

Wayne County Rouge Valley Sewage Disposal System

Annual System Monitoring Report for 2019



Report to Wayne County and Communities

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April 3, 2020

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Section 1

Noteworthy Items

Noteworthy Items

The annual system monitoring report provides a summary of the flow monitoring data for the Rouge Valley Sewage Disposal System (RVSDS) for January through December 2019. This report supersedes and consolidates the information in the four (4) quarterly system monitoring reports previously issued for 2019. It is intended to provide the best available estimate of flow rates for the entire RVSDS, each meter district and community during the dry and wet weather conditions that occurred in 2019. 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. Any monitoring plan updates made in the annual period and major findings from the RVSDS 2019 system monitoring are presented below.

1. The Agreement Regarding Rouge Valley Sewage Disposal System Between Great Lakes Water Authority and County of Wayne ("Agreement") was executed on May 6, 2019. Revisions to the service area for the RVSDS under the Agreement include the proposed termination of RVSDS service to Canton Township, Northville Township, and Plymouth Township (collectively known as the Western Townships Utilities Authority (WTUA)). The County and WTUA service termination agreement was executed on February 6, 2020.
2. There are some small service areas of the WTUA communities directly connected to the RVSDS, and small service areas of the RVSDS which are directly connected to WTUA sewers. Rather than undertake costly physical improvements to local community/WTUA sewer systems to effect complete physical separation of WTUA flows from RVSDS and of RVSDS customer flows from WTUA, under the WTUA service termination agreement WTUA will continue to convey and treat sewage from the areas of Cities of Plymouth and Northville which are directly connected to their system in exchange for the County continue to convey and treat sewage from the areas within the WTUA townships which are directly connected to the RVSDS. These areas are collectively known as the "flow swap" areas and are described in detail in the RVSDS Annual System Monitoring Report for 2018, dated November 5, 2019.

Prior to the WTUA service termination agreement, WTUA had a combined Maximum Allowable Flow Limit (MAFL) of 26.57 cfs (Canton Township 14.37 cfs, Northville Township 2.60 cfs, and Plymouth Township 9.60 cfs). Through the termination process, 11.00 cfs was transferred to the City of Plymouth and the remaining 15.57 cfs was transferred to Wayne County. The City of Plymouth now has a MAFL of 15.80 cfs (4.80 cfs + 11.00 cfs).

3. Over the year, the flow meters in the RVSDS operated and provided useful data for 92.5% of the period. Excluding the customer meters and the three Great Lakes Water Authority (GLWA) outlet meters, which were out-of-service for the entire year (see discussion under item 11), the flow meters in the RVSDS operated and provided useful data for 98.4% of the year.

4. In 2019, dye-dilution testing was conducted for Meters P-30, P-31 and P-32. The results of all applicable dye-dilution tests of RVSDS flow meters for year 2019 data are shown in Table 1-1 for reference. The data presented in this annual report reflects the results of these dye-dilution tests. The dye test results provided important information that was used to adjust the flow meter data. These adjustments provide more reasonable estimates of flow rates for the meters, meter districts, and communities.
5. The total precipitation at the Detroit Metropolitan Wayne County Airport (DTW) for the year was 36.38 inches, which is 2.91 inches above normal.
6. Over the last four years, the total precipitation at DTW was 16.46 inches above normal. The total precipitation above normal at DTW from 2016 through 2019 were 1.22, 1.99, 10.34, and 2.91 inches, respectively.
7. There were eleven (11) significant storm events during the year. The events were designated as Significant Storm Events 1 through 11 for 2019. A summary of these events is presented in Table 6-1. Total rainfall values for each rain gage and each event are presented in Tables 8-1 through 8-11.
 - Significant Storm Event 1 occurred on March 29-31, 2019 and had an average rainfall of 1.28 inches over the service area.
 - Significant Storm Event 2 occurred on April 18-20, 2019 and had an average rainfall of 1.37 inches over the service area.
 - Significant Storm Event 3 occurred on April 25-26, 2019 and had an average rainfall of 1.27 inches over the service area.
 - Significant Storm Event 4 occurred on April 30, 2019 through May 1, 2019 and had an average rainfall of 1.89 inches over the service area.
 - Significant Storm Event 5 occurred on May 18-20, 2019 and had an average rainfall of 1.10 inches over the service area.
 - Significant Storm Event 6 occurred on July 6, 2019 and had an arithmetic average rainfall of 0.55 inches. However, multiple rain gauges centrally located within the RVSDS service area recorded about 1.5-inches of rainfall for this event and the area-weighted rainfall would be greater than 1-inch. Therefore, this event was included as a significant storm event.
 - Significant Storm Event 7 occurred on July 15-17, 2019 and had an average rainfall of 1.43 inches over the service area.
 - Significant Storm Event 8 occurred on September 11-12, 2019 and had an average rainfall of 1.50 inches over the service area.
 - Significant Storm Event 9 occurred on October 26-27, 2019 and had an average rainfall of 1.39 inches over the service area.
 - Significant Storm Event 10 occurred on October 30, 2019 to November 1, 2019 and had an average rainfall of 1.40 inches over the service area.
 - Significant Storm Event 11 occurred on December 29-30, 2019 and had an average rainfall of 1.32 inches over the service area.

8. Figures 1-1 through 1-11 show the RVSDS outlet meter flow rates for Significant Storm Events 1 through 11. The peak outlet flow rate to GLWA was 312 cfs and occurred during Significant Storm Event 4, on May 1, 2019.
9. A summary of maximum allowable flow limit exceedances by community during significant storm events for 2019 are listed in Table 1-2. Dearborn Heights, Garden City, Inkster, Van Buren Township and Wayne exceeded the maximum allowable flow limits (MAFLs) for at least one significant storm event in 2019. Livonia, Northville City, Oakland County (Novi), Plymouth City, Redford Township, Romulus and Westland did not exceed the maximum allowable flow limits for any of the significant storm events in 2019.
10. Table 1-3 lists the peak flow rates and estimated flood frequencies on the Middle and Lower Rouge Rivers for each significant storm event in 2019. The peak flow rate and return frequency on the Middle Rouge River occurred during Significant Storm Event 4, on May 1, 2019. The estimated flood frequency for the Middle Rouge River for this event was about 3-years. The peak flow rate and return frequency on the Lower Rouge River occurred during Significant Storm Event 4, on May 1, 2019. The estimated flood frequency for the Lower Rouge River for this event was about 5-years.
11. Flow Meters WC-S-1, WC-S-2 and WC-S-3 are owned by Wayne County and operated by the GLWA. Meters WC-S-1, WC-S-2 and WC-S-3 were out-of-service all of 2019.
 - A. GLWA and Wayne County agreed to implement a common data estimation methodology for WC-S-1, WC-S-2 and WC-S-3 missing data as of GLWA fiscal year 2017 (starting on July 1, 2016 at 12:00 AM) and continuing into the future. The agreed upon flow rate estimation methods for Meters WC-S-1, WC-S-2 and WC-S-3 are based on correlations to upstream RVSDS flow meters. Details of these correlations are provided in the *Wayne County Rouge Valley Sewage Disposal System System Monitoring Plan* dated February 25, 2020.
 - B. GLWA and Wayne County executed a data sharing agreement on January 13, 2020. Wayne County will provide GLWA the necessary RVSDS meter data to implement the new data estimation methodology on a monthly basis.
 - C. GLWA publishes monthly “compiled” data for WC-S-1, WC-S-2, and WC-S-3 on the GDRSS portal based on daily average flow rate values (i.e., 24-hour time increment) using the agreed upon methodology to estimate missing data. GLWA has confirmed that the “Annual Compiled” data to be published on the GDRSS portal for WC-S-1, WC-S-2 and WC-S-3 will be daily average values, with missing data estimated based on the correlation with upstream RVSDS meter data per the agreed upon flow rate estimation methods.
 - D. Wayne County estimates missing flow rate data for Meters WC-S-1, WC-S-2 and WC-S-3 using the agreed upon methodology of correlations to upstream RVSDS meters. The missing flow rate data is estimated in 5-minute increments. The increased level of detail provided by the Wayne County estimated data is important for estimating peak hourly flow rates during significant storm events. Meters WC-S-1, WC-S-2 and WC-S-3 flow rates were estimated with the correlations from January 1, 2019 through December 31, 2019.

- E. Table 1-4 lists the total monthly volumes for year 2019 for Meters WC-S-1, WC-S-2 and WC-S-3 as estimated by GLWA "Annual Compiled" and by Wayne County. GLWA "Annual Compiled" data is only available through June 2019. The GLWA and Wayne County values from January through June 2019 are in agreement.
12. Table 1-5 lists the average flow rate and total flow volume for each customer for year 2019. The sum of the outlet flow meters is based on the Wayne County estimated flow rates for Meters WC-S-1, WC-S-2 and WC-S-3.

**Table 1-1
Rouge Valley Sewage Disposal System
Dye-Dilution Test Summary**

Meter	Dye Test Date	Adjustment Factor	Period Adjustment Factor
BG-1	8/10/2016	0.93	0.93
LV-04	7/20/2018	1.11	1.11
LV-14	7/19/2018	0.90	0.90
LV-Basin	8/8/2016	0.82	0.82
M-1	7/18/2018	0.87	0.90
	12/13/2018	0.93	
M-2	7/17/2018	0.84	0.84
P-1	7/11/2016	0.89	0.89
P-7	8/9/2016	0.67	0.67
P-8	8/9/2016	1.10	1.10
P-9	9/1/2015	0.96	0.96
	9/26/2017	0.96	
P-10	8/27/2015	0.97	1.00
	9/27/2017	1.05	
P-11	8/26/2015	0.96	0.97
	9/25/2017	0.97	
P-12	8/26/2015	1.01	0.99
	9/29/2017	0.96	
P-13	7/18/2016	0.93	0.93
P-14	9/10/2015	1.00	0.97
	9/29/2017	0.93	
P-15	6/23/2016	0.84	0.84
P-17	8/8/2016	0.80	0.80
P-19	9/16/2015	0.94	0.94
	9/28/2017	0.94	
P-20	6/24/2016	0.99	0.99
P-21	9/16/2015	0.94	1.03
	10/5/2017	1.12	
P-24	12/4/2014	0.92	0.91
	9/8/2015	0.82	
	9/26/2017	0.97	
P-25	9/8/2015	0.95	0.96
	9/27/2017	0.96	
P-28	6/24/2016	0.74	0.74
P-29	7/27/2016	0.81	0.81
P-30	7/14/2016	0.98	0.99
	11/26/2019	0.99	
P-31	7/7/2016	1.00	1.04
	12/17/2019	1.07	
P-32	7/7/2016	0.89	1.00
	12/10/2019	1.11	
P-33	7/14/2016	0.86	0.86
P-34	11/5/2018	1.11	1.11
P-35	7/12/2016	0.94	0.94
WE-28	10/15/2015	0.72	0.79
	9/27/2017	0.85	

Figure 1-1
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 1

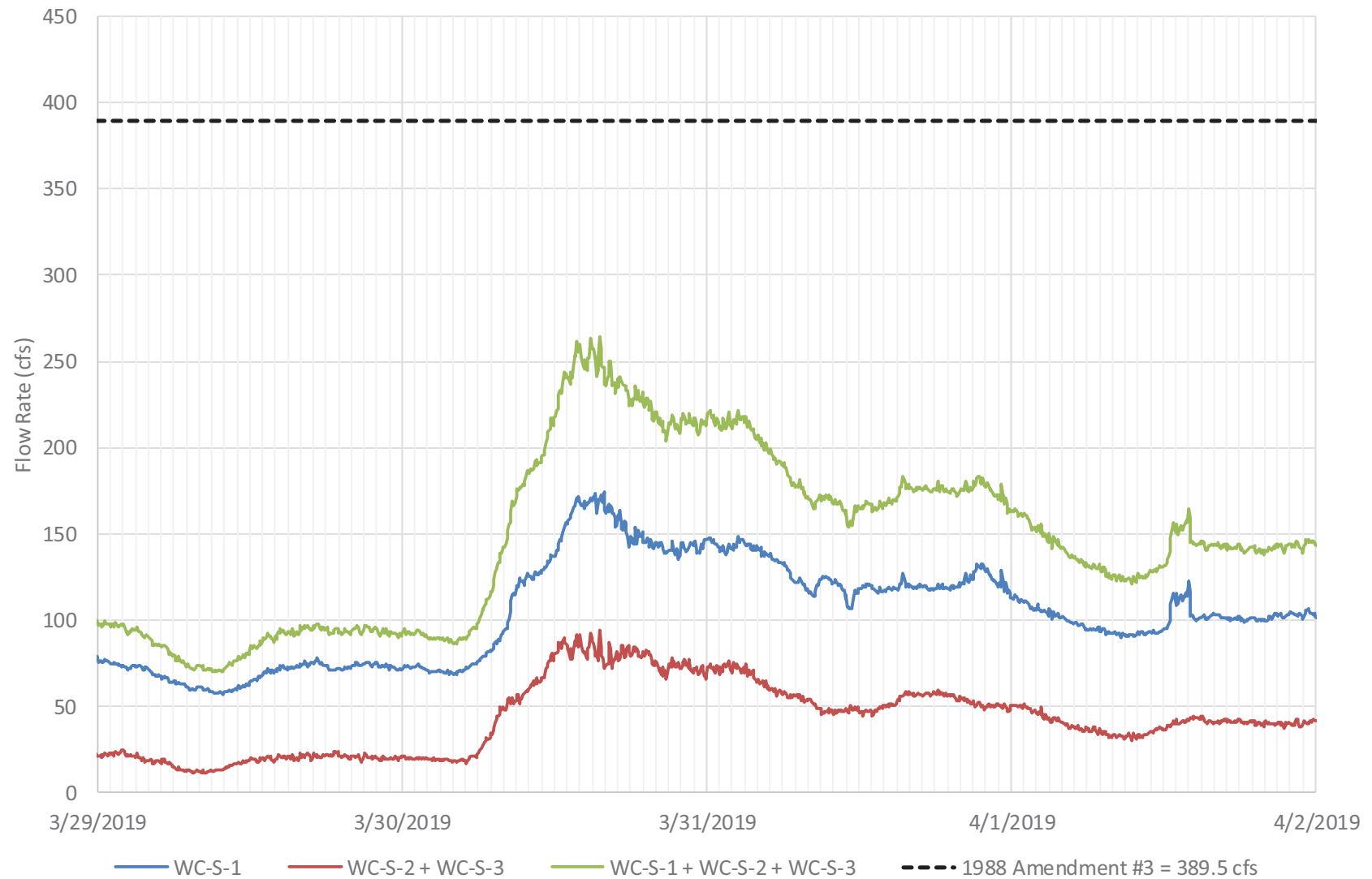


Figure 1-2
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 2

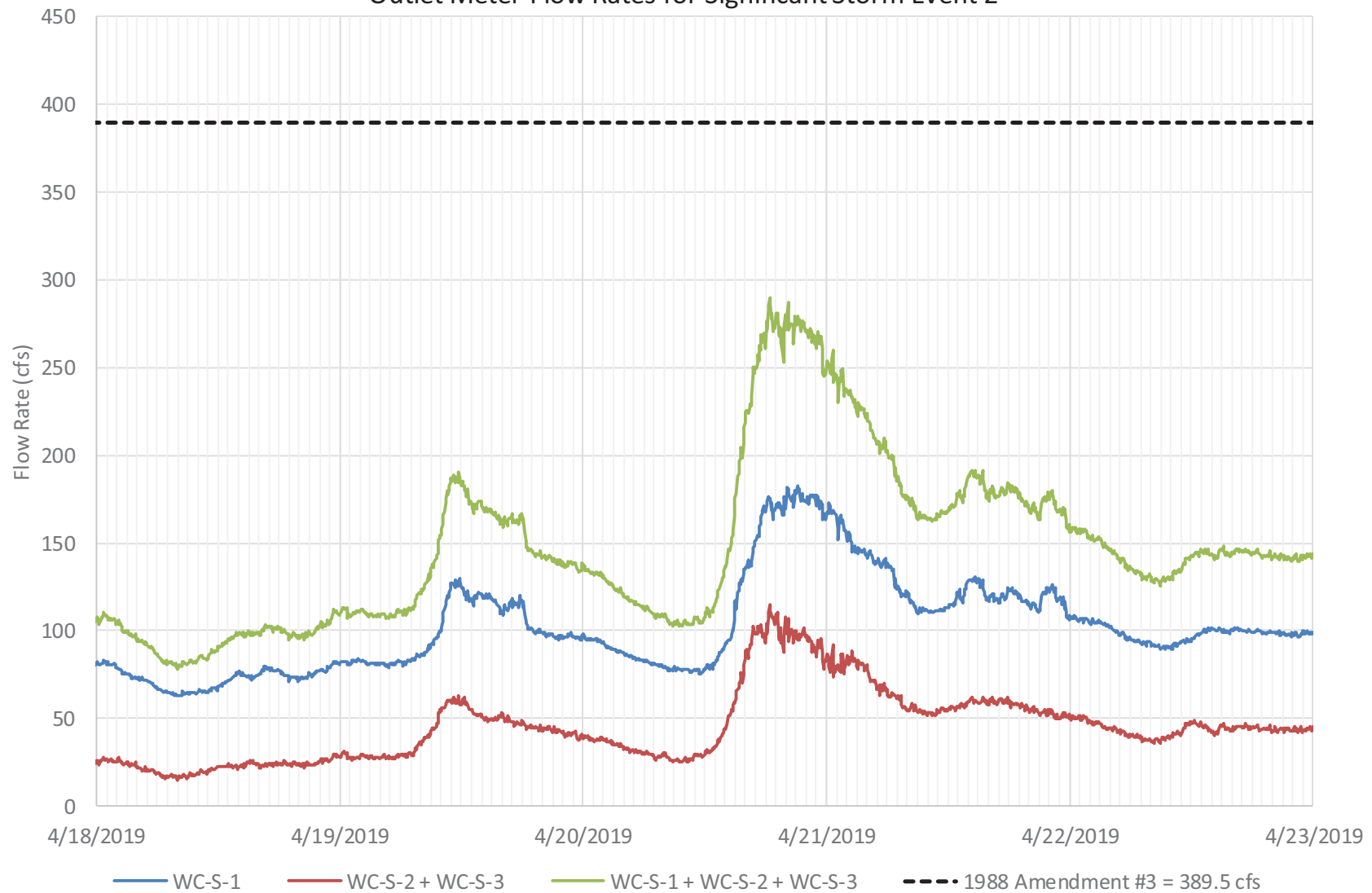


Figure 1-3
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 3

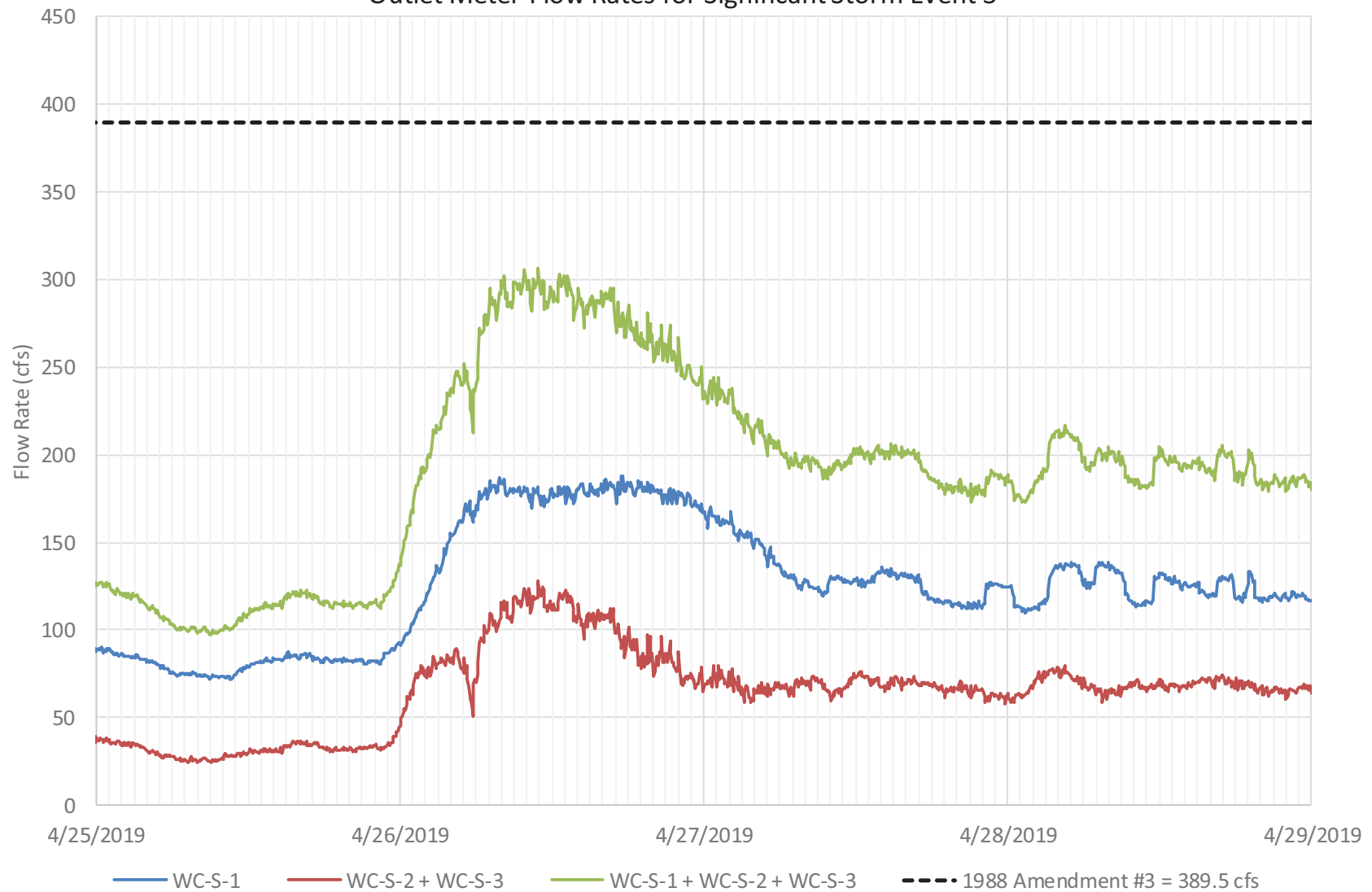


Figure 1-4
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 4

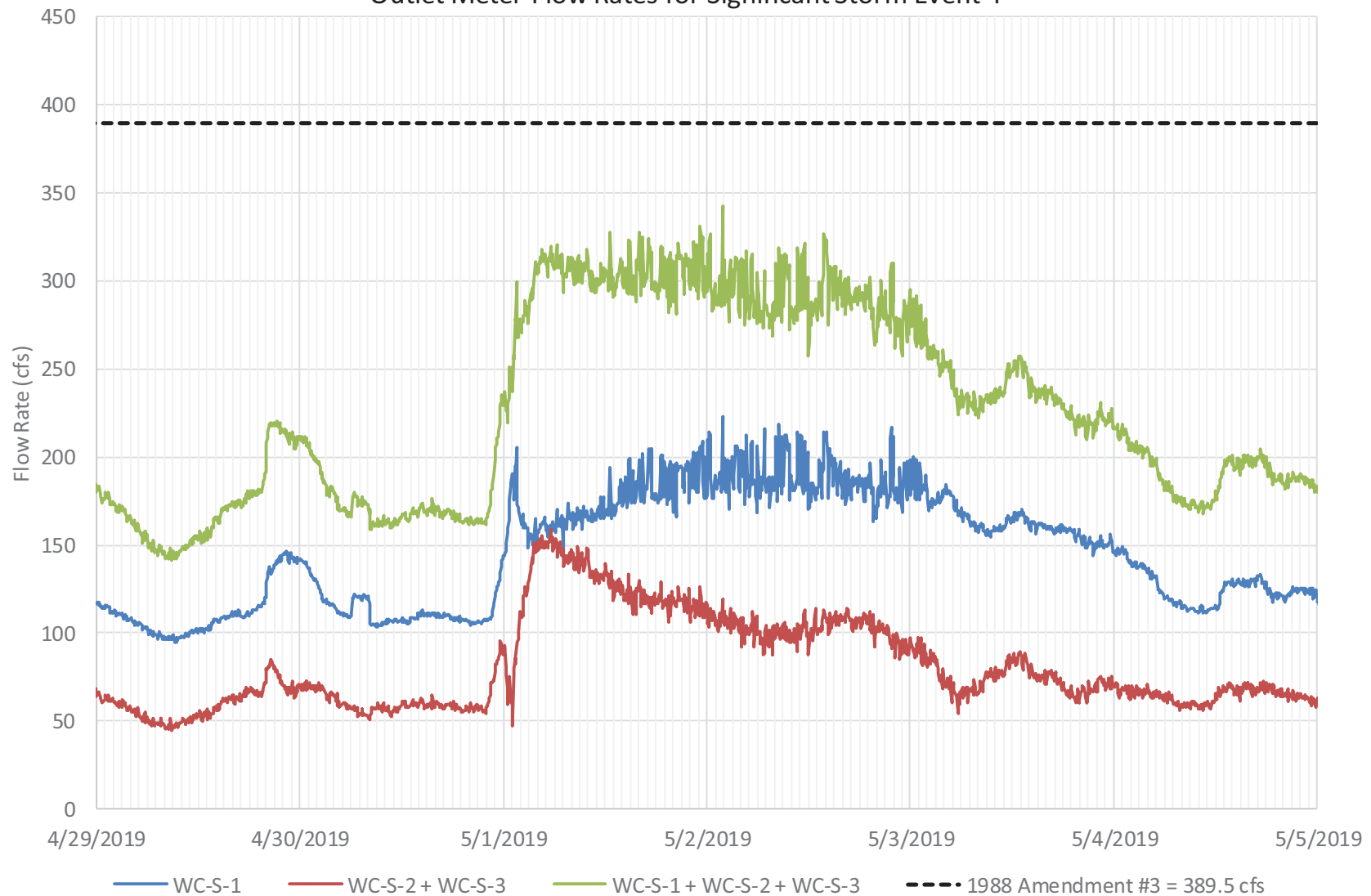


Figure 1-5
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 5

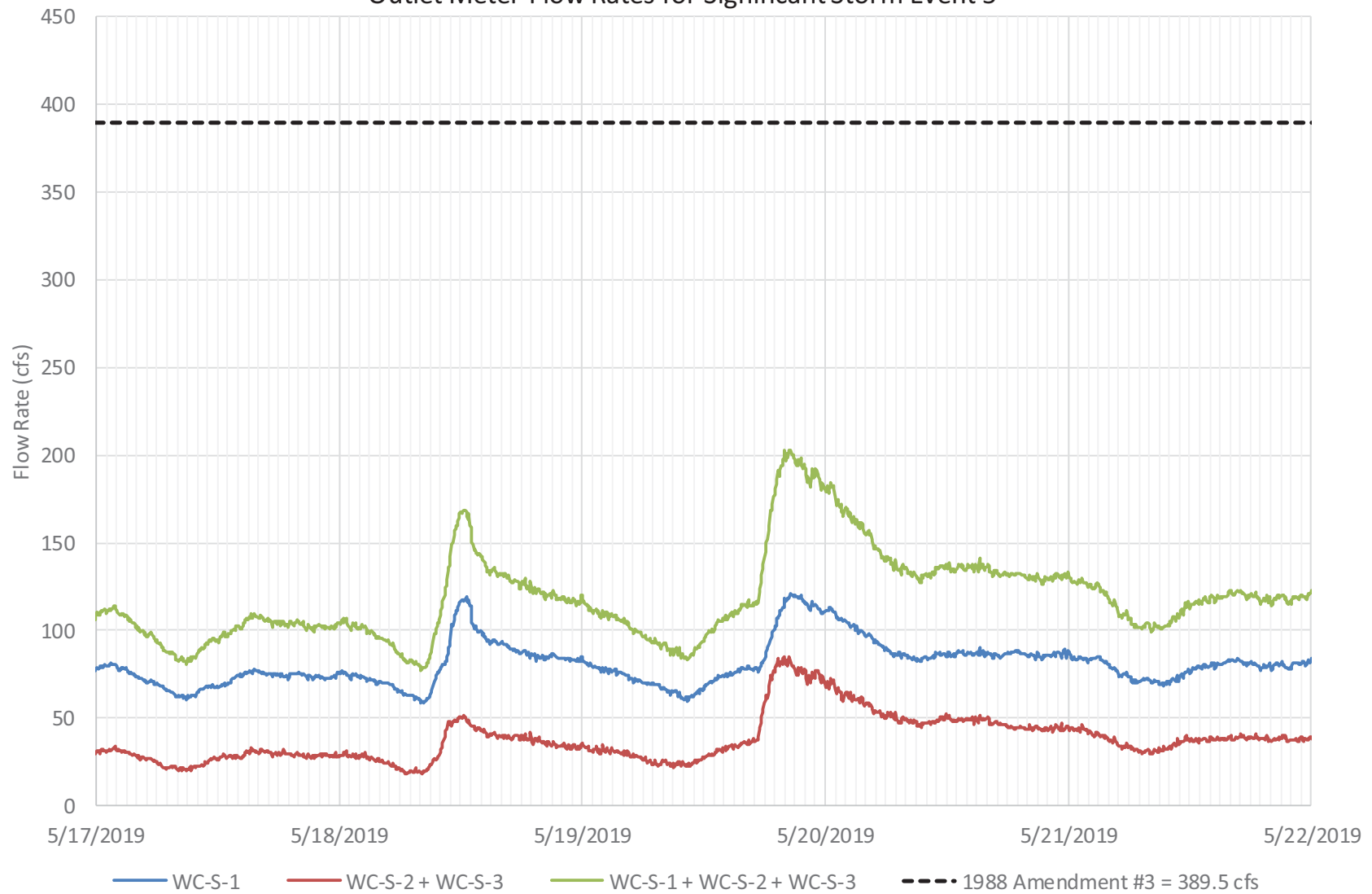


Figure 1-6
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 6

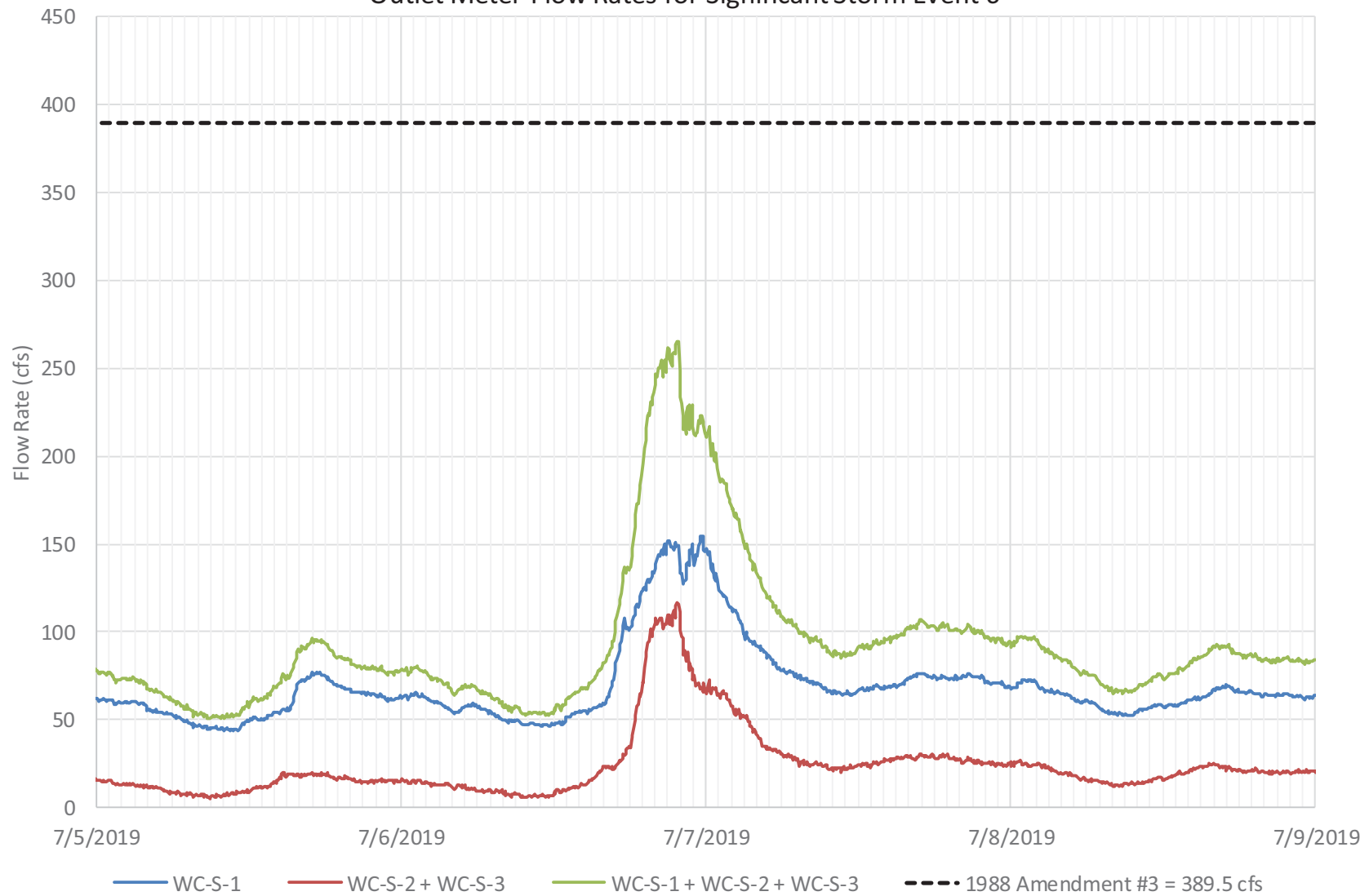


Figure 1-7
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 7

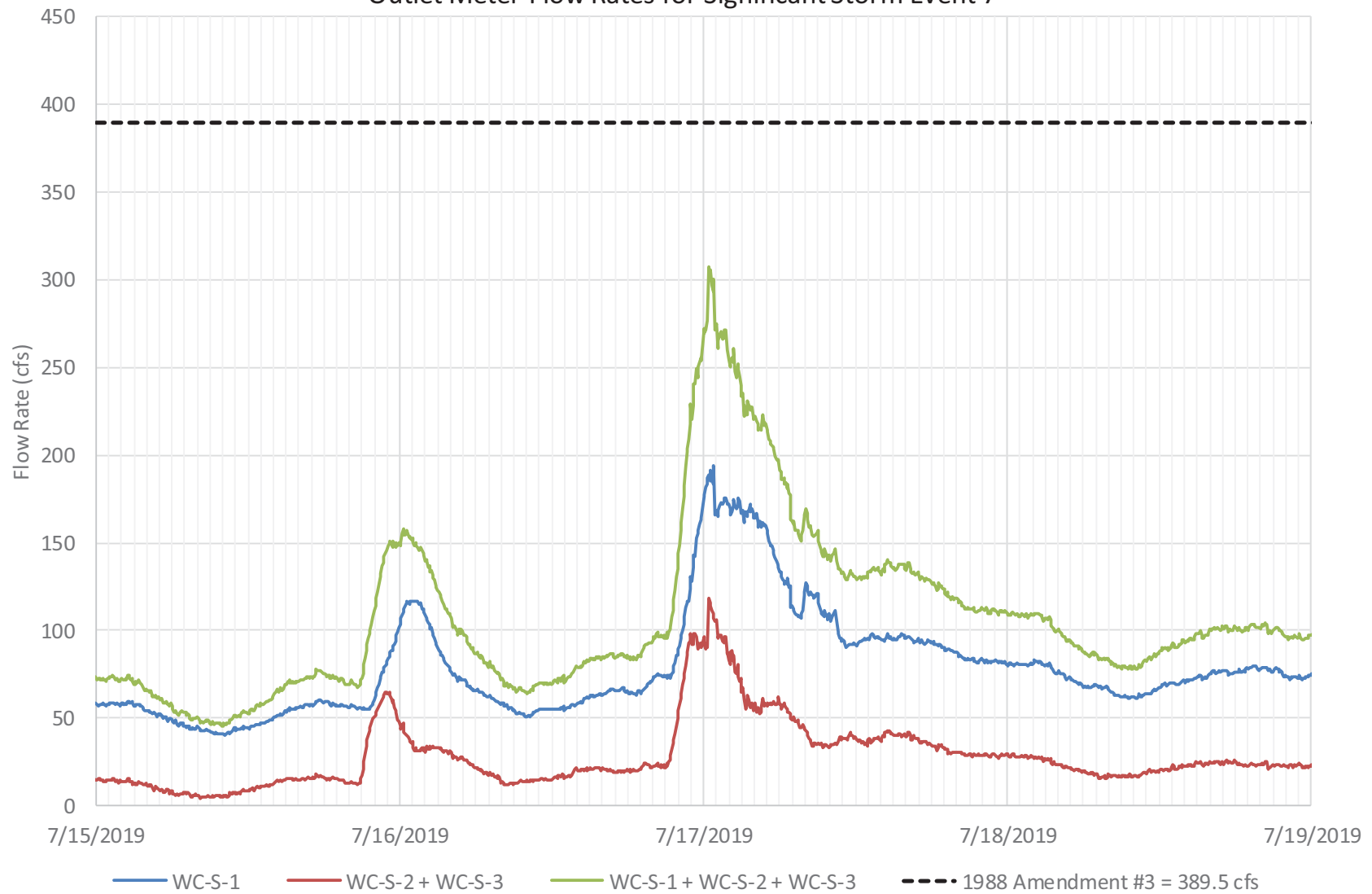


Figure 1-8
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 8

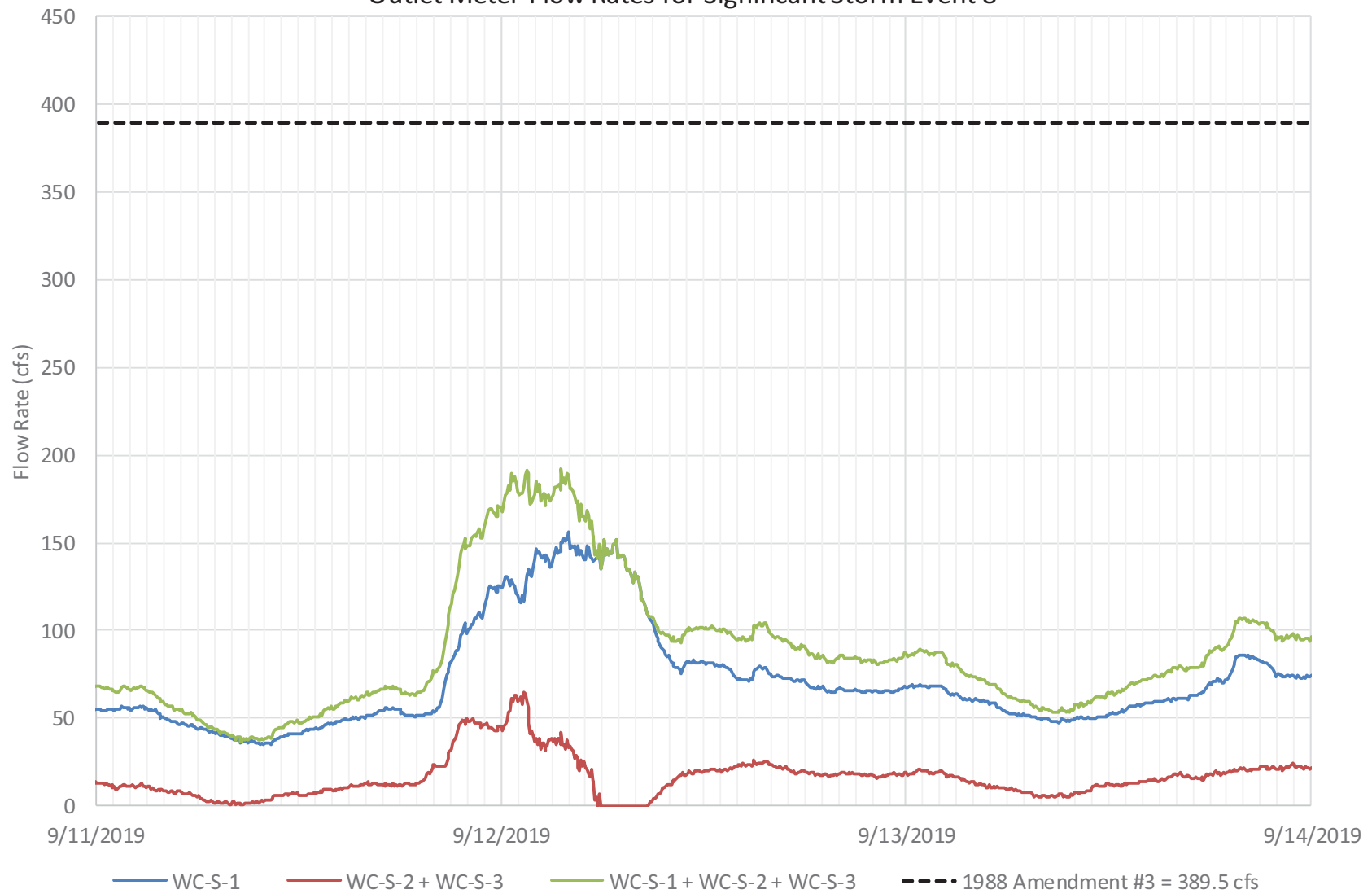


Figure 1-9
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 9

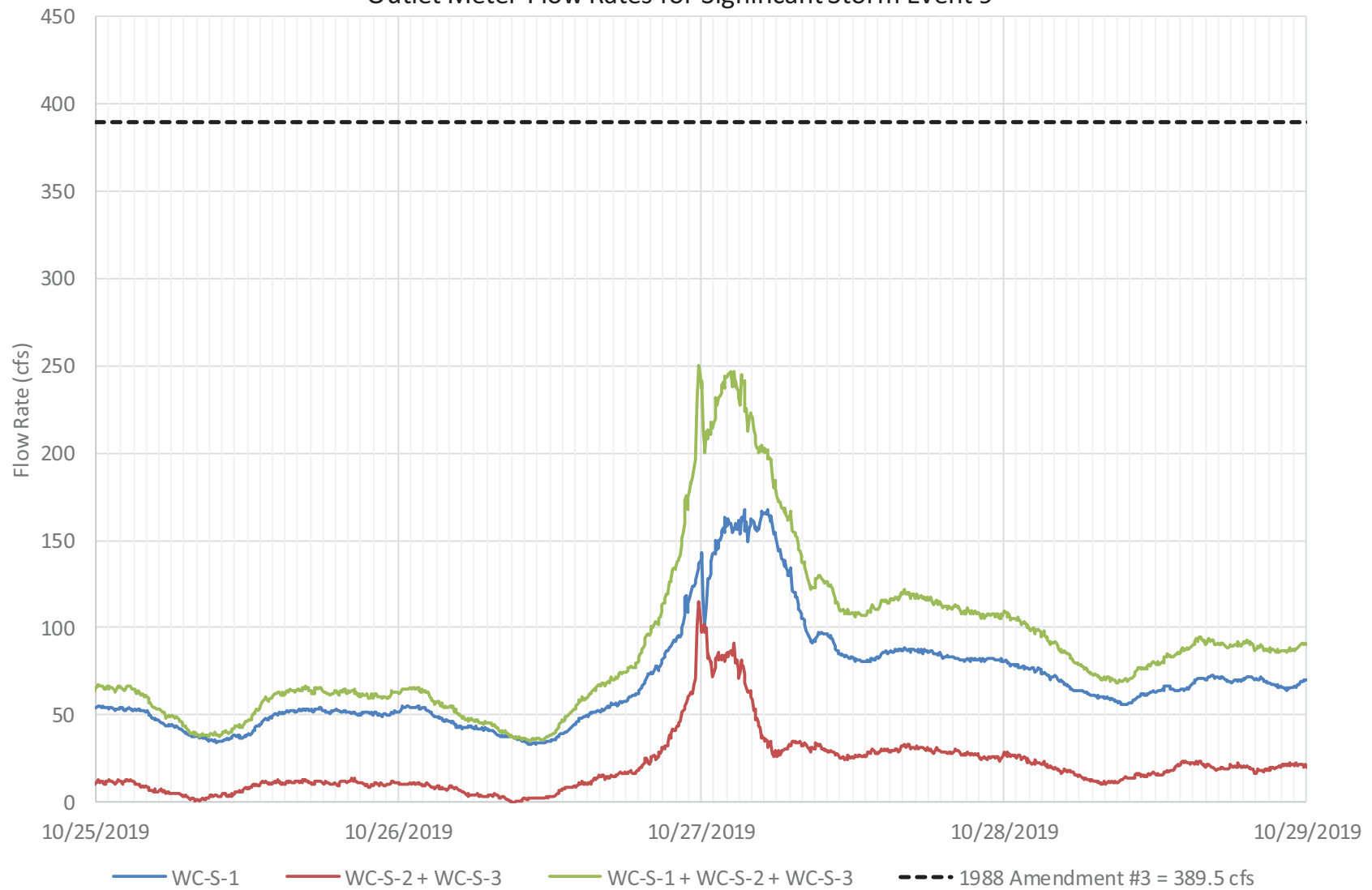


Figure 1-10
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 10

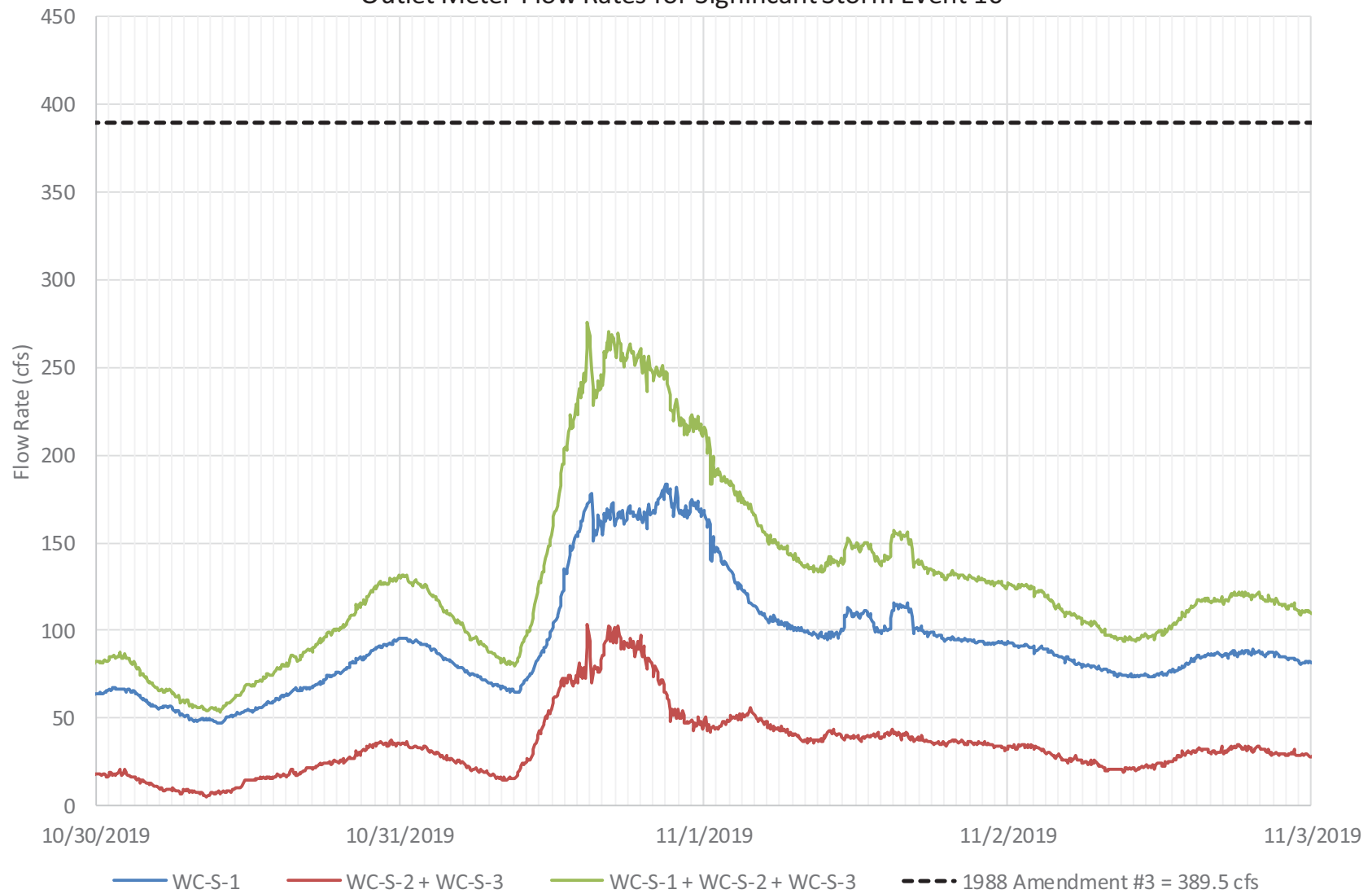


Figure 1-11
Rouge Valley Sewage Disposal System
Outlet Meter Flow Rates for Significant Storm Event 11

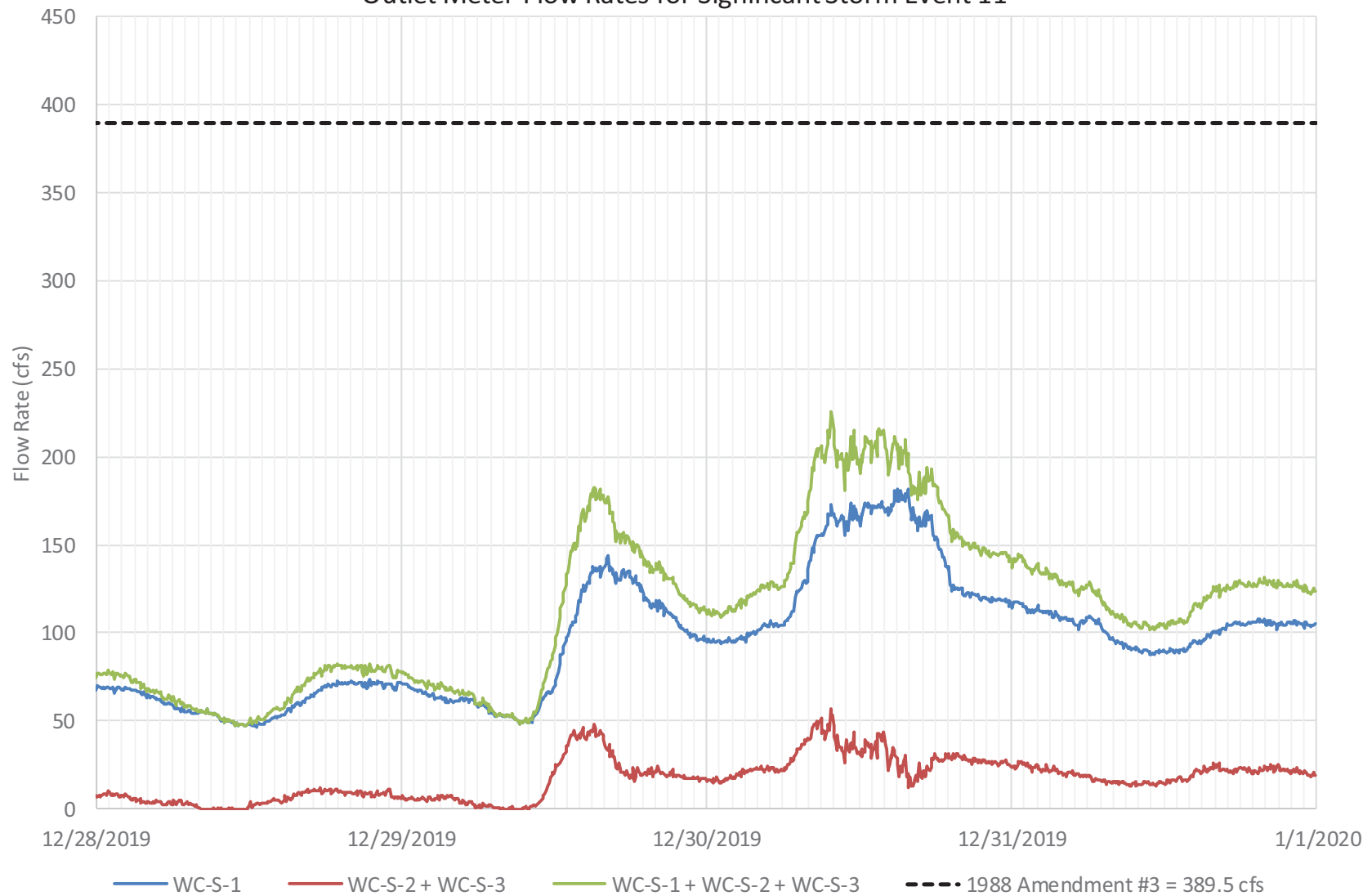


Table 1-2
Rouge Valley Sewage Disposal System
Maximum Allowable Flow Limit Exceedances for Significant Storm Events in 2019

Event	Date	Precipitation (inches)	Customer											
			Oakland County (Novi)	Plymouth City	Northville City	Garden City	Livonia	Westland	Redford Twp	Dearborn Heights	Van Buren Twp	Romulus	Wayne	Inkster
1	March 29-31, 2019	1.28	x	x	x	✓	x	x	x	x	x	x	x	x
2	April 18-20, 2019	1.37	x	x	x	✓	x	x	x	x	x	x	x	x
3	April 25-26, 2019	1.27	x	x	x	✓	x	x	x	x	x	x	x	x
4	April 30, 2019 – May 1, 2019	1.89	x	x	x	✓	x	x	x	✓	✓	x	✓	✓
5	May 18-20, 2019	1.10	x	x	x	x	x	x	x	x	x	x	x	x
6	July 6, 2019	0.55	x	x	x	✓	x	x	x	✓	x	x	x	✓
7	July 15-17, 2019	1.43	x	x	x	✓	x	x	x	✓	x	x	x	x
8	September 11-12, 2019	1.50	x	x	x	x	x	x	x	x	x	x	x	x
9	October 26-27, 2019	1.39	x	x	x	✓	x	x	x	x	x	x	x	x
10	October 30, 2019 – November 1, 2019	1.40	x	x	x	✓	x	x	x	✓	x	x	x	x
11	December 29-30, 2019	1.32	x	x	x	x	x	x	x	x	x	x	x	x
Total			0/11	0/11	0/11	8/11	0/11	0/11	0/11	4/11	1/11	0/11	1/11	2/11

Legend:

✓	Maximum Allowable Flow Limit Exceeded
x	Maximum Allowable Flow Limit Not Exceeded

Table 1-3
Rouge Valley Sewage Disposal System
Rouge River Flood Frequency for Significant Storm Events in 2019

Significant Storm Event		Peak 15-minute Flow Rate (cfs)		Estimated Flood Frequency ²	
Event No.	Date	Middle Rouge USGS Gage #04167000	Lower Rouge USGS Gage #04168400	Middle Rouge USGS Gage #04167000	Lower Rouge USGS Gage #04168400
1	March 29-31, 2019	548	673	4 - month	4 - month
2	April 18-20, 2019	637	695	5 - month	4 - month
3	April 25-26, 2019	1,030	979	2 - year	8 - month
4	April 30, 2019 – May 1, 2019	1,180	1,940	3 - year	5 - year
5	May 18-20, 2019	447	460	3 - month	2 - month
6	July 6, 2019	613	552	5 - month	2 - month
7	July 15-17, 2019	597	748	4 - month	4 - month
8	September 11-12, 2019	392	389	2 - month	1 - month
9	October 26-27, 2019	501	478	3 - month	2 - month
10	October 30, 2019 – November 1, 2019	574	654	4 - month	3 - month
11	December 29-30, 2019	462	621	3 - month	3 - month
Estimated Flood Frequency ¹		315	408	1 - month	
		734	903	6 - month	
		944	1,152	1 - year	
		1,066	1,405	2 - year	
		1,549	1,943	5 - year	
		1,988	2,436	10 - year	
		3,255	3,717	100 - year	

Notes:

1. A partial duration analysis was used to estimate the 1-month, 6-month, and 1-year flood frequency flow rates. An annual peak series analysis was used to estimate the 2, 5, 10 and 100-year flood frequency flow rates.
2. The estimated flood frequency for each storm event was linearly interpolated between the estimated flood frequencies listed in the lower half of this table.

Table 1-4
Rouge Valley Sewage Disposal System
Monthly Volume Comparison

Period	[WC-S-1] (MG)				[WC-S-2] + [WC-S-3] (MG)				[WC-S-1] + [WC-S-2] + [WC-S-3] (MG)			
	GLWA	Wayne County	Difference		GLWA	Wayne County	Difference		GLWA	Wayne County	Difference	
January 2019	1,472	1,472	0	0.0%	446	446	0	0.0%	1,918	1,918	0	0.0%
February 2019	1,483	1,483	0	0.0%	493	493	0	0.0%	1,976	1,976	0	0.0%
March 2019	1,592	1,592	0	0.0%	525	525	0	0.0%	2,117	2,117	0	0.0%
April 2019	1,799	1,799	0	0.0%	719	719	0	0.0%	2,517	2,517	0	0.0%
May 2019	1,869	1,869	0	0.0%	917	917	0	0.0%	2,786	2,786	0	0.0%
June 2019	1,402	1,402	0	0.0%	500	500	0	0.0%	1,901	1,901	0	0.0%
July 2019	N/A	1,290	-	-	N/A	376	-	-	N/A	1,666	-	-
August 2019	N/A	1,029	-	-	N/A	195	-	-	N/A	1,224	-	-
September 2019	N/A	1,040	-	-	N/A	209	-	-	N/A	1,248	-	-
October 2019	N/A	1,162	-	-	N/A	296	-	-	N/A	1,458	-	-
November 2019	N/A	1,324	-	-	N/A	370	-	-	N/A	1,693	-	-
December 2019	N/A	1,358	-	-	N/A	335	-	-	N/A	1,693	-	-
Total	N/A	16,818	0	0.0%	N/A	5,380	0	0.0%	N/A	22,199	0	0.0%

Notes:

1. GLWA annual compiled data is assembled and provided on the GDRSS Portal by GLWA fiscal year, which ends on June 30th.
2. MG = Million Gallons
3. N/A = Data not available

Table 1-5
Rouge Valley Sewage Disposal System
Average Flow Rate and Volume by Customer for 2019

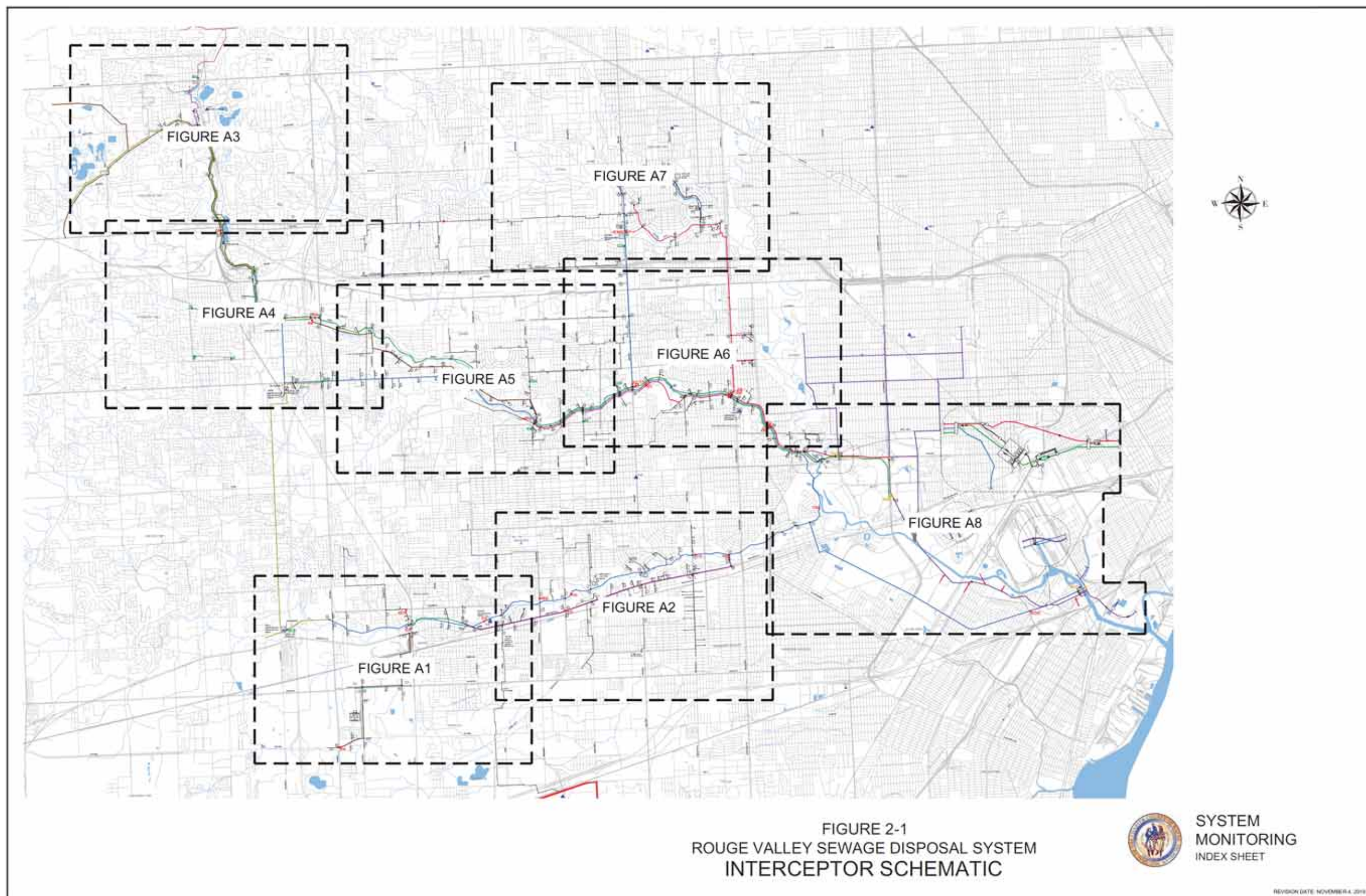
Customer	Estimated Annual Average Flow Rate (cfs)	Estimated Annual Flow Volume	
		(MG)	(MCF)
Oakland County (Novi)	7.46	1,759	235,172
Plymouth City	3.11	734	98,129
Northville City	1.68	397	53,024
Garden City	6.31	1,488	198,867
Livonia	24.75	5,840	780,636
Westland	17.32	4,085	546,098
Redford Twp	11.08	2,615	349,526
Dearborn Heights	7.47	1,762	235,567
Van Buren Twp	1.48	349	46,703
Romulus	0.31	74	9,850
Wayne	5.69	1,342	179,372
Inkster	3.89	917	122,567
WCAA	0.43	101	13,436
Sum of Customer Flow Rates	90.97	21,461	2,868,948
Sum of Outlet Meter Flow Rates [WC-S-1] + [WC-S-2] + [WC-S-3]	94.10	22,199	2,967,552

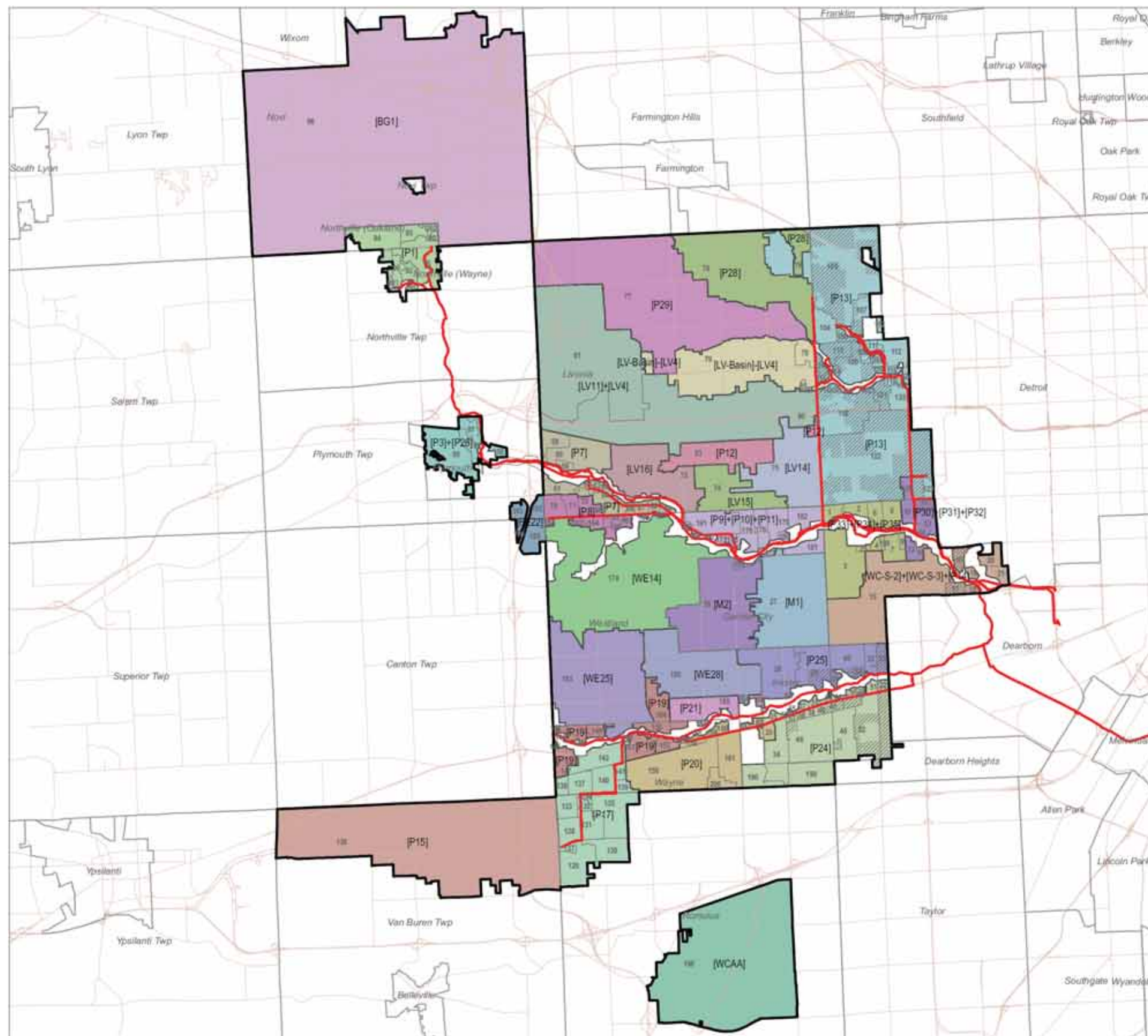
Notes:

1. cfs = Cubic Feet per Second
2. MG = Million Gallons
3. MCF = Thousand Cubic Feet

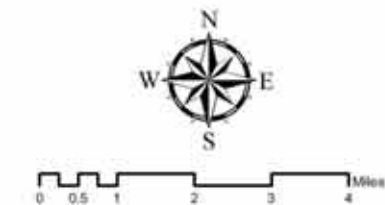
Section 2

Monitoring Network





Rouge Valley Sewage Disposal System



Legend

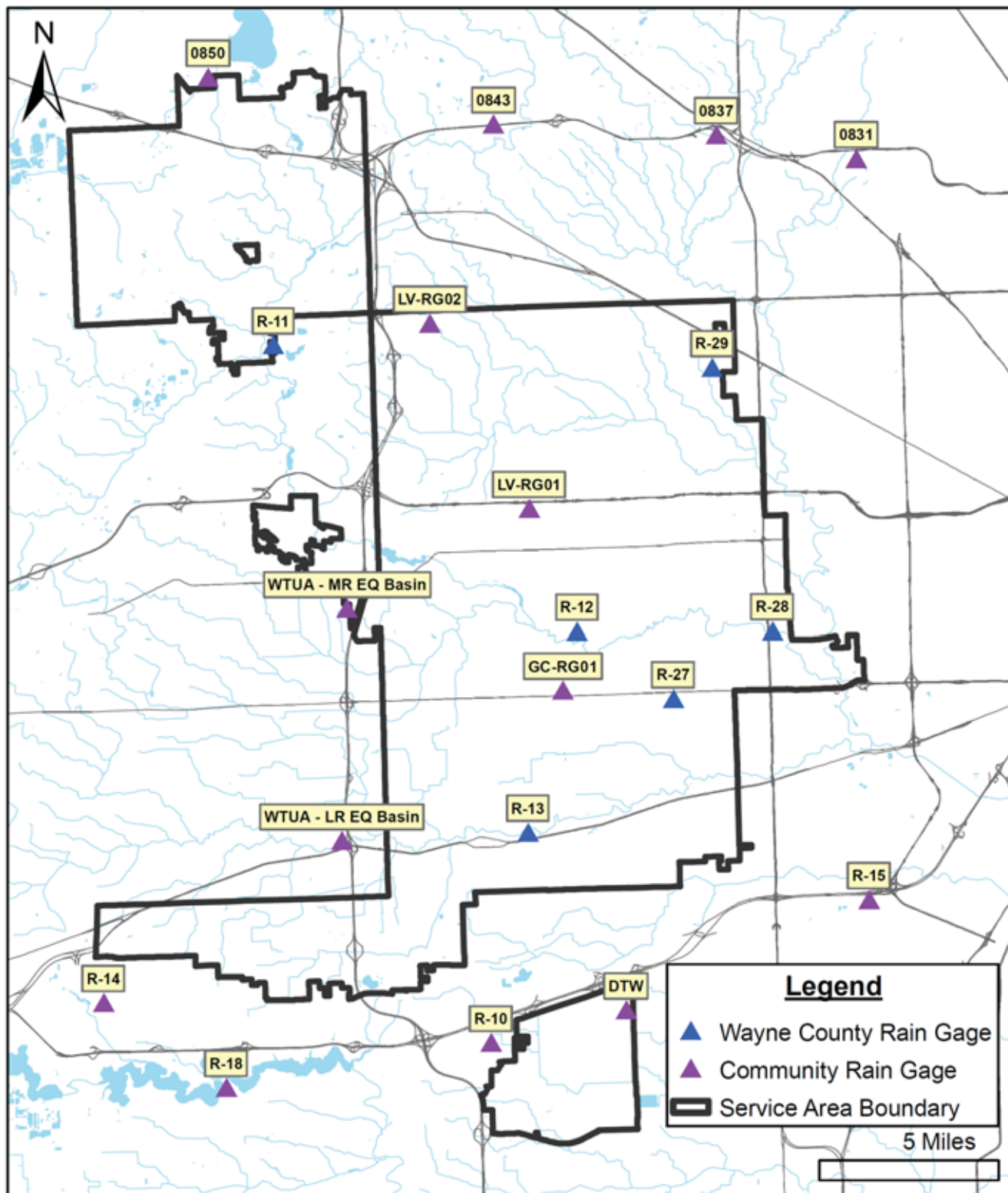
- Interceptor
- [P1] Meter District
- 1 Line Connection Area
- Combined Area
- Community Boundary
- Service Area Boundary
- Roads

Figure 2-2
Meter District and
Line Connection Areas



Prepared By:
Applied Science, Inc.

REVISION DATE: OCTOBER 7, 2019



REVISION DATE: October 10, 2019

Figure 2-3
Rouge Valley Sewage Disposal System
Rain Gage Location Map

Table 2-1
Rouge Valley Sewage Disposal System
Flow Monitoring Meters

Operated By		Flow Meter
Wayne County		P-1, P-3, P-7, P-8, P-9, P-10, P-11, P-12, P-13, P-14, P-15, P-17, P-19, P-20, P-21, P-24, P-25, P-26, P-28, P-29, P-30, P-31, P-32, P-33, P-34, P-35, LV-Basin, M-22A, M-22B, WE-14, WE-25, WE-28 & WC-S-1A
Customer Meters	City of Livonia	LV-4, LV-11, LV-14, LV-15, LV-16 & LV-20
	Garden City	M-1 & M-2
	Oakland County (City of Novi)	BG-1
	WTUA ¹	FE-19 & FE-22
	WCAA ²	Pond 3 West to RVSDS
RVSDS Outlet Meters ³		WC-S-1, WC-S-2 & WC-S-3

1) Western Townships Utilities Authority (WTUA)

2) Wayne County Airport Authority (WCAA)

3) Meters owned by Wayne County and operated/maintained by GLWA

Table 2-2
Rouge Valley Sewage Disposal System
Rain Gages

Operated By	Rain Gage	Location
Wayne County	R-11	650 Doheny Drive, Northville
	R-12	7651 Merriman Road, Westland
	R-13	3301 Josephine Street, Wayne
	R-27	2001 Inkster Road, Inkster
	R-28	23800 Hines Drive, Dearborn Heights
	R-29	15145 Beech Daly Road, Redford
DUWA ¹	R-10	11111 Wayne Road, Romulus
	R-14	Willow Run Airport, Van Buren Township
	R-15	20195 Trolley, Taylor
	R-18	130 4 th Street, Belleville
Livonia	Livonia RG01	Schoolcraft Road, Livonia
	Livonia RG02	Whispering Willows Golf Course, Livonia
Garden City	Garden City RG01	Moeller Park, Garden City
NOAA ²	DTW	Wayne County Metro Airport, Romulus
Oakland County WRC ³	0831	19625 Middlesex Street, Southfield
	0837	25515 Clara Lane, Southfield
	0843	34189 12 Mile Road, Farmington Hills
	0850	46351 West Road, Walled Lake
WTUA	WTUA LR EQ Basin	3501 Haggerty Road, Canton
	WTUA MR EQ Basin	40905 Joy Road, Plymouth

1) Downriver Utility Wastewater Authority (DUWA) transferred from Wayne County (effective September 27, 2018)

2) National Oceanic and Atmospheric Administration (NOAA)

3) Oakland County Water Resources Commissioner (WRC)

Section 3

Per-Capita Flow Rate at Key Locations

Table 3-1
Rouge Valley Sewage Disposal System
Average Per-Capita Flow Rate at Key Locations

Branch	Sewage Flow Meter	Year 2010 Residential Population	Total Developed Land (acres)	Monthly Average Incremental Flow Rate (cfs)												Annual Average Incremental Flow Rate	
				Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	(cfs)	(gallons / capita / day)
Middle Rouge at Inkster Road	[P-9] + [P-10] + [P-11]	223,294	38,494	48.6	56.3	55.1	66.1	70.1	52.6	44.2	33.8	34.8	39.8	46.6	44.7	49.3	143
Middle Rouge Outlet	[WC-S-2] + [WC-S-3] + [P-14]	308,778	46,362	68.0	77.3	75.7	92.8	100.7	72.9	61.4	44.6	46.6	54.0	62.9	60.4	68.0	142
Lower Rouge Outlet	[P-24] + [P-25] - [WCAA]	96,019	15,976	20.4	24.1	21.8	27.3	28.1	17.6	16.3	12.9	14.0	14.7	18.4	17.4	19.4	131
RVSDS Outlet	[WC-S-1] + [WC-S-2] + [WC-S-3] - [WCAA]	404,797	62,339	95.2	109.1	104.8	129.1	138.4	96.9	83.0	61.1	64.4	72.8	87.3	83.6	93.7	150

Table 3-2
Rouge Valley Sewage Disposal System
Average Per-Capita Dry Weather Flow Rate at Key Locations

Branch	Sewage Flow Meter	Year 2010 Residential Population	Total Developed Land (acres)	Monthly Average Incremental Dry Weather Flow Rate (cfs)												Annual Average Incremental Dry Weather Flow Rate	
				Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	(cfs)	(gallons / capita / day)
Middle Rouge at Inkster Road	[P-9] + [P-10] + [P-11]	223,294	38,494	44.7	50.6	50.0	53.3	59.0	49.6	39.3	33.2	33.2	35.0	43.3	41.4	44.3	128
Middle Rouge Outlet	[WC-S-2] + [WC-S-3] + [P-14]	308,778	46,362	61.6	68.7	67.3	72.9	82.4	67.9	53.0	43.6	43.7	45.9	57.9	55.3	59.9	125
Lower Rouge Outlet	[P-24] + [P-25] - [WCAA]	96,019	15,976	17.4	20.4	18.8	21.1	21.4	16.4	13.7	12.2	12.7	11.5	16.6	15.2	16.4	111
RVSDS Outlet	[WC-S-1] + [WC-S-2] + [WC-S-3] - [WCAA]	404,797	62,339	84.8	95.7	92.4	101.4	111.2	90.4	71.1	59.3	60.0	60.8	79.8	75.5	81.7	130

Section 4

Customer Flow Summaries

Table 4-1
Rouge Valley Sewage Disposal System
Monthly Average Flow Rate by Customer
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math ¹	Year 2010 Residential Population	Total Developed Land (acres)	Maximum Allowable Flow Limit ² (cfs)	Estimated Monthly Average Customer Flow Rate (cfs)												Estimated Annual Average Flow Rate		Estimated Maximum Monthly Average Flow Rate (cfs)
					Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	(cfs)	(gallons / capita / day)	
Oakland County (Novi)	[BG-1]	43,217	12,473	20.48	7.32	7.65	7.73	8.04	8.32	8.13	7.09	6.42	6.67	6.97	7.60	7.58	7.46	112	8.32
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	9,022	968	15.80	3.72	4.18	4.05	3.81	4.44	4.19	2.75	1.69	1.80	2.10	2.38	2.30	3.11	223	4.44
Northville City	[P-1] - [BG-1]	5,939	913	7.61	1.50	1.50	1.62	1.82	2.05	2.01	1.84	1.59	1.67	1.53	1.56	1.47	1.68	183	2.05
Garden City	99.4%[M-1] + 93.1%[M-2]	27,647	2,796	24.40	6.32	7.83	7.23	9.74	9.93	5.70	5.22	3.25	3.75	5.16	6.32	5.37	6.31	147	9.93
Livonia	[P-7] - [P-26] + [P-12] + 51.5%{[P-8] - [FE-22]} + 4.4%[P-13] + [LV-14] + 99.7%[LV-15] + [LV-16]	96,949	16,928	106.52	25.73	30.33	28.19	34.28	37.62	27.26	21.35	15.74	15.90	17.83	21.72	21.63	24.75	165	37.62
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	84,123	9,274	80.04	17.37	19.27	18.46	22.75	25.81	17.67	15.13	12.51	12.60	14.06	16.65	15.72	17.32	133	25.81
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	47,040	4,703	52.89	11.34	13.28	13.14	16.15	17.29	12.50	9.90	6.29	6.69	7.81	9.61	9.23	11.08	152	17.29
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	38,721	3,156	65.47	7.98	7.69	7.32	10.39	13.03	7.46	7.17	4.43	4.97	6.17	6.55	6.47	7.47	125	13.03
Van Buren Twp	[P-15]	6,938	4,471	5.00	1.60	1.71	1.64	1.94	2.04	1.53	1.44	1.27	1.15	1.20	1.35	0.92	1.48	138	2.04
Romulus	38.0%{[P-17] - [P-15]}	2,362	1,562	3.60	0.26	0.30	0.29	0.30	0.35	0.31	0.27	0.28	0.34	0.37	0.33	0.33	0.31	85	0.37
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	17,597	2,517	27.92	5.55	6.67	6.09	7.56	8.32	5.22	4.54	3.92	4.34	5.09	5.85	5.21	5.69	209	8.32
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	25,242	2,578	26.66	4.56	5.88	4.98	6.11	4.69	2.81	3.49	2.41	2.74	2.00	3.32	3.80	3.89	100	6.11
WCAA	[WCAA]	--	4,881	1.50	0.51	0.16	0.82	0.67	0.66	1.17	0.18	0.00	0.00	0.00	0.00	0.92	0.43	--	1.17
Row A) Sum of Customer Flow Rates (cfs):					93.77	106.46	101.57	123.58	134.55	95.97	80.37	59.81	62.64	70.30	83.26	80.95	90.97	--	134.55
Row B) Sum of Outlet Meter Flow Rates [WC-S-1] + [WC-S-2] + [WC-S-3] (cfs):					95.72	109.21	105.65	129.82	139.04	98.06	83.17	61.08	64.38	72.79	87.33	84.51	94.10	--	139.04

Notes:
1. Sewage flow meter math for some customers based on 2010 Census populations.
2. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.

Table 4-2
Rouge Valley Sewage Disposal System
Monthly Average Dry Weather Flow Rate by Customer
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math ¹	Year 2010 Residential Population	Total Developed Land (acres)	Maximum Allowable Flow Limit ² (cfs)	Estimated Monthly Average Customer Dry Weather Flow Rate (cfs)												Estimated Annual Average Dry Weather Flow Rate		Estimated Maximum Monthly Average Dry Weather Flow Rate (cfs)
					Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	(cfs)	(gallons / capita / day)	
Oakland County (Novi)	[BG-1]	43,217	12,473	20.48	7.17	7.33	7.37	7.28	7.82	7.81	6.87	6.39	6.52	6.64	7.36	7.38	7.16	107	7.82
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	9,022	968	15.80	3.60	4.04	3.86	3.54	4.32	4.02	2.67	1.66	1.80	1.94	2.29	2.18	2.99	214	4.32
Northville City	[P-1] - [BG-1]	5,939	913	7.61	1.48	1.42	1.51	1.64	1.91	1.94	1.78	1.61	1.64	1.48	1.50	1.40	1.61	175	1.94
Garden City	99.4%[M-1] + 93.1%[M-2]	27,647	2,796	24.40	5.21	6.20	5.74	6.61	6.95	5.14	3.90	3.01	3.24	3.63	5.53	4.36	4.95	116	6.95
Livonia	[P-7] - [P-26] + [P-12] + 51.5%{[P-8] - [FE-22]} + 4.4%[P-13] + [LV-14] + 99.7%[LV-15] + [LV-16]	96,949	16,928	106.52	23.64	27.40	25.89	27.61	31.73	25.60	19.18	15.50	15.26	15.81	20.29	20.16	22.30	149	31.73
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	84,123	9,274	80.04	16.17	17.79	17.09	18.70	21.22	16.94	13.83	12.23	12.05	12.59	15.50	14.76	15.72	121	21.22
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	47,040	4,703	52.89	10.28	11.75	11.72	13.06	14.59	11.48	8.55	6.07	5.99	6.37	8.85	8.33	9.74	134	14.59
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	38,721	3,156	65.47	6.40	6.22	5.36	6.33	8.51	6.53	4.97	4.23	4.40	4.33	5.55	5.49	5.69	95	8.51
Van Buren Twp	[P-15]	6,938	4,471	5.00	1.48	1.54	1.48	1.64	1.74	1.46	1.31	1.26	1.12	1.09	1.27	0.71	1.34	125	1.74
Romulus	38.0%{[P-17] - [P-15]}	2,362	1,562	3.60	0.24	0.29	0.28	0.29	0.29	0.31	0.26	0.28	0.33	0.35	0.35	0.35	0.30	83	0.35
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	17,597	2,517	27.92	4.91	5.91	5.40	6.02	6.46	4.92	4.04	3.73	4.07	4.43	5.47	4.74	5.00	184	6.46
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	25,242	2,578	26.66	3.35	4.29	3.87	4.35	3.15	2.47	2.42	2.11	2.20	0.71	2.73	3.00	2.87	74	4.35
WCAA	[WCAA]	--	4,881	1.50	0.64	0.37	1.08	1.19	0.97	1.38	0.17	0.00	0.00	0.00	0.00	1.11	0.58	-	1.38
Row A) Sum of Customer Flow Rates (cfs):					84.56	94.55	90.67	98.26	109.65	90.00	69.95	58.06	58.60	59.38	76.69	73.97	80.24	-	109.65
Row B) Sum of Outlet Meter Flow Rates [WC-S-1] + [WC-S-2] + [WC-S-3] (cfs):					85.41	96.07	93.53	102.58	112.12	91.73	71.30	59.29	59.99	60.81	79.77	76.61	82.31	-	112.12

Notes:
1. Sewage flow meter math for some customers based on 2010 Census populations.
2. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.

Section 5

Maximum Hourly Flow Rates for Significant Storm Events by Customer

Table 5-1
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 1 3/29-31/2019 1.28 in		
			Estimated Monthly Average Dry Weather Flow Rate for March 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	7.37	13.82	1.88
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	3.86	6.36	1.65
Northville City	[P-1] - [BG-1]	7.61	1.51	3.02	2.00
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	5.74	25.74	4.49
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	25.89	56.31	2.18
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	17.09	37.59	2.20
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	11.72	29.43	2.51
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	5.36	39.71	7.41
Van Buren Twp	[P-15]	5.00	1.48	3.27	2.21
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.28	0.98	3.44
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	5.40	13.99	2.59
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	3.87	20.61	5.32

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-2
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 2 4/18-20/2019 1.37 in		
			Estimated Monthly Average Dry Weather Flow Rate for April 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	7.28	16.89	2.32
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	3.54	5.43	1.54
Northville City	[P-1] - [BG-1]	7.61	1.64	3.81	2.32
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.61	31.11	4.71
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	27.61	59.94	2.17
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	18.70	42.26	2.26
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	13.06	30.80	2.36
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.33	53.43	8.45
Van Buren Twp	[P-15]	5.00	1.64	3.63	2.22
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.29	0.81	2.77
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	6.02	16.42	2.73
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	4.35	19.40	4.45

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-3
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 3 4/25-26/2019 1.27 in		
			Estimated Monthly Average Dry Weather Flow Rate for April 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	7.28	14.10	1.94
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	3.54	5.95	1.68
Northville City	[P-1] - [BG-1]	7.61	1.64	3.39	2.06
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.61	33.79	5.12
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	27.61	72.08	2.61
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	18.70	47.15	2.52
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	13.06	31.67	2.43
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.33	61.45	9.71
Van Buren Twp	[P-15]	5.00	1.64	4.34	2.65
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.29	1.18	4.02
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	6.02	14.14	2.35
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	4.35	18.51	4.25

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-4
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 4 4/30/2019 - 5/1/2019 1.89 in		
			Estimated Monthly Average Dry Weather Flow Rate for April 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	7.28	15.30	2.10
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	3.54	7.61	2.15
Northville City	[P-1] - [BG-1]	7.61	1.64	4.05	2.46
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.61	69.56	10.53
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	27.61	77.07	2.79
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	18.70	61.98	3.31
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	13.06	33.17	2.54
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	6.33	74.73	11.81
Van Buren Twp	[P-15]	5.00	1.64	5.47	3.35
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.29	1.77	6.03
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	6.02	30.92	5.13
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	4.35	30.32	6.96

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-5
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 5 5/18-20/2019 1.10 in		
			Estimated Monthly Average Dry Weather Flow Rate for May 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	7.82	11.82	1.51
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	4.32	6.47	1.50
Northville City	[P-1] - [BG-1]	7.61	1.91	3.80	1.99
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	6.95	17.45	2.51
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	31.73	57.87	1.82
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	21.22	33.78	1.59
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	14.59	27.64	1.89
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	8.51	28.14	3.31
Van Buren Twp	[P-15]	5.00	1.74	2.99	1.72
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.29	0.94	3.20
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	6.46	11.26	1.74
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	3.15	18.05	5.73

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-6
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 6 7/6/2019 0.55 in		
			Estimated Monthly Average Dry Weather Flow Rate for July 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	6.87	8.92	1.88
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	2.67	3.94	1.48
Northville City	[P-1] - [BG-1]	7.61	1.78	2.93	1.64
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.90	27.85	7.14
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	19.18	48.96	2.55
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	13.83	25.49	1.84
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	8.55	35.15	4.11
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	4.97	80.95	16.27
Van Buren Twp	[P-15]	5.00	1.31	1.56	1.18
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.26	0.26	0.99
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.04	7.11	1.76
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	2.42	30.14	12.47

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-7
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 7 7/15-17/2019 1.43 in		
			Estimated Monthly Average Dry Weather Flow Rate for July 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	6.87	13.89	1.88
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	2.67	6.79	2.55
Northville City	[P-1] - [BG-1]	7.61	1.78	4.51	2.53
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.90	43.91	11.25
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	19.18	44.83	2.34
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	13.83	47.21	3.41
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	8.55	20.98	2.46
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	4.97	84.25	16.94
Van Buren Twp	[P-15]	5.00	1.31	4.52	3.44
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.26	2.29	8.72
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.04	22.49	5.57
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	2.42	22.62	9.36

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-8
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 8 9/11-12/2019 1.50 in		
			Estimated Monthly Average Dry Weather Flow Rate for September 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	6.52	14.54	1.88
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	1.80	3.20	1.78
Northville City	[P-1] - [BG-1]	7.61	1.64	4.48	2.73
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.24	20.27	6.26
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	15.26	32.08	2.10
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	12.05	29.59	2.46
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	5.99	25.13	4.20
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	4.40	55.56	12.63
Van Buren Twp	[P-15]	5.00	1.12	2.22	1.99
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.33	1.10	3.37
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.07	15.56	3.83
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	2.20	23.80	10.84

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-9
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 9 10/26-27/2019 1.39 in		
			Estimated Monthly Average Dry Weather Flow Rate for October 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	6.64	14.64	1.88
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	1.94	5.58	2.88
Northville City	[P-1] - [BG-1]	7.61	1.48	3.91	2.65
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.63	27.69	7.62
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	15.81	43.09	2.73
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	12.59	37.02	2.94
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	6.37	29.69	4.66
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	4.33	55.63	12.84
Van Buren Twp	[P-15]	5.00	1.09	2.59	2.37
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.35	0.88	2.47
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.43	17.08	3.86
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	0.71	17.73	25.03

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-10
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 10 10/30/2019-11/1/2019 1.40 in		
			Estimated Monthly Average Dry Weather Flow Rate for October 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	6.64	14.38	2.32
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	1.94	5.17	2.66
Northville City	[P-1] - [BG-1]	7.61	1.48	3.43	2.32
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	3.63	29.98	8.25
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	15.81	51.04	3.23
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	12.59	39.09	3.11
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	6.37	29.09	4.56
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	4.33	75.92	17.52
Van Buren Twp	[P-15]	5.00	1.09	2.90	2.65
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.35	0.95	2.68
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.43	17.06	3.85
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	0.71	20.95	29.58

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Table 5-11
Rouge Valley Sewage Disposal System
Estimated Maximum Hourly Flow Rates for Significant Storm Events by Customer for 2019
Using Incremental Sewage Flow Meter Math

Customer	Sewage Flow Meter Math	Maximum Allowable Flow Limit ¹ (cfs)	Event 11 12/29-30/2019 1.32 in		
			Estimated Monthly Average Dry Weather Flow Rate for December 2019 (cfs)	Estimated Maximum Hourly Flow Rate ² (cfs)	Peaking Factor ³
Oakland County (Novi)	[BG-1]	20.48	7.38	12.29	1.94
Plymouth City	[P-3] + [P-26] - [P-1] + [FE-22]	15.80	2.18	5.38	2.47
Northville City	[P-1] - [BG-1]	7.61	1.40	2.99	2.14
Garden City	99.4%[M-1] + 93.1%[M-2]	24.40	4.36	24.17	5.55
Livonia	[P-7] - [P-26] + [P-12] + 4.4%[P-13] + 51.5%{[P-8] - [FE-22]} + [LV-14] + 99.7%[LV-15] + [LV-16]	106.52	20.16	40.43	2.01
Westland	48.5%{[P-8] - [FE-22]} + 14.9%{[P-24] + [P-25] - [P-20] - [P-21]} + 29.5%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 0.3%[LV-15] + 0.6%[M-1] + 6.9%[M-2] + 147.7%[WE-14] + 95.7%[WE-25] + [WE-28]	80.04	14.76	29.29	1.98
Redford Twp	0.9%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 95.6%[P-13]	52.89	8.33	26.66	3.20
Dearborn Heights	99.1%{[WC-S-2] + [WC-S-3] + [P-14] - [P-9] - [P-10] - [P-11] - [P-13]} + 7.5%{[P-24] + [P-25] - [P-20] - [P-21]}	65.47	5.49	46.39	8.45
Van Buren Twp	[P-15]	5.00	0.71	2.70	3.80
Romulus	38.0%{[P-17] - [P-15]}	3.60	0.35	0.84	2.38
Wayne	69.7%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]} + 62.0%{[P-17] - [P-15]} + 4.3%[WE-25]	27.92	4.74	12.74	2.69
Inkster	77.7%{[P-24] + [P-25] - [P-20] - [P-21]} + 0.8%{[P-20] + [P-21] - [P-17] - [WE-25] - [WE-28] - [WCAA]}	26.66	3.00	20.36	6.78

Legend:

xx.x	Exceeds the Maximum Allowable Flow Limit by 0 to 10%
xx.x	Exceeds the Maximum Allowable Flow Limit by more than 10%

Notes:

1. The maximum allowable flow limits are from the 1988 service agreement adjusted for transfers between customers.
2. Estimated maximum hourly flow rates are based on recorded meter data with no adjustments for routing and attenuation.
3. The peaking factor is a ratio of the maximum flow rate observed during the event to the average monthly dry weather flow rate.
4. The Wayne County Airport Authority (WCAA) is only allowed to discharge to the RVSDS during dry weather. The WCAA did not discharge to the RVSDS during this significant storm event.

Section 6

Summary of Rainfall Events

Table 6-1
Rouge Valley Sewage Disposal System
Summary of Rainfall Events

Period: 1/1/2019 through 12/31/2019

Significant Event No. ¹	Start Date/Time	Stop Date/Time	Duration (hours)	Preceding Week Rainfall (inches)	Event Precipitation Depth (inches) ²				Coefficient of Variation ⁴
					Minimum	Average ³	Maximum	Std. Dev	
1	3/29/19	3/31/19	28	0.03	1.01	1.28	1.50	0.16	12%
2	4/18/19	4/20/19	52	0.84	1.14	1.37	1.51	0.10	7%
3	4/25/19	4/26/19	24	1.38	0.89	1.27	1.91	0.27	22%
4	4/30/19	5/1/19	24	1.98	0.85	1.89	3.27	0.79	42%
5	5/18/19	5/20/19	45	0.17	0.66	1.10	1.59	0.30	27%
6	7/6/19	7/6/19	10	0.58	0.00	0.55	1.63	0.59	107%
7	7/15/19	7/17/19	45	0.00	0.23	1.43	2.54	0.78	55%
8	9/11/19	9/12/19	24	0.11	0.96	1.50	2.43	0.38	26%
9	10/26/19	10/27/19	22	0.29	1.11	1.39	1.61	0.12	9%
10	10/30/19	11/1/19	44	1.40	1.17	1.40	1.63	0.12	9%
11	12/29/19	12/30/19	30	0.00	0.63	1.32	1.57	0.27	20%

Notes:

- 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 gages used in the analysis for that storm.
- The values presented in Table 6-1 are a summary of RVSDS rain gages. Individual rain gage data are summarized in Tables 8-1 to 8-11.
- The average precipitation value is an arithmetic average of the collection of point gages listed in Tables 8-1 to 8-11.
- The coefficient of variation (CV) 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 CV means the storm event's rainfall was evenly distributed over the district, a high CV means the storm event had pockets of intense rainfall within the district.

Section 7

Peak Hydraulic Gradeline Summary

Table 7-1
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 1 3/29-31/2019 1.28 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	13.82	3/30/19 10:30	-	-	-	-
	P-1	NAI	48	740.82	716.31	15.83	3/30/19 11:20	717.76	1.45	○	3/30/19 11:40
	P-3	MRIR	36	681.37	652.48	16.30	3/30/19 13:15	654.00	1.52	○	3/30/19 13:50
	P-26	PWI	30	649.24	647.86	2.07	3/30/19 12:15	648.37	0.51	○	3/30/19 12:30
	P-7	PWI	48	649.09	625.23	3.01	3/30/19 14:40	626.57	1.34	○	3/30/19 15:30
	LV-16	CS	48	-	627.38	6.19	3/30/19 7:50	628.50	1.12	○	3/30/19 8:10
	FE-22	RVI	48	685.04	644.88	1.82	3/31/19 10:20	645.49	0.61	○	3/31/19 10:50
	P-8	RVI	48	645.40	621.80	3.88	3/31/19 11:05	622.58	0.78	○	3/31/19 11:25
	WE-14	CS	42	-	613.48	10.10	3/30/19 10:15	615.32	1.84	○	3/30/19 10:55
	LV-15	CS	60	636.29	617.03	6.03	3/30/19 8:35	619.76	2.73	○	3/30/19 11:50
	M-22 MP#1	CS	42	630.49	614.41	-	-	619.90	5.49	⊙	3/30/19 12:40
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.09	7.68	⊙	3/30/19 18:00
	M-2	CS	27	636.70	612.39	10.46	3/30/19 10:00	614.26	1.87	○	3/30/19 10:15
	M-1	CS	72	630.59	607.59	16.37	3/30/19 10:55	613.14	5.55	○	3/30/19 11:15
	LV-14	CS	60	612.02	605.57	6.94	3/30/19 9:50	606.63	1.06	○	3/30/19 10:20
	P-28	RVI	54	629.02	607.92	5.76	3/30/19 9:50	610.31	2.39	○	3/30/19 11:40
	P-29	CS	42	-	-	8.31	3/30/19 11:35	-	2.30	○	3/30/19 12:00
	LV-20	CS	54	-	-	-	-	-	0.20	○	3/31/19 13:45
	LV-BASIN	RVI	54	632.00	602.01	24.60	3/30/19 11:40	607.32	5.31	⊙	3/30/19 11:35
	LV-4	CS	30	652.59	638.51	7.73	3/30/19 9:30	640.43	1.92	○	3/30/19 9:55
	LV-11	CS	42	-	-	16.93	3/30/19 13:10	-	1.42	○	3/30/19 13:50
	P-12	RVI	60	613.41	597.67	38.01	3/30/19 14:00	600.60	2.93	○	3/30/19 14:30
	P-9	MRIR	42	610.36	597.01	20.87	3/30/19 12:40	599.77	2.76	○	3/30/19 13:50
	P-10	RVI	66	607.65	595.62	62.99	3/30/19 12:55	598.85	3.23	○	3/30/19 14:20
	P-11	MRPIE	48	607.91	596.68	32.22	3/30/19 11:05	599.84	3.16	○	3/30/19 11:05
	P-13	MRPIE	54	613.22	586.85	30.67	3/30/19 10:10	590.05	3.20	○	3/30/19 11:05
	P-35	MRIR	54	597.62	584.15	40.60	3/30/19 13:40	587.92	3.77	○	3/30/19 12:00
	P-34	RVI	62	595.60	582.30	54.00	3/30/19 15:20	586.57	4.27	○	3/30/19 11:50
	P-33	MRPIE	48	597.01	585.22	32.06	3/30/19 10:05	587.87	2.65	○	3/30/19 11:00
	P-32	MRIR	66	597.03	578.79	48.91	3/30/19 12:45	583.18	4.39	○	3/30/19 12:35
	P-31	RVI	78	599.00	578.71	83.41	3/30/19 12:00	583.49	4.78	○	3/30/19 12:35
	P-30	MRPIE	60	593.00	580.29	43.97	3/30/19 11:30	583.97	3.68	○	3/30/19 12:25
	P-14	RVI	78	604.91	570.93	93.44	3/30/19 13:05	575.99	5.06	○	3/30/19 12:45
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.27	3/30/19 11:30	652.94	1.27	○	3/30/19 11:40
	P-17	LRIR	30	641.21	632.39	5.01	3/31/19 16:10	633.44	1.05	○	3/31/19 16:35
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	7.96	3/30/19 10:00	-	1.42	○	3/30/19 10:00
	P-19	RVI	48	630.34	621.54	16.13	3/30/19 10:50	623.47	1.93	○	3/30/19 11:25
	WE-28	CS	30	-	-	5.15	3/30/19 9:10	-	1.03	○	3/30/19 9:20
	P-21	RVI	54	620.17	608.14	25.24	3/30/19 10:25	610.03	1.89	○	3/30/19 11:10
	P-25	RVI	60	598.36	588.06	42.79	3/30/19 12:45	590.63	2.57	○	3/30/19 11:40
	P-20	WI	48	630.66	619.72	10.78	3/30/19 9:40	622.07	2.35	○	3/30/19 10:25
	P-24	RVI	36	594.24	584.52	16.73	3/30/19 11:15	586.17	1.65	○	3/30/19 11:55
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	162.02	3/30/19 12:55	566.49	11.59	⊙	3/30/19 12:10
	WC-S-1	RVI	66	586.88	500.94	169.82	3/30/19 15:00	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	85.46	3/30/19 12:15	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-2
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 2 4/18-20/2019 1.37 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	16.89	4/20/19 15:20	-	-	-	-
	P-1	NAI	48	740.82	716.31	18.44	4/20/19 16:05	717.92	1.61	○	4/20/19 16:45
	P-3	MRIR	36	681.37	652.48	18.64	4/20/19 17:10	654.10	1.62	○	4/20/19 17:15
	P-26	PWI	30	649.24	647.86	2.71	4/20/19 17:10	648.46	0.60	○	4/20/19 17:45
	P-7	PWI	48	649.09	625.23	3.47	4/20/19 19:55	626.68	1.45	○	4/20/19 20:35
	LV-16	CS	48	-	627.38	6.34	4/20/19 17:00	628.51	1.13	○	4/20/19 17:25
	FE-22	RVI	48	685.04	644.88	1.98	4/21/19 9:35	645.51	0.63	○	4/21/19 9:45
	P-8	RVI	48	645.40	621.80	4.25	4/21/19 9:40	622.60	0.80	○	4/21/19 10:55
	WE-14	CS	42	-	613.48	11.23	4/20/19 13:55	615.47	1.99	○	4/20/19 14:30
	LV-15	CS	60	636.29	617.03	5.72	4/20/19 19:35	621.84	4.81	○	4/20/19 17:20
	M-22 MP#1	CS	42	630.49	614.41	-	-	622.09	7.68	⊙	4/20/19 17:15
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.69	8.28	⊙	4/21/19 2:05
	M-2	CS	27	636.70	612.39	12.52	4/20/19 15:55	614.46	2.07	○	4/20/19 16:20
	M-1	CS	72	630.59	607.59	19.85	4/20/19 16:40	615.05	7.46	⊙	4/20/19 17:20
	LV-14	CS	60	612.02	605.57	7.50	4/20/19 14:15	606.70	1.13	○	4/20/19 14:50
	P-28	RVI	54	629.02	607.92	6.19	4/20/19 15:50	610.93	3.01	○	4/20/19 16:20
	P-29	CS	42	-	-	9.90	4/20/19 16:20	-	2.77	○	4/20/19 17:15
	LV-20	CS	54	-	-	-	-	-	0.20	○	4/20/19 14:40
	LV-BASIN	RVI	54	632.00	602.01	24.64	4/20/19 18:45	607.87	5.86	⊙	4/20/19 21:05
	LV-4	CS	30	652.59	638.51	7.95	4/20/19 13:50	640.67	2.16	○	4/20/19 14:50
	LV-11	CS	42	-	-	15.85	4/20/19 16:50	-	1.35	○	4/20/19 17:10
	P-12	RVI	60	613.41	597.67	39.54	4/20/19 18:15	600.85	3.18	○	4/20/19 18:05
	P-9	MRIR	42	610.36	597.01	23.80	4/20/19 18:45	600.10	3.09	○	4/20/19 18:50
	P-10	RVI	66	607.65	595.62	67.80	4/20/19 17:20	599.17	3.55	○	4/20/19 17:55
	P-11	MRPIE	48	607.91	596.68	34.46	4/20/19 16:00	600.11	3.43	○	4/20/19 16:00
	P-13	MRPIE	54	613.22	586.85	32.02	4/20/19 15:40	590.15	3.30	○	4/20/19 16:35
	P-35	MRIR	54	597.62	584.15	46.02	4/20/19 16:55	588.36	4.21	○	4/20/19 17:55
	P-34	RVI	62	595.60	582.30	54.91	4/20/19 23:20	587.11	4.81	○	4/20/19 18:45
	P-33	MRPIE	48	597.01	585.22	34.70	4/20/19 15:35	588.21	2.99	○	4/20/19 18:20
	P-32	MRIR	66	597.03	578.79	52.11	4/20/19 16:15	584.60	5.81	⊙	4/20/19 18:20
	P-31	RVI	78	599.00	578.71	94.12	4/20/19 18:35	584.67	5.96	○	4/20/19 18:25
	P-30	MRPIE	60	593.00	580.29	48.97	4/20/19 18:15	584.92	4.63	○	4/20/19 18:15
	P-14	RVI	78	604.91	570.93	97.66	4/20/19 20:10	577.90	6.97	⊙	4/20/19 17:30
Lower Rouge	P-15	WRVI	24	667.57	651.67	3.63	4/20/19 15:10	653.05	1.38	○	4/20/19 16:50
	P-17	LRIR	30	641.21	632.39	4.76	4/20/19 17:35	633.40	1.01	○	4/20/19 18:15
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	9.02	4/20/19 14:55	-	1.56	○	4/20/19 14:55
	P-19	RVI	48	630.34	621.54	17.03	4/20/19 16:40	623.51	1.97	○	4/20/19 17:20
	WE-28	CS	30	-	-	6.45	4/20/19 15:15	-	1.19	○	4/20/19 15:40
	P-21	RVI	54	620.17	608.14	28.71	4/20/19 15:10	610.17	2.03	○	4/20/19 15:35
	P-25	RVI	60	598.36	588.06	44.15	4/20/19 16:20	590.74	2.68	○	4/20/19 17:20
	P-20	WI	48	630.66	619.72	12.73	4/20/19 14:15	622.39	2.67	○	4/20/19 14:40
	P-24	RVI	36	594.24	584.52	19.03	4/20/19 15:00	586.44	1.92	○	4/20/19 16:10
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	169.65	4/20/19 18:35	568.20	13.30	⊙	4/20/19 16:50
	WC-S-1	RVI	66	586.88	500.94	177.90	4/20/19 20:50	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	108.71	4/20/2019 18:15	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-3
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 3 4/25-26/2019 1.27 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	14.10	4/26/19 7:10	-	-	-	-
	P-1	NAI	48	740.82	716.31	16.77	4/26/19 8:05	717.80	1.49	○	4/26/19 8:50
	P-3	MRIR	36	681.37	652.48	17.29	4/26/19 9:00	654.02	1.54	○	4/26/19 9:45
	P-26	PWI	30	649.24	647.86	2.04	4/26/19 7:45	648.39	0.53	○	4/26/19 7:50
	P-7	PWI	48	649.09	625.23	3.53	4/26/19 10:05	626.68	1.45	○	4/26/19 11:05
	LV-16	CS	48	-	627.38	7.46	4/26/19 5:30	628.63	1.25	○	4/26/19 5:20
	FE-22	RVI	48	685.04	644.88	2.78	4/26/19 6:45	645.58	0.70	○	4/26/19 7:15
	P-8	RVI	48	645.40	621.80	5.08	4/26/19 7:30	622.67	0.87	○	4/26/19 8:00
	WE-14	CS	42	-	613.48	13.40	4/26/19 6:10	615.83	2.35	○	4/26/19 8:35
	LV-15	CS	60	636.29	617.03	9.60	4/26/19 4:45	623.26	6.23	⊙	4/26/19 16:10
	M-22 MP#1	CS	42	630.49	614.41	-	-	623.55	9.14	⊙	4/26/19 15:05
	M-22 MP#2	CS	42	630.49	614.41	-	-	623.41	9.00	⊙	4/26/19 16:20
	M-2	CS	27	636.70	612.39	15.13	4/26/19 4:40	614.72	2.33	⊙	4/26/19 4:55
	M-1	CS	72	630.59	607.59	20.15	4/26/19 6:15	615.55	7.96	⊙	4/26/19 6:25
	LV-14	CS	60	612.02	605.57	10.86	4/26/19 5:05	606.97	1.40	○	4/26/19 5:25
	P-28	RVI	54	629.02	607.92	8.54	4/26/19 15:05	615.90	7.98	⊙	4/26/19 10:45
	P-29	CS	42	-	-	11.63	4/26/19 5:35	-	7.06	⊗	4/26/19 10:15
	LV-20	CS	54	-	-	-	-	-	0.31	○	4/26/19 4:00
	LV-BASIN	RVI	54	632.00	602.01	30.06	4/26/19 15:45	612.88	10.87	⊙	4/26/19 10:15
	LV-4	CS	30	652.59	638.51	8.39	4/26/19 9:45	640.91	2.40	○	4/26/19 4:50
	LV-11	CS	42	-	-	20.74	4/26/19 6:15	-	5.68	⊗	4/26/19 10:30
	P-12	RVI	60	613.41	597.67	46.53	4/26/19 11:40	604.46	6.79	⊙	4/26/19 10:05
	P-9	MRIR	42	610.36	597.01	25.19	4/26/19 18:05	603.64	6.63	⊙	4/26/19 11:20
	P-10	RVI	66	607.65	595.62	82.21	4/26/19 11:10	602.98	7.36	⊙	4/26/19 10:10
	P-11	MRPIE	48	607.91	596.68	35.44	4/26/19 3:25	603.45	6.77	⊙	4/26/19 9:40
	P-13	MRPIE	54	613.22	586.85	32.63	4/26/19 15:25	594.87	8.02	⊙	4/26/19 7:25
	P-35	MRIR	54	597.62	584.15	44.31	4/26/19 9:05	593.00	8.85	⊙	4/26/19 7:55
	P-34	RVI	62	595.60	582.30	67.23	4/26/19 11:55	591.71	9.41	⊙	4/26/19 7:45
	P-33	MRPIE	48	597.01	585.22	33.84	4/26/19 18:05	592.89	7.67	⊙	4/26/19 7:50
	P-32	MRIR	66	597.03	578.79	56.36	4/26/19 10:45	589.04	10.25	⊙	4/26/19 7:45
	P-31	RVI	78	599.00	578.71	107.67	4/26/19 10:25	589.25	10.54	⊙	4/26/19 7:45
	P-30	MRPIE	60	593.00	580.29	52.69	4/26/19 10:20	589.52	9.23	⊙	4/26/19 7:35
	P-14	RVI	78	604.91	570.93	115.51	4/26/19 16:15	581.60	10.67	⊙	4/26/19 7:20
Lower Rouge	P-15	WRVI	24	667.57	651.67	4.34	4/26/19 7:40	653.68	2.01	⊙	4/26/19 9:00
	P-17	LRIR	30	641.21	632.39	6.91	4/26/19 9:10	633.63	1.24	○	4/26/19 9:15
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	10.48	4/26/19 6:30	-	2.02	○	4/26/19 6:55
	P-19	RVI	48	630.34	621.54	21.45	4/26/19 9:25	623.77	2.23	○	4/26/19 9:45
	WE-28	CS	30	-	-	6.90	4/26/19 5:10	-	1.22	○	4/26/19 6:00
	P-21	RVI	54	620.17	608.14	29.94	4/26/19 6:00	610.19	2.05	○	4/26/19 6:35
	P-25	RVI	60	598.36	588.06	46.23	4/26/19 7:05	590.81	2.75	○	4/26/19 7:35
	P-20	WI	48	630.66	619.72	10.86	4/26/19 4:10	622.03	2.31	○	4/26/19 3:05
	P-24	RVI	36	594.24	584.52	18.31	4/26/19 5:00	587.46	2.94	○	4/26/19 7:50
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	172.72	4/26/19 16:55	-	-	-	-
	WC-S-1	RVI	66	586.88	500.94	183.10	4/26/19 17:25	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	120.06	4/26/19 10:30	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-4
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 4 4/30/2019 - 5/1/2019 1.89 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	15.30	4/30/19 21:25	-	-	-	-
	P-1	NAI	48	740.82	716.31	17.27	5/1/19 8:15	717.84	1.53	○	5/1/19 8:20
	P-3	MRIR	36	681.37	652.48	18.20	5/1/19 9:10	654.08	1.60	○	5/1/19 9:45
	P-26	PWI	30	649.24	647.86	2.31	5/1/19 10:00	648.43	0.57	○	5/1/19 10:10
	P-7	PWI	48	649.09	625.23	4.24	5/1/19 12:30	626.83	1.60	○	5/1/19 13:20
	LV-16	CS	48	-	627.38	9.45	5/1/19 4:00	629.98	2.60	○	5/1/19 4:55
	FE-22	RVI	48	685.04	644.88	4.06	5/1/19 6:40	645.68	0.80	○	5/1/19 7:20
	P-8	RVI	48	645.40	621.80	6.98	5/1/19 7:40	622.85	1.05	○	5/1/19 8:35
	WE-14	CS	42	-	613.48	17.10	5/1/19 6:50	622.35	8.87	⊗	5/1/19 6:00
	LV-15	CS	60	636.29	617.03	12.78	5/1/19 4:35	624.13	7.10	⊙	5/1/19 13:00
	M-22 MP#1	CS	42	630.49	614.41	-	-	624.41	10.00	⊙	5/1/19 13:05
	M-22 MP#2	CS	42	630.49	614.41	-	-	624.22	9.81	⊙	5/1/19 13:20
	M-2	CS	27	636.70	612.39	21.96	5/1/19 1:00	620.91	8.52	⊙	5/1/19 5:15
	M-1	CS	72	630.59	607.59	51.11	5/1/19 2:20	618.18	10.59	⊙	5/1/19 3:10
	LV-14	CS	60	612.02	605.57	15.85	5/1/19 3:55	611.43	5.86	⊙	5/1/19 3:10
	P-28	RVI	54	629.02	607.92	10.88	5/1/19 3:35	615.99	8.07	⊙	5/1/19 3:40
	P-29	CS	42	-	-	12.35	4/30/19 23:15	-	4.60	⊗	5/1/19 5:50
	LV-20	CS	54	-	-	-	-	-	0.22	○	5/1/19 6:50
	LV-BASIN	RVI	54	632.00	602.01	29.43	5/2/19 16:25	615.74	13.73	⊙	5/1/19 13:25
	LV-4	CS	30	652.59	638.51	8.92	5/1/19 5:30	641.12	2.61	⊙	5/1/19 3:00
	LV-11	CS	42	-	-	28.22	5/1/19 6:40	-	9.37	⊗	5/1/19 5:15
	P-12	RVI	60	613.41	597.67	43.09	5/2/19 19:30	609.93	12.26	⊙	5/1/19 4:30
	P-9	MRIR	42	610.36	597.01	24.66	4/30/19 23:40	≥608.87	≥11.86	⊗	5/1/19 6:35
	P-10	RVI	66	607.65	595.62	78.64	5/1/19 17:10	≥607.50	≥11.88	⊗	5/1/19 8:45
	P-11	MRPIE	48	607.91	596.68	35.96	4/30/19 22:05	609.06	12.38	●	5/1/19 4:25
	P-13	MRPIE	54	613.22	586.85	34.47	5/1/19 1:20	598.14	11.29	⊙	5/1/19 10:50
	P-35	MRIR	54	597.62	584.15	49.78	5/1/19 5:45	≥596.89	≥12.74	⊗	5/1/19 2:30
	P-34	RVI	62	595.60	582.30	74.10	5/1/19 2:00	594.66	12.36	⊙	5/1/19 4:45
	P-33	MRPIE	48	597.01	585.22	37.67	5/1/19 4:05	≥593.42	≥8.20	⊗	5/1/19 5:05
	P-32	MRIR	66	597.03	578.79	58.77	5/1/19 7:05	591.04	12.25	⊙	5/1/19 23:25
	P-31	RVI	78	599.00	578.71	113.51	5/1/19 4:20	592.54	13.83	⊙	5/1/19 2:05
	P-30	MRPIE	60	593.00	580.29	55.89	5/1/19 3:25	593.00	12.71	⊙	5/1/19 3:05
	P-14	RVI	78	604.91	570.93	108.36	4/30/19 22:15	586.55	15.62	⊙	5/1/19 2:10
Lower Rouge	P-15	WRVI	24	667.57	651.67	5.47	5/1/19 1:45	658.80	7.13	⊙	5/1/19 4:30
	P-17	LRIR	30	641.21	632.39	9.70	5/1/19 7:40	635.24	2.85	⊙	5/1/19 6:05
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	14.72	5/1/19 12:30	-	6.44	⊗	5/1/19 6:25
	P-19	RVI	48	630.34	621.54	44.27	5/1/19 8:40	629.96	8.42	⊙	5/1/19 5:35
	WE-28	CS	30	-	-	10.82	5/1/19 4:05	-	1.70	○	5/1/19 3:35
	P-21	RVI	54	620.17	608.14	63.65	5/1/19 4:40	619.17	11.03	⊙	5/1/19 5:35
	P-25	RVI	60	598.36	588.06	69.13	5/2/19 11:20	599.97	11.91	●	5/1/19 3:05
	P-20	WI	48	630.66	619.72	11.16	4/30/19 23:00	-	-	-	-
RVSDS Outlet	P-24	RVI	36	594.24	584.52	18.85	4/30/19 23:50	595.41	10.89	●	5/1/19 2:30
	WC-S-1A	RVI	102	583.84	554.90	200.10	5/2/19 0:35	577.59	22.69	⊙	5/1/19 2:30
	WC-S-1	RVI	66	586.88	500.94	203.10	5/2/19 13:50	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	151.74	5/1/19 5:20	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-5
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 5 5/18-20/2019 1.10 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	11.82	5/19/19 14:30	-	-	-	-
	P-1	NAI	48	740.82	716.31	14.17	5/19/19 15:25	717.66	1.35	○	5/19/19 16:05
	P-3	MRIR	36	681.37	652.48	15.52	5/19/19 16:40	653.93	1.45	○	5/19/19 17:05
	P-26	PWI	30	649.24	647.86	1.57	5/19/19 16:40	648.30	0.44	○	5/19/19 17:00
	P-7	PWI	48	649.09	625.23	3.17	5/19/19 19:35	626.58	1.35	○	5/19/19 16:40
	LV-16	CS	48	-	627.38	6.99	5/19/19 14:05	628.61	1.23	○	5/19/19 14:30
	FE-22	RVI	48	685.04	644.88	1.96	5/19/19 20:05	645.51	0.63	○	5/19/19 21:00
	P-8	RVI	48	645.40	621.80	4.19	5/19/19 21:20	622.59	0.79	○	5/19/19 22:05
	WE-14	CS	42	-	613.48	11.11	5/19/19 14:50	615.43	1.95	○	5/19/19 15:20
	LV-15	CS	60	636.29	617.03	6.75	5/19/19 14:00	620.46	3.43	○	5/19/19 20:05
	M-22 MP#1	CS	42	630.49	614.41	-	-	620.74	6.33	⊙	5/19/19 20:35
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.36	7.95	⊙	5/19/19 23:40
	M-2	CS	27	636.70	612.39	7.74	5/19/19 15:30	613.98	1.59	○	5/19/19 16:10
	M-1	CS	72	630.59	607.59	11.17	5/18/19 7:30	609.75	2.16	○	5/18/19 8:35
	LV-14	CS	60	612.02	605.57	5.69	5/19/19 15:30	606.58	1.01	○	5/19/19 16:10
	P-28	RVI	54	629.02	607.92	7.59	5/19/19 15:10	610.36	2.44	○	5/19/19 16:45
	P-29	CS	42	-	-	8.11	5/19/19 16:05	-	2.58	○	5/19/19 17:05
	LV-20	CS	54	-	-	-	-	-	0.19	○	5/18/19 14:45
	LV-BASIN	RVI	54	632.00	602.01	25.15	5/19/19 17:45	607.66	5.65	⊙	5/19/19 19:25
	LV-4	CS	30	652.59	638.51	8.40	5/19/19 14:15	640.49	1.98	○	5/19/19 14:40
	LV-11	CS	42	-	-	13.69	5/19/19 16:30	-	1.26	○	5/19/19 17:10
	P-12	RVI	60	613.41	597.67	39.57	5/19/19 18:25	600.55	2.88	○	5/19/19 17:55
	P-9	MRIR	42	610.36	597.01	19.80	5/19/19 18:00	599.63	2.62	○	5/19/19 18:50
	P-10	RVI	66	607.65	595.62	55.80	5/19/19 17:10	598.60	2.98	○	5/19/19 17:50
	P-11	MRPIE	48	607.91	596.68	27.69	5/19/19 16:20	599.48	2.80	○	5/19/19 16:30
	P-13	MRPIE	54	613.22	586.85	29.19	5/19/19 16:30	589.96	3.11	○	5/19/19 17:20
	P-35	MRIR	54	597.62	584.15	36.05	5/19/19 17:40	587.61	3.46	○	5/19/19 17:55
	P-34	RVI	62	595.60	582.30	46.76	5/19/19 17:55	586.14	3.84	○	5/19/19 18:10
	P-33	MRPIE	48	597.01	585.22	24.45	5/19/19 17:30	587.44	2.22	○	5/19/19 18:00
	P-32	MRIR	66	597.03	578.79	44.88	5/19/19 17:50	582.32	3.53	○	5/19/19 18:40
	P-31	RVI	78	599.00	578.71	67.68	5/19/19 17:55	582.71	4.00	○	5/19/19 18:20
	P-30	MRPIE	60	593.00	580.29	38.56	5/19/19 18:00	583.61	3.32	○	5/19/19 18:15
	P-14	RVI	78	604.91	570.93	71.64	5/19/19 18:30	574.58	3.65	○	5/19/19 18:55
Lower Rouge	P-15	WRVI	24	667.57	651.67	2.99	5/19/19 16:45	652.87	1.20	○	5/19/19 16:50
	P-17	LRIR	30	641.21	632.39	4.80	5/19/19 18:30	633.41	1.02	○	5/19/19 19:00
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	8.97	5/19/19 16:25	-	1.54	○	5/19/19 16:30
	P-19	RVI	48	630.34	621.54	15.94	5/19/19 18:05	623.44	1.90	○	5/19/19 18:40
	WE-28	CS	30	-	-	3.78	5/18/19 7:45	-	0.87	○	5/18/19 8:10
	P-21	RVI	54	620.17	608.14	21.56	5/19/19 19:30	609.88	1.74	○	5/19/19 18:45
	P-25	RVI	60	598.36	588.06	34.93	5/18/19 9:15	590.16	2.10	○	5/18/19 9:20
	P-20	WI	48	630.66	619.72	10.47	5/18/19 8:05	622.05	2.33	○	5/18/19 8:30
	P-24	RVI	36	594.24	584.52	14.16	5/18/19 9:00	585.86	1.34	○	5/18/19 9:30
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	118.23	5/19/19 20:05	-	-	-	-
	WC-S-1	RVI	66	586.88	500.94	119.59	5/19/19 20:35	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	82.58	5/19/19 19:40	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-6
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 6 7/6/2019 0.55 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	8.92	7/7/19 11:55	-	-	-	-
	P-1	NAI	48	740.82	716.31	10.96	7/6/19 11:55	717.50	1.19	○	7/7/19 13:15
	P-3	MRIR	36	681.37	652.48	12.86	7/7/19 13:50	653.69	1.21	○	7/7/19 14:25
	P-26	PWI	30	649.24	647.86	0.72	7/7/19 14:00	648.16	0.30	○	7/7/19 14:45
	P-7	PWI	48	649.09	625.23	2.01	7/6/19 18:05	626.36	1.13	○	7/6/19 16:55
	LV-16	CS	48	-	627.38	5.37	7/6/19 15:15	628.42	1.04	○	7/6/19 15:35
	FE-22	RVI	48	685.04	644.88	1.05	7/6/19 10:55	645.44	0.56	○	7/7/19 7:40
	P-8	RVI	48	645.40	621.80	2.60	7/6/19 12:35	622.45	0.65	○	7/6/19 13:05
	WE-14	CS	42	-	613.48	7.39	7/6/19 15:10	615.01	1.53	○	7/6/19 15:30
	LV-15	CS	60	636.29	617.03	5.33	7/6/19 15:50	619.75	2.72	○	7/6/19 19:25
	M-22 MP#1	CS	42	630.49	614.41	-	-	620.05	5.64	⊙	7/6/19 19:25
	M-22 MP#2	CS	42	630.49	614.41	-	-	620.46	6.05	⊙	7/6/19 16:25
	M-2	CS	27	636.70	612.39	9.42	7/6/19 16:35	614.16	1.77	○	7/6/19 16:55
	M-1	CS	72	630.59	607.59	20.14	7/6/19 17:30	615.19	7.60	⊙	7/6/19 17:50
	LV-14	CS	60	612.02	605.57	12.03	7/6/19 16:35	607.12	1.55	○	7/6/19 17:05
	P-28	RVI	54	629.02	607.92	5.55	7/6/19 17:25	609.55	1.63	○	7/6/19 18:00
	P-29	CS	42	-	-	5.09	7/6/19 19:20	-	1.82	○	7/6/19 18:05
	LV-20	CS	54	-	-	-	-	-	0.20	○	7/6/19 15:45
	LV-BASIN	RVI	54	632.00	602.01	20.32	7/6/19 17:40	606.30	4.29	○	7/6/19 18:05
	LV-4	CS	30	652.59	638.51	5.30	7/6/19 19:00	639.97	1.46	○	7/6/19 19:30
	LV-11	CS	42	-	-	15.81	7/6/19 16:55	-	1.39	○	7/6/19 17:30
	P-12	RVI	60	613.41	597.67	33.01	7/6/19 18:55	600.41	2.74	○	7/6/19 18:40
	P-9	MRIR	42	610.36	597.01	18.23	7/6/19 19:05	599.51	2.50	○	7/6/19 19:30
	P-10	RVI	66	607.65	595.62	55.14	7/6/19 18:00	598.61	2.99	○	7/6/19 18:30
	P-11	MRPIE	48	607.91	596.68	33.31	7/6/19 16:55	600.05	3.37	○	7/6/19 17:30
	P-13	MRPIE	54	613.22	586.85	36.37	7/6/19 19:15	590.94	4.09	○	7/6/19 19:10
	P-35	MRIR	54	597.62	584.15	39.14	7/6/19 18:15	588.13	3.98	○	7/6/19 18:45
	P-34	RVI	62	595.60	582.30	50.85	7/6/19 17:35	586.80	4.50	○	7/6/19 18:40
	P-33	MRPIE	48	597.01	585.22	33.81	7/6/19 17:25	588.07	2.85	○	7/6/19 18:15
	P-32	MRIR	66	597.03	578.79	53.04	7/6/19 19:00	583.30	4.51	○	7/6/19 19:15
	P-31	RVI	78	599.00	578.71	90.79	7/6/19 18:25	583.63	4.92	○	7/6/19 19:05
	P-30	MRPIE	60	593.00	580.29	47.26	7/6/19 18:15	584.06	3.77	○	7/6/19 18:55
	P-14	RVI	78	604.91	570.93	92.08	7/6/19 20:55	577.64	6.71	⊙	7/6/19 20:05
Lower Rouge	P-15	WRVI	24	667.57	651.67	1.56	7/6/19 15:50	652.49	0.82	○	7/6/19 16:10
	P-17	LRIR	30	641.21	632.39	1.93	7/6/19 14:20	633.06	0.67	○	7/6/19 14:30
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	3.13	7/6/19 12:45	-	0.86	○	7/7/19 13:55
	P-19	RVI	48	630.34	621.54	6.57	7/6/19 14:50	622.75	1.21	○	7/6/19 15:30
	WE-28	CS	30	-	-	3.36	7/6/19 14:45	-	0.78	○	7/6/19 15:10
	P-21	RVI	54	620.17	608.14	13.60	7/6/19 15:00	609.53	1.39	○	7/6/19 15:25
	P-25	RVI	60	598.36	588.06	40.34	7/6/19 17:40	590.42	2.36	○	7/6/19 18:05
	P-20	WI	48	630.66	619.72	4.24	7/6/19 14:45	621.11	1.39	○	7/6/19 15:15
	P-24	RVI	36	594.24	584.52	14.73	7/6/19 14:40	585.90	1.38	○	7/6/19 16:55
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	139.48	7/6/19 19:40	572.02	17.12	⊙	7/6/19 18:50
	WC-S-1	RVI	66	586.88	500.94	149.36	7/6/19 20:55	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	109.93	7/6/19 21:00	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-7
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 7 7/15-17/2019 1.43 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	13.89	7/16/19 21:55	-	-	-	-
	P-1	NAI	48	740.82	716.31	16.04	7/16/19 22:30	717.77	1.46	○	7/16/19 23:05
	P-3	MRIR	36	681.37	652.48	16.31	7/16/19 21:50	654.10	1.62	○	7/16/19 23:55
	P-26	PWI	30	649.24	647.86	2.29	7/16/19 23:45	648.41	0.55	○	7/17/19 0:25
	P-7	PWI	48	649.09	625.23	2.79	7/17/19 2:10	626.54	1.31	○	7/17/19 2:40
	LV-16	CS	48	-	627.38	11.74	7/15/19 18:55	629.43	2.05	○	7/15/19 19:15
	FE-22	RVI	48	685.04	644.88	1.20	7/17/19 7:10	645.45	0.57	○	7/18/19 10:40
	P-8	RVI	48	645.40	621.80	2.82	7/17/19 8:50	622.51	0.71	○	7/16/19 21:20
	WE-14	CS	42	-	613.48	13.97	7/16/19 19:45	615.84	2.36	○	7/16/19 20:20
	LV-15	CS	60	636.29	617.03	9.88	7/15/19 18:50	621.62	4.59	○	7/17/19 0:05
	M-22 MP#1	CS	42	630.49	614.41	-	-	621.95	7.54	⊙	7/16/19 23:45
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.69	8.28	⊙	7/17/19 7:45
	M-2	CS	27	636.70	612.39	15.73	7/16/19 21:25	614.79	2.40	⊙	7/16/19 22:00
	M-1	CS	72	630.59	607.59	29.94	7/16/19 20:40	616.15	8.56	⊙	7/16/19 20:50
	LV-14	CS	60	612.02	605.57	12.76	7/15/19 19:35	607.16	1.59	○	7/15/19 20:10
	P-28	RVI	54	629.02	607.92	3.15	7/16/19 21:35	609.15	1.23	○	7/16/19 22:45
	P-29	CS	42	-	-	5.37	7/16/19 22:15	-	1.49	○	7/16/19 22:45
	LV-20	CS	54	-	-	-	-	-	0.18	○	7/15/19 11:55
	LV-BASIN	RVI	54	632.00	602.01	14.62	7/16/19 22:10	605.18	3.17	○	7/16/19 22:40
	LV-4	CS	30	652.59	638.51	7.66	7/19/19 16:35	640.33	1.82	○	7/19/19 16:55
	LV-11	CS	42	-	-	8.50	7/16/19 21:05	-	1.04	○	7/16/19 21:25
	P-12	RVI	60	613.41	597.67	22.11	7/16/19 23:30	600.30	2.63	○	7/16/19 22:40
	P-9	MRIR	42	610.36	597.01	17.98	7/16/19 23:20	599.43	2.42	○	7/16/19 23:45
	P-10	RVI	66	607.65	595.62	59.73	7/16/19 21:40	599.02	3.40	○	7/16/19 22:15
	P-11	MRPIE	48	607.91	596.68	36.80	7/16/19 20:45	600.55	3.87	○	7/16/19 21:10
	P-13	MRPIE	54	613.22	586.85	21.52	7/16/19 22:35	589.29	2.44	○	7/16/19 23:10
	P-35	MRIR	54	597.62	584.15	43.23	7/16/19 21:25	587.97	3.82	○	7/16/19 22:30
	P-34	RVI	62	595.60	582.30	51.72	7/16/19 21:50	586.83	4.53	○	7/16/19 22:15
	P-33	MRPIE	48	597.01	585.22	37.11	7/16/19 20:55	588.05	2.83	○	7/16/19 21:50
	P-32	MRIR	66	597.03	578.79	51.87	7/16/19 22:05	584.00	5.21	○	7/16/19 23:50
	P-31	RVI	78	599.00	578.71	91.20	7/16/19 22:10	584.11	5.40	○	7/16/19 23:50
	P-30	MRPIE	60	593.00	580.29	44.94	7/16/19 22:05	584.24	3.95	○	7/16/19 23:40
	P-14	RVI	78	604.91	570.93	97.44	7/17/19 0:45	578.19	7.26	⊙	7/16/19 23:15
Lower Rouge	P-15	WRVI	24	667.57	651.67	4.52	7/19/19 19:15	653.82	2.15	⊙	7/19/19 20:10
	P-17	LRIR	30	641.21	632.39	7.40	7/16/19 18:45	633.69	1.30	○	7/16/19 19:10
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	8.88	7/16/19 20:45	-	1.62	○	7/16/19 20:55
	P-19	RVI	48	630.34	621.54	27.60	7/16/19 19:50	624.18	2.64	○	7/16/19 20:25
	WE-28	CS	30	-	-	7.87	7/16/19 20:00	-	1.35	○	7/16/19 20:25
	P-21	RVI	54	620.17	608.14	37.52	7/16/19 20:30	610.51	2.37	○	7/16/19 20:50
	P-25	RVI	60	598.36	588.06	53.67	7/16/19 21:35	591.39	3.33	○	7/16/19 21:55
	P-20	WI	48	630.66	619.72	13.58	7/19/19 16:55	622.58	2.86	○	7/16/19 20:20
	P-24	RVI	36	594.24	584.52	17.46	7/16/19 20:50	586.96	2.44	○	7/16/19 22:00
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	168.37	7/16/19 23:50	568.38	13.48	⊙	7/16/19 21:45
	WC-S-1	RVI	66	586.88	500.94	183.76	7/16/19 23:55	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	106.13	7/17/19 0:25	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-8
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 8 9/12-12/2019 1.50 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	14.54	9/11/2019 22:15	-	-	-	-
	P-1	NAI	48	740.82	716.31	16.10	9/11/2019 23:05	717.78	1.47	○	9/11/2019 23:20
	P-3	MRIR	36	681.37	652.48	12.84	9/11/2019 23:55	653.94	1.46	○	9/12/2019 0:40
	P-26	PWI	30	649.24	647.86	1.93	9/12/2019 0:10	648.37	0.51	○	9/12/2019 0:35
	P-7	PWI	48	649.09	625.23	2.14	9/11/2019 22:30	626.42	1.19	○	9/12/2019 3:30
	LV-16	CS	48	-	627.38	3.59	9/11/2019 19:20	628.25	0.87	○	9/11/2019 19:45
	FE-22	RVI	48	685.04	644.88	1.16	9/12/2019 7:15	645.34	0.46	○	9/12/2019 20:00
	P-8	RVI	48	645.40	621.80	3.25	9/11/2019 22:05	622.46	0.66	○	9/12/2019 20:25
	WE-14	CS	42	-	613.48	7.53	9/11/2019 21:20	614.99	1.51	○	9/11/2019 22:00
	LV-15	CS	60	636.29	617.03	3.62	9/11/2019 22:05	618.55	1.52	○	9/11/2019 22:30
	M-22 MP#1	CS	42	630.49	614.41	-	-	617.22	2.81	○	9/11/2019 22:55
	M-22 MP#2	CS	42	630.49	614.41	-	-	621.75	7.34	⊙	9/12/2019 5:25
	M-2	CS	27	636.70	612.39	7.02	9/11/2019 22:00	613.85	1.46	○	9/11/2019 22:00
	M-1	CS	72	630.59	607.59	13.85	9/11/2019 22:05	610.29	2.70	○	9/11/2019 23:05
	LV-14	CS	60	612.02	605.57	4.51	9/11/2019 22:10	606.41	0.84	○	9/11/2019 22:40
	P-28	RVI	54	629.02	607.92	2.92	9/11/2019 22:25	-	-	-	-
	P-29	CS	42	-	-	5.51	9/11/2019 22:20	-	1.59	○	9/11/2019 22:55
	LV-20	CS	54	-	-	-	-	-	0.20	○	9/13/2019 12:50
	LV-BASIN	RVI	54	632.00	602.01	14.38	9/11/2019 22:50	605.18	3.17	○	9/11/2019 23:35
	LV-4	CS	30	652.59	638.51	6.22	9/13/2019 17:50	640.12	1.61	○	9/11/2019 22:20
	LV-11	CS	42	-	-	6.89	9/11/2019 23:25	-	0.95	○	9/12/2019 0:00
	P-12	RVI	60	613.41	597.67	21.08	9/11/2019 23:55	599.93	2.26	○	9/12/2019 0:10
	P-9	MRIR	42	610.36	597.01	10.40	9/12/2019 0:35	598.66	1.65	○	9/12/2019 1:10
	P-10	RVI	66	607.65	595.62	43.28	9/11/2019 23:10	598.14	2.52	○	9/11/2019 23:30
	P-11	MRPIE	48	607.91	596.68	26.25	9/11/2019 22:30	599.36	2.68	○	9/11/2019 22:55
	P-13	MRPIE	54	613.22	586.85	26.18	9/11/2019 23:30	589.57	2.72	○	9/12/2019 0:15
	P-35	MRIR	54	597.62	584.15	19.88	9/12/2019 0:05	587.14	2.99	○	9/12/2019 0:15
	P-34	RVI	62	595.60	582.30	33.49	9/11/2019 23:30	585.76	3.46	○	9/12/2019 1:00
	P-33	MRPIE	48	597.01	585.22	24.46	9/11/2019 22:55	587.28	2.06	○	9/11/2019 23:25
	P-32	MRIR	66	597.03	578.79	33.61	9/11/2019 22:40	584.51	5.72	⊙	9/12/2019 1:25
	P-31	RVI	78	599.00	578.71	56.86	9/12/2019 1:20	584.74	6.03	○	9/12/2019 1:30
	P-30	MRPIE	60	593.00	580.29	31.62	9/11/2019 22:50	584.74	4.45	○	9/12/2019 1:25
	P-14	RVI	78	604.91	570.93	90.75	9/12/2019 3:55	580.51	9.58	⊙	9/12/2019 0:10
Lower Rouge	P-15	WRVI	24	667.57	651.67	2.22	9/11/2019 23:15	652.68	1.01	○	9/11/2019 23:35
	P-17	LRIR	30	641.21	632.39	4.29	9/13/2019 20:00	633.34	0.95	○	9/13/2019 18:20
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	5.06	9/11/2019 22:35	-	1.08	○	9/11/2019 23:10
	P-19	RVI	48	630.34	621.54	12.83	9/11/2019 21:55	623.26	1.72	○	9/11/2019 22:15
	WE-28	CS	30	-	-	4.28	9/11/2019 22:10	-	0.92	○	9/11/2019 22:30
	P-21	RVI	54	620.17	608.14	21.23	9/11/2019 22:25	609.89	1.75	○	9/11/2019 23:00
	P-25	RVI	60	598.36	588.06	40.82	9/11/2019 23:00	590.64	2.58	○	9/11/2019 23:40
	P-20	WI	48	630.66	619.72	12.34	9/11/2019 23:20	622.36	2.64	○	9/11/2019 23:50
	P-24	RVI	36	594.24	584.52	17.59	9/11/2019 23:10	586.29	1.77	○	9/11/2019 23:40
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	140.52	9/11/2019 23:30	573.56	18.66	⊙	9/11/2019 22:55
	WC-S-1	RVI	66	586.88	500.94	149.38	9/12/2019 3:25	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	61.18	9/12/2019 0:35	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-9
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 9 10/26-27/2019 1.39 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	14.64	10/26/2019 21:45	-	-	-	-
	P-1	NAI	48	740.82	716.31	16.24	10/26/2019 22:45	717.77	1.46	○	10/26/2019 22:55
	P-3	MRIR	36	681.37	652.48	16.51	10/26/2019 23:35	654.00	1.52	○	10/26/2019 23:55
	P-26	PWI	30	649.24	647.86	2.25	10/26/2019 23:35	648.40	0.54	○	10/26/2019 23:55
	P-7	PWI	48	649.09	625.23	2.16	10/26/2019 22:45	626.43	1.20	○	10/26/2019 23:50
	LV-16	CS	48	-	627.38	5.57	10/26/2019 20:45	628.42	1.04	○	10/26/2019 21:10
	FE-22	RVI	48	685.04	644.88	1.26	10/26/2019 21:40	645.34	0.46	○	10/26/2019 22:00
	P-8	RVI	48	645.40	621.80	2.62	10/26/2019 10:35	622.46	0.66	○	10/26/2019 11:05
	WE-14	CS	42	-	613.48	9.71	10/26/2019 21:30	615.29	1.81	○	10/26/2019 22:10
	LV-15	CS	60	636.29	617.03	5.39	10/26/2019 20:35	620.33	3.30	○	10/26/2019 22:40
	M-22 MP#1	CS	42	630.49	614.41	-	-	620.67	6.26	⊙	10/26/2019 22:35
	M-22 MP#2	CS	42	630.49	614.41	-	-	621.78	7.37	⊙	10/26/2019 23:50
	M-2	CS	27	636.70	612.39	11.39	10/26/2019 21:30	614.32	1.93	○	10/26/2019 21:45
	M-1	CS	72	630.59	607.59	17.82	10/26/2019 20:25	613.95	6.36	⊙	10/26/2019 22:20
	LV-14	CS	60	612.02	605.57	7.80	10/26/2019 21:15	606.74	1.17	○	10/26/2019 21:45
	P-28	RVI	54	629.02	607.92	4.93	10/26/2019 21:55	609.60	1.68	○	10/26/2019 23:20
	P-29	CS	42	-	-	7.10	10/26/2019 23:00	-	1.92	○	10/26/2019 23:20
	LV-20	CS	54	-	-	-	-	-	0.18	○	10/26/2019 21:40
	LV-BASIN	RVI	54	632.00	602.01	20.34	10/26/2019 22:40	606.01	4.00	○	10/26/2019 23:20
	LV-4	CS	30	652.59	638.51	8.56	10/26/2019 21:05	640.47	1.96	○	10/26/2019 21:35
	LV-11	CS	42	-	-	10.20	10/26/2019 22:50	-	1.11	○	10/26/2019 23:25
	P-12	RVI	60	613.41	597.67	30.34	10/26/2019 23:50	600.32	2.65	○	10/26/2019 23:55
	P-9	MRIR	42	610.36	597.01	17.10	10/26/2019 23:55	599.36	2.35	○	10/26/2019 23:55
	P-10	RVI	66	607.65	595.62	55.42	10/26/2019 22:30	598.67	3.05	○	10/26/2019 23:20
	P-11	MRPIE	48	607.91	596.68	32.89	10/26/2019 21:35	599.97	3.29	○	10/26/2019 22:15
	P-13	MRPIE	54	613.22	586.85	30.93	10/26/2019 22:45	590.07	3.22	○	10/26/2019 23:35
	P-35	MRIR	54	597.62	584.15	32.83	10/26/2019 23:35	588.14	3.99	○	10/26/2019 23:55
	P-34	RVI	62	595.60	582.30	48.63	10/26/2019 23:40	587.11	4.81	○	10/26/2019 23:55
	P-33	MRPIE	48	597.01	585.22	32.60	10/26/2019 22:00	588.03	2.81	○	10/26/2019 23:55
	P-32	MRIR	66	597.03	578.79	42.63	10/26/2019 21:30	585.38	6.59	⊙	10/26/2019 23:55
	P-31	RVI	78	599.00	578.71	87.34	10/26/2019 23:55	585.55	6.84	⊙	10/26/2019 23:55
	P-30	MRPIE	60	593.00	580.29	42.37	10/26/2019 23:55	585.20	4.91	○	10/26/2019 23:00
	P-14	RVI	78	604.91	570.93	85.97	10/26/2019 23:55	580.71	9.78	⊙	10/26/2019 22:50
Lower Rouge	P-15	WRVI	24	667.57	651.67	2.59	10/26/2019 22:05	652.81	1.14	○	10/26/2019 22:40
	P-17	LRIR	30	641.21	632.39	3.50	10/26/2019 16:15	633.25	0.86	○	10/26/2019 16:50
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	6.96	10/26/2019 22:05	-	1.30	○	10/26/2019 22:40
	P-19	RVI	48	630.34	621.54	15.25	10/26/2019 21:15	623.45	1.91	○	10/26/2019 21:40
	WE-28	CS	30	-	-	5.94	10/26/2019 21:25	-	1.15	○	10/26/2019 21:50
	P-21	RVI	54	620.17	608.14	25.73	10/26/2019 22:00	610.06	1.92	○	10/26/2019 22:30
	P-25	RVI	60	598.36	588.06	40.38	10/26/2019 22:20	590.71	2.65	○	10/26/2019 23:10
	P-20	WI	48	630.66	619.72	13.06	10/26/2019 22:10	622.50	2.78	○	10/26/2019 22:45
	P-24	RVI	36	594.24	584.52	17.59	10/26/2019 22:40	586.48	1.96	○	10/26/2019 23:10
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	158.83	10/26/2019 23:50	574.51	19.61	⊙	10/26/2019 20:45
	WC-S-1	RVI	66	586.88	500.94	130.26	10/26/2019 23:10	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	99.99	10/26/2019 23:40	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-10
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 10 10/30/2019-11/1/2019 1.40 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	14.38	10/31/2019 12:40	-	-	-	-
	P-1	NAI	48	740.82	716.31	16.16	10/31/2019 13:20	717.76	1.45	○	10/31/2019 13:55
	P-3	MRIR	36	681.37	652.48	16.90	10/31/2019 14:25	654.03	1.55	○	10/31/2019 14:50
	P-26	PWI	30	649.24	647.86	2.39	10/31/2019 14:35	648.43	0.57	○	10/31/2019 15:00
	P-7	PWI	48	649.09	625.23	3.02	10/31/2019 17:30	626.60	1.37	○	10/31/2019 17:25
	LV-16	CS	48	-	627.38	4.46	10/31/2019 13:55	628.32	0.94	○	10/31/2019 20:15
	FE-22	RVI	48	685.04	644.88	1.48	11/1/2019 7:20	645.40	0.52	○	11/1/2019 8:00
	P-8	RVI	48	645.40	621.80	3.48	11/1/2019 7:55	622.53	0.73	○	11/1/2019 18:55
	WE-14	CS	42	-	613.48	9.99	10/31/2019 12:10	615.33	1.85	○	10/31/2019 13:15
	LV-15	CS	60	636.29	617.03	6.18	10/31/2019 11:40	619.46	2.43	○	10/31/2019 13:35
	M-22 MP#1	CS	42	630.49	614.41	-	-	619.68	5.27	⊙	10/31/2019 13:45
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.71	8.30	⊙	10/31/2019 23:30
	M-2	CS	27	636.70	612.39	11.64	10/31/2019 12:45	614.34	1.95	○	10/31/2019 12:35
	M-1	CS	72	630.59	607.59	19.41	10/31/2019 13:15	614.78	7.19	⊙	10/31/2019 13:35
	LV-14	CS	60	612.02	605.57	7.14	10/31/2019 12:15	606.65	1.08	○	10/31/2019 12:35
	P-28	RVI	54	629.02	607.92	4.50	10/31/2019 12:50	609.67	1.75	○	10/31/2019 14:30
	P-29	CS	42	-	-	7.25	10/31/2019 13:50	-	1.98	○	10/31/2019 14:30
	LV-20	CS	54	-	-	-	-	-	0.21	○	11/1/2019 12:10
	LV-BASIN	RVI	54	632.00	602.01	21.74	10/31/2019 13:35	606.38	4.37	○	10/31/2019 14:35
	LV-4	CS	30	652.59	638.51	8.74	10/31/2019 12:05	640.48	1.97	○	10/31/2019 12:30
	LV-11	CS	42	-	-	13.02	10/31/2019 14:10	-	1.26	○	10/31/2019 14:35
	P-12	RVI	60	613.41	597.67	33.71	10/31/2019 14:40	600.59	2.92	○	10/31/2019 14:35
	P-9	MRIR	42	610.36	597.01	20.64	10/31/2019 15:25	599.80	2.79	○	10/31/2019 15:25
	P-10	RVI	66	607.65	595.62	57.49	10/31/2019 13:00	598.96	3.34	○	10/31/2019 14:30
	P-11	MRPIE	48	607.91	596.68	35.03	10/31/2019 12:30	600.19	3.51	○	10/31/2019 13:10
	P-13	MRPIE	54	613.22	586.85	30.23	10/31/2019 12:00	591.28	4.43	○	10/31/2019 15:20
	P-35	MRIR	54	597.62	584.15	35.29	10/31/2019 12:40	588.53	4.38	○	10/31/2019 13:45
	P-34	RVI	62	595.60	582.30	53.51	10/31/2019 16:00	589.19	6.89	⊙	10/31/2019 15:15
	P-33	MRPIE	48	597.01	585.22	33.46	10/31/2019 12:40	589.92	4.70	⊙	10/31/2019 15:25
	P-32	MRIR	66	597.03	578.79	48.02	10/31/2019 12:05	587.01	8.22	⊙	10/31/2019 15:00
	P-31	RVI	78	599.00	578.71	92.58	10/31/2019 15:30	587.34	8.63	⊙	10/31/2019 15:15
	P-30	MRPIE	60	593.00	580.29	45.06	10/31/2019 14:30	585.20	4.91	○	10/31/2019 13:20
	P-14	RVI	78	604.91	570.93	103.94	10/31/2019 18:50	580.95	10.02	⊙	10/31/2019 14:45
Lower Rouge	P-15	WRVI	24	667.57	651.67	2.90	10/31/2019 12:45	652.90	1.23	○	10/31/2019 13:30
	P-17	LRIR	30	641.21	632.39	5.03	10/31/2019 12:35	633.41	1.02	○	10/31/2019 13:10
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	7.68	10/31/2019 12:35	-	1.37	○	10/31/2019 13:10
	P-19	RVI	48	630.34	621.54	17.18	10/31/2019 12:05	623.53	1.99	○	10/31/2019 12:50
	WE-28	CS	30	-	-	6.37	10/31/2019 12:40	-	1.16	○	10/31/2019 13:05
	P-21	RVI	54	620.17	608.14	27.90	10/31/2019 12:50	610.13	1.99	○	10/31/2019 13:10
	P-25	RVI	60	598.36	588.06	44.05	10/31/2019 20:40	590.71	2.65	○	10/31/2019 14:25
	P-20	WI	48	630.66	619.72	13.13	10/31/2019 13:30	622.42	2.70	○	10/31/2019 13:55
	P-24	RVI	36	594.24	584.52	19.02	10/31/2019 12:30	586.63	2.11	○	10/31/2019 14:55
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	166.92	10/31/2019 16:40	571.88	16.98	⊙	10/31/2019 11:25
	WC-S-1	RVI	66	586.88	500.94	178.83	10/31/2019 20:30	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	98.04	10/31/2019 16:30	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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 7-11
Rouge Valley Sewage Disposal System
Peak Hydraulic Gradeline Summary

Branch	Meter	Interceptor	Interceptor Height (inches)	Interceptor Rim (feet, NAVD88)	Interceptor Invert (feet, NAVD88)	Event 11 12/29-30/2019 1.32 in					
						Peak Recorded Hourly Flow Rate (cfs)	Time	Peak Recorded Depth (feet)			Time
								Elevation (NAVD88)	Above Invert	-	
Middle Rouge	BG-1	HRTS	42	821.59	797.17	12.29	12/29/2019 12:05	-	-	-	-
	P-1	NAI	48	740.82	716.31	14.24	12/30/2019 12:30	717.66	1.35	○	12/30/2019 13:05
	P-3	MRIR	36	681.37	652.48	16.18	12/29/2019 14:20	653.99	1.51	○	12/29/2019 14:55
	P-26	PWI	30	649.24	647.86	1.56	12/30/2019 13:45	648.31	0.45	○	12/30/2019 14:40
	P-7	PWI	48	649.09	625.23	2.43	12/30/2019 16:45	626.46	1.23	○	12/30/2019 17:40
	LV-16	CS	48	-	627.38	4.82	12/30/2019 6:20	628.36	0.98	○	12/30/2019 7:10
	FE-22	RVI	48	685.04	644.88	1.36	12/31/2019 11:20	645.55	0.67	○	12/31/2019 21:40
	P-8	RVI	48	645.40	621.80	3.07	12/31/2019 13:00	622.50	0.70	○	12/31/2019 13:00
	WE-14	CS	42	-	613.48	8.03	12/30/2019 12:55	615.05	1.57	○	12/30/2019 13:55
	LV-15	CS	60	636.29	617.03	4.99	12/30/2019 6:05	618.74	1.71	○	12/30/2019 7:15
	M-22 MP#1	CS	42	630.49	614.41	-	-	618.48	4.07	⊙	12/30/2019 7:35
	M-22 MP#2	CS	42	630.49	614.41	-	-	622.25	7.84	⊙	12/30/2019 16:30
	M-2	CS	27	636.70	612.39	9.07	12/30/2019 6:15	614.07	1.68	○	12/30/2019 6:50
	M-1	CS	72	630.59	607.59	16.47	12/30/2019 5:05	612.47	4.88	○	12/30/2019 7:55
	LV-14	CS	60	612.02	605.57	4.62	12/30/2019 6:50	606.43	0.86	○	12/30/2019 7:40
	P-28	RVI	54	629.02	607.92	4.00	12/29/2019 11:45	609.47	1.55	○	12/30/2019 8:20
	P-29	CS	42	-	-	6.14	12/30/2019 7:50	-	1.77	○	12/30/2019 8:35
	LV-20	CS	54	-	-	-	-	-	0.22	○	12/30/2019 19:55
	LV-BASIN	RVI	54	632.00	602.01	18.32	12/30/2019 8:10	605.72	3.71	○	12/30/2019 8:50
	LV-4	CS	30	652.59	638.51	7.12	12/30/2019 7:25	640.24	1.73	○	12/30/2019 7:35
	LV-11	CS	42	-	-	9.77	12/30/2019 9:30	-	1.12	○	12/30/2019 7:25
	P-12	RVI	60	613.41	597.67	26.93	12/30/2019 9:20	600.16	2.49	○	12/30/2019 9:55
	P-9	MRIR	42	610.36	597.01	14.41	12/30/2019 8:45	599.09	2.08	○	12/30/2019 9:15
	P-10	RVI	66	607.65	595.62	49.77	12/30/2019 8:10	598.37	2.75	○	12/30/2019 8:40
	P-11	MRPIE	48	607.91	596.68	29.36	12/30/2019 7:05	599.57	2.89	○	12/30/2019 7:45
	P-13	MRPIE	54	613.22	586.85	27.76	12/30/2019 7:20	589.69	2.84	○	12/30/2019 8:00
	P-35	MRIR	54	597.62	584.15	33.02	12/30/2019 8:05	587.72	3.57	○	12/30/2019 10:05
	P-34	RVI	62	595.60	582.30	44.26	12/30/2019 7:35	586.79	4.49	○	12/30/2019 10:15
	P-33	MRPIE	48	597.01	585.22	29.37	12/30/2019 7:05	587.70	2.48	○	12/30/2019 10:15
	P-32	MRIR	66	597.03	578.79	41.91	12/30/2019 6:50	585.66	6.87	⊙	12/30/2019 10:15
	P-31	RVI	78	599.00	578.71	70.19	12/30/2019 11:10	585.91	7.20	⊙	12/30/2019 10:20
	P-30	MRPIE	60	593.00	580.29	35.03	12/30/2019 6:55	585.93	5.64	⊙	12/30/2019 10:05
	P-14	RVI	78	604.91	570.93	106.77	12/30/2019 12:30	579.18	8.25	⊙	12/30/2019 9:25
Lower Rouge	P-15	WRVI	24	667.57	651.67	2.70	12/30/2019 10:35	652.81	1.14	○	12/30/2019 11:10
	P-17	LRIR	30	641.21	632.39	4.58	12/30/2019 9:20	633.36	0.97	○	12/30/2019 9:55
	FE-19	CS	-	-	-	0.00	-	-	-	-	-
	WE-25	CS	27	-	-	5.40	12/30/2019 6:50	-	1.11	○	12/30/2019 7:50
	P-19	RVI	48	630.34	621.54	13.27	12/30/2019 10:45	623.27	1.73	○	12/30/2019 10:50
	WE-28	CS	30	-	-	4.24	12/30/2019 6:20	-	0.89	○	12/30/2019 6:30
	P-21	RVI	54	620.17	608.14	20.29	12/30/2019 16:05	609.81	1.67	○	12/30/2019 9:35
	P-25	RVI	60	598.36	588.06	38.37	12/30/2019 5:50	590.45	2.39	○	12/30/2019 6:25
	P-20	WI	48	630.66	619.72	10.56	12/30/2019 5:55	622.02	2.30	○	12/30/2019 6:30
	P-24	RVI	36	594.24	584.52	17.08	12/30/2019 7:20	586.06	1.54	○	12/30/2019 7:45
RVSDS Outlet	WC-S-1A	RVI	102	583.84	554.90	166.87	12/30/2019 11:45	569.87	14.97	⊙	12/30/2019 7:10
	WC-S-1	RVI	66	586.88	500.94	177.91	12/30/2019 14:55	-	-	-	-
	WC-S-2	MRPIE	66	619.47	564.01	47.09	12/30/2019 9:00	-	-	-	-
	WC-S-3	MRIR	48	599.79	561.87			-	-	-	-

Interceptor Key

CS	Community Sewer
HRTS	Huron Rouge Trunk Sewer
LRIR	Lower Rouge Interceptor Relief
NWI	Northwest Interceptor
MRPIE	Middle Rouge Parkway Interceptor Extension
MRIR	Middle Rouge Interceptor Relief
NAI	Northville Arm Interceptor
PWI	Parkway Interceptor
RVI	Rouge Valley Interceptor
WI	Wayne Interceptor
WRVI	Wayne-Romulus-Van Buren Interceptor

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:	-

Section 8

Rainfall Event Summary Tables

Table 8-1
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 1
Start Date: 3/29/2019
Stop Date: 3/31/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.18	0.31	0.43	0.68	1.01	1.46	1.46	1.46	1.46
R-11	0.16	0.27	0.34	0.62	0.86	1.06	1.14	1.14	1.06
R-12	0.17	0.31	0.46	0.78	1.12	1.48	1.48	1.48	1.48
R-13	0.16	0.29	0.42	0.68	1.02	1.41	1.42	1.42	1.42
R-14	0.17	0.30	0.44	0.71	1.05	1.42	1.42	1.42	1.42
R-15	0.14	0.26	0.37	0.64	0.92	1.30	1.31	1.31	1.30
R-18	0.16	0.28	0.38	0.60	0.89	1.22	1.23	1.23	1.23
R-27	0.18	0.33	0.45	0.73	1.06	1.49	1.50	1.50	1.50
R-28	0.15	0.29	0.44	0.74	1.08	1.42	1.42	1.42	1.42
R-29	0.18	0.33	0.46	0.77	1.06	1.30	1.30	1.30	1.30
WTUA LR	0.16	0.30	0.48	0.75	1.06	1.43	1.43	1.43	1.43
WTUA MR	0.16	0.27	0.39	0.63	0.91	1.07	1.07	1.07	1.07
0831	0.19	0.34	0.45	0.78	1.08	1.32	1.32	1.32	1.32
0837	0.19	0.32	0.41	0.70	0.97	1.15	1.15	1.15	1.15
0843	0.18	0.30	0.37	0.67	0.92	1.17	1.17	1.17	1.17
0850	0.14	0.24	0.34	0.58	0.78	1.01	1.01	1.01	1.01
GC RG01	0.16	0.29	0.42	0.69	0.97	1.12	1.12	1.12	1.12
LV RG01	0.16	0.29	0.41	0.71	1.03	1.25	1.27	1.27	1.25
LV RG02	0.17	0.28	0.36	0.63	0.89	1.07	1.12	1.12	1.07
DTW	0.14	0.28	0.45	0.63	0.93	1.34	1.34	1.34	1.34
Minimum	0.14	0.24	0.34	0.58	0.78	1.01	1.01	1.01	1.01
Average	0.17	0.29	0.41	0.69	0.98	1.27	1.28	1.28	1.28
Maximum	0.19	0.34	0.48	0.78	1.12	1.49	1.50	1.50	1.50
								Standard Deviation (in):	0.16
								Coefficient of Variation:	12%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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 8-2
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 2
Start Date: 4/18/2019
Stop Date: 4/20/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.25	0.46	0.67	0.79	0.80	0.83	1.45	1.45	1.45
R-11	0.22	0.39	0.55	0.74	0.74	0.80	1.49	1.56	1.51
R-12	0.26	0.42	0.60	0.77	0.77	0.79	1.42	1.43	1.42
R-13	0.24	0.41	0.59	0.75	0.75	0.78	1.36	1.36	1.36
R-14	0.24	0.44	0.57	0.75	0.76	0.79	1.35	1.39	1.36
R-15	0.23	0.42	0.60	0.71	0.71	0.75	1.30	1.30	1.30
R-18	0.23	0.41	0.53	0.71	0.71	0.74	1.25	1.29	1.26
R-27	0.23	0.40	0.62	0.77	0.78	0.81	1.43	1.44	1.43
R-28	0.26	0.42	0.66	0.82	0.82	0.85	1.43	1.43	1.43
R-29	0.24	0.43	0.59	0.74	0.74	0.77	1.42	1.44	1.43
WTUA LR	0.23	0.41	0.59	0.72	0.72	0.75	1.32	1.36	1.32
WTUA MR	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0831	0.23	0.41	0.59	0.69	0.69	0.72	1.37	1.39	1.37
0837	0.22	0.39	0.56	0.69	0.70	0.76	1.47	1.52	1.47
0843	0.22	0.36	0.51	0.64	0.64	0.78	1.41	1.46	1.42
0850	0.19	0.30	0.45	0.63	0.64	0.75	1.15	1.28	1.17
GC RG01	0.24	0.39	0.53	0.66	0.66	0.68	1.14	1.15	1.14
LV RG01	0.24	0.43	0.62	0.79	0.79	0.84	1.49	1.53	1.49
LV RG02	0.18	0.34	0.49	0.67	0.67	0.71	1.35	1.39	1.35
DTW	0.22	0.41	0.70	0.74	0.74	0.76	1.29	1.29	1.29
Minimum	0.18	0.30	0.45	0.63	0.64	0.68	1.14	1.15	1.14
Average	0.23	0.40	0.58	0.73	0.73	0.77	1.36	1.39	1.37
Maximum	0.26	0.46	0.70	0.82	0.82	0.85	1.49	1.56	1.51
							Standard Deviation (in):		0.10
X.XX*	Missing or suspect data (not used).						Coefficient of Variation:		7%

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	-	-	-	-	-	-	-	-	-
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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 8-3
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 3
Start Date: 4/25/2019
Stop Date: 4/26/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.22	0.26	0.37	0.57	0.89	0.90	0.90	1.27	0.89
R-11	0.20	0.33	0.50	0.90	1.15	1.17	1.17	1.55	1.17
R-12	0.61	0.79	0.84	1.22	1.64	1.65	1.65	2.04	1.65
R-13	0.37	0.45	0.50	0.86	1.19	1.22	1.22	1.60	1.22
R-14	0.65	0.99	1.15	1.44	1.91	1.91	1.91	2.27	1.91
R-15	0.27	0.32	0.32	0.51	0.86	0.89	0.89	1.22	0.89
R-18	0.27	0.33	0.37	0.64	0.98	0.98	0.98	1.32	0.98
R-27	0.22	0.29	0.34	0.62	0.99	1.03	1.03	1.42	1.01
R-28	0.30	0.39	0.43	0.77	1.13	1.15	1.15	1.54	1.15
R-29	0.41	0.58	0.66	1.02	1.43	1.44	1.44	1.82	1.44
WTUA LR	0.45	0.69	0.83	1.10	1.48	1.50	1.50	1.88	1.50
WTUA MR	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0831	0.42	0.59	0.70	1.15	1.50	1.52	1.52	1.87	1.52
0837	0.26	0.42	0.53	0.92	1.21	1.21	1.21	1.56	1.21
0843	0.35	0.48	0.62	1.04	1.29	1.32	1.32	1.63	1.32
0850	0.30	0.49	0.70	1.04	1.25	1.26	1.26	1.52	1.26
GC RG01	0.42	0.59	0.64	0.94	1.25	1.26	1.26	1.62	1.26
LV RG01	0.32	0.52	0.62	0.99	1.37	1.39	1.39	1.79	1.39
LV RG02	0.45	0.57	0.69	1.06	1.37	1.39	1.39	1.75	1.39
DTW	0.24	0.30	0.40	0.51	0.89	0.89	0.89	1.22	0.89
Minimum	0.20	0.26	0.32	0.51	0.86	0.89	0.89	1.22	0.89
Average	0.35	0.49	0.59	0.91	1.25	1.27	1.27	1.63	1.27
Maximum	0.65	0.99	1.15	1.44	1.91	1.91	1.91	2.27	1.91
								Standard Deviation (in):	0.27
								Coefficient of Variation:	22%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1	1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	-	-	-	-	-	-	-	-	-
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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 8-4
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 4
Start Date: 4/30/2019
Stop Date: 5/1/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.88	1.33	2.08	2.73	3.04	3.06	3.23	3.39	3.06
R-11	0.38	0.52	0.53	0.87	1.06	1.06	1.10	1.19	1.06
R-12	0.49	0.58	0.83	1.30	1.62	1.62	1.71	1.87	1.62
R-13	0.77	0.98	1.55	1.99	2.45	2.46	2.59	2.75	2.46
R-14	0.63	0.87	1.26	1.82	2.13	2.13	2.25	2.37	2.13
R-15	1.22	1.73	2.24	2.81	3.06	3.12	3.23	3.36	3.11
R-18	1.24	1.58	2.04	2.63	2.76	2.78	2.94	3.07	2.78
R-27	0.80	1.01	1.61	2.03	2.39	2.41	2.57	2.72	2.41
R-28	0.44	0.68	1.08	1.43	1.86	1.87	1.98	2.14	1.87
R-29	0.47	0.59	0.62	1.08	1.39	1.39	1.43	1.55	1.39
WTUA LR	0.57	0.77	1.14	1.54	1.87	1.87	1.96	2.10	1.87
WTUA MR	0.20*	0.32*	0.49*	0.51*	0.53*	0.53*	0.64*	0.71*	0.53*
0831	0.36	0.46	0.60	0.91	1.19	1.19	1.21	1.37	1.19
0837	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0843	0.31	0.42	0.45	0.75	0.96	0.96	1.01	1.15	0.96
0850	0.27	0.40	0.42	0.65	0.85	0.85	0.87	0.96	0.85
GC RG01	0.46	0.56	0.90	1.31	1.68	1.68	1.77	1.91	1.68
LV RG01	0.42	0.53	0.56	0.98	1.27	1.28	1.31	1.47	1.28
LV RG02	0.37	0.50	0.51	0.87	1.07	1.07	1.12	1.20	1.07
DTW	1.05	1.56	2.48	2.88	3.20	3.28	3.41	3.55	3.27
Minimum	0.27	0.40	0.42	0.65	0.85	0.85	0.87	0.96	0.85
Average	0.62	0.84	1.16	1.59	1.88	1.89	1.98	2.12	1.89
Maximum	1.24	1.73	2.48	2.88	3.20	3.28	3.41	3.55	3.27
								Standard Deviation (in):	0.79
								Coefficient of Variation:	42%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	2	7	13	12	7	5	4	13
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	2	3	4	3	2	1	4
R-14	< 1	< 1	< 1	2	2	1	< 1	< 1	2
R-15	3	5	9	14	13	8	5	4	14
R-18	3	4	7	10	8	5	3	3	10
R-27	< 1	< 1	2	3	4	2	2	1	4
R-28	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1	1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	1	< 1	< 1	< 1	1
WTUA MR	-	-	-	-	-	-	-	-	-
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	-	-	-	-	-	-	-	-	-
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	1	3	16	16	16	10	6	5	16
Minimum	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
Average	< 1	1	3	4	4	2	2	1	4
Maximum	3	5	16	16	16	10	6	5	16

- 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 8-5
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 5
Start Date: 5/18/2019
Stop Date: 5/20/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.43	0.48	0.50	0.50	0.50	0.50	0.77	0.77	0.77
R-11	0.56	0.62	0.67	0.69	0.76	0.77	1.16	1.16	1.16
R-12	0.38	0.56	0.57	0.59	0.59	0.59	1.08	1.08	1.08
R-13	0.36	0.53	0.53	0.53	0.53	0.53	0.87	0.87	0.87
R-14	0.56	0.74	0.76	0.79	0.79	0.79	1.14	1.14	1.14
R-15	0.35	0.37	0.38	0.38	0.38	0.38	0.75	0.75	0.75
R-18	0.36	0.54	0.54	0.56	0.56	0.56	0.97	0.97	0.97
R-27	0.35	0.51	0.52	0.52	0.52	0.52	0.77	0.77	0.77
R-28	0.27	0.42	0.42	0.42	0.42	0.42	0.66	0.66	0.66
R-29	0.79	1.00	1.02	1.04	1.10	1.11	1.39	1.39	1.38
WTUA LR	0.86	1.04	1.06	1.07	1.07	1.07	1.58	1.58	1.58
WTUA MR	0.53	0.66	0.69	0.71	0.71	0.71	1.15	1.15	1.15
0831	0.90	1.13	1.16	1.18	1.34	1.34	1.53	1.60	1.53
0837	0.91	1.13	1.17	1.21	1.41	1.44	1.59	1.65	1.59
0843	0.56	0.65	0.71	0.73	0.99	0.99	1.19	1.22	1.19
0850	0.39	0.41	0.48	0.50	0.88	0.89	1.03	1.14	1.02
GC RG01	0.32	0.46	0.47	0.48	0.48	0.48	0.94	0.94	0.94
LV RG01	0.90	1.06	1.09	1.11	1.12	1.12	1.53	1.53	1.53
LV RG02	0.41	0.50	0.58	0.62	0.69	0.69	1.02	1.02	1.02
DTW	0.29	0.46	0.46	0.46	0.46	0.46	0.80	0.80	0.80
Minimum	0.27	0.37	0.38	0.38	0.38	0.38	0.66	0.66	0.66
Average	0.52	0.66	0.69	0.70	0.77	0.77	1.10	1.11	1.10
Maximum	0.91	1.13	1.17	1.21	1.41	1.44	1.59	1.65	1.59
								Standard Deviation (in):	0.30
								Coefficient of Variation:	27%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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 8-6
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 6
Start Date: 7/6/2019
Stop Date: 7/6/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
R-11	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
R-12	0.79	1.07	1.11	1.19	1.19	1.19	1.19	1.19	1.19
R-13	0.06	0.08	0.08	0.14	0.14	0.14	0.14	0.14	0.14
R-14	0.29	0.29	0.29	0.44	0.44	0.44	0.44	0.44	0.44
R-15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R-18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
R-27	1.03	1.06	1.61	1.63	1.63	1.63	1.63	1.63	1.63
R-28	0.78	0.89	1.12	1.39	1.40	1.40	1.40	1.40	1.40
R-29	1.11	1.41	1.48	1.48	1.48	1.48	1.49	1.49	1.48
WTUA LR	0.05	0.05	0.05	0.09	0.09	0.09	0.09	0.09	0.09
WTUA MR	0.05	0.06	0.06	0.08	0.08	0.08	0.08	0.08	0.08
0831	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0837	0.44	0.44	0.49	0.62	0.62	0.62	0.62	0.62	0.62
0843	0.43	0.43	0.44	0.55	0.55	0.56	0.57	0.57	0.55
0850	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
GC RG01	0.61	0.85	1.25	1.35	1.35	1.35	1.35	1.35	1.35
LV RG01	0.23	0.31	0.46	0.55	0.55	0.55	0.55	0.55	0.55
LV RG02	0.21	0.28	0.29	0.29	0.29	0.29	0.29	0.29	0.29
DTW	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Average	0.34	0.41	0.49	0.55	0.55	0.55	0.55	0.55	0.55
Maximum	1.11	1.41	1.61	1.63	1.63	1.63	1.63	1.63	1.63
								Standard Deviation (in):	0.59
								Coefficient of Variation:	107%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	1	< 1	2	1	< 1	< 1	< 1	< 1	2
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	2	2	2	< 1	< 1	< 1	< 1	< 1	2
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	-	-	-	-	-	-	-	-	-
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	-	-	-	-	-	-	-	-	-
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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	2	2	2	1	< 1	< 1	< 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 8-7
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 7
Start Date: 7/15/2019
Stop Date: 7/17/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.31	0.31	0.31	0.31	0.31	0.34	0.38	2.11	0.38
R-11	0.42	0.48	0.73	0.95	0.96	0.99	1.24	1.26	1.24
R-12	1.23	1.41	1.42	1.43	1.46	1.48	2.46	2.46	2.46
R-13	0.94	1.49	1.83	2.00	2.17	2.18	2.39	2.49	2.21
R-14	0.77	0.83	0.85	0.85	0.86	0.87	1.09	2.87	0.87
R-15	1.07	1.09	1.09	1.09	1.09	1.19	1.47	1.48	1.47
R-18	0.12	0.12	0.14	0.15	0.17	0.21	0.32	1.79	0.23
R-27	1.21	1.29	1.29	1.48	1.50	1.54	1.74	1.88	1.74
R-28	1.29	1.37	1.37	1.37	1.37	1.52	2.54	2.54	2.54
R-29	0.18	0.26	0.30	0.36	0.37	0.41	0.50	0.57	0.50
WTUA LR	0.90	1.31	1.59	1.88	2.16	2.21	2.43	3.07	2.21
WTUA MR	0.73	0.98	1.02	1.04	1.04	1.07	1.80	1.81	1.80
0831	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0837	0.41	0.42	0.42	0.42	0.42	0.59	0.83	0.83	0.83
0843	0.70	0.74	0.99	1.80	1.84	1.85	2.19	2.19	2.19
0850	0.83	0.83	0.88	1.04	1.13	1.13	1.17	1.21	1.17
GC RG01	1.68	1.88	1.88	1.91	1.93	1.94	2.34	2.54	2.34
LV RG01	1.09	1.16	1.16	1.16	1.16	1.21	1.78	1.78	1.78
LV RG02	0.32	0.39	0.55	0.65	0.66	0.70	0.94	1.01	0.94
DTW	0.15	0.15	0.15	0.15	0.15	0.18	0.27	1.73	0.27
Minimum	0.12	0.12	0.14	0.15	0.15	0.18	0.27	0.57	0.23
Average	0.76	0.87	0.95	1.05	1.09	1.14	1.47	1.87	1.43
Maximum	1.68	1.88	1.88	2.00	2.17	2.21	2.54	3.07	2.54
							Standard Deviation (in):		0.78
X.XX*	Missing or suspect data (not used).						Coefficient of Variation:		55%

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	3	2	1	< 1	< 1	< 1	1	< 1	3
R-13	< 1	3	4	3	3	1	1	< 1	4
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2	2
R-15	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	3	2	< 1	< 1	< 1	< 1	< 1	< 1	3
R-28	3	2	1	< 1	< 1	< 1	2	< 1	3
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	2	2	2	3	1	1	3	3
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	-	-	-	-	-	-	-	-	-
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	2	< 1	< 1	< 1	< 1	2
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	9	7	4	3	1	< 1	< 1	< 1	9
LV RG01	2	< 1	< 1	< 1	< 1	< 1	< 1	< 1	2
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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	2
Maximum	9	7	4	3	3	1	2	3	9

- 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 8-8
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 8

Start Date: 9/11/2019

Stop Date: 9/12/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.58	0.93	0.98	1.08	1.23	1.34	1.57	1.73	1.34
R-11	0.52	0.73	0.80	1.21	1.68	1.81	1.81	1.81	1.81
R-12	0.27	0.52	0.52	1.02	1.24	1.39	1.40	1.52	1.39
R-13	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-14	1.03	1.23	1.28	1.37	1.50	1.53	2.11	2.14	1.53
R-15	0.51	0.75	0.77	0.86	0.94	0.96	1.31	1.33	0.96
R-18	0.64	0.85	0.92	1.00	1.39	1.57	1.62	2.02	1.57
R-27	1.14	1.15	1.42	1.84	1.96	2.06	2.32	2.33	2.06
R-28	0.42	0.62	0.69	1.07	1.19	1.35	1.47	1.52	1.35
R-29	0.27	0.44	0.52	0.82	0.99	1.20	1.22	1.38	1.20
WTUA LR	0.50	0.75	0.78	0.98	1.07	1.08	1.30	1.31	1.08
WTUA MR	0.26	0.38	0.38	0.71	1.03	1.07	1.08	1.25	1.07
0831	0.50	0.72	0.78	1.13	1.59	1.64	1.65	2.02	1.64
0837	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0843	0.63	1.05	1.12	1.65	2.27	2.43	2.45	2.92	2.43
0850	0.36	0.64	0.84	1.15	1.72	1.72	1.72	1.72	1.72
GC RG01	0.42	0.62	0.62	1.14	1.31	1.36	1.44	1.54	1.36
LV RG01	0.40	0.53	0.59	1.03	1.31	1.78	1.78	1.94	1.48
LV RG02	0.48	0.67	0.90	1.28	1.80	1.90	1.91	2.45	1.90
DTW	0.41	0.79	0.87	0.95	1.03	1.10	1.43	1.50	1.10
Minimum	0.26	0.38	0.38	0.71	0.94	0.96	1.08	1.25	0.96
Average	0.52	0.74	0.82	1.13	1.40	1.52	1.64	1.80	1.50
Maximum	1.14	1.23	1.42	1.84	2.27	2.43	2.45	2.92	2.43
								Standard Deviation (in):	0.38
								Coefficient of Variation:	26%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	-	-	-	-	-	-	-	-	-
R-14	1	1	< 1	< 1	< 1	< 1	< 1	< 1	1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	2	< 1	1	2	2	< 1	< 1	< 1	2
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	-	-	-	-	-	-	-	-	-
0843	< 1	< 1	< 1	1	3	2	1	2	3
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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	2	1	1	2	3	2	1	2	3

- 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 8-9
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 9
Start Date: 10/26/2019
Stop Date: 10/27/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.55	0.77	0.98	1.27	1.39	1.46	1.46	1.56	1.46
R-11	0.47	0.68	0.87	1.13	1.24	1.36	1.36	1.36	1.36
R-12	0.44	0.67	0.85	1.16	1.28	1.37	1.38	1.38	1.37
R-13	0.53	0.79	0.99	1.36	1.48	1.57	1.57	1.57	1.57
R-14	0.50	0.73	0.97	1.30	1.43	1.54	1.54	1.54	1.54
R-15	0.48	0.68	0.90	1.15	1.26	1.32	1.32	1.42	1.32
R-18	0.54	0.78	0.99	1.31	1.47	1.61	1.61	1.71	1.61
R-27	0.46	0.70	0.88	1.19	1.31	1.36	1.36	1.36	1.36
R-28	0.47	0.70	0.91	1.20	1.32	1.36	1.37	1.37	1.36
R-29	0.47	0.71	0.90	1.20	1.32	1.41	1.41	1.41	1.40
WTUA LR	0.51	0.74	0.98	1.27	1.42	1.57	1.57	1.57	1.57
WTUA MR	0.45	0.68	0.92	1.18	1.29	1.40	1.40	1.40	1.40
0831	0.45	0.68	0.86	1.12	1.23	1.26	1.26	1.26	1.26
0837	0.45	0.66	0.81	1.08	1.18	1.26	1.27	1.27	1.25
0843	0.45	0.66	0.85	1.14	1.29	1.44	1.44	1.44	1.43
0850	0.34	0.52	0.67	0.90	1.02	1.12	1.12	1.12	1.11
GC RG01	0.46	0.69	0.88	1.18	1.31	1.41	1.41	1.41	1.41
LV RG01	0.47	0.70	0.87	1.14	1.25	1.33	1.33	1.33	1.33
LV RG02	0.41	0.61	0.79	1.07	1.19	1.31	1.31	1.31	1.31
DTW	0.44	0.73	1.02	1.23	1.37	1.38	1.38	1.38	1.38
Minimum	0.34	0.52	0.67	0.90	1.02	1.12	1.12	1.12	1.11
Average	0.47	0.69	0.89	1.18	1.30	1.39	1.39	1.41	1.39
Maximum	0.55	0.79	1.02	1.36	1.48	1.61	1.61	1.71	1.61
								Standard Deviation (in):	0.12
								Coefficient of Variation:	9%
X.XX*	Missing or suspect data (not used).								

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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 8-10
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 10

Start Date: 10/30/2019

Stop Date: 11/1/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.19	0.33	0.47	0.80	0.91	1.18	1.37	1.37	1.37
R-11	0.24	0.33	0.45	0.82	0.91	1.15	1.44	1.44	1.44
R-12	0.23	0.34	0.49	0.87	0.98	1.28	1.54	1.54	1.54
R-13	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
R-14	0.23	0.36	0.53	0.90	0.98	1.28	1.55	1.55	1.54
R-15	0.24	0.34	0.47	0.71	0.83	1.10	1.34	1.34	1.34
R-18	0.25	0.37	0.51	0.91	0.98	1.27	1.40	1.40	1.40
R-27	0.23	0.35	0.50	0.81	0.93	1.21	1.45	1.45	1.45
R-28	0.24	0.36	0.52	0.85	0.96	1.30	1.53	1.53	1.53
R-29	0.20	0.29	0.43	0.77	0.91	1.19	1.47	1.47	1.47
WTUA LR	0.24	0.36	0.55	0.94	1.03	1.36	1.63	1.63	1.63
WTUA MR	0.17	0.28	0.45	0.77	0.82	1.05	1.17	1.17	1.17
0831	0.18	0.31	0.43	0.73	0.87	1.13	1.39	1.39	1.39
0837	0.17	0.28	0.41	0.71	0.81	1.05	1.28	1.28	1.27
0843	0.24	0.33	0.44	0.81	0.91	1.16	1.47	1.47	1.47
0850	0.26	0.28	0.38	0.61	0.72	0.93	1.18	1.18	1.18
GC RG01	0.21	0.31	0.45	0.80	0.90	1.13	1.38	1.38	1.38
LV RG01	0.17	0.29	0.44	0.78	0.87	1.17	1.43	1.43	1.43
LV RG02	0.22	0.30	0.43	0.76	0.86	1.10	1.37	1.37	1.37
DTW	0.17	0.26	0.49	0.71	0.83	1.04	1.27	1.27	1.27
Minimum	0.17	0.26	0.38	0.61	0.72	0.93	1.17	1.17	1.17
Average	0.21	0.32	0.47	0.79	0.90	1.16	1.40	1.40	1.40
Maximum	0.26	0.37	0.55	0.94	1.03	1.36	1.63	1.63	1.63
							Standard Deviation (in):		0.12
X.XX*	Missing or suspect data (not used).						Coefficient of Variation:		9%

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	-	-	-	-	-	-	-	-	-
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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 8-11
Rouge Valley Sewage Disposal System
Rainfall Event Summary Table

Significant Storm Event 11

Start Date: 12/29/2019

Stop Date: 12/30/2019

Gage ID	Peak Rainfall (in)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Event Total
R-10	0.34	0.51	0.68	0.86	0.86	1.54	1.55	1.56	1.54
R-11	0.29	0.44	0.59	0.70	0.72	1.30	1.34	1.34	1.33
R-12	0.28	0.41	0.58	0.72	0.72	1.39	1.43	1.46	1.39
R-13	0.30	0.45	0.65	0.81	0.81	1.48	1.48	1.48	1.48
R-14	0.32	0.49	0.63	0.78	0.78	1.52	1.53	1.53	1.52
R-15	0.30	0.49	0.71	0.83	0.83	1.53	1.55	1.60	1.53
R-18	0.34	0.51	0.65	0.83	0.83	1.45	1.46	1.47	1.46
R-27	0.28	0.41	0.60	0.74	0.74	1.45	1.47	1.49	1.45
R-28	0.26	0.40	0.60	0.73	0.73	1.43	1.47	1.53	1.43
R-29	0.26	0.39	0.57	0.70	0.70	1.34	1.38	1.39	1.34
WTUA LR	0.31	0.46	0.66	0.79	0.79	1.42	1.45	1.46	1.42
WTUA MR	0.29	0.45	0.59	0.68	0.68	1.16	1.16	1.17	1.16
0831	0.22	0.34	0.52	0.63	0.64	1.15	1.20	1.20	0.64
0837	0.25	0.40	0.59	0.71	0.71	1.29	1.39	1.41	1.30
0843	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
0850	0.19	0.28	0.36	0.40	0.40	0.62	0.71	0.72	0.63
GC RG01	0.27	0.40	0.57	0.71	0.71	1.30	1.30	1.30	1.30
LV RG01	0.27	0.42	0.59	0.72	0.73	1.33	1.33	1.33	1.33
LV RG02	0.24	0.40	0.55	0.66	0.66	1.18	1.20	1.20	1.18
DTW	0.26	0.43	0.68	0.76	0.81	1.53	1.58	1.61	1.57
Minimum	0.19	0.28	0.36	0.40	0.40	0.62	0.71	0.72	0.63
Average	0.28	0.43	0.60	0.72	0.73	1.34	1.37	1.38	1.32
Maximum	0.34	0.51	0.71	0.86	0.86	1.54	1.58	1.61	1.57
								Standard Deviation (in):	0.27
								Coefficient of Variation:	20%

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

Gage ID	Recurrence Interval (years)								
	1-Hour	2-Hour	3-Hour	6-Hour	12-Hour	24-Hour	2-Day	3-Day	Maximum
R-10	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-11	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-12	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-13	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-14	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-15	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-18	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-27	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-28	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
R-29	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA LR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
WTUA MR	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0831	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0837	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
0843	-	-	-	-	-	-	-	-	-
0850	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
GC RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG01	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
LV RG02	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
DTW	< 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.

Section 9

Dry/Wet Weather Day Count by Month

Table 9-1
Rouge Valley Sewage Disposal System
Dry/Wet Weather Day Count by Month

Month	Number of Dry Weather Days	Number of Wet Weather Days
January 2019	22	9
February 2019	12	16
March 2019	22	9
April 2019	16	14
May 2019	15	16
June 2019	22	8
July 2019	15	16
August 2019	21	10
September 2019	19	11
October 2019	19	12
November 2019	22	8
December 2019	21	10
Total	226	139

Notes:

1) A single set of dry days was used to estimate the dry weather flow rates for all of the meters. The dry weather days were determined by analyzing the daily flow rate traces for meter groups near the downstream end of the interceptor system. The meter groups used for this analysis include: Meters [P-9]+[P-10]+[P-11] which represent the Middle Rouge interceptor system, Meters [P-24]+[P-25] which represent the Lower Rouge interceptor system, and Meters [WC-S-1]+[WC-S-2]+[WC-S-3] which represent the entire RVSDS. These meter groups 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. Two methods were used for screening out dry and wet weather days using average daily flow rates.

The first method was designed to flag days that exhibited abrupt changes in average daily flow rate from the preceding or following days. This criterion was selected because wet weather events that cause an RDI/I response will significantly raise the average daily flow rate when compared to the preceding day. Likewise, the average daily flow rate on the day following a wet weather event will exhibit a decrease as the RDI/I flow rates subside.

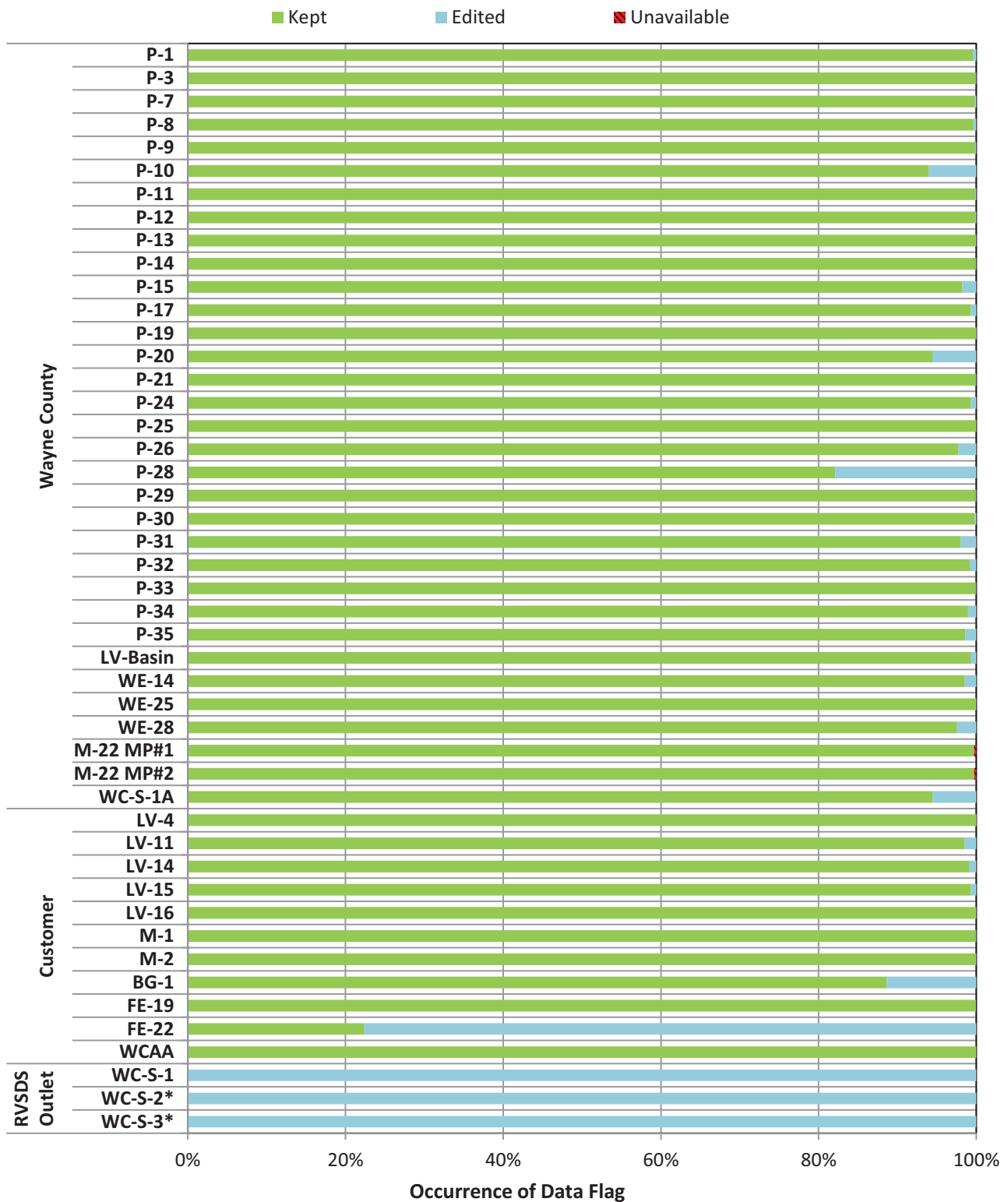
The second method was designed to flag additional wet weather days that were typically found during large, multiple day events that elevated the metered flow rates for a few days. When this happens, the days in the middle of the event are not flagged by the first method because there is no change in the already elevated flow rate. For this method, the average daily flow rate on dry days was constrained to remain below two standard deviations of the three month average flow rate. Any day with a daily average above this was flagged as a wet day.

2) The same set of dry days was used to estimate the dry weather flow rates for all of the meters.

Section 10

Flow Rate Data Flags

Figure 10-1
Rouge Valley Sewage Disposal System
2019 Flow Rate Flags



*GLWA has noted a possible issue with the proper recording of reverse flows at these sites. Reverse flow is believe to only occur rarely. Once this is resolved, data may be updated.

Section 11

Data Edits

Table 11-1
Rouge Valley Sewage Disposal System
Notable Data Edits

Meter	Period		Issue	Fix Applied
	Start	Stop		
BG-1	6/28/2019	7/3/2019	Bad flow rate data	Diurnal pattern
	9/17/2019	10/11/2019	Bad flow rate data	Correlation to Meter P-1
	11/9/2019	11/13/2019		
FE-22	1/1/2019	6/7/2019	Unrealistic increase in velocity in December 2018	Rating curve to depth
	6/7/2019	9/4/2019	Bad flow rate data	Correlation to Meter P-8
	11/25/2019	12/31/2019		
LV-11	8/14/2019	8/19/2019	No data	Diurnal pattern
LV-14	1/17/2019	1/24/2019	Frequent but brief periods of missing data	Linear Interpolation
	5/8/2019	5/10/2019	No data	Diurnal pattern
LV-15	9/4/2019	9/6/2019	No data	Diurnal pattern
LV-Basin	10/13/2019	10/15/2019	No data	Diurnal pattern
M-22 MP#1	3/17/2019	3/22/2019	Sensor malfunctioned and was replaced	No fix
P-1	1/7/2019	1/8/2019	Fuse tripped and was replaced	Diurnal pattern
P-8	9/11/2019	9/12/2019	Data unavailable due to a meter malfunction	The meter was replaced Correlation to Meter P-1
P-10	1/20/2019	1/21/2019	Fuse tripped and the meter was replaced	Diurnal pattern
	1/27/2019	2/7/2019		Correlation to Meter P-34
	6/14/2019	6/24/2019	Meter malfunctioned	Meter replaced Correlation to Meter P-34
P-15	5/3/2019	5/9/2019	Meter malfunctioned	Meter replaced Diurnal pattern
P-17	12/2/2019	12/4/2019	Cabinet malfunction possible AC power outage No data	Correlation to Meter P-19 and WE-25
P-20	1/1/2019	1/4/2019	Fuse tripped and was replaced	Correlation to Meter P-21
	4/26/2019	5/9/2019	Meter malfunctioned	Meter replaced Correlation to Meter P-24
	12/2/2019	12/4/2019	Fuse tripped No data	Fuse replaced Diurnal pattern
P-24	12/2/2019	12/4/2019	Cabinet malfunction possible AC power outage No data	Diurnal pattern
P-26	12/5/2019	12/12/2019	Meter malfunction No data	Meter replaced Diurnal pattern
P-28	7/22/2019	9/25/2019	Data unavailable due to the site being paved over during construction	Correlation to Meter LVBasin
P-31	1/13/2019	1/17/2019	Fuse tripped and was replaced	Diurnal pattern
	4/1/2019	4/4/2019	Meter malfunctioned	Diurnal pattern
P-32	2/3/2019	2/5/2019	Fuse tripped and was replaced	Correlation to Meter P-35
P-34	9/22/2019	9/25/2019	Data unavailable due to a meter malfunction	The meter was replaced Diurnal pattern
P-35	7/31/2019	8/5/2019	Data unavailable due to a meter malfunction	The meter was replaced Diurnal pattern
WE-14	7/20/2019	7/21/2019	Data unavailable due to a fuse tripped	The fuse was replaced Diurnal pattern
	10/11/2019	10/15/2019	Meter malfunction No data	Meter replaced Diurnal pattern
WE-28	4/8/2019	4/16/2019	Meter malfunctioned	Meter replaced Correlation to Meter WE-25
WC-S-1A	4/21/2019	4/30/2019	Meter malfunctioned	Meter replaced Correlation to Meters P-14, P-24, P-25
	5/15/2019	5/24/2019		
	12/10/2019	12/12/2019	Fuse tripped No data	Fuse replaced Diurnal pattern
WC-S-1	1/1/2019	12/31/2019	Out-of-service	Correlation to Meters P-14, P-24, P-25
WC-S-2 + WC-S-3	1/1/2019	12/31/2019	Out-of-service	Correlation to Meters P-30, P-31, P-32, P-14

Section 12

System Flow Rate Checks

Table 12-1
Rouge Valley Sewage Disposal System
Flow Rate Continuity Check

Meter Grouping	Relative Location	Monthly Average Dry Weather Flow Rate (cfs)												Annual Average (cfs)
		Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	
Comparison 1														
[WC-S-2] + [WC-S-3] + [P-14]	Downstream	61.6	68.7	67.3	72.9	82.4	67.9	53.0	43.6	43.7	45.9	57.9	55.3	59.9
[P-30] + [P-31]+ [P-32]	Upstream	61.8	68.8	67.5	72.9	81.7	68.0	53.3	43.9	44.1	46.3	58.3	55.6	60.1
	Incremental	-0.2	-0.1	-0.2	0.0	0.7	-0.1	-0.3	-0.3	-0.4	-0.4	-0.4	-0.3	-0.2
Comparison 2														
[WC-S-2] + [WC-S-3] + [P-14]	Downstream	61.6	68.7	67.3	72.9	82.4	67.9	53.0	43.6	43.7	45.9	57.9	55.3	59.9
[P-9] + [P-10] + [P-11] + [P-13]	Upstream	55.4	62.8	62.2	66.9	74.2	61.6	48.2	39.5	39.5	41.6	52.5	50.1	54.5
	Incremental	6.2	5.9	5.1	6.0	8.2	6.3	4.8	4.1	4.2	4.3	5.4	5.2	5.4
Comparison 3														
[P-30] + [P-31]+ [P-32]	Downstream	61.8	68.8	67.5	72.9	81.7	68.0	53.3	43.9	44.1	46.3	58.3	55.6	60.1
[P-13] + [P-33] + [P-34]+ [P-35]	Upstream	58.7	66.2	65.2	69.9	76.9	63.6	48.8	39.2	39.0	41.0	55.0	51.7	56.2
	Incremental	3.1	2.6	2.3	3.0	4.8	4.4	4.5	4.7	5.1	5.3	3.3	3.9	3.9
Comparison 4														
[P-33] + [P-34] + [P-35]	Downstream	48.0	54.0	53.0	56.3	61.8	51.7	39.9	32.9	32.8	34.3	45.8	43.0	46.0
[P-9] + [P-10] + [P-11]	Upstream	44.7	50.6	50.0	53.3	59.0	49.6	39.3	33.2	33.2	35.0	43.3	41.4	44.3
	Incremental	3.3	3.4	3.0	3.0	2.8	2.1	0.6	-0.3	-0.4	-0.7	2.5	1.6	1.7
Comparison 5														
[WC-S-1]	Downstream	66.7	73.7	72.4	77.9	77.4	69.1	57.2	50.1	50.6	50.3	63.7	61.1	64.1
[WC-S-1A]	Upstream	64.8	71.2	69.4	75.4	80.7	64.7	52.7	46.4	47.2	48.6	60.6	58.4	61.6
	Incremental	1.9	2.5	3.0	2.5	-3.3	4.4	4.5	3.7	3.4	1.7	3.1	2.7	2.5
Comparison 6														
[WC-S-1]	Downstream	66.7	73.7	72.4	77.9	77.4	69.1	57.2	50.1	50.6	50.3	63.7	61.1	64.1
[P-14]+[P-24]+[P-25]	Upstream	61.0	67.1	66.0	70.5	70.1	63.1	52.8	46.5	47.0	46.9	58.5	56.2	58.7
	Incremental	5.7	6.6	6.4	7.4	7.3	6.0	4.4	3.6	3.6	3.4	5.2	4.9	5.4
Comparison 7														
[WC-S-1A]	Downstream	64.8	71.2	69.4	75.4	80.7	64.7	52.7	46.4	47.2	48.6	60.6	58.4	61.6
[P-14]+[P-24]+[P-25]	Upstream	61.0	67.1	66.0	70.5	70.1	63.1	52.8	46.5	47.0	46.9	58.5	56.2	58.7
	Incremental	3.8	4.1	3.4	4.9	10.6	1.6	-0.1	-0.1	0.2	1.7	2.1	2.2	2.9
Comparison 8														
[P-24] + [P-25]	Downstream	18.1	20.7	19.9	22.3	22.4	17.8	13.9	12.2	12.7	11.5	16.6	16.3	17.0
[P-20] + [P-21]	Upstream	13.8	15.3	15.0	16.8	18.4	14.7	10.9	9.5	10.0	10.6	13.2	12.5	13.4
	Incremental	4.3	5.4	4.9	5.5	4.0	3.1	3.0	2.7	2.7	0.9	3.4	3.8	3.6
Comparison 9														
[P-21]	Downstream	9.9	11.4	10.5	12.1	13.3	10.5	8.1	6.9	7.2	7.8	9.5	8.3	9.6
[P-19] + [WE-28]	Upstream	8.4	9.0	8.8	9.8	11.1	8.5	7.1	6.0	6.3	6.7	8.0	7.0	8.1
	Incremental	1.5	2.4	1.7	2.3	2.2	2.0	1.0	0.9	0.9	1.1	1.5	1.3	1.5
Comparison 10														
[P-19]	Downstream	6.7	7.4	7.2	8.0	8.9	6.9	5.9	5.0	5.2	5.6	6.6	5.7	6.6
[P-17] + [WE-25] + [FE-19]	Upstream	5.3	5.7	5.4	6.1	6.9	5.5	4.4	4.0	4.0	4.1	4.9	4.3	5.0
	Incremental	1.4	1.7	1.8	1.9	2.0	1.4	1.5	1.0	1.2	1.5	1.7	1.4	1.6
Comparison 11														
[P-3] + [P-26]	Downstream	11.1	11.7	11.6	11.3	12.6	12.7	10.6	9.0	9.1	9.1	10.2	10.1	10.8
[P-1]	Upstream	8.6	8.7	8.9	8.9	9.7	9.8	8.6	8.0	8.2	8.1	8.9	8.8	8.8
	Incremental	2.5	3.0	2.7	2.4	2.9	2.9	2.0	1.0	0.9	1.0	1.3	1.3	2.0
Comparison 12														
[P-1]	Downstream	8.6	8.7	8.9	8.9	9.7	9.8	8.6	8.0	8.2	8.1	8.9	8.8	8.8
[BG-1]	Upstream	7.2	7.3	7.4	7.3	7.8	7.8	6.9	6.4	6.5	6.6	7.4	7.4	7.2
	Incremental	1.4	1.4	1.5	1.6	1.9	2.0	1.7	1.6	1.7	1.5	1.5	1.4	1.6
Comparison 13														
[P-12]	Downstream	14.2	16.9	16.8	17.6	20.5	16.8	12.1	9.7	9.8	10.1	13.0	13.2	14.2
[LV-Basin] + [LV-11]	Upstream	14.8	16.7	16.4	17.4	19.4	16.2	11.7	9.3	9.5	10.1	13.0	13.2	14.0
	Incremental	-0.6	0.2	0.4	0.2	1.1	0.6	0.4	0.4	0.3	0.0	0.0	0.0	0.2

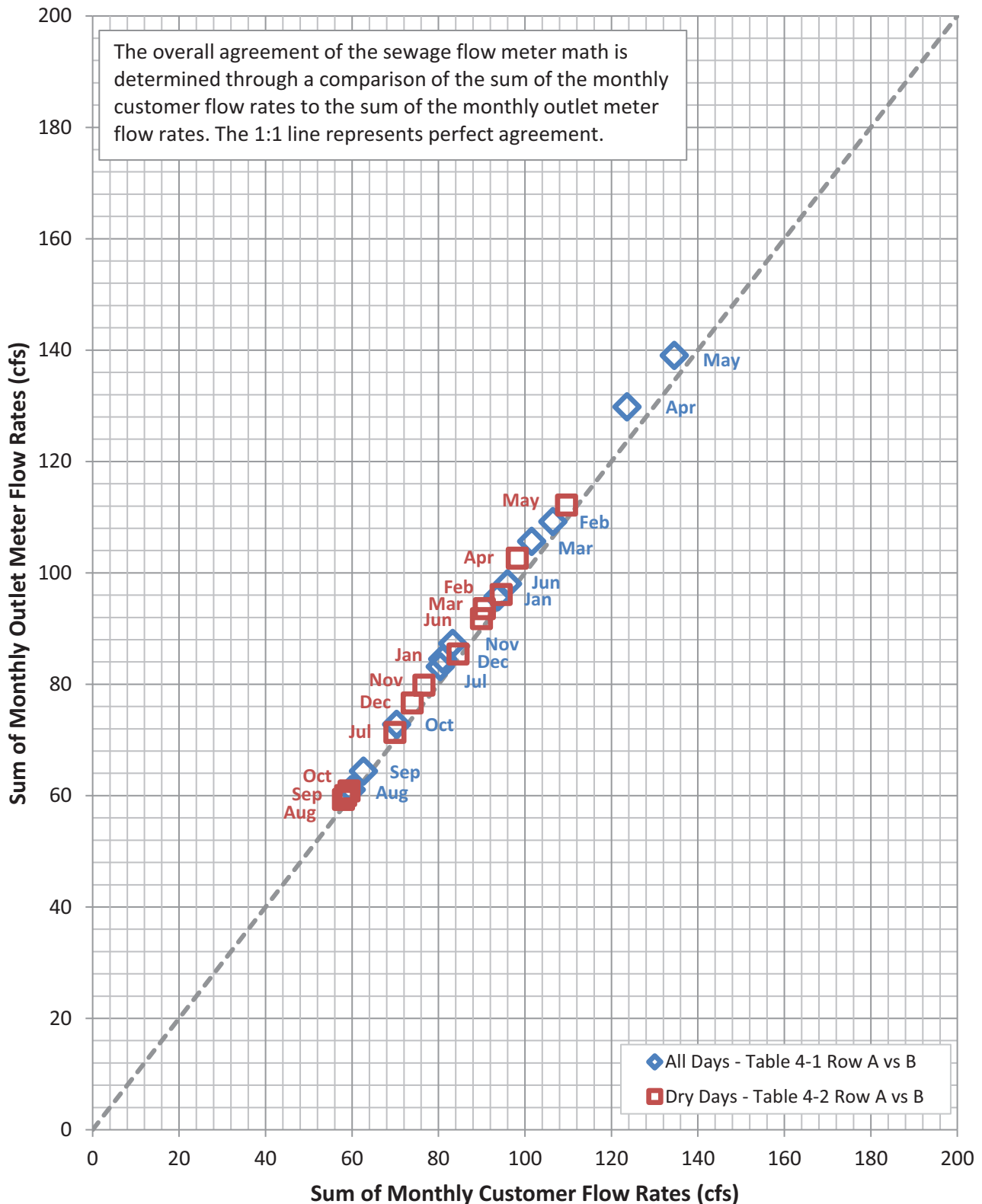
Table 12-2
Rouge Valley Sewage Disposal System
Monthly Average Dry Weather Flow Rate Versus Residential Population Check

Meter Grouping	Year 2010 Residential Population	Metric	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Annual Average	Percent of Area as Residential	Residential Area (acres)	Total Developed Land (Acres)
[BG-1]	43,217	cfs	7.2	7.3	7.4	7.3	7.8	7.8	6.9	6.4	6.5	6.6	7.4	7.4	7.2	62%	7,768	12,473
		GPCD	107.2	109.6	110.2	108.9	117.0	116.9	102.7	95.5	97.5	99.3	110.1	110.4	107.1			
[P-1]	49,143	cfs	8.6	8.7	8.9	8.9	9.7	9.8	8.6	8.0	8.2	8.1	8.9	8.8	8.8	63%	8,421	13,361
		GPCD	113.7	115.1	116.8	117.4	127.9	128.2	113.8	105.1	107.3	106.8	116.5	115.5	115.3			
[P-3] + [P-26]	55,091	cfs	11.1	11.7	11.6	11.3	12.6	12.7	10.6	9.0	9.1	9.1	10.2	10.1	10.8	63%	8,762	13,982
		GPCD	130.7	136.7	136.5	132.1	148.2	149.3	124.6	105.9	106.6	106.8	119.6	118.9	126.2			
[LV-16]	5,147	cfs	2.2	2.4	2.5	2.7	3.1	2.6	1.9	1.6	1.5	1.5	2.0	1.9	2.2	62%	599	963
		GPCD	277.4	303.4	312.2	344.1	392.7	329.8	243.9	196.9	188.5	184.5	247.7	237.4	271.2			
[LV-15]	6,570	cfs	3.2	3.5	2.2	2.3	2.5	1.9	1.5	1.3	1.2	1.3	1.8	1.6	2.0	81%	484	596
		GPCD	310.0	349.0	214.0	230.0	248.8	186.7	150.3	125.1	122.7	131.1	172.9	160.6	199.1			
[WE-14]	26,724	cfs	5.5	6.0	5.9	6.2	7.1	6.0	5.1	4.6	4.4	4.8	5.5	5.2	5.5	60%	2,000	3,348
		GPCD	133.4	144.8	142.5	150.8	172.1	146.1	123.3	112.0	107.1	115.1	132.1	126.7	133.7			
[M-2]	13,739	cfs	3.0	3.5	3.3	3.8	4.1	3.0	2.2	1.7	1.8	2.1	2.9	2.5	2.8	81%	1,143	1,409
		GPCD	140.2	164.9	154.3	177.8	192.0	140.3	101.5	80.1	83.3	97.3	138.0	116.7	131.9			
[M-1]	14,943	cfs	2.4	3.0	2.7	3.1	3.2	2.4	1.9	1.4	1.6	1.7	2.8	2.1	2.4	81%	1,181	1,453
		GPCD	105.9	127.7	116.9	134.3	137.1	102.7	82.3	61.9	69.1	74.2	121.6	89.1	101.6			
[LV-14]	7,738	cfs	1.7	2.0	1.9	2.2	2.3	1.7	1.4	1.0	1.0	1.1	1.4	1.3	1.6	56%	573	1,029
		GPCD	144.7	164.0	159.4	179.6	190.7	138.0	112.9	84.9	83.7	91.0	118.4	112.1	131.4			
[LV-11] + [LV-4]	39,591	cfs	8.3	9.3	9.0	9.1	9.7	8.7	6.7	5.6	5.7	6.0	7.6	7.7	7.8	49%	2,439	5,018
		GPCD	135.3	152.1	147.5	149.0	158.5	142.2	109.9	91.4	93.6	97.2	124.7	125.5	127.0			
[LV-11] + [LV-Basin]	28,266	cfs	14.8	16.7	16.4	17.4	19.4	16.2	11.7	9.3	9.5	10.1	13.0	13.2	14.0	64%	7,708	11,998
		GPCD	337.5	381.3	375.6	397.1	444.6	370.7	267.8	212.7	217.8	232.0	298.2	302.8	319.3			
[P-12]	68,311	cfs	14.2	16.9	16.8	17.6	20.5	16.8	12.1	9.7	9.8	10.1	13.0	13.2	14.2	61%	7,733	12,722
		GPCD	134.0	160.0	158.7	166.7	194.1	159.1	114.7	92.0	92.3	95.5	123.2	124.7	134.4			
[P-9] + [P-10] + [P-11]	223,281	cfs	44.7	50.6	50.0	53.3	59.0	49.6	39.3	33.2	33.2	35.0	43.3	41.4	44.3	64%	24,438	38,468
		GPCD	129.5	146.5	144.7	154.3	170.7	143.7	113.8	96.0	96.2	101.3	125.5	119.8	128.3			
[P-13]	48,847	cfs	10.7	12.2	12.2	13.6	15.2	11.9	8.9	6.3	6.2	6.6	9.2	8.7	10.1	73%	3,636	4,961
		GPCD	141.5	161.9	161.6	180.0	200.9	158.1	117.7	83.6	82.4	87.7	121.8	114.7	134.1			
[WC-S-2] + [WC-S-3] + [P-14]	308,765	cfs	61.6	68.7	67.3	72.9	82.4	67.9	53.0	43.6	43.7	45.9	57.9	55.3	59.9	66%	30,460	46,337
		GPCD	128.9	143.8	140.8	152.5	172.6	142.2	110.9	91.2	91.5	96.1	121.2	115.8	125.4			
[P-15]	6,938	cfs	1.5	1.5	1.5	1.6	1.7	1.5	1.3	1.3	1.1	1.1	1.3	0.7	1.3	36%	1,626	4,471
		GPCD	137.4	143.7	137.8	152.3	161.8	136.0	122.3	117.3	103.9	102.0	118.6	66.0	124.8			
[P-17]	9,561	cfs	2.1	2.3	2.2	2.4	2.5	2.3	2.0	2.0	2.0	2.0	2.2	1.6	2.1	37%	2,476	6,748
		GPCD	141.8	156.1	150.6	162.7	169.5	154.2	135.5	134.1	133.3	136.9	149.1	110.9	144.4			
[WE-25]	16,269	cfs	3.2	3.4	3.2	3.7	4.4	3.3	2.4	2.0	2.0	2.1	2.7	2.6	2.9	70%	1,503	2,141
		GPCD	125.6	134.2	126.9	145.1	176.2	129.7	94.4	79.2	79.3	84.2	107.4	104.5	115.4			
[P-19] - [FE-19]	32,127	cfs	6.7	7.4	7.2	8.0	8.9	6.9	5.9	5.0	5.2	5.6	6.6	5.7	6.6	46%	4,454	9,630
		GPCD	135.6	148.7	145.6	161.1	179.6	138.6	118.0	101.4	104.7	112.1	132.8	114.6	132.6			
[WE-28]	14,096	cfs	1.6	1.6	1.6	1.8	2.2	1.7	1.3	1.0	1.1	1.1	1.4	1.3	1.5	72%	931	1,294
		GPCD	74.4	75.4	72.4	83.5	100.9	76.0	57.9	44.7	48.3	50.5	66.3	61.7	67.6			
[P-21] - [FE-19]	51,271	cfs	9.9	11.4	10.5	12.1	13.3	10.5	8.1	6.9	7.2	7.8	9.5	8.3	9.6	50%	5,665	11,264
		GPCD	124.2	143.2	133.0	152.7	167.0	132.4	102.3	86.9	90.9	98.5	120.3	104.8	121.1			
[P-25] - [FE-19]	66,119	cfs	11.5	13.7	12.7	14.5	15.2	12.1	9.5	8.0	8.8	8.1	11.2	9.8	11.2	54%	6,687	12,479
		GPCD	112.3	134.3	124.4	141.6	148.9	118.0	93.3	78.0	85.8	79.6	109.4	96.2	109.9			
[P-20]	12,503	cfs	4.0	3.9	4.4	4.7	5.2	4.2	2.7	2.6	2.8	2.8	3.7	4.2	3.8	12%	731	6,147
		GPCD	205.2	203.0	228.6	242.2	267.5	217.5	141.5	136.4	142.8	146.2	189.0	218.1	194.7			
[P-24]	29,900	cfs	6.6	7.0	7.2	7.8	7.2	5.7	4.4	4.2	4.0	3.4	5.5	6.5	5.8	66%	2,294	3,498
		GPCD	142.2	151.1	154.8	169.5	154.9	124.2	94.3	91.2	85.8	72.6	117.9	140.5	124.7			
[WC-S-1] + [WC-S-2] + [WC-S-3] - [FE-19]	404,784	cfs	85.4	96.1	93.5	102.6	112.1	91.7	71.3	59.3	60.0	60.8	79.8	76.6	82.3	59%	39,441	67,194
		GPCD	136.4	153.4	149.3	163.8	179.0	146.5	113.8	94.7	95.8	97.1	127.4	122.3	131.4			

Legend:

XX.X	Per capita flow rates are greater than the district-wide average by 20% or more.
XX.X	Per capita flow rates are less than the district-wide average by 20% or more.

Figure 12-1
Rouge Valley Sewage Disposal System
End of System Monthly Flow Rate Comparison



Section 13

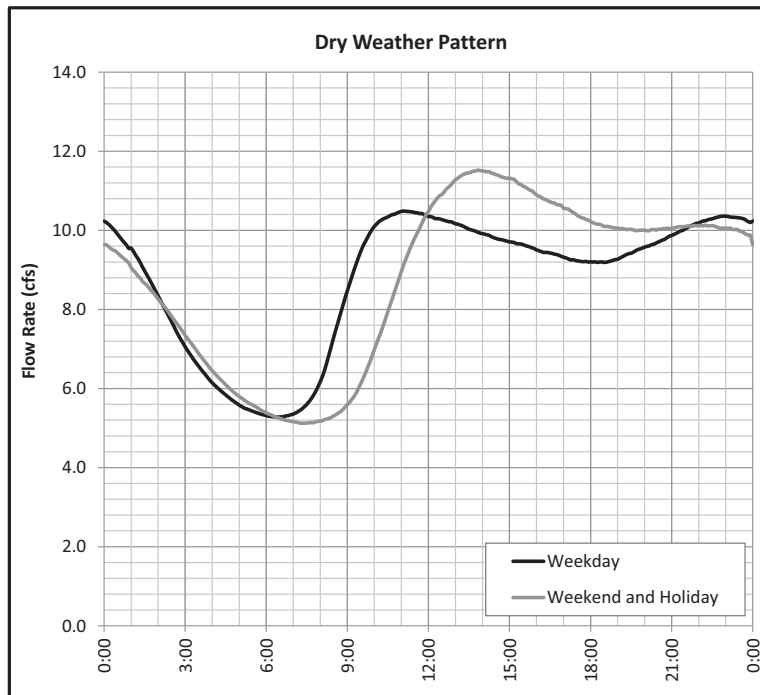
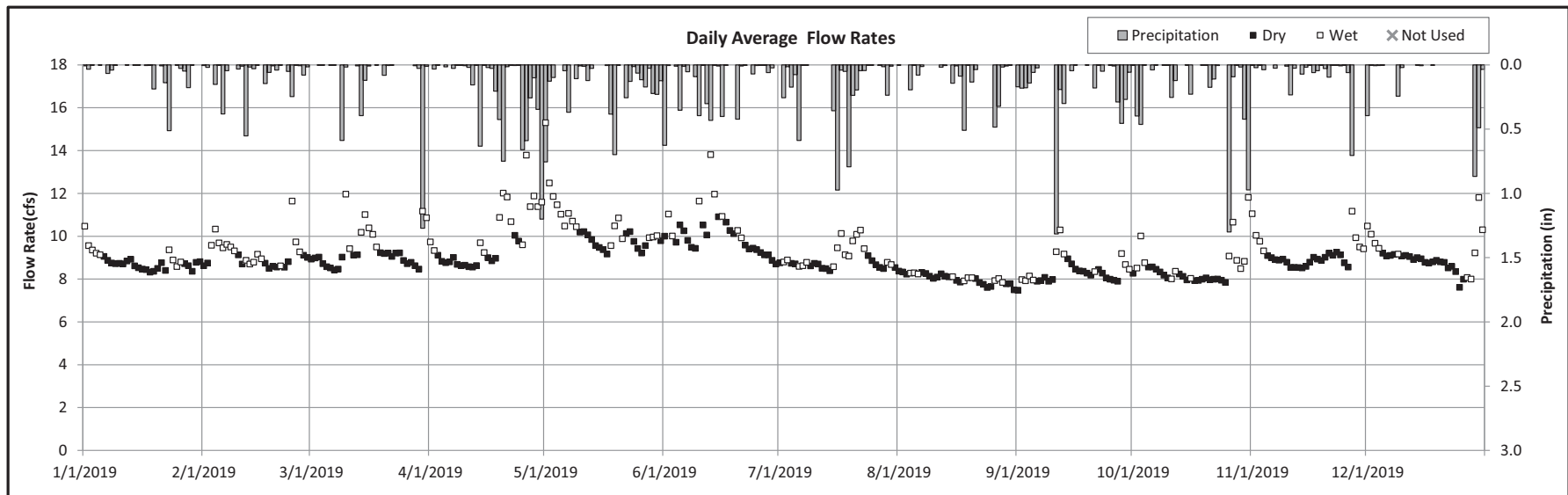
Meter Reports

Figure 13-1
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-1
 Interceptor Manhole ID: NAI 1-13A

Location: 5 Mile Road and Hines Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	8.8	176.8	8.6	173.2	22	9
Feb-19	9.1	165.5	8.7	158.3	12	16
Mar-19	9.4	187.4	8.9	177.9	22	9
Apr-19	9.9	191.1	8.9	173.0	16	14
May-19	10.4	207.7	9.7	194.9	15	16
Jun-19	10.1	196.5	9.8	189.1	22	8
Jul-19	8.9	178.9	8.6	173.3	15	16
Aug-19	8.0	160.6	8.0	160.1	21	10
Sep-19	8.3	161.8	8.2	158.3	19	11
Oct-19	8.5	170.4	8.1	162.7	19	12
Nov-19	9.2	177.7	8.9	171.7	22	8
Dec-19	9.1	181.3	8.8	175.9	21	10

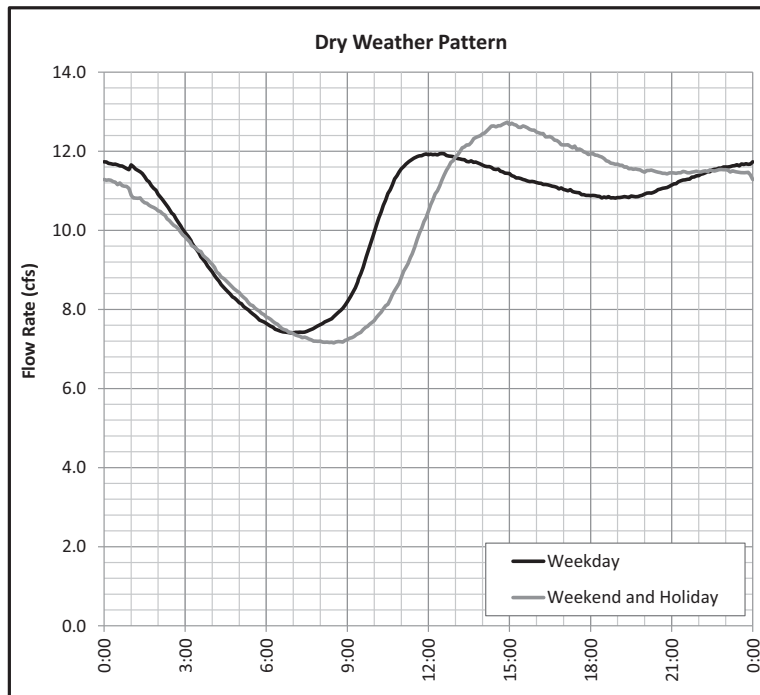
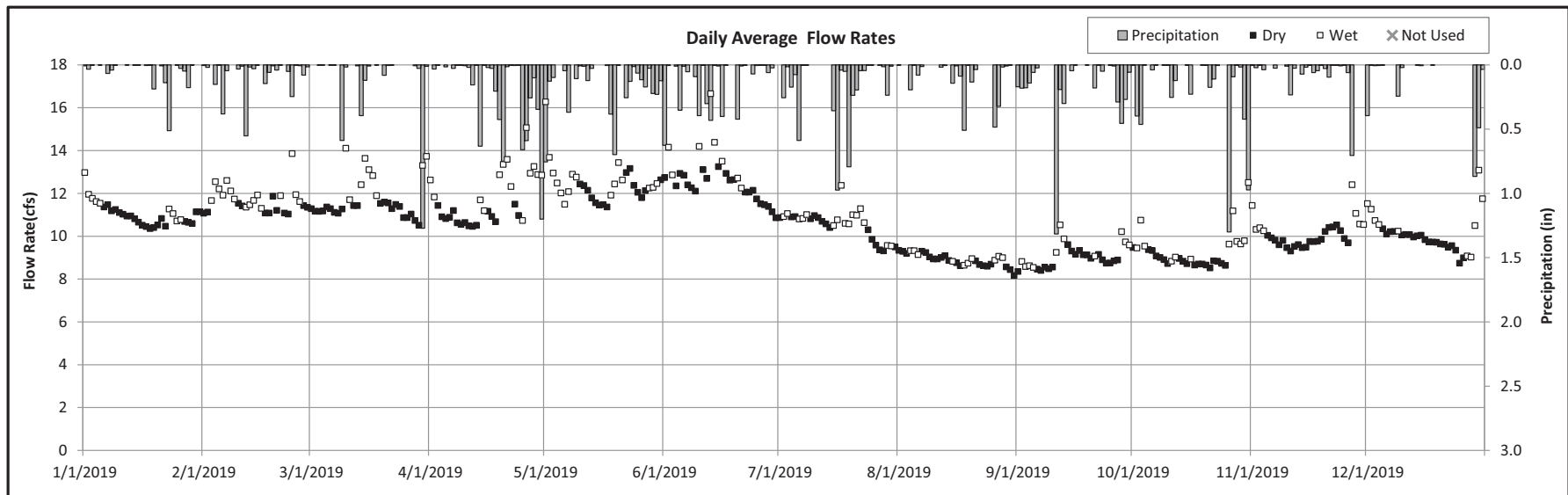
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	15.83	3/30/19 11:20	1.45	3/30/19 11:40
2	1.37	4/18/2019	4/20/2019	18.44	4/20/19 16:05	1.61	4/20/19 16:45
3	1.27	4/25/2019	4/26/2019	16.77	4/26/19 8:05	1.49	4/26/19 8:50
4	1.89	4/30/2019	5/1/2019	17.27	5/1/19 8:15	1.53	5/1/19 8:20
5	1.10	5/18/2019	5/20/2019	14.17	5/19/19 15:25	1.35	5/19/19 16:05
6	0.55	7/6/2019	7/6/2019	10.96	7/6/19 11:55	1.19	7/7/19 13:15
7	1.43	7/15/2019	7/17/2019	16.04	7/16/19 22:30	1.46	7/16/19 23:05
8	1.50	9/11/2019	9/12/2019	16.10	9/11/19 23:05	1.47	9/11/19 23:20
9	1.39	10/26/2019	10/27/2019	16.24	10/26/19 22:45	1.46	10/26/19 22:55
10	1.40	10/30/2019	11/1/2019	16.16	10/31/19 13:20	1.45	10/31/19 13:55
11	1.32	12/29/2019	12/30/2019	14.24	12/30/19 12:30	1.35	12/30/19 13:05

Figure 13-2
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-3
 Interceptor Manhole ID: MRIR 5C-01

Location: Plymouth Road East of I-275
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	11.0	221.1	10.8	217.1	22	9
Feb-19	11.7	211.3	11.3	203.9	12	16
Mar-19	11.7	234.7	11.2	224.5	22	9
Apr-19	11.7	226.8	10.9	210.5	16	14
May-19	12.4	249.2	12.1	242.6	15	16
Jun-19	12.7	245.5	12.2	237.2	22	8
Jul-19	10.6	211.5	10.3	206.8	15	16
Aug-19	8.9	178.4	8.9	177.6	21	10
Sep-19	9.0	175.4	8.9	172.1	19	11
Oct-19	9.3	185.8	8.9	177.8	19	12
Nov-19	10.1	196.1	9.8	190.8	22	8
Dec-19	10.1	202.4	9.8	196.0	21	10

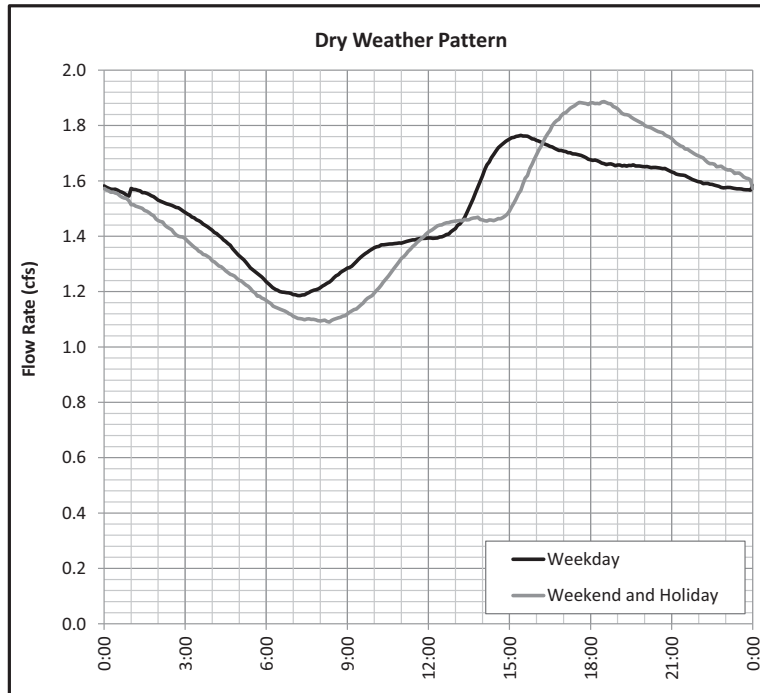
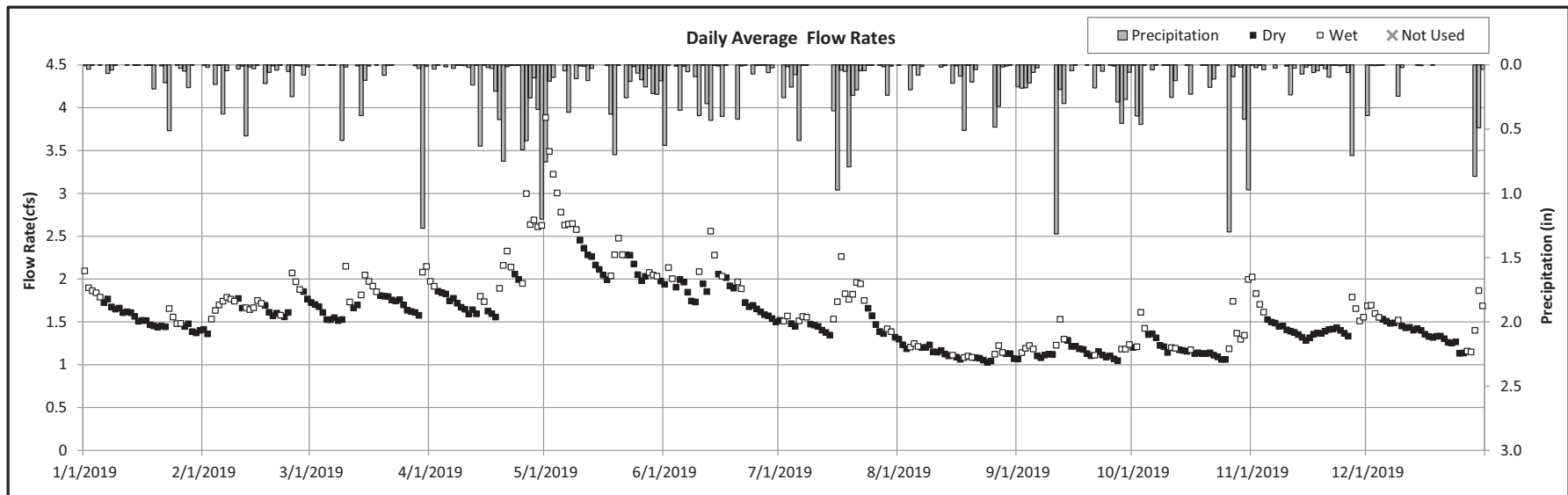
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	16.30	3/30/19 13:15	1.52	3/30/19 13:50
2	1.37	4/18/2019	4/20/2019	18.64	4/20/19 17:10	1.62	4/20/19 17:15
3	1.27	4/25/2019	4/26/2019	17.29	4/26/19 9:00	1.54	4/26/19 9:45
4	1.89	4/30/2019	5/1/2019	18.20	5/1/19 9:10	1.60	5/1/19 9:45
5	1.10	5/18/2019	5/20/2019	15.52	5/19/19 16:40	1.45	5/19/19 17:05
6	0.55	7/6/2019	7/6/2019	12.86	7/7/19 13:50	1.21	7/7/19 14:25
7	1.43	7/15/2019	7/17/2019	16.31	7/16/19 21:50	1.62	7/16/19 23:55
8	1.50	9/11/2019	9/12/2019	12.84	9/11/19 23:55	1.46	9/12/19 0:40
9	1.39	10/26/2019	10/27/2019	16.51	10/26/19 23:35	1.52	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	16.90	10/31/19 14:25	1.55	10/31/19 14:50
11	1.32	12/29/2019	12/30/2019	16.18	12/29/19 14:20	1.51	12/29/19 14:55

Figure 13-3
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-7
 Interceptor Manhole ID: PWI I-03

Location: Joy Road West of Farmington Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	1.6	31.9	1.5	30.7	22	9
Feb-19	1.7	30.6	1.6	29.3	12	16
Mar-19	1.7	35.0	1.7	33.2	22	9
Apr-19	2.0	38.2	1.7	33.6	16	14
May-19	2.4	48.2	2.2	43.3	15	16
Jun-19	1.9	36.4	1.8	34.7	22	8
Jul-19	1.6	31.5	1.4	29.0	15	16
Aug-19	1.1	22.8	1.1	22.7	21	10
Sep-19	1.2	22.6	1.1	21.9	19	11
Oct-19	1.3	25.2	1.2	23.5	19	12
Nov-19	1.5	28.7	1.4	27.0	22	8
Dec-19	1.4	28.3	1.4	27.2	21	10

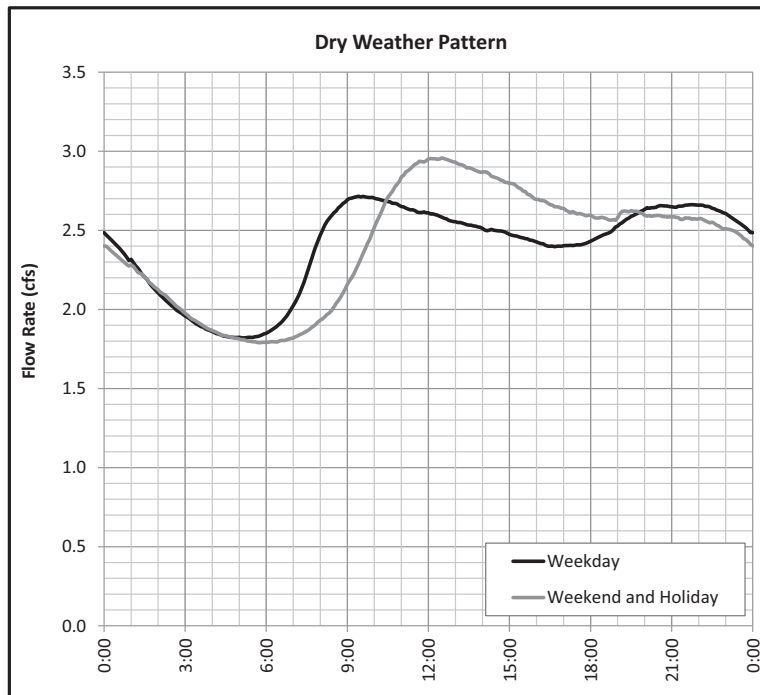
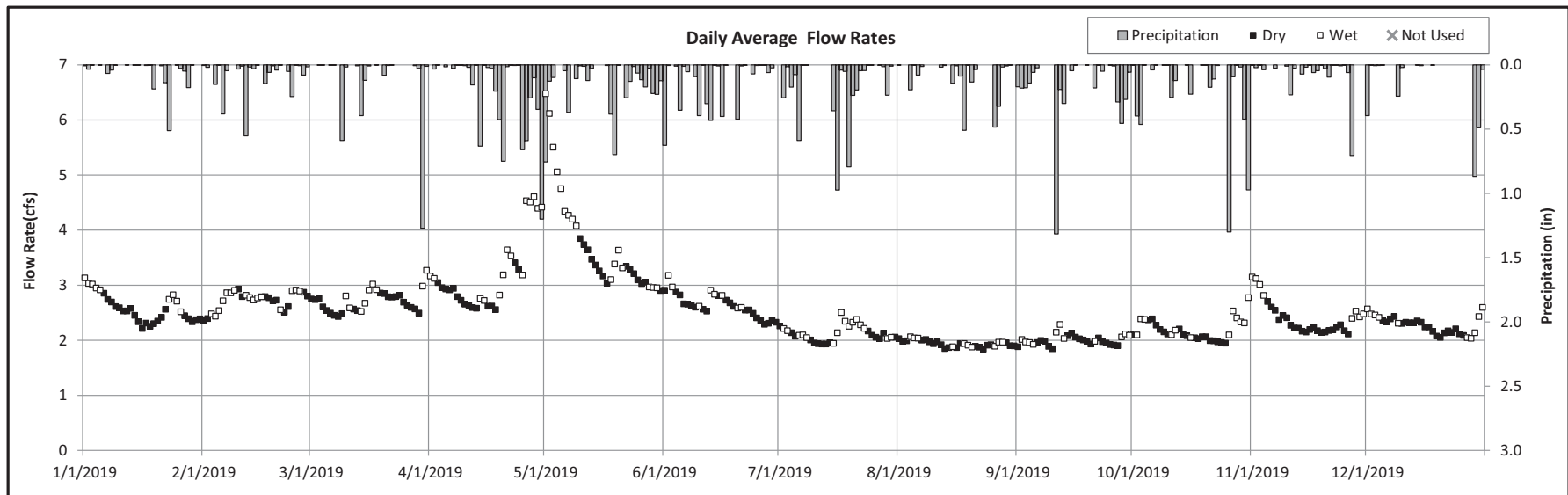
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	3.01	3/30/19 14:40	1.34	3/30/19 15:30
2	1.37	4/18/2019	4/20/2019	3.47	4/20/19 19:55	1.45	4/20/19 20:35
3	1.27	4/25/2019	4/26/2019	3.53	4/26/19 10:05	1.45	4/26/19 11:05
4	1.89	4/30/2019	5/1/2019	4.24	5/1/19 12:30	1.60	5/1/19 13:20
5	1.10	5/18/2019	5/20/2019	3.17	5/19/19 19:35	1.35	5/19/19 16:40
6	0.55	7/6/2019	7/6/2019	2.01	7/6/19 18:05	1.13	7/6/19 16:55
7	1.43	7/15/2019	7/17/2019	2.79	7/17/19 2:10	1.31	7/17/19 2:40
8	1.50	9/11/2019	9/12/2019	2.14	9/11/19 22:30	1.19	9/12/19 3:30
9	1.39	10/26/2019	10/27/2019	2.16	10/26/19 22:45	1.20	10/26/19 23:50
10	1.40	10/30/2019	11/1/2019	3.02	10/31/19 17:30	1.37	10/31/19 17:25
11	1.32	12/29/2019	12/30/2019	2.43	12/30/19 16:45	1.23	12/30/19 17:40

Figure 13-4
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-8
 Interceptor Manhole ID: RVI 9-20

Location: Joy Road West of Farmington Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	2.6	51.7	2.5	49.4	22	9
Feb-19	2.7	49.2	2.7	48.6	12	16
Mar-19	2.7	54.2	2.6	53.0	22	9
Apr-19	3.2	61.9	2.8	54.8	16	14
May-19	3.8	75.3	3.3	66.0	15	16
Jun-19	2.6	51.2	2.6	49.9	22	8
Jul-19	2.1	42.5	2.0	41.0	15	16
Aug-19	1.9	38.8	1.9	38.6	21	10
Sep-19	2.0	38.8	2.0	38.2	19	11
Oct-19	2.2	43.7	2.1	42.2	19	12
Nov-19	2.4	46.6	2.3	44.2	22	8
Dec-19	2.3	45.6	2.2	44.9	21	10

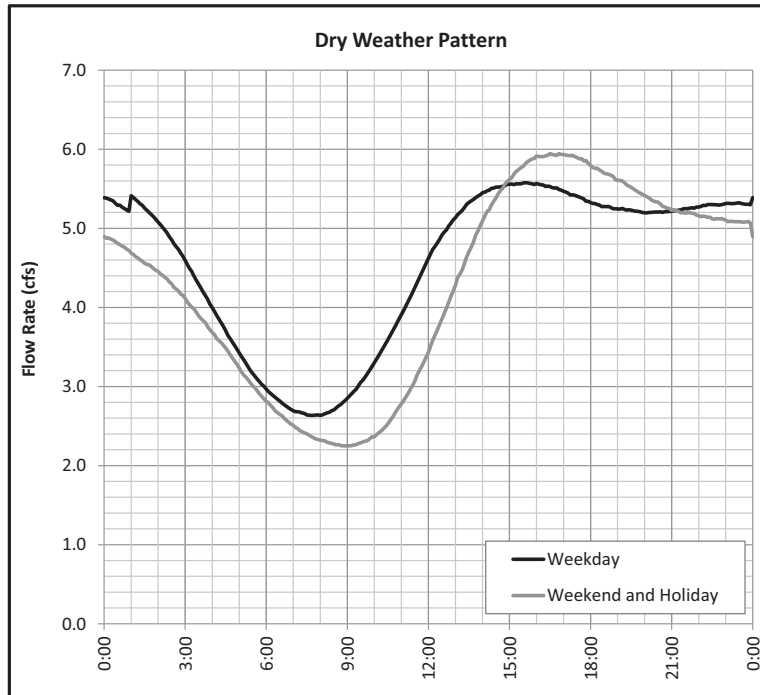
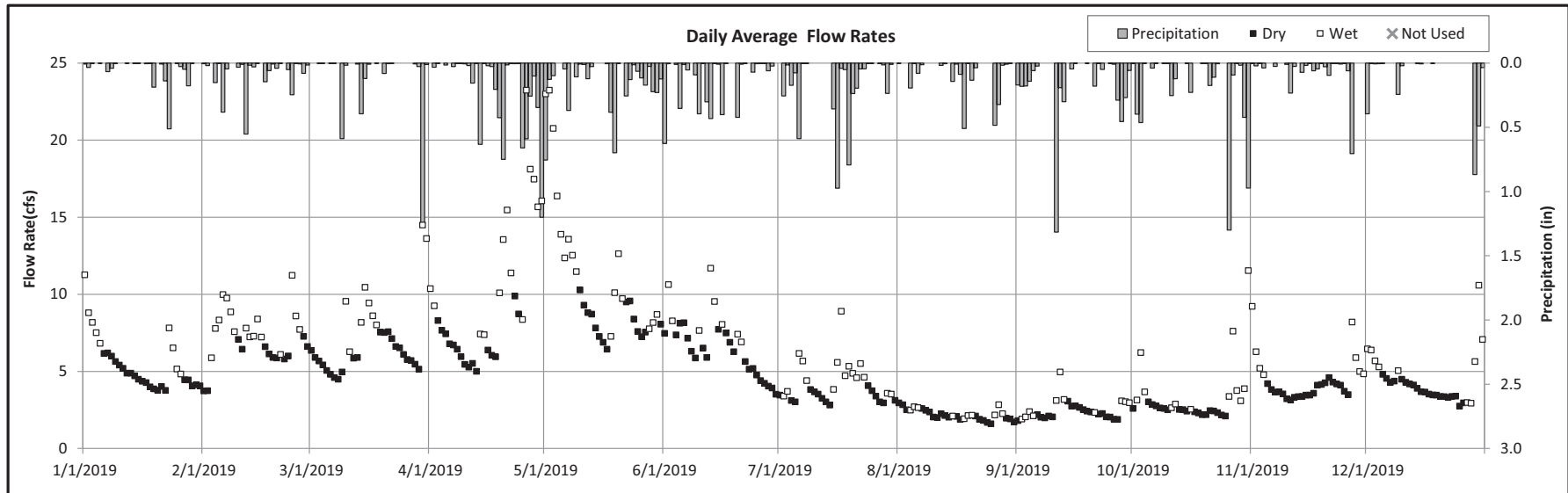
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	3.88	3/31/19 11:05	0.78	3/31/19 11:25
2	1.37	4/18/2019	4/20/2019	4.25	4/21/19 9:40	0.80	4/21/19 10:55
3	1.27	4/25/2019	4/26/2019	5.08	4/26/19 7:30	0.87	4/26/19 8:00
4	1.89	4/30/2019	5/1/2019	6.98	5/1/19 7:40	1.05	5/1/19 8:35
5	1.10	5/18/2019	5/20/2019	4.19	5/19/19 21:20	0.79	5/19/19 22:05
6	0.55	7/6/2019	7/6/2019	2.60	7/6/19 12:35	0.65	7/6/19 13:05
7	1.43	7/15/2019	7/17/2019	2.82	7/17/19 8:50	0.71	7/16/19 21:20
8	1.50	9/11/2019	9/12/2019	3.25	9/11/19 22:05	0.66	9/12/19 20:25
9	1.39	10/26/2019	10/27/2019	2.62	10/26/19 10:35	0.66	10/26/19 11:05
10	1.40	10/30/2019	11/1/2019	3.48	11/1/19 7:55	0.73	11/1/19 18:55
11	1.32	12/29/2019	12/30/2019	3.07	12/31/19 13:00	0.70	12/31/19 13:00

Figure 13-5
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-9
 Interceptor Manhole ID: NHV 3-34

Location: Hines Drive East of Inkster Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	5.5	109.5	4.7	93.4	22	9
Feb-19	7.2	129.7	5.9	107.2	12	16
Mar-19	7.0	141.2	5.9	118.3	22	9
Apr-19	9.7	188.2	6.7	130.1	16	14
May-19	10.8	216.3	8.2	164.6	15	16
Jun-19	6.7	130.5	6.0	116.2	22	8
Jul-19	4.1	82.8	3.3	66.6	15	16
Aug-19	2.2	43.9	2.1	42.6	21	10
Sep-19	2.5	47.8	2.3	43.7	19	11
Oct-19	3.3	65.3	2.5	49.3	19	12
Nov-19	4.4	85.2	3.7	72.7	22	8
Dec-19	4.4	88.6	3.8	75.5	21	10

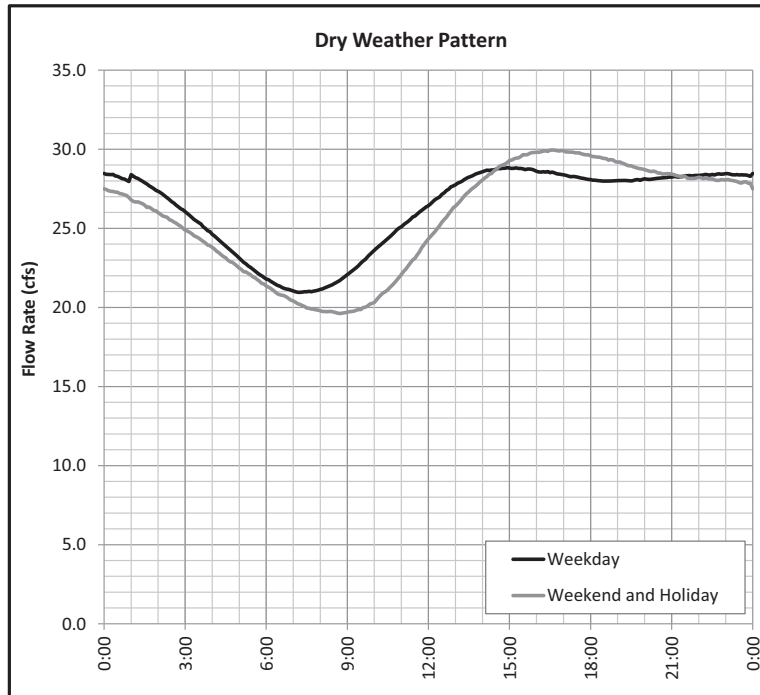
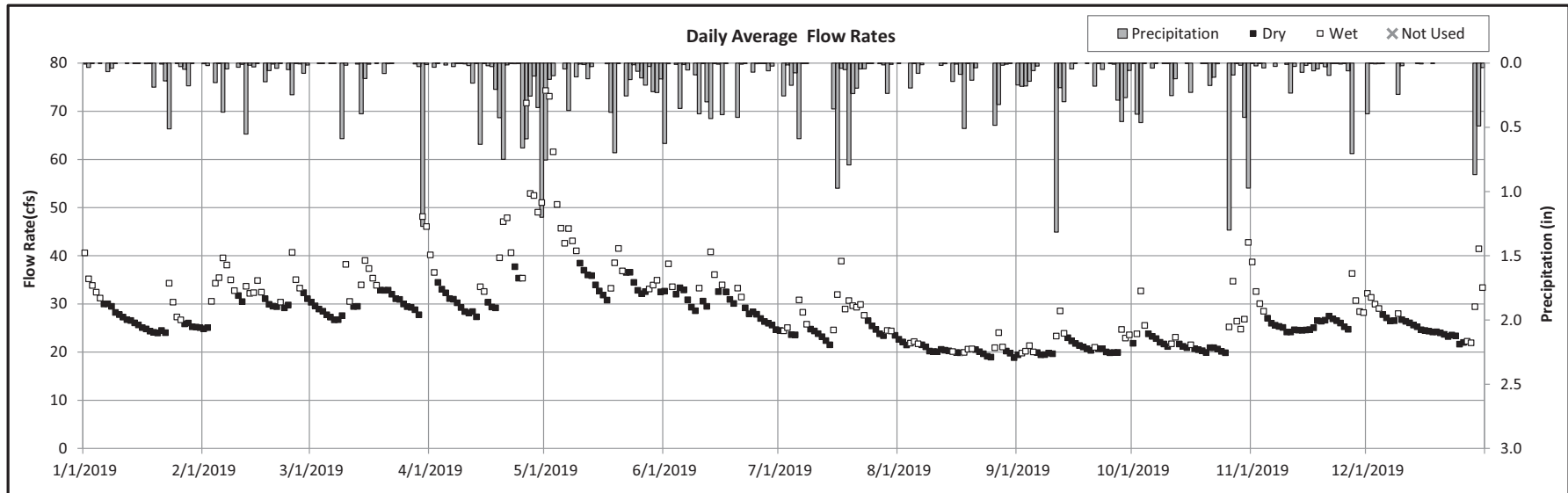
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	20.87	3/30/19 12:40	2.76	3/30/19 13:50
2	1.37	4/18/2019	4/20/2019	23.80	4/20/19 18:45	3.09	4/20/19 18:50
3	1.27	4/25/2019	4/26/2019	25.19	4/26/19 18:05	6.63	4/26/19 11:20
4	1.89	4/30/2019	5/1/2019	24.66	4/30/19 23:40	≥11.86	5/1/19 6:35
5	1.10	5/18/2019	5/20/2019	19.80	5/19/19 18:00	2.62	5/19/19 18:50
6	0.55	7/6/2019	7/6/2019	18.23	7/6/19 19:05	2.50	7/6/19 19:30
7	1.43	7/15/2019	7/17/2019	17.98	7/16/19 23:20	2.42	7/16/19 23:45
8	1.50	9/11/2019	9/12/2019	10.40	9/12/19 0:35	1.65	9/12/19 1:10
9	1.39	10/26/2019	10/27/2019	17.10	10/26/19 23:55	2.35	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	20.64	10/31/19 15:25	2.79	10/31/19 15:25
11	1.32	12/29/2019	12/30/2019	14.41	12/30/19 8:45	2.08	12/30/19 9:15

Figure 13-6
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-10
 Interceptor Manhole ID: RVI 6-50

Location: Hines Drive East of Inkster Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	28.0	560.4	26.2	524.0	22	9
Feb-19	32.3	584.4	29.5	534.0	12	16
Mar-19	32.0	641.0	29.5	591.5	22	9
Apr-19	37.5	727.4	31.0	600.1	16	14
May-19	40.1	803.4	34.3	686.2	15	16
Jun-19	31.0	600.2	29.5	571.3	22	8
Jul-19	26.2	525.4	23.9	479.0	15	16
Aug-19	20.6	413.3	20.3	407.2	21	10
Sep-19	21.3	412.3	20.5	396.8	19	11
Oct-19	23.6	473.4	21.3	425.8	19	12
Nov-19	27.2	526.4	25.5	494.7	22	8
Dec-19	26.4	529.7	24.8	496.9	21	10

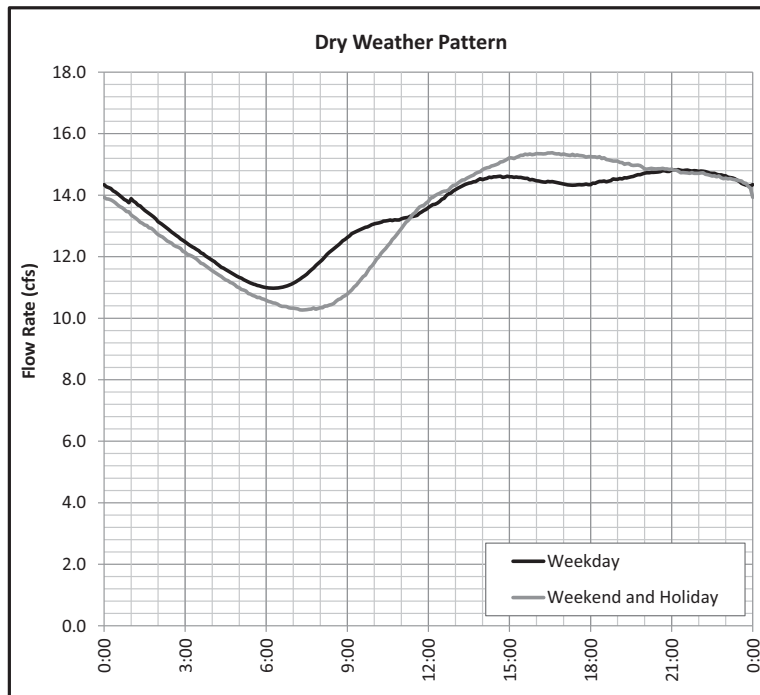
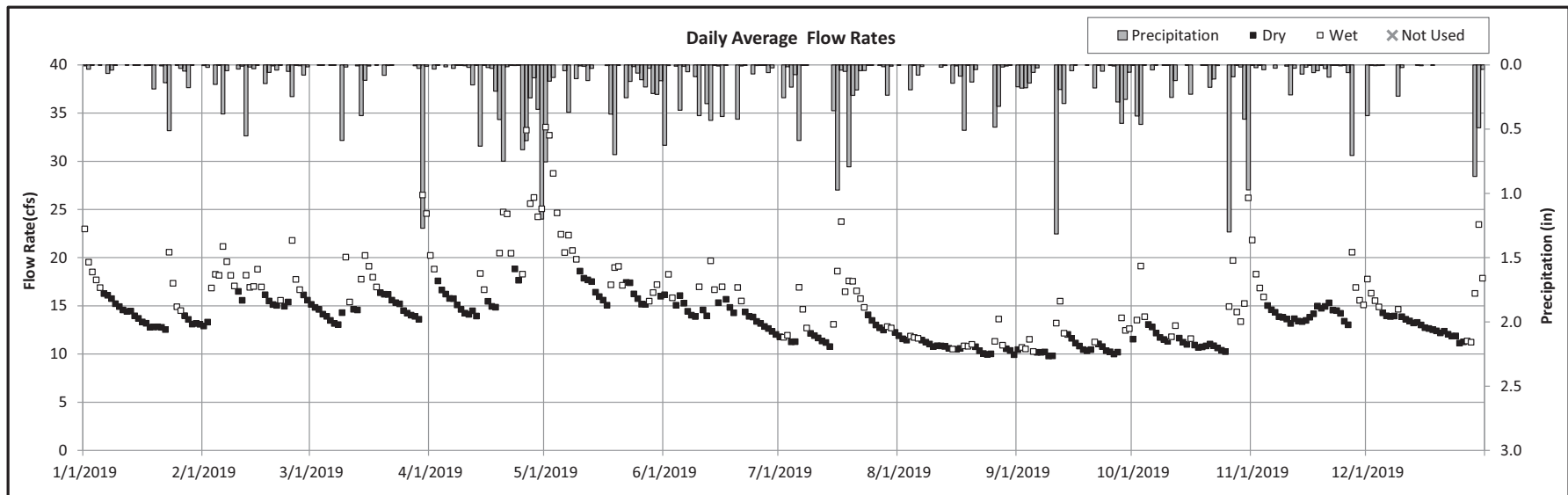
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	62.99	3/30/19 12:55	3.23	3/30/19 14:20
2	1.37	4/18/2019	4/20/2019	67.80	4/20/19 17:20	3.55	4/20/19 17:55
3	1.27	4/25/2019	4/26/2019	82.21	4/26/19 11:10	7.36	4/26/19 10:10
4	1.89	4/30/2019	5/1/2019	78.64	5/1/19 17:10	≥11.88	5/1/19 8:45
5	1.10	5/18/2019	5/20/2019	55.80	5/19/19 17:10	2.98	5/19/19 17:50
6	0.55	7/6/2019	7/6/2019	55.14	7/6/19 18:00	2.99	7/6/19 18:30
7	1.43	7/15/2019	7/17/2019	59.73	7/16/19 21:40	3.40	7/16/19 22:15
8	1.50	9/11/2019	9/12/2019	43.28	9/11/19 23:10	2.52	9/11/19 23:30
9	1.39	10/26/2019	10/27/2019	55.42	10/26/19 22:30	3.05	10/26/19 23:20
10	1.40	10/30/2019	11/1/2019	57.49	10/31/19 13:00	3.34	10/31/19 14:30
11	1.32	12/29/2019	12/30/2019	49.77	12/30/19 8:10	2.75	12/30/19 8:40

Figure 13-7
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-11
 Interceptor Manhole ID: MR II-18

Location: Hines Drive East of Inkster Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	15.1	303.1	13.9	278.9	22	9
Feb-19	16.8	304.2	15.2	274.5	12	16
Mar-19	16.1	322.6	14.6	292.1	22	9
Apr-19	18.9	366.3	15.6	303.0	16	14
May-19	19.2	384.1	16.5	330.8	15	16
Jun-19	14.9	289.9	14.2	274.8	22	8
Jul-19	13.8	277.0	12.1	242.0	15	16
Aug-19	10.9	219.3	10.7	214.9	21	10
Sep-19	11.1	215.7	10.5	204.0	19	11
Oct-19	12.9	258.9	11.3	225.8	19	12
Nov-19	15.0	291.3	14.1	273.0	22	8
Dec-19	13.8	276.9	12.8	256.9	21	10

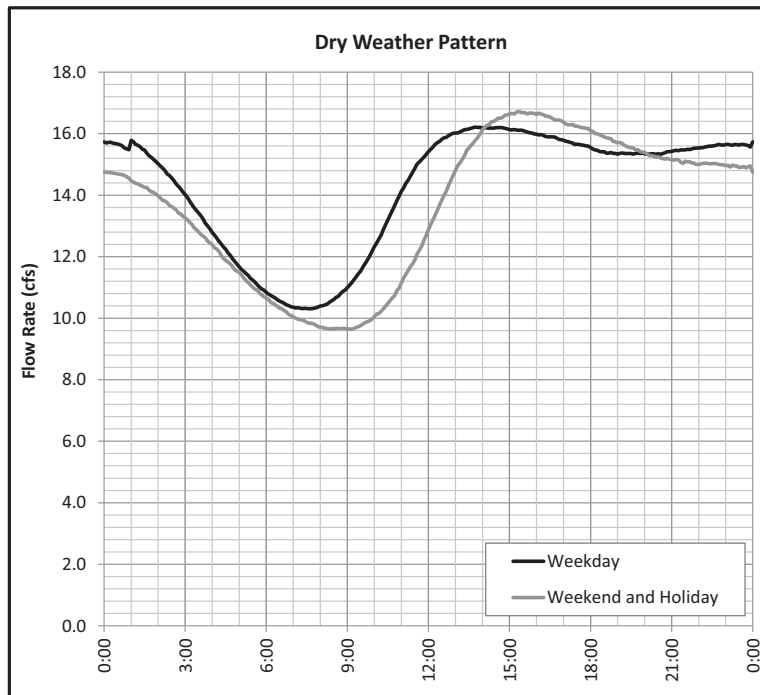
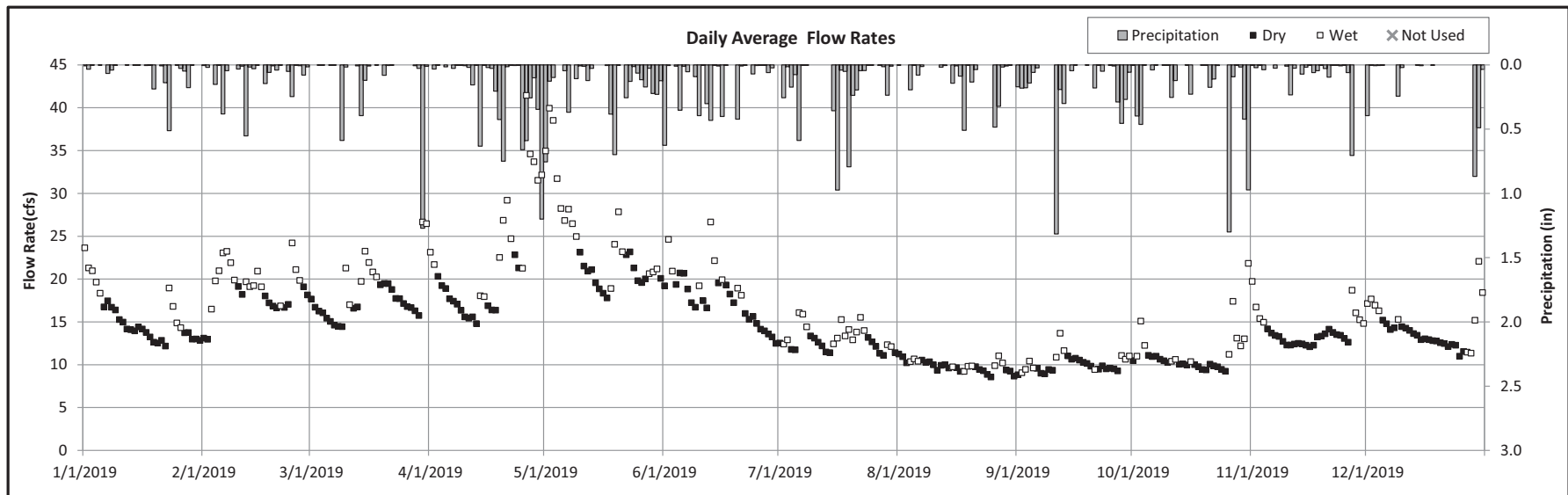
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	32.22	3/30/19 11:05	3.16	3/30/19 11:05
2	1.37	4/18/2019	4/20/2019	34.46	4/20/19 16:00	3.43	4/20/19 16:00
3	1.27	4/25/2019	4/26/2019	35.44	4/26/19 3:25	6.77	4/26/19 9:40
4	1.89	4/30/2019	5/1/2019	35.96	4/30/19 22:05	12.38	5/1/19 4:25
5	1.10	5/18/2019	5/20/2019	27.69	5/19/19 16:20	2.80	5/19/19 16:30
6	0.55	7/6/2019	7/6/2019	33.31	7/6/19 16:55	3.37	7/6/19 17:30
7	1.43	7/15/2019	7/17/2019	36.80	7/16/19 20:45	3.87	7/16/19 21:10
8	1.50	9/11/2019	9/12/2019	26.25	9/11/19 22:30	2.68	9/11/19 22:55
9	1.39	10/26/2019	10/27/2019	32.89	10/26/19 21:35	3.29	10/26/19 22:15
10	1.40	10/30/2019	11/1/2019	35.03	10/31/19 12:30	3.51	10/31/19 13:10
11	1.32	12/29/2019	12/30/2019	29.36	12/30/19 7:05	2.89	12/30/19 7:45

Figure 13-8
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-12
 Interceptor Manhole ID: RVI 12-01

Location: Inkster Road North of Hines Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	15.5	310.4	14.2	283.7	22	9
Feb-19	18.9	341.3	16.9	306.1	12	16
Mar-19	18.3	365.9	16.8	336.0	22	9
Apr-19	22.0	426.9	17.6	341.6	16	14
May-19	24.0	480.8	20.5	411.1	15	16
Jun-19	18.0	349.3	16.8	326.1	22	8
Jul-19	13.0	260.0	12.1	242.9	15	16
Aug-19	9.8	197.3	9.7	194.9	21	10
Sep-19	10.1	195.3	9.8	189.2	19	11
Oct-19	11.3	226.2	10.1	202.2	19	12
Nov-19	13.9	270.1	13.0	252.4	22	8
Dec-19	14.1	283.4	13.2	264.1	21	10

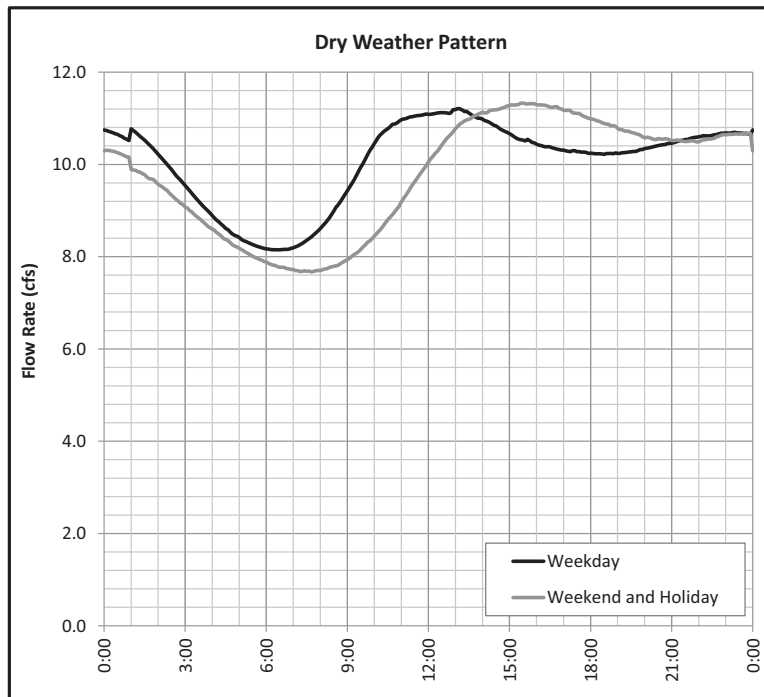
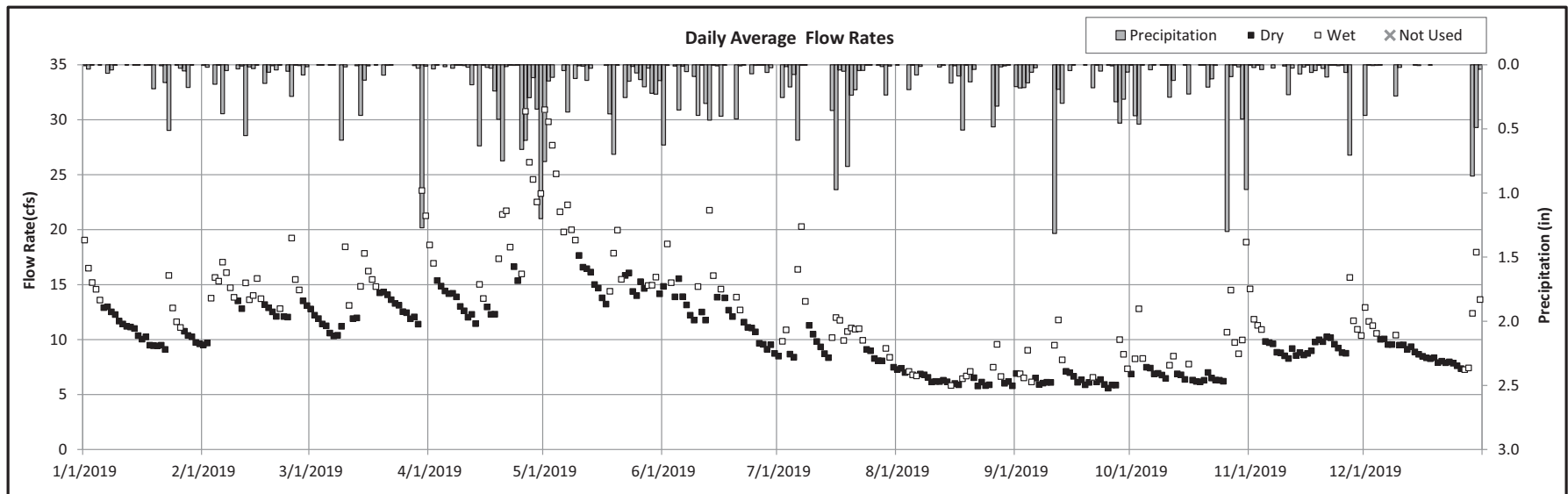
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	38.01	3/30/19 14:00	2.93	3/30/19 14:30
2	1.37	4/18/2019	4/20/2019	39.54	4/20/19 18:15	3.18	4/20/19 18:05
3	1.27	4/25/2019	4/26/2019	46.53	4/26/19 11:40	6.79	4/26/19 10:05
4	1.89	4/30/2019	5/1/2019	43.09	5/2/19 19:30	12.26	5/1/19 4:30
5	1.10	5/18/2019	5/20/2019	39.57	5/19/19 18:25	2.88	5/19/19 17:55
6	0.55	7/6/2019	7/6/2019	33.01	7/6/19 18:55	2.74	7/6/19 18:40
7	1.43	7/15/2019	7/17/2019	22.11	7/16/19 23:30	2.63	7/16/19 22:40
8	1.50	9/11/2019	9/12/2019	21.08	9/11/19 23:55	2.26	9/12/19 0:10
9	1.39	10/26/2019	10/27/2019	30.34	10/26/19 23:50	2.65	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	33.71	10/31/19 14:40	2.92	10/31/19 14:35
11	1.32	12/29/2019	12/30/2019	26.93	12/30/19 9:20	2.49	12/30/19 9:55

Figure 13-9
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-13
 Interceptor Manhole ID: MR IV -07

Location: Telegraph Road North of Joy Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	11.8	236.2	10.7	214.2	22	9
Feb-19	13.8	250.2	12.2	221.4	12	16
Mar-19	13.7	274.2	12.2	244.7	22	9
Apr-19	16.8	325.7	13.6	263.8	16	14
May-19	18.0	360.0	15.2	304.2	15	16
Jun-19	13.0	252.2	11.9	231.6	22	8
Jul-19	10.3	206.3	8.9	178.2	15	16
Aug-19	6.5	131.1	6.3	126.5	21	10
Sep-19	7.0	134.9	6.2	120.7	19	11
Oct-19	8.1	162.5	6.6	132.8	19	12
Nov-19	10.0	193.7	9.2	178.5	22	8
Dec-19	9.6	192.2	8.7	173.7	21	10

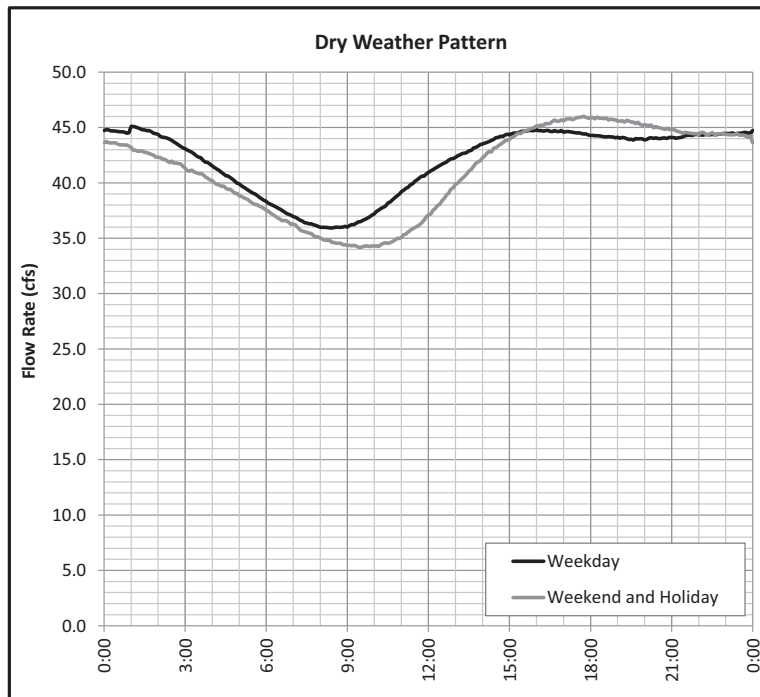
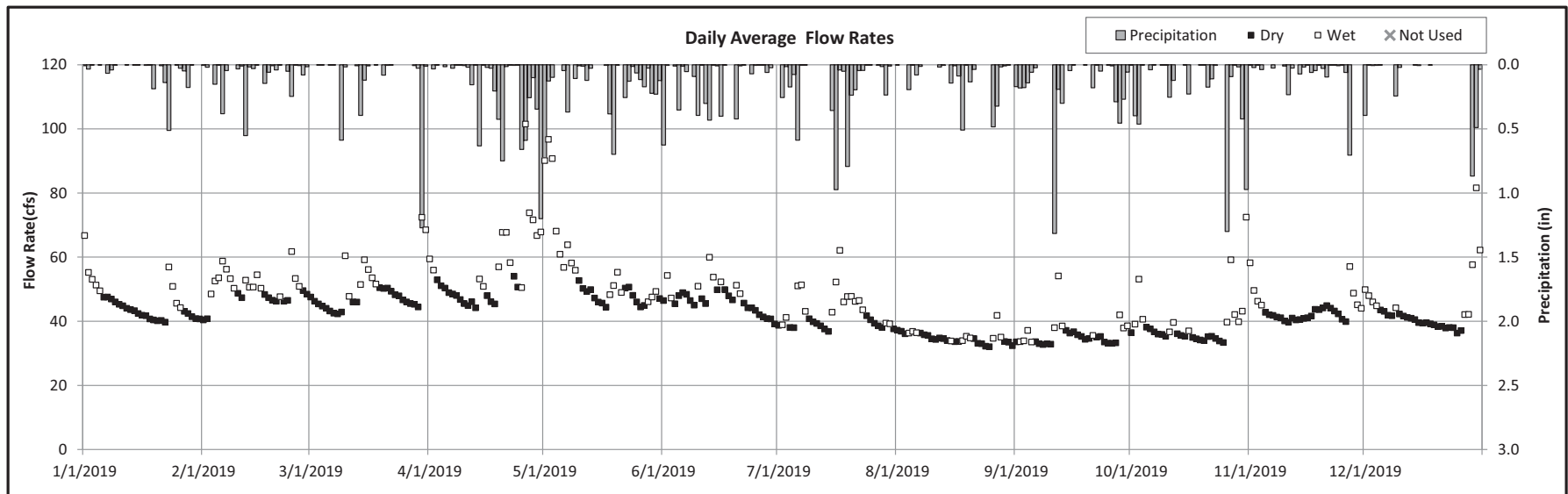
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	30.67	3/30/19 10:10	3.20	3/30/19 11:05
2	1.37	4/18/2019	4/20/2019	32.02	4/20/19 15:40	3.30	4/20/19 16:35
3	1.27	4/25/2019	4/26/2019	32.63	4/26/19 15:25	8.02	4/26/19 7:25
4	1.89	4/30/2019	5/1/2019	34.47	5/1/19 1:20	11.29	5/1/19 10:50
5	1.10	5/18/2019	5/20/2019	29.19	5/19/19 16:30	3.11	5/19/19 17:20
6	0.55	7/6/2019	7/6/2019	36.37	7/6/19 19:15	4.09	7/6/19 19:10
7	1.43	7/15/2019	7/17/2019	21.52	7/16/19 22:35	2.44	7/16/19 23:10
8	1.50	9/11/2019	9/12/2019	26.18	9/11/19 23:30	2.72	9/12/19 0:15
9	1.39	10/26/2019	10/27/2019	30.93	10/26/19 22:45	3.22	10/26/19 23:35
10	1.40	10/30/2019	11/1/2019	30.23	10/31/19 12:00	4.43	10/31/19 15:20
11	1.32	12/29/2019	12/30/2019	27.76	12/30/19 7:20	2.84	12/30/19 8:00

Figure 13-10
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-14
 Interceptor Manhole ID: RVI 4-16A

Location: Brady Road near Willoway Road
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	45.7	915.8	42.9	859.6	22	9
Feb-19	50.0	905.5	46.3	838.5	12	16
Mar-19	49.5	992.1	46.1	923.8	22	9
Apr-19	55.7	1080.9	48.2	934.1	16	14
May-19	55.0	1101.1	47.8	956.8	15	16
Jun-19	47.1	914.0	45.3	878.0	22	8
Jul-19	42.6	853.8	38.8	778.3	15	16
Aug-19	34.8	697.8	34.3	688.0	21	10
Sep-19	35.8	694.1	34.3	664.9	19	11
Oct-19	39.2	784.8	35.4	708.8	19	12
Nov-19	43.8	849.0	41.8	810.6	22	8
Dec-19	43.7	875.7	39.8	798.2	21	10

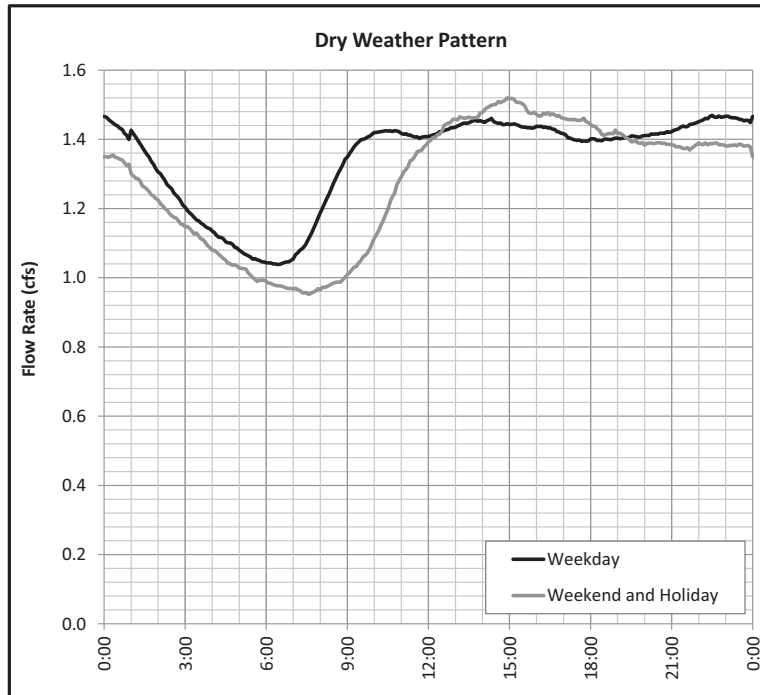
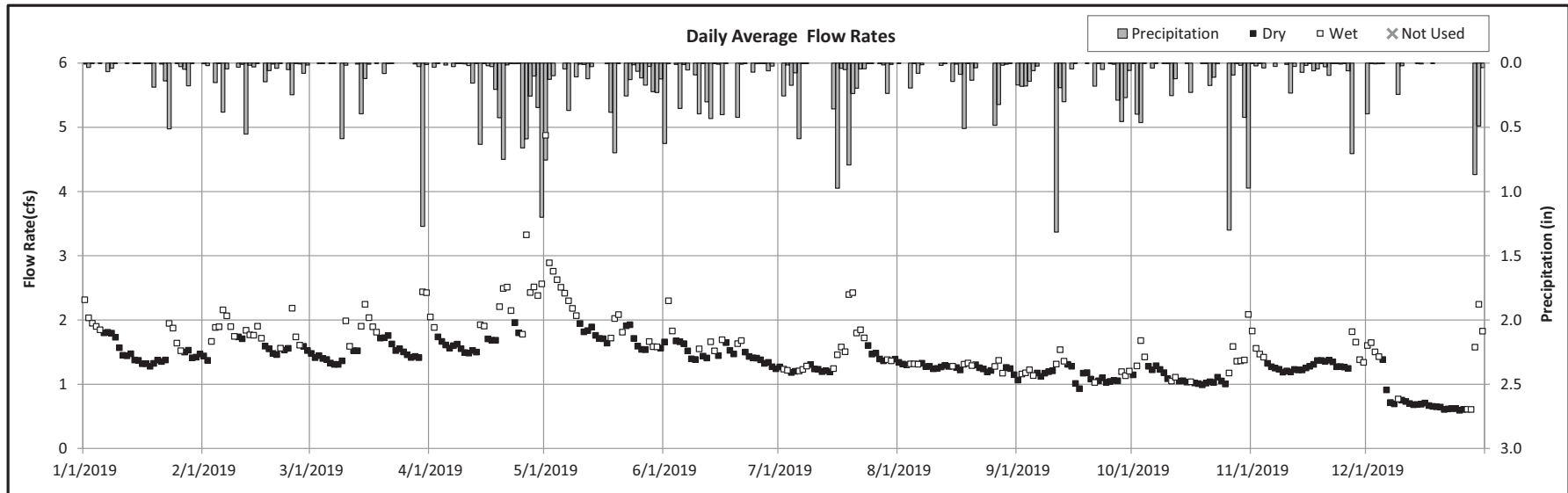
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	93.44	3/30/19 13:05	5.06	3/30/19 12:45
2	1.37	4/18/2019	4/20/2019	97.66	4/20/19 20:10	6.97	4/20/19 17:30
3	1.27	4/25/2019	4/26/2019	115.51	4/26/19 16:15	10.67	4/26/19 7:20
4	1.89	4/30/2019	5/1/2019	108.36	4/30/19 22:15	15.62	5/1/19 2:10
5	1.10	5/18/2019	5/20/2019	71.64	5/19/19 18:30	3.65	5/19/19 18:55
6	0.55	7/6/2019	7/6/2019	92.08	7/6/19 20:55	6.71	7/6/19 20:05
7	1.43	7/15/2019	7/17/2019	97.44	7/17/19 0:45	7.26	7/16/19 23:15
8	1.50	9/11/2019	9/12/2019	90.75	9/12/19 3:55	9.58	9/12/19 0:10
9	1.39	10/26/2019	10/27/2019	85.97	10/26/19 23:55	9.78	10/26/19 22:50
10	1.40	10/30/2019	11/1/2019	103.94	10/31/19 18:50	10.02	10/31/19 14:45
11	1.32	12/29/2019	12/30/2019	106.77	12/30/19 12:30	8.25	12/30/19 9:25

Figure 13-11
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-15
 Interceptor Manhole ID: WRVI - 54

Location: Ecorse Road and Hannan Road
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	1.6	32.0	1.5	29.6	22	9
Feb-19	1.7	30.9	1.5	27.9	12	16
Mar-19	1.6	32.9	1.5	29.6	22	9
Apr-19	1.9	37.6	1.6	31.7	16	14
May-19	2.0	40.8	1.7	34.8	15	16
Jun-19	1.5	29.7	1.5	28.3	22	8
Jul-19	1.4	28.8	1.3	26.3	15	16
Aug-19	1.3	25.5	1.3	25.2	21	10
Sep-19	1.2	22.4	1.1	21.6	19	11
Oct-19	1.2	24.1	1.1	21.9	19	12
Nov-19	1.3	26.1	1.3	24.7	22	8
Dec-19	0.9	18.5	0.7	14.2	21	10

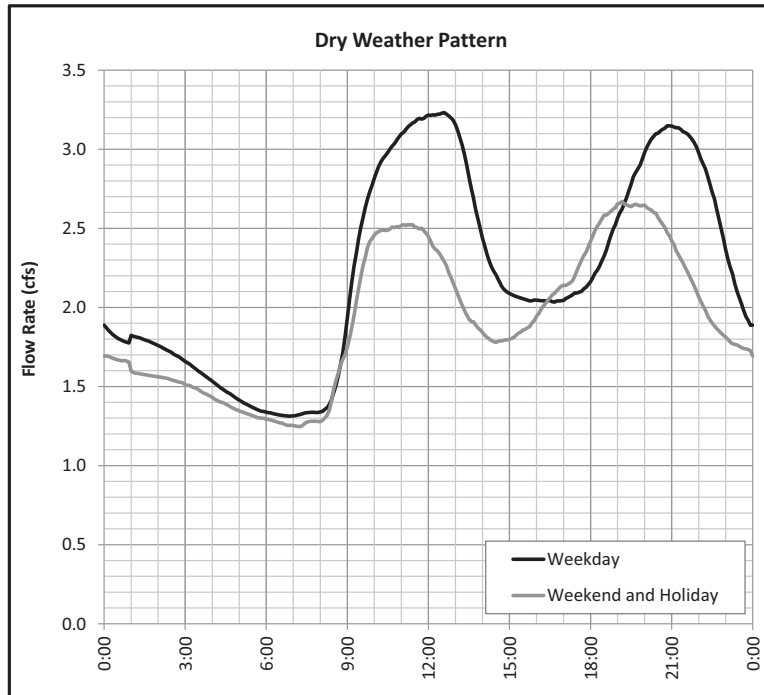
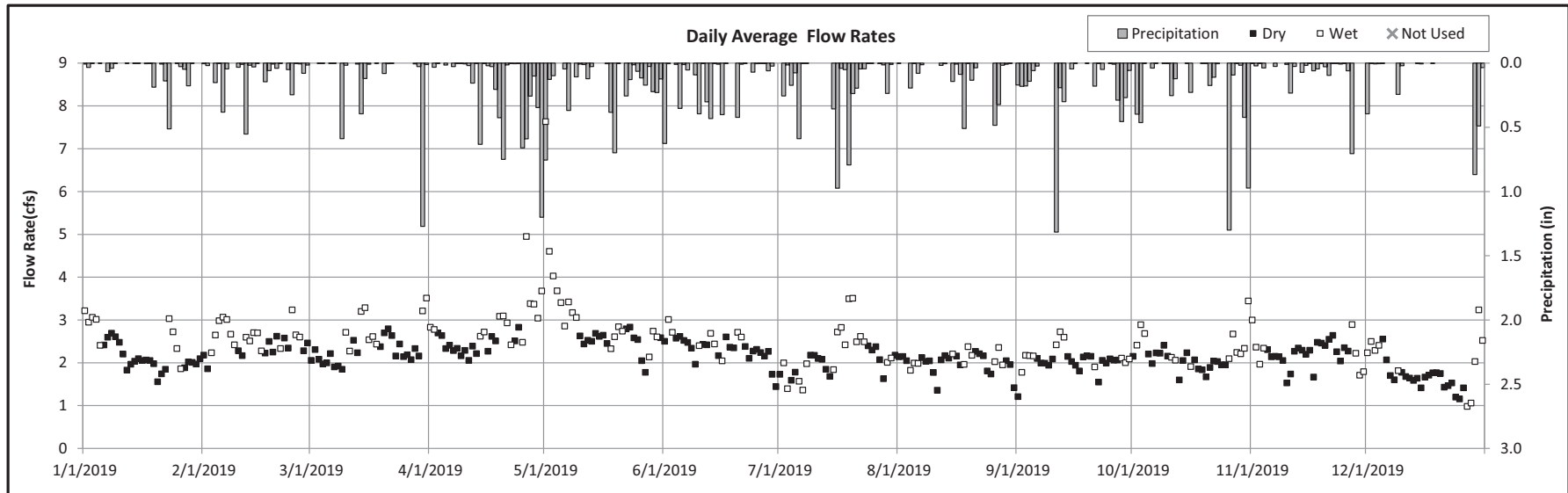
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	3.27	3/30/19 11:30	1.27	3/30/19 11:40
2	1.37	4/18/2019	4/20/2019	3.63	4/20/19 15:10	1.38	4/20/19 16:50
3	1.27	4/25/2019	4/26/2019	4.34	4/26/19 7:40	2.01	4/26/19 9:00
4	1.89	4/30/2019	5/1/2019	5.47	5/1/19 1:45	7.13	5/1/19 4:30
5	1.10	5/18/2019	5/20/2019	2.99	5/19/19 16:45	1.20	5/19/19 16:50
6	0.55	7/6/2019	7/6/2019	1.56	7/6/19 15:50	0.82	7/6/19 16:10
7	1.43	7/15/2019	7/17/2019	4.52	7/19/19 19:15	2.15	7/19/19 20:10
8	1.50	9/11/2019	9/12/2019	2.22	9/11/19 23:15	1.01	9/11/19 23:35
9	1.39	10/26/2019	10/27/2019	2.59	10/26/19 22:05	1.14	10/26/19 22:40
10	1.40	10/30/2019	11/1/2019	2.90	10/31/19 12:45	1.23	10/31/19 13:30
11	1.32	12/29/2019	12/30/2019	2.70	12/30/19 10:35	1.14	12/30/19 11:10

Figure 13-12
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-17
 Interceptor Manhole ID: LRIR 9-17

Location: North of Michigan Avenue along Railroad
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	2.3	45.7	2.1	42.0	22	9
Feb-19	2.5	45.4	2.3	41.8	12	16
Mar-19	2.4	48.3	2.2	44.6	22	9
Apr-19	2.7	52.9	2.4	46.7	16	14
May-19	2.9	59.1	2.5	50.2	15	16
Jun-19	2.4	45.7	2.3	44.2	22	8
Jul-19	2.2	43.2	2.0	40.2	15	16
Aug-19	2.0	40.4	2.0	39.8	21	10
Sep-19	2.1	39.8	2.0	38.2	19	11
Oct-19	2.2	43.7	2.0	40.6	19	12
Nov-19	2.2	43.2	2.2	42.8	22	8
Dec-19	1.8	35.9	1.6	32.9	21	10

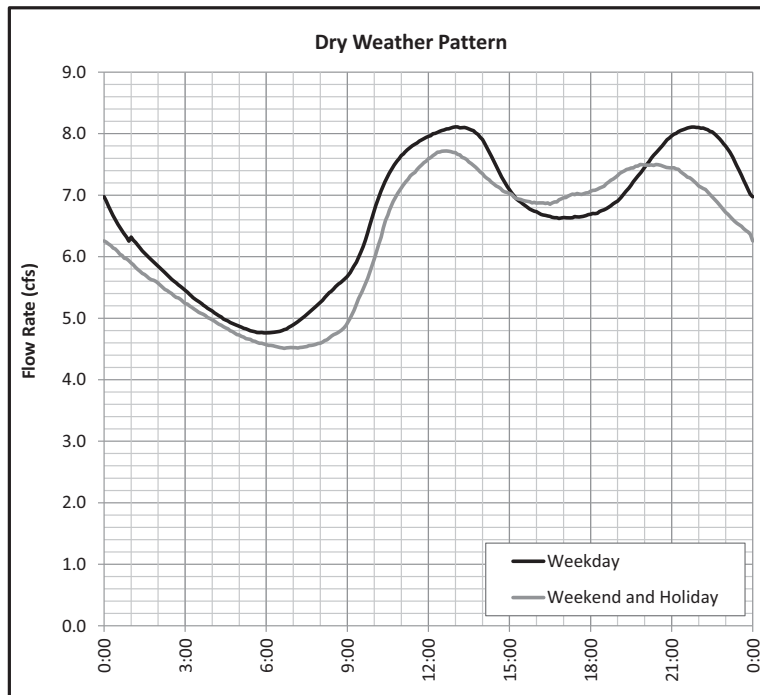
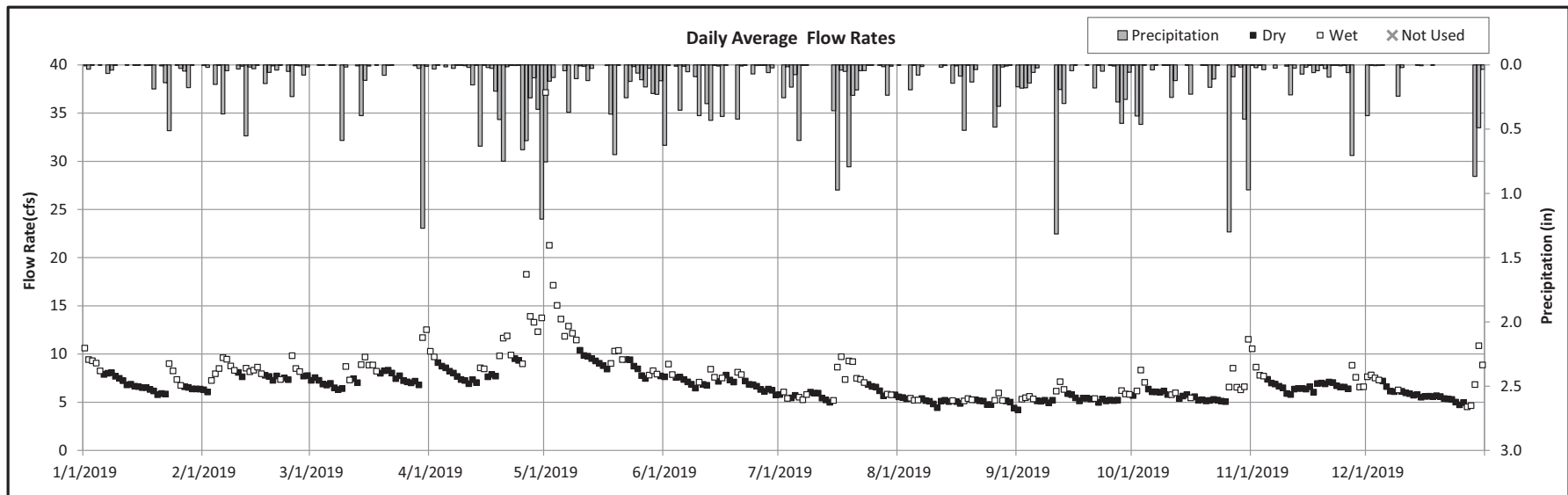
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	5.01	3/31/19 16:10	1.05	3/31/19 16:35
2	1.37	4/18/2019	4/20/2019	4.76	4/20/19 17:35	1.01	4/20/19 18:15
3	1.27	4/25/2019	4/26/2019	6.91	4/26/19 9:10	1.24	4/26/19 9:15
4	1.89	4/30/2019	5/1/2019	9.70	5/1/19 7:40	2.85	5/1/19 6:05
5	1.10	5/18/2019	5/20/2019	4.80	5/19/19 18:30	1.02	5/19/19 19:00
6	0.55	7/6/2019	7/6/2019	1.93	7/6/19 14:20	0.67	7/6/19 14:30
7	1.43	7/15/2019	7/17/2019	7.40	7/16/19 18:45	1.30	7/16/19 19:10
8	1.50	9/11/2019	9/12/2019	4.29	9/13/19 20:00	0.95	9/13/19 18:20
9	1.39	10/26/2019	10/27/2019	3.50	10/26/19 16:15	0.86	10/26/19 16:50
10	1.40	10/30/2019	11/1/2019	5.03	10/31/19 12:35	1.02	10/31/19 13:10
11	1.32	12/29/2019	12/30/2019	4.58	12/30/19 9:20	0.97	12/30/19 9:55

Figure 13-13
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-19
 Interceptor Manhole ID: RVI 15-17

Location: Josephine Street and Lower Rouge River
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	7.3	146.2	6.7	135.0	22	9
Feb-19	8.0	144.6	7.4	133.7	12	16
Mar-19	7.9	157.6	7.2	145.0	22	9
Apr-19	9.6	186.6	8.0	155.2	16	14
May-19	11.3	225.8	8.9	178.8	15	16
Jun-19	7.2	138.9	6.9	133.6	22	8
Jul-19	6.4	128.4	5.9	117.5	15	16
Aug-19	5.1	102.6	5.0	101.0	21	10
Sep-19	5.4	105.6	5.2	101.0	19	11
Oct-19	6.1	123.1	5.6	111.6	19	12
Nov-19	7.0	135.3	6.6	128.0	22	8
Dec-19	6.2	123.9	5.7	114.2	21	10

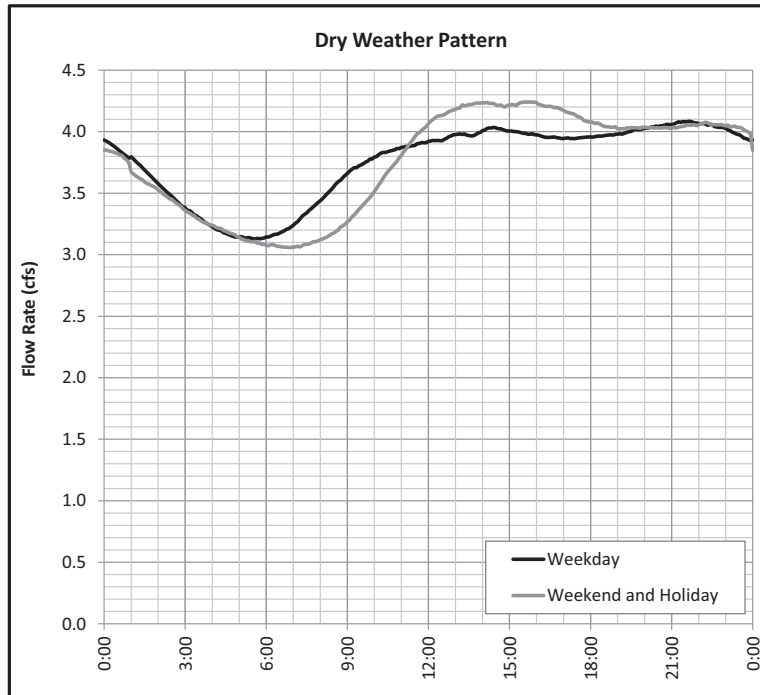
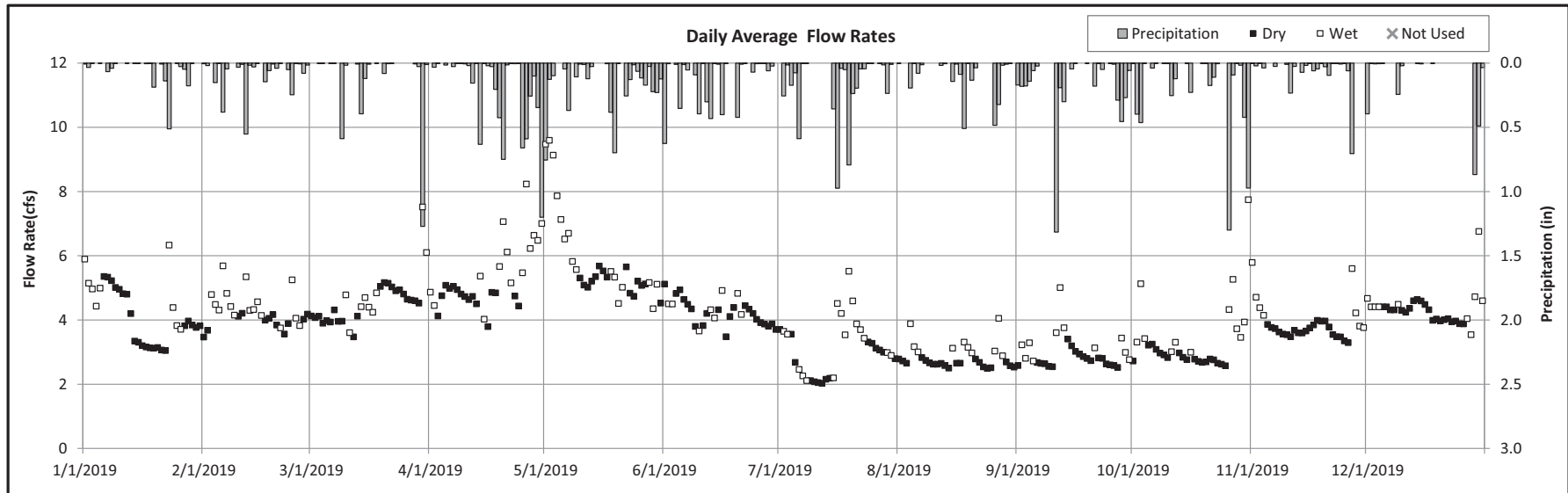
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	16.13	3/30/19 10:50	1.93	3/30/19 11:25
2	1.37	4/18/2019	4/20/2019	17.03	4/20/19 16:40	1.97	4/20/19 17:20
3	1.27	4/25/2019	4/26/2019	21.45	4/26/19 9:25	2.23	4/26/19 9:45
4	1.89	4/30/2019	5/1/2019	44.27	5/1/19 8:40	8.42	5/1/19 5:35
5	1.10	5/18/2019	5/20/2019	15.94	5/19/19 18:05	1.90	5/19/19 18:40
6	0.55	7/6/2019	7/6/2019	6.57	7/6/19 14:50	1.21	7/6/19 15:30
7	1.43	7/15/2019	7/17/2019	27.60	7/16/19 19:50	2.64	7/16/19 20:25
8	1.50	9/11/2019	9/12/2019	12.83	9/11/19 21:55	1.72	9/11/19 22:15
9	1.39	10/26/2019	10/27/2019	15.25	10/26/19 21:15	1.91	10/26/19 21:40
10	1.40	10/30/2019	11/1/2019	17.18	10/31/19 12:05	1.99	10/31/19 12:50
11	1.32	12/29/2019	12/30/2019	13.27	12/30/19 10:45	1.73	12/30/19 10:50

Figure 13-14
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-20
 Interceptor Manhole ID: WI E-35

Location: Michigan Avenue and Henry Ruff Road
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	4.2	84.7	4.0	79.6	22	9
Feb-19	4.3	77.1	3.9	71.1	12	16
Mar-19	4.6	91.7	4.4	88.6	22	9
Apr-19	5.3	101.9	4.7	90.9	16	14
May-19	5.8	116.6	5.2	103.7	15	16
Jun-19	4.3	82.4	4.2	81.6	22	8
Jul-19	3.1	62.3	2.7	54.8	15	16
Aug-19	2.8	56.8	2.6	52.9	21	10
Sep-19	3.0	57.6	2.8	53.5	19	11
Oct-19	3.3	66.8	2.8	56.7	19	12
Nov-19	3.9	75.5	3.7	70.9	22	8
Dec-19	4.3	87.0	4.2	84.5	21	10

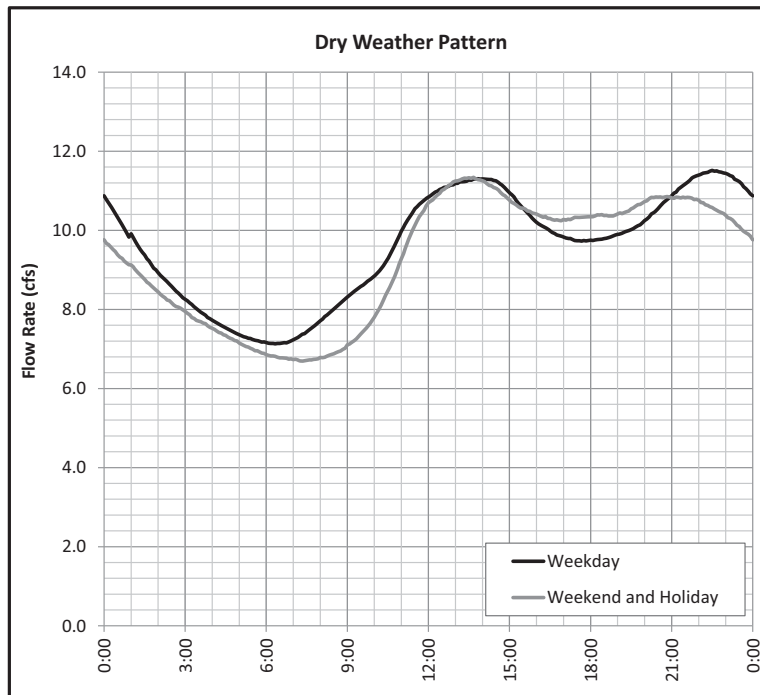
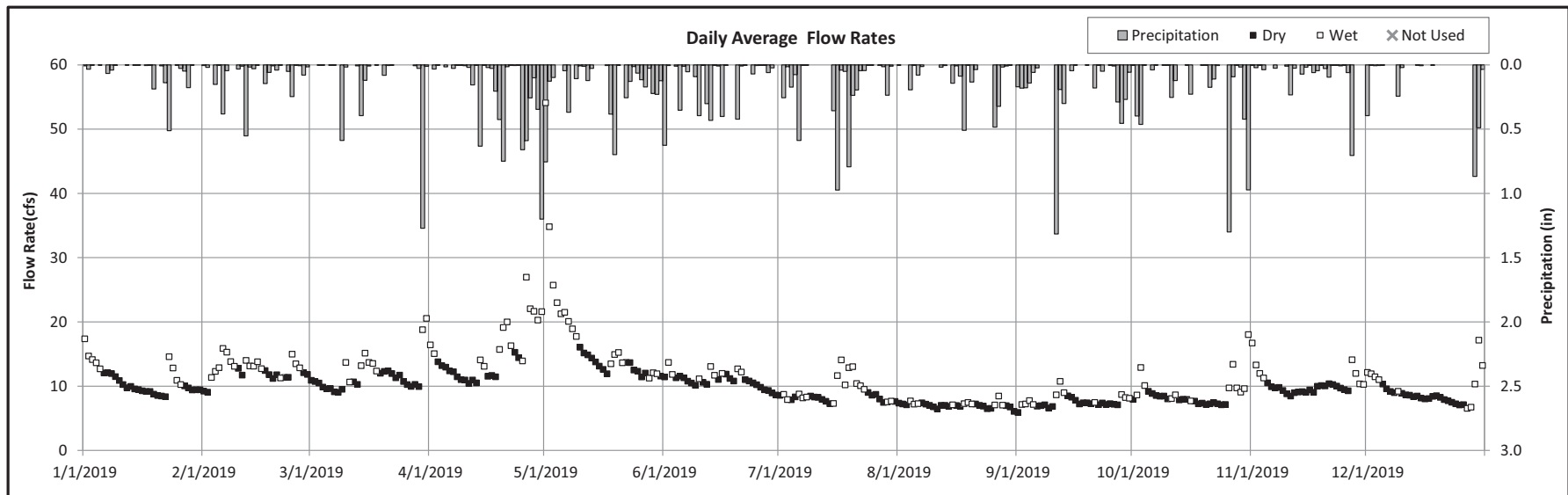
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	10.78	3/30/19 9:40	2.35	3/30/19 10:25
2	1.37	4/18/2019	4/20/2019	12.73	4/20/19 14:15	2.67	4/20/19 14:40
3	1.27	4/25/2019	4/26/2019	10.86	4/26/19 4:10	2.31	4/26/19 3:05
4	1.89	4/30/2019	5/1/2019	11.16	4/30/19 23:00	-	-
5	1.10	5/18/2019	5/20/2019	10.47	5/18/19 8:05	2.33	5/18/19 8:30
6	0.55	7/6/2019	7/6/2019	4.24	7/6/19 14:45	1.39	7/6/19 15:15
7	1.43	7/15/2019	7/17/2019	13.58	7/19/19 16:55	2.86	7/16/19 20:20
8	1.50	9/11/2019	9/12/2019	12.34	9/11/19 23:20	2.64	9/11/19 23:50
9	1.39	10/26/2019	10/27/2019	13.06	10/26/19 22:10	2.78	10/26/19 22:45
10	1.40	10/30/2019	11/1/2019	13.13	10/31/19 13:30	2.70	10/31/19 13:55
11	1.32	12/29/2019	12/30/2019	10.56	12/30/19 5:55	2.30	12/30/19 6:30

Figure 13-15
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-21
 Interceptor Manhole ID: RVI 14-19

Location: Merriman Road and Lower Rouge River
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	10.9	218.2	9.9	197.4	22	9
Feb-19	12.5	226.2	11.4	205.6	12	16
Mar-19	11.7	234.9	10.5	211.3	22	9
Apr-19	15.0	290.7	12.1	234.9	16	14
May-19	17.0	341.3	13.3	265.5	15	16
Jun-19	11.0	212.7	10.5	203.6	22	8
Jul-19	9.0	179.4	8.1	162.6	15	16
Aug-19	7.0	141.1	6.9	138.1	21	10
Sep-19	7.6	146.6	7.2	139.8	19	11
Oct-19	8.8	176.9	7.8	156.5	19	12
Nov-19	10.3	200.2	9.5	185.0	22	8
Dec-19	9.2	183.6	8.3	166.5	21	10

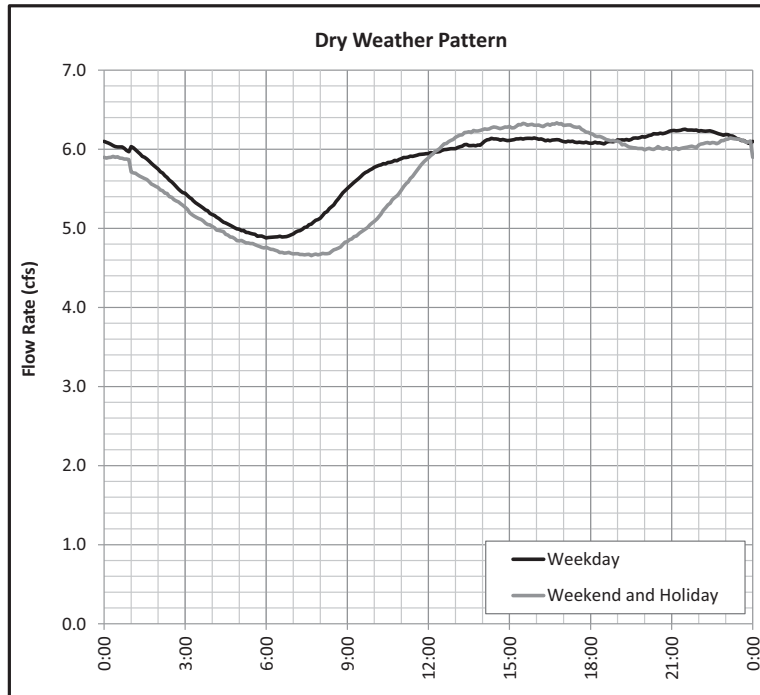
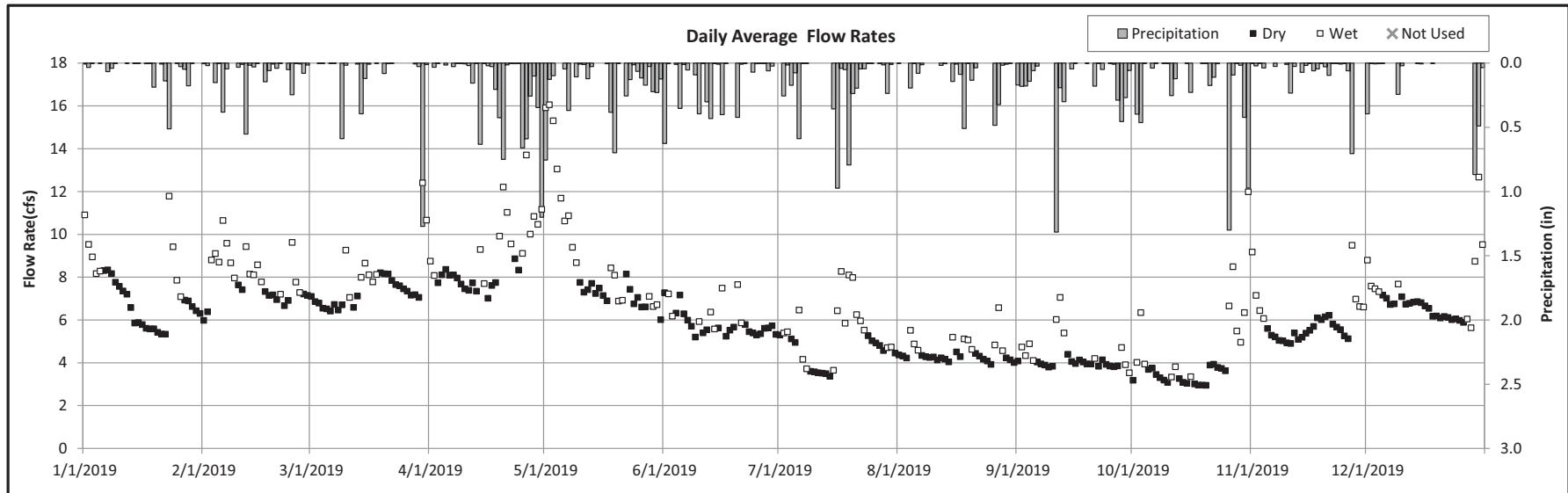
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	25.24	3/30/19 10:25	1.89	3/30/19 11:10
2	1.37	4/18/2019	4/20/2019	28.71	4/20/19 15:10	2.03	4/20/19 15:35
3	1.27	4/25/2019	4/26/2019	29.94	4/26/19 6:00	2.05	4/26/19 6:35
4	1.89	4/30/2019	5/1/2019	63.65	5/1/19 4:40	11.03	5/1/19 5:35
5	1.10	5/18/2019	5/20/2019	21.56	5/19/19 19:30	1.74	5/19/19 18:45
6	0.55	7/6/2019	7/6/2019	13.60	7/6/19 15:00	1.39	7/6/19 15:25
7	1.43	7/15/2019	7/17/2019	37.52	7/16/19 20:30	2.37	7/16/19 20:50
8	1.50	9/11/2019	9/12/2019	21.23	9/11/19 22:25	1.75	9/11/19 23:00
9	1.39	10/26/2019	10/27/2019	25.73	10/26/19 22:00	1.92	10/26/19 22:30
10	1.40	10/30/2019	11/1/2019	27.90	10/31/19 12:50	1.99	10/31/19 13:10
11	1.32	12/29/2019	12/30/2019	20.29	12/30/19 16:05	1.67	12/30/19 9:35

Figure 13-16
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-24
 Interceptor Manhole ID: WI E-08

Location: Michigan Avenue West of Beech Daly Road
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	7.3	146.5	6.6	131.8	22	9
Feb-19	7.9	143.0	7.0	126.5	12	16
Mar-19	7.7	153.5	7.2	143.4	22	9
Apr-19	8.9	172.7	7.8	152.0	16	14
May-19	8.7	174.3	7.2	143.5	15	16
Jun-19	6.0	115.5	5.7	111.4	22	8
Jul-19	5.1	102.1	4.4	87.4	15	16
Aug-19	4.5	90.2	4.2	84.5	21	10
Sep-19	4.3	82.9	4.0	76.9	19	11
Oct-19	4.3	85.6	3.4	67.3	19	12
Nov-19	6.0	115.4	5.5	105.8	22	8
Dec-19	7.0	140.8	6.5	130.2	21	10

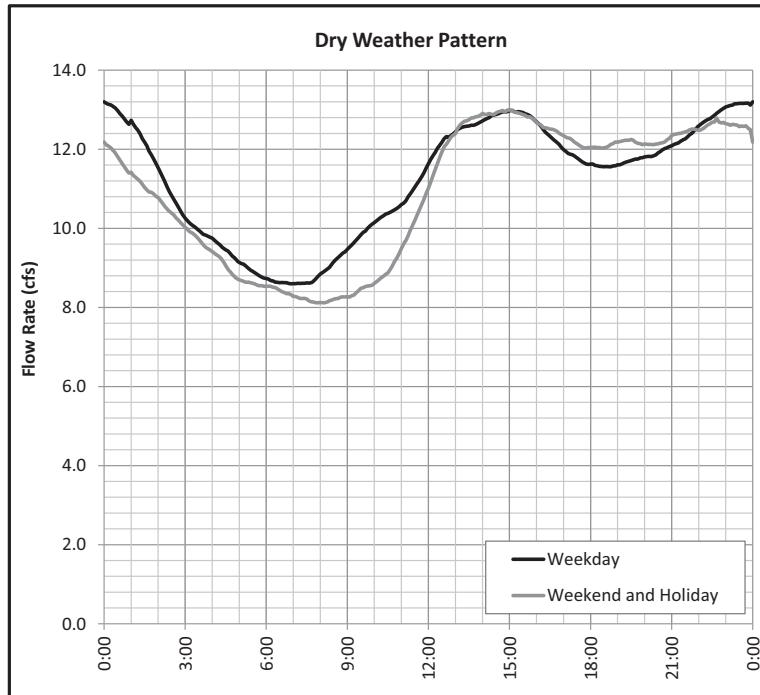
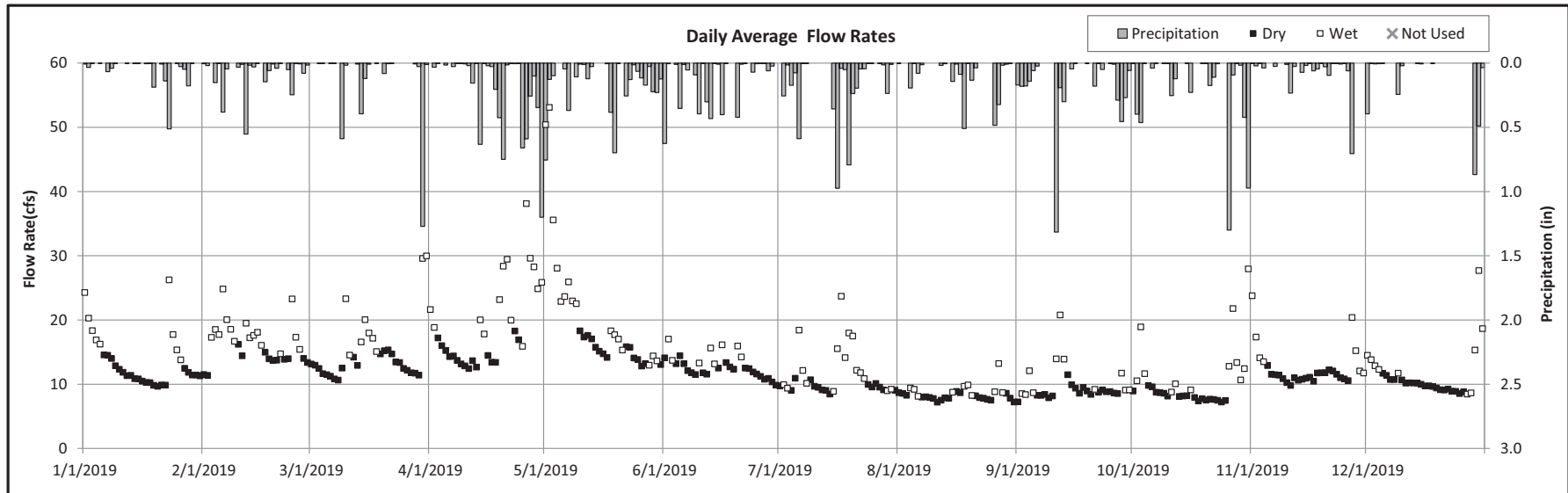
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	16.73	3/30/19 11:15	1.65	3/30/19 11:55
2	1.37	4/18/2019	4/20/2019	19.03	4/20/19 15:00	1.92	4/20/19 16:10
3	1.27	4/25/2019	4/26/2019	18.31	4/26/19 5:00	2.94	4/26/19 7:50
4	1.89	4/30/2019	5/1/2019	18.85	4/30/19 23:50	10.89	5/1/19 2:30
5	1.10	5/18/2019	5/20/2019	14.16	5/18/19 9:00	1.34	5/18/19 9:30
6	0.55	7/6/2019	7/6/2019	14.73	7/6/19 14:40	1.38	7/6/19 16:55
7	1.43	7/15/2019	7/17/2019	17.46	7/16/19 20:50	2.44	7/16/19 22:00
8	1.50	9/11/2019	9/12/2019	17.59	9/11/19 23:10	1.77	9/11/19 23:40
9	1.39	10/26/2019	10/27/2019	17.59	10/26/19 22:40	1.96	10/26/19 23:10
10	1.40	10/30/2019	11/1/2019	19.02	10/31/19 12:30	2.11	10/31/19 14:55
11	1.32	12/29/2019	12/30/2019	17.08	12/30/19 7:20	1.54	12/30/19 7:45

Figure 13-17
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-25
 Interceptor Manhole ID: RVI 5-14

Location: Lower Rouge River West of Beech Daly Road
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	13.6	272.6	11.5	230.2	22	9
Feb-19	16.3	295.6	13.7	248.6	12	16
Mar-19	15.0	299.9	12.7	254.9	22	9
Apr-19	19.1	370.6	14.5	280.9	16	14
May-19	20.1	402.4	15.2	305.1	15	16
Jun-19	12.8	248.6	12.1	234.1	22	8
Jul-19	11.4	228.6	9.5	191.3	15	16
Aug-19	8.4	168.9	8.0	159.8	21	10
Sep-19	9.7	188.7	8.8	170.2	19	11
Oct-19	10.4	208.4	8.1	163.1	19	12
Nov-19	12.5	241.8	11.2	217.0	22	8
Dec-19	11.3	226.4	9.8	197.1	21	10

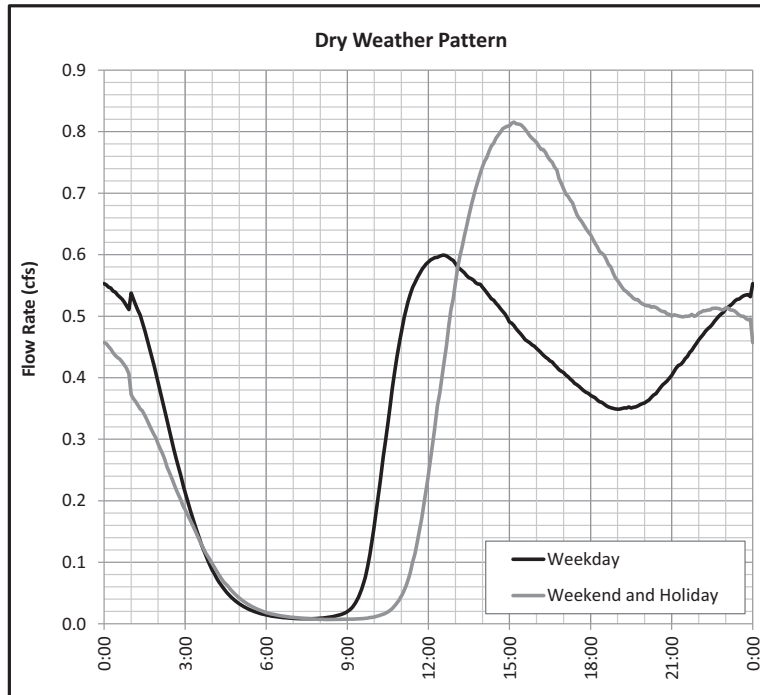
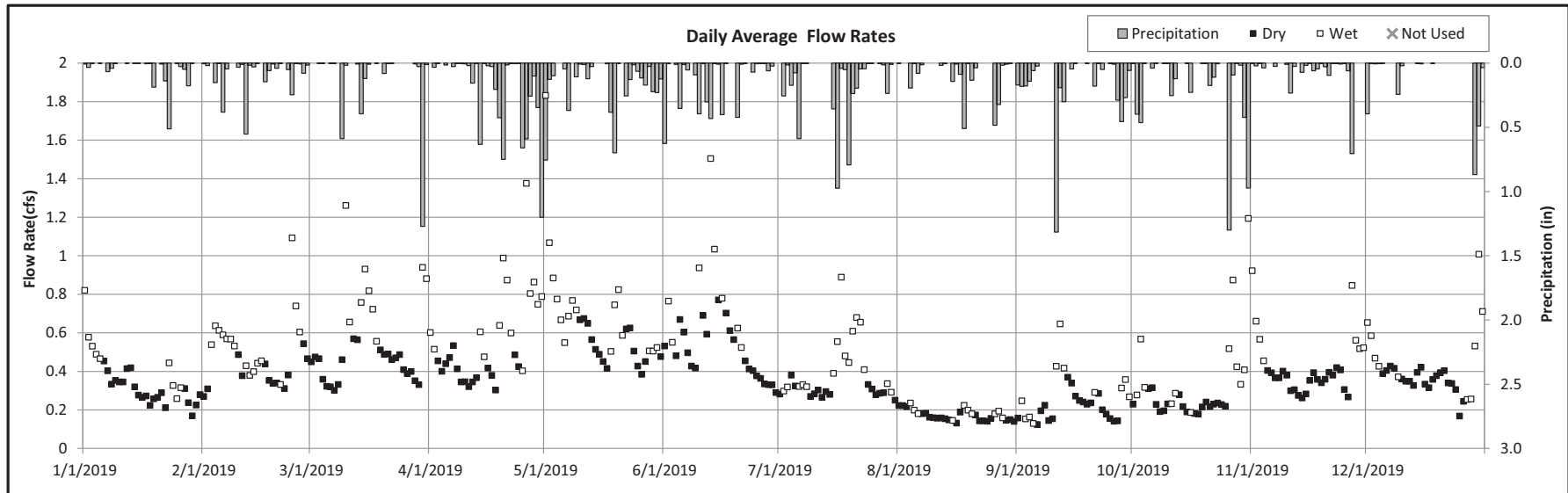
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	42.79	3/30/19 12:45	2.57	3/30/19 11:40
2	1.37	4/18/2019	4/20/2019	44.15	4/20/19 16:20	2.68	4/20/19 17:20
3	1.27	4/25/2019	4/26/2019	46.23	4/26/19 7:05	2.75	4/26/19 7:35
4	1.89	4/30/2019	5/1/2019	69.13	5/2/19 11:20	11.91	5/1/19 3:05
5	1.10	5/18/2019	5/20/2019	34.93	5/18/19 9:15	2.10	5/18/19 9:20
6	0.55	7/6/2019	7/6/2019	40.34	7/6/19 17:40	2.36	7/6/19 18:05
7	1.43	7/15/2019	7/17/2019	53.67	7/16/19 21:35	3.33	7/16/19 21:55
8	1.50	9/11/2019	9/12/2019	40.82	9/11/19 23:00	2.58	9/11/19 23:40
9	1.39	10/26/2019	10/27/2019	40.38	10/26/19 22:20	2.65	10/26/19 23:10
10	1.40	10/30/2019	11/1/2019	44.05	10/31/19 20:40	2.65	10/31/19 14:25
11	1.32	12/29/2019	12/30/2019	38.37	12/30/19 5:50	2.39	12/30/19 6:25

Figure 13-18
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-26
 Interceptor Manhole ID: PWI 2-05

Location: Plymouth Road East of I-275
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	0.4	7.0	0.3	6.1	22	9
Feb-19	0.5	8.7	0.4	6.9	12	16
Mar-19	0.5	10.9	0.4	8.6	22	9
Apr-19	0.6	10.8	0.4	7.8	16	14
May-19	0.6	13.0	0.5	10.6	15	16
Jun-19	0.6	11.3	0.5	9.6	22	8
Jul-19	0.4	7.6	0.3	5.9	15	16
Aug-19	0.2	3.5	0.2	3.3	21	10
Sep-19	0.2	4.8	0.2	4.1	19	11
Oct-19	0.3	6.4	0.2	4.6	19	12
Nov-19	0.4	8.2	0.3	6.8	22	8
Dec-19	0.4	8.2	0.4	7.1	21	10

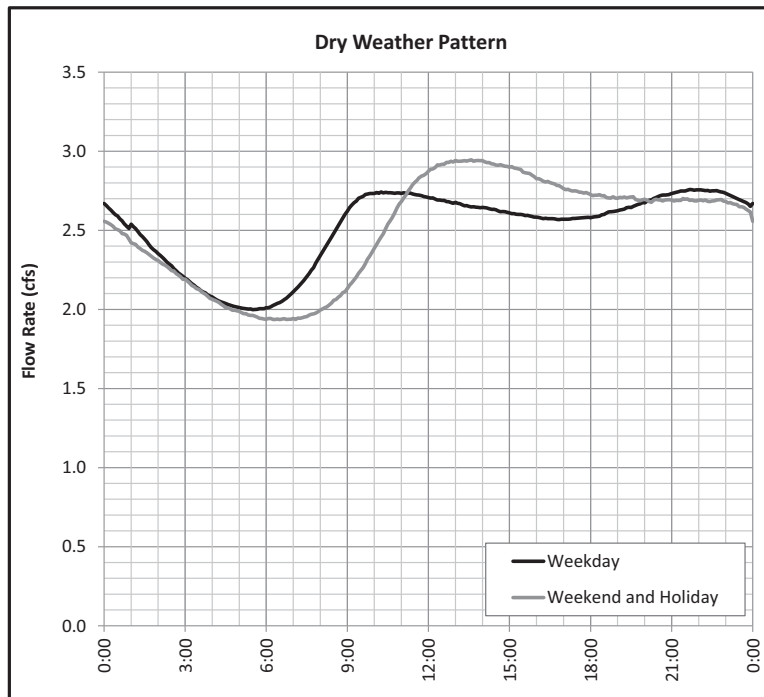
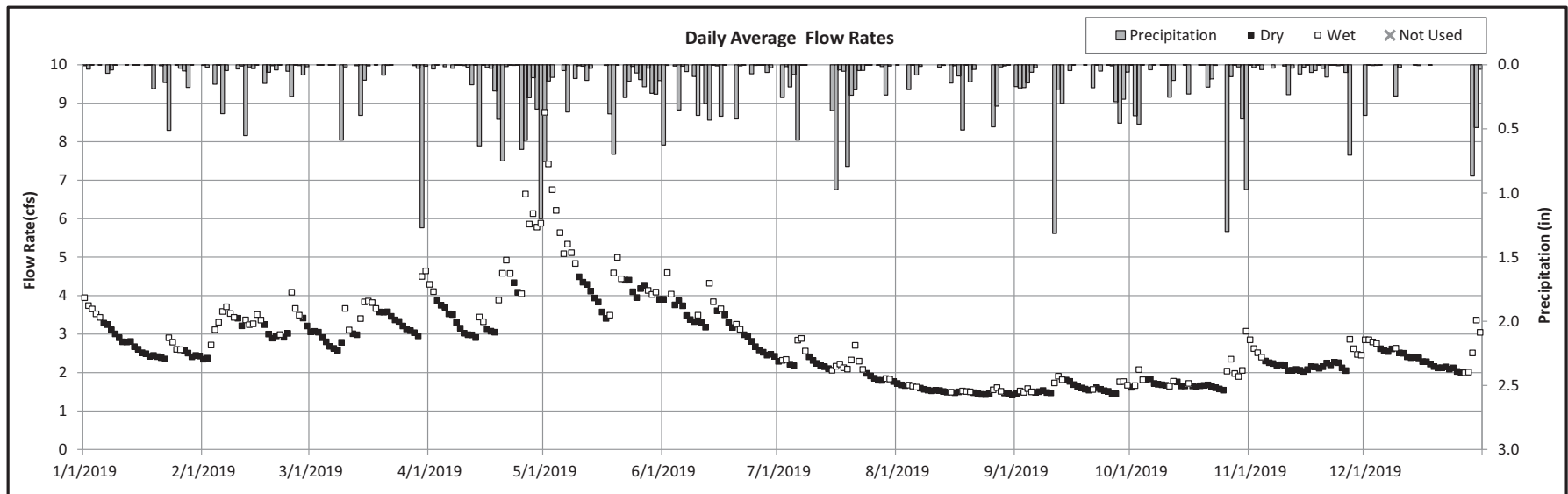
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	2.07	3/30/19 12:15	0.51	3/30/19 12:30
2	1.37	4/18/2019	4/20/2019	2.71	4/20/19 17:10	0.60	4/20/19 17:45
3	1.27	4/25/2019	4/26/2019	2.04	4/26/19 7:45	0.53	4/26/19 7:50
4	1.89	4/30/2019	5/1/2019	2.31	5/1/19 10:00	0.57	5/1/19 10:10
5	1.10	5/18/2019	5/20/2019	1.57	5/19/19 16:40	0.44	5/19/19 17:00
6	0.55	7/6/2019	7/6/2019	0.72	7/7/19 14:00	0.30	7/7/19 14:45
7	1.43	7/15/2019	7/17/2019	2.29	7/16/19 23:45	0.55	7/17/19 0:25
8	1.50	9/11/2019	9/12/2019	1.93	9/12/19 0:10	0.51	9/12/19 0:35
9	1.39	10/26/2019	10/27/2019	2.25	10/26/19 23:35	0.54	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	2.39	10/31/19 14:35	0.57	10/31/19 15:00
11	1.32	12/29/2019	12/30/2019	1.56	12/30/19 13:45	0.45	12/30/19 14:40

Figure 13-19
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-28
 Interceptor Manhole ID:

Location: Inkster Road south of Rougeway Street
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	2.8	56.7	2.7	53.3	22	9
Feb-19	3.2	58.4	3.0	54.2	12	16
Mar-19	3.3	66.1	3.1	61.7	22	9
Apr-19	4.1	78.7	3.4	65.8	16	14
May-19	4.7	94.4	4.1	81.7	15	16
Jun-19	3.3	64.3	3.1	61.0	22	8
Jul-19	2.2	43.8	2.1	41.6	15	16
Aug-19	1.5	30.6	1.5	30.4	21	10
Sep-19	1.6	30.9	1.6	30.2	19	11
Oct-19	1.8	36.0	1.7	33.4	19	12
Nov-19	2.3	44.0	2.2	41.7	22	8
Dec-19	2.4	48.6	2.3	46.2	21	10

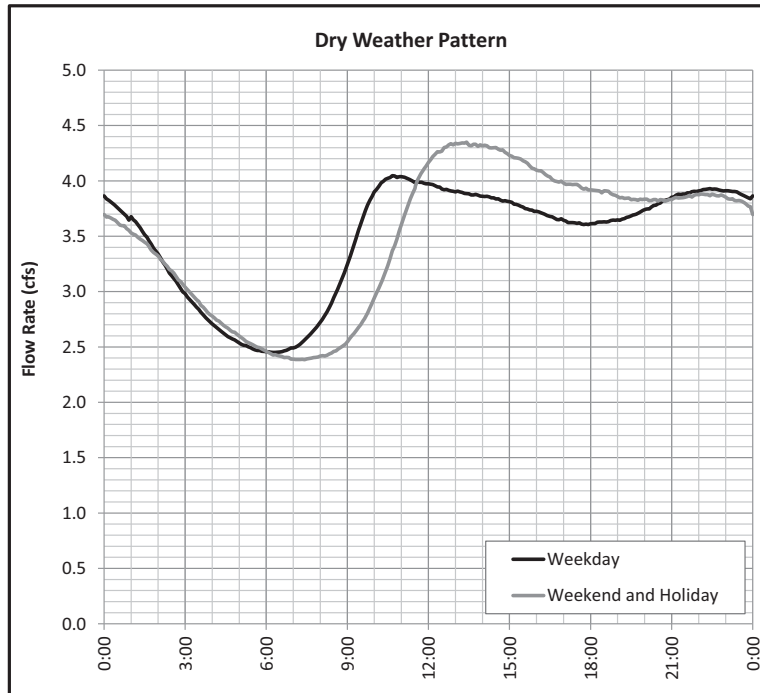
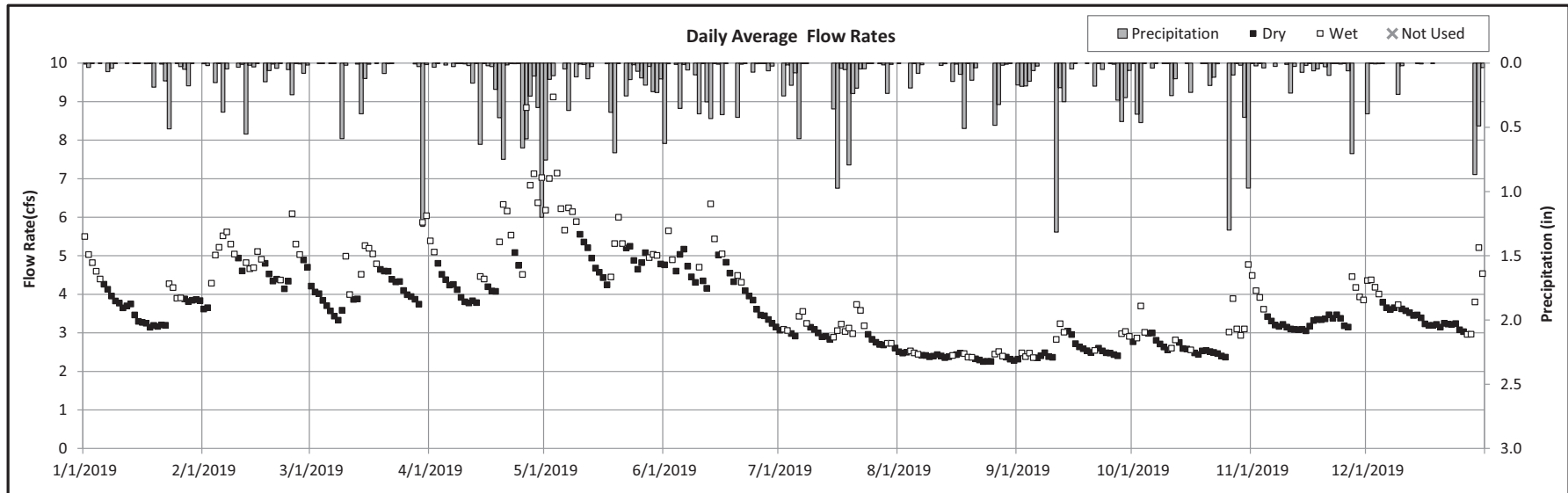
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	5.76	3/30/19 9:50	2.39	3/30/19 11:40
2	1.37	4/18/2019	4/20/2019	6.19	4/20/19 15:50	3.01	4/20/19 16:20
3	1.27	4/25/2019	4/26/2019	8.54	4/26/19 15:05	7.98	4/26/19 10:45
4	1.89	4/30/2019	5/1/2019	10.88	5/1/19 3:35	8.07	5/1/19 3:40
5	1.10	5/18/2019	5/20/2019	7.59	5/19/19 15:10	2.44	5/19/19 16:45
6	0.55	7/6/2019	7/6/2019	5.55	7/6/19 17:25	1.63	7/6/19 18:00
7	1.43	7/15/2019	7/17/2019	3.15	7/16/19 21:35	1.23	7/16/19 22:45
8	1.50	9/11/2019	9/12/2019	2.92	9/11/19 22:25	0.00	-
9	1.39	10/26/2019	10/27/2019	4.93	10/26/19 21:55	1.68	10/26/19 23:20
10	1.40	10/30/2019	11/1/2019	4.50	10/31/19 12:50	1.75	10/31/19 14:30
11	1.32	12/29/2019	12/30/2019	4.00	12/29/19 11:45	1.55	12/30/19 8:20

Figure 13-20
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-29
 Interceptor Manhole ID:

Location: Along Rouge River, Inkster Road south of Rougeway Street
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	3.9	77.5	3.6	72.3	22	9
Feb-19	4.8	86.5	4.4	79.8	12	16
Mar-19	4.3	86.4	4.0	80.1	22	9
Apr-19	5.0	97.6	4.2	81.9	16	14
May-19	5.5	109.4	4.9	98.3	15	16
Jun-19	4.4	86.1	4.2	81.4	22	8
Jul-19	3.0	60.7	2.9	57.9	15	16
Aug-19	2.4	48.0	2.4	47.6	21	10
Sep-19	2.6	50.6	2.5	49.1	19	11
Oct-19	2.8	56.8	2.6	52.2	19	12
Nov-19	3.5	67.1	3.2	62.9	22	8
Dec-19	3.6	71.6	3.4	67.4	21	10

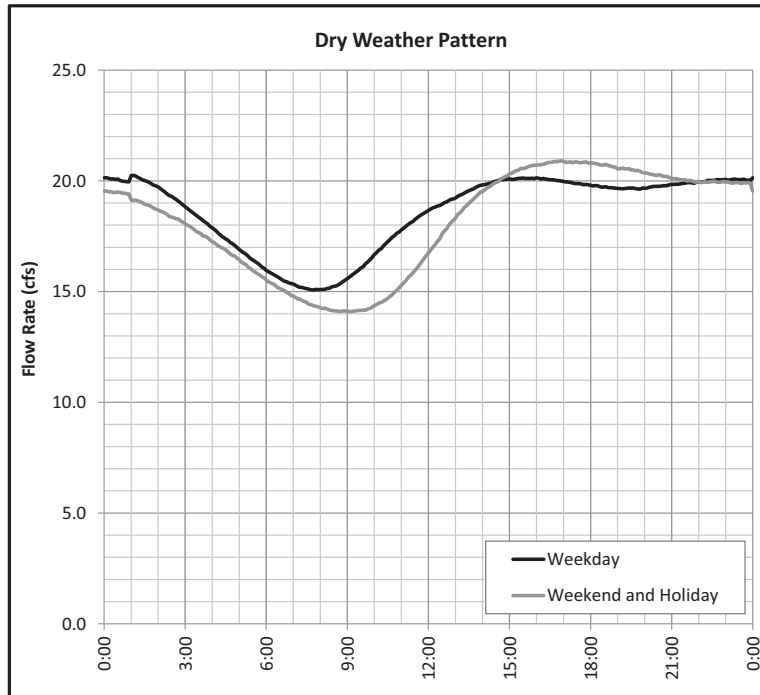
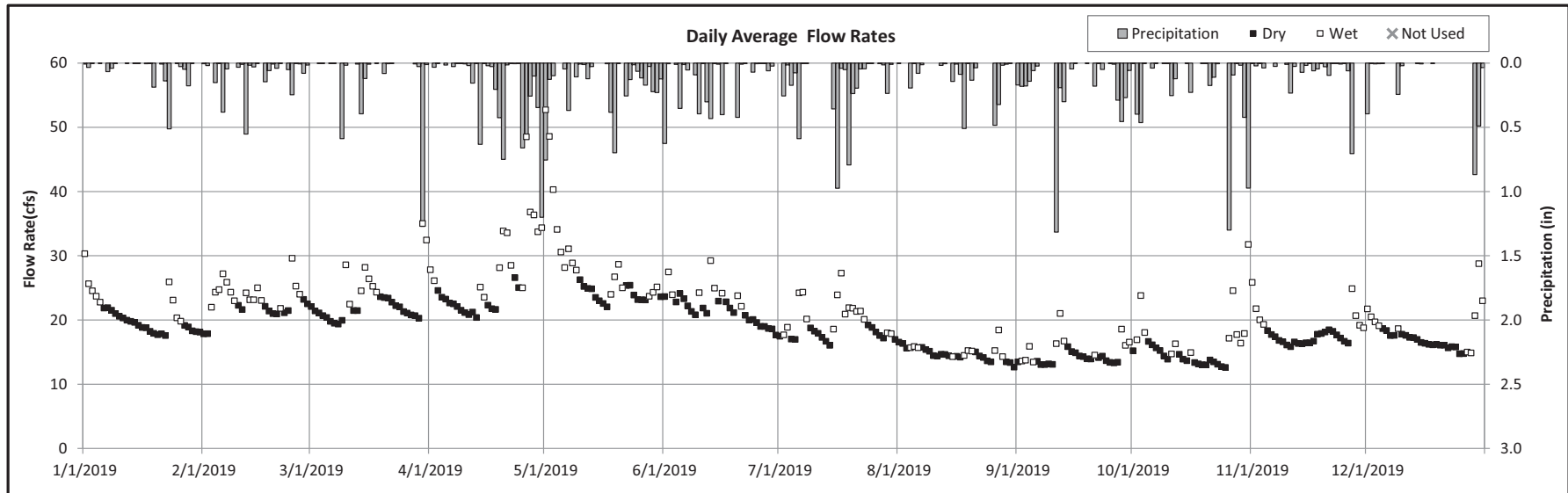
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	8.31	3/30/19 11:35	2.30	3/30/19 12:00
2	1.37	4/18/2019	4/20/2019	9.90	4/20/19 16:20	2.77	4/20/19 17:15
3	1.27	4/25/2019	4/26/2019	11.63	4/26/19 5:35	7.06	4/26/19 10:15
4	1.89	4/30/2019	5/1/2019	12.35	4/30/19 23:15	4.60	5/1/19 5:50
5	1.10	5/18/2019	5/20/2019	8.11	5/19/19 16:05	2.58	5/19/19 17:05
6	0.55	7/6/2019	7/6/2019	5.09	7/6/19 19:20	1.82	7/6/19 18:05
7	1.43	7/15/2019	7/17/2019	5.37	7/16/19 22:15	1.49	7/16/19 22:45
8	1.50	9/11/2019	9/12/2019	5.51	9/11/19 22:20	1.59	9/11/19 22:55
9	1.39	10/26/2019	10/27/2019	7.10	10/26/19 23:00	1.92	10/26/19 23:20
10	1.40	10/30/2019	11/1/2019	7.25	10/31/19 13:50	1.98	10/31/19 14:30
11	1.32	12/29/2019	12/30/2019	6.14	12/30/19 7:50	1.77	12/30/19 8:35

Figure 13-21
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-30
 Interceptor Manhole ID: MR 1-11

Location: Hines Drive and Outer Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	20.7	414.2	19.3	386.9	22	9
Feb-19	23.0	415.9	21.1	381.8	12	16
Mar-19	23.1	462.4	21.3	426.6	22	9
Apr-19	26.7	518.3	22.5	437.2	16	14
May-19	27.7	555.3	24.0	480.5	15	16
Jun-19	22.1	428.2	21.0	407.9	22	8
Jul-19	19.4	389.2	17.6	352.7	15	16
Aug-19	14.8	297.2	14.6	291.7	21	10
Sep-19	14.7	284.3	13.9	269.1	19	11
Oct-19	16.0	321.4	14.1	281.9	19	12
Nov-19	18.2	352.9	17.1	331.1	22	8
Dec-19	17.8	356.0	16.6	333.0	21	10

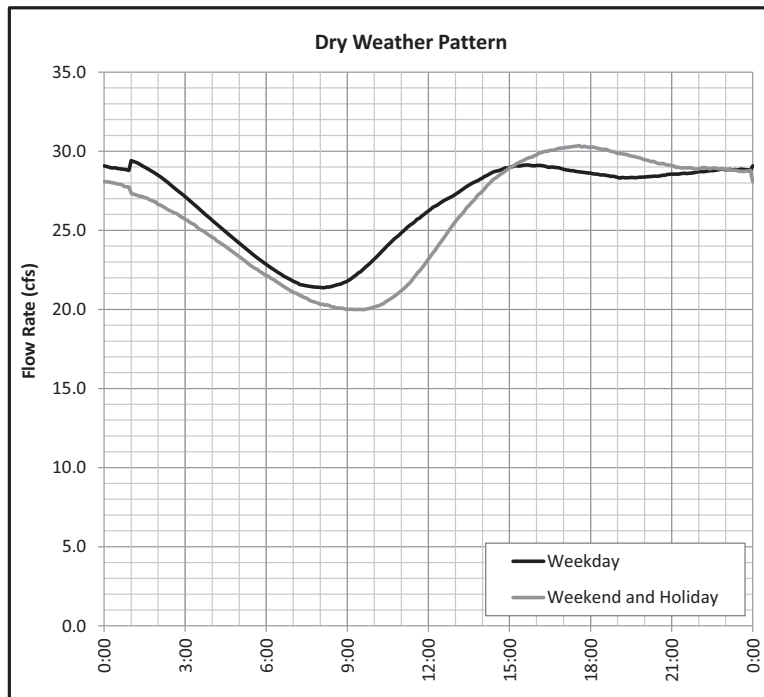
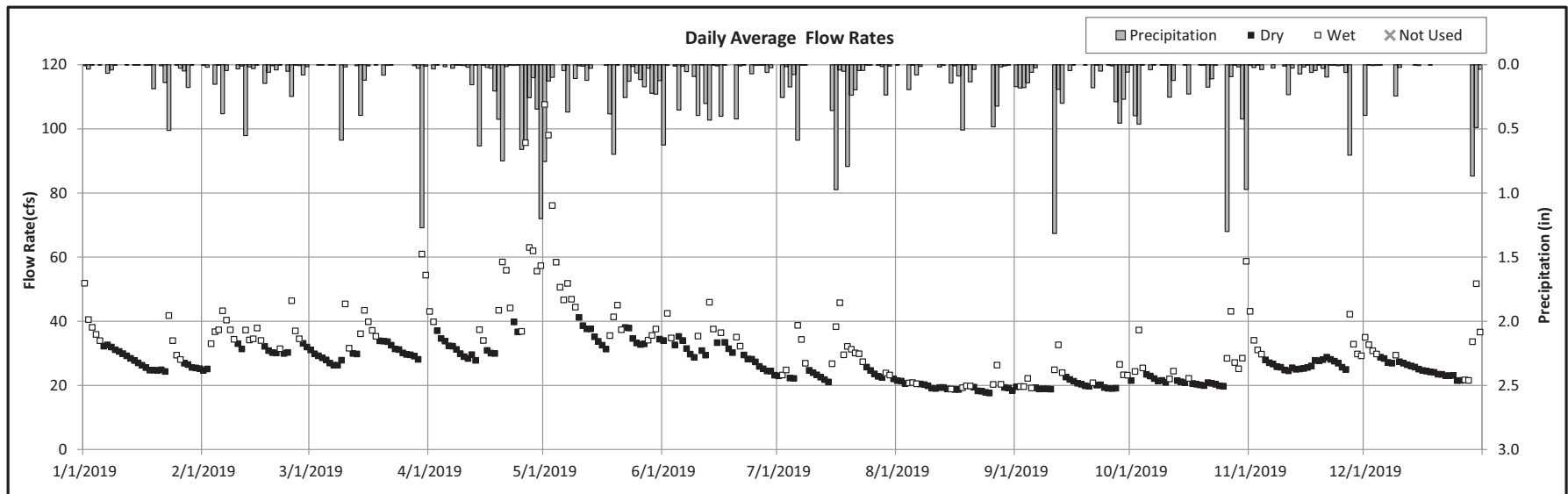
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	43.97	3/30/19 11:30	3.68	3/30/19 12:25
2	1.37	4/18/2019	4/20/2019	48.97	4/20/19 18:15	4.63	4/20/19 18:15
3	1.27	4/25/2019	4/26/2019	52.69	4/26/19 10:20	9.23	4/26/19 7:35
4	1.89	4/30/2019	5/1/2019	55.89	5/1/19 3:25	12.71	5/1/19 3:05
5	1.10	5/18/2019	5/20/2019	38.56	5/19/19 18:00	3.32	5/19/19 18:15
6	0.55	7/6/2019	7/6/2019	47.26	7/6/19 18:15	3.77	7/6/19 18:55
7	1.43	7/15/2019	7/17/2019	44.94	7/16/19 22:05	3.95	7/16/19 23:40
8	1.50	9/11/2019	9/12/2019	31.62	9/11/19 22:50	4.45	9/12/19 1:25
9	1.39	10/26/2019	10/27/2019	42.37	10/26/19 23:55	4.91	10/26/19 23:00
10	1.40	10/30/2019	11/1/2019	45.06	10/31/19 14:30	4.91	10/31/19 13:20
11	1.32	12/29/2019	12/30/2019	35.03	12/30/19 6:55	5.64	12/30/19 10:05

Figure 13-22
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-31
 Interceptor Manhole ID: RVI 6-12

Location: Hines Drive and Outer Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	30.3	606.2	27.5	550.7	22	9
Feb-19	34.0	614.7	30.2	546.4	12	16
Mar-19	33.5	671.8	29.8	597.1	22	9
Apr-19	41.3	800.5	32.0	621.1	16	14
May-19	44.4	890.3	35.4	709.4	15	16
Jun-19	31.6	613.6	29.5	572.8	22	8
Jul-19	26.8	537.0	23.0	461.5	15	16
Aug-19	19.7	394.7	19.3	385.8	21	10
Sep-19	21.1	408.5	19.8	384.3	19	11
Oct-19	24.7	494.5	21.0	420.6	19	12
Nov-19	28.4	550.2	26.3	510.8	22	8
Dec-19	27.3	547.4	25.0	500.3	21	10

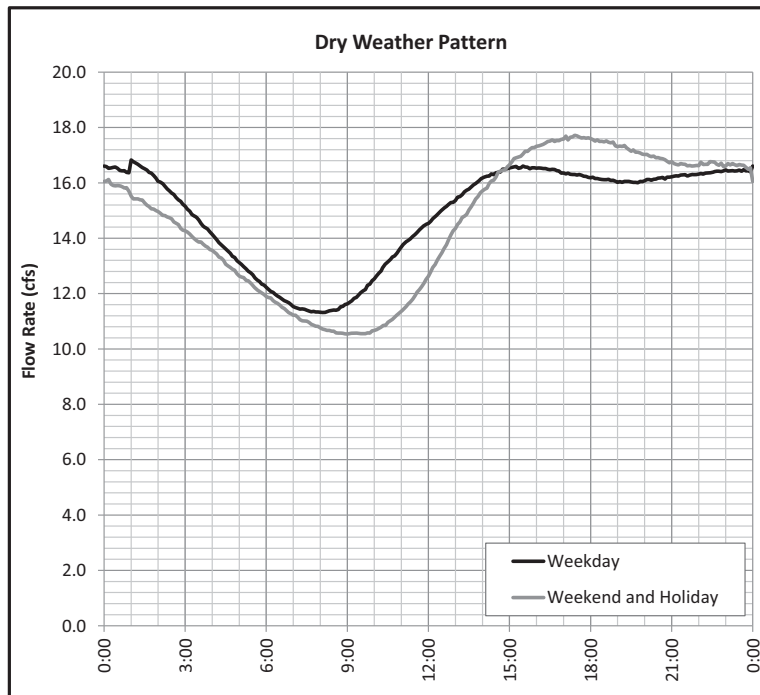
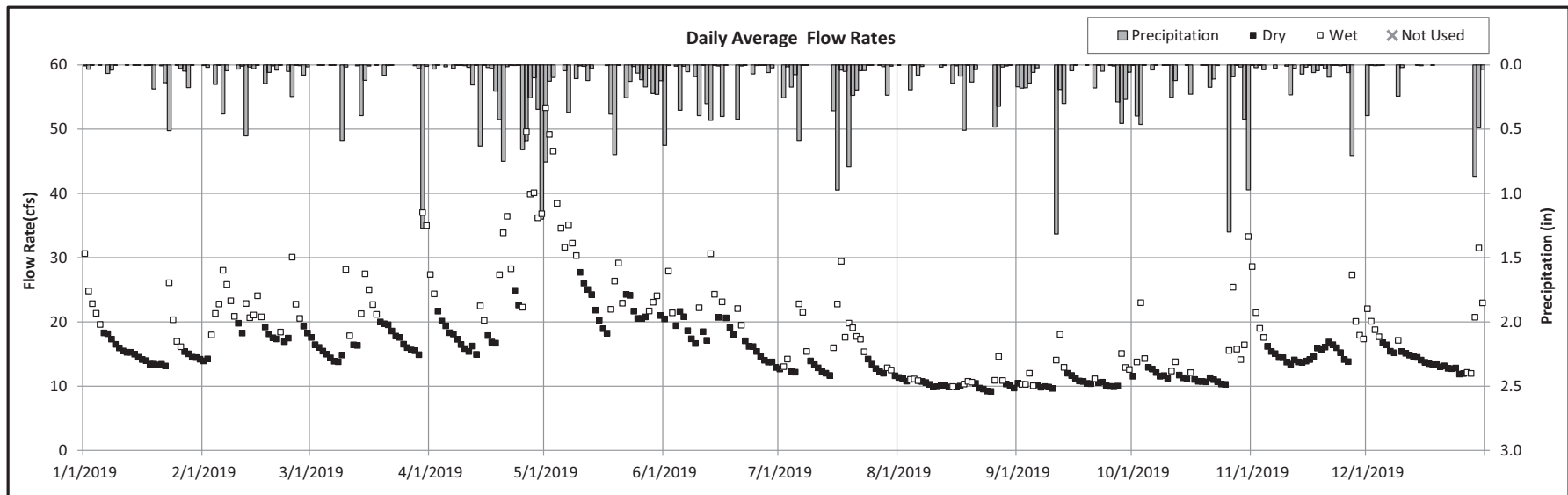
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	83.41	3/30/19 12:00	4.78	3/30/19 12:35
2	1.37	4/18/2019	4/20/2019	94.12	4/20/19 18:35	5.96	4/20/19 18:25
3	1.27	4/25/2019	4/26/2019	107.67	4/26/19 10:25	10.54	4/26/19 7:45
4	1.89	4/30/2019	5/1/2019	113.51	5/1/19 4:20	13.83	5/1/19 2:05
5	1.10	5/18/2019	5/20/2019	67.68	5/19/19 17:55	4.00	5/19/19 18:20
6	0.55	7/6/2019	7/6/2019	90.79	7/6/19 18:25	4.92	7/6/19 19:05
7	1.43	7/15/2019	7/17/2019	91.20	7/16/19 22:10	5.40	7/16/19 23:50
8	1.50	9/11/2019	9/12/2019	56.86	9/12/19 1:20	6.03	9/12/19 1:30
9	1.39	10/26/2019	10/27/2019	87.34	10/26/19 23:55	6.84	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	92.58	10/31/19 15:30	8.63	10/31/19 15:15
11	1.32	12/29/2019	12/30/2019	70.19	12/30/19 11:10	7.20	12/30/19 10:20

Figure 13-23
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-32
 Interceptor Manhole ID: MRIR 2-21

Location: Hines Drive and Outer Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	17.0	341.4	15.0	300.2	22	9
Feb-19	20.4	369.1	17.5	316.9	12	16
Mar-19	19.3	385.9	16.4	329.3	22	9
Apr-19	24.6	476.6	18.3	354.4	16	14
May-19	27.6	552.8	22.3	447.5	15	16
Jun-19	19.1	370.6	17.4	337.0	22	8
Jul-19	15.4	307.8	12.6	252.7	15	16
Aug-19	10.4	208.9	10.1	202.6	21	10
Sep-19	11.2	217.8	10.4	202.0	19	11
Oct-19	13.7	273.9	11.3	225.9	19	12
Nov-19	16.5	320.3	14.8	287.8	22	8
Dec-19	15.8	315.9	14.0	280.4	21	10

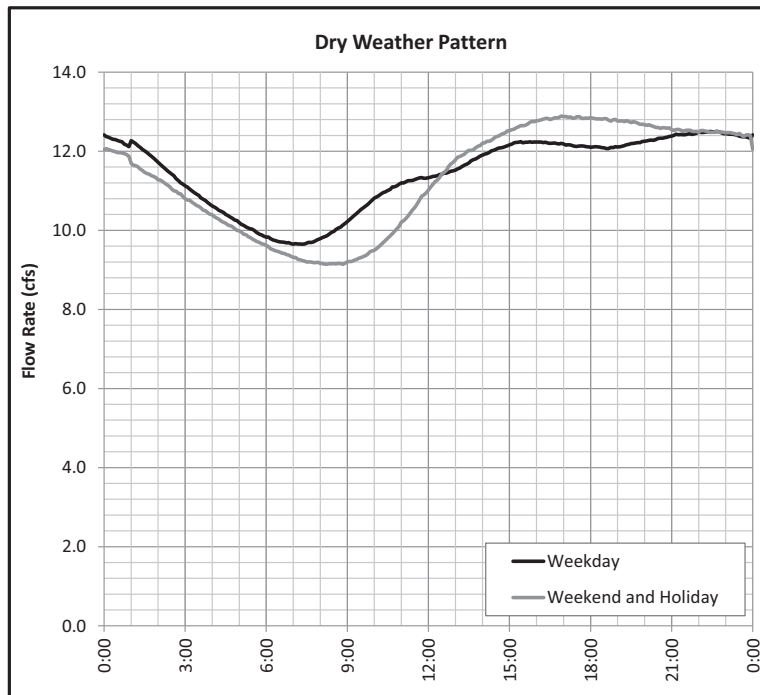
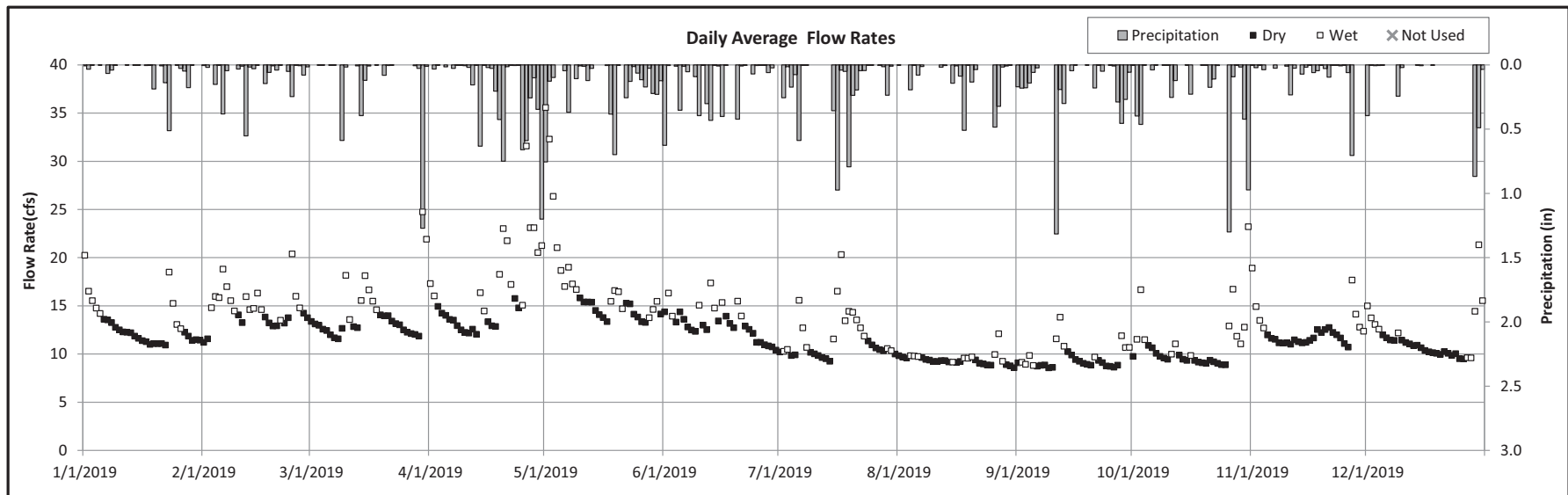
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	48.91	3/30/19 12:45	4.39	3/30/19 12:35
2	1.37	4/18/2019	4/20/2019	52.11	4/20/19 16:15	5.81	4/20/19 18:20
3	1.27	4/25/2019	4/26/2019	56.36	4/26/19 10:45	10.25	4/26/19 7:45
4	1.89	4/30/2019	5/1/2019	58.77	5/1/19 7:05	12.25	5/1/19 23:25
5	1.10	5/18/2019	5/20/2019	44.88	5/19/19 17:50	3.53	5/19/19 18:40
6	0.55	7/6/2019	7/6/2019	53.04	7/6/19 19:00	4.51	7/6/19 19:15
7	1.43	7/15/2019	7/17/2019	51.87	7/16/19 22:05	5.21	7/16/19 23:50
8	1.50	9/11/2019	9/12/2019	33.61	9/11/19 22:40	5.72	9/12/19 1:25
9	1.39	10/26/2019	10/27/2019	42.63	10/26/19 21:30	6.59	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	48.02	10/31/19 12:05	8.22	10/31/19 15:00
11	1.32	12/29/2019	12/30/2019	41.91	12/30/19 6:50	6.87	12/30/19 10:15

Figure 13-24
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-33
Interceptor Manhole ID: MR 2-1

Location: Hines Drive West of Telegraph Road
Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	13.0	260.2	11.9	238.6	22	9
Feb-19	14.7	265.6	13.2	238.0	12	16
Mar-19	14.2	283.6	12.7	255.1	22	9
Apr-19	16.4	318.7	13.4	259.6	16	14
May-19	17.0	341.0	14.5	289.5	15	16
Jun-19	13.2	256.5	12.5	242.2	22	8
Jul-19	11.6	233.4	10.1	202.9	15	16
Aug-19	9.4	188.6	9.2	184.4	21	10
Sep-19	9.6	185.6	9.0	175.0	19	11
Oct-19	11.0	219.4	9.5	190.4	19	12
Nov-19	12.4	240.5	11.6	225.0	22	8
Dec-19	11.6	232.2	10.6	212.2	21	10

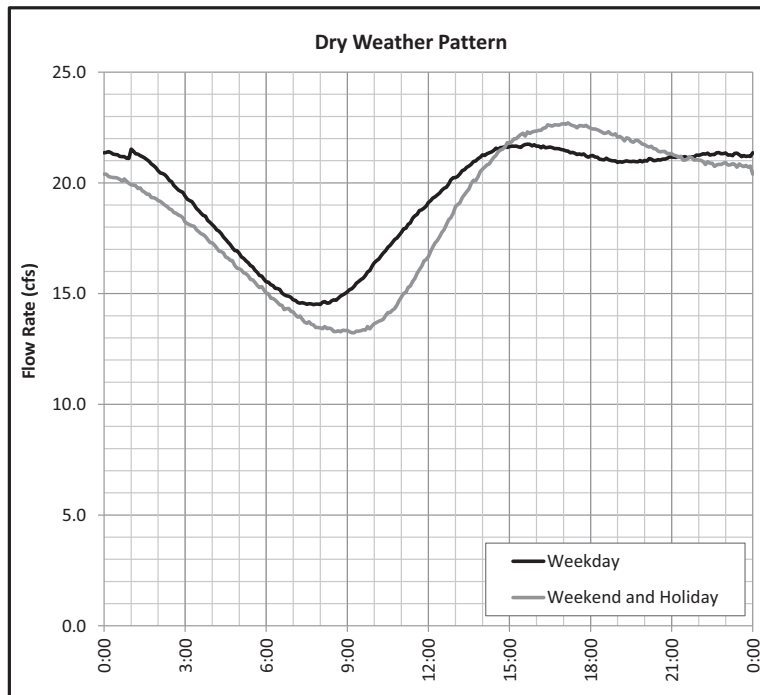
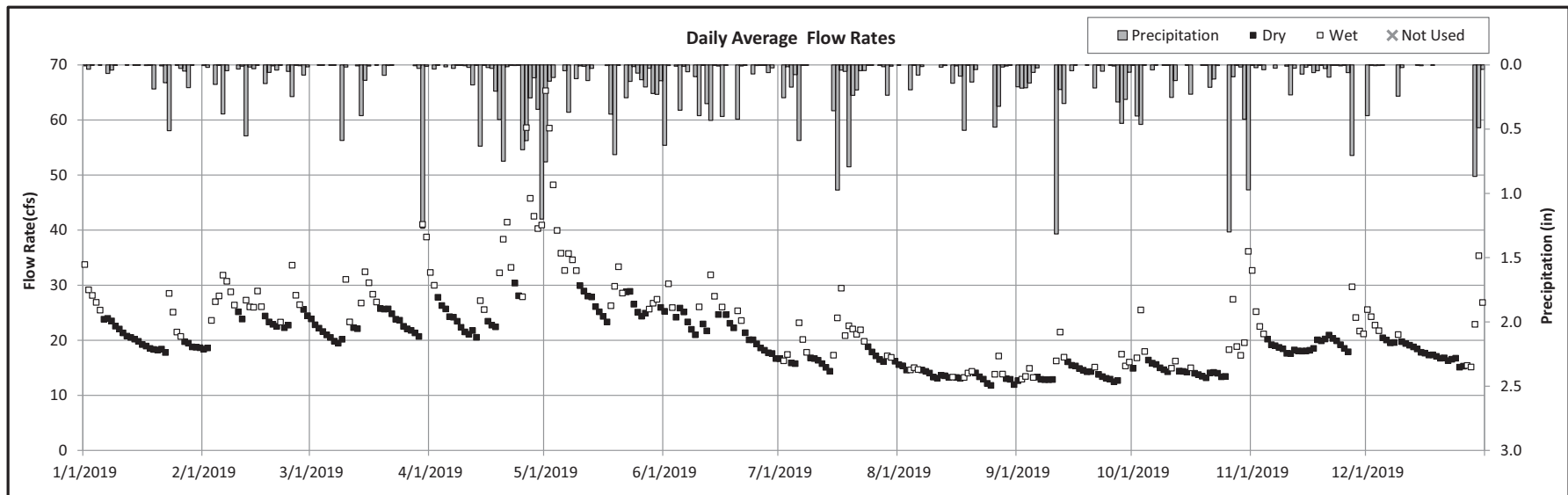
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	32.06	3/30/19 10:05	2.65	3/30/19 11:00
2	1.37	4/18/2019	4/20/2019	34.70	4/20/19 15:35	2.99	4/20/19 18:20
3	1.27	4/25/2019	4/26/2019	33.84	4/26/19 18:05	7.67	4/26/19 7:50
4	1.89	4/30/2019	5/1/2019	37.67	5/1/19 4:05	≥8.20	5/1/19 5:05
5	1.10	5/18/2019	5/20/2019	24.45	5/19/19 17:30	2.22	5/19/19 18:00
6	0.55	7/6/2019	7/6/2019	33.81	7/6/19 17:25	2.85	7/6/19 18:15
7	1.43	7/15/2019	7/17/2019	37.11	7/16/19 20:55	2.83	7/16/19 21:50
8	1.50	9/11/2019	9/12/2019	24.46	9/11/19 22:55	2.06	9/11/19 23:25
9	1.39	10/26/2019	10/27/2019	32.60	10/26/19 22:00	2.81	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	33.46	10/31/19 12:40	4.70	10/31/19 15:25
11	1.32	12/29/2019	12/30/2019	29.37	12/30/19 7:05	2.48	12/30/19 10:15

Figure 13-25
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-34
 Interceptor Manhole ID: RVI 6-28

Location: Hines Drive West of Telegraph Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	22.0	440.6	20.1	403.2	22	9
Feb-19	25.6	462.7	22.8	413.2	12	16
Mar-19	24.9	498.9	22.4	449.0	22	9
Apr-19	30.1	582.7	24.1	467.3	16	14
May-19	31.6	632.6	26.5	531.4	15	16
Jun-19	23.1	447.2	21.6	418.7	22	8
Jul-19	18.5	370.4	16.4	328.1	15	16
Aug-19	13.8	276.2	13.5	270.5	21	10
Sep-19	14.4	279.9	13.7	265.6	19	11
Oct-19	16.7	333.7	14.3	287.5	19	12
Nov-19	20.5	397.0	18.9	366.8	22	8
Dec-19	19.6	391.7	17.9	358.1	21	10

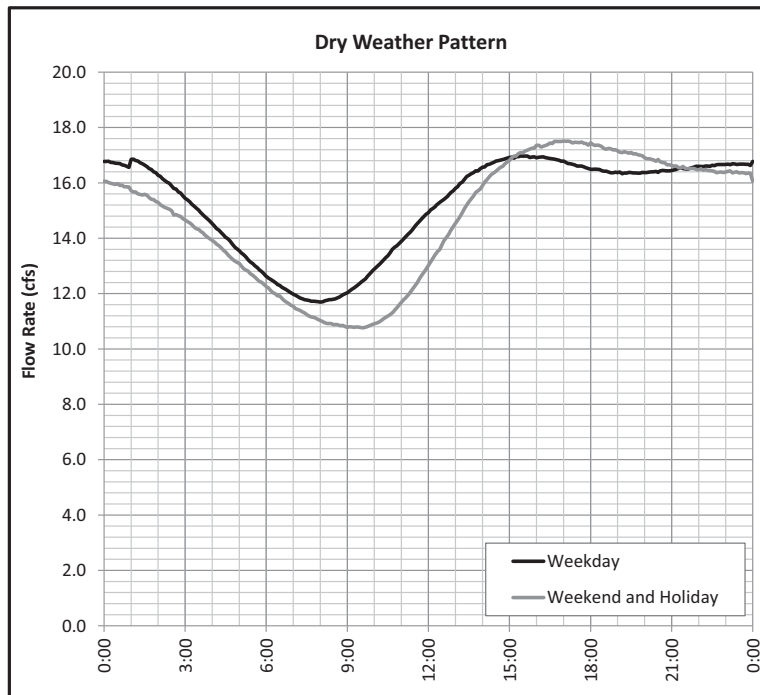
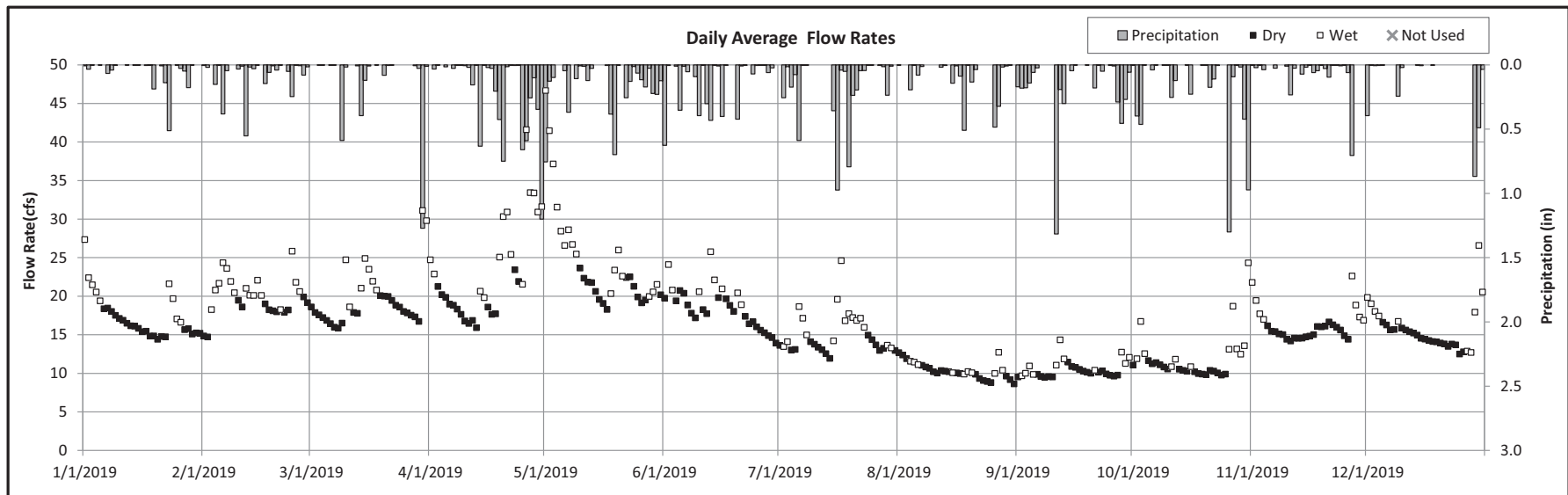
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	54.00	3/30/19 15:20	4.27	3/30/19 11:50
2	1.37	4/18/2019	4/20/2019	54.91	4/20/19 23:20	4.81	4/20/19 18:45
3	1.27	4/25/2019	4/26/2019	67.23	4/26/19 11:55	9.41	4/26/19 7:45
4	1.89	4/30/2019	5/1/2019	74.10	5/1/19 2:00	12.36	5/1/19 4:45
5	1.10	5/18/2019	5/20/2019	46.76	5/19/19 17:55	3.84	5/19/19 18:10
6	0.55	7/6/2019	7/6/2019	50.85	7/6/19 17:35	4.50	7/6/19 18:40
7	1.43	7/15/2019	7/17/2019	51.72	7/16/19 21:50	4.53	7/16/19 22:15
8	1.50	9/11/2019	9/12/2019	33.49	9/11/19 23:30	3.46	9/12/19 1:00
9	1.39	10/26/2019	10/27/2019	48.63	10/26/19 23:40	4.81	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	53.51	10/31/19 16:00	6.89	10/31/19 15:15
11	1.32	12/29/2019	12/30/2019	44.26	12/30/19 7:35	4.49	12/30/19 10:15

Figure 13-26
Rouge Valley Sewage Disposal System
Meter Report

Meter: P-35
 Interceptor Manhole ID: MRIR 3-1

Location: Hines Drive West of Telegraph Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	17.4	347.7	16.0	320.5	22	9
Feb-19	19.9	359.8	18.0	325.7	12	16
Mar-19	19.6	393.5	17.8	357.6	22	9
Apr-19	23.1	447.4	18.8	363.8	16	14
May-19	24.5	490.3	20.8	416.5	15	16
Jun-19	18.7	362.2	17.6	341.0	22	8
Jul-19	15.0	300.9	13.4	267.7	15	16
Aug-19	10.4	207.5	10.2	203.8	21	10
Sep-19	10.5	203.5	10.0	194.7	19	11
Oct-19	11.9	238.4	10.5	209.8	19	12
Nov-19	16.2	314.8	15.3	295.9	22	8
Dec-19	15.7	315.2	14.6	292.2	21	10

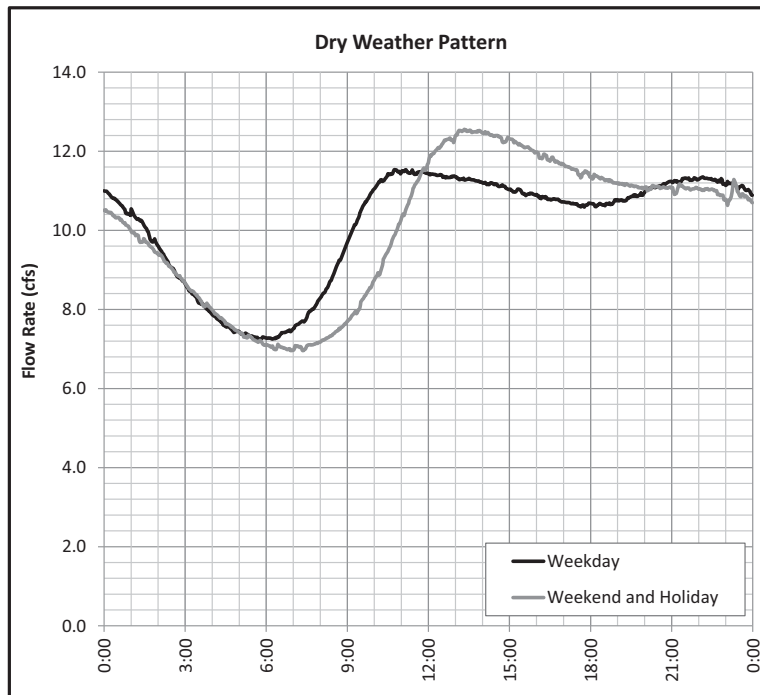
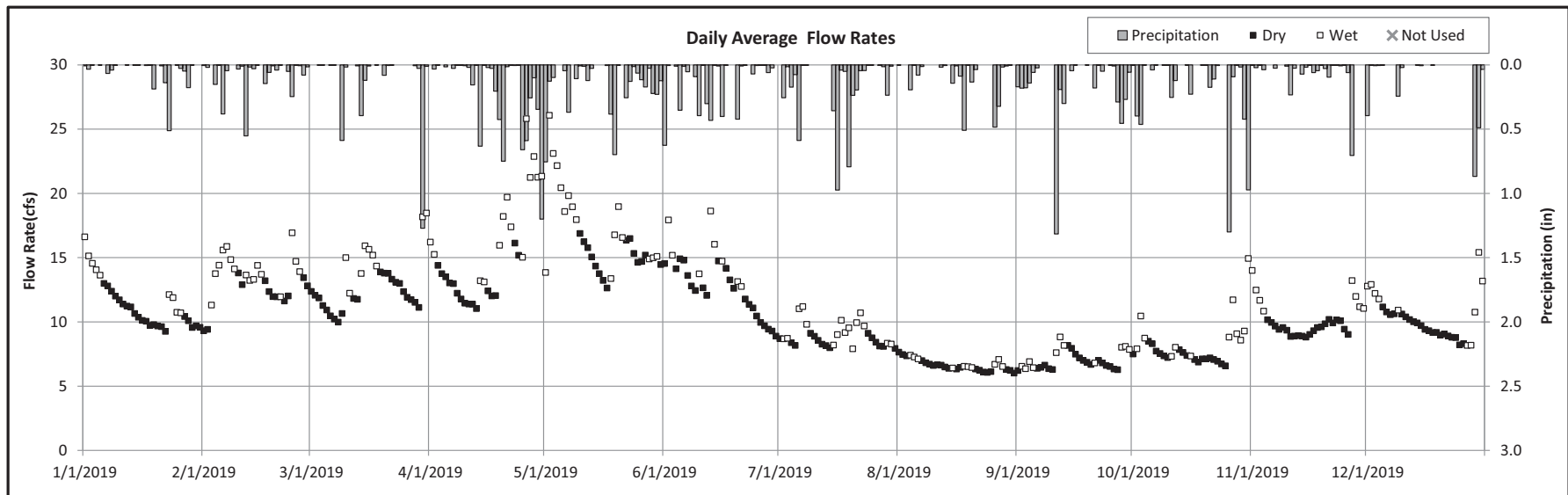
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	40.60	3/30/19 13:40	3.77	3/30/19 12:00
2	1.37	4/18/2019	4/20/2019	46.02	4/20/19 16:55	4.21	4/20/19 17:55
3	1.27	4/25/2019	4/26/2019	44.31	4/26/19 9:05	8.85	4/26/19 7:55
4	1.89	4/30/2019	5/1/2019	49.78	5/1/19 5:45	≥12.74	5/1/19 2:30
5	1.10	5/18/2019	5/20/2019	36.05	5/19/19 17:40	3.46	5/19/19 17:55
6	0.55	7/6/2019	7/6/2019	39.14	7/6/19 18:15	3.98	7/6/19 18:45
7	1.43	7/15/2019	7/17/2019	43.23	7/16/19 21:25	3.82	7/16/19 22:30
8	1.50	9/11/2019	9/12/2019	19.88	9/12/19 0:05	2.99	9/12/19 0:15
9	1.39	10/26/2019	10/27/2019	32.83	10/26/19 23:35	3.99	10/26/19 23:55
10	1.40	10/30/2019	11/1/2019	35.29	10/31/19 12:40	4.38	10/31/19 13:45
11	1.32	12/29/2019	12/30/2019	33.02	12/30/19 8:05	3.57	12/30/19 10:05

Figure 13-27
Rouge Valley Sewage Disposal System
Meter Report

Meter: LV-Basin
 Interceptor Manhole ID: RVI 12-12

Location: Inkster Road and Oakley Street
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	11.4	228.5	10.6	213.2	22	9
Feb-19	13.2	239.3	12.1	218.2	12	16
Mar-19	12.9	259.4	11.9	239.2	22	9
Apr-19	15.4	298.0	12.8	247.9	16	14
May-19	16.7	333.8	15.0	300.5	15	16
Jun-19	13.0	252.4	12.2	236.6	22	8
Jul-19	8.9	178.8	8.4	169.0	15	16
Aug-19	6.6	132.9	6.6	131.4	21	10
Sep-19	7.0	136.1	6.8	131.7	19	11
Oct-19	8.1	162.6	7.3	147.1	19	12
Nov-19	10.2	197.0	9.5	183.8	22	8
Dec-19	10.3	205.6	9.6	192.6	21	10

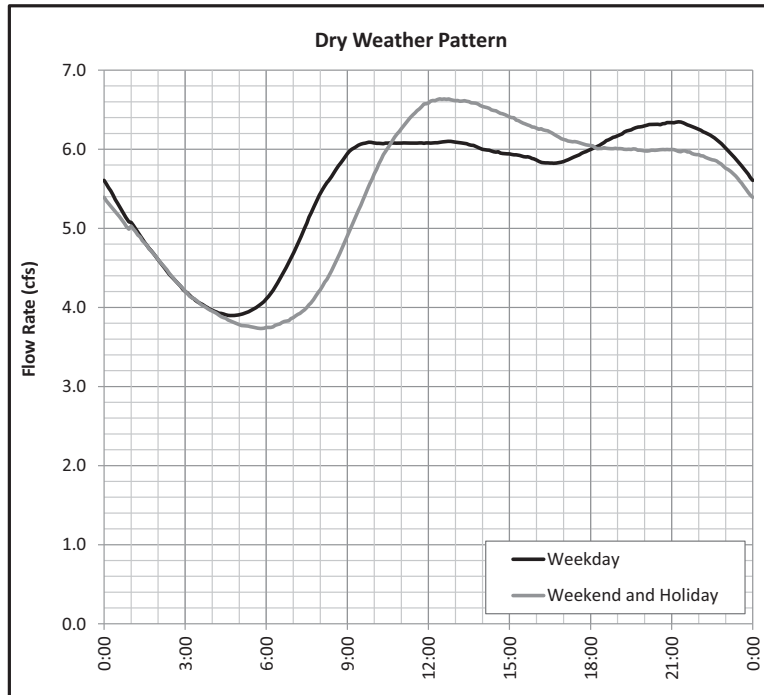
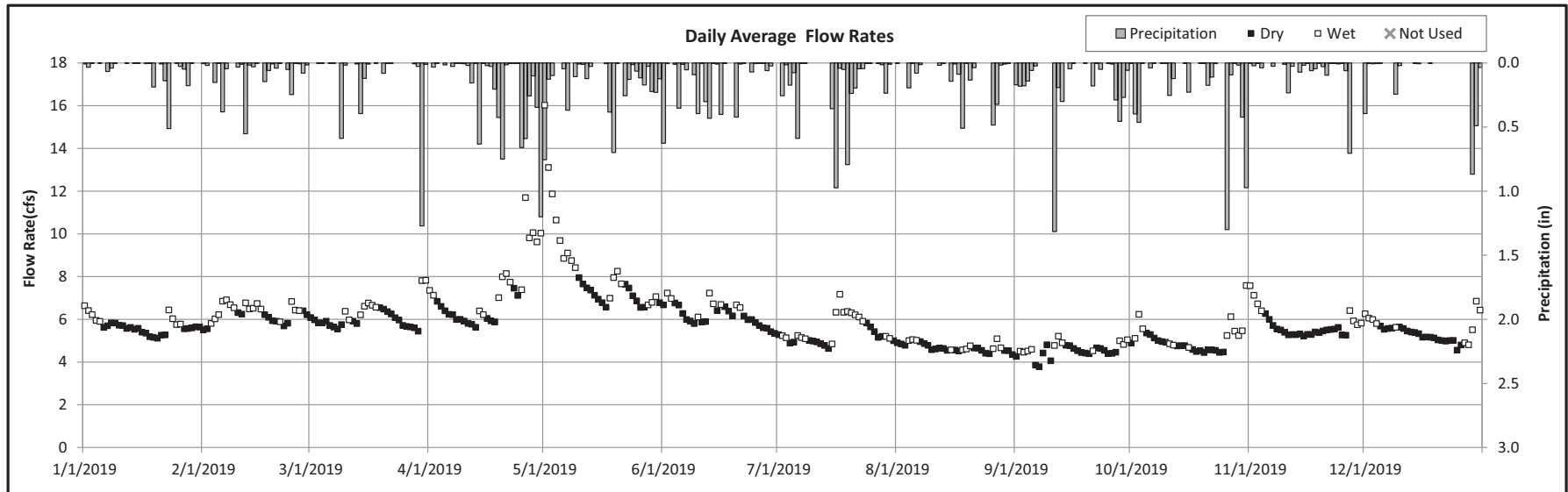
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	24.60	3/30/19 11:40	5.31	3/30/19 11:35
2	1.37	4/18/2019	4/20/2019	24.64	4/20/19 18:45	5.86	4/20/19 21:05
3	1.27	4/25/2019	4/26/2019	30.06	4/26/19 15:45	10.87	4/26/19 10:15
4	1.89	4/30/2019	5/1/2019	29.43	5/2/19 16:25	13.73	5/1/19 13:25
5	1.10	5/18/2019	5/20/2019	25.15	5/19/19 17:45	5.65	5/19/19 19:25
6	0.55	7/6/2019	7/6/2019	20.32	7/6/19 17:40	4.29	7/6/19 18:05
7	1.43	7/15/2019	7/17/2019	14.62	7/16/19 22:10	3.17	7/16/19 22:40
8	1.50	9/11/2019	9/12/2019	14.38	9/11/19 22:50	3.17	9/11/19 23:35
9	1.39	10/26/2019	10/27/2019	20.34	10/26/19 22:40	4.00	10/26/19 23:20
10	1.40	10/30/2019	11/1/2019	21.74	10/31/19 13:35	4.37	10/31/19 14:35
11	1.32	12/29/2019	12/30/2019	18.32	12/30/19 8:10	3.71	12/30/19 8:50

Figure 13-28
Rouge Valley Sewage Disposal System
Meter Report

Meter: WE-14
 Interceptor Manhole ID: --

Location: Hines Drive West of Merriman
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	5.7	114.0	5.5	110.5	22	9
Feb-19	6.3	113.3	6.0	108.3	12	16
Mar-19	6.1	123.1	5.9	118.1	22	9
Apr-19	7.2	139.8	6.2	120.9	16	14
May-19	8.2	164.5	7.1	142.6	15	16
Jun-19	6.2	120.9	6.0	117.1	22	8
Jul-19	5.4	108.7	5.1	102.1	15	16
Aug-19	4.7	93.8	4.6	92.8	21	10
Sep-19	4.5	88.2	4.4	85.9	19	11
Oct-19	5.1	101.3	4.8	95.3	19	12
Nov-19	5.7	111.1	5.5	105.9	22	8
Dec-19	5.4	108.7	5.2	105.0	21	10

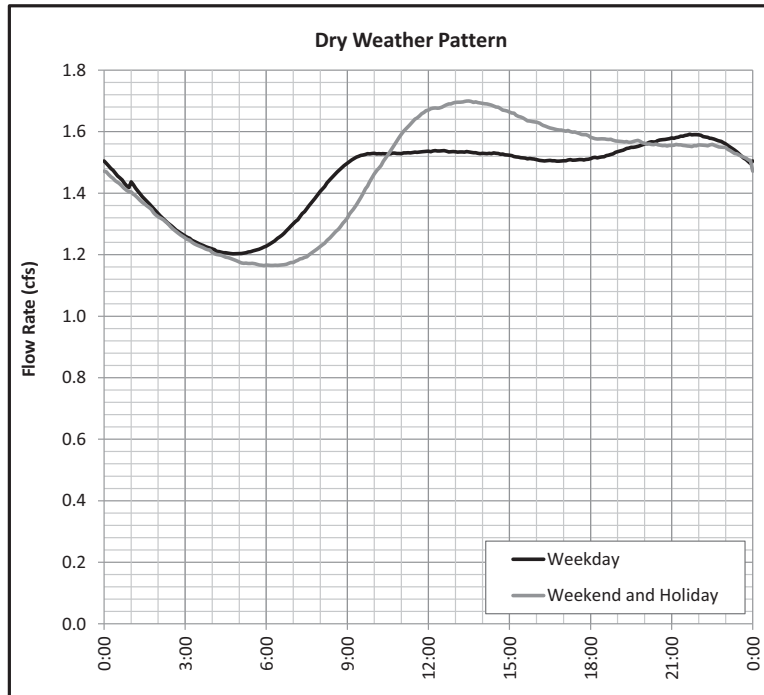
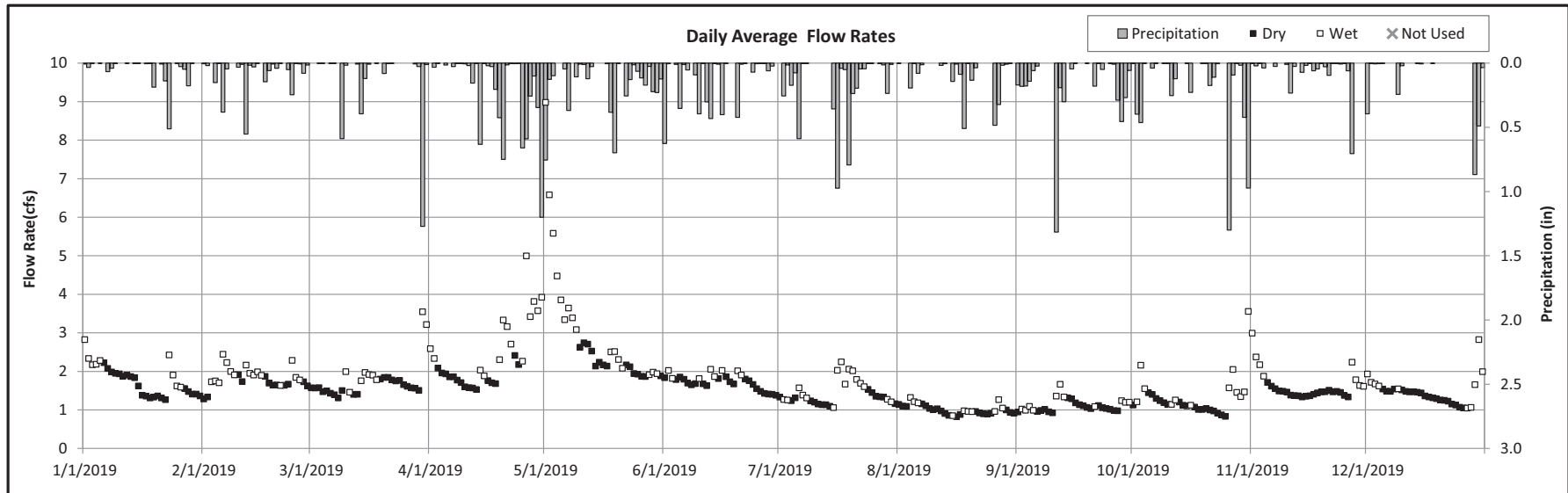
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	10.10	3/30/19 10:15	1.84	3/30/19 10:55
2	1.37	4/18/2019	4/20/2019	11.23	4/20/19 13:55	1.99	4/20/19 14:30
3	1.27	4/25/2019	4/26/2019	13.40	4/26/19 6:10	2.35	4/26/19 8:35
4	1.89	4/30/2019	5/1/2019	17.10	5/1/19 6:50	8.87	5/1/19 6:00
5	1.10	5/18/2019	5/20/2019	11.11	5/19/19 14:50	1.95	5/19/19 15:20
6	0.55	7/6/2019	7/6/2019	7.39	7/6/19 15:10	1.53	7/6/19 15:30
7	1.43	7/15/2019	7/17/2019	13.97	7/16/19 19:45	2.36	7/16/19 20:20
8	1.50	9/11/2019	9/12/2019	7.53	9/11/19 21:20	1.51	9/11/19 22:00
9	1.39	10/26/2019	10/27/2019	9.71	10/26/19 21:30	1.81	10/26/19 22:10
10	1.40	10/30/2019	11/1/2019	9.99	10/31/19 12:10	1.85	10/31/19 13:15
11	1.32	12/29/2019	12/30/2019	8.03	12/30/19 12:55	1.57	12/30/19 13:55

Figure 13-29
Rouge Valley Sewage Disposal System
Meter Report

Meter: WE-28
 Interceptor Manhole ID: --

Location: Merriman Road and Lower Rouge River
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	1.8	35.6	1.6	32.5	22	9
Feb-19	1.8	32.9	1.6	29.8	12	16
Mar-19	1.7	35.1	1.6	31.6	22	9
Apr-19	2.4	46.2	1.8	35.3	16	14
May-19	2.9	58.9	2.2	44.1	15	16
Jun-19	1.7	33.6	1.7	32.1	22	8
Jul-19	1.4	28.7	1.3	25.3	15	16
Aug-19	1.0	20.1	1.0	19.5	21	10
Sep-19	1.1	21.4	1.1	20.4	19	11
Oct-19	1.3	26.3	1.1	22.1	19	12
Nov-19	1.6	31.3	1.4	28.0	22	8
Dec-19	1.5	29.3	1.3	26.9	21	10

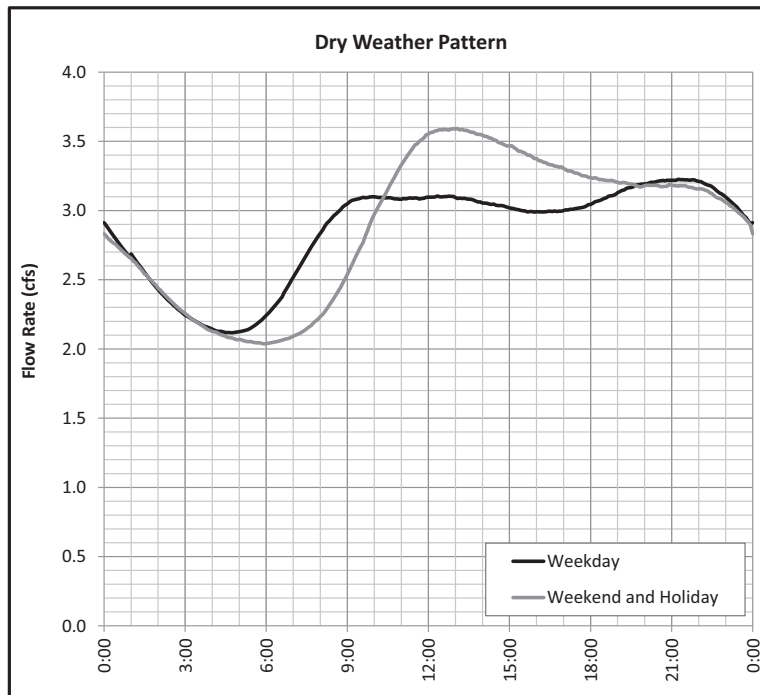
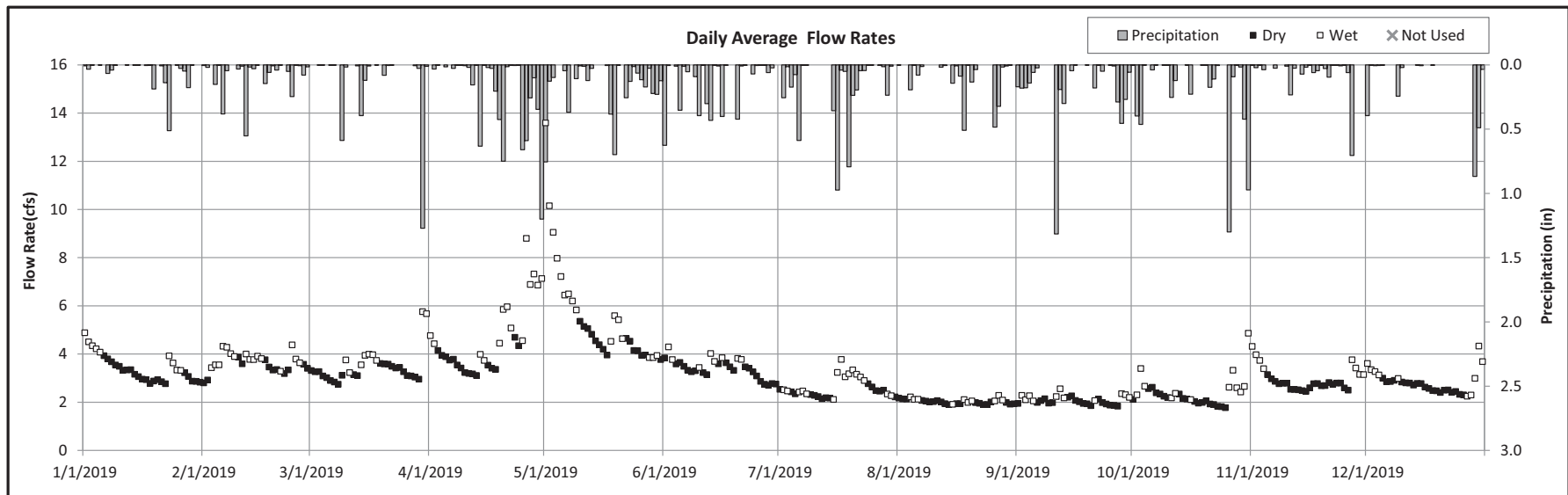
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	5.15	3/30/19 9:10	1.03	3/30/19 9:20
2	1.37	4/18/2019	4/20/2019	6.45	4/20/19 15:15	1.19	4/20/19 15:40
3	1.27	4/25/2019	4/26/2019	6.90	4/26/19 5:10	1.22	4/26/19 6:00
4	1.89	4/30/2019	5/1/2019	10.82	5/1/19 4:05	1.70	5/1/19 3:35
5	1.10	5/18/2019	5/20/2019	3.78	5/18/19 7:45	0.87	5/18/19 8:10
6	0.55	7/6/2019	7/6/2019	3.36	7/6/19 14:45	0.78	7/6/19 15:10
7	1.43	7/15/2019	7/17/2019	7.87	7/16/19 20:00	1.35	7/16/19 20:25
8	1.50	9/11/2019	9/12/2019	4.28	9/11/19 22:10	0.92	9/11/19 22:30
9	1.39	10/26/2019	10/27/2019	5.94	10/26/19 21:25	1.15	10/26/19 21:50
10	1.40	10/30/2019	11/1/2019	6.37	10/31/19 12:40	1.16	10/31/19 13:05
11	1.32	12/29/2019	12/30/2019	4.24	12/30/19 6:20	0.89	12/30/19 6:30

Figure 13-30
Rouge Valley Sewage Disposal System
Meter Report

Meter: WE-25
 Interceptor Manhole ID: --

Location: Thinbark Road at Lower Rouge River
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	3.4	68.3	3.2	63.3	22	9
Feb-19	3.6	65.8	3.4	61.1	12	16
Mar-19	3.5	69.7	3.2	64.0	22	9
Apr-19	4.6	89.3	3.7	70.8	16	14
May-19	5.5	110.7	4.4	88.9	15	16
Jun-19	3.4	66.2	3.3	63.3	22	8
Jul-19	2.6	51.8	2.4	47.6	15	16
Aug-19	2.0	40.6	2.0	40.0	21	10
Sep-19	2.1	40.4	2.0	38.7	19	11
Oct-19	2.4	47.6	2.1	42.5	19	12
Nov-19	2.9	57.1	2.7	52.4	22	8
Dec-19	2.8	56.3	2.6	52.7	21	10

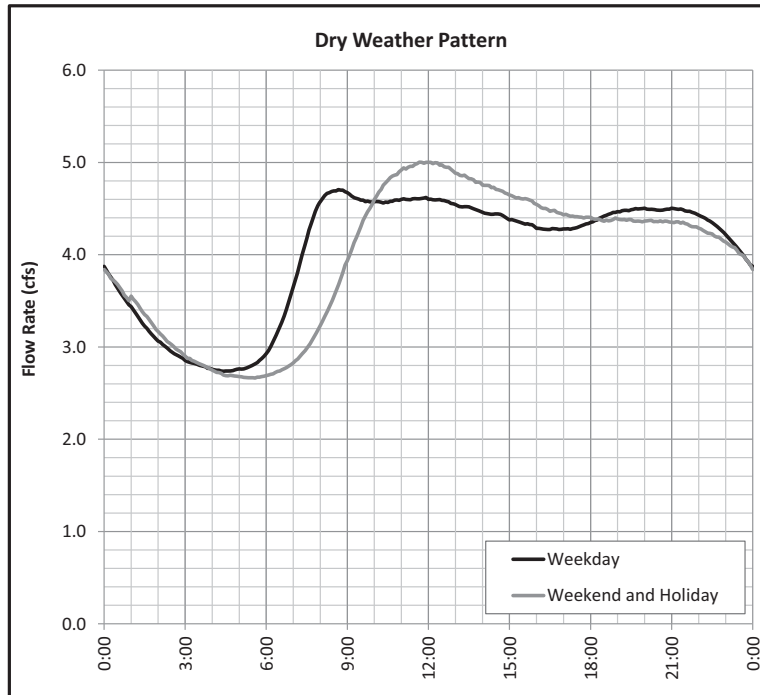
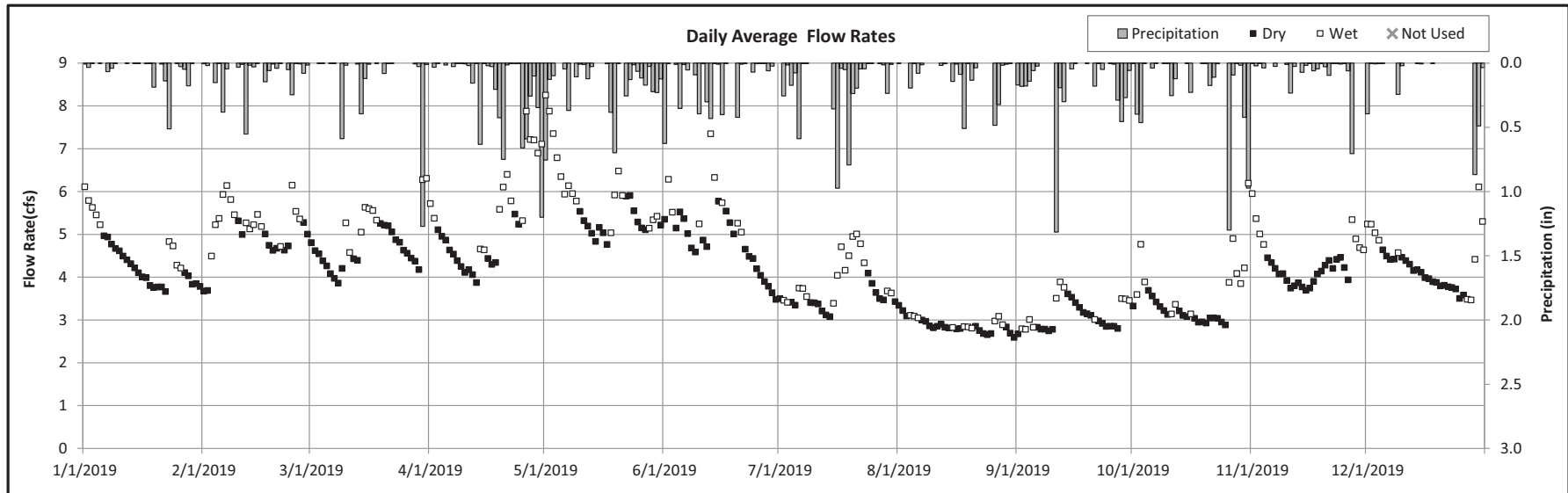
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	7.96	3/30/19 10:00	1.42	3/30/19 10:00
2	1.37	4/18/2019	4/20/2019	9.02	4/20/19 14:55	1.56	4/20/19 14:55
3	1.27	4/25/2019	4/26/2019	10.48	4/26/19 6:30	2.02	4/26/19 6:55
4	1.89	4/30/2019	5/1/2019	14.72	5/1/19 12:30	6.44	5/1/19 6:25
5	1.10	5/18/2019	5/20/2019	8.97	5/19/19 16:25	1.54	5/19/19 16:30
6	0.55	7/6/2019	7/6/2019	3.13	7/6/19 12:45	0.86	7/7/19 13:55
7	1.43	7/15/2019	7/17/2019	8.88	7/16/19 20:45	1.62	7/16/19 20:55
8	1.50	9/11/2019	9/12/2019	5.06	9/11/19 22:35	1.08	9/11/19 23:10
9	1.39	10/26/2019	10/27/2019	6.96	10/26/19 22:05	1.30	10/26/19 22:40
10	1.40	10/30/2019	11/1/2019	7.68	10/31/19 12:35	1.37	10/31/19 13:10
11	1.32	12/29/2019	12/30/2019	5.40	12/30/19 6:50	1.11	12/30/19 7:50

Figure 13-31
Rouge Valley Sewage Disposal System
Meter Report

Meter: LV-4
 Interceptor Manhole ID: --

Location: Alpine Road and 5 Mile Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	4.5	89.2	4.2	83.6	22	9
Feb-19	5.1	92.3	4.7	85.0	12	16
Mar-19	4.8	96.7	4.6	91.2	22	9
Apr-19	5.3	102.5	4.5	88.1	16	14
May-19	5.8	115.4	5.3	105.4	15	16
Jun-19	5.0	97.1	4.7	91.1	22	8
Jul-19	3.8	75.5	3.5	69.2	15	16
Aug-19	2.9	57.8	2.9	57.2	21	10
Sep-19	3.1	60.2	3.0	58.2	19	11
Oct-19	3.5	70.3	3.1	63.1	19	12
Nov-19	4.3	84.2	4.1	79.0	22	8
Dec-19	4.3	85.9	4.1	81.3	21	10

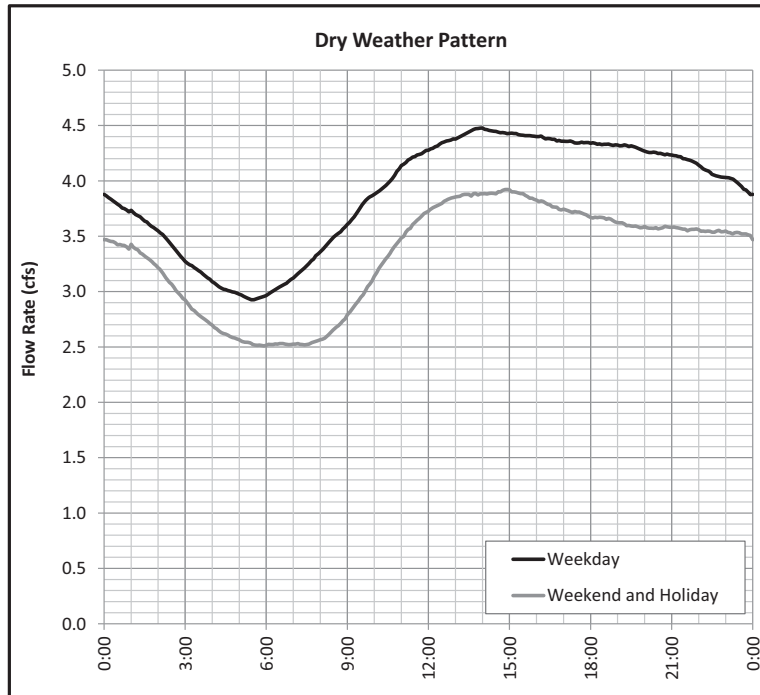
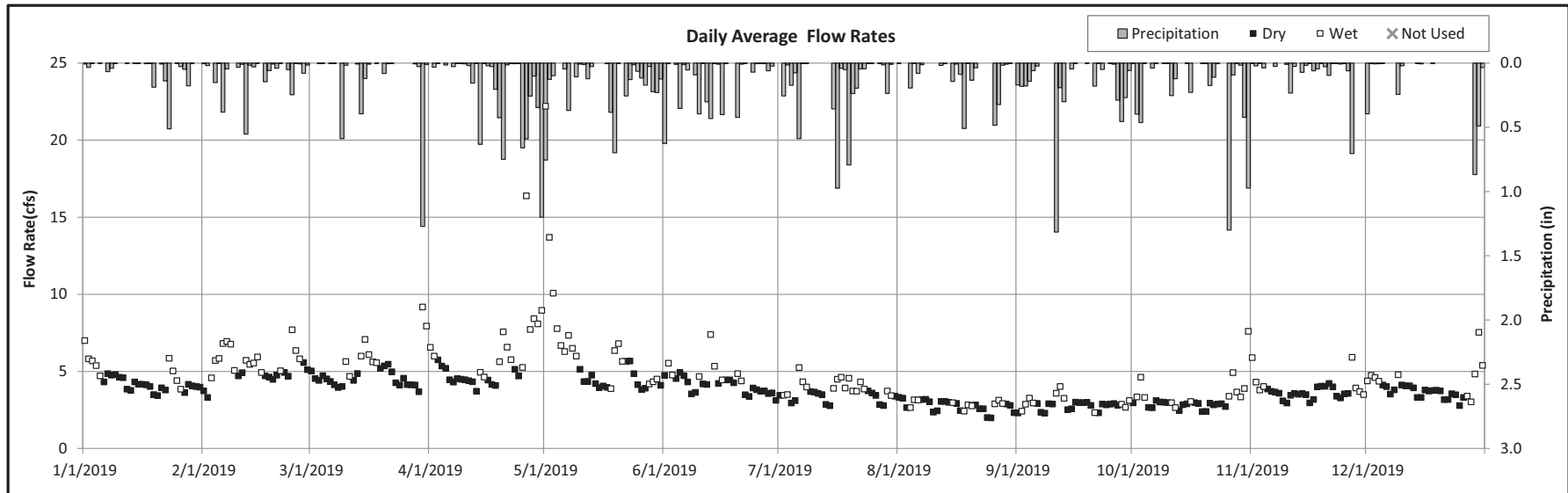
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	7.73	3/30/19 9:30	1.92	3/30/19 9:55
2	1.37	4/18/2019	4/20/2019	7.95	4/20/19 13:50	2.16	4/20/19 14:50
3	1.27	4/25/2019	4/26/2019	8.39	4/26/19 9:45	2.40	4/26/19 4:50
4	1.89	4/30/2019	5/1/2019	8.92	5/1/19 5:30	2.61	5/1/19 3:00
5	1.10	5/18/2019	5/20/2019	8.40	5/19/19 14:15	1.98	5/19/19 14:40
6	0.55	7/6/2019	7/6/2019	5.30	7/6/19 19:00	1.46	7/6/19 19:30
7	1.43	7/15/2019	7/17/2019	7.66	7/19/19 16:35	1.82	7/19/19 16:55
8	1.50	9/11/2019	9/12/2019	6.22	9/13/19 17:50	1.61	9/11/19 22:20
9	1.39	10/26/2019	10/27/2019	8.56	10/26/19 21:05	1.96	10/26/19 21:35
10	1.40	10/30/2019	11/1/2019	8.74	10/31/19 12:05	1.97	10/31/19 12:30
11	1.32	12/29/2019	12/30/2019	7.12	12/30/19 7:25	1.73	12/30/19 7:35

Figure 13-32
Rouge Valley Sewage Disposal System
Meter Report

Meter: LV-11
 Interceptor Manhole ID: --

Location: Lyndon Road and Inkster Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	4.5	89.3	4.1	82.5	22	9
Feb-19	5.3	96.6	4.6	83.6	12	16
Mar-19	5.0	101.1	4.5	89.9	22	9
Apr-19	5.9	113.5	4.6	88.8	16	14
May-19	6.1	122.0	4.4	89.1	15	16
Jun-19	4.3	83.7	4.0	77.7	22	8
Jul-19	3.7	73.5	3.3	65.7	15	16
Aug-19	2.8	55.8	2.7	55.0	21	10
Sep-19	2.8	55.0	2.7	52.9	19	11
Oct-19	3.2	64.6	2.8	56.2	19	12
Nov-19	3.8	73.3	3.6	69.1	22	8
Dec-19	4.0	79.6	3.6	72.8	21	10

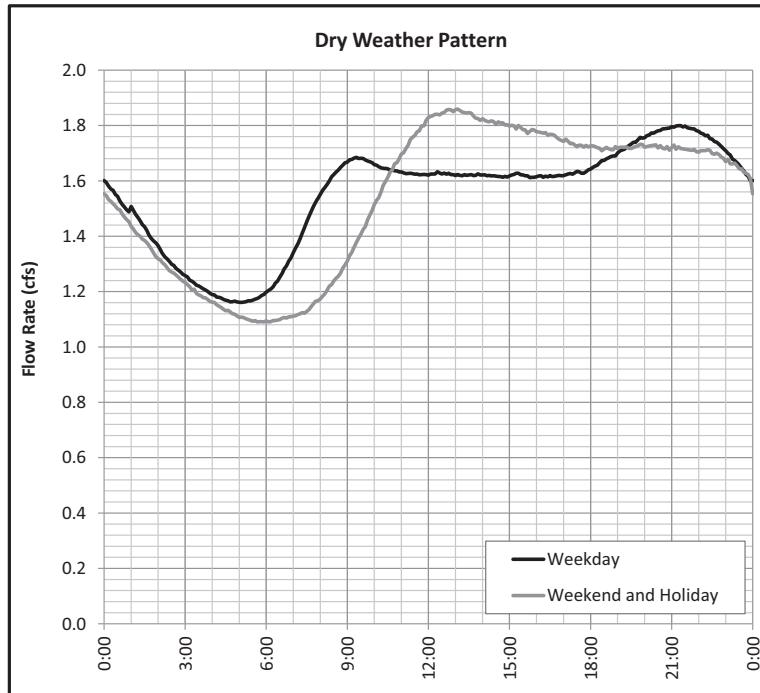
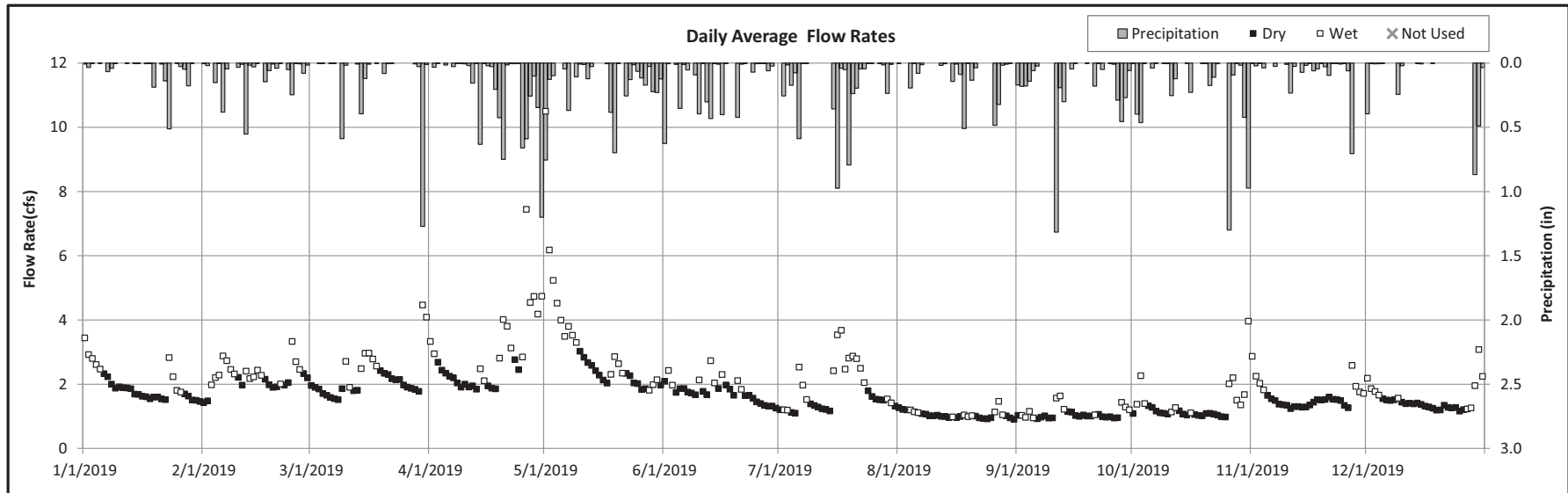
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	16.93	3/30/19 13:10	1.42	3/30/19 13:50
2	1.37	4/18/2019	4/20/2019	15.85	4/20/19 16:50	1.35	4/20/19 17:10
3	1.27	4/25/2019	4/26/2019	20.74	4/26/19 6:15	5.68	4/26/19 10:30
4	1.89	4/30/2019	5/1/2019	28.22	5/1/19 6:40	9.37	5/1/19 5:15
5	1.10	5/18/2019	5/20/2019	13.69	5/19/19 16:30	1.26	5/19/19 17:10
6	0.55	7/6/2019	7/6/2019	15.81	7/6/19 16:55	1.39	7/6/19 17:30
7	1.43	7/15/2019	7/17/2019	8.50	7/16/19 21:05	1.04	7/16/19 21:25
8	1.50	9/11/2019	9/12/2019	6.89	9/11/19 23:25	0.95	9/12/19 0:00
9	1.39	10/26/2019	10/27/2019	10.20	10/26/19 22:50	1.11	10/26/19 23:25
10	1.40	10/30/2019	11/1/2019	13.02	10/31/19 14:10	1.26	10/31/19 14:35
11	1.32	12/29/2019	12/30/2019	9.77	12/30/19 9:30	1.12	12/30/19 7:25

Figure 13-33
Rouge Valley Sewage Disposal System
Meter Report

Meter: LV-14
 Interceptor Manhole ID: --

Location: West of Cavell South of Ann Arbor Trail
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	2.0	39.4	1.7	34.7	22	9
Feb-19	2.2	40.3	2.0	35.5	12	16
Mar-19	2.2	44.5	1.9	38.2	22	9
Apr-19	2.9	56.5	2.2	41.7	16	14
May-19	3.1	61.3	2.3	45.8	15	16
Jun-19	1.8	34.8	1.7	32.0	22	8
Jul-19	1.8	36.7	1.4	27.1	15	16
Aug-19	1.0	21.0	1.0	20.4	21	10
Sep-19	1.1	21.0	1.0	19.4	19	11
Oct-19	1.4	27.1	1.1	21.8	19	12
Nov-19	1.6	31.1	1.4	27.5	22	8
Dec-19	1.5	30.3	1.3	26.9	21	10

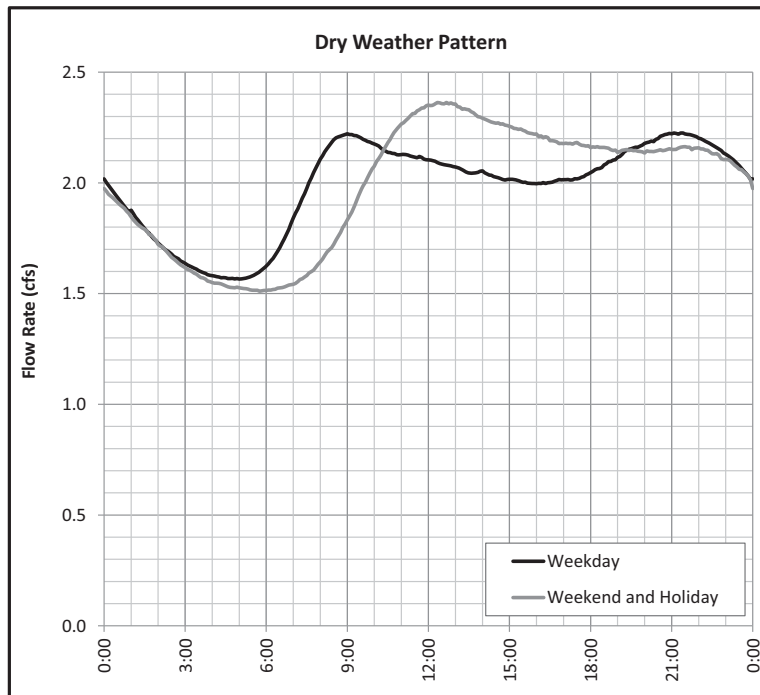
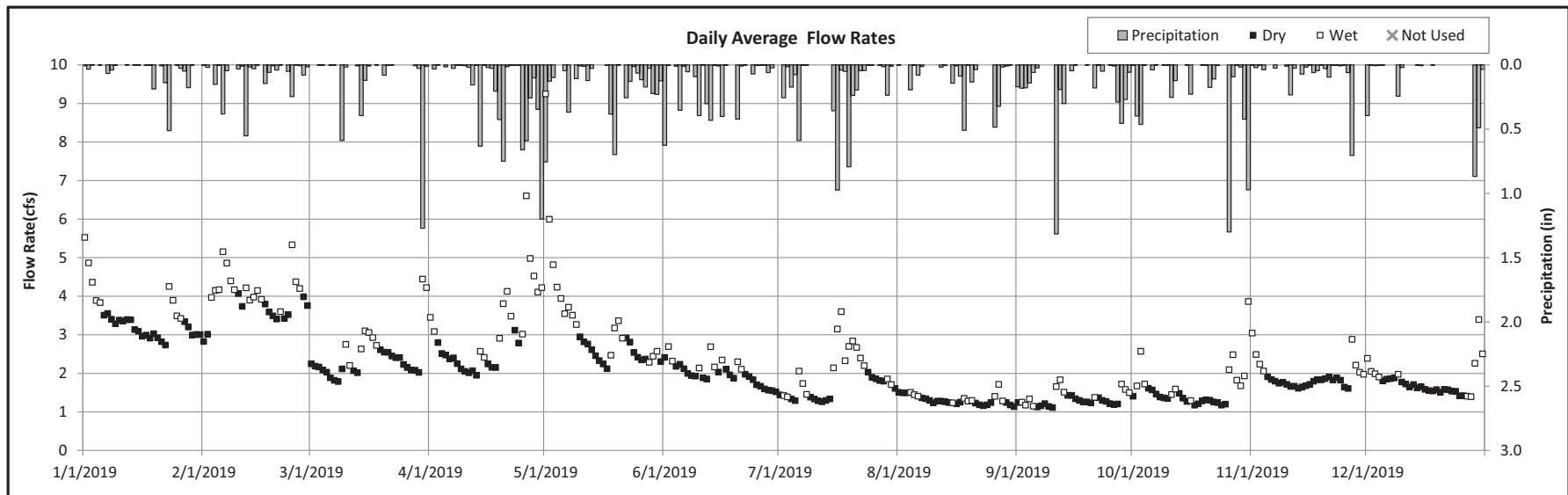
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	6.94	3/30/19 9:50	1.06	3/30/19 10:20
2	1.37	4/18/2019	4/20/2019	7.50	4/20/19 14:15	1.13	4/20/19 14:50
3	1.27	4/25/2019	4/26/2019	10.86	4/26/19 5:05	1.40	4/26/19 5:25
4	1.89	4/30/2019	5/1/2019	15.85	5/1/19 3:55	5.86	5/1/19 3:10
5	1.10	5/18/2019	5/20/2019	5.69	5/19/19 15:30	1.01	5/19/19 16:10
6	0.55	7/6/2019	7/6/2019	12.03	7/6/19 16:35	1.55	7/6/19 17:05
7	1.43	7/15/2019	7/17/2019	12.76	7/15/19 19:35	1.59	7/15/19 20:10
8	1.50	9/11/2019	9/12/2019	4.51	9/11/19 22:10	0.84	9/11/19 22:40
9	1.39	10/26/2019	10/27/2019	7.80	10/26/19 21:15	1.17	10/26/19 21:45
10	1.40	10/30/2019	11/1/2019	7.14	10/31/19 12:15	1.08	10/31/19 12:35
11	1.32	12/29/2019	12/30/2019	4.62	12/30/19 6:50	0.86	12/30/19 7:40

Figure 13-34
Rouge Valley Sewage Disposal System
Meter Report

Meter: LV-15
 Interceptor Manhole ID: --

Location: Merriman Road at Geraldine Street
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	3.4	69.0	3.2	63.1	22	9
Feb-19	4.0	71.8	3.5	64.2	12	16
Mar-19	2.4	49.0	2.2	43.6	22	9
Apr-19	3.0	58.6	2.3	45.3	16	14
May-19	3.2	64.2	2.5	50.7	15	16
Jun-19	2.0	39.1	1.9	36.8	22	8
Jul-19	1.9	37.8	1.5	30.6	15	16
Aug-19	1.3	26.2	1.3	25.5	21	10
Sep-19	1.3	25.7	1.2	24.2	19	11
Oct-19	1.6	31.9	1.3	26.7	19	12
Nov-19	1.9	37.2	1.8	34.1	22	8
Dec-19	1.8	35.9	1.6	32.7	21	10

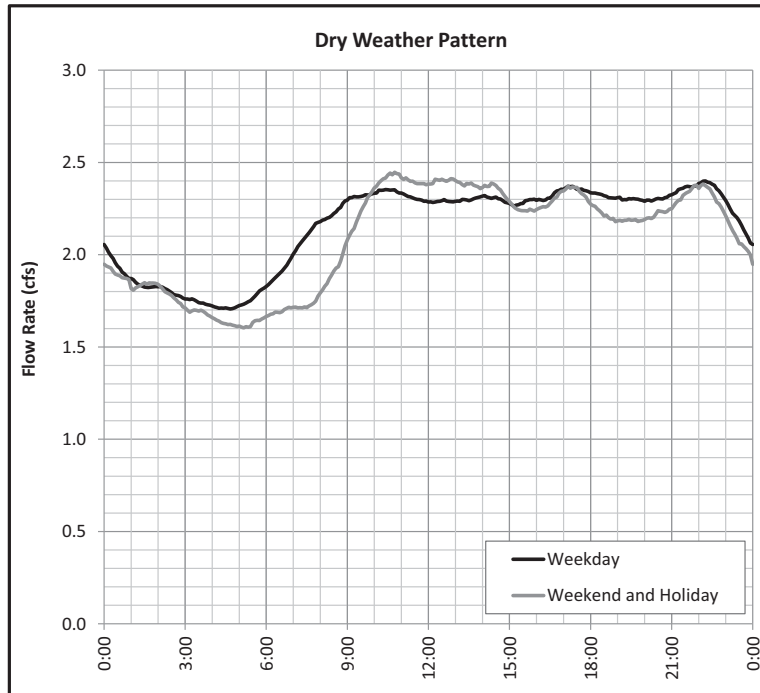
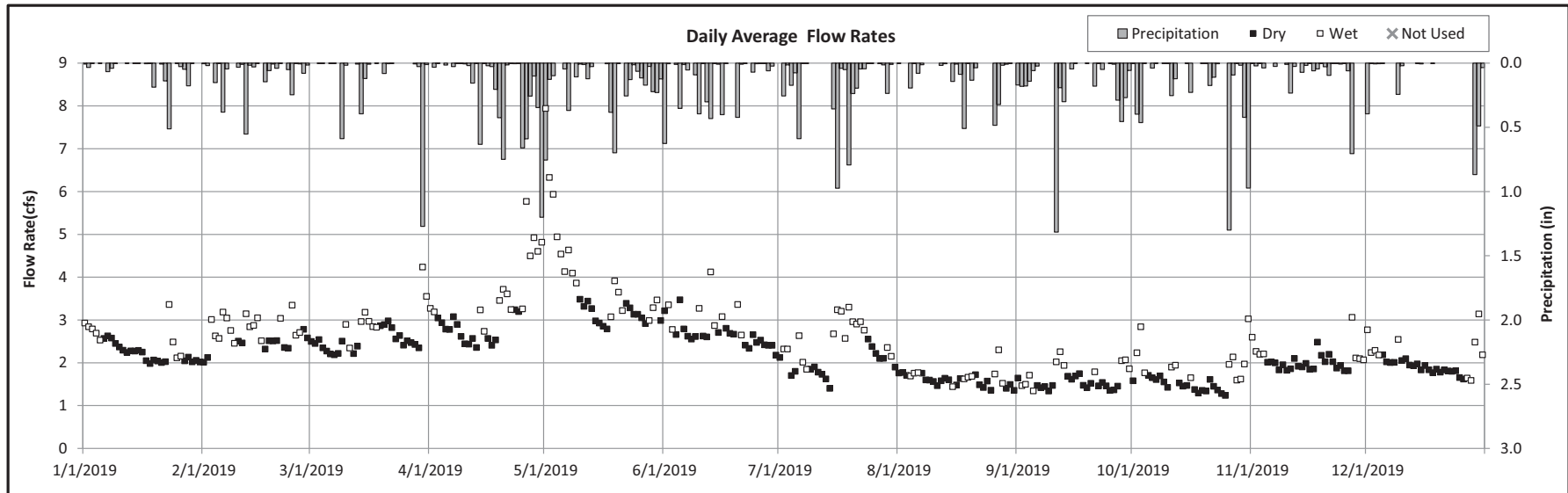
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	6.03	3/30/19 8:35	2.73	3/30/19 11:50
2	1.37	4/18/2019	4/20/2019	5.72	4/20/19 19:35	4.81	4/20/19 17:20
3	1.27	4/25/2019	4/26/2019	9.60	4/26/19 4:45	6.23	4/26/19 16:10
4	1.89	4/30/2019	5/1/2019	12.78	5/1/19 4:35	7.10	5/1/19 13:00
5	1.10	5/18/2019	5/20/2019	6.75	5/19/19 14:00	3.43	5/19/19 20:05
6	0.55	7/6/2019	7/6/2019	5.33	7/6/19 15:50	2.72	7/6/19 19:25
7	1.43	7/15/2019	7/17/2019	9.88	7/15/19 18:50	4.59	7/17/19 0:05
8	1.50	9/11/2019	9/12/2019	3.62	9/11/19 22:05	1.52	9/11/19 22:30
9	1.39	10/26/2019	10/27/2019	5.39	10/26/19 20:35	3.30	10/26/19 22:40
10	1.40	10/30/2019	11/1/2019	6.18	10/31/19 11:40	2.43	10/31/19 13:35
11	1.32	12/29/2019	12/30/2019	4.99	12/30/19 6:05	1.71	12/30/19 7:15

Figure 13-35
Rouge Valley Sewage Disposal System
Meter Report

Meter: LV-16
Interceptor Manhole ID: --

Location: 8914 Farmington Road
Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	2.3	46.8	2.2	44.3	22	9
Feb-19	2.7	48.3	2.4	43.7	12	16
Mar-19	2.7	53.3	2.5	49.8	22	9
Apr-19	3.3	63.4	2.7	53.1	16	14
May-19	3.8	75.5	3.1	62.7	15	16
Jun-19	2.8	53.8	2.6	50.9	22	8
Jul-19	2.3	46.1	1.9	38.9	15	16
Aug-19	1.6	32.4	1.6	31.4	21	10
Sep-19	1.6	31.3	1.5	29.1	19	11
Oct-19	1.7	34.0	1.5	29.4	19	12
Nov-19	2.1	40.1	2.0	38.3	22	8
Dec-19	2.0	40.6	1.9	37.9	21	10

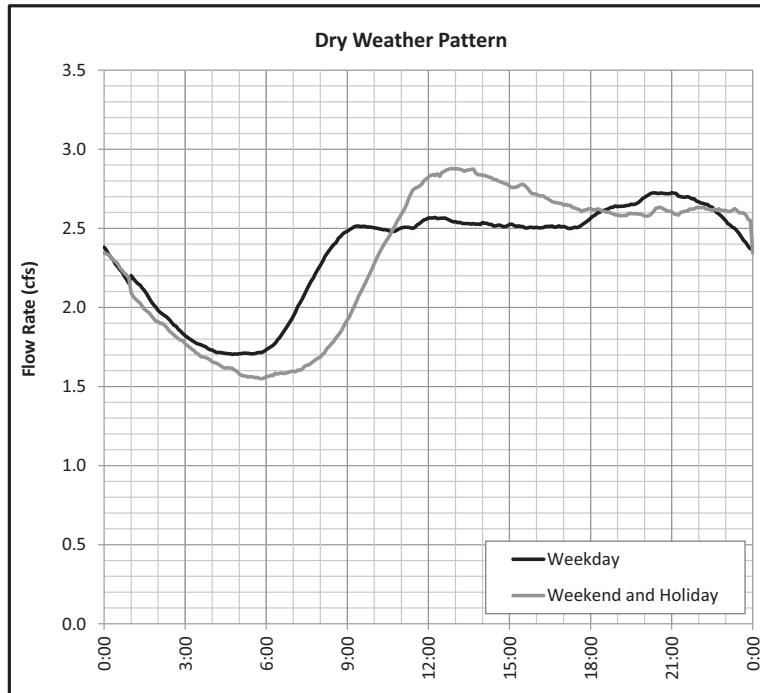
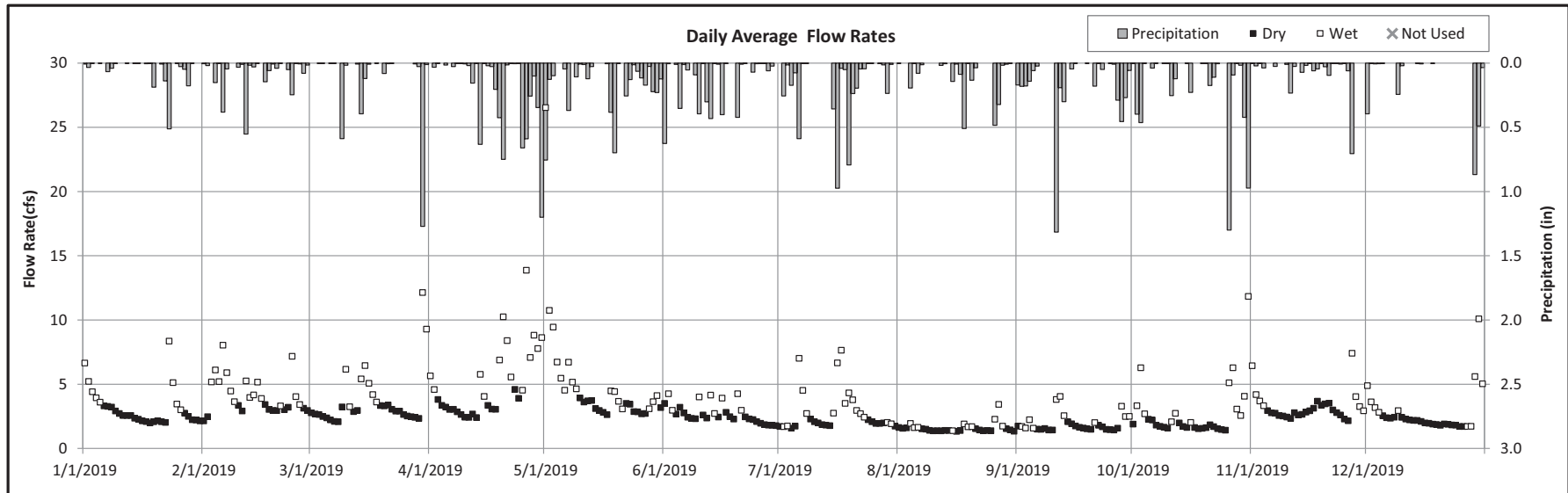
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	6.19	3/30/19 7:50	1.12	3/30/19 8:10
2	1.37	4/18/2019	4/20/2019	6.34	4/20/19 17:00	1.13	4/20/19 17:25
3	1.27	4/25/2019	4/26/2019	7.46	4/26/19 5:30	1.25	4/26/19 5:20
4	1.89	4/30/2019	5/1/2019	9.45	5/1/19 4:00	2.60	5/1/19 4:55
5	1.10	5/18/2019	5/20/2019	6.99	5/19/19 14:05	1.23	5/19/19 14:30
6	0.55	7/6/2019	7/6/2019	5.37	7/6/19 15:15	1.04	7/6/19 15:35
7	1.43	7/15/2019	7/17/2019	11.74	7/15/19 18:55	2.05	7/15/19 19:15
8	1.50	9/11/2019	9/12/2019	3.59	9/11/19 19:20	0.87	9/11/19 19:45
9	1.39	10/26/2019	10/27/2019	5.57	10/26/19 20:45	1.04	10/26/19 21:10
10	1.40	10/30/2019	11/1/2019	4.46	10/31/19 13:55	0.94	10/31/19 20:15
11	1.32	12/29/2019	12/30/2019	4.82	12/30/19 6:20	0.98	12/30/19 7:10

Figure 13-36
Rouge Valley Sewage Disposal System
Meter Report

Meter: M-1
 Interceptor Manhole ID: --

Location: Middlebelt Road North of Rush
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	3.1	63.1	2.4	49.1	22	9
Feb-19	4.1	73.8	3.0	53.4	12	16
Mar-19	3.7	74.3	2.7	54.1	22	9
Apr-19	5.0	97.8	3.1	60.2	16	14
May-19	5.0	99.4	3.2	63.5	15	16
Jun-19	2.7	52.6	2.4	46.1	22	8
Jul-19	2.8	56.1	1.9	38.1	15	16
Aug-19	1.6	31.8	1.4	28.7	21	10
Sep-19	1.9	37.5	1.6	31.0	19	11
Oct-19	2.7	54.6	1.7	34.4	19	12
Nov-19	3.2	62.7	2.8	54.5	22	8
Dec-19	2.7	54.8	2.1	41.3	21	10

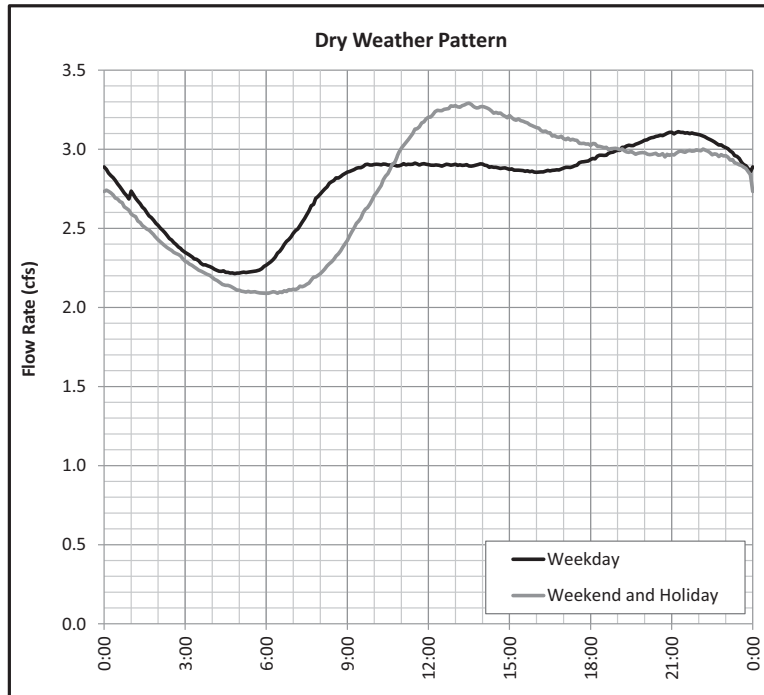
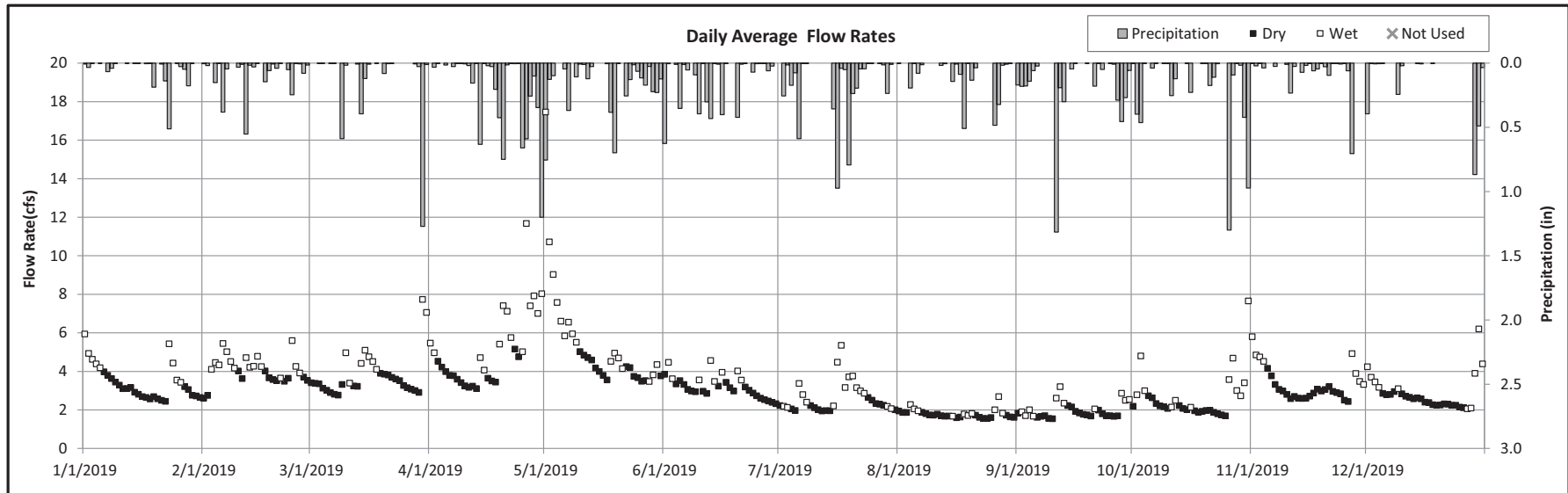
Statistics for Significant Wet Weather Events						
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth
				Max. Hour (cfs)	Date/Time	Max. (ft)
1	1.28	3/29/2019	3/31/2019	16.37	3/30/19 10:55	5.55
2	1.37	4/18/2019	4/20/2019	19.85	4/20/19 16:40	7.46
3	1.27	4/25/2019	4/26/2019	20.15	4/26/19 6:15	7.96
4	1.89	4/30/2019	5/1/2019	51.11	5/1/19 2:20	10.59
5	1.10	5/18/2019	5/20/2019	11.17	5/18/19 7:30	2.16
6	0.55	7/6/2019	7/6/2019	20.14	7/6/19 17:30	7.60
7	1.43	7/15/2019	7/17/2019	29.94	7/16/19 20:40	8.56
8	1.50	9/11/2019	9/12/2019	13.85	9/11/19 22:05	2.70
9	1.39	10/26/2019	10/27/2019	17.82	10/26/19 20:25	6.36
10	1.40	10/30/2019	11/1/2019	19.41	10/31/19 13:15	7.19
11	1.32	12/29/2019	12/30/2019	16.47	12/30/19 5:05	4.88

Figure 13-37
Rouge Valley Sewage Disposal System
Meter Report

Meter: M-2
 Interceptor Manhole ID: --

Location: Merriman Road South of Hines Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	3.4	68.8	3.0	59.7	22	9
Feb-19	4.1	73.4	3.5	63.4	12	16
Mar-19	3.8	76.3	3.3	65.7	22	9
Apr-19	5.1	98.4	3.8	73.3	16	14
May-19	5.4	107.5	4.1	81.8	15	16
Jun-19	3.2	62.5	3.0	57.8	22	8
Jul-19	2.6	52.4	2.2	43.2	15	16
Aug-19	1.8	35.8	1.7	34.1	21	10
Sep-19	2.0	38.1	1.8	34.4	19	11
Oct-19	2.6	52.8	2.1	41.5	19	12
Nov-19	3.3	64.6	2.9	56.9	22	8
Dec-19	2.8	57.1	2.5	49.7	21	10

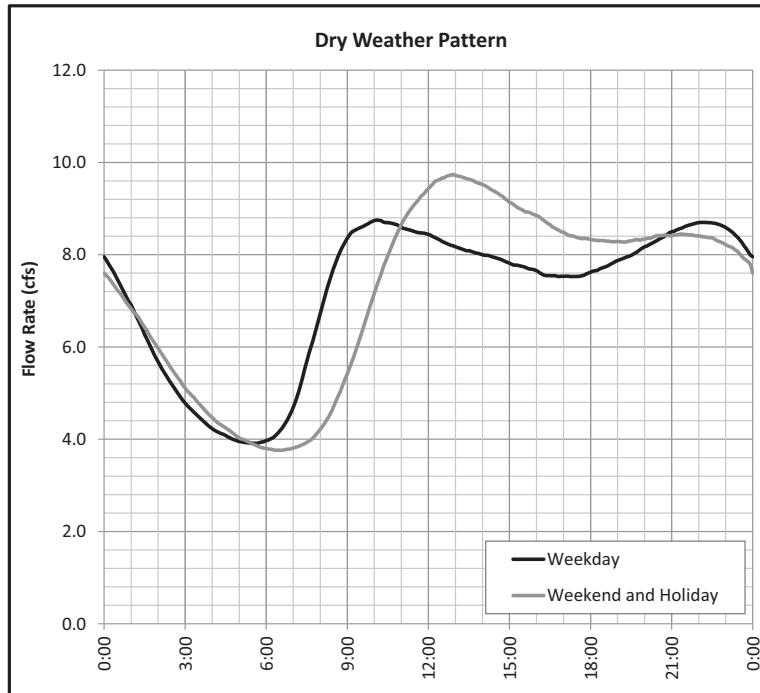
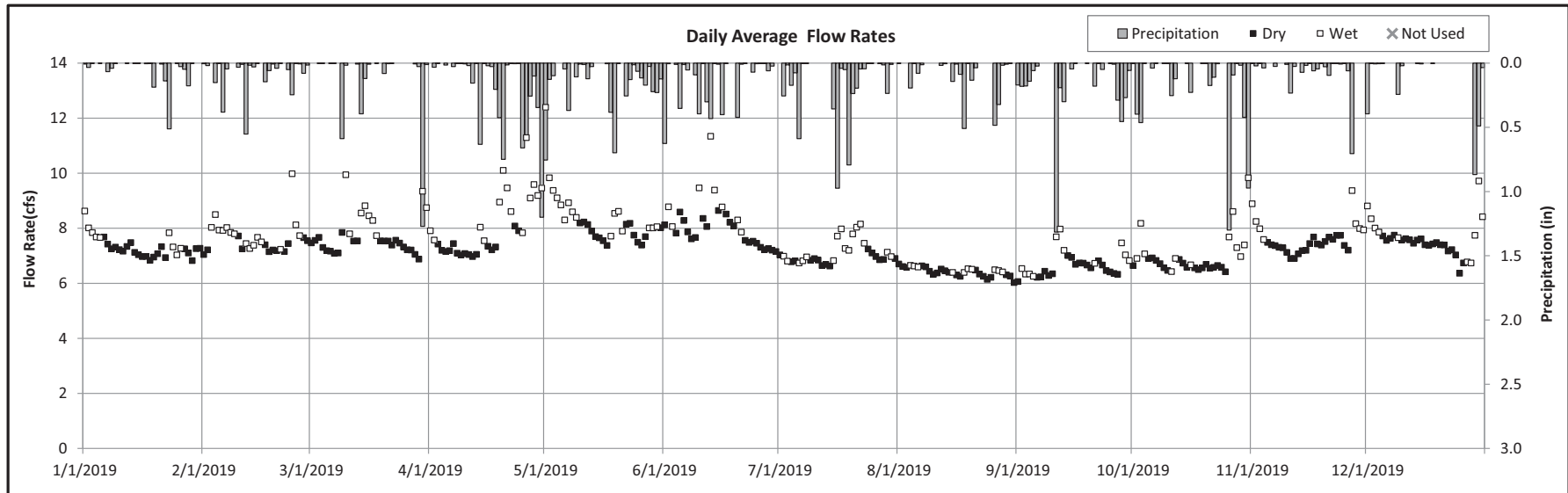
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	10.46	3/30/19 10:00	1.87	3/30/19 10:15
2	1.37	4/18/2019	4/20/2019	12.52	4/20/19 15:55	2.07	4/20/19 16:20
3	1.27	4/25/2019	4/26/2019	15.13	4/26/19 4:40	2.33	4/26/19 4:55
4	1.89	4/30/2019	5/1/2019	21.96	5/1/19 1:00	8.52	5/1/19 5:15
5	1.10	5/18/2019	5/20/2019	7.74	5/19/19 15:30	1.59	5/19/19 16:10
6	0.55	7/6/2019	7/6/2019	9.42	7/6/19 16:35	1.77	7/6/19 16:55
7	1.43	7/15/2019	7/17/2019	15.73	7/16/19 21:25	2.40	7/16/19 22:00
8	1.50	9/11/2019	9/12/2019	7.02	9/11/19 22:00	1.46	9/11/19 22:00
9	1.39	10/26/2019	10/27/2019	11.39	10/26/19 21:30	1.93	10/26/19 21:45
10	1.40	10/30/2019	11/1/2019	11.64	10/31/19 12:45	1.95	10/31/19 12:35
11	1.32	12/29/2019	12/30/2019	9.07	12/30/19 6:15	1.68	12/30/19 6:50

Figure 13-38
Rouge Valley Sewage Disposal System
Meter Report

Meter: BG-1
 Interceptor Manhole ID: NT 25

Location: 8 Mile Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	Monthly Statistics					
	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	7.3	146.7	7.2	143.6	22	9
Feb-19	7.7	138.5	7.3	132.6	12	16
Mar-19	7.7	154.9	7.4	147.6	22	9
Apr-19	8.0	155.8	7.3	141.1	16	14
May-19	8.3	166.6	7.8	156.7	15	16
Jun-19	8.1	157.6	7.8	151.5	22	8
Jul-19	7.1	142.0	6.9	137.6	15	16
Aug-19	6.4	128.7	6.4	128.0	21	10
Sep-19	6.7	129.4	6.5	126.4	19	11
Oct-19	7.0	139.7	6.6	133.1	19	12
Nov-19	7.6	147.4	7.4	142.7	22	8
Dec-19	7.6	151.9	7.4	147.9	21	10

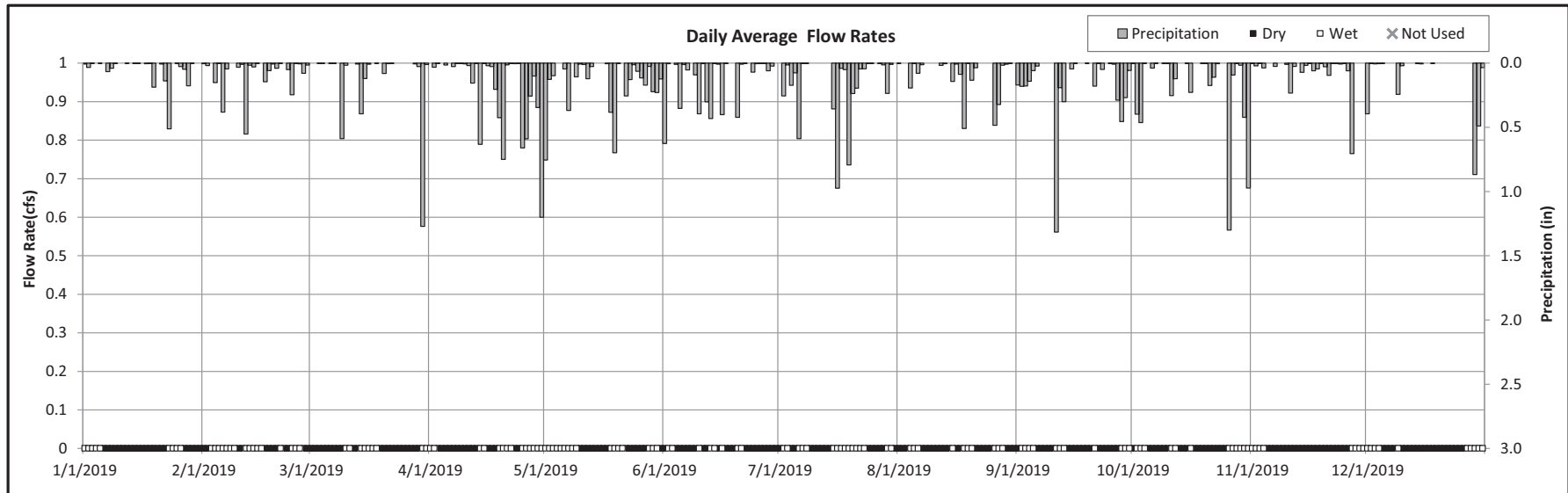
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	13.82	3/30/19 10:30	-	-
2	1.37	4/18/2019	4/20/2019	16.89	4/20/19 15:20	-	-
3	1.27	4/25/2019	4/26/2019	14.10	4/26/19 7:10	-	-
4	1.89	4/30/2019	5/1/2019	15.30	4/30/19 21:25	-	-
5	1.10	5/18/2019	5/20/2019	11.82	5/19/19 14:30	-	-
6	0.55	7/6/2019	7/6/2019	8.92	7/7/19 11:55	-	-
7	1.43	7/15/2019	7/17/2019	13.89	7/16/19 21:55	-	-
8	1.50	9/11/2019	9/12/2019	14.54	9/11/19 22:15	-	-
9	1.39	10/26/2019	10/27/2019	14.64	10/26/19 21:45	-	-
10	1.40	10/30/2019	11/1/2019	14.38	10/31/19 12:40	-	-
11	1.32	12/29/2019	12/30/2019	12.29	12/29/19 12:05	-	-

Figure 13-39
Rouge Valley Sewage Disposal System
Meter Report

Meter: FE-19
 Interceptor Manhole ID: --

Location: Haggerty Road North of Michigan Avenue
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



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-19	0.0	0.0	0.0	0.0	22	9
Feb-19	0.0	0.0	0.0	0.0	12	16
Mar-19	0.0	0.0	0.0	0.0	22	9
Apr-19	0.0	0.0	0.0	0.0	16	14
May-19	0.0	0.0	0.0	0.0	15	16
Jun-19	0.0	0.0	0.0	0.0	22	8
Jul-19	0.0	0.0	0.0	0.0	15	16
Aug-19	0.0	0.0	0.0	0.0	21	10
Sep-19	0.0	0.0	0.0	0.0	19	11
Oct-19	0.0	0.0	0.0	0.0	19	12
Nov-19	0.0	0.0	0.0	0.0	22	8
Dec-19	0.0	0.0	0.0	0.0	21	10

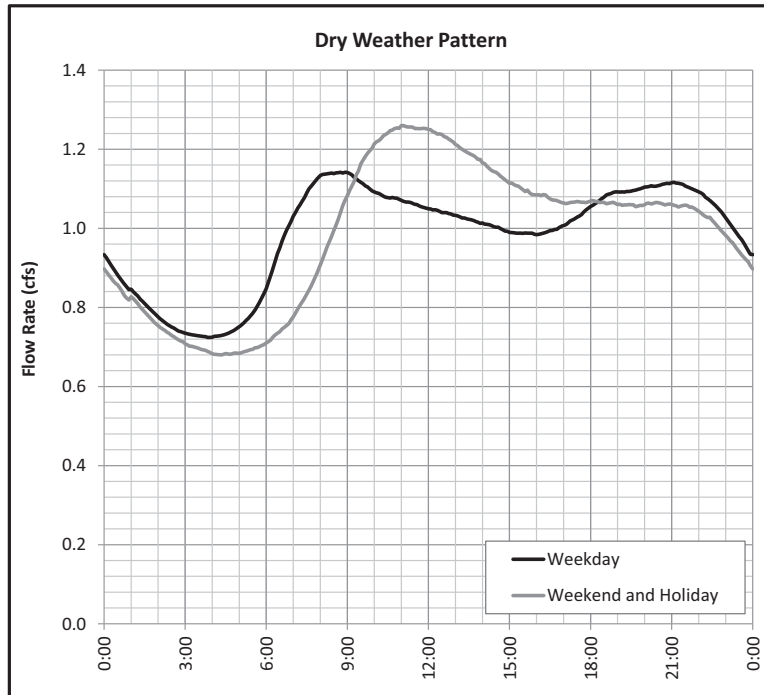
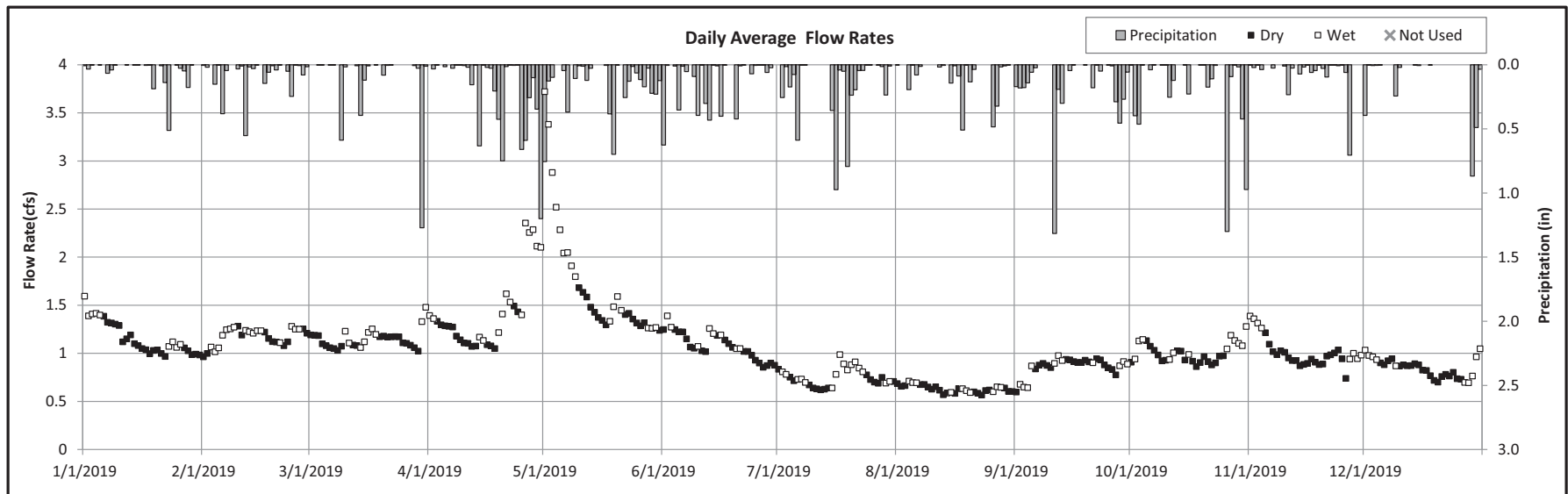
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	0.00	-	-	-
2	1.37	4/18/2019	4/20/2019	0.00	-	-	-
3	1.27	4/25/2019	4/26/2019	0.00	-	-	-
4	1.89	4/30/2019	5/1/2019	0.00	-	-	-
5	1.10	5/18/2019	5/20/2019	0.00	-	-	-
6	0.55	7/6/2019	7/6/2019	0.00	-	-	-
7	1.43	7/15/2019	7/17/2019	0.00	-	-	-
8	1.50	9/11/2019	9/12/2019	0.00	-	-	-
9	1.39	10/26/2019	10/27/2019	0.00	-	-	-
10	1.40	10/30/2019	11/1/2019	0.00	-	-	-
11	1.32	12/29/2019	12/30/2019	0.00	-	-	-

Figure 13-40
Rouge Valley Sewage Disposal System
Meter Report

Meter: FE-22
 Interceptor Manhole ID: RVI 10-11

Location: Eckles Road and Joy Road
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	1.2	23.2	1.1	22.2	22	9
Feb-19	1.2	21.2	1.1	20.6	12	16
Mar-19	1.1	22.9	1.1	22.3	22	9
Apr-19	1.4	27.5	1.2	23.3	16	14
May-19	1.7	34.5	1.4	28.2	15	16
Jun-19	1.1	21.0	1.0	20.3	22	8
Jul-19	0.7	15.0	0.7	14.0	15	16
Aug-19	0.6	12.6	0.6	12.5	21	10
Sep-19	0.9	16.6	0.9	16.9	19	11
Oct-19	1.0	20.1	1.0	19.2	19	12
Nov-19	1.0	19.5	1.0	18.6	22	8
Dec-19	0.8	16.9	0.8	16.5	21	10

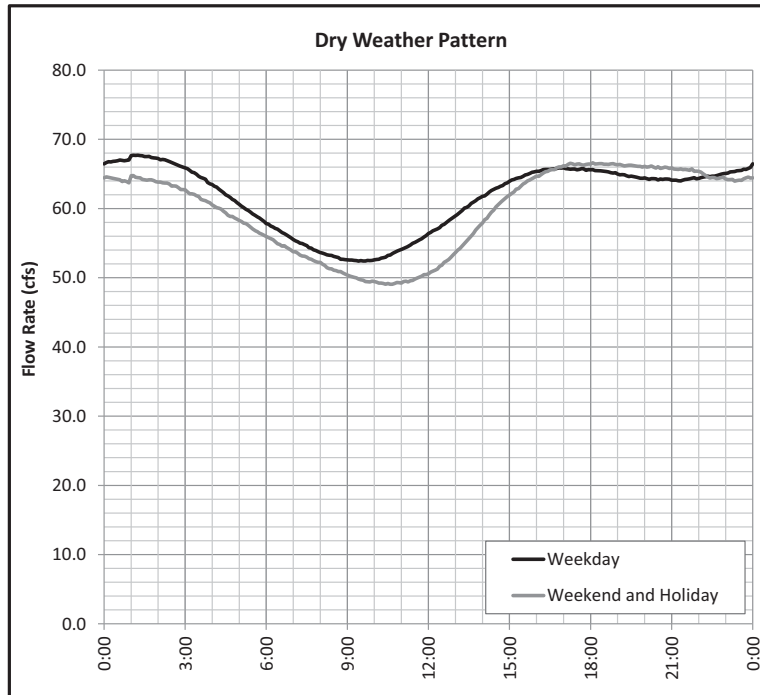
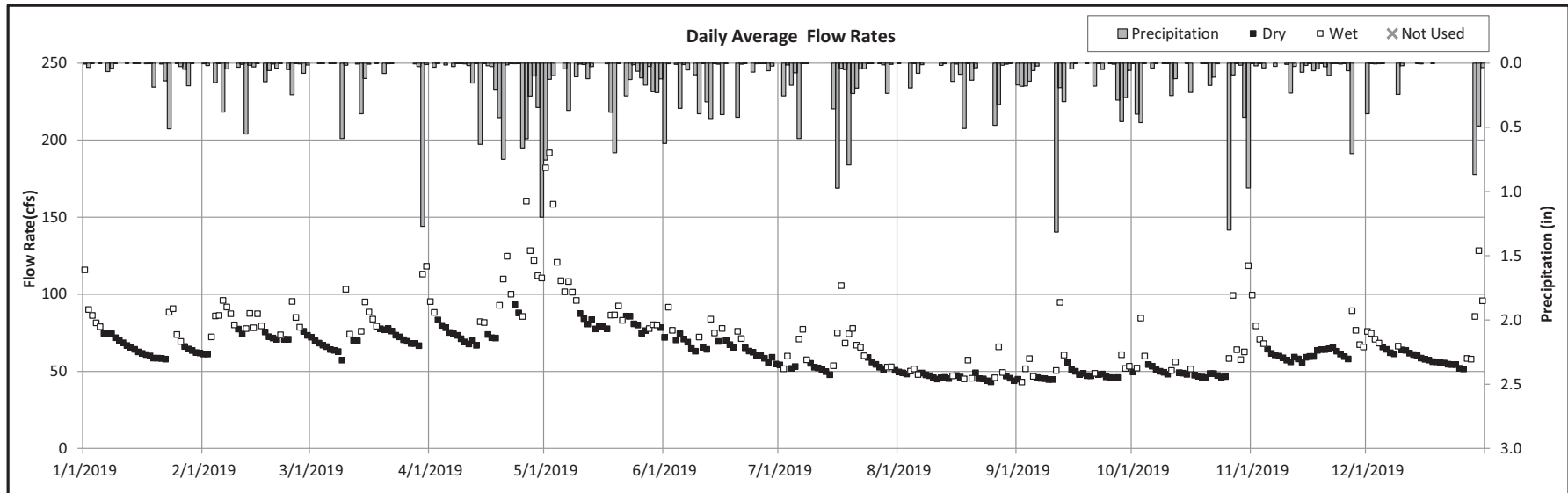
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	1.82	3/31/19 10:20	0.61	3/31/19 10:50
2	1.37	4/18/2019	4/20/2019	1.98	4/21/19 9:35	0.63	4/21/19 9:45
3	1.27	4/25/2019	4/26/2019	2.78	4/26/19 6:45	0.70	4/26/19 7:15
4	1.89	4/30/2019	5/1/2019	4.06	5/1/19 6:40	0.80	5/1/19 7:20
5	1.10	5/18/2019	5/20/2019	1.96	5/19/19 20:05	0.63	5/19/19 21:00
6	0.55	7/6/2019	7/6/2019	1.05	7/6/19 10:55	0.56	7/7/19 7:40
7	1.43	7/15/2019	7/17/2019	1.20	7/17/19 7:10	0.57	7/18/19 10:40
8	1.50	9/11/2019	9/12/2019	1.16	9/12/19 7:15	0.46	9/12/19 20:00
9	1.39	10/26/2019	10/27/2019	1.26	10/26/19 21:40	0.46	10/26/19 22:00
10	1.40	10/30/2019	11/1/2019	1.48	11/1/19 7:20	0.52	11/1/19 8:00
11	1.32	12/29/2019	12/30/2019	1.36	12/31/19 11:20	0.67	12/31/19 21:40

Figure 13-41
Rouge Valley Sewage Disposal System
Meter Report

Meter: WC-S-1A
 Interceptor Manhole ID: RVI 2-02

Location: Oakwood Boulevard east of Dix Street
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	71.0	1421.8	64.8	1298.5	22	9
Feb-19	78.4	1419.3	71.2	1288.5	12	16
Mar-19	76.0	1523.3	69.4	1390.1	22	9
Apr-19	90.0	1744.6	75.4	1462.1	16	14
May-19	95.6	1915.9	80.7	1616.3	15	16
Jun-19	68.3	1323.5	64.7	1255.2	22	8
Jul-19	60.0	1202.0	52.7	1056.2	15	16
Aug-19	47.7	955.5	46.4	928.8	21	10
Sep-19	50.6	980.2	47.2	915.7	19	11
Oct-19	56.1	1123.6	48.6	974.7	19	12
Nov-19	65.0	1259.4	60.6	1174.3	22	8
Dec-19	64.7	1297.1	58.4	1169.7	21	10

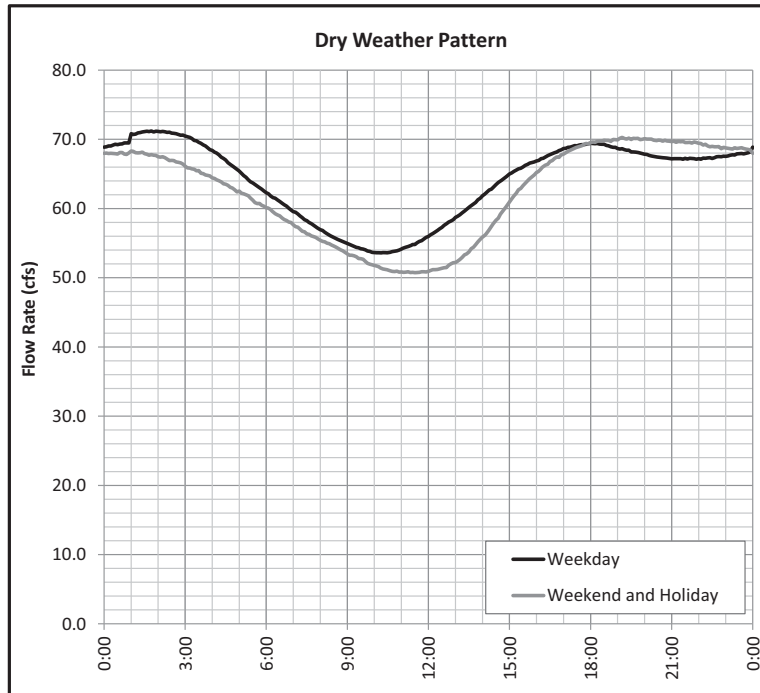
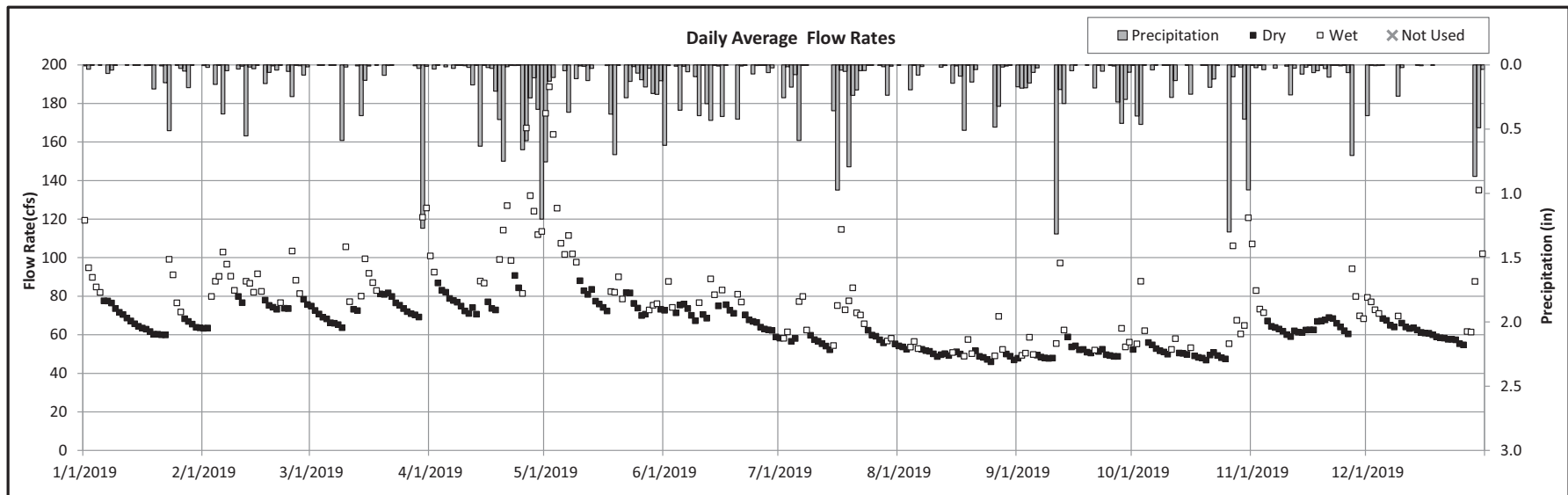
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	162.02	3/30/19 12:55	11.59	3/30/19 12:10
2	1.37	4/18/2019	4/20/2019	169.65	4/20/19 18:35	13.30	4/20/19 16:50
3	1.27	4/25/2019	4/26/2019	172.72	4/26/19 16:55	-	-
4	1.89	4/30/2019	5/1/2019	200.10	5/2/19 0:35	22.69	5/1/19 2:30
5	1.10	5/18/2019	5/20/2019	118.23	5/19/19 20:05	-	-
6	0.55	7/6/2019	7/6/2019	139.48	7/6/19 19:40	17.12	7/6/19 18:50
7	1.43	7/15/2019	7/17/2019	168.37	7/16/19 23:50	13.48	7/16/19 21:45
8	1.50	9/11/2019	9/12/2019	140.52	9/11/19 23:30	18.66	9/11/19 22:55
9	1.39	10/26/2019	10/27/2019	158.83	10/26/19 23:50	19.61	10/26/19 20:45
10	1.40	10/30/2019	11/1/2019	166.92	10/31/19 16:40	16.98	10/31/19 11:25
11	1.32	12/29/2019	12/30/2019	166.87	12/30/19 11:45	14.97	12/30/19 7:10

Figure 13-42
Rouge Valley Sewage Disposal System
Meter Report

Meter: WC-S-1
 Interceptor Manhole ID: MR I 05B

Location: Fort Street and Bayside Street
 Interceptor Branch: Lower Rouge

Period: 1/1/2019 through 12/31/2019



Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	73.5	1471.7	66.7	1337.3	22	9
Feb-19	82.0	1483.1	73.7	1333.9	12	16
Mar-19	79.4	1591.6	72.4	1450.2	22	9
Apr-19	92.8	1798.6	77.9	1510.3	16	14
May-19	93.3	1868.6	77.4	1551.5	15	16
Jun-19	72.3	1401.6	69.1	1339.5	22	8
Jul-19	64.4	1290.5	57.2	1145.2	15	16
Aug-19	51.4	1029.0	50.1	1003.2	21	10
Sep-19	53.6	1039.7	50.6	980.7	19	11
Oct-19	58.0	1162.1	50.3	1007.2	19	12
Nov-19	68.3	1323.5	63.7	1235.0	22	8
Dec-19	67.8	1358.0	61.1	1225.0	21	10

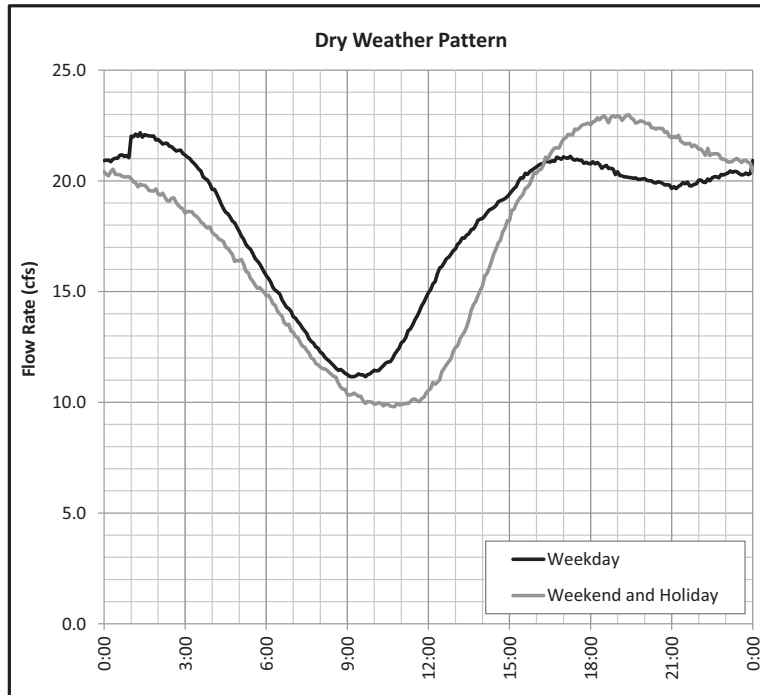
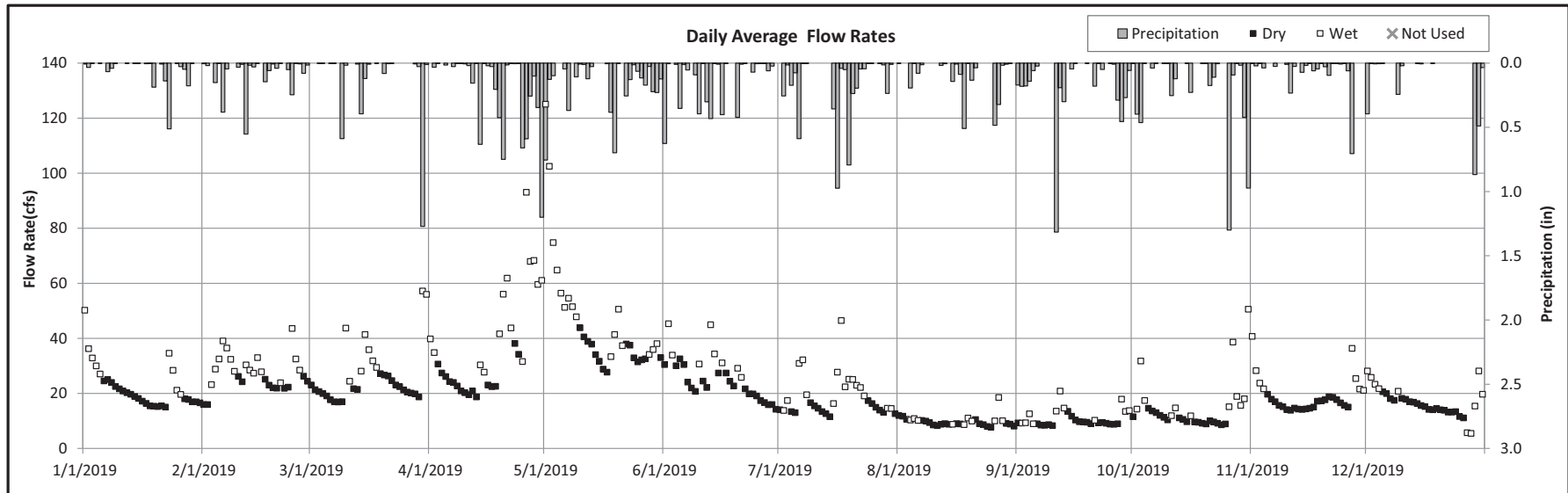
Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	169.82	3/30/19 15:00	-	-
2	1.37	4/18/2019	4/20/2019	177.90	4/20/19 20:50	-	-
3	1.27	4/25/2019	4/26/2019	183.10	4/26/19 17:25	-	-
4	1.89	4/30/2019	5/1/2019	203.10	5/2/19 13:50	-	-
5	1.10	5/18/2019	5/20/2019	119.59	5/19/19 20:35	-	-
6	0.55	7/6/2019	7/6/2019	149.36	7/6/19 20:55	-	-
7	1.43	7/15/2019	7/17/2019	183.76	7/16/19 23:55	-	-
8	1.50	9/11/2019	9/12/2019	149.38	9/12/19 3:25	-	-
9	1.39	10/26/2019	10/27/2019	130.26	10/26/19 23:10	-	-
10	1.40	10/30/2019	11/1/2019	178.83	10/31/19 20:30	-	-
11	1.32	12/29/2019	12/30/2019	177.91	12/30/19 14:55	-	-

Figure 13-43
Rouge Valley Sewage Disposal System
Meter Report

Meter: WC-S-2 + WC-S-3
 Interceptor Manhole ID: MR 1A-C2 & MRIR 1-01B

Location: Ford Road West of Evergreen Road & Southfield Road and Mercury Drive
 Interceptor Branch: Middle Rouge

Period: 1/1/2019 through 12/31/2019

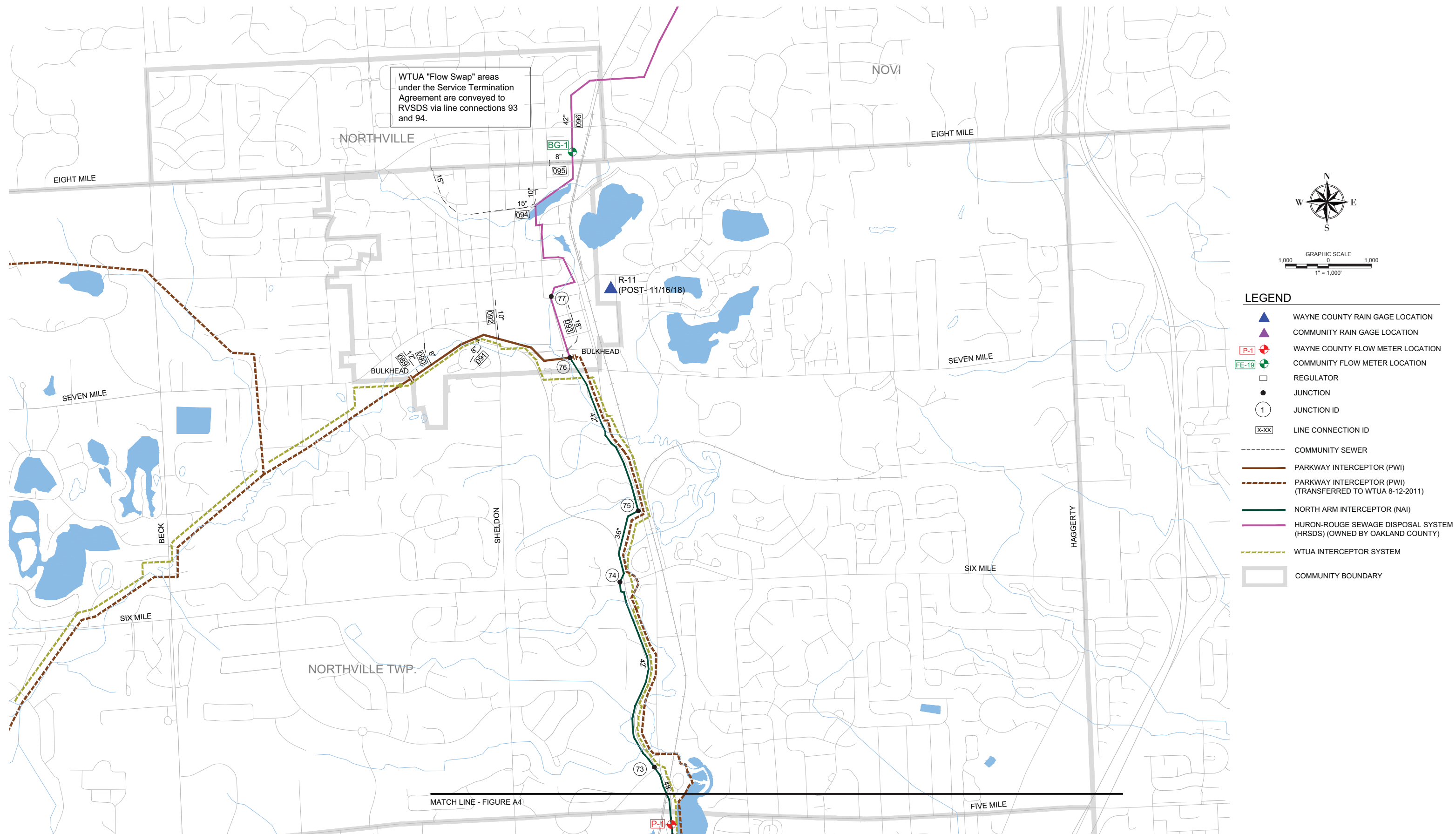


Month	All Days		Dry Days			
	Avg. (cfs)	Vol. (MG)	Avg. (cfs)	Vol. (MG)	# Dry Days	# Wet Days
Jan-19	22.3	446.0	18.7	373.8	22	9
Feb-19	27.3	493.3	22.4	404.7	12	16
Mar-19	26.2	525.2	21.1	423.7	22	9
Apr-19	37.1	718.6	24.7	478.6	16	14
May-19	45.8	917.2	34.7	694.9	15	16
Jun-19	25.8	499.6	22.6	439.1	22	8
Jul-19	18.8	375.9	14.1	283.4	15	16
Aug-19	9.7	194.8	9.2	184.7	21	10
Sep-19	10.8	208.6	9.4	182.4	19	11
Oct-19	14.8	296.3	10.5	211.1	19	12
Nov-19	19.1	369.7	16.1	311.7	22	8
Dec-19	16.7	335.1	15.5	310.0	21	10

Statistics for Significant Wet Weather Events							
Event No.	Rainfall (in)	Start Date/Time	End Date/Time	Flow Rate		Depth	
				Max. Hour (cfs)	Date/Time	Max. (ft)	Date/Time
1	1.28	3/29/2019	3/31/2019	85.46	3/30/19 12:15	-	-
2	1.37	4/18/2019	4/20/2019	108.71	4/20/19 18:15	-	-
3	1.27	4/25/2019	4/26/2019	120.06	4/26/19 10:30	-	-
4	1.89	4/30/2019	5/1/2019	151.74	5/1/19 5:20	-	-
5	1.10	5/18/2019	5/20/2019	82.58	5/19/19 19:40	-	-
6	0.55	7/6/2019	7/6/2019	109.93	7/6/19 21:00	-	-
7	1.43	7/15/2019	7/17/2019	106.13	7/17/19 0:25	-	-
8	1.50	9/11/2019	9/12/2019	61.18	9/12/19 0:35	-	-
9	1.39	10/26/2019	10/27/2019	99.99	10/26/19 23:40	-	-
10	1.40	10/30/2019	11/1/2019	98.04	10/31/19 16:30	-	-
11	1.32	12/29/2019	12/30/2019	47.09	12/30/19 9:00	-	-

Appendix A

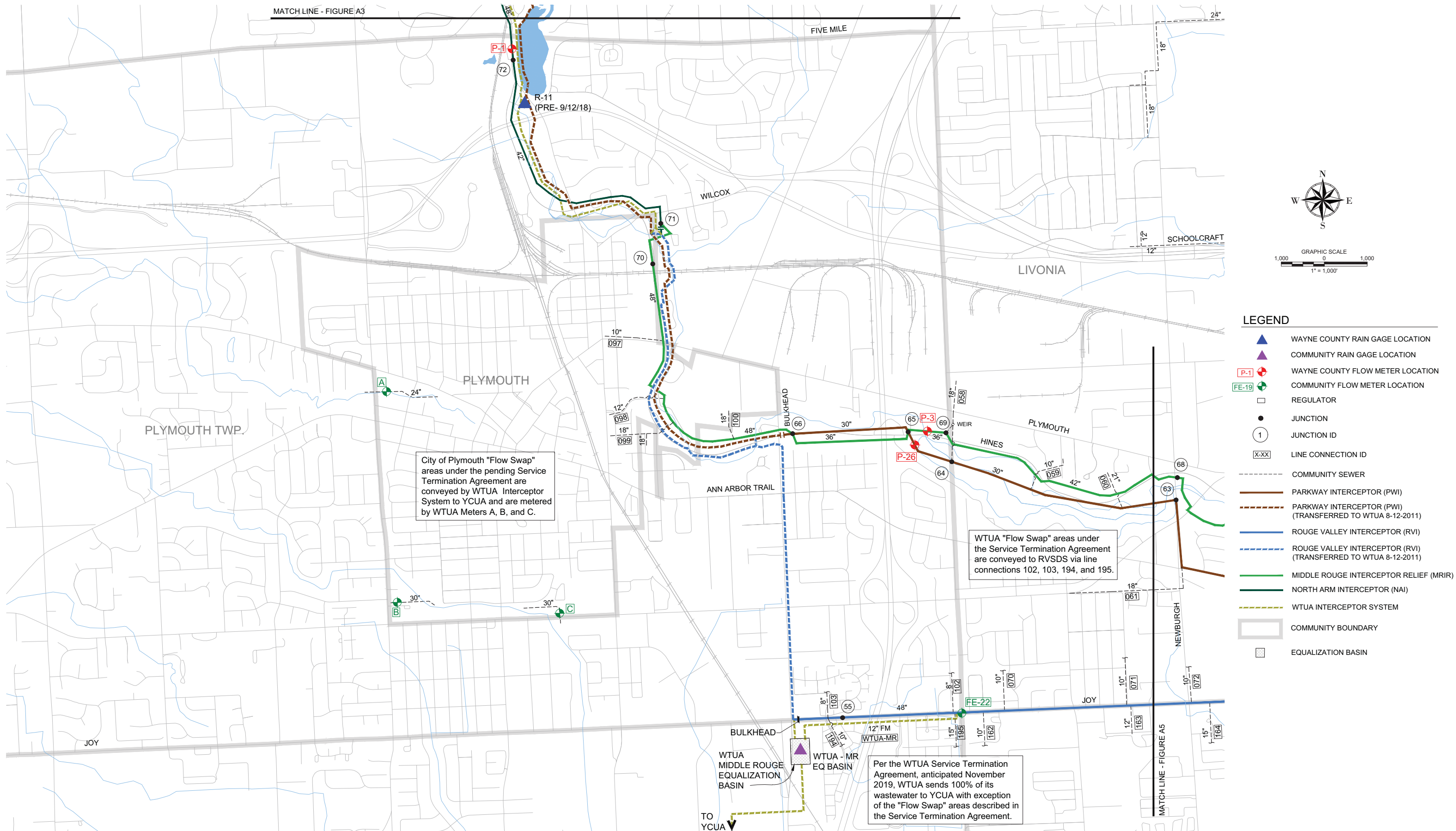
System Reach Maps



ROUGE VALLEY SEWAGE DISPOSAL SYSTEM MIDDLE ROUGE INTERCEPTOR SCHEMATIC NORTHVILLE TO 5 MILE ROAD



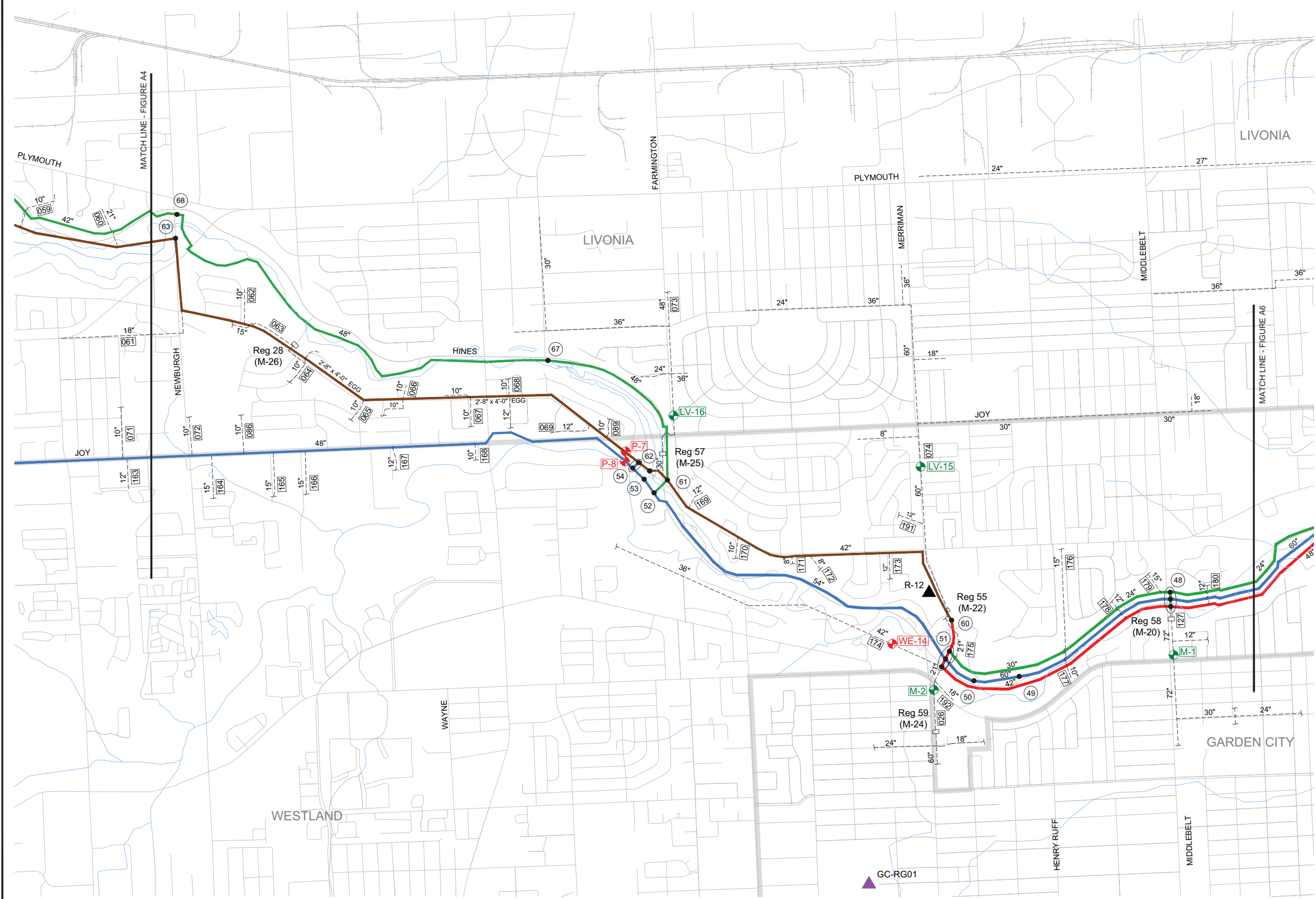
SYSTEM
MONITORING PLAN
FIGURE A3 OF 8



ROUGE VALLEY SEWAGE DISPOSAL SYSTEM
MIDDLE ROUGE INTERCEPTOR SCHEMATIC
5 MILE ROAD TO NEWBURGH



SYSTEM
MONITORING PLAN
FIGURE A4 OF 8



LEGEND

- ▲ WAYNE COUNTY RAIN GAGE LOCATION
- ▲ COMMUNITY RAIN GAGE LOCATION
- P-1 WAYNE COUNTY FLOW METER LOCATION
- FE-19 COMMUNITY FLOW METER LOCATION
- REGULATOR
- JUNCTION
- 1 JUNCTION ID
- X-XX LINE CONNECTION ID
- COMMUNITY SEWER
- PARKWAY INTERCEPTOR (PWI)
- MIDDLE ROUGE PARKWAY INTERCEPTOR EXTENSION (MRPIE)
- ROUGE VALLEY INTERCEPTOR (RVI)
- MIDDLE ROUGE INTERCEPTOR RELIEF (MRIR)
- COMMUNITY BOUNDARY

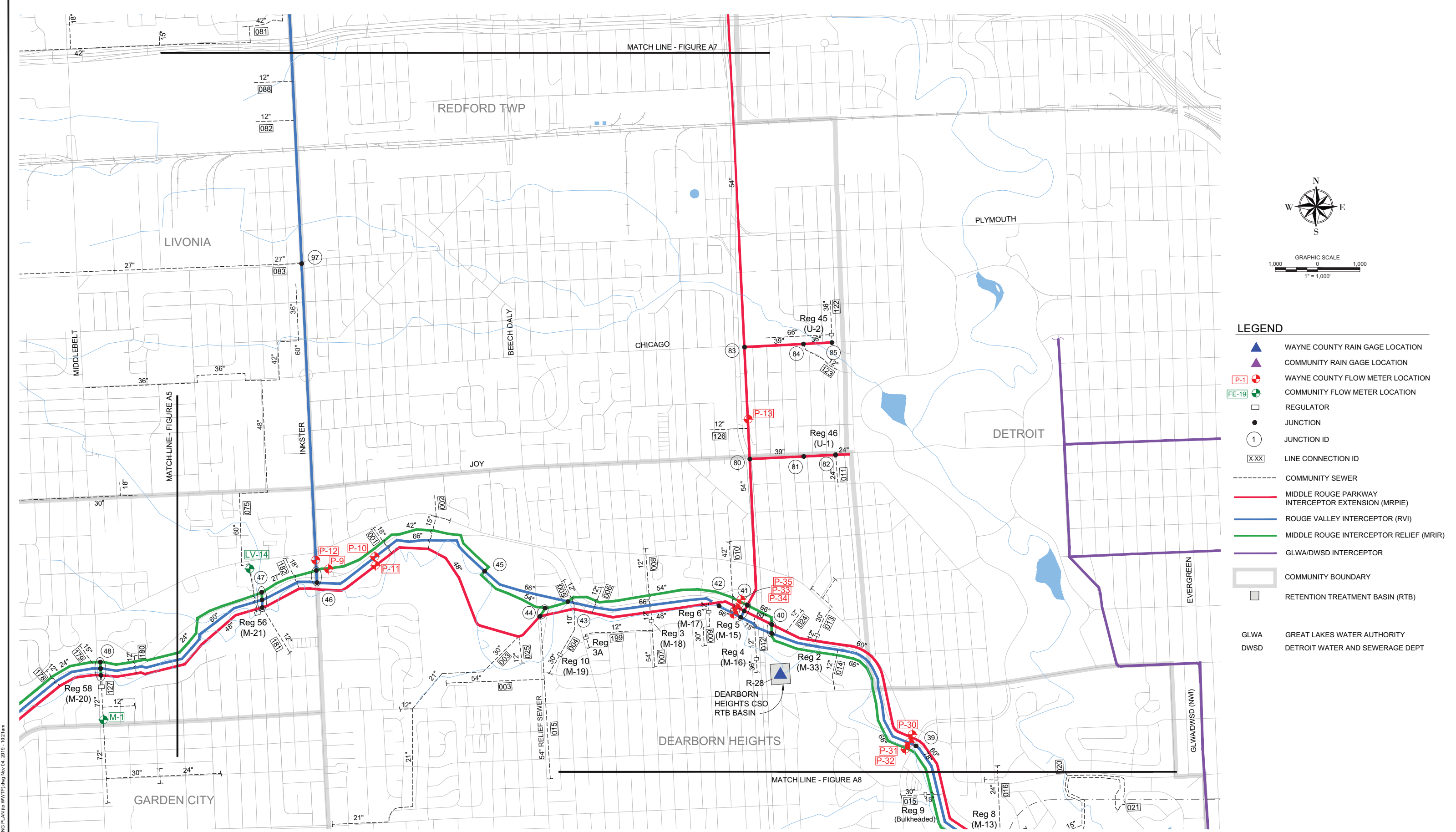
ROUGE VALLEY SEWAGE DISPOSAL SYSTEM
MIDDLE ROUGE INTERCEPTOR SCHEMATIC
NEWBURGH TO MIDDLEBELT



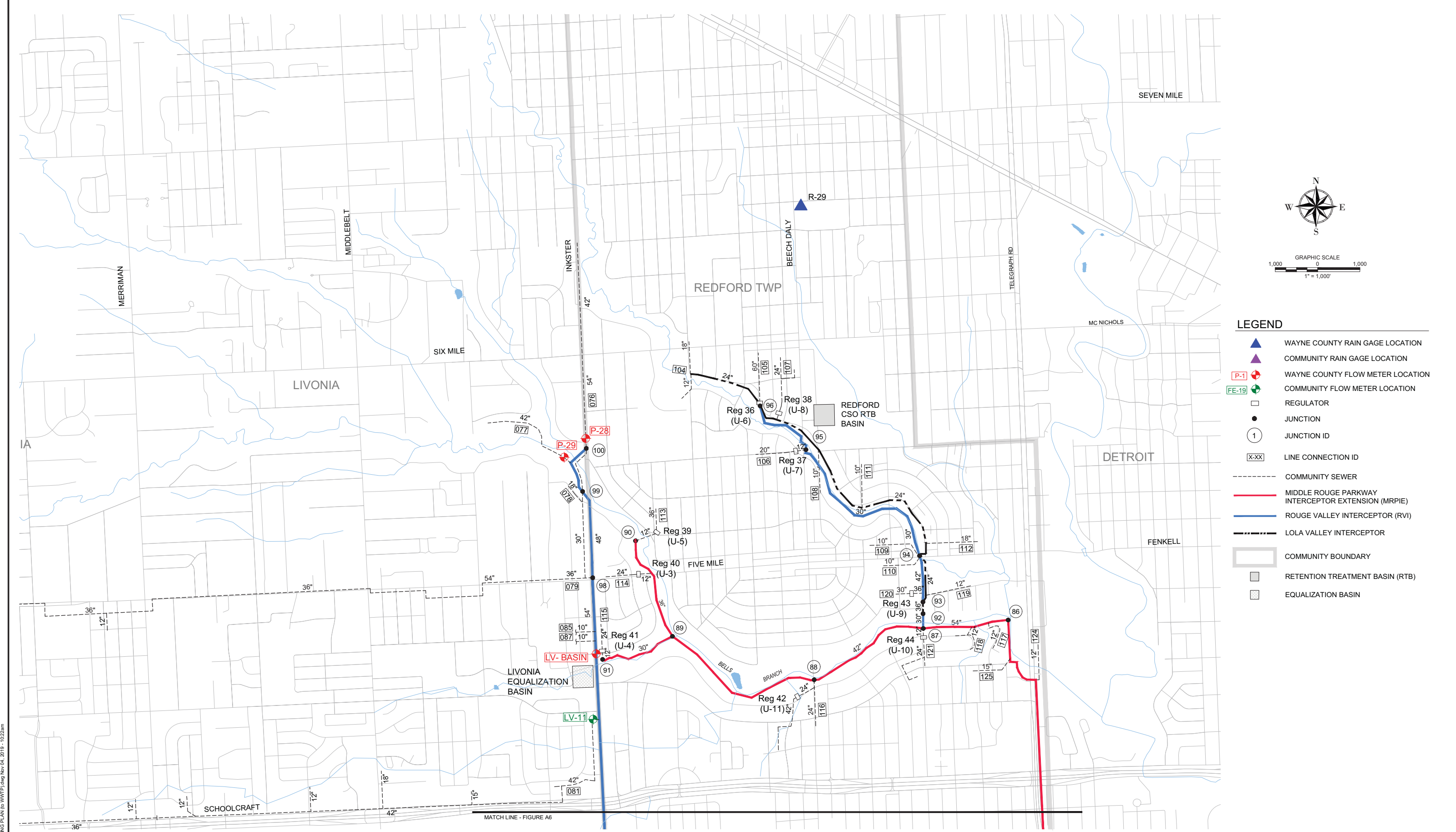
SYSTEM
MONITORING PLAN
FIGURE A5 OF 8

K:\DWG\figa20151510R\SDS SYSTEM MONITORING PLAN (to WWTP).dwg Nov 04, 2019 - 10:28am

K:\DWGFiles\2015\15-016\SDS SYSTEM MONITORING PLAN (to WWP).dwg, Nov 04, 2019 - 10:21am



K:\DWGFiles\2015\1510\RVSDS SYSTEM MONITORING PLAN to WWP\Fig Nov 04, 2019 - 1:22am

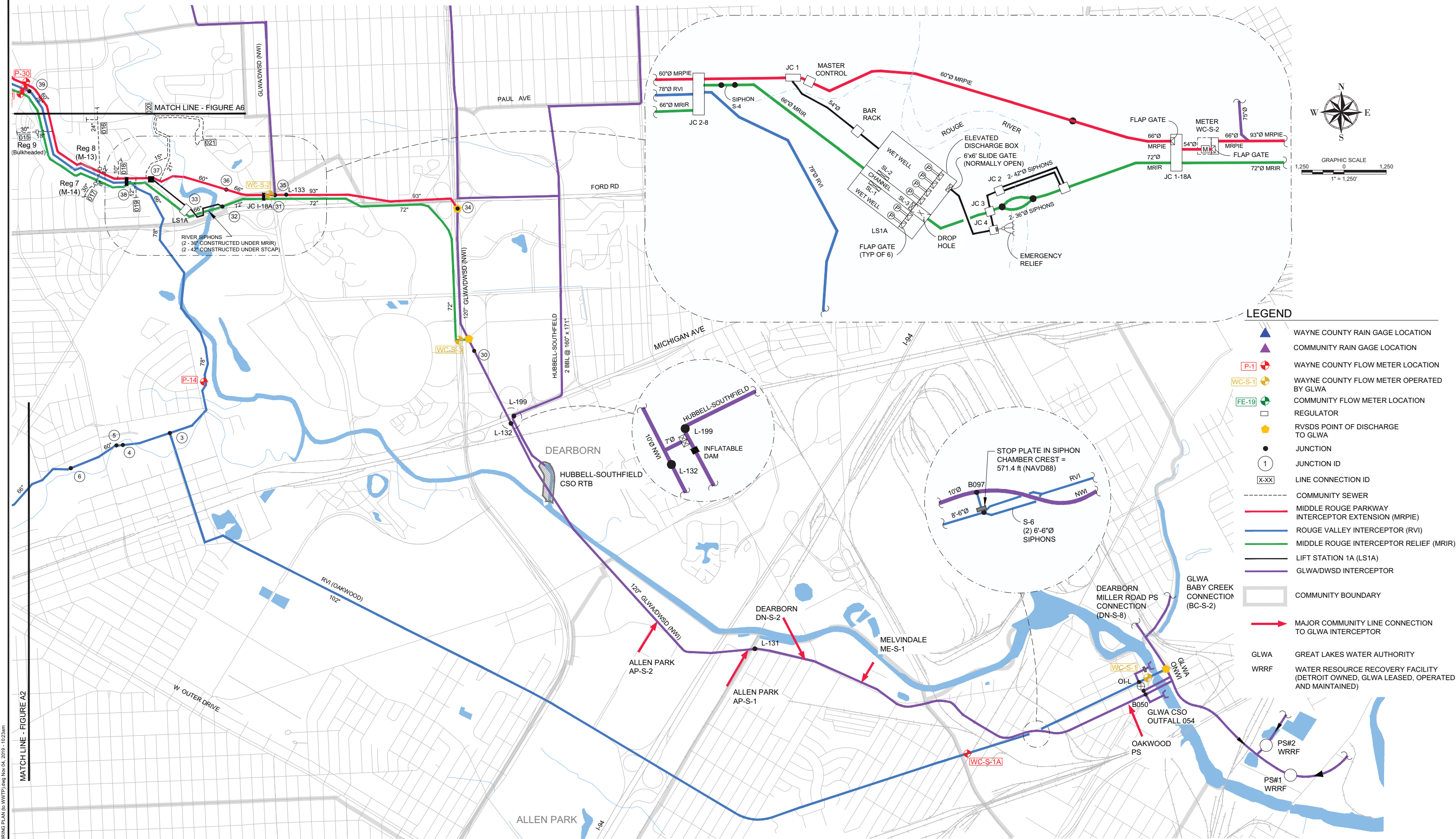


ROUGE VALLEY SEWAGE DISPOSAL SYSTEM
MIDDLE ROUGE INTERCEPTOR SCHEMATIC
INKSTER AND REDFORD ARMS



SYSTEM
MONITORING PLAN
FIGURE A7 OF 8

K:\DWGFiles\2015\1510\RVSDS SYSTEM MONITORING PLAN (to WWP)\dwg Nov 04, 2019 - 10:23am



ROUGE VALLEY SEWAGE DISPOSAL SYSTEM INTERCEPTOR SYSTEM SCHEMATIC DOWNSTREAM END OF SYSTEM



**SYSTEM
MONITORING PLAN**
FIGURE A8 OF 8