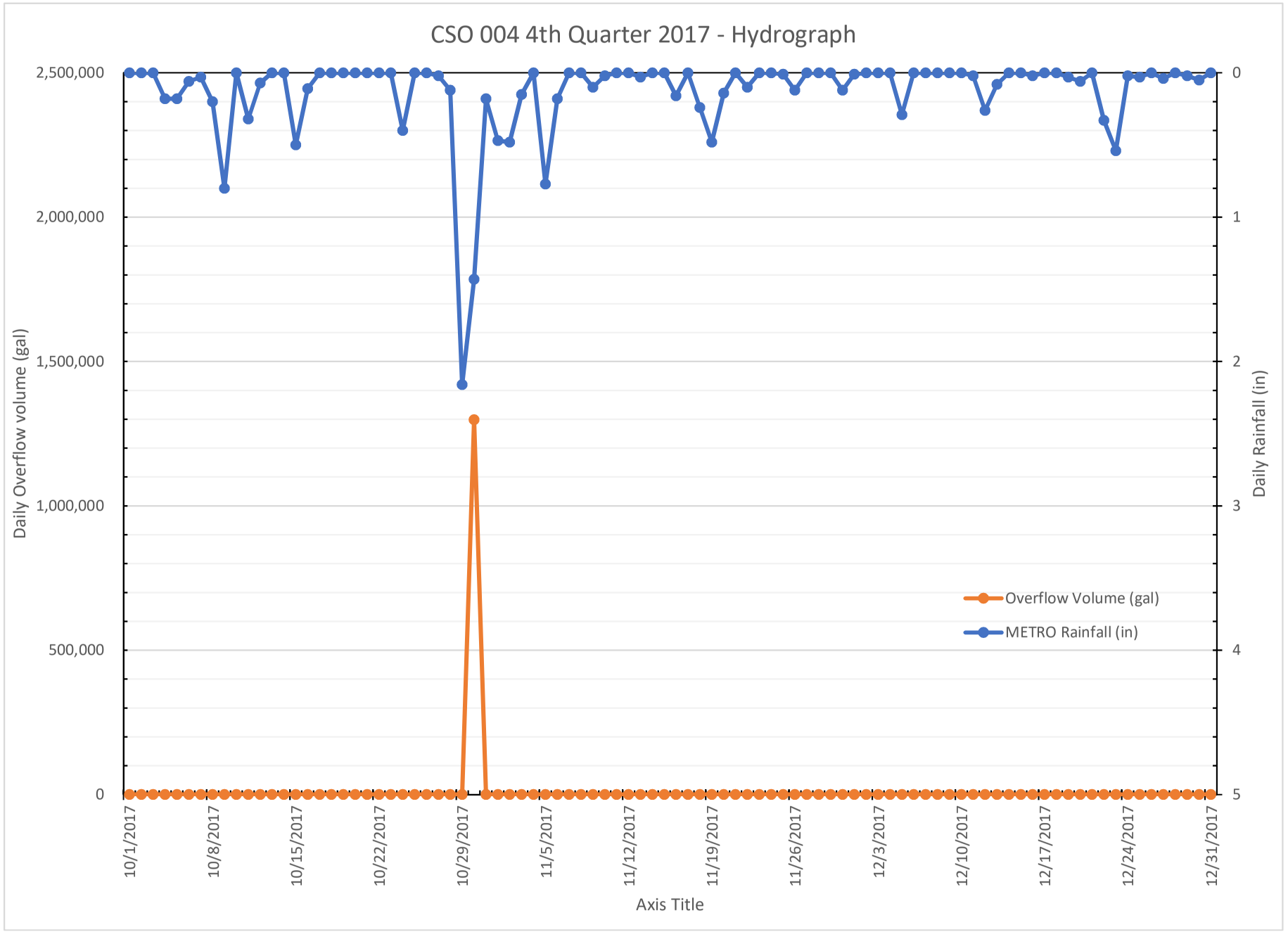
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

October	1,298,674	6.76
November	0	3.57
December	0	1.80

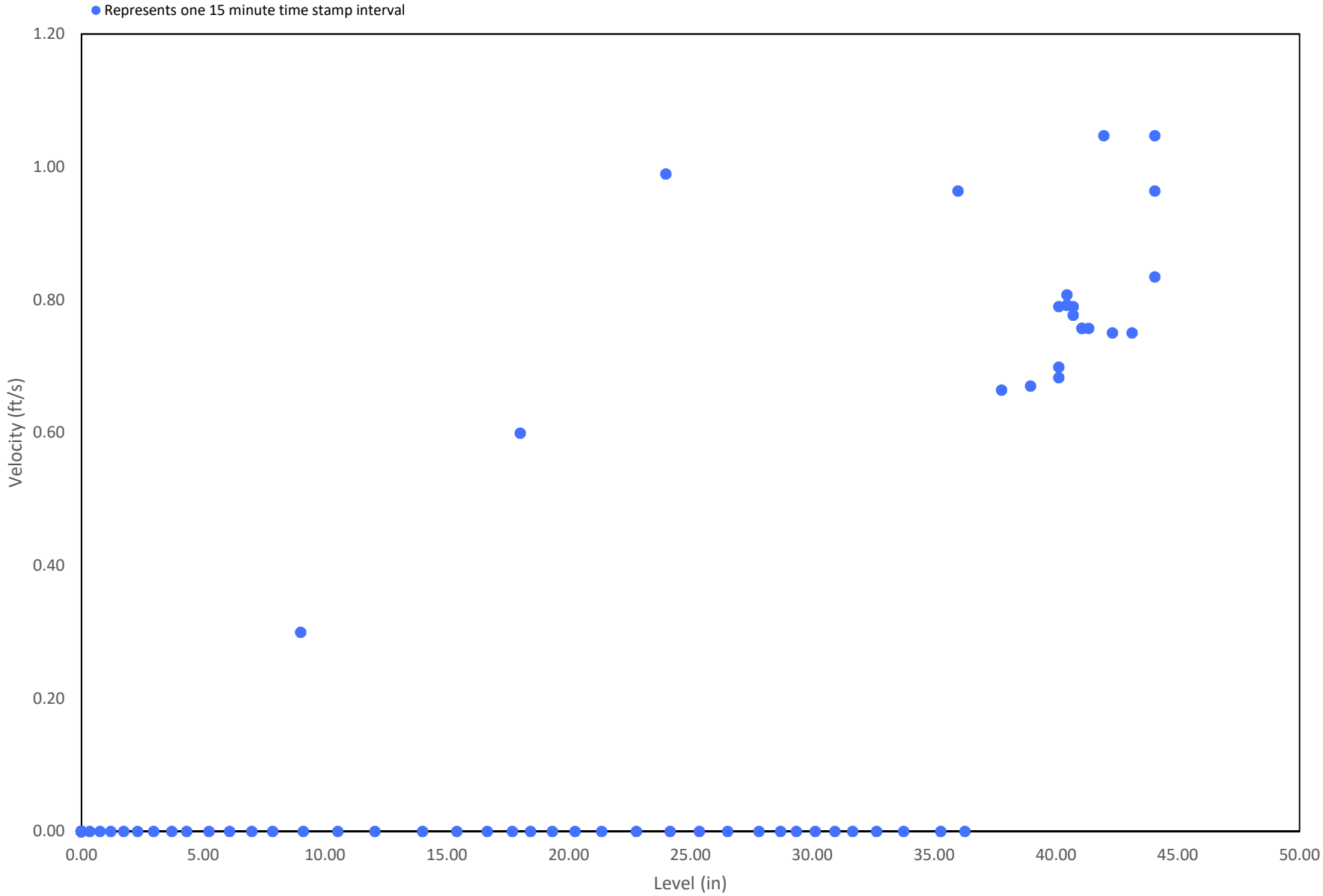
4Q Total	1,298,674	12.13

Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 004 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
1
2
3
4
5
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)

CSO 004 4th Quarter 2017 - Scattergraph



CSO 014 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	0	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	0	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	0	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	0	2.16	0.27	
10/30/2017	689,330	1.43	0.49	
10/31/2017	0	0.18	0.07	
11/1/2017	0	0.47	N/A[1]	
11/2/2017	0	0.48	N/A[1]	
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	0	0.77	0.25	
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	

CSO 014 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	
12/23/2017	0	0.54	0.09	

CSO 014 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

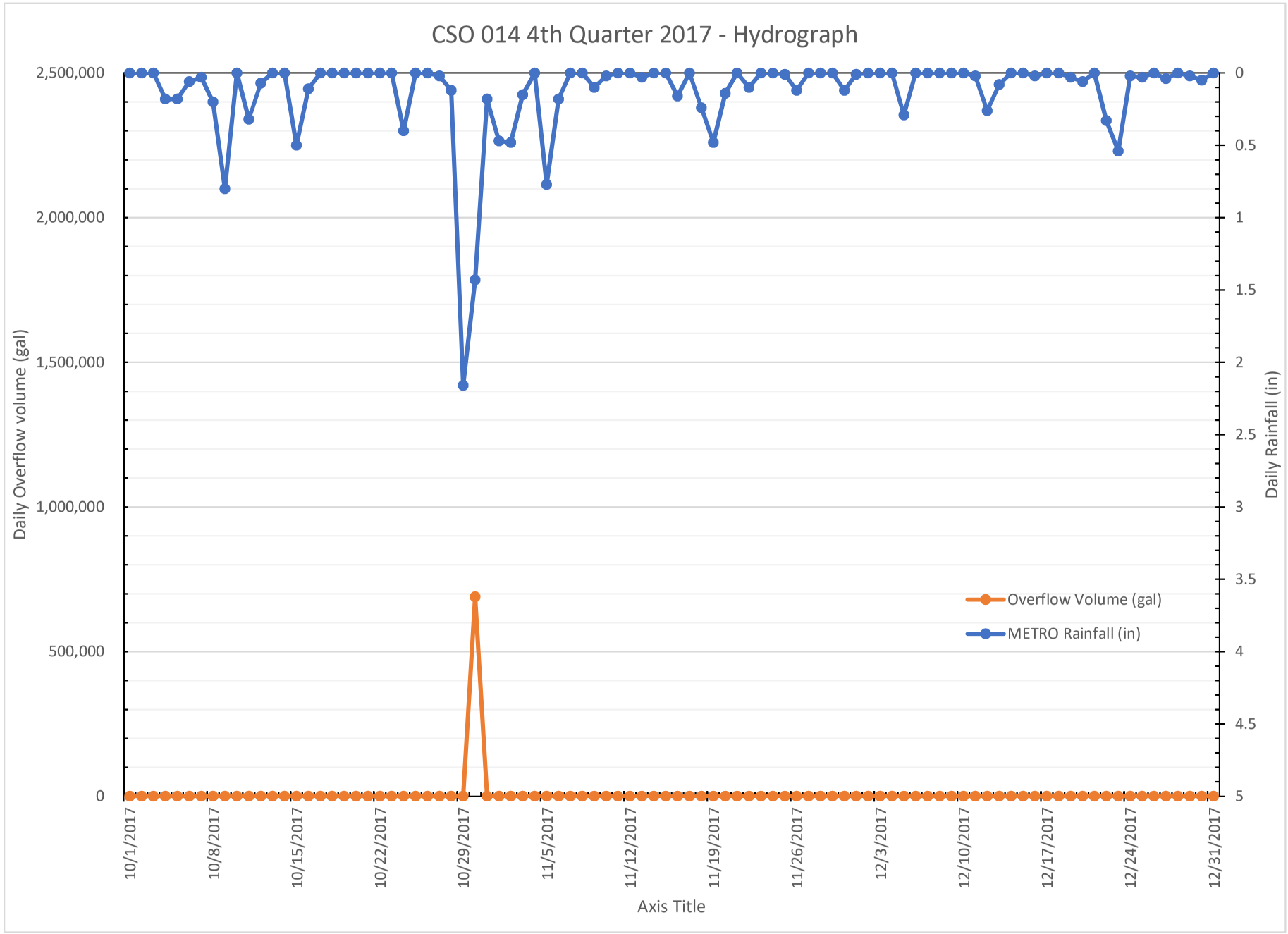
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.4
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

October	689,330	6.76
November	0	3.57
December	0	1.80

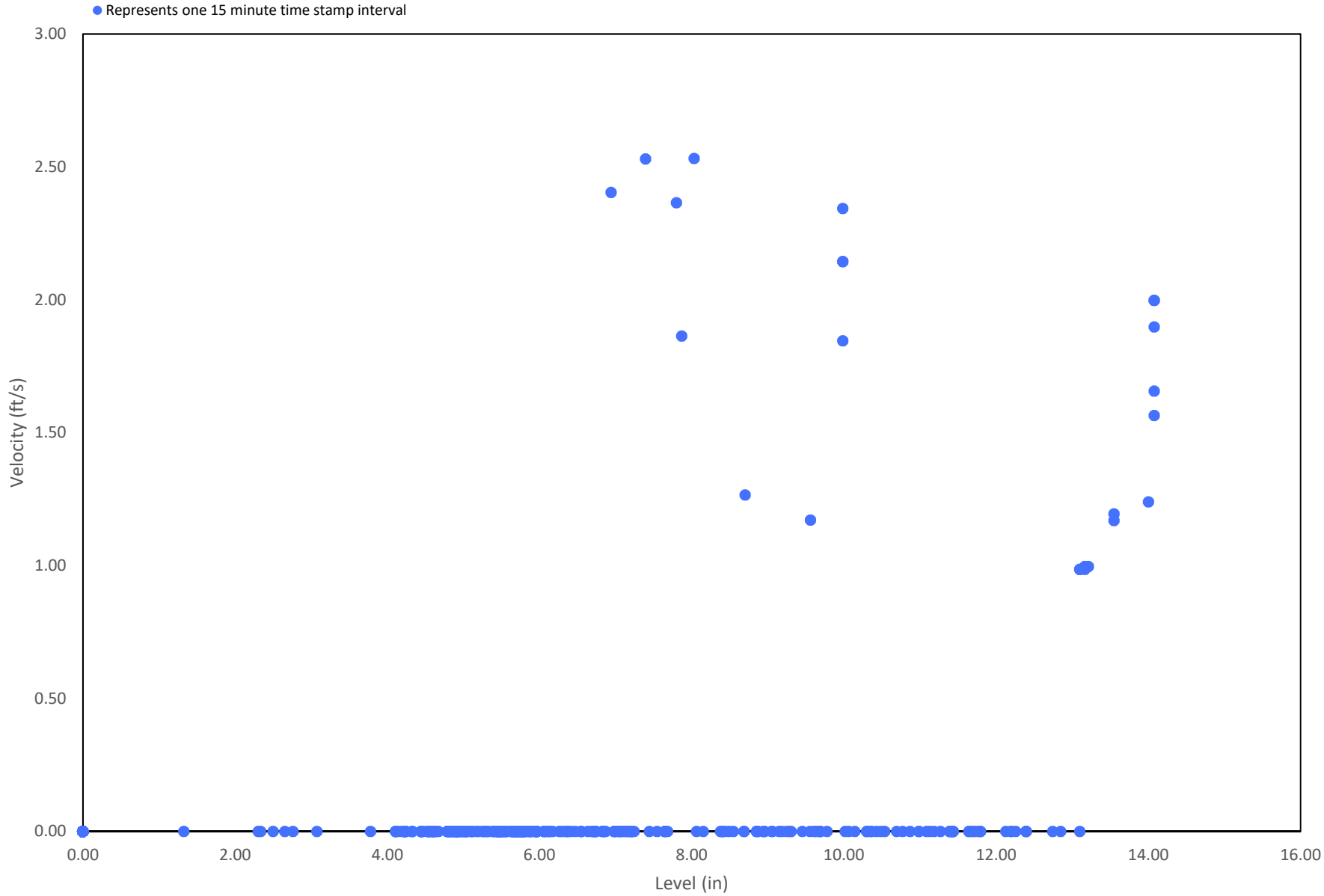
4Q Total	689,330	12.13

Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 014 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
Overflow Volume (gal)
METRO Rainfall (in)
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017
Axis Title

CSO 014 4th Quarter 2017 - Scattergraph



CSO 027 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	276,438	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04 [1]	
10/13/2017	0	0	0 [1]	
10/14/2017	0	0	0 [1]	
10/15/2017	0	0.5	0.46 [1]	
10/16/2017	0	0.11	0.07 [1]	
10/17/2017	0	0	0 [1]	
10/18/2017	0	0	0 [1]	
10/19/2017	0	0	0 [1]	
10/20/2017	0	0	0 [1]	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	124,059	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	3,553,463	2.16	0.27	
10/30/2017	10,362,795	1.43	0.49	
10/31/2017	0	0.18	0.07	
11/1/2017	0	0.47	N/A [2]	
11/2/2017	0	0.48	N/A [2]	
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	0	0.77	0.25	
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	

CSO 027 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
11/11/2017	0	0	0	
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	

CSO 027 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.1
12/23/2017	0	0.54	0.09	
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

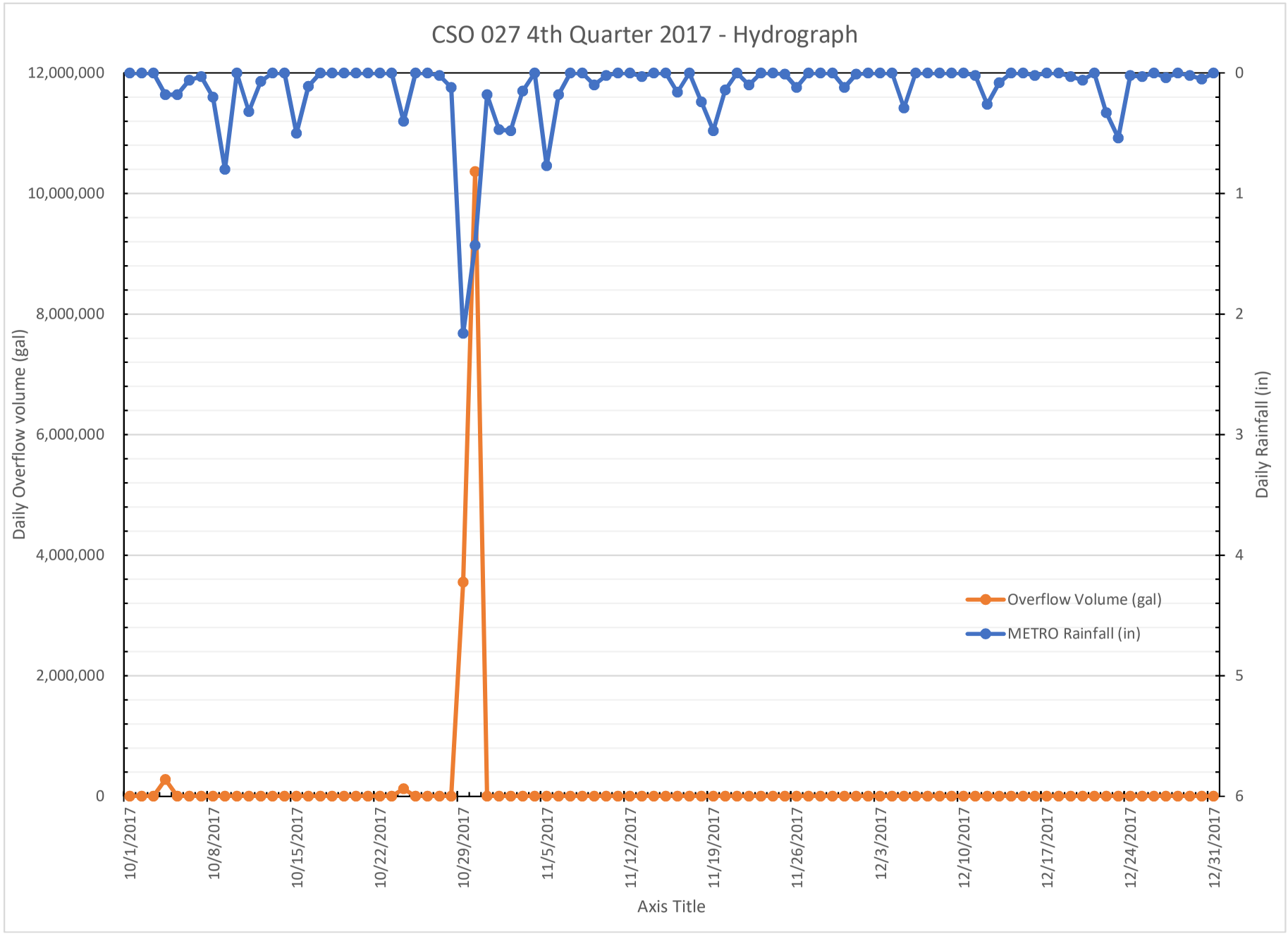
October	14,316,754	6.76
November	0	3.57
December	0	1.80

4Q Total	14,316,754	12.13

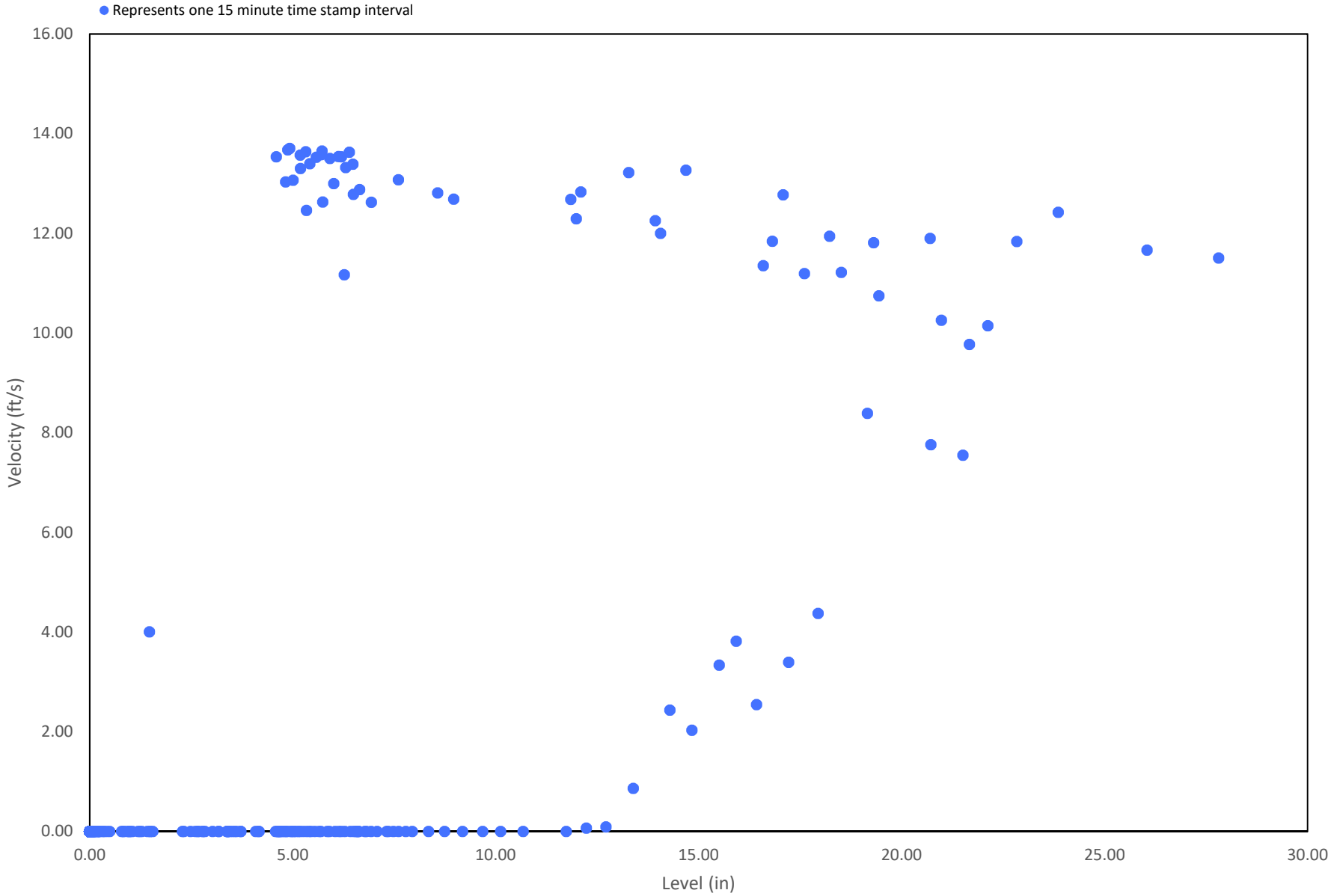
Notes:

1 - Days of service interruption for one or both of the meters.

2 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 027 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
0
0
1
2
3
4
5
6
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)

CSO 027 4th Quarter 2017 - Scattergraph



CSO 034 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				>0.9
10/1/2017	0	0	0	
10/2/2017	0	0	0	*1*
10/3/2017	0	0	0	*2*
10/4/2017	0	0.18	0.11	*2*
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	0	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	0	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	0	2.16	0.27	
10/30/2017	66,627	1.43	0.49	
10/31/2017	55,253	0.18	0.07	
11/1/2017	0	0.47	N/A	*1*
11/2/2017	0	0.48	N/A	*1*
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	0	0.77	0.25	
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	

CSO 034 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				>0.9
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	

CSO 034 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

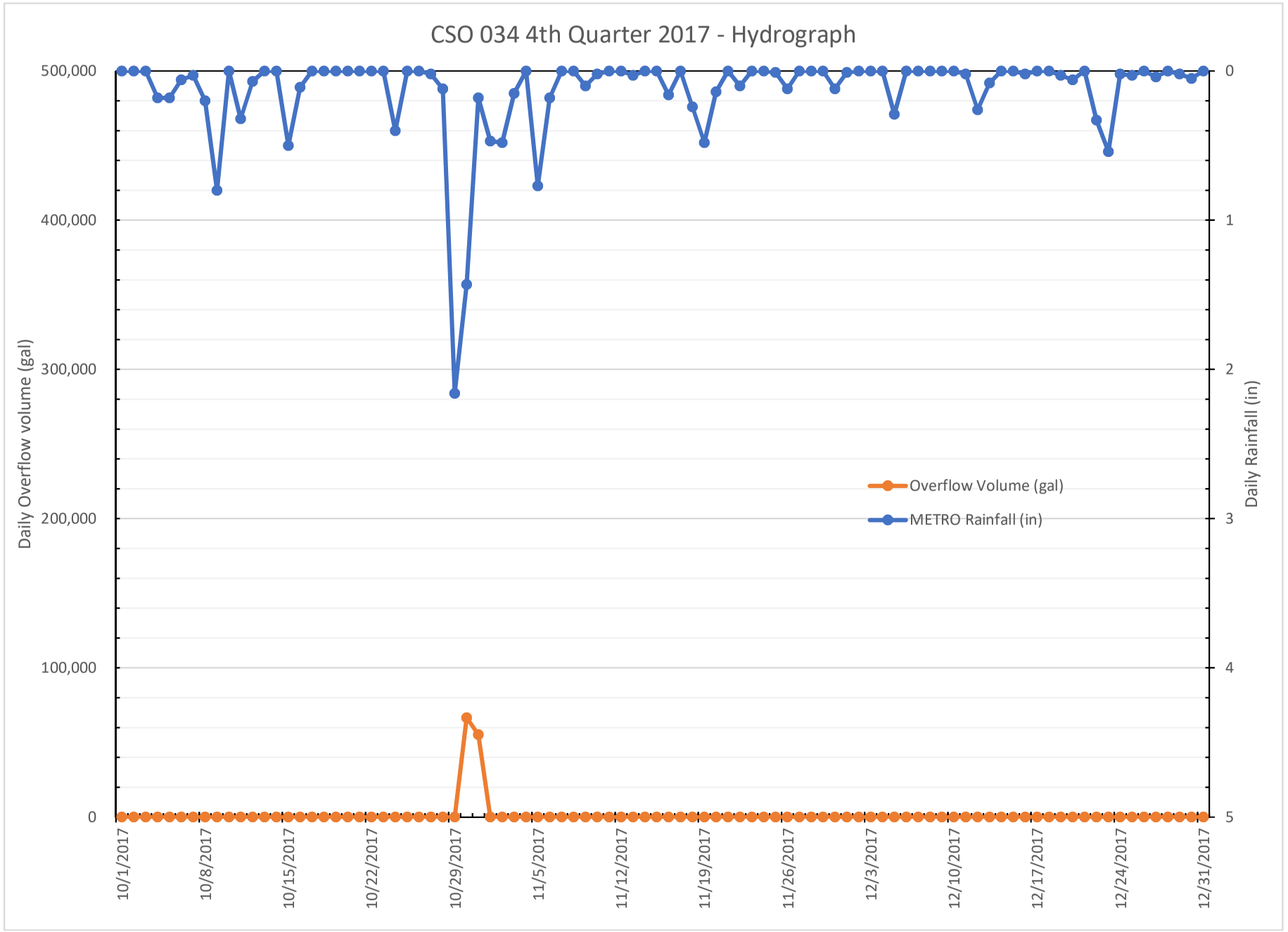
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				>0.9
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	
12/23/2017	0	0.54	0.09	
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

October	121,880	6.76
November	0	3.57
December	0	1.80

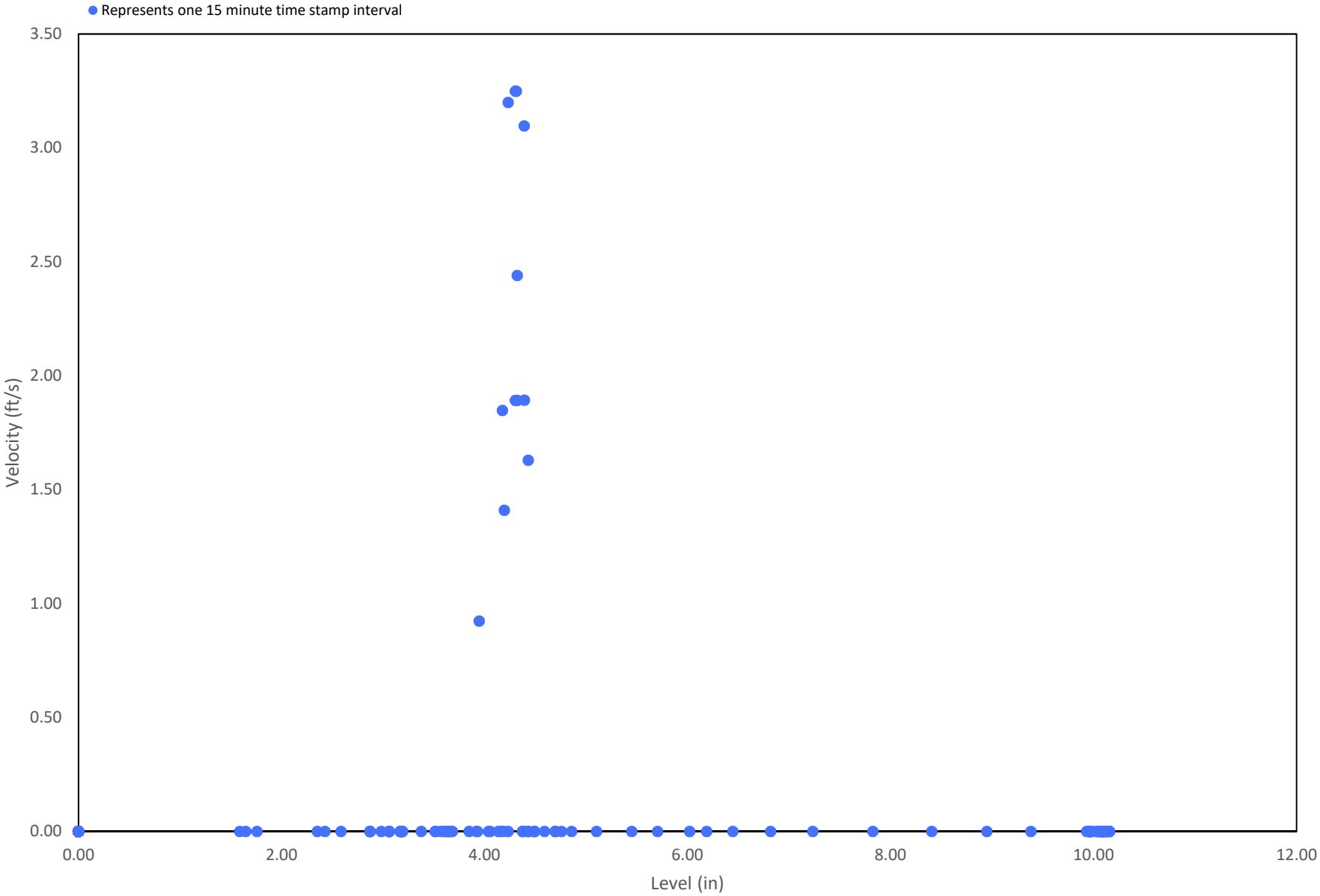
4Q Total	121,880	12.13

Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 034 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
500,000
400,000
300,000
200,000
100,000
0
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017

CSO 034 4th Quarter 2017 - Scattergraph



CSO 052 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				0.1
10/1/2017	0	0	0	
10/2/2017	0	0	0	[2]
10/3/2017	0	0	0	
10/4/2017	2,205	0.18	0.11	
10/5/2017	4,249	0.18	0.23	[3]
10/6/2017	0	0.06	0.04	[2]
10/7/2017	0	0.03	0.02	
10/8/2017	1,382	0.2	0.16	
10/9/2017	7,189	0.8	0.17	
10/10/2017	0	0	0	[2]
10/11/2017	4,957	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	[2]
10/15/2017	4,307	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	5,773	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	31,107	2.16	0.27	
10/30/2017	4,325	1.43	0.49	
10/31/2017	2,149	0.18	0.07	
11/1/2017	4,074	0.47	N/A	[1]
11/2/2017	27,689	0.48	N/A	[1]
11/3/2017	970	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	14,707	0.77	0.25	
11/6/2017	1,725	0.18	0.13	
11/7/2017	0	0	0	

CSO 052 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				0.1
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	[4]
11/15/2017	--	0	0	[4]
11/16/2017	--	0.16	0.08	[4]
11/17/2017	--	0	0	[4]
11/18/2017	--	0.24	0.11	[4]
11/19/2017	--	0.48	0.12	[4]
11/20/2017	--	0.14	0.05	[4]
11/21/2017	--	0	0	[4]
11/22/2017	--	0.1	0.05	[4]
11/23/2017	--	0	0	[4]
11/24/2017	--	0	0	[4]
11/25/2017	--	0.01	0.01	[4]
11/26/2017	--	0.12	0.05	[4]
11/27/2017	--	0	0	[4]
11/28/2017	--	0	0	[4]
11/29/2017	--	0	0	[4]
11/30/2017	--	0.12	0.08	[4]
12/1/2017	--	0.01	0.01	[4]
12/2/2017	--	0	0	[4]
12/3/2017	--	0	0	[4]
12/4/2017	--	0	0	[4]
12/5/2017	--	0.29	0.16	[4]
12/6/2017	--	0	0	[4]
12/7/2017	--	0	0	[4]
12/8/2017	--	0	0	[4]
12/9/2017	--	0	0	[4]
12/10/2017	--	0	0	[4]
12/11/2017	--	0.02	0.01	[4]
12/12/2017	--	0.26	0.06	[4]
12/13/2017	--	0.08	0.03	[4]

CSO 052 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr) ***Notes***
				0.1
12/14/2017	--	0	0	[4]
12/15/2017	--	0	0	[4]
12/16/2017	--	0.02	0.01	[4]
12/17/2017	--	0	0	[4]
12/18/2017	--	0	0	[4]
12/19/2017	--	0.03	0.01	[4]
12/20/2017	--	0.06	0.03	[4]
12/21/2017	--	0	0	[4]
12/22/2017	--	0.33	0.04	[4]
12/23/2017	--	0.54	0.09	[4]
12/24/2017	--	0.02	0.02	[4]
12/25/2017	--	0.03	0.02	[4]
12/26/2017	--	0	0	[4]
12/27/2017	--	0.04	0.02	[4]
12/28/2017	--	0	0	[4]
12/29/2017	--	0.02	0.01	[4]
12/30/2017	--	0.05	0.02	[4]
12/31/2017	--	0	0	[4]

October	67,643	6.76
November	49,165	3.57
December	0	1.80

4Q Total	116,808	12.13

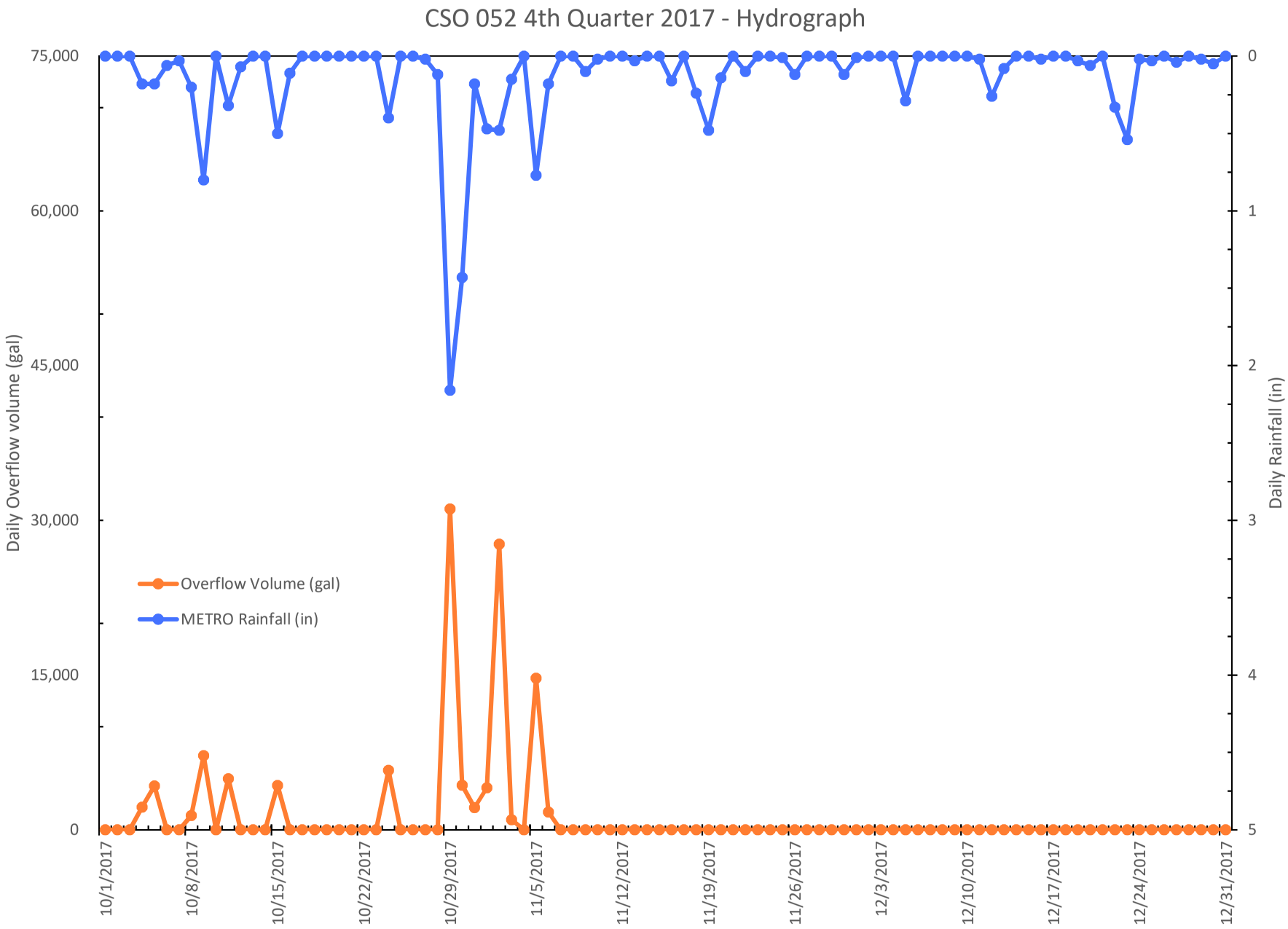
Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.

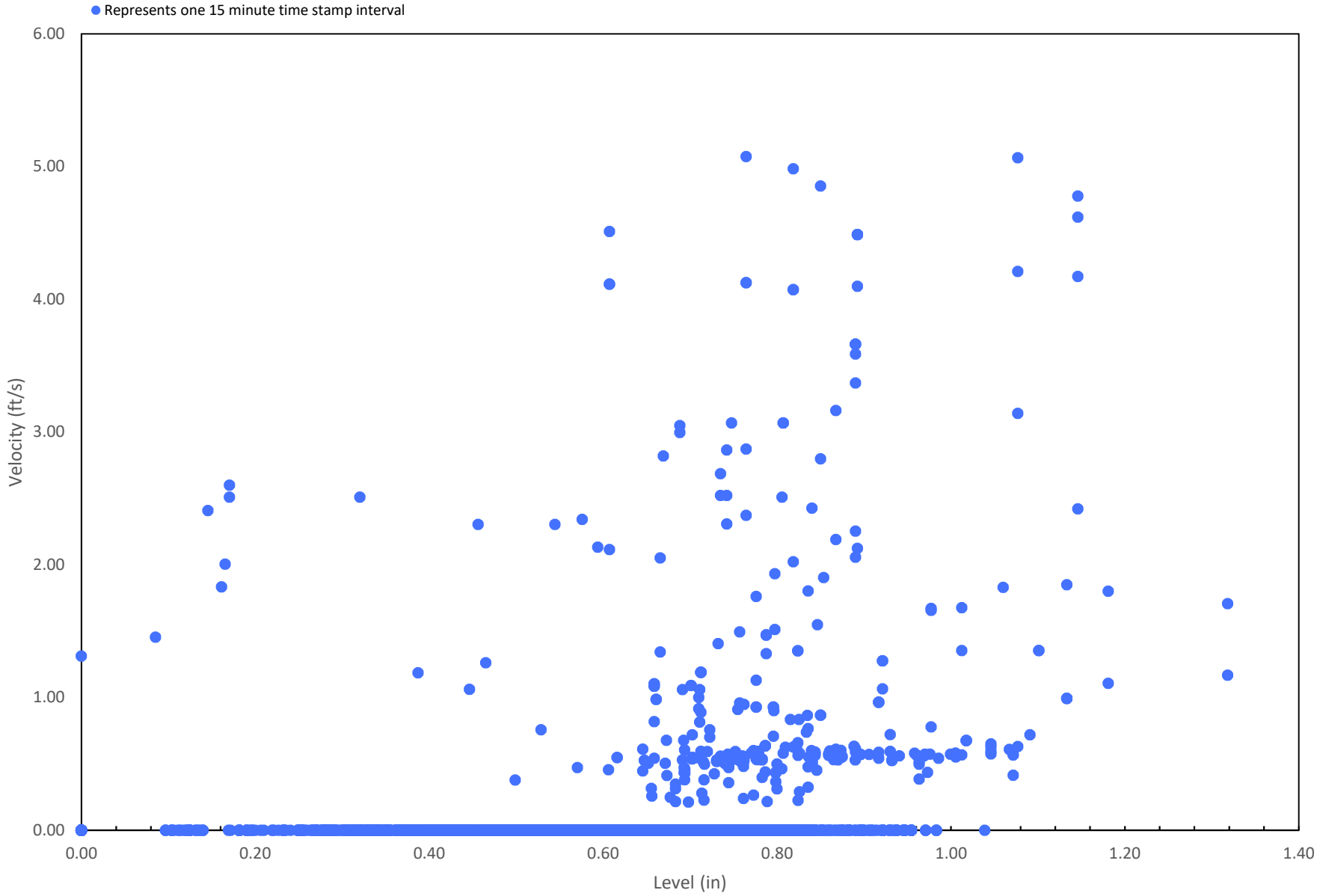
2 - Overflow volume measured not consistent with a rainfall event.

3 - Overflow event began on the previous day.

4 - A service interruption began on 11/14 and the A/V meter probe was replaced on 11/17. Data from the two meters did not correlate well afterwards through 12/31/17. Therefore, the quality of data is suspect for the period of 11/14/17 through 12/31/17.


CSO 052 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
75,000
60,000
45,000
30,000
15,000
0
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017

CSO 052 4th Quarter 2017 - Scattergraph



CSO 060 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	108,890	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	42,159	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	112,860	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	177,215	2.16	0.27	
10/30/2017	1,043,202	1.43	0.49	
10/31/2017	0	0.18	0.07	
11/1/2017	0	0.47	N/A	[1]
11/2/2017	161,101	0.48	N/A	[1]
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	116,735	0.77	0.25	
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	

CSO 060 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
11/11/2017	0	0	0	
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	

CSO 060 DAILY OVERFLOW VOLUME
4th QUARTER 2017

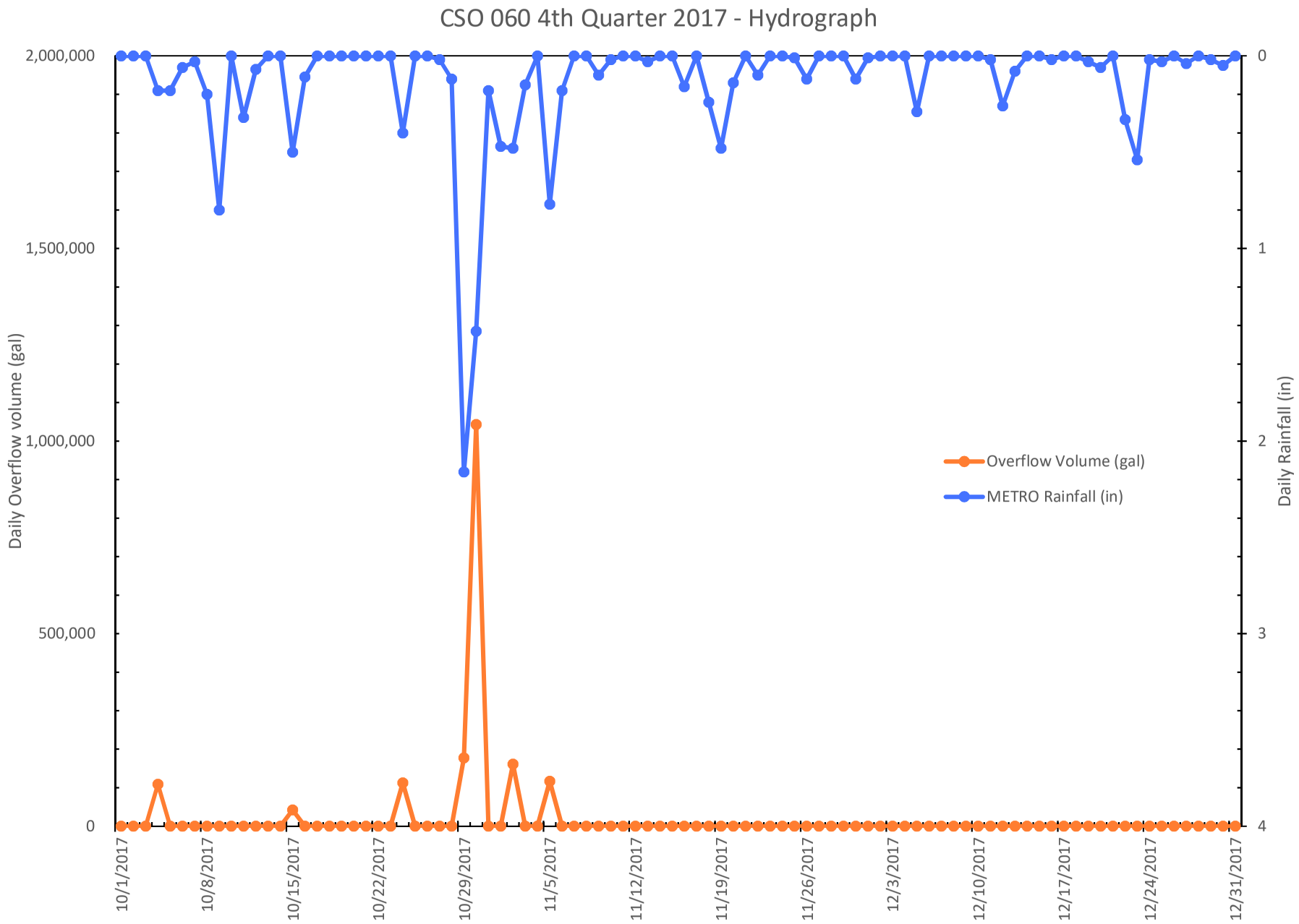
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
12/22/2017	0	0.33	0.04	
12/23/2017	0	0.54	0.09	
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

October	1,484,326	6.76
November	277,836	3.57
December	0	1.80

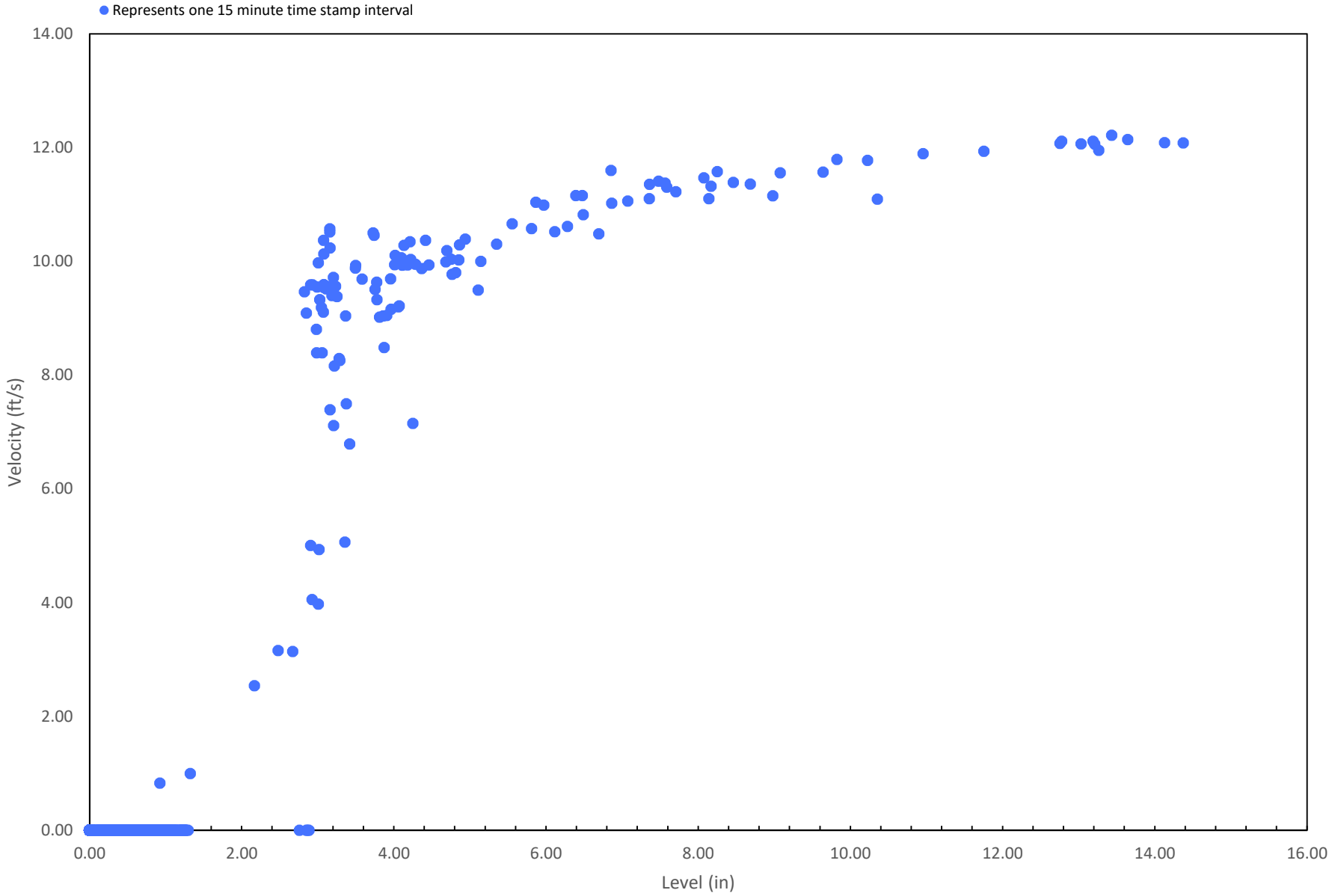
4Q Total	1,762,163	12.13

Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 060 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
1
2
3
4
Overflow Volume (gal)
METRO Rainfall (in)
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017

CSO 060 4th Quarter 2017 - Scattergraph



CSO 063 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	0	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	0	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	0	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	0	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	0	2.16	0.27	
10/30/2017	0	1.43	0.49	[2]
10/31/2017	0	0.18	0.07	
11/1/2017	0	0.47	N/A	[1]
11/2/2017	0	0.48	N/A	[1 2]
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	0	0.77	0.25	[2]

CSO 063 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
11/6/2017	0	0.18	0.13	
11/7/2017	0	0	0	
11/8/2017	0	0	0 [2]	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	

CSO 063 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				>0.9
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	
12/23/2017	0	0.54	0.09	
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

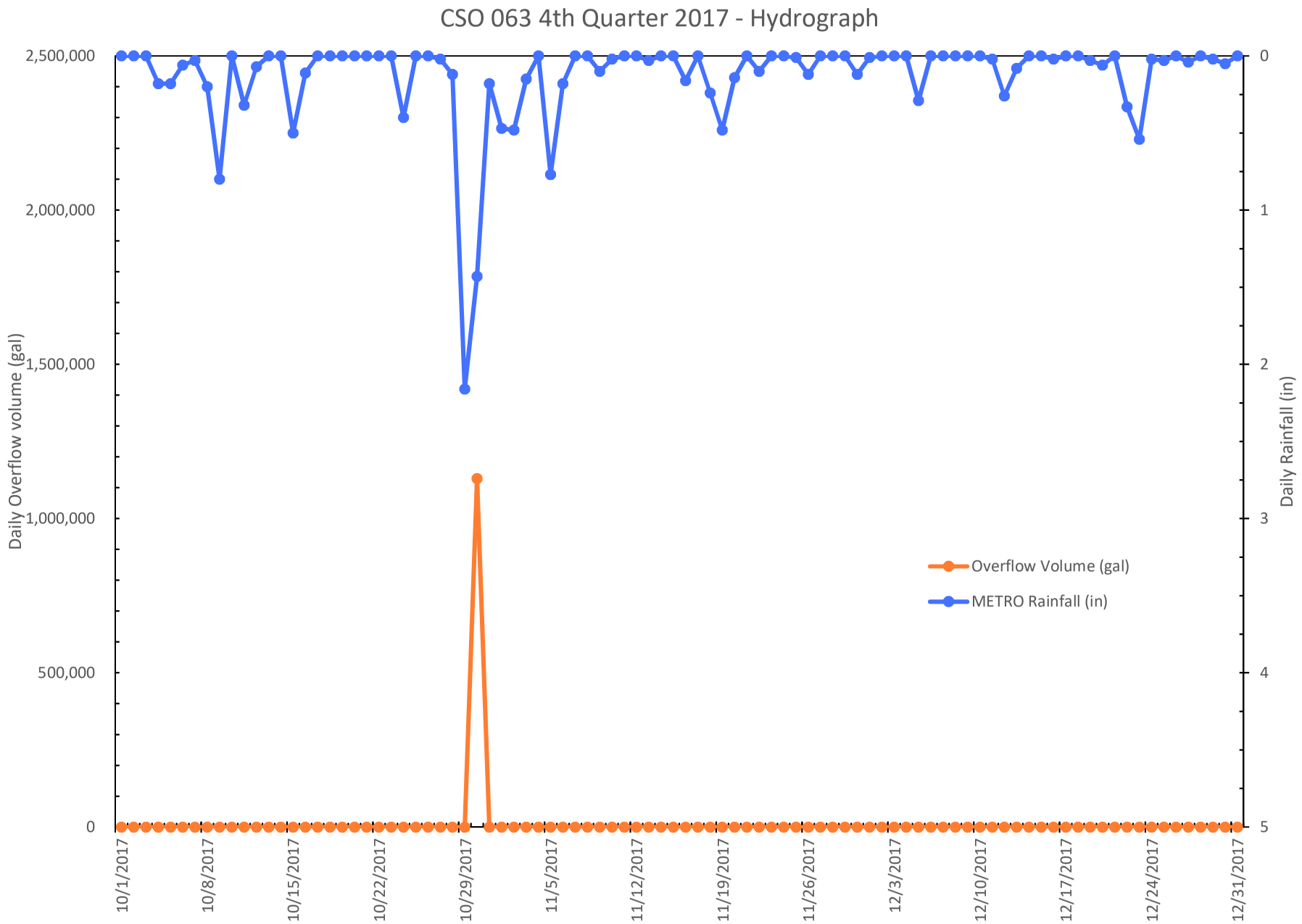
October	1,484,326	6.76
November	277,836	3.57
December	0	1.80

4Q Total	1,762,163	12.13

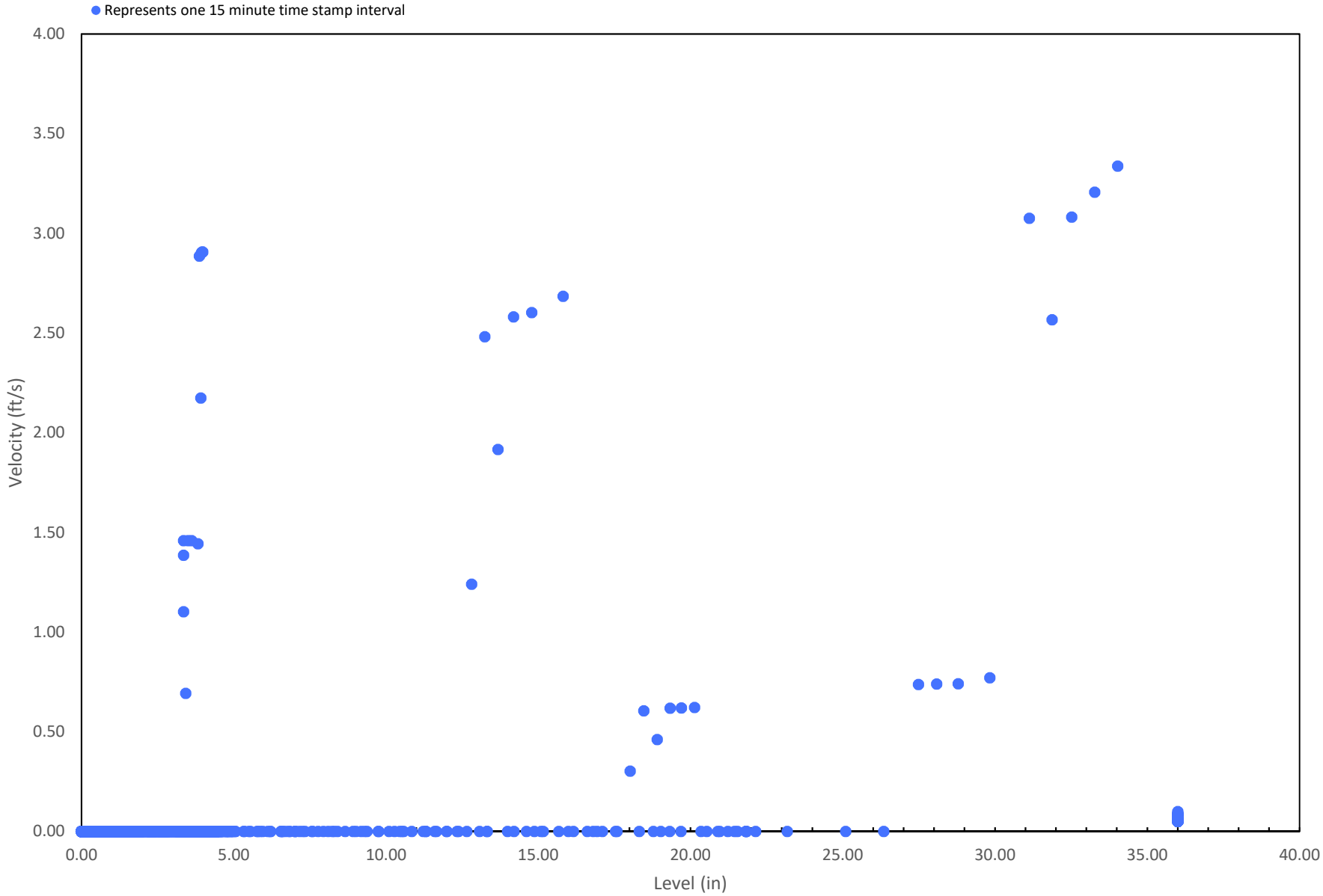
Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.

2 - Overflow volume on these days could not be verified.


CSO 063 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
Daily Rainfall (in)
0
1
2
3
4
5
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017
Overflow Volume (gal)
METRO Rainfall (in)

CSO 063 4th Quarter 2017 - Scattergraph



CSO 075 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
10/1/2017	0	0	0	
10/2/2017	0	0	0	
10/3/2017	0	0	0	
10/4/2017	0	0.18	0.11	
10/5/2017	0	0.18	0.23	
10/6/2017	0	0.06	0.04	
10/7/2017	0	0.03	0.02	
10/8/2017	0	0.2	0.16	
10/9/2017	56,152	0.8	0.17	
10/10/2017	0	0	0	
10/11/2017	0	0.32	0.12	
10/12/2017	0	0.07	0.04	
10/13/2017	0	0	0	
10/14/2017	0	0	0	
10/15/2017	16,331	0.5	0.46	
10/16/2017	0	0.11	0.07	
10/17/2017	0	0	0	
10/18/2017	0	0	0	
10/19/2017	0	0	0	
10/20/2017	0	0	0	
10/21/2017	0	0	0	
10/22/2017	0	0	0	
10/23/2017	0	0	0	
10/24/2017	88,547	0.4	0.3	
10/25/2017	0	0	0	
10/26/2017	0	0	0	
10/27/2017	0	0.02	0.02	
10/28/2017	0	0.12	0.04	
10/29/2017	1,285,736	2.16	0.27	
10/30/2017	487,456	1.43	0.49	
10/31/2017	0	0.18	0.07	
11/1/2017	0	0.47	N/A	*1*
11/2/2017	219,255	0.48	N/A	*1*
11/3/2017	0	0.15	0.09	
11/4/2017	0	0	0	
11/5/2017	192,284	0.77	0.25	
11/6/2017	0	0.18	0.13	

CSO 075 DAILY OVERFLOW VOLUME
4th QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
11/7/2017	0	0	0	
11/8/2017	0	0	0	
11/9/2017	0	0.1	0.08	
11/10/2017	0	0.02	0.02	
11/11/2017	0	0	0	
11/12/2017	0	0	0	
11/13/2017	0	0.03	0.02	
11/14/2017	0	0	0	
11/15/2017	0	0	0	
11/16/2017	0	0.16	0.08	
11/17/2017	0	0	0	
11/18/2017	0	0.24	0.11	
11/19/2017	0	0.48	0.12	
11/20/2017	0	0.14	0.05	
11/21/2017	0	0	0	
11/22/2017	0	0.1	0.05	
11/23/2017	0	0	0	
11/24/2017	0	0	0	
11/25/2017	0	0.01	0.01	
11/26/2017	0	0.12	0.05	
11/27/2017	0	0	0	
11/28/2017	0	0	0	
11/29/2017	0	0	0	
11/30/2017	0	0.12	0.08	
12/1/2017	0	0.01	0.01	
12/2/2017	0	0	0	
12/3/2017	0	0	0	
12/4/2017	0	0	0	
12/5/2017	0	0.29	0.16	
12/6/2017	0	0	0	
12/7/2017	0	0	0	
12/8/2017	0	0	0	
12/9/2017	0	0	0	
12/10/2017	0	0	0	
12/11/2017	0	0.02	0.01	
12/12/2017	0	0.26	0.06	
12/13/2017	0	0.08	0.03	

CSO 075 DAILY OVERFLOW VOLUME
4th QUARTER 2017

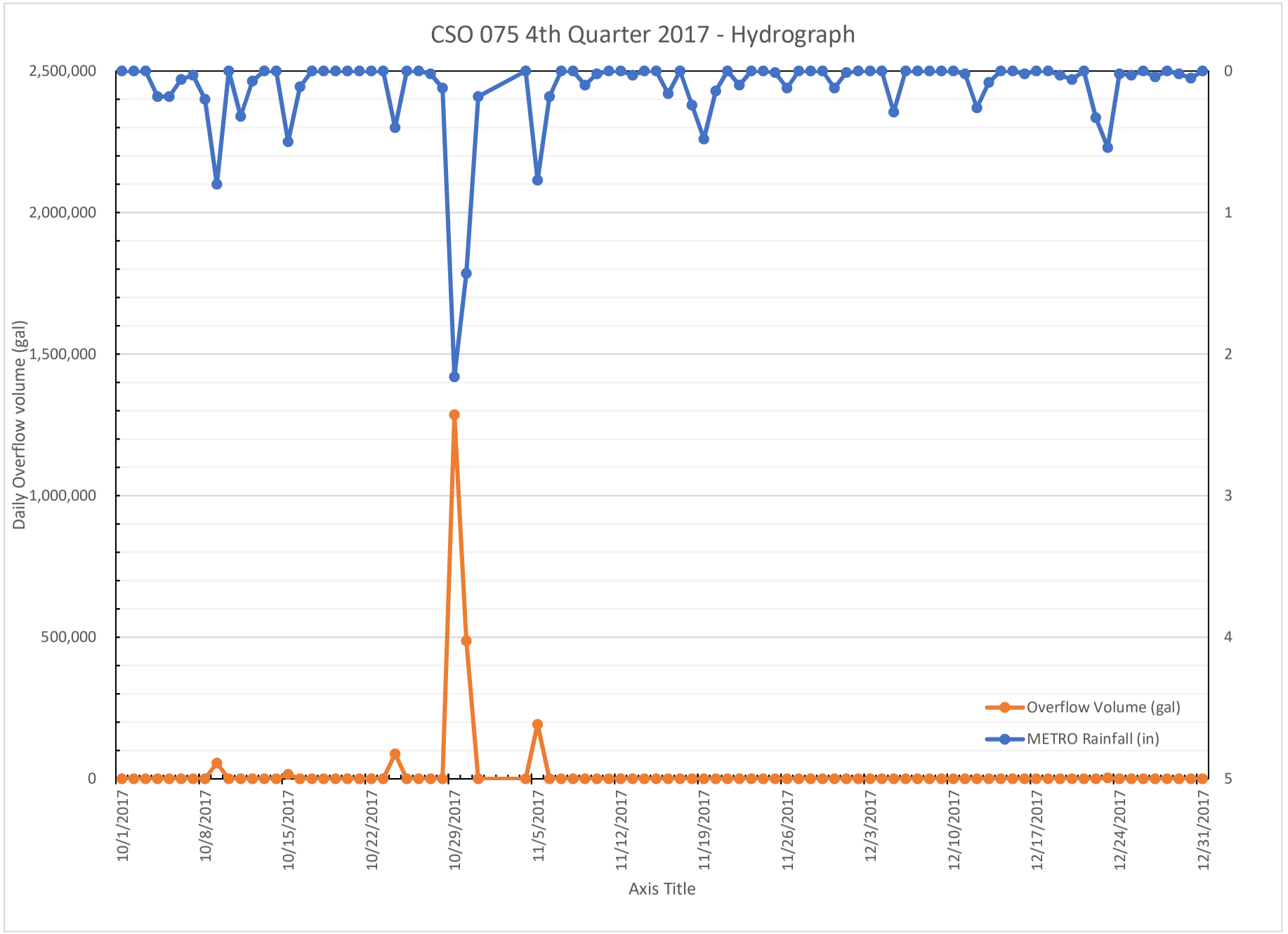
Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.2
12/14/2017	0	0	0	
12/15/2017	0	0	0	
12/16/2017	0	0.02	0.01	
12/17/2017	0	0	0	
12/18/2017	0	0	0	
12/19/2017	0	0.03	0.01	
12/20/2017	0	0.06	0.03	
12/21/2017	0	0	0	
12/22/2017	0	0.33	0.04	
12/23/2017	3,448	0.54	0.09	
12/24/2017	0	0.02	0.02	
12/25/2017	0	0.03	0.02	
12/26/2017	0	0	0	
12/27/2017	0	0.04	0.02	
12/28/2017	0	0	0	
12/29/2017	0	0.02	0.01	
12/30/2017	0	0.05	0.02	
12/31/2017	0	0	0	

October	1,934,222	6.76
November	411,539	3.57
December	3,448	1.80

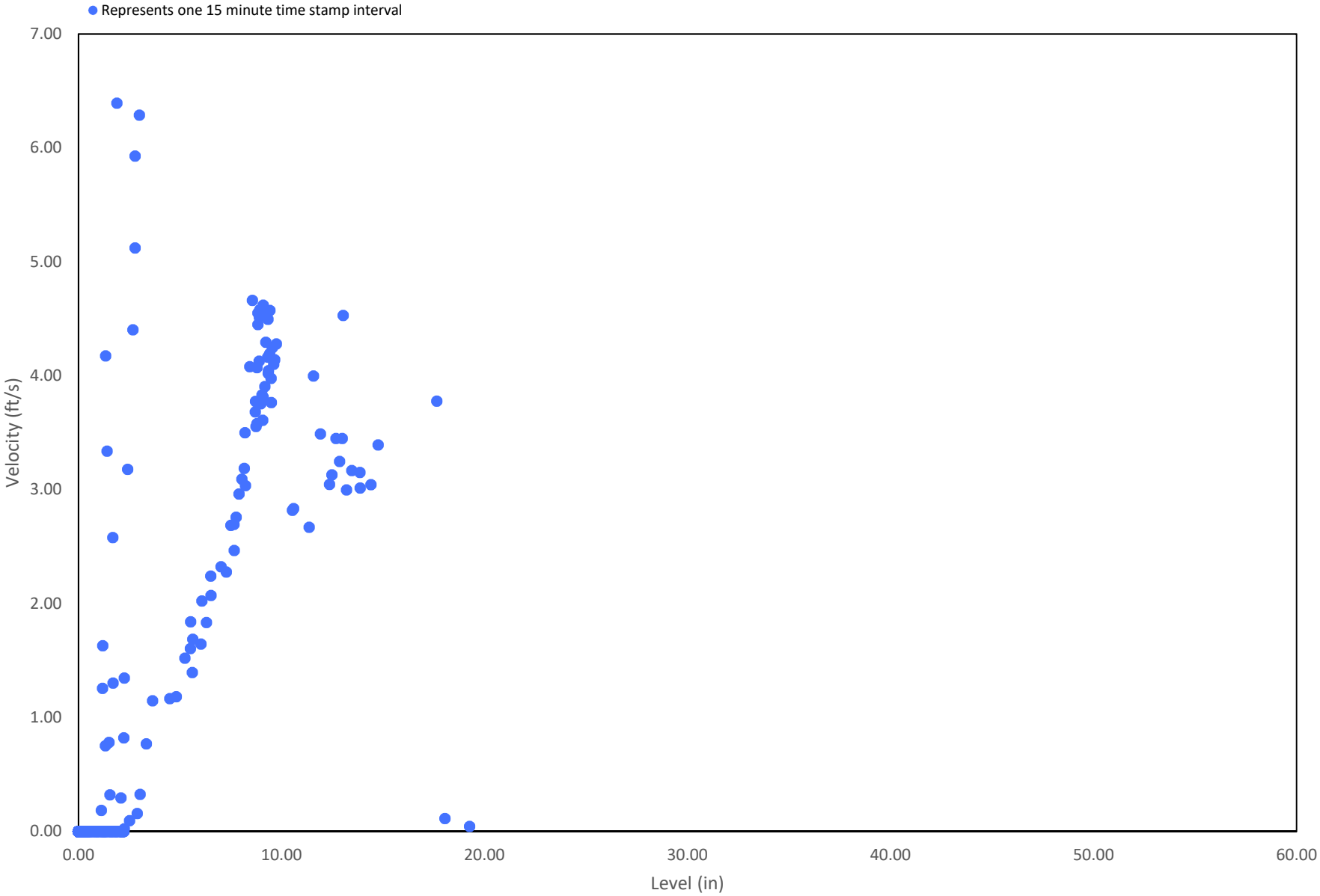
4Q Total	2,349,209	12.13

Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.


CSO 075 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
0
1
2
3
4
5
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017
Axis Title
Overflow Volume (gal)
METRO Rainfall (in)

CSO 075 4th Quarter 2017 - Scattergraph



CSO 078 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
10/1/2017	21,380	0	0	[2]
10/2/2017	22,634	0	0	[2]
10/3/2017	20,437	0	0	[2]
10/4/2017	26,378	0.18	0.11	[2]
10/5/2017	54,742	0.18	0.23	[2]
10/6/2017	55,130	0.06	0.04	[2]
10/7/2017	34,386	0.03	0.02	[2]
10/8/2017	20,701	0.2	0.16	[2]
10/9/2017	22,185	0.8	0.17	[2]
10/10/2017	22,357	0	0	[2]
10/11/2017	18,688	0.32	0.12	[2]
10/12/2017	20,638	0.07	0.04	[2]
10/13/2017	20,808	0	0	[2]
10/14/2017	57,442	0	0	[2]
10/15/2017	25,819	0.5	0.46	[2]
10/16/2017	41,142	0.11	0.07	[2]
10/17/2017	19,676	0	0	[2]
10/18/2017	20,725	0	0	[2]
10/19/2017	21,570	0	0	[2]
10/20/2017	17,422	0	0	[2]
10/21/2017	16,706	0	0	[2]
10/22/2017	26,249	0	0	[2]
10/23/2017	56,761	0	0	[2]
10/24/2017	18,801	0.4	0.3	[2]
10/25/2017	20,938	0	0	[2]
10/26/2017	21,190	0	0	[2]
10/27/2017	22,524	0.02	0.02	[2]
10/28/2017	21,154	0.12	0.04	[2]
10/29/2017	21,308	2.16	0.27	[2]
10/30/2017	72,395	1.43	0.49	[2]
10/31/2017	23,221	0.18	0.07	[2]
11/1/2017	17,929	0.47	N/A	[1]
11/2/2017	25,634	0.48	N/A	[1 2]
11/3/2017	26,356	0.15	0.09	[2]
11/4/2017	28,681	0	0	[2]
11/5/2017	26,267	0.77	0.25	[2]

CSO 078 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
11/6/2017	27,331	0.18	0.13	[2]
11/7/2017	23,967	0	0	[2]
11/8/2017	22,406	0	0	[2]
11/9/2017	23,221	0.1	0.08	[2]
11/10/2017	22,731	0.02	0.02	[2]
11/11/2017	24,068	0	0	[2]
11/12/2017	22,275	0	0	[2]
11/13/2017	18,178	0.03	0.02	[2]
11/14/2017	21,030	0	0	[2]
11/15/2017	21,612	0	0	[2]
11/16/2017	22,318	0.16	0.08	[2]
11/17/2017	24,207	0	0	[2]
11/18/2017	23,578	0.24	0.11	[2]
11/19/2017	25,706	0.48	0.12	[2]
11/20/2017	26,787	0.14	0.05	[2]
11/21/2017	24,347	0	0	[2]
11/22/2017	24,095	0.1	0.05	[2]
11/23/2017	20,391	0	0	[2]
11/24/2017	20,702	0	0	[2]
11/25/2017	21,992	0.01	0.01	[2]
11/26/2017	23,857	0.12	0.05	[2]
11/27/2017	24,169	0	0	[2]
11/28/2017	25,800	0	0	[2]
11/29/2017	7,988	0	0	[2]
11/30/2017	--	0.12	0.08	[3]
12/1/2017	--	0.01	0.01	[3]
12/2/2017	--	0	0	[3]
12/3/2017	--	0	0	[3]
12/4/2017	--	0	0	[3]
12/5/2017	--	0.29	0.16	[3]
12/6/2017	--	0	0	[3]
12/7/2017	--	0	0	[3]
12/8/2017	--	0	0	[3]
12/9/2017	--	0	0	[3]
12/10/2017	--	0	0	[3]
12/11/2017	--	0.02	0.01	[3]

CSO 078 DAILY OVERFLOW VOLUME
4TH QUARTER 2017

Date	Overflow Volume (gal)	METRO Rainfall (in)	METRO Rainfall Hourly Max (in/hr)	CSO Trigger (in/hr)
				0.6
12/12/2017	--	0.26	0.06	3
12/13/2017	--	0.08	0.03	3
12/14/2017	--	0	0	3
12/15/2017	--	0	0	3
12/16/2017	--	0.02	0.01	3
12/17/2017	--	0	0	3
12/18/2017	--	0	0	3
12/19/2017	--	0.03	0.01	3
12/20/2017	--	0.06	0.03	3
12/21/2017	--	0	0	3
12/22/2017	--	0.33	0.04	3
12/23/2017	--	0.54	0.09	3
12/24/2017	--	0.02	0.02	3
12/25/2017	--	0.03	0.02	3
12/26/2017	--	0	0	3
12/27/2017	--	0.04	0.02	3
12/28/2017	--	0	0	4
12/29/2017	--	0.02	0.01	4
12/30/2017	--	0.05	0.02	4
12/31/2017	--	0	0	4

October	885,507	6.76
November	667,623	3.57
December	0	1.80

4Q Total	1,553,130	12.13

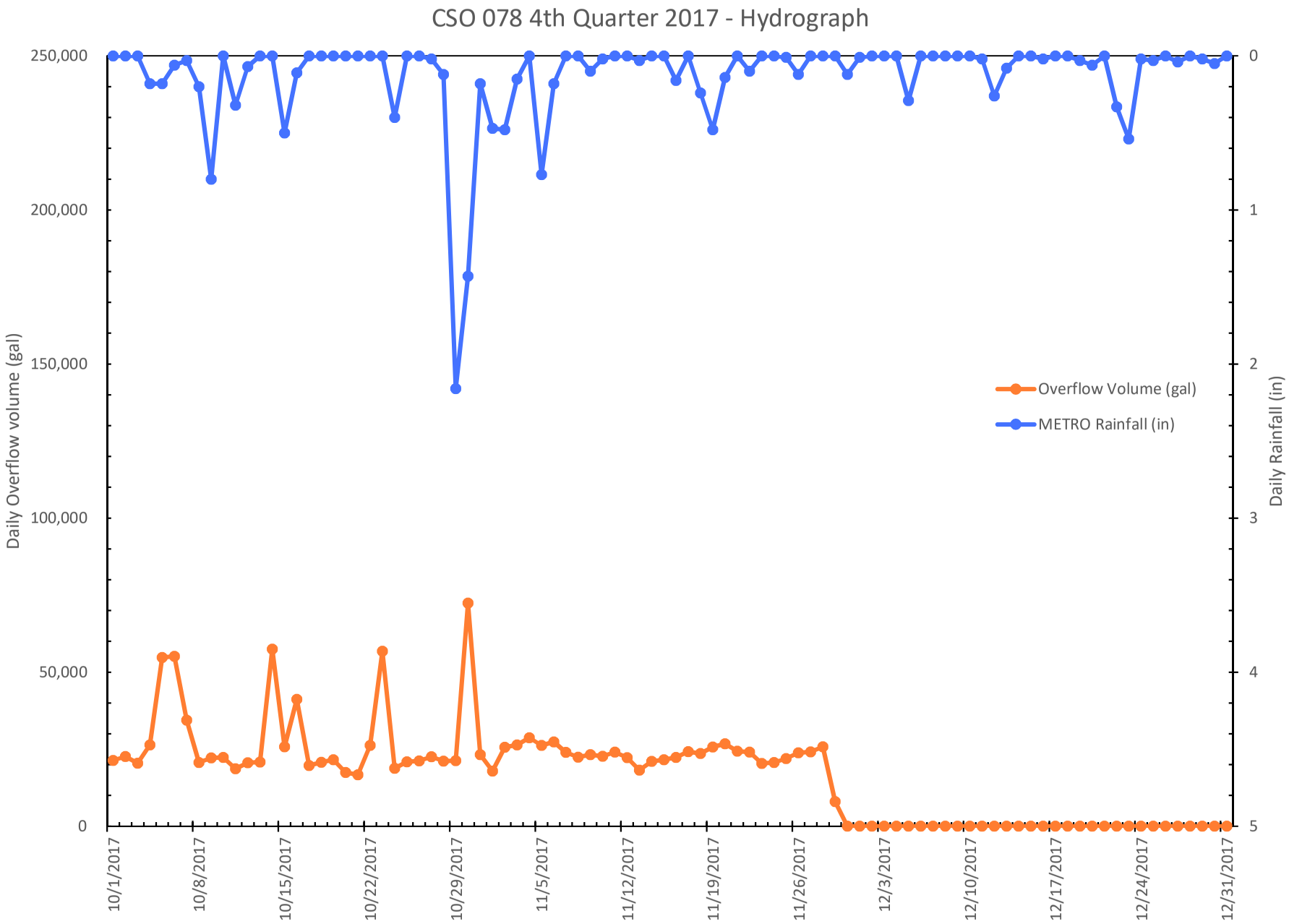
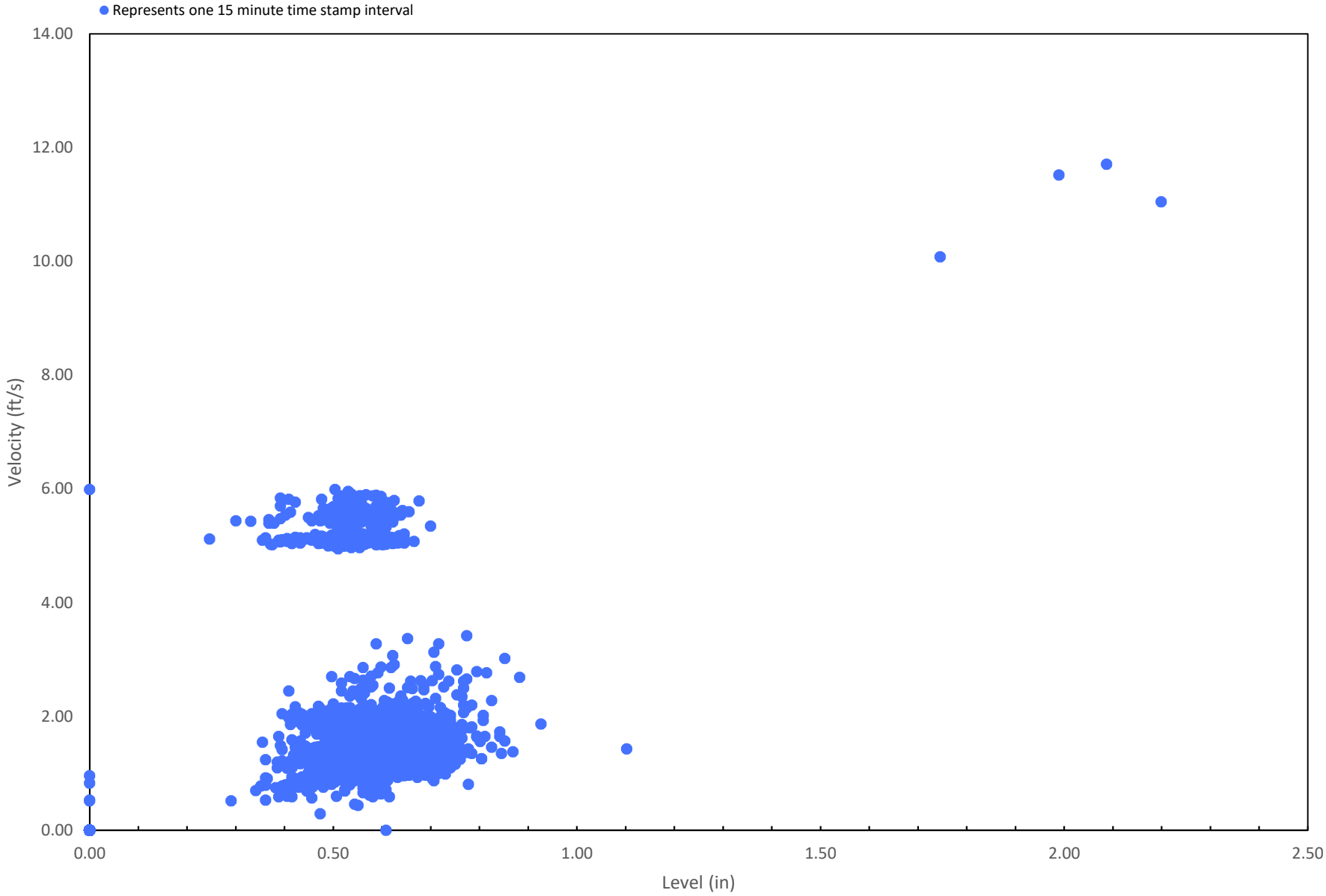
Notes:

1 - Metro Rainfall Data for 11/1/17 and 11/2/17 taken from NOAA. During software/program updates Metro Rainfall Data was inadverdently "lost". The hourly max data for 11/1/17 and 11/2/17 is not available.

2 - Due to manhole and overflow sewer configuration, the flow data measured does not represent actual overflow to Harbor Brook.

3 - Due to manhole reconstruction, meter was removed. Meter was moved upstream to the CSO 078 regulator manhole on 12/28/17.

4 - Due to apparent temperature probe failure for the new installation, data for 12/28 through 12/31 is suspect and not reported.


CSO 078 4th Quarter 2017 - Hydrograph
Daily Overflow volume (gal)
Daily Rainfall (in)
250,000
200,000
150,000
100,000
50,000
0
0
1
2
3
4
5
Overflow Volume (gal)
METRO Rainfall (in)
10/1/2017
10/8/2017
10/15/2017
10/22/2017
10/29/2017
11/5/2017
11/12/2017
11/19/2017
11/26/2017
12/3/2017
12/10/2017
12/17/2017
12/24/2017
12/31/2017

CSO 078 4th Quarter 2017 - Scattergraph