

TECHNICAL MEMORANDUM

To: Kevin Ko, P.E.
 From: Mike Swan, P.E.
 Date: March 27, 2020
 Subject: City of Maywood – Wet Weather Sewer Flow Monitoring and
 Model Calibration



Introduction

The purpose of this memorandum is to document the sewer model calibration and subsequent analysis of the City of Maywood’s sewer system based on wet weather flow monitoring data collected by ADS from December 20, 2019 to January 16, 2020.

The Maywood sewer system discharges primarily to two Los Angeles County Sanitation District (LACSD) trunk sewer lines with a small area discharging to the City of Bell. The major LACSD trunk line collecting sewage from the western portion of the City is the Wright Road Trunk that flows south in Atlantic Blvd. This trunk sewer also collects sewage from the City of Vernon at its upstream terminus near the Maywood/Vernon boundary. Most of the eastern portion of the City discharges to LACSD’s Wilcox Avenue Trunk Sewer at that trunk sewer’s upstream terminus at Alamo Avenue and Randolph Street. A small portion of the City sewer system, on the eastern edge, discharges directly to the City of Bell collection system at Walker Avenue. Figure 1 shows various tributary sub-basins color coded with five basins in the City labeled Basin 1 through 5. In addition, there are two City of Vernon basins labeled Vernon 2 and Vernon 4. Maywood Basins 1 and 2 and Vernon 2 are tributary to the Wright Road Trunk in Atlantic Blvd, Maywood Basins 3 and 4 and Vernon 4 are tributary to the Wilcox Avenue Trunk on Alamo Avenue, and Basin 5 is tributary to the City of Bell at Walker Avenue.

Dry weather flow model calibration was previously completed using flow monitoring conducted by ADS at four locations from May 8 to May 24, 2019 and documented in a technical memorandum dated June 26, 2019. Flow monitoring data was collected at MH 972 on the Wright Road Trunk and at MH 1185 on the Wilcox Avenue Trunk. A monitoring site was also located to collect data for Vernon 2 where it enters the LACSD Wright Road Trunk and along East 53rd Street (MH 390) which collects sewage from a tributary area that is almost entirely residential land use. A summary of the average and peak flows for the May 2019 monitoring is shown on Table 1.

TABLE 1 - FLOW MONITORING DATA SUMMARY

May 2019 FM Data (MGD)	ADWF	PDWF	Peak to Avg
MH 972 (Basin 2 & Vernon 2)	1.08	1.85	1.71
MH 1185 (Basin 3, 4 & Vernon 4)	0.53	0.91	1.72
Vernon 2	0.41	1.12	2.76
MH 390 (East 53 rd Street)	0.09	0.18	2.14

Winter Flow Monitoring Data

Winter flow monitoring was conducted at these same four locations for a 28-day period from December 20, 2019 through January 16, 2020 in hopes of capturing a significant rainfall event. During this period, two rainfall events occurred, the first beginning on December 22nd and the second beginning on December 25th. Based on NOAA statistics in the area, the first storm event was about a 1-year storm (1-year return period or occurs once a year on average) with a 6-hour duration. The second storm, starting on December 25th at around 9 p.m., was about a 10-year storm with a 6-hour duration. This represents a significant event with a 10-year return period or occurring once every 10 years on average. Peak flows for both of these storms occurred overnight during normally minimum dry weather flow periods. The December 25th storm was also on a holiday which can alter the typical flow pattern. The plot of both rainfall events compared to storm return periods is shown on Figure 2.

The winter flow monitoring report by ADS is attached along with plots of the storm events. Plotting the rainfall event with the flow monitoring data shows a quick response of sewer flow to storm water flow (Figure 3). The pipeline flow rate at each monitoring location peaks and dissipates quickly. This implies much more inflow to the system through manholes or illegal drain connections as opposed to infiltration from the soil into the pipelines (i.e. at pipe joints or cracks).

A 10-year storm event is considered sufficient for the sewer capacity analysis of wet weather conditions, therefore, the model was calibrated to the December 25th flow data. Table 2 shows a summary of the winter flow monitoring data. The average dry weather flow (ADWF) and peak dry weather flow (PDWF) was calculated for the winter monitoring data, as was the peak wet weather flow (PWWF). In comparing to Table 1, the winter PDWF was slightly lower than the PDWF from the May 2019 monitoring data. The dry weather flow model calibration to the May data was not changed, adding a level of conservatism.

TABLE 2 - WINTER FLOW MONITORING DATA SUMMARY

Dec 2019 FM Data (MGD)	ADWF	PDWF	Peak Dry to Average	PWWF	Peak Wet to Average
MH 972 (Basin 2 & Vernon 2)	0.95	1.75	1.85	4.32	4.57
MH 1185 (Basin 3, 4 & Vernon 4)	0.46	0.77	1.66	1.75	3.78
Vernon 2	0.29	0.73	2.51	1.00	3.42
MH 390 (East 53 rd Street)	0.09	0.17	1.89	0.50	5.50

Wet Weather Flow Model Updates

The peak storm flow rate (excluding the dry weather sewer flow) was estimated by subtracting the ADWF from the PWWF. This peak storm flow rate was applied on a prorated basis to each manhole in the model based on the surface area tributary to the manhole. The total peak storm flow was calculated to equal approximately 4.66 MGD combined with 3.37 MGD discharging to the Wright Road Trunk and 1.29 MGD discharging to the Wilcox Avenue Trunk. These quantities were placed in the model to match the total storm outflow for each tributary area.

The sewer model maintained the dry weather flow factors that were developed using the May 2019 flow monitoring data. The model was updated with the peak storm flow measured for the larger December 25th event. To evaluate the capacity of the sewer system under wet weather conditions, the calculated storm flow was added to the peak dry weather flow. The actual storm event occurred overnight, however, the peak wet weather simulation assumed that the same storm occurs coincidental to peak flow conditions (worst case scenario).

Simulations were run utilizing the calibrated dry weather peak flow and the 10-year storm event. Sewer model output for simulated peak flow is included in Appendix C along with the corresponding model sewer map showing manhole numbers. Pipelines depth to diameter (d/D) ratios at or above 0.75 under peak wet weather conditions are indicated on Figure 4. Under PWWF conditions, a d/D below 0.90 is considered adequate for existing pipelines. There are three locations where the d/D is at or above 0.90 including three pipeline reaches that are full with a d/D equal to 1.0.

One of the full pipeline segments (GM-462) is 8-inch diameter and approximately 87 feet long within Maywood Park. This sewer was relocated to make way for the construction of a swimming pool in the park. Another pipeline (GM-438) is a short reach, approximately 30 feet, of 15-inch pipeline in Alamo Avenue just south of Slauson Avenue. Both of these locations were identified as deficient in the previous dry weather flow analysis. The third location is along 52nd Street and 52nd Place, upstream of Cudahy Avenue. There is approximately 350 feet of 8-inch pipeline (GM-126) that models full along 52nd Place. Just upstream, along 52nd Street, there are three reaches of pipeline at or near 0.9 d/D. This analysis indicates sufficient capacity to meet peak wet weather flows throughout the remainder of the system.

Recommendations

Based on the above, the following improvements/actions are recommended:

1. Replace pipeline segments in Alamo Avenue from 52nd Place (MH-345) to the south side of Slauson Avenue (MH-343), which totals approximately 30 linear feet. By raising the invert elevations of the two manholes near the intersection of Slauson Avenue (MH-344 and MH-415) slightly, a slope of approximately 0.0125 can be attained for this reach and the inflow inverts at these two manholes (MH-344 from the east and MH-415 from the west) will still come into these manholes above the out inverts. This will eliminate the adverse slope of the pipe segment GM-438 between MH-415 and MH-343.
2. Conduct further research on the sewer segment that was constructed around the swimming pool in Maywood Park and if the adverse slope is confirmed, develop a design that corrects this deficiency. These manholes were included in the survey conducted by Psomas in April 2019. One potential solution might be to construct a new line from MH-199 down Heliotrope Avenue to the existing line in 58th Street and the line through the park could then be abandoned at least to the downstream end of the swimming pool, assuming no laterals are connected. And if there are laterals connected in the reach upstream of the swimming pool, they could likely be re-routed to the new line in Heliotrope.

3. Replace wet weather deficient pipeline segments along 52nd Place and 52nd Street. This includes 4 segments of 8-inch pipeline totaling 1,265 feet. These pipeline rim and invert elevations were included in the April 2019 survey, so the slopes in the model are accurate.
4. Continue to rehabilitate the sewer collection system including segment replacements, lining and point repairs, which will reduce infiltration. Consider checking CCTV files for illegal drain connections and based on these checks, consider smoke testing in certain areas and take appropriate action to eliminate any drain connections discovered, which will reduce inflow.

Attachments: Figures 1 through 4, ADS Winter 2019/20 Flow Monitoring Report, Junction Map and PWWF Output

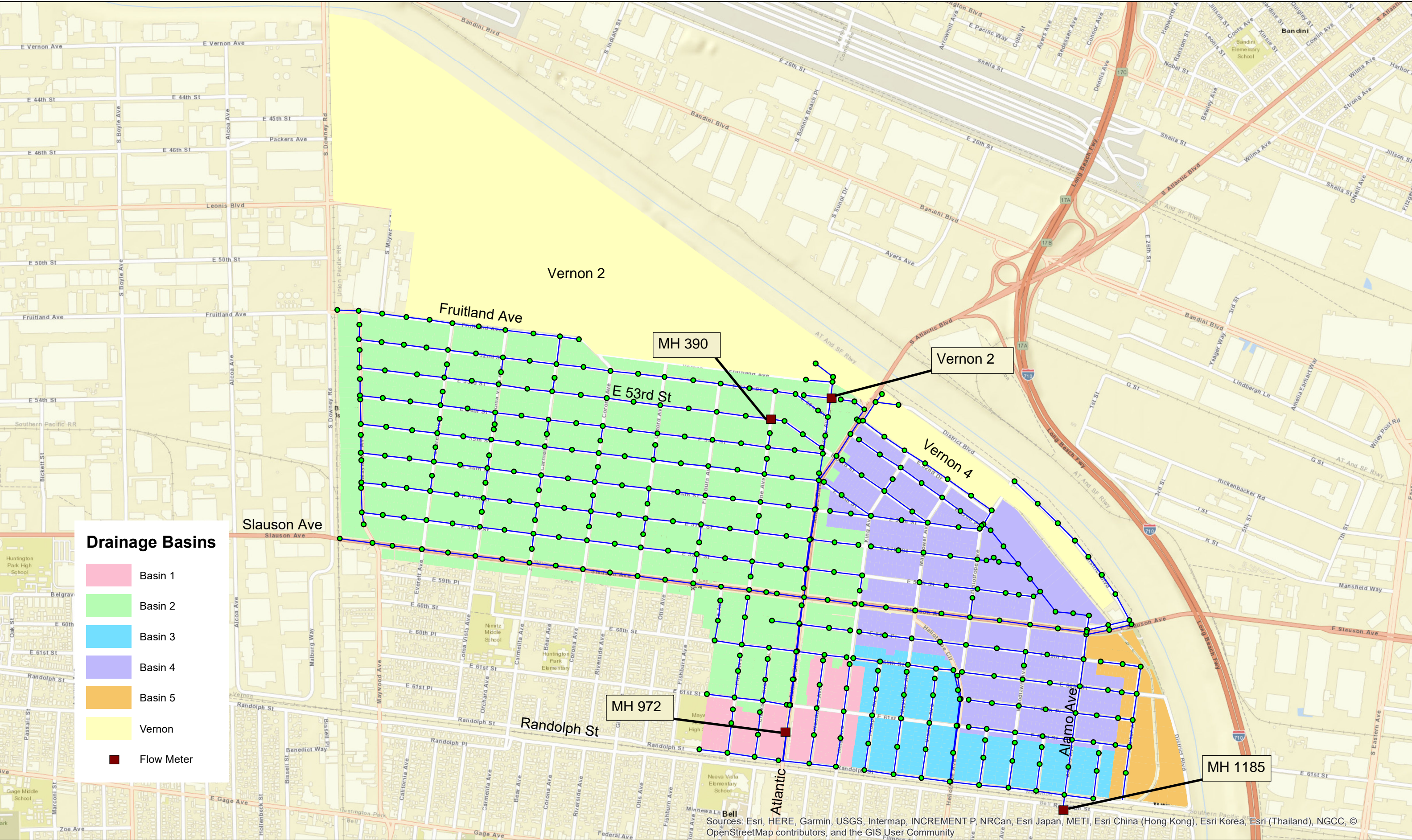


FIGURE 1
Maywood Sewer Sub-Basins and Flow Monitoring Locations

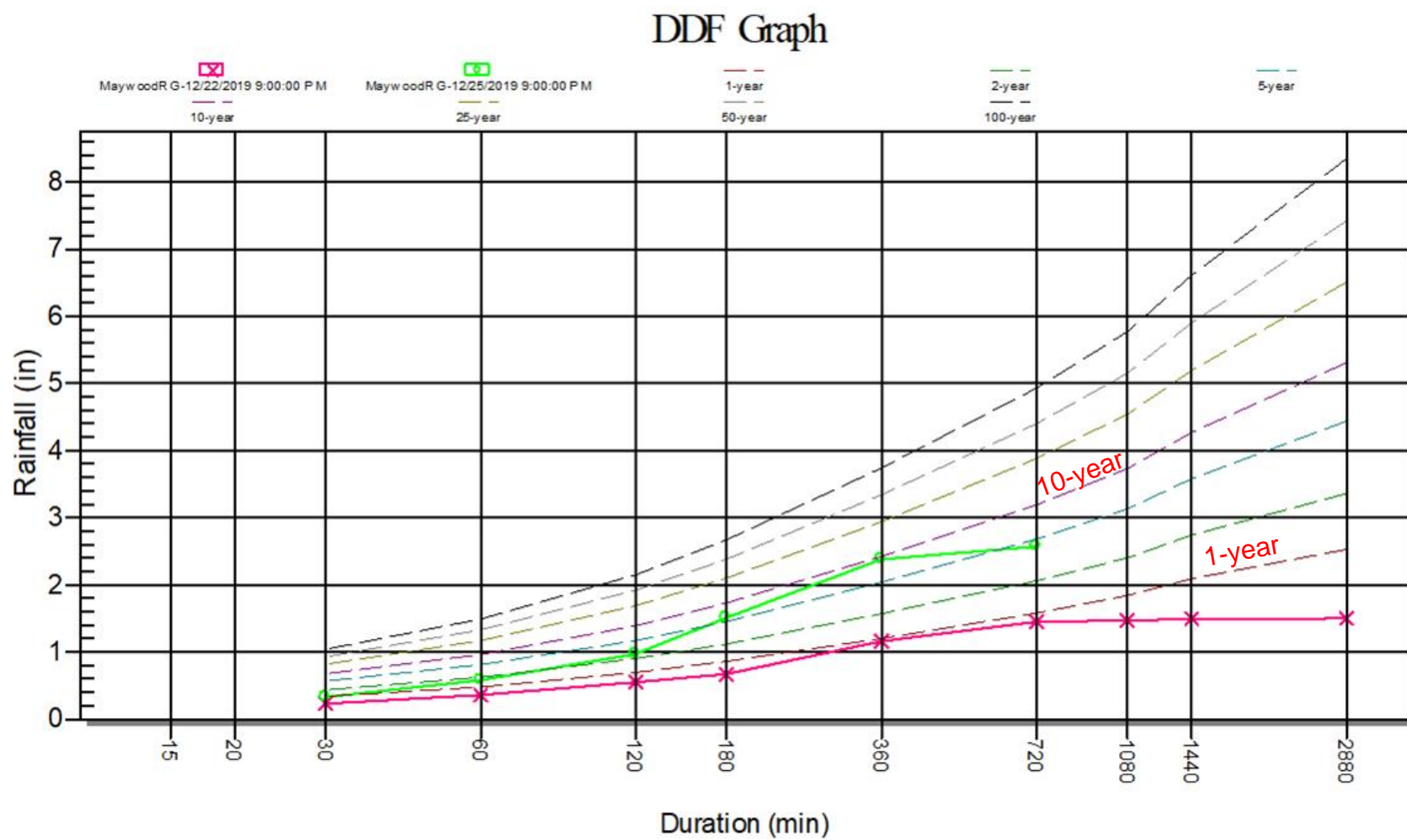


Figure 2
Winter Flow Monitoring Rainfall Events

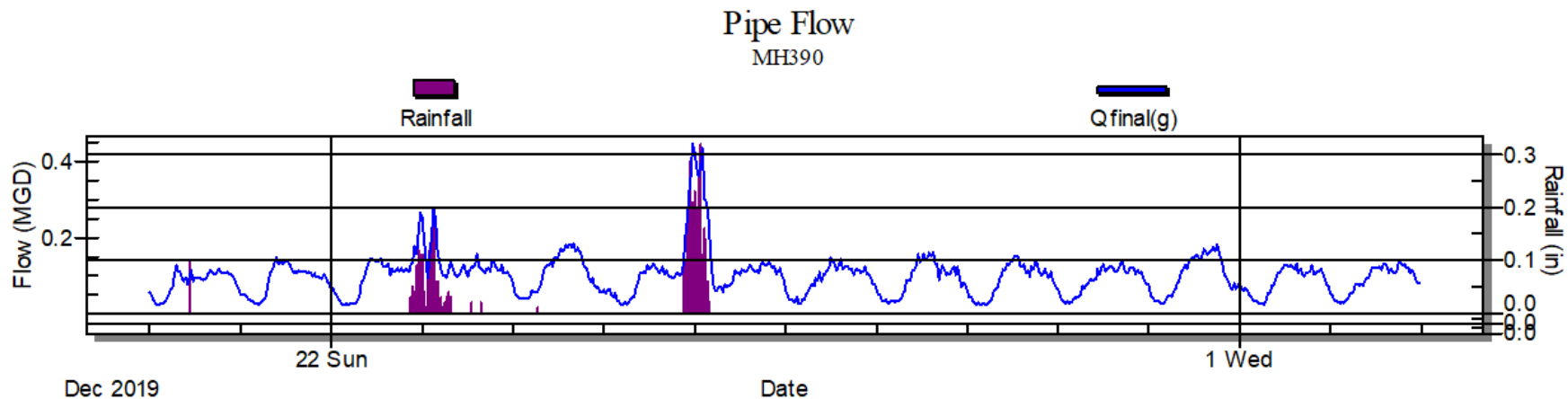
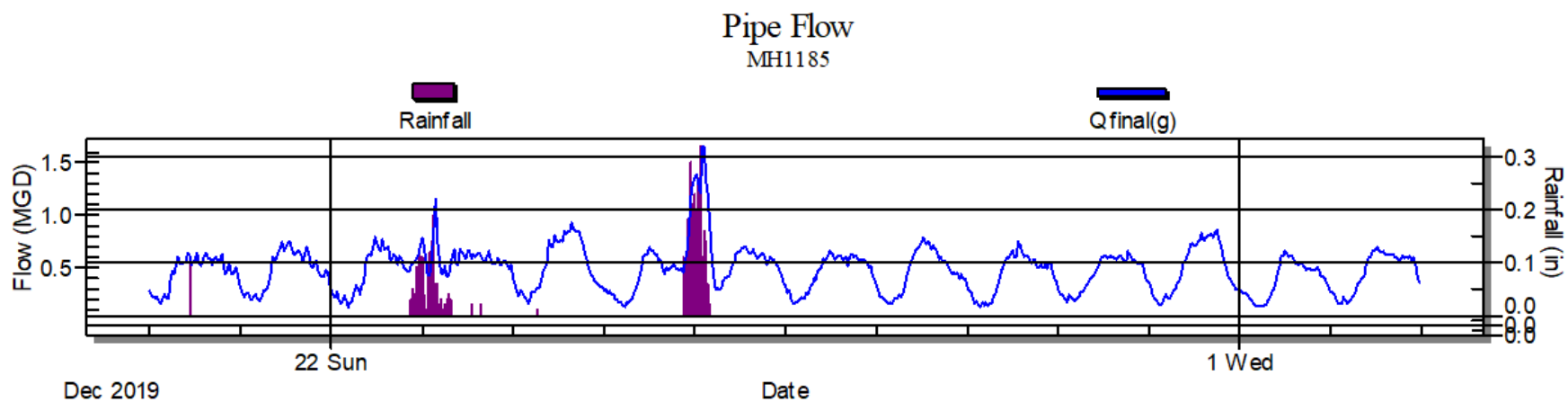


Figure 3
Winter Flow Monitoring
Pipeline Flow and Rainfall Events

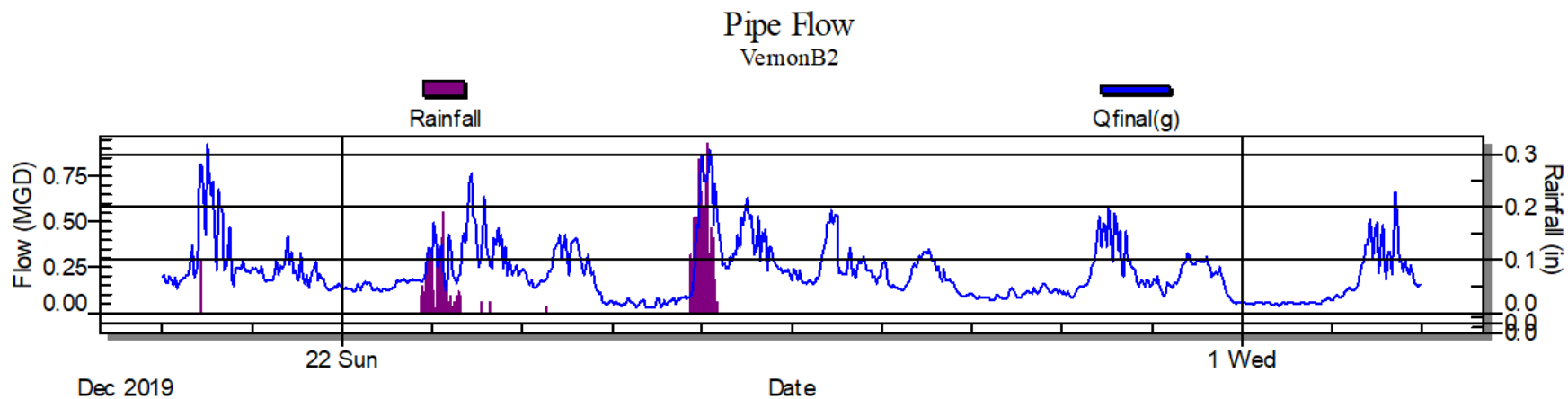
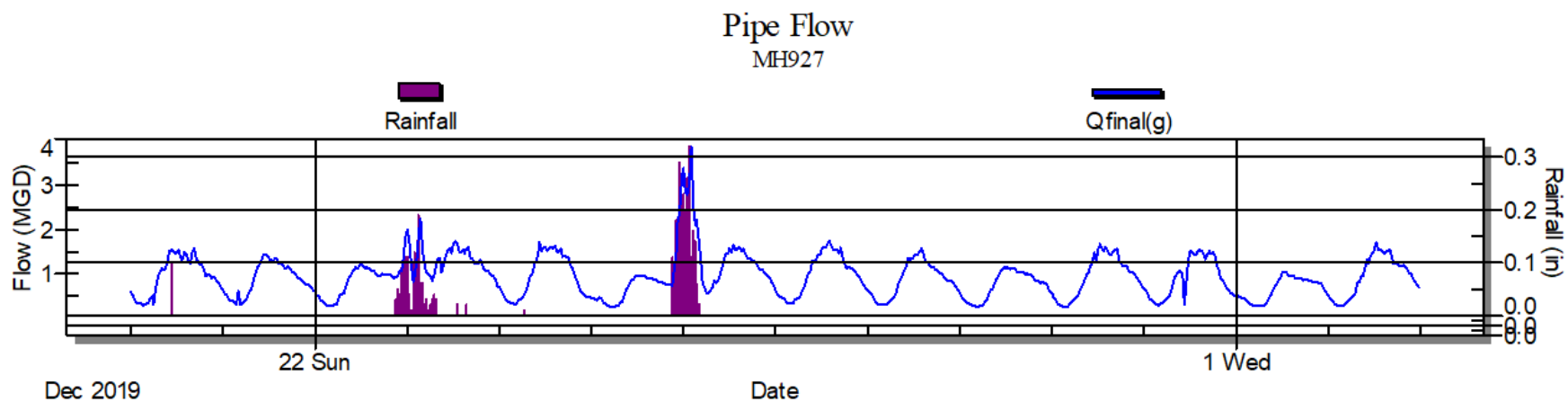
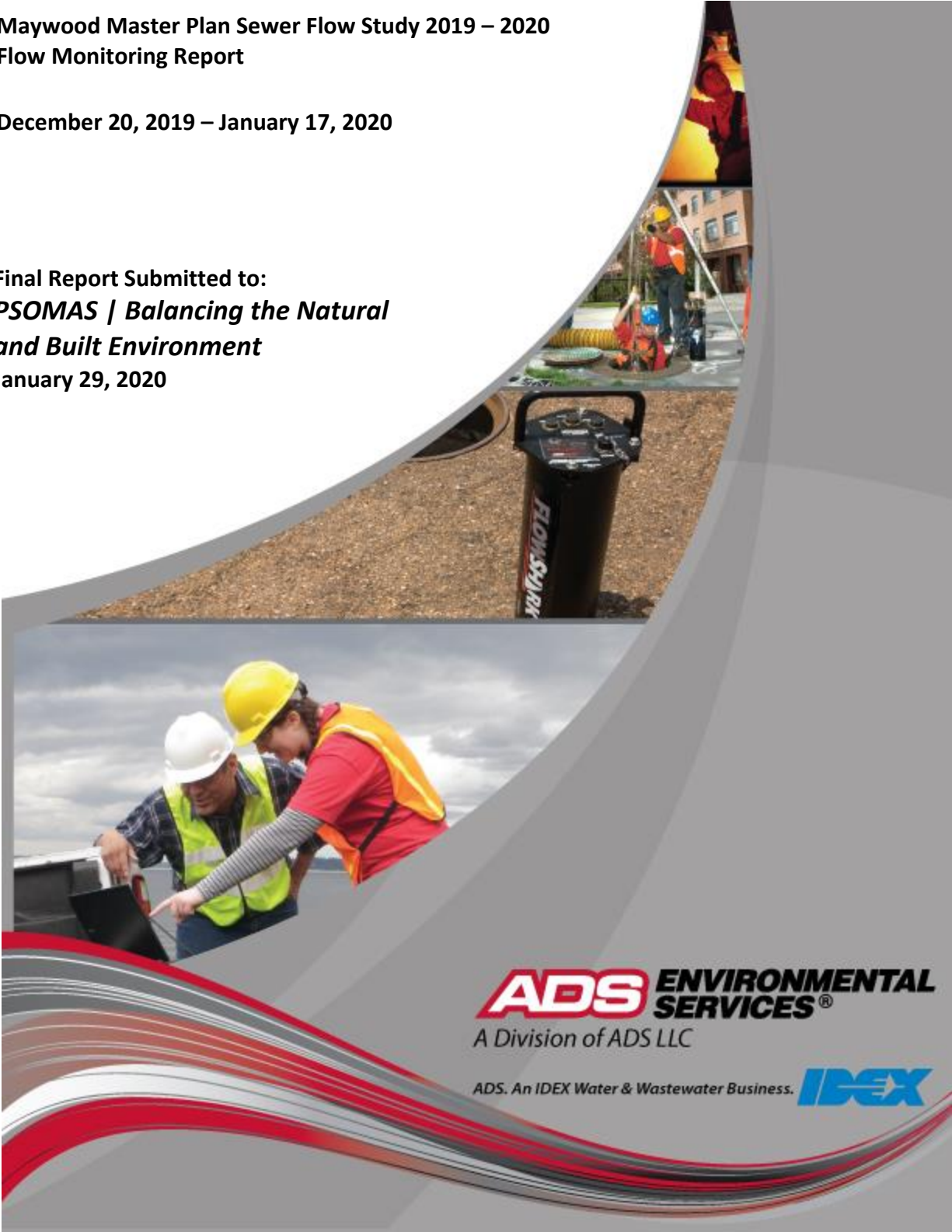


Figure 3 (cont.)
Winter Flow Monitoring
Pipeline Flow and Rainfall Events

**Maywood Master Plan Sewer Flow Study 2019 – 2020
Flow Monitoring Report**

December 20, 2019 – January 17, 2020

**Final Report Submitted to:
*PSOMAS | Balancing the Natural
and Built Environment*
January 29, 2020**



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Maywood Master Plan Sewer Flow Study 2019 - 2020

Prepared for:

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January 29, 2020

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SUBJECT: Maywood Master Plan Sewer Flow Study 2019 - 2020

Dear Mike,

ADS is pleased to submit the report for the Maywood Master Plan Sewer Flow Study 2019 - 2020 conducted on behalf of PSOMAS. The metering was contracted for twenty-eight (28) days at four (4) locations. The study period is December 20, 2019 - January 17, 2020. All available data has been provided.

The report contains 5-minute averaged depth, velocity, and quantity hydrographs as well as daily long tables for the metering period in pdf format. Excel files containing depth, quantity, and velocity entities for each monitoring location in both 5-minute and 15-minute format are also provided.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, you may contact the Project Manager, Paul Mitchell at (714) 379-9778 ext 223.

It has been our pleasure to serve you in the performance of this project. Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Jackie Crutcher
Data Manager

Introduction

PSOMAS entered into an agreement with ADS Environmental Services to conduct flow monitoring at four (4) metering points in the Maywood, CA and LA County, CA Collection System. The study was conducted over a twenty-eight (28) day period. The study period is December 20, 2019 - January 17, 2020. The primary objective of the monitoring was to determine current flows for master planning purposes.

Project Scope

The scope of this study involved using flow monitors to quantify wastewater flows at the designated locations. Specifically, the study included the following key components.

- Investigate the proposed flow-monitoring sites for adequate hydraulic conditions.
- Flow monitor installations.
- Flow monitor confirmations and data collections.
- Flow data analysis.

Equipment installation was completed on December 19, 2019. The study period began on December 20, 2019 and was completed on January 17, 2020.

Flow Monitoring Equipment



The **ADS FlowShark Triton** monitor was selected for this project. This flow monitor is an area velocity flow monitor that uses both the Continuity and Manning's equations to measure flow.

The ADS FlowShark Triton monitor consists of data acquisition sensors and a battery-powered microcomputer. The microcomputer includes a processor unit, data storage, and an on-board clock to control and synchronize the sensor recordings. The monitor was programmed to acquire and store depth of flow and velocity readings at 5-minute intervals.

The FS Triton monitor features cross-checking using multiple technologies in each sensor for continuous running of comparisons and tolerances. The FS Triton monitor can support two (2) sets of sensors. The sensor option used for this project was:

The Peak Combo Sensor installed at the bottom of the pipe includes three types of data acquisition technologies.

The **up looking ultrasonic depth** uses sound waves from two independent transceivers to measure the distance from the sensor upward toward the flow surface; applying the speed of sound in the water and the temperature measured by sensor to calculate depth.

The **pressure depth** is calculated by using a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a

desiccant filled breather tube.

To obtain **peak velocity**, the sensor sends an ultrasonic signal at an angle upward through the widest cross-section of the oncoming flow. The signal is reflected by suspended particles, air bubbles, or organic matter with a frequency shift proportional to the velocity of the reflecting objects. The reflected signal is received by the sensor and processed using digital spectrum analysis to determine the peak flow velocity.

Installation

Installation of flow monitoring equipment typically proceeds in four steps. First, the site is investigated for safety and to determine physical and hydraulic suitability for the flow monitoring equipment. Second, the equipment is physically installed at the selected location. Third, the monitor is tested to assure proper operation of the velocity and depth of flow sensors and verify that the monitor clock is operational and synchronized to the master computer clock. Fourth, the depth and velocity sensors are confirmed and line confirmations are performed.

In pipes up to 42 inches in diameter, the sensors were mounted on expandable stainless steel rings, inserted at least a foot upstream into influent pipes and tightened against the inside walls of the pipes. Influent pipe installations reduce the influences of turbulence and backwater often caused by changes in channel geometry in manholes.



Data Collection, Confirmation, and Quality Assurance

Data collects were done remotely via wireless connect on a weekly basis via ADS Field Representatives. During the monitoring period, field crews visit each monitoring location to verify proper monitor operation and document field conditions. The following quality assurance steps are taken to assure the integrity of the collected data:

Measure power supplies: monitors were powered by dry cell battery packs. Voltages were recorded and battery packs replaced, as necessary. Separate batteries provided back-up power to memory allowing primary batteries to be replaced without loss of data.

Clock synchronization: Field crews synchronized monitor clocks to master clocks.

Confirm depth and velocity readings: Field crews descended into meter manholes to manually measure depths and velocities and compare them meter readings to confirm that they agreed. They also measured silt levels, if any, in the inverts of the pipes. Silt areas were subtracted from flow areas to compute true areas of flow.

Confirm average velocities through cross-sectional velocity profiles: Since ADS velocity sensors measure peak velocity, field crews collected cross-sectional velocity profiles in order to develop a relationship between peak and average velocity in lines that meet the hydraulic criteria.

Upload and Review Data: Data collected from the monitors were uploaded and reviewed by a Data Analyst for completeness, outliers and deviations in the flow patterns, which indicate system anomalies or equipment failure.

Flow Quantification Methods

There are two main equations used to measure open channel flow: the **Continuity Equation** and the **Manning Equation**. The Continuity Equation, which is considered the most accurate, can be used if both depth of flow and velocity are available. In cases where velocity measurements are not available or not practical to obtain, the Manning Equation can be used to estimate velocity from the depth data based on certain physical characteristics of the pipe (i.e. the slope and roughness of the pipe being measured). However, the Manning equation assumes uniform, steady flow hydraulic conditions with non-varying roughness, which are typically invalid assumptions in most sanitary sewers. The Continuity Equation was used exclusively for this study.

Continuity Equation

The Continuity Equation states that the flow quantity (Q) is equal to the wetted area (A) multiplied by the average velocity (V) of the flow.

$$Q = A * V$$

This equation is applicable in a variety of conditions including backwater, surcharge, and reverse flow.

Data Analysis and Presentation

Data Analysis

A flow monitor is typically programmed to collect data at either 15-minute or 5-minute intervals throughout the monitoring period. The monitor stores raw data consisting of (1) the ultrasonic depth, (2) the peak velocity and (3) the pressure depth. The data is imported into ADS's proprietary software and is examined by a data analyst to verify its integrity. The data analyst also reviews the daily field reports and site visit records to identify conditions that would affect the collected data.

Velocity profiles and the line confirmation data developed by the field personnel are reviewed by the data analyst to identify inconsistencies and verify data integrity. Velocity profiles are reviewed and an average to peak velocity ratio is

calculated for the site. This ratio is used in converting the peak velocity measured by the sensor to the average velocity used in the Continuity equation. The data analyst selects which depth sensor entity will be used to calculate the final depth information. Silt levels present at each site visit are reviewed and representative silt levels established.

Occasionally the velocity sensor's performance may be compromised resulting in invalid readings sporadically during the monitoring period. This is generally caused by excessive debris (silt) blocking the sensor's crystals, shallow flows ($\sim < 1"$) that may drop below the top of the sensor or very clear flows lacking the particles needed to measure rate. In order to use the Continuity equation to quantify the flow during these periods, a Data Analyst and/or Engineer will use the site's historical pipe curve (depth vs. velocity) data along with valid field confirmations to reconstitute and replace the false velocity recordings with expected velocity readings for a given historical depth along the curve.

Selections for the above parameters can be constant or can change during the monitoring period. While the data analysis process is described in a linear manner, it often requires an iterative approach to accurately complete.

Data Presentation

This type of flow monitoring project generates a large volume of data. To facilitate review of the data, results have been provided in graphical and tabular formats. The flow data is presented graphically in the form of scattergraphs and hydrographs. Hydrographs are based on 5-minute averaging. Tables are provided in daily average format. These tables show the flow rate for each day, along with the daily minimum and maximums, the times they were observed, the total daily flow, and total flow for the month (or monitoring period). The following explanation of terms may aid in interpretation of the tables and hydrographs.

DEPTH - Final calculated depth measurement (in inches)

QUANTITY - Final calculated flow rate (in MGD)

VELOCITY - Final calculated flow velocity (in feet per second)

REPORT TOTAL - Total volume of flow recorded for the indicated time period (in MG)

Site Commentary

Site Information

MH1185	
Pipe Dimensions	15.13
Silt Level	0.00"

Overview

Site MH1185 functioned under normal conditions during the period Friday, December 20, 2019 to Friday, January 17, 2020 . This site exhibited an observable response to the wet weather events of December 22, 2019 - December 23, 2019 and December 25, 2019 - December 26, 2019. Surge conditions were experienced at this location. Review of the scattergraph shows that both free flow and backwater flows were recorded during the study period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Observations

Average flow depth, velocity, and quantity data observed during Friday, December 20, 2019 to Friday, January 17, 2020 , along with observed minimum and maximum data, are provided in the following table.

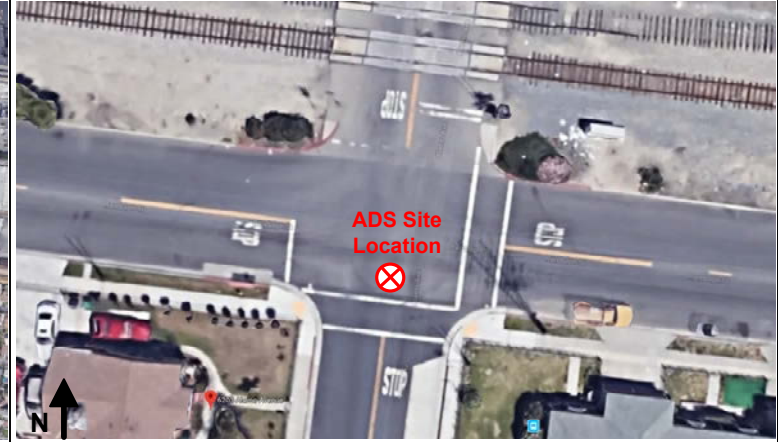
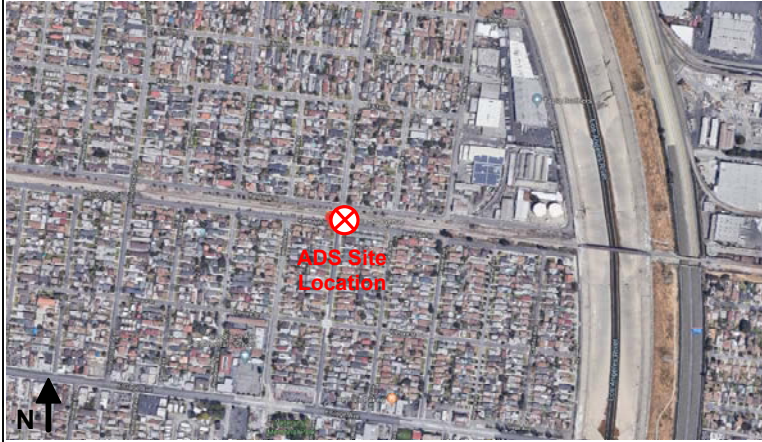
Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	5.85	1.62	0.476
Minimum	3.38	0.67	0.116
Maximum	43.63	2.82	1.750
Time of Minimum	1/12/2020 4:50 AM	1/1/2020 6:05 AM	12/22/2019 4:50 AM
Time of Maximum	12/26/2019 2:35 AM	12/25/2019 11:50 PM	12/26/2019 2:30 AM

Data Quality

Data uptime observed during the Friday, December 20, 2019 to the Friday, January 17, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

Project Name: Maywood Psomas TFM 2020		City: Maywood		Agency: Maywood		FM Initials: SK	
Site Name: MH1185		Install Date: 12/19/19		Monitor Type		Peak Doppler	
Address/Location: 6203 Alamo Ave				Monitor Model		Triton+ (8000)	
				Data Acquisition		Manual Collect	
				Manhole ID		MH1185	
Access: Drive		Type of System:		Pipe Height:		15.13 "	
		Sanitary <input checked="" type="checkbox"/> Storm <input type="checkbox"/> Combined <input type="checkbox"/>		Pipe Width:		15.00 "	



Investigation Information:				Manhole Information:			
Date/Time of Investigation:		4/29/19 @ 1100		Manhole Depth:		10'	
Site Hydraulics:		Good straight through flow		Manhole Material / Condition		Brick/OK	
Upstream Input: (L/S, P/S)		DNI		Pipe Material / Condition: VCP/Good			
Upstream Manhole:		DNI		Land Use:		Residential <input type="checkbox"/> Commercial <input checked="" type="checkbox"/> Industrial <input type="checkbox"/> Trunk <input type="checkbox"/>	
Downstream Manhole:		DNI		Oxygen: 20.9		H2S: 0	
Depth of Flow:		6.88 " +/- 0.13"		LEL: 0		CO: 0	
Range (Air DOF):		+/-		Safety Notes: 2 man crew required and one blowers are to be operated at all times.			
Peak Velocity:		1.85 fps					
Silt:		0.00 Inches					

Other Information:			

Installation Information		Backup		Yes	No	?	Distance
Installation Type: Standard		Trunk		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sensors Devices: Ultrasonic / Pressure/ Velocity		Lift / Pump Station		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surcharge Height: 0		WWTP		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rain Gauge Zone:		Other		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Site Information / Comments:	
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Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

MH1185

Flow Monitor

MH1185

Pipe Height
15.13 in

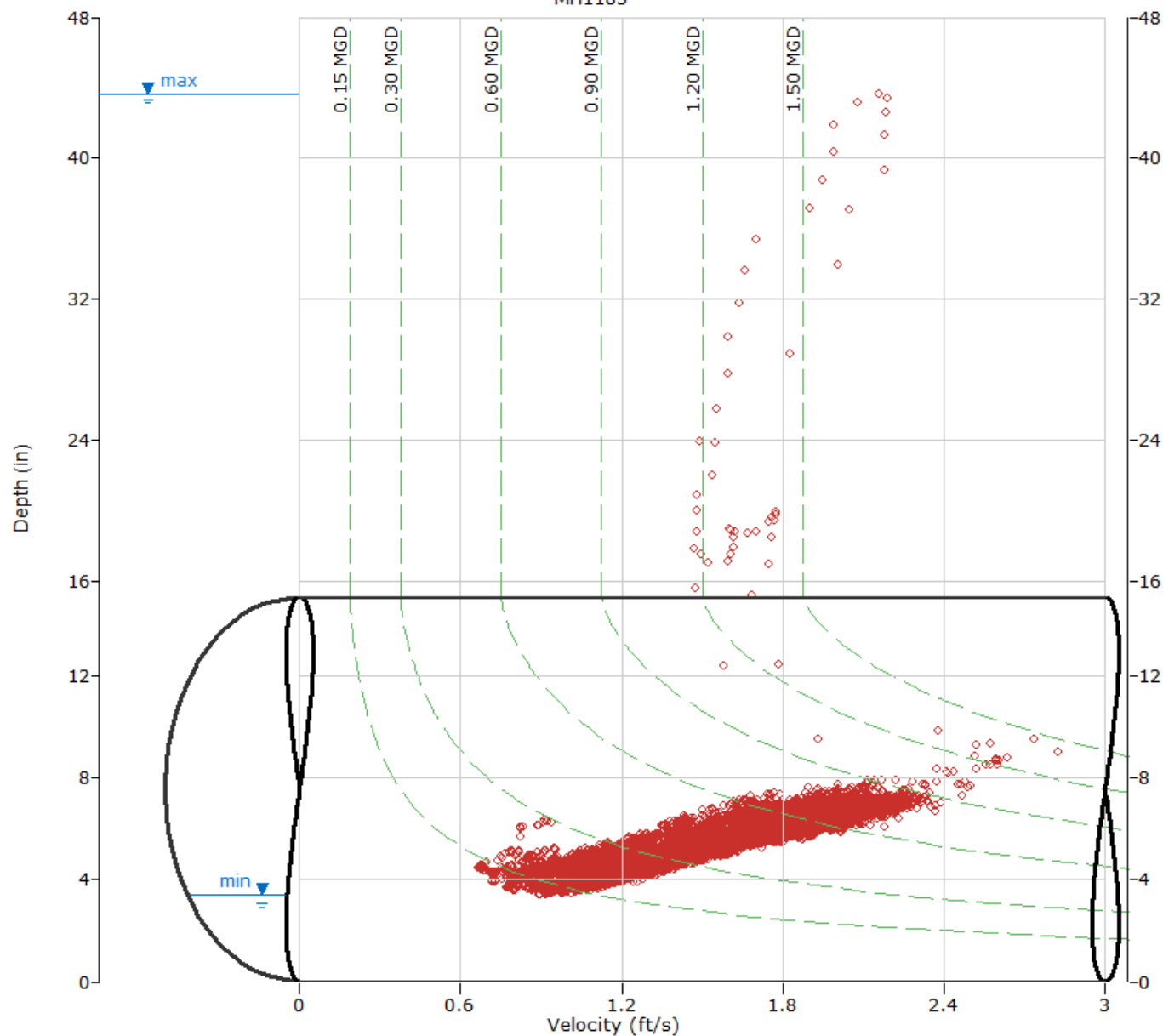
Report Period

12/20/2019
To
1/17/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- ▼ Min-Max Depth

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HYDROGRAPH REPORT

MH1185

Flow Monitor

MH1185

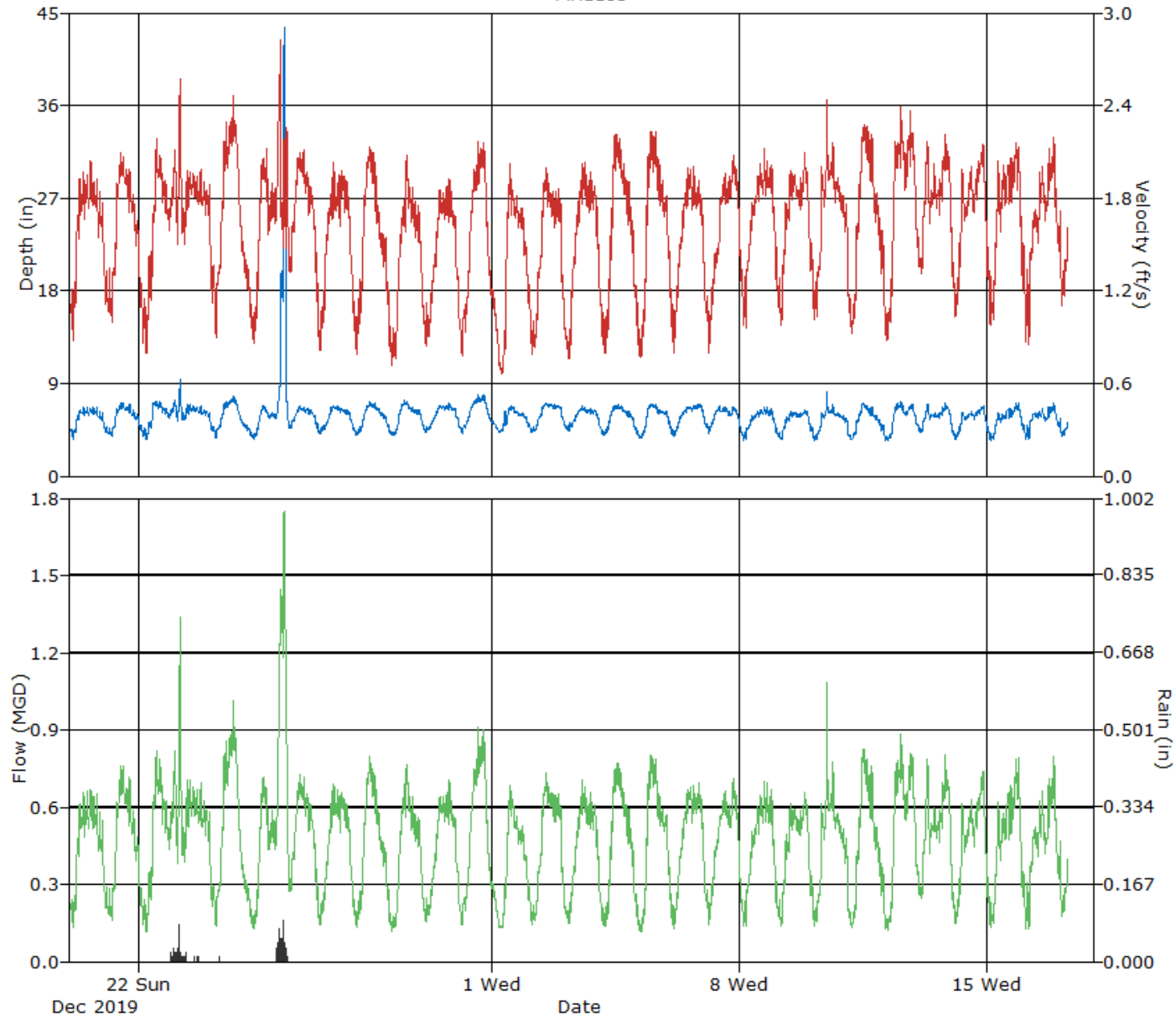
Pipe Height
15.13 in.

Report Period

12/20/2019
To
1/17/2020

Legend

- Depth
- Velocity
- Quantity
- Rain



Daily Tabular Report For The Period 12/20/2019 00:00 - 01/17/2020 23:59
MH1185, Pipe Height: 15.13 in, Silt: 0.00 in
Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/20/2019	03:05	3.61	12:50	6.68	5.71	03:00	0.88	15:05	2.04	1.63	03:05	0.130	15:05	0.666	0.465	0.465	0.00
12/21/2019	05:30	3.84	13:30	7.12	5.73	05:35	1.00	11:10	2.10	1.62	05:30	0.159	11:10	0.762	0.472	0.472	
12/22/2019	04:55	3.60	13:45	7.26	5.81	04:50	0.80	12:00	2.19	1.57	04:50	0.116	12:00	0.819	0.471	0.471	0.44
12/23/2019	01:50	5.35	03:40	9.36	6.35	06:40	1.50	03:40	2.57	1.84	01:50	0.380	03:40	1.337	0.591	0.591	1.05
12/24/2019	04:15	3.75	15:50	7.75	5.86	04:15	0.90	15:45	2.47	1.74	04:15	0.139	15:50	1.015	0.529	0.529	0.01
12/25/2019	05:45	3.63	23:55	9.50	5.52	05:50	0.86	23:50	2.82	1.60	05:50	0.127	23:55	1.448	0.458	0.458	1.07
12/26/2019	06:55	4.60	02:35	43.63	9.30	06:55	1.32	00:00	2.38	1.79	06:55	0.271	02:30	1.750	0.684	0.684	1.50
12/27/2019	03:30	4.13	14:25	6.84	5.76	02:30	0.82	12:10	2.03	1.56	03:30	0.145	12:10	0.689	0.455	0.455	
12/28/2019	04:05	3.95	12:55	7.19	5.79	04:05	0.79	12:35	2.13	1.54	04:05	0.131	12:55	0.799	0.458	0.458	
12/29/2019	03:45	3.93	11:55	7.40	5.79	03:45	0.72	13:30	2.08	1.43	03:45	0.118	13:45	0.767	0.429	0.429	
12/30/2019	02:45	4.21	18:40	7.11	5.91	02:45	0.84	18:45	1.92	1.46	02:45	0.152	18:45	0.704	0.441	0.441	
12/31/2019	03:20	4.17	18:00	7.89	6.16	03:35	0.78	14:15	2.17	1.51	03:35	0.141	14:15	0.912	0.497	0.497	
01/01/2020	04:30	4.22	12:25	6.83	5.58	06:05	0.67	12:10	2.02	1.36	05:35	0.130	12:15	0.684	0.384	0.384	
01/02/2020	03:05	4.21	12:40	7.14	6.01	03:20	0.79	12:30	2.00	1.48	03:20	0.143	12:30	0.735	0.461	0.461	
01/03/2020	04:20	4.39	12:50	6.82	5.81	04:25	0.76	14:25	2.04	1.54	04:20	0.147	12:50	0.708	0.451	0.451	
01/04/2020	03:10	3.93	13:25	6.99	5.73	04:25	0.79	11:30	2.21	1.59	04:50	0.139	12:50	0.772	0.469	0.469	
01/05/2020	04:25	3.71	12:00	7.02	5.62	04:20	0.77	11:30	2.23	1.60	04:20	0.118	11:35	0.803	0.464	0.464	
01/06/2020	03:20	3.85	20:10	7.01	5.87	03:20	0.80	16:25	2.01	1.57	03:20	0.128	20:10	0.696	0.471	0.471	
01/07/2020	03:00	4.14	10:10	6.77	5.86	03:00	0.79	20:10	2.08	1.58	03:00	0.141	20:10	0.710	0.466	0.466	
01/08/2020	02:45	3.48	16:35	6.75	5.49	04:20	0.96	16:20	2.12	1.67	02:45	0.135	16:25	0.699	0.456	0.456	
01/09/2020	04:20	3.53	20:30	6.39	5.40	03:55	0.97	20:15	2.09	1.67	03:55	0.139	20:15	0.657	0.443	0.443	
01/10/2020	02:50	3.44	11:05	8.23	5.46	02:45	1.01	11:05	2.44	1.70	02:45	0.138	11:05	1.083	0.463	0.463	
01/11/2020	04:30	3.53	11:35	7.12	5.53	04:20	0.92	12:15	2.28	1.70	04:30	0.131	12:15	0.824	0.479	0.479	
01/12/2020	04:50	3.38	13:15	7.26	5.64	04:00	0.87	13:10	2.39	1.76	04:40	0.119	13:15	0.882	0.516	0.516	
01/13/2020	03:15	4.29	19:50	7.09	5.78	03:15	1.31	19:40	2.21	1.80	03:15	0.244	19:40	0.805	0.515	0.515	
01/14/2020	03:10	3.58	21:40	6.78	5.47	02:15	1.03	21:20	2.15	1.69	02:15	0.150	21:20	0.737	0.461	0.461	
01/15/2020	02:15	3.44	21:30	7.14	5.53	02:15	0.97	19:20	2.15	1.70	02:15	0.133	21:30	0.792	0.471	0.471	
01/16/2020	02:30	3.58	21:25	7.08	5.60	04:25	0.85	21:20	2.19	1.64	02:30	0.125	21:20	0.799	0.460	0.460	
01/17/2020	03:05	3.79	01:35	5.64	4.60	03:00	1.11	01:30	1.72	1.39	03:00	0.175	01:30	0.466	0.291	0.082	

Report Summary For The Period 12/20/2019 00:00 - 01/17/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			13.463	4.07
Avg	5.85	1.62	0.476	

Site Commentary

Site Information

MH390	
Pipe Dimensions	7.88
Silt Level	0.00"

Overview

Site MH390 functioned under normal conditions during the period Friday, December 20, 2019 to Friday, January 17, 2020. This site exhibited an observable response to the wet weather events of December 22, 2019 - December 23, 2019 and December 25, 2019 - December 26, 2019. No surcharge conditions were experienced at this location. Review of the scattergraph shows that free flow conditions were maintained throughout the study period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This location along with VernonB2 was positioned upstream of MH972 (See MH972 Site Commentary For More Details).

Observations

Average flow depth, velocity, and quantity data observed during Friday, December 20, 2019 to Friday, January 17, 2020, along with observed minimum and maximum data, are provided in the following table.

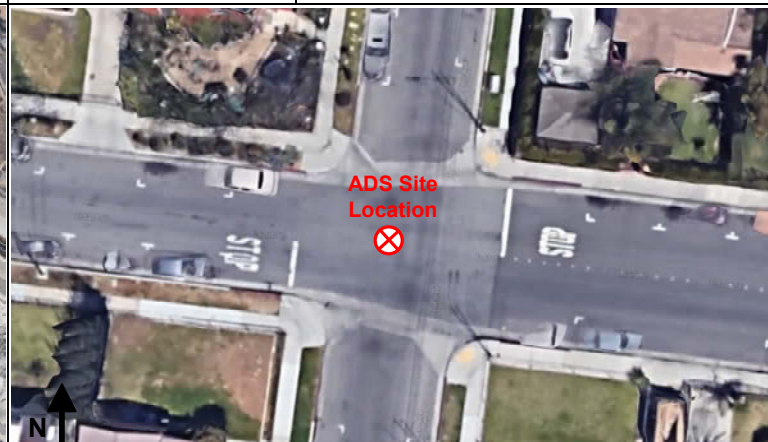
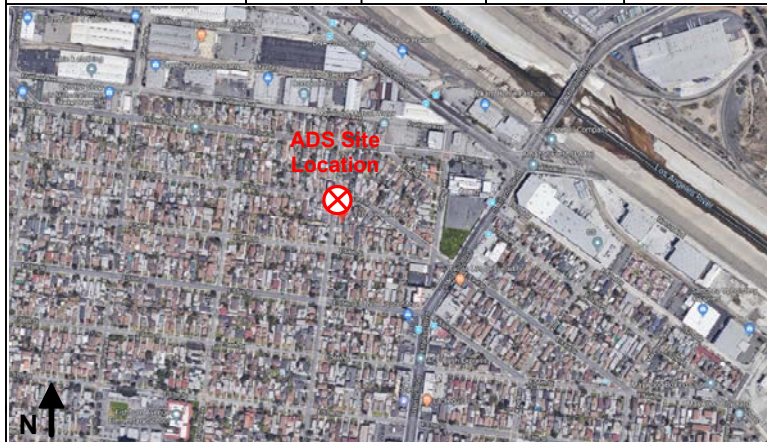
Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.96	1.17	0.096
Minimum	1.80	0.45	0.019
Maximum	6.01	2.77	0.502
Time of Minimum	12/25/2019 5:10 AM	12/22/2019 7:00 AM	1/3/2020 3:40 AM
Time of Maximum	12/26/2019 2:00 AM	12/26/2019 2:05 AM	12/26/2019 2:00 AM

Data Quality

Data uptime observed during the Friday, December 20, 2019 to the Friday, January 17, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

Project Name: Maywood Psomas TFM 2020		City: Maywood		Agency: Maywood		FM Initials: SK	
Site Name: MH390		Install Date: 12/19/19		Monitor Type		Peak Doppler	
Address/Location: 5310 Pine Ave				Monitor Model		Triton+ (8000)	
				Data Acquisition		Manual Collect	
				Manhole ID		MH390	
Access: Drive		Type of System:		Pipe Height:		21.00 "	
		Sanitary <input checked="" type="checkbox"/>		Storm <input type="checkbox"/>		Combined <input type="checkbox"/>	
				Pipe Width:		20.88 "	



Investigation Information:		Manhole Information:				
Date/Time of Investigation:	4/29/19 @ 0940	Manhole Depth:		7'		
Site Hydraulics:	Good straight through flow	Manhole Material / Condition		Brick/OK		
Upstream Input: (L/S, P/S)	DNI	Pipe Material / Condition: VCP/Good				
Upstream Manhole:	DNI	Land Use:	Residential <input checked="" type="checkbox"/>	Commercial <input type="checkbox"/>	Industrial <input type="checkbox"/>	Trunk <input type="checkbox"/>
Downstream Manhole:	DNI	Oxygen: 20.9	H2S: 0	LEL: 0	CO: 0	
Depth of Flow:	3.00 " +/- 0.13"	Safety Notes: 2 man crew required and one blower is to be operated at all times.				
Range (Air DOF):	+/-					
Peak Velocity:	1.57 fps					
Silt:	0.00 Inches					

Other Information:	

Installation Information		Backup		Yes	No	?	Distance
Installation Type:	Standard	Trunk		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sensors Devices:	Ultrasonic / Pressure/ Velocity	Lift / Pump Station		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surcharge Height:	0	WWTP		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rain Gauge Zone:		Other		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

MH390

Flow Monitor

MH390

Pipe Height
7.88 in

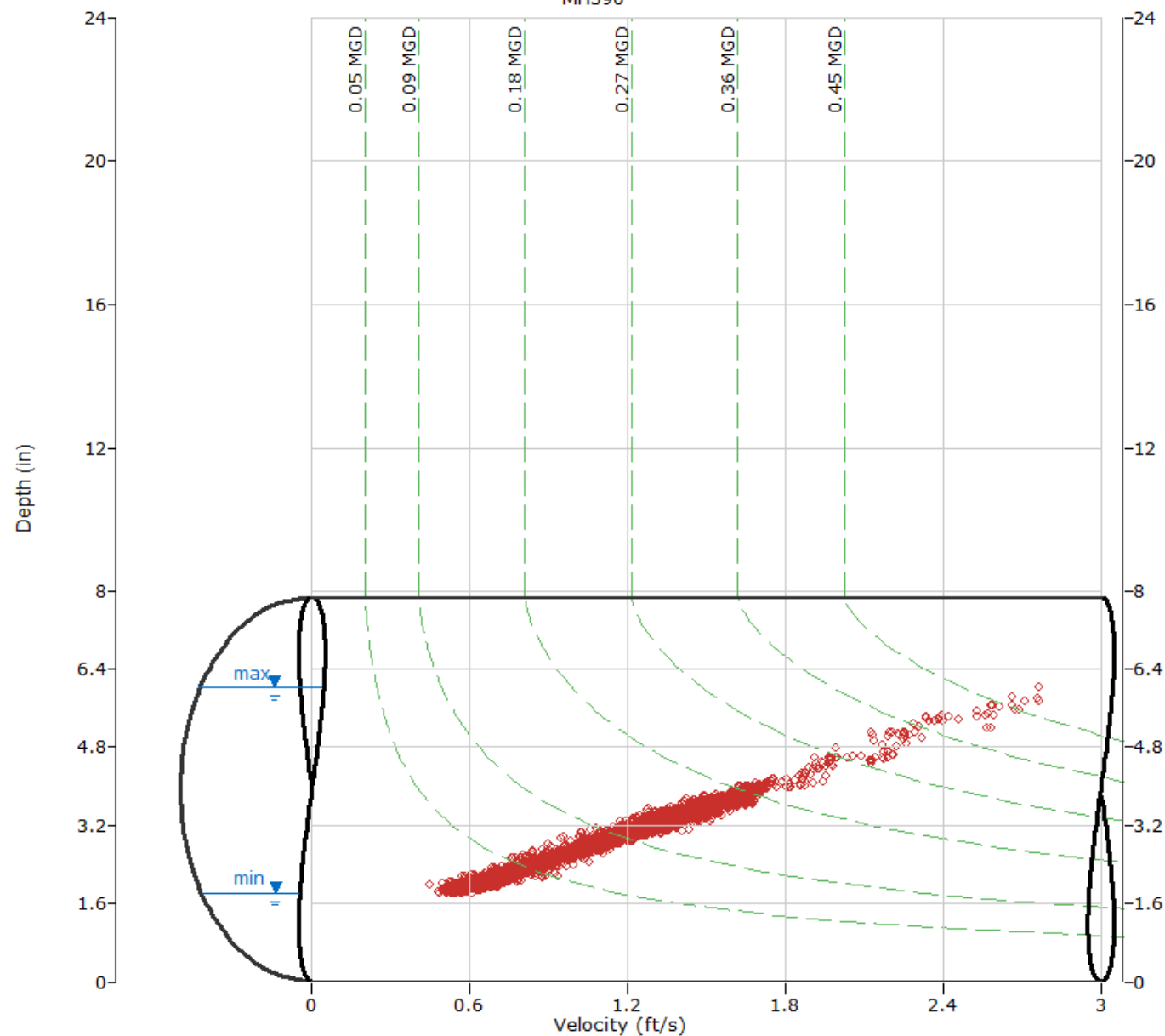
Report Period

12/20/2019
To
1/17/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- ▼ Min-Max Depth

ADS ENVIRONMENTAL
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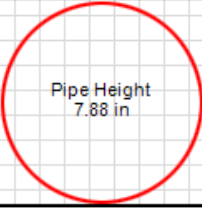


HYDROGRAPH REPORT

MH390

Flow Monitor

MH390



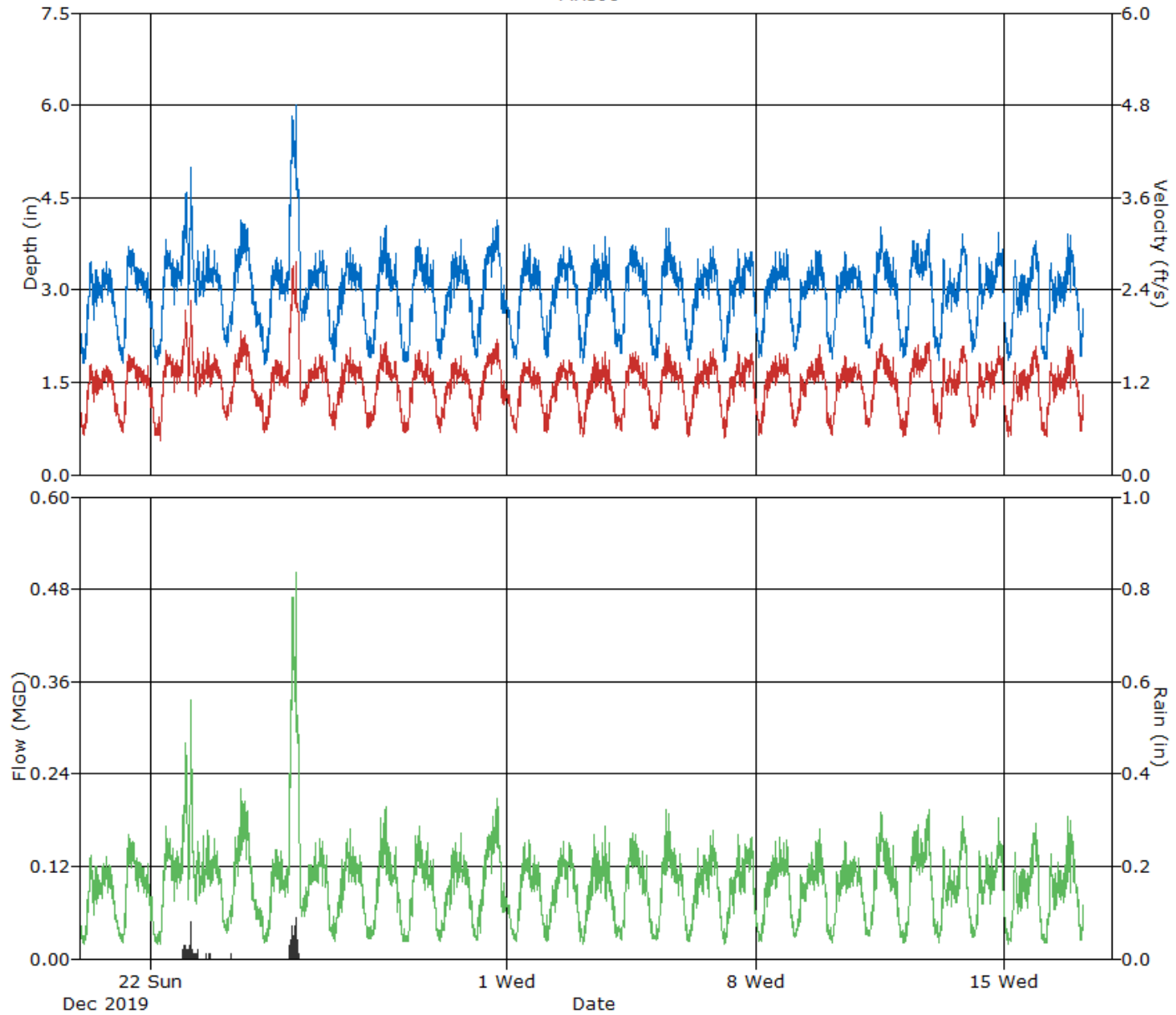
Pipe Height
7.88 in

Report Period

12/20/2019
To
1/17/2020

Legend

- Depth
- Velocity
- Quantity
- Rain



Daily Tabular Report For The Period 12/20/2019 00:00 - 01/17/2020 23:59

MH390, Pipe Height: 7.88 in, Silt: 0.00 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	
12/20/2019	02:35	1.80	07:45	3.46	2.83	03:30	0.52	07:45	1.43	1.10	03:30	0.020	07:45	0.134	0.083	0.083	0.00
12/21/2019	05:00	1.81	09:25	3.71	2.89	05:05	0.54	09:25	1.57	1.14	05:00	0.021	09:25	0.161	0.089	0.089	
12/22/2019	04:50	1.80	23:55	4.57	2.98	07:00	0.45	23:45	2.13	1.19	07:00	0.019	23:45	0.281	0.100	0.100	0.44
12/23/2019	06:30	2.76	03:20	4.99	3.35	06:30	1.02	03:25	2.26	1.41	06:30	0.071	03:20	0.335	0.130	0.130	1.05
12/24/2019	03:50	2.08	12:45	4.13	3.05	03:50	0.71	12:40	1.87	1.24	03:50	0.033	12:45	0.220	0.106	0.106	0.01
12/25/2019	05:10	1.80	23:50	5.83	3.01	05:05	0.55	23:55	2.71	1.21	05:10	0.021	23:50	0.470	0.107	0.107	1.07
12/26/2019	06:00	2.50	02:00	6.01	3.46	06:00	0.89	02:05	2.77	1.44	06:00	0.054	02:00	0.502	0.148	0.148	1.50
12/27/2019	04:05	1.84	14:40	3.68	2.90	04:05	0.59	14:40	1.65	1.16	04:05	0.023	14:40	0.168	0.091	0.091	
12/28/2019	04:55	1.90	14:55	4.04	2.89	03:00	0.60	14:55	1.72	1.16	03:20	0.026	14:55	0.198	0.092	0.092	
12/29/2019	05:00	1.83	13:10	3.81	2.88	03:30	0.55	13:15	1.62	1.12	03:30	0.022	13:10	0.172	0.089	0.089	
12/30/2019	03:20	1.88	16:55	3.81	2.91	03:15	0.55	16:55	1.54	1.12	03:20	0.022	16:55	0.164	0.088	0.088	
12/31/2019	03:20	1.90	18:00	4.13	3.03	03:20	0.58	18:00	1.76	1.19	03:20	0.024	18:00	0.207	0.101	0.101	
01/01/2020	06:40	1.87	15:25	3.75	2.89	06:20	0.55	15:10	1.50	1.10	06:40	0.022	15:25	0.154	0.086	0.086	
01/02/2020	03:00	1.91	14:10	3.71	2.95	03:00	0.54	14:10	1.48	1.11	03:00	0.022	14:10	0.152	0.089	0.089	
01/03/2020	03:40	1.81	18:55	3.85	2.92	03:40	0.49	18:55	1.59	1.11	03:40	0.019	18:55	0.172	0.087	0.087	
01/04/2020	05:45	1.97	13:35	3.72	2.96	05:45	0.58	14:50	1.59	1.14	05:45	0.025	13:35	0.164	0.093	0.093	
01/05/2020	04:30	1.87	11:55	4.01	2.94	04:05	0.59	11:55	1.70	1.15	05:15	0.025	11:55	0.193	0.093	0.093	
01/06/2020	03:40	1.86	19:00	3.70	2.92	03:00	0.50	19:00	1.63	1.16	02:25	0.022	19:00	0.167	0.092	0.092	
01/07/2020	03:20	1.84	12:05	3.65	2.94	03:20	0.48	12:05	1.59	1.17	03:20	0.019	12:05	0.160	0.093	0.093	
01/08/2020	02:25	1.91	20:50	3.65	2.94	02:20	0.52	16:15	1.58	1.16	02:20	0.022	16:15	0.157	0.092	0.092	
01/09/2020	02:20	2.02	19:35	3.65	2.93	02:25	0.62	19:35	1.68	1.15	02:25	0.029	19:35	0.169	0.090	0.090	
01/10/2020	03:50	1.88	11:55	3.61	2.90	03:50	0.52	11:55	1.53	1.14	03:50	0.021	11:55	0.152	0.089	0.089	
01/11/2020	04:40	2.05	12:10	4.01	3.00	03:40	0.63	13:35	1.70	1.20	04:30	0.029	12:10	0.191	0.098	0.098	
01/12/2020	03:45	1.89	20:55	3.97	3.02	03:45	0.50	20:55	1.72	1.19	03:45	0.020	20:55	0.193	0.102	0.102	
01/13/2020	03:35	1.87	19:15	3.91	2.90	03:35	0.54	19:15	1.67	1.16	03:35	0.022	19:15	0.184	0.091	0.091	
01/14/2020	02:25	1.99	19:40	3.92	2.95	02:30	0.62	19:40	1.66	1.16	02:25	0.027	19:40	0.183	0.093	0.093	
01/15/2020	02:30	1.85	21:25	3.80	2.87	02:30	0.50	21:25	1.66	1.12	02:30	0.020	21:25	0.176	0.088	0.088	
01/16/2020	03:30	1.89	18:55	3.92	2.89	04:20	0.50	18:55	1.67	1.13	04:20	0.021	18:55	0.184	0.089	0.089	
01/17/2020	03:35	1.93	00:35	3.03	2.48	03:25	0.56	00:20	1.22	0.89	03:25	0.024	00:35	0.096	0.056	0.012	

Report Summary For The Period 12/20/2019 00:00 - 01/17/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			2.701	4.07
Avg	2.96	1.17	0.096	

Site Commentary

Site Information

MH972	
Pipe Dimensions	23.5
Silt Level	0.00"

Overview

Site MH972 functioned under normal conditions during the period Friday, December 20, 2019 to Friday, January 17, 2020 . This site exhibited an observable response to the wet weather events of December 22, 2019 - December 23, 2019 and December 25, 2019 - December 26, 2019. No surcharge conditions were experienced at this location. Review of the scattergraph shows that free flow conditions were maintained throughout the study period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This site was positioned downstream of locations MH390 and VernonB2. A check of balancing shows an average net flow of 0.573 mgd.

Observations

Average flow depth, velocity, and quantity data observed during Friday, December 20, 2019 to Friday, January 17, 2020 , along with observed minimum and maximum data, are provided in the following table.

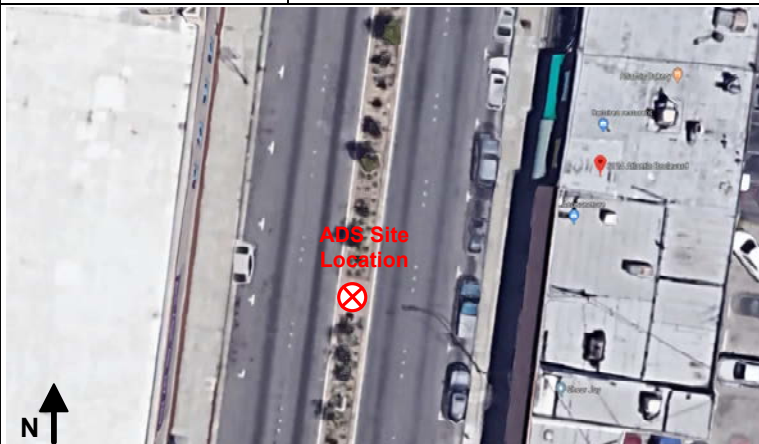
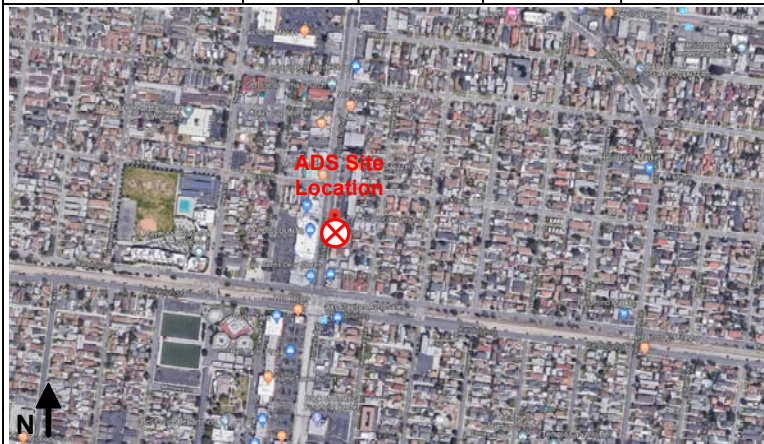
Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	6.17	2.17	0.965
Minimum	3.15	0.94	0.149
Maximum	15.00	3.45	4.319
Time of Minimum	1/15/2020 3:20 AM	1/15/2020 3:20 AM	1/15/2020 3:20 AM
Time of Maximum	12/26/2019 2:10 AM	12/26/2019 1:50 AM	12/26/2019 2:10 AM

Data Quality

Data uptime observed during the Friday, December 20, 2019 to the Friday, January 17, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

Project Name: Maywood Psomas TFM 2020		City: Maywood		Agency: Maywood		FM Initials: SK	
Site Name: MH972		Install Date: 12/19/19		Monitor Type		Peak Doppler	
Address/Location: 6124 Atlantic Blvd				Monitor Model		Triton+ (8000)	
				Data Acquisition		Manual Collect	
				Manhole ID		MH972	
Access: Drive		Type of System:		Pipe Height:		23.50 "	
		Sanitary <input checked="" type="checkbox"/> Storm <input type="checkbox"/> Combined <input type="checkbox"/>		Pipe Width:		23.63 "	



Investigation Information:				Manhole Information:			
Date/Time of Investigation:		4/29/19 @ 1035		Manhole Depth:		15'	
Site Hydraulics:		Good straight through flow		Manhole Material / Condition		Brick/OK	
Upstream Input: (L/S, P/S)		DNI		Pipe Material / Condition: VCP/Good			
Upstream Manhole:		DNI		Land Use:	Residential <input type="checkbox"/>	Commercial <input checked="" type="checkbox"/>	Industrial <input type="checkbox"/> Trunk <input type="checkbox"/>
Downstream Manhole:		DNI		Oxygen: 20.9	H2S: 0	LEL: 0	CO: 0
Depth of Flow:	4.50 " +/- 0.13"			Safety Notes: 2 man crew required and one blower is to be operated at all times.			
Range (Air DOF):	+/-						
Peak Velocity:	1.98 fps						
Silt:	0.00 Inches						

Other Information:			
		<p align="center">Cross Section</p>	
		<p align="center">Plan</p>	

Installation Information		Backup		Yes	No	?	Distance
Installation Type:	Standard	Trunk		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sensors Devices:	Ultrasonic / Pressure/ Velocity	Lift / Pump Station		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surcharge Height:	0	WWTP		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rain Gauge Zone:		Other		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

MH972

Flow Monitor

MH972

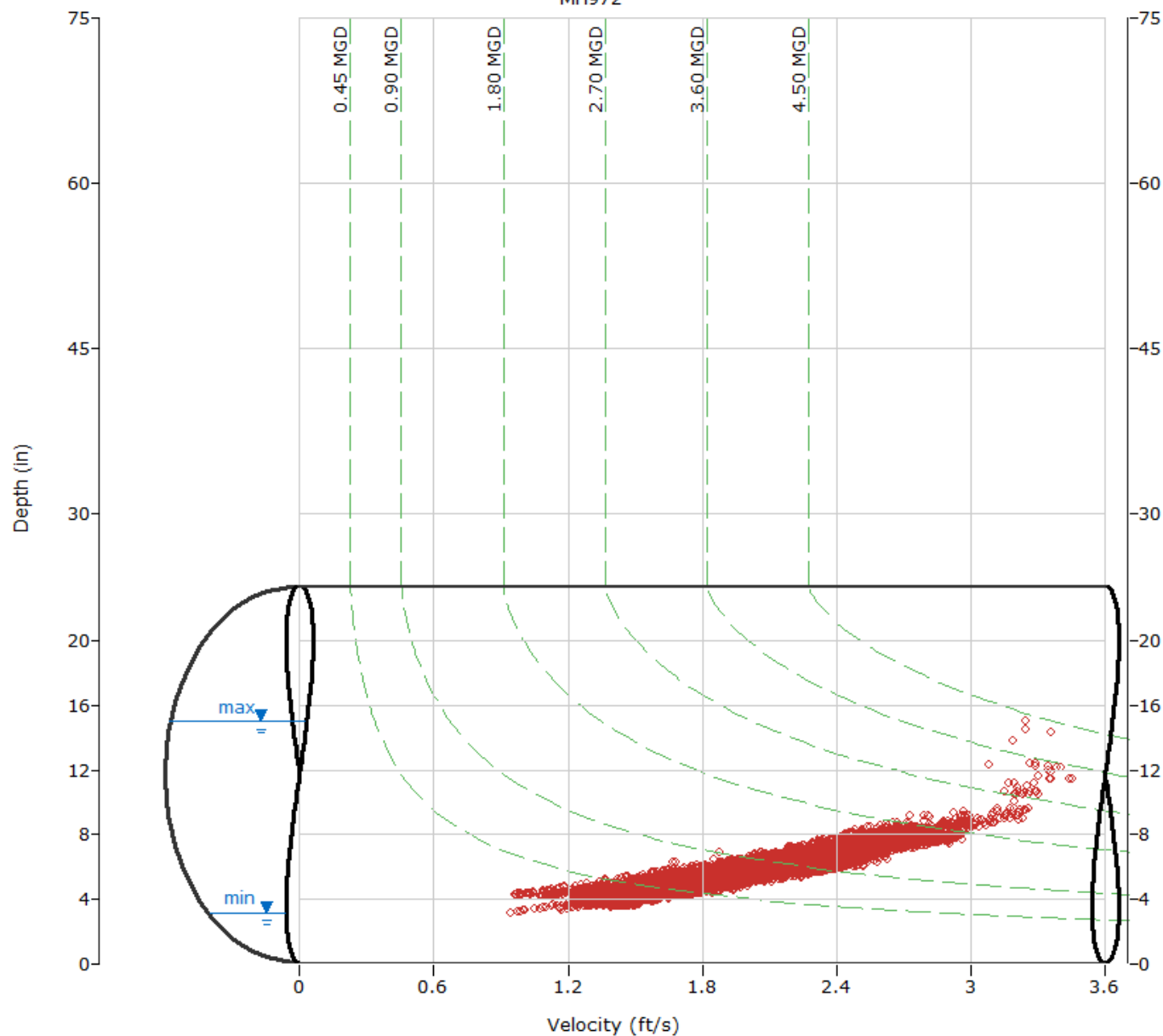
Pipe Height
23.50 in

Report Period

12/20/2019
To
1/17/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- ▼ Min-Max Depth



ADS ENVIRONMENTAL
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HYDROGRAPH REPORT

MH972

Flow Monitor

MH972

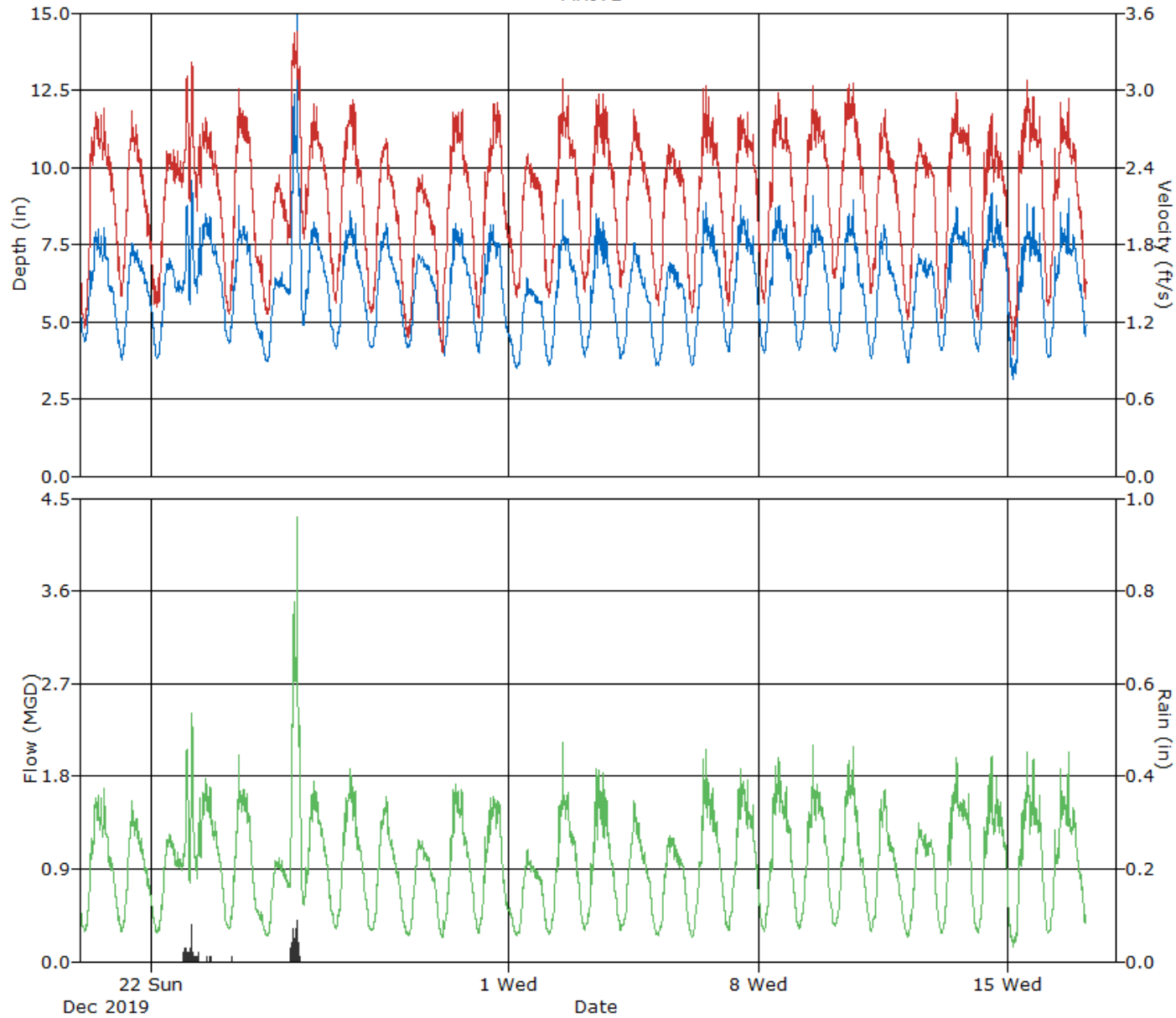
Pipe Height
23.50 in

Report Period

12/20/2019
To
1/17/2020

Legend

— Depth
— Velocity
— Quantity
— Rain



Daily Tabular Report For The Period 12/20/2019 00:00 - 01/17/2020 23:59
MH972, Pipe Height: 23.50 in, Silt: 0.00 in
Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	
12/20/2019	03:15	4.36	16:35	8.03	6.27	03:15	1.15	16:15	2.86	2.18	03:15	0.289	16:15	1.684	0.979	0.979	0.00
12/21/2019	04:25	3.77	10:45	7.55	5.92	04:05	1.40	10:50	2.84	2.13	04:05	0.294	10:50	1.557	0.878	0.878	
12/22/2019	04:05	3.80	23:55	8.72	5.78	04:10	1.31	23:55	3.06	2.10	04:10	0.272	23:55	2.042	0.840	0.840	0.44
12/23/2019	01:55	5.58	03:30	9.57	7.28	23:55	1.86	03:40	3.21	2.47	23:55	0.707	03:35	2.411	1.311	1.311	1.05
12/24/2019	04:45	4.31	10:45	8.74	6.22	04:45	1.25	10:45	3.01	2.13	04:45	0.311	10:45	2.013	0.963	0.963	0.01
12/25/2019	06:10	3.70	23:55	12.23	5.65	06:30	1.26	23:50	3.36	1.95	06:10	0.253	23:55	3.480	0.790	0.790	1.07
12/26/2019	06:20	4.88	02:10	15.00	7.44	23:55	1.82	01:50	3.45	2.53	06:30	0.551	02:10	4.319	1.437	1.437	1.50
12/27/2019	04:35	4.10	14:05	8.57	6.32	04:35	1.35	16:00	2.92	2.18	04:35	0.311	14:05	1.873	0.998	0.998	
12/28/2019	04:05	4.17	14:20	8.19	6.18	03:55	1.27	14:05	2.62	1.99	03:55	0.301	14:20	1.607	0.880	0.880	
12/29/2019	04:30	4.15	11:35	7.18	5.93	04:40	1.08	14:00	2.34	1.80	04:40	0.254	11:35	1.186	0.747	0.747	
12/30/2019	05:05	3.87	12:40	8.20	6.18	03:55	0.96	17:00	2.85	2.12	04:00	0.232	12:40	1.719	0.950	0.950	
12/31/2019	04:10	3.99	14:00	8.14	6.10	04:10	1.23	16:50	2.91	2.14	04:10	0.273	14:15	1.606	0.932	0.932	
01/01/2020	06:00	3.51	12:10	6.44	5.05	06:00	1.39	13:10	2.50	2.03	06:00	0.257	13:10	1.086	0.663	0.663	
01/02/2020	03:25	3.57	12:40	8.94	5.96	03:30	1.39	12:40	3.09	2.24	03:30	0.263	12:40	2.130	0.954	0.954	
01/03/2020	03:25	3.87	11:30	8.47	6.06	03:20	1.44	12:55	2.97	2.26	03:25	0.306	11:30	1.872	0.978	0.978	
01/04/2020	03:30	3.81	13:00	7.57	5.70	03:25	1.47	11:55	2.85	2.19	03:30	0.305	12:00	1.559	0.855	0.855	
01/05/2020	04:55	3.57	12:35	6.91	5.46	04:50	1.33	12:00	2.58	2.06	04:55	0.251	12:25	1.229	0.763	0.763	
01/06/2020	03:35	3.58	13:10	8.85	6.23	03:35	1.27	13:15	3.03	2.20	03:35	0.241	13:15	2.059	1.006	1.006	
01/07/2020	04:15	4.02	12:00	8.77	6.46	03:55	1.32	17:00	2.83	2.22	04:00	0.299	12:00	1.877	1.050	1.050	
01/08/2020	04:15	3.97	13:55	8.74	6.46	04:10	1.34	13:50	2.97	2.24	04:10	0.296	13:50	1.974	1.062	1.062	
01/09/2020	03:30	4.08	12:40	9.08	6.39	04:05	1.40	12:45	3.03	2.28	03:20	0.323	12:45	2.108	1.061	1.061	
01/10/2020	03:35	4.03	15:35	8.92	6.24	03:35	1.54	15:40	3.05	2.34	03:35	0.346	15:40	2.082	1.052	1.052	
01/11/2020	04:15	3.80	12:15	8.13	5.95	03:30	1.42	13:30	2.85	2.16	04:10	0.295	13:30	1.670	0.901	0.901	
01/12/2020	04:45	3.69	12:15	7.18	5.80	04:35	1.21	12:15	2.63	2.06	04:40	0.241	12:15	1.341	0.834	0.834	
01/13/2020	02:50	4.08	13:25	8.72	6.57	03:35	1.22	13:25	2.97	2.23	02:50	0.281	13:25	1.983	1.087	1.087	
01/14/2020	03:55	4.01	13:05	9.15	6.69	03:55	1.22	12:55	2.82	2.10	03:55	0.273	13:00	1.999	1.041	1.041	
01/15/2020	03:20	3.15	12:35	8.80	6.22	03:20	0.94	12:30	3.07	2.22	03:20	0.149	12:35	2.028	1.034	1.034	
01/16/2020	03:00	3.84	16:20	8.97	6.40	02:55	1.33	16:20	2.93	2.22	02:55	0.280	16:20	2.032	1.035	1.035	
01/17/2020	03:55	4.54	00:30	6.23	5.40	03:45	1.38	00:25	2.09	1.73	03:55	0.369	00:30	0.875	0.605	0.116	

Report Summary For The Period 12/20/2019 00:00 - 01/17/2020 23:59

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			27.196	4.07
Avg	6.17	2.17	0.965	

Site Commentary

Site Information

VernonB2	
Pipe Dimensions	21
Silt Level	0.00"

Overview

Site VernonB2 functioned under normal conditions during the period Friday, December 20, 2019 to Friday, January 17, 2020 . The flow pattern at this location varies between weekdays and weekends. Decreased flow is reported during the weekends indicating that the area monitored by this line is comprised of some portion of non-residential contributors.

This site exhibited an observable response to the wet weather events of December 22, 2019 - December 23, 2019 and December 25, 2019 - December 26, 2019. No surcharge conditions were experienced at this location. Review of the scattergraph shows that free flow conditions were maintained throughout the study period.

Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

This location along with MH390 was positioned upstream of MH972 (See MH972 Site Commentary For More Details).

Observations

Average flow depth, velocity, and quantity data observed during Friday, December 20, 2019 to Friday, January 17, 2020 , along with observed minimum and maximum data, are provided in the following table.

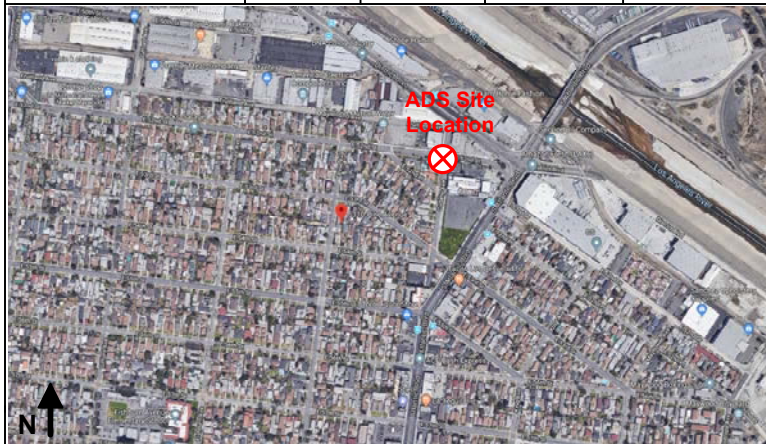
Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	3.08	1.88	0.298
Minimum	1.97	0.59	0.045
Maximum	6.08	3.43	1.230
Time of Minimum	1/16/2020 10:05 PM	1/1/2020 10:15 AM	1/1/2020 10:15 AM
Time of Maximum	1/10/2020 3:20 PM	1/7/2020 4:30 PM	1/10/2020 3:20 PM

Data Quality

Data uptime observed during the Friday, December 20, 2019 to the Friday, January 17, 2020 monitoring period is provided in the table below. Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Percent Uptime	
Depth (in)	100
Velocity (ft/s)	100
Quantity (MGD)	100

Project Name: Maywood Psomas TFM 2020		City: Maywood		Agency: Maywood		FM Initials: SK	
Site Name: VernonB2		Install Date: 12/19/19		Monitor Type		Peak Doppler	
Address/Location: 5199 Cudahy Ave				Monitor Model		Triton+ (8000)	
				Data Acquisition		Manual Collect	
				Manhole ID			
Access: Drive	Type of System:	Sanitary <input checked="" type="checkbox"/>	Storm <input type="checkbox"/>	Combined <input type="checkbox"/>	Pipe Height:		21.00 "
					Pipe Width:		20.75 "



Investigation Information:				Manhole Information:			
Date/Time of Investigation:		4/29/19 @ 1000		Manhole Depth:		10'	
Site Hydraulics:		Good straight through flow		Manhole Material / Condition		Brick/OK	
Upstream Input: (L/S, P/S)		DNI		Pipe Material / Condition: VCP/Good			
Upstream Manhole:		DNI		Land Use:	Residential <input checked="" type="checkbox"/>	Commercial <input type="checkbox"/>	Industrial <input type="checkbox"/>
Downstream Manhole:		DNI		Oxygen: 20.9	H2S: 0	LEL: 0	CO: 0
Depth of Flow:	2.25 " +/- 0.13"			Safety Notes: 2 man crew required and one blower is to be operated at all times.			
Range (Air DOF):	+/-						
Peak Velocity:	2.61 fps						
Silt:	0.00 Inches						

Other Information:			
		<p>Cross Section</p>	
		<p>Plan</p>	

Installation Information		Backup	Yes	No	?	Distance
Installation Type: Standard		Trunk	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sensors Devices: Ultrasonic / Pressure/ Velocity		Lift / Pump Station	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surcharge Height: 0		WWTP	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rain Gauge Zone:		Other	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Additional Site Information / Comments:

Standard Traffic Control with No Safety Concerns

SCATTERGRAPH REPORT

VernonB2

Flow Monitor

VernonB2

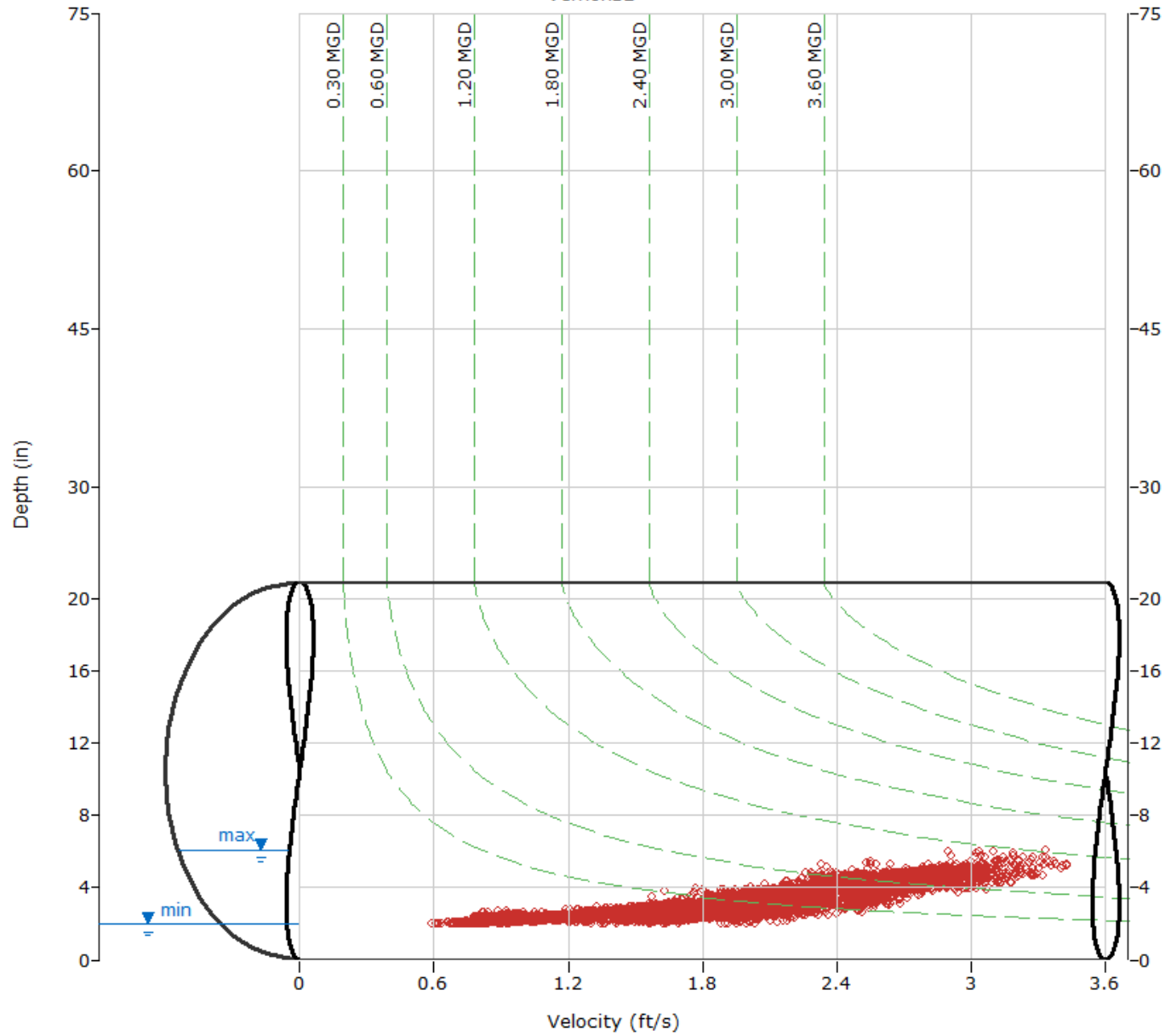
Pipe Height
21.00 in

Report Period
12/20/2019
To
1/17/2020

Legend

- Depth - Velocity
- Iso-Q™
- Silt
- ▼ Min-Max Depth

ADS ENVIRONMENTAL SERVICES



HYDROGRAPH REPORT

VernonB2

Flow Monitor

VernonB2

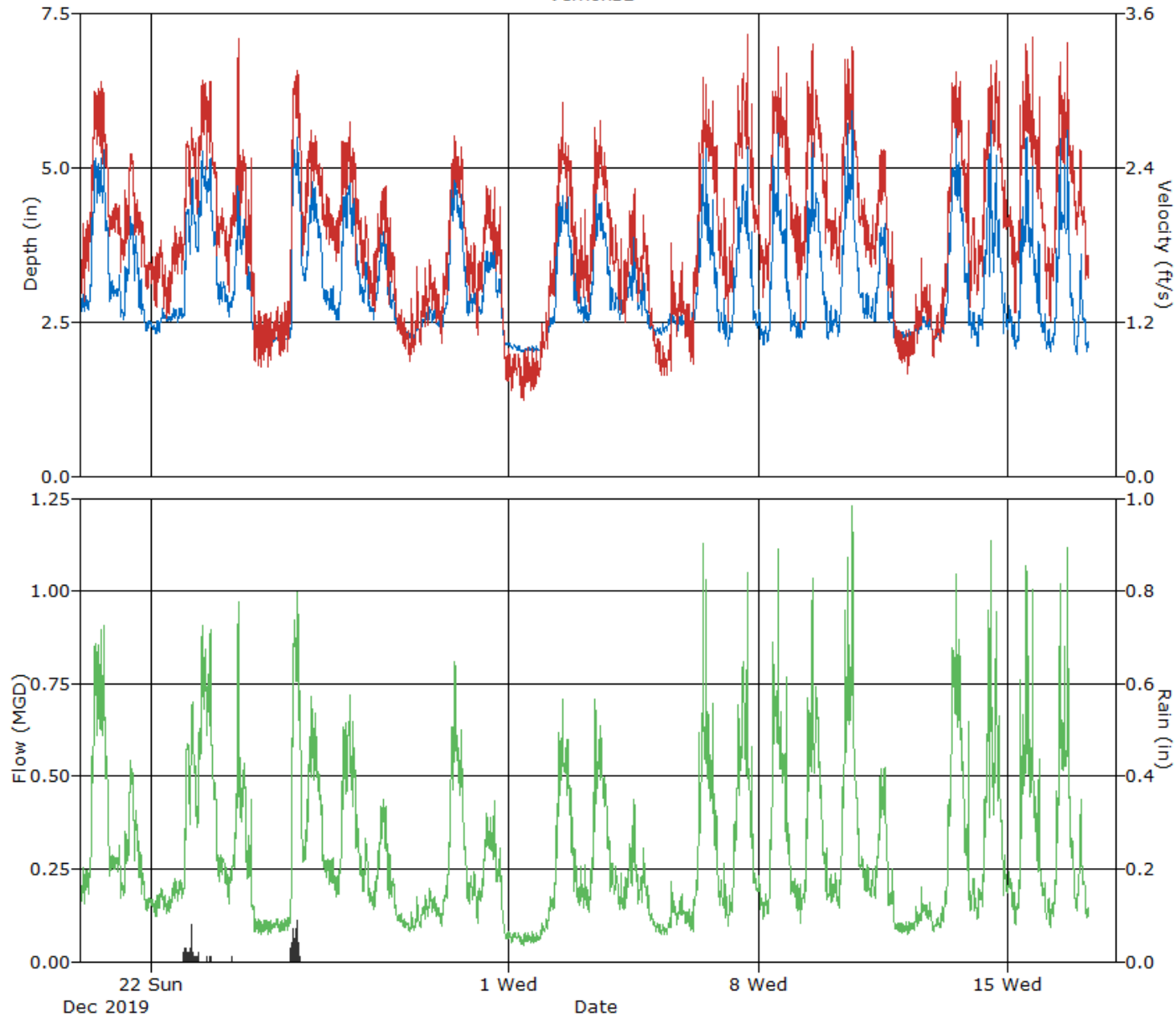
Pipe Height
21.00 in

Report Period

12/20/2019
To
1/17/2020

Legend

- Depth
- Velocity
- Quantity
- Rain



Daily Tabular Report For The Period 12/20/2019 00:00 - 01/17/2020 23:59
VernonB2, Pipe Height: 21.00 in, Silt: 0.00 in
Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total MG)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	
12/20/2019	03:10	2.67	16:25	5.29	3.69	03:00	1.35	14:15	3.06	2.23	03:00	0.155	16:25	0.905	0.439	0.439	0.00
12/21/2019	21:05	2.35	10:05	4.21	3.05	21:05	1.45	10:40	2.51	1.94	21:05	0.137	10:00	0.544	0.277	0.277	
12/22/2019	03:45	2.31	23:50	4.26	2.60	10:50	1.23	23:55	2.58	1.65	03:25	0.121	23:50	0.573	0.184	0.184	0.44
12/23/2019	21:45	2.79	10:25	5.25	4.11	20:00	1.72	10:50	3.08	2.47	21:45	0.216	10:20	0.905	0.542	0.542	1.05
12/24/2019	23:50	2.25	10:35	5.06	3.14	22:00	0.89	10:35	3.40	1.92	22:00	0.079	10:35	0.971	0.295	0.295	0.01
12/25/2019	09:45	2.18	23:55	5.13	2.37	01:50	0.85	23:55	3.02	1.25	01:50	0.072	23:55	0.878	0.136	0.136	1.07
12/26/2019	23:55	2.74	02:20	5.49	3.91	05:55	1.71	02:05	3.15	2.37	23:55	0.219	02:20	0.998	0.489	0.489	1.50
12/27/2019	04:10	2.53	13:25	4.81	3.46	22:30	1.54	13:20	2.75	2.10	04:05	0.176	13:20	0.721	0.365	0.365	
12/28/2019	22:25	2.39	12:30	3.96	2.99	23:25	1.10	14:05	2.26	1.66	23:25	0.108	11:55	0.436	0.232	0.232	
12/29/2019	08:45	2.25	19:10	2.73	2.44	06:20	0.89	19:10	1.68	1.25	06:20	0.079	19:10	0.198	0.126	0.126	
12/30/2019	03:15	2.31	12:05	5.34	3.39	03:10	1.03	12:10	2.64	1.86	03:10	0.095	12:10	0.809	0.328	0.328	
12/31/2019	23:50	2.12	14:55	3.90	2.95	23:40	0.74	09:25	2.25	1.63	23:40	0.061	14:45	0.433	0.227	0.227	
01/01/2020	10:25	2.00	23:05	2.21	2.07	10:15	0.59	23:05	1.19	0.84	10:15	0.045	23:05	0.102	0.066	0.066	
01/02/2020	00:30	2.15	12:20	4.53	3.26	00:45	0.99	12:20	2.91	1.89	00:25	0.082	12:20	0.708	0.316	0.316	
01/03/2020	03:00	2.49	10:15	4.80	3.33	06:45	1.28	13:40	2.76	1.99	06:45	0.135	10:35	0.709	0.331	0.331	
01/04/2020	23:25	2.38	12:40	3.95	2.89	23:25	1.16	12:50	2.23	1.64	23:25	0.112	12:35	0.438	0.213	0.213	
01/05/2020	03:05	2.29	13:50	2.78	2.45	06:50	0.78	13:45	1.81	1.12	06:50	0.071	13:45	0.217	0.113	0.113	
01/06/2020	04:45	2.30	11:00	6.03	3.29	04:30	0.87	11:00	3.10	2.04	04:45	0.081	11:00	1.129	0.350	0.350	
01/07/2020	03:45	2.11	16:40	5.33	3.22	03:45	1.20	16:30	3.43	2.21	03:45	0.097	16:35	1.048	0.363	0.363	
01/08/2020	03:35	2.12	13:35	5.67	3.21	03:30	1.39	13:35	3.33	2.29	03:30	0.113	13:35	1.114	0.373	0.373	
01/09/2020	22:40	2.23	12:30	5.40	3.22	04:45	1.15	12:40	3.36	2.29	04:45	0.102	12:35	1.035	0.373	0.373	
01/10/2020	05:40	2.27	15:20	6.08	3.42	06:35	1.57	15:20	3.33	2.31	06:40	0.146	15:20	1.230	0.415	0.415	
01/11/2020	20:10	2.16	13:05	4.09	2.86	23:20	0.90	12:50	2.54	1.75	23:20	0.079	13:00	0.524	0.234	0.234	
01/12/2020	22:15	2.19	13:30	2.75	2.37	04:40	0.80	13:25	1.69	1.15	04:40	0.072	13:25	0.199	0.111	0.111	
01/13/2020	23:35	2.24	13:10	5.65	3.46	02:20	1.04	13:05	3.14	2.07	02:20	0.093	13:05	1.046	0.394	0.394	
01/14/2020	03:30	2.10	12:40	5.97	3.20	03:30	1.41	15:50	3.22	2.26	03:30	0.113	12:35	1.135	0.365	0.365	
01/15/2020	04:50	2.06	12:15	5.49	3.13	04:40	1.27	16:40	3.41	2.30	04:50	0.100	12:10	1.067	0.358	0.358	
01/16/2020	22:05	1.97	16:00	5.69	3.01	04:10	1.21	15:55	3.37	2.23	04:10	0.094	16:00	1.117	0.337	0.337	
01/17/2020	04:40	2.00	00:50	3.58	2.57	04:15	1.53	00:35	2.54	1.95	04:35	0.117	00:55	0.436	0.218	0.055	

Report Summary For The Period 12/20/2019 00:00 - 01/17/2020 23:59

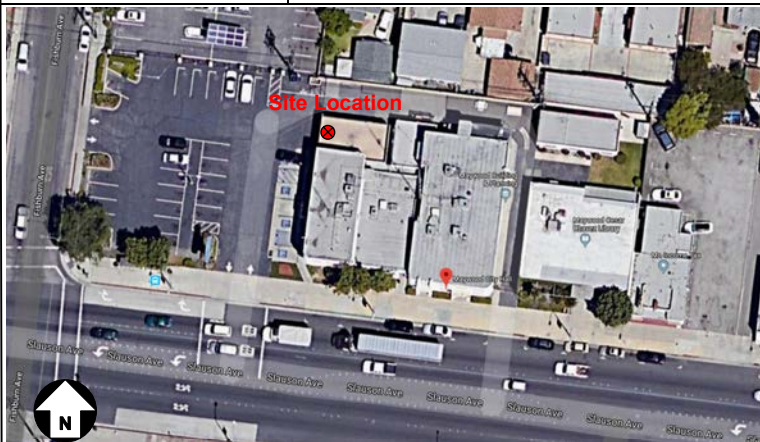
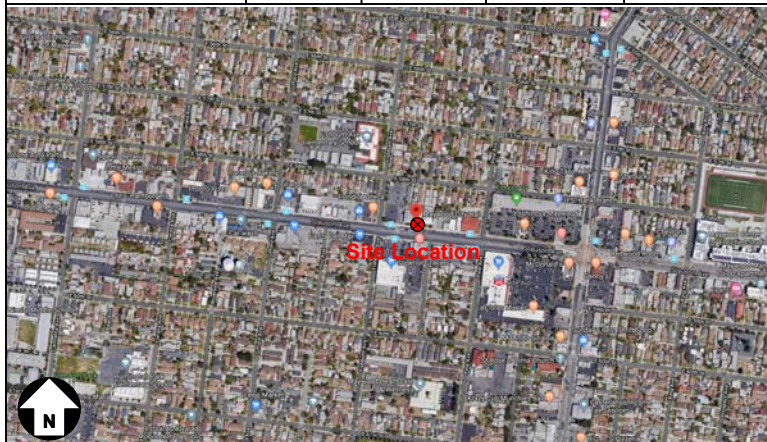
	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total MG)	Rain (in)
Total			8.407	4.07
Avg	3.08	1.88	0.298	

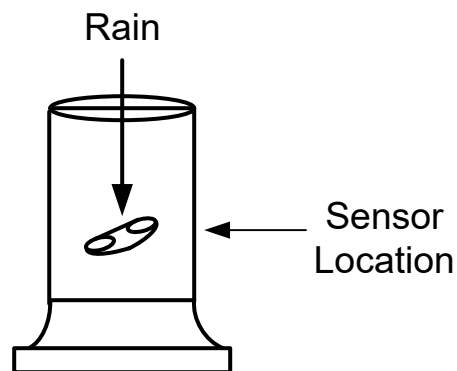
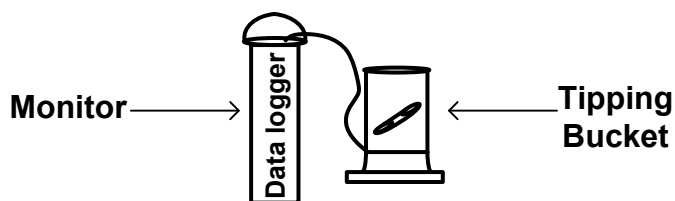
Rainfall data

MaywoodRG	
Rain Collector Dimensions	8"

The rainfall measured at MaywoodRG from December 20, 2019 to January 17, 2020 is 4.07 inches.

Project Name: Maywood Psomas TFM 2020					City: Maywood, CA	FM Initials: SK
Site Name: MaywoodRG		Install Date: 12/20/19			Monitor Type	Rain Gauge Data Logger
Address/Location: 4319 Slauson Ave					Monitor Model	Rain Alert III
					Tipping Bucket Model	Hydrological Services TB06
Access: Drive	Type of System:	Sanitary <input checked="" type="checkbox"/>	Storm <input type="checkbox"/>	Combined <input type="checkbox"/>	Tipping Bucket Dia.	8"
					Data Acquisition	Wireless


Rain Gauge Area
Rain Gauge Photo

Other Information:

Installation Information

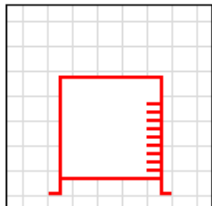
Installation Type:	Rain Gauge
Monitoring Period:	12/20/19-1/17/20
Increments of Rain Fall:	0.01"
Test Tips:	10 tips on 12/17/18

Additional Site Information / Comments:

HYDROGRAPH REPORT

MaywoodRG

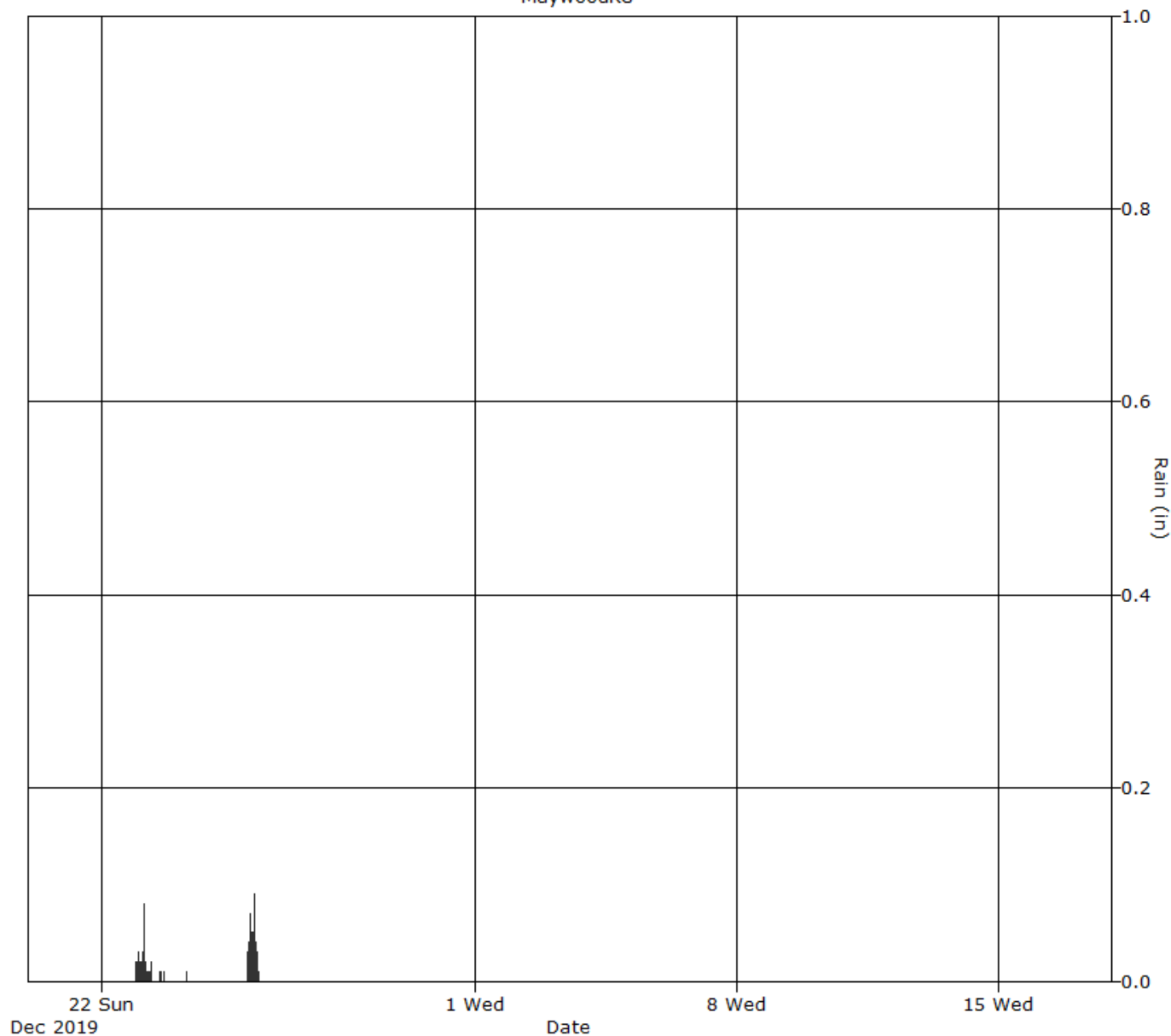
Rain Gauge
MaywoodRG



Report Period
12/20/2019
To
1/17/2020

Legend
— Rain

ADS ENVIRONMENTAL
SERVICES



Daily Tabular Report

Date	Rain (in)					
	Time	Min	Time	Max	Avg	Total
12/20/2019						0.00
12/21/2019						
12/22/2019						0.44
12/23/2019						1.05
12/24/2019						0.01
12/25/2019						1.07
12/26/2019						1.50
12/27/2019						
12/28/2019						
12/29/2019						
12/30/2019						
12/31/2019						
01/01/2020						
01/02/2020						
01/03/2020						
01/04/2020						
01/05/2020						
01/06/2020						
01/07/2020						
01/08/2020						
01/09/2020						
01/10/2020						
01/11/2020						
01/12/2020						
01/13/2020						
01/14/2020						
01/15/2020						
01/16/2020						
01/17/2020						

Report Summary For The Period 12/20/2019 - 01/17/2020

	Rain (in)
Total	4.07
Avg	

Model Junction Map

Peak Wet Weather Flow Model Output

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-1	M-17	M-16	8	382.4	0.009	2,910	0.05
GM-10	M-13	M-12	8	326.0	0.004	57,849	0.24
GM-100	M-41	M-40	8	331.1	0.003	64,127	0.27
GM-101	M-40	M-39	8	333.1	0.003	90,091	0.31
GM-102	M-39	M-102	8	329.0	0.003	116,959	0.35
GM-103	M-45	M-54	8	348.0	0.003	43,118	0.21
GM-104	M-77	M-76	8	342.0	0.004	342,972	0.61
GM-105	M-76	M-75	8	342.0	0.004	370,160	0.67
GM-106	M-75	M-390	8	340.0	0.003	392,808	0.72
GM-107	M-391	M-392	8	271.1	0.004	419,725	0.72
GM-108	M-390	M-391	8	163.0	0.003	402,675	0.81
GM-109	M-392	M-162	8	276.0	0.003	431,342	0.80
GM-11	M-12	M-11	10	326.0	0.004	70,600	0.20
GM-110	M-57	M-59	8	326.0	0.003	144,802	0.40
GM-111	M-59	M-60	8	332.1	0.003	165,333	0.42
GM-112	M-60	M-61	8	328.0	0.003	188,832	0.45
GM-113	M-61	M-66	8	330.0	0.004	216,372	0.45
GM-114	M-66	M-67	8	329.0	0.004	240,339	0.49
GM-115	M-67	M-403	8	330.1	0.006	266,022	0.46
GM-116	M-403	M-404	8	329.0	0.005	292,940	0.50
GM-117	M-404	M-77	8	337.0	0.004	317,916	0.58
GM-118	M-54	M-55	8	351.0	0.003	73,979	0.28
GM-119	M-55	M-56	8	345.1	0.003	100,869	0.33
GM-12	M-11	M-10	10	326.0	0.004	87,584	0.22
GM-120	M-56	M-57	8	330.0	0.003	123,164	0.37
GM-121	M-47	M-48	8	269.0	0.003	28,935	0.18
GM-122	M-410	M-164	8	147.0	0.021	507,742	0.47
GM-123	M-73	M-74	8	340.0	0.003	452,423	0.94
GM-124	M-74	M-167	8	341.0	0.003	473,768	0.89
GM-125	M-167	M-168	8	236.8	0.003	490,875	0.90
GM-126	M-168	M-410	8	348.0	0.003	499,431	1.00
GM-127	M-52	M-63	8	240.0	0.004	142,686	0.37
GM-128	M-63	M-62	8	326.0	0.004	173,639	0.41
GM-129	M-62	M-411	8	330.0	0.004	197,048	0.43
GM-13	M-10	M-376	10	326.0	0.004	97,140	0.23
GM-130	M-411	M-68	8	330.0	0.004	307,040	0.59
GM-131	M-68	M-69	8	375.0	0.004	330,782	0.62
GM-132	M-69	M-70	8	285.0	0.005	357,568	0.60
GM-133	M-70	M-71	8	330.0	0.004	379,327	0.68
GM-134	M-71	M-72	8	340.0	0.004	400,403	0.71
GM-135	M-72	M-73	8	341.0	0.004	423,551	0.75
GM-136	M-48	M-49	8	269.0	0.003	45,619	0.22
GM-137	M-49	M-50	8	269.0	0.003	68,287	0.28
GM-138	M-51	M-52	8	246.8	0.001	110,434	0.48
GM-139	M-50	M-51	8	269.0	0.003	92,210	0.32

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-14	M-376	M-375	10	326.0	0.004	111,098	0.24
GM-140	M-407	M-378	8	241.1	0.008	2,988	0.05
GM-141	M-383	M-384	8	326.0	0.003	45,662	0.22
GM-142	M-384	M-385	8	326.0	0.003	50,827	0.24
GM-143	M-385	M-386	8	326.0	0.003	62,322	0.26
GM-144	M-387	M-386	8	230.0	0.003	7,893	0.10
GM-145	M-378	M-379	8	281.5	0.003	4,295	0.07
GM-146	M-379	M-380	8	281.5	0.003	9,195	0.10
GM-147	M-380	M-381	8	281.5	0.003	19,527	0.15
GM-148	M-382	M-383	8	326.0	0.003	34,323	0.20
GM-149	M-381	M-382	8	281.5	0.003	24,739	0.17
GM-15	M-375	M-374	10	326.0	0.004	126,336	0.26
GM-150	M-236	M-268	8	292.0	0.003	16,951	0.14
GM-151	M-262	M-257	8	337.0	0.007	84,366	0.24
GM-152	M-268	M-261	8	289.0	0.002	39,966	0.24
GM-153	M-261	M-262	8	340.0	0.002	61,503	0.27
GM-154	M-252	M-253	8	269.1	0.004	16,099	0.12
GM-155	M-253	M-254	12	335.0	0.004	42,915	0.12
GM-157	M-249	M-250	12	271.0	0.003	43,025	0.13
GM-158	M-246	M-248	12	260.0	0.003	42,283	0.13
GM-16	M-374	M-373	10	326.0	0.004	139,201	0.27
GM-161	M-228	M-413	8	282.0	0.011	36,003	0.14
GM-162	M-238	M-267	8	291.0	0.002	15,497	0.15
GM-163	M-265	M-263	8	337.6	0.001	90,802	0.39
GM-164	M-267	M-266	8	289.0	0.001	39,535	0.24
GM-165	M-266	M-265	8	340.0	0.002	62,958	0.28
GM-166	M-241	M-271	8	211.0	0.005	17,700	0.12
GM-167	M-288	M-289	8	340.2	0.003	86,041	0.30
GM-168	M-399	M-288	8	340.0	0.003	61,297	0.25
GM-169	M-271	M-399	8	330.0	0.003	38,847	0.20
GM-17	M-16	M-15	8	237.2	0.004	8,242	0.09
GM-170	M-273	M-272	8	285.8	0.003	22,161	0.15
GM-171	M-301	M-290	8	339.0	0.003	87,037	0.30
GM-172	M-287	M-301	8	336.2	0.004	66,314	0.26
GM-173	M-272	M-287	8	295.9	0.003	44,645	0.22
GM-174	M-286	M-285	8	207.4	0.005	18,557	0.13
GM-175	M-292	M-291	8	339.0	0.004	87,720	0.29
GM-176	M-284	M-292	8	341.0	0.003	64,629	0.26
GM-177	M-285	M-284	8	332.1	0.004	40,523	0.19
GM-178	M-239	M-240	8	350.0	0.005	11,604	0.10
GM-18	M-15	M-14	8	348.8	0.004	23,215	0.15
GM-181	M-278	M-279	8	329.0	0.004	8,516	0.09
GM-183	M-240	M-274	8	350.0	0.004	24,538	0.16
GM-184	M-274	M-275	8	348.0	0.003	35,085	0.19
GM-185	M-275	M-425	8	217.0	0.002	44,520	0.23

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-188	M-295	M-294	8	213.0	0.007	16,429	0.11
GM-189	M-294	M-299	8	339.1	0.006	40,157	0.17
GM-19	M-1	M-2	8	259.0	0.003	44,215	0.22
GM-190	M-296	M-297	8	214.3	0.004	19,512	0.13
GM-191	M-297	M-298	8	341.0	0.007	41,299	0.17
GM-192	M-280	M-283	8	128.9	0.006	13,397	0.10
GM-193	M-283	M-310	8	353.0	0.005	28,301	0.15
GM-194	M-310	M-311	8	351.0	0.004	42,416	0.20
GM-195	M-311	M-312	8	349.0	0.006	58,351	0.21
GM-196	M-281	M-282	8	180.1	0.006	16,924	0.12
GM-197	M-282	M-329	8	346.2	0.003	35,705	0.19
GM-198	M-329	M-328	8	343.0	0.004	60,697	0.24
GM-199	M-328	M-325	8	342.0	0.01	82,332	0.22
GM-2	M-373	M-369	10	336.5	0.004	153,971	0.29
GM-20	M-124	M-122	8	342.0	0.003	331,707	0.67
GM-200	M-316	M-313	8	265.0	0.004	0	0.00
GM-201	M-313	M-312	8	263.6	0.005	18,647	0.13
GM-202	M-304	M-303	8	214.3	0.009	12,898	0.09
GM-203	M-303	M-302	8	340.0	0.007	30,858	0.15
GM-204	M-309	M-308	8	214.3	0.005	16,385	0.12
GM-205	M-308	M-307	8	350.0	0.005	38,512	0.18
GM-207	M-289	M-290	8	351.0	0.003	93,364	0.33
GM-208	M-290	M-291	8	351.0	0.003	187,643	0.46
GM-209	M-291	M-435	8	334.0	0.003	281,212	0.58
GM-21	M-122	M-123	8	341.0	0.003	348,899	0.67
GM-210	M-300	M-299	10	351.0	0.003	399,165	0.52
GM-211	M-299	M-298	10	350.0	0.003	446,634	0.53
GM-212	M-298	M-302	10	350.0	0.003	495,189	0.61
GM-213	M-302	M-306	10	350.1	0.002	532,821	0.73
GM-214	M-335	M-334	10	312.1	0.003	18,386	0.10
GM-215	M-334	M-333	10	319.0	0.004	38,672	0.14
GM-216	M-333	M-324	10	346.0	0.004	57,591	0.17
GM-217	M-324	M-323	10	339.7	0.006	82,595	0.18
GM-218	M-337	M-338	8	352.0	0.003	99,557	0.33
GM-219	M-338	M-332	8	349.1	0.003	133,329	0.38
GM-22	M-123	M-367	8	342.0	0.005	373,433	0.61
GM-220	M-332	M-331	8	351.0	0.004	161,221	0.40
GM-221	M-225	M-394	8	300.1	0.003	16,658	0.14
GM-222	M-394	M-393	8	385.9	0.003	44,517	0.22
GM-223	M-393	M-395	8	344.0	0.003	65,502	0.26
GM-224	M-395	M-337	8	354.1	0.002	83,950	0.32
GM-225	M-223	M-396	8	313.0	0.004	11,443	0.11
GM-226	M-396	M-408	8	296.0	0.006	22,123	0.13
GM-227	M-226	M-227	8	255.0	0.005	21,190	0.14
GM-228	M-227	M-413	8	292.1	0.005	39,208	0.18

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-229	M-222	M-221	8	296.0	0.004	8,166	0.09
GM-23	M-367	M-365	8	342.0	0.003	396,549	0.79
GM-230	M-221	M-220	8	346.0	0.004	33,772	0.18
GM-231	M-220	M-219	8	330.0	0.003	47,551	0.23
GM-232	M-219	M-359	8	329.0	0.003	60,541	0.26
GM-233	M-359	M-340	10	370.0	0.005	76,858	0.19
GM-234	M-340	M-341	10	371.0	0.002	95,232	0.25
GM-235	M-341	M-342	10	350.0	0.003	106,853	0.26
GM-236	M-342	M-415	10	349.0	0.008	116,000	0.20
GM-237	M-242	M-270	12	260.0	0.004	22,343	0.09
GM-238	M-270	M-416	12	261.0	0.006	37,952	0.10
GM-239	M-247	M-248	15	333.0	0.005	10,390	0.04
GM-24	M-365	M-366	8	340.0	0.006	418,640	0.60
GM-240	M-248	M-416	15	341.0	0.004	62,470	0.11
GM-241	M-416	M-260	15	280.0	0.012	105,917	0.11
GM-242	M-245	M-244	8	234.1	0.001	24,451	0.21
GM-243	M-243	M-412	8	338.1	0.006	52,250	0.20
GM-244	M-412	M-234	8	338.0	0.008	89,369	0.24
GM-245	M-234	M-235	8	339.0	0.006	102,250	0.28
GM-246	M-244	M-243	8	240.1	0.001	35,903	0.26
GM-247	M-414	M-237	8	293.0	0.006	12,410	0.10
GM-248	M-237	M-235	8	293.1	0.008	22,319	0.12
GM-249	M-232	M-233	8	231.0	0.004	6,404	0.08
GM-250	M-233	M-412	8	326.0	0.003	27,394	0.17
GM-251	M-215	M-397	8	332.1	0.002	30,502	0.19
GM-252	M-397	M-360	8	335.1	0.006	52,033	0.20
GM-253	M-216	M-398	8	291.0	0.003	23,858	0.17
GM-254	M-398	M-361	8	292.0	0.005	44,022	0.19
GM-255	M-206	M-207	8	309.1	0.005	19,222	0.13
GM-256	M-207	M-208	8	316.0	0.003	41,947	0.22
GM-257	M-417	M-199	8	330.0	0.005	92,084	0.27
GM-258	M-208	M-417	8	331.0	0.005	61,011	0.22
GM-26	M-5	M-6	8	332.0	0.003	161,996	0.42
GM-263	M-217	M-218	8	349.0	0.005	34,388	0.17
GM-265	M-201	M-202	8	266.1	0.004	70,085	0.26
GM-268	M-203	M-204	8	93.0	0.003	85,414	0.31
GM-269	M-150	M-151	8	255.0	0.003	16,828	0.13
GM-27	M-4	M-5	8	331.0	0.001	111,934	0.52
GM-270	M-195	M-209	8	350.0	0.006	90,071	0.26
GM-271	M-209	M-211	8	303.0	0.004	195,267	0.43
GM-272	M-211	M-189	8	293.0	0.004	214,609	0.48
GM-273	M-151	M-152	8	253.0	0.003	30,680	0.18
GM-274	M-152	M-195	8	360.0	0.003	78,767	0.30
GM-275	M-141	M-149	8	290.0	0.002	10,084	0.12
GM-276	M-149	M-152	8	292.0	0.003	27,494	0.17

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-277	M-153	M-154	8	270.0	0.003	18,790	0.15
GM-278	M-194	M-209	8	333.0	0.005	85,853	0.27
GM-279	M-154	M-155	8	273.0	0.003	43,712	0.22
GM-28	M-6	M-7	8	331.0	0.003	182,714	0.48
GM-280	M-155	M-194	8	345.0	0.004	75,244	0.26
GM-281	M-159	M-158	8	303.0	0.006	20,078	0.13
GM-282	M-192	M-191	8	296.0	0.003	87,136	0.31
GM-283	M-191	M-188	8	331.0	0.009	99,916	0.25
GM-284	M-193	M-192	8	312.0	0.003	70,034	0.28
GM-285	M-157	M-193	8	312.0	0.003	48,373	0.23
GM-286	M-158	M-157	8	300.0	0.006	37,281	0.17
GM-287	M-177	M-181	8	315.0	0.003	1,648	0.05
GM-288	M-185	M-186	8	300.1	0.005	86,938	0.27
GM-289	M-186	M-187	8	188.6	0.008	87,763	0.24
GM-29	M-7	M-8	8	331.0	0.002	207,299	0.53
GM-290	M-184	M-185	8	354.0	0.004	44,588	0.20
GM-291	M-181	M-182	8	300.0	0.003	20,979	0.15
GM-292	M-182	M-183	8	302.0	0.002	27,103	0.18
GM-293	M-183	M-184	8	354.0	0.004	42,996	0.20
GM-294	M-172	M-173	8	163.0	0.005	8,537	0.09
GM-295	M-174	M-175	8	163.0	0.004	10,472	0.10
GM-296	M-173	M-174	8	146.9	0.005	9,562	0.09
GM-297	M-176	M-160	8	172.0	0.004	22,190	0.15
GM-298	M-418	M-142	8	353.0	0.004	29,516	0.17
GM-299	M-160	M-418	8	336.1	0.004	27,066	0.16
GM-3	M-369	M-370	10	341.1	0.004	168,950	0.30
GM-30	M-8	M-405	8	331.0	0.003	234,947	0.52
GM-303	M-187	M-190	10	102.0	0.004	405,503	0.49
GM-304	M-347	M-346	10	212.4	0.004	764,043	0.74
GM-305	M-346	M-345	10	213.0	0.003	775,959	0.82
GM-306	M-345	M-344	10	181.1	0.007	783,120	0.61
GM-307	M-205	M-204	10	214.0	0.003	641,963	0.68
GM-308	M-204	M-347	10	282.2	0.003	755,414	0.80
GM-309	M-196	M-197	10	259.0	0.003	471,280	0.58
GM-31	M-405	M-126	8	332.0	0.003	259,741	0.55
GM-310	M-197	M-205	10	214.0	0.003	613,468	0.66
GM-311	M-190	M-196	10	295.5	0.003	405,503	0.53
GM-312	M-358	M-357	8	304.0	0.003	18,706	0.14
GM-313	M-351	M-344	8	246.0	0.008	37,571	0.16
GM-314	M-350	M-351	8	253.0	0.008	35,270	0.15
GM-315	M-353	M-352	8	325.0	0.002	32,509	0.20
GM-316	M-352	M-350	8	350.0	0.003	35,270	0.20
GM-317	M-354	M-353	8	301.0	0.003	29,749	0.18
GM-318	M-356	M-355	8	305.0	0.003	24,227	0.16
GM-319	M-355	M-354	8	299.0	0.003	26,988	0.17

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-32	M-126	M-125	8	328.0	0.003	282,112	0.58
GM-320	M-357	M-356	8	317.0	0.003	21,467	0.16
GM-321	M-64	M-63	8	179.1	0.005	11,332	0.10
GM-322	M-386	M-411	8	339.0	0.003	75,039	0.29
GM-323	M-65	M-61	8	180.1	0.005	7,758	0.08
GM-324	M-84	M-85	8	173.0	0.006	11,202	0.09
GM-325	M-90	M-91	8	40.0	0.009	7,360	0.07
GM-326	M-91	M-87	8	78.0	0.009	15,534	0.10
GM-327	M-53	M-56	8	176.0	0.003	9,200	0.10
GM-328	M-58	M-39	8	177.7	0.003	12,814	0.12
GM-329	M-38	M-37	8	178.0	0.003	17,593	0.14
GM-33	M-125	M-124	8	332.0	0.003	310,003	0.60
GM-330	M-44	M-43	8	245.0	0.004	18,750	0.14
GM-331	M-42	M-34	8	288.0	0.003	12,450	0.12
GM-332	M-27	M-26	8	266.1	0.003	10,508	0.11
GM-333	M-25	M-1	8	301.0	0.003	12,280	0.12
GM-334	M-406	M-1	8	146.2	0.003	13,828	0.13
GM-335	M-32	M-31	8	176.0	0.003	10,045	0.11
GM-336	M-22	M-21	8	176.0	0.006	12,028	0.10
GM-337	M-18	M-19	8	190.6	0.005	3,704	0.06
GM-338	M-98	M-99	8	190.0	0.004	13,581	0.11
GM-339	M-97	M-99	8	190.2	0.006	12,940	0.10
GM-34	M-2	M-3	8	257.0	0.003	66,123	0.27
GM-340	M-107	M-106	8	187.6	0.004	12,097	0.11
GM-341	M-105	M-104	8	188.0	0.002	17,179	0.15
GM-342	M-9	M-8	8	190.1	0.005	11,840	0.10
GM-343	M-111	M-110	8	191.0	0.005	11,562	0.10
GM-344	M-402	M-409	8	188.3	0.005	12,311	0.10
GM-345	M-121	M-120	8	188.4	0.003	24,485	0.16
GM-346	M-368	M-123	8	190.0	0.005	9,988	0.10
GM-347	M-214	M-215	8	188.6	0.001	6,800	0.11
GM-35	M-3	M-4	8	257.1	0.003	87,721	0.31
GM-350	M-156	M-155	8	133.0	0.004	8,613	0.09
GM-352	M-179	M-178	8	130.1	0.029	0	0.00
GM-353	M-180	M-178	8	279.0	0.003	0	0.00
GM-354	M-178	M-177	8	279.4	0.004	0	0.00
GM-355	M-166	M-165	12	325.0	0.004	11,258	0.06
GM-356	M-146	M-145	8	177.6	0.007	10,376	0.09
GM-357	M-134	M-137	8	176.0	0.008	11,092	0.09
GM-358	M-388	M-171	18	266.2	0.002	0	0.00
GM-359	M-169	M-170	12	483.0	0.009	4,441	0.03
GM-36	M-26	M-24	8	281.1	0.003	27,044	0.17
GM-360	M-133	M-132	8	180.1	0.008	9,308	0.08
GM-361	M-83	M-81	8	180.1	0.005	8,037	0.08
GM-362	M-117	M-116	8	189.0	0.004	11,661	0.11

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-363	M-113	M-114	8	190.1	0.003	10,635	0.11
GM-364	M-109	M-110	8	187.3	0.005	11,347	0.10
GM-365	M-364	M-363	8	190.0	0.005	10,430	0.09
GM-366	M-401	M-365	8	188.4	0.002	5,798	0.09
GM-369	M-349	M-348	8	268.0	0.01	5,413	0.06
GM-37	M-127	M-120	8	340.2	0.003	311,101	0.61
GM-370	M-348	M-343	8	271.0	0.008	14,885	0.10
GM-371	M-343	M-419	15	310.0	0.002	956,237	0.53
GM-372	M-312	M-305	15	339.2	0.001	1,478,040	0.84
GM-373	M-305	M-306	15	347.3	0.001	1,500,403	0.86
GM-374	M-325	M-312	15	330.2	0.003	1,382,912	0.59
GM-375	M-323	M-325	15	325.0	0.002	1,260,431	0.62
GM-376	M-419	M-323	15	335.1	0.002	1,141,881	0.58
GM-377	M-307	M-306	8	214.3	0.009	47,131	0.17
GM-378	M-316	M-315	8	276.0	0.007	7,304	0.07
GM-379	M-339	M-322	8	256.0	0.005	0	0.00
GM-38	M-120	M-128	8	342.0	0.003	353,257	0.66
GM-380	M-327	M-317	8	182.4	0.027	6,113	0.05
GM-381	M-327	M-326	8	262.3	0.004	2,340	0.05
GM-382	M-326	M-325	8	258.0	0.005	28,293	0.16
GM-383	M-321	M-320	8	288.0	0.003	23,859	0.16
GM-384	M-314	M-420	8	319.0	0.003	209,246	0.48
GM-385	M-315	M-314	8	343.0	0.003	152,485	0.41
GM-386	M-317	M-315	8	320.1	0.003	100,225	0.34
GM-387	M-318	M-317	8	318.0	0.003	65,038	0.26
GM-388	M-320	M-319	8	292.0	0.003	31,899	0.18
GM-389	M-319	M-318	8	331.0	0.002	35,722	0.21
GM-39	M-363	M-362	8	341.1	0.006	410,782	0.59
GM-391	M-377	M-47	8	182.0	0.003	16,533	0.14
GM-392	M-46	M-45	8	275.0	0.005	21,815	0.14
GM-393	M-33	M-28	8	250.6	0.003	11,127	0.11
GM-394	M-162	M-161	8	83.0	0.004	433,481	0.70
GM-396	M-251	M-250	12	334.0	0.003	14,139	0.07
GM-397	M-250	M-254	12	343.0	0.007	63,821	0.13
GM-398	M-255	M-256	8	41.8	0.057	115,234	0.17
GM-399	M-254	M-255	12	277.0	0.013	113,420	0.14
GM-4	M-370	M-371	10	341.0	0.003	176,049	0.32
GM-40	M-128	M-363	8	339.0	0.005	377,034	0.61
GM-400	M-257	M-256	8	336.0	0.003	191,859	0.46
GM-401	M-263	M-257	8	331.1	0.003	97,115	0.33
GM-402	M-175	M-176	8	18.0	0.005	22,190	0.14
GM-403	M-188	M-187	8	28.1	0.005	316,161	0.53
GM-404	M-189	M-188	8	59.4	0.006	216,245	0.42
GM-406	M-339	M-318	8	179.0	0.022	6,787	0.06
GM-407	M-322	M-323	8	258.0	0.005	25,729	0.14

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-408	M-306	M-426	15	135.5	0.023	2,086,205	0.40
GM-409	M-171	M-170	18	70.0	0.004	0	0.00
GM-41	M-362	M-361	8	333.1	0.006	434,952	0.62
GM-410	M-360	M-408	24	351.0	0.003	4,840,611	0.58
GM-411	M-361	M-360	24	359.0	0.003	4,307,085	0.54
GM-412	M-140	M-361	24	371.0	0.003	3,823,486	0.50
GM-413	M-142	M-140	24	352.0	0.003	3,360,678	0.45
GM-414	M-161	M-142	24	341.0	0.001	2,907,106	0.62
GM-415	M-164	M-163	21	226.1	0.003	2,013,374	0.41
GM-416	M-163	M-161	21	223.2	0.004	2,020,842	0.40
GM-417	M-170	M-165	21	195.0	0.003	1,484,025	0.36
GM-418	M-165	M-164	21	237.0	0.002	1,496,875	0.39
GM-419	M-143	M-421	8	446.0	0.004	7,575	0.09
GM-42	M-20	M-19	8	329.0	0.003	113,088	0.34
GM-421	M-422	M-423	8	351.0	0.004	24,002	0.15
GM-422	M-421	M-422	8	356.0	0.004	15,496	0.12
GM-423	M-408	M-413	24	332.0	0.003	5,070,700	0.60
GM-424	M-258	M-256	24	350.0	0.006	5,461,814	0.48
GM-425	M-259	M-258	24	335.0	0.003	5,455,854	0.63
GM-426	M-455	M-259	24	324.0	0.003	5,287,857	0.61
GM-427	M-235	M-455	24	337.0	0.003	5,281,422	0.61
GM-428	M-413	M-235	24	332.0	0.003	5,151,036	0.60
GM-433	M-429	M-430	8	342.3	0.003	0	0.00
GM-434	M-428	M-429	8	326.0	0.004	39,633	0.19
GM-435	M-427	M-428	8	142.1	0.007	28,732	0.15
GM-435A	M-428	M-455	8	4.0	0.663	0	0.00
GM-436	M-260	M-429	10	47.0	0.034	112,827	0.14
GM-436A	M-429	M-259	8	4.0	0.043	162,048	0.21
GM-437	M-344	M-415	10	30.0	0.003	822,265	0.82
GM-438	M-415	M-343	15	32.0	-0.001	938,265	1.00
GM-44	M-106	M-108	8	330.0	0.003	174,754	0.44
GM-441	M-425	M-433	8	214.0	0.002	48,213	0.24
GM-442	M-433	M-438	8	218.0	0.007	52,860	0.19
GM-443	M-438	M-434	8	246.0	0.002	60,783	0.27
GM-445	M-439	M-435	8	334.4	0.002	90,385	0.33
GM-446	M-434	M-439	8	348.1	0.002	73,863	0.30
GM-449	M-443	M-332	8	108.0	0.002	7,129	0.10
GM-45	M-110	M-112	8	326.0	0.004	241,433	0.51
GM-450	M-445	M-359	10	316.2	0.001	5,495	0.07
GM-453	M-202	M-448	8	349.2	0.002	77,760	0.31
GM-454	M-448	M-203	8	85.1	0.002	81,011	0.32
GM-455	M-446	M-246	12	256.7	0.003	7,792	0.06
GM-456	M-444	M-249	12	270.0	0.001	9,901	0.07
GM-458	M-331	M-419	8	430.0	0.003	173,507	0.45
GM-459	M-279	M-300	8	336.0	0.008	18,560	0.11

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-46	M-108	M-110	8	328.0	0.003	201,701	0.48
GM-460	M-218	M-201	8	378.8	0.004	59,428	0.24
GM-461	M-450	M-451	8	98.1	0.006	108,142	0.29
GM-462	M-451	M-452	8	87.0	0	109,745	1.00
GM-463	M-199	M-450	8	143.7	0.003	96,750	0.32
GM-464	M-452	M-197	8	218.4	0.002	142,188	0.44
GM-465	M-19	M-440	8	329.0	0.003	130,588	0.39
GM-466	M-440	M-106	8	329.0	0.002	154,195	0.47
GM-467	M-224	M-449	8	144.0	0.006	8,447	0.08
GM-468	M-449	M-427	8	143.0	0.002	13,857	0.13
GM-469	M-430	M-256	8	336.0	0.008	714	0.02
GM-47	M-409	M-127	8	341.1	0.004	294,194	0.58
GM-473	M-366	M-360	8	329.0	0.005	445,398	0.66
GM-475	M-435	M-300	8	10.0	0.019	373,578	0.41
GM-477	M-400	M-423	8	241.0	0.003	4,962	0.08
GM-478	M-453	M-278	8	285.0	0.002	3,050	0.07
GM-48	M-112	M-409	8	322.1	0.004	269,122	0.53
GM-49	M-24	M-23	8	278.0	0.003	51,514	0.24
GM-5	M-371	M-372	10	339.0	0.004	186,267	0.32
GM-50	M-23	M-21	8	279.0	0.003	76,719	0.29
GM-51	M-21	M-20	8	331.2	0.001	99,973	0.53
GM-517	M-423	M-360	8	13.5	0.128	28,964	0.07
GM-52	M-28	M-29	8	292.6	0.003	46,609	0.23
GM-53	M-118	M-119	8	340.0	0.004	374,601	0.63
GM-54	M-119	M-129	8	340.0	0.005	398,115	0.63
GM-55	M-129	M-130	8	340.0	0.005	421,357	0.66
GM-56	M-130	M-139	8	340.1	0.003	440,965	0.81
GM-57	M-139	M-140	8	335.1	0.011	461,946	0.53
GM-58	M-100	M-99	8	328.0	0.003	140,440	0.41
GM-59	M-99	M-96	8	332.1	0.003	181,232	0.44
GM-6	M-372	M-230	10	336.7	0.003	186,267	0.35
GM-60	M-96	M-104	8	328.0	0.003	204,977	0.49
GM-61	M-104	M-103	8	332.1	0.003	241,286	0.53
GM-62	M-103	M-116	8	330.0	0.003	268,585	0.58
GM-63	M-116	M-115	8	333.1	0.003	292,344	0.58
GM-64	M-115	M-114	8	329.0	0.004	316,428	0.57
GM-65	M-114	M-118	8	342.0	0.003	347,323	0.65
GM-66	M-29	M-30	8	292.6	0.003	68,675	0.28
GM-67	M-30	M-31	8	292.6	0.003	91,582	0.32
GM-68	M-31	M-100	8	333.1	0	116,682	0.65
GM-69	M-34	M-35	8	309.8	0.003	41,024	0.21
GM-7	M-231	M-408	10	333.0	0.001	205,304	0.48
GM-70	M-135	M-136	8	340.0	0.004	342,046	0.60
GM-71	M-136	M-137	8	341.0	0.004	368,286	0.64
GM-72	M-137	M-138	8	340.0	0.004	399,314	0.66

Maywood Sewer Model Output - Peak Wet Weather Flow

ID	From ID	To ID	Diameter (in)	Length (ft)	Slope	Total Flow (gpd)	d/D
GM-73	M-138	M-142	8	335.1	0.006	421,634	0.62
GM-74	M-101	M-88	8	330.0	0.002	145,036	0.43
GM-75	M-88	M-89	8	330.0	0.003	157,424	0.40
GM-76	M-89	M-92	8	329.0	0.003	181,740	0.45
GM-77	M-92	M-93	8	331.1	0.003	199,359	0.46
GM-78	M-93	M-94	8	331.0	0.004	222,197	0.48
GM-79	M-94	M-95	8	330.0	0.005	233,572	0.46
GM-8	M-230	M-231	10	126.0	0.016	194,969	0.22
GM-80	M-95	M-132	8	330.0	0.004	258,328	0.51
GM-81	M-132	M-131	8	340.0	0.004	292,113	0.55
GM-82	M-131	M-135	8	340.0	0.004	315,421	0.61
GM-83	M-35	M-36	8	314.0	0.003	67,575	0.27
GM-84	M-36	M-37	8	312.0	0.003	86,316	0.31
GM-85	M-37	M-101	8	331.1	0.001	118,355	0.54
GM-86	M-43	M-41	8	329.0	0.003	36,558	0.20
GM-87	M-78	M-148	8	339.0	0.003	351,248	0.67
GM-88	M-148	M-147	8	342.0	0.005	375,174	0.62
GM-89	M-147	M-145	8	340.0	0.004	399,451	0.67
GM-9	M-14	M-13	8	326.0	0.004	38,736	0.19
GM-90	M-145	M-144	8	342.0	0.005	424,963	0.68
GM-91	M-144	M-161	8	332.1	0.004	447,539	0.73
GM-92	M-102	M-87	8	330.0	0.003	140,767	0.40
GM-93	M-87	M-86	8	331.1	0.003	170,384	0.43
GM-94	M-86	M-85	8	329.0	0.003	195,664	0.48
GM-95	M-85	M-82	8	331.1	0.003	225,007	0.50
GM-96	M-82	M-81	8	329.0	0.003	251,776	0.53
GM-97	M-81	M-80	8	332.1	0.004	283,271	0.54
GM-98	M-80	M-79	8	328.0	0.004	307,940	0.56
GM-99	M-79	M-78	8	344.0	0.004	323,747	0.59