Downriver Utility Wastewater Authority

Downriver Sewage Disposal System
Annual System Monitoring Report for 2018

May 15, 2019

Applied Science, Inc.

VEOLIA

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1) INTRODUCTION

The annual system monitoring report provides a summary of the flow monitoring data for the Downriver Sewage Disposal System (DSDS) for January through December 2018. This report supersedes and consolidates the information previously issued in the partial year system monitoring reports for 2018. It is intended to provide the best available estimate of flow rates for the entire DSDS, each meter district and community during the dry and wet weather conditions that occurred in 2018. For some meter districts and communities, the data have been revised from the previously issued reports. The flow monitoring data were reviewed and missing or erroneous data have been estimated using fill-in techniques to provide a complete data set.

Figure 1-1 is a map of the DSDS showing the flow meter and level sensor locations, incremental meter districts, the interceptor and tunnel system, and the location of rain gauges that may be used to evaluate the wet weather monitoring data.

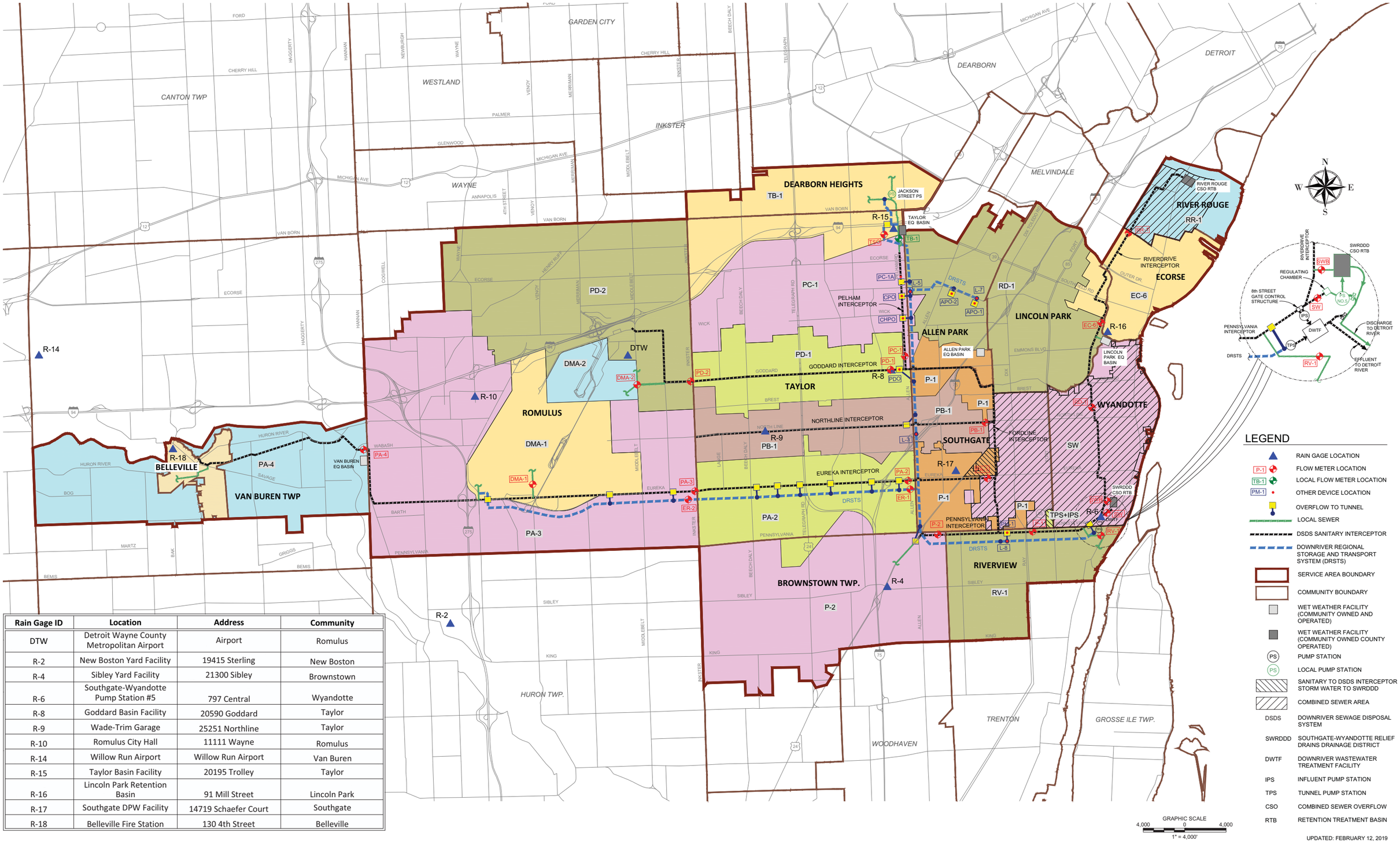
2) SYSTEM SUMMARY

Major findings from the DSDS 2018 system monitoring are presented in the following subsections: subsection A lists the noteworthy items which occurred in 2018, subsection B presents an overview of the DSDS performance for 2018, subsection C presents an overview of the controlled flow communities performance for 2018, and subsection D presents an overview of the non-controlled flow communities performance for 2018.

A) NOTEWORTHY ITEMS

1. The Maximum Allowable Flow Limits (MAFLs) listed in this report were updated to the values listed in Exhibits A and B of the Downriver Utility Wastewater Authority (DUWA) Service Agreement approved by the DUWA Board on October 13, 2016 and approved by the communities on March 21, 2017. The DUWA Board set these MAFLs to maintain good system performance for all DUWA communities.

   For the non-controlled flow communities, the updated dry weather MAFLs provided a slight increase compared to the former values. There was no update to the wet weather MAFLs for the non-controlled flow communities, or to the dry or wet weather MAFLs for the controlled flow communities.



Rain Gage ID	Location	Address	Community
DTW	Detroit Wayne County Metropolitan Airport	Airport	Romulus
R-2	New Boston Yard Facility	19415 Sterling	New Boston
R-4	Sibley Yard Facility	21300 Sibley	Brownstown
R-6	Southgate-Wyandotte Pump Station #5	797 Central	Wyandotte
R-8	Goddard Basin Facility	20590 Goddard	Taylor
R-9	Wade-Trim Garage	25251 Northline	Taylor
R-10	Romulus City Hall	11111 Wayne	Romulus
R-14	Willow Run Airport	Willow Run Airport	Van Buren
R-15	Taylor Basin Facility	20195 Trolley	Taylor
R-16	Lincoln Park Retention Basin	91 Mill Street	Lincoln Park
R-17	Southgate DPW Facility	14719 Schaefer Court	Southgate
R-18	Belleville Fire Station	130 4th Street	Belleville

	DESCRIPTION	CHECKED	APRVD	DATE
F				
E				
D				
C				
B				
A				
	REVISIONS			

DESIGN D. WIEBE
DRAFTING D. HEROLD-J
CHECKED D. WIEBE
APPROVED K. RIDGWAY
ISSUE DATE AUG 2017

DUWA

DOWNRIVER
SEWAGE DISPOSAL SYSTEM

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INCREMENTAL METER DISTRICTS &
INTERCEPTOR & METER LOCATIONS & RAIN GAGES
FOR 2018 SYSTEM MONITORING PLAN

SCALE: 1" = 4000'
JOB No. ASI #1510
FILE No.

FIGURE 1-1

Feb 11, 2019 – 2:15pm
K:\DWGFiles\2015\1510\DSDS System Monitoring Plan.dwg

2. On May 13, 2018, electrical bus duct A to the Influent Pump Station (IPS) failed at the Downriver Wastewater Treatment Facility (DWTF). This failure caused the entire IPS substation to fail, including the connection to the permanent onsite emergency generators at the DWTF. As a result, none of the IPS pumps could be run. Immediate changes to the operation of the DSDS and DWTF were made, including use of the pumps located in the Tunnel Pump Station (TPS) to pump wastewater to the DWTF.

   From May 13, 2018 through January 23, 2019, the DSDS operated under the "Emergency Operations Plan Supplement" which was finalized on July 12, 2018. This document was distributed to the DSDS Technical Committee and provides details of the modified operational procedures. The DWTF repairs were completed on January 23, 2019.

3. In October 2018, the City of Ecorse installed an orifice plate on its 36-inch connection to the Riverdrive Interceptor at White Street. This re-establishes the flow control at all locations that have been previously lost.

4. On February 6, 2019, the Technical Committee approved a new procedure for tracking MAFL compliance in the Riverdrive Interceptor. In the new procedure, the peak flow rate will be tabulated by meter for each significant/major storm event. Incremental peak flow rates for meter districts will only be estimated if the peak flow rate for any meter exceeds the MAFL by 5% or more.

5. The results of dye tests currently in-effect for DSDS meters are shown in Table 2-1 for reference. The data presented in this report reflects the results of these dye dilution tests.

B) DSDS OVERVIEW

1. The total precipitation at the Detroit Metropolitan Wayne County Airport (DTW) for the year was 43.81 inches, which is 10.34 inches above normal.

2. There were ten (10) significant storms in 2018. Significant storm events are defined as those with at least 0.5 inches of rainfall occurring on a single day with an event total of at least 1.0 inch of rainfall. Significant storm events are separated by at least 2 consecutive days without precipitation over 0.1 inches. This storm event definition is based on the arithmetic mean of the rainfall recorded by all rain gauges used in the analysis for that storm.

3. Of the significant storms, seven (7) of the largest were also defined as major storms. Major storm events are a subgroup of significant storm events which result in the peak hourly influent flow rate to the DWTF reaching or exceeding 175 million gallons per day (MGD). The average rainfall depths at DTW for the major storms are listed in Table 2-2.

Table 2-1
Downriver Sewage Disposal System
Dye Dilution Test Summary

Meter	Date	Adjustment Factor	Period Adjustment Factor Adjustment Factor
DMA-1	8/30/2018	0.85	0.85
DMA-2	9/24/2014	0.86	0.98
	8/1/2018	1.09	
EC-6	2/18/2014	0.70	0.70
P-1	9/16/2013	0.99	0.98
	8/7/2018	0.96	
P-2	9/18/2017	1.01	1.01
PA-1	11/6/2013	0.93	0.93
PA-2	11/4/2013	0.86	0.90
	9/18/2017	0.94	
PA-3	11/5/2013	1.00	0.99
	8/8/2018	0.98	
PA-4	4/4/2018	0.90	0.90
PB-1	9/18/2014	0.86	0.86
PC-1	9/25/2014	0.93	0.93
	8/9/2018	0.93	
PD-1	8/18/2015	0.76	0.76
	7/31/2018	0.76	
PD-2	11/26/2013	0.97	0.97
RD-1	4/6/2018	1.02	1.02
RR-1	2/19/2014	0.97	0.97
SW	11/12/2013	1.00 (with sludge accounted for)	1.00
TB-1	11/10/2014	1.05	1.05

Table 2-2
Downriver Sewage Disposal System
Rainfall Depths at DTW for Major Storms during 2018 in the DSDS Service Area

2018 Major Storm Event	2018 Significant Storm Event	Event Dates	Peak 24-hour Rainfall Depth (inches)	Total Rainfall Depth (inches)
A	1	2/19-21/2018	1.54	2.27
B	2	3/1/2018	1.42	1.42
C	3	4/14-15/2018	1.46	2.29
D	5	5/11-13/2018	2.61	3.15
E	7	7/31/2018-8/1/2018	3.00	3.00
F	8	9/24-25/2018	2.64	2.91
G	10	10/31/2018-11/2/2018	1.50	2.44

4. Table 2-3 lists the annual average flow rate and total flow volume for years 2013 through 2018. The total incoming flow rate to the DWTF is based on the interceptor system flow meters. The DWTF flow rate is based on the IPS and TPS and includes recycle flow rate. The total influent volume to the DWTF for 2018 was about 15% higher than the average volume for years 2013 through 2017. However, the total precipitation for 2018 was about 23% higher than the average precipitation for years 2013 through 2017.

Table 2-3
Downriver Sewage Disposal System
Annual Average Flow Rate and Volume for 2013 through 2018

Year	Total Precipitation at DTW (inches)	Annual Average Flow Rate (cfs)		Annual Flow Volume (MG)		Annual Flow Volume (MCF)	
		Influent to DWTF	DWTF Including Recycle (IPS + TPS)	Influent to DWTF	DWTF Including Recycle (IPS + TPS)	Influent to DWTF	DWTF Including Recycle (IPS + TPS)
2013	39.90	79.74	84.22	18,811	19,868	2,514,643	2,655,980
2014	37.57	78.40	85.20	18,495	20,098	2,472,357	2,686,713
2015	30.32	68.68	79.43	16,201	18,738	2,165,777	2,504,916
2016	34.69	74.84	81.87	17,703	19,365	2,366,537	2,588,743
2017	35.46	73.63	80.28	17,370	18,939	2,321,975	2,531,783
2018	43.81	86.08	96.51	20,305	22,766	2,714,445	3,043,389

5. Figures 2-1 through 2-4 plot the quarterly average influent flow rate (interceptor system flow meters) to the DWTF versus the quarterly total precipitation at DTW for years 2013 through 2018. These figures show the seasonal variation of the DSDS flow rate versus precipitation. The quarterly periods of April through June tend to have the highest influent flow rates and total precipitation. April through June 2018 had the highest quarterly influent flow rate to the DWTF and second highest precipitation at DTW over the last five years.

Figure 2-1
Downriver Sewage Disposal System
Average Influent Flow Rate to DWTF versus Total Precipitation at DTW
Quarter 1 January – March for 2013 through 2018

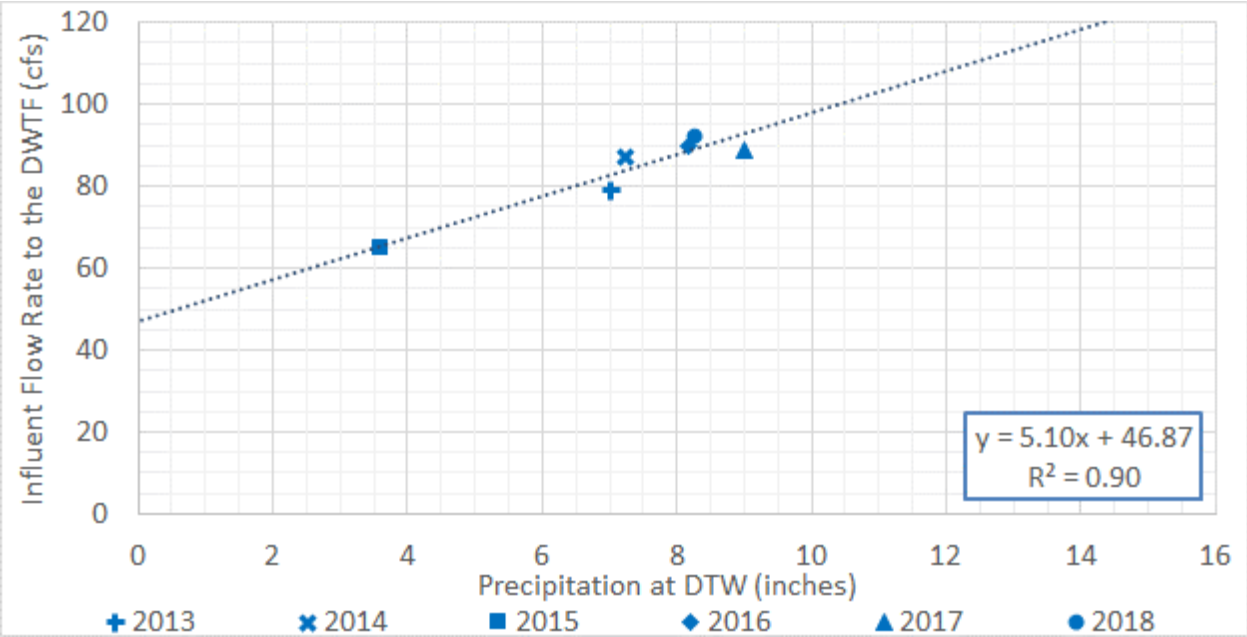


Figure 2-2
Downriver Sewage Disposal System
Average Influent Flow Rate to DWTF versus Total Precipitation at DTW
Quarter 2 April – June for 2013 through 2018

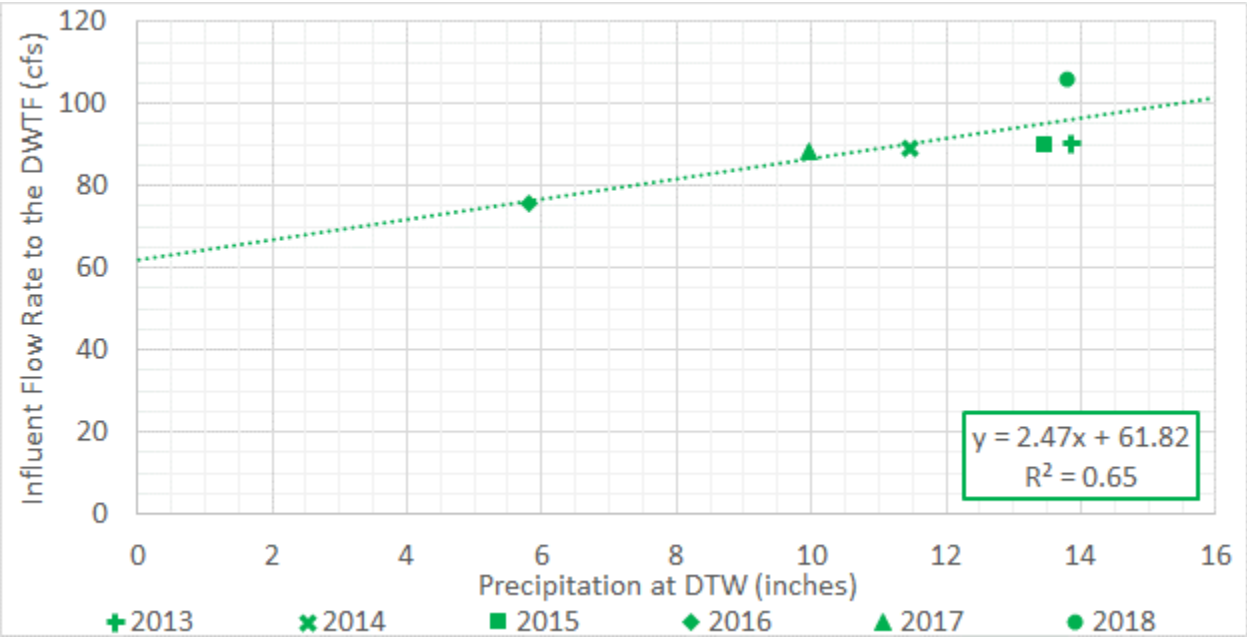


Figure 2-3
Downriver Sewage Disposal System
Average Influent Flow Rate to DWTF versus Total Precipitation at DTW
Quarter 3 July – September for 2013 through 2018

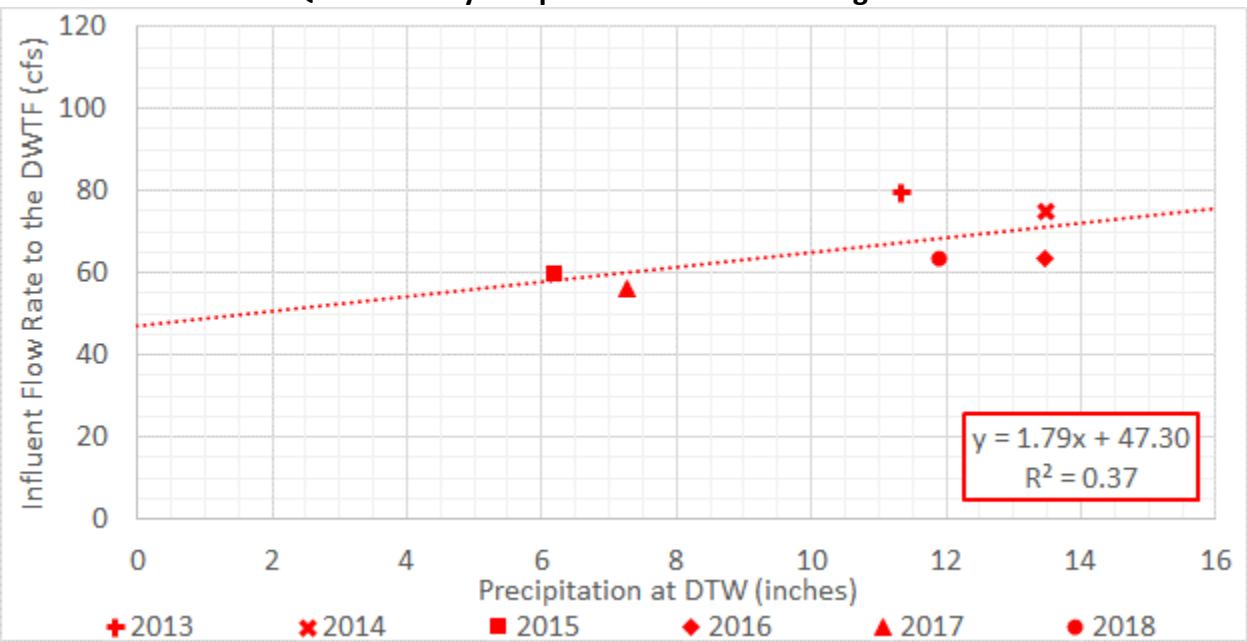
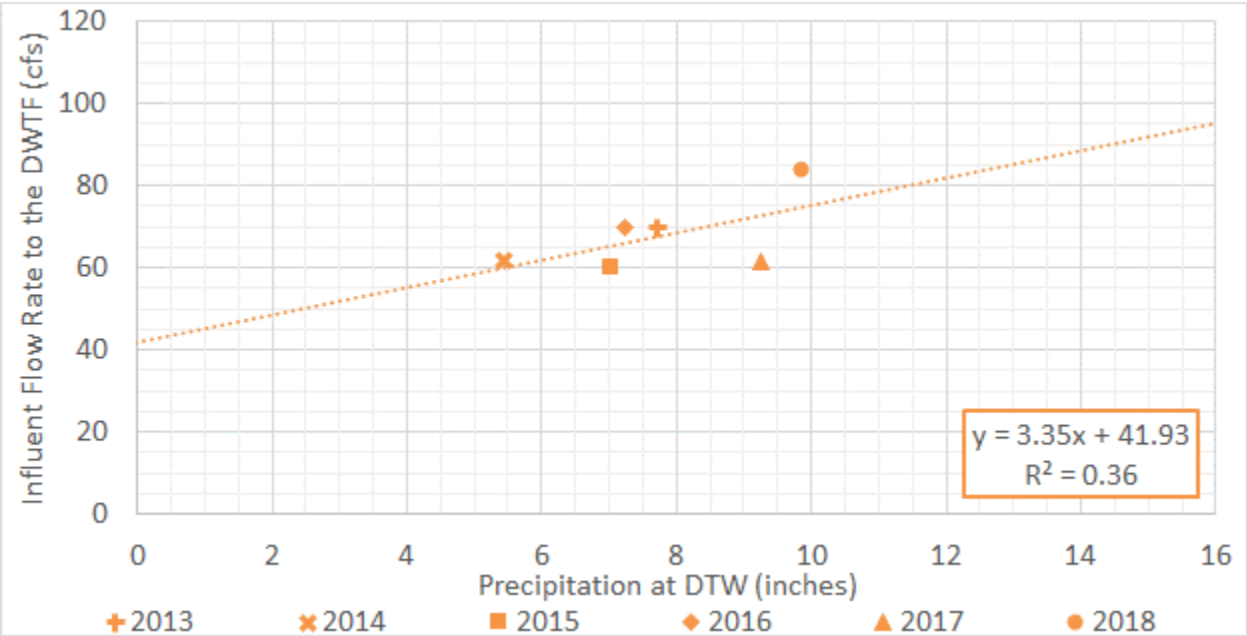
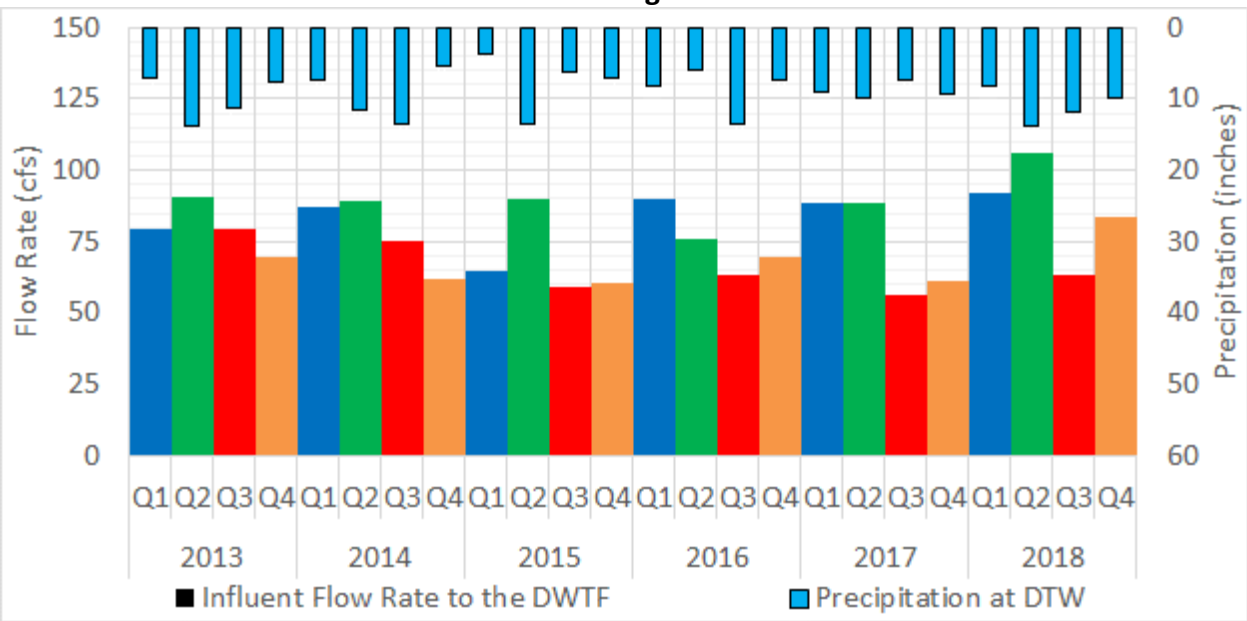


Figure 2-4
Downriver Sewage Disposal System
Average Influent Flow Rate to DWTF versus Total Precipitation at DTW
Quarter 4 October – December for 2013 through 2018



6. Figure 2-5 plots the quarterly average influent flow rate (interceptor system flow meters) to the DWTF and the quarterly total precipitation at DTW for years 2013 through 2018. This figure shows the long-term flow rate versus precipitation trends for the DSDS**.**

Figure 2-5
Downriver Sewage Disposal System
Quarterly Average Influent Flow Rate to DWTF and Quarterly Total Precipitation at DTW for 2013 through 2018



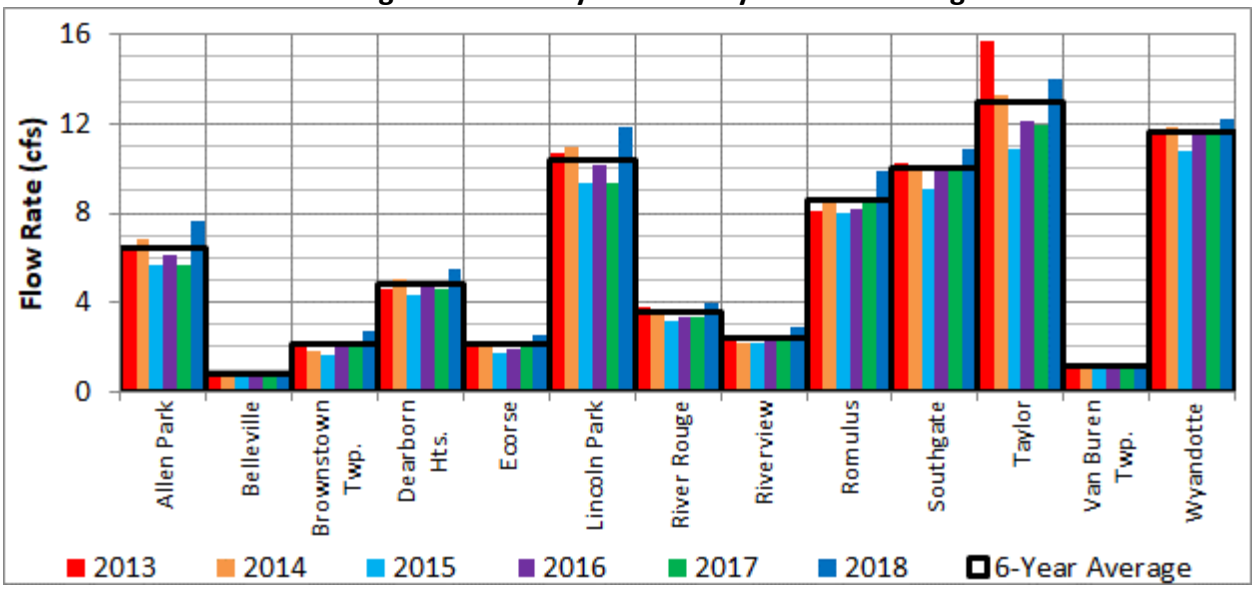
7. For each community, the average annual flow rate and 6-year average flow rate for years 2013 through 2018 are listed in Table 2-4 and shown in Figure 2-6. Year 2018 had the highest annual average flow rates for each community with the exception of Taylor where 2013 had the highest reported annual average flow rate. The data tends to show that the system flows are stable on an overall system basis.

8. Community flows also include interceptor infiltration and inflow.

Table 2-4
Downriver Sewage Disposal System
Annual Average Flow Rate by Community for 2013 through 2018

Community	Annual Average Flow Rate (cfs)						6-Year Average Flow Rate	
	2013	2014	2015	2016	2017	2018	(cfs)	(MGD)
Allen Park	6.5	6.8	5.6	6.1	5.7	7.6	6.4	4.1
Belleville	0.7	0.8	0.8	0.8	0.8	0.9	0.8	0.5
Brownstown Twp.	2.0	1.8	1.6	2.2	2.2	2.7	2.1	1.4
Dearborn Hts.	4.6	5.0	4.3	4.8	4.6	5.4	4.8	3.1
Ecorse	2.3	2.3	1.7	1.9	2.1	2.5	2.1	1.4
Lincoln Park	10.7	11.0	9.3	10.2	9.3	11.9	10.4	6.7
River Rouge	3.8	3.5	3.2	3.4	3.3	4.0	3.5	2.3
Riverview	2.4	2.1	2.2	2.4	2.3	2.9	2.4	1.5
Romulus	8.1	8.6	8.0	8.2	8.5	9.9	8.5	5.5
Southgate	10.3	10.1	9.1	9.9	9.9	10.8	10.0	6.5
Taylor	15.7	13.3	10.8	12.1	11.9	14.0	13.0	8.4
Van Buren Twp.	1.0	1.2	1.2	1.1	1.2	1.2	1.2	0.7
Wyandotte	11.7	11.8	10.8	11.8	11.7	12.2	11.7	7.5
Total Incoming Flow Rate	79.7	78.4	68.7	74.8	73.6	86.1	76.9	49.7
DWTF Including Recycle (IPS + TPS)	84.2	85.2	79.4	81.9	80.3	96.5	84.6	54.7
Total Precipitation DTW (inches) =	39.9	37.6	30.3	34.7	35.5	43.8	37.0	

Figure 2-6
Downriver Sewage Disposal System
Annual Average Flow Rate by Community for 2013 through 2018



9. The peak hourly flow rate at the DWTF for Major Storm Events are listed in Table 2-5. For Major Storm Events E, F and G, the peak hourly flow rate at the DWTF were less than the 175 MGD (271 cfs) criteria required for classification as a major storm events because of not being able to pump fully at the IPS due to the temporary power problems.

Table 2-5
Downriver Sewage Disposal System
Peak Hourly Flow Rates at DWTF for 2018 Major Storms Events

2018 Major Storm Event	2018 Significant Storm Event	Total Rainfall Depth at DTW (inches)	Peak Hourly Flow Rate (cfs)
A	1	2.27	390.0
B	2	1.42	274.8
C	3	2.29	371.9
D	5	3.15	332.7
E	7	3.00	223.2
F	8	2.91	190.0
G	10	2.44	202.9

10. Table 2-6 lists the reverse flow volumes for the major storm events during 2018. Reverse flow at Meter SW occur as hydraulically necessary for emergency operating conditions and/or storms greater than the design storm. There was more reverse flow volume during 2018 than normal due to not being able to pump fully at the IPS due to the temporary power problems.

Table 2-6
Downriver Sewage Disposal System
Reverse Flow Volumes for 2018 Major Storms Events

2018 Major Storm Event	2018 Significant Storm Event	Total Rainfall Depth at DTW (inches)	Reverse Flow Volume (MG)
A	1	2.27	4.9
B	2	1.42	0.3
C	3	2.29	3.8
D	5	3.15	6.3
E	7	3.00	10.2
F	8	2.91	17.5
G	10	2.44	26.2

11. Table 2-7 lists the total bypass flow volumes for the ten bypass events which occurred in 2018. The DWTF primary and secondary treatment capacities are 150 and 125 MGD, respectively. The peak flow capacity of the DWTF is 225 MGD, with flow blending occurring at flows greater than 125 MGD. Under peak wet weather flow conditions, about 50 MGD receives both primary and secondary treatment, 100 MGD receives primary treatment only, and 75 MGD receives secondary treatment only.

Table 2-7
Downriver Sewage Disposal System
Bypass Flow Volumes for 2018

2018 Major Storm Event	2018 Significant Storm Event	Bypass Event Dates	Total Rainfall Depth at DTW (inches)	Bypass Volume (MG)		
				Secondary	Primary	Total
-	-	2/15-16/2018	0.07	9.11	0.00	9.11
A	1	2/19-24/2018	2.27	326.90	122.17	449.07
B	2	3/1-5/2018	1.42	160.00	31.70	191.70
-	-	4/4/2018	0.89	10.00	0.00	10.00
C	3	4/15-17/2018	2.29	202.50	80.96	283.46
D	5	5/11-17/2018	3.15	311.60	85.05	396.65
-	-	5/19/2018	0.19	29.60	0.00	29.60
E	7	8/1/2018	3.00	1.30	5.13	6.43
F	8	9/25-26/2018	2.91	38.40	5.20	43.60
G	10	11/1/2018	2.44	1.50	1.50	3.00

Note: 1) Reported bypass values are a compilation of the best available information from MiWaters, Wayne County, and DUWA/Veolia records.

C) CONTROLLED FLOW COMMUNITIES OVERVIEW

1. The controlled flow communities are tributary to the Riverdrive Interceptor. The performance of the Riverdrive Interceptor relies on the peak flow rates being regulated to the MAFLs. The peak hourly flow rates and peak depths for the flow meters along the Riverdrive Interceptor for the major storm events are listed in Table 2-8. The total wet weather MAFLs are also given and are used to check whether the incoming flow rates are being regulated properly. The total wet weather MAFLs at the flow meter locations are the sum of the MAFLs for the upstream communities.

2. Since DUWA took over the system at the end of September 2018, concerted efforts have occurred to manage the flow inputs and to appropriately monitor the system. The work appears to have been successful but will be monitored closely to determine if further action is required.

Table 2-8
Downriver Sewage Disposal System
Peak Hourly Flow Rates and Depth for Controlled Flow Communities along the Riverdrive Interceptor for 2018 Major Storms Events

2018 Major Storm Event	2018 Significant Storm Event	Peak Hourly Flow Rate (cfs)				Peak Depth (ft)			
		RR-1	EC-6	RD-1	SW	RR-1	EC-6	RD-1	SW
A	1	11.30	26.47	72.34	32.16[1]	7.9	13.6	≥9.2	15.1
B	2	11.24	19.06	71.35	37.71[1]	4.5	11.1	≥9.2	14.2
C	3	8.26	27.53	67.91	37.32[1]	7.0	12.4	10.6	14.8
D	5	11.86	27.17	70.90	34.91[1]	8.3	12.8	10.8	17.4
E	7	11.10	23.99	56.53	44.55[1]	5.3	10.6	11.6	≥17.9
F	8	11.14	27.11	64.01	30.67	9.6	16.9	16.6	20.0
G	10	11.18	23.76	55.90	31.20	5.7	10.2	10.3	17.1
		Total MAFL (cfs)				Pipe Diameter (ft)			
		11.26	23.46	65.82	31.73	3.0	4.5	6.0	6.5
XX.XX		Exceeds wet weather MAFL by 0 to 5%				Manhole Depth (ft)			
XX.XX		Exceeds wet weather MAFL by > 5%				16.0	24.8	27.2	40.0

Note: 1) Meter SW flow rates above the MAFL are not considered an exceedance when dewatering operations were requested at a higher flow rate and permission was granted by DWTF.

3. For all seven events, surcharging was recorded at Meters RR-1, EC-6, RD-1 and SW along the Riverdrive Interceptor.

4. Incremental flow rates were estimated for major storm events when the metered peak hourly flow rate exceeded the MAFL by 5% or more. Table 2-9 lists the estimated incremental peak hourly flow rates for the flow meters along the Riverdrive Interceptor for these major storm events. The incremental wet weather MAFLs are also given and are used to check whether the incoming flow rates are being regulated properly. Incremental flow rates were not estimated for Major Storm Event G, as the peak hourly flow rates did not exceed the MAFLs by more than 5%.

Table 2-9
Downriver Sewage Disposal System
Estimated Incremental Peak Hourly Flow Rates for Controlled Flow Communities along the Riverdrive Interceptor for 2018 Major Storms Events

2018 Major Storm Event	2018 Significant Storm Event	Incremental Peak Hourly Flow Rate (cfs)			
		RR-1	EC-6	RD-1	SW
A	1	11.30	18.03	53.23	32.16[1]
B	2	11.24	8.49	57.63	37.71[1]
C	3	8.26	21.18	44.46	37.32[1]
D	5	11.86	19.11	50.61	34.91[1]
E	7	11.10	14.76	42.19	44.55[1]
F	8	11.14	17.65	48.58	30.67
G	10	*Total Metered Flow Rates did not Exceed MAFL by more than 5%*			
Incremental MAFL (cfs)		11.26	12.20	42.36	31.73
XX.XX		Exceeds wet weather MAFL by 0 to 5%			
XX.XX		Exceeds wet weather MAFL by > 5%			

Note: 1) Meter SW flow rates above the MAFL are not considered an exceedance when dewatering operations were requested at a higher flow rate and permission was granted by DWTF.

5. The Meter RR-1 district includes all of River Rouge. The flow rates estimated for the Meter RR-1 district for the major storms during 2018 were below the MAFL for five of the seven events, slightly exceeded the MAFL for one of the seven events and significantly exceeded the MAFL for one of the seven events. No flow meter exists on the pump station discharge pipe. The pumps are operated to maintain a maximum level in the Riverdrive Interceptor immediately downstream of the River Rouge CSO Basin. This sometimes results in a slight exceedence of the MAFL.

6. The Meter EC-6 district includes all of the City of Ecorse and a portion of Lincoln Park. The incremental flow rates estimated for the Meter EC-6 district for the significant storms during 2018 were below the MAFL for two of the seven events and significantly exceeded the MAFL for five of the seven events.

7. The Meter RD-1 district includes most of Allen Park and most of Lincoln Park. The incremental flow rates estimated for the Meter RD-1 district for the significant storms during 2018 were below the MAFL for two of the seven events, slightly exceeded the MAFL for one of the seven events and significantly exceeded the MAFL for four of the seven events.

8. The Meter SW district serves the Southgate-Wyandotte Relief Drains Drainage District (SWRDDD). The SWRDDD is a combined sewer area that includes part of Southgate and all of Wyandotte. Flow rates above the MAFL occurred after the peak of the storm event during dewatering operations of the SWRDDD CSO retention treatment facility, which were coordinated with DWTF operations to minimize bypass operations at DWTF and discharges to Detroit River from SWRDDD. These events where Meter SW flow rates were above the MAFL are not considered an exceedance as higher flow rates were requested for dewatering operations and permission was granted by the DWTF.

D) NON-CONTROLLED FLOW COMMUNITIES OVERVIEW

1. The non-controlled flow communities are tributary to both the Pennsylvania Interceptor system and the Downriver Regional Storage and Transport System (DRSTS) and have allowable peak 96-hour volumes that were established for the 4.42-inch design storm. The estimated peak 96-hour total volumes for the 2018 major storm events are listed in Table 2-10.

Table 2-10
Downriver Sewage Disposal System
Peak 96-Hour Total Volumes for Non-Controlled Flow Communities
for 2018 Major Storms Events

Community	Total Volume (MG)							
	4.42 inch Design Storm	2018 Major Storm Event						
		A	B	C	D	E	F	G
Allen Park (part)	29.23	56.35	17.04	36.76	39.31	8.98	26.34	18.62
Belleville	4.86	5.11	4.49	4.75	5.25	1.88	2.87	3.30
Brownstown Twp.	20.90	16.65	11.83	13.74	13.36	8.11	9.04	10.70
Dearborn Heights	43.76	53.10	35.72	42.69	36.29	20.13	32.16	26.80
Riverview	28.30	27.97	19.66	24.38	24.89	7.18	10.51	18.01
Romulus	88.43	60.07	46.91	61.49	68.83	21.89	28.48	41.89
Southgate (part)	31.24	38.86	20.78	34.04	32.25	21.41	32.45	22.82
Taylor	164.45	117.61	77.72	87.89	105.41	58.92	83.23	71.27
Van Buren Twp.	7.04	7.32	6.43	6.80	7.52	2.70	4.12	4.73
Total	418.21	383.06	240.58	312.53	333.10	151.20	229.20	218.15

Legend:

XX.XX	Exceeds design storm volume by 0 to 20%
XX.XX	Exceeds design storm volume by > 20%

2. The DRSTS worked as intended for all of the storm events during 2018.

3. None of the major storm events in 2018 exceeded the peak 96-hour total volume of 418.21 MG estimated for the 4.42-inch design storm.

4. The City of Allen Park (part) is estimated to have significantly exceeded its peak 96-hour total volumes during Major Storm Events A, C and D. The City of Belleville is estimated to have slightly exceeded its peak 96-hour total volumes during Major Storm Events A and D. The City of Dearborn Heights is estimated to have significantly exceeded its peak 96-hour total volume during Major Storm Event A. The City of Southgate (part) is estimated to have slightly exceeded its peak 96-hour total volumes during Major Storm Events C, D and F and significantly exceeded its peak 96-hour total volume during Major Storm Events A. Van Buren Township is estimated to have slightly exceeded its peak 96-hour total volumes during Major Storm Events A and D. None of the other Downriver communities are estimated to have exceeded its peak 96-hour total volumes during 2018.

5. Surcharging was recorded for all seven of the major storm events. For all seven events, surcharging was recorded at Meters P-1 and RV-1 along the Pennsylvania Interceptor. For Events A, C, D, E, and F, surcharging was recorded at Meter PC-1 along the Pelham Interceptor.

6. A summary of DRSTS usage during significant storm events for 2018 are listed in Table 2-11. At least one of the relief structures discharged into the DRSTS during each of the significant storm events in 2018. The relief structure at Meter CHPO discharged most frequently.

Table 2-11
Downriver Sewage Disposal System
Downriver Regional Storage and Transport System Usage
during 2018 Significant Storm Events

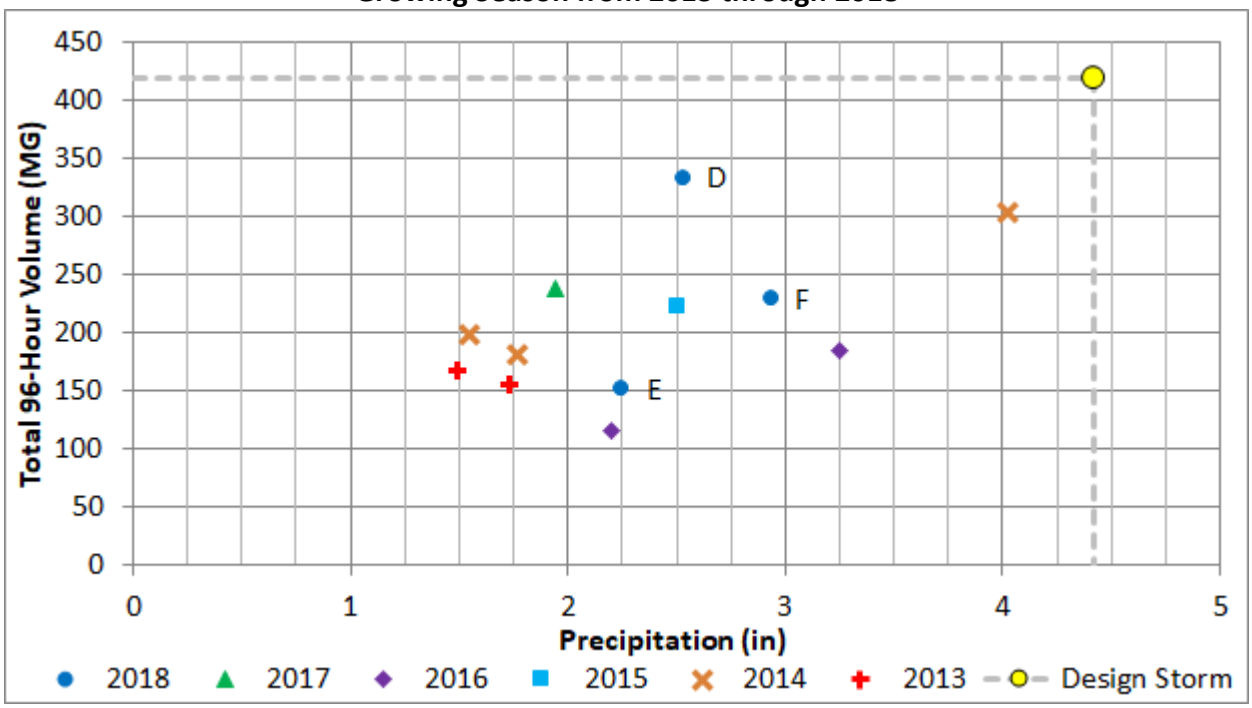
2018 Storm Events	Meter									
	TPS	TSO	CHPO	CPO	PDO	ER-2	ER-1	APO-2	APO-1	PM-1
Event 1 / Major Event A (2/19-21/2018)	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
Event 2 / Major Event B (3/1/2018)	✓	✓	✓	✓	×	✓	✓	✓	✓	×
Event 3 / Major Event C (4/14-15/2018)	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
Event 4 (5/2-4/2018)	✓	×	✓	×	×	✓	✓	×	×	×
Event 5 / Major Event D (5/11-13/2018)	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
Event 6 (6/18-19/2018)	✓	✓	✓	✓	×	×	✓	✓	✓	×
Event 7 / Major Event E (7/31/2018-8/1/2018)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Event 8 / Major Event F (9/24-25/2018)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Event 9 (10/6/2018)	✓	✓	✓	×	×	×	×	×	×	×
Event 10 / Major Event G (10/31/2018-11/2/2018)	✓	✓	✓	✓	×	✓	✓	✓	✓	✓
Number of Overflow Events	10/10	9/10	10/10	8/10	2/10	8/10	9/10	8/10	8/10	6/10

Legend:

✓	Discharge to DRSTS
×	No discharge to DRSTS

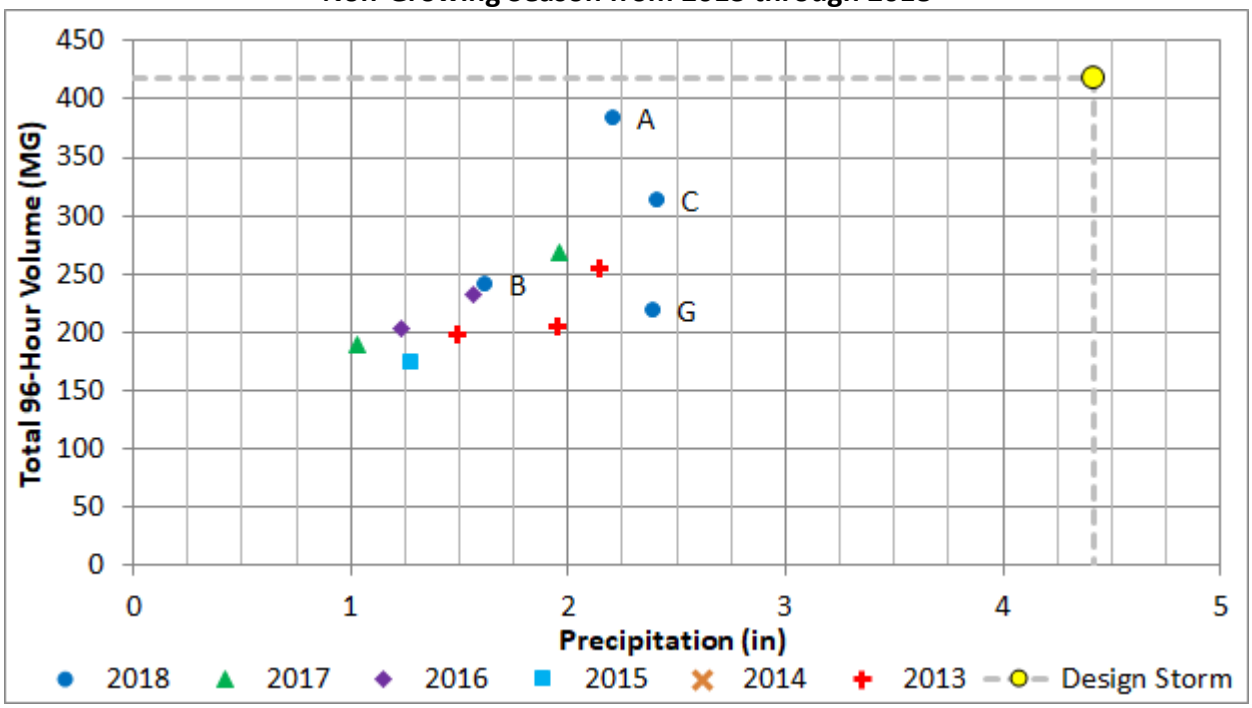
7. Figures 2-7 and 2-8 plot the total 96-hour volume for the non-controlled flow communities versus precipitation for the major storm events from 2013 through 2018. Figure 2-7 shows the growing season events which occurred between May 1st and September 30th, and Figure 2-8 shows the non-growing season events which occurred between October 1st and April 30th. The 4.42-inch design storm volume is shown for comparison. Three of the largest major storm events by total 96-hour volume occurred in 2018.

Figure 2-7
Downriver Sewage Disposal System
Total 96-Hour Volume for the Non-Controlled Flow Communities for Major Storms Events
Growing Season from 2013 through 2018



Note: 1) Growing season is May 1st through September 30th. Non-growing season is October 1st through April 30th.

Figure 2-8
Downriver Sewage Disposal System
Total 96-Hour Volume for the Non-Controlled Flow Communities for Major Storms Events
Non-Growing Season from 2013 through 2018



Note: 1) Growing season is May 1st through September 30th. Non-growing season is October 1st through April 30th.

8. The non-controlled flow communities have dry weather MAFLs. The portion of Meter District PA-2 in Taylor was the only districts estimated to have exceeded the dry weather MAFL during 2018. This data point may be an anomaly, since the total City of Taylor flow was less than half of the MAFL. This subarea will be looked at in more detail in the coming months to determine if there is any trend that may cause concern. Inclusive of all meter district components, no community was estimated to have exceeded the dry weather MAFL for any month.

3) SUMMARY BY COMMUNITY

Table 3-1 presents the estimated average monthly flow rate for each community in the DSDS for each month in 2018. The average monthly flow rate includes all days – both dry and wet weather. Table 3-1 also shows the percentages for each community of the incoming flow rate to the DWTF. These percentages are plotted on Figure 3-1.

The incoming flow rate to the DWTF is based on the interceptor system flow meters. It is given on Table 3-1 along with the average monthly influent pumping rate at the DWTF. The DWTF influent pumping rate includes recycle flow rates where the incoming flow rate measured by the interceptor system meters does not include DWTF recycle flow rates. Therefore, it is expected that the incoming flow rate measured by the sum of the interceptor system meters will be slightly less than the DWTF influent flow rate.

The average monthly flow rates are subtotaled for controlled flow communities and for non-controlled flow communities. Tables 3-2 and 3-3 provide the breakdown of average monthly flow rates for controlled flow communities and non-controlled flow communities, respectively.

Table 3-1
Downriver Sewage Disposal System
Average Monthly Flow Rates by Community for 2018

Community	Flow Rate (cfs)												
	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park	5.41	12.62	8.13	10.78	12.69	5.51	3.39	4.10	7.32	5.77	9.35	6.76	7.61
Belleville	0.65	0.94	1.10	1.13	1.18	0.75	0.61	0.66	0.75	0.80	1.01	0.86	0.87
Brownstown Twp.	2.37	3.30	3.01	3.33	3.64	2.44	2.16	2.31	2.23	2.32	2.99	2.73	2.73
Dearborn Hts.	4.21	8.02	6.42	8.00	7.98	3.36	2.44	3.49	4.78	5.08	6.85	5.07	5.45
Ecorse	2.09	3.18	2.60	3.10	3.53	2.48	2.13	1.99	2.38	2.12	2.57	2.04	2.51
Lincoln Park	9.11	17.04	12.84	15.60	19.22	9.56	5.99	6.63	10.78	9.85	14.82	11.42	11.85
River Rouge	2.44	4.38	4.63	4.93	7.33	4.52	3.28	2.81	3.67	3.16	3.99	2.93	4.00
Riverview	2.43	4.10	3.20	3.64	4.33	2.40	1.92	1.99	2.22	2.33	3.52	2.94	2.91
Romulus	7.25	11.28	11.64	15.09	16.51	8.59	5.81	6.22	6.68	7.76	12.44	9.85	9.91
Southgate	8.95	12.58	12.21	14.47	14.76	10.04	8.42	8.34	9.79	8.91	11.84	9.99	10.84
Taylor	11.95	18.93	15.96	17.68	19.44	11.24	8.08	10.28	12.88	12.00	16.31	13.60	13.98
Van Buren Twp.	0.93	1.35	1.57	1.62	1.69	1.08	0.87	0.95	1.08	1.14	1.45	1.24	1.25
Wyandotte	10.49	12.75	13.95	15.74	15.89	12.46	10.95	9.33	10.51	10.22	12.69	11.30	12.18
Subtotal Controlled Flow Communities	34.50	52.97	48.22	55.94	64.45	40.66	31.31	29.16	38.54	35.93	48.61	39.74	43.23
Subtotal Non-Controlled Flow Communities	33.79	57.50	49.05	59.16	63.73	33.77	24.72	29.93	36.54	35.51	51.22	40.99	42.85
Total Incoming Flow Rate	68.29	110.47	97.27	115.11	128.17	74.43	56.03	59.09	75.07	71.44	99.82	80.73	86.08
DWTF Including Recycle (IPS + TPS)	72.40	120.76	104.98	130.37	148.92	84.67	67.88	76.03	83.36	77.72	107.86	86.14	96.51
Total Precipitation DTW (inches)	1.36	4.27	2.63	3.79	6.35	3.66	4.24	1.20	6.46	3.56	3.63	2.66	43.81

Percentage of Total Incoming Flow Rate by Community for 2018

Community	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park	7.9%	11.4%	8.4%	9.4%	9.9%	7.4%	6.1%	6.9%	9.8%	8.1%	9.4%	8.4%	8.6%
Belleville	0.9%	0.9%	1.1%	1.0%	0.9%	1.0%	1.1%	1.1%	1.0%	1.1%	1.0%	1.1%	1.0%
Brownstown Twp.	3.5%	3.0%	3.1%	2.9%	2.8%	3.3%	3.8%	3.9%	3.0%	3.2%	3.0%	3.4%	3.2%
Dearborn Hts.	6.2%	7.3%	6.6%	6.9%	6.2%	4.5%	4.3%	5.9%	6.4%	7.1%	6.9%	6.3%	6.2%
Ecorse	3.1%	2.9%	2.7%	2.7%	2.8%	3.3%	3.8%	3.4%	3.2%	3.0%	2.6%	2.5%	3.0%
Lincoln Park	13.3%	15.4%	13.2%	13.6%	15.0%	12.8%	10.7%	11.2%	14.4%	13.8%	14.8%	14.1%	13.5%
River Rouge	3.6%	4.0%	4.8%	4.3%	5.7%	6.1%	5.9%	4.8%	4.9%	4.4%	4.0%	3.6%	4.7%
Riverview	3.6%	3.7%	3.3%	3.2%	3.4%	3.2%	3.4%	3.4%	3.0%	3.3%	3.5%	3.6%	3.4%
Romulus	10.6%	10.2%	12.0%	13.1%	12.9%	11.5%	10.4%	10.5%	8.9%	10.9%	12.5%	12.2%	11.3%
Southgate	13.1%	11.4%	12.6%	12.6%	11.5%	13.5%	15.0%	14.1%	13.0%	12.5%	11.9%	12.4%	12.8%
Taylor	17.5%	17.1%	16.4%	15.4%	15.2%	15.1%	14.4%	17.4%	17.2%	16.8%	16.3%	16.8%	16.3%
Van Buren Twp.	1.4%	1.2%	1.6%	1.4%	1.3%	1.5%	1.5%	1.6%	1.4%	1.6%	1.5%	1.5%	1.5%
Wyandotte	15.4%	11.5%	14.3%	13.7%	12.4%	16.7%	19.5%	15.8%	14.0%	14.3%	12.7%	14.0%	14.6%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

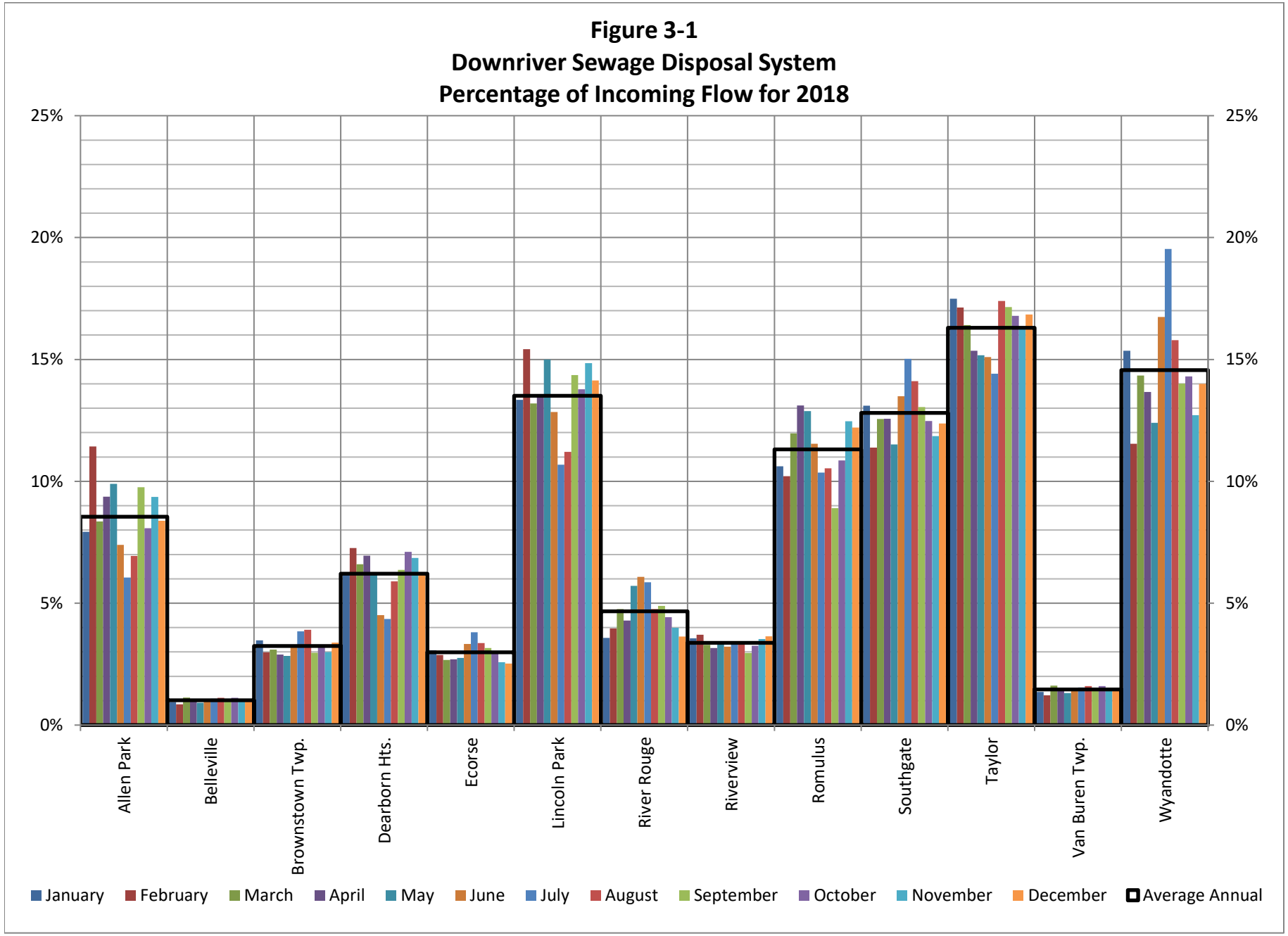


Figure 3-1
Downriver Sewage Disposal System
Percentage of Incoming Flow for 2018
25%
20%
15%
10%
5%
0%
Allen Park
Belleville
Brownstown Twp.
Dearborn Hts.
Ecorse
Lincoln Park
River Rouge
Riverview
Romulus
Southgate
Taylor
Van Buren Twp.
Wyandotte
January
February
March
April
May
June
July
August
September
October
November
December
Average Annual

Table 3-2
Downriver Sewage Disposal System
Average Monthly Flow Rates for Controlled Flow Communities for 2018

Community	Flow Rate (cfs)												
	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park (part)	4.38	8.35	6.25	7.60	9.42	4.54	2.72	3.09	5.20	4.76	7.30	5.61	5.74
Ecorse	2.09	3.18	2.60	3.10	3.53	2.48	2.13	1.99	2.38	2.12	2.57	2.04	2.51
Lincoln Park	9.11	17.04	12.84	15.60	19.22	9.56	5.99	6.63	10.78	9.85	14.82	11.42	11.85
River Rouge	2.44	4.38	4.63	4.93	7.33	4.52	3.28	2.81	3.67	3.16	3.99	2.93	4.00
Southgate - Wyandotte RDDD	16.47	20.02	21.90	24.70	24.95	19.57	17.18	14.65	16.51	16.04	19.93	17.75	19.12
Total	34.50	52.97	48.22	55.94	64.45	40.66	31.31	29.16	38.54	35.93	48.61	39.74	43.23
Total Precipitation DTW (inches)	1.36	4.27	2.63	3.79	6.35	3.66	4.24	1.20	6.46	3.56	3.63	2.66	43.81

Table 3-3
Downriver Sewage Disposal System
Average Monthly Flow Rates for Non-Controlled Flow Communities for 2018

Community	Flow Rate (cfs)												
	January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Allen Park (part)	1.03	4.28	1.88	3.18	3.26	0.97	0.67	1.01	2.12	1.00	2.04	1.15	1.86
Belleville	0.65	0.94	1.10	1.13	1.18	0.75	0.61	0.66	0.75	0.80	1.01	0.86	0.87
Brownstown Twp.	2.37	3.30	3.01	3.33	3.64	2.44	2.16	2.31	2.23	2.32	2.99	2.73	2.73
Dearborn Hts.	4.21	8.02	6.42	8.00	7.98	3.36	2.44	3.49	4.78	5.08	6.85	5.07	5.45
Riverview	2.43	4.10	3.20	3.64	4.33	2.40	1.92	1.99	2.22	2.33	3.52	2.94	2.91
Romulus	7.25	11.28	11.64	15.09	16.51	8.59	5.81	6.22	6.68	7.76	12.44	9.85	9.91
Southgate (part)	2.97	5.31	4.26	5.50	5.70	2.94	2.18	3.02	3.80	3.09	4.60	3.54	3.90
Taylor	11.95	18.93	15.96	17.68	19.44	11.24	8.08	10.28	12.88	12.00	16.31	13.60	13.98
Van Buren Twp.	0.93	1.35	1.57	1.62	1.69	1.08	0.87	0.95	1.08	1.14	1.45	1.24	1.25
Total	33.79	57.50	49.05	59.16	63.73	33.77	24.72	29.93	36.54	35.51	51.22	40.99	42.85
Total Precipitation DTW (inches)	1.36	4.27	2.63	3.79	6.35	3.66	4.24	1.20	6.46	3.56	3.63	2.66	43.81

4) DRY WEATHER SUMMARY

Table 4-1 lists the incremental monthly flow rates for each community summarized by meter district component. Incremental average daily flow rates are given along with an estimate of the average daily dry weather flow rates. The Year 2010 residential population is given on Table 4-1 and it is used to estimate per-capita dry weather flow rates. Appendix A contains a set of tables that further support the monthly flow rates presented on Tables 3-1, 3-2, 3-3 and 4-1. In addition, Table 4-1 lists MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017).

A single set of dry days was used to estimate the dry weather flow rates for all of the meters, with the number of dry days in each month listed in Table 5-1. Daily average flow rate traces for Meters P-2, PA-1, PB-1, PC-1, RD-1, and RV-1 were used for screening out dry and wet weather days. These meters were chosen because they are near the downstream end of the interceptor system, include some dewatering flow rates, and provide a well-defined sort of dry/wet days. Details of the dry and wet weather day selection process are provided in the *Wayne County Downriver Sewage Disposal System - System Monitoring Plan* dated May 7, 2018.

Table 4-1
Downriver Sewage Disposal System
Monthly Incremental Flow Rates Summarized by Community

Community	Sewage Flow Meter Math	Meter District	Year 2010 Incremental Population	January 2018			February 2018			March 2018			April 2018			May 2018			June 2018			Dry Weather MAFLs for Controlled Flow Communities[1] (cfs)	Dry Weather MAFLs for Non-Controlled Flow Communities[1] (cfs)
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather			
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)		
Allen Park	3.8%([PC-1]+[CPO]+[CHPO]-[TB-1]) + 23.9%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 34.6%([RD-1]-[EC-6]) + ([APO-1] + [APO-2])	PC-1	1,019	0.20	0.17	108	0.34	0.16	101	0.28	0.21	135	0.32	0.23	148	0.33	0.19	123	0.19	0.15	92	-	0.43
		P-1	3,332	0.73	0.66	128	1.36	0.66	127	1.07	0.85	165	1.41	0.96	185	1.42	0.88	171	0.73	0.63	123	-	1.58
		RD-1	18,179	4.38	3.10	110	8.35	3.60	128	6.25	3.07	109	7.60	5.16	183	9.42	3.81	136	4.54	2.87	102	17.20	-
		APO-1 + APO-2	0	0.10	0.08	-	2.58	0.00	-	0.54	0.00	-	1.46	0.00	-	1.52	0.00	-	0.05	0.00	-	-	-
		Total	22,531	5.41	4.01	115	12.62	4.42	127	8.13	4.14	119	10.78	6.35	182	12.69	4.89	140	5.51	3.65	105	-	2.01
Belleville	41.1%[PA-4]	PA-4	3,993	0.65	0.63	103	0.94	0.66	107	1.10	1.01	163	1.13	1.00	162	1.18	0.90	146	0.75	0.69	111	-	1.32
Brownstown Twp.	97.5%[P-2] + 1.8%([PA-2]+[ER-1]-[PA-3]-[ER-2])	P-2	10,397	2.33	2.22	138	3.24	2.29	142	2.96	2.59	161	3.27	2.78	173	3.57	2.58	161	2.41	2.30	143	-	3.91
		PA-2	248	0.04	0.04	95	0.06	0.04	91	0.05	0.04	98	0.06	0.04	108	0.07	0.04	96	0.03	0.03	74	-	0.06
		Total	10,645	2.37	2.26	137	3.30	2.32	141	3.01	2.63	159	3.33	2.82	171	3.64	2.62	159	2.44	2.33	141	-	3.97
Dearborn Hts.	78.2%([TB-1]+[TSO])	TB-1	19,152	4.21	3.52	119	8.02	3.46	117	6.42	4.60	155	8.00	5.14	173	7.98	4.29	145	3.36	2.95	100	-	8.22
Ecorse	71.5%([EC-6]-[RR-1])	EC-6	9,515	2.09	1.93	131	3.18	2.03	138	2.60	2.52	171	3.10	2.16	147	3.53	2.75	187	2.48	2.42	164	9.20	-
Lincoln Park	28.5%([EC-6]-[RR-1]) + 65.4%([RD-1]-[EC-6])	EC-6	3,795	0.84	0.77	131	1.27	0.81	138	1.04	1.00	171	1.24	0.86	147	1.41	1.10	187	0.99	0.96	164	3.00	-
		RD-1	34,347	8.28	5.86	110	15.77	6.81	128	11.80	5.80	109	14.36	9.75	183	17.81	7.20	136	8.57	5.43	102	25.16	-
		Total	38,142	9.11	6.63	112	17.04	7.62	129	12.84	6.81	115	15.60	10.61	180	19.22	8.30	141	9.56	6.39	108	28.16	-
River Rouge	[RR-1]	RR-1	7,903	2.44	2.14	175	4.38	2.04	167	4.63	3.51	287	4.93	4.47	366	7.33	4.63	379	4.52	3.75	306	11.26	-
Riverview	[RV-1]	RV-1	12,486	2.43	2.04	106	4.10	1.93	100	3.20	2.13	110	3.64	2.32	120	4.33	2.32	120	2.40	2.00	103	-	3.61
Romulus	[DMA-1] + ([PA-3]+[ER-2]-[PA-4]-[DMA-1] + [DMA-2] + ([PD-2] - [DMA-2])	DMA-1	0	0.67	0.66	-	0.58	0.52	-	0.69	0.64	-	0.63	0.63	-	0.68	0.68	-	0.72	0.72	-	-	6.39
		PA-3	11,371	3.75	3.59	204	5.90	3.77	214	5.77	4.93	280	6.33	5.17	294	6.83	4.87	277	4.35	4.03	229	-	
		DMA-2	0	0.65	0.72	-	1.12	1.11	-	1.60	1.58	-	3.62	3.48	-	4.51	4.24	-	1.10	0.56	-	-	9.02
		PD-2	9,532	2.18	2.00	136	3.68	2.05	139	3.58	2.90	197	4.51	3.43	232	4.49	3.10	210	2.41	2.15	146	-	
		Total	20,904	7.25	6.97	216	11.28	7.45	230	11.64	10.06	311	15.09	12.71	393	16.51	12.89	398	8.59	7.47	231	-	15.41
Southgate	76.1%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 40%[PB-1] + 36.3%([SW]+[SWB]) + 1.4%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1])	P-1	10,637	2.33	2.11	128	4.35	2.09	127	3.41	2.72	165	4.49	3.05	185	4.54	2.82	171	2.33	2.02	123	-	3.65
		PB-1	4,459	0.60	0.54	78	0.88	0.51	74	0.79	0.61	89	0.93	0.68	99	1.08	0.61	88	0.56	0.49	71	-	1.42
		SW	14,752	5.98	4.67	204	7.27	4.43	194	7.95	6.09	267	8.97	7.69	337	9.06	7.65	335	7.10	6.27	275	11.52	-
		TPS+IPS	199	0.04	0.04	128	0.08	0.04	127	0.06	0.05	165	0.08	0.06	185	0.08	0.05	171	0.04	0.04	123	-	0.06
		Total	30,047	8.95	7.35	158	12.58	7.08	152	12.21	9.47	204	14.47	11.48	247	14.76	11.13	240	10.04	8.83	190	-	5.13
Taylor	2.5%[P-2] + 98.2%([PA-2]+[ER-1]-[PA-3]-[ER-2]) + 60%[PB-1] + 21.8%([TB-1]+[TSO]) + 96.2%([PC-1]+[CPO]+[CHPO]-[TB-1]) + ([PD-1]-[PD-2])	P-2	262	0.06	0.06	138	0.08	0.06	142	0.07	0.07	161	0.08	0.07	173	0.09	0.07	161	0.06	0.06	143	-	0.08
		PA-2	13,270	2.17	1.96	95	3.34	1.88	91	2.71	2.02	98	3.13	2.22	108	3.85	1.98	96	1.69	1.53	74	-	2.40
		PB-1	6,462	0.90	0.81	81	1.32	0.76	76	1.19	0.92	92	1.39	1.02	102	1.62	0.91	91	0.85	0.74	74	-	2.15
		TB-1	5,339	1.17	0.98	119	2.24	0.97	117	1.79	1.28	155	2.23	1.43	173	2.22	1.20	145	0.94	0.82	100	-	2.29
		PC-1	25,700	5.11	4.28	108	8.50	4.01	101	6.95	5.37	135	7.98	5.87	148	8.22	4.91	123	4.85	3.66	92	-	11.03
		PD-1	12,100	2.53	2.38	127	3.44	2.22	119	3.24	2.73	146	2.86	2.35	126	3.44	2.37	126	2.85	2.67	143	-	4.01
		Total	63,131	11.95	10.46	107	18.93	9.89	101	15.96	12.39	127	17.68	12.97	133	19.44	11.43	117	11.24	9.48	97	-	21.96
Van Buren Twp.	58.9%[PA-4]	PA-4	5,719	0.93	0.91	103	1.35	0.94	107	1.57	1.44	163	1.62	1.43	162	1.69	1.29	146	1.08	0.99	111	-	2.37
Wyandotte	63.7%([SW]+[SWB])	SW	25,883	10.49	8.19	204	12.75	7.78	194	13.95	10.69	267	15.74	13.49	337	15.89	13.42	335	12.46	11.00	275	20.21	-
Subtotal Controlled Flow Communities			114,374	34.50	26.66	151	52.97	27.51	155	48.22	32.69	185	55.94	43.59	246	64.45	40.57	229	40.66	32.70	185	97.55	-
Subtotal Non-Controlled Flow Communities			155,677	33.69	30.30	126	54.93	30.11	125	48.51	38.68	161	57.71	43.37	180	62.21	40.30	167	33.72	29.24	121	-	64.00
Total Incoming Flow			270,052	68.19	57.04	137	110.47	57.62	138	97.27	71.37	171	115.11	86.96	208	128.17	80.87	194	74.43	61.94	148	-	-
DWTF Including Recycle (IPS + TPS)			270,052	72.40	59.93	143	120.76	61.29	147	104.98	75.73	181	130.37	96.46	231	148.92	96.54	231	84.67	71.19	170	-	-

Note:

1) Dry weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017).

2) The MAFL for each community component of Meter Distict SW is population weighted. Southgate and Wyandotte have MAFLs of 7.67 and 24.06 cfs, respectively. Therefore, the combined MAFL is 31.73 cfs. The population weighted MAFL for Southgate and Wyandotte are allocated to be 11.52 and 20.21 cfs, respectively.

3) The meter district flow rates are split into community components based on relative 2010 residential population.

Legend:

XX.XX	Exceeds the dry weather MAFL by 0 to 20%
XX.XX	Exceeds the dry weather MAFL by greater than 20%

Table 4-2
Downriver Sewage Disposal System
Monthly Incremental Flow Rates Summarized by Community

Community	Sewage Flow Meter Math	Meter District	Year 2010 Incremental Population	July 2018			August 2018			September 2018			October 2018			November 2018			December 2018			Dry Weather MAFLs for Controlled Flow Communities[1] (cfs)	Dry Weather MAFLs for Non-Controlled Flow Communities[1] (cfs)
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather			
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)		
Allen Park	3.8%([PC-1]+[CPO]+[CHPO]-[TB-1]) + 23.9%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 34.6%([RD-1]-[EC-6]) + ([APO-1] + [APO-2])	PC-1	1,019	0.12	0.12	74	0.17	0.11	71	0.24	0.12	79	0.21	0.16	100	0.31	0.22	138	0.24	0.20	124	-	0.43
		P-1	3,332	0.53	0.52	101	0.77	0.53	103	1.00	0.54	105	0.77	0.63	122	1.17	0.83	160	0.89	0.78	152	-	1.58
		RD-1	18,179	2.72	2.47	88	3.09	2.21	79	5.20	2.75	98	4.76	2.98	106	7.30	4.49	160	5.61	4.13	147	17.20	-
		APO-1 + APO-2	0	0.02	0.00	-	0.07	0.00	-	0.88	0.00	-	0.02	0.00	-	0.57	0.00	-	0.03	0.00	-	-	-
		Total	22,531	3.39	3.11	89	4.10	2.85	82	7.32	3.41	98	5.77	3.77	108	9.35	5.53	159	6.76	5.11	147	-	2.01
Belleville	41.1%[PA-4]	PA-4	3,993	0.61	0.59	96	0.66	0.63	103	0.75	0.68	111	0.80	0.73	118	1.01	0.90	146	0.86	0.82	132	-	1.32
Brownstown Twp.	97.5%[P-2] + 1.8%([PA-2]+[ER-1]-[PA-3]-[ER-2])	P-2	10,397	2.13	2.11	131	2.28	2.10	130	2.20	1.98	123	2.29	2.13	132	2.93	2.58	160	2.68	2.49	155	-	3.91
		PA-2	248	0.03	0.03	69	0.03	0.03	70	0.03	0.03	71	0.03	0.03	71	0.05	0.04	95	0.05	0.05	124	-	0.06
		Total	10,645	2.16	2.14	130	2.31	2.12	129	2.23	2.01	122	2.32	2.16	131	2.99	2.62	159	2.73	2.54	154	-	3.97
Dearborn Hts.	78.2%([TB-1]+[TSO])	TB-1	19,152	2.44	2.38	80	3.49	2.61	88	4.78	2.69	91	5.08	3.48	118	6.85	4.57	154	5.07	4.25	143	-	8.22
Ecorse	71.5%([EC-6]-[RR-1])	EC-6	9,515	2.13	2.04	138	1.99	1.80	122	2.38	2.03	138	2.12	1.81	123	2.57	2.12	144	2.04	1.85	126	9.20	-
Lincoln Park	28.5%([EC-6]-[RR-1]) + 65.4%([RD-1]-[EC-6])	EC-6	3,795	0.85	0.81	138	0.79	0.72	122	0.95	0.81	138	0.84	0.72	123	1.03	0.85	144	0.81	0.74	126	3.00	-
		RD-1	34,347	5.14	4.66	88	5.83	4.17	79	9.83	5.20	98	9.00	5.64	106	13.79	8.48	160	10.60	7.80	147	25.16	-
		Total	38,142	5.99	5.47	93	6.63	4.89	83	10.78	6.01	102	9.85	6.36	108	14.82	9.33	158	11.42	8.54	145	28.16	-
River Rouge	[RR-1]	RR-1	7,903	3.28	3.07	251	2.81	2.34	192	3.67	2.49	204	3.16	1.92	157	3.99	2.65	217	2.93	2.48	202	11.26	-
Riverview	[RV-1]	RV-1	12,486	1.92	1.83	95	1.99	1.79	93	2.22	1.94	101	2.33	1.88	97	3.52	2.78	144	2.94	2.64	137	-	3.61
Romulus	[DMA-1] + ([PA-3]+[ER-2]-[PA-4]-[DMA-1] + [DMA-2] + ([PD-2] - [DMA-2])	DMA-1	0	0.76	0.76	-	0.83	0.82	-	0.73	0.72	-	0.68	0.66	-	0.66	0.56	-	0.58	0.55	-	-	6.39
		PA-3	11,371	2.99	2.98	169	3.16	2.95	168	3.39	2.95	168	4.28	3.83	218	5.46	4.91	279	4.48	4.05	230	-	
		DMA-2	0	0.20	0.20	-	0.22	0.22	-	0.19	0.18	-	0.21	0.23	-	2.39	1.27	-	1.36	1.38	-	-	9.02
		PD-2	9,532	1.85	1.84	125	2.02	1.74	118	2.36	1.75	119	2.59	2.15	145	3.92	2.84	192	3.43	3.10	211	-	
		Total	20,904	5.81	5.79	179	6.22	5.73	177	6.68	5.60	173	7.76	6.87	212	12.44	9.58	296	9.85	9.09	281	-	15.41
Southgate	76.1%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1]) + 40%[PB-1] + 36.3%([SW]+[SWB]) + 1.4%([P-1]+[PM-1]-[P-2]-[PA-2]-[PB-1]-[PD-1]-[PC-1])	P-1	10,637	1.69	1.67	101	2.47	1.70	103	3.19	1.72	105	2.47	2.00	122	3.74	2.64	160	2.83	2.50	152	-	3.65
		PB-1	4,459	0.45	0.44	64	0.51	0.45	65	0.55	0.45	65	0.58	0.47	68	0.79	0.60	87	0.66	0.58	84	-	1.42
		SW	14,752	6.24	5.80	254	5.32	4.66	204	5.99	5.05	221	5.82	3.99	175	7.23	6.76	296	6.44	5.15	226	11.52	-
		TPS+IPS	199	0.03	0.03	101	0.05	0.03	103	0.06	0.03	105	0.05	0.04	122	0.07	0.05	160	0.05	0.05	152	-	0.06
		Total	30,047	8.42	7.94	171	8.34	6.83	147	9.79	7.26	156	8.91	6.50	140	11.84	10.04	216	9.99	8.27	178	-	5.13
Taylor	2.5%[P-2] + 98.2%([PA-2]+[ER-1]-[PA-3]-[ER-2]) + 60%[PB-1] + 21.8%([TB-1]+[TSO]) + 96.2%([PC-1]+[CPO]+[CHPO]-[TB-1]) + ([PD-1]-[PD-2])	P-2	262	0.05	0.05	131	0.06	0.05	130	0.06	0.05	123	0.06	0.05	132	0.07	0.06	160	0.07	0.06	155	-	0.08
		PA-2	13,270	1.42	1.41	69	1.72	1.44	70	1.87	1.45	71	1.74	1.45	71	2.88	1.96	95	2.75	***2.54***	124	-	2.40
		PB-1	6,462	0.68	0.67	67	0.76	0.67	67	0.82	0.67	67	0.87	0.71	71	1.19	0.90	90	1.00	0.87	87	-	2.15
		TB-1	5,339	0.68	0.66	80	0.97	0.73	88	1.33	0.75	91	1.42	0.97	118	1.91	1.27	154	1.41	1.18	143	-	2.29
		PC-1	25,700	3.02	2.93	74	4.28	2.83	71	6.09	3.13	79	5.41	3.98	100	7.71	5.49	138	6.00	4.94	124	-	11.03
		PD-1	12,100	2.23	2.21	118	2.48	2.29	122	2.70	2.33	124	2.51	2.22	119	2.55	2.52	135	2.37	2.07	111	-	4.01
		Total	63,131	8.08	7.92	81	10.28	8.00	82	12.88	8.38	86	12.00	9.39	96	16.31	12.21	125	13.60	11.66	119	-	21.96
Van Buren Twp.	58.9%[PA-4]	PA-4	5,719	0.87	0.85	96	0.95	0.91	103	1.08	0.98	111	1.14	1.05	118	1.45	1.29	146	1.24	1.17	132	-	2.37
Wyandotte	63.7%([SW]+[SWB])	SW	25,883	10.95	10.18	254	9.33	8.17	204	10.51	8.87	221	10.22	7.00	175	12.69	11.86	296	11.30	9.03	226	20.21	-
Subtotal Controlled Flow Communities			114,374	31.31	29.03	164	29.16	24.07	136	38.54	27.20	154	35.93	24.05	136	48.61	37.20	210	39.74	31.18	176	97.55	-
Subtotal Non-Controlled Flow Communities			155,677	24.70	24.28	101	29.86	24.62	102	35.66	25.15	104	35.49	28.85	120	50.65	38.28	159	40.96	36.27	151	-	64.00
Total Incoming Flow			270,052	56.03	53.31	128	59.09	48.69	117	75.07	52.35	125	71.44	52.91	127	99.82	75.48	181	80.73	67.45	161	-	-
DWTF Including Recycle (IPS + TPS)			270,052	67.88	65.88	158	76.03	68.88	165	83.36	64.43	154	77.72	65.01	156	107.86	78.34	187	86.14	71.86	172	-	-

Note:

1) Dry weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017).

2) The MAFL for each community component of Meter Distict SW is population weighted. Southgate and Wyandotte have MAFLs of 7.67 and 24.06 cfs, respectively. Therefore, the combined MAFL is 31.73 cfs. The population weighted MAFL for Southgate and Wyandotte are allocated to be 11.52 and 20.21 cfs, respectively.

3) The meter district flow rates are split into community components based on relative 2010 residential population.

Legend:

XX.XX	Exceeds the dry weather MAFL by 0 to 20%
XX.XX	Exceeds the dry weather MAFL by greater than 20%

5) PRECIPITATION DATA

Table 5-1 lists the monthly precipitation at Metro Airport (DTW), the departure from normal, and the number of wet/dry days included for each month. Monthly precipitation data for the DSDS rain gauges for 2018 is summarized on Table 5-2. Daily precipitation data for the DSDS rain gauges for each month is summarized on Tables 5-3 through 5-14. Data for the rain gauge at DTW is included in these tables. The total precipitation for 2018 at DTW was 43.81 inches, which is 10.34 inches above normal.

Significant storm events are defined as those with at least 0.5 inches of rainfall occurring on a single day with an event total of at least 1.0 inch of rainfall. Significant storm events are separated by at least 2 consecutive days without precipitation over 0.1 inches. This storm event definition is based on the arithmetic mean of the rainfall recorded by all rain gauges used in the analysis for that storm. Major storm events are a subgroup of significant storm events which result in the peak hourly influent flow rate to the DWTF reaching or exceeding 175 MGD (271 cfs).

There were ten significant storm events in 2018. The events were designated as Significant Storm Events 1 through 10 for year 2018. There were seven major storm events in 2018. Significant Storm Events 1, 2, 3, 5, 7, 8, and 10 were also designated as Major Storm Events A, B, C, D, E, F and G for year 2018. The precipitation data for the significant/major storm events are further summarized in Table 5-15 and Appendix B. None of these events equaled or exceeded the 25-year, 24-hour design storm rainfall total of 4.42 inches on which the DRSTS was based.

A quality assurance (QA) and quality control (QC) review of the DUWA rain gauge data was performed and involved a review of the maintenance logs and a comparison of the recorded precipitation to other nearby rain gauges. The maintenance logs identified rain gauge issues which were detected during site visits. In almost all cases these issues were resolved during the site visit. In general, when a rain gauge had an issue, it recorded zero precipitation. All rain gauge data with documented maintenance log issues were flagged.

Table 5-1
Downriver Sewage Disposal System
Dry/Wet Weather Count by Month and Monthly Precipitation at DTW for 2018

Month	Number of Dry Weather Days	Number of Wet Weather Days	Monthly Total Precipitation (in)	
			DTW[1]	Departure From Normal[2]
January	22	9	1.36	-0.60
February	13	15	4.27	+2.25
March	17	14	2.63	+0.35
April	14	16	3.79	+0.89
May	6	25	6.35	+2.97
June	14	16	3.66	+0.14
July	25	6	4.24	+0.87
August	16	15	1.20	-1.80
September	14	16	6.46	+3.19
October	13	18	3.56	+1.04
November	6	24	3.63	+0.84
December	17	14	2.66	+0.20
Total	177	188	43.81	+10.34

Note:
1) Detroit Metropolitan Wayne County Airport (DTW)
2) Normal is a period mean computed by the National Climatic Data Center (NCDC) for a National Weather Service (NWS) observing station from a period comprising three consecutive 10-year decadal periods (for example, 1981-2010)

Table 5-2
Downriver Sewage Disposal System
Monthly Precipitation for 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
January	0.98	1.08	1.13	1.45	1.35	1.13	1.40	0.97*	0.00*	1.36	1.45	1.21	33	17	25
February	3.76	3.73	1.84*	4.10	4.27	4.08	4.66	1.91*	3.45*	4.16	3.20*	4.16	39	23	31
March	3.06	2.66	2.56	3.15	2.63	2.41	3.25	1.66	2.47	3.59	3.03	2.93	43	28	35
April	3.56	3.68	4.07	4.11	3.79	4.07	4.72	3.34	3.87	4.29	4.48	4.30	52	34	43
May	5.76	5.65	6.10	5.59*	6.10	7.56	7.58	6.62	5.72	7.51	7.05	7.72	77	55	66
June	2.88	3.68	2.97	4.21	3.66	2.55*	3.36	3.66	2.98	3.82	3.18	3.28	81	63	72
July	1.69	2.87	3.62	2.34*	4.24	5.14	4.53	2.72	3.24	3.59	2.55	2.75	86	66	76
August	3.10	4.15	1.48	3.11	1.20	1.64	1.92	1.23	1.05	1.11	1.42	1.39	85	67	76
September	6.86	6.06	4.77	6.85	6.46	6.04	5.42	5.03	7.24	4.34*	4.26	4.79*	78	60	69
October	3.93	3.40	3.65	3.50	3.56	3.74	3.95	2.78	3.22	2.48	4.22	3.60	61	44	53
Novembert	3.40	3.38	3.42	3.83	3.63	3.42	4.27	3.02	3.26	3.98	3.87	3.77	42	32	37
December	2.40	2.18	2.42	2.67	2.66	2.64	3.01	2.30	2.49	2.62	2.60	2.50	41	29	35
Total	41.38	42.52	38.03*	44.91*	43.55	44.42*	48.07	35.24*	38.99*	42.85*	41.31*	42.40*	60	43	51

* Missing or suspect data

Table 5-3
Downriver Sewage Disposal System
Daily Precipitation for January 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
1/1/2018	0	0	0	0	0	0	0	0	0*	0	0	0	13	-2	6
1/2/2018	0	0	0	0	0	0	0	0	0*	0	0	0	13	0	6
1/3/2018	0	0	0	0	0.01	0	0	0	0*	0	0	0.01	17	0	8
1/4/2018	0	0	0	0	0	0	0	0	0*	0	0	0	17	1	9
1/5/2018	0	0	0	0	0	0	0	0	0*	0	0	0	6	-4	1
1/6/2018	0	0	0	0	0	0	0	0	0*	0	0	0	10	-5	2
1/7/2018	0	0	0	0	0	0	0	0	0*	0	0	0	30	-6	12
1/8/2018	0.13	0.06	0.17	0.18	0.24	0.23	0.26	0.35	0*	0.18	0.55	0.20	37	29	33
1/9/2018	0	0	0	0	0	0	0	0	0*	0	0	0	37	25	31
1/10/2018	0.03	0.05	0.05	0.08	0.08	0.06	0.09	0.04	0*	0.08	0.10	0.08	46	25	36
1/11/2018	0.04	0.03	0.01	0.04	0.02	0	0	0	0*	0	0	0	57	43	50
1/12/2018	0.15	0.19	0.23	0.27	0.19	0.18	0.30	0.16	0*	0.26	0.17	0.23	55	14	34
1/13/2018	0	0	0	0	0	0	0	0	0*	0	0	0	19	11	15
1/14/2018	0	0	0	0	0	0	0	0	0*	0	0	0	20	8	14
1/15/2018	0	0.01	0.01	0.02	0.06	0.01	0.02	0	0*	0.04	0	0.03	22	15	18
1/16/2018	0	0	0	0	0	0	0	0	0*	0	0	0	22	7	14
1/17/2018	0	0	0	0	0	0	0	0	0*	0	0	0	24	2	13
1/18/2018	0	0	0	0	0	0	0	0.01	0*	0	0	0	28	13	20
1/19/2018	0	0	0	0	0	0	0	0.01	0*	0	0.02	0	36	21	28
1/20/2018	0	0	0	0	0	0	0	0	0*	0	0	0	43	31	37
1/21/2018	0	0	0	0	0	0	0	0.01	0*	0	0.01	0	42	33	38
1/22/2018	0.42	0.53	0.40	0.51	0.40	0.40	0.35	0.31	0*	0.38	0.37	0.36	55	38	46
1/23/2018	0.12	0.13	0.09	0.14	0.12	0.14	0.13	0.07	0*	0.12	0.16	0.12	47	29	38
1/24/2018	0	0	0	0	0	0	0	0	0*	0	0	0	30	25	28
1/25/2018	0	0	0	0	0	0	0	0	0*	0	0	0	35	25	30
1/26/2018	0	0	0	0	0	0	0	0	0*	0	0	0	53	27	40
1/27/2018	0	0	0	0	0	0	0.01	0.01	0*	0	0.01	0	50	31	40
1/28/2018	0	0	0	0	0	0	0	0	0*	0	0	0	47	27	37
1/29/2018	0.09	0.08	0.17	0.21	0.23	0.11	0.24	0*	0*	0.30	0.03	0.18	31	18	24
1/30/2018	0	0	0	0	0	0	0	0*	0*	0	0.02	0	23	13	18
1/31/2018	0	0	0	0	0	0	0	0*	0*	0	0.01	0	41	22	32
Total	0.98	1.08	1.13	1.45	1.35	1.13	1.40	0.97*	0.00*	1.36	1.45	1.21	33	17	25

* Missing or suspect data

Table 5-4
Downriver Sewage Disposal System
Daily Precipitation for February 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
2/1/2018	0	0	0	0	0	0	0	0*	0*	0	0	0	38	11	24
2/2/2018	0	0	0	0	0	0	0	0*	0*	0	0	0	21	9	15
2/3/2018	0	0	0	0	0	0	0	0*	0*	0	0	0	35	11	23
2/4/2018	0.08	0.06	0.20	0.22	0.29	0.21	0.36	0*	0*	0.24	0.27	0.31	35	11	23
2/5/2018	0.01	0.02	0.03	0.03	0.05	0.04	0.04	0*	0*	0.04	0	0.02	19	5	12
2/6/2018	0.02	0.01	0.02	0.02	0.03	0.02	0.05	0*	0*	0.03	0.08	0.04	26	10	18
2/7/2018	0.08	0.11	0.14	0.13	0.16	0.13	0.20	0*	0*	0.18	0.17	0.15	26	18	22
2/8/2018	0	0	0*	0	0	0	0	0*	0*	0	0	0	21	9	15
2/9/2018	0.55	0.59	0.65	0.61	0.72	0.65	0.78	0*	0.48	0.68	0*	0.66	26	13	20
2/10/2018	0.12	0.10	0.07	0.13	0.13	0.07	0.07	0*	0.09	0.09	0*	0.08	24	21	22
2/11/2018	0.18	0.22	0.25	0.23	0.24	0.29	0.27	0*	0.22	0.29	0*	0.23	29	21	25
2/12/2018	0	0	0	0	0	0	0	0*	0	0	0*	0	31	15	23
2/13/2018	0	0	0	0	0	0	0	0*	0	0	0*	0	28	13	20
2/14/2018	0	0	0	0	0	0	0	0*	0	0	0	0	43	19	31
2/15/2018	0.05	0.07	0.14	0.07	0.07	0.10	0.18	0.07*	0.08	0.11	0.14	0.09	45	35	40
2/16/2018	0	0	0	0	0	0	0	0	0	0	0	0	41	22	32
2/17/2018	0	0	0	0	0.01	0	0	0	0	0	0	0	34	19	26
2/18/2018	0	0	0	0	0	0	0	0	0	0	0	0	36	28	32
2/19/2018	0.56	0.67	0*	0.67	0.69	0.67	0.70	0.47	0.62	0.68	0.67	0.61	58	32	45
2/20/2018	1.44	1.20	0*	1.15	1.10	1.07	1.02	0.75	1.18	0.92	0.95	1.06	65	49	57
2/21/2018	0.48	0.48	0*	0.56	0.48	0.47	0.59	0.37	0.52	0.51	0.48	0.51	57	32	44
2/22/2018	0	0	0*	0	0	0	0	0	0	0	0	0	42	31	36
2/23/2018	0.12	0.13	0.26	0.18	0.20	0.28	0.30	0.19	0.16	0.29	0.32	0.29	50	35	42
2/24/2018	0.02	0.02	0.04	0.03	0.04	0.04	0.06	0.03	0.04	0.05	0.07	0.06	41	37	39
2/25/2018	0.05	0.05	0.04	0.07	0.06	0.04	0.04	0.03	0.06	0.05	0.05	0.05	50	35	42
2/26/2018	0	0	0	0	0	0	0	0	0	0	0	0	52	28	40
2/27/2018	0	0	0	0	0	0	0	0	0	0	0	0	60	32	46
2/28/2018	0	0	0	0	0	0	0	0	0	0	0	0	63	40	52
Total	3.76	3.73	1.84*	4.10	4.27	4.08	4.66	1.91*	3.45*	4.16	3.20*	4.16	39	23	31

* Missing or suspect data

Table 5-5
Downriver Sewage Disposal System
Daily Precipitation for March 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
3/1/2018	1.63	1.44	1.45	1.75	1.42	1.22	1.88	0.64*	1.29	2.32	1.76	1.70	40	33	36
3/2/2018	0	0	0	0	0	0	0	0*	0	0	0	0	40	30	35
3/3/2018	0	0	0	0	0	0	0	0*	0	0	0	0	42	26	34
3/4/2018	0	0	0	0	0	0	0	0	0	0	0	0	43	25	34
3/5/2018	0	0	0	0	0	0	0	0	0	0	0	0	37	25	31
3/6/2018	0.13	0.10	0.10	0.09	0.10	0.09	0.11	0.03	0.05	0.07	0.05	0.05	44	31	38
3/7/2018	0.02	0	0.02	0.02	0.02	0	0.03	0.07	0.02	0.01	0.02	0.02	36	26	31
3/8/2018	0	0	0	0	0	0	0	0	0	0	0	0	34	23	28
3/9/2018	0	0	0	0	0	0	0	0	0	0	0	0	35	26	30
3/10/2018	0	0	0	0	0	0	0	0	0	0	0	0	39	23	31
3/11/2018	0	0	0	0	0	0	0	0	0	0	0	0	43	23	33
3/12/2018	0.02	0.01	0.01	0.01	0.03	0	0	0.01	0	0	0	0	37	22	30
3/13/2018	0	0	0	0.01	0	0	0	0	0	0	0	0	37	26	32
3/14/2018	0	0	0	0	0	0	0	0	0	0	0	0	41	22	32
3/15/2018	0	0	0	0	0	0	0	0	0	0	0	0	39	24	32
3/16/2018	0	0	0	0	0	0	0	0	0	0	0	0	40	21	30
3/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	51	25	38
3/18/2018	0	0	0	0	0	0	0	0	0	0	0	0	60	24	42
3/19/2018	0	0	0	0	0	0	0	0	0	0	0	0	44	27	36
3/20/2018	0	0	0	0	0	0	0	0	0	0	0	0	45	26	36
3/21/2018	0	0	0	0	0	0	0	0	0	0	0	0	43	30	36
3/22/2018	0	0	0	0	0	0	0*	0*	0*	0*	0	0	47	26	36
3/23/2018	0	0	0	0	0	0	0	0	0	0	0	0	45	25	35
3/24/2018	0	0	0	0	0	0	0	0	0	0	0	0	44	24	34
3/25/2018	0	0	0	0	0	0	0	0	0	0	0	0	40	23	32
3/26/2018	0	0	0	0	0	0	0	0	0	0	0	0	51	31	41
3/27/2018	0.69	0.43	0.38	0.47	0.42	0.42	0.41	0.25	0.38	0.41	0.41	0.43	55	41	48
3/28/2018	0	0	0	0	0	0	0	0	0	0	0	0	48	39	44
3/29/2018	0.44	0.56	0.54	0.60	0.53	0.55	0.73	0.56	0.54	0.70	0.70	0.60	46	40	43
3/30/2018	0	0	0	0	0	0	0	0	0	0	0	0	47	33	40
3/31/2018	0.13	0.12	0.06	0.20	0.11	0.13	0.09	0.10	0.19	0.08	0.09	0.13	51	31	41
Total	3.06	2.66	2.56	3.15	2.63	2.41	3.25	1.66*	2.47	3.59	3.03	2.93	43	28	35

* Missing or suspect data

Table 5-6
Downriver Sewage Disposal System
Daily Precipitation for April 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
4/1/2018	0	0	0	0	0	0	0	0	0	0	0	0	43	29	36
4/2/2018	0	0	0	0	0	0	0	0	0	0	0	0	42	24	33
4/3/2018	0.81	0.77	1.01	0.82	0.89	1.06	0.88	1.00	0.85	0.98	0.80	1.07	42	35	38
4/4/2018	0.01	0	0	0.01	0	0	0	0.02	0	0	0.01	0	38	28	33
4/5/2018	0	0	0	0	0	0	0	0	0	0	0	0	45	27	36
4/6/2018	0.13	0.10	0.15	0.14	0.12	0.13	0.17	0.10	0.13	0.14	0.16	0.14	46	27	36
4/7/2018	0	0	0	0	0	0	0	0	0	0	0	0	40	22	31
4/8/2018	0	0	0	0	0	0	0	0	0	0	0	0	42	21	32
4/9/2018	0	0	0	0	0.03	0.02	0	0	0	0	0	0.01	40	31	36
4/10/2018	0	0	0	0	0	0	0	0	0	0	0	0	47	30	38
4/11/2018	0	0	0	0.01	0	0	0	0	0	0	0	0	58	35	46
4/12/2018	0.04	0.06	0.05	0.05	0.04	0.05	0.05	0.03	0.02	0.04	0.05	0.03	76	42	59
4/13/2018	0	0	0	0	0	0	0	0	0	0	0	0	60	39	50
4/14/2018	0.88	0.87	0.87	0.97	0.83	0.83	1.16	0.65	0.90	0.94	0.93	0.84	46	32	39
4/15/2018	1.27	1.45	1.50	1.53	1.46	1.47	1.87	1.10	1.54	1.59	1.83	1.63	42	32	37
4/16/2018	0.01	0.02	0.01	0.02	0.01	0.02	0.03	0.02	0.02	0.02	0.04	0.03	38	32	35
4/17/2018	0	0	0.01	0.02	0.03	0.03	0.01	0.02	0.03	0.03	0.02	0.02	38	29	34
4/18/2018	0	0.01	0.02	0.02	0.01	0.02	0.03	0.01	0	0.03	0.04	0.03	46	33	40
4/19/2018	0	0	0	0	0	0	0	0	0	0	0	0	55	35	45
4/20/2018	0	0	0	0	0	0	0	0	0	0	0	0	59	32	46
4/21/2018	0	0	0	0	0	0	0	0	0	0	0	0	57	34	46
4/22/2018	0	0	0	0	0	0	0	0	0	0	0	0	62	35	48
4/23/2018	0	0	0	0	0	0	0	0	0	0	0	0	72	42	57
4/24/2018	0.22	0.20	0.26	0.29	0.21	0.27	0.35	0.21	0.24	0.31	0.41	0.33	58	51	54
4/25/2018	0.01	0.03	0.03	0.04	0.02	0.02	0.04	0.02	0.01	0.04	0.04*	0.04	62	43	52
4/26/2018	0	0	0	0	0	0	0	0	0	0	0	0	64	39	52
4/27/2018	0	0.02	0	0	0	0	0	0	0	0.01	0.02	0	67	43	55
4/28/2018	0.18	0.15	0.16	0.19	0.14	0.15	0.13	0.16	0.13	0.16	0.13	0.13	52	37	44
4/29/2018	0	0	0	0	0	0	0	0	0	0	0	0	59	32	46
4/30/2018	0	0	0*	0*	0	0	0	0	0	0	0	0	72	38	55
Total	3.56	3.68	4.07	4.11	3.79	4.07	4.72	3.34	3.87	4.29	4.48	4.30	52	34	43

* Missing or suspect data

Table 5-7
Downriver Sewage Disposal System
Daily Precipitation for May 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
5/1/2018	0	0	0	0	0	0	0	0	0	0	0	0	85	50	67
5/2/2018	0.74	0.50	0.93	0.43	0.46	0.66	0.72	0.68	0.32	0.72	0.61	0.56	85	59	72
5/3/2018	0.60	0.61	0.49	0.49	0.52	0.57	0.65	0.38	0.52	0.43	0.65*	0.47	74	56	65
5/4/2018	0.07	0.09	0.18	0.11	0.06	0.18	0.34	0.16	0.08	0.26	0.22*	0.21	78	55	67
5/5/2018	0	0	0	0	0	0	0	0	0	0	0	0	79	52	65
5/6/2018	0.01	0.12	0.15	0.06	0.19	0.49	0.50	0.20	0.65	0.39	0.26	1.15	78	52	65
5/7/2018	0	0	0	0	0	0	0	0	0	0	0	0	68	46	57
5/8/2018	0	0	0	0	0	0	0	0	0	0	0	0	75	46	61
5/9/2018	0.05	0.13	0.09	0.04	0.06	0.24	0.31	0.20	0.07	0.24	0.16	0.27	81	52	66
5/10/2018	0.16	0.03	0.09	0.07	0.04	0.07	0.04	0.04	0.05	0.07	0.05	0.10	72	51	62
5/11/2018	1.06	1.62	0.95	1.28	1.39	1.68	0.92	1.14	0.59	1.36	0.84	1.02	51	43	47
5/12/2018	0.76	0.62	0.43	1.11	1.32	0.85	0.75	1.37	0.91	0.83	1.18	1.12	51	43	47
5/13/2018	0.49	0.39	0.43	0.45	0.44	0.42	0.47	0.45	0.51	0.42	0.38	0.46	63	45	54
5/14/2018	0.31	0.39	0.43	0.33	0.32	0.40	0.45	0.30	0.22	0.51	0.33	0.38	77	51	64
5/15/2018	0.45	0.21	0.38	0.32	0.36	0.39	0.35	0.46	0.38	0.19	0.38	0.44	73	55	64
5/16/2018	0	0	0	0	0	0	0	0	0	0	0	0	77	50	64
5/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	79	54	66
5/18/2018	0	0.01	0	0	0	0	0	0	0	0	0	0	74	53	64
5/19/2018	0.48	0.13	0.50	0.24	0.19	0.83	1.37	0.64	0.86	1.47	1.08	0.59	77	59	68
5/20/2018	0	0	0	0	0	0	0	0	0	0	0	0	66	55	61
5/21/2018	0.48	0.58	0.45	0.46	0.43	0.46	0.38	0.41	0.42	0.37	0.37	0.40	67	50	58
5/22/2018	0.01	0.10	0.20	0.14	0.13	0.23	0.18	0.16	0.06	0.09	0.06	0.24	77	54	65
5/23/2018	0	0.01	0	0	0	0.01	0	0	0	0	0*	0	81	53	67
5/24/2018	0	0	0	0	0	0	0	0	0	0	0	0	82	58	70
5/25/2018	0	0*	0	0	0	0	0	0	0	0	0	0	87	58	73
5/26/2018	0	0	0.20	0	0	0	0.06	0	0	0	0.01	0	82	65	73
5/27/2018	0	0	0	0	0	0	0	0	0	0	0.01*	0	91	64	78
5/28/2018	0	0	0	0	0	0	0	0	0	0	0*	0	94	69	82
5/29/2018	0	0	0	0	0	0	0	0	0	0	0	0	91	70	81
5/30/2018	0.09	0.10	0.08	0.06	0.19	0.07*	0.07	0.03	0.08	0.16	0.46*	0.31*	86	69	78
5/31/2018	0	0.01	0.12	0	0	0.01	0.02	0	0	0	0	0	90	73	82
Total	5.76	5.65	6.10	5.59	6.10	7.56	7.58	6.62	5.72	7.51	7.05	7.72	77	55	66

* Missing or suspect data

Table 5-8
Downriver Sewage Disposal System
Daily Precipitation for June 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
6/1/2018	0.62	1.38	0.91	1.22	0.05	0.04	0.25	0.68	0.73	0.81	0.43	0.34	82	61	72
6/2/2018	0	0	0	0	0	0	0	0	0	0	0	0	72	58	65
6/3/2018	0.39	0.23	0.06	0.12	0.11	0.16	0.04	0.12	0.34	0.03	0.02	0.04	76	59	67
6/4/2018	0	0.03	0	0	0.02	0.04	0.05	0.01	0	0	0	0	74	58	66
6/5/2018	0.07	0.04	0.12*	0.10*	0.10	0.10	0.13*	0.19	0.20	0.16*	0.13	0.18	71	54	63
6/6/2018	0	0	0	0	0	0	0	0	0	0	0	0	73	49	61
6/7/2018	0*	0*	0	0	0	0	0	0*	0*	0	0	0	84	60	72
6/8/2018	0	0	0	0	0	0	0	0	0	0	0	0	83	62	73
6/9/2018	0.25	0.25	0.26	0.14	0.13	0.11	0.12	0.07	0.10	0.12	0.12	0.07	73	65	69
6/10/2018	0	0.01	0.04	0.02	0.05	0.04	0.06	0.03	0.02	0.03	0.05	0.05	68	63	65
6/11/2018	0	0	0	0	0	0	0	0	0	0	0*	0	77	60	69
6/12/2018	0	0	0	0	0	0	0	0	0	0	0	0	77	62	70
6/13/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	64	75
6/14/2018	0	0	0	0	0	0*	0	0	0	0	0	0*	85	59	72
6/15/2018	0	0	0	0	0	0	0	0	0	0	0	0	84	59	72
6/16/2018	0.17	0.05	0.06	0.22	0.11	0.13	0.08	0.02	0	0.07	0.02	0	86	68	77
6/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	96	69	83
6/18/2018	0.97	1.10	0.75	1.23	1.39	1.58	1.19	1.52	0.86	1.33	1.34	1.33	96	72	84
6/19/2018	0	0	0.01	0.01	0	0	0	0	0.01	0	0	0	79	68	73
6/20/2018	0.20	0.46	0.57	0.29	0.43	0.28	0.45	0.26	0.24	0.32	0.28	0.29	74	59	66
6/21/2018	0	0	0	0	0	0	0	0	0	0	0	0	79	60	70
6/22/2018	0.02	0.02	0	0.01	0.01	0.06	0.09	0.02	0	0.03	0	0	74	65	69
6/23/2018	0.10	0.09	0.15	0.80	1.09	0.01*	0.40	0.67	0.38	0.53	0.46	0.39	78	67	73
6/24/2018	0	0	0	0	0.07	0*	0.04	0	0.04	0	0.04	0.07	77	64	71
6/25/2018	0	0	0	0	0	0*	0	0	0	0	0	0	76	56	66
6/26/2018	0	0	0	0	0	0*	0	0	0	0	0	0.01	80	55	68
6/27/2018	0.09	0.02	0.04	0.05	0.10	0*	0.46	0.07	0.06	0.39	0.29	0.51	81	68	74
6/28/2018	0	0	0	0	0	0*	0	0	0	0	0	0	89	67	78
6/29/2018	0	0	0	0	0	0*	0	0	0	0	0	0	91	69	80
6/30/2018	0	0	0	0	0	0*	0	0	0	0	0	0	94	76	85
Total	2.88	3.68	2.97	4.21	3.66	2.55*	3.36	3.66	2.98	3.82	3.18	3.28	81	63	72

* Missing or suspect data

Table 5-9
Downriver Sewage Disposal System
Daily Precipitation for July 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
7/1/2018	0.09	0	0	0	0	0*	0	0	0	0	0	0	93	75	84
7/2/2018	0	0	0*	0	0	0*	0*	0	0	0	0*	0	90	76	83
7/3/2018	0	0*	0	0	0	0	0	0	0	0	0	0	91	70	81
7/4/2018	0	0	0.24	0	0	0	0	0	0	0	0	0	93	75	84
7/5/2018	0.05	0.01	0.01	0	0	0.23	0.18	0.09	0.10	0.16	0.08	1.05	96	78	87
7/6/2018	0	0	0	0	0	0	0	0	0*	0	0	0	81	63	72
7/7/2018	0	0	0	0	0	0	0	0	0	0	0	0	81	55	68
7/8/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	58	72
7/9/2018	0	0	0	0	0	0	0	0	0	0	0	0	92	62	77
7/10/2018	0	0	0	0	0	0	0	0	0	0	0	0	89	69	79
7/11/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	62	74
7/12/2018	0	0	0	0	0	0	0	0	0	0	0	0	83	61	72
7/13/2018	0	0	0	0	0	0	0	0	0	0	0	0	90	68	79
7/14/2018	0	0	0	0	0	0	0	0	0	0	0	0	89	72	81
7/15/2018	0	0.48	0	0.31	0.29	0	0	0.06	0	0	0	0	94	74	84
7/16/2018	0.08	0.25	0.30	0.14	0.07	0.15	0.27	0.01	0	0.15	0.08	0	91	73	82
7/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	84	65	74
7/18/2018	0	0	0	0	0	0	0	0	0	0	0	0	83	61	72
7/19/2018	0	0	0	0	0	0	0	0	0	0	0	0	82	62	72
7/20/2018	0.04	0.02	0.04	0.04	0.04	0.04	0.04	0.01	0.02	0.03	0.02	0.03	82	68	75
7/21/2018	0.19	0.29	0.45	0*	0.47	0.71	0.65	0.46	0.41	0.83	0.62	0.33	73	68	71
7/22/2018	0.01	0.01	0.03	0*	0.03	0.02	0.03	0.02	0.02	0.04	0.02	0.03	73	64	69
7/23/2018	0	0	0	0*	0	0	0	0*	0	0*	0	0	81	61	71
7/24/2018	0.02	0	0.01	0.01	0	0	0	0	0.02	0	0.16	0	86	70	78
7/25/2018	0	0	0	0	0	0	0	0	0	0	0	0*	90	68	79
7/26/2018	0.28*	0.58	0.08	0.31	0.36	0.33	0.41	0.16	0.10	0.21	0.31	0.16	86	66	76
7/27/2018	0.01	0	0	0	0.02	0	0	0	0	0	0	0	83	59	71
7/28/2018	0.02	0.04	0	0.07	0	0	0	0	0	0	0	0	82	59	71
7/29/2018	0	0	0	0	0	0	0	0	0	0	0	0	83	64	73
7/30/2018	0	0	0	0	0	0	0	0	0	0	0	0	80	62	71
7/31/2018	0.90	1.19	2.46	1.46	2.96	3.66	2.95	1.91	2.57	2.17	1.26	1.15	80	65	73
Total	1.69	2.87	3.62	2.34*	4.24	5.14	4.53	2.72	3.24	3.59	2.55	2.75	86	66	76

* Missing or suspect data

Table 5-10
Downriver Sewage Disposal System
Daily Precipitation for August 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
8/1/2018	0.34	0.24	0.02	1.04	0.04	0.03	0.05	0.27	0.11	0.07	0.01	0.11	81	65	73
8/2/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	62	74
8/3/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	66	76
8/4/2018	0	0	0	0	0	0	0	0	0	0	0	0	88	67	77
8/5/2018	0	0	0	0	0	0	0	0	0	0	0	0	92	71	82
8/6/2018	0.80	0.54	0.43	0.39	0.31	0.45	0.50	0.24	0.33	0.40	0.52	0.30	89	72	81
8/7/2018	0.18	0.01	0.02*	0	0	0.02	0.06*	0*	0.01	0.02*	0.05*	0.03	86	70	78
8/8/2018	0	0*	0.02	0.01	0.02	0	0	0	0	0	0	0	87	72	80
8/9/2018	0.04	0	0.15	0.01	0.01	0	0	0	0.01	0	0	0	86	66	76
8/10/2018	0	0	0	0	0	0	0	0	0	0	0	0	84	67	75
8/11/2018	0.12	0.10	0.04	0.50	0.02	0.01	0	0	0	0	0	0	86	62	74
8/12/2018	0.15	0.26	0.01	0.01	0	0	0	0	0	0	0	0	85	66	75
8/13/2018	0	0.01	0	0	0	0	0	0	0	0	0	0	86	65	75
8/14/2018	0	0	0	0	0	0	0	0	0	0	0	0	88	66	77
8/15/2018	0	0	0	0	0	0	0	0	0	0	0	0	87	69	78
8/16/2018	0.24	0.36	0.21	0.29	0.24	0.41	0.11	0.24	0.21	0.13	0.22	0.23	77	71	74
8/17/2018	0.08	0.94	0.10	0.26	0.13	0.17	0.63	0.04	0.03	0.08	0.18	0.33	82	72	77
8/18/2018	0.54	1.32	0.16	0.24	0.11	0.14	0.06	0.02	0.03	0.01	0	0	85	69	77
8/19/2018	0	0	0	0	0	0	0	0.01	0	0	0	0	81	69	75
8/20/2018	0.11	0.03	0.02	0.02	0	0	0	0	0	0	0	0	83	67	75
8/21/2018	0.32	0.16	0.12	0.14	0.12	0.24	0.23	0.23	0.17	0.18	0.22	0.13	85	69	77
8/22/2018	0.05	0.04	0.04	0.03	0	0.01	0	0	0	0	0	0	78	60	69
8/23/2018	0	0	0	0	0	0	0	0	0	0	0	0	83	57	70
8/24/2018	0	0	0	0	0	0	0	0	0	0	0	0	80	59	70
8/25/2018	0.12	0.14	0.14	0.17	0.20	0.16	0.27	0.17	0.15	0.21	0.20	0.25	78	69	74
8/26/2018	0.01	0	0	0	0	0	0	0	0	0	0	0	87	70	79
8/27/2018	0	0	0	0	0	0	0.01	0.01	0	0.01	0.02	0.01	91	73	82
8/28/2018	0	0	0	0	0	0	0	0	0	0	0	0	91	76	83
8/29/2018	0	0	0	0	0	0	0	0	0	0	0	0	87	68	78
8/30/2018	0*	0	0	0	0	0	0	0	0	0	0	0	78	60	69
8/31/2018	0	0	0	0	0	0	0	0	0	0	0	0	82	59	71
Total	3.10	4.15	1.48	3.11	1.20	1.64	1.92	1.23	1.05	1.11	1.42	1.39	85	67	76

* Missing or suspect data

Table 5-11
Downriver Sewage Disposal System
Daily Precipitation for September 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
9/1/2018	0.22	0.72	0.75	1.08	0.73	0.76	0.19	0.57	0.64	0.22	0.37	0.52	87	67	77
9/2/2018	0.01	0	0	0.01	0	0	0	0	0	0.01	0.01	0*	90	72	81
9/3/2018	2.82	1.57	0.64	1.64	0.81	0.52	0.34	0.42	0.91	0*	0.24	0*	91	71	81
9/4/2018	0	0	0	0.02	0	0.01	0	0.01	0.01	0*	0.01	0*	92	70	81
9/5/2018	0.31	0.25	0	0.17	0.07	0.01	0.01	0.03	0.01	0*	0	0*	93	73	83
9/6/2018	0.03	0.03	0.03	0.07	0.02	0.01	0.02	0.01	0.03	0*	0.01	0*	77	66	72
9/7/2018	0	0	0	0	0	0	0	0	0	0*	0	0*	74	63	68
9/8/2018	0	0	0	0	0	0	0	0	0	0*	0	0*	67	59	63
9/9/2018	0	0	0.08	0.01	0.02	0.05	0.19	0.02	0.01	0*	0.10	0*	61	56	58
9/10/2018	0.11	0.14	0.30	0.23	0.28	0.25	0.24	0.21	0.29	0.08*	0.17	0*	65	56	60
9/11/2018	0	0	0	0	0	0	0	0	0	0	0	0*	77	58	67
9/12/2018	0	0.01	0	0*	0	0*	0	0.01	0*	0	0	0*	76	56	66
9/13/2018	0	0	0	0	0	0	0	0	0	0	0	0	78	60	69
9/14/2018	0	0	0	0	0	0	0	0	0	0	0	0	85	66	75
9/15/2018	0	0	0	0	0	0	0	0	0	0	0	0	87	69	78
9/16/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	66	76
9/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	67	76
9/18/2018	0	0	0.01	0.01	0.03	0.04	0.48	0	0.01	0.01	0.02	0	90	67	78
9/19/2018	0	0	0	0	0	0	0	0	0	0	0.01	0	79	65	72
9/20/2018	0.65	0.70	0.17	0.92	1.53	0.82	0.24	1.00	1.83	0.95	0.66	1.23	79	64	72
9/21/2018	0	0	0	0	0	0	0	0	0	0*	0	0	86	60	73
9/22/2018	0	0	0	0	0	0	0	0	0	0*	0	0	64	51	58
9/23/2018	0	0	0	0	0	0	0	0	0	0*	0	0	71	48	60
9/24/2018	0.44	0.37	0.51	0.53	0.40	0.37	0.43	0.31	0.34	0.48*	0.31	0.36	69	54	62
9/25/2018	2.20	2.21	2.21	2.07	2.51	3.15	3.24	2.38	3.05	2.54	2.32	2.60	76	67	71
9/26/2018	0	0	0	0.01	0.01	0	0	0	0	0.01	0.01*	0	72	51	62
9/27/2018	0	0	0.01	0	0	0	0	0	0	0	0	0	64	49	56
9/28/2018	0.01	0.02	0.01	0.03	0.01	0.01	0	0.01	0.01	0.01	0	0.01	71	48	60
9/29/2018	0	0	0	0	0	0	0	0	0	0	0	0	64	45	55
9/30/2018	0.06	0.04	0.05	0.05	0.04	0.04	0.04	0.05	0.10	0.03	0.02	0.07	67	47	57
Total	6.86	6.06	4.77	6.85	6.46	6.04	5.42	5.03	7.24	4.34*	4.26	4.79*	78	60	69

* Missing or suspect data

Table 5-12
Downriver Sewage Disposal System
Daily Precipitation for October 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
10/1/2018	0.08	0.05	0.06	0.15	0.16	0.17	0.09	0.17	0.19	0.06	0.21	0.24	62	54	58
10/2/2018	0.30	0.17	0.25	0.28	0.27	0.32	0.19	0.27	0.34	0.23	0.20	0.63	73	59	66
10/3/2018	0	0	0	0	0	0	0	0	0	0	0	0	78	57	68
10/4/2018	0.06	0	0.02	0.01	0.02	0.03	0.01	0.01	0.07	0.02	0.01	0.02	78	47	63
10/5/2018	0.01	0	0.01	0	0	0	0.01	0	0	0	0	0	61	45	53
10/6/2018	1.73	1.40	1.11	1.32	1.25	1.05	1.42	0.78	1.02	0.54	1.34	0.92	81	61	71
10/7/2018	0.04	0.03	0.06	0.05	0.05	0.05	0.06	0.04	0.04	0.02	0.04	0.05	63	57	60
10/8/2018	0.01	0.01	0.11	0.01	0	0.01	0.01	0.01	0.01	0	0.37	0.01	82	57	70
10/9/2018	0	0	0	0	0	0	0	0	0	0	0	0	86	67	76
10/10/2018	0.02	0.02	0.07	0.05	0.08	0.06	0.03	0.03	0.06	0	0.01	0.04	80	66	73
10/11/2018	0	0	0	0.01	0	0	0	0	0.01	0	0	0	72	47	59
10/12/2018	0.17	0.15	0.10	0.11	0.09	0.10	0.10	0.08	0.11	0.01	0.06	0.10	49	41	45
10/13/2018	0.03	0.02	0.04	0.05	0.03	0.05	0.04	0.04	0.02	0	0.03	0.03	54	40	47
10/14/2018	0	0	0	0	0	0	0	0	0	0	0	0	58	39	48
10/15/2018	0.04	0.07	0.04	0.06	0.05	0.04	0.03	0.03	0.06	0.03	0.02	0.04	55	35	45
10/16/2018	0	0	0	0	0	0.01	0	0.01	0	0.01	0	0	57	31	44
10/17/2018	0	0	0*	0*	0	0	0	0	0	0	0*	0	50	35	43
10/18/2018	0	0	0	0	0	0	0	0	0	0	0	0	53	30	42
10/19/2018	0.02	0.02	0.01	0.01	0.02	0.03	0.01	0.01	0.01	0.02	0.01	0.02	60	39	50
10/20/2018	0.33	0.40	0.41	0.24	0.28	0.32	0.51	0.19	0.25	0.23	0.28	0.21	59	37	48
10/21/2018	0	0	0	0	0	0	0	0	0	0	0	0	46	36	41
10/22/2018	0	0*	0	0	0	0*	0*	0*	0*	0*	0	0	58	35	46
10/23/2018	0	0	0	0	0	0	0	0	0	0	0	0*	56	39	47
10/24/2018	0	0	0	0	0	0	0	0	0	0	0	0	52	33	43
10/25/2018	0	0	0	0	0	0	0	0	0	0	0	0	50	32	41
10/26/2018	0	0	0.02	0	0.01	0.01	0.01	0	0	0	0	0	52	43	47
10/27/2018	0.17	0.10	0.08	0.11	0.10	0.13	0.17	0.12	0.12	0.19	0.16	0.21	46	43	45
10/28/2018	0.31	0.27	0.18	0.23	0.21	0.22	0.25	0.15	0.14	0.21	0.25	0.17	48	41	45
10/29/2018	0*	0	0	0	0	0	0	0	0	0	0	0	56	40	48
10/30/2018	0	0	0	0	0	0	0	0	0	0	0	0	59	36	47
10/31/2018	3.93	0.69	1.08	0.81	0.94	1.14	1.01	0.84	0.77	0.91	1.23*	0.91	59	47	53
Total	3.93	3.40	3.65	3.50	3.56	3.74	3.95	2.78	3.22	2.48	4.22	3.60	61	44	53

* Missing or suspect data

Table 5-13
Downriver Sewage Disposal System
Daily Precipitation for November 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
11/1/2018	1.17	1.24	1.26	1.28	1.23	1.36	1.59	1.10	1.23	1.49	1.37*	1.29	49	44	46
11/2/2018	0.28	0.26	0.23	0.28	0.27	0.22	0.24	0.21	0.26	0.23	0.21	0.20	48	43	46
11/3/2018	0	0	0	0	0	0	0	0	0	0	0	0	50	37	44
11/4/2018	0	0	0	0	0	0	0	0	0	0	0	0	54	38	46
11/5/2018	0.16	0.11	0.11	0.14	0.13	0.12	0.10	0.07	0.09	0.10	0.10*	0.12	57	48	53
11/6/2018	0.28	0.23	0.15	0.18	0.16	0.16	0.22	0.10	0.13	0.19	0.22*	0.18	58	45	51
11/7/2018	0	0	0	0	0	0	0	0	0	0	0	0.21	47	40	43
11/8/2018	0	0	0	0	0	0	0	0	0	0	0	0	43	36	39
11/9/2018	0.21	0.28	0.30	0.31	0.30	0.32	0.43	0.30	0.31	0.33	0.32	0.31	40	30	35
11/10/2018	0	0	0	0	0	0	0	0	0	0	0	0	37	23	30
11/11/2018	0	0	0	0	0	0	0	0	0	0	0	0	41	29	35
11/12/2018	0.05	0.07	0.07	0.03	0.09	0.06	0.07	0.03	0.06	0.07	0.05	0.06	42	28	35
11/13/2018	0.05	0.02	0.03	0.07	0.03	0.02	0.02	0.04	0.04	0.03	0.03	0.03	37	24	31
11/14/2018	0	0	0	0.01	0	0	0	0	0	0	0	0	34	19	27
11/15/2018	0.25	0.24	0.24	0.21	0.25	0.22	0.30	0.20	0.20	0.24	0.25	0.23	35	29	32
11/16/2018	0	0	0	0.04	0	0	0	0.01	0	0	0	0	39	32	36
11/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	41	34	37
11/18/2018	0.11	0.10	0.11	0.14	0.12	0.09	0.13	0.10	0.08	0.10	0.09	0.10	37	30	34
11/19/2018	0	0	0	0.01	0	0	0	0.01	0	0	0	0	40	26	33
11/20/2018	0.01	0.02	0.04	0.02	0.05	0.04	0.04	0.01	0.03	0.04	0.03	0.03	35	28	32
11/21/2018	0	0	0	0	0	0	0	0	0	0	0	0	37	23	30
11/22/2018	0	0	0	0	0	0	0	0	0	0	0	0	31	22	27
11/23/2018	0	0	0	0	0	0	0	0	0	0	0	0	46	29	38
11/24/2018	0.28	0.29	0.32	0.42	0.38	0.37	0.39	0.24	0.31	0.39	0.42	0.37	50	42	46
11/25/2018	0	0	0	0	0	0	0	0	0	0	0.02*	0	47	42	45
11/26/2018	0.55	0.52	0.56	0.68	0.60	0.44	0.74	0.59	0.52	0.77	0.76	0.64	42	31	37
11/27/2018	0	0	0	0	0	0	0	0	0	0	0	0	33	28	31
11/28/2018	0	0	0	0	0	0	0	0	0	0	0	0	30	28	29
11/29/2018	0	0	0	0	0.02	0	0	0	0	0	0	0	34	26	30
11/30/2018	0	0	0	0.01	0	0	0	0.01	0	0	0	0	45	31	38
Total	3.40	3.38	3.42	3.83	3.63	3.42	4.27	3.02	3.26	3.98	3.87	3.77	42	32	37

* Missing or suspect data

Table 5-14
Downriver Sewage Disposal System
Daily Precipitation for December 2018

Date	Daily Precipitation (inches)												DTW Daily Temperature (°F)		
	R-14	R-18	R-02	R-10	DTW	R-09	R-04	R-08	R-15	R-17	R-06	R-16	Max.	Min.	Avg.
12/1/2018	0.34	0.31	0.45	0.32	0.41	0.46	0.63	0.35	0.43	0.45	0.41	0.40	44	30	37
12/2/2018	0.20	0.13	0.12	0.24	0.17	0.10	0.13	0.13	0.15	0.10	0.17*	0.11	60	40	50
12/3/2018	0	0	0.01	0.01	0.01	0	0.02	0.01	0	0.01	0.01	0.01	41	32	37
12/4/2018	0	0	0	0	0	0*	0	0	0	0	0	0	35	25	30
12/5/2018	0	0	0	0	0	0*	0	0	0	0	0	0	34	25	30
12/6/2018	0	0	0	0	0	0*	0.01	0	0	0	0	0	37	28	33
12/7/2018	0	0	0	0	0	0*	0	0	0	0	0	0	35	26	31
12/8/2018	0	0	0	0	0	0*	0	0	0	0	0	0	32	20	26
12/9/2018	0	0	0	0	0	0*	0	0	0	0	0	0	36	17	27
12/10/2018	0	0	0	0	0	0*	0	0	0	0	0	0	29	21	25
12/11/2018	0*	0*	0	0	0	0*	0	0*	0*	0	0	0	35	25	30
12/12/2018	0.08	0.07	0.05*	0.08*	0.07	0.07	0.07*	0.05	0.06	0.07*	0.07*	0.07	41	22	32
12/13/2018	0	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0	43	33	38
12/14/2018	0.10	0.06	0.06	0.09	0.07	0.07	0.05	0.07	0.06	0.05	0.04	0.05	50	37	44
12/15/2018	0	0	0	0	0	0	0	0	0	0	0	0	41	33	37
12/16/2018	0	0	0	0	0	0	0	0	0	0	0	0	47	31	39
12/17/2018	0	0	0	0	0	0	0	0	0	0	0	0	41	26	34
12/18/2018	0	0	0	0	0	0	0	0	0	0	0	0	36	24	30
12/19/2018	0	0	0	0	0	0	0	0	0	0	0	0*	45	23	34
12/20/2018	0.22	0.28	0.31	0.33	0.31	0.33	0.38	0.31	0.29	0.34	0.37	0.34	43	34	38
12/21/2018	0.31	0.22	0.21	0.24	0.27	0.32	0.31	0.30	0.29	0.28	0.26	0.27	41	33	37
12/22/2018	0	0	0	0	0	0	0	0	0	0	0	0	34	31	33
12/23/2018	0	0	0	0	0	0	0	0	0	0	0	0	37	31	34
12/24/2018	0	0	0	0	0	0	0	0	0	0	0	0	34	30	32
12/25/2018	0	0	0	0	0	0	0	0	0	0	0	0	33	24	29
12/26/2018	0	0	0	0	0	0	0	0	0	0	0	0	48	30	39
12/27/2018	0.24	0.25	0.31	0.37	0.39	0.34	0.35	0.28	0.31	0.36	0.33	0.35	48	34	41
12/28/2018	0.02	0.01	0.01	0.02	0.03	0.03	0.02	0.01	0.01	0.01	0.03*	0.03	56	34	45
12/29/2018	0.02	0.02	0	0	0.04	0.01	0	0	0.02	0	0	0.01	34	29	32
12/30/2018	0.01	0	0	0.03	0	0.01	0	0	0.01	0	0	0	36	27	32
12/31/2018	0.86	0.81	0.87	0.93	0.88	0.89	1.03	0.78	0.84	0.94	0.90	0.86	48	27	38
Total	2.40	2.18	2.42	2.67	2.66	2.64	3.01	2.30	2.49	2.62	2.60	2.50	41	29	35

* Missing or suspect data

Table 5-15
Downriver Sewage Disposal System
Summary of Precipitation Data for Significant Storm Events

Period: 1/1/2018 through 12/31/2018

Significant Event No.[1]	Major Storm Event[2]	DWTF Peak Hourly Flow Rate (cfs)	Start Date	Stop Date	Preceding Week Rainfall (inches)	Event Precipitation Depth (inches)				Coefficient of Variation[4]
						Minimum	Average[3]	Maximum	Std. Dev	
1	A	390	2/19/2018	2/21/2018	0.05	0.00	2.02	2.48	0.68	33%
2	B	275	3/1/2018	3/1/2018	0.19	0.64	1.54	2.32	0.41	27%
3	C	372	4/14/2018	4/15/2018	0.04	1.75	2.41	3.03	0.31	13%
4	-	183	5/2/2018	5/4/2018	0.18	0.92	1.31	1.71	0.24	18%
5	D	342	5/11/2018	5/13/2018	0.22	1.81	2.53	3.15	0.41	16%
6	-	162	6/18/2018	6/19/2018	0.17	0.76	1.22	1.58	0.25	21%
7	E	182	7/31/2018	8/1/2018	0.31	1.24	2.25	3.69	0.80	36%
8	F	190	9/24/2018	9/25/2018	0.65	2.56	2.94	3.66	0.39	13%
9	-	145	10/6/2018	10/6/2018	0.51	0.54	1.16	1.73	0.32	28%
10	G	203	10/31/2018	11/2/2018	0.48	2.06	2.45	2.84	0.26	11%

Notes:

1) Significant storm events are defined as those with at least 0.5 inches of rainfall occurring on a single day with an event total of at least 1.0 inch of rainfall. Significant storm events are separated by at least 2 consecutive days without precipitation over 0.1 inches. This storm event definition is based on the arithmetic mean of the rainfall recorded by all rain gauges used in the analysis for that storm.

2) Major storm events are a subgroup of significant storm events which result in the peak hourly influent flow rate to the DWTF reaching or exceeding 175 MGD (271 cfs).

3) The average precipitation value is an arithmetic average of the collection of point gauges listed on Tables B-1 through B-10.

4) The coefficient of variation is the ratio of the standard deviation to the average. It provides a normalized assessment of the degree of spatial variability for a given event. This allows comparisons to be made between events regarding their uniformity over the service area independent of the magnitude of each event. A low coefficient of variation means the storm event was spatially uniform over the district, high coefficient of variation means the storm event was highly variable over the district.

6) The peak hourly flow rate at the DWTF for Major Storm Events E, F and G were less than the peak design flow rate of 348 cfs (225 MGD) because of not being able to pump fully at the IPS due to the temporary power problems.

6) PEAK FLOW RATES FOR CONTROLLED FLOW COMMUNITIES

Tables 6-1 and 6-2 list the peak hourly flow rates for the flow meters along the Riverdrive Interceptor for each significant/major storm event. The wet weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017) are also given. These MAFLs are used to check whether or not the incoming flow rates are being regulated properly for the significant/major storm events. Exceedences of the MAFLs are highlighted (if any).

Incremental peak hourly flow rates are estimated if the total peak hourly flow rates for the flow meters exceed the MAFLs by 5% or more. Tables 6-3 and 6-4 list the incremental peak hourly flow rates for the flow meters along the Riverdrive Interceptor for these events. The incremental wet weather MAFLs from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017) are also given. Exceedences of the incremental MAFLs are highlighted (if any).

Appendix D includes hydrographs at select locations for the major storm events.

Table 6-1
Downriver Sewage Disposal System
Peak Hourly Flow Rates by Meter for Controlled Flow Communities

Meter =		RR-1		EC-6		RD-1		SW	
Total Flow Formula =		[RR-1]		[EC-6]		[RD-1]		[SW]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		River Rouge, Ecorse, & Lincoln Park (part)		River Rouge, Ecorse, Lincoln Park (part), & Allen Park (part)		Southgate (part) & Wyandotte	
Total Wet Weather MAFL =		11.26 cfs		23.46 cfs		65.82 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 1 Major Storm Event A February 19-21, 2018 2.02 inches	Start of First Exceedence	2/22/18 13:10	--	2/20/18 4:45	--	2/20/18 9:00	--	2/20/18 19:30	--
	End of Last Exceedence	2/22/18 17:15	--	2/21/18 13:00	--	2/23/18 2:05	--	2/20/18 19:40	--
	Total Time of Exceedence	0:25	--	23:00	--	49:20	--	0:10	--
	Total Volume Above MAFL	--	0.00 MG	--	0.93 MG	--	3.40 MG	--	0.00 MG
	Peak Hourly Flow Rate	2/22/18 13:15	11.30 cfs	2/20/18 6:10	26.47 cfs	2/21/18 4:00	72.34 cfs	2/20/18 19:35	32.16 cfs
Significant Storm Event 2 Major Storm Event B March 1, 2018 1.54 inches	Start of First Exceedence	--	--	--	--	3/1/18 21:35	--	3/3/18 3:20	--
	End of Last Exceedence	--	--	--	--	3/4/18 17:00	--	3/4/18 10:20	--
	Total Time of Exceedence	--	--	--	--	65:30	--	6:40	--
	Total Volume Above MAFL	--	--	--	--	--	4.92 MG	--	0.32 MG
	Peak Hourly Flow Rate	3/2/18 19:00	11.24 cfs	3/1/18 19:40	19.06 cfs	3/4/18 0:45	71.35 cfs	3/4/18 3:35	37.71 cfs
Significant Storm Event 3 Major Storm Event C April 14-15, 2018 2.41 inches	Start of First Exceedence	--	--	4/15/18 13:00	--	4/16/18 4:20	--	4/15/18 1:00	--
	End of Last Exceedence	--	--	4/16/18 8:40	--	4/16/18 8:15	--	4/17/18 12:20	--
	Total Time of Exceedence	--	--	14:40	--	3:55	--	10:05	--
	Total Volume Above MAFL	--	--	--	0.78 MG	--	0.10 MG	--	0.61 MG
	Peak Hourly Flow Rate	4/15/18 10:35	8.26 cfs	4/15/18 18:30	27.53 cfs	4/16/18 5:35	67.91 cfs	4/17/18 3:40	37.32 cfs
Significant Storm Event 4 May 2-4, 2018 1.31 inches	Start of First Exceedence	--	--	--	--	--	--	5/4/18 3:10	--
	End of Last Exceedence	--	--	--	--	--	--	5/4/18 4:30	--
	Total Time of Exceedence	--	--	--	--	--	--	0:15	--
	Total Volume Above MAFL	--	--	--	--	--	--	--	0.00 MG
	Peak Hourly Flow Rate	5/3/18 3:25	10.27 cfs	5/3/18 0:55	16.44 cfs	5/3/18 2:20	55.00 cfs	5/4/18 4:25	32.02 cfs
Significant Storm Event 5 Major Storm Event D May 11-13, 2018 2.53 inches	Start of First Exceedence	5/13/18 18:45	--	5/12/18 3:00	--	5/12/18 1:10	--	5/12/18 23:15	--
	End of Last Exceedence	5/15/18 11:50	--	5/13/18 20:00	--	5/13/18 16:20	--	5/15/18 10:15	--
	Total Time of Exceedence	8:25	--	11:50	--	13:15	--	6:50	--
	Total Volume Above MAFL	--	0.08 MG	--	0.39 MG	--	0.62 MG	--	0.27 MG
	Peak Hourly Flow Rate	5/15/18 8:30	11.86 cfs	5/12/18 12:15	27.17 cfs	5/12/18 10:10	70.90 cfs	5/14/18 0:20	34.91 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-2
Downriver Sewage Disposal System
Peak Hourly Flow Rates by Meter for Controlled Flow Communities

Meter =		RR-1		EC-6		RD-1		SW	
Total Flow Formula =		[RR-1]		[EC-6]		[RD-1]		[SW]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		River Rouge, Ecorse, & Lincoln Park (part)		River Rouge, Ecorse, Lincoln Park (part), & Allen Park (part)		Southgate (part) & Wyandotte	
Total Wet Weather MAFL =		11.26 cfs		23.46 cfs		65.82 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 6 June 18-19, 2018 1.22 inches	Start of First Exceedence	6/19/18 2:00	--	6/19/18 0:45	--	--	--	--	--
	End of Last Exceedence	6/19/18 5:00	--	6/19/18 1:25	--	--	--	--	--
	Total Time of Exceedence	1:50	--	0:40	--	--	--	--	--
	Total Volume Above MAFL	--	0.00 MG	--	0.00 MG	--	--	--	--
	Peak Hourly Flow Rate	6/19/18 2:20	11.42 cfs	6/19/18 1:10	23.86 cfs	6/18/18 23:35	59.80 cfs	6/19/18 11:55	25.14 cfs
Significant Storm Event 7 Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches	Start of First Exceedence	--	--	8/1/18 0:25	--	--	--	7/31/18 17:10	--
	End of Last Exceedence	--	--	8/1/18 1:15	--	--	--	7/31/18 23:05	--
	Total Time of Exceedence	--	--	0:50	--	--	--	3:45	--
	Total Volume Above MAFL	--	--	--	0.01 MG	--	--	--	0.75 MG
	Peak Hourly Flow Rate	8/1/18 2:50	11.10 cfs	8/1/18 0:30	23.99 cfs	8/1/18 8:30	56.53 cfs	7/31/18 17:55	44.55 cfs
Significant Storm Event 8 Major Storm Event F September 24-25, 2018 2.94 inches	Start of First Exceedence	--	--	9/25/18 9:35	--	--	--	--	--
	End of Last Exceedence	--	--	9/25/18 20:15	--	--	--	--	--
	Total Time of Exceedence	--	--	1:35	--	--	--	--	--
	Total Volume Above MAFL	--	--	--	0.09 MG	--	--	--	--
	Peak Hourly Flow Rate	9/25/18 18:00	11.14 cfs	9/25/18 19:25	27.11 cfs	9/25/18 21:15	64.01 cfs	9/26/18 21:35	30.67 cfs
Significant Storm Event 9 October 6, 2018 1.16 inches	Start of First Exceedence	--	--	--	--	--	--	10/6/18 23:45	--
	End of Last Exceedence	--	--	--	--	--	--	10/7/18 0:05	--
	Total Time of Exceedence	--	--	--	--	--	--	0:15	--
	Total Volume Above MAFL	--	--	--	--	--	--	--	0.00 MG
	Peak Hourly Flow Rate	10/6/18 13:20	9.91 cfs	10/6/18 12:45	17.99 cfs	10/6/18 21:25	55.21 cfs	10/6/18 23:45	31.79 cfs
Significant Storm Event 10 Major Storm Event G October 31, 2018 through November 2, 2018 2.45 inches	Start of First Exceedence	--	--	11/2/18 0:20	--	--	--	--	--
	End of Last Exceedence	--	--	11/2/18 1:05	--	--	--	--	--
	Total Time of Exceedence	--	--	0:35	--	--	--	--	--
	Total Volume Above MAFL	--	--	--	0.00 MG	--	--	--	--
	Peak Hourly Flow Rate	11/2/18 8:50	11.18 cfs	11/2/18 0:55	23.76 cfs	10/31/18 6:50	55.90 cfs	11/1/18 4:35	31.20 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-3
Downriver Sewage Disposal System
Incremental Peak Hourly Flow Rates by Meter District for Controlled Flow Communities

Meter District =		RR-1		EC-6		RD-1		SW	
Incremental Flow Formula =		[RR-1]		[EC-6] - [RR-1r]		[RD-1] - [EC-6r]		[SW]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		Ecorse & Lincoln Park (part)		Lincoln Park (part) & Allen Park (part)		Southgate (part) & Wyandotte	
Incremental Wet Weather MAFL =		11.26 cfs		12.20 cfs		42.36 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 1 Major Storm Event A February 19-21, 2018 2.02 inches	Start of First Exceedence	2/22/18 13:10	--	2/20/18 4:15	--	2/19/18 13:40	--	2/20/18 19:30	--
	End of Last Exceedence	2/22/18 17:15	--	2/21/18 15:45	--	2/25/18 8:00	--	2/20/18 19:40	--
	Total Time of Exceedence	0:25	--	31:30	--	115:10	--	0:10	--
	Total Volume Above MAFL	--	0.00 MG	--	2.64 MG	--	12.86 MG	--	0.00 MG
	Peak Hourly Flow Rate	2/22/18 13:15	11.30 cfs	2/20/18 6:10	18.03 cfs	2/19/18 14:50	53.23 cfs	2/20/18 19:35	32.16 cfs
Significant Storm Event 2 Major Storm Event B March 1, 2018 1.54 inches	Start of First Exceedence	--	--	--	--	3/1/18 9:10	--	3/3/18 3:20	--
	End of Last Exceedence	--	--	--	--	3/6/18 1:00	--	3/4/18 10:20	--
	Total Time of Exceedence	--	--	--	--	111:50	--	6:40	--
	Total Volume Above MAFL	--	--	--	--	--	27.56 MG	--	0.32 MG
	Peak Hourly Flow Rate	3/2/18 19:00	11.24 cfs	3/1/18 19:40	8.49 cfs	3/4/18 1:50	57.63 cfs	3/4/18 3:35	37.71 cfs
Significant Storm Event 3 Major Storm Event C April 14-15, 2018 2.41 inches	Start of First Exceedence	--	--	4/15/18 7:20	--	4/15/18 5:00	--	4/15/18 1:00	--
	End of Last Exceedence	--	--	4/16/18 18:10	--	4/16/18 11:45	--	4/17/18 12:20	--
	Total Time of Exceedence	--	--	32:30	--	9:45	--	10:05	--
	Total Volume Above MAFL	--	--	--	3.92 MG	--	0.19 MG	--	0.61 MG
	Peak Hourly Flow Rate	4/15/18 10:35	8.26 cfs	4/15/18 18:30	21.18 cfs	4/15/18 11:50	44.46 cfs	4/17/18 3:40	37.32 cfs
Significant Storm Event 4 May 2-4, 2018 1.31 inches	Start of First Exceedence	*Total Metered Flow Rates did not Exceed MAFL by more than 5%*							
	End of Last Exceedence								
	Total Time of Exceedence								
	Total Volume Above MAFL								
	Peak Hourly Flow Rate								
Significant Storm Event 5 Major Storm Event D May 11-13, 2018 2.53 inches	Start of First Exceedence	5/13/18 18:45	--	5/12/18 1:30	--	5/11/18 23:00	--	5/12/18 23:15	--
	End of Last Exceedence	5/15/18 11:50	--	5/13/18 19:55	--	5/15/18 10:35	--	5/15/18 10:15	--
	Total Time of Exceedence	8:25	--	24:55	--	34:30	--	6:50	--
	Total Volume Above MAFL	--	0.08 MG	--	1.76 MG	--	2.29 MG	--	0.27 MG
	Peak Hourly Flow Rate	5/15/18 8:30	11.86 cfs	5/12/18 16:10	19.11 cfs	5/12/18 0:35	50.61 cfs	5/14/18 0:20	34.91 cfs

Notes:

1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

Table 6-4
Downriver Sewage Disposal System
Incremental Peak Hourly Flow Rates by Meter District for Controlled Flow Communities

Meter District =		RR-1		EC-6		RD-1		SW	
Incremental Flow Formula =		[RR-1]		[EC-6] - [RR-1r]		[RD-1] - [EC-6r]		[SW]	
Location =		River Rouge CSO Basin Outlet		Riverdrive Interceptor South of Southfield Road		Riverdrive Interceptor North of Northline Road		SWRDDD Connection	
Communities Included in Total Flow =		River Rouge		Ecorse & Lincoln Park (part)		Lincoln Park (part) & Allen Park (part)		Southgate (part) & Wyandotte	
Incremental Wet Weather MAFL =		11.26 cfs		12.20 cfs		42.36 cfs		31.73 cfs	
		Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume	Date/Time of Occurrence	Flow Rate / Volume
Significant Storm Event 6 June 18-19, 2018 1.22 inches	Start of First Exceedence	*Total Metered Flow Rates did not Exceed MAFL by more than 5%*							
	End of Last Exceedence								
	Total Time of Exceedence								
	Total Volume Above MAFL								
	Peak Hourly Flow Rate								
Significant Storm Event 7 Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches	Start of First Exceedence	*Total Metered Flow Rates did not Exceed MAFL by more than 5%*							
	End of Last Exceedence								
	Total Time of Exceedence								
	Total Volume Above MAFL								
	Peak Hourly Flow Rate								
Significant Storm Event 8 Major Storm Event F September 24-25, 2018 2.94 inches	Start of First Exceedence	--	--	9/25/18 8:40	--	9/25/18 8:45	--	--	--
	End of Last Exceedence	--	--	9/26/18 4:55	--	9/26/18 23:45	--	--	--
	Total Time of Exceedence	--	--	11:40	--	11:25	--	--	--
	Total Volume Above MAFL	--	--	--	1.00 MG	--	0.63 MG	--	--
	Peak Hourly Flow Rate	9/25/18 18:00	11.14 cfs	9/25/18 23:20	17.65 cfs	9/25/18 18:40	48.58 cfs	9/26/18 21:35	30.67 cfs
Significant Storm Event 9 October 6, 2018 1.16 inches	Start of First Exceedence	*Total Metered Flow Rates did not Exceed MAFL by more than 5%*							
	End of Last Exceedence								
	Total Time of Exceedence								
	Total Volume Above MAFL								
	Peak Hourly Flow Rate								
Significant Storm Event 10 Major Storm Event G October 31, 2018 through November 2, 2018 2.45 inches	Start of First Exceedence	*Total Metered Flow Rates did not Exceed MAFL by more than 5%*							
	End of Last Exceedence								
	Total Time of Exceedence								
	Total Volume Above MAFL								
	Peak Hourly Flow Rate								

Notes:
1. The Wet Weather MAFLs for Controlled Flow Communities are from the Downriver Utility Wastewater Authority Service Agreement (March 21, 2017). The communities are responsible for regulating their flow rates to the Riverdrive Interceptor to the these flow limits. The MAFLs for each community are listed below:
   i. The MAFL for River Rouge at RR-1 is 11.26 cfs.
   ii. The MAFL for Ecorse at EC-6 is 9.20 cfs.
   iii. The MAFL for Lincoln Park is 28.16 cfs.
   iv. The MAFL for Lincoln Park is divided between two meters 3.00 cfs at EC-6 and 25.16 cfs at RD-1. The Reg-U-Flo Vortex Valve on the Applewood connection restricts Lincoln Parks flow rate to about 3.00 cfs.
   v. The MAFL for Allen Park at RD-1 (via Lincoln Park) is 17.20 cfs.
   vi. The MAFL for Southgate at SW is 7.67 cfs.
   vii. The MAFL for Wyandotte at SW is 24.06 cfs.

Legend:

XX.XX	Exceeds wet weather MAFL by 0 to 5%
XX.XX	Exceeds wet weather MAFL by > 5%

7) WET WEATHER VOLUMES FOR NON-CONTROLLED FLOW COMMUNITIES

The peak 96-hour wet weather volumes for the non-controlled flow communities during the major storm events were estimated using the flow monitoring data set. These volumes were compared to those for the 4.42-inch storm event used in the design of the Downriver tunnel system as given on Table 7-1. Exceedences of the peak 96-hour volumes allocated to each community during the major storm events during this reporting period are highlighted (if any). Tables 7-2 through 7-9 list the peak 96-hour incremental volumes for each meter district by community. Tables 7-10 through 7-16 list the peak flow rates and 96-hour volumes at each meter, and Tables 17-17 through 7-23 list the peak hydraulic grade lines at each meter for the major storm event.

8) METER DATA SUMMARY

The flow monitoring data were reviewed and edited as summarized on Table 8-1. The flow monitoring data is summarized in more detail in Appendix C. This appendix includes: charts detailing data and meter maintenance issues that occurred during these months, and average daily flow rate plots for each meter. Data for each meter was carried through the analysis with the following exceptions:

- A rating curve is used to estimate flow rate for Meter RV-1 under extremely low flow rate conditions. Flow rates are recalculated to account for sludge deposits for Meter SW. Details of these corrections are provided in the Wayne County Downriver Sewage Disposal System Annual System Monitoring Report for 2013.

- The incremental flow rates for Meter TPS + IPS and P-1 districts cannot be confidently and accurately calculated because they are too small relative to the total flow rate. Therefore, the incremental flow rates for the Meter TPS+IPS and P-1 districts were estimated using a ratio of each district's incremental population to the cumulative population of the upstream meters (Meters PC-1, PD-1, PB-1, PA-2 and P-2) multiplied by the sum of the cumulative district flow rates for Meters PC-1, PD-1, PB-1, PA-2 and P-2.

- Overflows to the DRSTS were calculated using the level sensor data and the previously developed ratings curves except for Meter TSO. The flow rates calculated with the area-velocity measurements were used for Meter TSO.

Table 7-1
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Non-Controlled Flow Communities

Community	Total Volume (MG)							
	4.42 inch Design Storm	Major Storm Event A February 19-21, 2018 2.21 inches	Major Storm Event B March 1, 2018 1.62 inches	Major Storm Event C April 14-15, 2018 2.41 inches	Major Storm Event D May 11-13, 2018 2.53 inches	Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches	Major Storm Event F September 24-25, 2018 2.94 inches	Major Storm Event G October 31, 2018 - November 2, 2018 2.39 inches
Allen Park (part)	29.23	56.35	17.04	36.76	39.31	8.98	26.34	18.62
Belleville	4.86	5.11	4.49	4.75	5.25	1.88	2.87	3.30
Brownstown Twp.	20.90	16.65	11.83	13.74	13.36	8.11	9.04	10.70
Dearborn Heights	43.76	53.10	35.72	42.69	36.29	20.13	32.16	26.80
Riverview	28.30	27.97	19.66	24.38	24.89	7.18	10.51	18.01
Romulus	88.43	60.07	46.91	61.49	68.83	21.89	28.48	41.89
Southgate (part)	31.24	38.86	20.78	34.04	32.25	21.41	32.45	22.82
Taylor	164.45	117.61	77.72	87.89	105.41	58.92	83.23	71.27
Van Buren Twp.	7.04	7.32	6.43	6.80	7.52	2.70	4.12	4.73
Total	418.21	383.06	240.58	312.53	333.10	151.20	229.20	218.15

Legend:

XX.XX	Exceeds design storm volume by 0 to 20%
XX.XX	Exceeds design storm volume by > 20%

Table 7-2
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Community

Community	Meter District	Peak 96 Hour Incremental Volume (MG)						
		Major Storm Event A February 19-21, 2018 2.21 inches	Major Storm Event B March 1, 2018 1.62 inches	Major Storm Event C April 14-15, 2018 2.41 inches	Major Storm Event D May 11-13, 2018 2.53 inches	Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches	Major Storm Event F September 24-25, 2018 2.94 inches	Major Storm Event G October 31, 2018 - November 2, 2018 2.39 inches
Allen Park	PC-1	2.29	1.27	1.61	1.85	1.28	2.00	1.43
	P-1	10.41	5.14	8.91	7.94	5.80	9.07	5.86
	RD-1	42.57	48.61	35.31	39.07	19.47	32.36	28.70
	APO-1 + APO-2	43.65	10.62	26.25	29.52	1.89	15.27	11.33
	Total	98.92	65.64	72.08	78.37	28.45	58.70	47.32
Belleville	PA-4	5.11	4.49	4.75	5.25	1.88	2.87	3.30
Brownstown Twp.	P-2	16.27	11.55	13.43	12.95	7.95	8.85	10.44
	PA-2	0.38	0.28	0.31	0.41	0.16	0.19	0.26
	Total	16.65	11.83	13.74	13.36	8.11	9.04	10.70
Dearborn Hts.	TB-1	53.10	35.72	42.69	36.29	20.13	32.16	26.80
Ecorse	EC-6	19.10	9.01	18.86	19.28	7.37	10.12	11.53
Lincoln Park	EC-6	7.62	3.59	7.52	7.69	2.94	4.04	4.60
	RD-1	80.42	91.84	66.72	73.81	36.78	61.14	54.23
	Total	88.04	95.43	74.24	81.50	39.72	65.18	58.83
River Rouge	RR-1	25.70	24.55	15.85	26.88	12.52	17.53	21.93
Riverview	RV-1	27.97	19.66	24.38	24.89	7.18	10.51	18.01
Romulus	DMA-1	1.93	2.80	2.02	2.28	2.67	2.12	2.09
	PA-3	31.15	22.92	26.37	30.47	9.89	13.92	17.60
	DMA-2	3.29	3.85	8.95	11.07	0.65	0.61	10.82
	PD-2	23.71	17.35	24.15	25.01	8.69	11.82	11.37
	Total	60.07	46.91	61.49	68.83	21.89	28.48	41.89
Southgate	P-1	33.24	16.41	28.45	25.34	18.52	28.94	18.70
	PB-1	5.00	4.05	4.69	6.10	2.18	2.66	3.53
	SW	25.12	26.77	30.30	29.47	19.69	16.49	28.68
	TPS+IPS	0.62	0.32	0.90	0.80	0.71	0.85	0.59
	Total	63.98	47.55	64.34	61.72	41.10	48.94	51.50
Taylor	P-2	0.41	0.29	0.34	0.33	0.20	0.22	0.26
	PA-2	20.56	15.25	16.70	22.02	8.47	10.30	14.04
	PB-1	7.50	6.07	7.04	9.15	3.27	3.99	5.30
	TB-1	14.80	9.96	11.90	10.12	5.61	8.96	7.47
	PC-1	57.75	32.02	40.51	46.62	32.39	50.32	36.08
	PD-1	16.60	14.12	11.41	17.17	8.97	9.44	8.11
	Total	117.61	77.72	87.89	105.41	58.92	83.23	71.27
Van Buren Twp.	PA-4	7.32	6.43	6.80	7.52	2.70	4.12	4.73
Wyandotte	SW	44.07	46.98	53.16	51.71	34.55	28.93	50.31

Table 7-3
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event A February 19-21, 2018 2.21 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	43.6	43.6
DMA-1	[DMA-1]	Romulus	0	100.0%	1.9	1.9
DMA-2	[DMA-2]	Romulus	0	100.0%	3.3	3.3
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	26.7	19.1
		Lincoln Park	3,795	28.5%		7.6
		Total	13,310	100%		26.7
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	43.7	10.4
		Southgate	10,637	76.1%		33.2
		Total	13,969	100%		43.7
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	16.7	16.3
		Taylor	262	2.5%		0.4
		Total	10,659	100%		16.7
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	20.9	0.4
		Taylor	13,270	98.2%		20.6
		Total	13,517	100%		20.9
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	31.2	31.2
PA-4	[PA-4]	Belleville	3,993	41.1%	12.4	5.1
		Van Buren Twp.	5,719	58.9%		7.3
		Total	9,712	100%		12.4
PB-1	[PB-1]	Southgate	4,459	40.0%	12.5	5.0
		Taylor	6,462	60.0%		7.5
		Total	10,921	100%		12.5
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	60.0	2.3
		Taylor	25,700	96.2%		57.7
		Total	26,719	100%		60.0
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	16.6	16.6
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	23.7	23.7
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	123.0	42.6
		Lincoln Park	34,347	65.4%		80.4
		Total	52,526	100%		123.0
RR-1	[RR-1]	River Rouge	7,903	100.0%	25.7	25.7
RV-1	[RV-1]	Riverview	12,486	100.0%	28.0	28.0
SW	[SW]+[SWB]	Southgate	14,752	36.3%	69.2	25.1
		Wyandotte	25,883	63.7%		44.1
		Total	40,635	100%		69.2
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	67.9	53.1
		Taylor	5,339	21.8%		14.8
		Total	24,491	100%		67.9
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.6	0.6

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-4
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event B March 1, 2018 1.62 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	10.6	10.6
DMA-1	[DMA-1]	Romulus	0	100.0%	2.8	2.8
DMA-2	[DMA-2]	Romulus	0	100.0%	3.8	3.8
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	12.6	9.0
		Lincoln Park	3,795	28.5%		3.6
		Total	13,310	100%		12.6
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	21.6	5.1
		Southgate	10,637	76.1%		16.4
		Total	13,969	100%		21.6
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	11.8	11.5
		Taylor	262	2.5%		0.3
		Total	10,659	100%		11.8
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	15.5	0.3
		Taylor	13,270	98.2%		15.3
		Total	13,517	100%		15.5
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	22.9	22.9
PA-4	[PA-4]	Belleville	3,993	41.1%	10.9	4.5
		Van Buren Twp.	5,719	58.9%		6.4
		Total	9,712	100%		10.9
PB-1	[PB-1]	Southgate	4,459	40.0%	10.1	4.0
		Taylor	6,462	60.0%		6.1
		Total	10,921	100%		10.1
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	33.3	1.3
		Taylor	25,700	96.2%		32.0
		Total	26,719	100%		33.3
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	14.1	14.1
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	17.3	17.3
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	140.4	48.6
		Lincoln Park	34,347	65.4%		91.8
		Total	52,526	100%		140.4
RR-1	[RR-1]	River Rouge	7,903	100.0%	24.6	24.6
RV-1	[RV-1]	Riverview	12,486	100.0%	19.7	19.7
SW	[SW]+[SWB]	Southgate	14,752	36.3%	73.8	26.8
		Wyandotte	25,883	63.7%		47.0
		Total	40,635	100%		73.8
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	45.7	35.7
		Taylor	5,339	21.8%		10.0
		Total	24,491	100%		45.7
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.3	0.3

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-5
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event C April 14-15, 2018 2.41 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	26.2	26.2
DMA-1	[DMA-1]	Romulus	0	100.0%	2.0	2.0
DMA-2	[DMA-2]	Romulus	0	100.0%	9.0	9.0
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	26.4	18.9
		Lincoln Park	3,795	28.5%		7.5
		Total	13,310	100%		26.4
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	37.4	8.9
		Southgate	10,637	76.1%		28.4
		Total	13,969	100%		37.4
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	13.8	13.4
		Taylor	262	2.5%		0.3
		Total	10,659	100%		13.8
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	17.0	0.3
		Taylor	13,270	98.2%		16.7
		Total	13,517	100%		17.0
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	26.4	26.4
PA-4	[PA-4]	Belleville	3,993	41.1%	11.5	4.7
		Van Buren Twp.	5,719	58.9%		6.8
		Total	9,712	100%		11.5
PB-1	[PB-1]	Southgate	4,459	40.0%	11.7	4.7
		Taylor	6,462	60.0%		7.0
		Total	10,921	100%		11.7
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	42.1	1.6
		Taylor	25,700	96.2%		40.5
		Total	26,719	100%		42.1
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	11.4	11.4
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	24.1	24.1
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	102.0	35.3
		Lincoln Park	34,347	65.4%		66.7
		Total	52,526	100%		102.0
RR-1	[RR-1]	River Rouge	7,903	100.0%	15.8	15.8
RV-1	[RV-1]	Riverview	12,486	100.0%	24.4	24.4
SW	[SW]+[SWB]	Southgate	14,752	36.3%	83.5	30.3
		Wyandotte	25,883	63.7%		53.2
		Total	40,635	100%		83.5
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	54.6	42.7
		Taylor	5,339	21.8%		11.9
		Total	24,491	100%		54.6
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.9	0.9

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-6
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event D May 11-13, 2018 2.53 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	29.5	29.5
DMA-1	[DMA-1]	Romulus	0	100.0%	2.3	2.3
DMA-2	[DMA-2]	Romulus	0	100.0%	11.1	11.1
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	27.0	19.3
		Lincoln Park	3,795	28.5%		7.7
		Total	13,310	100%		27.0
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	33.3	7.9
		Southgate	10,637	76.1%		25.3
		Total	13,969	100%		33.3
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	13.3	12.9
		Taylor	262	2.5%		0.3
		Total	10,659	100%		13.3
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	22.4	0.4
		Taylor	13,270	98.2%		22.0
		Total	13,517	100%		22.4
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	30.5	30.5
PA-4	[PA-4]	Belleville	3,993	41.1%	12.8	5.3
		Van Buren Twp.	5,719	58.9%		7.5
		Total	9,712	100%		12.8
PB-1	[PB-1]	Southgate	4,459	40.0%	15.3	6.1
		Taylor	6,462	60.0%		9.2
		Total	10,921	100%		15.3
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	48.5	1.8
		Taylor	25,700	96.2%		46.6
		Total	26,719	100%		48.5
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	17.2	17.2
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	25.0	25.0
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	112.9	39.1
		Lincoln Park	34,347	65.4%		73.8
		Total	52,526	100%		112.9
RR-1	[RR-1]	River Rouge	7,903	100.0%	26.9	26.9
RV-1	[RV-1]	Riverview	12,486	100.0%	24.9	24.9
SW	[SW]+[SWB]	Southgate	14,752	36.3%	81.2	29.5
		Wyandotte	25,883	63.7%		51.7
		Total	40,635	100%		81.2
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	46.4	36.3
		Taylor	5,339	21.8%		10.1
		Total	24,491	100%		46.4
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.8	0.8

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-7
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	1.9	1.9
DMA-1	[DMA-1]	Romulus	0	100.0%	2.7	2.7
DMA-2	[DMA-2]	Romulus	0	100.0%	0.6	0.6
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	10.3	7.4
		Lincoln Park	3,795	28.5%		2.9
		Total	13,310	100%		10.3
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	24.3	5.8
		Southgate	10,637	76.1%		18.5
		Total	13,969	100%		24.3
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	8.2	8.0
		Taylor	262	2.5%		0.2
		Total	10,659	100%		8.2
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	8.6	0.2
		Taylor	13,270	98.2%		8.5
		Total	13,517	100%		8.6
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	9.9	9.9
PA-4	[PA-4]	Belleville	3,993	41.1%	4.6	1.9
		Van Buren Twp.	5,719	58.9%		2.7
		Total	9,712	100%		4.6
PB-1	[PB-1]	Southgate	4,459	40.0%	5.4	2.2
		Taylor	6,462	60.0%		3.3
		Total	10,921	100%		5.4
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	33.7	1.3
		Taylor	25,700	96.2%		32.4
		Total	26,719	100%		33.7
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	9.0	9.0
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	8.7	8.7
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	56.2	19.5
		Lincoln Park	34,347	65.4%		36.8
		Total	52,526	100%		56.2
RR-1	[RR-1]	River Rouge	7,903	100.0%	12.5	12.5
RV-1	[RV-1]	Riverview	12,486	100.0%	7.2	7.2
SW	[SW]+[SWB]	Southgate	14,752	36.3%	54.2	19.7
		Wyandotte	25,883	63.7%		34.6
		Total	40,635	100%		54.2
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	25.7	20.1
		Taylor	5,339	21.8%		5.6
		Total	24,491	100%		25.7
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.7	0.7

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-8
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event F September 24-25, 2018 2.94 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	15.3	15.3
DMA-1	[DMA-1]	Romulus	0	100.0%	2.1	2.1
DMA-2	[DMA-2]	Romulus	0	100.0%	0.6	0.6
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	14.2	10.1
		Lincoln Park	3,795	28.5%		4.0
		Total	13,310	100%		14.2
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	38.0	9.1
		Southgate	10,637	76.1%		28.9
		Total	13,969	100%		38.0
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	9.1	8.8
		Taylor	262	2.5%		0.2
		Total	10,659	100%		9.1
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	10.5	0.2
		Taylor	13,270	98.2%		10.3
		Total	13,517	100%		10.5
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	13.9	13.9
PA-4	[PA-4]	Belleville	3,993	41.1%	7.0	2.9
		Van Buren Twp.	5,719	58.9%		4.1
		Total	9,712	100%		7.0
PB-1	[PB-1]	Southgate	4,459	40.0%	6.6	2.7
		Taylor	6,462	60.0%		4.0
		Total	10,921	100%		6.6
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	52.3	2.0
		Taylor	25,700	96.2%		50.3
		Total	26,719	100%		52.3
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	9.4	9.4
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	11.8	11.8
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	93.5	32.4
		Lincoln Park	34,347	65.4%		61.1
		Total	52,526	100%		93.5
RR-1	[RR-1]	River Rouge	7,903	100.0%	17.5	17.5
RV-1	[RV-1]	Riverview	12,486	100.0%	10.5	10.5
SW	[SW]+[SWB]	Southgate	14,752	36.3%	45.4	16.5
		Wyandotte	25,883	63.7%		28.9
		Total	40,635	100%		45.4
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	41.1	32.2
		Taylor	5,339	21.8%		9.0
		Total	24,491	100%		41.1
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.9	0.9

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-9
Downriver Sewage Disposal System
Peak 96 Hour Total Volumes for Major Storm Events Summarized by Meter District

Meter District	Incremental Meter District Formula	Community	Year 2010 Incremental Population	Meter District Percentage	Major Storm Event G October 31, 2018 - November 2, 2018 2.39 inches	
					Meter District Peak 96 Hour Volume (MG)	Peak 96 Hour Incremental Volume (MG)
APO-1 + APO-2	[APO-1]+[APO-2]	Allen Park	0	100.0%	11.3	11.3
DMA-1	[DMA-1]	Romulus	0	100.0%	2.1	2.1
DMA-2	[DMA-2]	Romulus	0	100.0%	10.8	10.8
EC-6	[EC-6]-[RR-1]	Ecorse	9,515	71.5%	16.1	11.5
		Lincoln Park	3,795	28.5%		4.6
		Total	13,310	100%		16.1
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	Allen Park	3,332	23.9%	24.6	5.9
		Southgate	10,637	76.1%		18.7
		Total	13,969	100%		24.6
P-2	[P-2]	Brownstown Twp.	10,397	97.5%	10.7	10.4
		Taylor	262	2.5%		0.3
		Total	10,659	100%		10.7
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	Brownstown Twp.	248	1.8%	14.3	0.3
		Taylor	13,270	98.2%		14.0
		Total	13,517	100%		14.3
PA-3	[PA-3]+[ER-2]	Romulus	11,371	100.0%	17.6	17.6
PA-4	[PA-4]	Belleville	3,993	41.1%	8.0	3.3
		Van Buren Twp.	5,719	58.9%		4.7
		Total	9,712	100%		8.0
PB-1	[PB-1]	Southgate	4,459	40.0%	8.8	3.5
		Taylor	6,462	60.0%		5.3
		Total	10,921	100%		8.8
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	Allen Park	1,019	3.8%	37.5	1.4
		Taylor	25,700	96.2%		36.1
		Total	26,719	100%		37.5
PD-1	[PD-1]-[PD-2]+[PDO]	Taylor	12,100	100.0%	8.1	8.1
PD-2	[PD-2] - [DMA-2]	Romulus	9,532	100.0%	11.4	11.4
RD-1	[RD-1]-[EC-6]	Allen Park	18,179	34.6%	82.9	28.7
		Lincoln Park	34,347	65.4%		54.2
		Total	52,526	100%		82.9
RR-1	[RR-1]	River Rouge	7,903	100.0%	21.9	21.9
RV-1	[RV-1]	Riverview	12,486	100.0%	18.0	18.0
SW	[SW]+[SWB]	Southgate	14,752	36.3%	79.0	28.7
		Wyandotte	25,883	63.7%		50.3
		Total	40,635	100%		79.0
TB-1	[TB-1]+[TSO]	Dearborn Hts.	19,152	78.2%	34.3	26.8
		Taylor	5,339	21.8%		7.5
		Total	24,491	100%		34.3
TPS+IPS	Population Ratio of Meter District P-1	Southgate	199	100.0%	0.6	0.6

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + P2-1 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

2) [TPS+IPS] = (TPS+TPS Inc. Pop. / P-1 Inc. Pop.) x [P-1]

3) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table 7-10
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event A February 19-21, 2018 2.21 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	2/20/18 11:35	15.2	2/20/18 23:55	41.0
	PC-1	Pelham Interceptor North of Goddard Road	2/19/18 15:30	28.0	2/20/18 21:40	67.7
	DMA-2	Goddard near Harrison	2/20/18 15:35	1.2	2/20/18 23:55	3.3
	PD-2	Goddard Interceptor West of Inkster Road	2/20/18 6:15	20.3	2/19/18 17:05	27.0
	PD-1	Goddard Interceptor West of Allen Road	2/20/18 7:00	25.7	2/19/18 18:55	43.6
	PB-1	Northline Interceptor West of Fordline Road	2/20/18 5:20	9.4	2/19/18 14:20	12.5
	PA-4	Eureka Interceptor near Hannan Road	2/20/18 6:10	6.9	2/20/18 3:00	12.4
	DMA-1	Detroit Metropolitan Airport	2/20/18 15:10	1.3	2/20/18 3:00	1.9
	PA-3	Eureka Interceptor at Inkster Road	2/20/18 16:15	18.8	2/19/18 22:55	40.0
	PA-2	Eureka Interceptor at Allen Road	2/20/18 16:55	28.5	2/19/18 19:20	56.4
	PA-1	Eureka Interceptor West of Fordline Road	2/20/18 15:40	39.0	2/19/18 16:45	71.2
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	2/20/18 16:35	9.6	2/19/18 16:00	16.7
	P-1	Pennsylvania Interceptor East of Fort Street	2/20/18 9:40	131.2	2/19/18 16:45	250.5
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	2/20/18 5:15	25.4	2/19/18 13:50	28.0
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	2/19/18 23:45	11.0	2/19/18 21:20	25.7
	EC-6	Riverdrive Interceptor South of Southfield Road	2/20/18 6:10	26.5	2/19/18 18:35	52.4
	RD-1	Riverdrive Interceptor North of Northline Road	2/20/18 22:50	69.7	2/19/18 21:30	175.4
	SW + SWB	Southgate-Wyandotte Connection	2/20/18 19:35	32.2	2/20/18 19:30	69.2
Tunnel Connection Meters	TSO	At Pelham Basin	2/20/18 15:30	36.5	2/20/18 3:35	27.0
	APO-1	Belmont and Rosedale	2/20/18 15:05	56.5	2/19/18 19:55	15.8
	APO-2	Belmont and Quandt	2/20/18 3:50	47.0	2/19/18 19:40	27.9
	CHPO	Pelham Road South of R.R.	2/20/18 15:30	72.8	2/19/18 14:15	23.1
	CPO	Pelham Road North of Haskell	2/20/18 5:25	78.0	2/19/18 19:25	10.2
	PDO	Allen Road and Goddard	-	0.0	-	0.0
	ER-2	Eureka Road and Inkster	2/20/18 17:00	5.9	2/20/18 4:20	5.5
	ER-1	Allen Road and Eureka Road	2/20/18 18:20	8.2	2/20/18 3:50	10.0
	PM-1	Pennsylvania Ave. at Fordline	2/20/18 15:05	76.2	2/20/18 4:35	10.0
DWTF	IPS + TPS	DWTF Influent	2/20/18 5:15	390.0	2/19/18 22:15	691.2

Table 7-11
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event B March 1, 2018 1.62 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	3/1/18 12:55	19.3	3/1/18 12:35	45.6
	PC-1	Pelham Interceptor North of Goddard Road	3/1/18 11:45	26.6	3/1/18 10:25	65.3
	DMA-2	Goddard near Harrison	3/2/18 17:45	2.0	3/1/18 9:50	3.8
	PD-2	Goddard Interceptor West of Inkster Road	3/1/18 14:30	11.3	3/1/18 11:20	21.2
	PD-1	Goddard Interceptor West of Allen Road	3/1/18 15:15	17.4	3/1/18 10:40	35.3
	PB-1	Northline Interceptor West of Fordline Road	3/1/18 13:10	7.8	3/1/18 8:35	10.1
	PA-4	Eureka Interceptor near Hannan Road	3/2/18 19:40	5.1	3/1/18 9:10	10.9
	DMA-1	Detroit Metropolitan Airport	3/3/18 19:45	1.7	3/1/18 0:00	2.8
	PA-3	Eureka Interceptor at Inkster Road	3/1/18 14:00	16.1	3/1/18 12:15	34.0
	PA-2	Eureka Interceptor at Allen Road	3/1/18 14:40	24.4	3/1/18 11:35	46.5
	PA-1	Eureka Interceptor West of Fordline Road	3/1/18 14:20	33.3	3/1/18 11:00	56.6
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	3/1/18 14:25	8.4	3/1/18 11:40	11.8
	P-1	Pennsylvania Interceptor East of Fort Street	3/1/18 14:40	111.2	3/1/18 10:55	212.2
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	3/1/18 13:50	23.3	3/1/18 9:10	19.7
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	3/2/18 19:00	11.2	3/1/18 9:15	24.6
	EC-6	Riverdrive Interceptor South of Southfield Road	3/1/18 19:40	19.1	3/1/18 11:35	37.2
	RD-1	Riverdrive Interceptor North of Northline Road	3/4/18 0:45	73.4	3/1/18 11:15	177.6
	SW + SWB	Southgate-Wyandotte Connection	3/4/18 3:35	37.7	3/2/18 11:55	73.8
Tunnel Connection Meters	TSO	At Pelham Basin	3/2/18 15:25	0.3	3/1/18 10:40	0.1
	APO-1	Belmont and Rosedale	3/2/18 15:40	3.1	3/1/18 13:05	1.0
	APO-2	Belmont and Quandt	3/2/18 15:45	10.2	3/1/18 12:45	9.6
	CHPO	Pelham Road South of R.R.	3/1/18 12:30	9.9	3/1/18 8:50	13.2
	CPO	Pelham Road North of Haskell	3/1/18 12:45	6.0	3/1/18 11:55	0.4
	PDO	Allen Road and Goddard	-	0.0	-	0.0
	ER-2	Eureka Road and Inkster	3/1/18 17:35	2.2	3/1/18 16:20	2.6
	ER-1	Allen Road and Eureka Road	3/1/18 19:20	4.6	3/1/18 0:00	5.7
	PM-1	Pennsylvania Ave. at Fordline	-	0.0	-	0.0
DWTF	IPS + TPS	DWTF Influent	3/2/18 8:20	274.8	3/1/18 13:30	543.6

Table 7-12
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event C April 14-15, 2018 2.41 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	4/17/18 12:50	18.8	4/16/18 22:15	41.5
	PC-1	Pelham Interceptor North of Goddard Road	4/15/18 5:45	27.3	4/16/18 1:20	63.8
	DMA-2	Goddard near Harrison	4/16/18 15:55	3.7	4/15/18 10:30	9.0
	PD-2	Goddard Interceptor West of Inkster Road	4/15/18 18:25	21.0	4/14/18 11:50	33.1
	PD-1	Goddard Interceptor West of Allen Road	4/15/18 18:25	28.4	4/14/18 10:55	44.5
	PB-1	Northline Interceptor West of Fordline Road	4/15/18 18:55	9.2	4/14/18 7:30	11.7
	PA-4	Eureka Interceptor near Hannan Road	4/15/18 20:40	7.5	4/15/18 12:15	11.5
	DMA-1	Detroit Metropolitan Airport	4/14/18 14:20	1.5	4/14/18 10:25	2.0
	PA-3	Eureka Interceptor at Inkster Road	4/15/18 20:00	19.3	4/15/18 5:25	35.5
	PA-2	Eureka Interceptor at Allen Road	4/15/18 21:30	28.8	4/14/18 11:00	48.7
	PA-1	Eureka Interceptor West of Fordline Road	4/15/18 19:25	40.0	4/14/18 10:50	60.9
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	4/15/18 20:15	10.1	4/14/18 9:20	13.8
	P-1	Pennsylvania Interceptor East of Fort Street	4/16/18 1:20	128.9	4/14/18 10:05	227.8
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	4/15/18 14:50	27.7	4/14/18 7:00	24.4
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	4/15/18 10:35	8.3	4/14/18 12:10	15.8
	EC-6	Riverdrive Interceptor South of Southfield Road	4/15/18 18:30	27.5	4/14/18 9:15	42.2
	RD-1	Riverdrive Interceptor North of Northline Road	4/16/18 5:35	69.9	4/14/18 8:55	144.3
	SW + SWB	Southgate-Wyandotte Connection	4/17/18 3:40	37.3	4/16/18 15:00	83.5
Tunnel Connection Meters	TSO	At Pelham Basin	4/15/18 20:35	33.7	4/14/18 7:35	13.1
	APO-1	Belmont and Rosedale	4/15/18 15:45	56.6	4/15/18 7:45	9.9
	APO-2	Belmont and Quandt	4/15/18 15:05	46.7	4/15/18 7:25	16.4
	CHPO	Pelham Road South of R.R.	4/15/18 20:20	32.2	4/14/18 7:55	18.1
	CPO	Pelham Road North of Haskell	4/15/18 19:10	8.0	4/15/18 8:10	1.7
	PDO	Allen Road and Goddard	-	0.0	-	0.0
	ER-2	Eureka Road and Inkster	4/15/18 19:35	7.5	4/15/18 15:20	4.4
	ER-1	Allen Road and Eureka Road	4/15/18 22:00	12.2	4/14/18 12:20	8.2
	PM-1	Pennsylvania Ave. at Fordline	4/15/18 14:55	56.3	4/15/18 11:55	10.3
DWTF	IPS + TPS	DWTF Influent	4/15/18 15:55	371.9	4/14/18 19:55	613.1

Table 7-13
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event D May 11-13, 2018 2.53 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	5/13/18 16:25	15.3	5/12/18 22:00	39.0
	PC-1	Pelham Interceptor North of Goddard Road	5/12/18 10:05	25.5	5/13/18 15:20	64.2
	DMA-2	Goddard near Harrison	5/11/18 23:55	6.3	5/11/18 23:40	11.1
	PD-2	Goddard Interceptor West of Inkster Road	5/12/18 13:15	20.5	5/12/18 0:35	36.1
	PD-1	Goddard Interceptor West of Allen Road	5/12/18 13:20	30.1	5/11/18 23:35	53.3
	PB-1	Northline Interceptor West of Fordline Road	5/12/18 1:05	12.6	5/11/18 23:40	15.3
	PA-4	Eureka Interceptor near Hannan Road	5/12/18 14:20	6.8	5/12/18 1:20	12.8
	DMA-1	Detroit Metropolitan Airport	5/13/18 18:40	1.4	5/13/18 22:20	2.3
	PA-3	Eureka Interceptor at Inkster Road	5/12/18 13:15	16.8	5/12/18 1:10	38.7
	PA-2	Eureka Interceptor at Allen Road	5/12/18 2:40	27.5	5/12/18 0:25	55.1
	PA-1	Eureka Interceptor West of Fordline Road	-	-	-	-
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	5/12/18 14:40	7.4	5/12/18 1:00	13.3
	P-1	Pennsylvania Interceptor East of Fort Street	5/12/18 2:05	130.2	5/12/18 0:45	263.7
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	5/12/18 1:10	26.4	5/11/18 22:45	24.9
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	5/13/18 19:35	11.5	5/13/18 9:40	26.9
	EC-6	Riverdrive Interceptor South of Southfield Road	5/12/18 12:15	27.2	5/12/18 1:10	53.9
	RD-1	Riverdrive Interceptor North of Northline Road	5/12/18 10:10	73.0	5/11/18 23:55	166.7
	SW + SWB	Southgate-Wyandotte Connection	5/11/18 7:30	52.5	5/13/18 19:10	81.2
Tunnel Connection Meters	TSO	At Pelham Basin	5/13/18 14:30	12.3	5/13/18 13:35	7.4
	APO-1	Belmont and Rosedale	5/12/18 11:50	22.0	5/12/18 0:25	6.8
	APO-2	Belmont and Quandt	5/12/18 11:25	41.5	5/12/18 0:10	22.7
	CHPO	Pelham Road South of R.R.	5/12/18 13:10	27.4	5/11/18 23:35	21.9
	CPO	Pelham Road North of Haskell	5/12/18 12:00	13.0	5/12/18 0:50	1.4
	PDO	Allen Road and Goddard	-	0.0	-	0.0
	ER-2	Eureka Road and Inkster	5/12/18 17:30	5.3	5/12/18 4:00	6.8
	ER-1	Allen Road and Eureka Road	5/12/18 18:40	8.0	5/11/18 23:20	12.9
	PM-1	Pennsylvania Ave. at Fordline	5/13/18 7:15	46.3	5/12/18 2:10	3.6
DWTF	IPS + TPS	DWTF Influent	5/12/18 14:55	332.7	5/12/18 0:35	639.0

Table 7-14
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	8/1/18 4:25	15.0	7/31/18 23:25	25.6
	PC-1	Pelham Interceptor North of Goddard Road	8/1/18 6:45	27.7	7/31/18 23:15	42.7
	DMA-2	Goddard near Harrison	8/1/18 0:25	2.8	7/31/18 10:00	0.6
	PD-2	Goddard Interceptor West of Inkster Road	8/1/18 1:30	23.4	7/31/18 17:50	9.3
	PD-1	Goddard Interceptor West of Allen Road	8/1/18 2:30	21.4	7/31/18 17:25	18.3
	PB-1	Northline Interceptor West of Fordline Road	8/1/18 0:15	12.8	7/31/18 16:55	5.4
	PA-4	Eureka Interceptor near Hannan Road	8/1/18 1:40	3.2	7/31/18 17:40	4.6
	DMA-1	Detroit Metropolitan Airport	8/2/18 14:15	1.8	7/31/18 5:30	2.7
	PA-3	Eureka Interceptor at Inkster Road	8/1/18 0:50	14.7	7/31/18 18:10	17.1
	PA-2	Eureka Interceptor at Allen Road	8/1/18 1:00	28.6	7/31/18 20:20	25.0
	PA-1	Eureka Interceptor West of Fordline Road	8/1/18 1:15	36.6	7/31/18 22:35	30.3
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	8/1/18 0:30	12.4	7/31/18 17:15	8.2
	P-1	Pennsylvania Interceptor East of Fort Street	8/1/18 4:15	112.9	7/31/18 22:55	116.6
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	7/31/18 23:30	25.3	7/31/18 17:15	7.2
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	8/1/18 2:50	11.1	7/31/18 17:15	12.5
	EC-6	Riverdrive Interceptor South of Southfield Road	8/1/18 0:30	24.0	7/31/18 11:10	22.8
	RD-1	Riverdrive Interceptor North of Northline Road	8/1/18 8:30	58.2	7/31/18 17:10	79.1
	SW + SWB	Southgate-Wyandotte Connection	7/31/18 17:55	44.6	8/2/18 23:55	54.2
Tunnel Connection Meters	TSO	At Pelham Basin	8/1/18 0:45	2.2	7/31/18 23:05	0.2
	APO-1	Belmont and Rosedale	-	-	-	-
	APO-2	Belmont and Quandt	8/1/18 2:30	18.9	7/31/18 23:20	1.3
	CHPO	Pelham Road South of R.R.	8/1/18 1:15	129.7	7/31/18 23:20	8.5
	CPO	Pelham Road North of Haskell	8/1/18 1:45	116.3	7/31/18 23:55	8.0
	PDO	Allen Road and Goddard	8/1/18 1:30	1.2	8/1/18 1:30	0.0
	ER-2	Eureka Road and Inkster	8/1/18 21:20	0.0	8/1/18 2:40	0.0
	ER-1	Allen Road and Eureka Road	8/1/18 1:05	14.4	8/1/18 0:40	0.7
	PM-1	Pennsylvania Ave. at Fordline	8/1/18 1:35	206.5	8/1/18 1:15	11.4
DWTF	IPS + TPS	DWTF Influent	8/1/18 2:45	223.2	7/31/18 19:55	268.4

Notes:
1) Meter APO-1 was out-of-service for this event.

Table 7-15
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event F September 24-25, 2018 2.94 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	9/25/18 15:40	15.3	9/24/18 22:45	29.5
	PC-1	Pelham Interceptor North of Goddard Road	9/25/18 21:05	34.5	9/24/18 22:35	55.5
	DMA-2	Goddard near Harrison	9/25/18 8:50	0.9	9/24/18 7:45	0.6
	PD-2	Goddard Interceptor West of Inkster Road	9/25/18 10:30	15.3	9/25/18 8:00	12.4
	PD-1	Goddard Interceptor West of Allen Road	9/25/18 20:10	19.8	9/25/18 8:15	21.9
	PB-1	Northline Interceptor West of Fordline Road	9/25/18 20:25	13.7	9/24/18 20:50	6.6
	PA-4	Eureka Interceptor near Hannan Road	9/25/18 22:35	4.7	9/24/18 19:00	7.0
	DMA-1	Detroit Metropolitan Airport	9/25/18 14:25	1.4	9/24/18 0:00	2.1
	PA-3	Eureka Interceptor at Inkster Road	9/25/18 21:30	13.9	9/25/18 9:10	22.8
	PA-2	Eureka Interceptor at Allen Road	9/25/18 20:40	27.3	9/25/18 8:10	32.0
	PA-1	Eureka Interceptor West of Fordline Road	9/25/18 21:15	39.6	9/25/18 7:40	38.0
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	9/25/18 20:55	11.9	9/24/18 23:15	9.1
	P-1	Pennsylvania Interceptor East of Fort Street	9/25/18 21:10	111.0	9/24/18 23:35	145.4
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	9/25/18 20:15	33.4	9/24/18 14:25	10.5
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	9/25/18 18:00	11.1	9/24/18 14:50	17.5
	EC-6	Riverdrive Interceptor South of Southfield Road	9/25/18 19:25	27.1	9/24/18 13:25	31.7
	RD-1	Riverdrive Interceptor North of Northline Road	9/25/18 21:15	64.0	9/24/18 22:40	125.2
	SW + SWB	Southgate-Wyandotte Connection	9/24/18 21:50	44.7	9/25/18 23:55	45.4
Tunnel Connection Meters	TSO	At Pelham Basin	9/25/18 22:10	1.4	9/25/18 8:05	11.6
	APO-1	Belmont and Rosedale	9/25/18 20:10	56.5	9/25/18 9:00	6.7
	APO-2	Belmont and Quandt	9/25/18 19:45	47.0	9/25/18 8:45	8.6
	CHPO	Pelham Road South of R.R.	9/25/18 20:40	162.8	9/25/18 8:40	14.9
	CPO	Pelham Road North of Haskell	9/25/18 21:25	145.1	9/25/18 9:10	11.4
	PDO	Allen Road and Goddard	9/25/18 20:55	106.7	9/25/18 20:45	3.3
	ER-2	Eureka Road and Inkster	9/25/18 16:25	0.6	9/25/18 16:10	0.3
	ER-1	Allen Road and Eureka Road	9/25/18 20:25	19.9	9/25/18 18:35	1.5
	PM-1	Pennsylvania Ave. at Fordline	9/25/18 21:05	213.2	9/25/18 20:15	18.2
DWTF	IPS + TPS	DWTF Influent	9/25/18 21:25	190.0	9/25/18 2:30	355.1

Table 7-16
Downriver Sewage Disposal System
Peak Flow Rates for Major Storm Events

System	Meter	Location	Major Storm Event G October 31, 2018 - November 2, 2018 2.39 inches			
			Peak Hour		Peak 96 Hour	
			Date/Time	Flow Rate (cfs)	Date/Time	Cumulative Volume (MG)
Tunnel (Non-Controlled)	TB-1	Taylor Basin	11/1/18 22:25	15.1	10/31/18 6:10	34.2
	PC-1	Pelham Interceptor North of Goddard Road	10/31/18 7:00	30.3	10/31/18 5:55	64.7
	DMA-2	Goddard near Harrison	11/3/18 14:20	4.3	11/3/18 13:45	10.8
	PD-2	Goddard Interceptor West of Inkster Road	11/1/18 14:10	10.8	11/3/18 10:20	22.2
	PD-1	Goddard Interceptor West of Allen Road	11/1/18 22:00	16.6	11/1/18 14:30	30.3
	PB-1	Northline Interceptor West of Fordline Road	11/1/18 21:50	7.2	10/31/18 4:45	8.8
	PA-4	Eureka Interceptor near Hannan Road	11/2/18 7:50	4.1	11/1/18 15:30	8.0
	DMA-1	Detroit Metropolitan Airport	11/2/18 14:30	1.4	11/1/18 4:30	2.1
	PA-3	Eureka Interceptor at Inkster Road	11/1/18 23:15	13.4	11/1/18 13:05	27.3
	PA-2	Eureka Interceptor at Allen Road	11/1/18 22:40	25.2	11/1/18 9:20	40.8
	PA-1	Eureka Interceptor West of Fordline Road	11/1/18 23:00	33.4	10/31/18 6:05	51.4
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	11/1/18 23:05	7.6	10/31/18 6:10	10.7
	P-1	Pennsylvania Interceptor East of Fort Street	11/1/18 19:40	105.2	10/31/18 7:00	184.3
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	11/1/18 22:30	19.3	10/31/18 4:50	18.0
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet Jefferson North of Victoria	11/2/18 8:50	11.2	10/31/18 5:35	21.9
	EC-6	Riverdrive Interceptor South of Southfield Road	11/2/18 0:55	23.8	10/31/18 5:30	38.1
	RD-1	Riverdrive Interceptor North of Northline Road	10/31/18 6:50	55.9	10/31/18 5:35	121.0
	SW + SWB	Southgate-Wyandotte Connection	11/1/18 4:35	31.2	11/3/18 17:55	79.0
Tunnel Connection Meters	TSO	At Pelham Basin	11/1/18 21:05	0.1	10/31/18 5:35	0.1
	APO-1	Belmont and Rosedale	11/1/18 22:05	12.8	10/31/18 6:55	3.0
	APO-2	Belmont and Quandt	11/1/18 21:30	22.0	10/31/18 6:40	8.3
	CHPO	Pelham Road South of R.R.	11/1/18 21:50	10.6	10/31/18 6:10	7.0
	CPO	Pelham Road North of Haskell	11/1/18 22:15	0.7	11/1/18 21:50	0.0
	PDO	Allen Road and Goddard	-	0.0	-	0.0
	ER-2	Eureka Road and Inkster	11/2/18 2:25	0.9	11/1/18 23:40	0.4
	ER-1	Allen Road and Eureka Road	11/2/18 5:15	2.0	11/2/18 4:15	1.2
	PM-1	Pennsylvania Ave. at Fordline	11/1/18 22:25	50.7	11/1/18 21:10	5.6
DWTF	IPS + TPS	DWTF Influent	11/1/18 19:00	202.9	11/1/18 12:25	387.2

Table 7-17
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event A February 19-21, 2018 2.21 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	2/20/18 5:40	6.3	571.2	⦿
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	2/20/18 6:45	2.2	600.6	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	2/20/18 7:00	2.5	578.0	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	2/20/18 5:50	1.8	571.3	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	2/20/18 8:45	1.5	636.6	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	2/20/18 17:05	2.5	603.5	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	2/20/18 16:45	3.5	579.6	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	2/20/18 16:40	2.8	573.2	○
	P-2[2]	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	2/20/18 16:50	1.6	578.9	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	2/20/18 15:00	11.1	556.5	⦿
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	2/20/18 14:55	9.7	553.7	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	2/20/18 4:50	7.9	574.1	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	2/20/18 5:50	13.6	568.1	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	2/20/2018 2:45 - 2/20/2018 19:45	≥9.2	≥559.8	⊘
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	2/20/18 15:05	15.1	553.1	⦿
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	2/20/18 15:40	2.6	587.9	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	2/20/2018 4:15 - 2/20/2018 17:25	≥10.2	≥575.7	⊘
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	2/20/2018 3:50 - 2/20/2018 17:05	≥4.9	≥575.9	⊘
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	2/20/18 16:00	5.7	572.2	⦿
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	2/20/18 5:55	5.8	573.8	⦿
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	2/20/18 7:25	1.1	571.1	○
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	2/20/18 18:00	1.2	592.7	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	2/20/18 16:05	1.8	562.3	○
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	2/20/18 15:10	8.9	557.8	⦿
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	2/20/2018 4:30 - 2/20/2018 20:15	≥9.1	≥552.2	⊘
	L-5	Pelham and Champaign	601.35	546.84	7.0	2/20/2018 4:15 - 2/21/2018 14:45	≥10.1	≥556.9	⊘
	L-7	Rosedale and Belmont	593.21	552.86	6.5	2/20/2018 5:00 - 2/21/2018 10:30	≥10.0	≥562.9	⊘
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	2/19/2018 20:45 - 2/21/2018 2:00	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	2/20/18 15:05	20.0	548.5	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	2/20/18 15:45	25.9	550.6	○

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⊘
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 7-18
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event B March 1, 2018 1.62 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	3/1/18 13:25	4.0	568.9	○
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	3/1/18 15:10	1.6	599.9	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	3/1/18 17:05	1.9	577.5	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	3/1/18 13:40	1.6	571.2	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	3/1/18 15:15	1.2	636.4	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	3/1/18 14:10	2.2	603.3	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	3/1/18 15:00	2.8	579.0	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	3/1/18 14:50	2.5	572.9	○
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	3/1/18 14:50	1.5	578.8	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	3/1/18 13:50	8.3	553.8	⦿
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	3/1/18 13:40	7.4	551.5	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	3/1/18 14:30	4.5	570.7	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	3/1/18 14:50	11.1	565.6	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	3/1/2018 12:45 - 3/1/2018 20:15	≥9.2	≥559.8	⊘
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	3/1/18 13:40	14.2	552.2	⦿
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	3/1/18 13:45	0.3	585.7	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	3/1/18 20:50	9.2	574.6	⦿
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	3/1/18 21:05	3.8	574.8	⦿
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	3/1/18 12:50	4.1	570.6	○
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	3/1/18 13:10	4.2	572.2	○
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	3/1/18 15:50	0.9	570.9	○
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	3/1/18 18:05	0.8	592.3	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	3/1/18 19:55	0.6	561.1	○
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	3/1/18 14:35	6.2	555.1	○
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	3/1/18 14:00	7.5	550.5	⦿
	L-5	Pelham and Champaign	601.35	546.84	7.0	3/1/18 17:15	3.8	550.6	○
	L-7	Rosedale and Belmont	593.21	552.86	6.5	3/1/18 14:15	0.2	553.0	○
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	3/1/2018 10:45 - 3/4/2018 3:00	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	3/1/18 13:35	19.4	547.8	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	3/1/18 13:40	22.4	547.1	○

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⊘
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 7-19
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event C April 14-15, 2018 2.41 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	4/15/18 21:00	5.7	570.7	⦿
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	4/15/18 12:45	2.0	600.3	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	4/15/18 19:15	2.6	578.1	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	4/15/18 19:25	1.8	571.3	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	4/15/18 21:45	1.5	636.7	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	4/15/18 20:05	2.5	603.5	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	4/15/18 19:45	3.7	579.9	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	4/15/18 19:25	2.8	573.2	○
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	4/15/18 20:50	1.6	579.0	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	4/15/18 15:15	10.8	556.3	⦿
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	4/15/18 15:05	9.8	553.9	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	4/15/18 16:05	7.0	573.2	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	4/15/18 16:15	12.4	566.9	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	4/15/18 15:10	10.6	561.3	⦿
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	4/15/18 15:10	14.8	552.8	⦿
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	4/15/18 21:00	2.5	587.9	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	4/15/2018 15:05 - 4/15/2018 19:40	≥10.2	≥575.7	⊘
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	4/15/18 15:15	4.9	575.9	⦿
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	4/15/18 20:40	4.9	571.4	⦿
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	4/15/18 19:35	4.3	572.3	○
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	4/15/18 19:30	1.2	571.1	○
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	4/15/18 20:20	1.3	592.8	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	4/15/18 20:10	1.3	561.7	○
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	4/15/18 15:25	8.7	557.6	⦿
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	4/15/2018 12:15 - 4/16/2018 0:45	≥9.1	≥552.2	⊘
	L-5	Pelham and Champaign	601.35	546.84	7.0	4/15/2018 12:45 - 4/16/2018 3:45	≥10.1	≥556.9	⊘
	L-7	Rosedale and Belmont	593.21	552.86	6.5	4/15/2018 8:30 - 4/15/2018 20:15	≥9.0	≥561.8	⊘
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	4/14/2018 18:00 - 4/16/2018 4:30	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	4/15/18 15:05	19.8	548.2	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	4/15/18 18:50	25.0	549.7	○

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⊘
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 7-20
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event D May 11-13, 2018 2.53 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	5/12/18 13:45	5.8	570.7	⦿
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	5/12/18 14:10	2.2	600.6	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	5/12/18 13:10	2.7	578.3	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	5/12/18 1:35	2.1	571.7	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	5/12/18 15:00	1.5	636.6	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	5/12/18 3:00	2.2	603.3	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	5/12/18 3:00	3.4	579.6	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	-	-	-	-
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	5/12/18 15:10	1.4	578.7	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	5/13/18 8:05	11.7	557.2	⦿
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	5/13/18 7:55	11.4	555.5	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	5/12/18 12:30	8.3	574.5	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	5/12/18 14:25	12.8	567.4	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	5/12/18 11:50	10.8	561.4	⦿
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	5/13/18 8:00	17.4	555.4	⦿
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	5/13/18 14:30	1.7	587.0	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	5/12/18 1:05	10.2	575.6	⦿
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	5/12/18 11:35	4.8	575.8	⦿
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	5/12/18 13:25	4.8	571.2	⦿
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	5/12/18 12:15	4.4	572.4	○
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	5/12/18 12:20	1.2	571.2	○
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	5/12/18 18:20	1.1	592.6	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	5/12/18 13:35	0.9	561.3	○
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	5/13/18 8:10	9.0	557.9	⦿
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	5/12/2018 13:15 - 5/12/2018 8:10	≥9.1	≥552.2	⊘
	L-5	Pelham and Champaign	601.35	546.84	7.0	5/12/2018 13:15 - 5/12/2018 9:15	≥10.1	≥556.9	⊘
	L-7	Rosedale and Belmont	593.21	552.86	6.5	5/12/18 15:00	≥10.0	≥562.8	⊘
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	5/12/2018 3:30 - 5/15/2018 12:30	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	5/13/18 8:10	20.5	548.9	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	5/13/2018 8:10 - 5/13/2018 9:05	≥25.8	≥550.5	⊘

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).
2) Meter PA-1 was out-of-service for this event.

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⊘
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 7-21
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event E July 31, 2018 - August 1, 2018 2.25 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	8/1/18 2:00	8.4	573.3	⦿
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	8/1/18 1:55	2.5	600.8	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	8/1/18 3:00	2.4	578.0	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	8/1/18 0:40	2.2	571.7	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	8/1/18 2:10	1.0	636.2	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	8/1/18 1:15	2.3	603.3	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	8/1/18 1:30	3.4	579.6	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	8/1/18 1:45	2.8	573.2	○
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	8/1/18 1:40	2.2	579.6	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	8/1/2018 1:15 - 8/1/2018 3:15	≥12.0	≥557.5	⦸
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	8/1/18 1:50	16.3	560.4	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	8/1/18 0:45	5.3	571.5	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	8/1/18 2:25	10.6	565.1	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	8/1/18 1:35	11.6	562.2	⦿
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	8/1/2018 1:20 - 8/1/2018 3:00	≥17.9	≥555.9	⦸
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	8/1/18 1:10	0.9	586.2	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	-	-	-	-
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	7/31/18 23:35	4.6	575.6	⦿
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	8/1/18 1:45	8.1	574.5	⦿
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	8/1/18 2:10	7.8	575.8	⦿
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	8/1/18 2:00	4.2	574.1	⦿
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	8/1/18 23:00	0.3	591.8	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	8/1/18 1:55	6.6	567.0	⦿
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	8/1/18 2:05	15.3	564.2	⦿
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	8/1/2018 1:20 - 8/1/2018 4:00	≥9.1	≥552.2	⦸
	L-5	Pelham and Champaign	601.35	546.84	7.0	8/1/2018 1:15 - 8/1/2018 4:15	≥10.1	≥556.9	⦸
	L-7	Rosedale and Belmont	593.21	552.86	6.5	8/1/2018 0:00 - 8/1/2018 3:30	≥10.0	≥562.8	⦸
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	8/1/2018 0:00 - 8/1/2018 13:00	≥7.3	≥544.8	⦸
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	8/1/18 2:00	27.9	556.3	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	8/1/2018 1:20 - 8/1/2018 3:40	≥25.0	≥549.7	⦸

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).
2) Meter APO-1 was out-of-service for this event.

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⦸
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 7-22
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event F September 24-25, 2018 2.94 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	9/25/2018 20:50 - 9/25/2018 22:25	≥8.3	≥573.3	⊘
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	9/25/18 10:55	1.8	600.2	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	9/25/18 20:45	2.4	578.0	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	9/25/18 21:05	2.3	571.9	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	9/25/18 22:40	1.3	636.4	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	9/25/18 21:15	2.3	603.3	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	9/25/18 21:30	3.7	579.9	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	9/25/18 21:25	2.9	573.3	○
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	9/25/18 22:15	2.4	579.7	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	9/25/2018 20:35 - 9/25/2018 23:40	≥12.0	≥557.5	⊘
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	9/25/18 20:50	17.3	561.4	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	9/25/18 20:25	9.6	575.8	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	9/25/18 21:10	16.9	571.4	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	9/25/18 21:00	16.6	567.2	⦿
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	9/25/18 21:00	20.0	558.0	⦿
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	9/25/18 23:00	0.8	586.1	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	9/25/2018 20:05 - 9/25/2018 23:25	≥10.2	≥575.7	⊘
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	9/25/2018 19:40 - 9/25/2018 23:15	≥4.5	≥575.5	⊘
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	9/25/18 21:00	12.3	578.7	⦿
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	9/25/2018 21:05 - 9/25/2018 22:20	≥10.3	≥578.3	⊘
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	9/25/18 21:10	7.1	577.1	⦿
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	9/25/18 16:50	0.5	592.0	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	9/25/18 21:05	8.3	568.7	⦿
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	9/25/18 21:10	16.3	565.2	⦿
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	9/25/2018 20:15 - 9/26/2018 1:30	≥9.2	≥552.2	⊘
	L-5	Pelham and Champaign	601.35	546.84	7.0	9/25/2018 21:00 - 9/26/2018 2:30	≥10.1	≥556.9	⊘
	L-7	Rosedale and Belmont	593.21	552.86	6.5	9/25/2018 23:45 - 9/26/2018 1:45	≥7.7	≥560.5	⊘
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	9/25/2018 1:15 - 9/27/2018 1:00	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	9/25/18 21:05	24.5	552.9	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	9/25/2018 20:45 - 9/25/2018 23:50	≥26.3	≥551.0	⊘

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⊘
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 7-23
Downriver Sewage Disposal System
Peak Hydraulic Grade Lines for Major Storm Events

System	Meter	Location	Rim Elevation (ft)	Invert Elevation (ft)	Diameter (ft)	Major Storm Event G October 31, 2018 - November 2, 2018 2.39 inches			
						Date/Time of Occurrence	Peak Depth (ft)	Peak HGL (ft)	
Tunnel (Non-Controlled)	PC-1	Pelham Interceptor North of Goddard Road	601.95	564.96	4.5	11/1/18 23:20	4.0	569.0	○
	PD-2	Goddard Interceptor West of Inkster Road	623.35	598.32	4.5	11/1/18 14:50	1.5	599.8	○
	PD-1	Goddard Interceptor West of Allen Road	602.25	575.55	4.0	11/1/18 22:30	1.9	577.5	○
	PB-1	Northline Interceptor West of Fordline Road	596.15	569.55	3.0	11/1/18 22:20	1.6	571.1	○
	PA-4	Eureka Interceptor near Hannan Road	656.95	635.14	3.5	11/2/18 10:25	1.2	636.3	○
	PA-3	Eureka Interceptor at Inkster Road	622.65	601.02	3.5	11/1/18 22:05	2.2	603.2	○
	PA-2	Eureka Interceptor at Allen Road	601.55	576.18	4.0	11/1/18 23:30	2.8	579.0	○
	PA-1	Eureka Interceptor West of Fordline Road	594.95	570.40	4.0	11/1/18 23:20	2.5	572.9	○
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	598.95	577.35	3.0	11/1/18 23:20	1.4	578.7	○
	P-1	Pennsylvania Interceptor East of Fort Street	591.45	545.45	6.5	11/1/18 22:40	11.4	556.9	⦿
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	578.33	544.07	3.5	11/1/18 22:30	11.2	555.3	⦿
Riverdrive (Controlled)	RR-1	Riverdrive Interceptor South of Visger Road	582.25	566.21	3.0	11/1/18 22:45	5.7	571.9	⦿
	EC-6	Riverdrive Interceptor South of Southfield Road	579.35	554.54	4.5	11/1/18 22:45	10.2	564.8	⦿
	RD-1	Riverdrive Interceptor North of Northline Road	577.85	550.66	6.0	11/1/18 22:40	10.3	561.0	⦿
	SW	On Southgate-Wyandotte Connection	578.00	538.00	6.5	11/1/18 22:40	17.1	555.1	⦿
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	609.16	585.34	4.0	11/1/18 21:30	0.4	585.7	○
	APO-1	Allen Park Overflow at Belmont Road and Rosedale Road	594.56	565.46	3.0	11/1/18 22:30	9.5	574.9	⦿
	APO-2	Allen Park Overflow at Belmont Road and Quandt Road	597.16	571.00	3.0	11/1/18 21:55	4.1	575.1	⦿
	CHPO	Pelham Interceptor South of R.R.	602.96	566.46	4.5	11/1/18 22:15	4.2	570.6	○
	CPO	Pelham Interceptor North of Haskell Road	601.46	568.00	4.5	11/1/18 22:35	4.0	572.0	○
	PDO	Goddard Interceptor at Allen Road	601.96	569.97	4.0	10/31/18 1:35	0.8	570.8	○
	ER-2	Eureka Relief Sewer Extention on Eureka Road at Inkster Road	623.73	591.48	4.5	11/2/18 3:05	0.5	592.0	○
	ER-1	Eureka Relief Sewer at Allen Road	602.81	560.47	4.5	11/2/18 5:25	0.4	560.9	○
	PM-1	Pennsylvania Interceptor at Fordline Road	593.06	548.92	6.5	11/1/18 22:55	8.7	557.6	⦿
Tunnel Level Sensors	L-3	Allen and I-75 (North)	602.56	543.04	7.0	11/1/2018 21:30 - 11/2/2018 8:15	≥9.2	≥552.2	⊘
	L-5	Pelham and Champaign	601.35	546.84	7.0	11/1/2018 22:15 - 11/2/2018 6:30	≥10.1	≥556.9	⊘
	L-7	Rosedale and Belmont	593.21	552.86	6.5	11/1/2018 21:00 - 11/2/2018 4:00	≥9.6	≥562.5	⊘
	L-8	Pennsylvania Ave. at Fordline	592.21	537.49	7.5	10/31/2018 7:15 - 11/4/2018 6:00	≥7.3	≥544.8	⊘
DWTF	IPS	Main Influent Pump Station Wet Well	-	528.46	NA	11/1/18 22:45	22.6	551.0	○
	TPS	Tunnel Pump Station Wet Well	-	524.71	NA	11/1/18 22:30	25.9	550.6	○

Notes:
1) Elevations are referenced to the North American Vertical Datum of 1988 (NAVD 88).

Key
Within sewer: ○
Surcharging sewer, grade elevation unknown: ⊗
Surcharging sewer, surcharging level exceeded top of range for level sensor: ⊘
Surcharging sewer, grade elevation known: ⦿
Above grade: ●
Data not available: -

Table 18
Downriver Sewage Disposal System
Meter Data Review and Fixes for 2018

Meter	Start	Stop	Description of the Problem	Dry Period	Wet Period	Fix
APO-1	7/18/2018	8/2/2018	UPS failed causing meter to lose power	X	X	Correlation to Meter APO-2
	9/25/2018	9/25/2018	Sewer surcharging level exceeded top of range for level sensor		X	Flow rate estimated
APO-2	9/25/2018	9/25/2018	Sewer surcharging level exceeded top of range for level sensor		X	Flow rate estimated
CPO	9/25/2018	9/25/2018	Sewer surcharging level exceeded top of range for level sensor		X	Flow rate estimated
DMA-1	1/27/2018	1/31/2018	Depth sensor malfunctioned	X		Diurnal pattern
	2/24/2018	2/28/2018	Battery ran out of power due to site access restriction	X		
	3/1/2018	3/2/2018			X	
ER-1	10/7/2018	10/8/2018	Brief periods of significantly low flow or stagnant flow with sporadic velocity values	X		Flow rate estimated to be zero
	10/20/2018	10/21/2018		X	X	
	10/31/2018	10/31/2018			X	
	11/1/2018	11/1/2018			X	
	11/4/2018	11/4/2018			X	
	11/26/2018	11/27/2018			X	
	11/29/2018	11/30/2018			X	
	12/2/2018	12/3/2018			X	
ER-2	1/1/2018	1/2/2018	No data available	X		Set to flow rate to zero
	1/4/2018	1/5/2018		X		
	2/23/2018	2/26/2018	No velocity values for end of event when depths		X	Estimated flow rate with rating curve to depth
	3/1/2018	3/10/2018	Bad velocity data	X	X	
PA-1	5/9/2018	5/14/2018	Fuse malfunctioned	X	X	Fuse was replaced
PA-2	10/8/2018	10/9/2018	Meter malfunctioned	X		Diurnal pattern
	10/10/2018	10/11/2018		X		
PA-3	9/25/2018	12/6/2018	Velocity path 1 failed	X	X	Velocity path 1 estimated with correlation to velocity path 2
PD-2	4/15/2018	4/17/2018	Site lost power		X	Correlation to Meters PD-1 and DMA-2
	7/15/2018	7/17/2018	Debris in metering section of sewer	X		Debris cleared Flow rate estimated with rating curve to depth
	7/19/2018	7/23/2018		X	X	
RV-1	11/5/2018	12/31/2018	Accusonic monitor failed	X	X	Accusonic monitor replaced Correlation to Meter P-2
SW	11/10/2018	11/26/2018	UPS failed	X	X	Diurnal pattern
TB-1	12/14/2018	12/15/2018	Erronious flow rate data	X		Diurnal pattern

Appendix A

Additional Monthly Summary Tables

Table A-1
Downriver Sewage Disposal System
Incremental Flow Rates Summarized by Meter District with Community Components

Meter District	Community	Year 2010 Incremental Population	Meter District Percentage	January 2018			February 2018			March 2018			April 2018			May 2018			June 2018		
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	Dearborn Heights	19,152	78.2%	4.21	3.52	119	8.02	3.46	117	6.42	4.60	155	8.00	5.14	173	7.98	4.29	145	3.36	2.95	100
	Taylor	5,339	21.8%	1.17	0.98		2.24	0.97		1.79	1.28		2.23	1.43		2.22	1.20		0.94	0.82	
	Total	24,491	100.0%	5.38	4.50		10.26	4.43		8.20	5.88		10.23	6.57		10.20	5.49		4.29	3.78	
PC-1	Allen Park	1,019	3.8%	0.20	0.17	108	0.34	0.16	101	0.28	0.21	135	0.32	0.23	148	0.33	0.19	123	0.19	0.15	92
	Taylor	25,700	96.2%	5.11	4.28		8.50	4.01		6.95	5.37		7.98	5.87		8.22	4.91		4.85	3.66	
	Total	26,719	100.0%	5.32	4.45		8.84	4.17		7.23	5.58		8.30	6.11		8.54	5.10		5.04	3.81	
DMA-2	Romulus	0	100.0%	0.65	0.72	--	1.12	1.11	--	1.60	1.58	--	3.62	3.48	--	4.51	4.24	--	1.10	0.56	--
PD-2	Romulus	9,532	100.0%	2.18	2.00	136	3.68	2.05	139	3.58	2.90	197	4.51	3.43	232	4.49	3.10	210	2.41	2.15	146
PD-1	Taylor	12,100	100.0%	2.53	2.38	127	3.44	2.22	119	3.24	2.73	146	2.86	2.35	126	3.44	2.37	126	2.85	2.67	143
PB-1[1]	Taylor	6,462	60.0%	0.90	0.81	81	1.32	0.76	76	1.19	0.92	92	1.39	1.02	102	1.62	0.91	91	0.85	0.74	74
	Southgate	4,459	40.0%	0.60	0.54	78	0.88	0.51	74	0.79	0.61	89	0.93	0.68	99	1.08	0.61	88	0.56	0.49	71
	Total	10,921	100.0%	1.50	1.35	80	2.21	1.27	75	1.98	1.53	91	2.32	1.70	101	2.70	1.52	90	1.41	1.23	73
PA-4	Belleville	3,993	41.1%	0.65	0.63	103	0.94	0.66	107	1.10	1.01	163	1.13	1.00	162	1.18	0.90	146	0.75	0.69	111
	Van Buren Twp	5,719	58.9%	0.93	0.91		1.35	0.94		1.57	1.44		1.62	1.43		1.69	1.29		1.08	0.99	
	Total	9,712	100.0%	1.58	1.54		2.29	1.60		2.67	2.44		2.75	2.43		2.86	2.19		1.84	1.67	
DMA-1	Romulus (Airport)	0	100.0%	0.67	0.66	--	0.58	0.52	--	0.69	0.64	--	0.63	0.63	--	0.68	0.68	--	0.72	0.72	--
PA-3	Romulus	11,371	100.0%	3.75	3.59	204	5.90	3.77	214	5.77	4.93	280	6.33	5.17	294	6.83	4.87	277	4.35	4.03	229
PA-2	Taylor	13,270	98.2%	2.17	1.96	95	3.34	1.88	91	2.71	2.02	98	3.13	2.22	108	3.85	1.98	96	1.69	1.53	74
	Brownstown Twp	248	1.8%	0.04	0.04		0.06	0.04		0.05	0.04		0.06	0.04		0.07	0.04		0.03	0.03	
	Total	13,517	100.0%	2.21	1.99		3.41	1.91		2.76	2.06		3.19	2.26		3.93	2.02		1.72	1.56	
P-2	Brownstown Twp	10,397	97.5%	2.33	2.22	138	3.24	2.29	142	2.96	2.59	161	3.27	2.78	173	3.57	2.58	161	2.41	2.30	143
	Taylor	262	2.5%	0.06	0.06		0.08	0.06		0.07	0.07		0.08	0.07		0.09	0.07		0.06	0.06	
	Total	10,659	100.0%	2.39	2.28		3.32	2.34		3.04	2.65		3.35	2.85		3.66	2.65		2.47	2.36	
P-1	Allen Park	3,332	23.9%	0.73	0.66	128	1.36	0.66	127	1.07	0.85	165	1.41	0.96	185	1.42	0.88	171	0.73	0.63	123
	Southgate	10,637	76.1%	2.33	2.11		4.35	2.09		3.41	2.72		4.49	3.05		4.54	2.82		2.33	2.02	
	Total	13,969	100.0%	3.06	2.77		5.71	2.75		4.47	3.57		5.90	4.00		5.96	3.71		3.06	2.66	
RV-1	Riverview	12,486	100.0%	2.43	2.04	106	4.10	1.93	100	3.20	2.13	110	3.64	2.32	120	4.33	2.32	120	2.40	2.00	103
RR-1	River Rouge	7,903	100.0%	2.44	2.14	175	4.38	2.04	167	4.63	3.51	287	4.93	4.47	366	7.33	4.63	379	4.52	3.75	306
EC-6	Ecorse	9,515	71.5%	2.09	1.93	131	3.18	2.03	138	2.60	2.52	171	3.10	2.16	147	3.53	2.75	187	2.48	2.42	164
	Lincoln Park	3,795	28.5%	0.84	0.77		1.27	0.81		1.04	1.00		1.24	0.86		1.41	1.10		0.99	0.96	
	Total	13,310	100.0%	2.93	2.70		4.45	2.84		3.64	3.52		4.34	3.02		4.94	3.84		3.47	3.38	
RD-1	Allen Park	18,179	34.6%	4.38	3.10	110	8.35	3.60	128	6.25	3.07	109	7.60	5.16	183	9.42	3.81	136	4.54	2.87	102
	Lincoln Park	34,347	65.4%	8.28	5.86		15.77	6.81		11.80	5.80		14.36	9.75		17.81	7.20		8.57	5.43	
	Total	52,526	100.0%	12.66	8.96		24.12	10.42		18.05	8.88		21.96	14.91		27.23	11.01		13.11	8.30	
SW + SWB	Southgate	14,752	36.3%	5.98	4.67	204	7.27	4.43	194	7.95	6.09	267	8.97	7.69	337	9.06	7.65	335	7.10	6.27	275
	Wyandotte	25,883	63.7%	10.49	8.19		12.75	7.78		13.95	10.69		15.74	13.49		15.89	13.42		12.46	11.00	
	Total	40,635	100.0%	16.47	12.85		20.02	12.21		21.90	16.78		24.70	21.19		24.95	21.07		19.57	17.28	
APO-1 + APO-2	Allen Park	0	100.0%	0.10	0.08	--	2.58	0.00	--	0.54	0.00	--	1.46	0.00	--	1.52	0.00	--	0.05	0.00	--
TPS+IPS	Southgate	199	100.0%	0.04	0.04	128	0.08	0.04	127	0.06	0.05	165	0.08	0.06	185	0.08	0.05	171	0.04	0.04	123
Subtotal Controlled Flow Communities		114,374	42.4%	34.50	26.66	151	52.97	27.51	155	48.22	32.69	185	55.94	43.59	246	64.45	40.57	229	40.66	32.70	185
Subtotal Non-Controlled Flow Communities		155,677	57.6%	33.79	30.38	126	57.50	30.11	125	49.05	38.68	161	59.16	43.37	180	63.73	40.30	167	33.77	29.24	121
Total Incoming Flow		270,052	100.0%	68.29	57.04	137	110.47	57.62	138	97.27	71.37	171	115.11	86.96	208	128.17	80.87	194	74.43	61.94	148
DWTF Including Recycle (IPS + TPS)		270,052	100.0%	72.40	59.93	143	120.76	61.29	147	104.98	75.73	181	130.37	96.46	231	148.92	96.54	231	84.67	71.19	170

Notes:
1) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table A-1 continued
Downriver Sewage Disposal System
Incremental Flow Rates Summarized by Meter District with Community Components

Meter District	Community	Year 2010 Incremental Population	Meter District Percentage	July 2018			August 2018			September 2018			October 2018			November 2018			December 2018		
				Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
				Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	Dearborn Heights	19,152	78.2%	2.44	2.38	80	3.49	2.61	88	4.78	2.69	91	5.08	3.48	118	6.85	4.57	154	5.07	4.25	143
	Taylor	5,339	21.8%	0.68	0.66		0.97	0.73		1.33	0.75		1.42	0.97		1.91	1.27		1.41	1.18	
	Total	24,491	100.0%	3.12	3.04		4.46	3.33		6.11	3.43		6.49	4.46		8.76	5.85		6.48	5.43	
PC-1	Allen Park	1,019	3.8%	0.12	0.12	74	0.17	0.11	71	0.24	0.12	79	0.21	0.16	100	0.31	0.22	138	0.24	0.20	124
	Taylor	25,700	96.2%	3.02	2.93		4.28	2.83		6.09	3.13		5.41	3.98		7.71	5.49		6.00	4.94	
	Total	26,719	100.0%	3.14	3.04		4.45	2.94		6.33	3.25		5.62	4.14		8.02	5.71		6.24	5.13	
DMA-2	Romulus	0	100.0%	0.20	0.20	--	0.22	0.22	--	0.19	0.18	--	0.21	0.23	--	2.39	1.27	--	1.36	1.38	--
PD-2	Romulus	9,532	100.0%	1.85	1.84	125	2.02	1.74	118	2.36	1.75	119	2.59	2.15	145	3.92	2.84	192	3.43	3.10	211
PD-1	Taylor	12,100	100.0%	2.23	2.21	118	2.48	2.29	122	2.70	2.33	124	2.51	2.22	119	2.55	2.52	135	2.37	2.07	111
PB-1[1]	Taylor	6,462	60.0%	0.68	0.67	67	0.76	0.67	67	0.82	0.67	67	0.87	0.71	71	1.19	0.90	90	1.00	0.87	87
	Southgate	4,459	40.0%	0.45	0.44	64	0.51	0.45	65	0.55	0.45	65	0.58	0.47	68	0.79	0.60	87	0.66	0.58	84
	Total	10,921	100.0%	1.14	1.11	66	1.27	1.12	66	1.37	1.12	66	1.44	1.18	70	1.98	1.49	88	1.66	1.44	85
PA-4	Belleville	3,993	41.1%	0.61	0.59	96	0.66	0.63	103	0.75	0.68	111	0.80	0.73	118	1.01	0.90	146	0.86	0.82	132
	Van Buren Twp	5,719	58.9%	0.87	0.85		0.95	0.91		1.08	0.98		1.14	1.05		1.45	1.29		1.24	1.17	
	Total	9,712	100.0%	1.47	1.44		1.61	1.54		1.83	1.66		1.94	1.78		2.46	2.20		2.10	1.99	
DMA-1	Romulus (Airport)	0	100.0%	0.76	0.76	--	0.83	0.82	--	0.73	0.72	--	0.68	0.66	--	0.66	0.56	--	0.58	0.55	--
PA-3	Romulus	11,371	100.0%	2.99	2.98	169	3.16	2.95	168	3.39	2.95	168	4.28	3.83	218	5.46	4.91	279	4.48	4.05	230
PA-2	Taylor	13,270	98.2%	1.42	1.41	69	1.72	1.44	70	1.87	1.45	71	1.74	1.45	71	2.88	1.96	95	2.75	2.54	124
	Brownstown Twp	248	1.8%	0.03	0.03		0.03	0.03		0.03	0.03		0.03	0.03		0.05	0.04		0.05	0.05	
	Total	13,517	100.0%	1.44	1.43		1.75	1.46		1.91	1.47		1.77	1.48		2.93	2.00		2.80	2.59	
P-2	Brownstown Twp	10,397	97.5%	2.13	2.11	131	2.28	2.10	130	2.20	1.98	123	2.29	2.13	132	2.93	2.58	160	2.68	2.49	155
	Taylor	262	2.5%	0.05	0.05		0.06	0.05		0.06	0.05		0.06	0.05		0.07	0.06		0.07	0.06	
	Total	10,659	100.0%	2.18	2.17		2.34	2.15		2.25	2.03		2.35	2.18		3.01	2.64		2.75	2.56	
P-1	Allen Park	3,332	23.9%	0.53	0.52	101	0.77	0.53	103	1.00	0.54	105	0.77	0.63	122	1.17	0.83	160	0.89	0.78	152
	Southgate	10,637	76.1%	1.69	1.67		2.47	1.70		3.19	1.72		2.47	2.00		3.74	2.64		2.83	2.50	
	Total	13,969	100.0%	2.22	2.19		3.24	2.23		4.19	2.26		3.24	2.63		4.91	3.46		3.71	3.28	
RV-1	Riverview	12,486	100.0%	1.92	1.83	95	1.99	1.79	93	2.22	1.94	101	2.33	1.88	97	3.52	2.78	144	2.94	2.64	137
RR-1	River Rouge	7,903	100.0%	3.28	3.07	251	2.81	2.34	192	3.67	2.49	204	3.16	1.92	157	3.99	2.65	217	2.93	2.48	202
EC-6	Ecorse	9,515	71.5%	2.13	2.04	138	1.99	1.80	122	2.38	2.03	138	2.12	1.81	123	2.57	2.12	144	2.04	1.85	126
	Lincoln Park	3,795	28.5%	0.85	0.81		0.79	0.72		0.95	0.81		0.84	0.72		1.03	0.85		0.81	0.74	
	Total	13,310	100.0%	2.99	2.85		2.78	2.52		3.32	2.84		2.96	2.53		3.60	2.97		2.85	2.59	
RD-1	Allen Park	18,179	34.6%	2.72	2.47	88	3.09	2.21	79	5.20	2.75	98	4.76	2.98	106	7.30	4.49	160	5.61	4.13	147
	Lincoln Park	34,347	65.4%	5.14	4.66		5.83	4.17		9.83	5.20		9.00	5.64		13.79	8.48		10.60	7.80	
	Total	52,526	100.0%	7.85	7.13		8.92	6.38		15.04	7.95		13.76	8.62		21.10	12.97		16.22	11.93	
SW + SWB	Southgate	14,752	36.3%	6.24	5.80	254	5.32	4.66	204	5.99	5.05	221	5.82	3.99	175	7.23	6.76	296	6.44	5.15	226
	Wyandotte	25,883	63.7%	10.95	10.18		9.33	8.17		10.51	8.87		10.22	7.00		12.69	11.86		11.30	9.03	
	Total	40,635	100.0%	17.18	15.98		14.65	12.82		16.51	13.92		16.04	10.99		19.93	18.62		17.75	14.18	
APO-1 + APO-2	Allen Park	0	100.0%	0.02	0.00	--	0.07	0.00	--	0.88	0.00	--	0.02	0.00	--	0.57	0.00	--	0.03	0.00	--
TPS+IPS	Southgate	199	100.0%	0.03	0.03	101	0.05	0.03	103	0.06	0.03	105	0.05	0.04	122	0.07	0.05	160	0.05	0.05	152
Subtotal Controlled Flow Communities		114,374	42.4%	31.31	29.03	164	29.16	24.07	136	38.54	27.20	154	35.93	24.05	136	48.61	37.20	210	39.74	31.18	176
Subtotal Non-Controlled Flow Communities		155,677	57.6%	24.72	24.28	101	29.93	24.62	102	36.54	25.15	104	35.51	28.85	120	51.22	38.28	159	40.99	36.27	151
Total Incoming Flow		270,052	100.0%	56.03	53.31	128	59.09	48.69	117	75.07	52.35	125	71.44	52.91	127	99.82	75.48	181	80.73	67.45	161
DWTF Including Recycle (IPS + TPS)		270,052	100.0%	67.88	65.88	158	76.03	68.88	165	83.36	64.43	154	77.72	65.01	156	107.86	78.34	187	86.14	71.86	172

Notes:
1) PB-1 flow rates were estimated to be 60% Taylor and 40% Southgate of the total Meter PB-1 flow rates.

Table A-2
Downriver Sewage Disposal System
Incremental Flow Rates by Meter District

Meter District	Incremental Meter District Formula	Year 2010 Incremental Population	January 2018			February 2018			March 2018			April 2018			May 2018			June 2018		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	[TB-1]+[TSO]	24,491	5.38	4.50	119	10.26	4.43	117	8.20	5.88	155	10.23	6.57	173	10.20	5.49	145	4.29	3.78	100
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	26,719	5.32	4.45	108	8.84	4.17	101	7.23	5.58	135	8.30	6.11	148	8.54	5.10	123	5.04	3.81	92
DMA-2	[DMA-2]	0	0.65	0.72	-	1.12	1.11	-	1.60	1.58	-	3.62	3.48	-	4.51	4.24	-	1.10	0.56	-
PD-2	[PD-2] - [DMA-2]	9,532	2.18	2.00	136	3.68	2.05	139	3.58	2.90	197	4.51	3.43	232	4.49	3.10	210	2.41	2.15	146
PD-1	[PD-1]-[PD-2]+[PDO]	12,100	2.53	2.38	127	3.44	2.22	119	3.24	2.73	146	2.86	2.35	126	3.44	2.37	126	2.85	2.67	143
PB-1	[PB-1]	10,921	1.50	1.35	80	2.21	1.27	75	1.98	1.53	91	2.32	1.70	101	2.70	1.52	90	1.41	1.23	73
PA-4	[PA-4]	9,712	1.58	1.54	103	2.29	1.60	107	2.67	2.44	163	2.75	2.43	162	2.86	2.19	146	1.84	1.67	111
DMA-1	[DMA-1]	0	0.67	0.66	-	0.58	0.52	-	0.69	0.64	-	0.63	0.63	-	0.68	0.68	-	0.72	0.72	-
PA-3	[PA-3]+[ER-2] -[PA-4]-[DMA-1]	11,371	3.75	3.59	204	5.90	3.77	214	5.77	4.93	280	6.33	5.17	294	6.83	4.87	277	4.35	4.03	229
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	13,517	2.21	1.99	95	3.41	1.91	91	2.76	2.06	98	3.19	2.26	108	3.93	2.02	96	1.72	1.56	74
P-2	[P-2]	10,659	2.39	2.28	138	3.32	2.34	142	3.04	2.65	161	3.35	2.85	173	3.66	2.65	161	2.47	2.36	143
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	13,969	3.06	2.77	128	5.71	2.75	127	4.47	3.57	165	5.90	4.00	185	5.96	3.71	171	3.06	2.66	123
RV-1	[RV-1]	12,486	2.43	2.04	106	4.10	1.93	100	3.20	2.13	110	3.64	2.32	120	4.33	2.32	120	2.40	2.00	103
RR-1	[RR-1]	7,903	2.44	2.14	175	4.38	2.04	167	4.63	3.51	287	4.93	4.47	366	7.33	4.63	379	4.52	3.75	306
EC-6	[EC-6]-[RR-1]	13,310	2.93	2.70	131	4.45	2.84	138	3.64	3.52	171	4.34	3.02	147	4.94	3.84	187	3.47	3.38	164
RD-1	[RD-1]-[EC-6]	52,526	12.66	8.96	110	24.12	10.42	128	18.05	8.88	109	21.96	14.91	183	27.23	11.01	136	13.11	8.30	102
APO-1 + APO-2	[APO-1]+[APO-2]	0	0.10	0.08	-	2.58	0.00	-	0.54	0.00	-	1.46	0.00	-	1.52	0.00	-	0.05	0.00	-
SW+SWB	[SW]+[SWB]	40,635	16.47	12.85	204	20.02	12.21	194	21.90	16.78	267	24.70	21.19	337	24.95	21.07	335	19.57	17.28	275
TPS+IPS[1]	Population Ratio of Meter District P-1	199	0.04	0.04	128	0.08	0.04	127	0.06	0.05	165	0.08	0.06	185	0.08	0.05	171	0.04	0.04	123

Notes:
1) ([TPS+IPS] Inc. Flow Rate) = (TPS-IPS Inc. Pop. / P-1 Inc. Pop.) x ([P-1] Inc. Flow Rate)

Table A-2 continued
Downriver Sewage Disposal System
Incremental Flow Rates by Meter District

Meter District	Incremental Meter District Formula	Year 2010 Incremental Population	July 2018			August 2018			September 2018			October 2018			November 2018			December 2018		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
TB-1	[TB-1]+[TSO]	24,491	3.12	3.04	80	4.46	3.33	88	6.11	3.43	91	6.49	4.46	118	8.76	5.85	154	6.48	5.43	143
PC-1	[PC-1]+[CPO] +[CHPO]-[TB-1]	26,719	3.14	3.04	74	4.45	2.94	71	6.33	3.25	79	5.62	4.14	100	8.02	5.71	138	6.24	5.13	124
DMA-2	[DMA-2]	0	0.20	0.20	-	0.22	0.22	-	0.19	0.18	-	0.21	0.23	-	2.39	1.27	-	1.36	1.38	-
PD-2	[PD-2] - [DMA-2]	9,532	1.85	1.84	125	2.02	1.74	118	2.36	1.75	119	2.59	2.15	145	3.92	2.84	192	3.43	3.10	211
PD-1	[PD-1]-[PD-2]+[PDO]	12,100	2.23	2.21	118	2.48	2.29	122	2.70	2.33	124	2.51	2.22	119	2.55	2.52	135	2.37	2.07	111
PB-1	[PB-1]	10,921	1.14	1.11	66	1.27	1.12	66	1.37	1.12	66	1.44	1.18	70	1.98	1.49	88	1.66	1.44	85
PA-4	[PA-4]	9,712	1.47	1.44	96	1.61	1.54	103	1.83	1.66	111	1.94	1.78	118	2.46	2.20	146	2.10	1.99	132
DMA-1	[DMA-1]	0	0.76	0.76	-	0.83	0.82	-	0.73	0.72	-	0.68	0.66	-	0.66	0.56	-	0.58	0.55	-
PA-3	[PA-3]+[ER-2] -[PA-4]-[DMA-1]	11,371	2.99	2.98	169	3.16	2.95	168	3.39	2.95	168	4.28	3.83	218	5.46	4.91	279	4.48	4.05	230
PA-2	[PA-2]+[ER-1] -[PA-3]-[ER-2]	13,517	1.44	1.43	69	1.75	1.46	70	1.91	1.47	71	1.77	1.48	71	2.93	2.00	95	2.80	2.59	124
P-2	[P-2]	10,659	2.18	2.17	131	2.34	2.15	130	2.25	2.03	123	2.35	2.18	132	3.01	2.64	160	2.75	2.56	155
P-1	[P-1]+[PM-1]-[P-2] -[PA-2]-[PB-1]-[PD-1]-[PC-1]	13,969	2.22	2.19	101	3.24	2.23	103	4.19	2.26	105	3.24	2.63	122	4.91	3.46	160	3.71	3.28	152
RV-1	[RV-1]	12,486	1.92	1.83	95	1.99	1.79	93	2.22	1.94	101	2.33	1.88	97	3.52	2.78	144	2.94	2.64	137
RR-1	[RR-1]	7,903	3.28	3.07	251	2.81	2.34	192	3.67	2.49	204	3.16	1.92	157	3.99	2.65	217	2.93	2.48	202
EC-6	[EC-6]-[RR-1]	13,310	2.99	2.85	138	2.78	2.52	122	3.32	2.84	138	2.96	2.53	123	3.60	2.97	144	2.85	2.59	126
RD-1	[RD-1]-[EC-6]	52,526	7.85	7.13	88	8.92	6.38	79	15.04	7.95	98	13.76	8.62	106	21.10	12.97	160	16.22	11.93	147
APO-1 + APO-2	[APO-1]+[APO-2]	0	0.02	0.00	-	0.07	0.00	-	0.88	0.00	-	0.02	0.00	-	0.57	0.00	-	0.03	0.00	-
SW+SWB	[SW]+[SWB]	40,635	17.18	15.98	254	14.65	12.82	204	16.51	13.92	221	16.04	10.99	175	19.93	18.62	296	17.75	14.18	226
TPS+IPS[1]	Population Ratio of Meter District P-1	199	0.03	0.03	101	0.05	0.03	103	0.06	0.03	105	0.05	0.04	122	0.07	0.05	160	0.05	0.05	152

Notes:
1) ([TPS+IPS] Inc. Flow Rate) = (TPS-IPS Inc. Pop. / P-1 Inc. Pop.) x ([P-1] Inc. Flow Rate)

Table A-3

Downriver Sewage Disposal System

Monthly Flow Rates by Meter for 2018

System	Meter	Location	Year 2010 Cumulative Population	Average Flow Rates (cfs)												
				January	February	March	April	May	June	July	August	September	October	November	December	Average Annual
Tunnel (Non-Controlled)	TB-1	Taylor Basin	24,491	5.38	8.77	8.20	9.55	9.83	4.29	3.12	4.45	5.51	6.49	8.75	6.48	6.72
	PC-1	Pelham Interceptor North of Goddard Road	51,210	10.70	15.56	14.72	16.65	17.03	9.29	6.24	8.09	10.42	12.04	16.37	12.61	12.44
	DTW Pond 3 West	Detroit Metro Airport	0	0.21	0.69	1.60	3.95	4.85	1.00	0.00	0.00	0.00	0.00	2.59	1.34	1.35
	DMA-2	Detroit Metro Airport	0	0.65	1.12	1.60	3.62	4.51	1.10	0.20	0.22	0.19	0.21	2.39	1.36	1.43
	PD-2	Goddard Interceptor West of Inkster Road	9,532	2.83	4.80	5.17	8.13	9.00	3.51	2.05	2.24	2.55	2.80	6.31	4.79	4.51
	PD-1	Goddard Interceptor West of Allen Road	21,632	5.37	8.24	8.42	11.00	12.43	6.36	4.28	4.72	5.09	5.31	8.87	7.16	7.26
	PB-1	Northline Interceptor West of Fordline Road	10,921	1.50	2.21	1.98	2.32	2.70	1.41	1.14	1.27	1.37	1.44	1.98	1.66	1.74
	PA-4	Eureka Interceptor near Hannan Road	9,712	1.58	2.29	2.67	2.75	2.86	1.84	1.47	1.61	1.83	1.94	2.46	2.10	2.11
	DMA-1	Detroit Metro Airport Connection to the Eureka Interceptor	0	0.67	0.58	0.69	0.63	0.68	0.72	0.76	0.83	0.73	0.68	0.66	0.58	0.69
	PA-3	Eureka Interceptor at Inkster Road	21,084	5.99	8.45	8.97	9.47	9.94	6.91	5.22	5.60	5.95	6.90	8.57	7.16	7.42
	PA-2	Eureka Interceptor at Allen Road	34,601	8.20	11.57	11.52	12.40	13.39	8.63	6.67	7.31	7.79	8.67	11.45	9.96	9.78
	PA-1	Eureka Interceptor West of Fordline Road	38,730	9.20	13.72	13.75	14.87	16.16	9.18	7.04	8.33	8.48	9.40	12.68	10.58	11.09
	P-2	Pennsylvania Interceptor East of Dix-Toledo Road	10,659	2.39	3.32	3.04	3.35	3.66	2.47	2.18	2.34	2.25	2.35	3.01	2.75	2.75
	P-1	Pennsylvania Interceptor East of Fort Street	142,992	31.21	46.06	44.15	51.08	55.00	31.23	22.74	26.40	30.17	33.05	46.29	37.85	37.85
	RV-1	Pennsylvania Interceptor West of Jefferson Avenue	12,486	2.43	4.10	3.20	3.64	4.33	2.40	1.92	1.99	2.22	2.33	3.52	2.94	2.91
Riverdrive (Controlled)	RR-1	River Rouge CSO Basin Outlet	7,903	2.44	4.38	4.63	4.93	7.33	4.52	3.28	2.81	3.67	3.16	3.99	2.93	4.00
	EC-6	Riverdrive Interceptor South of Southfield Road	21,213	5.37	8.83	8.27	9.28	12.27	7.99	6.27	5.59	6.99	6.13	7.59	5.78	7.51
	RD-1	Riverdrive Interceptor North of Northline Road	73,739	18.03	32.94	26.32	31.24	39.50	21.10	14.12	14.51	22.03	19.89	28.68	22.00	24.11
	SW	On Southgate-Wyandotte Connection	40,635	15.40	19.48	20.26	22.76	23.47	17.67	16.61	13.78	15.18	14.84	17.87	16.19	17.77
	SWB	Southgate-Wyandotte Basin	0	1.06	0.54	1.64	1.95	1.48	1.90	0.57	0.87	1.33	1.20	2.06	1.56	1.35
Tunnel Connection Meters	TSO	Connection to Tunnel at Pelham Basin	0	0.00	1.49	0.00	0.68	0.37	0.00	0.00	0.01	0.60	0.00	0.01	0.00	0.25
	APO-1	Allen Park Connection to Tunnel at Belmont and Rosedale Road	0	0.00	0.87	0.05	0.53	0.34	0.01	0.01	0.02	0.38	0.00	0.15	0.00	0.19
	APO-2	Allen Park Connection to Tunnel at Belmont and Quandt Road	0	0.10	1.71	0.49	0.93	1.18	0.04	0.02	0.05	0.50	0.02	0.41	0.03	0.44
	CHPO	Pelham Interceptor Connection to Tunnel North of Haskell Road	0	0.00	1.48	0.69	1.11	1.27	0.04	0.01	0.42	0.82	0.07	0.40	0.11	0.53
	CPO	Pelham Interceptor Connection to Tunnel South of R.R.	0	0.00	0.57	0.02	0.09	0.07	0.00	0.00	0.40	0.60	0.00	0.00	0.00	0.14
	PDO	Goddard Interceptor Connection to Tunnel at Allen Road	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.01
	ER-2	Eureka Relief Sewer Extention Connection to Tunnel at Inkster Road	0	0.00	0.32	0.17	0.24	0.44	0.00	0.00	0.00	0.01	0.00	0.02	0.00	0.10
	ER-1	Eureka Relief Sewer Connection to Tunnel at Allen Road	0	0.00	0.60	0.38	0.49	0.91	0.01	0.00	0.04	0.08	0.00	0.07	0.00	0.21
	PM-1	Pennsylvania Interceptor Connection to Tunnel at Fordline Road	0	0.00	0.55	0.00	0.53	0.18	0.00	0.00	0.57	0.94	0.00	0.29	0.00	0.25
DWTF	P-1+RD-1+RV-1+SW+SWB +Tunnel Connections	End of Interceptor System Meters	269,853	68.24	110.39	97.21	115.02	128.09	74.39	56.00	59.05	75.01	71.40	99.75	80.68	86.02
	IPS+TPS	DWTF	270,052	72.40	120.76	104.98	130.37	148.92	84.67	67.88	76.03	83.36	77.72	107.86	86.14	96.51

Table A-4
Downriver Sewage Disposal System
Average Flow Rates by Meter

System	Meter	Year 2010 Cumulative Population	January 2018			February 2018			March 2018			April 2018			May 2018			June 2018		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
Tunnel (Non-Controlled)	TB-1	24,491	5.38	4.50	119	8.77	4.43	117	8.20	5.88	155	9.55	6.57	173	9.83	5.49	145	4.29	3.78	100
	PC-1	51,210	10.70	8.95	113	15.56	8.60	109	14.72	11.46	145	16.65	12.68	160	17.03	10.58	134	9.29	7.58	96
	DTW Pond 3 West	0	0.21	0.19	-	0.69	0.36	-	1.60	1.58	-	3.95	3.80	-	4.85	4.53	-	1.00	0.35	-
	DMA-2	0	0.65	0.72	-	1.12	1.11	-	1.60	1.58	-	3.62	3.48	-	4.51	4.24	-	1.10	0.56	-
	PD-2	9,532	2.83	2.72	184	4.80	3.16	214	5.17	4.49	304	8.13	6.91	468	9.00	7.34	498	3.51	2.72	184
	PD-1	21,632	5.37	5.10	152	8.24	5.38	161	8.42	7.22	216	11.00	9.26	277	12.43	9.70	290	6.36	5.39	161
	PB-1	10,921	1.50	1.35	80	2.21	1.27	75	1.98	1.53	91	2.32	1.70	101	2.70	1.52	90	1.41	1.23	73
	PA-4	9,712	1.58	1.54	103	2.29	1.60	107	2.67	2.44	163	2.75	2.43	162	2.86	2.19	146	1.84	1.67	111
	DMA-1	0	0.67	0.66	-	0.58	0.52	-	0.69	0.64	-	0.63	0.63	-	0.68	0.68	-	0.72	0.72	-
	PA-3	21,084	5.99	5.79	177	8.45	5.89	181	8.97	8.01	245	9.47	8.23	252	9.94	7.74	237	6.91	6.43	197
	PA-2	34,601	8.20	7.78	145	11.57	7.80	146	11.52	10.05	188	12.40	10.45	195	13.39	9.76	182	8.63	7.98	149
	PA-1	38,730	9.20	8.41	140	13.72	8.48	142	13.75	11.80	197	14.87	11.99	200	16.16	10.62	177	9.18	8.40	140
	P-2	10,659	2.39	2.28	138	3.32	2.34	142	3.04	2.65	161	3.35	2.85	173	3.66	2.65	161	2.47	2.36	143
	P-1[1]	142,992	31.21	28.23	128	46.06	28.15	127	44.15	36.48	165	51.08	40.95	185	55.00	37.92	171	31.23	27.20	123
	RV-1	12,486	2.43	2.04	106	4.10	1.93	100	3.20	2.13	110	3.64	2.32	120	4.33	2.32	120	2.40	2.00	103
Riverdrive (Controlled)	RR-1	7,903	2.44	2.14	175	4.38	2.04	167	4.63	3.51	287	4.93	4.47	366	7.33	4.63	379	4.52	3.75	306
	EC-6	21,213	5.37	4.84	147	8.83	4.88	149	8.27	7.03	214	9.28	7.49	228	12.27	8.48	258	7.99	7.12	217
	RD-1	73,739	18.03	13.80	121	32.94	15.29	134	26.32	15.91	139	31.24	22.40	196	39.50	19.49	171	21.10	15.42	135
	SW (with sludge depth)	40,635	15.40	12.29	195	19.48	12.21	194	20.26	16.13	257	22.76	18.94	301	23.47	16.38	261	17.67	15.78	251
	SWB	0	1.06	0.57	-	0.54	0.01	-	1.64	0.64	-	1.95	2.24	-	1.48	4.69	-	1.90	1.50	-
Tunnel Connection Meters	TSO	0	0.00	0.00	-	1.49	0.00	-	0.00	0.00	-	0.68	0.00	-	0.37	0.00	-	0.00	0.00	-
	APO-1	0	0.00	0.00	-	0.87	0.00	-	0.05	0.00	-	0.53	0.00	-	0.34	0.00	-	0.01	0.00	-
	APO-2	0	0.10	0.08	-	1.71	0.00	-	0.49	0.00	-	0.93	0.00	-	1.18	0.00	-	0.04	0.00	-
	CHPO	0	0.00	0.00	-	1.48	0.00	-	0.69	0.00	-	1.11	0.00	-	1.27	0.01	-	0.04	0.00	-
	CPO	0	0.00	0.00	-	0.57	0.00	-	0.02	0.00	-	0.09	0.00	-	0.07	0.00	-	0.00	0.00	-
	PDO	0	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	ER-2	0	0.00	0.00	-	0.32	0.00	-	0.17	0.01	-	0.24	0.00	-	0.44	0.00	-	0.00	0.00	-
	ER-1	0	0.00	0.00	-	0.60	0.00	-	0.38	0.02	-	0.49	0.04	-	0.91	0.00	-	0.01	0.00	-
	PM-1	0	0.00	0.00	-	0.55	0.00	-	0.00	0.00	-	0.53	0.00	-	0.18	0.00	-	0.00	0.00	-
	Total	0	0.10	0.08	-	7.27	0.00	-	1.63	0.02	-	4.36	0.04	-	4.32	0.01	-	0.10	0.00	-
DWTF	P-1+RV-1+RD-1+SW+SWB +Tunnel Connections	269,853	68.24	57.00	137	110.39	57.58	138	97.21	71.32	171	115.02	86.90	208	128.09	80.81	194	74.39	61.90	148
	IPS+TPS	270,052	72.40	59.93	143	120.76	61.29	147	104.98	75.73	181	130.37	96.46	231	148.92	96.54	231	84.67	71.19	170

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + PA-2 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

Table A-4 continued
Downriver Sewage Disposal System
Average Flow Rates by Meter

System	Meter	Year 2010 Cumulative Population	July 2018			August 2018			September 2018			October 2018			November 2018			December 2018		
			Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather		Total	Dry Weather	
			Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)	Average Daily Flow Rate (cfs)	Average Daily Flow Rate (cfs)	Average Per Capita Flow Rate (gpcd)
Tunnel (Non-Controlled)	TB-1	24,491	3.12	3.04	80	4.45	3.33	88	5.51	3.43	91	6.49	4.46	118	8.75	5.85	154	6.48	5.43	143
	PC-1	51,210	6.24	6.08	77	8.09	6.27	79	10.42	6.69	84	12.04	8.60	109	16.37	11.55	146	12.61	10.57	133
	DTW Pond 3 West	0	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-	2.59	1.26	-	1.34	1.38	-
	DMA-2	0	0.20	0.20	-	0.22	0.22	-	0.19	0.18	-	0.21	0.23	-	2.39	1.27	-	1.36	1.38	-
	PD-2	9,532	2.05	2.04	139	2.24	1.96	133	2.55	1.93	131	2.80	2.38	161	6.31	4.11	278	4.79	4.49	304
	PD-1	21,632	4.28	4.26	127	4.72	4.25	127	5.09	4.26	127	5.31	4.60	137	8.87	6.63	198	7.16	6.56	196
	PB-1	10,921	1.14	1.11	66	1.27	1.12	66	1.37	1.12	66	1.44	1.18	70	1.98	1.49	88	1.66	1.44	85
	PA-4	9,712	1.47	1.44	96	1.61	1.54	103	1.83	1.66	111	1.94	1.78	118	2.46	2.20	146	2.10	1.99	132
	DMA-1	0	0.76	0.76	-	0.83	0.82	-	0.73	0.72	-	0.68	0.66	-	0.66	0.56	-	0.58	0.55	-
	PA-3	21,084	5.22	5.18	159	5.60	5.31	163	5.95	5.33	164	6.90	6.27	192	8.57	7.67	235	7.16	6.59	202
	PA-2	34,601	6.67	6.62	124	7.31	6.78	127	7.79	6.81	127	8.67	7.74	145	11.45	9.67	181	9.96	9.18	171
	PA-1	38,730	7.04	6.97	116	8.33	7.62	127	8.48	7.14	119	9.40	8.14	136	12.68	9.96	166	10.58	9.30	155
	P-2	10,659	2.18	2.17	131	2.34	2.15	130	2.25	2.03	123	2.35	2.18	132	3.01	2.64	160	2.75	2.56	155
	P-1[1]	142,992	22.74	22.42	101	26.40	22.79	103	30.17	23.18	105	33.05	26.94	122	46.29	35.45	160	37.85	33.58	152
	RV-1	12,486	1.92	1.83	95	1.99	1.79	93	2.22	1.94	101	2.33	1.88	97	3.52	2.78	144	2.94	2.64	137
Riverdrive (Controlled)	RR-1	7,903	3.28	3.07	251	2.81	2.34	192	3.67	2.49	204	3.16	1.92	157	3.99	2.65	217	2.93	2.48	202
	EC-6	21,213	6.27	5.92	180	5.59	4.86	148	6.99	5.33	162	6.13	4.45	136	7.59	5.62	171	5.78	5.07	154
	RD-1	73,739	14.12	13.05	114	14.51	11.24	99	22.03	13.28	116	19.89	13.07	115	28.68	18.59	163	22.00	17.00	149
	SW (with sludge depth)	40,635	16.61	15.29	243	13.78	12.69	202	15.18	13.91	221	14.84	10.95	174	17.87	18.39	292	16.19	13.34	212
	SWB	0	0.57	0.69	-	0.87	0.13	-	1.33	0.01	-	1.20	0.04	-	2.06	0.23	-	1.56	0.84	-
Tunnel Connection Meters	TSO	0	0.00	0.00	-	0.01	0.00	-	0.60	0.00	-	0.00	0.00	-	0.01	0.00	-	0.00	0.00	-
	APO-1	0	0.01	0.00	-	0.02	0.00	-	0.38	0.00	-	0.00	0.00	-	0.15	0.00	-	0.00	0.00	-
	APO-2	0	0.02	0.00	-	0.05	0.00	-	0.50	0.00	-	0.02	0.00	-	0.41	0.00	-	0.03	0.00	-
	CHPO	0	0.01	0.00	-	0.42	0.00	-	0.82	0.00	-	0.07	0.00	-	0.40	0.00	-	0.11	0.00	-
	CPO	0	0.00	0.00	-	0.40	0.00	-	0.60	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	PDO	0	0.00	0.00	-	0.00	0.00	-	0.17	0.00	-	0.00	0.00	-	0.00	0.00	-	0.00	0.00	-
	ER-2	0	0.00	0.00	-	0.00	0.00	-	0.01	0.00	-	0.00	0.00	-	0.02	0.00	-	0.00	0.00	-
	ER-1	0	0.00	0.00	-	0.04	0.00	-	0.08	0.00	-	0.00	0.00	-	0.07	0.00	-	0.00	0.00	-
	PM-1	0	0.00	0.00	-	0.57	0.00	-	0.94	0.00	-	0.00	0.00	-	0.29	0.00	-	0.00	0.00	-
	Total	0	0.03	0.00	-	1.50	0.00	-	4.08	0.00	-	0.09	0.00	-	1.33	0.00	-	0.14	0.00	-
DWTF	P-1+RV-1+RD-1+SW+SWB +Tunnel Connections	269,853	56.00	53.28	128	59.05	48.65	117	75.01	52.32	125	71.40	52.87	127	99.75	75.43	181	80.68	67.40	161
	IPS+TPS	270,052	67.88	65.88	158	76.03	68.88	165	83.36	64.43	154	77.72	65.01	156	107.86	78.34	187	86.14	71.86	172

Notes:

1) [P-1] = [P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + (P-1 Inc. Pop. / (P-2 Cum. Pop. + PA-2 Cum. Pop. + PB-1 Cum. Pop. + PC-1 Cum. Pop. + PD-1 Cum. Pop.)) x ([P-2] + [PA-2] + [PB-1] + [PC-1] + [PD-1] + [TSO]+ [CPO] + [CHPO] + [PDO] + [APO-1] + [APO-2] + [ER-1])

Appendix B

Precipitation Data for Significant/Major Storm Events

Table B-1
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 1
Start Date: 2/19/2018
Stop Date: 2/21/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.45	0.73	0.85	0.91	1.11	1.62	2.46	2.48	2.48
R18	0.44	0.68	0.79	0.88	1.08	1.63	2.32	2.35	2.35
R02	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.26	0.00
R10	0.36	0.58	0.70	0.81	1.00	1.57	2.35	2.38	2.38
DTW	0.29	0.49	0.65	0.76	0.99	1.54	2.24	2.27	2.27
R09	0.27	0.44	0.53	0.65	0.86	1.44	2.17	2.21	2.21
R04	0.27	0.44	0.47	0.55	0.88	1.38	2.25	2.31	2.31
R08	0.20	0.33	0.41	0.49	0.61	1.04	1.56	1.59	1.59
R15	0.33	0.59	0.73	0.83	1.02	1.54	2.28	2.32	2.32
R17	0.28	0.41	0.46	0.56	0.76	1.31	2.06	2.11	2.11
R06	0.23	0.44	0.47	0.51	0.85	1.32	2.04	2.10	2.09
R16	0.32	0.48	0.56	0.68	0.86	1.40	2.14	2.18	2.18
Minimum (in):	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.26	0.00
Average (in):	0.29	0.47	0.55	0.64	0.84	1.32	2.01	2.05	2.02
Maximum (in):	0.45	0.73	0.85	0.91	1.11	1.63	2.46	2.48	2.48
								Standard Deviation (in):	0.68
								Coefficient of Variation:	33%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum:	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-2
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 2
Start Date: 3/1/2018
Stop Date: 3/1/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.29	0.49	0.62	1.17	1.60	1.63	1.63	1.63	1.63
R18	0.25	0.48	0.64	0.95	1.39	1.44	1.44	1.44	1.44
R02	0.22	0.42	0.57	0.94	1.37	1.45	1.45	1.45	1.45
R10	0.29	0.54	0.69	1.08	1.63	1.75	1.75	1.75	1.75
DTW	0.23	0.46	0.61	0.92	1.34	1.42	1.42	1.42	1.42
R09	0.26	0.47	0.61	0.89	1.19	1.22	1.22	1.22	1.22
R04	0.26	0.48	0.68	1.10	1.67	1.88	1.88	1.88	1.88
R08	0.18	0.30	0.38	0.63	0.64	0.64	0.64	0.64	0.64
R15	0.20	0.33	0.42	0.68	1.12	1.29	1.29	1.29	1.29
R17	0.36	0.64	0.85	1.21	2.02	2.32	2.32	2.32	2.32
R06	0.24	0.45	0.62	0.98	1.55	1.76	1.76	1.76	1.76
R16	0.27	0.46	0.59	0.95	1.52	1.70	1.70	1.70	1.70
Minimum (in):	0.18	0.30	0.38	0.63	0.64	0.64	0.64	0.64	0.64
Average (in):	0.25	0.46	0.61	0.96	1.42	1.54	1.54	1.54	1.54
Maximum (in):	0.36	0.64	0.85	1.21	2.02	2.32	2.32	2.32	2.32
								Standard Deviation (in):	0.41
								Coefficient of Variation:	27%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	2	2	< 1	< 1	2
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum:	< 1	< 1	< 1	< 1	2	2	< 1	< 1	2

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-3
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 3
Start Date: 4/14/2018
Stop Date: 4/15/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.24	0.36	0.51	0.74	1.11	1.27	2.15	2.16	2.15
R18	0.25	0.36	0.47	0.73	1.19	1.45	2.32	2.34	2.32
R02	0.24	0.38	0.48	0.71	1.11	1.50	2.37	2.38	2.37
R10	0.65	0.79	0.96	1.23	1.52	1.54	2.51	2.52	2.50
DTW	0.17	0.33	0.40	0.68	1.06	1.46	2.29	2.30	2.29
R09	0.22	0.36	0.43	0.68	1.03	1.47	2.30	2.32	2.30
R04	0.27	0.46	0.60	0.88	1.38	1.87	3.03	3.06	3.03
R08	0.19	0.30	0.37	0.54	0.86	1.10	1.77	1.77	1.75
R15	0.23	0.37	0.46	0.71	1.14	1.54	2.46	2.46	2.44
R17	0.25	0.41	0.52	0.75	1.18	1.59	2.54	2.55	2.53
R06	0.29	0.38	0.51	0.86	1.41	1.83	2.77	2.80	2.76
R16	0.25	0.34	0.42	0.76	1.22	1.63	2.49	2.50	2.47
Minimum (in):	0.17	0.30	0.37	0.54	0.86	1.10	1.77	1.77	1.75
Average (in):	0.27	0.40	0.51	0.77	1.18	1.52	2.42	2.43	2.41
Maximum (in):	0.65	0.79	0.96	1.23	1.52	1.87	3.03	3.06	3.03
								Standard Deviation (in):	0.31
								Coefficient of Variation:	13%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R10	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	4	3	4
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R17	< 1	< 1	< 1	< 1	< 1	< 1	2	< 1	2
R06	< 1	< 1	< 1	< 1	< 1	< 1	2	2	2
R16	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	< 1	< 1	< 1	1	1	1
Maximum:	< 1	< 1	< 1	< 1	< 1	< 1	4	3	4

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-4
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 4
Start Date: 5/2/2018
Stop Date: 5/4/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.68	0.73	0.82	0.98	1.25	1.32	1.41	1.41	1.41
R18	0.42	0.43	0.56	0.70	0.83	0.99	1.20	1.20	1.20
R02	0.70	0.92	0.92	1.11	1.34	1.39	1.60	1.60	1.60
R10	0.42	0.43	0.54	0.69	0.80	0.92	1.03	1.03	1.03
DTW	0.29	0.46	0.46	0.62	0.84	0.89	1.04	1.04	1.04
R09	0.64	0.65	0.76	0.92	1.07	1.16	1.41	1.41	1.41
R04	0.59	0.71	0.72	0.94	1.23	1.34	1.71	1.71	1.71
R08	0.65	0.66	0.74	0.87	1.01	1.06	1.22	1.22	1.22
R15	0.31	0.32	0.43	0.54	0.66	0.79	0.92	0.92	0.92
R17	0.61	0.71	0.71	0.88	1.11	1.15	1.41	1.41	1.41
R06	0.47	0.58	0.58	0.80	1.01	1.23	1.48	1.48	1.48
R16	0.51	0.52	0.62	0.74	0.89	0.99	1.24	1.40	1.24
Minimum (in):	0.29	0.32	0.43	0.54	0.66	0.79	0.92	0.92	0.92
Average (in):	0.52	0.59	0.66	0.82	1.00	1.10	1.31	1.32	1.31
Maximum (in):	0.70	0.92	0.92	1.11	1.34	1.39	1.71	1.71	1.71
								Standard Deviation (in):	0.24
								Coefficient of Variation:	18%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-5
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 5
Start Date: 5/11/2018
Stop Date: 5/13/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.66	0.90	0.98	1.01	1.23	1.74	2.31	2.58	2.31
R18	1.07	1.26	1.29	1.37	1.56	2.09	2.63	2.93	2.63
R02	0.49	0.54	0.67	0.73	0.86	1.24	1.81	2.12	1.81
R10	0.94	1.14	1.20	1.25	1.64	2.29	2.84	3.12	2.84
DTW	0.77	1.01	1.22	1.31	1.83	2.61	3.15	3.38	3.15
R09	1.24	1.47	1.52	1.55	1.88	2.43	2.95	3.22	2.95
R04	0.50	0.65	0.71	0.77	0.93	1.49	2.14	2.40	2.14
R08	0.82	1.04	1.12	1.17	1.74	2.40	2.96	3.18	2.96
R15	0.38	0.56	0.61	0.69	0.91	1.39	2.01	2.14	2.01
R17	1.03	1.32	1.34	1.35	1.57	2.08	2.61	2.86	2.61
R06	0.77	1.09	1.13	1.14	1.37	1.88	2.40	2.67	2.40
R16	0.61	0.89	0.96	1.01	1.35	2.01	2.60	2.81	2.60
Minimum (in):	0.38	0.54	0.61	0.69	0.86	1.24	1.81	2.12	1.81
Average (in):	0.77	0.99	1.06	1.11	1.41	1.97	2.53	2.78	2.53
Maximum (in):	1.24	1.47	1.52	1.55	1.88	2.61	3.15	3.38	3.15
								Standard Deviation (in):	0.41
								Coefficient of Variation:	16%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	2	1	< 1	< 1	< 1	1	2	2	2
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	2	3	3	3
DTW	< 1	< 1	< 1	< 1	1	4	4	4	4
R09	3	3	2	1	1	3	3	3	3
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	2	3	3	3
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	1	2	1	< 1	< 1	1	2	2	2
R06	< 1	< 1	< 1	< 1	< 1	< 1	1	1	1
R16	< 1	< 1	< 1	< 1	< 1	< 1	2	2	2
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	1	< 1	< 1	< 1	1	2	2	2
Maximum:	3	3	2	1	1	4	4	4	4

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-6
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 6
Start Date: 6/18/2018
Stop Date: 6/19/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.97	0.97	0.97	0.97	0.97	0.97	1.17	1.17	0.97
R18	1.10	1.10	1.10	1.10	1.10	1.10	1.56	1.56	1.10
R02	0.74	0.75	0.75	0.76	0.76	0.76	1.33	1.33	0.76
R10	1.23	1.24	1.24	1.24	1.24	1.24	1.53	1.53	1.24
DTW	1.38	1.39	1.39	1.39	1.39	1.39	1.82	1.82	1.39
R09	1.58	1.58	1.58	1.58	1.58	1.58	1.86	1.86	1.58
R04	1.18	1.19	1.19	1.19	1.19	1.19	1.64	1.64	1.19
R08	1.51	1.52	1.52	1.52	1.52	1.52	1.78	1.78	1.52
R15	0.85	0.86	0.87	0.87	0.87	0.87	1.11	1.11	0.87
R17	1.33	1.33	1.33	1.33	1.33	1.33	1.65	1.65	1.33
R06	1.32	1.33	1.33	1.34	1.34	1.34	1.62	1.62	1.34
R16	1.32	1.33	1.33	1.33	1.33	1.33	1.62	1.62	1.33
Minimum (in):	0.74	0.75	0.75	0.76	0.76	0.76	1.11	1.11	0.76
Average (in):	1.21	1.22	1.22	1.22	1.22	1.22	1.56	1.56	1.22
Maximum (in):	1.58	1.58	1.58	1.58	1.58	1.58	1.86	1.86	1.58
								Standard Deviation (in):	0.25
								Coefficient of Variation:	21%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
R18	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	3	1	< 1	< 1	< 1	< 1	< 1	< 1	3
DTW	4	2	1	< 1	< 1	< 1	< 1	< 1	4
R09	8	4	2	1	< 1	< 1	< 1	< 1	8
R04	2	1	< 1	< 1	< 1	< 1	< 1	< 1	2
R08	6	3	2	< 1	< 1	< 1	< 1	< 1	6
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	4	2	1	< 1	< 1	< 1	< 1	< 1	4
R06	4	2	1	< 1	< 1	< 1	< 1	< 1	4
R16	4	2	1	< 1	< 1	< 1	< 1	< 1	4
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	3	2	1	< 1	< 1	< 1	< 1	< 1	3
Maximum:	8	4	2	1	< 1	< 1	< 1	< 1	8

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-7
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 7
Start Date: 7/31/2018
Stop Date: 8/1/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.42	0.58	0.87	0.98	1.24	1.24	1.24	1.24	1.24
R18	0.50	0.79	0.97	1.11	1.43	1.43	1.43	1.43	1.43
R02	1.86	2.20	2.22	2.23	2.47	2.47	2.48	2.48	2.47
R10	1.59	1.96	1.99	2.00	2.49	2.49	2.50	2.50	2.49
DTW	2.08	2.46	2.50	2.50	3.00	3.00	3.00	3.00	3.00
R09	2.04	3.19	3.24	3.25	3.69	3.69	3.69	3.69	3.69
R04	1.99	2.69	2.80	2.80	3.00	3.00	3.00	3.00	3.00
R08	1.39	1.82	1.94	1.94	2.18	2.18	2.18	2.18	2.18
R15	1.90	2.44	2.50	2.50	2.68	2.68	2.68	2.68	2.68
R17	1.39	1.95	2.01	2.02	2.24	2.24	2.24	2.24	2.24
R06	1.02	1.24	1.26	1.26	1.27	1.27	1.27	1.27	1.27
R16	0.78	1.03	1.15	1.16	1.26	1.26	1.26	1.26	1.26
Minimum (in):	0.42	0.58	0.87	0.98	1.24	1.24	1.24	1.24	1.24
Average (in):	1.41	1.86	1.95	1.98	2.25	2.25	2.25	2.25	2.25
Maximum (in):	2.08	3.19	3.24	3.25	3.69	3.69	3.69	3.69	3.69
								Standard Deviation (in):	0.80
								Coefficient of Variation:	36%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	17	15	9	5	5	3	1	< 1	17
R10	8	8	6	3	5	3	1	< 1	8
DTW	26	23	16	8	11	7	4	2	26
R09	24	92	56	28	31	19	9	7	92
R04	22	38	28	15	12	7	4	2	38
R08	4	6	5	3	3	1	< 1	< 1	6
R15	18	22	16	8	7	4	2	1	22
R17	4	8	6	4	3	2	< 1	< 1	8
R06	1	1	< 1	< 1	< 1	< 1	< 1	< 1	1
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	11	18	12	6	7	4	2	2	18
Maximum:	26	92	56	28	31	19	9	7	92

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-8
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 8
Start Date: 9/24/2018
Stop Date: 9/25/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	1.06	1.07	1.07	1.08	2.00	2.26	2.64	2.64	2.63
R18	0.98	1.10	1.15	1.20	2.02	2.31	2.58	2.58	2.56
R02	1.29	1.38	1.40	1.41	1.73	2.35	2.71	2.72	2.69
R10	1.09	1.16	1.18	1.19	1.88	2.20	2.60	2.60	2.59
DTW	1.10	1.28	1.31	1.33	2.22	2.64	2.92	2.92	2.91
R09	1.81	2.19	2.21	2.22	2.83	3.32	3.52	3.52	3.51
R04	1.77	2.66	2.66	2.67	2.74	3.45	3.67	3.67	3.66
R08	1.20	1.60	1.60	1.61	2.14	2.54	2.69	2.69	2.68
R15	1.39	1.63	1.64	1.65	2.84	3.23	3.39	3.39	3.38
R17	1.11	1.95	1.96	1.97	2.07	2.85	3.03	3.03	3.02
R06	1.81	1.94	1.95	1.96	2.01	2.48	2.64	2.64	2.63
R16	1.22	1.89	1.89	1.90	2.19	2.78	2.96	2.96	2.96
Minimum (in):	0.98	1.07	1.07	1.08	1.73	2.20	2.58	2.58	2.56
Average (in):	1.32	1.65	1.67	1.68	2.22	2.70	2.95	2.95	2.94
Maximum (in):	1.81	2.66	2.66	2.67	2.84	3.45	3.67	3.67	3.66
								Standard Deviation (in):	0.39
								Coefficient of Variation:	13%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	2	< 1	< 1	< 1	2	2	2	1	2
R18	1	< 1	< 1	< 1	2	2	2	1	2
R02	3	2	1	< 1	< 1	2	2	1	3
R10	2	< 1	< 1	< 1	1	1	2	1	2
DTW	2	1	1	< 1	3	4	3	2	4
R09	15	14	9	5	9	10	8	5	15
R04	13	36	22	12	8	14	9	6	36
R08	3	4	2	1	3	3	2	1	4
R15	4	4	3	1	9	9	6	4	9
R17	2	8	5	3	2	5	4	3	8
R06	15	8	5	3	2	3	2	1	15
R16	3	7	5	3	3	5	3	2	7
Minimum:	1	< 1	< 1	< 1	< 1	1	2	1	2
Average:	5	7	5	3	4	5	4	2	9
Maximum:	15	36	22	12	9	14	9	6	36

- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-9
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 9
Start Date: 10/6/2018
Stop Date: 10/6/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.99	1.02	1.02	1.09	1.44	1.73	1.77	1.78	1.73
R18	0.52	0.54	0.54	0.56	0.92	1.40	1.43	1.44	1.40
R02	0.41	0.47	0.48	0.52	0.92	1.11	1.17	1.28	1.11
R10	0.53	0.58	0.58	0.60	0.98	1.32	1.37	1.38	1.32
DTW	0.41	0.51	0.51	0.53	0.88	1.25	1.30	1.30	1.25
R09	0.33	0.42	0.44	0.46	0.89	1.05	1.10	1.11	1.05
R04	0.58	0.63	0.64	0.64	0.95	1.42	1.48	1.49	1.42
R08	0.25	0.36	0.36	0.38	0.67	0.78	0.82	0.83	0.78
R15	0.33	0.37	0.38	0.39	0.71	1.02	1.06	1.07	1.02
R17	0.24	0.25	0.25	0.28	0.50	0.54	0.56	0.56	0.54
R06	0.46	0.50	0.51	0.52	0.89	1.35	1.38	1.75	1.34
R16	0.29	0.32	0.37	0.40	0.73	0.92	0.97	0.98	0.92
Minimum (in):	0.24	0.25	0.25	0.28	0.50	0.54	0.56	0.56	0.54
Average (in):	0.45	0.50	0.51	0.53	0.87	1.16	1.20	1.25	1.16
Maximum (in):	0.99	1.02	1.02	1.09	1.44	1.73	1.77	1.78	1.73
								Standard Deviation (in):	0.32
								Coefficient of Variation:	28%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R09	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R04	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R06	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Maximum:	1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	1

\- Missing or suspect data (not used).

Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Table B-10
Downriver Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 10
Start Date: 10/31/2018
Stop Date: 11/2/2018

Gauge ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R14	0.27	0.44	0.53	0.61	0.89	1.45	2.03	2.06	2.06
R18	0.33	0.49	0.58	0.69	0.90	1.49	2.15	2.19	2.19
R02	0.45	0.59	0.89	1.06	1.08	1.48	2.50	2.57	2.57
R10	0.35	0.48	0.65	0.77	0.93	1.55	2.28	2.37	2.37
DTW	0.31	0.51	0.68	0.91	0.94	1.50	2.37	2.44	2.44
R09	0.40	0.56	0.90	1.06	1.14	1.57	2.59	2.72	2.72
R04	0.35	0.52	0.72	0.94	1.11	1.82	2.72	2.84	2.84
R08	0.29	0.42	0.69	0.81	0.84	1.29	2.07	2.15	2.15
R15	0.31	0.48	0.66	0.76	0.90	1.47	2.21	2.26	2.26
R17	0.32	0.51	0.71	0.85	1.07	1.71	2.52	2.63	2.63
R06	0.42	0.49	0.61	0.77	0.99	1.57	2.71	2.81	2.81
R16	0.34	0.51	0.70	0.83	0.91	1.49	2.28	2.40	2.40
Minimum (in):	0.27	0.42	0.53	0.61	0.84	1.29	2.03	2.06	2.06
Average (in):	0.35	0.50	0.69	0.84	0.98	1.53	2.37	2.45	2.45
Maximum (in):	0.45	0.59	0.90	1.06	1.14	1.82	2.72	2.84	2.84
								Standard Deviation (in):	0.26
								Coefficient of Variation:	11%

X.XX* Missing or suspect data (not used).

Gauge ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R02	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 1	< 1	< 1	< 1	< 1	< 1	1	< 1	1
R09	< 1	< 1	< 1	< 1	< 1	< 1	2	1	2
R04	< 1	< 1	< 1	< 1	< 1	< 1	2	2	2
R08	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R17	< 1	< 1	< 1	< 1	< 1	< 1	2	1	2
R06	< 1	< 1	< 1	< 1	< 1	< 1	2	2	2
R16	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Minimum:	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average:	< 1	< 1	< 1	< 1	< 1	< 1	1	1	1
Maximum:	< 1	< 1	< 1	< 1	< 1	< 1	2	2	2

\- Missing or suspect data (not used).

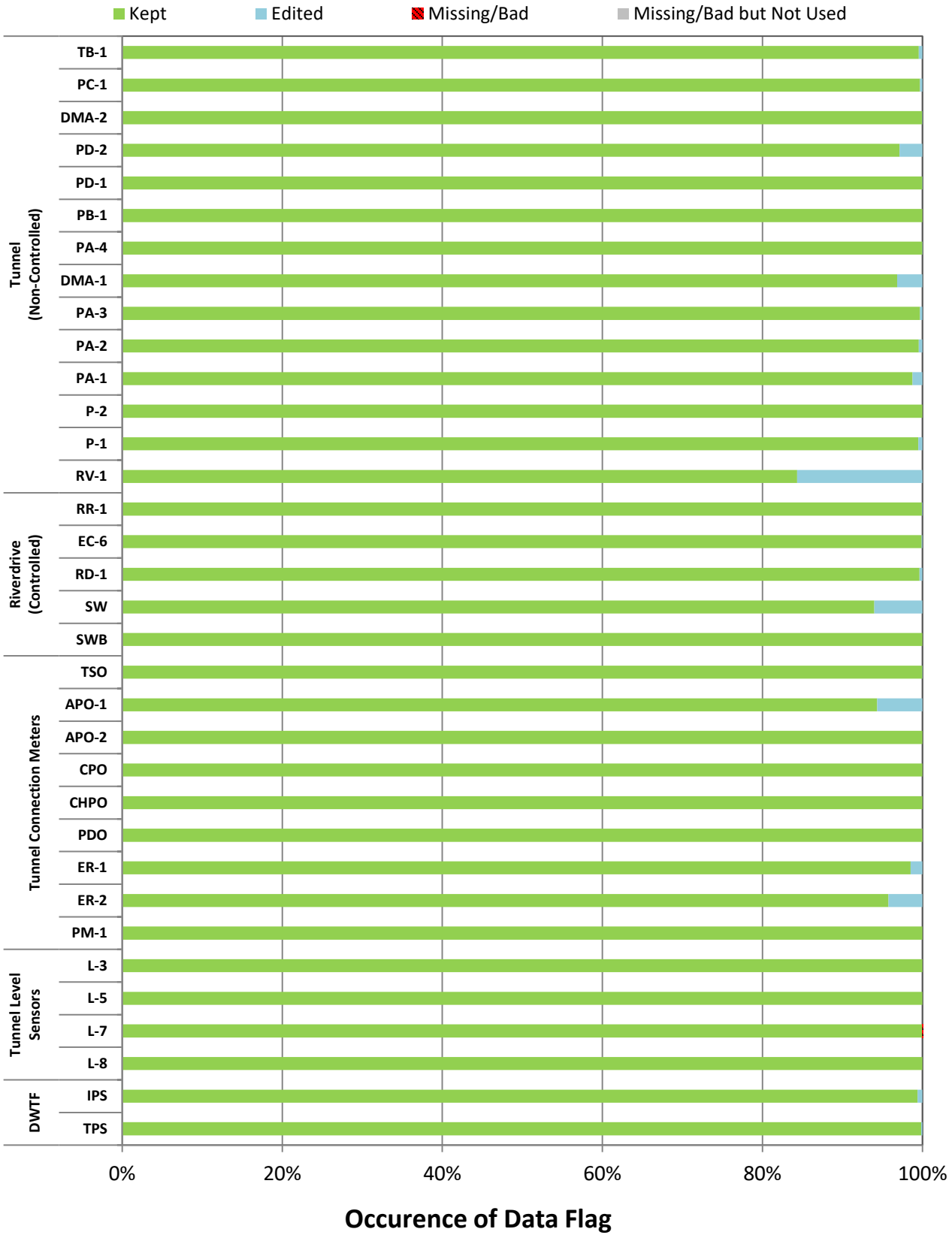
Notes:

1) Return periods determined from point precipitation frequency (PF) estimates from NOAA Atlas 14, Volume 8, Version 2 published in 2013. NOAA Atlas 14 is the current reference document for return frequency as of 2013.
2) Return periods calculated by linear interpolation between the published whole number month or year frequencies.

Appendix C

Meter Data Summaries

Downriver Sewage Disposal System
2018 Data Flags

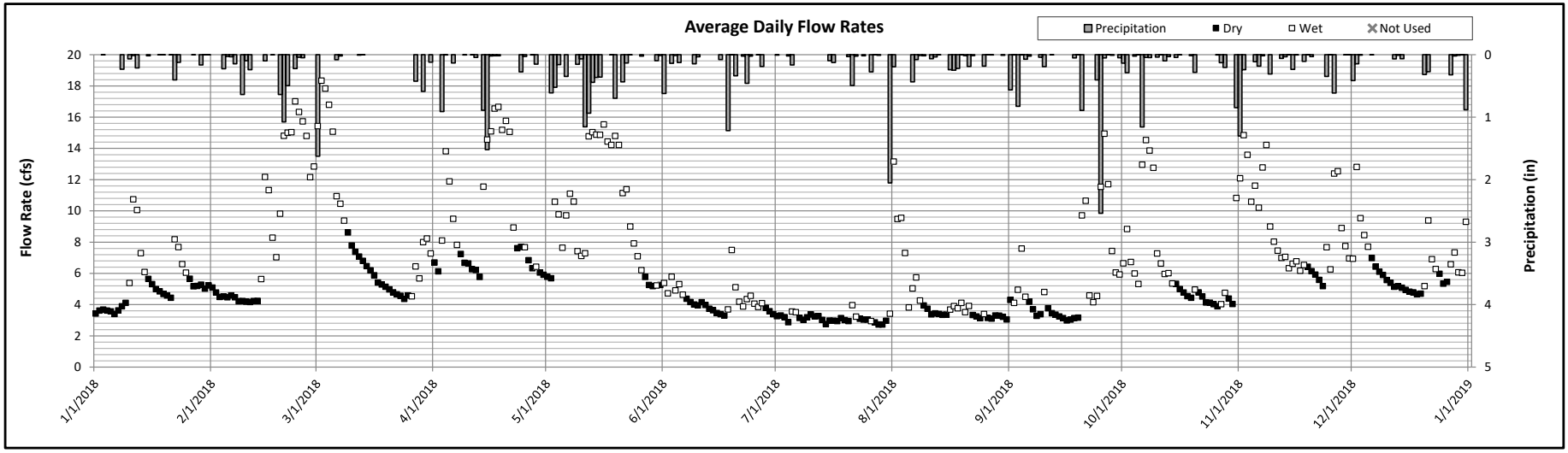


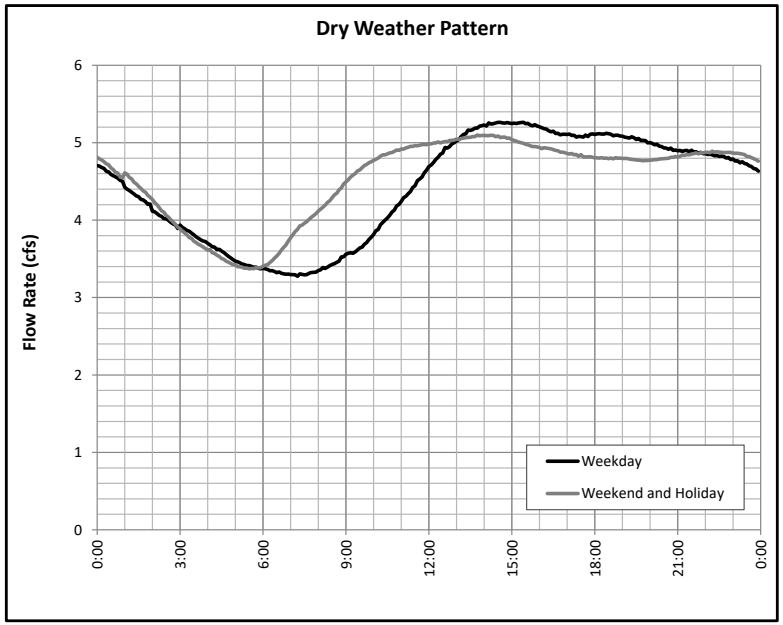
Downriver Sewage Disposal System

Meter Report

Meter: TB-1 | **Location: Taylor Basin** | **Period: 1/1/2018 through 12/31/2018**

Type: Magmeter | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	5.4	107.9	4.5	90.1	22	9
Feb-18	8.8	158.7	4.4	80.2	13	15
Mar-18	8.2	164.3	5.9	117.7	17	14
Apr-18	9.6	185.2	6.6	127.4	14	16
May-18	9.8	197.0	5.5	109.9	6	25
Jun-18	4.3	83.2	3.8	73.2	14	16
Jul-18	3.1	62.4	3.0	60.9	25	6
Aug-18	4.4	89.1	3.3	66.8	16	15
Sep-18	5.5	106.8	3.4	66.6	14	16
Oct-18	6.5	130.1	4.5	89.3	13	18
Nov-18	8.7	169.6	5.8	113.3	5	25
Dec-18	6.5	129.8	5.4	108.9	17	14

Statistics for Major Wet Weather Events

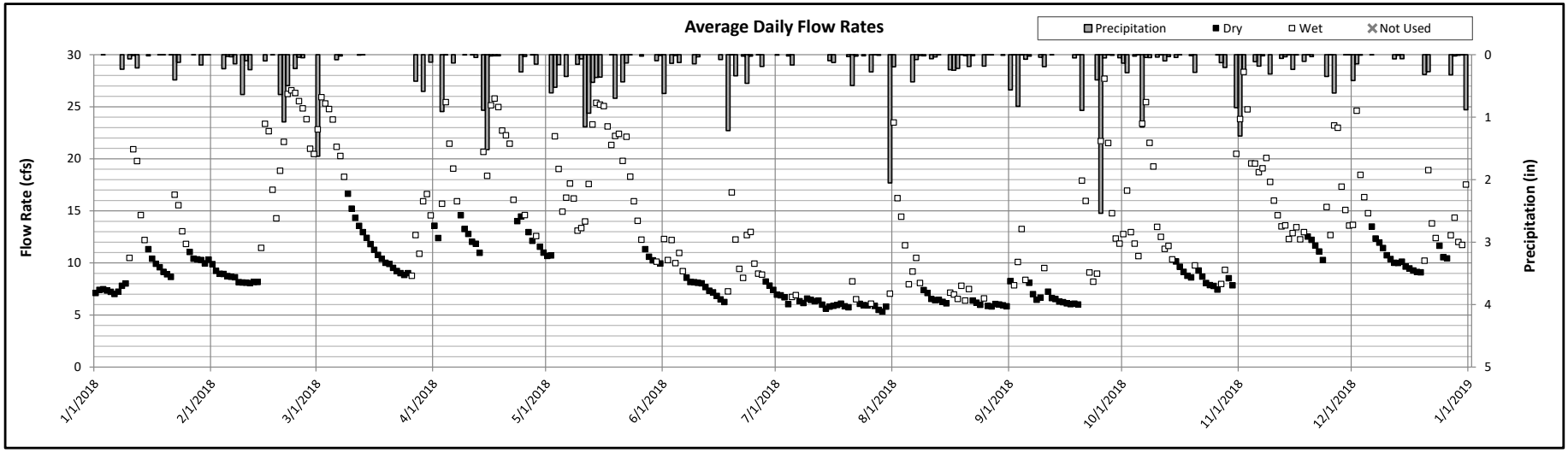
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	15.2	2/20/2018 11:35	-	-
B	1.62	3/1/2018	3/1/2018	19.3	3/1/2018 12:55	-	-
C	2.41	4/14/2018	4/15/2018	18.8	4/17/2018 12:50	-	-
D	2.53	5/11/2018	5/13/2018	15.3	5/13/2018 16:25	-	-
E	2.25	7/31/2018	8/1/2018	15.0	8/1/2018 4:25	-	-
F	2.94	9/24/2018	9/25/2018	15.3	9/25/2018 15:40	-	-
G	2.39	10/31/2018	11/2/2018	15.1	11/1/2018 22:25	-	-

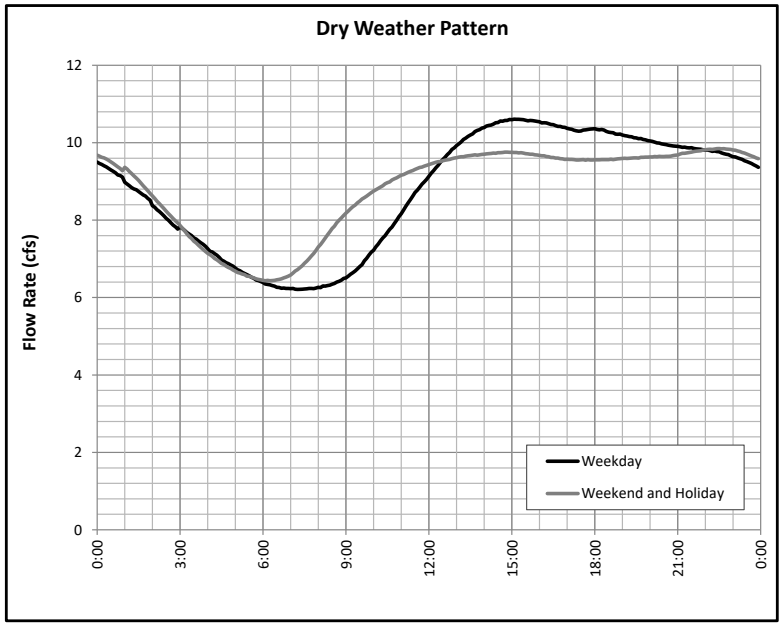
Downriver Sewage Disposal System

Meter Report

Meter: PC-1 | **Location: Pelham Interceptor North of Goddard Road** | **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	10.7	214.4	8.9	179.3	22	9
Feb-18	15.6	281.6	8.6	155.6	13	15
Mar-18	14.7	295.0	11.5	229.5	17	14
Apr-18	16.7	322.8	12.7	245.8	14	16
May-18	17.0	341.3	10.6	212.0	6	25
Jun-18	9.3	180.1	7.6	147.0	14	16
Jul-18	6.2	125.1	6.1	121.8	25	6
Aug-18	8.1	162.0	6.3	125.6	16	15
Sep-18	10.4	202.0	6.7	129.6	14	16
Oct-18	12.0	241.3	8.6	172.3	13	18
Nov-18	16.4	317.4	11.6	224.0	5	25
Dec-18	12.6	252.7	10.6	211.7	17	14

Statistics for Major Wet Weather Events

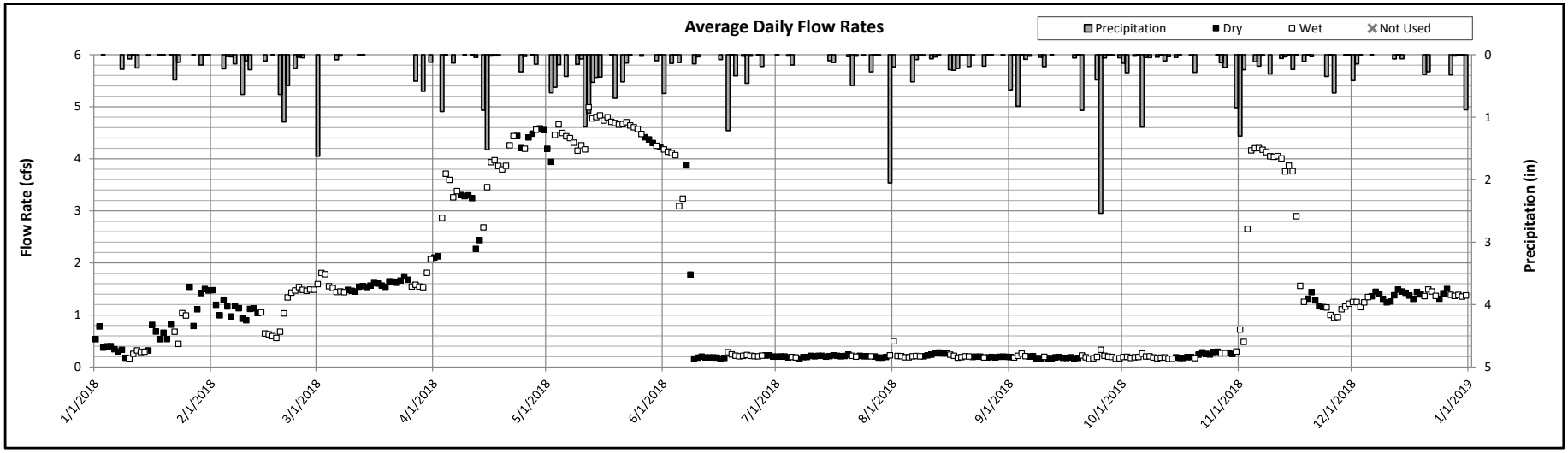
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	28.0	2/19/2018 15:30	6.3	2/20/2018 5:40
B	1.62	3/1/2018	3/1/2018	26.6	3/1/2018 11:45	4.0	3/1/2018 13:25
C	2.41	4/14/2018	4/15/2018	27.3	4/15/2018 5:45	5.7	4/15/2018 21:00
D	2.53	5/11/2018	5/13/2018	25.5	5/12/2018 10:05	5.8	5/12/2018 13:45
E	2.25	7/31/2018	8/1/2018	27.7	8/1/2018 6:45	8.4	8/1/2018 2:00
F	2.94	9/24/2018	9/25/2018	34.5	9/25/2018 21:05	≥8.3	9/25/2018 20:50 - 9/25/2018 22:25
G	2.39	10/31/2018	11/2/2018	30.3	10/31/2018 7:00	4.0	11/1/2018 23:20

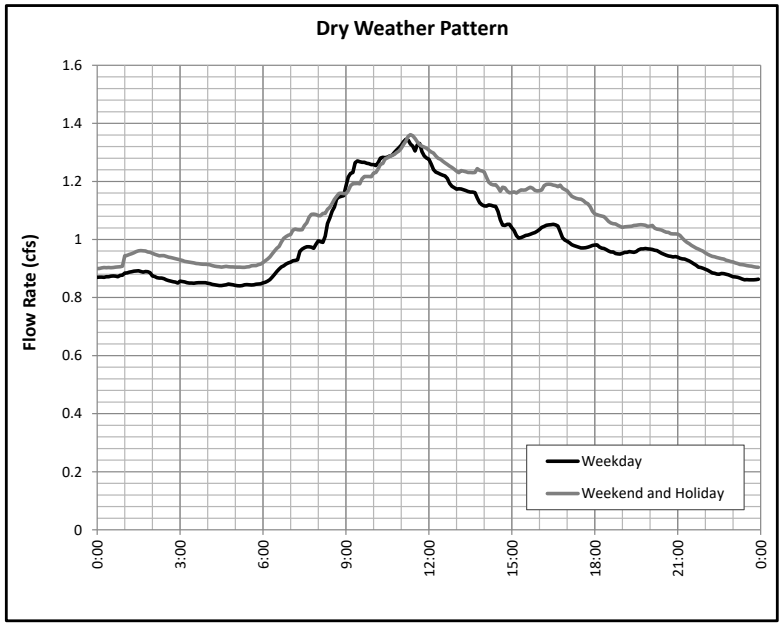
Downriver Sewage Disposal System

Meter Report

Meter: DMA-2 | **Location: Detroit Metro Airport** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.7	13.1	0.7	14.4	22	9
Feb-18	1.1	20.3	1.1	20.2	13	15
Mar-18	1.6	32.0	1.6	31.7	17	14
Apr-18	3.6	70.1	3.5	67.5	14	16
May-18	4.5	90.3	4.2	85.0	6	25
Jun-18	1.1	21.3	0.6	10.9	14	16
Jul-18	0.2	4.0	0.2	4.0	25	6
Aug-18	0.2	4.4	0.2	4.3	16	15
Sep-18	0.2	3.7	0.2	3.5	14	16
Oct-18	0.2	4.3	0.2	4.7	13	18
Nov-18	2.4	46.4	1.3	24.6	5	25
Dec-18	1.4	27.3	1.4	27.7	17	14

Statistics for Major Wet Weather Events

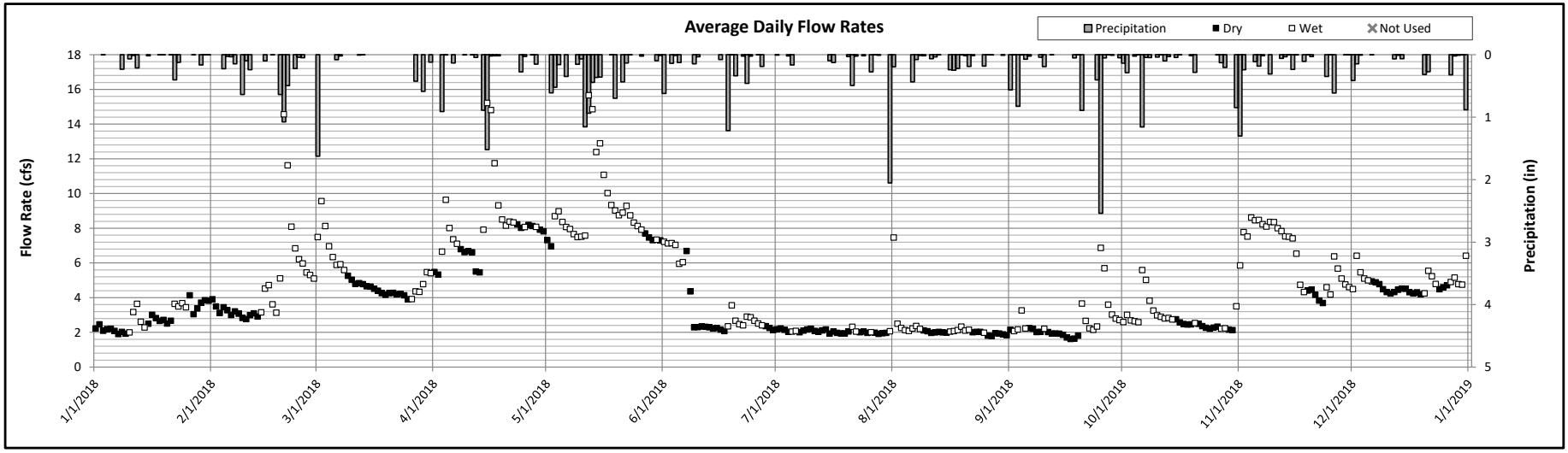
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	1.2	2/20/2018 15:35	0.7	2/23/2018 16:15
B	1.62	3/1/2018	3/1/2018	2.0	3/2/2018 17:45	0.8	3/1/2018 12:40
C	2.41	4/14/2018	4/15/2018	3.7	4/16/2018 15:55	1.3	4/16/2018 14:45
D	2.53	5/11/2018	5/13/2018	6.3	5/11/2018 23:55	1.9	5/12/2018 0:20
E	2.25	7/31/2018	8/1/2018	2.8	8/1/2018 0:25	1.1	8/1/2018 0:40
F	2.94	9/24/2018	9/25/2018	0.9	9/25/2018 8:50	0.6	9/25/2018 9:05
G	2.39	10/31/2018	11/2/2018	4.3	11/3/2018 14:20	1.3	11/3/2018 14:40

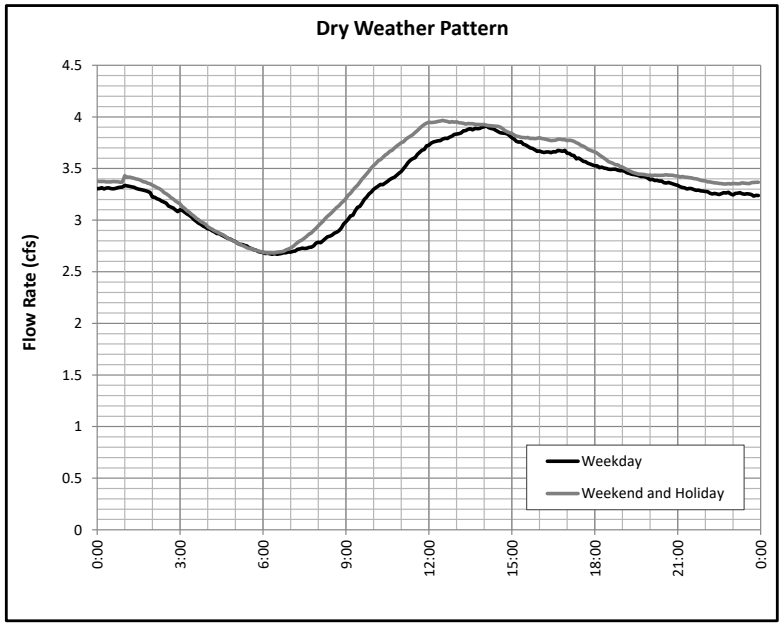
Downriver Sewage Disposal System

Meter Report

Meter: PD-2 | **Location: Goddard Interceptor West of Inkster Road** | **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.8	56.7	2.7	54.5	22	9
Feb-18	4.8	86.9	3.2	57.2	13	15
Mar-18	5.2	103.6	4.5	89.9	17	14
Apr-18	8.1	157.7	6.9	133.9	14	16
May-18	9.0	180.3	7.3	147.0	6	25
Jun-18	3.5	68.1	2.7	52.6	14	16
Jul-18	2.1	41.1	2.0	41.0	25	6
Aug-18	2.2	44.8	2.0	39.3	16	15
Sep-18	2.6	49.5	1.9	37.4	14	16
Oct-18	2.8	56.1	2.4	47.6	13	18
Nov-18	6.3	122.4	4.1	79.6	5	25
Dec-18	4.8	96.0	4.5	89.9	17	14

Statistics for Major Wet Weather Events

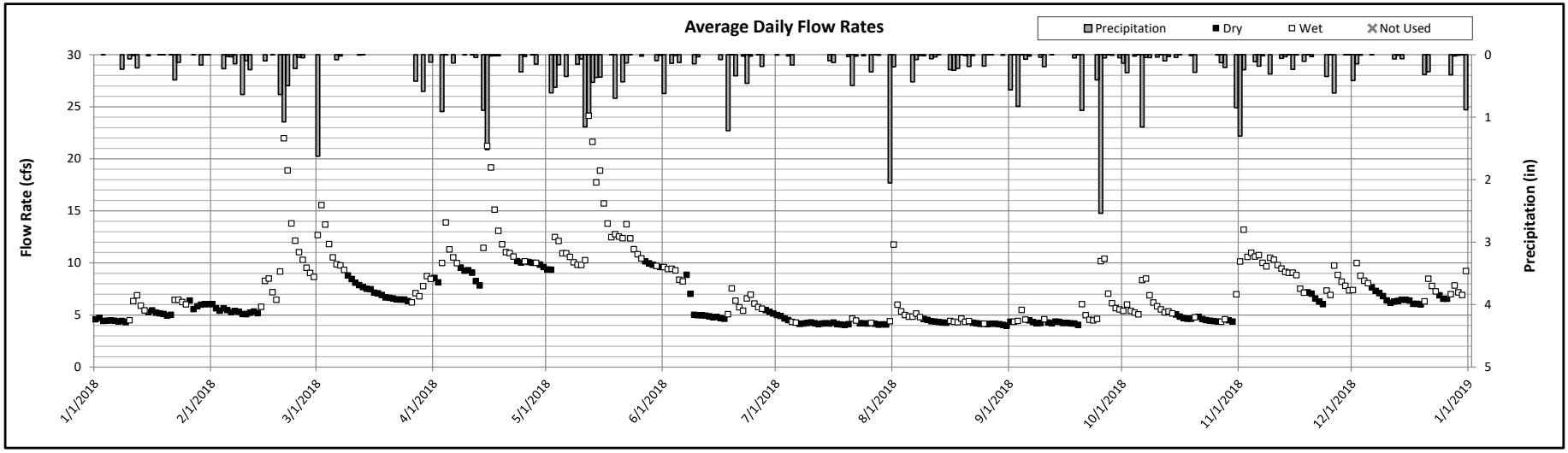
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	20.3	2/20/2018 6:15	2.2	2/20/2018 6:45
B	1.62	3/1/2018	3/1/2018	11.3	3/1/2018 14:30	1.6	3/1/2018 15:10
C	2.41	4/14/2018	4/15/2018	21.0	4/15/2018 18:25	2.0	4/15/2018 12:45
D	2.53	5/11/2018	5/13/2018	20.5	5/12/2018 13:15	2.2	5/12/2018 14:10
E	2.25	7/31/2018	8/1/2018	23.4	8/1/2018 1:30	2.5	8/1/2018 1:55
F	2.94	9/24/2018	9/25/2018	15.3	9/25/2018 10:30	1.8	9/25/2018 10:55
G	2.39	10/31/2018	11/2/2018	10.8	11/1/2018 14:10	1.5	11/1/2018 14:50

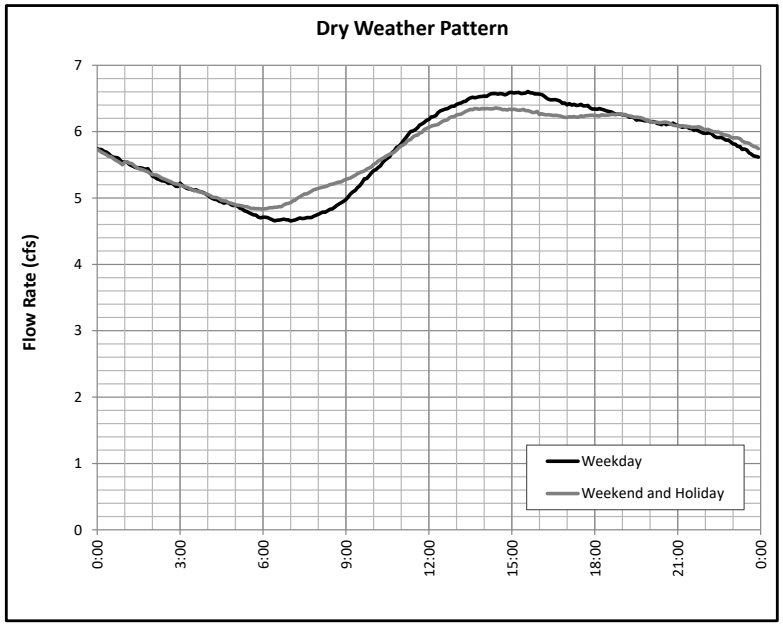
Downriver Sewage Disposal System

Meter Report

Meter: PD-1 | **Location: Goddard Interceptor West of Allen Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	5.4	107.5	5.1	102.1	22	9
Feb-18	8.2	149.1	5.4	97.4	13	15
Mar-18	8.4	168.6	7.2	144.6	17	14
Apr-18	11.0	213.2	9.3	179.5	14	16
May-18	12.4	249.1	9.7	194.4	6	25
Jun-18	6.4	123.4	5.4	104.5	14	16
Jul-18	4.3	85.8	4.3	85.3	25	6
Aug-18	4.7	94.5	4.2	85.1	16	15
Sep-18	5.1	98.6	4.3	82.6	14	16
Oct-18	5.3	106.4	4.6	92.2	13	18
Nov-18	8.9	171.9	6.6	128.5	5	25
Dec-18	7.2	143.4	6.6	131.4	17	14

Statistics for Major Wet Weather Events

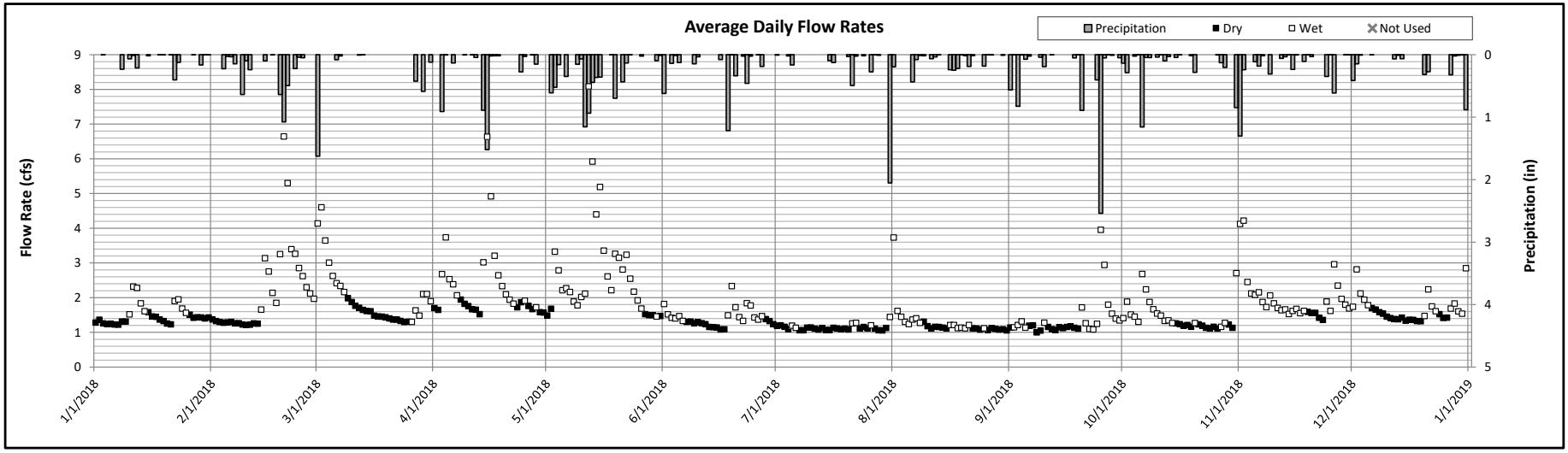
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	25.7	2/20/2018 7:00	2.5	2/20/2018 7:00
B	1.62	3/1/2018	3/1/2018	17.4	3/1/2018 15:15	1.9	3/1/2018 17:05
C	2.41	4/14/2018	4/15/2018	28.4	4/15/2018 18:25	2.6	4/15/2018 19:15
D	2.53	5/11/2018	5/13/2018	30.1	5/12/2018 13:20	2.7	5/12/2018 13:10
E	2.25	7/31/2018	8/1/2018	21.4	8/1/2018 2:30	2.4	8/1/2018 3:00
F	2.94	9/24/2018	9/25/2018	19.8	9/25/2018 20:10	2.4	9/25/2018 20:45
G	2.39	10/31/2018	11/2/2018	16.6	11/1/2018 22:00	1.9	11/1/2018 22:30

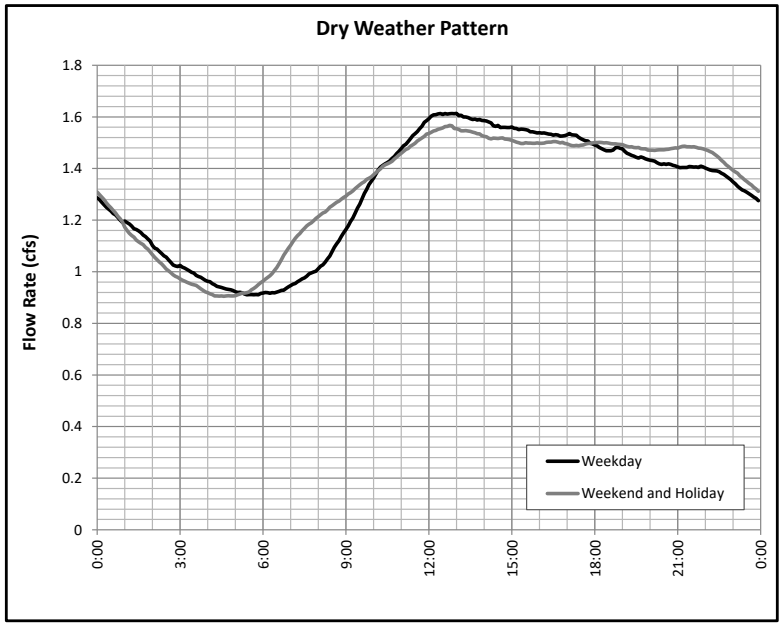
Downriver Sewage Disposal System

Meter Report

Meter: PB-1 | **Location: Northline Interceptor West of Fordline Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.5	30.0	1.4	27.1	22	9
Feb-18	2.2	39.9	1.3	23.0	13	15
Mar-18	2.0	39.8	1.5	30.7	17	14
Apr-18	2.3	44.9	1.7	33.1	14	16
May-18	2.7	54.1	1.5	30.5	6	25
Jun-18	1.4	27.4	1.2	23.8	14	16
Jul-18	1.1	22.8	1.1	22.2	25	6
Aug-18	1.3	25.5	1.1	22.5	16	15
Sep-18	1.4	26.6	1.1	21.8	14	16
Oct-18	1.4	28.9	1.2	23.6	13	18
Nov-18	2.0	38.4	1.5	29.0	5	25
Dec-18	1.7	33.3	1.4	28.9	17	14

Statistics for Major Wet Weather Events

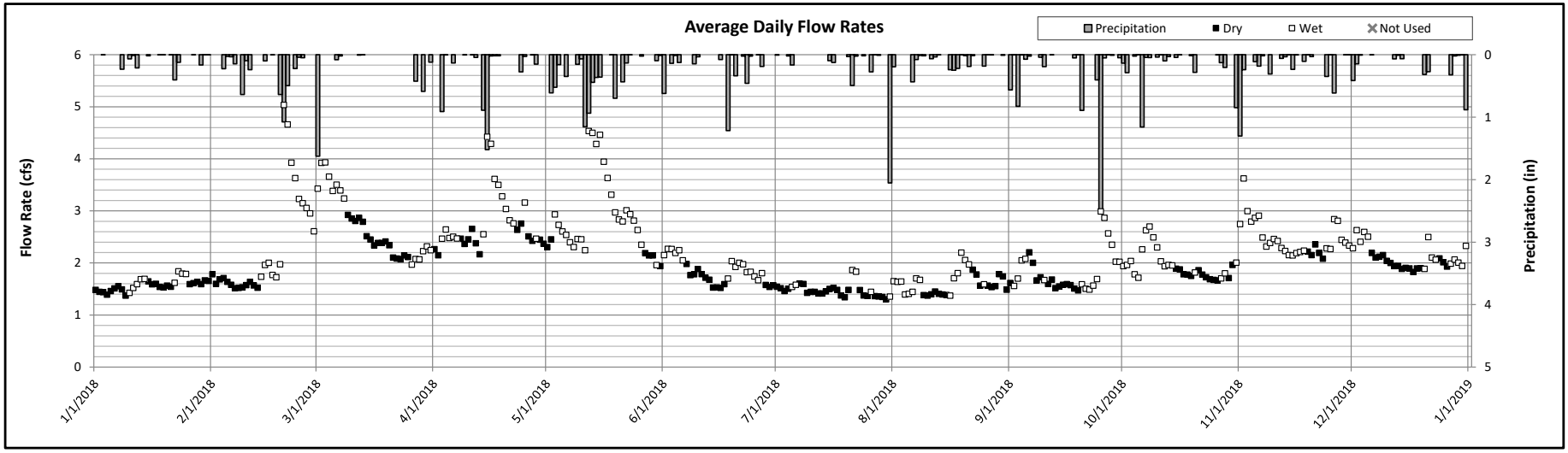
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	9.4	2/20/2018 5:20	1.8	2/20/2018 5:50
B	1.62	3/1/2018	3/1/2018	7.8	3/1/2018 13:10	1.6	3/1/2018 13:40
C	2.41	4/14/2018	4/15/2018	9.2	4/15/2018 18:55	1.8	4/15/2018 19:25
D	2.53	5/11/2018	5/13/2018	12.6	5/12/2018 1:05	2.1	5/12/2018 1:35
E	2.25	7/31/2018	8/1/2018	12.8	8/1/2018 0:15	2.2	8/1/2018 0:40
F	2.94	9/24/2018	9/25/2018	13.7	9/25/2018 20:25	2.3	9/25/2018 21:05
G	2.39	10/31/2018	11/2/2018	7.2	11/1/2018 21:50	1.6	11/1/2018 22:20

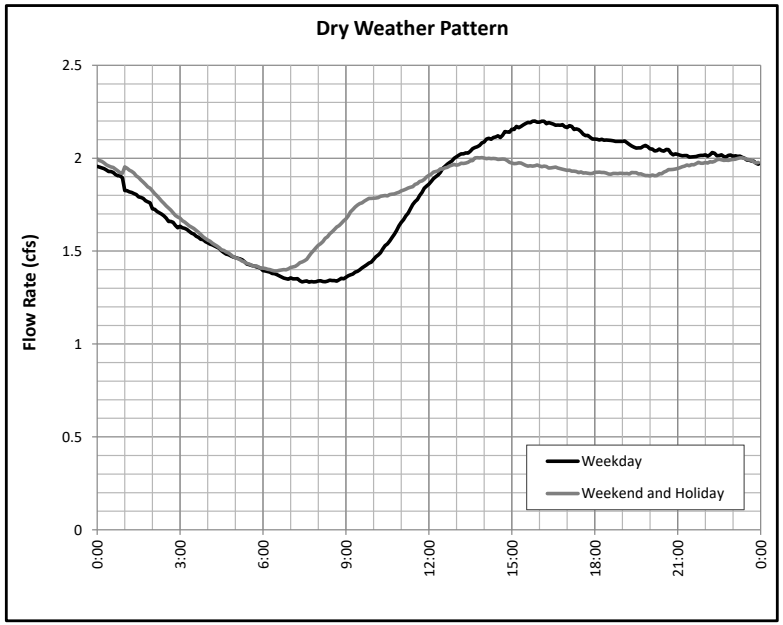
Downriver Sewage Disposal System

Meter Report

Meter: PA-4 | **Location: Eureka Interceptor near Hannan Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	1.6	31.6	1.5	30.9	22	9
Feb-18	2.3	41.5	1.6	29.0	13	15
Mar-18	2.7	53.6	2.4	49.0	17	14
Apr-18	2.7	53.3	2.4	47.1	14	16
May-18	2.9	57.4	2.2	44.0	6	25
Jun-18	1.8	35.6	1.7	32.4	14	16
Jul-18	1.5	29.5	1.4	28.9	25	6
Aug-18	1.6	32.2	1.5	30.9	16	15
Sep-18	1.8	35.5	1.7	32.2	14	16
Oct-18	1.9	38.8	1.8	35.6	13	18
Nov-18	2.5	47.7	2.2	42.6	5	25
Dec-18	2.1	42.1	2.0	39.8	17	14

Statistics for Major Wet Weather Events

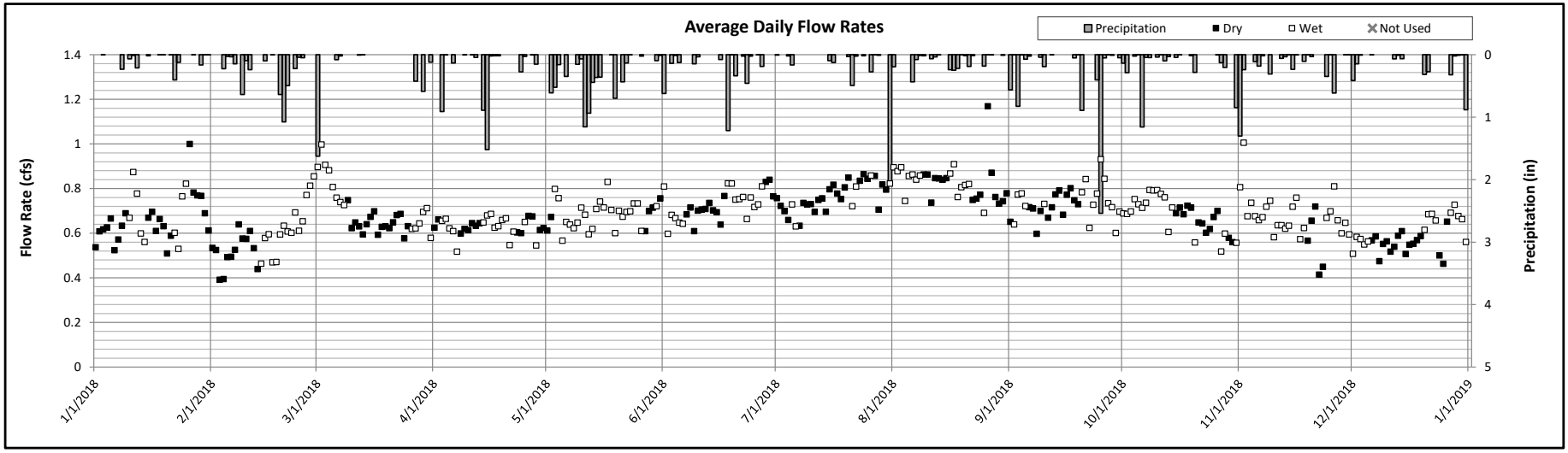
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	6.9	2/20/2018 6:10	1.5	2/20/2018 8:45
B	1.62	3/1/2018	3/1/2018	5.1	3/2/2018 19:40	1.2	3/1/2018 15:15
C	2.41	4/14/2018	4/15/2018	7.5	4/15/2018 20:40	1.5	4/15/2018 21:45
D	2.53	5/11/2018	5/13/2018	6.8	5/12/2018 14:20	1.5	5/12/2018 15:00
E	2.25	7/31/2018	8/1/2018	3.2	8/1/2018 1:40	1.0	8/1/2018 2:10
F	2.94	9/24/2018	9/25/2018	4.7	9/25/2018 22:35	1.3	9/25/2018 22:40
G	2.39	10/31/2018	11/2/2018	4.1	11/2/2018 7:50	1.2	11/2/2018 10:25

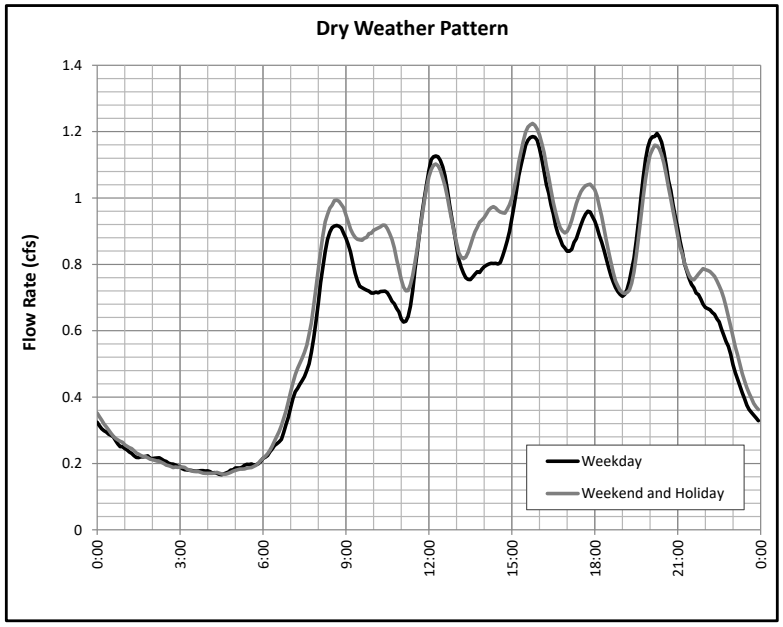
Downriver Sewage Disposal System

Meter Report

Meter: DMA-1 | **Location: Detroit Metro Airport outlet at Eureka** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.7	13.3	0.7	13.2	22	9
Feb-18	0.6	10.4	0.5	9.4	13	15
Mar-18	0.7	13.9	0.6	12.9	17	14
Apr-18	0.6	12.2	0.6	12.2	14	16
May-18	0.7	13.7	0.7	13.6	6	25
Jun-18	0.7	14.0	0.7	14.0	14	16
Jul-18	0.8	15.3	0.8	15.3	25	6
Aug-18	0.8	16.6	0.8	16.5	16	15
Sep-18	0.7	14.2	0.7	13.9	14	16
Oct-18	0.7	13.6	0.7	13.2	13	18
Nov-18	0.7	12.9	0.6	10.9	5	25
Dec-18	0.6	11.7	0.6	11.0	17	14

Statistics for Major Wet Weather Events

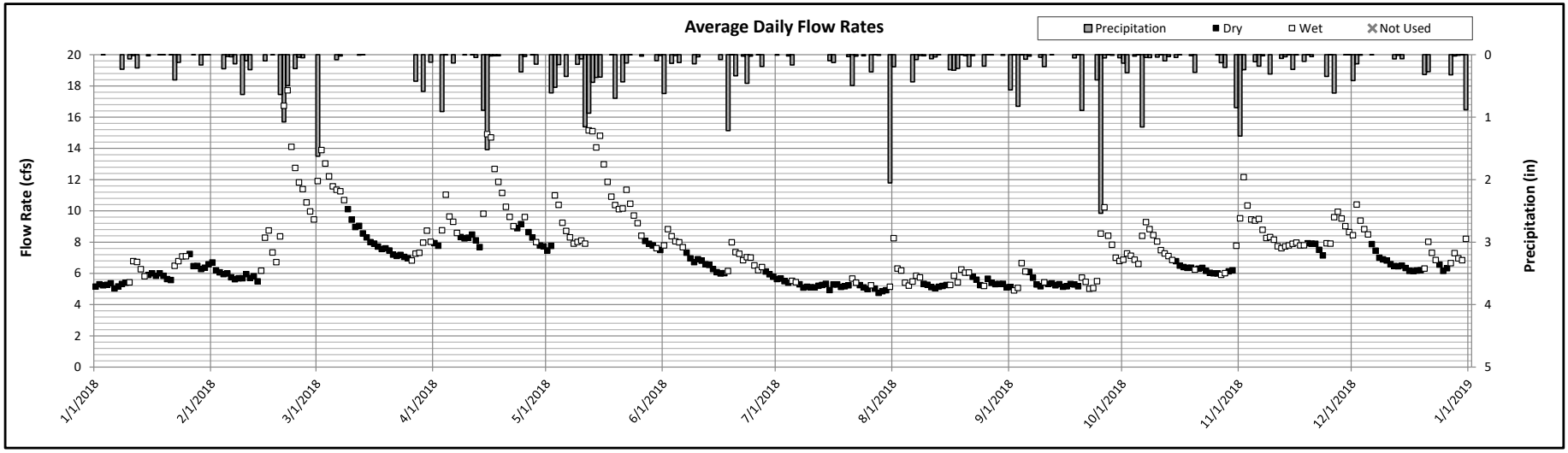
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	1.3	2/20/2018 15:10	0.8	2/21/2018 15:25
B	1.62	3/1/2018	3/1/2018	1.7	3/3/2018 19:45	-	-
C	2.41	4/14/2018	4/15/2018	1.5	4/14/2018 14:20	1.0	4/15/2018 19:30
D	2.53	5/11/2018	5/13/2018	1.4	5/13/2018 18:40	0.8	5/12/2018 15:05
E	2.25	7/31/2018	8/1/2018	1.8	8/2/2018 14:15	0.8	8/2/2018 14:40
F	2.94	9/24/2018	9/25/2018	1.4	9/25/2018 14:25	0.7	9/25/2018 15:10
G	2.39	10/31/2018	11/2/2018	1.4	11/2/2018 14:30	0.8	11/2/2018 15:05

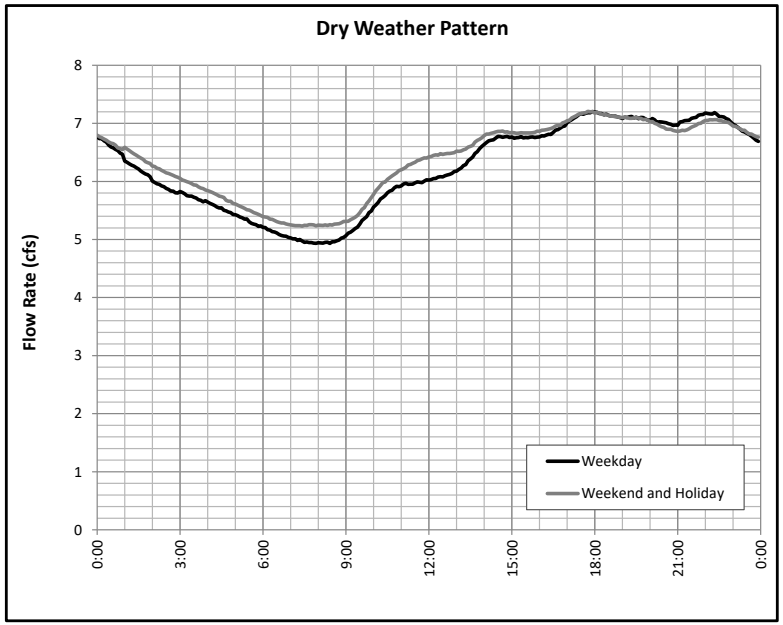
Downriver Sewage Disposal System

Meter Report

Meter: PA-3 | **Location: Eureka Interceptor at Inkster Road** | **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	6.0	120.1	5.8	116.0	22	9
Feb-18	8.4	152.9	5.9	106.6	13	15
Mar-18	9.0	179.7	8.0	160.4	17	14
Apr-18	9.5	183.6	8.2	159.6	14	16
May-18	9.9	199.2	7.7	155.1	6	25
Jun-18	6.9	134.0	6.4	124.6	14	16
Jul-18	5.2	104.7	5.2	103.9	25	6
Aug-18	5.6	112.1	5.3	106.5	16	15
Sep-18	5.9	115.3	5.3	103.4	14	16
Oct-18	6.9	138.2	6.3	125.6	13	18
Nov-18	8.6	166.1	7.7	148.7	5	25
Dec-18	7.2	143.5	6.6	132.1	17	14

Statistics for Major Wet Weather Events

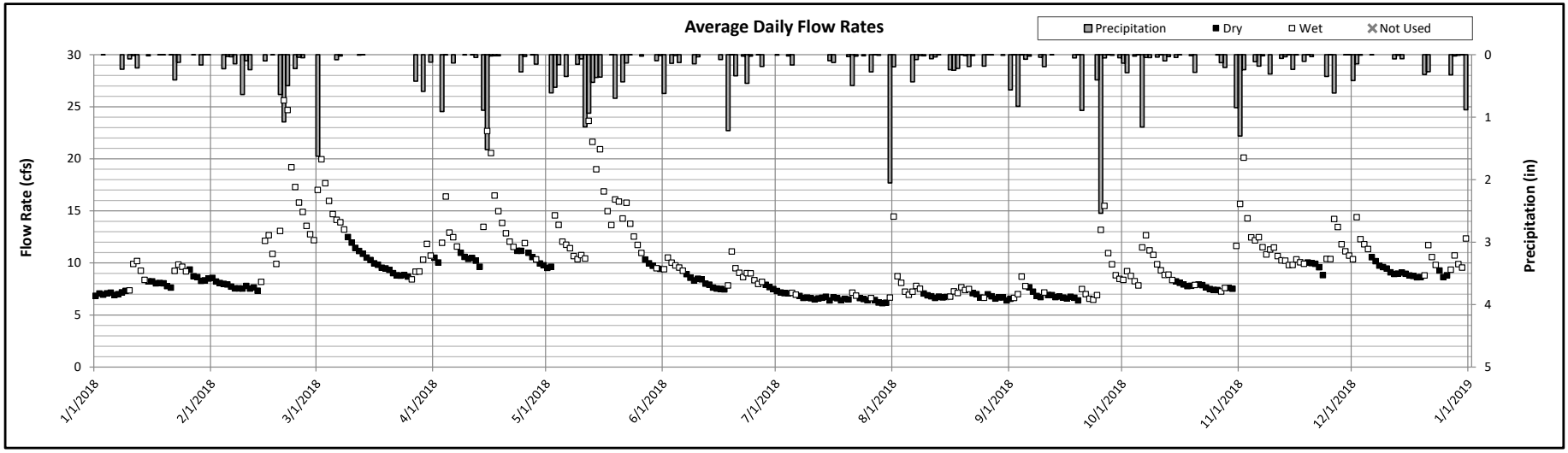
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	18.8	2/20/2018 16:15	2.5	2/20/2018 17:05
B	1.62	3/1/2018	3/1/2018	16.1	3/1/2018 14:00	2.2	3/1/2018 14:10
C	2.41	4/14/2018	4/15/2018	19.3	4/15/2018 20:00	2.5	4/15/2018 20:05
D	2.53	5/11/2018	5/13/2018	16.8	5/12/2018 13:15	2.2	5/12/2018 3:00
E	2.25	7/31/2018	8/1/2018	14.7	8/1/2018 0:50	2.3	8/1/2018 1:15
F	2.94	9/24/2018	9/25/2018	13.9	9/25/2018 21:30	2.3	9/25/2018 21:15
G	2.39	10/31/2018	11/2/2018	13.4	11/1/2018 23:15	2.2	11/1/2018 22:05

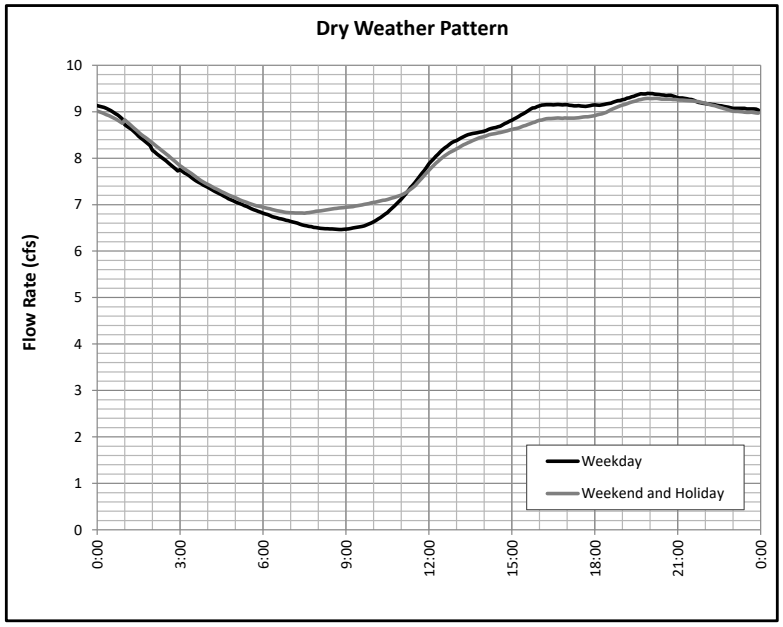
Downriver Sewage Disposal System

Meter Report

Meter: PA-2 | **Location: Eureka Interceptor at Allen Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	8.2	164.3	7.8	156.0	22	9
Feb-18	11.6	209.5	7.8	141.2	13	15
Mar-18	11.5	230.7	10.1	201.4	17	14
Apr-18	12.4	240.5	10.5	202.6	14	16
May-18	13.4	268.3	9.8	195.5	6	25
Jun-18	8.6	167.3	8.0	154.8	14	16
Jul-18	6.7	133.6	6.6	132.6	25	6
Aug-18	7.3	146.5	6.8	135.8	16	15
Sep-18	7.8	151.0	6.8	132.0	14	16
Oct-18	8.7	173.7	7.7	155.1	13	18
Nov-18	11.5	222.0	9.7	187.4	5	25
Dec-18	10.0	199.6	9.2	183.9	17	14

Statistics for Major Wet Weather Events

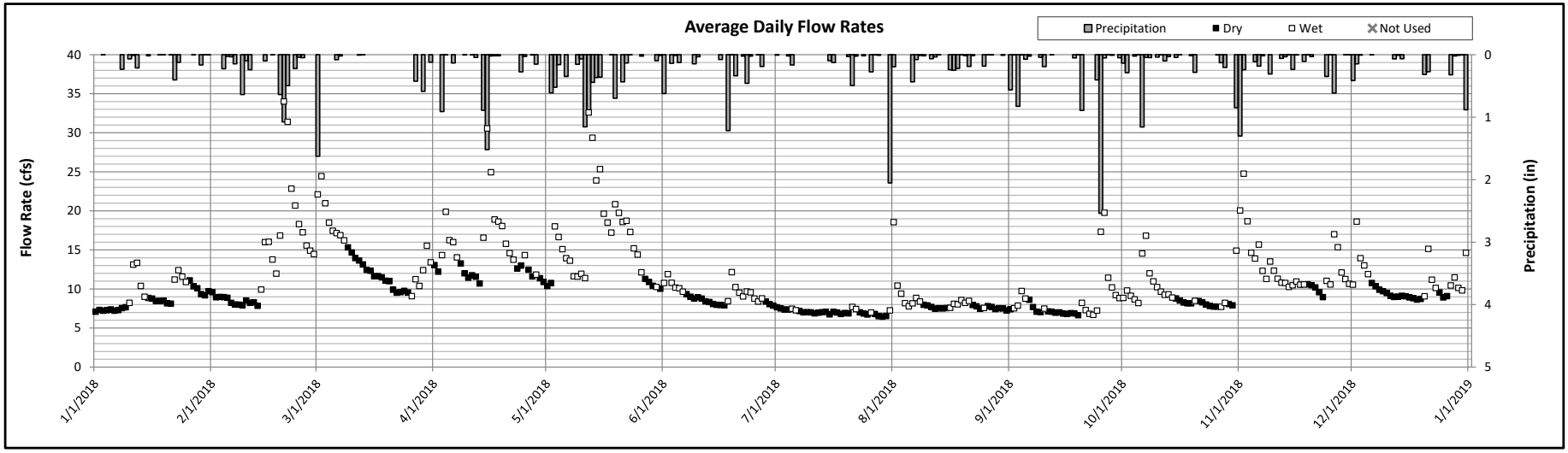
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	28.5	2/20/2018 16:55	3.5	2/20/2018 16:45
B	1.62	3/1/2018	3/1/2018	24.4	3/1/2018 14:40	2.8	3/1/2018 15:00
C	2.41	4/14/2018	4/15/2018	28.8	4/15/2018 21:30	3.7	4/15/2018 19:45
D	2.53	5/11/2018	5/13/2018	27.5	5/12/2018 2:40	3.4	5/12/2018 3:00
E	2.25	7/31/2018	8/1/2018	28.6	8/1/2018 1:00	3.4	8/1/2018 1:30
F	2.94	9/24/2018	9/25/2018	27.3	9/25/2018 20:40	3.7	9/25/2018 21:30
G	2.39	10/31/2018	11/2/2018	25.2	11/1/2018 22:40	2.8	11/1/2018 23:30

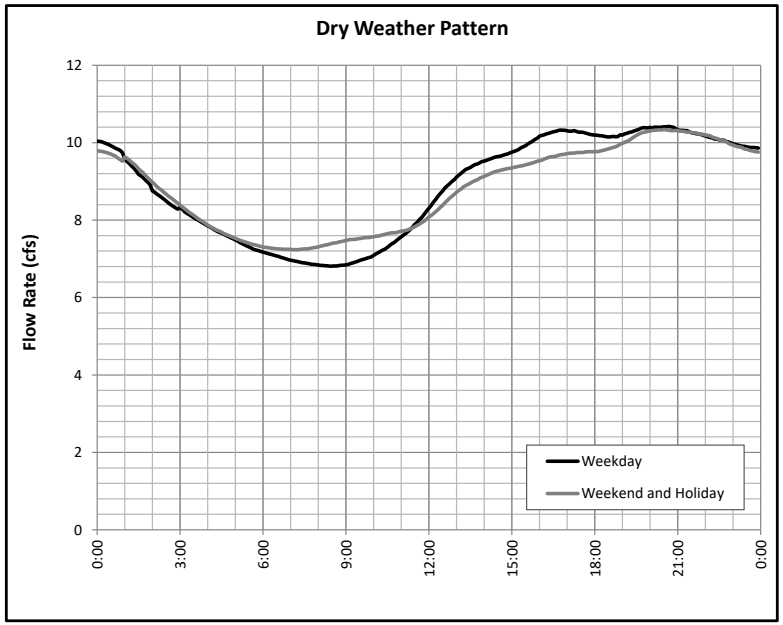
Downriver Sewage Disposal System

Meter Report

Meter: PA-1 | **Location: Eureka Interceptor West of Fordline Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	9.2	184.2	8.4	168.4	22	9
Feb-18	13.7	248.2	8.5	153.5	13	15
Mar-18	13.8	275.5	11.8	236.4	17	14
Apr-18	14.9	288.3	12.0	232.4	14	16
May-18	16.2	323.9	10.6	212.9	6	25
Jun-18	9.2	178.0	8.4	162.9	14	16
Jul-18	7.0	141.0	7.0	139.6	25	6
Aug-18	8.3	166.8	7.6	152.7	16	15
Sep-18	8.5	164.3	7.1	138.4	14	16
Oct-18	9.4	188.3	8.1	163.1	13	18
Nov-18	12.7	245.9	10.0	193.1	5	25
Dec-18	10.6	212.0	9.3	186.3	17	14

Statistics for Major Wet Weather Events

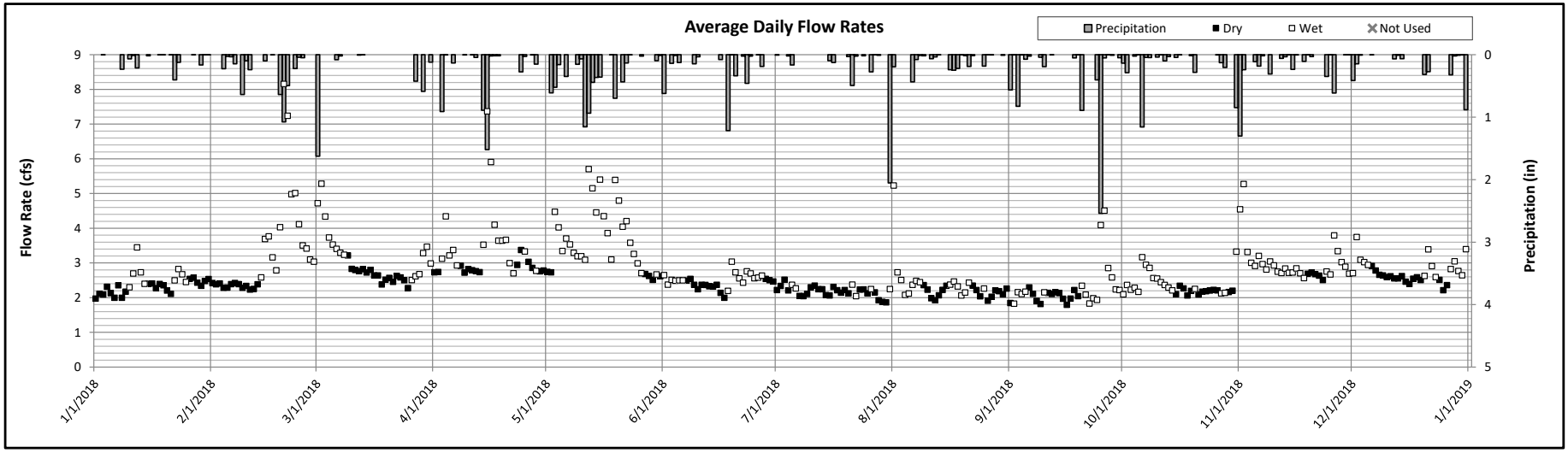
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	39.0	2/20/2018 15:40	2.8	2/20/2018 16:40
B	1.62	3/1/2018	3/1/2018	33.3	3/1/2018 14:20	2.5	3/1/2018 14:50
C	2.41	4/14/2018	4/15/2018	40.0	4/15/2018 19:25	2.8	4/15/2018 19:25
D	2.53	5/11/2018	5/13/2018	-	-	-	-
E	2.25	7/31/2018	8/1/2018	36.6	8/1/2018 1:15	2.8	8/1/2018 1:45
F	2.94	9/24/2018	9/25/2018	39.6	9/25/2018 21:15	2.9	9/25/2018 21:25
G	2.39	10/31/2018	11/2/2018	33.4	11/1/2018 23:00	2.5	11/1/2018 23:20

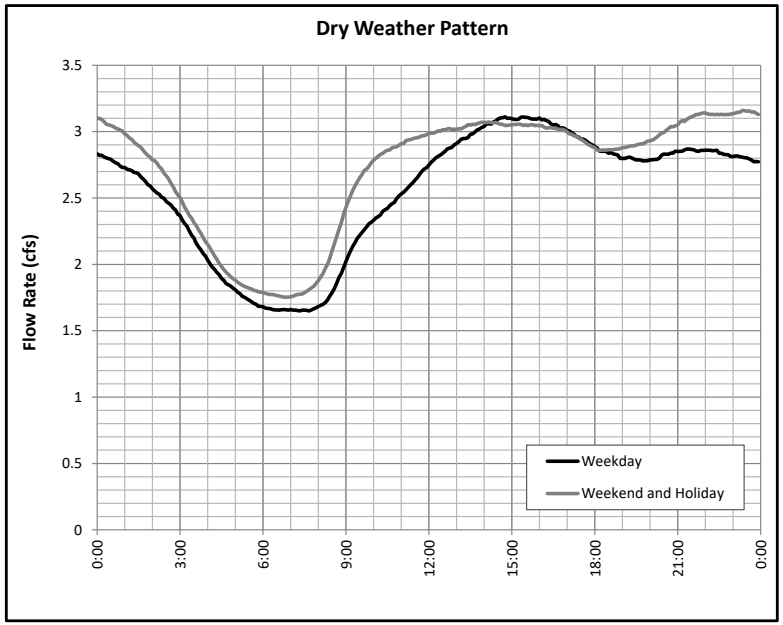
Downriver Sewage Disposal System

Meter Report

Meter: P-2 | **Location: Pennsylvania Interceptor East of Dix-Toledo Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.4	47.9	2.3	45.7	22	9
Feb-18	3.3	60.1	2.3	42.4	13	15
Mar-18	3.0	60.9	2.7	53.2	17	14
Apr-18	3.4	65.0	2.9	55.3	14	16
May-18	3.7	73.3	2.6	53.1	6	25
Jun-18	2.5	47.9	2.4	45.7	14	16
Jul-18	2.2	43.7	2.2	43.4	25	6
Aug-18	2.3	46.8	2.1	43.1	16	15
Sep-18	2.3	43.6	2.0	39.4	14	16
Oct-18	2.3	47.0	2.2	43.8	13	18
Nov-18	3.0	58.3	2.6	51.3	5	25
Dec-18	2.7	55.0	2.6	51.2	17	14

Statistics for Major Wet Weather Events

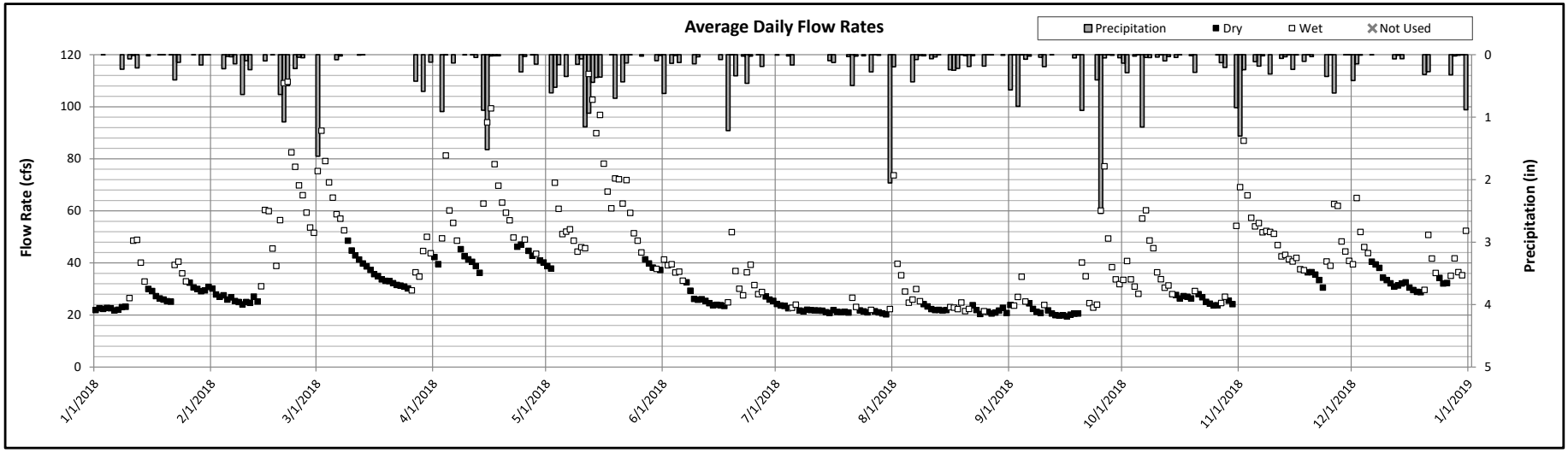
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	9.6	2/20/2018 16:35	1.6	2/20/2018 16:50
B	1.62	3/1/2018	3/1/2018	8.4	3/1/2018 14:25	1.5	3/1/2018 14:50
C	2.41	4/14/2018	4/15/2018	10.1	4/15/2018 20:15	1.6	4/15/2018 20:50
D	2.53	5/11/2018	5/13/2018	7.4	5/12/2018 14:40	1.4	5/12/2018 15:10
E	2.25	7/31/2018	8/1/2018	12.4	8/1/2018 0:30	2.2	8/1/2018 1:40
F	2.94	9/24/2018	9/25/2018	11.9	9/25/2018 20:55	2.4	9/25/2018 22:15
G	2.39	10/31/2018	11/2/2018	7.6	11/1/2018 23:05	1.4	11/1/2018 23:20

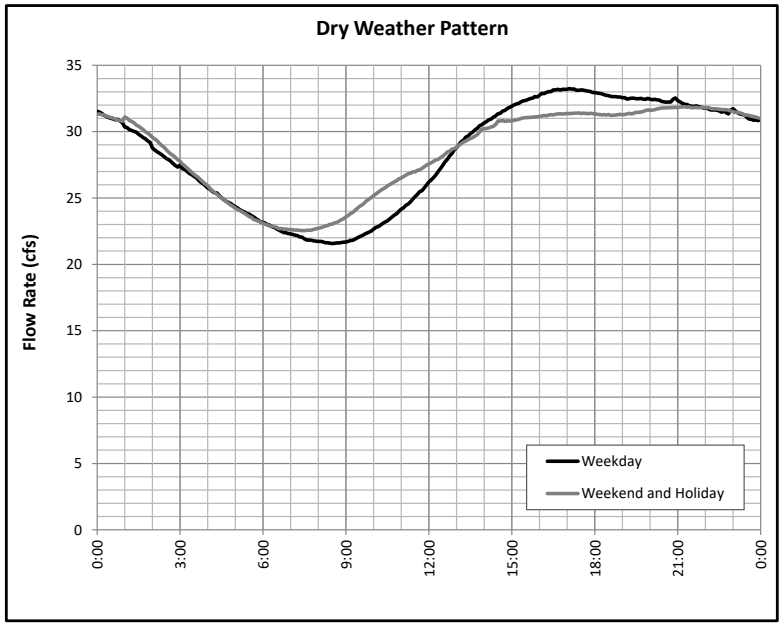
Downriver Sewage Disposal System

Meter Report

Meter: P-1 | **Location: Pennsylvania Interceptor East of Fort Street** | **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	29.6	593.7	26.1	522.0	22	9
Feb-18	46.8	847.7	26.3	475.2	13	15
Mar-18	45.4	909.8	36.4	730.3	17	14
Apr-18	53.6	1038.8	42.0	814.1	14	16
May-18	59.1	1184.9	38.9	778.5	6	25
Jun-18	30.8	597.2	25.9	502.8	14	16
Jul-18	22.0	440.7	21.7	433.8	25	6
Aug-18	25.6	512.1	21.9	439.3	16	15
Sep-18	28.9	559.5	21.1	408.5	14	16
Oct-18	32.5	652.1	25.8	517.4	13	18
Nov-18	47.9	928.2	34.4	667.8	5	25
Dec-18	37.6	753.4	33.0	661.0	17	14

Statistics for Major Wet Weather Events

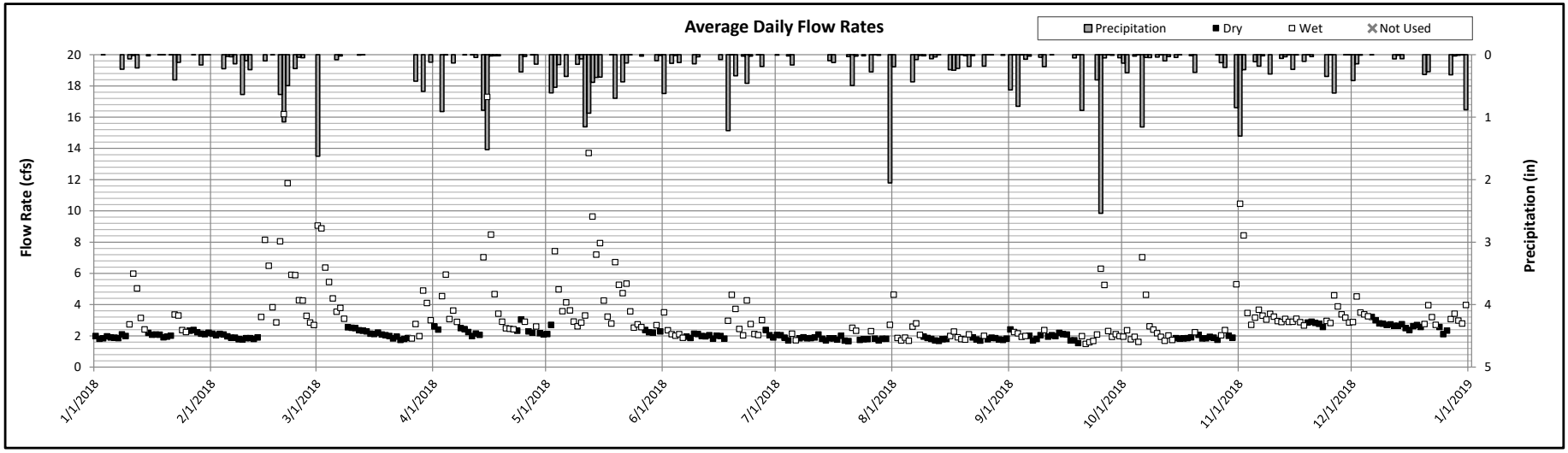
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	131.2	2/20/2018 9:40	11.1	2/20/2018 15:00
B	1.62	3/1/2018	3/1/2018	111.2	3/1/2018 14:40	8.3	3/1/2018 13:50
C	2.41	4/14/2018	4/15/2018	128.9	4/16/2018 1:20	10.8	4/15/2018 15:15
D	2.53	5/11/2018	5/13/2018	130.2	5/12/2018 2:05	11.7	5/13/2018 8:05
E	2.25	7/31/2018	8/1/2018	112.9	8/1/2018 4:15	≥12.0	8/1/2018 1:15 - 8/1/2018 3:15
F	2.94	9/24/2018	9/25/2018	111.0	9/25/2018 21:10	≥12.0	9/25/2018 20:35 - 9/25/2018 23:40
G	2.39	10/31/2018	11/2/2018	105.2	11/1/2018 19:40	11.4	11/1/2018 22:40

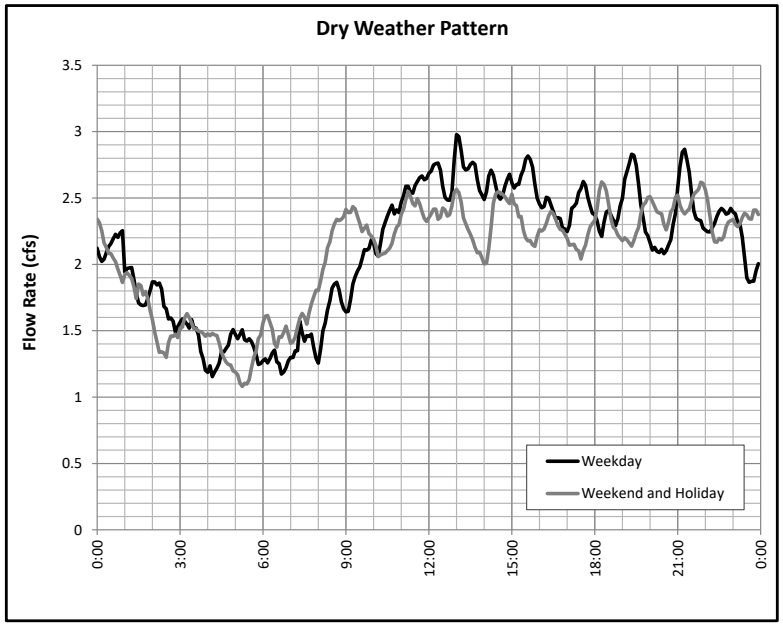
Downriver Sewage Disposal System

Meter Report

Meter: RV-1 | **Location: Pennsylvania Interceptor West of Jefferson Avenue** | **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.4	48.7	2.0	40.9	22	9
Feb-18	4.1	74.1	1.9	34.8	13	15
Mar-18	3.2	64.2	2.1	42.7	17	14
Apr-18	3.6	70.5	2.3	44.9	14	16
May-18	4.3	86.7	2.3	46.4	6	25
Jun-18	2.4	46.5	2.0	38.7	14	16
Jul-18	1.9	38.4	1.8	36.7	25	6
Aug-18	2.0	39.8	1.8	35.9	16	15
Sep-18	2.2	43.0	1.9	37.7	14	16
Oct-18	2.3	46.6	1.9	37.6	13	18
Nov-18	3.5	68.3	2.8	53.9	5	25
Dec-18	2.9	59.0	2.6	52.9	17	14

Statistics for Major Wet Weather Events

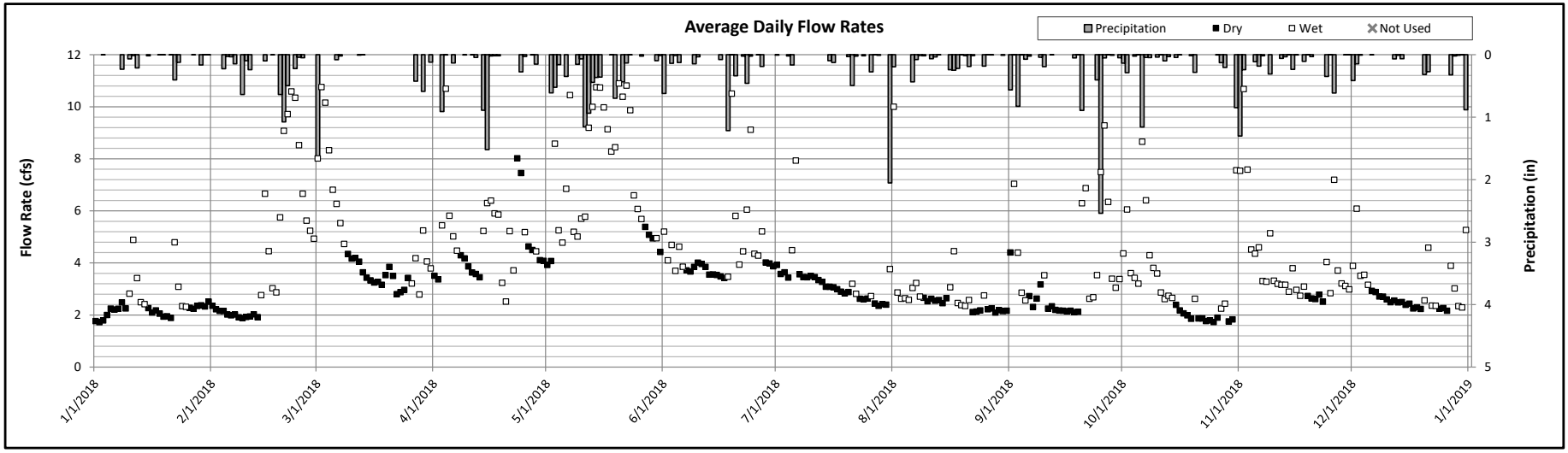
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	25.4	2/20/2018 5:15	9.7	2/20/2018 14:55
B	1.62	3/1/2018	3/1/2018	23.3	3/1/2018 13:50	7.4	3/1/2018 13:40
C	2.41	4/14/2018	4/15/2018	27.7	4/15/2018 14:50	9.8	4/15/2018 15:05
D	2.53	5/11/2018	5/13/2018	26.4	5/12/2018 1:10	11.4	5/13/2018 7:55
E	2.25	7/31/2018	8/1/2018	25.3	7/31/2018 23:30	16.3	8/1/2018 1:50
F	2.94	9/24/2018	9/25/2018	33.4	9/25/2018 20:15	17.3	9/25/2018 20:50
G	2.39	10/31/2018	11/2/2018	19.3	11/1/2018 22:30	11.2	11/1/2018 22:30

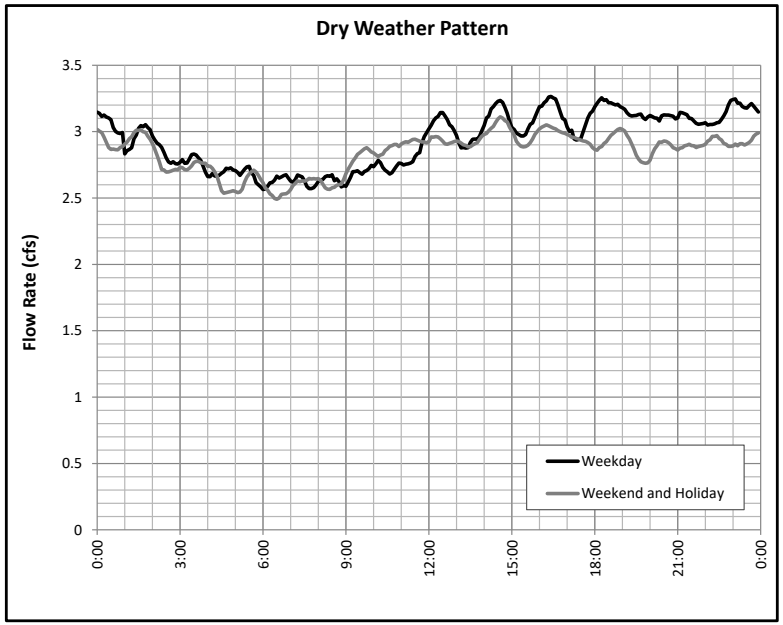
Downriver Sewage Disposal System

Meter Report

Meter: RR-1 | **Location: 17th Street near Visger Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	2.4	48.9	2.1	42.9	22	9
Feb-18	4.4	79.3	2.0	36.9	13	15
Mar-18	4.6	92.8	3.5	70.4	17	14
Apr-18	4.9	95.7	4.5	86.7	14	16
May-18	7.3	146.8	4.6	92.9	6	25
Jun-18	4.5	87.7	3.7	72.6	14	16
Jul-18	3.3	65.8	3.1	61.6	25	6
Aug-18	2.8	56.3	2.3	46.9	16	15
Sep-18	3.7	71.2	2.5	48.3	14	16
Oct-18	3.2	63.4	1.9	38.5	13	18
Nov-18	4.0	77.3	2.7	51.4	5	25
Dec-18	2.9	58.7	2.5	49.6	17	14

Statistics for Major Wet Weather Events

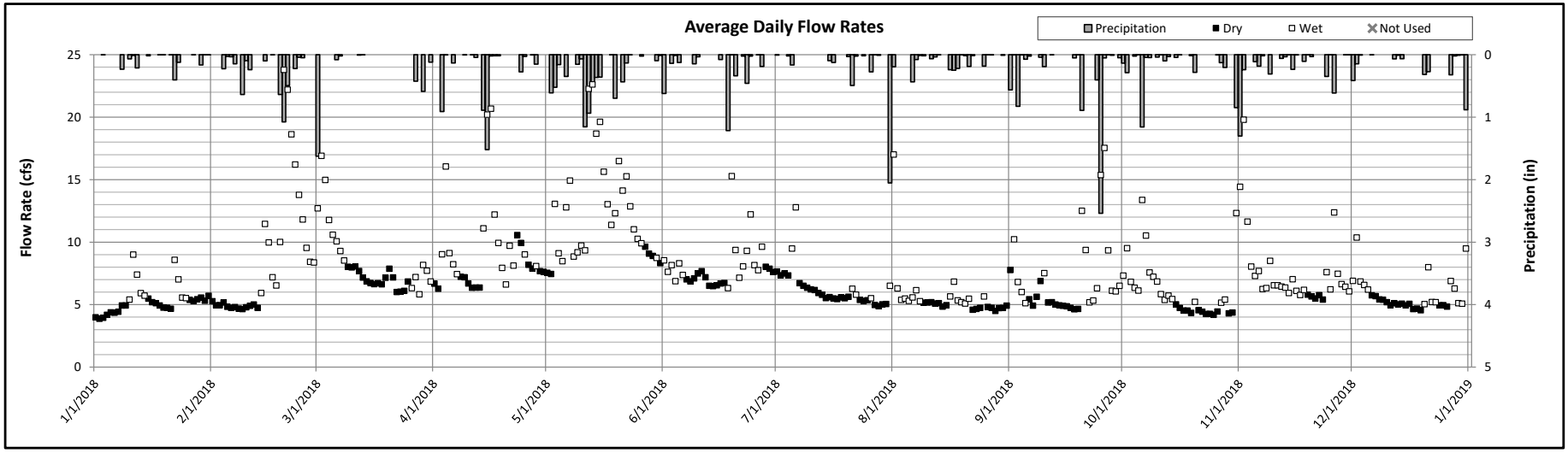
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	11.0	2/19/2018 23:45	7.9	2/20/2018 4:50
B	1.62	3/1/2018	3/1/2018	11.2	3/2/2018 19:00	4.5	3/1/2018 14:30
C	2.41	4/14/2018	4/15/2018	8.3	4/15/2018 10:35	7.0	4/15/2018 16:05
D	2.53	5/11/2018	5/13/2018	11.5	5/13/2018 19:35	8.3	5/12/2018 12:30
E	2.25	7/31/2018	8/1/2018	11.1	8/1/2018 2:50	5.3	8/1/2018 0:45
F	2.94	9/24/2018	9/25/2018	11.1	9/25/2018 18:00	9.6	9/25/2018 20:25
G	2.39	10/31/2018	11/2/2018	11.2	11/2/2018 8:50	5.7	11/1/2018 22:45

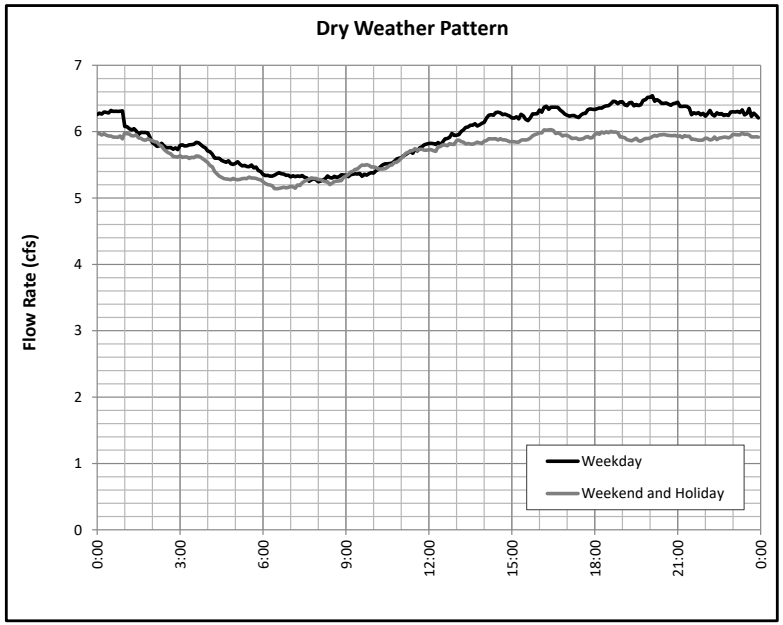
Downriver Sewage Disposal System

Meter Report

Meter: EC-6 | **Location: Riverdrive Interceptor South of Southfield Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	5.4	107.6	4.8	96.9	22	9
Feb-18	8.8	159.8	4.9	88.3	13	15
Mar-18	8.3	165.7	7.0	140.9	17	14
Apr-18	9.3	179.8	7.5	145.3	14	16
May-18	12.3	245.8	8.5	169.9	6	25
Jun-18	8.0	155.0	7.1	138.1	14	16
Jul-18	6.3	125.6	5.9	118.6	25	6
Aug-18	5.6	112.1	4.9	97.4	16	15
Sep-18	7.0	135.6	5.3	103.4	14	16
Oct-18	6.1	122.7	4.5	89.2	13	18
Nov-18	7.6	147.1	5.6	108.9	5	25
Dec-18	5.8	115.8	5.1	101.5	17	14

Statistics for Major Wet Weather Events

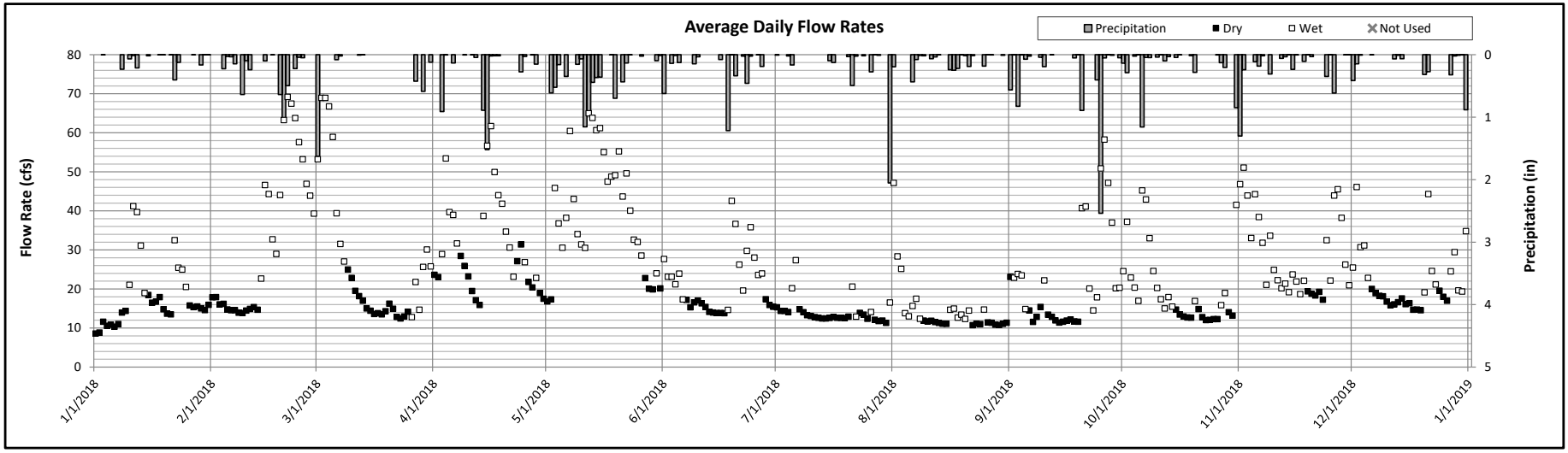
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	26.5	2/20/2018 6:10	13.6	2/20/2018 5:50
B	1.62	3/1/2018	3/1/2018	19.1	3/1/2018 19:40	11.1	3/1/2018 14:50
C	2.41	4/14/2018	4/15/2018	27.5	4/15/2018 18:30	12.4	4/15/2018 16:15
D	2.53	5/11/2018	5/13/2018	27.2	5/12/2018 12:15	12.8	5/12/2018 14:25
E	2.25	7/31/2018	8/1/2018	24.0	8/1/2018 0:30	10.6	8/1/2018 2:25
F	2.94	9/24/2018	9/25/2018	27.1	9/25/2018 19:25	16.9	9/25/2018 21:10
G	2.39	10/31/2018	11/2/2018	23.8	11/2/2018 0:55	10.2	11/1/2018 22:45

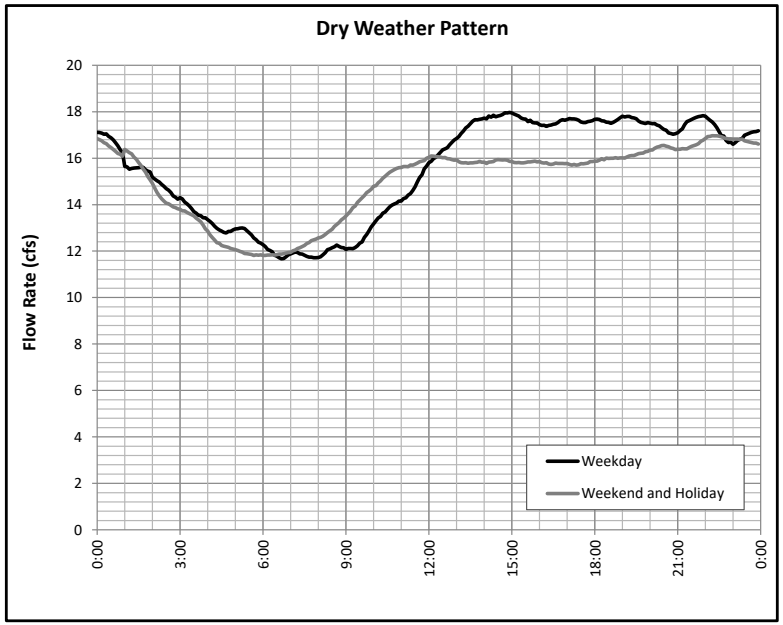
Downriver Sewage Disposal System

Meter Report

Meter: RD-1 | **Location: Riverdrive Interceptor North of Northline Road** | **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 | **System Meter Type: Interceptor Flow Meter**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	18.0	361.3	13.8	276.5	22	9
Feb-18	32.9	596.2	15.3	276.8	13	15
Mar-18	26.3	527.3	15.9	318.8	17	14
Apr-18	31.2	605.6	22.4	434.4	14	16
May-18	39.5	791.4	19.5	390.5	6	25
Jun-18	21.1	409.1	15.4	299.0	14	16
Jul-18	14.1	282.9	13.0	261.4	25	6
Aug-18	14.5	290.8	11.2	225.3	16	15
Sep-18	22.0	427.2	13.3	257.4	14	16
Oct-18	19.9	398.5	13.1	261.8	13	18
Nov-18	28.7	556.1	18.6	360.4	5	25
Dec-18	22.0	440.7	17.0	340.5	17	14

Statistics for Major Wet Weather Events

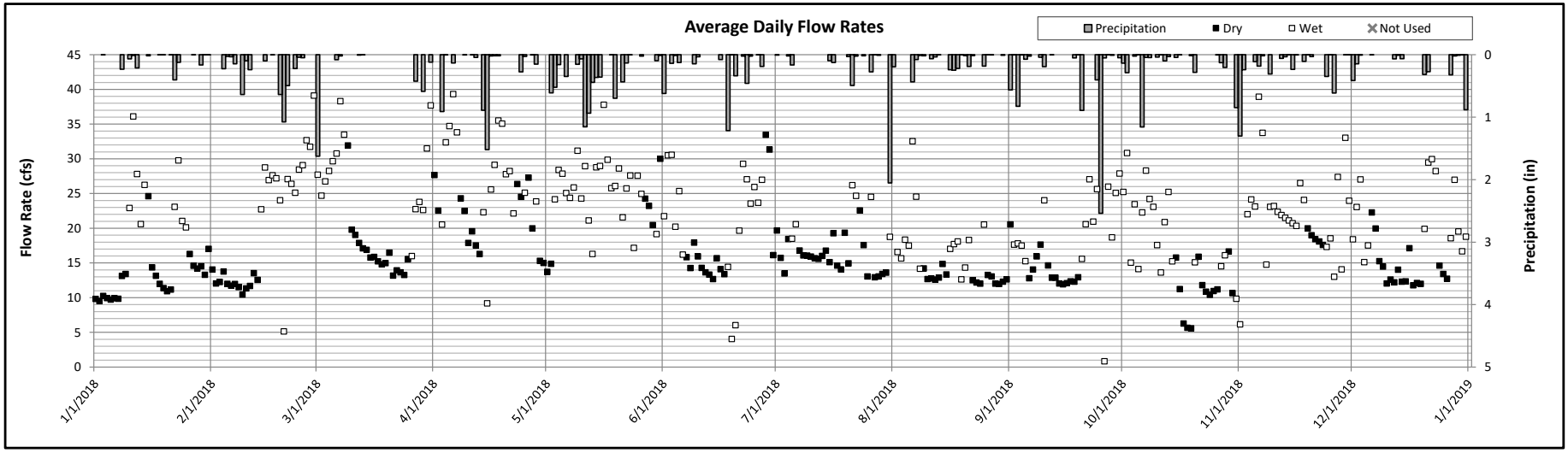
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	69.7	2/20/2018 22:50	≥9.2	2/20/2018 2:45 - 2/20/2018 19:45
B	1.62	3/1/2018	3/1/2018	73.4	3/4/2018 0:45	≥9.2	3/1/2018 12:45 -3/1/2018 20:15
C	2.41	4/14/2018	4/15/2018	69.9	4/16/2018 5:35	10.6	4/15/2018 15:10
D	2.53	5/11/2018	5/13/2018	73.0	5/12/2018 10:10	10.8	5/12/2018 11:50
E	2.25	7/31/2018	8/1/2018	58.2	8/1/2018 8:30	11.6	8/1/2018 1:35
F	2.94	9/24/2018	9/25/2018	64.0	9/25/2018 21:15	16.6	9/25/2018 21:00
G	2.39	10/31/2018	11/2/2018	55.9	10/31/2018 6:50	10.3	11/1/2018 22:40

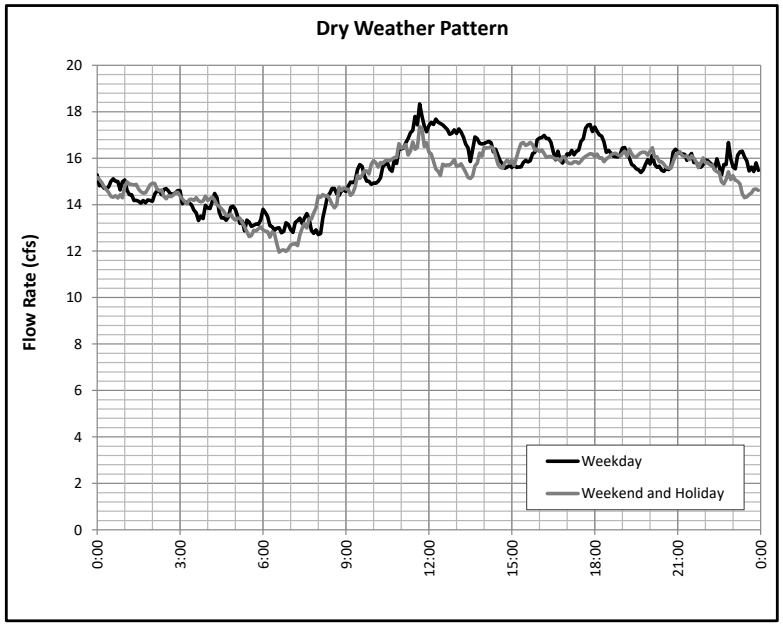
Downriver Sewage Disposal System

Meter Report

Meter: [SW] + [SWB] **Location: Southgate / Wyandotte** **Period: 1/1/2018 through 12/31/2018**

Type: Accusonic 7510 (SW) & Telog 3314 (SWB) **System Meter Type: Total for SWDDD**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	16.5	329.9	12.9	257.6	22	9
Feb-18	20.0	362.3	12.2	221.0	13	15
Mar-18	21.9	438.8	16.8	336.1	17	14
Apr-18	24.7	479.0	21.2	410.8	14	16
May-18	24.9	499.8	21.1	422.2	6	25
Jun-18	19.6	379.4	17.3	335.0	14	16
Jul-18	17.2	344.3	16.0	320.2	25	6
Aug-18	14.6	293.4	12.8	256.9	16	15
Sep-18	16.5	320.1	13.9	269.9	14	16
Oct-18	16.0	321.4	11.0	220.1	13	18
Nov-18	19.9	386.3	18.6	360.9	5	25
Dec-18	17.7	355.6	14.2	284.1	17	14

Statistics for Major Wet Weather Events

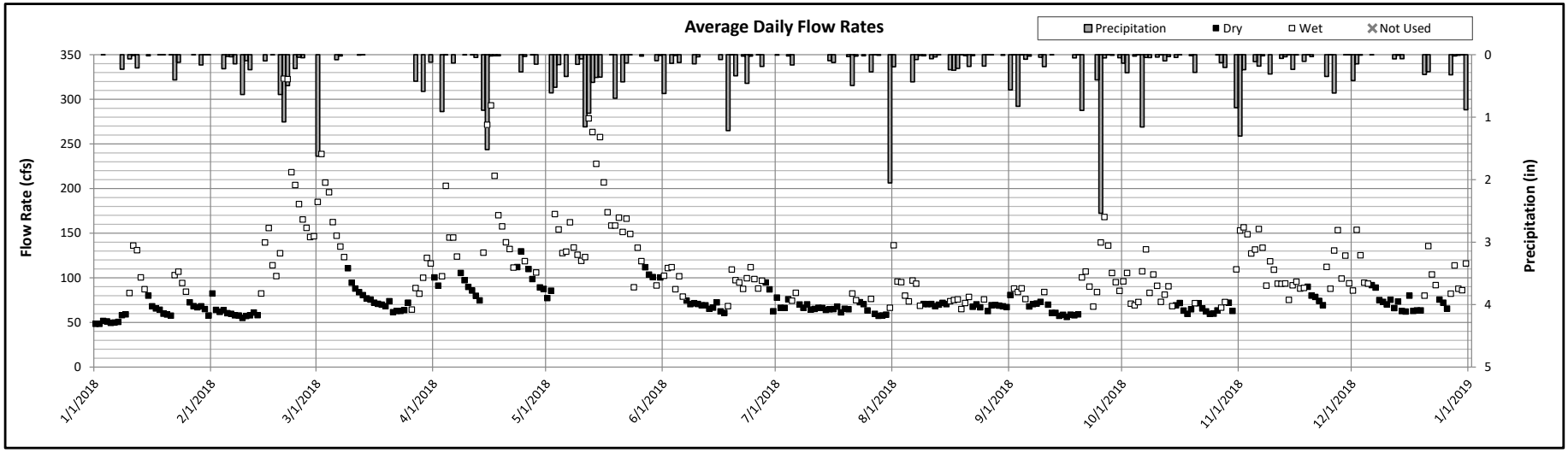
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	32.2	2/20/2018 19:35	15.1	2/20/2018 15:05
B	1.62	3/1/2018	3/1/2018	37.7	3/4/2018 3:35	14.2	3/1/2018 13:40
C	2.41	4/14/2018	4/15/2018	37.3	4/17/2018 3:40	14.8	4/15/2018 15:10
D	2.53	5/11/2018	5/13/2018	52.5	5/11/2018 7:30	17.4	5/13/2018 8:00
E	2.25	7/31/2018	8/1/2018	44.6	7/31/2018 17:55	≥17.9	8/1/2018 1:20 - 8/1/2018 3:00
F	2.94	9/24/2018	9/25/2018	44.7	9/24/2018 21:50	20.0	9/25/2018 21:00
G	2.39	10/31/2018	11/2/2018	31.2	11/1/2018 4:35	17.1	11/1/2018 22:40

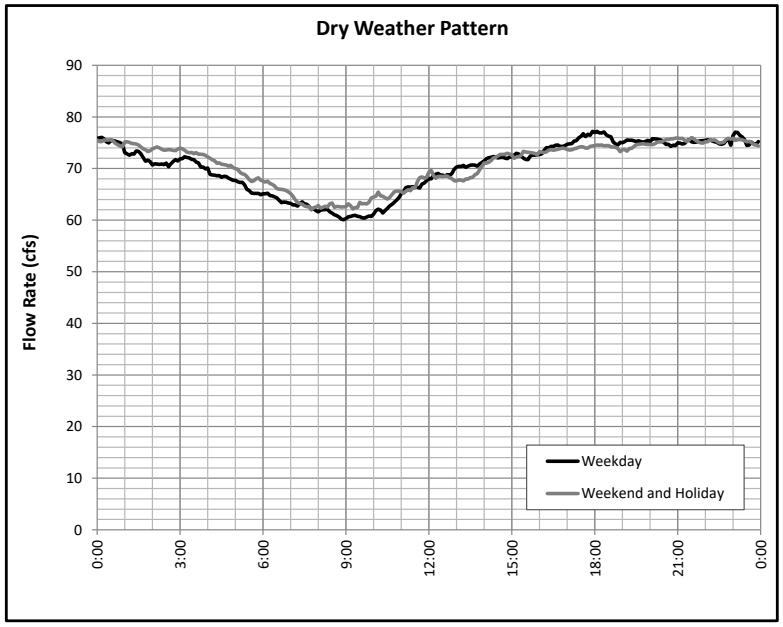
Downriver Sewage Disposal System

Meter Report

Meter: [IPS] + [TPS] | **Location: Main Influent Pump Station and Tunnel Pump Station** | **Period: 1/1/2018 through 12/31/2018**

Type: Magmeters | **System Meter Type: DWTF**





Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	72.4	1450.5	59.9	1200.8	22	9
Feb-18	120.8	2185.4	61.3	1109.1	13	15
Mar-18	105.0	2103.4	75.7	1517.3	17	14
Apr-18	130.4	2527.7	96.5	1870.3	14	16
May-18	148.9	2983.6	96.5	1934.2	6	25
Jun-18	84.7	1641.7	71.2	1380.3	14	16
Jul-18	67.9	1359.9	65.9	1319.9	25	6
Aug-18	76.0	1523.4	68.9	1380.1	16	15
Sep-18	83.4	1616.2	64.4	1249.2	14	16
Oct-18	77.7	1557.1	65.0	1302.5	13	18
Nov-18	107.9	2091.3	78.3	1518.9	5	25
Dec-18	86.1	1725.8	71.9	1439.7	17	14

Statistics for Major Wet Weather Events

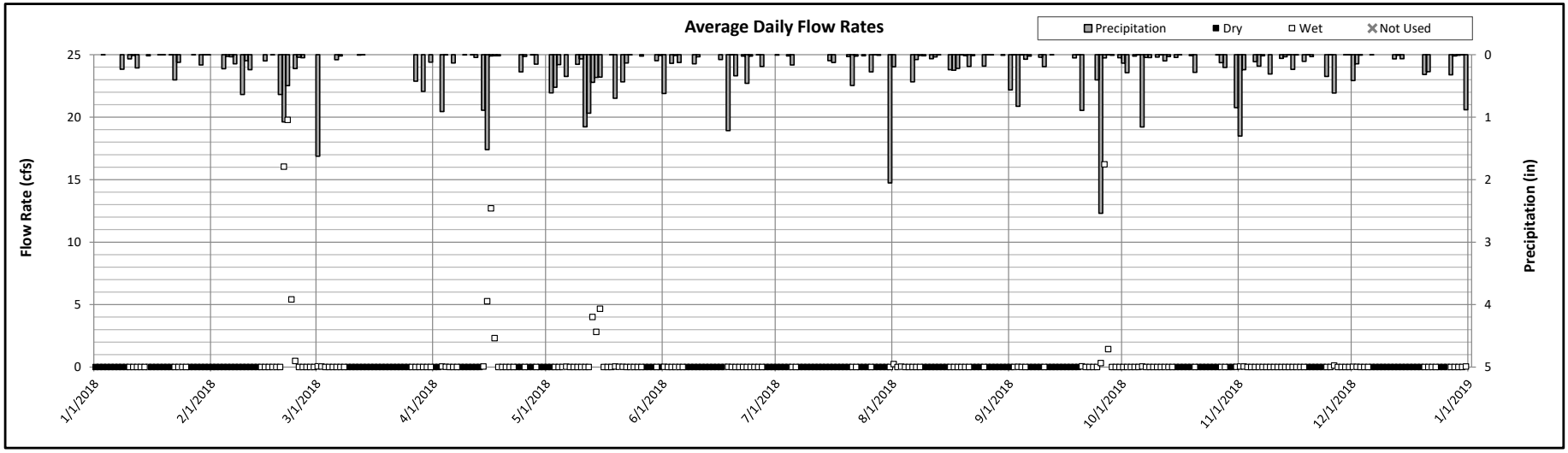
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	390.0	2/20/2018 5:15	25.9	2/20/2018 15:45
B	1.62	3/1/2018	3/1/2018	274.8	3/2/2018 8:20	22.4	3/1/2018 13:40
C	2.41	4/14/2018	4/15/2018	371.9	4/15/2018 15:55	25.0	4/15/2018 18:50
D	2.53	5/11/2018	5/13/2018	332.7	5/12/2018 14:55	≥25.8	5/13/2018 8:10 - 5/13/2018 9:05
E	2.25	7/31/2018	8/1/2018	223.2	8/1/2018 2:45	≥25.0	8/1/2018 1:20 - 8/1/2018 3:40
F	2.94	9/24/2018	9/25/2018	190.0	9/25/2018 21:25	≥26.3	9/25/2018 20:45 - 9/25/2018 23:50
G	2.39	10/31/2018	11/2/2018	202.9	11/1/2018 19:00	25.9	11/1/2018 22:30

Downriver Sewage Disposal System

Meter Report

Meter: TSO | **Location: At Pelham Basin** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Tunnel System Flow Meter**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	1.5	27.0	0.0	0.0	13	15
Mar-18	0.0	0.1	0.0	0.0	17	14
Apr-18	0.7	13.2	0.0	0.0	14	16
May-18	0.4	7.5	0.0	0.0	6	25
Jun-18	0.0	0.0	0.0	0.0	14	16
Jul-18	0.0	0.0	0.0	0.0	25	6
Aug-18	0.0	0.2	0.0	0.0	16	15
Sep-18	0.6	11.7	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.0	0.1	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

Statistics for Major Wet Weather Events

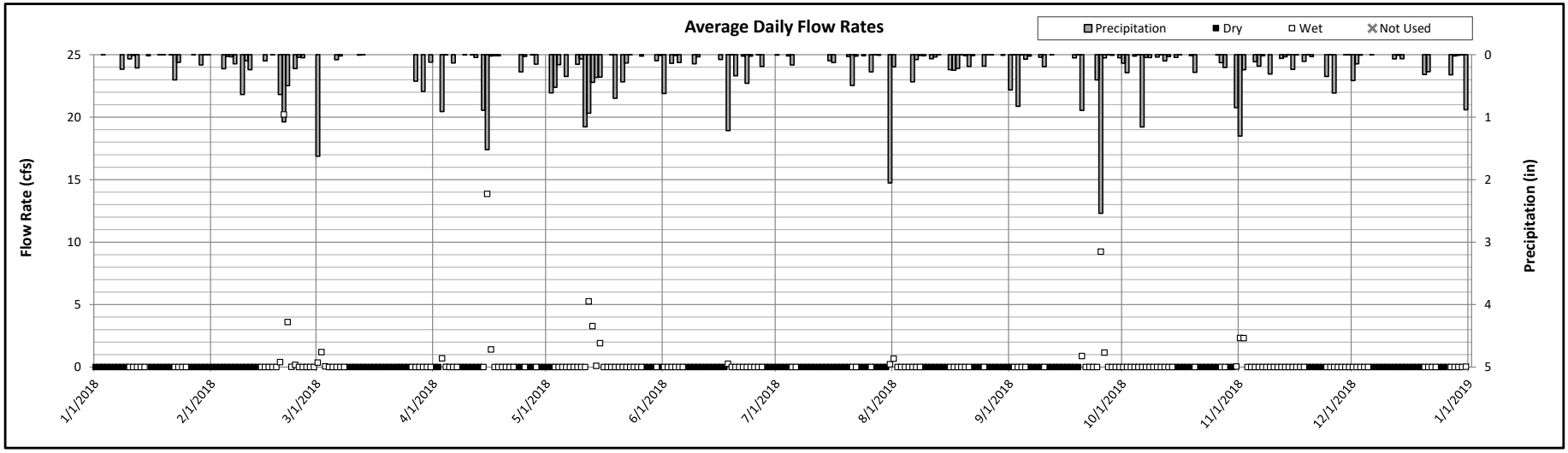
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	36.5	2/20/2018 15:30	2.6	2/20/2018 15:40
B	1.62	3/1/2018	3/1/2018	0.3	3/2/2018 15:25	0.3	3/1/2018 13:45
C	2.41	4/14/2018	4/15/2018	33.7	4/15/2018 20:35	2.5	4/15/2018 21:00
D	2.53	5/11/2018	5/13/2018	12.3	5/13/2018 14:30	1.7	5/13/2018 14:30
E	2.25	7/31/2018	8/1/2018	2.2	8/1/2018 0:45	0.9	8/1/2018 1:10
F	2.94	9/24/2018	9/25/2018	1.4	9/25/2018 22:10	0.8	9/25/2018 23:00
G	2.39	10/31/2018	11/2/2018	0.1	11/1/2018 21:05	0.4	11/1/2018 21:30

Downriver Sewage Disposal System

Meter Report

Meter: APO-1 | **Location: Belmont and Rosedale** | **Period: 1/1/2018 through 12/31/2018**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	0.9	15.8	0.0	0.0	13	15
Mar-18	0.1	1.0	0.0	0.0	17	14
Apr-18	0.5	10.3	0.0	0.0	14	16
May-18	0.3	6.8	0.0	0.0	6	25
Jun-18	0.0	0.2	0.0	0.0	14	16
Jul-18	0.0	0.1	0.0	0.0	25	6
Aug-18	0.0	0.4	0.0	0.0	16	15
Sep-18	0.4	7.3	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.2	3.0	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

Statistics for Major Wet Weather Events

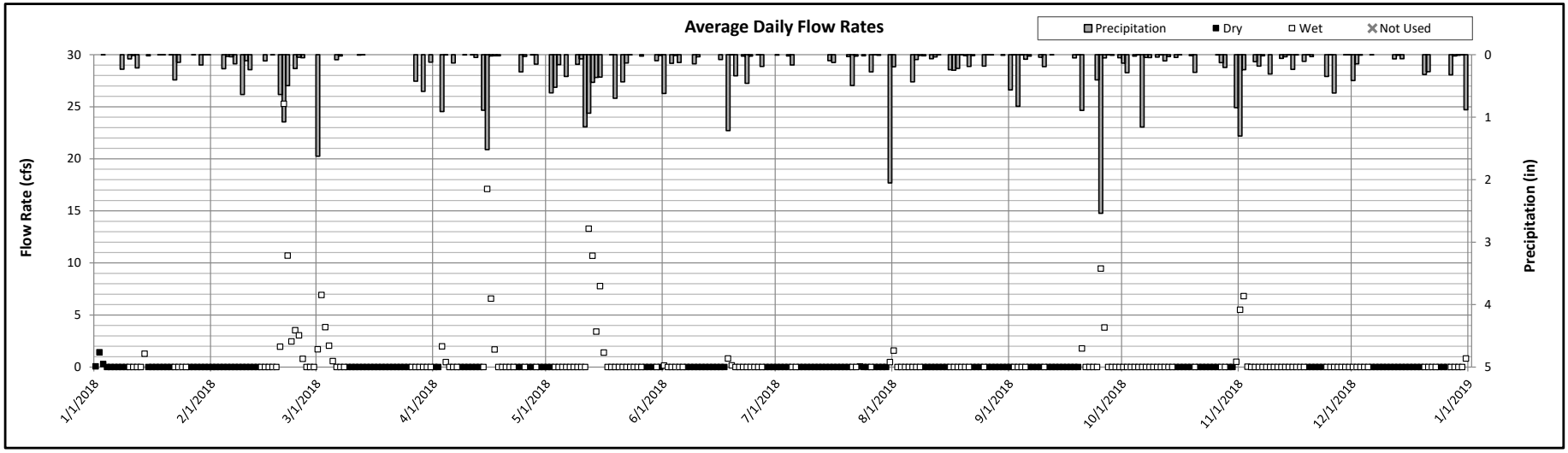
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	56.5	2/20/2018 15:05	≥10.2	2/20/2018 4:15 - 2/20/2018 17:25
B	1.62	3/1/2018	3/1/2018	3.1	3/2/2018 15:40	9.2	3/1/2018 20:50
C	2.41	4/14/2018	4/15/2018	56.6	4/15/2018 15:45	≥10.2	4/15/2018 15:05 -4/15/2018 19:40
D	2.53	5/11/2018	5/13/2018	22.0	5/12/2018 11:50	10.2	5/12/2018 1:05
E	2.25	7/31/2018	8/1/2018	-	-	-	-
F	2.94	9/24/2018	9/25/2018	56.5	9/25/2018 20:10	≥10.2	9/25/2018 20:05 - 9/25/2018 23:25
G	2.39	10/31/2018	11/2/2018	12.8	11/1/2018 22:05	9.5	11/1/2018 22:30

Downriver Sewage Disposal System

Meter Report

Meter: APO-2 | **Location: Belmont and Quandt** | **Period: 1/1/2018 through 12/31/2018**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.1	2.0	0.1	1.6	22	9
Feb-18	1.7	30.9	0.0	0.0	13	15
Mar-18	0.5	9.7	0.0	0.0	17	14
Apr-18	0.9	18.0	0.0	0.0	14	16
May-18	1.2	23.6	0.0	0.0	6	25
Jun-18	0.0	0.7	0.0	0.0	14	16
Jul-18	0.0	0.3	0.0	0.0	25	6
Aug-18	0.1	1.0	0.0	0.0	16	15
Sep-18	0.5	9.7	0.0	0.0	14	16
Oct-18	0.0	0.3	0.0	0.0	13	18
Nov-18	0.4	8.0	0.0	0.0	5	25
Dec-18	0.0	0.5	0.0	0.0	17	14

Statistics for Major Wet Weather Events

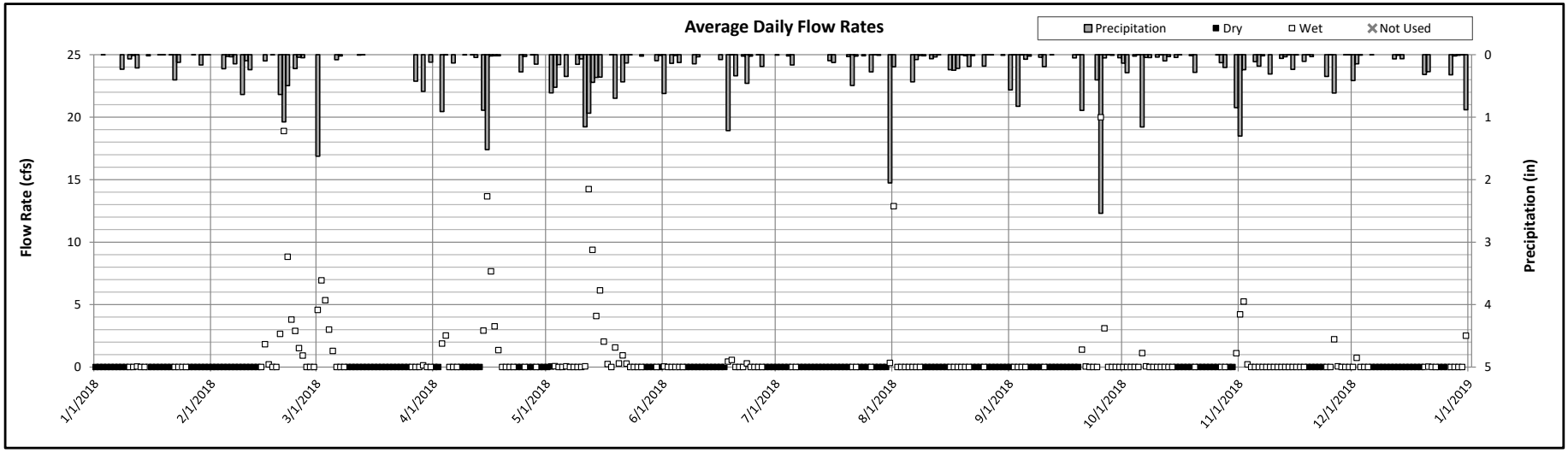
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	47.0	2/20/2018 3:50	≥4.9	2/20/2018 3:50 - 2/20/2018 17:05
B	1.62	3/1/2018	3/1/2018	10.2	3/2/2018 15:45	3.8	3/1/2018 21:05
C	2.41	4/14/2018	4/15/2018	46.7	4/15/2018 15:05	4.9	4/15/2018 15:15
D	2.53	5/11/2018	5/13/2018	41.5	5/12/2018 11:25	4.8	5/12/2018 11:35
E	2.25	7/31/2018	8/1/2018	18.9	8/1/2018 2:30	4.6	7/31/2018 23:35
F	2.94	9/24/2018	9/25/2018	47.0	9/25/2018 19:45	≥4.5	9/25/2018 19:40 - 9/25/2018 23:15
G	2.39	10/31/2018	11/2/2018	22.0	11/1/2018 21:30	4.1	11/1/2018 21:55

Downriver Sewage Disposal System

Meter Report

Meter: CHPO | **Location: Pelham Road North of Haskell** | **Period: 1/1/2018 through 12/31/2018**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	1.5	26.8	0.0	0.0	13	15
Mar-18	0.7	13.7	0.0	0.0	17	14
Apr-18	1.1	21.5	0.0	0.0	14	16
May-18	1.3	25.5	0.0	0.1	6	25
Jun-18	0.0	0.9	0.0	0.0	14	16
Jul-18	0.0	0.2	0.0	0.0	25	6
Aug-18	0.4	8.3	0.0	0.0	16	15
Sep-18	0.8	15.8	0.0	0.0	14	16
Oct-18	0.1	1.5	0.0	0.0	13	18
Nov-18	0.4	7.7	0.0	0.0	5	25
Dec-18	0.1	2.1	0.0	0.0	17	14

Statistics for Major Wet Weather Events

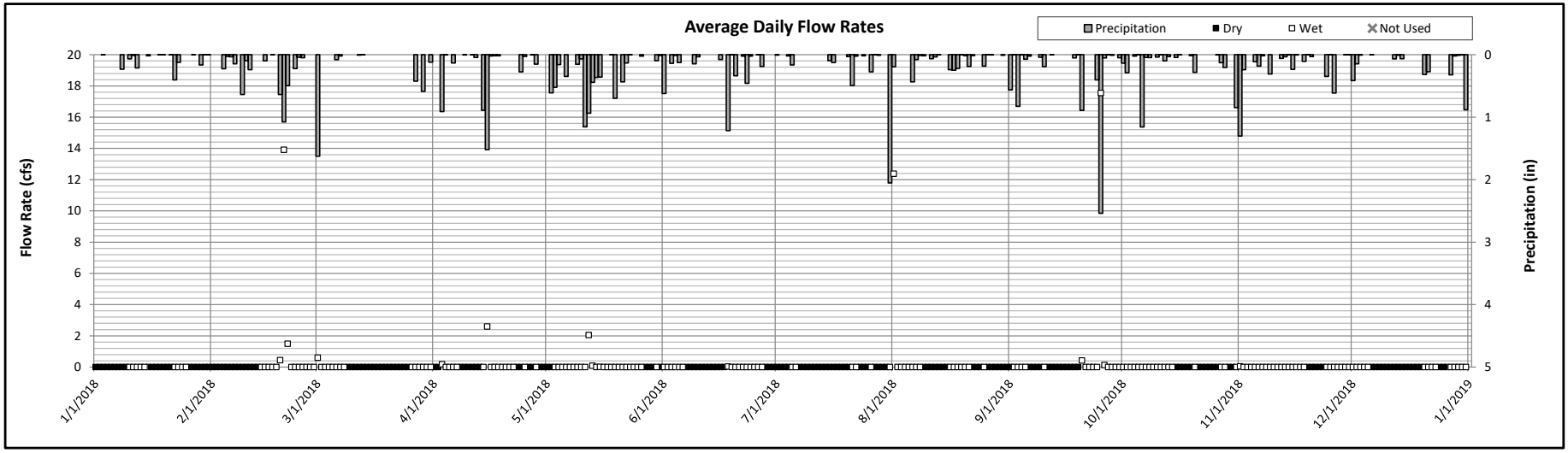
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	72.8	2/20/2018 15:30	5.7	2/20/2018 16:00
B	1.62	3/1/2018	3/1/2018	9.9	3/1/2018 12:30	4.1	3/1/2018 12:50
C	2.41	4/14/2018	4/15/2018	32.2	4/15/2018 20:20	4.9	4/15/2018 20:40
D	2.53	5/11/2018	5/13/2018	27.4	5/12/2018 13:10	4.8	5/12/2018 13:25
E	2.25	7/31/2018	8/1/2018	129.7	8/1/2018 1:15	8.1	8/1/2018 1:45
F	2.94	9/24/2018	9/25/2018	162.8	9/25/2018 20:40	12.3	9/25/2018 21:00
G	2.39	10/31/2018	11/2/2018	10.6	11/1/2018 21:50	4.2	11/1/2018 22:15

Downriver Sewage Disposal System

Meter Report

Meter: CPO | **Location: Pelham Road South of R.R.** | **Period: 1/1/2018 through 12/31/2018**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	0.6	10.2	0.0	0.0	13	15
Mar-18	0.0	0.4	0.0	0.0	17	14
Apr-18	0.1	1.8	0.0	0.0	14	16
May-18	0.1	1.4	0.0	0.0	6	25
Jun-18	0.0	0.0	0.0	0.0	14	16
Jul-18	0.0	0.0	0.0	0.0	25	6
Aug-18	0.4	8.0	0.0	0.0	16	15
Sep-18	0.6	11.7	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.0	0.0	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

Statistics for Major Wet Weather Events

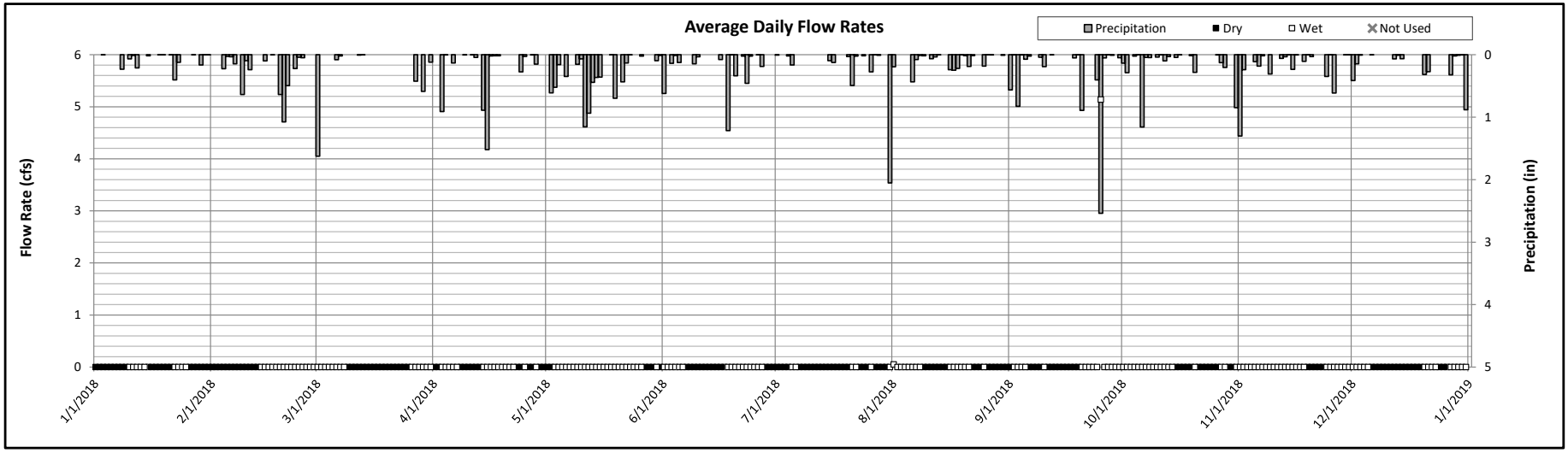
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	78.0	2/20/2018 5:25	5.8	2/20/2018 5:55
B	1.62	3/1/2018	3/1/2018	6.0	3/1/2018 12:45	4.2	3/1/2018 13:10
C	2.41	4/14/2018	4/15/2018	8.0	4/15/2018 19:10	4.3	4/15/2018 19:35
D	2.53	5/11/2018	5/13/2018	13.0	5/12/2018 12:00	4.4	5/12/2018 12:15
E	2.25	7/31/2018	8/1/2018	116.3	8/1/2018 1:45	7.8	8/1/2018 2:10
F	2.94	9/24/2018	9/25/2018	145.1	9/25/2018 21:25	≥10.3	9/25/2018 21:05 - 9/25/2018 22:20
G	2.39	10/31/2018	11/2/2018	0.7	11/1/2018 22:15	4.0	11/1/2018 22:35

Downriver Sewage Disposal System

Meter Report

Meter: PDO | **Location: Allen Road and Goddard** | **Period: 1/1/2018 through 12/31/2018**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	0.0	0.0	0.0	0.0	13	15
Mar-18	0.0	0.0	0.0	0.0	17	14
Apr-18	0.0	0.0	0.0	0.0	14	16
May-18	0.0	0.0	0.0	0.0	6	25
Jun-18	0.0	0.0	0.0	0.0	14	16
Jul-18	0.0	0.0	0.0	0.0	25	6
Aug-18	0.0	0.0	0.0	0.0	16	15
Sep-18	0.2	3.3	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.0	0.0	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

Statistics for Major Wet Weather Events

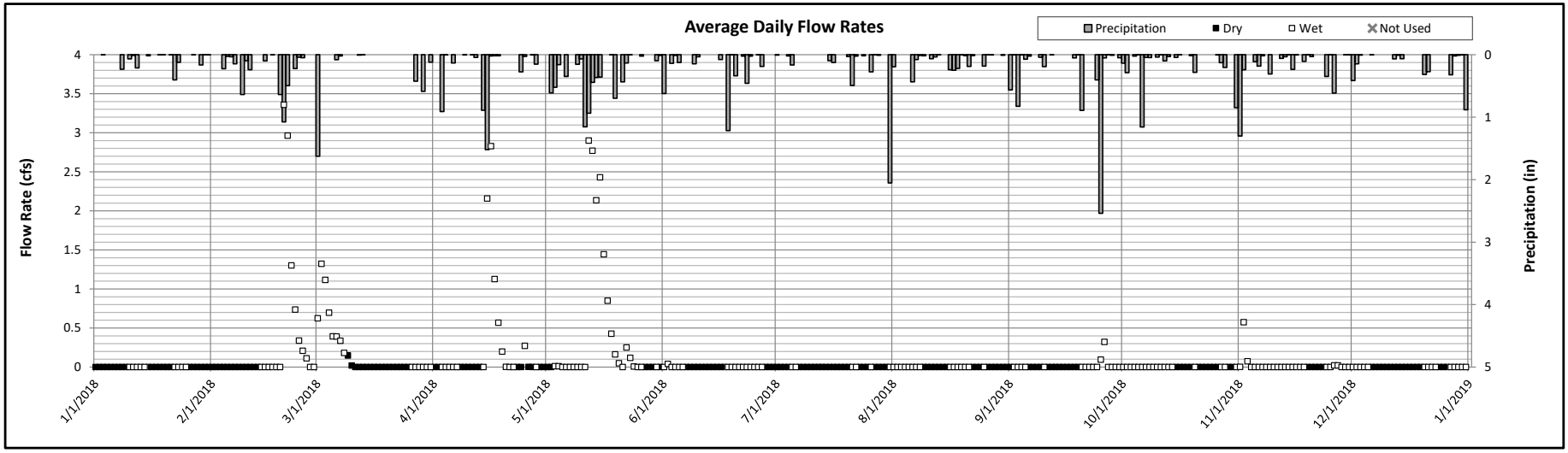
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	0.0	-	1.1	2/20/2018 7:25
B	1.62	3/1/2018	3/1/2018	0.0	-	0.9	3/1/2018 15:50
C	2.41	4/14/2018	4/15/2018	0.0	-	1.2	4/15/2018 19:30
D	2.53	5/11/2018	5/13/2018	0.0	-	1.2	5/12/2018 12:20
E	2.25	7/31/2018	8/1/2018	1.2	8/1/2018 1:30	4.2	8/1/2018 2:00
F	2.94	9/24/2018	9/25/2018	106.7	9/25/2018 20:55	7.1	9/25/2018 21:10
G	2.39	10/31/2018	11/2/2018	0.0	-	0.8	10/31/2018 1:35

Downriver Sewage Disposal System

Meter Report

Meter: ER-2 | **Location: Eureka Road and Inkster** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Tunnel System Flow Meter**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	0.3	5.8	0.0	0.0	13	15
Mar-18	0.2	3.4	0.0	0.2	17	14
Apr-18	0.2	4.6	0.0	0.0	14	16
May-18	0.4	8.8	0.0	0.0	6	25
Jun-18	0.0	0.0	0.0	0.0	14	16
Jul-18	0.0	0.0	0.0	0.0	25	6
Aug-18	0.0	0.0	0.0	0.0	16	15
Sep-18	0.0	0.3	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.0	0.4	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

Statistics for Major Wet Weather Events

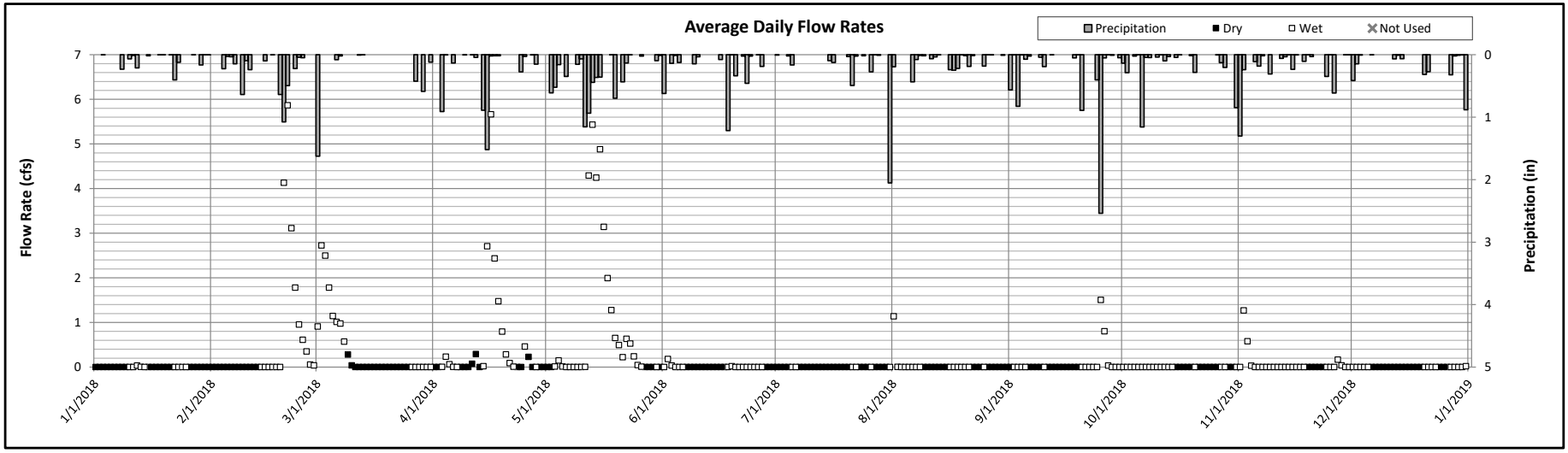
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	5.9	2/20/2018 17:00	1.2	2/20/2018 18:00
B	1.62	3/1/2018	3/1/2018	2.2	3/1/2018 17:35	0.8	3/1/2018 18:05
C	2.41	4/14/2018	4/15/2018	7.5	4/15/2018 19:35	1.3	4/15/2018 20:20
D	2.53	5/11/2018	5/13/2018	5.3	5/12/2018 17:30	1.1	5/12/2018 18:20
E	2.25	7/31/2018	8/1/2018	0.0	8/1/2018 21:20	0.3	8/1/2018 23:00
F	2.94	9/24/2018	9/25/2018	0.6	9/25/2018 16:25	0.5	9/25/2018 16:50
G	2.39	10/31/2018	11/2/2018	0.9	11/2/2018 2:25	0.5	11/2/2018 3:05

Downriver Sewage Disposal System

Meter Report

Meter: ER-1 | **Location: Allen Road and Eureka Road** | **Period: 1/1/2018 through 12/31/2018**

Type: ADS Triton+ | **System Meter Type: Tunnel System Flow Meter**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	0.6	10.9	0.0	0.0	13	15
Mar-18	0.4	7.7	0.0	0.4	17	14
Apr-18	0.5	9.6	0.0	0.8	14	16
May-18	0.9	18.2	0.0	0.0	6	25
Jun-18	0.0	0.1	0.0	0.0	14	16
Jul-18	0.0	0.0	0.0	0.0	25	6
Aug-18	0.0	0.7	0.0	0.0	16	15
Sep-18	0.1	1.5	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.1	1.3	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

Statistics for Major Wet Weather Events

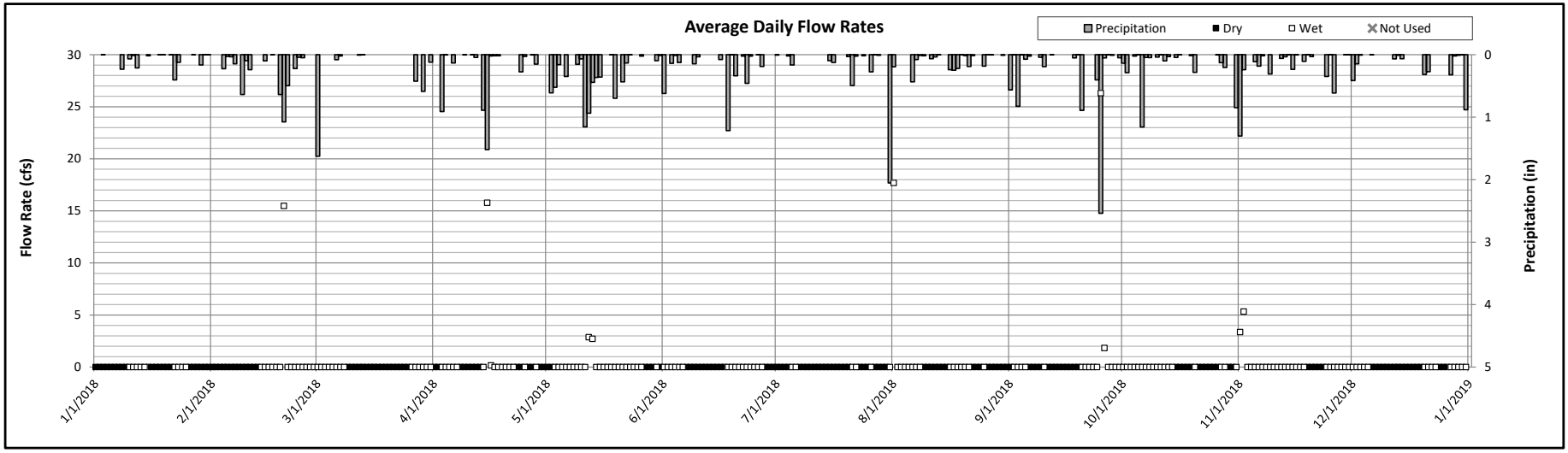
Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	8.2	2/20/2018 18:20	1.8	2/20/2018 16:05
B	1.62	3/1/2018	3/1/2018	4.6	3/1/2018 19:20	0.6	3/1/2018 19:55
C	2.41	4/14/2018	4/15/2018	12.2	4/15/2018 22:00	1.3	4/15/2018 20:10
D	2.53	5/11/2018	5/13/2018	8.0	5/12/2018 18:40	0.9	5/12/2018 13:35
E	2.25	7/31/2018	8/1/2018	14.4	8/1/2018 1:05	6.6	8/1/2018 1:55
F	2.94	9/24/2018	9/25/2018	19.9	9/25/2018 20:25	8.3	9/25/2018 21:05
G	2.39	10/31/2018	11/2/2018	2.0	11/2/2018 5:15	0.4	11/2/2018 5:25

Downriver Sewage Disposal System

Meter Report

Meter: PM-1 | **Location: Pennsylvania Ave. at Fordline** | **Period: 1/1/2018 through 12/31/2018**

Type: Telog 3307 | **System Meter Type: Tunnel Diversion Chamber Level Sensor**



Dry weather pattern not applicable to this meter

Monthly Statistics

Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-18	0.0	0.0	0.0	0.0	22	9
Feb-18	0.6	10.0	0.0	0.0	13	15
Mar-18	0.0	0.0	0.0	0.0	17	14
Apr-18	0.5	10.3	0.0	0.0	14	16
May-18	0.2	3.6	0.0	0.0	6	25
Jun-18	0.0	0.0	0.0	0.0	14	16
Jul-18	0.0	0.0	0.0	0.0	25	6
Aug-18	0.6	11.4	0.0	0.0	16	15
Sep-18	0.9	18.2	0.0	0.0	14	16
Oct-18	0.0	0.0	0.0	0.0	13	18
Nov-18	0.3	5.6	0.0	0.0	5	25
Dec-18	0.0	0.0	0.0	0.0	17	14

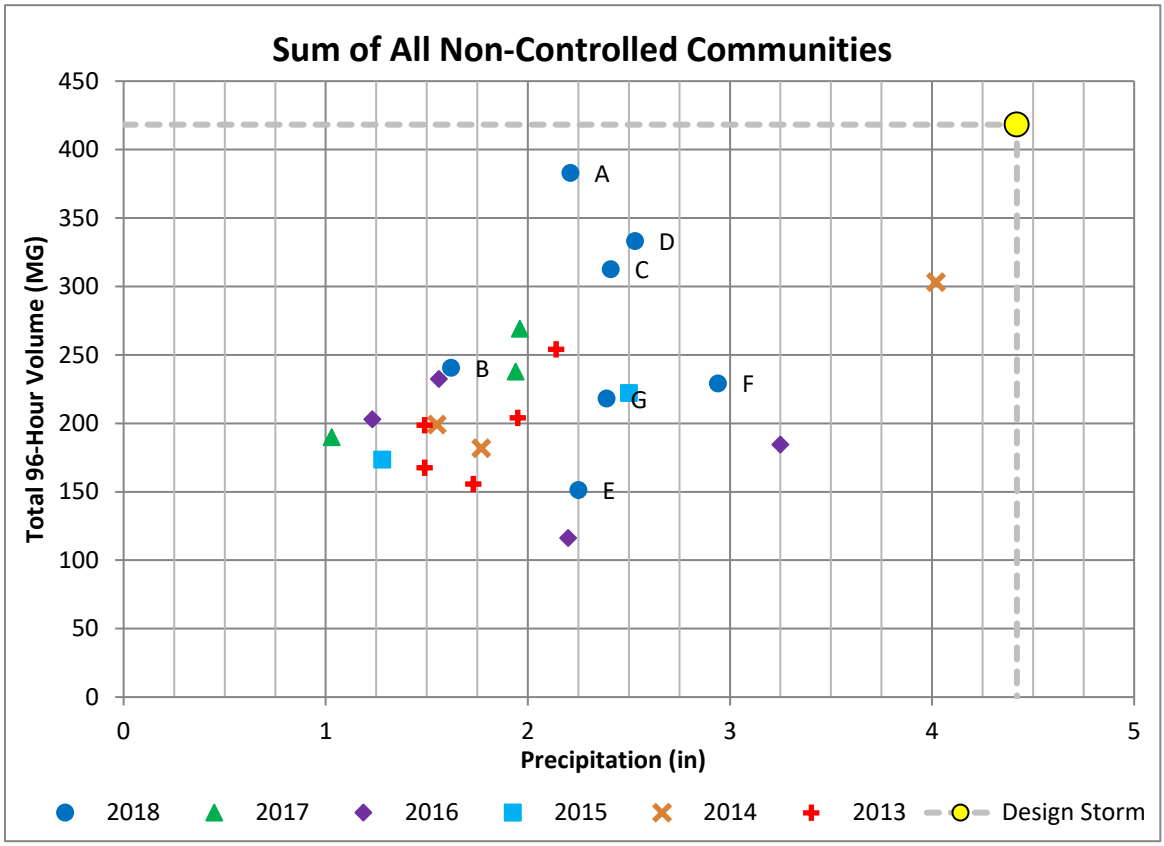
Statistics for Major Wet Weather Events

Event No.	Rainfall (in)	Start Date	End Date	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
A	2.21	2/19/2018	2/21/2018	76.2	2/20/2018 15:05	8.9	2/20/2018 15:10
B	1.62	3/1/2018	3/1/2018	0.0	-	6.2	3/1/2018 14:35
C	2.41	4/14/2018	4/15/2018	56.3	4/15/2018 14:55	8.7	4/15/2018 15:25
D	2.53	5/11/2018	5/13/2018	46.3	5/13/2018 7:15	9.0	5/13/2018 8:10
E	2.25	7/31/2018	8/1/2018	206.5	8/1/2018 1:35	15.3	8/1/2018 2:05
F	2.94	9/24/2018	9/25/2018	213.2	9/25/2018 21:05	16.3	9/25/2018 21:10
G	2.39	10/31/2018	11/2/2018	50.7	11/1/2018 22:25	8.7	11/1/2018 22:55

Appendix D

Major Storm Event Wet Weather Summary Figures

Figure D-1
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

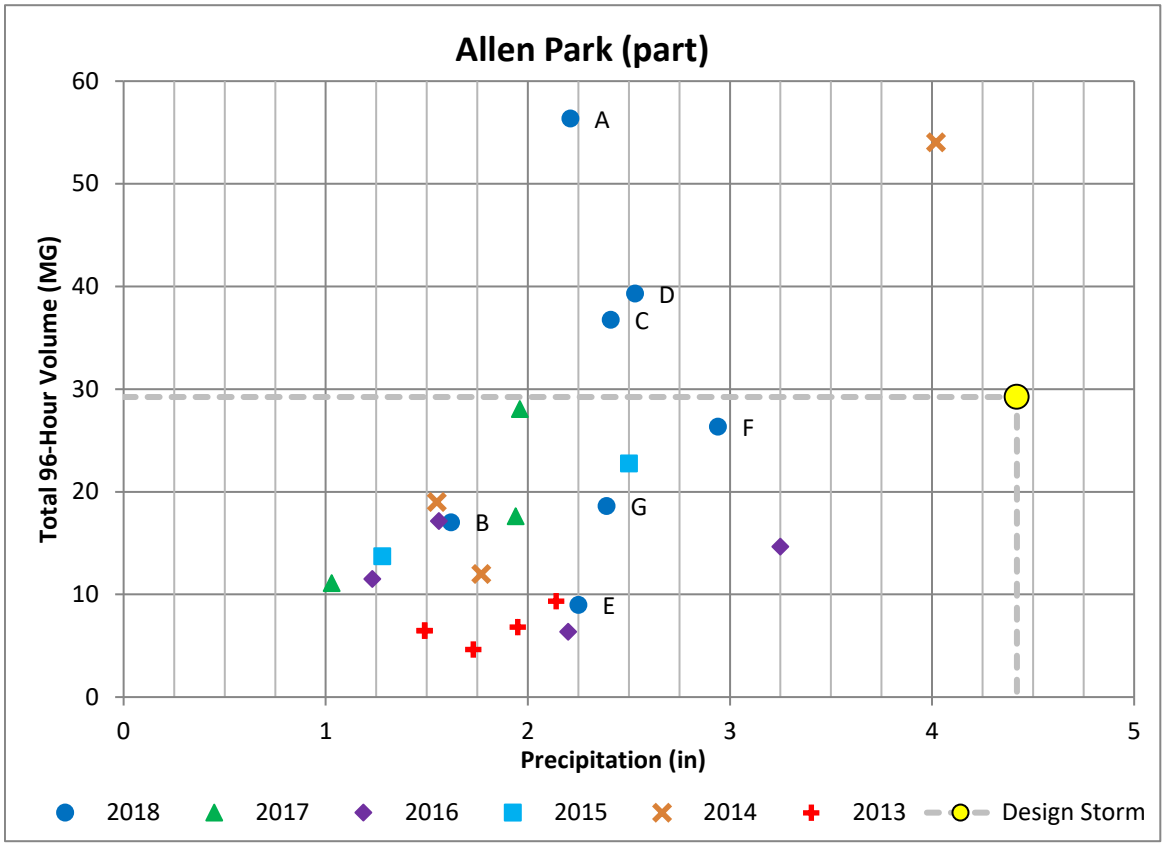


2018 Major Storm Event	Sum of All Non-Controlled Communities	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	383.06
B	1.62	240.58
C	2.41	312.53
D	2.53	333.10
E	2.25	151.20
F	2.94	229.20
G	2.39	218.15
Design Storm	4.42	418.21

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-2
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

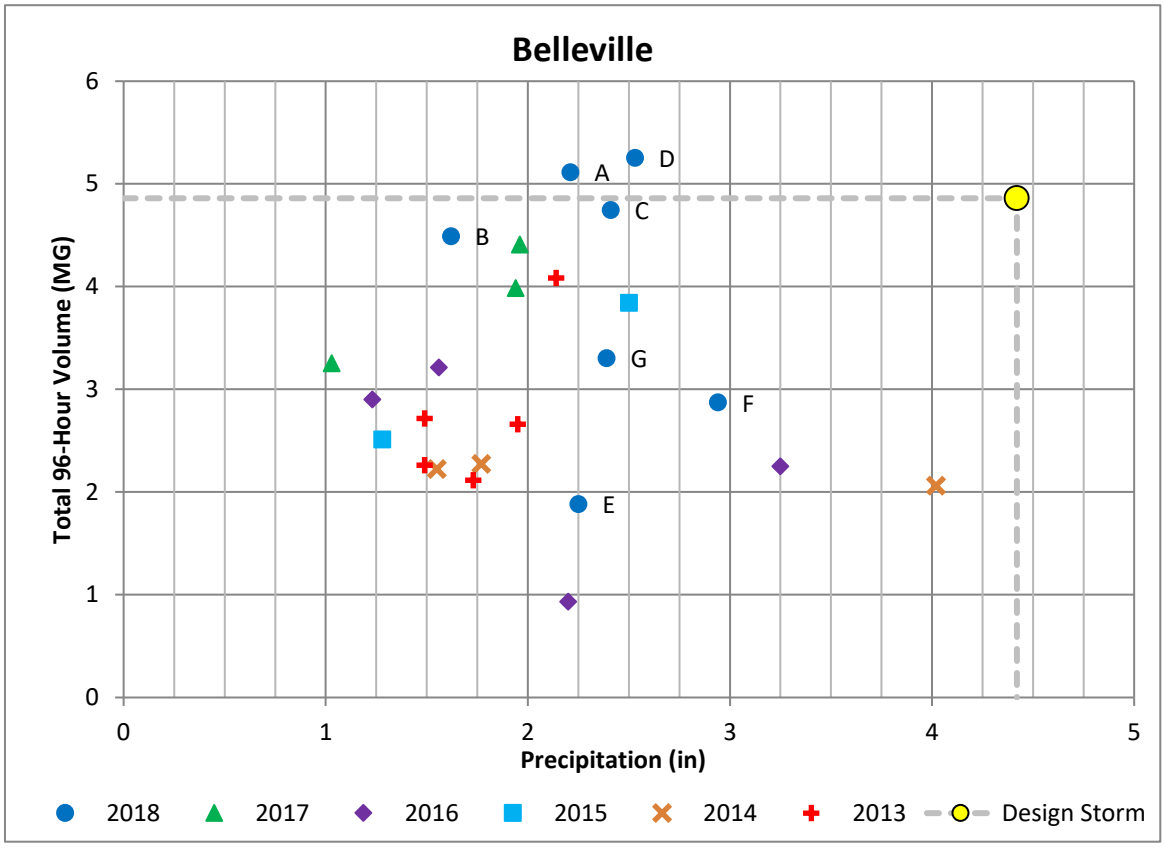


2018 Major Storm Event	Allen Park (part)	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	56.35
B	1.62	17.04
C	2.41	36.76
D	2.53	39.31
E	2.25	8.98
F	2.94	26.34
G	2.39	18.62
Design Storm	4.42	29.23

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-3
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

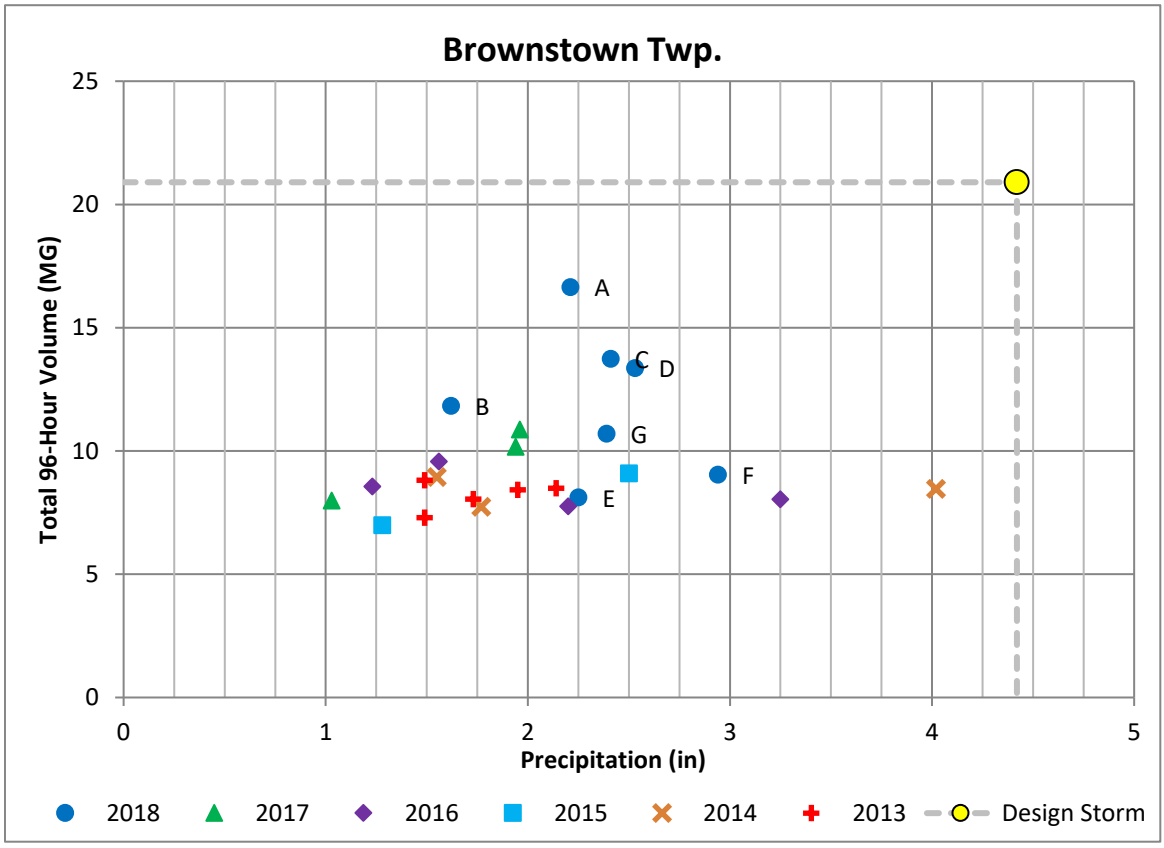


2018 Major Storm Event	Belleville	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	5.11
B	1.62	4.49
C	2.41	4.75
D	2.53	5.25
E	2.25	1.88
F	2.94	2.87
G	2.39	3.30
Design Storm	4.42	4.86

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-4
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

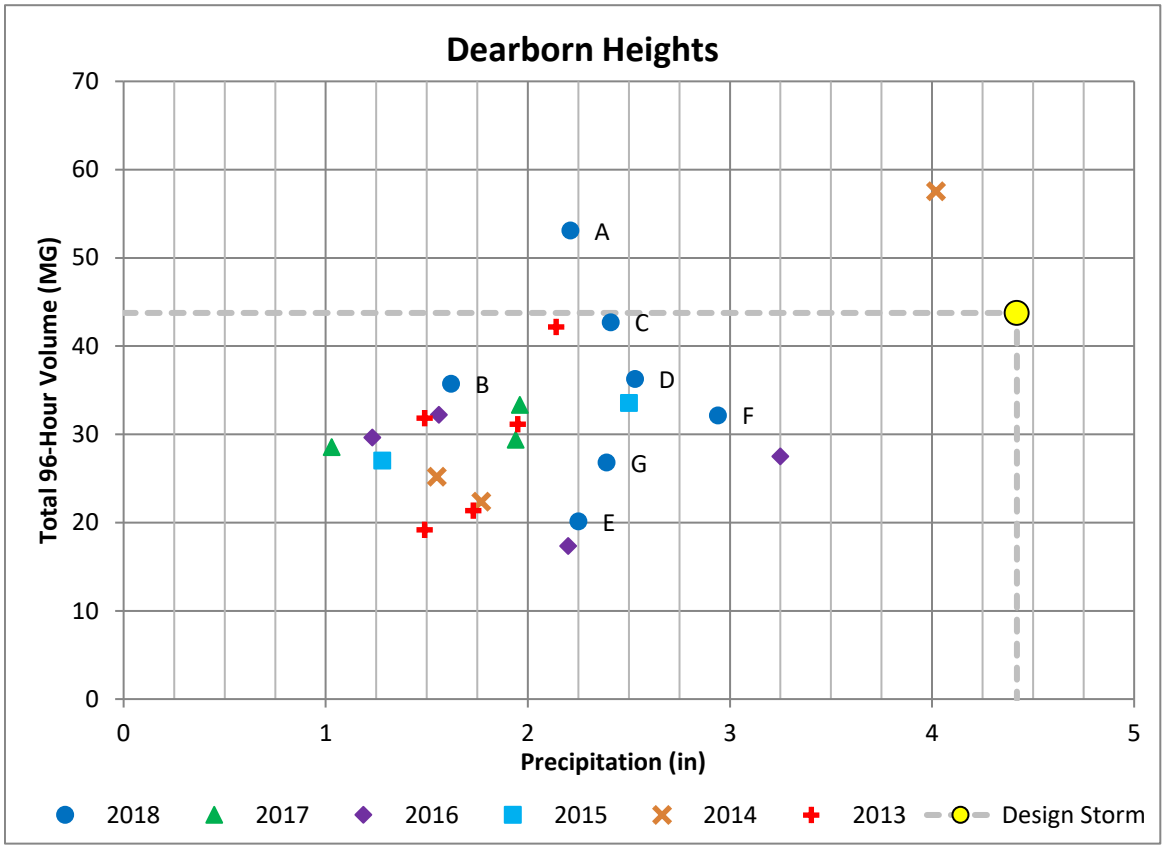


2018 Major Storm Event	Brownstown Twp.	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	16.65
B	1.62	11.83
C	2.41	13.74
D	2.53	13.36
E	2.25	8.11
F	2.94	9.04
G	2.39	10.70
Design Storm	4.42	20.90

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-5
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

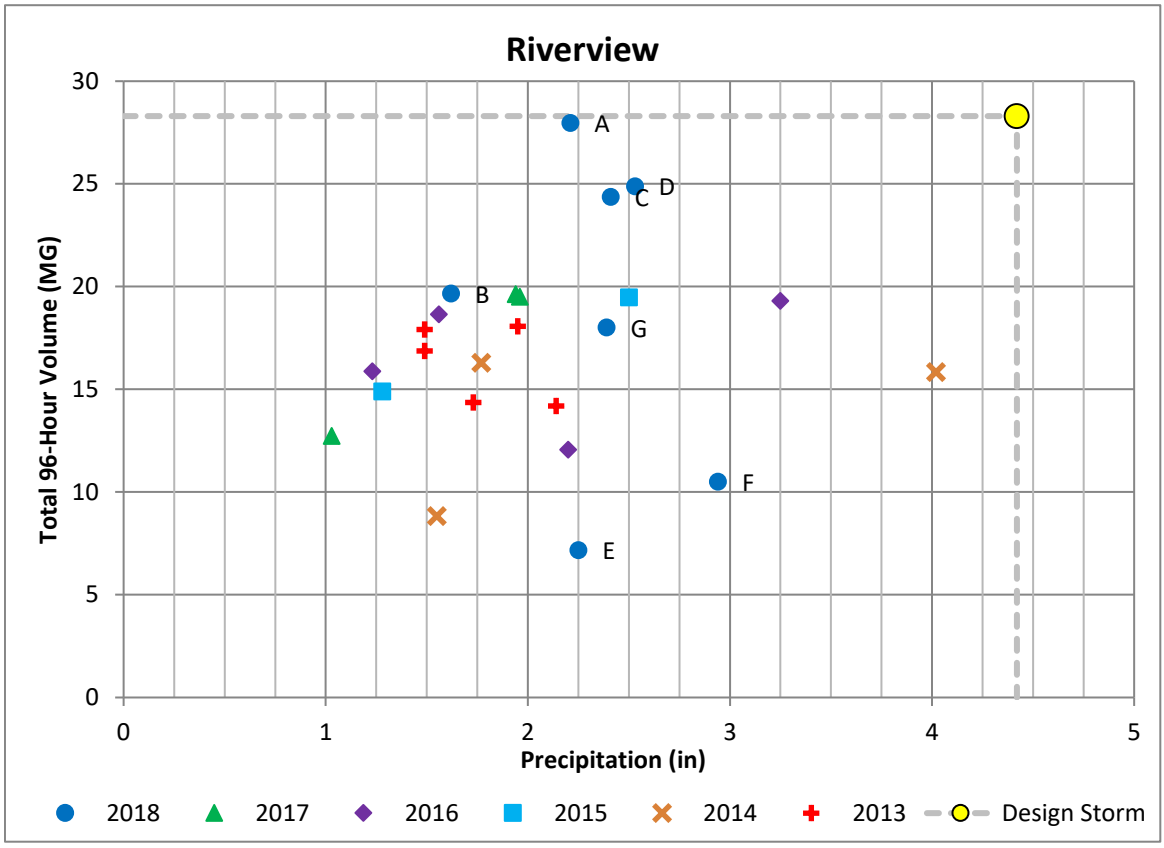


2018 Major Storm Event	Dearborn Heights	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	53.10
B	1.62	35.72
C	2.41	42.69
D	2.53	36.29
E	2.25	20.13
F	2.94	32.16
G	2.39	26.80
Design Storm	4.42	43.76

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-6
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

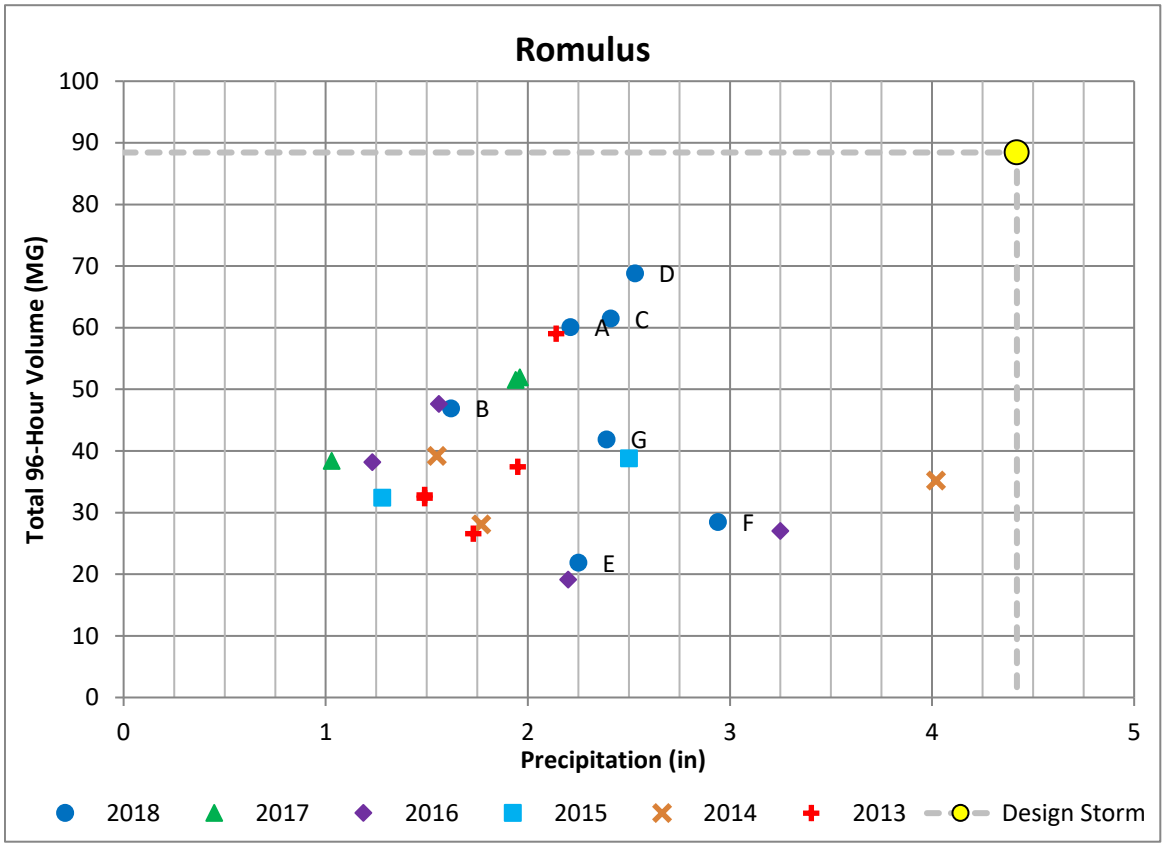


2018 Major Storm Event	Riverview	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	27.97
B	1.62	19.66
C	2.41	24.38
D	2.53	24.89
E	2.25	7.18
F	2.94	10.51
G	2.39	18.01
Design Storm	4.42	28.30

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-7
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

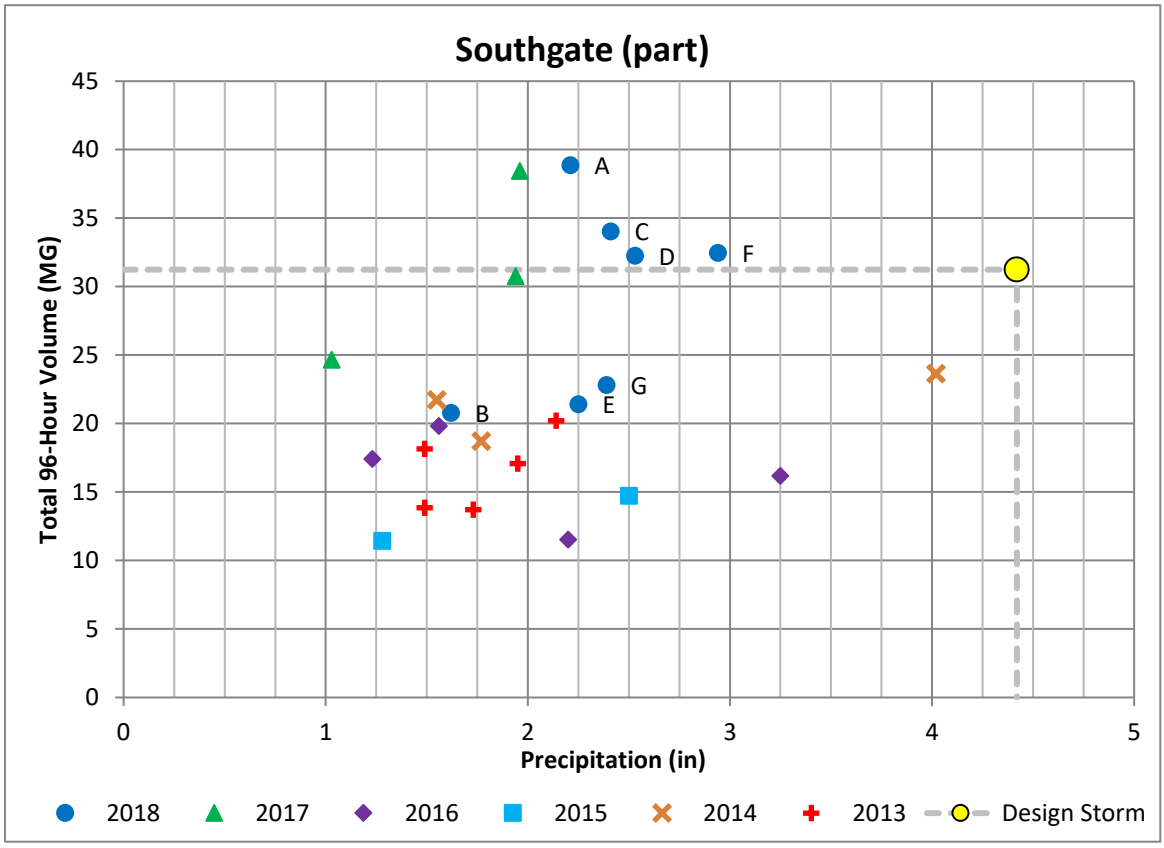


2018 Major Storm Event	Romulus	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	60.07
B	1.62	46.91
C	2.41	61.49
D	2.53	68.83
E	2.25	21.89
F	2.94	28.48
G	2.39	41.89
Design Storm	4.42	88.43

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-8
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

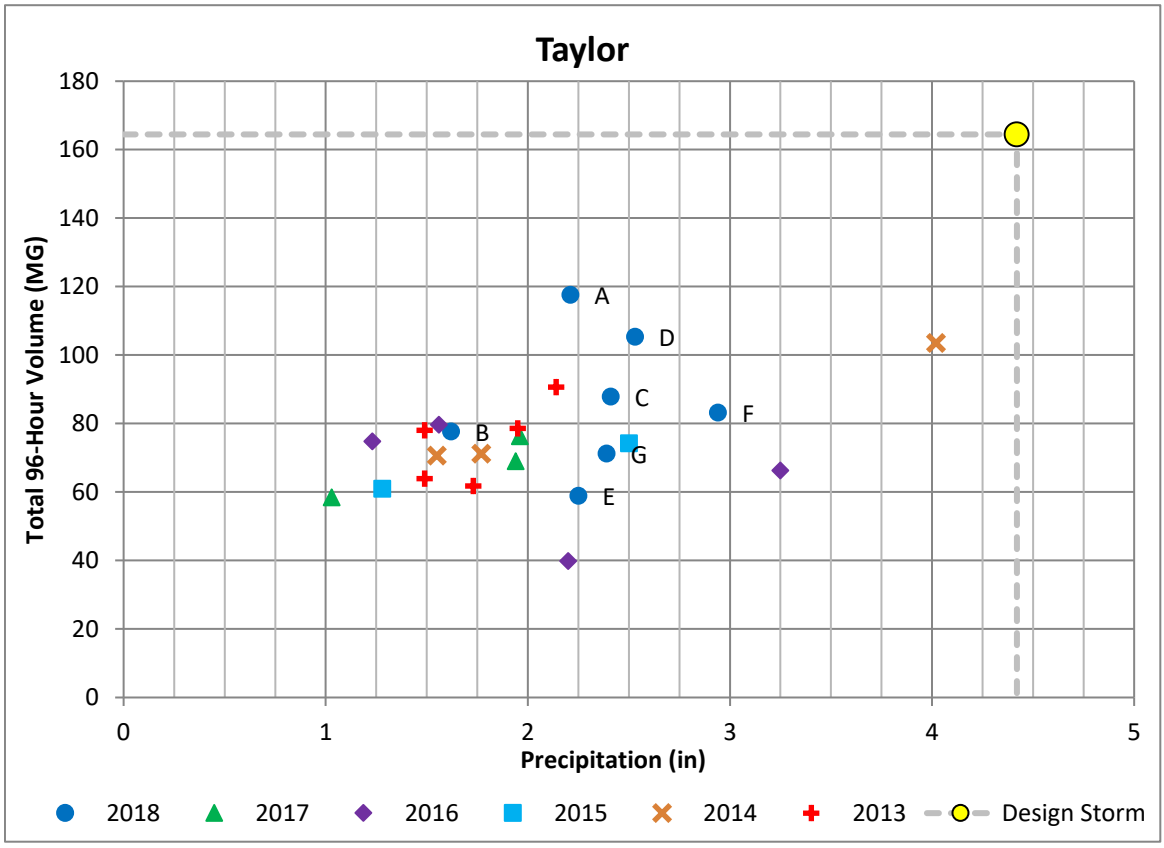


2018 Major Storm Event	Southgate (part)	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	38.86
B	1.62	20.78
C	2.41	34.04
D	2.53	32.25
E	2.25	21.41
F	2.94	32.45
G	2.39	22.82
Design Storm	4.42	31.24

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-9
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018

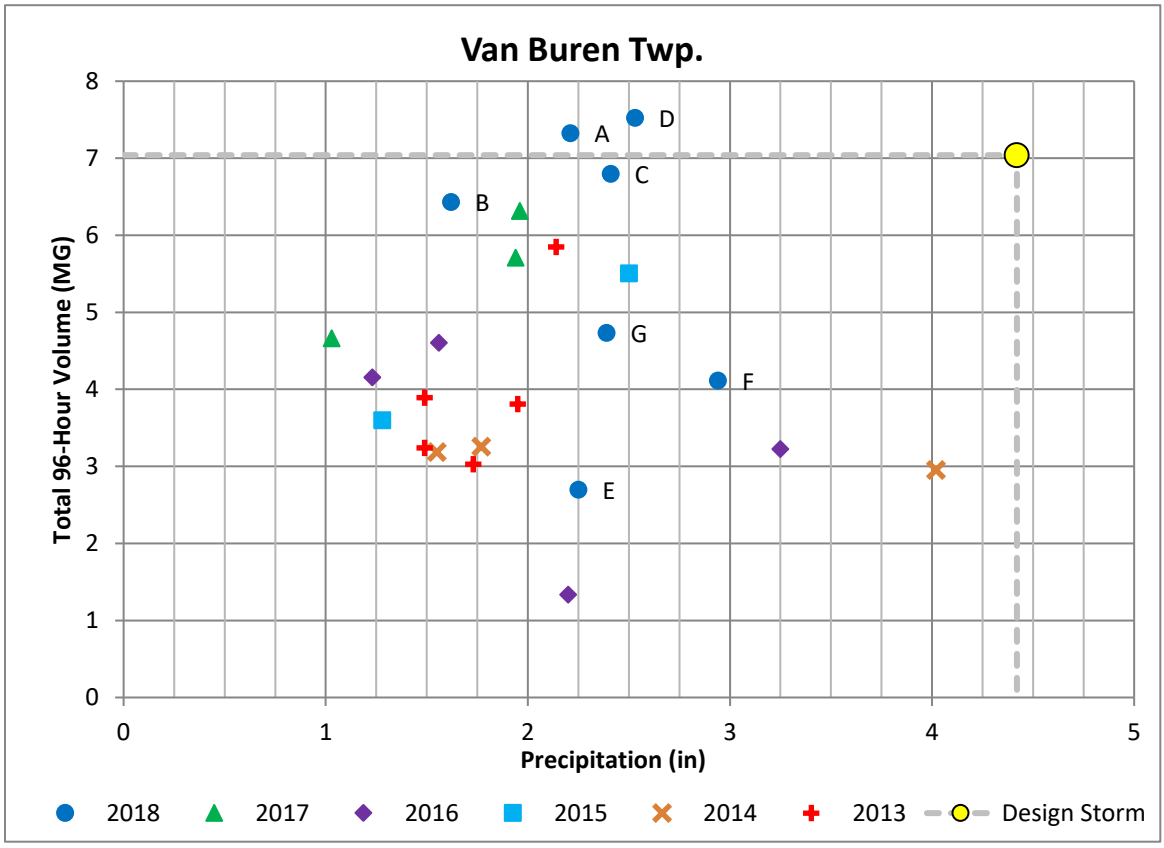


2018 Major Storm Event	Taylor	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	117.61
B	1.62	77.72
C	2.41	87.89
D	2.53	105.41
E	2.25	58.92
F	2.94	83.23
G	2.39	71.27
Design Storm	4.42	164.45

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

Figure D-10
Downriver Sewage Disposal System
Total 96-Hour Volume versus Precipitation
for Major Storm Events for 2013 through 2018



2018 Major Storm Event	Van Buren Twp.	
	DTW Precipitation (in)	96-hour Volume (MG)
A	2.21	7.32
B	1.62	6.43
C	2.41	6.80
D	2.53	7.52
E	2.25	2.70
F	2.94	4.12
G	2.39	4.73
Design Storm	4.42	7.04

Notes

1. A Major storm event has a peak 24 hour rainfall depth of at least 0.5 inches, an event total of at least 1.0 inch, and the peak hourly flow rate at DWTF reaches or exceeds 175 MGD.
2. The 4.42 inch storm event used in the design of the Downriver Regional Storage and Transport System.

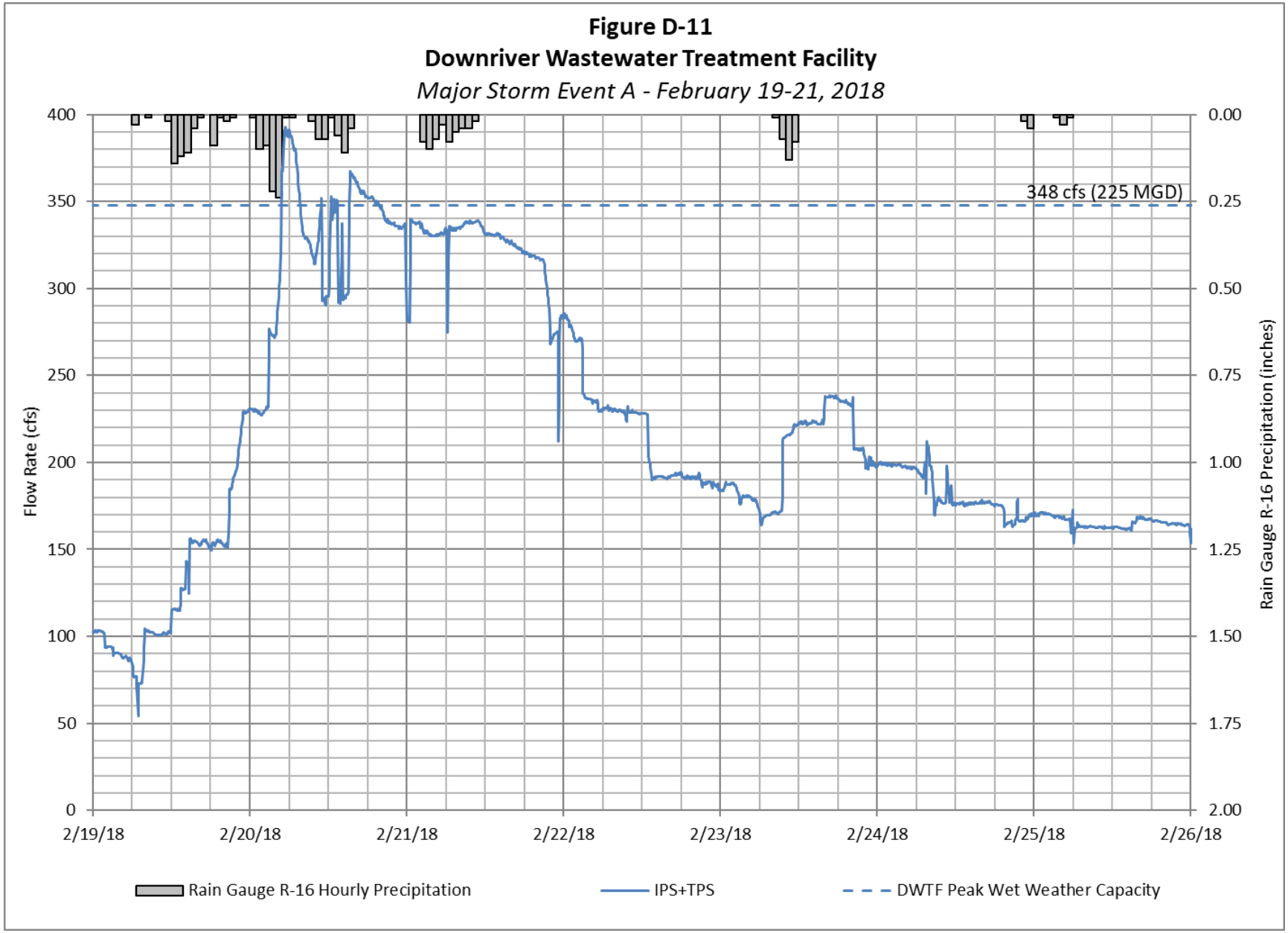


Figure D-11
Downriver Wastewater Treatment Facility
Major Storm Event A - February 19-21, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2/19/18
2/20/18
2/21/18
2/22/18
2/23/18
2/24/18
2/25/18
2/26/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

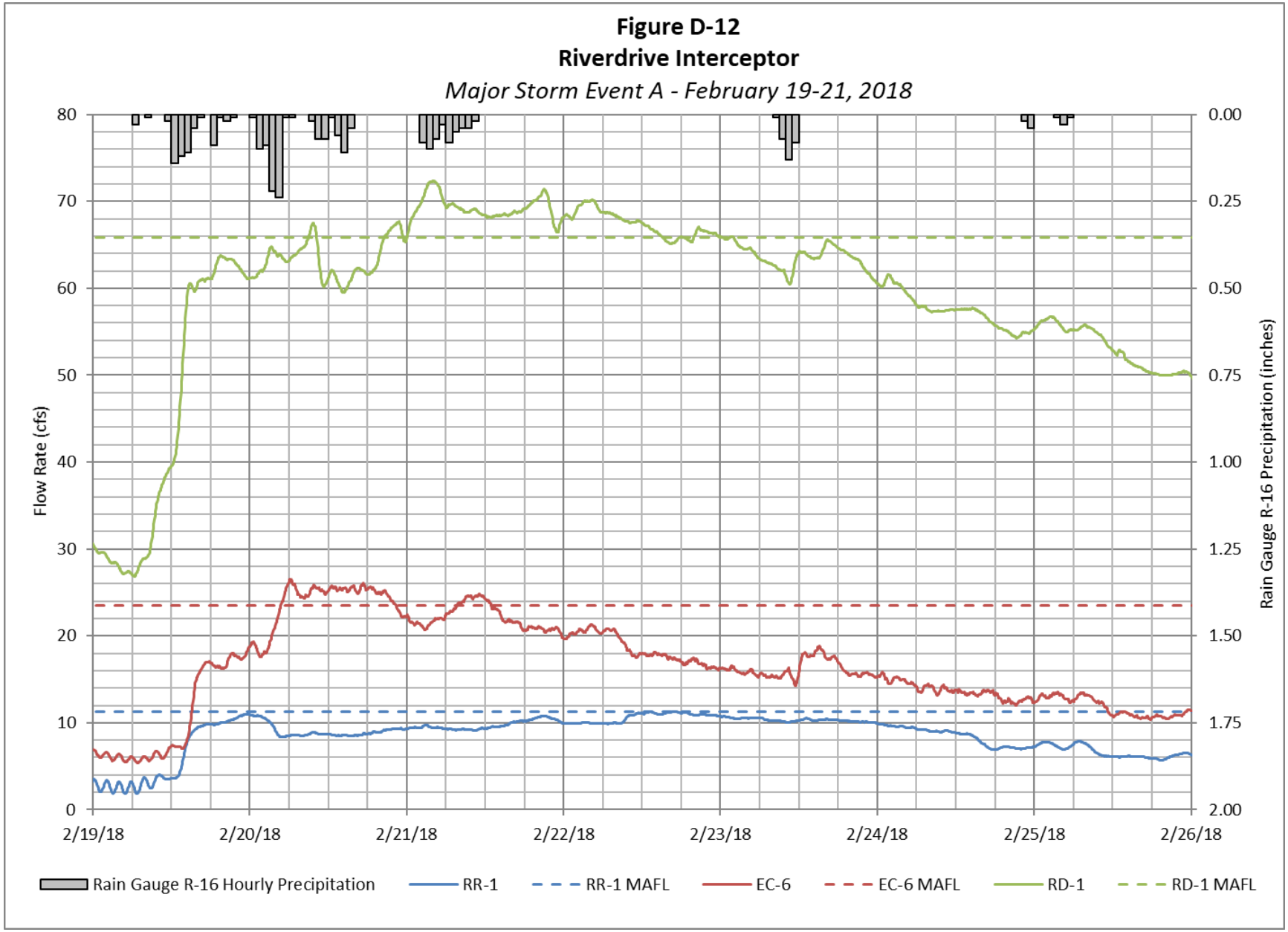


Figure D-12
Riverdrive Interceptor
Major Storm Event A - February 19-21, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2/19/18
2/20/18
2/21/18
2/22/18
2/23/18
2/24/18
2/25/18
2/26/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

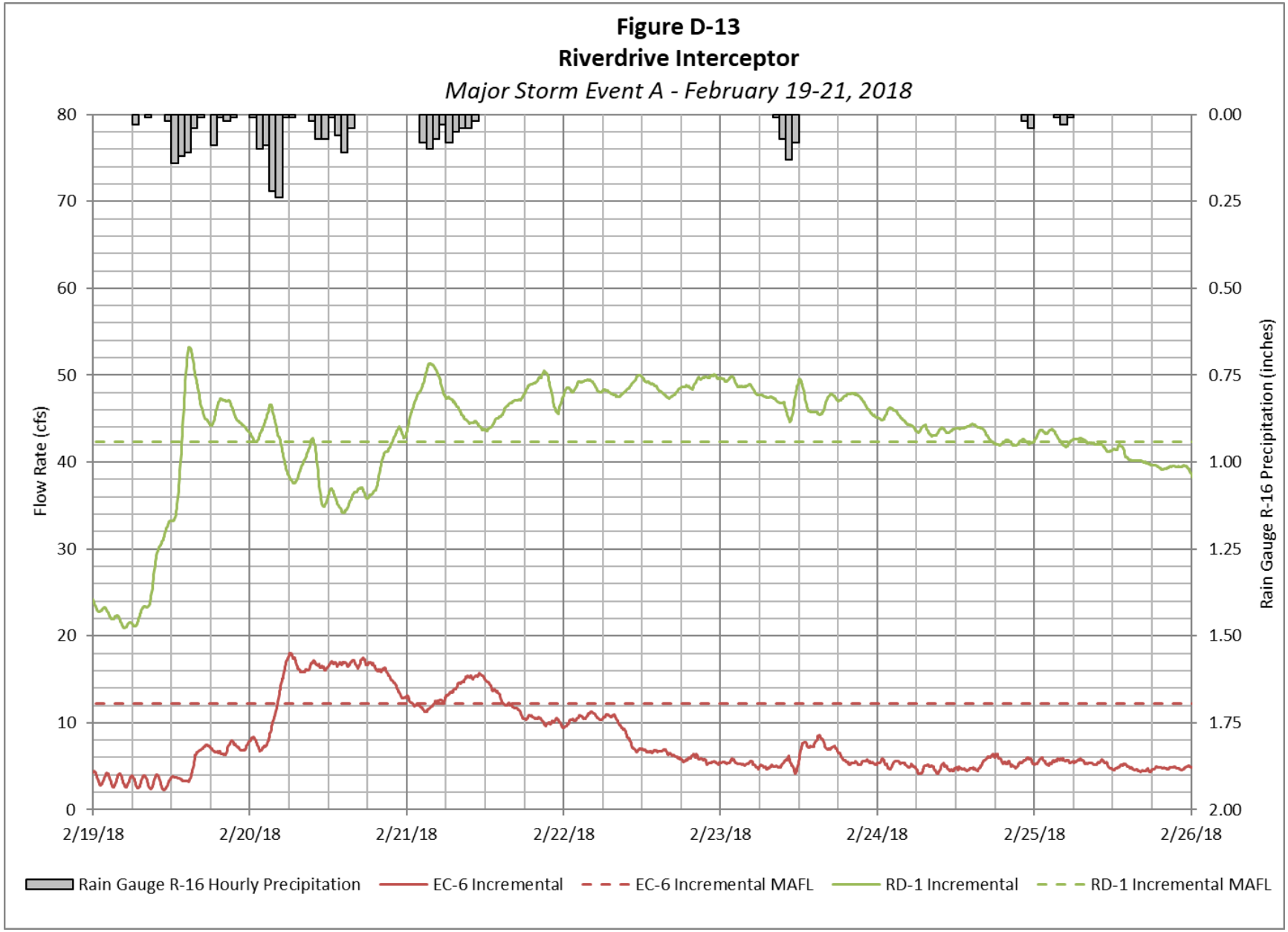


Figure D-13
Riverdrive Interceptor
Major Storm Event A - February 19-21, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2/19/18
2/20/18
2/21/18
2/22/18
2/23/18
2/24/18
2/25/18
2/26/18
Rain Gauge R-16 Hourly Precipitation
EC-6 Incremental
EC-6 Incremental MAFL
RD-1 Incremental
RD-1 Incremental MAFL

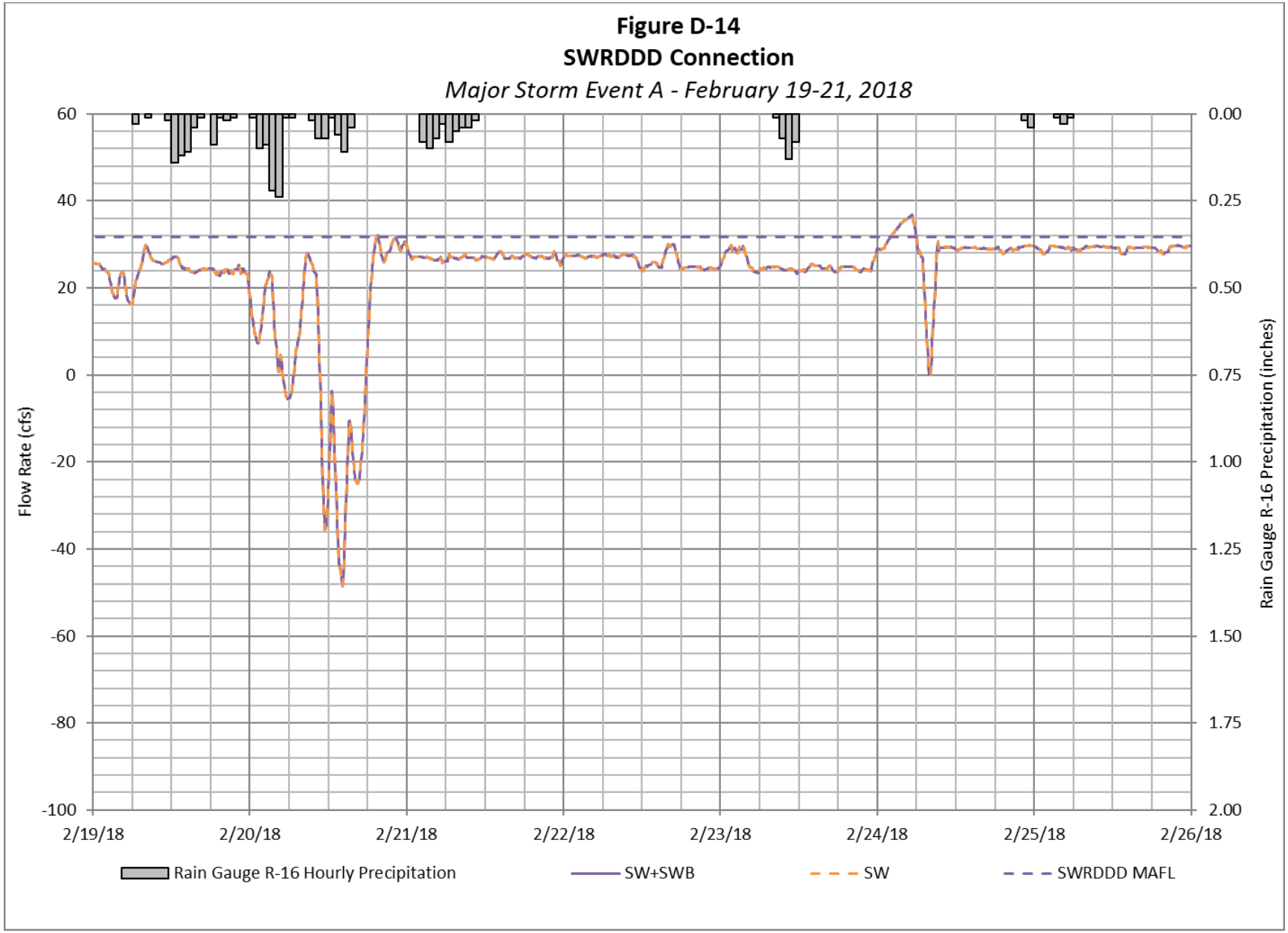


Figure D-14
SWRDDD Connection
Major Storm Event A - February 19-21, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
40
20
0
-20
-40
-60
-80
-100
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
2/19/18
2/20/18
2/21/18
2/22/18
2/23/18
2/24/18
2/25/18
2/26/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL

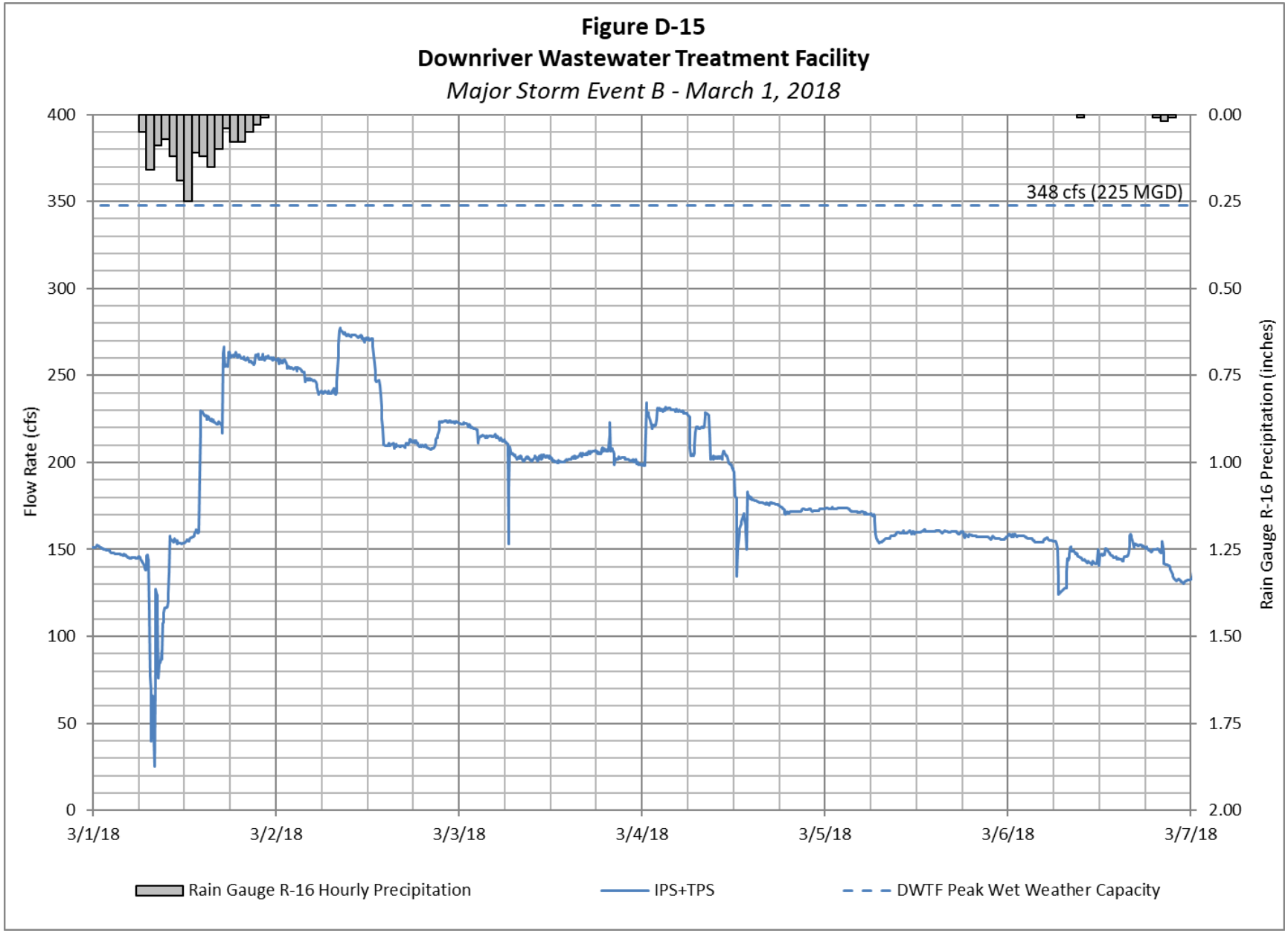


Figure D-15
Downriver Wastewater Treatment Facility
Major Storm Event B - March 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
3/1/18
3/2/18
3/3/18
3/4/18
3/5/18
3/6/18
3/7/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

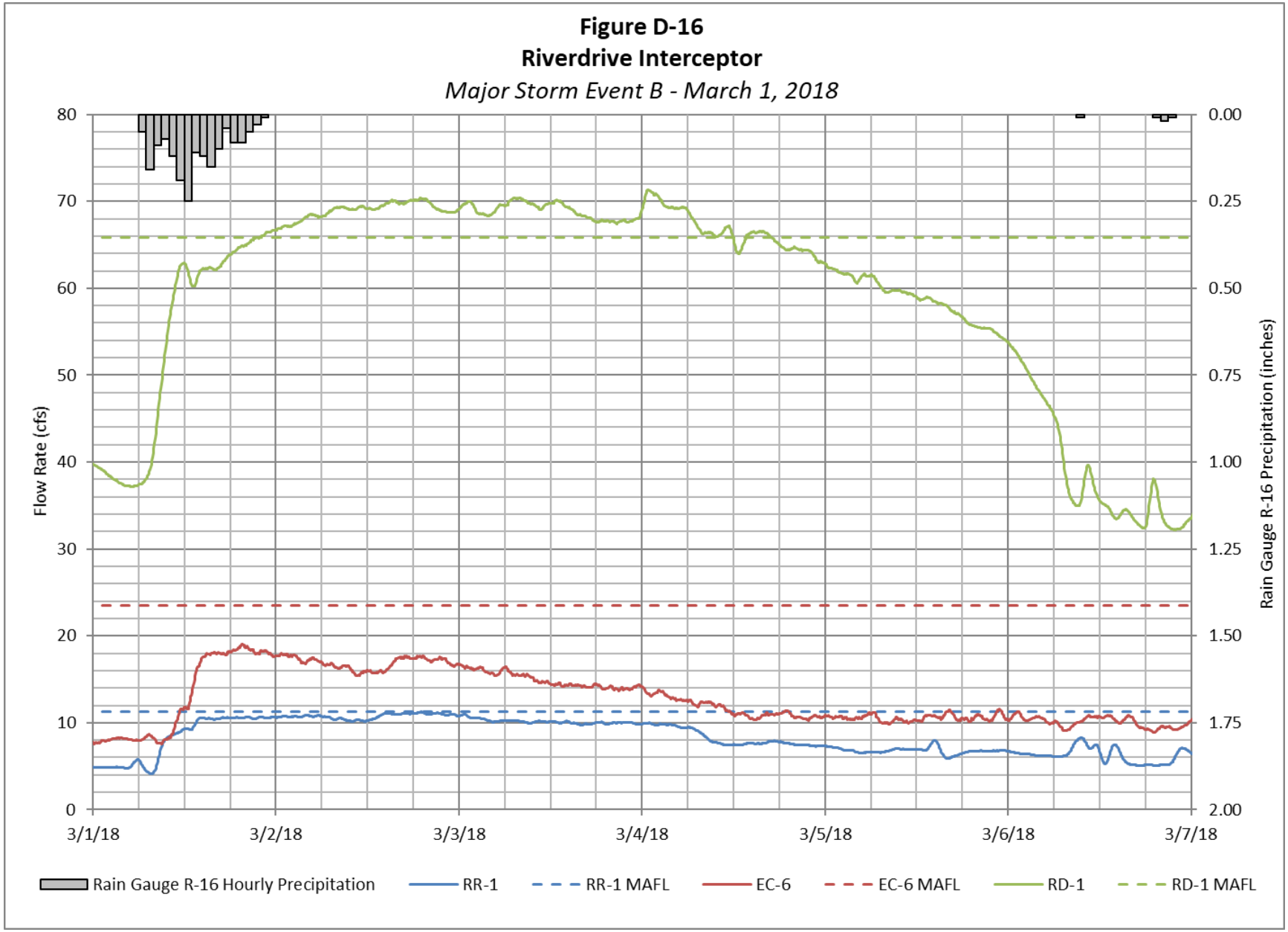


Figure D-16
Riverdrive Interceptor
Major Storm Event B - March 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
3/1/18
3/2/18
3/3/18
3/4/18
3/5/18
3/6/18
3/7/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

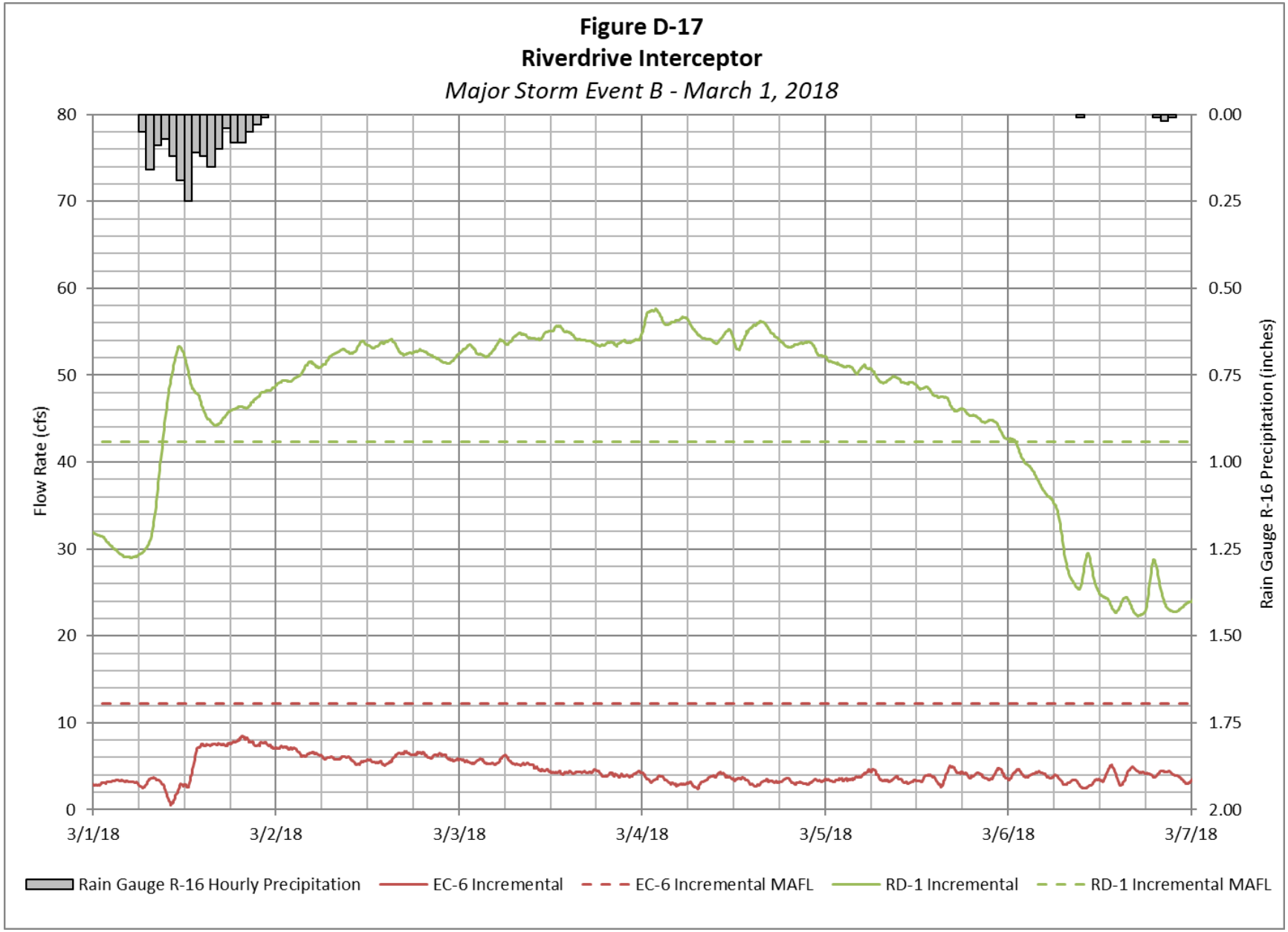


Figure D-17
Riverdrive Interceptor
Major Storm Event B - March 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
3/1/18
3/2/18
3/3/18
3/4/18
3/5/18
3/6/18
3/7/18
Rain Gauge R-16 Hourly Precipitation
EC-6 Incremental
EC-6 Incremental MAFL
RD-1 Incremental
RD-1 Incremental MAFL

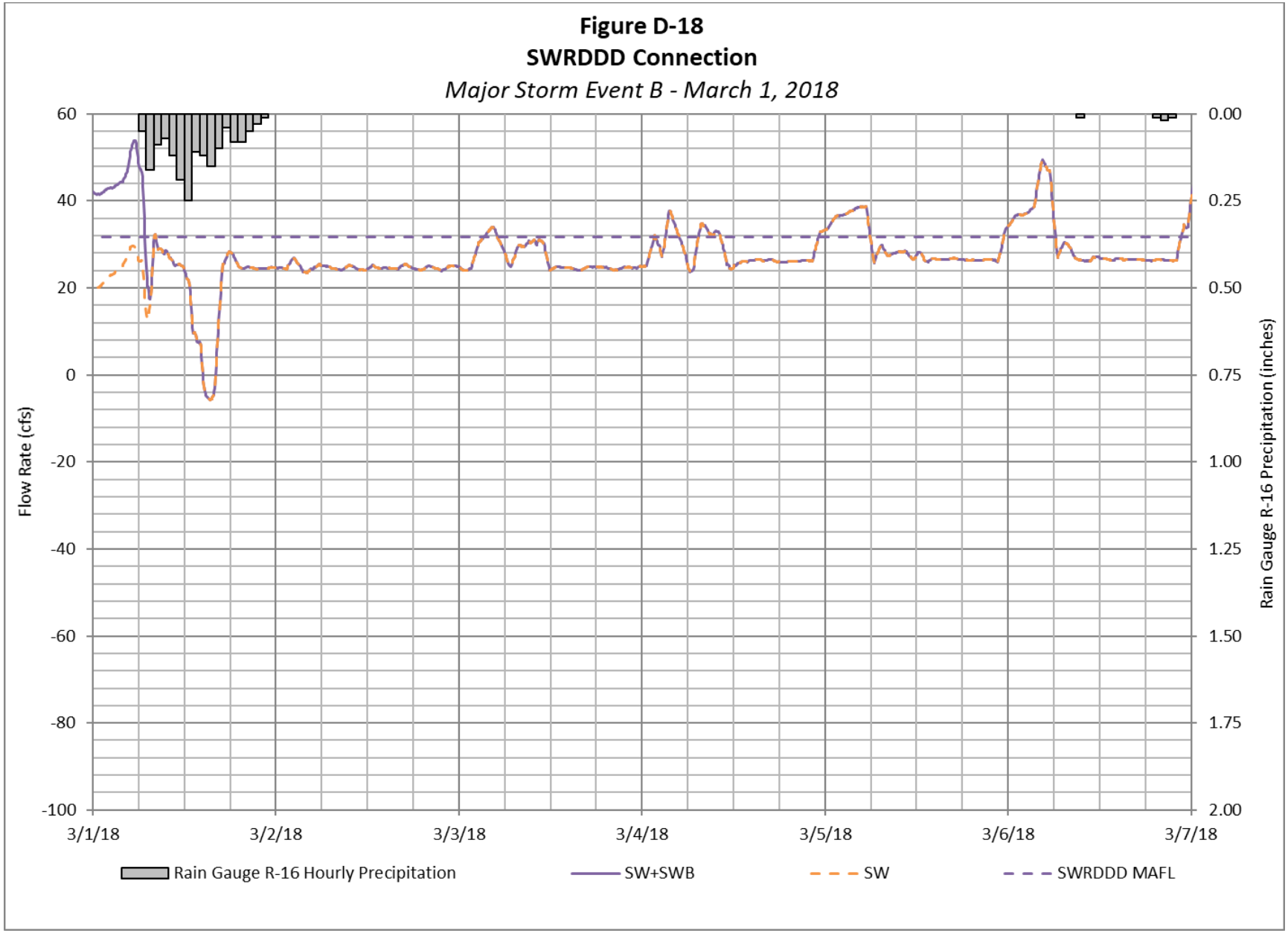


Figure D-18
SWRDDD Connection
Major Storm Event B - March 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
40
20
0
-20
-40
-60
-80
-100
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
3/1/18
3/2/18
3/3/18
3/4/18
3/5/18
3/6/18
3/7/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL

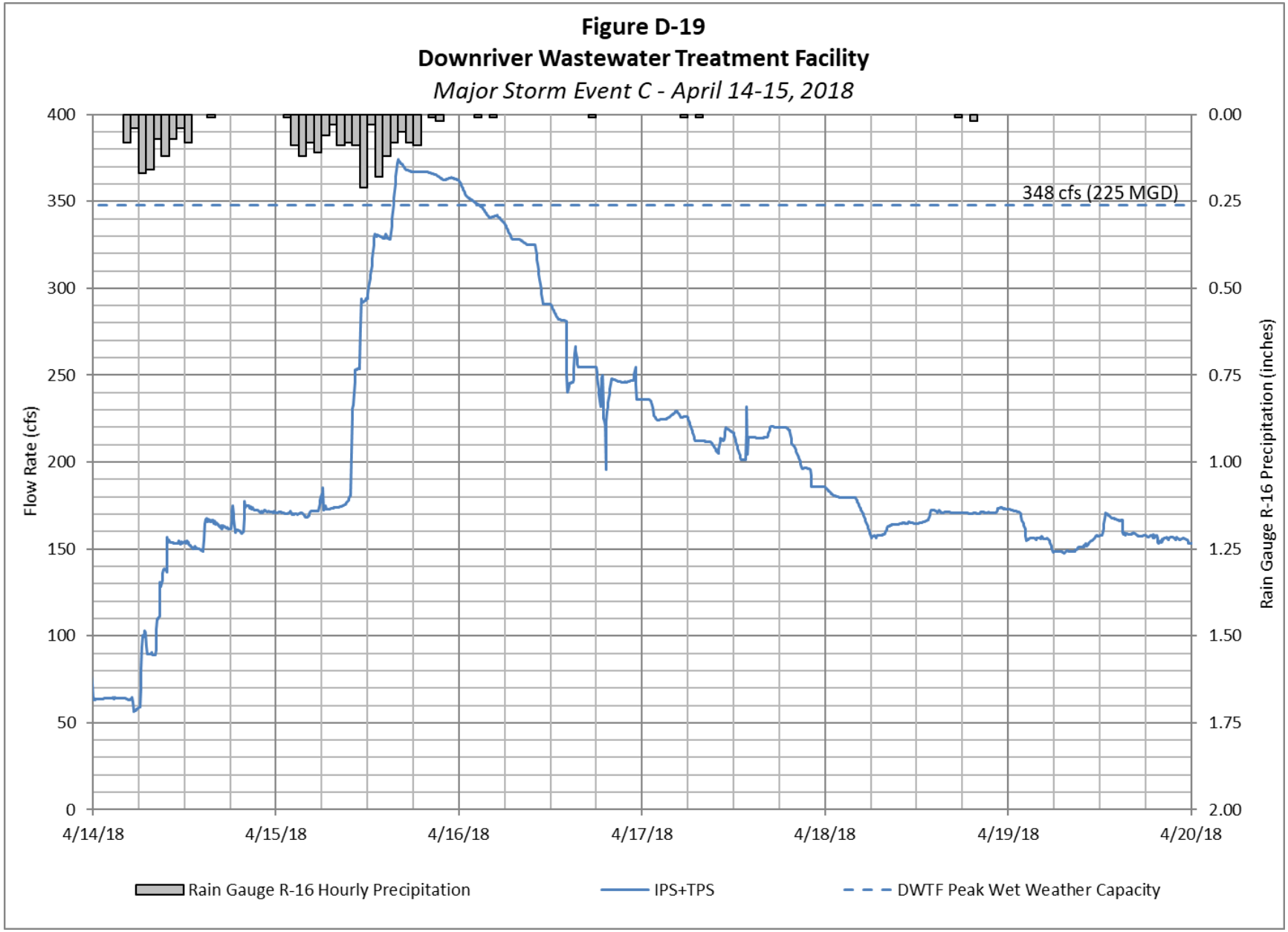


Figure D-19
Downriver Wastewater Treatment Facility
Major Storm Event C - April 14-15, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
4/14/18
4/15/18
4/16/18
4/17/18
4/18/18
4/19/18
4/20/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

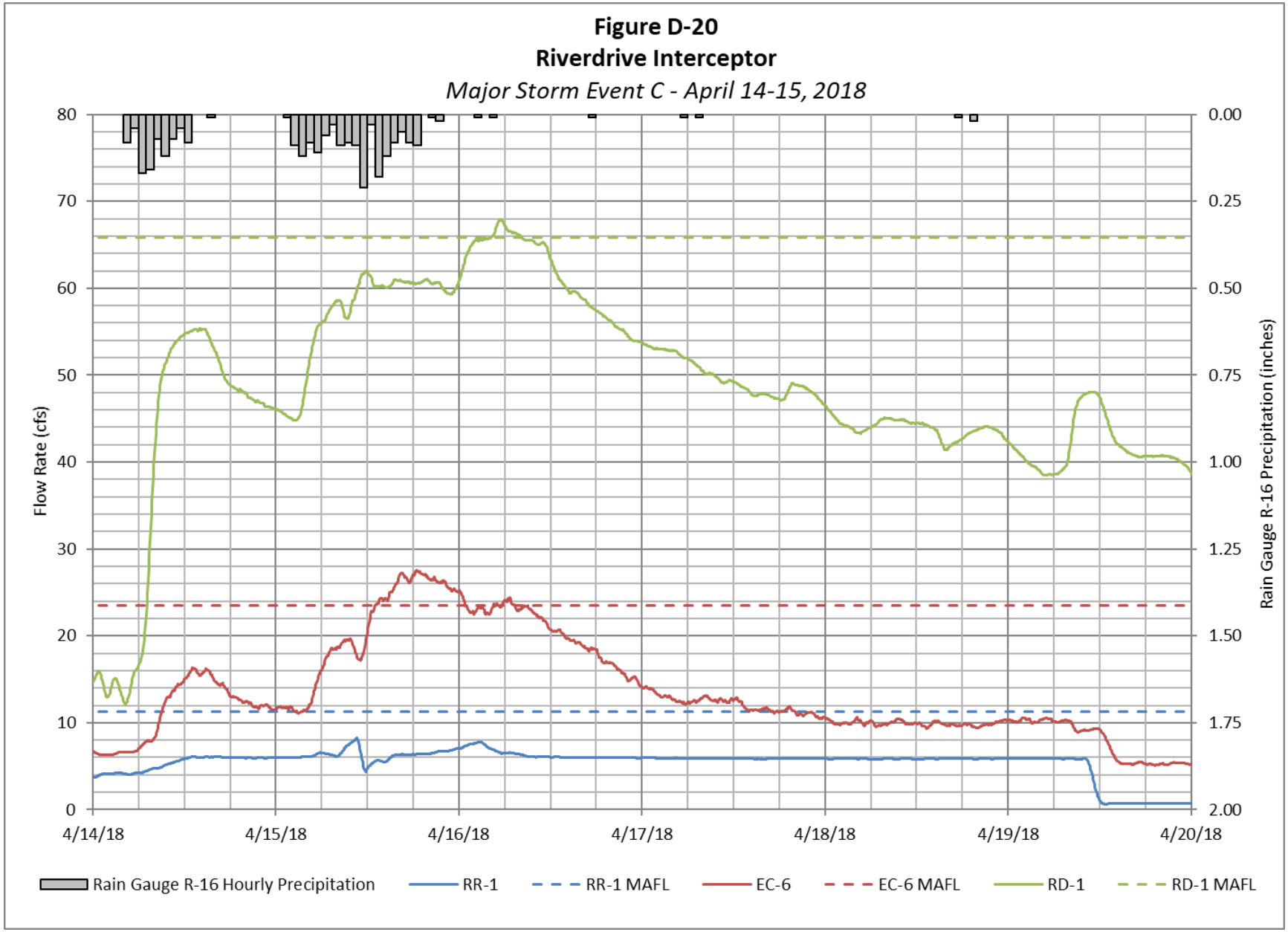


Figure D-20
Riverdrive Interceptor
Major Storm Event C - April 14-15, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
4/14/18
4/15/18
4/16/18
4/17/18
4/18/18
4/19/18
4/20/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

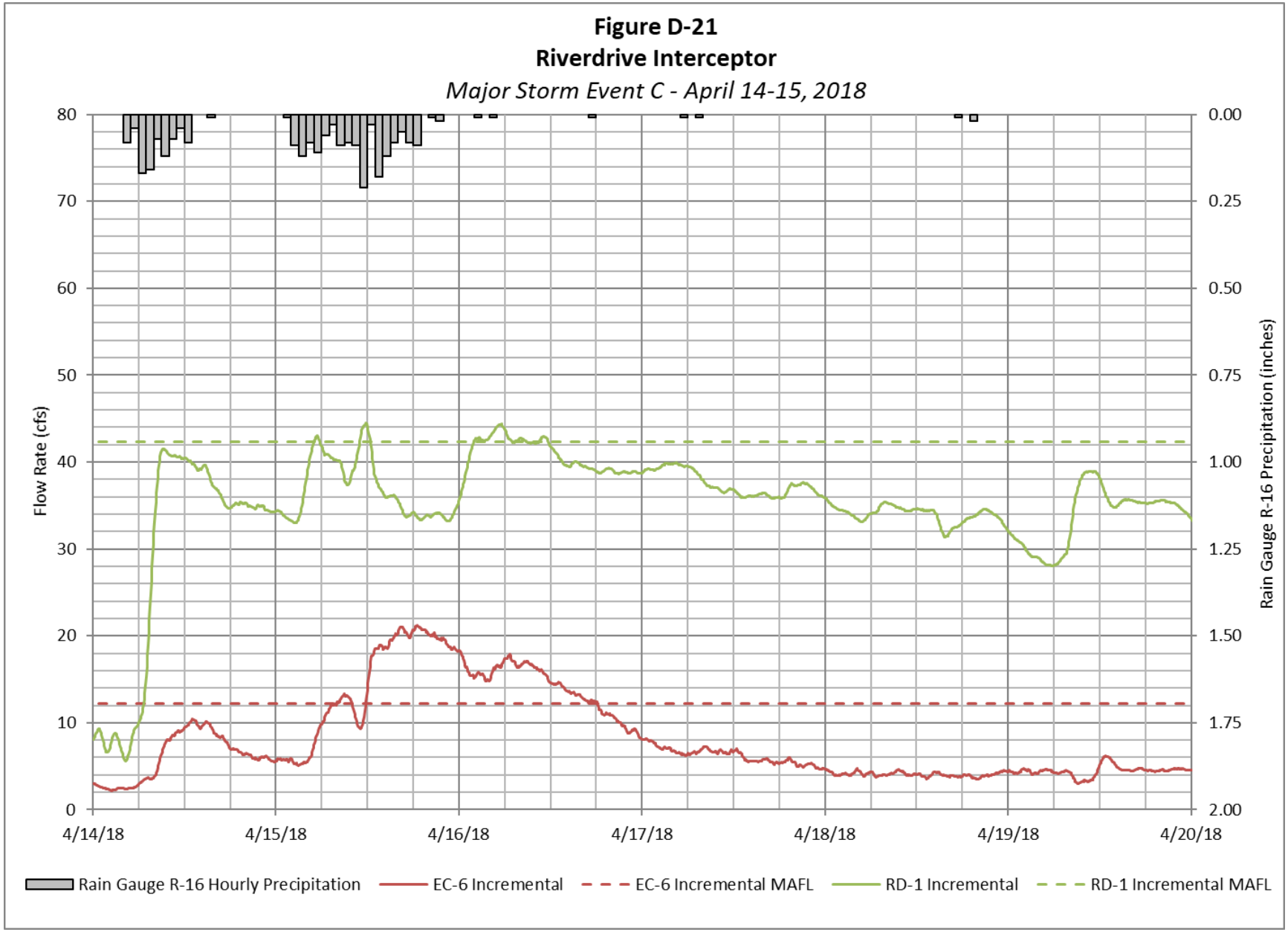


Figure D-21
Riverdrive Interceptor
Major Storm Event C - April 14-15, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
4/14/18
4/15/18
4/16/18
4/17/18
4/18/18
4/19/18
4/20/18
Rain Gauge R-16 Hourly Precipitation
EC-6 Incremental
EC-6 Incremental MAFL
RD-1 Incremental
RD-1 Incremental MAFL

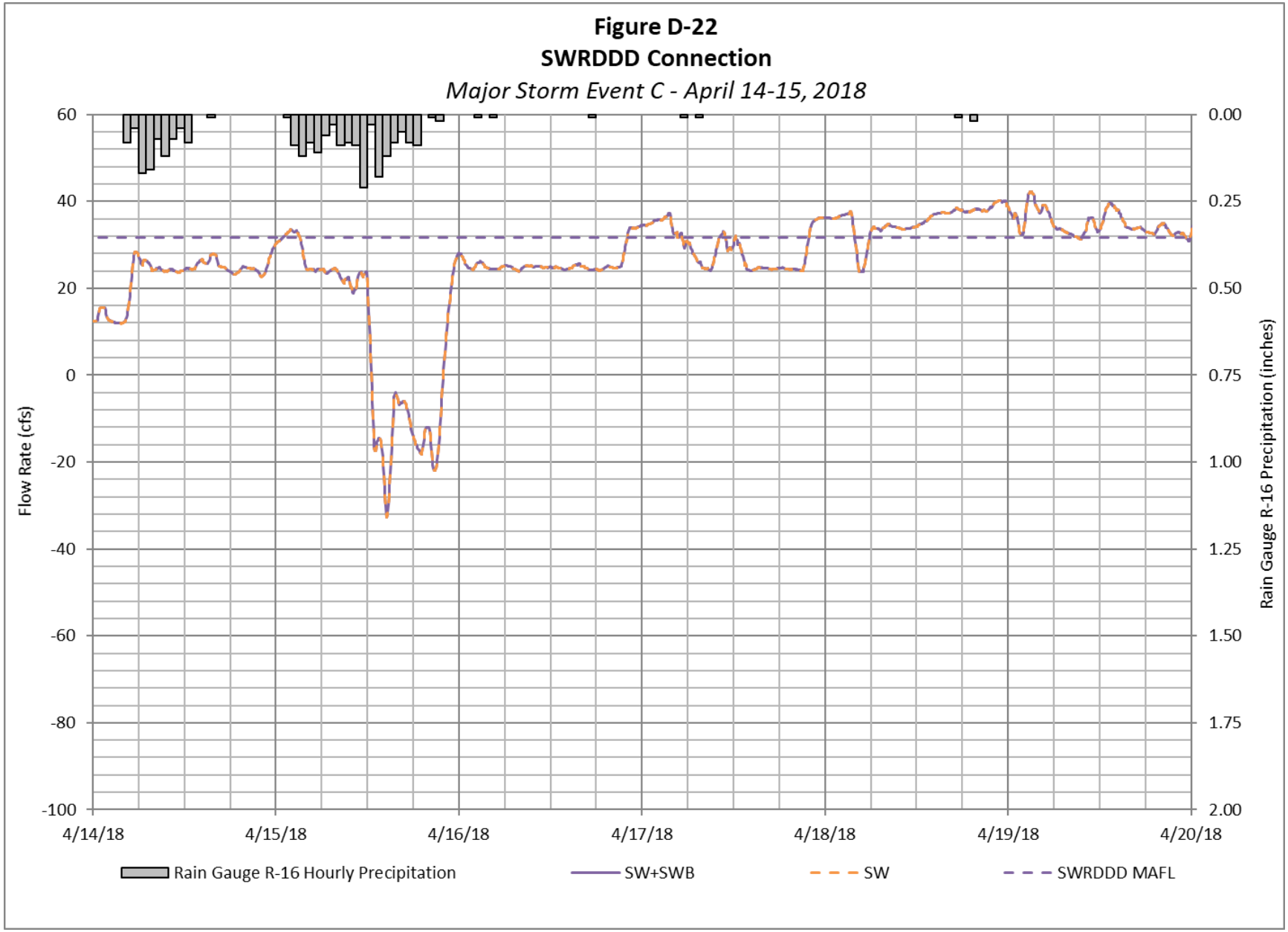


Figure D-22
SWRDDD Connection
Major Storm Event C - April 14-15, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
40
20
0
-20
-40
-60
-80
-100
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
4/14/18
4/15/18
4/16/18
4/17/18
4/18/18
4/19/18
4/20/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL

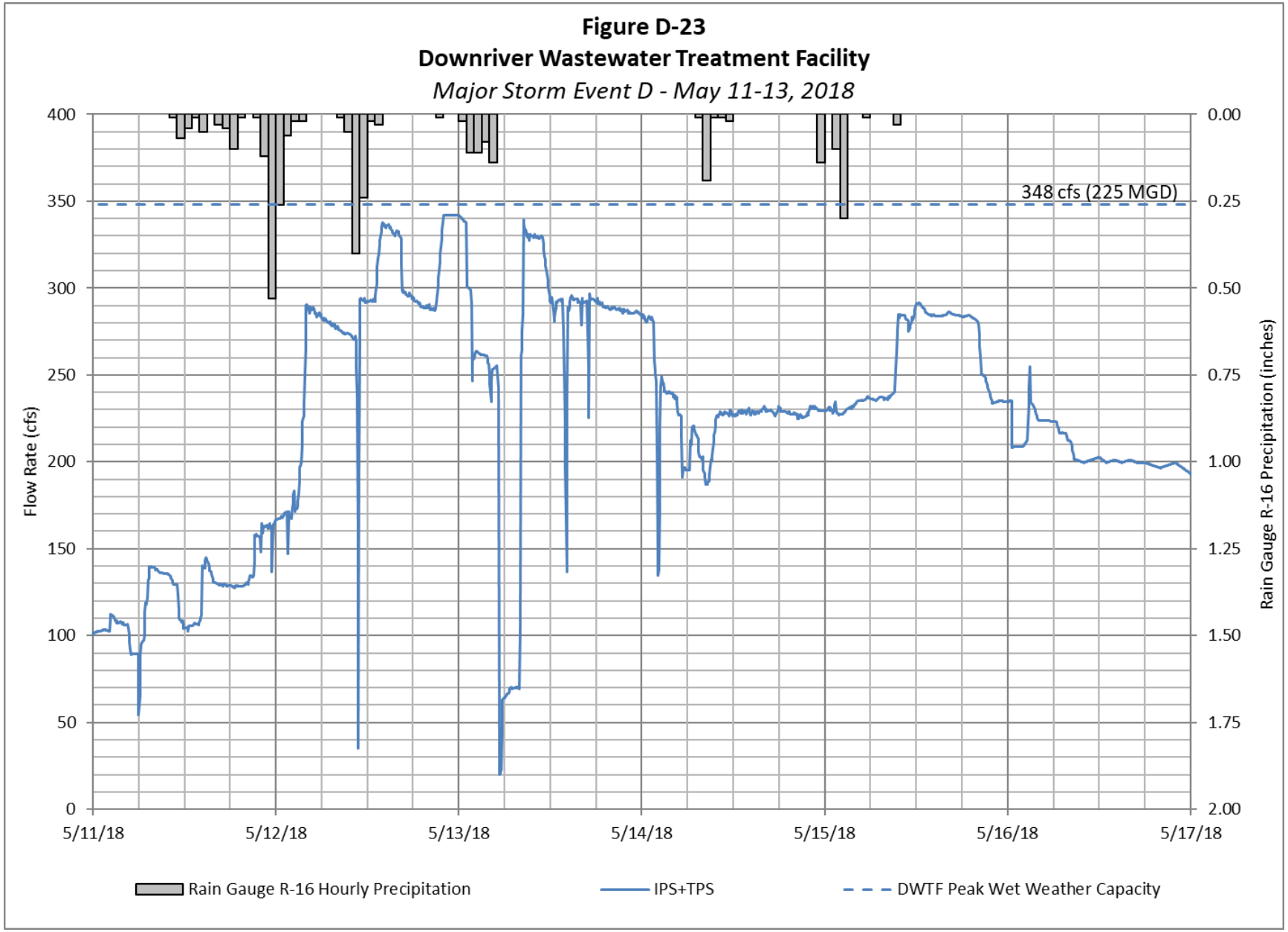


Figure D-23
Downriver Wastewater Treatment Facility
Major Storm Event D - May 11-13, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
5/11/18
5/12/18
5/13/18
5/14/18
5/15/18
5/16/18
5/17/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

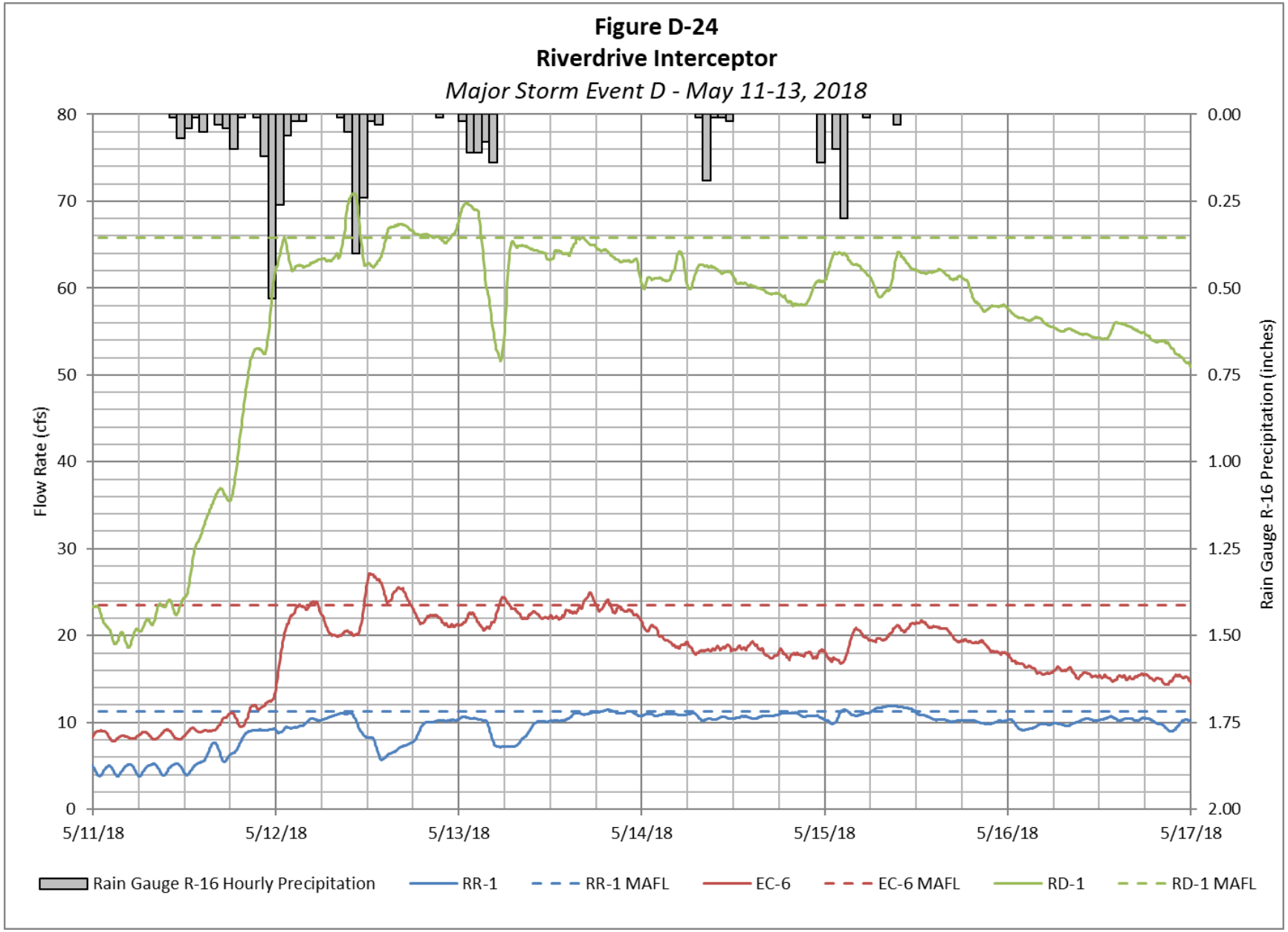


Figure D-24
Riverdrive Interceptor
Major Storm Event D - May 11-13, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
5/11/18
5/12/18
5/13/18
5/14/18
5/15/18
5/16/18
5/17/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

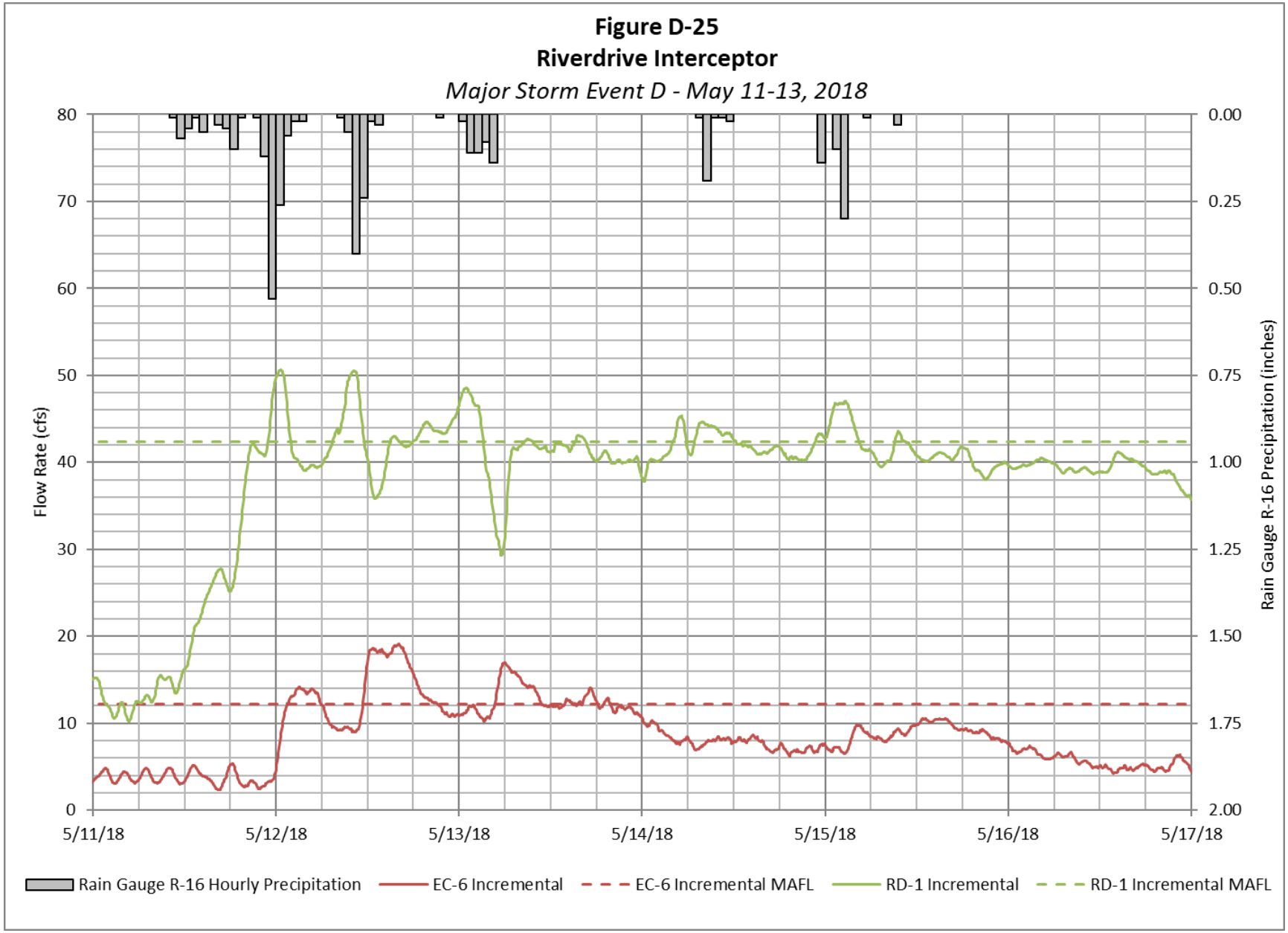


Figure D-25
Riverdrive Interceptor
Major Storm Event D - May 11-13, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
5/11/18
5/12/18
5/13/18
5/14/18
5/15/18
5/16/18
5/17/18
Rain Gauge R-16 Hourly Precipitation
EC-6 Incremental
EC-6 Incremental MAFL
RD-1 Incremental
RD-1 Incremental MAFL

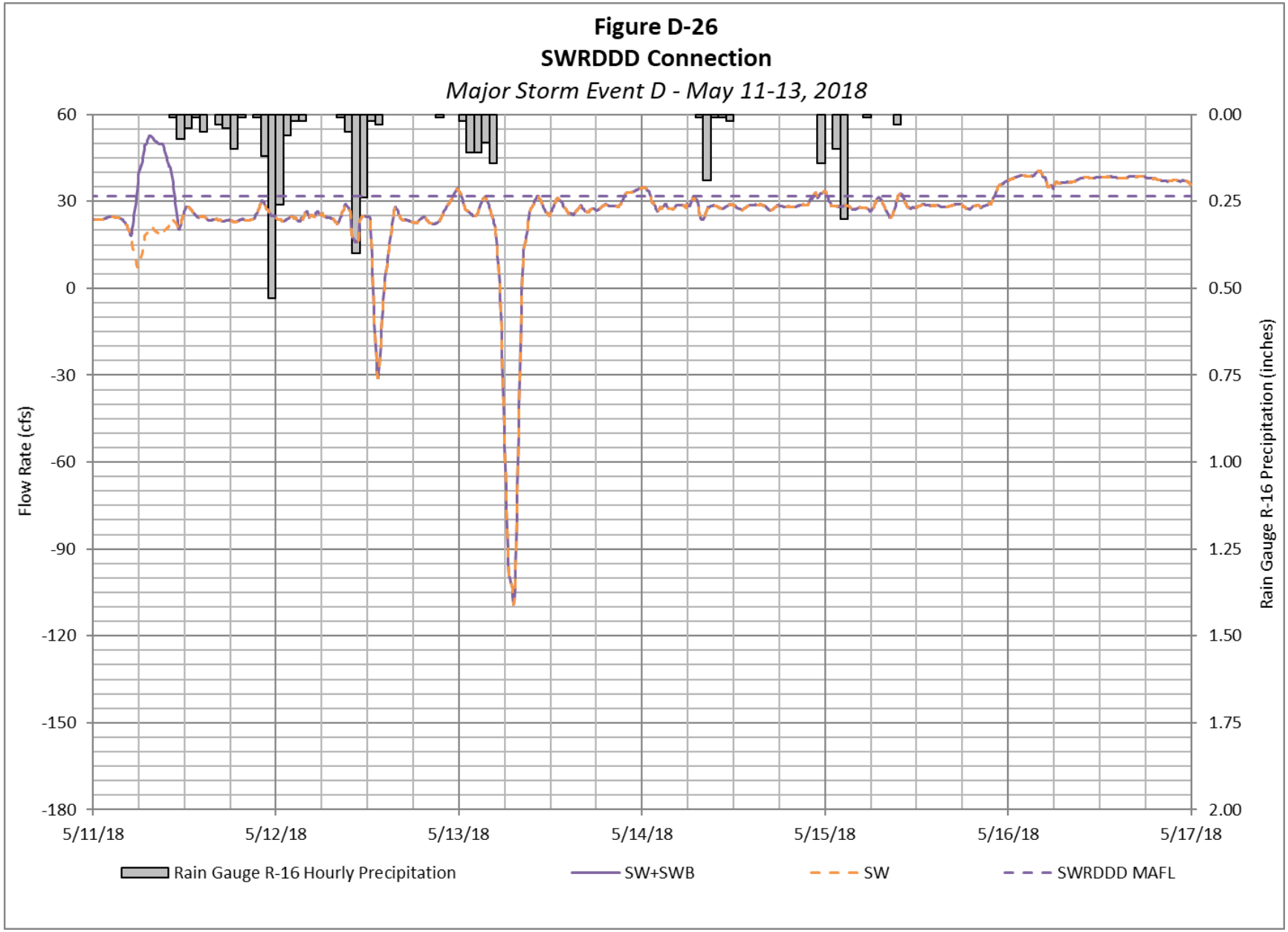


Figure D-26
SWRDDD Connection
Major Storm Event D - May 11-13, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
30
0
-30
-60
-90
-120
-150
-180
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
5/11/18
5/12/18
5/13/18
5/14/18
5/15/18
5/16/18
5/17/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL

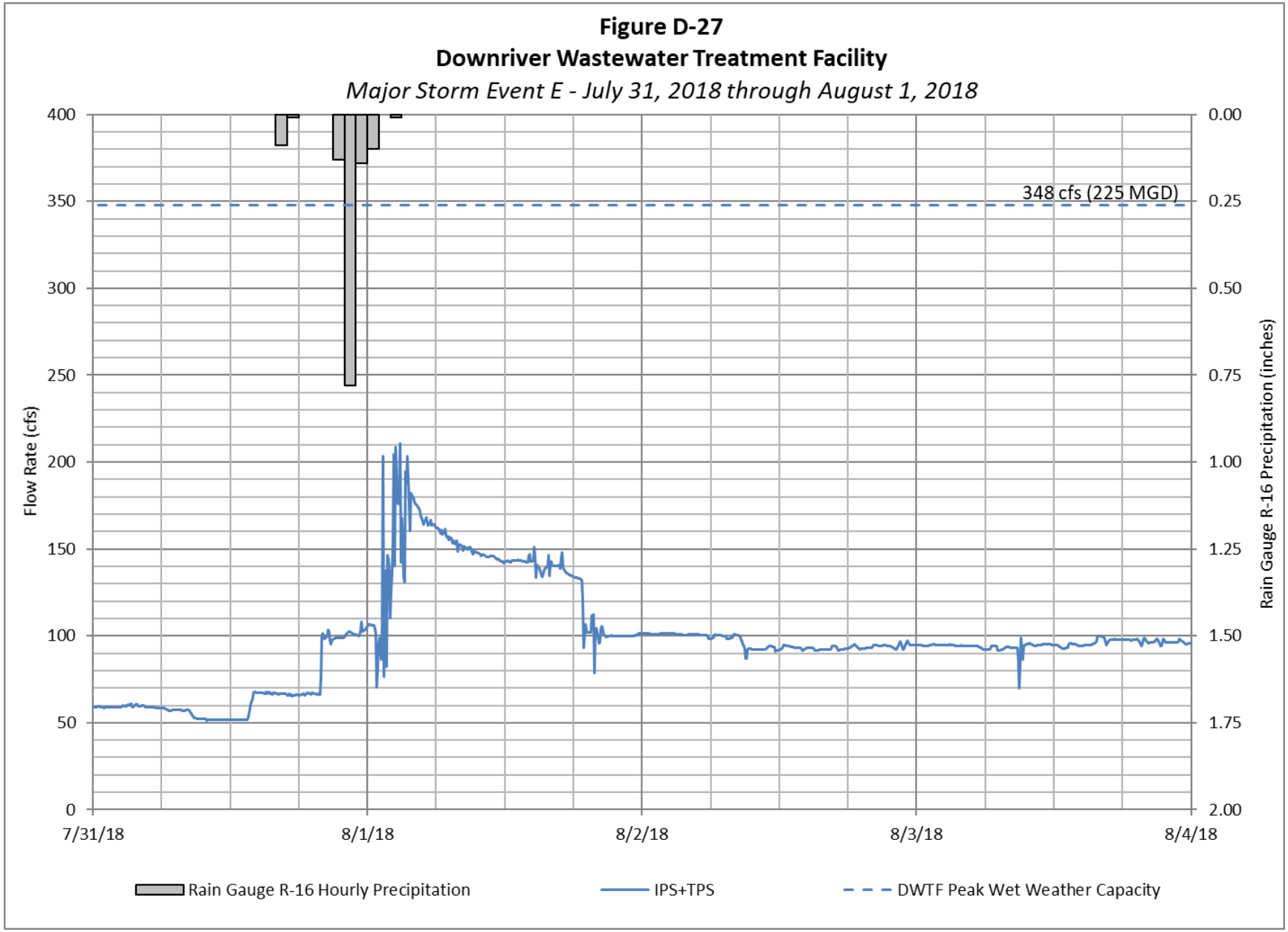


Figure D-27
Downriver Wastewater Treatment Facility
Major Storm Event E - July 31, 2018 through August 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
7/31/18
8/1/18
8/2/18
8/3/18
8/4/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

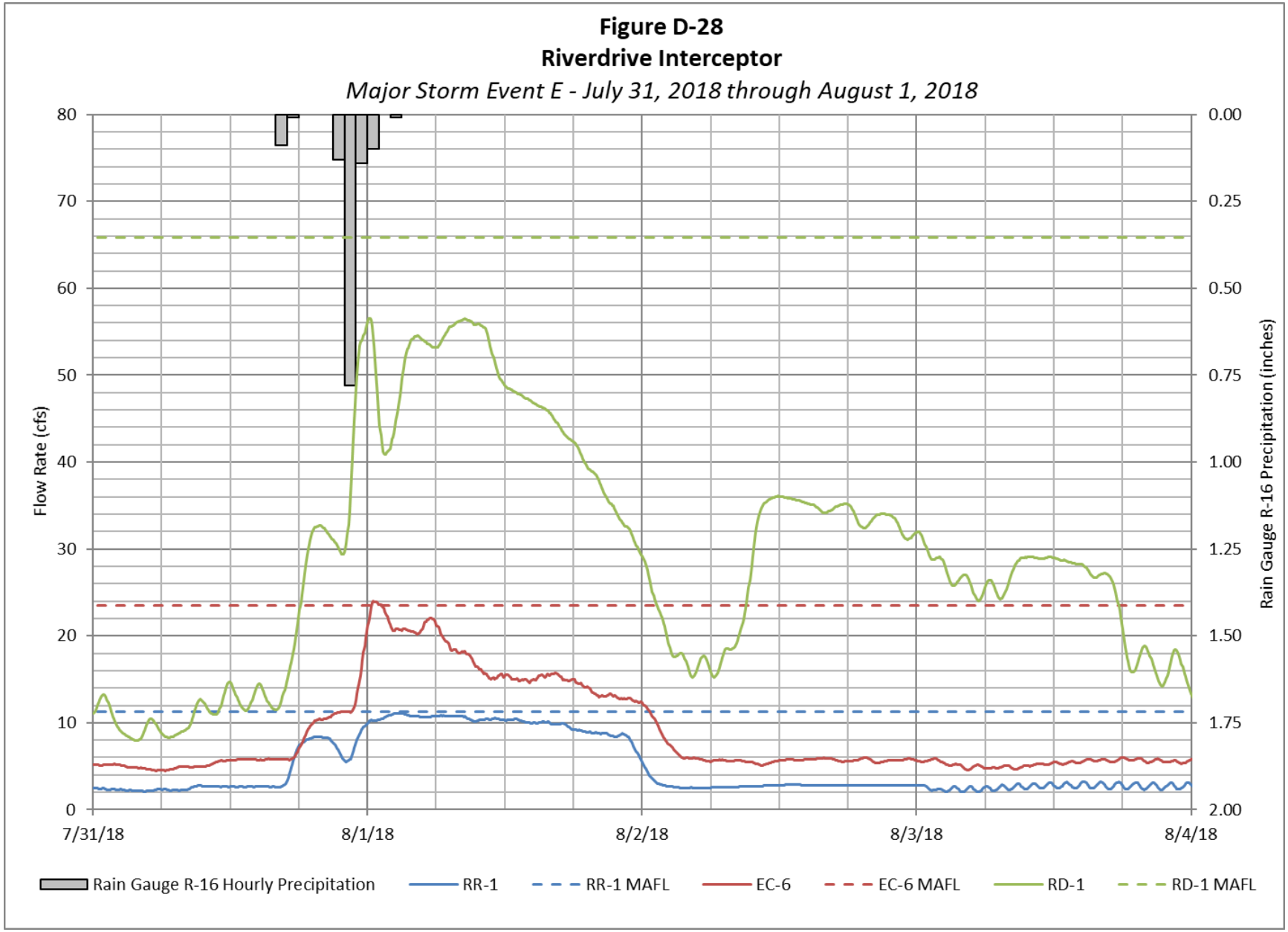


Figure D-28
Riverdrive Interceptor
Major Storm Event E - July 31, 2018 through August 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
7/31/18
8/1/18
8/2/18
8/3/18
8/4/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

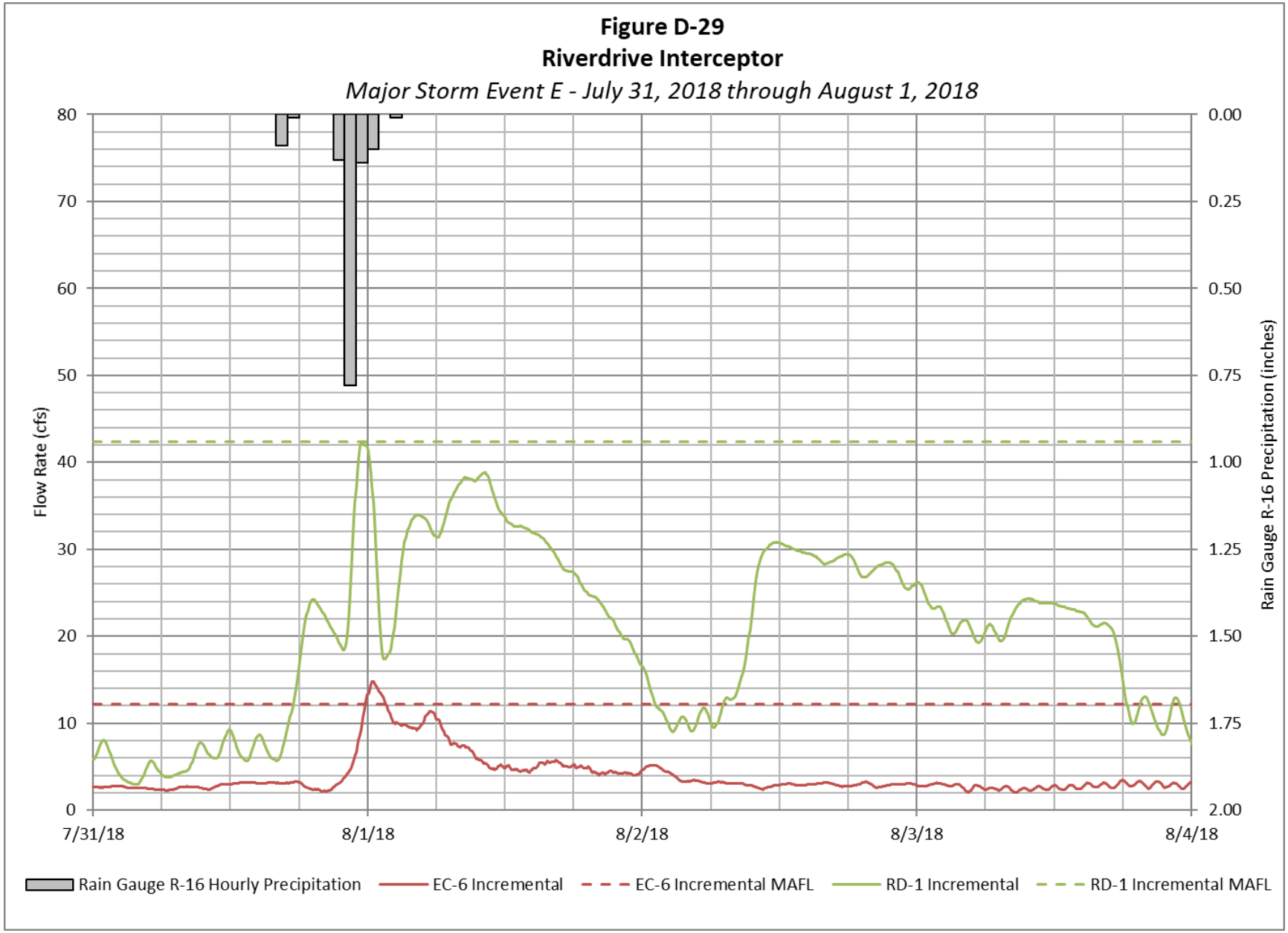


Figure D-29
Riverdrive Interceptor
Major Storm Event E - July 31, 2018 through August 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
7/31/18
8/1/18
8/2/18
8/3/18
8/4/18
Rain Gauge R-16 Hourly Precipitation
EC-6 Incremental
EC-6 Incremental MAFL
RD-1 Incremental
RD-1 Incremental MAFL

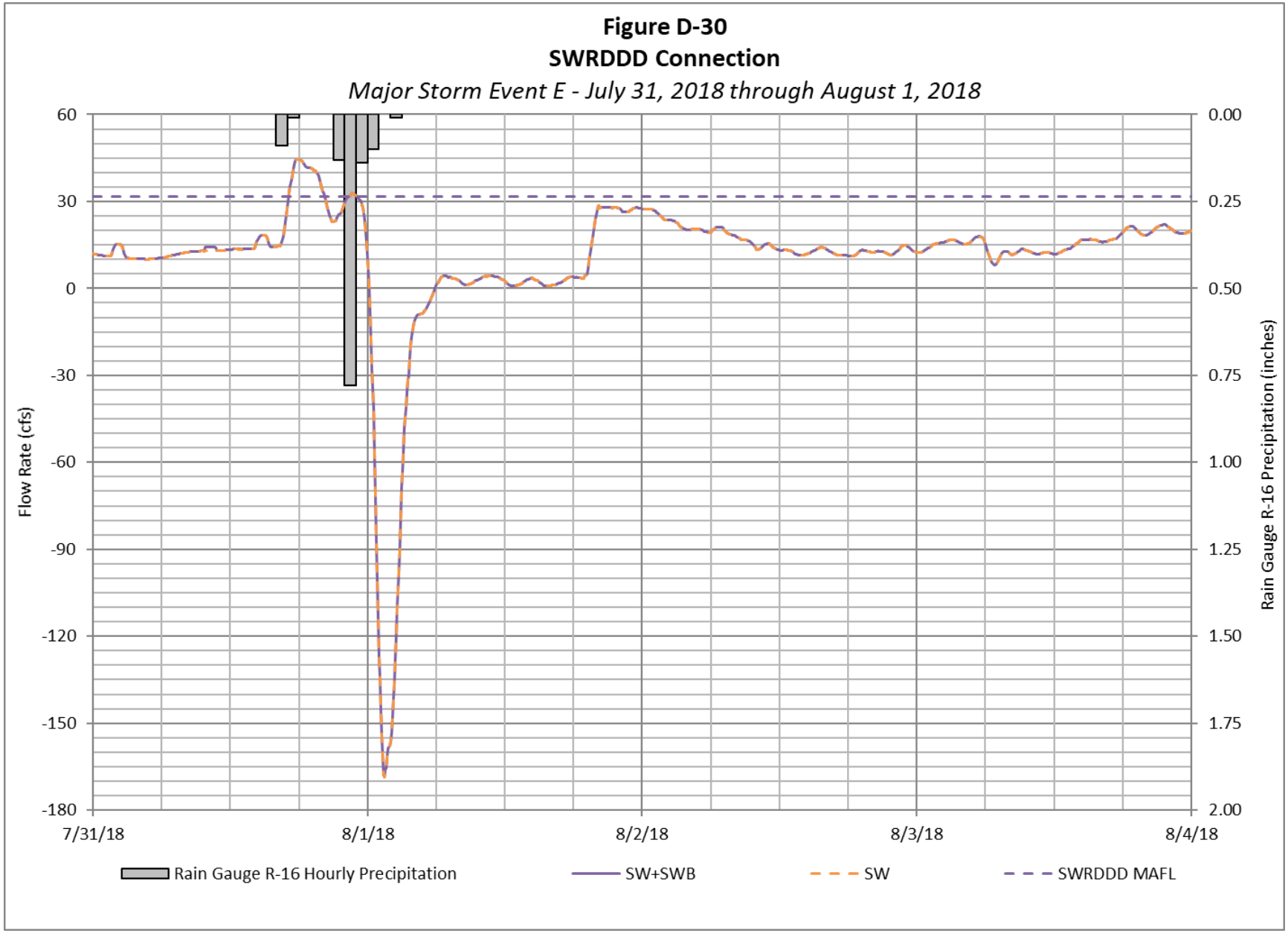


Figure D-30
SWRDDD Connection
Major Storm Event E - July 31, 2018 through August 1, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
30
0
-30
-60
-90
-120
-150
-180
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
7/31/18
8/1/18
8/2/18
8/3/18
8/4/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL

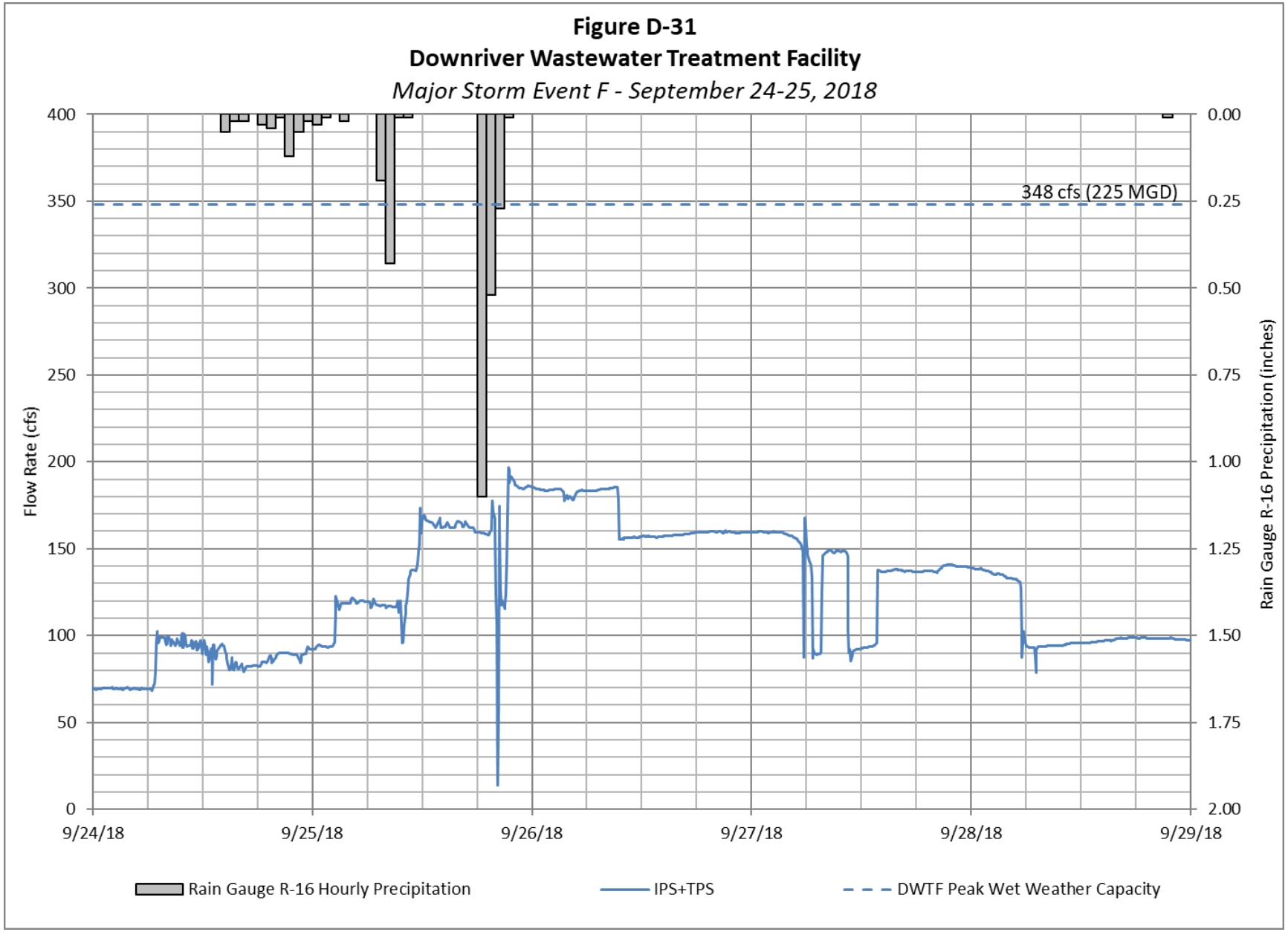


Figure D-31
Downriver Wastewater Treatment Facility
Major Storm Event F - September 24-25, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
9/24/18
9/25/18
9/26/18
9/27/18
9/28/18
9/29/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

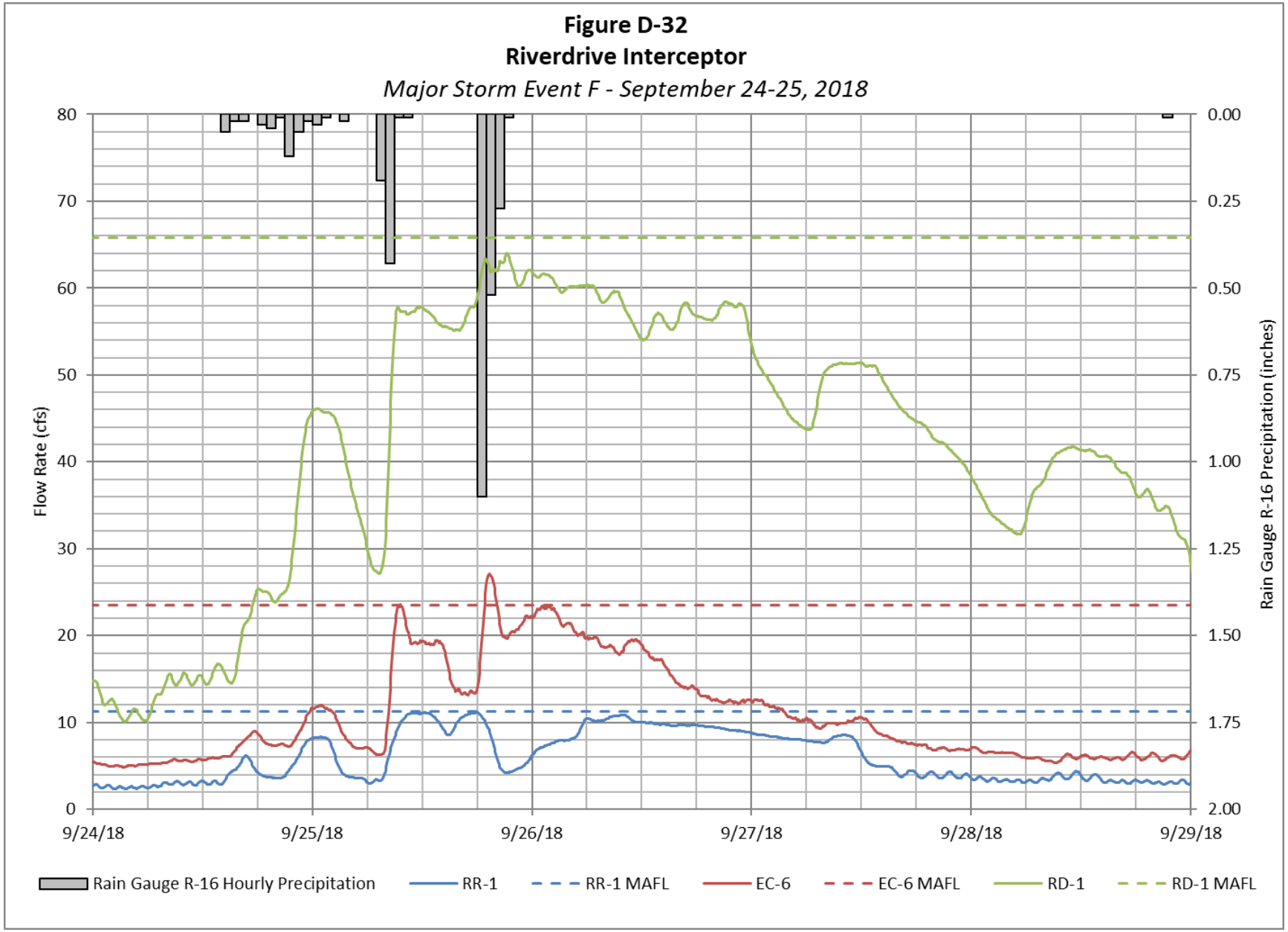


Figure D-32
Riverdrive Interceptor
Major Storm Event F - September 24-25, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
9/24/18
9/25/18
9/26/18
9/27/18
9/28/18
9/29/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

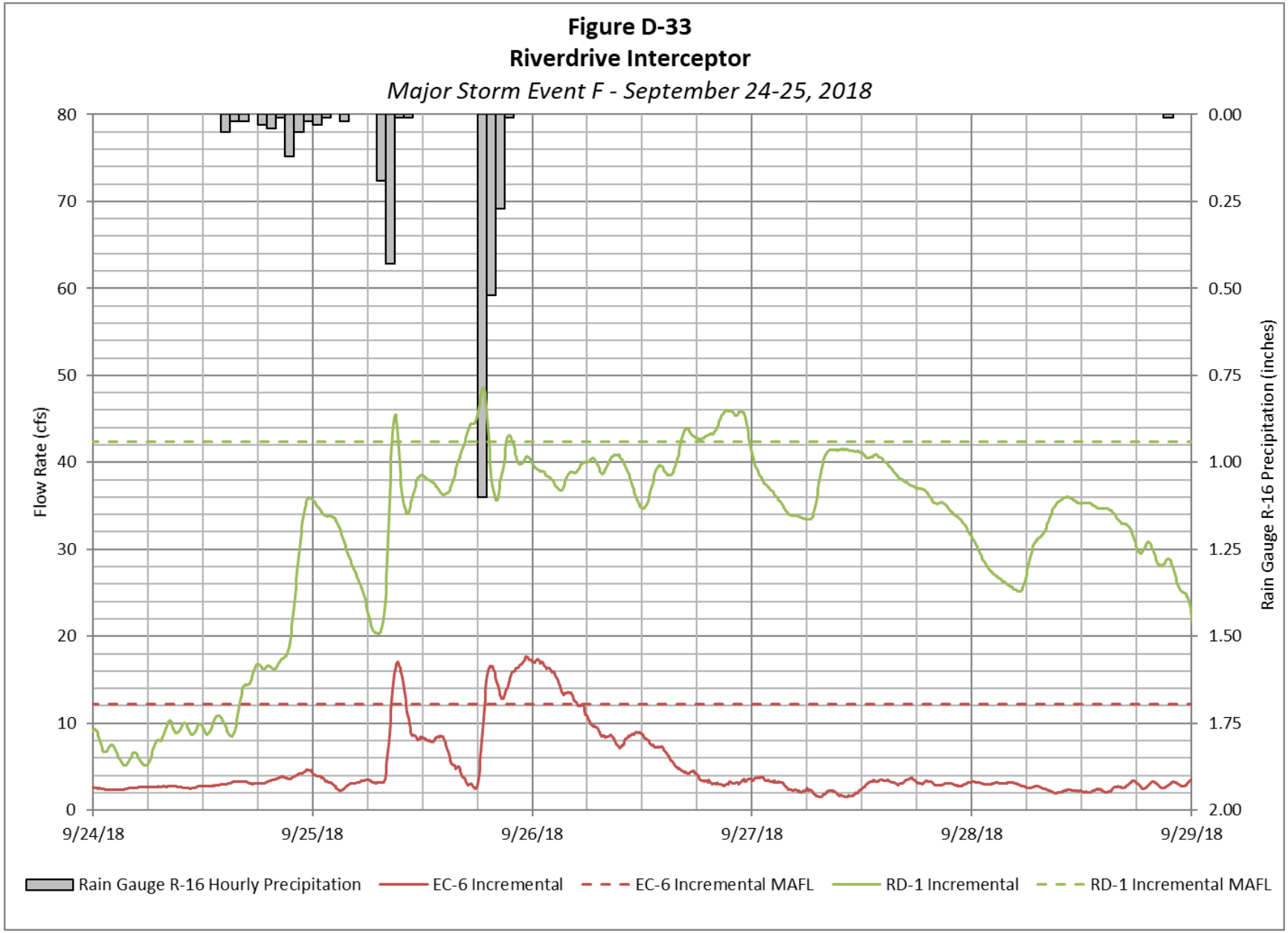


Figure D-33
Riverdrive Interceptor
Major Storm Event F - September 24-25, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
9/24/18
9/25/18
9/26/18
9/27/18
9/28/18
9/29/18
Rain Gauge R-16 Hourly Precipitation
EC-6 Incremental
EC-6 Incremental MAFL
RD-1 Incremental
RD-1 Incremental MAFL

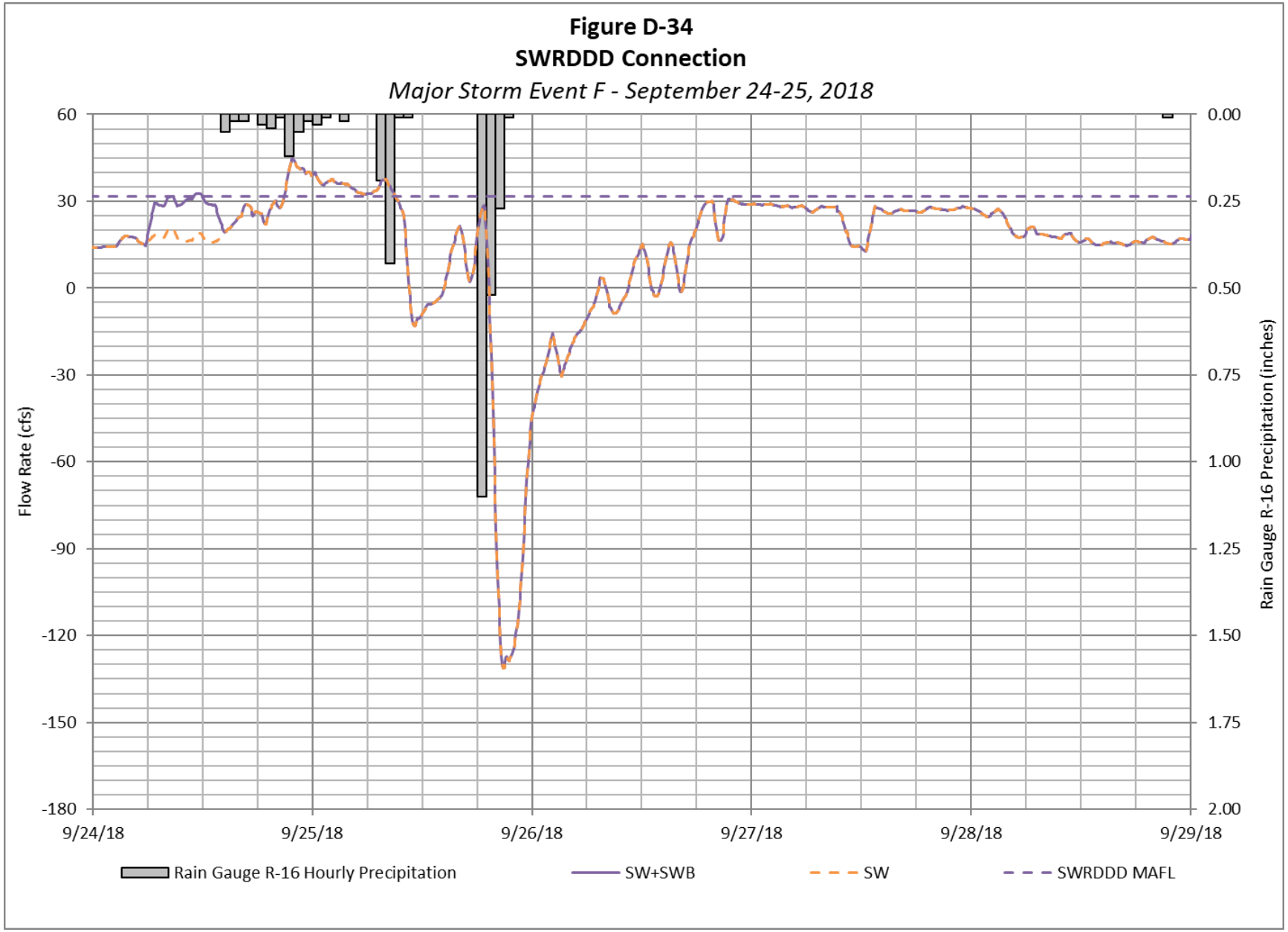


Figure D-34
SWRDDD Connection
Major Storm Event F - September 24-25, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
30
0
-30
-60
-90
-120
-150
-180
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
9/24/18
9/25/18
9/26/18
9/27/18
9/28/18
9/29/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL

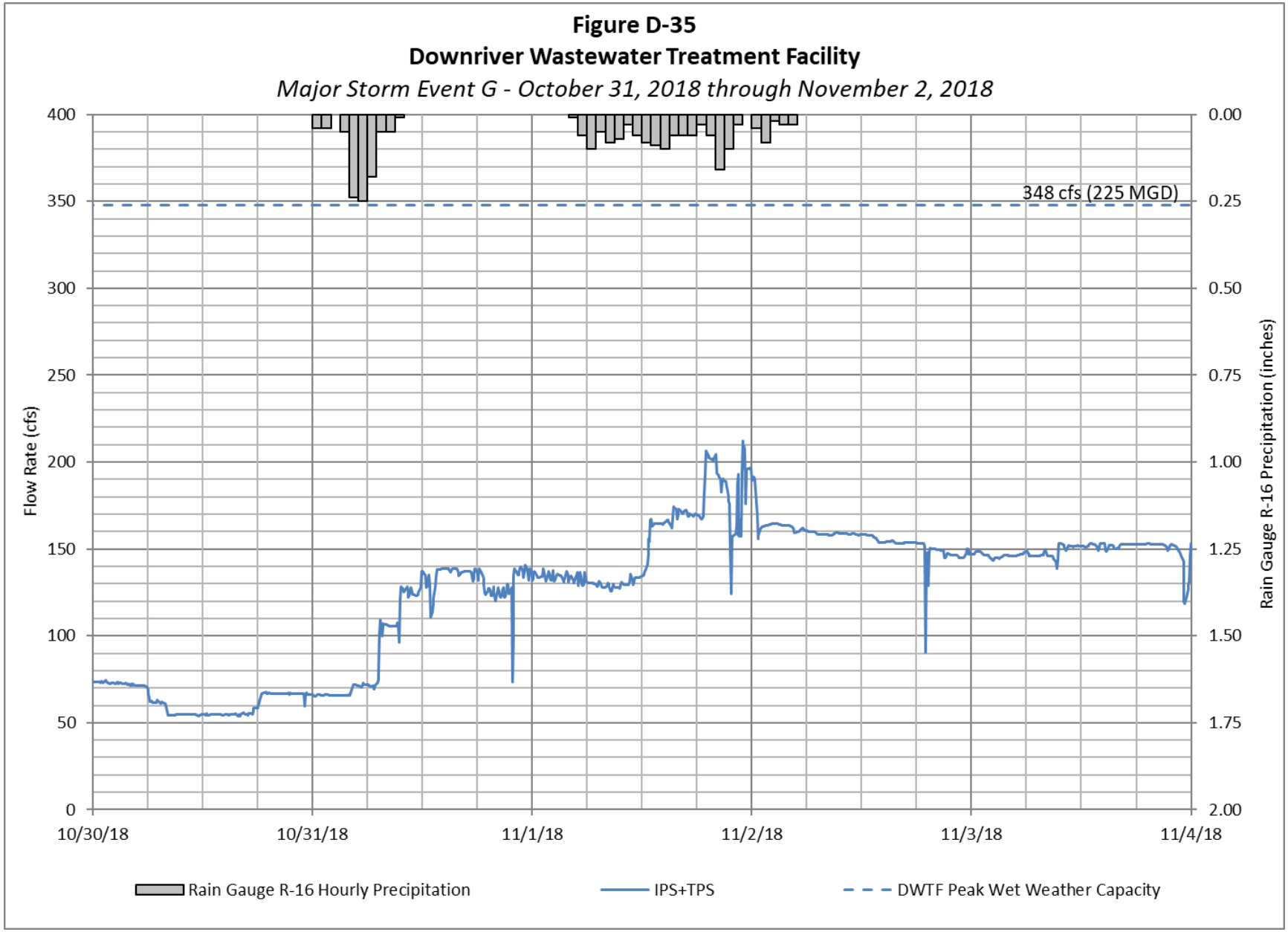


Figure D-35
Downriver Wastewater Treatment Facility
Major Storm Event G - October 31, 2018 through November 2, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
348 cfs (225 MGD)
400
350
300
250
200
150
100
50
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
10/30/18
10/31/18
11/1/18
11/2/18
11/3/18
11/4/18
Rain Gauge R-16 Hourly Precipitation
IPS+TPS
DWTF Peak Wet Weather Capacity

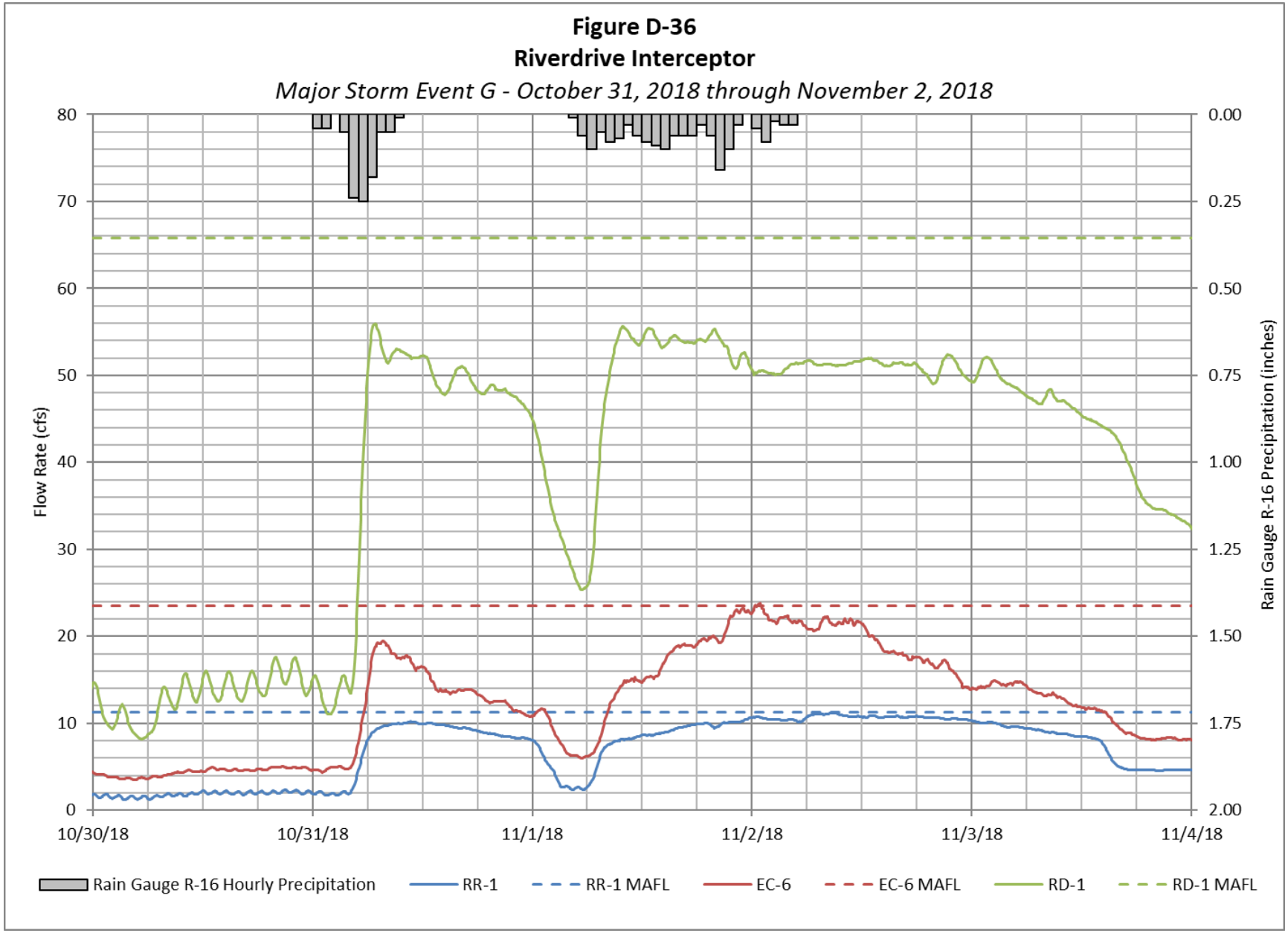
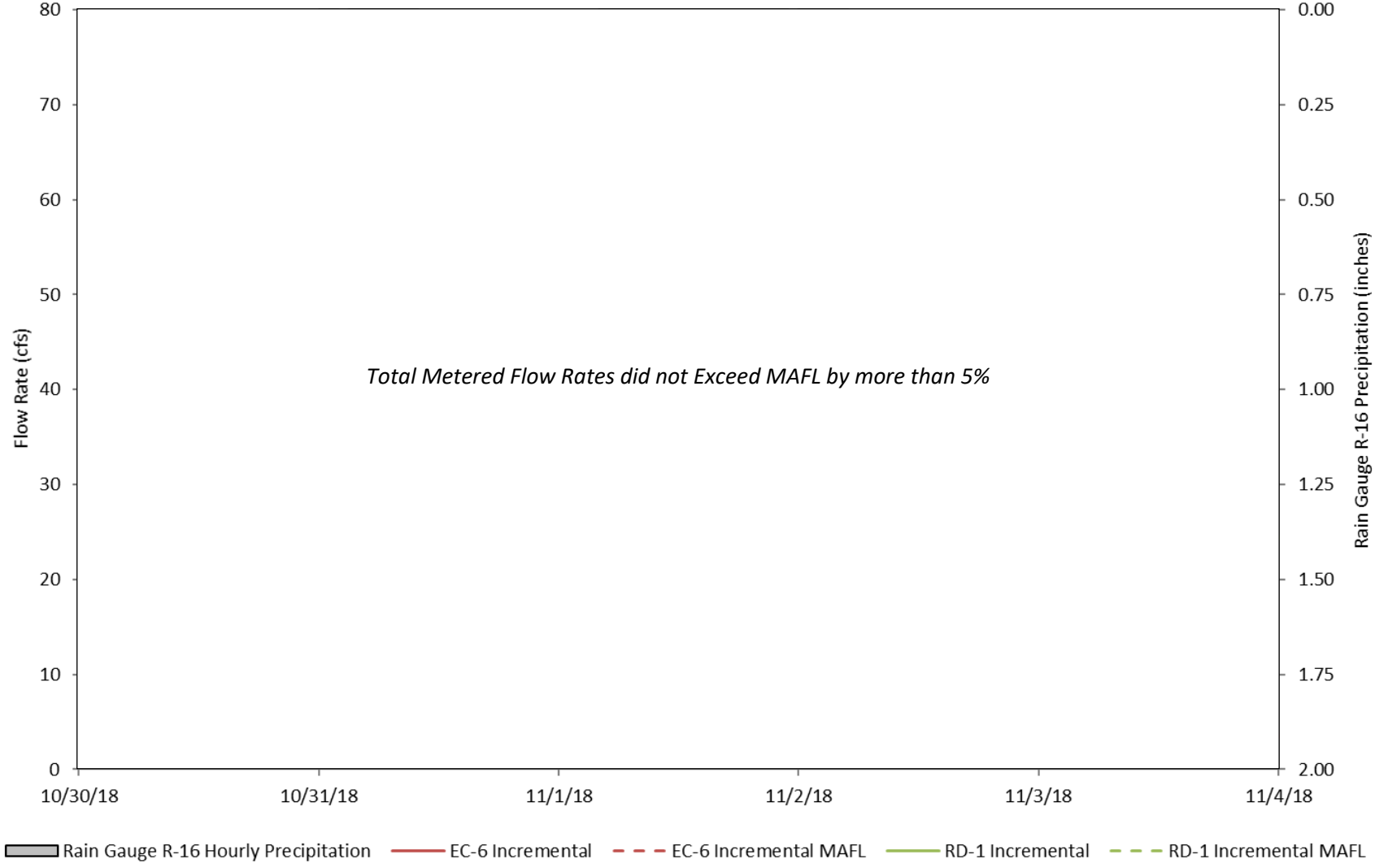


Figure D-36
Riverdrive Interceptor
Major Storm Event G - October 31, 2018 through November 2, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
80
70
60
50
40
30
20
10
0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
10/30/18
10/31/18
11/1/18
11/2/18
11/3/18
11/4/18
Rain Gauge R-16 Hourly Precipitation
RR-1
RR-1 MAFL
EC-6
EC-6 MAFL
RD-1
RD-1 MAFL

Figure D-37
Riverdrive Interceptor
Major Storm Event G - October 31, 2018 through November 2, 2018



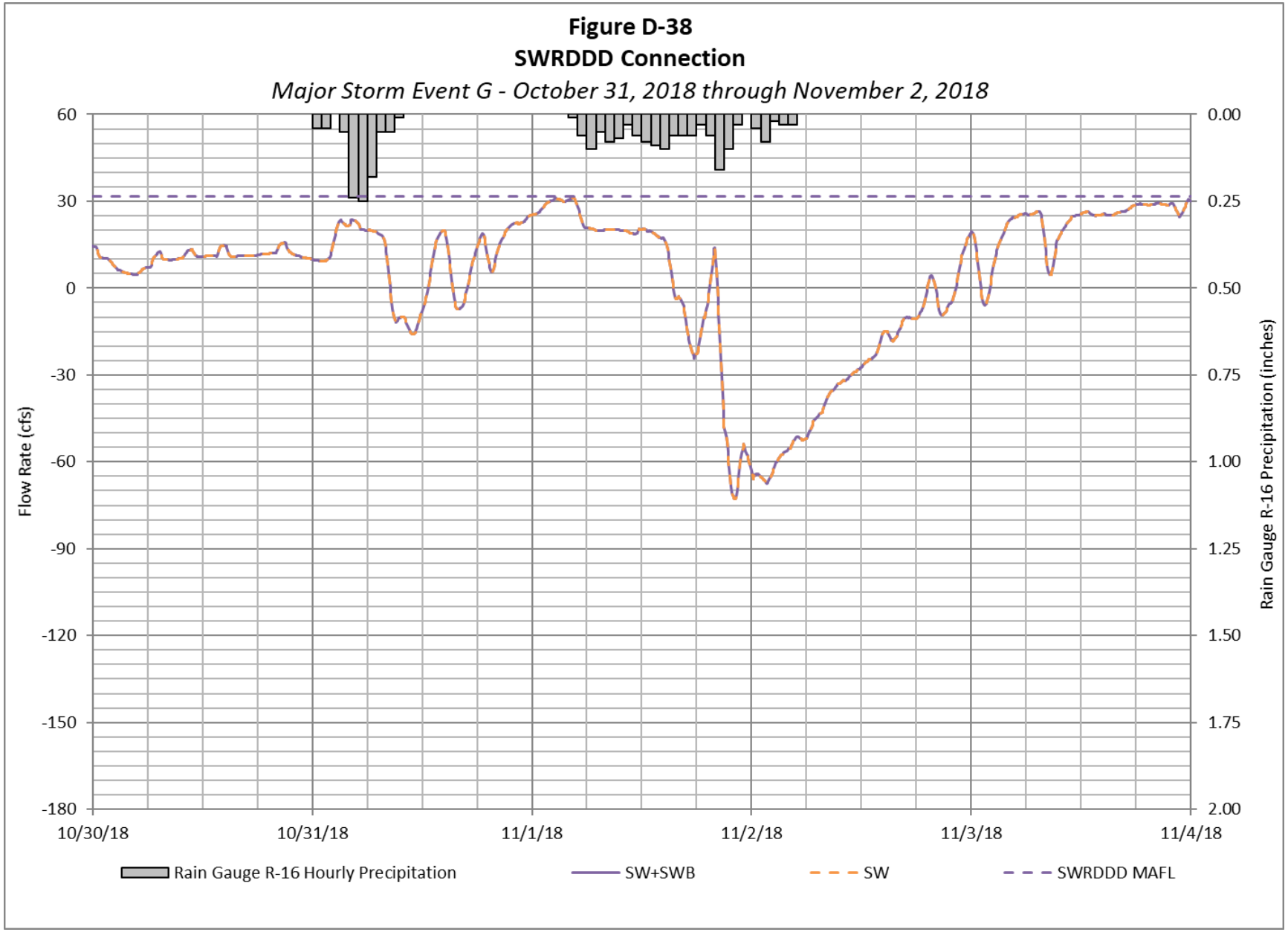


Figure D-38
SWRDDD Connection
Major Storm Event G - October 31, 2018 through November 2, 2018
Flow Rate (cfs)
Rain Gauge R-16 Precipitation (inches)
60
30
0
-30
-60
-90
-120
-150
-180
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
10/30/18
10/31/18
11/1/18
11/2/18
11/3/18
11/4/18
Rain Gauge R-16 Hourly Precipitation
SW+SWB
SW
SWRDDD MAFL