Sewer System Management Plan

2025 Update

Sanitary Sewer Collection System (WDID #3SSO11465)

GOLETA
WEST
SANITARY DISTRICT

YOUR ENVIRONMENTAL PARTNER SINCE 1954

REVIEWED AND APPROVED BY:

Brian McCarthy, General Manager
Legally Responsible Official
Goleta West Sanitary District

PREPARED BY:

FISCHER LLC COMPLIANCE
PRACTICES THAT COMPLY

July 21, 2025
Date Signed

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Revision Date	SSMP Section	Approval Date	Description of Change/Revision Made	Initials

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Goleta West Sanitary District
Attn: Brian McCarthy, General Manager
Legally Responsible Official (LRO)
P.O. Box 4
Goleta, CA 93116-0004

Dear Brian,

We are pleased to present the new 2025 Sewer System Management Plan (SSMP) Update developed in partnership with District management. The 2025 Update meets and exceeds compliance with the Reissued WDR (State Water Board, Water Quality Order No. 2022-0103-DWQ, Attachment D-10 and Specifications 5.4). The 2025 SSMP has been completely revised to harmonize with industry standard guidelines and incorporates the latest SSMP Audit findings.

The 2025 SSMP is a declaration of what the District is doing to demonstrate full compliance with the Reissued WDR. Attachment A of the Reissued WDR (page A-4), states "A sewer system management plan is a living document an Enrollee develops and implements to effectively manage its sanitary sewer system (s) in accordance with this General Order." This requires the District to periodically review and update the SSMP as necessary until its next 6-year SSMP Update is completed.

We look forward to assisting the District wherever necessary to fully implement the new 2025 SSMP Update.

Sincerely,

Jim Fischer

James Fischer, P.E.
Principal, Fischer Compliance LLC
Credentialed U.S. EPA NPDES Compliance Inspector

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Introduction

This Sewer System Management Plan (SSMP) or "Plan" has been prepared by Goleta West Sanitary District (District) with technical assistance from Fischer Compliance, LLC with the goal of meeting and exceeding compliance with the State Water Resources Control Board 2022 General Waste Discharge Requirements, Order WQ 2022-0103-DWQ for Sanitary Sewer Systems (referred to throughout this document as the WDR).

The District provided all details, information, and institutional insights for preparation of the SSMP. The document has been developed as required by the WDR to meet the size, scale, and complexity of the District's sewer systems, serving as a "living document" and help readers improve understanding about the District's systems, work programs, and efforts to reduce sewage spills.

The District is required to update this SSMP, at a minimum, every six years. The schedule for these updates is based on the WDR enrollment date deadlines for each sewer system established for population served by the sewer system.

The District Board must approve the SSMP and upload it to the CIWQS database by August 2, 2025. The 2024 Sewer System Management Plan Guidance Manual published by the Bay Area Clean Water Agencies was utilized as a model for development of the Master document to harmonize formatting/content and incorporate recommended suggested guidance wherever possible.

SSMP Organization

This SSMP is organized into 11 core elements following Attachment D of the WDR, with inclusion of applicable Specifications requirements.

Each individual element in the SSMP includes the following technical contents.

1. Requirements – Provides the actual description of applicable requirements in the WDR.
2. Compliance – Describes the District's approach to complying with the WDR requirements.
3. Effectiveness – As measured by Key Performance Indicators (KPIs.)
4. Implementation – Demonstrates how the District will ensure the SSMP will be carried out as described.
5. Resilience – Demonstrates the resilience that is addressed in the SSMP and built-in to the District's collection system and procedures.
6. Appendix Inclusions – List the items included in the Appendix for each SSMP Element, if any.

District Compliance Initiatives

The District experienced a large sewage spill in February of 2024 caused by a force main sewer pipeline rupture in the District's easement along the Goleta Slough. In response, the District requested Fischer Compliance, LLC provide two to three new, separately phased compliance initiatives for the District to consider implementing to improve WDR compliance and prevention of future spills:

> Phase 1: Compliance Support (Spill Technical Report/Investigation, Spill Emergency Response Plan, Force Main Recommissioning Planning, Compliance Evaluation Inspection)
>
> Phase 2: Organizational Support (2021-2024 Sewer System Management Plant Audit, 2025 SSMP Update, Computerized Maintenance Management Support, Pump Station Emergency Response Plans, Equipment Standard Operating Procedures, WDR trainings for LRO, Supervisor, Data submitter, and field staff)
>
> Phase 3: Organizational Development O/M (Program Assessments including work programs, planning/scheduling, staffing, equipment, and training, Mutual Aid/Emergency Services Program development, Spill Emergency Preparedness & Response Trainings, Onboarding, Staff Development, Succession Plan, SSMP Implementation)
>
> At the time of this SSMP Update publication, the District authorized implementation of the first two phases. The District is considering authorization of Phase 3 where the District can use Fischer Compliance, LLC's continued technical support for improving long term WDR compliance.

Additionally, as part of the District's comprehensive response and corrective actions to the February 2024 spill the District accelerated the installation of a new flow meter at its pump station and improved calibration of its SCADA delta alarm based on the flow data from a smaller, isolated spill event in October 2024, so that a small excursion like the October 2024 spill will trigger the alarm and provide District staff immediate notice. The District is also installing a new SCADA system, projected to be completed by Fall 2025, and will continue to evaluate and improve its spill alarm system to ensure even small excursions can be readily detected.

The District also completed an expanded force main condition assessment in December 2024 and February 2025, using Xylem Technology's SmartBall and PipeDiver tools. Initial data and findings are currently under evaluation and the District anticipates incorporating the findings in a final condition assessment report with MNS Engineering in 2025.

The District will use these findings to inform a long-term decision to potentially rehabilitate, replace or realign its force mains to address highly corrosive soils in the Goleta Slough and ensure prevention of future spill events. The District installed deployment and retrieval infrastructure during the latest Xylem Technology's assessment field work so that it may access and assess the force mains internally and externally more frequently. The District's current plan is to use Best Available Technology to assess the internal and external condition and integrity of its force mains on a reoccurring basis every five years. The District has identified available capital commitments in its budget to ensure it can continue to fund these frequent and recurring assessments and complete and respond to any identified issues or vulnerabilities identified in the assessments. As a direct example of the District's commitment to frequent assessments and responses, the District is currently responding to preliminary Xylem Technology data findings with work to repair potential defects in the force mains potentially at risk of imminent failure. Force main access and proximity to environmentally sensitive areas will also be considered with respect to rehabilitation, replacement or realignment.

The District intends to maintain updates to this SSMP as additional improvements are identified and implemented.

<u>District Historic Spill Performance:</u> Figure 1 below provides key District spill metrics, (5/1/2010 to 5/1/2025) including data comparing the District's spill record with state and regional system data. But for the District's February 2024 spill that discharged a large volume of wastewater (as indicated in the Net Volume Spills Indices table), the District performs better than both statewide and regional spill rate indices and net spill volumes for all categories of spills from its sanitary sewer collection system.

SEARCH CRITERIA: [REFINE SEARCH] [NEW SEARCH] [GLOSSARY]
WDID (**3SSO11465**)
Date Range: Start_Date (**01/01/2010**) End_Date (**07/04/2025**)

DRILLDOWN HISTORY: [GO BACK TO LISTING OF COLLECTION SYSTEMS]
Goleta West SD CS
Agency: Goleta West SD

General Information

Region	Place ID	Place Name	CS Category	Place Address	Place County
3	645317	Goleta West SD CS	Municipal(Public)	Goleta CA	Santa Barbara

Collection System Spill Summary

Operational Indices: Goleta West SD CS

Spill Rate Indice (spills/100mi/yr)							
	Category 1			Category 2		Category 3	
	Main System	Laterals	Other	Main System	Other	Main System	Other
Goleta West SD CS	0.51	N/A	0.0	0.0	0.0	0.51	0.09
State Municipal(Public) Average	1.45	N/A	0.43	0.53	0.47	2.72	0.53
Region Municipal Average	1.26	N/A	0.82	0.74	0.56	2.94	0.53

Net Volume Spills Indice (gallons/1000 Capita/yr)							
	Category 1			Category 2		Category 3	
	Main System	Laterals	Other	Main System	Other	Main System	Other
Goleta West SD CS	1666.92	N/A	0.0	0.0	0.0	0.4	0.0
State Municipal(Public) Average	1510.65	N/A	3189.26	228.75	3028.64	27.0	7.96
Region Municipal Average	463.45	N/A	166.67	606.95	354.32	23.36	16.18

Figure 1 – District Spill Metrics (2010-2025)

Abbreviations and Acronyms

BMP	Best Management Practices
CCTV	Closed Circuit Television
CIP	Capital Improvement Program
CIWQS	California Integrated Water Quality System (State Water Board Online Spill Database)
CMMS	Computerized Maintenance Management System
FOG	Fats, Oils and Grease
FSE	Food Service Establishment
GCD	Grease Control Device
GIS	Geographic Information System
I & I	Inflow and Infiltration
LRO	Legally Responsible Official
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SERP	Spill Emergency Response Plan
SOP	Standard Operating Procedure
SSMP	Sewer System Management Plan
Spill	Sanitary Sewer Spill
Superint	Sewer System Superintendent
Sup	Sewer System Supervisor
WDR	Sanitary Sewer Systems General Wastewater Discharge Requirements Order issued by the State Water Board (Order No. 2022-0103-DWQ)
SWRCB	State Water Resources Control Board
WDID	Waste Discharge ID Number (CIWQS)

Table 1 – Abbreviations and Acronyms

1. Goal and Introduction

WDR REQUIREMENTS

Att. D-1 (pg. D-2)

"The goal of the Sewer System Management Plan (Plan) is to provide a plan and schedule to: (1) properly manage, operate, and maintain all parts of the Enrollee's sanitary sewer system(s), (2) reduce and prevent spills, and (3) contain and mitigate spills that do occur.

The Plan must include a narrative Introduction section that discusses the following items…."

1.1. Regulatory Context

WDR REQUIREMENTS

Att. D-1.1 (pg. D-2)

"The Plan Introduction section must provide a general description of the local sewer system management program and discuss Plan implementation and updates."

COMPLIANCE

The District is committed to fully implementing the WDR[1] which includes addressing all requirements by integrating a wide range of programs specifically designed for ensuring the integrity and efficiency of the District's sanitary sewer collection system. Moreover, the District is dedicated to maintaining its collection system in a systematic manner by implementing various work programs, with a focus on critical areas, to prevent spills, allowing for a comprehensive approach to maintenance. Work programs include closed-circuit television (CCTV) inspections, pipe cleaning, manhole inspections, lift station maintenance, FOG (fats, oils, greases) program, root control, source control and pipe repair. Work programs are described in more detail in Specifications 5.19 – Operation and Maintenance of this SSMP.

By prioritizing proactive measures and taking a comprehensive approach, the District is well-equipped with a proven track record of effectively operating its sanitary sewer collection system with the highest levels of service, complying with the WDR, and reducing/eliminating sewage spills.

EFFECTIVENESS

N/A

IMPLEMENTATION PLAN/SCHEDULE

N/A

[1] *State Water Resources Control Board, Statewide Waster Discharge Requirements, General Order for Sanitary Sewer Systems (2022-0103-DWQ).*

1.2. SSMP Update Schedule

WDR REQUIREMENTS

Att. D-1.2 (pg. D-3)

"The Plan Introduction section must include a schedule for the Enrollee to update the Plan, including the schedule for conducting internal audits. The schedule must include milestones for incorporation of activities addressing prevention of sewer spills."

COMPLIANCE

The District utilizes the State Water Board's Sewer System Management Plan & Audit Required Due Dates Online Tool to ensure compliance with all required due dates for updating its SSMP and completing its required SSMP Audits. The WDID for the District is 3SS011465 and the schedule is:

Sewer System Management Plan & Audit Required Due Dates
Transition from General Order 2006-0003-DWQ to Reissued General Order

Search by Waste Discharge Identification (WDID) Number

Enter your Waste Discharge Identification (WDID) number in the search field to retrieve the required Sewer System Management Plan (SSMP) Update and Audit due dates for your system.

3SSO11465

Show Update/Audit Dates

Sewer System Management Plan & Subsequent Update Due Dates

System Name	WDID Number	Original Plan Required Due Date	Required Plan Update Due Date	Required Plan Update Due Date	Required Plan Update Due Date*
Goleta West SD CS	3SSO11465	8/2/2009	8/2/2014	8/2/2019	8/2/2025

Audit Due Dates

System Name	WDID Number	Original Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	End of Required 3-Year Audit Period**
Goleta West SD CS	3SSO11465	8/2/2011	8/2/2013	8/2/2015	8/2/2017	8/2/2019	8/2/2021	8/2/2024

* Per Section 5.5 and Attachment E1, Section 3.11 of the General Order, Plan updates are due within six years after the required due date of the Enrollee's last Plan Update.

** Per Section 5.4 and Attachment E1, Section 3.10 of the General Order, the Audit Report is due within six months after the end of the required 3-year audit period.

Figure 2 – Sewer System Management Plan Update and Audit Due Dates

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Are SSMP Audits and SSMP Updates being performed as scheduled?
- Has the SSMP been approved by the governing board on the required schedule (i.e., every six years)?
- Are specific internally established sewer program milestones being monitored?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Mgr
1.2.1	Prepare for next SSMP Audit	Begin 8/2/2027	X	X	X
1.2.2	Complete and Upload next SSMP Audit	By 2/2/2028	X	X	
1.2.3	Incorporate Audit Findings, update Change Log and Update SSMP	Begin after completion of SSMP Audit		X	
1.2.4	Prepare for next SSMP Audit	Begin 8/2/2030	X	X	X
1.2.5	Complete and Upload next SSMP Audit	By 2/2/2031	X	X	
1.2.6	Incorporate Audit Findings, update Change Log and Update SSMP	Begin after completion of SSMP Audit		X	
1.2.7	Prepare for next SSMP Update	Begin 2/2/2031	X	X	
1.2.8	Board Approval deadline for SSMP Update	By 8/2/2031	X	X	

1.3. Sewer System Asset Overview

WDR REQUIREMENTS

Att. D-1.3 (pg. D-3)

"The Plan Introduction section must provide a description of the Enrollee-owned assets and service area, including but not limited to:

- *Location, including [District(s)];*
- *Service area boundary;*
- *Population and community served;*
- *System size, including total length in miles, length of gravity mainlines, length of pressurized (force) mains, and number of pump stations and siphons;*
- *Structures diverting stormwater to the sewer system;*
- *Data management systems;*
- *Sewer system ownership and operation responsibilities between Enrollee and private entities for upper and lower sewer laterals;*
- *Estimated number or percentage of residential, commercial, and industrial service connections; and*
- *Unique service boundary conditions and challenge(s).*

Additionally, the Plan Introduction section must provide reference to the Enrollee's up-to-date map of its sanitary sewer system, as required in section 4.1 (Updated Map of Sanitary Sewer System) of this Attachment."

COMPLIANCE

Goleta West Sanitary District provides wastewater collection and street sweeping services to the residents and businesses of portions of the City of Goleta and surrounding unincorporated areas in the Western Goleta Valley and Isla Vista. The District services approximately 41,575 people throughout 6.75 square miles in southern Santa Barbara County, specifically in the western Goleta Valley on both sides of Highway 101. The District also provides collection system operation and maintenance to the Embarcadero Municipal Improvement District.

The District was established in 1954 under the Sanitary District Act of 1923 as the Isla Vista Sanitary District to serve the community of Isla Vista and the Western Goleta Valley. In 1990, the name of the District was changed. The District does not operate its own wastewater treatment plant. Goleta West Sanitary District has capacity rights to 40.78% of the total capacity of the regional wastewater treatment plant at Goleta Sanitary District under an agreement dated January 13, 1956.

The District currently consists of roughly 70 miles of gravity sewer pipe ranging from 6 inches to 42 inches in diameter. The system is comprised of vitrified clay pipe (VCP), polyvinyl chloride (PVC), asbestos cement pipe (ACP), ductile iron, and fiberglass reinforced mortar (HOBAS). There is one remote lift station which utilizes two parallel 2,000-foot high-density polyethylene (HDPE) force mains, as well as the main lift station which uses one 18-inch ACP force main and one 24-inch ductile iron force main, both measuring roughly 9,000 feet in length. There are no siphons in the District's collection system, and the system is not utilized for stormwater. The District owns and maintains the mainline sewer while the entire service lateral (both upper and lower), up to and including the point of connection at the mainline, is privately owned.

Of the approximately 41,575 people the District serves, approximately 32,339 are living within City of Goleta. The District anticipates a growth rate of approximately 0.7 percent a year within its boundaries in the coming years. In 2021, it was estimated that the District serves 6,772 parcels, 6,429 in City of Goleta, and 315 in Isla Vista serving approximately 6,066 connections. Of these connections roughly 90% is classified as residential, 10% commercial and of that 10% roughly 2% would be considered industrial. Sewer service laterals within the District Service areas are privately owned.

The District does not have any significant boundary area challenges at this time.

The District is proactive and in a good position for operating and managing its sewer system assets. Some unique challenges for District staff include seasonally accessing some sewer easement locations located in environmentally sensitive areas that may complicate construction or maintenance of easement access to District facilities. This includes accessing facilities located adjacent to the Santa Barbara City Airport, remote trail areas, locations near wetlands, and locations adjacent to private property. To overcome these challenges, the District employs the following tasks for completing maintenance in many of these easement locations:

- Accessing many of these locations during dry weather periods to ensure routine maintenance tasks are completed prior to wet weather periods;
- Execution of pre-planned communications and coordination with property owners, businesses, and agencies for some of these remote locations including the Santa Barbara City Airport;
- Pre-planning tasks with management, supervisors, and field staff including utilizing additional resources where necessary;
- Utilizing remote setups with hydro-vacs, equipment, and CCTV vehicle;
- Utilizing special offtrack/easement hydrojetting machinery; and,
- Additional time to complete tasks.

The District maintains up to date collection system maps (see Element 4.1 - Updated Map of Sanitary Sewer System for more details).

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Are asset statistics periodically reviewed and updated as necessary?
- Are omissions or errors addressed in a timely manner?
- Are system maps up to date?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
1.3.1	Review District-owned asset statistics and element description; update as necessary	At the beginning of the audit cycle and when significant changes have been made.		X	X
1.3.2	Verify map updates have been completed	Annually		X	

RESILIENCE

Resilience is addressed in Element 1 by:

- Adhering to an SOP for collecting and managing asset data.
- Redundancy: More than one member of staff is trained and able to retrieve and manage the data.
- Implementing a QA/QC process to help ensure information is accurate.
- Using Calendar Reminders to ensure compliance deadlines are met.

APPENDIX 1 INCLUSIONS:

- None

Specifications 5.2 – SSMP Development and Implementation

WDR REQUIREMENTS

Specification. 5.2 (pg. 18)

"To facilitate adequate local funding and management of its sanitary sewer system(s), the District shall develop and implement an updated Sewer System Management Plan. The scale and complexity of the Sewer System Management Plan, and specific elements of The SSMP, must match the size, scale, and complexity of the Enrollee's sanitary sewer system(s). The Sewer System Management Plan must address, at minimum, the required Plan elements in Attachment D (Sewer System Management Plan – Required Elements) of this General Order. To be effective, the Sewer System Management Plan must include procedures for the management, operation, and maintenance of the sanitary sewer system(s). The procedures must: (1) incorporate the prioritization of system repairs and maintenance to proactively prevent spills, and (2) address the implementation of current standard industry practices through available equipment, technologies, and strategies."

COMPLIANCE

This SSMP has been updated to meet the requirements of General Order WQ 2022-0103-DWQ and addresses all required Elements and Specifications. The SSMP addresses management, operations and maintenance procedures specific to the District's collection system. The District maintains a proactive O&M program to operate its system and identify defects, which are then prioritized for repair, replacement, rehabilitation, or placed on modified maintenance schedules. (See Elements 4 and 8 and Specifications 5.19 of this SSMP for more detail).

The District keeps up with current industry standards, technology and best practices by reviewing industry periodicals, networking and attending industry conferences, customized consulting trainings on the WDR, vendor demonstrations, and attending online and in-person workshops. This includes continuously evaluating emerging collection system practices, updating equipment, and reviewing technologies to consider for enhancing existing operations.

Specifications 5.7 – Allocation of Resources

WDR REQUIREMENTS

Spec. 5.7 (pg. 22)

"The District shall comply with the following requirements:

- *Establish and maintain a means to manage all necessary revenues and expenditures related to the sanitary sewer system; and*
- *Allocate the necessary resources to its sewer system management program for: (a) compliance with this General Order, (b) full implementation of its updated SSMP, (c) system operation, maintenance, and repair, and (d) spill responses."*

COMPLIANCE

The District maintains various revenue sources to maintain financial stability, meet its operational needs and manage all necessary expenditures to operate its sewer system. Sources of revenue include:

Revenues

Goleta West Sanitary District has four primary sources of revenue:

1. Sewer User Fees (including fees collected for O/M and capital improvements purposes, and replacement projects)
2. Property Tax (utilized for upsizing pipes and expanding the sewer system to locations not already served)
3. Connection fees (for all sewer trunk lines above 12 inches and for handling capacity with wastewater treatment services)
4. Frontage fees (required for all smaller diameter pipes less than 12 inches in diameter)

Expenditures

1. Operating Expenses – Treatment costs, Personnel, Contractual Services, Legal Services, and general administrative costs are paid for with Sewer User Fees
2. Street Sweeping Personnel and O&M costs unrelated to sewers.
3. District reserves fund all capital costs.

Reserves

1. Reserves are maintained for intended purposes. The largest portion of the District reserves are allocated to upgrades and improvements at the Regional Wastewater Treatment Plant (GSD). GWSD is responsible for 40.78% of the treatment plant O&M and improvements/upgrades.
2. Specific Capital Projects, Operating and Cash Reserves, and Equipment and Building Reserves are established and funded annually.

Financial Plan

In 2012, the District's financial consultant updated the District's Financial Plan to ensure that the District maintains the funds to meet future District goals including repair and rehabilitation. This report was followed up with a Cost-of-Service Study Report in April 2023. Effective July 1, 2023, the District implemented a program increasing sewer user fees over a 5-year period to ensure revenue requirements of the District will be met. The District currently maintains substantial reserve funds dedicated to capital improvements in the collection system. The District routinely publishes its annual budget on the District's website

Additionally, to ensure adequate funding for frequent force main condition assessments with Best Available Technology, which may cost approximately $500,000, the District is setting aside $125,000/year from its annual revenues. The District will set aside the revenues by depositing the funds into a dedicated Force Mains Assessment Reserve Fund.

The District owns the necessary equipment and employes the appropriate number of staff to properly maintain and manage its sanitary sewer collections system.

Provisions 6.1 – Enforcement Provisions

WDR REQUIREMENTS

Provisions 6.1 (pg. 27)

> *"The following enforcement provisions are based on existing federal and state regulations, laws and policies, including the federal Clean Water Act, the state Water Code and the State Water Board Enforcement Policy."*

COMPLIANCE

The District is aware of the consequences for noncompliance including associated penalties for violations. The District maintains a proactive stance with full implementation of its SSMP.

Noncompliance with requirements of this General Order or discharging sewage without enrolling in this General Order constitutes a violation of the Water Code and a potential violation of the Clean Water Act and is grounds for an enforcement action by the State Water Board or the applicable Regional Water Board. Failure to comply with the notification, monitoring, inspection, entry, reporting, and recordkeeping requirements may subject the Enrollee to administrative civil liabilities of up to $10,000 a day per violation pursuant to Water Code section 13385; up to $1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. Discharging waste not in compliance with the requirements of this General Order or the Clean Water Act may subject the Enrollee to administrative civil liabilities up to $10,000 a day per violation and additional liability up to $10 per gallon of discharge not cleaned up after the first 1,000 gallons of discharge; up to $5,000 a day per violation pursuant to Water Code section 13350 or up to $20 per gallon of waste discharged; or referral to the Attorney General for judicial civil enforcement.

Provisions 6.3 – Sewer System Management Plan Availability

WDR REQUIREMENTS

Provisions 6.3 (pg. 31)

> *"The Enrollee's updated Sewer System Management Plan must be maintained for public inspection at the Enrollee's offices and facilities and must be available to the public through CIWQS and/or on the Enrollee's website, in accordance with section 3.8 (Sewer System Management Plan Reporting Requirements) of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of this General Order."*

COMPLIANCE

The District will upload this SSMP to the CIWQS database and publish it on its website. In addition, the SSMP and any updates are available for public review at the District office, by appointment, during regular business hours.

2. Organization

WDR REQUIREMENTS

Att. D-2 (pg. D-3)

"The Plan must identify organizational staffing responsible and integral for implementing the local Sewer System Management Plan through an organization chart or similar narrative documentation that includes:

- *The name of the Legally Responsible Official as required in section 5.1 (Designation of a Legally Responsible Official) of this General Order;*
- *The position titles, telephone numbers, and email addresses for management, administrative, and maintenance positions responsible for implementing specific Sewer System Management Plan elements;*
- *Organizational lines of authority; and*
- *Chain of communication for reporting spills from receipt of complaint or other information, including the person responsible for reporting spills to the State and Regional Water Boards and other agencies, as applicable. (For example, District health officer, District environmental health District, and State Office of emergency Services.)*

COMPLIANCE

The above items are addressed in order below:

The District's single Legally Responsible Official (LRO) is listed below:

- Brian McCarthy, General Manager

The District's LRO meets the minimum requirements set forth in Specifications 5.1 of the WDR.

IMPLEMENTATION RESPONSIBILITIES

Sewer System Management Plan Elements	Responsible Position
1. SSMP Plan, Goal and Introduction	General Manager
1.1. Regulatory Context	General Manager
1.2. SSMP Update Schedule	General Manager
1.3. Sewer System Asset Overview	General Manager
2. Organization	General Manager
3. Legal Authority	General Manager
4. Operations and Maintenance Program	Utility Worker IV
4.1. Updated maps of Sanitary Sewer System	Utility Worker IV
4.2. Preventive Operation & Maintenance	Utility Worker IV
4.3. Training	Utility Worker IV
4.4. Equipment Inventory	Utility Worker IV
5. Design/Performance	General Manager
5.1. Updated Design Criteria & Construction Standards	General Manager
5.2. Procedures and Standards	General Manager
6. Spill Emergency Response Plan	General Manager
7. Sewer Pipe Blockage Program	Utility Worker IV
8. System Eval, Capacity Assurance, Capital Imp.	General Manager
8.1. System Evaluation and Condition Assessment	General Manager
8.2. Capacity Assessment and Design Criteria	General Manager
8.3. Prioritization of Corrective Action	General Manager
8.4. Capital Improvement Plan	General Manager
9. Monitoring, Measurement & Program Modifications	Utility Worker IV
10. Internal Audits	Utility Worker IV
11. Communication Program	Utility Worker IV

Table 2 – Implementation Responsibilities

RESPONSIBLE POSITION CONTACT INFORMATION

Responsible Position	Name	Title	Phone	Email
General Manager	Brian McCarthy	General Manager	(805) 968-2617	bmccarthy@goletawest.org
Superintendent	Joey Hilliard	Utility Worker IV	(805) 968-2617	jhilliard@goletawest.org

Table 3 – Responsible Position Contact Information

2.1. Organizational Staffing Responsibilities

Board of Directors

- Elected Officials who establish policies of the District.

General Manager

- Serves as the Legally Responsible Official (LRO) for the District.
- Responsible for the administration, operations and public relations of the District under the general direction of the Board of Directors.
- Prepares and manages the District budget.
- Plans, organizes, directs and evaluates the operation and maintenance of the District's wastewater collection system.
- Supervises employees in the day-to-day operation and maintenance of the wastewater collection system.

Engineering Services

- Third-party professional consultants hired by the District as needed to complete various studies, planning documents, design improvements or manage projects.

Legal Counsel

- Outside counsel, retained to advise the District on all legal issues.

Office Manager

- Supports District Staff in the areas of administration, accounting, and clerical.
- Answers the telephone and receives office visitors, provides customer assistance as well as a variety of information about District policies, programs and functions.
- Acts as District radio dispatcher.

Environmental Compliance Specialist

- Implements the District’s Industrial Waste Pretreatment Program (including the FOG program).
- Inspects new and rehabilitated assets to ensure that construction meets District standards.
- Assists with the administrative, operations and public relations functions of the District.

Utility Worker IV

- Serves as a Designated Data Submitter for the District.
- Acts as the lead worker responsible for the day-to-day operation, maintenance and repair of the wastewater collection system.
- Acts as back-up to General Manager/Superintendent when required.

Utility Worker III

- Performs at the journeyman level in the maintenance, operation and repair of wastewater collection system.

Utility Worker II

- Maintains, operates and repairs wastewater collection system.

<u>Utility Worker I</u>

- Assists in the maintenance, operation and repair of wastewater collection system.

<u>Laborer</u>

- Assists in the maintenance, operation and repair of wastewater collection system.

<u>Clerk II</u>

- Maintains fiscal, statistical and administrative records; performs support work as assigned.

<u>Clerk I</u>

- Performs secretarial duties and general office support for staff.

2.2. District Organization Chart

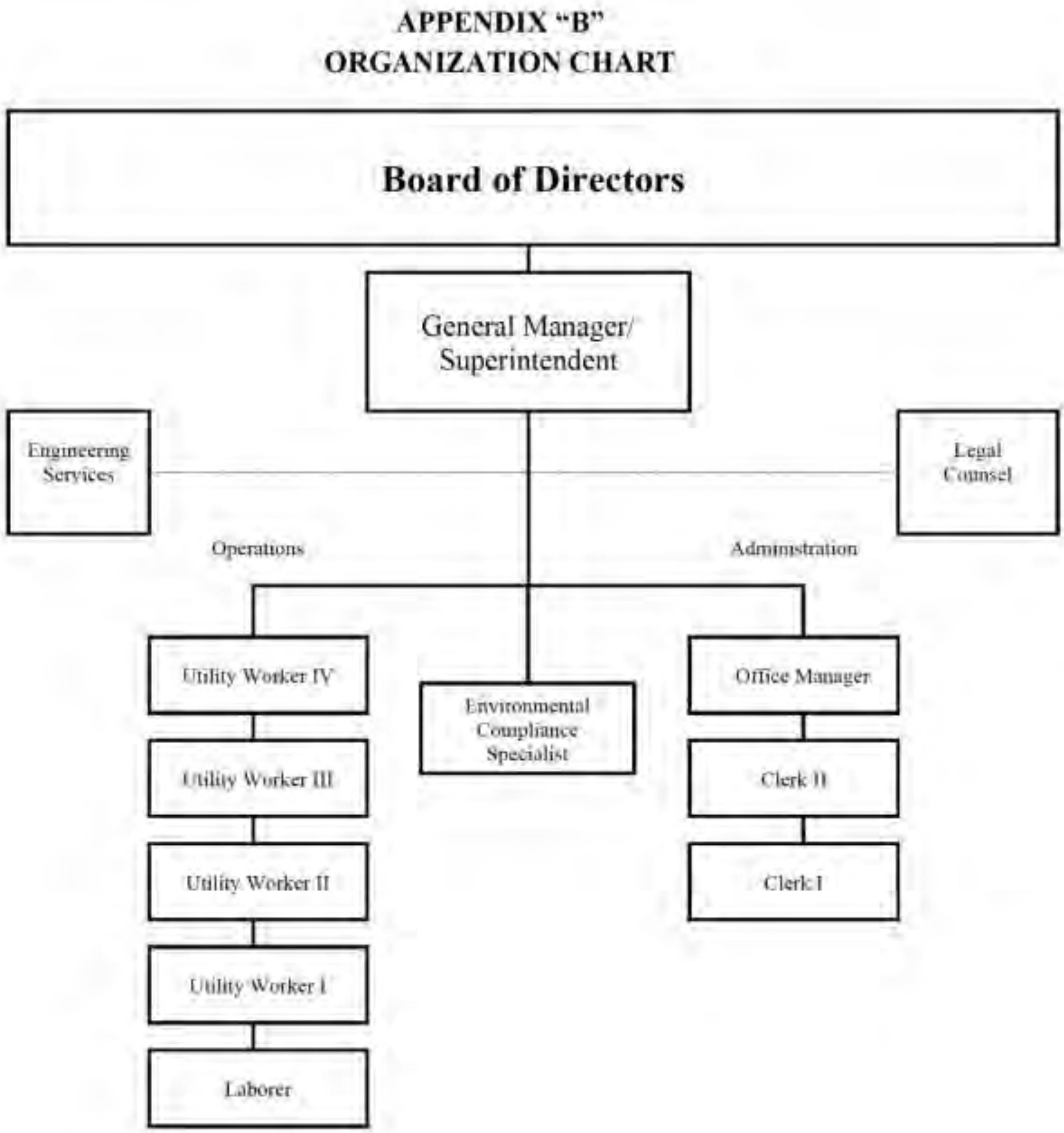

Figure 3 – District Organization Chart

2.3. Chain of Communication for Reporting Spills

District Procedures for Receiving and Responding to Service

Service calls received during business hours and/or after hours to the District office phone at (805) 968-2617 are answered directly by District staff during business hours or forwarded after hours to a dedicated Duty Person in charge. An additional standby person is also provided during all weekends and holidays to provide support to the assigned Duty Person, if required. During business hours, the Utility IV Supervisor dispatches appropriate crew member(s) to respond to service calls (see District SERP for additional details). SCADA alarm calls from lift stations received during/after business hours go directly to the assigned Duty Person in charge.

District Spill Response Procedures for Spill Events

Response staff respond to all calls, assess the spill event, and take appropriate actions to mitigate the spill. All spill events are responded to in accordance with the District's Spill Emergency Response Plan (SERP) and are documented in adherence to the WDR Notification, Monitoring, Reporting and Recordkeeping requirements. The On-Call Utility Supervisor makes the Cal-OES notifications, when applicable (see District SERP for additional details).

District Reports Spill Event

The responding field staff submit the field report(s) to the on-call supervisor or Data Submitter who reviews for completeness and accuracy and then confers with the LRO and/or Data Submitter if not already serving as on-call supervisor as a layer of quality control (see District SERP for additional details).

Once all information is verified, Data Submitter submits it to CIWQS.

The District's Legally Responsible Official certifies all spill reports.

Figure 4 – Chain of Communication for Reporting Spills

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Have there been any changes requiring updates to the Organizational Chart?
- Have there been instances when a service call for a spill was not properly routed to response personnel?
- Were all spill response activities documented and forwarded to the LRO?
- Have there been any changes in assigned responsibilities for implementing the SSMP?
- Is there a process in place to ensure all contact information remains up to date?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
2.1	Review names, contact information and position responsibilities; update as necessary	Annually		X	X
2.2	Review Chain of Communication outcomes for all spill responses	Each Spill Event	X	X	X
2.3	Review Organizational Chart for any changes. Update as necessary	Annually		X	X

RESILIENCE

Resilience is addressed in Element 2 by:

- Ensuring that more than one person is capable and responsible for specific duties for SSMP implementation, e.g., back-up personnel.
- Designation of more than one LRO to help ensure full and continuous coverage of duties.
- Testing the phone notification system to ensure calls are received and routed to appropriate personnel.

APPENDIX 2 INCLUSIONS:

- None

3. Legal Authority

WDR REQUIREMENTS

Att. D-3 (pg. D-4)

"The Plan must include copies or an electronic link to the Enrollee's current sewer system use ordinances, service agreements and/or other legally binding procedures to demonstrate the Enrollee possesses the necessary legal authority to:

- *Prevent illicit discharges into its sanitary sewer system from inflow and infiltration (I&I); unauthorized stormwater; chemical dumping; unauthorized debris; roots; fats, oils, and grease; and trash, including rags and other debris that may cause blockages;*
- *Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross connections of sanitary sewer infrastructure to storm sewer infrastructure;*
- *Require that sewer system components and connections be properly designed and constructed;*
- *Ensure access for maintenance, inspection, and/or repairs for portions of the service lateral owned and/or operated by the Enrollee;*
- *Enforce any violation of its sewer ordinances, service agreements, or other legally binding procedures; and*
- *Obtain easement accessibility agreements for locations requiring sewer system operations and maintenance, as applicable. "*

COMPLIANCE

The above items are addressed below in order:

- Authority to prevent illicit discharges into the District's sanitary sewer collection system is provided by District Ordinance No. 60, Article III requiring certain uses of public sewers. The purpose of this section is to prevent discharges of wastes, garbage, stormwater drainage, swimming pool discharges, and other materials into sewers. Additional authority to limit/prohibit fats, grease and other debris that may cause sewer blockages is granted under District Ordinance No. 21-94. The District's Ordinance No. 21-94 also provides the District authority to implement enforceable pretreatment standards for industrial waste and require additional pretreatment measures for certain industrial users through individual wastewater discharge permits.
- The District does not own any storm drain assets located within the District service area. As such, the District has traditionally used its de facto authority for accessing storm drain system(s) owned and operated by the City of Santa Barbara, City of Goleta, and the County of Santa Barbara as necessary during and after spill events to when necessary to retrieve and/or return sewage entering these system(s) back to the District's sewer system, clean these system(s), and notify the system owner(s) as needed. The District is also embarking on a new effort to improve communication with these system owners to better formalize these procedures for addressing compliance with this requirement.
- The District's authority to require sewer system components and connections to be properly designed and constructed is provided in District Ordinance No. 60, Article VI requiring compliance with District Specifications. In addition, the District's Ordinance No. 58 and the District's Design and Construction Standards for Sewer Facilities (sections I and III).

- The District does not own any portion of the service lateral and does not require access for inspection, maintenance, or repair.
- The District's legal authority to enforce any violation of its sewer ordinances, service agreements, or other legally binding procedures is provided in District Ordinance No. 62, including specific enforcement provisions, penalties, notices of non-compliance, and other legally-binding procedures and authority.
- The District's authority to obtain easement accessibility agreements for locations requiring sewer system operations and maintenance is provided in District Ordinance No. 60, Article VI. It is the District's understanding that all existing facilities are located within a public utility easement of dedicated sewer easement. The District's Design and Construction Standards for Sewer Facilities (see section 1.4.9) requires new facilities be located within a legal easement. Further, additional easement authority is specified in District Ordinance No. 58 (see section 3.6) for ensuring easement accessibility as specified below:

  "All necessary easements and rights-of way for purposes of accessing and inspecting the Facilities during Construction, and for operating, repairing, maintaining, replacing and extending the Facilities upon and after Dedication and acceptance."

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Are the District ordinances and standards adequate for fulfilling the SSMP Plan legal requirements?
- Does the District have a process in place for periodic review and evaluation of ordinances?
- Have there been instances when the code or ordinance did not address a need or circumstance?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
3.1	Review Ordinance(s) to confirm all documents provide necessary required legal authority	Continuously, and at least once per SSMP Update Cycle	X	X	
3.2	Confer with storm drain owners to ensure current practices and contact information are up to date	Annually		X	
3.3	Monitor and document occasions when Ordinance(s) failed to address issues as intended	Continuously	X	X	X

RESILIENCE

Resilience is addressed in Element 3 by:

- Keeping abreast of industry trends and local ordinances that may affect operations.

APPENDIX 3 INCLUSIONS:

- None

4. Operation and Maintenance Program

WDR Requirements

Att. D-4 (pg. D-4)

"The Plan must include the items listed below that are appropriate and applicable to the Enrollee's system."

4.1. Updated Map of Sewer System

WDR REQUIREMENTS

Att. D-4.1 (pg. D-4)

"An up-to-date map(s) of the sanitary sewer system, and procedures for maintaining and providing State and Regional Water Board staff access to the map(s). The map(s) must show gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities within the sewer system service area boundaries."

COMPLIANCE

Knowledge of the locations and physical attributes of all District facilities is essential to effective operation and maintenance of the system. The District maintains updated system maps utilizing its Geographical Information System (GIS) database (ArcGIS ESRI). Included in this database are layers showing digital ortho photos, individual parcels, water lines owned by the Goleta Water District and storm drain locations in the City of Goleta portion of the District. Each District asset is labeled with a unique identifier. Atlas maps include information such as pipe size, pipe type, manhole depth, pipe segment length and material, and other attributes. Atlas maps are used by the field crew and carried in every District vehicle.

The maps are updated on an ongoing and as needed basis by engineering consultants hired by the District. Mapping errors or omissions discovered by field staff are documented and submitted to supervisory staff who verify the proposed changes prior to inclusion in the District's GIS. Geographic information for new subdivisions or other collection system facilities are incorporated into the District's GIS following completion of each project with project engineers providing the District with the record drawings.)

District sewer system maps will be made available to State and Regional Water Board staff upon request.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Were all map updates completed in a timely manner?
- Are all staff trained in the procedure for providing map update information?
- Are newly installed sewer assets incorporated into the system maps?
- Are there terrain features or assets that should be incorporated in future map updates (e.g. exposed pipe, siphons, ARVs, surface water, etc.)

IMPLEMENTATION PLAN/SCHEDULE

No	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup.
4.1.1	Review map update procedures with all affected staff	Annually		X	X
4.1.2	Review/ensure all newly installed facilities have been updated and included in the system maps	Annually		X	X

4.2. Preventive Operation and Maintenance Activities

WDR REQUIREMENTS

Att. D-4.2 (pgs. D-4/D-5)

"A scheduling system and a data collection system for preventive operation and maintenance activities conducted by staff and contractors. The scheduling system must include:

- *Inspection and maintenance activities;*
- *Higher-frequency inspections and maintenance of known problem areas, including areas with tree root problems;*
- *Regular visual and closed-circuit television (CCTV) inspections of manholes and sewer pipes.*

The data collection system must document data from system inspection and maintenance activities, including system areas/components prone to root-intrusion potentially resulting in system backup and/or failure."

COMPLIANCE

The purpose of a work order system is to program and track all required inspection and maintenance activities within the collection system to help proactively prevent blockages/operational problems or spills. The District utilizes the ICOM Computerized Maintenance Management System (CMMS, ICOM), which allows the District to make informed decisions regarding its assets and infrastructure by using the collected data from field work orders and documented inspections. It also utilizes ArcGIS (ESRI) for sewer mapping, and WinCan software for field CCTV inspection data capture.

The District utilizes ICOM for scheduling, work orders, and asset management. The scheduling system allows staff to put certain activities on a preventive schedule where ICOM automatically creates work orders on a prescribed interval. Work orders for other activities are generated by supervisory personnel on an as-needed basis.

The District uses a CMMS to assist in the management and maintenance of the District's facilities. The CMMS stores and enables staff to retrieve data such as facility inventories, maintenance history, maintenance schedules, service calls, comments and complaints. In addition, the CMMS interfaces with the District's GIS mapping program. The District utilizes a number of resources and tools to provide information which enables the District to prioritize maintenance activities required on each specific District asset, such as CCTV, manhole inspections, work order history, spill history, site risk assessment and observations from maintenance crews.

The ICOM software capabilities include ability to produce scheduled and unscheduled work orders for all the District's assets. The District includes anything requiring routine maintenance. Schedules for maintenance activities are input into the system by District staff based on information found using methods discussed above. Following the completion of the scheduled task, the District staff will enter the work order in ICOM. The database keeps a history of each work order and any related findings during that event. Many District assets have historical records over 25-years old as GWSD has had a computerized database of some type during that period.

The maintenance frequencies are updated as new information is acquired. This information may indicate a change in frequency or method of cleaning is needed. The District maintains different types of assets pursuant to maintenance programs and integrates maintenance with the District's GIS. ICOM provides the tools necessary to identify any trends developing in relation to stoppages or spills.

The District is also embarking on a new project to upgrade its existing CMMS software from ICOM to another software platform with expanded capabilities. The District currently plans to implement the new CMMS software prior to completion of the next required SSMP Audit.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Are the District's maintenance, operations, and engineering work orders periodically audited for accuracy and completeness?
- Does the District monitor "open," "overdue," or "not yet completed" work orders to ensure completion of tasks?
- Are inspection and maintenance activities reducing the number and volume of spills?
- Is maintenance work being completed as scheduled?

IMPLEMENTATION PLAN/SCHEDULE

No	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup.
4.2.1	Monitor "Past Due" work orders to ensure critical work is being completed	Ongoing		X	X
4.2.2	Review scheduled PMs to ensure the prescribed schedule remains appropriate	Ongoing & Annually		X	X

4.3. Training

WDR REQUIREMENTS

Att. D-4.3 (pg. D-5)

"In-house and external training provided on a regular basis for sanitary sewer system operations and maintenance staff and contractors. The training must cover:

- *The requirements of this General Order;*
- *The Enrollee's Spill Emergency Response Plan procedures and practice drills;*
- *Skilled estimation of spill volume for field operators; and*
- *Electronic CIWQS reporting procedures for staff submitting data."*

COMPLIANCE

The District's training programs cover numerous areas involving or associated with wastewater collection systems and serves to develop and maintain highly qualified, knowledgeable, and capable staff. This training is provided through a variety of modes (self-study, seminars, conferences, on-the-job, etc.) and begins from the first day on the job and continues regularly thereafter.

Staff involved in responding to customer service calls, including sewage spills, receive annual training on the District's Spill Emergency Response Plan (SERP). This training is a combination of classroom and hands-on exercises and drills for responding to spill events and includes containment, restoring flow, spill volume, volume recovered, spill start time estimations, clean up and completing the spill event data collection forms. SERP and other trainings include technical support from an outside collection system consultant (Fischer Compliance, LLC) for building new internal operational procedures and a formalized training curriculum plan/schedule for ensuring District staff are trained consistently, competent, and are knowledgeable with all related WDR requirements including emergency field preparedness, response activities, and field documentation.

As a condition of employment all collection system employees are certified in collection system maintenance through the technical certification program of the California Water Environment Association (CWEA). The District is highly committed to ensuring highly trained and knowledgeable staff. The District requires employees to pursue professional development, and all expenses incurred are reimbursed by the District. The collection system staff hold CWEA Collection System Maintenance Certification in addition to other various professional wastewater related certifications and credentials. Staff regularly attend vocational training provided by industry vendors and professionals. The LRO and Designated Data Submitters regularly attend WDR update training courses to ensure the SSMP is up to date and in compliance with the General Order, as well as CIWQS reporting procedures. The entire staff attend regularly scheduled meetings to discuss safety, emergency response and receive training in collection system operations and maintenance. All trainings are documented.

The District has developed spill response procedures for Contract Service personnel who perform work for the District. The Contract Service personnel are required to:

- Immediately notify the District of any sewage spill they encounter;
- Make attempts to contain the spill;
- Take photos of the:
- Spilling structure,
- The affected area, and,

- 10-second video of spilling structure;
- Cordon off the area to keep the public safe; and
- Remain onsite until District staff arrives.

This language is included in service agreements and discussed during pre-job meetings.

The District may utilize contractors to perform repairs on facilities. The District's Standard Construction Contract Documents require contractors to provide records of their credentials and qualifications. All District contractors must hold a valid contractor's license in the State of California for the classifications named in the Contract Documents. The Contract Documents require the contractor to submit information certifying their general competency, experience and qualifications and the qualifications of the designated person who will act as foreman on the project. Contractors are required to attend a preconstruction meeting at the District prior to commencement of work. All special issues related to the job; contractor staff training and safety are discussed during the preconstruction meeting. The District's trained staff inspects workmanship and monitors contractors and their workers during the completion of the project. The District's Standard Construction Contract Documents state, "*Whenever the District notifies the contractor in writing that any person on the Work appears incompetent, disorderly, or otherwise unsatisfactory, such person shall be removed from the Work and shall not again be employed on it except with the consent of the District.*"

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Has all training been completed as scheduled?
- Have records of training and attendance been documented and maintained?
- Have all staff demonstrated ability and knowledge after each training event?
- Have contractors received, at a minimum, direction for reporting and responding to spills?

IMPLEMENTATION PLAN/SCHEDULE

No	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup.
4.3.1	Review training documentation to ensure all staff have received required training	Quarterly		X	X
4.3.2	Review agreements with contractors and/or pre-job meeting minutes to ensure contract personnel have received instruction for responding to sewage spills	Each Contract		X	X

4.4. Equipment Inventory

WDR REQUIREMENTS

Att. D-4.4 (pg. D-5)

"An inventory of sewer system equipment, including the identification of critical replacement and spare parts."

COMPLIANCE

The District maintains a general list of equipment and spare parts for both routine maintenance and for contingency or emergency operations and has identified spare parts and components considered to be critical for the operation of pump stations and gravity sewers.

The parts and equipment can be categorized as follows:

Pipelines/Manholes

An inventory of plugs and bypass equipment are maintained to provide for stopping, diverting or bypassing flows while emergency repairs are made. The District relies on local contractors to perform most emergency repairs. These local contractors are listed on the District's emergency call-out list to effectively respond to emergencies. These contractors typically maintain a substantial inventory of critical parts including pipe, pipe fittings and repair couplings.

Lift/Pump Stations

Both of the District's stations have redundant pump configurations and can operate normally with some pumps out of service. This allows the District to minimize the parts inventory to only the most critical items. Parts kept in stock are replacement motors, impellors, mechanical seals, seal and gland packing material, and electrical switches and components. Both of the District's pump stations have emergency generators to provide electrical power during outages.

Other Facilities/Equipment

An inventory of critical parts is kept on hand for other District facilities, equipment and vehicles. These parts are based on manufacturer's recommendations and experience of the maintenance staff. The District's emergency equipment includes:

- High Pressure Sewer Cleaners
- Maintenance Truck
- Combination Truck
- 200 Kw Trailer Mounted Generator
- Sewer CCTV Equipment
- Trailer Mounted 4" Trash Pump

If additional equipment is needed, it can be rented or supplemented by outside contracted services. Further, the District has established an informal mutual aid agreement with the Goleta Sanitary District. The informal agreement includes sharing equipment lists for helping in emergencies. Periodic meetings are held with these agencies. Additionally, the District utilizes on-call service agreements to supplement staff on an as-needed basis.

To supplement its critical parts and bolster its emergency equipment resources, the District is a member of CALWARN water and wastewater community.

The District is also expanding on its existing wastewater critical spare parts/inventory.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Have inventory lists been audited as scheduled?
- Have any inventory deficiencies or omissions been discovered and rectified?
- Has the District experienced any equipment failure that inhibited a spill response?

IMPLEMENTATION PLAN/SCHEDULE

No	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup.
4.4.1	Audit inventory lists to ensure stock is adequate	Annually		X	X
4.4.2	Check with vendors to ensure lead times for critical parts are as expected	Annually		X	X
4.4.3	Ensure contracts with emergency support services are current	Annually			X

RESILIENCE

Resilience is addressed in Element 4 by:

- Developing an SOP for updating maps when errors are discovered.
- Developing and using forms (paper or electronic) for data collection to help ensure all pertinent information is consistently collected.
- Periodically evaluating inspection cycle intervals to help ensure they are optimized.
- Requiring staff to demonstrate ability and/or knowledge for all training activities.
- Monitoring equipment and critical spare parts usage for and trends.
- Performing periodic audits of the vehicle and equipment inventory list.

APPENDIX 4 INCLUSIONS:

- None

Specifications 5.19 - Operations and Maintenance

WDR REQUIREMENTS

Specification. 5.19 (pg. 27)

"To prevent discharges to the environment, the Enrollee shall maintain in good working order, and operate as designed, any facility or treatment and control system designed to contain sewage and convey it to a treatment plant."

COMPLIANCE

A summary of the current Preventative Operation and Maintenance Programs for the District's maintained collection system are summarized below:

Gravity Mainline Cleaning

The District cleans the gravity pipe to prevent a buildup of roots, debris and grease from blocking the sewer and causing a spill. The cleaning is typically done with a sewer cleaning truck which uses high pressure water sent through a hose that is pushed up the sewer line. A nozzle at the end of the hose scours the inside of the sewer pipe washing debris and grease down to the lower manhole where it is vacuumed into the truck for disposal. In the case of roots and grease, a rotating cutter can be attached to the nozzle that will cut away the roots intruding into the pipe through a joint or crack. The District utilizes a systematic approach: The District divides the system into more than 40 specific geographic/neighborhood routes. The order and sequence of the routes is intended to improve cleaning efficiency, drive accumulated solids downstream in the system, and reduce the required physical setups for completing work tasks.

All gravity sewers need cleaning on a regular basis to reduce the likelihood of spills. The frequency of that cleaning is based on the age, condition and past performance of the sewer pipe. If the condition of the pipe requires cleaning more frequently than once per year, it is considered a "hot spot" and can be cleaned as frequently as once a month. Non-hot spot pipes between 6-inch and 12-inch diameter -- again depending on their age, condition, and past performance -- may be cleaned from yearly to once every three years. Larger diameter pipes are cleaned at least once every ten years.

Condition Assessments (Pipelines)

The District previously inspected its pipelines with CCTV on a five-year schedule. To increase efficiency and due to the minimal problems found throughout the system, the District extended the frequency of CCTV inspections to every seven years in 2014. The District's collection crew, who are NASSCO PACP certified, performs CCTV inspections with the District's own CCTV equipment. The District uses the conditions identified during CCTV inspection to prioritize pipelines for rehabilitation or replacement. Additionally, the District may use CCTV findings to adjust cleaning frequencies.

Condition Assessments (Manholes)

The District performs manhole inspections while the collection crew is performing line cleaning maintenance and CCTV inspections. Manhole features are recorded, and a photographic library is maintained within the District CMMS. District staff note any defects including corrosion or infiltration and mark the manhole for rehabilitation.

Inspections (Pump Stations)

The District maintains two lift/pump stations: one remote lift station; and one primary pump station to pump effluent to the Goleta Sanitary District treatment plant. The District conducts routine inspections including on weekends and holidays on the two pump stations that operate full time. The District records inspection data in logbooks. Routine maintenance is scheduled through the CMMS and documented with work orders. Both stations have emergency generator power available so the District can operate normally in power outage situations. Additionally, all stations have redundant pump configurations and can operate normally with some pumps out of service. In 2011 the District completed installation of a Supervisory Control and Data Acquisition (SCADA) system for the pump stations. SCADA was upgraded/improved in 2018 and again in 2022. The SCADA system monitors the District's pump stations 24/7 and immediately notifies District personnel of a failure. Authorized staff can access the system remotely and monitor and troubleshoot specific equipment in the pump stations. SCADA ensures reliable off-hour duty response to emergencies.

Rehabilitation and Replacement

The District maintains a Capital Improvement Plan (CIP). This plan is a document that lays out a proposed schedule for rehabilitation and repair of specified District assets. Periodically the District hires engineering consultants to review and update the CIP (see Element 8 below for more details).

Underground Service Alerts

The District participates in the Underground Service Alert marking program. This program assists in District efforts to lessen the risk of a third-party excavation or drilling damaging a District mainline. Strict Design and Construction Standards for Sewer Facilities and on-site inspection during construction projects also help to ensure long term structural integrity of the collection system.

Force Main Condition Assessment

The District implements a proactive force main sewer inspection program for these critical assets. In 2022, the District contracted with MNS Engineers to complete a condition assessment. Current efforts include an expanded force main condition assessment using Xylem Technologies' SmartBall and PipeDiver tools to evaluate the conditions of both the 18-inch force main and 24-inch force main in greater detail. The final results of this recent field work will be incorporated in MNS's final condition assessment report and the District will use these findings to evaluate long-term rehabilitation, relining, replacement, or re-alignment solutions to prevent future spill events. With this latest effort, the District installed deployment and retrieval infrastructure on the force mains to be able to more efficiently conduct routine force main condition assessments every five years and as needed.

Level Sensor Monitoring

The District utilizes three individual SmartCovers upstream of both District sewer lift/pump stations and at one sewer manhole location on a sewer trunkline near a sensitive wetland area to proactively monitor flows and help alert operations staff if anomalies occur.

5. Design and Performance Provisions

5.1. Updated Design Criteria/Construction Standards/Specifications

WDR REQUIREMENTS

Attachment D-5.1 (pg. D-5)

"Updated design criteria, and construction standards and specifications, for the construction, installation, repair, and rehabilitation of existing and proposed system infrastructure components, including but not limited to pipelines, pump stations, and other system appurtenances. If existing design criteria and construction standards are deficient to address the necessary component-specific hydraulic capacity as specified in section 8 (System Evaluation, Capacity Assurance and Capital Improvements) of this Attachment, the procedures must include component-specific evaluation of the design criteria."

COMPLIANCE

The District has specific design and construction standards in place. The GWSD Design and Construction Standards for Sewer Facilities govern the design and construction of newly constructed sewer facilities and rehabilitations. These standards are updated periodically. Design and construction standards include specifications and details for all sewer facilities such as pipe materials, minimum sizes, slopes and cover, pipe bedding and backfill, structure standards and many other factors.

The District's current Design and Construction Standards for Sewer Facilities were last updated in 2022 and are available online. Design and Construction Standards for Sewer Facilities govern the installation of new and rehabilitated sewers (see Section 3.3.6).

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Are plan checking QA/QC processes helping to ensure adherence to the standards?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	**Superint**	**Sup**
5.1.1	Ensure all project plans are approved in accordance with the District's Standard Specifications and Details	Each Project		X	
5.1.2	Verify design standards and hydraulic model previously completed are adequate and consistent with current standards of practice	2025		X	

5.2. Procedures and Standards

WDR REQUIREMENTS

Attachment D-5.2 (pg. D-5)

"Procedures, and standards for the inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment and appurtenances."

COMPLIANCE

The District has established Design and Construction Standards for Sewer Facilities that include specific standards and requirements for testing of all new construction.

Testing of new facilities is typically conducted by the contractor while a District inspector is present to witnesses the testing, ensuring that it meets the District's standards. Some of the required tests include vacuum testing of manholes, low air pressure testing of sewer lines, mandrel test, and CCTV inspection.

When new sewer assets are constructed, they are require to be designed, constructed, tested and inspected in accordance with published Design and Construction Standards for Sewer Facilities (see Part II, Design Requirements, Part III, Construction Requirements, and Part IV, Standard Drawings. The Standard Specifications include sections related to installation, testing and inspection (see Section 1). Inspection is typically performed by in-house staff. However, on certain projects the District may hire third-party engineering and other consultants to provide inspection services.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Were any design or installation deficiencies found during warranty inspections?
- Are deviations from standard procedures and/or specs, testing, etc., justified and documented?
- Does the District stay abreast of industry design standards and technical advances in the industry?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
5.2.1	Verify inspection procedures are adequate and consistent with current standards of practice	Ongoing			X
5.2.2	Verify design standards and hydraulic model previously completed are adequate and consistent with current standards of practice	Ongoing			X

RESILIENCE

Resilience is addressed in Element 5 by:

- Staying abreast of industry trends and standards.
- Performing warranty inspections of newly installed or repaired assets to evaluate design and installation practices.
- Evaluating as-built changes for trends and areas for design and performance improvements.

APPENDIX 5 INCLUSIONS:

- None

6. Spill Emergency Response Plan

WDR REQUIREMENTS

Attachment D-6 (pg. D-6)

"The Plan must include an up-to-date Spill Emergency Response Plan to ensure prompt detection and response to spills to reduce spill volumes and collect information for prevention of future spills. The Spill Emergency Response Plan must include procedures to:

- *Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner;*
- *Notify other potentially affected entities (for example, health agencies, water suppliers, etc.) of spills that potentially affect public health or reach waters of the State;*
- *Comply with the notification, monitoring and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders;*
- *Ensure that appropriate staff and contractors implement the Spill Emergency Response Plan and are appropriately trained;*
- *Address emergency system operations, traffic control and other necessary response activities;*
- *Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system;*
- *Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State;*
- *Remove sewage from the drainage conveyance system;*
- *Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters;*
- *Implement technologies, practices, equipment, and inter District coordination to expedite spill containment and recovery;*
- *Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event;*
- *Conduct post-spill assessments of spill response activities;*
- *Document and report spill events as required in this General Order; and*
- *Annually, review and assess effectiveness of the Spill Emergency Response Plan, and update the Plan as needed."*

COMPLIANCE

The District's Spill Emergency Response Plan (SERP) is a stand-alone document that contains all the key elements necessary for an appropriate spill response: notification, emergency incident response, reporting, and impact mitigation. The District's current SERP, prepared by Fischer Compliance, LLC, meets the requirements of the WDR, which became effective on June 5, 2023. Initial training has been provided to affected staff and refresher training is conducted annually. A copy of the District's SERP is available for viewing at the District's office upon request.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Have staff's spill response efforts helped to prevent the discharge of sewage to surface waters?
- Do post-spill assessments indicate staff are following the procedures outlined in the SERP?
- Is SERP training effective and are trainees demonstrating adequate knowledge and abilities?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
6.1	Perform SERP training including practice drills	Annually		X	X
6.2	Review Post-Spill Assessments to ensure adherence with the SERP and to identify any trends that should be addressed	Annually		X	X

RESILIENCE

Resilience is addressed in Element 6 by:

- Multiple staff are trained to respond to spill events.
- Post-spill assessments are conducted to evaluate staff's adherence to the SERP and to identify areas for improvement.
- Data collection forms are used to direct staff to collect all the required data to be submitted to CIWQS and are designed as a guide to a proper spill event response.
- The District employees several different spill volume estimation methods to account for different circumstances.

APPENDIX 6 INCLUSIONS:

- None

7. Sewer Pipe Blockage Program

WDR REQUIREMENTS

Attachment D-7 (pg. D-7)

"The Sewer System Management Plan must include procedures for the evaluation of the Enrollee's service area to determine whether a sewer pipe blockage control program is needed to control fats, oils, grease, rags and debris. If the Enrollee determines that a program is not needed, the Enrollee shall provide justification in its Plan for why a program is not needed.

The procedures must include, at minimum:

- *An implementation plan and schedule for a public education and outreach program that promotes proper disposal of pipe-blocking substances;*
- *A plan and schedule for the disposal of pipe-blocking substances generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of substances generated within a sanitary sewer system service area;*
- *The legal authority to prohibit discharges to the system and identify measures to prevent spills and blockages.*
- *Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, best management practices requirements, recordkeeping and reporting requirements;*
- *Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the fats, oils, and grease ordinance;*
- *An identification of sanitary sewer system sections subject to fats, oils, and grease blockages and establishment of a cleaning schedule for each section; and*
- *Implementation of source control measures for all sources of fats, oils, and grease reaching the sanitary sewer system for each section identified above."*

COMPLIANCE

In many sanitary sewer collection systems, Fats, Oils, and Grease (FOG)is known to be a significant cause, and or contributor, of sewer blockages in pipes and the cause of operational disruptions and damage to sewage pump stations. Although service areas that include commercial and institutional food service establishments (FSEs) are obvious sources of FOG, residential communities, especially those of medium and high-density multi-family residences, can also be a significant source of FOG.

Plan/Schedule (Outreach)

The District has an established public education outreach program for FOG related issues that is administered under the District's industrial waste/pretreatment program. Outreach efforts are concentrated in two major area: (1) residential, and (2) restaurants/ FSEs. The District publishes its FOG public education outreach materials on the District's website. The District's FOG outreach program also includes distribution of bilingual educational brochures and handouts used for problem/targeted problem areas and for FSEs where necessary. Periodically, the District publishes a newsletter distributed to all ratepayers, which often includes information on FOG related topics. District Staff attends local community events to discuss relevant FOG issues with the general public and distribute FOG educational material.

Information regarding the proper disposal of FOG is distributed to FSEs during routine inspections. FSEs serviced by the District that have grease removal devices are required to keep a maintenance log. The District also provides a list of resources for grease removal device sales and service providers.

Plan/Schedule (Disposal)

The District provides information regarding proper disposal of FOG for residential customers in mailers; door hangers and materials distributed at local community events. The District utilizes resources and information regarding FOG issues made available by other government agencies, including CalFOG and the CWEA.

FSEs are also made aware of California Assembly Bill 1333 (Bill) during routine inspections. This Bill makes the improper disposal of brown grease from grease traps or interceptors illegal. Additionally, the Bill prohibits reinserting any grease removed from a device back into the trap or interceptor (decanting) unless specific conditions are met. The Bill also requires grease haulers to completely remove all grease, greasy liquids, water, and solids from a trap or interceptor each time it is pumped. The District recommends hiring a reputable, professional hauler and will observe the interceptor cleaning in the interest of the customer at no charge.

All FOG that accumulates in grease traps and grease interceptors is pumped out and hauled by private haulers hired by the owners of the FSE and commercial establishments. FSEs are required to maintain records of grease removal manifests if using a contract hauler. Smaller FSEs may remove material from their grease removal devices and dispose in their regular solid waste. However, they are required to keep records that are verified during periodic inspections.

When District maintenance crews collect pipe blocking substances during routine and reactive maintenance activities, typically via hydro-vac operations, the District properly disposes of the FOG at the Goleta Sanitary District Wastewater Treatment Plant on an as needed basis.

Legal Authority to Prohibit Discharges

The District's authority to prohibit discharges the sewer system is provided in District Ordinance No. 21-94, including established local limits authorized to protect wastewater treatment plants from pass through and interference (see U.S. 40 C.F.R. § 403.5(c)).

- District Ordinance No. 21-94 establishes the legal authority to prohibit discharge of Fats, Oils and Grease (FOG). This Ordinance prohibits the following: (a) the discharge of Oils and Grease concentrations in excess of Federal Pretreatment Standards or Local Limits, whichever is more stringent; (b) wastewater discharges that contain floatable fats, wax, grease or oils; (c) wax, grease, non-biodegradable cutting oil, or oil concentration of mineral or petroleum origin (non-living sources) of more than 100 mg/L, or containing substances which may solidify or become viscous at temperatures between 32° and 150° F (0° and 65° C) at the point of discharge into the system or in amounts that will cause interference or pass through; (d) total fat, wax grease or oil concentration of animal or vegetable origin (living sources of more than 100 mg/L whether emulsified or not), or containing substances which may solidify or become viscous at temperatures between 32° and 150° F (0° and 65° C) at the point of discharge into the system or in amounts that will cause interference or pass through.
- District Ordinance No. 62 sets forth provisions for the enforcement of ordinances, rules, and regulations of Goleta West Sanitary District. Enforcement provisions range from issuance of Notifications of Violation and Administrative Orders to Administrative, Civil, and Criminal Penalties and Termination of Service. Sewer Service to any premises may be terminated if a discharge of wastewater causes or threatens to cause a condition of contamination, pollution or nuisance, or for any condition that presents, or reasonably appears to present, an imminent danger to the

environment or the health or welfare of persons, or that threatens to interfere with the operation of the publicly owned treatment works. When a discharge of wastes causes an obstruction, damage, or any other impairment to the facilities owned or used by the District, the District may assess a charge against the responsible person for the work required to clean or repair the facility. Any person violating any of the provisions of the ordinances, rules or regulations of the District shall become liable to the District for each, every, any and all expenses, losses or damages occasioned by the District by reason of such violation.

Requirements (Grease Removal Devices)

District Ordinance No. 21-94 requires that interceptors shall be provided when necessary for the proper handling of the liquid wastes containing FOG or any other harmful ingredients. All interceptors shall be of a capacity sufficient to provide the appropriate quality of effluent in accordance with the Uniform Plumbing Code and shall be in an easily accessible location for the purpose of cleaning and inspection. Sample boxes are required on all interceptors. All interceptors are required to be properly maintained to ensure compliance with District requirements. Section 2.4.10 of the District's Facilities provides specific design requirements for grease removal devices. All grease removal devices shall be installed in such a manner that access for maintenance and inspections shall be readily obtainable. The District's Design and Construction Standards for Sewer Facilities (see Part IV, Standard Drawings, section 4.15) illustrates the design and installation of a typical grease interceptor and sample box.

Authority to Inspect

The District's trained staff conduct FOG inspections at restaurants and other commercial FSEs pursuant to its authority in Article VII of the District's Ordinance No. 21-94. Guidelines for grease interceptor maintenance, kitchen best management practices, grease removal device maintenance logs and other relevant materials are distributed to FSE operators during inspections. The grease removal device is inspected, maintenance logs reviewed and if deemed necessary, samples collected. Inspection frequency is determined by the condition and type of grease removal device, nature of operation of the FSE, compliance history of the FSE and sample results. Ongoing monitoring of FSEs is conducted by trained District staff.

The District has identified portions of its collection system subject to excessive grease and other pipe blocking substances. High frequency maintenance schedules have been established to maintain flows in these pipes. For more detail see Specifications 5.19 of this SSMP. When collections staff discover evidence of grease discharges, they report the findings to source control staff for investigation and resolve.

Identification of Source Control Measures

The District’s source control measures place a strong emphasis on public education and outreach as well as commercial FOG inspections and enforcement. The District completes routine FSE inspections to evaluate source control measures. The District also conducts CCTV inspections to document FOG issues at problem locations, distributing door hangars/flyers where necessary and as FOG-related work orders are completed.

The District is continually improving its documentation of FOG-related problem locations for its source control program and anticipates these improvements prior to completion its next required SSMP Update.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Have there been any blockages/spills from any identified problem area?
- Is the District receiving feedback on public outreach efforts?
- Are the debris and other sewage solids collected during cleaning activities being disposed of appropriately?
- Have there been spills due to excessive fats, oil, grease, roots, or non-dispersible wipes discovered in the sewer system during the audit period?
- Are there repeat offenders among FSEs?
- Are enforcement trends decreasing?
- Are Source Control and Collection staff included in the plan check process?

IMPLEMENTATION PLAN/SCHEDULE

No	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
7.1	Review/evaluate enforcement and inspection findings and implement changes as necessary	Annually		X	X
7.2	Review spill rates and causes and make changes to maintenance programs as necessary	Annually		X	X

RESILIENCE

Resilience is addressed in Element 7 by:

- Inspection of select assets directly downstream of grease producing businesses to ensure source control is effective.
- Residential FOG outreach and education program.
- Performance of regular assessments of system assets to monitor performance.
- QA/QA process for evaluating pipe cleaning effectiveness.
- Daily disposal of pipe blocking materials retrieved during maintenance activities.

APPENDIX 7 INCLUSIONS:

- None

8. System Evaluation, Capacity Assurance, Capital Improvements

WDR REQUIREMENTS

Attachment D-8 (pg. D-7)

"The Plan must include procedures and activities for:

- *Routine evaluation and assessment of system conditions;*
- *Capacity assessment and design criteria;*
- *Prioritization of corrective actions; and*
- *A capital improvement plan."*

8.1. System Evaluation and Condition Assessment

WDR REQUIREMENTS

Attachment D-8.1 (pgs. D-7/D-8)

"The Plan must include procedures to:

- *Evaluate the sanitary sewer system assets utilizing the best practices and technologies available;*
- *Identify and justify the amount (percentage) of its system for its condition to be assessed each year;*
- *Prioritize the condition assessment of system areas that:*
  - *Hold a high level of environmental consequences if vulnerable to collapse, failure, blockage, capacity issues, or other system deficiencies;*
  - *Are located in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas;*
  - *Are within the vicinity of a receiving water with a bacterial-related impairment on the most current Clean Water Act section 303(d) List;*
- *Assess the system conditions using visual observations, video surveillance and/or other comparable system inspection methods;*
- *Utilize observations/evidence of system conditions that may contribute to exiting of sewage from the system which can reasonably be expected to discharge into a water of the State;*
- *Maintain documents and recordkeeping of system evaluation and condition assessment inspections and activities; and*
- *Identify system assets vulnerable to direct and indirect impacts of climate change, including but not limited to: sea level rise; flooding and/or erosion due to increased storm volumes, frequency, and/or intensity; wildfires; and increased power disruptions."*

COMPLIANCE

The above requirements are addressed below:

The District's system evaluation involves every component of the District's collection system, including pipelines, manholes, and pump stations. It is of key importance to regularly perform asset condition assessments to initially establish a condition baseline and to monitor condition changes over time. The District also utilizes a push camera as needed for additional investigations in sewer mainlines throughout the system. District staff are trained using NAASCO PACP standards to score and prioritize the pipelines. Based on the compiled PACP scores, an outside consultant develops CIP projects, including cost estimates. District facilities requiring repair are all contracted out for repair or replacement, including specific projects on an emergency basis if the collection crew discovers a major problem during routine maintenance work.

The District takes an adaptive approach and continuously monitors the gravity main inspection return frequency. Monitoring includes pipe performance, repair and rehabilitation activities, and cleaning intervals and the results of cleaning efforts, with the goal for optimizing the inspection interval. CCTV zones were developed in a systematic manner to distribute workload requirements. The District's CCTV return interval was every five years for inspecting the entire sewer system mainline assets. After three complete inspection cycles of all mainline pipelines throughout the system including addressing many repairs, the District shifted its CCTV inspection cycle interval to approximately seven years to increase efficiency. Based on the District's historic and current CCTV data, the District believes its current seven-year cycle is the appropriate interval at this time.

The District staff utilizes the PACP defect coding system from its routine CCTV inspections to prioritize projects for the sewer CIP. In addition to the PACP rating, the District considers the asset proximity to flood-prone areas and creek crossings to help support its wet weather spill readiness tasks.

The District has a wet weather protocol that includes:

- Ensuring all low-lying manholes where flooding may occur are sealed using silicone adhesive and a plug or cork in the pickhole;
- Visually inspecting easements for:
    - potential flooding conditions,
    - any large obstructions in nearby creeks, and
    - necessary mowing, trimming and other maintenance;
- Preparing pump stations;
- Preparing vehicles and equipment;
- Completing pre-storm checklist; and,
- Completing after storms/documentation of field conditions or action items.

The District is not aware of any exiting of sewage from its collection system. The District, through its field inspection efforts and calibrated SCADA flow delta alarm, continuously monitors for potential exfiltration and significant infiltration and will address any of these issues upon discovery.

In addition, the District, with its engineering consultant The Corwin Group, Inc. (Corwin Group), completed a comprehensive Sewer Master Plan in 2021 reviewing and assessing flow monitoring data collected in response to rainfall events. The measured flow data showed that peak wet weather flows were up to 9% higher than peak dry weather flows. The District's pipe capacity is sufficient to convey these wet weather flows because the pipes are sized to handle up to twice the peak dry weather flows. The Corwin Group recommended that the District complete a more pointed and detailed rainfall dependent infiltration/inflow (RDI/I) investigation using added specific flow monitoring to catch significant rain events as well as complete a smoke testing study and a lateral study on large users like UCSB where meters could be installed. The

District anticipates completing its consideration of the Corwin Group's recommendations before its next required SSMP Audit is completed.

Routine inspection and assessment activities are all documented in the District's CMMS (currently ICOM). All collected data is used for the purpose of documenting maintenance efforts, evaluating system performance, and making maintenance and corrective action decisions today and into the future.

The District is not currently affected by potential climate change impacts. The District periodically monitors for potential climate change impacts annually and during the SSMP audit cycle, so the District can anticipate possible impacts and be prepared to act, as needed.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Has the District maintained its schedule for inspecting the sewer assets listed below and is data being reviewed in a timely manner?
  - CCTV Gravity Mains
  - Laterals
  - Manholes
  - Pump Stations
- Are inspection efforts discovering deficiencies in a timely manner?
- Are maintenance and inspection activities being properly documented?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
8.1.1	Review/evaluate enforcement and inspection findings and implement changes as necessary	Annually		X	X
8.1.2	Review spill rates and causes and make changes to maintenance programs as necessary	Annually		X	X
8.1.3	Hold a meeting to discuss any issues that may result from climate changes	Annually	X	X	X

8.2. Capacity Assessment and Design Criteria

WDR REQUIREMENTS

Attachment D-8.2 (pgs. D-8/D-9)

> *"The Plan must include procedures to identify system components that are experiencing or contributing to spills caused by hydraulic deficiency and/or limited capacity, including procedures to identify the appropriate hydraulic capacity of key system elements for:*
>
> - *Dry-weather peak flow conditions that cause or contributes to spill events;*
> - *The appropriate design storm(s) or wet weather events that causes or contributes to spill events;*
> - *The capacity of key system components; and*
> - *Identify the major sources that contribute to the peak flows associated with sewer spills.*
>
> *The capacity assessment must consider:*
>
> - *Data from existing system condition assessments, system inspections, system audits, spill history, and other available information;*
> - *Capacity of flood-prone systems subject to increased infiltration and inflow, under normal local and regional storm conditions;*
> - *Capacity of systems subject to increased infiltration and inflow due to larger and/or higher-intensity storm events as a result of climate change;*
> - *Increases of erosive forces in canyons and streams near underground and above-ground system components due to larger and/or higher-intensity storm events;*
> - *Capacity of major system elements to accommodate dry weather peak flow conditions, and updated design storm and wet weather events; and*
> - *Necessary redundancy in pumping and storage capacities."*

COMPLIANCE

In July 2020 the District contracted with Corwin Group to complete an updated Wastewater Master Plan including a CIP. Tools utilized to update the CIP include a sophisticated hydraulic model that was developed to determine if the District's collection system capacity was sufficient for existing and future build out scenarios.

The hydraulic analysis included a simulation for 24 hours with calculations made every 15 minutes. To determine pipe deficiencies, the maximum ratio of water depth to pipe diameter (d/D) in each pipe during the simulation was evaluated. The District has defined a pipe as not meeting its design capacity standards if d/D is greater than 0.5 for the peak dry weather flows.

Key Hydraulic Flow Findings include the following information and recommendations:

1. The 27-inch diameter pipeline in Mesa Road, west of S. Los Carneros Road, connects to an existing structure box that becomes a physical constraint where other major pipelines connect. This is a brand-new line with correct diameter and the slope was determined based on the bottom elevation of the existing manhole where it was connected to an existing stub. The d/D ratio is 0.70 under existing conditions and 0.72 under buildout conditions which exceeds the criteria d/D of 0.50. However, the crown of the pipe is 12 feet deep below the ground surface and hydraulically, there should be no concerns about overflows because the overall hydraulic slope will push the flow through easily. Additionally, there is a Smart Cover installed on Mesa Road only a few sections above the structure box and no surcharging has been detected at that location.

2. The 6-inch diameter pipeline in Abrego Road, east of Camino Del Sur, has a d/D of 0.5109 under existing conditions and d/D of 0.5113 under buildout conditions which is marginally exceeding the d/D criteria of 0.50. This pipeline connects to a drop manhole and downstream pipe invert should be field verified.
3. The 8-inch diameter pipeline in Calle Real, east of Mendocino Drive, has a d/D of 0.5046 under both 10-year and buildout conditions which is marginally exceeding the d/D criteria of 0.50.
4. The 8-inch diameter pipeline in Willow Springs Lane has a d/D of 0.5439 under both 10-year and buildout conditions which is exceeding the d/D criteria of 0.50.
5. The 15-inch diameter pipeline in an easement east of the south end of Mathilda Drive has a d/D of 0.5034 under buildout conditions which is marginally exceeding the d/D criteria of 0.50.
6. Corwin Group engineering consultant recommended that the District institute an RDI/I investigation as referenced above and discussed in Appendix A for areas identified as having potential concerns as well as a representative sample of service connections in those areas.

The District anticipates completing further assessments of the above findings and prior to completion of its next required SSMP Audit.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Number of capacity-related spills or surcharge condition during the audit period.
- Has the system responded to rain events as indicated by the hydraulic model?
- Has there been any changes to zoning designations (residential, commercial, industrial)?

IMPLEMENTATION PLAN/SCHEDULE

No	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
8.2.1	Monitor/evaluate significant rain events to see if they exceed the design storm in the hydraulic model	Each significant rain evet		X	X
8.2.2	Identify and monitor flood-prone areas susceptible to erosion from rain events	After each significant rain event		X	X
8.2.3	Monitor flows in each basin and update the hydraulic model	Per Engineering Department schedule			X

8.3. Prioritization of Corrective Action

WDR REQUIREMENTS

Attachment D-8.3 (pg. D-9)

> *"The findings of the condition assessments and capacity assessments must be used to prioritize corrective actions. Prioritization must consider the severity of the consequences of potential spills."*

COMPLIANCE

The District utilizes routine CCTV inspection data and results from its latest Master Plan to add projects to its CIP. District Staff are trained and adhere to the NAASCO PACP standards to prioritize the pipelines which are tagged to be included in the CIP. Based on the data compiled, the District can then develop an updated and prioritized CIP with its third-party consultant, including cost estimates for the CIP. CIP projects are prioritized considering the following factors: field observations, PACP assessment scores, age of infrastructure, potential for failure and spill occurrence, probability of future build-out and potential for environmental risks. District facilities are also repaired or replaced on an emergency basis if the District's collection crew discovers a major problem during routine operation and maintenance work.

Additionally, as discussed in the Overview of this SSMP, the District experienced a large spill in February 2024, while it was completing a 2022 condition assessment report with engineering consultants. The District immediately prioritized and expanded the scope of the condition assessment field work in response to the large spill. The District implemented Xylem Technologies' SmartBall and PipeDiver tools to further investigate the condition of its force mains and to ensure its force mains were not at further risk of imminent failure. The preliminary data from the expanded condition assessment field work indicate a few additional points of potential defects that the District is currently addressing with excavation, repair, and further investigation, while the final condition assessment report is completed. The District intends to use the final report to evaluate rehabilitation, replacement, or realignment solutions to prevent future large spill events.

The District has updated its force main condition assessment frequency as additional corrective action and installed deployment and retrieval infrastructure on its force mains in order to complete condition assessments on a five-year frequency. The District will prioritize any repair or other response to defects or anomalies identified in these frequent condition assessments based on imminent risk of failure and the severity of the consequences of potential spills.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Has the District adhered to its system evaluation/condition assessment schedule?
- Has the District adhered to its prioritization/corrective procedures for sewer repair and capacity improvement projects?
- Have projects been completed before deficiencies caused failures?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
8.3.1	Utilize all available data for prioritizing corrective actions considering severity and consequences of potential spills	Continuously		X	X
8.3.2	Maintain documents and recordkeeping of system evaluation and condition assessment inspections and activities	Continuously		X	X

8.4. Capital Improvement Plan

WDR REQUIREMENTS

Attachment D-8.4 (pg. D-9)

"The capital improvement plan must include the following items:

- *Project schedules include completion dates for all portions of the capital improvement program;*
- *Internal and external project funding sources for each project; and*
- *Joint coordination between operation and maintenance staff, and engineering staff/consultants during planning, design, and construction of capital improvement projects; and Inter District coordination with other impacted utility agencies."*

COMPLIANCE

The 2021 Wastewater Master Plan report identified a variety of findings and recommended improvements for the District (summarized below) that the District used to generate long term CIP. The District's CIP provides the required components and is intended to be reviewed regularly.

Findings

The sections of pipes not meeting design criteria were combined into capital improvement projects. In cases where a small section of pipe was between sections not meeting design criteria, this length was also included within the project. The pipes not meeting design criteria were then analyzed to determine the replacement diameter necessary to achieve a d/D ratio of less than 0.5.

The report presents the unit capital costs for pipe replacement that were used to determine the project costs. The unit capital costs include construction cost plus an assumed 40% for legal, administration and contingencies. The unit capital costs were obtained from the Goleta Sanitary District's 2000 Sewer Collection System Master Plan and escalated to current dollars using the Engineering News Record Construction Cost.

The report presents recommended capital improvement projects. The report also recommended before the projects are undertaken, further verification of the pipes not meeting design criteria should be performed. First, inverts should be field verified.

Many of the issues are due to flat slopes, so if pipes are steeper than modeled, replacement may not be necessary. The second consideration is that even if the pipes do not meet design criteria, they may be deep enough (more than 5 feet) that surcharging is acceptable, and replacement is unwarranted. Third, further evaluation of wet weather flows should be undertaken to determine the magnitude of the I/I component and assess the pipe capacity.

Recommended Improvements

Future costs for collection system improvements should include regular inspection and maintenance costs estimated in 2020 to be approximately $500,000 per year as well as costs for additional potential pipeline and manhole upgrades at an assumed rate of $300,000 per year.

The District should be upgrading all 6-inch pipelines in Isla Vista to 8-inch over the next 10 to 20 years. These lines are the oldest in the District and the GWSD standards have required 8-inch diameter minimum sewers for years. The constraints of 6-inch pipe make inspection and maintenance difficult.

The following pipe segments may be considered for upgrade:

- The 6-inch diameter pipeline in Abrego Road east of Camino Del Sur.
- The 8-inch diameter pipeline in Calle Real east of Mendocino.
- The 8-inch diameter pipeline in Willow Springs Lane.
- The 15-inch diameter pipeline in an easement east of the south end of Mathilda Drive.

The District should also institute an RDI/I investigation as discussed in Appendix A for areas identified as having potential concerns as well as a representative sample of service connections in those areas.

- Smoke testing should target approximately 8,000 feet of sewer pipe per day. Rough cost is $2.00 per foot of pipe.
- Mini-Basin focused sewer flow monitoring. Rough estimate is 2-month study at $3,500.00 per meter per month. This work would be focused on Basins 3, 5, 9E and 11 (for locations see Figures 3-4 in the 2021 Wastewater Master Plan)
- Nighttime reconnaissance work in Basins 3, 5, 9E and 11 at cost of $13,000 per night for 3 nights. This work will need to be planned for a large rainfall event The District should also consider doing some focused CCTV inspection of reaches within Basins 3, 5, 9E and 11 to verify condition of the piping that may contribute to infiltration.
- The force mains should be further investigated due to limited access and difficulty to inspect by completing a condition assessment. The force main investigation should begin with a field assessment of the best approach to investigate their condition. There are various new technologies that may be considered. Typically, you would review background information and perform preliminary site investigations (soil corrosivity studies and corrosion protection system evaluations) in order to develop a comprehensive and detailed Condition Assessment Work Plan. The preliminary planning work and site investigations can be completed for approximately $30,000-$60,000 depending on the scope of work and available information.

The District should continue to provide routine maintenance upgrades and replacement as needed.

The District anticipates completing further assessments of the above findings and prior to completion of its next required SSMP Audit.

EFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Has the District's capital improvement plan schedule been adhered to?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
8.4.1	Hold regular coordination meetings, with all parties, to help keep the projects on track and resolve issues that may arise in a timely manner	Annually		X	X
8.4.2	For schedules that are not followed, justify and document the reason	Each Delayed Project			X

RESILIENCE

Resilience is addressed in Element 8 by:

- Is there an annual review of the Capital Improvement Plan by all appropriate individuals including both Engineering and Operations?

APPENDIX 8 INCLUSIONS

- 8.1 GWSD 2021 Wastewater Master Plan

9. Monitoring, Measurement, and Program Modifications

WDR REQUIREMENTS

Attachment D-9 (pg. D-9)

"The Plan must include an Adaptive Management section that addresses Plan-implementation effectiveness and the steps for necessary Plan improvement, including:

- *Maintaining relevant information, including audit findings, to establish and prioritize appropriate Plan activities;*
- *Monitoring the implementation and measuring the effectiveness of each Plan element;*
- *Assessing the success of the preventive operation and maintenance activities;*
- *Updating Plan procedures and activities, as appropriate, based on results of monitoring and performance evaluations; and*
- *Identifying and illustrating spill trends, including spill frequency, locations, and estimated volumes."*

COMPLIANCE

The above requirements are addressed below:

The District has utilized a CMMS for many years. The District has a rich history contained in the database. The District maintains accurate and relevant inspection and maintenance records for the collection system. Much of the documentation today is maintained electronically, which allows for ease of access and analysis. This helps District staff to make sound decisions and prioritize activities when dealing with the routine and the unexpected.

The CMMS is an integral system for tracking the District's SSMP implementation and effectiveness. Monitoring of the District's SSMP focuses on each element in terms of its implementation, key performance indicators, and effectiveness. In addition, implementation responsibilities are included for each element to help ensure the SSMP is being implemented as intended. Through the CMMS, work orders are generated for all PM activities. Completed work orders provide a record which aids in decision making such as maintenance activities and rehabilitation. Feedback from collection system operators is communicated through work orders and considered when revising PM activities. The CMMS allows the District to track/monitor effectiveness of the SSMP elements: Reports can be generated using several performance indicators; management monitors the workflow and effectiveness of all existing programs; daily meetings are a forum for discussion to ensure that work is on schedule, certain problems have been identified and changes to the plan may be needed.

The District assesses the success of maintenance and operation activities by ensuing activities are being performed as expected, by monitoring actual outcomes compared to intended outcomes, as well as monitoring spill trends.

The District is committed to continuous improvement and monitors and evaluates performance of work programs and SSMP elements to ensure intended outcomes are achieved while looking for areas for improvement. Although the WDR requires that the SSMP be updated every six years, the District considers its SSMP a dynamic document that will require updating on a more frequent basis.

The District monitors spill trends, at a minimum every three years during required audits, utilizing the CMMS, inspection records and CIWQS data. These resources are helpful in planning and programing work, and adjusting as needed, enabling the District to be adaptive and capitalize on lessons learned.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Are SSMP Elements being periodically evaluated for effectiveness?
- Are work activities and spill events being documented?
- Has a plan and schedule been established to address audit findings/deficiencies from the last audit?
- Is Trend Analysis being performed on spill causes?
- Have work programs been assessed and updated as necessary?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	**Superint**	**Sup**
9.1	Assess work programs to ensure outcomes are as intended	Annually		X	X
9.2	Prepare updates to work programs and the SSMP based on assessments	As Needed		X	X
9.3	Monitor and evaluate spill trends and document efforts	Continuously		X	X

RESILIENCE

Resilience is addressed in Element 9 by:

- Development of key performance indicators to measure effectiveness of the SSMP.
- Performing periodic reviews of the SSMP to help ensure it is being properly implemented.
- Developing and adhering to a timeline to correct deficiencies found during the audit process.
- Periodically evaluating work programs to help ensure effectiveness.

APPENDIX 9 INCLUSIONS:

- None

10. Internal Audits

WDR REQUIREMENTS

Attachment D-10 (pg. D-10)

"The Plan shall include internal audit procedures, appropriate to the size and performance of the system, for the Enrollee to comply with section 5.4 (Sewer System Management Plan Audits) of this General Order."

COMPLIANCE

The District completed its last SSMP Audit in February 2025 (see Appendix 10.1) and will complete audits every three years moving forward. The objective of the audit is to evaluate compliance, implementation and effectiveness of the SSMP. Additionally, the SSMP includes a description of how the District will comply with the requirements of each WDR Element. The audit review includes an evaluation to determine the District is continuing to maintain compliance with the WDR.

The District responded to the SSMP Audit findings by compiling a Development Plan/Schedule for each item (see Appendix 10.1).

Implementation is evaluated by determining the District is continuing to execute the SSMP as stated.

Effectiveness is evaluated by using key performance indicators, which have been developed specifically for each Element.

An additional evaluation is performed to comply with Specifications 5.6 addressing resilience.

Resilience indicators have been developed for each Element. These indicators serve to demonstrate how resilience is built into the District's SSMP and inspection, maintenance and spill response activities. Any deficiencies discovered through the District's SSMP Audit process are noted and a plan and schedule to implement corrective measures are established.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Have audits been performed as required?
- Have the audits assessed compliance, implementation, and effectiveness?
- Have deficiencies been identified?
- Has a plan and schedule to rectify the deficiencies been established?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	**Superint**	**Sup**
10.1	Schedule audits in advance of due dates to ensure adequate time to complete; District has 6 months to complete the SSMP Audit from the end of the Audit period	Beginning at end of Audit period		X	X
10.2	Ensure a plan and schedule is developed to address deficiencies	Once the Audit is completed		X	X

RESILIENCE

Resilience is addressed in Element 10 by:

- Periodically evaluating key performance indicators during the audit period to assess effectiveness and make corrections, if necessary, prior to the audit.
- Evaluating previous audits to ensure deficiencies have been rectified.
- Scheduling the audit due dates and completing the audit on time.

APPENDIX 10 INCLUSIONS:

- 10.1 2021-2024 SSMP Audit Report (With Fischer Compliance, LLC; includes SSMP Post Audit Implementation Plan/Schedule at Appendix 3)

11. Communication Program

WDR REQUIREMENTS

Attachment D-11 (pg. D-10)

"The Plan must include procedures for the Enrollee to communicate with:

- *The public for:*
  - *Spills and discharges resulting in closures of public areas, or that enter a source of drinking water; and*
  - *The development, implementation, and update of its Plan, including opportunities for public input to Plan implementation and updates.*
- *Owners/operators of systems that connect into the Enrollee's system, including satellite systems, for:*
  - *System operation, maintenance, and capital improvement-related activities."*

COMPLIANCE

When the District experiences a spill, it is standard procedure to secure the affected area and keep the public away. This is generally done using barricades, cones and caution tape. Should the District experience a spill that may require closure of public areas or enter a source drinking of water, signs will be immediately placed indicating the issue and providing contact information. Staff will remain on site to provide an additional safety factor until appropriate authorities respond and direct otherwise. In all cases, the District will follow the advice of higher authorities, such as the local environmental health department and other regulatory authorities.

There are several opportunities for stakeholders and the public to participate and provide input into the development and update of the District's SSMP. During its initial development stage, as with each SSMP update the SSMP and related documents are presented to the District Board for review and approval. SSMP Audits are now performed every three years and approval and re-certification of updated SSMPs is now required every six years.

The District serves one satellite system outside of its District boundaries for the Embarcadero Municipal Improvement District (EMID) through a sewer service agreement. Quarterly meetings are held with EMID staff to address any issues and update them with the current condition of their collection system. The District has informal mutual assistance programs in place with neighboring public agencies surrounding its service area. The General Managers for GWSD and Goleta Sanitary District (the regional treatment plant) meet quarterly to discuss system operation, maintenance, and capital improvement-related activities. Additionally, the District is active in the local Sanitary Agency Managers Association (SAMA) where joint response and mutual aid is often discussed with other agency managers.

EFFECTIVENESS

The District utilizes the following Key Performance Indicators for measuring effectiveness of this Element:

- Does the District place all SSMP action items on the agenda for regular counsel/board meetings?
- Does the District have signage, or other means, readily available to notify the public of environmental or public risk factors related to a sewage spill?
- Does the District perform outreach to residential customers?

IMPLEMENTATION PLAN/SCHEDULE

No.	Plan	Schedule	Responsible Party		
			LRO	Superint	Sup
11.1	Ensure the Board of Directors approves the SSMP per schedule	Every 6 years		X	X
11.2	Ensure the SSMP is posted on the District website and the link functions properly	Continuously		X	X
11.3	Ensure Sewage Spill Warning signs are readily available to communicate with the public when necessary	Annually			X

RESILIENCE

Resilience is addressed in Element 11 by:

- Use the SSMP as a tool to communicate to the public how the District is managing the system.
- Maintain a consistent presence in the service area by attending community events or issuing periodic newsletters or other communications to the public.
- Make it clear and easy for the public to contact the District.

APPENDIX 11 INCLUSIONS

- None

LIST OF APPENDICIES

APPENDIX 1	• None
APPENDIX 2	• None
APPENDIX 3	• None
APPENDIX 4	• None
APPENDIX 5	• None
APPENDIX 6	• None
APPENDIX 7	• None
APPENDIX 8	• 8.1 2021 GWSD Wastewater Master Plan
APPENDIX 9	• None
APPENDIX 10	• 10.1 2021-2024 SSMP Audit Report (With Fischer Compliance, LLC; includes SSMP Audit Development Plan/Schedule at Appendix 3)
APPENDIX 11	• None

GOLETA WEST SANITARY DISTRICT

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WASTEWATER MASTER PLAN

2021

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Appendices

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EXECUTIVE SUMMARY

The Goleta West Sanitary District (GWSD) retained the Corwin Group, Inc. (Corwin) in August 2020 to complete an update to their Sewer Master Plan that was completed in 2007 by CDM.

1.0 OBJECTIVES

The intent of this update includes several things:

1. Evaluate the adequacy of the existing sewer collection system.
2. Update and review the GIS and system data to ensure its accuracy.
3. Update the population and land use data based on current information.
4. Prepare a new hydraulic model to assess the current condition of the sewer system.
5. Compare the new model to the previous condition.
6. Install meters in the system to provide real time data on actual flows for assessing wet and dry weather conditions.
7. Identify future system needs and planned expansion.
8. Evaluate the ability of the sewer system to allow for future expansion using the hydraulic model.
9. Develop an update to the GWSD Capital Improvement Plan (CIP).

2.0 SCOPE OF SERVICES

Phase 1 – Flow Monitoring and General Master Plan Requirements
Phase 2 – Data Review and Development of Evaluation Criteria
Phase 3 – Develop System Hydraulic Model
Phase 4 – Evaluate Sewer System
Phase 5 – Develop Expansion Master Plan Update
Phase 6 – Produce Master Plan Report

3.0 STUDY AREA LAND USE AND POPULATION

Introduction

On November 8, 1954, the Santa Barbara County Board of Supervisors formed, by Resolution No. 13910, the Isla Vista Sanitary District. The district was formed because the citizens of Isla Vista wanted to safely and efficiently handle their wastewater and an agreement was entered into with the GSD to treat the wastewater. The Isla Vista Sanitary District was renamed the Goleta West Sanitary District in 1990 to more accurately describe the District service area.

Existing Land Use and Development

A land use category for each parcel was assigned based on its primary permitted use within the specific zone district. Land use information was taken from the LAND USE SURVEY / WASTEWATER GENERATION PROJECTIONS STUDY 2020 UPDATE prepared by TW LAND PLANNING & DEVELOPMENT, LLC. The land use categories used are as follows:

Residential

Commercial

Agriculture

Recreation

Highway

Public

Maximum Density

For residential zoned parcels, the maximum potential development on a parcel was generated by multiplying the density allowance by the parcel size. However, the maximum development potentials for some parcels were based on specific proposed development projects under consideration by the County/ City. The density allowance is taken from LAND USE SURVEY / WASTEWATER GENERATION PROJECTIONS STUDY 2020 UPDATE prepared by TW LAND PLANNING & DEVELOPMENT, LLC.

Maximum Potential Development

For residential zoned parcels, the maximum potential development on a parcel was generated by multiplying the density allowance by the parcel size.

For non-residential (commercial and industrial) zoned parcels, the maximum potential development was generated by multiplying the floor-to-area ratio (FAR) by the area of the parcel.

Parcels zoned recreation and having a parcel size greater than one acre were assumed to generate wastewater demand (from recreational activities and/or public restroom facilities) equivalent to one residential unit and were assigned a development value of “1.

Parcels zoned public/quasi-public were left blank.

Agriculture zoned parcels were assumed to generate wastewater demand equivalent to one residential unit since a legal agricultural parcel is generally permitted to have one single family residence.

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Parcels without any development potential due to extremely small parcel size, configuration (for example, a 25 square foot parcel which would be physically infeasible to develop), or known and identified environmental constraints (for example, parcels identified as having environmentally sensitive habitats (ESH) and for which development would pose serious policy conflicts), etc. were assumed to not generate wastewater service and were assigned a development value of "0".

GWSD Generation Factors

In 2003-2004, GWSD commissioned the Black & Veatch Corporation to prepare a Wastewater Unit Value Analysis Memorandum (May 2004) to identify an appropriate equivalent residential unit (ERU) planning factor. Black & Veatch recommended that 184 gallons per day (gpd)/ERU, which is an average of 171.47 gpd/ ERU and 195.95 gpd/ERU, should be utilized to "predict the allowance for ERU development based on an engineering analysis." As a result, the GWSD currently utilizes the factor of 184 gpd/ ERU for all planning purposes.

4.0 WASTEWATER FLOWS AND DESIGN CRITERIA

For GWSD, the estimated wastewater generation for the parcels was calculated by multiplying the maximum development potential for each residential and non-residential parcel by the pertaining generation factor.

Current and Future flows for the GWSD

As indicated within the Background Data section of this report and the LAND USE SURVEY / WASTEWATER GENERATION PROJECTIONS STUDY 2020 UPDATE prepared by TW LAND PLANNING & DEVELOPMENT, LLC., GWSD has a remaining capacity of approximately 1.83 MGD based on the maximum facility design capacity and 0.99 MGD based on the current NPDES permit requirements. Within the next ten years, it is estimated that the Goleta West Sanitary District may need to provide additional wastewater treatment services of approximately 0.144 MGD for new development within the District's service boundaries, which falls well within the GWSD's existing service capabilities.

Ultimate buildout, which includes the ten-year development scenario, is anticipated to generate a total future demand of 0.194 MGD of wastewater based on existing zoning but could generate between 0.194 MGD and 0.212 MGD.

Flow Monitoring Program

Flow monitoring was conducted within the Goleta West system during the period of November 3rd, 2020 - January 30th, 2021. Measurements were collected from 14 locations which are shown on Figure 3-4, along with the tributary area for each flow monitor.

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During the flow monitoring period dry and wet weather flows were collected. Dry weather flows during the period of November 3rd through December 1st, 2020 were analyzed to determine the unit flow factors, and wet weather flows during the period of December 27th, 2020 through January 30th, 2021 were analyzed to determine the magnitude of infiltration and inflow during the rainfall events.

Unit Flow Factors

Loading factors for each service class type by meter were adjusted to calibrate against the measured flows. The calibration results were within ± 10%. The loading rates for residential varies between 150 and 250 gpd/ERU, for commercial, institutional, and apartments the rates were lower than normal, as expected, due to the impact of COVID-19 where businesses were either closed or operating at reduced capacity. Similarly, for apartments in the Isla Vista area, where flow loading rates are lower than expected could be either due to low occupancy rate or fewer students remained in their apartments. Meter 09 East (located upstream of Emily PS) showed low loading rates about 80 - 100 gpd/ERU and that might be attributed to the accuracy of the flow meter during low flows or less occupancy rate.

Table ES-1
Recommended Loading Factors

Land Use	Calibration Loading Rates (gpd/ERU)	Recommended Loading Rates (gpd/ERU)	Comments
Residential	150 - 250	180	Recommended rate of 180 gpd/ERU is like pre COVID-19 conditions
Commercial	50	100	Calibration rates are low as they are influenced by COVID-19
Institutional	50	100	Calibration rates are low as they are influenced by COVID-19
Apartments	100 - 160	160	Calibration rates are lower than normal as they are influenced by COVID-19 Recommending rate of 160 gpd/ERU reflects low flow fixtures for new apartments
Dormitory	-	160	No change
Embarcadero Municipal Irrigation District	140	180	Calibration rates are lower than normal as they are influenced by COVID-19 Recommending rate of 180 gpd/ERU like pre COVID-19 conditions

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Wet Weather Flows

During the flow monitoring period from December 27th, 2020 through January 30th, 2021 two significant wet weather events occurred; one on December 27, 2020 and one on January 28, 2021. A review of the flow monitoring data during the rainfall events revealed that infiltration and inflow was evidenced in the District's sewer system as flows increased in direct response to rainfall.

Infiltration and Inflow

After model development, Corwin reviewed and assessed the flow monitoring data collected in response to rainfall events. The measured flow data showed that peak wet weather flows were up to 9 percent higher than peak dry weather flows. Pipe capacity is sufficient to convey these wet weather flows because the pipes are sized to handle up to twice the peak dry weather flows.

Corwin recommends that the GWSD complete a more pointed and detailed rainfall dependent infiltration/inflow (RDI/I) investigation using added specific flow monitoring to catch significant rain events as well as complete a smoke testing study and a lateral study on large users like UCSB where meters could be installed.

Chapter 4 contains cost information and details for an RDI/I study the GWSD should consider.

Hydraulic Model of Wastewater System

The computerized hydraulic model of the GWSD wastewater collection system was updated using InfoSewer Pro software version 7.6 developed by Innovyze. InfoSewer Pro is an ArcGIS-based computer program for use in the planning, design, analysis, and expansion of sanitary sewer collection systems.

GWSD provided Corwin with GIS files containing pipes and manholes within the system along with associated data such as pipe diameters, pipe material, pipe length, and invert elevations. Additionally, GWSD provided a parcel database listing, land use classifications and the number of equivalent residential units (ERUs) per parcel which was used to generate sewer flows.

The hydraulic model was updated to include pipe locations, lengths, diameters and materials for the Phelps Road, Sycamore Walk, and the Los Carneros Village. Data was imported to the model from the GWSD GIS system.

It is worth noting that Mesa Road project and other new projects since the 2007 Wastewater Master Plan were included in the 2019 model update prepared by others.

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Existing Flows Update

There are two new developments currently under-construction; one located at the southwest corner of S. Glenn Annie Road and Village Way; and one located at Cortona Drive.

Large Water Users

GWSD provided a list of large water users, a total of 39, with average daily water demand greater than 3500 HCF. All these users were checked against the model for proper loading to manholes.

Collection System Analysis

The model was run using future scenarios outlined in the report "Land Use Survey / Wastewater Generation Projections Study 2020" prepared by TW PLANNING & DEVELOPMENT, LLC. Scenarios evaluated included existing, ten-year, and buildout.

Existing – The existing scenario includes flows based on ERUs by parcels and land use type as provided by GWSD.

Ten-year – The flows for this scenario are based on the development projections outlined in the TW PLANNING & DEVELOPMENT report, which is based on communication with GWSD, review of planning documents, and requests for new connections.

Buildout The flows for this scenario are based on the buildout analysis described in the TW PLANNING & DEVELOPMENT report, which is based on vacant or unconnected parcels located with GWSD boundary, review of parcel assignments, rezoning, and general plan amendments.

The flows for these scenarios were calculated based on the number of ERUs by parcel multiplied by the unit flow rate associated with its land use type.

All scenarios included pipeline improvements since the 2007 Wastewater Master Plan such as Hollister Avenue Interceptor, Phelps Road Interceptor, Mesa Road trunk sewer, and other smaller pipeline improvements.

Future flows for each scenario were developed based upon parcel numbers, land use type and the expected increase in ERUs given in the TW PLANNING & DEVELOPMENT, LLC report. These flows were assigned, into the model, at the manhole closest to each identified parcel. Table ES-1 shows the total flow and incremental flow for each scenario.

Table ES-2
Total Flow and Incremental Flow Modeled by Scenario

Scenario	*Total Flow (mgd)*	*Incremental Flow (mgd)*
Existing	2.48	--
Ten Year	2.59	0.11
Ultimate Build-Out	2.64	0.05

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Gravity Sewers

The analysis was performed by running an extended period simulation (EPS) for each scenario. The simulation was run for 24 hours with calculations made every 15 minutes. To determine pipe deficiencies, the maximum ratio of water depth to pipe diameter (d/D) in each pipe during the simulation was evaluated. GWSD has defined a pipe as not meeting its design capacity standards if d/D is greater than 0.5 for the peak dry weather flows.

5.0 GWSD CAPITAL IMPROVEMENT PLAN NEEDS

Key findings include:

The 27-inch diameter pipeline in Mesa Road west of S. Los Carneros Road connects to an existing structure box that becomes a physical constraint where other major pipelines connect. This is a brand-new line with correct diameter and the slope was determined based on the bottom elevation of the existing manhole where it was connected to an existing stub. The d/D ratio is 0.70 under existing conditions and 0.72 under buildout conditions which exceeds the criteria d/D of 0.50. However, the crown of the pipe is 12 feet deep below the ground surface and hydraulically, there should be no concerns about overflows because the overall hydraulic slope will push the flow through easily. There is also no option to change the hydraulic capacity as the pipe connects to an existing manhole at the invert of the existing pipe.

The 6-inch diameter pipeline in Abrego Road east of Camino Del Sur has a d/D of 0.5109 under existing conditions and d/D of 0.5113 under buildout conditions which is marginally exceeding the d/D criteria of 0.50. This pipeline connects to a drop manhole and downstream pipe invert should be field verified.

The 8-inch diameter pipeline in Calle Real east of Mendocino Drive has a d/D of 0.5046 under both 10-year and buildout conditions which is marginally exceeding the d/D criteria of 0.50.

The 8-inch diameter pipeline in Willow Springs Lane has a d/D of 0.5439 under both 10-year and buildout conditions which is exceeding the d/D criteria of 0.50.

The 15-inch diameter pipeline in an easement east of the south end of Mathilda Drive has a d/D of 0.5034 under buildout conditions which is marginally exceeding the d/D criteria of 0.50.

An RDI/I investigation into basins 3, 5, 9E and 11 located as shown on Figure 3-4 having large wet weather flows is recommended. This will be discussed further within the Master Plan.

6-inch sewers in the Isla Vista portion of the District should be replaced with 8-inch sewers, primarily for maintenance issues, on a staged basis over the next 10-20 years as funding becomes available.

Force Mains and Pump Stations

The force mains in the GWSD system include parallel 18-inch and 24-inch diameter pipes which convey flow to the GSD wastewater treatment plant and two parallel 8-inch force mains which convey water from the Emily Lift Station to the nearest gravity sewer trunk. The force mains and pump stations were evaluated for the Buildout scenario as it represents the highest flow.

Based on the projected velocities and peak flows, no immediate improvements are needed to the existing force mains and pump stations to accommodate all the future scenarios. Emily force mains are in good condition. The main pump station force mains were investigated previously in 2002 and were in good condition at that time. However, these force mains from the main pump station should be investigated with a condition assessment to firm up their condition and the District should also continue to provide routine maintenance upgrades and replacement as needed. This will be discussed further in the Master Plan.

Other Needs

Various vehicles and equipment should continue to be replaced and upgraded on a rotating schedule as they age and newer technologies are available. The main facility generator is currently in excellent condition, but at some point should be replaced and upgraded to meet newer air quality requirements.

All capital improvement needs are further displayed in Chapter 4.

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CHAPTER 1 – INTRODUCTION

The Goleta West Sanitary District (GWSD) retained the Corwin Group, Inc. (Corwin) in August 2020 to complete an update to their Sewer Master Plan that was completed in 2007 by CDM. The chapter provides background on the GWSD, the objectives for this plan and outlines the scope of services.

1.0 BACKGROUND

GWSD was formed as the Isla Vista Sanitary District in 1954 to serve the needs of the growing area of Isla Vista. The District changed its name to Goleta West Sanitary District in January 1990 to reflect the area wide aspects of the District's service area.

The District currently serves approximately 39,500 people via 6,100 service connections and maintains approximately 66 miles of wastewater collection system pipelines, including gravity lines, manholes, two pump stations and force mains. Pipe sizes vary from 6 to 42-inches. Gravity pipelines are predominately made of vitrified clay pipe (VCP), with polyvinyl chloride pipe (PVC), asbestos cement pipe (ACP), Centrifugally Cast Fiberglass Reinforced Polymer Mortar (CCFRPM) and ductile iron pipe (DIP). Approximately 1,440 pre-cast reinforced concrete manholes, with limited quantities constructed of brick or cast-in-place concrete as well as some newer manholes made of polymer concrete are also in service. Force mains from GWSD to GSD consist of 8,700-foot long 18-inch and 24-inch pipelines made of ACP and DIP. Force mains from field lift station (Emily) consist of 2,000-foot long two parallel 8-inch pipelines made of HDPE and combination of ACP and 200 feet of PVC.

The collection system also contains Pump Station #1 at the main facility located at Parking Lot 32 on the University of California Santa Barbara (UCSB) campus and the Emily pump station located at 8200 Calle Real built to serve the Embarcadero Municipal Improvement District (EMID).

Pump station #1 pumps all GWSD's collected wastewater to the Goleta Sanitary District (GSD) treatment plant. The pump station is a wet well/dry well design with a wet well volume of approximately 2,500 cubic feet (cf). The wet well/dry well structure is concrete and cylindrical in shape with an 11-foot radius. Pump station #1 has full capability of handling all GWSD flows. Emergency power for the pump station at the main facility includes a 450 kilowatt (KW) Lawless Detroit Diesel Generator. The GWSD owns capacity in the GSD wastewater treatment plant to treat up to 3.12 MGD.

The field lift station (Emily) is a standard Smith and Loveless, Inc. underground lift station with a wet well volume of approximately 1,500 cf. The dry well is a prefabricated steel structure. The wet well is a separate concrete structure connected to the dry well with piping.

The Capital Facilities Engineering and Financial Plan of 2007 found that deterioration of GWSD main sewer lines was primarily due to root intrusion. GWSD has rehabilitated deteriorated pipelines through replacement or a re-lining process over the last several years. Laterals are owned by the property owners, so nothing has been done to upgrade the laterals to date.

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Manholes are in generally good condition, and many were upgraded during the phased pipeline rehabilitation program discussed above or during the construction of the Mesa Road and Phelps Trunk sewers.

2.0 OBJECTIVES

The intent of this update includes several things:

1. Evaluate the adequacy of the existing sewer collection system.
2. Update and review the GIS and system data to ensure its accuracy.
3. Update the population and land use data based on current information.
4. Prepare a new hydraulic model to assess the current condition of the sewer system.
5. Compare the new model to the previous condition.
6. Install meters in the system to provide real time data on actual flows for assessing wet and dry weather conditions.
7. Identify future system needs and planned expansion.
8. Evaluate the ability of the sewer system to allow for future expansion using the hydraulic model.
9. Develop an update to the GWSD Capital Improvement Plan (CIP).

3.0 SCOPE OF SERVICES

The outline of the Scope of Services for development of this Wastewater Master Plan is as follows:

Phase 1 – Flow Monitoring and General Master Plan Requirements
Task 1 Conduct an Initial Project Workshop
Task 2 Prepare RFP for Flow Monitoring Contractors
Task 3 Review Proposals and Select Contractor
Task 4 Manage Flow Monitoring Contract
Task 5 General Project Administration

Phase 2 – Data Review and Development of Evaluation Criteria
Task 1 Review Collection System and Land Use Data
Task 2 Develop Sewer System Design Criteria
Task 3 Develop Planning Criteria
Task 4 Develop Costing Criteria
Task 5 Summarize Criteria in TM-1

Phase 3 – Develop System Hydraulic Model
Task 1 Dry Weather Flow Evaluation
Task 1A Review of Flow Monitoring Data

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Task 1B Large Users
Task 1C Develop Base Flows
Task 2 Establish Future Flows
Task 3 Summarize Flow Analysis in TM-2/4
Task 4 Model Update
Task 4.1 Model Update
Task 4.2 Summarize Inventory in TM-3
Task 5 Develop Model Inventory Files
Task 6 Dry Model Calibration
Task 6.1 Model Calibration
Task 6.2 Summarize Model in TM-2/4

Phase 4 – Evaluate Sewer System
Task 1 Analyze Existing System
Task 1.1 Evaluate Existing Dry Weather Conditions and Assess Wet Weather
Task 2 Analyze Projected Future Flows
Task 2.1 Analyze 2030 Flows
Task 2.2 Analyze Build Out Flows
Task 3 Summarize Model Analyses
Task 3.1 Prepare Model Analyses in TM-5
Task 3.2 Conduct Model Analyses Review Presentation

Phase 5 – Develop Expansion Master Plan Update
Task 1 Evaluate System Alternatives
Task 1.1 Identify Revisions/Refinements of the Existing Master Plan
Task 1.2 Review Model Output
Task 1.3 Develop Alternatives
Task 1.4 Evaluate Alternatives
Task 1.5 Summarize Alternatives in TM-6
Task 2 Develop Capital Improvements Plan (CIP)
Task 2.1 CIP Program
Task 3 Summarize CIP
Task 3.1 Conduct CIP Workshop

Phase 6 – Produce Master Plan Report
Task 1 – Publish Master Plan Report
Task 1.1 Prepare Draft Master Plan Report
Task 1.2 Publish and Deliver Final Report
Task Group 2 – Assist in Presentation of Master Plan Report
Task 2.1 Assist in Presentation of the Draft Document to the Board of Directors

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4.0 ABBREVIATIONS AND DEFINITIONS

ac	acre
ACP	asbestos cement pipe
ADWF	average dry weather flow
BHP	brake horsepower
CCTV	closed circuit television
CDM	Camp Dresser & McKee, Inc.
cf	cubic feet
cfs	cubic feet per second
CFEFP	Capital Facilities Engineering and Financial Plan
CIP	Capital Improvement Plan
cy	cubic yard
dia	diameter
DIP	ductile iron pipe
du	dwelling unit
ea	each
EIR	Environmental Impact Report
EMID	Embarcadero Municipal Improvement District
ERU	Equivalent Residential Unit
FAR	Floor-to-Area Ratio
FOG	Fats, Oil and Grease
fps	feet per second
ft	feet
GIS	Geographic Information System
GPA	Goleta Planning Area
gpd	gallons per day
gpm	gallons per minute
GSD	Goleta Sanitary District
GWSD	Goleta West Sanitary District
hp	horsepower
I&I	Infiltration and Inflow
kw	kilowatt

kwh	kilowatt per hour
lf	linear feet
LS	Lump Sum
MG	Million Gallons
mgd	million gallons per day
NPDES	National Pollution Discharge Elimination System
O&M	Operation and Maintenance
PDWF	Peak Dry Weather Flow
PVC	polyvinyl chloride
PWWF	Peak Wet Weather Flow
RDI/I	Rainfall Dependent Infiltration/Inflow
rpm	revolutions per minute
sq	square
SF	square feet
SSMP	Sanitary Sewer Management Plan
tdh	total dynamic head
UCSB	University of California Santa Barbara
VCP	vitrified clay pipe
WDR	Waste Discharge Requirements

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CHAPTER 2 – STUDY AREA LAND USE AND POPULATION

1.0 STUDY AREA DESCRIPTION

Introduction

This chapter assesses the physical environment of the study area; incorporates the land use plans of Santa Barbara County and the Goleta Community Plan; and develops population projections within the GWSD sewer system service area. The information contained below has been taken from LAND USE SURVEY / WASTEWATER GENERATION PROJECTIONS STUDY 2020 UPDATE prepared by TW LAND PLANNING & DEVELOPMENT, LLC .

Background

On November 8, 1954, the Santa Barbara County Board of Supervisors formed, by Resolution No. 13910, the Isla Vista Sanitary District. The district was formed because the citizens of Isla Vista wanted to safely and efficiently handle their wastewater and an agreement was entered into with the GSD to treat the wastewater. The Isla Vista Sanitary District was renamed the Goleta West Sanitary District in 1990 to describe more accurately the District service area.

GWSD is in Santa Barbara County adjacent to the Pacific Ocean. The GWSD boundary encompasses approximately 7 square miles including portions of the unincorporated areas of the county including Isla Vista, and portions of the City of Goleta. The service area does not include the Santa Barbara Municipal Airport or the UCSB campus.

Geography and Climate

The climate in the Goleta Valley can be characterized as mild Mediterranean. Prevailing winds are westerly and southwesterly winds off the pacific. As with most of Southern California, annual precipitation rates for Goleta have large variation from year to year. Precipitation rates range from a low in 1975 of about 8 inches and a high of nearly 50 inches in 1941. On average, annual rainfall is about 20 inches. Almost all rainfall falls in the months from November through April.

2.0 LAND USE

Existing Land Use and Development

A land use category for each parcel was assigned based on its primary permitted use within the specific zone district. The land use categories used are as follows:

Residential: All residential zoned parcels (Current: RR, R-1, E-1, R-2, EX-1, DR, PRD, RES, MT-GOL, MHP, MHS, SR-M, and SR-H; City Proposed Draft General Plan: SF-LD, SF, MF-LD, MF-MD, MF-HD, and MHP) were given this land use designation.

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Commercial: All commercial/industrial zoned parcels (Current: C-1, C-2, C-3, C-S, CH, CN, C-V, SC, PI, M-RP, M-S, M-1, M-2, and PU; City Proposed Draft General Plan: C-R, C-C, C-OT, C-N, C-I, C-V, C-H, C-G, BP, OI, I, I-S, PU, CH-MUA) were given this land use designation.

Agriculture: All agriculture zoned parcels (AG-I and AG-II) were assigned this land use designation.

Recreation: All recreation zoned parcels (REC) were assigned this land use designation.

Highway: All right-of-way zoned parcels (ROW) were assigned the “Highway” land use designation.

Public: All public/quasi-public zoned parcels (PQ) were assigned the “Public” land use designation.

Maximum Density

For residential zoned parcels, the maximum potential development on a parcel was generated by multiplying the density allowance by the parcel size. However, the maximum development potentials for some parcels were based on specific proposed development projects under consideration by the County/ City. In addition, although some parcels were substandard in size according to the zone district requirements, it was assumed that legal substandard-sized parcels could be developed with one (1) single family dwelling. Finally, under the “ten year” analysis based on “Existing Zoning”, a few parcels have an Affordable Housing Overlay (AHO) zoning designation, which increases the maximum development potential of the parcels due to the proposed affordable housing units to be developed. These parcels were, however, assigned the maximum potential development based on the proposed development identified within the City/ County cumulative project lists.

Under the “County Zoning/ City NZO + Bonus Density” build-out development scenario, the density of all residentially zoned parcels with a base zoning allowing for five or more units was increased by 35%, which is the maximum allowable bonus density increase under State Law for affordable and senior housing projects.
For non-residential (commercial and industrial) zoned parcels, the maximum potential development was generated by multiplying the FAR by the area of the parcel. Except for the “Ten Year” analyses, a FAR of 0.70 was utilized to estimate future commercial development. The 0.70 FAR was based on the assumption of development of two-story buildings occupying 35% of a lot for any remaining undeveloped commercial properties. The FAR is supported by the City of Goleta General Plan recommended maximum building lot coverage of 0.35 for the Business Park land use. It is worth noting that most retail commercial development within the City/County is single-story and that other commercial/industrial buildings, while typically two-stories in height, are not always

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developed with a complete second story, but instead are developed with a partial mezzanine. TW Land P&D believes, therefore, that the use of a 0.70 FAR is an appropriate, if not conservative, commercial/ industrial build-out development assumption. For the "Ten Year" projection tables, development projections for maximum potential development are based on the specific development proposed for those parcels identified within the City/ County cumulative project lists.
Parcels zoned recreation and having a parcel size greater than one acre were assumed to generate wastewater demand (from recreational activities and/or public restroom facilities) equivalent to one residential unit and were assigned a development value of "1". Certain parcels, or collection of parcels, identified as known parks that were incorrectly zoned (i.e., Residential) were given a development value of "1". Recreation zoned parcels of less than one acre or parcels identified as "open space" were assumed not to require wastewater service and were assigned a development value of "0".

Parcels zoned public/quasi-public were left blank. Due to the variety of uses this zoning category allows for, the maximum development potential for these parcels could not be assigned since the development of these parcels will vary on a case-by-case scenario. Parcels zoned highway were assigned a maximum development of 0.

Agriculture zoned parcels were assumed to generate wastewater demand equivalent to one residential unit since a legal agricultural parcel is generally permitted to have one single family residence.

Parcels without any development potential due to extremely small parcel size, configuration (for example, a 25 square foot parcel which would be physically infeasible to develop), or known and identified environmental constraints (for example, parcels identified as having environmentally sensitive habitats (ESH) and for which development would pose serious policy conflicts), etc. were assumed to not generate wastewater service and were assigned a development value of "0".

Maximum Potential Development

For residential zoned parcels, the maximum potential development on a parcel was generated by multiplying the density allowance by the parcel size. However, the maximum development potentials for some parcels were based on specific proposed development projects under consideration by the County/ City. In addition, although some parcels were substandard in size according to the zone district requirements, it was assumed that legal substandard-sized parcels could be developed with one (1) single family dwelling. Finally, under the "ten year" analysis based on "Existing Zoning", a few parcels have an Affordable Housing Overlay (AHO) zoning designation, which increases the maximum development potential of the parcels due to the proposed affordable housing units to be developed. These parcels were, however, assigned the maximum potential development based on the proposed development identified within the City/ County cumulative project lists.

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Parcels zoned recreation and having a parcel size greater than one acre were assumed to generate wastewater demand (from recreational activities and/or public restroom facilities) equivalent to one residential unit and were assigned a development value of "1". Certain parcels, or collection of parcels, identified as known parks that were incorrectly zoned (i.e., Residential) were given a development value of "1". Recreation zoned parcels of less than one acre or parcels identified as "open space" were assumed not to require wastewater service and were assigned a development value of "0".

Parcels zoned public/quasi-public were left blank. Due to the variety of uses this zoning category allows for, the maximum development potential for these parcels could not be assigned since the development of these parcels will vary on a case-by-case scenario. Parcels zoned highway were assigned a maximum development of 0.

Agriculture zoned parcels were assumed to generate wastewater demand equivalent to one residential unit since a legal agricultural parcel is generally permitted to have one single family residence.

Parcels without any development potential due to extremely small parcel size, configuration (for example, a 25 square foot parcel which would be physically infeasible to develop), or known and identified environmental constraints (for example, parcels identified as having environmentally sensitive habitats (ESH) and for which development would pose serious policy conflicts), etc. were assumed to not generate wastewater service and were assigned a development value of "0".

GWSD Generation Factors

In 2003-2004, GWSD commissioned the Black & Veatch Corporation to prepare a Wastewater Unit Value Analysis Memorandum (May 2004) to identify an appropriate equivalent residential unit (ERU) planning factor. Black & Veatch recommended that 184 gallons per day (gpd)/ERU, which is an average of 171.47 gpd/ ERU and 195.95 gpd/ERU, should be utilized to “predict the allowance for ERU development based on an engineering analysis.” As a result, the GWSD currently utilizes the factor of 184 gpd/ ERU for all planning purposes. The following factors are used in this study as the basis for estimating wastewater flows:

Residential: 1 equivalent residential unit (ERU); the ERU is assigned a value of 184 gallons per day.

***Commercial*:** 100 gallons per day per 1,000 square feet of habitable building space.

***Agriculture*:** 1 ERU; the ERU is assigned a value of 184 gallons per day.

***Recreation*:** 1 ERU; the ERU is assigned a value of 184 gallons per day, if greater than 1 acre.

Within GSD’s service boundaries, this study estimates 1 ERU (equivalent residential unit) as being equivalent to 184 gallons per day. The commercial wastewater generation factor of 100 gallons per day per 1,000 square feet of habitable building space utilized within this report is based on City of Goleta wastewater generation factors (City of Goleta, June 21, 2004).

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CHAPTER 3 – WASTEWATER FLOWS AND DESIGN CRITERIA

1.0 INTRODUCTION

This chapter outlines the development of wastewater flows under current and future conditions as well as design criteria used to evaluate the GWSD's wastewater system.

2.0 ESTIMATION OF CURRENT WASTEWATER FLOWS

Introduction

For GWSD, the estimated wastewater generation for the parcels was calculated by multiplying the maximum development potential for each residential and non-residential parcel by the pertaining generation factor.

ERU Evaluation

For GWSD, the estimated ERU is calculated by dividing the Estimated Flow amounts by 184 gpd.

Projected Wastewater Demand Summary

TEN-YEAR

Table 3-1 below summarizes the estimated wastewater demand for the ten-year period for GWSD. Parcels included in the ten-year buildout projections are also shown on the Figure 3-1.

TABLE 3-1
GWSD ESTIMATED WASTEWATER DEMAND – TEN YEAR [1)]

AGENCY	CURRENT NPDES CAPACITY	FACILITY DESIGN CAPACITY
GWSD Remaining Capacity	0.990	1.830
GWSD Estimated Ten Year Flows	0.144	0.144
GWSD EXCESS CAPACITY	+0.846	+1.686
(1) Wastewater demand is expressed in million gallons per day (mgd).		

ULTIMATE BUILDOUT

Table 3-2 below summarize the estimated wastewater demand under community buildout for GWSD. Parcels included in the buildout projections are displayed in Figure 3-2.

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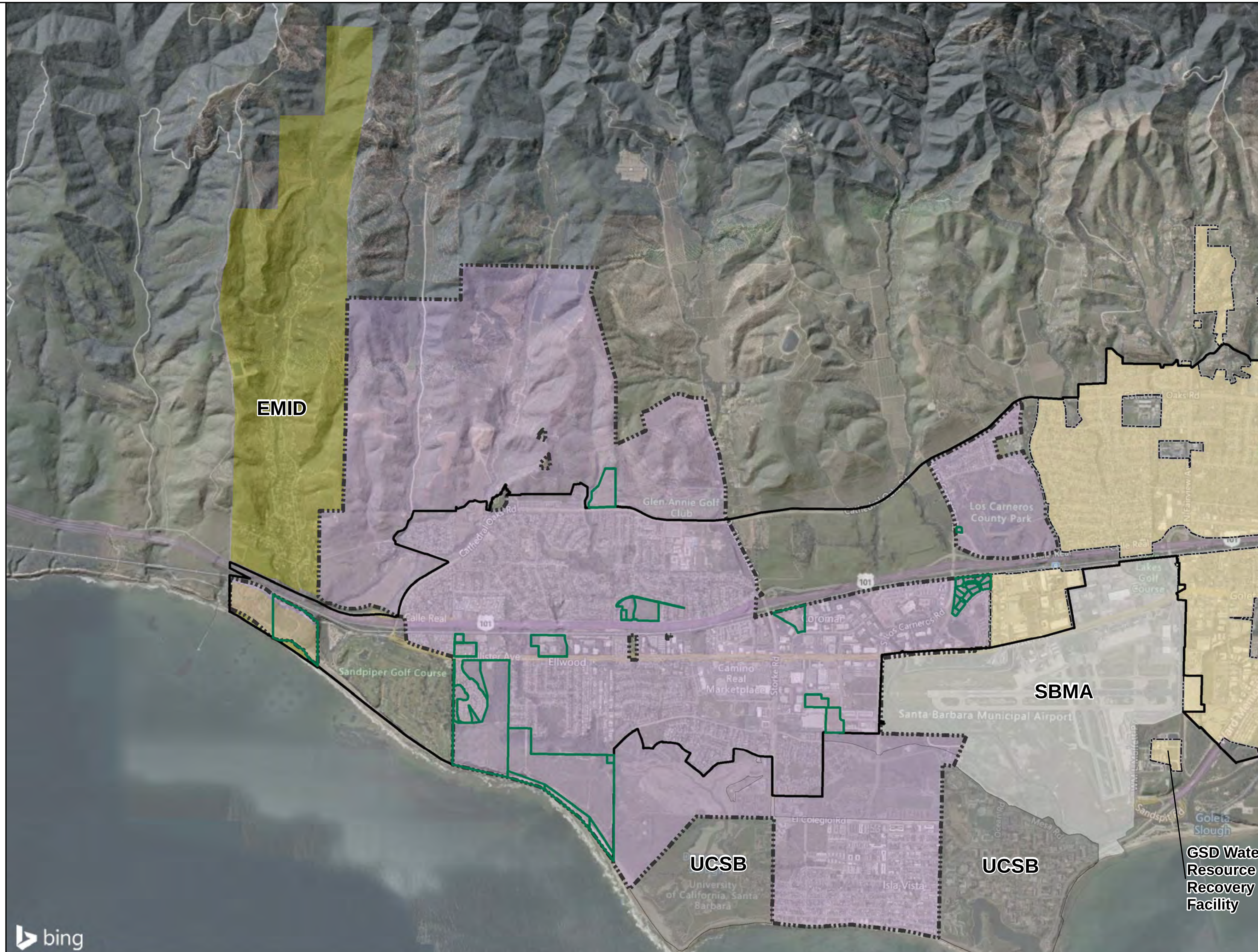
FIGURE 3-1
GOLETA WEST SANITARY DISTRICT TEN-YEAR PROJECTIONS

- Goleta West Sanitary District Ten-Year Projections
- Goleta West Sanitary District Boundary
- Goleta Sanitary District Boundary
- City of Goleta
- Embarcadero Municipal Improvement District (EMID)
- Santa Barbara Municipal Airport (SBMA)
- University of California Santa Barbara (UCSB)



0 0.25 0.5 1 Miles

1 inch = 0.5 miles

N

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FIGURE 3-2
GOLETA WEST SANITARY DISTRICT BUILDOUT PROJECTIONS

Goleta West Sanitary District Vacant Parcels

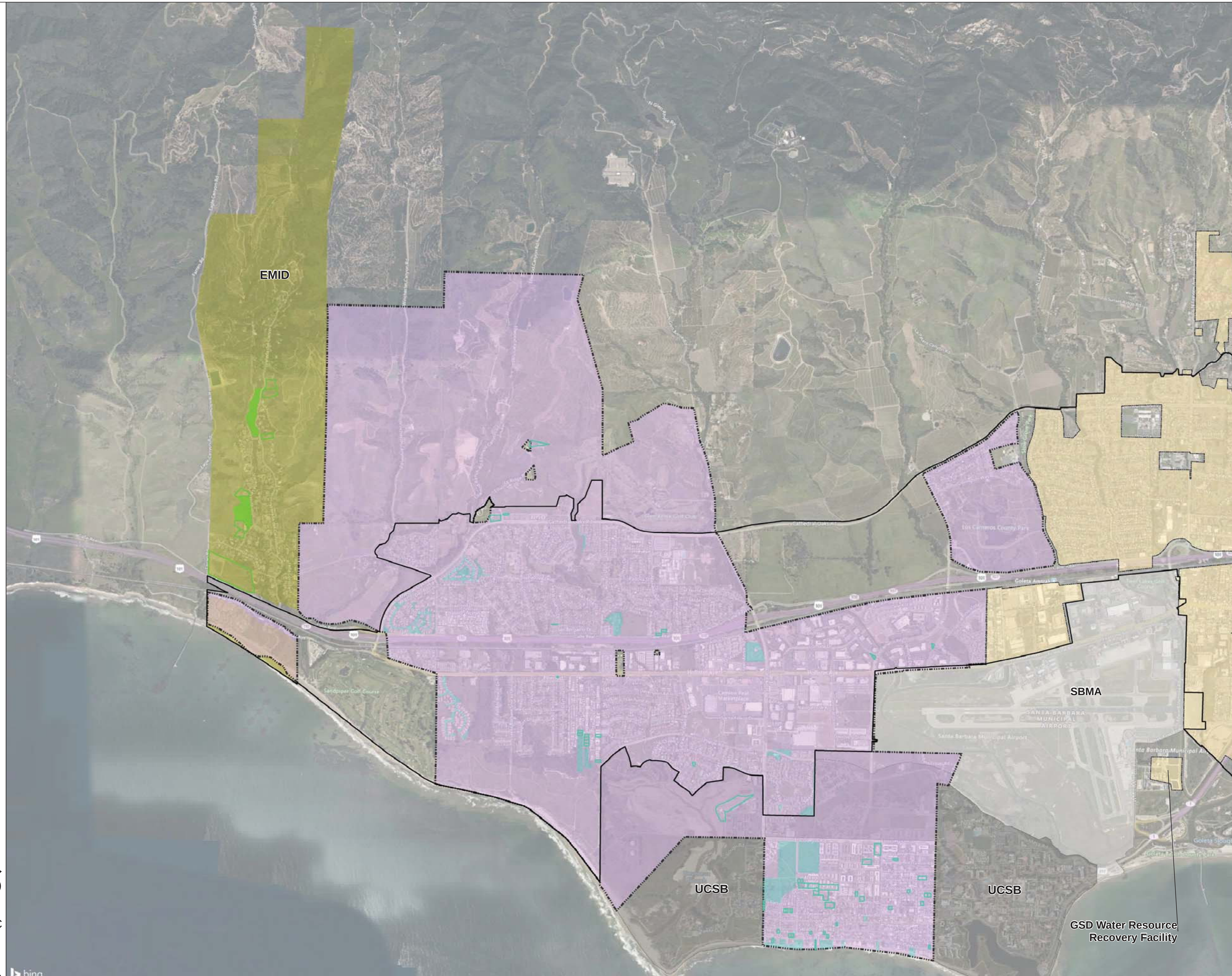
- Vacant Parcels with Development Potential
- Vacant Parcels with Development Constraints (Flood, ESH, etc.)

Embarcadero Municipal District Vacant Parcels

- Vacant Parcels with Development Potential
- Vacant Parcels with Development Constraints (Flood, ESH, etc.)

Jurisdictions/ Districts

- Goleta West Sanitary District Boundary
- Embarcadero Municipal Improvement District (EMID)
- Goleta Sanitary District Boundary
- City of Goleta
- Santa Barbara Municipal Airport (SBMA)
- University of California Santa Barbara (UCSB)



0 1,200 2,400 4,800 Feet

1 inch = 1,200 feet

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For GWSD, the following scenarios are summarized: 1) Existing City/ County Zoning, 2) County Zoning with City New Zoning Ordinance (NZO), and 3) County Zoning with City NZO + Bonus Density.

TABLE 3-2
GWSD ESTIMATED WASTEWATER DEMAND – ULTIMATE BUILDOUT [1]

Agency	CURRENT GWSD NPDES CAPACITY	GWSD FACILITY DESIGN CAPACITY
GWSD Remaining Capacity	0.990	1.830
Existing City/ County Zoning	0.194	0.194
GWSD EXCESS CAPACITY	+0.796	+1.636
GWSD Remaining Capacity	0.990	1.830
County Zoning + City NZO	0.195	0.195
GWSD EXCESS CAPACITY	+0.795	+1.635
GWSD Remaining Capacity	0.990	1.830
County Zoning + City NZO + Bonus Density	0.212	0.212
GWSD EXCESS CAPACITY	+0.778	+1.618
(1) Wastewater demand is expressed in million gallons per day (mgd).		

3.0 CURRENT AND FUTURE FLOWS FOR THE GWSD

As indicated within the Background Data section of this report, GWSD has a remaining capacity of approximately 1.83 MGD based on the maximum facility design capacity and 0.99 MGD based on the current NPDES permit requirements. Within the next ten years, it is estimated that the Goleta West Sanitary District may need to provide additional wastewater treatment services of approximately 0.144 MGD for new development within the District's service boundaries, which falls well within the GWSD's existing service capabilities.

Ultimate buildout, which includes the ten-year development scenario, is anticipated to generate a total future demand of 0.194 MGD of wastewater based on existing zoning, but could generate between 0.194 MGD and 0.212 MGD; if the following were to occur:

1. The City of Goleta's New Zoning Ordinance is implemented as currently written.

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2. The remaining residential parcels with a base zoning allowing five units or greater are proposed for development which includes significant affordable components to qualify for bonus densities up to 35%.

Even with consideration of items 1 and 2 above, most of which are speculative at this time, ultimate buildout would NOT result in an exceedance of GWSD's remaining design/NPDES capacity.

4.0 WASTEWATER COLLECTION SYSTEM DESIGN CRITERIA

Peak Wet Weather Flow

The GWSD wastewater collection system will be sized to convey the peak wet weather flow (PWWF). Design for PWWF will provide an adequate level of protection against wastewater overflow. PWWF is defined to be the peak dry weather flow (PDWF) plus inflow and infiltration (I&I).

Peak Dry Weather Flow

PDWF is estimated by multiplying average daily flows by a peaking factor. Peaking factors come from equations derived based on monitoring data from the specific collection system. Generally, as population, and average flows increase, peaking factors decrease. Due to the lack of sufficient flow monitoring data in the previous master plan, the peaking factor equation recommended in that plan was based largely on a review of peaking factors from surrounding communities and used this peaking factor equation:

$$Q^{Peak} = 1.94\left(Q^{AVG}\right)^{0.88} \text{ (cfs)}$$

Based on flow monitoring data for this project, Corwin recommends that a new peaking factor equation be implemented. This new equation more closely resembles the peak flows experienced in the District. The recommended peaking factor equation is:

$$Q^{Peak} = 2.28\left(Q^{AVG}\right)^{0.88} \text{ (cfs)}$$

PDWF is typically not discharged into the collection system at a constant rate during the day. It varies throughout the day, but typically follows predictable diurnal patterns depending on the type of land use. For example, residential areas tend to have high flows in the morning hours as users wake up and in the evening hours as users return to the home, commercial areas tend to have steady flows during business hours, but very low flow outside of business hours, and industrial areas have flow patterns that depend upon their individual processes. PDWF is the peak flow experienced in a collection system during dry conditions, and it is determined by the diurnal flow patterns of the collection system land use type. PDWF is typically 1.2 times to 3.0

times the ADWF in a collection system, depending on the mixture of land use types and the layout of the collection system which affects the peak flow attenuation.

PWWF is composed of PDWF with the addition of Rainfall-Dependent Infiltration and Inflow (RDI/I). RDI/I is storm water inflow and infiltration that enter the system in direct response to rainfall events, either through direct connections such as holes in manhole covers or illegally connected roof leaders or area drains, or, more commonly, through defects in sewer pipes, manholes, and service laterals. RDI/I typically results in short term peak flows that recede relatively quickly after the rainfall ends. The magnitude of RDI/I flows is related to the intensity and duration of the rainfall, the relative soil moisture at the time of the rainfall event.

There are no industry criteria for PWWF as this is a system specific based on conditions, topography, and layout of the sewer system. Also, PWWF considers the annual average amount of rainfall, peak intensity, duration, and return period for every system which would have significant impact on estimating peak wet weather flow.

Based on our experience and industry common practices, the capacity of the pipe during wet weather flows is not to exceed 100% with a d/D less than or equal to 1.0. Sometimes surcharging is allowed depending on the depth of sewer pipes.

Infiltration and Inflow

Rainfall dependent infiltration and inflow (RDI/I) as well as groundwater infiltration (GWI) must also be considered, in addition to base wastewater flows from residential and non-residential development. RDI/I is storm water that enters the collection system in direct response to a specific rainfall event. Entry to the collection system occurs through pipe defects, manhole lids, and illegal connections or cross connections with storm sewers. GWI is groundwater that is not rainfall dependent but occurs when the groundwater level is above the invert of the sewer. Inflow typically occurs through defects in the pipe or improperly sealed joints.

The GWSD Standard Specifications for Design and Construction do not require wet weather modeling and instead state that pipelines will be designed to convey the peak dry weather flow using a d/D ratio of 0.5 of actual capacity based on the hydraulic criteria. The remaining available capacity is allocated for RDI/I, GWI, reserve capacity and variations in flows.

After model development, Corwin reviewed and assessed the flow monitoring data collected between December 27th, 2020 through January 30th, 2021 in response to rainfall events. The measured flow data showed that peak wet weather flows were higher than peak dry weather flows in the non-UCSB pipelines and that peak wet weather flows were higher than peak dry weather flows in the UCSB pipelines. Pipe capacity is sufficient to convey these wet weather flows because the pipes are sized to handle up to twice the peak dry weather flows. RDI/I will be discussed later in this Master Plan.

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Hydraulic Design Criteria

Hydraulic equations, friction factors and percent capacity are used to define the design capacity of collection pipelines (gravity pipes). Based on discussions with GWSD staff and our understanding of the collection system, the development of the discharge capacity (Q) of collection pipelines was established using the continuity equations, Manning's equation, and criteria as follows.

The continuity equation for flow is:

$$Q = VA$$

where:

Q = flow (ft^3/s)
V = velocity (ft/s)
A = cross –sectional area of flow (ft^2)

Manning's equation is used to estimate the flow velocity in gravity pipelines:

$$V = \frac{1.486 \times R^{\frac{2}{3}} \times S^{\frac{1}{2}}}{n}$$

where:

V = velocity (ft/s)
R = hydraulic radius (ft)
S = pipeline slope (ft_{rise}/ft_{length})
n = Manning friction factor

Because a majority of the GWSD's sewer system is comprised of VCP, a Manning's friction factor of 0.013 was used to establish existing sewer capacity.

Design Capacity

The design capacity of collection pipelines is established in the GWSD Standard Specifications for Design and Construction, as follows. Actual pipeline capacity is based on the calculated capacity of the pipeline with the hydraulic grade line parallel to the pipe invert slope and coincidental with the pipe crown. The design capacity is determined by calculating the actual capacity and adding 50 percent for I&I, reserve capacity and variations in flows previously discussed. In relation to hydraulic analysis, pipelines that do not have this 50 percent added capacity are considered to not meet the design capacity standard.

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Minimum Velocity

A minimum velocity is necessary for the collection system to ensure that flow scours the pipes and prevents detrimental solids deposition. GWSD Standard Specifications specify the minimum velocity is 2 fps. Minimum velocity was calculated for all piping in the District. The District system meets the minimum velocity criteria.

5.0 WASTEWATER COLLECTION COST CRITERIA

Table 3-1 shows the unit capital costs for pipe replacement that were used to determine the project costs. The unit capital costs include construction cost plus an assumed 40 percent for legal, administration and contingencies. The unit capital costs were obtained from the Goleta Sanitary District's 2007 Sewer Collection System Master Plan and escalated to current dollars using the Engineering News Record Construction Cost Index. The costs were then compared to recent local bids to arrive at the costs below.

Table 3-1
Unit Capital Costs for Pipe Replacement

Diameter (in)	*Unit Capital Cost ($/ft, up to 15 ft deep)*
8	500
10	525
12	550
15	650
18	680
21	700
24	750
27	800
30	850
33	900
36	950
39	1020
42	1070
45	1100
48	1135
54	1185

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6.0 WASTEWATER FLOWS

Existing Flows

Existing wastewater flows were estimated based on equivalent residential units (ERU's) for each service class and a unit flow rate per ERU using the recent ERU count per parcel provided by the District. Table 3-2 summarizes the existing wastewater flows by service class (land use type). Figure 3-3 shows the distribution of land use types throughout the District.

Table 3-2
Summary of Total ERUs and Existing Flow by Service Class (Land Use Type)

Service Class	*Total ERUs*	*Total Flow (MGD)*	*% of Total*
Residential	4,882	0.879	36%
Commercial	2,053	0.205	8%
Institutional	283	0.028	1%
Apartments	8,554	1.369	55%
Total	15,771	2.481	100%

GWSD provided a GIS shapefile of the parcels listing the service class for each parcel and an Excel spreadsheet with the assessor parcel number (APN) and corresponding number of equivalent residential units (ERUs) for each parcel within the District. Using GIS tools, the GIS parcel layer and the Excel spreadsheet were joined using APN as a common link. As a result, there were a few APNs totalling 287 ERUs listed in the spreadsheet that did not match the APNs in the parcel layer of the GIS. After further review with the District, the locations of these parcels were identified along with the loading manholes. Table 3-3 summarizes the information for the mis-matched parcels.

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Table 3-3 APN Mismatch			
APN in Spreadsheet not in GIS	**ERU**	**Loading Manhole**	**Comments**
073-030-036	10	73-03-54	Hollister Village
073-090-074	153	50% to 73-12-17 50% to 73-12-98	Sierra Madre Housing UCSB
073-140-099	1	73-15-17	Parcel split
073-210-076	2	73-21-12	Condo Clubhouse
073-330-100	39	73-33-23	Parcel split
073-330-102	2		
073-380-001-066	65	73-12-12	West Campus Point Condos
075-172-012	1	75-17-04	Trigo Road
079-120-046	14	79-12-11	Trailer Park Clubhouse
Total	**287**		

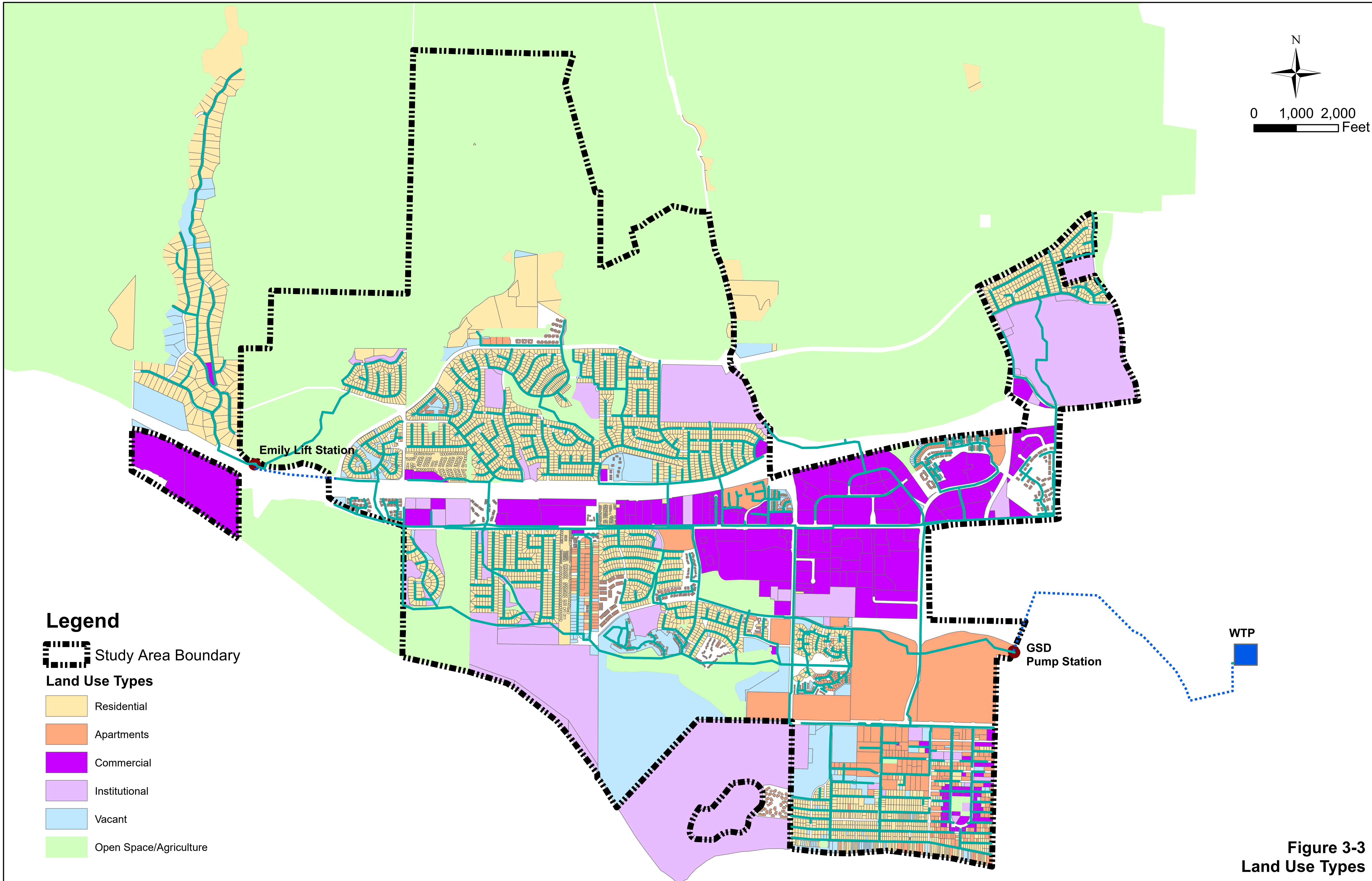

Figure 3-3
Land Use Types

Flow Monitoring Program

Flow monitoring was conducted within the Goleta West system during the period of November 3rd, 2020 - January 30th, 2021. Measurements were collected from 14 locations which are shown on Figure 3-4, along with the tributary area for each flow monitor.

During the flow monitoring period dry and wet weather flows were collected. Dry weather flows during the period of November 3rd through December 1st, 2020 were analyzed to determine the unit flow factors, and wet weather flows during the period of December 27th, 2020 through January 30th, 2021were analyzed to determine the magnitude of infiltration and inflow during the rainfall events.

Complete descriptions of each monitoring site, a visual graph of the data and commentary about the monitoring are included in Appendix A (V&A Flow Monitoring Report).

Unit Flow Factors

Using the GIS parcel layer and the tributary area to each meter, service class types with associated ERUs were tabulated for each flow meter as shown in Table 3-4. Loading factors for each service class type by meter were adjusted to calibrate against the measured flows. As shown in Table 3-4, the calibration results were within ± 10%. The loading rates for residential varies between 150 and 250 gpd/ERU, for commercial, institutional, and apartments the rates were lower than normal, as expected, due to the impact of COVID-19 where businesses were either closed or operating at reduced capacity. Similarly, for apartments in the Isla Vista area, where flow loading rates are lower than expected could be either due to low occupancy rate or fewer students remained in their apartments. Meter 09 East (located at the inlet of the Emily PS, servicing the San Miguel tract) showed low loading rates about 80 - 100 gpd/ERU and that might be attributed to the accuracy of the flow meter during low flows.

Table 3-4

Flow Meter Summary of ERUs and Calibrated Loading Rates

Land Use	Site 01		Site 04		Site 03		Site 06		Site 07		Site 08		Site 09E		Site 09W		Site 10		Site 13		Site 14	
	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading Rates	ERUs	Loading	ERUs	Loading	ERUs	Loading
Residential	3312	185	213	185	213	185	623	185	433	250	673	150	131	80	0	0	1571	150	1012	185	136	185
Commercial	978	50	0	0	763	50	3.16	50	8.71	50	4	50	0	0	1	0	470	50	26	50	369	50
Institutional	649	50	0	0	88.3	50	0.0	50	4.39	50	24	50	0	0	0	0	58	50	87	50	94	50
Apartments	2921	100	0	0	618	100	9.6	100	149	100	25	100	0	0	0	0	1159	100	2175	130	1152	160
Vacant	-		-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-
Retired	-		-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Embarcadero Municipal Irrigation District	-		-	-		-	-	-	-	-	-	-	-	-	145	100	-	90	-		-	
Calibration (mgd)		0.986		0.039		0.144		0.116		0.124		0.105		0.010		0.015		0.378		0.476		0.233
Meter (mgd)		0.995		0.040		0.133		0.128		0.126		0.105		0.010		0.014		0.361		0.475		0.234
Difference (%)		0.99		0.99		1.08		0.91		0.98		1.00		1.05		1.04		1.05		1.00		0.97

Table 3-5 summarizes the recommended loading factors that will be used for system evaluation.

Table 3-5
Recommended Loading Factors

Land Use	Calibration Loading Rates (gpd/ERU)	Recommended Loading Rates (gpd/ERU)	Comments
Residential	150 - 250	180	Recommended rate of 180 gpd/ERU is like pre COVID-19 conditions
Commercial	50	100	Calibration rates are low as they are influenced by COVID-19
Institutional	50	100	Calibration rates are low as they are influenced by COVID-19
Apartments	100 - 160	160	Calibration rates are lower than normal as they are influenced by COVID-19 Recommending rate of 160 gpd/ERU reflects low flow fixtures for new apartments
Dormitory	-	160	Recommending rate of 160 gpd/ERU reflects low flow fixtures
Embarcadero Municipal Irrigation District	140	180	Calibration rates are lower than normal as they are influenced by COVID-19 Recommending rate of 180 gpd/ERU like pre COVID-19 conditions

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Goleta West Sanitary District Flow Monitoring Locations

Location No.	Manhole No.	Location Description	Pipe Diameter (inches)	Pipe Material	Manhole Depth (feet)	Comments
1	73-12-24	MH 12 on Phelps Road and Bike Path	27	PVC	24.0	
2	73-12-03	Los Carneros, South of Mesa	12	PVC	14.4	UCSB Connection
3	73-08-03	Los Carneros, North of Mesa	24	VCP	17.3	
4	77-16-01	South of Covington Way at Covington Place	12	VCP	6.0	
5	73-12-28	Los Carneros, South of Mesa	12	PVC	19.0	UCSB Connection
6	73-03-18	Santa Felicia Drive at SH 101	12	PVC	9.3	
7	73-02-04	South of SH 101, West of Calveras Avenue	12	VCP	13.0	
8	79-68-01	North of Hollister near East Branch of Devereux Creek	12	VCP	6.8	
9	79-20-03	Upstream of Emily PS	12	VCP	11.0	Both upstream pipes are 12-inch VCP
10	73-09-19	Near South end of Ellwood Beach	18	VCP	9.0	
11	73-12-21	At end of Bike Path before wetlands	12	VCP	17.0	UCSB Connection
12	MH LS-1	At Storke Road from Phelps Drawings	8	PVC	14.0	UCSB Connection
13	75-02-08	West of Los Carneros In El Colegio	18	PVC	19.9	
14	75-02-10	East of Los Carneros In El Colegio	15	PVC	20.9	

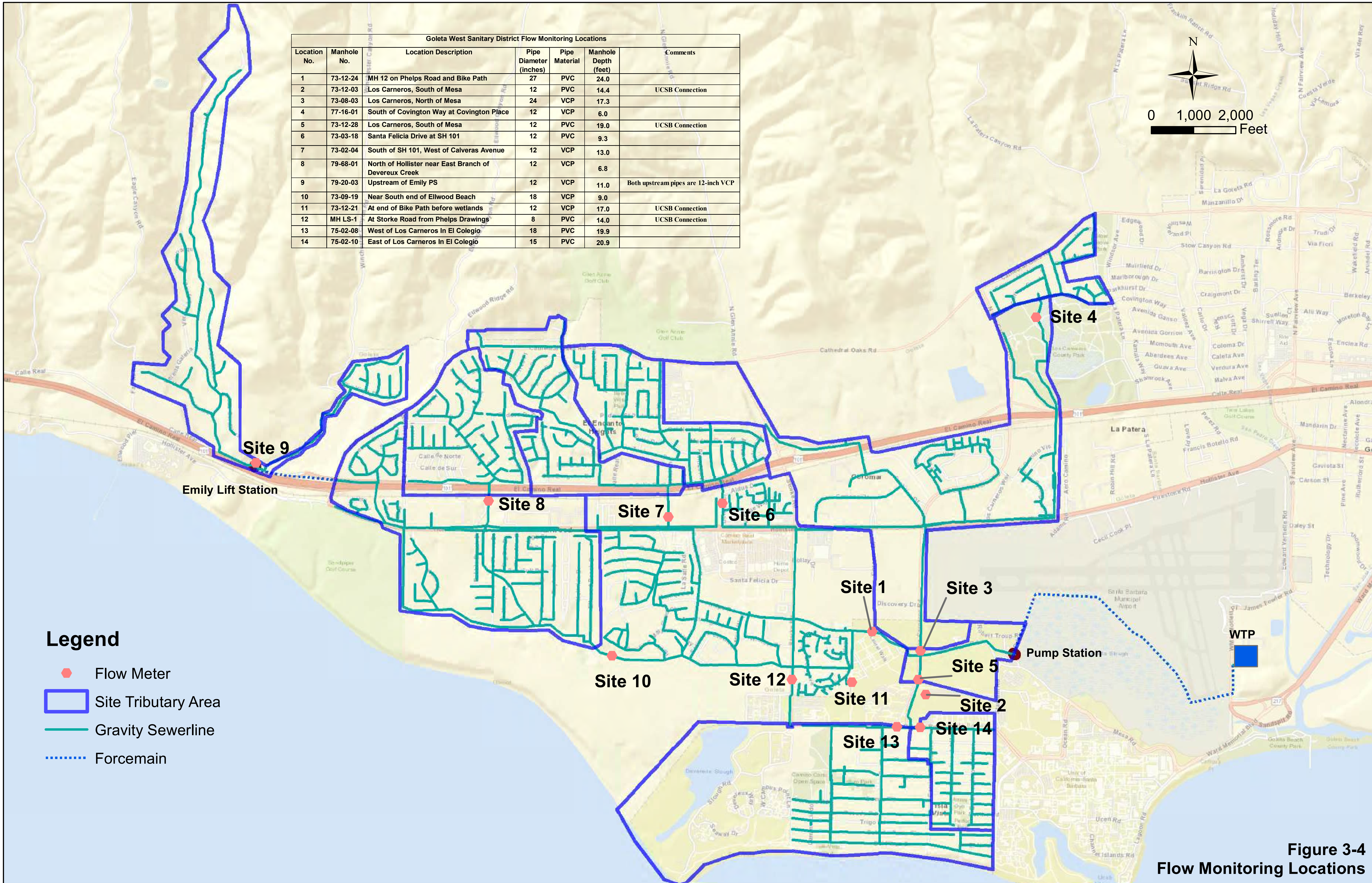

Figure 3-4
Flow Monitoring Locations

Diurnal Curves

The flow monitoring data was used to determine diurnal curves for average dry weather flows (ADWF). The dry weather diurnal flow patterns were unitized by dividing the flow for each time step by the average flow for the monitoring period. Flow monitoring sites 4, 6, 7, and 8 were used to determine the typical flow pattern for residential units, and sites 13 and 14 were used to determine the specific pattern for apartments. There were no sites which isolated commercial or industrial flow, so previously established diurnal pattern in the 2007 Wastewater Master Plan Report were used. A normalized diurnal flow pattern was developed for residential and apartments land use category. Figure 3-5 shows the diurnal flow patterns for residential and Figure 3-6 shows the diurnal flow patterns for apartments.

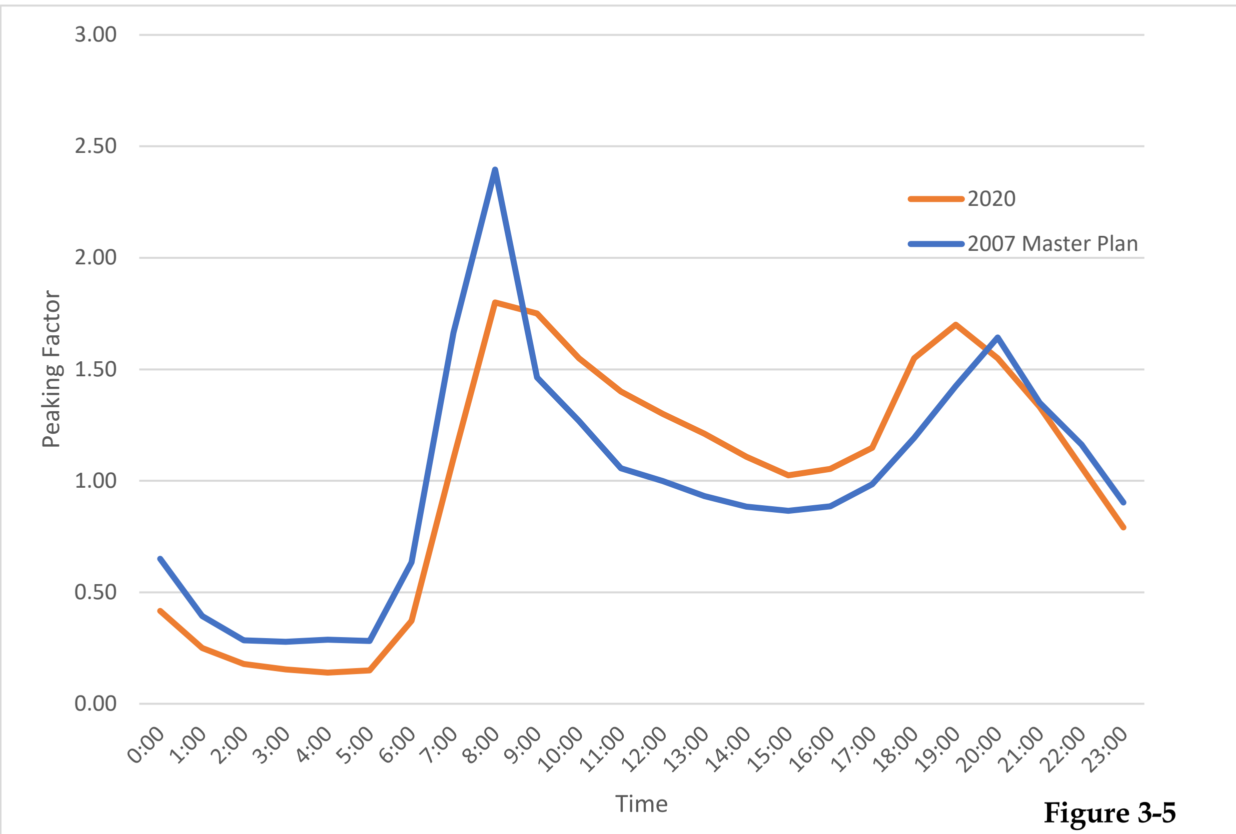

Figure 3-5

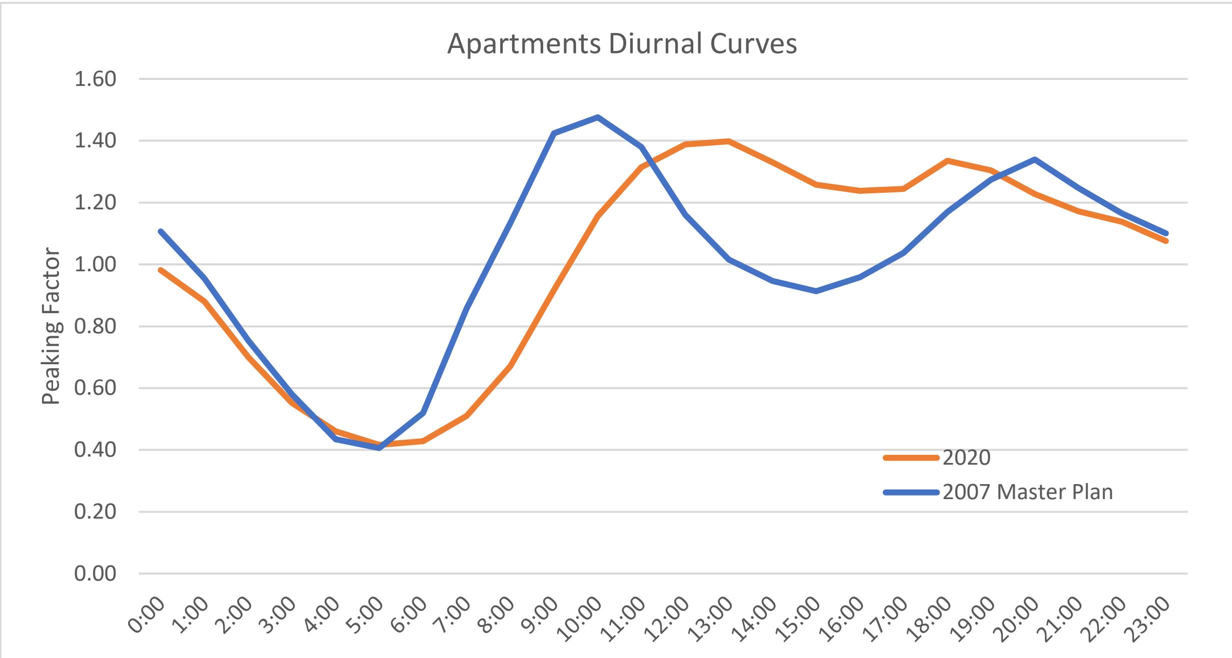

Figure 3-6

Based on the 2020 flow monitoring period the peak flow is lower than the peak flow that was established in 2007 Wastewater Master Plan Report and that might be attributed to the change of habitual use during COVID-19 period where most people are working from home and to water conservation because of lower-than-normal rainfall seasons. The curves show lower peak in the morning and higher peaking factors during the rest of the day compared to the 2007 Wastewater Master Plan Report.

For the system evaluation, diurnal curves that were established in the 2007 Wastewater Master Plan will be used as they represent pre-COVID-19 conditions.

Wet Weather Flows

During the flow monitoring period from of December 27th, 2020 through January 30th, 2021 two significant wet weather events occurred; one on December 27, 2020 and one on January 28, 2021. Table 3-6 summarizes the information for the rainfall events.

Table 3-6 Rainfall Events

Events	Rainfall (in)	Duration (hr)	Peak Intensity (in/hr)
12/27/2020	2.24	19.5	1.01
1/28/2021	3.3	14.75	1.68

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A review of the flow monitoring data during the rainfall events revealed that infiltration and inflow was evidenced in the District's sewer system as flows increased in direct response to rainfall. Usually, the rain percolates through the soil and reach the sewer lines through pipe defects, manhole lids, and illegal connections. Table 3-7 summarizes the average dry weather and peak wet weather flows.

Table 3-7 Dry Weather and Peak Wet Weather Flows

Site Name	Average Dry Weather Flow (mgd)	Peak Wet Weather Flow (mgd)	Ratio of Peak Wet Weather Flow/ Average Dry Weather Flow
Site 01	0.995	3.551	3.57
Site 02(1)	0.055	0.252	4.58
Site 03	0.133	1.151	8.65
Site 04	0.040	0.148	3.69
Site 05(1)	0.060	0.269	4.48
Site 06	0.128	0.547	4.27
Site 07	0.126	0.481	3.82
Site 08	0.105	0.427	4.06
Site 09 East	0.014	0.131	9.39
Site 09 West	0.010	0.065	6.46
Site 10	0.361	1.059	2.93
Site 11(1)(2)	0.000	0.141	-
Site 12(1)	0.021	0.125	5.94
Site 13	0.475	0.996	2.10
Site 14	0.239	0.461	1.93

(1) University of California at Santa Barbara (UCSB) Direct Connections

(2) Site 11 did not show any dry weather flows during the flow monitoring period, but it did show flows during wet weather events

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Figure 3-8 shows, as a sample, the flow response due to rainfall for Site 07. Appendix B contains the wet weather flow response for the remaining sites.

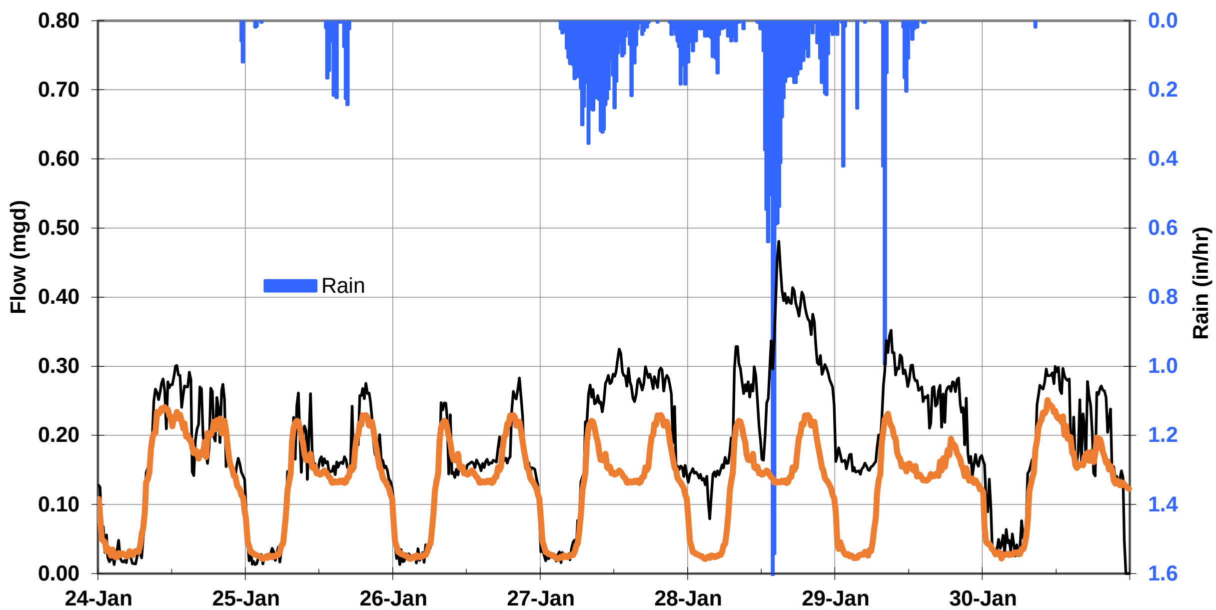

Figure 3-8

7.0 HYDRAULIC MODEL

This section presents the model updates since the last model update in 2019 which includes Phelps Road, Sycamore Walk, and Los Carneros Village development sewer lines within the study area of the Goleta West Sanitary District (GWSD). Figure 3-9 shows the locations of the updates and provides an overview of the study area boundary encompassing the area included within the model.

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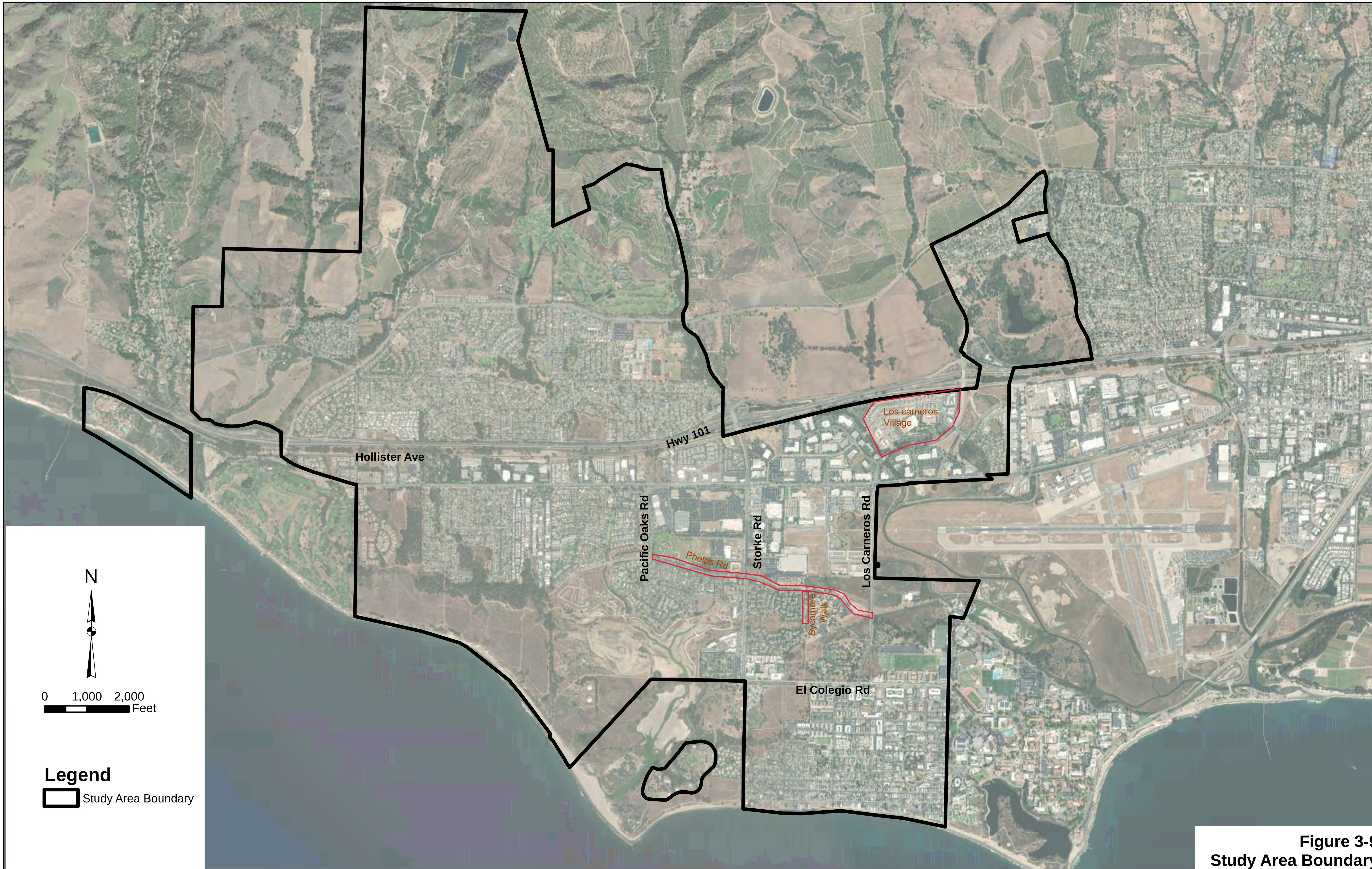

Figure 3-9
Study Area Boundary

Hydraulic Model of Wastewater System

The computerized hydraulic model of the GWSD wastewater collection system was updated using InfoSewer Pro software version 7.6 developed by Innovyze. InfoSewer Pro is an ArcGIS-based computer program for use in the planning, design, analysis, and expansion of sanitary sewer collection systems. The program can effectively be used to model both dry and wet weather flows and determine cost-effective and reliable methods of wastewater collection.

InfoSewer Pro integrates advanced hydraulics and hydrology modeling functionality with the latest generation of ArcGIS and capitalizes on the intelligence and versatility of the geodatabase architecture to perform infrastructure management and planning.

GWSD provided Corwin with GIS files containing pipes and manholes within the system along with associated data such as pipe diameters, pipe material, pipe length, and invert elevations. Additionally, GWSD provided a parcel database listing, land use classifications and the number of equivalent residential units (ERUs) per parcel which was used to generate sewer flows.

Below is a discussion of the various types of modeled facilities.

Pipes

This hydraulic model was updated since the last model update in 2019 to include pipe locations, lengths, diameters and materials for the Phelps Road, Sycamore Walk, and the Los Carneros Village development as summarized in Table 3-8. Data was imported to the model from the GWSD GIS system. For all new pipes, a typical Manning's n value of 0.013 was assumed. Appendix A shows the elevation pipe profiles for the new updates.

It is worth noting that Mesa Road project and other new projects since the 2007 Wastewater Master Plan were included in the 2019 model update prepared by others.

Table 3-8 Information Summary of the New Updates

Location	Diameter (in)	Length (ft)	Material
Phelps Road	15	2307	PVC
	18	1429	PVC
	27	1546	PVC
	27	288	CCFRPM
Sycamore Walk	21	871	PVC
Los Carneros Village	8	7980	PVC
UCSB Connection at Storke Road	8	15	PVC

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Table 3-9 inventories the quantity of pipes within GWSD based upon diameter and material. In the model, all the sewer lines were included instead of only the larger diameter trunk sewers.

Table 3-9 Inventory of Pipe Materials and Diameters within GWSD

Diameter (in)	Length of Pipe (LF)								
	Pipe Materials								
	ACP	CCFRPM	CIP	DIP	PVC	STL	VCP	Grand Total	% of Total
6			82		3,272	468	54,857	58,678	16%
8	887			336	51,102		140,389	192,714	54%
10			103		1,767		20,073	21,943	6%
12					12,255		24,027	36,282	10%
15					8,614		7,037	15,652	4%
18					2,490		7,975	10,465	3%
20					1,504			1,504	0.4%
21					871			871	0.2%
24	284			8,117	40		6,348	14,790	4%
27		288			1,546			1,834	1%
42		2,650						2,650	1%
Grand Total	1,171	2,650	185	8,453	83,750	468	260,706	357,383	
% of Total	0.3%	0.7%	0.1%	2.4%	23.4%	0.1%	72.9%		

Manholes

Manhole locations, depths and invert elevations for the new sewer lines were provided by GWSD and imported into the model.

The manhole numbering was taken from the GIS files provided by GWSD. The numbering is in the form XX-XX-XX.

Connectivity

Since GIS files are not typically set up with pipe-node connectivity in mind, a check was performed to establish the correct model connectivity. InfoSewer Pro allows connectivity to be traced onscreen. When breaks in connectivity were discovered, the model was checked against the GWSD Collection System GIS and adjustments were made to ensure proper pipe connections.

Pumps

The Goleta West sewer system has a pump station and a lift station. The pump station transports water from GWSD to the Goleta Sanitary District (GSD) treatment plant. The lift station transports water from the Embarcadero Municipal Improvement District and Winchester Canyon Development to the main gravity sewer trunk. The locations of the pump station and lift station are shown on Figure 3-10 and general information about the stations is listed in Table 3-10.

Table 3-10 GWSD Pump Station Information

Pump Station	*No. of Pumps*	*Manufacturer and Model No.*	*Motor Data (H.P @ RPM)*	*Rated Pump Capacity (gpm @ TDH)*
PS #1	2	Vaughan-PE6W8CS, 11.5 Imp	75 @ 1750	2100 @ 86 ft
	1	S & L-8D5	75 @ 1200	1500 @ 80 ft
	1	Sulzer-XFP200J-CH2-PE630/4-FM	85.68 @ 1785	3000 @ 70 ft
Lift Station (Emily)	2 1	S & L 6D5 Fairbanks Morse 4” 54x3K	75 @ 1180 30 @ 1775	1500 @ 120 ft 600 @ 101 ft

Existing Flows Update

There are two new developments currently under-construction; one located at the southwest corner of S. Glenn Annie Road and Village Way; and one located at Cortona Drive. Table 3-11 summarizes the number of ERUs and the corresponding flows.

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Table 3-11 Additional Existing Flows					
Location	**ERUs**	**Land Use**	**Flow Factor (gpd)**	**Flow (gpm)**	**Loading Manhole**
Southwest Corner of Glenn Annie Rd and Village Way	27	Apartments	160	3.00	73-03-32
Cortona Drive	176	Apartments	160	19.55	73-15-15

Large Water Users

GWSD provided a list of large water users, a total of 39, with average daily water demand greater than 3500 HCF. All these users were checked against the model for proper loading to manholes. Table 3-12 lists the large users with average daily water demand greater than 8,000 HCF. Usually, 60 – 85 percent of the per capita water consumption returns to sewers as a flow. In this case, these flows were estimated by multiplying water demands with a ratio of 0.70.

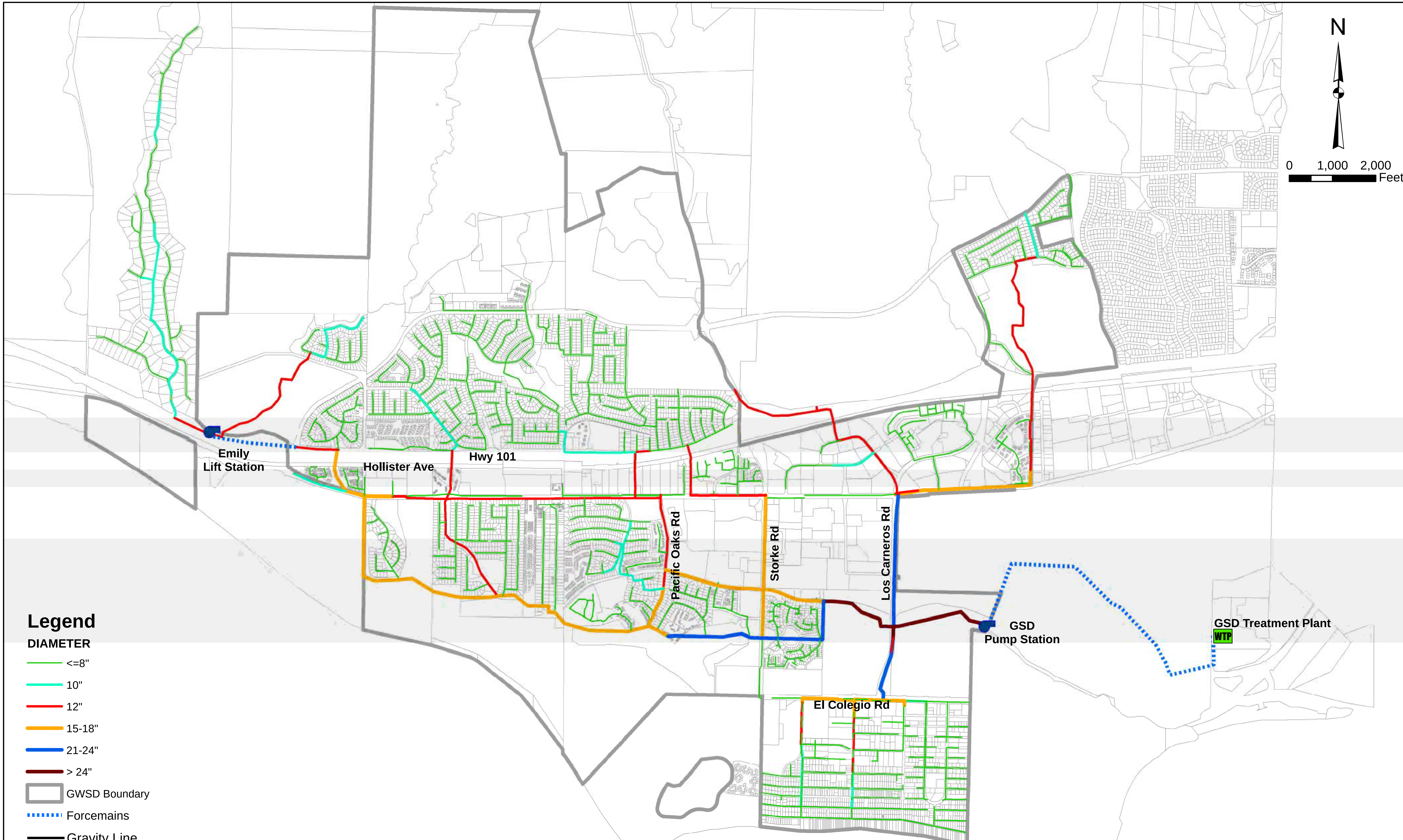

Figure 3-10
Pipe Diameters

Table 3-12 Large Users within GWSD

Assessor's Parcel Number (APN)	Address	Owner	Land Use Type	2019 Average Daily Water Billing Demand (HCF)	Estimated Sewer Flows (gpm)	Model MH ID
073-120-014	S LOS CARNEROS RD	UCSB	INSTL	74,200	47.89	73-12-03
079-200-012	HOLLISTER AVE	BACARA RITZ CARLTON SB	COMM	42,850	42.69	79-21-38
073-120-013	6750 EL COLEGIO RD	UCSB-HOUSE	INSTL	16,018	15.96	73-12-28
073-120-010	6840 EL COLEGIO RD	UCSB-HOUSE/RES SVC/FRAN TORRES	MFR	15,158	15.10	73-12-21
079-210-058	7465 HOLLISTER AVE	RANCHO MOBILE HOMES INC	MFR	9,423	12.07	79-55-14
075-020-038	6689 EL COLEGIO RD	HIP GARDEN CT LP	MFR	9,192	9.16	75-02-13
073-120-010	6850 EL COLEGIO RD	REGENTS OF THE UNIVERSITY OF CALIFORNIA	MFR	8,900	8.87	75-01-18
079-121-008	30 WINCHESTER CYN RD	RDPH PROPERTIES INC.	MFR	8,786	8.75	79-12-11

Collection System Analysis

Scenarios

The model was run using future scenarios outlined in the report "Land Use Survey / Wastewater Generation Projections Study 2020" prepared by TW PLANNING & DEVELOPMENT, LLC. Scenarios evaluated included existing, ten-year, and buildout. The following paragraphs explain the basis for each scenario and Figure 3-11 shows the study area color-coded by parcels contributing flows within each scenario.

Existing – The existing scenario includes flows based on ERUs by parcels and land use type as provided by GWSD.

Ten-year – The flows for this scenario are based on the development projections outlined in the TW PLANNING & DEVELOPMENT report, which is based on communication with GWSD, review of planning documents, and requests for new connections.

Buildout The flows for this scenario are based on the buildout analysis described in the TW PLANNING & DEVELOPMENT report, which is based on vacant or unconnected parcels located with GWSD boundary, review of parcel assignments, rezoning, and general plan amendments.

The flows for these scenarios were calculated based on the number of ERUs by parcel multiplied by the unit flow rate associated with its land use type.

All scenarios included pipeline improvements since the 2007 Wastewater Master Plan such as Hollister Avenue Interceptor, Phelps Road Interceptor, Mesa Road trunk sewer, and other smaller pipeline improvements.

Future flows for each scenario were developed based upon parcel numbers, land use type and the expected increase in ERUs given in the TW PLANNING & DEVELOPMENT, LLC report. These flows were assigned, into the model, at the manhole closest to each identified parcel. Table 3-13 shows the total flow and incremental flow for each scenario.

Table 3-13
Total Flow and Incremental Flow Modeled by Scenario

Scenario	*Total Flow (mgd)*	*Incremental Flow (mgd)*
Existing	2.48	--
Ten Year	2.59	0.11
Ultimate Build-Out	2.64	0.05

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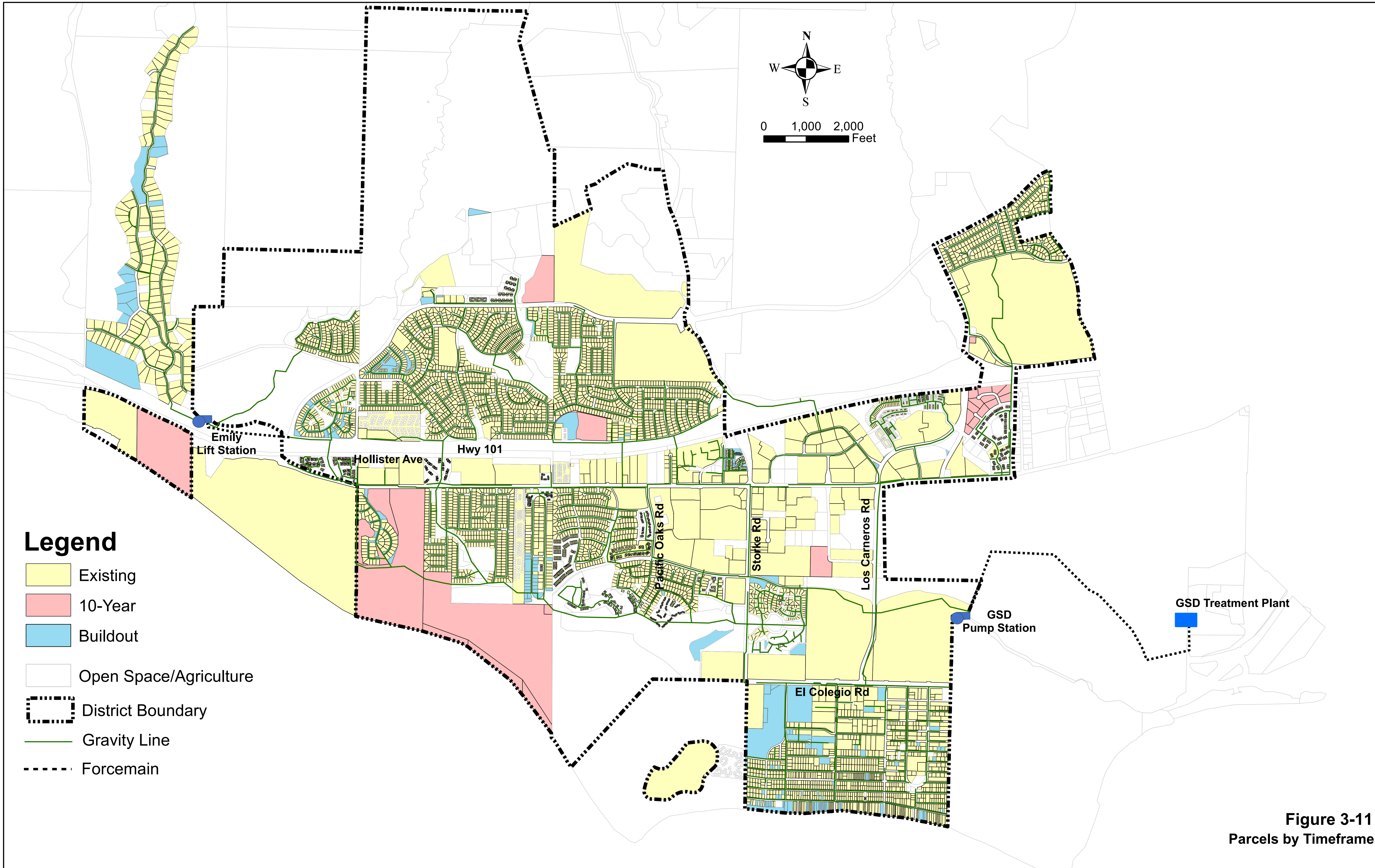

Figure 3-11
Parcels by Timeframe

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Analysis Results

Gravity Sewers

The hydraulic model can perform flow routing using either the steady state with a peaking curve or an extended period simulation (EPS) with flow diurnal curves. Since diurnal curves were developed by major land use type for 24-hour period, it was more appropriate to use EPS method for flow routing to analyze the system.

The analysis was performed by running an EPS for each scenario. The simulation was run for 24 hours with calculations made every 15 minutes. To determine pipe deficiencies, the maximum ratio of water depth to pipe diameter (d/D) in each pipe during the simulation was evaluated. GWSD has defined a pipe as not meeting its design capacity standards if d/D is greater than 0.5 for the peak dry weather flows.

Figures 3-12 through 3-14 show pipes exceeding the design criteria for each modeled scenario. The figures have been color-coded so that pipes which do not meet GWSD design capacity standards for the various future scenarios are shown larger and in orange for d/D values between 0.5 and 0.75 and in red for pipes with d/D between 0.75 and 1.0. Pipes approaching design capacity, with d/D values between 0.4 and 0.5, are shown in blue and pipes with ample capacity are in green.

Key findings include:

1. The 27-inch diameter pipeline in Mesa Road west of S. Los Carneros Road connects to an existing structure box that becomes a physical constraint where other major pipelines connect. This is a brand-new line with correct diameter and the slope was determined based on the bottom elevation of the existing manhole where it was connected to an existing stub. The d/D ratio is 0.70 under existing conditions and 0.72 under buildout conditions which exceeds the criteria d/D of 0.50. However, the crown of the pipe is 12 feet deep below the ground surface and hydraulically, there should be no concerns about overflows because the overall hydraulic slope will push the flow through easily. Additionally, there is a Smart Cover installed on Mesa Road only a few sections above the structure box and no surcharging has been detected at that location.

2. The 6-inch diameter pipeline in Abrego Road east of Camino Del Sur has a d/D of 0.5109 under existing conditions and d/D of 0.5113 under buildout conditions which is marginally exceeding the d/D criteria of 0.50. This pipeline connects to a drop manhole and downstream pipe invert should be field verified.

3. The 8-inch diameter pipeline in Calle Real east of Mendocino Drive has a d/D of 0.5046 under both 10-year and buildout conditions which is marginally exceeding the d/D criteria of 0.50.

4. The 8-inch diameter pipeline in Willow Springs Lane has a d/D of 0.5439 under both 10-year and buildout conditions which is exceeding the d/D criteria of 0.50.

5. The 15-inch diameter pipeline in an easement east of the south end of Mathilda Drive has a d/D of 0.5034 under buildout conditions which is marginally exceeding the d/D criteria of 0.50.

6. It is recommended that the GWSD institute an RDI/I investigation as discussed in Appendix A for areas identified as having potential concerns as well as a representative sample of service connections in those areas.

Force Mains and Pump Stations

The force mains in the GWSD system include parallel 18-inch and 24-inch diameter pipes which convey flow to the GSD wastewater treatment plant and two parallel 8-inch force mains which convey water from the Emily Lift Station to the nearest gravity sewer trunk. The force mains and pump stations were evaluated for the Buildout scenario as it represents the highest flow.

Typically, wastewater is conveyed through only one of the force mains at a time with the alternate used when maintenance is needed. Within the model, the force mains are represented as a single line of the smaller diameter main to ensure that this flow can be conveyed at the proper velocity. Table 3-21 shows the velocity at which flow travels through the force mains. Typically, velocities between 8 to 10 ft/s or higher are considered deficient. As indicated in Table 3-14, the modeled velocities for the Buildout were well below the maximum.

Table 3-14
Velocity of Water in Force Mains

Force Main	*Modeled Diameter (in)*	*Velocity (ft/s)*
To GSD WWTP	18	4.5
From Emily Lift Station	8	1.3

The force mains from the main pump station should be further investigated by completing a condition assessment and continue to provide routine maintenance upgrades and replacement as needed.

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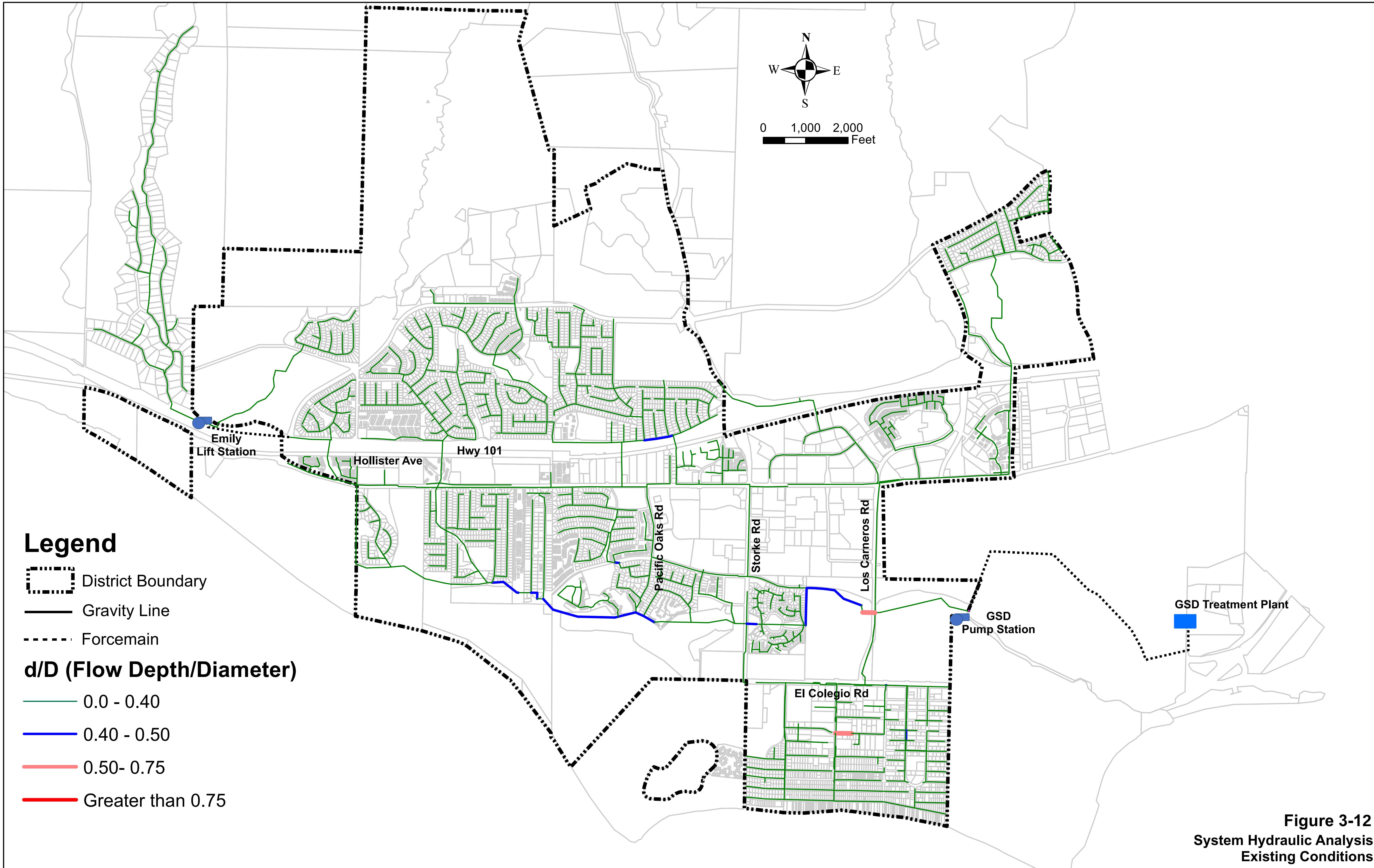

Figure 3-12
System Hydraulic Analysis
Existing Conditions

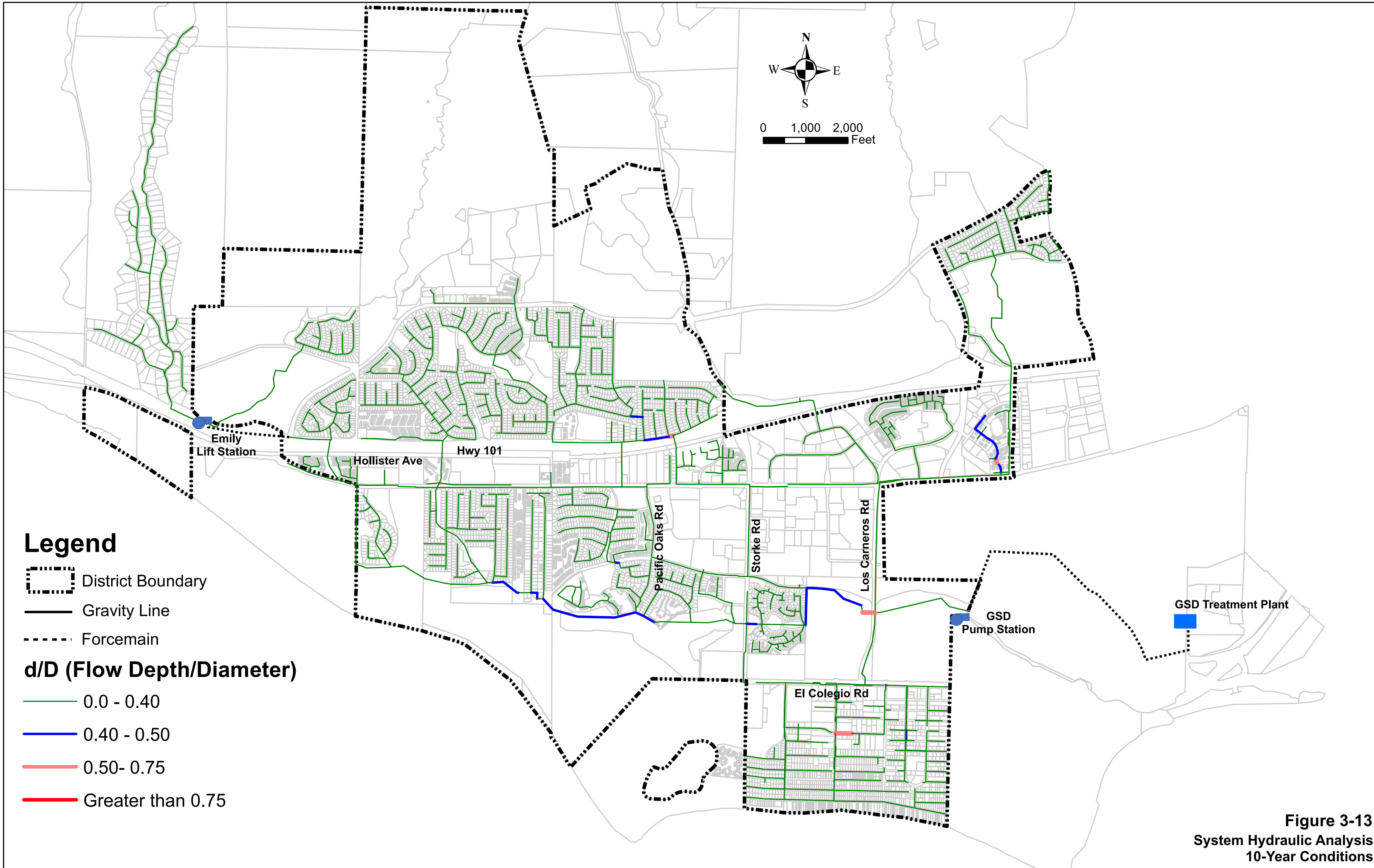

Figure 3-13

System Hydraulic Analysis
10-Year Conditions

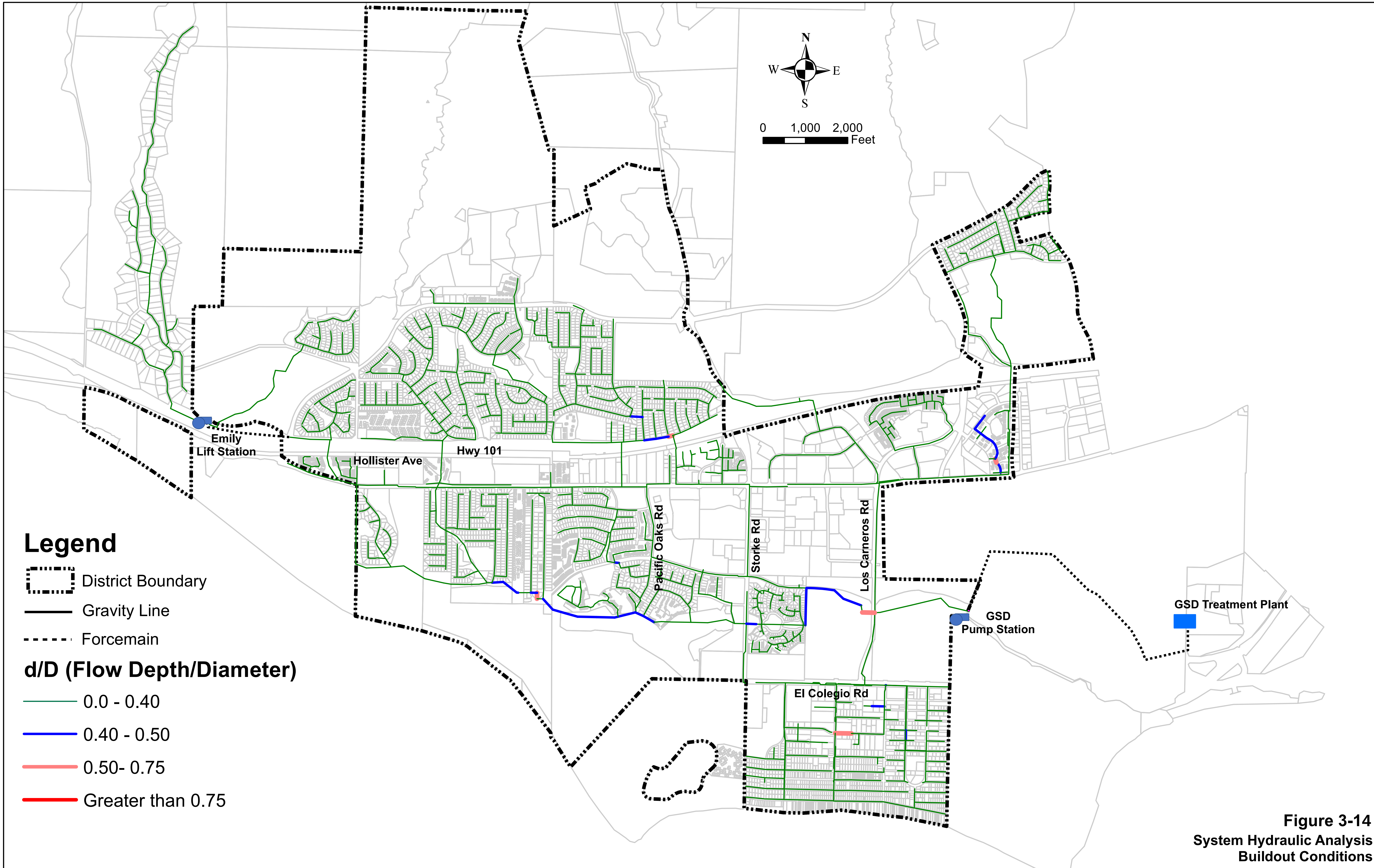

Figure 3-14
System Hydraulic Analysis
Buildout Conditions

For the pump station and lift station, the peak flow from the Buildout scenario was compared to the firm capacity of each station. The firm capacity is how much flow the station can convey assuming the largest pump is offline. Table 3-15 shows that both Pump Station #1 and Emily Lift Station have sufficient capacity to handle future flows. Based on the projected velocities and peak flows, no improvements are needed to the existing force mains and pump stations to accommodate all the future scenarios.

Table 3-15
Pump Station and Lift Station Capacity

Pump Station	*Firm Capacity (gpm)*	*Peak Flow (gpm)*
PS #1	6,300	2,950
Emily Lift Station	1,500	80

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CHAPTER 4 – GWSD CAPITAL IMPROVEMENT PLAN NEEDS

The recommended improvements for the Goleta West Sanitary District are based upon the results of the sewer system analysis. The sections of pipes not meeting design criteria presented in Figure 4-1 were combined into capital improvement projects. In cases where a small section of pipe was between sections not meeting design criteria, this length was also included within the project. The pipes not meeting design criteria were then analyzed to determine the replacement diameter necessary to achieve a d/D ratio of less than 0.5.

Table 4-1 shows the unit capital costs for pipe replacement that were used to determine the project costs. The unit capital costs include construction cost plus an assumed 40 percent for legal, administration and contingencies. The unit capital costs were obtained from the Goleta Sanitary District's 2000 Sewer Collection System Master Plan and escalated to current dollars using the Engineering News Record Construction Cost Index.

Table 4-1
Unit Capital Costs for Pipe Replacement

Diameter (in)	*Unit Capital Cost ($/ft, up to 15 ft deep)*
8	500
10	525
12	550
15	650
18	680
21	700
24	750
27	800
30	850
33	900
36	950
39	1020
42	1070
45	1100
48	1135
54	1185

Table 4-2 shows the recommended capital improvement projects, which correspond to the project numbers shown on Figure 4-1. Table 4-2 shows the diameters of the current~~ly~~ pipes not meeting design criteria, and replacement diameters needed. The estimated project cost shown is based on replacement diameters.

The recommendations in Table 4-2 are for replacing pipes based solely on hydraulic capacity without taking into consideration the physical condition of the pipes.

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The Comments field of Table 4-2 describes the reason why pipe segments have exceeded the design criteria and the Priority field ranks the projects based on exceeding the design criteria. A rating of one signifies the highest priority.

Before the projects in Table 4-2 are undertaken, further verification of the pipes not meeting design criteria should be performed. First, inverts should be field verified. Many of the issues are due to flat slopes, so if pipes are steeper than modeled, replacement may not be necessary. The second consideration is that even if the pipes do not meet design criteria, they may be deep enough (more than 5 feet) that surcharging is acceptable, and replacement is unwarranted. Third, further evaluation of wet weather flows should be undertaken to determine the magnitude of the I/I component and assess the pipe capacity.

1.0 INTRODUCTION

Based on the data presented above, there are future improvements required for the GWSD.

2.0 CURRENT PROJECTS

Collection System Improvements

Future costs for collection system improvements should include regular inspection and maintenance costs estimated in 2020 to be approximately $500,000 per year as well as costs for additional potential pipeline and manhole upgrades at an assumed rate of $300,000 per year. The District should be upgrading all 6-inch pipelines in Isla Vista to 8 inch over the next 10-20 years. These lines are the oldest in the District and the GWSD standards have required 8-inch diameter minimum sewers for years. The constraints of 6-inch pipe make inspection and maintenance difficult.

The following pipe segments shown in Figure 4-1 and Table 4-2 are only marginally above District Standards for d/D ratio and may be considered for upgrade:

1. The 6-inch diameter pipeline in Abrego Road east of Camino Del Sur.
2. The 8-inch diameter pipeline in Calle Real east of Mendocino.
3. The 8-inch diameter pipeline in Willow Springs Lane.
4. The 15-inch diameter pipeline in an easement east of the south end of Mathilda Drive.

The District should also institute an RDI/I investigation as discussed in Appendix A for areas identified as having potential concerns as well as a representative sample of service connections in those areas.

1. Smoke testing should target approximately 8,000 feet of sewer pipe per day. Rough cost is $2.00 per foot of pipe.

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2. Mini-Basin focused sewer flow monitoring. Rough estimate is 2 month study at $3,500.00 per meter per month. This work would be focused on Basins 3, 5, 9E and 11 (for locations see Figure 3-4)

3. Night time reconnaissance work in Basins 3, 5, 9E and 11 at cost of $13,000 per night for 3 nights. This work will need to be planned for a large rainfall event.

    a. Investigate and determine point sources of inflow during low flow

    b. Determine areas and/or pipe reaches responsible for high levels of infiltration

4. The District should also consider doing some focused CCTV inspection of reaches within Basins 3, 5, 9E and 11 to verify condition of the piping that may contribute to infiltration.

The force mains should be further investigated due to limited access and difficulty to inspect by completing a condition assessment. The force main investigation should begin with a field assessment of the best approach to investigate their condition. There are various new technologies that may be considered. Typically, you would review background information and perform preliminary site investigations (soil corrosivity studies and corrosion protection system evaluations) in order to develop a comprehensive and detailed Condition Assessment Work Plan. The preliminary planning work and site investigations can be completed for approximately $30,000-$60,000 depending on the scope of work and available information.

The District should continue to provide routine maintenance upgrades and replacement as needed.

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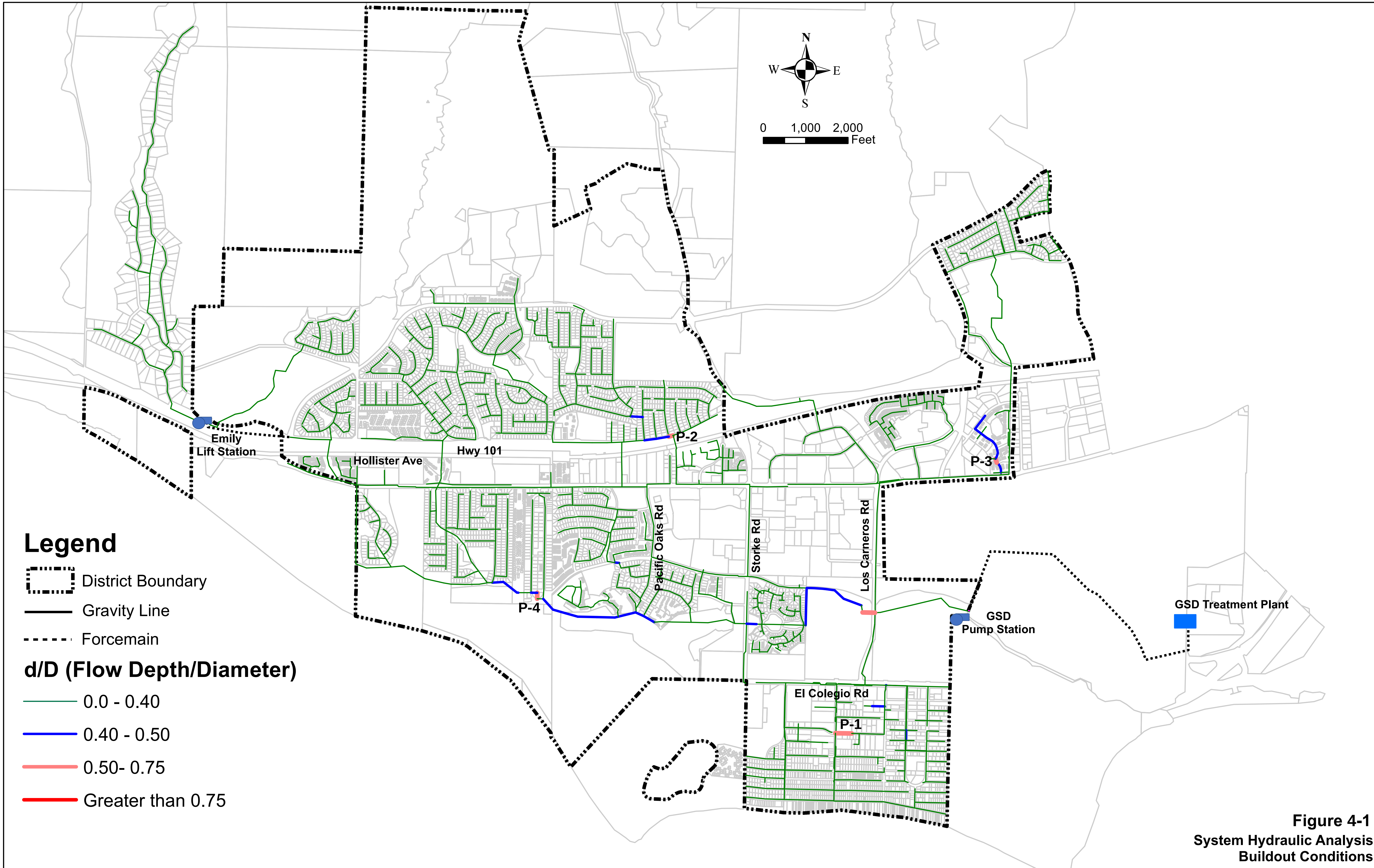

Figure 4-1
System Hydraulic Analysis
Buildout Conditions

Table 4-2 Recommended Hydraulic Capital Projects								
Project	***Location***	***Existing Diameter***	***Replacement Diameter***	***Length (ft)***	***Approx. Cost***	***d/D***	***Priority***	***Comments***
1	Pipeline in Abrego Road east of Camino Del Sur	6	8	385	$200,000	0.51	2	Diameter
2	Pipeline in Calle Road east of Mendocino Drive	8	10	97	$55,000	0.51	2	Diameter
3	Pipeline in Willow Springs Lane	8	10	94	$52,000	0.54	1	Diameter/Slope
4	Pipeline in easement east of south end of Matilda Drive	15	18	140	$100,000	0.51	2	Diameter
			Total	**716**	**$407,000**			

Wastewater Treatment

GWSD will need to provide 1.5 million per year for upgrades to the Goleta Sanitary District (GSD) WWTP for the next 5 years. The cost for these upgrades is included in Table 4-3 below.

Table 4-3 shows the Capital Costs and Approximate Expenditure Expectancy for continuing O&M or new improvements.

Table 4-3 Current Estimated Capital Costs and Approximate Expenditure Expectancy		
Type of Work	***Estimated Cost***	***When Needed***
Pipeline and Manholes	$ 8,000,000*	Next 10 Years
Structural/Architectural Facilities Upgrade	$ 9,000,000	Next 5 Years
Force Main Assessment & Pump Replacement	$ 700,000	Next 5 Years
Further RDI/I Study	$ 800,000	Next 5 Years
Electrical	$ 250,000	Next 5 Years
Wastewater Plant	$7,500,000	Next 5 Years
Vehicles and Emergency Generators	$ 2,283,000	Next 10 Years
Office & Miscellaneous Equip.	$ 193,000	Next 5 Years
TOTAL	$20,726,000	Next 5 to 10 Years

- Cost includes upgrades of Isla Vista 6-inch pipes to 8 inch.

Capital Facilities Engineering and Financial Projects

The next chapter discusses additional project needs for the GWSD.

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CHAPTER 5 – UPDATE CAPITAL FACILITIES AND MANAGEMENT PLAN

Pipelines

Pipelines should continue to be periodically monitored and maintained according to the GWSD standard scheduling practice.

Force Mains

The force mains appear to be in good condition but should be monitored and maintained. It is recommended that a condition assessment project be initiated to further assess their condition.

District Buildings

The District is currently in the process of upgrading their facilities and this project is expected to be completed in the next 5 years.

It is estimated that all the above improvements could be handled for approximately $9 million dollars.

Vehicles and Other Depreciable Assets

The Tables 5-1 to 5-3 below contain a complete listing of the recommended replacement schedules for all vehicle and other depreciable District assets.

Table 5-1 Vehicle and Equipment Replacement Schedule						
Vehicle	Date Purchased	Initial Value	Added Features (After Delivery and Value)	Current Mileage or Condition	Replacement Value	Projected Replacement (5 to 10 years)
2018 Ford Fusion	Dec-17	$26,765.23		56438	$30,000.00	2028
2015 Chevy Colorado	Aug-15	$20,959.40	Light Bar, Rack, Radio - ~$3500.00	33647	$30,000.00	2025
2015 Chevy 3500HD Flatbed	Nov-18	$51,276.06	Flatbed, Crain, Lights, Hydraulics	8951	$60,000.00	2025
2020 Chevy 2500HD	Oct-19	$55,745.33	Lights - $4000.00	8208	$60,000.00	2030
2008 Toyota Prius	Mar-08	$23,770.86		43341	$25,000.00	2025
2021 Elgin RegenX	Aug-20	$270,747.26		3790	$275,000.00	2030
2012 Vactor 2100+	Apr-11	$349,870.50		19081	$450,000.00	2025
1969 GMC Water Truck	Jun-69	$13,756.00	Water Tanks & Valving	12506	$150,000.00	2022
1991 Case Tractor	Nov-90	$44,979.00		2627.8 hrs	$150,000.00	2025
2017 Ford F-450 CCTV Van	Aug-17	$254,971.02		2272	$275,000.00	2030
2012 Elgin Crosswind	Feb-12	$250,000		40808	$275,000.00	2025
Gorman-Rupp 4" Trash Pump	Apr-08	$34,240			$60,000.00	2022
Onan Cummins Emergency Generator	May-10	$12,000		115 hrs	$35,000.00	2025
Main Emergency Generator	June-82	$225,000			$350,000.00	2025
Easement Machine	May-20	$57,192		5 hrs	$58,000.00	2028
Subtotal		$1,691,273			$2,283,000	

Table 5-2 Office Equipment					
Office Equipment	***Date Purchased***	***Initial Value***	***Replacement Value as percentage of Initial Value***	***Replacement Value (applied 60-100% of Initial value to obtain Replacement value)***	***Date of Projected Replacement***
Kyocera 3252CI Copier	7/2018	$ 8,203	100%	$ 15,000	2024
Kyocera KMP Copier	8/2017	$ 3,000	100%	$ 5,000	2024
Dell Work Stations (5)	Various	$10,000	80%	$ 15,000	2024
Dell File Server (used as terminal server)	6/2001	$ 15,000	80%	$ 20,000	2024
Subtotal		$ 36,203		$ 55,000	

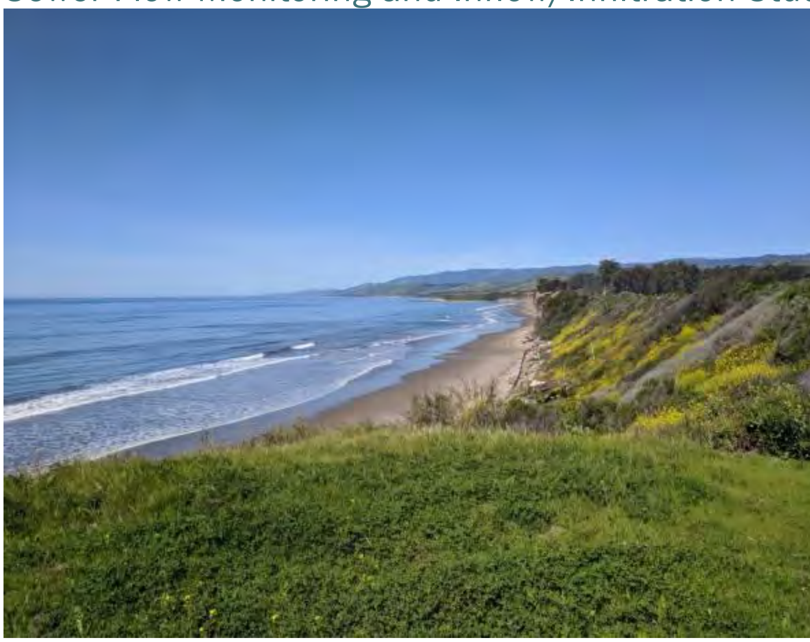
Table 5-3 Miscellaneous Equipment				
Miscellaneous Equipment	***Date Purchased***	***Initial Value***	***Replacement Value (Inflated Initial Value by 30% to Obtain Replacement Value***	***Date of Projected Replacement***
Miscellaneous < $4,000	Various	$ 50,000	$ 65,000	2024-2025
Office furniture*	Various	$ 15,000	$ 59,500	2024
Mobile Radios	Various	$ 10,000	$ 13,000	2025
Subtotal		$ 75,000	$ 137,500	

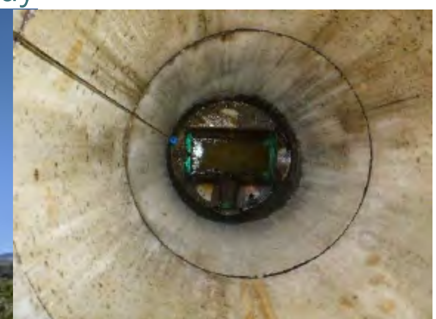
*Includes $40,000 for new facilities furniture

APPENDIX A – V&A FLOW MONITORING REPORT

Goleta West Sanitary District

Sewer Flow Monitoring and Inflow/Infiltration Study





Prepared for: The Corwin Group
7334 W. Portals Avenue
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Report Date: March 2021

Prepared by: V&A consulting engineers

V&A Project No. 20-0264

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Tables

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Abbreviations and Acronyms

Abbreviations/Acronyms	Definition
ADWF	Average Dry Weather Flow
AVG.	Average
CCTV	Closed-Circuit Television
CDEC	California Data Exchange Center
CIP	Capital Improvement Plan
CO	Carbon Monoxide
CWOP	Citizen Weather Observing Program
DIA.	Diameter
d/D	Depth/Diameter Ratio
FT.	Feet
FM	Flow Monitor
GPD	Gallons per Day
GPM	Gallons per Minute
GWI	Groundwater Infiltration
H2S	Hydrogen Sulfide
IN.	Inch
I/I	Inflow and Infiltration
IDM	Inch-Diameter Mile
IDW	Inverse Distance Weighting
LEL	Lower Explosive Limit
MAX.	Maximum
METRO.	Metro Wastewater Joint Powers Authority
MGD	Million Gallons per Day
MIN.	Minimum
NOAA	National Oceanic and Atmospheric Administration
N/A	Not applicable
PF	Peaking Factor
PWS	Private Weather Station
Q	Flow Rate
RDI	Rainfall-Dependent Infiltration
RG	Rain Gauge
SIP	Shelter In Place
V&A	V&A Consulting Engineers, Inc.
WEF	Water Environment Federation
WRCC	Western Regional Climate Center

Terms and Definitions

Term	Definition
Average dry weather flow (ADWF)	The average flow rate or pattern from days without noticeable inflow or infiltration response. ADWF usage patterns for weekdays and weekends differ and must be computed separately. ADWF is expressed as a numeric average and may include the influence of normal groundwater infiltration (not related to a rain event).
Basin	Sanitary sewer collection system upstream of a given location (often a flow meter), including all pipelines, inlets, and appurtenances. Also refers to the ground surface area near and enclosed by pipelines. A basin may refer to the entire collection system upstream from a flow meter or exclude separately monitored basins upstream.
Classifiable Rain Event	Rainfall event of sufficient intensity and duration. Somewhat subjective, usually at least 12 hours in duration (for the 24-hour duration) and exceeding the 1-year level, at a minimum.
Depth/diameter (*d/D*) ratio	Depth of water in a pipe as a fraction of the pipe's diameter. A measure of the fullness of the pipe used in the capacity analysis.
Infiltration and inflow	**Infiltration and inflow (I/I)** rates are calculated by subtracting the ADWF flow curve from the instantaneous flow measurements taken during and after a storm event. Flow in excess of the baseline consists of inflow, rainfall-responsive infiltration, and rainfall-dependent infiltration. **Total I/I** is the total sum in gallons of additional flow attributable to a storm event.
Infiltration, groundwater	**Groundwater infiltration (GWI)** is groundwater that enters the collection system through pipe defects. GWI depends on the depth of the groundwater table above the pipelines as well as the percentage of the system that is submerged. The variation of groundwater levels and subsequent groundwater infiltration rates are seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.
Infiltration, rainfall-dependent	**Rainfall-dependent infiltration (RDI)** is similar to groundwater infiltration but occurs as a result of storm water. The storm water percolates into the soil, submerges more of the pipe system, and enters through pipe defects. RDI is the slowest component of storm-related infiltration and inflow, beginning gradually and often lasting 24 hours or longer. The response time depends on the soil permeability and saturation levels.
Inflow	Inflow is defined as water discharged into the sewer system, including private sewer laterals, from direct connections such as downspouts, yard, and area drains, holes in manhole covers, cross-connections from storm drains, or catch basins. Inflow creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Overflows are often attributable to high inflow rates.
Peak Wet Weather Flow	The highest daily flow during and immediately after a significant storm event. Includes sanitary flow, infiltration, and inflow.
Peaking factor (PF)	PF is the ratio of peak measured flow to average dry weather flow. This ratio expresses the degree of fluctuation in flow rate over the monitoring period and is used in the capacity analysis.
Surcharge	When the flow level is higher than the crown of the pipe, then the pipeline is said to be in a **surcharged** condition. The pipeline is surcharged when the *d/D* ratio is greater than 1.0.

Executive Summary

Scope and Purpose

V&A Consulting Engineers (V&A) performed sanitary sewer flow monitoring for Goleta West Sanitary District (District). Flow monitoring was performed for three (3) months from November 4, 2020 to April 23, 2021. Open-channel flow monitoring was performed at 15 sites. There were three general purposes for this study.

1. Establish the baseline sanitary sewer flows at the flow monitoring sites.
2. Measure the peak flow and characteristics of the subject pipes during the monitoring period.
3. Quantify inflow/ infiltration (I/I) at the applicable flow monitoring sites.

Monitoring Sites

The flow monitoring site locations were selected and approved by the District and are listed in Table ES-1, and shown in Figure ES-1.

Table ES-1. List of Flow Monitoring Sites

Monitoring Site	Monitored Pipe	Measured Pipe Diameter (in)	Location
Site 1	West inlet	26.5	758 Mesa Road
Site 2	South inlet	11.75	S Los Carneros Road, corner of ball field near bike path
Site 3	North inlet	24	Bike path northeast of S Los Carneros Road, and Mesa Road
Site 4	Northeast inlet	12	In field south of Covington Way, east of Camino Caseta
Site 5	West inlet	11.75	S Los Carneros Road south of Mesa Road
Site 6	North inlet	11.75	Parking lot of Hollister Village
Site 7	North inlet	11.75	Behind building at 7234 Hollister Avenue
Site 8	North inlet	11.75	Behind apartments on Pebble Beach Drive, in bushes
Site 9 East	Southwest inlet	12	Emily Lift Station on Calle Real
Site 9 West	Southeast inlet	12	Emily Lift Station on Calle Real
Site 10	West inlet	17.75	Dirt path south of Pacific Coast Drive and Ocean Walk Lane
Site 11	West Inlet	12	Off path east of Fireside Lane
Site 12	South inlet	8	Storke Road north of Willowgrove Drive
Site 13	South inlet	17.75	El Colegio Road west of S Los Carneros Road
Site 14	East inlet	14.75	El Colegio Road east of S Los Carneros Road

Figure ES-1. Map of Flow Monitoring Sites – Overall

Rainfall Monitoring

There were approximately 7.55 inches of rainfall observed during the duration of the flow monitoring study. The cumulative precipitation was roughly average for the flow monitoring period, measuring between 74% and 141% of historical averages. There were two rainfall events during the flow monitoring period. Figure ES-2 illustrates the rainfall over the course of the flow monitoring study, noting the larger rainfall events (average of rain gauges shown).

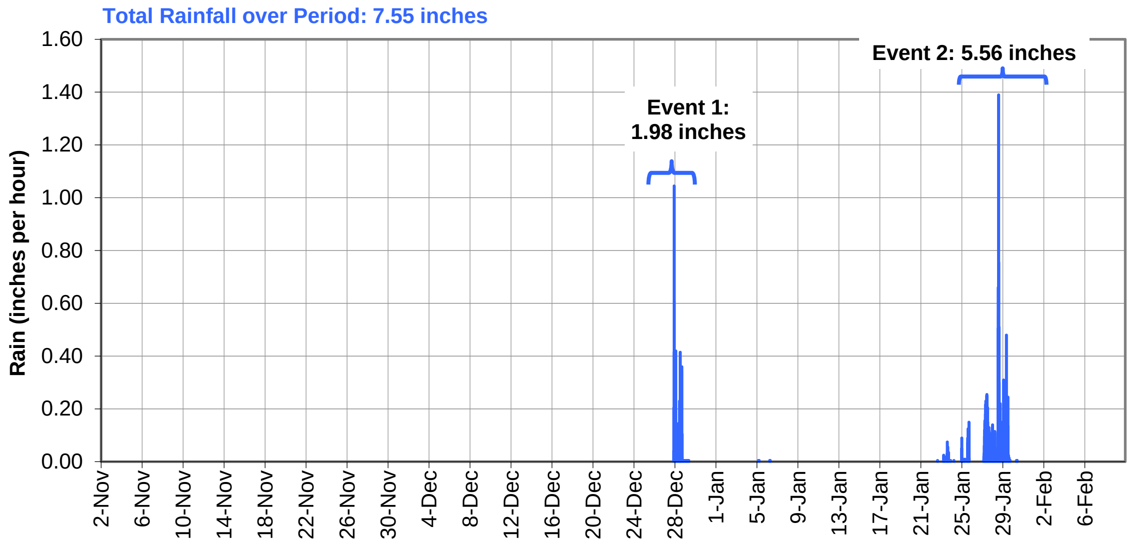


Figure ES-2. Rainfall Over Monitoring Period, Average of 9 Rain Gauges

There was one classifiable rainfall events during the flow monitoring period:

- The December 27 – 29, 2020 event was less than 1-year, 24-hour rainfall event.
- January 28, 2021 ranged between a <1-year, 24-hour and 7-year, 12-hour rainfall event at the nine rain gauges (average: 2.3-year, 12-hour event).
    - This event was utilized as the primary event for I/I analysis.
- The 4-day period from January 27 at midnight to January 29 at midnight, ranged between a 1.5-year and 15-year rainfall event (for 4 days of rainfall).

Peak Measured Flows and Pipeline Capacity Analysis

Peak measured flows and the hydraulic grade line data (flow depths) are important to understanding the capacity limitations of a collection system. The capacity analysis terms used in the text below are defined as follows:

- **Peaking Factor**: Peaking factor is defined as the peak measured flow divided by the average dry weather flow (ADWF). Peaking factors are influenced by many factors, including size and topography of the tributary area, flow attenuation, flow restrictions, and characteristics of I/I entering the collection system. Municipal standards for peaking factor vary agency by agency; the District should refer to jurisdictional standards when evaluating peaking factors[1]. For this study, peaking factors over 5.0 are highlighted YELLOW and over 10 are highlighted in RED.
- **d/D Ratio**: The d/D ratio is the peak measured depth of flow (d) divided by the pipe diameter (D). The d/D ratio for each site was computed based on the maximum depth of flow for the study. Standards for d/D ratio vary from agency to agency, but typically range between d/D ≤ 0.5 and d/D ≤ 0.75. For this study, d/D ratios that exceed 0.50 are highlighted YELLOW. Surcharged sites are highlighted RED.

Table ES-2 summarizes the peak recorded flows, levels, d/D ratios, and peaking factors per site during the flow monitoring period. Capacity analysis data is presented on a site-by-site basis and represents the hydraulic conditions only at the site locations; hydraulic conditions in other areas of the collection system will differ.

Table ES-2. Capacity Analysis Summary

Monitored Site	ADWF (MGD)	Peak Measured Flow (MGD)	Peaking Factor	Pipe Diameter, *D* (IN)	Max Depth, *d* (IN)	*Max d/D* Ratio	Surcharge above pipe crown (FT)
Site 1	1.063	3.55	3.3	26.5	30.29	1.14	0.32
Site 2	0.056	0.25	4.5	11.75	3.98	0.34	n/a
Site 3	0.212	1.15	5.4	24	15.27	0.64	n/a
Site 4	0.045	0.16	3.6	12	3.64	0.30	n/a
Site 5	0.055	0.41	7.5	11.75	10.42	0.89	n/a
Site 6	0.127	0.55	4.3	11.75	3.35	0.29	n/a
Site 7	0.132	0.48	3.6	11.75	3.78	0.32	n/a
Site 8	0.129	0.47	3.7	11.75	2.8	0.24	n/a
Site 9 East	0.018	0.13	7.1	12	3.87	0.32	n/a
Site 9 West	0.012	0.13	11.1	12	2.81	0.23	n/a
Site 10	0.382	1.06	2.8	17.75	10.52	0.59	n/a
Site 11	0.001	0.14	166.0	12	4.37	0.36	n/a

[1] WEF Manual of Practice FD-6 and ASCE Manual No. 62 suggests typical peaking factor ratios range between 3 and 4, with higher values possibly indicative of pronounced I/I flows.

Monitored Site	ADWF (MGD)	Peak Measured Flow (MGD)	Peaking Factor	Pipe Diameter, *D* (IN)	Max Depth, *d* (IN)	*Max d/D* Ratio	Surcharge above pipe crown (FT)
Site 12	0.022	0.21	9.5	8	15.35	1.92	0.61
Site 13	0.520	1.00	1.9	17.75	4.93	0.28	n/a
Site 14	0.265	0.46	1.7	14.75	2.95	0.20	n/a
System	2.100	6.47	3.1	-	-	-	-

The following capacity analysis results are noted:

- **Peak flows**: The peak measured flow was taken from the whole monitoring study, including during the rainfall. The peak flow events at all except 2 sites happened during the January 24 – 30, 2021 rainfall event.
- **Peaking Factors**: Six sites had peaking factors over 5.0. Site 9 West and Site 11 had peaking factors over 10. The peaking factor for Site 11 is skewed high because of its extremely low ADWF.
- **d/D Ratio**: Four sites had d/D ratios that exceeded 0.50 for the whole monitoring period. Sites 1 and 12 surcharged during the study.
- **Site 11**: This line has very little flow, and at times zero flow. Flow data indicates an upstream pump station provides most flow through this site and has a sporadic cycling interval. The only non-pumped flow appeared to occur during the rainfall events, indicating some I/I between the force main discharge and the metering manhole, though the volume of I/I was not significant.

Figure ES-3 shows a schematic diagram of the peak measured flows with peak flow levels.

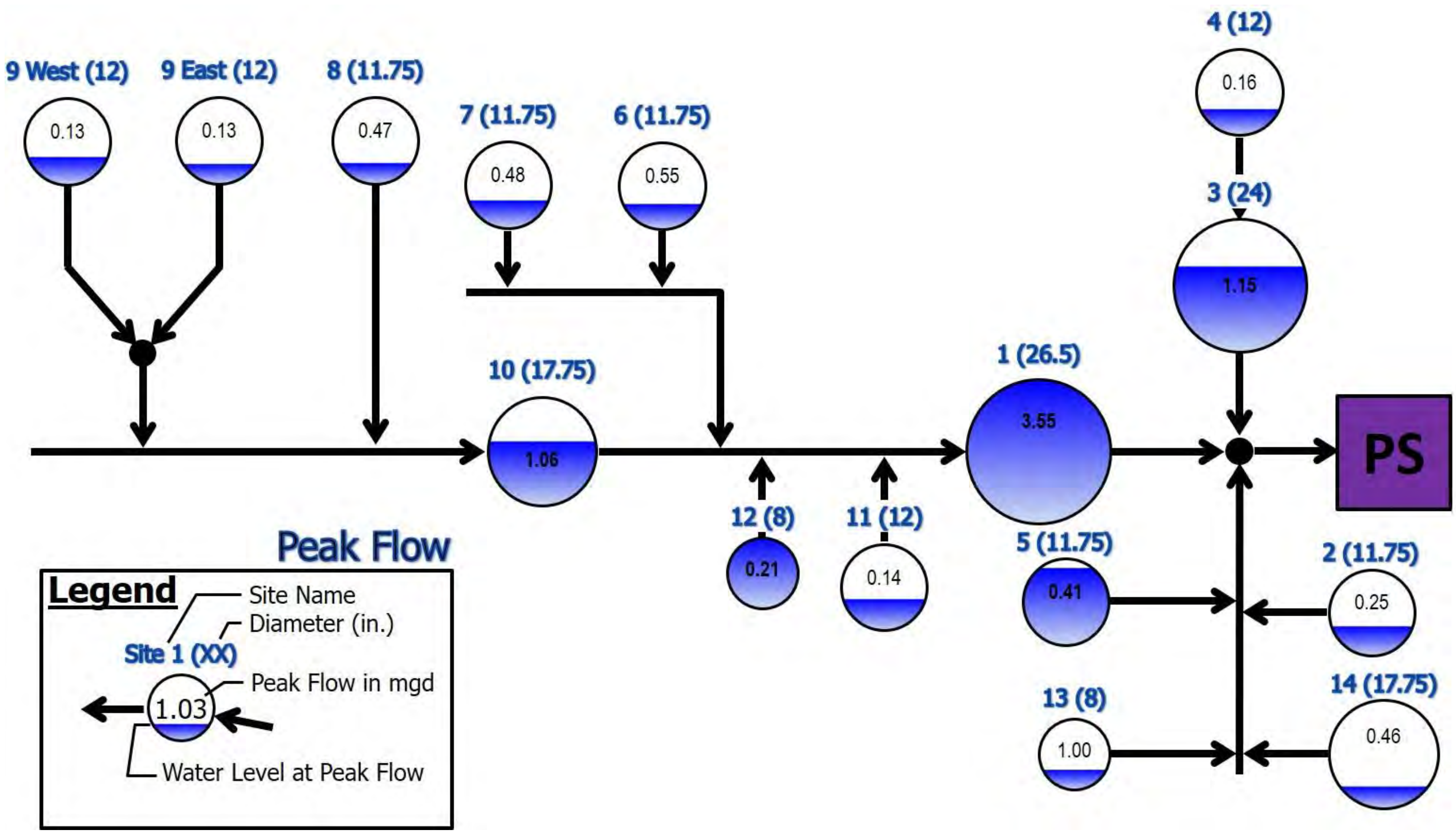


Figure ES-3. Peak Measured Flow (Flow Schematic)

Infiltration and Inflow

I/I analyses are presented on a basin-by-basin basis. I/I results were developed from January 24 - 30, 2021 rainfall event. Table ES-3 summarizes the I/I results for this study; The "Top 3" ranked basins in each metric have been shaded RED. Please refer to Section 2.7 I/I Methods for more information on inflow and infiltration analysis methods and ranking methods. Temperature maps for the ranked inflow, RDI, and Total I/I response metrics are shown in Figure ES-4, Figure ES-5, and Figure ES-6. The following items are noted:

- Basin 5 was ranked the highest for normalized RDI and Total I/I.
- Basin 9 East and Basin 11 also had consistently high rankings in all categories.

Table ES-3. Inflow/Infiltration Analysis Summary

Metering Basin	Peak I/I Rate (mgd)	RDI Rate (mgd)	Total I/I (gallons)	Final Inflow Ranking	Final RDI Ranking	Final Total I/I Ranking
Basin 01	0.872	0.087	393,000	10	6	11
Basin 02	0.078	0.012	99,000	6	5	4
Basin 03	0.773	0.004	318,000	4	14	7
Basin 04	0.095	0.000	54,000	11	15	8
Basin 05	0.197	0.062	464,000	3	1	1
Basin 06	0.428	0.021	337,000	7	9	5
Basin 07	0.346	0.034	397,000	8	4	6
Basin 08	0.348	0.010	204,000	5	11	9
Basin 09W	0.023	0.004	16,000	13	8	14
Basin 09E	0.119	0.006	73,000	2	3	3
Basin 10	0.204	0.039	315,000	14	7	10
Basin 11	0.036	0.004	44,000	1	2	2
Basin 12	0.046	0.002	14,000	9	12	13
Basin 13	0.323	0.020	149,000	12	13	12
Basin 14	0.122	0.011	48,000	15	10	15
System	3.878	0.360	3,217,000	-	-	-

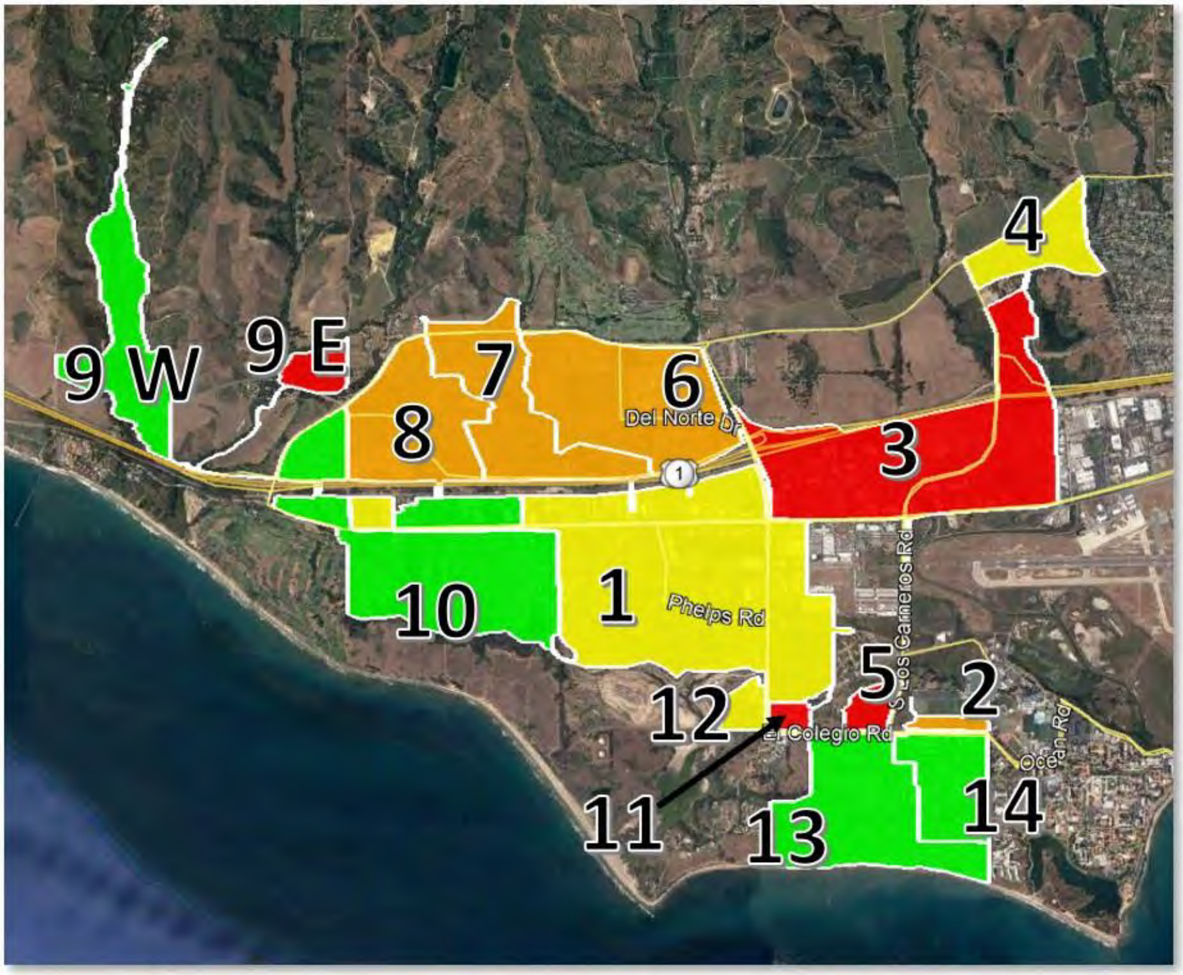


Figure ES-4. Temperature Map: Inflow Final Basin Rankings

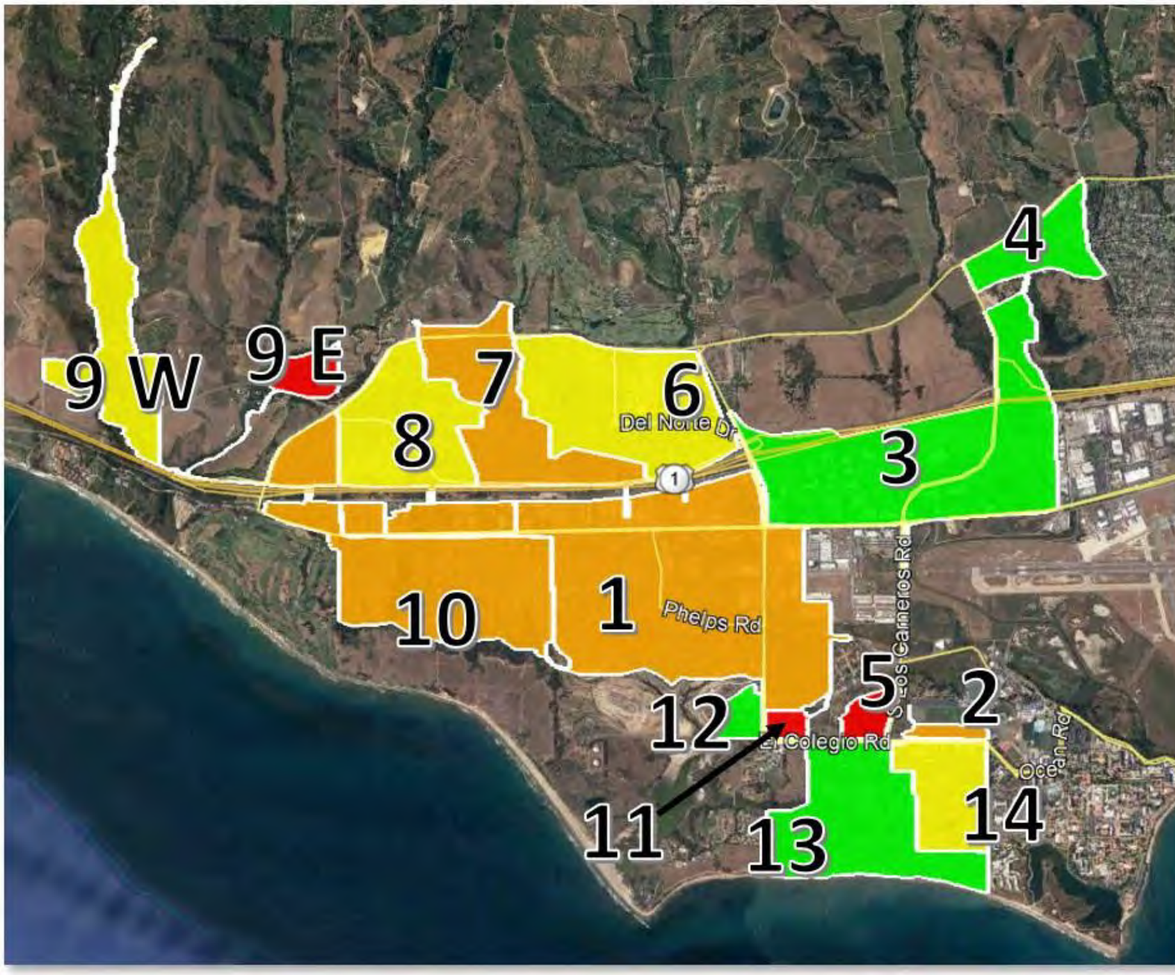


Figure ES-5. Temperature Map: RDI Final Basin Rankings

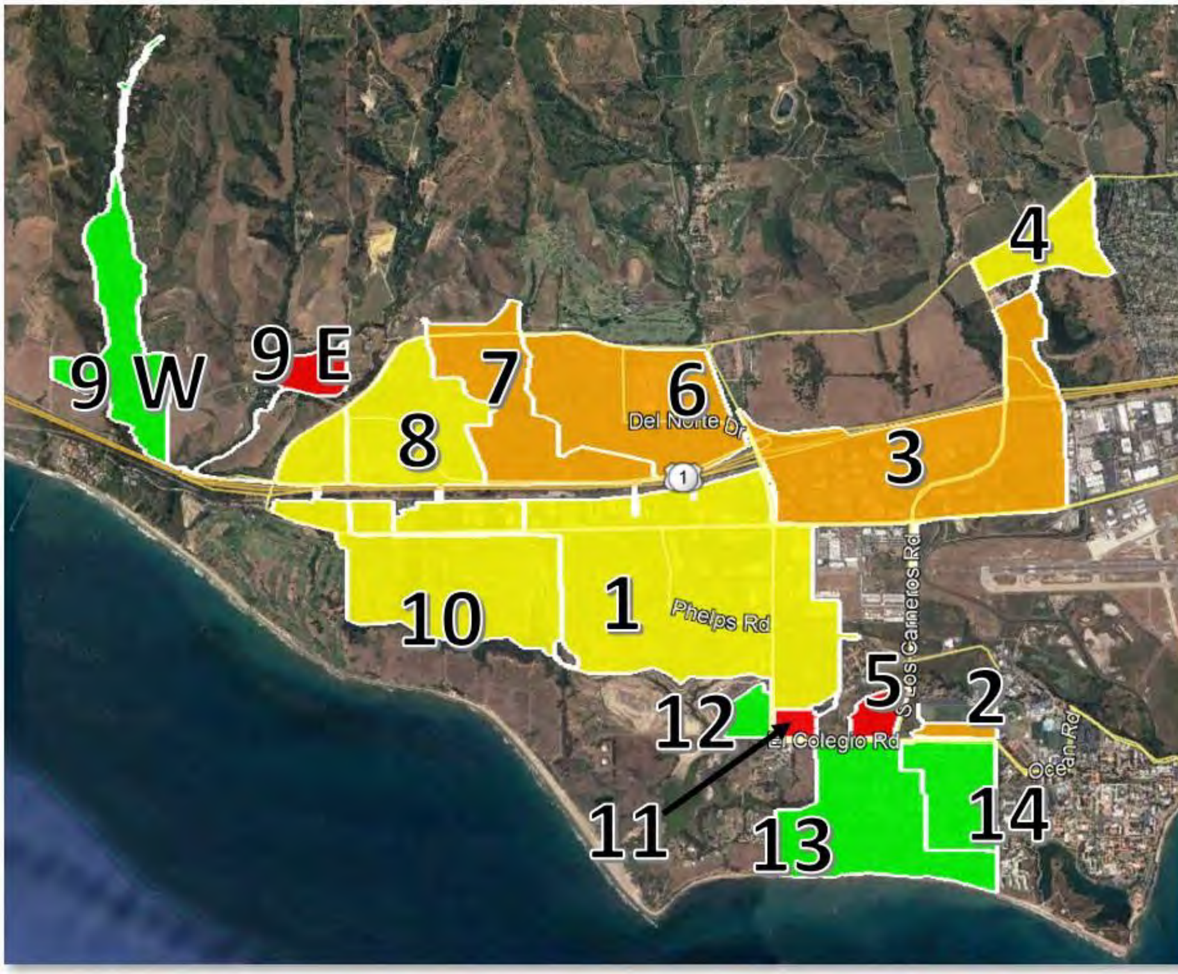


Figure ES-6. Temperature Map: Combined I/I Final Basin Rankings

Recommendations

V&A advises to consider the following recommendations for future I/I reduction plans:

1. **Master Plan and Model Implementation**: This study focuses on inflow and infiltration generation; however, the capacity deficiencies of the collection system may be of greater concern relative to I/I response during peak wet weather events. The District may wish to have a model designed and/or a master plan study conducted to determine the overall needs of the District relative to I/I. Or simply, the study results can be used to update the master plan and compare with previous model assumptions and flow monitoring results.
2. **Capacity Analysis:** Sites 1 and 12 surcharged approximately 0.32 and 0.61 feet, respectively, above the pipe crown during the January rainfall event. The District may wish to evaluate capacity concerns in the local collection system near these sites.
3. **Determine I/I Reduction Program**: The District should examine its I/I reduction needs to determine their needs and goals for a future I/I reduction program.
    a. If peak flows, sanitary sewer overflows, and pipeline capacity issues are of greater concern, then priority can be given to investigate and reduce sources of inflow within the basins with the greatest inflow problems.
    b. If total infiltration and general pipeline deterioration are of greater concern, then the program can be weighted to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
    c. Basin 5 was ranked the highest for normalized RDI and Total I/I. The District may wish to focus initial I/I mitigation efforts in this basin. Basins 9 East and 11 also had consistently high rankings in all categories.
4. **I/I Investigation Methods**: Potential I/I investigation methods include the following:
    a. smoke testing.
    b. mini-basin flow monitoring.
    c. night-time reconnaissance work to (1) investigate and determine direct point sources of inflow, and (2) determine the areas and/or pipe reaches responsible for high levels of infiltration contribution.
    d. CCTV inspection.
5. **I/I Reduction Cost-Effective Analysis**: The District should conduct a study to determine which is more cost-effective: (1) locating the sources of inflow/infiltration and systematically rehabilitating or replacing the faulty pipelines; or (2) continued treatment of the additional rainfall dependent I/I flow.

1 Introduction

1.1 Scope and Purpose

V&A Consulting Engineers (V&A) was retained by the Corwin Group (Corwin) to perform sanitary sewer flow monitoring for Goleta West Sanitary District (District). Flow monitoring was performed for three months from February 27, 2020 to April 23, 2020. Open-channel flow monitoring was performed at 15 sites within the District. There were three general purposes for this study.

1. Establish the baseline sanitary sewer flows at the flow monitoring sites.
2. Measure the peak flow and characteristics of the subject pipes during the monitoring period.
3. Quantify inflow/ infiltration (I/I) at the applicable flow monitoring sites.

1.2 Flow Monitoring Sites and Basins

Flow Monitoring Sites: Flow monitoring sites are identified as the manholes where the flow monitors were secured and the pipelines in which the flow sensors were placed. Capacity analysis and flow rate information is presented on a site-by-site basis.

Flow Monitoring Basins: Flow monitoring site data may include the flows of one or many drainage basins. Flow monitoring basins are localized areas of a sanitary sewer collection system upstream of a given location (often a flow meter), including all pipelines, inlets, and appurtenances. The basin refers to the ground surface area near and enclosed by the pipelines. A basin may refer to the entire collection system upstream from a flow meter or may exclude separately monitored basins upstream, requiring basin isolation (subtraction of upstream flows). The inflow and infiltration (I/I) analysis results will be presented on an isolated basin basis.

The flow monitoring site locations were selected by Corwin and approved by the District. Information regarding the flow monitoring locations is listed in Table 1-1. Figure 1-1 illustrates the flow monitoring locations. Detailed descriptions of the individual flow monitoring sites, including photographs, are included in *Appendix A*. Table 1-2 summarizes and Figure 1-2 illustrates the flow monitoring basins for this study.

Table 1-1. List of Monitoring Locations

Monitoring Site	Monitored Pipe	Measured Pipe Diameter (in)	Location
Site 1	West inlet	26.5	758 Mesa Road
Site 2	South inlet	11.75	S Los Carneros Road, corner of ball field near bike path
Site 3	North inlet	24	Bike path northeast of S Los Carneros Road, and Mesa Road
Site 4	Northeast inlet	12	In field south of Covington Way, east of Camino Caseta
Site 5	West inlet	11.75	S Los Carneros Road south of Mesa Road

Monitoring Site	Monitored Pipe	Measured Pipe Diameter (in)	Location
Site 6	North inlet	11.75	Parking lot of Hollister Village
Site 7	North inlet	11.75	Behind building at 7234 Hollister Avenue
Site 8	North inlet	11.75	Behind apartments on Pebble Beach Drive, in bushes
Site 9 East	Southwest inlet	12	Emily Lift Station on Calle Real
Site 9 West	Southeast inlet	12	Emily Lift Station on Calle Real
Site 10	West inlet	17.75	Dirt path south of Pacific Coast Drive and Ocean Walk Lane
Site 11	West Inlet	12	Off path east of Fireside Lane
Site 12	South inlet	8	Storke Road north of Willowgrove Drive
Site 13	South inlet	17.75	El Colegio Road west of S Los Carneros Road
Site 14	East inlet	14.75	El Colegio Road east of S Los Carneros Road

Figure 1-1. Map of Flow Monitoring Sites – Overall

Table 1-2. Isolated Flow Monitoring Basin Characteristics

Isolated Basin	Flow Isolation Calculation	Area (Acres)
Basin 01	$= Q_1 - (Q_6 + Q_7 + Q_{10} + Q_{11} + Q_{12})$	567.0
Basin 02	$= Q_2$	15.3
Basin 03	$= Q_3 - Q_4$	384.0
Basin 04	$= Q_4$	74.6
Basin 05	$= Q_5$	23.1
Basin 06	$= Q_6$	240.9
Basin 07	$= Q_7$	175.0
Basin 08	$= Q_8$	164.0
Basin 09W	$= Q_{9W}$	153.0
Basin 09E	$= Q_{9E}$	30.2
Basin 10	$= Q_{10} - (Q_{9W} + Q_{9E} + Q_8)$	346.0
Basin 11	$= Q_{11}$	13.3
Basin 12	$= Q_{12}$	22.0
Basin 13	$= Q_{13}$	210.0
Basin 14	$= Q_{14}$	93.4

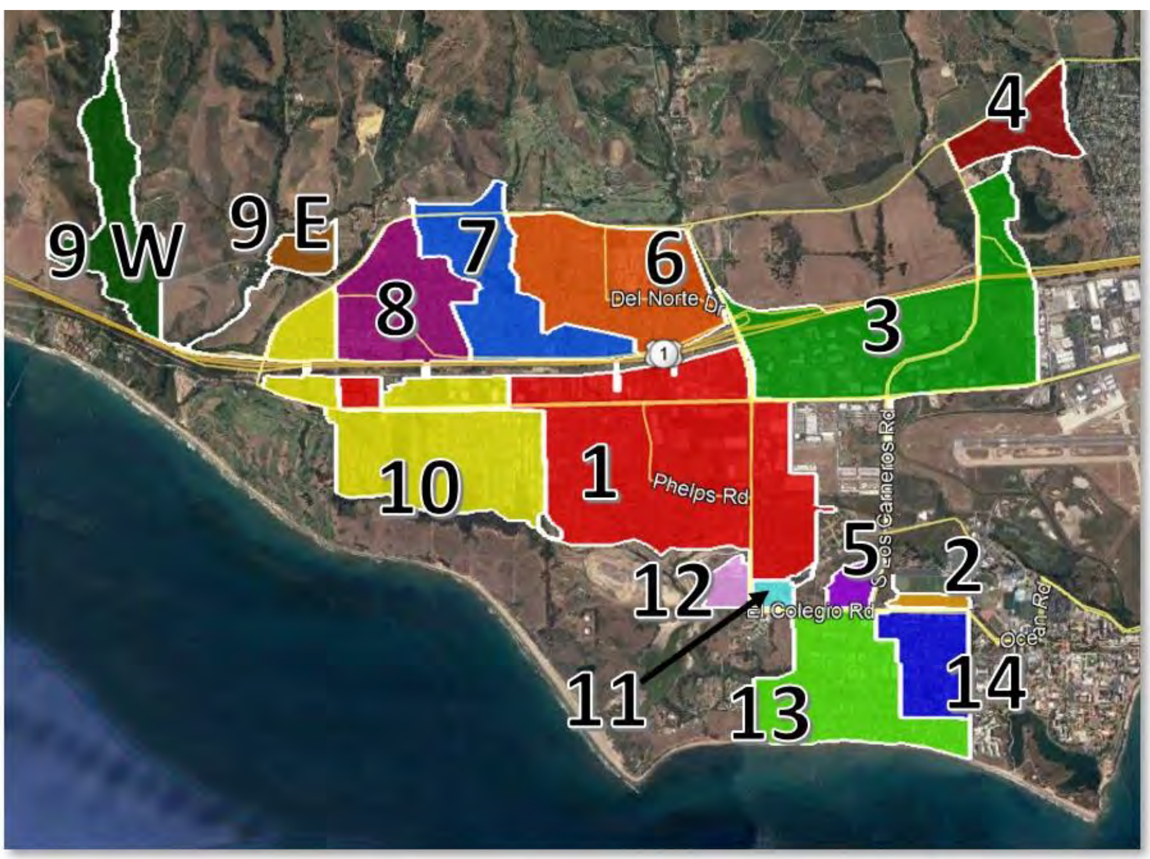


Figure 1-2. Map of Flow Monitoring Basins

2 Methods and Procedures

2.1 Confined Space Entry

A confined space (Photo 2-1) is defined as any space that is large enough and so configured that a person can bodily enter and perform assigned work, has limited or restricted means for entry or exit and is not designed for continuous employee occupancy. In general, the atmosphere must be constantly monitored for sufficient levels of oxygen (19.5% to 23.5%), and the presence of hydrogen sulfide (H_2S) gas, carbon monoxide (CO) gas, and lower explosive limit (LEL) levels. A typical confined space entry crew has members with OSHA-defined responsibilities of Entrant, Attendant, and Supervisor. The Entrant is the individual performing the work. He or she is equipped with the necessary personal protective equipment needed to perform the job safely, including a personal four-gas monitor (Photo 2-2). If it is not possible to maintain line-of-sight with the Entrant, then more Entrants are required until line-of-sight can be maintained. The Attendant is responsible for maintaining contact with the Entrants to monitor the atmosphere using another four-gas monitor and maintaining records of all Entrants if there is more than one. The Supervisor is responsible for developing the safe work plan for the job at hand prior to entering.

Photo 2-1. Confined Space Entry

Photo 2-2. Typical Personal Four-Gas Monitor

2.2 Flow Meter Installation

V&A installed fifteen (15) Hach 902 flow meters for temporary monitoring within the collection system. Hach 902 meters use submerged sensors with a pressure transducer to collect depth readings and an ultrasonic Doppler sensor to determine the average fluid velocity. The ultrasonic sensor emits high-frequency sound waves, which are reflected by air bubbles and suspended particles in the flow. The sensor receives the reflected signal and determines the Doppler frequency shift, which indicates the estimated average flow velocity. The sensor is typically mounted at a manhole inlet to take advantage of smoother upstream flow conditions. The sensor may be offset to one side to lessen the chances of fouling and sedimentation where these problems are expected to occur. Manual level and velocity measurements were taken during the installation of the flow meters and again when they were removed and compared to simultaneous level and velocity readings from the flow meters to ensure proper calibration and accuracy. Figure 2-1 shows a typical installation for a flow meter with a submerged sensor.

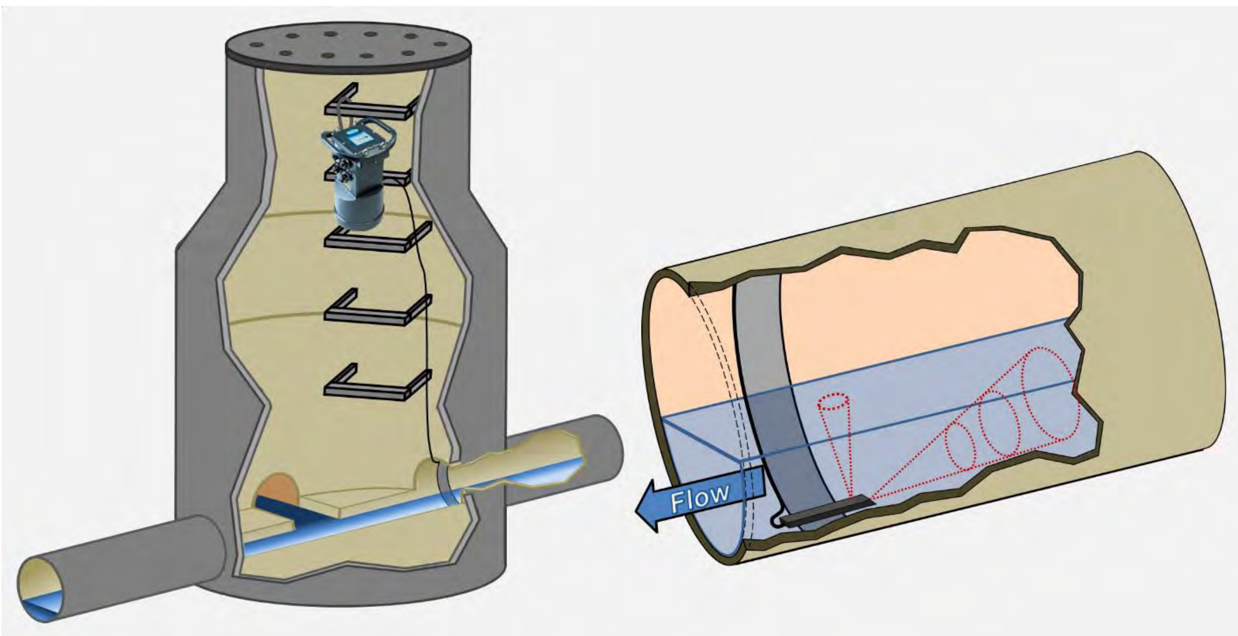


Figure 2-1. Typical Installation for Hach 902 Flow Meter with Submerged Sensor

2.3 Flow Calculation

Data retrieved from the flow meters were placed into a spreadsheet program for analysis. Data analysis includes data comparison to field calibration measurements, as well as necessary geometric adjustments as required for sediment (sediment reduces the pipe's wetted cross-sectional area available to carry flow). Area-velocity flow metering uses the continuity equation,

$$Q = v \cdot A = v \cdot (A_T - A_S)$$

where Q: volume flow rate

v: average velocity as determined by the ultrasonic sensor

A: cross-sectional area available to carry the flow

A_T: total cross-sectional area with both wastewater and sediment

A_S: cross-sectional area of sediment.

For circular pipe,

$$A_T = \left[\frac{D^2}{4}\cos^{-1}\left(1-\frac{2d_W}{D}\right)\right] - \left[\left(\frac{D}{2}-d_W\right)\left(\frac{D}{2}\right)\sin\left(\cos^{-1}\left(1-\frac{2d_W}{D}\right)\right)\right]$$

$$A_S = \left[\frac{D^2}{4}\cos^{-1}\left(1-\frac{2d_S}{D}\right)\right] - \left[\left(\frac{D}{2}-d_S\right)\left(\frac{D}{2}\right)\sin\left(\cos^{-1}\left(1-\frac{2d_S}{D}\right)\right)\right]$$

where d_W: distance between wastewater level and pipe invert

d_S: depth of sediment

D: pipe diameter

2.4 Measurement Error and Uncertainty

For traditional engineering applications, measurement “error” is explained as a difference between a computed, estimated, or measured value and the generally accepted true or theoretically correct value. It can also be thought of as a difference between the desired and the actual performance of equipment. For equipment, error is usually expressed as a percentage relative to accuracy (i.e., “...the velocity sensor has an accuracy of ±2% of the reading...”).

However, for this study and flow monitoring applications, the cause of the measurement difference is important and a distinction will be made between the equipment not performing to industry standards (“error”) and expected inaccuracies (“uncertainty”) associated with monitoring technology limitations.

Gauging **“error”** occurs when the equipment is not performing to industry standards. This can occur as a result of the following common categories of conditions that can be encountered at a wastewater monitoring site.

- Malfunctioning equipment (i.e. a sensor is damaged, battery life ends, or a desiccant canister becomes saturated)
- Improper equipment choice or maintenance (i.e. the selected gauging equipment technologies are incompatible with hydraulic conditions within the sewer, or excessive gravel deposits are allowed to accumulate around the sensors without being removed)
- Improper equipment calibration (i.e. depth and/or velocity measurements are incorrectly taken within the sewer, or equipment is allowed to drift out of calibration)
- Field conditions within the sewer, (i.e. foaming at the water surface that “blinds” an ultrasonic depth sensor, or toilet paper catching and accumulating on a combination sensor, blinding the acoustic Doppler velocity meter)

For flow monitoring applications, gauging **“uncertainty”** is used to describe and quantify the expected inaccuracies that result from the limitations of the technologies that utilize indirect measurements to quantify wastewater flow.

It is important to try and install flow meters in “ideal” flow conditions. Ideal flow conditions are generally defined by as laminar flow in a straight-through, constant-slope pipeline with no disturbances (elbows, tees, hydraulic shifts, etc.) 10 diameters upstream and 5 diameters downstream from the flow monitoring location. If ideal flow conditions are met, then an expected uncertainty of final flow calculation from an open-channel flow meter may be approximately ±5%. For many situations, ideal flow conditions cannot be met and uncertainties increase.

2.4.1 Flow Addition versus Flow Subtraction

Due to the uncertainties involved in subtracting flows of similar magnitudes, the addition of flows at multiple monitoring sites is usually preferred over subtraction of flows. Subtraction becomes an issue especially when the flow difference from the subtraction falls within the measurement uncertainty range of the two larger flow data sets (i.e. subtracting a large flow from another large flow to obtain a small difference).

This concept is best demonstrated per the following example:

1. Meter A measures 2.00 MGD of flow and has an expected uncertainty of ±5%, thus the uncertainty range of the flow measurement is ±0.10 MGD.
2. Meter B measures 2.50 MGD of flow and has an expected uncertainty of ±6%, thus the uncertainty range of the flow measurement is ±0.15 MGD.

3. Meter C measures 0.50 MGD of flow and has an expected uncertainty of ±8%, thus the uncertainty range of the flow measurement is ±0.04 MGD.

   - <u>Scenario 1 – Flow Addition</u>
   - Meter A + Meter B = 2.00 MGD (±0.10) + 2.50 MGD (±0.15) = 4.50 MGD (±0.25)
   - Overall uncertainty = ±0.25 / 4.50 = ±5.6%
   - For flow addition, the final uncertainty is essentially a weighted average of the component uncertainties.

   - <u>Scenario 2 – Flow Subtraction, Large Flow less Small Flow</u>
   - Meter B - Meter C = 2.50 MGD (±0.15) - 0.50 MGD (±0.04) = 2.00 MGD (±0.19)
   - Overall uncertainty = ±0.19 / 2.00 = ±9.5%
   - For flow subtraction, the final uncertainty will always be greater than the component uncertainties.
   - When subtracting a small flow from a large flow, the resulting uncertainties can still be manageable.

   - <u>Scenario 3 – Flow Subtraction, Large Flow less a similarly Large Flow</u>
   - Meter B - Meter A = 2.50 MGD (±0.15) – 2.00 MGD (±0.10) = 0.50 MGD (±0.25)
   - Overall uncertainty = ±0.25 / 0.50 = ±50%
   - When subtracting a similarly sized flow rates, the resulting uncertainties may not be manageable. In this example, an uncertainty of ±50% may be considered unacceptable for confident analyses.

Scenario 3 is a very "real-world" situation. The uncertainties for Meter A and Meter B are extremely reasonable (indeed, most flow monitoring service providers would be extremely pleased with true meter uncertainties of ±5% to ±6%). However, the reality of the math is clear and the above example demonstrates the concept of flow subtraction and compounding or inflating uncertainty ranges.

The following points are emphasized in relation to the items of this section:

- For subtraction of flows, the overall uncertainty can be an inflated value that far exceeds the component uncertainties.
- The smaller the resultant flow from the subtraction equation, the larger the percentage uncertainty.
- Whenever possible, basins flows should be directly measured, rather than calculated as a subtraction of two or more flow meters.
- If flow subtraction cannot be avoided, it is better to have the magnitudes of the component flows be as dissimilar as possible.

2.5 Average Dry Weather Flow Determination

For this study, four distinct average dry weather flow curves were established for each site location:

- Mondays – Thursdays
- Fridays
- Saturdays
- Sundays

Flows for many sites differ on Friday evenings compared to Mondays through Thursdays. Starting around 7 pm, the flows are often decreased (compared to Monday through Thursday). Similarly, flow patterns for Saturday and Sunday were also separated due to their unique evening flow pattern. This type of differentiation can be important when determining I/I response, especially if a rain event occurs on a Friday, Saturday, or Sunday evening.

Figure 2-2 illustrates a sample of varying flow patterns within a typical dry week.

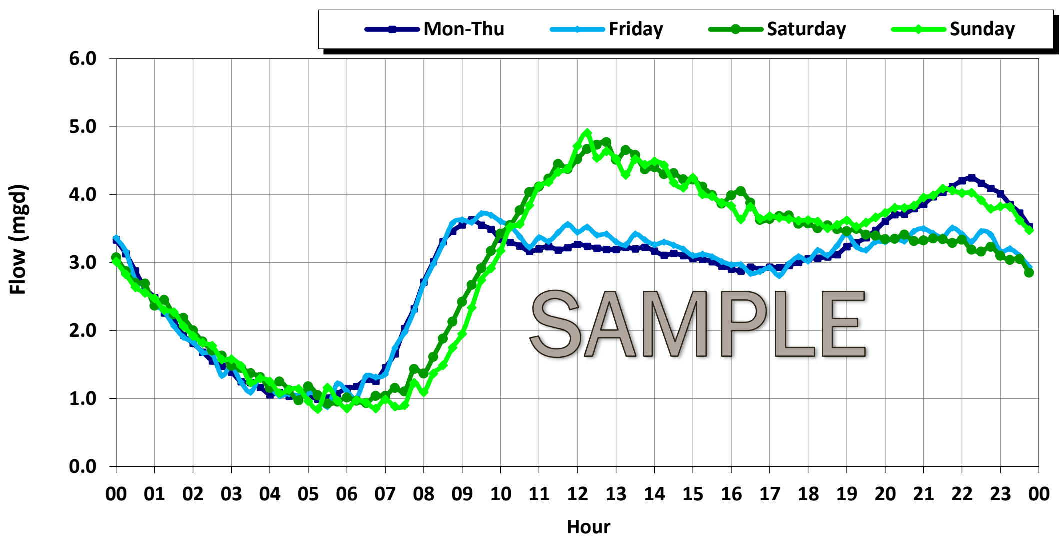


Figure 2-2. Sample ADWF Diurnal Flow Patterns

ADWF curves are taken from "Dry Days" when RDI had the least impact on the baseline flow. The overall average dry weather flow (ADWF) was calculated per the following equation:

$$ADWF = \left(ADWF_{Mon-Thu} \times \frac{4}{7}\right) + \left(ADWF_{Fri} \times \frac{1}{7}\right) + \left(ADWF_{Sat} \times \frac{1}{7}\right) + \left(ADWF_{Sun} \times \frac{1}{7}\right),$$

2.6 Flow Attenuation

Flow attenuation in a sewer collection system is the natural process of the reduction of the peak flow rate through redistribution of the same volume of flow over a longer period of time. This occurs as a result of friction (resistance), internal storage and diffusion along the sewer pipes. Fluids are constantly working towards equilibrium. For example, a volume of fluid poured into a static vessel with no outside turbulence will eventually stabilize to a static state, with a smooth fluid surface without peaks and valleys. Attenuation within a sanitary sewer collection system is based upon this concept. A flow profile with a strong peak will tend to stabilize towards equilibrium, as shown in Figure 2-3.

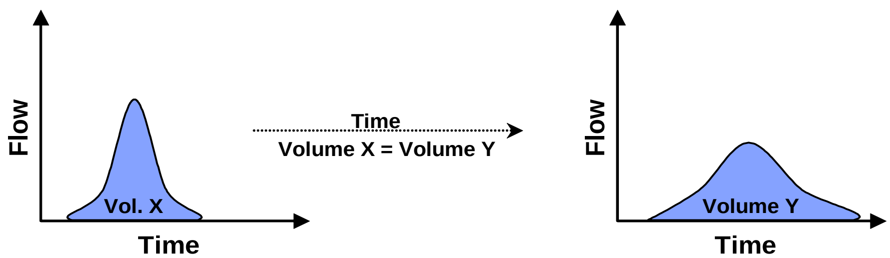


Figure 2-3. Attenuation Illustration

Within a sanitary sewer collection system, each individual basin will have a specific flow profile. As the flows from the basins combine within the trunk sewer lines, the peaks from each basin will (a) not necessarily coincide at the same time, and (b) due to the length and time of travel through the trunk sewers, peak flows will attenuate prior to reaching the treatment facility. The sum of the peak flows of the individual basins within a collection system will usually be greater than the peak flows observed at the treatment facility.

2.7 Inflow / Infiltration Analysis: Definitions and Identification

Inflow and infiltration (I/I) consists of storm water and groundwater that enter the sewer system through pipe defects and improper storm drainage connections and is defined as follows:

2.7.1 Inflow / Infiltration Analysis: Definitions and Identification

- **Inflow**: Storm water inflow is defined as water discharged into the sewer system, including private sewer laterals, from direct connections such as downspouts, yard and area drains, holes in manhole covers, cross-connections from storm drains, or catch basins.
- **Infiltration**: Infiltration is defined as water entering the sanitary sewer system through defects in pipes, pipe joints, and manhole walls, which may include cracks, offset joints, root intrusion points, and broken pipes.

Figure 2-4 illustrates the possible sources and components of I/I.

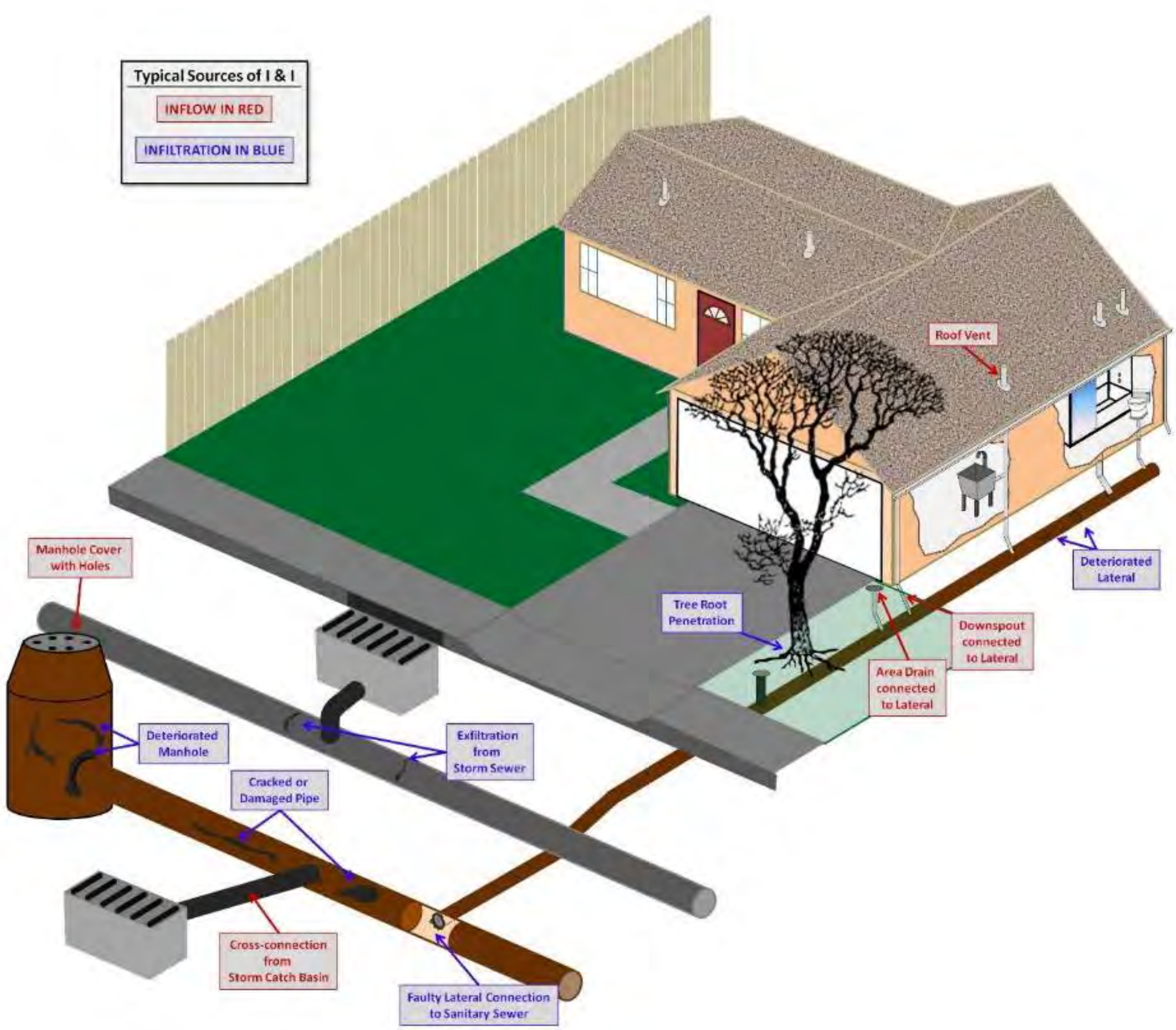


Figure 2-4. Typical Sources of Infiltration and Inflow

2.7.2 Infiltration Components

Infiltration can be further subdivided into components as follows:

- **Groundwater Infiltration**: Groundwater infiltration depends on the depth of the groundwater table above the pipelines as well as the percentage of the system submerged. The variation of groundwater levels and subsequent groundwater infiltration rates is seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.
- **Rainfall-Dependent Infiltration**: This component occurs as a result of storm water and enters the sewer system through pipe defects, as with groundwater infiltration. The storm water first percolates directly into the soil and then migrates to an infiltration point. Typically, the time of concentration for rainfall-related infiltration may be 24 hours or longer, but this depends on the soil permeability and saturation levels.
- **Rainfall-Responsive Infiltration** is storm water which enters the collection system indirectly through pipe defects, but normally in sewers constructed close to the ground surface such as private laterals. Rainfall-responsive infiltration is independent of the groundwater table and reaches defective sewers via the pipe trench in which the sewer is constructed, particularly if the pipe is placed in impermeable soil and bedded and backfilled with a granular material. In this case, the pipe trench serves as a conduit similar to a French drain, conveying storm drainage to defective joints and other openings in the system. This type of infiltration can have a quick response and graphically can look very similar to inflow.

2.7.3 Impact and Cost of Source Detection and Removal

- **Inflow**:
  - Impact: This component of I/I creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Because the response and magnitude of inflow is tied closely to the intensity of the storm event, the short-term peak instantaneous flows may result in surcharging and overflows within a collection system. Severe inflow may result in sewage dilution, resulting in upsetting the biological treatment (secondary treatment) at the treatment facility.
  - Cost of Source Identification and Removal: Inflow locations are usually less difficult to find and less expensive to correct. These sources include direct and indirect cross-connections with storm drainage systems, roof downspouts, and various types of surface drains. Generally, the costs to identify and remove sources of inflow are low compared to potential benefits to public health and safety or the costs of building new facilities to convey and treat the resulting peak flows.
- **Infiltration:**
  - Impact: Infiltration typically creates long-term annual volumetric problems. The major impact is the cost of pumping and treating the additional volume of water, and of paying for treatment (for municipalities that are billed strictly on flow volume).
  - Cost of Source Detection and Removal: Infiltration sources are usually harder to find and more expensive to correct than inflow sources. Infiltration sources include defects in deteriorated sewer pipes or manholes that may be widespread throughout a sanitary sewer system.

2.7.4 Graphical Identification of I/I

Inflow is usually recognized graphically by large-magnitude, short-duration spikes immediately following a rain event. Infiltration is often recognized graphically by a gradual increase in flow after a wet-weather event. The increased flow typically sustains for a period after rainfall has stopped and then gradually drops off as soils become less saturated and as groundwater levels recede to normal levels. Realtime flows were plotted against ADWF to analyze the I/I response to rainfall events. Figure 2-5 illustrates a sample of how this analysis is conducted and some of the measurements that are used to distinguish infiltration and inflow. Similar graphs were generated for the individual flow monitoring sites and can be found in Appendix A.

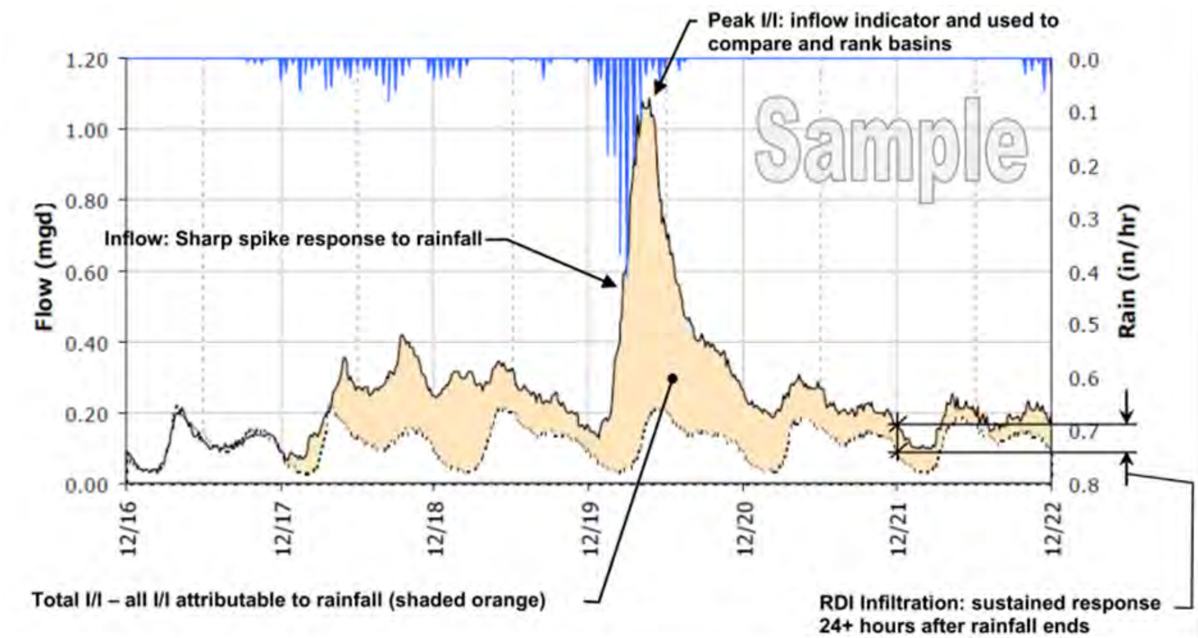


Figure 2-5. Sample Infiltration and Inflow Isolation Graph

2.7.5 Analysis Metrics

After differentiating I/I flows from ADWF flows, various calculations can be made to determine which I/I component (inflow or infiltration) is more prevalent at a particular site and to compare the relative magnitudes of the I/I components between drainage basins and between storm events:

- **Inflow – Peak I/I Flow Rate:** Inflow is characterized by sharp, direct spikes occurring during a rainfall event. Peak I/I rates are used for inflow analysis. [2]
- **Groundwater Infiltration (GWI):** GWI analysis is conducted by looking at minimum dry weather flow to average dry weather flow ratios and comparing them to established standards to quantify the rate of excess groundwater infiltration.
- **Rainfall-Dependent Infiltration (RDI):** RDI Analysis is conducted by looking at the infiltration rates at set periods after the conclusion of a storm event. Depending on the particular collection system and the time required for flows to return to ADWF levels, different periods may

[2] I/I flow rate is the real time flow less the estimated average dry weather flow rate. It is an estimate of flows attributable to rainfall. By using peak measured flow rates (inclusive of ADWF), the I/I flow rate would be skewed higher or lower depending on whether the storm event I/I response occurs during low-flow or high-flow hours.

be examined to determine the basins with the greatest or most sustained rainfall-dependent infiltration rates.

- **Total I/I:** The combined inflow and infiltration is measured in gallons per site and per storm event. Because it is based on combined I/I volume, it is used to identify the overall volumetric influence of I/I within the monitoring basin.

2.7.6 Normalization Methods

There are three ways to *normalize* the I/I analysis metrics for an "apples-to-apples" comparison amongst the different drainage basins:

- **per-ADWF:** The metric is divided by the established average dry weather flow rate and typically expressed as a ratio. *Peaking Factors* are examples of using ADWF to normalize data from different sites.
- **per-IDM:** The metric is divided by length of pipe (IDM [inch-diameter mile]) contained within the upstream basin. Final units typically are gallons per day (gpd) per IDM.
- **per-ACRE:** The metric is divided by the acreage of the upstream basin. Final units typically are gallons per day (gpd) per ACRE.

In this report, the infiltration and inflow indicators were normalized by the per-ADWF and per-ACRE methods described above. These results will be shown in the following I/I analysis results sections. For the purposes of basin rankings, the following weighting decisions are given:

Per-ADWF metrics were given a 51% weighting, with per-ACRE receiving a 49% weighting each.

3 Results and Analysis

3.1 Rain Data

3.1.1 Locations

V&A captured rainfall data from publicly available private weather stations (PWS[3]), allowing for good coverage over the flow monitoring area. Rain gauge locations are shown in Figure 3-1.

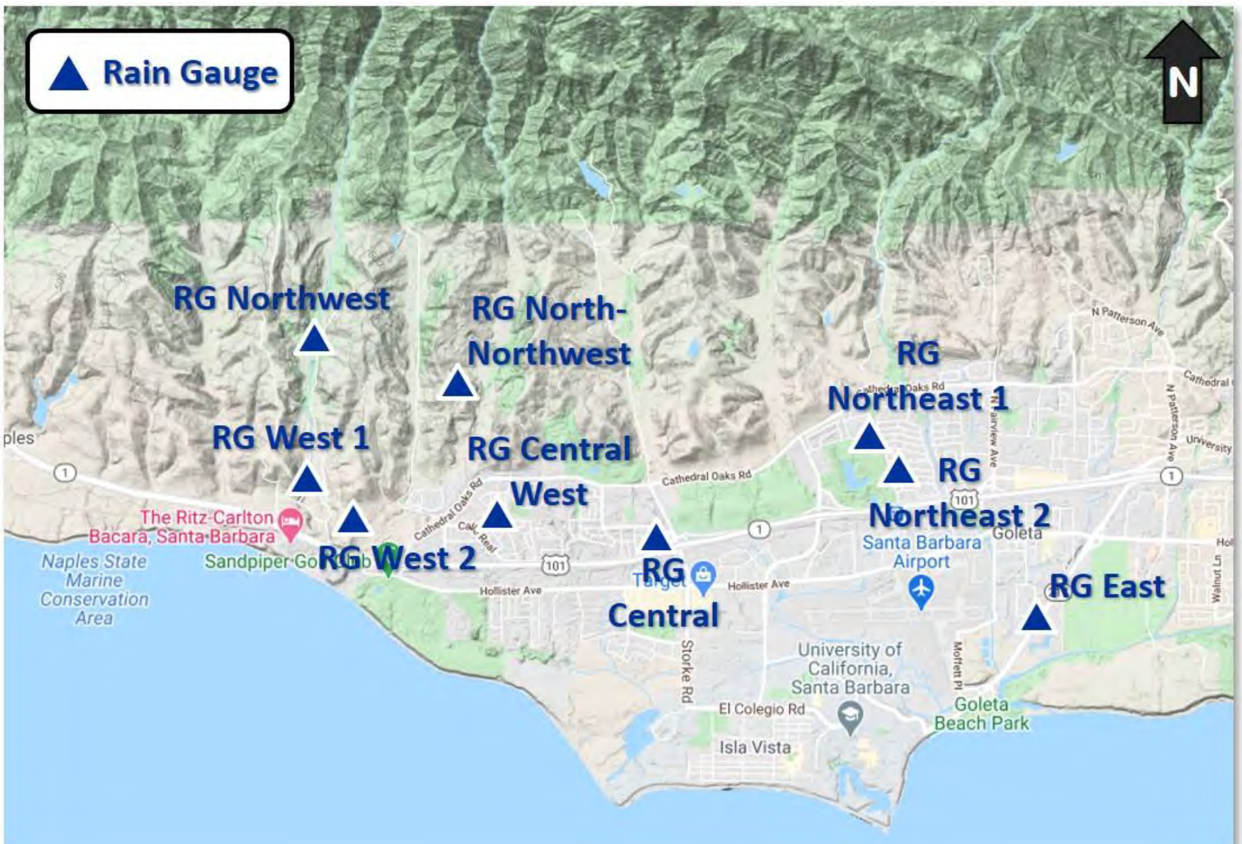


Figure 3-1. Map of Rain Gauge Locations

[3] National Oceanic and Atmospheric Administration (NOAA) Citizen Weather Observer Program (CWOP) members send data from their PWS to the NOAA MADIS server; the data undergoes quality checking and then is distributed. While V&A has no direct control over the rain gauges, V&A performs additional QA/QC on the data to ensure its suitability for use.

3.1.2 Rain Gauge Data

Table 3-1 summarizes the total rainfall that fell at all seven rain gauges for several significant rainfall events during the flow monitoring study. Figure 3-2 illustrates the rainfall over the course of the flow monitoring study, noting the larger rainfall events (average of rain gauges shown). Figure 3-3 shows the rain accumulation plot of the period rainfall, as well as the historical average rainfall[4] during this project duration. The cumulative precipitation for the rain gauges triangulated to the historical rain gauge station was between 74% and 141% higher than the historical precipitation for the duration of the flow monitoring. Graphs containing rainfall data overlaid with the flow data are included in *Appendix A*.

Table 3-1. Summary of Rainfall

Rain Gauge	Rainfall Event 1 – December 27 – 29, 2020 (inches)	Rainfall Event 2 – January 24 – 30, 2021 (inches)	Season Total (inches)
Northwest	2.56	8.92	11.78
West1	2.02	5.25	7.37
West2	1.82	4.29	6.17
NNW	2.39	7.25	9.77
Center West	2.52	7.72	10.35
Central	2.23	5.71	7.98
Northeast1	2.32	4.58	6.97
Northeast2	2.13	5.03	7.18
East	2.11	4.55	6.69

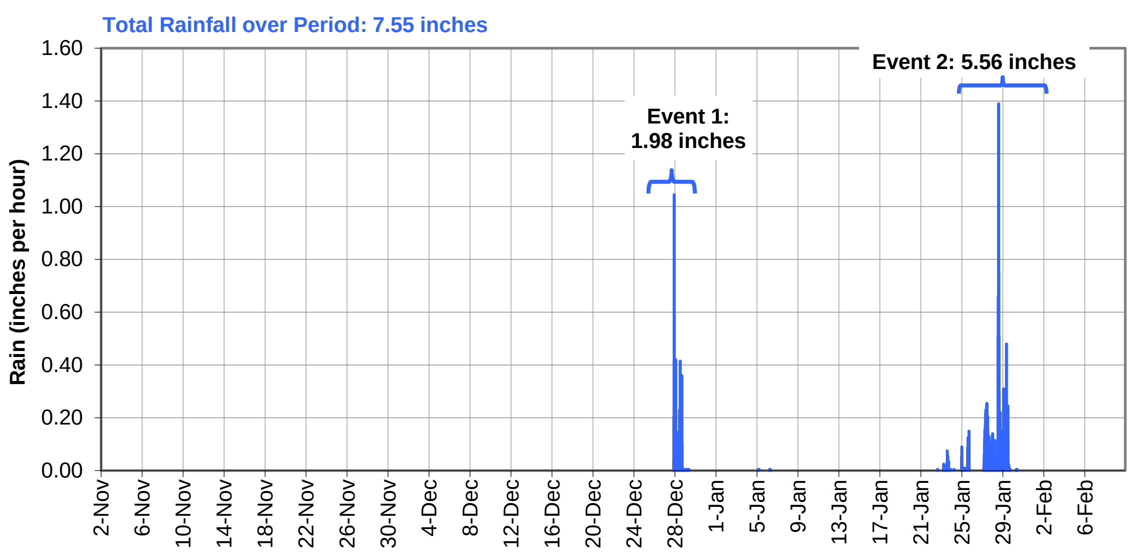


Figure 3-2. Rainfall during Flow Monitoring Period – Average of All Rain Gauges

[4] Historical data taken from the WRCC (Station 47905 at Santa Barbara Airport): http://www.wrcc.dri.edu/summary/climsmsca.html

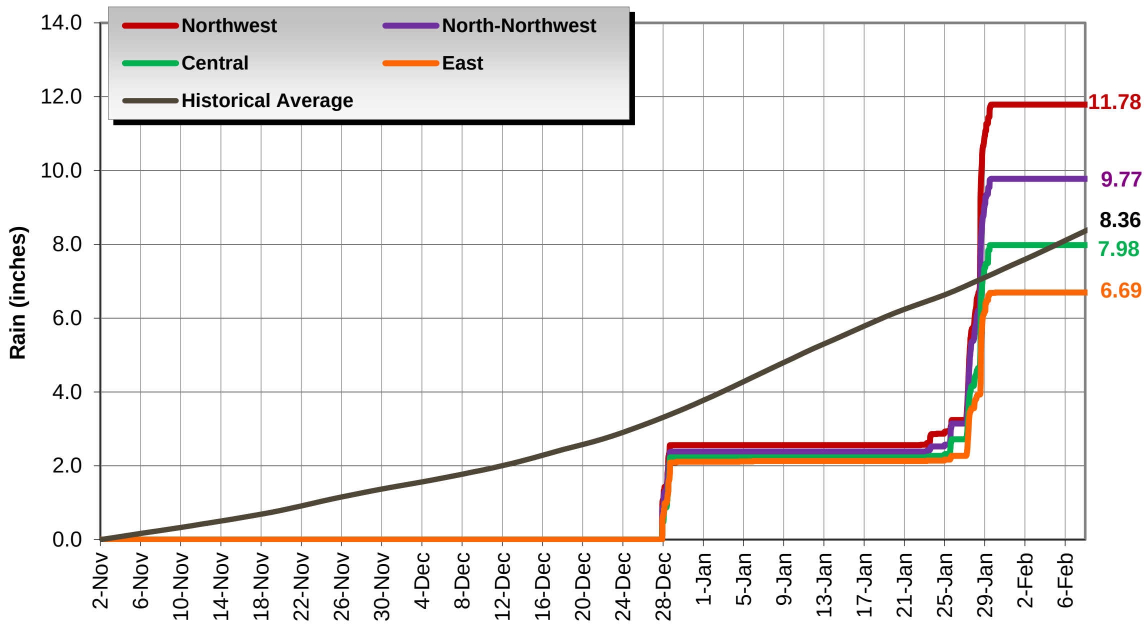


Figure 3-3. Rainfall Accumulation Plot

3.1.3 Regional Rainfall Event Classification

It is important to classify the relative size of a major storm event that occurs over the course of a flow monitoring period[5]. Rainfall events are classified by intensity and duration. Based on historical data, frequency contour maps for storm events of given intensity and duration have been developed by the NOAA for all areas within the continental United States (Figure 3-4).

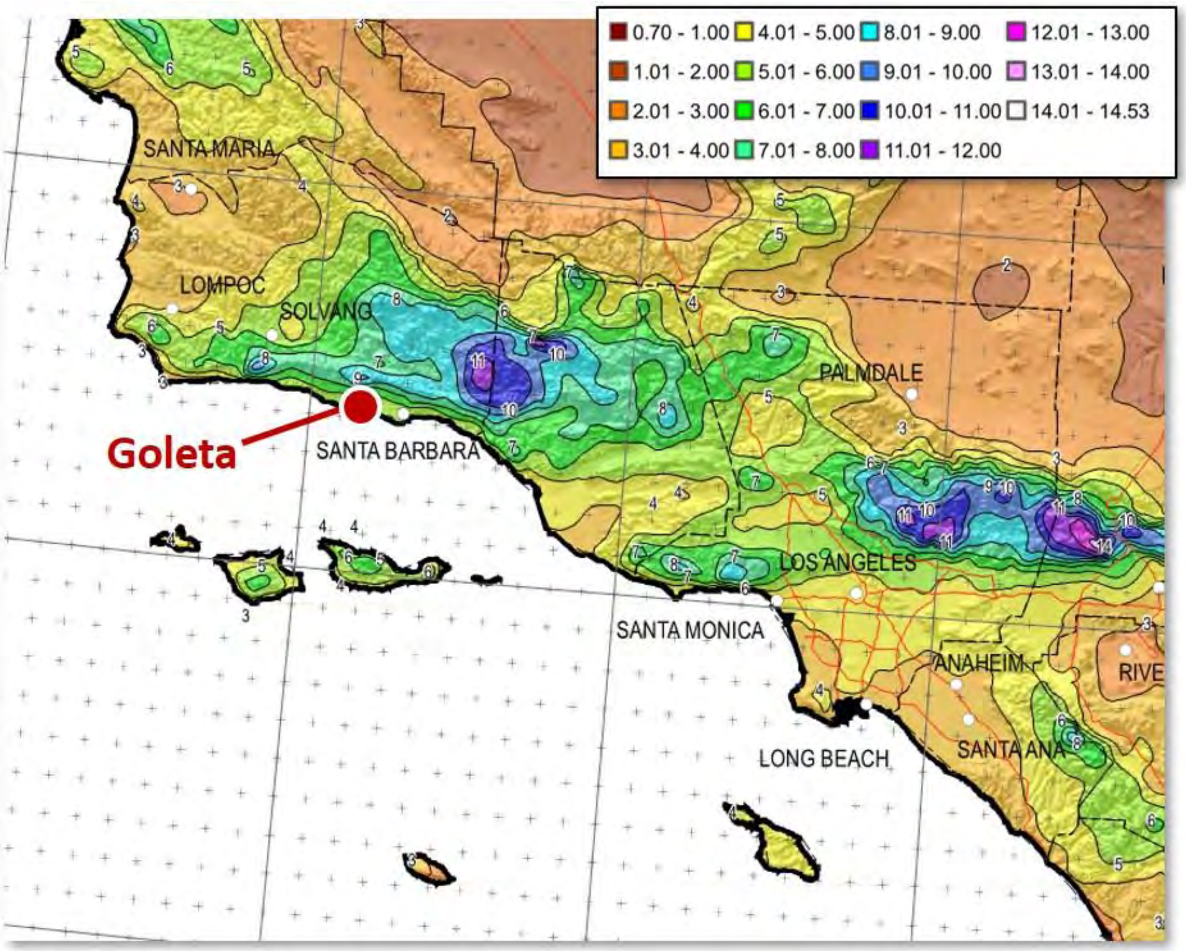


Figure 3-4. NOAA Southern California Rainfall Frequency Map

For example, the NOAA Rainfall Frequency Atlas[6] classifies a 10-year, 24-hour storm event at the Northwest rain gauge location as 5.89 inches. This means that in any given year, at this specific location, there is a 10% chance that 5.89 inches of rain will fall in any 24-hour period.

From the NOAA frequency maps, for a specific latitude and longitude, the rainfall densities for period durations ranging from 1 hour to 20 days are known for rain events ranging from 1-year to 10-year intensities. These are plotted to develop a rain event frequency map specific to each rainfall monitoring site. Superimposing the peak measured densities for the rainfall events on the rain event frequency

[5] Sanitary sewers are often designed to withstand I/I contribution to sanitary flows for specific-sized "design" storm events.

[6] NOAA Western U.S. Precipitation Frequency Maps Atlas 14, Volume 6, 2011: ftp://hdsc.nws.noaa.gov/pub/hdsc/data/sw/ca10y24h.pdf

plot determines the classification of the rainfall event. Table 3-2 shows the peak classifications for key rain events at each rain gauge location. Figure 3-5 to

Figure 3-8 illustrate the rain event short-term duration (1-hour to 24-hour) classification plots per the rain gauge location.

Table 3-2. Rainfall Event Classification

Rain Event	Duration	North-west	West 1	West 2	North North-west	Central West	Central	North-east 1	North-east 2	East
Dec 27 – 29	Peak	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour	< 1-year, 24-Hour
Jan 24 – 30	Peak	7-year, 24-hour	< 1-year, 24-hour	< 1-year, 24-hour	2-year, 12-hour	5-year, 12-hour	2-year, 12-hour	< 1-year, 24-hour	1-year, 24-hour	1-year, 24-hour
	4 - Day	15-year, 2-day	3-year, 2-day	1.5-year, 2-day	5-year, 2-day	10-year, 2-day	3-year, 4-day	1.5-year, 3-day	2-year, 3-day	2-year, 2-day
Period (Dec 8– Feb 8)	60-Day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day	< 1-yr, 60-day

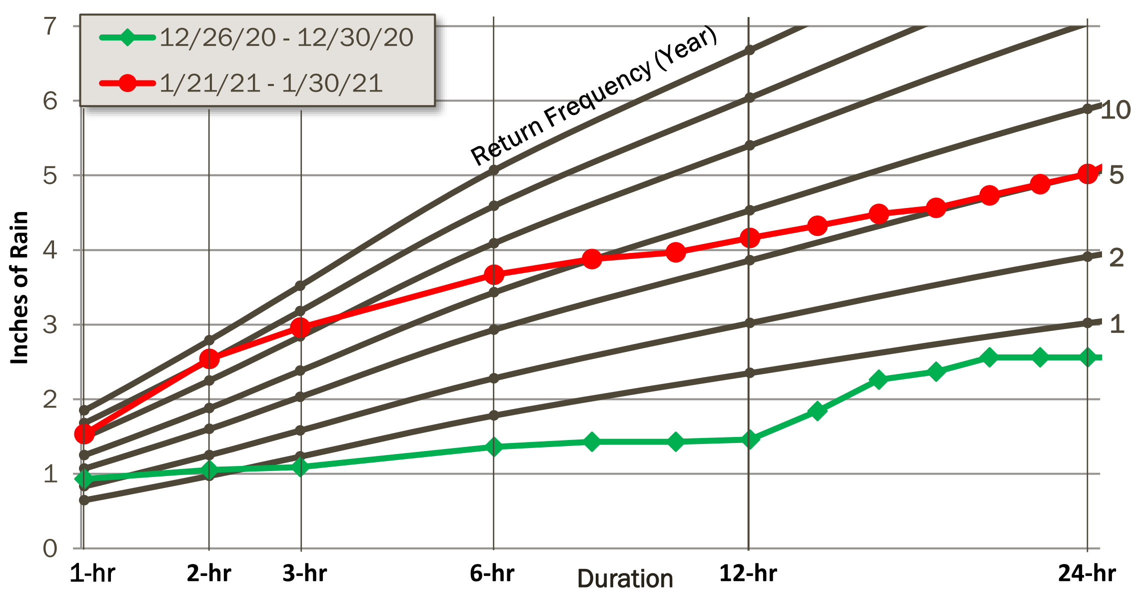


Figure 3-5. Rainfall Event Classification - Northwest Rain Gauge

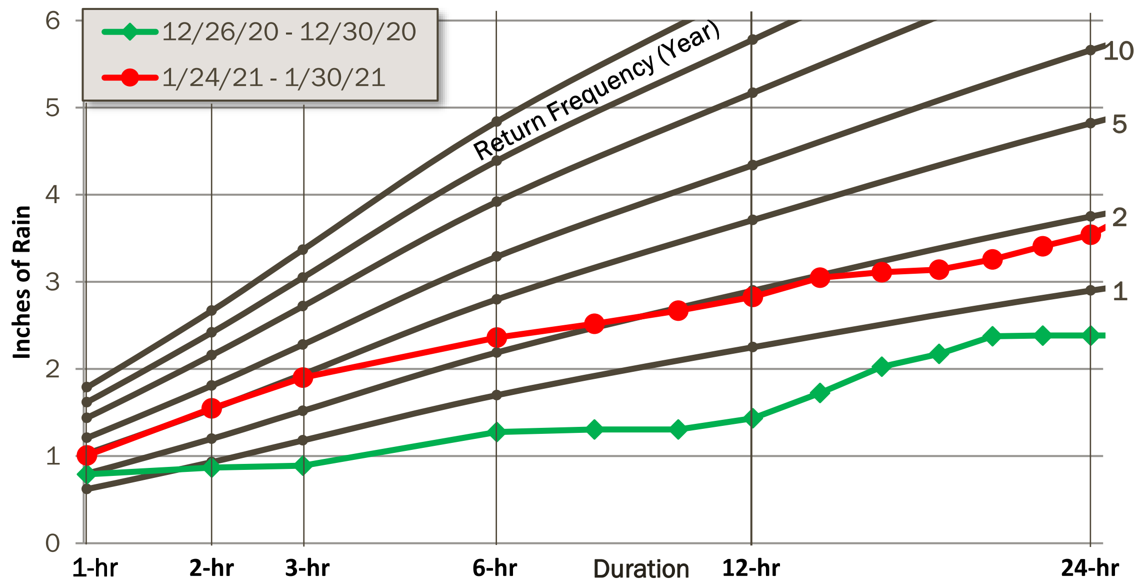


Figure 3-6. Rainfall Event Classification – North Northwest Rain Gauge

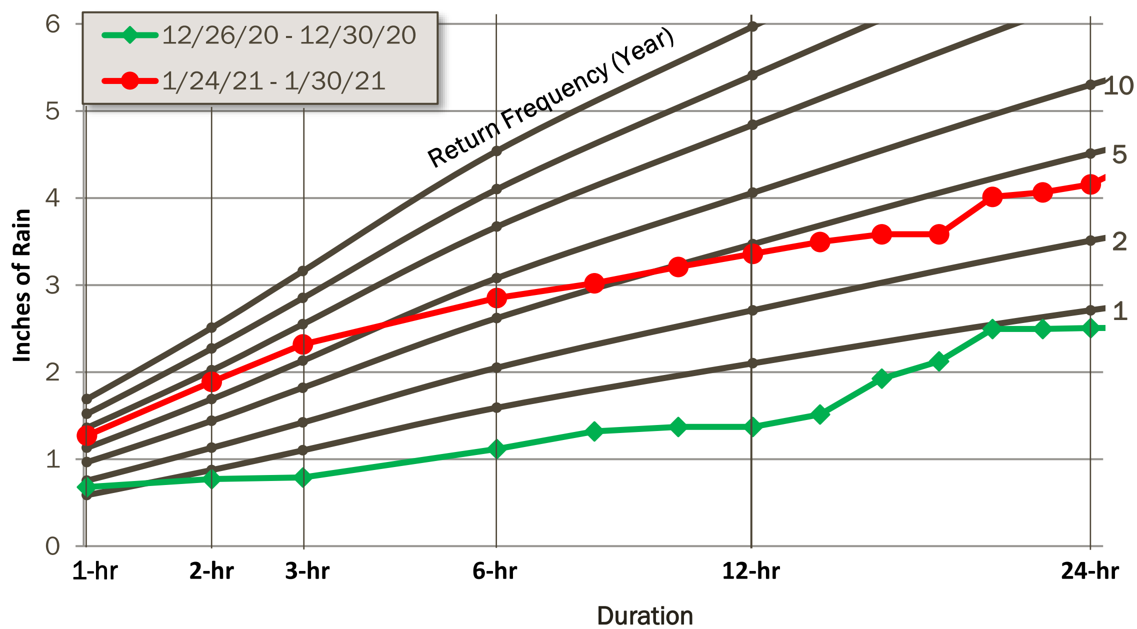


Figure 3-7. Rainfall Event Classification – Central West Rain Gauge

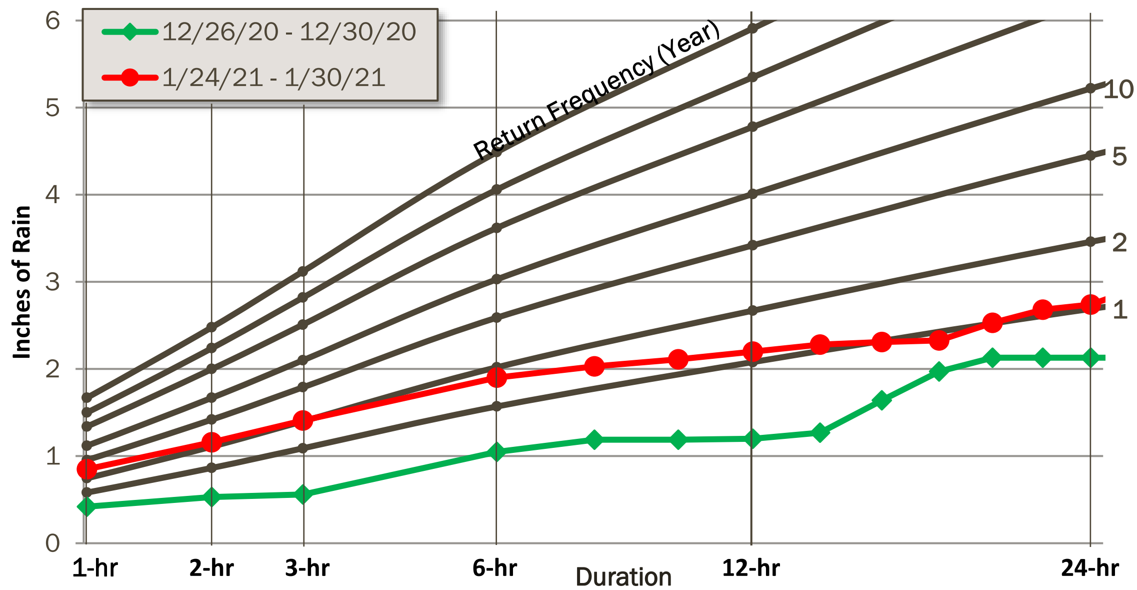


Figure 3-8. Rainfall Event Classification – Northeast 2 Rain Gauge

3.1.4 Rain Gauge Triangulation Distribution

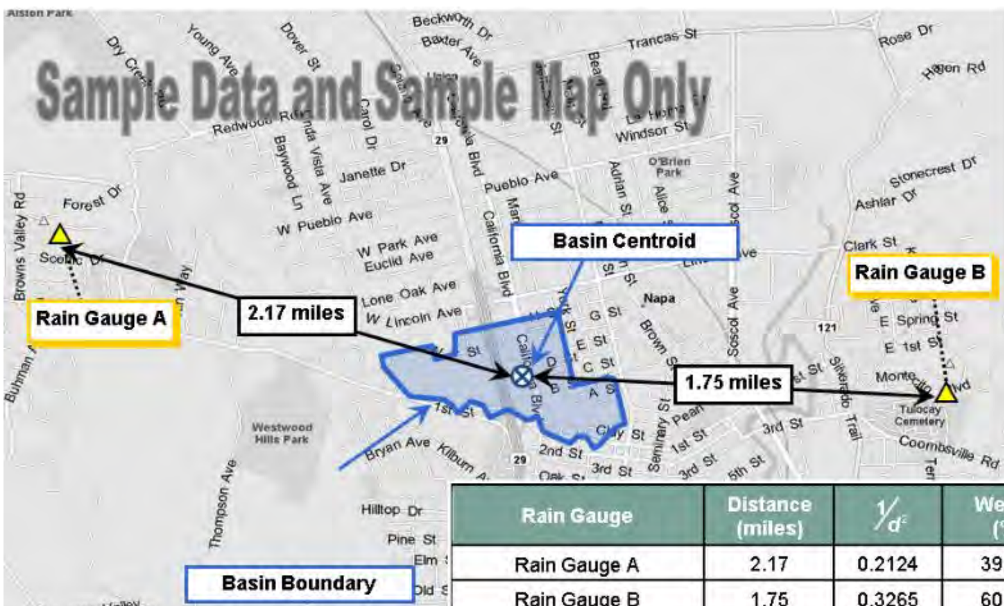
The rainfall affecting the sanitary sewer collection system basins must be calculated based on the proximity to the rain gauge locations. The mean precipitation for each site's upstream basin was calculated by taking data from the rain gauges and using the inverse distance weighting (IDW) method. IDW is an interpolation method that assumes the influence of each rain gauge location diminishes with distance. The center of an upstream basin[7] is identified, and a weighted triangulated average is taken of the precipitation data from nearby rain gauge locations.

The IDW function is as follows:

$$weight(d) = \frac{1/d^p}{\sum 1/d^p}, \quad \text{where:} \quad d = \text{distance} \quad p = \text{power } (p > 0)$$

The value of p is user defined. The most common choice for hydrological studies of watershed areas is $p = 2$.

Figure 3-9 illustrates the IDW method with sample data. The rain gauge distribution as calculated for each flow monitoring basin is shown in Table 3-3.



Rain Gauge	Distance (miles)	$1/d^2$	Weight (%)
Rain Gauge A	2.17	0.2124	39.4%
Rain Gauge B	1.75	0.3265	60.6%
Totals		**0.5389**	**100%**

Figure 3-9. Rainfall Inverse Distance Weighting Method

[7] Note that the full basin upstream of the site was used instead of the isolated basins as the rain data will be compared to the flow at each site

Table 3-3. Rain Gauge Distribution per Monitoring Basin

Monitoring Basin	North-west	West 1	West 2	North North-west	Central West	Central	North-east 1	North-east 2	East
Basin 01	0.0%	0.0%	0.0%	0.0%	0.0%	14.8%	76.5%	0.0%	5.7%
Basin 02	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	41.3%	0.0%	30.0%
Basin 03	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	39.6%	30.2%	30.2%
Basin 04	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	79.2%	19.8%
Basin 05	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.4%	0.0%	25.0%
Basin 06	0.0%	0.0%	0.0%	0.0%	3.6%	8.1%	86.6%	0.0%	1.8%
Basin 07	0.0%	0.0%	0.0%	0.0%	12.1%	47.6%	40.3%	0.0%	0.0%
Basin 08	0.0%	0.0%	0.4%	0.0%	0.5%	98.7%	0.3%	0.0%	0.0%
Basin 09W	1.2%	90.1%	8.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
Basin 09E	4.7%	12.1%	20.7%	0.0%	15.3%	47.2%	0.0%	0.0%	0.0%
Basin 10	0.0%	0.0%	0.0%	0.0%	0.0%	81.5%	18.5%	0.0%	0.0%
Basin 11	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	65.4%	0.0%	19.9%
Basin 12	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	70.8%	0.0%	17.1%
Basin 13	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	49.8%	0.0%	25.3%
Basin 14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	39.5%	0.0%	28.8%

3.2 Flow Monitoring Data

3.2.1 Average Flow Analysis

Average dry weather flow (ADWF) curves were established during dry days when I/I had the least impact on the baseline flow. Table 3-4 summarizes the dry weather flow data measured for this study. ADWF curves for each site can be found in *Appendix A*.

Table 3-4. Dry Weather Flow

Monitored Site	Sediment (in.)	Mon-Thu ADWF (MGD)	Friday ADWF (MGD)	Saturday ADWF (MGD)	Sunday ADWF (MGD)	Overall ADWF (MGD)
Site 1	none	1.047	1.043	1.096	1.110	1.063
Site 2	none	0.057	0.057	0.054	0.056	0.056
Site 3	3"	0.218	0.213	0.198	0.199	0.212
Site 4	none	0.044	0.045	0.047	0.047	0.045
Site 5	3"	0.053	0.056	0.058	0.058	0.055
Site 6	none	0.122	0.121	0.137	0.143	0.127
Site 7	none	0.129	0.126	0.137	0.146	0.132
Site 8	none	0.125	0.127	0.135	0.138	0.129
Site 9 East	none	0.018	0.017	0.017	0.018	0.018
Site 9 West	none	0.012	0.011	0.013	0.013	0.012
Site 10	none	0.378	0.369	0.388	0.407	0.382
Site 11	none	0.001	0.001	0.001	0.001	0.001
Site 12	none	0.022	0.022	0.021	0.021	0.022
Site 13	none	0.524	0.512	0.514	0.520	0.520
Site 14	none	0.266	0.265	0.263	0.266	0.265
System	-	2.093	2.067	2.106	2.155	2.100

Figure 3-10 shows a flow schematic of the average daily flows and average daily flow levels. The following ADWF analysis results are noted:

- From December 7, flows started increasing heading into the holidays. This was also observed at Site 4, and more dramatically at Site 9 East and Site 9 West.
- Sites 13 and 14 had very dramatic decreasing flows during Thanksgiving, with a brief recovery while students returned for exams, and then again large reductions as exams ended and the holiday season approached. Flows during holidays and when UCSB was not in session were not considered representative and not used for ADWF determination.

- Flows started decreasing starting December 14, assumed due to UCSB closing for winter break. Flows during holidays and when UCSB was not in session were not considered representative and not used for ADWF determination.
- Sites 3 and 5 had approximately 3-inches of sediment measured during visits.

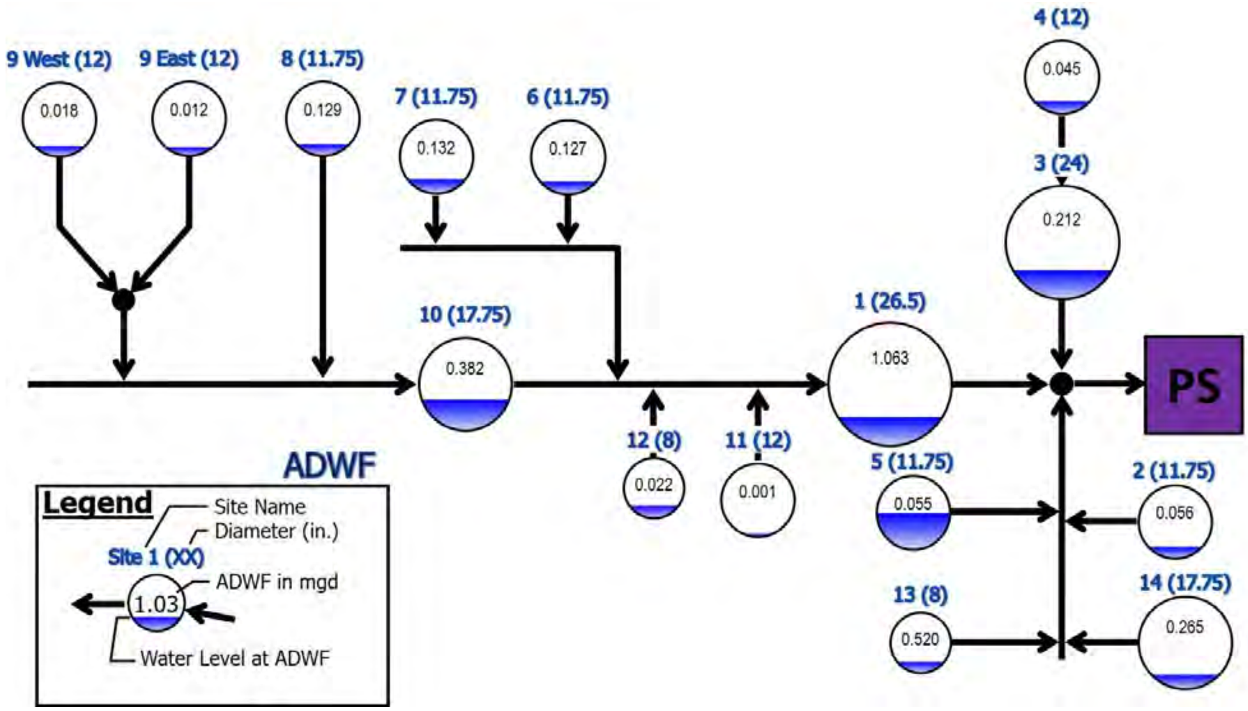


Figure 3-10. Average Dry Weather Flow (Flow Schematic)

3.2.2 COVID-19 and ADWF Changes

During the 2019-2020 wet weather season, the current COVID-19 pandemic necessitated the use of two sets of ADWF. In general, there were three time periods during this time period, pre-Shelter-in-Place (SIP), transition period and SIP. On March 13, schools were closed statewide. Although "Shelter-in-Place" was officially announced on March 20, 2020, it is clear from the flow monitoring data that people were already transitioning (in terms of sewage) towards SIP behavior starting from March 13. Saturday, March 14, was already a transition day, and by Sunday, March 15, people were mostly in SIP mode.

There were clear differences in ADWF patterns and volumes before and after the 'shelter-in-place' order. Daily peaks are delayed by 1-2 hours and without the sharp early-morning peak. For example, Figure 3-11 shows the sets of pre-SIP ADWF, post-SIP curves for Site A, and a direct comparison of the pre- and post-SIP curves for weekday diurnal patterns.

For the 2020-2021 wet weather season, in general, one set of ADWF can be used. The State of California has shifted several times between various tiers of COVID-19 status that have resulted in some groups of businesses opening and closing throughout the summer, fall and winter. But in general, most folks that were working from home continue in this capacity, most students are still attending school remotely. At UCSB, students are living on campus and in Isla Vista but attending classes remotely. As a result, the ADWF figures have somewhat stabilized with the exception of flows around

UCSB. There was a fairly substantial reduction in flows during holiday and non-school periods in areas where UCSB students reside.

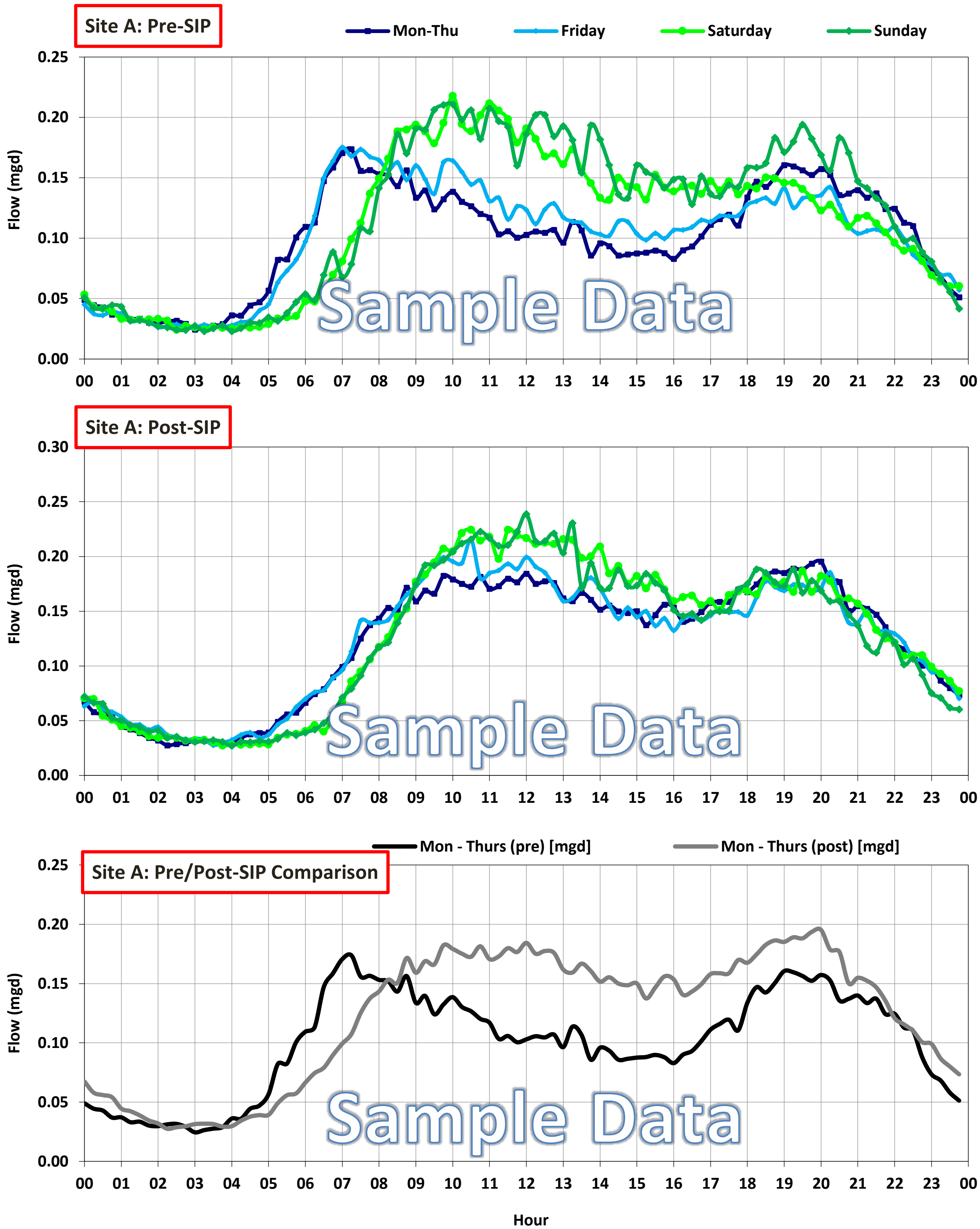


Figure 3-11. Site A pre-SIP and post-SIP Average Dry Weather Flow Curves with Comparison

3.2.3 Peak Flows and Pipeline Capacity

Peak measured flows and the hydraulic grade line data (flow depths) are important to understanding the capacity limitations. The capacity analysis terms used in the text below are defined as follows:

- **Peaking Factor**: Peaking factor is defined as the peak measured flow divided by the average dry weather flow (ADWF). Peaking factors are influenced by many factors, including size and topography of the tributary area, flow attenuation, flow restrictions, and characteristics of I/I entering the collection system. Municipal standards for peaking factor vary agency by agency; the District should refer to jurisdictional standards when evaluating peaking factors[8]. For this study, peaking factors over 5.0 are highlighted YELLOW and over 10 are highlighted in RED.
- **d/D Ratio**: The d/D ratio is the peak measured depth of flow (d) divided by the pipe diameter (D). The d/D ratio for each site was computed based on the maximum depth of flow for the study. Standards for d/D ratio vary from agency to agency, but typically range between d/D ≤ 0.5 and d/D ≤ 0.75. For this study, d/D ratios that exceed 0.50 are highlighted YELLOW. Surcharged sites are highlighted RED.

Table 3-5 summarizes the peak flows, levels, d/D ratios, and peaking factors during the flow monitoring period. Capacity analysis data are presented on a site-by-site basis and represents the hydraulic conditions only at the site nodes; hydraulic conditions in other areas of the collection system will differ.

Table 3-5. Capacity Analysis Summary

Monitored Site	ADWF (MGD)	Peak Measured Flow (MGD)	Peaking Factor	Pipe Diameter, *D* (IN)	Max Depth, *d* (IN)	*Max d/D* Ratio	Surcharge above pipe crown (FT)
Site 1	1.063	3.55	3.3	26.5	30.29	1.14	0.32
Site 2	0.056	0.25	4.5	11.75	3.98	0.34	n/a
Site 3	0.212	1.15	5.4	24	15.27	0.64	n/a
Site 4	0.045	0.16	3.6	12	3.64	0.30	n/a
Site 5	0.055	0.41	7.5	11.75	10.42	0.89	n/a
Site 6	0.127	0.55	4.3	11.75	3.35	0.29	n/a
Site 7	0.132	0.48	3.6	11.75	3.78	0.32	n/a
Site 8	0.129	0.47	3.7	11.75	2.8	0.24	n/a
Site 9 East	0.018	0.13	7.1	12	3.87	0.32	n/a
Site 9 West	0.012	0.13	11.1	12	2.81	0.23	n/a
Site 10	0.382	1.06	2.8	17.75	10.52	0.59	n/a
Site 11	0.001	0.14	166.0	12	4.37	0.36	n/a
Site 12	0.022	0.21	9.5	8	15.35	1.92	0.61
Site 13	0.520	1.00	1.9	17.75	4.93	0.28	n/a
Site 14	0.265	0.46	1.7	14.75	2.95	0.20	n/a
System	2.100	6.47	3.1	-	-	-	-

[8] WEF Manual of Practice FD-6 and ASCE Manual No. 62 suggests typical peaking factor ratios range between 3 and 4, with higher values possibly indicative of pronounced I/I flows.

The following capacity analysis results are noted:

- **Peak flows**: The peak measured flow was taken from the whole monitoring study, including during the rainfall. The peak flow events at all except 2 sites happened during the January 24 – 30, 2021 rainfall event.
- **Peaking Factors**: Six sites had peaking factors over 5.0. Site 9 West and Site 11 had peaking factors over 10. The peaking factor for Site 11 is skewed high because of its extremely low ADWF.
- **d/D Ratio**: Four sites had d/D ratios that exceeded 0.50 for the whole monitoring period. Sites 1 and 12 surcharged during the study.
- **Site 11**: This line has very little flow, and at times zero flow. Flow data indicates an upstream pump station provides most flow through this site and has a sporadic cycling interval. The only non-pumped flow appeared to occur during the rainfall events, indicating some I/I between the forcemain discharge and the metering manhole, though the volume of I/I was not significant.

Figure 3-12 and Figure 3-13 show bar graph summaries of the peaking factors and d/D ratios, respectively. Figure 3-14 shows the schematic diagram of the peak measured flows with peak flow levels of the whole monitoring period. It is noted that peak flows may have occurred at different times and due to factors, such as attenuation, some downstream sites may have totals that differ from upstream sites.

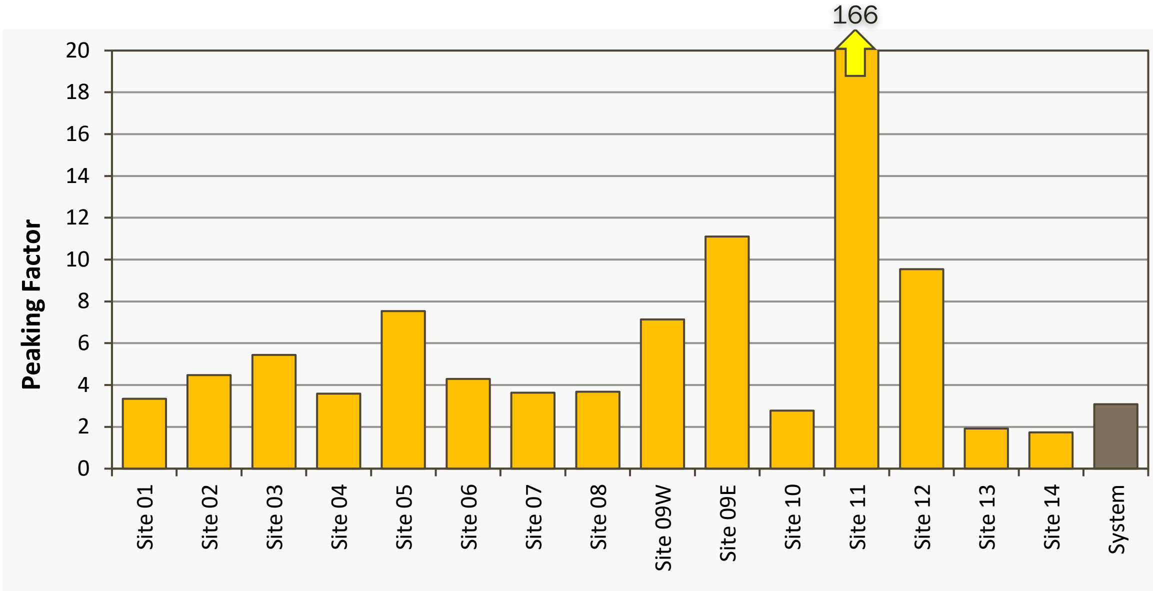


Figure 3-12. Peaking Factors

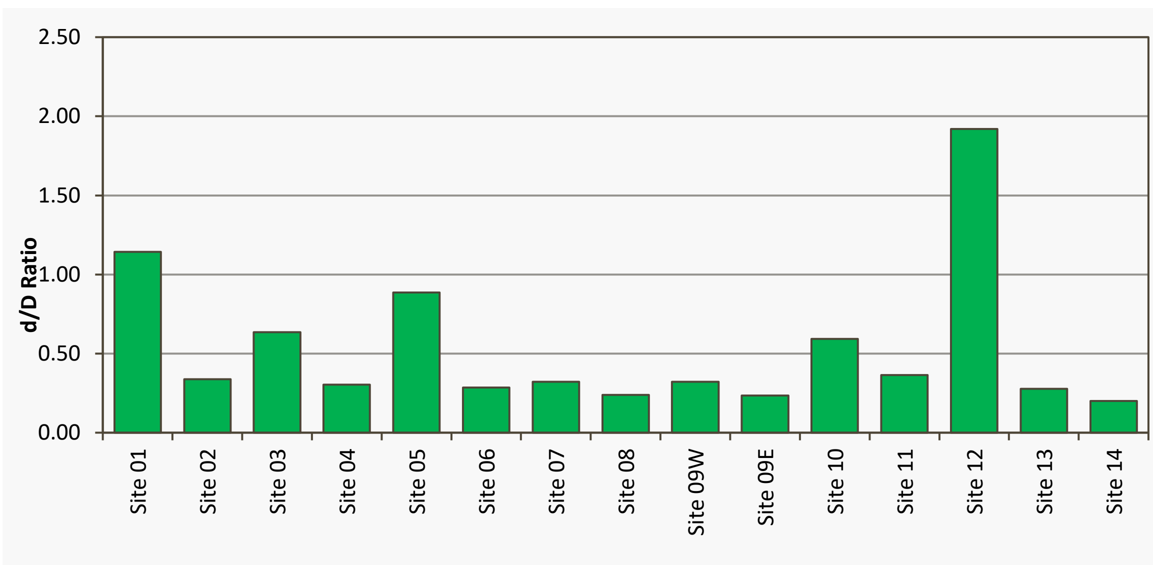


Figure 3-13. Capacity Summary: Max d/D Ratios

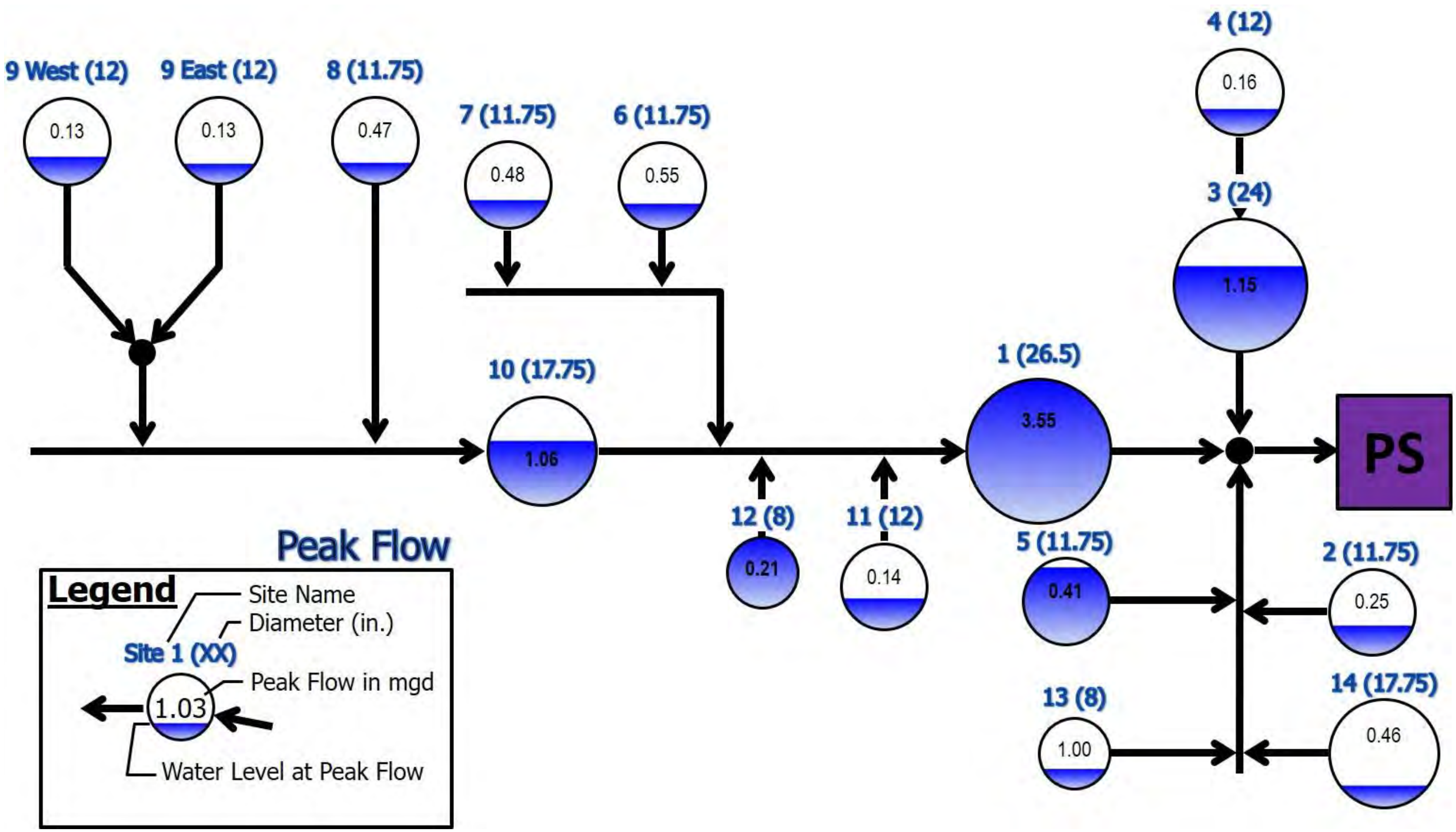


Figure 3-14. Peak Measured Flow (Flow Schematic)

3.3 Inflow and Infiltration

3.3.1 Preface

I/I analyses are presented on a basin-by-basin basis. Due to diversion structure operations and possible cross-connections between basins, some basins needed to be combined or excluded for the I/I analyses. Items relevant to the analyses in this study are noted below and referenced in Figure 3-15:

- **Baseline Flow:** Equivalent to overall ADWF per Section 2.5.
- **I/I Isolation**: The I/I flow rate is the real-time flow less the estimated average dry weather flow rate (shown below as the RED line).
- **Inflow**: Inflow is usually recognized graphically by large-magnitude, short-duration spikes immediately following a rain event. The peak inflow rate is the highest spike in the isolated I/I hydrograph immediately following the evaluated rainfall event.
- **RDI**: RDI is typically taken as the average I/I flow rate measured approximately 24 to 36 hours after the rainfall event has concluded.
- **Combined I/I**: the totalized volume (in gallons) of both inflow and RDI over the course of a rainfall event (shown below as the orange area).

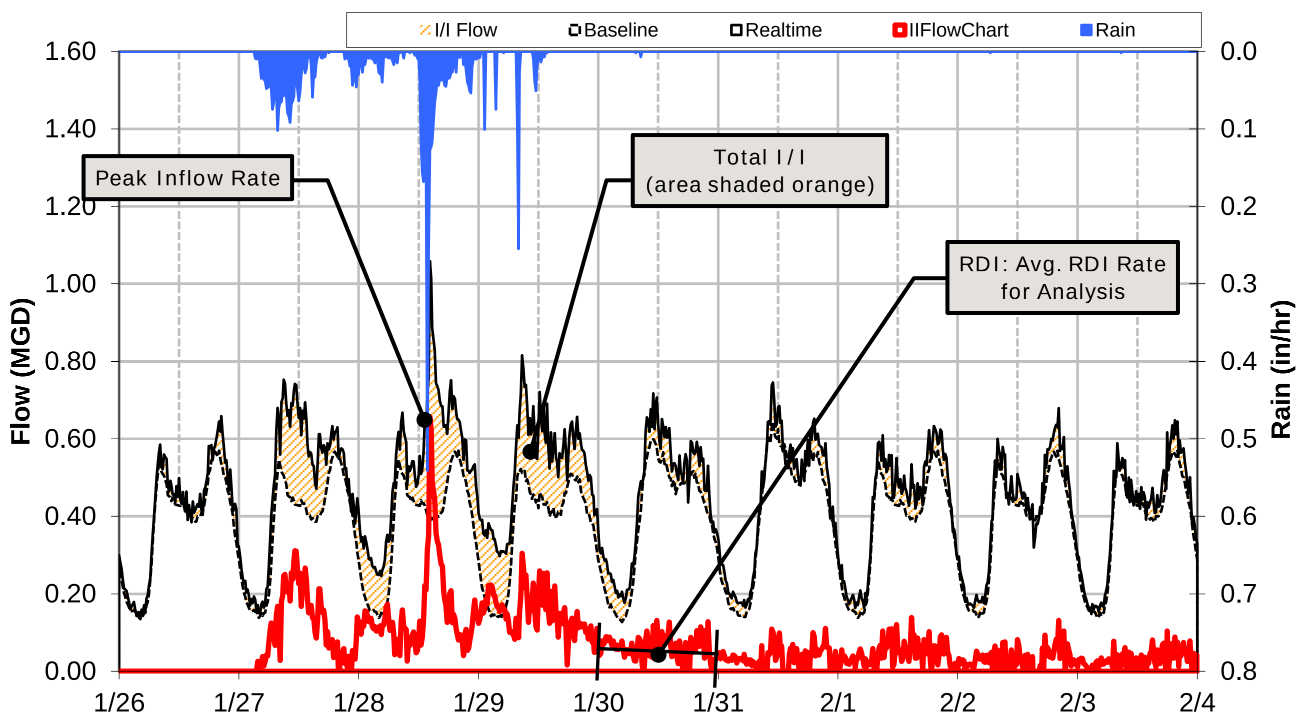


Figure 3-15. I/I Isolation, Site 10, January 27 – 29 Rainfall Event

3.3.2 Inflow Results Summary

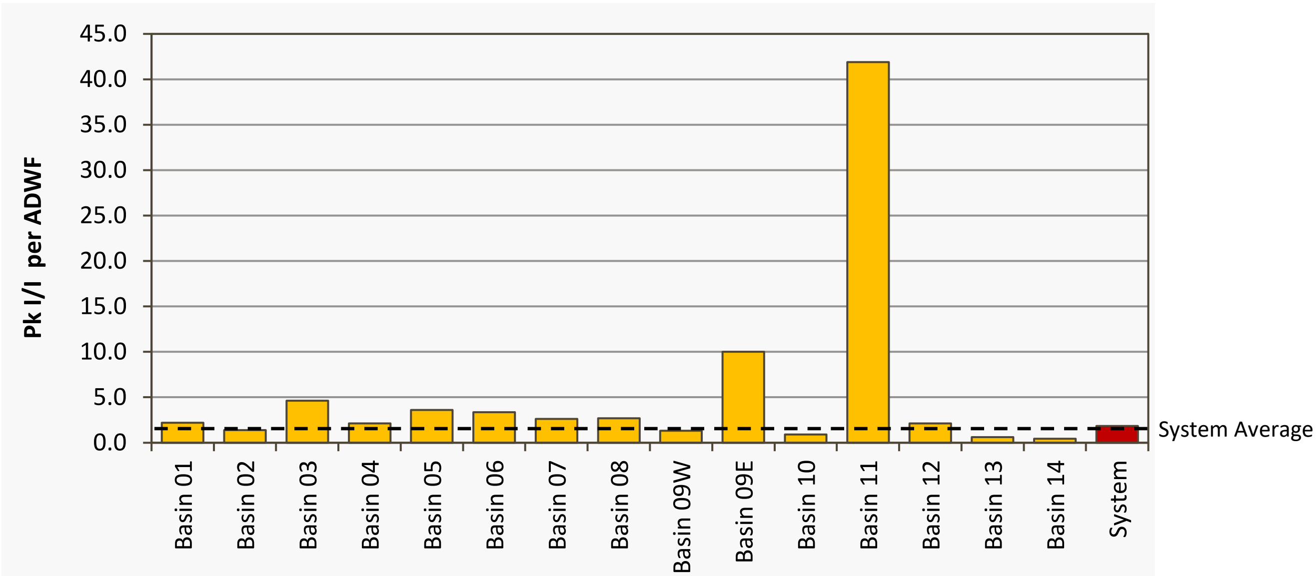
Inflow is storm water discharged into the sewer system through direct connections such as downspouts, area drains, cross-connections to catch basins, etc. These sources transport rainwater directly into the sewer system and the corresponding flow rates are tied closely to the intensity of the storm. This component of I/I often causes a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows.

Inflow rankings considered peak I/I response from the January rainfall event, summarized in Table 3-6. The "Top 3" ranked basins have been shaded RED. Figure 3-16 shows bar graph summaries of the inflow results. Figure 3-17 illustrates a temperature map summary of the inflow analysis results per basin. The following inflow results are noted:

- Basins 2, 3, 5, 9 East and 11 had the highest weighted, normalized peak I/I rates, an indicator of high inflow upstream from the flow monitoring basin.

Table 3-6. Inflow Analysis Summary

Metering Basin	Basin Acreage	ADWF (mgd)	Inflow Rate (mgd)	Inflow per-ADWF Ranking	Inflow per-Acre Ranking	Final Inflow Ranking
Basin 01	567.0	0.399	0.872	8	10	10
Basin 02	15.3	0.056	0.078	11	2	6
Basin 03	384.0	0.167	0.773	3	7	4
Basin 04	74.6	0.045	0.095	10	13	11
Basin 05	23.1	0.055	0.197	4	1	3
Basin 06	240.9	0.127	0.428	5	9	7
Basin 07	175.0	0.132	0.346	7	8	8
Basin 08	164.0	0.129	0.348	6	5	5
Basin 09W	153.0	0.018	0.023	12	15	13
Basin 09E	30.2	0.012	0.119	2	3	2
Basin 10	346.0	0.224	0.204	13	14	14
Basin 11	13.3	0.001	0.036	1	4	1
Basin 12	22.0	0.022	0.046	9	6	9
Basin 13	210.0	0.520	0.323	14	11	12
Basin 14	93.4	0.265	0.122	15	12	15
System	2511.8	2.100	3.878	-	-	-



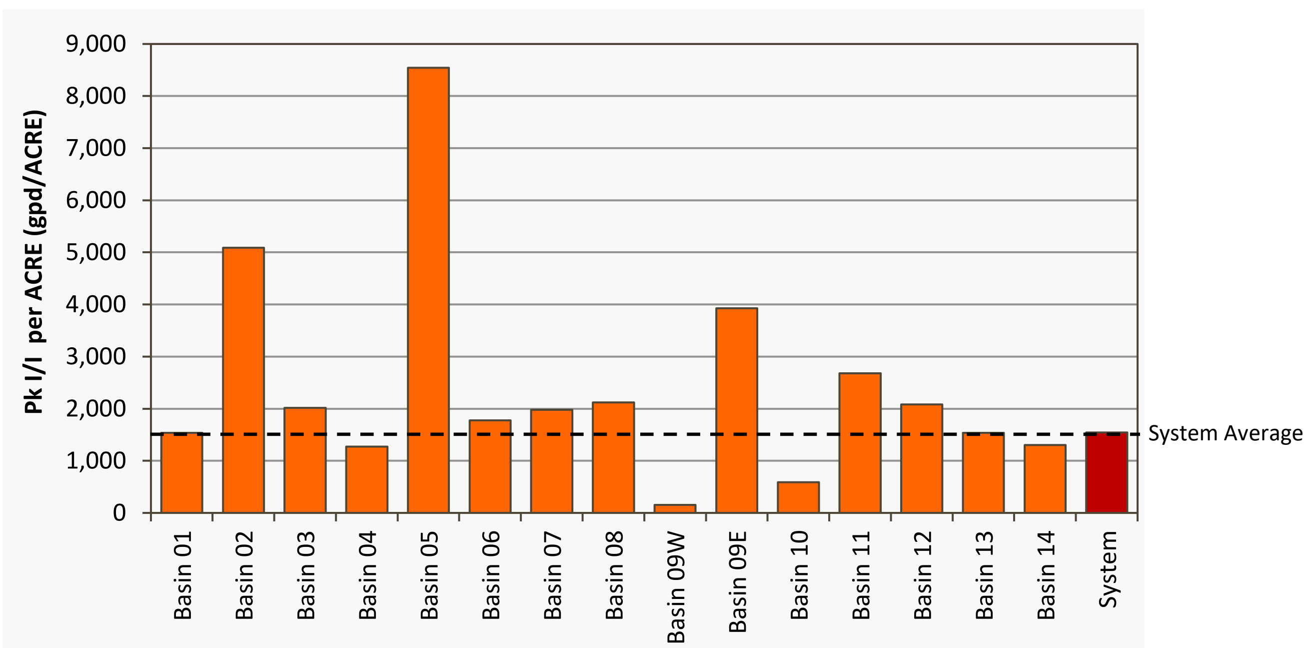


Figure 3-16. Bar Graphs: Inflow Analysis Summary

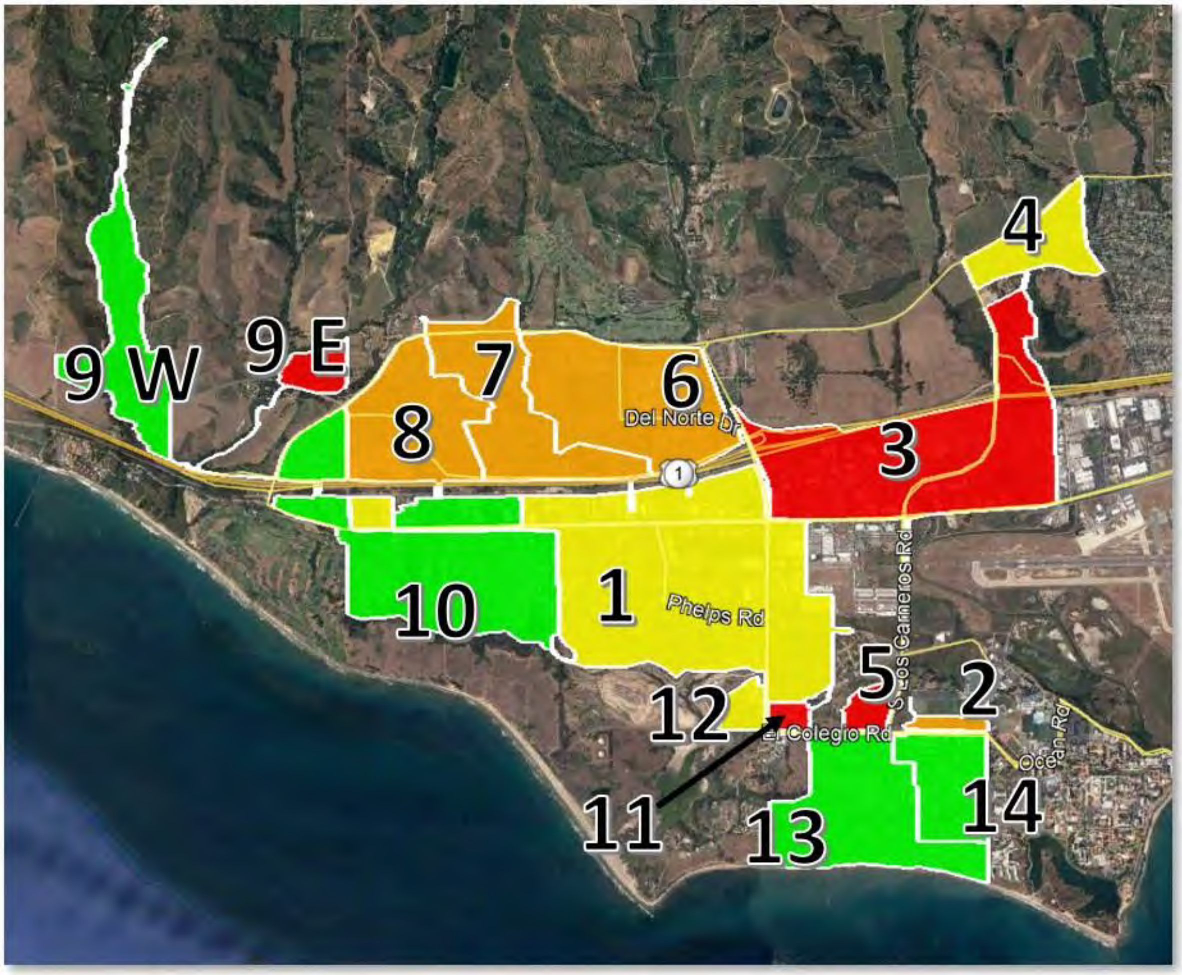


Figure 3-17. Temperature Map: Inflow Final Basin Rankings

3.3.3 Rainfall Dependent Infiltration Results Summary

Infiltration is defined as water entering the sanitary sewer system through defects in pipes, pipe joints, and manhole walls, which may include cracks, offset joints, root intrusion points, and broken pipes. Increased flows into the sanitary sewer system are usually tied to groundwater levels and soil saturation levels. Infiltration sources transport rainwater into the system indirectly; flow levels in the sanitary system increase gradually, are typically sustained for a period after rainfall has stopped, and then gradually decrease as soils become less saturated and as groundwater levels recede to normal.

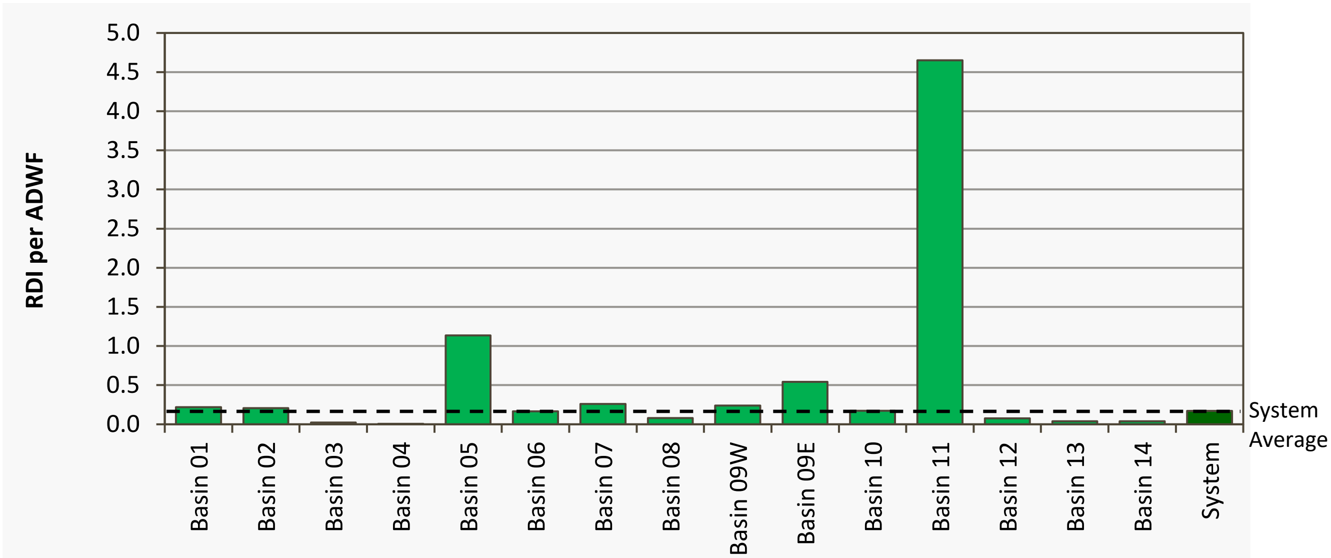
Infiltration typically creates long-term annual volumetric problems. The major impact is the cost of pumping and treating the additional volume of water, and of paying for treatment (for municipalities that are billed strictly on flow volume).

RDI rankings considered residual RDI response from the January rainfall event, summarized in Table 3-7. The "Top 3" ranked basins have been shaded RED. Figure 3-18 shows bar graph summaries of the RDI results. Figure 3-19 illustrates a temperature map summary of the RDI analysis results per basin. The following RDI results are noted:

- Basins 2, 5, 9 East, and 11 had the highest weighted, normalized RDI rates, an indicator of high RDI upstream from the flow monitoring basin.

Table 3-7. RDI Analysis Summary

Metering Basin	Basin Acreage	ADWF (mgd)	RDI Rate (mgd)	RDI per ADWF	Per-ADWF RDI Ranking	Per-ACRE RDI Ranking	Final RDI Ranking
Basin 01	567.0	0.399	0.087	0.22	6	6	6
Basin 02	15.3	0.056	0.012	0.21	7	2	5
Basin 03	384.0	0.167	0.004	0.02	14	14	14
Basin 04	74.6	0.045	0.000	0.01	15	15	15
Basin 05	23.1	0.055	0.062	1.14	2	1	1
Basin 06	240.9	0.127	0.021	0.17	9	10	9
Basin 07	175.0	0.132	0.034	0.26	4	5	4
Basin 08	164.0	0.129	0.010	0.08	10	12	11
Basin 09W	153.0	0.018	0.004	0.24	5	13	8
Basin 09E	30.2	0.012	0.006	0.54	3	4	3
Basin 10	346.0	0.224	0.039	0.17	8	8	7
Basin 11	13.3	0.001	0.004	4.65	1	3	2
Basin 12	22.0	0.022	0.002	0.08	11	11	12
Basin 13	210.0	0.520	0.020	0.04	13	9	13
Basin 14	93.4	0.265	0.011	0.04	12	7	10
System	2511.8	2.100	0.360	0.17			



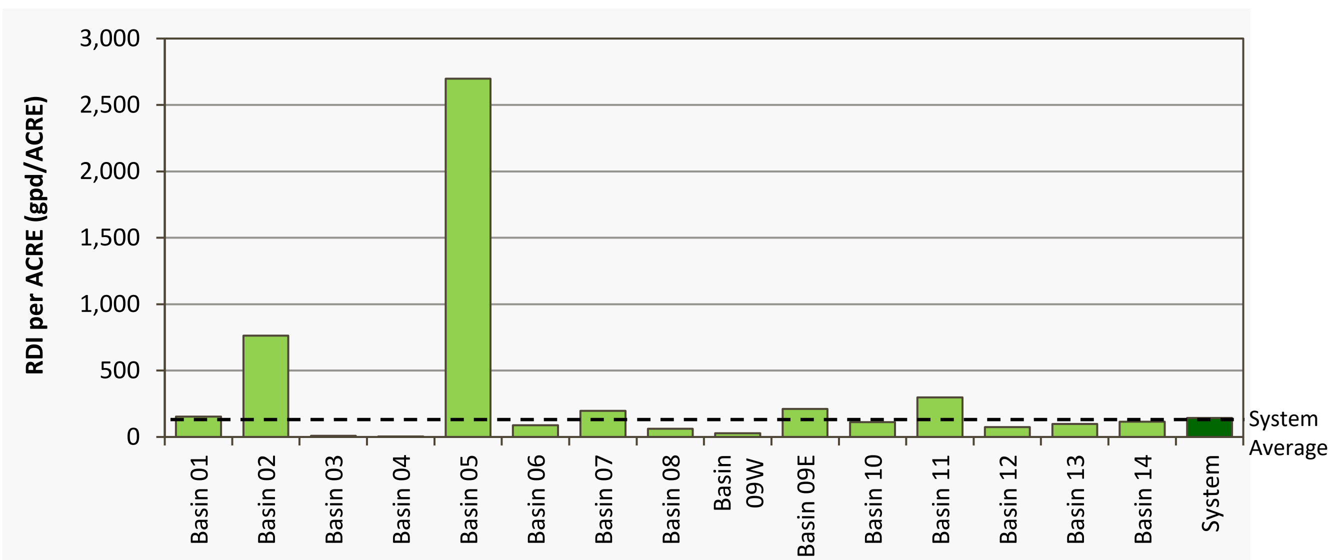


Figure 3-18. Bar Graphs: RDI Analysis Summary

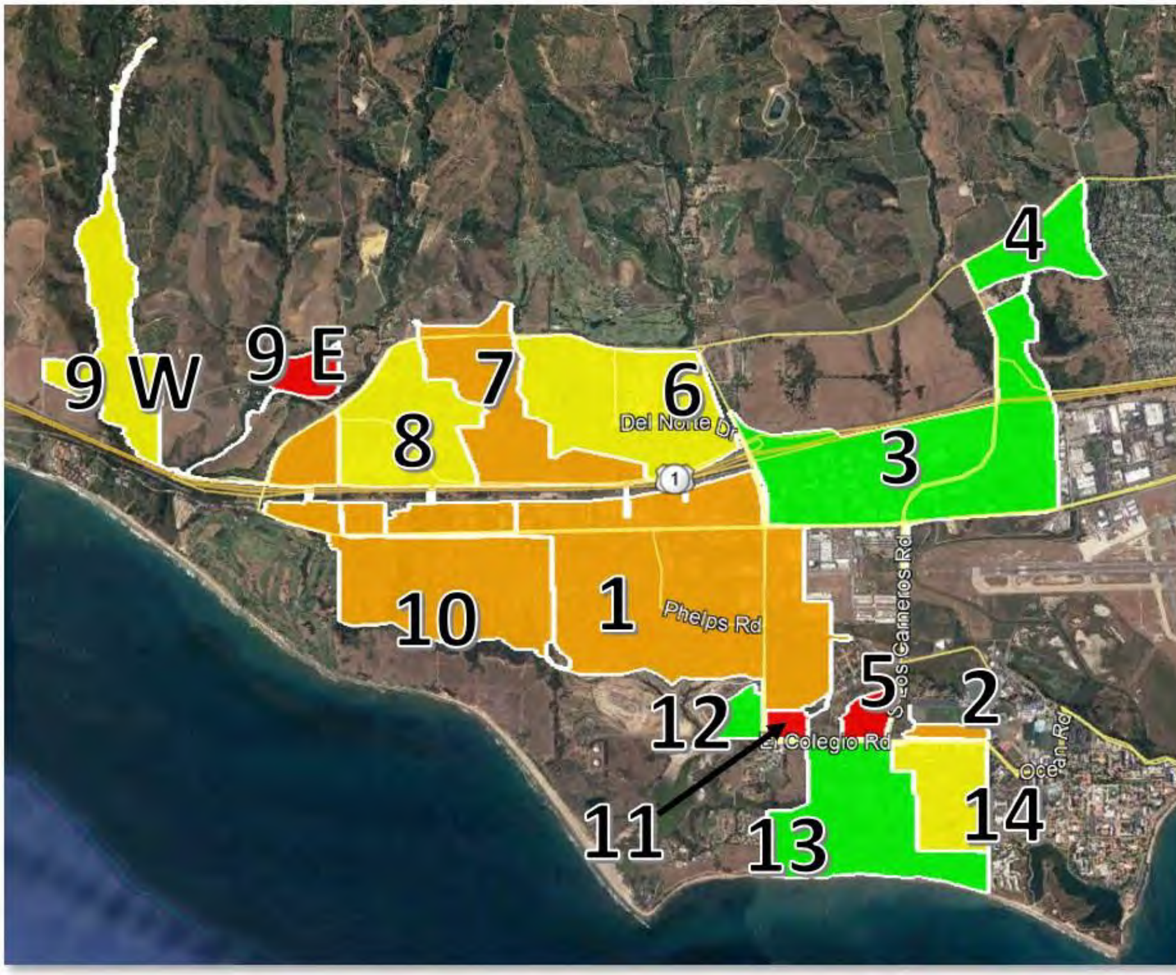


Figure 3-19. Temperature Map: RDI Final Basin Rankings

3.3.4 Combined I/I Results Summary

Combined I/I analysis considers the totalized volume (in gallons) of both inflow and rainfall-dependent infiltration over the course of a storm event. This analysis included the entirety of the January 24 – 30 rainfall event, summarized in Table 3-8. The "Top 3" ranked basins have been shaded RED.

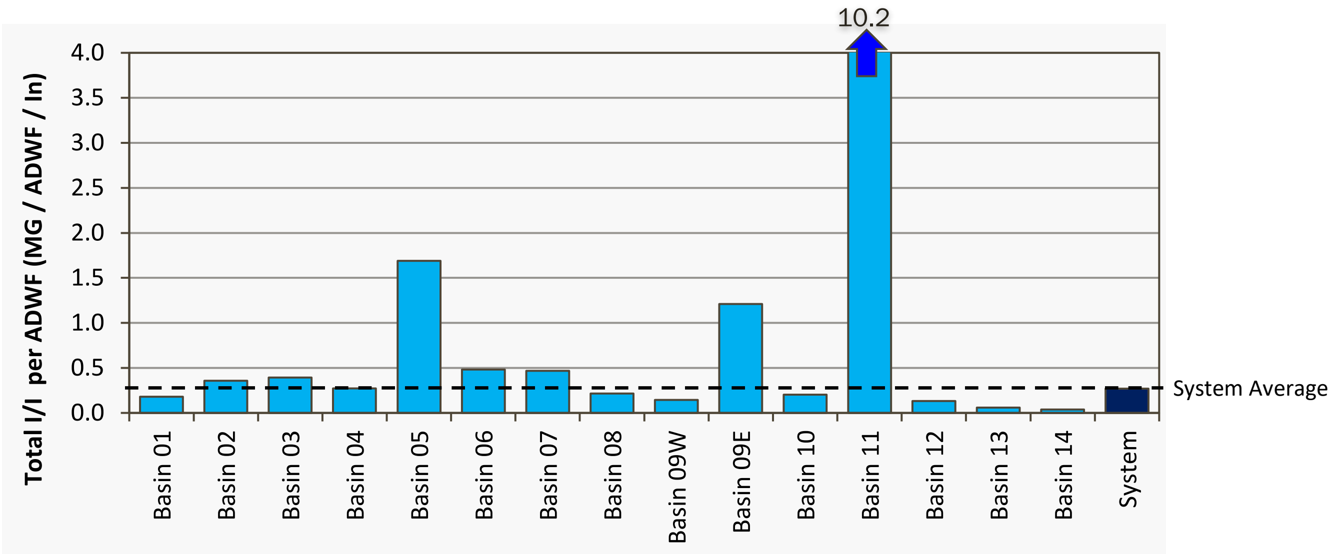
Figure 3-20 shows bar graph summaries of the combined I/I results. Figure 3-21 illustrates a temperature map summary of the RDI analysis results per basin. The following combined I/I results are noted:

- Basins 2, 5, 9 East, and 11 had the highest weighted, normalized combined I/I rates, an indicator of high total combined I/I upstream from the flow monitoring basin.

Table 3-8. Combined I/I Analysis Summary

Metering Basin	Basin Acreage	ADWF (mgd)	Total I/I (gallons)	Total I/I per-ACRE (R-Value*)	Per-ADWF Total I/I Ranking	Per-ACRE Total I/I Ranking	Final Total I/I Ranking
Basin 01	567.0	0.399	393,000	0.5%	11	13	11
Basin 02	15.3	0.056	99,000	4.8%	7	2	4
Basin 03	384.0	0.167	318,000	0.6%	6	7	7
Basin 04	74.6	0.045	54,000	0.6%	8	9	8
Basin 05	23.1	0.055	464,000	14.8%	2	1	1
Basin 06	240.9	0.127	337,000	0.9%	4	6	5
Basin 07	175.0	0.132	397,000	1.3%	5	5	6
Basin 08	164.0	0.129	204,000	0.6%	9	8	9
Basin 09W	153.0	0.018	16,000	0.1%	12	15	14
Basin 09E	30.2	0.012	73,000	1.7%	3	4	3
Basin 10	346.0	0.224	315,000	0.5%	10	11	10
Basin 11	13.3	0.001	44,000	2.4%	1	3	2
Basin 12	22.0	0.022	14,000	0.5%	13	12	13
Basin 13	210.0	0.520	149,000	0.5%	14	10	12
Basin 14	93.4	0.265	48,000	0.4%	15	14	15
System	2511.8	2.100	3,217,000	0.8%			

* - R-Value is an approximate % of rainfall that makes it into the sanitary sewer system.



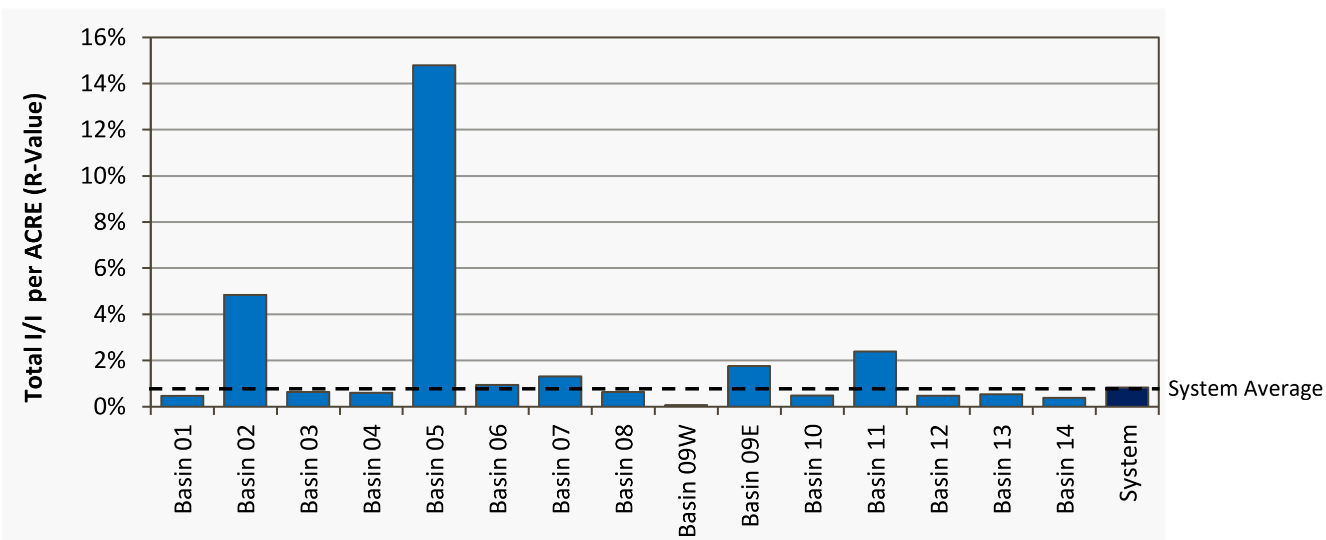


Figure 3-20. Bar Graphs: Total I/I Analysis Summary

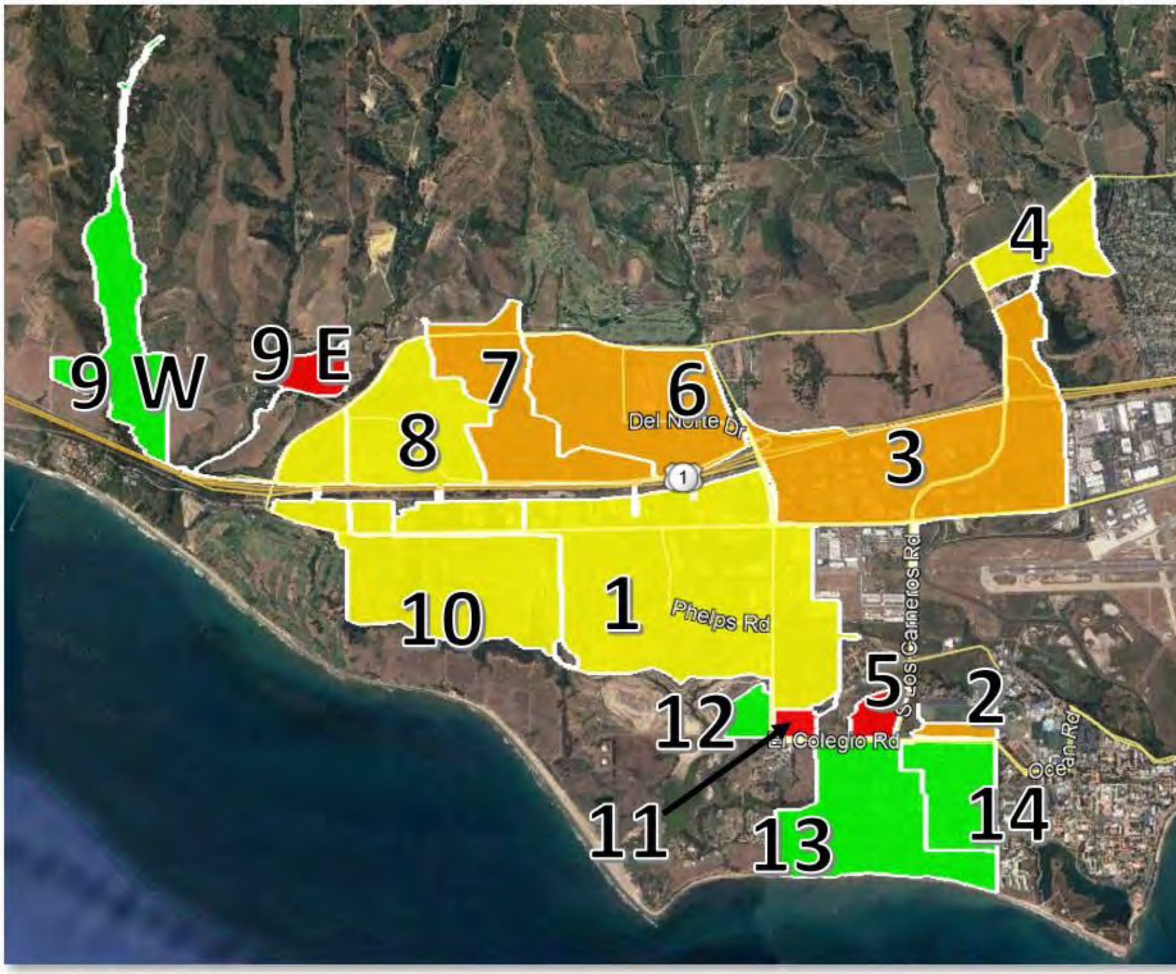


Figure 3-21. Temperature Map: Combined I/I Final Basin Rankings

4 Recommendations

V&A advises to consider the following recommendations for future I/I reduction plans:

1. **Master Plan and Model Implementation**: This study focuses on inflow and infiltration generation; however, the capacity deficiencies of the collection system may be of greater concern relative to I/I response during peak wet weather events. The District may wish to have a model designed and/or a master plan study conducted to determine the overall needs of the District relative to I/I. Or simply, the study results can be used to update the master plan and compare with previous model assumptions and flow monitoring results.
2. **Capacity Analysis:** Sites 1 and 12 surcharged approximately 0.32 and 0.61 feet, respectively, above the pipe crown during the January rainfall event. The District may wish to evaluate capacity concerns in the local collection system near these sites.
3. **Determine I/I Reduction Program**: The District should examine its I/I reduction needs to determine their needs and goals for a future I/I reduction program.
    a. If peak flows, sanitary sewer overflows, and pipeline capacity issues are of greater concern, then priority can be given to investigate and reduce sources of inflow within the basins with the greatest inflow problems.
    b. If total infiltration and general pipeline deterioration are of greater concern, then the program can be weighted to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
    c. Basin 5 was ranked the highest for normalized RDI and Total I/I. The District may wish to focus initial I/I mitigation efforts in this basin. Basins 9 East and 11 also had consistently high rankings in all categories.
4. **I/I Investigation Methods**: Potential I/I investigation methods include the following:
    a. smoke testing.
    b. mini-basin flow monitoring.
    c. night-time reconnaissance work to (1) investigate and determine direct point sources of inflow, and (2) determine the areas and/or pipe reaches responsible for high levels of infiltration contribution.
    d. CCTV inspection.
5. **I/I Reduction Cost-Effective Analysis**: The District should conduct a study to determine which is more cost-effective: (1) locating the sources of inflow/infiltration and systematically rehabilitating or replacing the faulty pipelines; or (2) continued treatment of the additional rainfall dependent I/I flow.

Appendix A
Flow Monitoring Sites: Data, Graphs, and Information

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

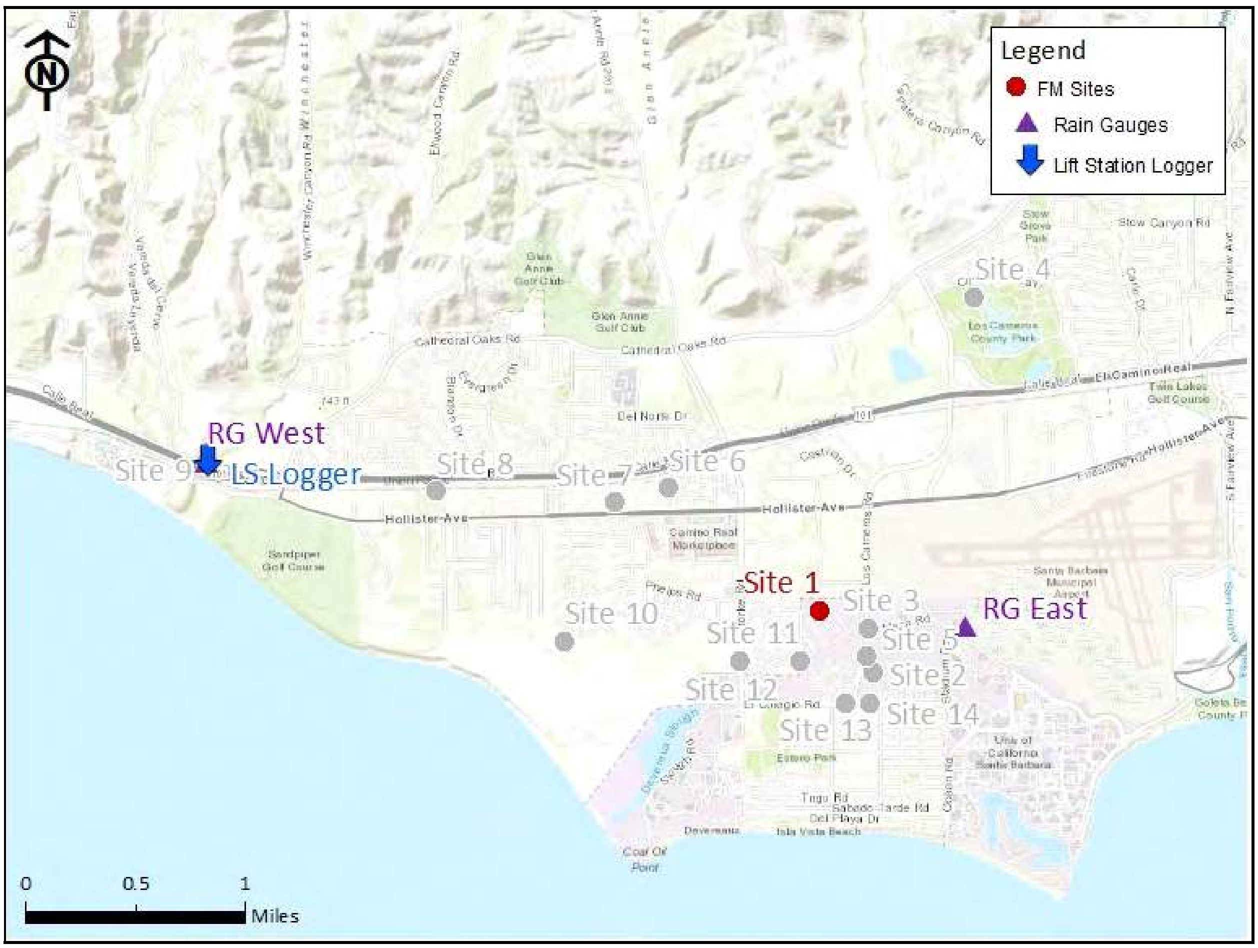
November 3, 2020 - February 7, 2021

Monitoring Site: Site 01

City Manhole: 73-12-93

Location: 758 Mesa Road

Data Summary Report



Vicinity Map: Site 01

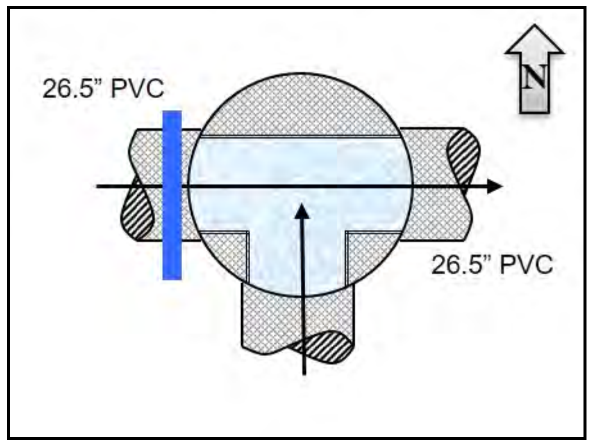
SITE 01

Site Information

Satellite Map

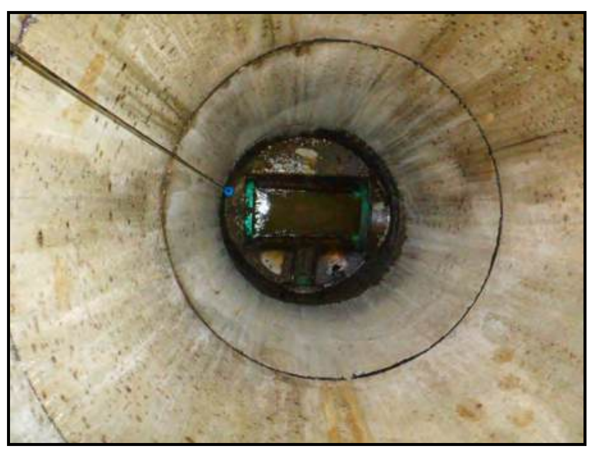
Location:	758 Mesa Road
City Manhole:	73-12-93
Coordinates:	119.8635° W, 34.4235° N
Rim Elevation (Earth):	12 feet
Pipe Diameter:	26.5 inches
ADWF:	1.063 mgd
Peak Measured Flow:	3.551 mgd

Sanitary Map



Flow Sketch

Street View



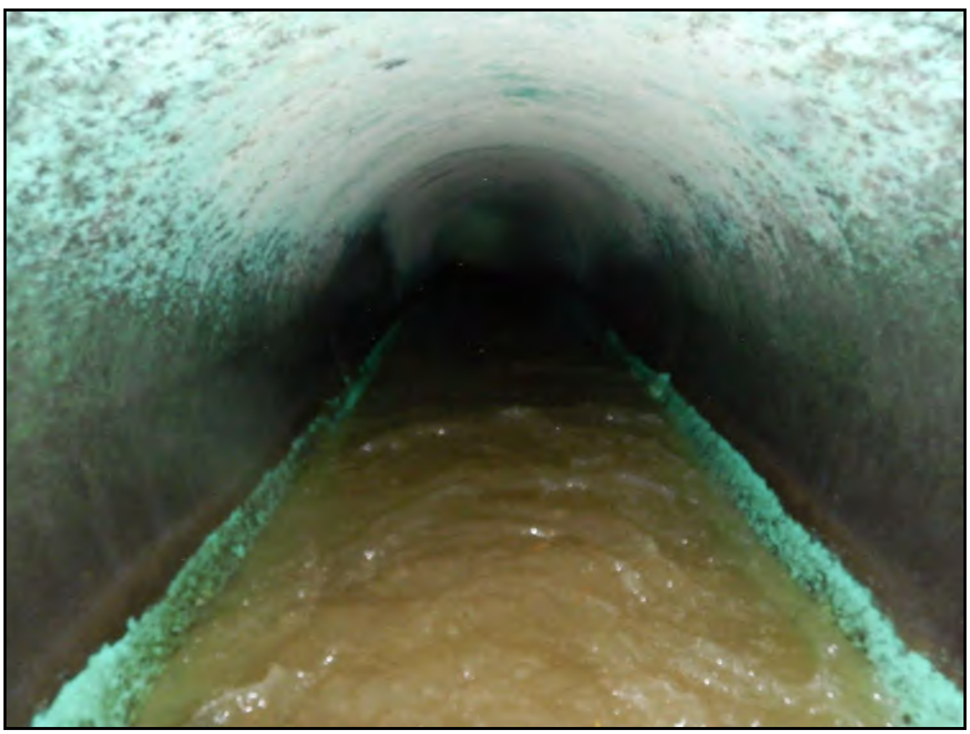
Plan View

SITE 01

Additional Site Photos

Monitored West Influent

East Effluent

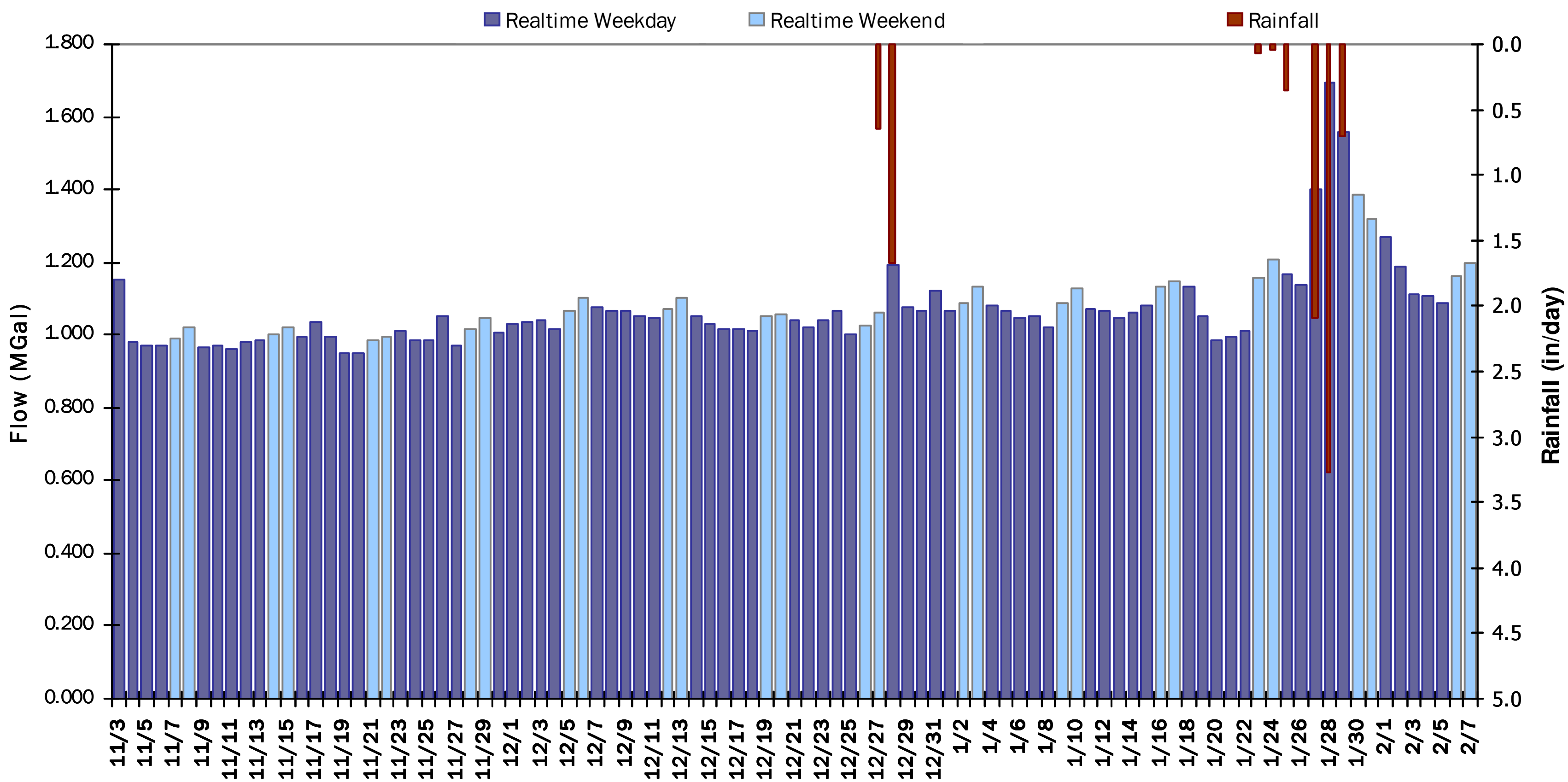


SITE 01

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 1.076 MGal **Peak Daily Flow: 1.692 MGal** **Min Daily Flow: 0.952 MGal**

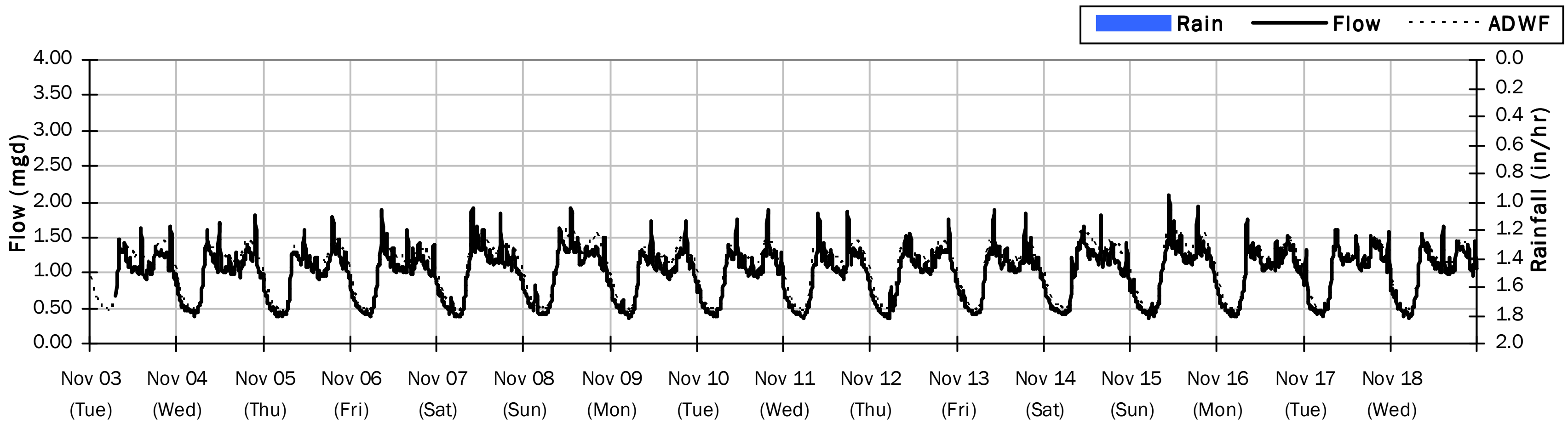
Total Period Rainfall: 8.86 inches

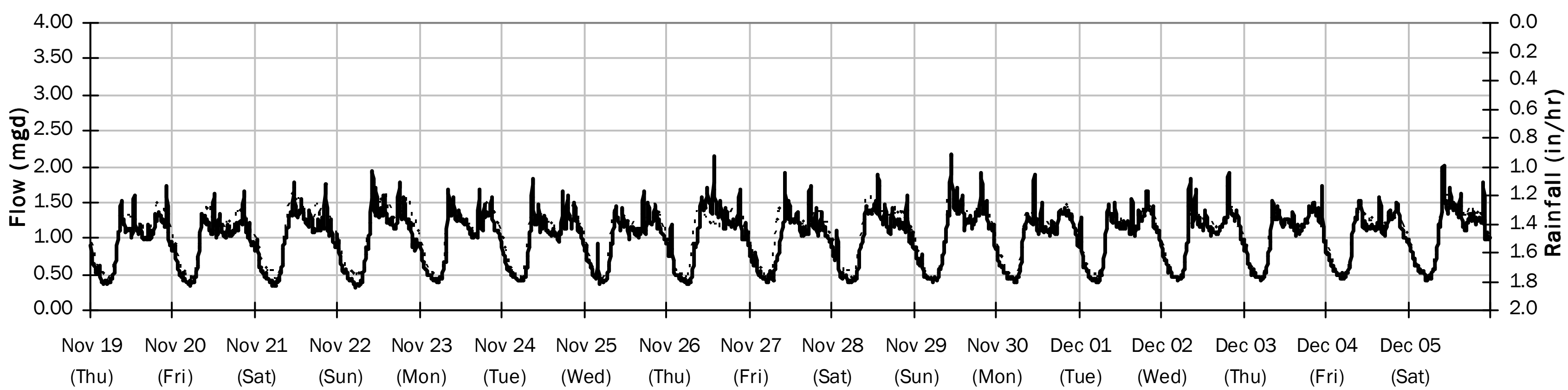


SITE 01

Flow Summary: 11/3/2020 to 12/5/2020

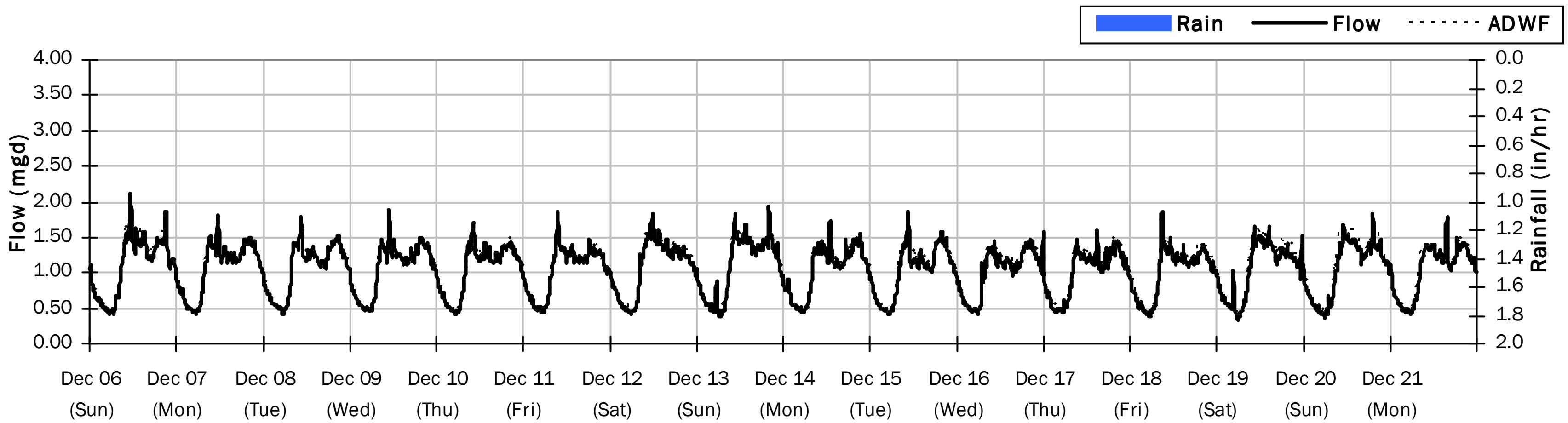
Total Period Rainfall: 0.00 inches   **Avg Flow: 1.004 mgd**   **Peak Flow: 2.150 mgd**   **Min Flow: 0.314 mgd**

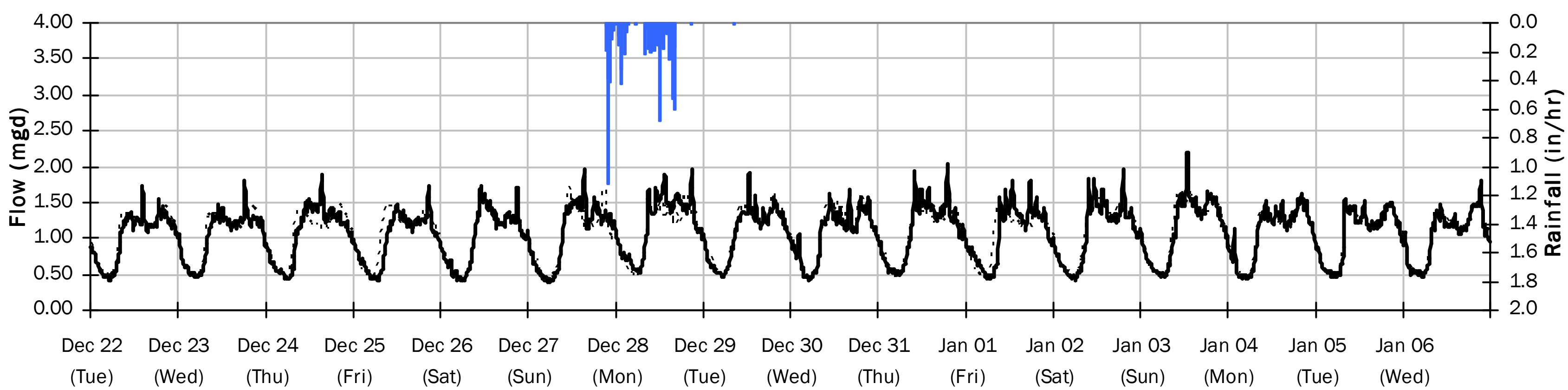




SITE 01
Flow Summary: 12/6/2020 to 1/6/2021

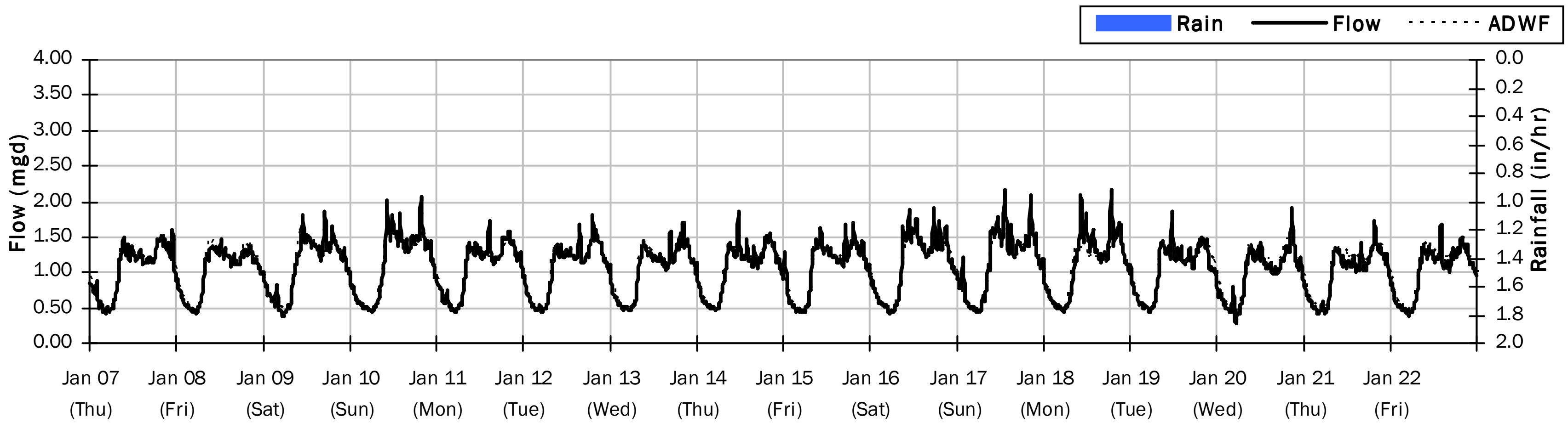
Total Period Rainfall: 2.32 inches **Avg Flow: 1.063 mgd** **Peak Flow: 2.203 mgd** **Min Flow: 0.327 mgd**

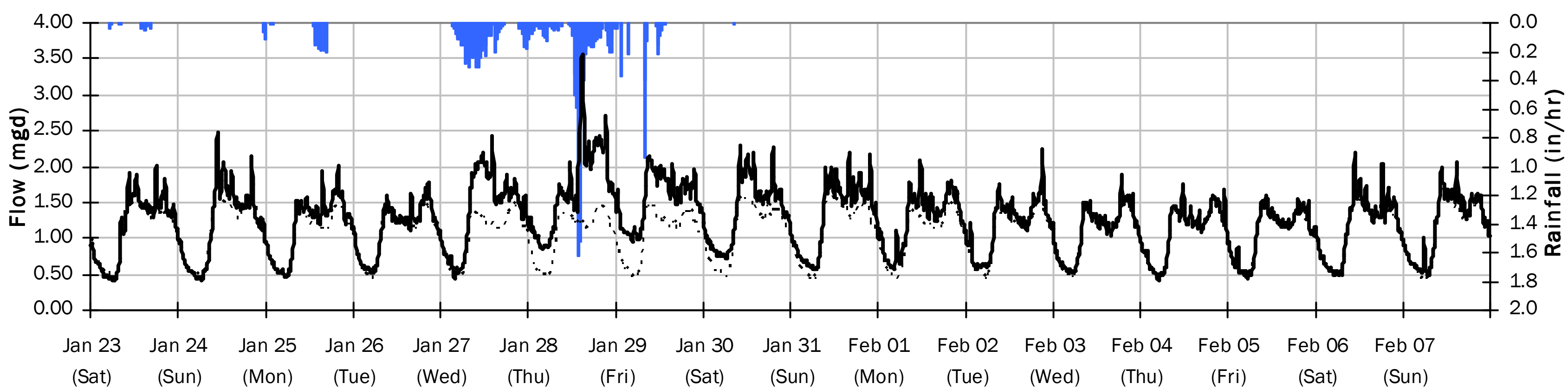




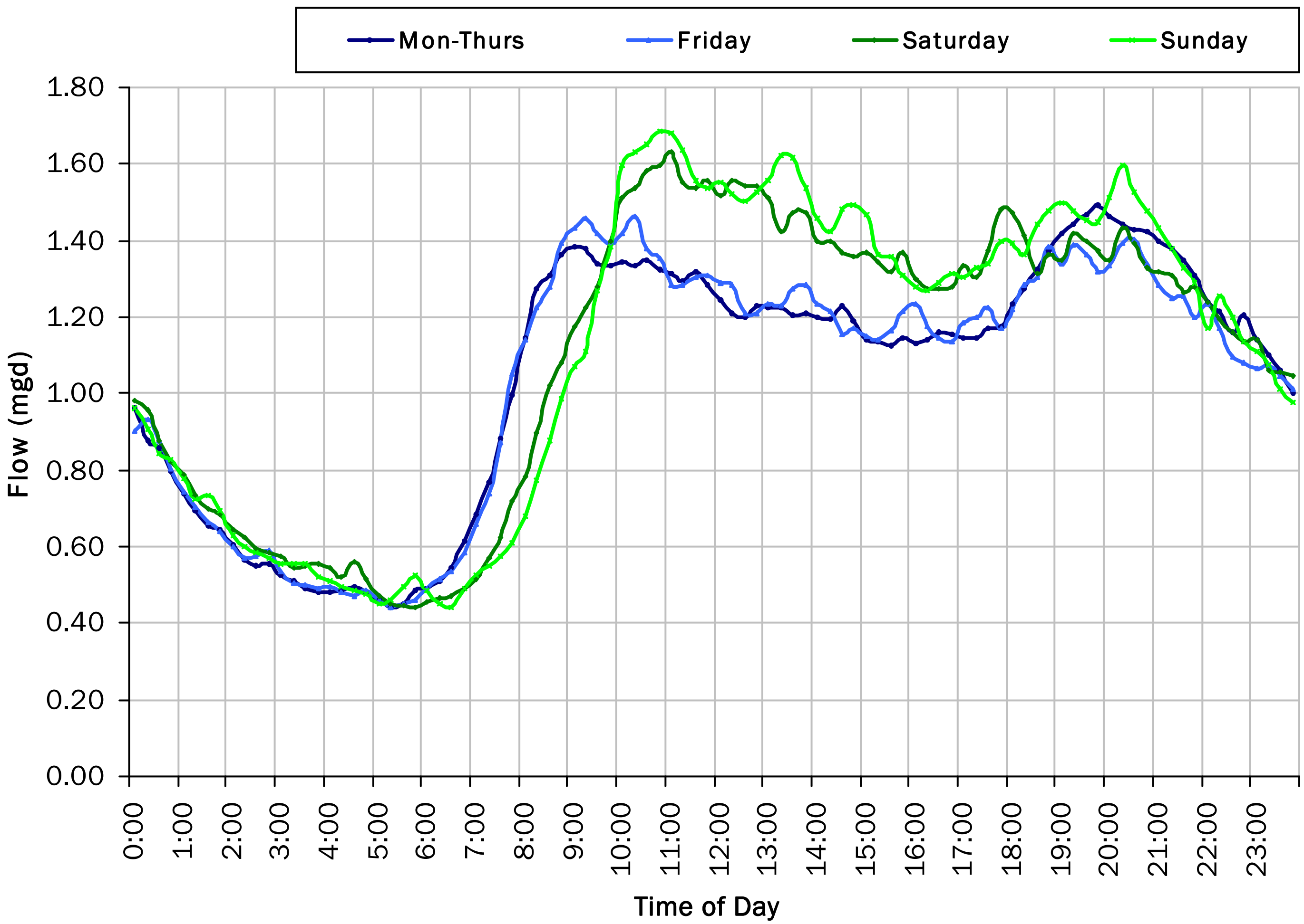
SITE 01
Flow Summary: 1/7/2021 to 2/7/2021

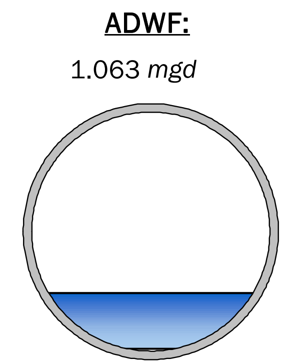
Total Period Rainfall: 6.54 inches   **Avg Flow: 1.163 mgd**   **Peak Flow: 3.551 mgd**   **Min Flow: 0.288 mgd**





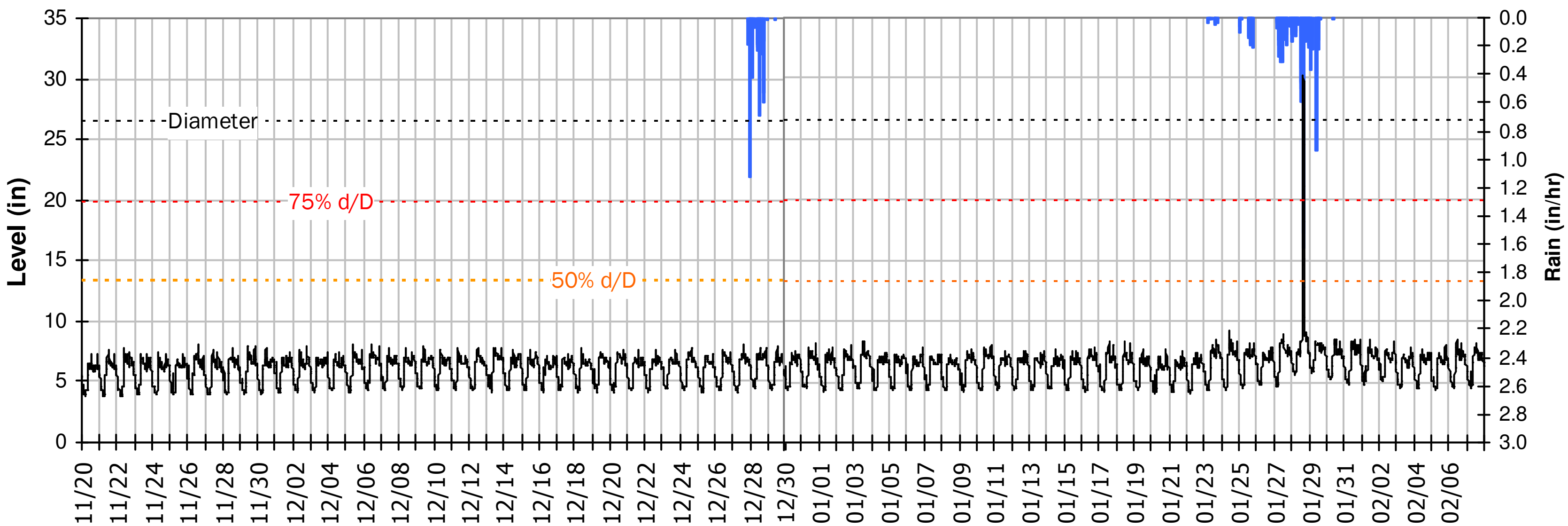
SITE 01
Average Dry Weather Flow Hydrographs

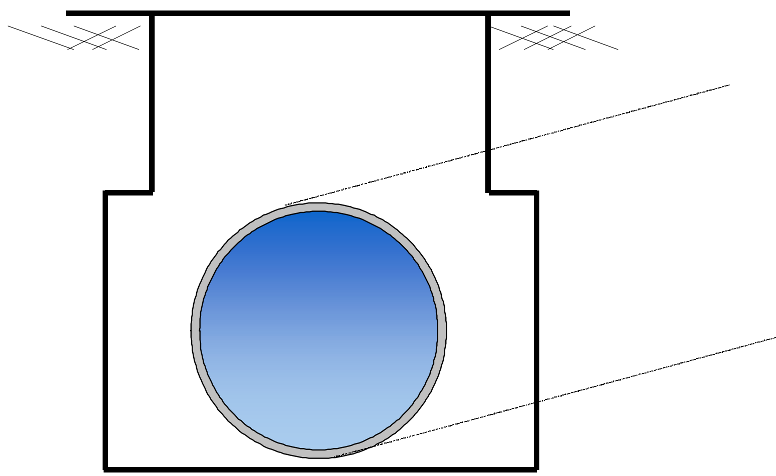




SITE 01
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





Pipe Diameter: 26.5 *inches*

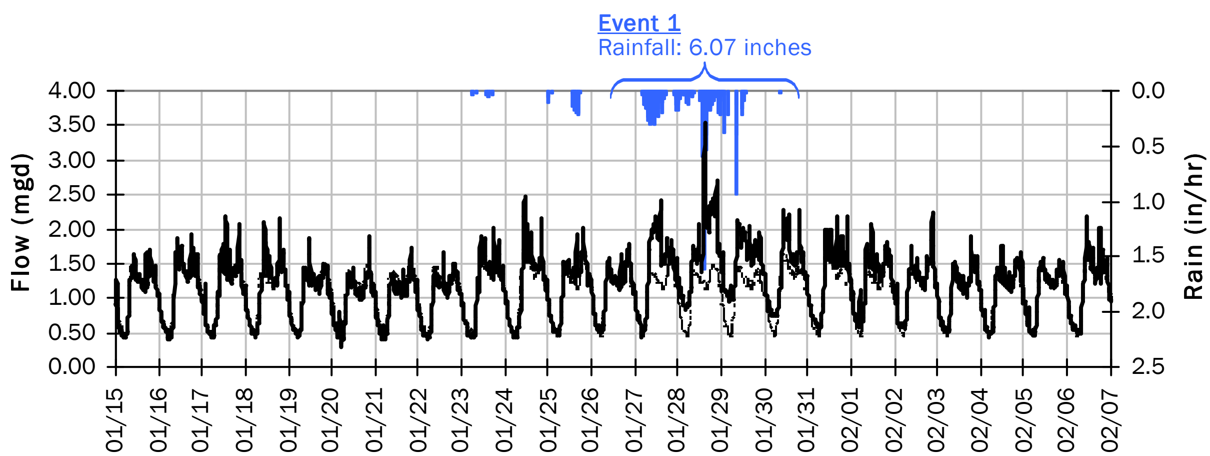
Peak Measured Level: 30.3 *inches*

Peak d/D Ratio: 1.14

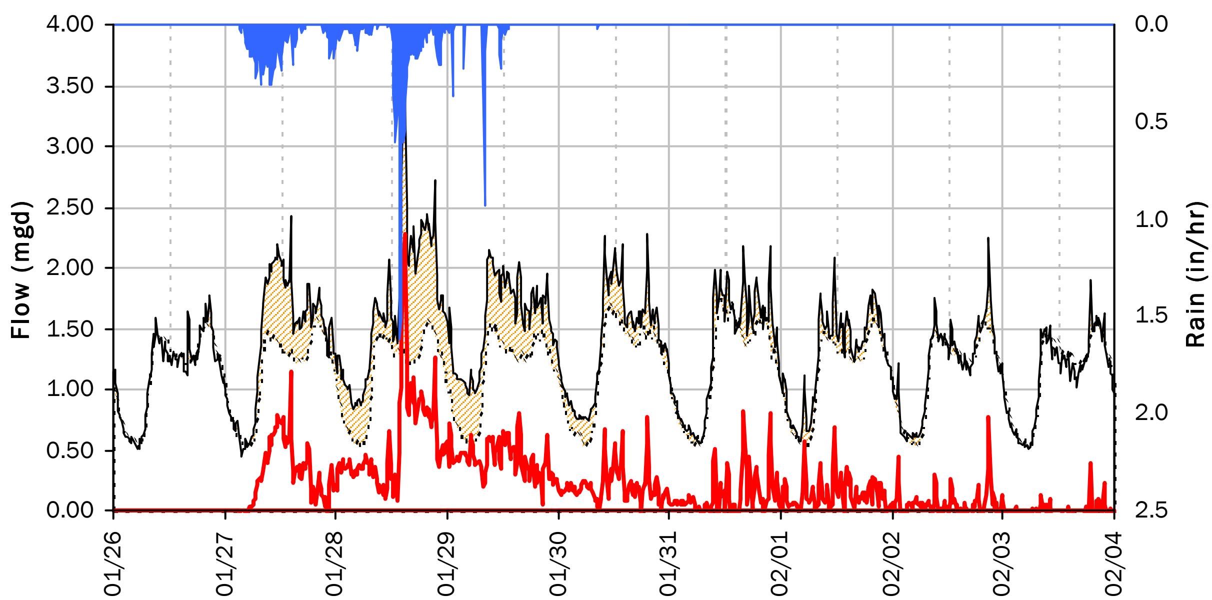
Surcharged 3.8 inches over crown

SITE 01
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



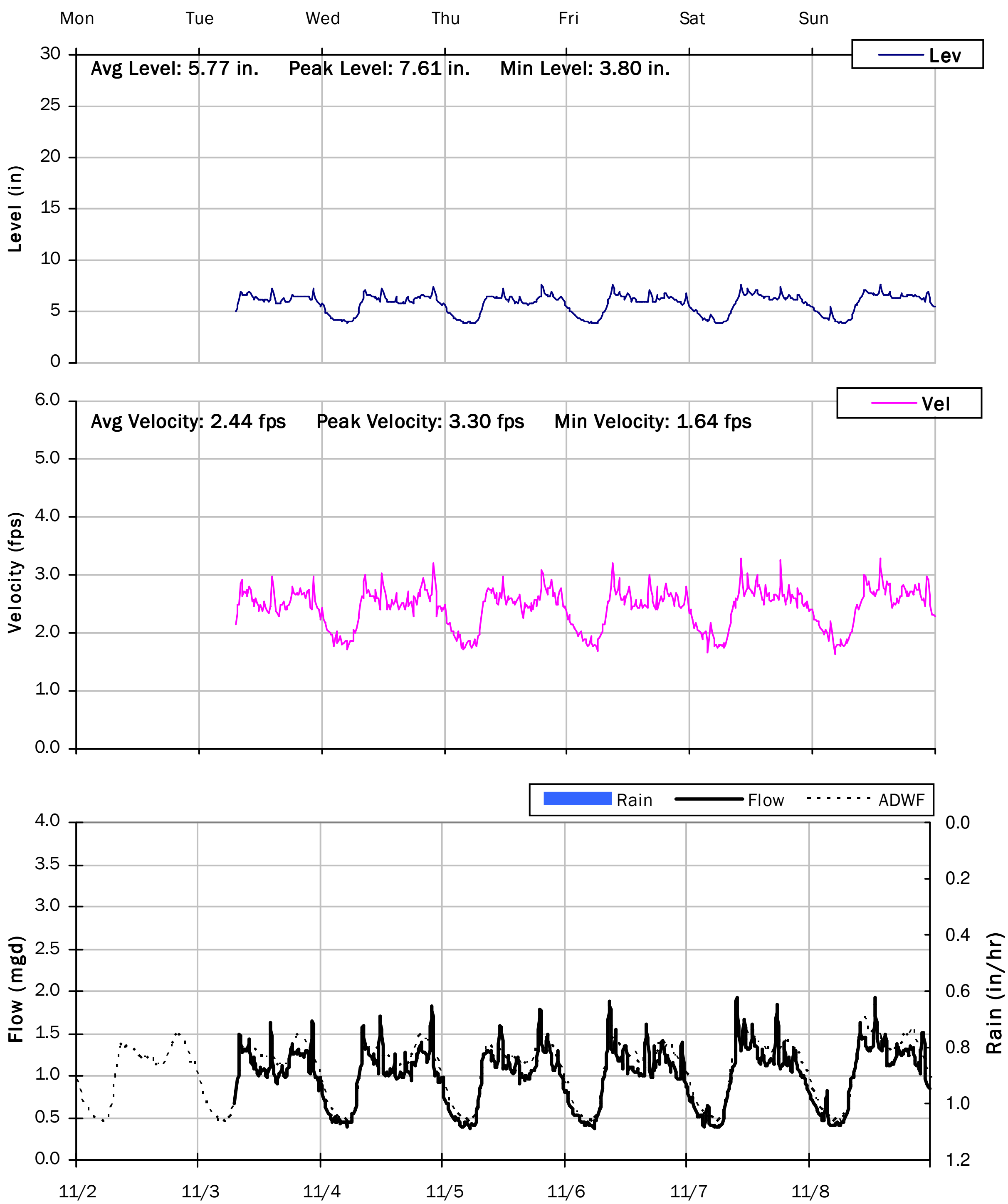
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 6.07 inches)

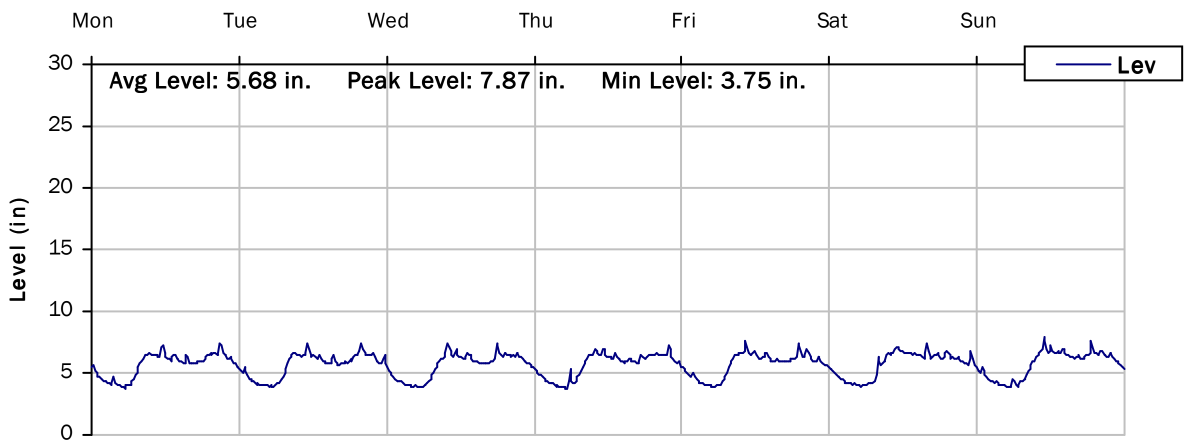
Capacity		Inflow / Infiltration	
Peak Flow:	3.55 *mgd*	**Peak I/I Rate:**	2.28 *mgd*
PF:	3.34	**Total I/I:**	1,792,000 *gallons*
Peak Level:	30.29 *in*		
d/D Ratio:	1.14		

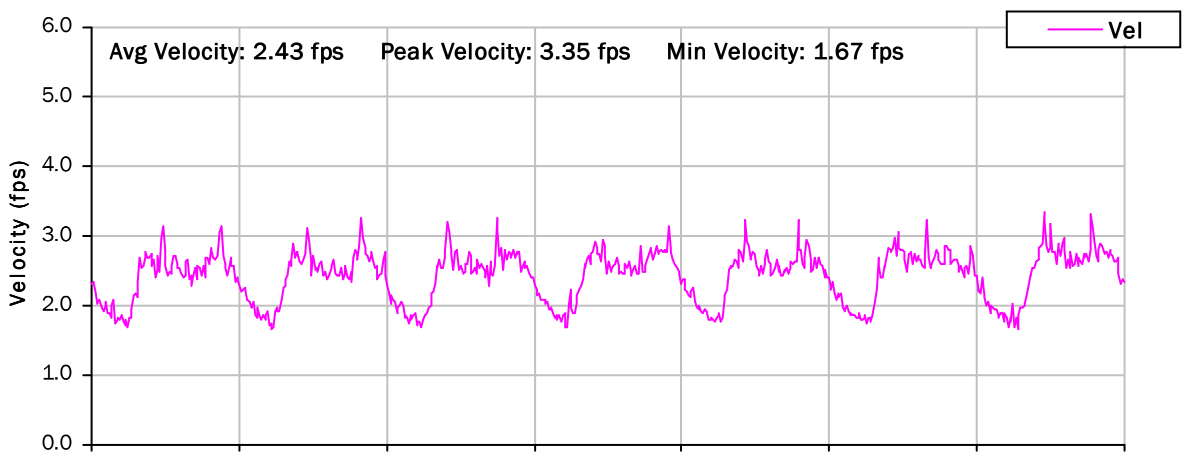
SITE 01
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

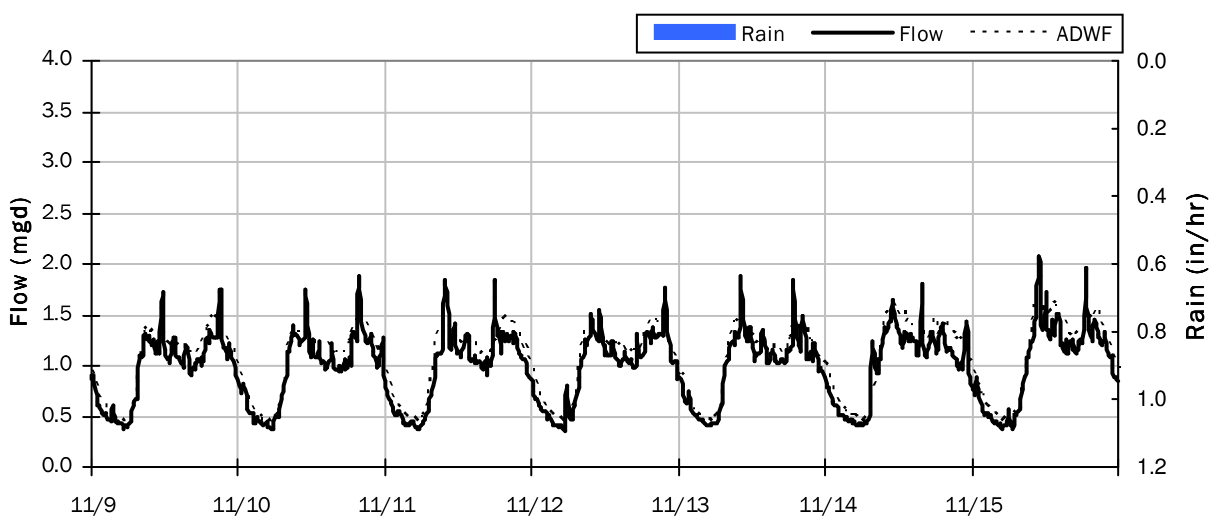


Avg Flow: 1.008 mgd **Peak Flow: 1.922 mgd** **Min Flow: 0.380 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020

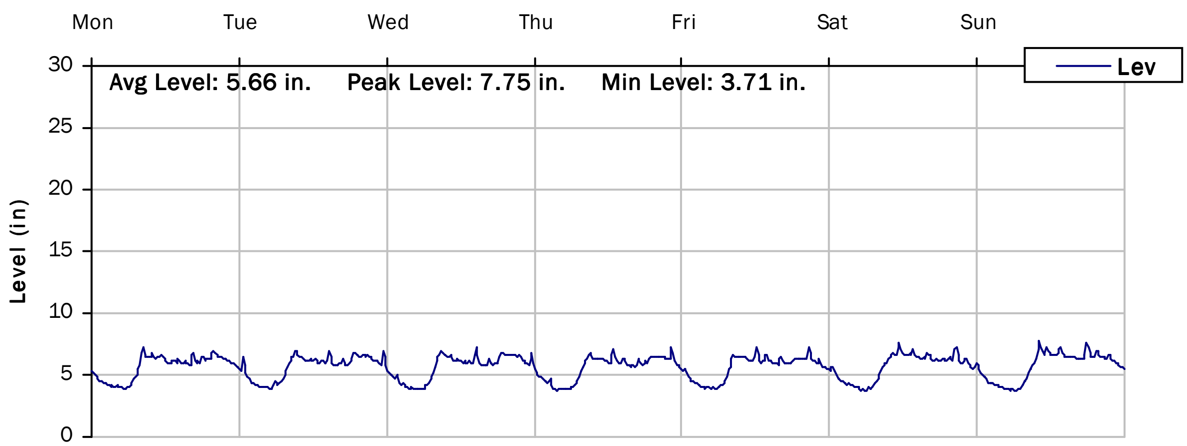


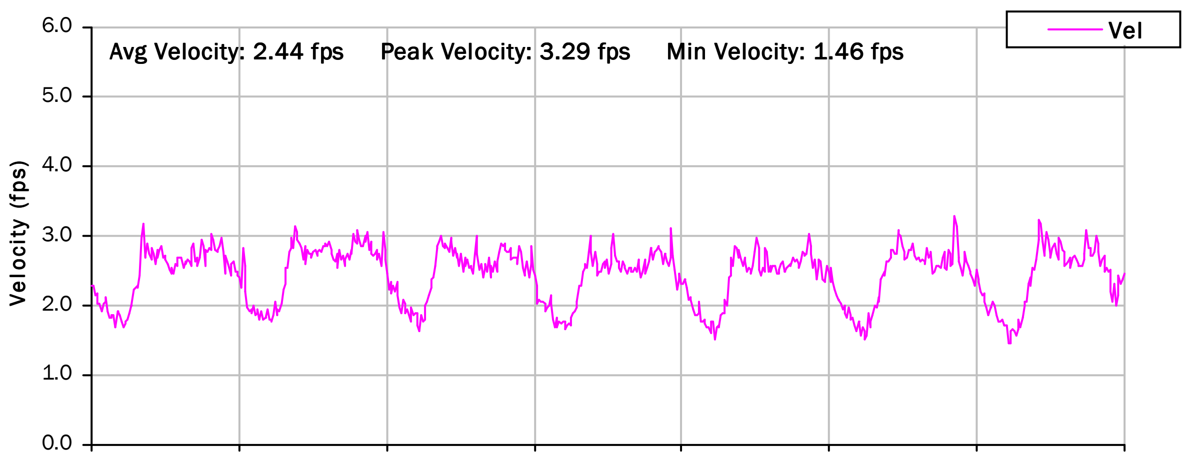


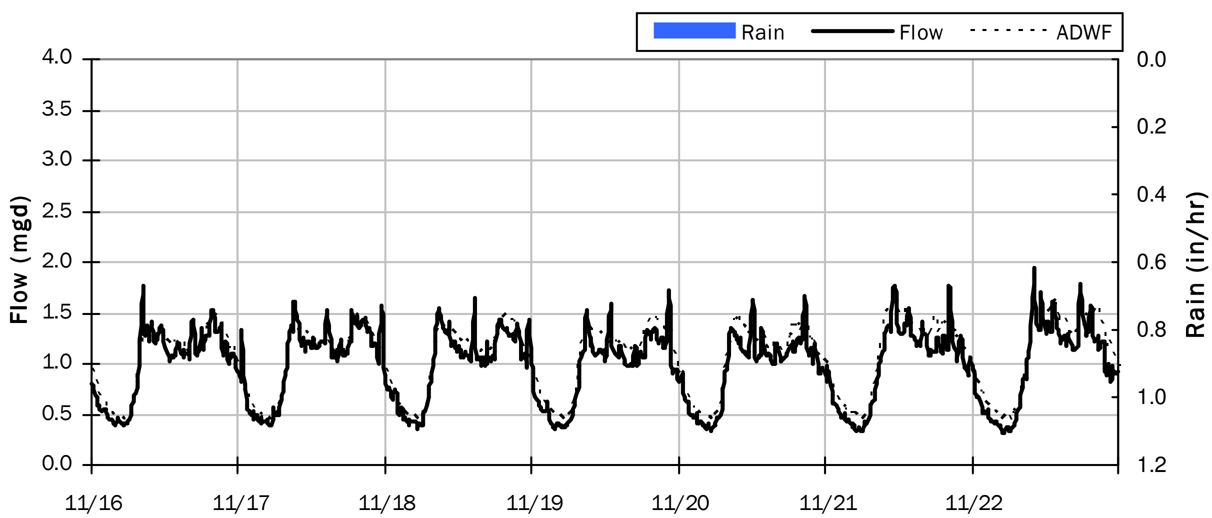


Avg Flow: 0.985 mgd **Peak Flow: 2.061 mgd** **Min Flow: 0.359 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020

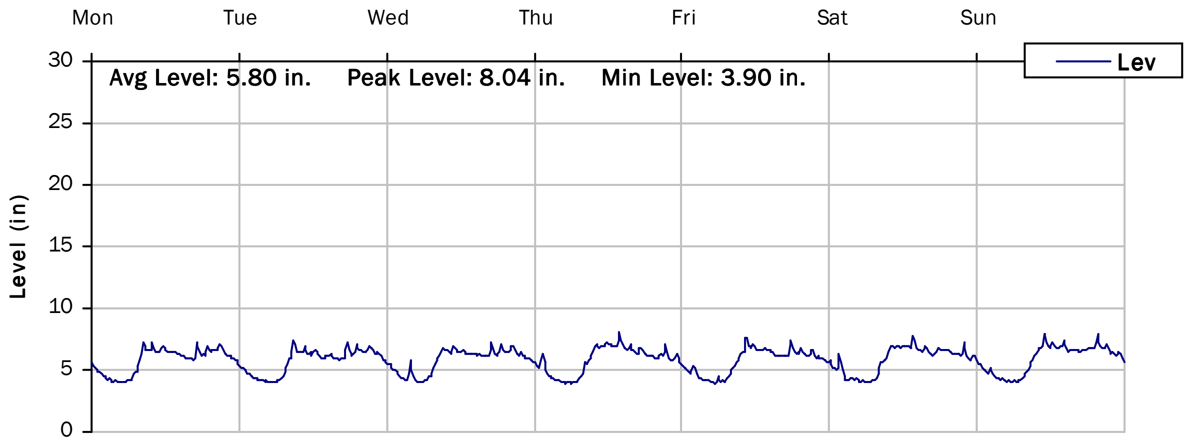


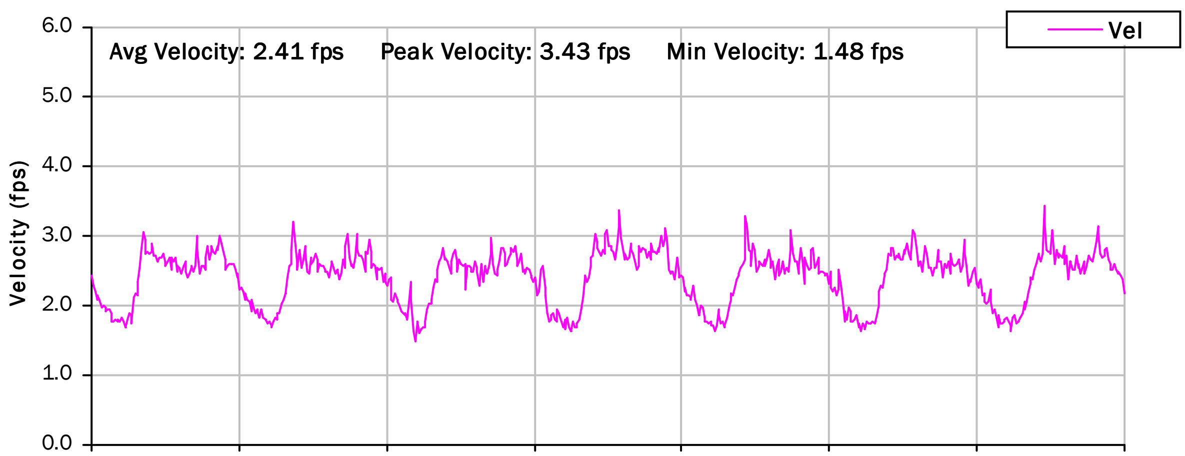


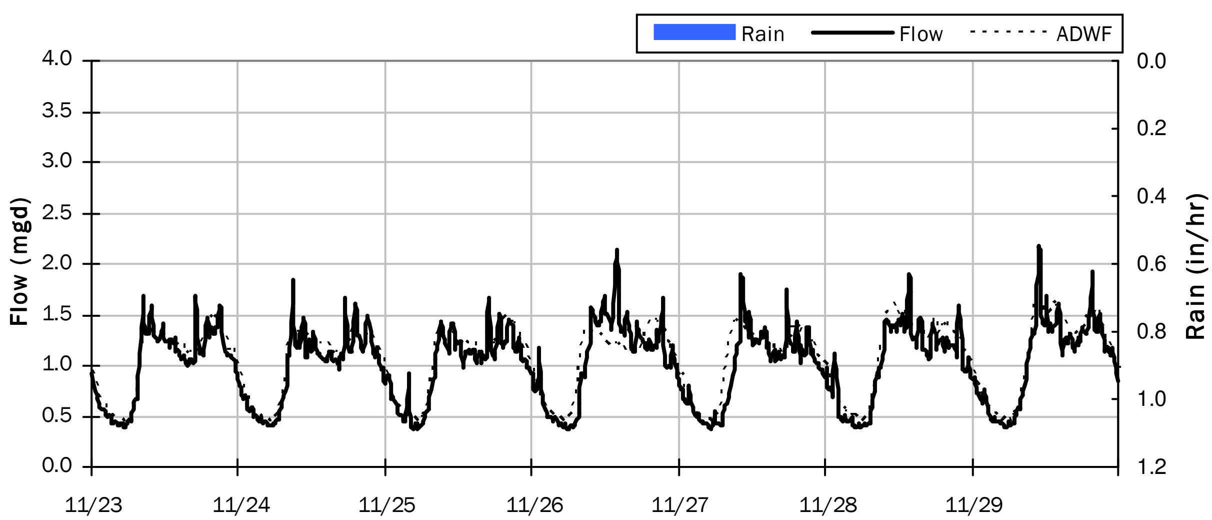


Avg Flow: 0.988 mgd Peak Flow: 1.947 mgd Min Flow: 0.314 mgd

SITE 01
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

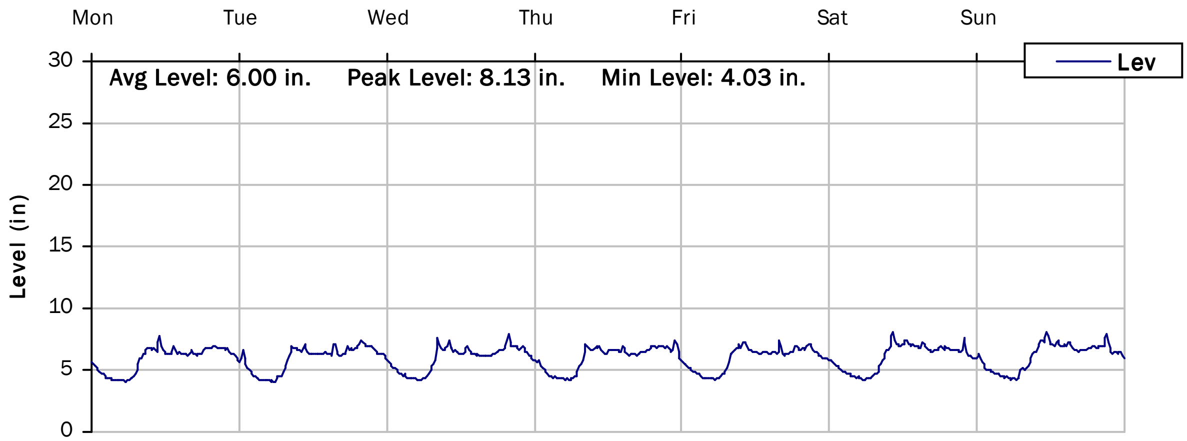


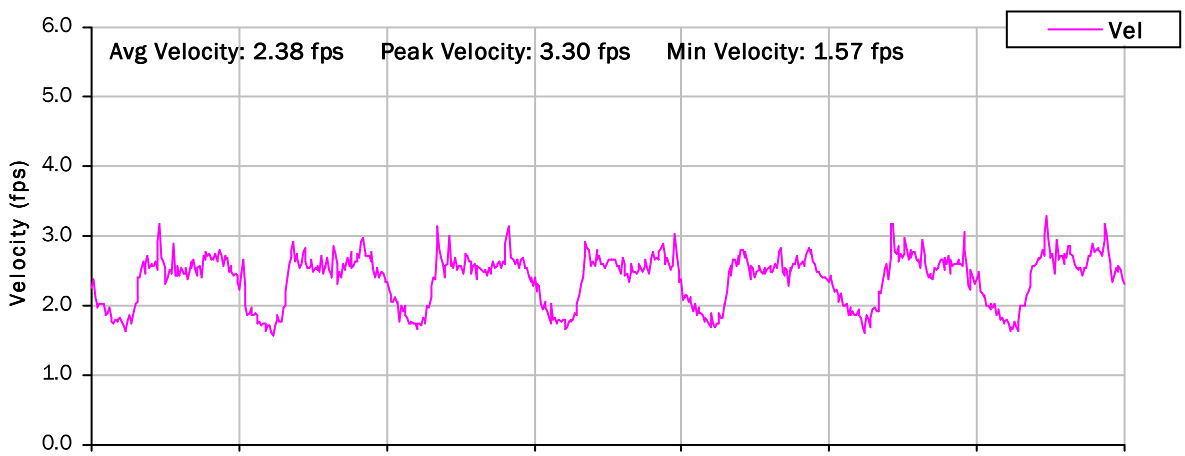


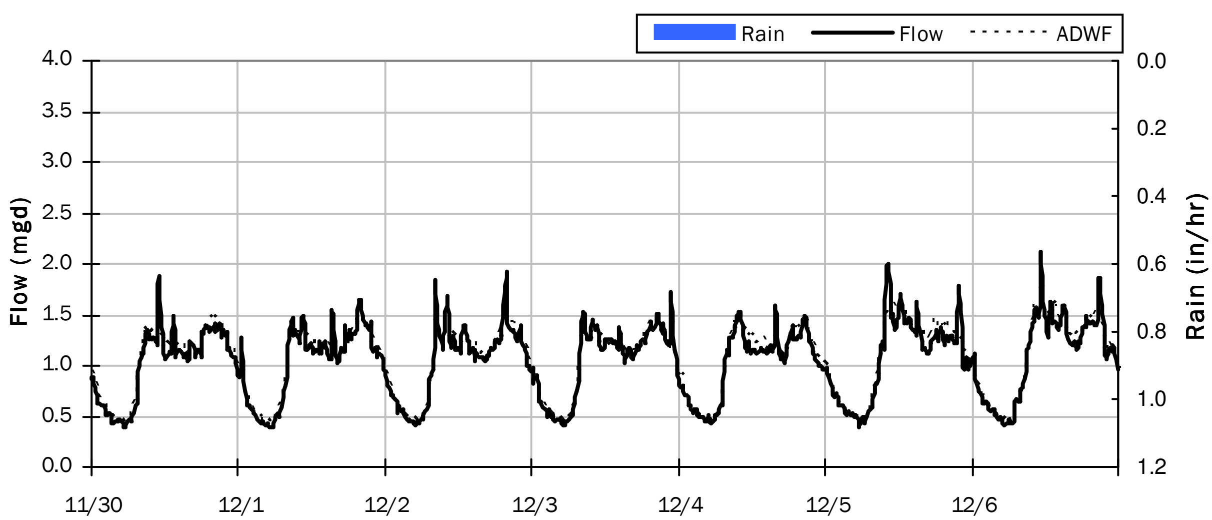


Avg Flow: 1.010 mgd **Peak Flow: 2.150 mgd** **Min Flow: 0.369 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

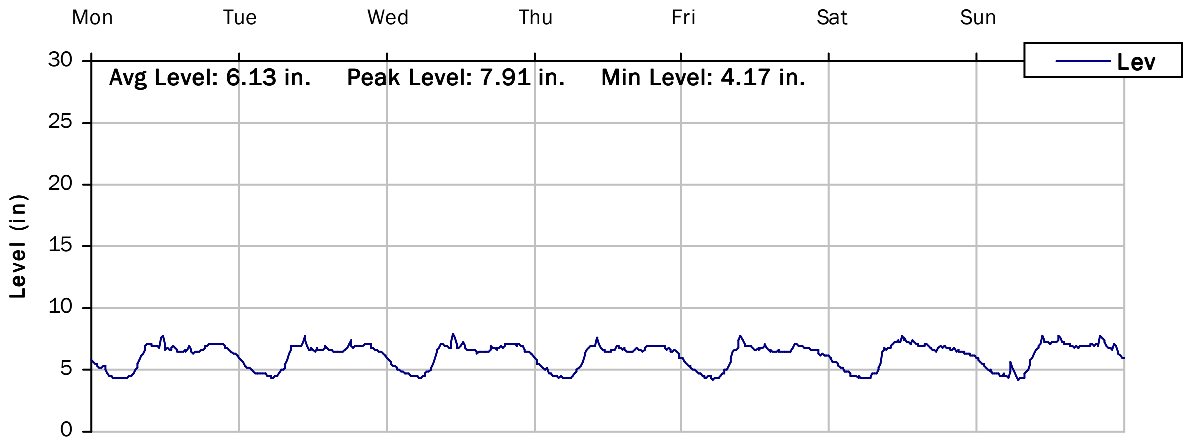


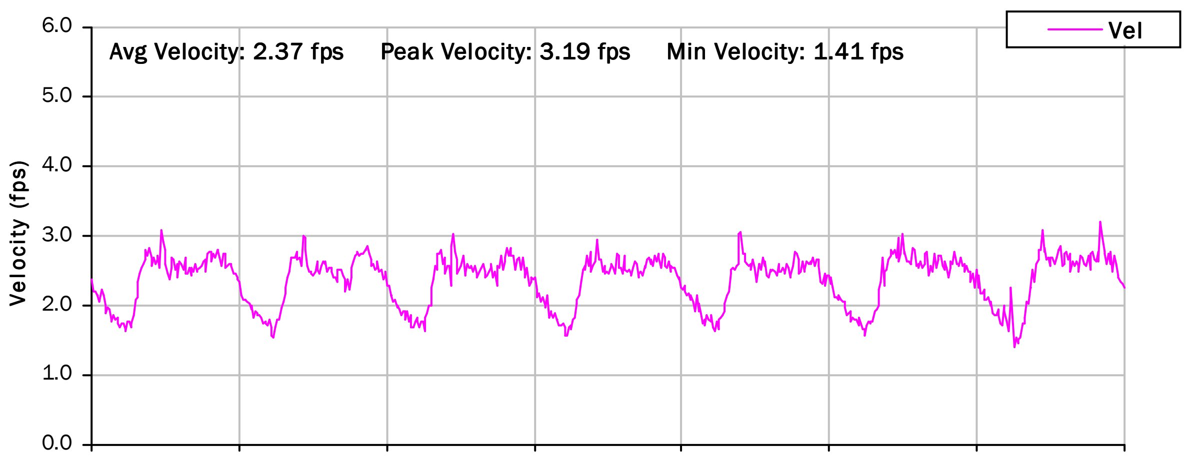


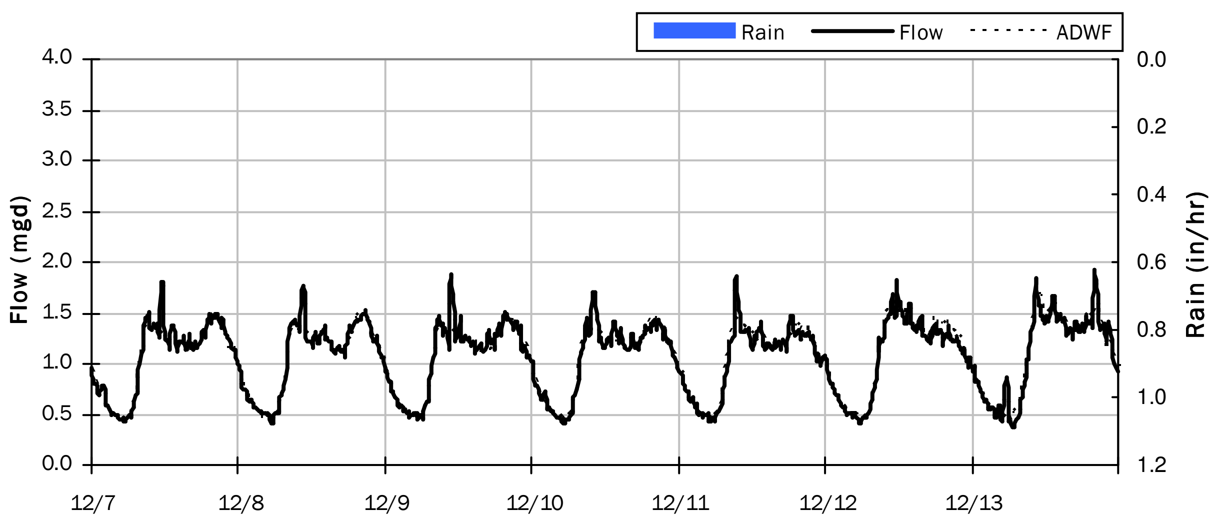


Avg Flow: 1.044 mgd **Peak Flow: 2.125 mgd** **Min Flow: 0.383 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

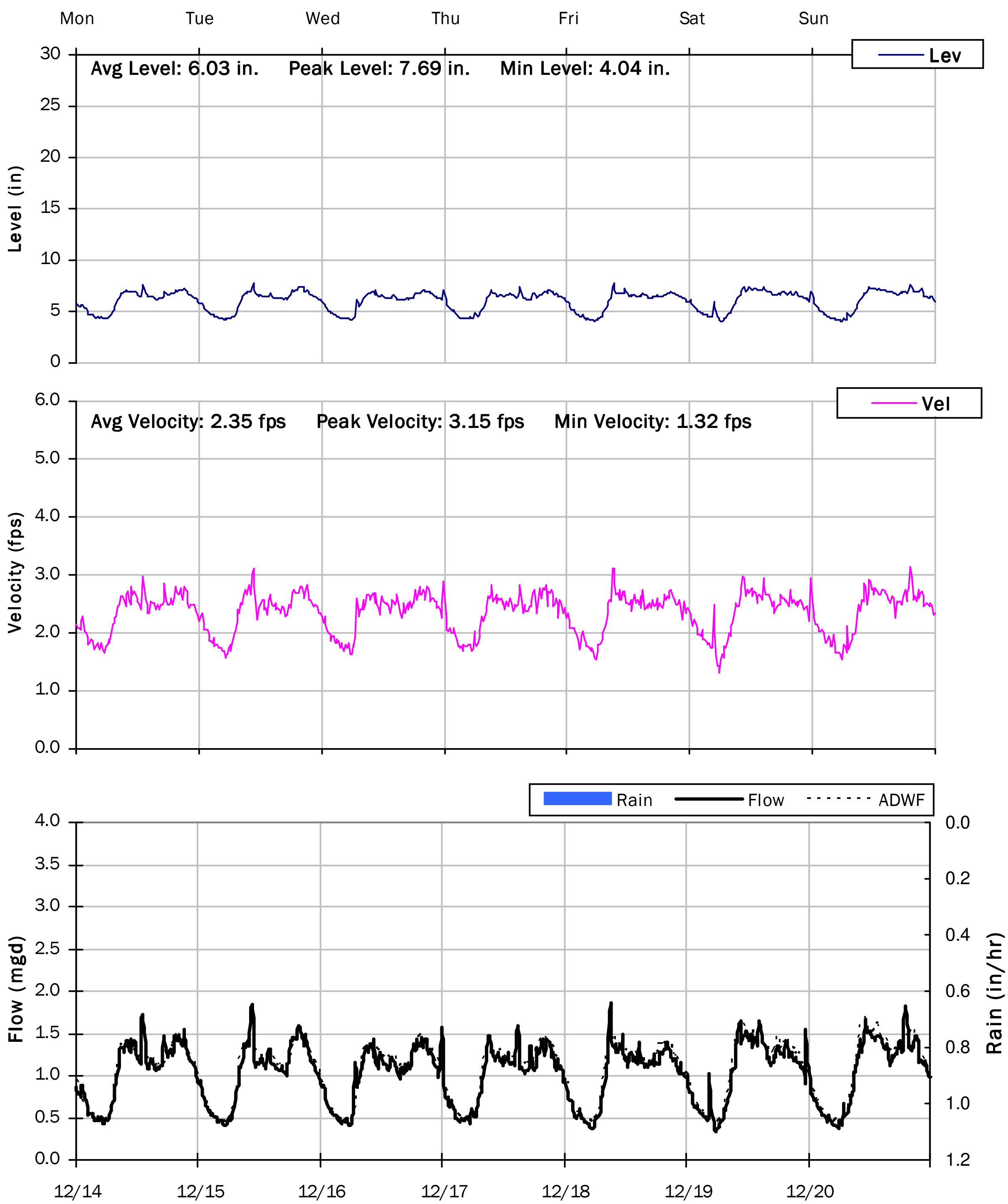






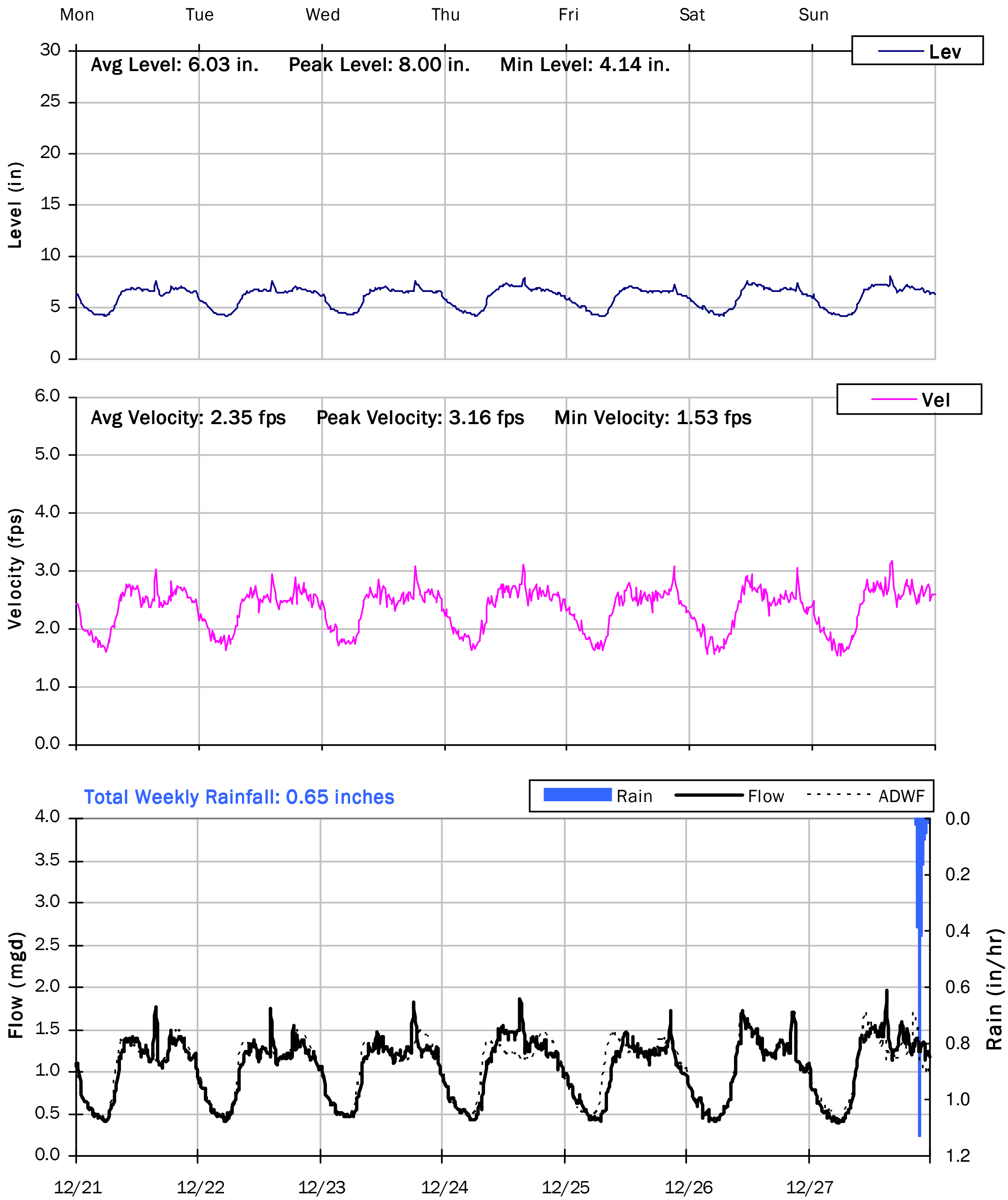
Avg Flow: 1.069 mgd **Peak Flow: 1.908 mgd** **Min Flow: 0.378 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020



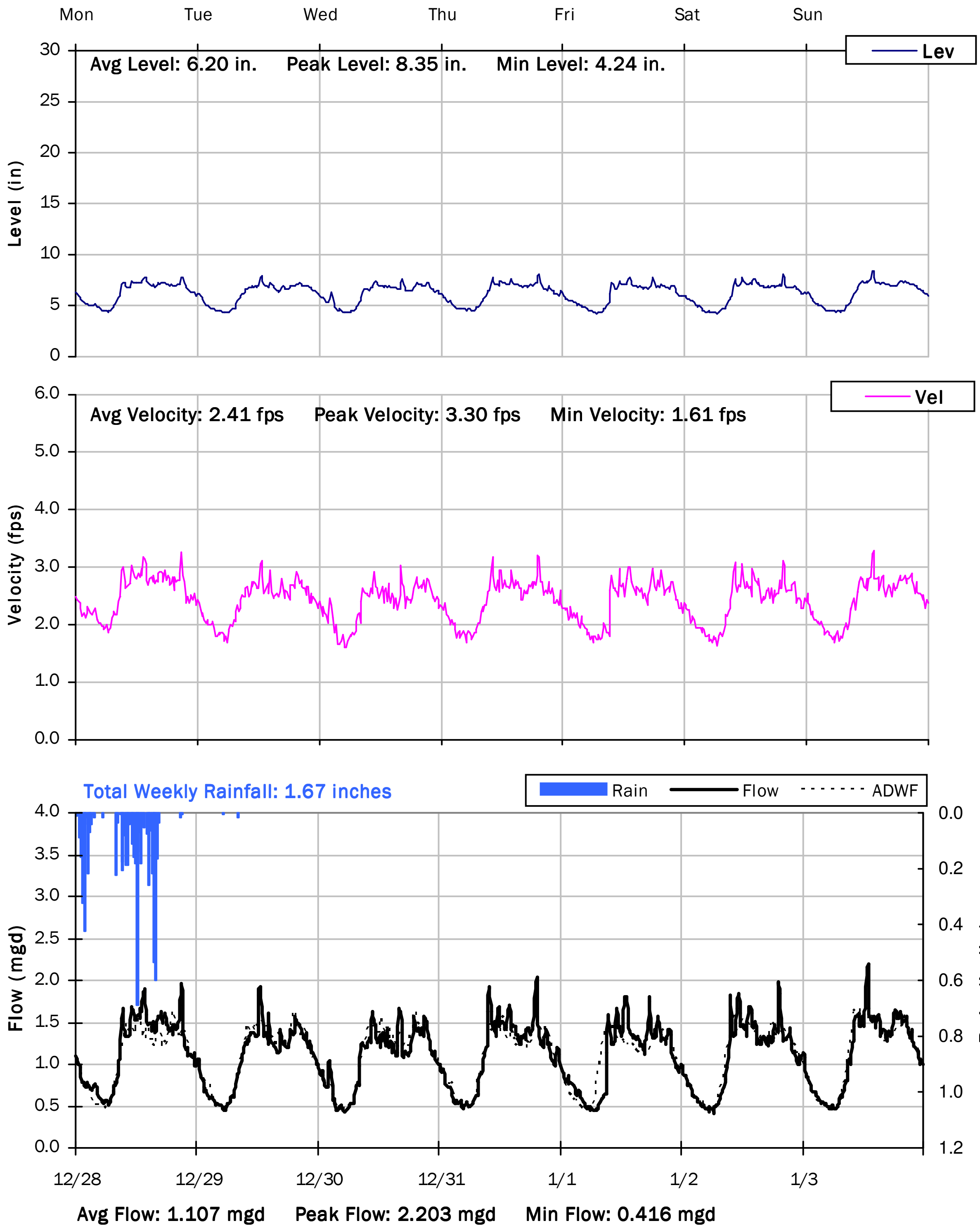
Avg Flow: 1.034 mgd Peak Flow: 1.859 mgd Min Flow: 0.327 mgd

SITE 01
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

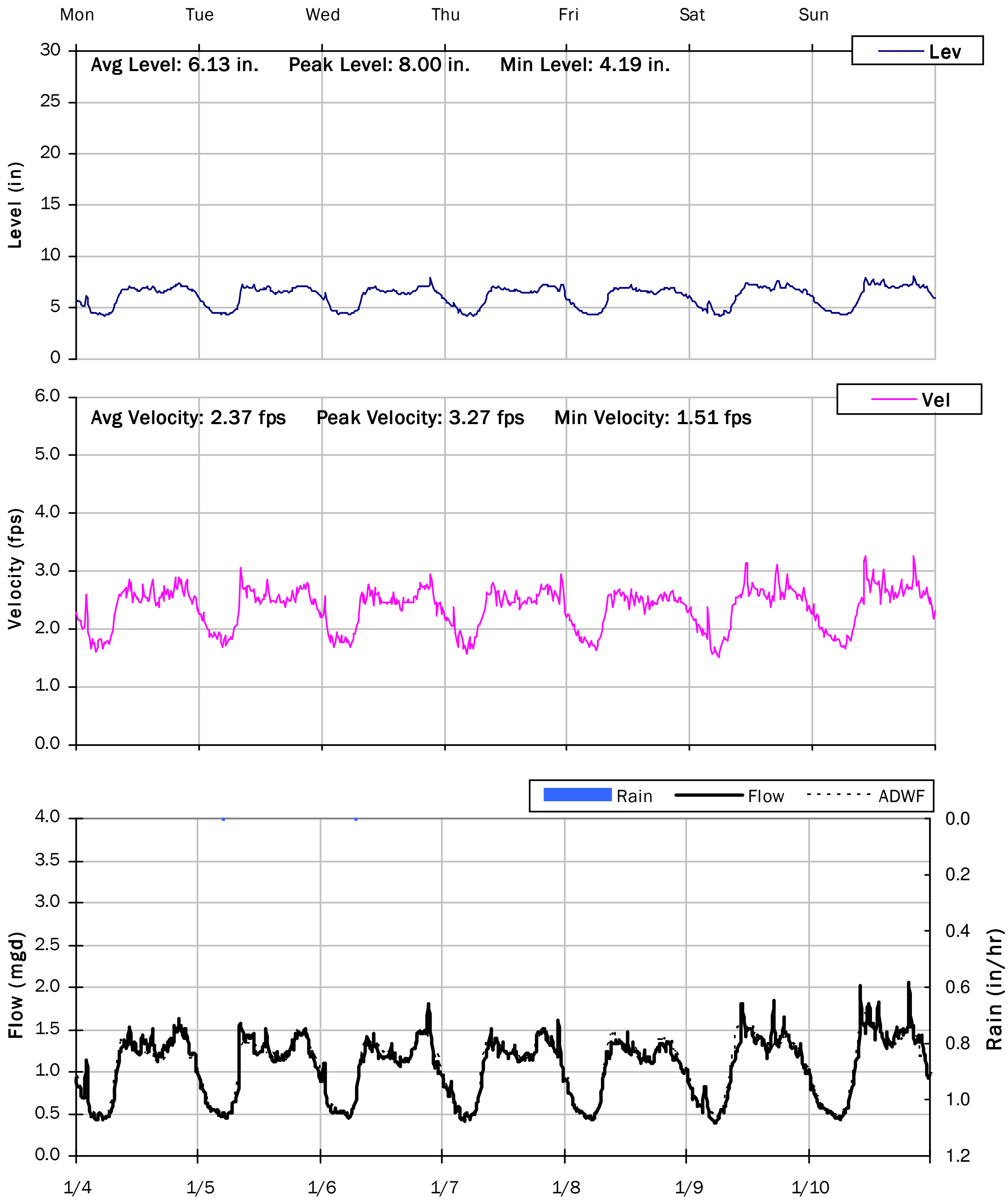


Avg Flow: 1.038 mgd **Peak Flow: 1.964 mgd** **Min Flow: 0.388 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

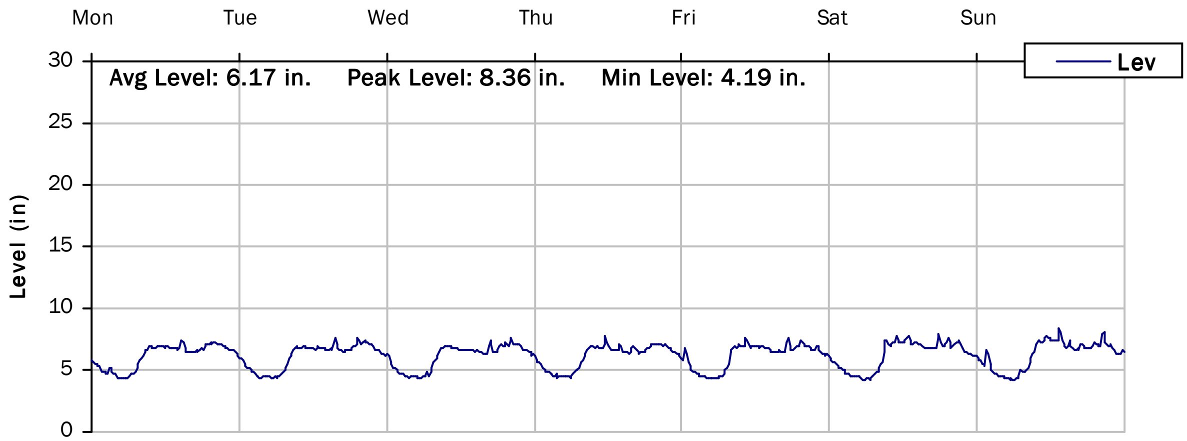


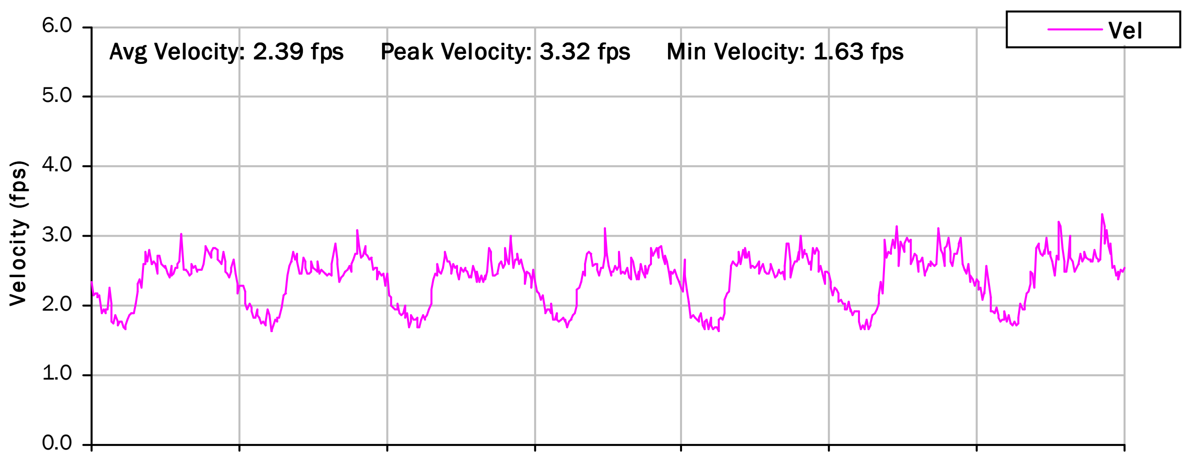
SITE 01
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

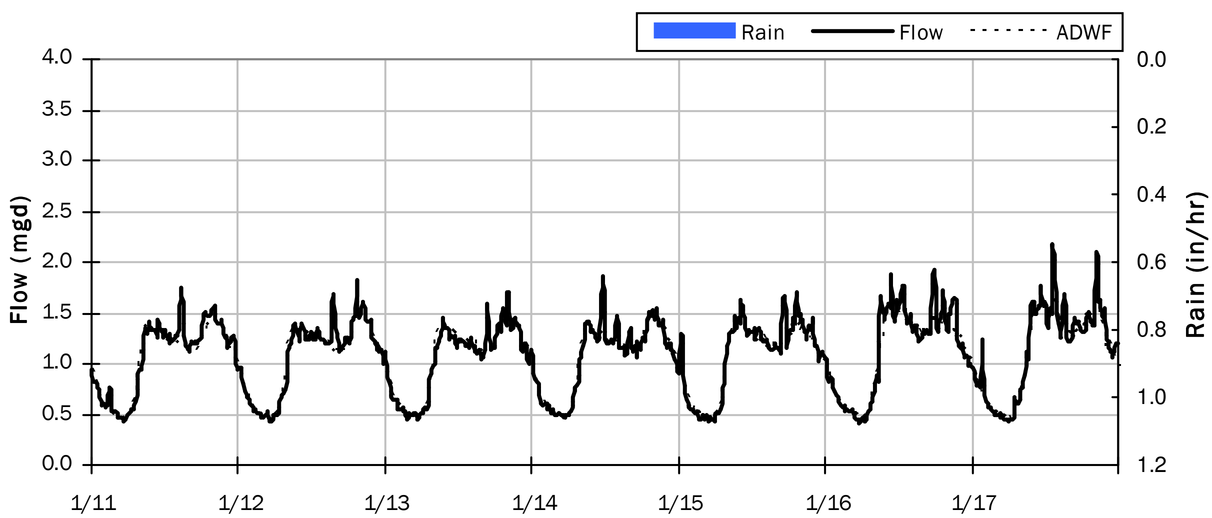


Avg Flow: 1.068 mgd **Peak Flow: 2.061 mgd** **Min Flow: 0.396 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

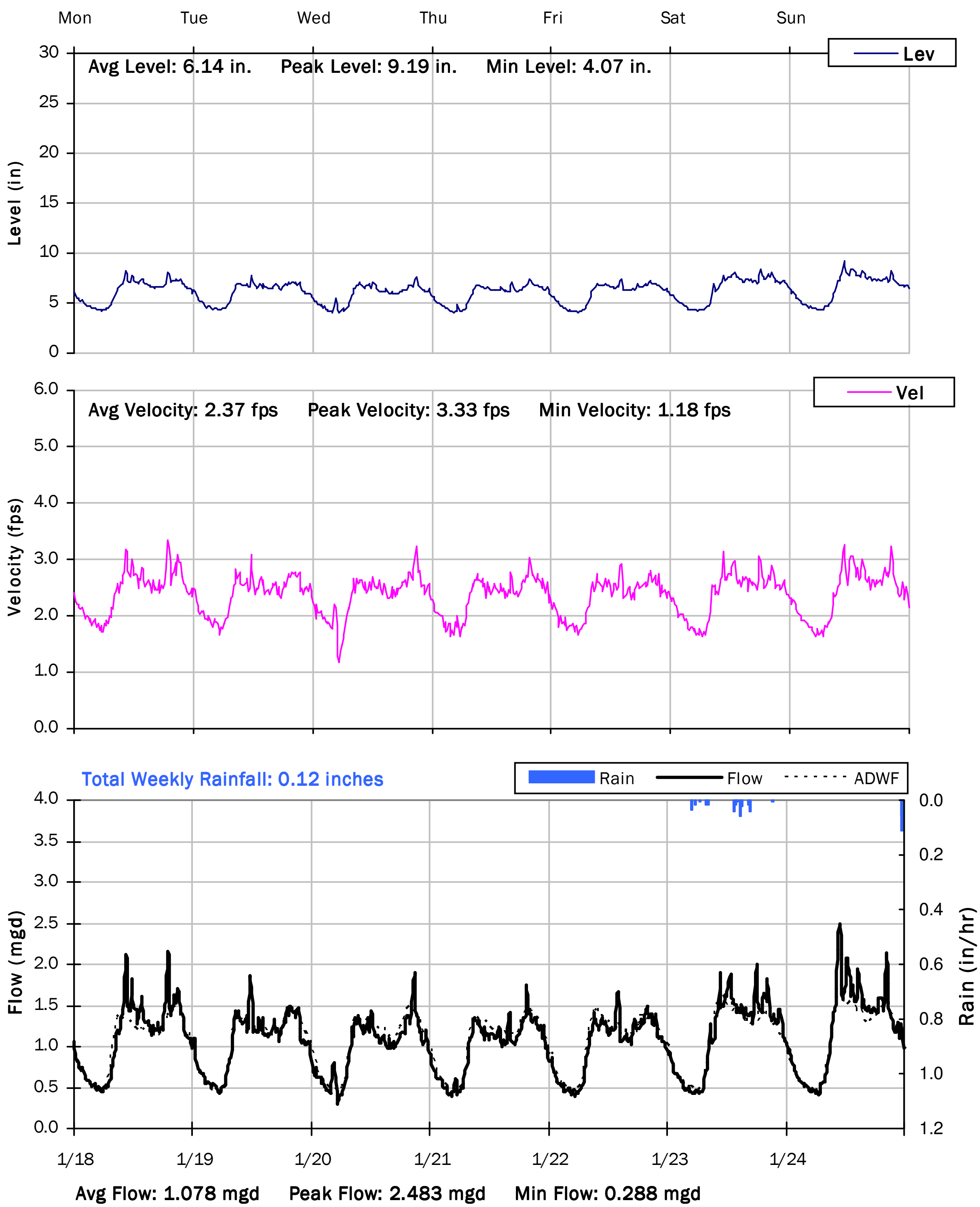




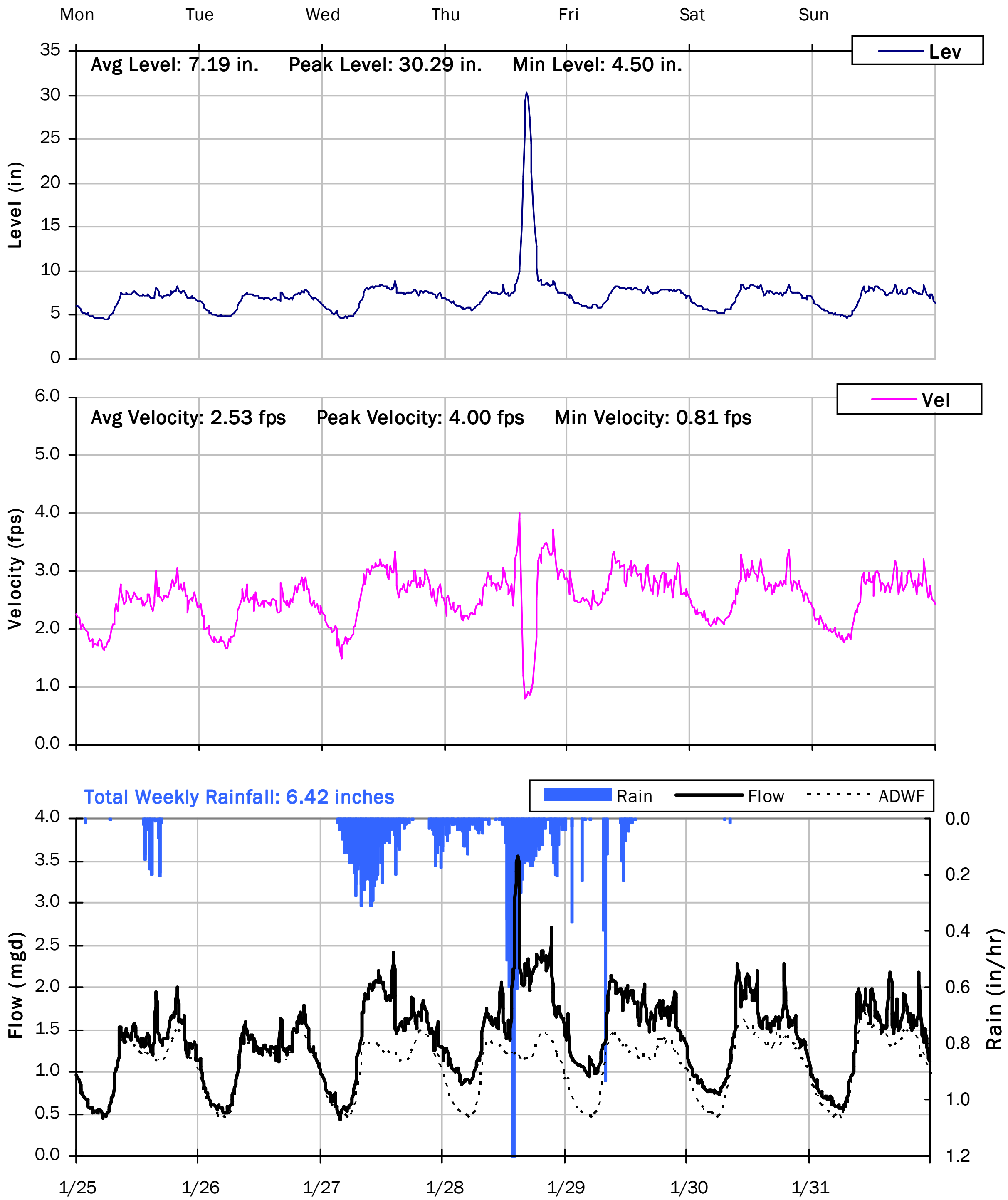


Avg Flow: 1.086 mgd **Peak Flow: 2.151 mgd** **Min Flow: 0.416 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

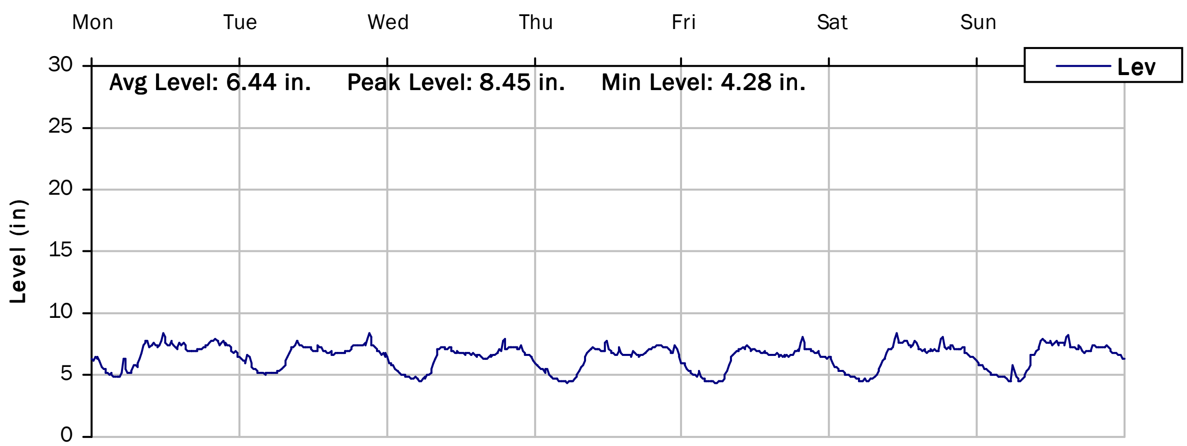


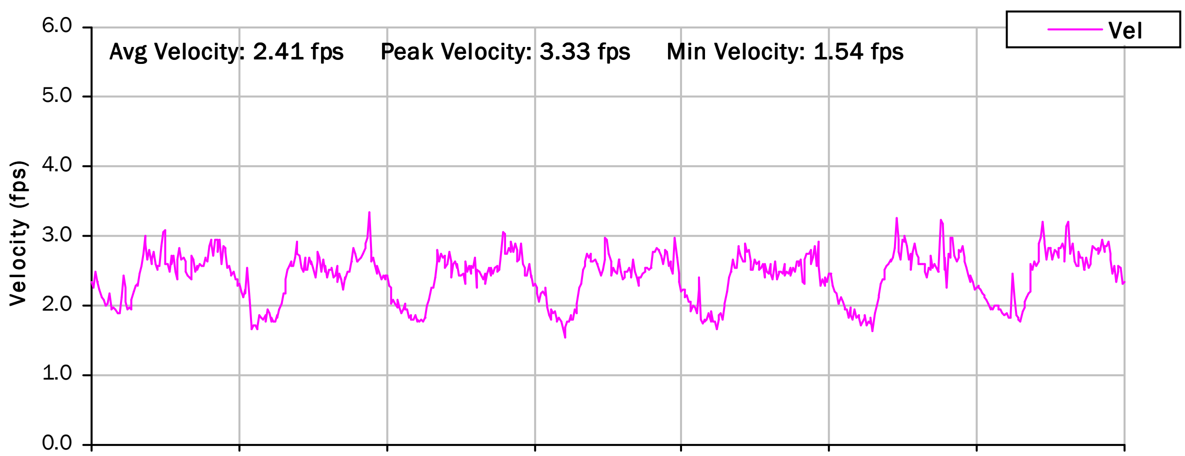
SITE 01
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021

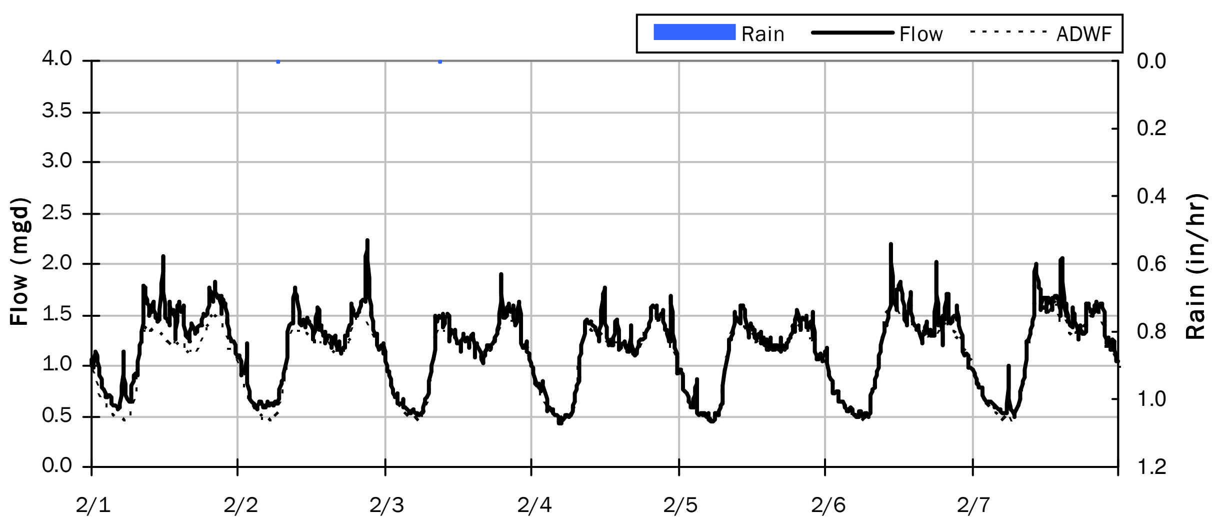


Avg Flow: 1.380 mgd **Peak Flow: 3.551 mgd** **Min Flow: 0.437 mgd**

SITE 01
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021







Avg Flow: 1.161 mgd **Peak Flow: 2.244 mgd** **Min Flow: 0.423 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

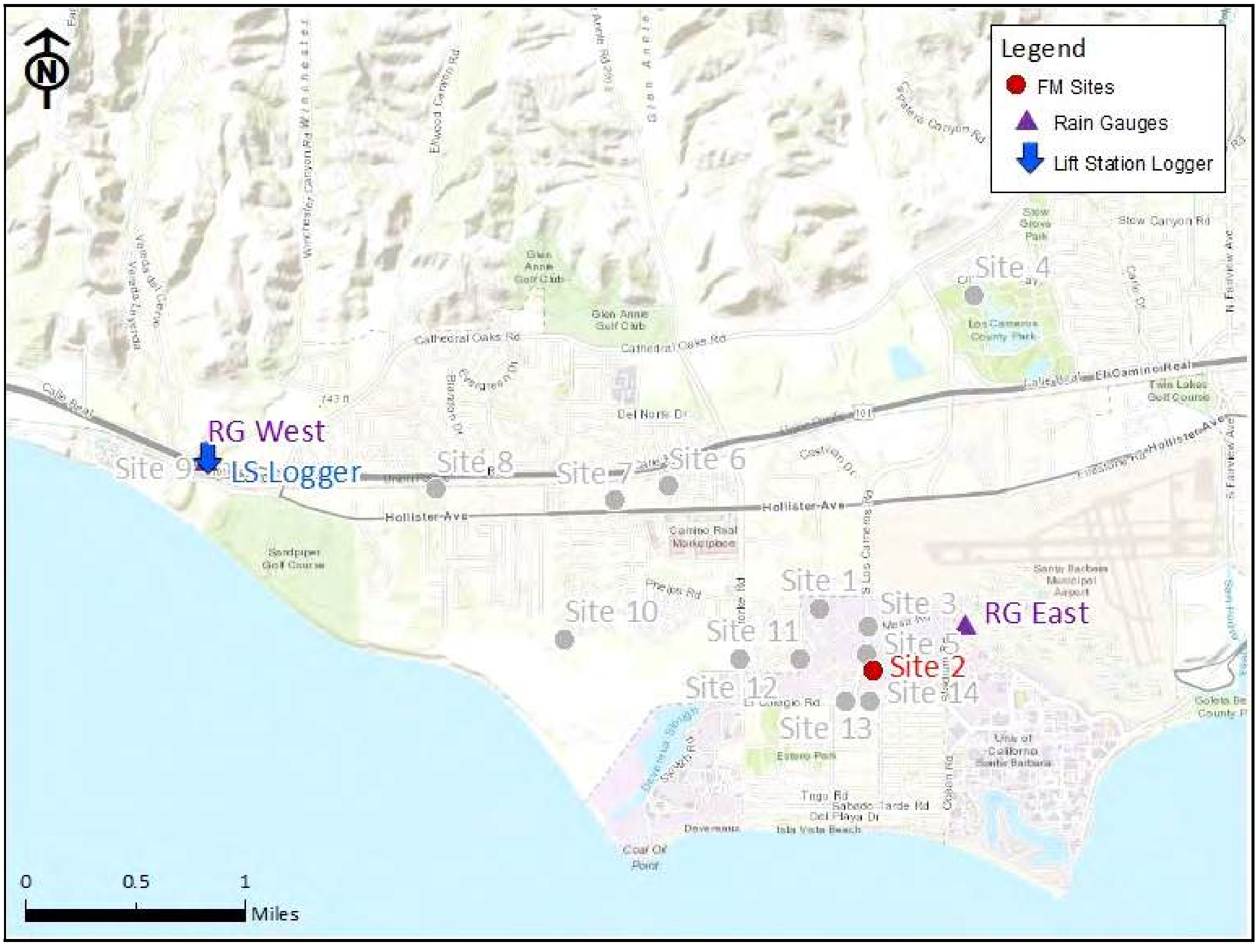
November 3, 2020 - February 7, 2021

Monitoring Site: Site 02

City Manhole: UCSB MH

Location: S Los Carneros Road, corner of ball field near bike path

Data Summary Report



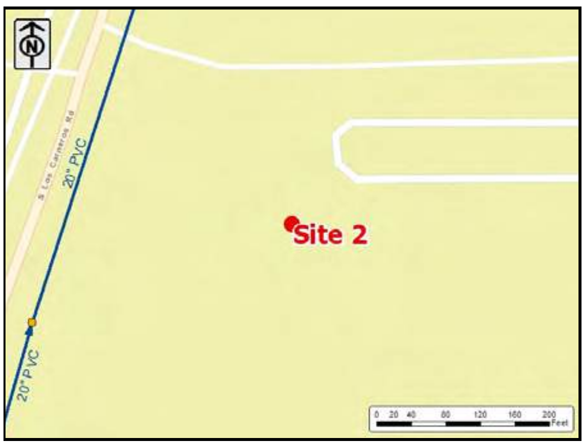
Vicinity Map: Site 02

SITE 02

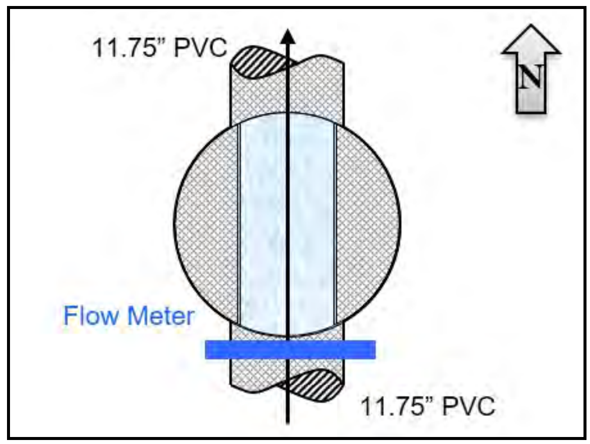
Site Information

Location:	S Los Carneros Road, corner of ball field near bike path
City Manhole:	UCSB MH
Coordinates:	119.8592° W, 34.4194° N
Rim Elevation (Earth):	20 feet
Pipe Diameter:	11.75 inches
ADWF:	0.055 mgd
Peak Measured Flow:	0.252 mgd

Satellite Map



Sanitary Map



Flow Sketch

Street View

Plan View

SITE 02

Additional Site Photos

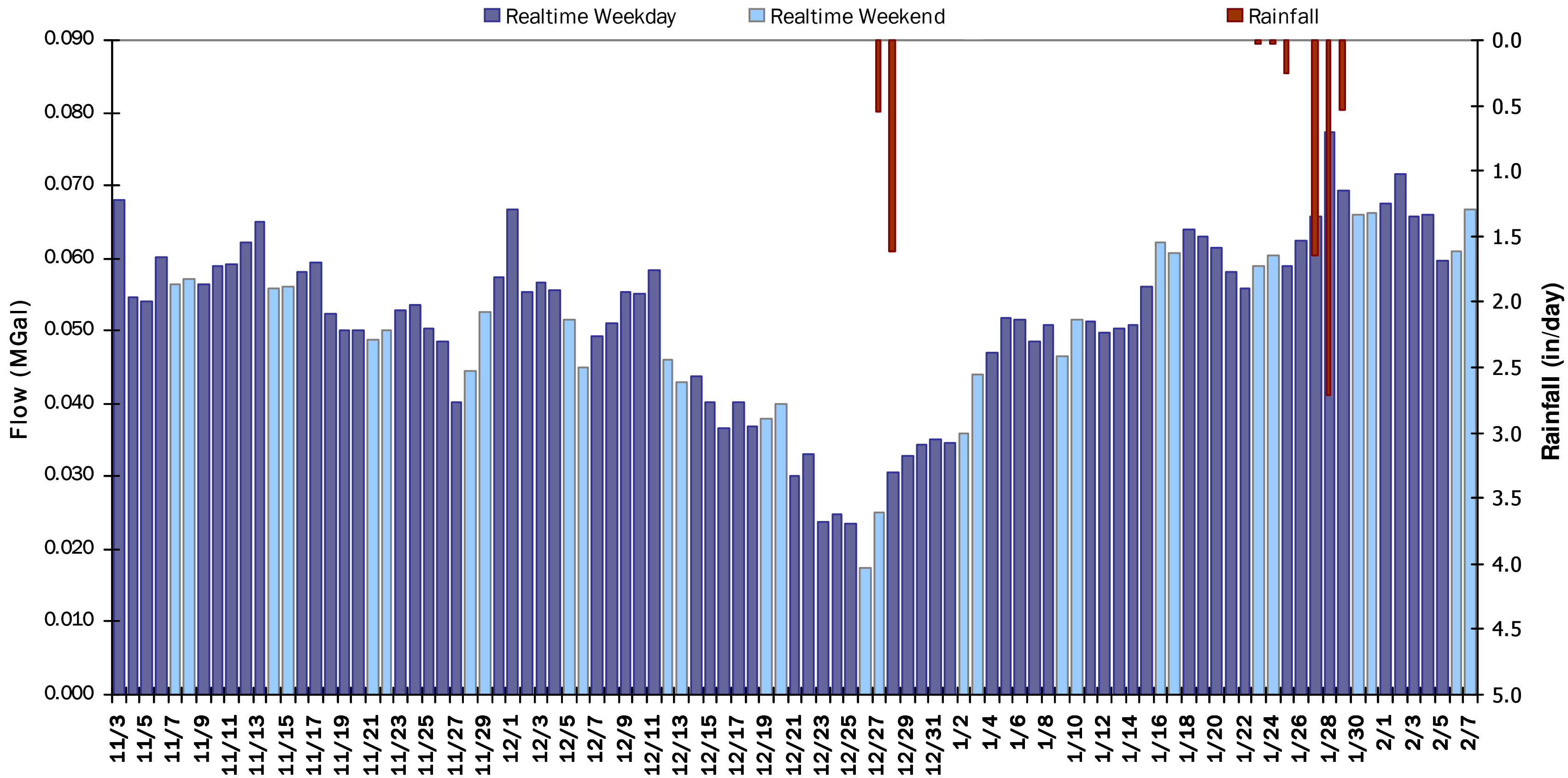
Monitored South Influent

North Effluent

SITE 02
Period Flow Summary: Daily Flow Totals

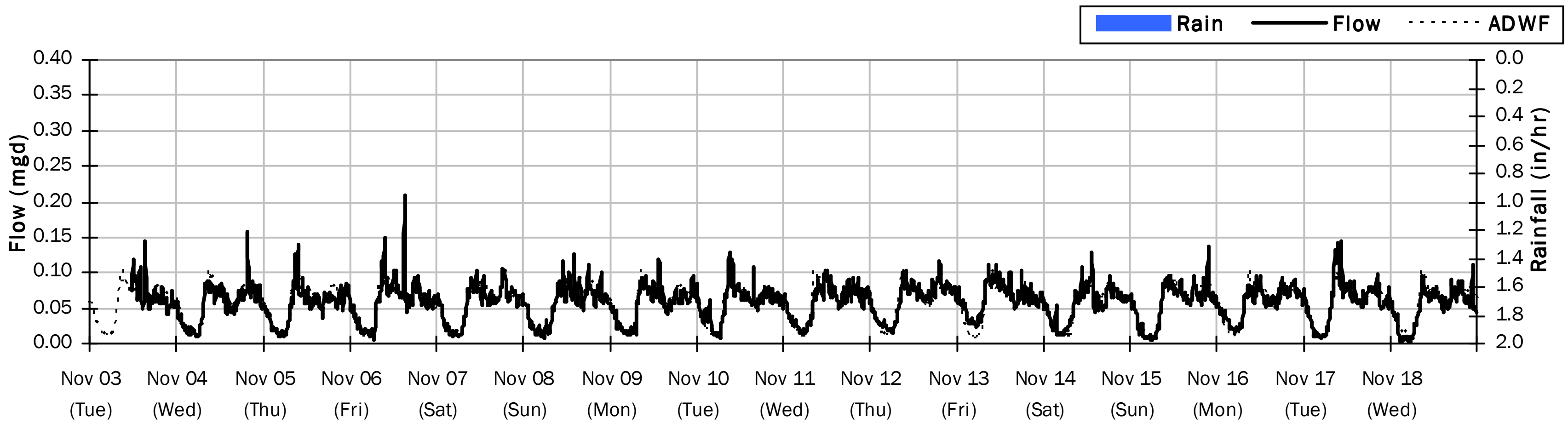
Avg Period Flow: 0.052 MGal **Peak Daily Flow: 0.077 MGal** **Min Daily Flow: 0.017 MGal**

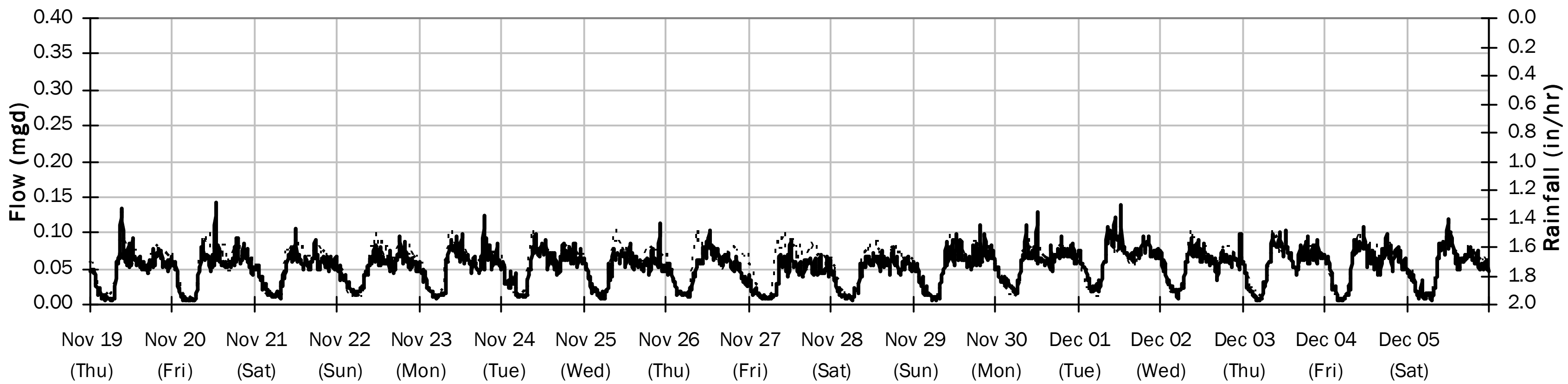
Total Period Rainfall: 7.38 inches



SITE 02
Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   Avg Flow: 0.055 mgd   Peak Flow: 0.210 mgd   Min Flow: 0.002 mgd

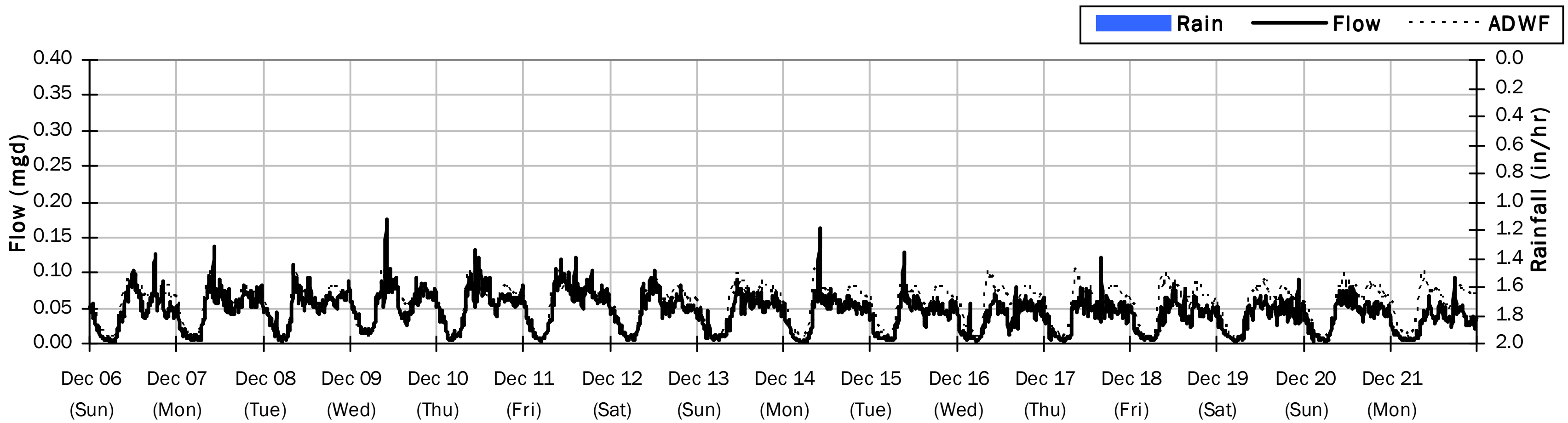


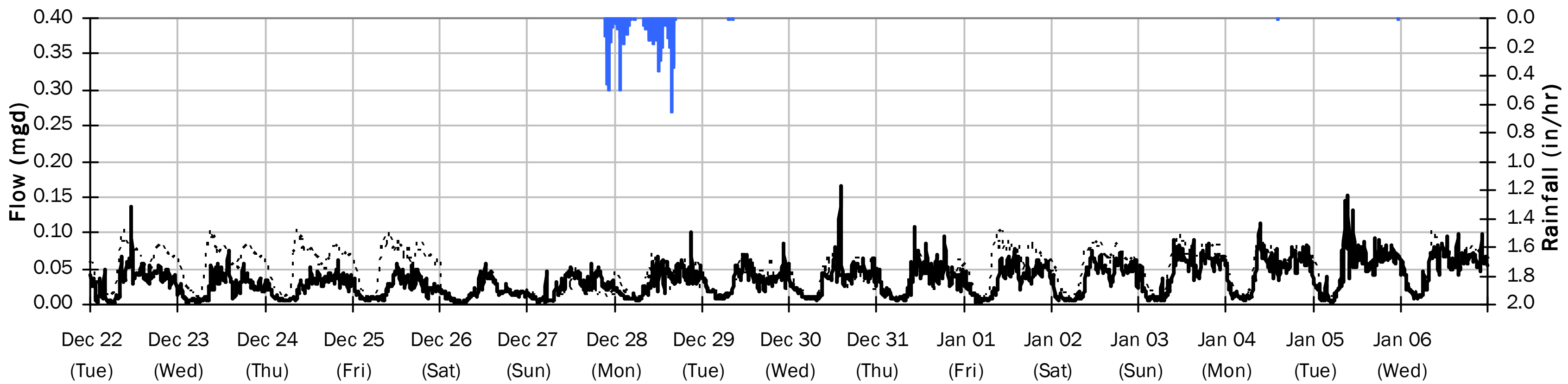


SITE 02

Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.17 inches   **Avg Flow: 0.039 mgd**   **Peak Flow: 0.177 mgd**   **Min Flow: 0.002 mgd**

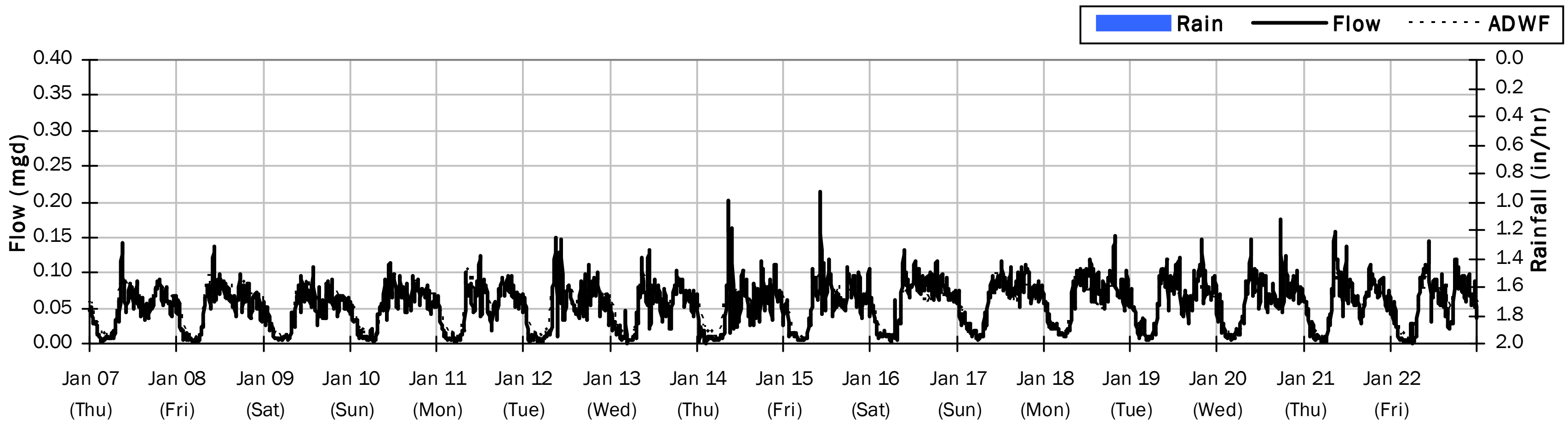


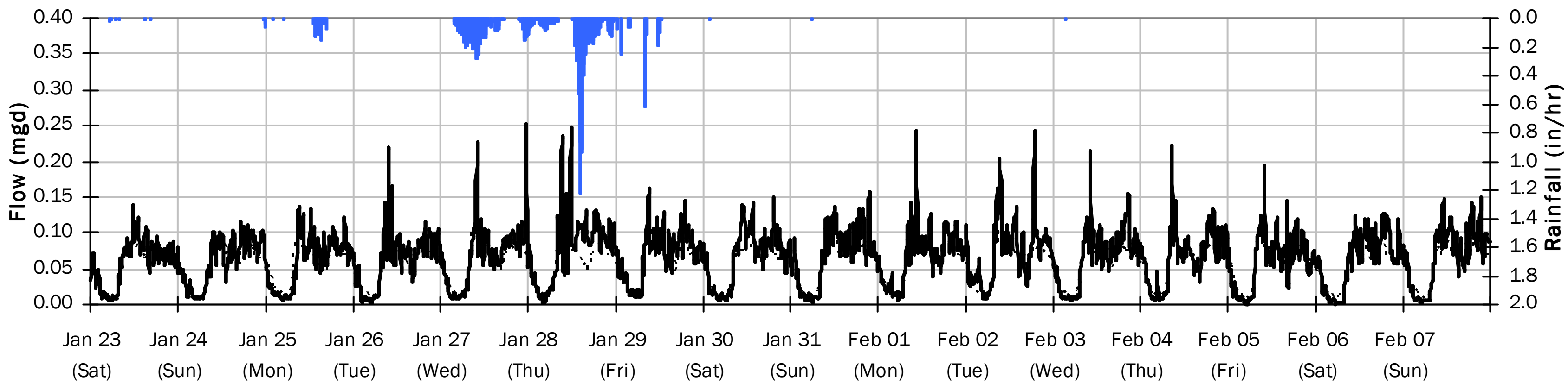


SITE 02

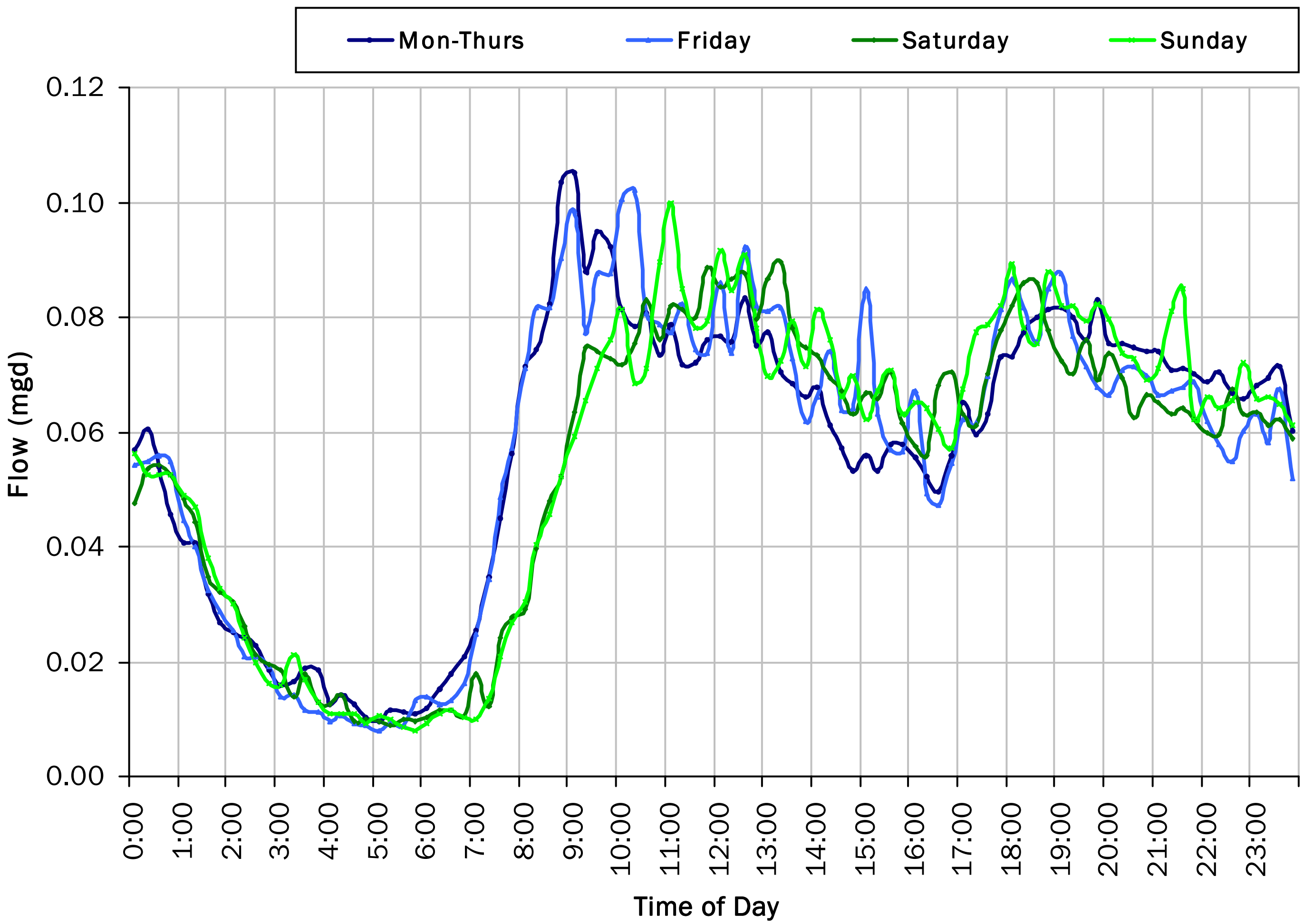
Flow Summary: 1/7/2021 to 2/7/2021

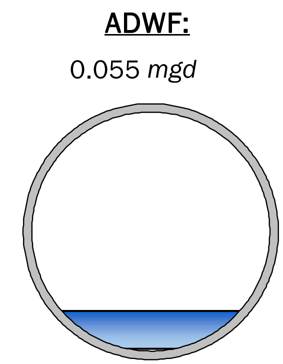
Total Period Rainfall: 5.21 inches Avg Flow: 0.060 mgd Peak Flow: 0.252 mgd Min Flow: 0.000 mgd





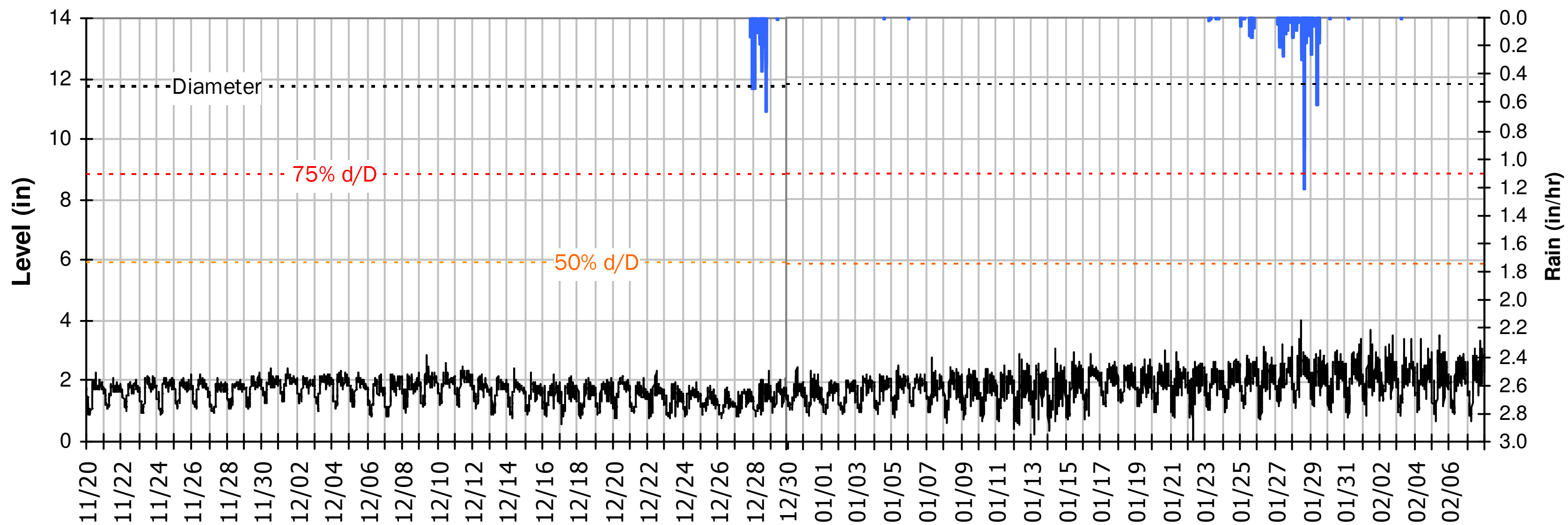
SITE 02
Average Dry Weather Flow Hydrographs

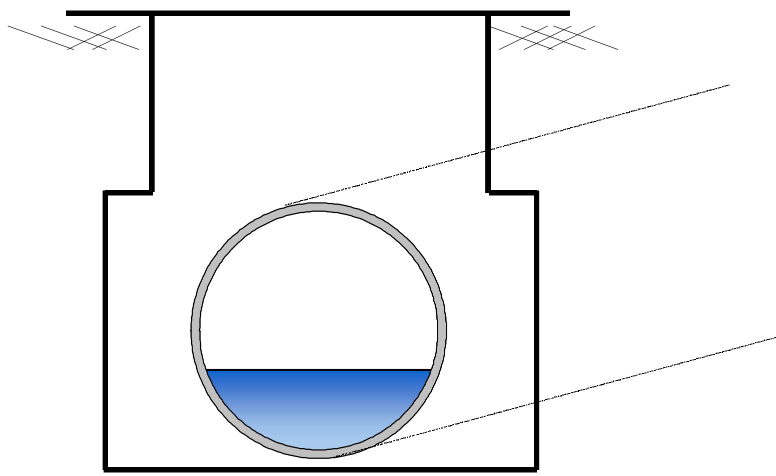




SITE 02
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

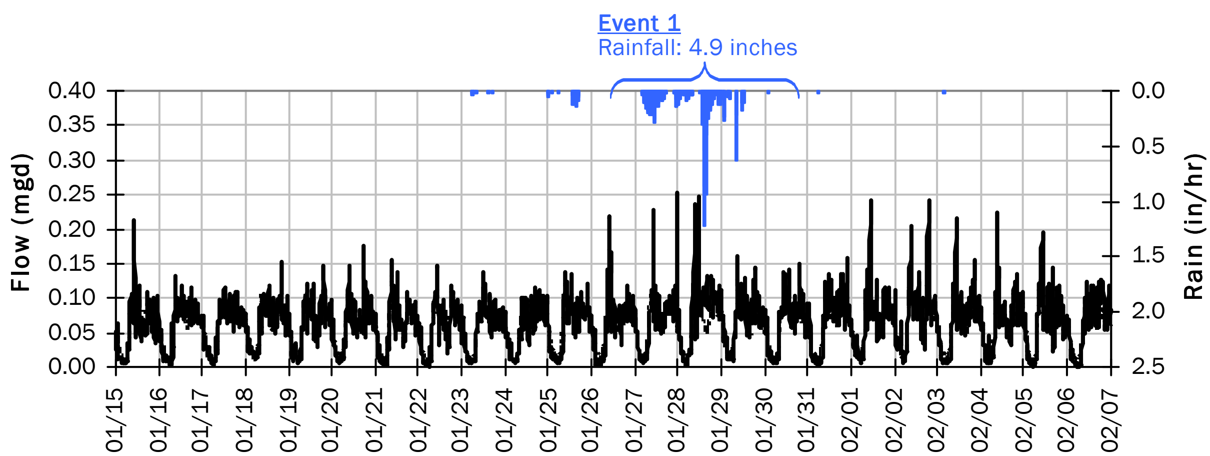




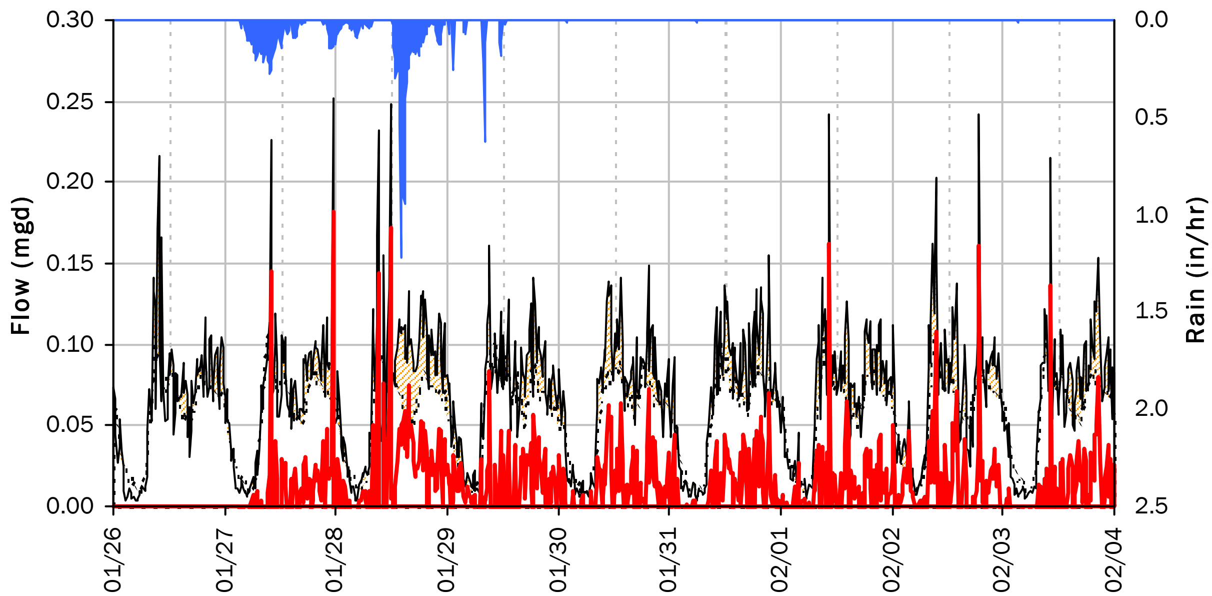
Pipe Diameter:	11.8	*inches*
Peak Measured Level:	3.98	*inches*
Peak d/D Ratio:	0.34	

SITE 02
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



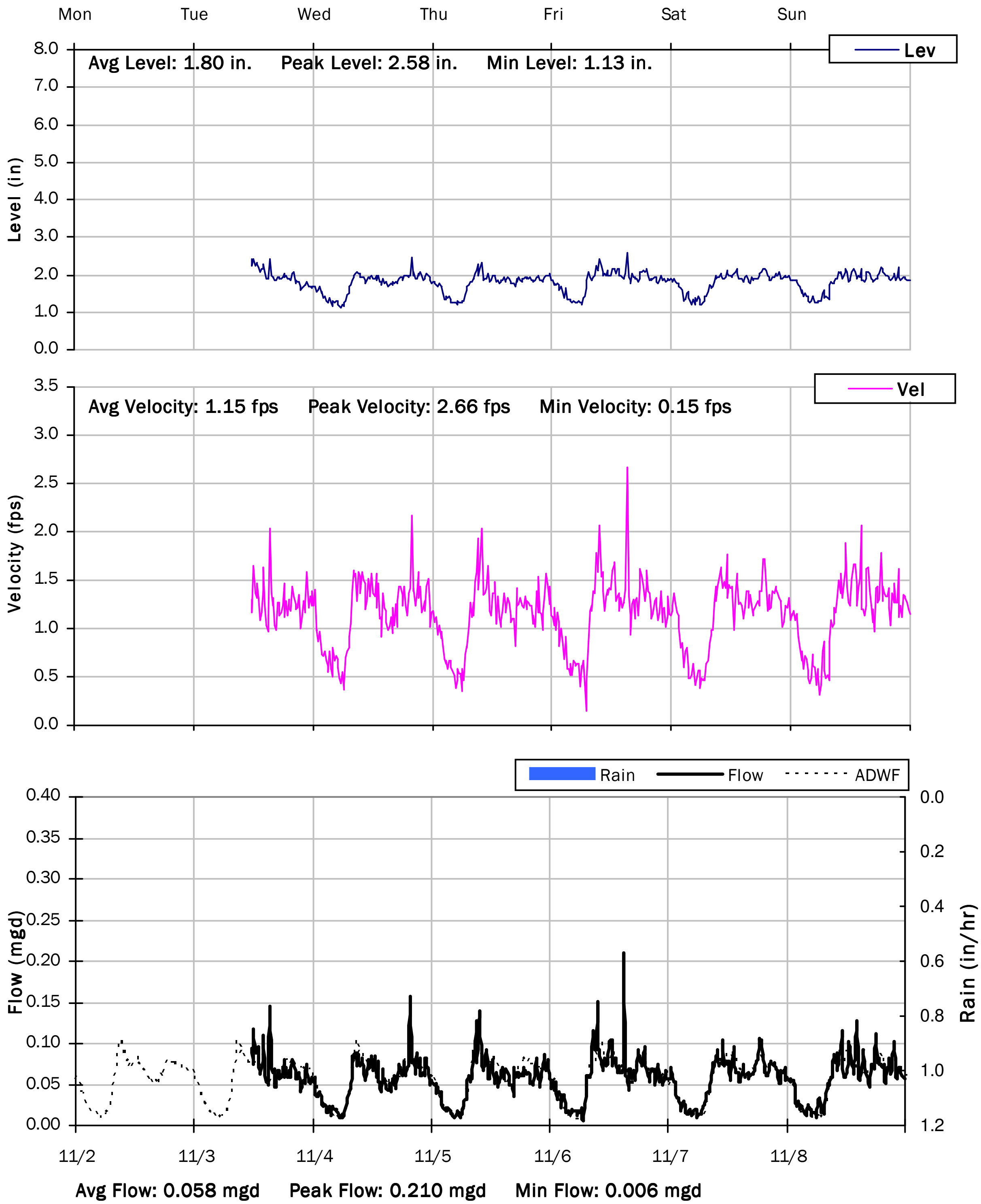
Event 1 Detail Graph



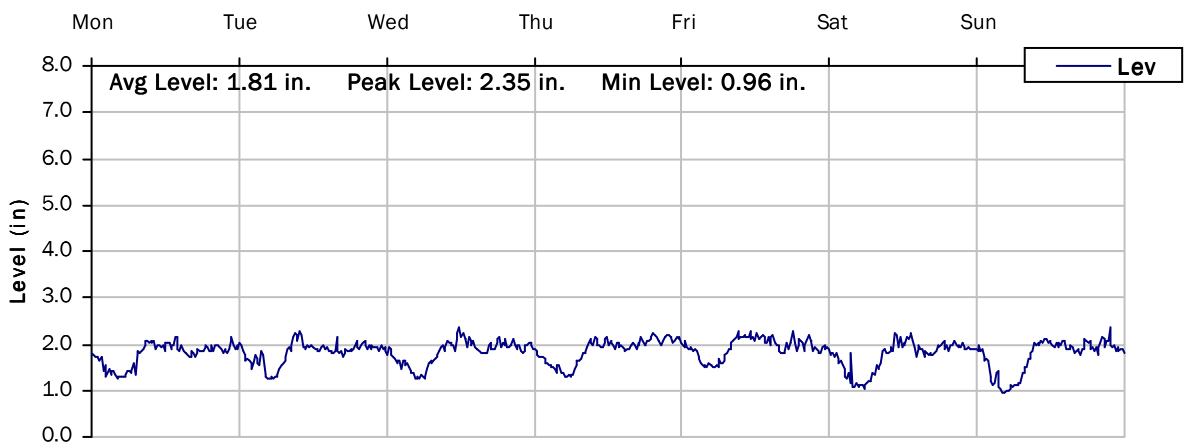
Storm Event I/I Analysis (Rain = 4.90 inches)

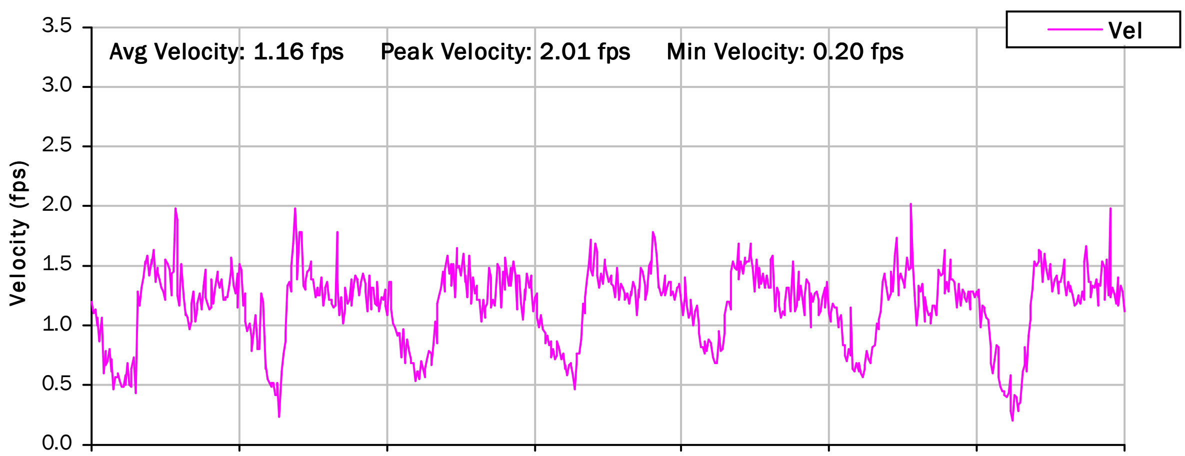
Capacity		Inflow / Infiltration	
Peak Flow:	0.25 *mgd*	**Peak I/I Rate:**	0.18 *mgd*
PF:	4.62	**Total I/I:**	99,000 *gallons*
Peak Level:	3.98 *in*		
d/D Ratio:	0.34		

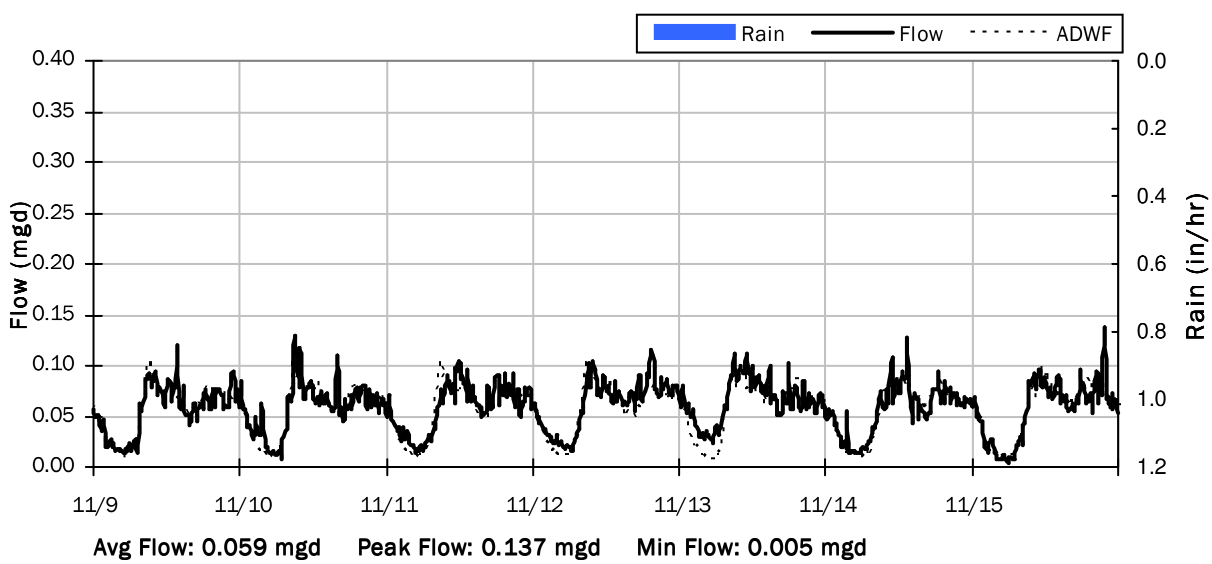
SITE 02
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



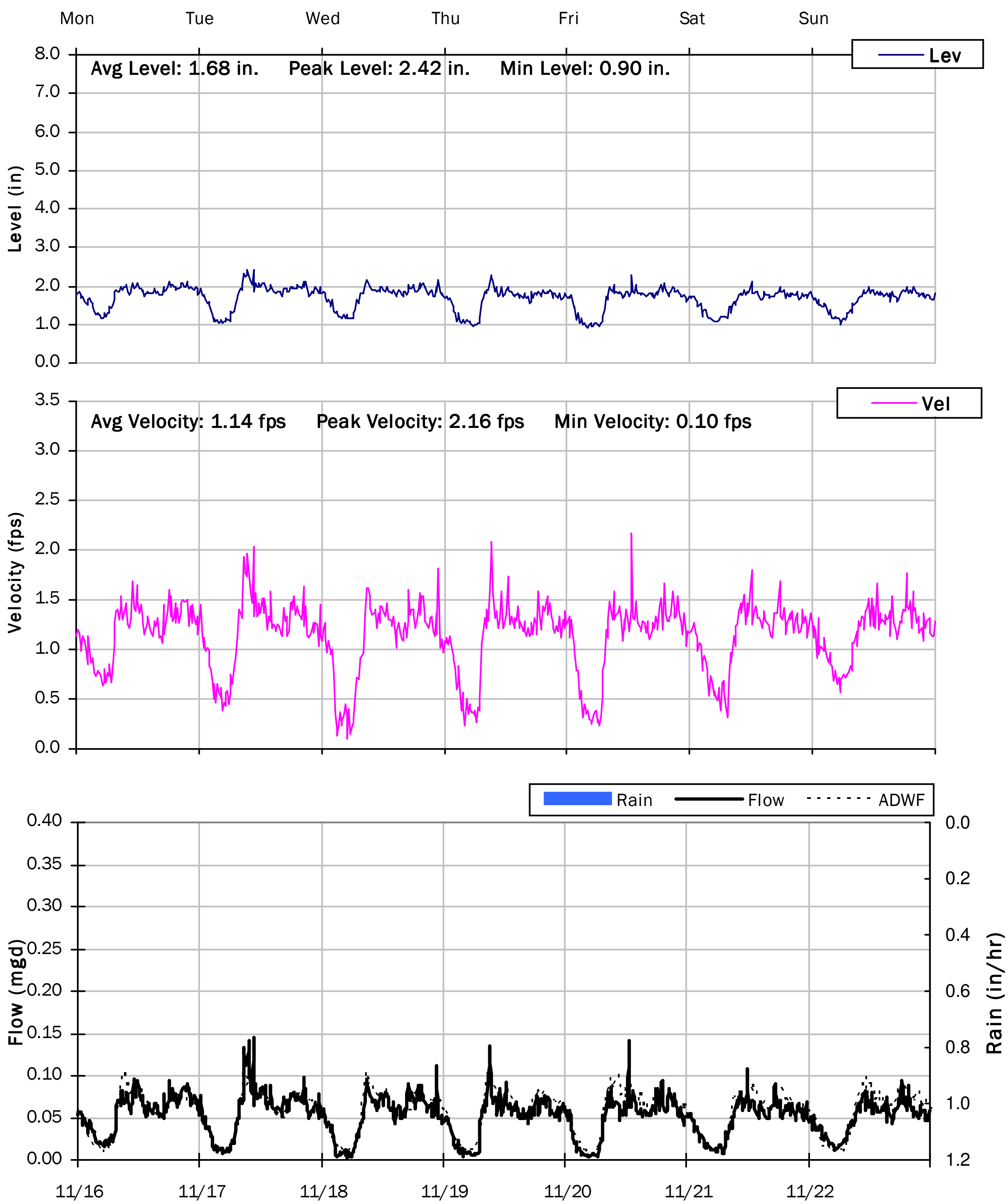
SITE 02
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020





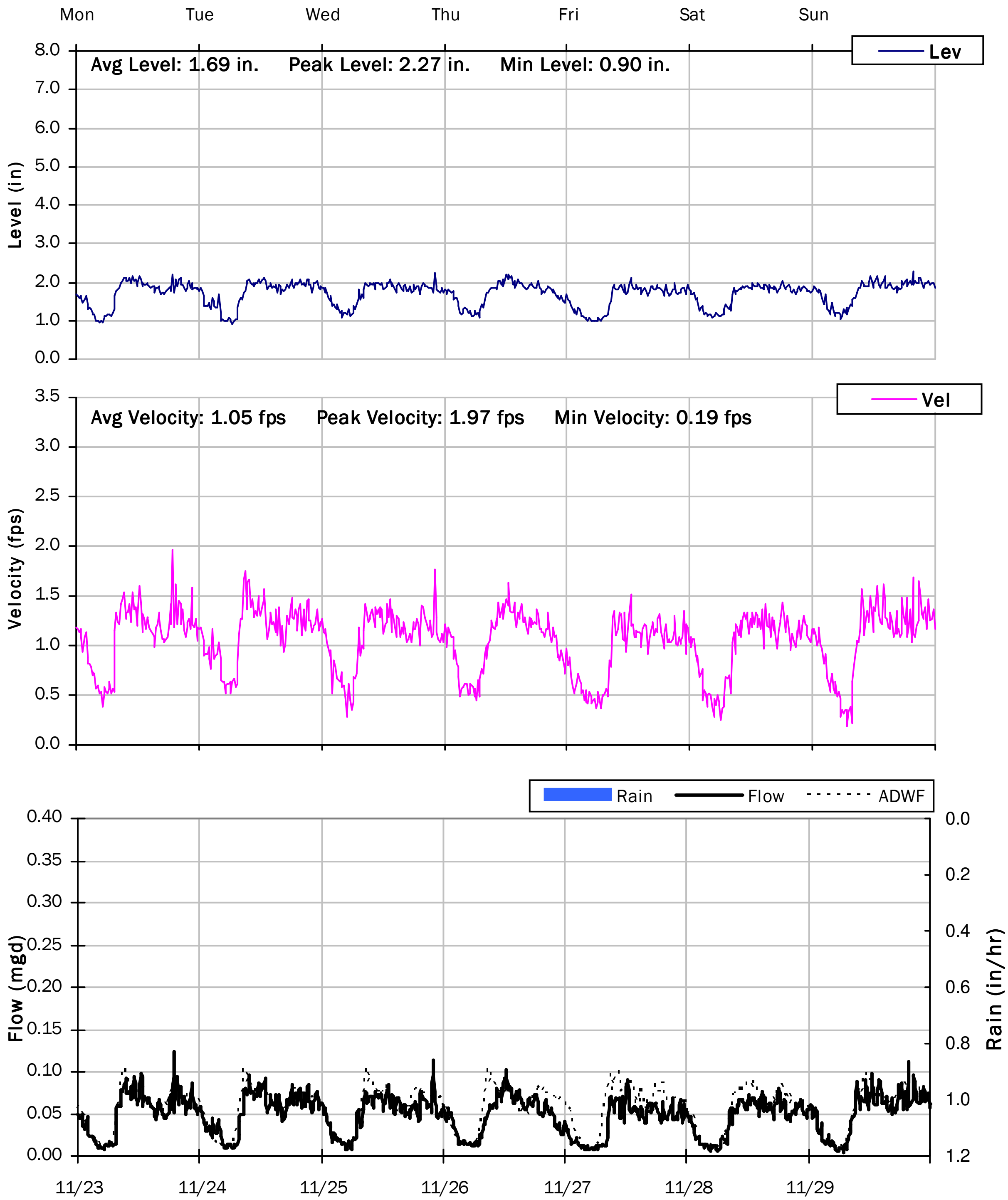


SITE 02
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020



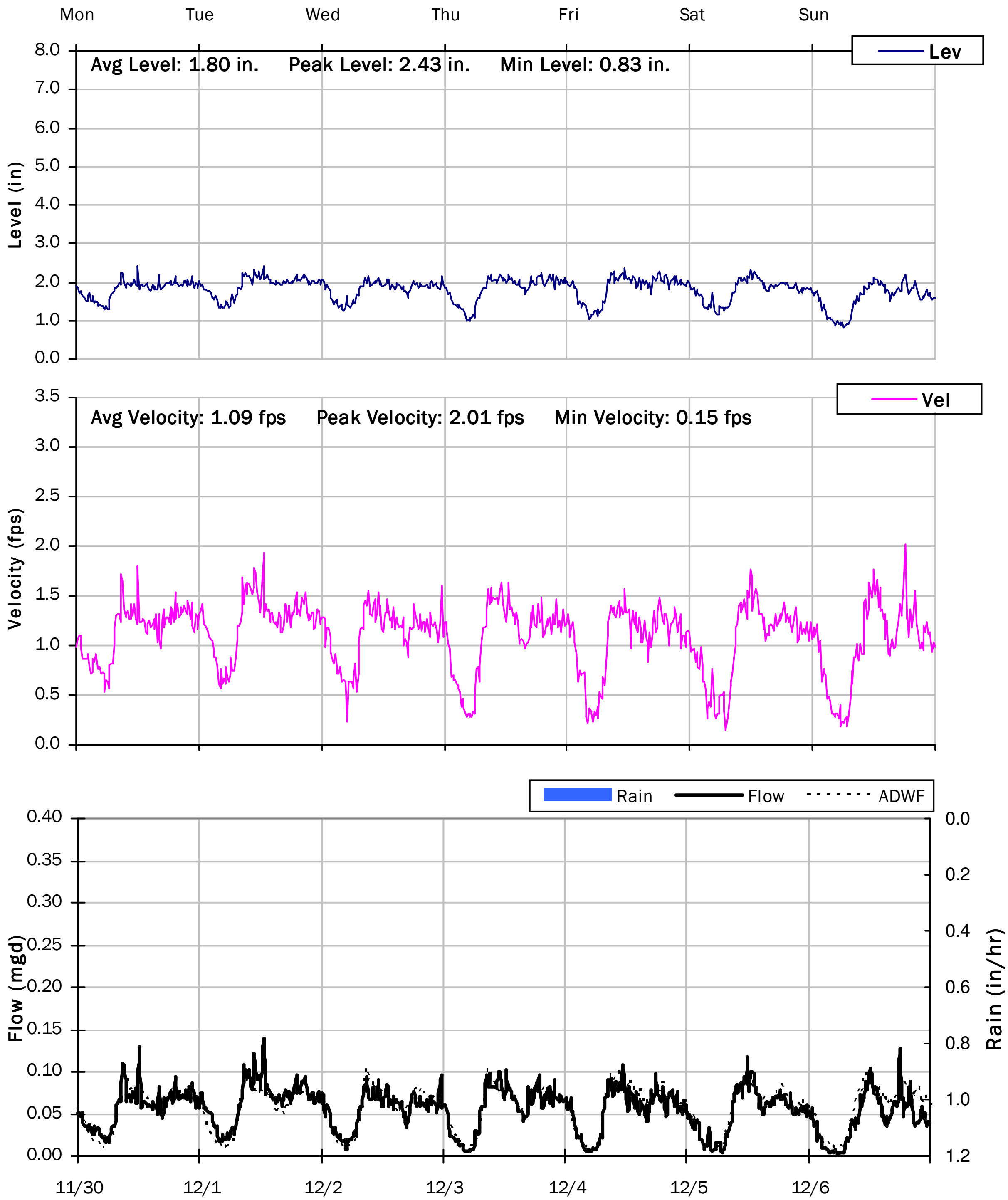
Avg Flow: 0.053 mgd **Peak Flow: 0.145 mgd** **Min Flow: 0.002 mgd**

SITE 02
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



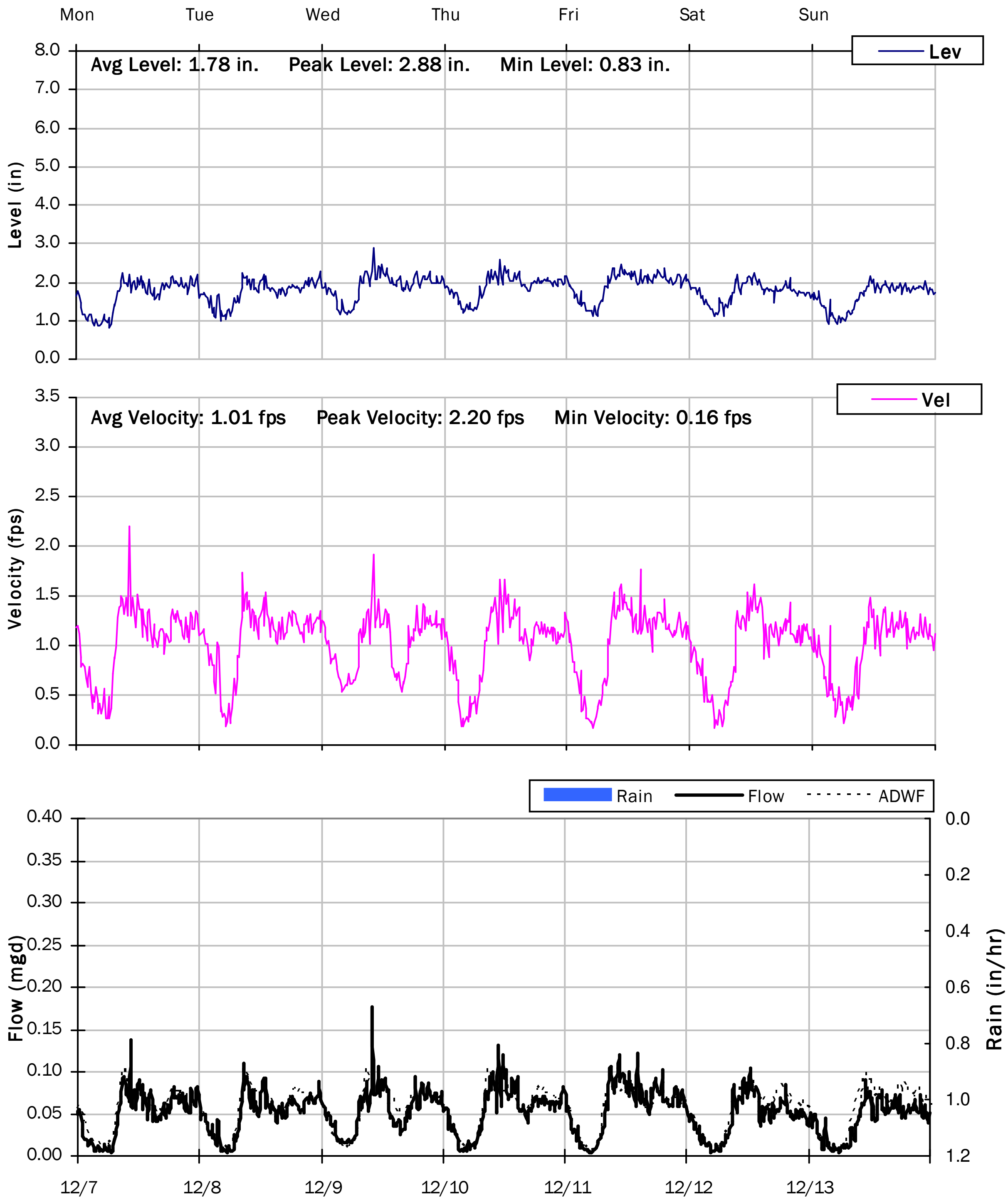
Avg Flow: 0.049 mgd **Peak Flow: 0.123 mgd** **Min Flow: 0.005 mgd**

SITE 02
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



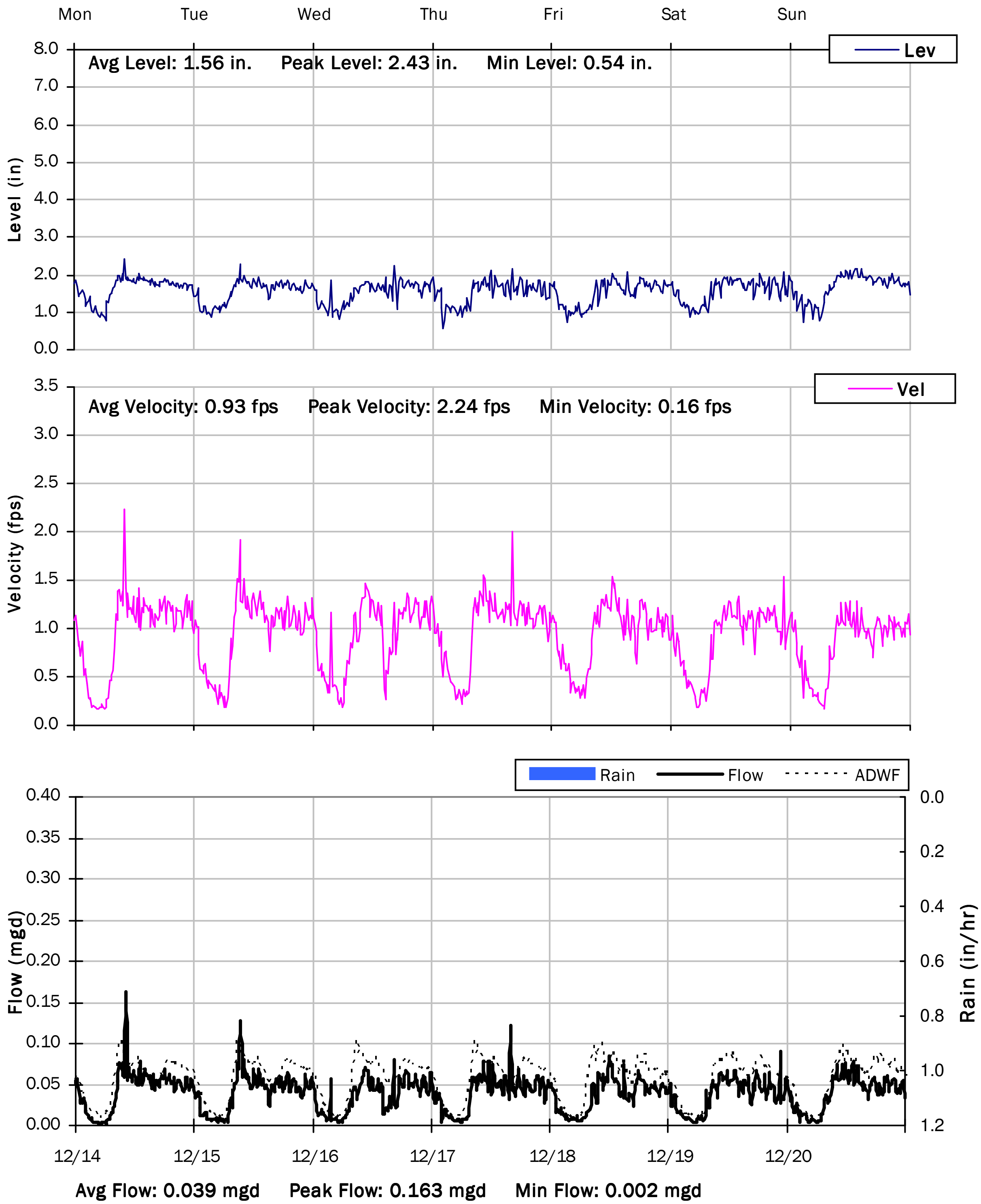
Avg Flow: 0.056 mgd Peak Flow: 0.139 mgd Min Flow: 0.003 mgd

SITE 02
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

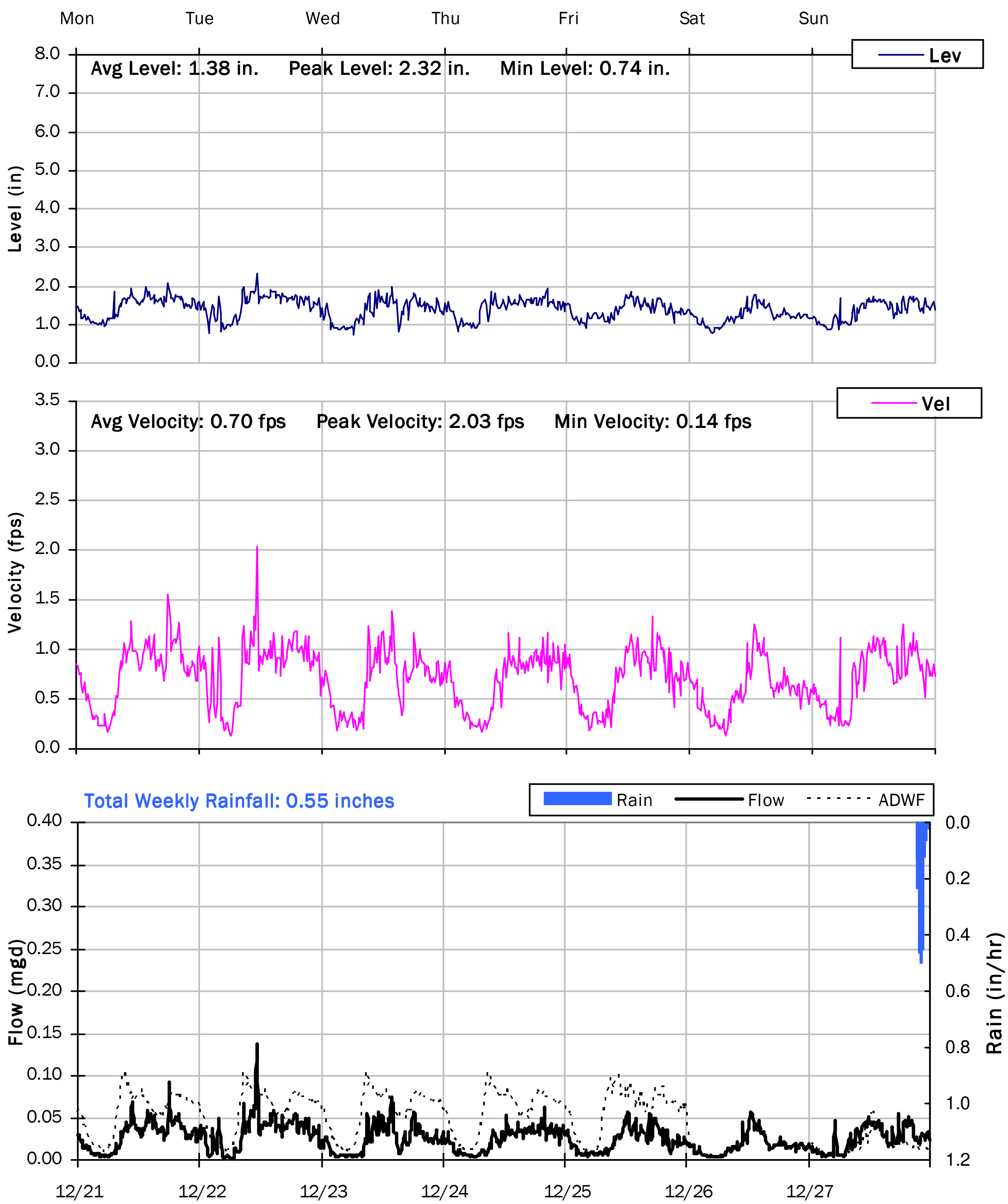


Avg Flow: 0.051 mgd
Peak Flow: 0.177 mgd
Min Flow: 0.004 mgd

SITE 02
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

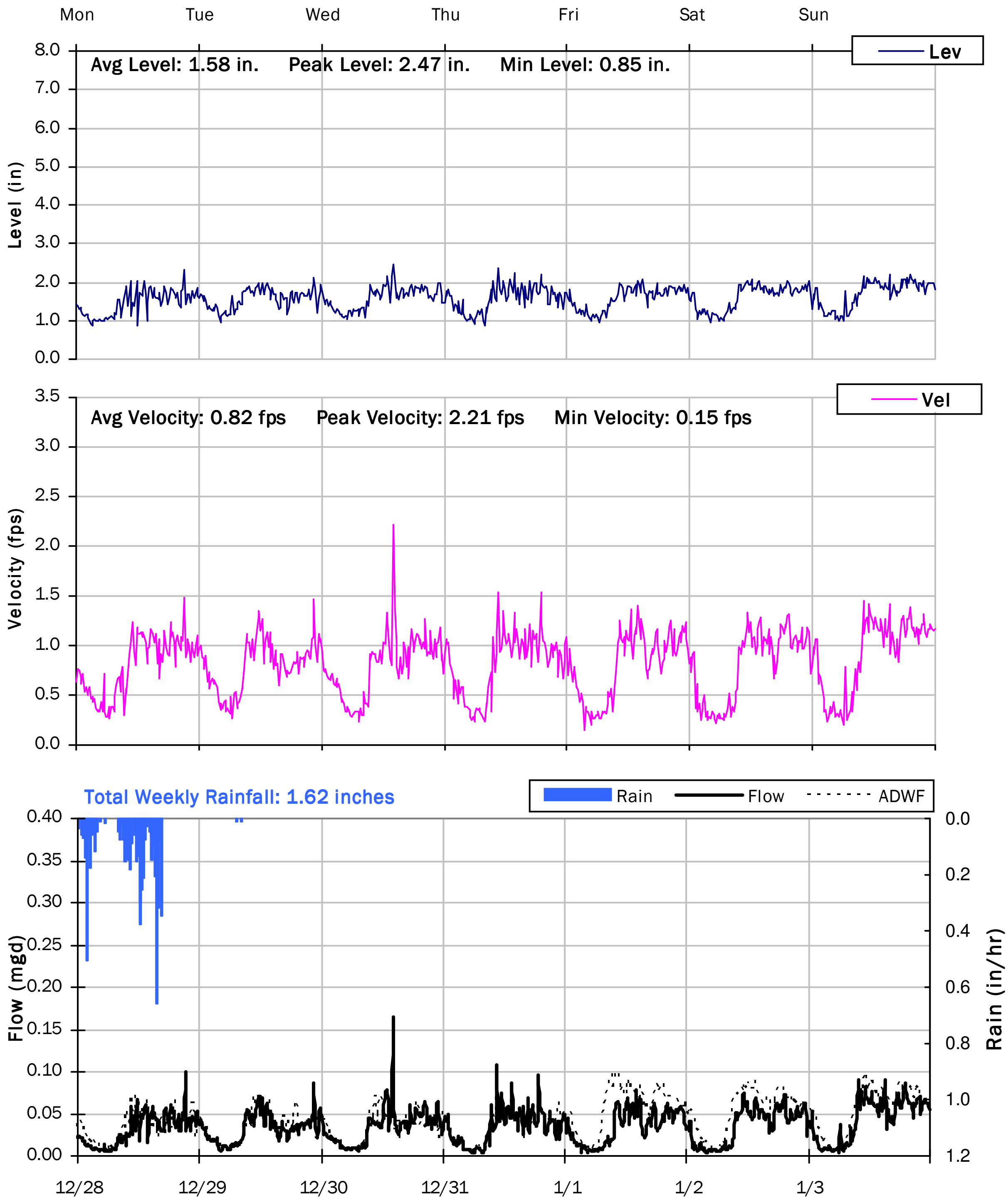


SITE 02
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020



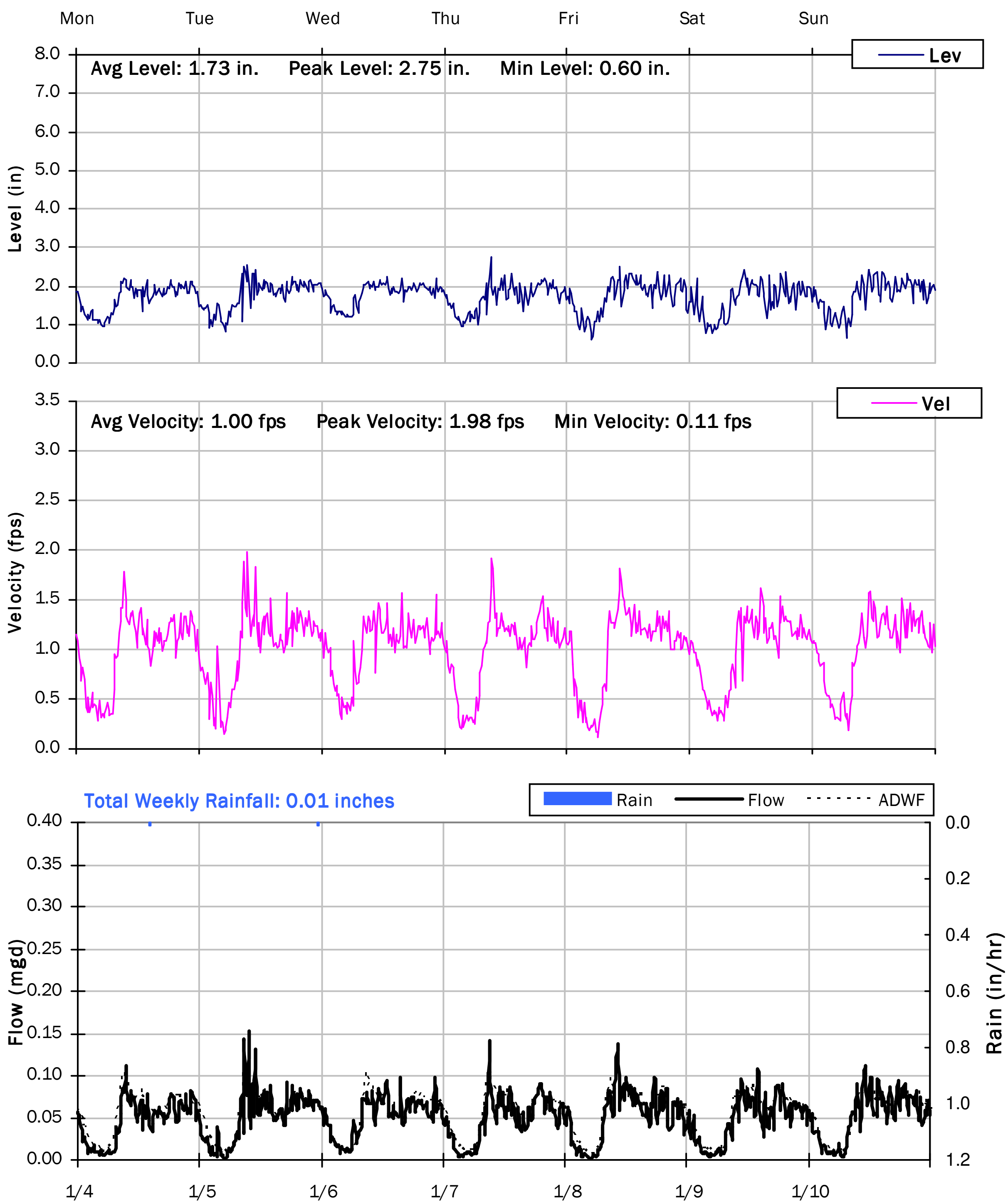
Avg Flow: 0.025 mgd **Peak Flow: 0.138 mgd** **Min Flow: 0.003 mgd**

SITE 02
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



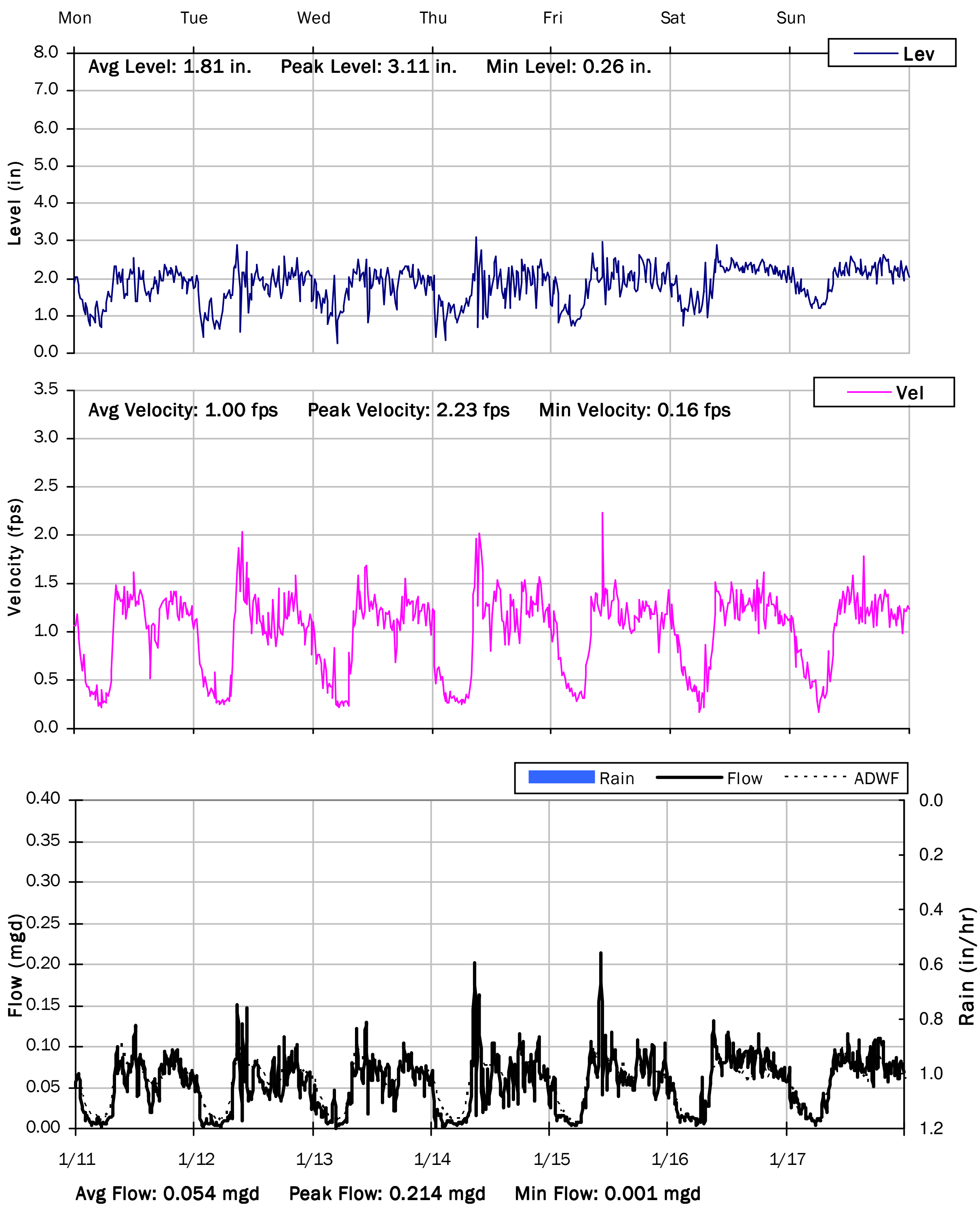
Avg Flow: 0.035 mgd Peak Flow: 0.164 mgd Min Flow: 0.003 mgd

SITE 02
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

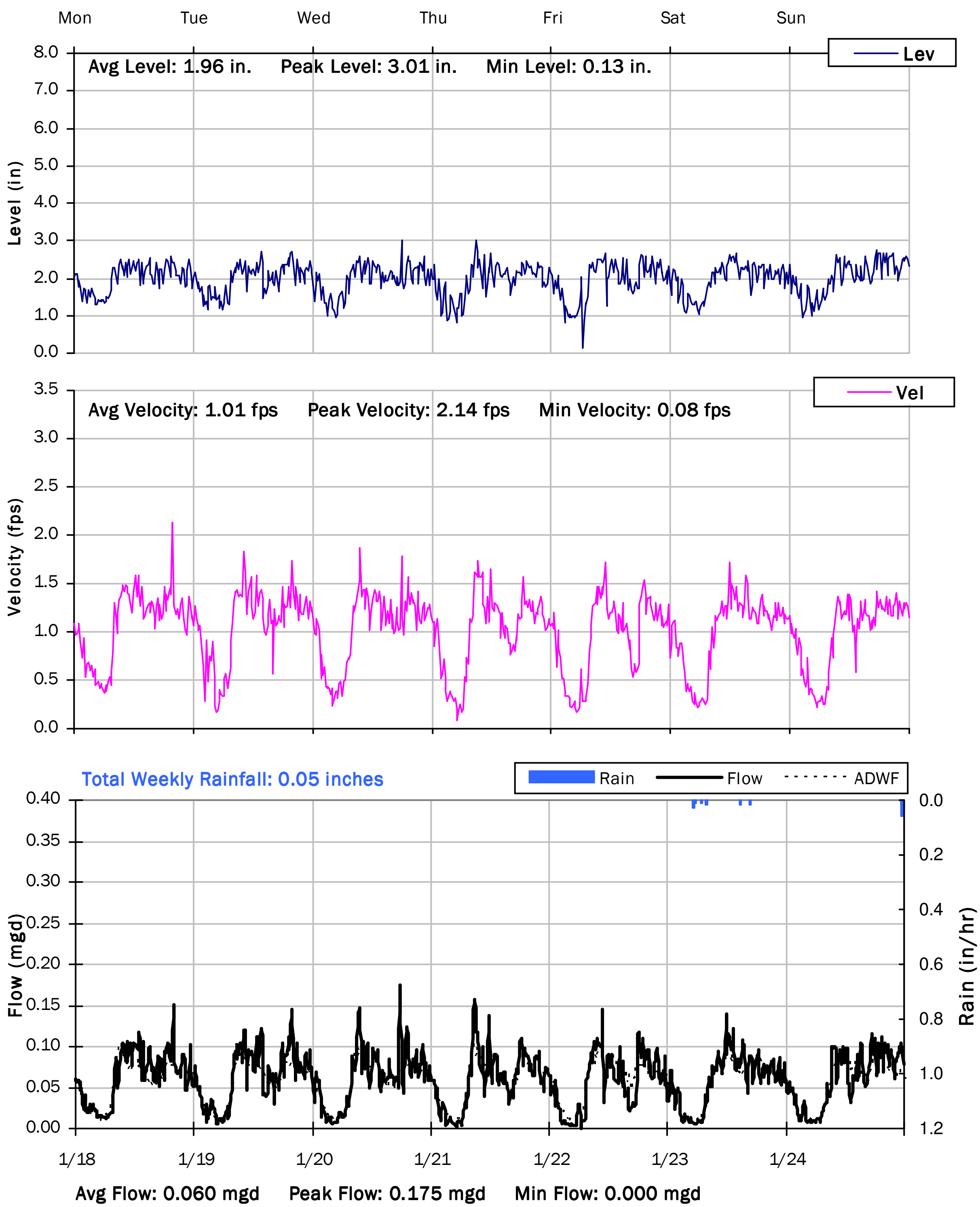


Avg Flow: 0.050 mgd Peak Flow: 0.153 mgd Min Flow: 0.002 mgd

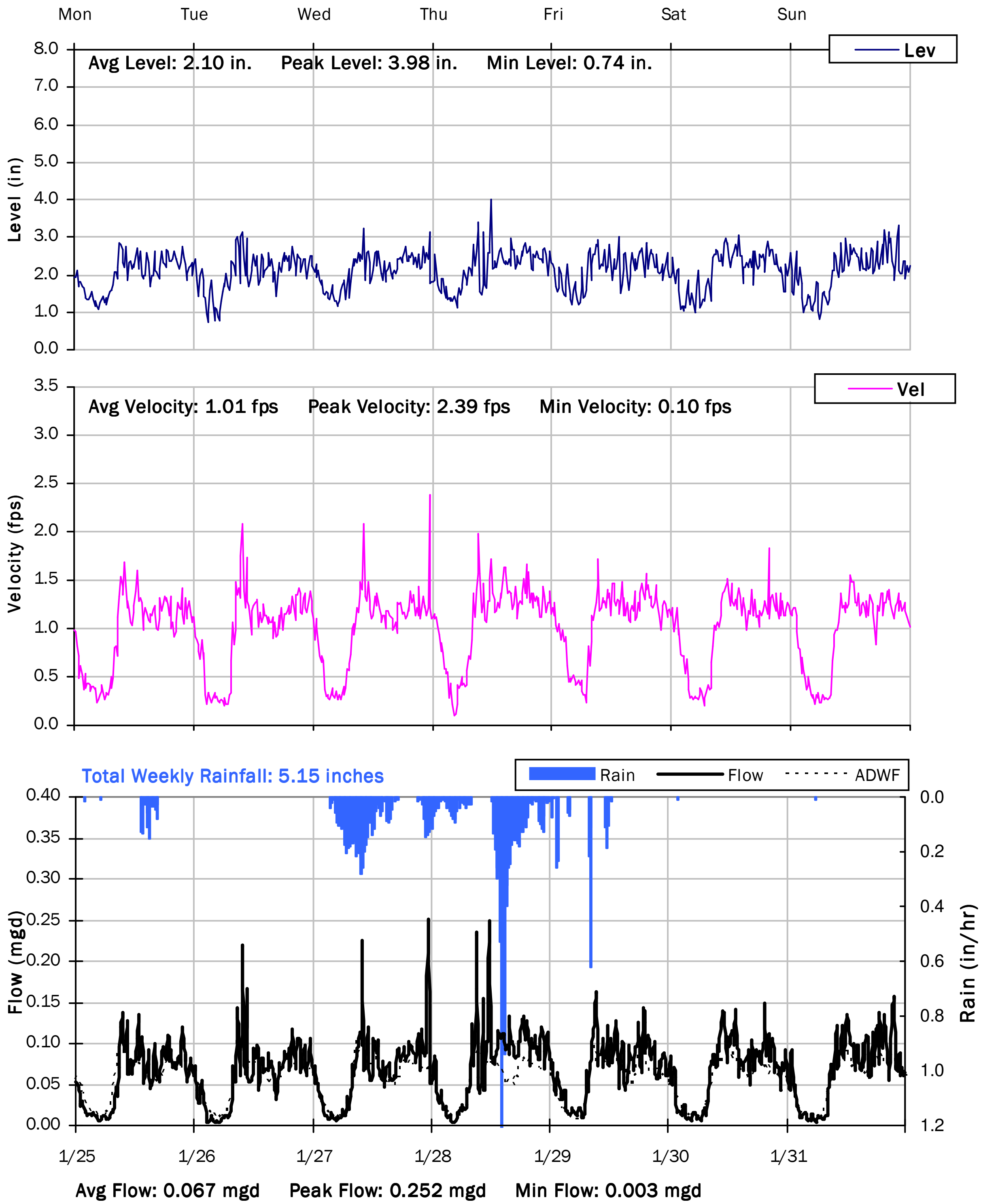
SITE 02
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021



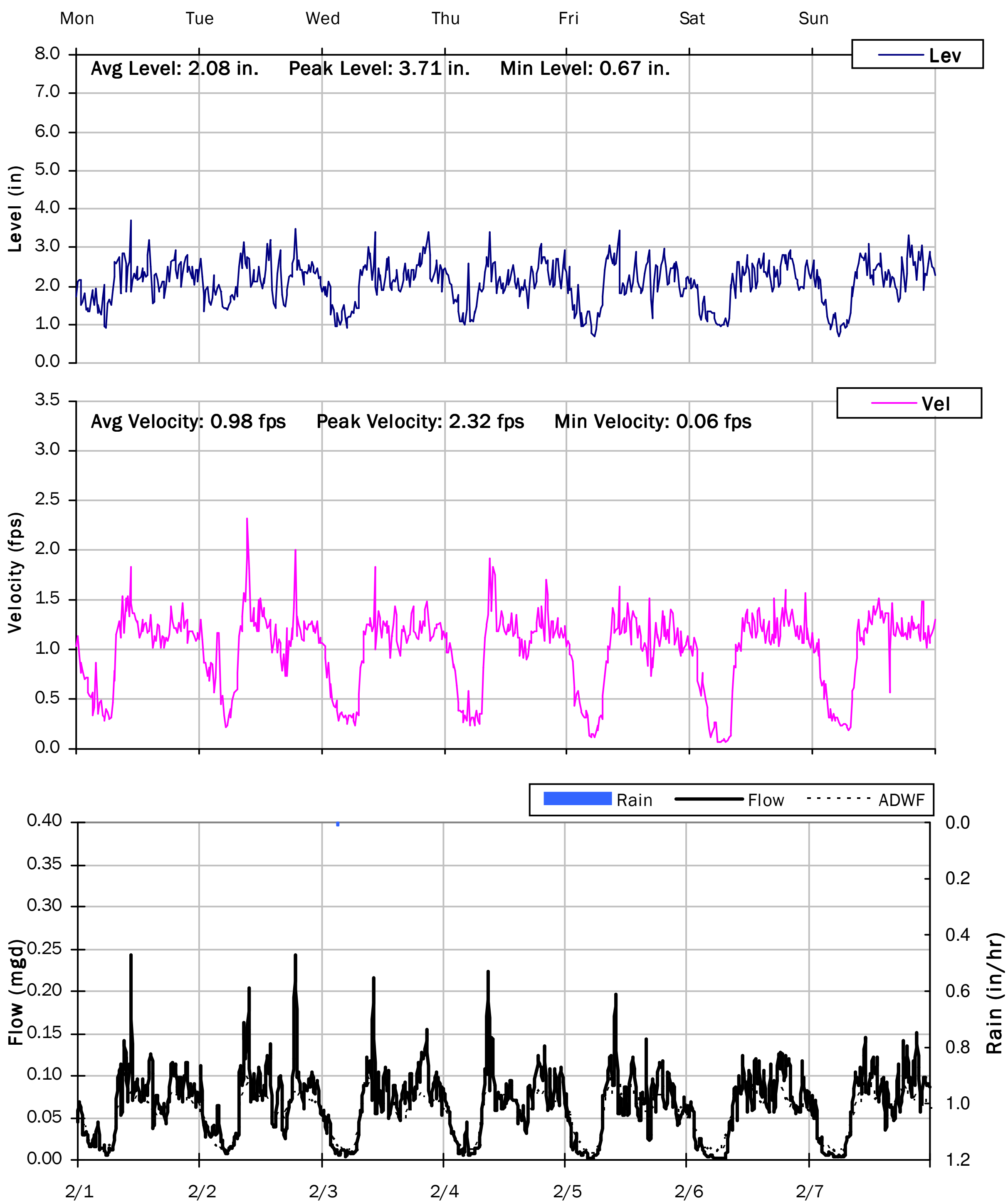
SITE 02
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021



SITE 02
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 02
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.065 mgd **Peak Flow: 0.243 mgd** **Min Flow: 0.001 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

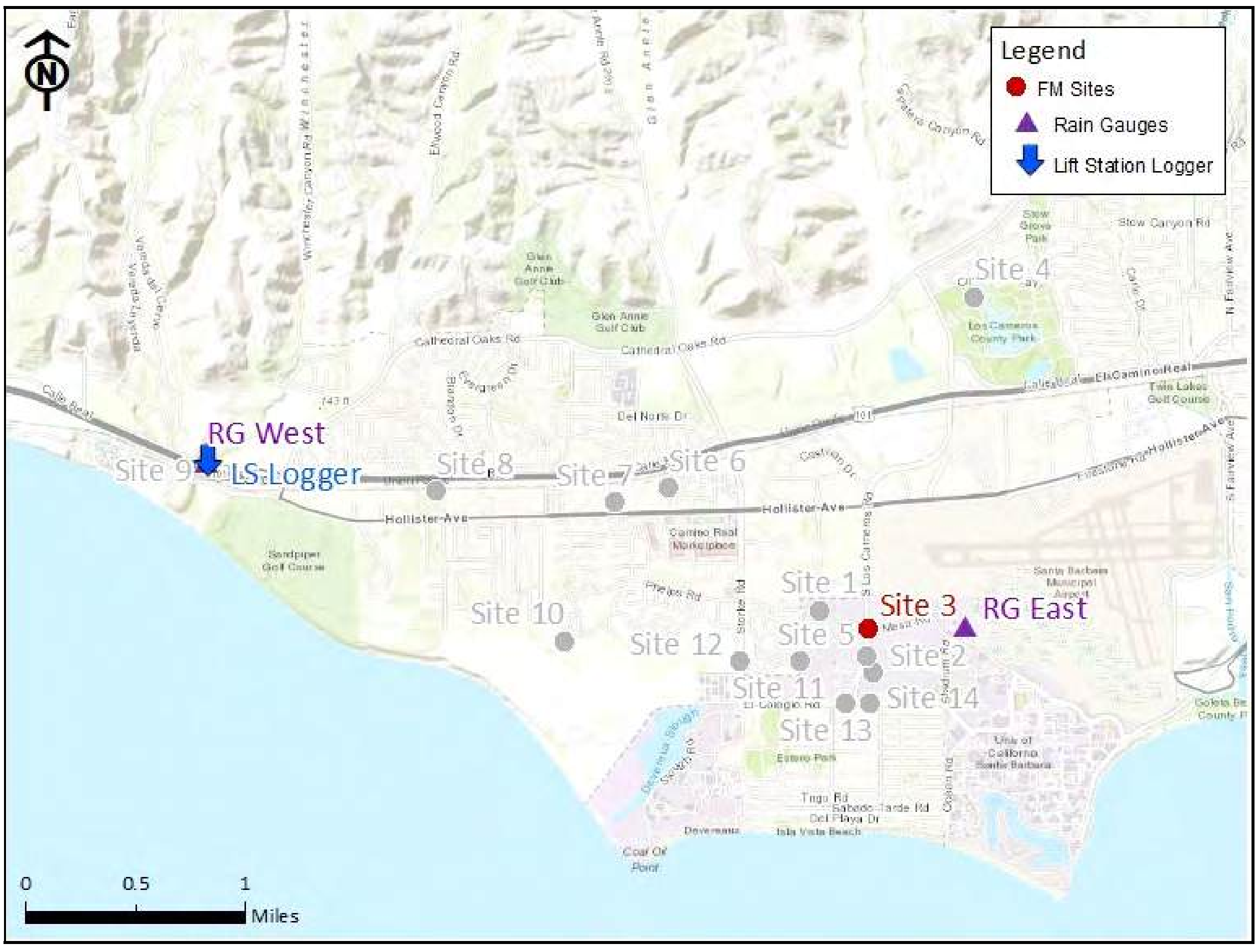
November 3, 2020 - February 7, 2021

Monitoring Site: Site 03

City Manhole: 73-08-03

Location: Bike path northeast of S Los Carneros Road, and Mesa Road

Data Summary Report



Vicinity Map: Site 03

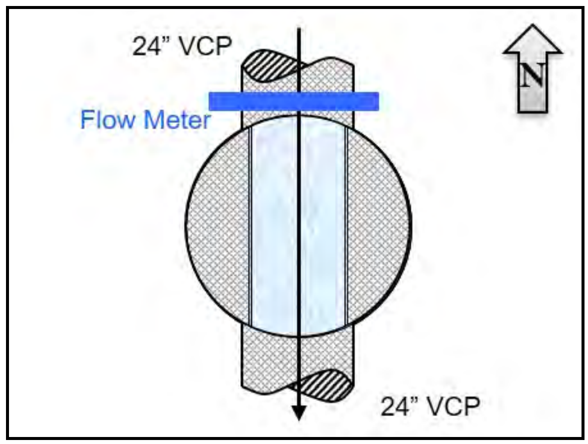
SITE 03

Site Information

Location:	Bike path northeast of S Los Carneros Road, and Mesa Road
City Manhole:	73-08-03
Coordinates:	119.8596° W, 34.4223° N
Rim Elevation (Earth):	7 feet
Pipe Diameter:	24 inches
ADWF:	0.209 mgd
Peak Measured Flow:	1.151 mgd

Satellite Map

Sanitary Map



Flow Sketch


Street View


Plan View

SITE 03

Additional Site Photos

Monitored North Influent

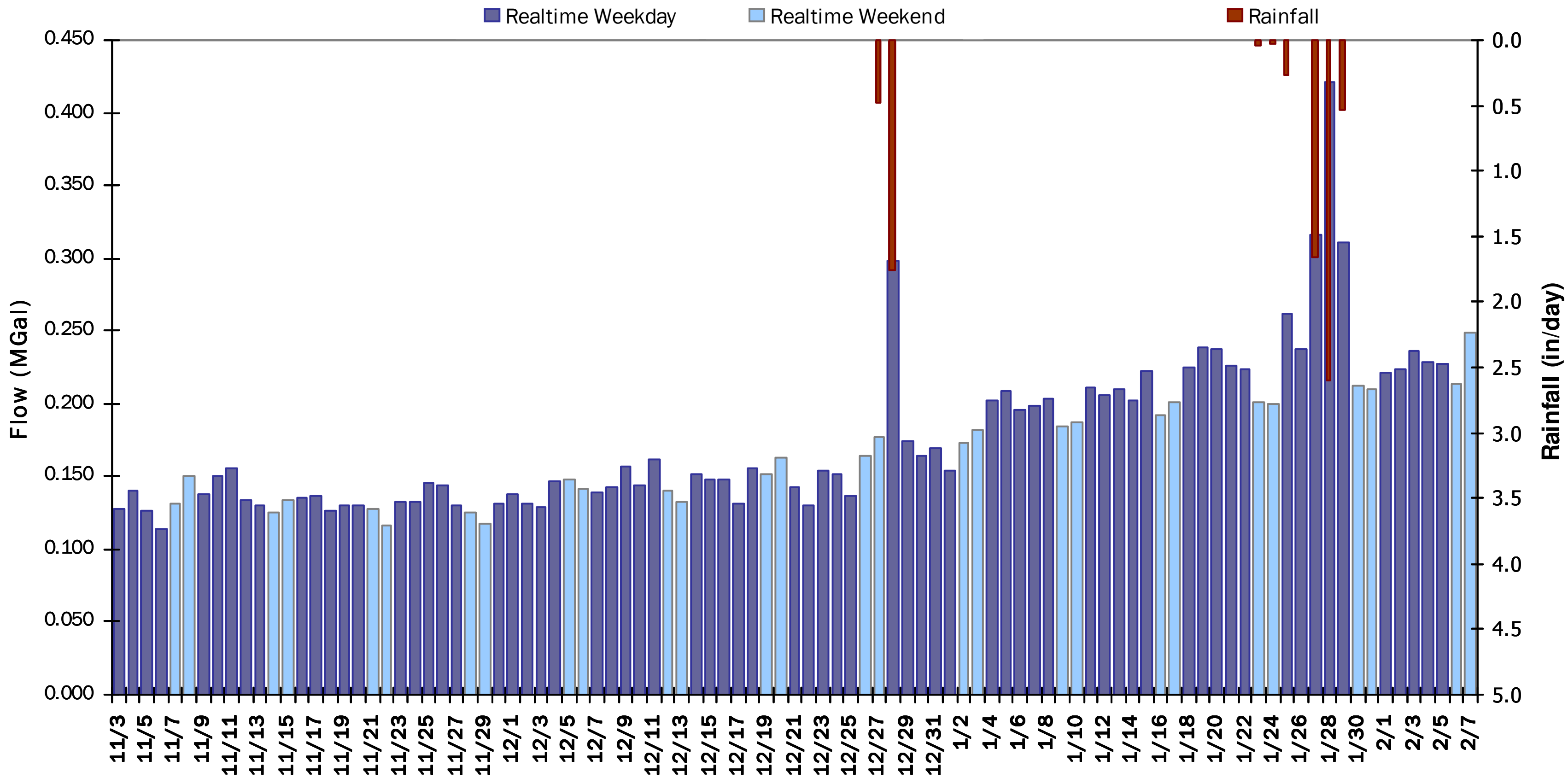
South Effluent

SITE 03

Period Flow Summary: Daily Flow Totals

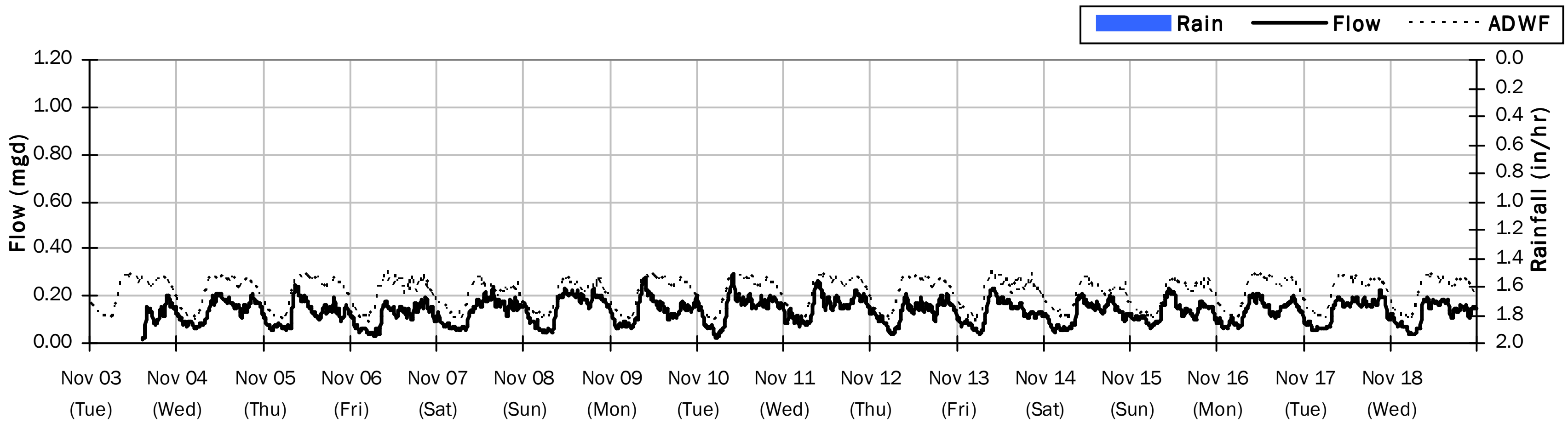
Avg Period Flow: 0.175 MGal **Peak Daily Flow: 0.421 MGal** **Min Daily Flow: 0.114 MGal**

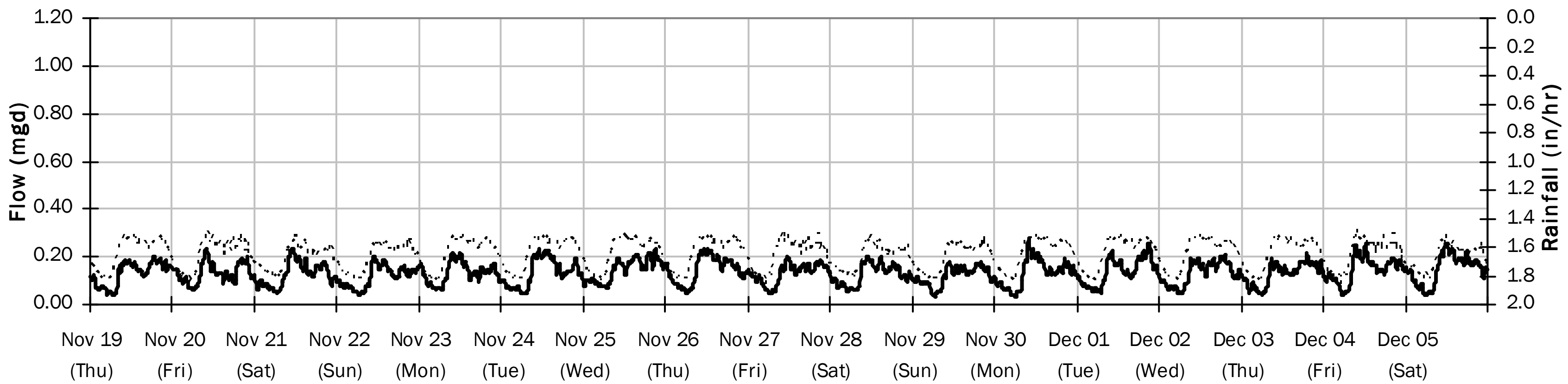
Total Period Rainfall: 7.37 inches



SITE 03
Flow Summary: 11/3/2020 to 12/5/2020

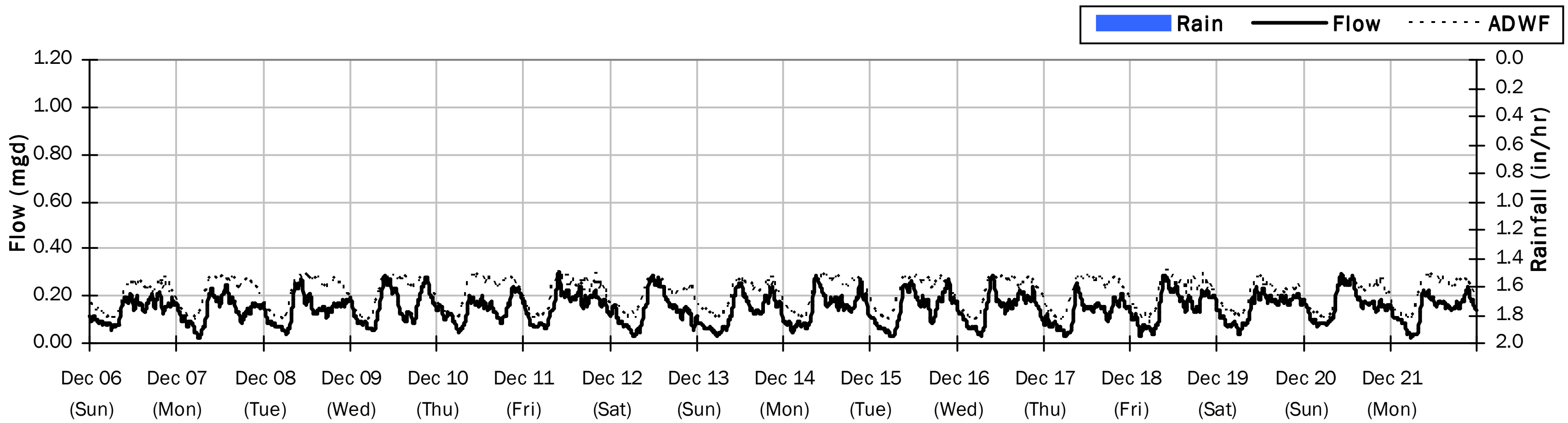
Total Period Rainfall: 0.00 inches   Avg Flow: 0.134 mgd   Peak Flow: 0.298 mgd   Min Flow: 0.017 mgd

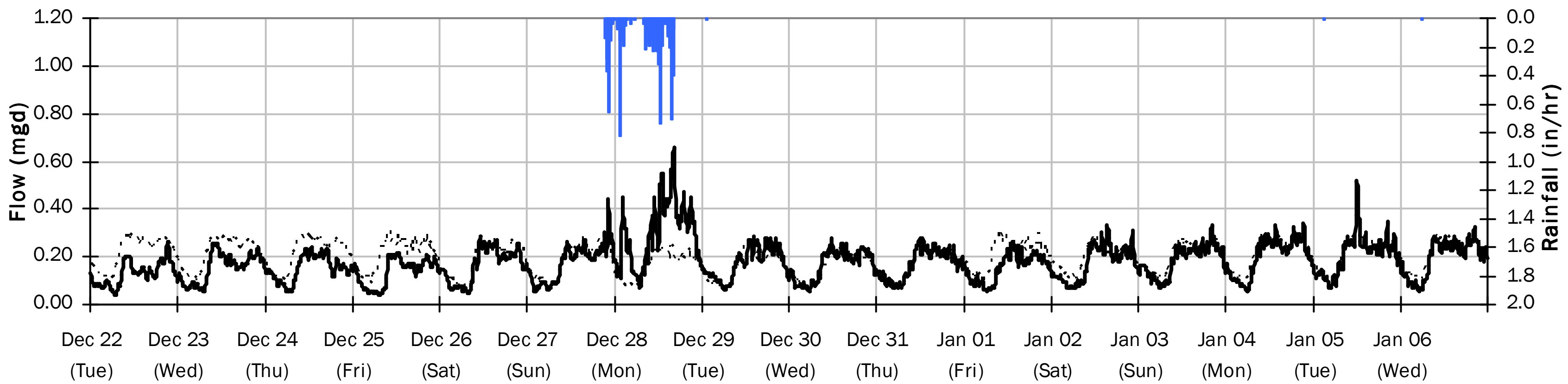




SITE 03
Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.24 inches   **Avg Flow: 0.162 mgd**   **Peak Flow: 0.661 mgd**   **Min Flow: 0.021 mgd**

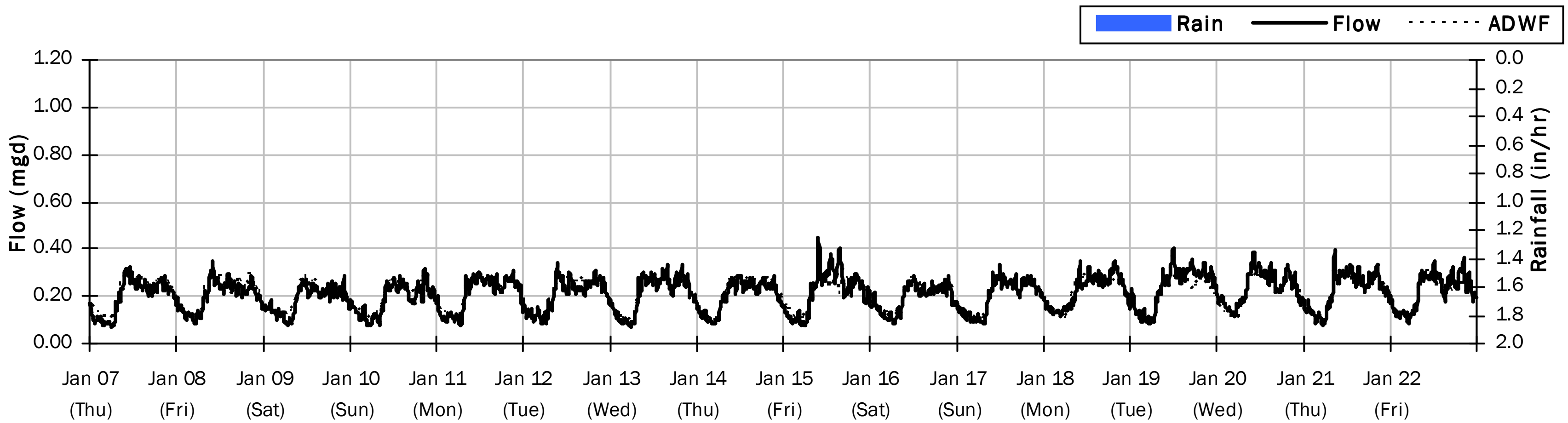


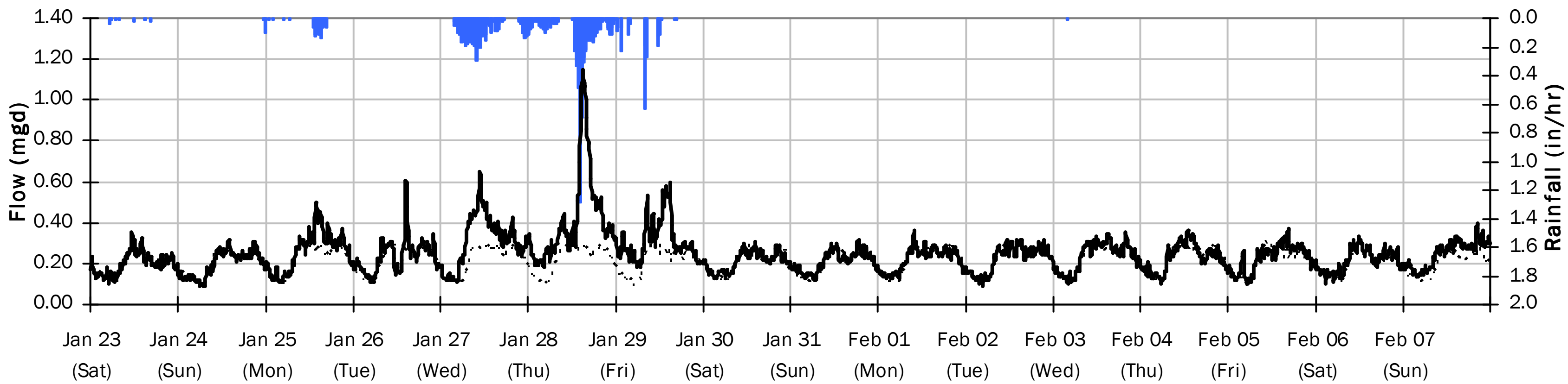


SITE 03

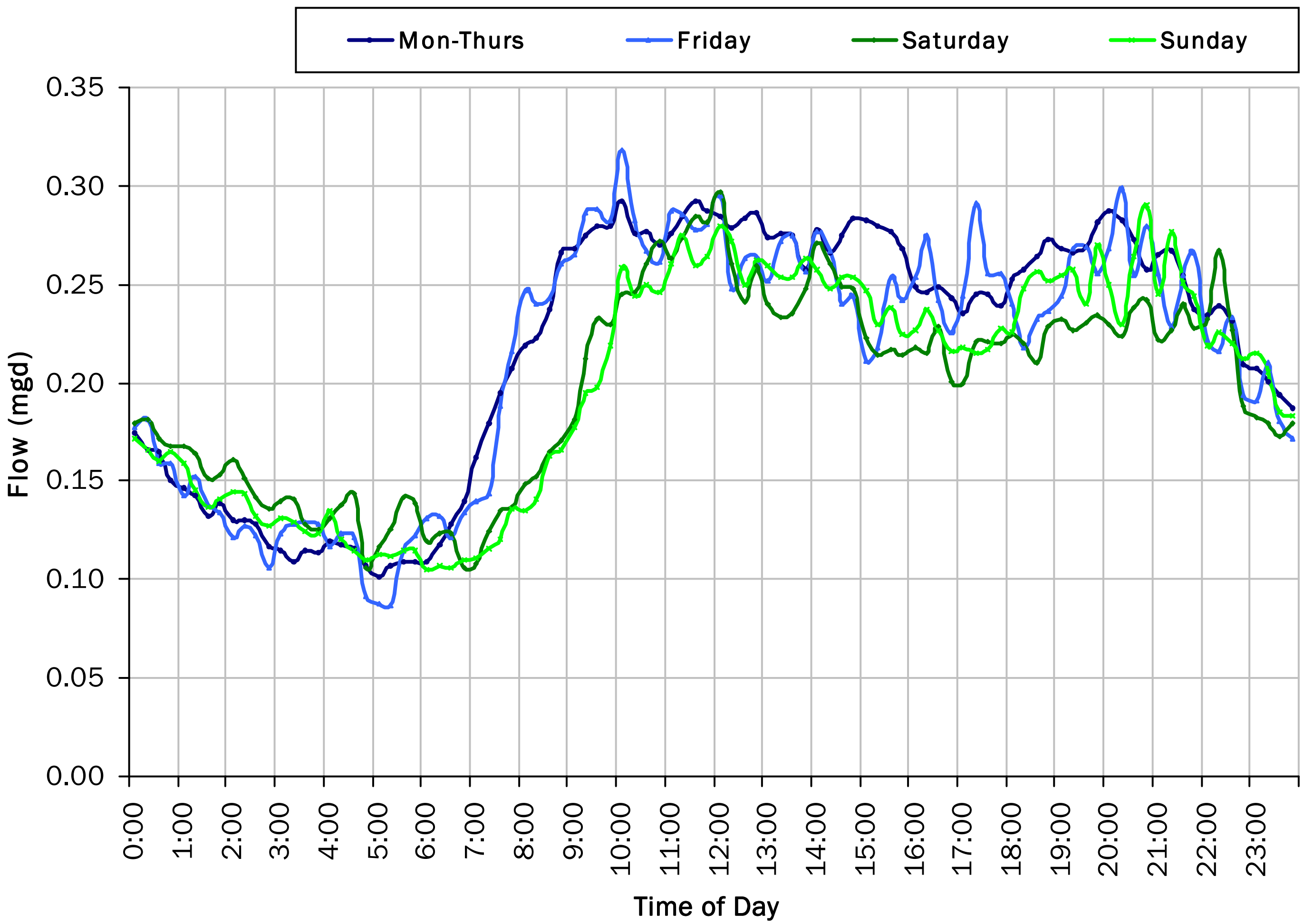
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 5.13 inches   **Avg Flow: 0.229 mgd**   **Peak Flow: 1.151 mgd**   **Min Flow: 0.071 mgd**



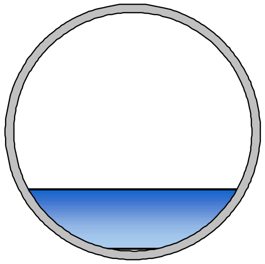


SITE 03
Average Dry Weather Flow Hydrographs



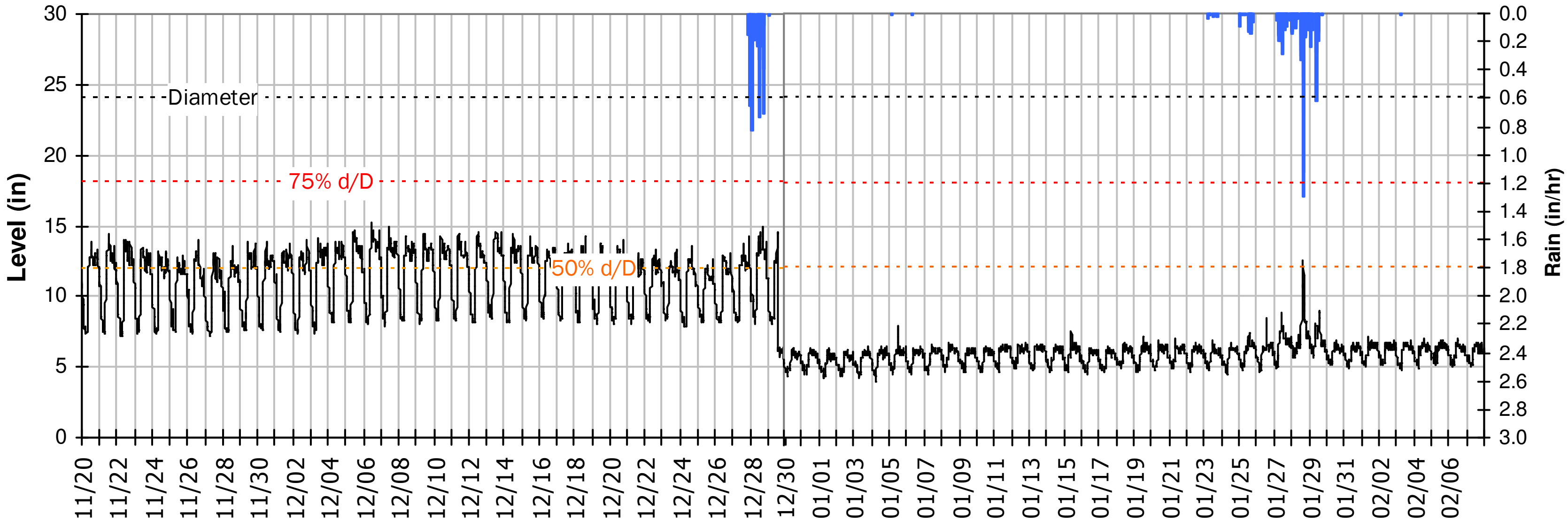
ADWF:

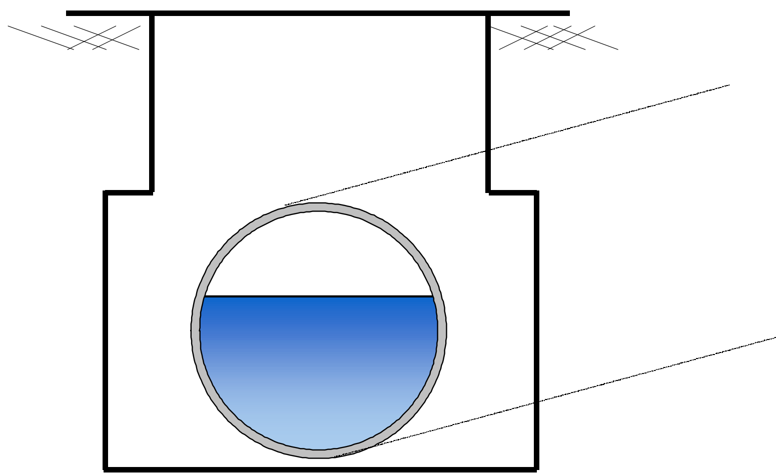
0.209 *mgd*



SITE 03
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period



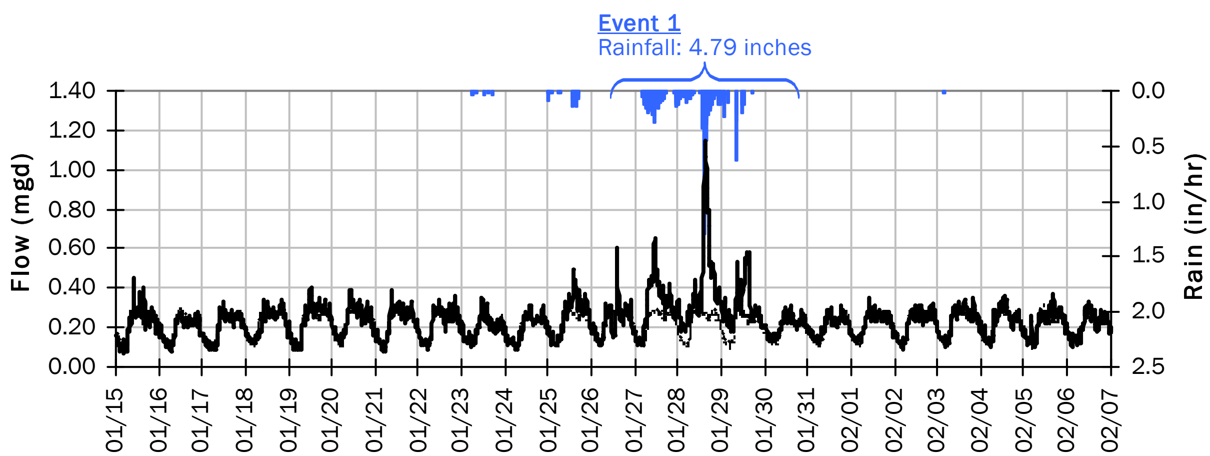


Pipe Diameter:	24	*inches*
Peak Measured Level:	15.3	*inches*
Peak d/D Ratio:	0.64	

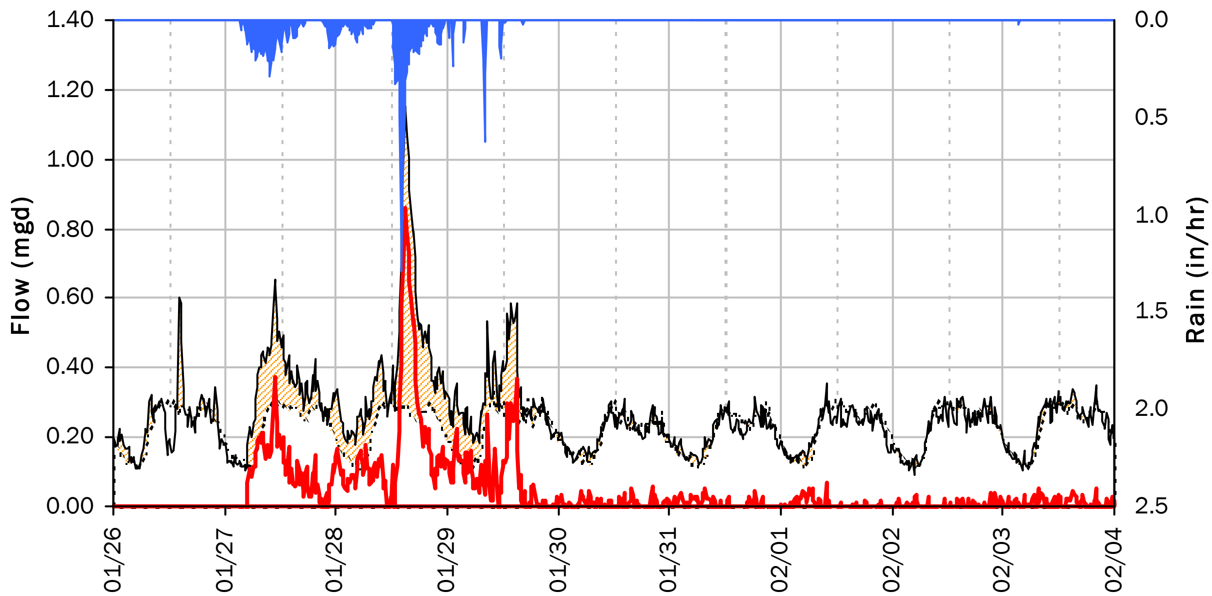
SITE 03

I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



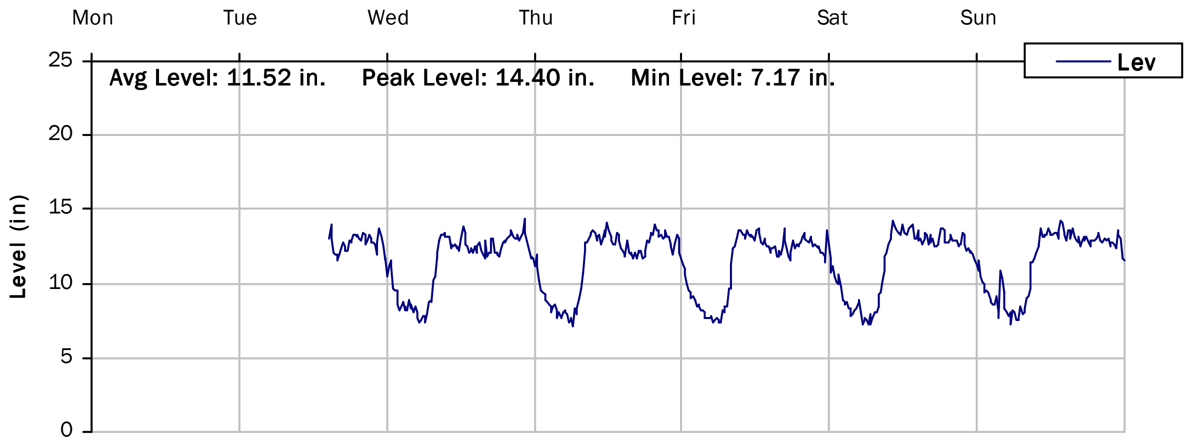
Event 1 Detail Graph

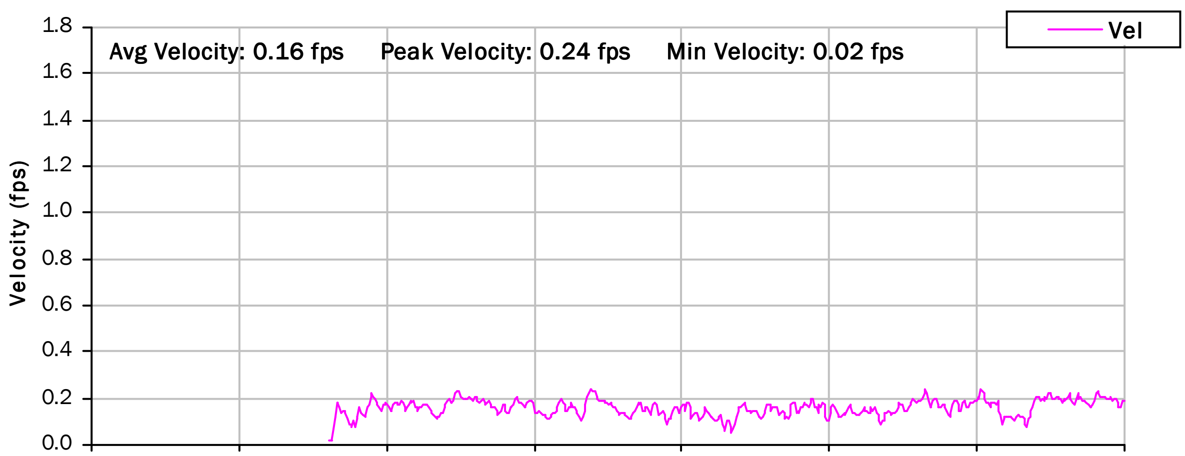


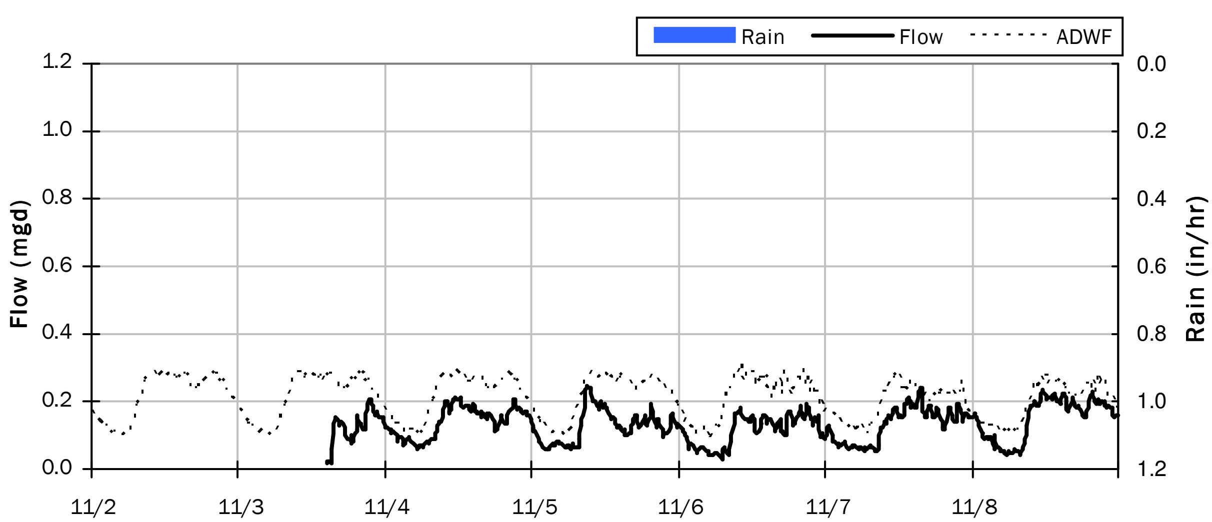
Storm Event I/I Analysis (Rain = 4.79 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	1.15 *mgd*	**Peak I/I Rate:**	0.86 *mgd*
PF:	5.50	**Total I/I:**	372,000 *gallons*
Peak Level:	12.51 *in*		
d/D Ratio:	0.52		

SITE 03
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

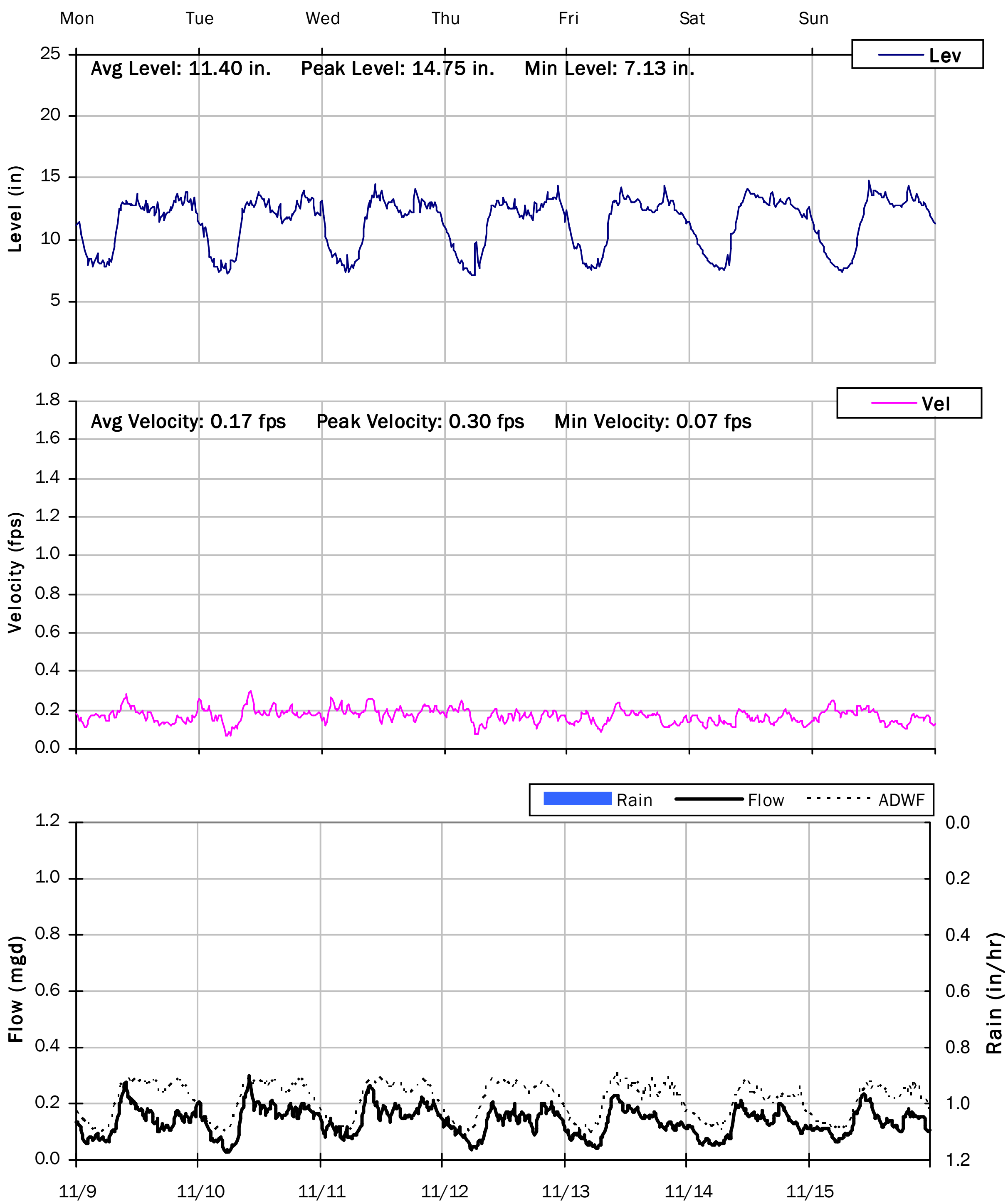






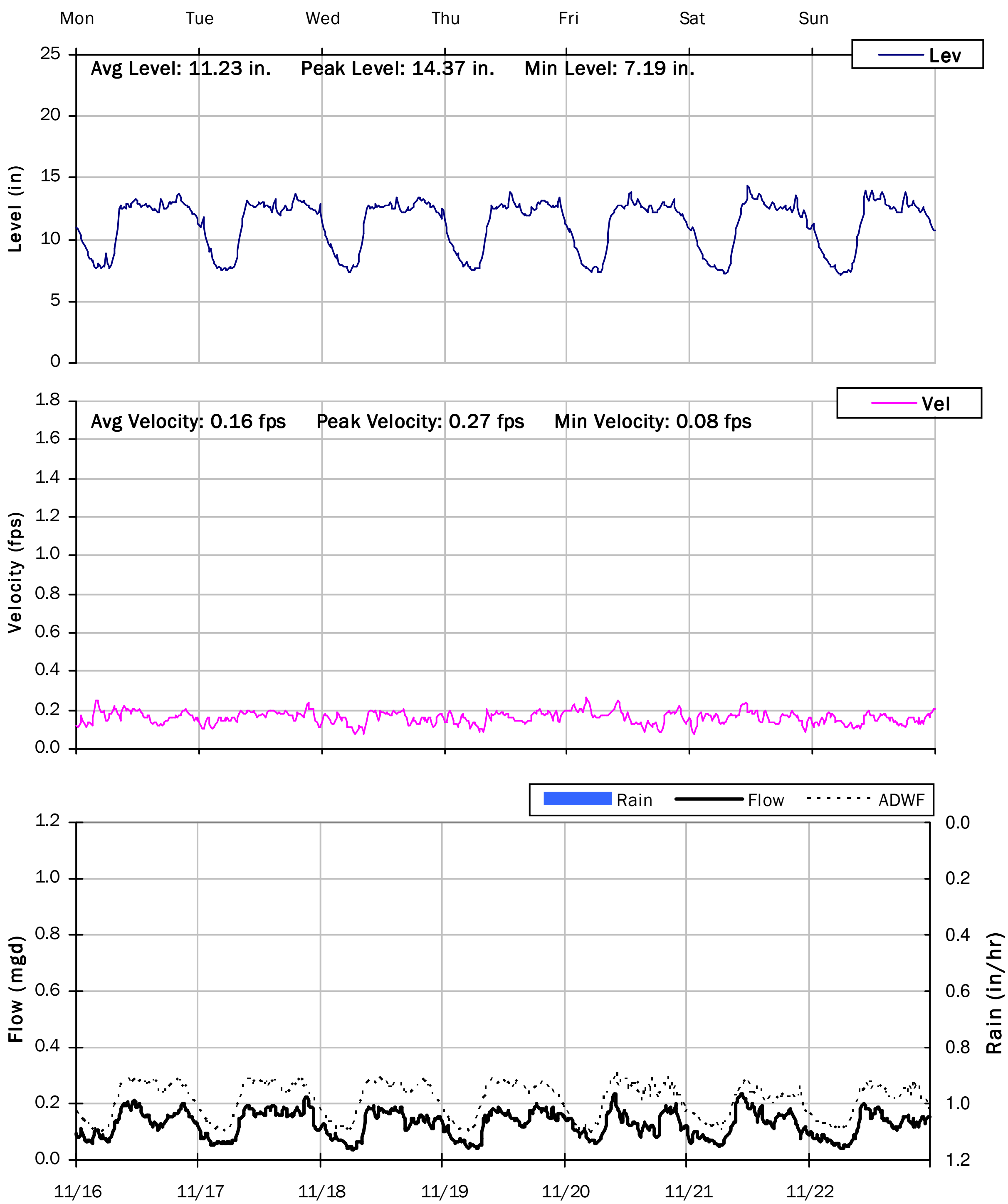
Avg Flow: 0.132 mgd Peak Flow: 0.244 mgd Min Flow: 0.017 mgd

SITE 03
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



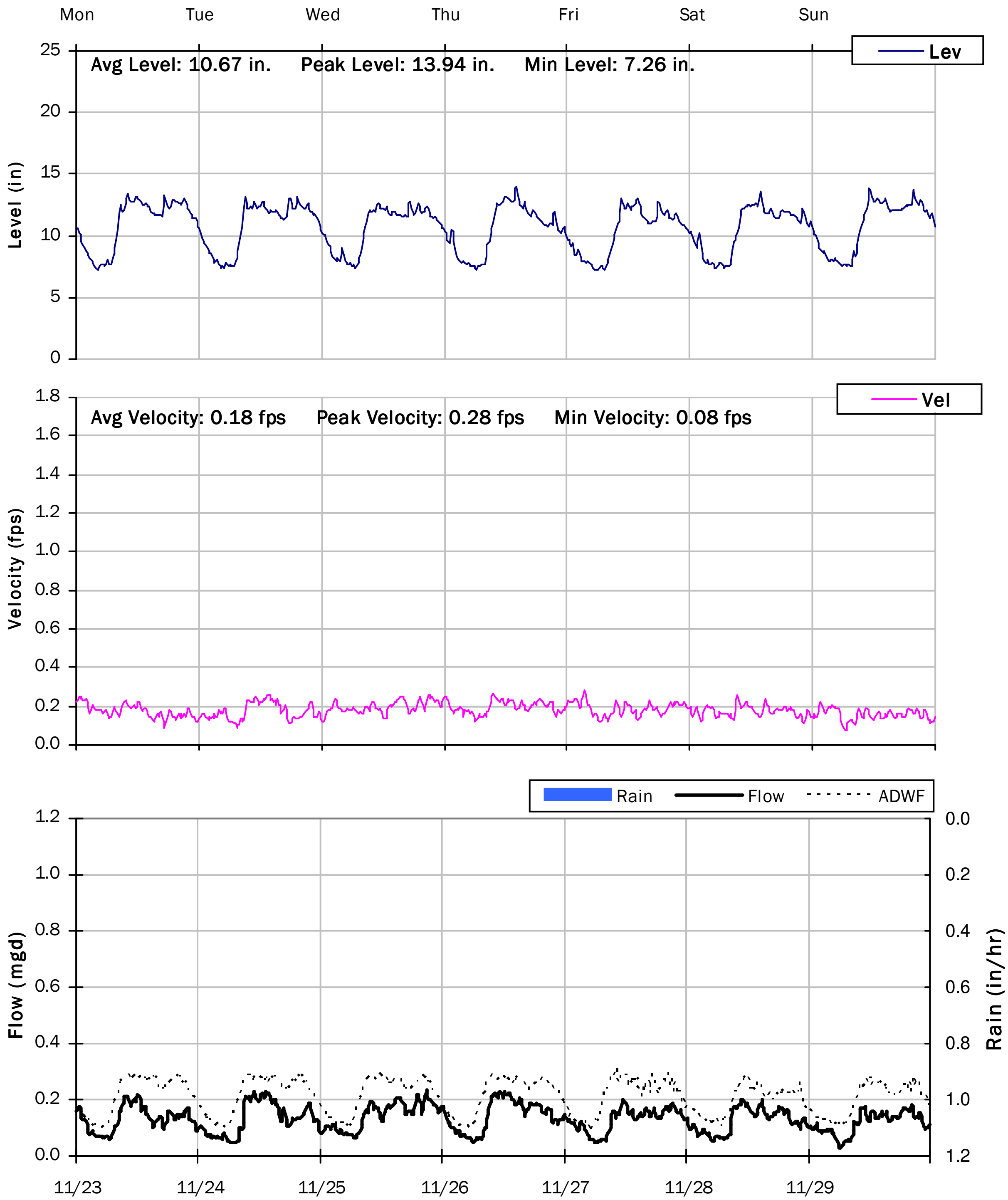
Avg Flow: 0.138 mgd Peak Flow: 0.298 mgd Min Flow: 0.027 mgd

SITE 03
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020



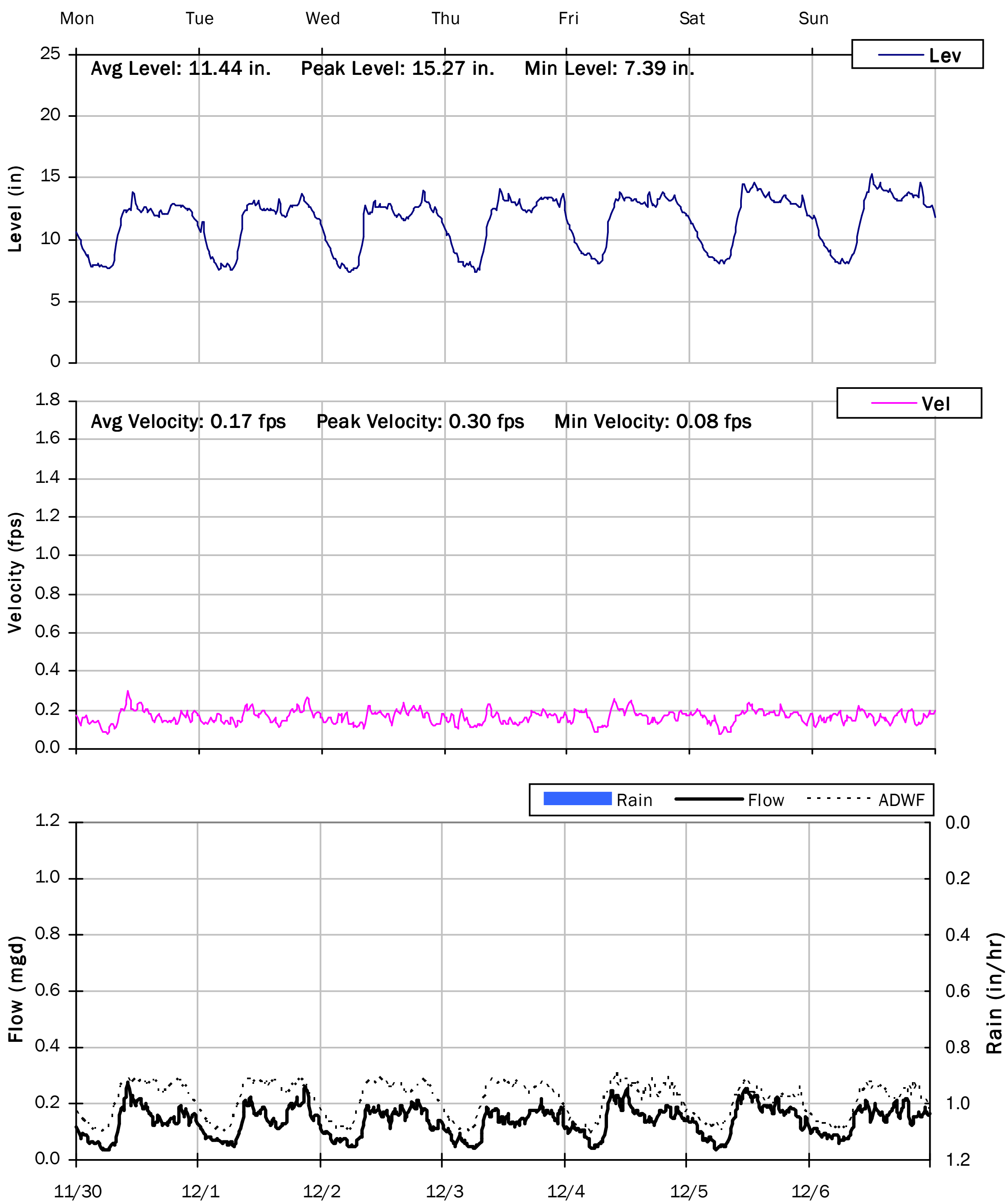
Avg Flow: 0.129 mgd Peak Flow: 0.236 mgd Min Flow: 0.036 mgd

SITE 03
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



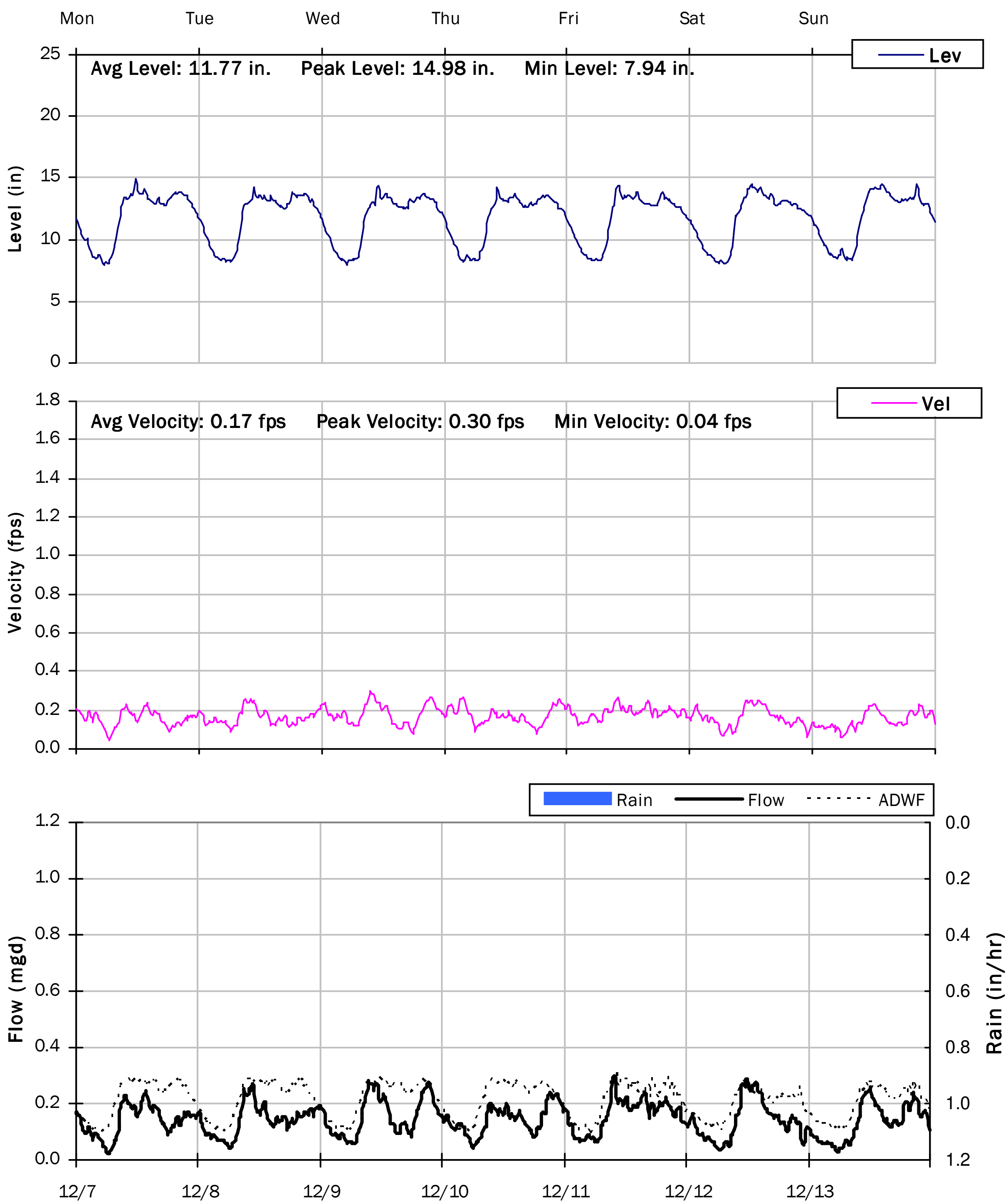
Avg Flow: 0.133 mgd **Peak Flow: 0.236 mgd** **Min Flow: 0.031 mgd**

SITE 03
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



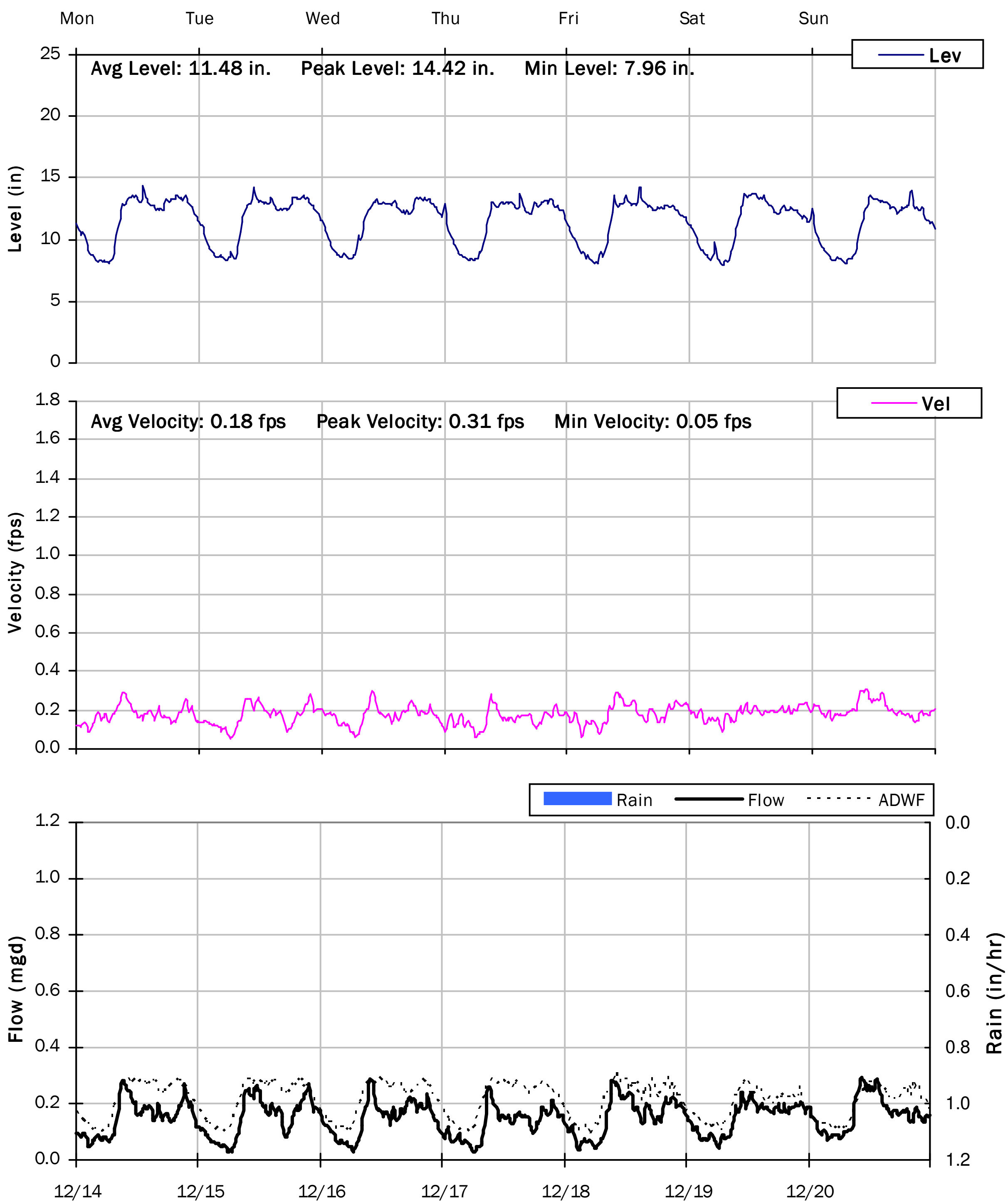
Avg Flow: 0.138 mgd **Peak Flow: 0.275 mgd** **Min Flow: 0.033 mgd**

SITE 03
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020



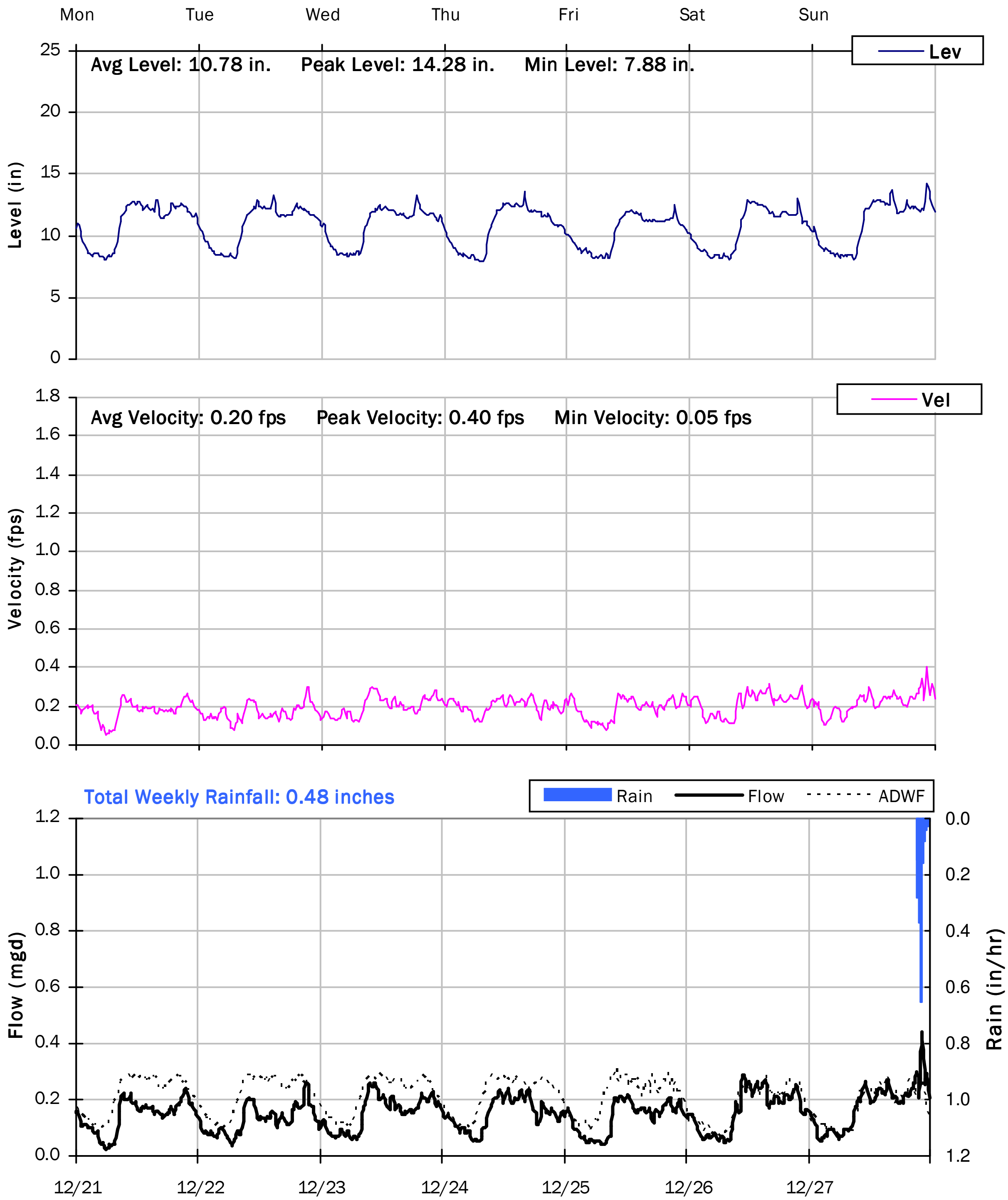
Avg Flow: 0.145 mgd **Peak Flow: 0.300 mgd** **Min Flow: 0.021 mgd**

SITE 03
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020



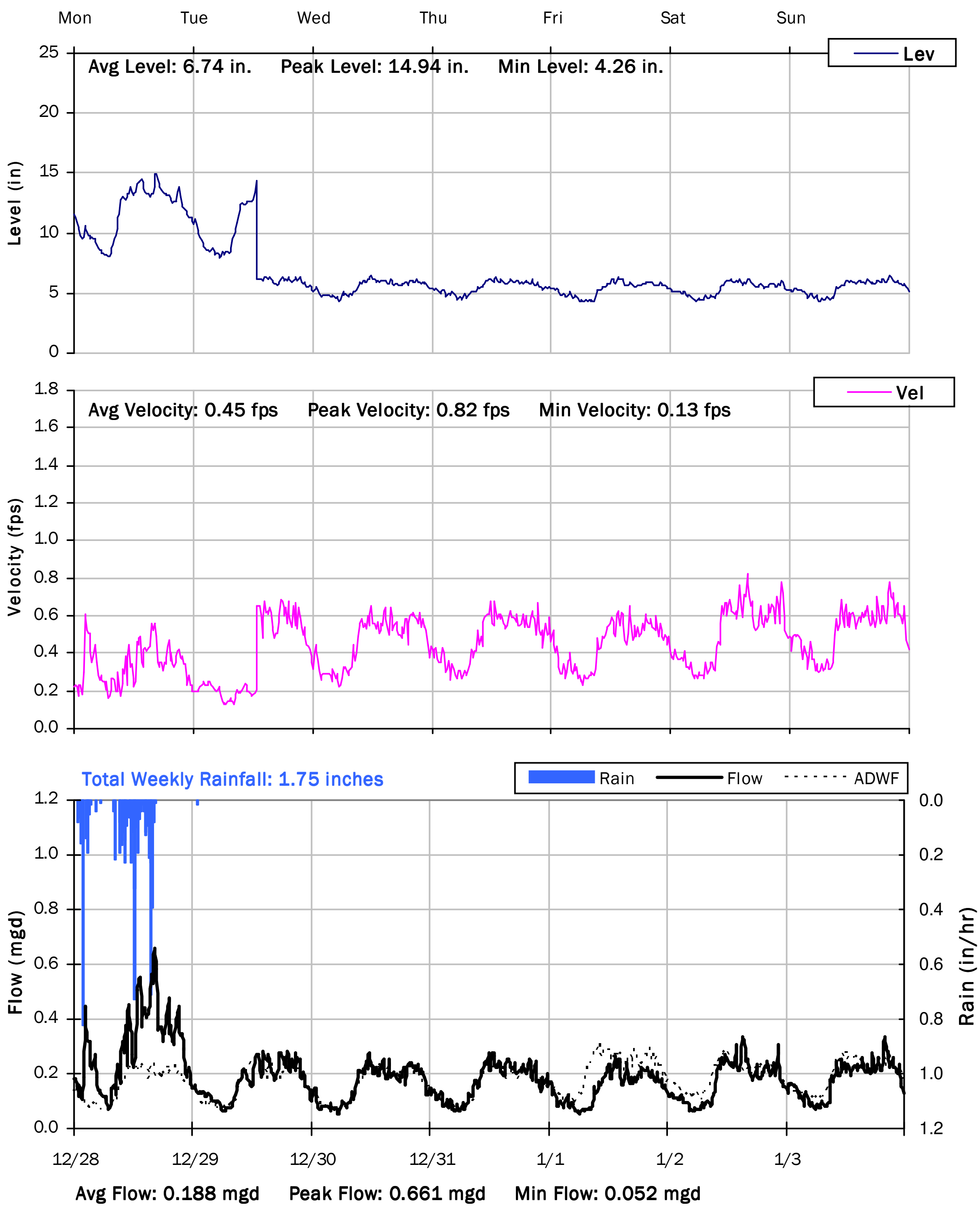
Avg Flow: 0.150 mgd **Peak Flow: 0.291 mgd** **Min Flow: 0.028 mgd**

SITE 03
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

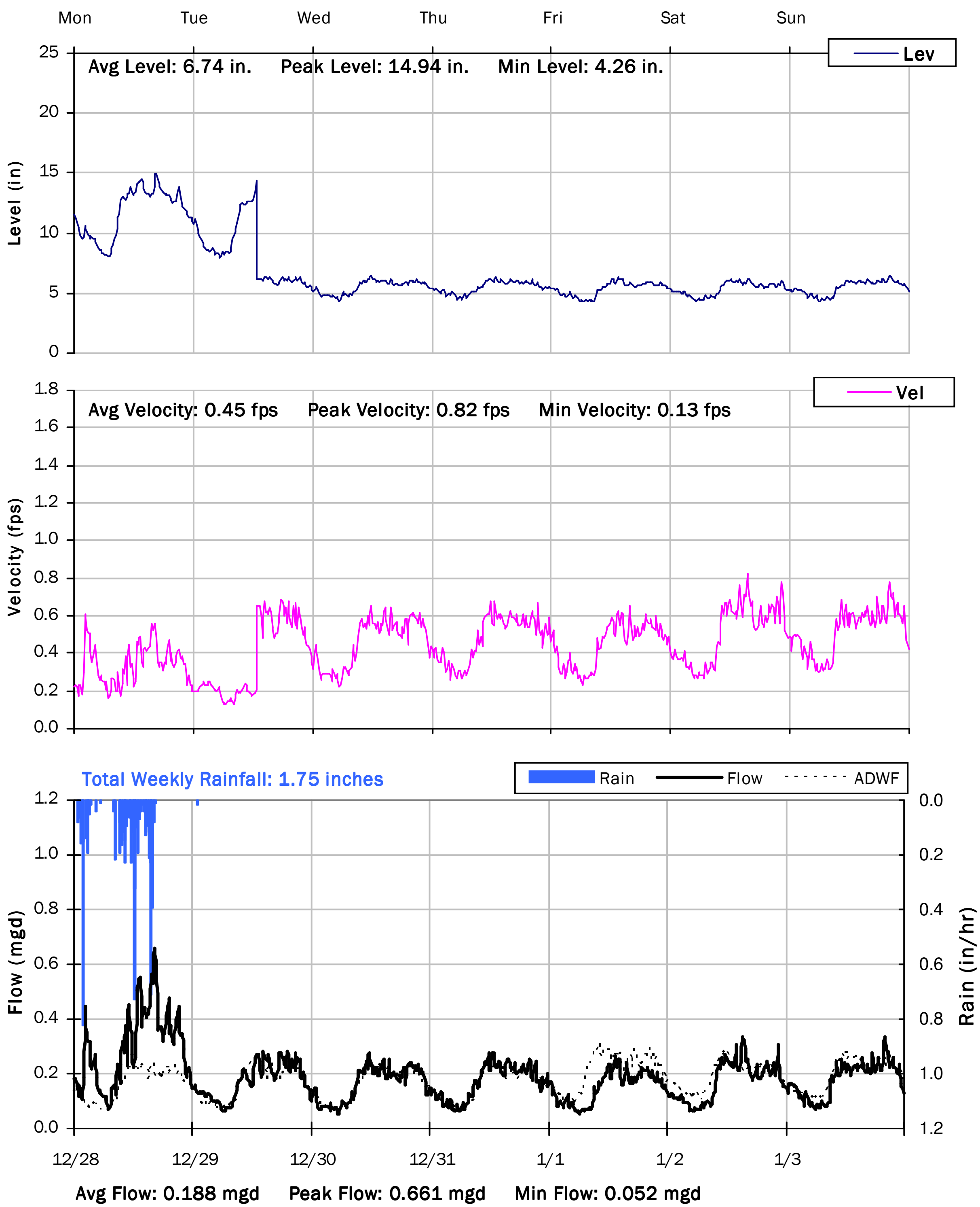


Avg Flow: 0.151 mgd Peak Flow: 0.443 mgd Min Flow: 0.025 mgd

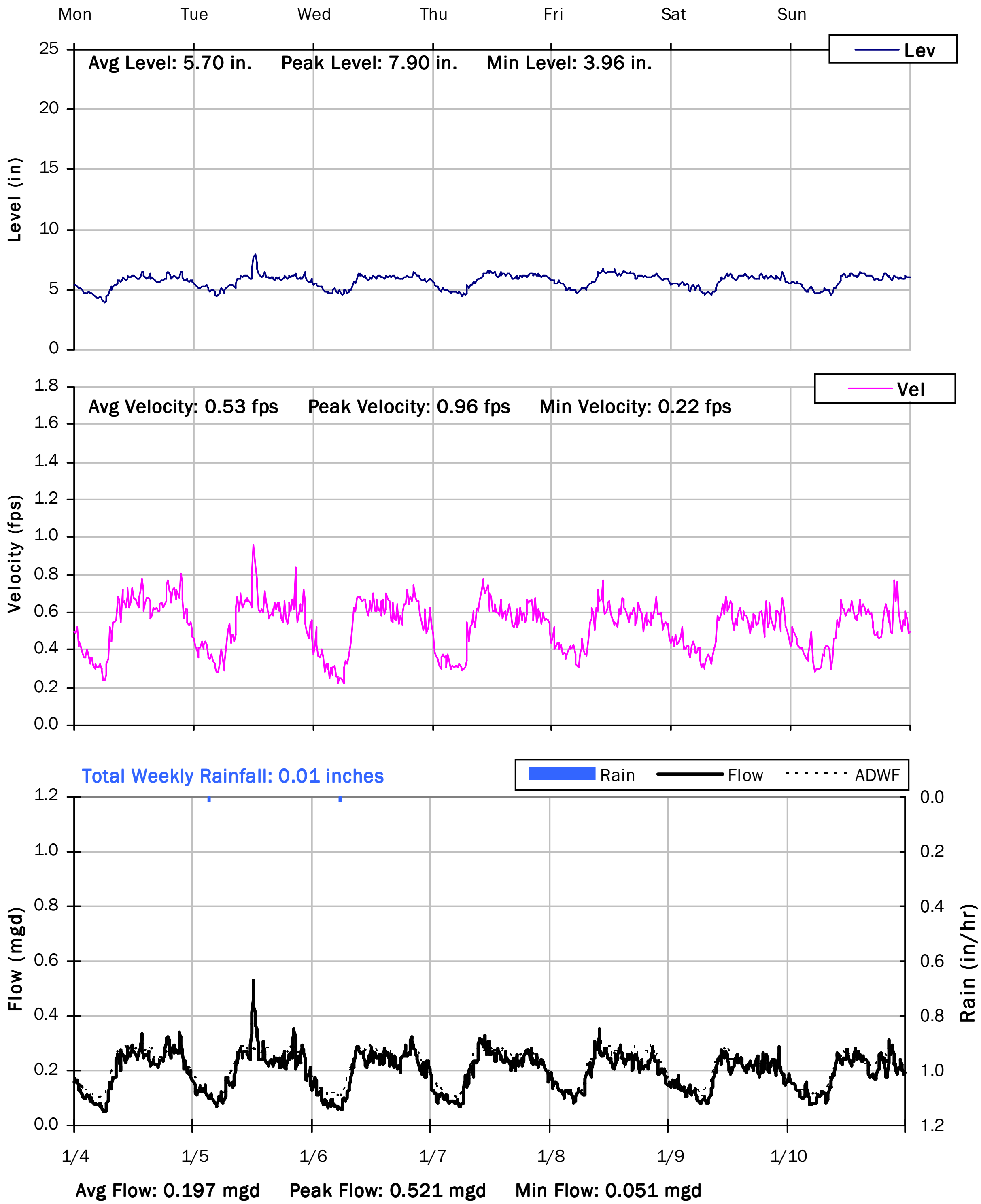
SITE 03
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



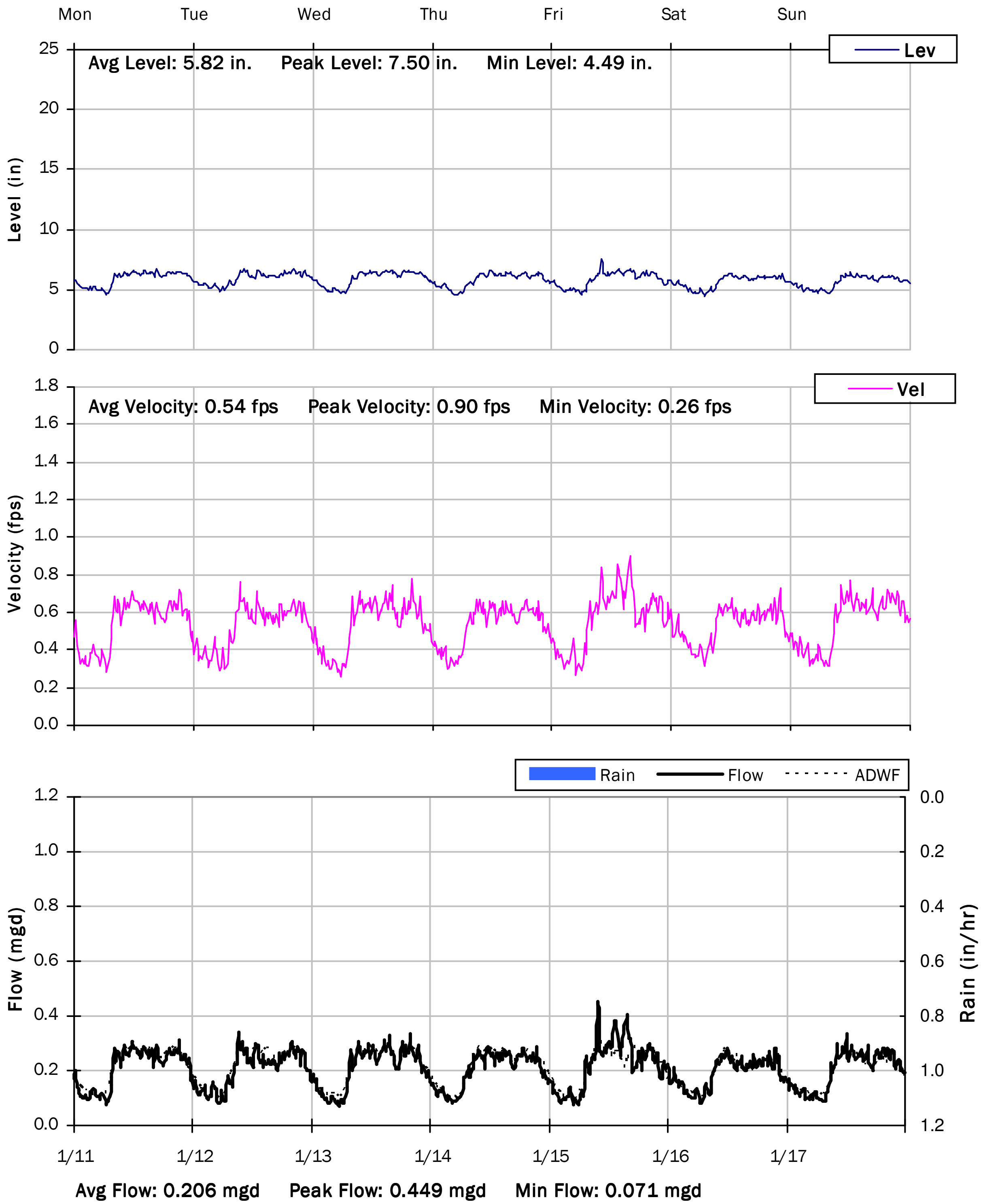
SITE 03
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



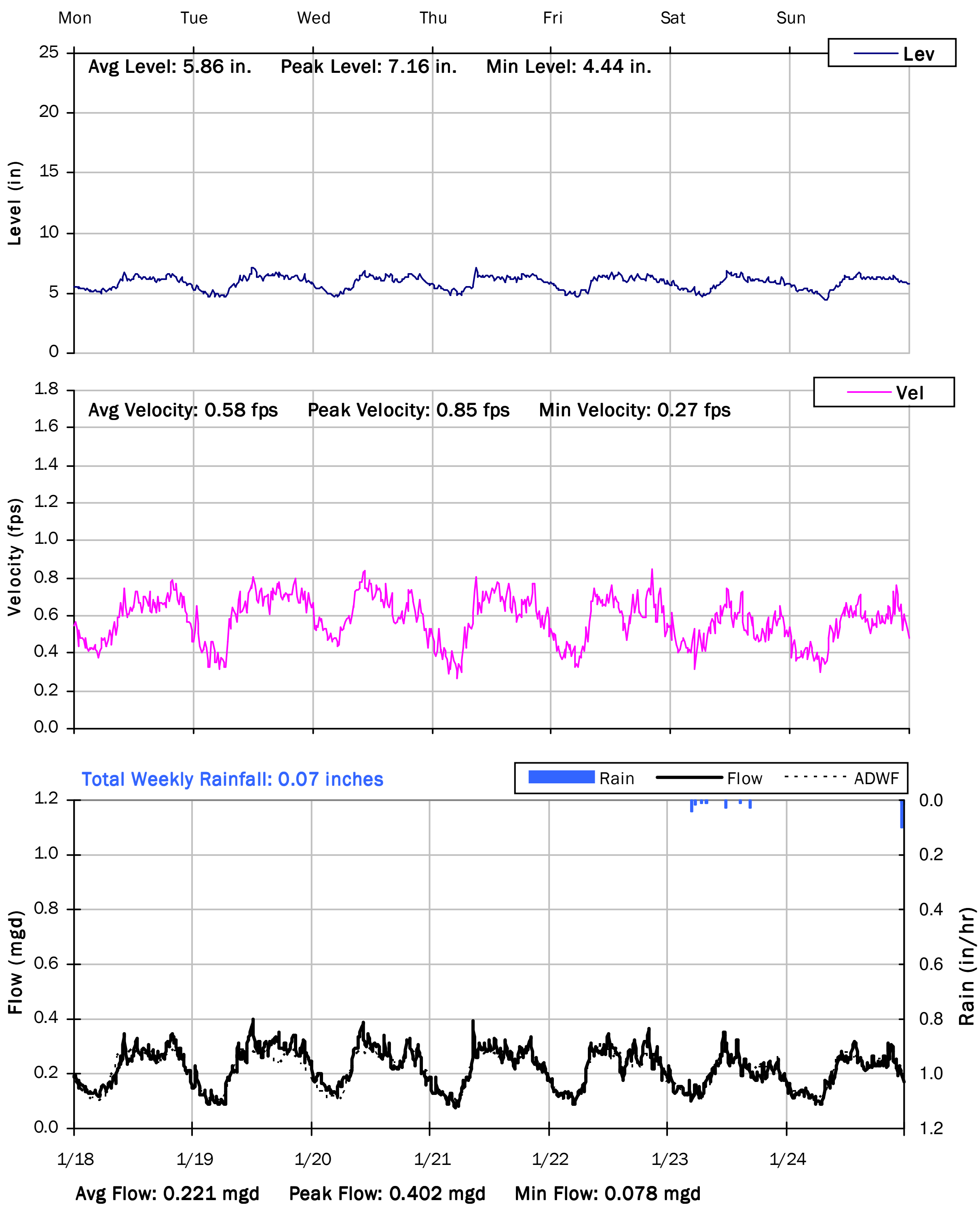
SITE 03
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021



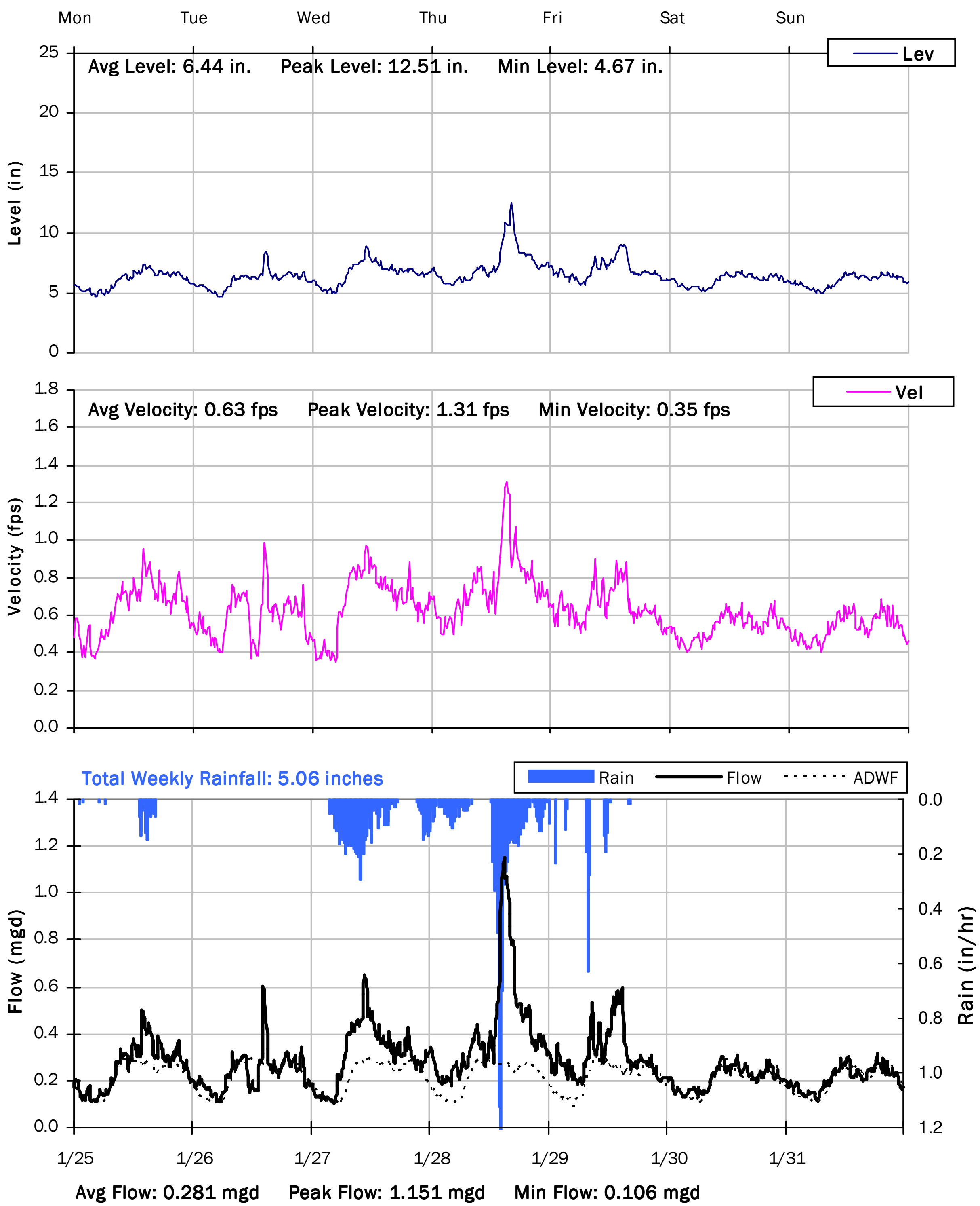
SITE 03
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021



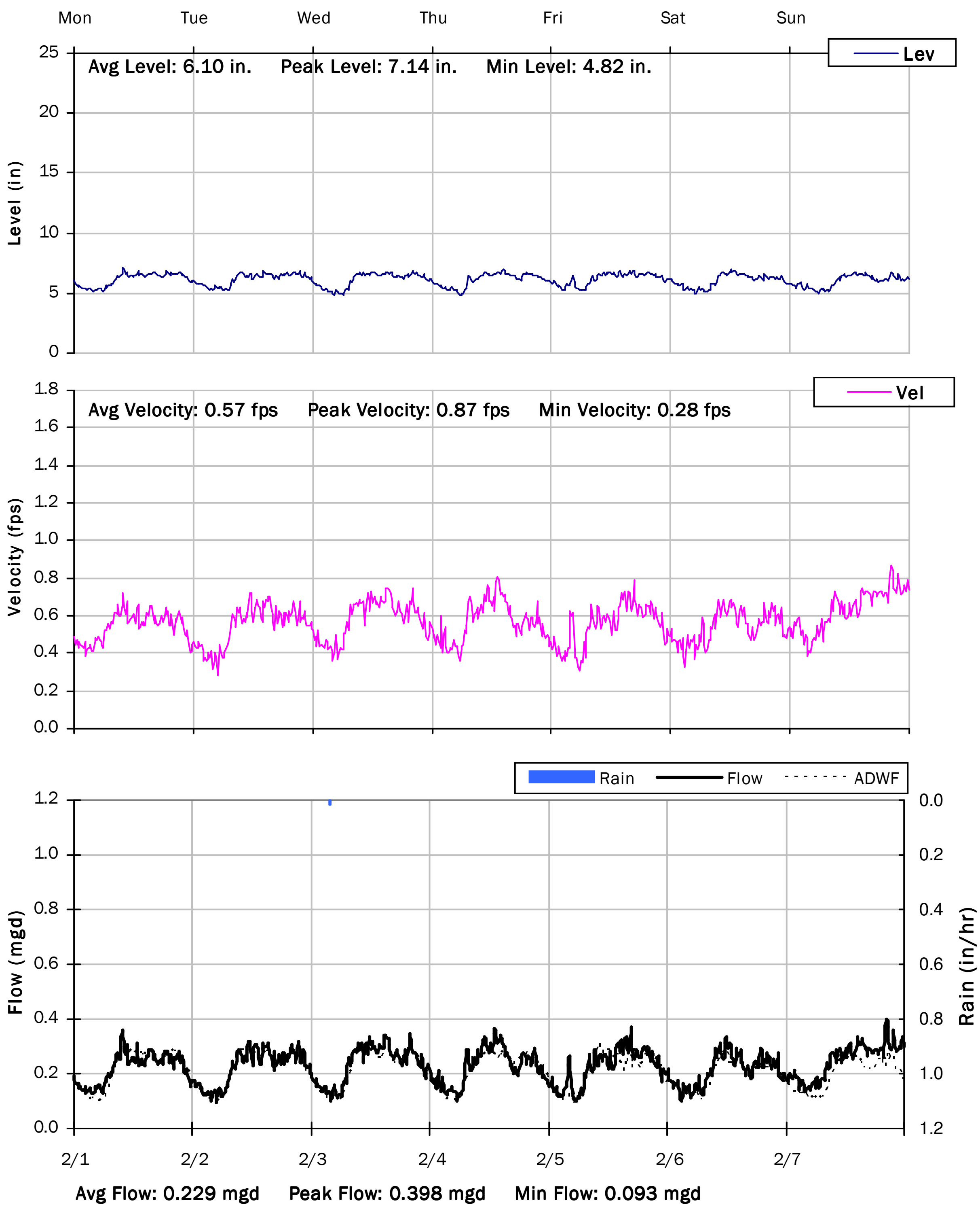
SITE 03
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021



SITE 03
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 03
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

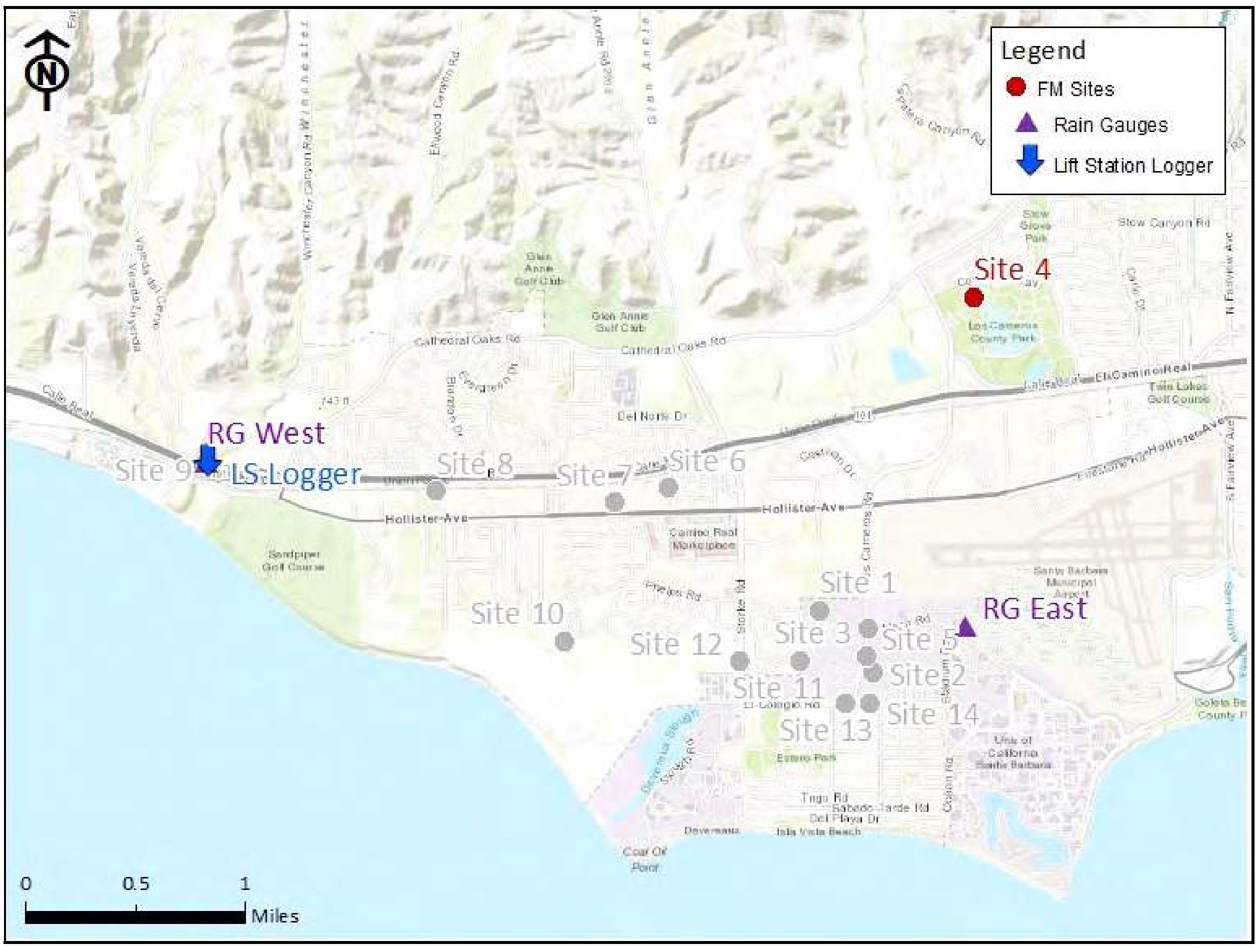
November 3, 2020 - February 7, 2021

Monitoring Site: Site 04

City Manhole: 77-16-03

Location: In field south of Covington Way, east of Camino Caseta

Data Summary Report



Vicinity Map: Site 04

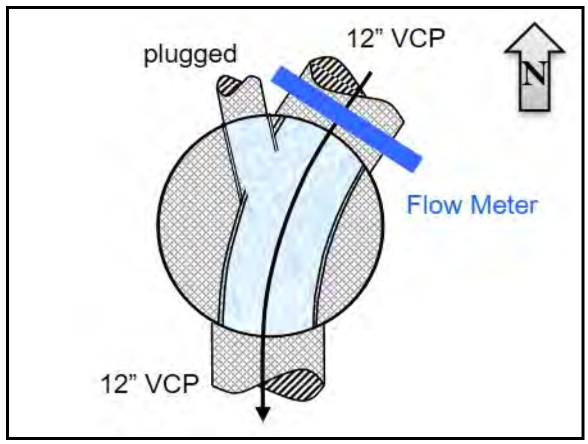
SITE 04

Site Information

Location:	In field south of Covington Way, east of Camino Caseta
City Manhole:	77-16-03
Coordinates:	119.8510° W, 34.4441° N
Rim Elevation (Earth):	63 feet
Pipe Diameter:	12 inches
ADWF:	0.045 mgd
Peak Measured Flow:	0.161 mgd

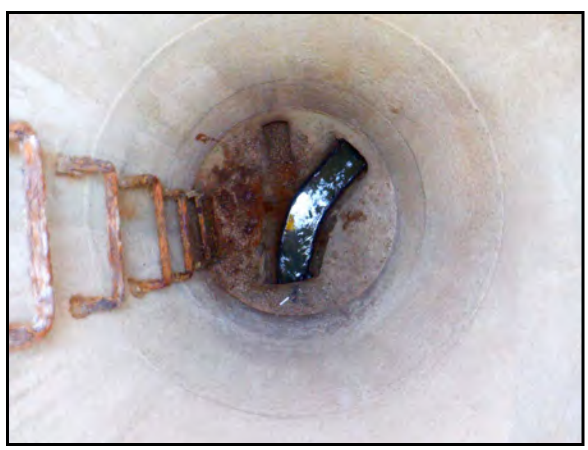
Satellite Map

Sanitary Map



Flow Sketch

Street View

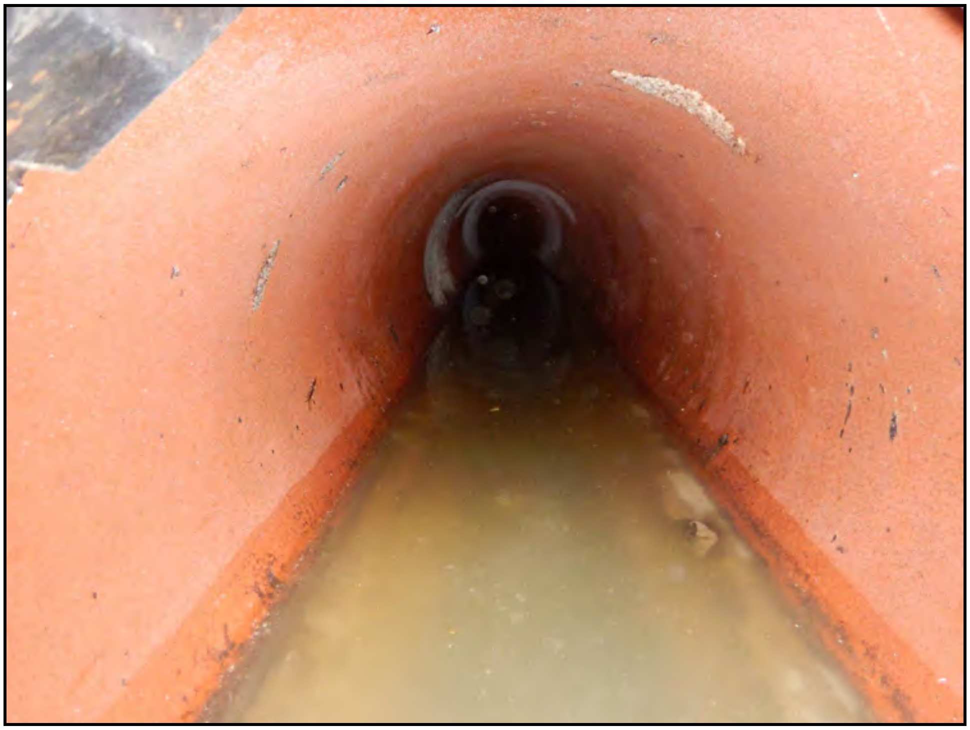


Plan View

SITE 04

Additional Site Photos

Monitored Northeast Influent



South Effluent

SITE 04

Additional Site Photos

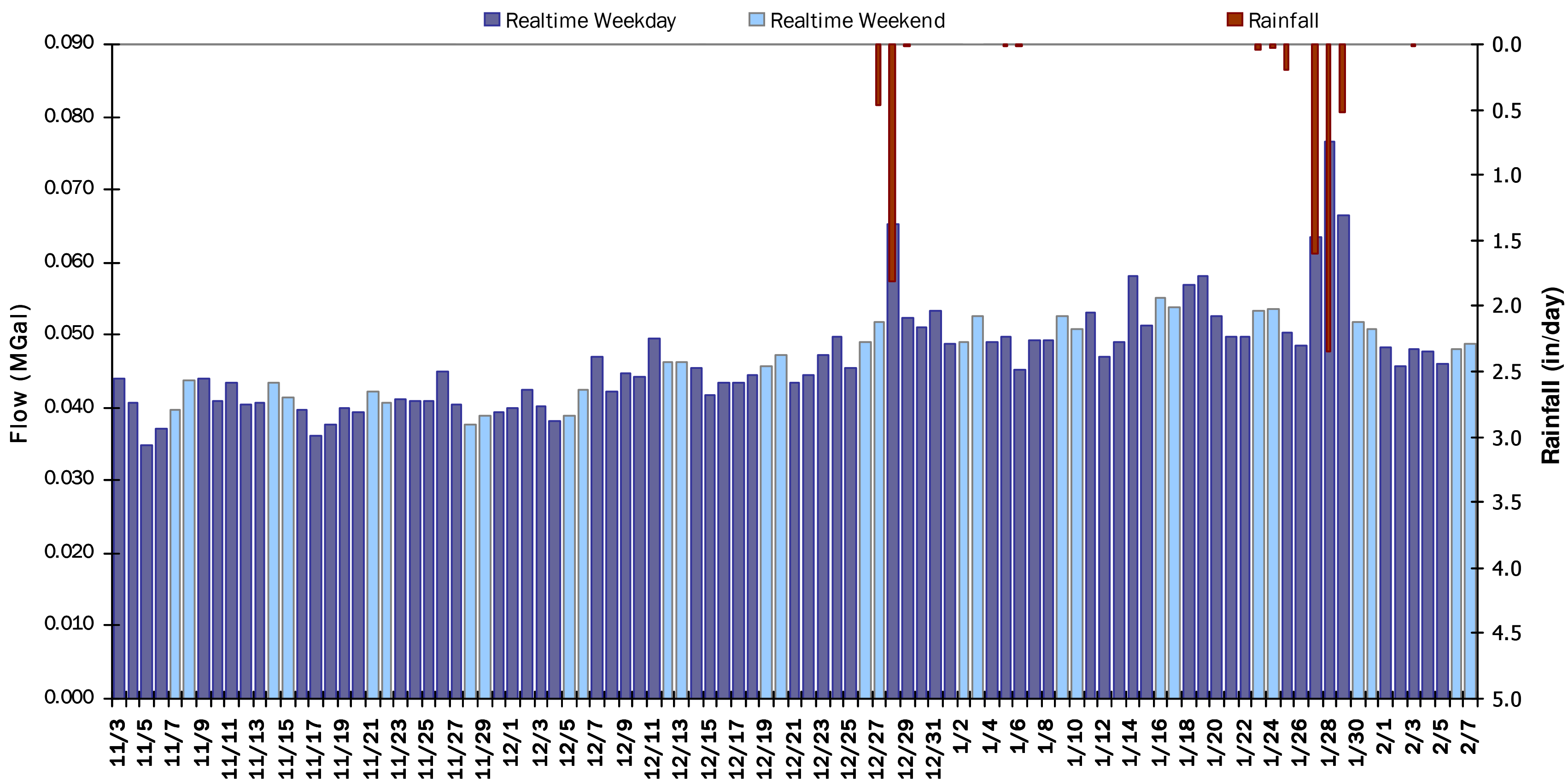
North Lateral Inlet (plugged)

SITE 04

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.047 MGal **Peak Daily Flow: 0.077 MGal** **Min Daily Flow: 0.035 MGal**

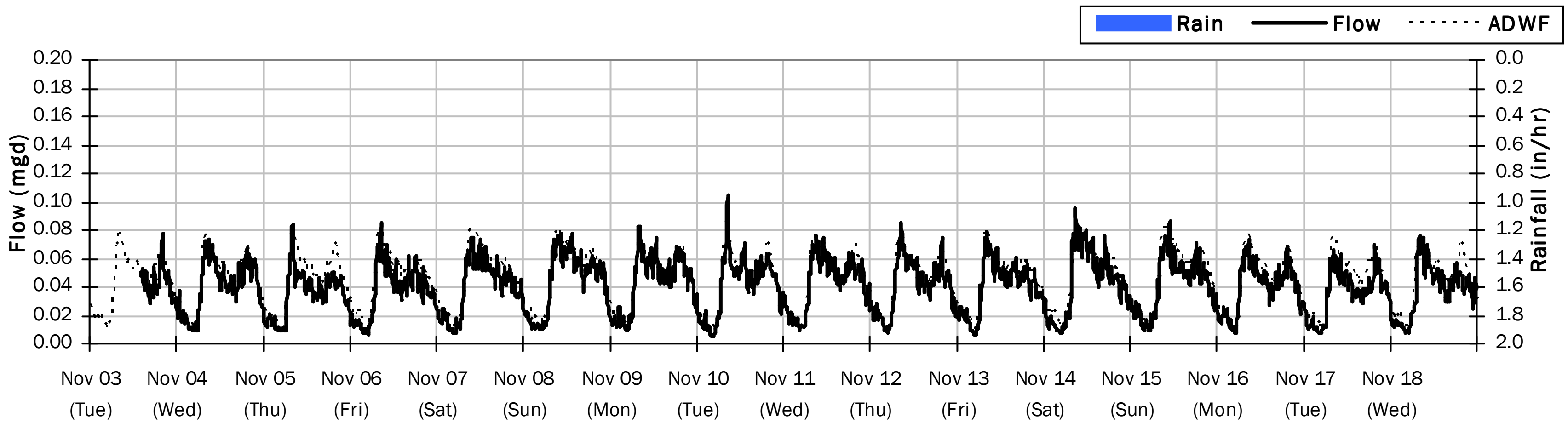
Total Period Rainfall: 7.05 inches

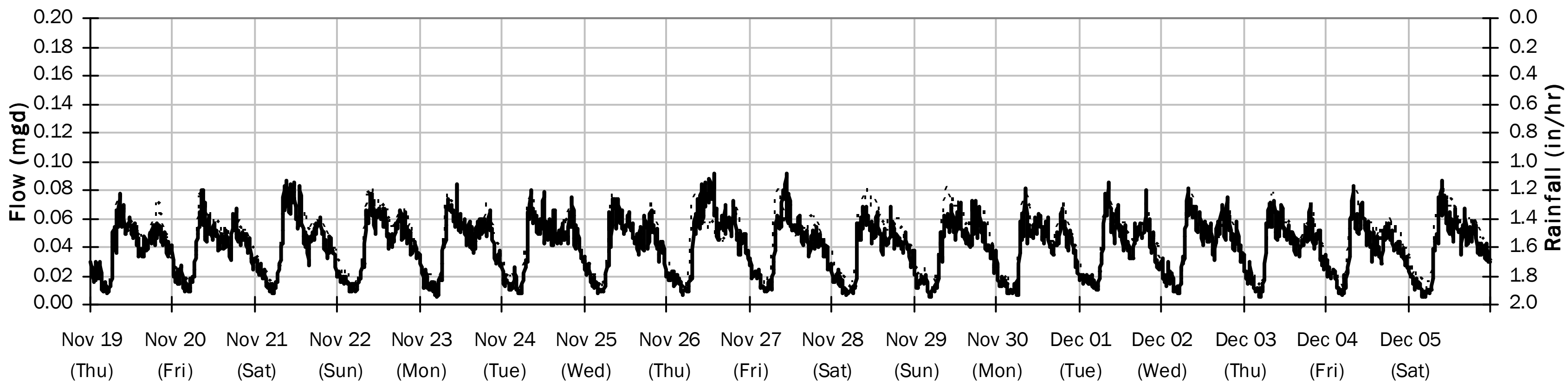


SITE 04

Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   **Avg Flow: 0.040 mgd**   **Peak Flow: 0.104 mgd**   **Min Flow: 0.005 mgd**

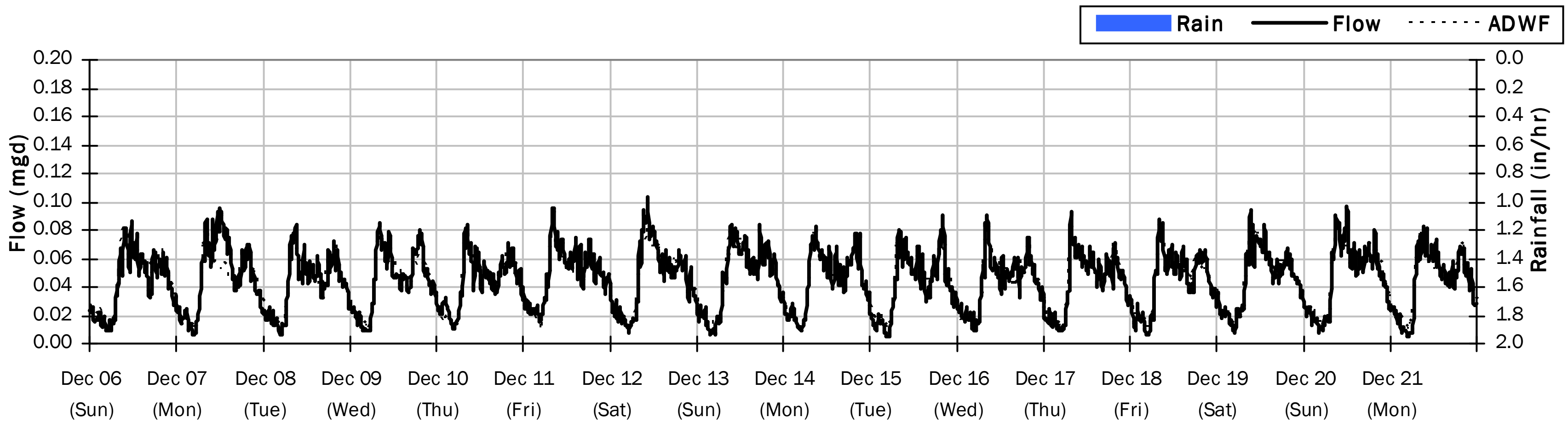


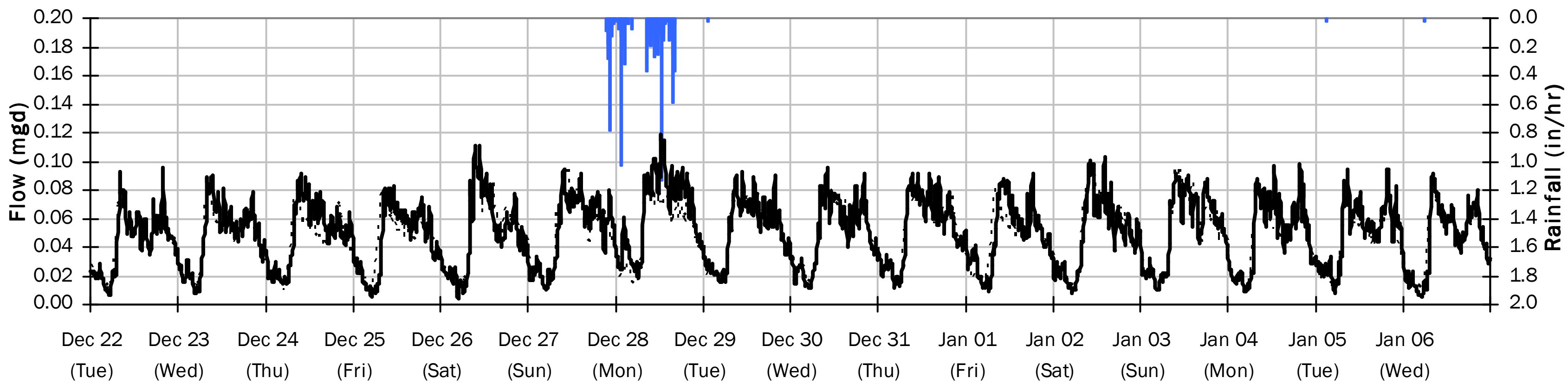


SITE 04

Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.30 inches   **Avg Flow: 0.048 mgd**   **Peak Flow: 0.118 mgd**   **Min Flow: 0.005 mgd**

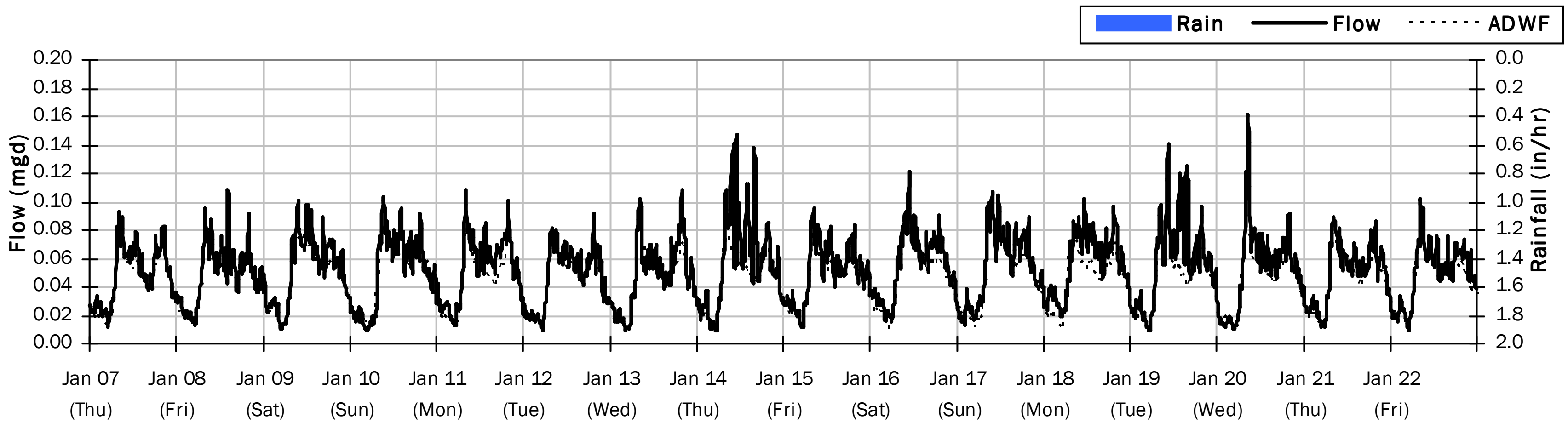


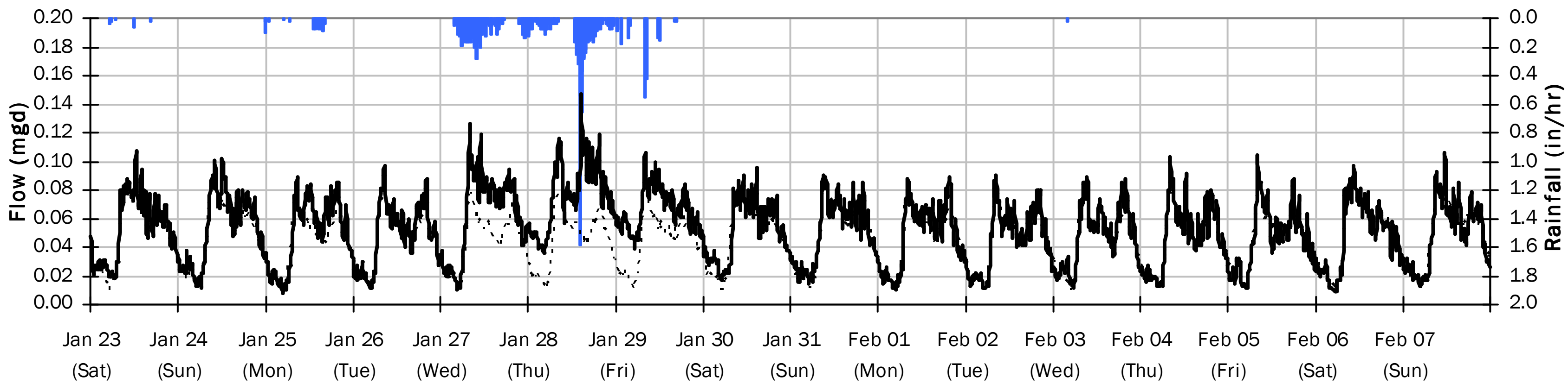


SITE 04

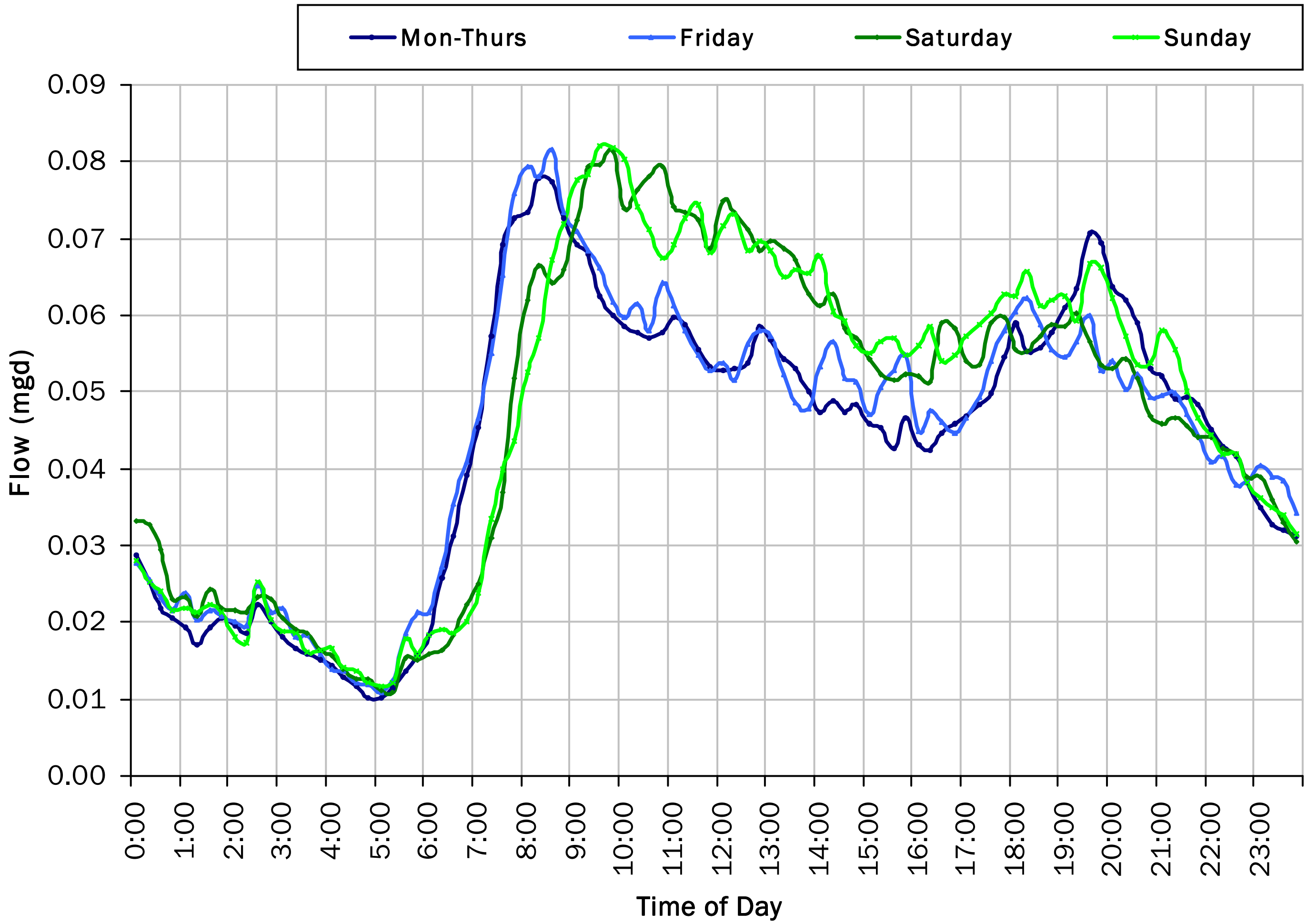
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 4.75 inches   **Avg Flow: 0.053 mgd**   **Peak Flow: 0.161 mgd**   **Min Flow: 0.008 mgd**



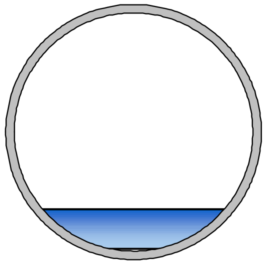


SITE 04
Average Dry Weather Flow Hydrographs



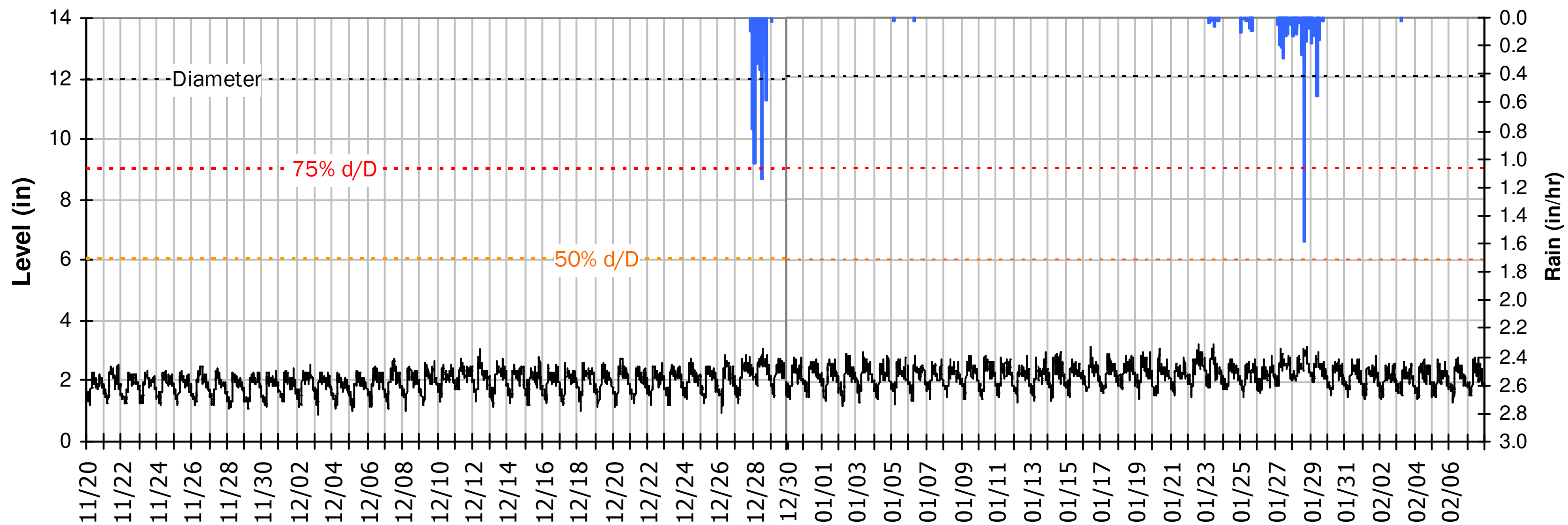
ADWF:

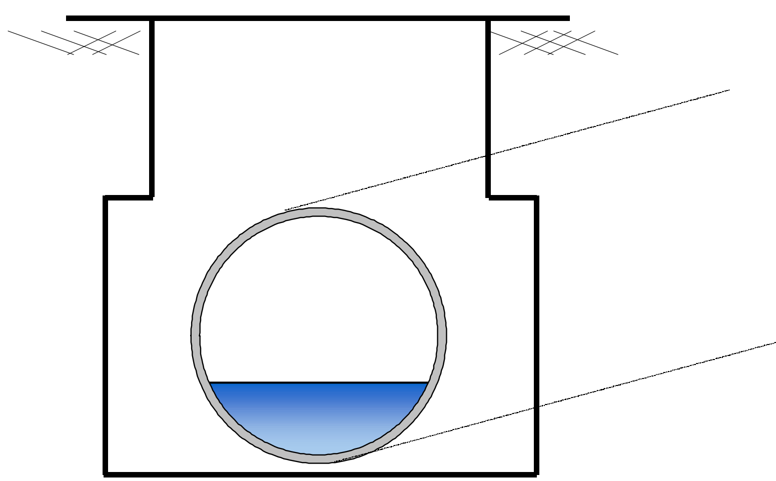
0.045 *mgd*



SITE 04
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

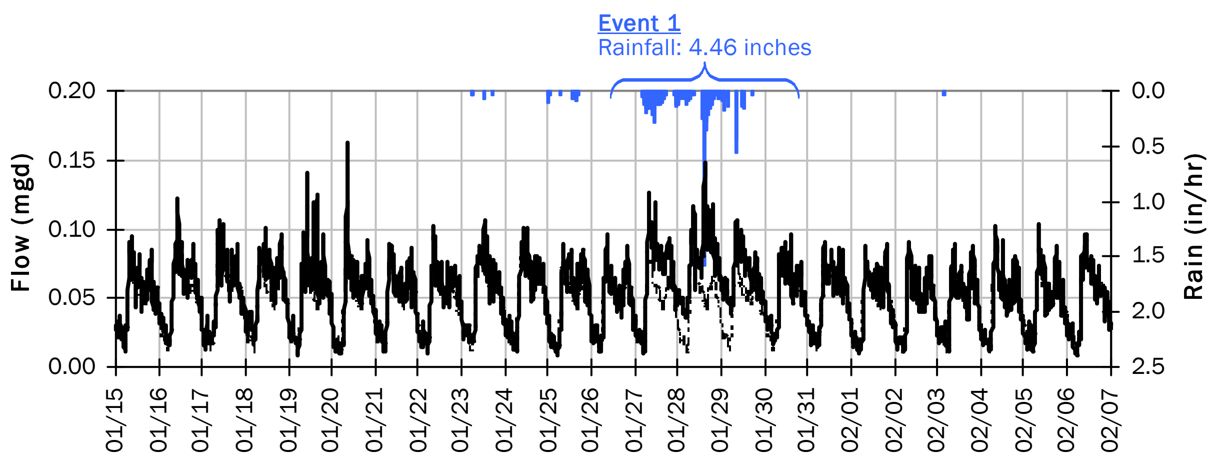




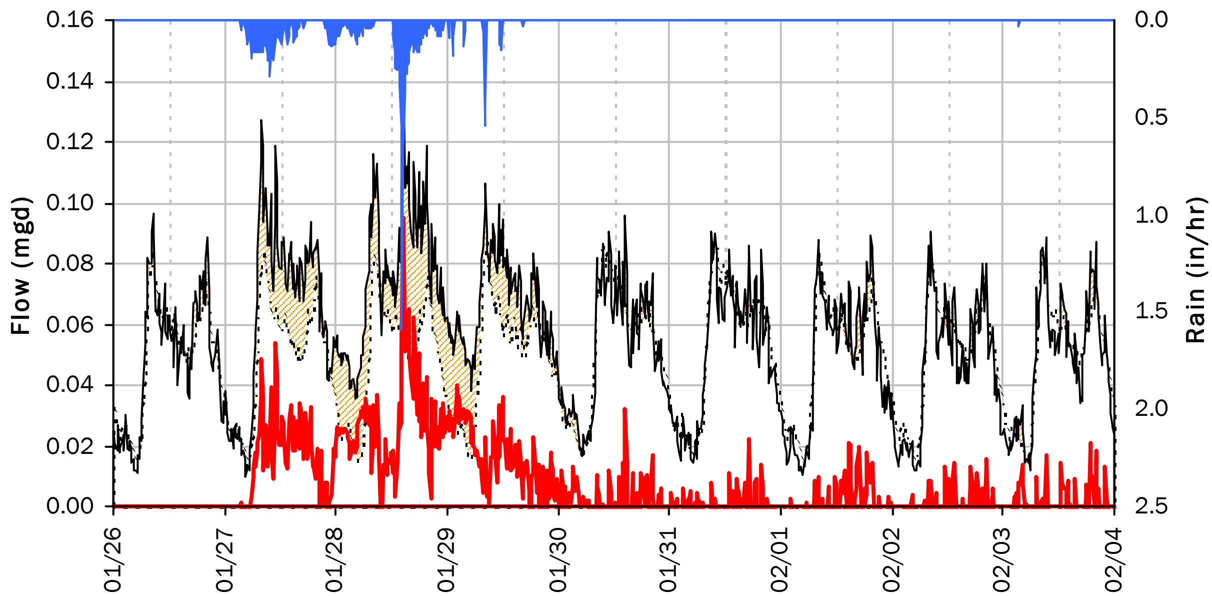
Pipe Diameter:	12	*inches*
Peak Measured Level:	3.64	*inches*
Peak d/D Ratio:	0.30	

SITE 04
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



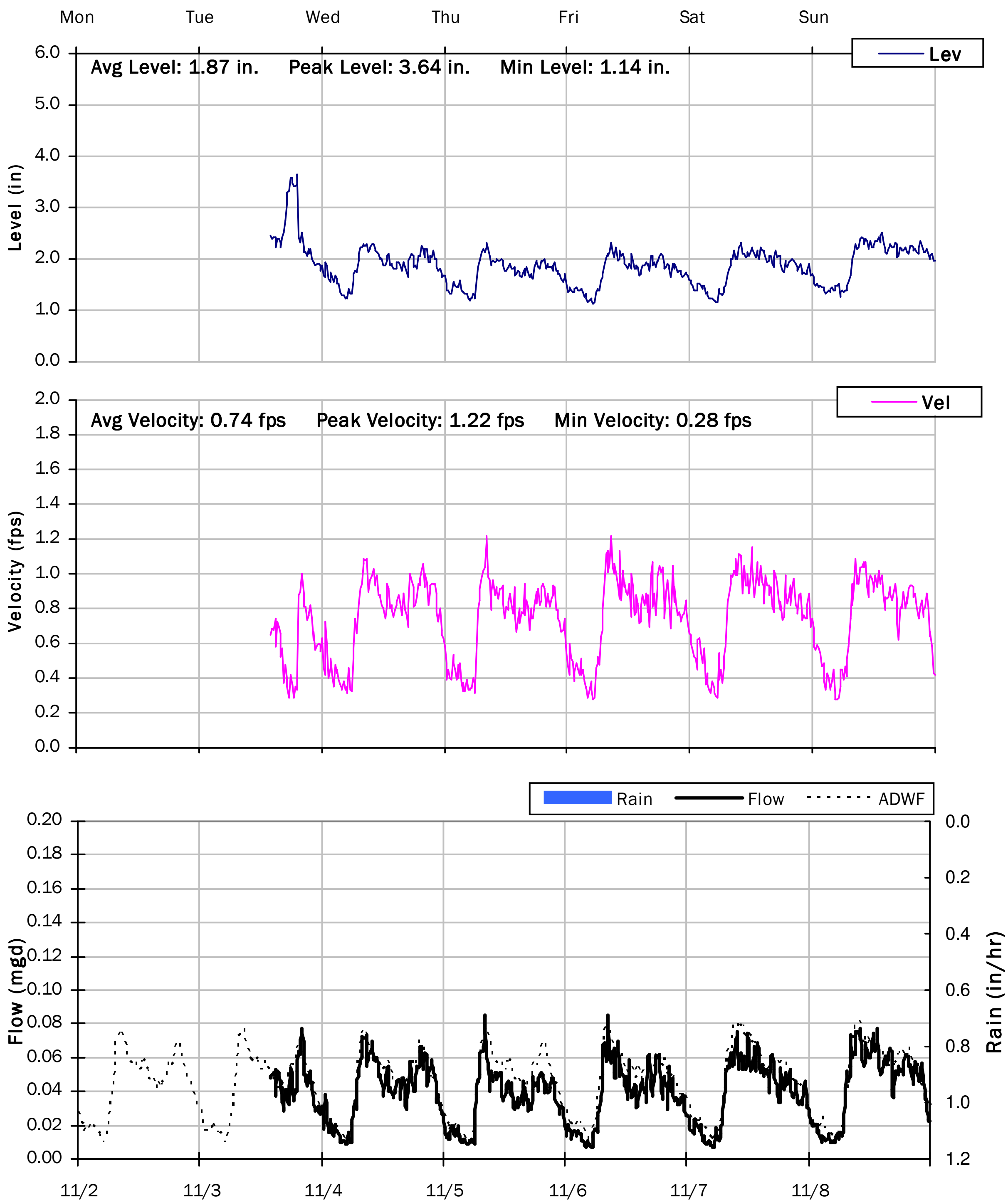
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 4.46 inches)

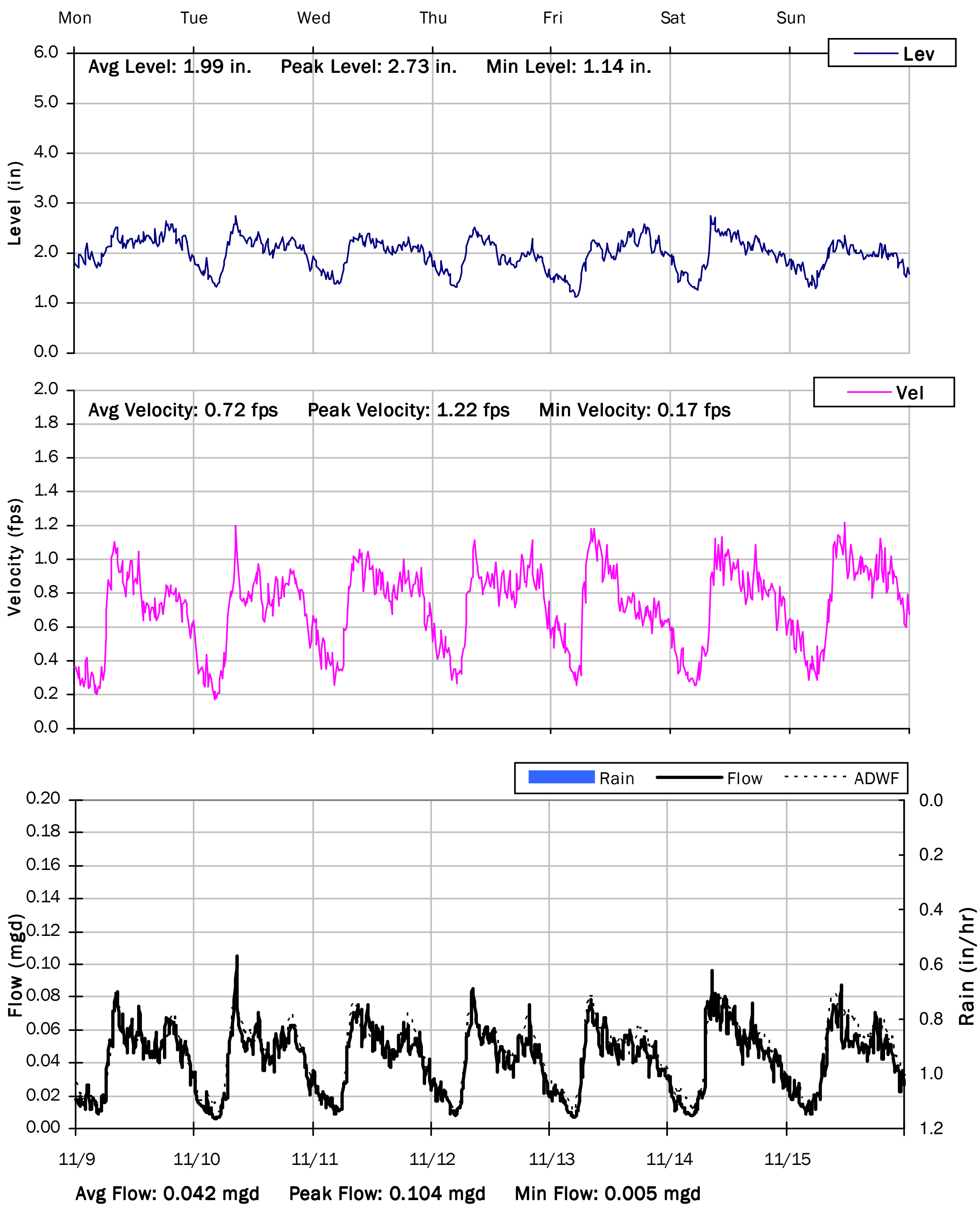
Capacity		**Inflow / Infiltration**	
Peak Flow:	0.15 *mgd*	**Peak I/I Rate:**	0.10 *mgd*
PF:	3.26	**Total I/I:**	54,000 *gallons*
Peak Level:	3.13 *in*		
d/D Ratio:	0.26		

SITE 04
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



Avg Flow: 0.040 mgd Peak Flow: 0.085 mgd Min Flow: 0.007 mgd

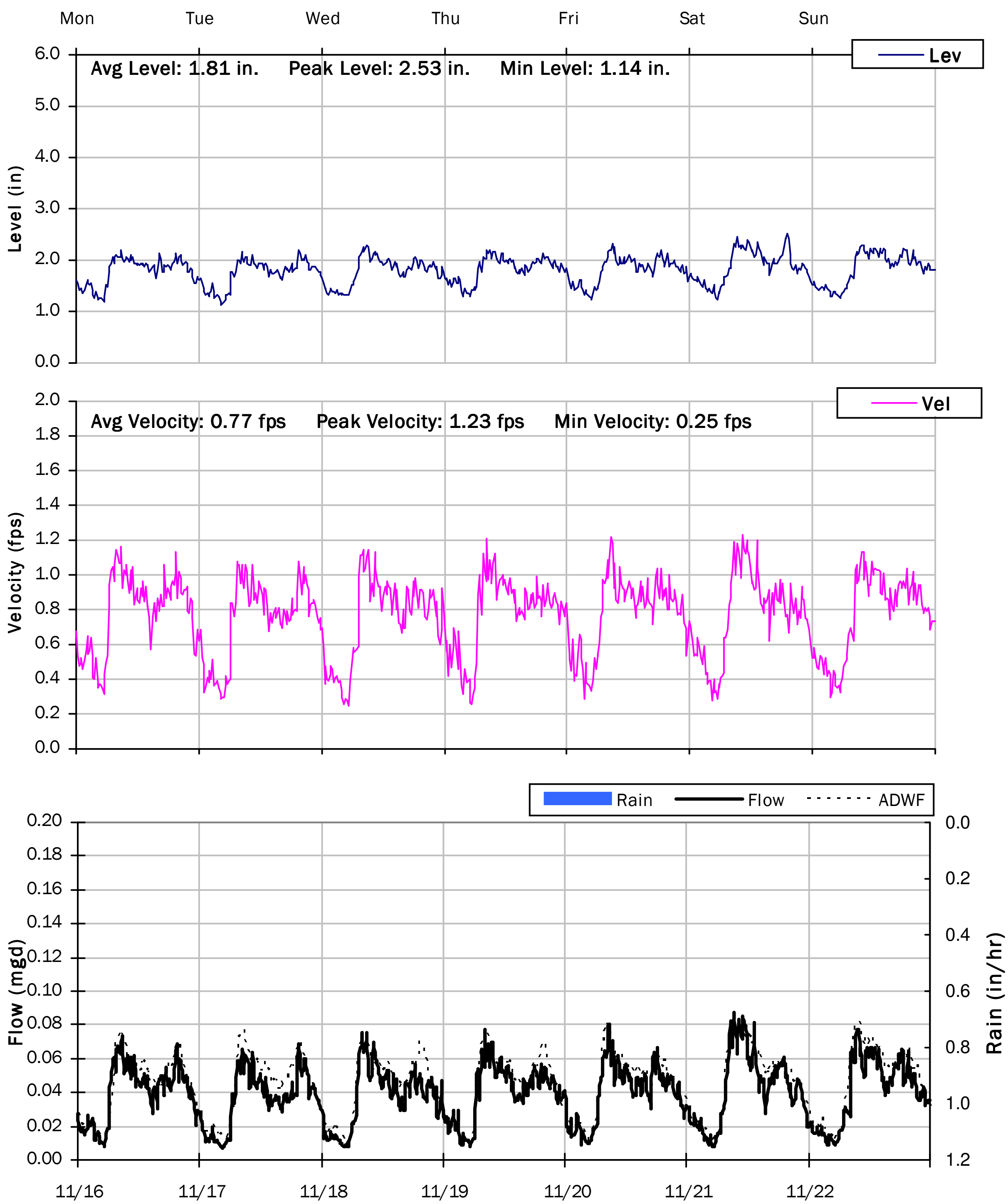
SITE 04
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



SITE 04

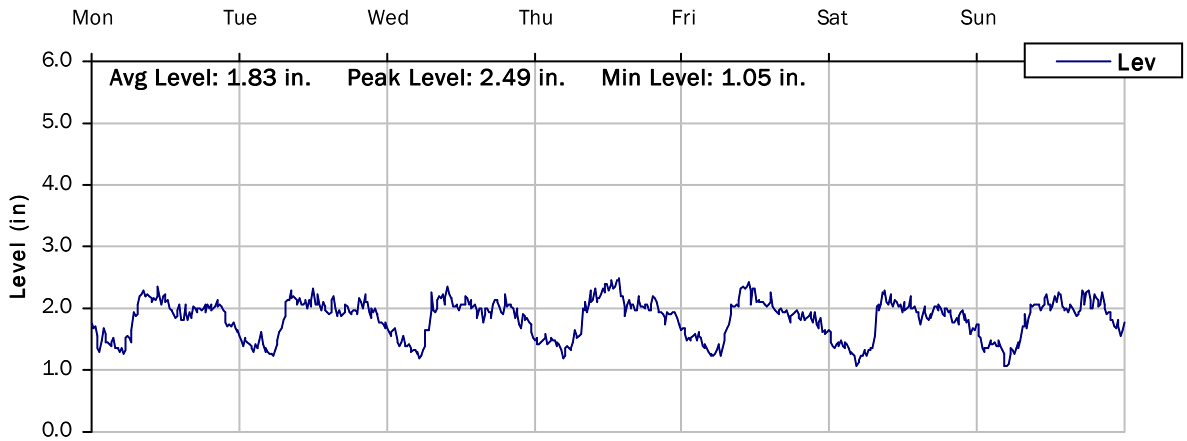
Weekly Level, Velocity and Flow Hydrographs

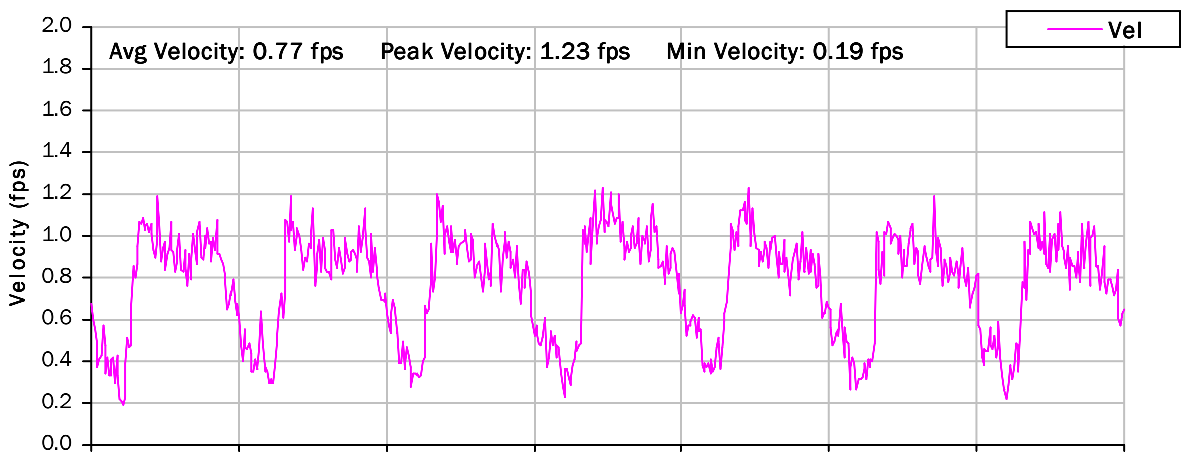
11/16/2020 to 11/23/2020

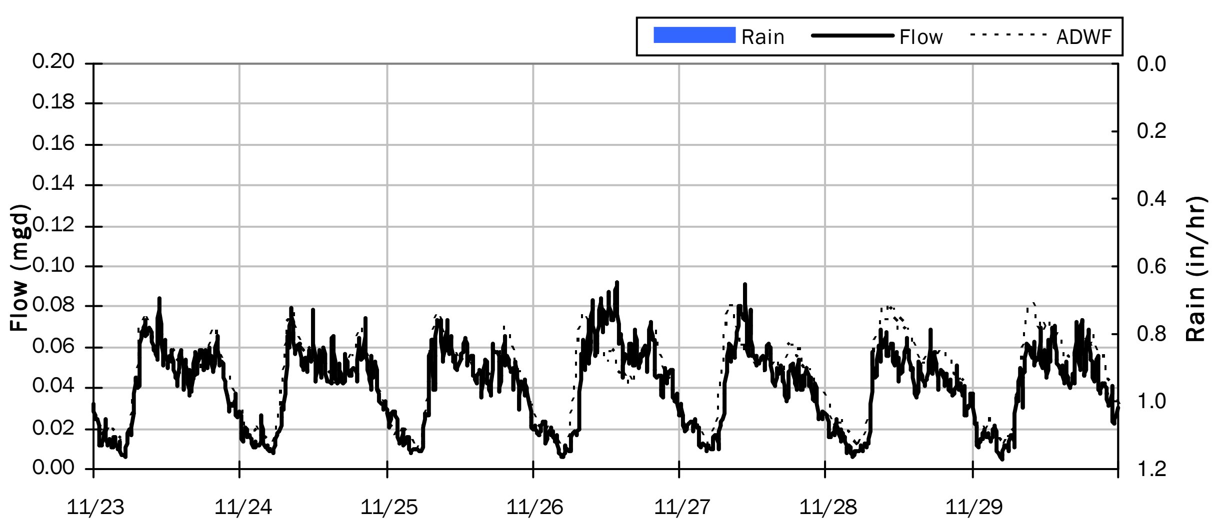


Avg Flow: 0.039 mgd **Peak Flow: 0.087 mgd** **Min Flow: 0.007 mgd**

SITE 04
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

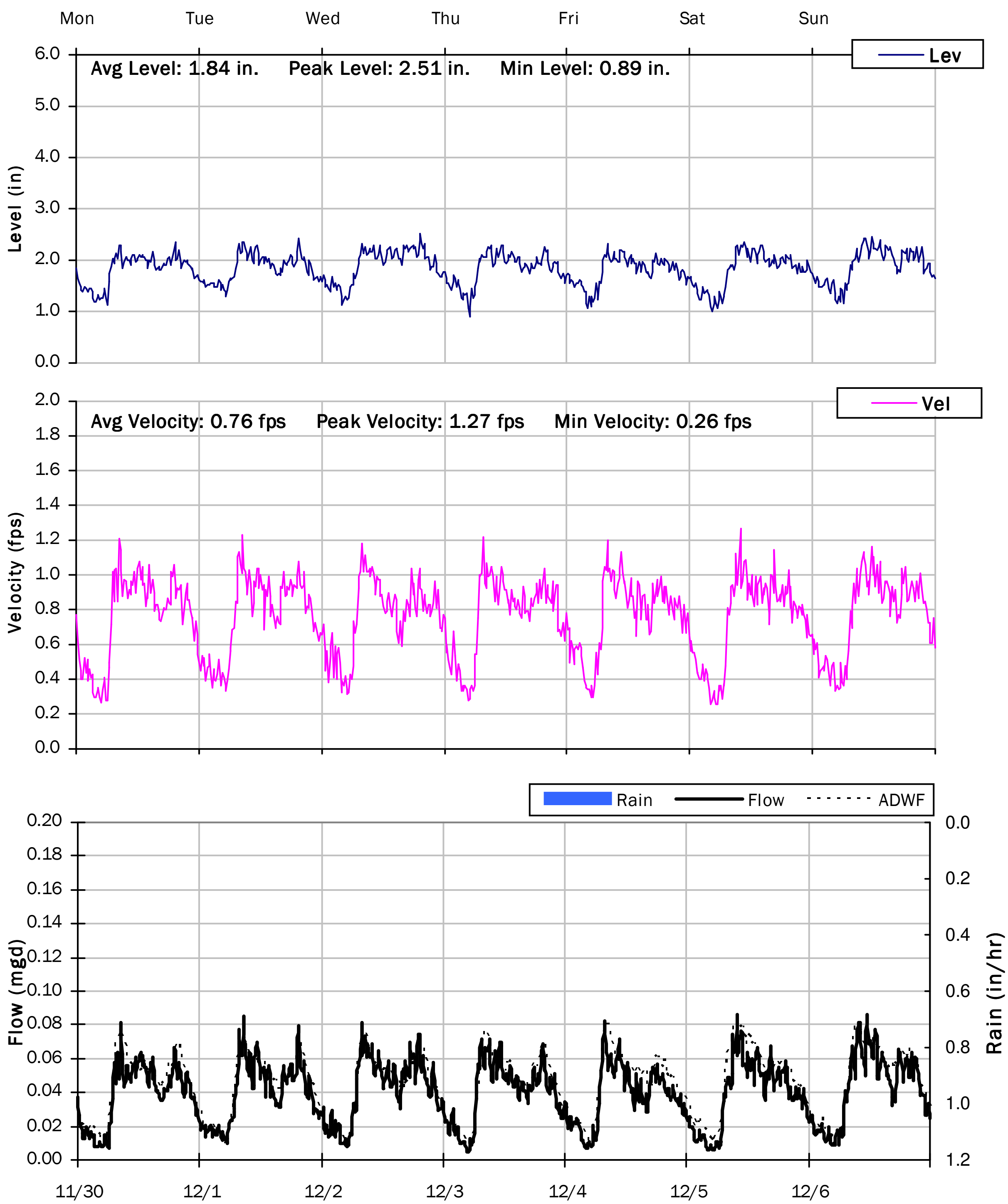






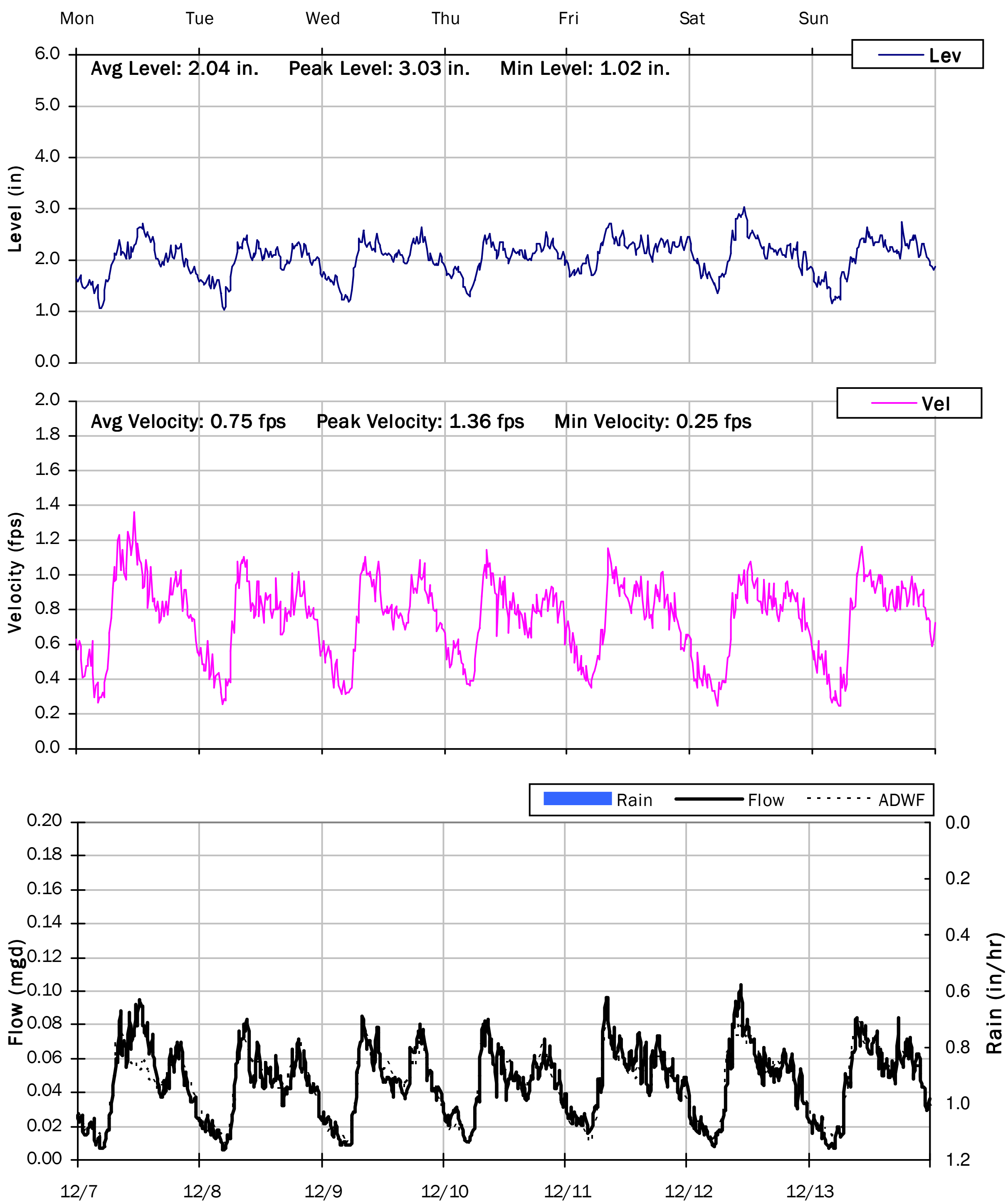
Avg Flow: 0.041 mgd **Peak Flow: 0.091 mgd** **Min Flow: 0.005 mgd**

SITE 04
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



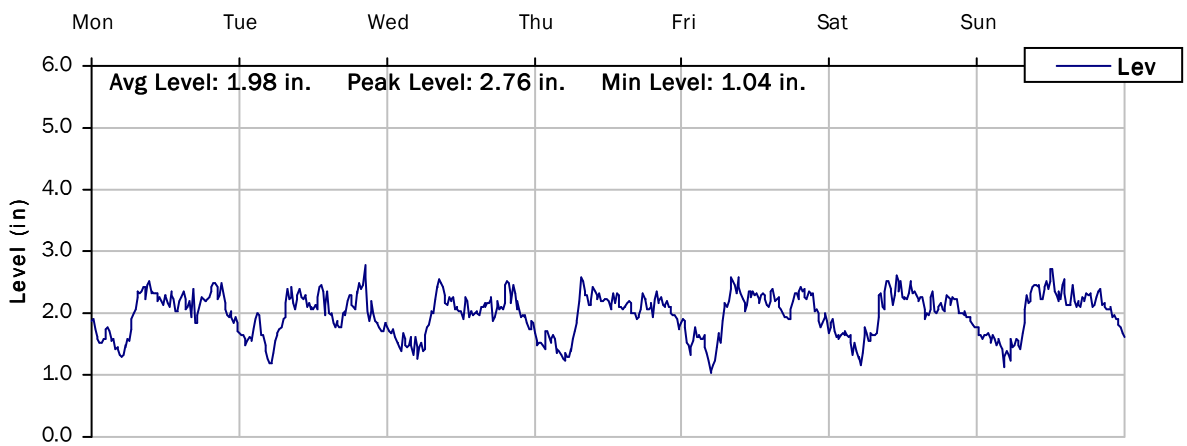
Avg Flow: 0.040 mgd Peak Flow: 0.086 mgd Min Flow: 0.005 mgd

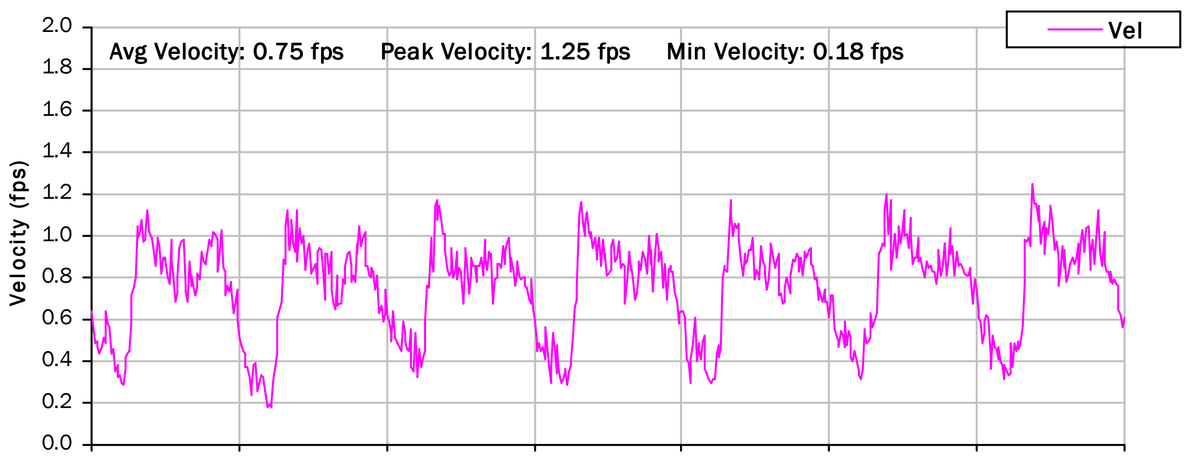
SITE 04
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

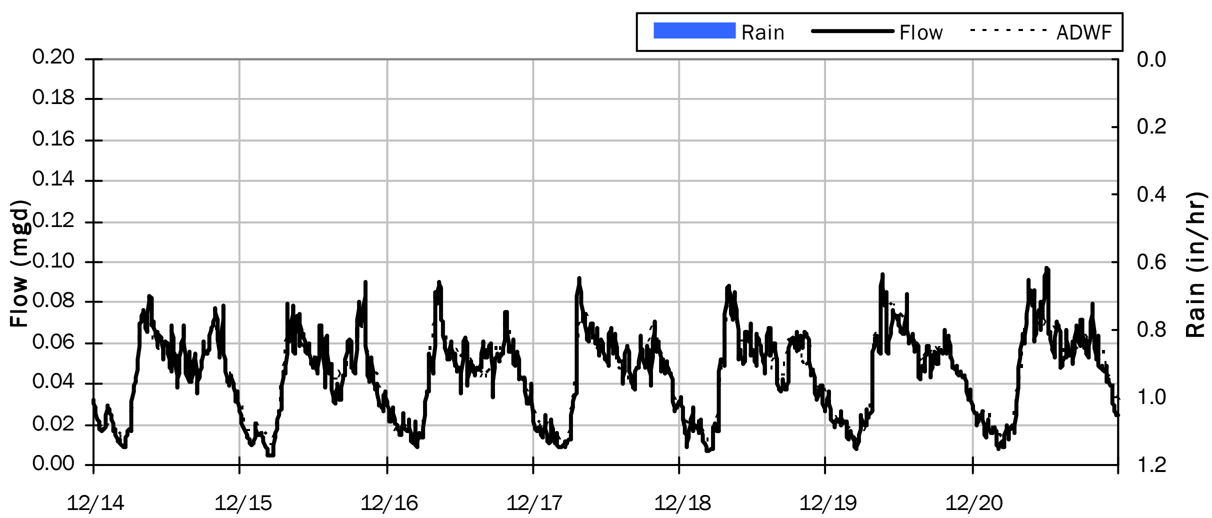


Avg Flow: 0.046 mgd **Peak Flow: 0.104 mgd** **Min Flow: 0.006 mgd**

SITE 04
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

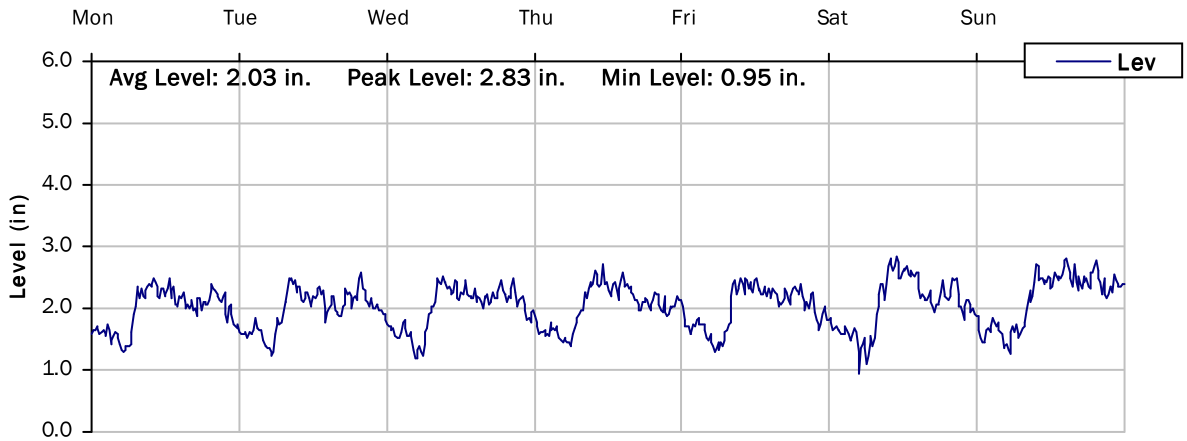


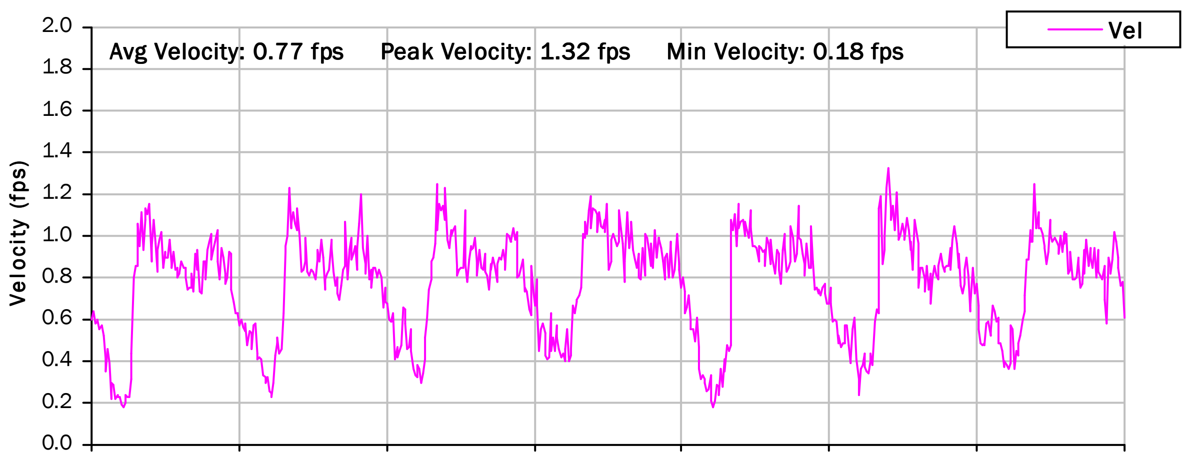


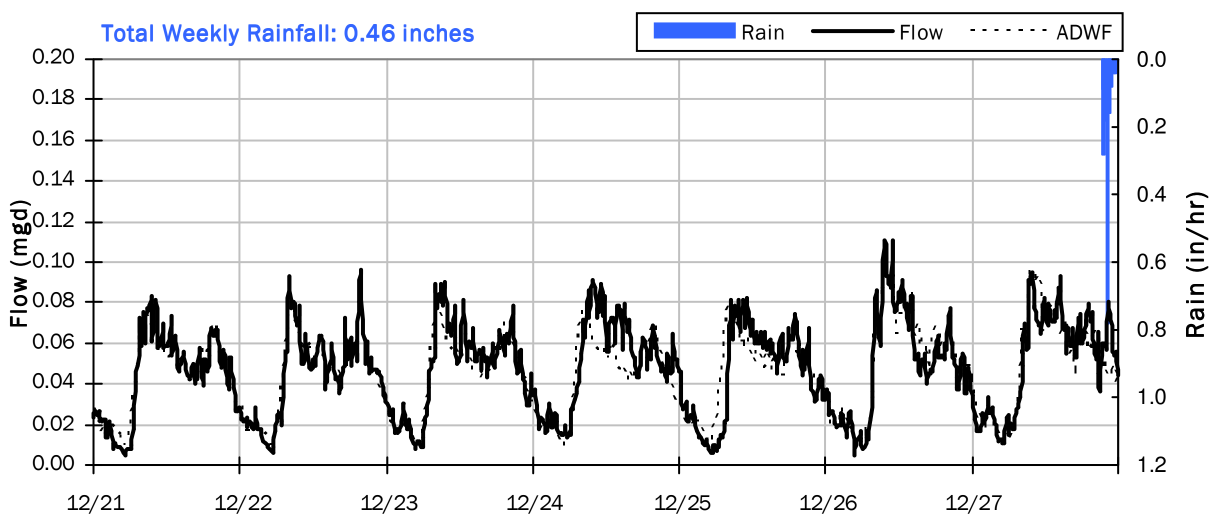


Avg Flow: 0.045 mgd **Peak Flow: 0.097 mgd** **Min Flow: 0.005 mgd**

SITE 04
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

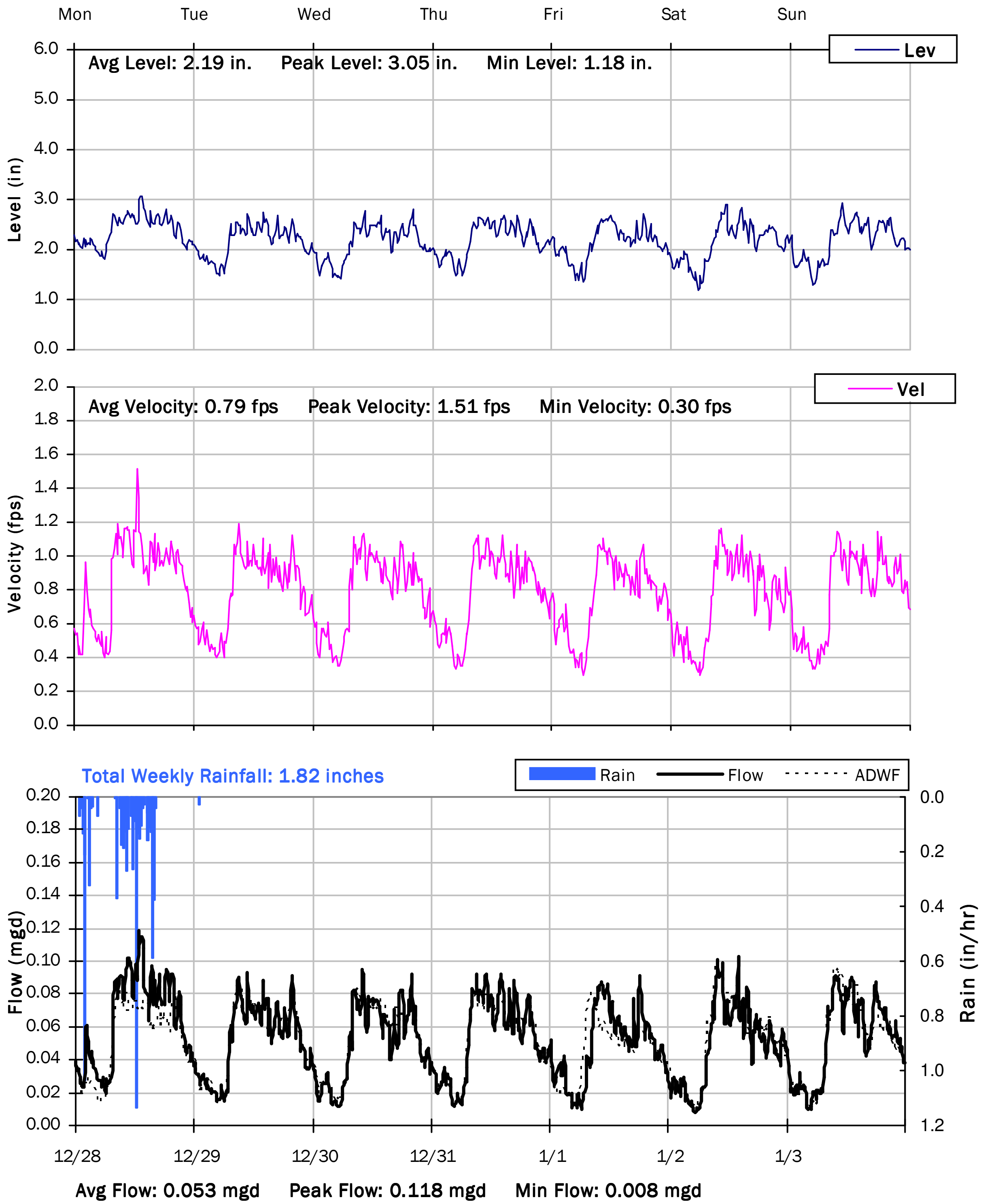




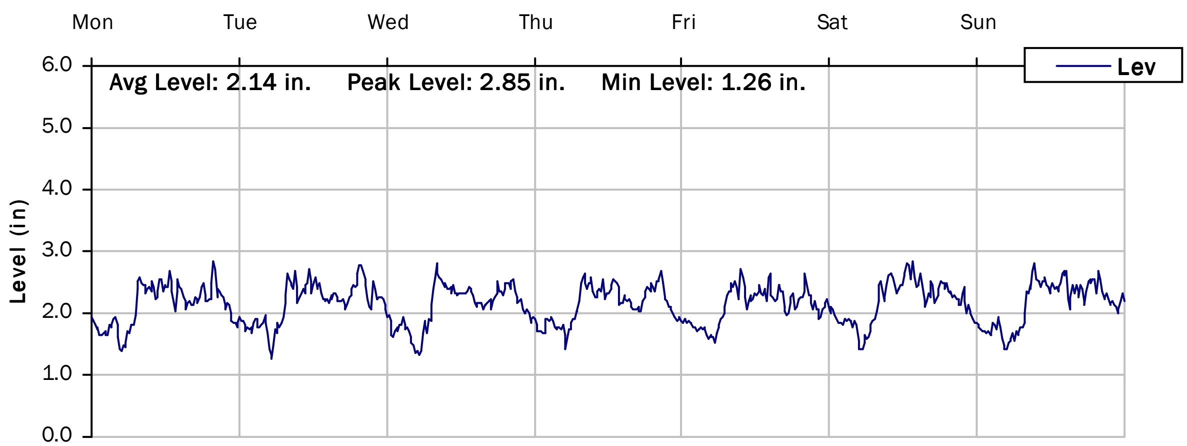


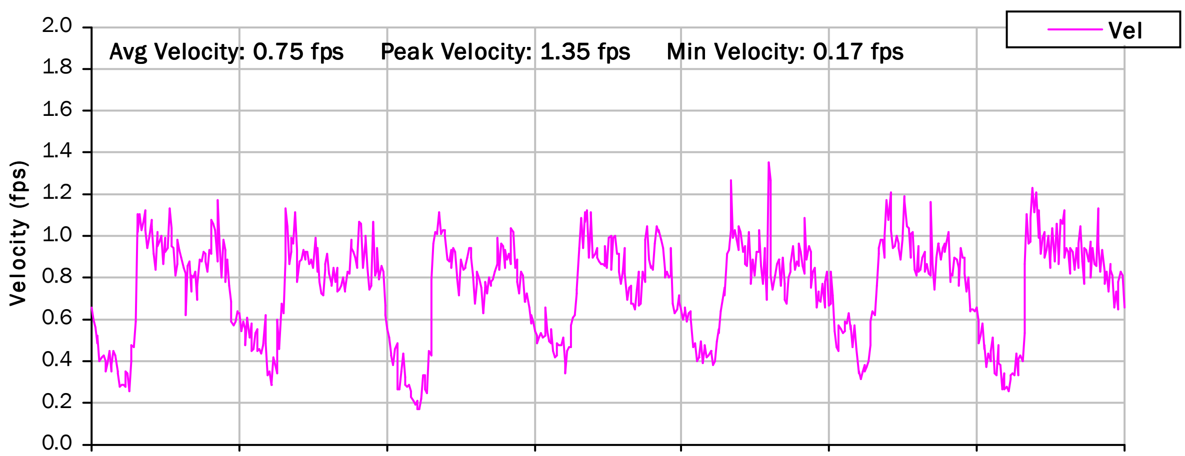
Avg Flow: 0.047 mgd Peak Flow: 0.111 mgd Min Flow: 0.005 mgd

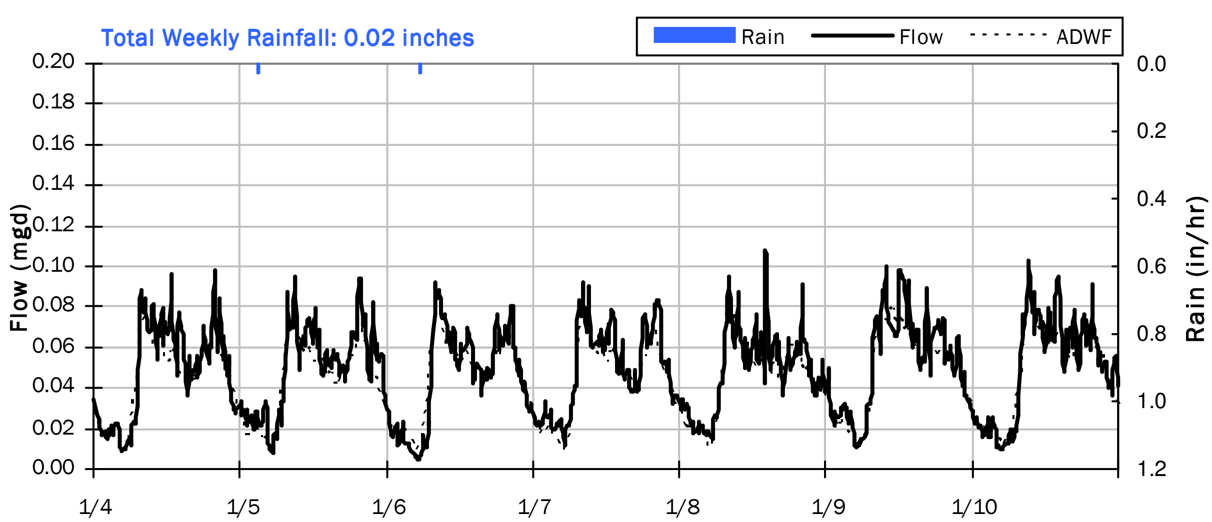
SITE 04
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



SITE 04
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

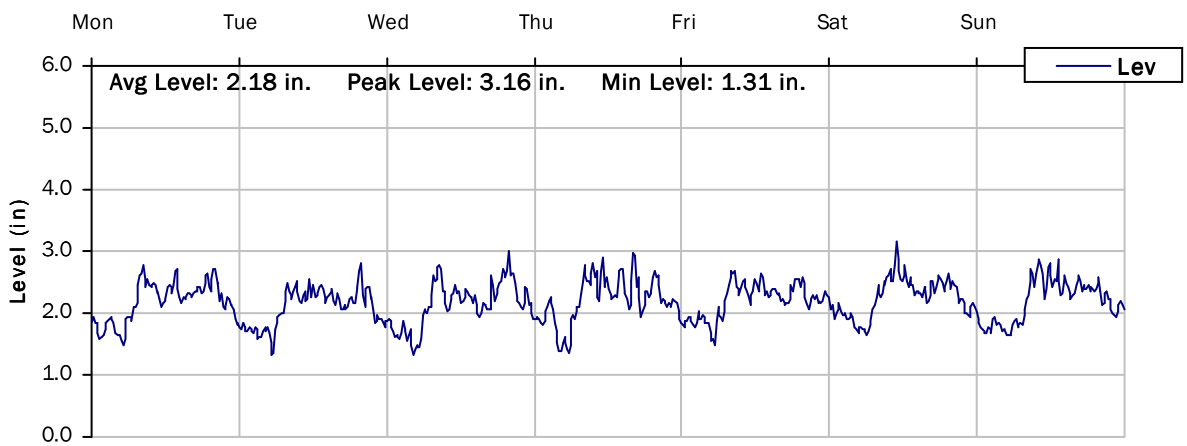


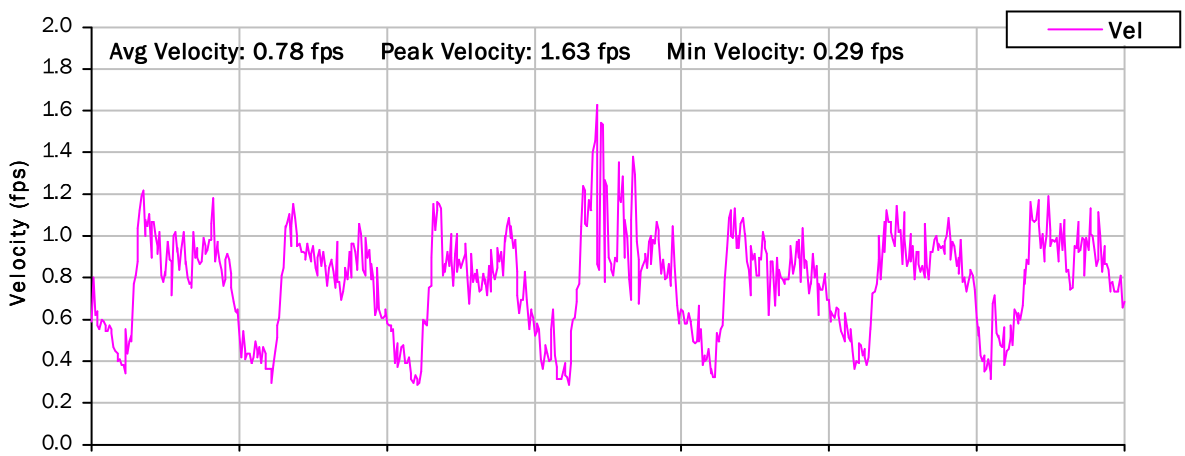


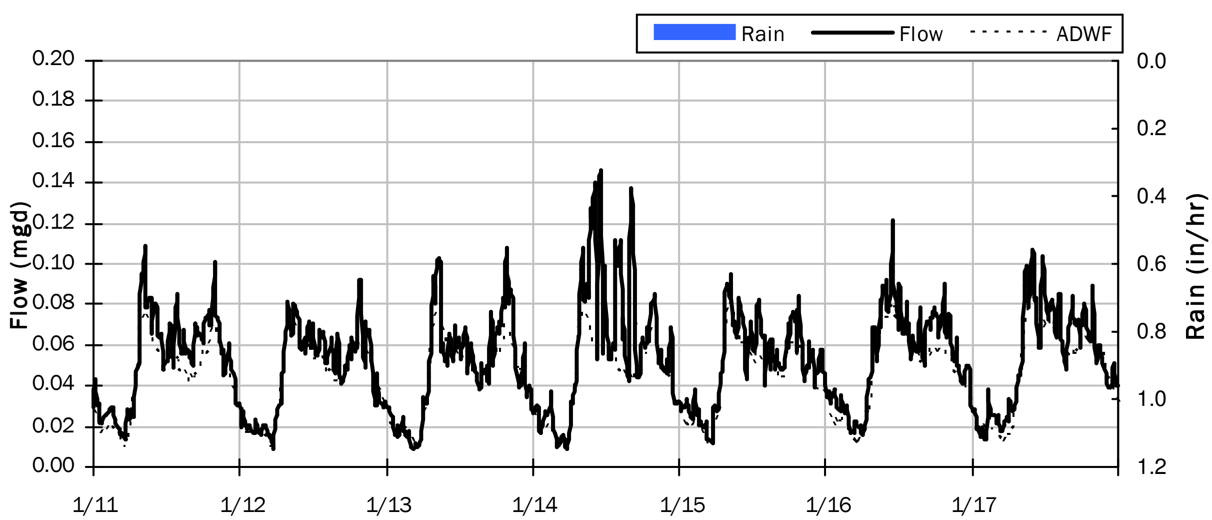


Avg Flow: 0.049 mgd **Peak Flow: 0.108 mgd** **Min Flow: 0.005 mgd**

SITE 04
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

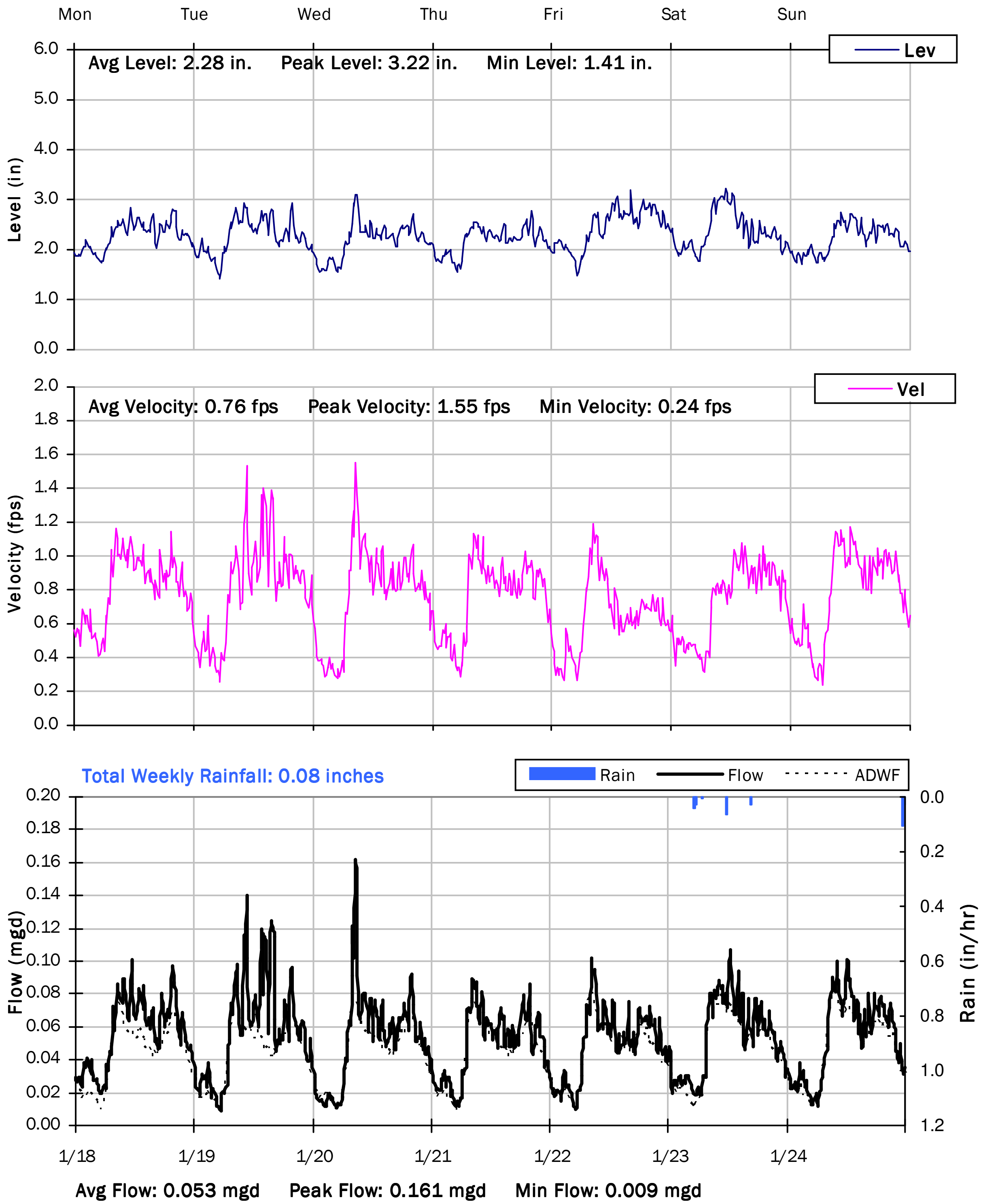




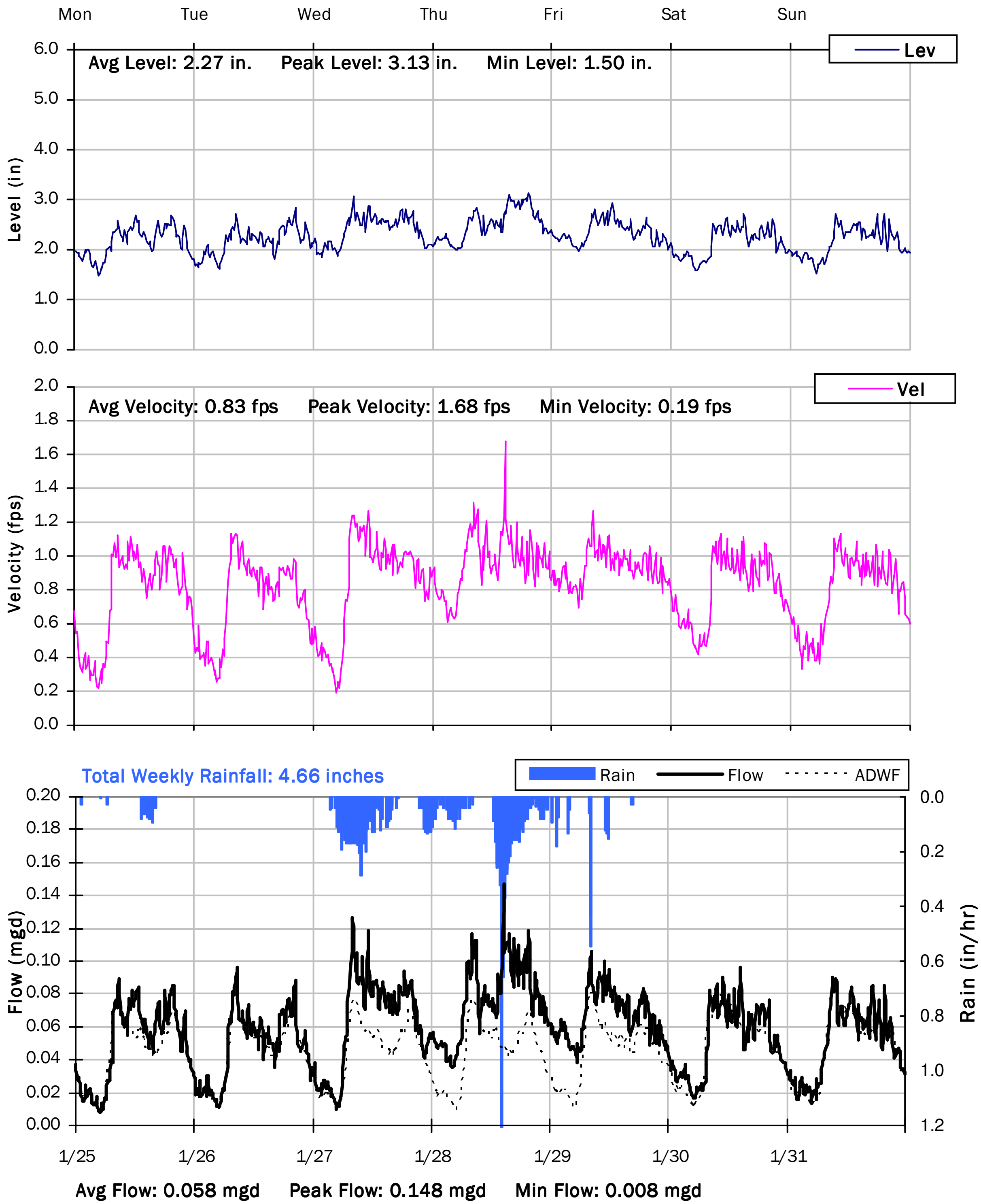


Avg Flow: 0.053 mgd **Peak Flow: 0.145 mgd** **Min Flow: 0.009 mgd**

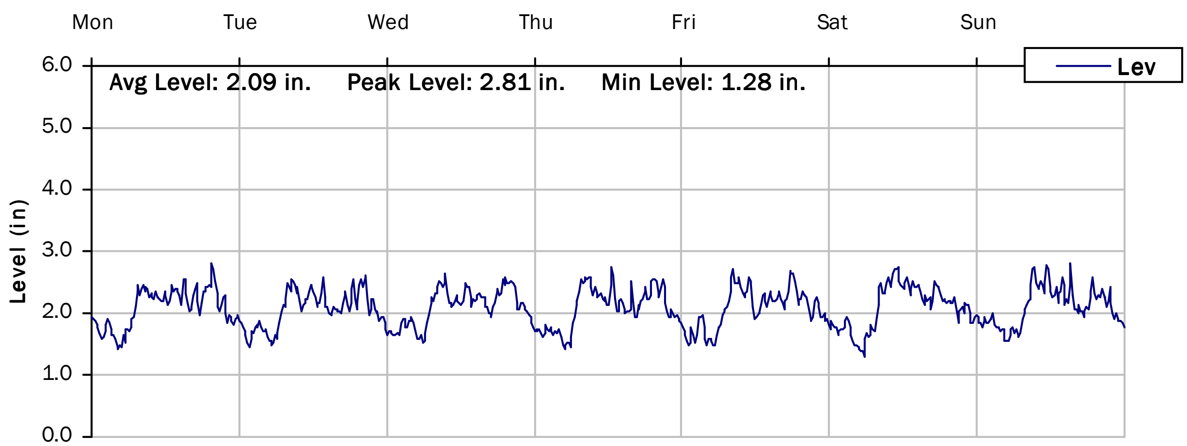
SITE 04
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

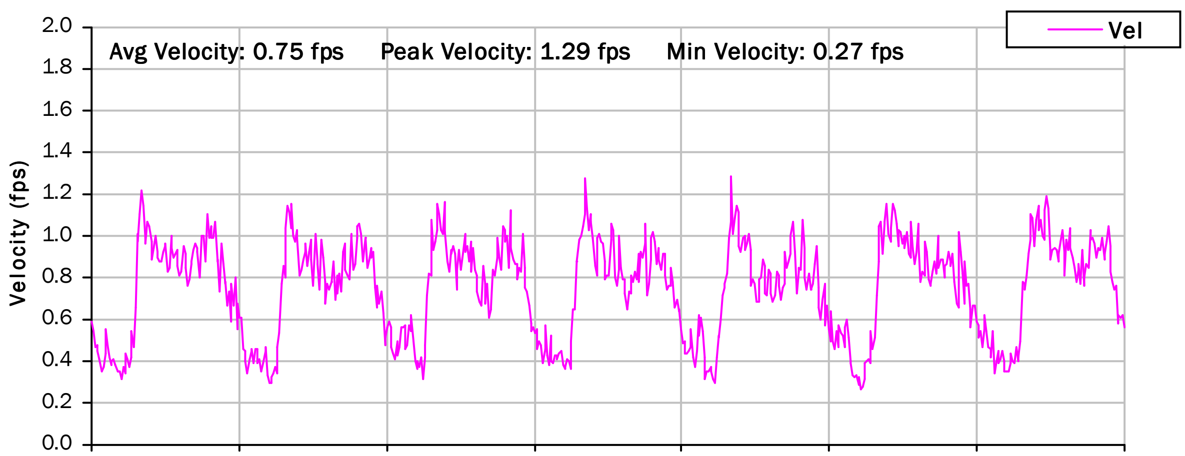


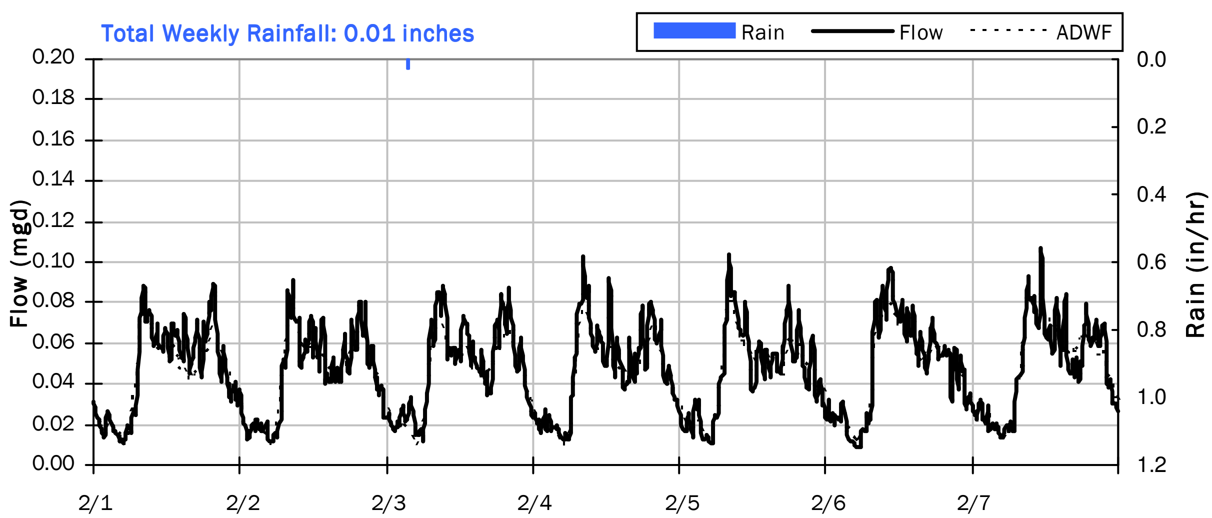
SITE 04
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 04
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021







Avg Flow: 0.048 mgd **Peak Flow: 0.106 mgd** **Min Flow: 0.009 mgd**

Goleta West Sanitary District

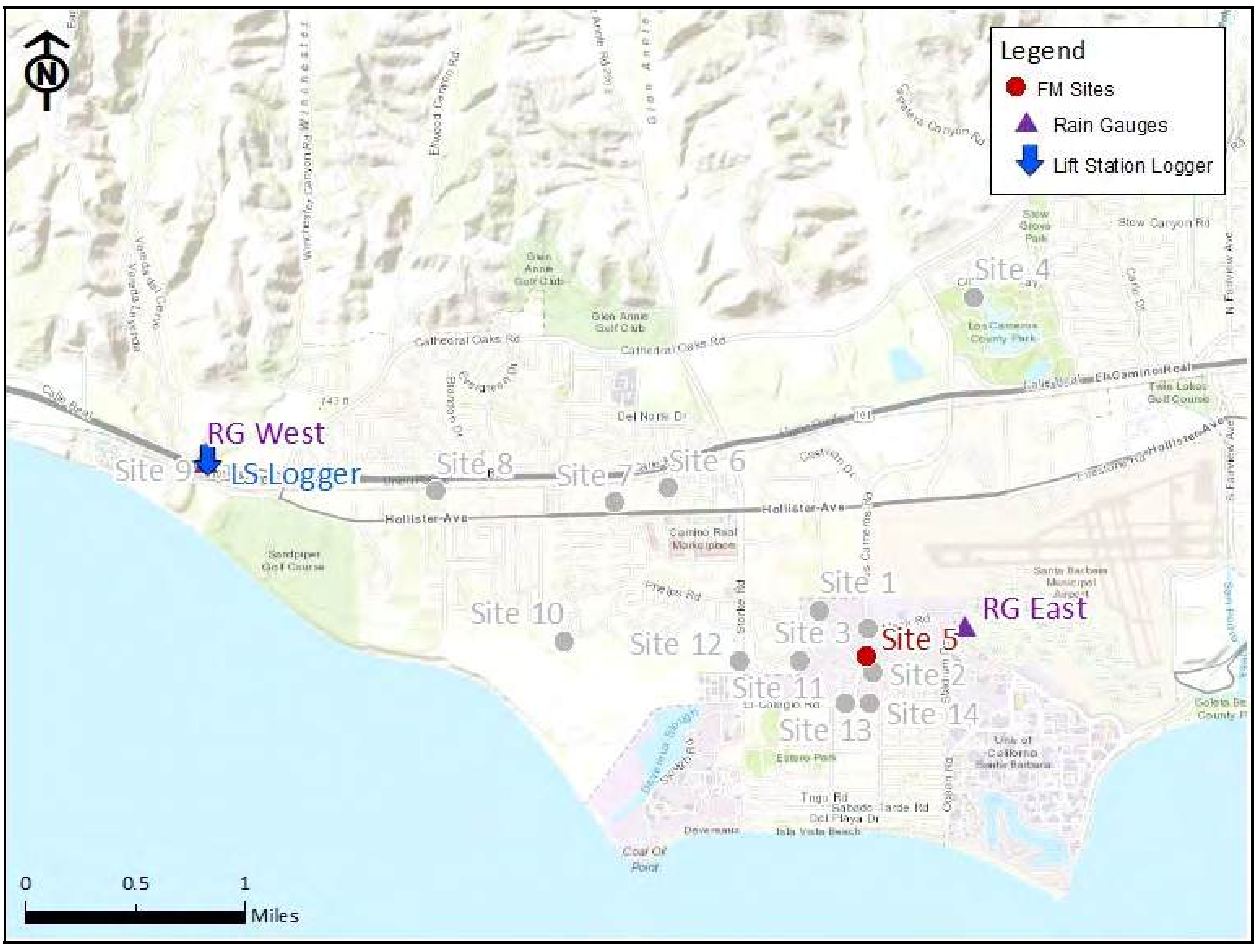
Sanitary Sewer Flow Monitoring
November 3, 2020 - February 7, 2021

Monitoring Site: Site 05

City Manhole: 73-12-28

Location: S Los Carneros Road south of Mesa Road

Data Summary Report



Vicinity Map: Site 05

SITE 05

Site Information

Location: S Los Carneros Road south of Mesa Road

City Manhole: 73-12-28

Coordinates: 119.8598° W, 34.4205° N

Rim Elevation (Earth): 15 feet

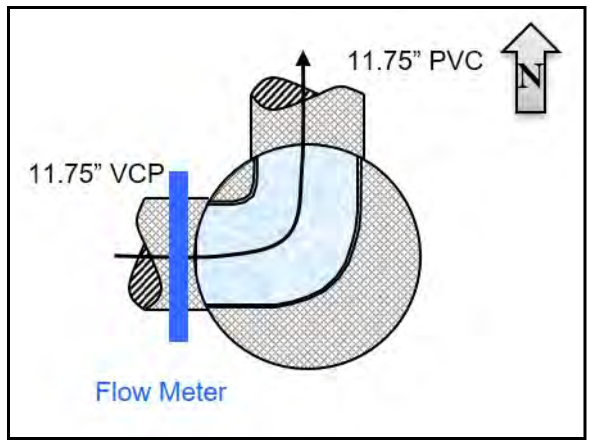
Pipe Diameter: 11.75 inches

ADWF: 0.054 mgd

Peak Measured Flow: 0.413 mgd

Satellite Map

Sanitary Map



Flow Sketch

Street View

Plan View

SITE 05

Additional Site Photos

Monitored West Influent

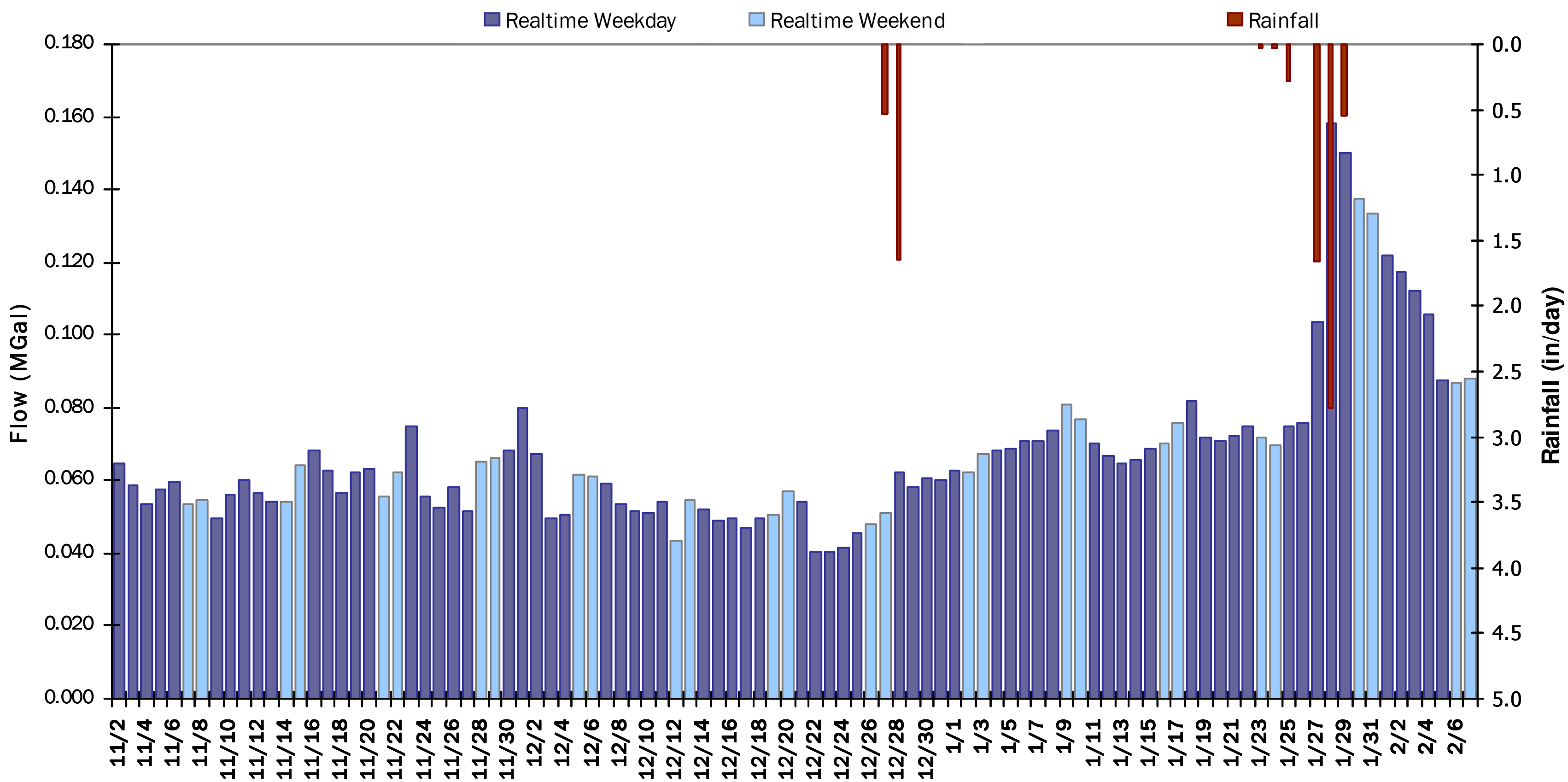
North Effluent

SITE 05

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.068 MGal **Peak Daily Flow: 0.158 MGal** **Min Daily Flow: 0.040 MGal**

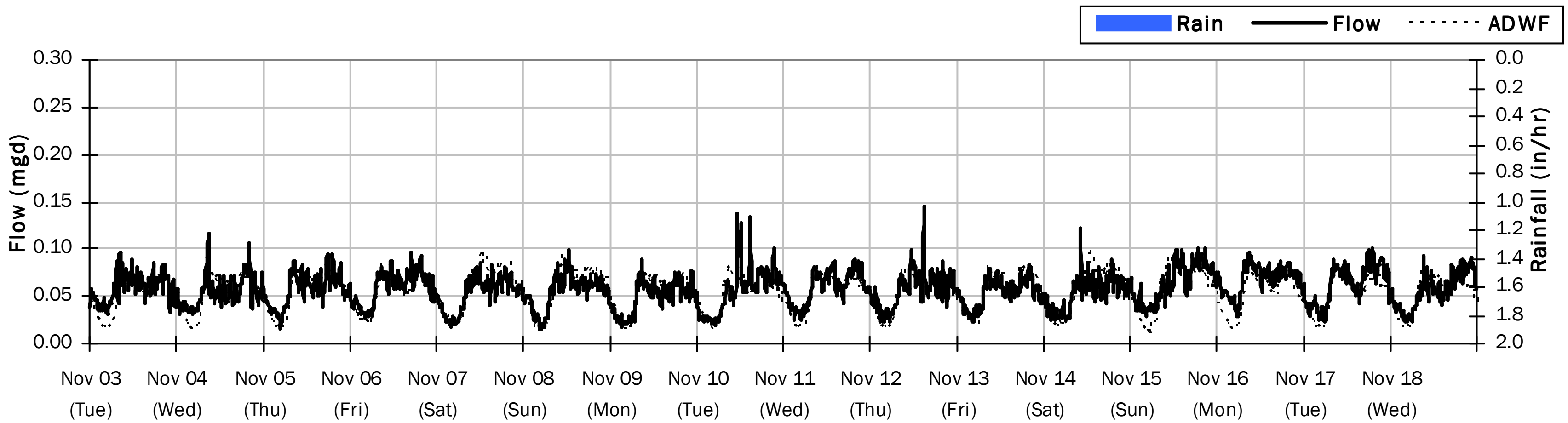
Total Period Rainfall: 7.53 inches

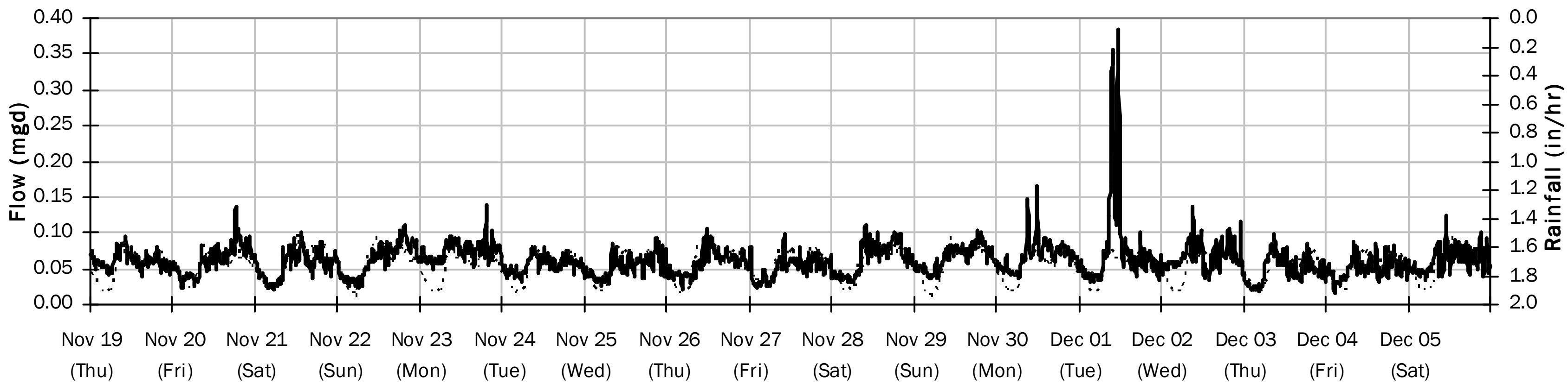


SITE 05

Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   **Avg Flow: 0.060 mgd**   **Peak Flow: 0.380 mgd**   **Min Flow: 0.014 mgd**

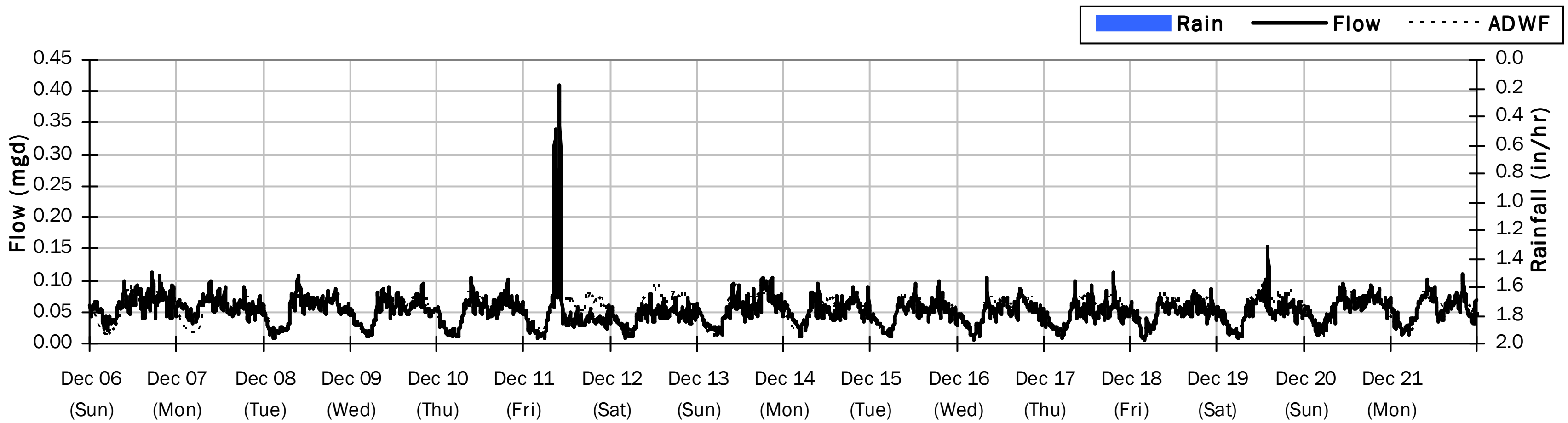


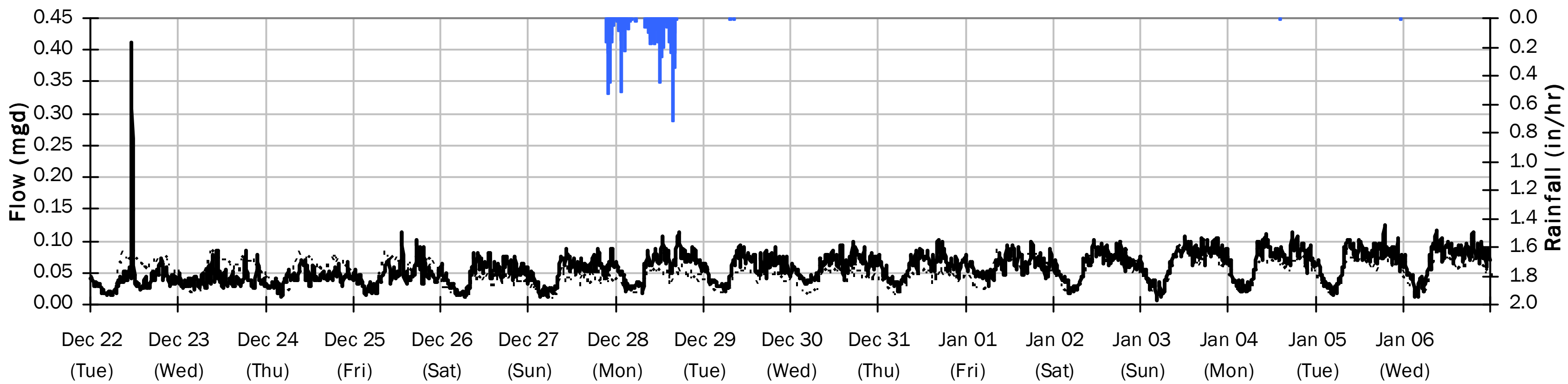


SITE 05

Flow Summary: 12/6/2020 to 1/6/2021

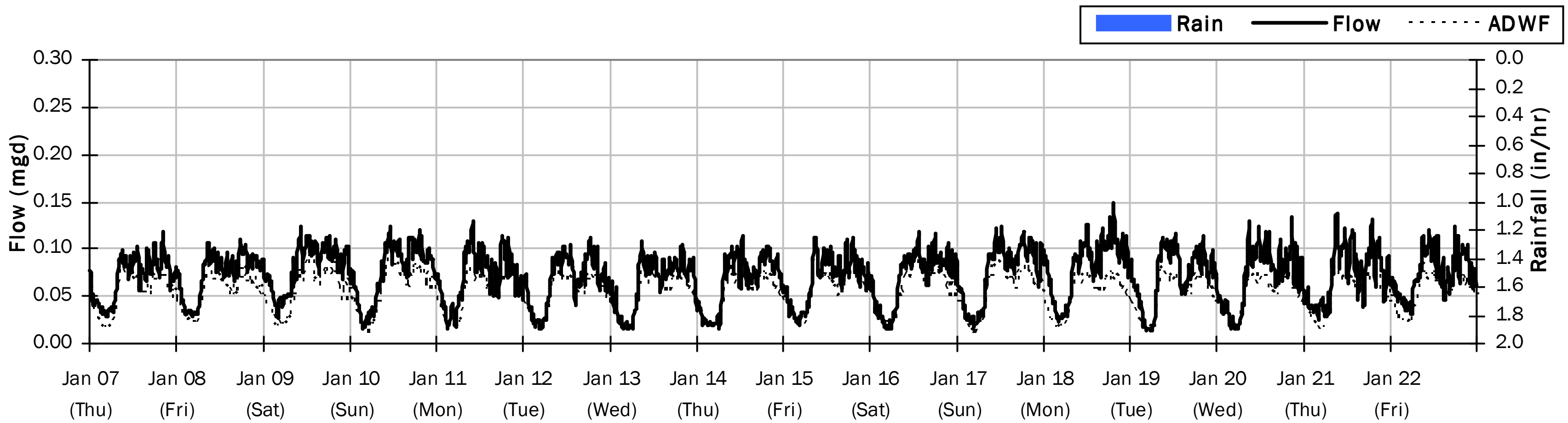
Total Period Rainfall: 2.19 inches   **Avg Flow: 0.055 mgd**   **Peak Flow: 0.413 mgd**   **Min Flow: 0.006 mgd**

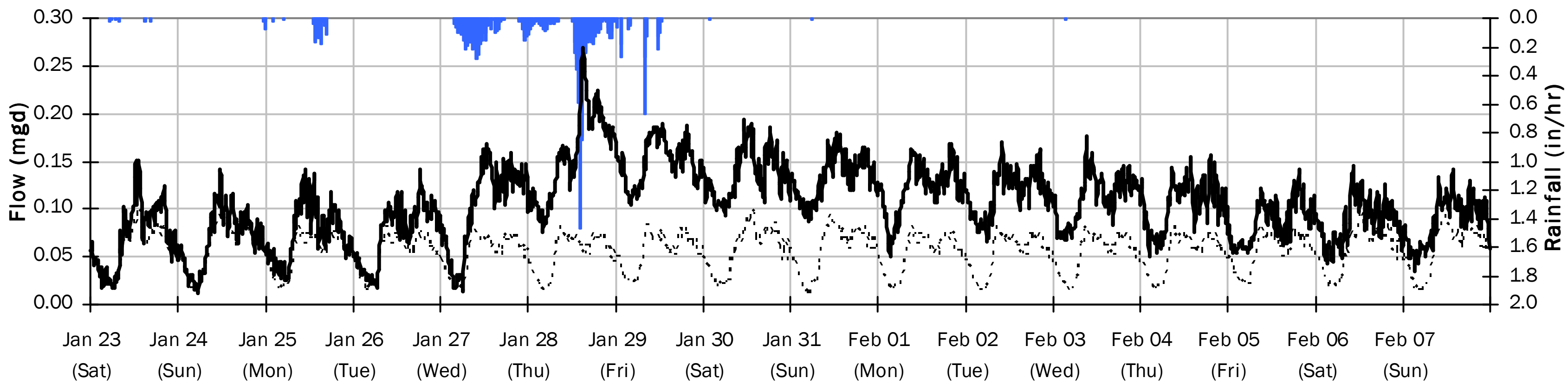




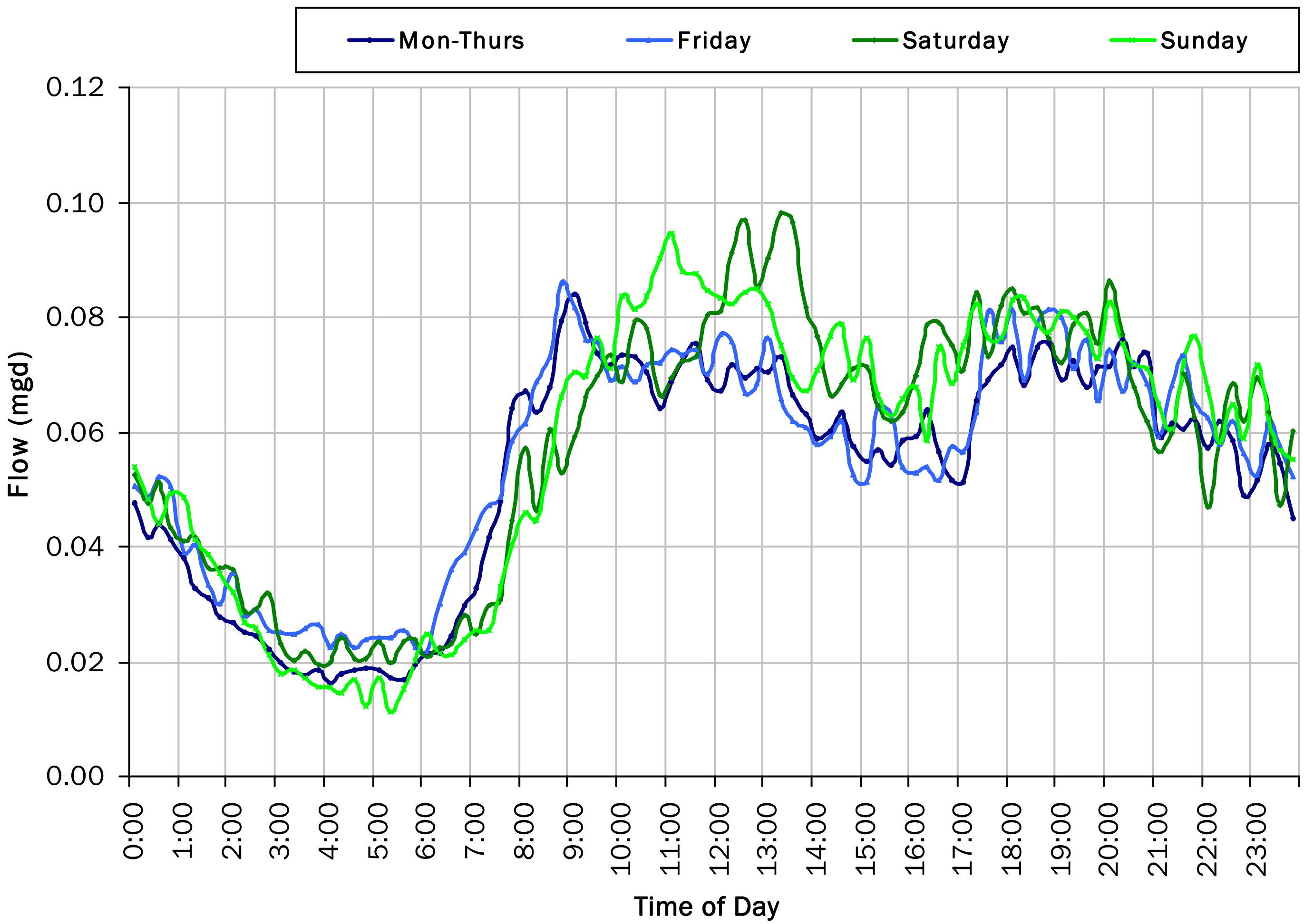
SITE 05
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 5.35 inches   **Avg Flow: 0.089 mgd   Peak Flow: 0.269 mgd   Min Flow: 0.012 mgd**



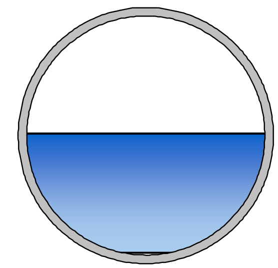


SITE 05
Average Dry Weather Flow Hydrographs



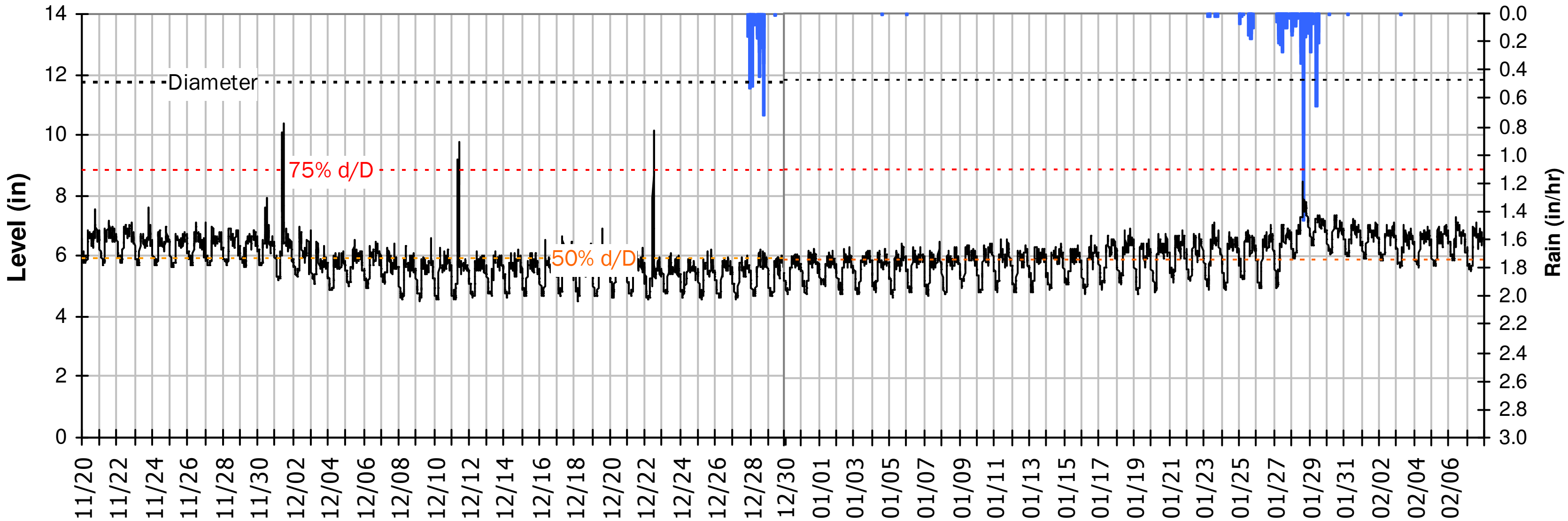
ADWF:

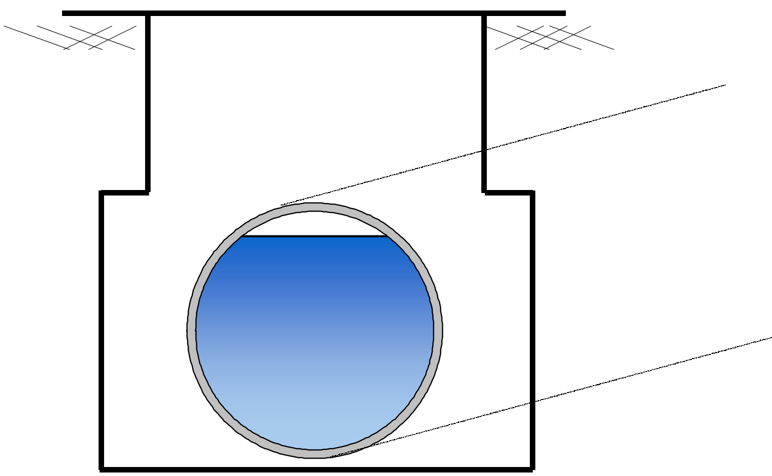
0.054 *mgd*



SITE 05
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





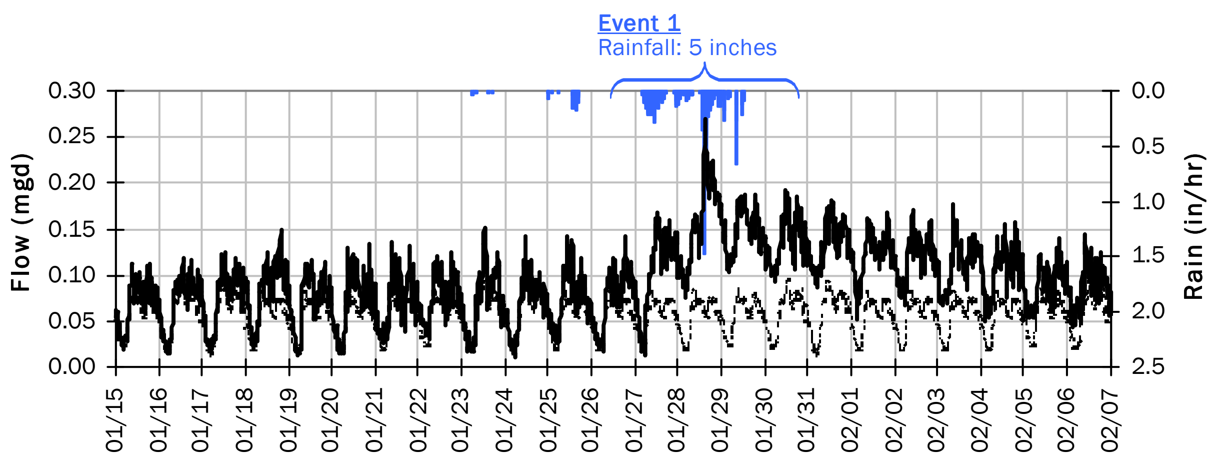
Pipe Diameter: 11.8 *inches*

Peak Measured Level: 10.4 *inches*

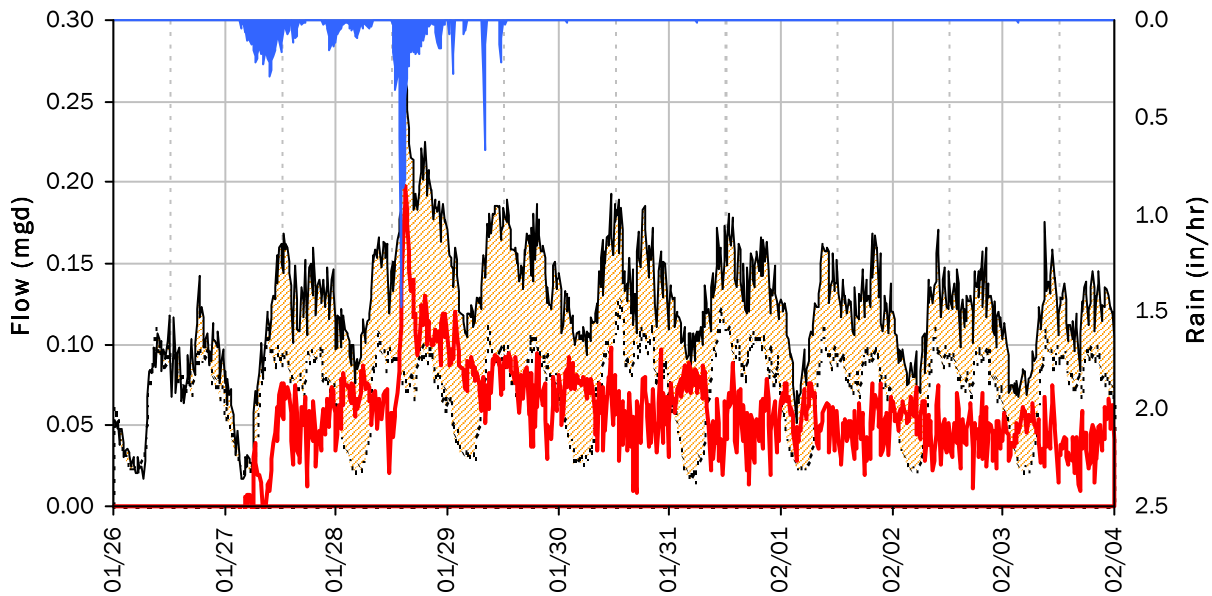
Peak d/D Ratio: 0.89

SITE 05
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



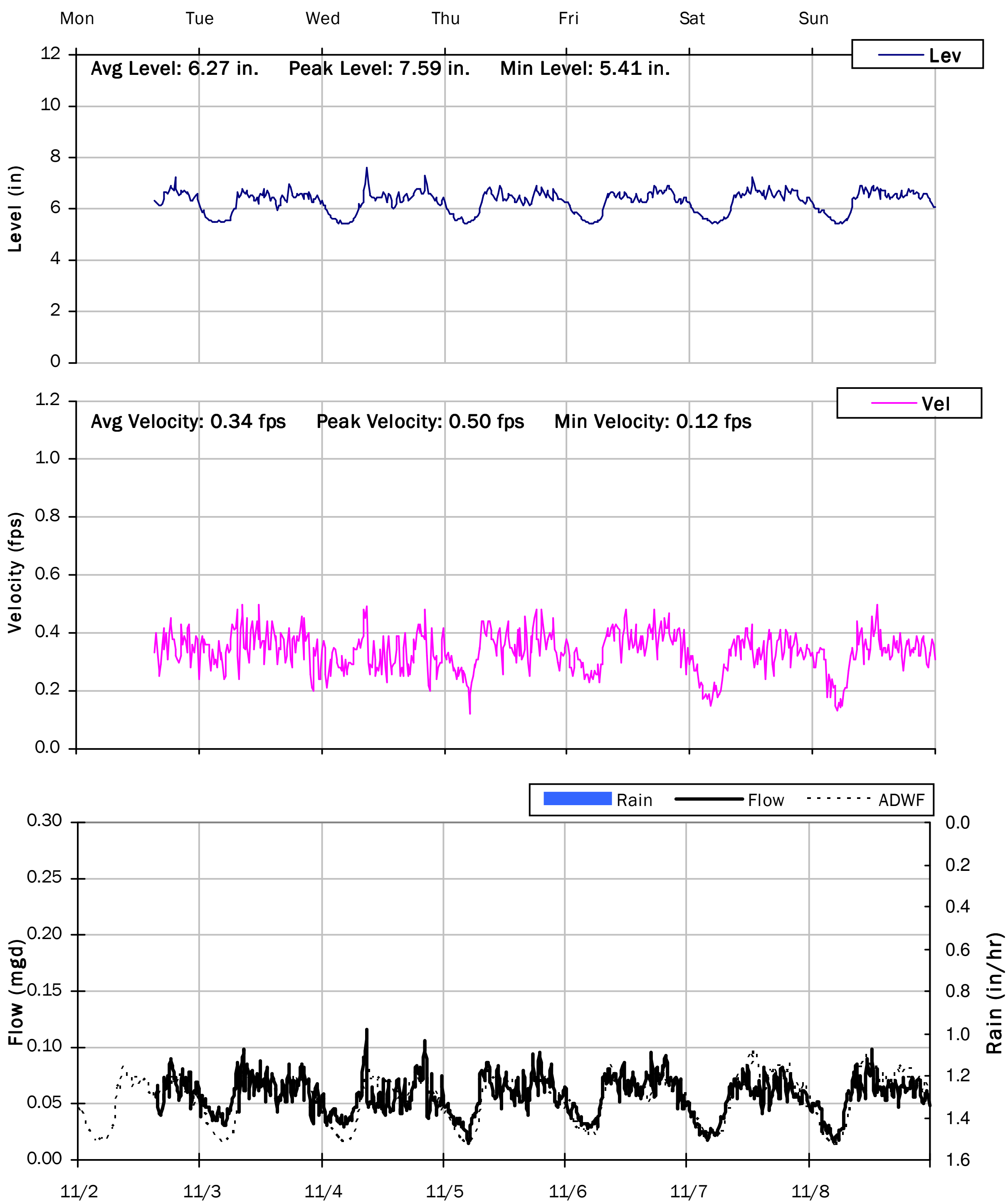
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 5.00 inches)

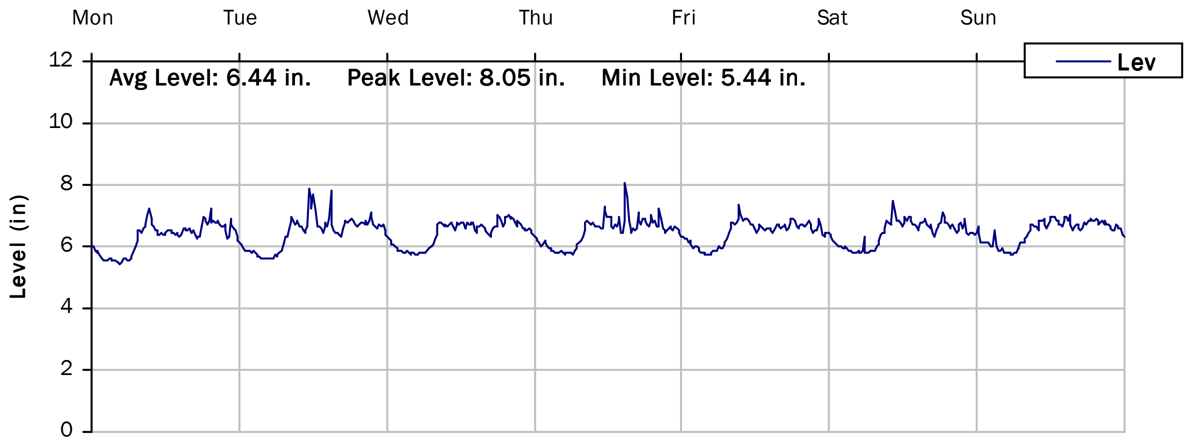
Capacity		Inflow / Infiltration	
Peak Flow:	0.27 *mgd*	**Peak I/I Rate:**	0.20 *mgd*
PF:	4.99	**Total I/I:**	464,000 *gallons*
Peak Level:	8.47 *in*		
d/D Ratio:	0.72		

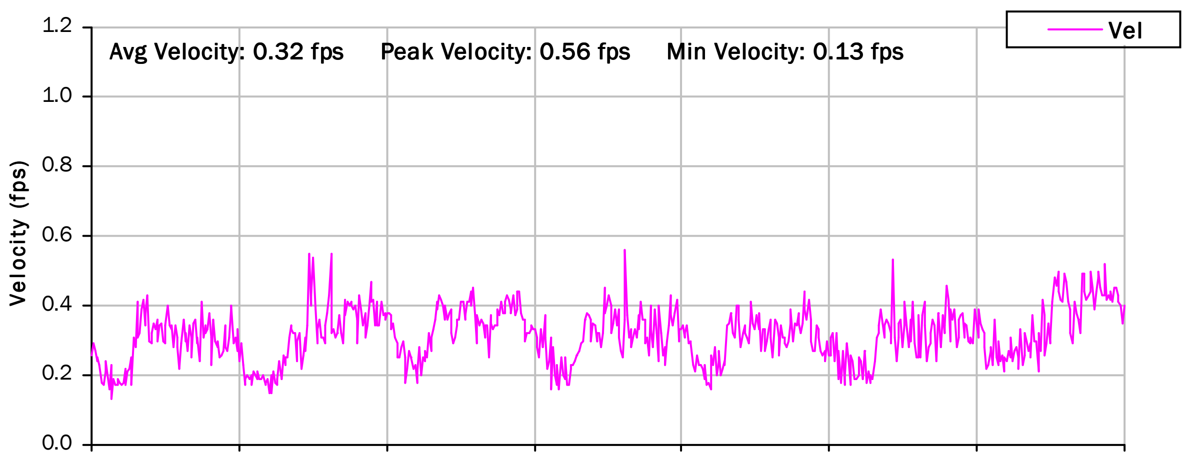
SITE 05
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

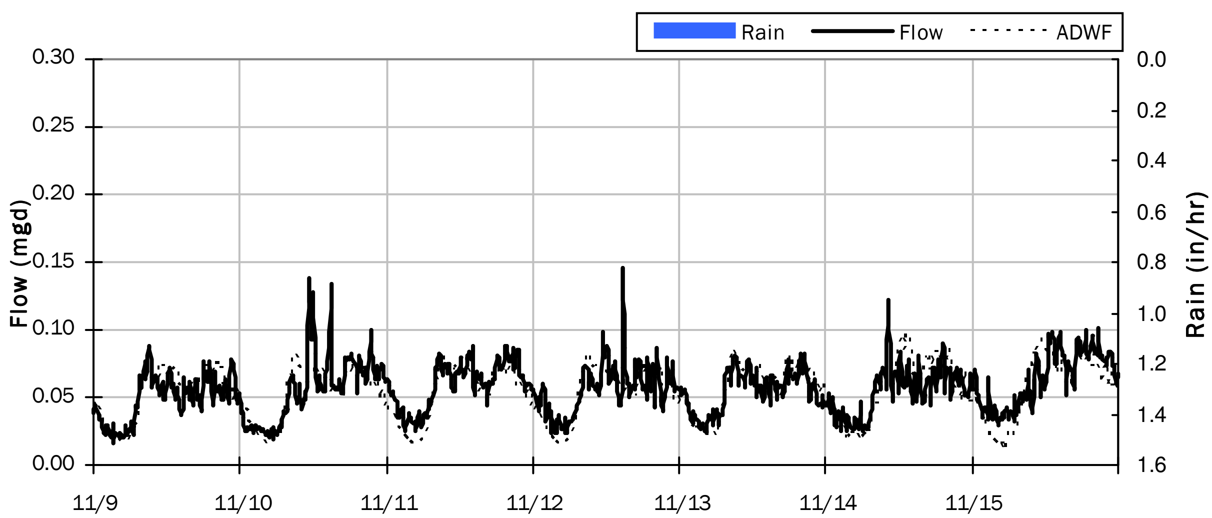


Avg Flow: 0.057 mgd Peak Flow: 0.116 mgd Min Flow: 0.015 mgd

SITE 05
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020

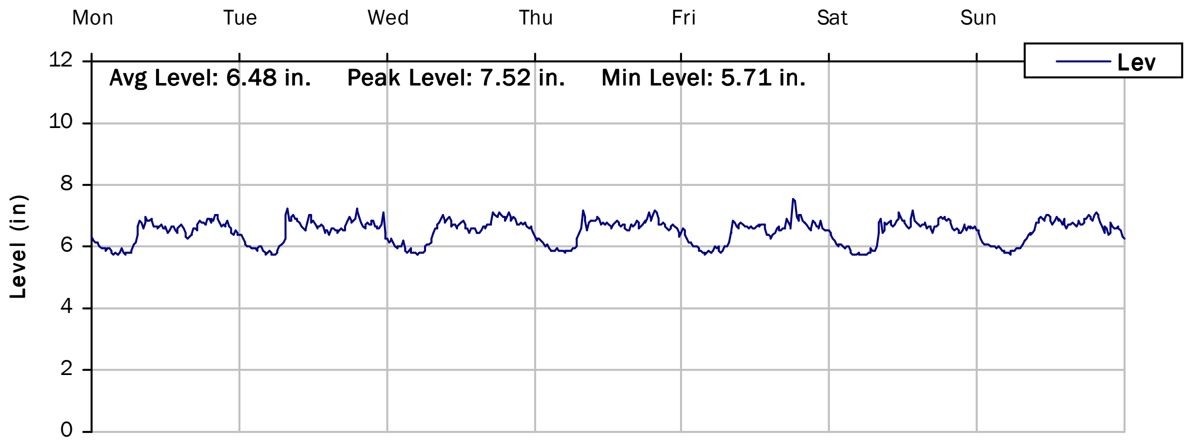


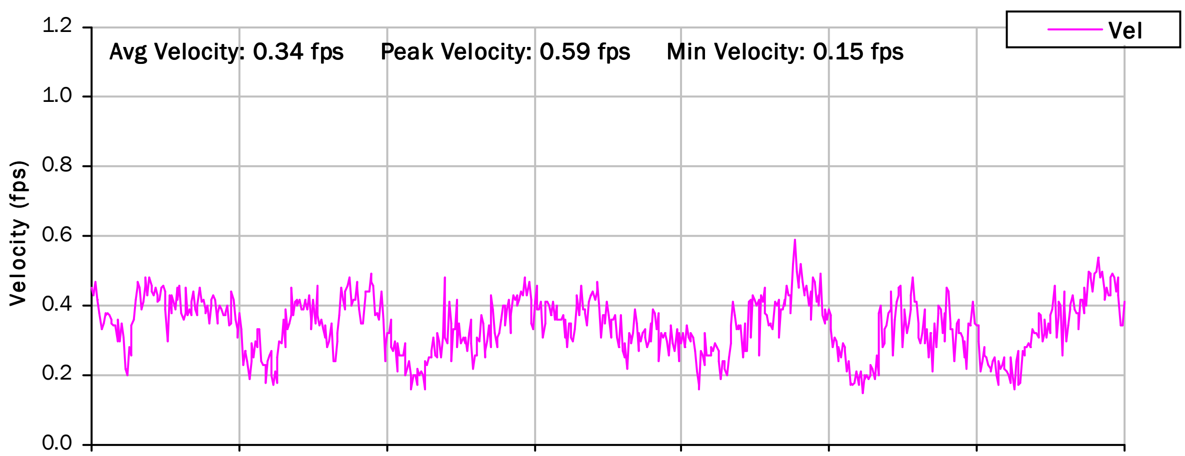


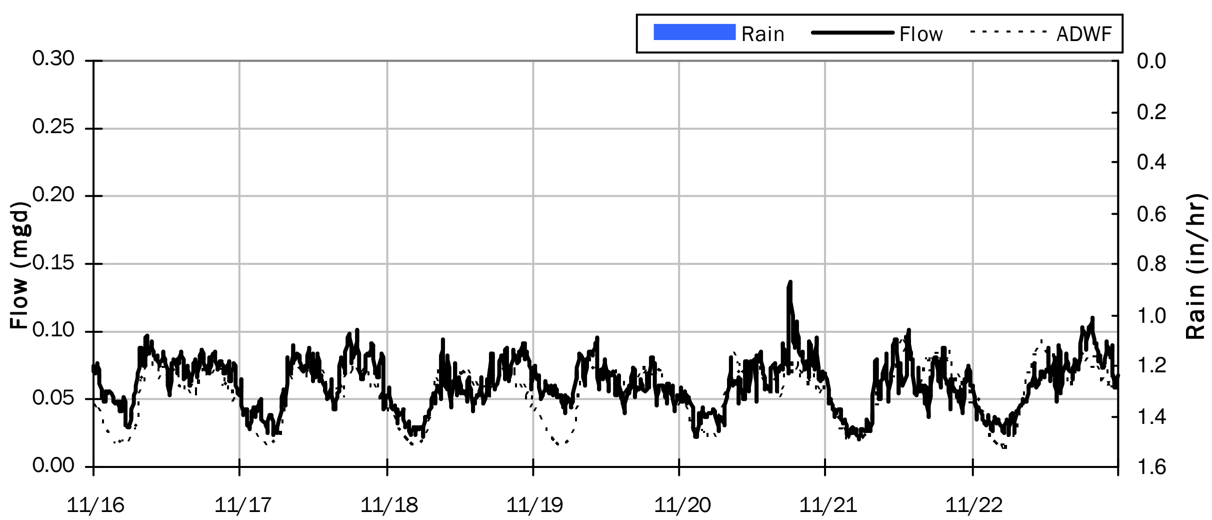


Avg Flow: 0.056 mgd Peak Flow: 0.145 mgd Min Flow: 0.017 mgd

SITE 05
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020

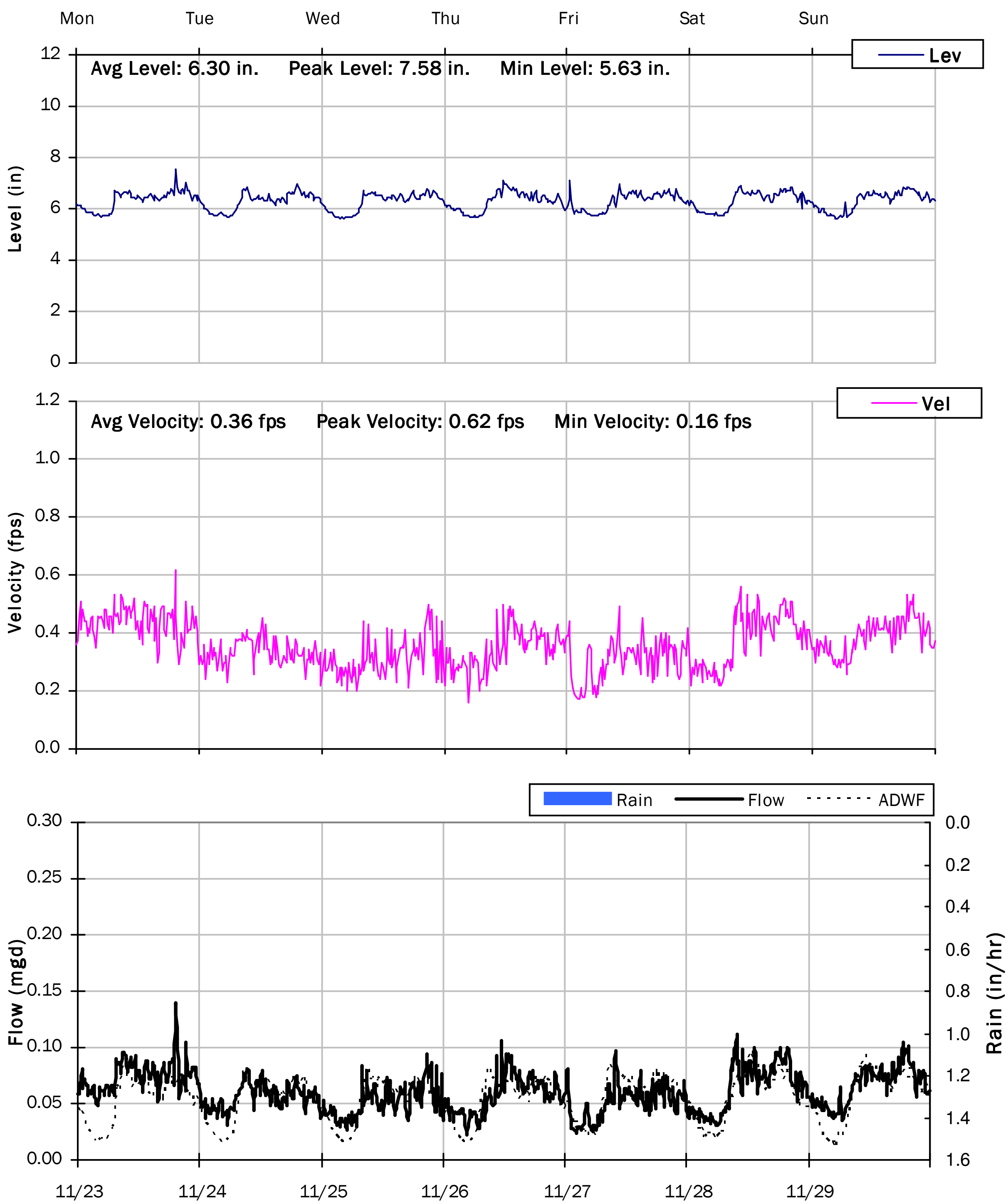






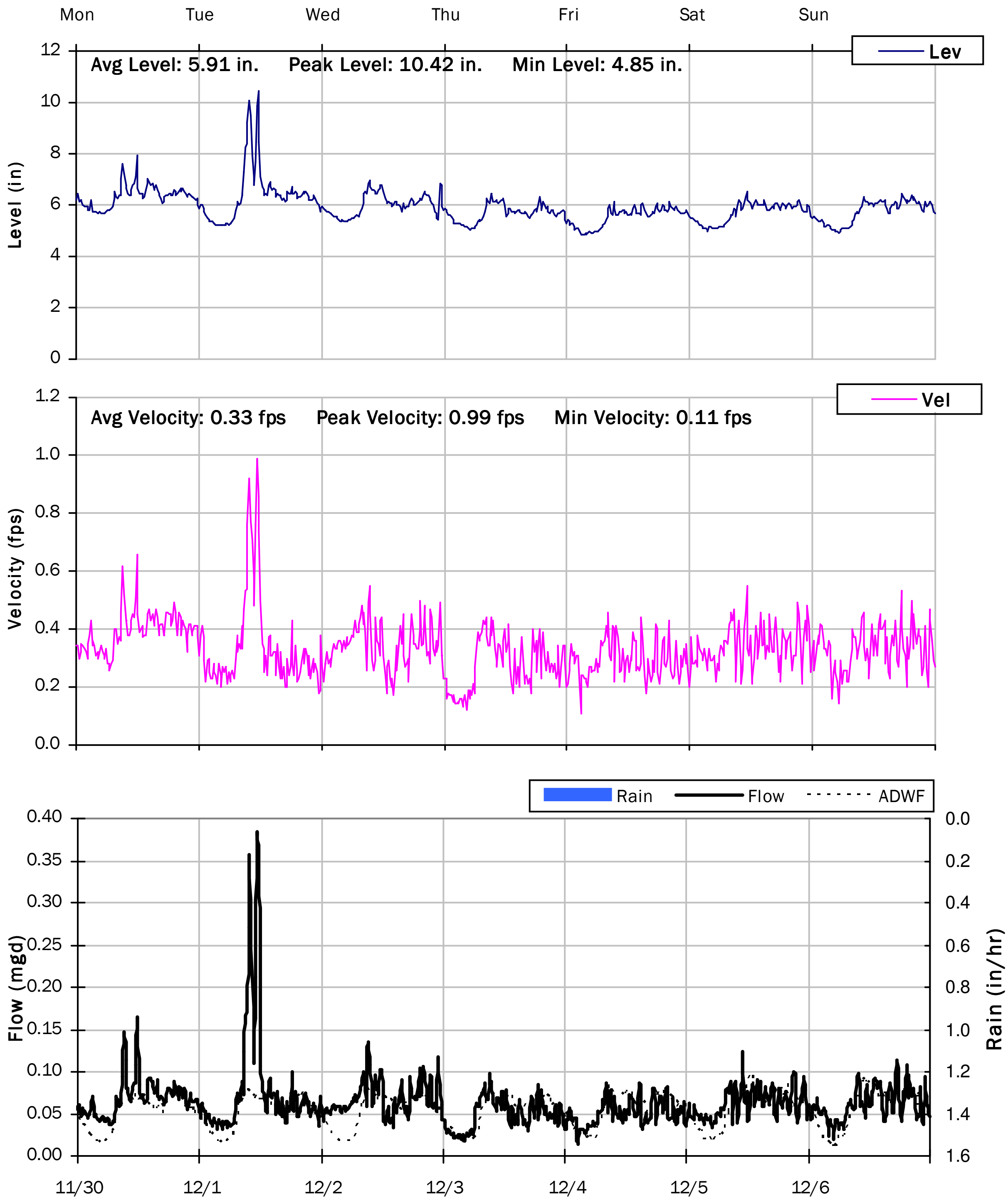
Avg Flow: 0.062 mgd **Peak Flow: 0.136 mgd** **Min Flow: 0.021 mgd**

SITE 05
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



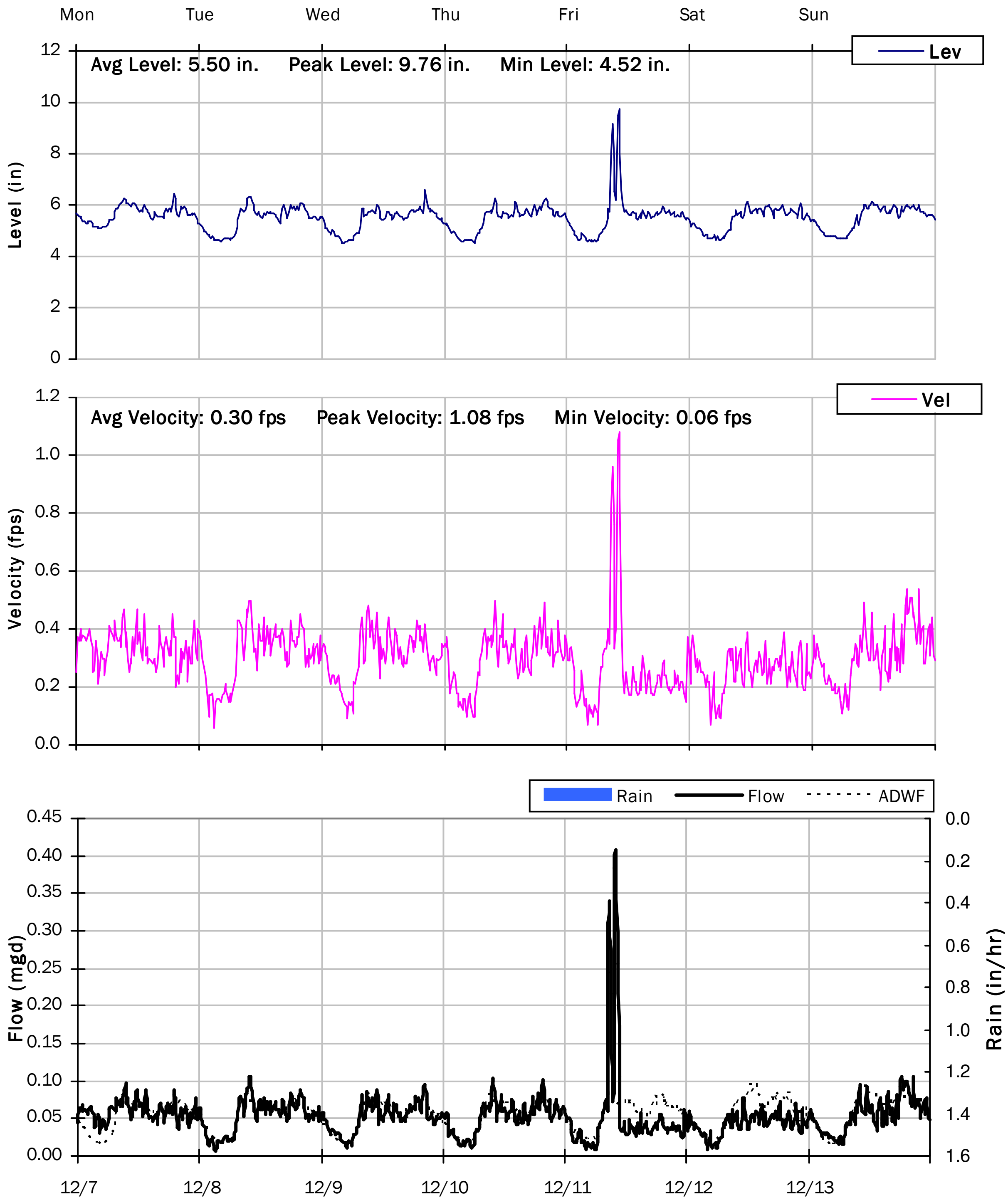
Avg Flow: 0.061 mgd **Peak Flow: 0.138 mgd** **Min Flow: 0.022 mgd**

SITE 05
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



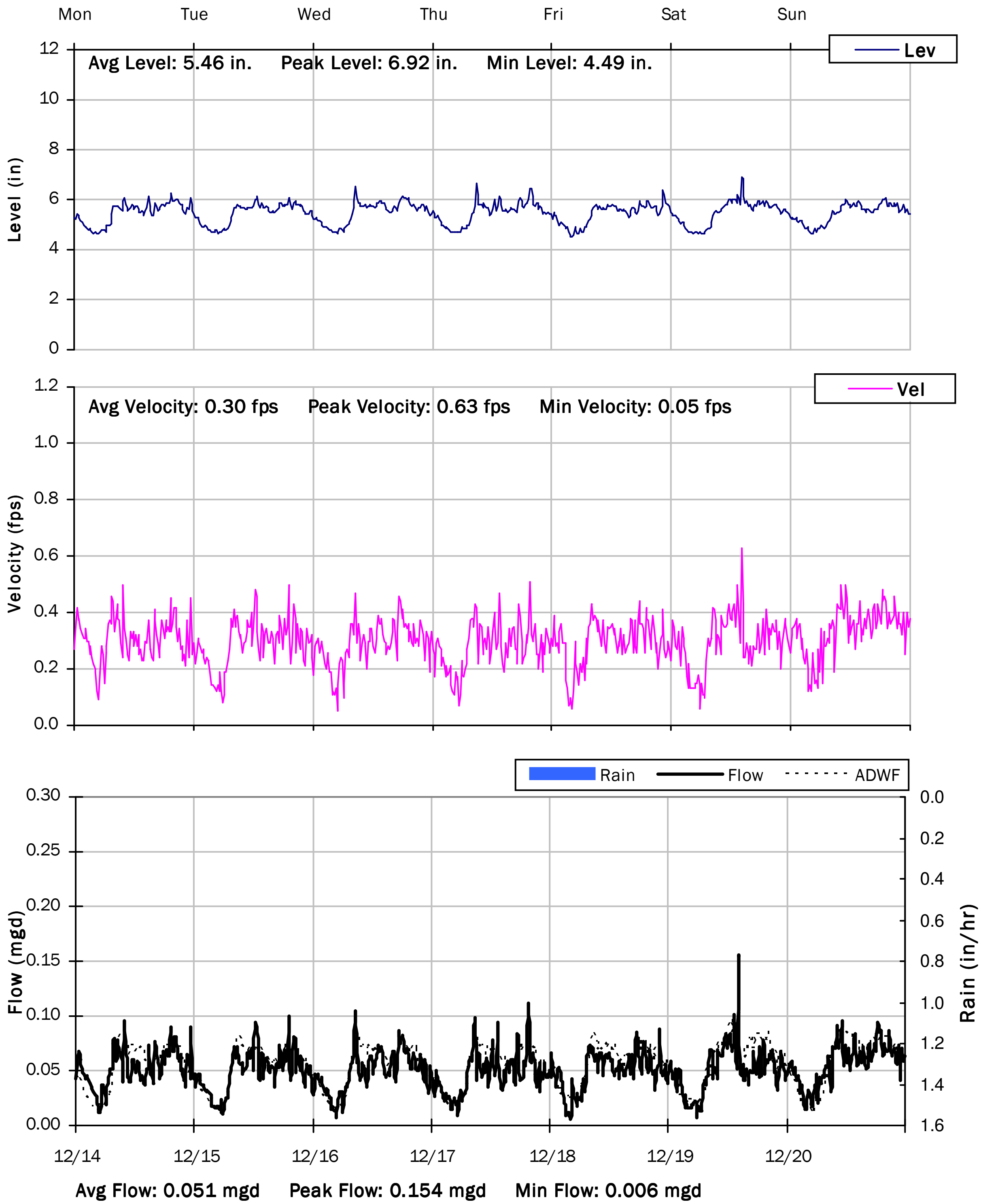
Avg Flow: 0.063 mgd Peak Flow: 0.380 mgd Min Flow: 0.014 mgd

SITE 05
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020



Avg Flow: 0.053 mgd **Peak Flow: 0.408 mgd** **Min Flow: 0.007 mgd**

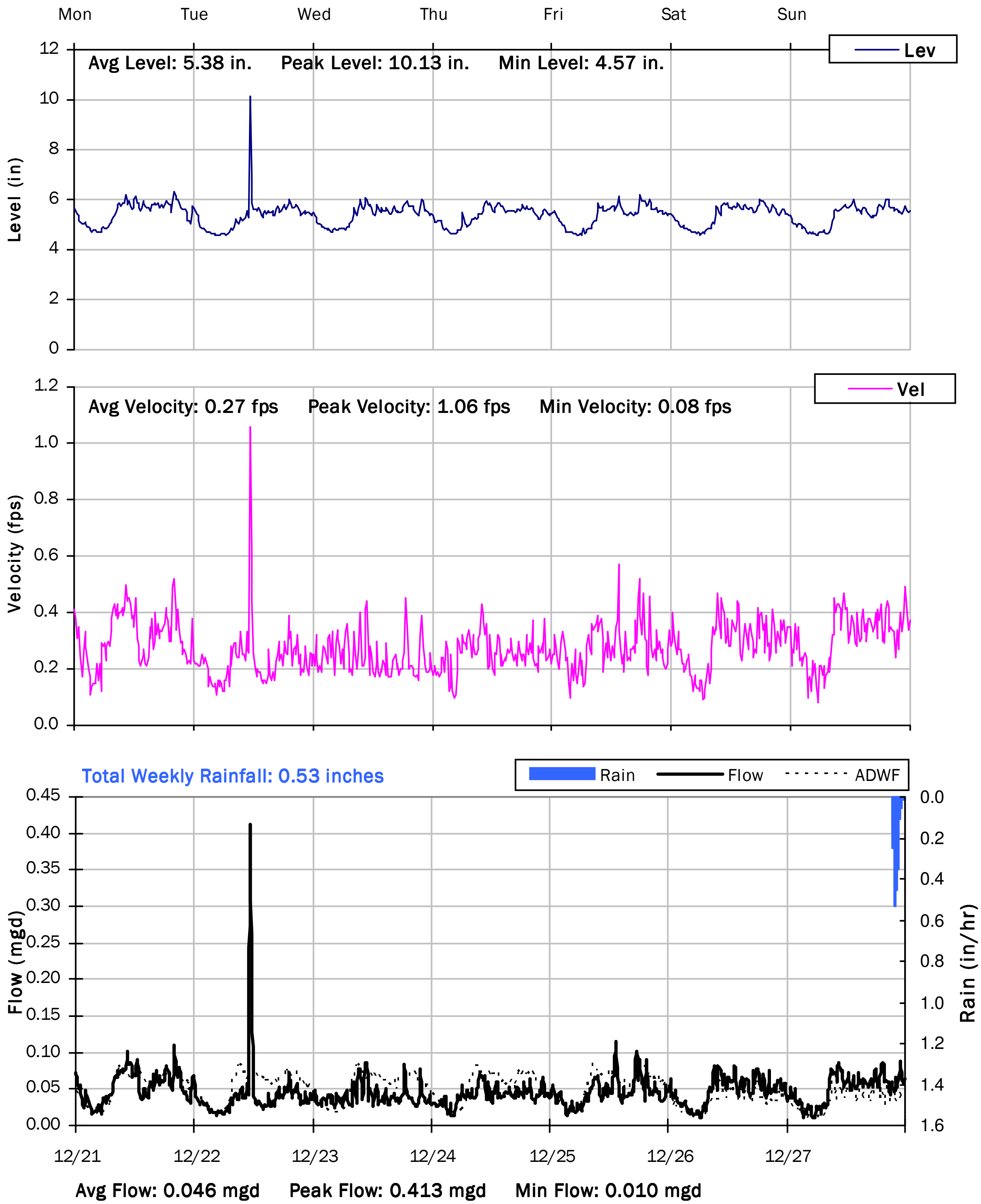
SITE 05
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020



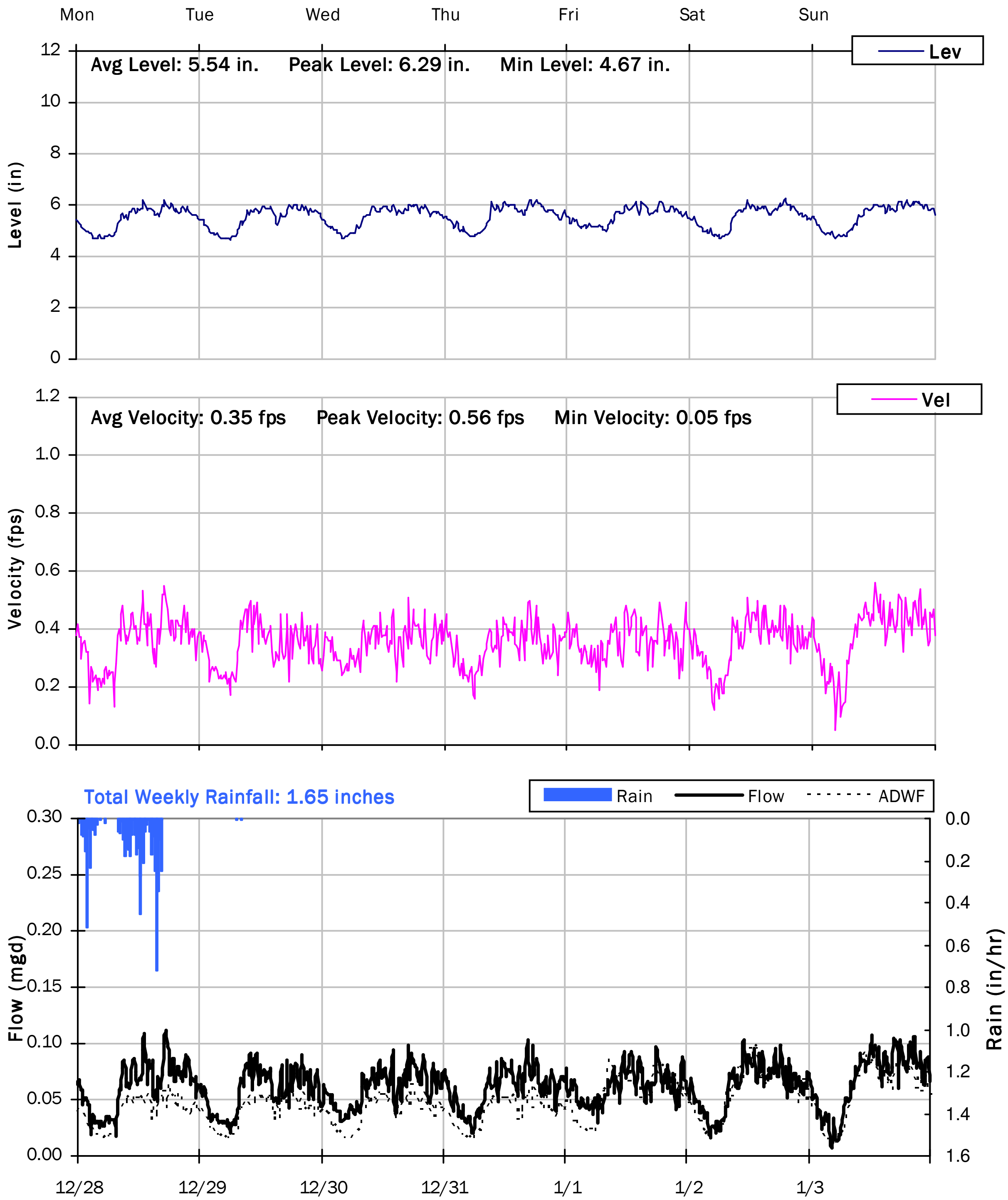
SITE 05

Weekly Level, Velocity and Flow Hydrographs

12/21/2020 to 12/28/2020



SITE 05
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

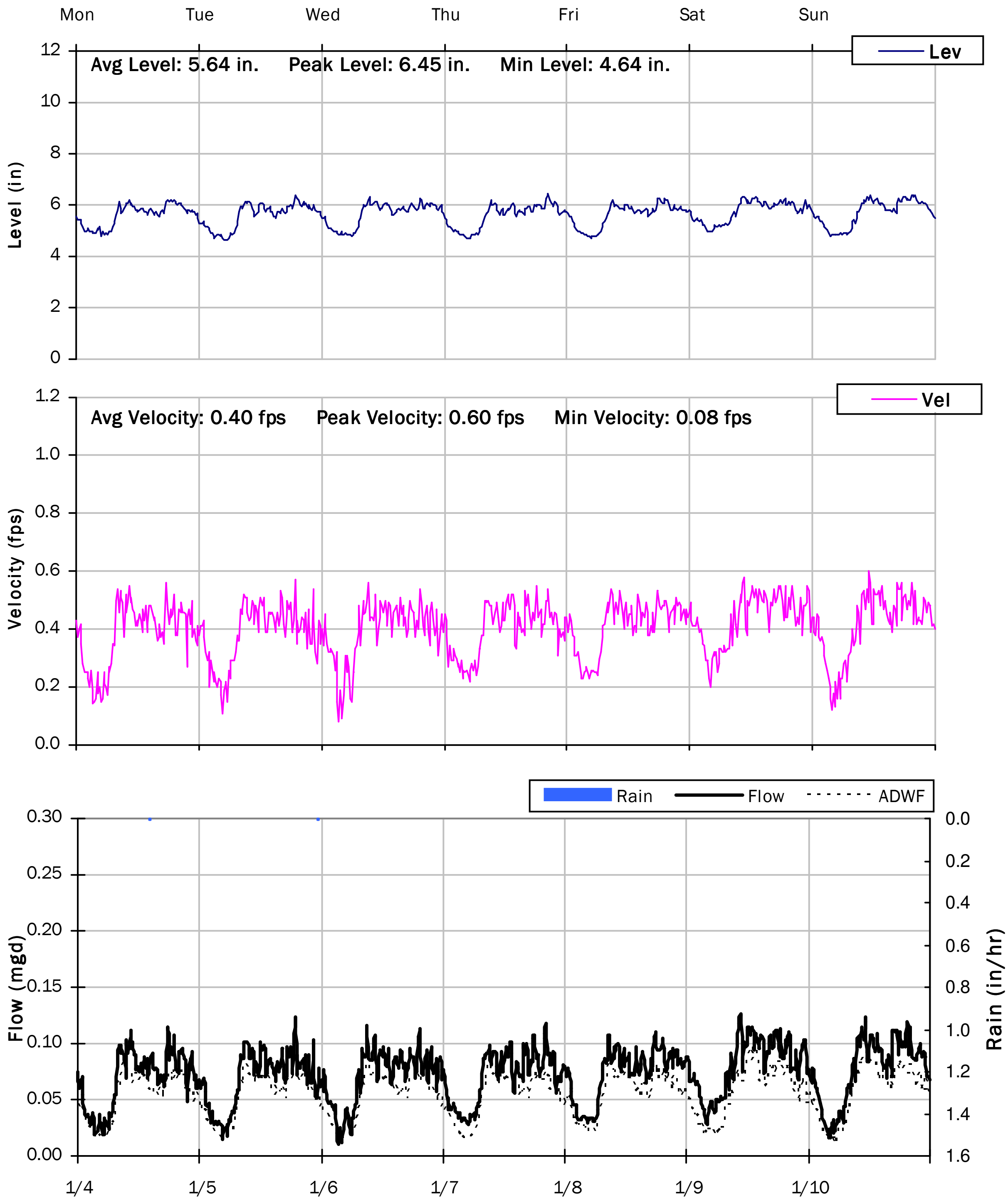


Avg Flow: 0.062 mgd **Peak Flow: 0.112 mgd** **Min Flow: 0.007 mgd**

SITE 05

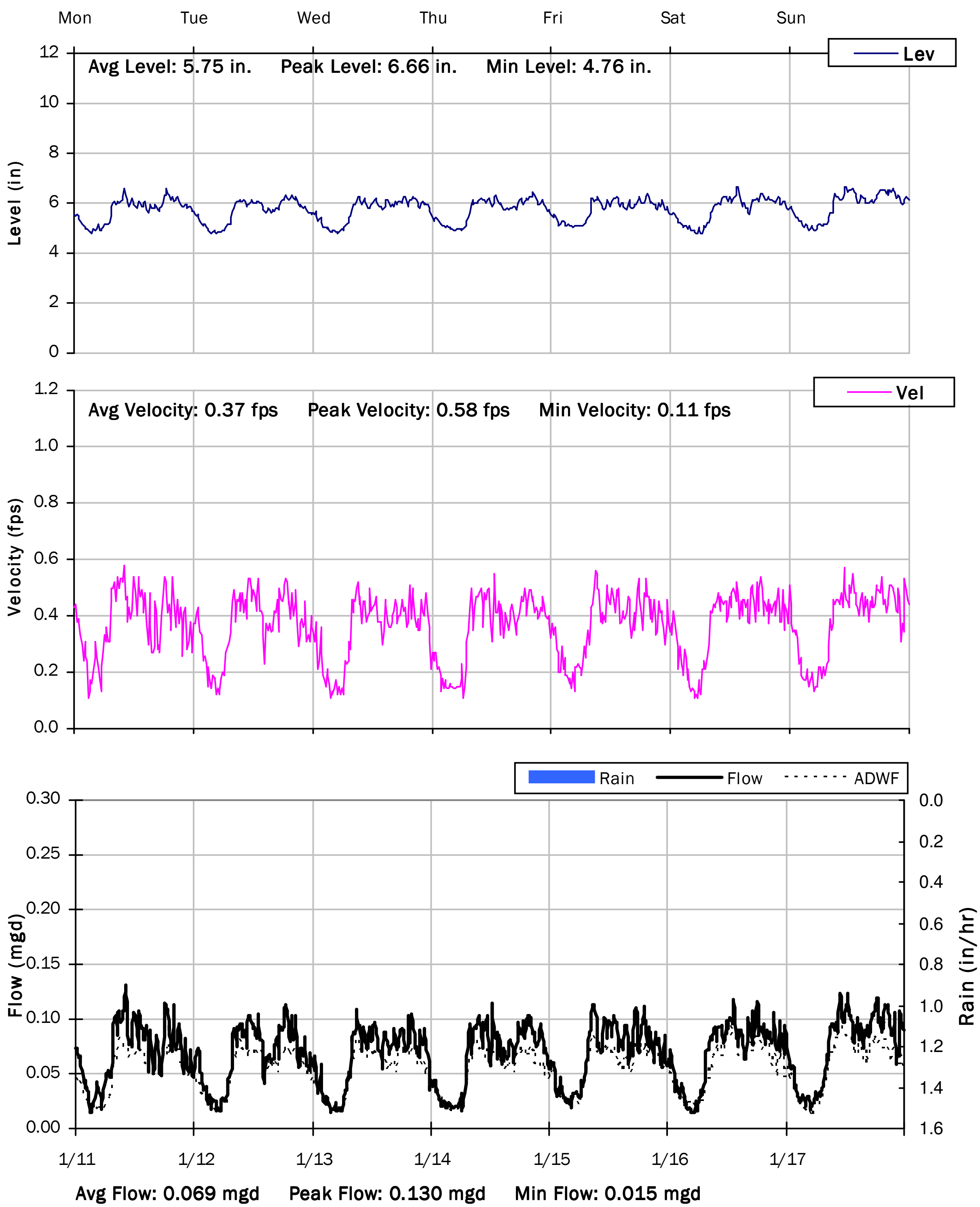
Weekly Level, Velocity and Flow Hydrographs

1/4/2021 to 1/11/2021

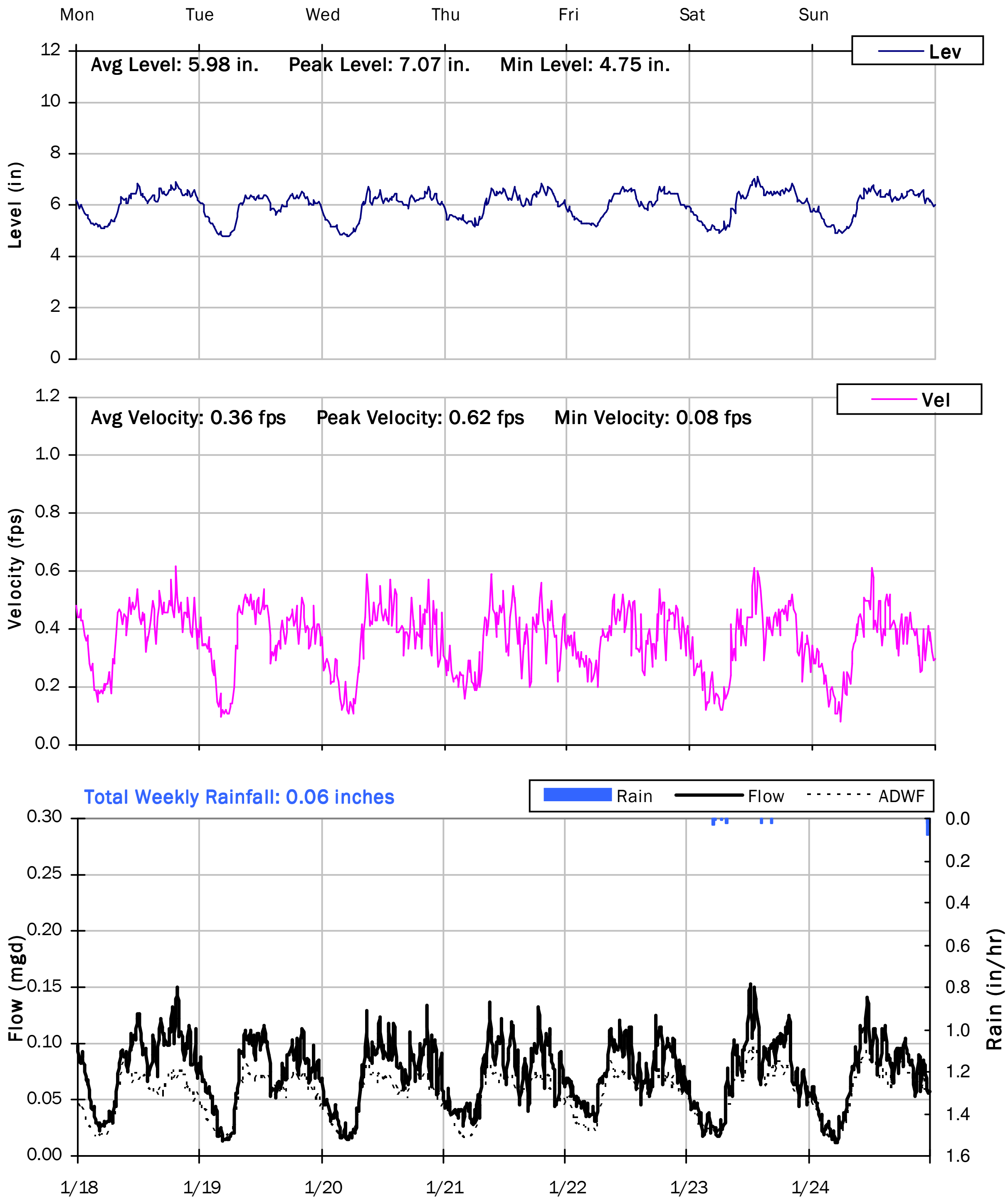


Avg Flow: 0.073 mgd Peak Flow: 0.124 mgd Min Flow: 0.011 mgd

SITE 05
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

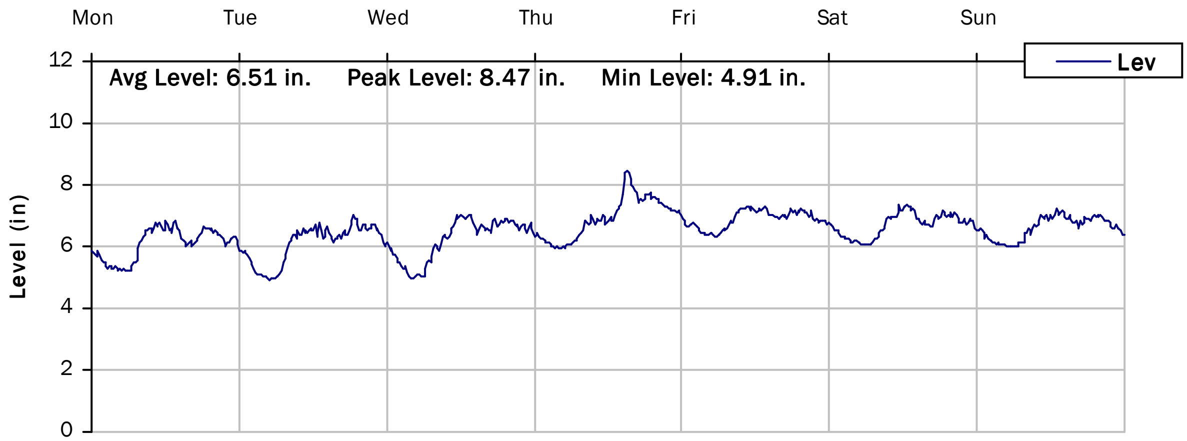


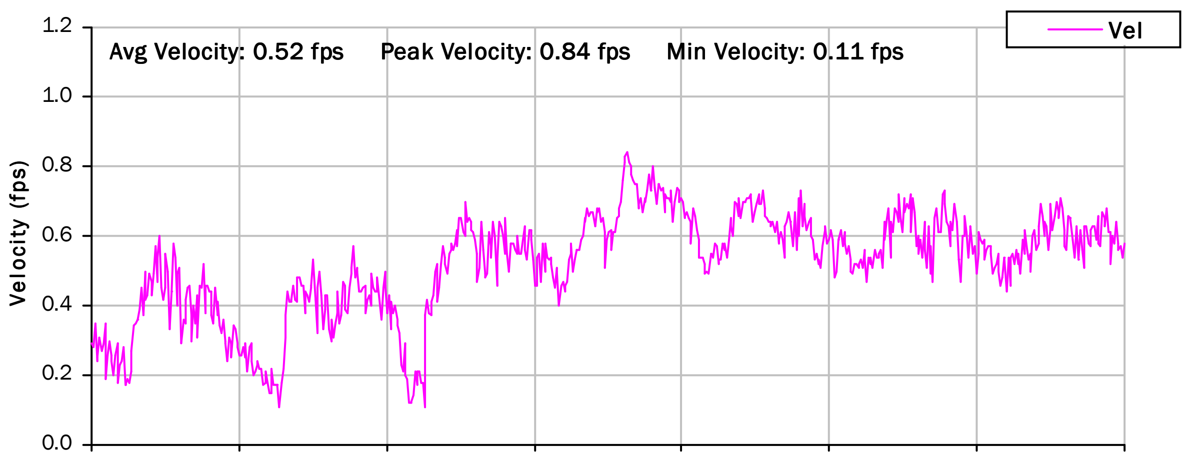
SITE 05
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

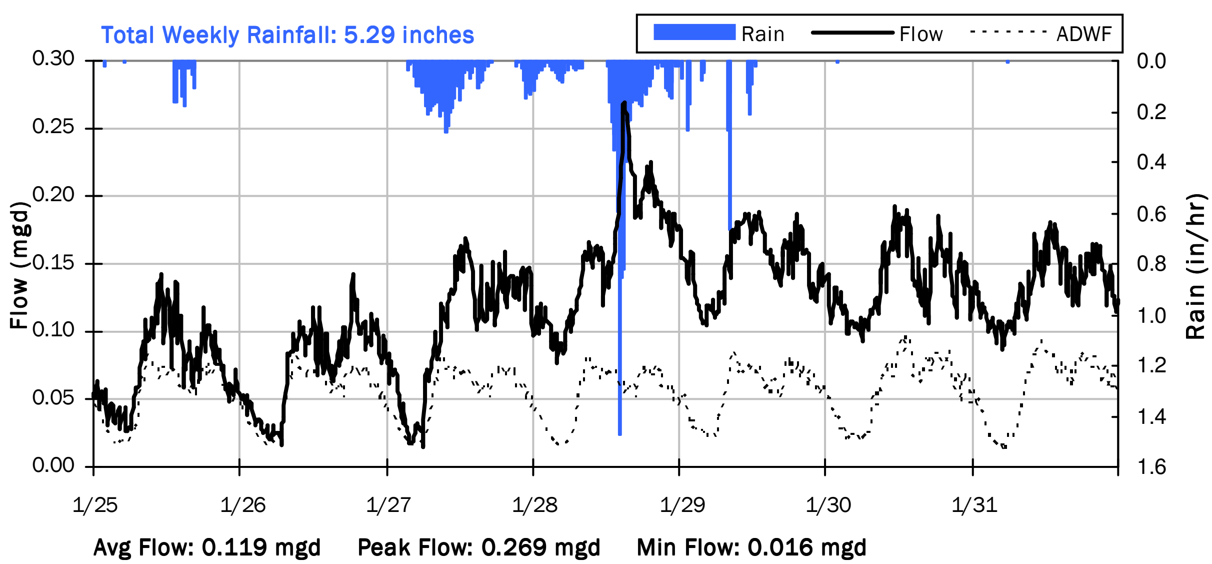


Avg Flow: 0.073 mgd Peak Flow: 0.152 mgd Min Flow: 0.012 mgd

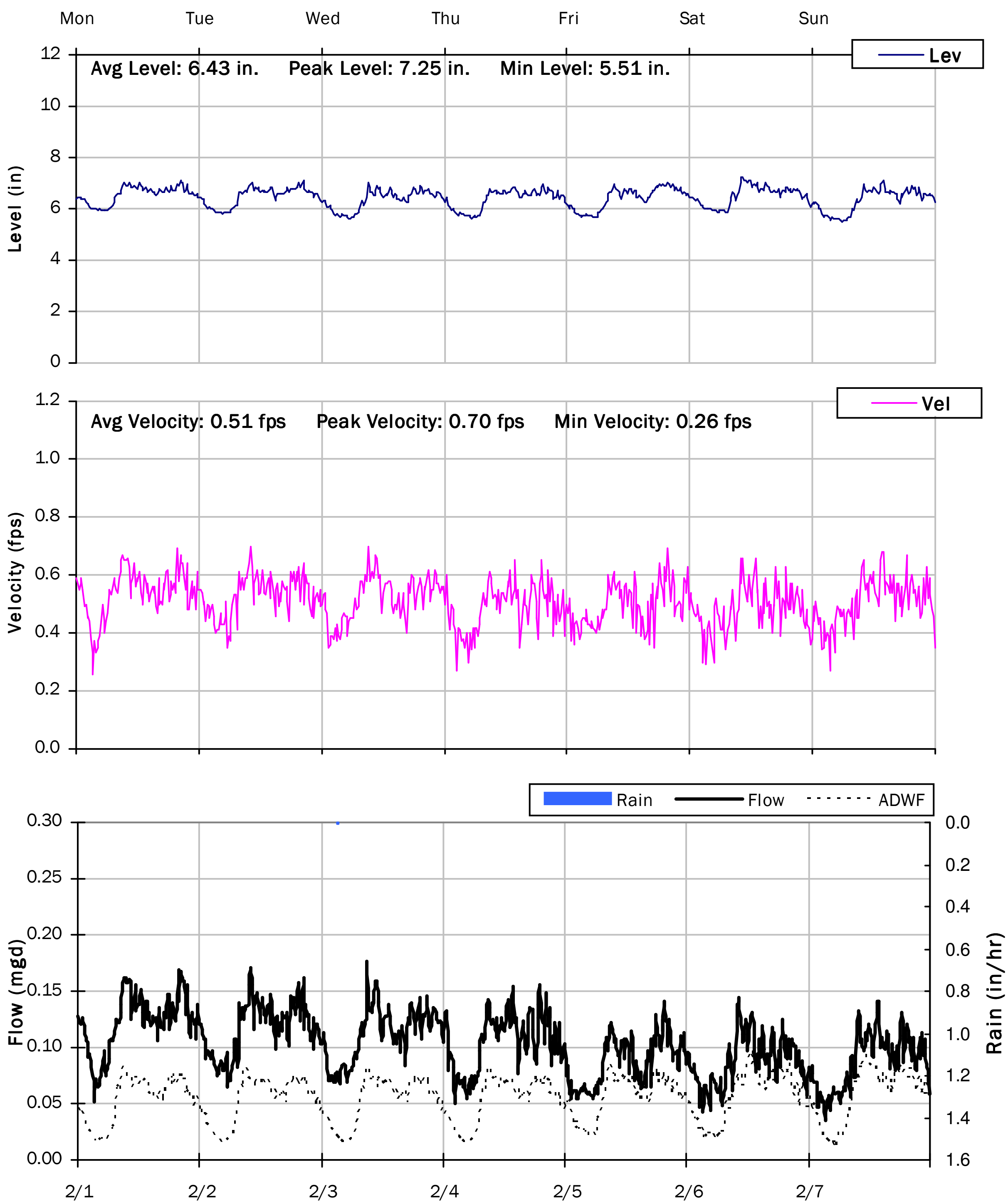
SITE 05
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021







SITE 05
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.103 mgd **Peak Flow: 0.176 mgd** **Min Flow: 0.035 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

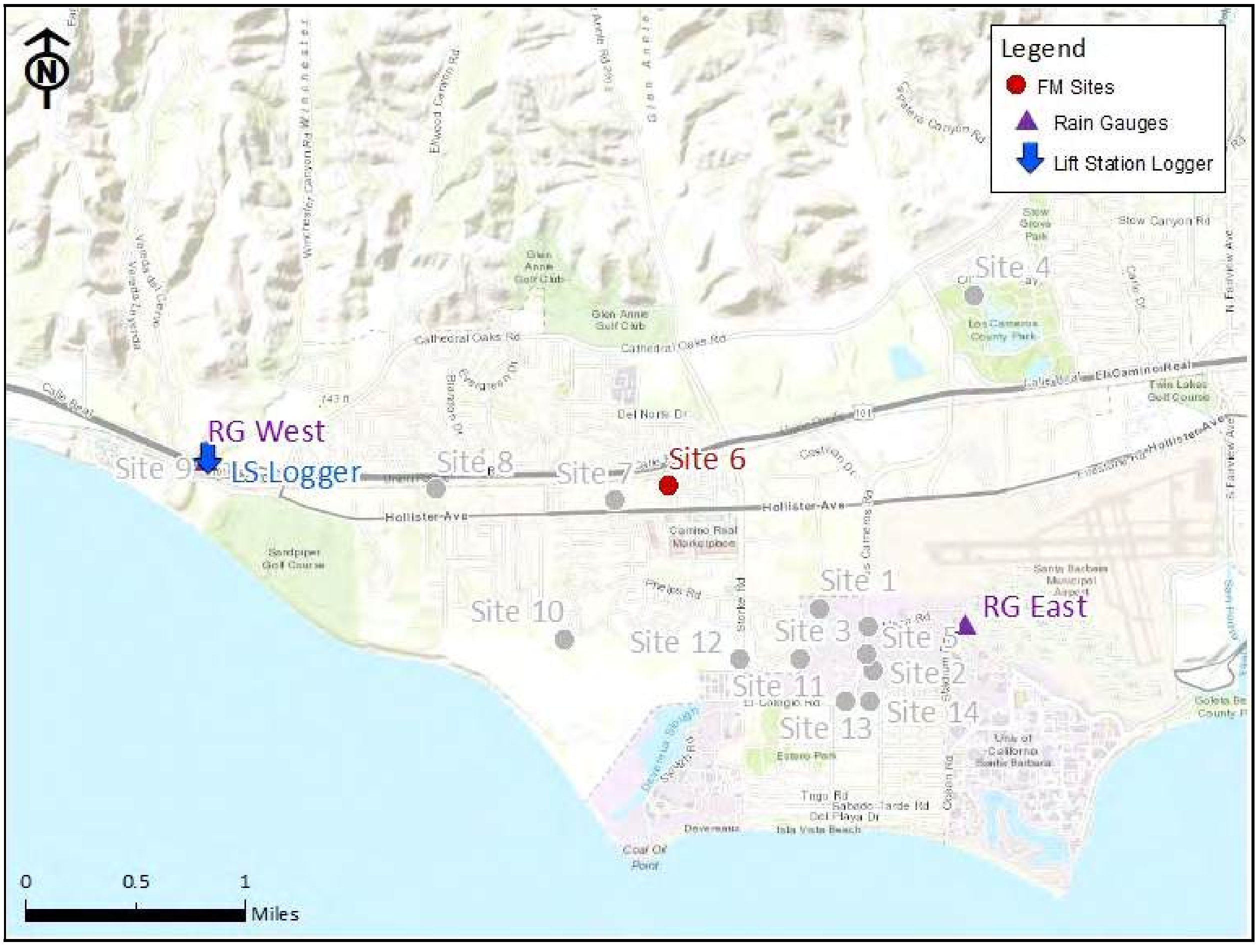
November 3, 2020 - February 7, 2021

Monitoring Site: Site 06

City Manhole: 73-03-55

Location: Parking lot of Hollister Village

Data Summary Report



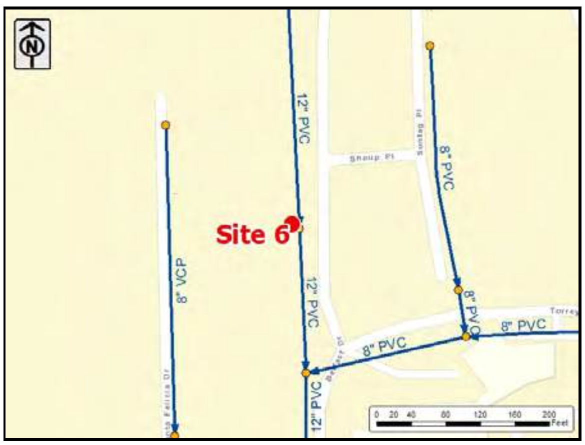
Vicinity Map: Site 06

SITE 06

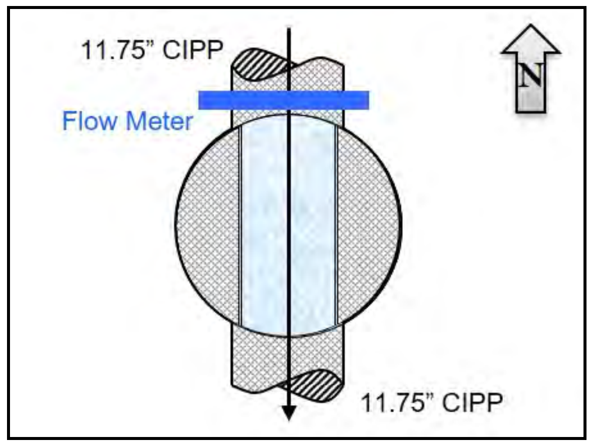
Site Information

Location:	Parking lot of Hollister Village
City Manhole:	73-03-55
Coordinates:	119.8754° W, 34.4317° N
Rim Elevation (Earth):	56 feet
Pipe Diameter:	11.75 inches
ADWF:	0.128 mgd
Peak Measured Flow:	0.547 mgd

Satellite Map

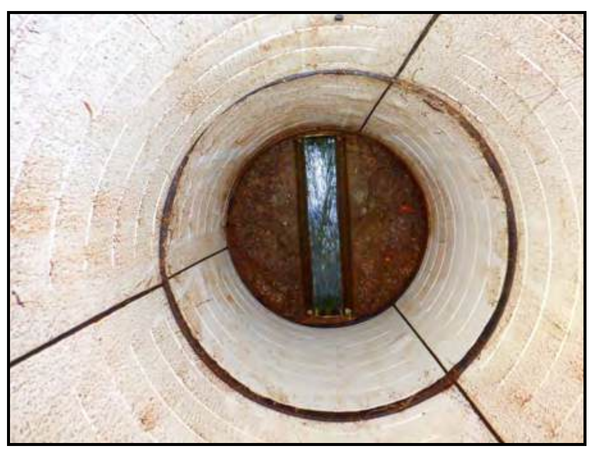


Sanitary Map



Flow Sketch

Street View



Plan View

SITE 06

Additional Site Photos

Monitored North Influent

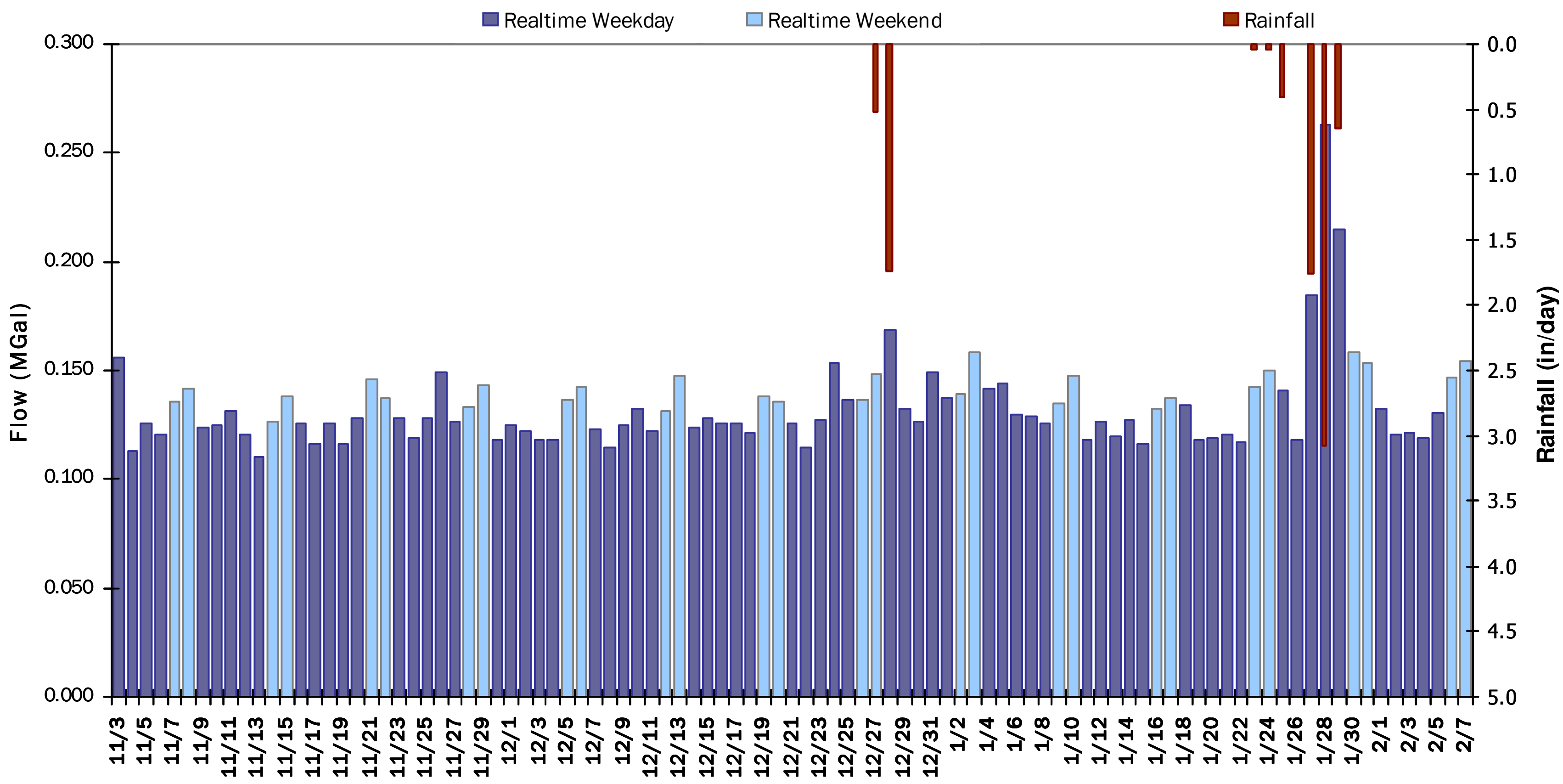
South Effluent

SITE 06

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.134 MGal **Peak Daily Flow: 0.263 MGal** **Min Daily Flow: 0.110 MGal**

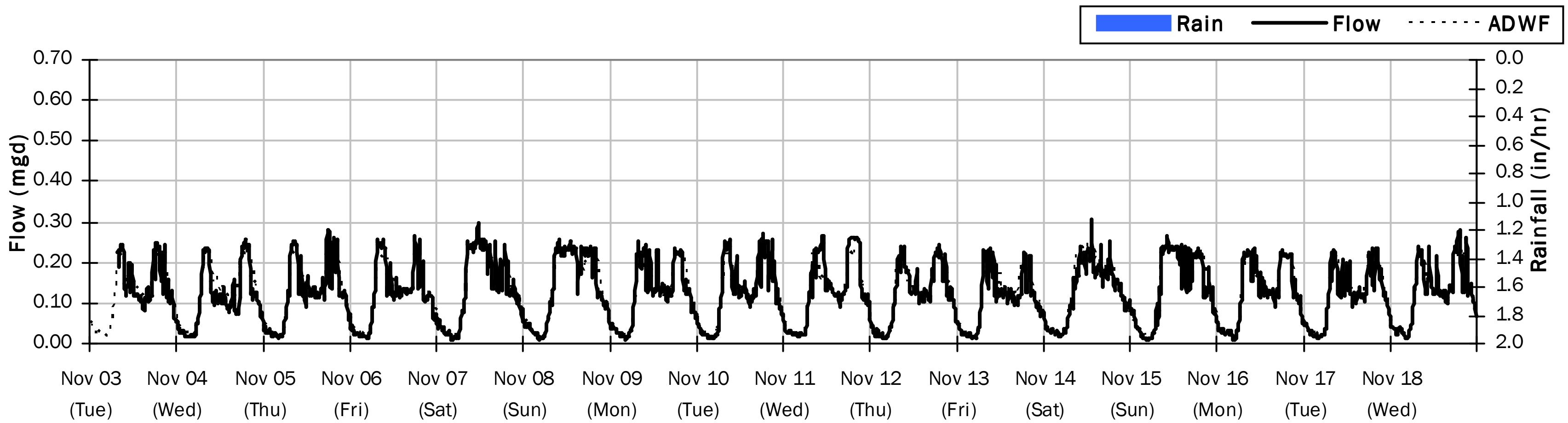
Total Period Rainfall: 8.22 inches

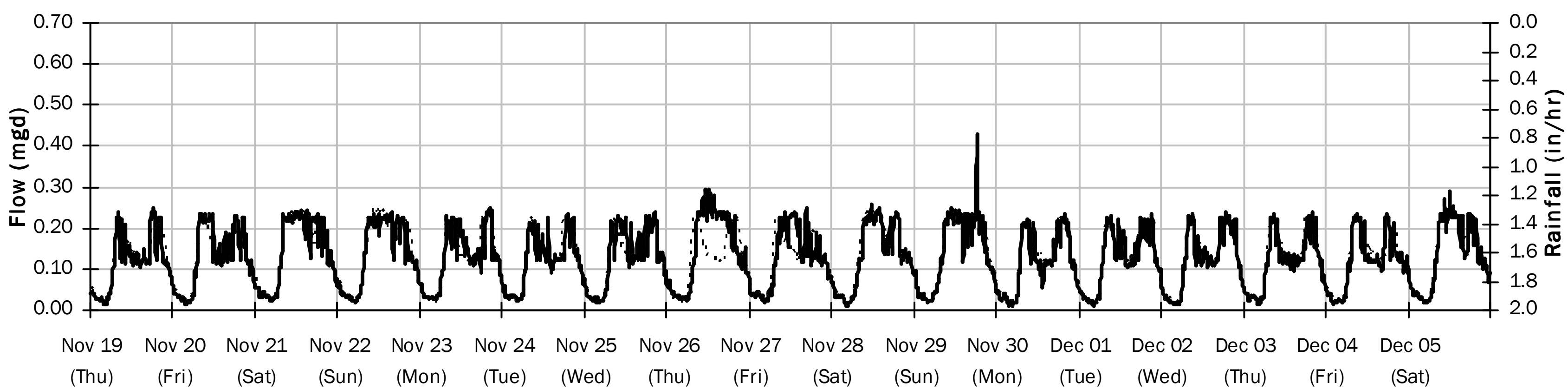


SITE 06

Flow Summary: 11/3/2020 to 12/5/2020

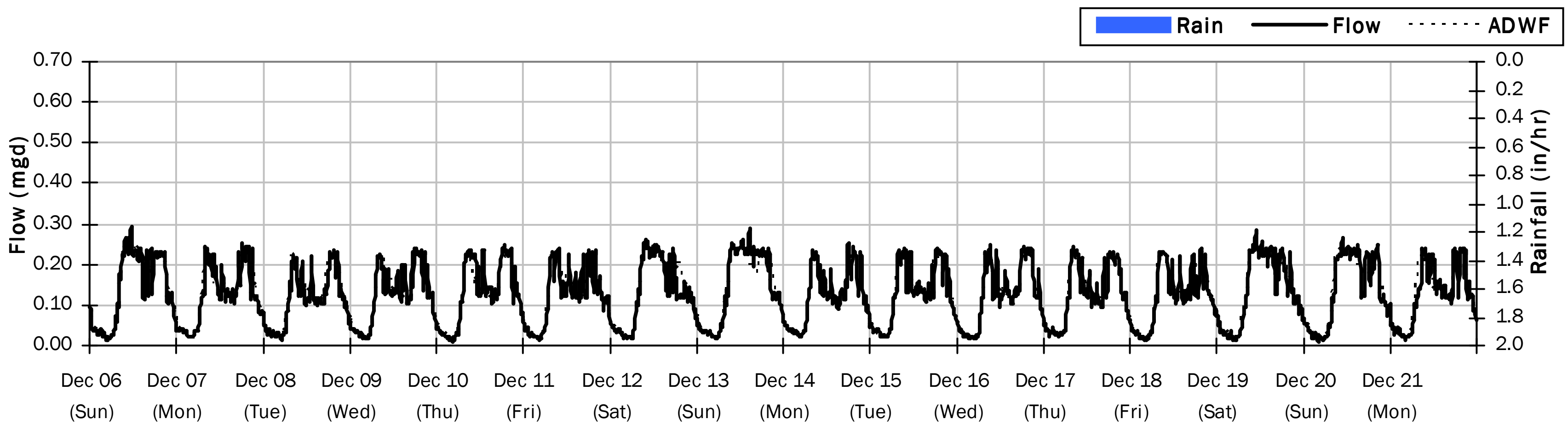
Total Period Rainfall: 0.00 inches   **Avg Flow: 0.128 mgd   Peak Flow: 0.428 mgd   Min Flow: 0.008 mgd**

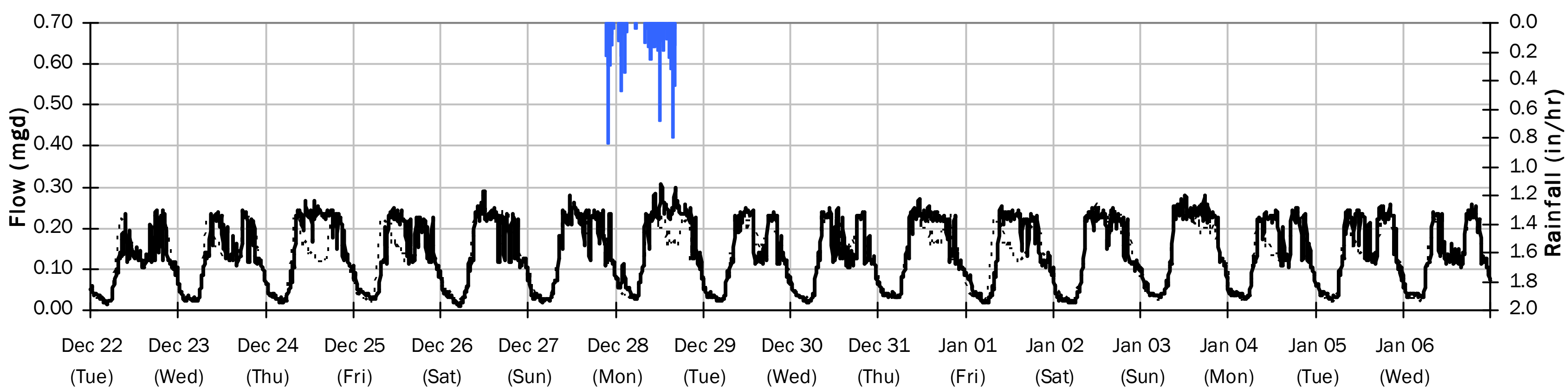




SITE 06
Flow Summary: 12/6/2020 to 1/6/2021

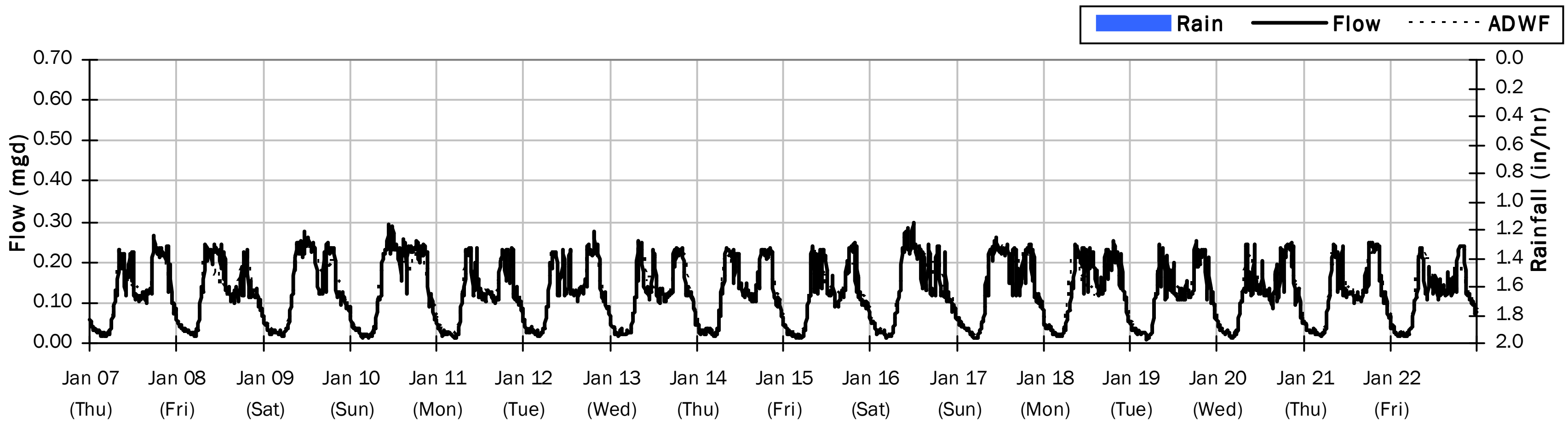
Total Period Rainfall: 2.26 inches   Avg Flow: 0.135 mgd   Peak Flow: 0.305 mgd   Min Flow: 0.010 mgd

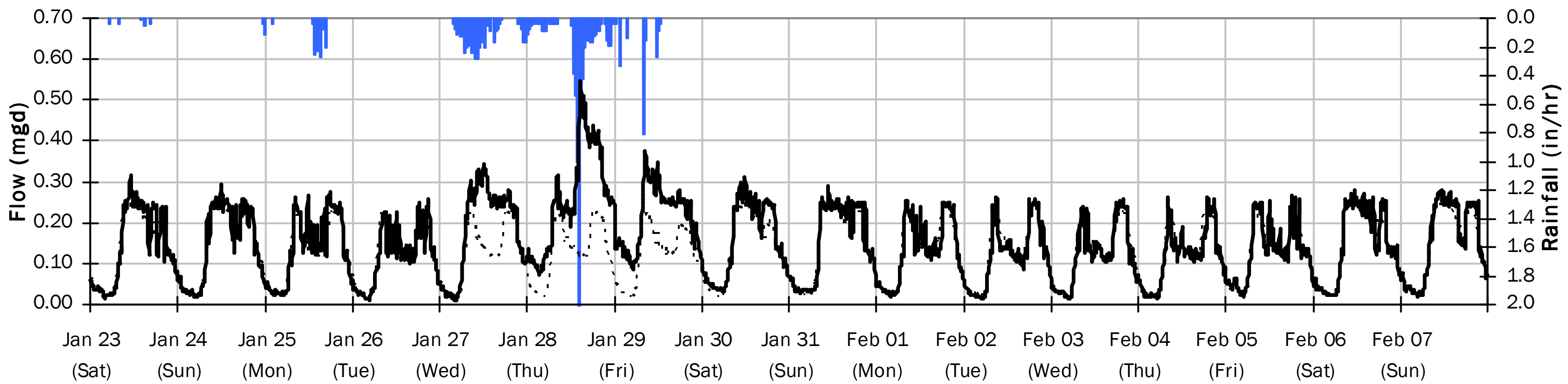




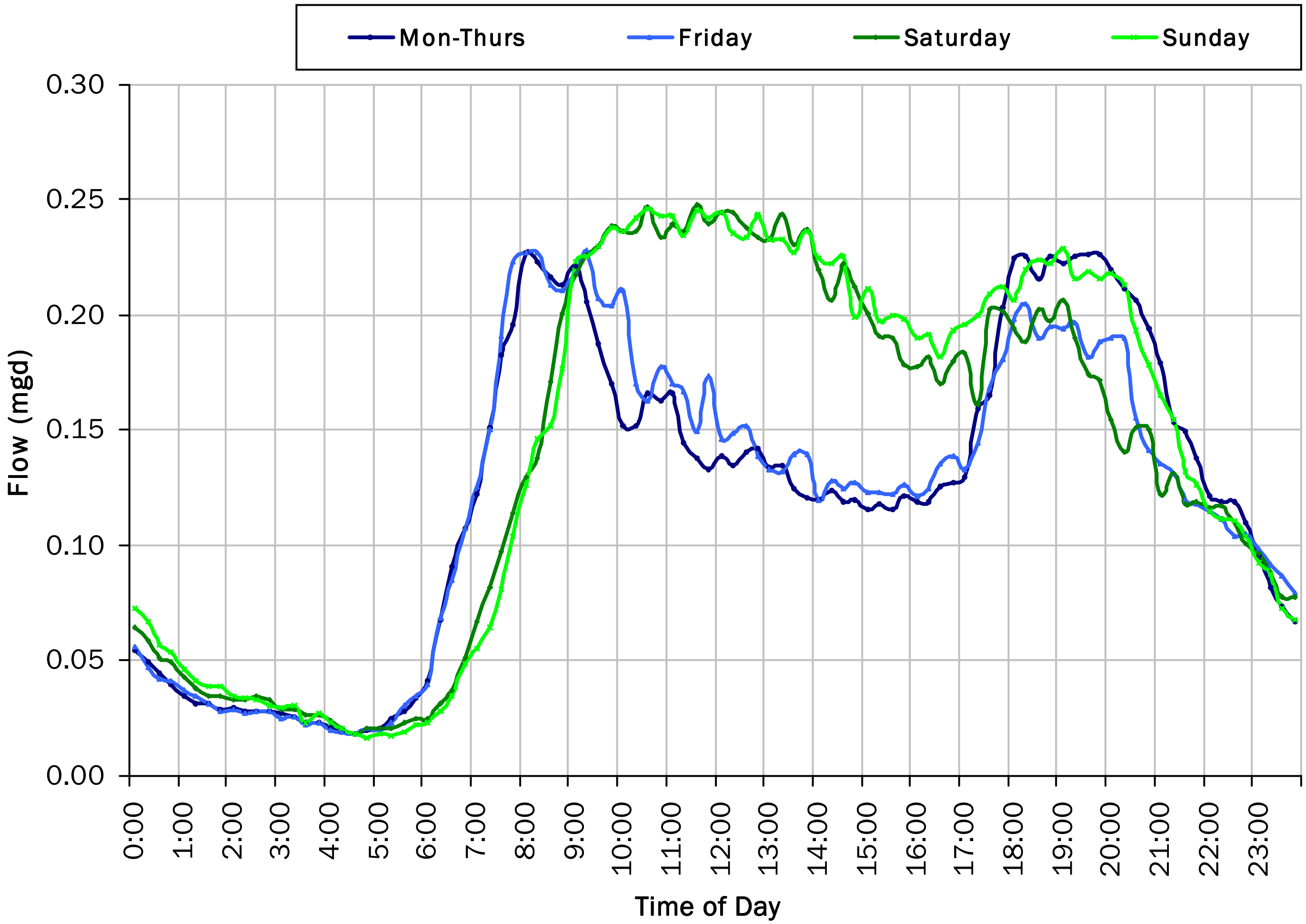
SITE 06
Flow Summary: 1/7/2021 to 2/7/2021

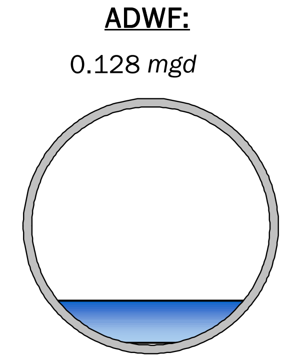
Total Period Rainfall: 5.96 inches   **Avg Flow: 0.140 mgd**   **Peak Flow: 0.547 mgd**   **Min Flow: 0.009 mgd**





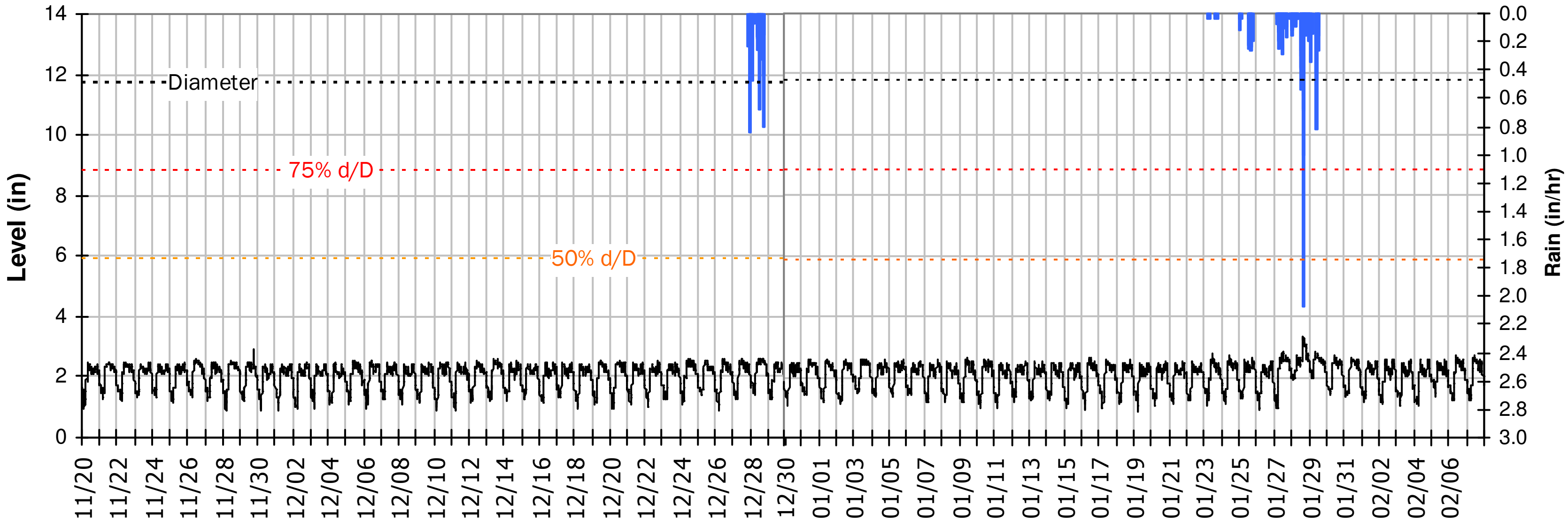
SITE 06
Average Dry Weather Flow Hydrographs

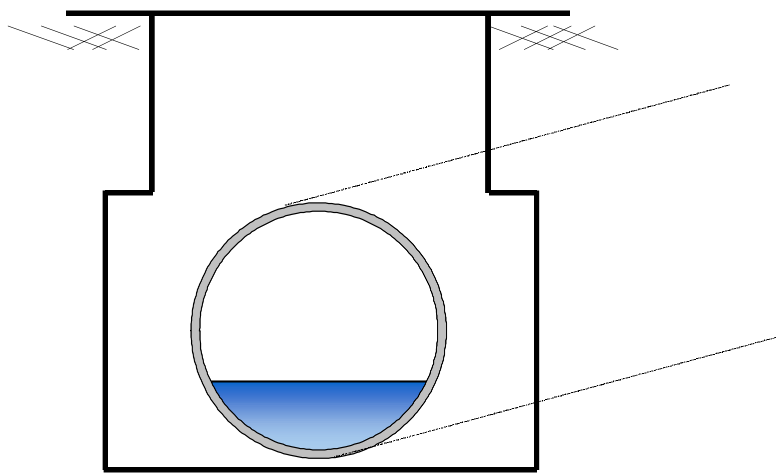




SITE 06
Site Capacity and Surcharge Summary

<u>Realtime Flow Levels with Rainfall Data over Monitoring Period</u>





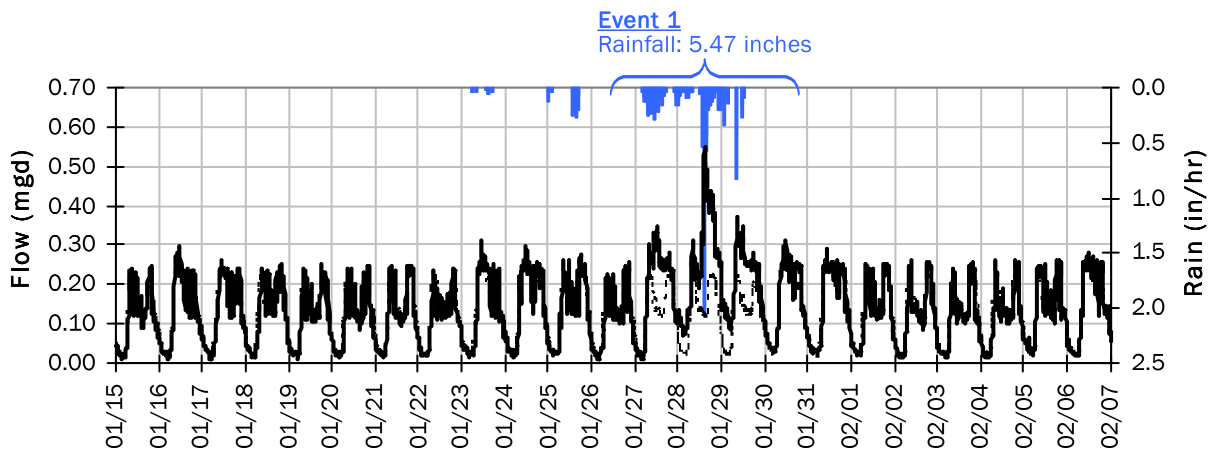
Pipe Diameter: 11.8 *inches*

Peak Measured Level: 3.35 *inches*

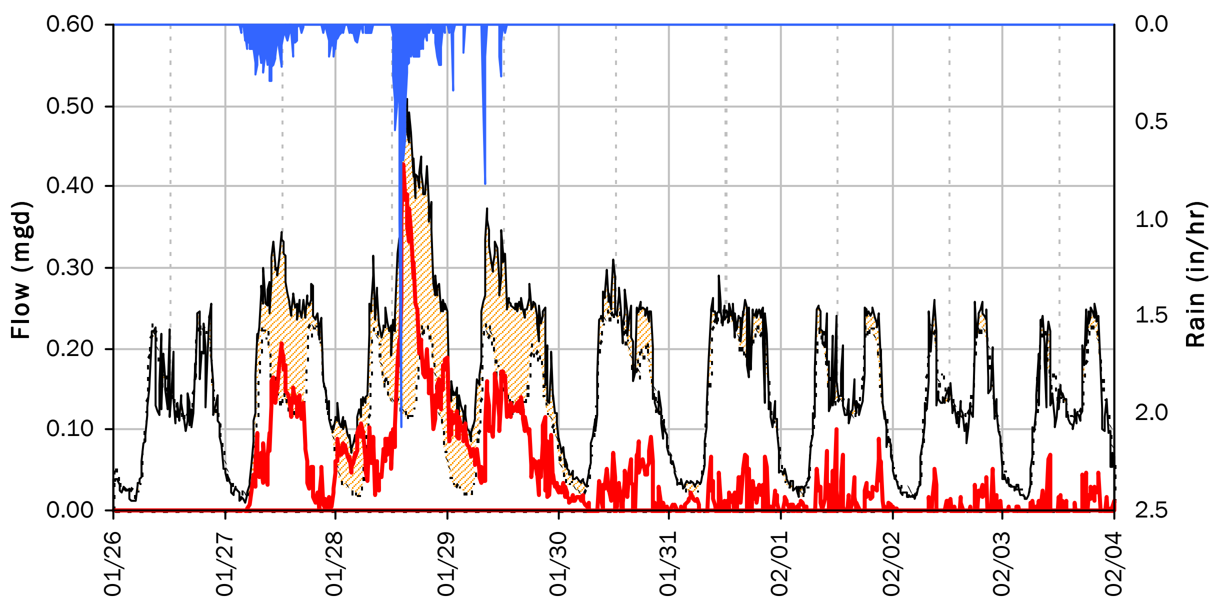
Peak d/D Ratio: 0.29

SITE 06
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



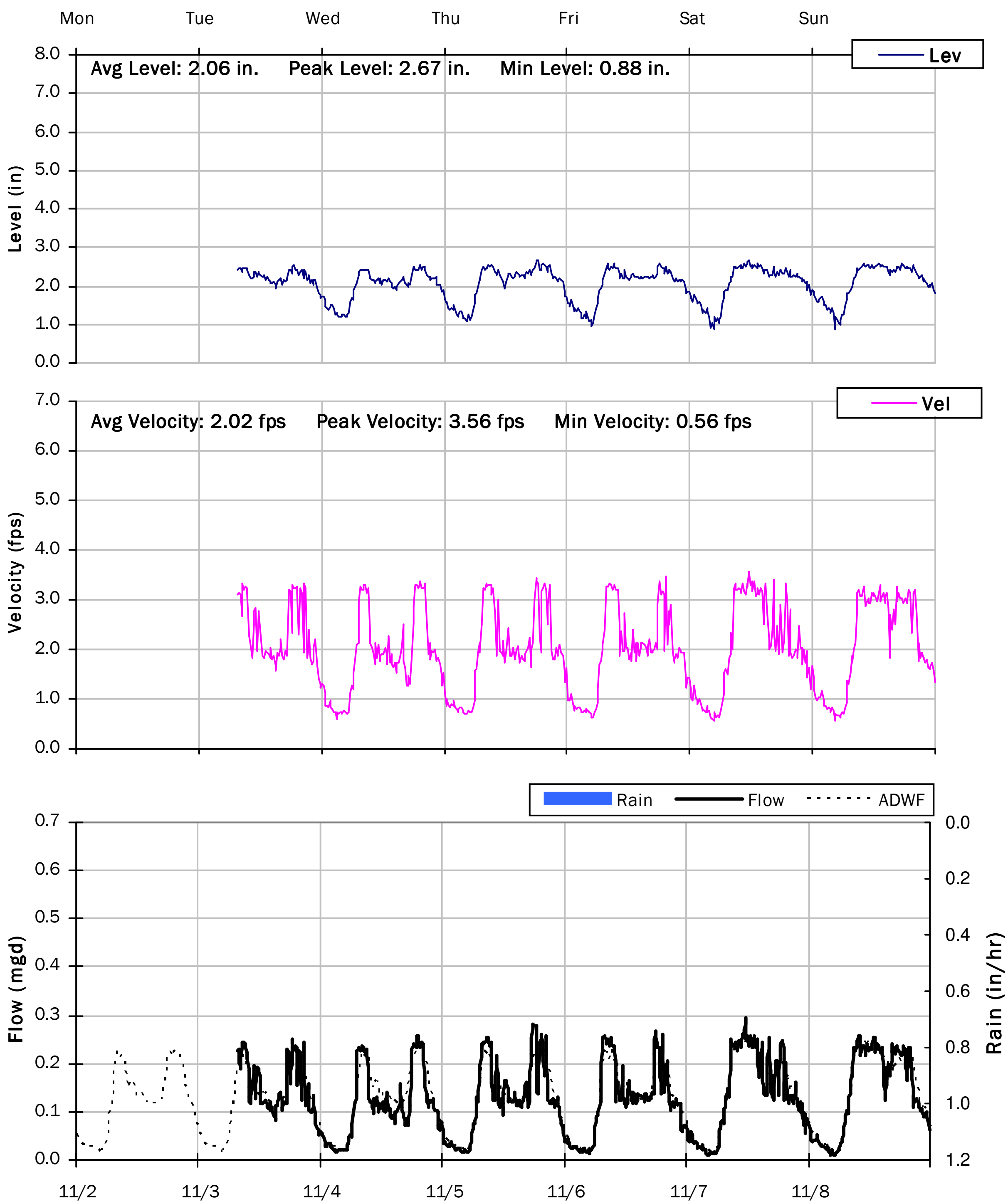
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 5.47 inches)

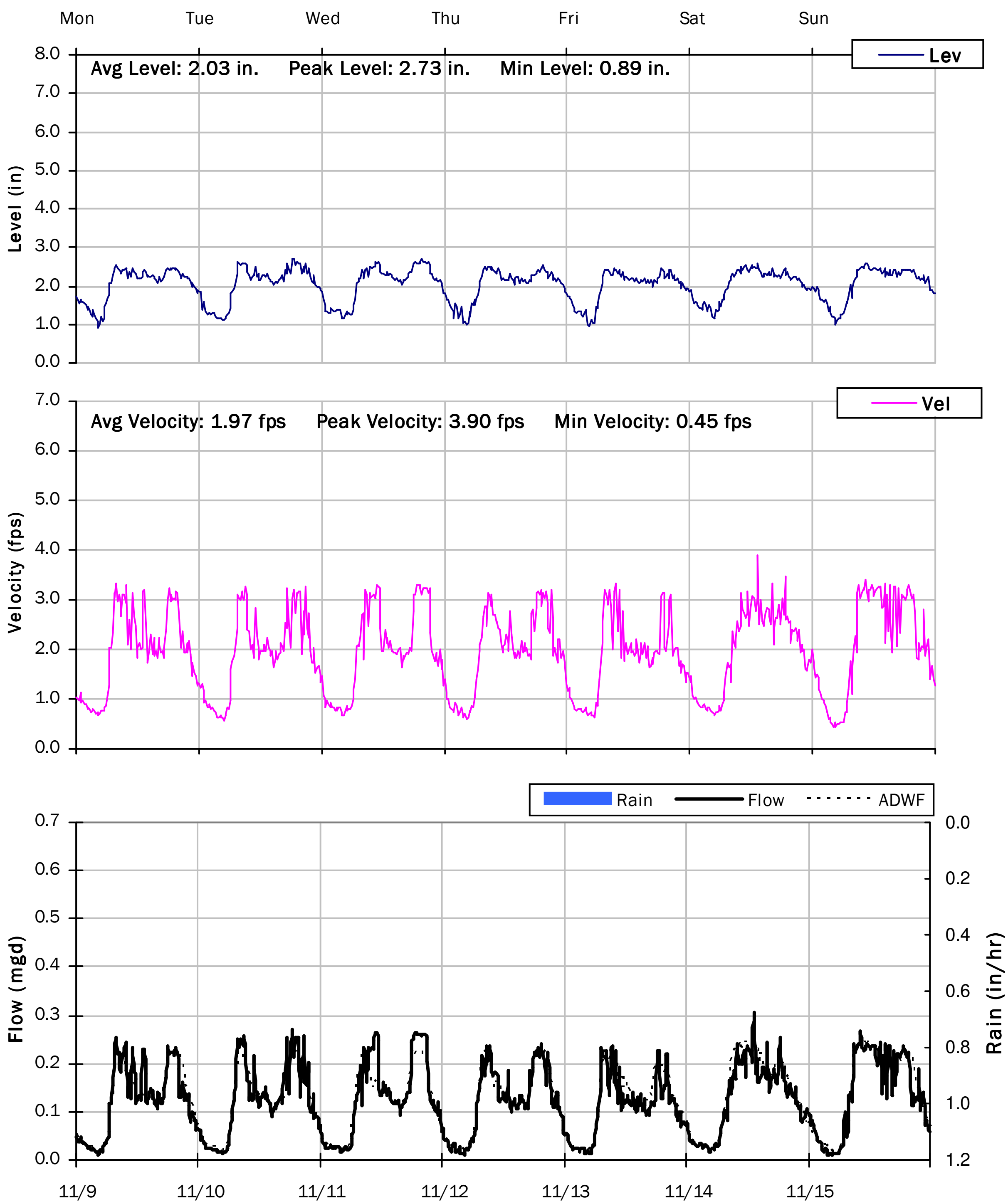
Capacity		Inflow / Infiltration	
Peak Flow:	0.55 *mgd*	**Peak I/I Rate:**	0.43 *mgd*
PF:	4.27	**Total I/I:**	337,000 *gallons*
Peak Level:	3.35 *in*		
d/D Ratio:	0.29		

SITE 06
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



Avg Flow: 0.131 mgd **Peak Flow: 0.296 mgd** **Min Flow: 0.009 mgd**

SITE 06
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020

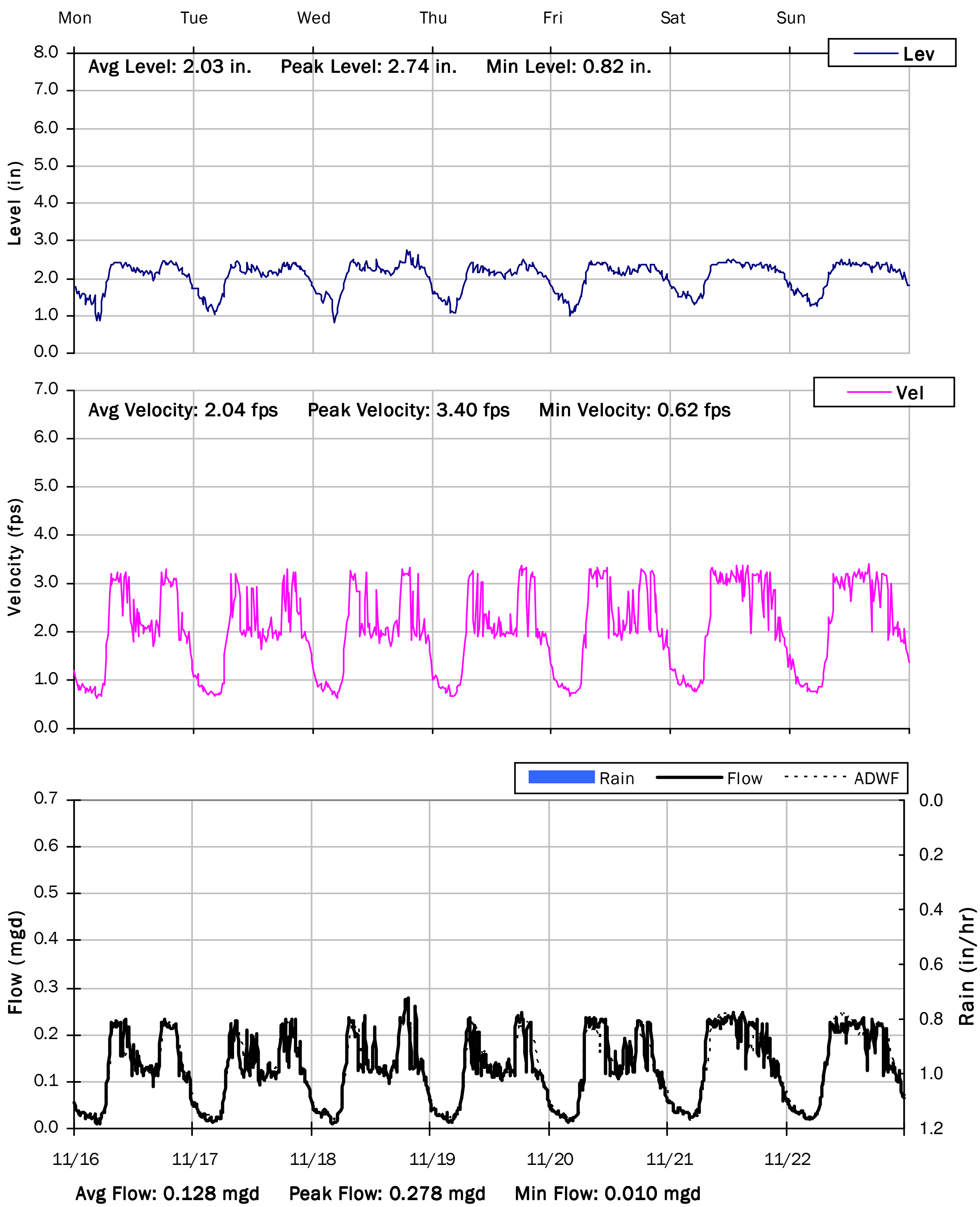


Avg Flow: 0.125 mgd **Peak Flow: 0.307 mgd** **Min Flow: 0.009 mgd**

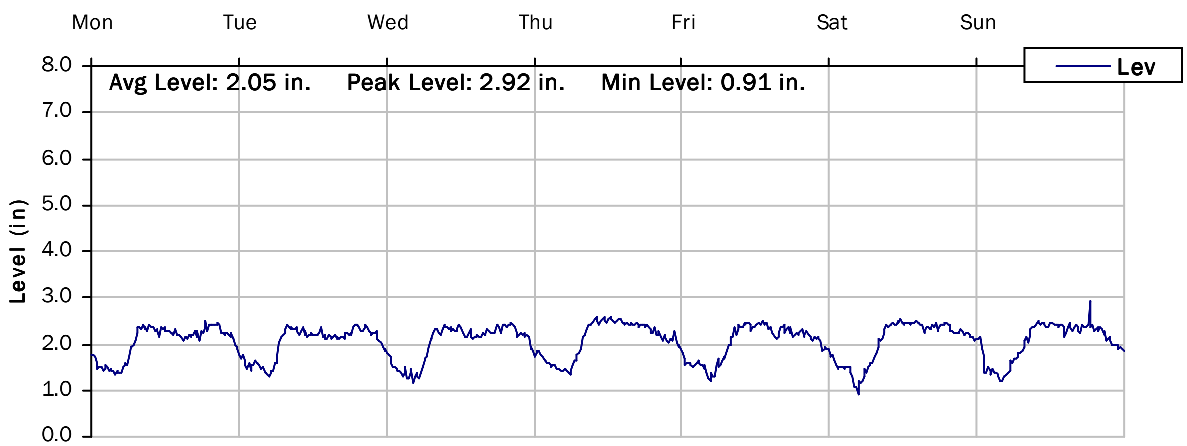
SITE 06

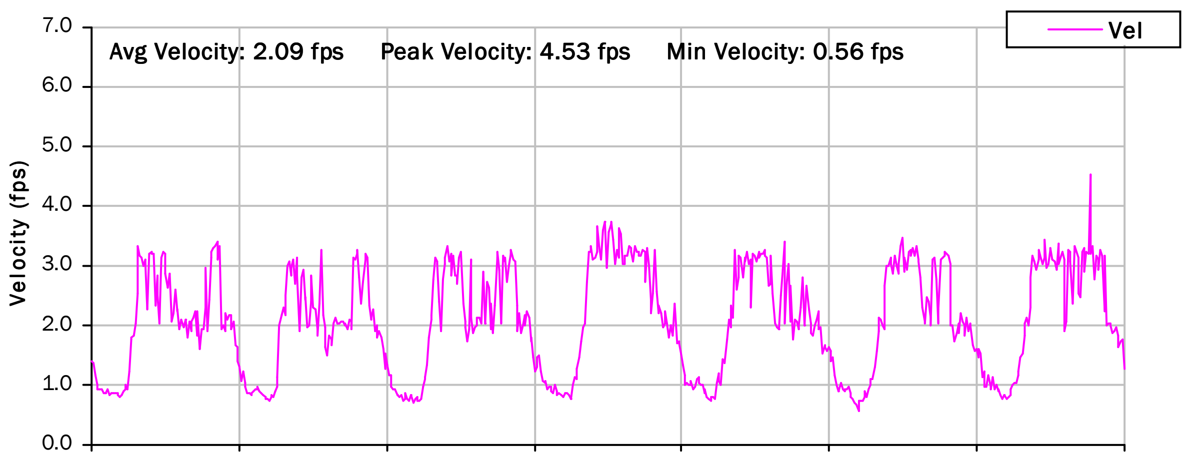
Weekly Level, Velocity and Flow Hydrographs

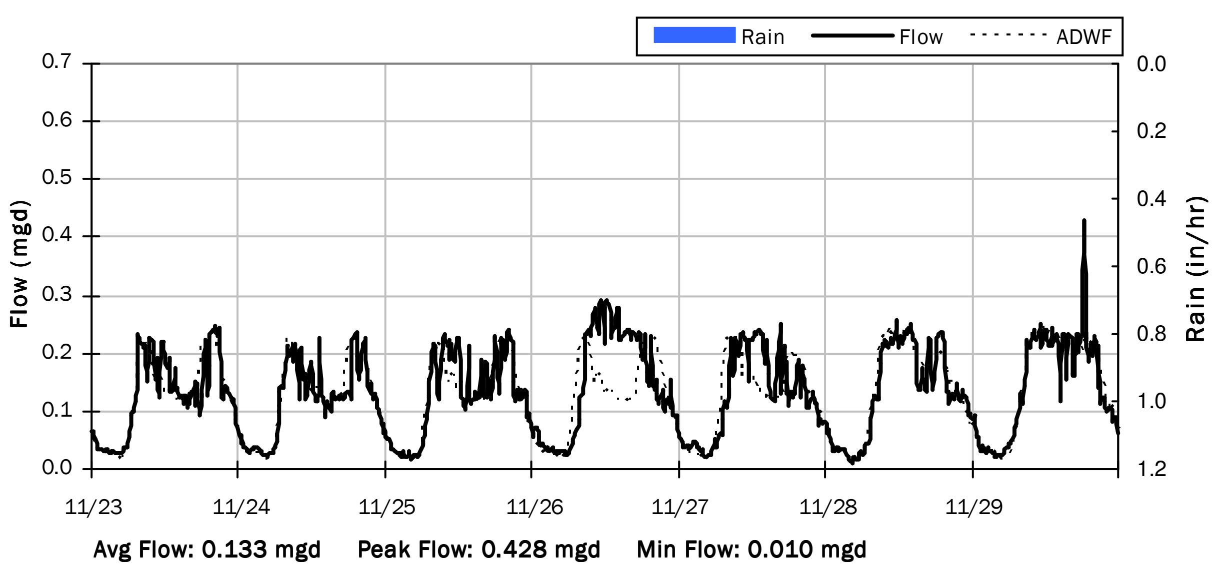
11/16/2020 to 11/23/2020



SITE 06
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



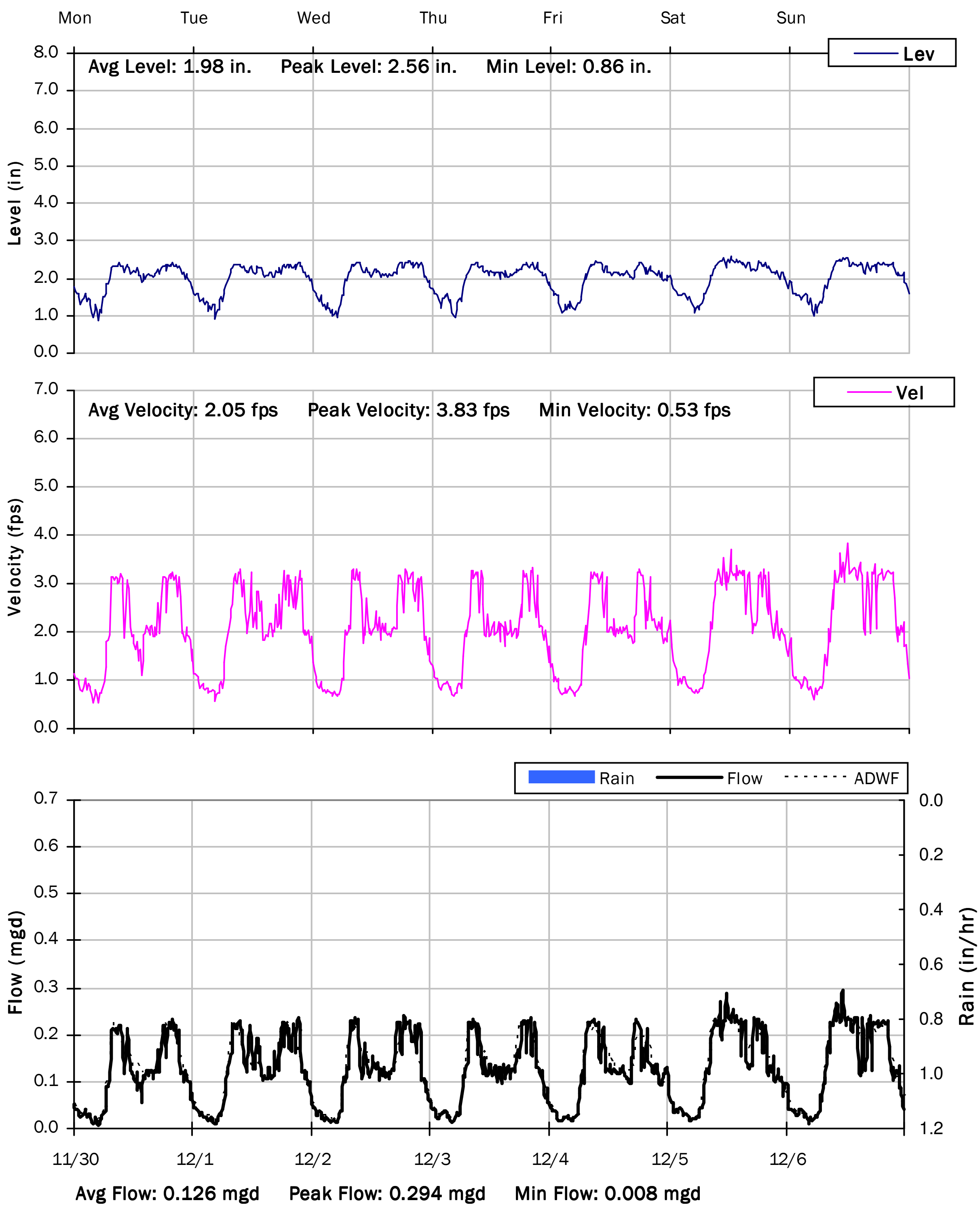




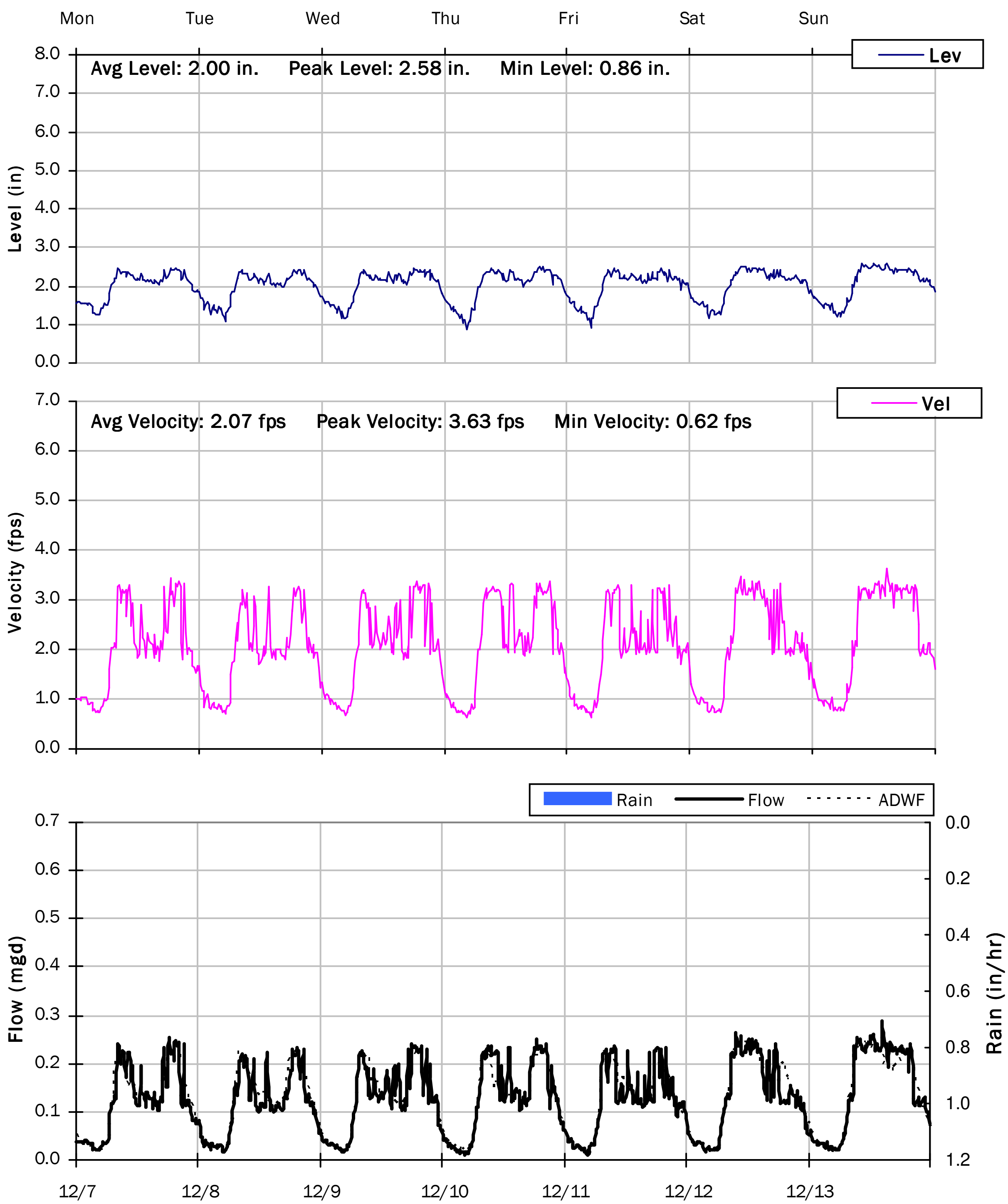
SITE 06

Weekly Level, Velocity and Flow Hydrographs

11/30/2020 to 12/7/2020

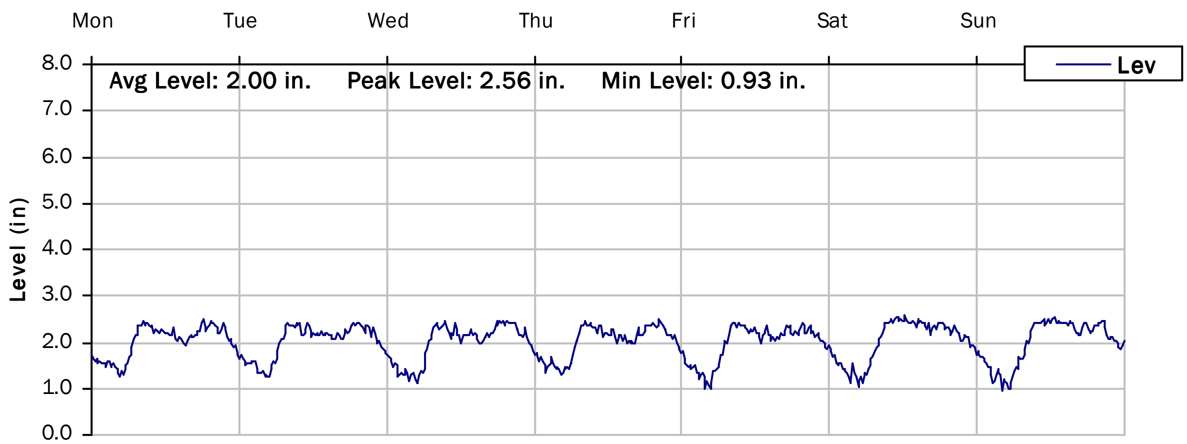


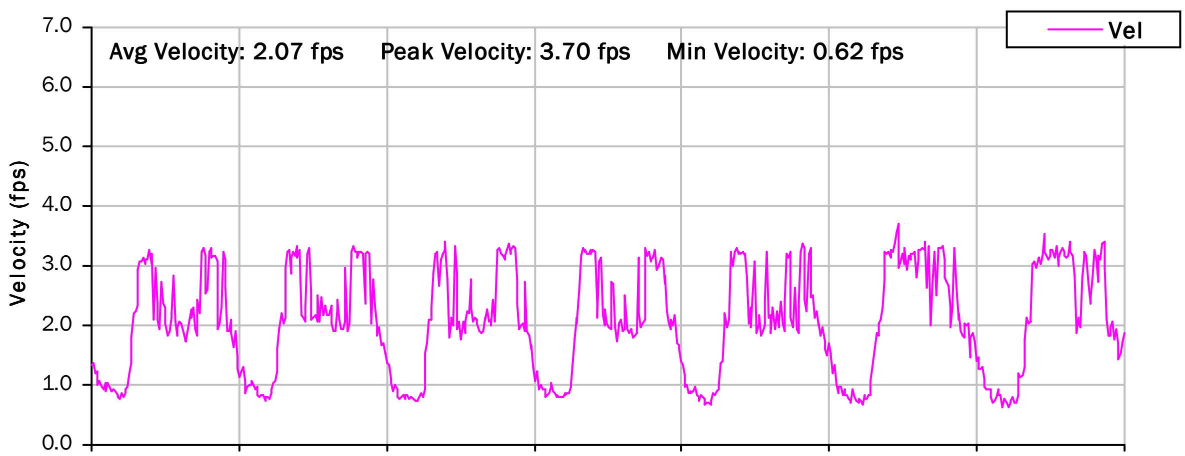
SITE 06
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

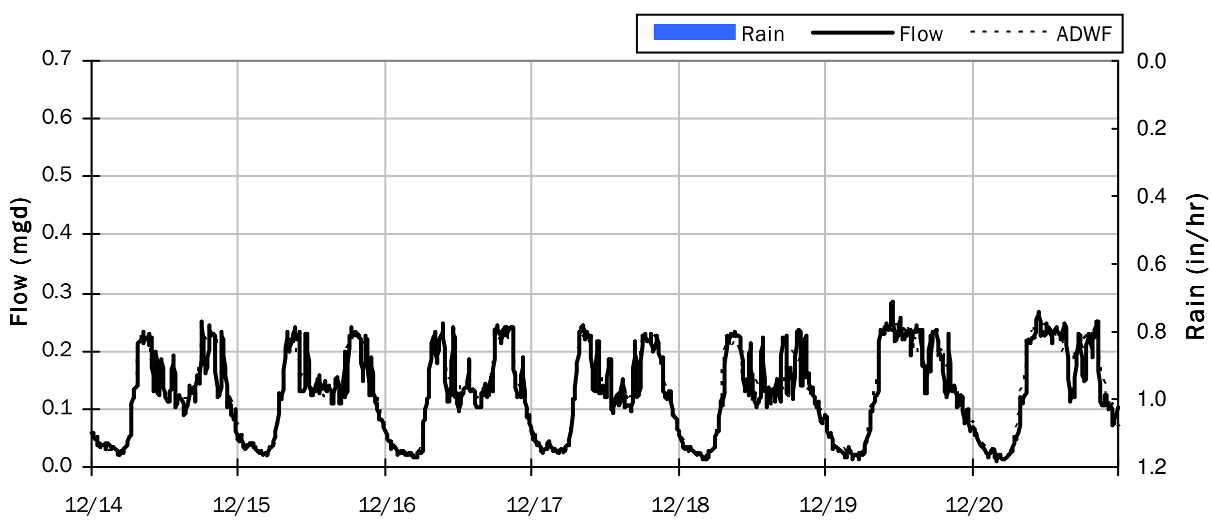


Avg Flow: 0.128 mgd Peak Flow: 0.288 mgd Min Flow: 0.010 mgd

SITE 06
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

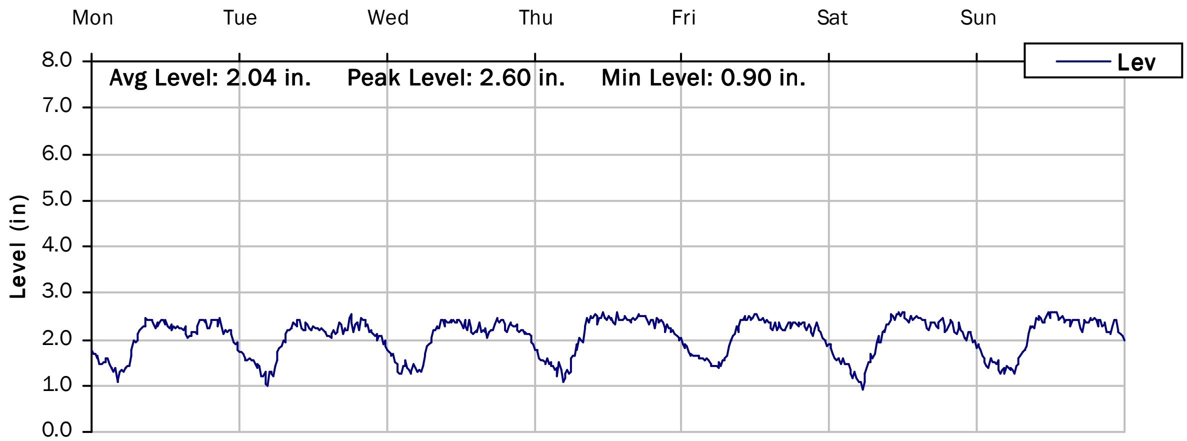


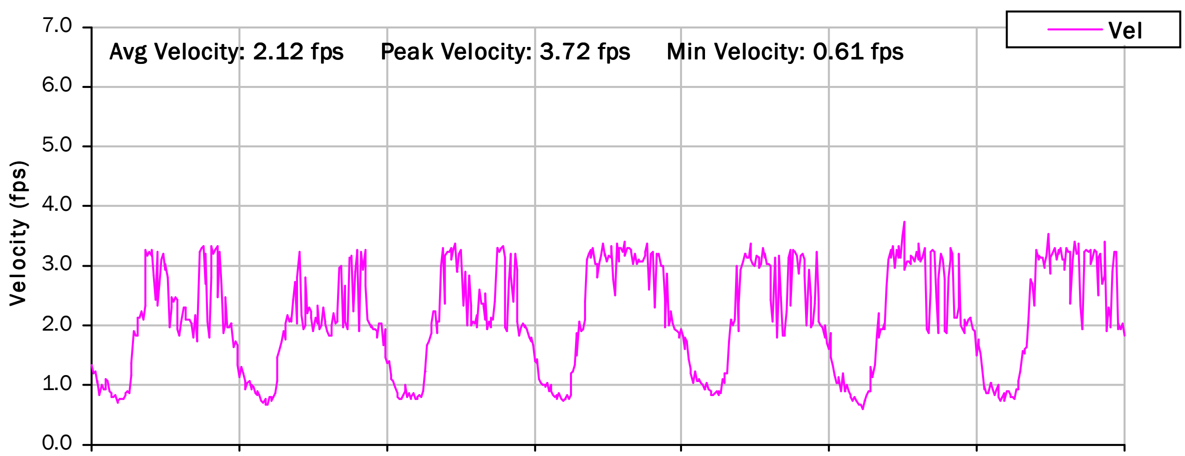


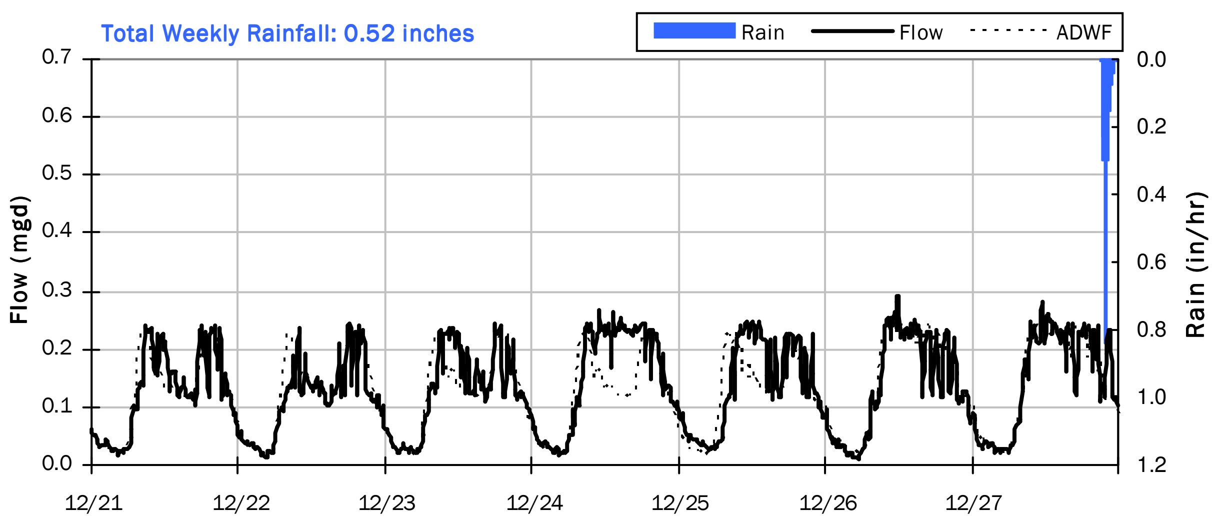


Avg Flow: 0.128 mgd **Peak Flow: 0.286 mgd** **Min Flow: 0.011 mgd**

SITE 06
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

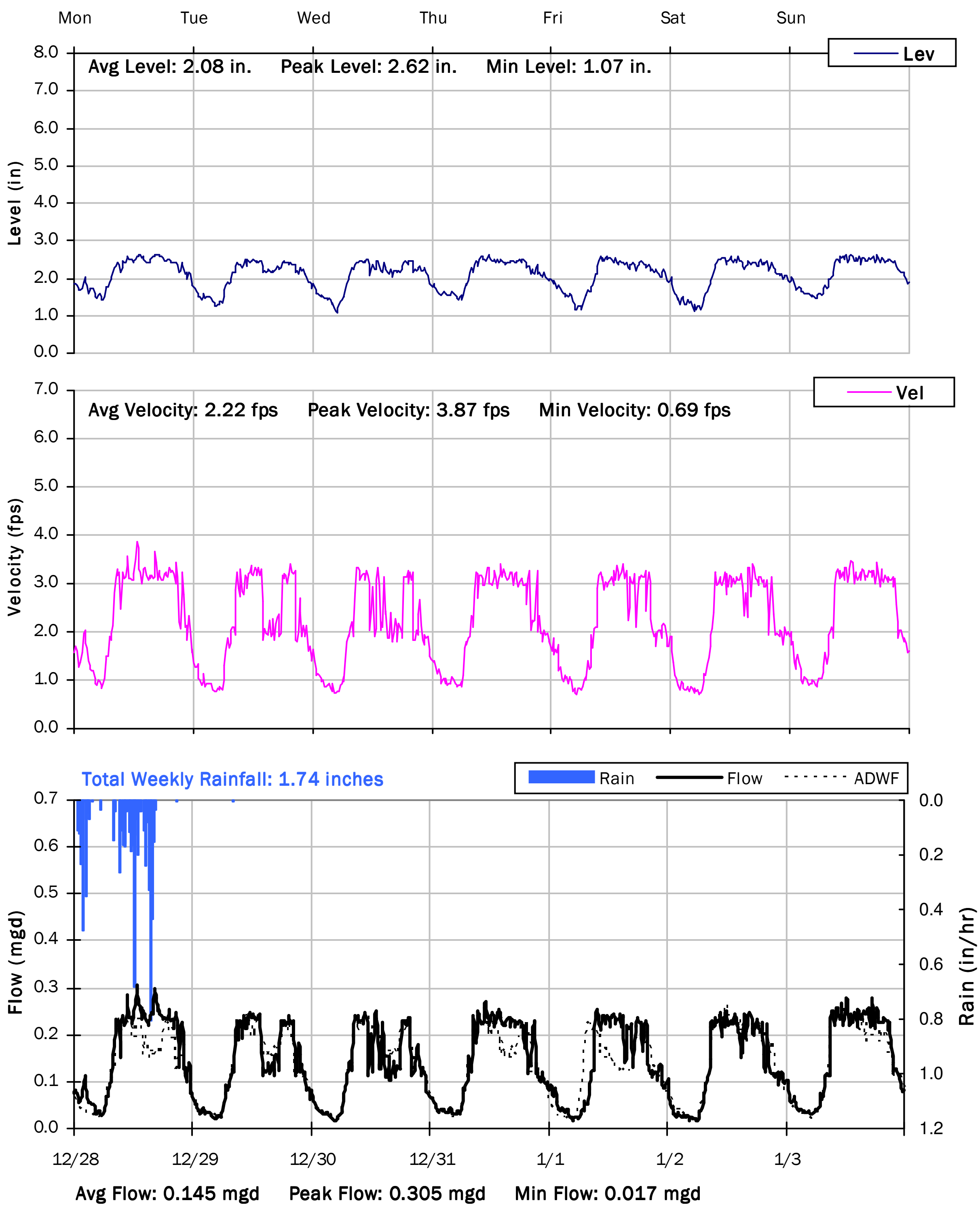






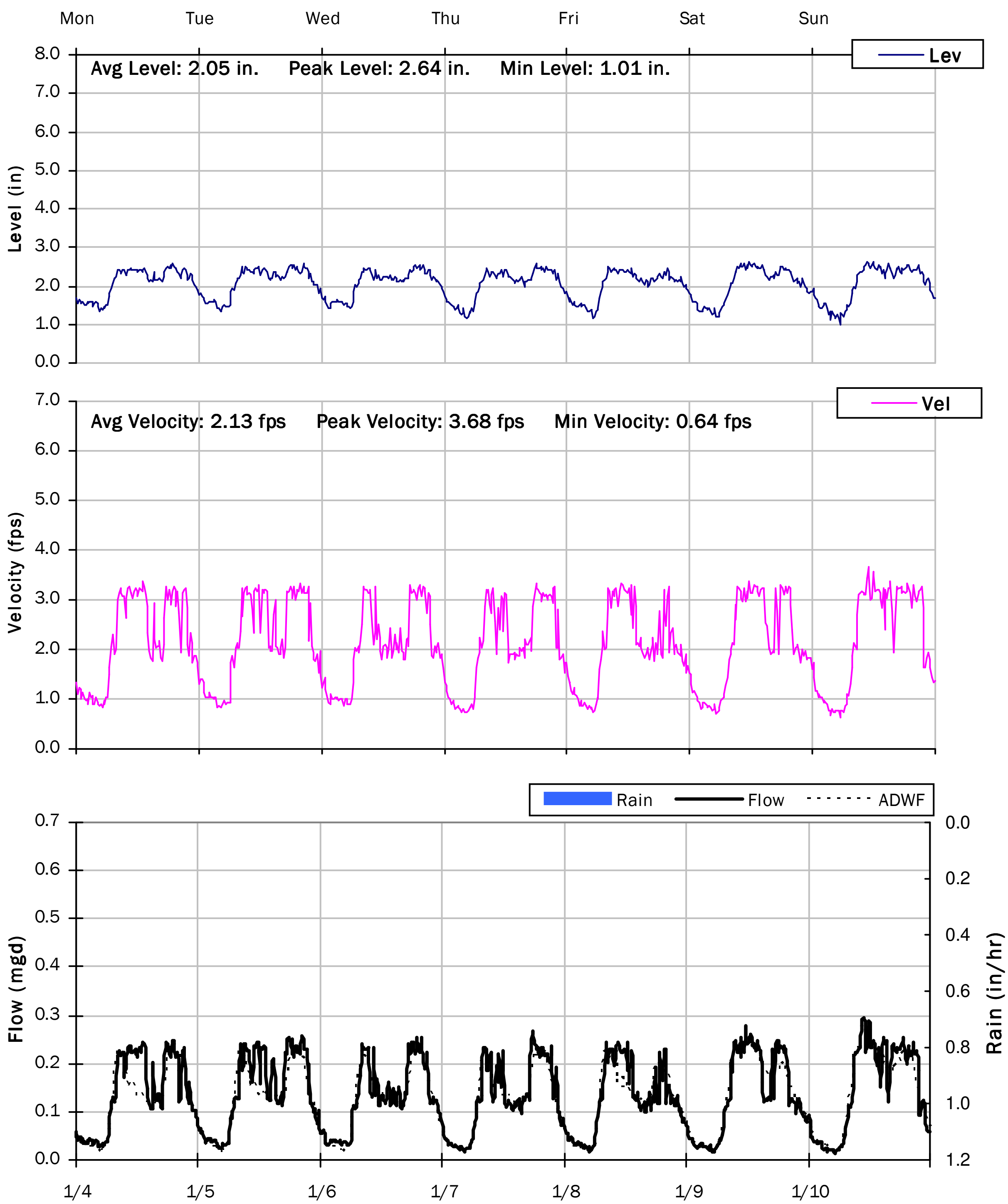
Avg Flow: 0.134 mgd Peak Flow: 0.291 mgd Min Flow: 0.010 mgd

SITE 06
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



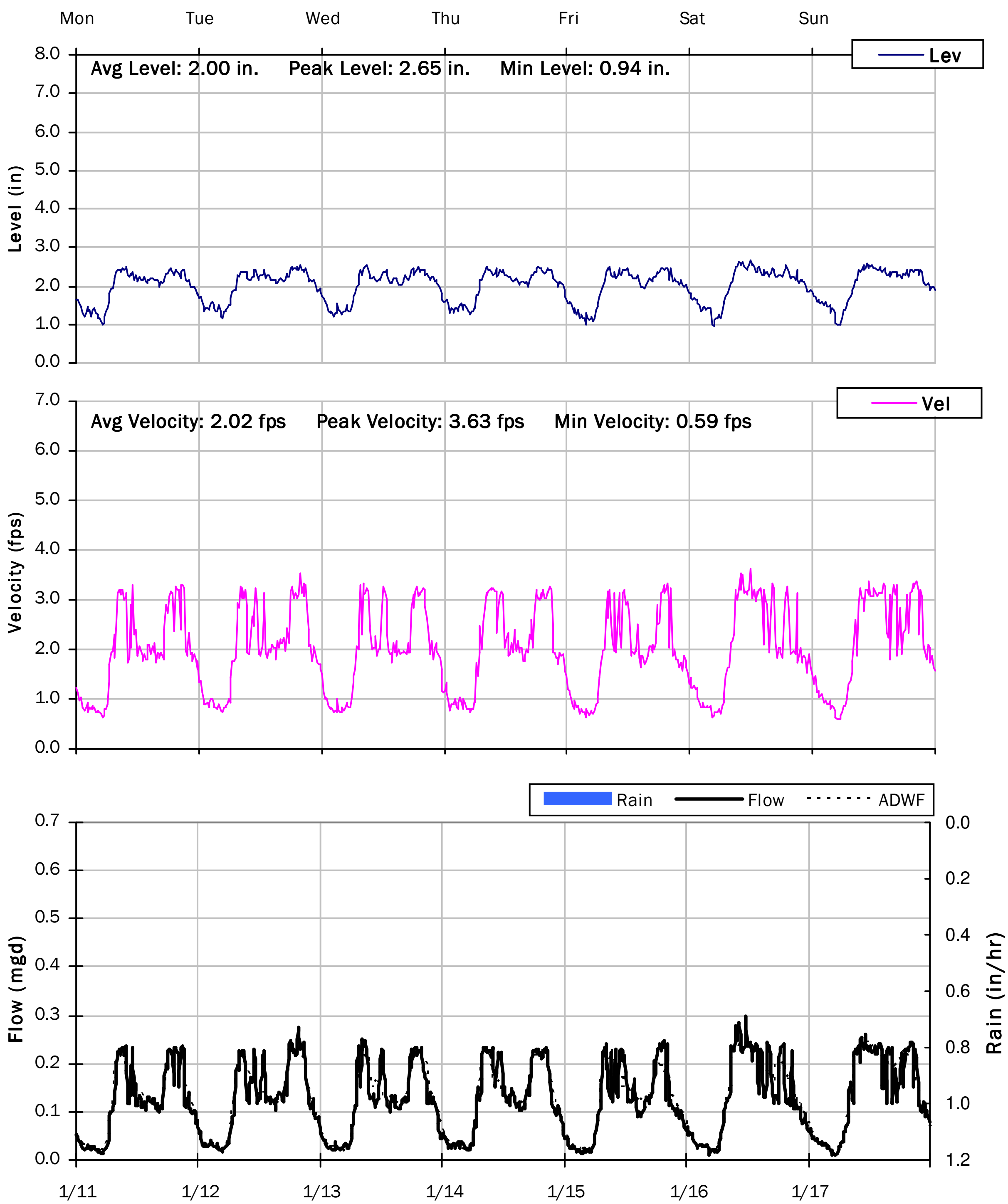
SITE 06

Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021



Avg Flow: 0.136 mgd **Peak Flow: 0.294 mgd** **Min Flow: 0.013 mgd**

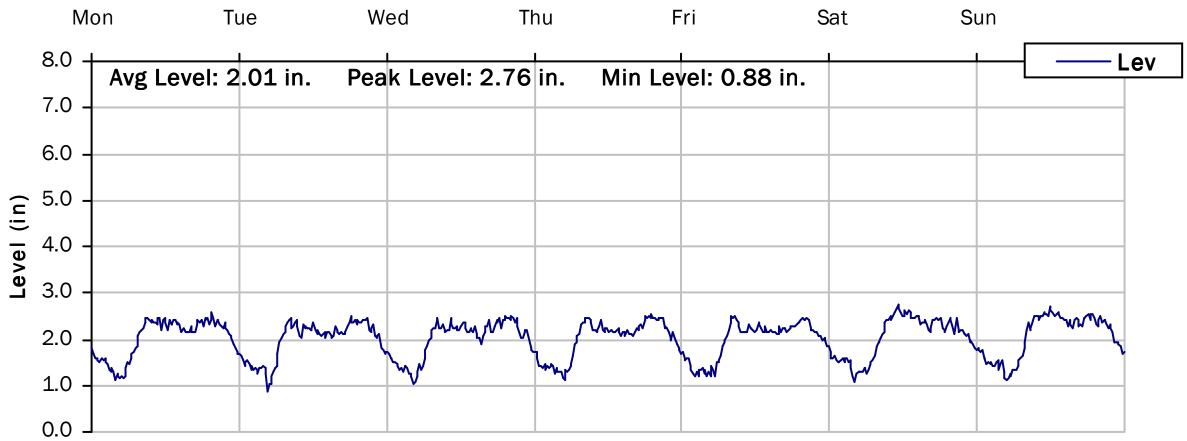
SITE 06
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

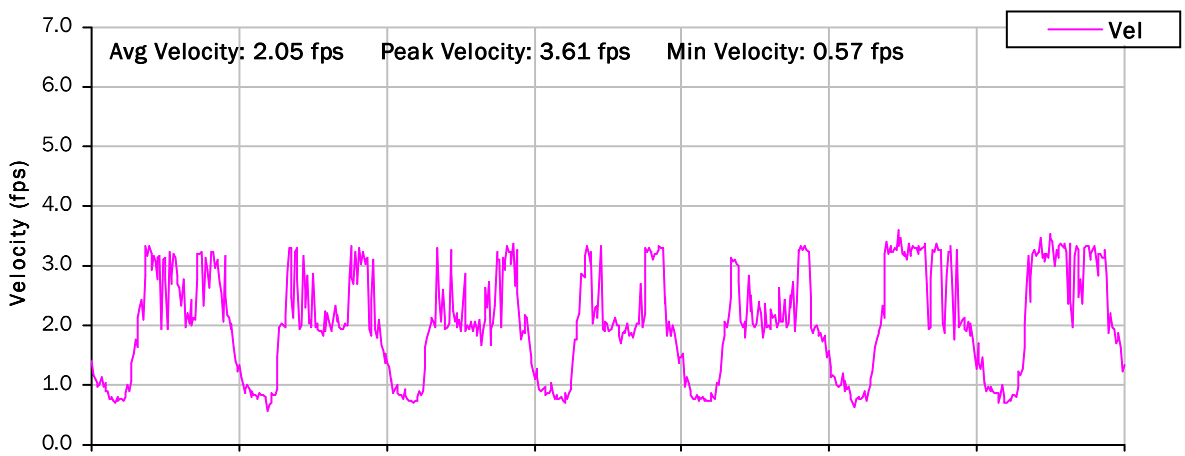


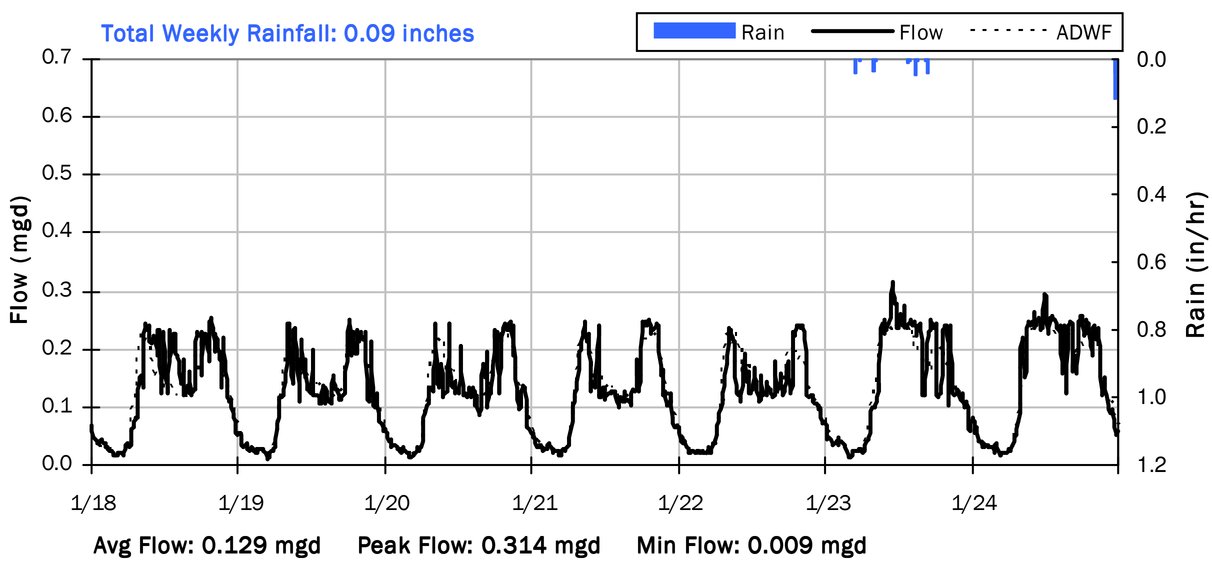
Avg Flow: 0.125 mgd **Peak Flow: 0.299 mgd** **Min Flow: 0.012 mgd**

SITE 06

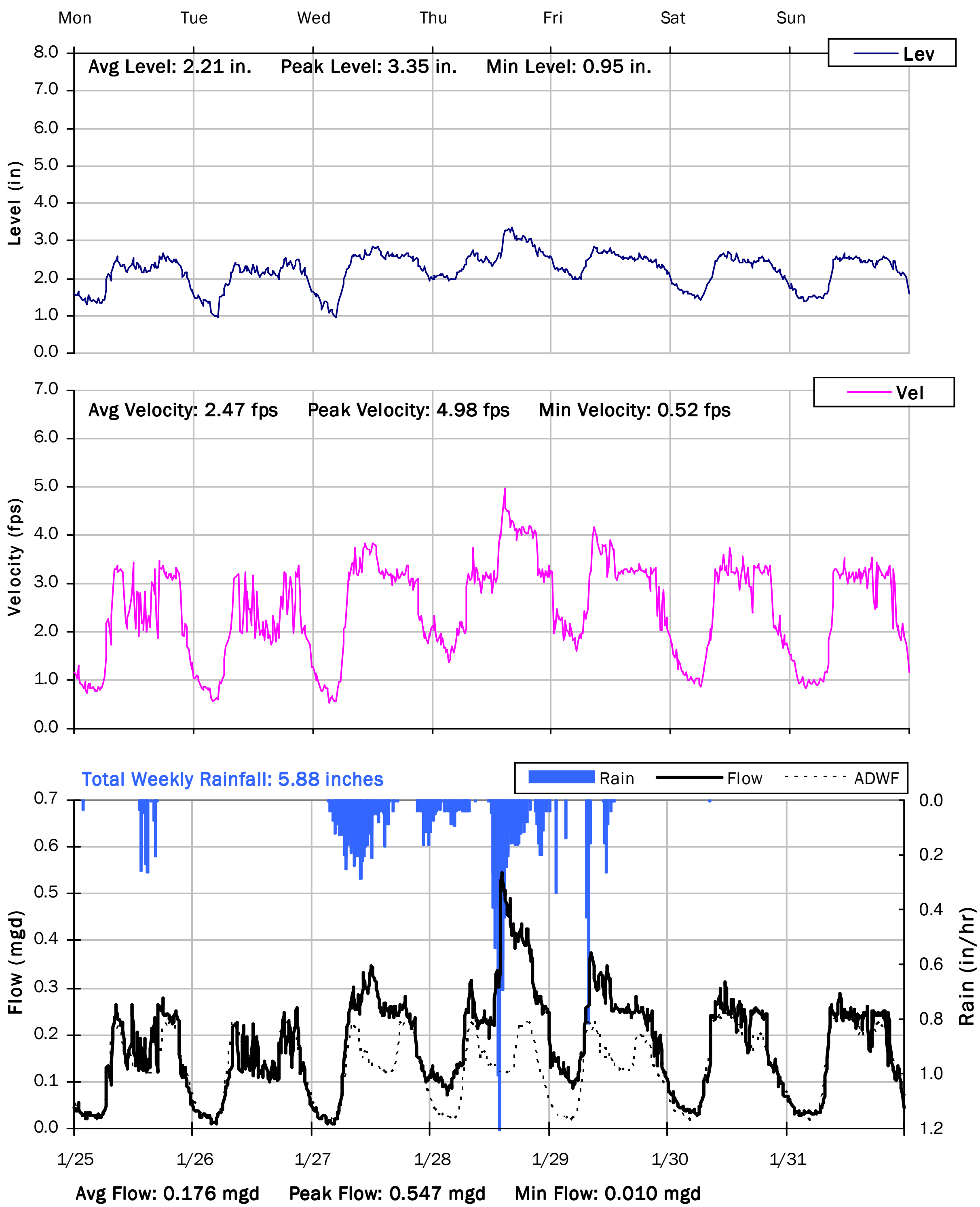
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021



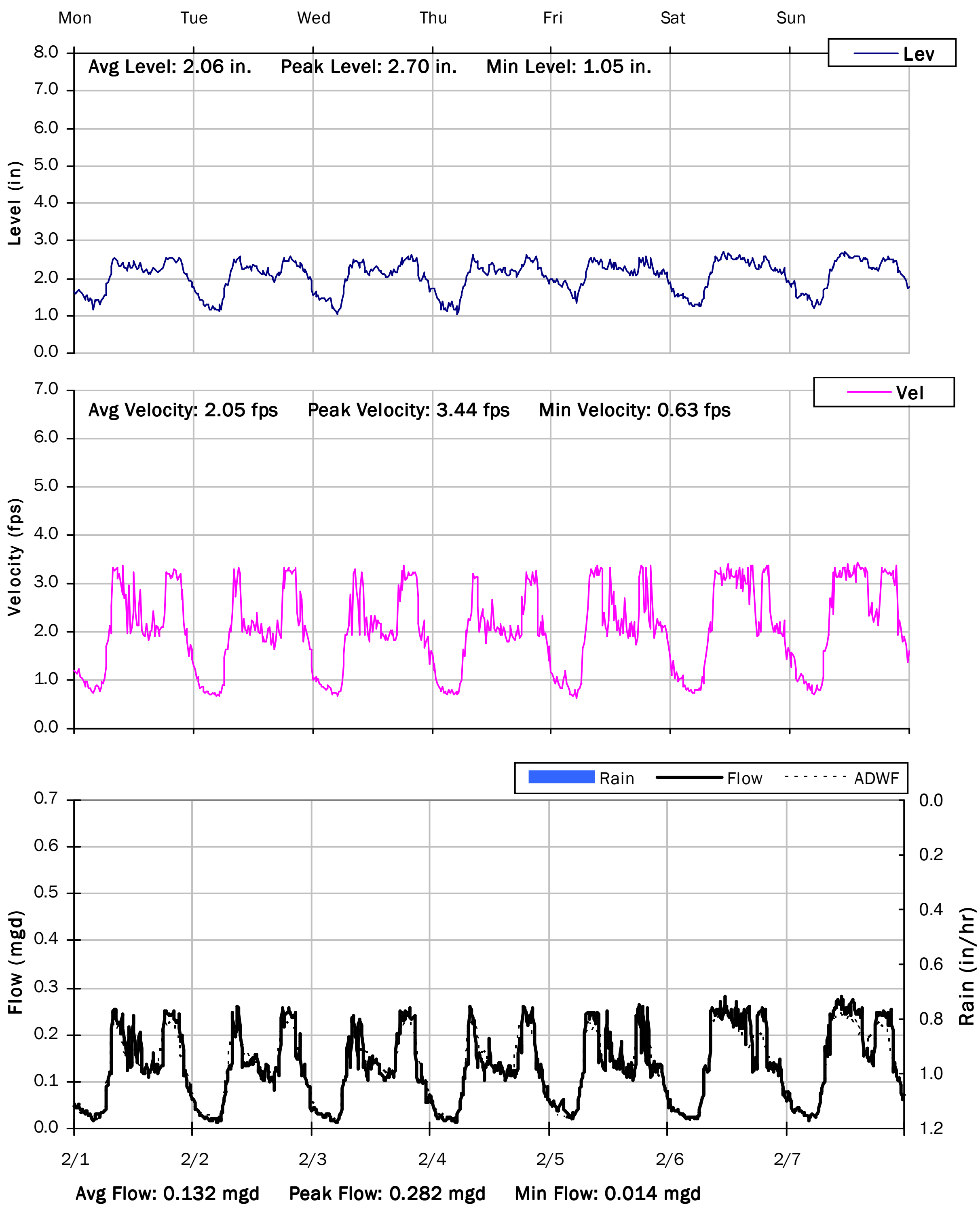




SITE 06
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 06
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Goleta West Sanitary District

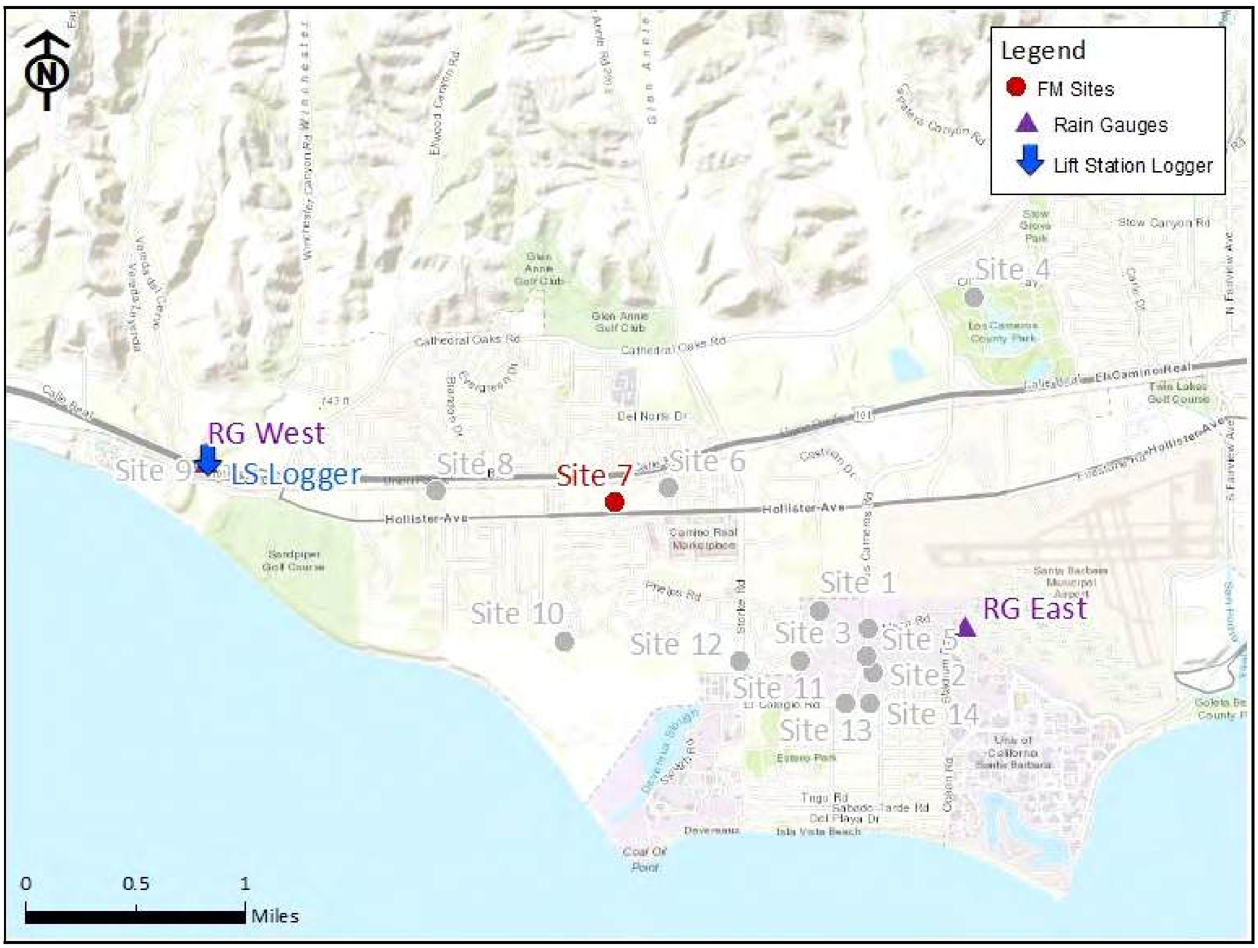
Sanitary Sewer Flow Monitoring
November 3, 2020 - February 7, 2021

Monitoring Site: Site 07

City Manhole: 73-02-05

Location: Behind building at 7234 Hollister Avenue

Data Summary Report



Vicinity Map: Site 07

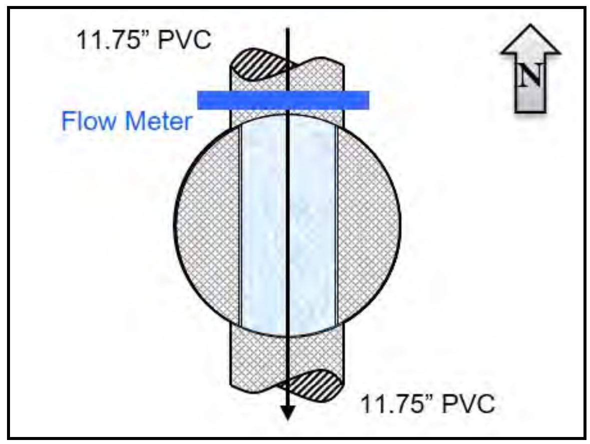
SITE 07

Site Information

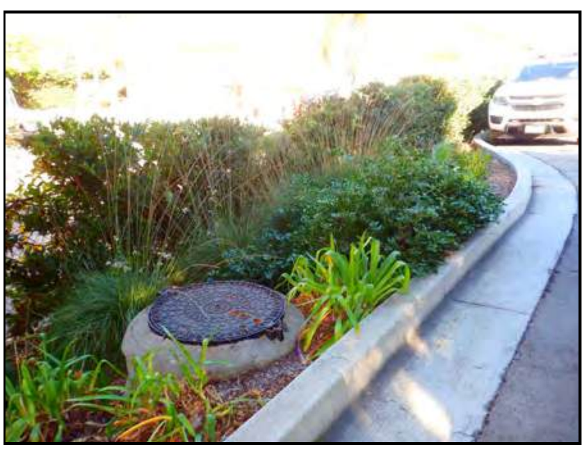
Location:	Behind building at 7234 Hollister Avenue
City Manhole:	73-02-05
Coordinates:	119.8797° W, 34.4308° N
Rim Elevation (Earth):	43 feet
Pipe Diameter:	11.75 inches
ADWF:	0.133 mgd
Peak Measured Flow:	0.481 mgd

Satellite Map

Sanitary Map



Flow Sketch

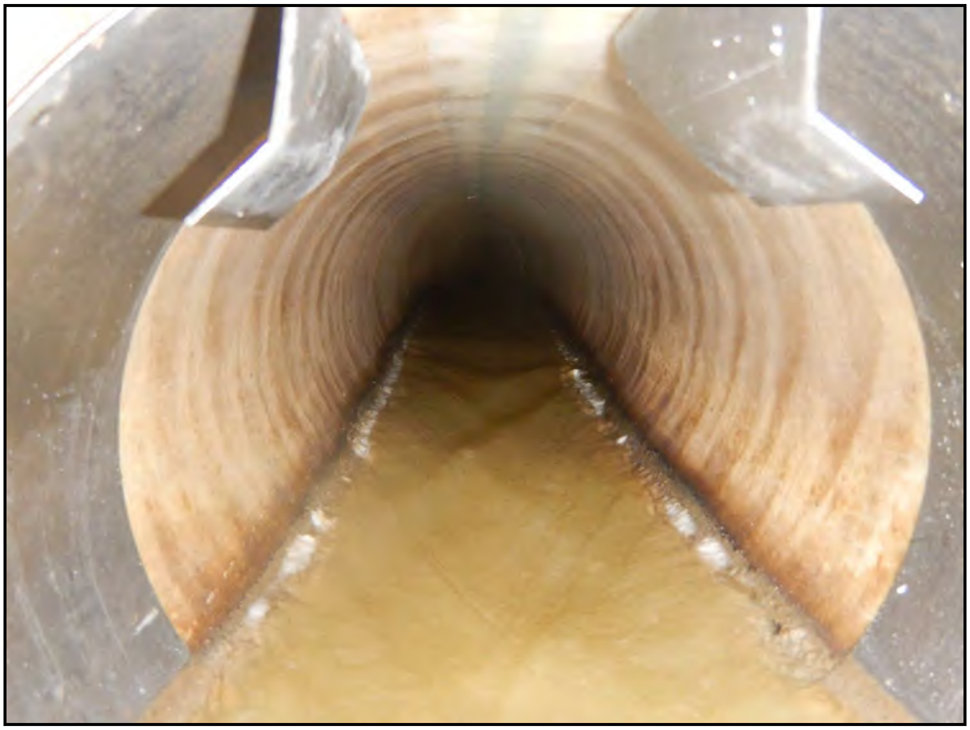

Street View


Plan View

SITE 07

Additional Site Photos

Monitored North Influent



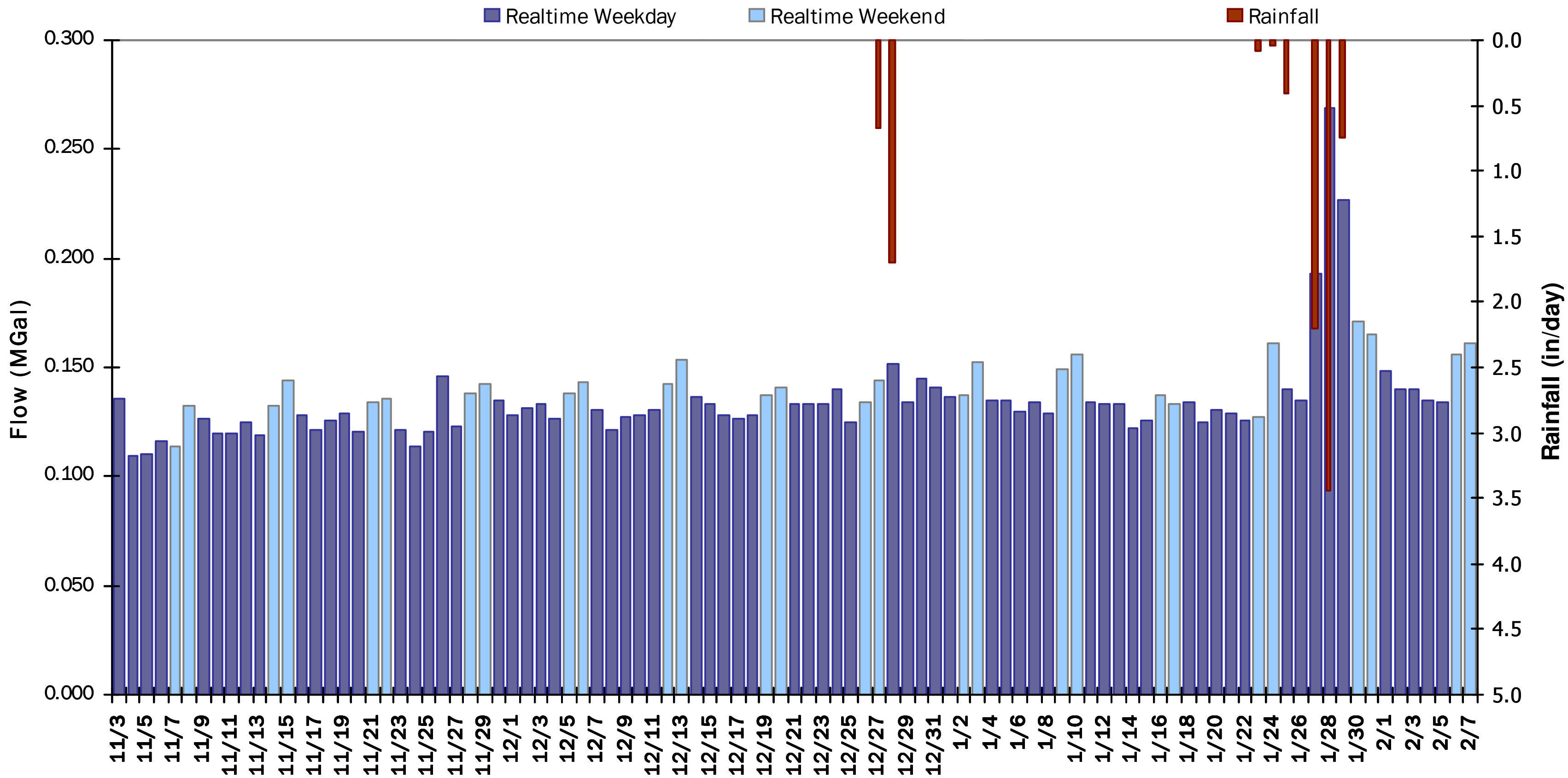
South Effluent

SITE 07

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.137 MGal **Peak Daily Flow: 0.269 MGal** **Min Daily Flow: 0.109 MGal**

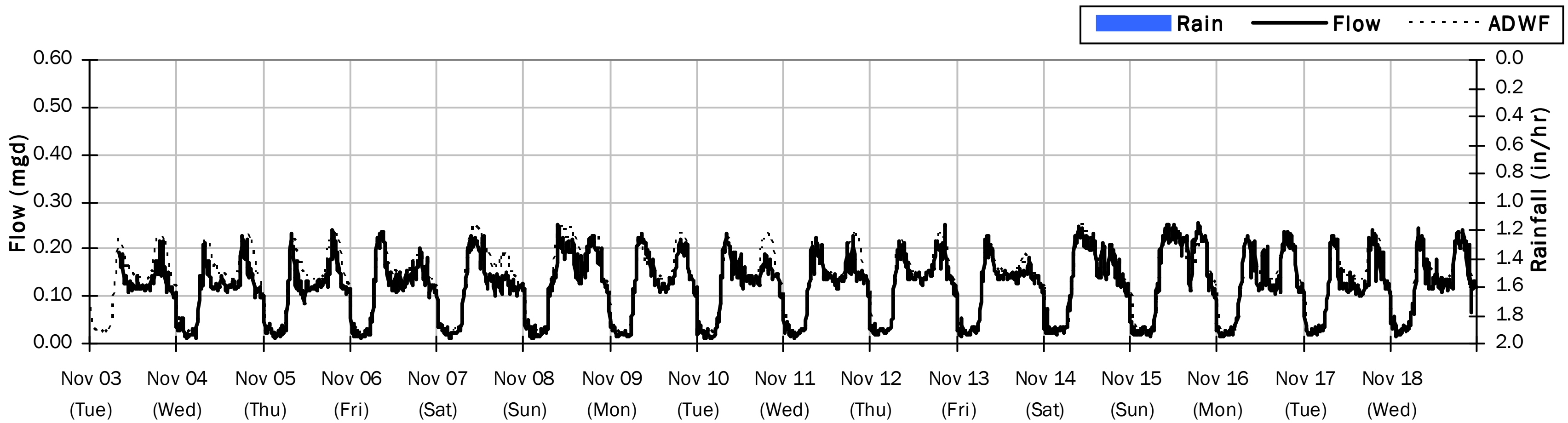
Total Period Rainfall: 9.32 inches

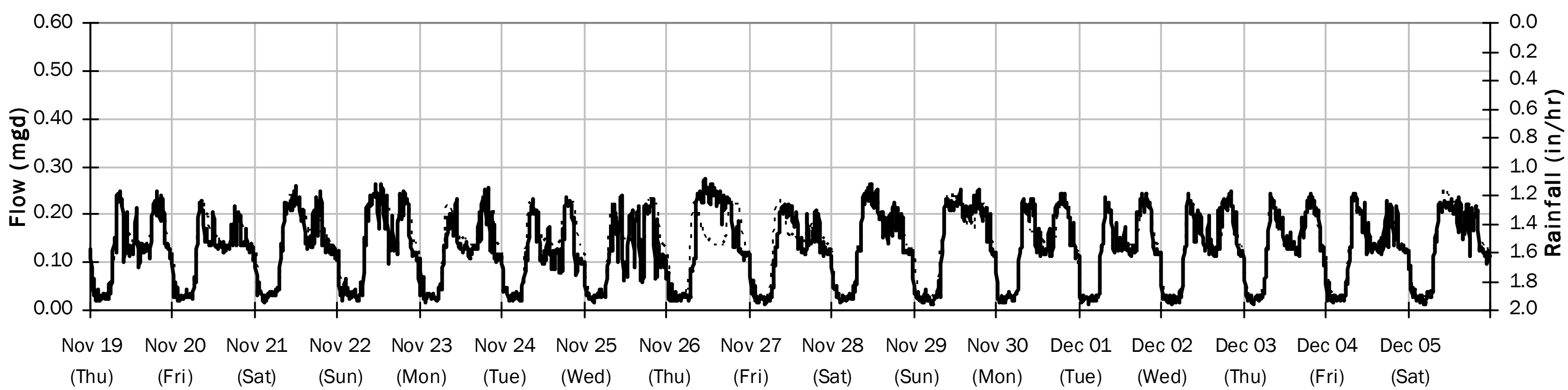


SITE 07

Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   **Avg Flow: 0.127 mgd**   **Peak Flow: 0.275 mgd**   **Min Flow: 0.010 mgd**

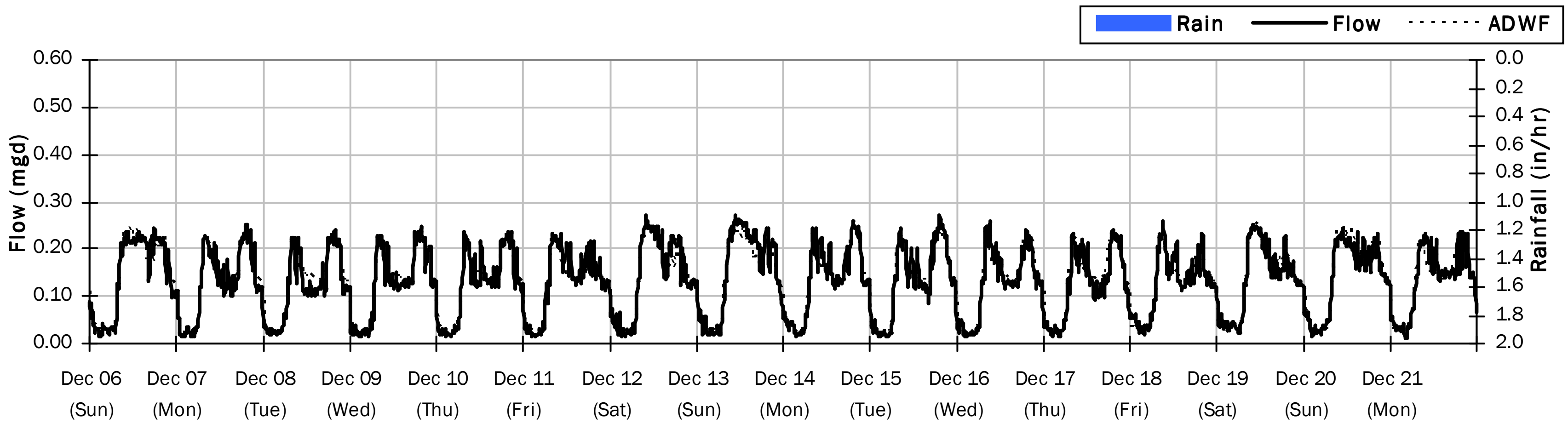


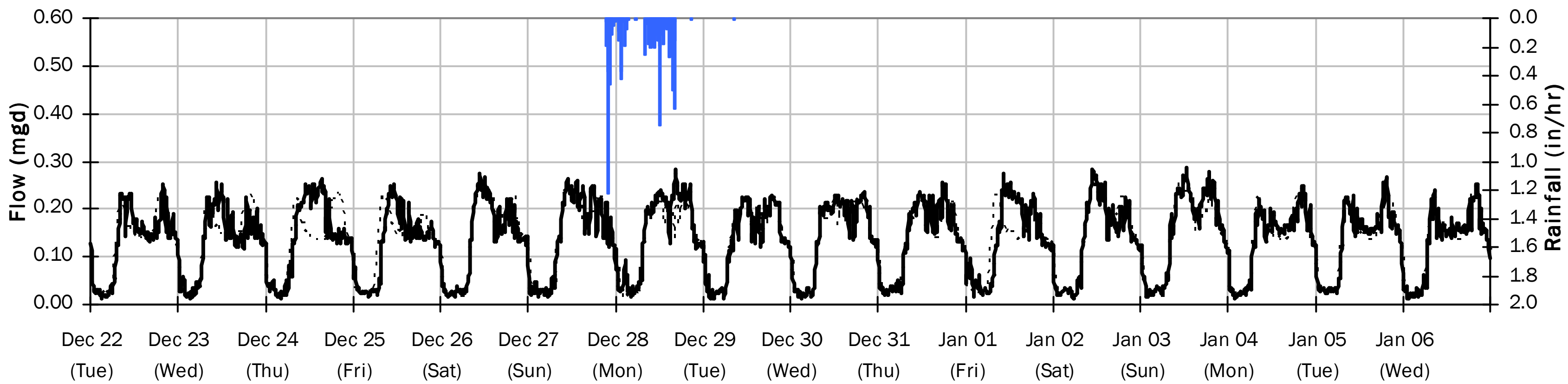


SITE 07

Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.38 inches Avg Flow: 0.136 mgd Peak Flow: 0.285 mgd Min Flow: 0.011 mgd

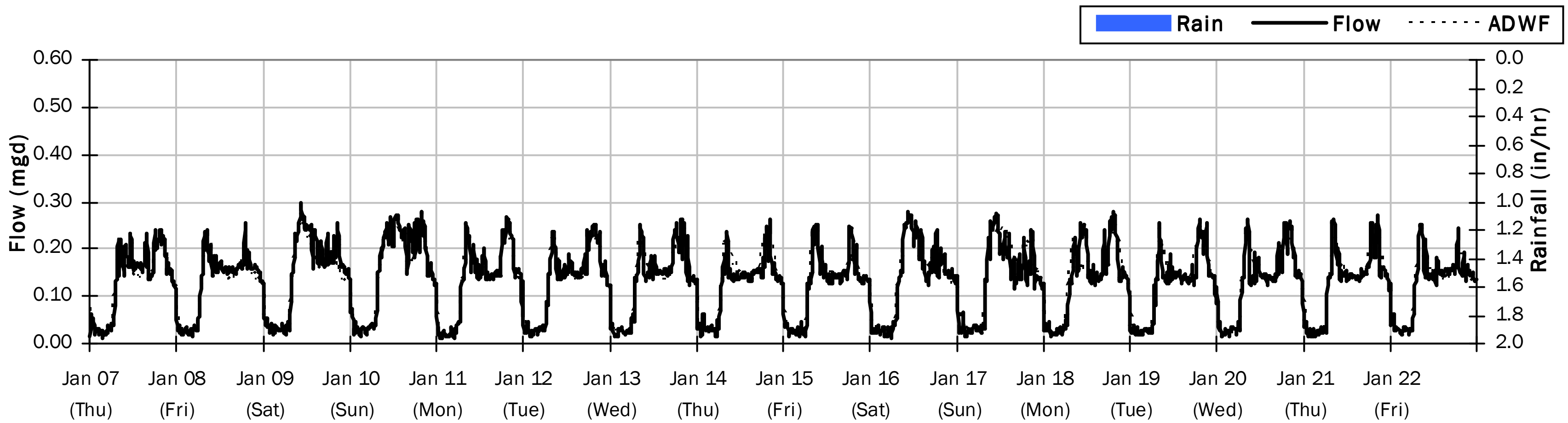


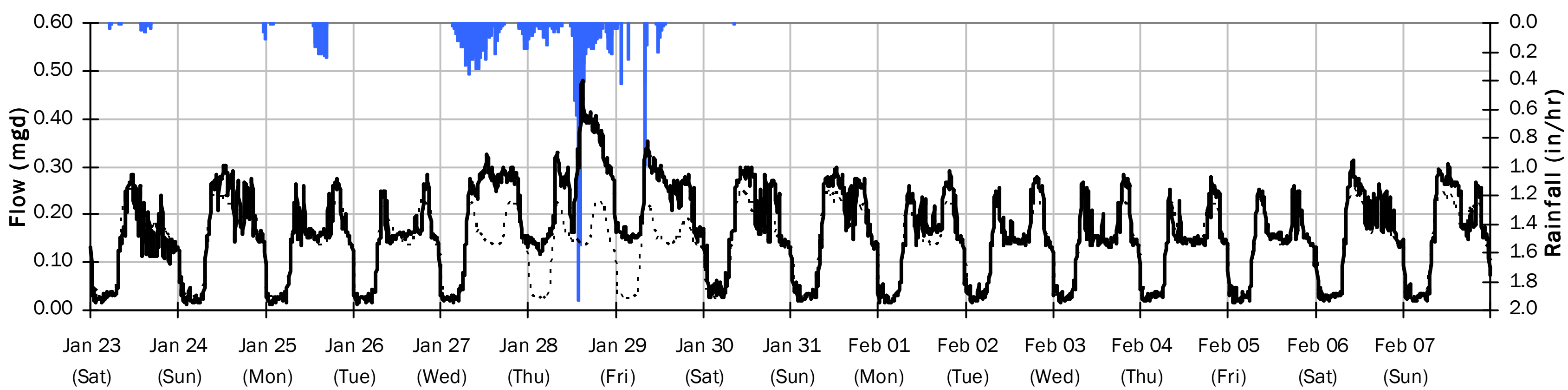


SITE 07

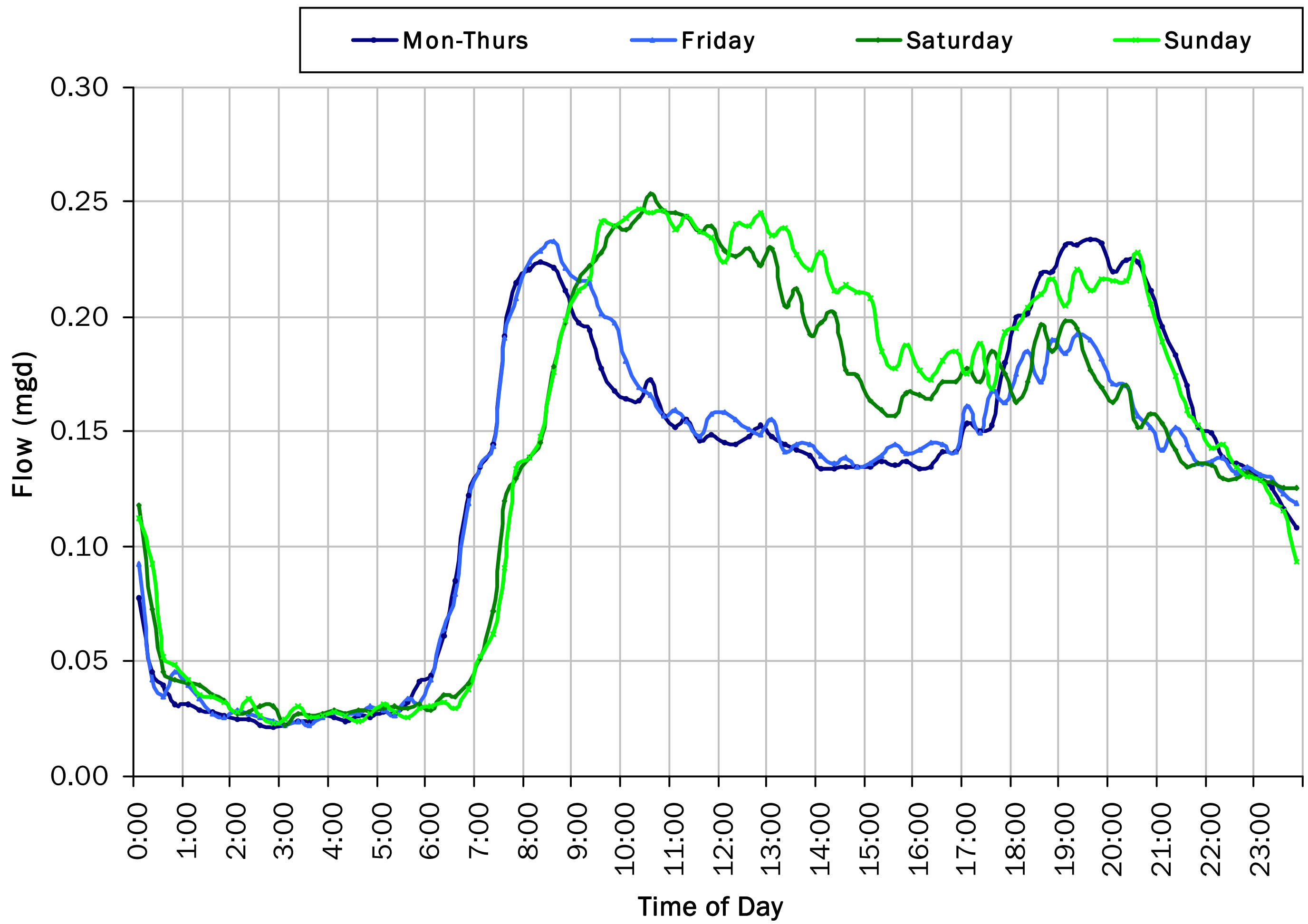
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 6.94 inches   **Avg Flow: 0.148 mgd**   **Peak Flow: 0.481 mgd**   **Min Flow: 0.012 mgd**

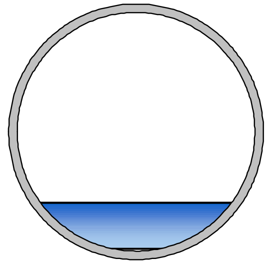




SITE 07
Average Dry Weather Flow Hydrographs

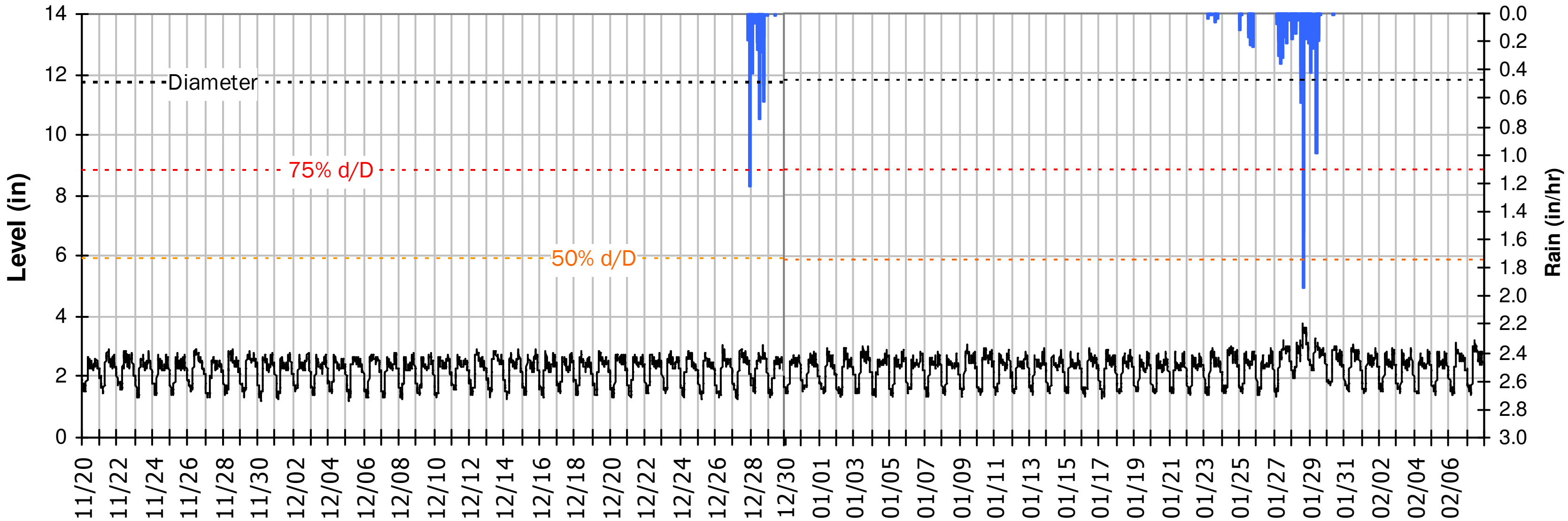


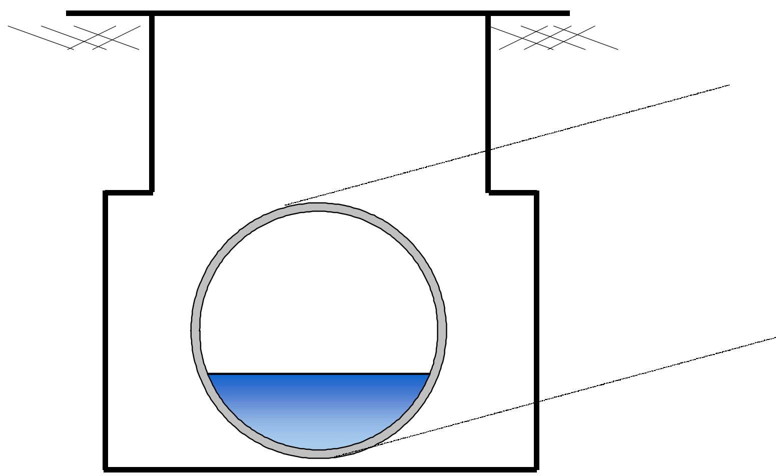
ADWF:
0.133 *mgd*



SITE 07
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

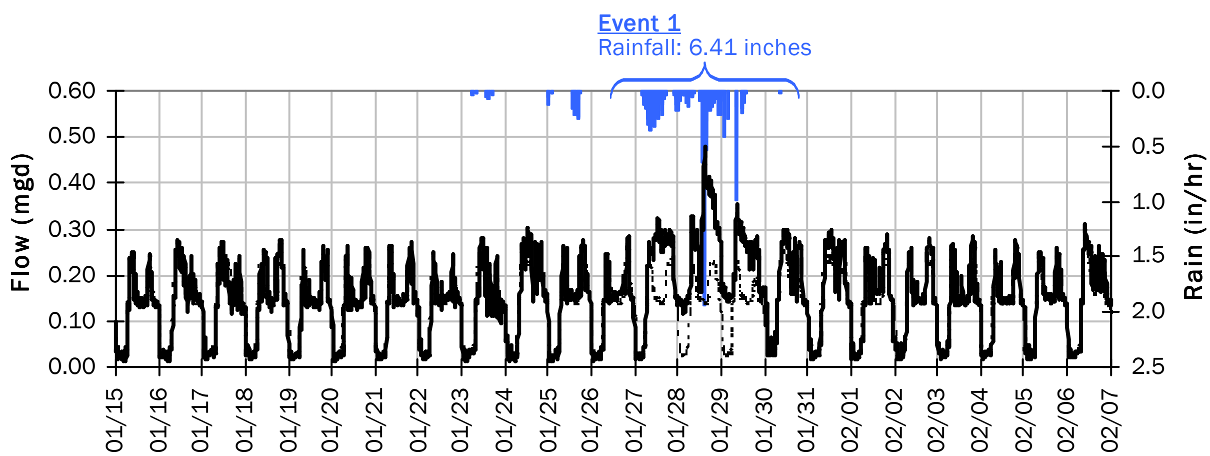




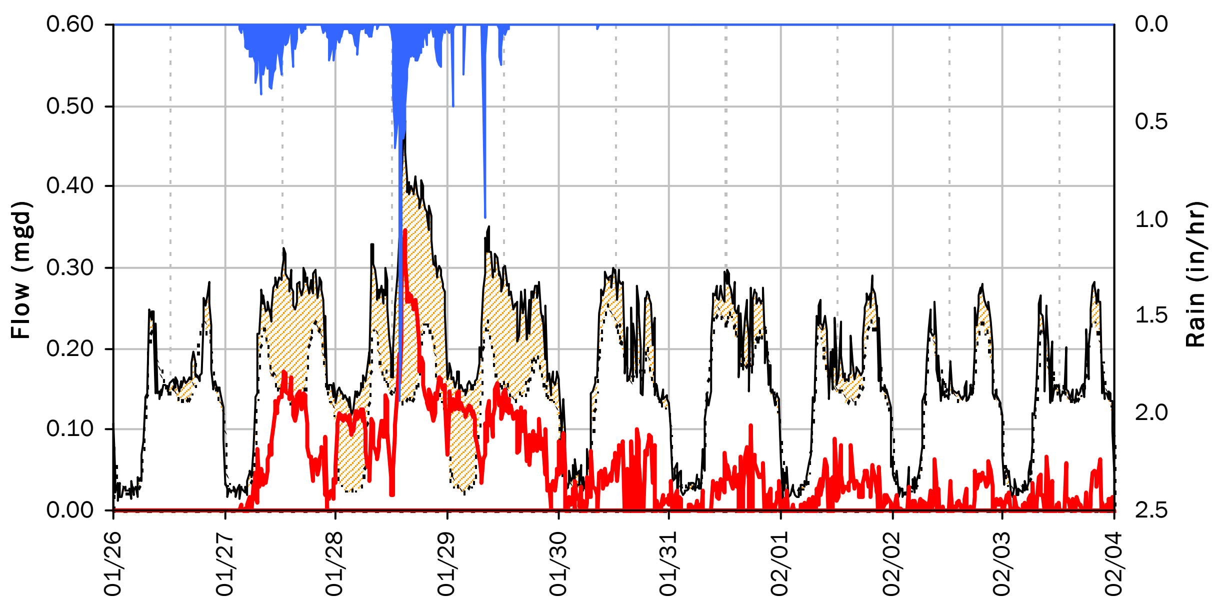
Pipe Diameter:	11.8	*inches*
Peak Measured Level:	3.78	*inches*
Peak d/D Ratio:	0.32	

SITE 07
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



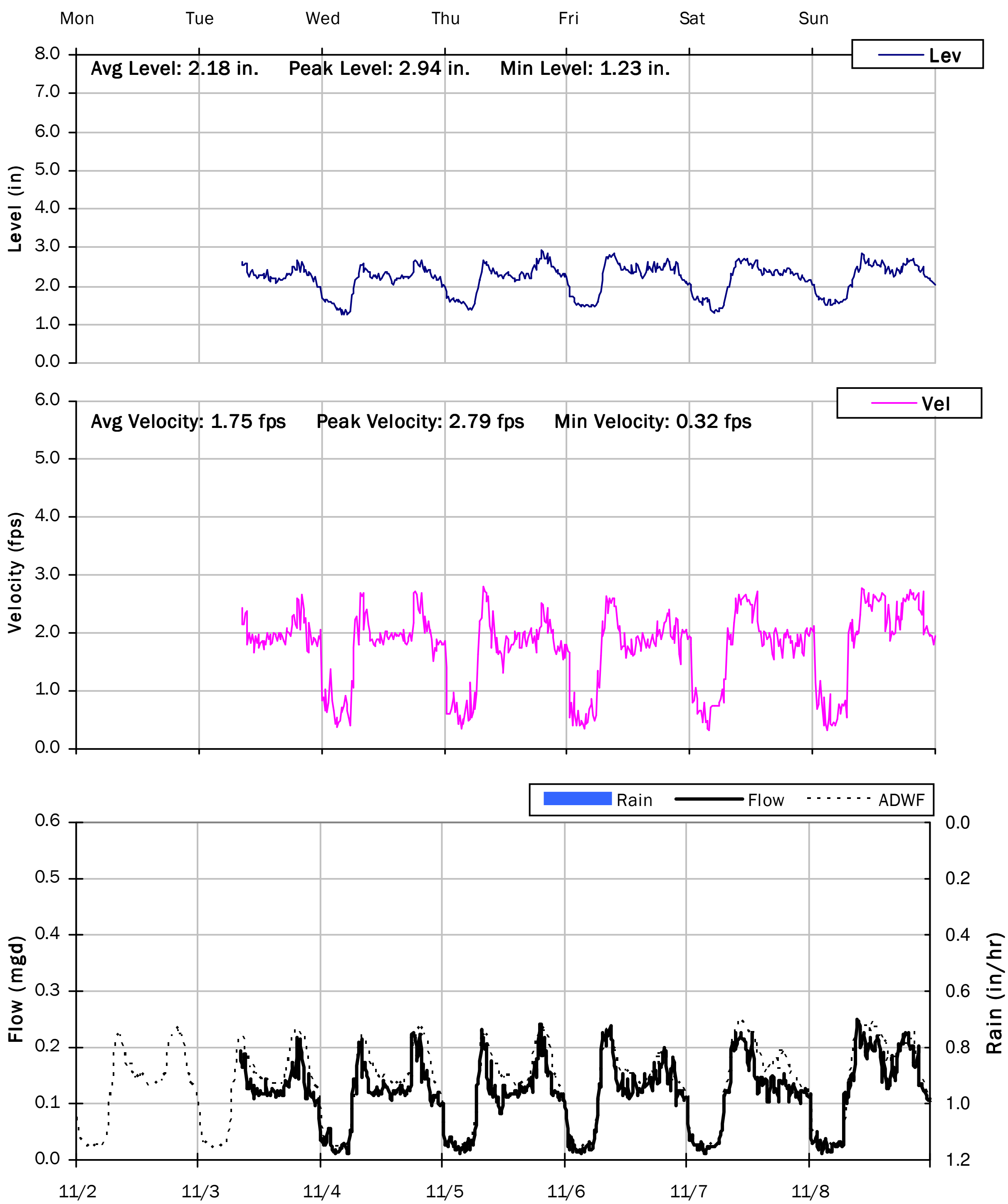
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 6.41 inches)

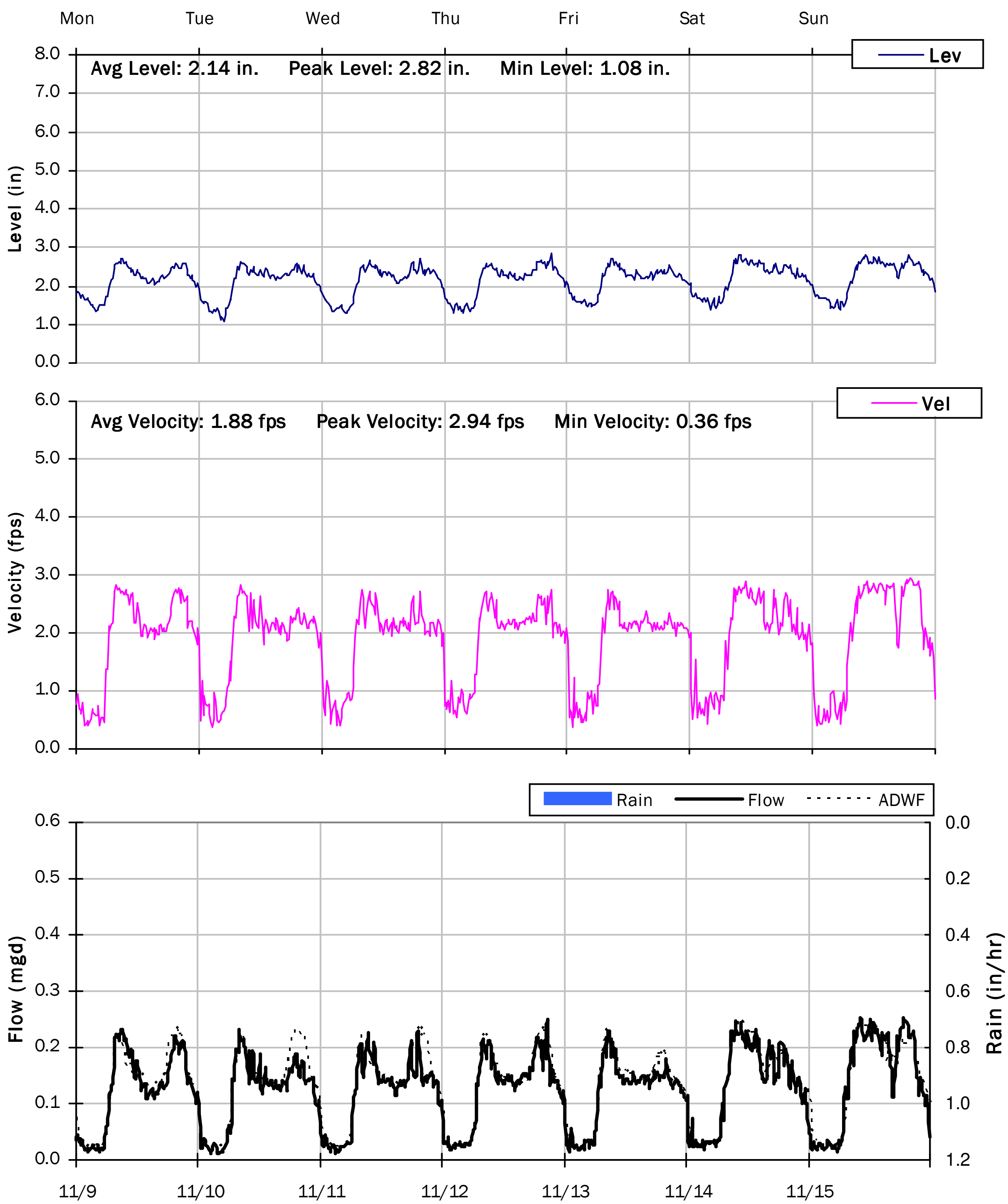
Capacity		Inflow / Infiltration	
Peak Flow:	0.48 *mgd*	**Peak I/I Rate:**	0.35 *mgd*
PF:	3.62	**Total I/I:**	397,000 *gallons*
Peak Level:	3.78 *in*		
d/D Ratio:	0.32		

SITE 07
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



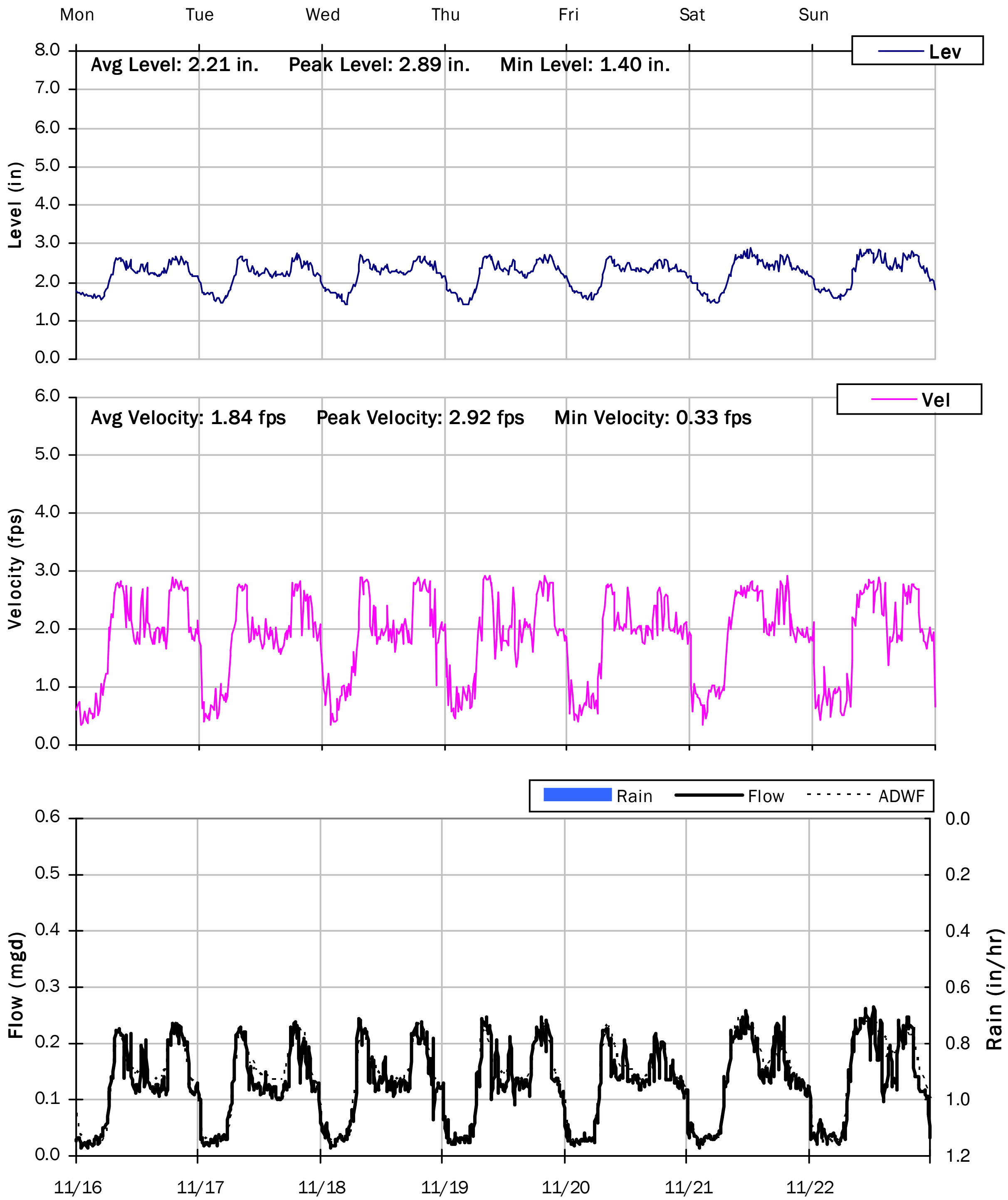
Avg Flow: 0.119 mgd **Peak Flow: 0.250 mgd** **Min Flow: 0.011 mgd**

SITE 07
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



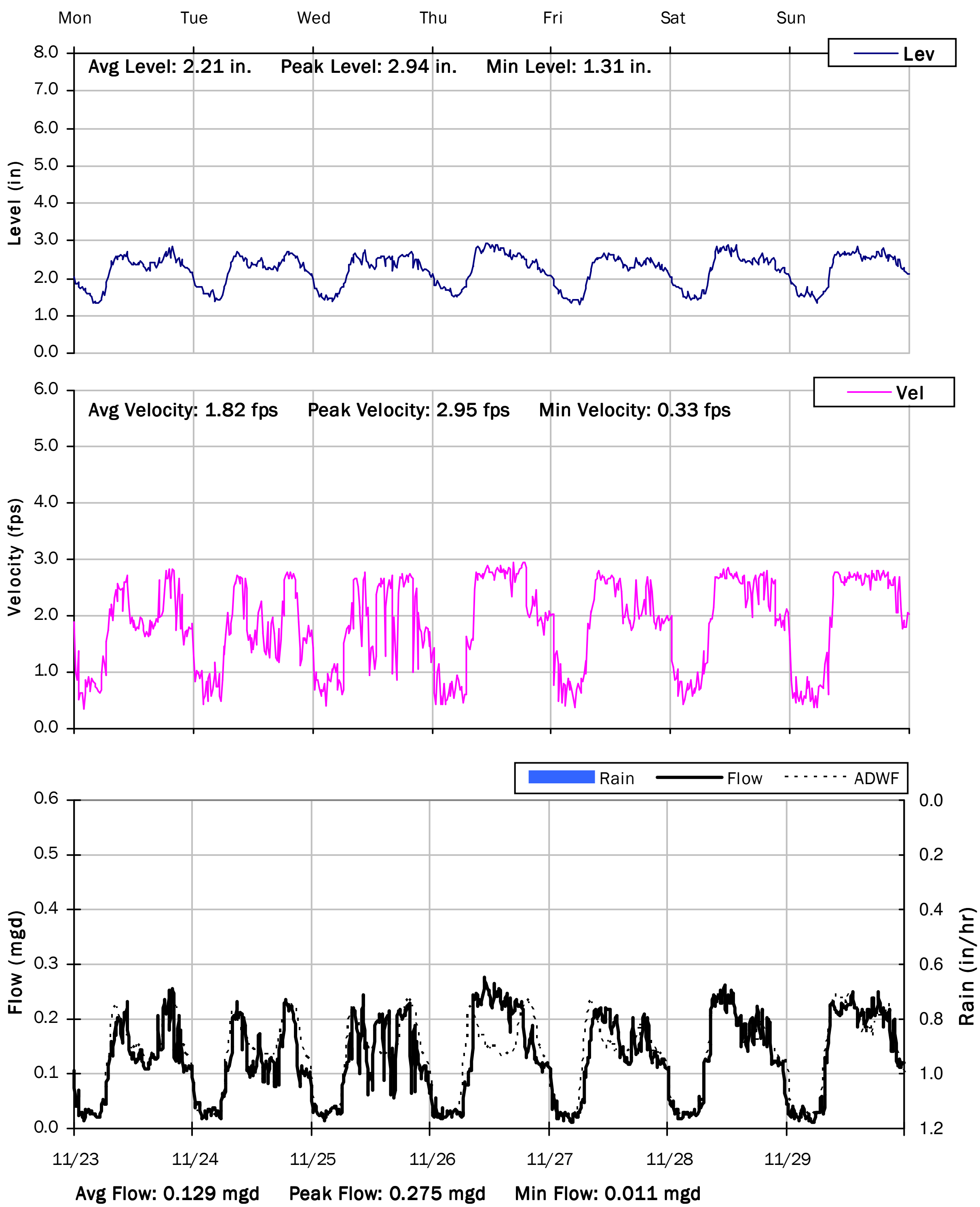
Avg Flow: 0.127 mgd **Peak Flow: 0.254 mgd** **Min Flow: 0.011 mgd**

SITE 07
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020

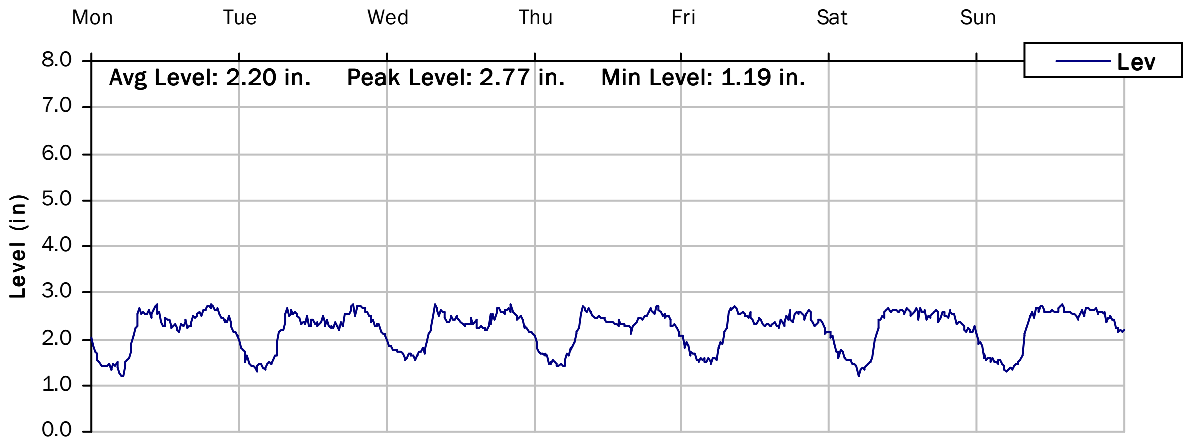


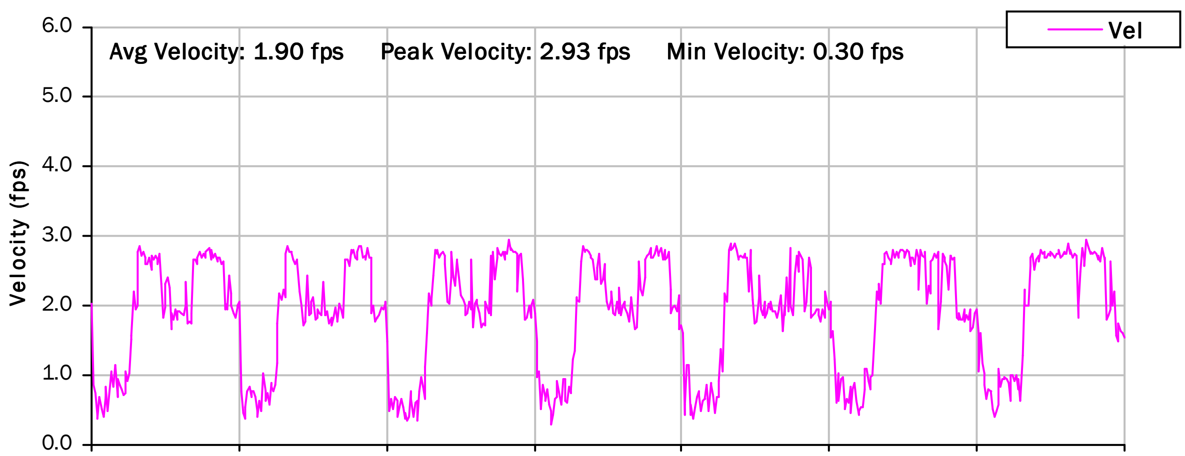
Avg Flow: 0.128 mgd **Peak Flow: 0.264 mgd** **Min Flow: 0.014 mgd**

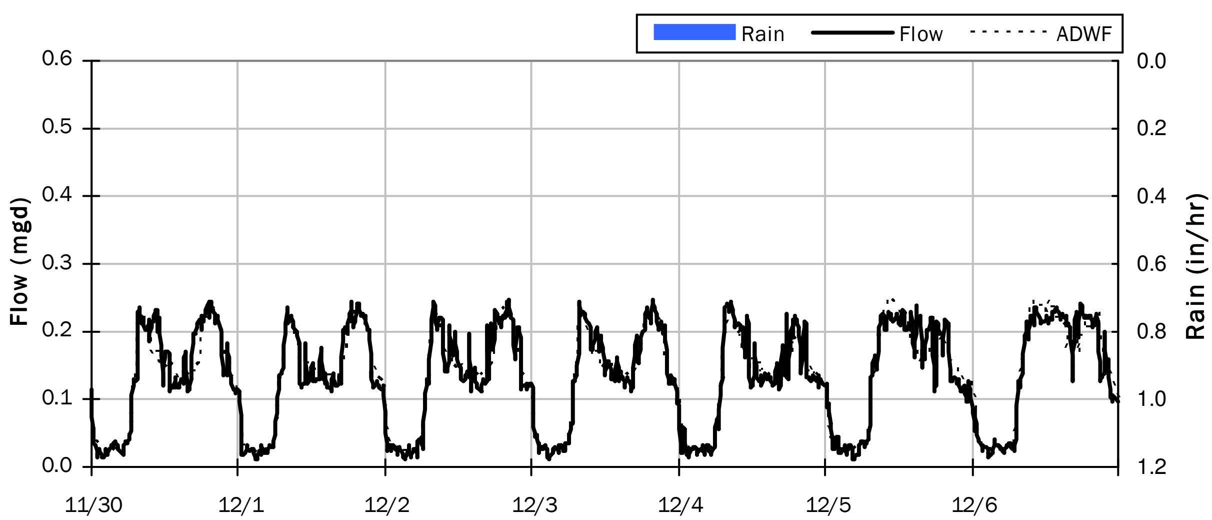
SITE 07
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



SITE 07
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

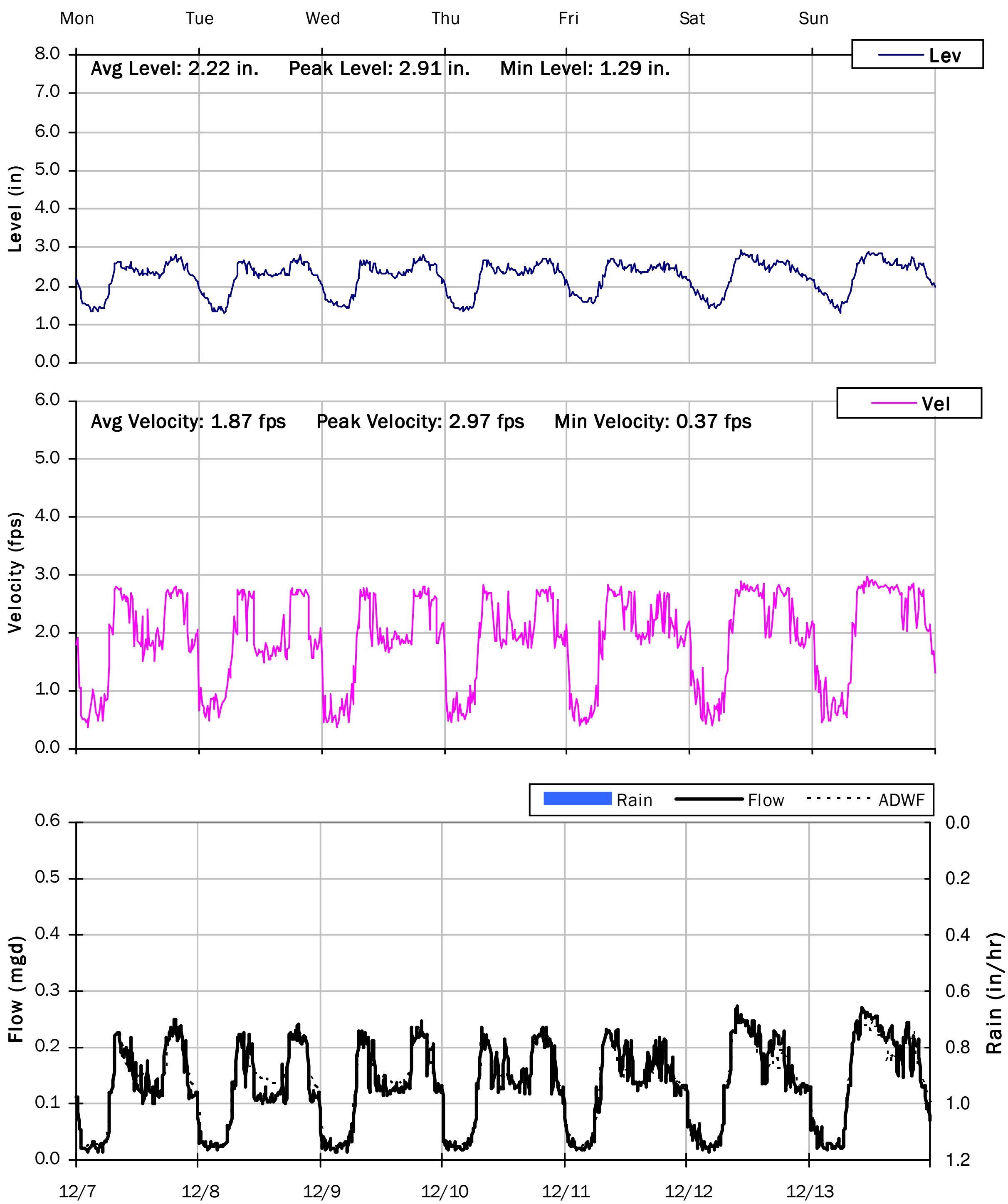






Avg Flow: 0.134 mgd **Peak Flow: 0.249 mgd** **Min Flow: 0.010 mgd**

SITE 07
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

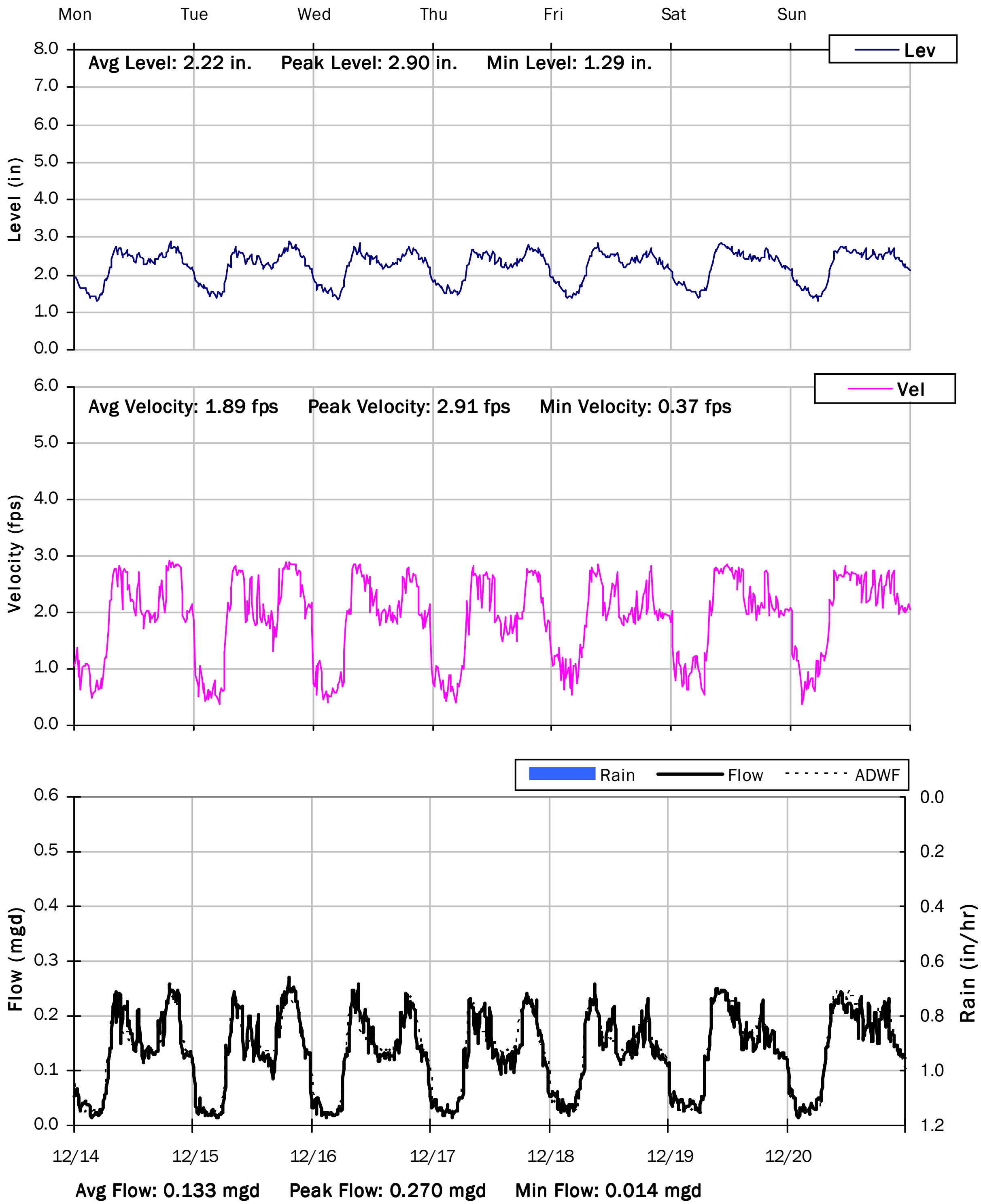


Avg Flow: 0.134 mgd **Peak Flow: 0.273 mgd** **Min Flow: 0.014 mgd**

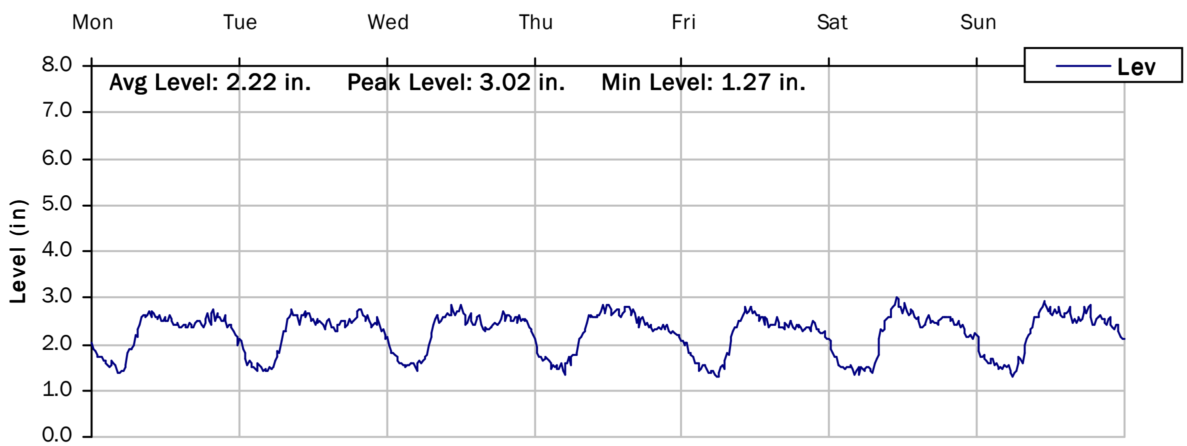
SITE 07

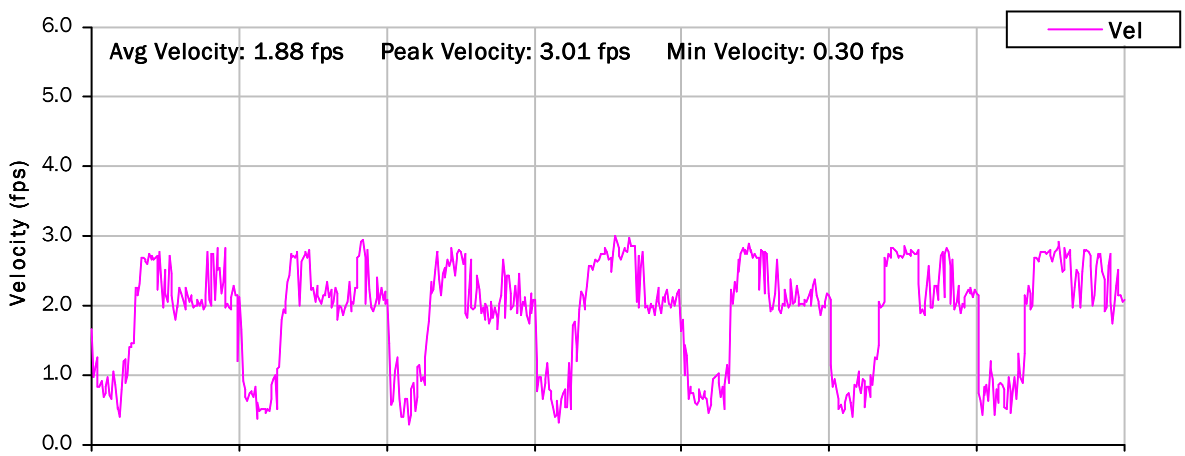
Weekly Level, Velocity and Flow Hydrographs

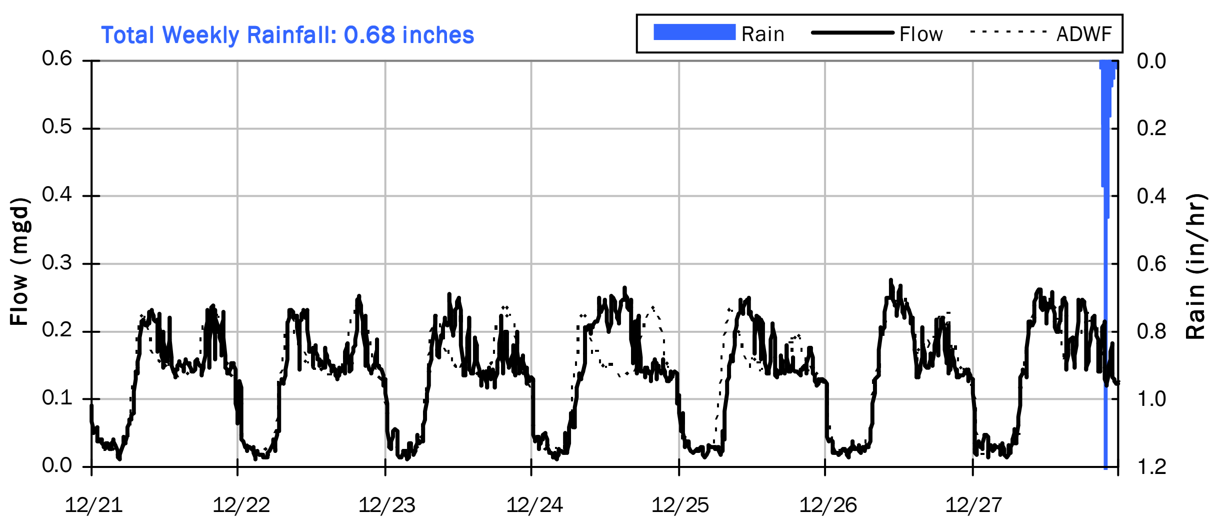
12/14/2020 to 12/21/2020



SITE 07
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

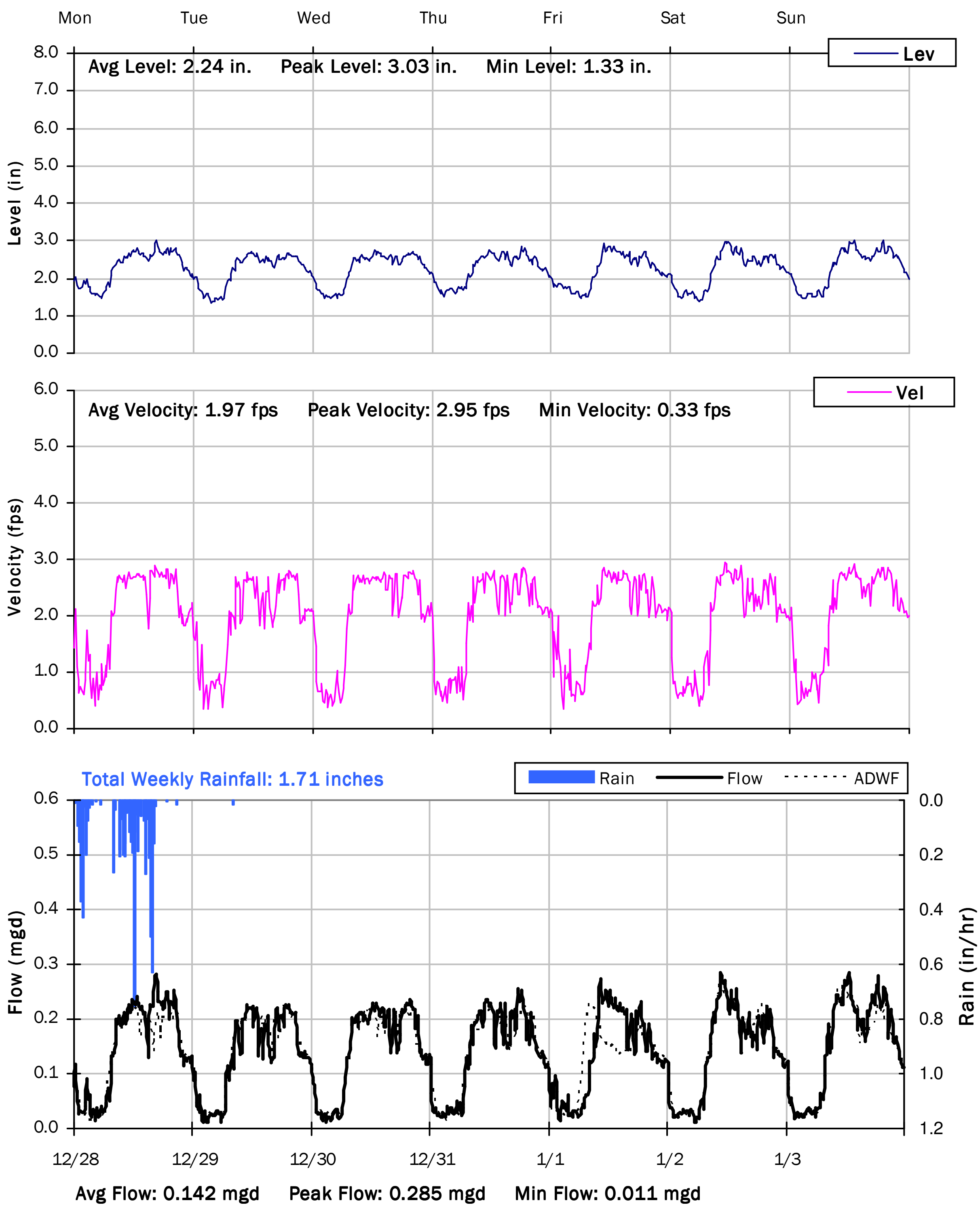




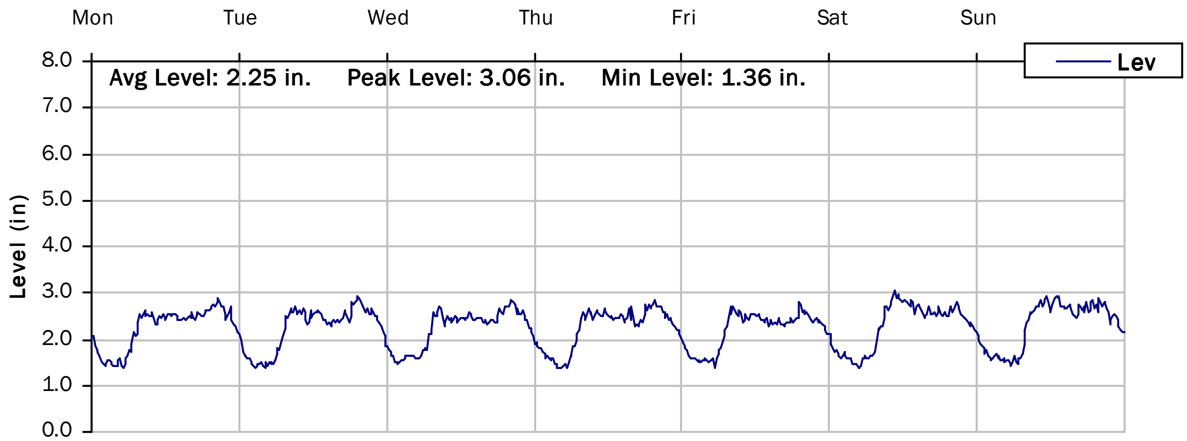


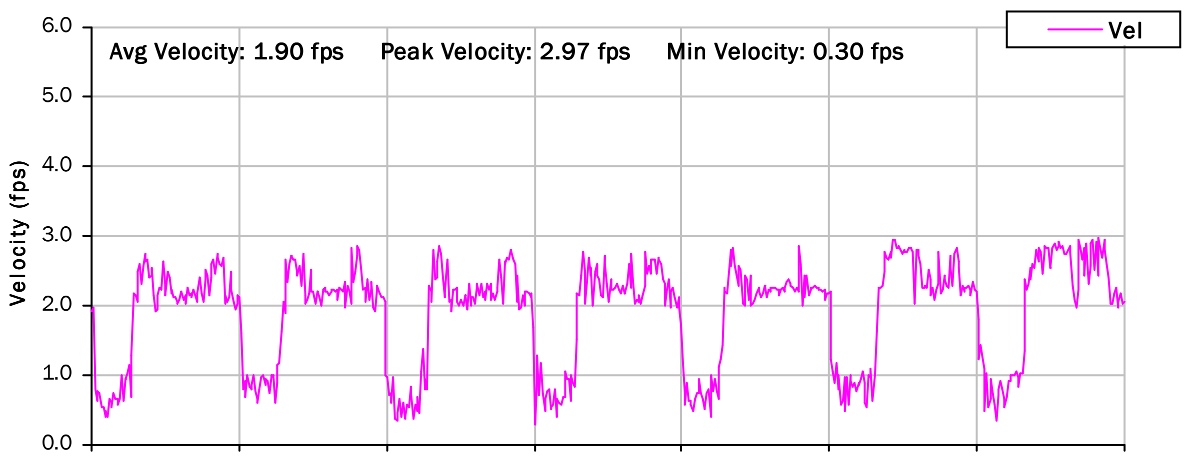
Avg Flow: 0.135 mgd **Peak Flow: 0.276 mgd** **Min Flow: 0.011 mgd**

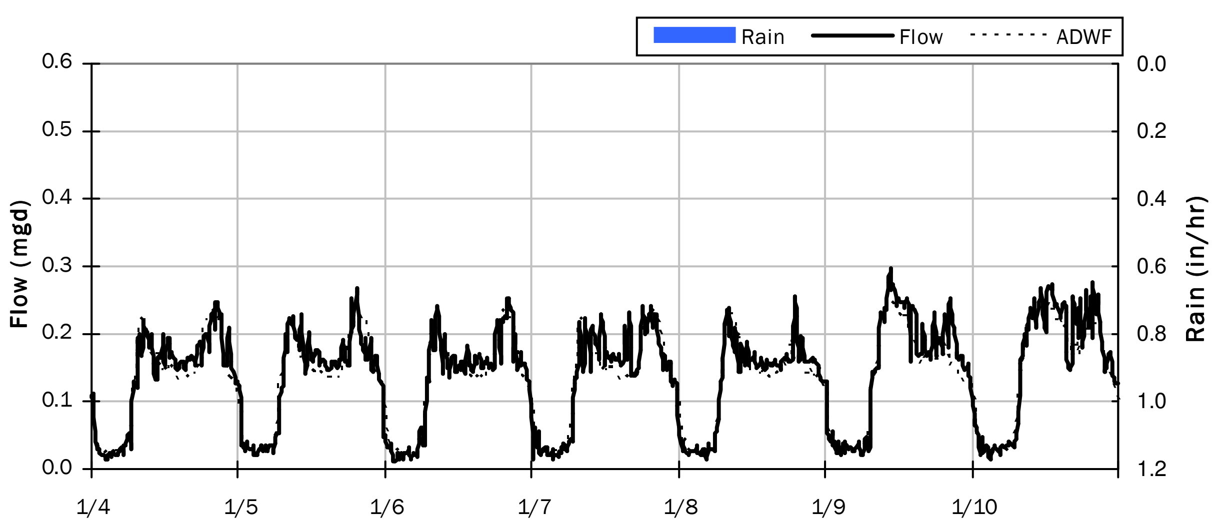
SITE 07
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



SITE 07
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

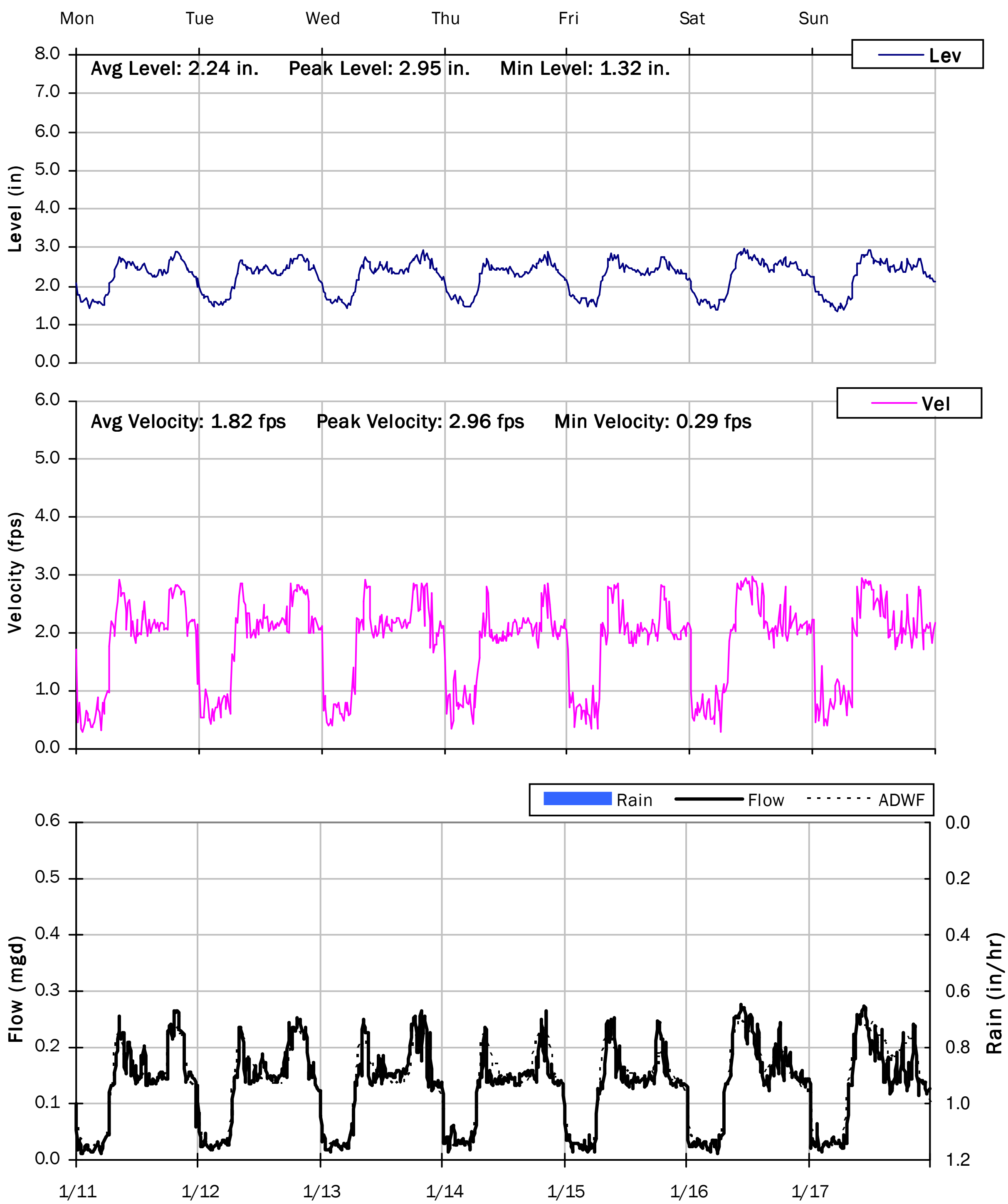






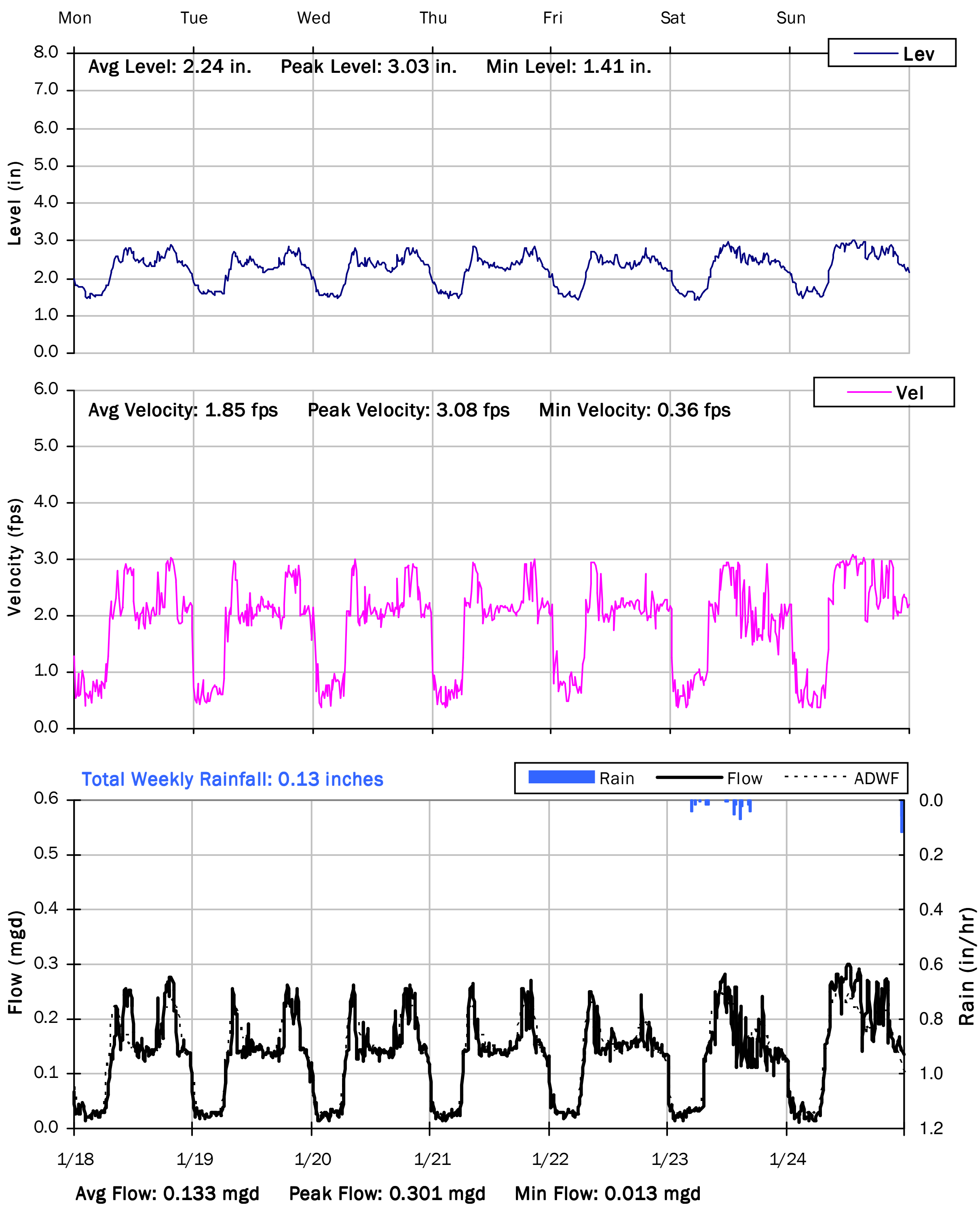
Avg Flow: 0.138 mgd **Peak Flow: 0.296 mgd** **Min Flow: 0.012 mgd**

SITE 07
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

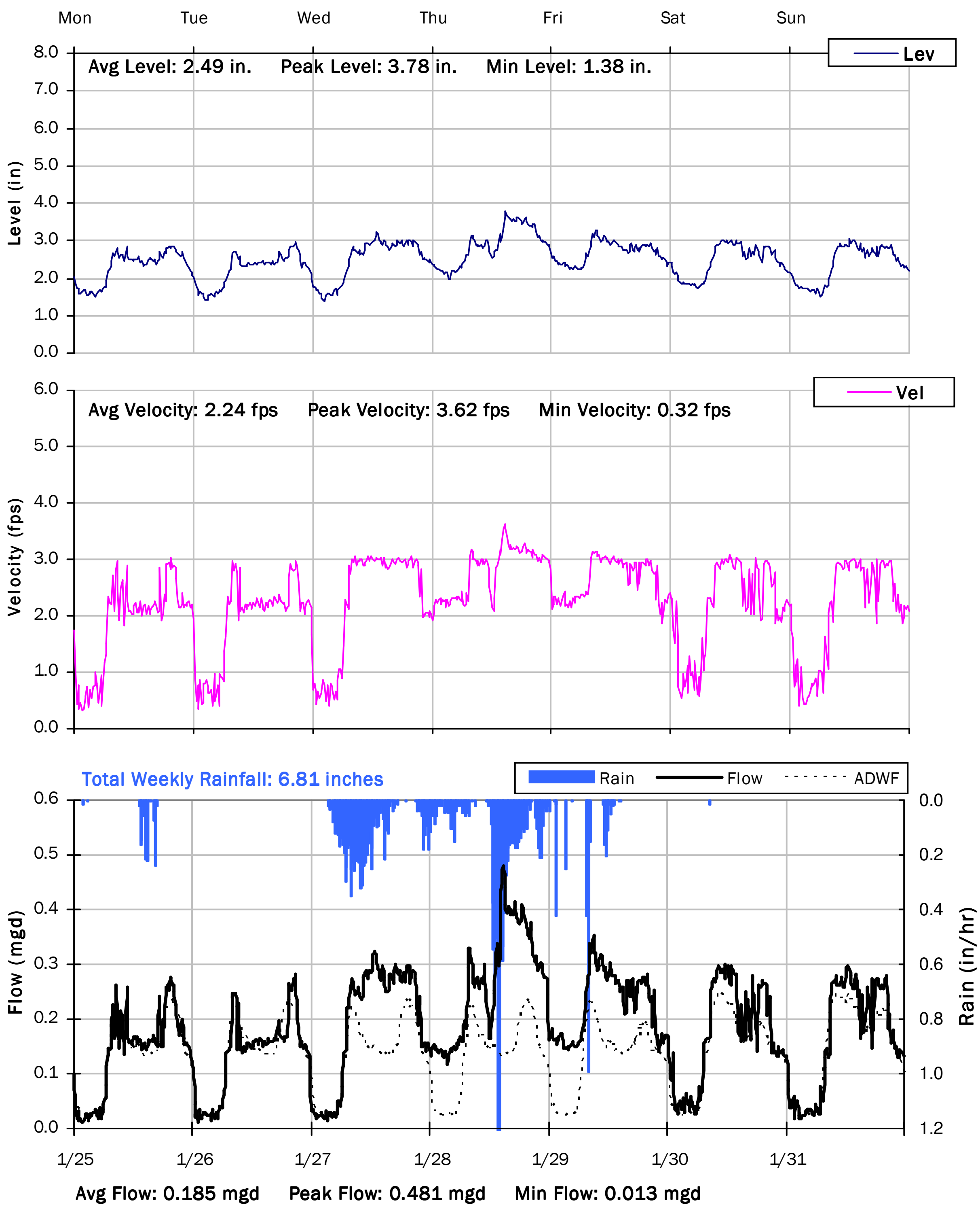


Avg Flow: 0.131 mgd **Peak Flow: 0.277 mgd** **Min Flow: 0.012 mgd**

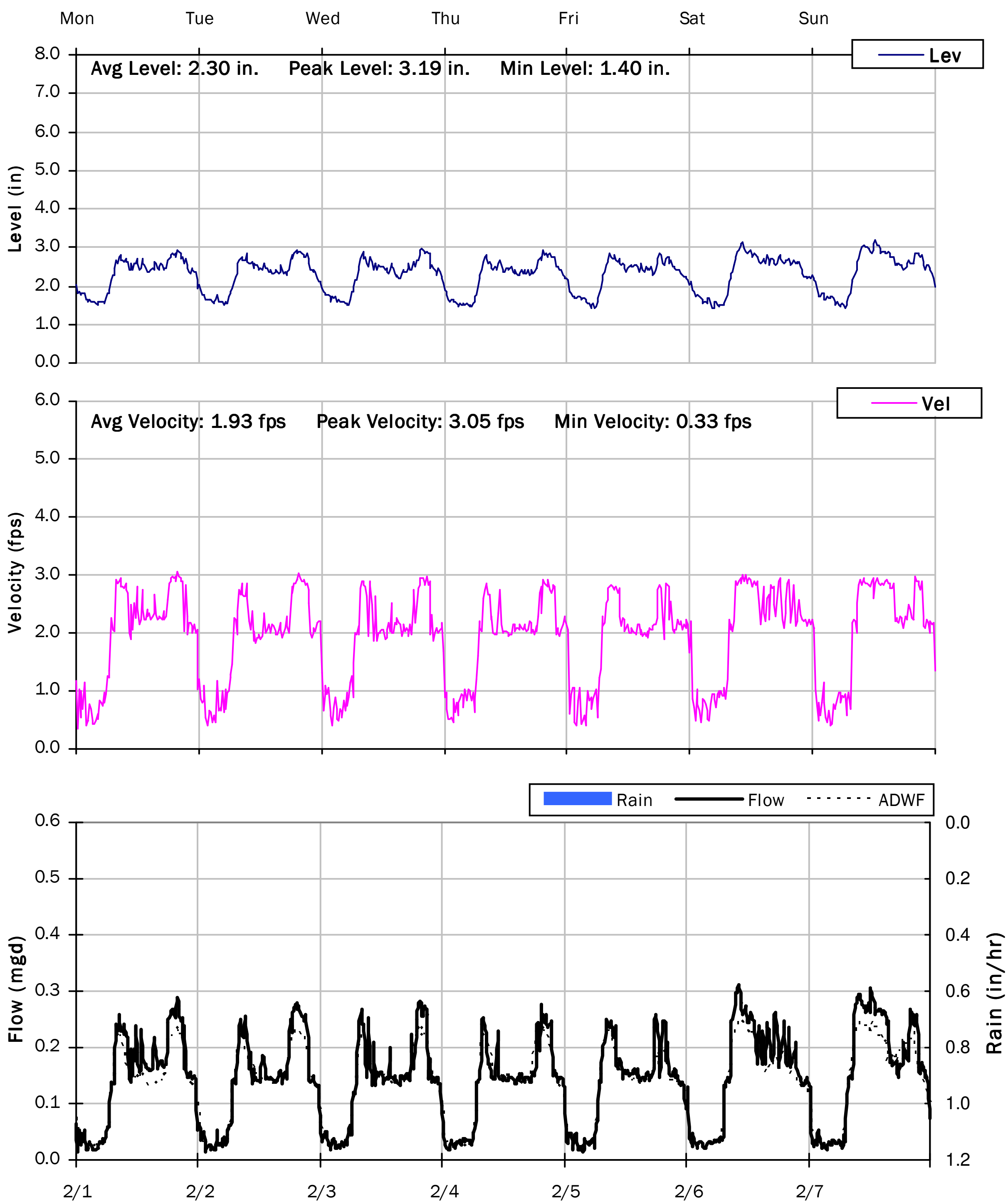
SITE 07
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021



SITE 07
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 07
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.145 mgd **Peak Flow: 0.313 mgd** **Min Flow: 0.015 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

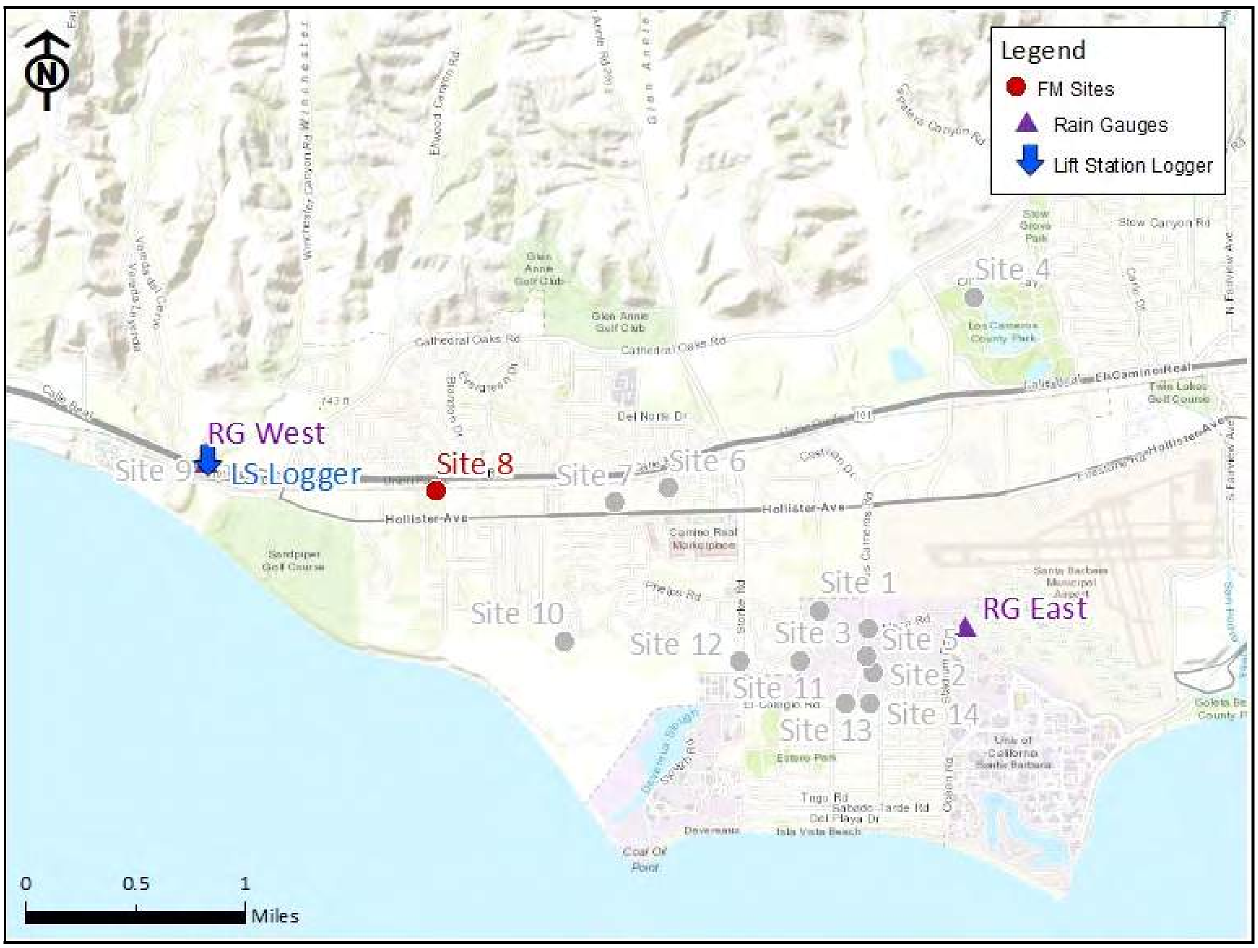
November 3, 2020 - February 7, 2021

Monitoring Site: Site 08

City Manhole: 79-68-01

Location: Behind apartments on Pebble Beach Drive, in bushes

Data Summary Report



Vicinity Map: Site 08

SITE 08

Site Information

Location: Behind apartments on Pebble Beach Drive, in bushes

City Manhole: 79-68-01

Coordinates: 119.8939° W, 34.4316° N

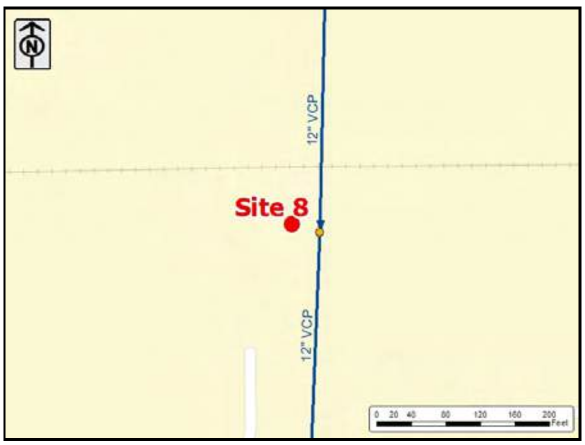
Rim Elevation (Earth): 85 feet

Pipe Diameter: 11.75 inches

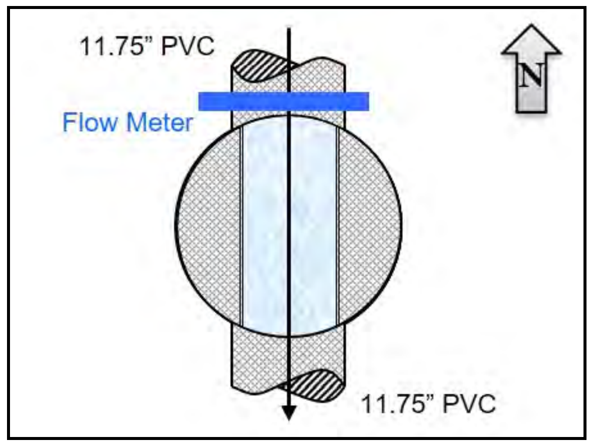
ADWF: 0.128 mgd

Peak Measured Flow: 0.474 mgd

Satellite Map



Sanitary Map



Flow Sketch


Street View


Plan View

SITE 08

Additional Site Photos

Monitored North Influent

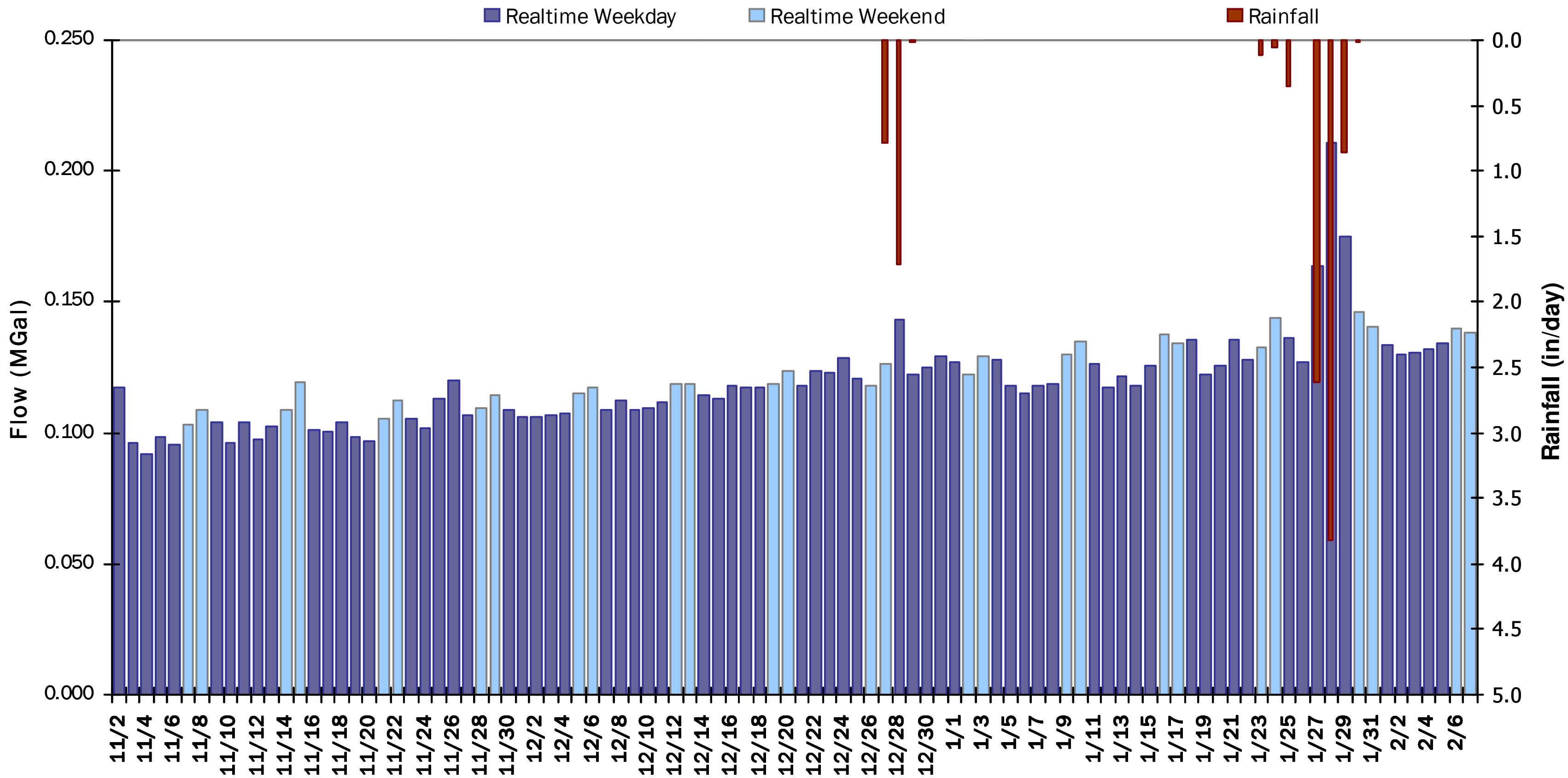
South Effluent

SITE 08

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.120 MGal **Peak Daily Flow: 0.211 MGal** **Min Daily Flow: 0.092 MGal**

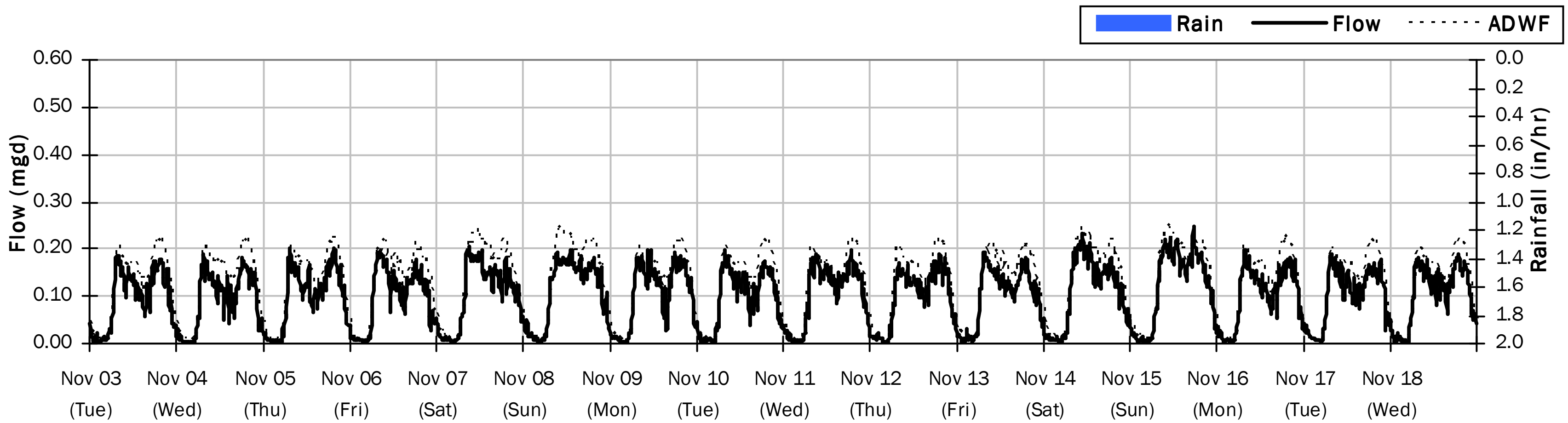
Total Period Rainfall: 10.32 inches

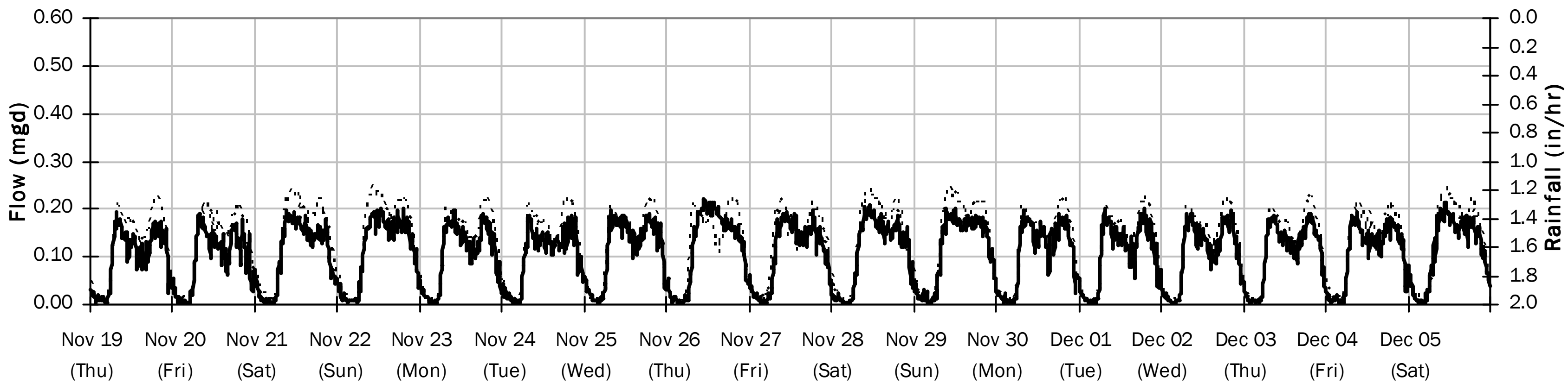


SITE 08

Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches **Avg Flow: 0.105 mgd** **Peak Flow: 0.247 mgd** **Min Flow: 0.002 mgd**

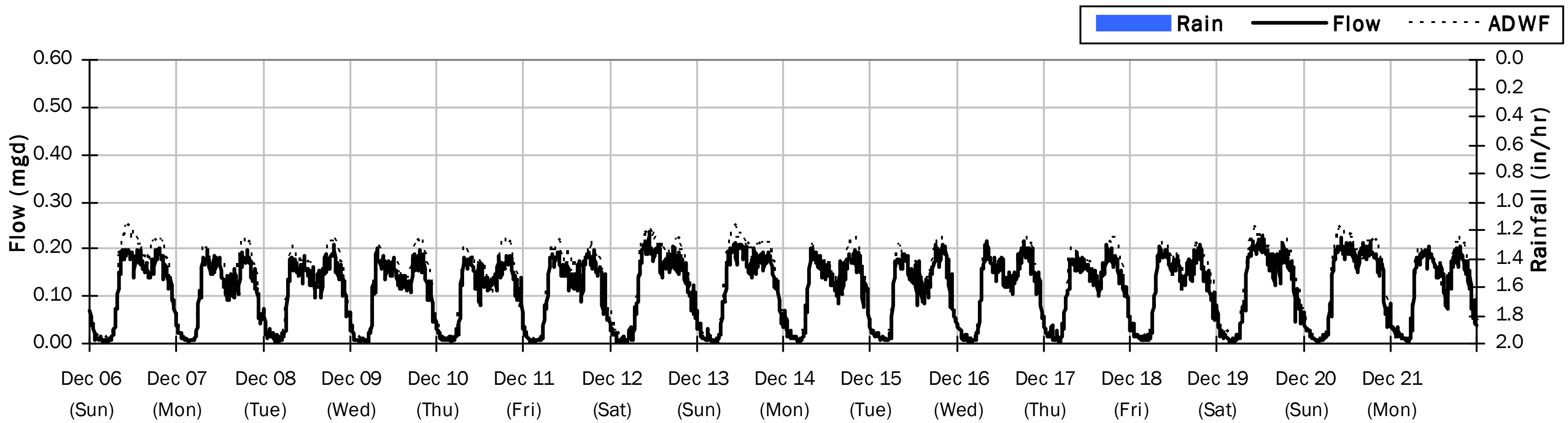


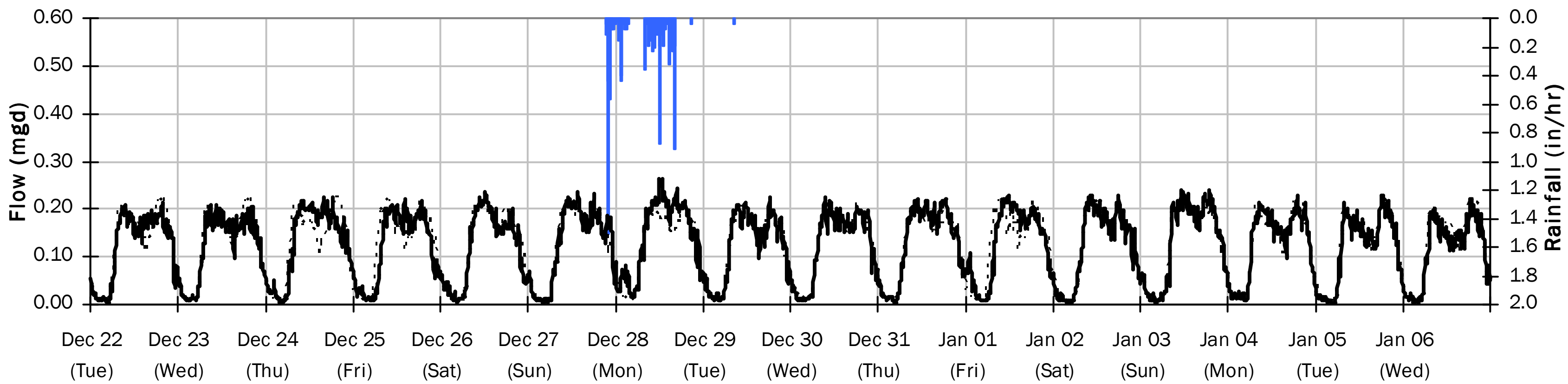


SITE 08

Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.51 inches   **Avg Flow: 0.120 mgd   Peak Flow: 0.264 mgd   Min Flow: 0.003 mgd**

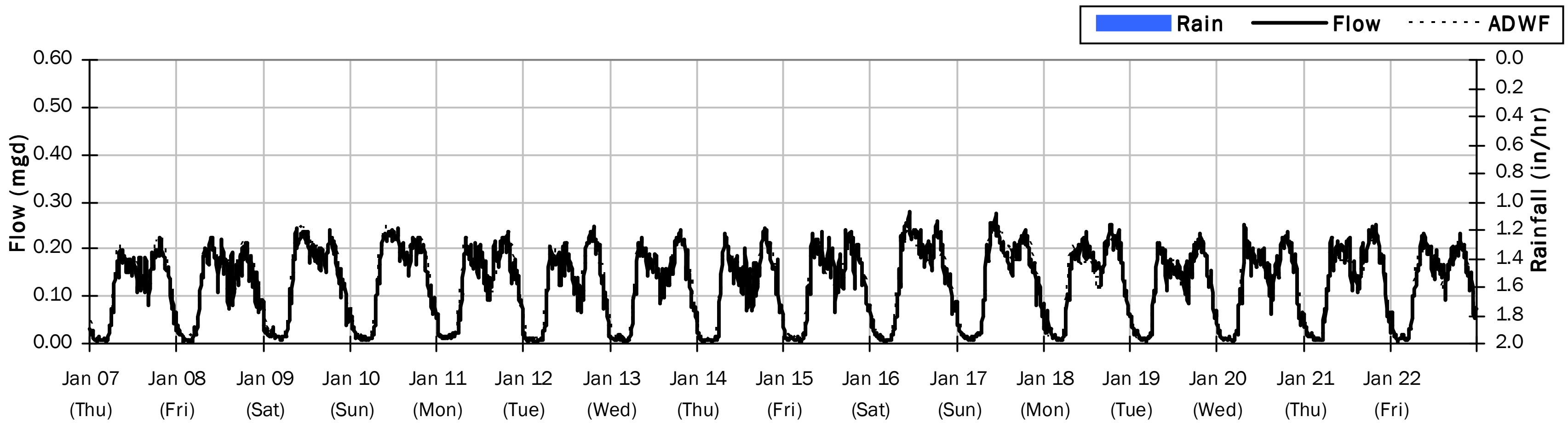


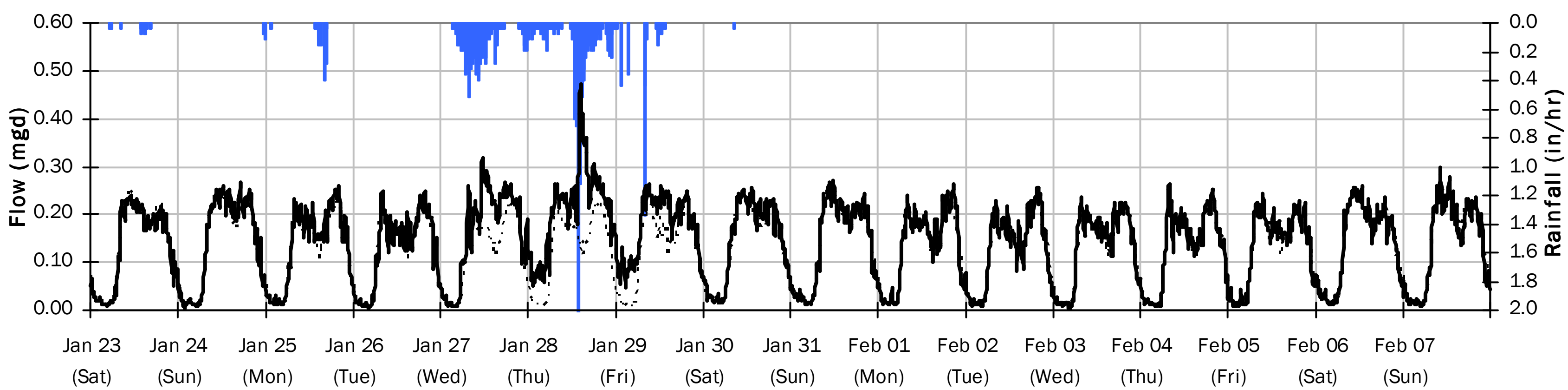


SITE 08

Flow Summary: 1/7/2021 to 2/7/2021

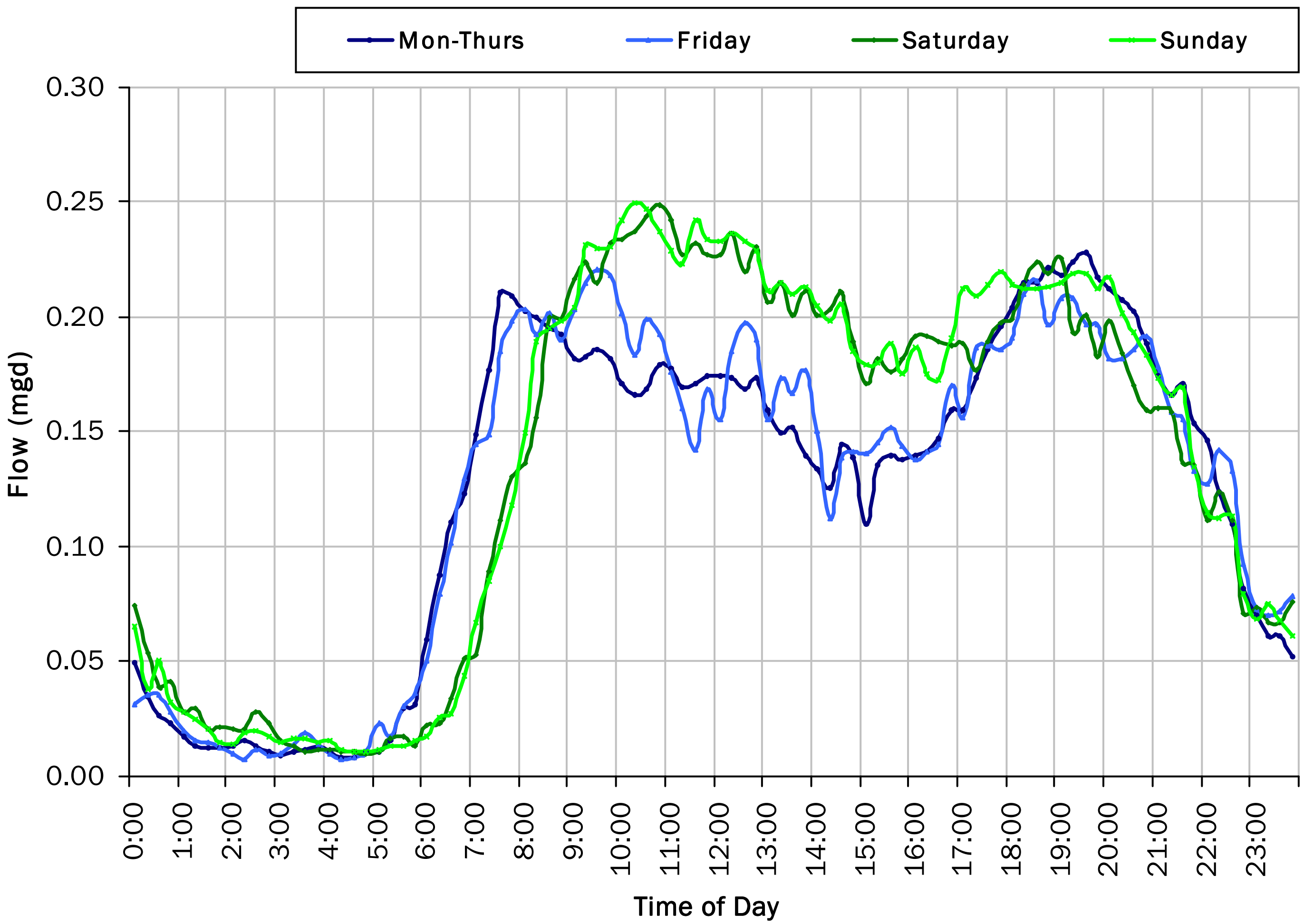
Total Period Rainfall: 7.81 inches   **Avg Flow: 0.136 mgd**   **Peak Flow: 0.474 mgd**   **Min Flow: 0.004 mgd**





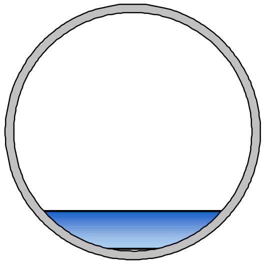
SITE 08

Average Dry Weather Flow Hydrographs



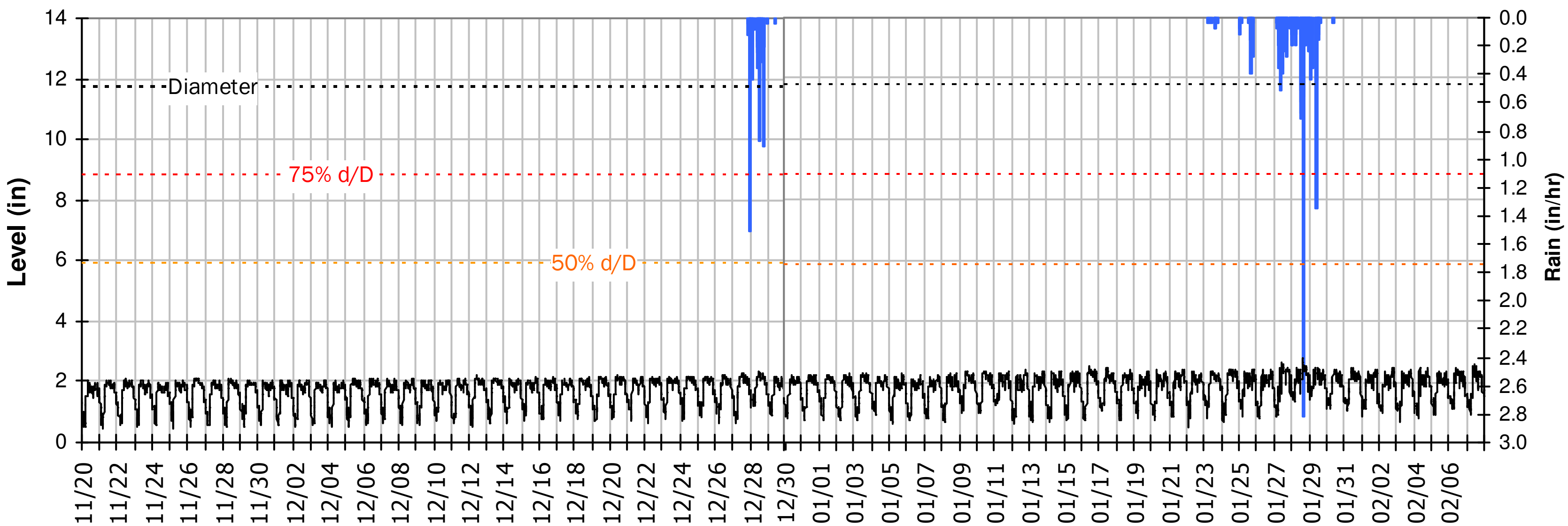
ADWF:

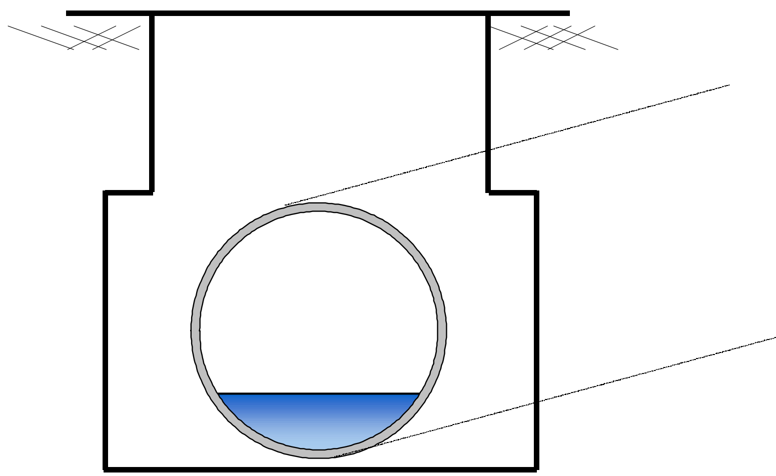
0.128 *mgd*



SITE 08
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





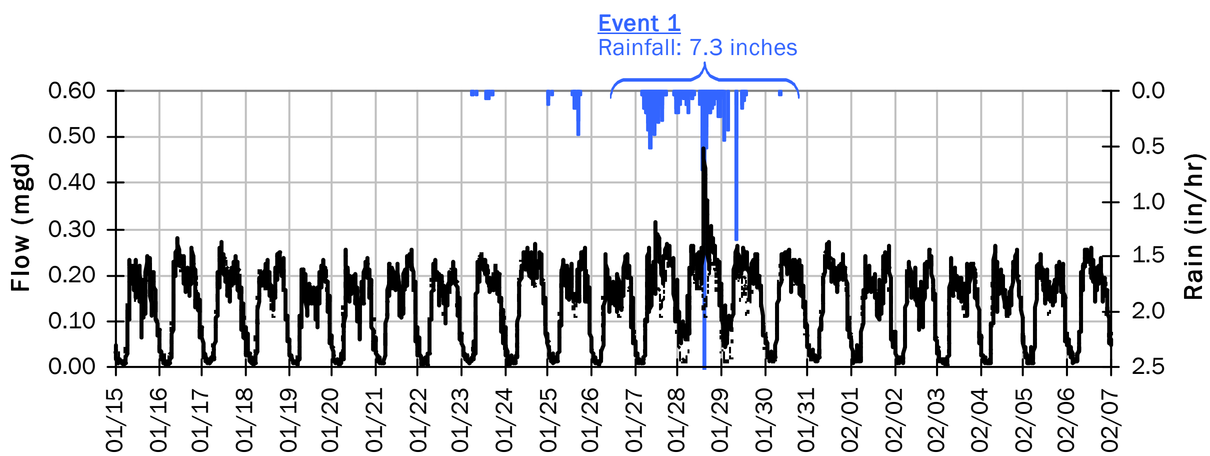
Pipe Diameter: 11.8 *inches*

Peak Measured Level: 2.8 *inches*

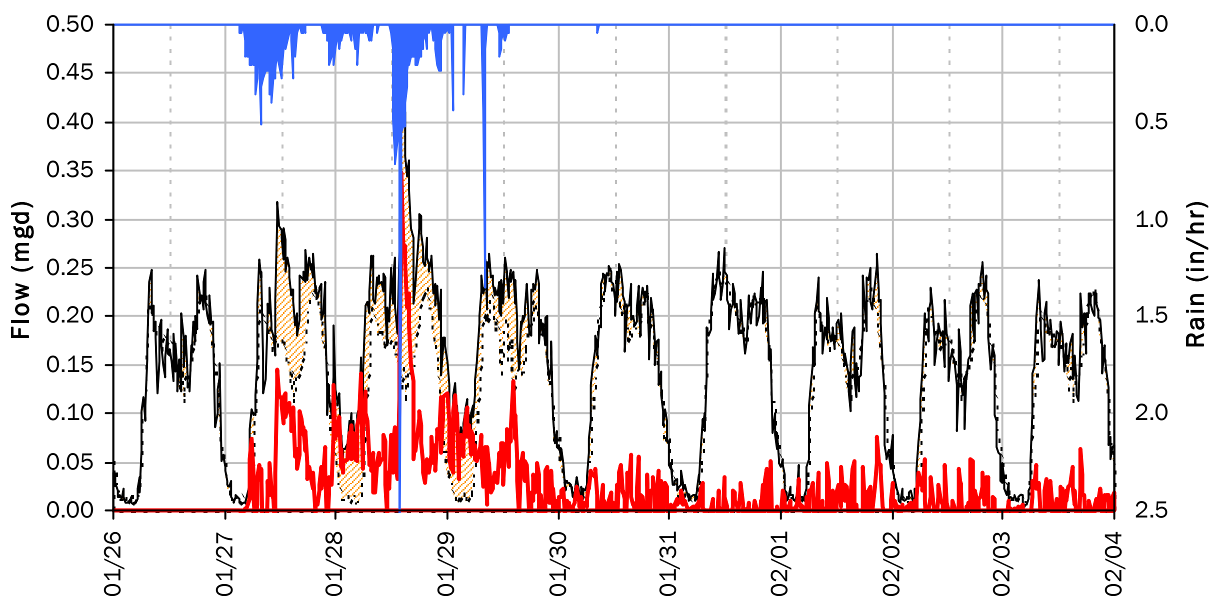
Peak d/D Ratio: 0.24

SITE 08
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



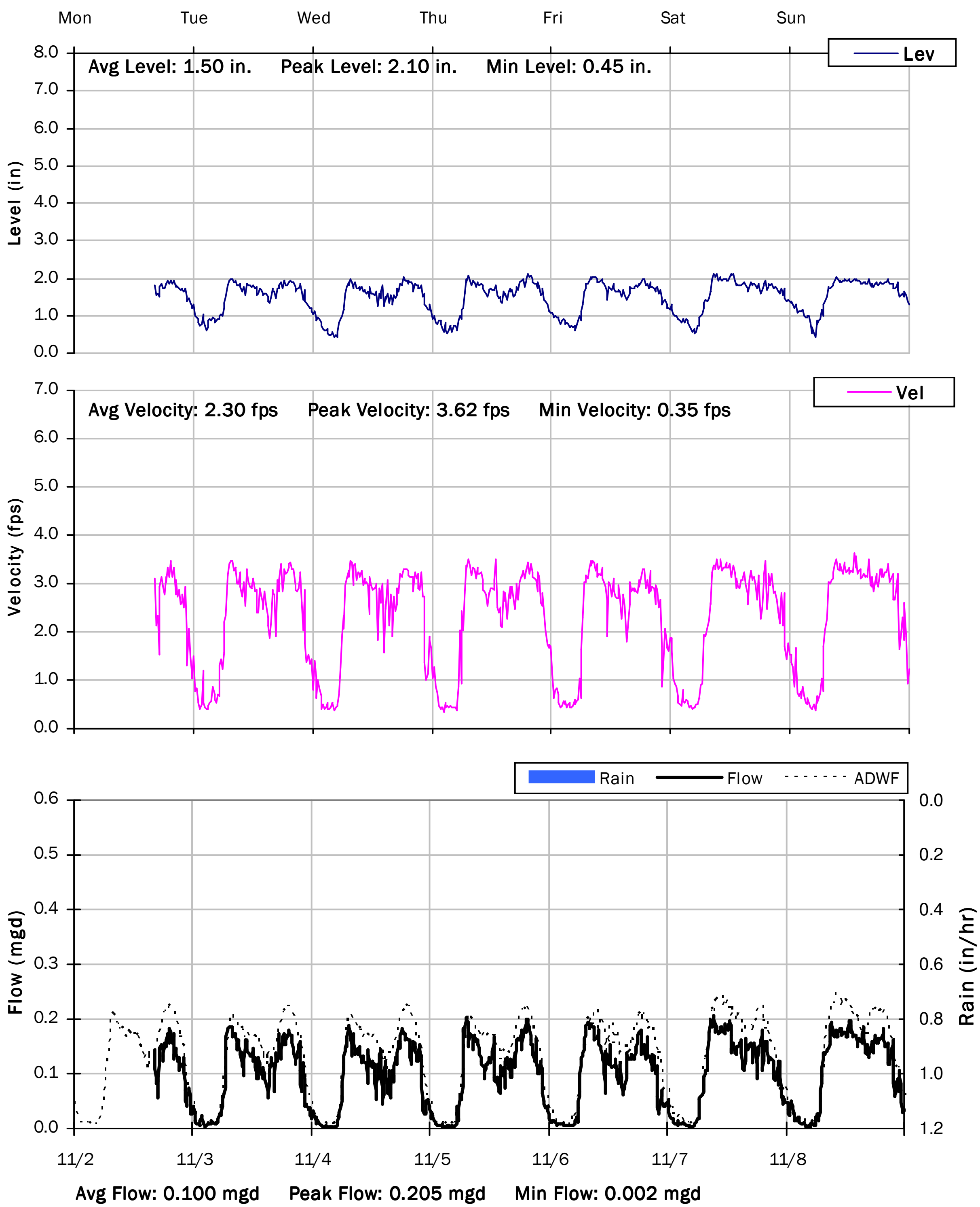
Event 1 Detail Graph



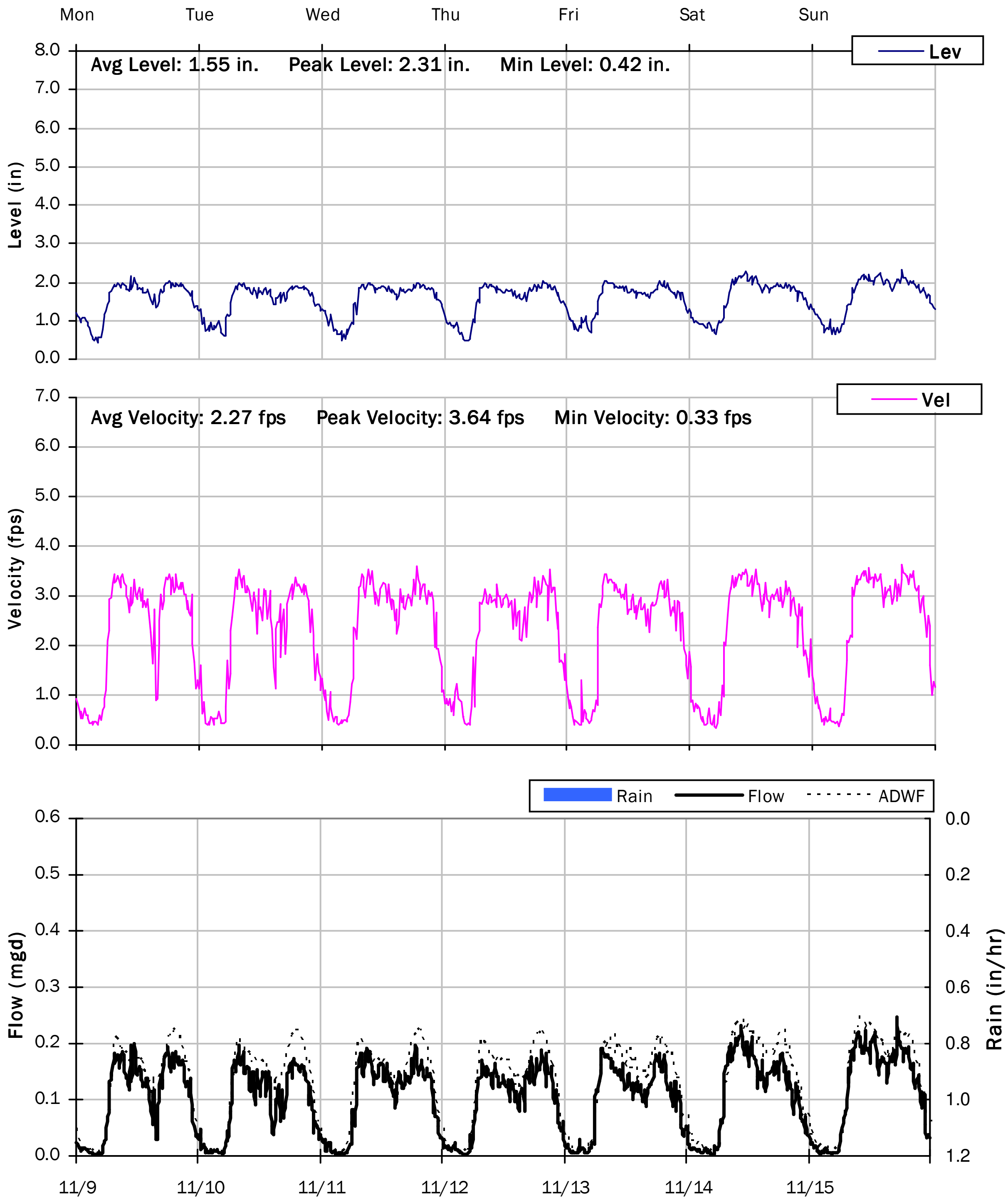
Storm Event I/I Analysis (Rain = 7.30 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.47 *mgd*	**Peak I/I Rate:**	0.35 *mgd*
PF:	3.70	**Total I/I:**	204,000 *gallons*
Peak Level:	2.80 *in*		
d/D Ratio:	0.24		

SITE 08
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

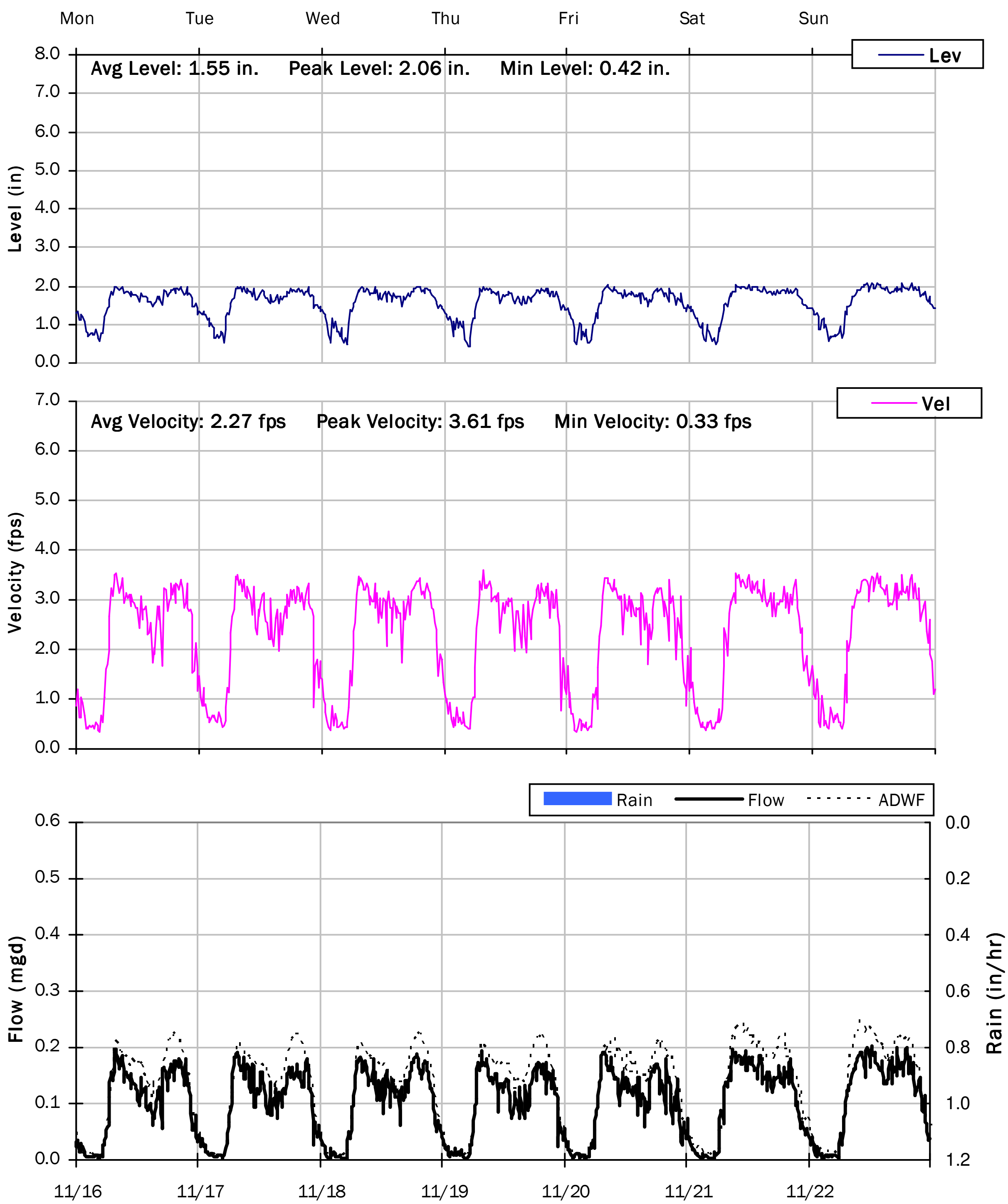


SITE 08
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



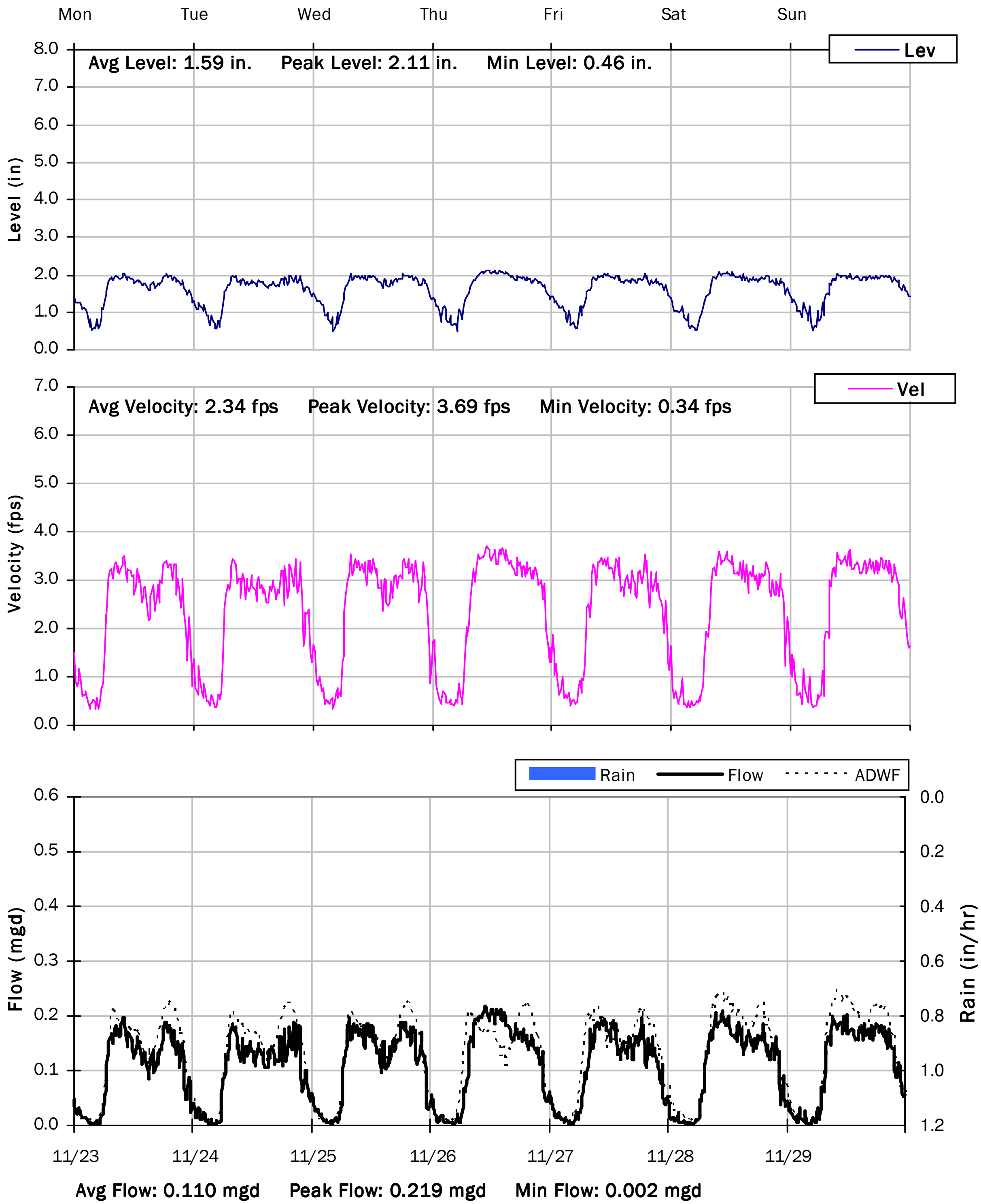
Avg Flow: 0.105 mgd **Peak Flow: 0.247 mgd** **Min Flow: 0.002 mgd**

SITE 08
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020

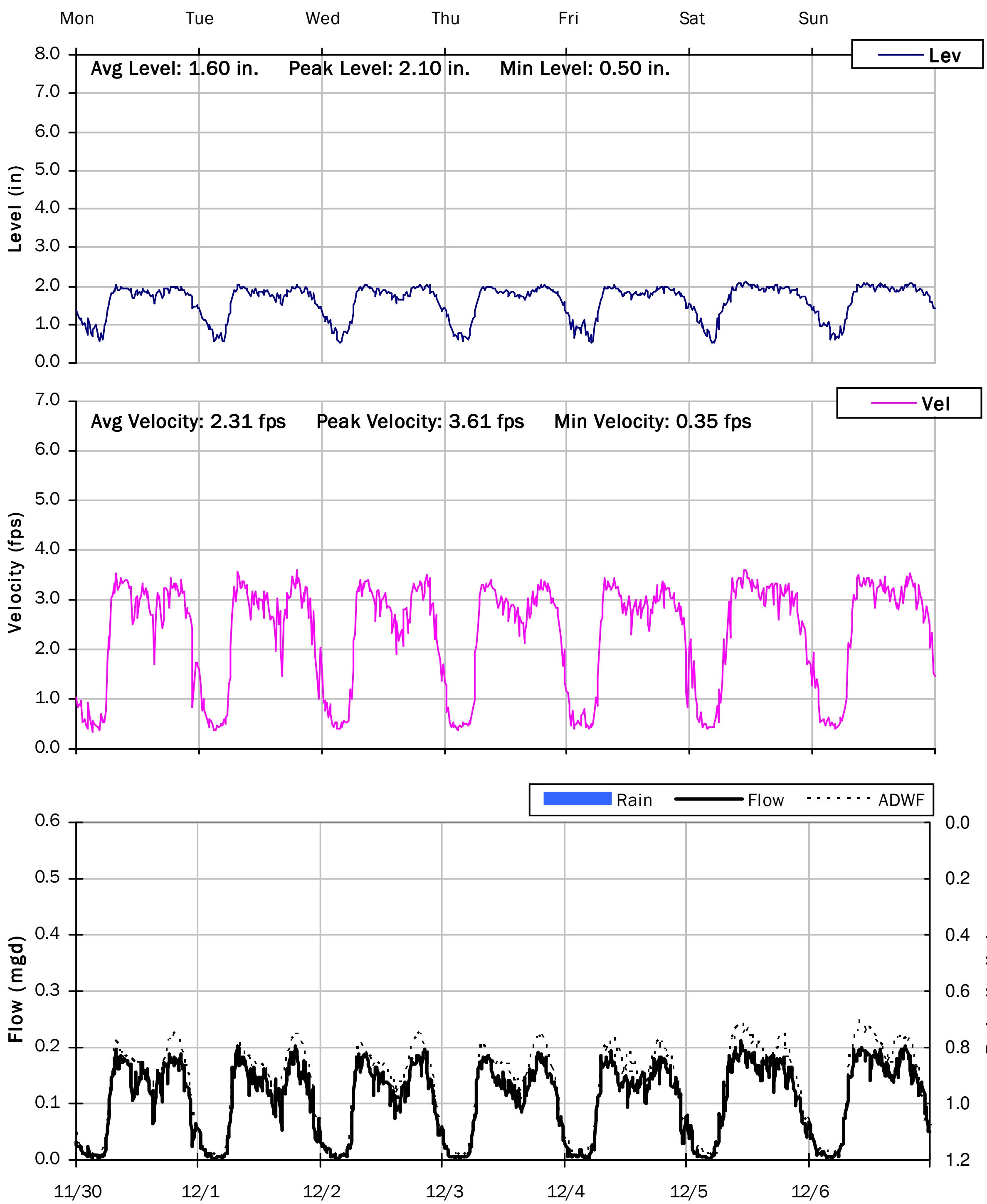


Avg Flow: 0.103 mgd **Peak Flow: 0.202 mgd** **Min Flow: 0.002 mgd**

SITE 08
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

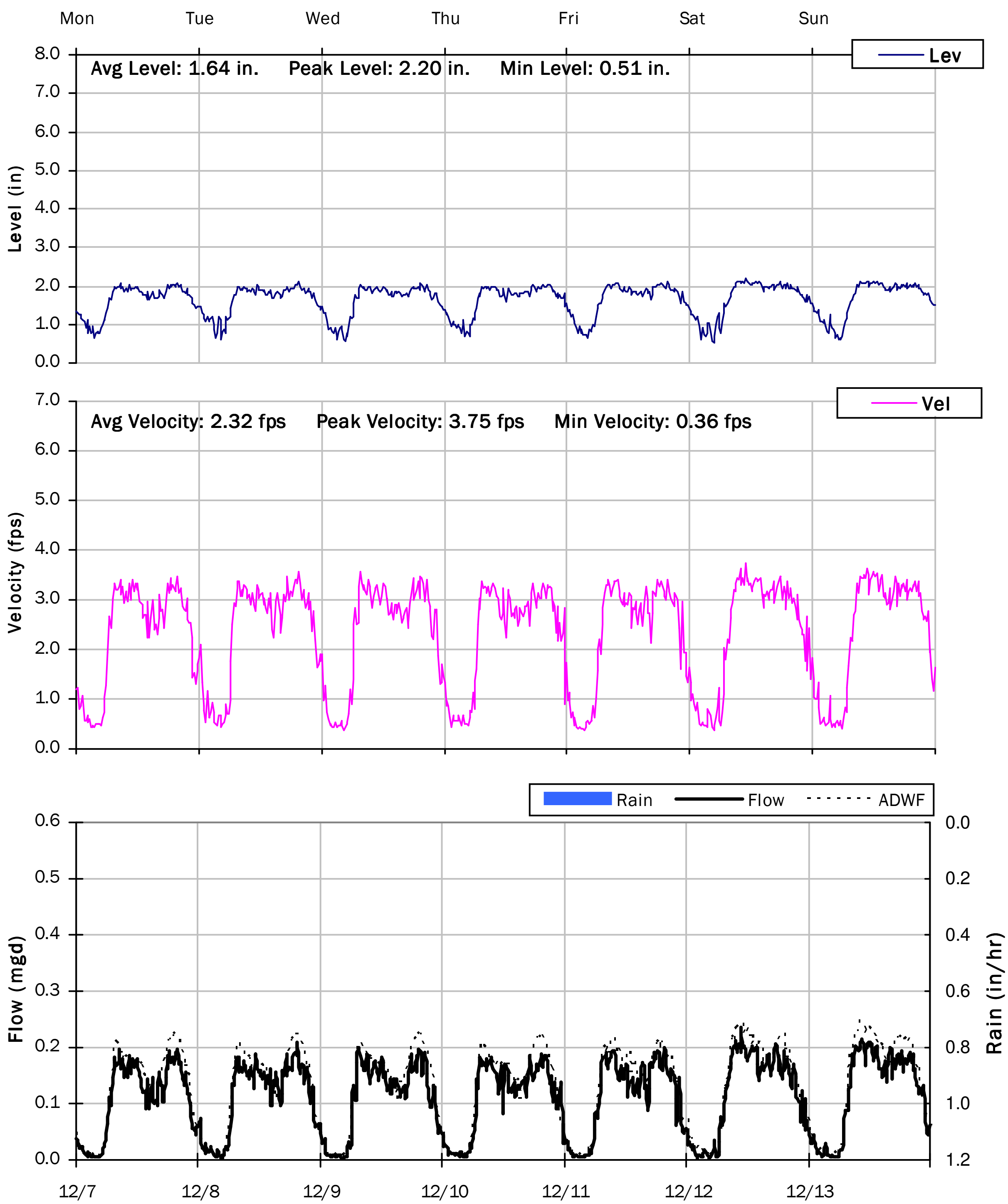


SITE 08
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



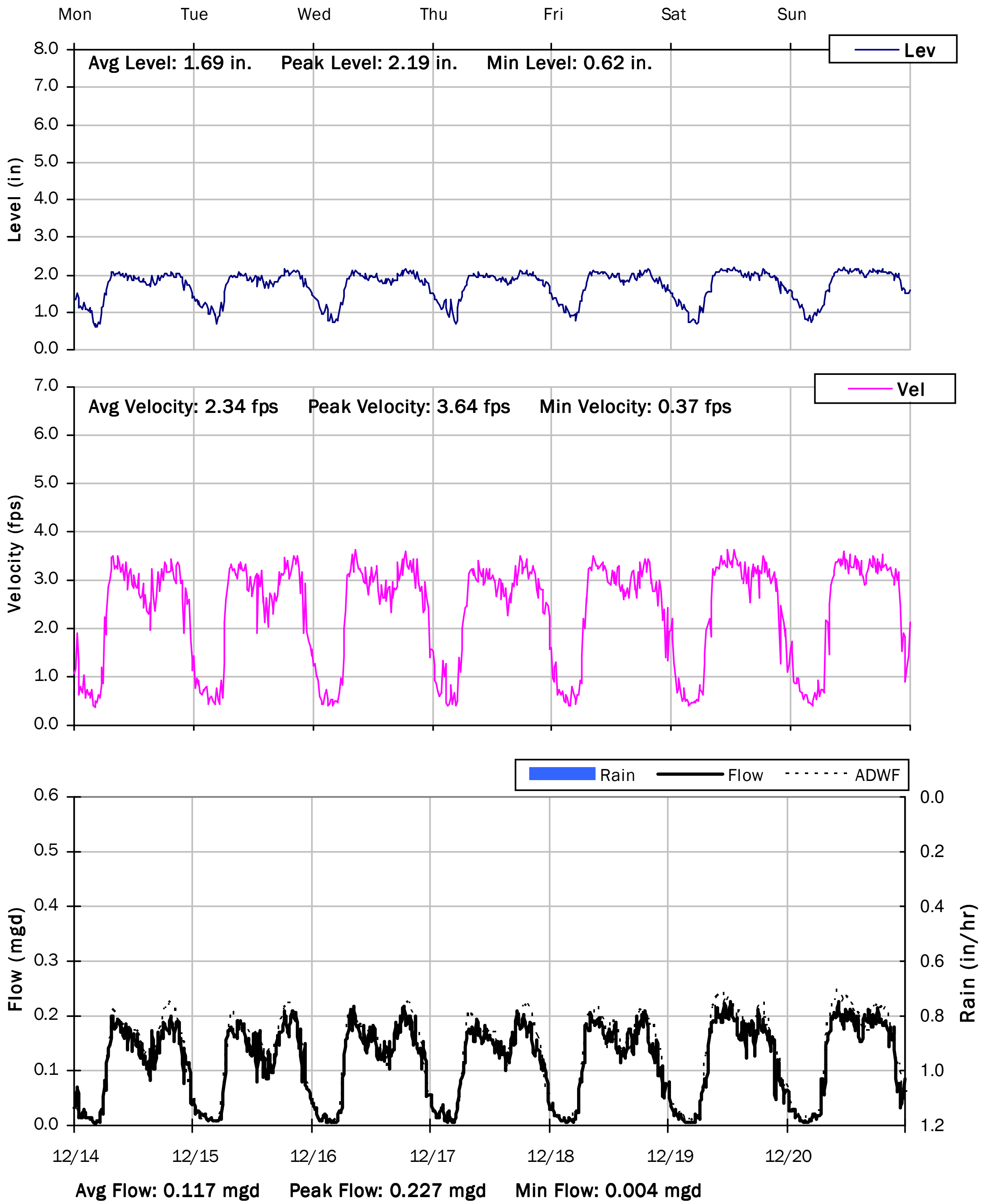
Avg Flow: 0.110 mgd   Peak Flow: 0.211 mgd   Min Flow: 0.003 mgd

SITE 08
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

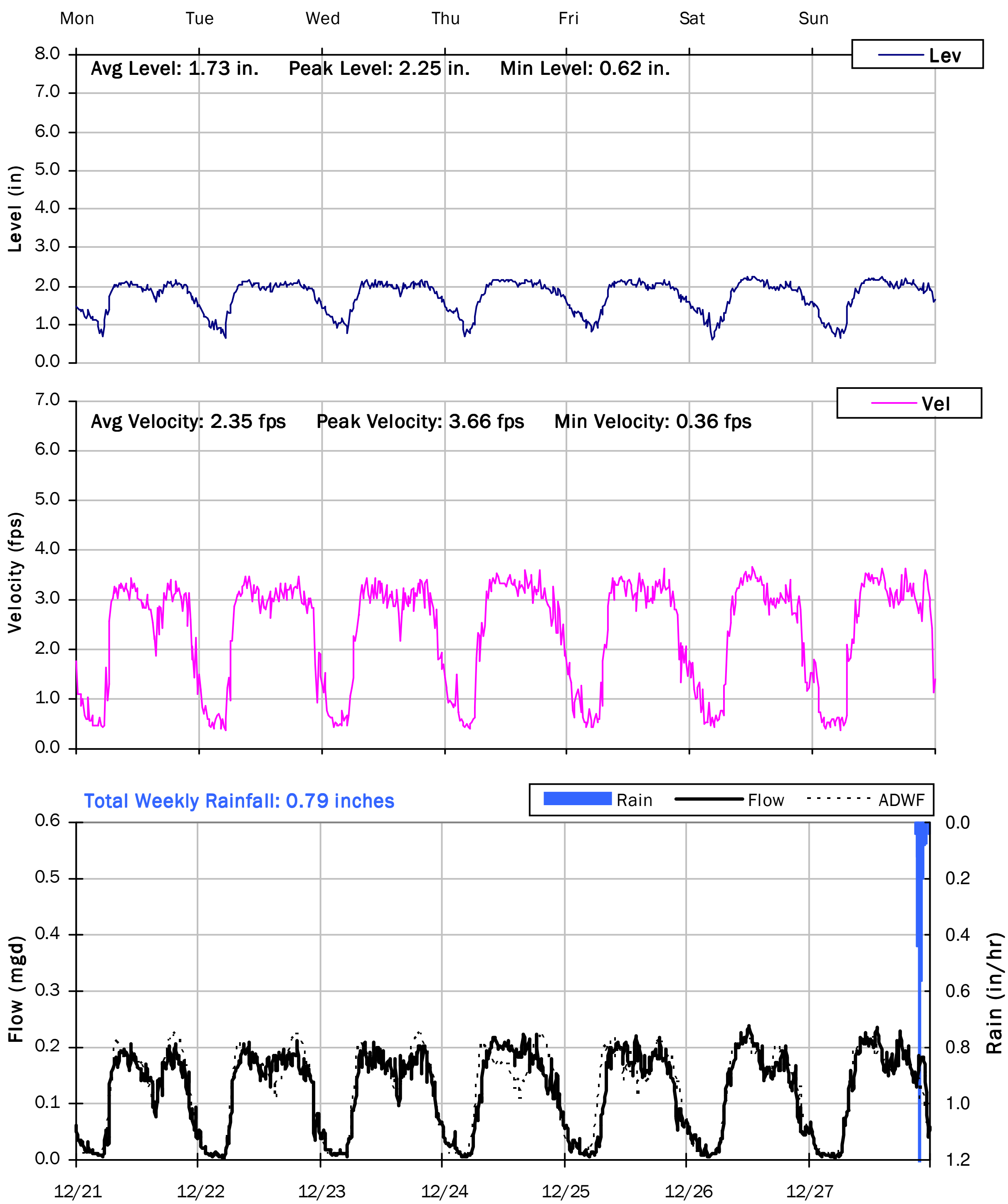


Avg Flow: 0.113 mgd Peak Flow: 0.236 mgd Min Flow: 0.003 mgd

SITE 08
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

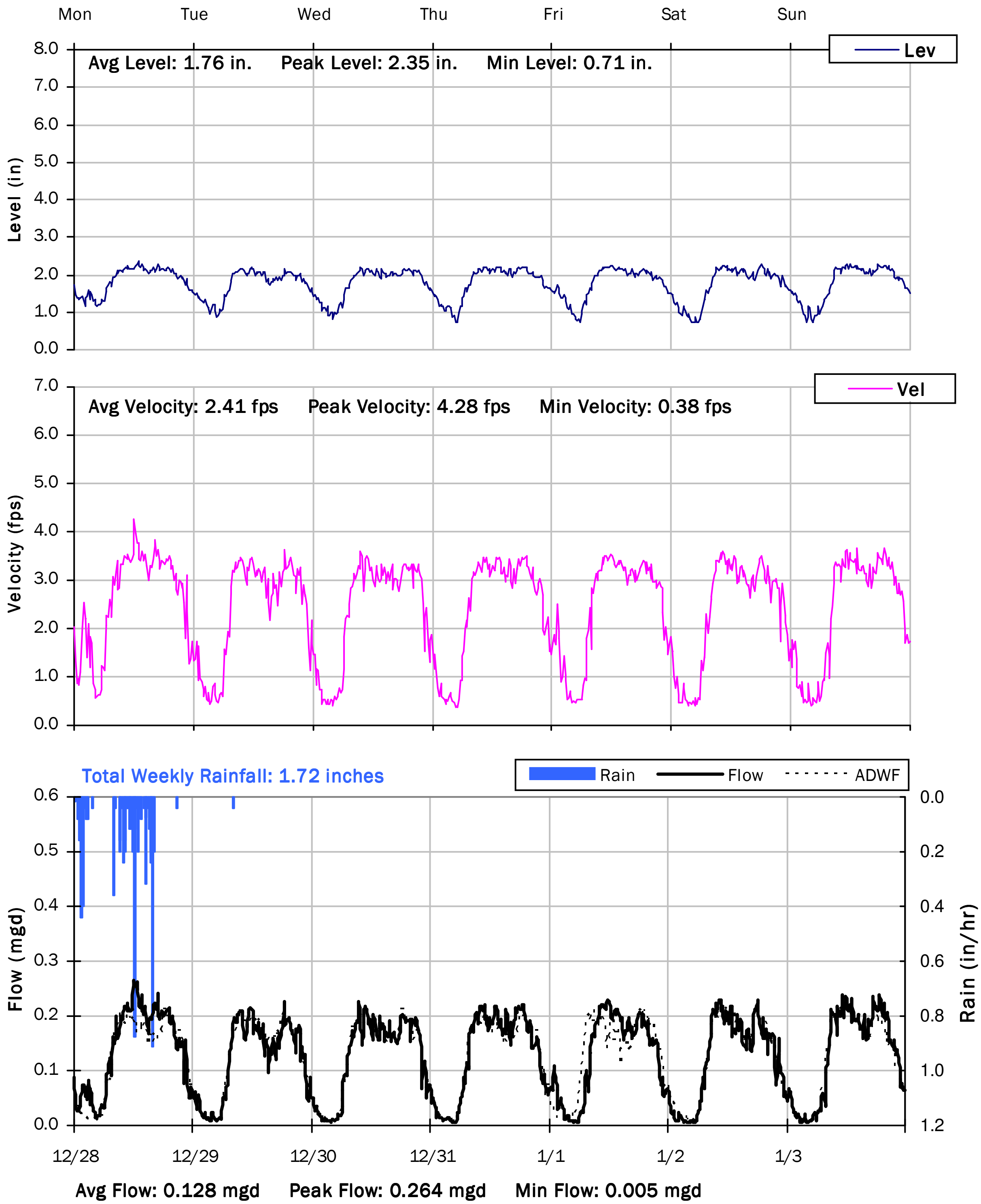


SITE 08
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

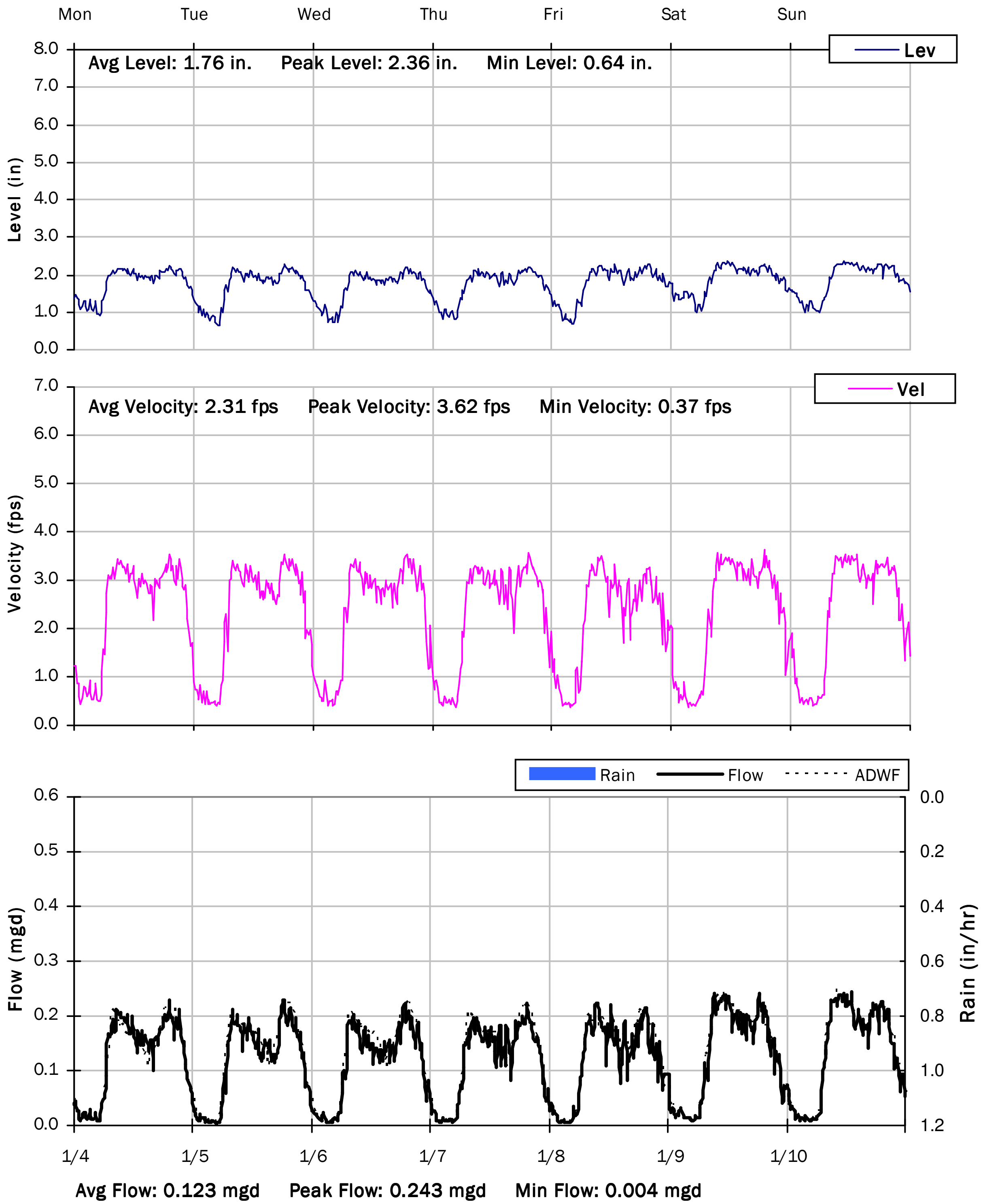


Avg Flow: 0.123 mgd Peak Flow: 0.237 mgd Min Flow: 0.004 mgd

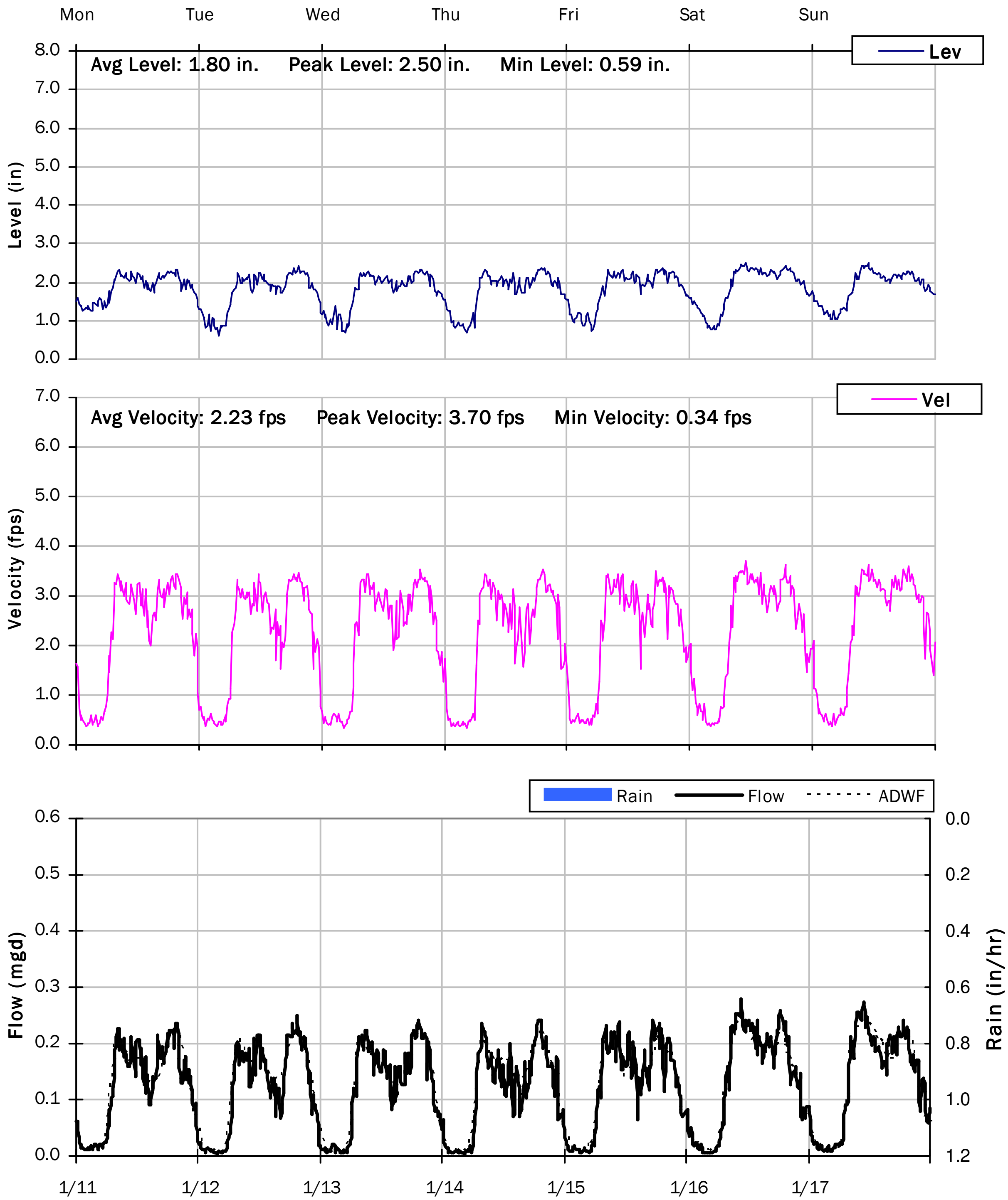
SITE 08
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



SITE 08
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

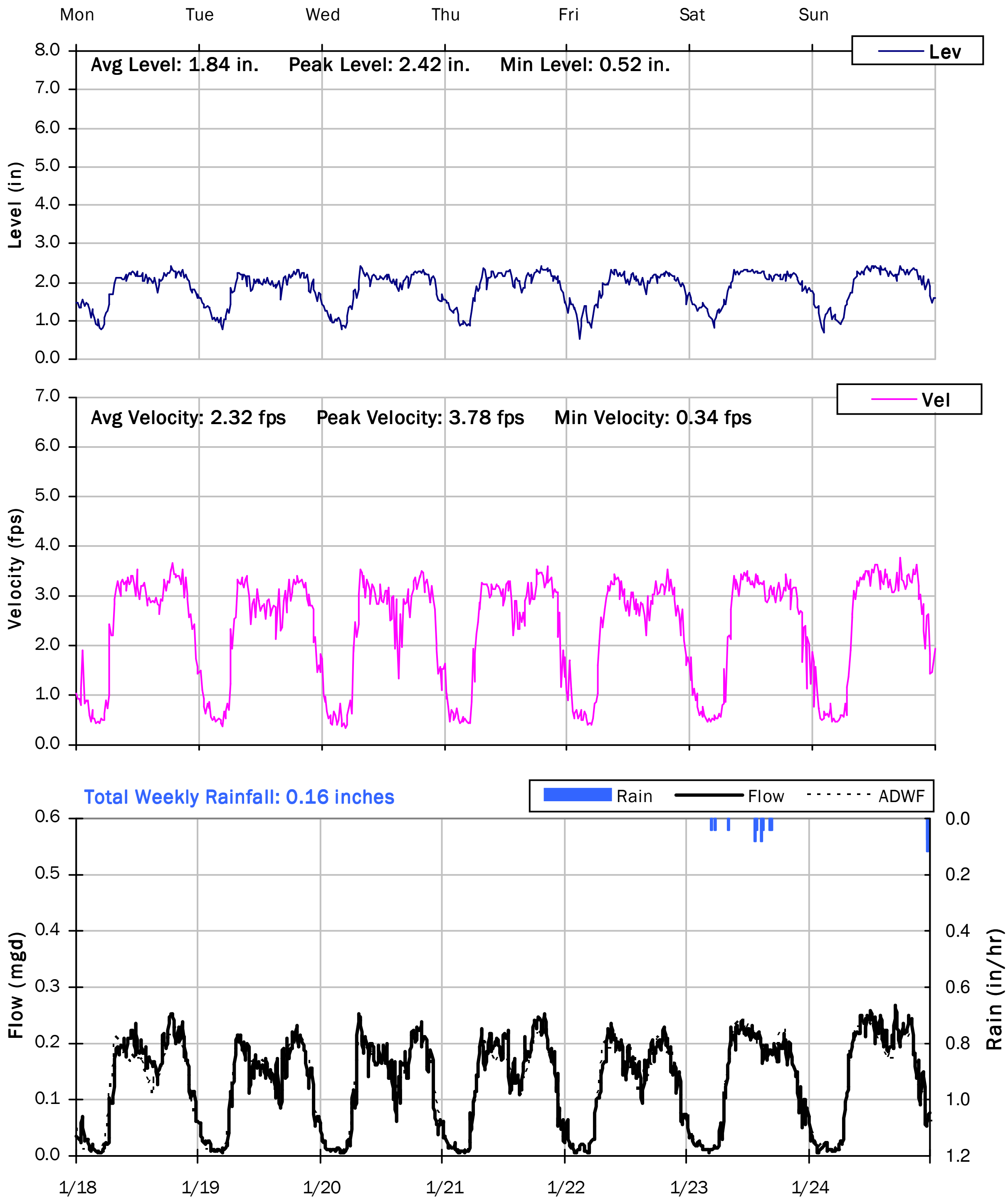


SITE 08
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021



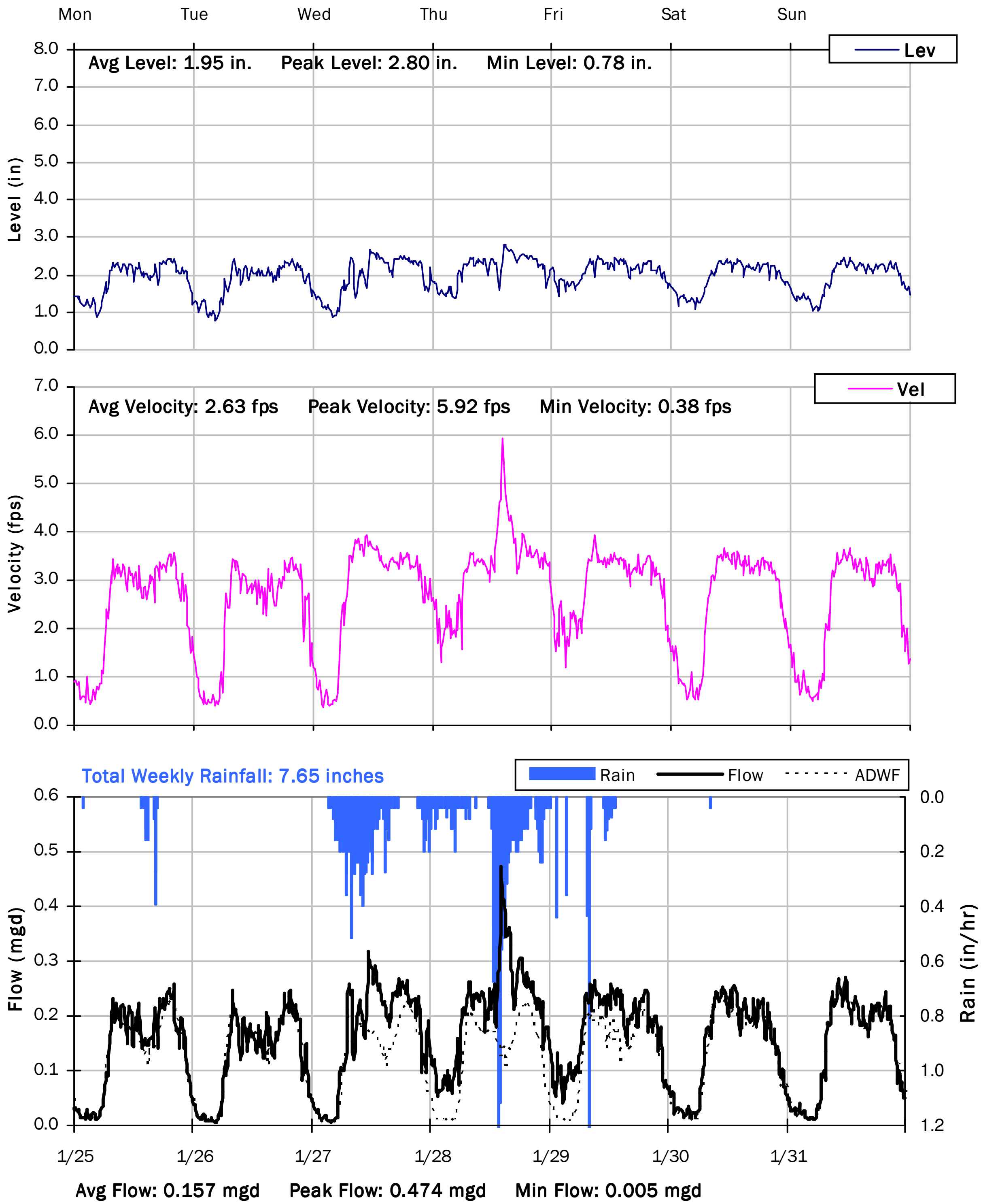
Avg Flow: 0.126 mgd Peak Flow: 0.280 mgd Min Flow: 0.004 mgd

SITE 08
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

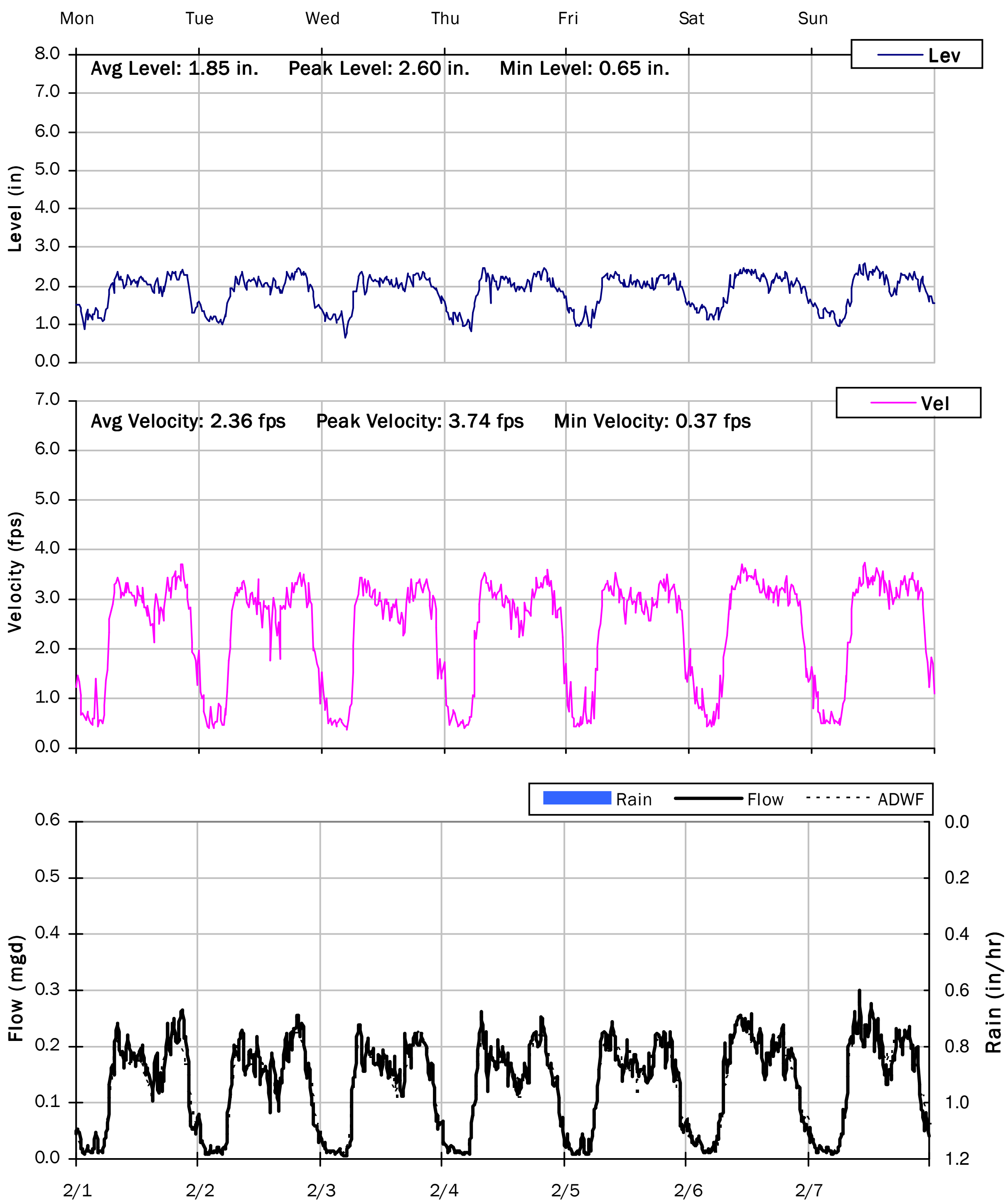


Avg Flow: 0.132 mgd Peak Flow: 0.269 mgd Min Flow: 0.005 mgd

SITE 08
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 08
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.134 mgd Peak Flow: 0.299 mgd Min Flow: 0.005 mgd

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

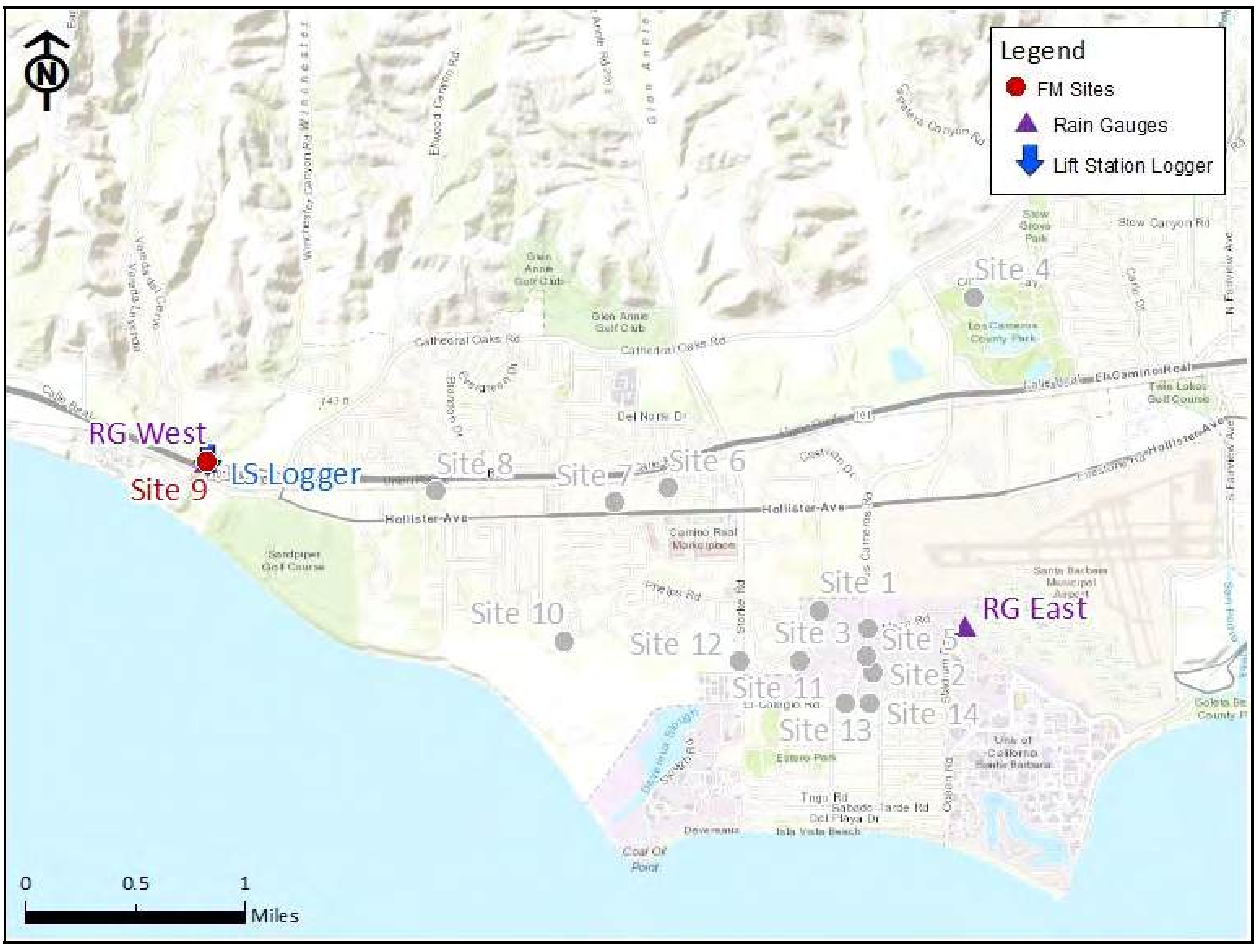
November 3, 2020 - February 7, 2021

Monitoring Site: Site 09W

City Manhole: 79-20-03

Location: Emily Lift Station on Calle Real

Data Summary Report



Vicinity Map: Site 09W

SITE 09W

Site Information

Location: Emily Lift Station on Calle Real

City Manhole: 79-20-03

Coordinates: 119.9122° W, 34.4336° N

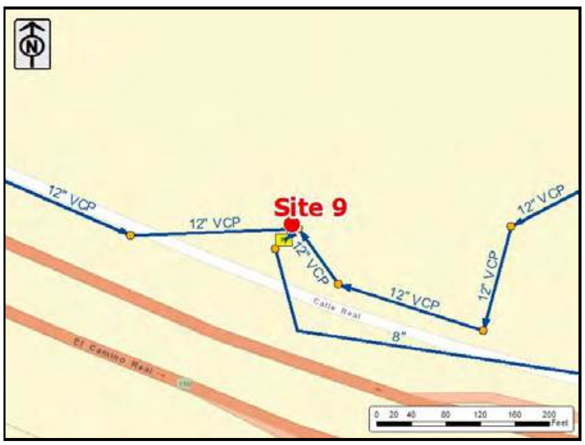
Rim Elevation (Earth): 41 feet

Pipe Diameter: 12 inches

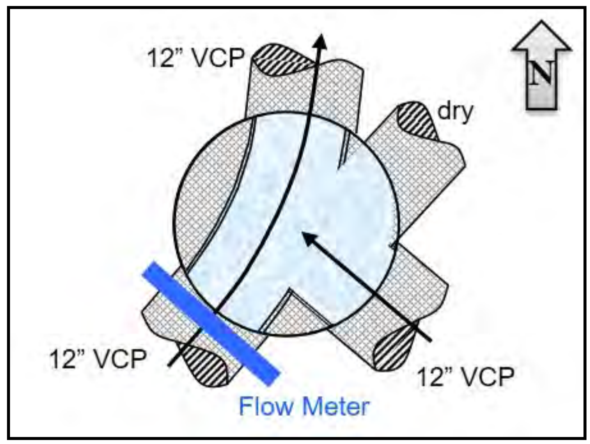
ADWF: 0.018 mgd

Peak Measured Flow: 0.127 mgd

Satellite Map



Sanitary Map



Flow Sketch

Street View

Plan View

SITE 09W

Additional Site Photos

Monitored West Influent

North Effluent

SITE 09W

Additional Site Photos

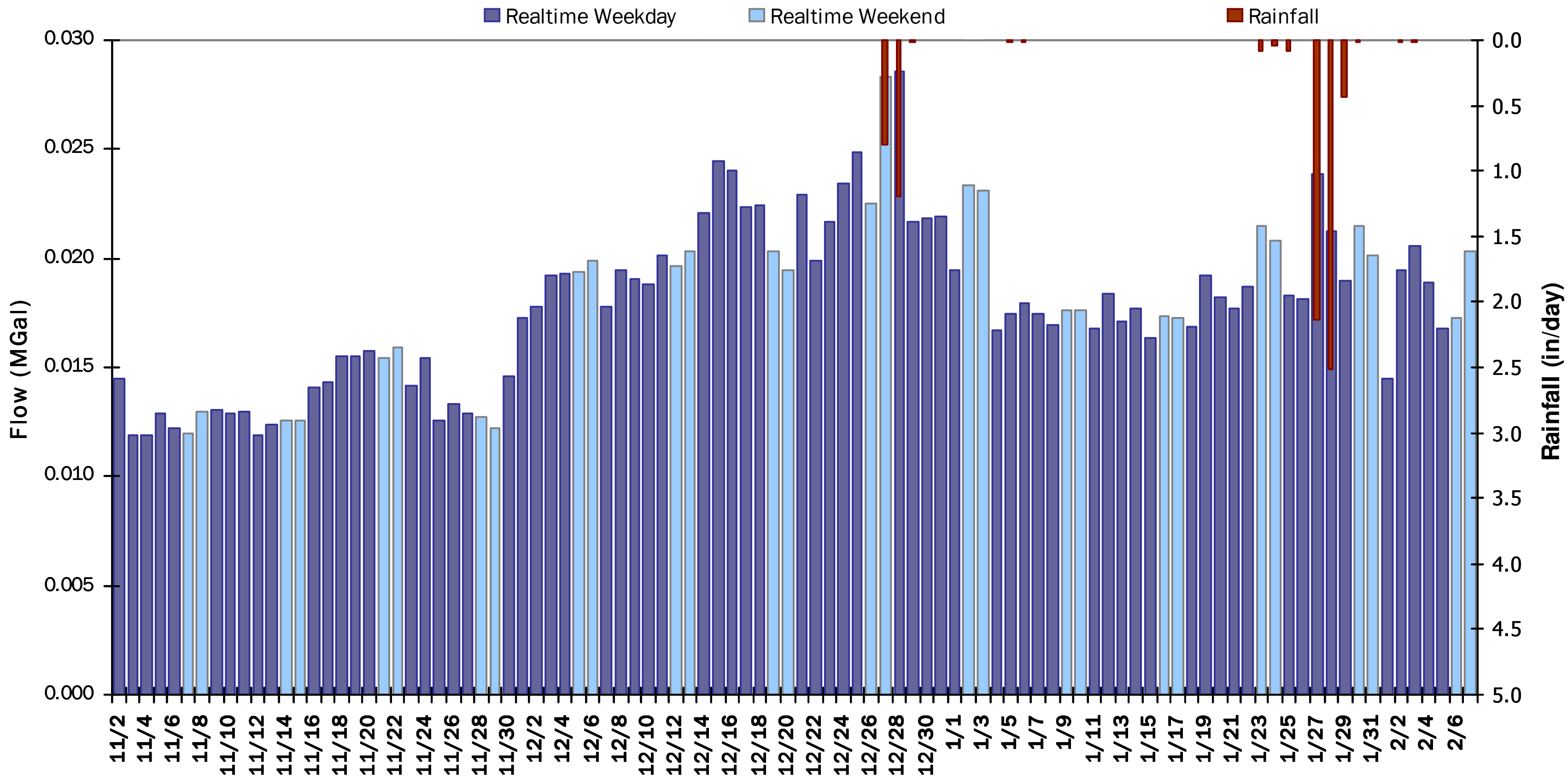
Southeast Influent

SITE 09W

Period Flow Summary: Daily Flow Totals

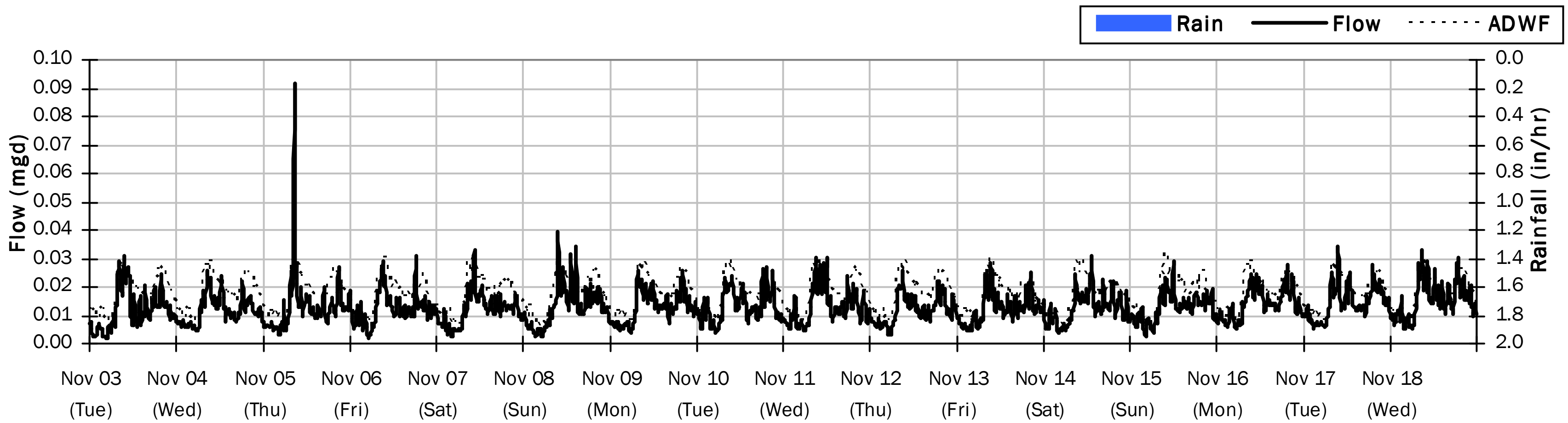
Avg Period Flow: 0.018 MGal **Peak Daily Flow: 0.029 MGal** **Min Daily Flow: 0.012 MGal**

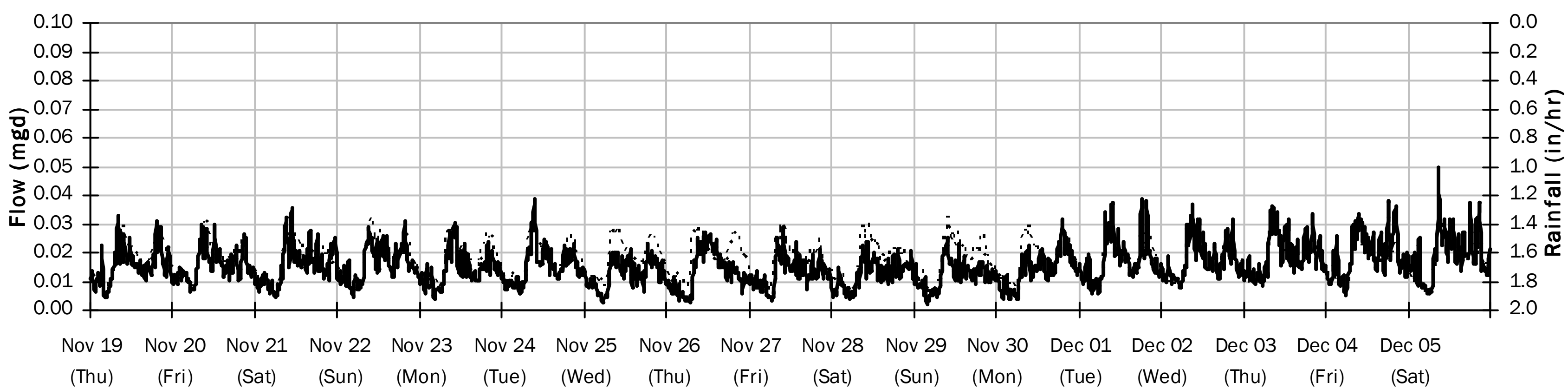
Total Period Rainfall: 7.37 inches



SITE 09W
Flow Summary: 11/3/2020 to 12/5/2020

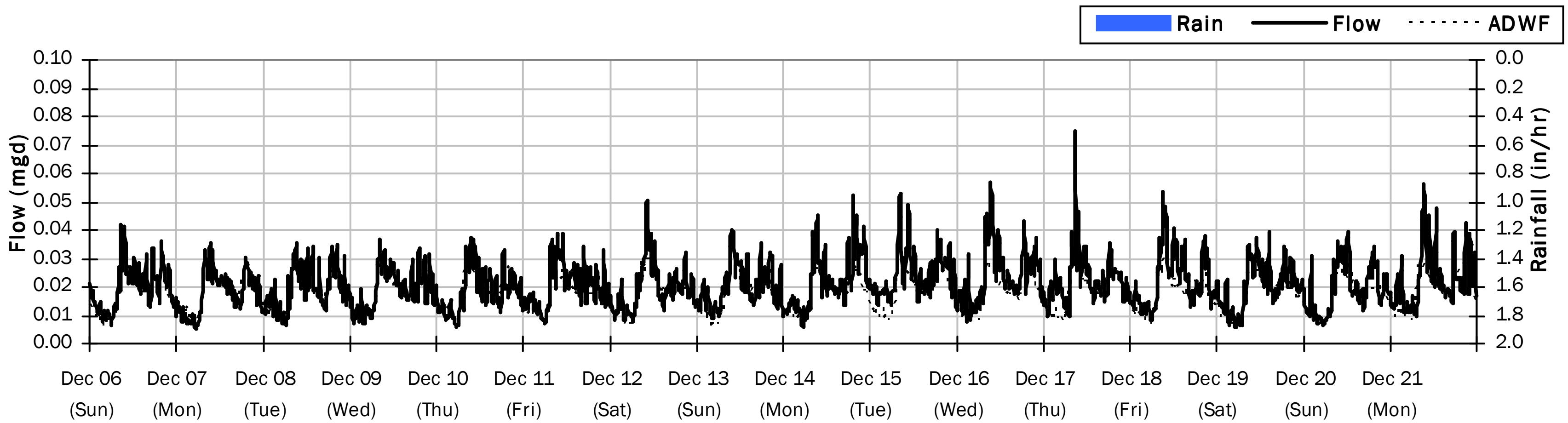
Total Period Rainfall: 0.00 inches   **Avg Flow: 0.014 mgd   Peak Flow: 0.092 mgd   Min Flow: 0.002 mgd**

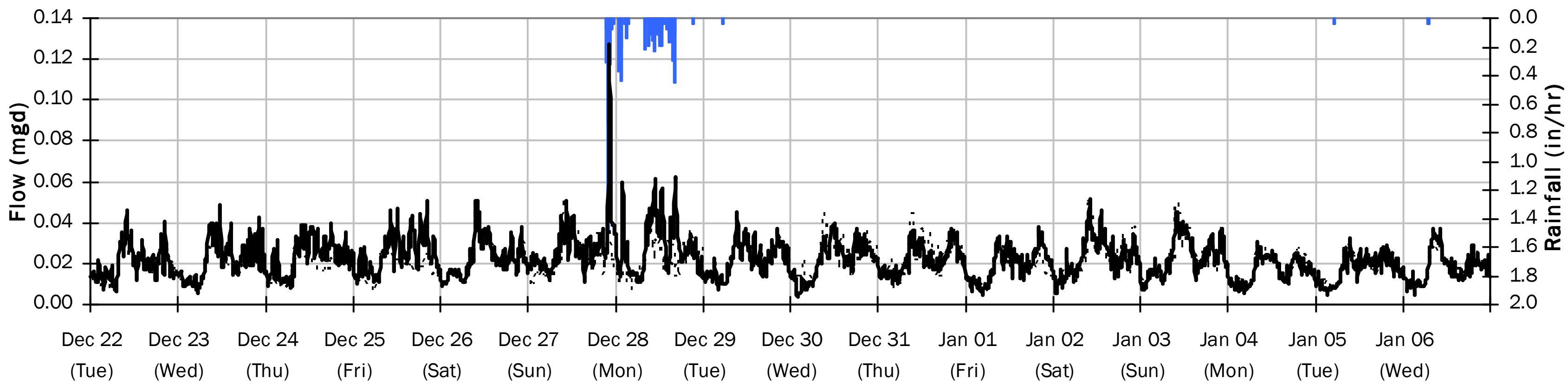




SITE 09W
Flow Summary: 12/6/2020 to 1/6/2021

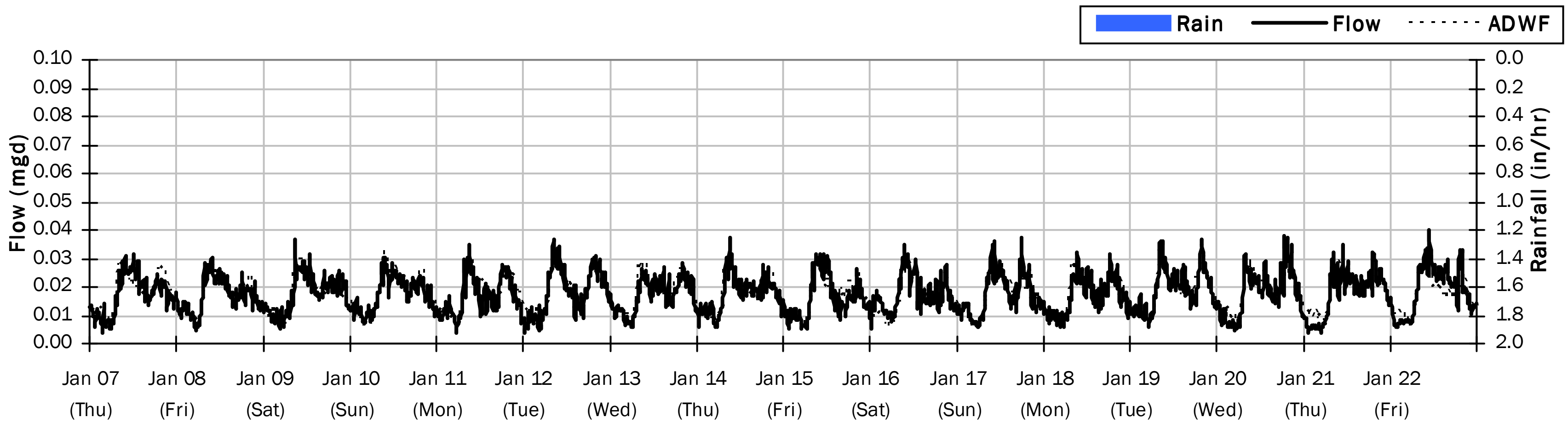
Total Period Rainfall: 2.03 inches   **Avg Flow: 0.021 mgd**   **Peak Flow: 0.127 mgd**   **Min Flow: 0.004 mgd**

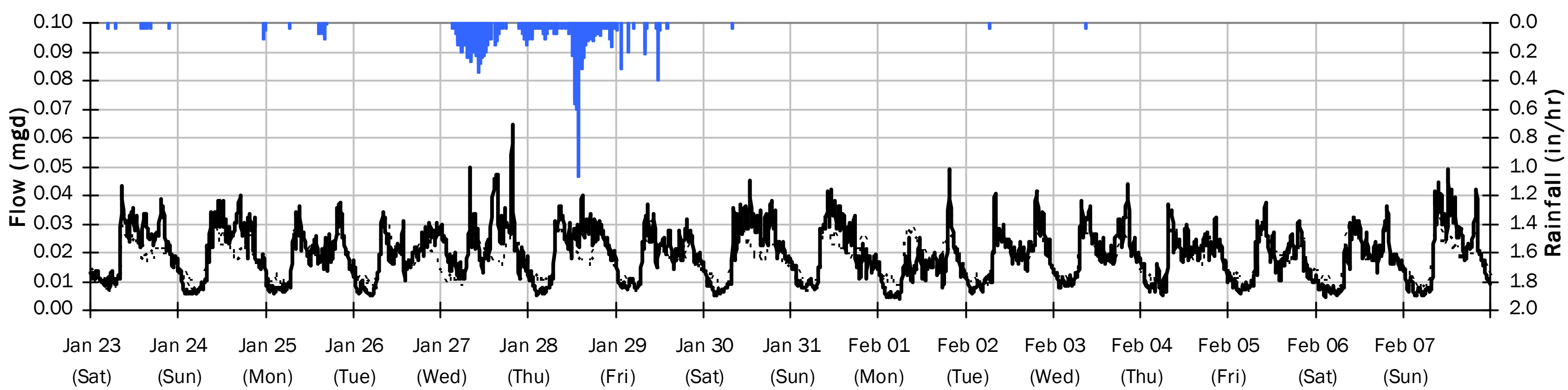




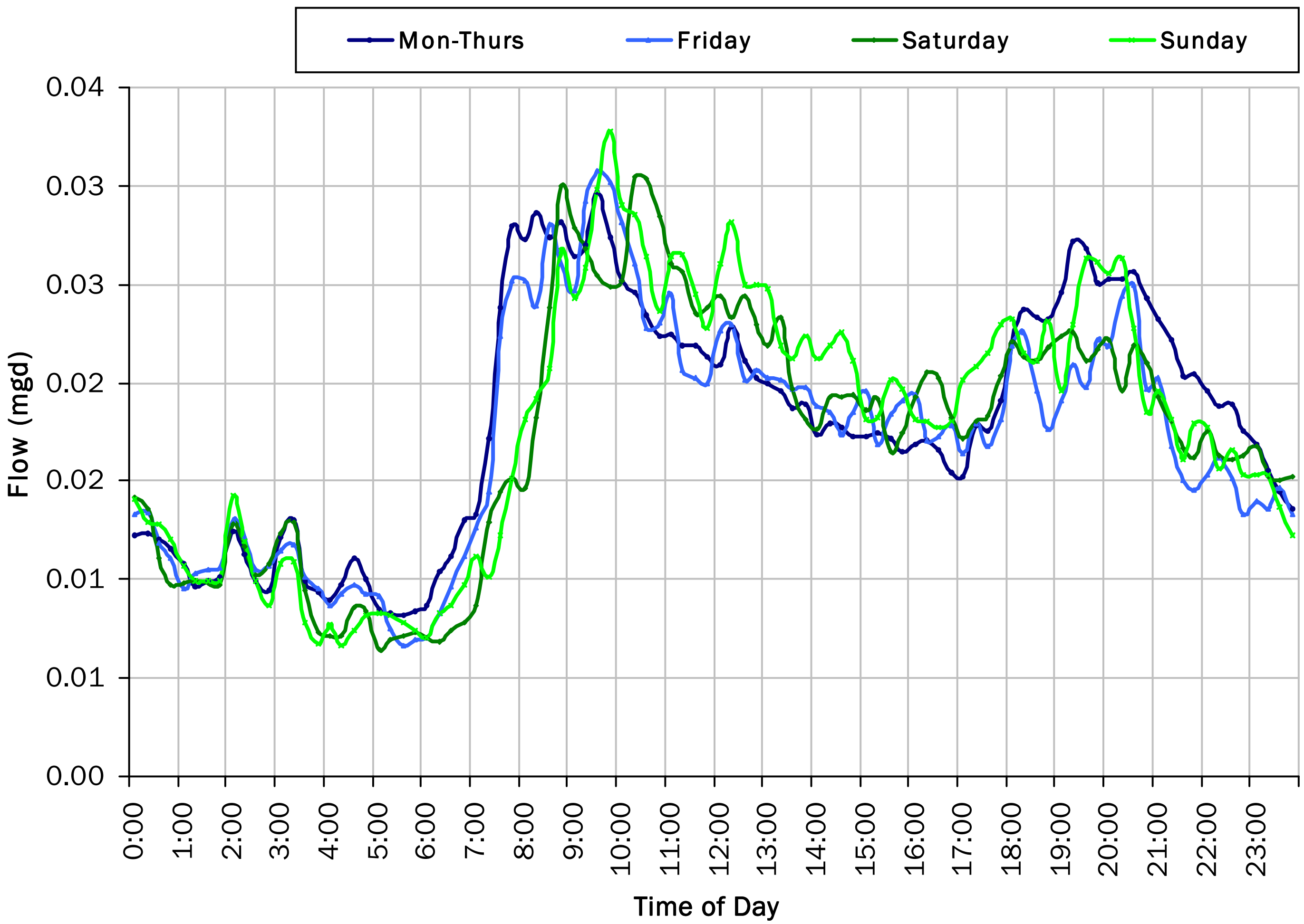
SITE 09W
Flow Summary: 1/7/2021 to 2/7/2021

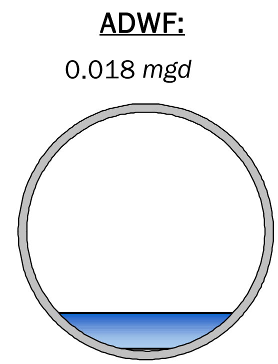
Total Period Rainfall: 5.34 inches   **Avg Flow: 0.019 mgd**   **Peak Flow: 0.065 mgd**   **Min Flow: 0.004 mgd**





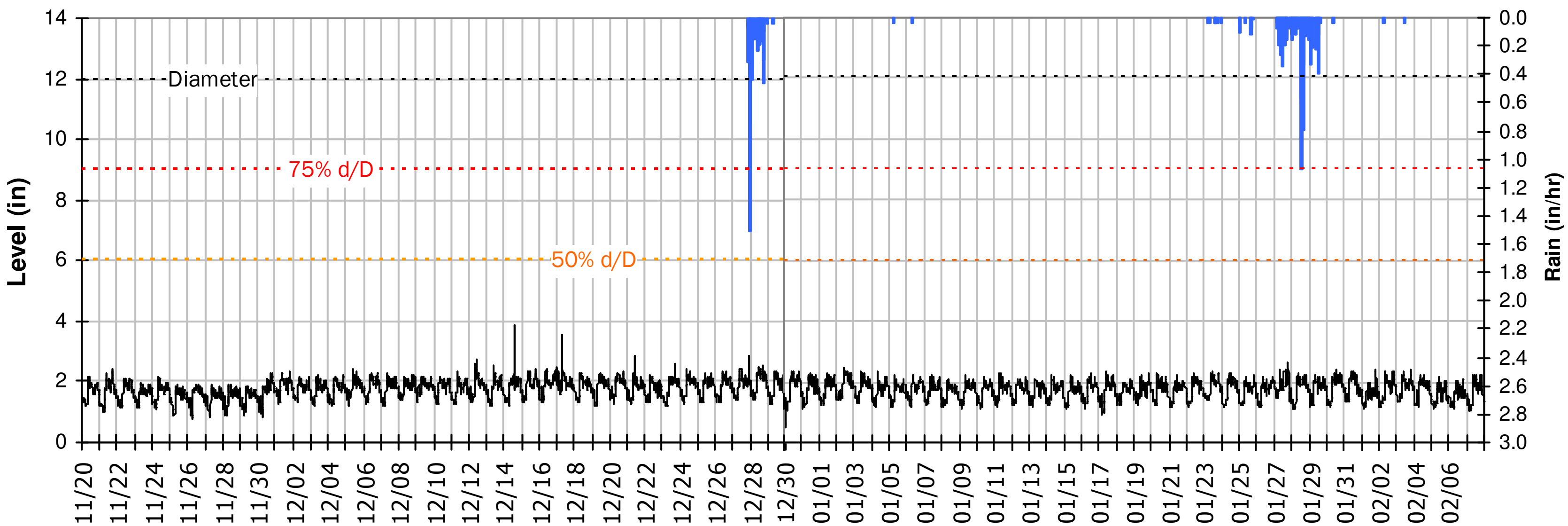
SITE 09W
Average Dry Weather Flow Hydrographs

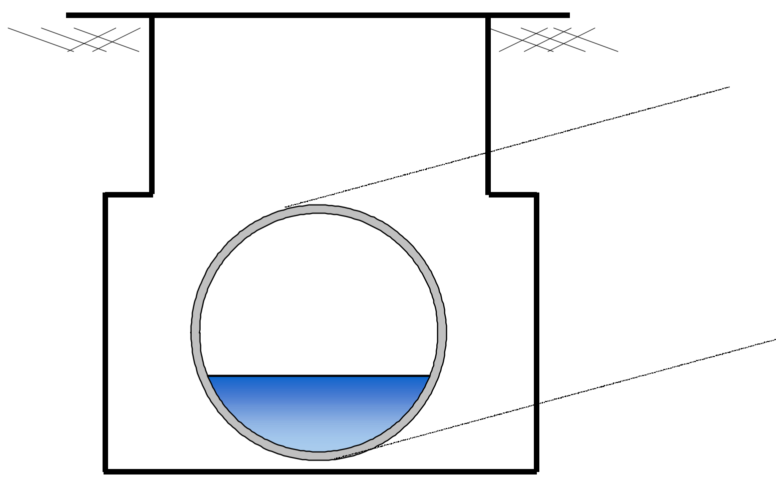




SITE 09W
Site Capacity and Surcharge Summary

<u>Realtime Flow Levels with Rainfall Data over Monitoring Period</u>

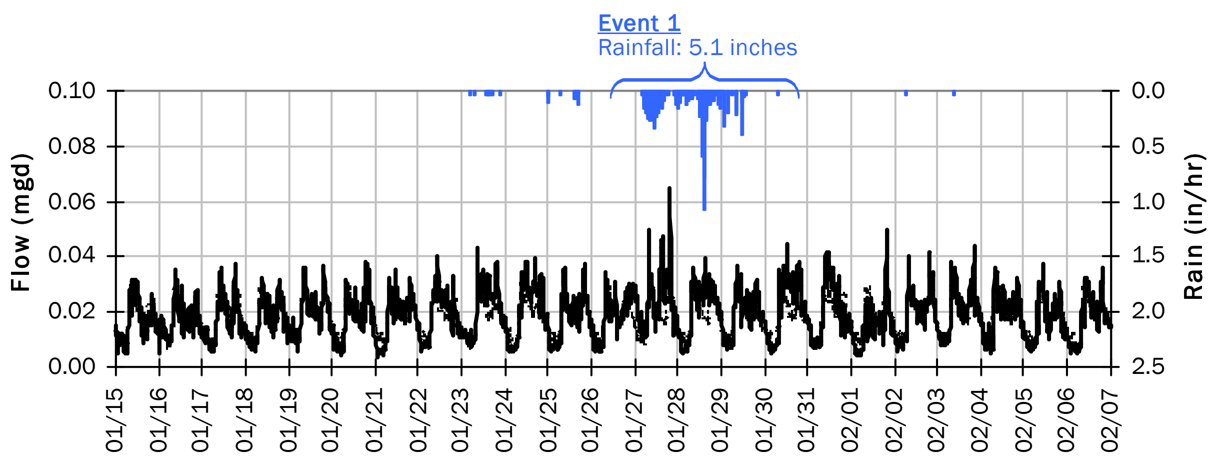




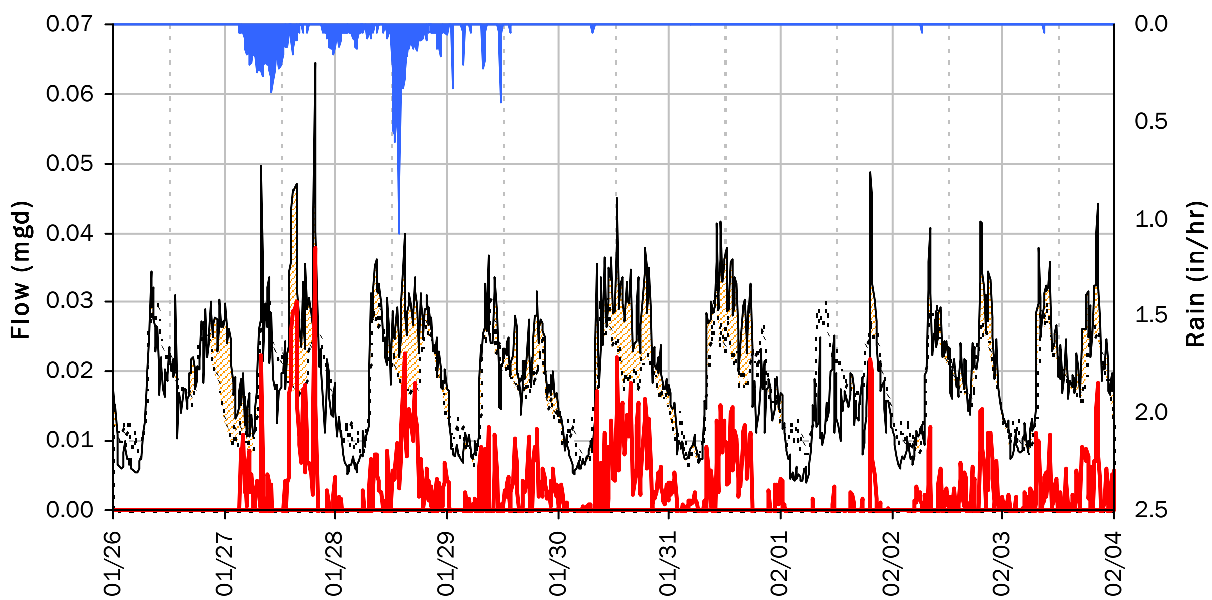
Pipe Diameter:	12	*inches*
Peak Measured Level:	3.87	*inches*
Peak d/D Ratio:	0.32	

SITE 09W
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



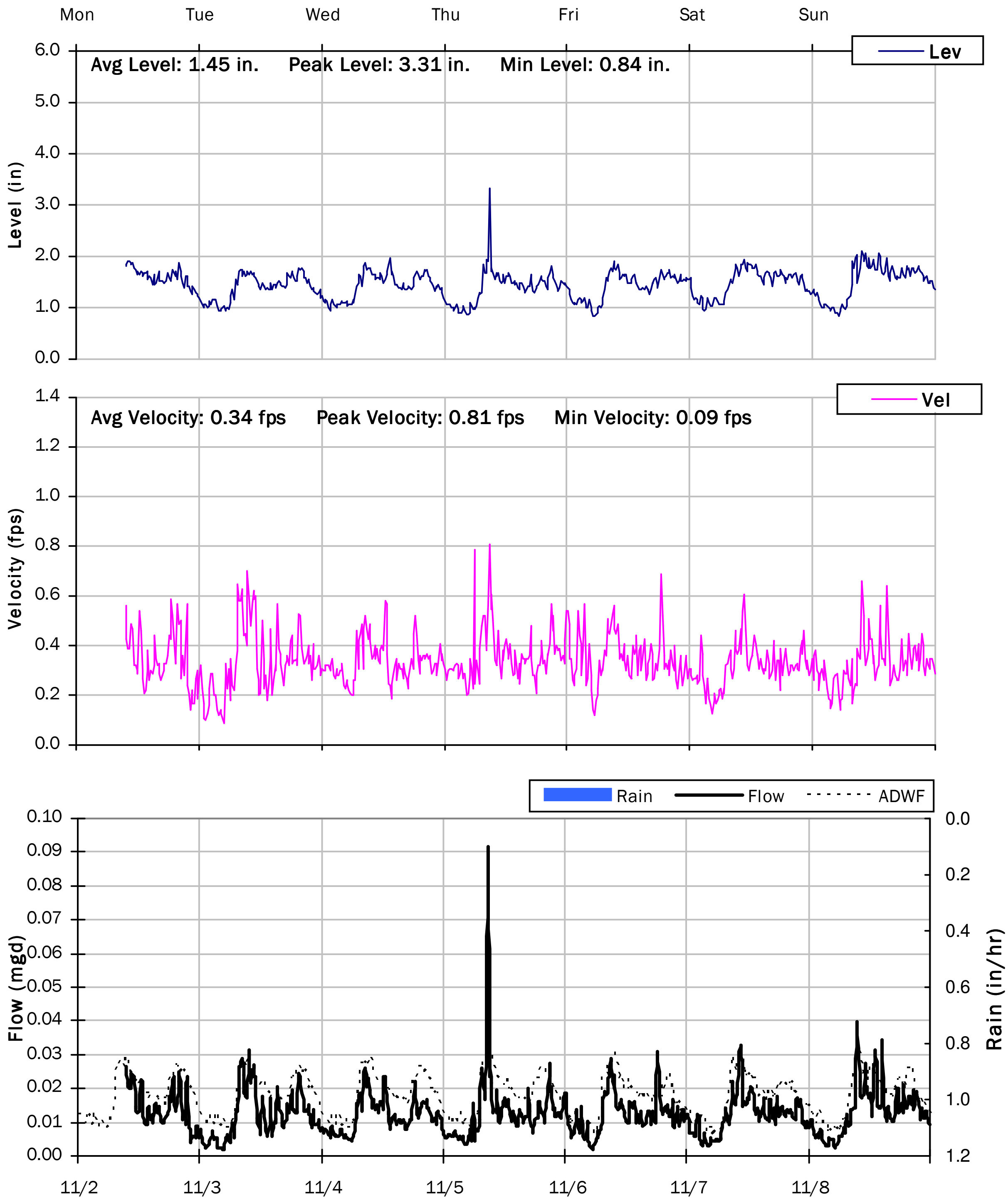
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 5.10 inches)

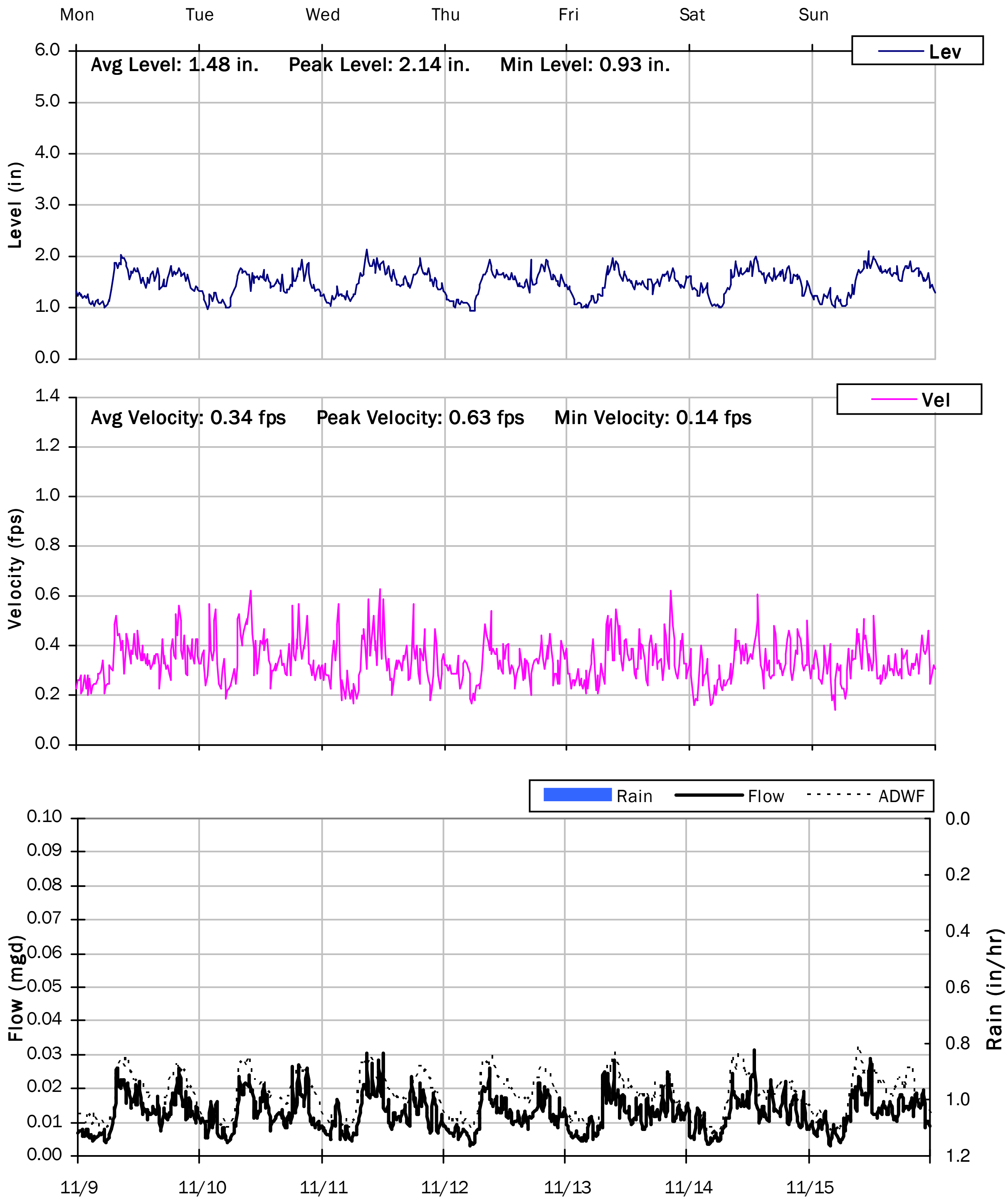
Capacity		Inflow / Infiltration	
Peak Flow:	0.06 *mgd*	**Peak I/I Rate:**	0.04 *mgd*
PF:	3.56	**Total I/I:**	16,000 *gallons*
Peak Level:	2.64 *in*		
d/D Ratio:	0.22		

SITE 09W
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



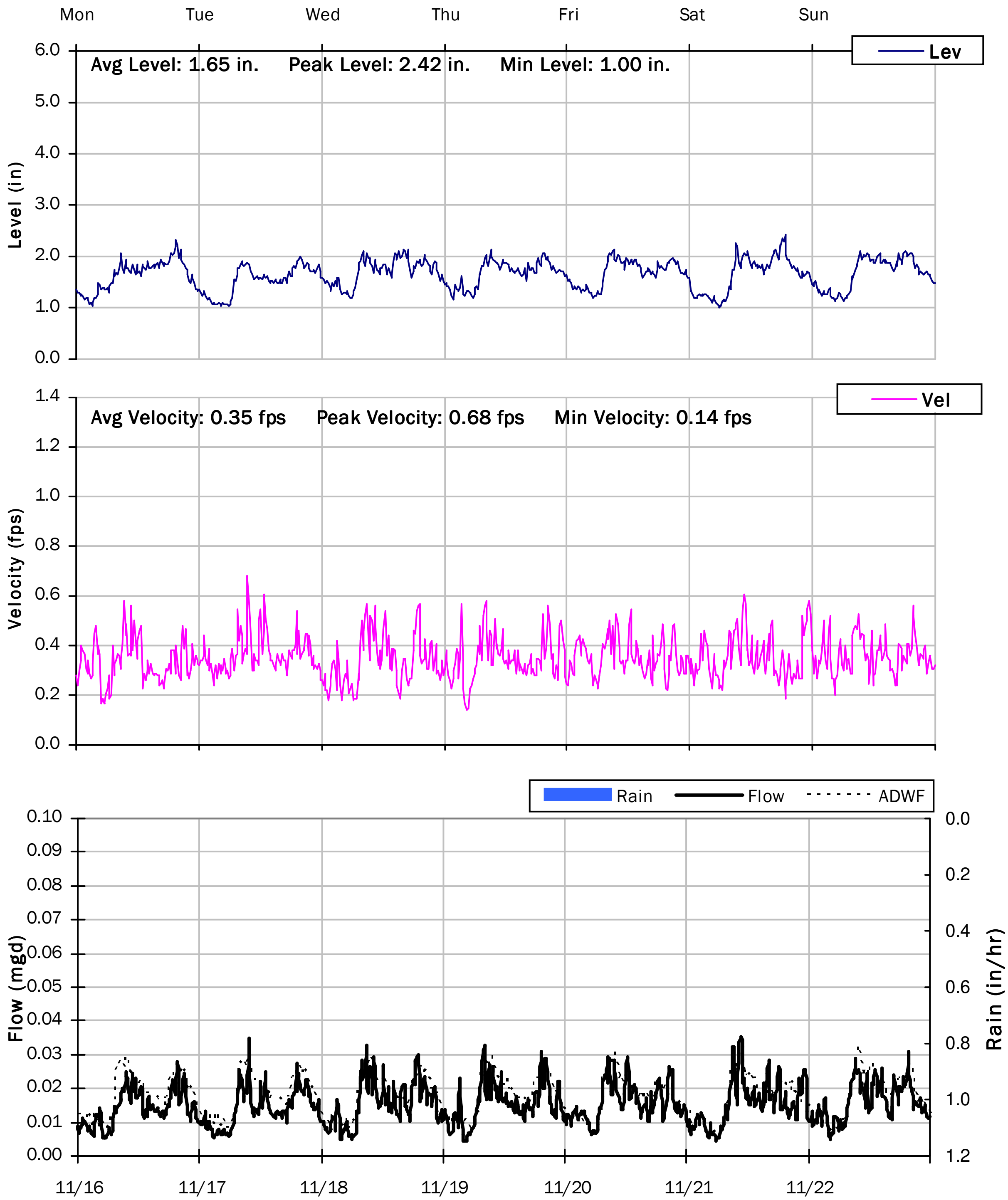
Avg Flow: 0.012 mgd Peak Flow: 0.092 mgd Min Flow: 0.002 mgd

SITE 09W
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



Avg Flow: 0.013 mgd **Peak Flow: 0.031 mgd** **Min Flow: 0.003 mgd**

SITE 09W
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020

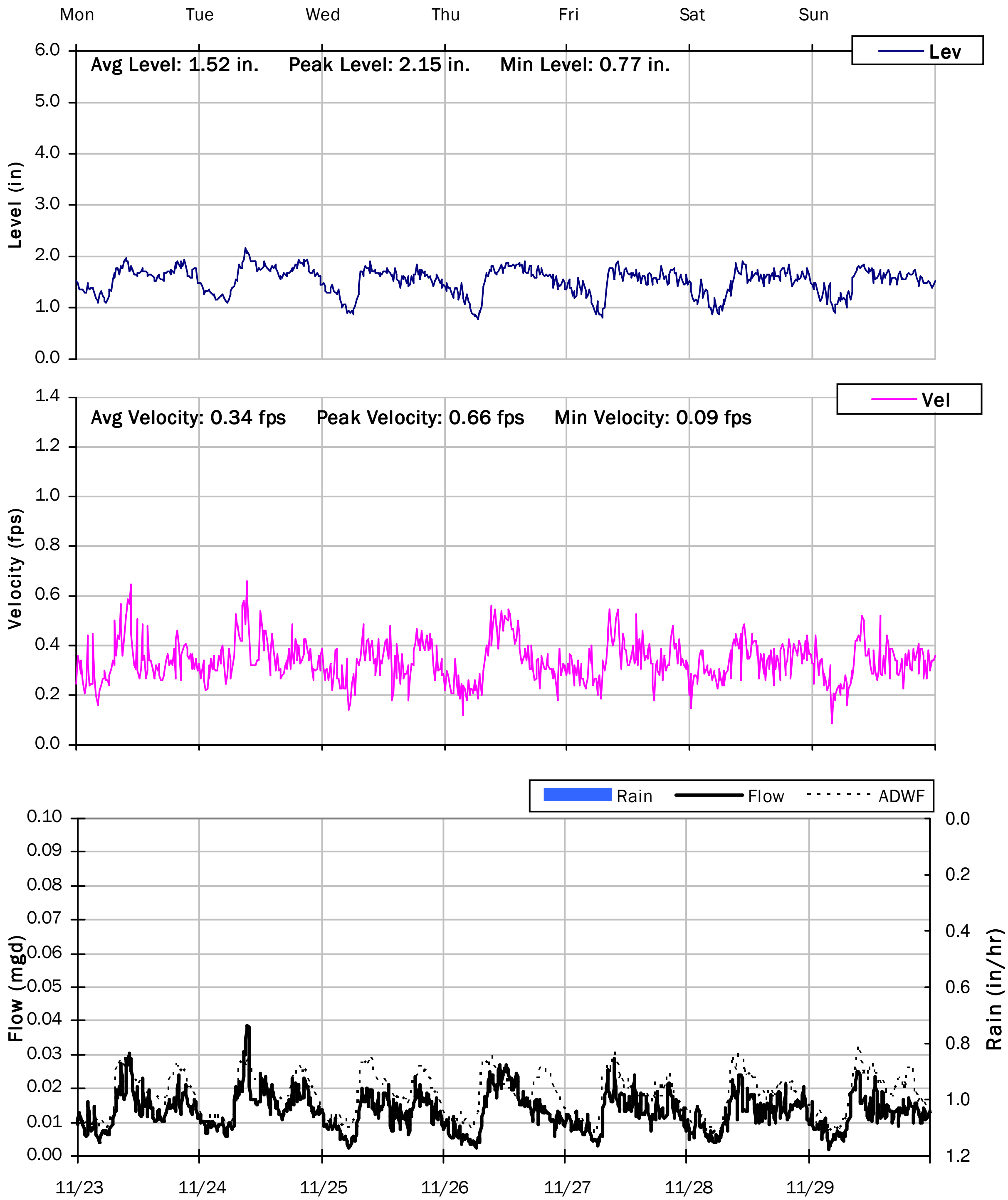


Avg Flow: 0.015 mgd Peak Flow: 0.035 mgd Min Flow: 0.004 mgd

SITE 09W

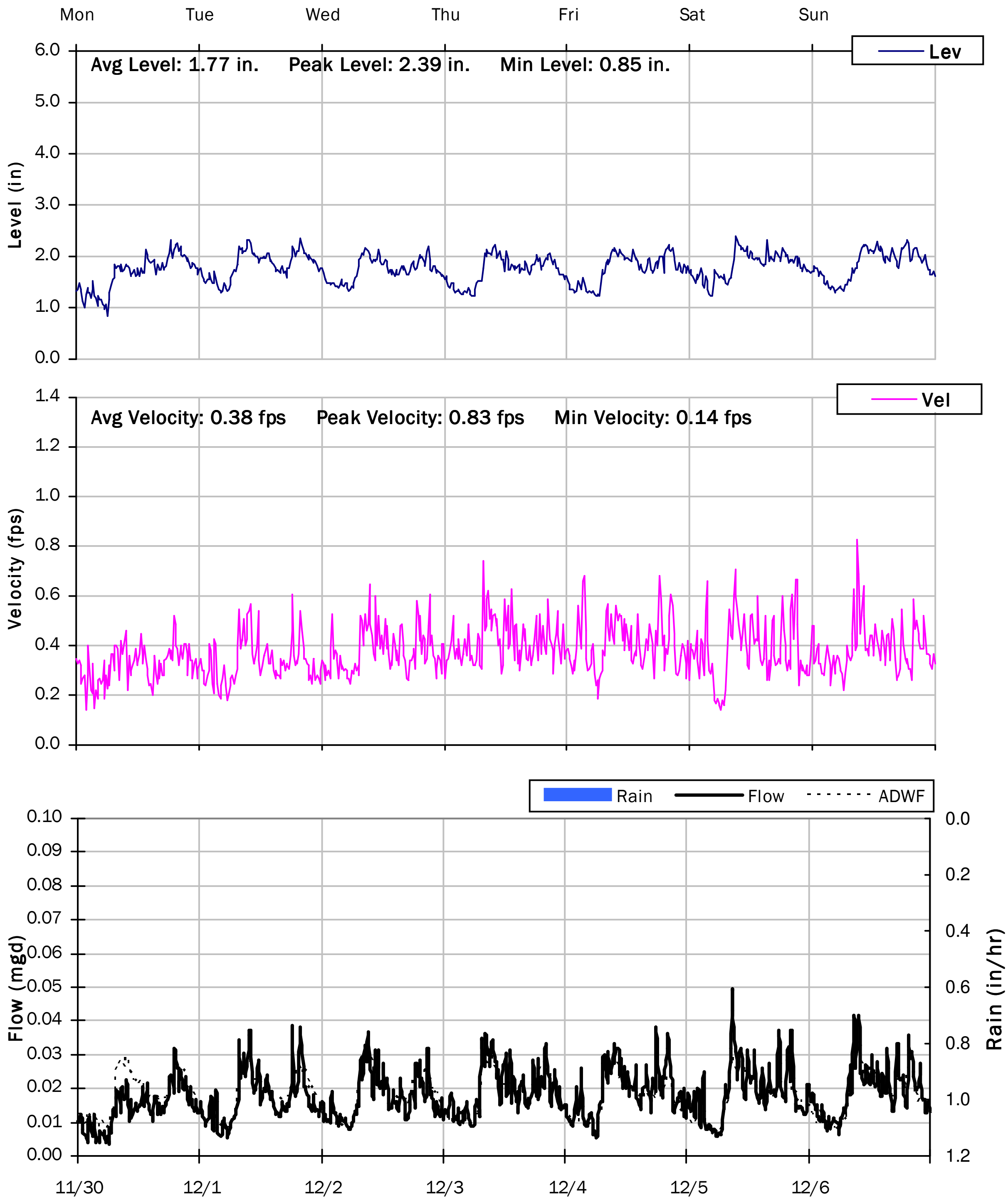
Weekly Level, Velocity and Flow Hydrographs

11/23/2020 to 11/30/2020



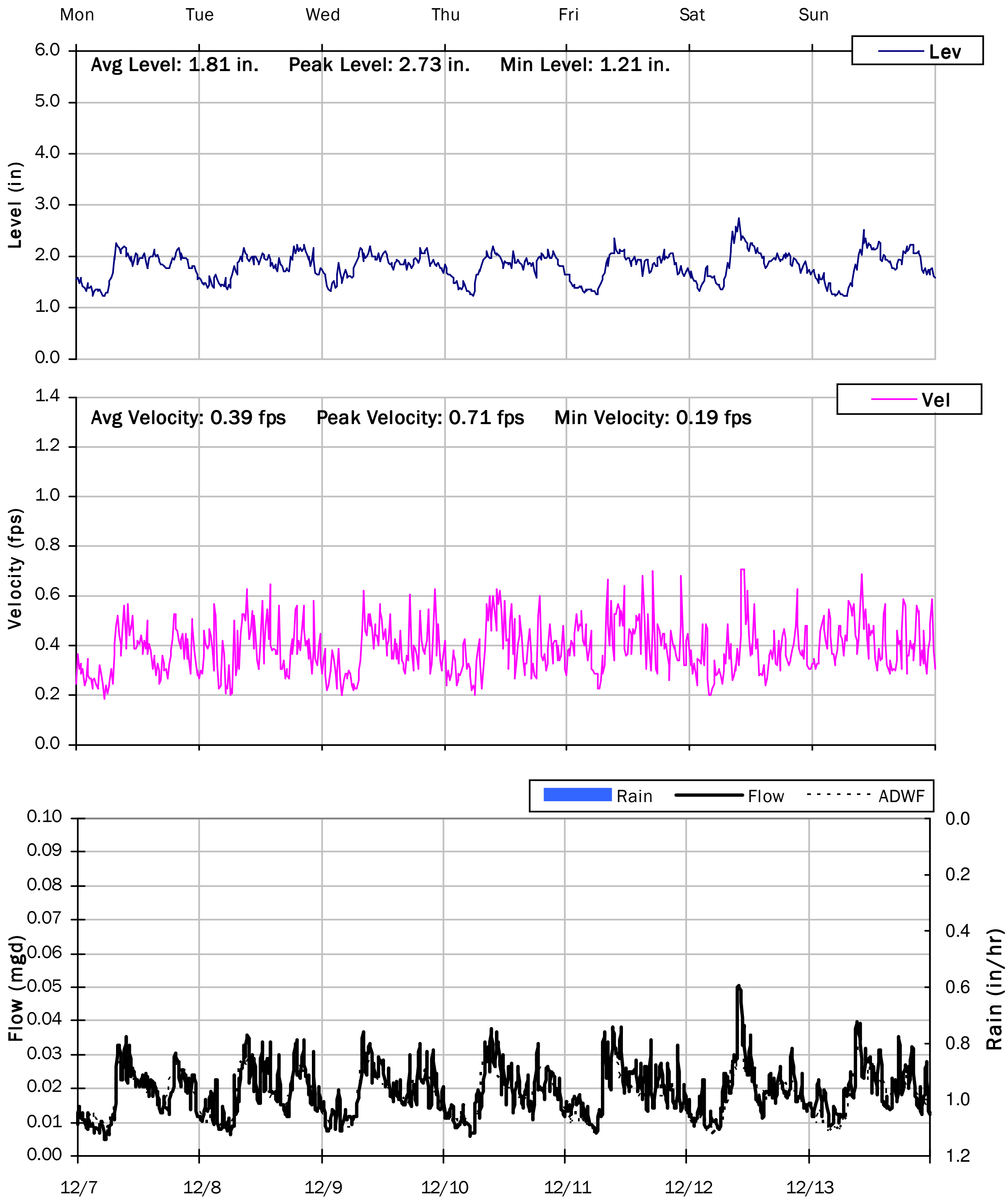
Avg Flow: 0.013 mgd   Peak Flow: 0.039 mgd   Min Flow: 0.002 mgd

SITE 09W
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



Avg Flow: 0.018 mgd Peak Flow: 0.049 mgd Min Flow: 0.004 mgd

SITE 09W
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

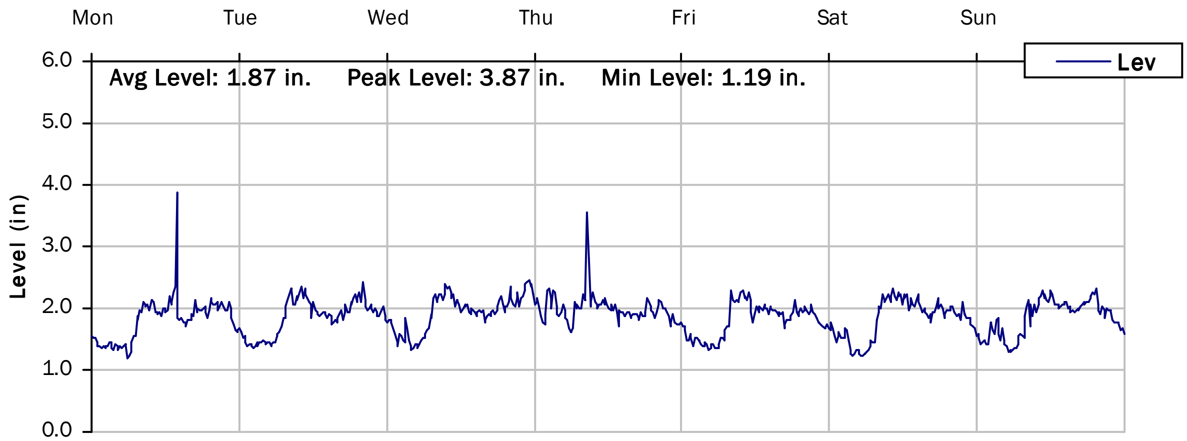


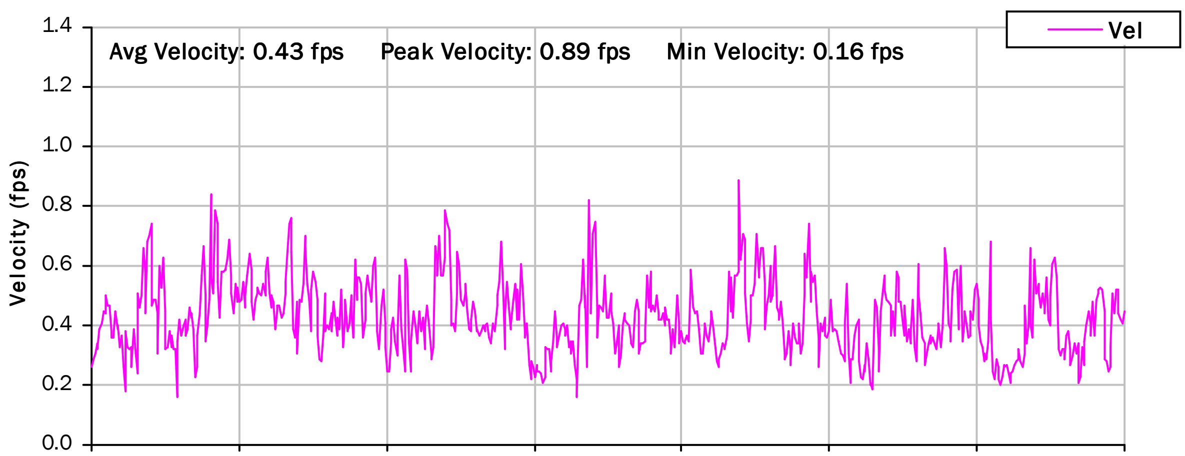
Avg Flow: 0.019 mgd Peak Flow: 0.051 mgd Min Flow: 0.005 mgd

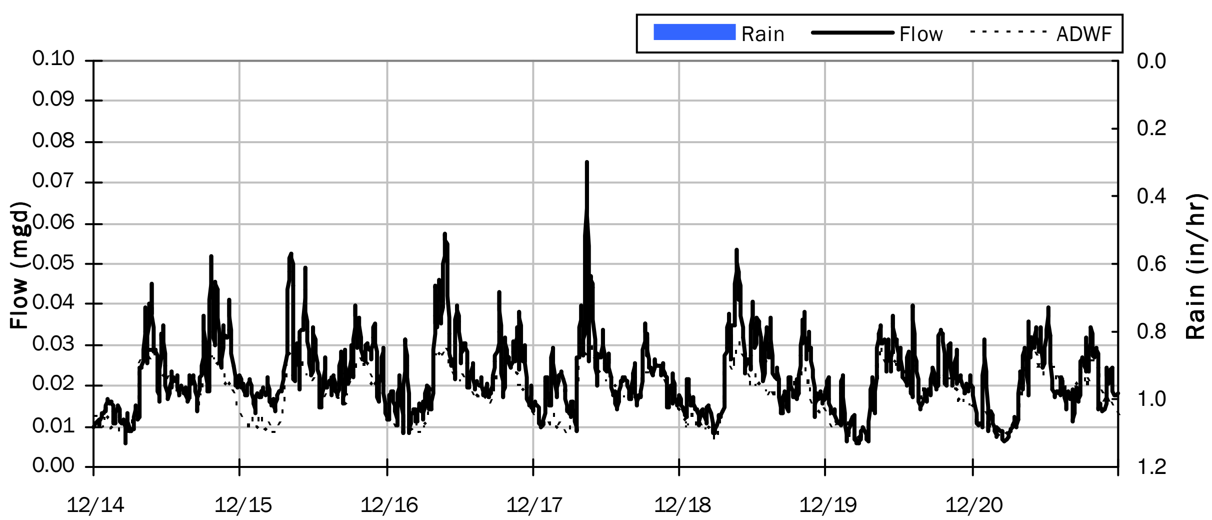
SITE 09W

Weekly Level, Velocity and Flow Hydrographs

12/14/2020 to 12/21/2020

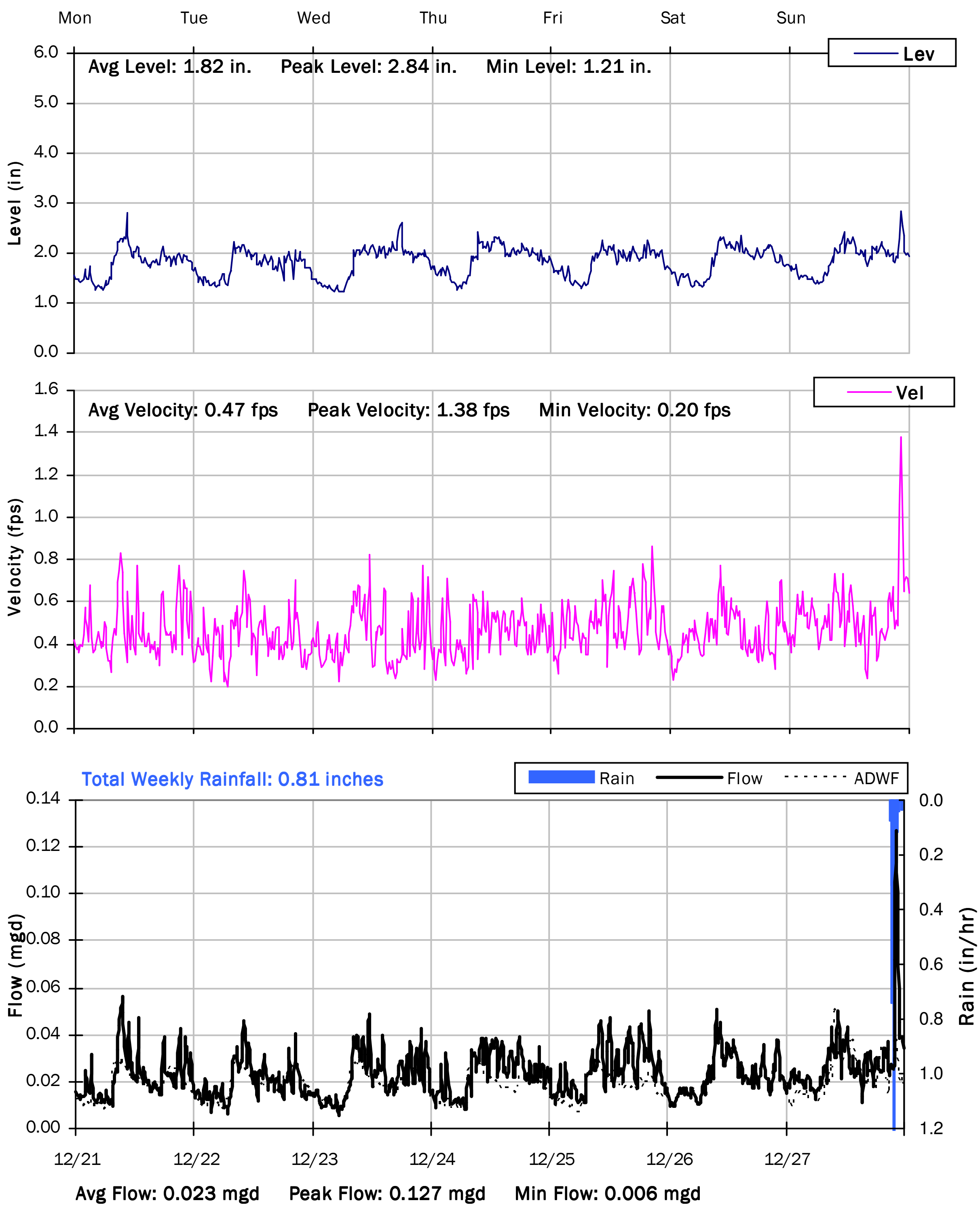




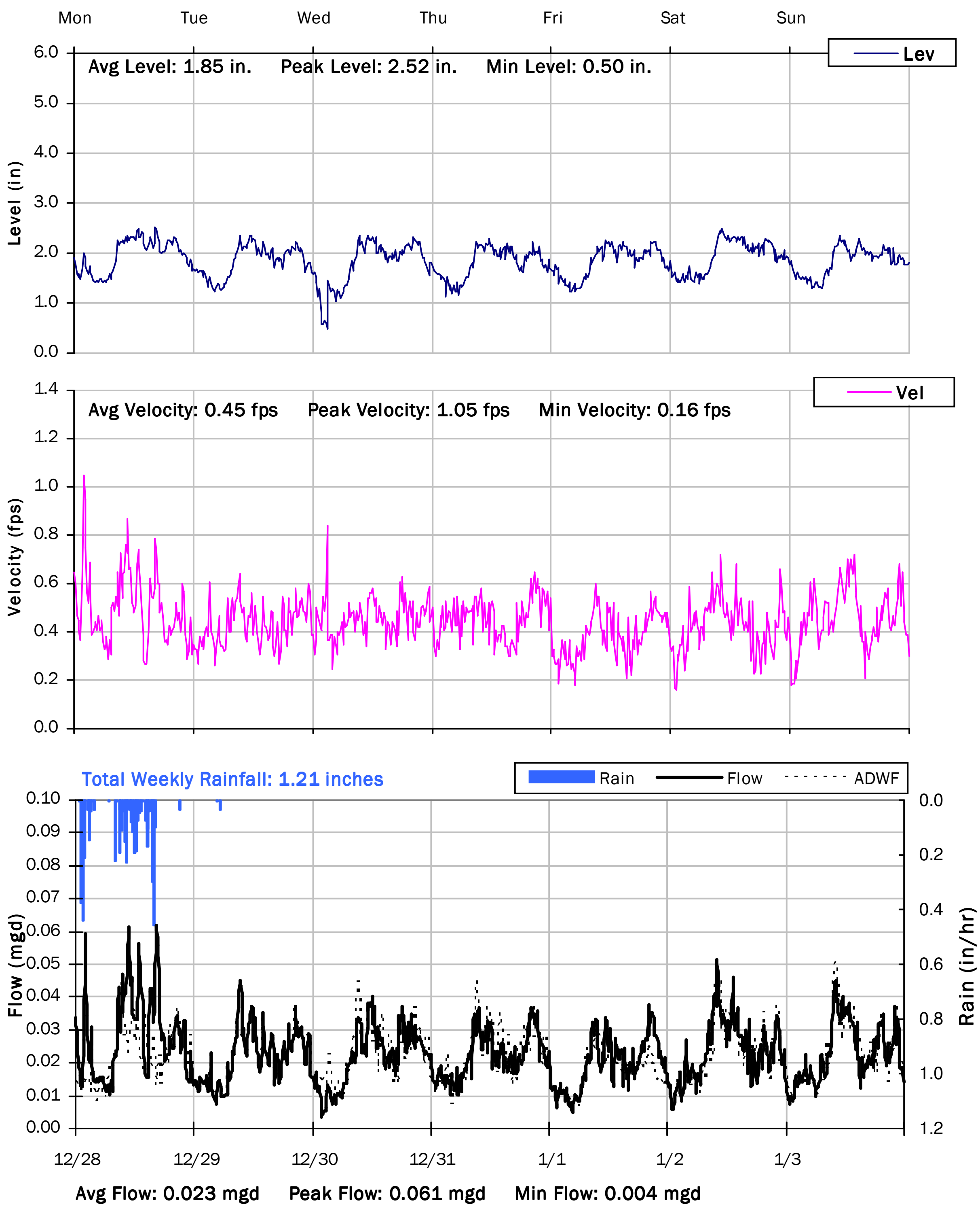


Avg Flow: 0.022 mgd Peak Flow: 0.075 mgd Min Flow: 0.006 mgd

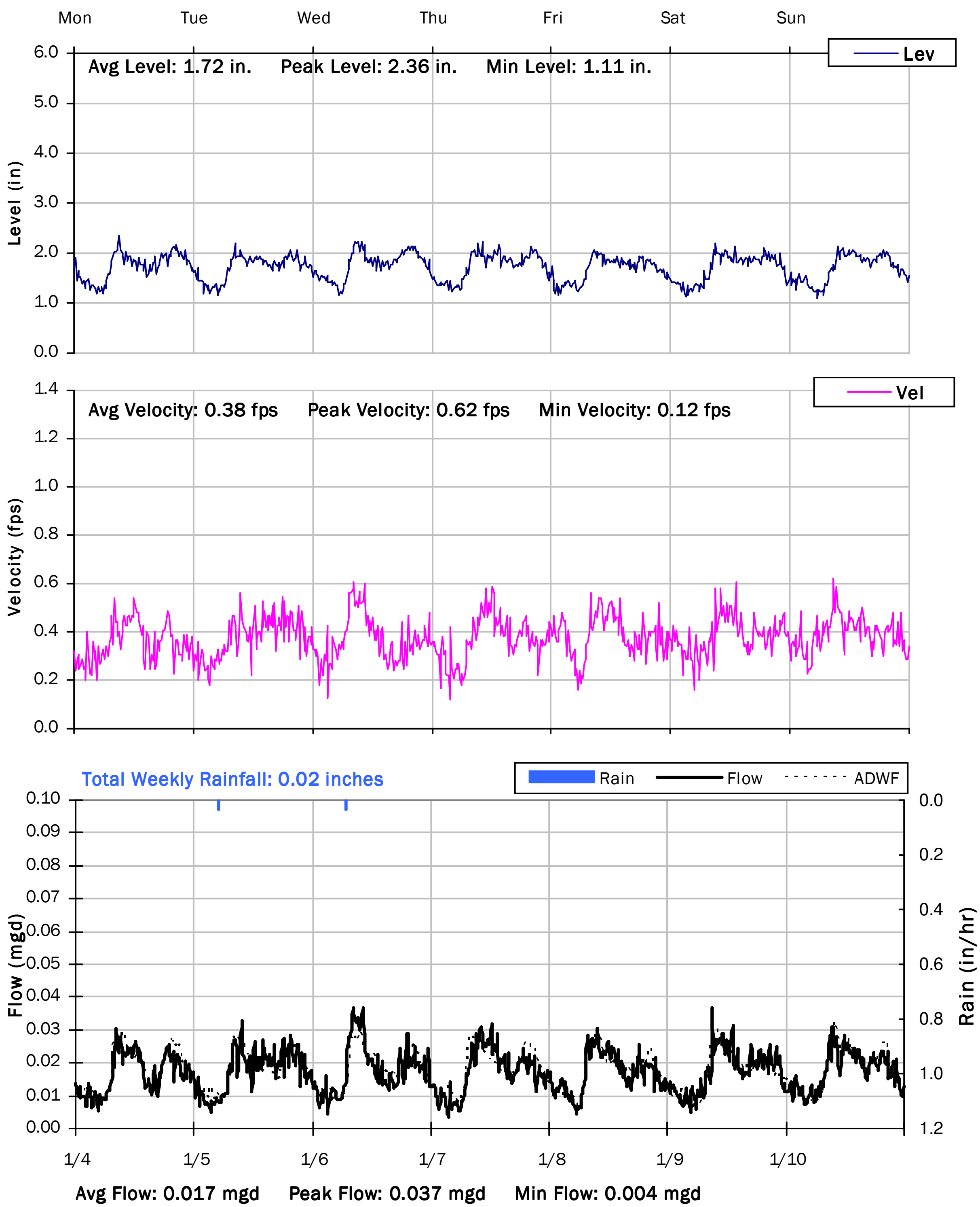
SITE 09W
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020



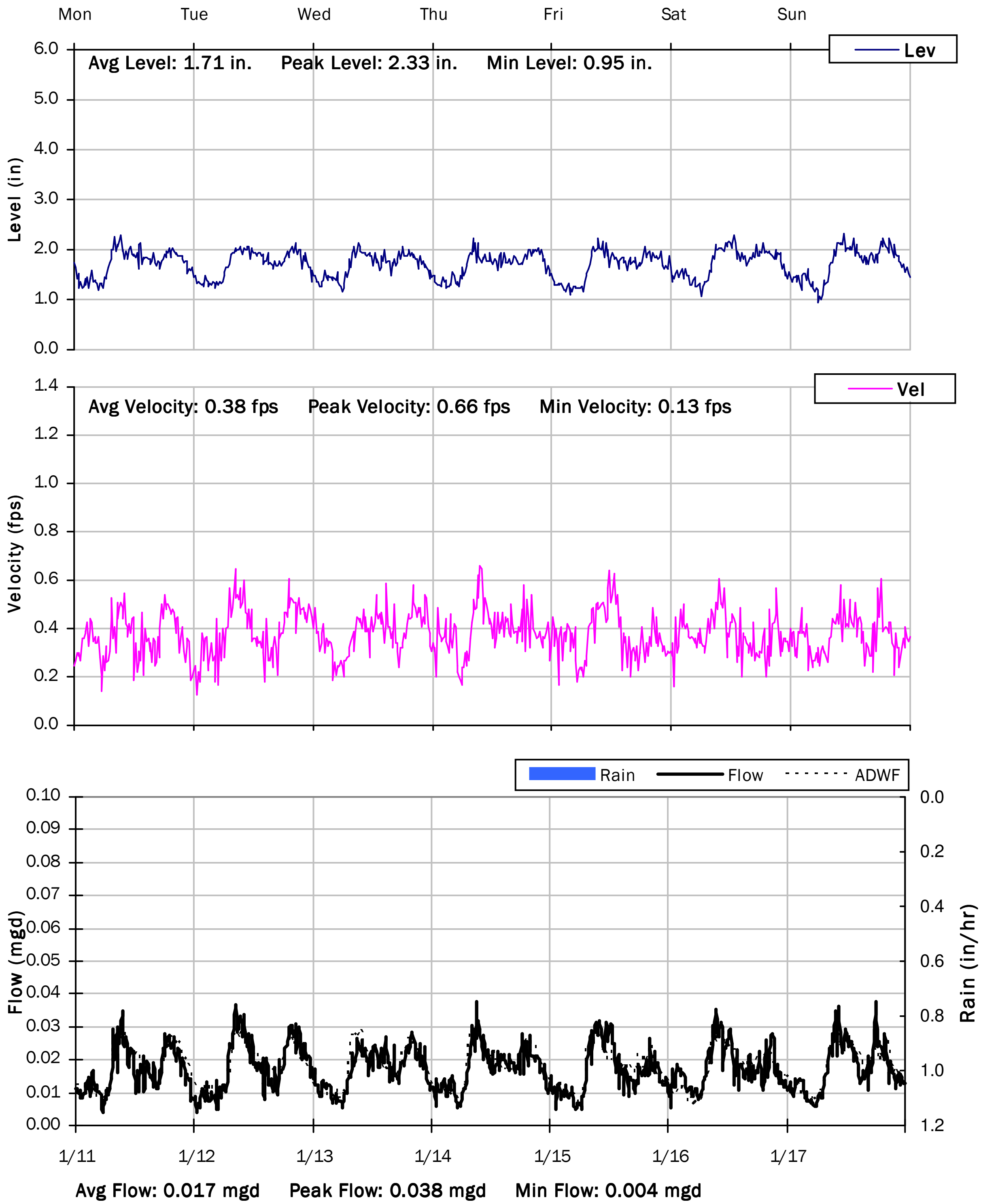
SITE 09W
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021



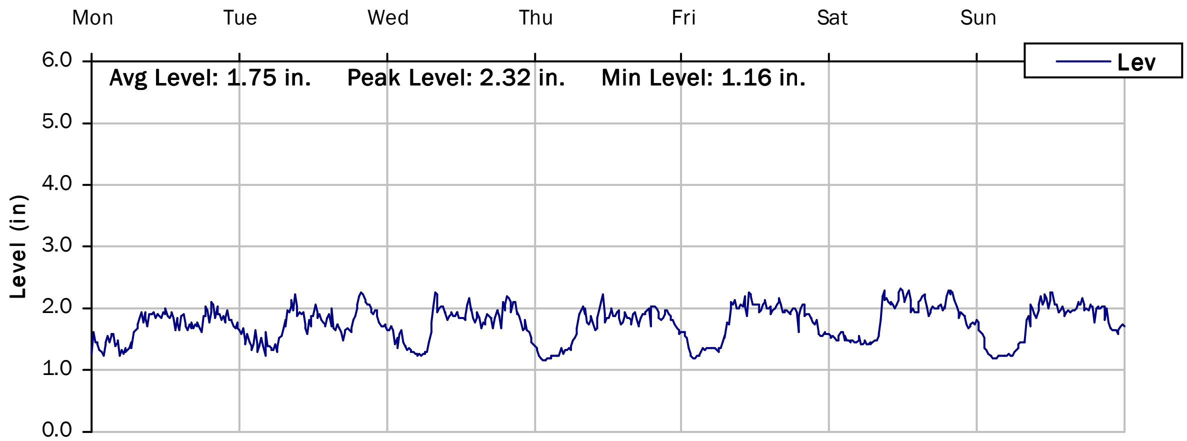
SITE 09W
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

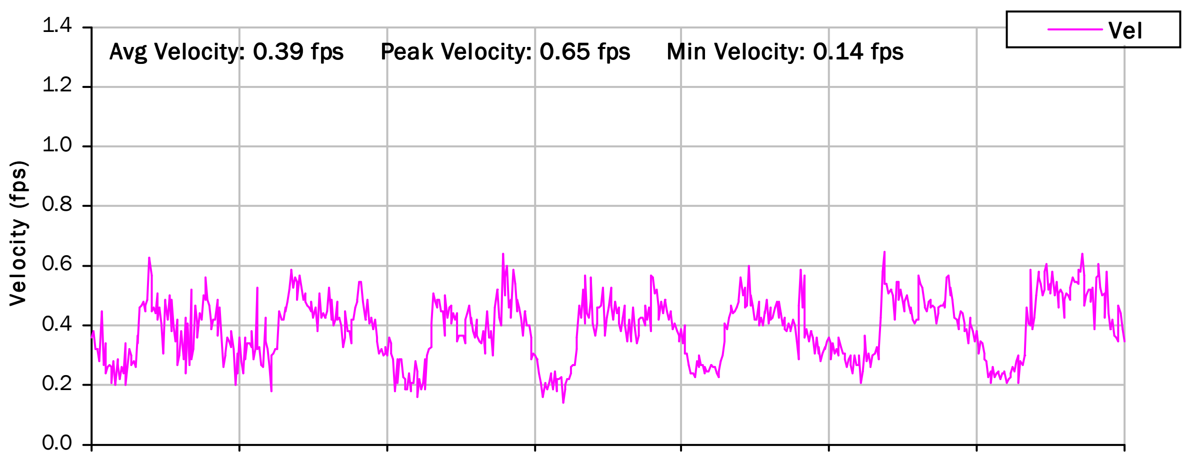


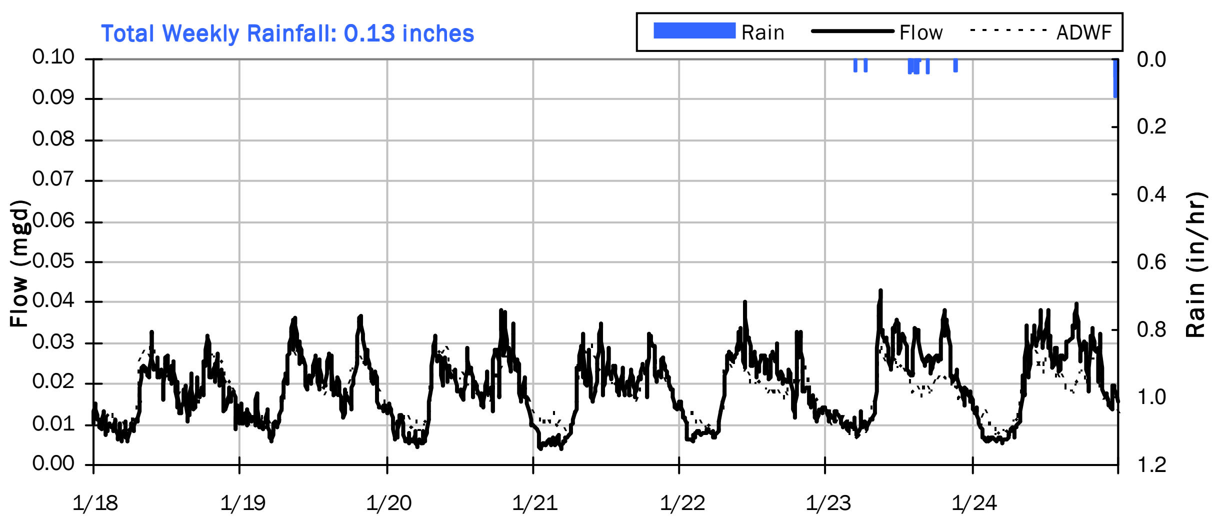
SITE 09W
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021



SITE 09W
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

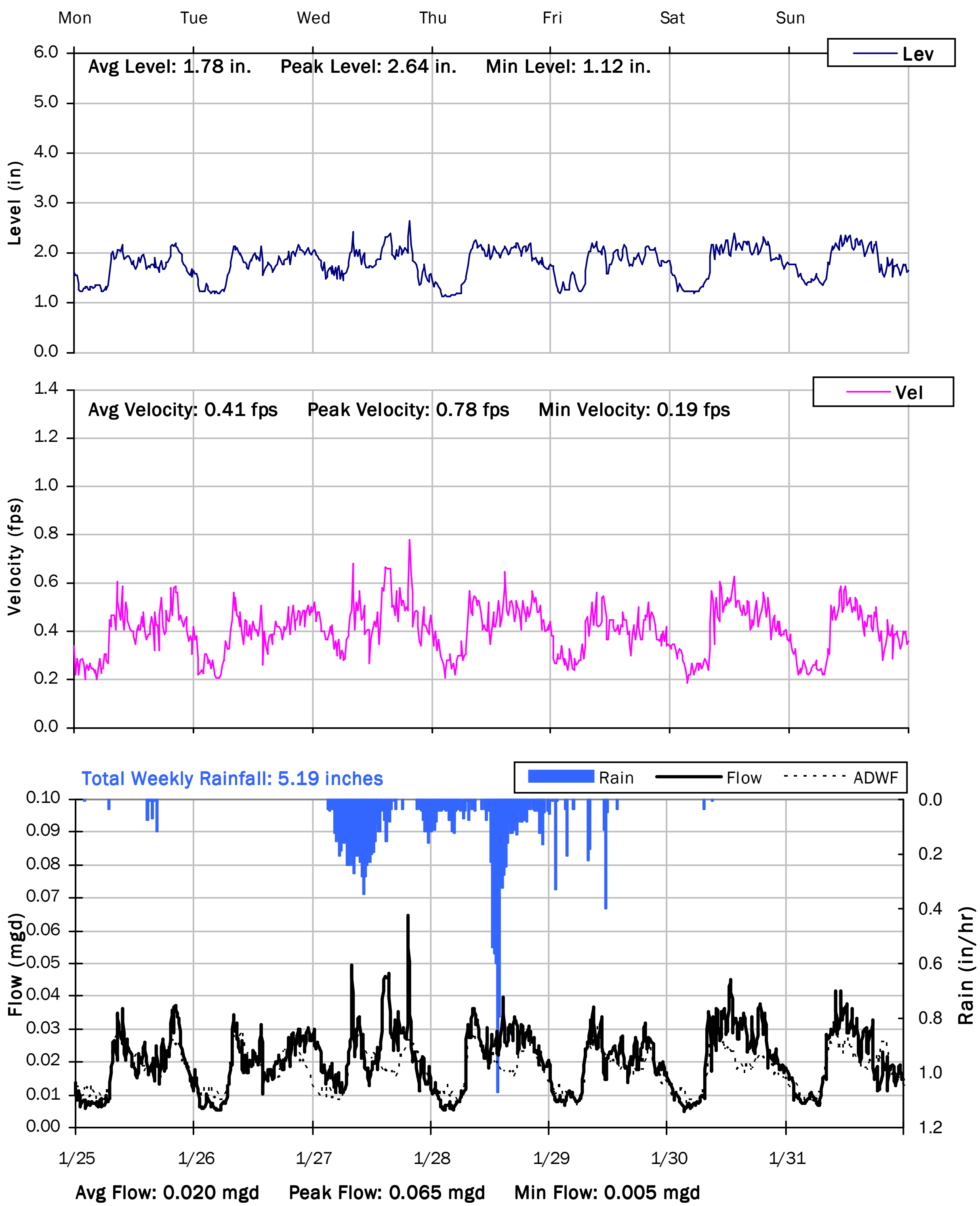




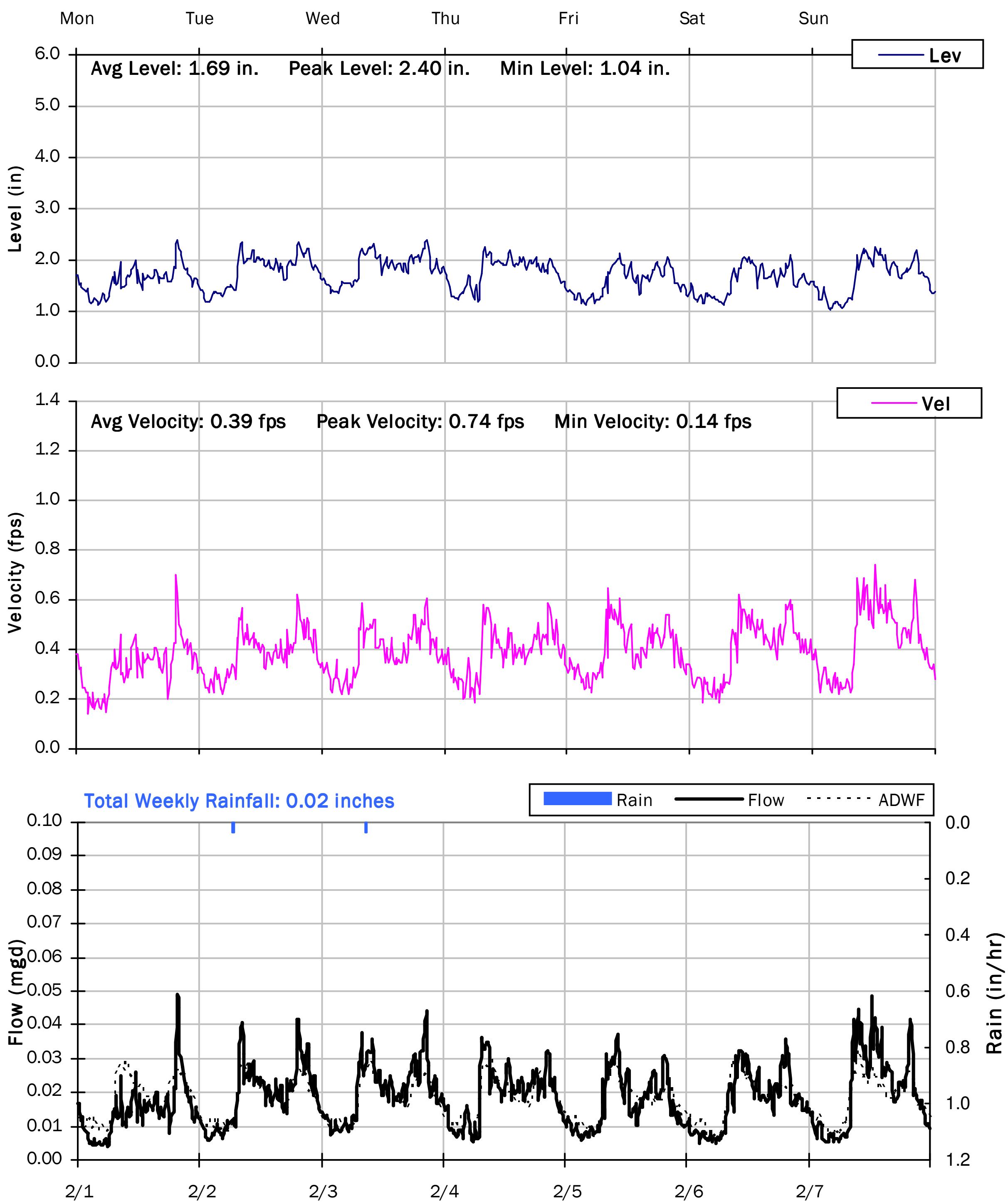


Avg Flow: 0.019 mgd Peak Flow: 0.043 mgd Min Flow: 0.004 mgd

SITE 09W
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 09W
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.018 mgd **Peak Flow: 0.049 mgd** **Min Flow: 0.004 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

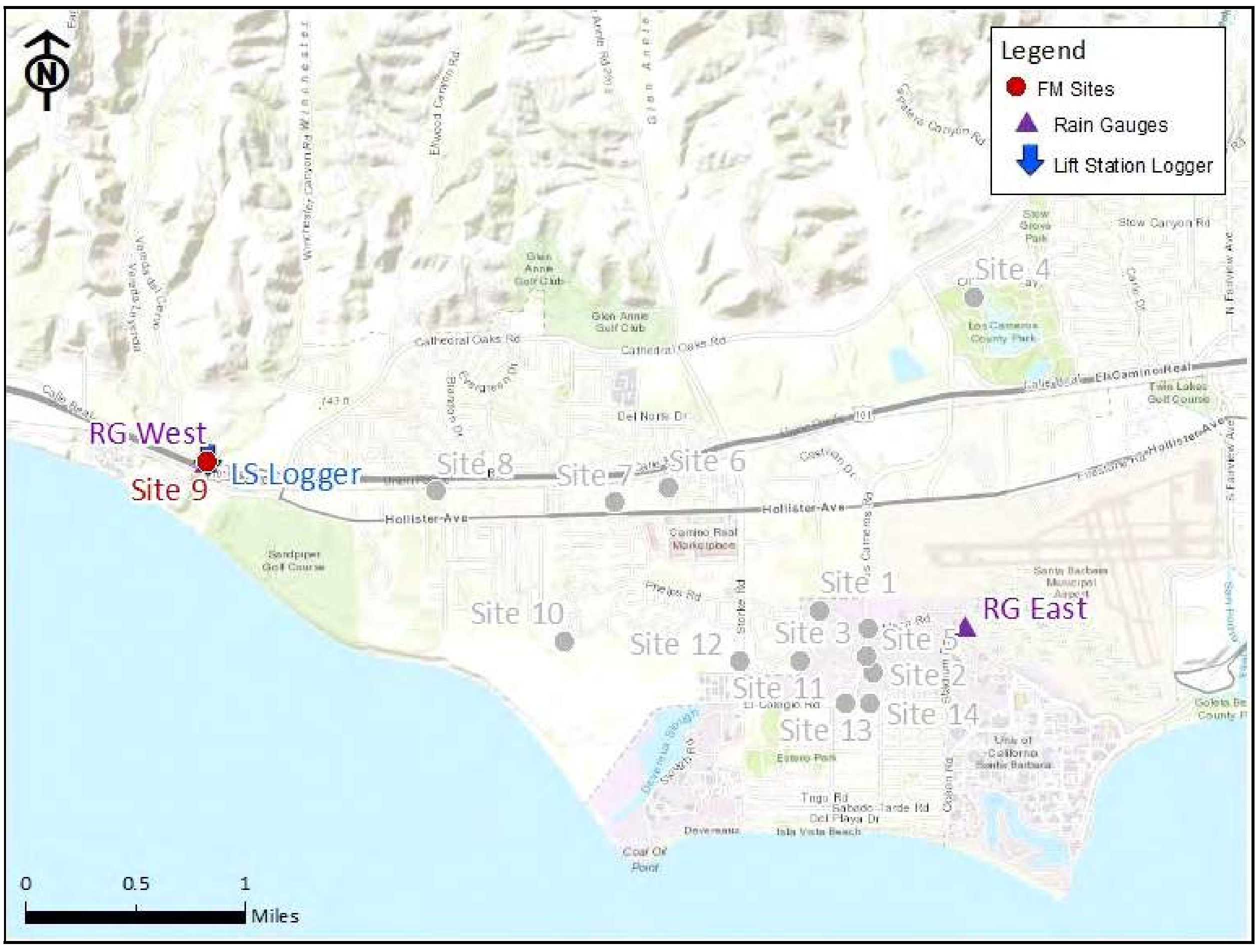
November 3, 2020 - February 7, 2021

Monitoring Site: Site 09E

City Manhole: 79-20-03

Location: Emily Lift Station on Calle Real

Data Summary Report



Vicinity Map: Site 09E

SITE 09E

Site Information

Location: Emily Lift Station on Calle Real

City Manhole: 79-20-03

Coordinates: 119.8838° W, 34.4216° N

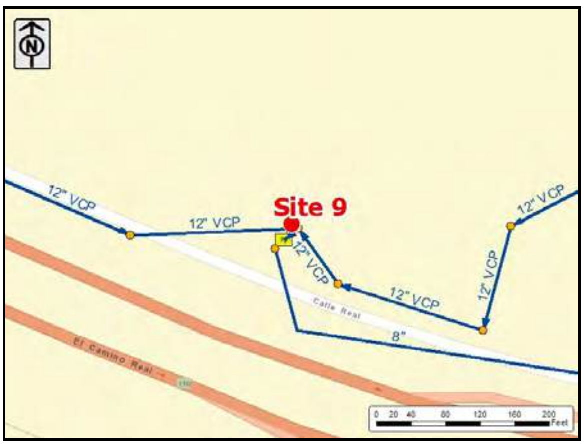
Rim Elevation (Earth): 41 feet

Pipe Diameter: 12 inches

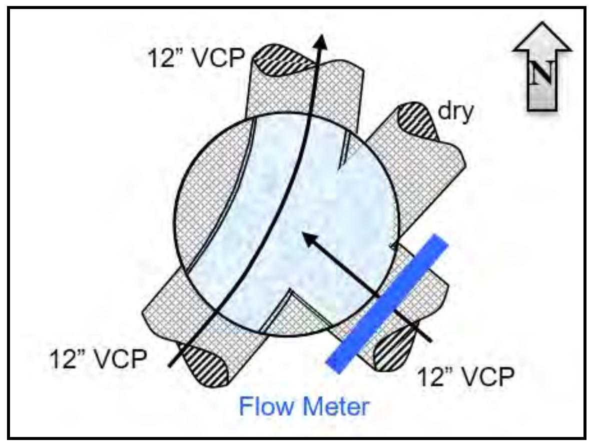
ADWF: 0.012 mgd

Peak Measured Flow: 0.131 mgd

Satellite Map



Sanitary Map



Flow Sketch

Street View

Plan View

SITE 09E

Additional Site Photos

Monitored Southeast Influent

North Effluent

SITE 09E

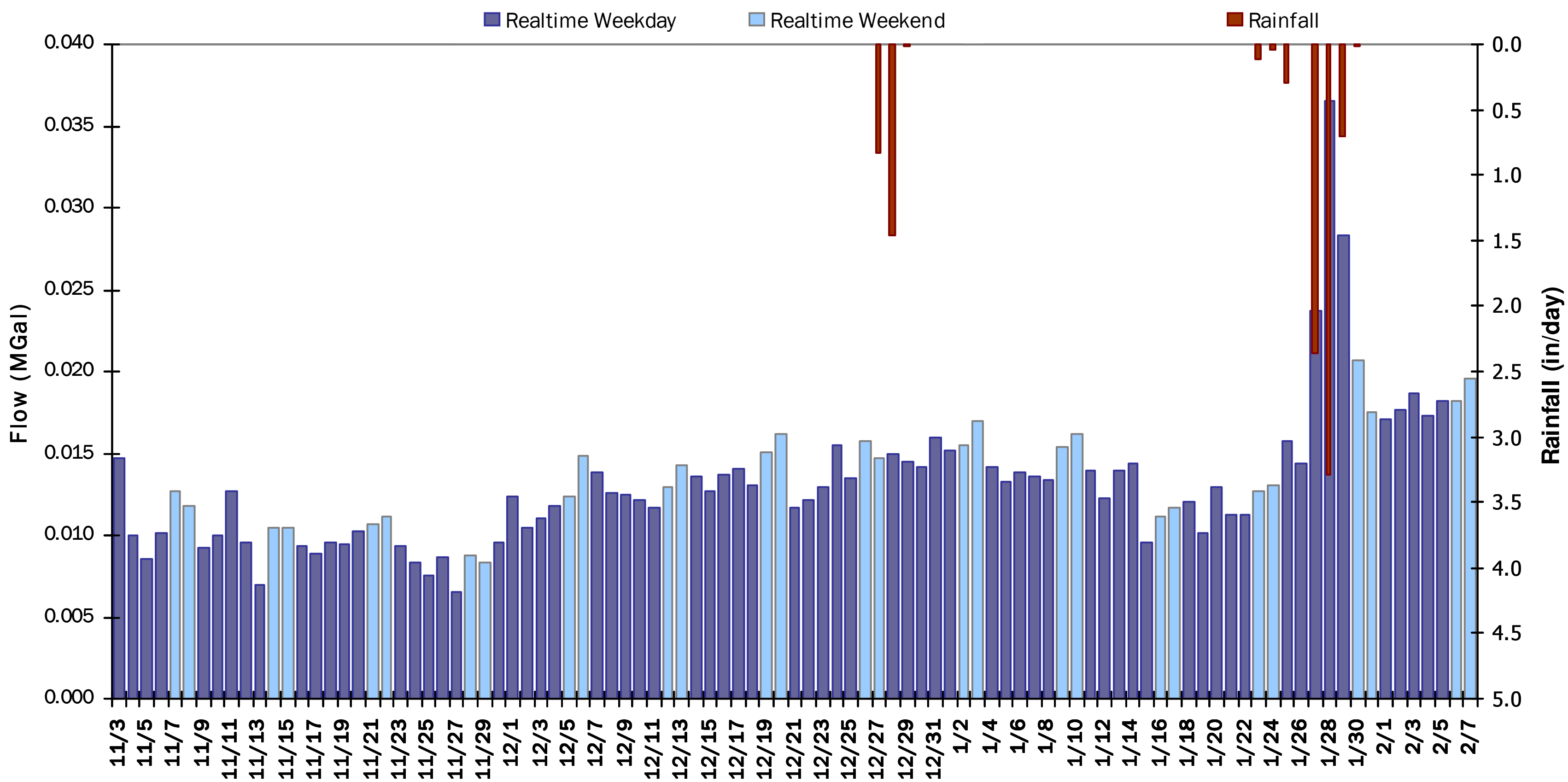
Additional Site Photos

West Influent

SITE 09E
Period Flow Summary: Daily Flow Totals

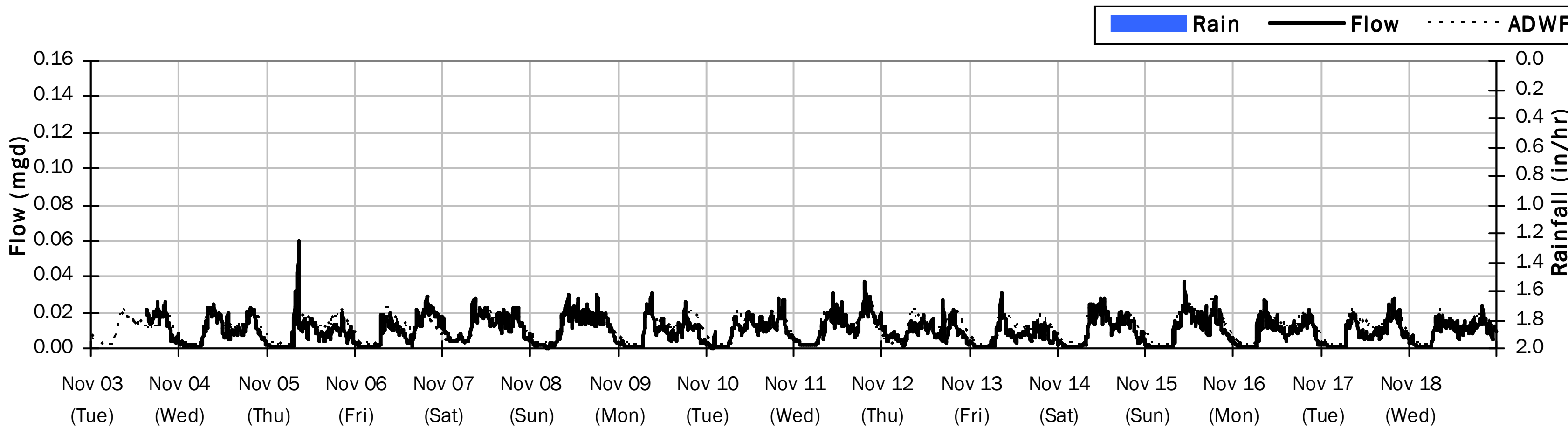
Avg Period Flow: 0.013 MGal **Peak Daily Flow: 0.037 MGal** **Min Daily Flow: 0.007 MGal**

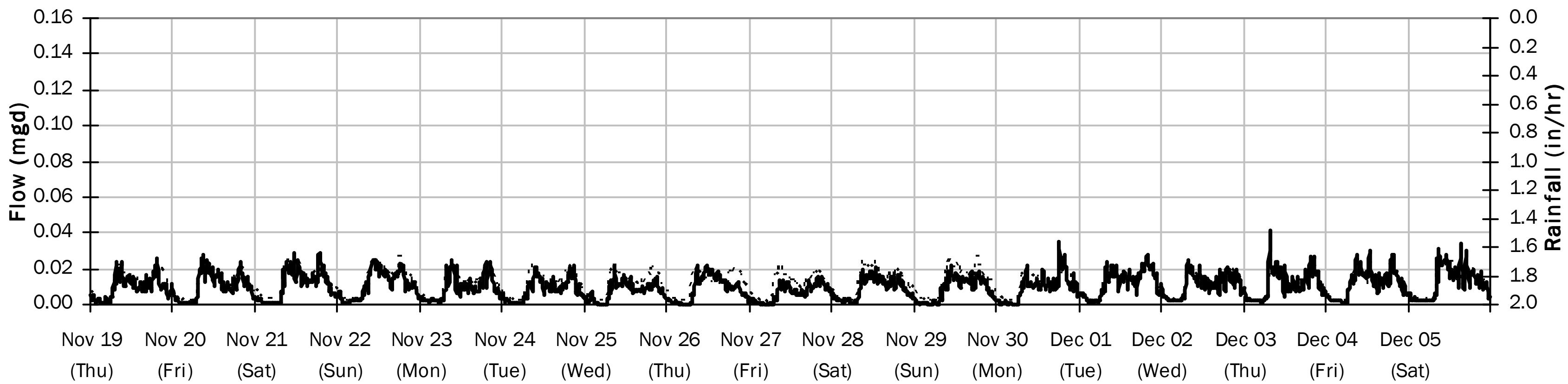
Total Period Rainfall: 9.11 inches



SITE 09E
Flow Summary: 11/3/2020 to 12/5/2020

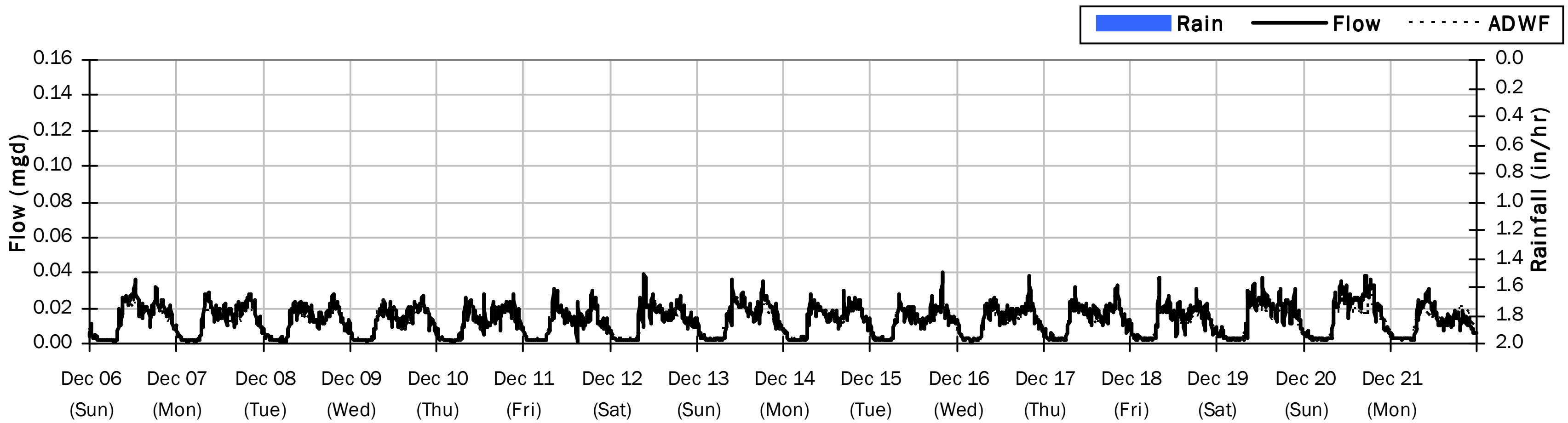
Total Period Rainfall: 0.00 inches   **Avg Flow: 0.010 mgd**   **Peak Flow: 0.060 mgd**   **Min Flow: 0.000 mgd**

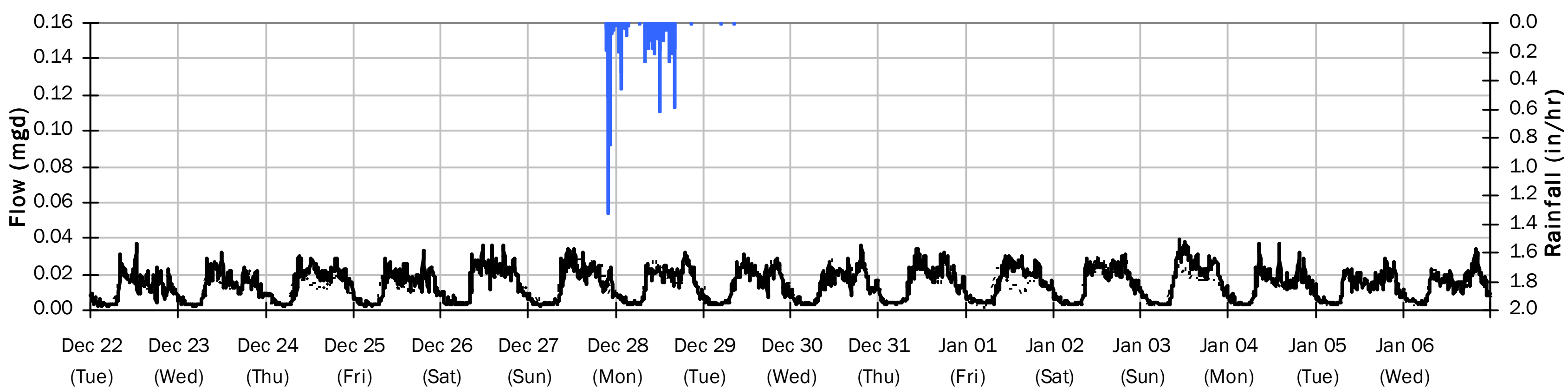




SITE 09E
Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.30 inches   **Avg Flow: 0.014 mgd**   **Peak Flow: 0.040 mgd**   **Min Flow: 0.001 mgd**

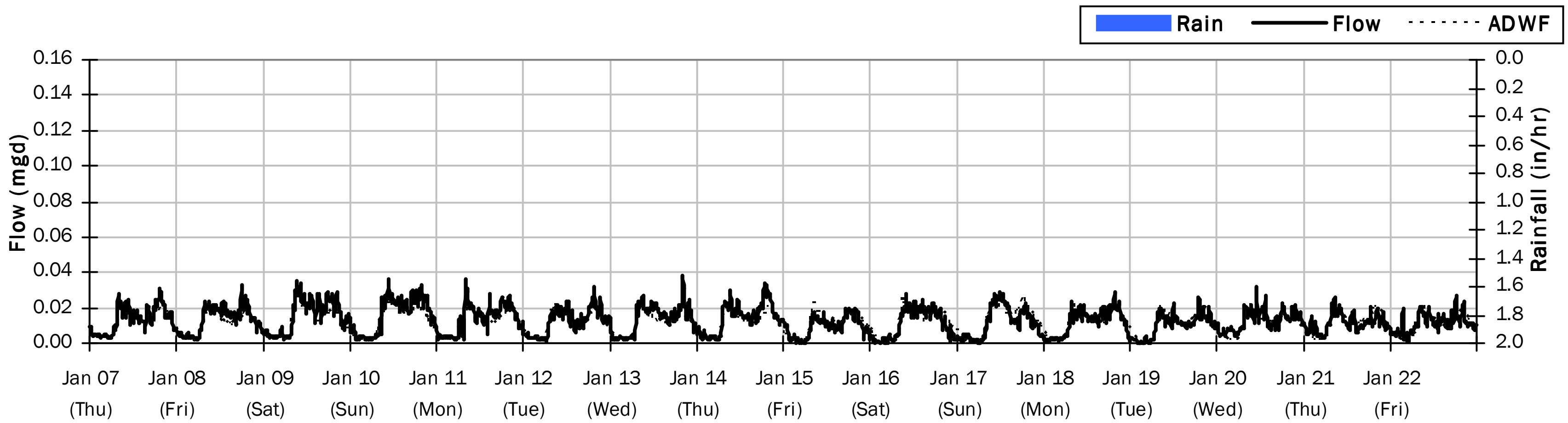


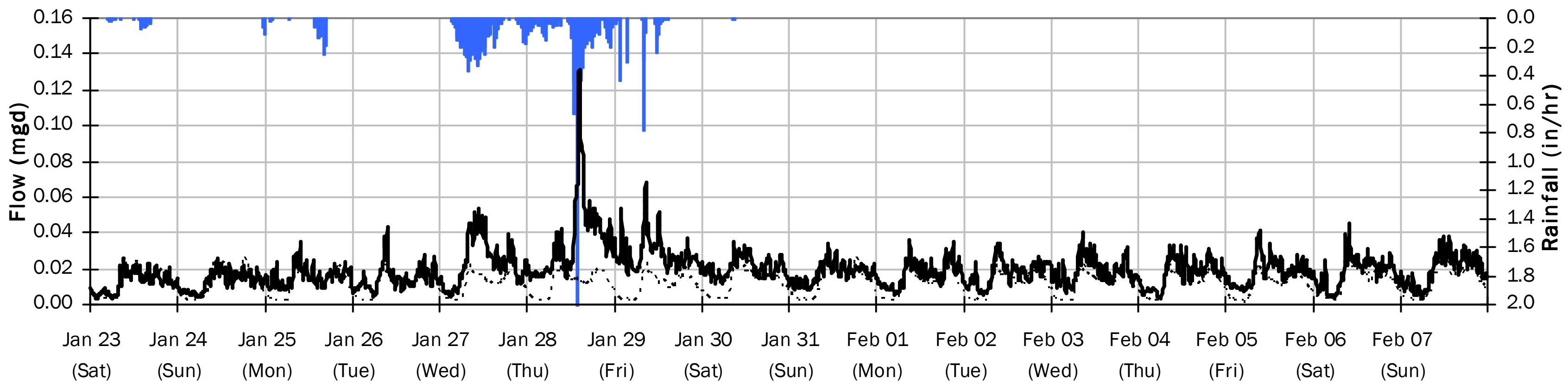


SITE 09E

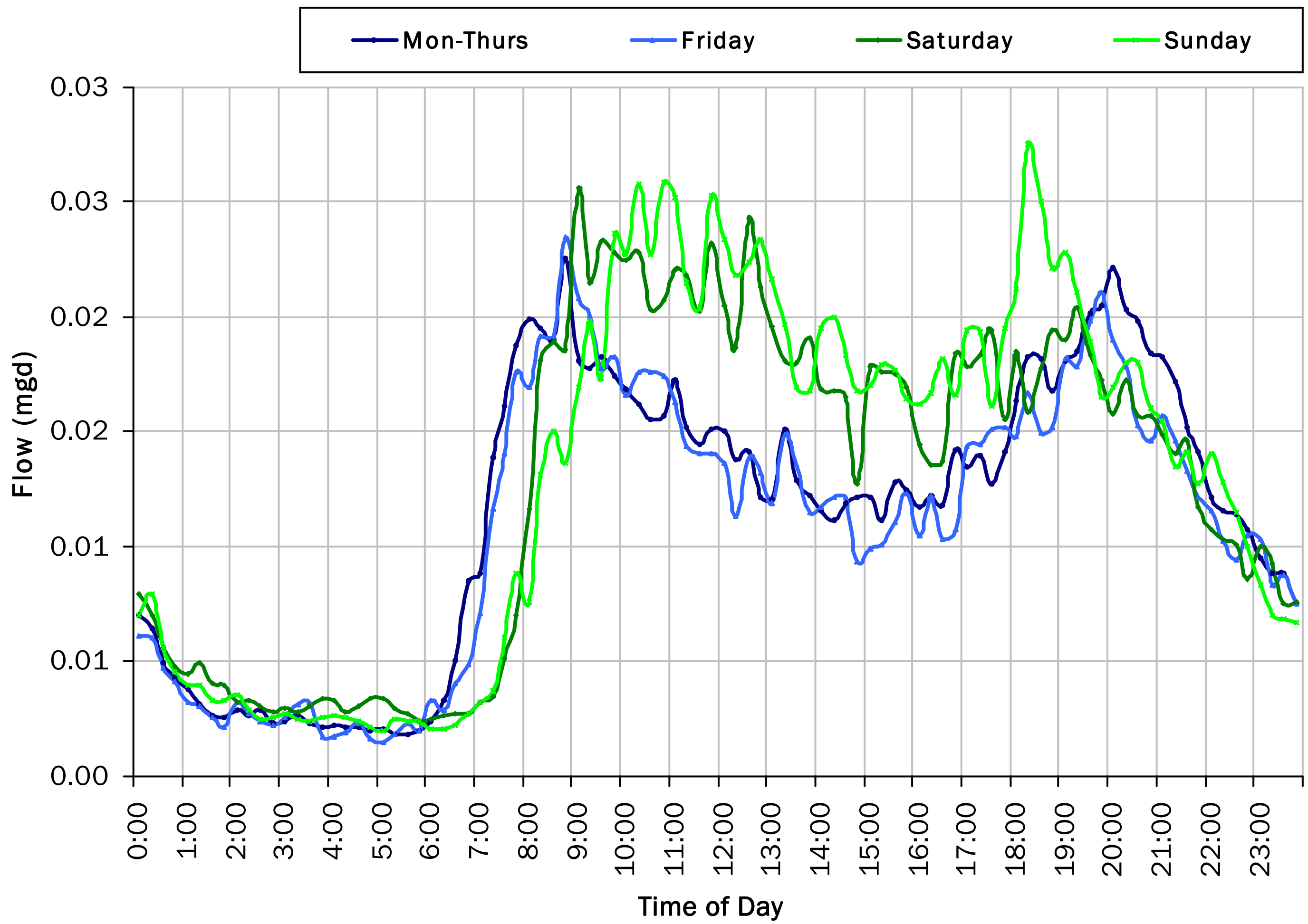
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 6.81 inches Avg Flow: 0.016 mgd Peak Flow: 0.131 mgd Min Flow: 0.000 mgd



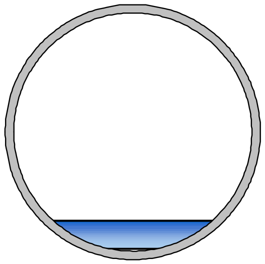


SITE 09E
Average Dry Weather Flow Hydrographs



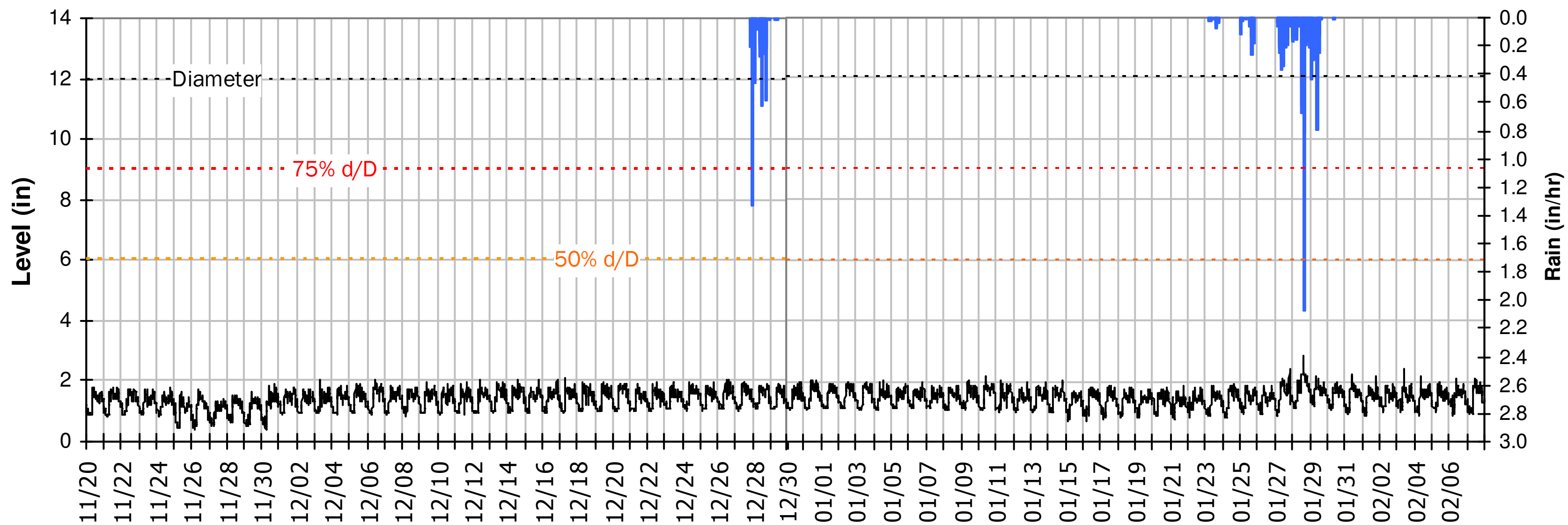
ADWF:

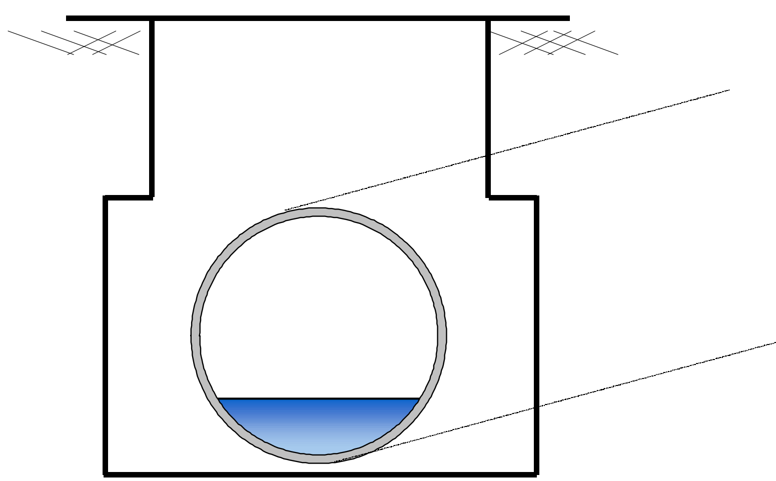
0.012 *mgd*



SITE 09E
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





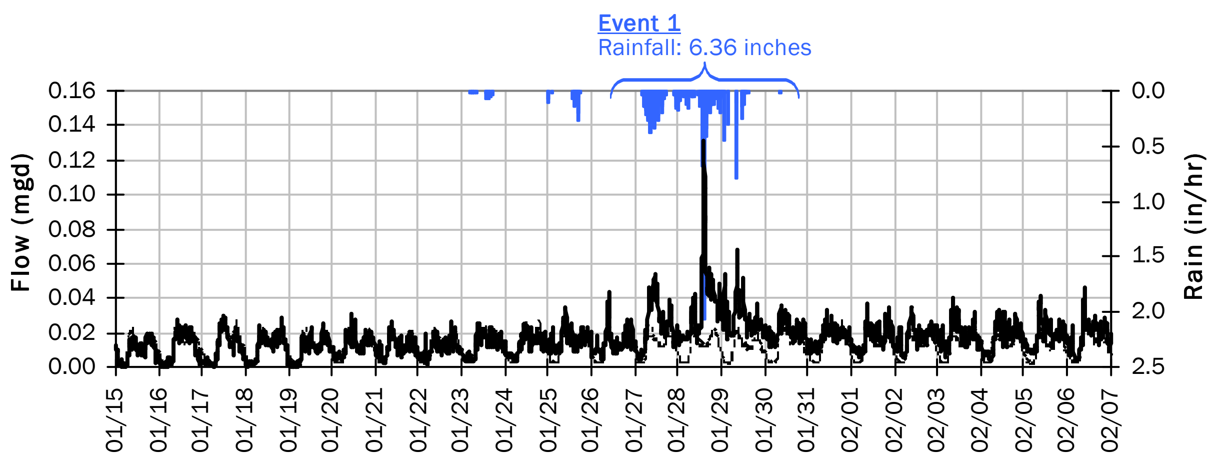
Pipe Diameter: 12 *inches*

Peak Measured Level: 2.81 *inches*

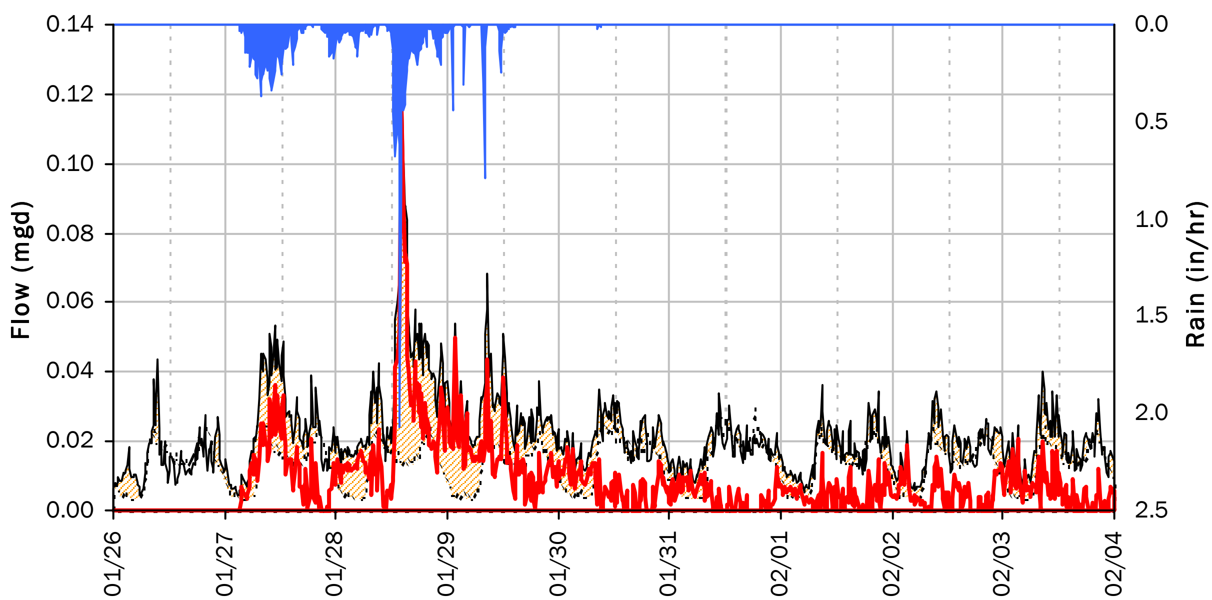
Peak d/D Ratio: 0.23

SITE 09E
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



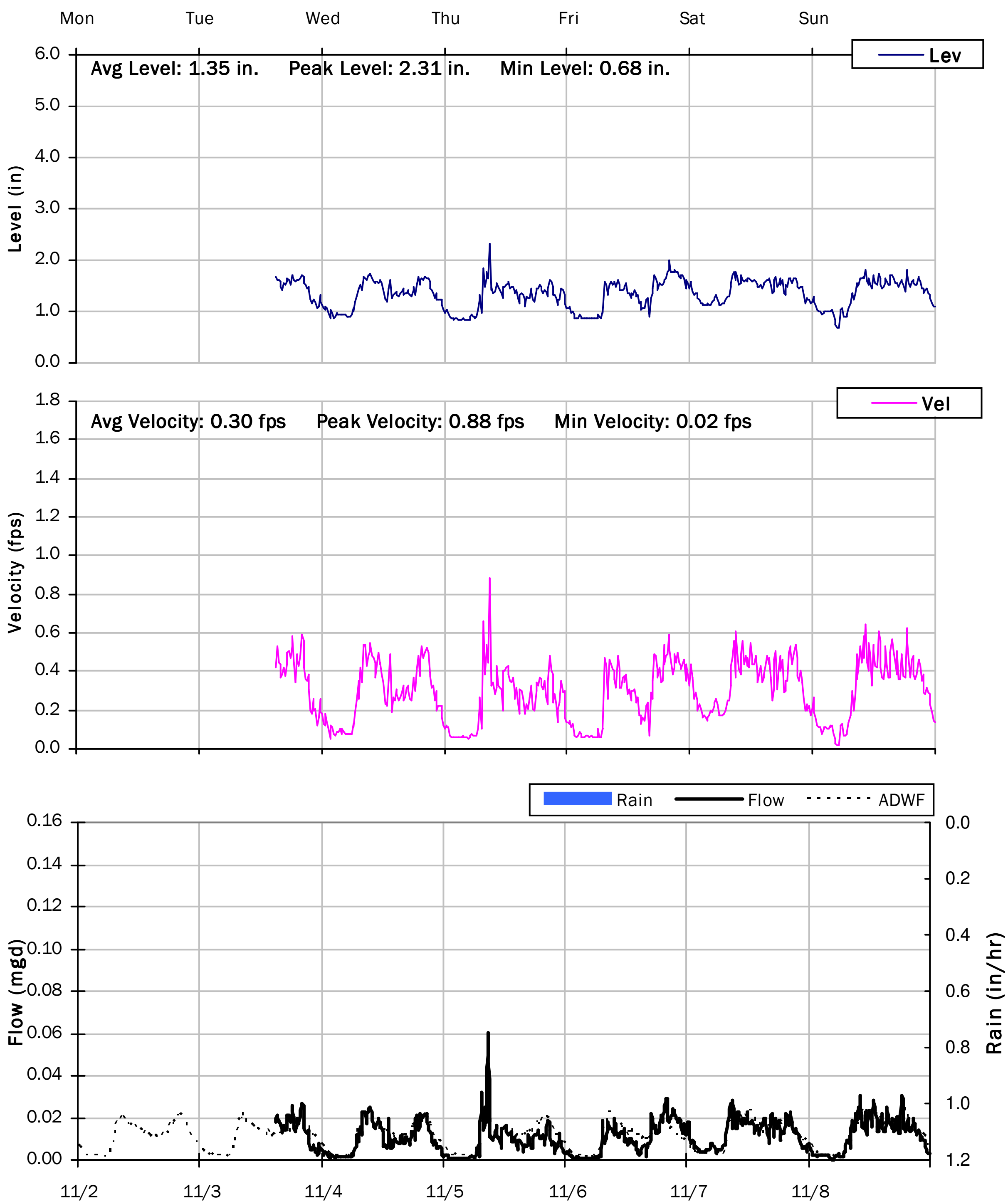
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 6.36 inches)

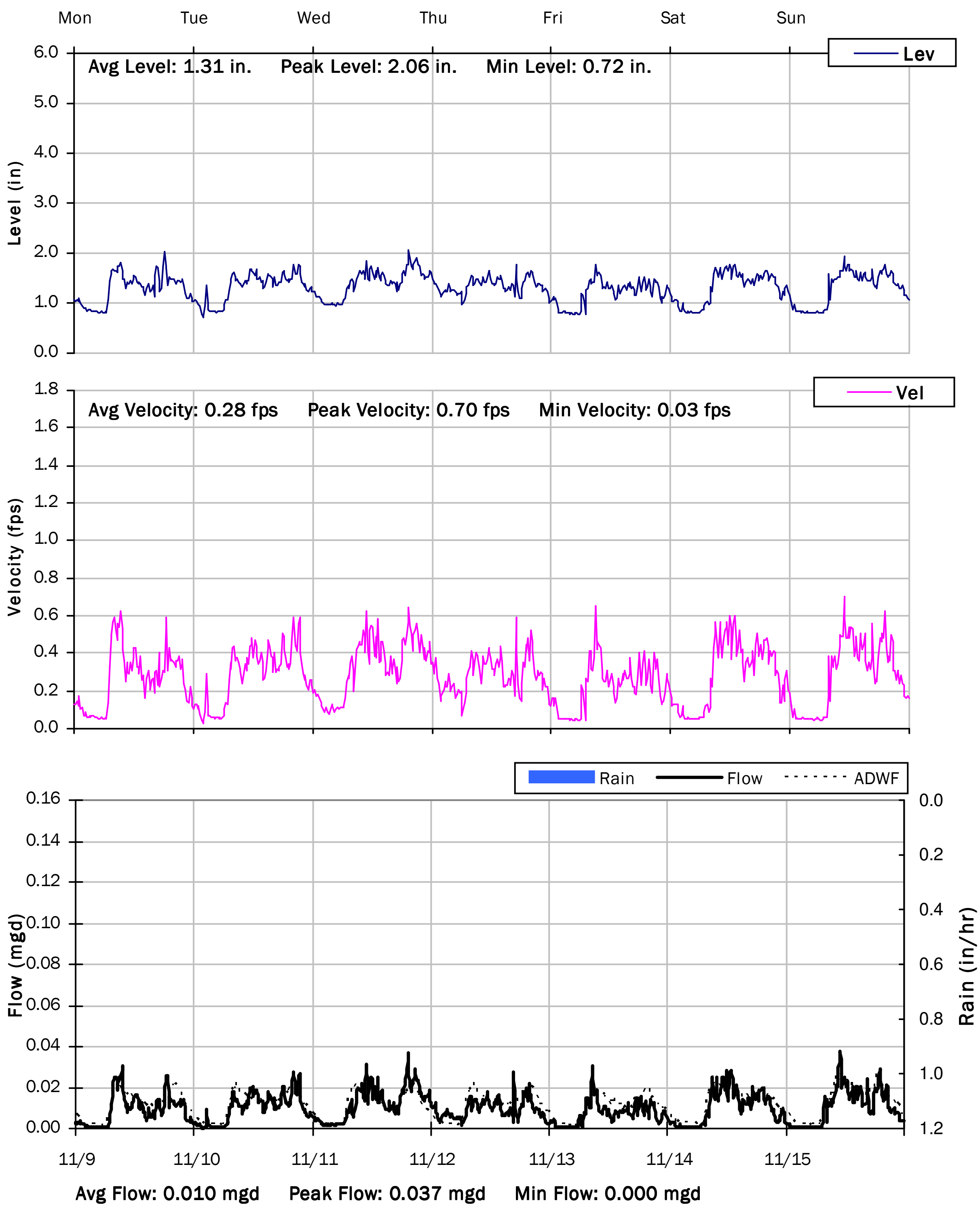
Capacity		Inflow / Infiltration	
Peak Flow:	0.13 *mgd*	**Peak I/I Rate:**	0.12 *mgd*
PF:	10.89	**Total I/I:**	73,000 *gallons*
Peak Level:	2.81 *in*		
d/D Ratio:	0.23		

SITE 09E
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

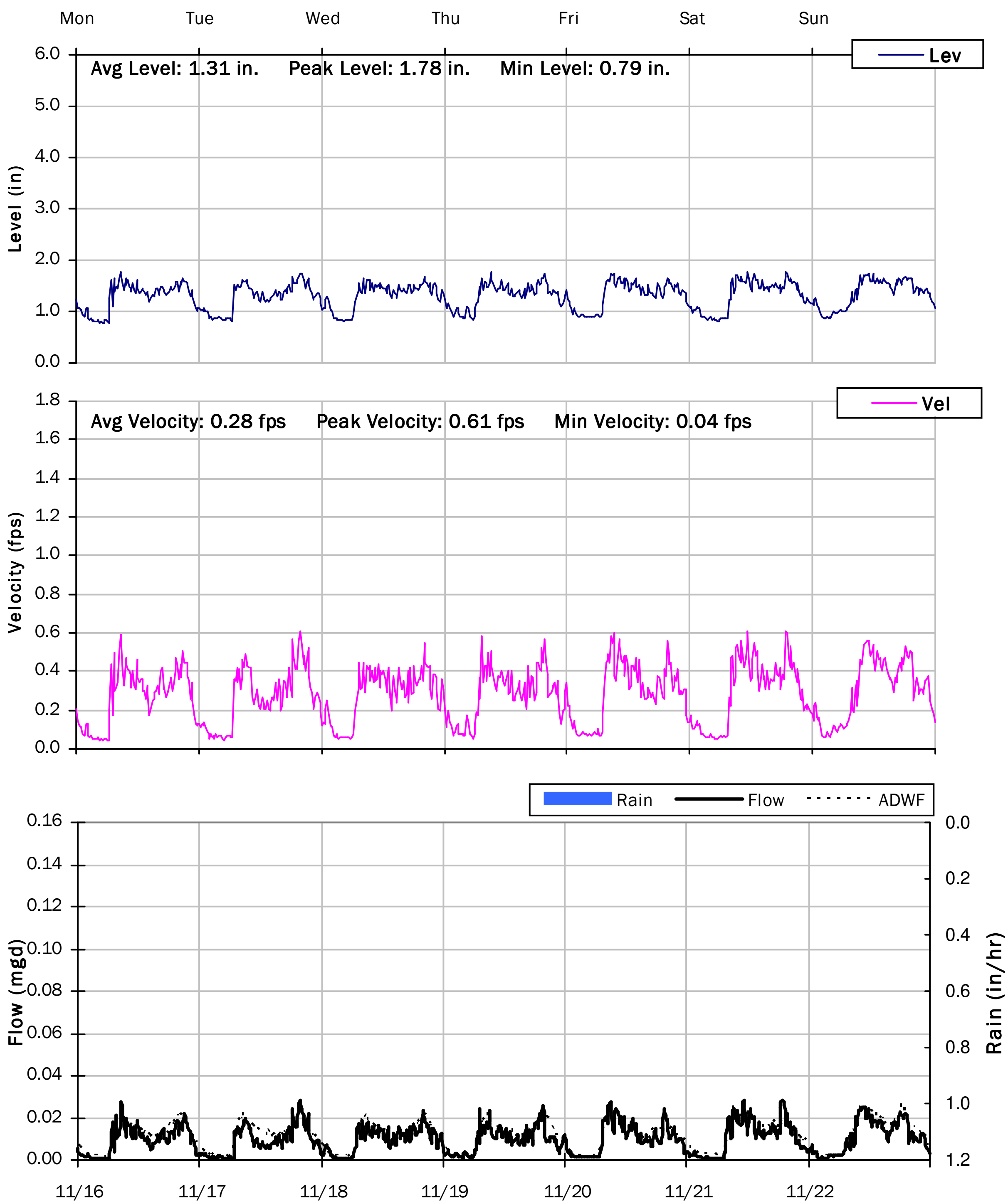


Avg Flow: 0.011 mgd Peak Flow: 0.060 mgd Min Flow: 0.000 mgd

SITE 09E
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020

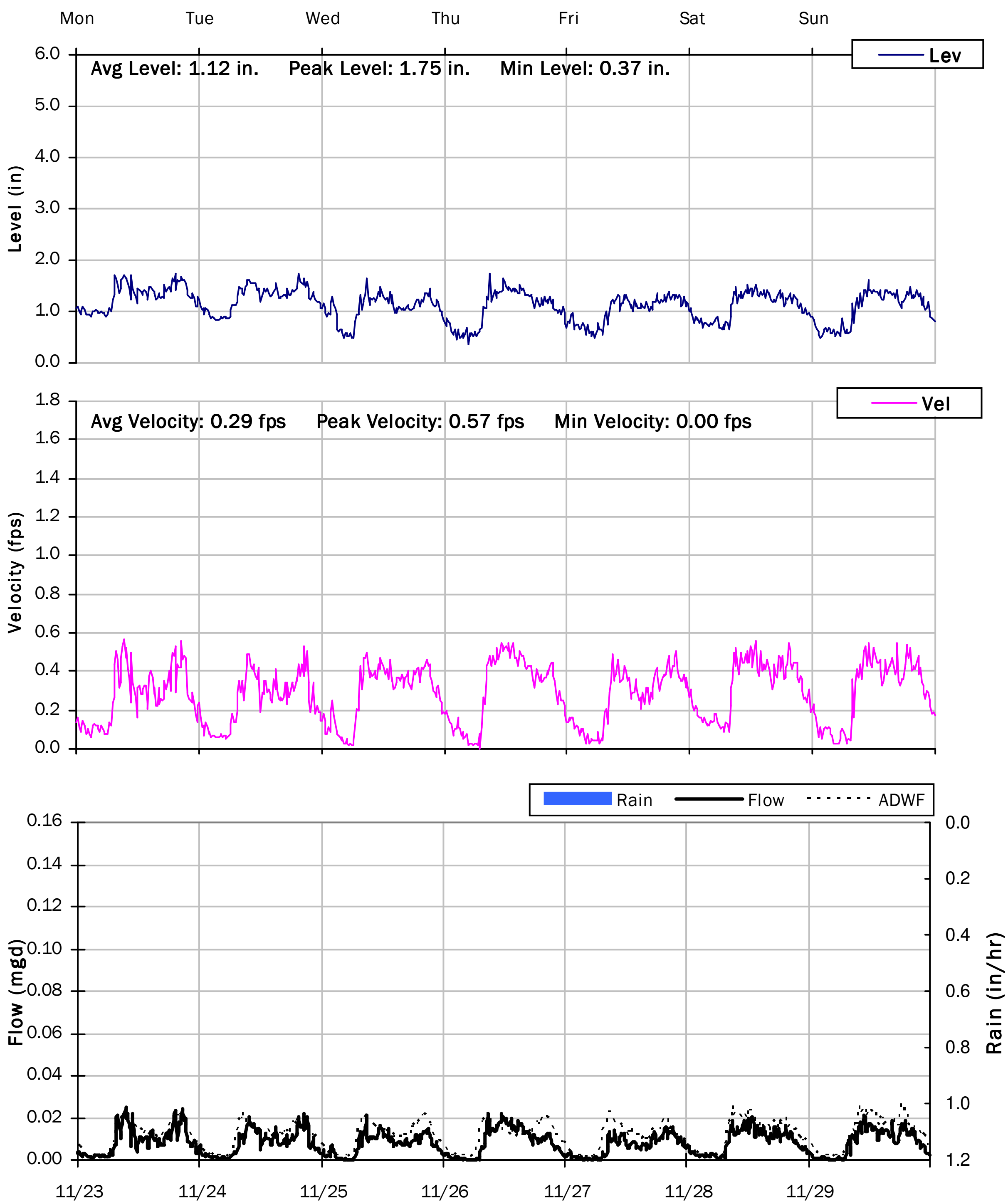


SITE 09E
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020



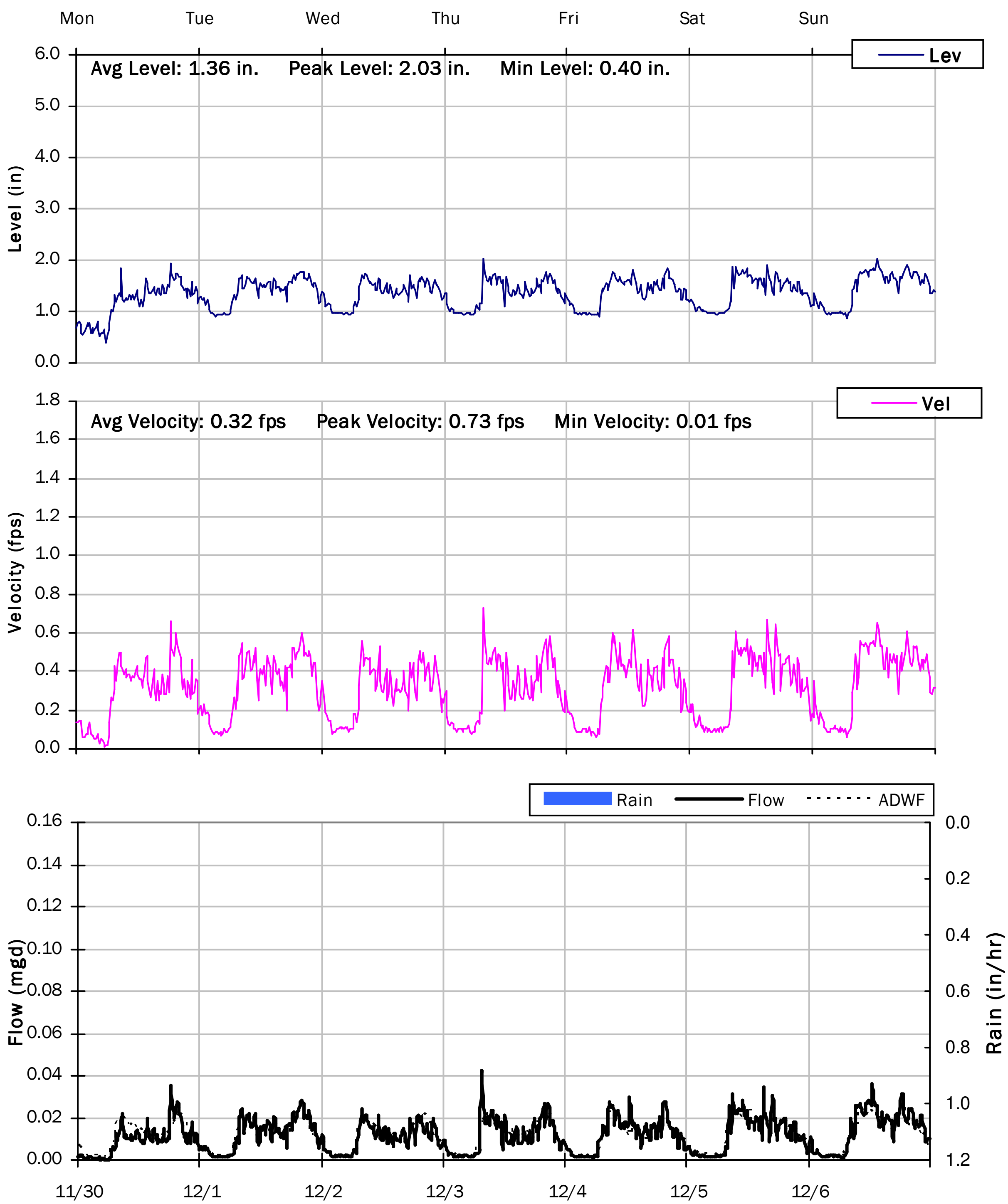
Avg Flow: 0.010 mgd **Peak Flow: 0.029 mgd** **Min Flow: 0.001 mgd**

SITE 09E
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



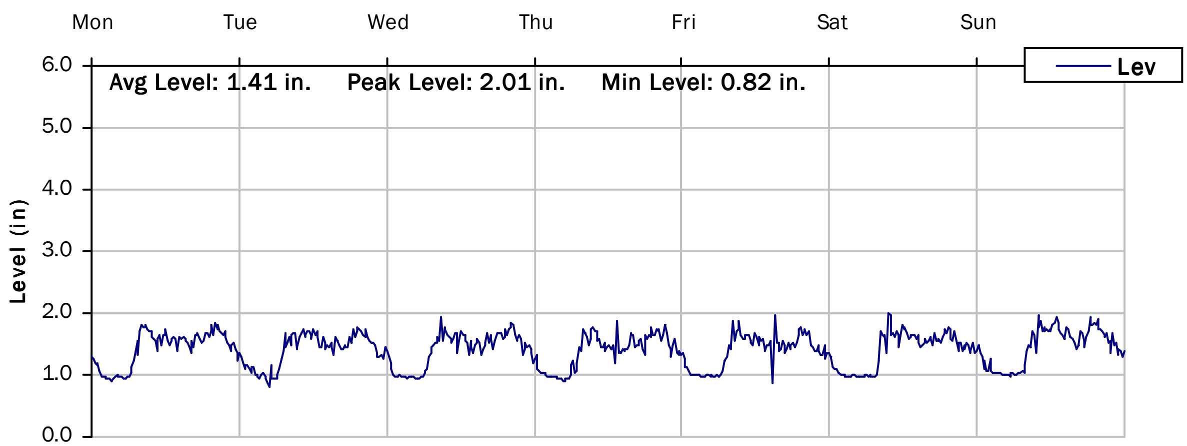
Avg Flow: 0.008 mgd Peak Flow: 0.025 mgd Min Flow: 0.000 mgd

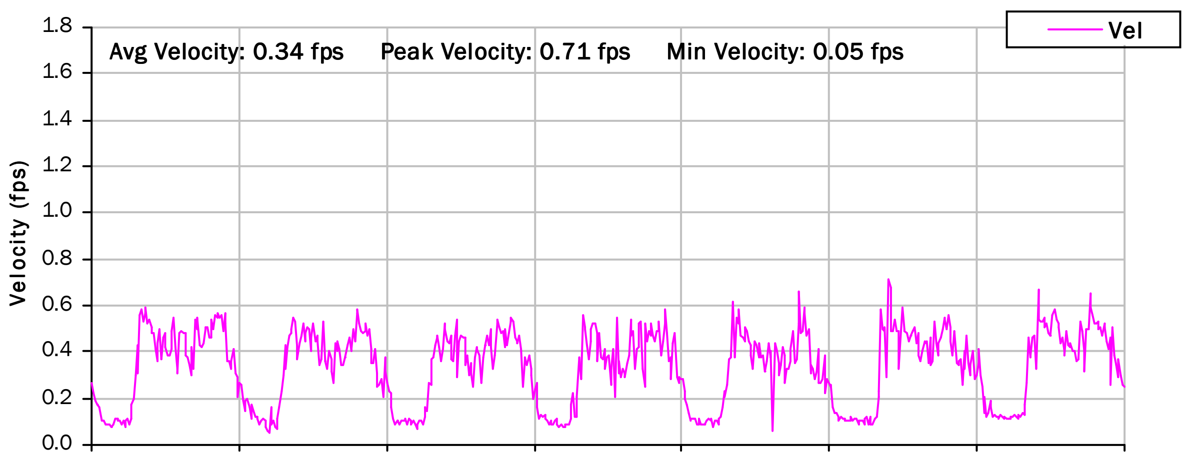
SITE 09E
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

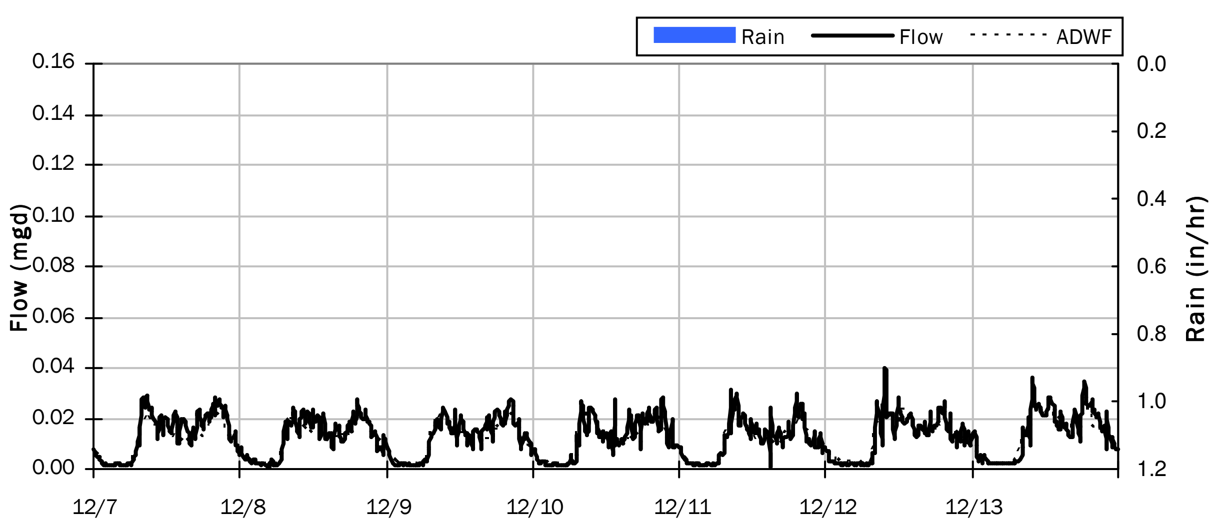


Avg Flow: 0.012 mgd Peak Flow: 0.042 mgd Min Flow: 0.000 mgd

SITE 09E
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

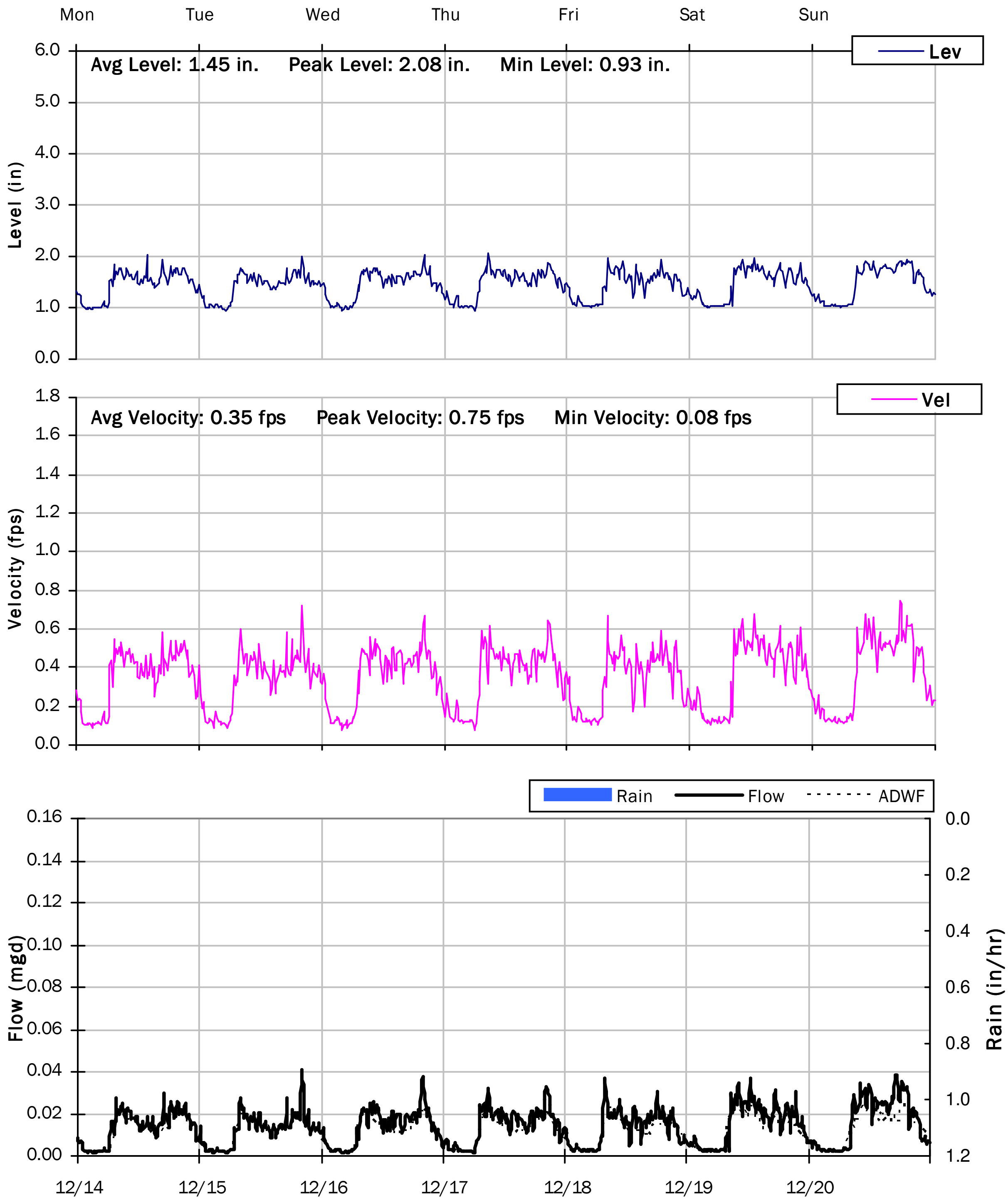






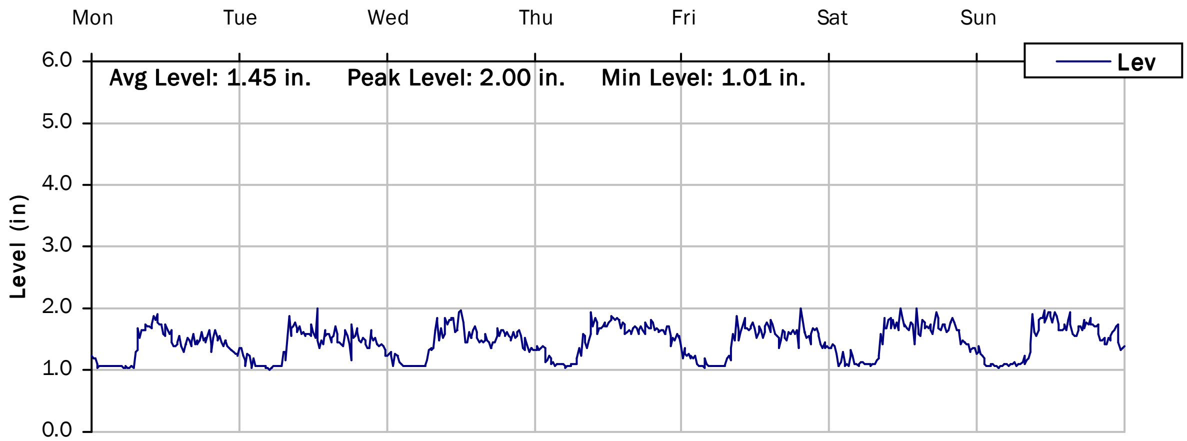
Avg Flow: 0.013 mgd **Peak Flow: 0.040 mgd** **Min Flow: 0.001 mgd**

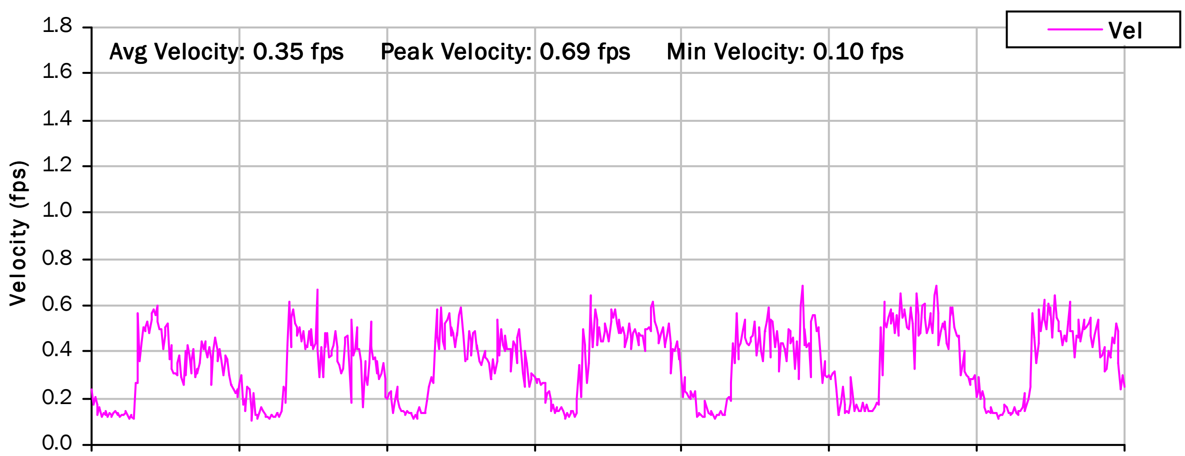
SITE 09E
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

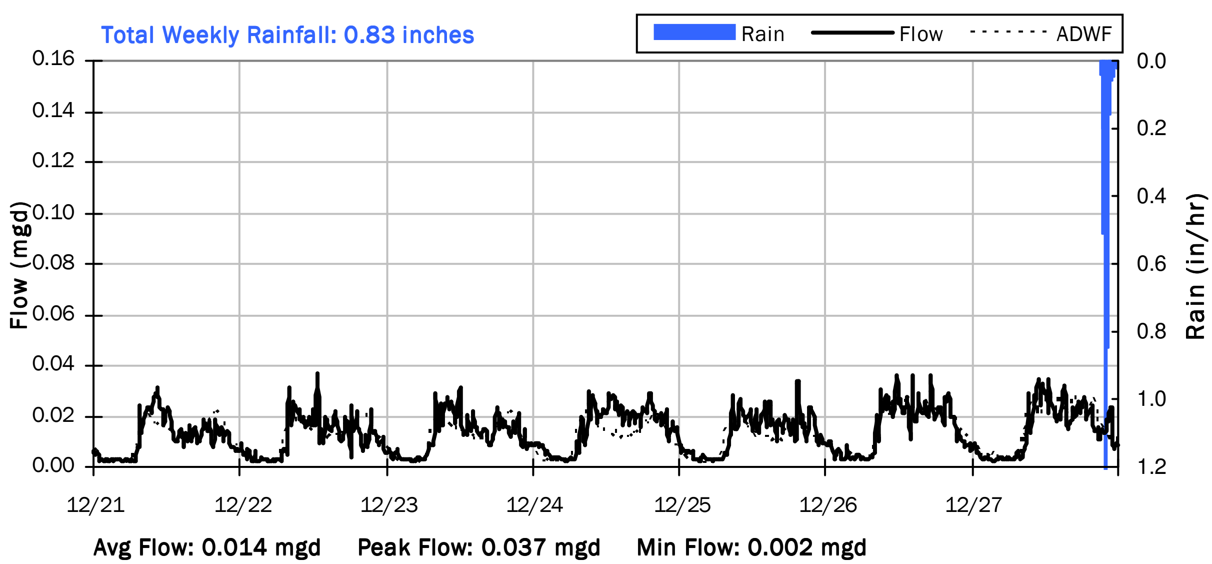


Avg Flow: 0.014 mgd **Peak Flow: 0.040 mgd** **Min Flow: 0.002 mgd**

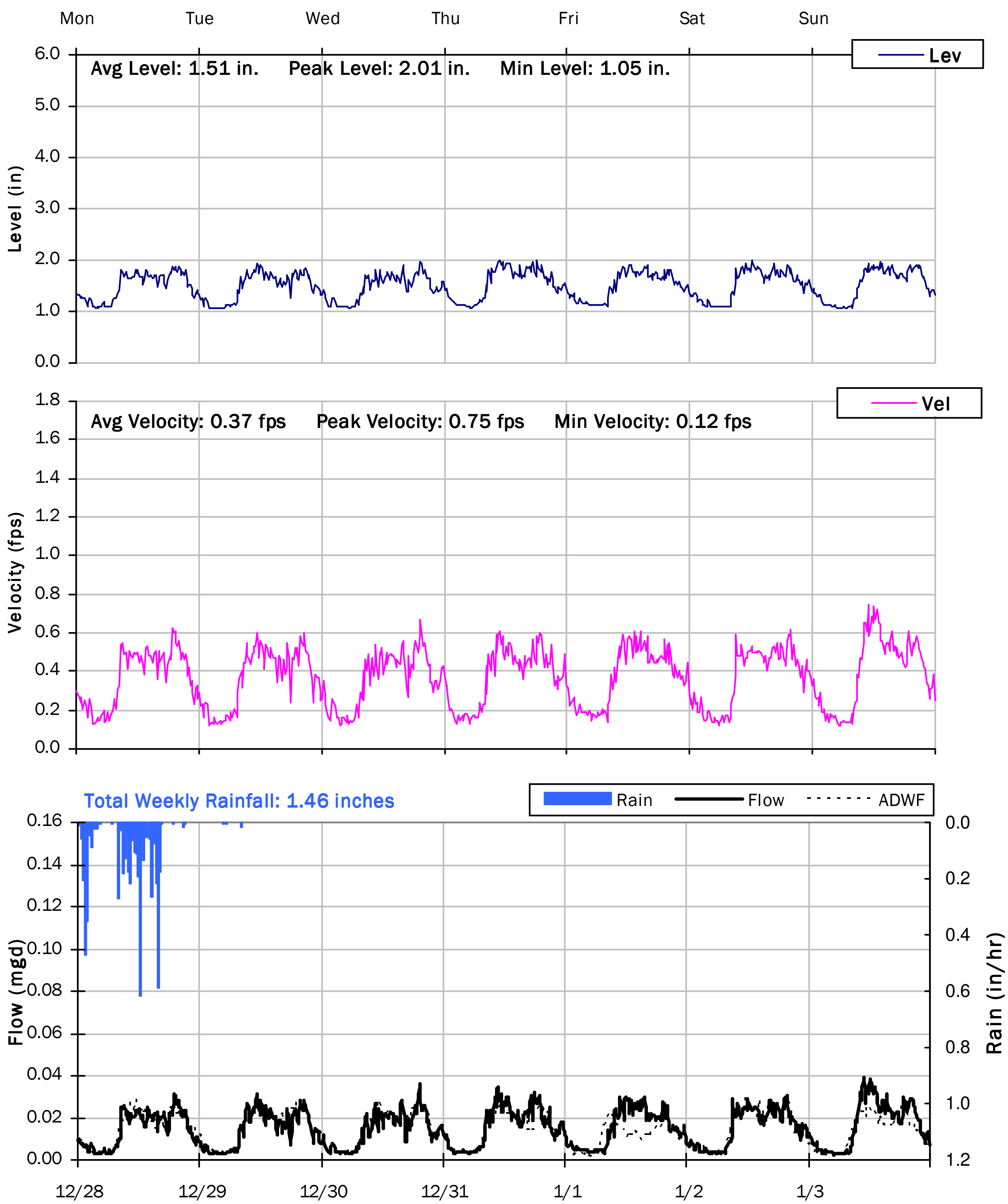
SITE 09E
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020





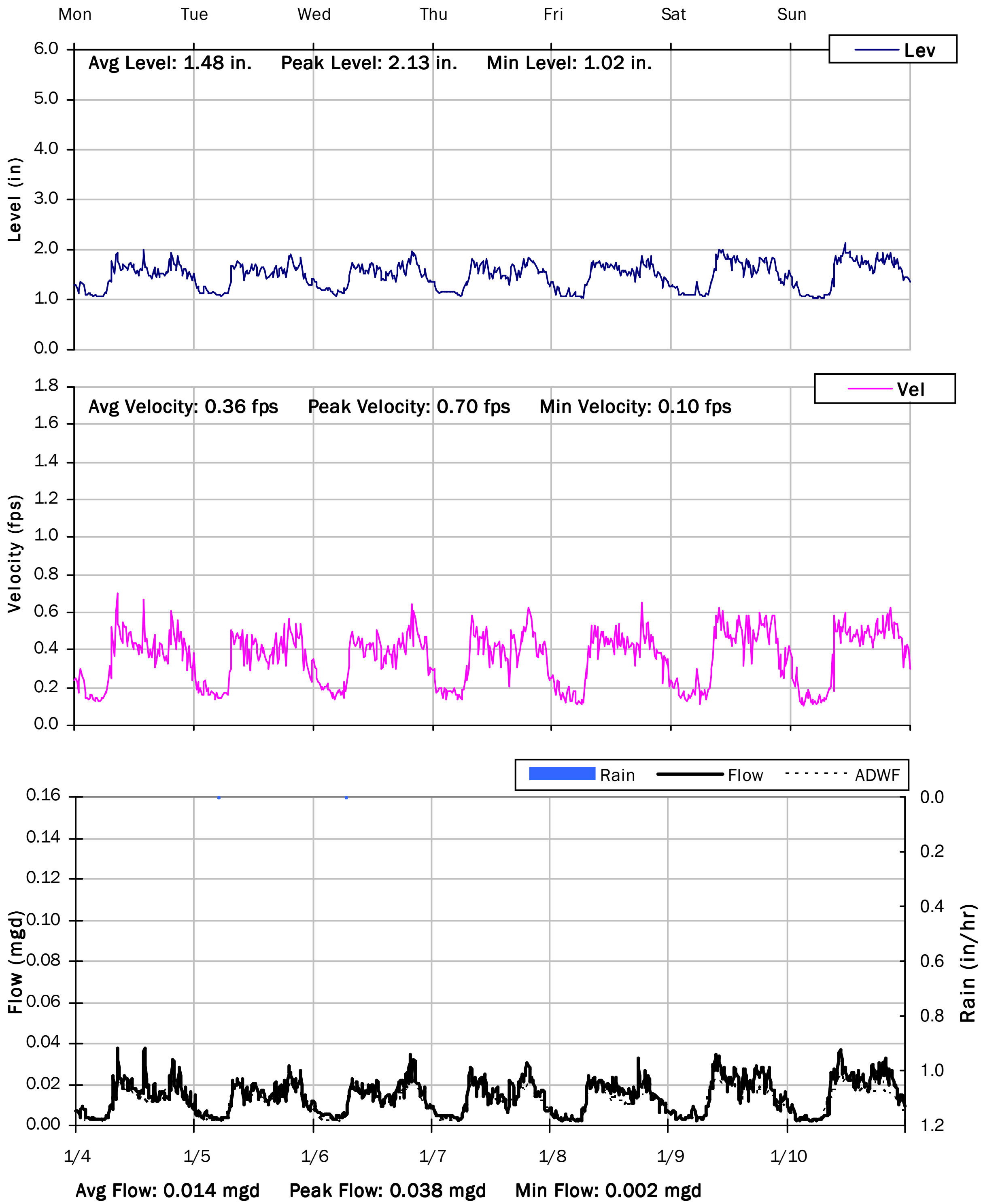


SITE 09E
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

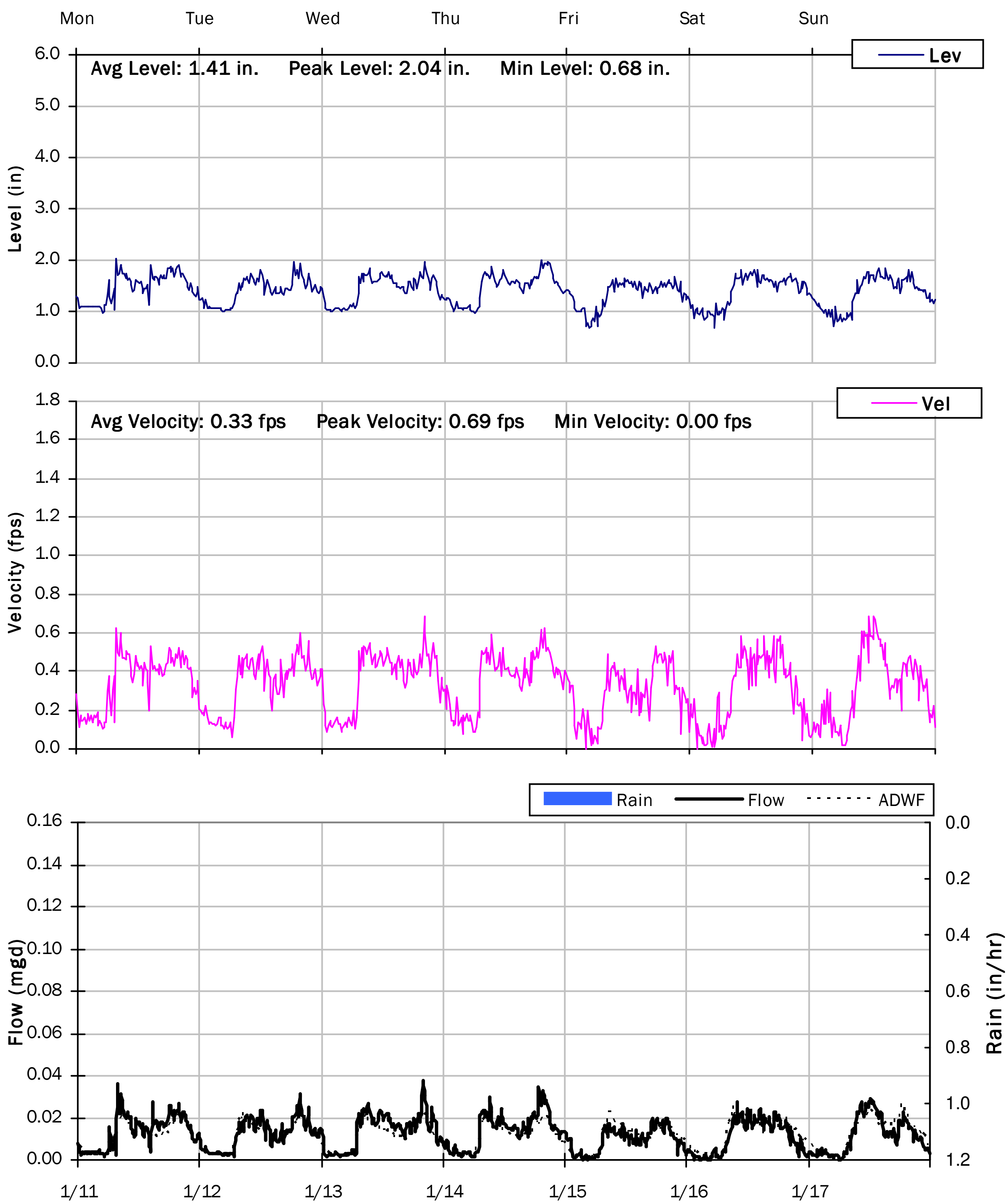


Avg Flow: 0.015 mgd **Peak Flow: 0.039 mgd** **Min Flow: 0.003 mgd**

SITE 09E
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

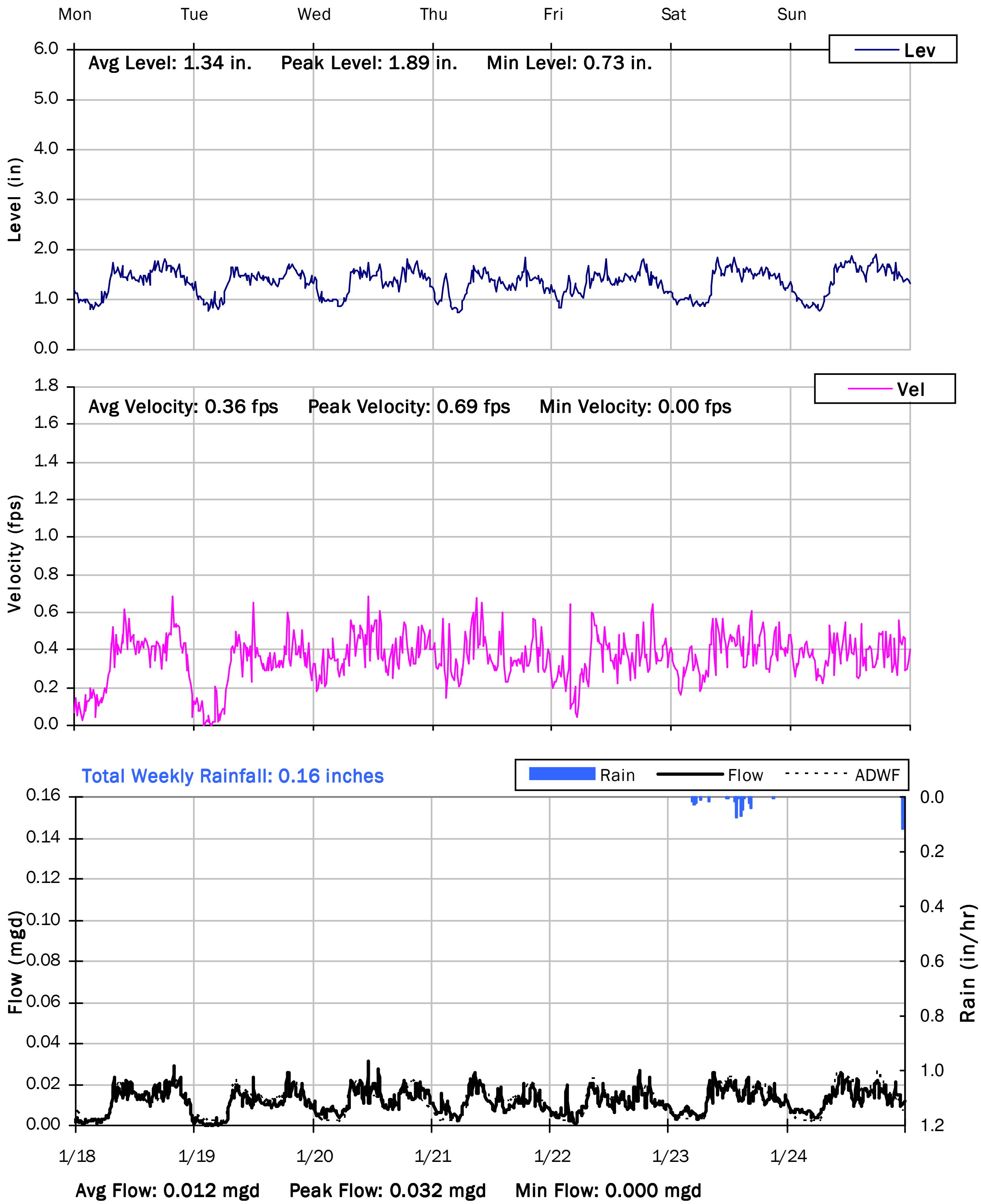


SITE 09E
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

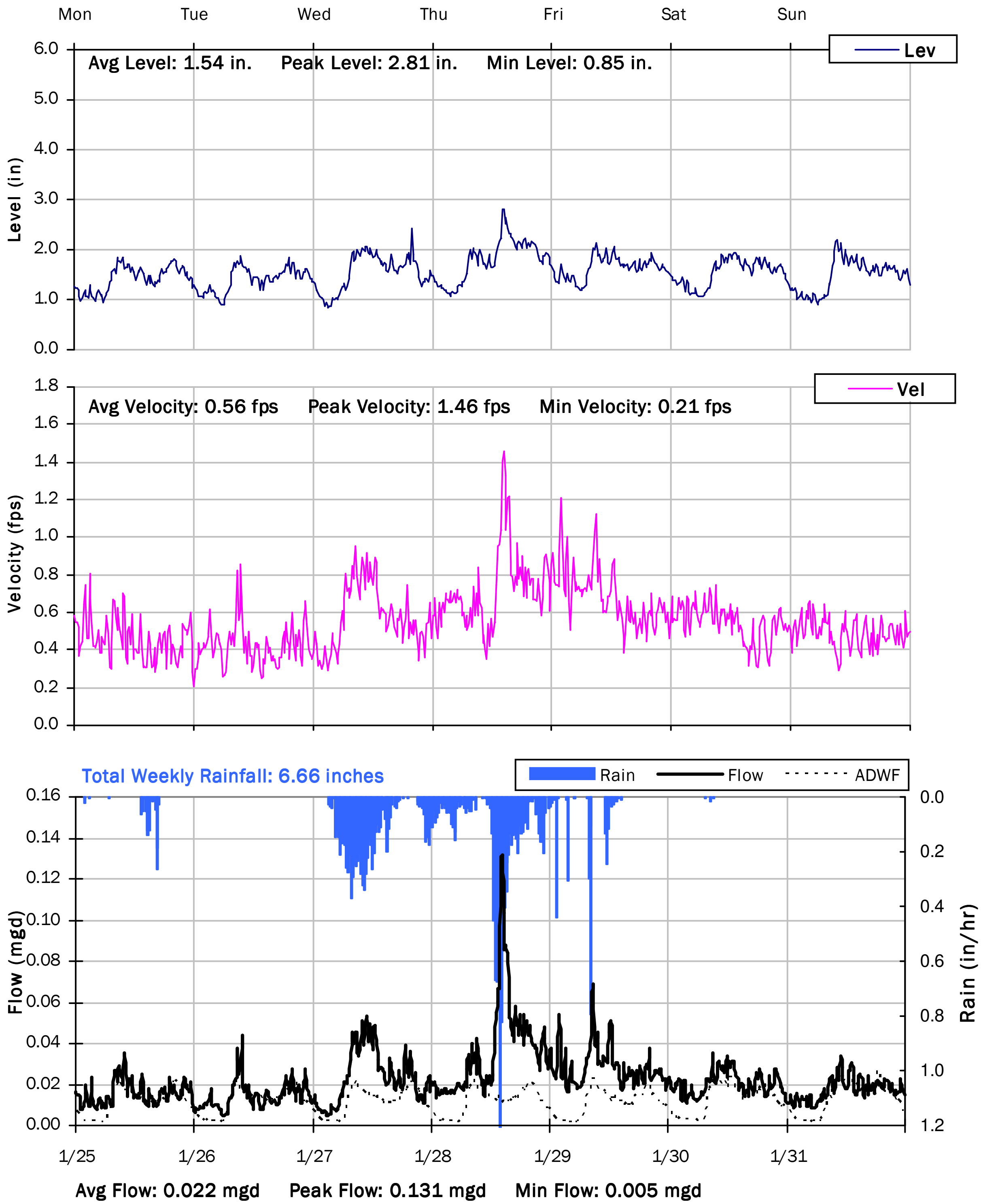


Avg Flow: 0.012 mgd Peak Flow: 0.038 mgd Min Flow: 0.000 mgd

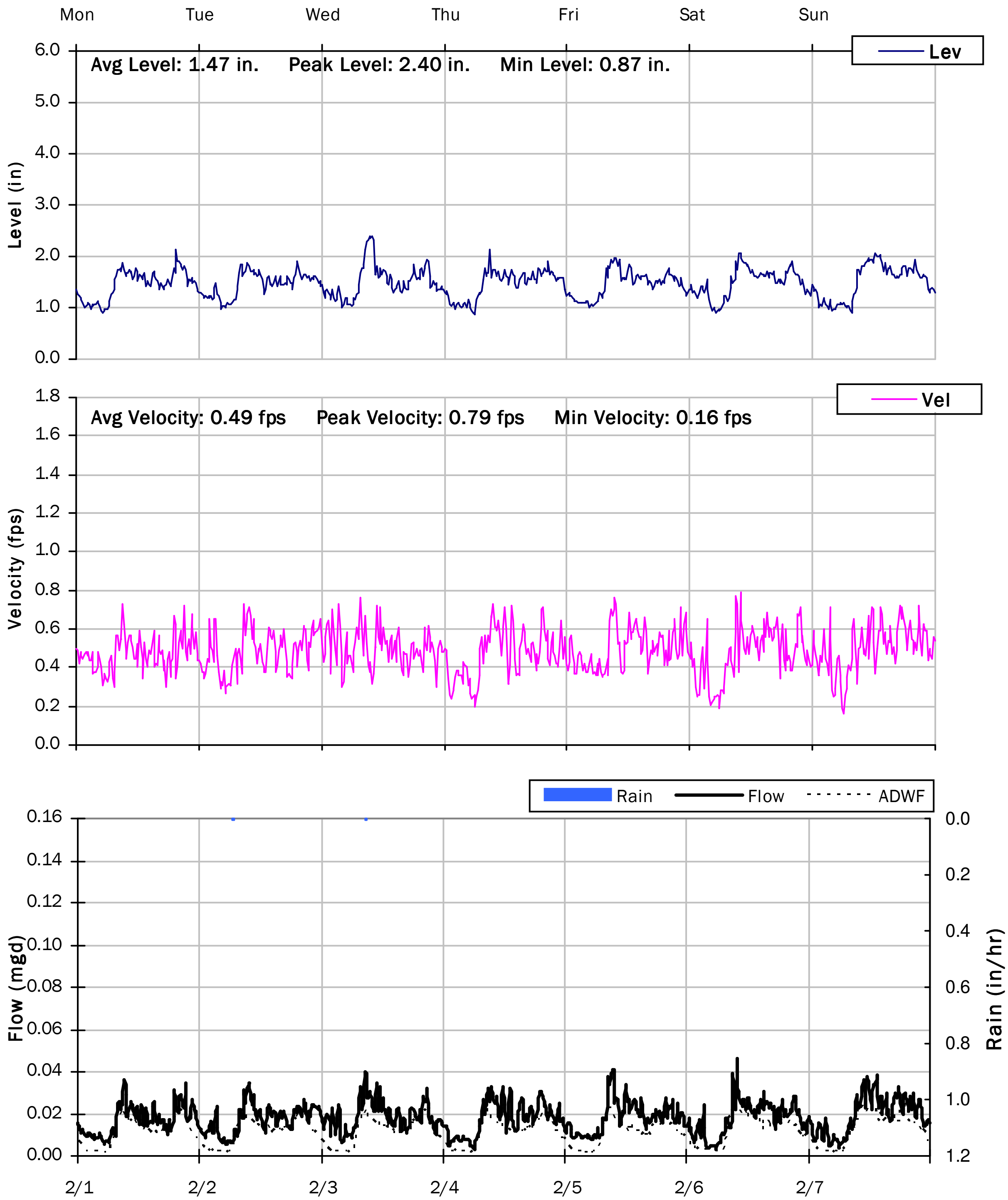
SITE 09E
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021



SITE 09E
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 09E
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.018 mgd Peak Flow: 0.046 mgd Min Flow: 0.003 mgd

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

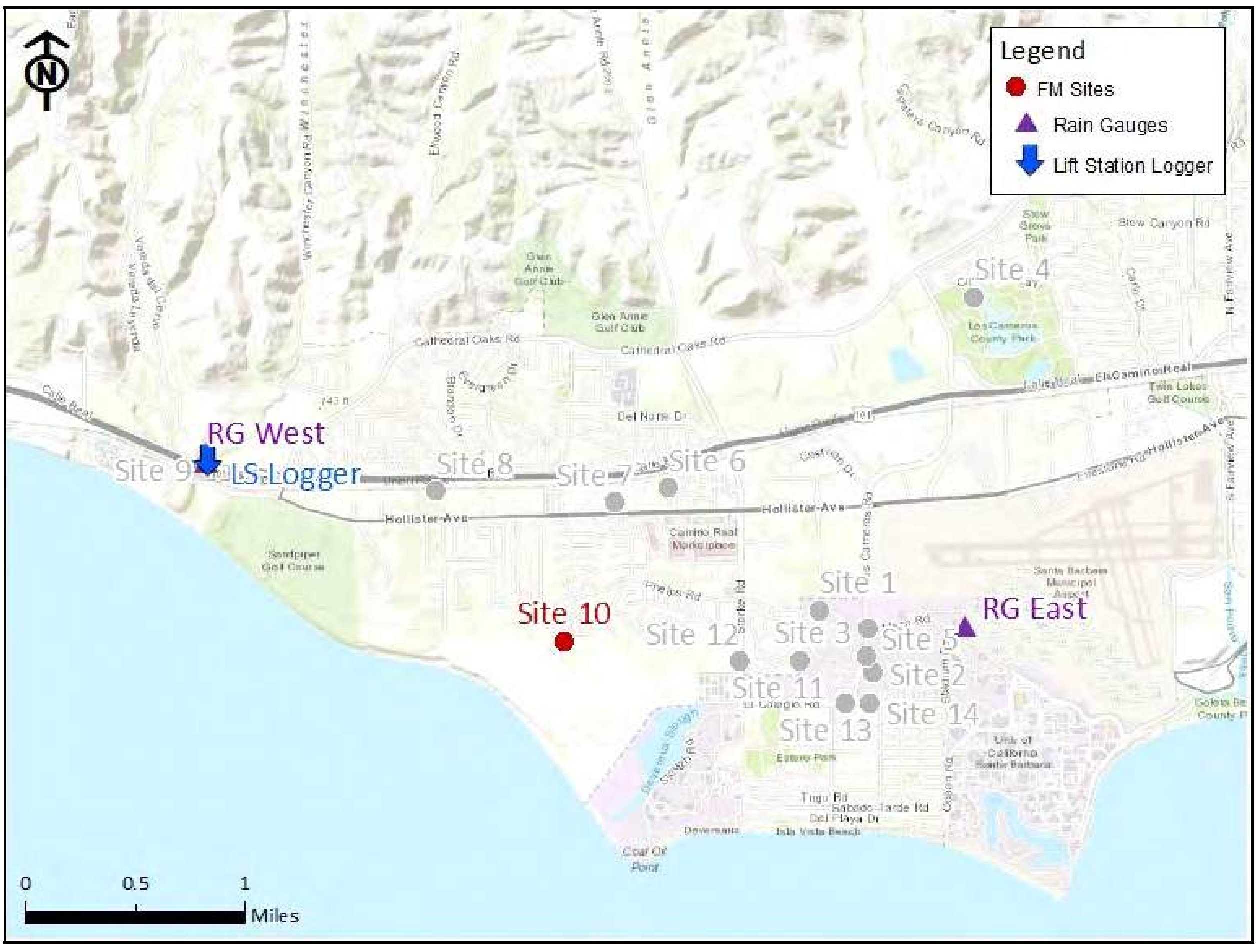
November 3, 2020 - February 7, 2021

Monitoring Site: Site 10

City Manhole: 73-09-19

Location: Dirt path south of Pacific Coast Drive and Ocean Walk Lane

Data Summary Report



Vicinity Map: Site 10

SITE 10

Site Information

Location: Dirt path south of Pacific Coast Drive and Ocean Walk Lane

City Manhole: 73-09-19

Coordinates: 119.8838° W, 34.4216° N

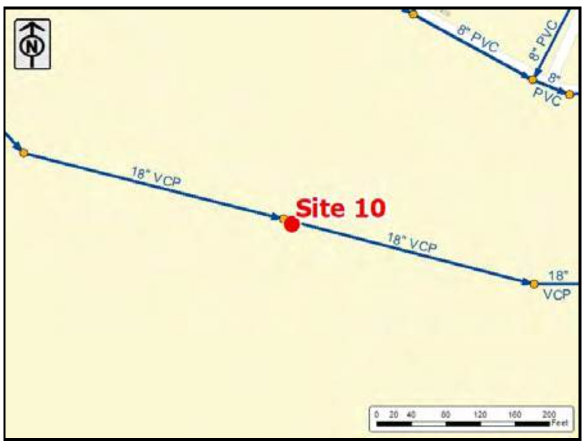
Rim Elevation (Earth): 10 feet

Pipe Diameter: 17.75 inches

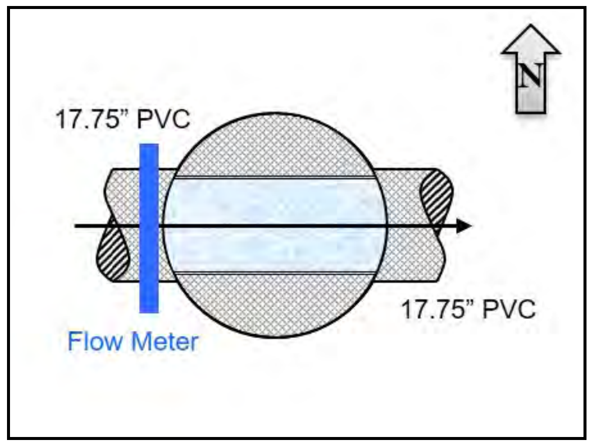
ADWF: 0.383 mgd

Peak Measured Flow: 1.059 mgd

Satellite Map

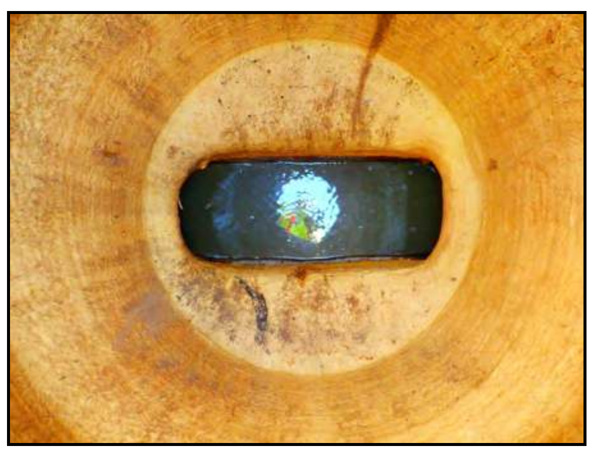


Sanitary Map



Flow Sketch

Street View



Plan View

SITE 10

Additional Site Photos

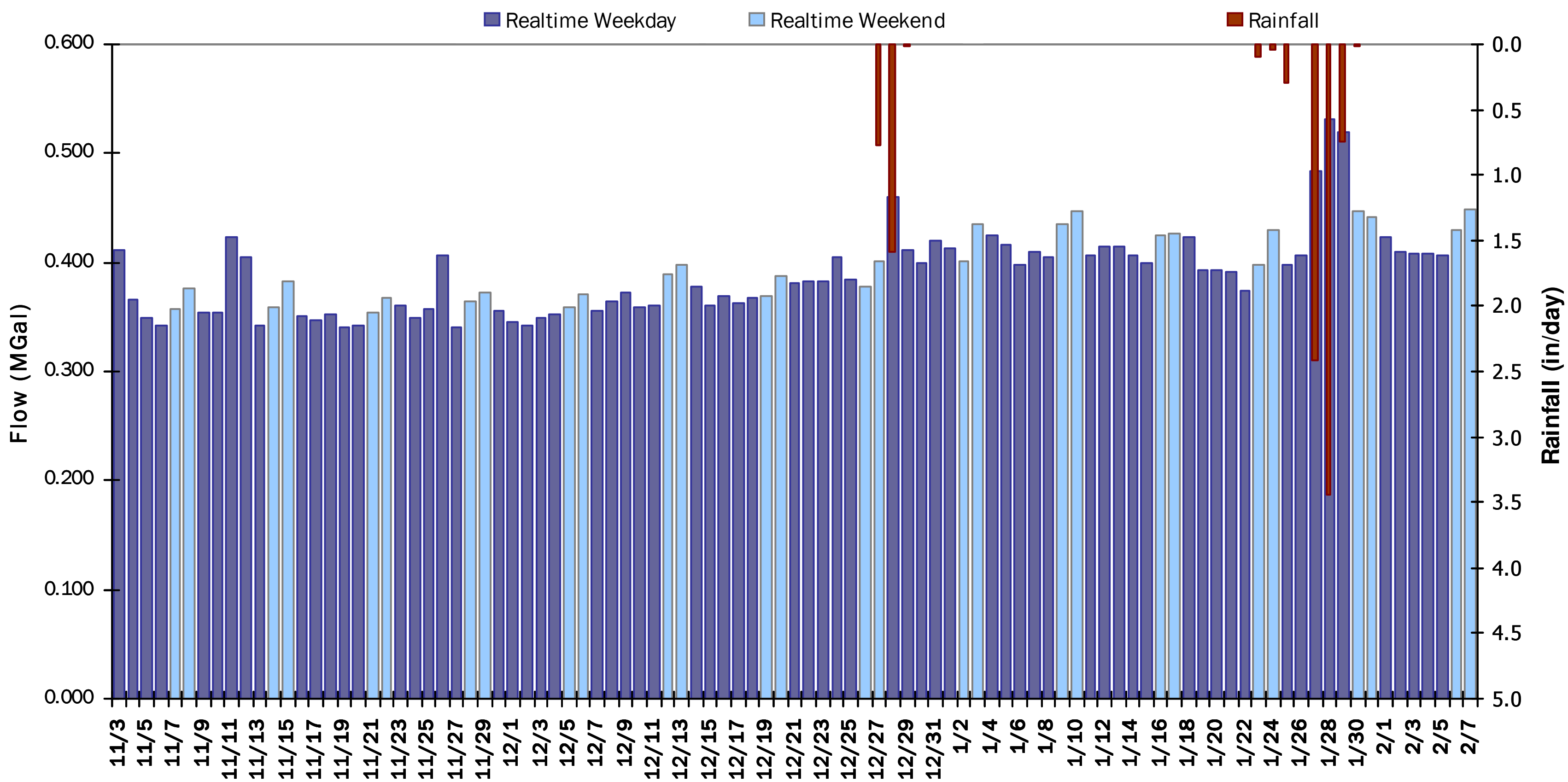
Monitored West Influent

East Effluent

SITE 10
Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.391 MGal **Peak Daily Flow: 0.531 MGal** **Min Daily Flow: 0.340 MGal**

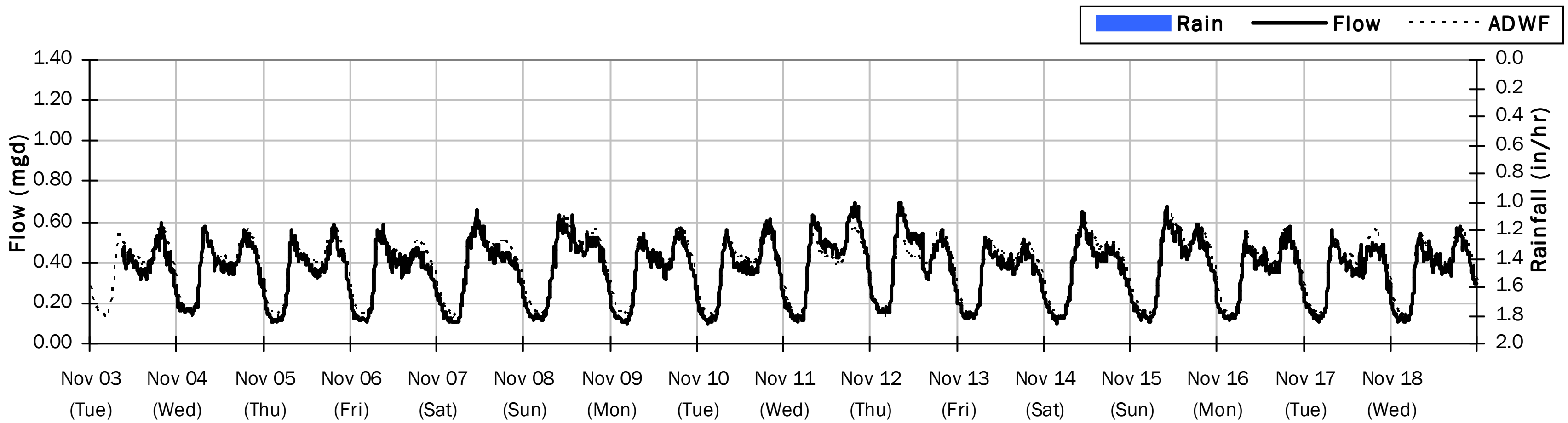
Total Period Rainfall: 9.41 inches

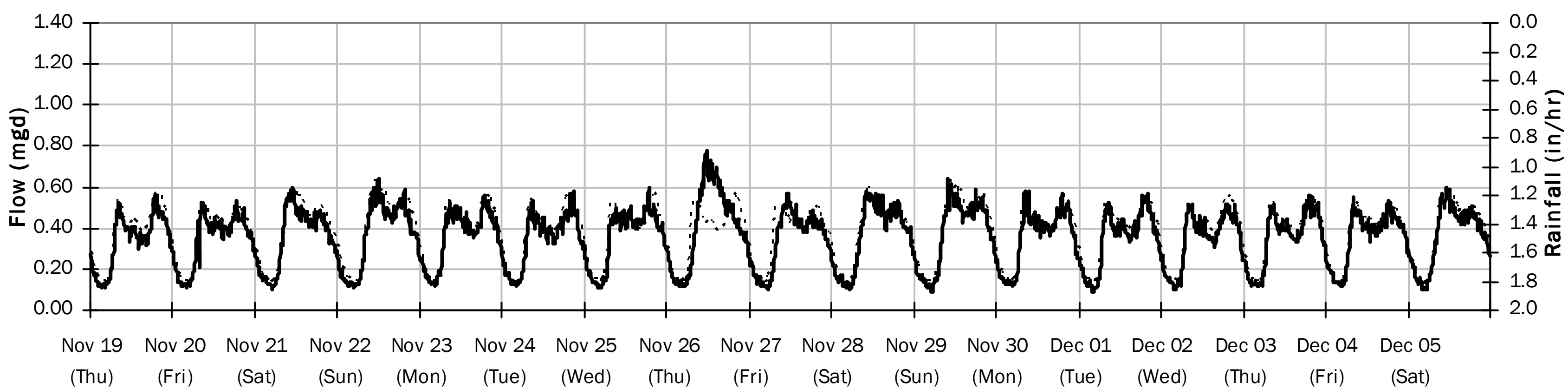


SITE 10

Flow Summary: 11/3/2020 to 12/5/2020

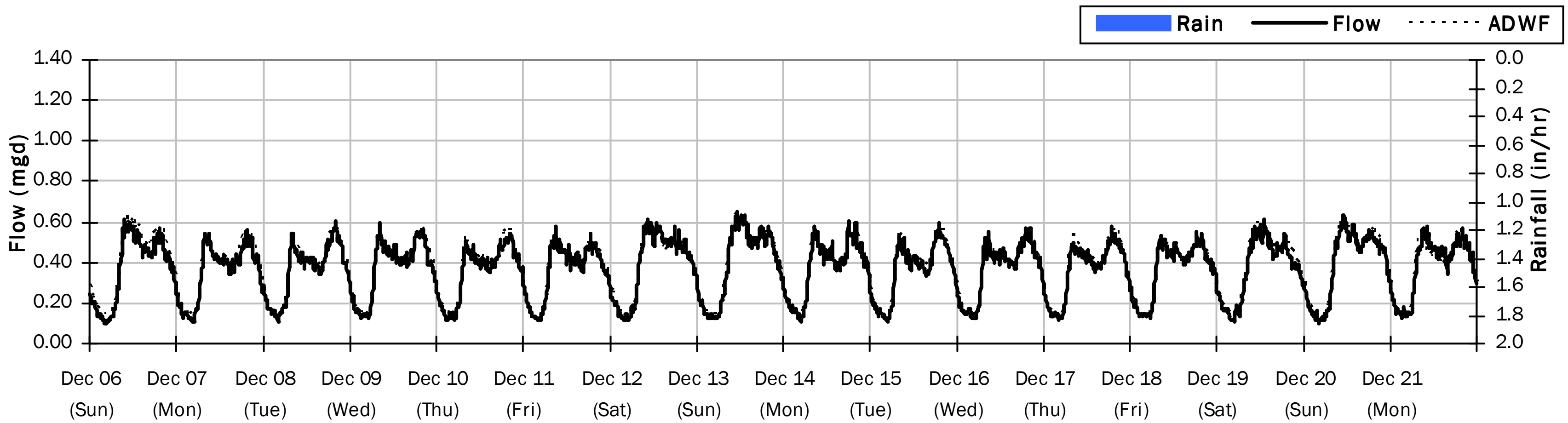
Total Period Rainfall: 0.00 inches Avg Flow: 0.361 mgd Peak Flow: 0.780 mgd Min Flow: 0.090 mgd

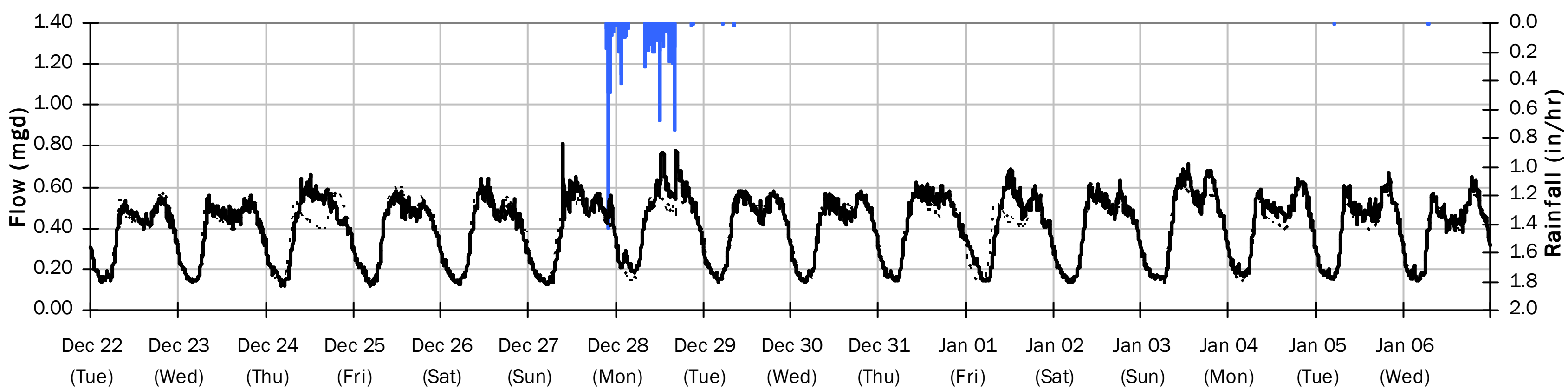




SITE 10
Flow Summary: 12/6/2020 to 1/6/2021

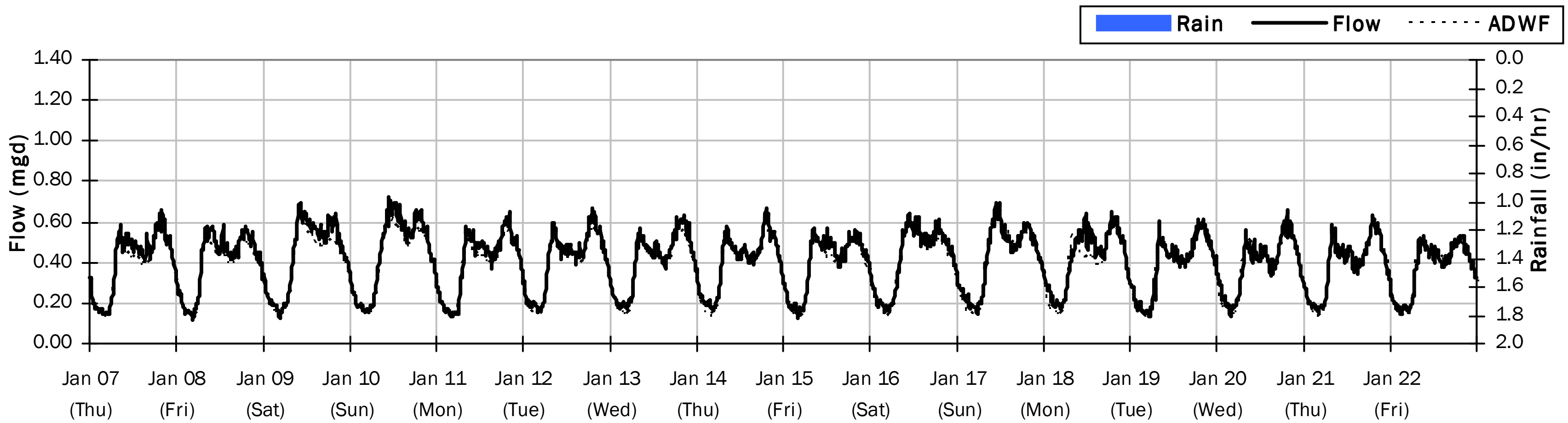
Total Period Rainfall: 2.37 inches   **Avg Flow: 0.389 mgd**   **Peak Flow: 0.808 mgd**   **Min Flow: 0.101 mgd**

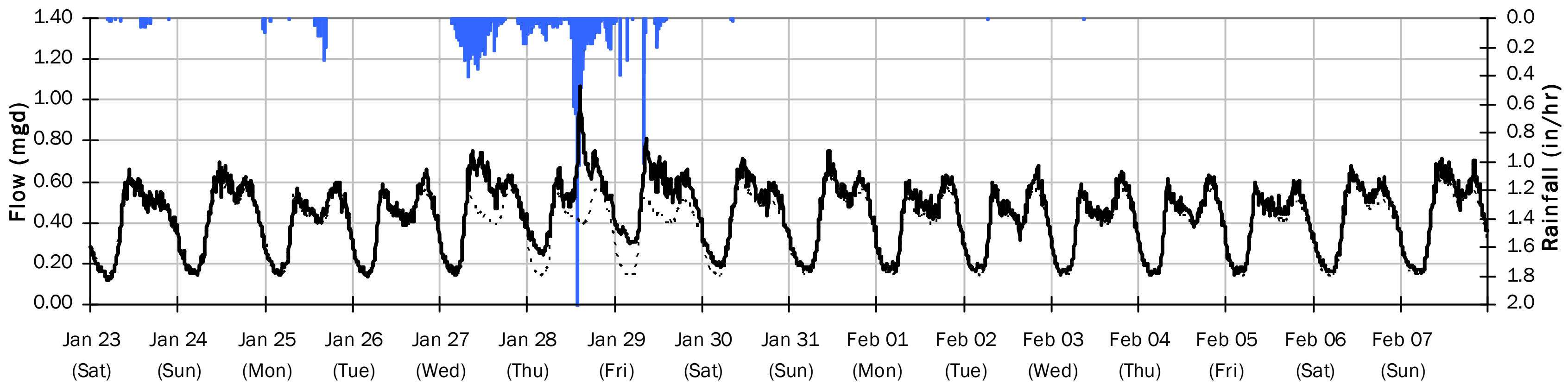




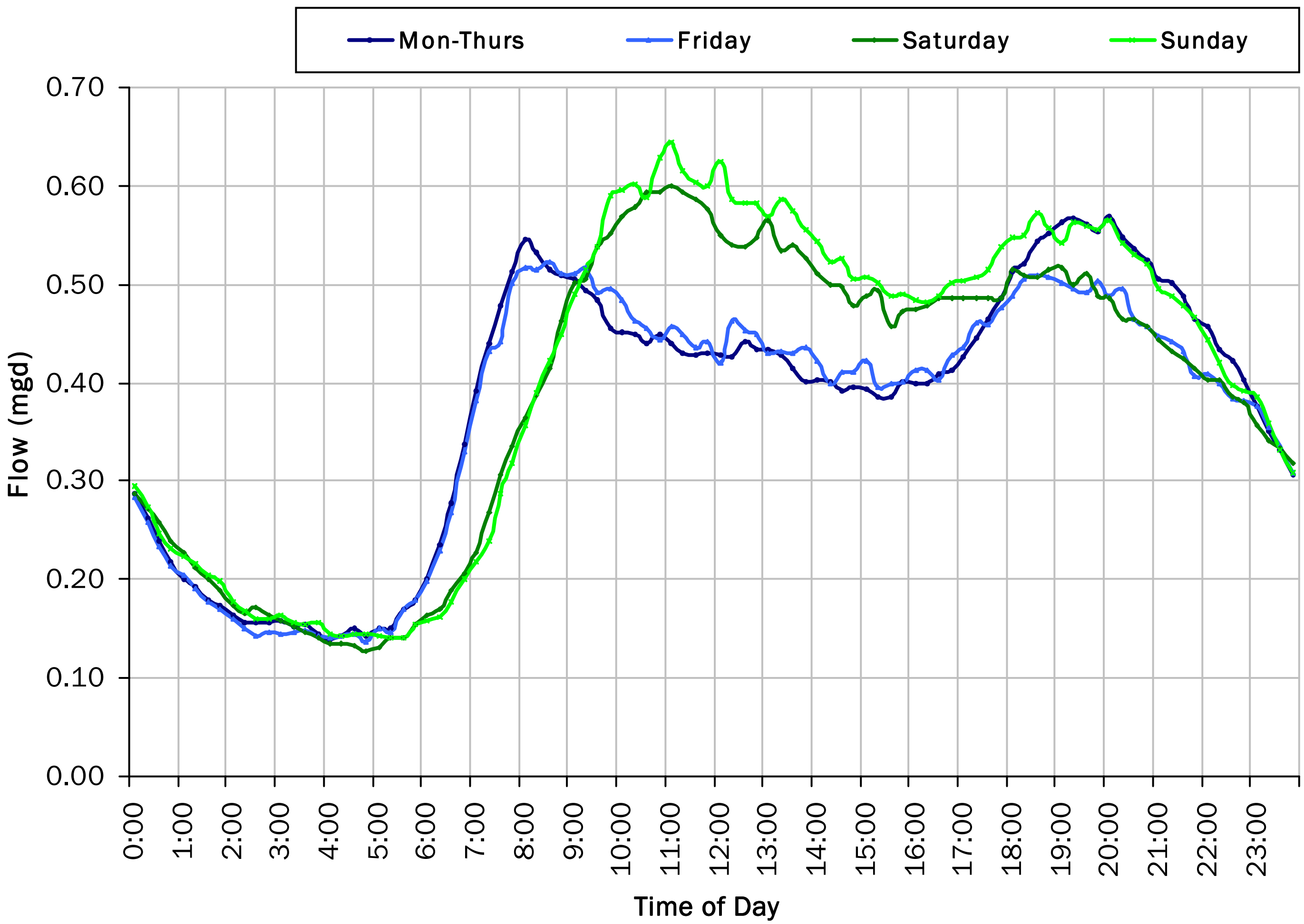
SITE 10
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 7.04 inches   **Avg Flow: 0.423 mgd**   **Peak Flow: 1.059 mgd**   **Min Flow: 0.119 mgd**



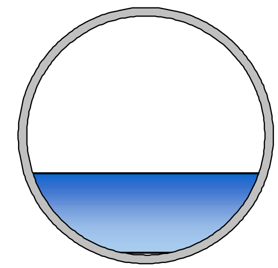


SITE 10
Average Dry Weather Flow Hydrographs



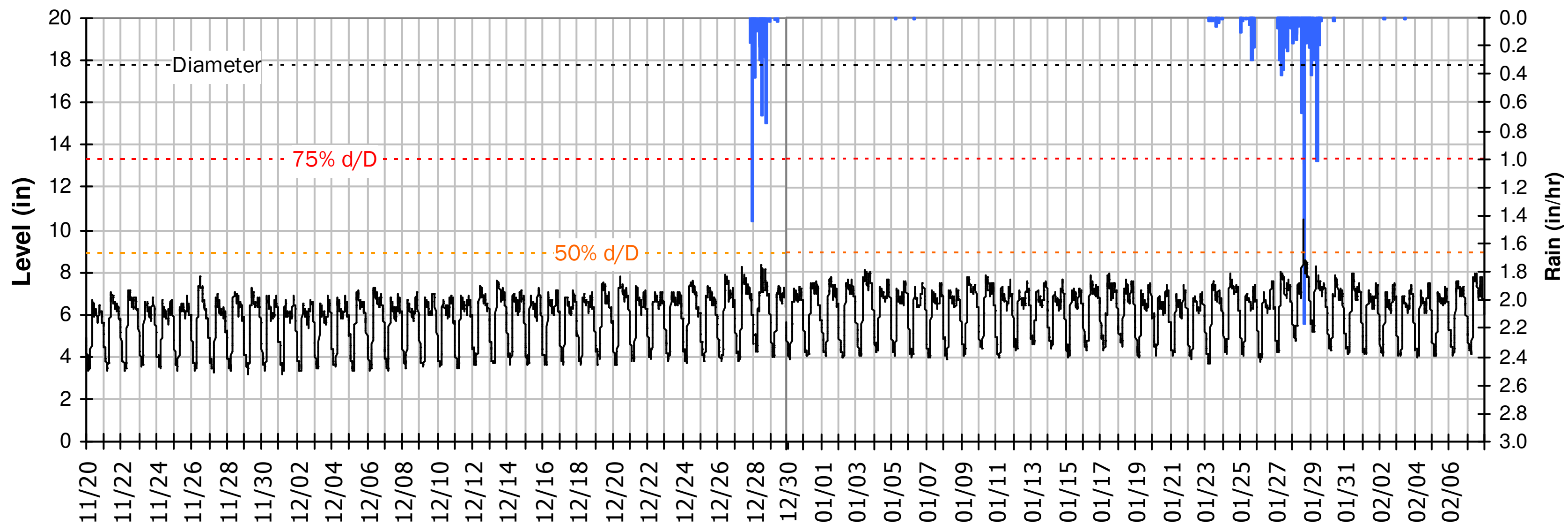
ADWF:

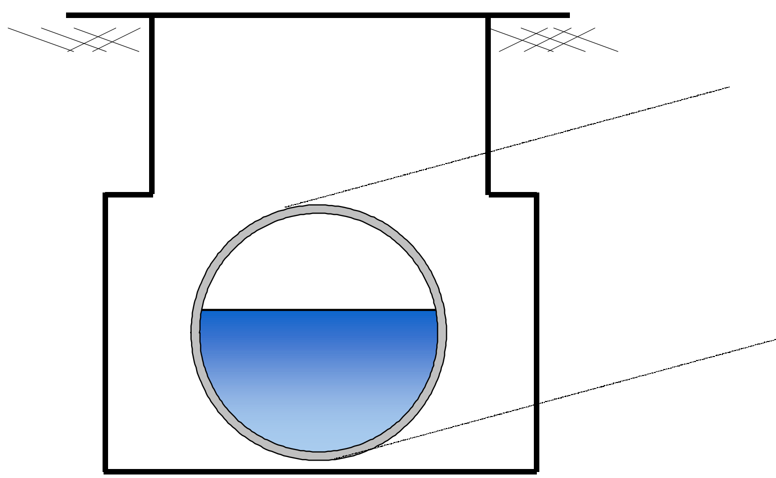
0.383 *mgd*



SITE 10
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





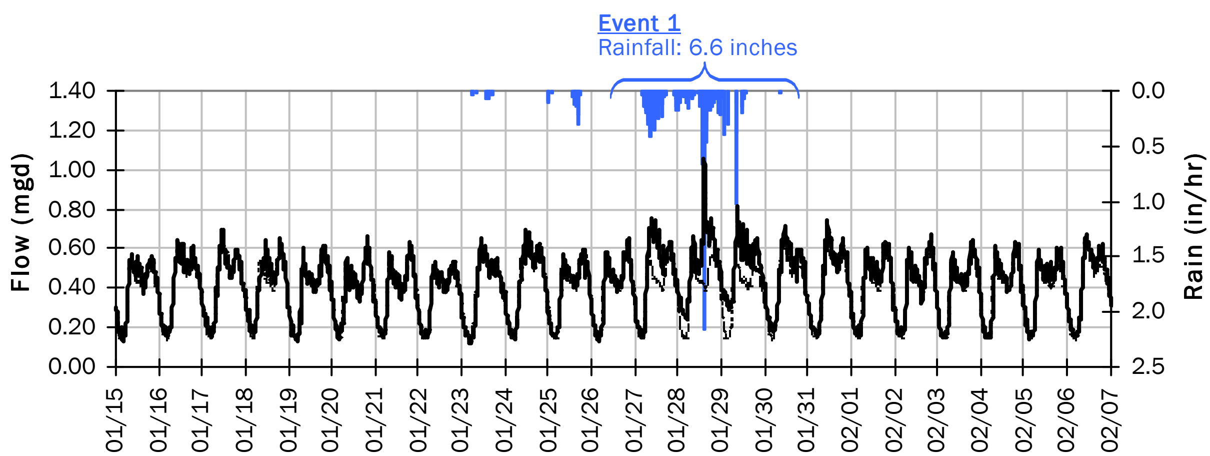
Pipe Diameter: 17.8 *inches*

Peak Measured Level: 10.5 *inches*

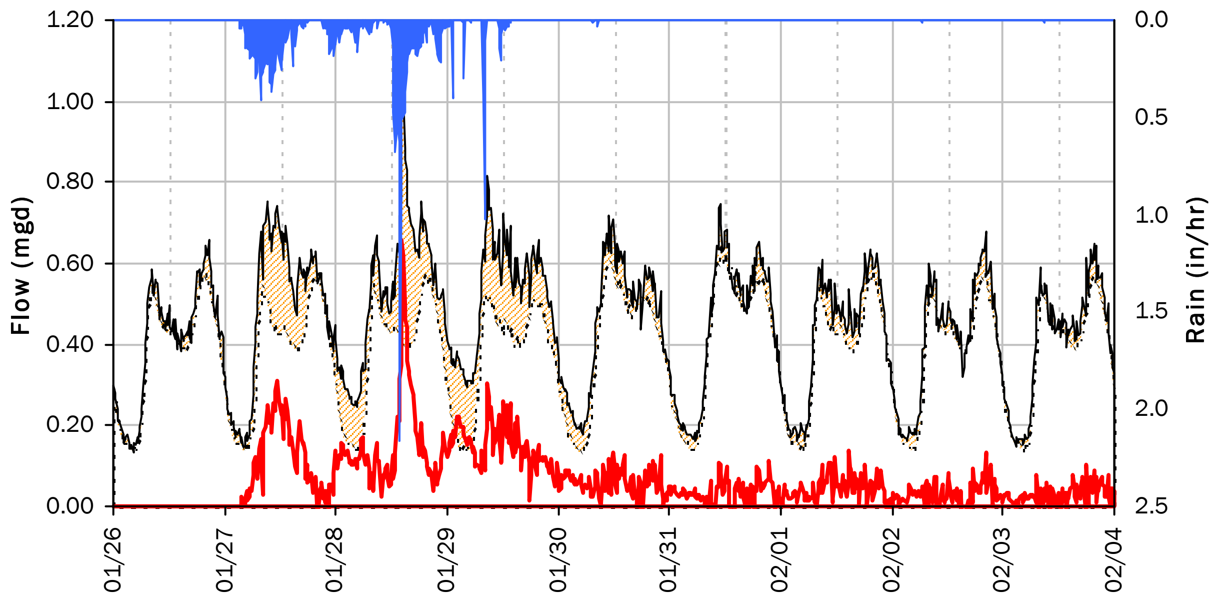
Peak d/D Ratio: 0.59

SITE 10
I/I Summary: Event 1

<u>Baseline and Realtime Flows with Rainfall Data over Monitoring Period</u>



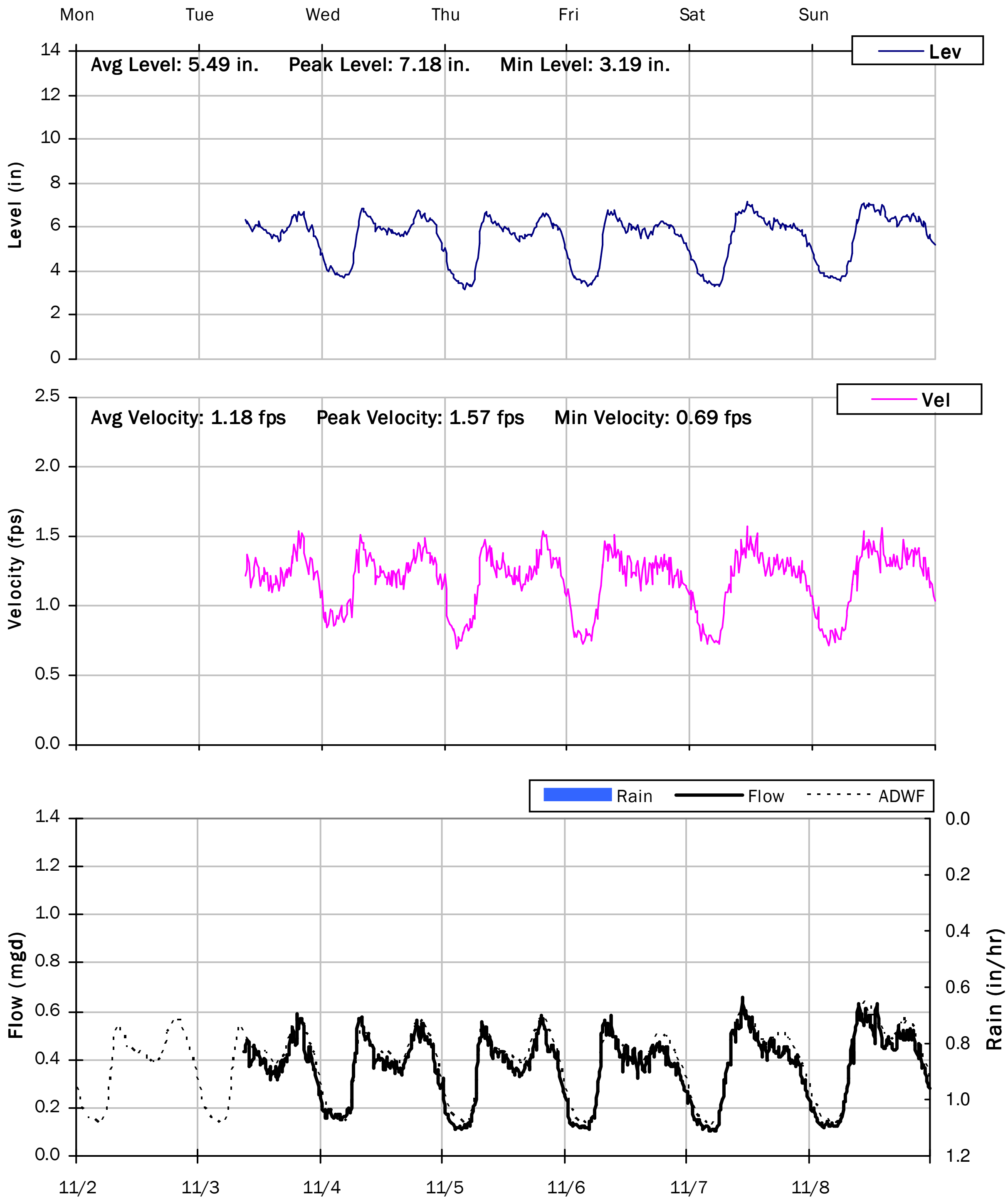
<u>Event 1 Detail Graph</u>



Storm Event I/I Analysis (Rain = 6.60 inches)

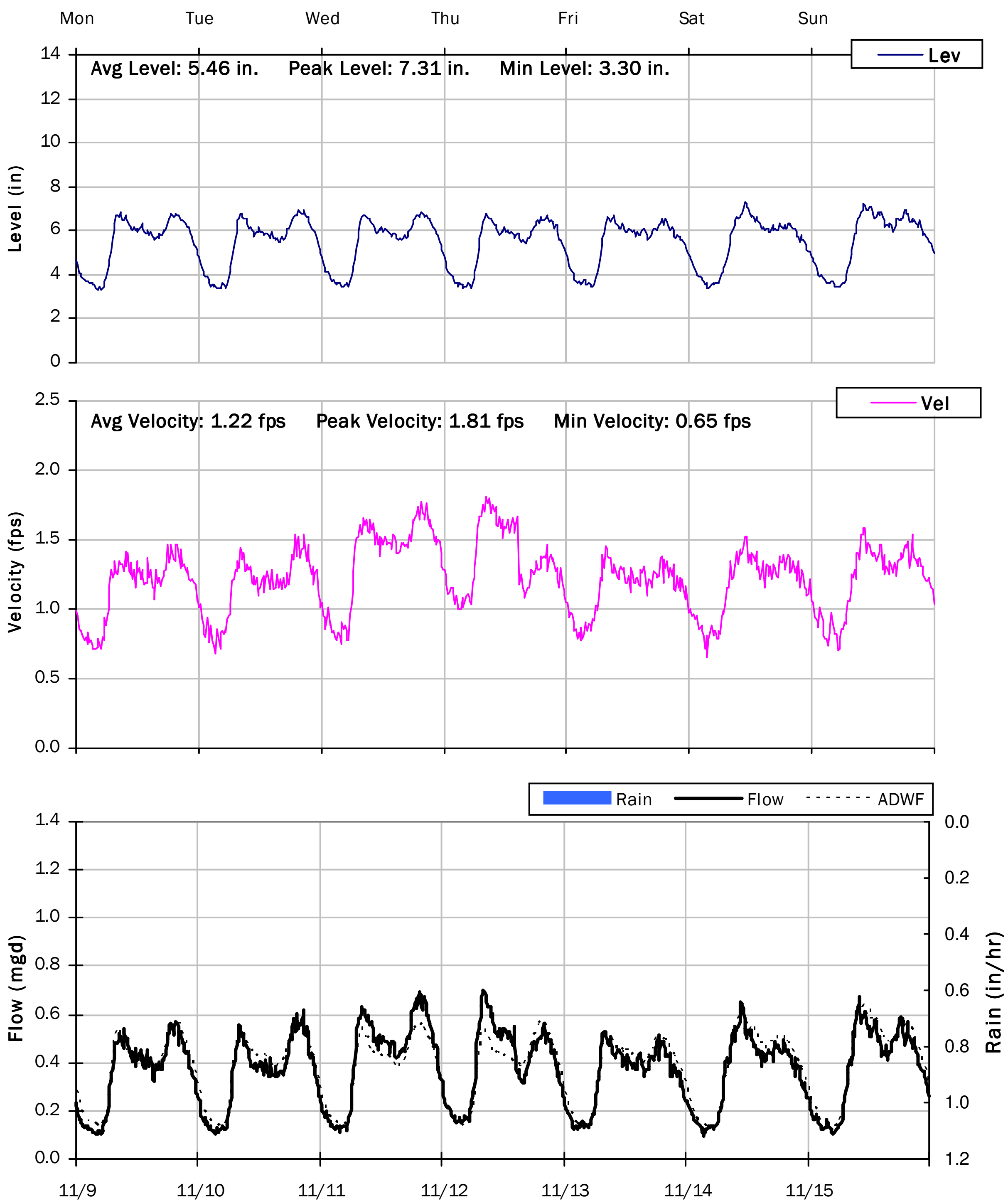
<u>**Capacity**</u>		<u>**Inflow / Infiltration**</u>	
Peak Flow:	1.06 *mgd*	**Peak I/I Rate:**	0.66 *mgd*
PF:	2.76	**Total I/I:**	608,000 *gallons*
Peak Level:	10.52 *in*		
d/D Ratio:	0.59		

SITE 10
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



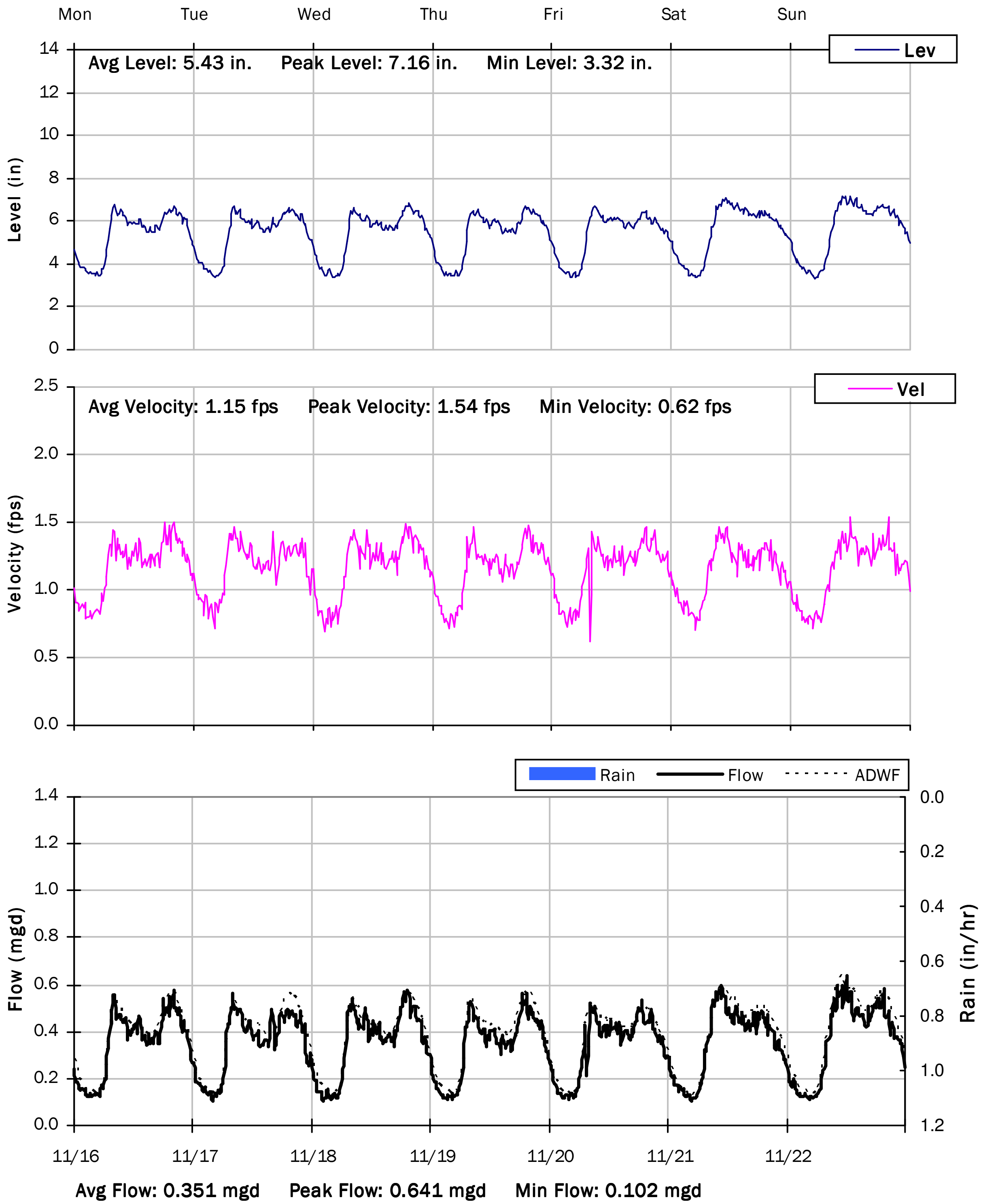
Avg Flow: 0.364 mgd **Peak Flow: 0.662 mgd** **Min Flow: 0.105 mgd**

SITE 10
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020

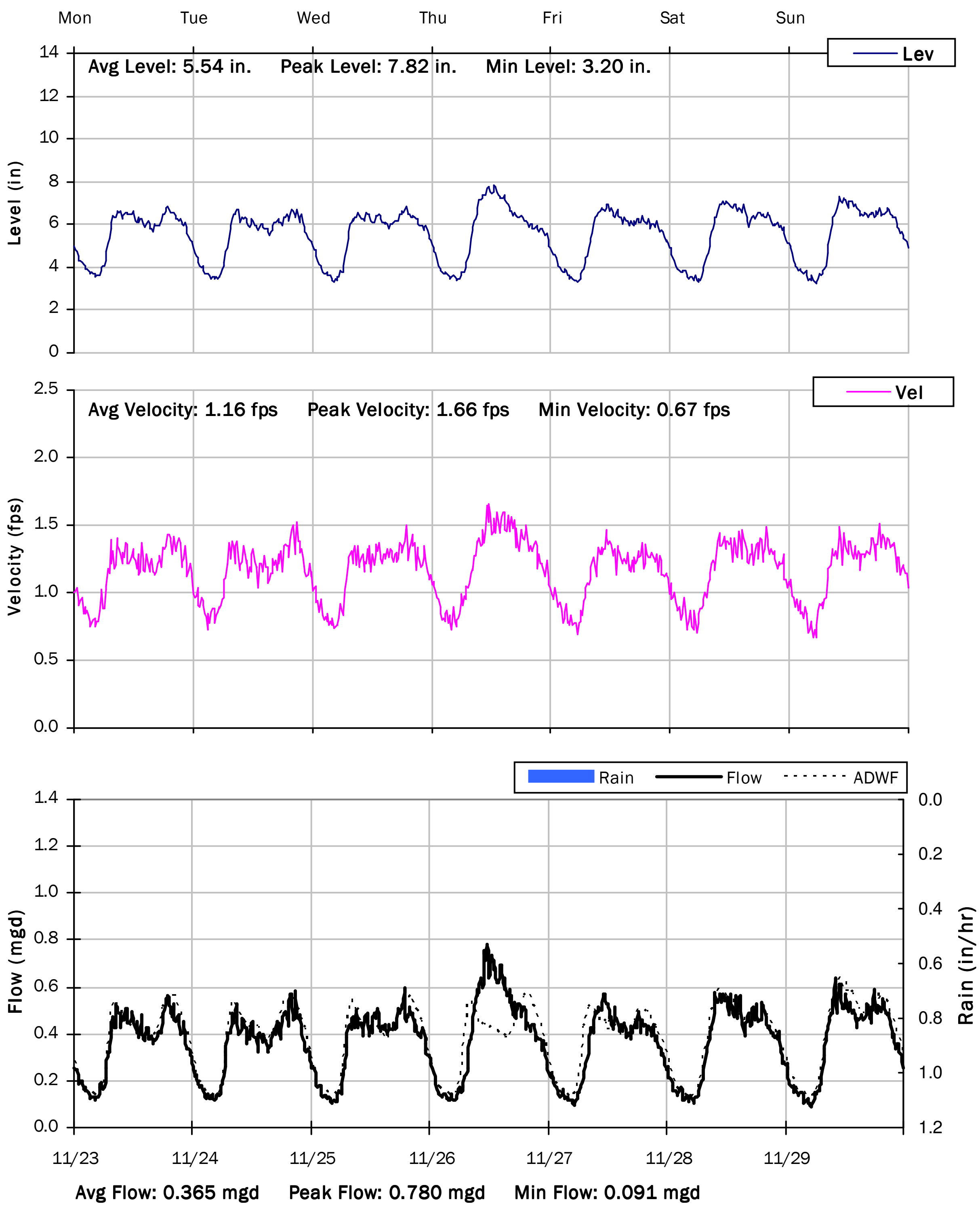


Avg Flow: 0.374 mgd **Peak Flow: 0.698 mgd** **Min Flow: 0.098 mgd**

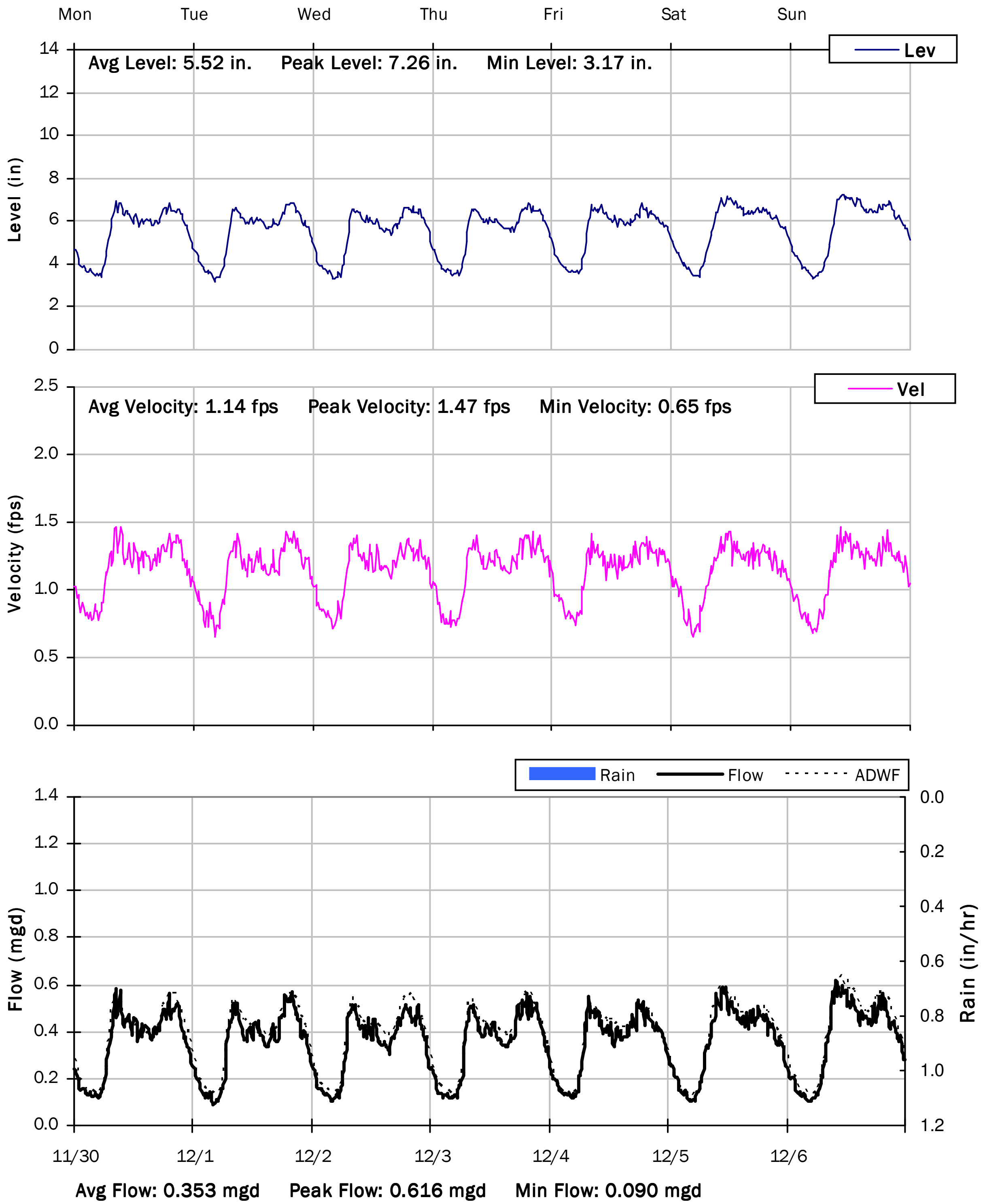
SITE 10
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020



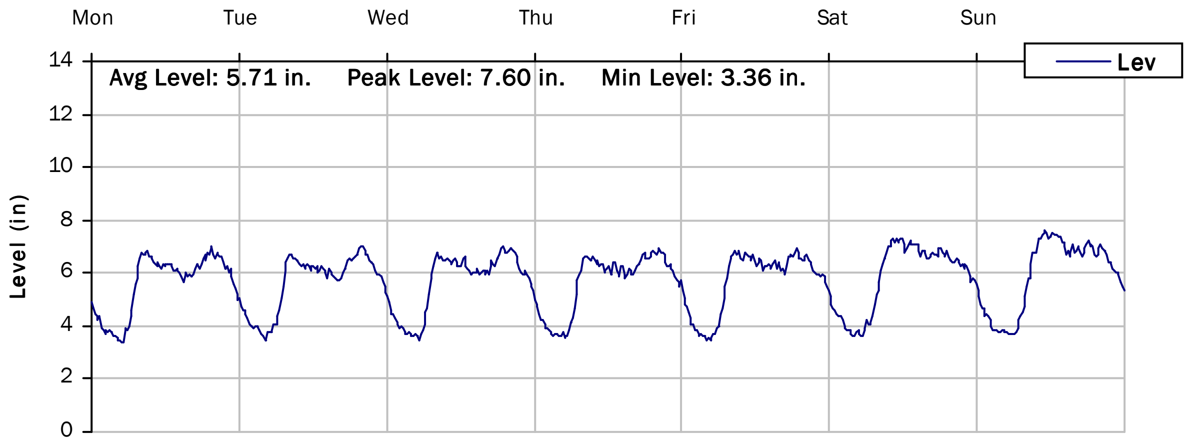
SITE 10
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

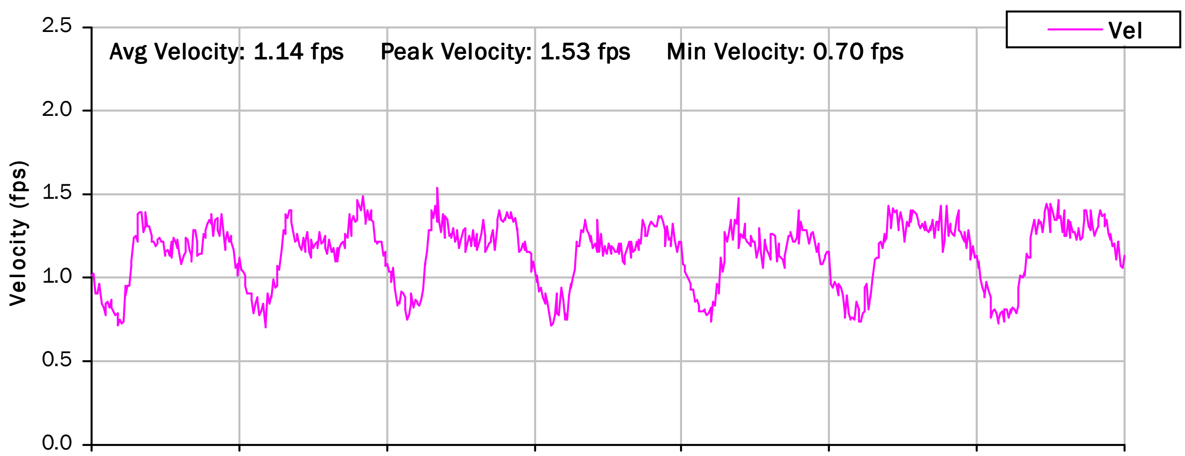


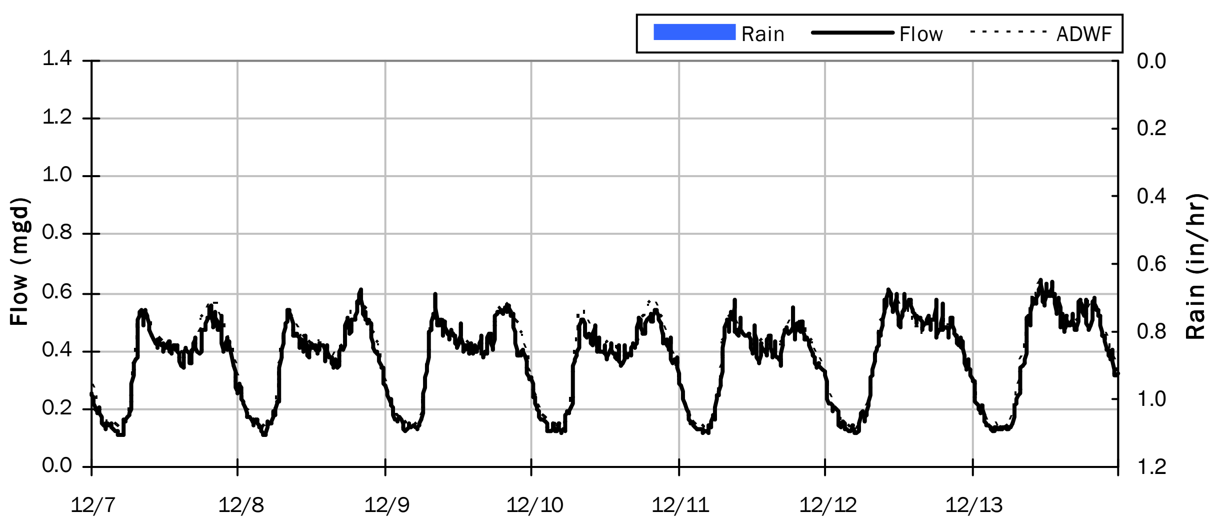
SITE 10
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020



SITE 10
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

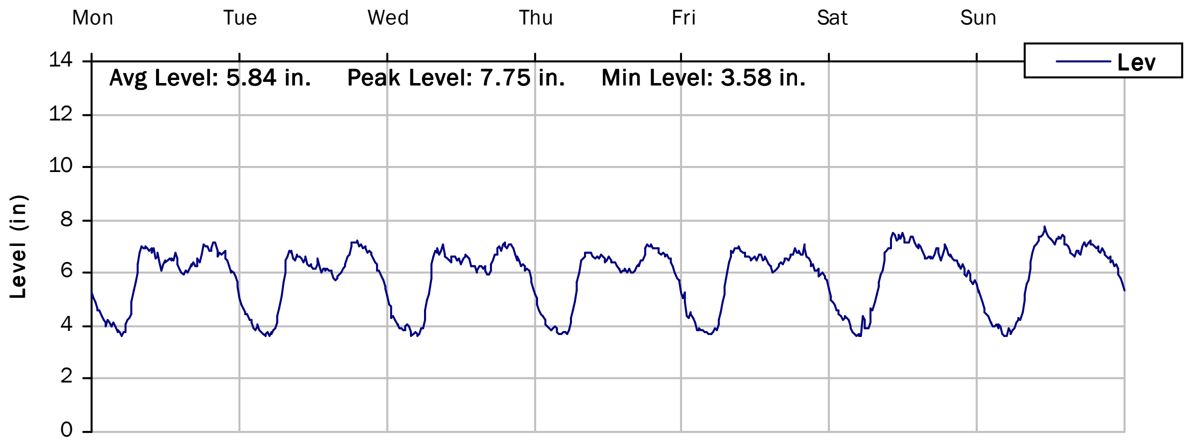


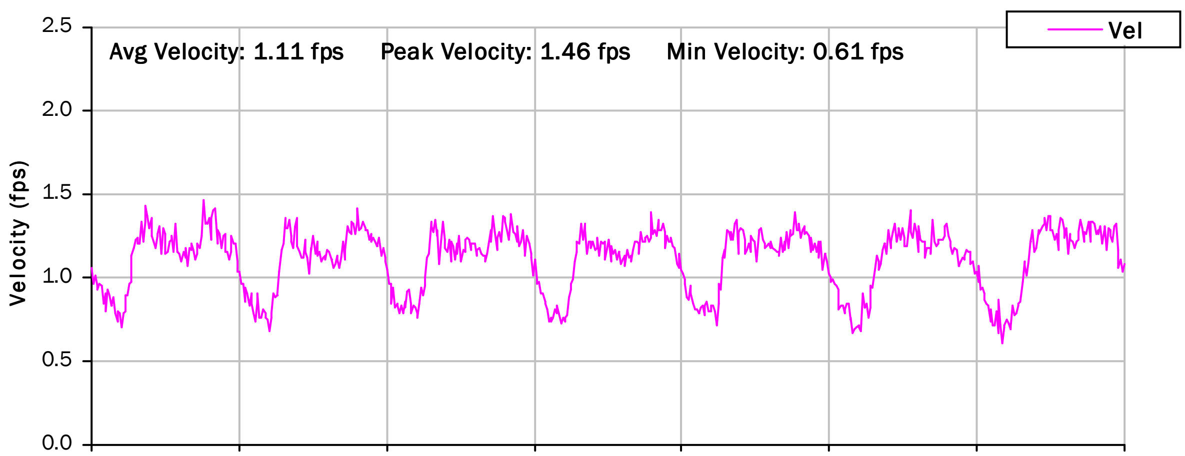


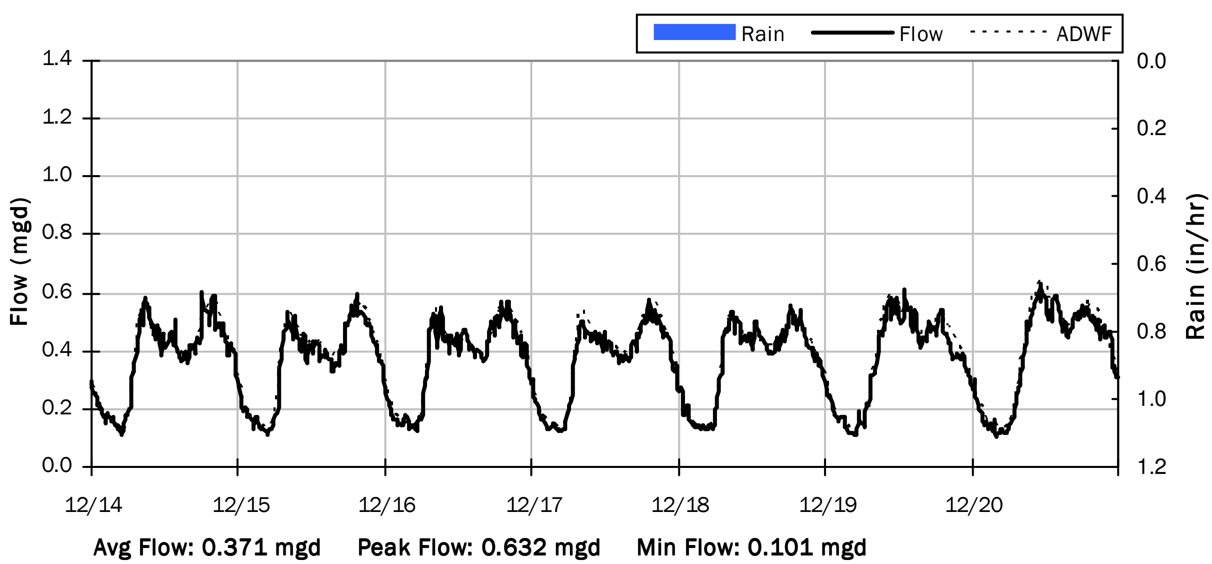


Avg Flow: 0.371 mgd **Peak Flow: 0.647 mgd** **Min Flow: 0.107 mgd**

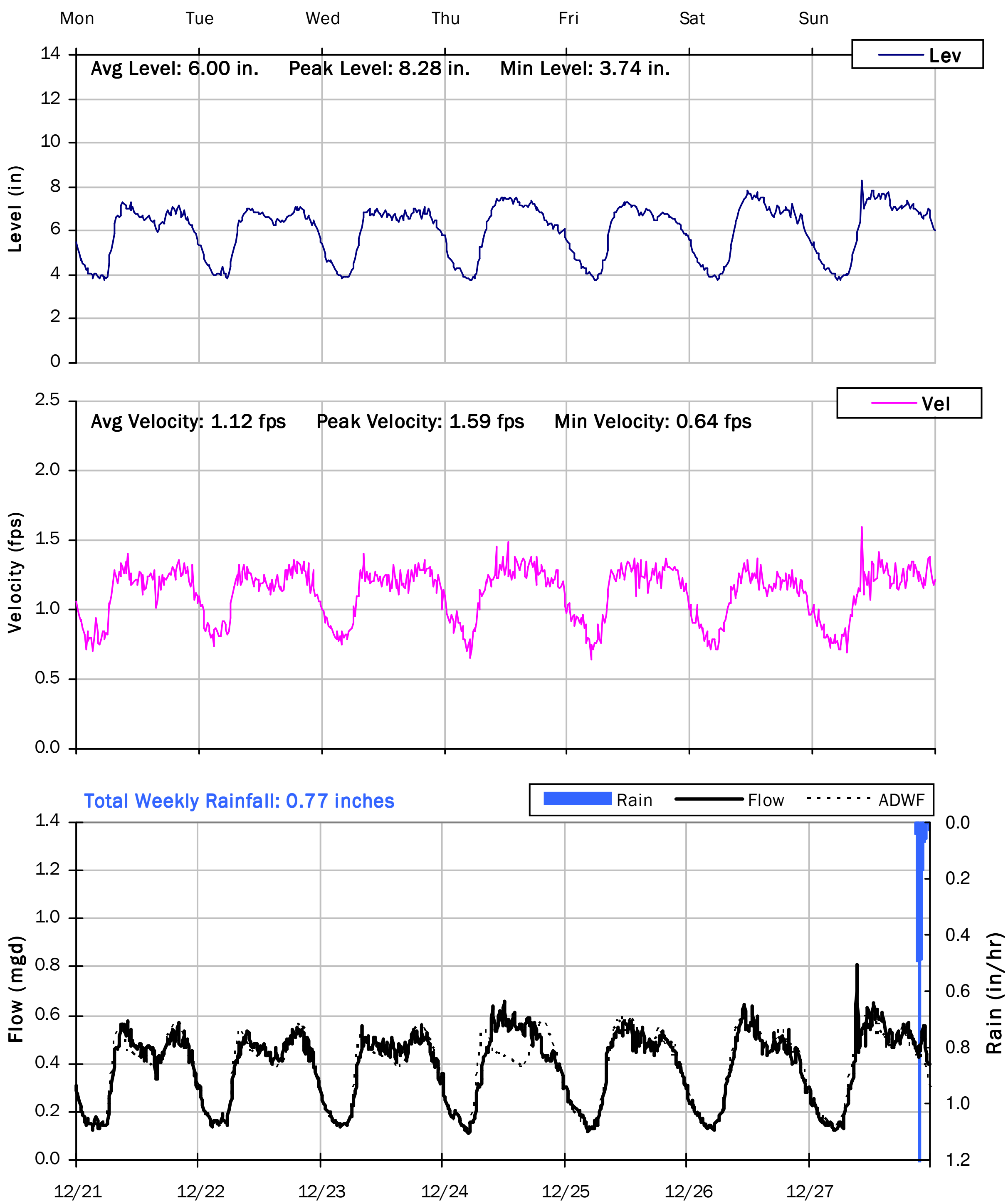
SITE 10
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020





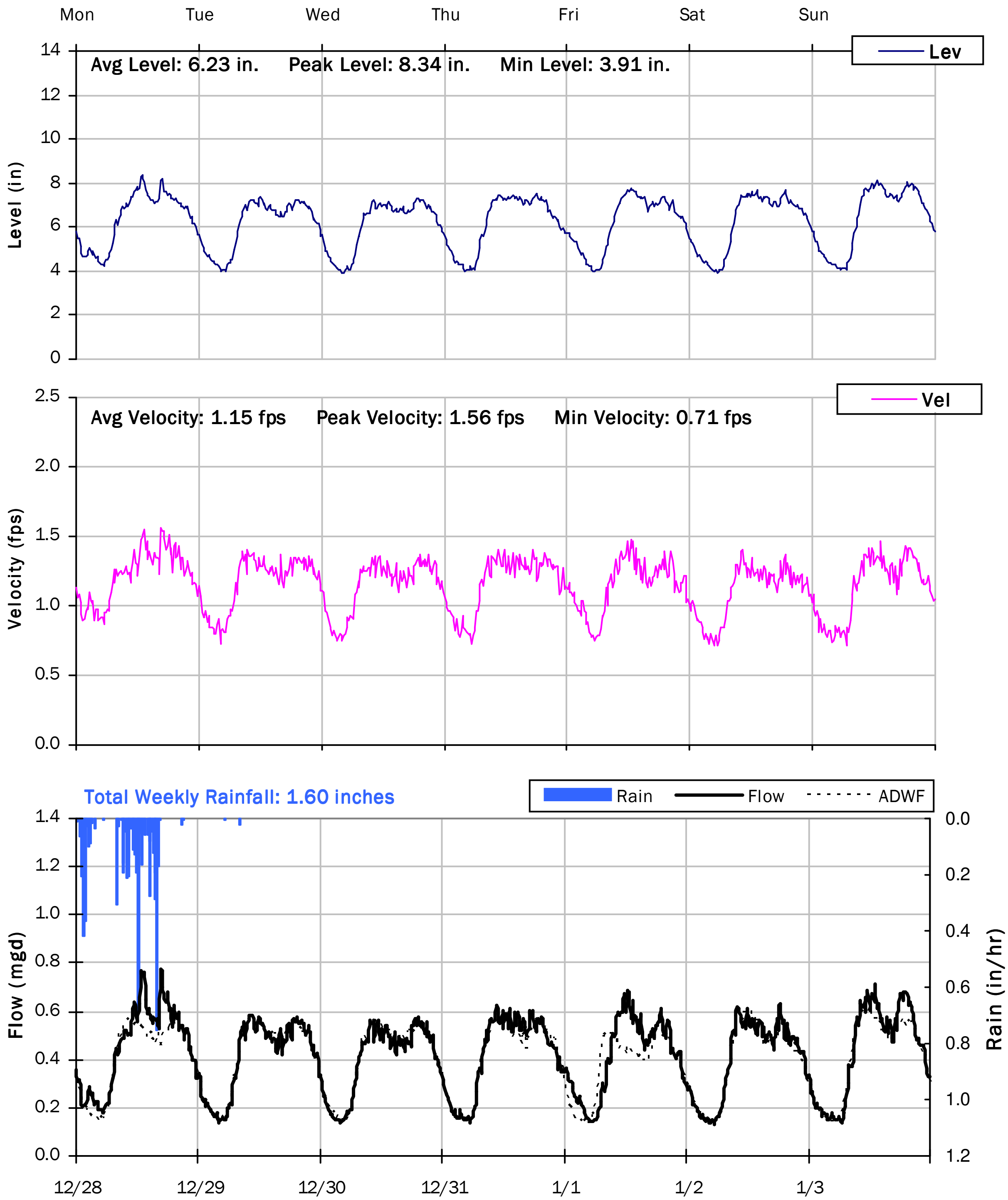


SITE 10
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020



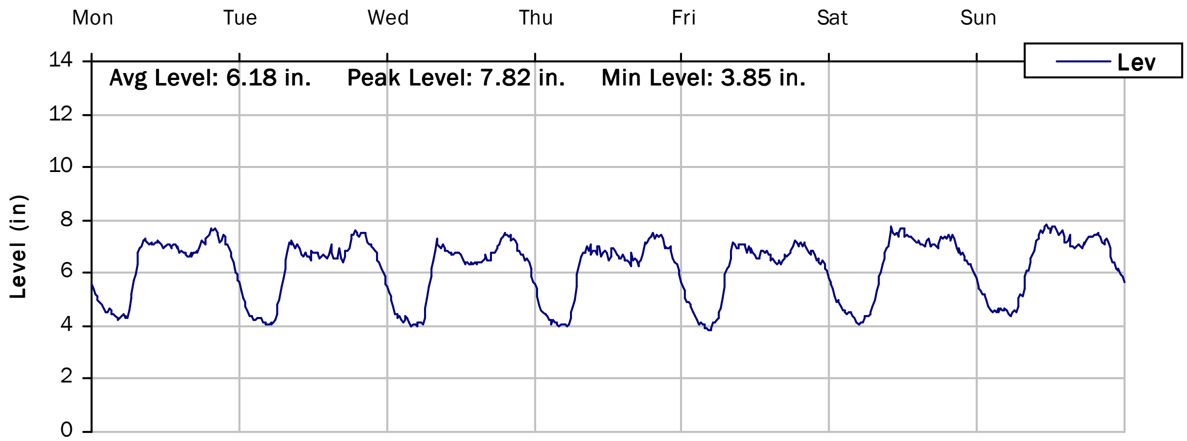
Avg Flow: 0.387 mgd Peak Flow: 0.808 mgd Min Flow: 0.113 mgd

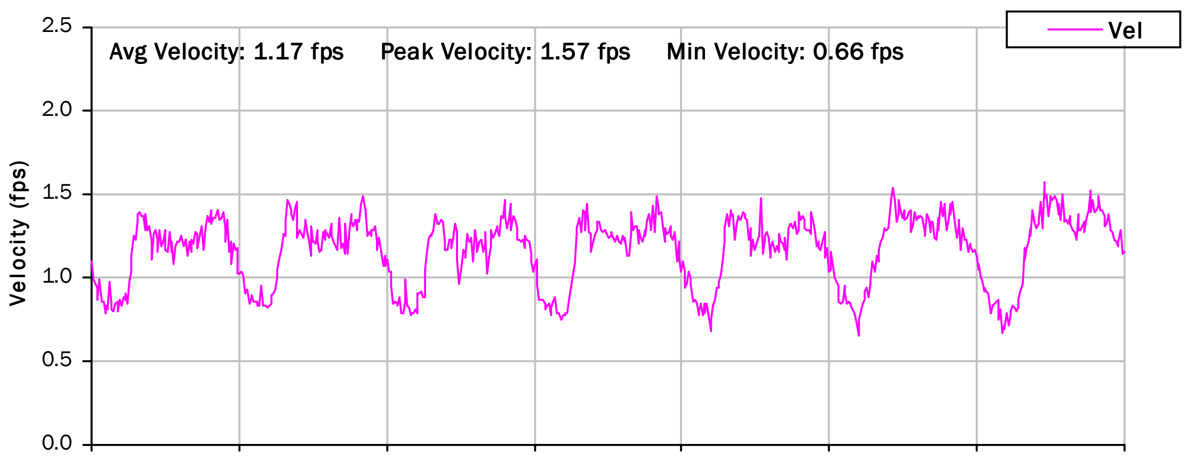
SITE 10
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

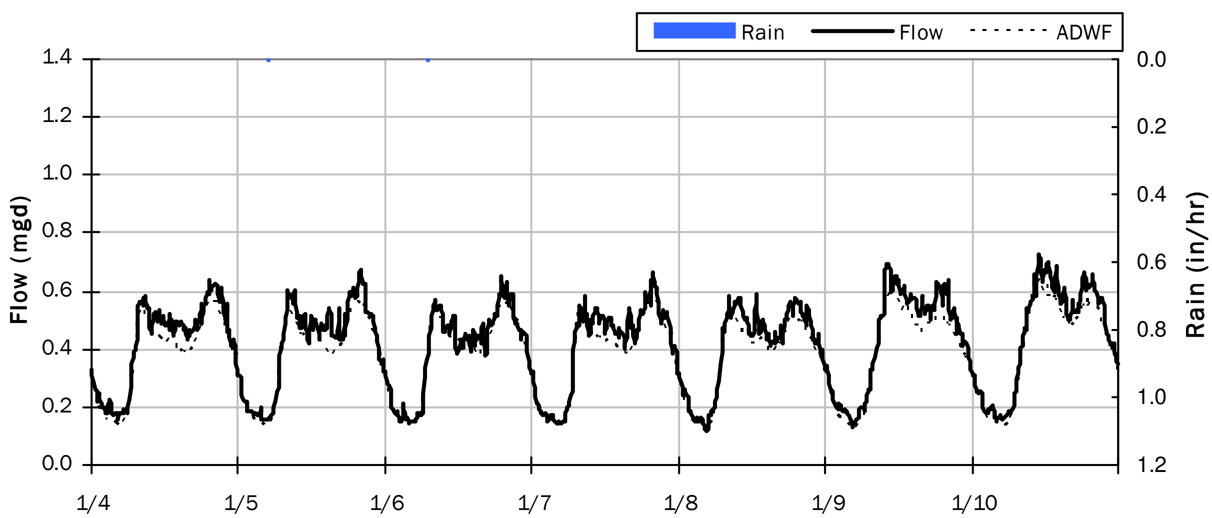


Avg Flow: 0.420 mgd Peak Flow: 0.773 mgd Min Flow: 0.132 mgd

SITE 10
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021

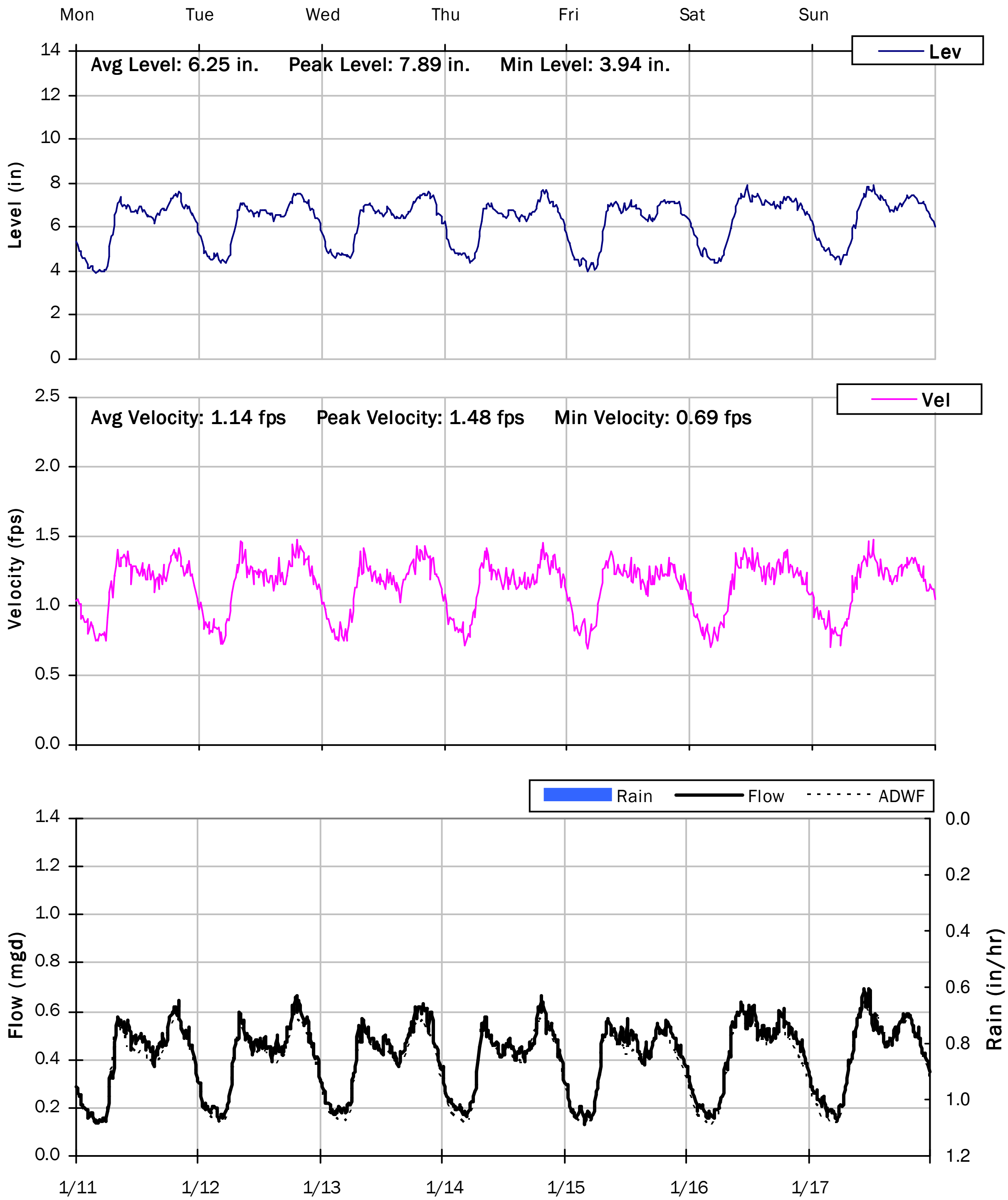






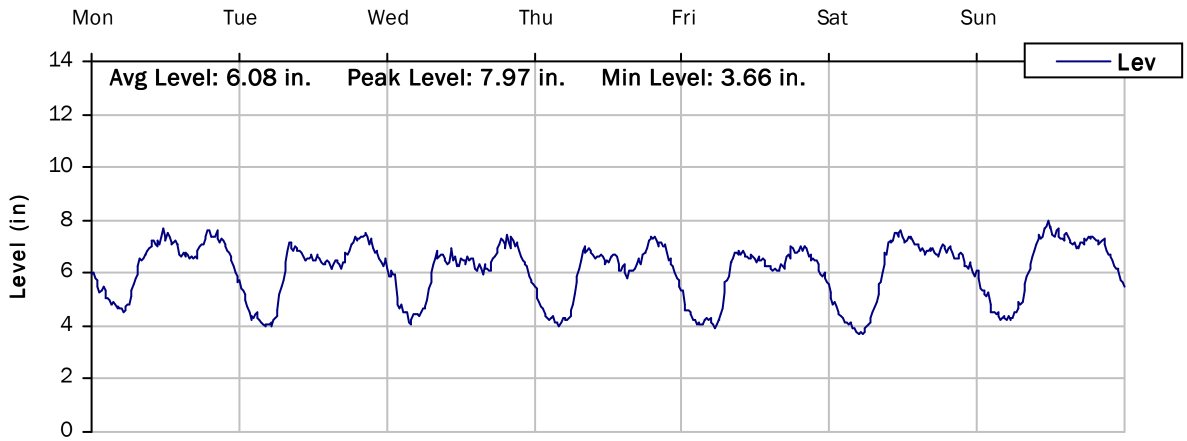
Avg Flow: 0.419 mgd **Peak Flow: 0.720 mgd** **Min Flow: 0.120 mgd**

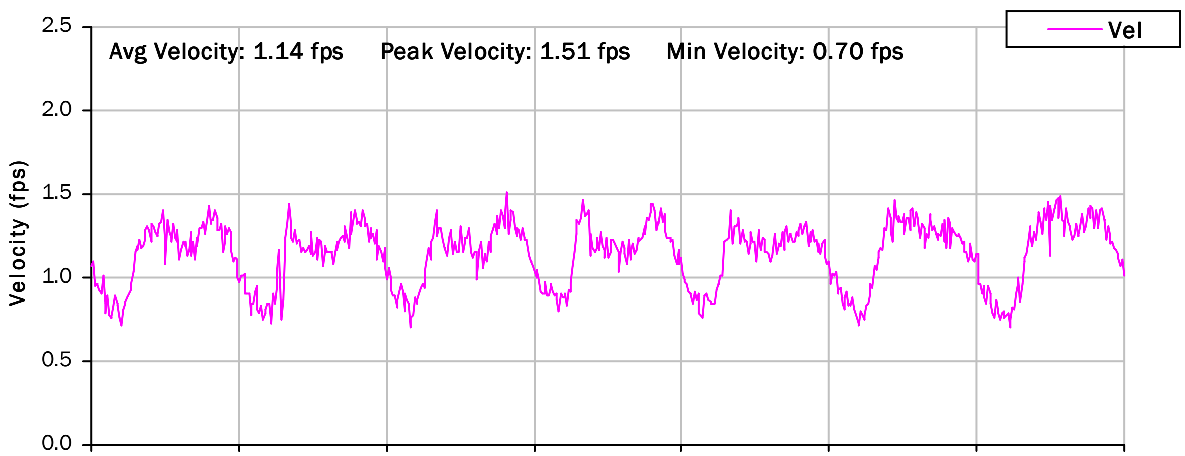
SITE 10
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

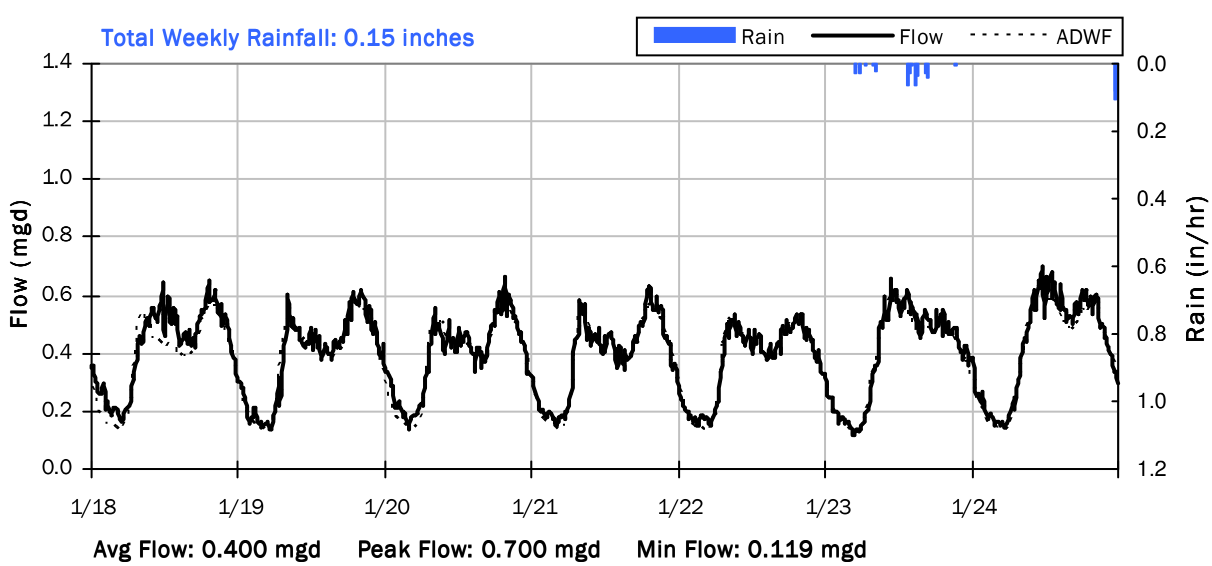


Avg Flow: 0.413 mgd Peak Flow: 0.697 mgd Min Flow: 0.128 mgd

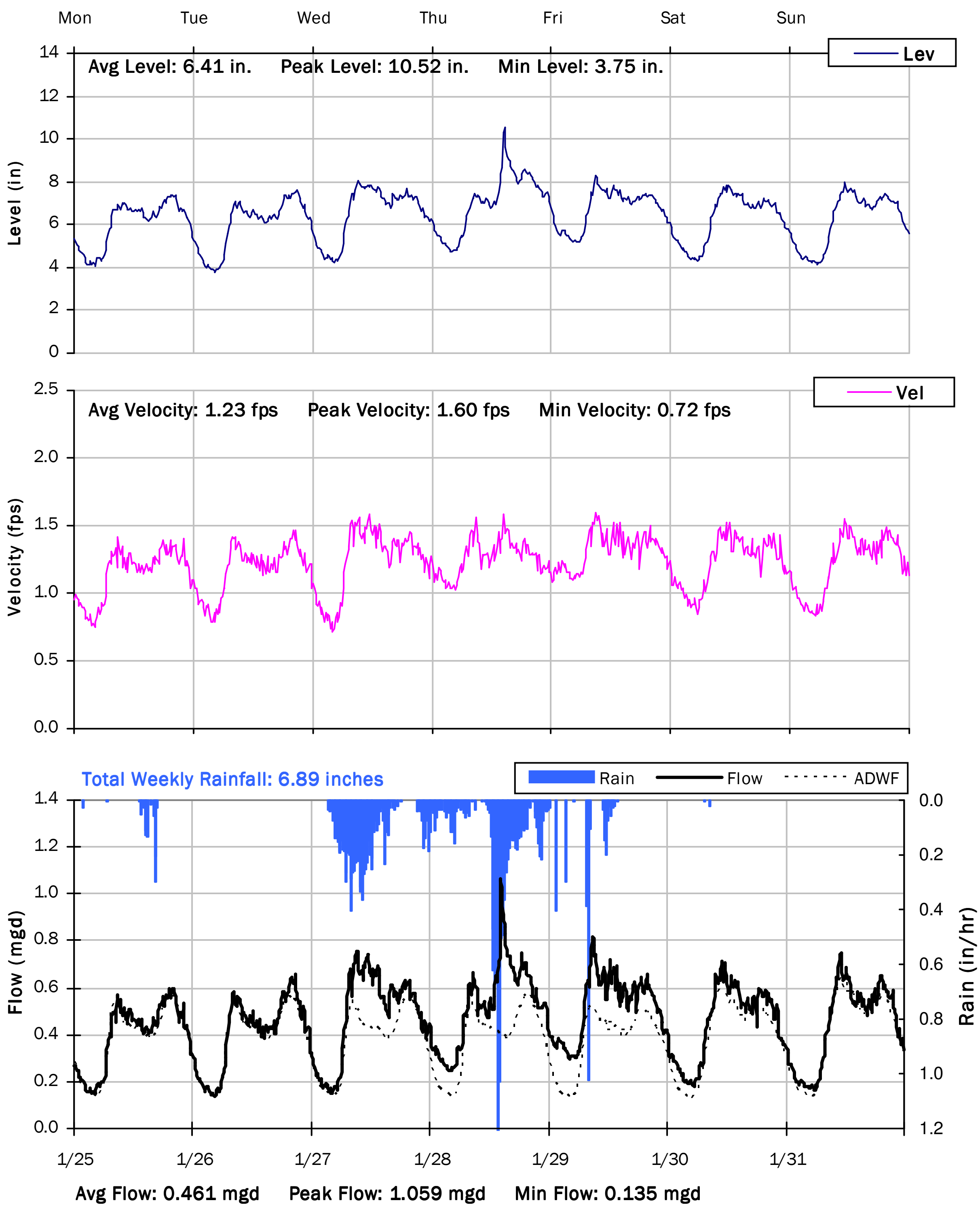
SITE 10
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021



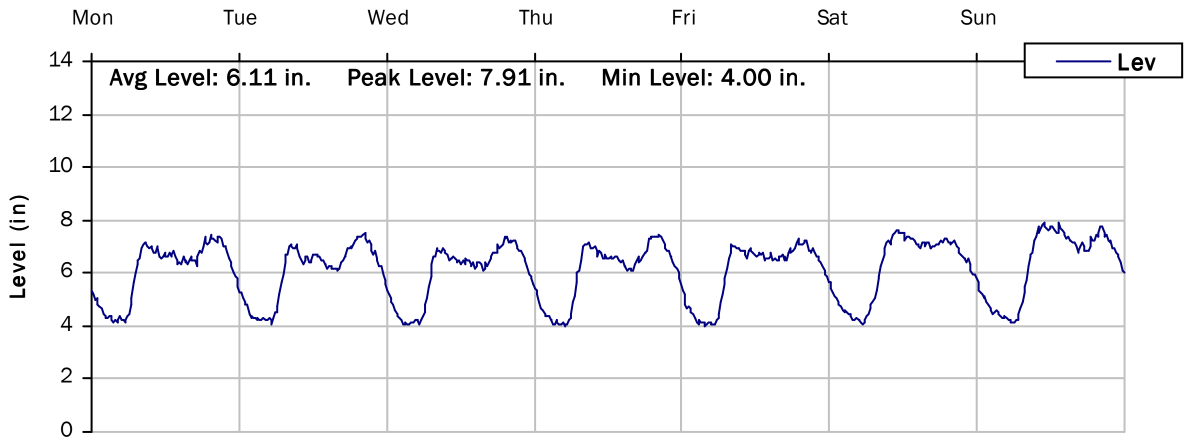


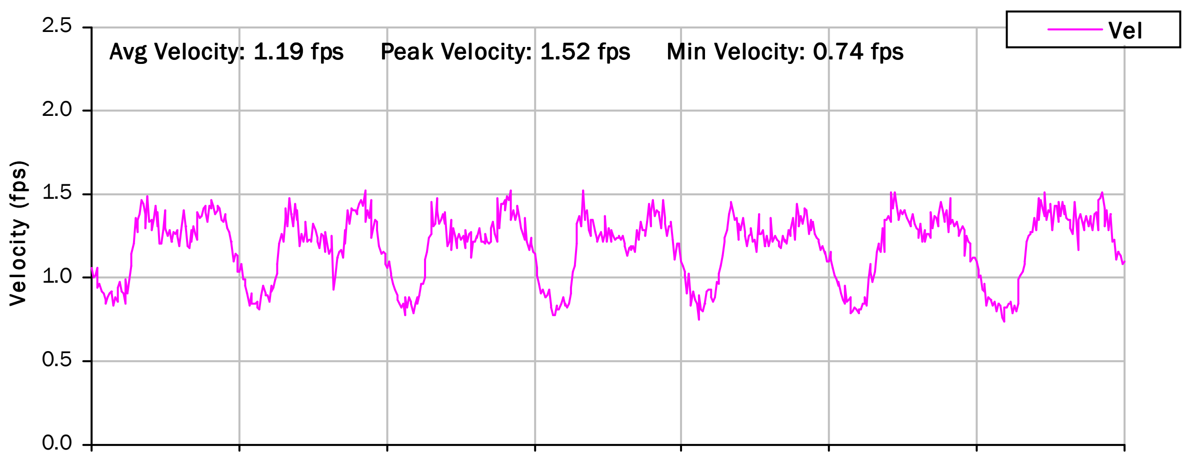


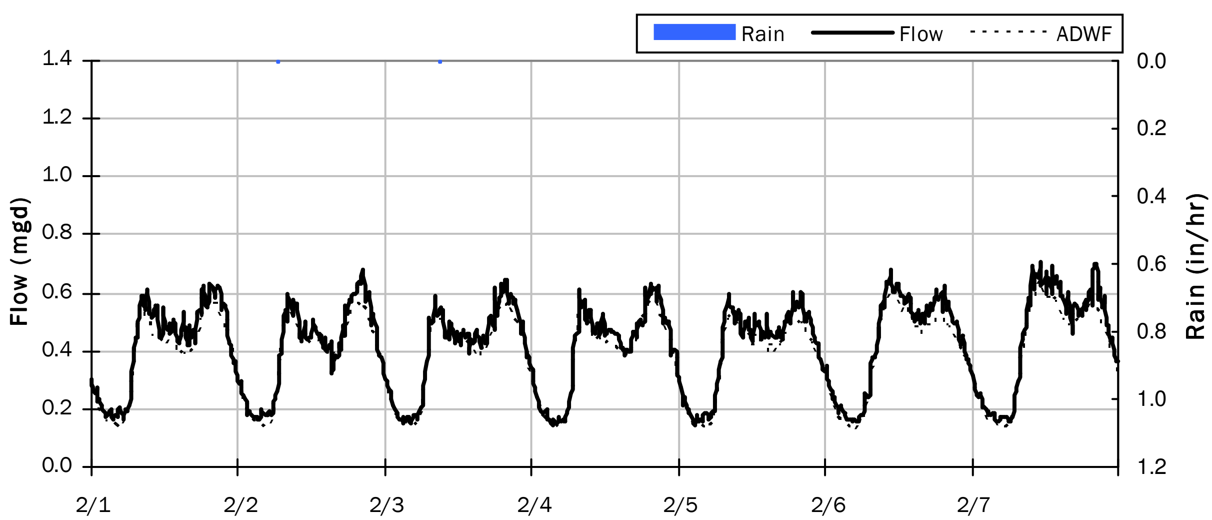
SITE 10
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 10
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021







Avg Flow: 0.419 mgd **Peak Flow: 0.710 mgd** **Min Flow: 0.143 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

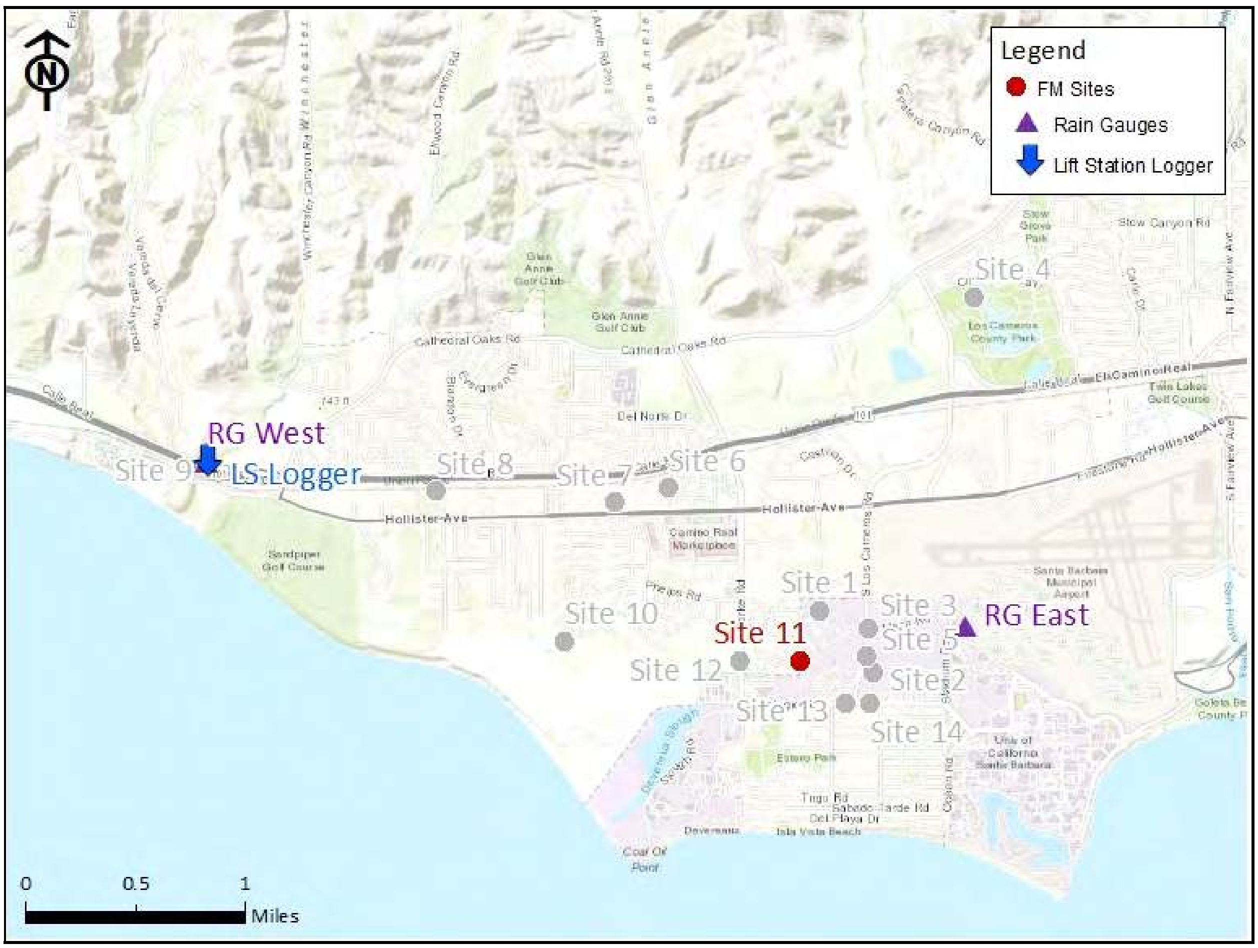
November 3, 2020 - February 7, 2021

Monitoring Site: Site 11

City Manhole: UCSB MH

Location: Off path east of Fireside Lane

Data Summary Report



Vicinity Map: Site 11

SITE 11

Site Information

Location: Off path east of Fireside Lane

City Manhole: UCSB MH

Coordinates: 119.8651° W, 34.4202° N

Rim Elevation (Earth): 10 feet

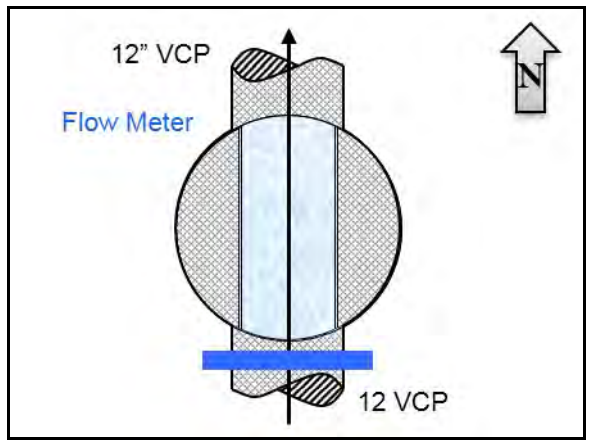
Pipe Diameter: 12 inches

ADWF: 0.001 mgd

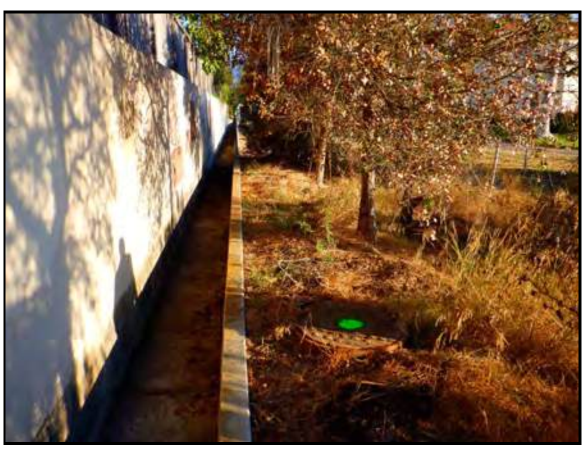
Peak Measured Flow: 0.141 mgd

Satellite Map

Sanitary Map



Flow Sketch



Street View

Plan View

SITE 11

Additional Site Photos

Monitored South Influent

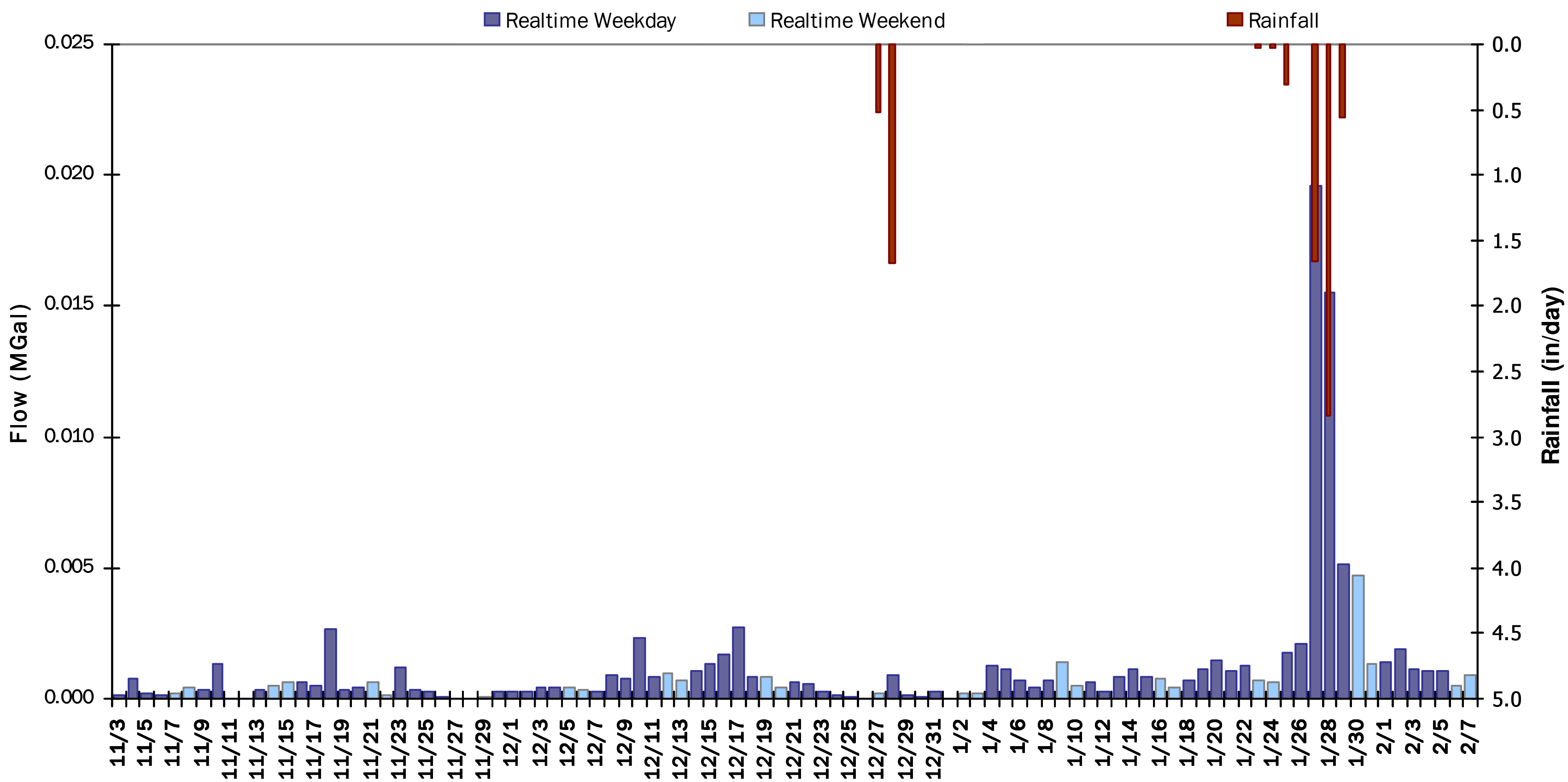
North Effluent

SITE 11

Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.001 MGal **Peak Daily Flow: 0.020 MGal** **Min Daily Flow: 0.000 MGal**

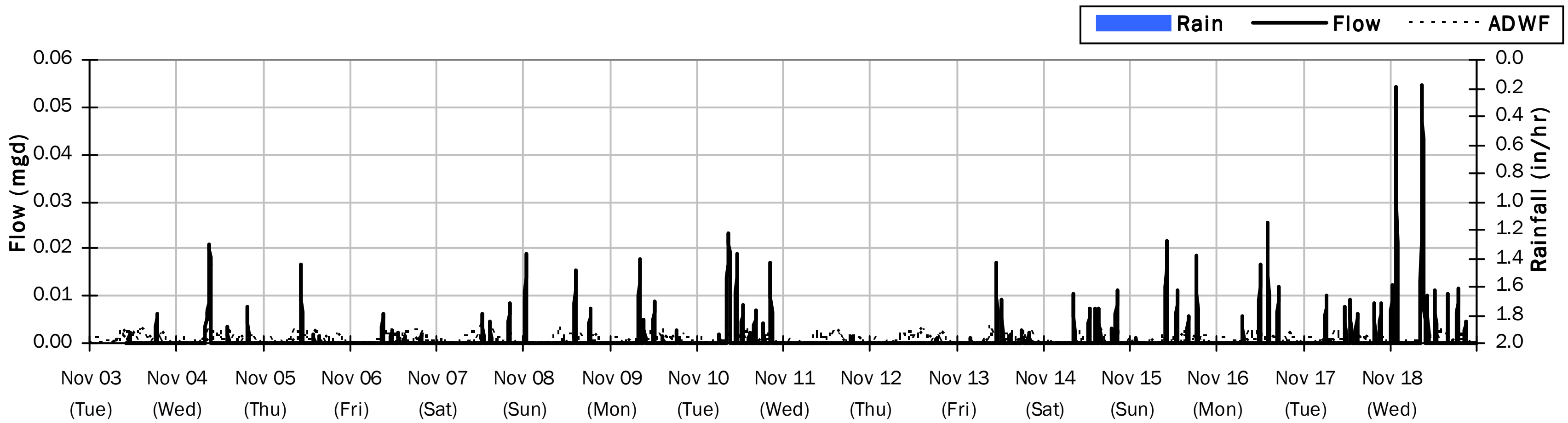
Total Period Rainfall: 7.64 inches

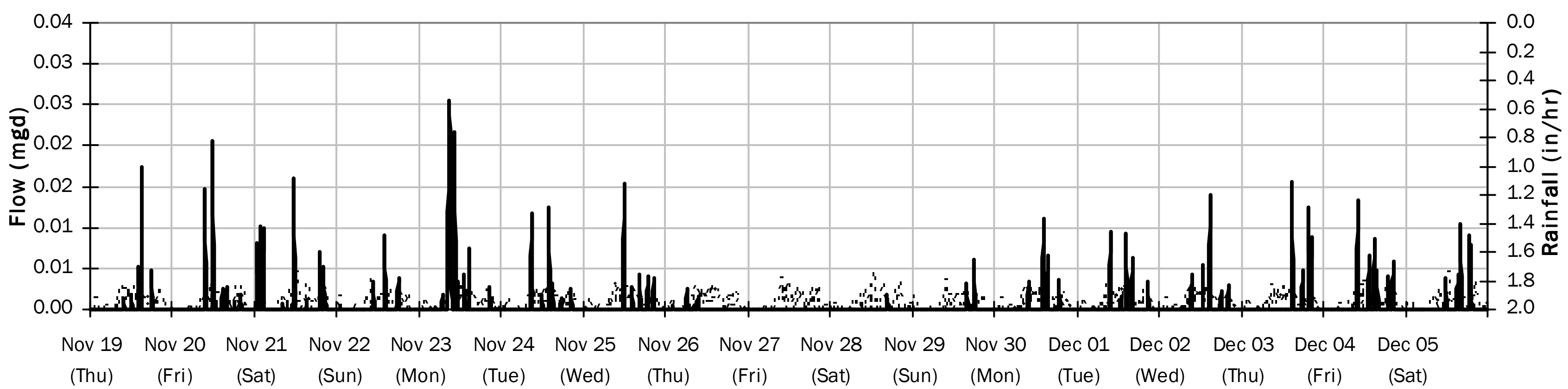


SITE 11

Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   **Avg Flow: 0.000 mgd**   **Peak Flow: 0.055 mgd**   **Min Flow: 0.000 mgd**

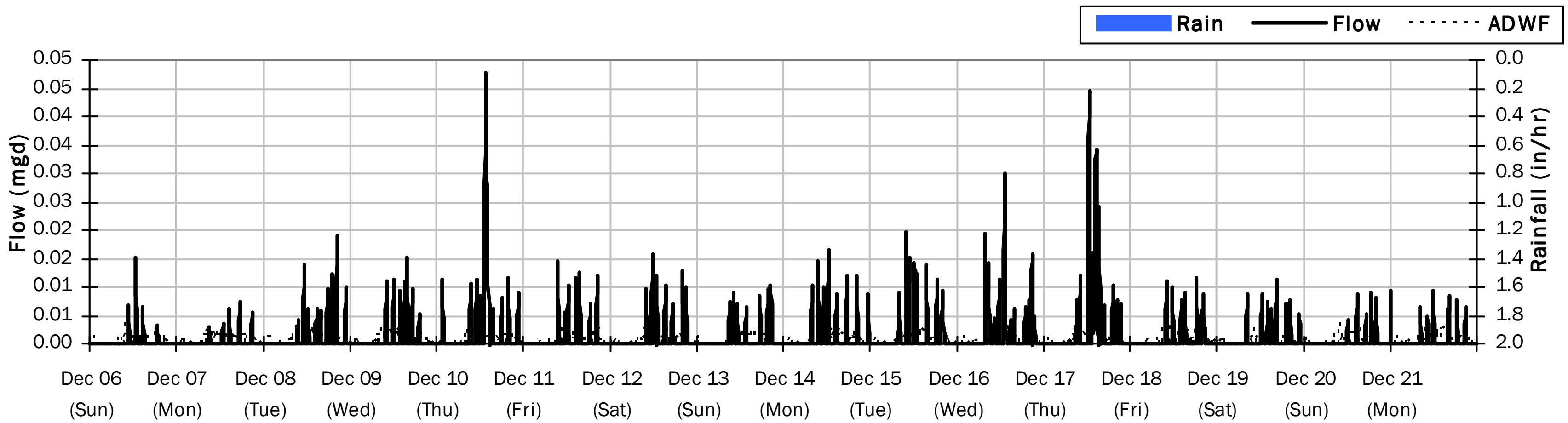


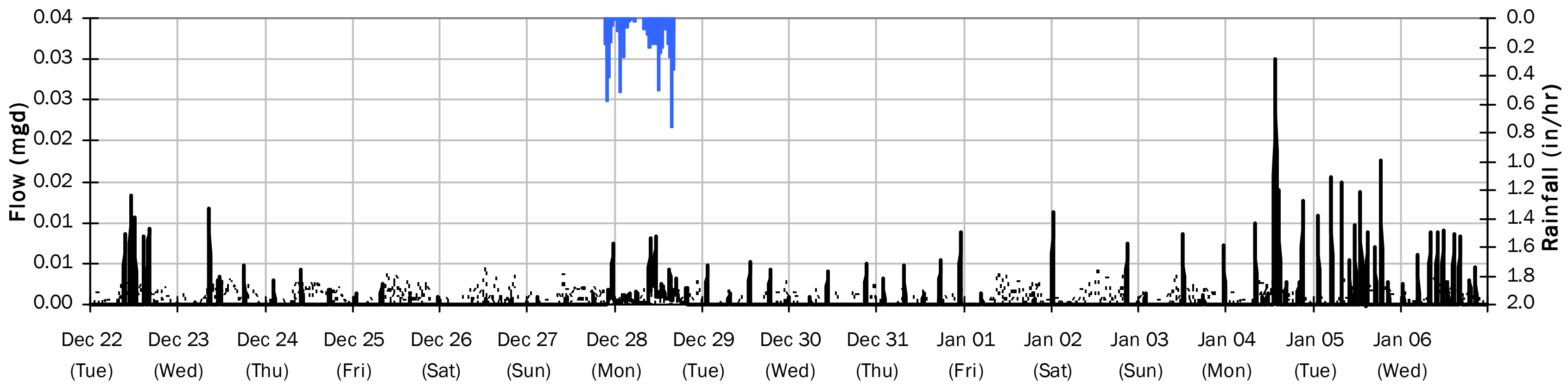


SITE 11

Flow Summary: 12/6/2020 to 1/6/2021

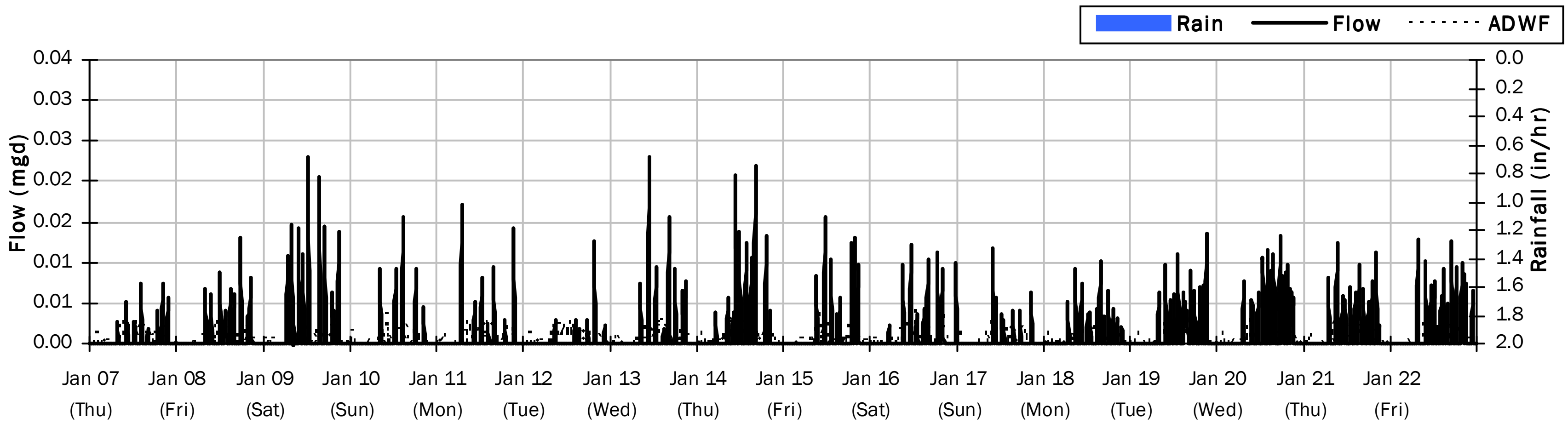
Total Period Rainfall: 2.20 inches   **Avg Flow: 0.001 mgd**   **Peak Flow: 0.047 mgd**   **Min Flow: 0.000 mgd**

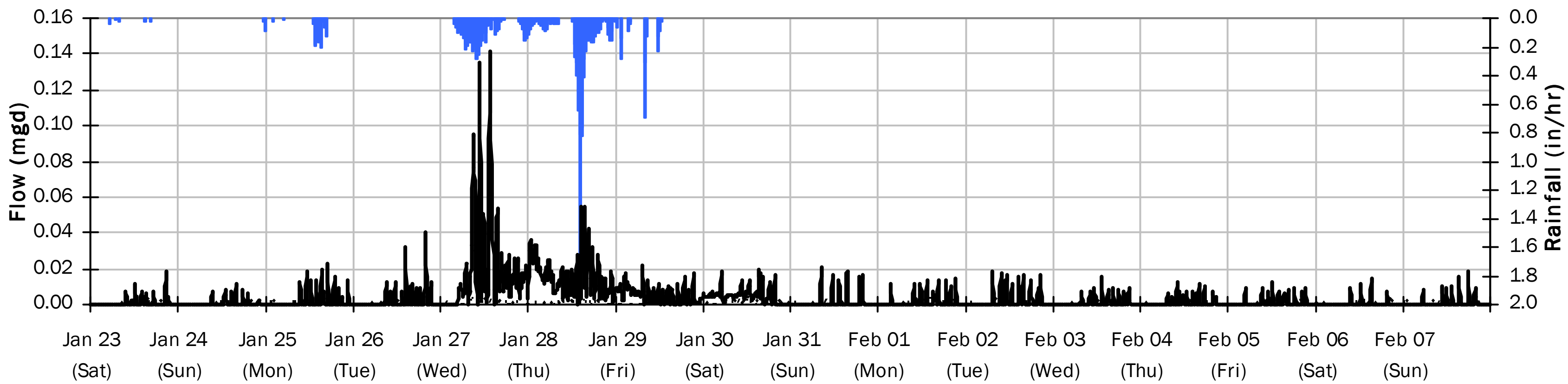




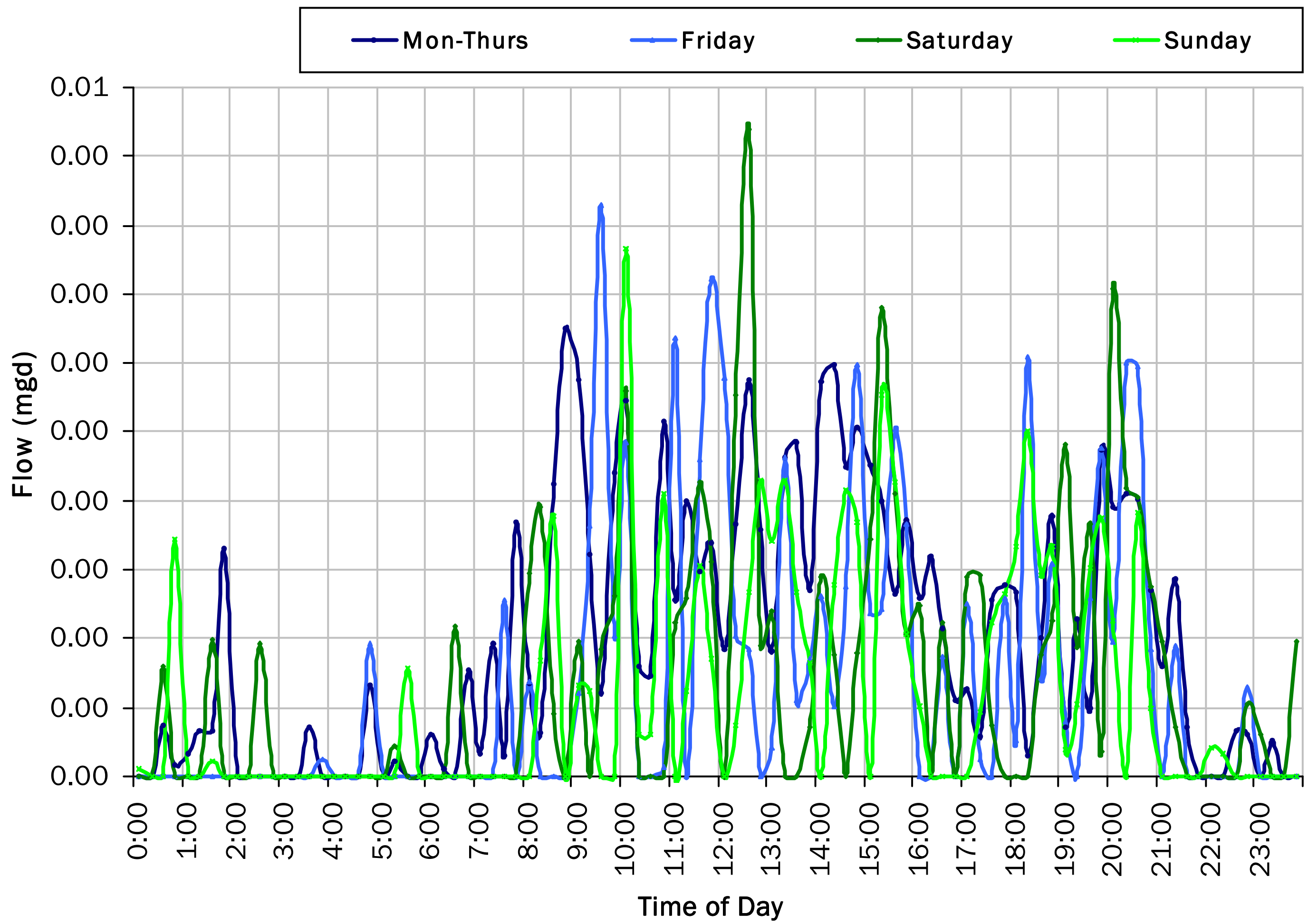
SITE 11
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 5.44 inches Avg Flow: 0.002 mgd Peak Flow: 0.141 mgd Min Flow: 0.000 mgd



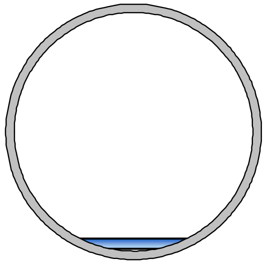


SITE 11
Average Dry Weather Flow Hydrographs



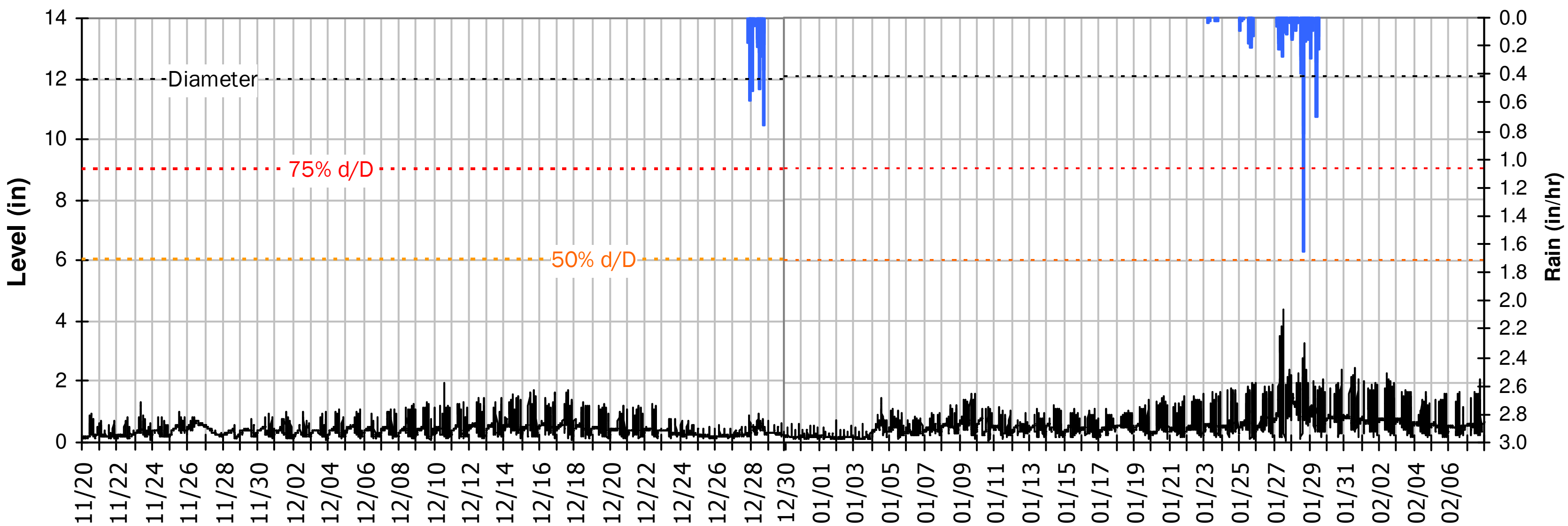
ADWF:

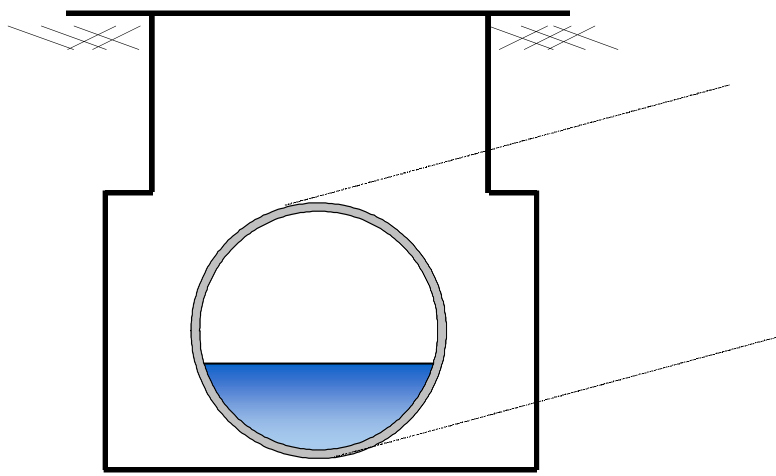
0.001 *mgd*



SITE 11
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

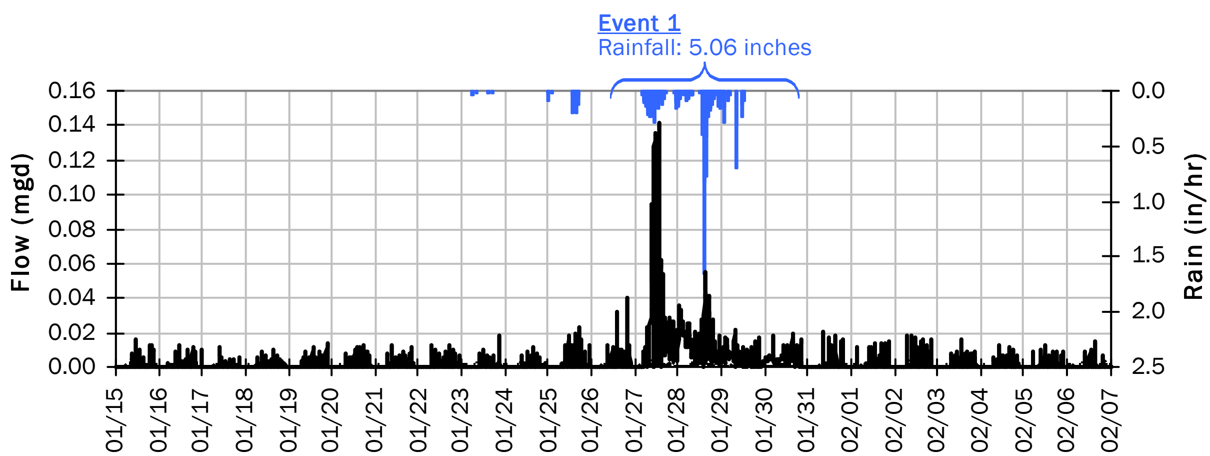




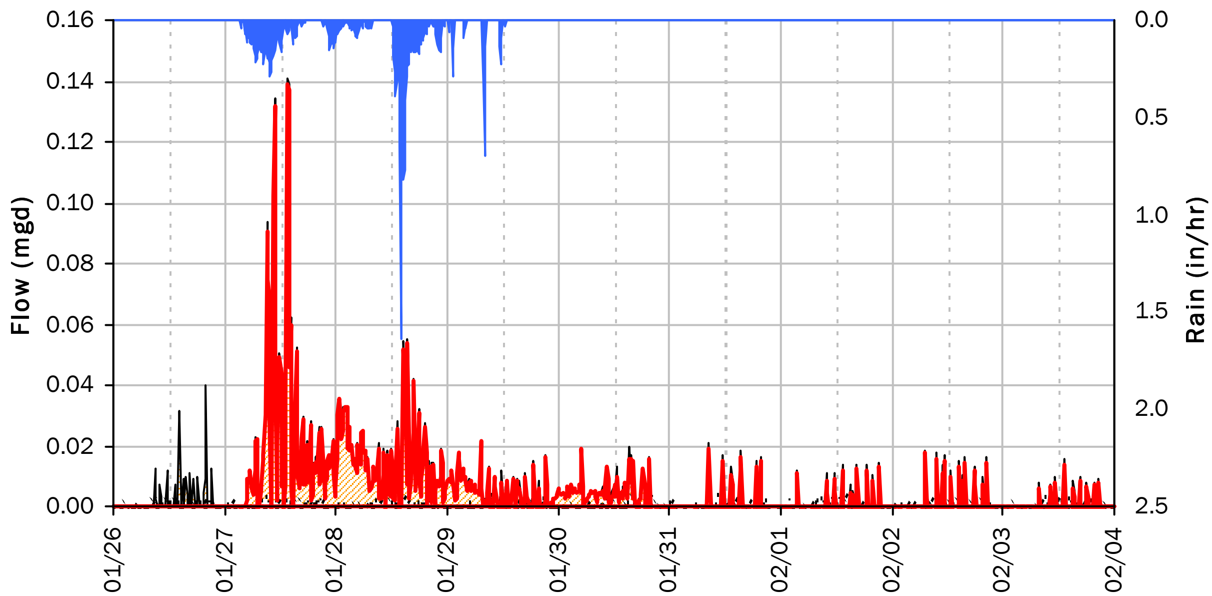
Pipe Diameter:	12	*inches*
Peak Measured Level:	4.37	*inches*
Peak d/D Ratio:	0.36	

SITE 11
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



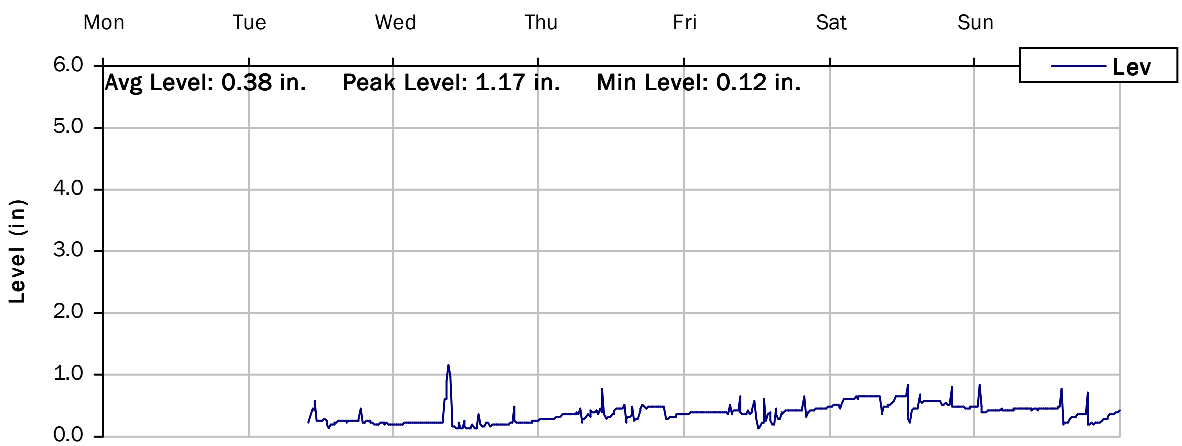
Event 1 Detail Graph

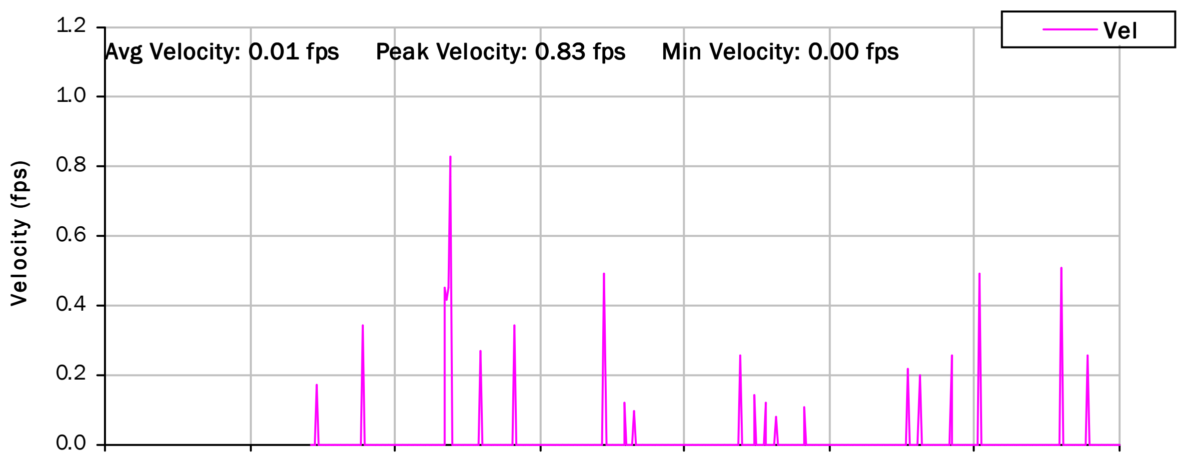


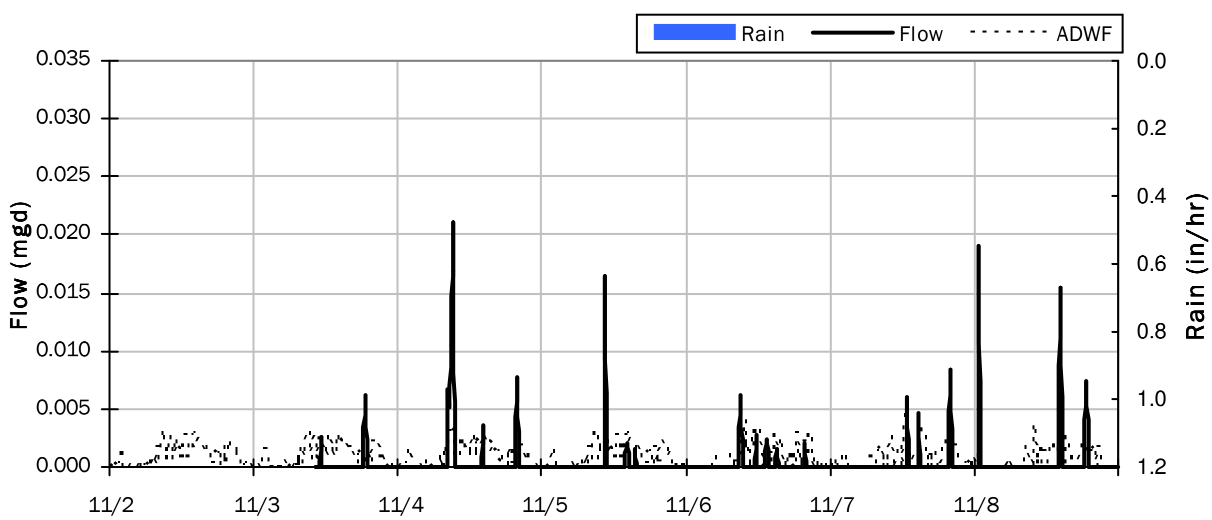
Storm Event I/I Analysis (Rain = 5.06 inches)

Capacity		Inflow / Infiltration	
Peak Flow:	0.14 *mgd*	**Peak I/I Rate:**	0.14 *mgd*
PF:	172.78	**Total I/I:**	44,000 *gallons*
Peak Level:	4.37 *in*		
d/D Ratio:	0.36		

SITE 11
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

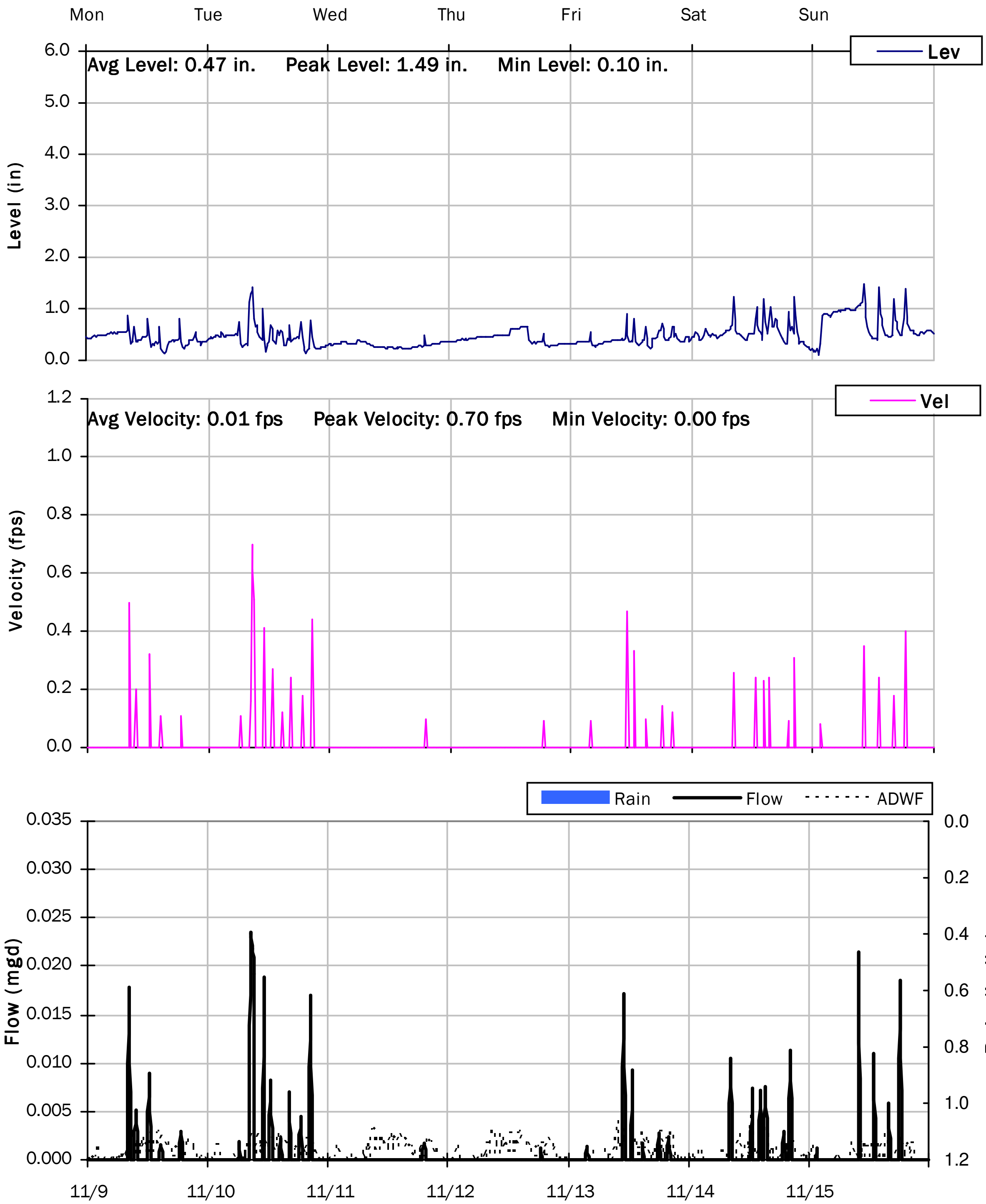






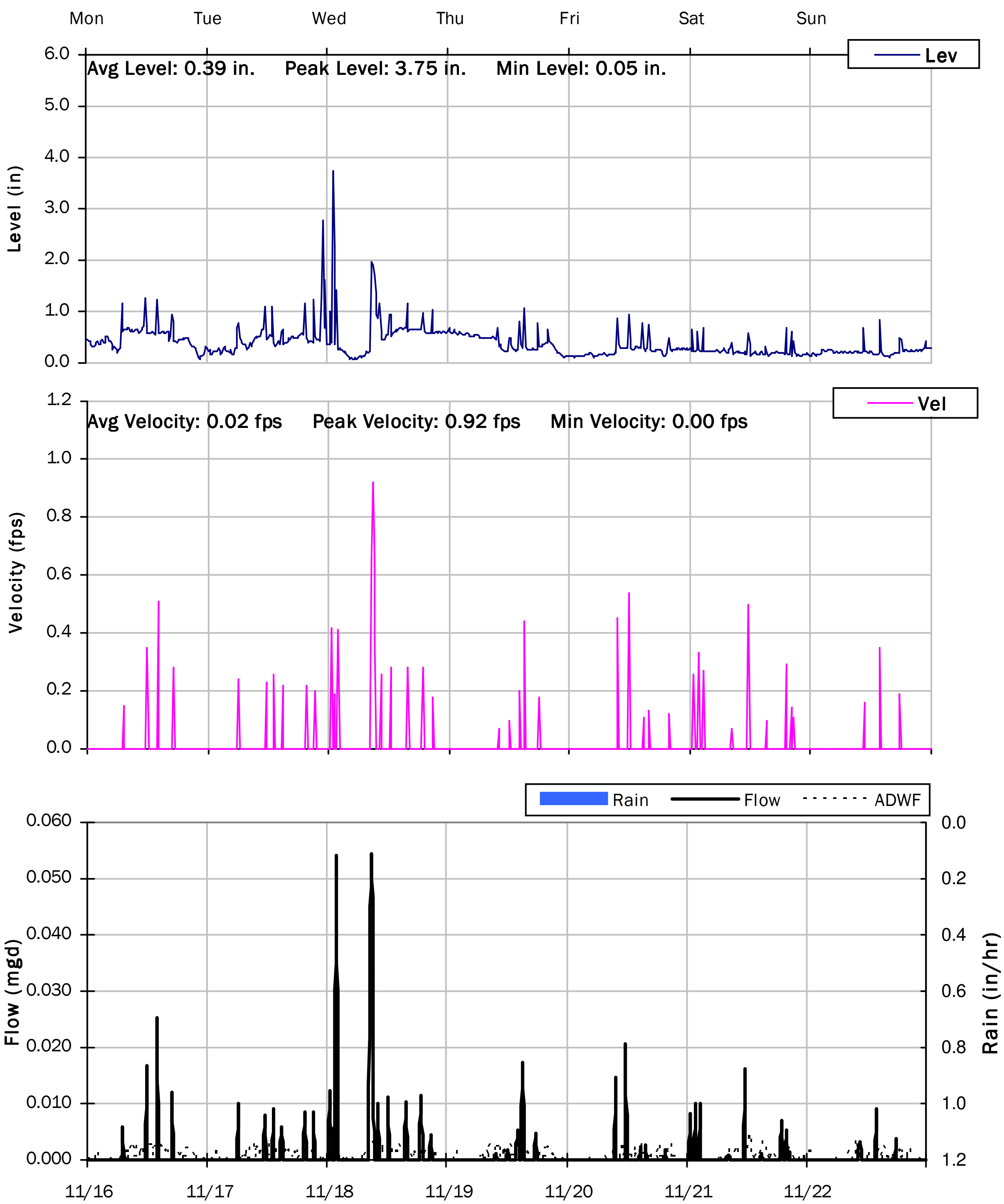
Avg Flow: 0.000 mgd **Peak Flow: 0.021 mgd** **Min Flow: 0.000 mgd**

SITE 11
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



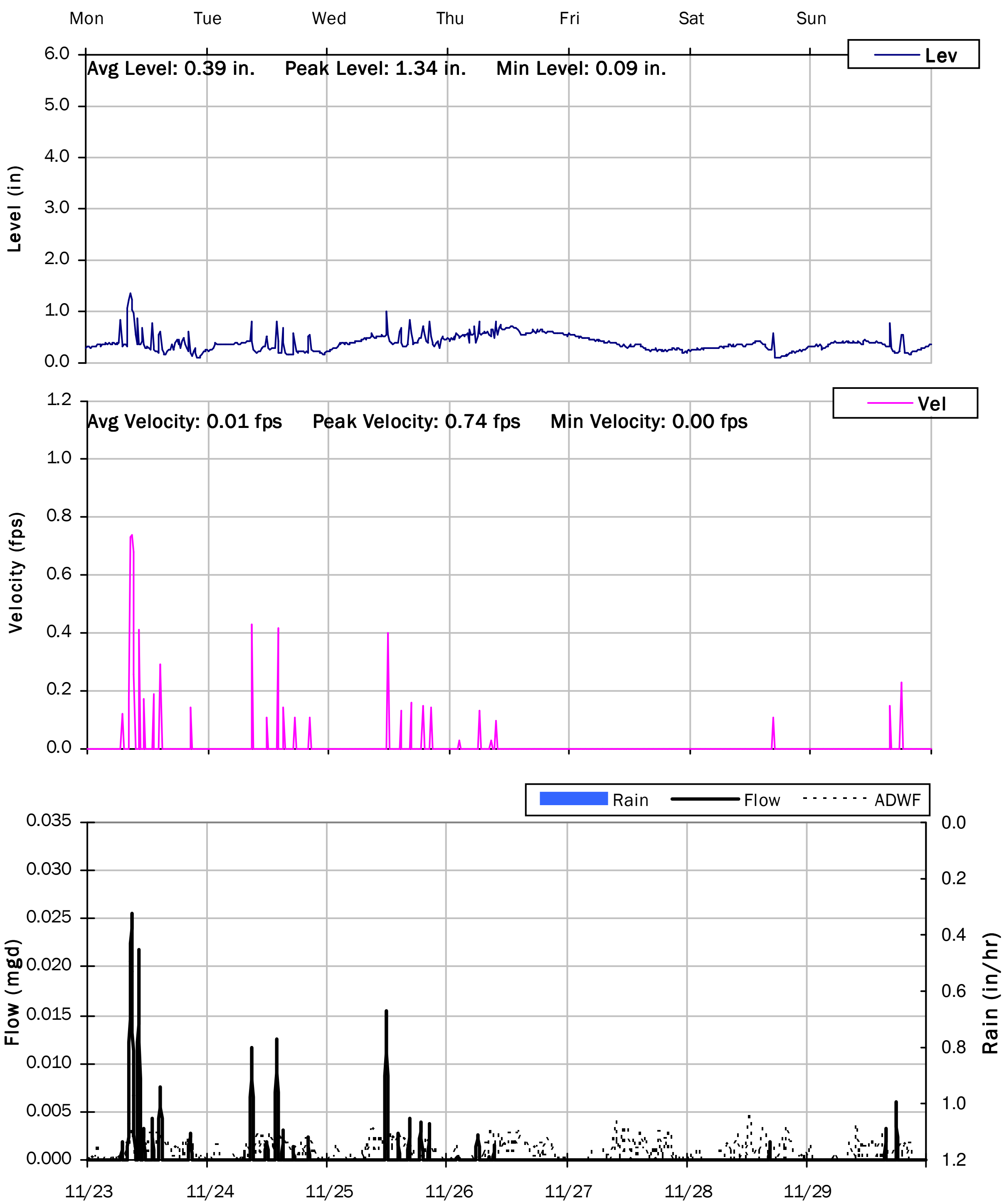
Avg Flow: 0.000 mgd **Peak Flow: 0.023 mgd** **Min Flow: 0.000 mgd**

SITE 11
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020



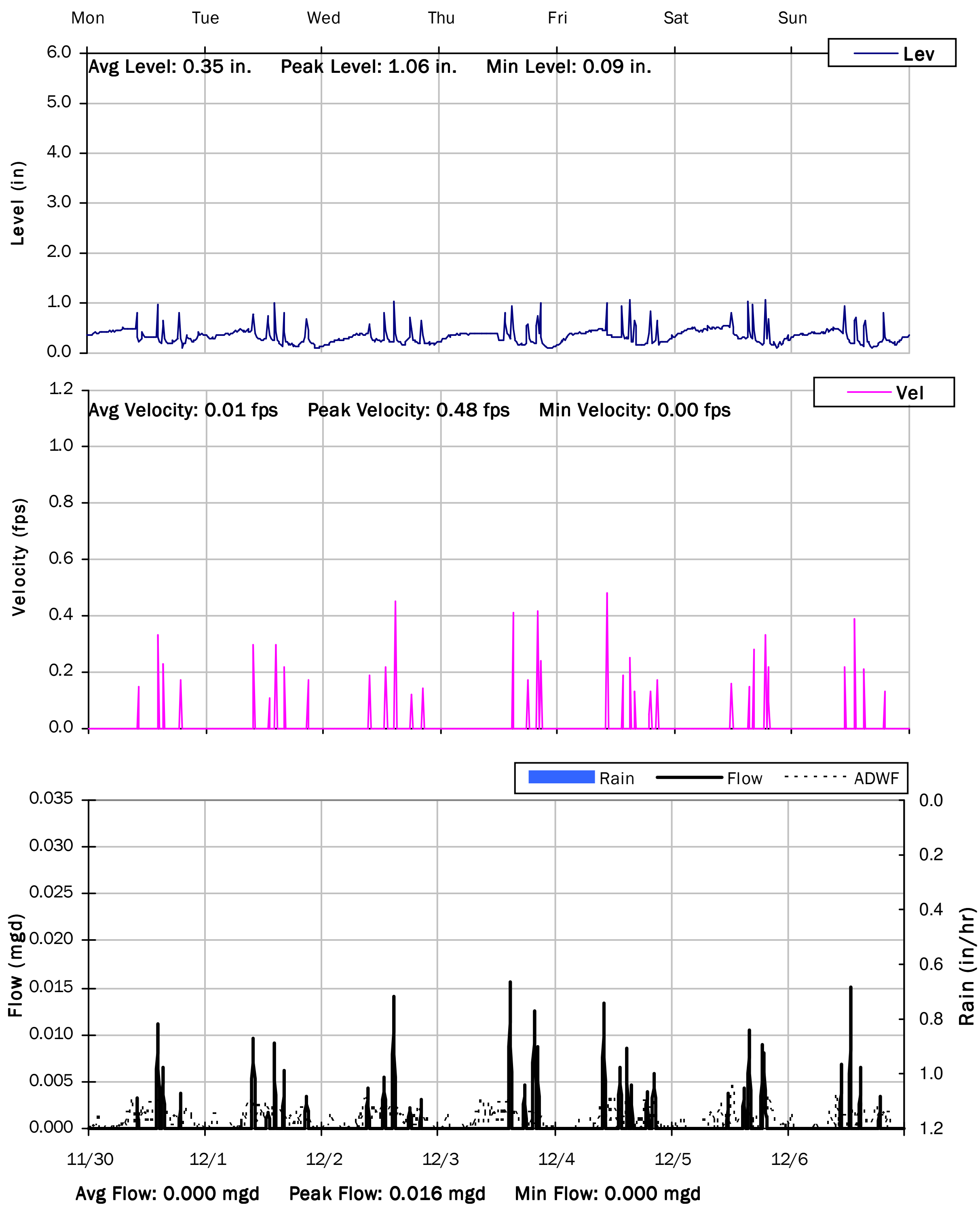
Avg Flow: 0.001 mgd Peak Flow: 0.055 mgd Min Flow: 0.000 mgd

SITE 11
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

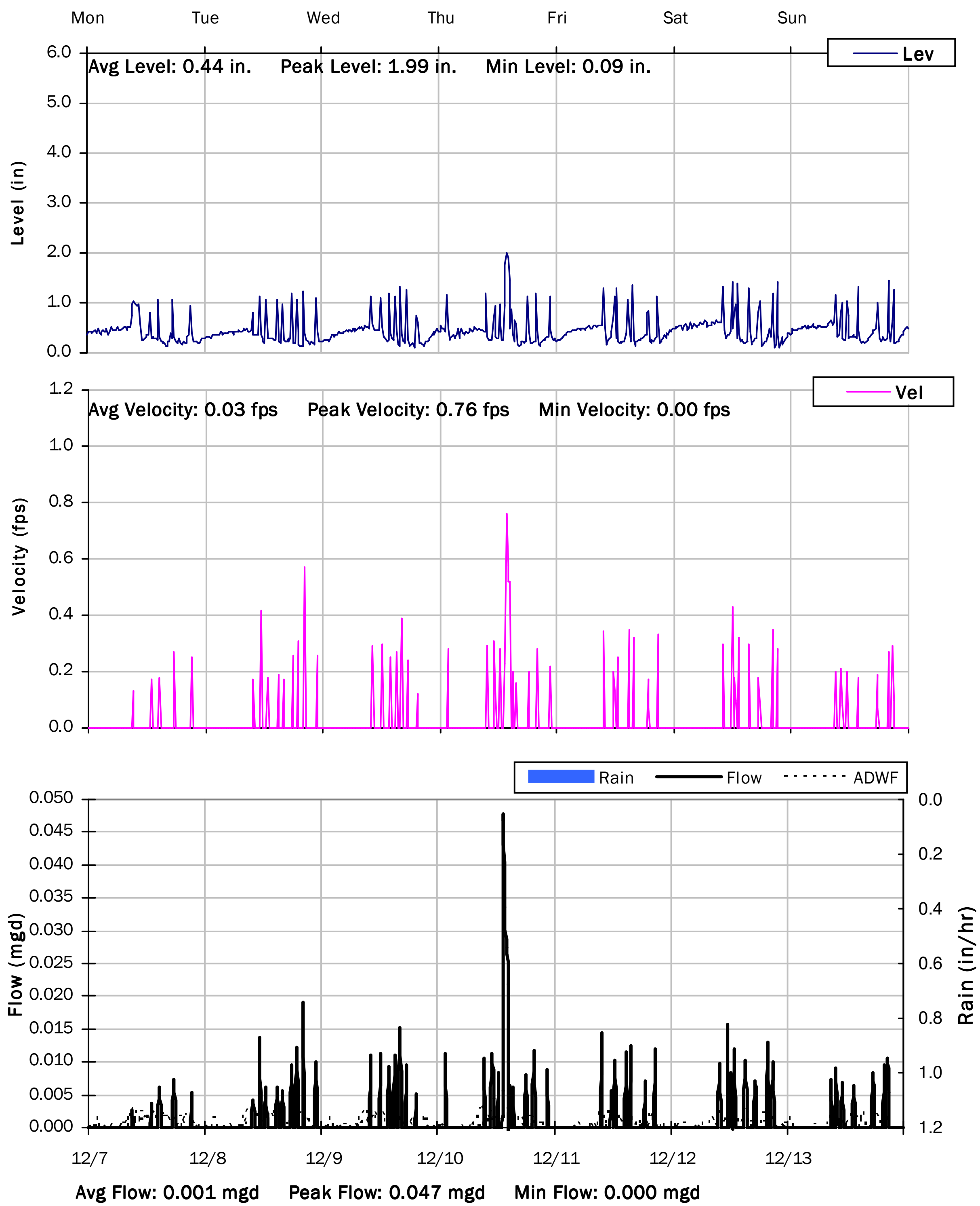


Avg Flow: 0.000 mgd **Peak Flow: 0.026 mgd** **Min Flow: 0.000 mgd**

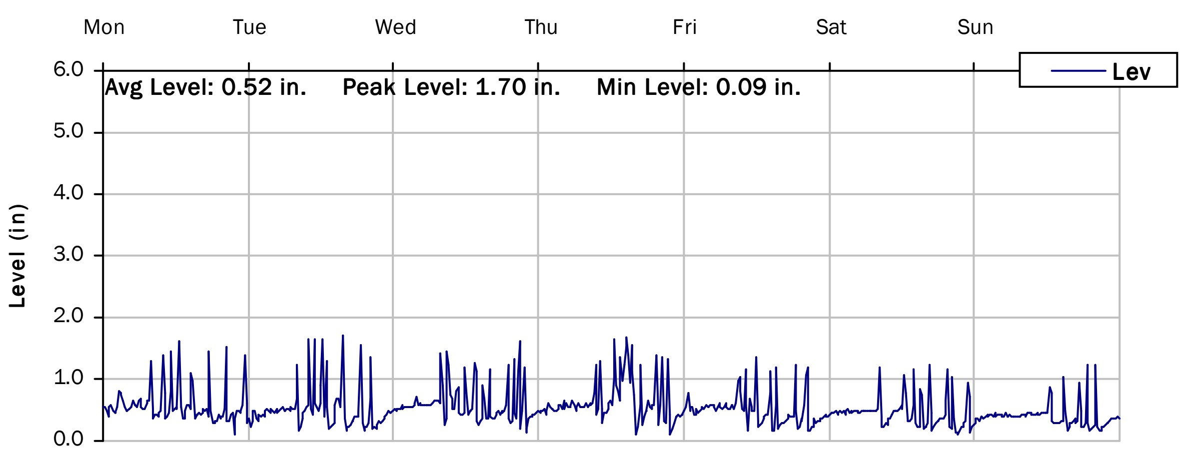
SITE 11
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

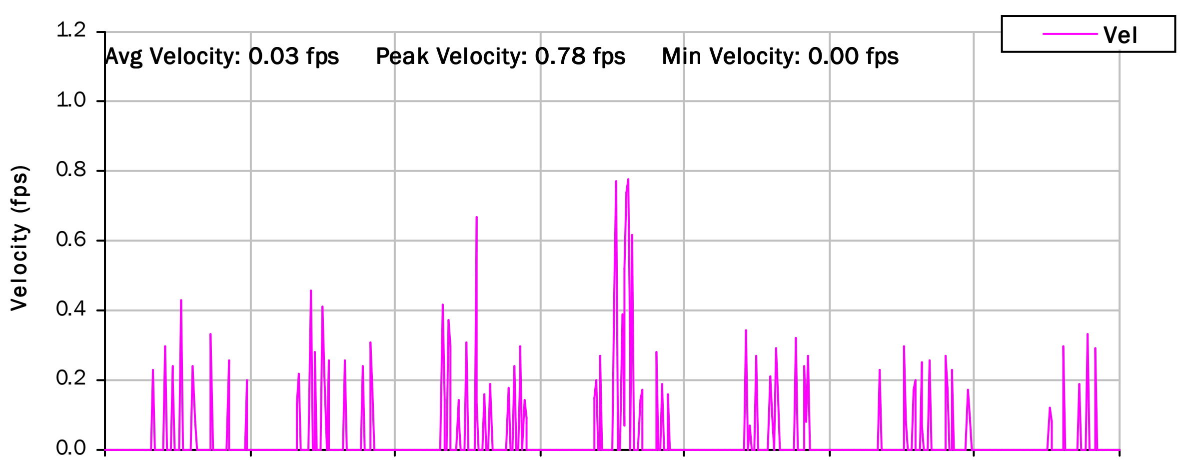


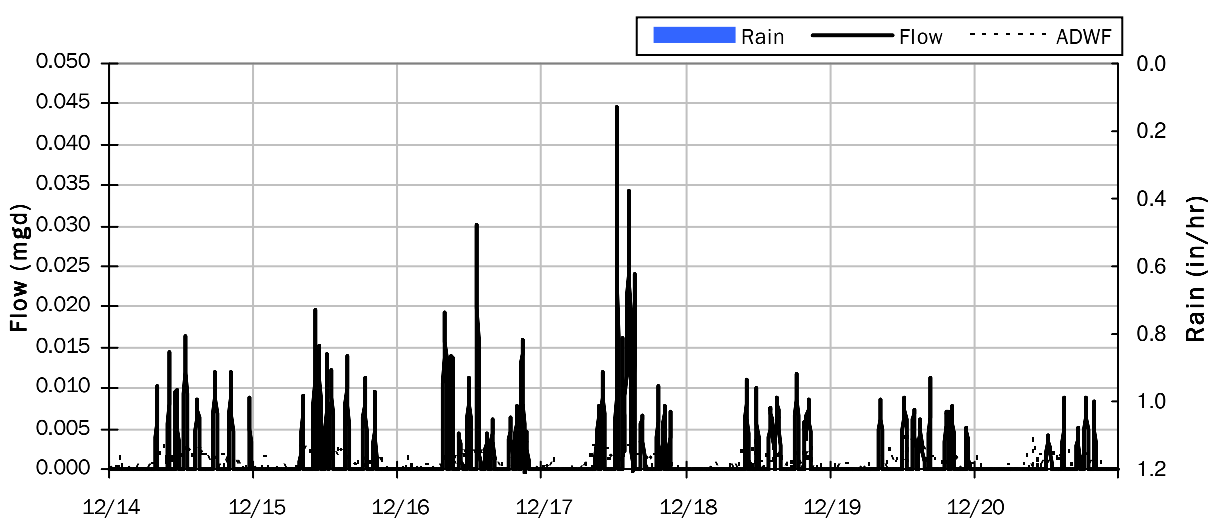
SITE 11
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020



SITE 11
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

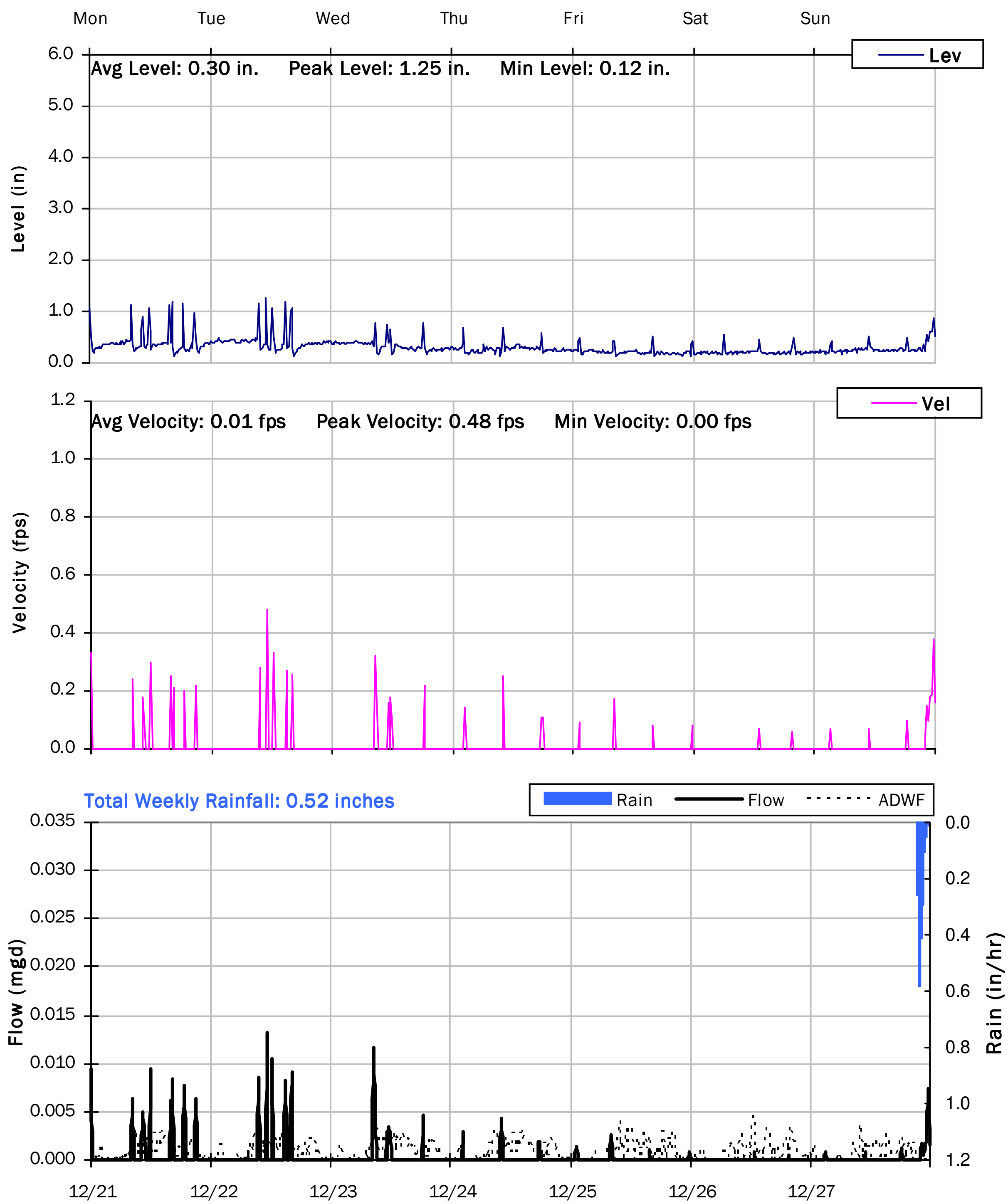






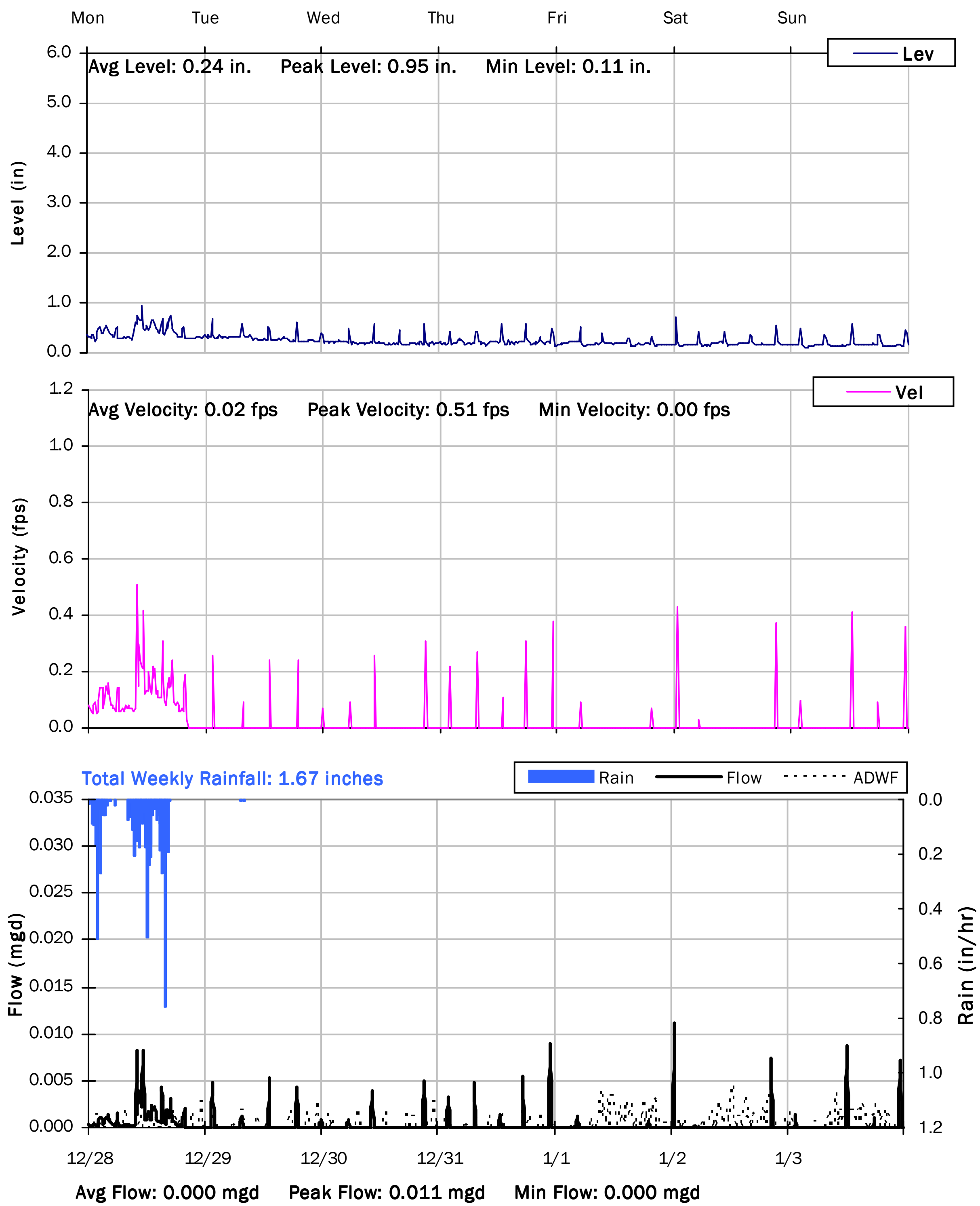
Avg Flow: 0.001 mgd Peak Flow: 0.044 mgd Min Flow: 0.000 mgd

SITE 11
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

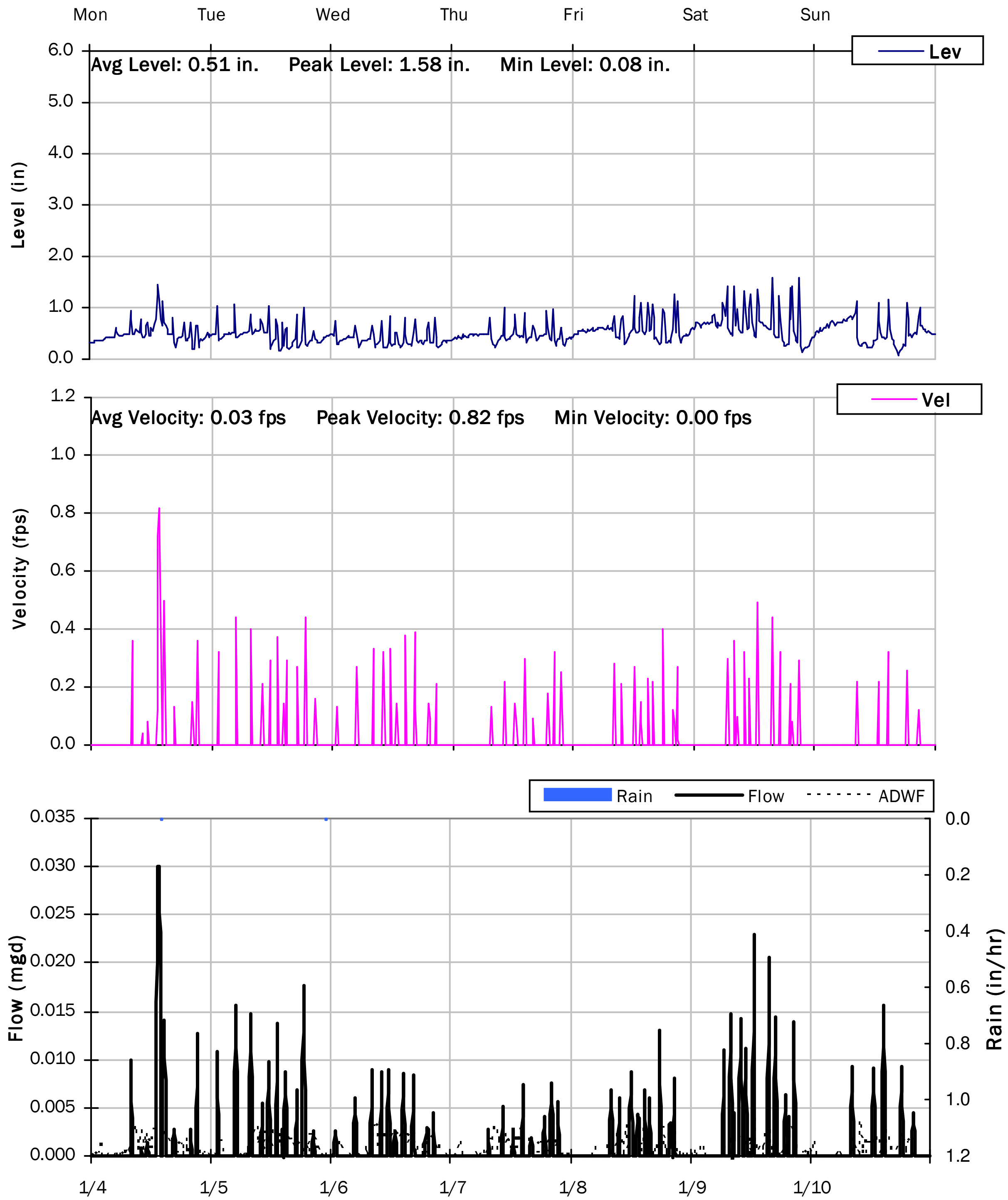


Avg Flow: 0.000 mgd **Peak Flow: 0.013 mgd** **Min Flow: 0.000 mgd**

SITE 11
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

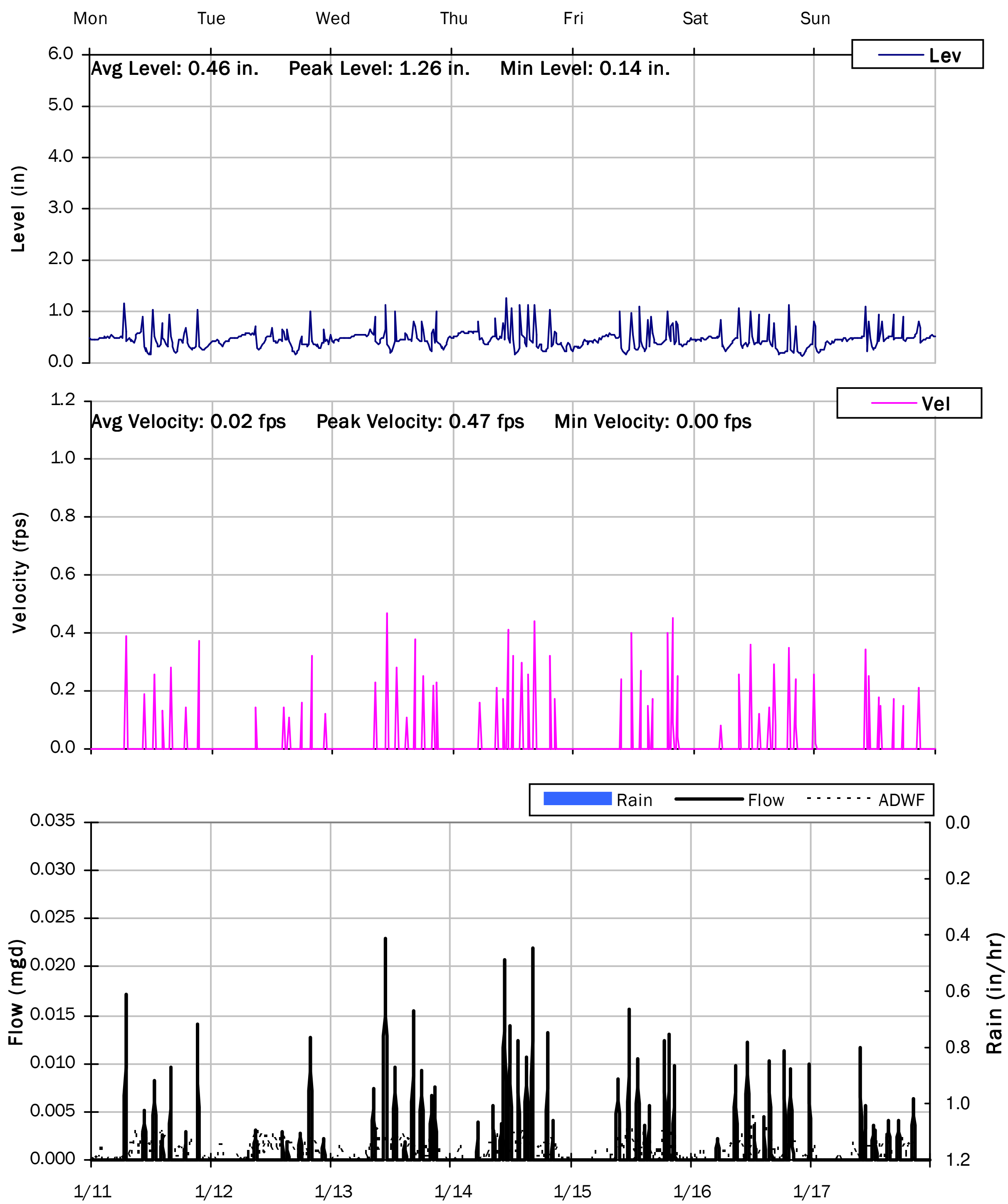


SITE 11
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021



Avg Flow: 0.001 mgd **Peak Flow: 0.030 mgd** **Min Flow: 0.000 mgd**

SITE 11
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

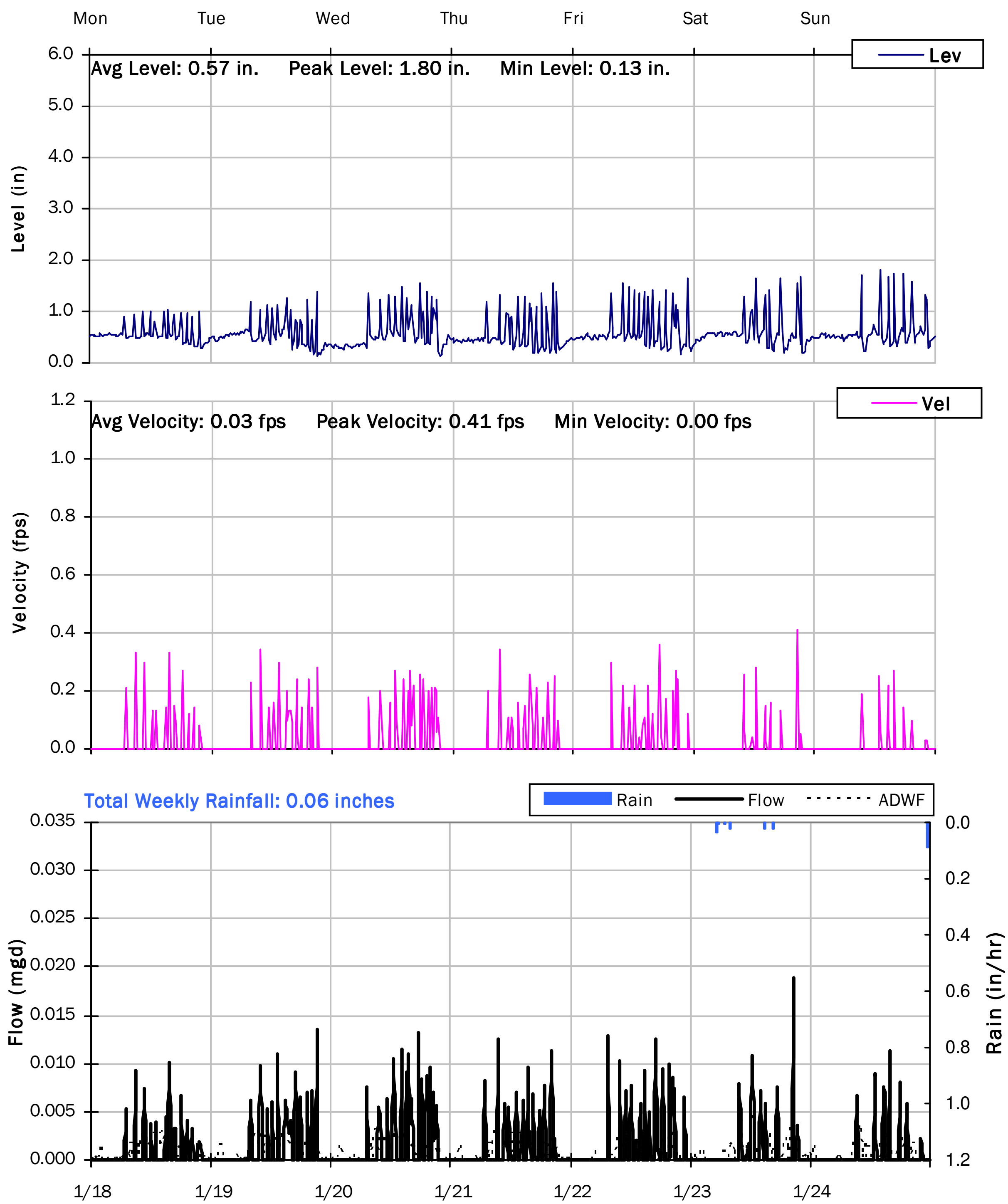


Avg Flow: 0.001 mgd Peak Flow: 0.023 mgd Min Flow: 0.000 mgd

SITE 11

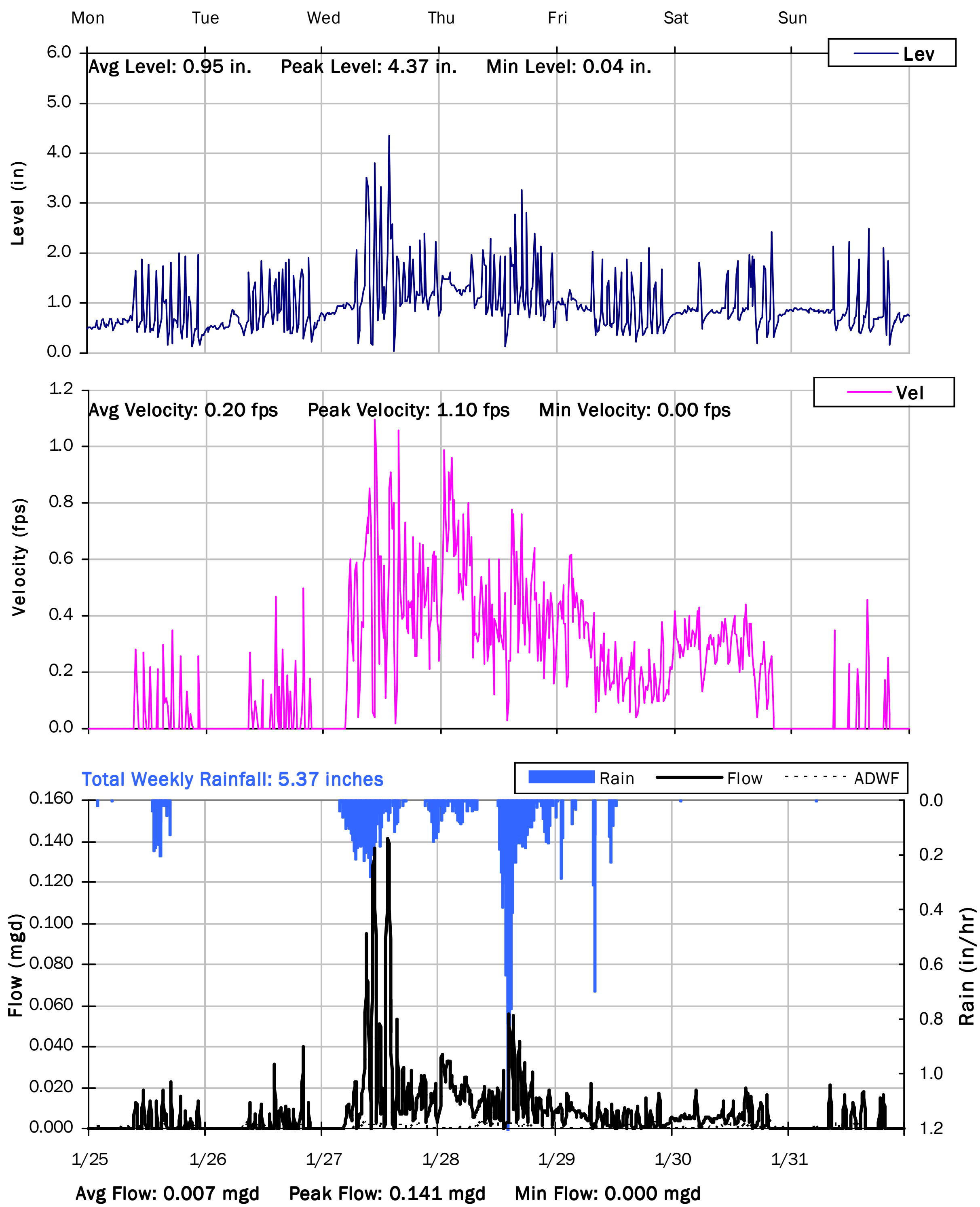
Weekly Level, Velocity and Flow Hydrographs

1/18/2021 to 1/25/2021

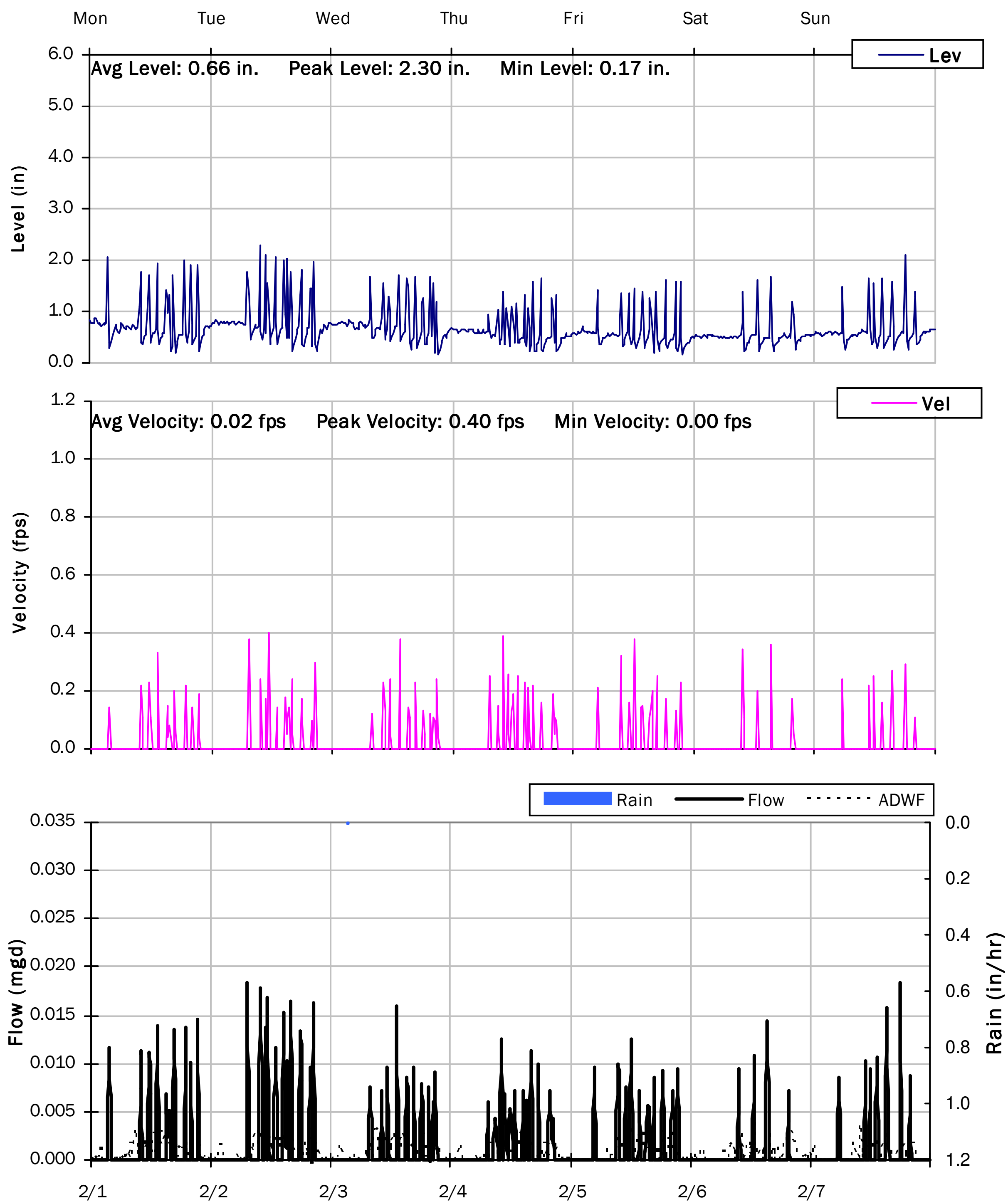


Avg Flow: 0.001 mgd **Peak Flow: 0.019 mgd** **Min Flow: 0.000 mgd**

SITE 11
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 11
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.001 mgd **Peak Flow: 0.018 mgd** **Min Flow: 0.000 mgd**

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

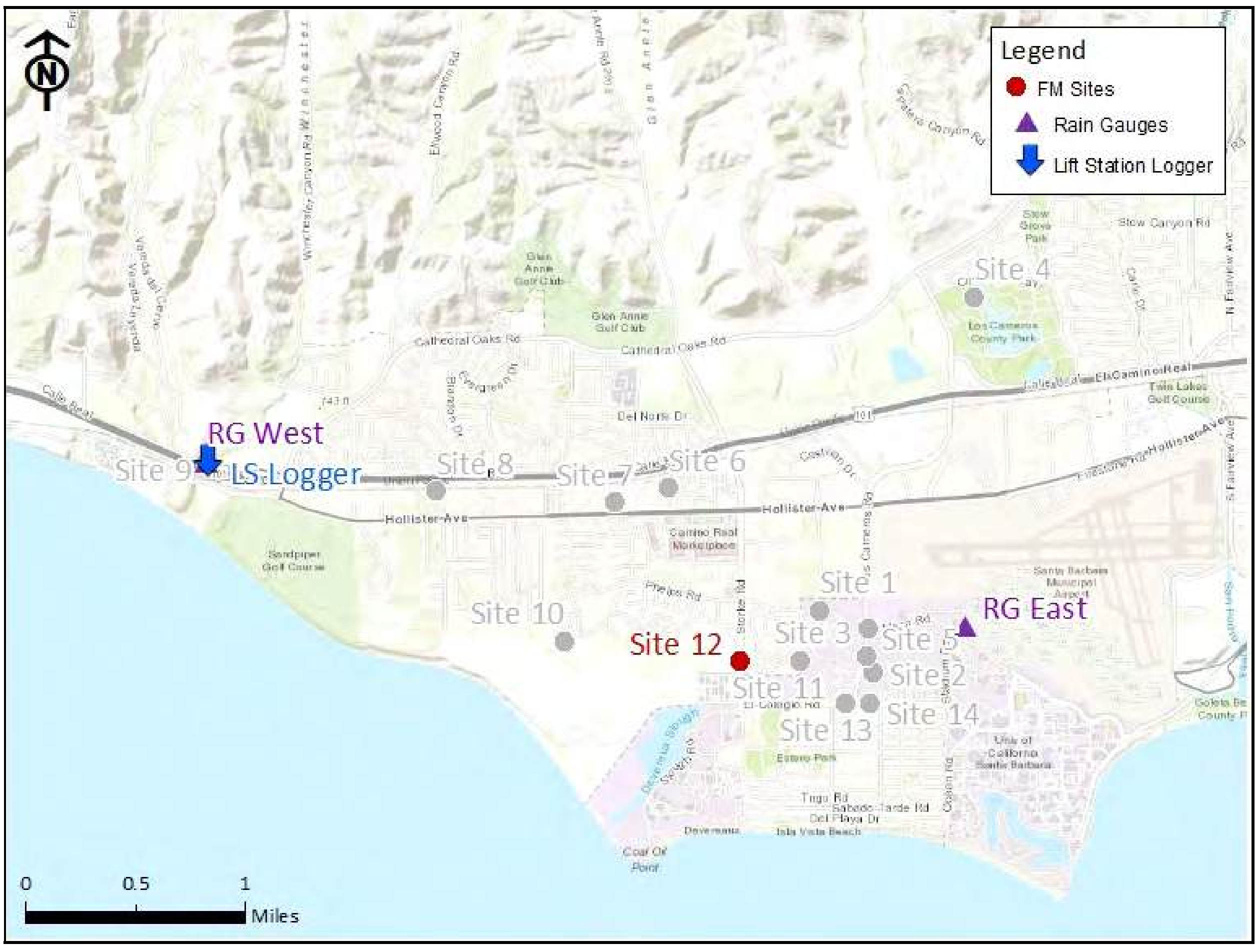
November 3, 2020 - February 7, 2021

Monitoring Site: Site 12

City Manhole: UCSB MH

Location: Storke Road north of Willogrove Drive

Data Summary Report



Vicinity Map: Site 12

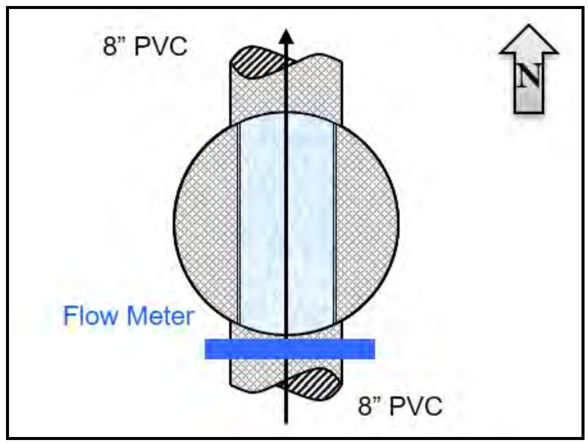
SITE 12

Site Information

Location:	Storke Road north of Willogrove Drive
City Manhole:	UCSB MH
Coordinates:	119.8698° W, 34.4202° N
Rim Elevation (Earth):	17 feet
Pipe Diameter:	8 inches
ADWF:	0.020 mgd
Peak Measured Flow:	0.205 mgd

Satellite Map

Sanitary Map



Flow Sketch


Street View


Plan View

SITE 12

Additional Site Photos

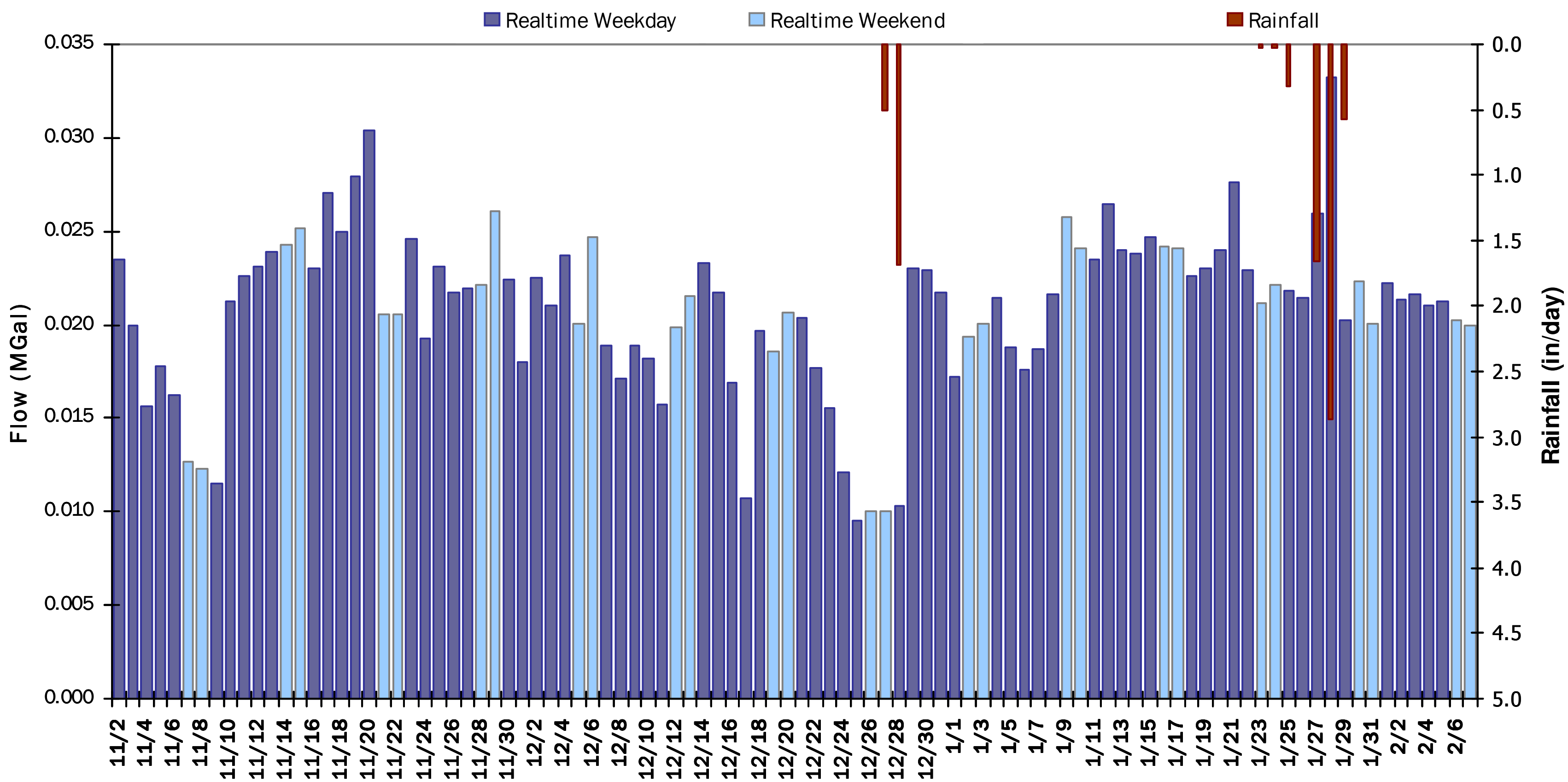
Monitored South Influent

North Effluent

SITE 12
Period Flow Summary: Daily Flow Totals

Avg Period Flow: 0.021 MGal **Peak Daily Flow: 0.033 MGal** **Min Daily Flow: 0.010 MGal**

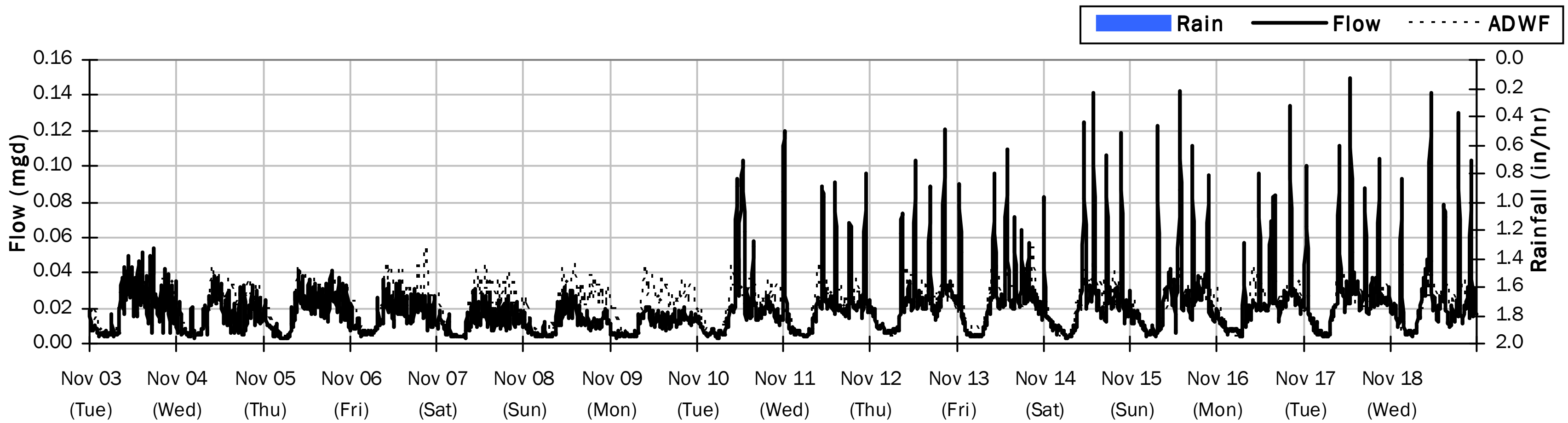
Total Period Rainfall: 7.69 inches

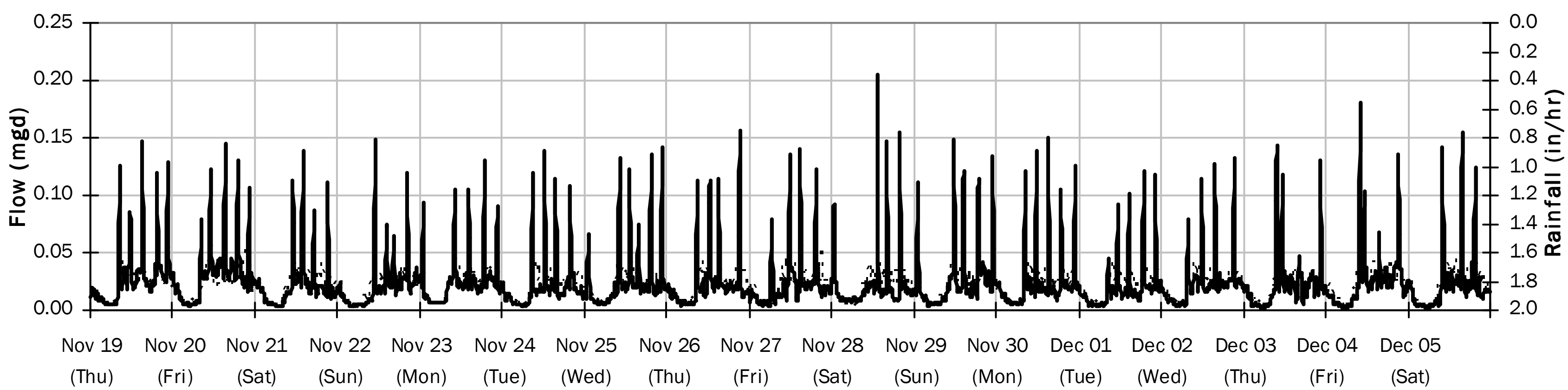


SITE 12

Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   **Avg Flow: 0.021 mgd   Peak Flow: 0.205 mgd   Min Flow: 0.002 mgd**

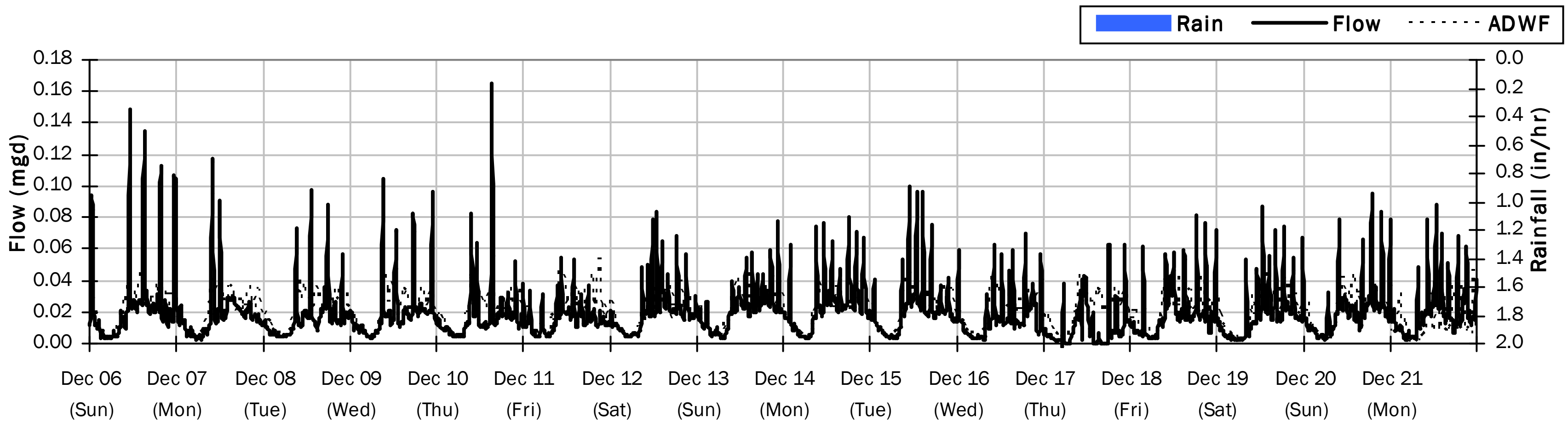


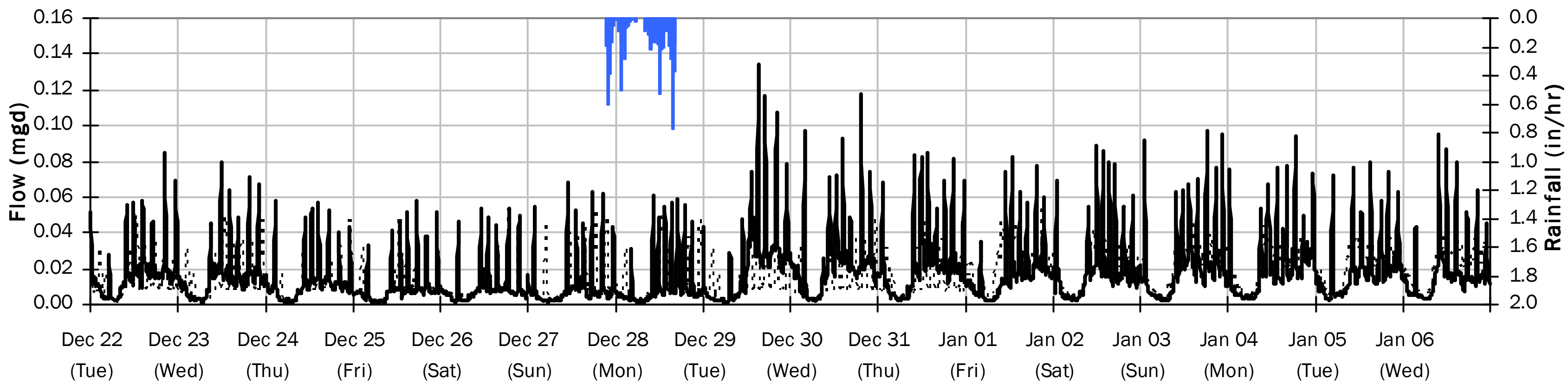


SITE 12

Flow Summary: 12/6/2020 to 1/6/2021

Total Period Rainfall: 2.20 inches   **Avg Flow: 0.018 mgd**   **Peak Flow: 0.165 mgd**   **Min Flow: -0.002 mgd**

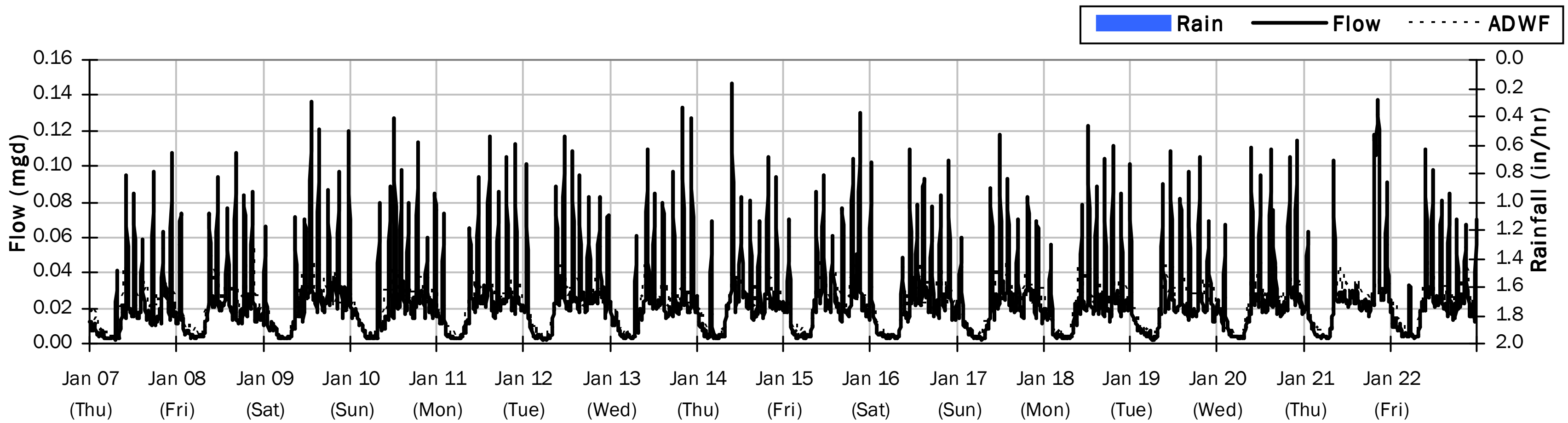


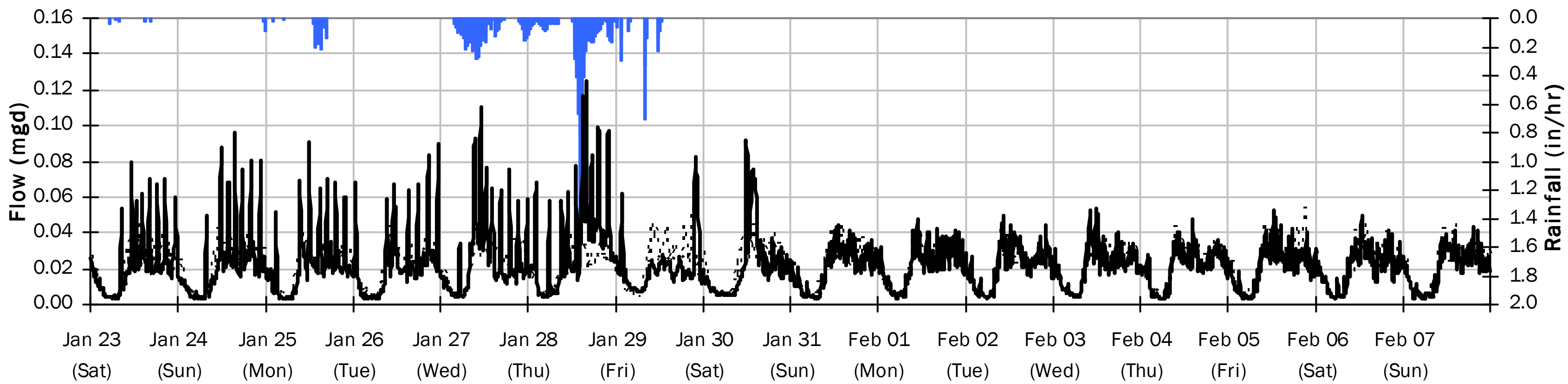


SITE 12

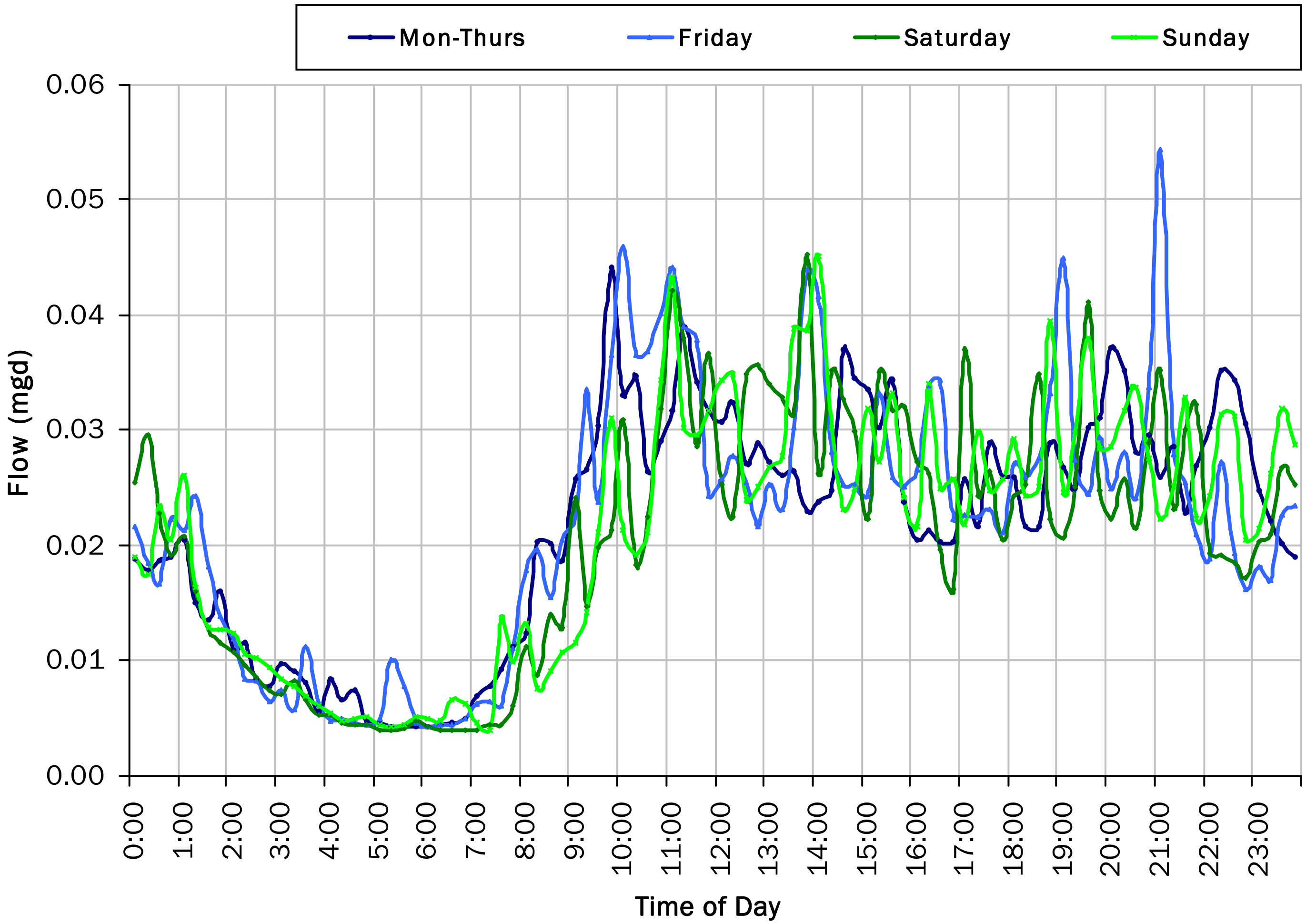
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 5.49 inches Avg Flow: 0.023 mgd Peak Flow: 0.147 mgd Min Flow: 0.002 mgd



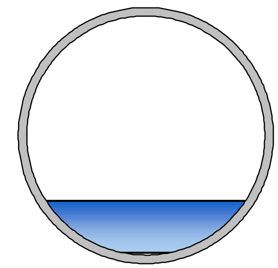


SITE 12
Average Dry Weather Flow Hydrographs



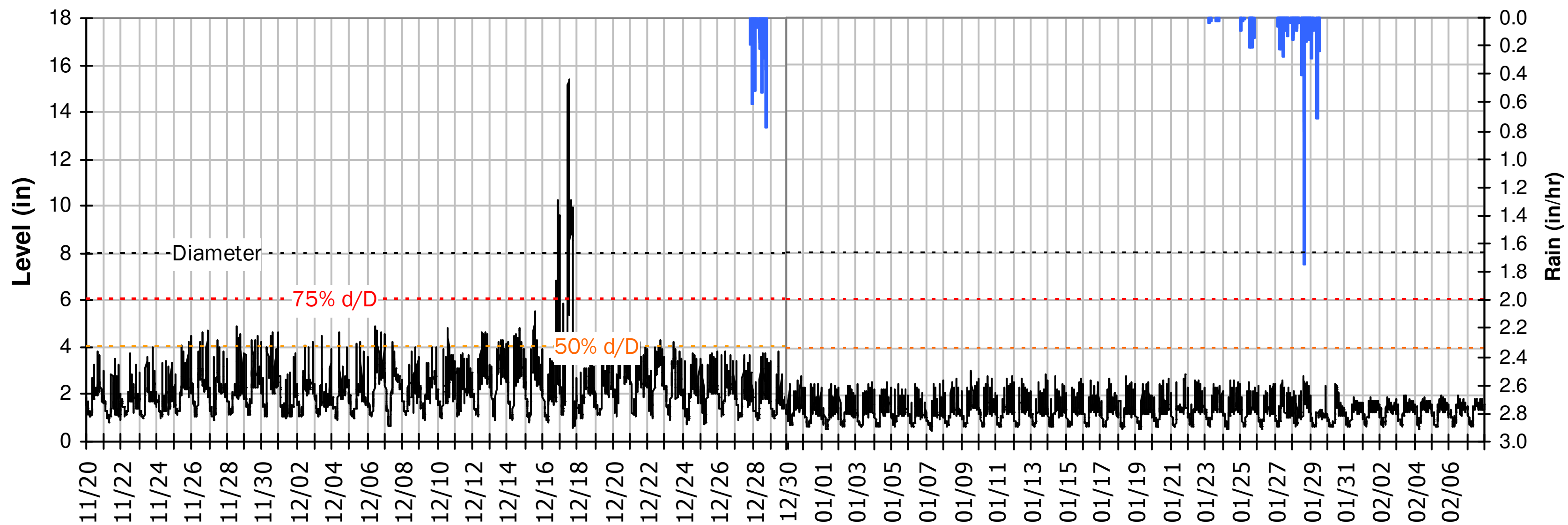
ADWF:

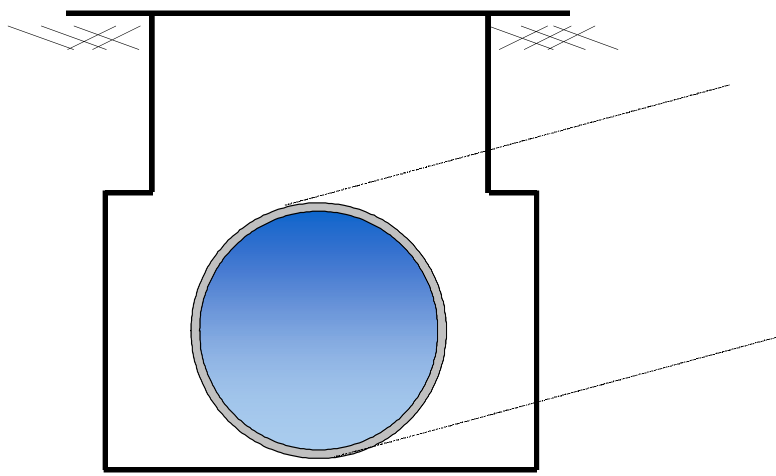
0.020 *mgd*



SITE 12
Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period



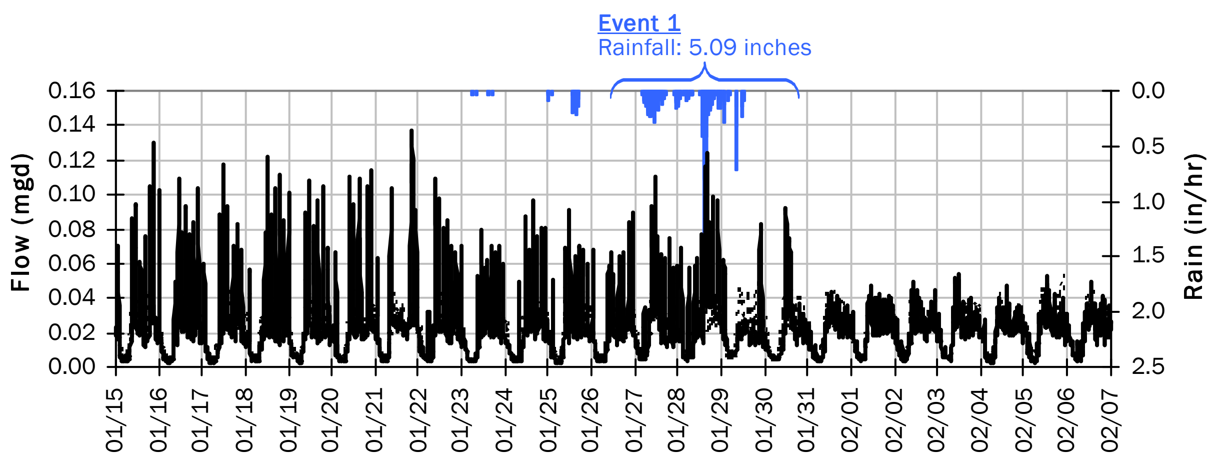


Pipe Diameter:	8	*inches*
Peak Measured Level:	15.4	*inches*
Peak d/D Ratio:	1.92	

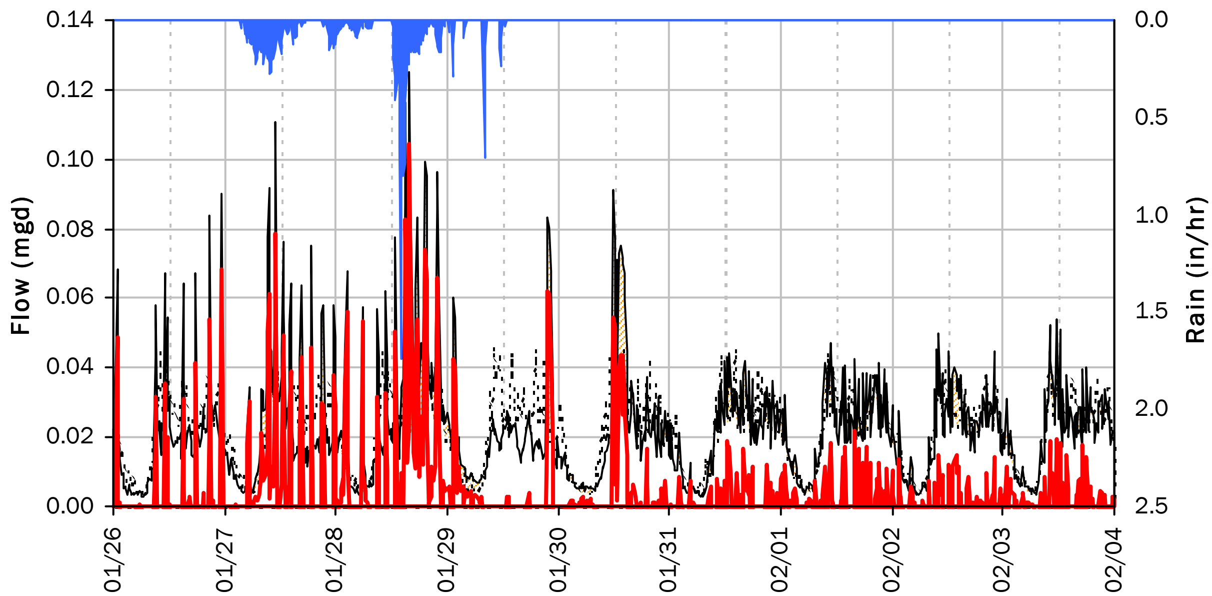
Surcharged 7.4 inches over crown

SITE 12
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



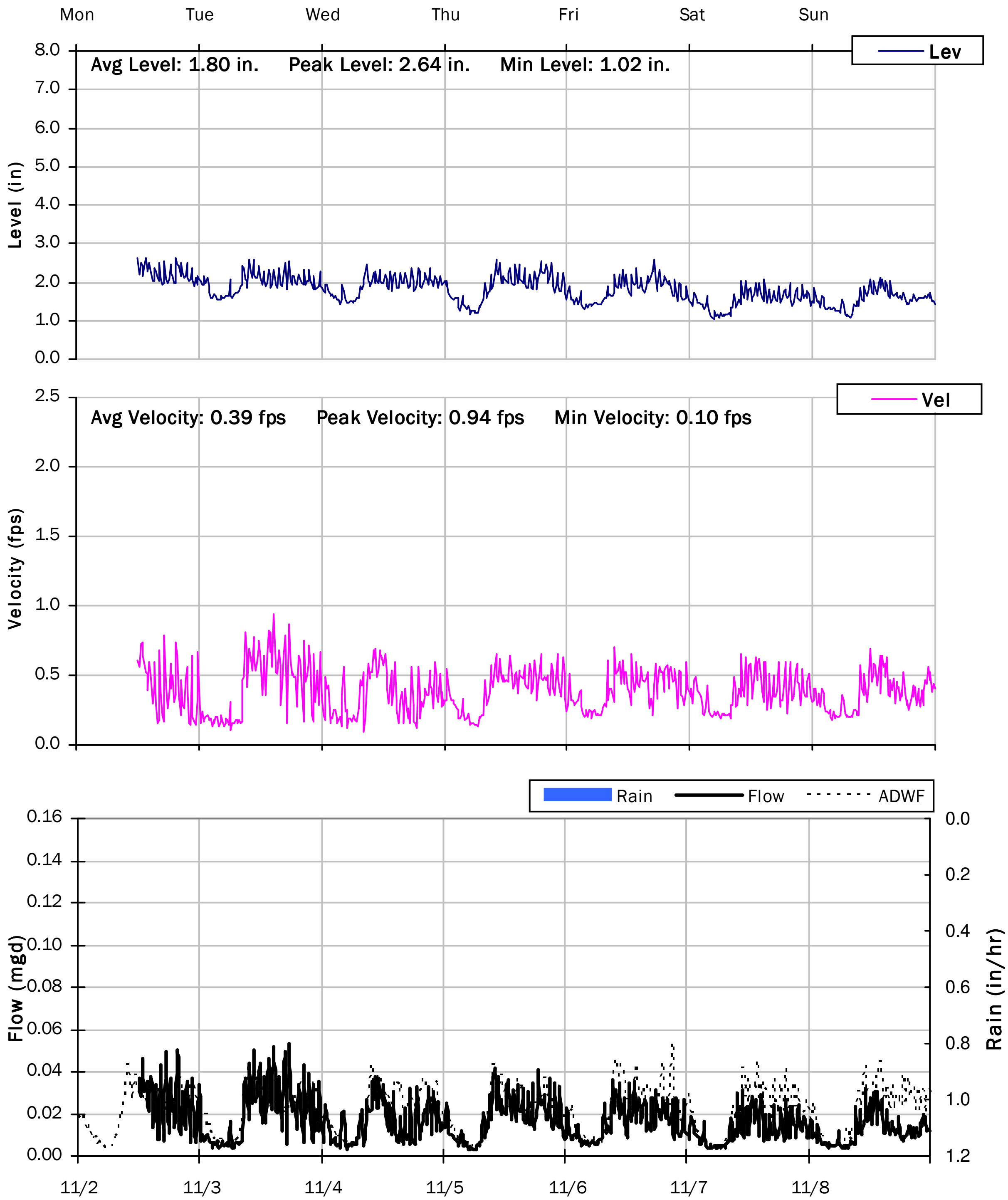
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 5.09 inches)

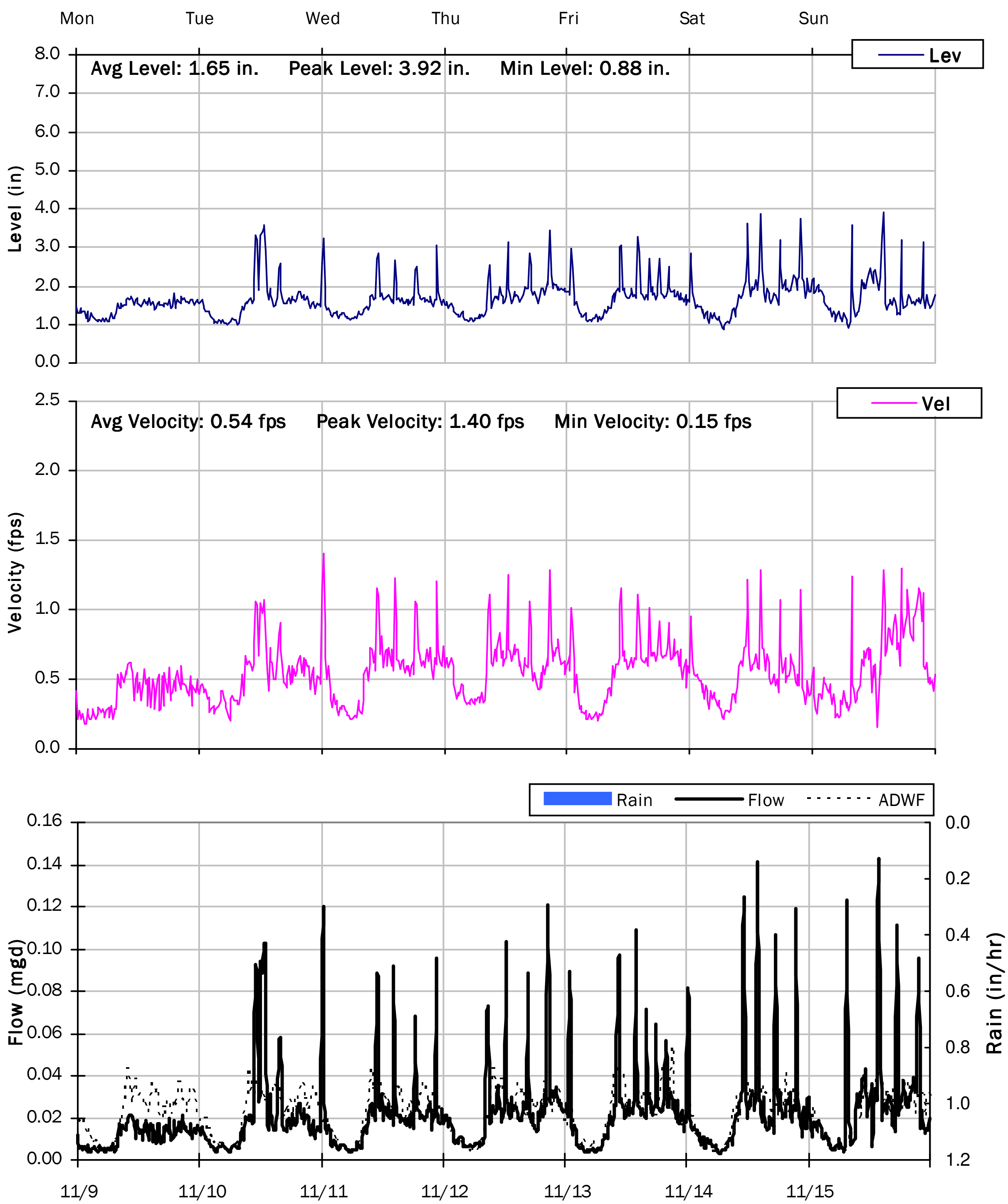
Capacity		**Inflow / Infiltration**	
Peak Flow:	0.12 *mgd*	**Peak I/I Rate:**	0.10 *mgd*
PF:	6.15	**Total I/I:**	14,000 *gallons*
Peak Level:	2.76 *in*		
d/D Ratio:	0.35		

SITE 12
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



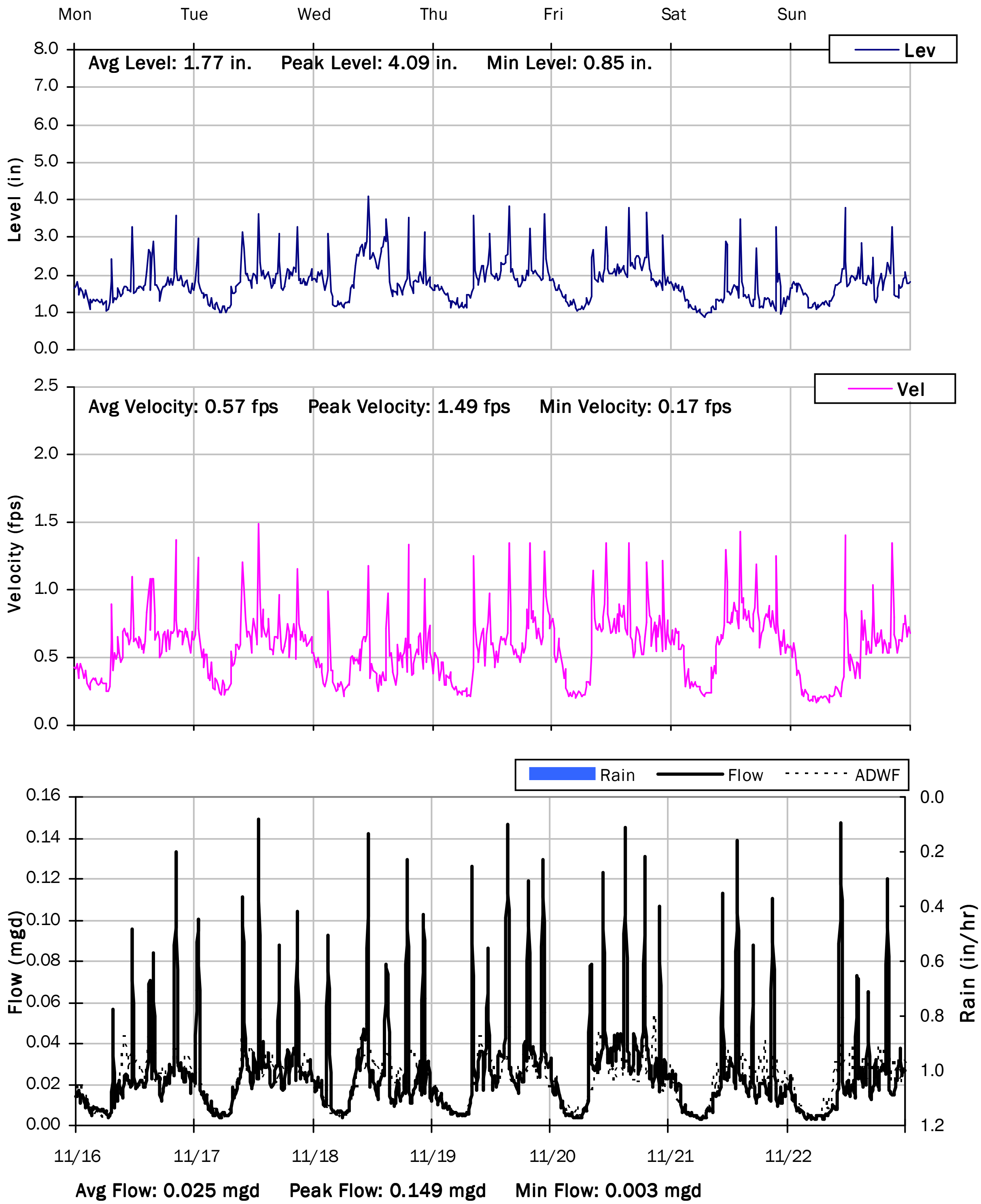
Avg Flow: 0.016 mgd **Peak Flow: 0.054 mgd** **Min Flow: 0.003 mgd**

SITE 12
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020

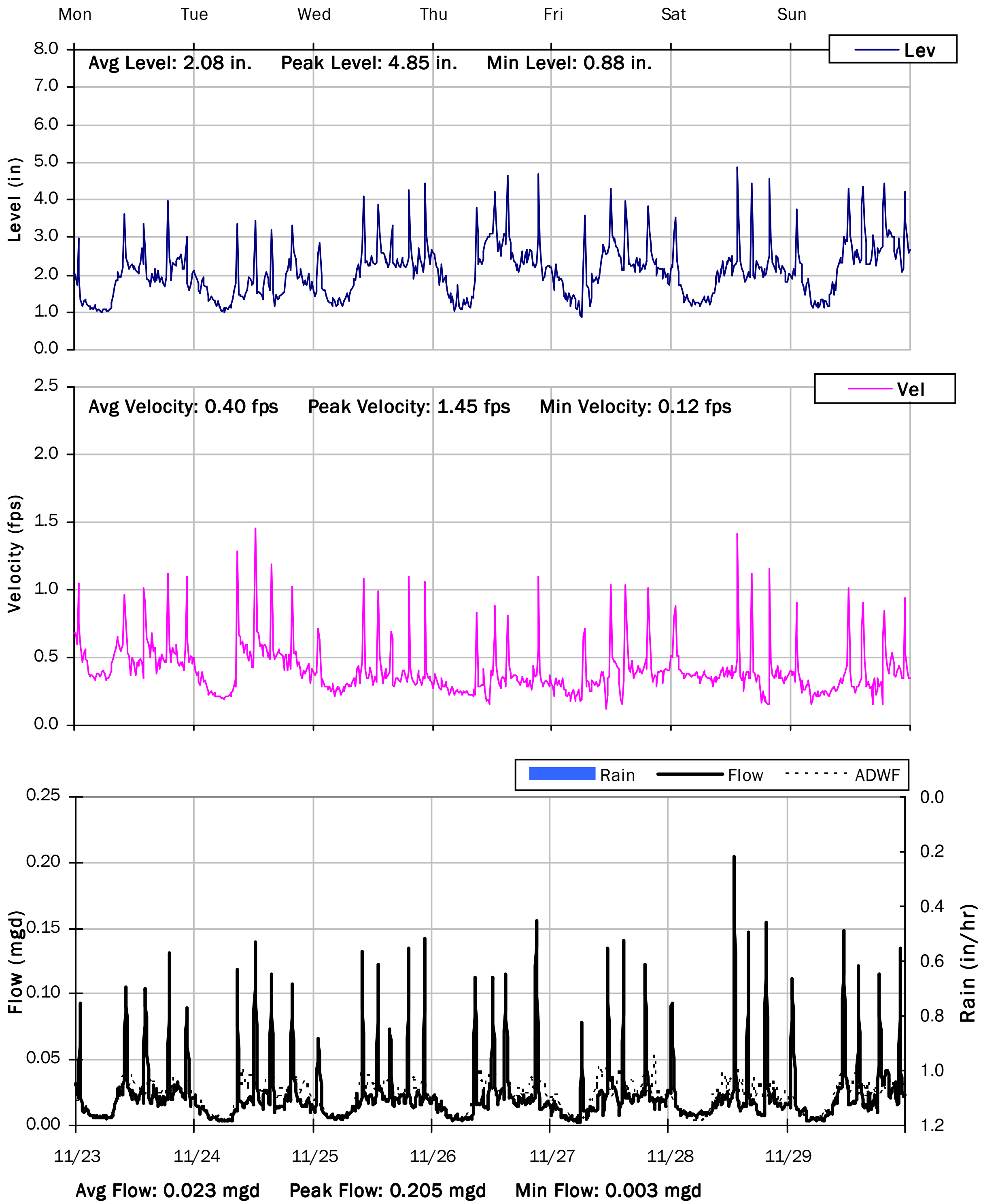


Avg Flow: 0.022 mgd **Peak Flow: 0.142 mgd** **Min Flow: 0.003 mgd**

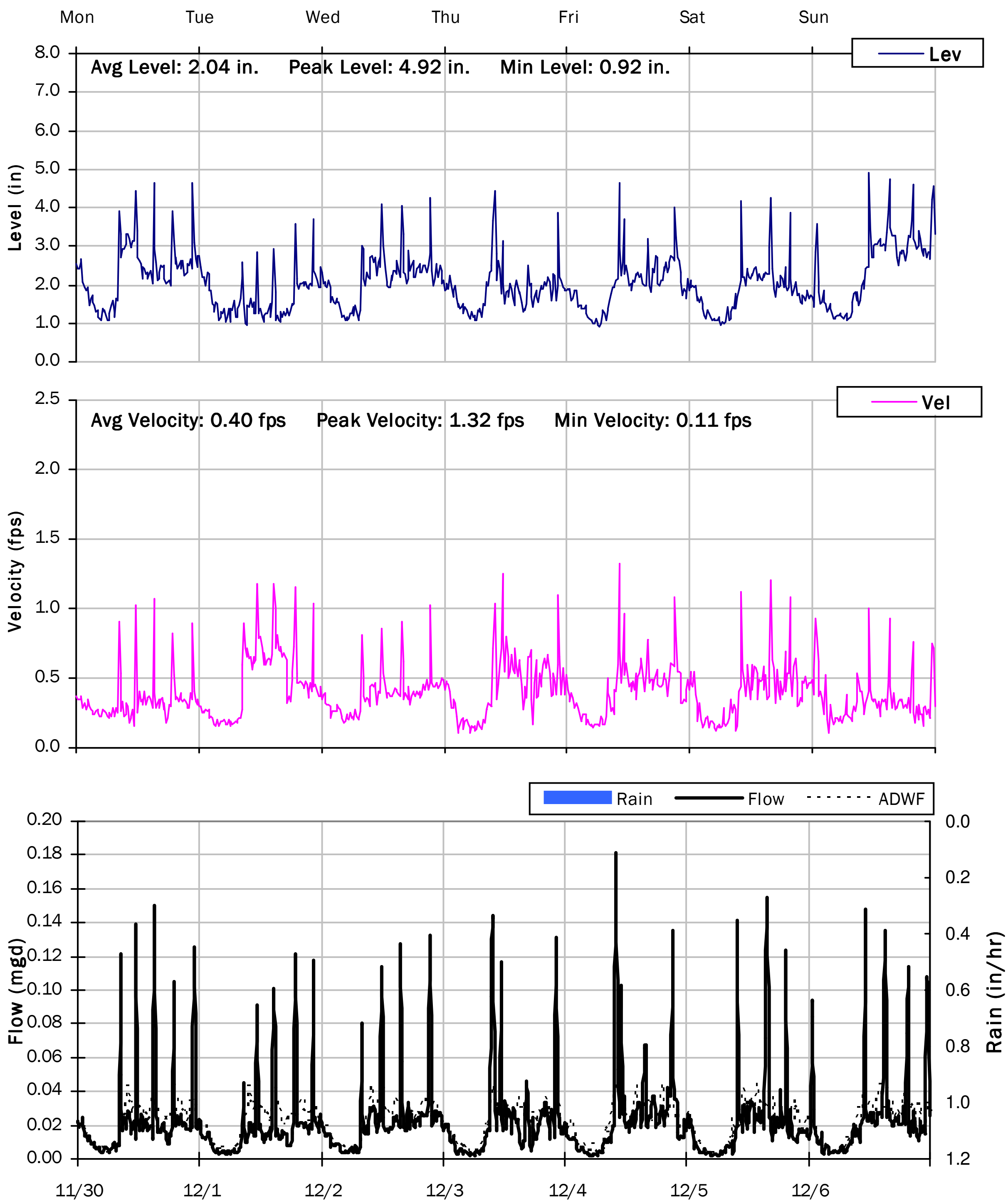
SITE 12
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020



SITE 12
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

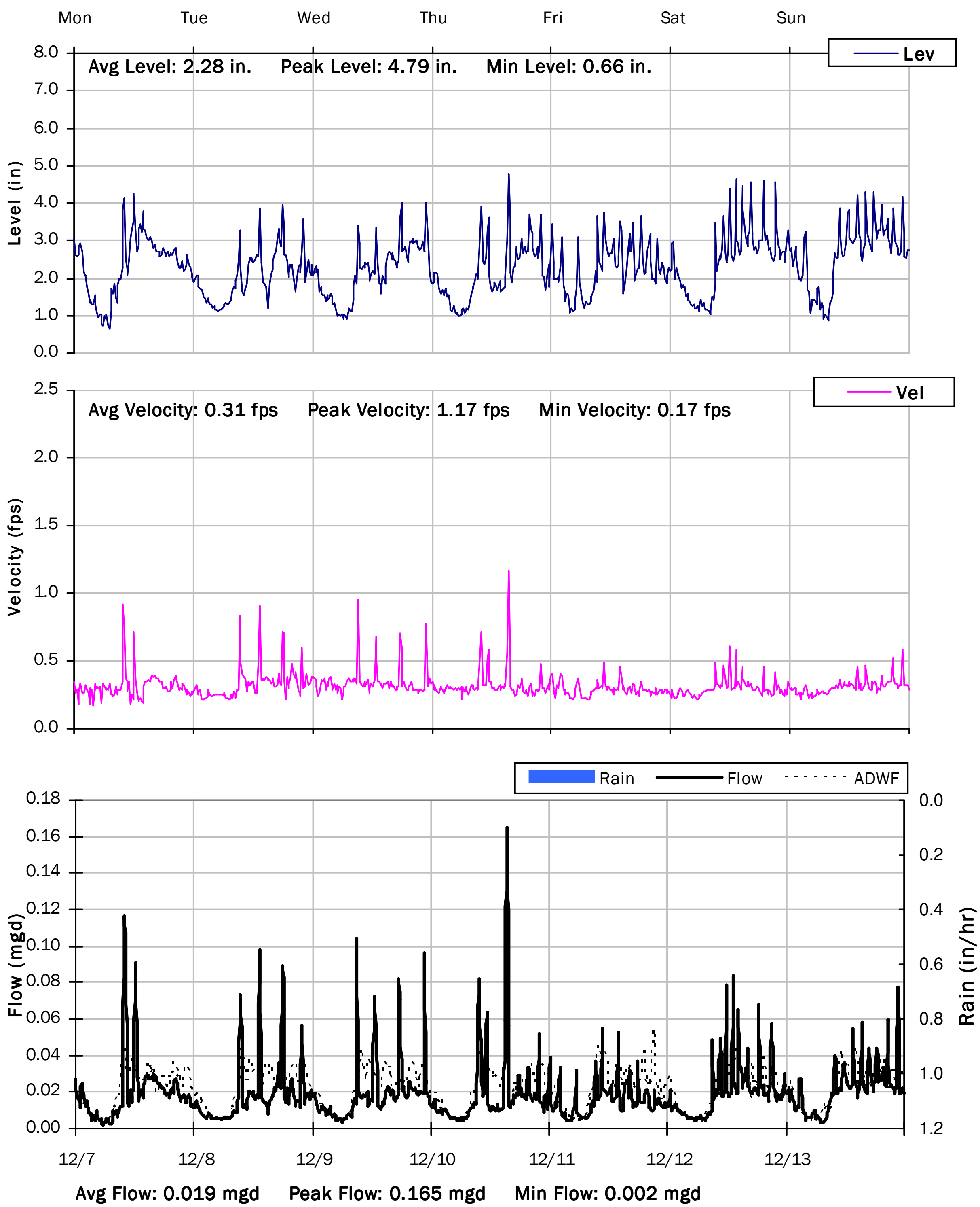


SITE 12
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

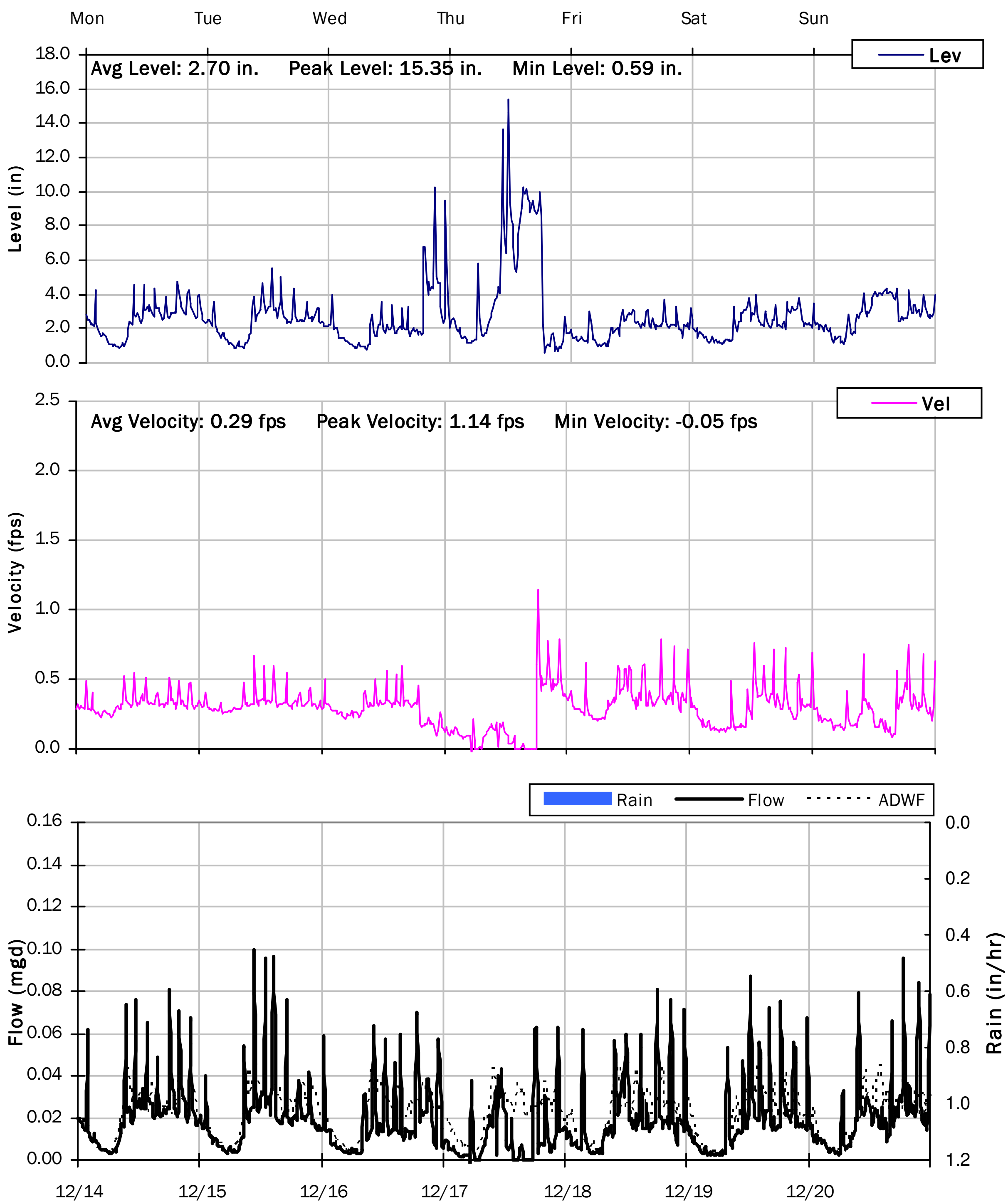


Avg Flow: 0.022 mgd **Peak Flow: 0.181 mgd** **Min Flow: 0.002 mgd**

SITE 12
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

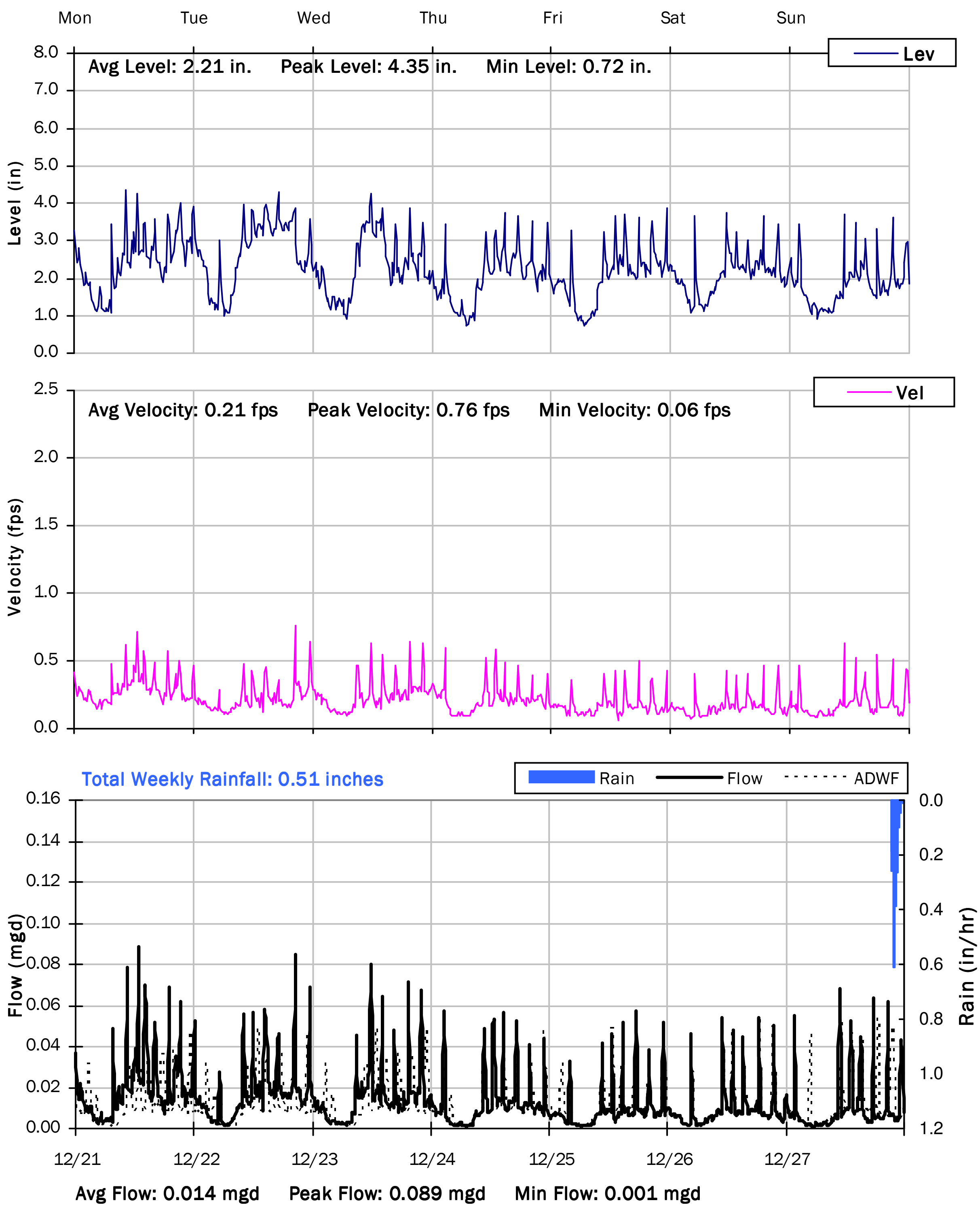


SITE 12
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

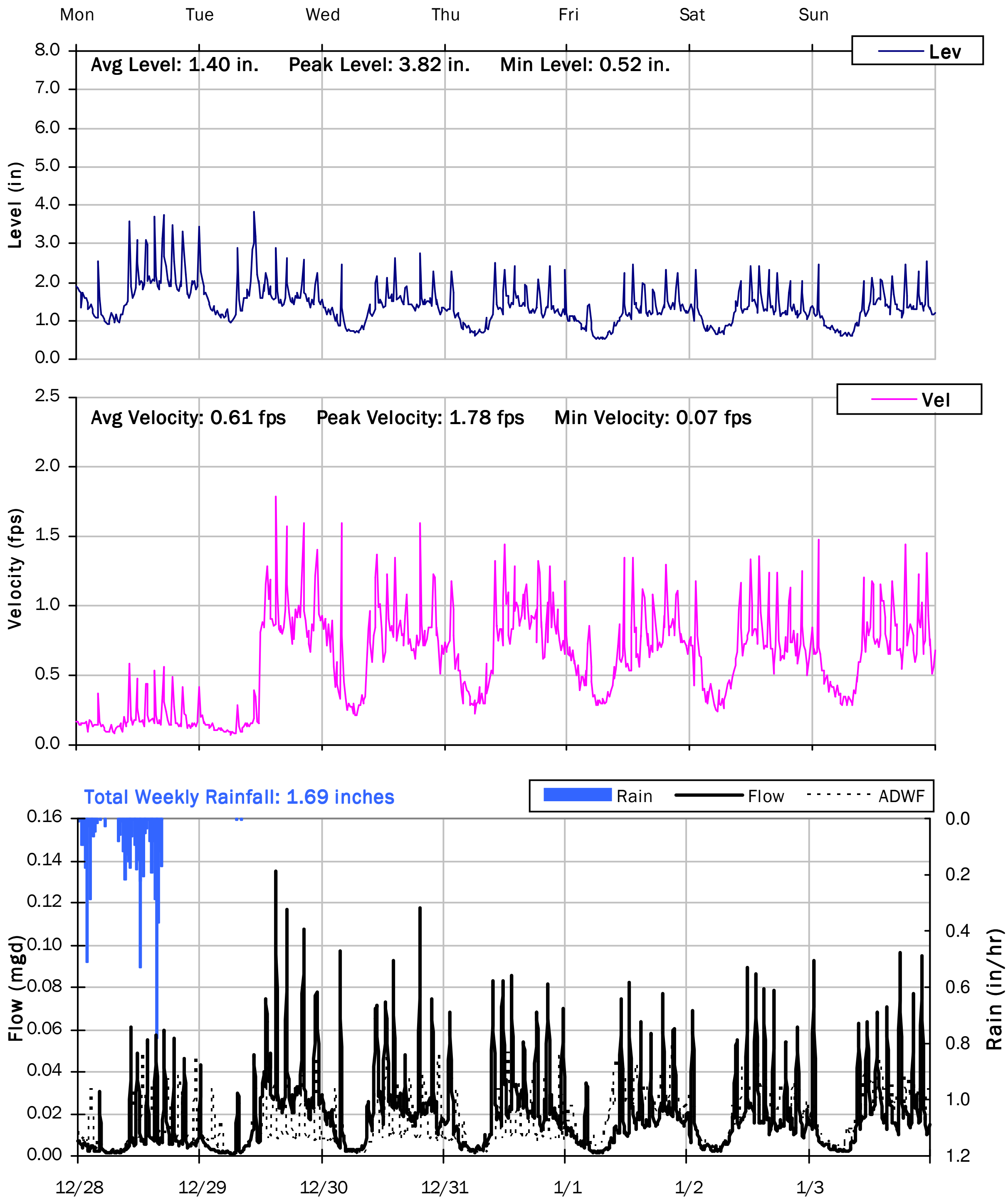


Avg Flow: 0.019 mgd **Peak Flow: 0.100 mgd** **Min Flow: -0.002 mgd**

SITE 12
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020

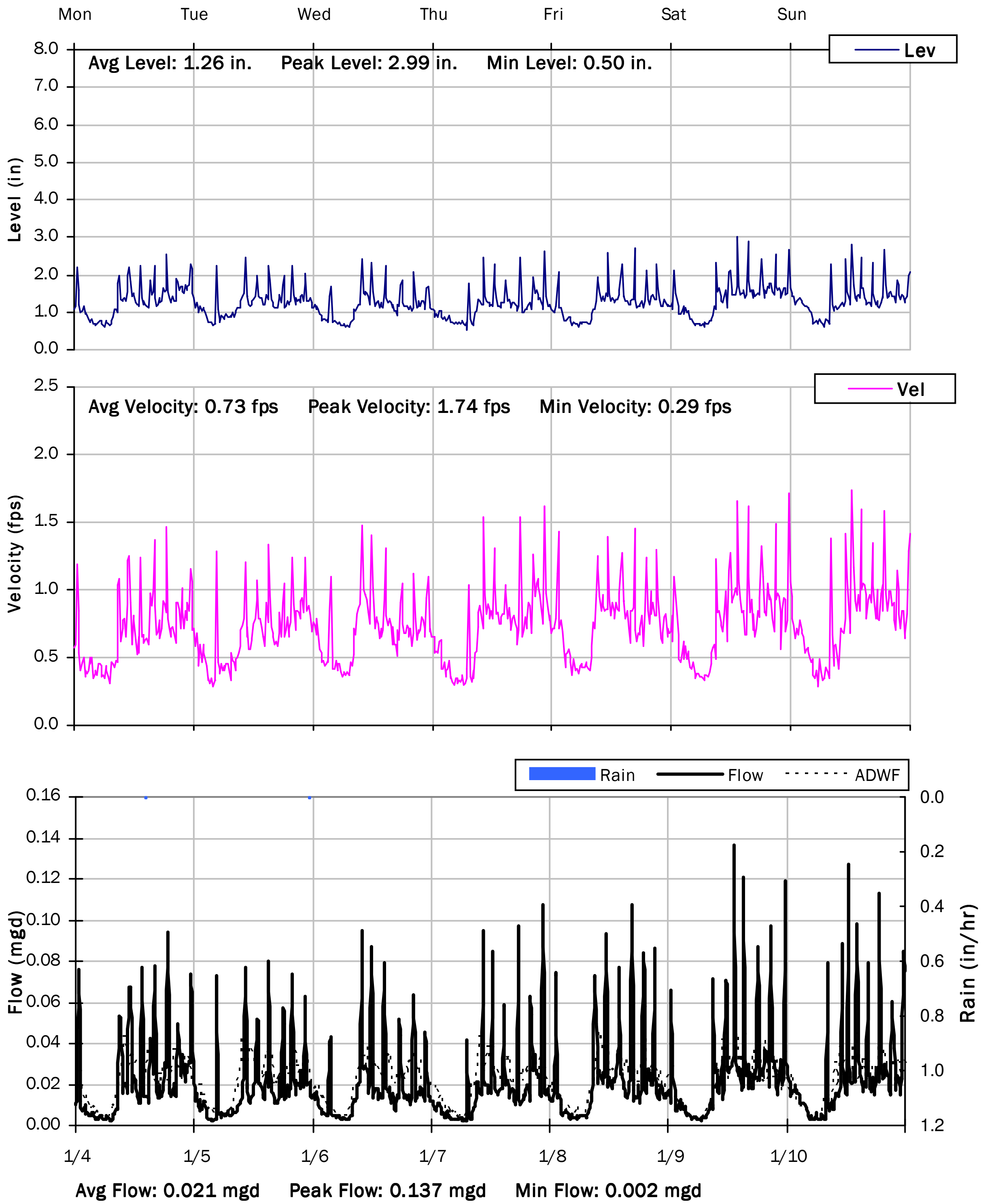


SITE 12
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

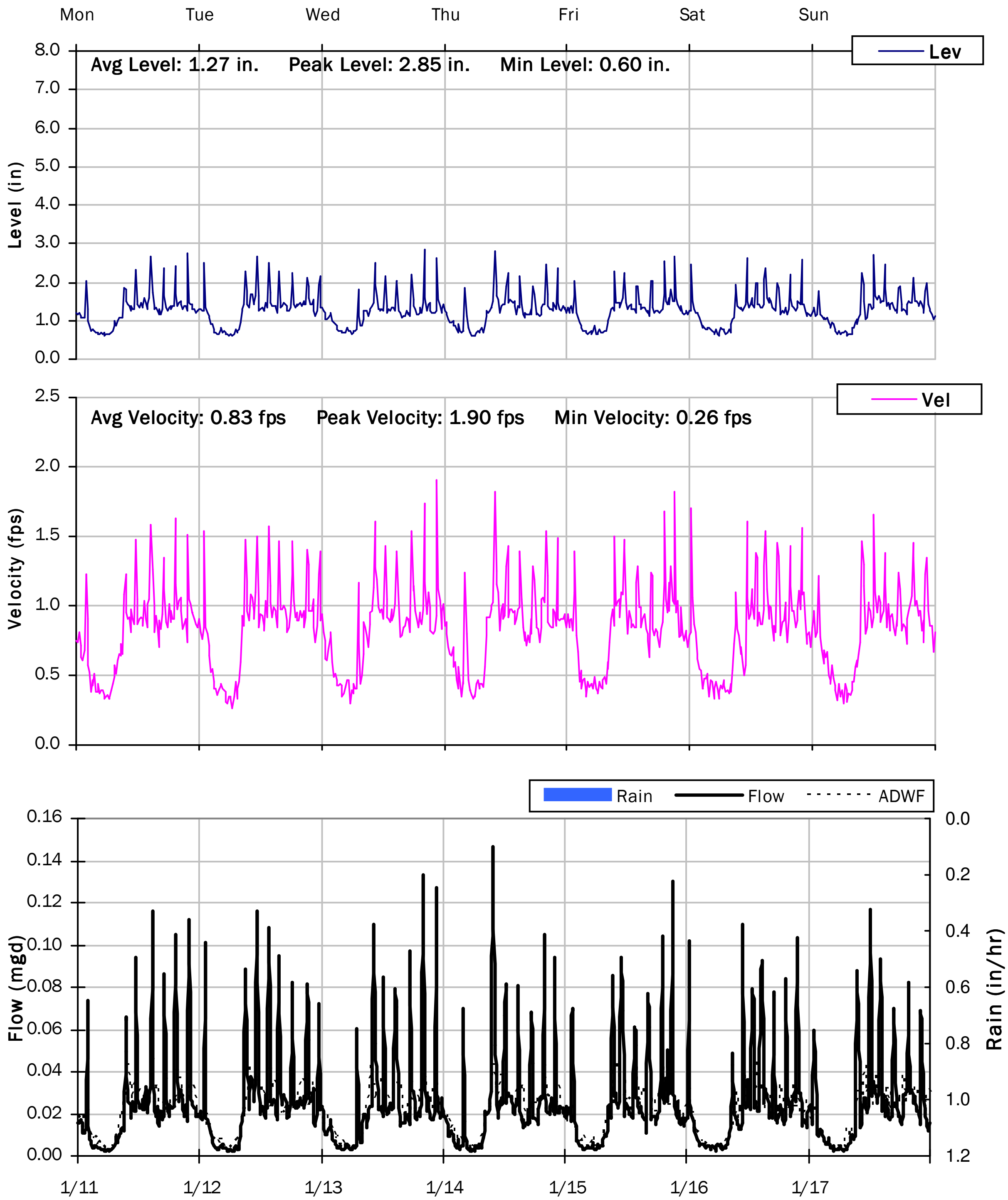


Avg Flow: 0.019 mgd Peak Flow: 0.135 mgd Min Flow: 0.001 mgd

SITE 12
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021



SITE 12
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

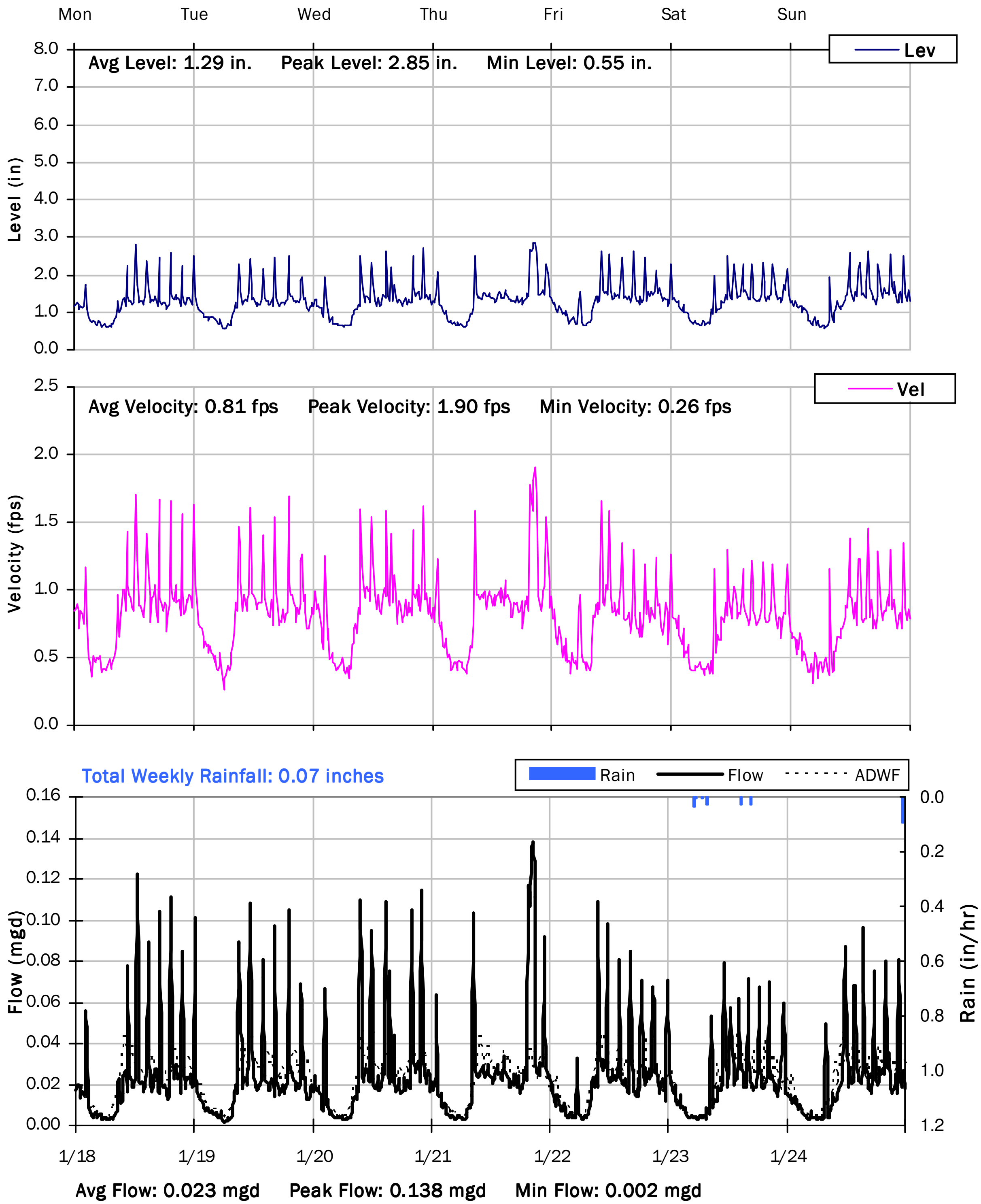


Avg Flow: 0.024 mgd Peak Flow: 0.147 mgd Min Flow: 0.002 mgd

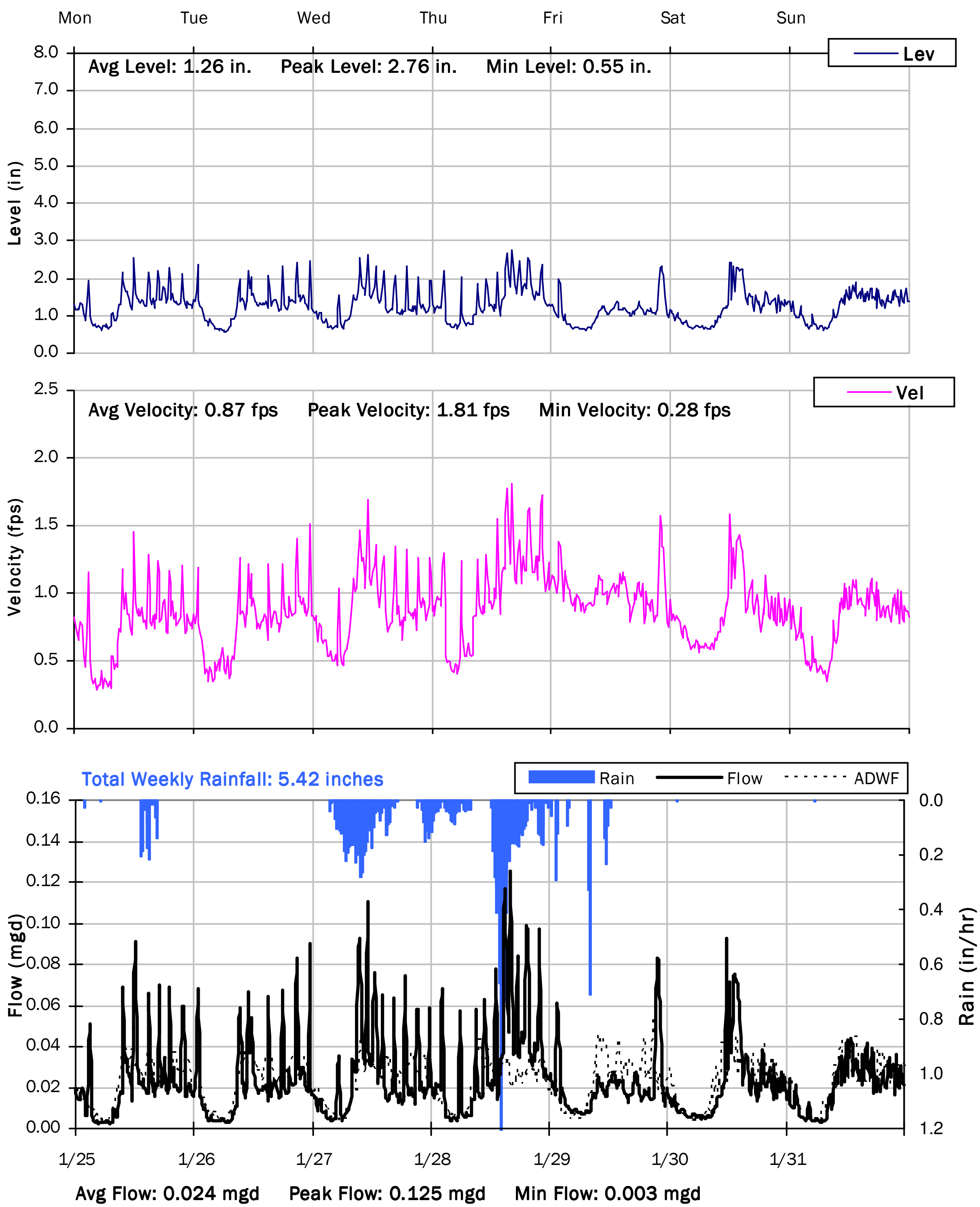
SITE 12

Weekly Level, Velocity and Flow Hydrographs

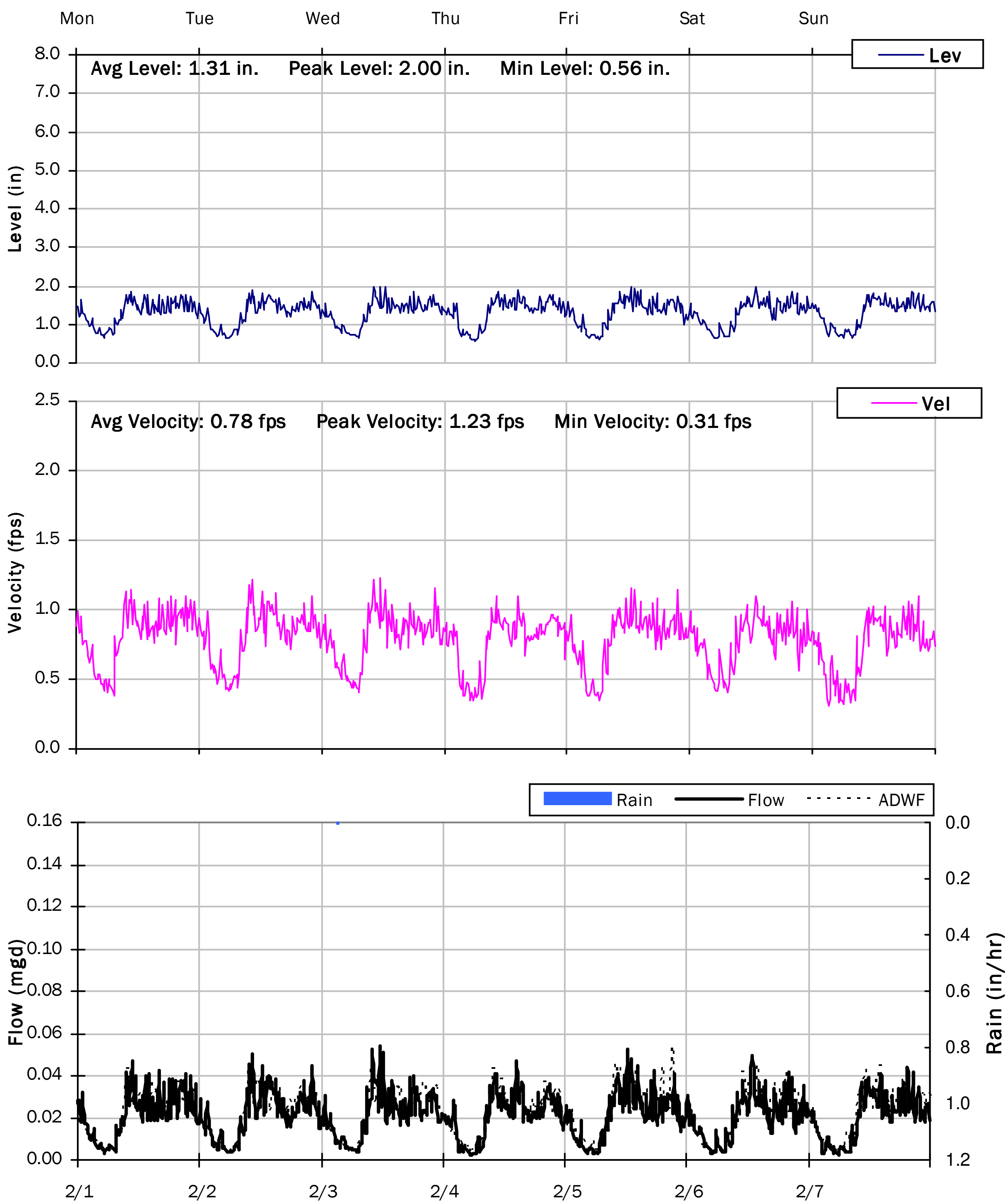
1/18/2021 to 1/25/2021



SITE 12
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 12
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021



Avg Flow: 0.021 mgd **Peak Flow: 0.054 mgd** **Min Flow: 0.003 mgd**

Goleta West Sanitary District

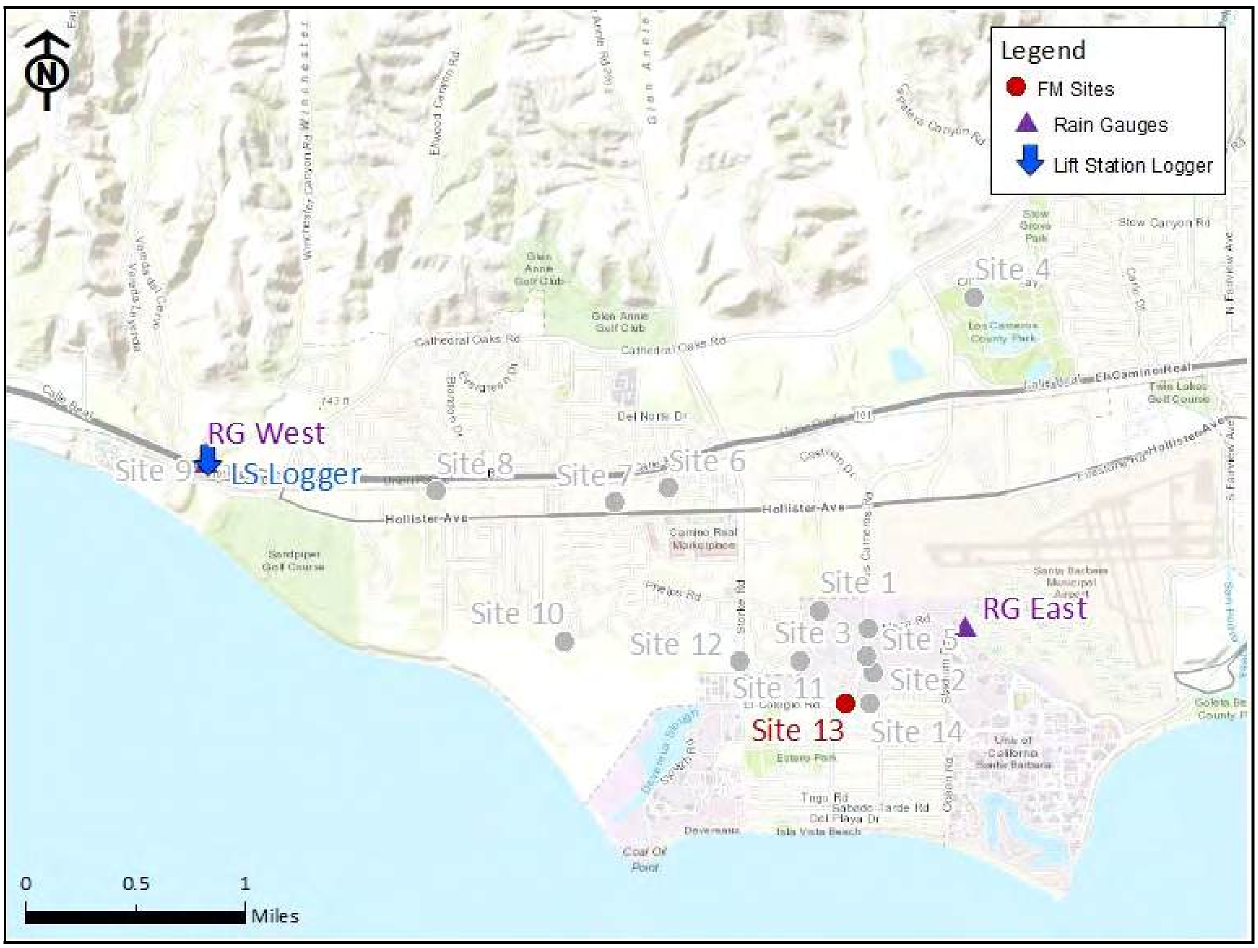
Sanitary Sewer Flow Monitoring
November 3, 2020 - February 7, 2021

Monitoring Site: Site 13

City Manhole: 75-02-08

Location: El Colegio Road west of S Los Carneros Road

Data Summary Report



Vicinity Map: Site 13

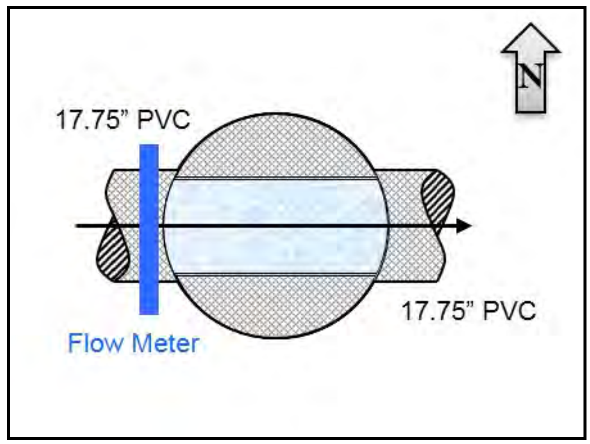
SITE 13

Site Information

Location:	El Colegio Road west of S Los Carneros Road
City Manhole:	75-02-08
Coordinates:	119.8614° W, 34.4174° N
Rim Elevation (Earth):	23 feet
Pipe Diameter:	17.75 inches
ADWF:	0.506 mgd
Peak Measured Flow:	0.996 mgd

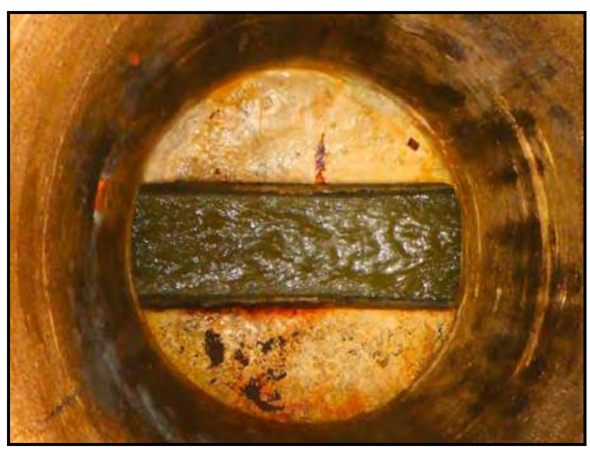
Satellite Map

Sanitary Map



Flow Sketch


Street View


Plan View

SITE 13

Additional Site Photos

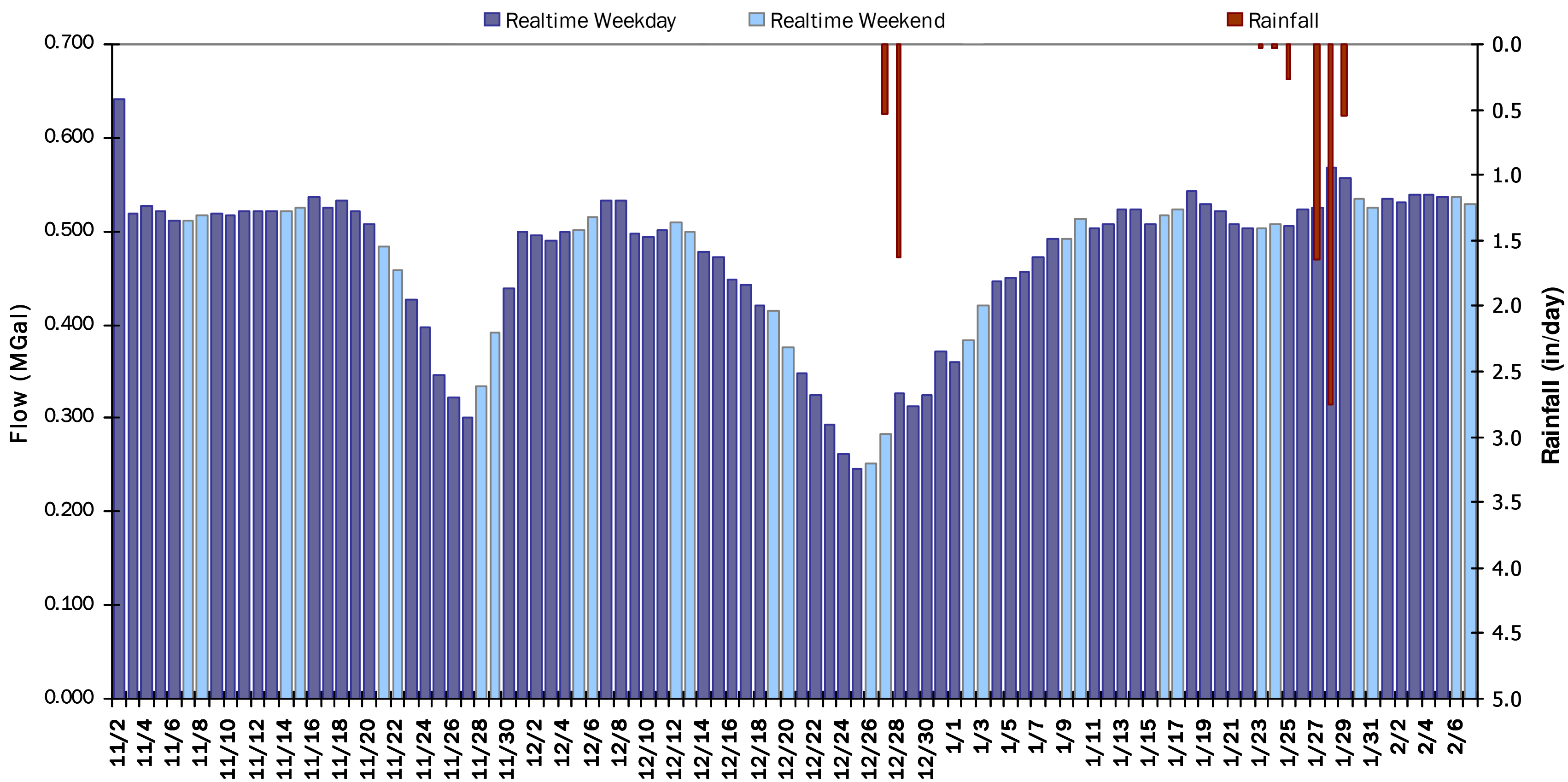
Monitored West Influent

East Effluent

SITE 13
Period Flow Summary: Daily Flow Totals

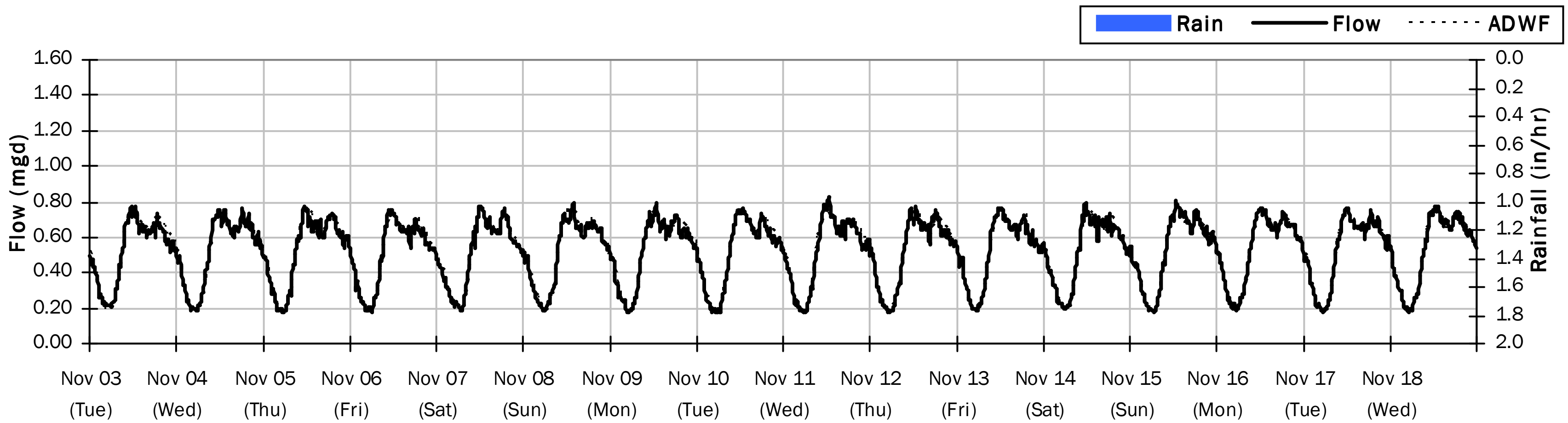
Avg Period Flow: 0.470 MGal   **Peak Daily Flow: 0.641 MGal**   **Min Daily Flow: 0.245 MGal**

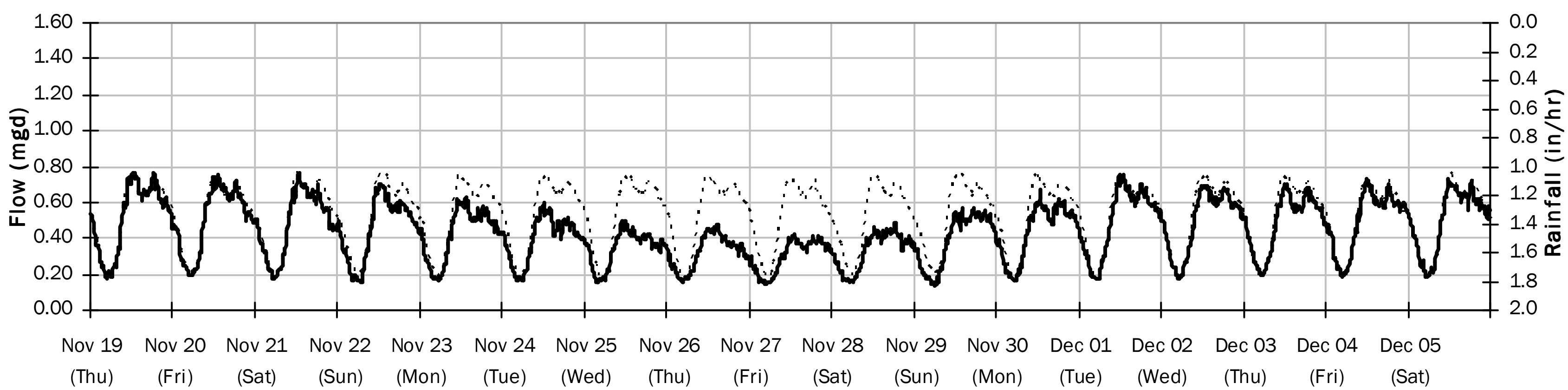
Total Period Rainfall: 7.46 inches



SITE 13
Flow Summary: 11/3/2020 to 12/5/2020

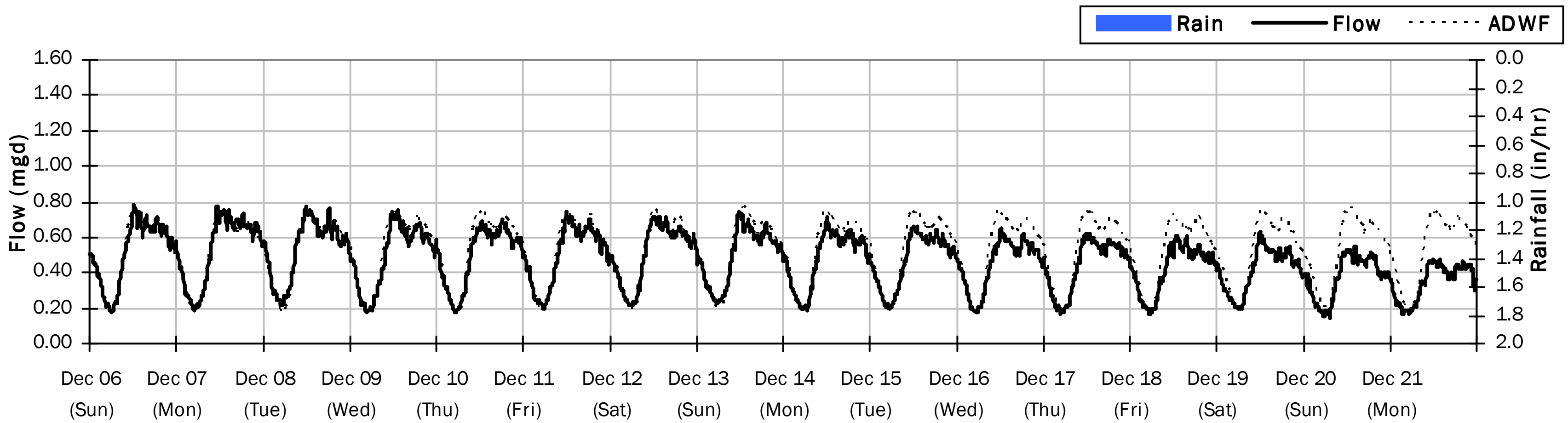
Total Period Rainfall: 0.00 inches Avg Flow: 0.478 mgd Peak Flow: 0.826 mgd Min Flow: 0.131 mgd

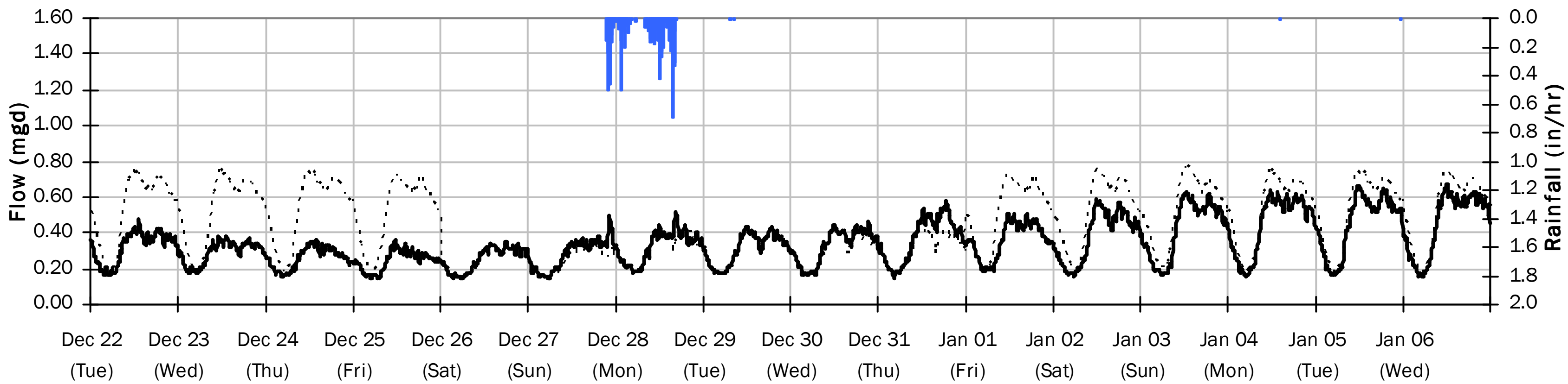




SITE 13
Flow Summary: 12/6/2020 to 1/6/2021

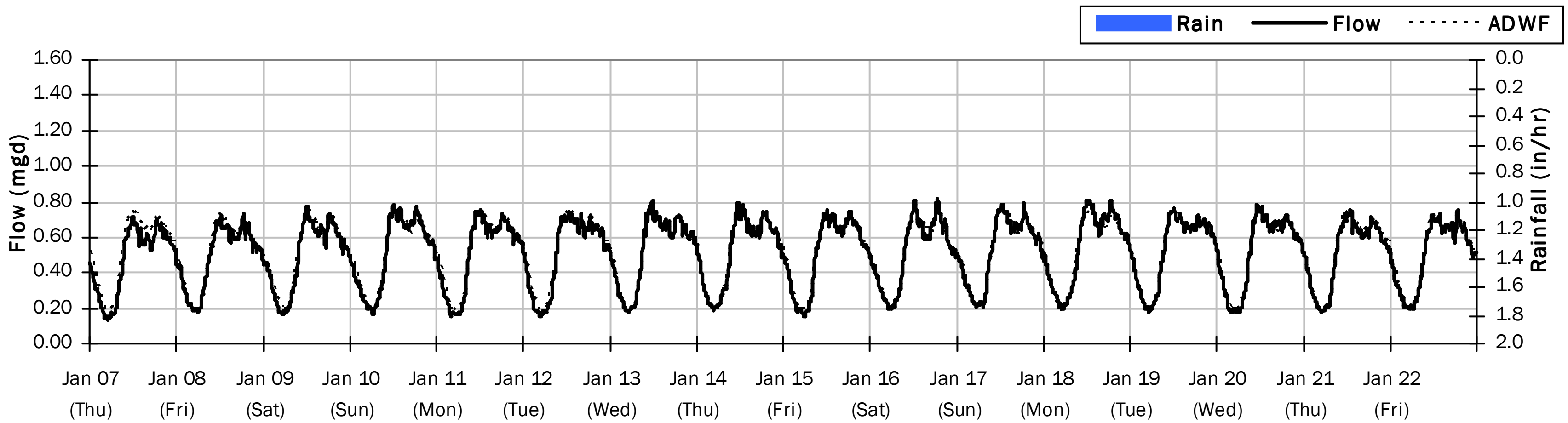
Total Period Rainfall: 2.18 inches   **Avg Flow: 0.406 mgd**   **Peak Flow: 0.788 mgd**   **Min Flow: 0.140 mgd**

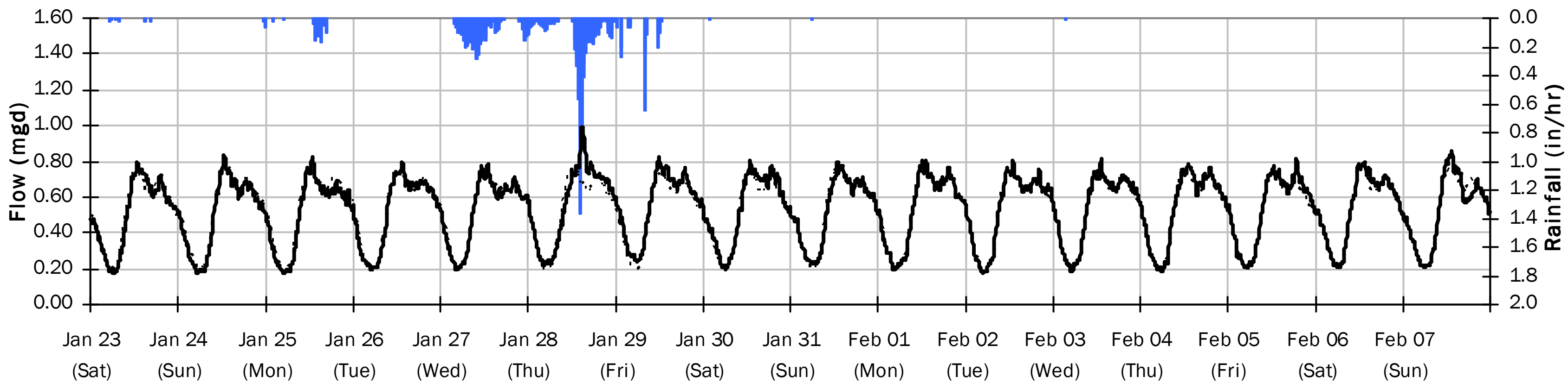




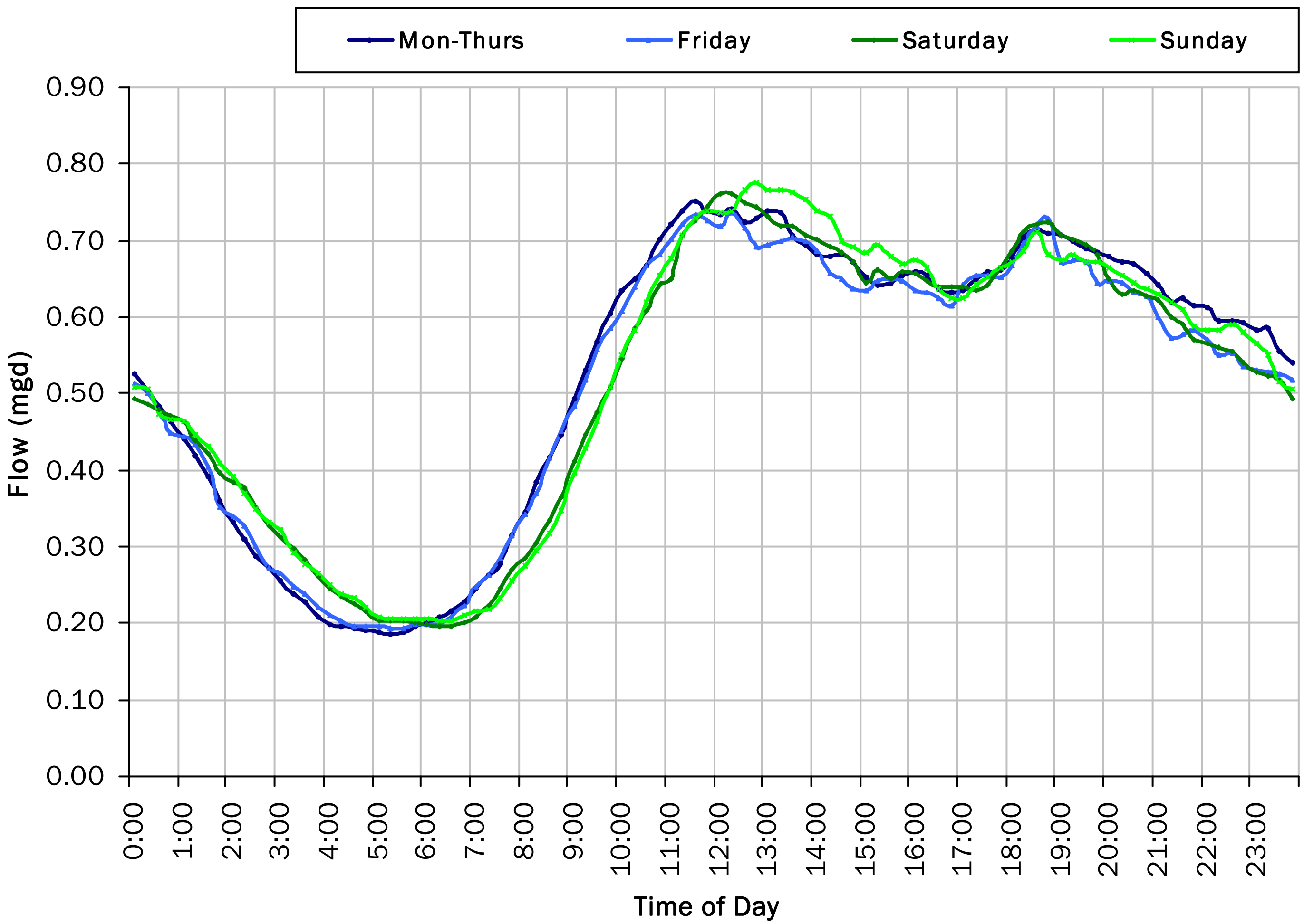
SITE 13
Flow Summary: 1/7/2021 to 2/7/2021

Total Period Rainfall: 5.28 inches Avg Flow: 0.521 mgd Peak Flow: 0.996 mgd Min Flow: 0.137 mgd



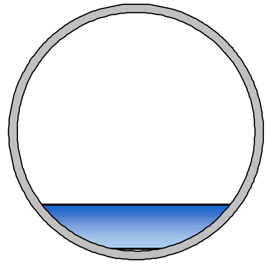


SITE 13
Average Dry Weather Flow Hydrographs



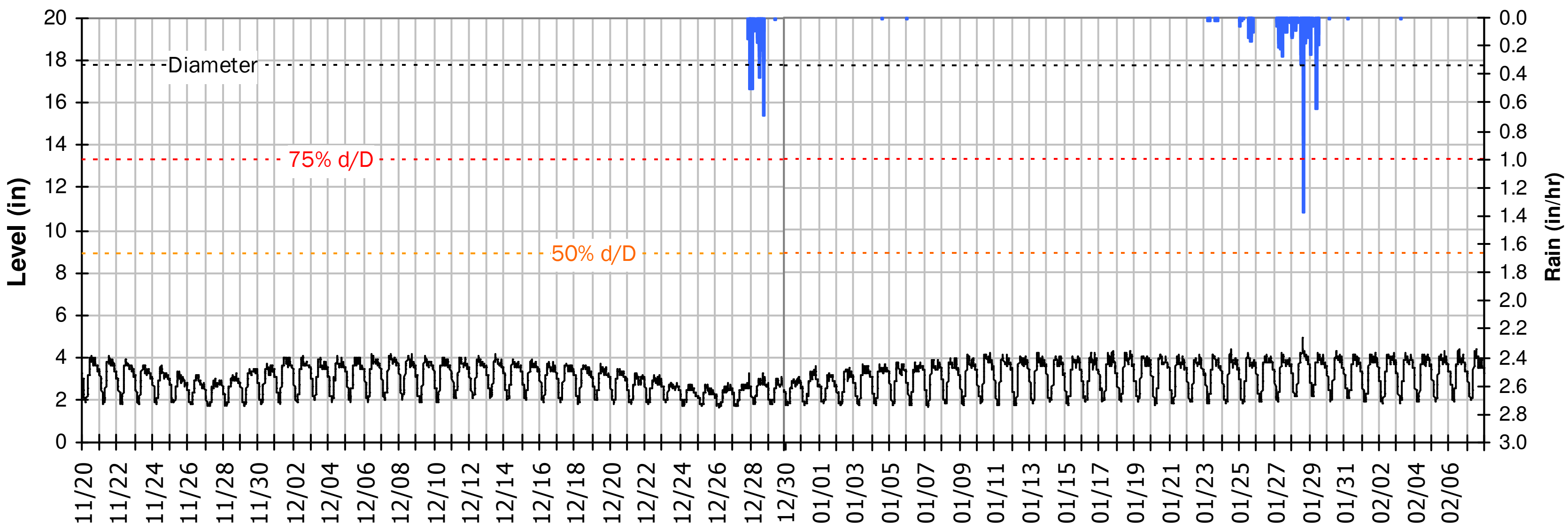
ADWF:

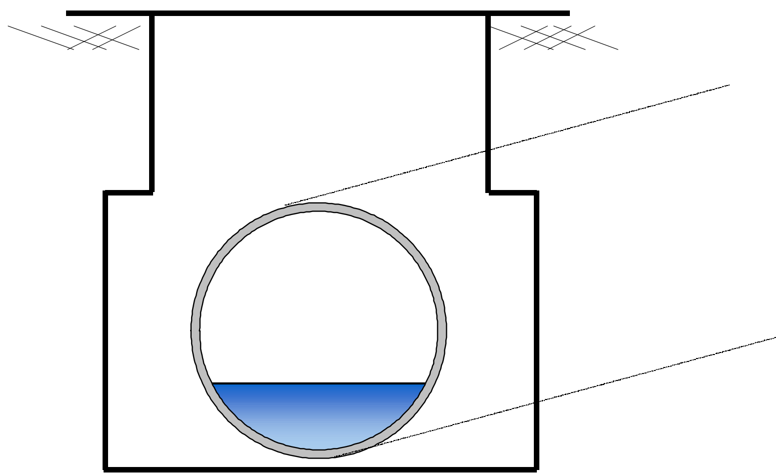
0.506 *mgd*



SITE 13
Site Capacity and Surcharge Summary

<u>Realtime Flow Levels with Rainfall Data over Monitoring Period</u>





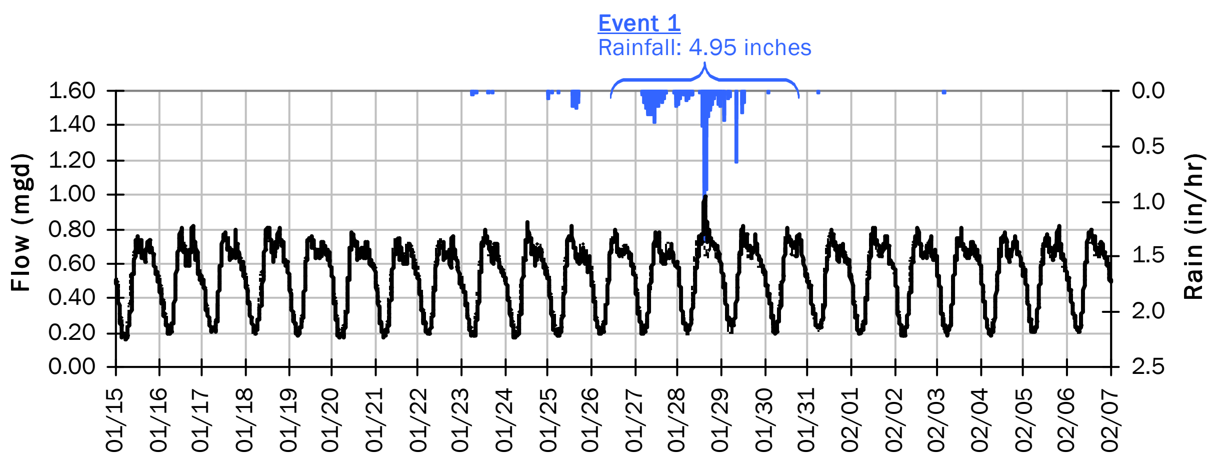
Pipe Diameter: 17.8 *inches*

Peak Measured Level: 4.93 *inches*

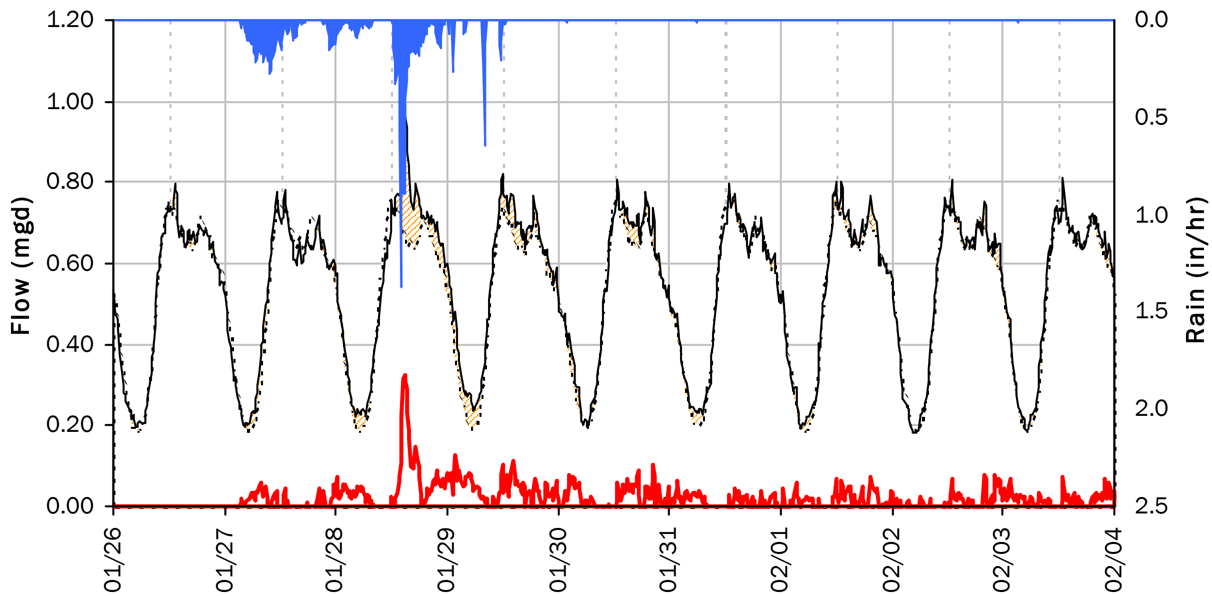
Peak d/D Ratio: 0.28

SITE 13
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



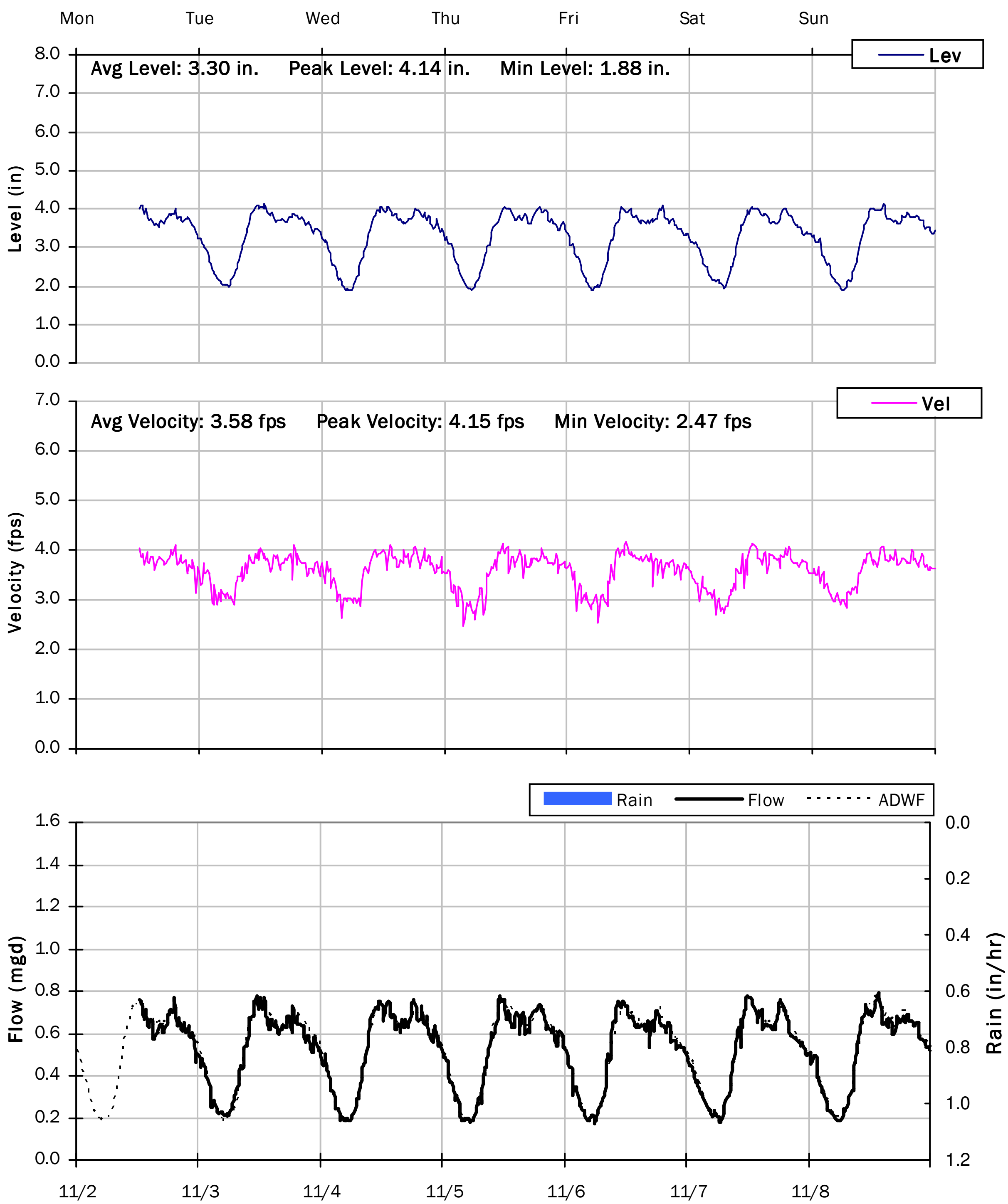
Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 4.95 inches)

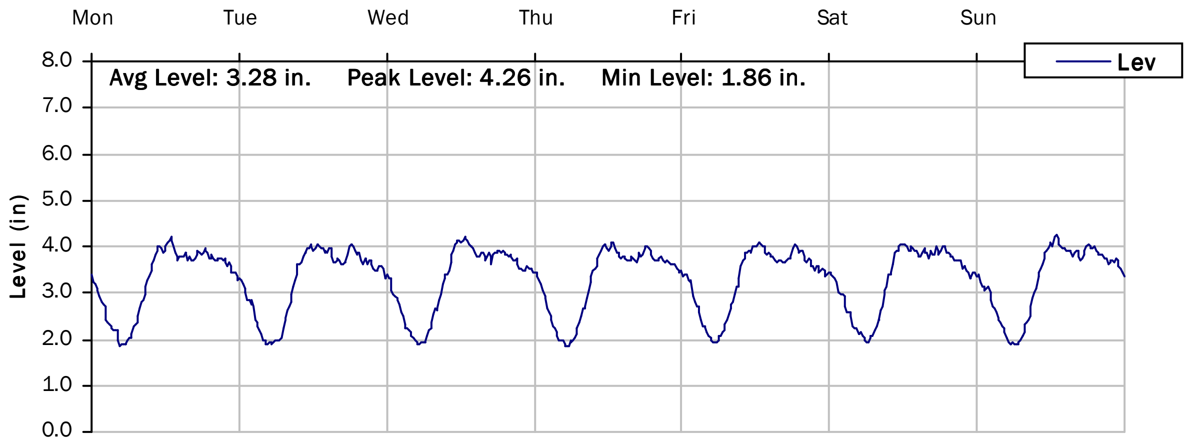
Capacity		Inflow / Infiltration	
Peak Flow:	1.00 *mgd*	**Peak I/I Rate:**	0.32 *mgd*
PF:	1.97	**Total I/I:**	149,000 *gallons*
Peak Level:	4.93 *in*		
d/D Ratio:	0.28		

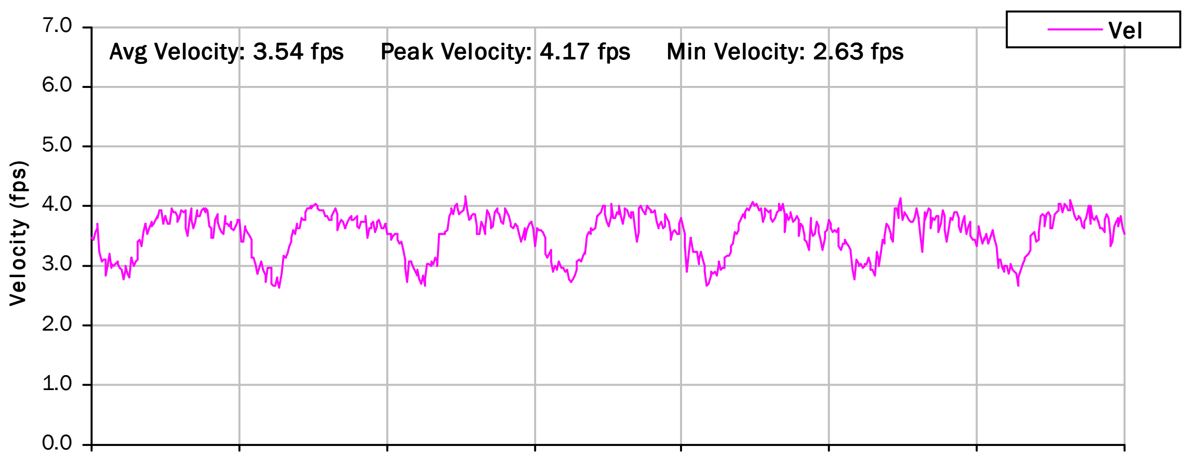
SITE 13
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020

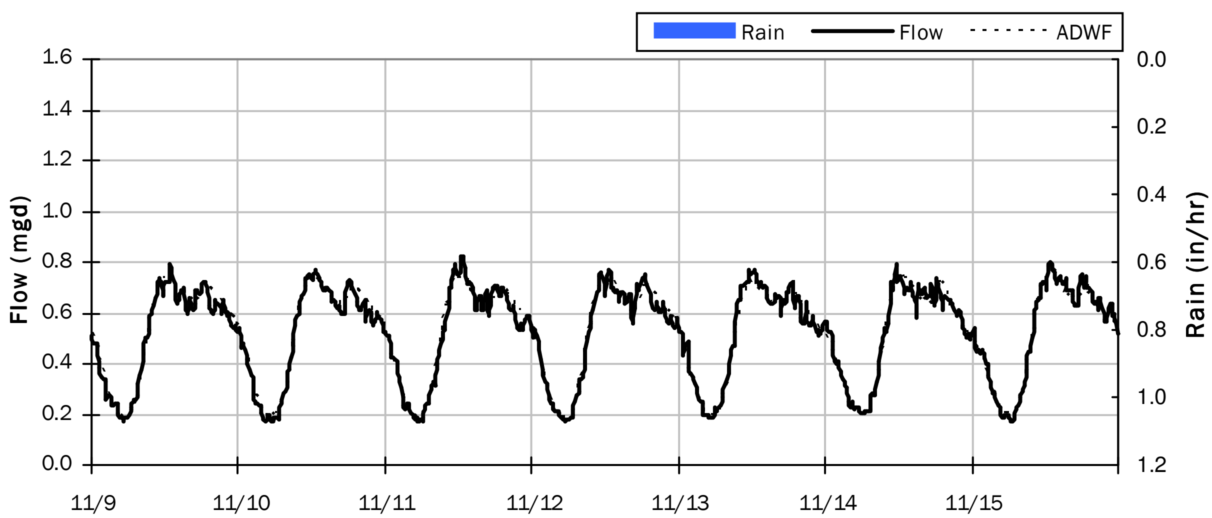


Avg Flow: 0.527 mgd **Peak Flow: 0.792 mgd** **Min Flow: 0.171 mgd**

SITE 13
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020





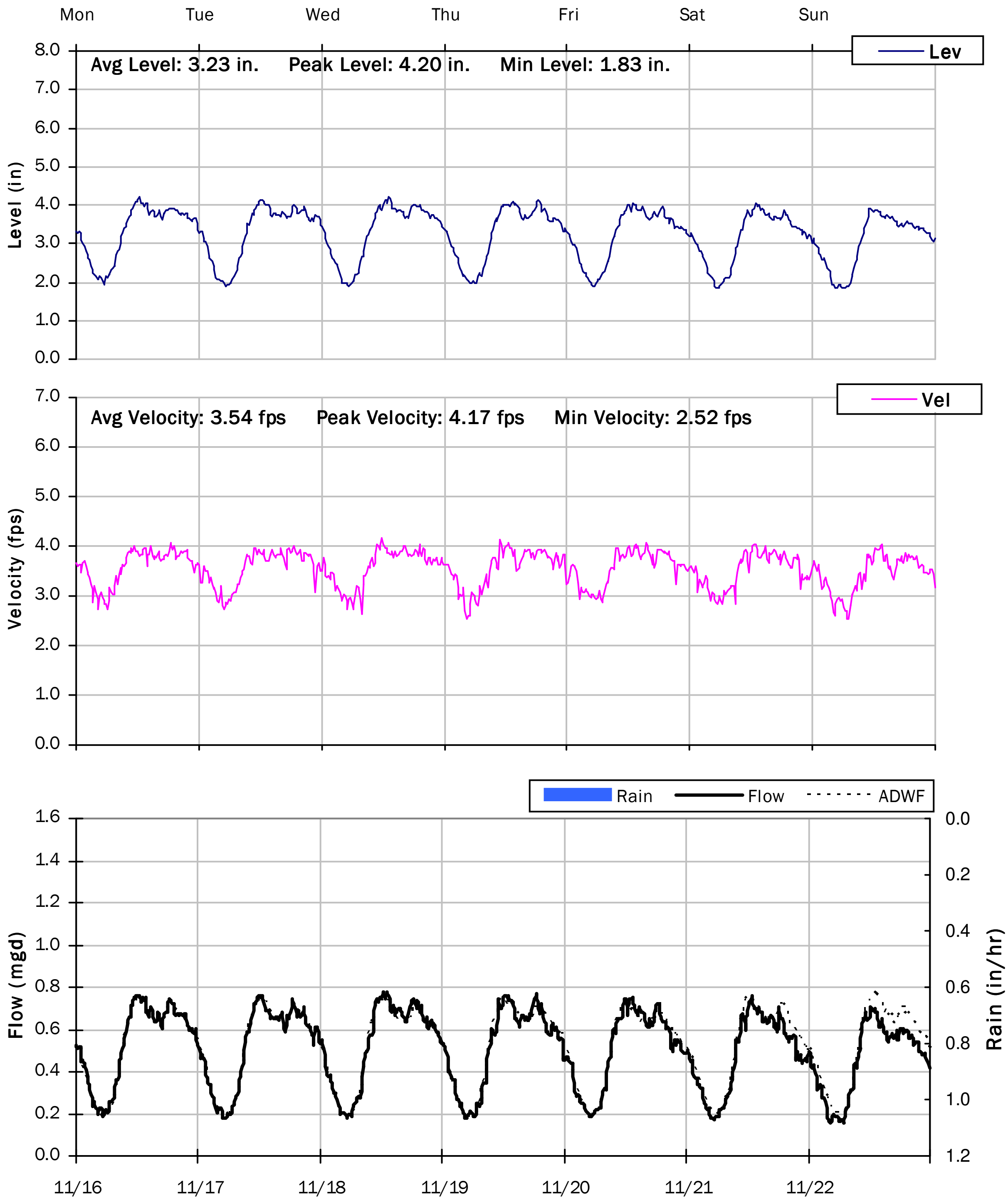


Avg Flow: 0.521 mgd **Peak Flow: 0.826 mgd** **Min Flow: 0.173 mgd**

SITE 13

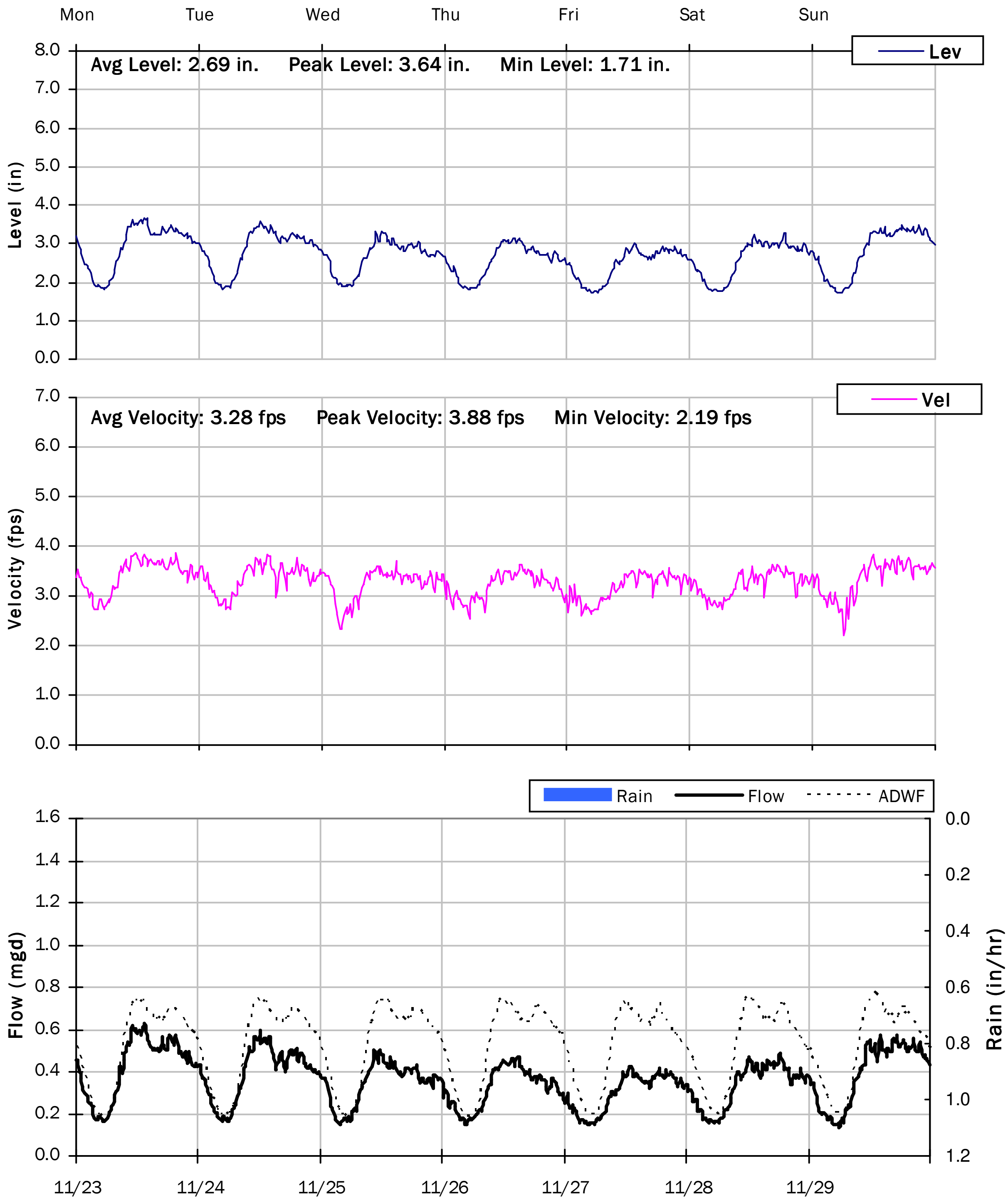
Weekly Level, Velocity and Flow Hydrographs

11/16/2020 to 11/23/2020



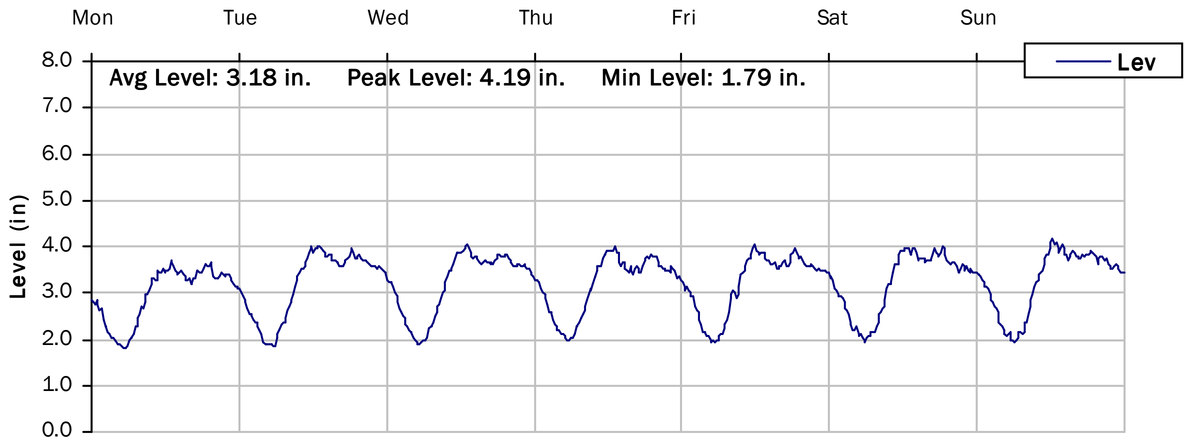
Avg Flow: 0.509 mgd Peak Flow: 0.779 mgd Min Flow: 0.158 mgd

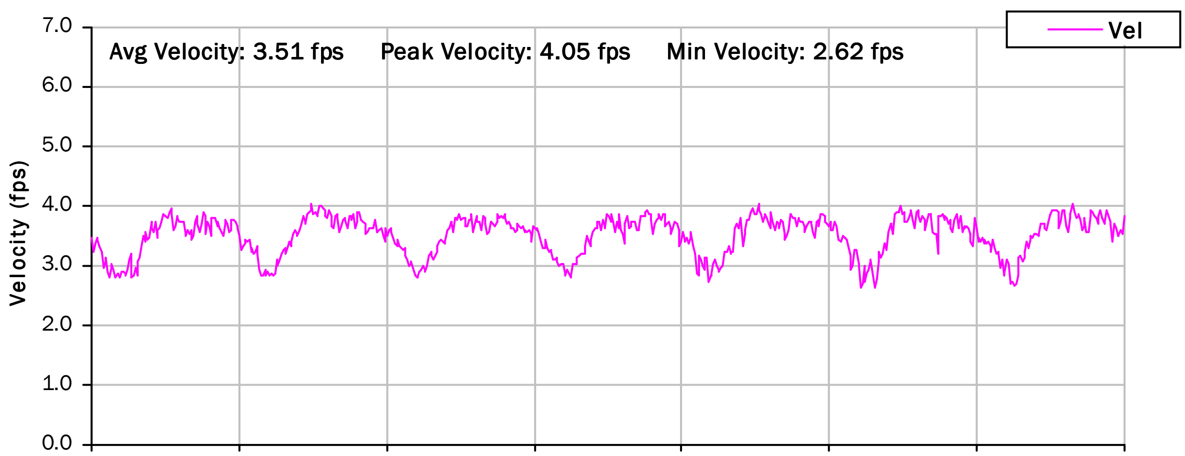
SITE 13
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020

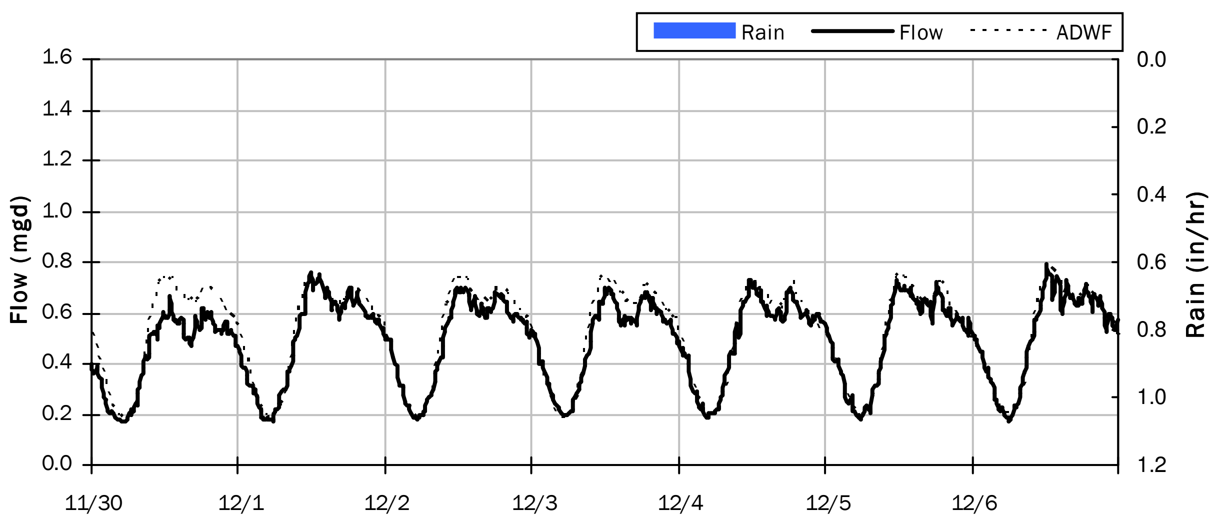


Avg Flow: 0.360 mgd **Peak Flow: 0.626 mgd** **Min Flow: 0.131 mgd**

SITE 13
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

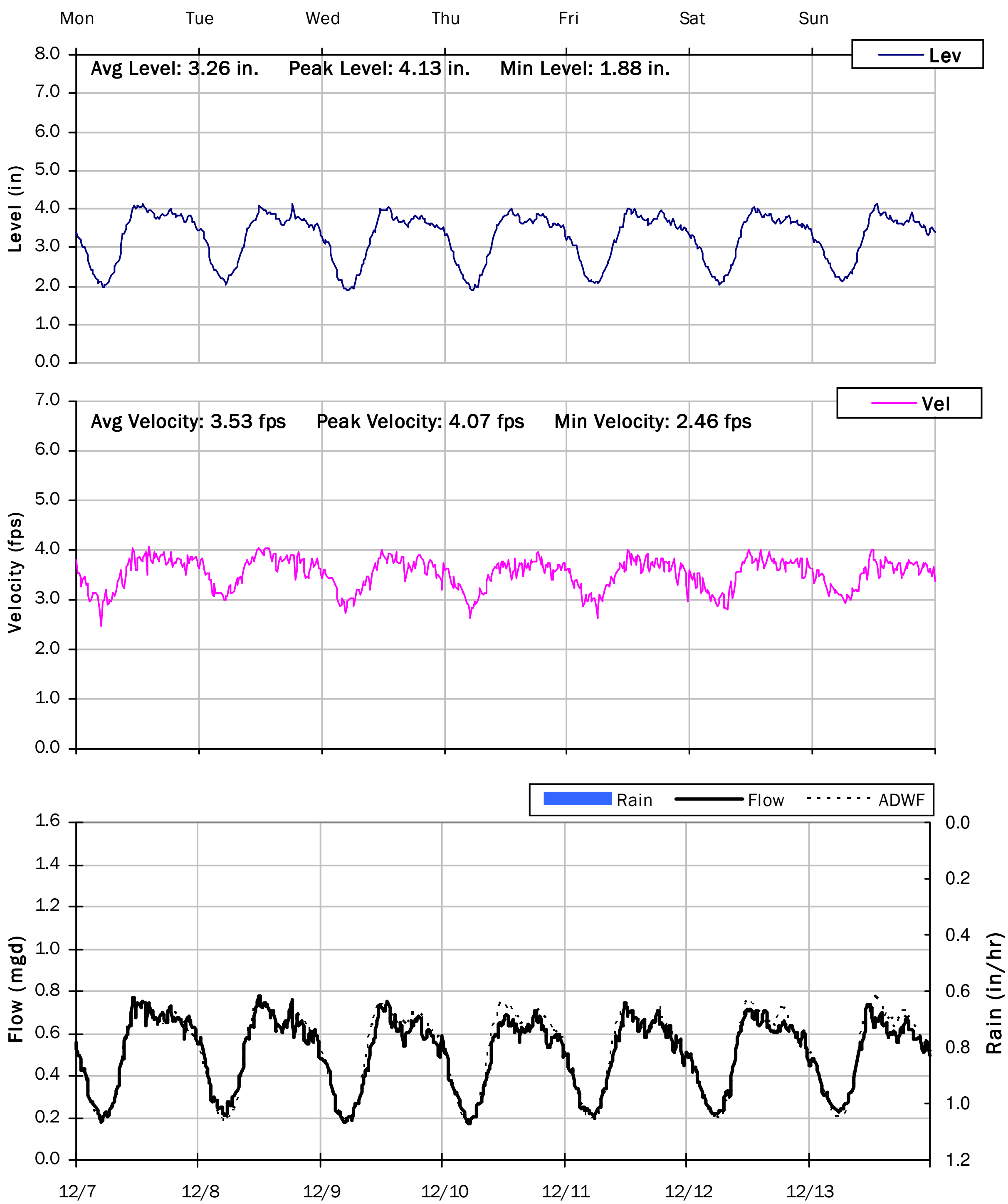






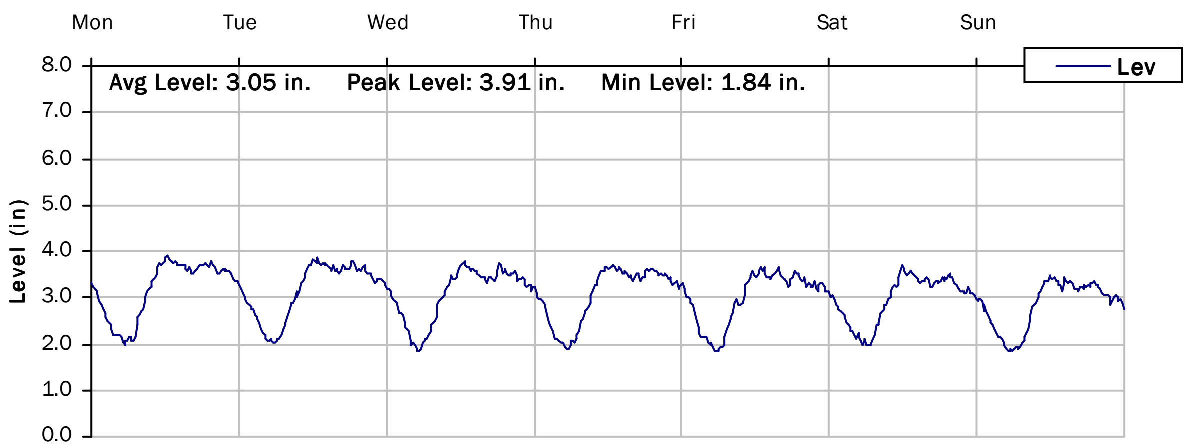
Avg Flow: 0.492 mgd **Peak Flow: 0.788 mgd** **Min Flow: 0.169 mgd**

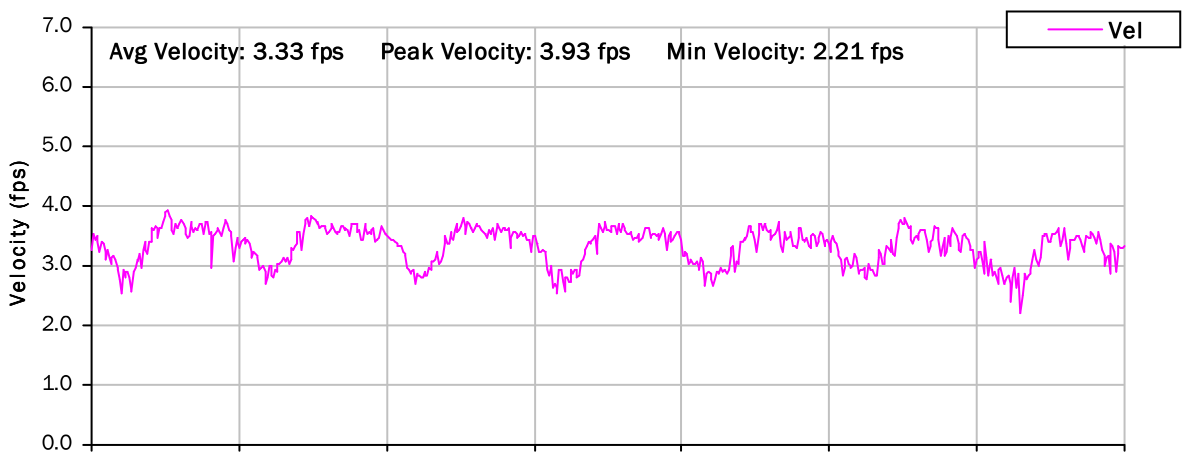
SITE 13
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

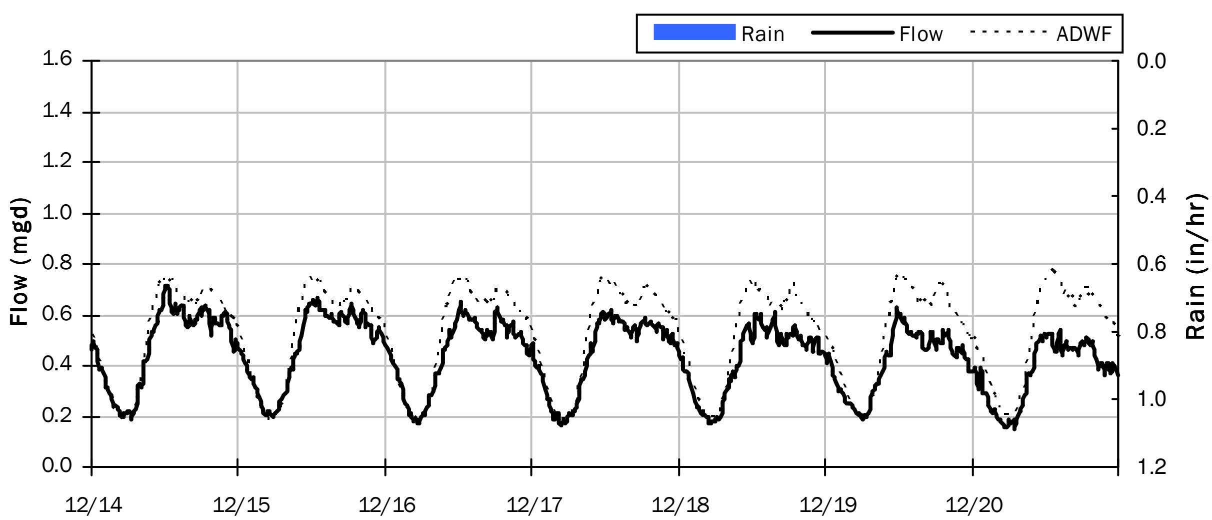


Avg Flow: 0.509 mgd **Peak Flow: 0.778 mgd** **Min Flow: 0.171 mgd**

SITE 13
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

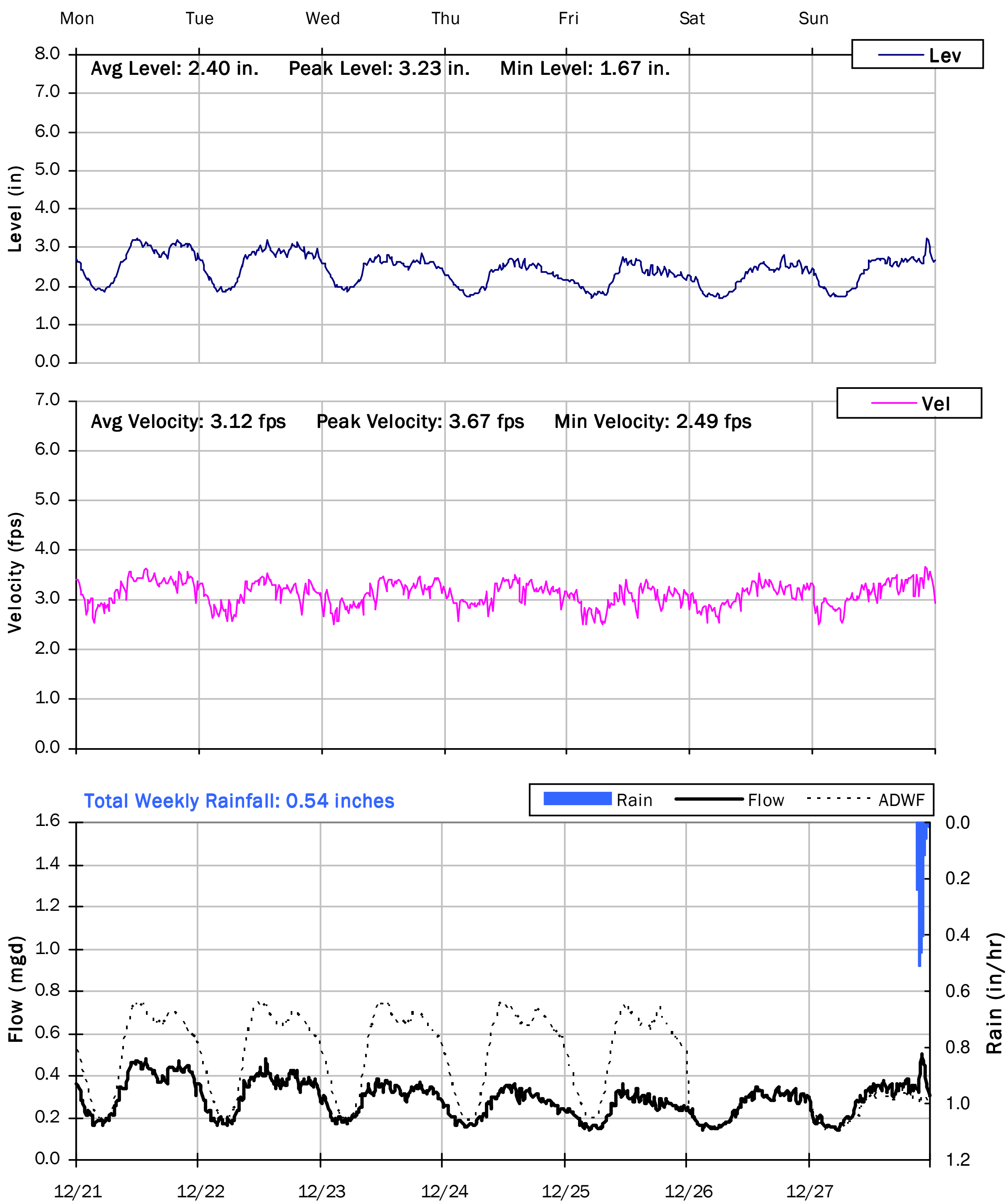






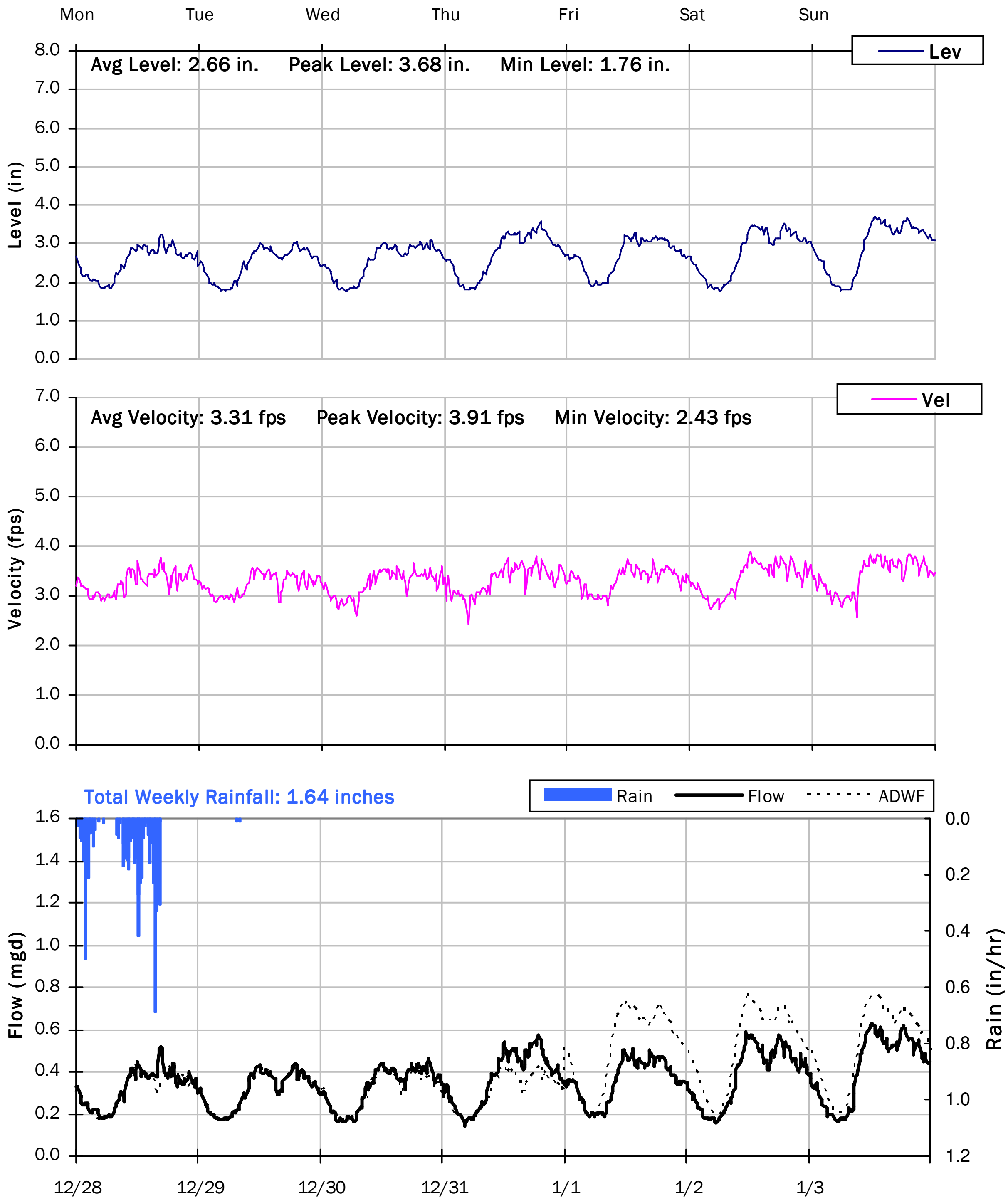
Avg Flow: 0.436 mgd **Peak Flow: 0.712 mgd** **Min Flow: 0.146 mgd**

SITE 13
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020



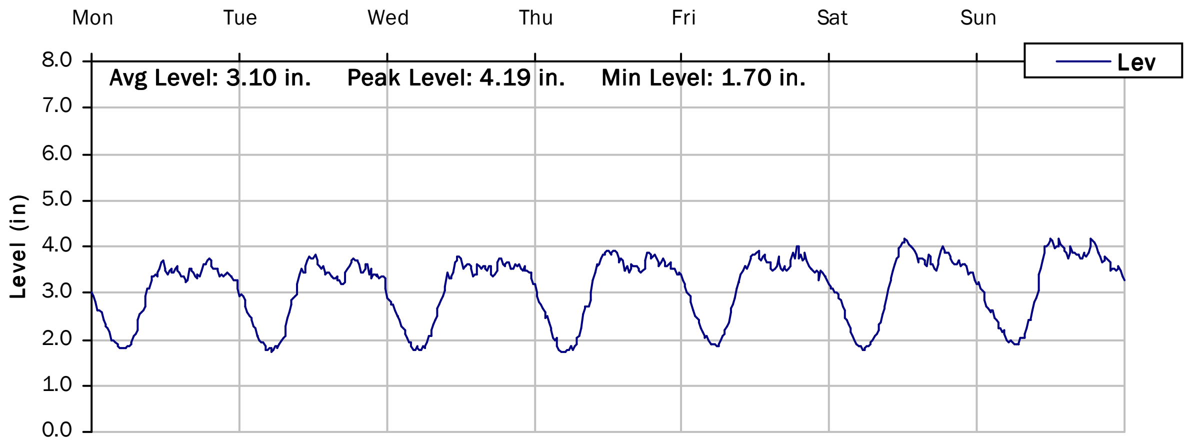
Avg Flow: 0.286 mgd Peak Flow: 0.498 mgd Min Flow: 0.140 mgd

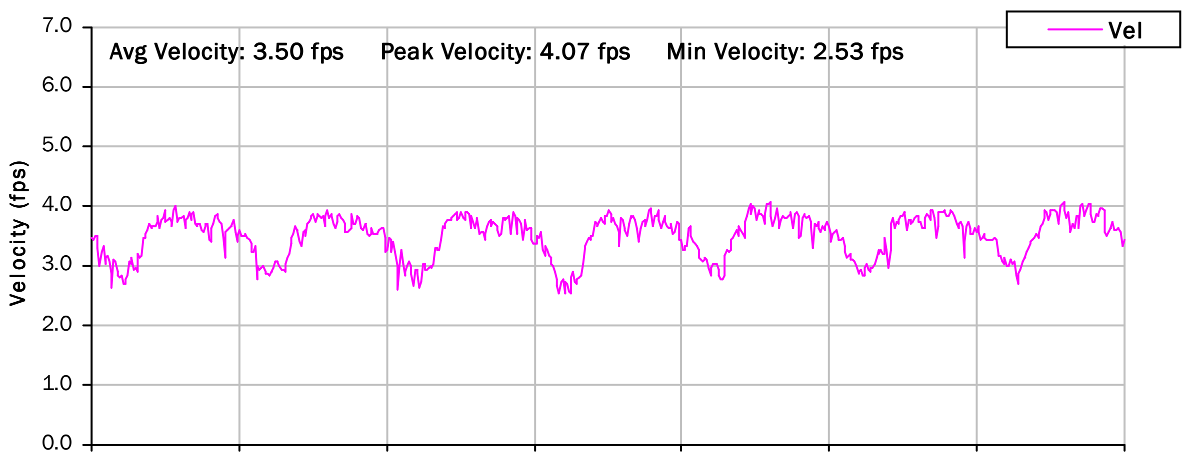
SITE 13
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

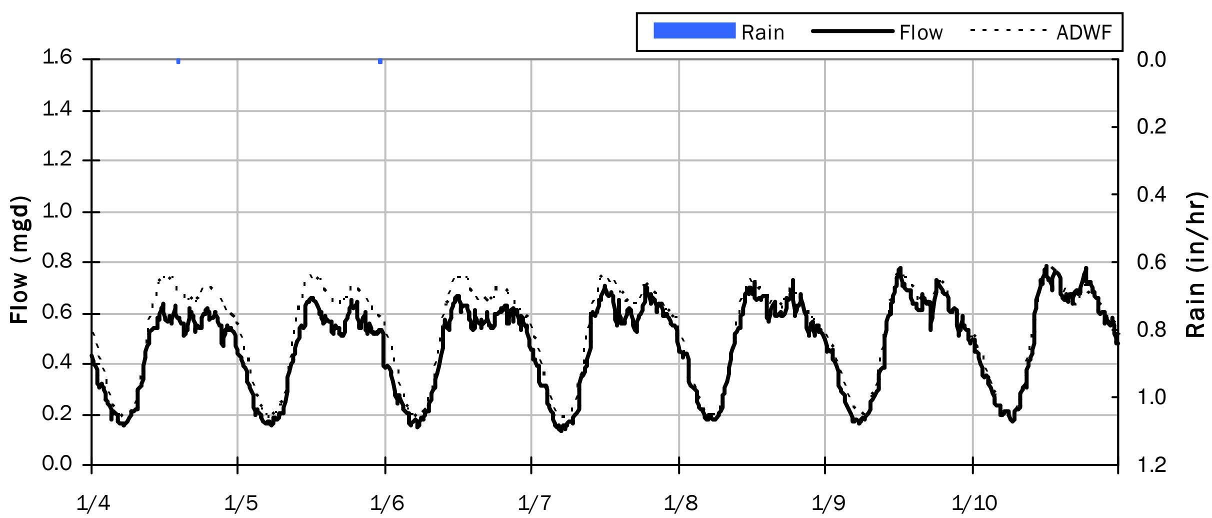


Avg Flow: 0.357 mgd Peak Flow: 0.625 mgd Min Flow: 0.143 mgd

SITE 13
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021





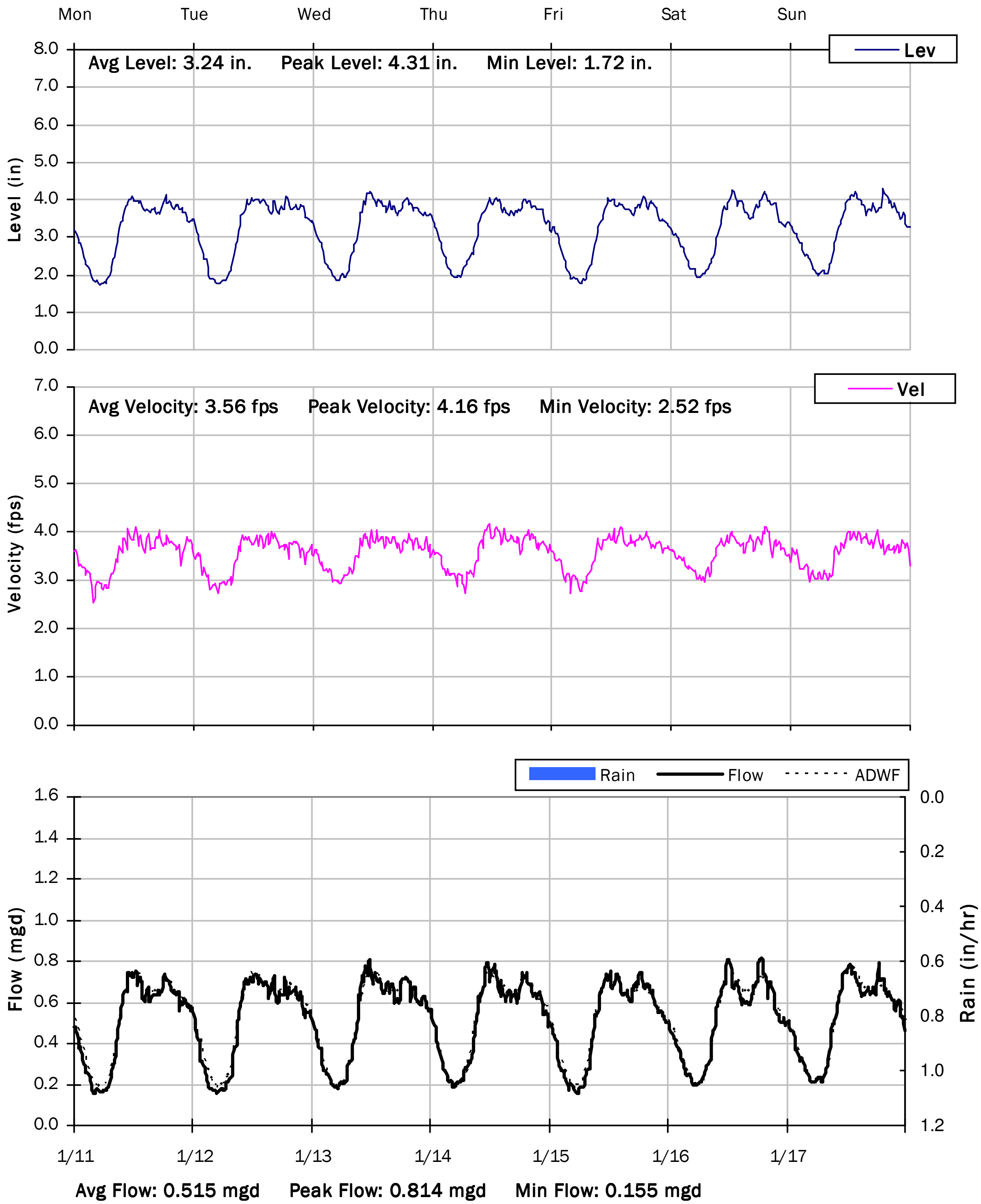


Avg Flow: 0.474 mgd Peak Flow: 0.782 mgd Min Flow: 0.137 mgd

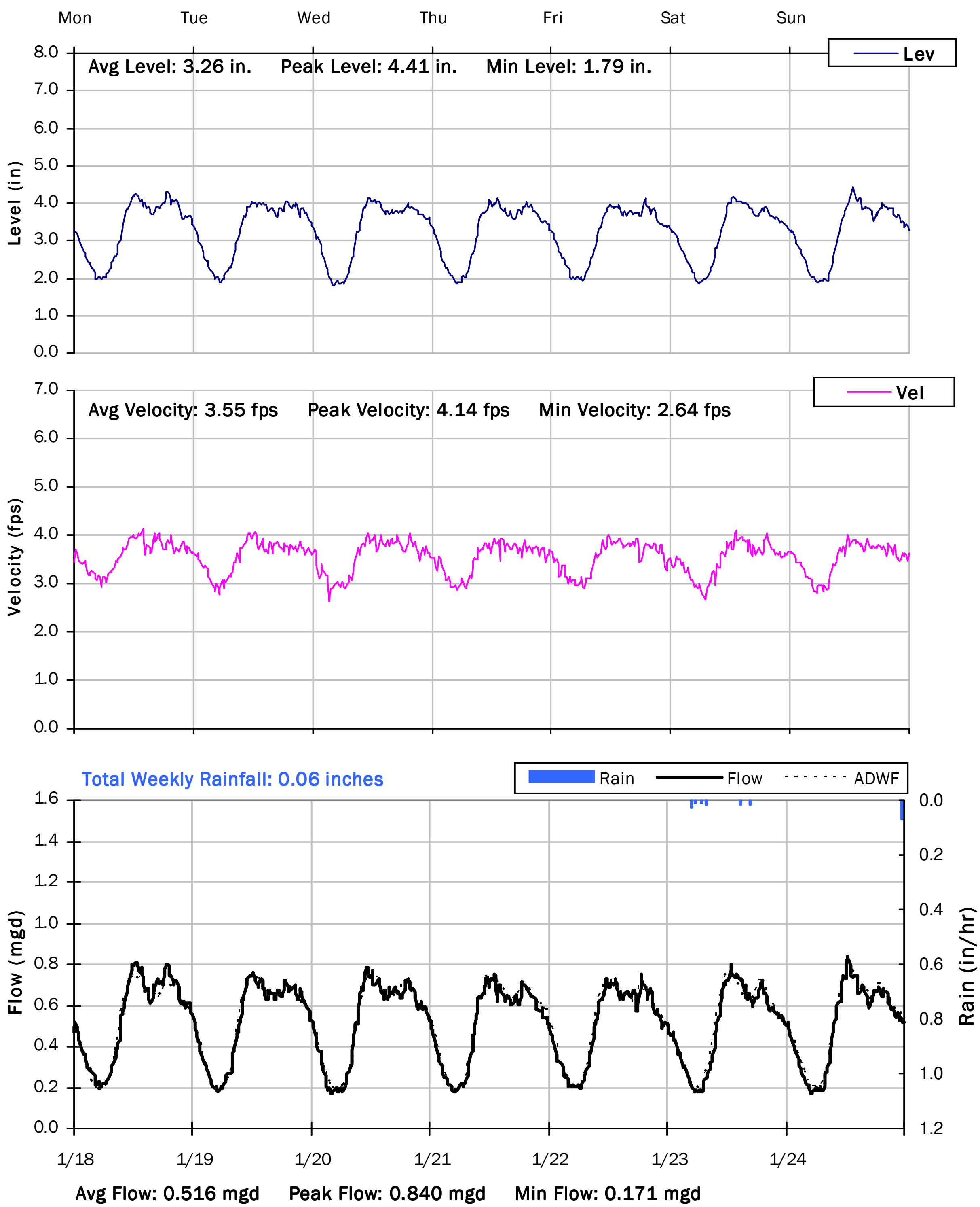
SITE 13

Weekly Level, Velocity and Flow Hydrographs

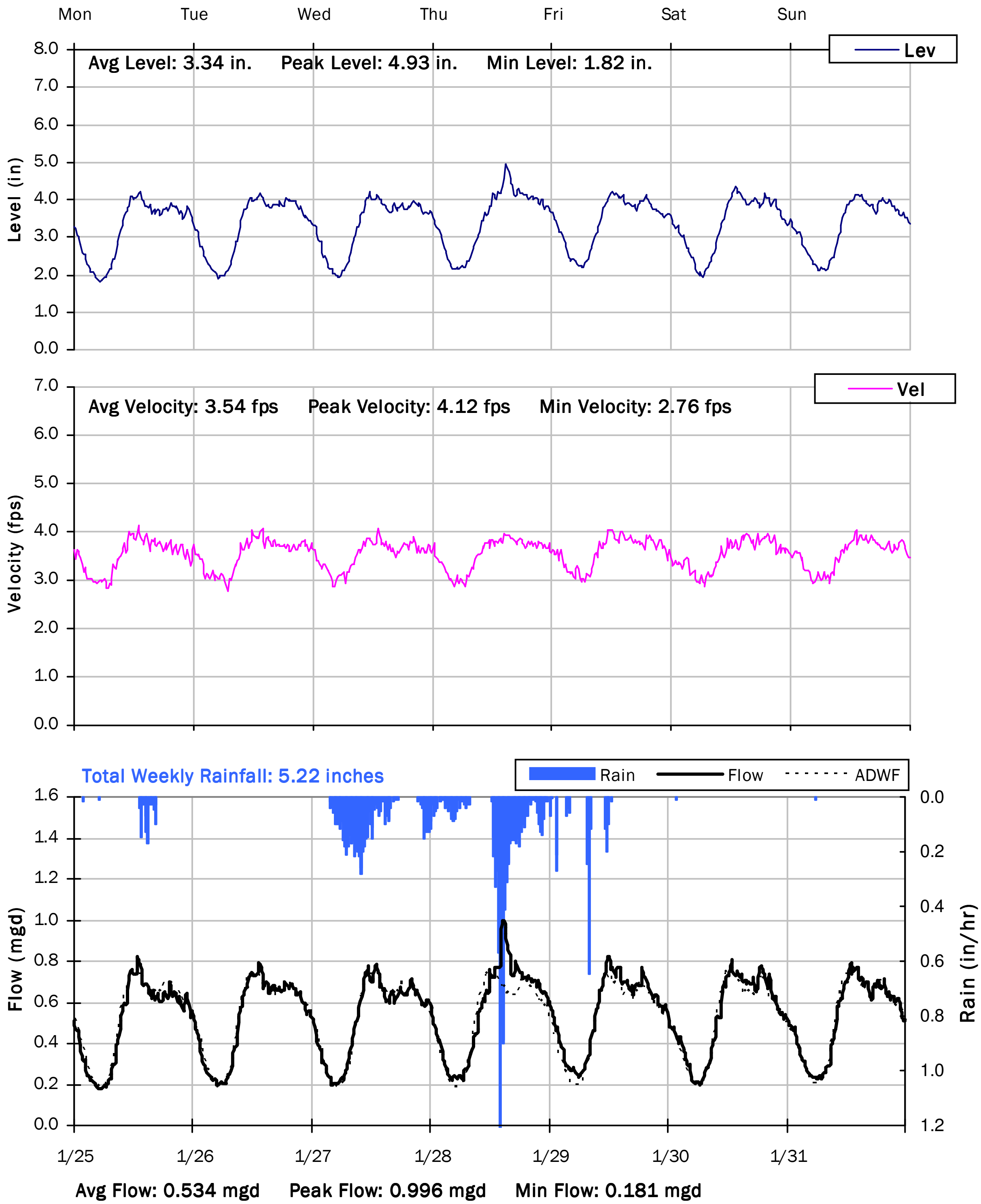
1/11/2021 to 1/18/2021



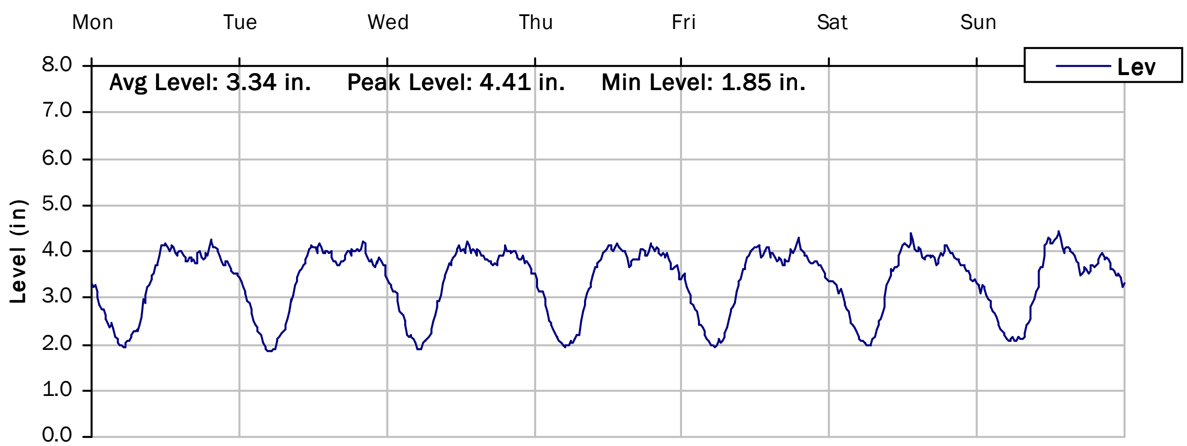
SITE 13
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

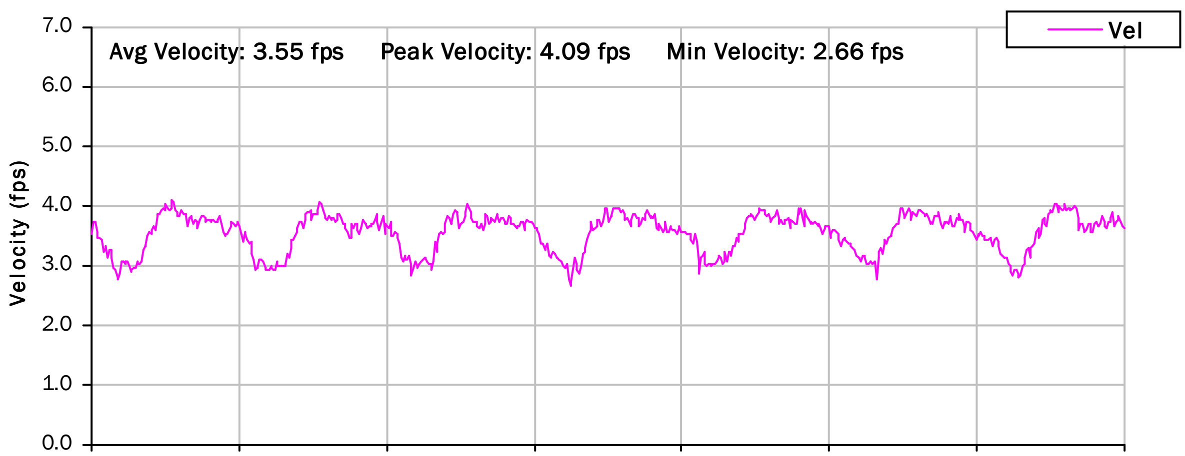


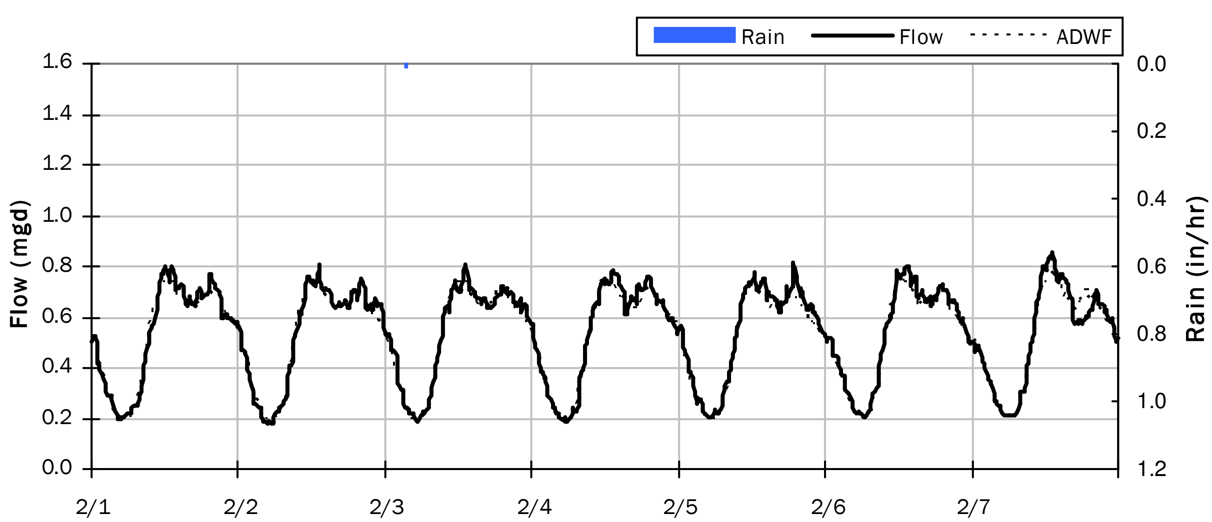
SITE 13
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021



SITE 13
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021







Avg Flow: 0.535 mgd   Peak Flow: 0.858 mgd   Min Flow: 0.180 mgd

Goleta West Sanitary District

Sanitary Sewer Flow Monitoring

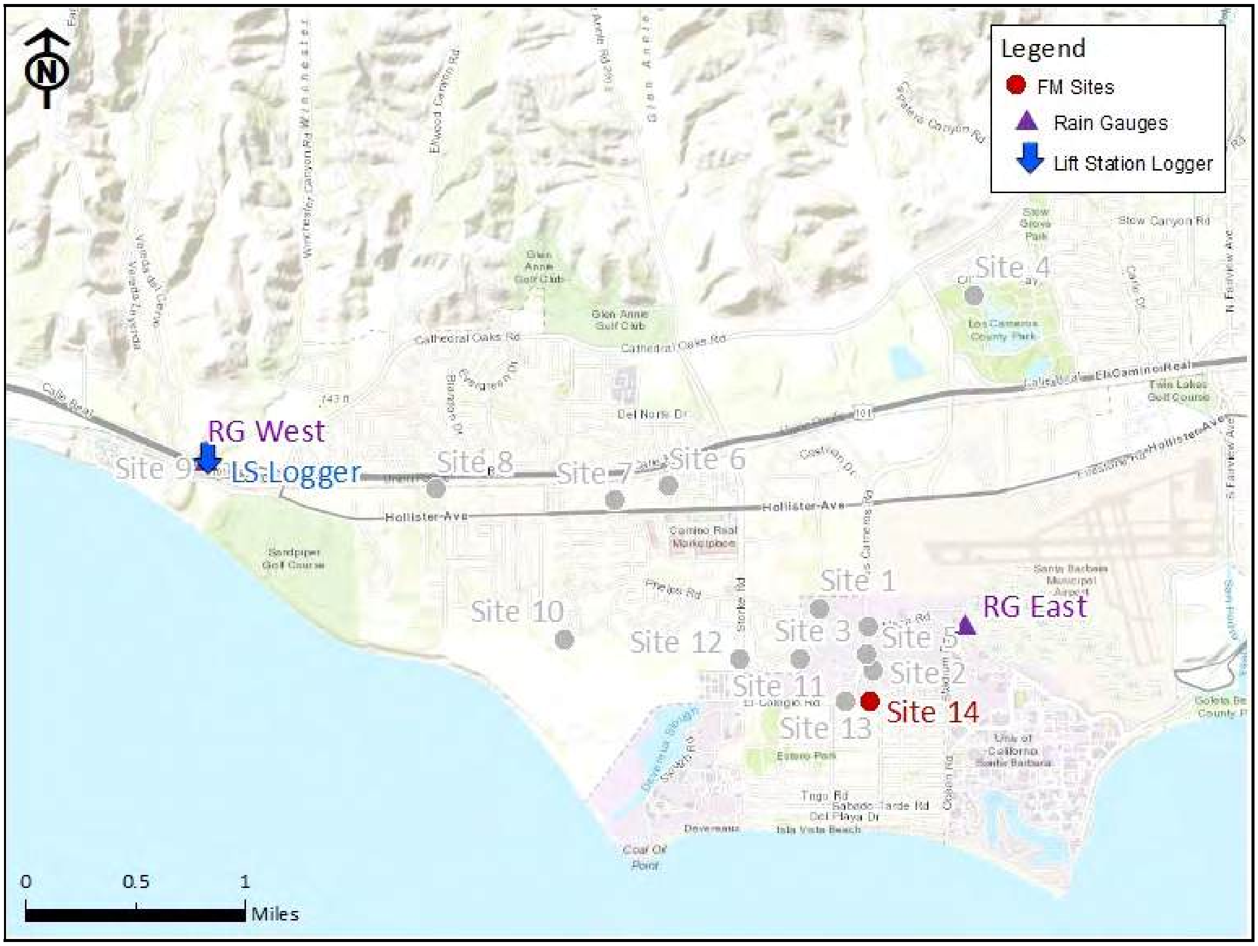
November 3, 2020 - February 7, 2021

Monitoring Site: Site 14

City Manhole: 75-02-10

Location: El Colegio Road east of S Los Carneros Road

Data Summary Report



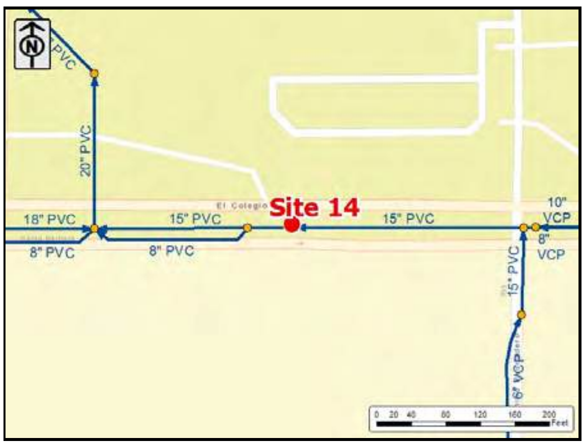
Vicinity Map: Site 14

SITE 14

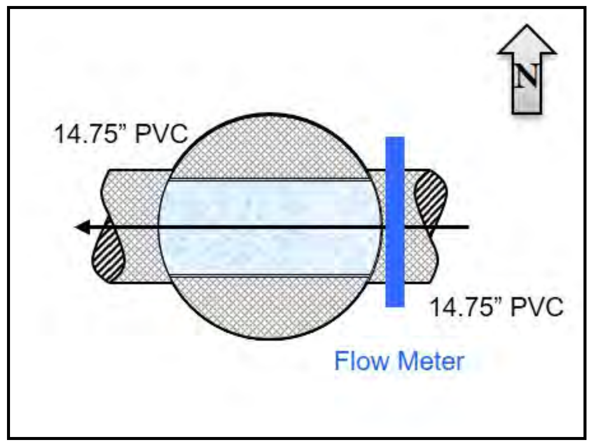
Site Information

Location:	El Colegio Road east of S Los Carneros Road
City Manhole:	75-02-10
Coordinates:	119.8596° W, 34.4174° N
Rim Elevation (Earth):	26 feet
Pipe Diameter:	14.75 inches
ADWF:	0.258 mgd
Peak Measured Flow:	0.461 mgd

Satellite Map



Sanitary Map



Flow Sketch

Street View

Plan View

SITE 14

Additional Site Photos

Monitored East Influent

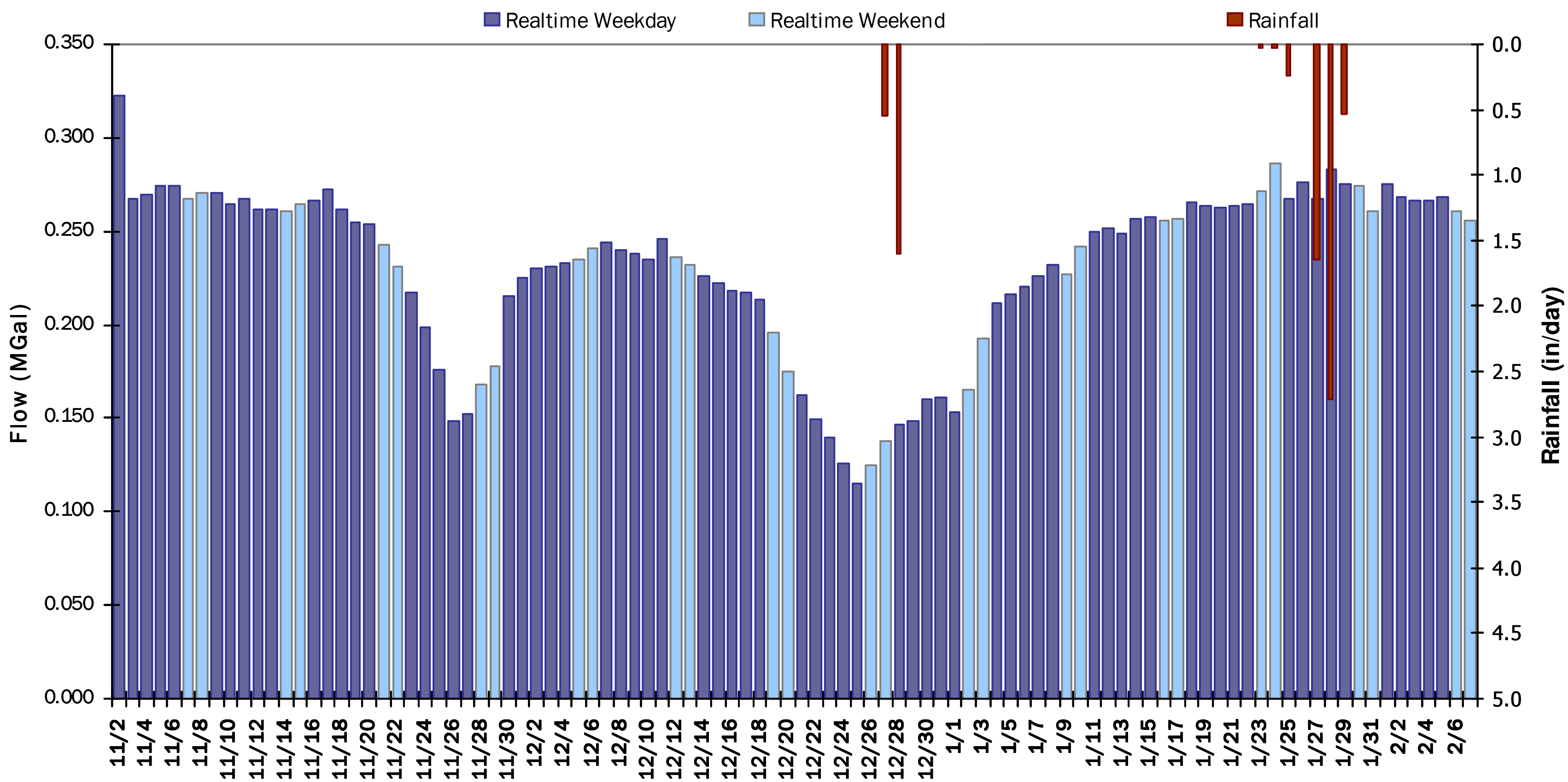
West Effluent

SITE 14

Period Flow Summary: Daily Flow Totals

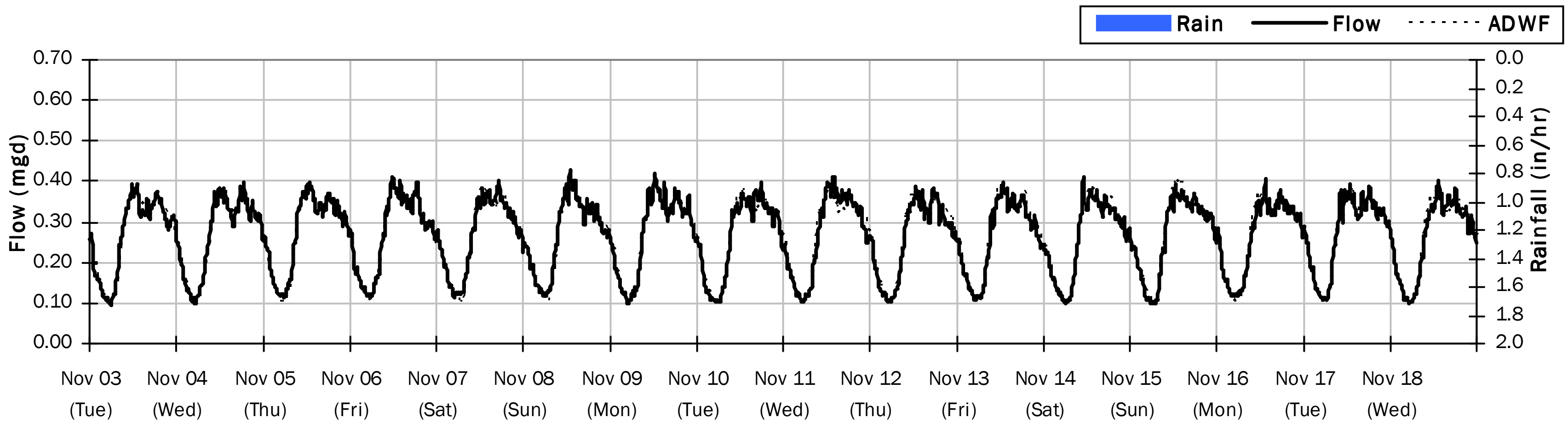
Avg Period Flow: 0.231 MGal **Peak Daily Flow: 0.323 MGal** **Min Daily Flow: 0.115 MGal**

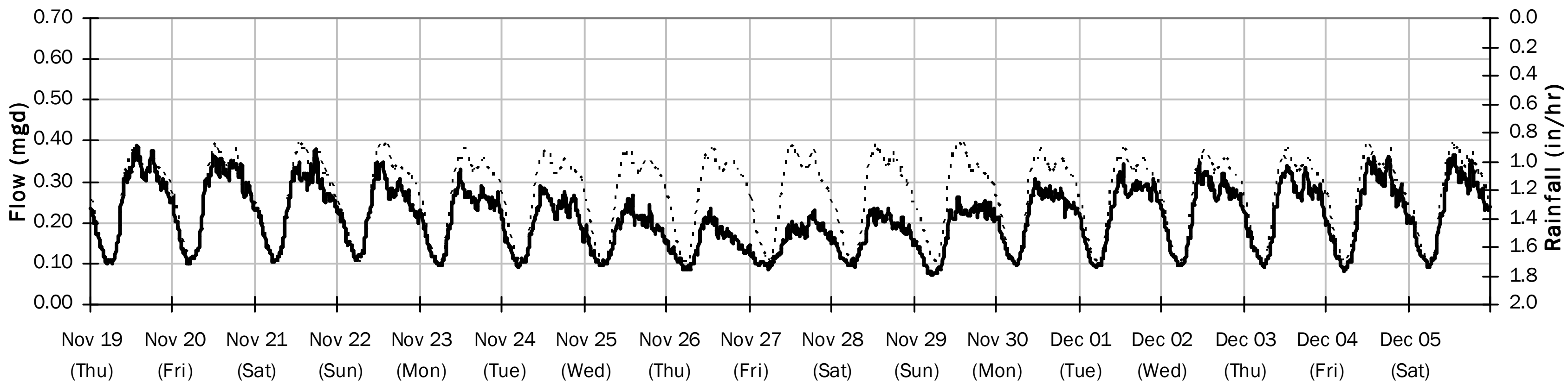
Total Period Rainfall: 7.35 inches



SITE 14
Flow Summary: 11/3/2020 to 12/5/2020

Total Period Rainfall: 0.00 inches   **Avg Flow: 0.238 mgd**   **Peak Flow: 0.427 mgd**   **Min Flow: 0.073 mgd**

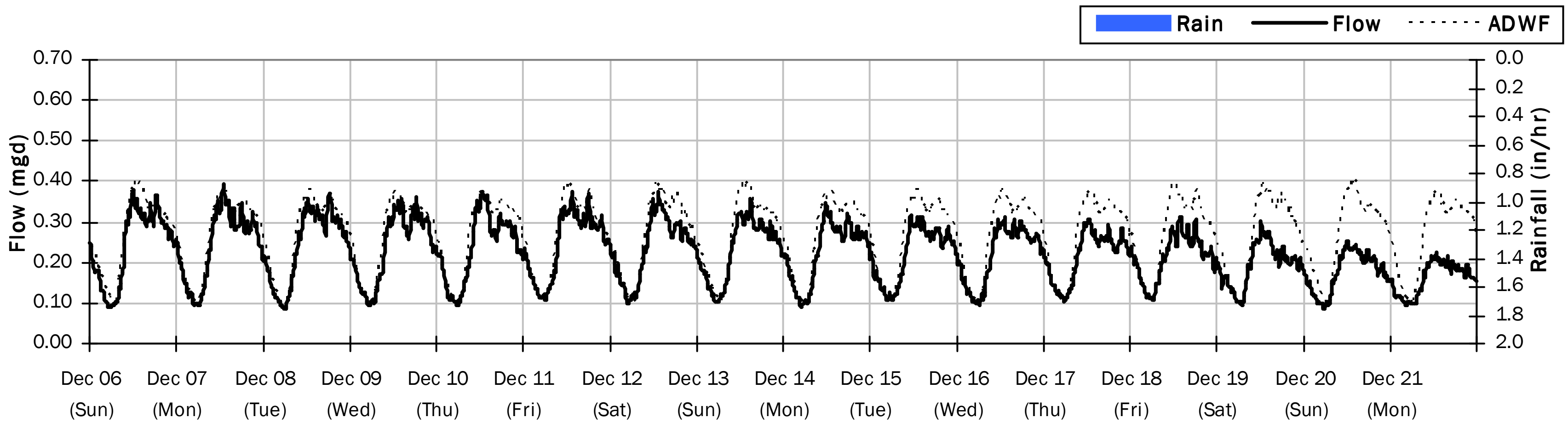


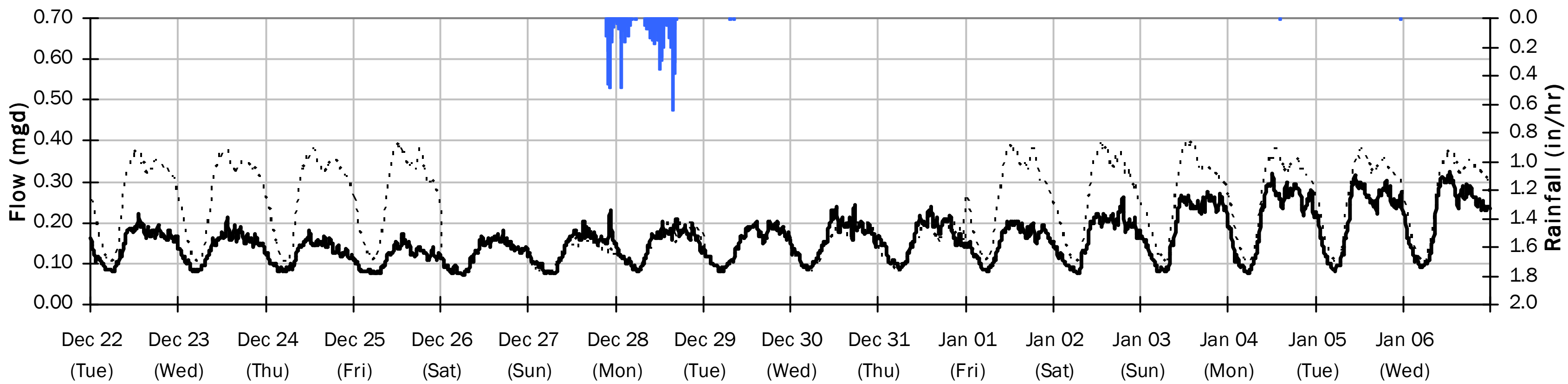


SITE 14

Flow Summary: 12/6/2020 to 1/6/2021

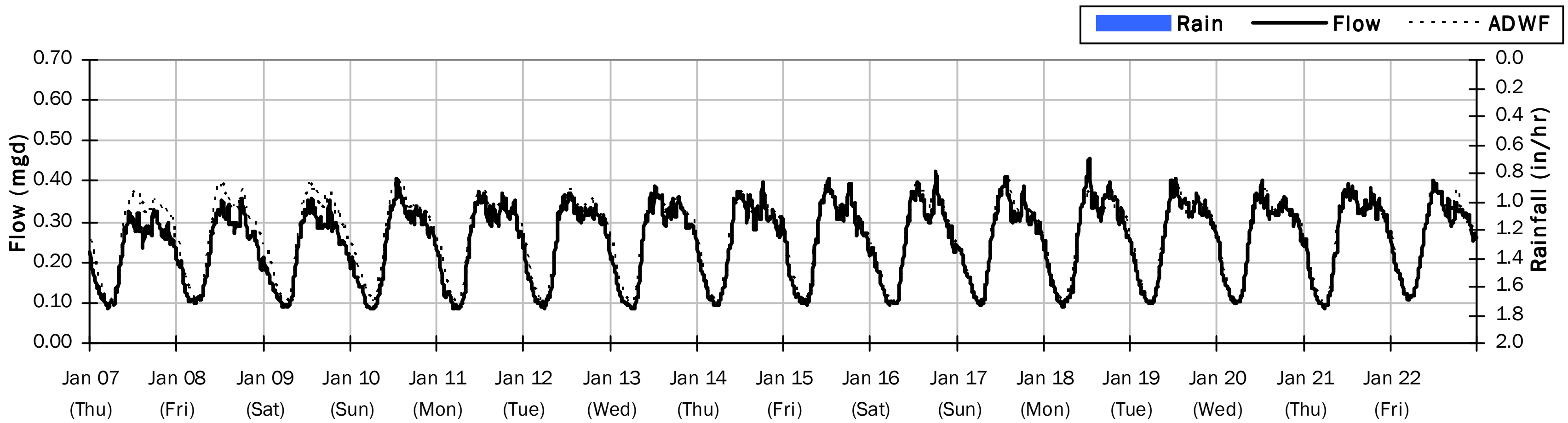
Total Period Rainfall: 2.17 inches **Avg Flow: 0.191 mgd** **Peak Flow: 0.395 mgd** **Min Flow: 0.072 mgd**

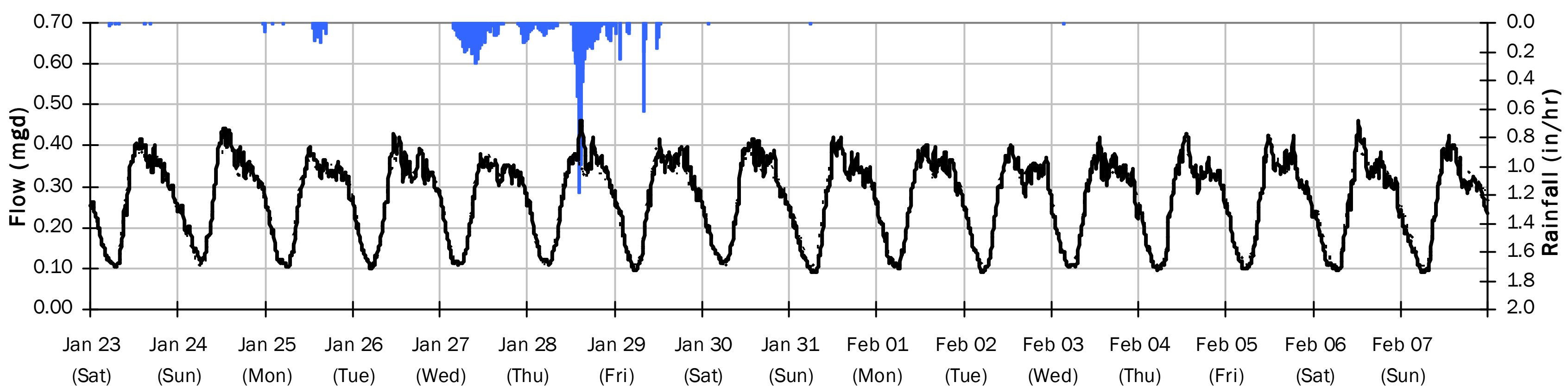




SITE 14
Flow Summary: 1/7/2021 to 2/7/2021

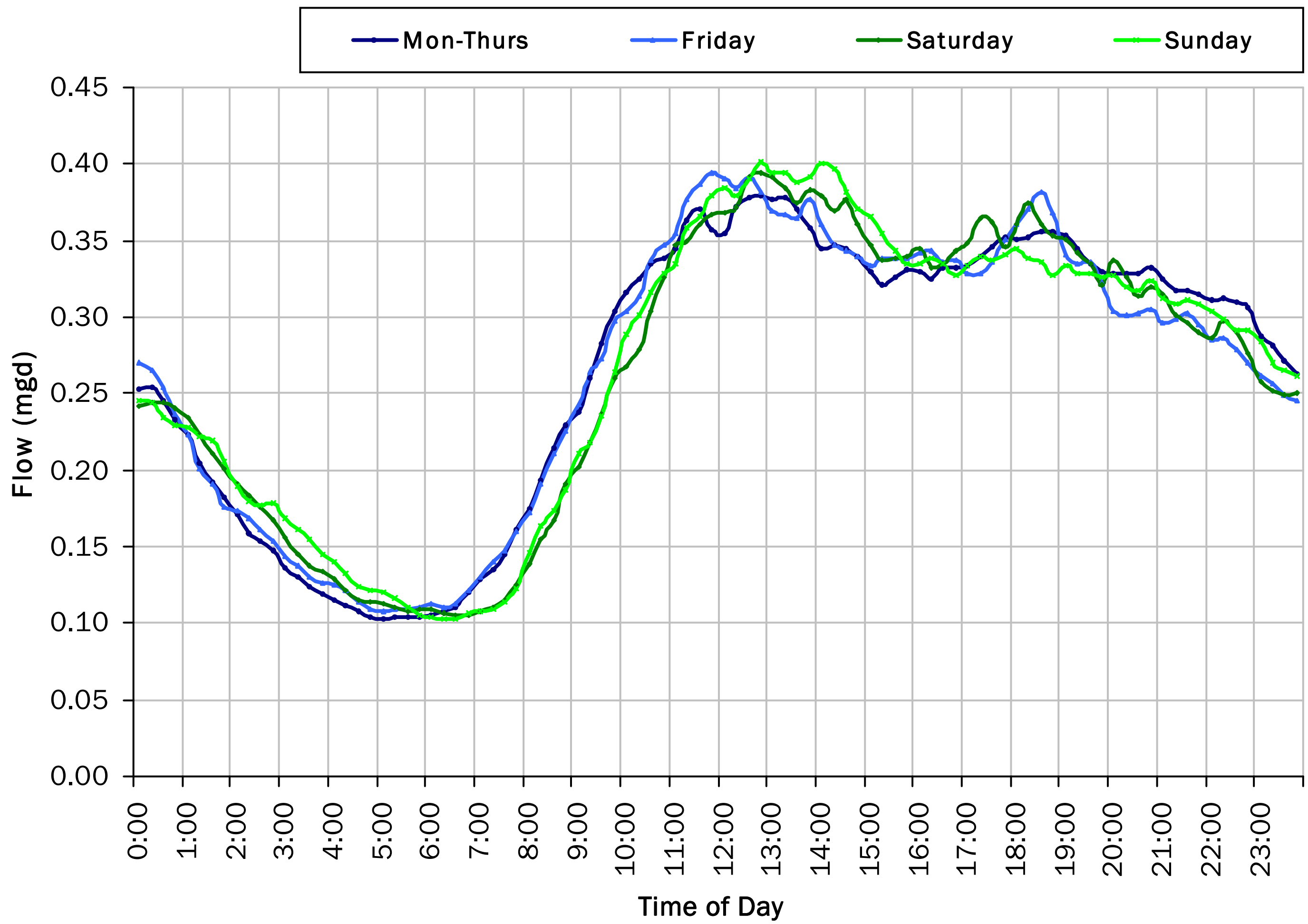
Total Period Rainfall: 5.18 inches   **Avg Flow: 0.261 mgd**   **Peak Flow: 0.461 mgd**   **Min Flow: 0.086 mgd**





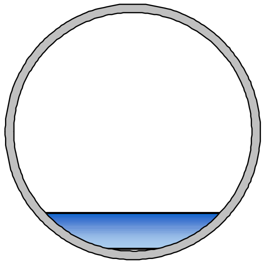
SITE 14

Average Dry Weather Flow Hydrographs



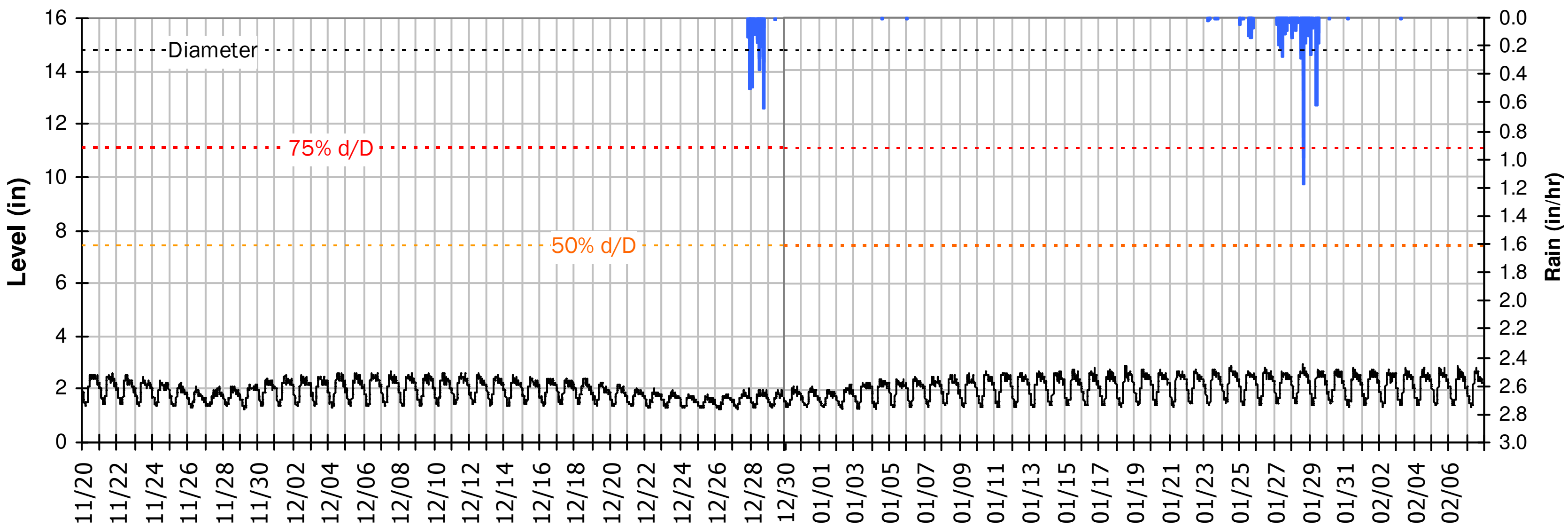
ADWF:

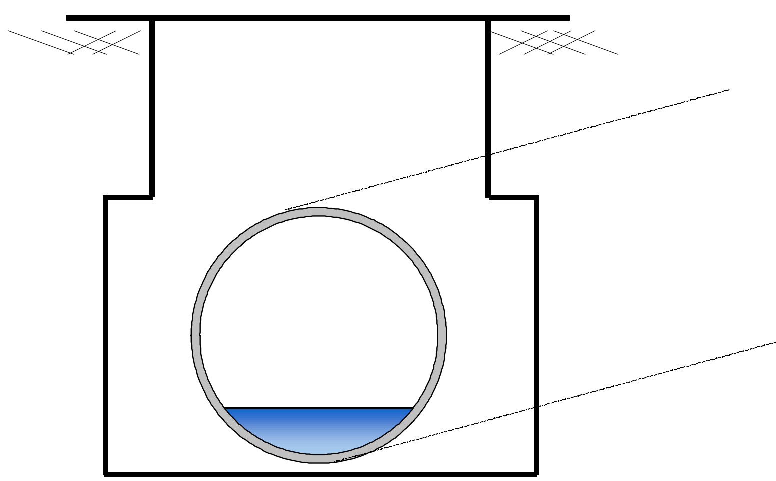
0.258 *mgd*



SITE 14
Site Capacity and Surcharge Summary

<u>Realtime Flow Levels with Rainfall Data over Monitoring Period</u>

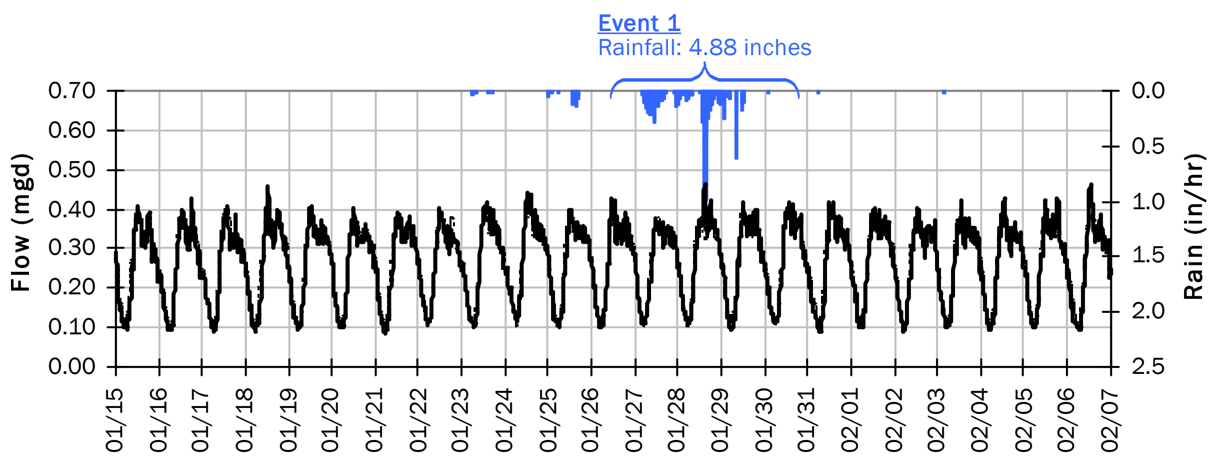




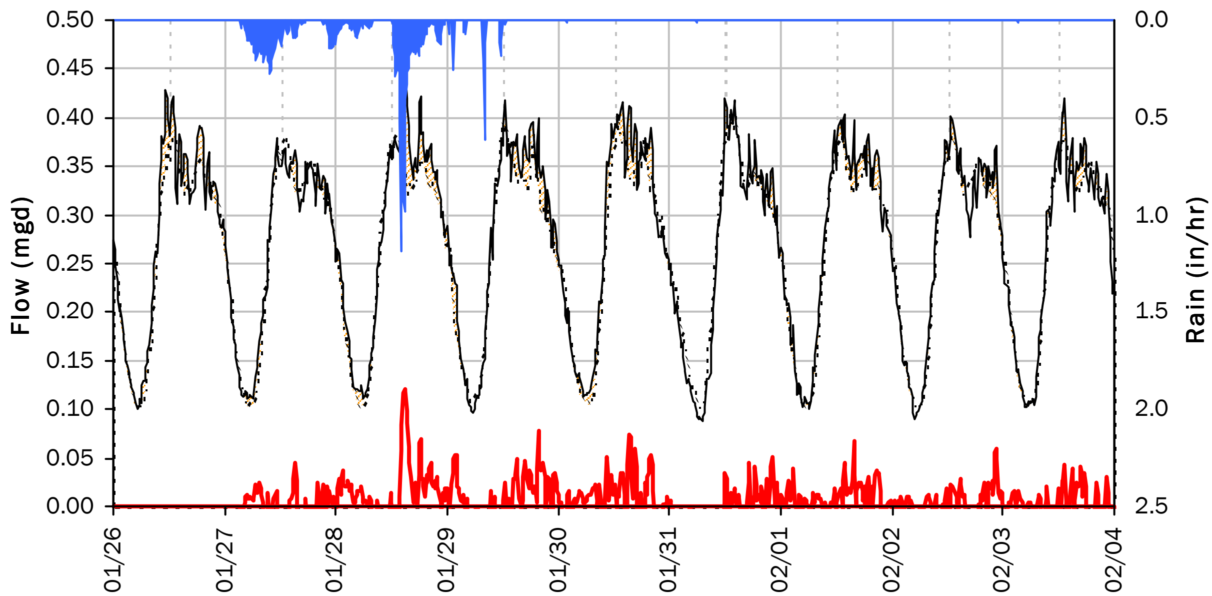
Pipe Diameter:	14.8	*inches*
Peak Measured Level:	2.95	*inches*
Peak d/D Ratio:	0.20	

SITE 14
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



Storm Event I/I Analysis (Rain = 4.88 inches)

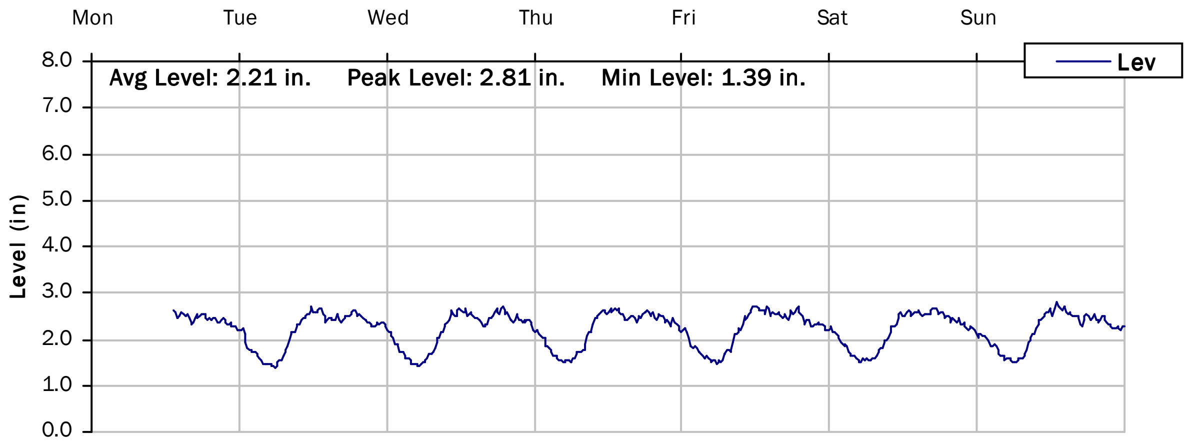
Capacity

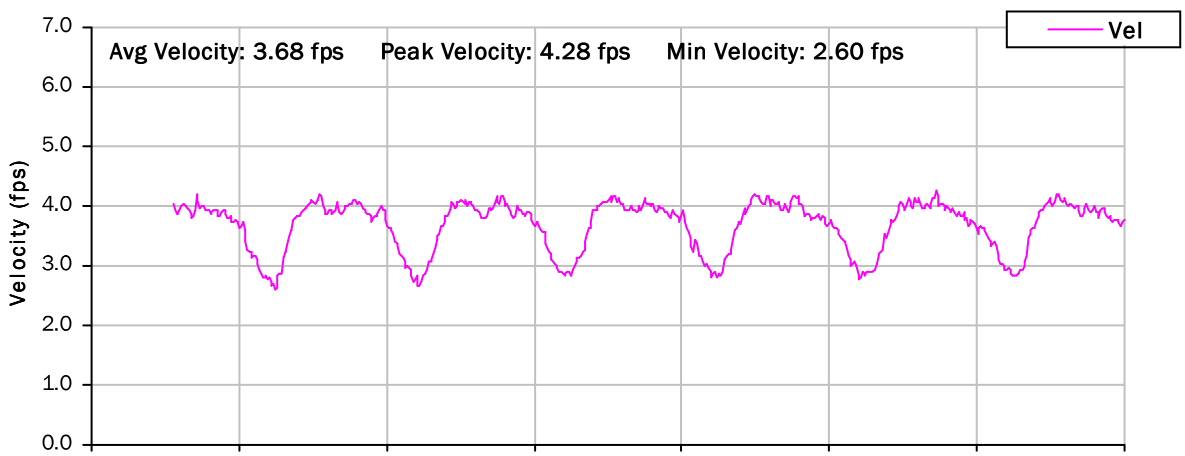
Peak Flow:	0.46 *mgd*
PF:	1.79
Peak Level:	2.95 *in*
d/D Ratio:	0.20

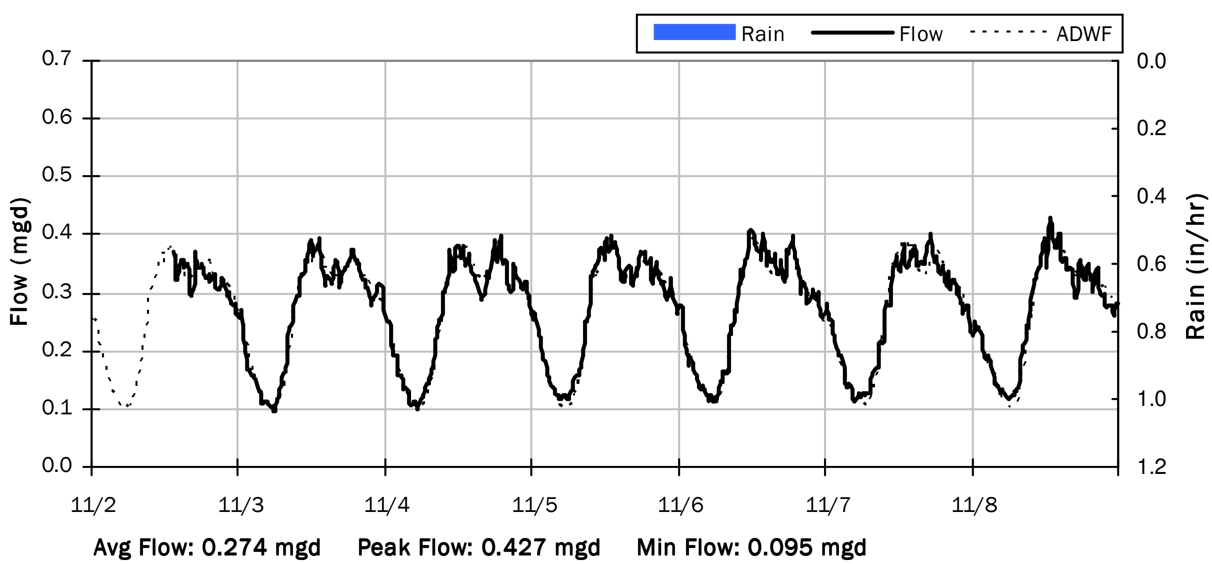
Inflow / Infiltration

Peak I/I Rate:	0.12 *mgd*
Total I/I:	48,000 *gallons*

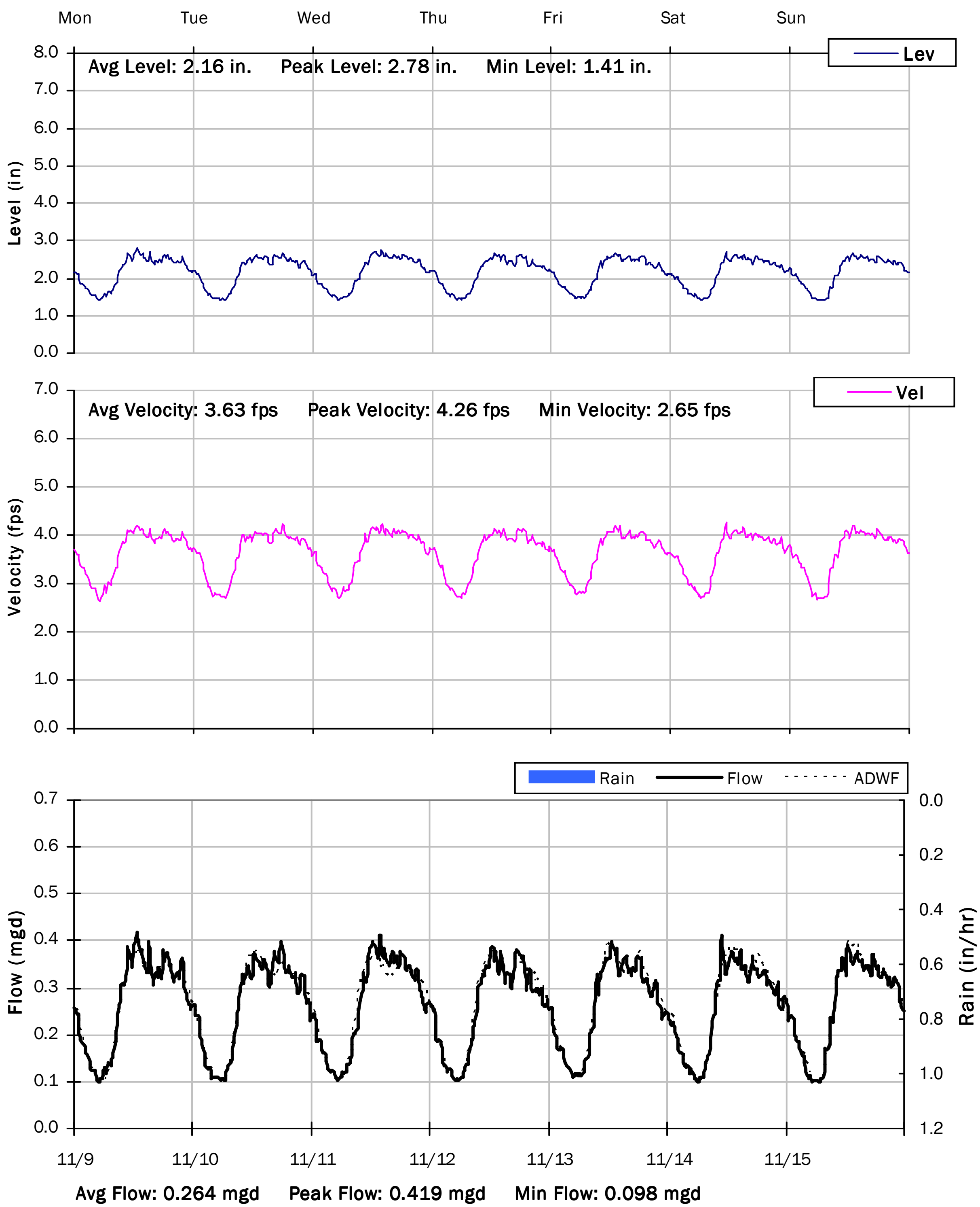
SITE 14
Weekly Level, Velocity and Flow Hydrographs
11/2/2020 to 11/9/2020



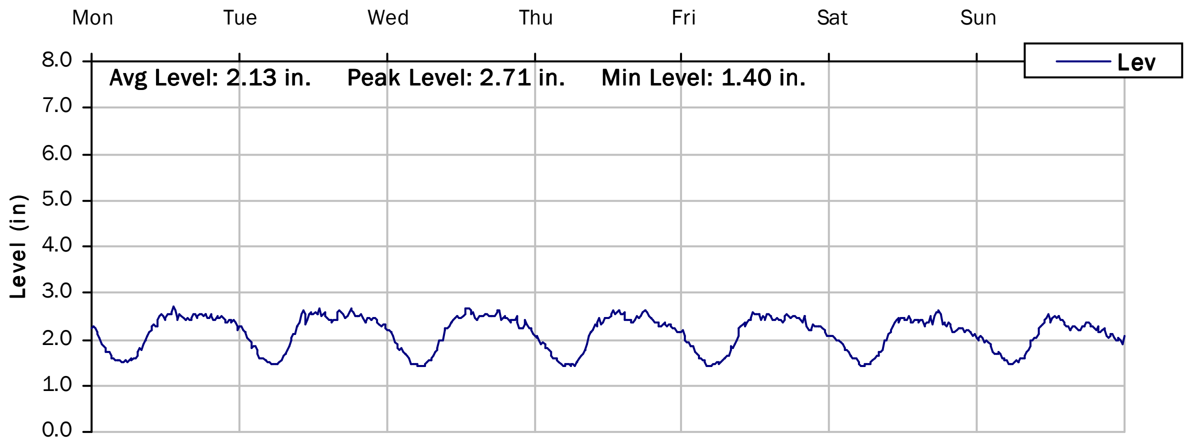


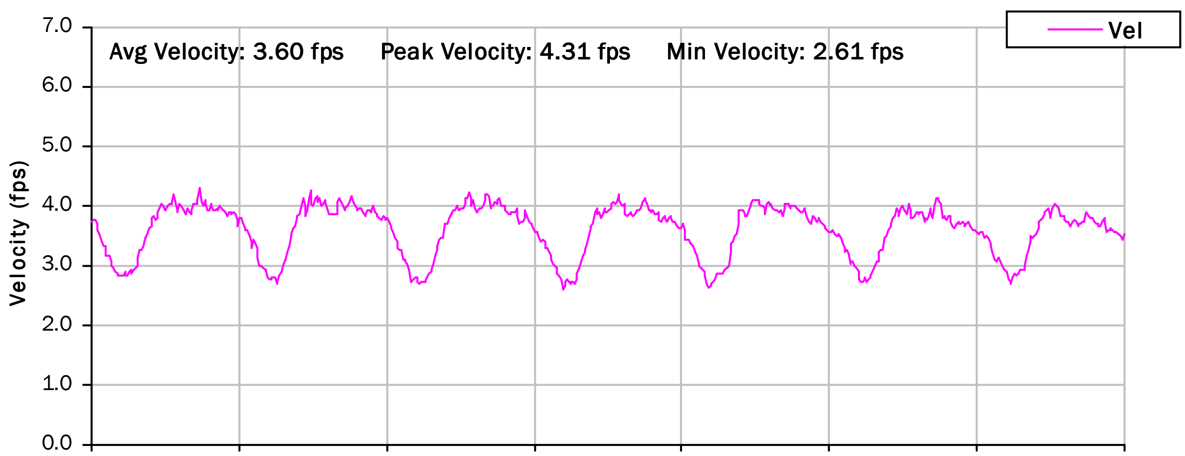


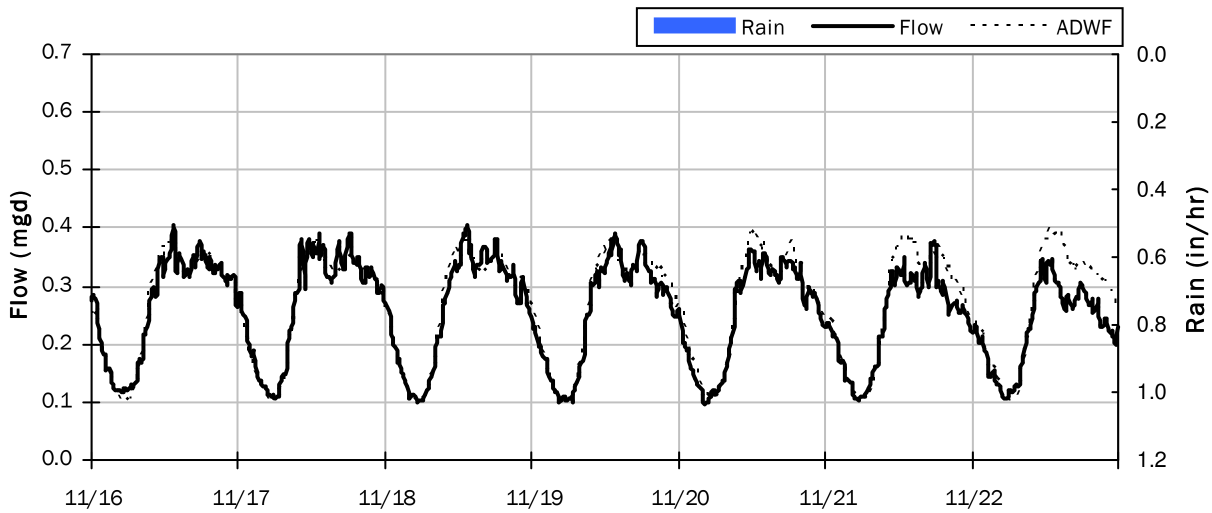
SITE 14
Weekly Level, Velocity and Flow Hydrographs
11/9/2020 to 11/16/2020



SITE 14
Weekly Level, Velocity and Flow Hydrographs
11/16/2020 to 11/23/2020

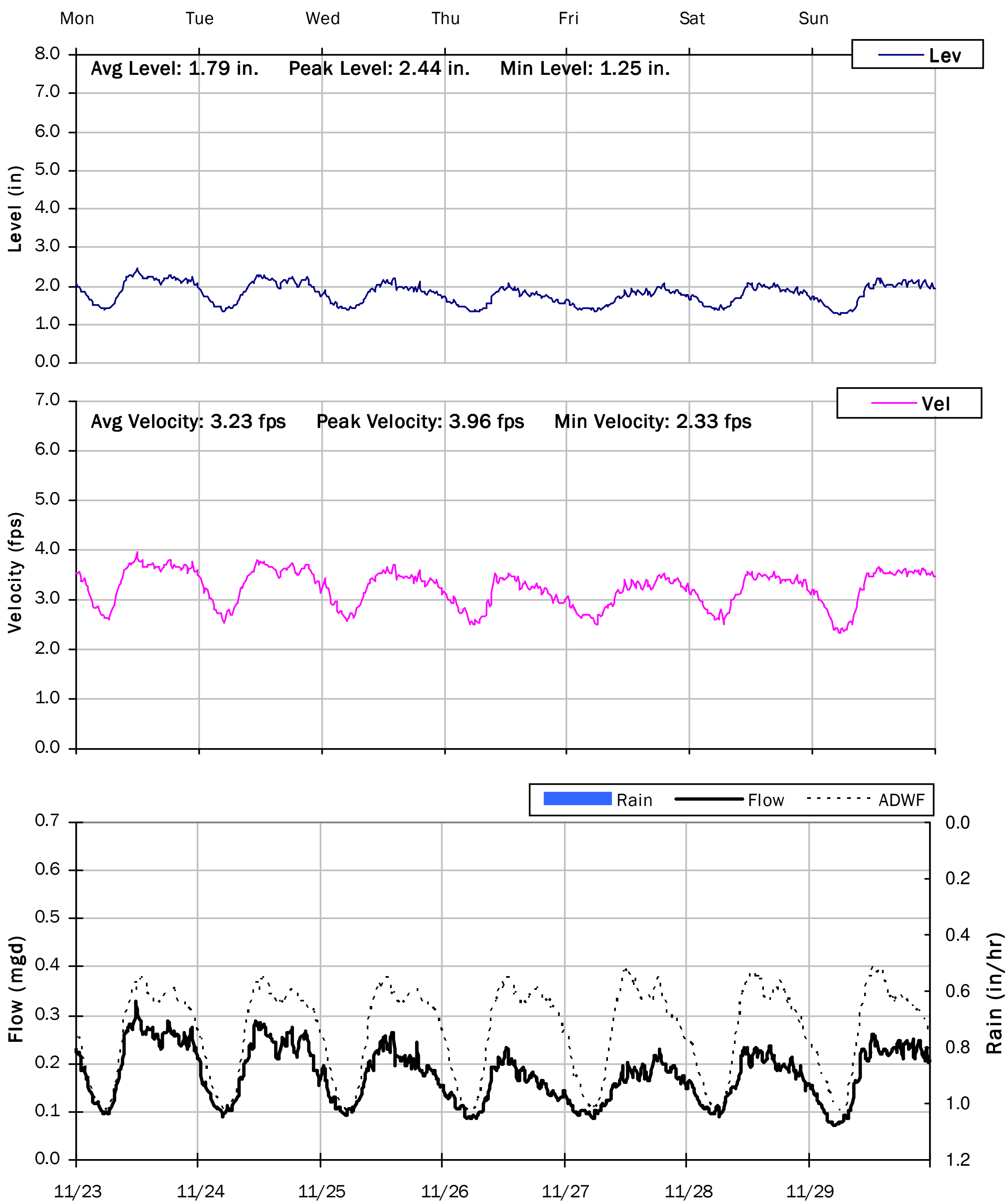






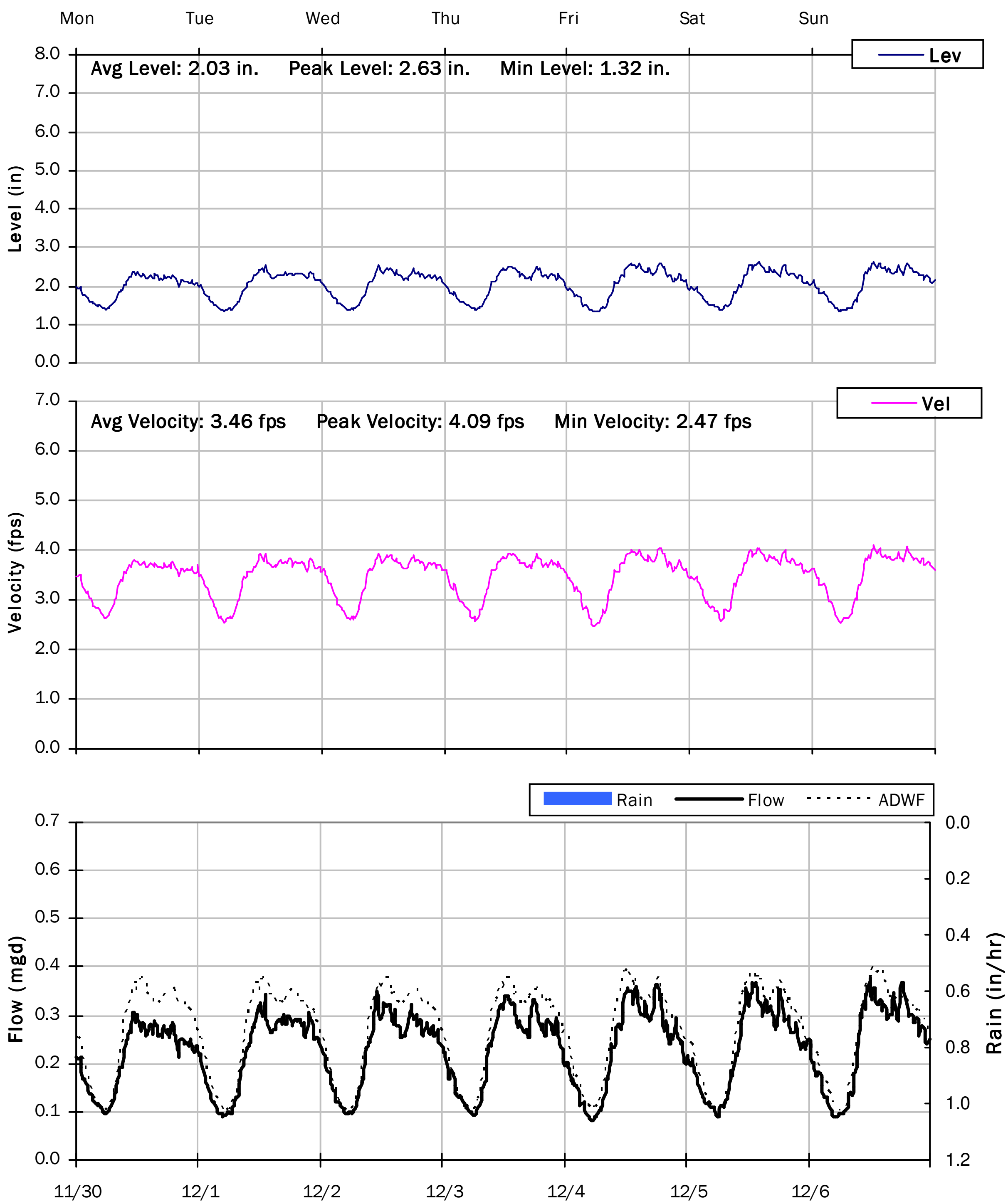
Avg Flow: 0.255 mgd **Peak Flow: 0.407 mgd** **Min Flow: 0.097 mgd**

SITE 14
Weekly Level, Velocity and Flow Hydrographs
11/23/2020 to 11/30/2020



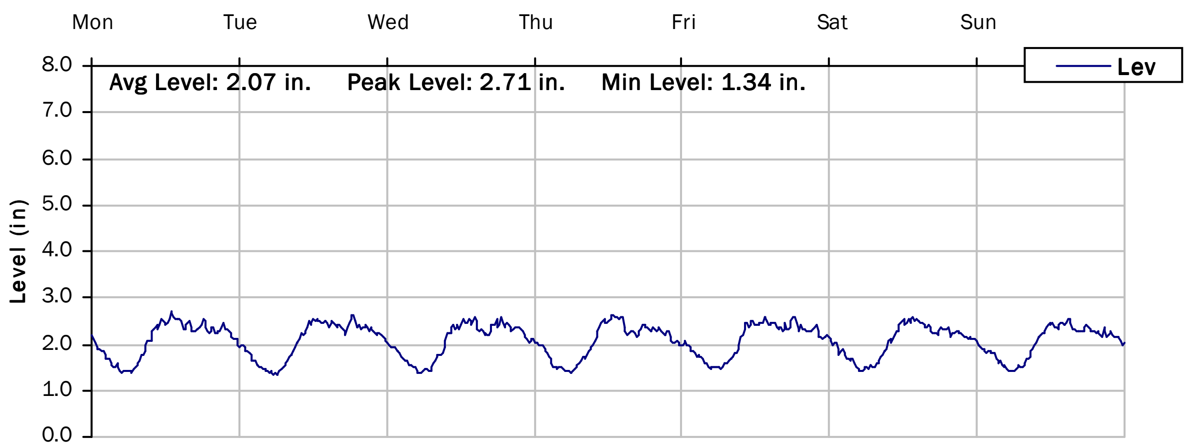
Avg Flow: 0.177 mgd **Peak Flow: 0.330 mgd** **Min Flow: 0.073 mgd**

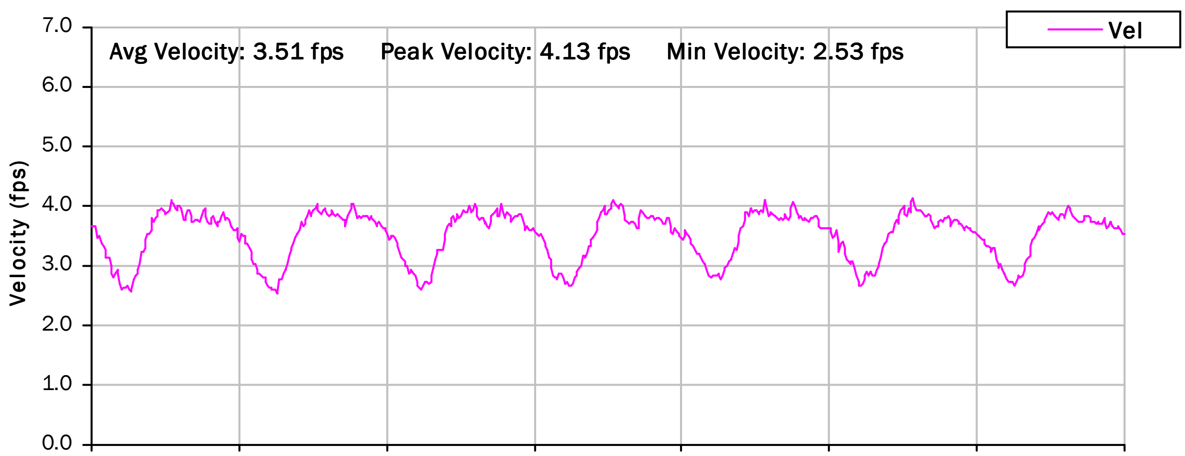
SITE 14
Weekly Level, Velocity and Flow Hydrographs
11/30/2020 to 12/7/2020

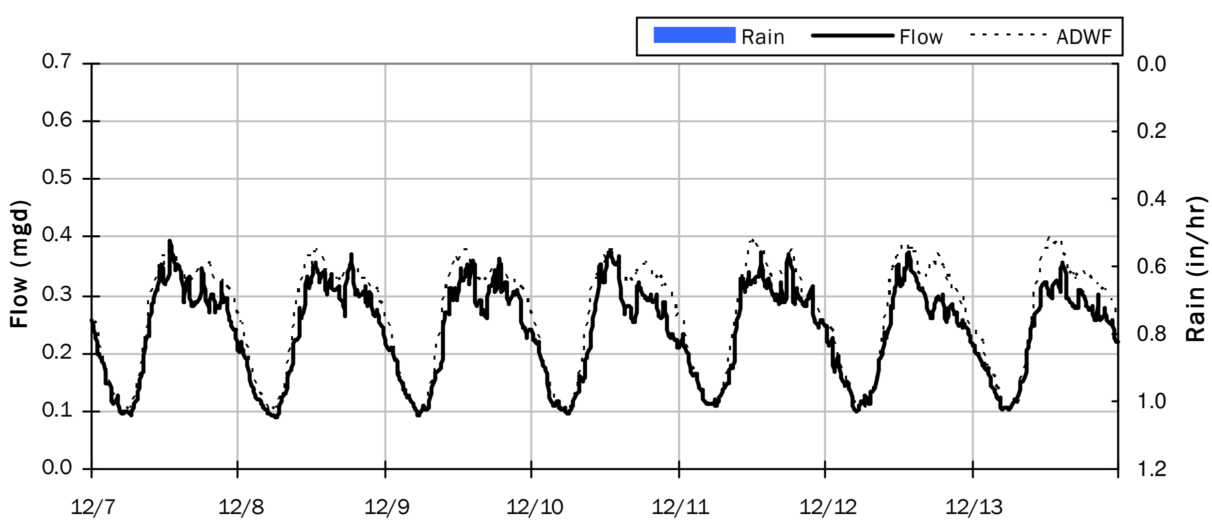


Avg Flow: 0.230 mgd **Peak Flow: 0.378 mgd** **Min Flow: 0.083 mgd**

SITE 14
Weekly Level, Velocity and Flow Hydrographs
12/7/2020 to 12/14/2020

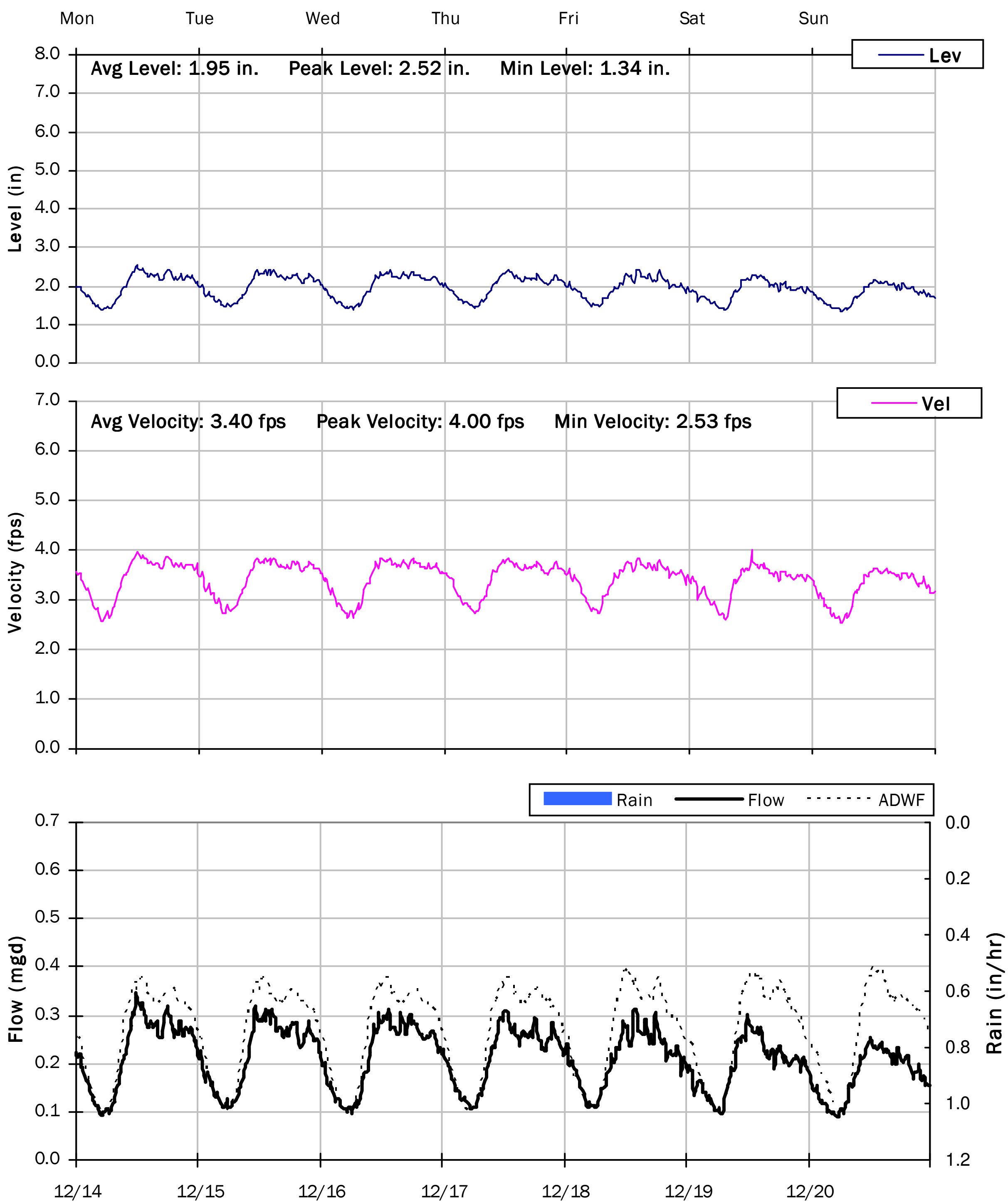






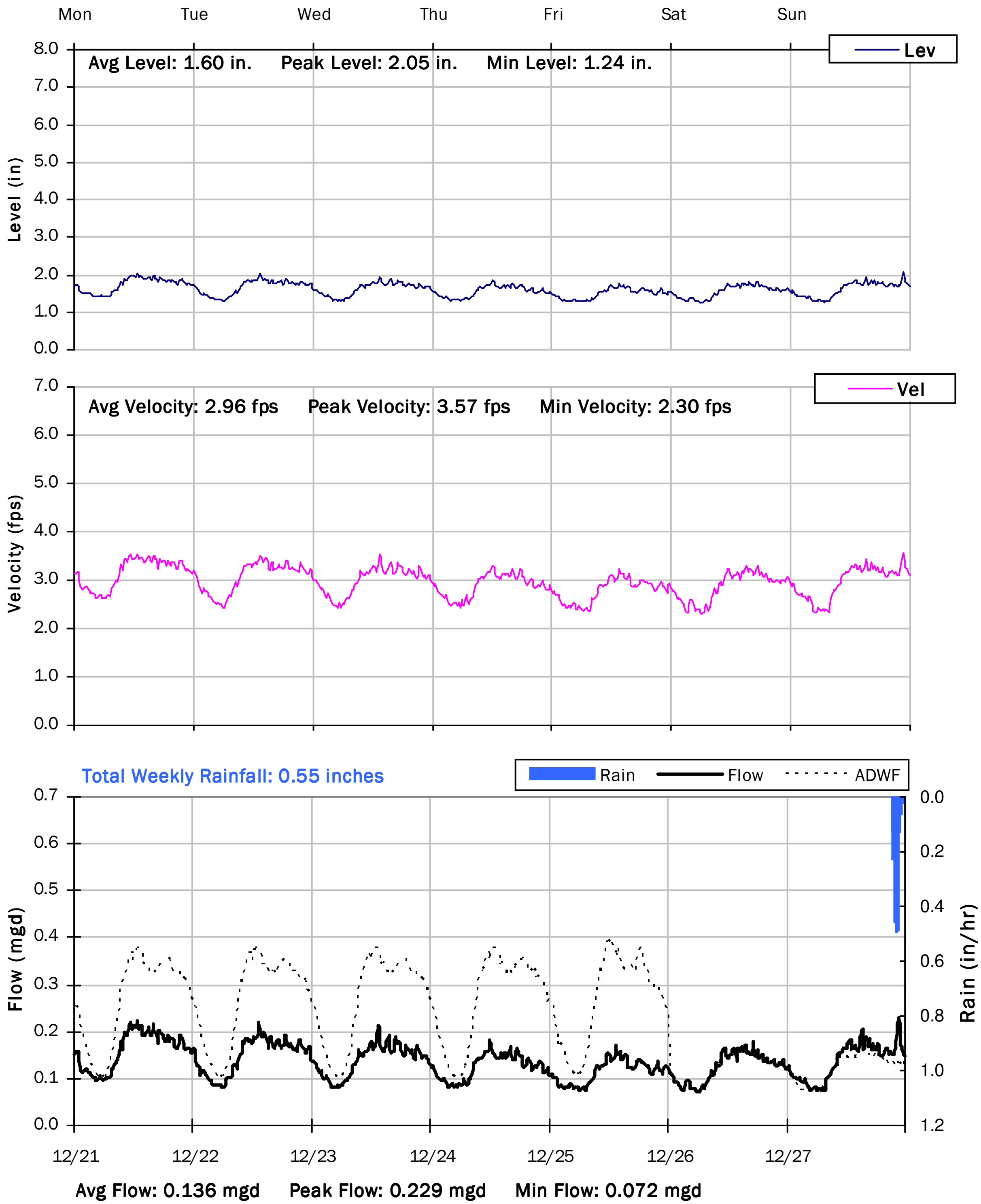
Avg Flow: 0.239 mgd Peak Flow: 0.395 mgd Min Flow: 0.088 mgd

SITE 14
Weekly Level, Velocity and Flow Hydrographs
12/14/2020 to 12/21/2020

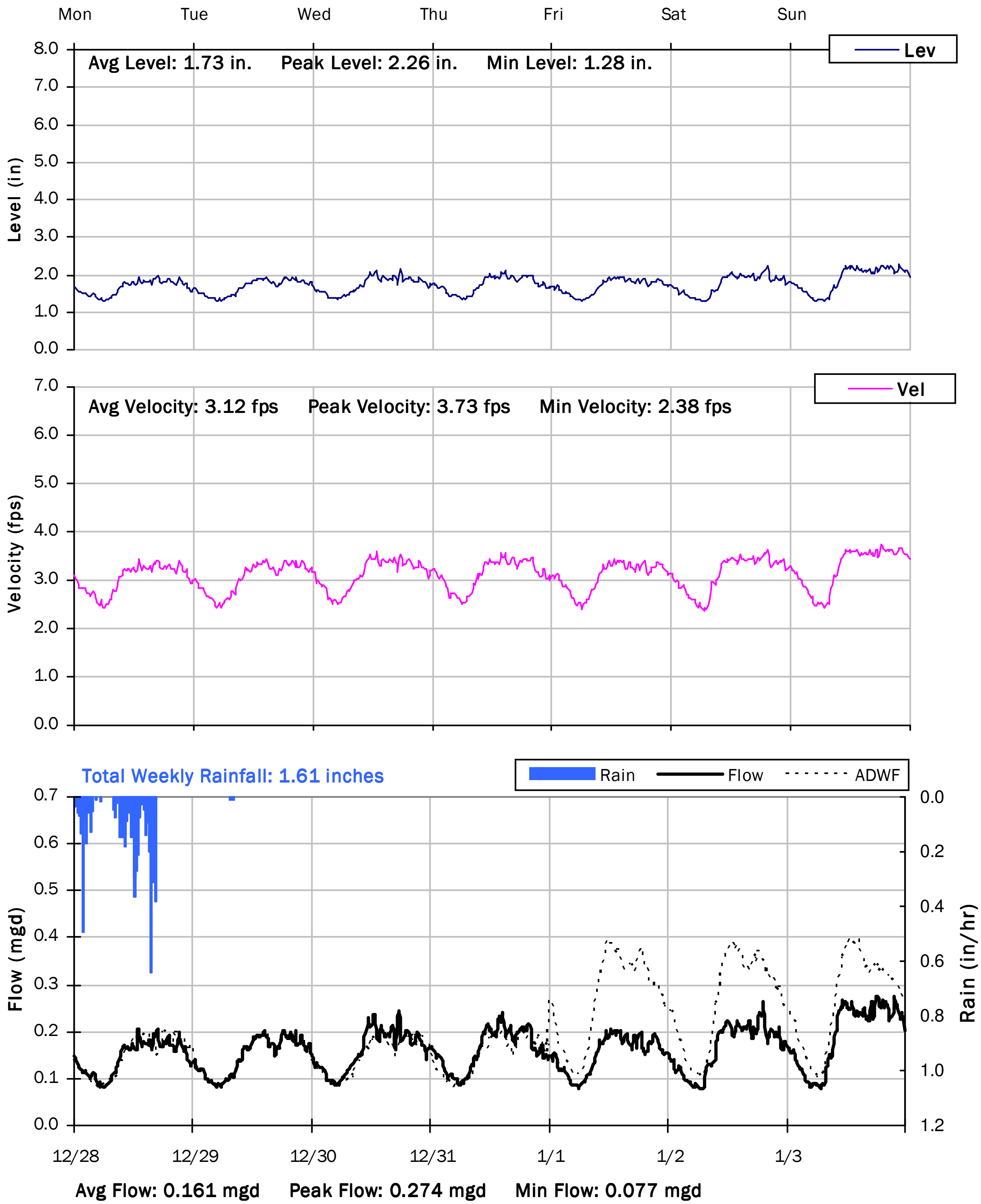


Avg Flow: 0.210 mgd Peak Flow: 0.346 mgd Min Flow: 0.088 mgd

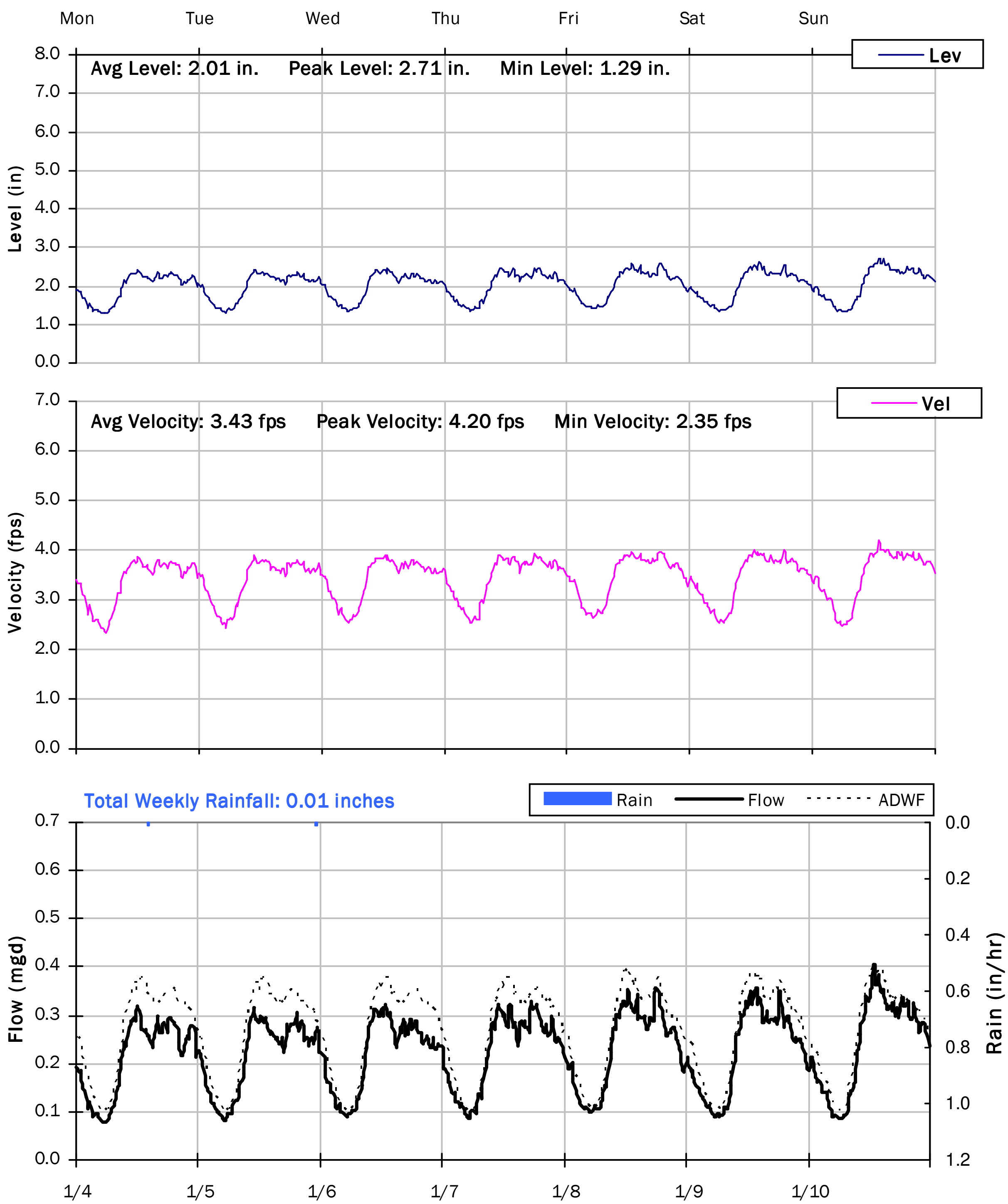
SITE 14
Weekly Level, Velocity and Flow Hydrographs
12/21/2020 to 12/28/2020



SITE 14
Weekly Level, Velocity and Flow Hydrographs
12/28/2020 to 1/4/2021

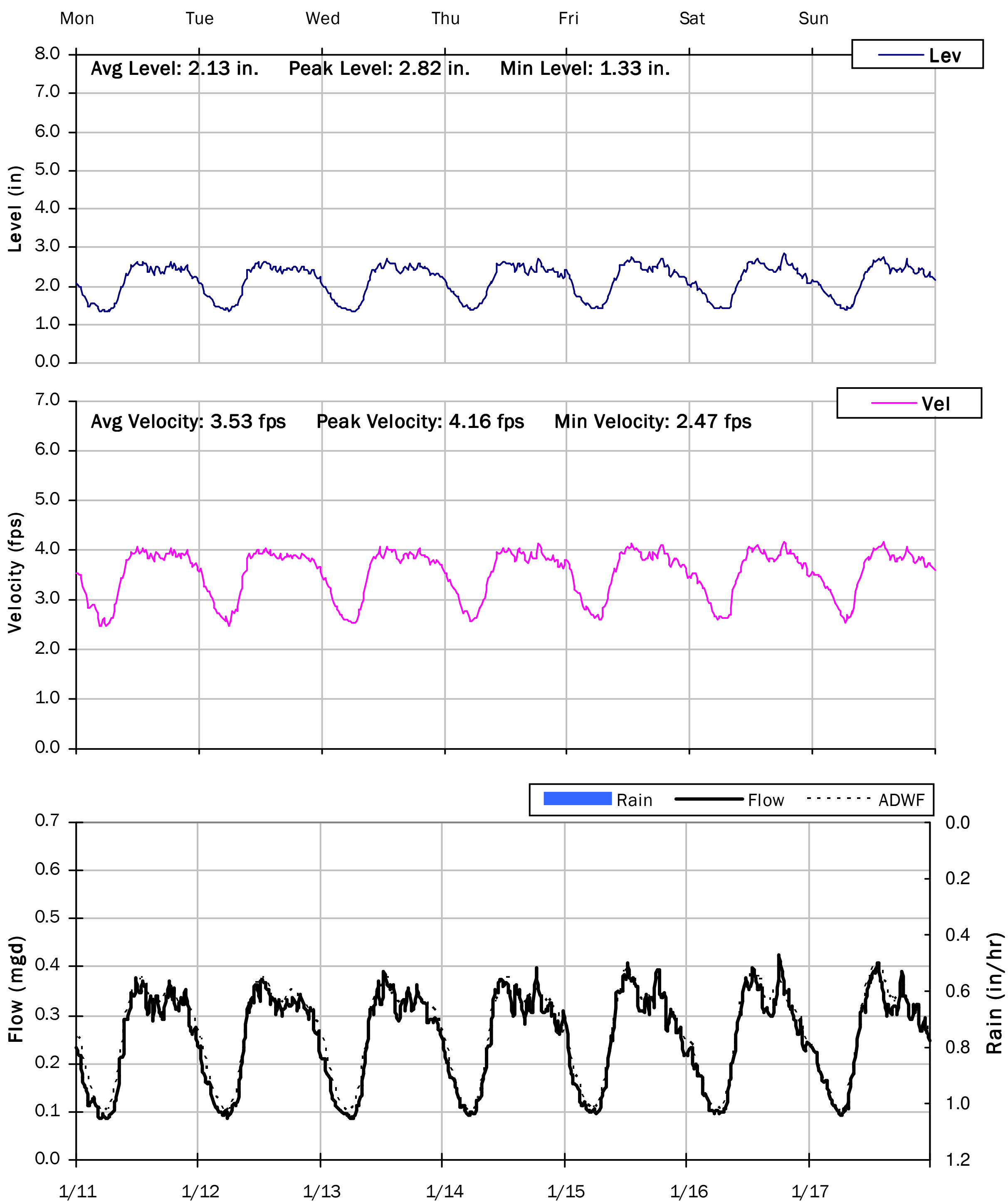


SITE 14
Weekly Level, Velocity and Flow Hydrographs
1/4/2021 to 1/11/2021



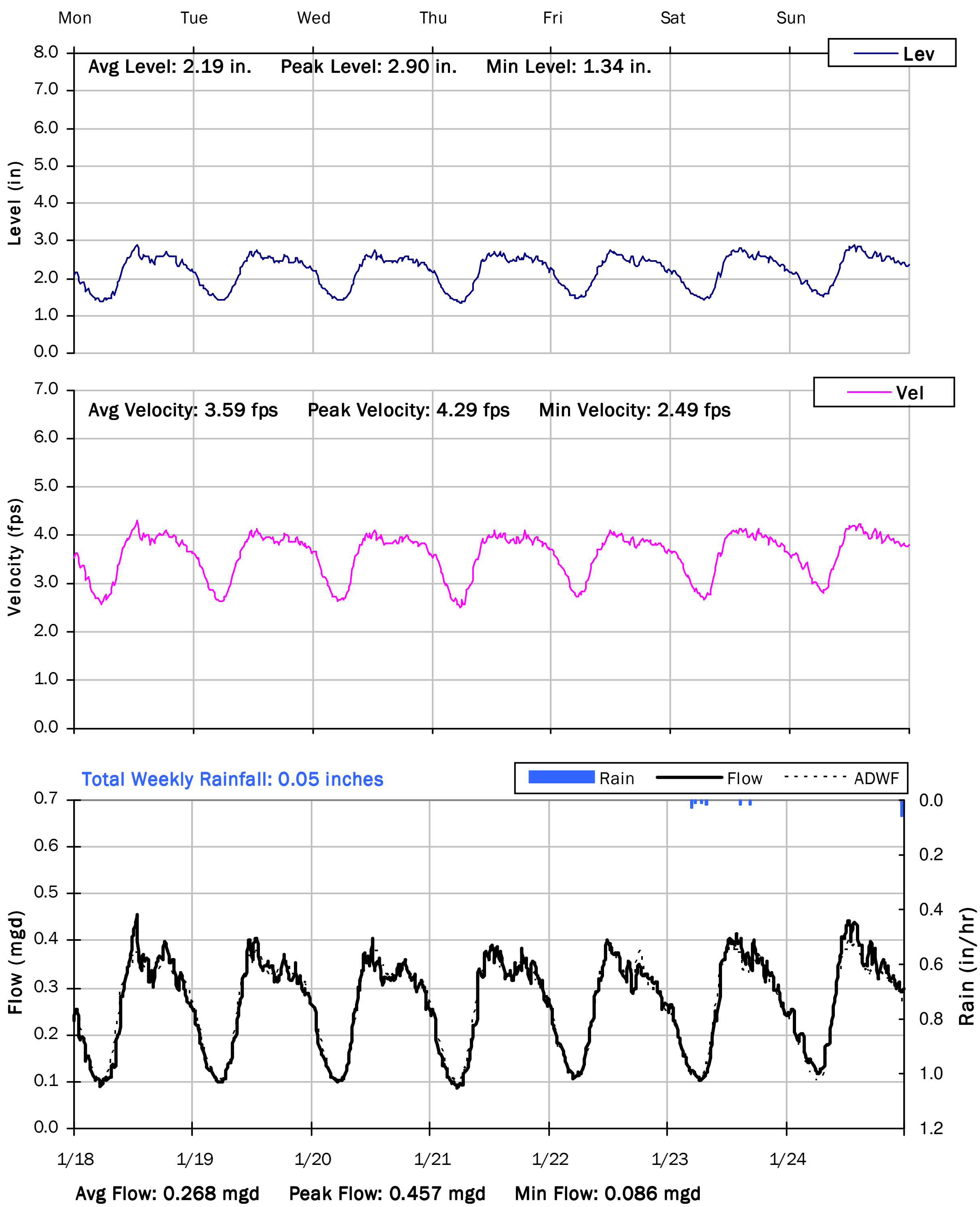
Avg Flow: 0.225 mgd   Peak Flow: 0.405 mgd   Min Flow: 0.077 mgd

SITE 14
Weekly Level, Velocity and Flow Hydrographs
1/11/2021 to 1/18/2021

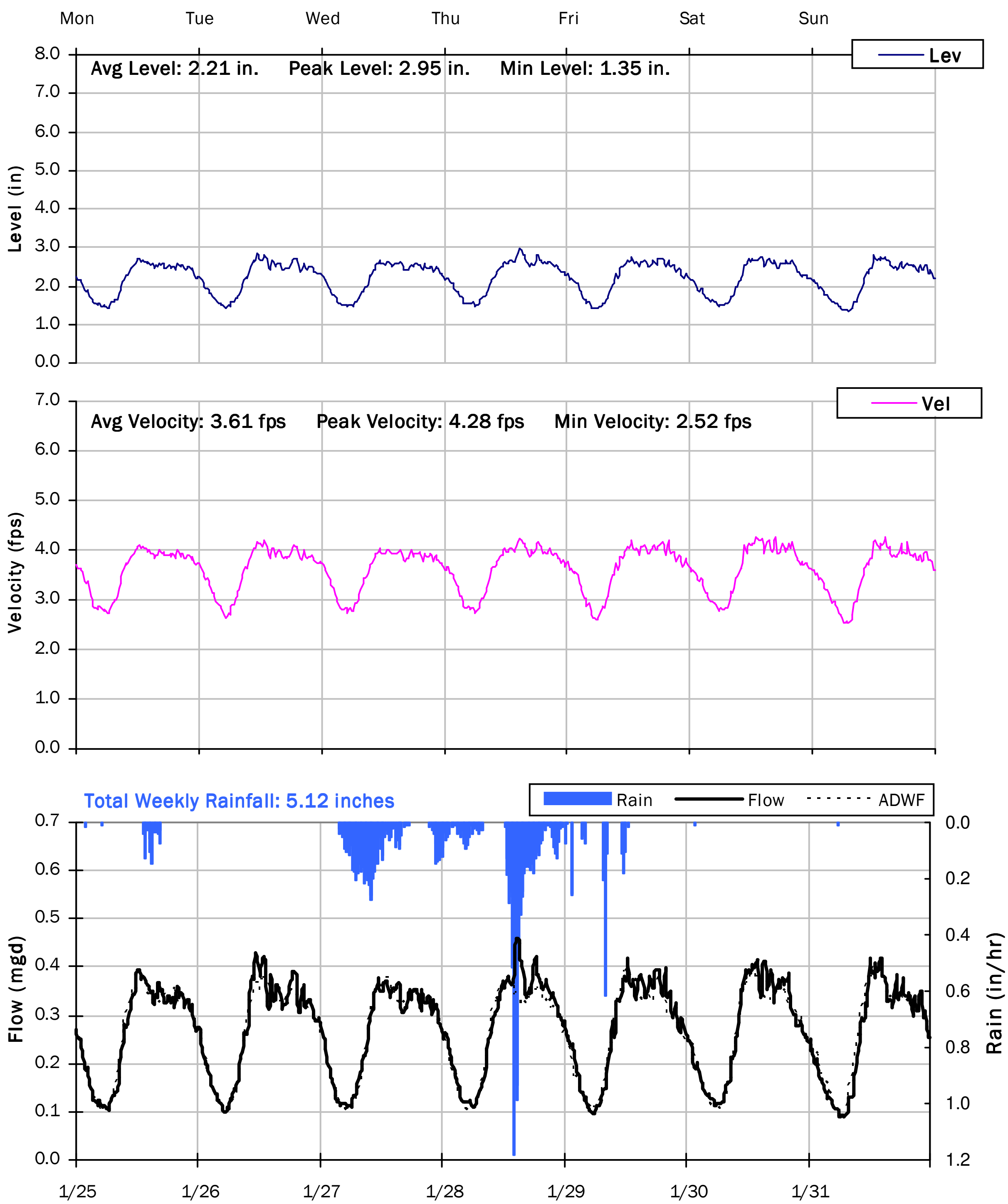


Avg Flow: 0.254 mgd Peak Flow: 0.426 mgd Min Flow: 0.086 mgd

SITE 14
Weekly Level, Velocity and Flow Hydrographs
1/18/2021 to 1/25/2021

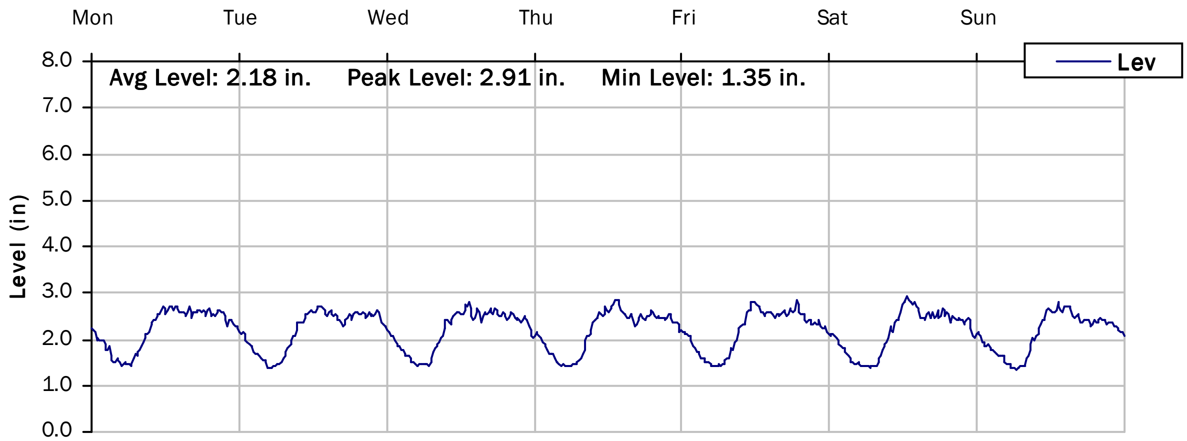


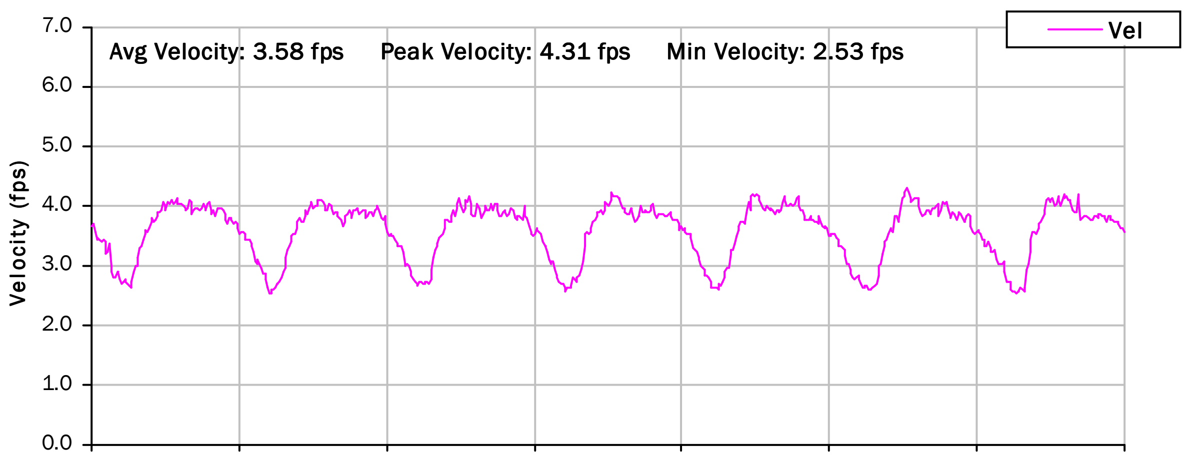
SITE 14
Weekly Level, Velocity and Flow Hydrographs
1/25/2021 to 2/1/2021

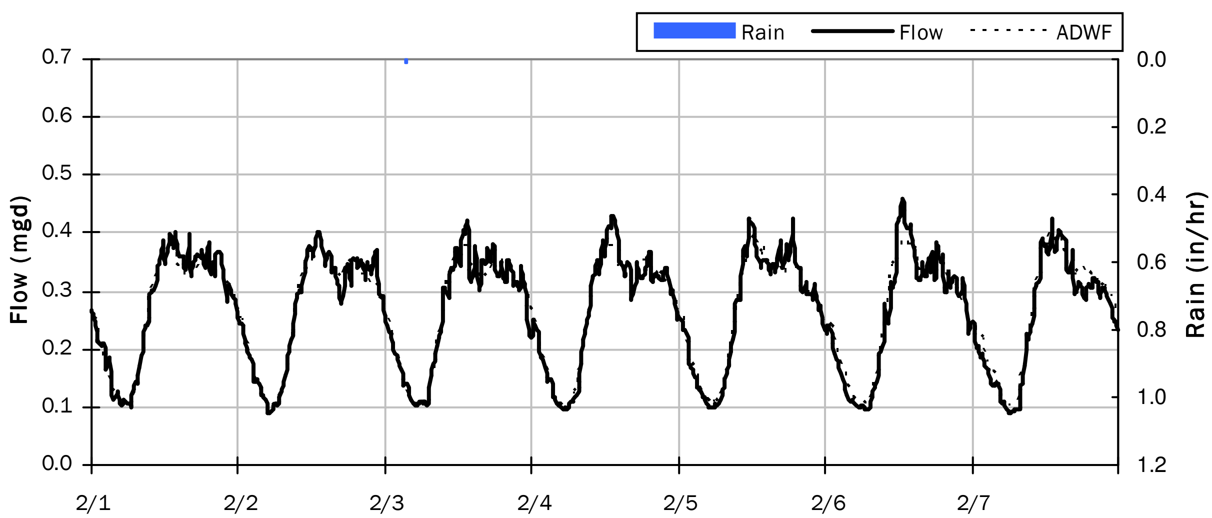


Avg Flow: 0.272 mgd **Peak Flow: 0.461 mgd** **Min Flow: 0.088 mgd**

SITE 14
Weekly Level, Velocity and Flow Hydrographs
2/1/2021 to 2/8/2021

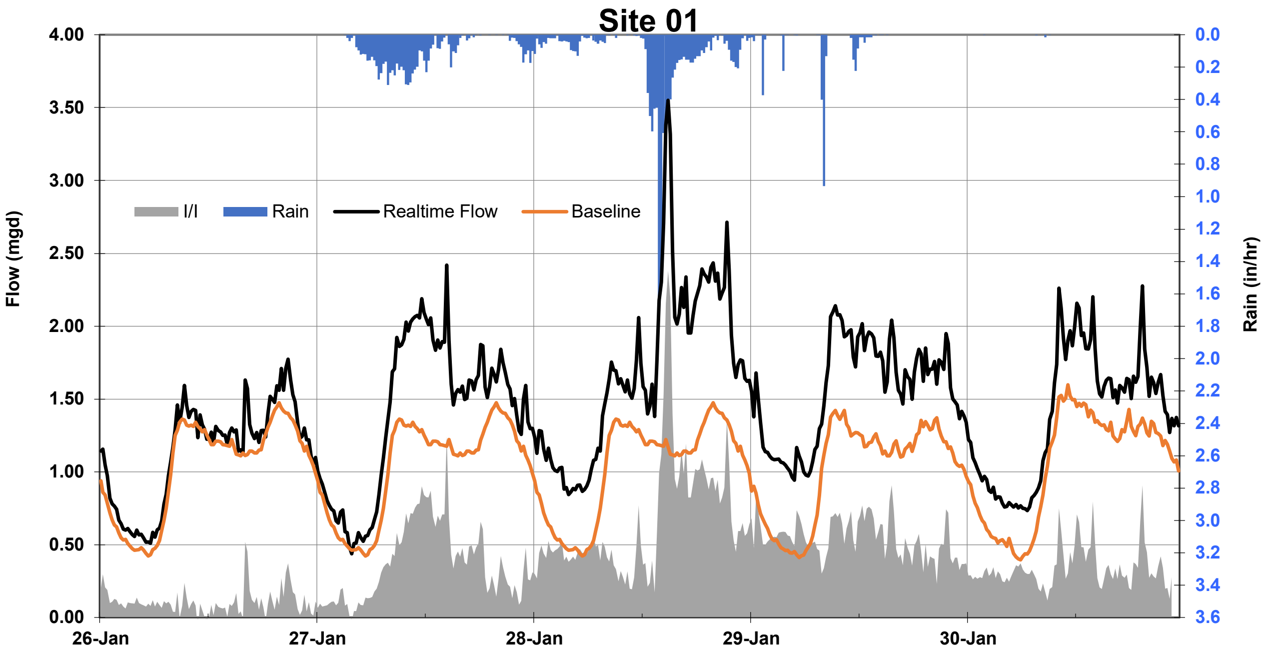


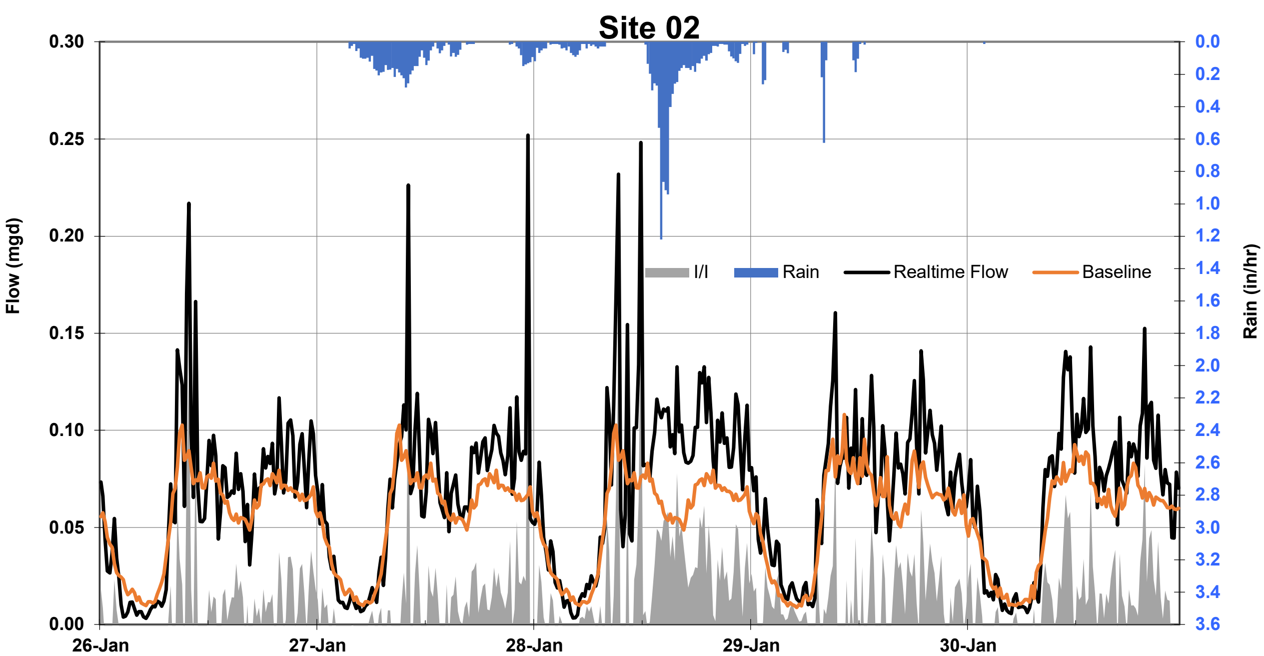


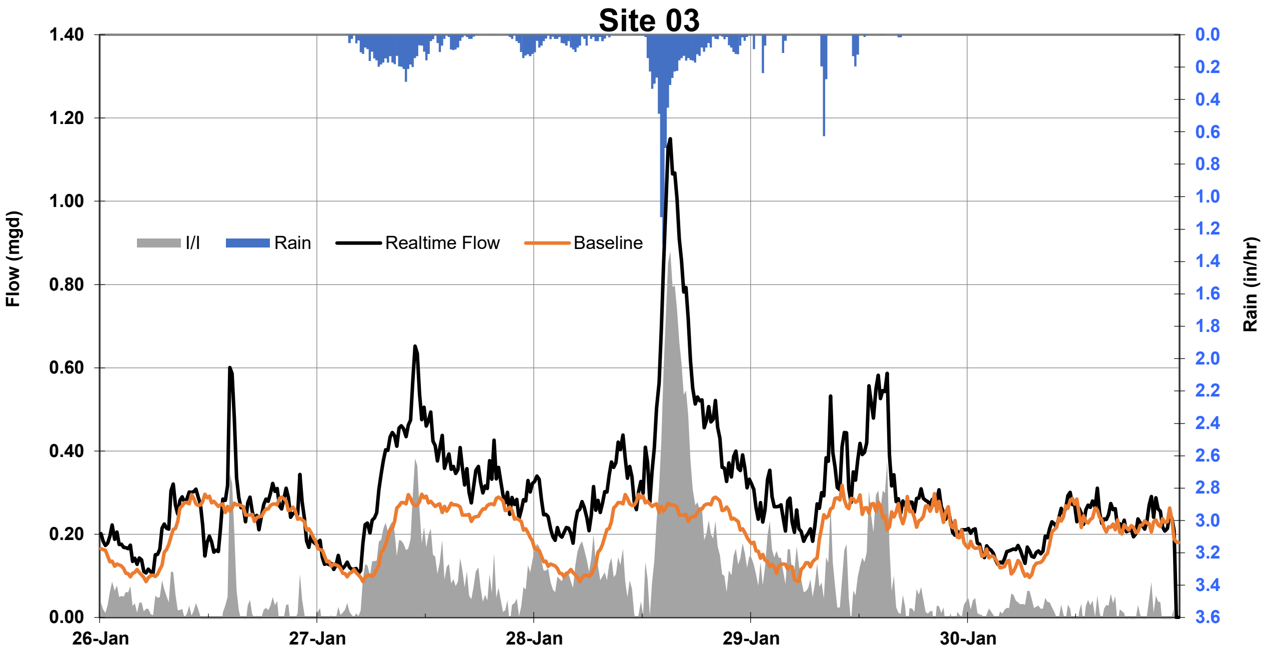


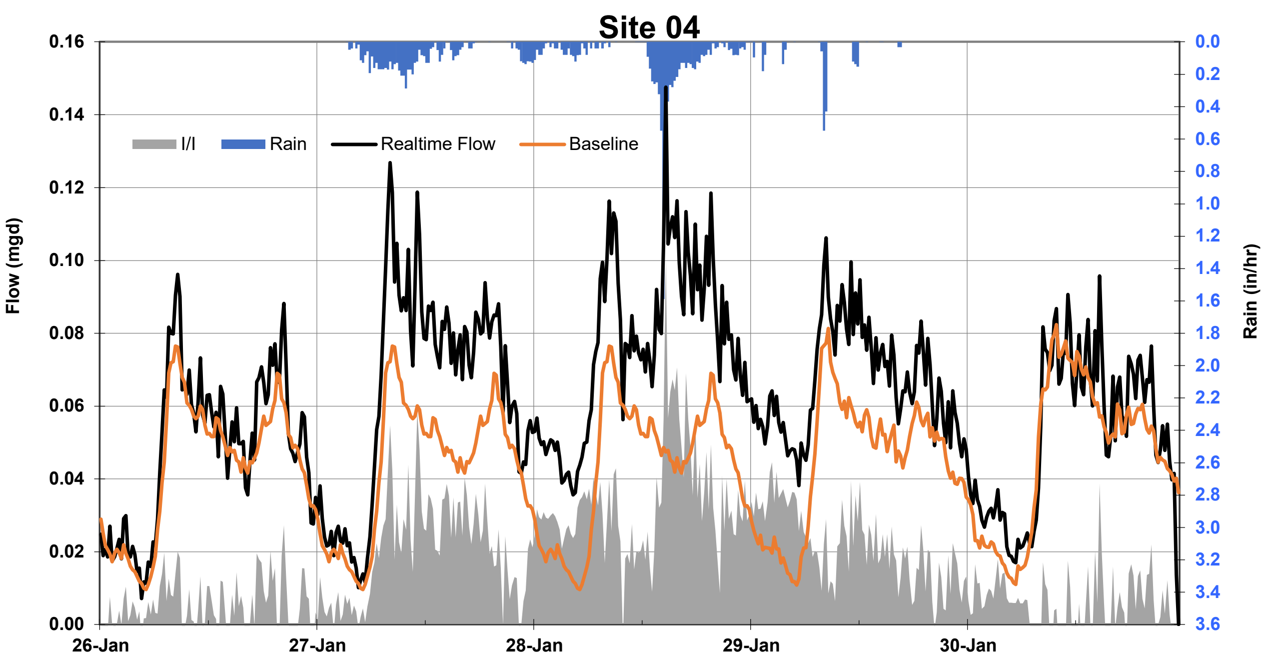
Avg Flow: 0.266 mgd **Peak Flow: 0.461 mgd** **Min Flow: 0.088 mgd**

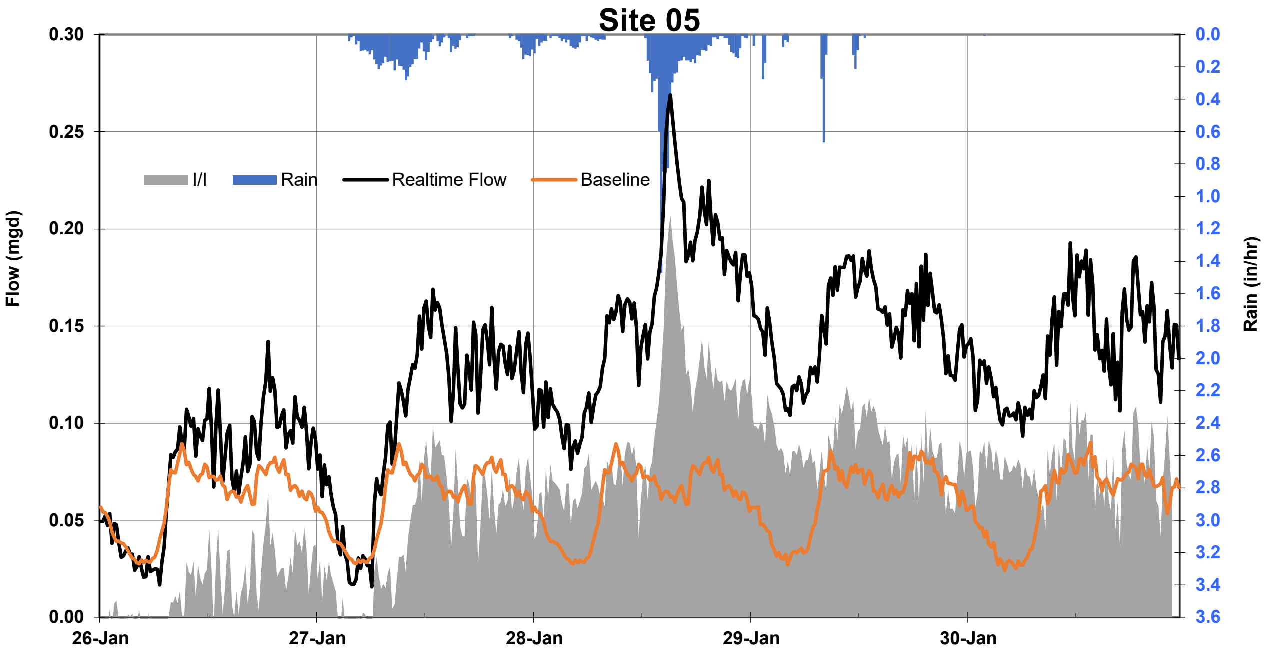
APPENDIX B – WET WEATHER CHARTS


Site 01
Flow (mgd)
Rain (in/hr)
I/I
Rain
Realtime Flow
Baseline
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan

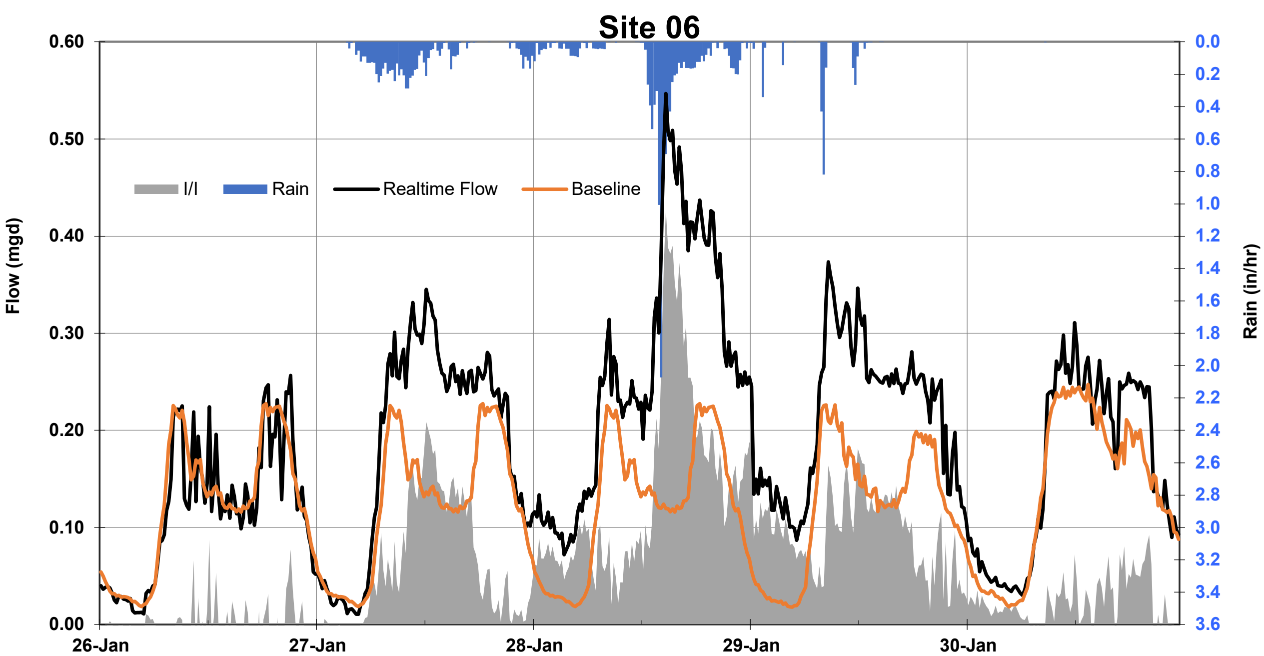

Site 02
Flow (mgd)
Rain (in/hr)
I/I
Rain
Realtime Flow
Baseline
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan


Site 03
Flow (mgd)
Rain (in/hr)
I/I
Rain
Realtime Flow
Baseline
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan

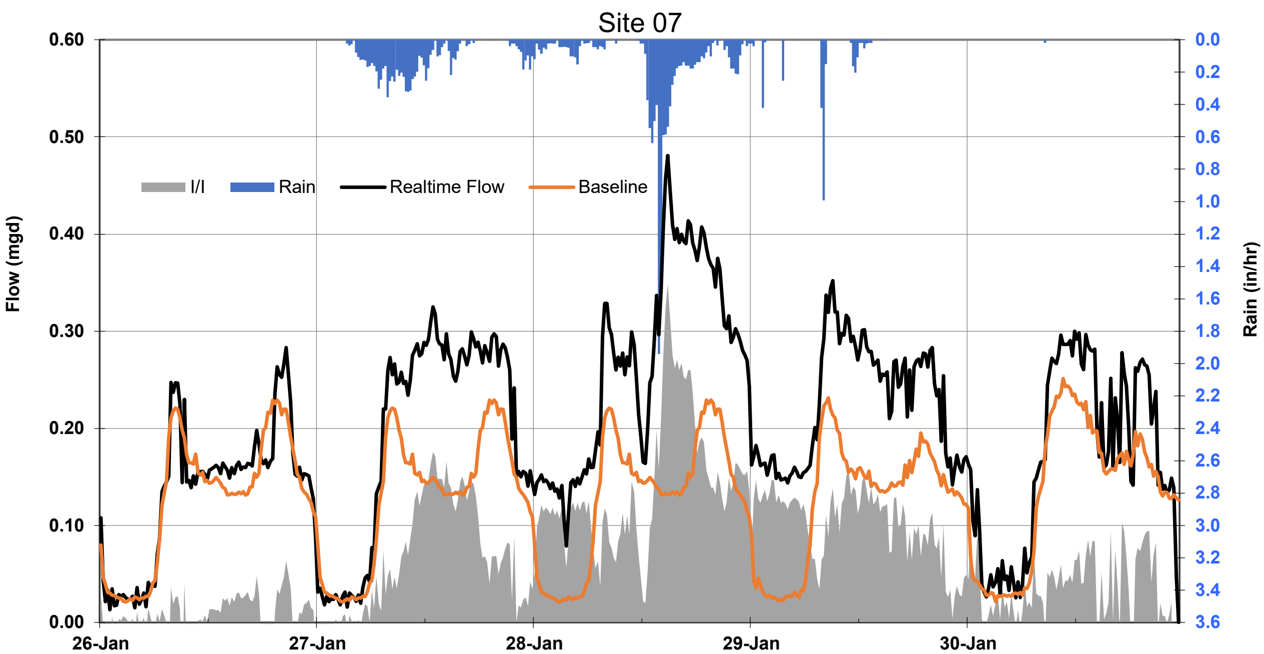

Site 04
Flow (mgd)
Rain (in/hr)
I/I
Rain
Realtime Flow
Baseline
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan

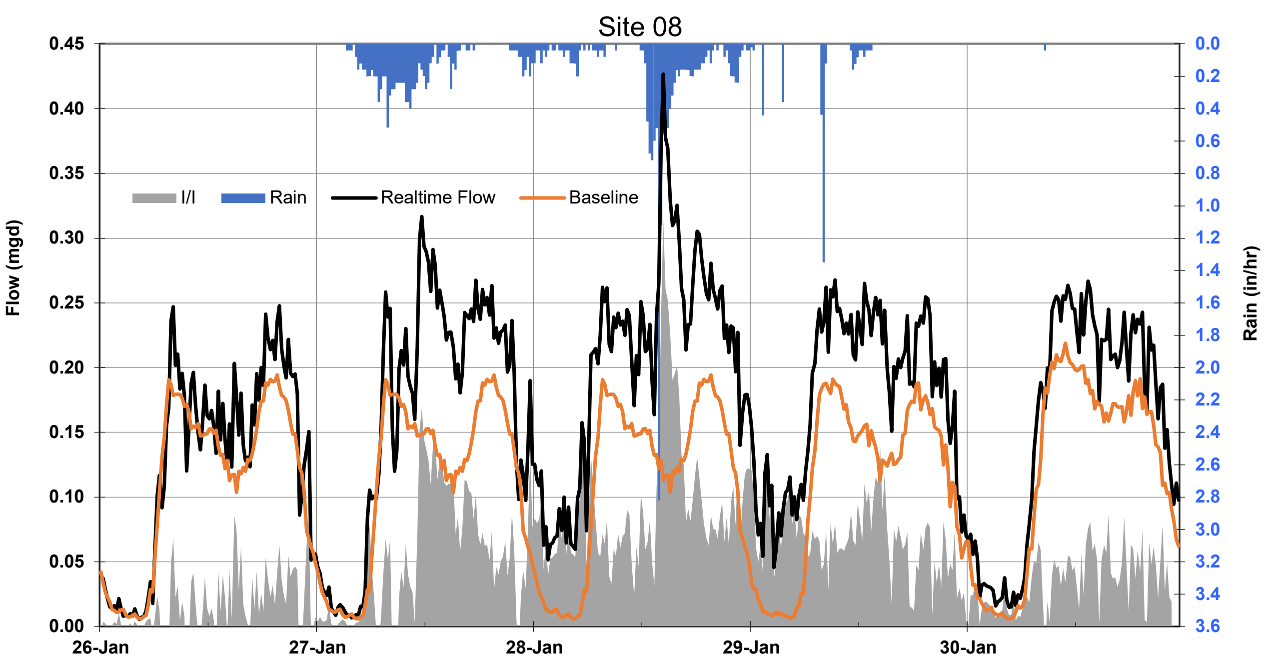


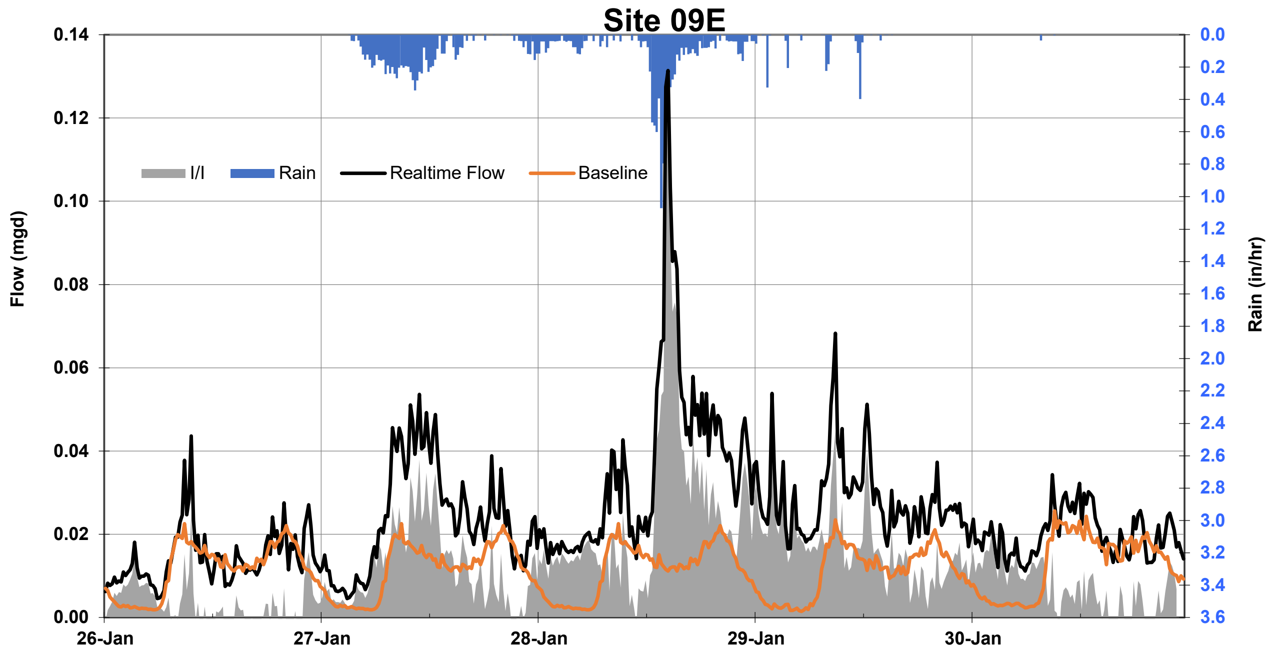
Site 05
I/I
Rain
Realtime Flow
Baseline
Flow (mgd)
Rain (in/hr)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan



Site 06
I/I
Rain
Realtime Flow
Baseline
Flow (mgd)
Rain (in/hr)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan


Site 07
I/I
Rain
Realtime Flow
Baseline
Flow (mgd)
Rain (in/hr)
0.60
0.50
0.40
0.30
0.20
0.10
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan


Site 08
I/I
Rain
Realtime Flow
Baseline
Flow (mgd)
Rain (in/hr)
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan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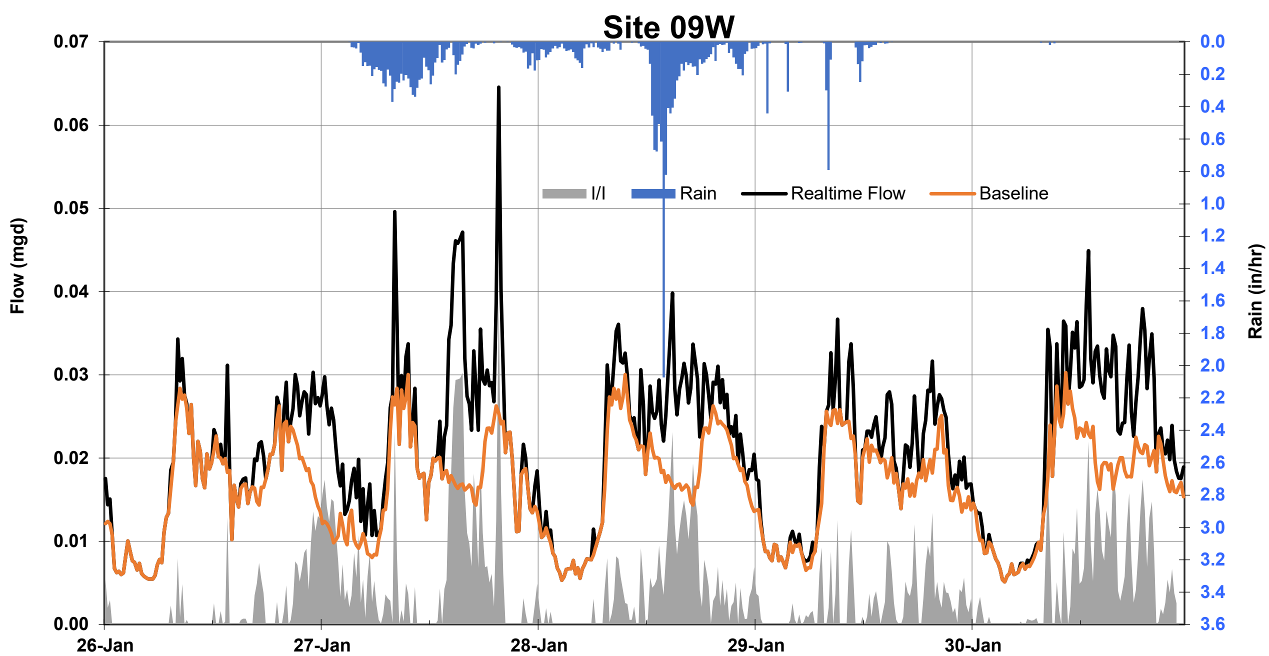
0.12
0.10
0.08
0.06
0.04
0.02
0.00
Flow (mgd)
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
Rain (in/hr)
I/I
Rain
Realtime Flow
Baseline
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan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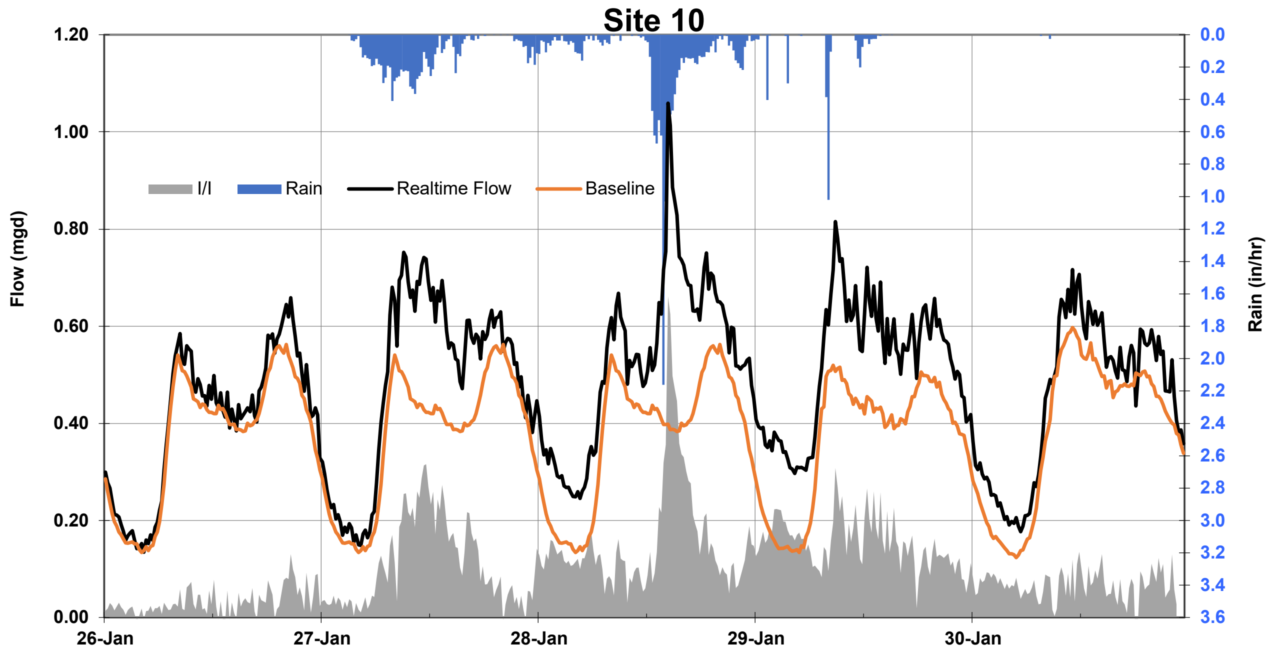
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
Rain (in/hr)
I/I
Rain
Realtime Flow
Baseline
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan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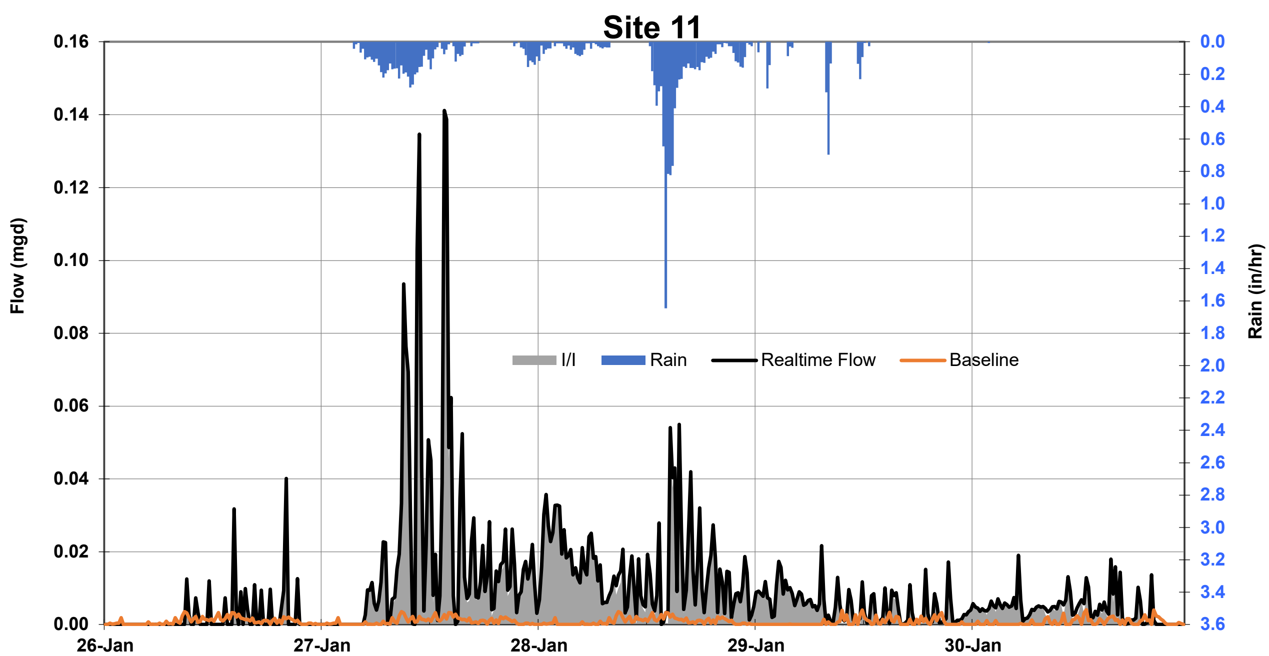
1.00
0.80
0.60
0.40
0.20
0.00
Flow (mgd)
I/I
Rain
Realtime Flow
Baseline
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
Rain (in/hr)
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan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0.06
0.04
0.02
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I/I
Rain
Realtime Flow
Baseline
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
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Rain (in/hr)
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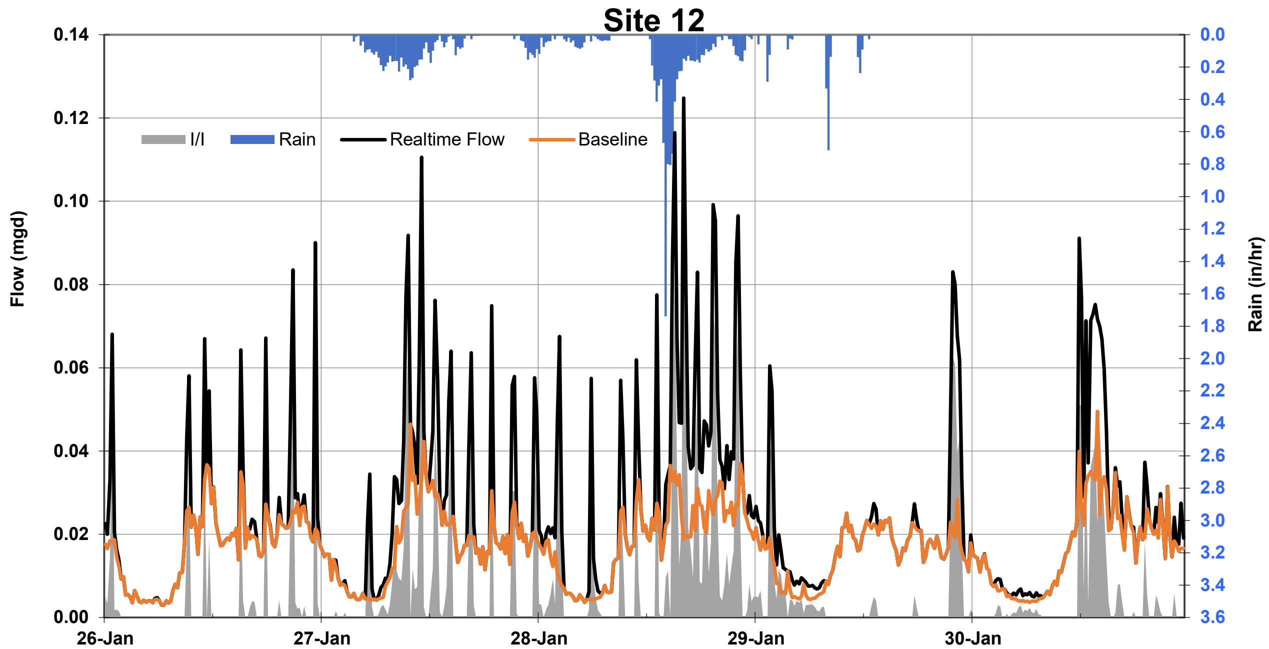
27-Jan
28-Jan
29-Jan
30-Jan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I/I
Rain
Realtime Flow
Baseline
Flow (mgd)
Rain (in/hr)
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0.10
0.08
0.06
0.04
0.02
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
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3.6
26-Jan
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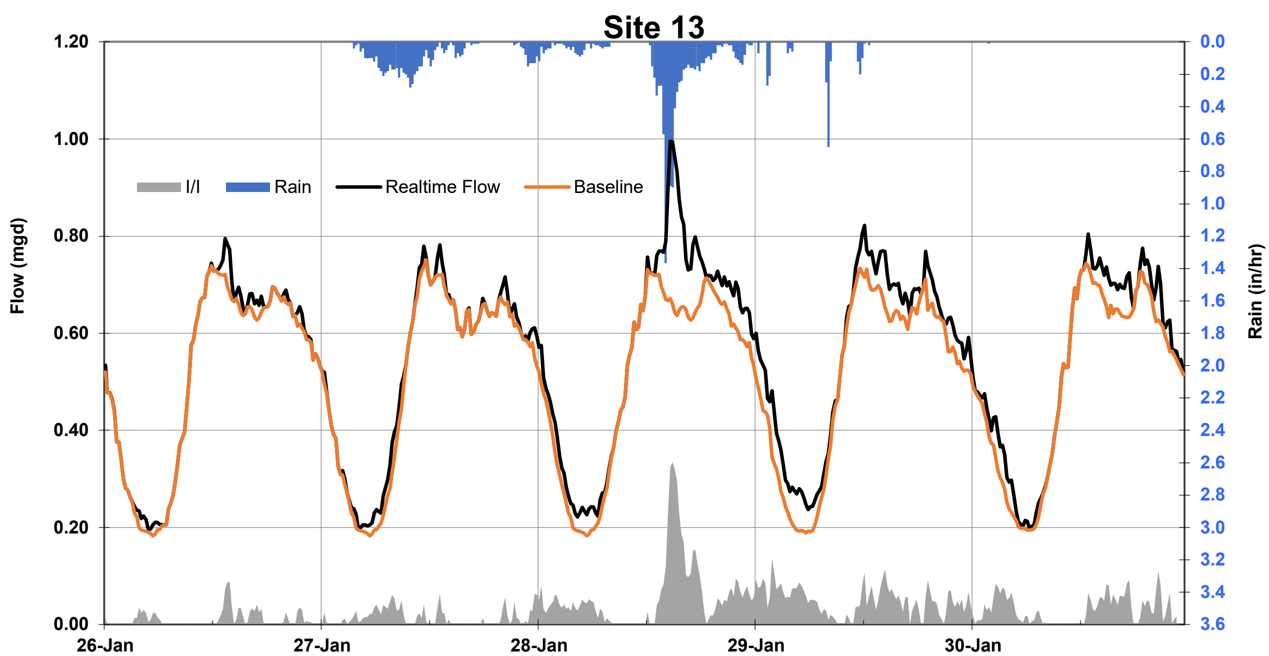
28-Jan
29-Jan
30-Jan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Realtime Flow
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Rain (in/hr)
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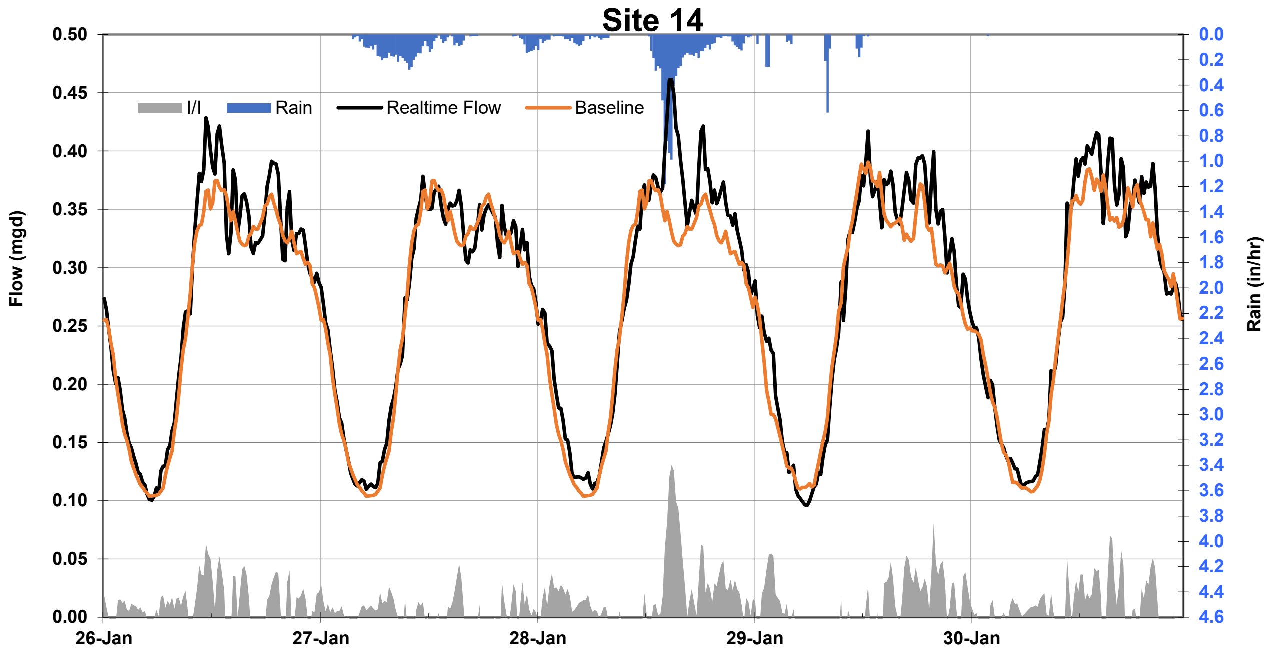
0.60
0.40
0.20
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan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I/I
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Realtime Flow
Baseline
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Rain (in/hr)
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0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
2.2
2.4
2.6
2.8
3.0
3.2
3.4
3.6
3.8
4.0
4.2
4.4
4.6
26-Jan
27-Jan
28-Jan
29-Jan
30-Jan

GOLETA WEST SANITARY DISTRICT
www.goletawest.com | P.O. Box 4, Goleta, CA 93116-0004
phone: 805 968-2617, fax: 805 562-8987 | UCSB Campus Parking Lot 32, Santa Barbara, CA 93106

COVER MEMORANDUM

Date: January 31, 2025

From: Brian McCarthy, Goleta West Sanitary District Legally Responsible Official

To: State Water Resources Control Board; Central Coast Regional Water Quality Control Board (CIWQS)

Goleta West Sanitary District "the District") submits its latest copy of the 2021-2024 Sanitary Sewer Management Plan ("SSMP") Audit Report. The District values the internal audit process to ensure its current SSMP is effective and the District's management and operations are in compliance with the SSMP requirements and the State Water Resources Control Board's Water Quality Order No. 2022-0103 DWQ ("Reissued WDR"). The District is already updating its SSMP due in August 2025.

The District began its iterative internal audit early, and retained Fischer Compliance, LLC, ("Fischer Compliance") to conduct a Compliance Enforcement Inspection ("CEI") in March 2024. The District experienced an uncharacteristic, unexpected large Category 1 spill in February 2024, due to external corrosion caused by highly corrosive soils, and chose to complete the SSMP audit with Fischer Compliance concurrently with identifying its response and corrective actions and spill investigation findings.

In accordance with the requirements identified in Section 5.4 of the Reissued WDR, the District's input on the audit findings has been considered. Since the draft CEI report was prepared for the District's consideration through the summer of 2024, the District has been reviewing potential findings internally and with Fischer Compliance, and implementing compliance improvements with additional exchanges of information with Fischer Compliance. The draft CEI does not reflect the District's current compliance and SSMP effectiveness. To demonstrate the District's detailed review and compliance, the District has attached this draft CEI as Appendix 1 to the completed SSMP Audit Report even though it does not capture the District's responses at the time or everything discussed and implemented since.

This SSMP Audit Report also serves as a roadmap for the District's continued efforts to exceed industry standards in compliance over the next audit period. At the time this SSMP Audit Report was completed, the District understands that all the potential areas of concern identified by Fischer Compliance's CEI and audit have been reviewed and resolved as necessary, or are currently underway for being resolved. Updated efforts may not yet be completely captured, and the findings may be overinclusive of addressed potential deficiencies based on ongoing implementation efforts.

The District continues to review and revise its implementation schedule and will continue to do so throughout the next audit period, an initial version of which is included in Appendix 3 to the SSMP Audit Report. This schedule includes many actions undertaken during the audit period which are also continuing to evolve as the District completes its expanded 2022 force main condition assessment and evaluates investigation findings in light of developing long-term improvements and considerations. Many of these actions are also documented in the District's submitted February 2024 spill report, subsequent technical report, technical report update, and available online on the District's website. The District will maintain current SSMP audit materials and documentation at its main office.

Sewer System Management Plan (SSMP) Audit Report

8/2/2021 to 8/2/2024

REVIEWED AND APPROVED BY:

BRIAN MCCARTHY
Legally Responsible Official

Goleta West Sanitary District
Sanitary Sewer System WDID=3SSO11465

PREPARED BY:

FISCHER LLC COMPLIANCE
PRACTICES THAT COMPLY

February 3, 2025

Date Signed

FISCHER LLC COMPLIANCE
PRACTICES THAT COMPLY

CERTIFICATE

OF COMPLETION

August 2, 2021 to August 2, 2024

SEWER SYSTEM MANAGEMENT PLAN AUDIT

- *Regulatory review, agency expectations and compliance best practices*
- *Regional Water Quality Control Board inspector expectations*
- *Completion of State Water Board Pre-Inspection Questionnaire*
- *Completion of Compliance Evaluation Inspection (CEI)*
- *Findings/Best Practice Recommendations for further improving agency program effectiveness, compliance, and resilience*

James Fischer

James Fischer, PE
NPDES Compliance Inspector

FISCHER LLC COMPLIANCE
PRACTICES THAT COMPLY

December 30, 2024

Goleta West Sanitary District
Att: Brian McCarthy, General Manager
P.O. Box 4
Santa Barbara, CA 93116-0004

Dear Brian,

We are pleased to present the 2021-2024 Sewer System Management Plan (SSMP) Audit Report for the Goleta West Sanitary District. The Audit meets and exceeds compliance with the Reissued WDR (State Water Board, Water Quality Order No. 2022-0103-DWQ, Attachment D-10 and Specifications 5.4). The Audit shed light on many existing and successful best practices and presents additional areas to consider for improving implementation of with the Reissued WDR.

Detailed desktop and field reviews incorporating USEPA/Water Board Compliance Evaluation Inspection (CEI) procedures, including comprehensive interviews with management and field staff were relied upon for generating the Audit findings and best practice recommendations. With completion of the Audit, the District becomes one of the few leading systems to be comprehensively evaluated under the Reissued WDR ahead of the required deadline.

We recommend utilizing the SSMP Audit developed in checklist format as a roadmap for improving SSMP compliance, implementation, and effectiveness. The District should complete Appendix 3 (SSMP Implementation Plan/Schedule) as soon as practical to commit to necessary improvements for reducing spills and enforcement exposure.

We look forward to continued compliance support for the District.

Sincerely,
James Fischer

James Fischer, P.E.
Principal, Credentialed U.S. EPA NPDES Compliance Inspector

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LIST OF ACRONYMS

Acronym	Description/Reference Hyperlinks
CEI	Compliance Evaluation Inspection
CIP	System Evaluation, Capacity Assurance/Capital Improvement Program (SECAP), Att. D-8
CSA	County Service Area
CIWQS	California Integrated Water Quality System
DS	Data Submitter (DS) registered with State Water Board
FOG	Fats, Oils and Grease (FOG) Control Program (Reissued WDR)
LRO	Legally Responsible Official (LRO) registered with State Water Board
NMMRP	Notification, Monitoring, Reporting, Record Keeping (NMRR), Att. E-1
SECAP	System Evaluation, Capacity Assurance/Capital Improvement Program (SECAP), Att. D-8
O/M	Operations and Maintenance Program (O/M)
SERP	Spill Emergency Response Plan (SERP)
SSMP	Sewer System Management Plan (SSMP)
SWRCB	State Water Resources Control Board (SWRCB)
Waters of the State	Any water, surface or underground, including saline waters, within the boundaries of California. In case of a sewage spill, storm drains are considered to be waters of the State unless the sewage is completely contained and returned to the sewer system; also referred to as surface water(s) or State waterway.

PART 1 – EXECUTIVE SUMMARY

The Goleta West Sanitary District (District) is charged with complying the State Water Resources Control Board (SWRCB) General Reissued Waste Discharge Requirements (WDR) for Sanitary Sewer Systems (“Reissued WDR”, Order No. 2022-0103-DWQ). The Reissued WDR replaced the original 2006 WDR (Order No. 2006-003-DWQ and its Monitoring and Reporting Program, Order No. 2013-0058-EXEC), which became effective on June 5, 2023.

The Reissued WDR requirements are the strictest sewer regulations in the country requiring a proactive approach for operations, maintenance, and management of sanitary sewer collection system to reduce or eliminate sewer spills. Attachment D-10 of the Reissued WDR requires periodic SSMP Audits to be completed by the District at least every three years.

To comply with the SSMP Audit requirements, Fischer Compliance LLC in collaboration with District management completed a Sewer System Management Plan (SSMP) Audit covering August 2, 2021 through August 2024 (due for approval by District management and uploading to CIWQS no later than 6 months, by 2/2/2025).

This Audit report meets and exceeds the minimum requirements specified in the Reissued WDR (Attachment D-10 and Specifications 5.4), scaled to the size/complexity of the District’s sewer system. This includes evaluating the SSMP implementation and effectiveness, compliance with the Reissued WDR, and identifying deficiencies in addressing ongoing spills.

REGULATORY BACKGROUND

2006 WDR:

To provide a consistent, statewide regulatory approach to address sewage spills, the State Water Resources Control Board (State Water Board) adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003 (SSS WDRs), on Aug 2, 2006. All public agencies that own or operate a sanitary sewer system that is comprised of more than one mile of pipes or sewer lines that convey wastewater to a publicly owned treatment facility were required to apply for coverage under the Order.

2022 WDR:

The 2006 WDR was rescinded and replaced with a “Reissued WDR” (Order No. 2022-0103-DWQ), adopted on December 5, 2023 which became effective on 6/5/2023. The Reissued WDR updates many aspects of the 16-year-old Order and includes several new requirements for Sewer System Management Plans.

SSMP AUDIT REQUIREMENTS

This section provides details about the SSMP Audit requirements mandated by the Reissued WDR. An SSMP is a spill reduction/mitigation plan that lays the foundation for how an District implements its work programs, assesses effectiveness of its maintenance program, and provides resilience to bounce-back from emergencies, upsets, and scrutiny by regulators conducting a Compliance Evaluation Inspection (CEI) or formal spill investigation.
The Reissued WDR includes the following specific requirements for completion of SSMP Internal Audits:

Specifications 5.4 (Sewer System Management Plan Audits, page 19):

"The Enrollee shall conduct an internal audit of its Sewer System Management Plan, and implementation of its Plan, at a minimum frequency of once every three years. The audit must be conducted for the period after the end of the Enrollee's last required audit period. ***Within six months after the end of the required 3-year audit period,*** *the Legally Responsible Official shall submit an audit report into the online CIWQS Sanitary Sewer System Database per the requirements in section 3.10 (Sewer System Management Plan Audit Reporting Requirements) of Attachment E1 of this General Order. Audit reports submitted to the CIWQS Sanitary Sewer System Database will be viewable only to Water Boards staff.*

The internal audit shall be appropriately scaled to the size of the system(s) and the number of spills. The Enrollee's sewer system operators must be involved in completing the audit. At minimum, the audit must:

- *Evaluate the implementation and effectiveness of the Enrollee's Sewer System Management Plan in preventing spills.*
- *Evaluate the Enrollee's compliance with this General Order.*
- *Identify Sewer System Management Plan deficiencies in addressing ongoing spills and discharges to waters of the State; and*
- *Identify necessary modifications to the Sewer System Management Plan to correct deficiencies.*

The Enrollee shall submit a complete audit report that includes:

- *Audit findings and recommended corrective actions.*
- *A statement that sewer system operators' input on the audit findings has been considered; and*
- *A proposed schedule for the Enrollee to address the identified deficiencies."*

Attachment D-10 (Internal Audits, page D-10):

The Plan shall include internal audit procedures, appropriate to the size and performance of the system, for the Enrollee to comply with section 5.4 (Sewer System Management Plan Audits) of this General Order."

SSMP AUDITING PROCEDURES

A comprehensive SSMP Audit was completed in partnership with managers responsible for providing the auditing team with all data requests and information evaluated in the project. The following key elements were reviewed for compeltion of the Audit:

- Assessment of the District's existing SSMP
- Detailed interviews with District collection management and field staff operators
- Completion of a Compliance Evaluation Inspection (CEI) in March 2024 mirroring procedures established and implemented by U.S. EPA and the Water Board staff assessing compliance and taking enforcement for noncompliance with the California Water Code, Federal Clean Water Act, and the Reissued WDR (see Appendix 1)
- Review of District spill reports, system data, and other documentation
- Guidelines and recommendations for SSMPs (see Appendix 5, incorporated throughout the Audit Report for thoroughness) prepared and published by the Bay Area Clean Water Agencies (BACWA) posted on the SWRCB's website.

COLLECTION SYSTEM INFORMATION

The District owns and operates sanitary sewer collection system (collection system) serving a population of approximately 41,575 (located within the Central Coast Regional Water Board area) and includes a total of approximately 71 miles of gravity/force main sewers and 6,200 sanitary sewer connections.

Figure 1 below provides a "Facility-At-A-Glance report providing publicly-available information from the State Water Board's database for the sytem. The purpose of the report is to convey current staffing and present the official regulatory measures information for the colleciton system including identification of historic violations determined by the Regional Water Board, list inspection data and any past enforcement actions.

General Information

Region	Place ID	Place Name	Place Type	Place Address	Place County
3	645317	Goleta West SD CS	Collection_System	Goleta, CA,	Santa Barbara

Related Parties

Party	Party Type	Party Name	Role	Classification	Relationship Start Date	Relationship End Date
631452	Person	Joseph Burl Hilliard	Is A Data Submitter For		03/10/2022	
372915	Person	Juan Ramirez	Is A Data Submitter For		03/10/2022	
374743	Person	Brian McCarthy	Is Onsite Manager For		02/15/2022	
374743	Person	Brian McCarthy	Is A Data Submitter For		12/11/2012	03/14/2022
74952	Person	Mark Nation	Is Onsite Manager For		01/09/2007	03/01/2022
18327	Organization	Goleta West SD	Owner	City Agency	01/09/2007	

Total Related Parties: 6

Regulatory Measures

Reg Measure ID	Reg Measure Type	Region	Program	Order No.	WDID	Effective Date	Expiration Date	Status	Amended?
318732	Enrollee	3	SSOMUNILRG	2022-0103-DWQ	3SSO11465	05/02/2006		Active	N

Total Reg Measures: 1

Violations

Violation ID	Occurred Date	Violation Type	(-) Violation Description	Corrective Action	Status	Classification	Source
1135965	10/30/2024	SSOS	Type: Category 1 Spill; Other (specify below) caused 8460 gallons of sewage to spill from Force Main at SB Airport Abandon ARV Adaptor to Drainage Conveyance System	Repaired Facilities or Replaced Defect,Other (specify below). See Attachment Response for Response #10	Violation	A	SSO
1124851	02/17/2024	SSOS	Sewage discharge of approximately 1,022,500 gallons to waters of the United States	Discharger properly responded and reported the SSO. Discharger submitted required 45-Day Technical Report on 4/2/24.	Violation	A	Report
1133534	02/16/2024	SSOS	Type: Category 1 Spill; Other (specify below) caused 1140657 gallons of sewage to spill from Force Main at Airport Force Main 24 to Drainage Conveyance System that discharges to surface water	Repaired Facilities or Replaced Defect. See attachment to #10. In addition to details in attachment to #10, District has completed updates to its force main recommissioning SOP, received training on its updated SERP, set up temporary inflow monitoring and updated its integration of GSD's flow data with the District's SCADA, updated its contingency plan, replaced coupling bolts to reduce any other potential failure point, pressure tested the 24" line prior to recommissioning with engineers, and recommissioned the line successfully on 5/1. District retained additional compliance support over next several months to ensure highest standard of operations. More corrective action details in 4/2 Technical Report and 5/17 Update to Technical Report.	Violation	A	SSO

Report displays most recent five years of violations. Refer to the Interactive Violation Report for more data.

Total Violations: 3 **Priority Violations: 0**

*Click the "(+/-) Violation Description" link to expand and contract the violation description.
*As of 5/20/2010, the Water Board's Enforcement Policy requires that all violations be classified as 1, 2 or 3, with class 1 being the highest. Prior to this, violations were simply classified as Yes or No. If a 123 classification has been assigned to a violation that occurred before this date, that classification data will be displayed instead of the Yes/No data.

Violation Types
SSOS = Sanitary Sewer Overflow/Spill/

Enforcement Actions

Enf Id	Enf Type	Enf Order No.	Effective Date	Status
456109	Notice of Violation	null	03/04/2024	Historical
344902	13267 Letter		04/03/2008	Historical

Total Enf Actions: 2

Inspections

Inspection ID	Inspection Type	Lead Inspector	Actual End Date	Planned	Violations	Attachment

Total Inspections: 0 **Last Inspection: None**

Figure 1 - District Facility At-A-Glance report (CIWQS, 12/30/2024)

DISTRICT SSMP/AUDIT DUE DATES

This section provides an overview of upcoming due dates for the District to update its SSMP and complete its next SSMP Audit. Figure 4 below displays a summary of the upcoming due dates for the District posted on the State Water Board's online Lookup Tool (due 8/2/2025 for its 2025 SSMP Update and by 2/2/2025 for its next required SSMP Audit, 6 months after the end of the Audit period shown in the table).

Sewer System Management Plan & Audit Required Due Dates
Transition from General Order 2006-0003-DWQ to Reissued General Order

Search by Waste Discharge Identification (WDID) Number

Enter your Waste Discharge Identification (WDID) number in the search field to retrieve the required Sewer System Management Plan (SSMP) Update and Audit due dates for your system.

3SSO11465

Show Update/Audit Dates

Sewer System Management Plan & Subsequent Update Due Dates					
System Name	WDID Number	Original Plan Required Due Date	Required Plan Update Due Date	Required Plan Update Due Date	Required Plan Update Due Date*
Goleta West SD CS	3SSO11465	8/2/2009	8/2/2014	8/2/2019	8/2/2025

Audit Due Dates								
System Name	WDID Number	Original Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	Required Plan Audit Due Date	End of Required 3-Year Audit Period**
Goleta West SD CS	3SSO11465	8/2/2011	8/2/2013	8/2/2015	8/2/2017	8/2/2019	8/2/2021	8/2/2024

*** Per Section 5.5 and Attachment E1, Section 3.11 of the General Order, Plan updates are due within six years after the required due date of the Enrollee's last Plan Update.**

**** Per Section 5.4 and Attachment E1, Section 3.10 of the General Order, the Audit Report is due within six months after the end of the required 3-year audit period.**

Figure 2- District SSMP Update/Audit Due Dates (SWRCB, 12/30/2024)

DISTRICT SPILL PERFORMANCE

This section provides an overview to showcase District spill performance information including trends and benchmarks to allow a comparison of the District’s performance against other collection system agencies within the Regional Water Board area and State. The District's spill rate is lower than both the net volume of spills indice and is lower than both spill rate and net volume indice for most category of spills. Specifically for Cat. 1 spills, the District's net volume is well below the statewide metrics (see Figure 3 below).

Certified Spills (2007-2024)

- Appendix 2A includes a recent data pull for all certified spills entered into CIWQS to date.

Certified Spills (Operational Report, 2023-2024)

- Figure 3 below and Appendix 2B includes a recent publicly-available operational report for managers to compare how their system spills compare with the regional and state spill rates.

General Information

Region	Place ID	Place Name	CS Category	Place Address	Place County
3	645317	Goleta West SD CS	Municipal(Public)	Goleta CA	Santa Barbara

Collection System Spill Summary

Operational Indices: Goleta West SD CS

Spill Rate Indice (spills/100mi/yr)

	Category 1			Category 2		Category 3	
	Main System	Laterals	Other	Main System	Other	Main System	Other
Goleta West SD CS	0.44	N/A	0.0	0.0	0.0	0.44	0.0
State Municipal(Public) Average	1.92	N/A	1.2	1.86	2.85	3.44	0.76
Region Municipal Average	1.06	N/A	0.35	1.37	1.15	2.42	0.72

Net Volume Spills Indice (gallons/1000 Capita/yr)

	Category 1			Category 2		Category 3	
	Main System	Laterals	Other	Main System	Other	Main System	Other
Goleta West SD CS	8705.03	N/A	0.0	0.0	0.0	1.65	0.0
State Municipal(Public) Average	9143.12	N/A	3624.53	266.6	2603.82	92.41	56.15
Region Municipal Average	1265.15	N/A	426.97	226.22	16.91	61.6	1.98

Figure 3- CIWQS Spill Metrics (Operational Report 2023-2024, 12/30/2024)

Certified Spills (Historic Operational Report, 2007-2023)

- Data visualizations (see Appendix 2C) utiluzing state of the art data analytical software for transforming historic certiified spill data are presented from infomration reported under the 2006 WDR into understandable visual graphics. These detailed graphics provide transparency and insights about how the collection system is performing, where top problem are occuring, benchmarks/trends, and showcases helpful comparisons with other collection system agencies in the same region. This provides additional tools for managers to support potential actionable decisions with managing the sewer program and improving SSMP efffectiveness.

SSMP AUDIT FINDINGS

This section provides a high-level summary of the SSMP Audit findings (see Tables 1 and 2 below) for incorporation into the District's 2025 SSMP Update due on or before 8/2/2025. The purpose of the Summary provides quick-rererence details to all the SSMP Audit findings for management and staff.

Table 1 (Summary of District SSMP Audit Findings (Reissued WDR, ATTACHMENTS)

SSMP AUDIT FINDINGS (ATTACHMENTS)				
WDR Requirements		**Violations[1]?**	**Areas of Concern[2]?**	**Audit References**
Att. D-1	Goal & Intro	Yes	No	See Element 1 Analysis
Att. D-2	Organization	Yes	No	See Element 2 Analysis
Att. D-3	Legal Authority	No	no	None
Att. D-4	O/M Program	No	Yes	See Element 4 Analysis
Att. D-5	Design and Performance	No	No	None
Att. D-6	Spill Emergency Response Plan (SERP)	No	Yes	See Element 6 Analysis
Att. D-7	Pipe Blockage Control Program	No	No	None
Att. D-8	SECAP	No	Yes	See Element 8 Analysis
Att. D-9	Monitoring, Measurement	No	No	None
Att. D-10	Audits	Yes	No	See Element 10 Analysis
Att. D-11	Communications	No	No	None
Att. E1	Notification, Monitoring, Reporting, Records	Yes	No	See E1 Analysis

[1] *Violation of REISSUED WDR requirement.*

[2] *Area of Concern with REISSUED WDR requirement which could lead to a violation.*

Table 2 (Summary of SSMP Audit Findings (Reissued WDR, SPECIFICATIONS)

SSMP AUDIT FINDINGS (SPECIFICATIONS)				
WDR Requirements		**Violations?**[1]	**Areas of Concern?**[2]	**Audit References**
Spec. 5.1	Designation Of LRO	No	No	• None
Spec. 5.2	SSMP Development, Implementation	No	No	• None
Spec. 5.3	SSMP Updates	No	No	• None
Spec. 5.4	SSMP Audits	Yes	No	• See Element 10 Analysis
Spec. 5.6	System Resilience	No	Yes	• See Element 8 Analysis
Spec. 5.10	Resources	No	No	• See Element 2 Analysis
Spec. 5.11	Performance Analysis	No	No	• None
Spec. 5.12	Spill Emergency Resp. Plan	No	Yes	• See Element 6 Analysis
Spec. 5.13	Notification, Monitoring, Reporting, Record Keeping	Yes	No	• See E1 Analysis
Spec. 5.14	Notifications (Private Spills)	No	No	• None
Spec. 5.15	Failure To Report	No	No	• None
Spec. 5.19	Proper O/M	No	Yes	• See Element 4 Analysis

[1] *Violation of* REISSUED WDR *requirement.*

[2] *Area of Concern with* REISSUED WDR *requirement which could lead to a violation.*

AUDIT CONCLUSIONS

The SSMP Audit completed by Fischer Compliance LLC in collaboration with District management and field operations staff shed light on many existing successful work programs in place. When comparing the District spill data/metrics performance with other collection systems in the region, the District performs well.

Detailed Auditing procedures incorporating review of questionnaires, the District's existing SSMP, interviews and other data were relied on for generating the detailed Audit findings for documenting the District's SSMP compliance, implementation, and effectiveness. To facilitate the project and improve effectiveness of the Audit process, the District dedicated an internal staff person for managing the project, responding to questions/data requests, and provide regular communications to auditors in every phase of the project.

Several specific technical recommendations along with an implementation plan/schedule were generated for helping the District get a jump start on updating its SSMP, many months ahead of schedule before its due date on 8/2/2025. The Audit also revealed several areas to provide an advantage to help prepare the District for regulatory compliance inspections and improve SSMP effectiveness. This includes providing insights for the District to reflect on additional ways for further improving existing work programs and spill reduction measures.

Appendix 1 serves as the heart of the Audit containing detailed Compliance Evaluation Inspection (CEI) reports for supporting findings and conclusions. Appendices 2A-2C allows District and regulators to evaluate spill performance and other data to help compare the District's performance against other collection systems in the region. Appendix 3 includes a checklist to help the District outline and track progress to address the Audit findings, refine updating of the District's SSMP (due by 8/2/2025), and provide an overall roadmap for focusing priorities and attention with the system over the next several years. Appendices 4-5 are provided for additional technical support for assisting the Distrit with more tools for evaluating system effectiveness, tracking performance, and reviewing compliance differences between the 2006 and 2022 WDRs.

POST-AUDIT RECOMMENDATIONS

The District should complete Appendix 3 (SSMP Implementation Plan/Schedule) as soon as practical to commit to ongoing/future improvements to reduce the District's enforcement liability exposure. This exercise also provides valuable information for management to help expedite completion of the District's required 2025 SSMP Update due by 8/2/2025.

PART 2 (DETAILED AUDIT FINDINGS/RECOMMENDATIONS)

This section presents each of the major SSMP requirements required in the WDR along with an assessment in a checklist format of the District's compliance, implementation, effectiveness, and resilience. Detailed findings presented were derived from assessing the District's SSMP efforts against the WDR requirements.

The Audit Findings include the following determinations:

- WDR Conformance (Violations)
  - Required items for review/resolution for SSMP Update to avoid potential enforcment
- WDR Conformance (Areas of Concern)
  - Strongly recommended for review/resolution for SSMP Update to avoid future violation(s) and potential enforcement
- Recommendations
  - Suggestions for improving the SSMP and adding resilience[3] for improving sytsem operations, maintenance, and holding up to outside scrutiny by regulators

[3] *"Definitions" in section Attachment A of the Reissued WDR (page A-4): "Resilience is the ability to recover from or adjust to adversity or change, and grow from disruptions. Resilience can be built through planning, preparing for, mitigating, and adapting to changing conditions."*

ELEMENT 1 – GOAL AND INTRODUCTION

1.1. REGULATORY CONTEXT REQUIREMENTS[4]

"The Plan Introduction section must provide a general description of the local sewer system management program and discuss Plan implementation and updates."

1.2. SSMP UPDATE SCHEDULE REQUIREMENTS

"The Plan Introduction section must include a schedule for the Enrollee to update the Plan, including the schedule for conducting internal audits. The schedule must include milestones for incorporation of activities addressing prevention of sewer spills."

1.3. SEWER SYSTEM ASSET OVERVIEW

"The District Sewer System Management Plan must have an Introduction section to provide a description of the District-owned assets and service area including but not limited to.

- Location, including county(ies).
- Service area boundary.
- Population and community served.
- System size, including total length in miles, length of gravity mainlines, length of pressurized (force) mains, and number of pump stations and siphons.
- Structures diverting stormwater to the sewer system.
- Data management systems.
- Sewer system ownership and operation responsibilities between Enrollee and private entities for upper and lower sewer laterals.
- Estimated number or percent of residential, commercial, and industrial service connections.
- Unique service boundary conditions and challenge(s).
- Reference to the Enrollee's up to-date map of its sanitary sewer system, as required in section 4.1 (Updated Map of Sanitary Sewer System) of this Attachment."

[4] *See Reissued WDR, Attachment D.*

FINDINGS - Element 1 (Analysis)

SSMP Element - Att. D-1

COMPLIANCE

To improve compliance, the District should continue to address each of the following previously identified Areas of Concern (AOC) revealed during the Audit prior to completing its 2025 SSMP Update, to the extent these findings are not already addressed.

WDR CONFORMANCE – VIOLATIONS

- ❑ Failure to prevent discharges of sewage to surface waters of the State (1,071,969 gallons during Audit period)
- ❑ Improve narrative language and harmonize structure with Reissued WDR for 2025 SSMP Update.

IMPLEMENTATION

- ❑ Address WDR Conformance above by adjusting goals and improving SSMP implementation to reduce future spills

WDR RECOMMENDATION

To assess implementation, the District should

- ❑ Annually review Element 1 entirely for ensuring all information is accurate and up to date.

EFFECTIVENESS

WDR RECOMMENDATION

To help measure effectiveness and align with available industry standard guidance, the District should check/verify The following data for inclusion in its next required SSMP update:

- ❑ Has the schedule for conducting audits been adhered to?
- ❑ Has the schedule for updating the Sewer System Management Plan been adhered to?
- ❑ Are established milestones being Monitored?
- ❑ Is the sewer system management program description up to date?
- ❑ Have audits been performed on schedule?
- ❑ Has the Sewer System Management Plan been approved by the governing board on schedule (every six years)?
- ❑ Is asset data kept in the computerized maintenance management system, GIS, etc., programs up to date?
- ❑ Does the sewer system asset overview reference up to date maps?

RESILIENCE

WDR RECOMMENDATION

To help provide resilience, the District should:

- ❑ Create a work order report for auditing open work orders and assets for any repeat spill locations.
- ❑ Implement a formal schedule for ensuring all WDR compliance deadlines are logged into management calendars.

FINDINGS (Element 1: WDR Violation/Areas of Concern Checklist) [5]

1. FAILURE TO IDENTIFY APPROPRIATE GOALS

   - ☑ Violations: No
   - ☑ Areas of Concern: No

   WDR RECOMMENDATION

   - ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. FAILURE TO ESTABLISH A PROCESS FOR ENSURING PUBLIC ACCESS TO SSMP

   - ☑ Violations: No
   - ☑ Areas of Concern: No

3. FAILURE TO COMPLETE APPROPRIATE SEWER SYSTEM MANAGEMENT PLAN AUDIT

   - ☑ Violations: No
   - ☑ Areas of Concern: No

4. FAILURE TO MEASURE EFFECTIVENESS AND PROGRESS

   - ☑ Violations: No
   - ☑ Areas of Concern: No

[5] *See SSMP Development Guide, available for download on the State Water Board's Spill Reduction Website, available at:* *https://www.waterboards.ca.gov/water_issues/programs/sso/*

5. FAILURE TO DEVELOP AND IMPLEMENT PROCEDURES FOR UPDATING SEWER MAPS

- ☑ Violations: No
- ☑ Areas of Concern: No

6. FAILURE TO PROVIDE APPROPRIATE NARRATIVE DESCRIPTIONS DESCRIBING PROCEDURES FOR PRIORITIZATION OF SYSTEM REPAIRS AND MAINTENANCE TO PREVENT SPILLS.

- ☑ Violations: No
- ☑ Areas of Concern: No

7. FAILURE TO DESCRIBE TECHNOLOGIES AND PRACTICES TO REDUCE SPILLS

- ☑ Violations: No
- ☑ Areas of Concern: No

ELEMENT 2 – ORGANIZATION

REQUIREMENTS

"The Plan must identify organizational responsible and integral for implementing the local Sewer System Management Plan through an organizational chart of other similar narrative documentation that includes:

- *The name of the Legally Responsible Official as required in section 5.1 (Designation of a Legally Responsible Official) of this General Order.*
- *The position titles, telephone numbers, and email addresses for management, administrative, and maintenance positions responsible for implementing specific Sewer System Management Plan elements.*
- *Organizational lines of authority.*
- *Chain of communication for reporting spills from receipt of complaint or other information, including the person responsible for reporting spills to the State and Regional Water Boards and other agencies, as applicable. (For example, county health officer, county environmental health District, and State Office of Emergency Services)."*

FINDINGS (Element 2: Analysis)

SSMP Element Att. D-2

COMPLIANCE

WDR CONFORMANCE – VIOLATION

- ❑ The inspection revealed the District potential lacks sufficient resources for ensuring continuous implementation of Reissued WDR including all required SSMP elements (see Appendix 1, Table 21).
- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

- ❑ None

EFFECTIVENESS

WDR RECOMMENDATION

Improve testing (at least annually) and documentation for after-hours spill notification system for 2025 SSMP Update

To help measure effectiveness and align with available industry standard guidance, the District should check/verify the following, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Have there been instances when a service call for a spill was not properly routed to response personnel?
- ❑ Was all spill response activity documented/prepared for LRO?
- ❑ Have there been any changes in assigned responsibilities for implementing the Sewer System Management Plan?
- ❑ Is there a process in place for ensuring all contact information remains up to date?
- ❑ Is a process established for ensuring that org. chart is current?

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Designate more than one LRO to help ensure full and continuous coverage of duties.
- ❑ Ensure more than one staff member can implement and be responsible for specific Sewer System Management Plan elements.
- ❑ Periodically review contact information throughout this element for ensuring data is up to date

FINDINGS (ELEMENT 2: WDR Violations/Areas of Concern Evaluation)

1. <u>FAILURE TO PROPERLY SECURE LEGALLY RESPONSIBLE OFFICIAL WITH APPROPRIATE TRAINING AND EXPERIENCE.</u>

   ☑ Violations: No
   ☑ Areas of Concern: No

   WDR RECOMMENDATION

   ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. <u>FAILURE TO ESTABLISH AND UPDATE ALL RELATED NECESSARY RESPONSIBLE STAFF AND LINES OF AUTHORITY.</u>

   ☑ Violations: No
   ☑ Areas of Concern: No

3. <u>FAILURE TO ESTABLISH AND UPDATE CHAIN OF COMMUNICATION FOR REPORTING SPILLS.</u>

   ☑ Violations: No
   ☑ Areas of Concern: No

ELEMENT 3 – LEGAL AUTHORITY

REQUIREMENTS [6]

"The District Sewer System Management Plan must include copies or an electronic link to the Enrollee's current sewer system use ordinances, service agreements and/or other legally binding procedures to demonstrate the Enrollee possesses the necessary legal authority."

- *"Prevent illicit discharges into its sanitary sewer system from inflow and infiltration (I&I); unauthorized stormwater; chemical dumping; unauthorized debris; roots; fats, oils, and grease; and trash, including rags and other debris that cause blockages."*
- *"Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross connections of sanitary sewer infrastructure to storm sewer infrastructure."*
- *"Require that sewer system components and connections be properly designed and constructed."*
- *"Ensure access for maintenance, inspection, and/or repairs for portions of the service lateral owned and/or operated by the Enrollee."*
- *"Enforce violation(s) of ordinances, service agreements, or other legally binding procedures."*
- *"Obtain easement accessibility agreements for locations requiring sewer system operations and maintenance, as applicable."*

[6] *See Attachment D-3 of* Reissued WDR *(page D-4)*

FINDINGS (Element 3: Analysis)

SSMP Element - Att. D-3

COMPLIANCE

- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

- ❑ None

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Annually review District codes and ordinances to ensure they are adequate in fulfilling all required legal requirements.
- ❑ Check for instances when the code/ordinance did not address a specific need/circumstance.

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Monitor performance of ordinances, codes, and agreements for deficiencies and omissions.
- ❑ Perform periodic review of ordinances, codes, and service agreements.
- ❑ Stay abreast of industry trends and local ordinances that affect operations.

FINDINGS (Element 3: WDR Violations/Areas of Concern Evaluation)

1. FAILURE TO ESTABLISH PROPER CODES, STANDARDS, LEGAL AGREEMENTS, AND PROCEDURES FOR ENSURING CONFORMANCE TO REQUIREMENTS.

   - [x] Violations: No
   - [x] Areas of Concern: No

   WDR RECOMMENDATION

   - [ ] Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

ELEMENT 4 – OPERATIONS AND MAINTENANCE PROGRAM

4.1. UPDATED MAP OF SEWER SYSTEM REQUIREMENTS [7]

"The Plan must include the items listed below that are appropriate and applicable to the Enrollee's system.

An up-to-date map(s) of the sanitary sewer system, and procedures for maintaining and providing State and Regional Water Board staff access to the map(s). The map(s) must show gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable stormwater conveyance facilities within the sewer system service area boundaries."

4.2. PREVENTIVE OPERATION AND MAINTENANCE ACTIVITIES REQUIREMENTS

"A scheduling system and a data collection system for preventive operation and maintenance activities conducted by staff and contractors.

The scheduling system must include:

- *Inspection and maintenance activities, Higher-frequency inspections*
- *Maintenance of known problem areas including areas with tree root problems*
- *Regular visual and closed-circuit television (CCTV) inspections of manholes and sewer pipes.*

The data collection system must document the data from system inspection and maintenance activities, including system areas/components prone to root-intrusion resulting in system backup and/or failure."

4.3. TRAINING REQUIREMENTS

"In-house and external training provided on a regular basis for sanitary sewer system operations and maintenance staff and contractors.

The training must cover the requirements of this General Order; the Enrollee's Spill Emergency Response Plan procedures and practice drills, skilled estimation of spill volume for field operators, and electronic CIWQS reporting procedures for staff submitting data."

4.4. EQUIPMENT INVENTORY REQUIREMENTS[1]

"An inventory of sewer system equipment, including identification of critical replacement/spare parts."

[7] *See Attachment D-4.1 of* Reissued WDR *(page D-4)*

FINDINGS (Element 4: Analysis)

SSMP Element - Att. D-4

COMPLIANCE

WDR CONFORMANCE (AREAS OF CONCERN):

To improve compliance, the District should continue to address each of the following Areas of Concern (AOC) revealed during the Audit prior to completing its 2025 SSMP Update (see Appendix 1).

- ❑ The inspection revealed potential inconsistencies with SSMP implementation (cleanings inspections (CCTV), standard operating procedures, spill emergency response plan procedures, spill reporting/documentation procedures, logging maintenance activities, field staff trainings, and mutual aid communication and coordination), see Appendix 1, Table 21.
- ❑ The inspection revealed potential inconsistencies with identification of all critical/spare parts and equipment including having "shelf-ready" components for emergency response operations, see Appendix 1, Table 21.
- ❑ The inspection revealed potential inconsistencies with training efforts for Legally Responsible Official (LRO), Data Submitter, and field staff, see Appendix 1, Table 21.
- ❑ The inspection revealed significant corrosion observed on force main coupling restraining bolts and nuts (24-inch and 18-inch) which were subsequently replaced by the District following the Compliance Evaluation Inspection (CEI), see Appendix 1, Table 21.
- ❑ The inspection revealed potentially abandoned air release valves originally installed on the force main systems. The District following the inspection addressed this finding.
- ❑ The inspection team noted a potential lack of a cathodic protection on the 24-inch force main sewer conveyance system, see Appendix 1, Table 21. The pipe was installed in 1978, and the District was already evaluating as part of its force main condition assessment started in 2022.
- ❑ The inspection revealed a potential lack of written standard operating procedures for the inspections and operations of force main systems and components, see Appendix 1, Table 21. The District has reviewed and is already updating its written standard operating procedures." because Fischer Compliance assisted with the recommissioning SOP and will help with others.
- ❑ The inspection team noted a potential lack of completed inspection forms documenting routine inspections/completed maintenance work at the station, see Appendix 1, Table 21. he District notes that its daily logbooks are consistently maintained in Pump Station 1 and Emily pump station, and its work order system for unscheduled work maintained on file server since inspection and during the audit. New inspection documents have been already implemented following the inspection.
- ❑ The inspection team noted a potential lack of routine/periodic cleanings of the force main systems/components, see Appendix 1, Table 21.
- ❑ The inspection revealed a potential incomplete O/M manual for the pump station, see Appendix 1, Table 21.
- ❑ The inspection revealed a potential lack of calibration of a force main pressure meter at Pump Station 1, see Appendix 1, Table 21.

- ❑ The inspection revealed operations staff may potentially not be documenting all work tasks in either the pump station logbook or work order system, see Appendix 1, Table 21.
- ❑ The inspection team noted a potential lack of completed inspection forms documenting all inspections/maintenance work conducted at the station, see Appendix 1, Table 21.

IMPLEMENTATION

- ❑ Continue to address WDR Conformance above to improve current SSMP implementation deficiencies.

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Were all map updates completed in a timely manner?
- ❑ Are staff trained to provide map update information?
- ❑ Are newly installed assets incorporated into maps?
- ❑ Are District maintenance, operations, engineering work orders periodically reviewed for completeness?
- ❑ Does the District monitor “open” or “overdue” work orders?
- ❑ Are inspection and maintenance activities reducing the number and volume of spills?
- ❑ Is maintenance work being completed as scheduled?
- ❑ Are inspections of pipes, manholes, and lift completed?
- ❑ Does the District have a proactive root control program?
- ❑ Has all training been completed as scheduled?
- ❑ Have consistent training records been maintained?
- ❑ Have staff demonstrated ability/knowledge after training?
- ❑ Have contractors received, at a minimum, directions for 1) reporting spills, containment, securing sites?
- ❑ Has the inventory list been audited as scheduled?
- ❑ Have any inventory deficiencies or omissions been discovered?

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Develop a Standard Operating Procedure (SOP) for updating maps when errors are discovered.
- ❑ Develop and use forms (paper or electronic) for data collection through inspections to ensure all pertinent information is consistently collected.
- ❑ Periodically evaluate inspection intervals to help ensure they are optimized.
- ❑ Require staff to demonstrate ability and/or knowledge for all training activities.
- ❑ Monitor equipment and critical spare parts usage for and trends.
- ❑ Ensure cross-training for CIWQS Data Submitters for ensuring more than one staff member can collect/manage all required spill data and meet all required deadlines specified in Attachment E1 of the Reissued WDR.

FINDINGS (Element 4: WDR Violations/Areas of Concern Evaluation)

1. FAILURE TO ESTABLISH PROCESS FOR ENSURING SEWER MAPS ARE UP TO DATE.

   ☑ Violations: No
   ☑ Areas of Concern: No

   WDR RECOMMENDATION
   ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. FAILURE TO ESTABLISH AND REVIEW REQUIRED MAINTENANCE PROGRAM ACTIVITIES (CCTV, ETC.)

   ☑ Violations: No
   ☑ Areas of Concern: Yes (see above)

3. FAILURE TO ESTABLISH ADEQUATE TRAINING PROGRAM FOR STAFF AND CONTRACTORS.

   ☑ Violations: No
   ☑ Areas of Concern: Yes (see above)

4. FAILURE TO ESTABLISH EQUIPMENT INVENTORY INCLUDING IDENTIFICATION OF CRITICAL SPARE PARTS.

   ☑ Violations: No
   ☑ Areas of Concern: Yes (see above)

ELEMENT 5 – DESIGN AND PERFORMANCE PROVISIONS

5.1. UPDATED DESIGN CRITERIA AND CONSTRUCTION STANDARDS REQUIREMENTS [8]

"The Plan must include the following items as appropriate and applicable to the Enrollee's system."

"Updated design criteria, and construction standards and specifications, for the construction, installation, repair, and rehabilitation of existing and proposed system infrastructure components, including but not limited to pipelines, pump stations, and other system appurtenances. If existing design criteria and construction standards are deficient to address the necessary component-specific hydraulic Capacity as specified in section 8 (System Evaluation, Capacity Assurance and Capital Improvements) of this Attachment, the procedures must include component-specific evaluation of the design criteria."

5.2. PROCEDURES AND STANDARDS REQUIREMENTS

"Procedures, and standards for the inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment and appurtenances."

FINDINGS (Element 5: Analysis)

SSMP Element Att. D-5

COMPLIANCE

- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

- ❑ None

[8] *See Attachment D-5.1 of* Reissued WDR *(page D-5)*

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Does the District implement its current design and construction standards, specifications, and inspection procedures?
- ❑ Does the District periodically review design and construction standards, specifications, and inspection procedures for ensuring conformance to requirements?
- ❑ Does the District have a review process for its standards and procedures?
- ❑ Were any design or installation deficiencies found during warranty inspections?
- ❑ Are hydraulic model findings included in the design process?
- ❑ Does the District stay abreast of industry design standards?

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Staying abreast of industry trends and standards.
- ❑ Performing warranty inspections of newly installed or repaired assets to evaluate design and installation practices.
- ❑ Evaluating as-built changes for trends and areas for design and performance improvements.

FINDINGS (Element 5: WDR Violations/Areas of Concern Evaluation)

1. Failure to establish, implement, and maintain appropriate sewer standards and procedures for inspections, and testing.

   - ☑ Violations: No
   - ☑ Areas of Concern: No

   WDR RECOMMENDATION

   - ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. Failure to establish process for ensuring sewer maps are up to date.

   - ☑ Violations: No
   - ☑ Areas of Concern: No

ELEMENT 6 – SPILL EMERGENCY RESPONSE PLAN

REQUIREMENTS [9]

"The Plan must include an up-to-date Spill Emergency Response Plan to ensure prompt detection and response to spills to reduce spill volumes and collect information for prevention of future spills. The Spill Emergency Response Plan must include procedures to meet all the following.

- *"Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a* spill in a timely manner.
- *Notify other affected entities (for example, health agencies, water suppliers, etc.) of spills that ly affect public health or reach waters of the State.*
- *Comply with the notification, monitoring and reporting requirements of this General Order, State law and regulations, and applicable Regional Water Board Orders.*
- *Ensure that appropriate staff and contractors implement the Spill Emergency Response Plan and are appropriately trained.*
- *Address emergency system operations, traffic control and other necessary response activities.*
- *Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system.*
- *Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State.*
- *Remove sewage from the drainage conveyance system.*
- *Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters.*
- *Implement technologies, practices, equipment, and interDistrict coordination to expedite spill containment and recovery.*
- *Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event.*
- *Conduct post-spill Guidance of spill response activities.*
- *Document and report spill events as required in this General Order.*
- *Annually, review and assess effectiveness of the Spill Emergency Response Plan, and update the* Plan as needed."

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[9] *See Attachment D-6 of* Reissued WDR *(page D-6)*

FINDINGS (Element 6: Analysis)

SSMP Element - Att. D-6

COMPLIANCE

To improve compliance, the District should continue to address the following findings revealed during the Audit prior to completing its 2025 SSMP Update (see Appendix 1).

WDR CONFORMANCE (AREAS OF CONCERN):

- ❑ The inspection revealed potentially a lack of pre/post storm inspection procedures for the collection system easements areas/roads, pump stations, force main systems etc., see Appendix 1, Table 21. Since the inspection, The District has since implemented a Wet Weather Protocol.
- ❑ The inspection revealed potentially noncomplete of emergency/standard operating procedures for the pump station, see Appendix 1, Table 21. Since the inspection, h the District has reviewed and is addressing this finding."
- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

- ❑ Continue to address WDR Conformance above to improve current SSMP implementation deficiencies

WDR RECOMMENDATION

- ❑ Refer to Compliance recommendations above for further improving implementation.

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Check to ensure the District is implementing all recommendations for spill emergency response plans incorporated in SSMP Guidance Manual (see pages 35-39) including appropriate field data collection for spills to comply with Att. E1.
- ❑ Does the District implement an effective Spill Emergency Response Plan?

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Provide training on a regular basis for all spill response staff. Training should include:
- ❑ Determining Spill Start Time
- ❑ Determining spill volume and volume recovered.
- ❑ Data Collection (forms)
- ❑ Containment and clean up.
- ❑ CIWQS Data Submitting
- ❑ Develop a training plan for contracted services.
- ❑ Periodically review post-spill assessments/trends.

FINDINGS (Element 6: WDR Violations/Areas of Concern Evaluation)

1. <u>FAILURE TO DEVELOP AND IMPLEMENT A SPILL EMERGENCY RESPONSE PLAN THAT MEETS ALL REQUIREMENTS.</u>

   - ☑ Violations: No
   - ☑ Areas of Concern: No

   WDR RECOMMENDATION

   - ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. <u>FAILURE TO TEST/EVALUATE EMERGENCY PROCEDURES DURING INCLUDING DEPLOYING CONTRACTED SERVICES WHERE NECESSARY.</u>

   - ☑ Violations: No
   - ☑ Areas of Concern: No

3. <u>FAILURE FOR ENSURING SUPPLY OF ADEQUATE CRITICAL/IDENTIFIED SPARE PARTS/EQUIPMENT PRIOR TO SPILLS.</u>

   - ☑ Violations: No
   - ☑ Areas of Concern: No

4. <u>FAILURE TO PROPERLY NOTIFY APPROPRIATE OUTSIDE AGENCIES/OFFICIALS.</u>

   - ☑ Violations: No
   - ☑ Areas of Concern: No

ELEMENT 7 – SEWER PIPE BLOCKAGE CONTROL PROGRAM

REQUIREMENTS [10]

"The Sewer System Management Plan must include procedures for the evaluation of the Enrollee's service area to determine whether a sewer pipe blockage control program is needed to control fats, oils, grease, rags, and debris. If the Enrollee determines that a program is not needed, the Enrollee shall provide justification in its Plan for why a program is not needed. The procedures must include, at minimum:

- *An implementation plan and schedule for a public education and outreach program that promotes proper disposal of pipe-blocking substances.*
- *A plan and schedule for the disposal of pipe-blocking substances generated within the sanitary sewer system service area. This includes a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of substances generated within a sanitary sewer system service area.*
- *The legal authority prohibits discharges to the system and identifies measures to prevent spills and blockages.*
- *Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, best management practices requirements, recordkeeping, and reporting requirements.*
- *Authority to inspect grease producing facilities, enforcement authorities, and whether the Enrollee has sufficient staff to inspect and enforce the fats, oils, and grease ordinance.*
- *An identification of sanitary sewer system sections subject to fats, oils, and grease blockages and establishment of a cleaning schedule for each section; and*
- *Implementation of source control measures for all sources of fats, oils, and grease reaching the sanitary sewer system for each section identified above."*

[10] *See Attachment D-7 of* Reissued WDR *(page D-7)*

FINDINGS (Element 7: Analysis)

SSMP Element - Att. D-7

COMPLIANCE

- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

- ❑ None

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Have there been any blockages/spills from any identified problem area?
- ❑ Is the District receiving feedback on public outreach efforts?
- ❑ Is the debris and other sewage solids collected during cleaning activities being disposed of appropriately?
- ❑ Does the District have a plan and schedule for inspection of grease producing facilities? Was the schedule adhered to?
- ❑ Have there been spills due to excessive fats, oil, or grease in the system?
- ❑ Are Source Control staff included in the plan check process?

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Inspect assets directly downstream of grease producing businesses to ensure source control is effective.
- ❑ Develop outreach doorhangers or flyers to perform targeted outreach when discoveries are made in the field.
- ❑ Perform regular assessments of system assets to monitor performance.
- ❑ Establish a QA/QA process for evaluating pipe cleaning effectiveness.

FINDINGS (Element 7: WDR Violations/Areas of Concern Evaluation)

WDR RECOMMENDATION

- ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

1. FAILURE TO IDENTIFY APPROPRIATE NEEDS FOR PIPE BLOCKAGE PROGRAM.

   ☑ Violations: No
   ☑ Areas of Concern: No

2. FAILURE FOR ENSURING ADEQUATE PIPE BLOCKAGE CONTROL ENFORCEMENT AUTHORITY.

   ☑ Violations: No
   ☑ Areas of Concern: No

3. FAILURE TO ESTABLISH RESIDENTIAL FOG OUTREACH

   ☑ Violations: No
   ☑ Areas of Concern: No

4. FAILURE TO ENFORCE REQUIREMENTS FOR INSTANCES OF NONCOMPLIANCE.

   ☑ Violations: No
   ☑ Areas of Concern: No

ELEMENT 8 – SYSTEM EVALUATION, CAPACITY ASSURANCE, CAPITAL IMPROVEMENTS

8.1. REQUIREMENTS

"The Plan must include procedures and activities for

- *Routine evaluation and guidance of system conditions,*
- *Capacity guidance and design criteria.*
- *Prioritization of corrective actions.*
- *Capital improvement plan."*

8.2. SYSTEM EVALUATION AND CONDITION GUIDANCE REQUIREMENTS [11]

"The Plan must include procedures to:

- *Evaluate the sanitary sewer system assets utilizing the best practices and technologies available.*
- *Identify and justify the amount (percentage) of its system for its condition to be assessed each year.*
- *Prioritize the condition Guidance of system areas that:*
- *Hold a high level of environmental consequences if vulnerable to collapse, failure, blockage, Capacity issues, or other system deficiencies.*
- *Are in or within the vicinity of surface waters, steep terrain, high groundwater elevations, and environmentally sensitive areas.*
- *Are within the vicinity of a receiving water with a bacterial-related impairment on the most current Clean Water Act section 303(d) List.*
- *Assess the system conditions using visual observations, video surveillance and/or other comparable system inspection methods.*
- *Utilize observations/Audit Findings/Recommendations of system conditions that contribute to exiting of sewage from the system which can reasonably be expected to discharge into a water of the State.*
- *Maintain documents and recordkeeping of system evaluation and condition Guidance inspections and activities,*
- *Identify system assets vulnerable to direct and indirect impacts of climate change, including but not limited to sea level rise; flooding and/or erosion due to increased storm volumes, frequency, and/or intensity; wildfires; and increased power disruptions."*

[11] *See Attachment D-8.1 of* Reissued WDR *(pages D-7 and D-8)*

FINDINGS (Element 8: Analysis)

SSMP Element - Att. D-8

COMPLIANCE

WDR CONFORMANCE (AREAS OF CONCERN):

- ❑ The inspection revealed the District may have inadequate access for inspecting all of its force main sewer locations due to extensive brush overlaying significant portions of pipelines on airport property (see Appendix 1, Table 21). Since the inspection, the District has already began reviewing and discussing this concern with other jurisdictional agencies**.**
- ❑ Develop a system-specific Climate Resilience Plan for the SSMP Update including but not limited addressing the factors listed in Findings 3.2.3 of the Reissue WDR such as:
  - Sea level rise impacts including flooding, coastal erosion, seawater intrusion, tidal inundation and submerged lands.
  - Increased surface water flows due to higher intensity rain events.
  - Flooding
  - Wildfires and wildfire induced impacts
  - Earthquake induced damage.
  - Landslides.
  - Subsidence.
- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

- ❑ None

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Number of Capacity-related spills or surcharge condition during the audit period?
- ❑ Has the system responded to rain events as indicated by the hydraulic model?
- ❑ Has there been any changes to zoning designations (residential, commercial, industrial)?
- ❑ Rain event trends: Has there been changes in rain event occurrences, intensity, and duration?
- ❑ Has the District's capital improvement plan been adhered to?
- ❑ Is there an annual review of the Capital Improvement Plan by all necessary individuals?
- ❑ Has the District adhered to its system evaluation/condition assessment efforts? Measured by annual review and update of system inspections/evaluations procedures.

- ❑ Has the District adhered to its prioritization/corrective actions for sewer repair and Capacity improvement projects? Measured by annual review and District prioritization/corrective actions procedures.

FINDINGS (Element 8: WDR Violations/Areas of Concern Evaluation Evaluation)

1. FAILURE TO DEVELOP AND IMPLEMENT SYSTEM EVALUATION, CAPACITY ASSURANCE, AND CAPITAL IMPROVEMENT PROGRAMS.

   ☑ Violations: No
   ☑ Areas of Concern: No

   WDR RECOMMENDATION

   ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. FAILURE TO IDENTIFY SECTIONS HOLDING HIGH DEGREE OF ENVIRONMENTAL CONSEQUENCES IF VULNERABLE TO COLLAPSE, FAILURE, BLOCKAGE, CAPACITY ISSUES, OR OTHER SYSTEM DEFICIENCIES.

   ☑ Violations: No
   ☑ Areas of Concern: No

3. FAILURE TO IDENTIFY SECTIONS LOCATED IN OR WITHIN THE VICINITY OF SURFACE WATERS, STEEP TERRAIN, HIGH GROUNDWATER ELEVATIONS, AND ENVIRONMENTALLY SENSITIVE AREAS.

   ☑ Violations: No
   ☑ Areas of Concern: No

4. FAILURE TO IDENTIFY ASSETS WITHIN THE VICINITY OF RECEIVING WATER WITH A -RELATED IMPAIRMENT ON THE MOST CURRENT CLEAN WATER ACT SECTION 303(D) LIST. BACTERIAL

   ☑ Violations: No
   ☑ Areas of Concern: No

5. FAILURE TO DEVELOP AND IMPLEMENT CAPITAL IMPROVEMENT PLAN (CIP) FOR NECESSARY SEWER SYSTEM REPAIRS AND IMPROVEMENTS (SHORT TERM AND LONG-TERM).

   ☑ Violations: No
   ☑ Areas of Concern: No

ELEMENT 9 – MONITORING, MEASUREMENT, PROGRAM MODIFICATIONS

REQUIREMENTS [12]

"The Plan must include an Adaptive Management section that addresses Plan-implementation effectiveness and the steps for necessary Plan improvement, including:

- *Maintaining relevant information, including audit findings, to establish and prioritize appropriate Plan activities.*
- *Monitoring the implementation and measuring the effectiveness of each Plan Element.*
- *Assessing the success of the preventive operation and maintenance activities.*
- *Updating Plan procedures and activities, as appropriate, based on results of monitoring and performance evaluations; and*
- *Identifying and illustrating spill trends, including spill frequency, locations, and estimated volumes."*

FINDINGS (Element 9: Analysis)

SSMP Element - Att. D-9

COMPLIANCE

❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

❑ None

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

❑ Are trends being monitored and corrective action taken as necessary?
❑ Have Key Performance Indicators been developed to measure the effectiveness of each Sewer System Management Plan element?
❑ Has a plan and schedule been established to address audit findings/deficiencies?
❑ Have changes been made to work programs and procedures because of monitoring efforts?

[12] *See Attachment D-9 of* Reissued WDR *(page D-9)*

RESILIENCE

WDR RECOMMENDATION

To provide resilience and align with available industry standard guidance, the District should check/verify the following data, make adjustments as necessary, and include any changes in the next required SSMP update:

- ❑ Develop key performance indicators to measure effectiveness of the Sewer System Management Plan.
- ❑ Perform periodic reviews of the Sewer System Management Plan to help ensure the plan is being properly implemented.
- ❑ Develop and adhere to a timeline to correct deficiencies found during the audit process.
- ❑ Periodically evaluate work programs to help ensure effectiveness.

FINDINGS (Element 9: WDR Violations/Areas of Concern Evaluation)

1. FAILURE TO COLLECT/MAINTAIN AND EVALUATE RELEVANT DATA FOR MONITORING, MEASURING, AND ASSESSING PREVENTIVE MAINTENANCE PROGRAM EFFECTIVENESS.

- ☑ Violations: No
- ☑ Areas of Concern: No

WDR RECOMMENDATION

- ❑ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. FAILURE TO UPDATE/MODIFY District SEWER SYSTEM MANAGEMENT PLAN BASED ON RESULTS FROM AUDITS AND EVALUATION OF DATA REQUIRED FOR THIS ELEMENT.

- ☑ Violations: No
- ☑ Areas of Concern: No

ELEMENT 10 – INTERNAL AUDITS

10.1. REQUIREMENTS [13]

"The Plan shall include internal audit procedures, appropriate to the size and performance of the system, for the Enrollee to comply with section 5.4 (Sewer System Management Plan Audits) of this General Order."

10.2. SPECIFICATIONS (SEWER SYSTEM MANAGEMENT PLAN AUDITS)

"The Enrollee shall conduct an internal audit of its Sewer System Management Plan, and implementation of its Plan, at a minimum frequency of once every three years. The audit must be conducted for the period after the end of the Enrollee's last required audit period. Within six months after the end of the required 3-year audit period, the Legally Responsible Official shall submit an audit report into the online CIWQS Sanitary Sewer System Database per the requirements in section 3.10 (Sewer System Management Plan Audit Reporting Requirements) of Attachment E1 of this General Order. Audit reports submitted to the CIWQS Sanitary Sewer System Database will be viewable only to Water Boards staff. The internal audit shall be appropriately scaled to the size of the system(s) and the number of spills. The Enrollee's sewer system operators must be involved in completing the audit. At minimum, the audit must:

- *Evaluate the implementation and effectiveness of the Enrollee's Sewer System Management Plan in preventing spills.*
- *Evaluate the Enrollee's compliance with this General Order.*
- *Identify Sewer System Management Plan deficiencies in addressing ongoing spills and discharges to waters of the State; and*
- *Identify necessary modifications to the Sewer System Management Plan to correct deficiencies.*
- *The Enrollee shall submit a complete audit report that includes:*
- *Audit findings and recommended corrective actions.*
- *A statement that sewer system operators' input on the audit findings has been considered; and*
- *A proposed schedule for the Enrollee to address the identified deficiencies."*

[13] *See Attachment D-10 of* Reissued WDR *(page D-10)*

FINDINGS (Element 10: Analysis)

SSMP Element - Att. D-10

COMPLIANCE

WDR CONFORMANCE (VIOLATION):

- ❑ Failure to complete SSMP Audits (see Appendix 1, Table 21).
- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

WDR CONFORMANCE (AREAS OF CONCERN):

- ❑ None

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Have audits been performed as required?
- ❑ Have the audits assessed compliance, implementation, and effectiveness?
- ❑ Have deficiencies been identified?
- ❑ Has a plan and schedule to rectify the deficiencies been established?

RESILIENCE

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Periodically evaluate key performance indicators to assess effectiveness of each Sewer System Management Plan element.
- ❑ Evaluate previous audit findings for ensuring deficiencies have all been addressed/rectified.
- ❑ Calendar the audit due dates and complete the audit on time.
- ❑ Prepare for announced/unannounced compliance inspections by regulators and by proactive with preparing required Audits by completing the State Water Board Pre-Inspection Questionnaire (see Appendix 1).

FINDINGS (Element 10: WDR Violations/Areas of Concern Evaluation)

1. <u>FAILURE TO CONDUCT ROUTINE SEWER SYSTEM MANAGEMENT PLAN AUDITS.</u>

   ☑ Violations: Yes
   ☑ Areas of Concern: No

   WDR RECOMMENDATION

   ☐ Utilize Appendix 5 checklist for revising current SSMP and improving narration for this element

2. <u>FAILURE TO MEASURE SEWER SYSTEM MANAGEMENT PLAN ELEMENT EFFECTIVENESS (A SIMPLE CHECKLIST WILL NOT FULFILL THIS OBLIGATION).</u>

   ☑ Violations: No
   ☑ Areas of Concern: No

3. <u>FAILURE TO IMPLEMENT IDENTIFIED DEFICIENCIES/RECOMMENDATIONS AND COMMIT TO NEW ENHANCEMENTS VIA A PLAN/SCHEDULE (SHORT AND LONG-TERM).</u>

   ☑ Violations: No
   ☑ Areas of Concern: No

ELEMENT 11 – COMMUNICATION PROGRAM

REQUIREMENTS [14]

"The Plan must include procedures for the Enrollee to communicate with:

- *The public for spills and discharges resulting in closures of public areas, or that enter a source of drinking water, and the development, implementation, update of its Plan, including opportunities for public input to Plan implementation and updates.*
- *Owners/operators of systems that connect into the Enrollee's system, including satellite systems, for system operation, maintenance, and capital improvement-related activities."*

[14] *See Attachment D-11 of* Reissued WDR *(page D-10)*

FINDINGS (Element 11: Analysis)

SSMP Element - Att. D-11

COMPLIANCE

- ❑ Assess element narrative and improve as necessary for 2025 SSMP Update.

IMPLEMENTATION

WDR RECOMMENDATION

- ❑ None

EFFECTIVENESS

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Does the District place all Sewer System Management Plan action items on the agenda for regular counsel/board meetings?
- ❑ Does the District have signage, or other means, readily available to notify the public of env. or public risk factors related to a sewage spill?
- ❑ Does the District regularly communicate with other systems connected to the system?
- ❑ Was the public afforded the opportunity to provide input as the program was being implemented?
- ❑ Does the District perform outreach to residential customers?

RESILIENCE

WDR RECOMMENDATION

To measure effectiveness and ensure alignment with available industry standard guidance, the District should check/verify the following data for inclusion in its next required SSMP update:

- ❑ Maintain a consistent presence in the service area by attending community events or issuing periodic newsletters or other communications to the public.
- ❑ Make it clear and easy for the public to contact the District.

FINDINGS (Element 11: WDR Violations/Areas of Concern Evaluation)

1. FAILURE TO DEVELOP AND IMPLEMENT A PUBLIC COMMUNICATION PROGRAM, ESPECIALLY DURING EMERGENCIES.

   - ☑ Violations: No
   - ☑ Areas of Concern: No

   WDR RECOMMENDATION

   - ❑ Improve narration in 2025 SSMP Update

2. FAILURE TO SOLICIT INPUT ON SEWER SYSTEM MANAGEMENT PLAN CONTENT.

   - ☑ Violations: No
   - ☑ Areas of Concern: No

3. FAILURE TO COMMUNICATE WITH OWNERS/OPERATORS OF SEWER SYSTEM(S) CONNECTED TO THE SEWER SYSTEM.

   - ☑ Violations: No
   - ☑ Areas of Concern: No

Attachment E1 – Notification, Monitoring, Reporting, Record Keeping

REQUIREMENTS [15]

"The Notification Requirements (section 1), Spill-specific Monitoring Requirements (section 2), Reporting Requirements (section 3) and Recordkeeping Requirements (section 4) in this Attachment are pursuant to Water Code section 13267 and section 13383 and are an enforceable component of this General Order.

For the purpose of this General Order, the term:

- *Notification means the notifying of appropriate parties of a spill event or other activity.*
- *Spill-specific Monitoring means the gathering of information and data for a specific spill event to be reported or kept as records.*
- *Reporting means the reporting of information and data into the online California Integrated Water Quality System (CIWQS) Sanitary Sewer System Database.*
- *Recordkeeping means the maintaining of information and data in an official records storage system. Failure to comply with the notification, monitoring, reporting and recordkeeping requirements in this General Order subject the Enrollee to civil liabilities of up to $10,000 a day per violation pursuant to Water Code section 13385; up to $1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. Water Code section 13193 et seq. requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Resources Control Board (State Water Board) to collect sanitary sewer spill information for each spill event and make this information available to the public. Sanitary sewer spill information for each spill event includes but is not limited to: Enrollee contact information for each spill event, spill cause, estimated spill volume and factors used for estimation, location, date, time, duration, amount discharged to waters of the State, response and corrective action(s) taken."*

[15] *See Attachment D-11 of* Reissued WDR *(page D-10)*

FINDINGS (Attachment E1: Analysis)

SPILL NOTIFICATION/REPORTING COMPLIANCE

To improve compliance, the District should continue to address the following Violation revealed during the Audit prior to completing its 2025 SSMP Update.

- ❑ The inspection revealed the District could further improve field documentation including additional details for determination of spill start time, spill volume calculations, and amounts recovered.

1. <u>FAILURE TO COMPLY WITH REQUIRED SPILL NOTIFICATIONS</u>

- ❑ 1 violation (2007-2024) for missing required timelines for notification to Cal-OES.
- ❑ 0 violations (2007-2024) for missing required timelines for Certified Spill Reports in CIWQS within 15 calendar days.

LIST OF APPENDICES

APPENDIX 1 – Draft Compliance Evaluation Inspection (CEI) Report

APPENDIX 1 – Collection System Compliance Evaluation Inspection (CEI) Draft Report by Fischer Compliance LLC (2024)

DRAFT

Compliance Evaluation Inspection (CEI) Report

GOLETA WEST SANITARY DISTRICT

Waste Discharge ID #3SSO11465

Prepared by: James Fischer, P.E.

FISCHER LLC COMPLIANCE
PRACTICES THAT COMPLY

Sanitary Sewer
Collection System
WDID=3SSO11465

March 2024

DRAFT

Table of Contents

List of Tables

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1. Introduction

On March 26-27, 2024, James Fischer and Chris Bracco (Fischer Compliance LLC) with technical assistance from Sam Rose (Sam Rose Consulting) conducted a Compliance Evaluation Inspection (CEI) of the Goleta West Sanitary District (District) sewer system to evaluate key compliance points with the Statewide Sanitary Sewer Systems General Order (Order No. 2022-0103-DWQ), hereafter "Reissued WDR[1].

FACILTY INSPECTED:	INSPECTED BY: James Fischer, P.E. NPDES Compliance Inspector[2] Principal, FISCHER COMPLIANCE, LLC James Fischer Inspection Dates: 3/26-27, 2024	
SANITARY SEWER COLLECTION SYSTEM (WASTEWATER)	Waste Discharge ID (WDID): 3SSO11465	
Water Quality Order(s)	2022-0103-DWQ (Reissued WDR)	
Regional Water Board	3 (Central Coast)	
County	Santa Barabara	
Population/Area	39,500	
Miles of Sewers (gravity)	63	
Miles of Sewers (force mains)	4.2	
Sewer Connections (#)	6,100	
Lift/Pump Stations (#)	2	
Above pipelines (#)	17 (12 gravity + 5 force mains)	
Air release valves (force mains, #)	0	
Sewer siphons (#)	0	
Flows (dry/wet, million gallons per day)	1.9/3.2	
CWEA Maintenance Certifications (#)	6	
Sewer lower later responsibility (Y/N)	N	
Final wastewater disposal	Goleta Sanitary District WWTP	
FACILITY REPRESENTATIVE	TITLE	CONTACT
Brian McCarthy	General Manager	(805) 968-2617
Joey Hilliard	Utility Worker IV	(805) 968-2617
Austin Catlin	Environmental Compliance Specialist	(805) 968-2617

[1] See https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2022/wqo_2022-0103-dwq.pdf

[2] Credentialed, U.S EPA summary(2017)

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2. Inspection Summary

The inspection incorporated pre-inspection conference and asset field inspections for comprehensively assessing the District's SSMP compliance, implementation, and effectiveness with the Reissued WDR (see Tables 1-2 below). This information provides a key advantage for helping District managers proactively reflect on ways for further improving its and implementing necessary adjustments to existing programs for preparing for its required SSMP Audit due by 2/2/2025.

3. Inspection Procedures

The inspection incorporated the following procedures:

1. Desktop Review (District SSMP, spill data/benchmarks, regional board compliance/enforcement priorities)
2. Compliance Evaluation Inspection (Pre-Inspection Conference, Field Asset Inspections, Interviews)
3. Post-Inspection data review

4. Inspection Tasks

The inspection incorporated several key inspection tasks (A-E) for evaluating the District's SSMP compliance, implementation, and effectiveness with the Reissued WDR (see Table 2 below).

Table 2 – Key Inspection Tasks (A-E)

Task	Description	Areas Reviewed	WDR Requirements
A 3/26/24	Pre-Inspection Conference Locations: District Offices, Goleta Sanitary District	• Force main testing plan with outside contractor • Staff training/competency, maintenance program, lift station alarms/SCADA monitoring, SERP development and implementation, capital improvement program, fats, oils, and grease (FOG), and critical parts. • Site visit to Goleta Sanitary District for reviewing emergency response coordination with Feb 2024 spill • Force main contingency planning • Options for pressure testing 24-inch force main	• Att. D-4, Spec. 5.19 • Att. D-6 • Att. E1
B 3/27/24	Field Inspections (Force Mains and Storage Yard) Locations: Santa Barbara Airport, District Offices	• Assess District inspecting procedures for force main assets including easement areas/roads • Inspection of Feb 2024 large spill failure location on airport • Operator interviews • Assess spill emergency response plan implementation	• Att. D-4, Spec. 5.19 • Att. D-6 • Att. E1
C 3/27/24	Field Inspection (Trunk Line Flow Monitor) Location: Mesa Road	• Inspect installation of temporary flow monitor upstream of Pump Station 1	• Att. D-4, Spec. 5.19
D 3/27/24	Field Inspection (Emily Lift Station) Location: 8200 Calle Rd	• Inspected lift station equipment and District inspection procedures • Discussed alarms, backup power, bypassing operations, and District maintenance activities for station	• Att. D-4, Spec. 5.19 • Att. D-6
E 3/27/24	Filed Inspection (Pump Station 1) District Offices	• Inspected lift station equipment and District inspection procedures • Discussed alarms, backup power, bypassing operations, and District maintenance activities for station	• Att. D-4, Spec. 5.19 • Att. D-6

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5. TASK A (Pre-Inspection Conference)

Inspection Consent

- Obtained consent for completing the inspection (obtained by Brian McCarthy).

Force Main Testing

- Discussed strategies for conducting pressure testing of the District's 24-inch force main sewer, with technical outside assistance from Filippin Engineering
- Discussed options for developing a draft contingency plan for testing/returning the 24-inch force main sewer back in service.
- Discussed District procedures for ensuring year-round access to all sewer lines (including having appropriate sewer easement agreements in place with the Santa Barabara Airport and other entities to ensure "easement accessibility agreements for locations requiring sewer system operations and maintenance" required by Reissued WDR (Att. D-3).
- Discussed daily force main inspections underway, including current procedures the District is employing for driving access roads at the Santa Barbara Airport near the District force main sewers to comply with Reissued WDR (Att. D-3).
- Discussed current/future upgrades to critical spare parts for the collection system, including procedures to be employed to ensure all outside contractor(s) have appropriate critical parts identified by the District to comply with equipment inventory requirements (see Reissued WDR, Att. D-4.4).

Spill Review

- Discussed notification, monitoring, reporting, recordkeeping compliance for assessing District compliance with Reissued WDR (sections Att. E1, Att. D-4) for a Category 3 spill (ID #893543) occurring on 2/16/2024 (see Attachment 1); reviewed District maintenance activities (prior/after spill), including plans for returning 24-inch force main back into service.
- Discussed notification, monitoring, reporting, recordkeeping for assessing District compliance with Reissued WDR (sections Att. E1, Att. D-4) for a Category 3 spill occurring on 5/26/2018 (see Attachment 1); reviewed District preventative maintenance activities (prior/after spill).

SSMP Implementation

- Discussed "Hot Spot" program (high frequency inspections and maintenance for all know problem areas including tree roots) for assessing District compliance with Reissued WDR (Att. D-4).
- Discussed routine/preventative maintenance scheduling efforts in place for assessing District compliance with Reissued WDR (Att. D-4.2)
- Discussed manhole inspection program for assessing District compliance with Reissued WDR (Att. D-4.2).
- Discussed Spill Emergency Response Plan training elements (General Order review, procedures, practice drills, skilled estimation of spill volume, CIWQS reporting) for assessing District compliance with Reissued WDR (Att. D-4.3).
- Discussed District safety/training efforts for ensuring proper operations of all facilities and equipment for assessing District compliance with Reissued WDR (Specifications 5.19).
- Discussed allocation of resources, staffing, and equipment for sewer system t for assessing District compliance with Reissued WDR (Specifications 5.7).
- Discussed level sensors employed for assessing District compliance with Reissued WDR (Specifications 5.2).
- Discussed pump station equipment, backup power, backup pumps, critical spare parts, storm drain mitigation efforts for spills, station overflow points, station contingency/response plans, emergency bypassing procedures, station alarms, station maintenance, and other details for assessing District compliance with Reissued WDR (Att. D-4 and Att. D-6).

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Emergency Coordination (Goleta Sanitary District)

- Discussed Spill Emergency Response Plan effectiveness and emergency communications between District and the Goleta Sanitary District during Feb. 2024 large spill.
- Discussed force main systems, plant alarms, and flow data metering and radio communication systems.

Force Main Contingency Planning

- Discussed District pre-storm/post storm wet weather protocols and procedures.
- Discussed inspection of easement areas.
- Discussed work order system data/logging systems.
- Discussed pump station ragging issues, solutions, and maintenance practices.
- Discussed pump station telemetry, monitoring, alarms, and related equipment.
- Discussed drafting force main contingency/testing plans and procedures.
- Discussed installation of bypass piping (from Rain for Rent).
- Discussed post-spill additional cleanup operations by District staff.
- Discussed redundancy for pump station electronics/components to ensure readiness.

Fats, Oils, and Grease (FOG) Implementation

- Discussed SSMP implementation efforts for controlling FOG from residential and commercial sources.

System O/M (Cleaning, CCTV inspections)

- Discussed SSMP implementation efforts for system-wide cleanings and inspections (CCTV)

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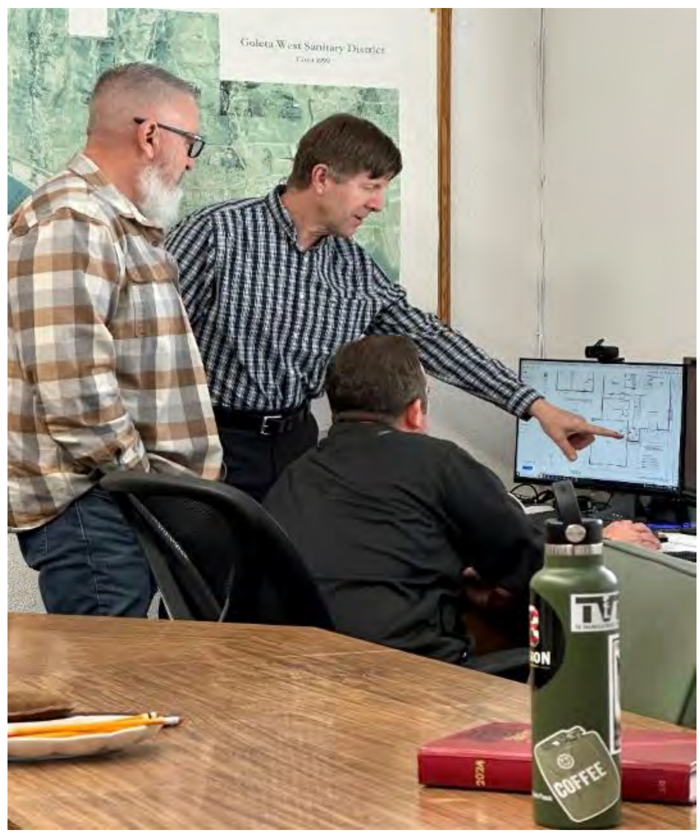
<u>Task B (Photo B1)</u>: Pre-Inspection Conference with District management and lead staff.

<u>Task B (Photo B2):</u> Review of District system map and extensive capital program improvements.



<u>Task B (Photo B3):</u> Inspection of detailed District sewer system maps which include all segments, manholes, and flow directions.

<u>Task B (Photo</u> B**<u>4):</u>** Detailed inspections of sewer asset data, hot spot priority lists, and other information with District Utility Worker IV .

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Table 3 – TASK A (Observed District Best Practices)

Best Practices (BPs)	WDR Citations
• BP A1: Comprehensive and proactive emergency repairs and procurement of outside experts for development of Spill Technical Report for Feb 2024 large spill to Goleta Slough.	• Att. D-4, Att. D-6
• BP A2: Dedicated, knowledgeable, and experienced District LRO and field staff responsible for overseeing SSMP implementation.	• Spec. 5.7, Att. D
• BP A3: Commitments for further improving existing work programs, staff procedures, training, and overall SSMP effectiveness.	• Spec. 5.7, Att. D
• BP A4: Comprehensive sewer system maps for field staff including detailed specifications and flow directions.	• Att. D-4, Att. D-6
• BP A5: Comprehensive draft force main contingency plan and standard operating procedures (in development).	• Spec 5.12, Att. D-6
• BP A6: Extensive capital improvement program implementation and spending (past 10 years) for addressing ongoing known sewer system deficiencies.	• Att. D-8

Table 4 – TASK A (Potential Violations)

Potential Violations (PV)	WDR Citations
• PV1: The inspection revealed a potential violation for the Feb 2024 large spill event where significant sewage was discharged to Goleta Slough.	• Prohib. 4.2
• PV 2: The inspection revealed the District may have failed to complete historic SSMP Audits	• Spec. 5.4, Att. D-10

Table 5 – TASK A (Areas of Concern)

Areas of Concern (AOC)	WDR Citations
• AOC A1: The inspection revealed the District potential lacks sufficient resources for ensuring continuous implementation of Reissued WDR including all required SSMP elements.	• Att. D (all elements) • Specifications (all requirements)
• AOC A2: The inspection revealed inconsistencies with SSSMP implementation (cleanings inspections (CCTV), standard operating procedures, spill emergency response plan procedures, spill reporting/documentation procedures, logging maintenance activities, field staff trainings, and mutual aid communication and coordination.	• Att. D (all elements) • Specifications (all requirements)
• AOC A3: The inspection revealed inconsistencies with identification of all critical/spare parts and equipment including having "shelf-ready" components for emergency response operations.	• Att. D-6, Spec. 5.12
• AOC A4: The inspection revealed inconsistencies with training efforts for Legally Responsible Official (LRO), Data Submitter, and field staff.	• Spec. 5.1, 5.12 • Att. D-4, Att. D-6

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6. TASK B (Field Inspections: Force Mains and District Storage Yard)

- Reviewed district field inspection procedures for force main routes
- Reviewed Feb 2024 large spill discharge to Goleta Slough (District emergency response operations, notifications, monitoring, repairs, and cleanup)
- Inspected Feb. 2024 large spill site failure location
- Inspected force main access manholes
- Inspected force main bridge crossing over Tecolotito Creek
- Inspected District spare parts and equipment in storage yard

Task B (Photo B1): Inspection of 24-inch force main route at Feb 2024 failure location adjacent to Santa Barbara Airport, Runway 33L looking northwest (view 2).

Task B (Photo B2): Inspection of 24-inch force main route at Feb 2024 failure location adjacent to Santa Barbara Airport, Runway 33L looking northwest (view 2).

Task B (Photo B3): Inspection of Goleta Slough west of Runway 33L; substantial solids discharged from spill observed remaining at site (view 1).

Task B (Photo B4): Inspection of Goleta Slough west of Runway 33L; substantial solids discharged from spill observed remaining at site (view 2).

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Task B (Photo B5): Inspection of abandoned District force main vault for air release valve (view 1).

Task B (Photo B6): Inspection of abandoned District force main vault for air release valve (view 2).

Task B (Photo B7): Inspection of airport easement roads on Santa Barbara Airport.

Task C (Photo B8): Inspection of District force main sewer bridge crossing spanning over Tecolotito Creek (view 1); bridge located approximately 700 feet north of District offices.

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Task A (Photo B9): Inspection of District force main sewer bridge crossing spanning over Tecolotito Creek (view 2); bridge located approximately 700 feet north of District offices.

Task A (Photo B10): Inspection of District 24-inch force main sewer vault on Santa Barbara Airport.

Task C (Photo B11): View inside District 24-inch force main sewer access vault on Santa Barbara Airport; significant corrosion observed on coupling restraining bolts and nuts.

Task B (Photo B12): Inspection of District 18-inch force main sewer vault on Santa Barbara Airport.

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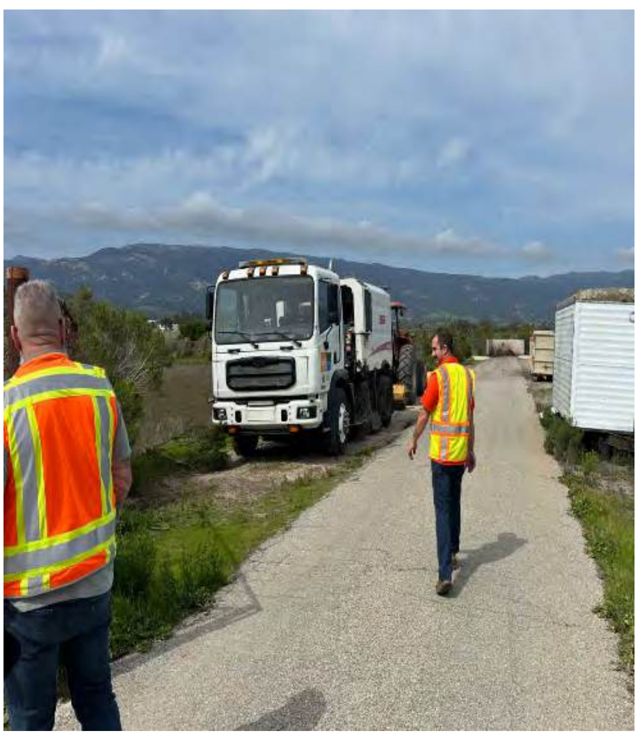
Task B (Photo B13): View inside District 18-inch force main sewer access vault on Santa Barbara Airport; significant corrosion observed on coupling restraining bolts and nuts.

Task B (Photo B14): View of inspection vaults for both 24-inch and 18-inch force mains on Santa Barbara Airport looking northwest.



Task B (Photo B15): Inspection of District storage yard near the District offices looking north.

Task B (Photo B16): Inspection of District storage yard near the District offices looking south.

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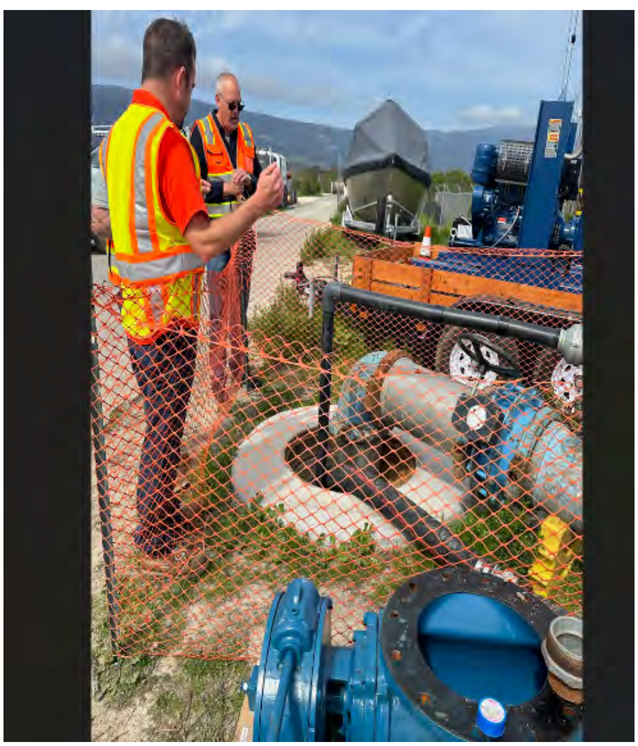
Task A (Photo B17): Inspection of manhole covers and rings located in District storage yard.

Task B (Photo B18): View inside District 24-inch force main sewer vault located in storage yard; significant corrosion observed on coupling restraining bolts and nuts.



Task B (Photo B19): Inspection of bypass pumps and hose in District storage yard looking north with orange fencing around equipment area.

Task B (Photo B20): Inspection of bypass pumps and hose in District storage yard looking south with orange fencing around equipment area.

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Table 9 – TASK B (Observed District Best Practices)

Best Practices (BPs)	
• BP B1: Dedicated, knowledgeable, and experienced field staff	• Att. D
• BP B2: Routine (daily) inspections of force mains/routes	• Att. D

Table 10 – TASK B (Potential Violations)

Potential Violations (PV)	WDR Citations
• PV B1: The inspection revealed significant solid materials discharged from the Feb. 2024 large spill event still remaining near the force main pipeline failure location adjacent to Goleta Slough	• Spec. 5.12, Att. D-6
• PV B2: The inspection revealed the District may have inadequate access for inspecting all of its force main sewer locations due to extensive brush overlaying significant portions of pipelines on airport property	• Spec. 5.7 • Spec. 5.1
• PV B3: The inspection revealed significant corrosion observed on force main coupling restraining bolts and nuts (24-inch and 18-inch)	• Spec. 5.2, 5.12 • Att. E1

Table 11 – TASK B (Areas of Concern)

Areas of Concern (AOC)	WDR Citations
• AOC B1: The inspection revealed abandoned air release valves originally installed on the force main systems. Removal of these valves could have caused or contributed to the extensive pipeline corrosion found on the failed 24-inch force main which caused a large spill in Feb. 2024.	• Att. D, Spec. 5.19
• AOC B2: The inspection team noted lack of a cathodic protection on the 24-inch force main sewer conveyance system.	• Att. D, Spec. 5.19
• AOC B3: The inspection revealed lack of written standard operating procedures for the inspections and operations of force main systems and components.	• Att. D, Spec. 5.19
• AOC B4: The inspection revealed lack of pre/post storm inspection procedures for the collection system easements areas/roads, pump stations, force main systems etc.	• Att. D, Spec. 5.19

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7. TASK C (Field Inspection: Mesa Road Trunk Line Flow Monitor)

- Observed and discussed 24-inch trunk line flow monitor installation by the District's outside contractor

Task C (Photo C1): Location of Mesa Road sewer trunk line temporary flow monitoring on UCSB campus.

Task C (Photo C2): Inspection of sewer trunk line temporary flow monitoring equipment installed in manhole with District outside contractor.

Table 12 – TASK C (Observed District Best Practices)

Best Practices (BPs)	WDR Citations
• BP C1: Expedited deployment of temporary flow monitor upstream of Pump Station 1 for providing District with reliable flow data and supporting volume estimations for Feb. 2024 large spill.	• Spec. 5.7 • Spec. 5.1 • Att. E1

Table 13 – TASK D (Potential Violations)

Potential Violations (PV)	WDR Citations
• PV C1: None	• None

Table 14 – TASK D (Areas of Concern)

Areas of Concern (AOC)	WDR Citations
• AOC C1: None	• None

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8. TASK D (Asset Inspection: Emily Lift Station)

This task included inspection of the pump station which included interviewing field staff for assessing adequacy of the District's staff competency, training program, spill emergency response plan implementation, and maintenance practices (see Photos D1-D4 below).

Emergency Troubleshooting: No references to available written standard operating procedures were cited by operations staff for completion of these tasks.

Logbook: Due to safety concerns, no inspection of the station dry pit was completed where the station's logbook was completed.

Documentation: The inspection team noted a lack of completed inspection forms documenting routine inspections completed at the station.

Alarm/Power Outage Simulation: No high float alarm test or simulated power outage scenarios were completed due operator to concerns with having only one single force main system in service. Field staff indicated that periodic tests of alarms and simulation of power outages are checked at the station on a regular basis. However, no references to available written standard operating procedures were cited by operations staff for completion of these tasks.

Bypassing: Operations staff indicated that routine bypassing practices at the station are performed. No available references to written standard procedures were cited by operations staff for completion of these tasks.

Spill Appearance Point: Field staff confirmed the lowest upstream manhole location where sewage would appear if pumps failed to operate.

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Task D (Photo D1): Inspection of Emily Lift Station including emergency notification signage mounted on entrance gate with District phone number.

Task D (Photo D2): Inspection of Emily Lift Station equipment with field staff.

Task D (Photo D3): Inspection of station dry pit access manhole with field staff.

Task D (Photo D4): View inside station dry pit access manhole.

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Table 15 – TASK D (Observed District Best Practices)

Best Practices (BPs)	WDR Citations
• BP D1: Emergency signage including District phone mounted on entrance gate for expediting public notifications to District for problems observed.	• Spec. 5.12 • Att. D-6
• BP A2: Station cleanliness/housekeeping	• Spec. 5.19 • Att. D-4
• BP A3: Routine bypass training for field operators	• Spec. 5.19 • Att. D-4

Table 15 – TASK D (Potential Violations)

Potential Violations (PV)	WDR Citations
• None	• None

Table 17 – TASK D (Areas of Concern)

Areas of Concern (AOC)	WDR Citations
• AOC D1: The inspection revealed the District lacks backup critical spare parts (electronic primary logic controller, relays/fuses, etc.) for the lift station.	• Spec. 5.19 • Att. D-4
• AOC D2: The inspection revealed the District lacks written procedures and training program for cleaning the force main system downstream of the lift station.	• Spec. 5.19 • Att. D-4
• AOC D3: The inspection revealed absence of emergency/standard operating procedures for the pump station.	• Spec. 5.19 • Att. D-4
• AOC D4: The inspection team noted a lack of completed inspection forms documenting routine inspections/completed maintenance work at the station.	• Att. D-4, Att. E1
• AOC D5: The inspection team noted a lack of routine/periodic cleanings of the force main systems/components.	• Spec. 5.19 • Att. D-4

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9. TASK E (Inspection: Pump Station 1)

This task included inspection of the pump station which included interviewing field staff for assessing adequacy of the District's staff competency, training program, spill emergency response plan implementation, and maintenance practices (see Photos E1-E8 below).

Emergency Troubleshooting: No references to available written standard operating procedures were cited by operations staff for completion of these tasks.

Logbook: District staff indicated they are routinely entering basic data and parameters into the station logbook.

Documentation: The inspection team noted a lack of completed inspection forms documenting routine inspections completed at the station.

Alarm/Power Outage Simulation: No high float alarm test or simulated power outage scenarios were completed due operator to concerns with having only one single force main system in service. Field staff indicated that periodic tests of alarms and simulation of power outages are checked at the station on a regular basis. However, no references to available written standard operating procedures were cited by operations staff for completion of these tasks.

Bypassing: Operations staff indicated that routine bypassing practices at the station are performed. No available references to written standard procedures were cited by operations staff for completion of these tasks.

Spill Appearance Point: Field staff confirmed the lowest upstream manhole location where sewage would appear if pumps failed to operate.

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Task E (Photo E1): Inspection of Pump Station 1.

Task E (Photo E2): View inside Pump Station 1 dry pit.

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Task E (Photo E3): Inspection of Pump Station 1 documentation.

Task E (Photo E4): Inspection of Pump Station 1 Motor Control Center (MCC).

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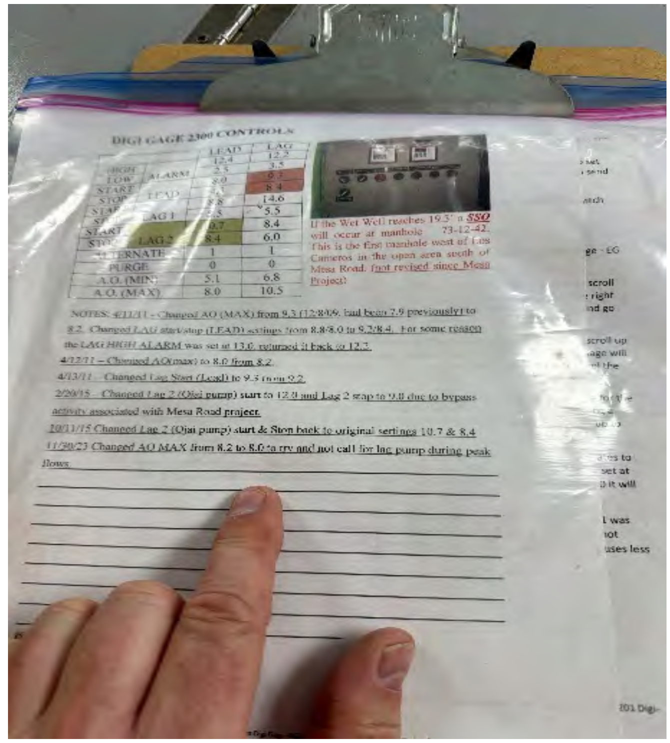
Task F (Photo E5): Inspection of Pump Station 1 force main flow meter.



Task E (Photo E6): Inspection of Pump Station 1 pump controller logsheet.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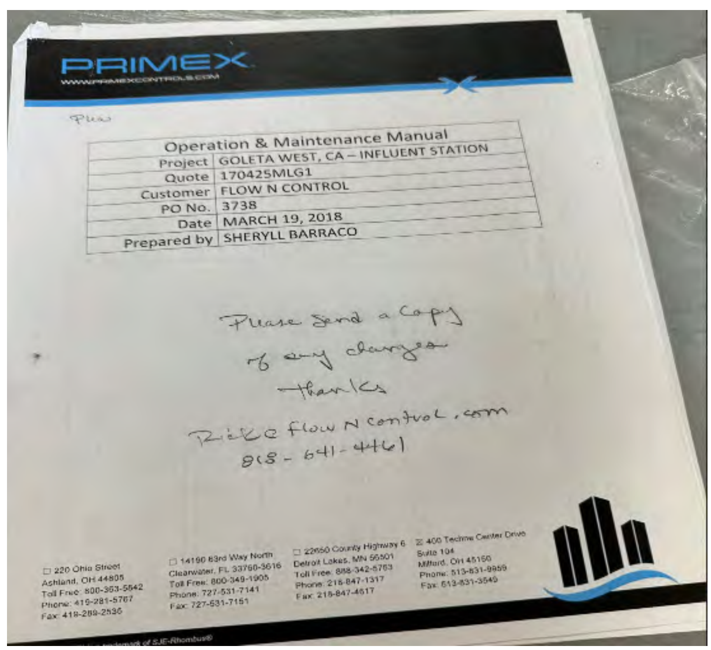
Task F (Photo E7): Inspection of fall protection safety equipment stored at Pump Station 1.



Task E (Photo E8): Inspection of Primex influent pump station flow controller O/M manual dated March 2018.

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Table 18 – TASK E (Best Practices)

Best Practices (BPs)	WDR Citations
• BP E1: Pumping capacity/redundancy	• Spec. 5.7 • Spec. 5.1
• BP E1: Station cleanliness/housekeeping	• Spec. 5.7 • Spec. 5.1

Table 19 – TASK F (Potential Violations)

Potential Violations (PV)	WDR Citations
• PB E1: None	• Spec. 5.19 • Att. D-4

Table 20 – TASK F (Areas of Concern)

Areas of Concern (AOC)	WDR Citations
• AOC E1: The inspection revealed absence of emergency/standard operating procedures for the pump station.	• Spec. 5.23 • Att. D-6
• AOC E2: The inspection revealed absence of complete O/M manual for the pump station.	• Spec. 5.19 • Att. D-4
• AOC E3: The inspection revealed lack of calibration of force main flow meter at the pump station.	• Spec. 5.19 • Att. D-4
• AOC E4: The inspection revealed operations staff may not be documenting all work tasks in either the pump station logbook or work order system.	• Spec. 5.19 • Att. D-4 • Att. E-1
• AOC E5: The inspection team noted a lack of completed inspection forms documenting all inspections/maintenance work conducted at the station.	• Spec. 5.19 • Att. D-4 • Att. E-1

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10. Post-Inspection Findings and Recommendations

To meet/exceed the requirements of the Reissued WDR, the District should address all potential violations and areas of concerns identified during the inspection (see Table 21 below) prior to completion of the next required SSMP Audit.

Table 21 – Post-Inspection Findings

TASK A	RECOMMENDATIONS
• PV 1 (Feb 2024 large sewage spill discharged to Goleta Slough).	• Ensure current/future spill prevention measures are effective in reducing spills; update SSMP and Change Log with all associated improvements when completed.
• PV 2 (Failure to complete SSMP Audits)	• Ensure SSMP Audits are completed to avoid future violations.
• AOC A1: The inspection revealed the District potential lacks sufficient resources for ensuring continuous implementation of Reissued WDR including all required SSMP elements.	• Audit existing staffing; evaluate program needs for additional staff; update SSMP and Change Log with all associated improvements when completed.
• AOC A2: The inspection revealed inconsistencies with SSMP implementation (cleanings inspections (CCTV), standard operating procedures, spill emergency response plan procedures, spill reporting/documentation procedures, logging maintenance activities, field staff trainings, and mutual aid communication and coordination).	• Assess core O/M programs; evaluate program needs for additional improvements; implement additional improvements as necessary; update SSMP and Change Log with all associated improvements when completed.
• AOC A3: The inspection revealed inconsistencies with identification of all critical/spare parts and equipment including having "shelf-ready" components for emergency response operations.	• Improve backup/ID of critical parts as necessary; update SSMP and Change Log with all associated improvements when completed.
• AOC A4: The inspection revealed inconsistencies with training efforts for Legally Responsible Official (LRO), Data Submitter, and field staff.	• Improve training program as necessary; update SSMP and Change Log with all associated improvements when completed.

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TASK B	RECOMMENDATIONS
• PV B1: The inspection revealed significant solid materials discharged from the Feb. 2024 large spill event still remaining near the force main pipeline failure location adjacent to Goleta Slough	• Improve cleanup of spill site.
• PV B2: The inspection revealed the District may have inadequate access for inspecting all of its force main sewer locations due to extensive brush overlaying significant portions of pipelines on airport property	• Enforce easement requirements/inspection access to all force main assets as necessary.
• PV B3: The inspection revealed significant corrosion observed on force main coupling restraining bolts and nuts (24-inch and 18-inch)	• Improve equipment conditions as necessary.
• AOC B1: The inspection revealed abandoned air release valves originally installed on the force main systems. Removal of these valves could have caused or contributed to the extensive pipeline corrosion found on the failed 24-inch force main which caused a large spill in Feb. 2024.	• Evaluate system to verify whether valves are required; update SSMP and Change Log when completed.
• AOC B2: The inspection team noted lack of a cathodic protection on the 24-inch force main sewer conveyance system.	• Evaluate system to verify whether cathodic protection is required; update SSMP and Change Log when completed.
• AOC B3: The inspection revealed lack of written standard operating procedures for the inspections and operations of force main systems and components.	• Assess/write procedures as required; update SSMP and Change Log when completed.
• AOC B4: The inspection revealed lack of pre/post storm inspection procedures for the collection system easements areas/roads, pump stations, force main systems etc.	• Assess/write procedures as required; update SSMP and Change Log when completed.

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TASK C	RECOMMENDATIONS
None	• None

TASK D	RECOMMENDATIONS
AOC D1: The inspection revealed the District lacks backup critical spare parts (electronic primary logic controller, relays/fuses, etc.) for the lift station.	• Assess needs for required backup parts; identify critical asset; update SSMP and Change Log when completed.
AOC D2: The inspection revealed the District lacks written procedures and training program for cleaning the force main system downstream of the lift station.	• Assess/write procedures as required; update SSMP and Change Log when completed.
AOC D3: The inspection revealed absence of emergency/standard operating procedures for the pump station.	• Assess/write procedures as required; update SSMP and Change Log when completed.
AOC D4: The inspection team noted a lack of completed inspection forms documenting routine inspections/completed maintenance work at the station.	• Assess/write forms as required to document work as necessary; update SSMP and Change Log when completed.
AOC D5: The inspection team noted a lack of routine/periodic cleanings of the force main systems/components.	• Assess/write procedures for cleanings as necessary; update SSMP and Change Log when completed.

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TASK E	RECOMMENDATIONS
AOC E1: The inspection revealed absence of emergency/standard operating procedures for the pump station.	• Assess/write procedures as required; update SSMP and Change Log when completed.
AOC E2: The inspection revealed absence of complete O/M manual for the pump station.	• Assess/compile O/M manual for station; update SSMP and Change Log when completed.
AOC E3: The inspection revealed lack of calibration of force main flow meter at the pump station.	• Assess/update calibration; update SSMP and Change Log when completed.
AOC E4: The inspection revealed operations staff may not be documenting all work tasks in either the pump station logbook or work order system.	• Assess/update procedure for capturing all O/M and operational activities and data into logbook/work order system; update SSMP and Change Log when completed.
AOC E5: The inspection team noted a lack of completed inspection forms documenting all inspections/maintenance work conducted at the station.	• Assess/write forms as required; update SSMP and Change Log when completed.

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11. List of Attachments

Attachment 1 – Spill Package (CIWQS ID #893543, Feb 2024)

Attachment 2 – Spill Package (CIWQS ID #847584, May 2018)

Attachment 3 – Post-Inspection Data Requests

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Attachment 1: Spill Package (CIWQS ID #893543, Feb 2024)

Certified Spill Report for Category 1 Spills

Spill Event ID:	893543	**Spill Location Name:**	Airport Force Main 24
Sanitary Sewer System:	Goleta West SD CS	**Agency:**	Goleta West SD
Spill Report Type:	Category 1 Spill	**Spill Report Status:**	Certified
Initial Draft Submitted On:	02/23/2024	**Certified On:**	04/02/2024
Spill Report Version Number:	2.1		

File Name	File Description	Uploaded Date	Status
Technical Report Attachment 4 - 2024.04.02 Goleta Sewer Spill Impact Assessment.pdf	Spill Technical Report for CIWQS Spill Event ID 893543 - Attachment 4 (Spill Impact Assessment)	2024-04-04	OK
893543_Version_2.1.pdf	Certified spill pdf : 893543_Version_2.1.pdf	2024-04-02	OK
Technical Report Attachment 3 - 2024.04.02 Water Quality Data.pdf	Spill Technical Report for CIWQS Spill Event ID 893543 - Attachment 3 (Water Quality Data)	2024-04-02	OK
Technical Report Attachment 2 - Spill Response Field Report.pdf	Spill Technical Report for CIWQS Spill Event ID 893543 - Attachment 2 (Spill Response Field Report)	2024-04-02	OK
Technical Report Attachment 1 - Photos from 2024.02.17 and 2024.03.28.pdf	Spill Technical Report for CIWQS Spill Event ID 893543 - Attachment 1 (Photos)	2024-04-02	OK
2024.04.02 Goleta West Sanitary District Spill Technical Report.pdf	Spill Technical Report for CIWQS Spill Event ID 893543	2024-04-02	OK
893543_Version_1.6.pdf	Certified spill pdf : 893543_Version_1.6.pdf	2024-03-01	OK
IMG_5227.JPG	On UCSB Campus looking Northeast towards spill site. With Tecolotito Creek in foreground; Tecolotito Creek water condition upstream of confluence with tributary where discharge occurred.	2024-03-01	OK
IMG_5218.JPG	Example of recovered solids.	2024-03-01	OK
IMG_5190.JPG	Wetted area south of service road.	2024-03-01	OK
IMG_5188.JPG	Receiving tributary looking north from downstream of discharge point, white objects are shell debris.	2024-03-01	OK
240222 Map of Sampling Locations.pdf	Sampling Locations Map	2024-03-01	OK
240301 Spill Map 2.pdf	Detail Map 2, for use with General Overview Map	2024-03-01	OK
240301 Spill Map 1.pdf	Detail Map 1, for us with General Overview Map	2024-03-01	OK
240301 Spill Overview Map.pdf	General Overview map of spill site for reference with other two final maps	2024-03-01	OK
IMG_5185.JPG	Staff using equipment to collect debris and remove from site. Looking North/northwest from service road toward spill site and creek.	2024-02-26	OK
IMG_5182.JPG	Staff vacuuming water from pooled area north of service road.	2024-02-26	OK
IMG_5180.JPG	Staff vacuuming debris from spill site	2024-02-26	OK
IMG_5178.JPG	Spill site, sink hole above force main where spill reached surface	2024-02-26	OK
IMG_5177.JPG	Pooled spill area north of service road, south of runway 33L	2024-02-26	OK
IMG_5175.JPG	Looking North east from creek bank where spill entered creek.	2024-02-26	OK
IMG_5162.JPG	Looking east from service road at large pooled water area south of runway 33L.	2024-02-26	OK
IMG_5160.JPG	Spill area from creek bank looking south west along service road	2024-02-26	OK
IMG_5158.JPG	Spill area entering unnamed creek	2024-02-26	OK

Spill Report General Information	
1. Name of Enrollee contact person to respond to spill-specific questions:	Joey Hilliard and/or Brian McCarthy
1.a. Telephone number of Enrollee contact person to respond to spill-specific questions:	(805) 968-2617
2. Spill Location Name:	Airport Force Main 24
3. Date and time the Enrollee was notified of, or self-discovered, the spill:	02/17/2024 08:24
4. Operator arrival time:	02/17/2024 09:15
5. Estimated spill start date and time:	02/16/2024 19:22
6. Date and time the Enrollee notified the California Office of Emergency Services:	02/17/2024 18:00
6.a. Assigned control number:	24-0124

7. Description, photographs, and GPS coordinates of the system location where the spill originated: If a single spill event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the spill appearance point explanation field:	30 feet south of the south west corner of runway 33L at the Santa Barbara Municipal Airport.
7.a. Lattitude:	34.4193
7.b. Longitude:	-119.83825
7.c. Appearance points:	Force Main
7.d. If other, describe:	
7.e. Additional spill appearance point(s) explanation:	
8. Estimated total spill volume exiting the system:	1086000
9. Description and photographs of the extent of the spill and spill boundaries:	Spill was originating out of the ground, 30 feet south of the southwestern corner of Runway 33L at the Santa Barbara Municipal Airport. Flow headed west and into the tributary spread across 145 linear feet of the embankment. Flow spread around the spill origin covering roughly 50 foot diameter circle area. Spill also headed south along the eastern edge of the service road in a 10 foot wide stream, then east along the northern edge of the service road where it pooled on the north side of the service road and created a triangular shaped wetted area. Flow also crossed over service road to the south and pooled in a drainage area. See attached spill map.
10. Did the spill reach a drainage conveyance system?:	Y
10.a. Description of the drainage conveyance system transporting the spill and photographs of the drainage conveyance system entry location(s):	Tributary to west of spill origin that flows south roughly 400' and connects to Tecolotito Creek, which eventually leads to Pacific Ocean.
10.b. Estimated spill volume fully recovered from the drainage conveyance system:	0
10.c. Estimated spill volume remaining within the drainage conveyance system:	1022500
11. Description and photographs of all discharge point(s) into the surface water:	To the west of spill origin across 143' of embankment into tributary of Tecolotito Creek.
12. Estimated spill volume that discharged to surface waters:	1022500
13. Estimated total spill volume recovered:	17000

Certification Questionnaire	
1. Spill Destination(s):	Drainage Conveyance System that discharges to surface water
1.a. If other, describe:	
1.b. Description of the spill event destination(s), including GPS coordinates if available, that represent the full spread and reach of the spill:	Spill was originating out of the ground, 30 feet south of the southwestern corner of Runway 33L at the Santa Barbara Municipal Airport. Flow headed west and into the tributary spread across 145 linear feet of the embankment. Flow spread around the spill origin covering roughly 50 foot diameter circle area. Spill also headed south along the eastern edge of the service road in a 10 foot wide stream, then east along the northern edge of the service road where it pooled on the north side of the service road and created a triangular shaped wetted area. Flow also crossed over service road to the south and pooled in a drainage area. See attached spill map. The spill origin is 30 feet from tributary of Tecolotito Creek, 1,000 linear feet from main body of Tecolotito Creek. Roughly 6,000 linear feet from location of spill entering the tributary to Goleta Slough inlet at Pacific Ocean if travelling along the waterway. Tributary had existing flowing water in it at time of spill.
1.c. Coordinates available?	Y
1.d. Lattitude:	34.41915
1.e. Longitude:	-119.83844
1.f. Lattitude:	34.41915
1.g. Longitude:	-119.83848
1.h. Lattitude:	34.41849
1.i. Longitude:	-119.8378
1.j. Lattitude:	34.41902
1.k. Longitude:	-119.83724
2. Spill end date and time:	02/17/2024 09:00

3. Description of how the spill volume estimations were calculated, including at a minimum: The methodology, assumptions and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information, used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered):	Assumed duration based on the earliest possible start time. Assumed total volume based on comparative average flow data. Assumed constant discharge throughout duration. For spill volume estimation, used flow telemetry at the regional treatment plant (operated by Goleta Sanitary District) to determine when leak occurred based on drop in flow received. Calculated total volume received at treatment plant during this time period and compared to historical average flow during the same time period. Estimated volume that did not enter the tributary by measuring wetted areas around spill origin and calculated volume based on average depths of wetted areas. Recovered amount calculated by known capacity of equipment used to remove wastewater and debris.
3.a. Description of the methodology(ies), assumptions and type of data relied upon for estimations of the spill start time and the spill end time:	Assumed spill start time based on analyzing flow telemetry and noting when flow received at regional treatment plant dropped off from normal. Spill stop time determined by field observation of when water stopped coming out of ground after all valves were closed and pipe was isolated.
4. Spill cause(s):	Other (specify below)
4.a. If other, describe:	See attachment for #4.a.
5. System failure location:	Force Main
5.a. If other, describe:	
6. Description of the pipe material, at the failure location:	Ductile Iron
6.a. If other, describe:	
6b. Estimated age of pipe material, at the failure location:	46
7. Description of the impact of the spill:	Current estimates are approximately 1,089,000 gallons of raw wastewater spilled from site. Roughly 66,500 gallons were contained within non-native dominated grassy area, of which 17,000 gallons were recovered and disposed of at the treatment plant. 1,022,500 gallons are believed to have entered a tributary to Tecolotito Creek which eventually drains to the Pacific Ocean. Approximately a day and a half into response activities, spill area received approximately 3 inches of rain. Site monitoring is ongoing.
8. Was the spill associated with a storm event?	N
9. Spill response activities:	Cleaned Up (specify below), Other (specify below), Contained All or Portion of Spill, Other Enforcement Agency Notified, Mitigated Effects of Spill (specify below), Property Owner Notified, Returned Portion of Spill to Sanitary Sewer System
9.a. If other, describe:	See attachment for response to #9.
9.b. Description of spill response activities including description of immediate spill containment and cleanup efforts:	See attachment for response to #9.
10. Spill corrective action:	Repaired Facilities or Replaced Defect
10.a. If other, describe:	
10.b. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of major milestones for those steps:	See attachment to #10.
10.c. Schedule of major milestones:	See attachment to #10.
11. Spill response completion date:	03/01/2024
12. Detailed narrative of investigation and investigation findings of cause of spill:	Uncovered pipe and found exterior coating of ductile iron had been compromised. Actual cause of exterior coating damage unknown at this time, but visual corrosion of ductile iron material evident. Procedure to reintroduce service to 24" forcemain on Friday February 16 was followed. Hole was roughly 6” in diameter with a 5” crack running from the hole along the side of the pipe. Expected life expectancy of pipe is 60 to 100 years and pipe age is 46 years. Pipe section retained for investigation. During excavation and replacement of portion of failed pipe, remaining pipe visually inspected with no issues seen. Flow data also under analysis.
13. Is the Enrollee conducting an ongoing investigation?	Y
13.a. Reasons for an ongoing investigation:	GWSD will continue further investigation of incident alongside the broader assessment of forcemains for future rehabilitation or replacement with contracted engineering firm that has already begun to ensure incident does not occur again.
13.b. Expected date of completion of investigation:	03/29/2024 18:30
14. Name of receiving water body(s):	Tributary to Tecolotito Creek, Mouth of Goleta Slough, Pacific Ocean

14.a. Type of receiving water body(s):	Other (specify below), Ocean
14.b. If other, describe:	Tributary located at south edge of estuary/slough
15. Description of the water body(s):	Tributary along south side of Goleta Slough which is designated as a state marine preserve and closed to fishing or collecting as marine protected area. Tributary joins Tecolotito Creek upstream of confluence with other creeks at Goleta Slough mouth to Pacific Ocean. Multiple uses for water bodies defined in Basin Plan.
15.a. Observed impacts on aquatic life:	Staff has been monitoring tributary, Tecolotito Creek, and Goleta Slough multiple times on day of spill and subsequent weeks after, including 2/17, 2/18, 2/20 through 2/23, and 2/27 through 3/1. This was done during water sampling activities as well as other site visits specifically to observe the waterway and aquatic life. No apparent impacts on aquatic life observed. Monitoring ongoing, and in communication with California Public Health Department.
15.b. Public access impact:	Public Closure, Other (specify below)
15.c. If other, describe:	GWSD is aware of a Beach Advisory being issued by the local public health department on 2/16, before the date of the spill, because of the anticipated water quality impacts as a result of the forecasted storm event on 2/18 and 2/19. GWSD monitored whether the Goleta Beach area was closed and followed up to confirm. GWSD reached out to the local public health department on Wednesday, 2/21 and understands the beach was then closed on that day. GWSD was told by County staff on 2/25 that the beach was closed due to unrelated dredging and beach replenishment activities in the Goleta Slough by Santa Barbara County Flood Control District that started on 2/20. Beach remains closed and signs posted for health advisory.
15.d. Responsible entity for closing/restricting use of water body:	Santa Barbara County Public Health Department and Environmental Health Services
15.e. Number of days closed/restricted as a result of the spill:	10
16. Was the spill located within 1,000 feet of a municipal surface water intake?	N
17. Were water quality samples collected?	Y
17.a. Identify sample locations:	Water samples were taken from 4 separate locations within the receiving tributary and downstream in Tecolotito Creek on 2/17 in the afternoon. Upstream from the discharge point, at the discharge point, and two downstream of the discharge point where water is fully mixed with receiving water. Additional samples were taken upstream of the contact point and below for reference. Samples were taken at sample sites 1 through 4 between 3:30PM and 4:00PM on 2/17/24. Sample site 4 was replaced by sample site 5 & 6 during the next sampling period on 2/22/24. Sample sites 1, 2, 3, 5 & 6 were sampled again on 2/27 and 2/29/24. Refer to sample location map for specific locations. GWSD understands samples are also being collected by other local agencies including local health department.
17.b. Identify parameters the water quality samples were analyzed for:	All samples were analyzed for total and fecal coliform and ammonia. GWSD is consulting with other agencies, plans including Ocean Plan, and continuing to sample post-spill conditions until further guidance.

Certification

I certify under penalty of perjury under the laws of the State of California that the electronically submitted information was prepared under my direction or supervision. Based on my inquiry of the person(s) directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is true, accurate, and complete, and complies with the Statewide Sanitary Sewer Systems General Order. I am aware that there are significant penalties for submitting false information.

Certifier Name:	Brian McCarthy	**Certifier Title:**	General Manager
Certifier Initials:	BM	**Certification Date:**	04/02/2024

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Attachment 2: Spill Package (CIWQS ID #847584, May 2018)

CIWQS Water Boards

You are logged-in as: PUBLIC.

SSO - General Information

SSO Event ID:	847584	**Regional Water Board:**	3
Spill Location Name:	7584 Hempstead Avenue	**Agency:**	Goleta West SD
WDID:	3SSO11465	**Sanitary Sewer System:**	Goleta West SD CS

File Name	File Description	Date/Time Uploaded	Status
847584_Version_1.4.pdf	Certified spill pdf : 847584_Version_1.4.pdf	06/11/2018 - 16:12:21	OK
P1 - MH 79-38-09.jpg	Photo 1 - arrived at MH 79-38-09	05/29/2018 - 13:36:59	OK
P10 - storm drain #1 after pressure washing and vaccuming.jpg	Photo 10 - storm drain #1 after pressure washing and vaccuming	05/29/2018 - 13:41:46	OK
P11 - storm drain #2 before cleaning.jpg	Photo 11 - storm drain #2 before cleaning	05/29/2018 - 13:42:17	OK
P12 - strom drain #2 after pressure wash and vac.jpg	Photo 12 - strom drain #2 after pressure wash and vac	05/29/2018 - 13:42:56	OK
P13 - street sweeper cleaning spill area.jpg	Photo 13 - street sweeper cleaning spill area	05/29/2018 - 13:43:33	OK
P14 - spill area after street sweeper pass.jpg	Photo 14 - after street sweeper cleaned	05/29/2018 - 13:44:23	OK
P15 - street sweeper cleaning entire spill area.jpg	Photo 15 - street sweeper cleaning entire spill area	05/29/2018 - 13:45:09	OK
P2 - looking west down Hempstead.jpg	Photo 2 - looking west down Hempstead from SSO manhole	05/29/2018 - 13:38:04	OK
P3 - continuing west down Heampstead toward Calle Real.jpg	Photo 3 - continuing west down Heampstead toward Calle Real	05/29/2018 - 13:38:35	OK
P4 - looking south on Calle Real towards storm drain inlet.jpg	Photo 4 - looking south on Calle Real towards storm drain inlet	05/29/2018 - 13:39:06	OK
P5 - looking east up Hempstead, Firetruck at manhole.jpg	Photo 5 - looking east up Hempstead, Firetruck at manhole	05/29/2018 - 13:39:38	OK
P6 - absorbant berm at strom drain inlet.jpg	Photo 6 - absorbant berm at strom drain inlet	05/29/2018 - 13:40:05	OK
P7 - 4-inch lateral root log that caused blockage.jpg	Photo 7 - 4-inch lateral root log that caused blockage	05/29/2018 - 13:40:34	OK
P8 - storm drain #1 before cleaning and vaccuming.jpg	Photo 8 - storm drain #1 before cleaning and vaccuming	05/29/2018 - 13:40:57	OK
P9 - pressure washing and vaccuming strom drain #1.jpg	Photo 9 - pressure washing and vaccuming strom drain #1	05/29/2018 - 13:41:22	OK
SSO Report (in-house).pdf	SSO Report (in-house)	05/29/2018 - 13:35:34	OK
SSO and site diagram.pdf	SSO and site diagram	05/29/2018 - 13:34:21	OK
SSO volume estimate.pdf	SSO volume estimate	05/29/2018 - 13:36:00	OK
map from GIS of area.docx	map from GIS of SSO area	05/29/2018 - 13:35:06	OK

General Info

Certified by Mark Nation on 2018-06-11 00:00:00.0

1 - Spill Type: Category 3

2 - Estimate Spill Volumes

a) Estimated spill volume that reached a separate storm drain that flows to a surface water body?	4
b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up)	4
c) Estimated spill volume that reached a drainage channel that flows to a surface water body?	0
d) Estimated spill volume recovered from a drainage channel that flows to a surface water body?	0
e) Estimated spill volume discharged directly to a surface water body?	0
f) Estimated spill volume recovered from surface water body?	0
g) Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.)	69
h) Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up)	69

Estimated Total spill volume Reach Surface Water (a-b+c+e)	Estimated Total spill volume Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
0	69	73	73

3 - Did the spill discharge to a drainage channel and/or surface water?	No
4 - Did the spill reach a separate (i.e.,not combined) storm drainpipe?	Yes
5 - If spill reached to a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?	Yes

Physical Location Details

6 - Spill location name:	7584 Hempstead Avenue
7 - Latitude of spill location:	34.433681
8 - Longitude of spill location:	-119.892872
9 - County:	Santa Barbara
10 - Regional Water Quality Control Board:	3
11 - Spill location description:	Spill came from GWSD manhole 79-38-09 in the asphalt paved residential street in front of 7584 Hempstead Avenue.

Spill Details

12 - Number Of appearance points:	1
13 - Spill appearance point:	Manhole
14 - Spill appearance point explanation:	Spill came from GWSD manhole due to blockage in downstream 6" VCP mainline.
15 - Final spill destination:	Paved Surface;Separate Storm Drain;Street/Curb and Gutter
16 - Explanation of final spill destination:	Entire spill recovered using vacuum truck. Some portion likely evaporated as it was a warm sunny day.
17 - Estimated spill start date/time:	2018-05-26 09:25:00.0
18 - Date and time sanitary sewer system agency was notified of or discovered spill:	2018-05-26 09:42:00
19 - Estimated Operator arrival date/time:	2018-05-26 10:35:00
20 - Estimated spill end date/time:	2018-05-26 11:59:00.0
21 - Spill cause:	Debris from Lateral
22 - Spill cause explanation:	Blockage likely caused by a plumber - root log pushed into mainline from a private lateral.
23 - Where did failure occur?	Gravity Mainline
24 - Explanation of Where failure occured:	Blockage was determined to be located approximately 20-feet downstream from manhole.
25 - Was this spill associcated with a storm event?	No
26 - Diameter of sewer pipe at the point of blockage or failure:	6
27 - Material of sewer pipe at the point of blockage or failure:	VCP
28 - Estimated age of sewer asset at the point of blockage or failure:	55
29 - Explanation of volume estimation method used:	Spill volume was calculated using wetted and stained area and depth estimates as per GWSD's SSO Response Plan

Notification Details

30(a) - Name and Tittle (Contact person who can answer specific questions about this SSO)	Brian McCarthy/Chief Inspector or Lawrence Hart/Utility 1
30(b) - Contact Person Phone Numner	8059682617

DRAFT

Attachment 3: Post-Inspection Data Requests

DRAFT

1. 2018 Root ball spill file
    a. Need CMMS copy of example report
    b. original field records
    c. Training Link documentation

2. Training
    a. Records on OERP/SERP training (2023 documentation – get copy of binder)
    b. Safety training records (signage sheets other than summary page?)
    c. CMMS report record for the root ball spill
    d. Hot Spot sections list
    e. Example safety training (confined space)
    f. Qualification records if any

3. Pump Stations
    a. Asset IDs for where lowest upstream manholes are for spills (need to re-confirm via Nick for inline capacity from engineer on where spill would flow after all the rehabilitation; did real time. unplanned test to check location and wet well height; want plan for surveying
    b. List of storm drain locations for each pump station where sewage would flow
    c. Station-specific spill response plans (ERPs)? None now

4. Critical spare parts (nothing now identified and confirmed),including maintaining critical parts (D4.4); main building has backup power for emergencies with SCADA with UPS backup batteries at each station

5. Pressure sensors and SCADA sensors on pipes? Check if they have (Steve at GSD asked about this)

6. Wet weather protocol/checklist (list of what they do before/after major weather events)

7. Work Order example for completed work

8. Maintenance checklists (hot spots, routine maintenance)

APPENDIX 2A – Certified Spills List (2007-2024)

Spill Public Report – Spill Event ID(s) Page

Here is the detail page of your Sanitary Sewer System Spill Report search for selected Regional Board, county, responsible agency, or sanitary sewer system. These results correspond to the following search criteria:

SEARCH CRITERIA: [REFINE SEARCH]

- WDID (**3SSO11465**)
- Spill Type (**Category 1; Category 2; Category 3**))
- Agency (**Goleta West SD**)

The table below presents important details from Enrollee-submitted certified spill events, as submitted through individual spill reports, which meet the search criteria selected on the Sanitary Sewer System (SSS) Spill Report Form. If data is not shown for a particular field, it means the Enrollee did not provide the information and was not required to do so. To view the entire spill report, select the corresponding “Spill Event ID”.

DRILLDOWN HISTORY: [GO BACK TO SUMMARY PAGE]

REGION: **3**

[VIEW PRINTER FRIENDLY VERSION] [EXPORT THIS REPORT TO EXCEL]

Event ID	Region	Responsible Agency	Sewer System	WDID	Spill Category	Spill Start Date	Spill Vol (gal)	Spill Vol Recovered (gal)	Spill Vol Reached Surface Water (gal)	System Failure Location	Spill Appearance Point
705384	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2007-10-10 00:00	450	200	250	Main	Other (specify)
714685	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2008-03-06 09:00	1,900	0	190		Manhole
735380	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2009-03-23 00:00	200	75	125	Main	Manhole
735469	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2009-03-20 00:00	1	0	0	Main	Manhole
745055	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2009-09-24 00:00	2,100	200	1,900	Main	Gravity sewer;Manhole
765008	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2011-03-31 09:00	50	0	0	Main	Manhole
788933	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2012-12-10 08:30	51	51	0	Failure occurred at the lateral connection to the main. Roots growing down the lateral protruded into the main and caused a blockage.	Manhole
793245	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2013-04-06 08:50	18	15	0	Main	Manhole
798200	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2013-08-25 12:15	94	0	5	Main	Manhole
802974	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2014-01-19 10:45	310	310	0	Gravity Mainline	Manhole
803955	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2014-02-18 14:00	82	82	0	Gravity Mainline	Manhole
805714	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2014-04-23 08:00	3,828	150	100	Gravity Mainline	Manhole

821659	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2016-01-30 00:00	300	50	250	Gravity Mainline	Manhole
841036	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1	2017-10-19 14:00	50	0	2	Manhole	Manhole
847584	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2018-05-26 09:25	73	73	0	Gravity Mainline	Manhole
878230	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 3	2021-12-15 09:38	253	50	0	Force Main	Force Main
893543	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1 Spill	2024-02-16 19:28	1,140,657	68,961	1,071,969	Force Main	Force Main
897322	3	Goleta West SD	Goleta West SD CS	3SSO11465	Category 1 Spill	2024-10-30 11:53	8,460	6,000	8,460	Force Main	Force Main

Page 1 of 1 Go To Page: 1 25 Records/Page

The current report was generated with data entered by Enrollees on the previous day.

Back to Main Page | **Back to Top of Page**

APPENDIX 2B – Certified Spills (Current Operational Report, 2023-2024)

COLLECTION SYSTEM OPERATIONAL REPORT

Please see the **Glossary of Terms** for explanations of the search results column headings. **More information about the report is found at the bottom of this page**.

Click to Print This Page (Select Printer as Adobe PDF)

SEARCH CRITERIA: [REFINE SEARCH] [NEW SEARCH] [GLOSSARY]

WDID (**3SSO11465**)

Date Range: Start_Date (**08/02/2021**) End_Date (**08/02/2024**)

DRILLDOWN HISTORY: [GO BACK TO LISTING OF COLLECTION SYSTEMS]

Goleta West SD CS

Agency: Goleta West SD

General Information

Region	Place ID	Place Name	CS Category	Place Address	Place County
3	645317	Goleta West SD CS	Municipal(Public)	Goleta CA	Santa Barbara

Collection System Spill Summary

Operational Indices: Goleta West SD CS

Spill Rate Indice (spills/100mi/yr)							
	Category 1			Category 2		Category 3	
	Main System	Laterals	Other	Main System	Other	Main System	Other
Goleta West SD CS	0.44	N/A	0.0	0.0	0.0	0.44	0.0
State Municipal(Public) Average	1.92	N/A	1.2	1.86	2.85	3.44	0.76
Region Municipal Average	1.06	N/A	0.35	1.37	1.15	2.42	0.72

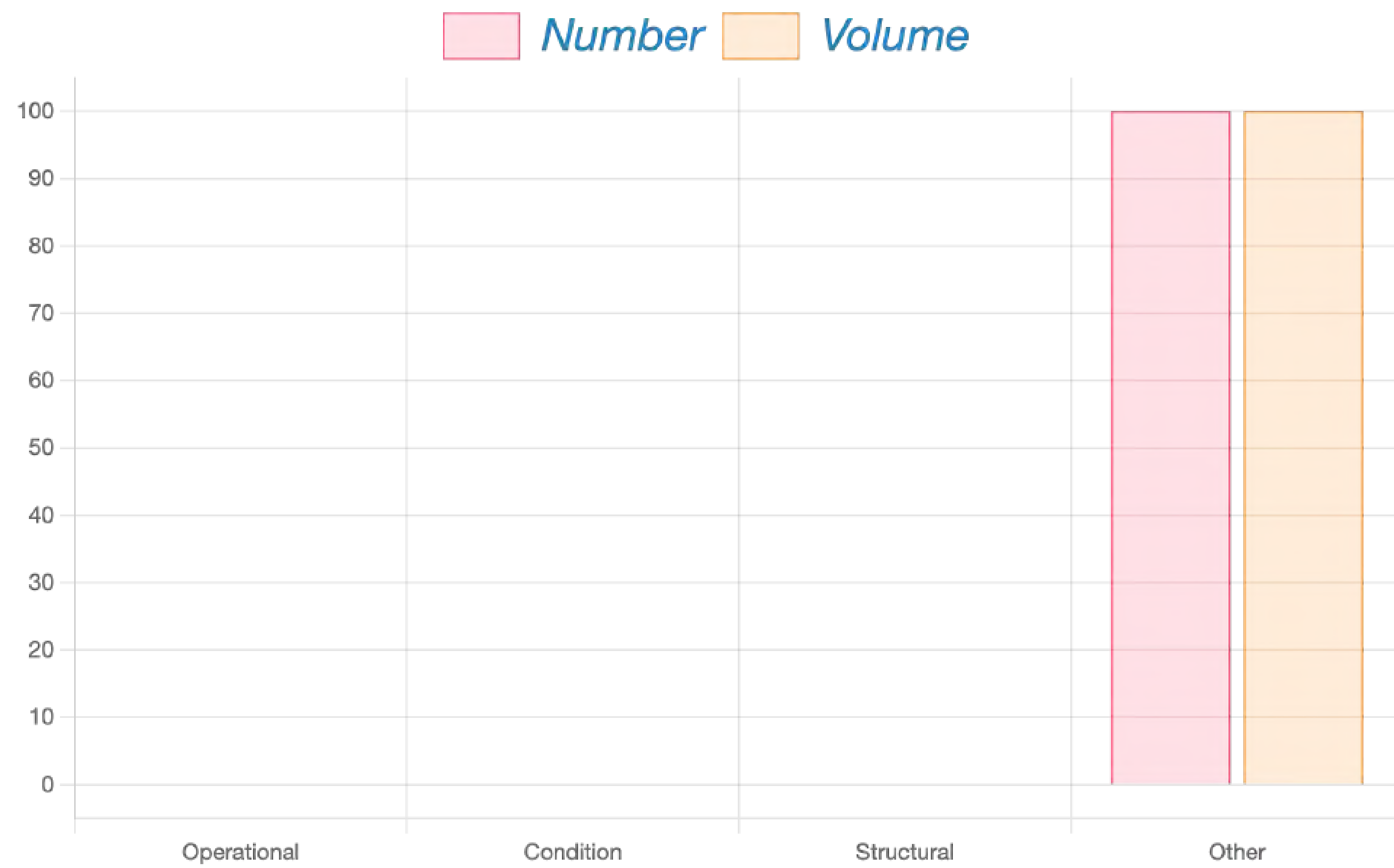
Net Volume Spills Indice (gallons/1000 Capita/yr)							
	Category 1			Category 2		Category 3	
	Main System	Laterals	Other	Main System	Other	Main System	Other
Goleta West SD CS	8705.03	N/A	0.0	0.0	0.0	1.65	0.0
State Municipal(Public) Average	9143.12	N/A	3624.53	266.6	2603.82	92.41	56.15
Region Municipal Average	1265.15	N/A	426.97	226.22	16.91	61.6	1.98

Note: Click on hyperlinks to get comparison charts for CS, Region, and State grouped by 'Miles Of Pipe'.

(1) The number of Category 1, 2 and 3 SSOs resulting from a failure in the Enrollee sewer system per 100 miles sewer system owned by the Enrollee per year.
(2) Net Volume (volume spilled minus volume recovered) of SSOs, for which the reporting Enrollee is responsible, per capita (i.e. the population served by your agency's sanitary sewer system), per year.
(3) Value calculated using miles of force mains and other pressure systems and miles of gravity sewers the agency is responsible for.
(4) Value calculated using miles of laterals the agency is responsible for (Lower Only, UpperLower). For collection systems with no lateral responsibility a N/A is shown.
(5) Value Calculated using total miles of collection system pipe the agency is responsible for.
(6) Comparison made between similar collection systems type (e.g. municipal) and lateral responsibility for the entire state over the selected time period. Comparison indices are calculated for all similar collection systems and averaged for comparison.
(7) Comparison made between similar collection systems type (e.g. Municipal) and lateral responsibility for collection systems in same region (e.g. Region 5S). Collection system indices are calculated for all similar collection systems and averaged for comparison. For airport, hospital, marinas, military, park, port, prison, school, and other collection systems facilities, only state comparison is shown.
(8) For Criteria used and term definitions refer to the SSO Glossary of Terms.
(9) Other: Includes spills caused by vandalism, surcharged pipe, operator error, and unknown causes.

Percentage of total Number and Volume of SSOs by Spill Cause

Collection System: Goleta West SD CS



Percentage of total Volume of SSOs by Spill Cause

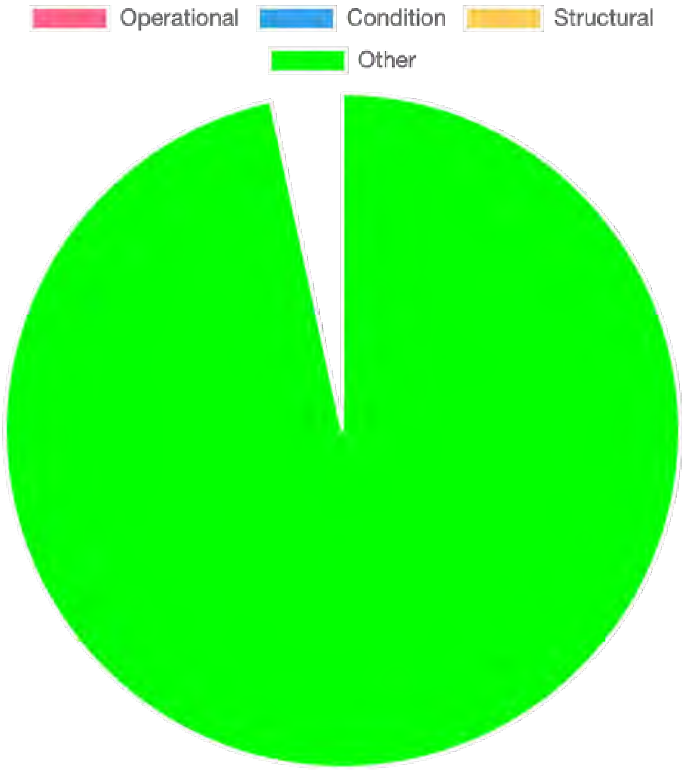
Operational: Debris from Construction, Debris from Lateral, Debris-General, Debris-Rags, Fats and Oils and Grease, Root Intrusion, Debris-Wipes/Non-Disposable

Condition: Flow Exceeded Capacity (Separate CS Only), Natural Disaster, Rainfall Exceeded Design, II (Separate CS Only)

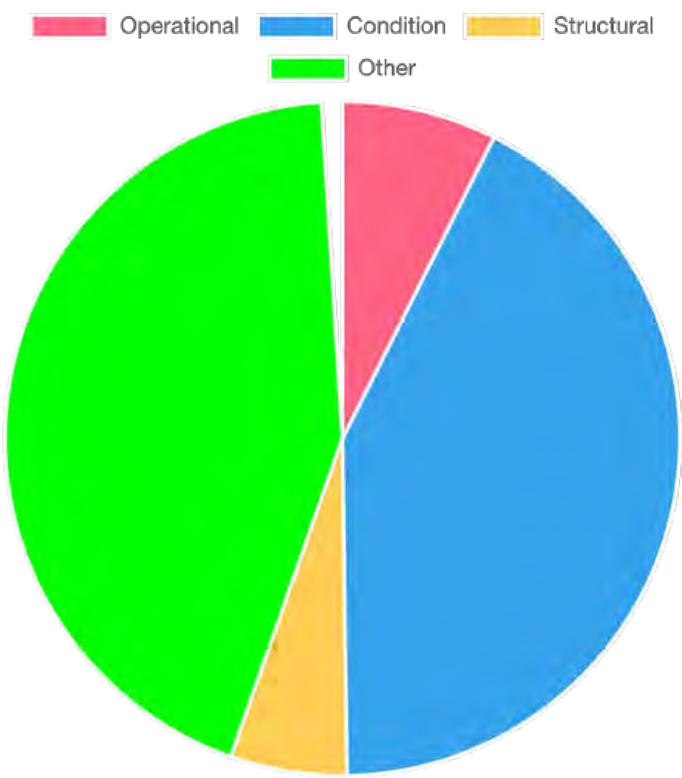
Structural: Air Relief Valve (ARV)/Blow-Off Valve (BOV) Failure , Pipe Structural Problem/Failure, Pipe Structural Problem/Failure - Installation, Pump Station Failure-Controls, Pump Station Failure-Mechanical, Pump Station Failure-Power, Siphon Failure

Other: Construction Diversion Failure, CS Maintenance Failure, Damage by Others Not Related to CS Construction/Maintenance (Specify Below), Inappropriate Discharge to CS, Operator Error, Other (specify below), Surcharged Pipe (Combined CS Only), Vandalism

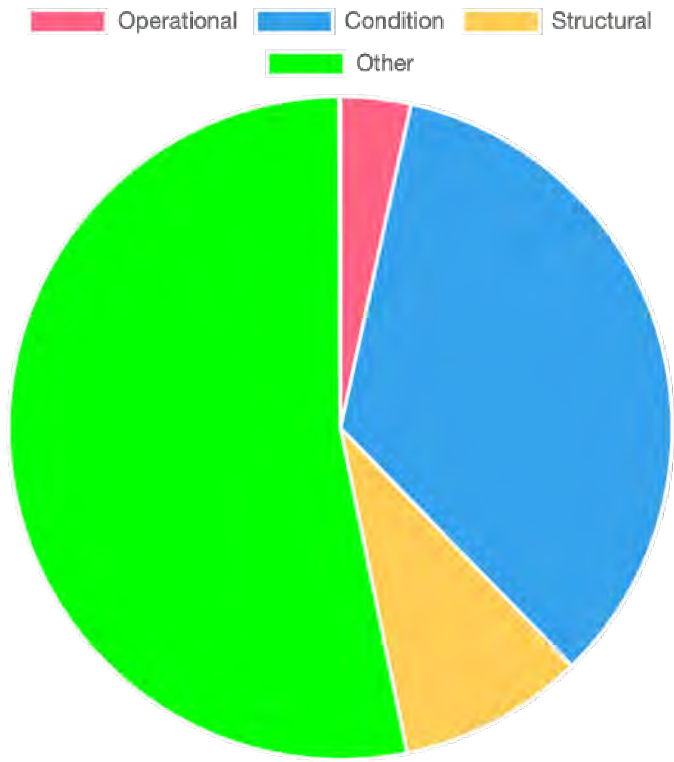
Goleta West SD CS



Region 3



State of California



Percentage of total Number of SSOs by Spill Cause

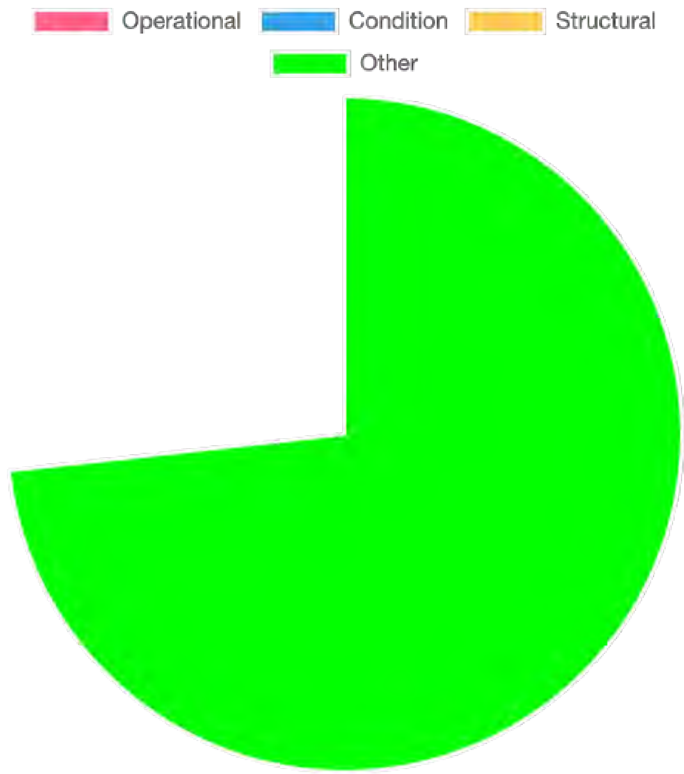
Operational: Debris from Construction, Debris from Lateral, Debris-General, Debris-Rags, Fats and Oils and Grease, Root Intrusion, Debris-Wipes/Non-Disposable

Condition: Flow Exceeded Capacity (Separate CS Only), Natural Disaster, Rainfall Exceeded Design, II (Separate CS Only)

Structural: Air Relief Valve (ARV)/Blow-Off Valve (BOV) Failure , Pipe Structural Problem/Failure, Pipe Structural Problem/Failure - Installation, Pump Station Failure-Controls, Pump Station Failure-Mechanical, Pump Station Failure-Power, Siphon Failure

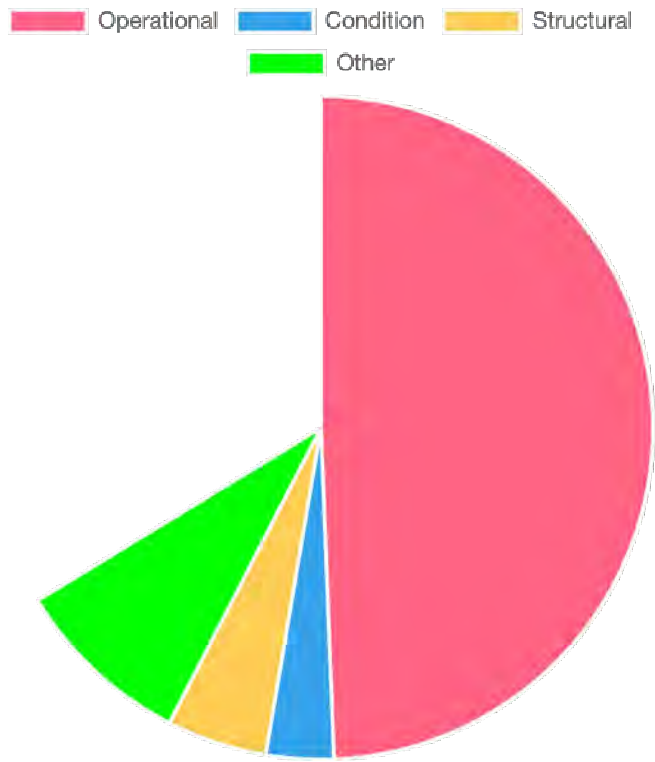
Other: Construction Diversion Failure, CS Maintenance Failure, Damage by Others Not Related to CS Construction/Maintenance (Specify Below), Inappropriate Discharge to CS, Operator Error, Other (specify below), Surcharged Pipe (Combined CS Only), Vandalism

Goleta West SD CS



Region 3

State of California



Collection System Annual Report Data(*)

Collection System Information: Goleta West SD CS

Status	Certified
Last Updated On	2024-04-02 10:30:04
Population Served	41000
Miles of Force Main	5
Miles of Gravity Sewer	70
Portion of Laterals Responsible	None
Miles of Laterals Responsible	0
Number of Lateral Connections	6026
Total pumps 2020 Current	0
Total pumps 2000 2019	0
Total pumps 1980 1999	0
Total pumps 1960 1979	100
Total pumps 1940 1959	0
Total pumps 1920 1939	0
Total pumps 1900 1919	0
Total pumps Before 1900	0
Inaccessible Sewer (Miles)	0
Sewer Clean Production (Miles/Yr)	41
Sewer System Inspected (Miles/Yr)	9

(*) The information presented above was provided by the Enrollee in the Collection System Questionnaire. Enrollees are required to update the questionnaire information at least once a year; therefore, the information presented above may not be the most current.

Enrollee: Goleta West SD CS

Sewer System Management Plan (SSMP) Due Dates (*)

SSMP Due Date	Certification Date	Access SSMP
08/02/2025	null	N/A
08/02/2031	null	N/A

Audit Report Due Dates (**)

Audit Period	Audit Report Due	Certification Date
08/02/2021 to 08/02/2024	02/02/2025	
08/03/2024 to 08/02/2027	02/02/2028	

* A Sewer System Management Plan (SSMP) is a living document an Enrollee develops and implements to effectively manage its sanitary sewer system(s). Section 5.2 and Attachment E1 section 3.11 of the General Order requires an Enrollee to provide and certify the SSMP in CIWQS Sanitary Sewer Systems data base every six years.

** The Legally Responsible Official shall upload and certify an audit report into the online CIWQS Sanitary Sewer System Database per the requirements in section 3.10 of Attachment E1 of the General Order.

Additional Information:

- Data used for the Operational report is reported by the enrollees through the CIWQS (California Integrated Water Quality System) SSO module.
- Indices are calculated for the date range specified (default is past 4 months) and using data available since reporting was required for all enrollees as specified in the Sanitary Sewer Systems WDR. Reporting was required to begin for Regions 4,8,9 on 1/2/2007, Regions 1,2,3 on 5/2/2007, and, Regions 5,6,7 on 9/2/2007.
- Comparisons are made between similar collection systems type (e.g. Municipal), and lateral responsibility for the entire state and region. Indices are calculated for all similar collection systems and averaged for comparison.
- Category 1 and 2 spills are required to be fully certified 15 calendar days after SSO response conclusion and Category 3 spills are required to be fully certified 30 Calendar days after end of calendar month which SSO occurred. Therefore, spill records for the past approximately 60 days may be incomplete.
- Average Number of Spills per 100 miles: Measures the number of sewer overflows per 100 miles of sewer lines. Notice that these indices are strongly influenced by the length of collection system owned by the enrollee.
    - For instance, an enrollee that owns and operates a collection system of one (1) mile in length having only one (1) spill (analyzing data for ONE year) will have a Operational indice of 100.0 spills/100mi/yr. On the other hand, an enrollee that owns and operates a collection system of one hundred (100) miles in length having only one (1) spill (analyzing data for ONE year) will have a Operational indice of 1.0 spills/100mi/yr.
- Average Net Volume (volume spilled minus volume recovered) of Spills per Capita: Measures the volume in gallons of SSOs, for which the reporting Enrollee is responsible, per capita (the population served by your agency's sanitary sewer system). Where the volume recovered is greater than the volume spilled, the net volume will be considered to be zero.
- The “agency” or Enrollee listed on a SSO report is responsible for the data presented in this report and should be contacted directly for questions related to their Data.
- More information on the Sanitary Sewer Overflow Reduction program is available at: http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml
- The Sanitary Sewer Overflows Incident Map is available at: http://www.waterboards.ca.gov/water_issues/programs/sso/sso_map/sso_pub.shtml
- The Interactive SSO report: https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportAction=criteria&reportId=sso_main

The current report was generated with data as of: Friday, January 10, 2025
Regional Boards are in the process of entering backlogged data.
As a result, data may be incomplete.

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APPENDIX 2C – Certified Spills (Historic Operational Report, 2007-2023)

The purpose of this Appendix is to provide a detailed spill benchmarking report for presenting spill metrics and other data for assisting agency managers and outside regulators with assessing the collection system spill performance. The report utilizes available data from the State Water Board online database (CIWQS) and Fischer Compliance LLC's customized modeling software including development of comprehensive data visualizations including useful insights, comparisons, and transparency of the data.

Figure 1 – Spill Dashboard 1 (# of Spills, 2007-2023)

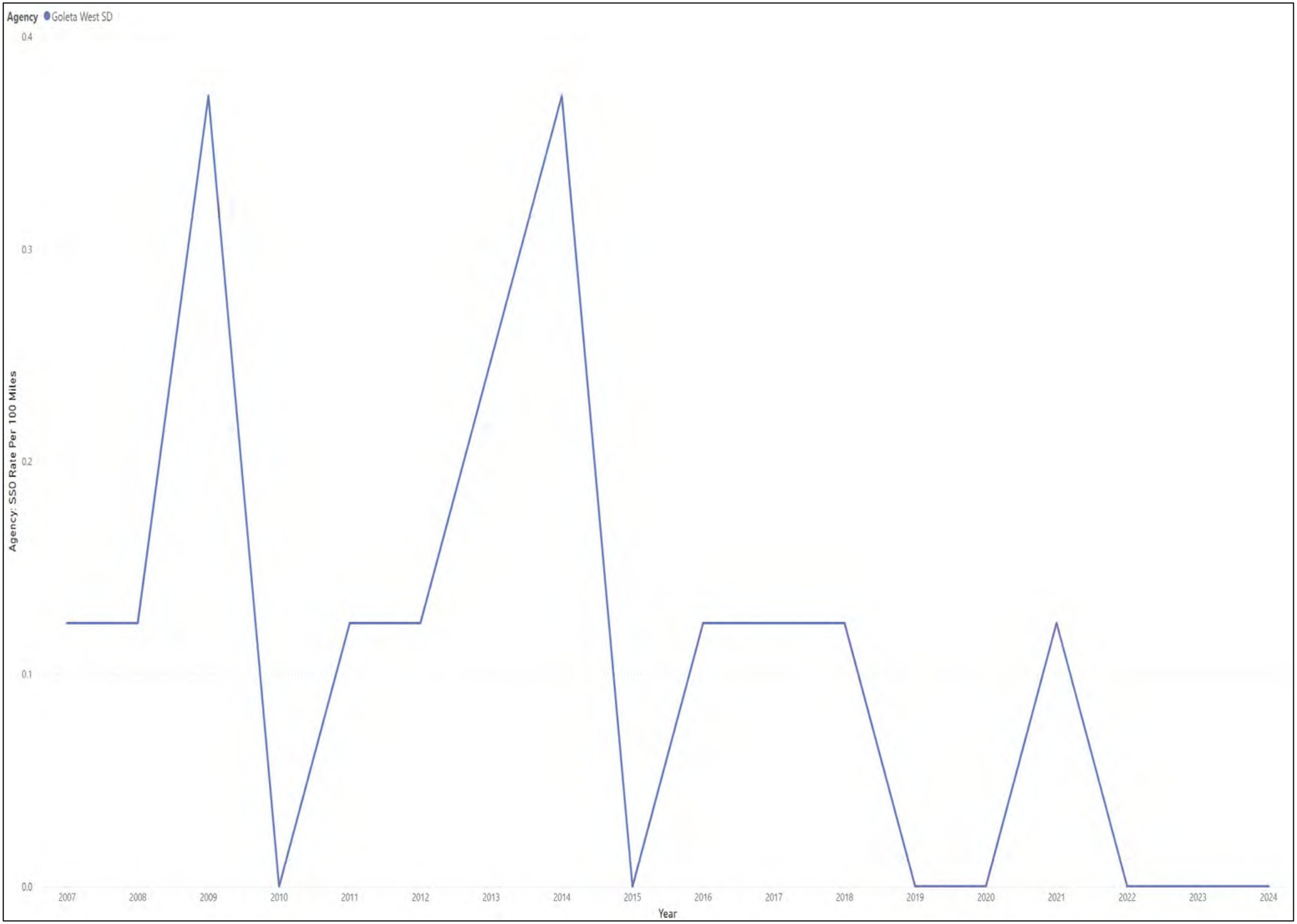

Figure 2 - Spill Rolling Average (# of Spills/100 miles of sewer/year, 2007-2023)

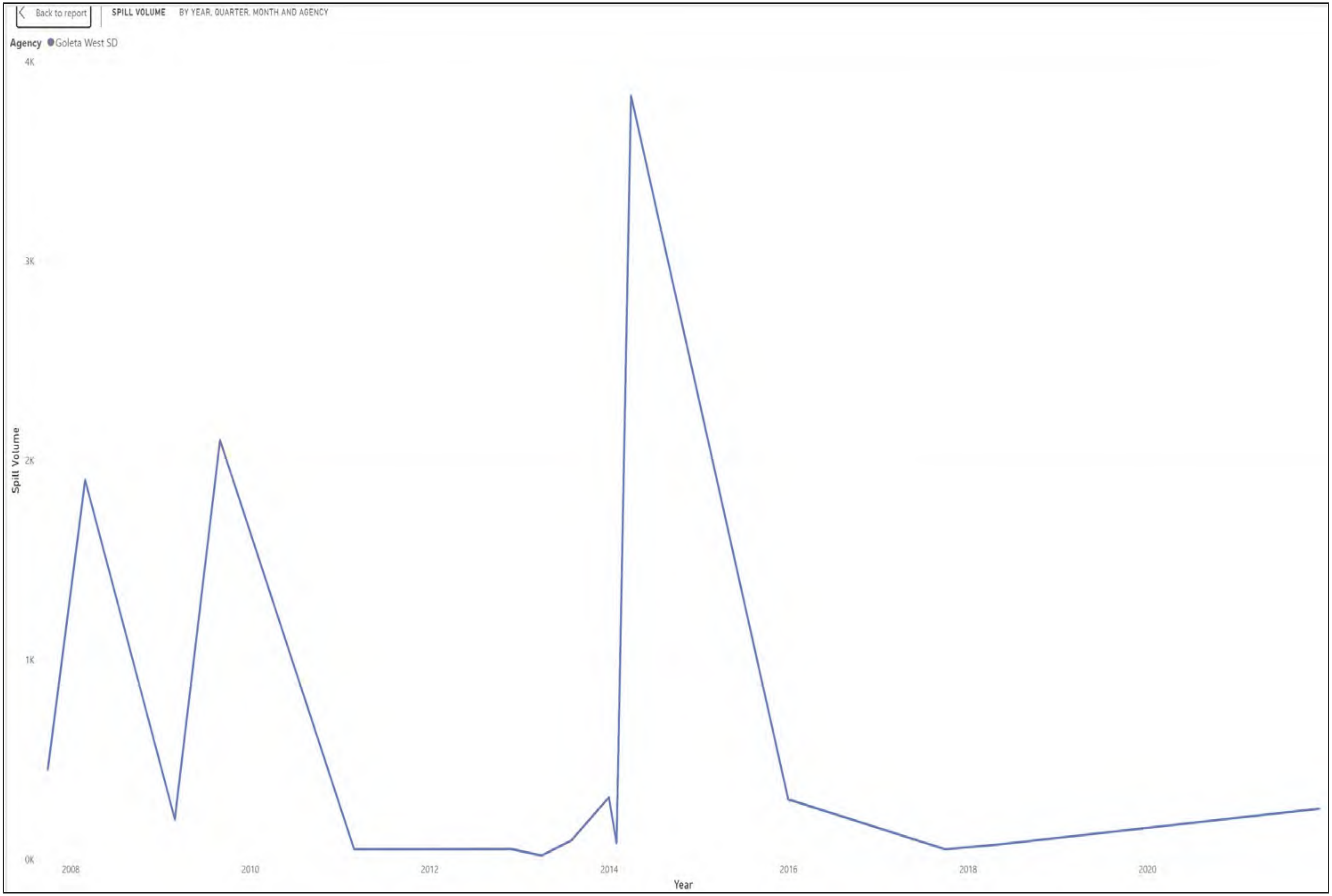

Figure 3 - Spill Causes by Volume of Spills (2007-2023)

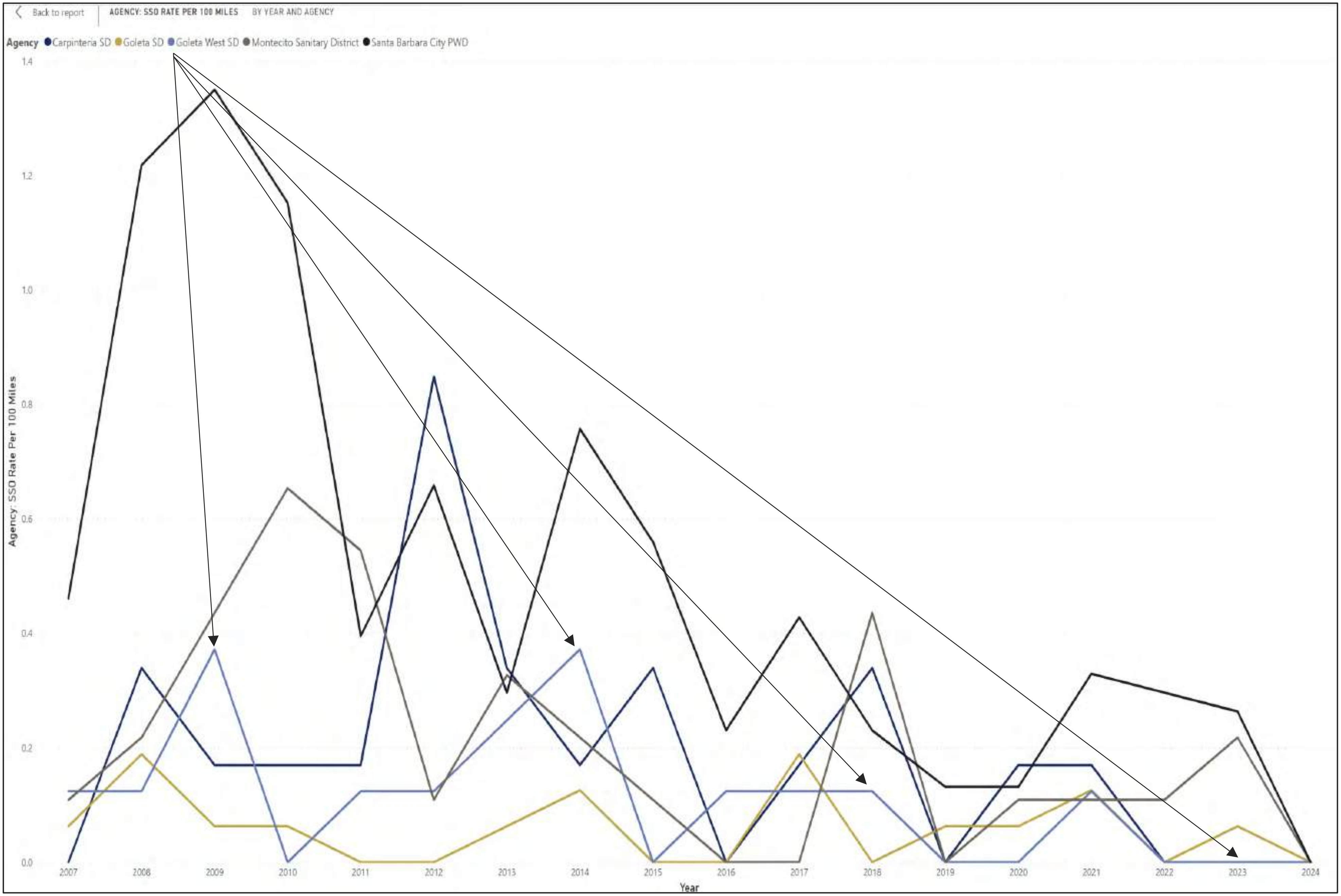

Figure 4 - Spill rolling averages (# of spills/100 miles of sewer compared with other agencies in region, 2007-2023)

<u>Observation:</u> The agency rolling spill rates are lower than several other agencies between 2021-2023

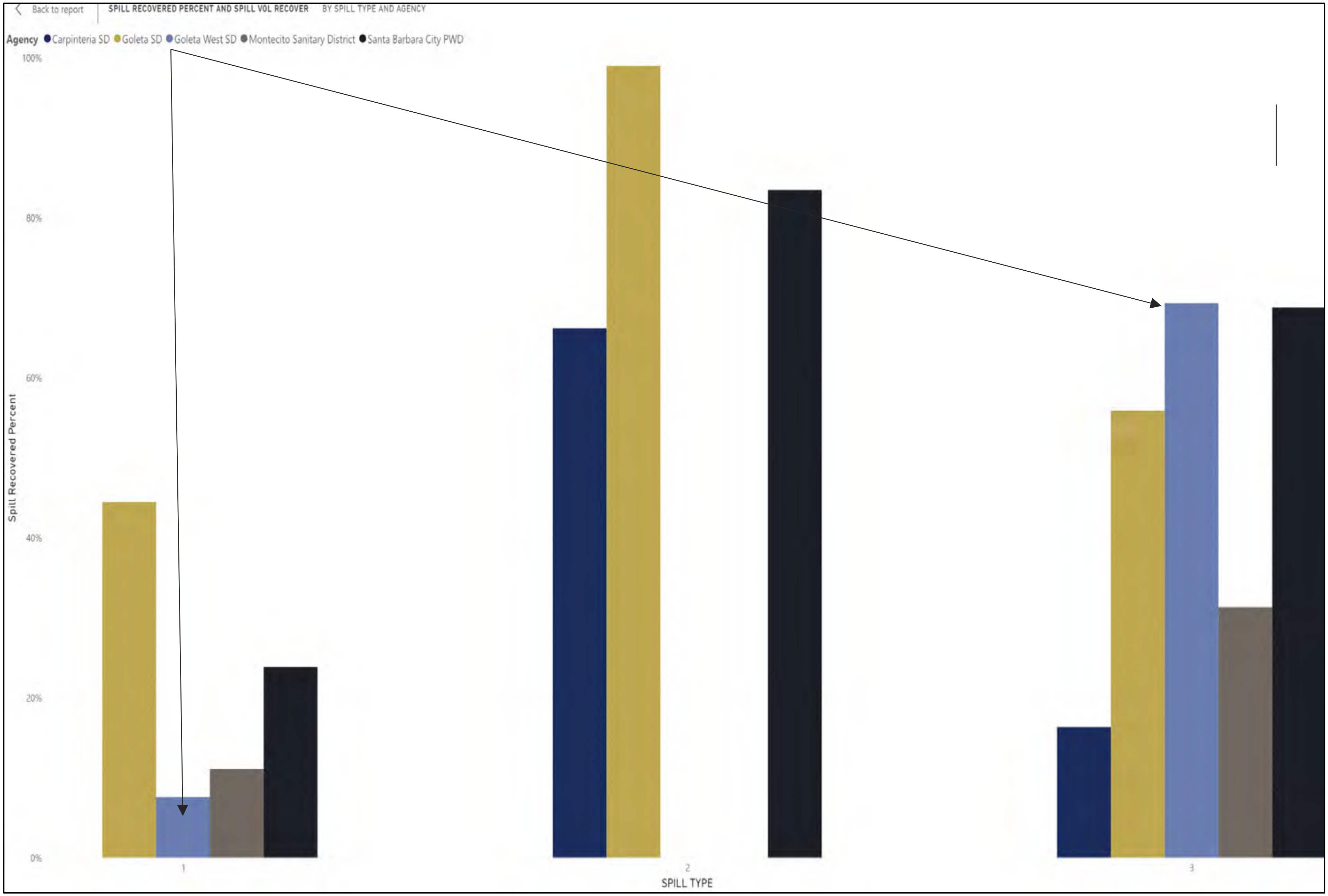

Figure 5 - Spill Recovery Metrics (%) recovered for Cat. 1, 2, 3 spills (compared to other agencies in region, 2007-2023

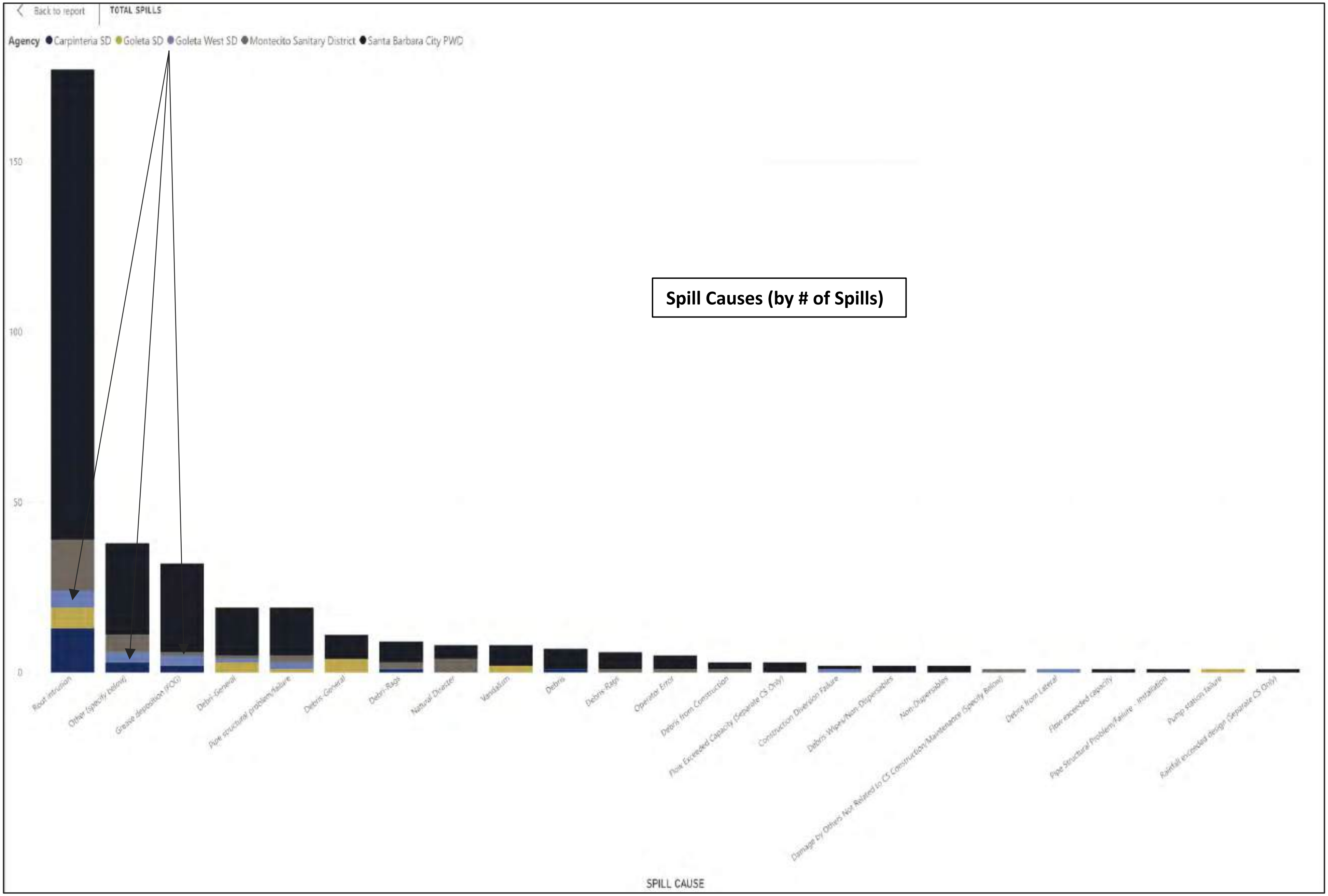

Figure 6 - Spill Causes by # of Spills (compared with other agencies in region, 2007-2023)

<u>Observation:</u> The top spill causes by # of spills are 1) Roots, 2) "Other", and 3) Grease (FOG)

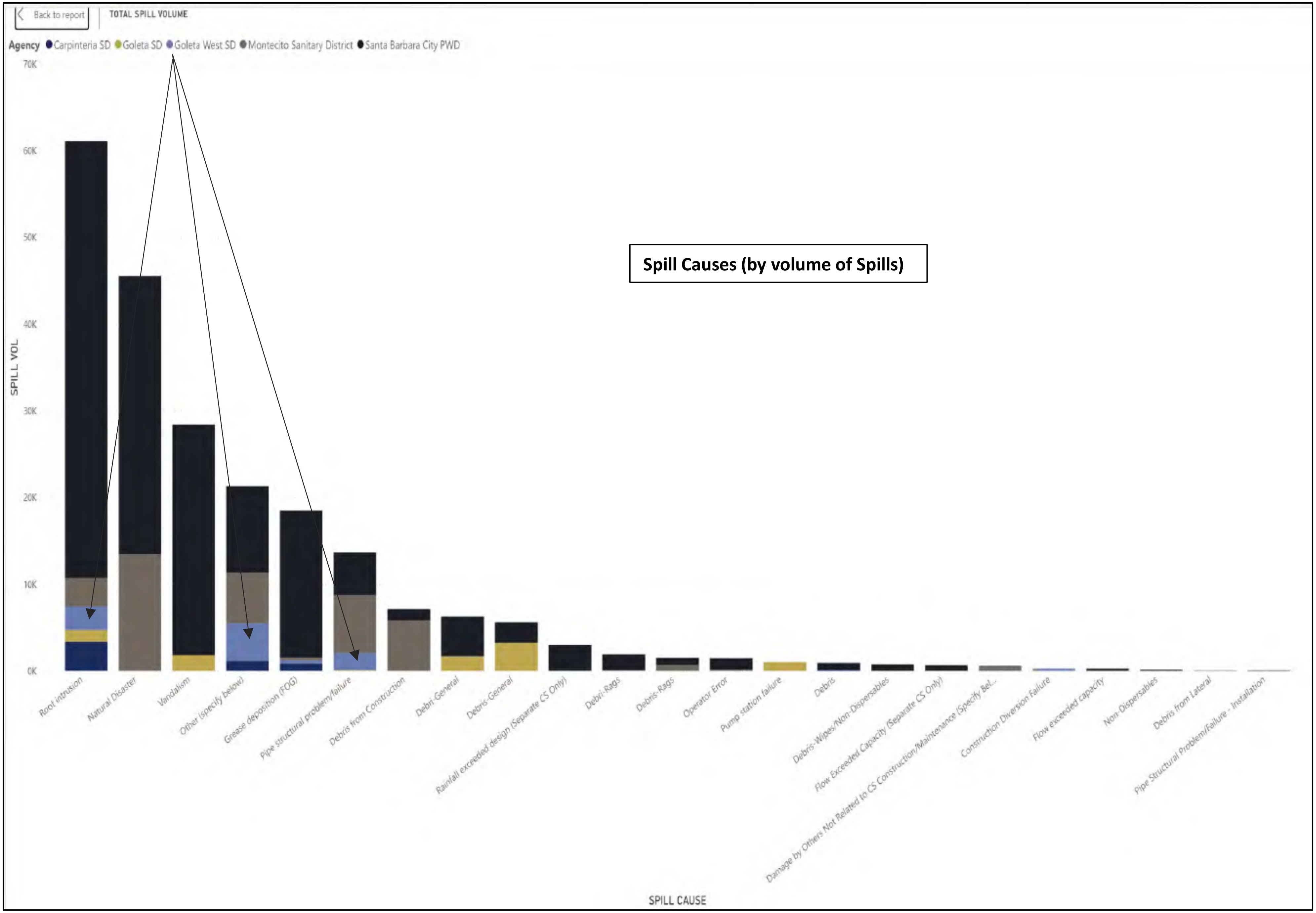

Figure 7 - Spill Causes by # of Spills (compared with other agencies in region, 2007-2023)

<u>Observation:</u> The top spill causes by volume are 1) Root Intrusion, 2) “Other”, and Pipe Structural Problem/Failure

APPENDIX 3 – SSMP Audit Implementation Plan and Schedule

REISSUED WDR (<u>ATT D:</u> IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027)						
Requirement	Finding	Agree? (Yes/No)	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. X-X Spec. X.X						

REISSUED WDR (ATT D: IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No)	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-1	Failure to prevent discharges of sewage to surface waters of the State.	Yes	February 2024 started, ongoing with Central Coast Regional Water Quality Control Board oversight.	Ongoing	Since February 2024, the District has undertaken extensive response and corrective actions. District continues to resolve with the Central Coast Regional Water Quality Control Board. District retained Fischer Compliance, LLC to support evaluating and implementing compliance improvements to prevent future large spills. District started force main condition assessment in 2022, well within the force main's expected lifetime, and enlarged scope of condition assessment after spill in consideration of the investigation findings related to corrosive soils. Final phase of condition assessment field work expected to be completed March 2025. District formed a Spill Ad Hoc Committee and declared emergency authorization to ensure nimble and thorough implementation. CEI conducted in March 2024. District evaluating additional corrective actions and will update.	
			8/2025 Annual review of Element 1	8/2025; Ongoing	Conduct annual review of Element 1 with SSMP Audit Report recommendations.	
	Improve narrative language and harmonize structure with Reissued WDR for 2025 SSMP Update	Yes	8/2025	8/2025; Ongoing	Already underway to reflect corrective actions identified in 2024. District working with Fischer Compliance, LLC to update SSMP.	

REISSUED WDR (<u>ATT D:</u> IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No)	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-2; Spec. 5.10	Potential lack of sufficient resources for ensuring continuous implementation of Reissued WDR	No. Evaluating further.	Ongoing	12/2024	Already addressed and ongoing reviews to reflect corrective actions since 2024 discharges, including ensuring contact information is up to date. District working with support from Fischer Compliance, LLC to complete implementation of WDR Recommendations in SSMP Audit Report.	
	Assess narrative language for 2025 SSMP Update	Yes	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
Att. D-3	Assess narrative language for 2025 SSMP Update	Yes	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	

REISSUED WDR (<u>ATT D:</u> IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-4; Spec. 5.19	Potential inconsistencies with SSMP implementation (cleaning, SOPS, SERP procedures, spill reporting / documentation procedures, logging maintenance, field staff training, and mutual aid coordination).	No. Evaluating further.	Review of compliance ongoing with periodic reviews	12/2024, ongoing	To extent this was an area of concern, District is already underway with reviewing for inconsistencies. District working to confirm trainings and updates to SERP with support from Fischer Compliance, LLC. District applied to CALWARN and updated communications plans with mutual aid partners.	
	Potential inconsistencies with critical spare parts and equipment	No. Evaluating further.	Review of compliance ongoing with periodic reviews	12/2024, ongoing	Already underway. District is implementing new inventory tracking and has applied to CALWARN for improved access to spare parts during emergency response.	
	Potential inconsistencies with training	No. Evaluating further.	Review of compliance ongoing with periodic reviews	12/2024, ongoing	Already underway and training will continue with support from Fischer Compliance, LLC in 2025.	
	Corrosion of force main coupling bolts and nuts	No. Evaluating further.	Replaced in 2024	5/2024	Replaced. District continues to inspect assets for corrosion after 2024 discharge and will address any additional corrosion identified. District evaluating long-term solutions. District completing expanded condition assessment field work by March 2025 with forthcoming report to inform any next steps to ensure SSMP compliance and integrity of infrastructure.	

REISSUED WDR (ATT D: IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-4; Spec. 5.19	Potential issue with abandoned air release valves on force main	No. Evaluating further.	Removed and replaced abandoned air release valves with proper repair coupling in 2024.	11/2024	Replaced. District confirmed external corrosion of force main caused by soil conditions and has not found internal corrosion issues with condition assessment conducted to date. District evaluating long-term solutions to deal with soil corrosivity. District completing expanded condition assessment field work by March 2025 with forthcoming report to inform any next steps to ensure SSMP compliance and integrity of infrastructure.	
	Potential lack of cathodic protection.	Yes.	Expanded condition assessment field work to be completed by 3/2025, followed by review of report by District and next steps.	2026	Condition assessment field work expected to be completed by March 2025. District, authorized Spill Ad Hoc Committee, and District's retained consultants will review and determine proposals for addressing any issues, including lack of cathodic protection. Any rehabilitation, replacement, or re-alignment of the force mains is subject to permitting requirements and coordination with the Santa Barbara Airport.	
	Potential issue with written SOPs for force main systems.	No. Evaluating further.	Updated and implemented force main recommissioning SOP by May 2024.	5/2024; ongoing	Force Main recommissioning SOP updated with review by several engineering experts, Fischer Compliance, LLC, and the Santa Barbara Airport. District continues to evaluate its written SOPS and is currently working with Fischer Compliance, LLC to identify updates to additional SOPs.	
	Potential lack of completed inspection forms.	No. Evaluating further.	District reviewed current practices to ensure proper documentation in Summer 2024. Evaluating new software for documentation in Spring 2025.	8/2025; ongoing	District evaluating updated software to support routine inspection and completed maintenance documentation. Implementation of software subject to third party contractor support. District continuing to review protocol with Fischer Compliance, LLC	

REISSUED WDR (ATT D: IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-4; Spec. 5.19	Potential lack of periodic cleanings of force main.	No. Evaluating further.	District reviewed current practices in Summer 2024. Installed infrastructure upgrades to help implement more frequent cleanings.	11/2024; ongoing	District installed deployment/retrieval infrastructure to support more frequent cleanings and force main inspections with BAT, and is considering more frequent cleanings and inspections, above industry standard, in light of 2024 spill. District adding line item in budget to ensure available funds for activities and any subsequent repair. District's condition assessment will inform any additional next steps.	
	Potential lack of O/M Manual for pump station.	No. Evaluating further.	District reviewed current manual in Summer 2024. Updates ongoing as need.	2024; ongoing	Already evaluated updates to O/M Manual. District will continue to keep current as need.	
	Potential lack of calibration of pressure meter at Pump Station 1.	No. Evaluating further.	District confirmed calibrations. Continuing to evaluate and maintain.	2024; ongoing	Already evaluated calibrations. In Summer 2024, District also installed a new flow meter at Pump Station 1. Flow meter calibrated and integrated with District's SCADA. District will continue to maintain. Delta alarm currently programmed and calibrated to detect potentially small excursions.	
	Potentially inconsistent documentation of work tasks; potential lack of completed inspection forms at station.	No. Evaluating further.	District confirmed documentation and staff compliance. Continuing to evaluate for improvements, including possible new software for work order system.	2024; ongoing	Already evaluated documentation and consistent use of log books and work order system. District also evaluating new software that may be implemented as improvement, with internal staff training.	

REISSUED WDR (ATT D: IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No)	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-5	Assess narrative language for 2025 SSMP Update	Yes	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
Att. D-6; Spec. 5.12	Potential lack of pre/post storm inspection procedures	No. Evaluating further.	Wet weather protocol implemented.	6/2024; ongoing	Already implemented updated protocol. District continuing to work with Fischer Compliance, LLC evaluating its SSMP and procedures.	
	Potential lack of emergency /SOPs for pump station.	Yes.	District is updating SOP and emergency procedures for pump station.	2025; ongoing	District continuing to work with Fischer Compliance, LLC evaluating its additional SOP updates.	
	Assess narrative language for 2025 SSMP Update.	Yes.	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
Att. D-7	Assess narrative language for 2025 SSMP Update.	Yes.	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	

REISSUED WDR (ATT D: IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No)	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-8; Spec. 5.6	Potentially inadequate access for inspecting all force main locations due to overlaying vegetation.	No. Evaluating further.	Ongoing	2026; ongoing.	To date, District has not had issue accessing and inspecting force main that runs through an easement on Santa Barbara Airport property and environmentally sensitive habitat. District began reviewing brush overlay in Spring 2024, which is ongoing, and any action is subject to coordination and cooperation with multiple other jurisdictional agencies. District will complete condition assessment in March 2025 and subsequent results may inform next steps for brush overlay.	
	Develop Climate Resilience Plan	Yes.	Ongoing	8/2025; ongoing.	Already underway. District has previously addressed many related factors, including reducing I&I. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
	Assess narrative language for 2025 SSMP Update.	Yes.	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
Att. D-9	Assess narrative language for 2025 SSMP Update.	Yes.	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	

REISSUED WDR (ATT D: IMPLEMENTATION PLAN/SCHEDULE LOG – 2024 to 2027) (Initial Draft)						
Requirement	Finding	Agree? (Yes/No)	Proposed Schedule	Date Completed	Implementation Notes	LRO Initials
Att. D-10; Spec. 5.4	Potentially missing SSMP Audits.	No. Evaluating further.	District evaluated records.	8/2025	District has identified its past, completed SSMP Audits. District continuing to confirm any remaining issues with support from Fischer Compliance, LLC.	
	Assess narrative language for 2025 SSMP Update.	Yes.	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
Att. D-11	Assess narrative language for 2025 SSMP Update.	Yes.	Ongoing	8/2025	Already underway. District working to confirm updates to SSMP with support from Fischer Compliance, LLC.	
Att. E-1; Spec. 5.13	Continue compliance improvement.	Yes.	Spring 2024 and ongoing.	8/2025; ongoing.	Already underway. District staff completed additional training in Summer 2024. District confirmed proper field documentation implemented in 10/2024. District working to confirm any related compliance improvements and updates to SSMP with support from Fischer Compliance, LLC.	

APPENDIX 4 – References (Key Performance Indicators, KPIs)

Key Performance Indicators (KPIs)

This document provides a list of additional Key Performance Indicators (KPIs) to facilitate review of the Agency's SSMP for compliance and effectiveness required for SSMP Audits.

Table of Contents

1. ELEMENT I (Goal and Introduction)

Attach. D-1 (SSMP Goal and Introduction)

SSMP Implementation

o KPI D-1(a)	o Are the Agencys goals adequate in maintaining the sewer system, including O&M and spill reduction and response? o Does the Agency have established response time goals for customer service response?	Action: o Annual review

SSMP Effectiveness

o KPI D-1(b)	o Are the Agency's Preventative Maintenance work plans being Implemented?	Element Review Frequency/Tasks: o Annual review
o KPI D-1(c)	o Are Agency spill Reduction Goals being met?	o Annual review
	o What is the Agencys average response time for response?	o Annual review
	o Total number of spills prevented (plugged mains that were discovered while doing routine PM)	o Annual review
o KPI D-1(e)	o Are Agency spill event responses effective?	Element Review Frequency/Tasks: o Annual review
o KPI D-1(f)	o Annual review/update of Agency goals and narrative descriptions	Element Review Frequency/Tasks: o Annual review
o KPI D-1(g)	o Annual review/update of system performance (wet weather spill/surcharge events).	Element Review Frequency/Tasks: o Annual review
o KPI D-1(h)	o Does the Agency update its sewer system asset inventory annually?	o Annual review

SSMP Resilience

o KPI D-1(h)	o None	o None

2. ELEMENT 2 (Organization)

Attach. D-2 (Organization)

SSMP Implementation

o KPI D-2(a)	o Are the Agency's organizational procedures adequate for ensuring full SSMP compliance?	Element Review Frequency/Tasks: o Annual review

SSMP Effectiveness

o KPI D-2(b)	o Does the Agency SSMP adequately describe SSMP Responsibilities/Tasks for all staffing?	Element Review Frequency/Tasks: o Annual review
o KPI D-2(c)	o Is Agency Chain of Communication effective and updated?	o Annual review

SSMP Resilience

o KPI D-2(d)	o None	o None

3. ELEMENT 3 (Legal Authority)

Attach. D-3 (Legal Authority)		
SSMP Implementation		
o KPI D-3(a)	o Does the Agency implement its existing codes and ordinances?	Element Review Frequency/Tasks: o Periodic review of sewer use ordinance implementation to ensure adequate required legal authority
SSMP Effectiveness		
o KPI D-3(a)	o Are the Agency codes and ordinances adequate for fulfilling the SSMP legal requirements?	Element Review Frequency/Tasks: o Annual review/update of review of completed work orders and customer complaints to ensure adequacy of authority o Annual review/update of any encounters by staff for circumstances where sewer use ordinance was inadequate
SSMP Resilience		
o KPI D-3(d)	o None	o None

4. ELEMENT 4 (Operations and Maintenance Program)

Attach. D-4 (Operations and Maintenance)

SSMP Implementation

o KPI D-4(a)	o Are the Agency's organizational procedures adequate for ensuring full SSMP compliance? o Are Agency preventative maintenance programs implemented and effective? o Is Agency tracking metrics for miles of pipe cleaned, CCTV-inspected, and pump station inspections performed in system?	Element Review Frequency/Tasks: o Annual review/update of Agency organizational staffing, contacts, and responsibilities o Annual review of O/M program o Annual review of program metrics

SSMP Effectiveness

o KPI D-4(b)	o Are Agency maps up to date?	Element Review Frequency/Tasks: o Annual review/update to ensure all system maps are up to date per change requests submitted by field staff
o KPI D-4(c)	o % of new assets added to Agencys sewer mapping system	Element Review Frequency/Tasks: o Annual review/update of requirements to ensure compliance conformance. o Annual review/update of current maps to ensure new construction project assets have been added.
o KPI D-4(d)	o Does Capital Improvement Plan (CIP) properly address Agency needs? o Annual Agency Capital budget for rehabilitation or replacement?	Element Review Frequency/Tasks: o Is each segment evaluated for capaAgency deficiencies based on projected growth o Are system assets evaluated for remaining useful life o Is existing CIP plan and schedule being implemented as intended?
o KPI D-4(e)	o Are Agency complete maintenance, operations, engineering work orders reviewed for accuracy and completeness? o Number of annual PM work orders completed?	Element Review Frequency/Tasks: o Annual review
o KPI D-4(f)	o Is Agency Rehabilitation and Replacement (R/R) plan being implemented?	Element Review Frequency/Tasks: o Annual review/update of R/R plan to ensure adherence to plan and schedule
o KPI D-4(g)	o % of Agencys CCTV goal completed o Number of annual CCTV work orders completed?	Element Review Frequency/Tasks: o
o KPI D-4(h)	o Is Agency critical spare parts adequate and up-to-date.	Element Review Frequency/Tasks: o Bi-annual review

	o % if required critical spare parts in stock?	o Bi-annual review
o KPI D-4(i)	o Has all required Agency staff training been completed?	Element Review Frequency/Tasks: o Bi-annual review
	o % of required training completed for wastewater collection staff	o Bi-annual review
SSMP Resilience		
o KPI D-2j)	o None	o None

5. ELEMENT 5 (Design and Performance Provisions)

Attach. D-5 (Design and Performance Provisions)

SSMP Implementation

o KPI D-5(a)	o Does the Agency implement its current design and construction standards, specifications, and inspection procedures?	Element Review Frequency/Tasks: o Annual review

SSMP Effectiveness

o KPI D-5(b)	o Are existing Agency design and construction standards, specifications, and inspection procedures adequate for the collection system?	Element Review Frequency/Tasks: o Annual review
	o Annual review of the Agencys standards and procedures for acceptance and testing of new infrastructure?	o Annual review
	o % of new infrastructure accepted vs inspected	o Annual review

SSMP Resilience

o KPI D-5(c)	o None	o None

6. ELEMENT 6 (Spill Emergency Response Plan)

Attach. D-6 (Spill Emergency Response Plan)

SSMP Implementation

o KPI D-6(a)	o Develop and implement a Spill Emergency Response Plan	Element Review Frequency/Tasks: o Quarterly review and training on SERP o Quarterly training/drills on SERP including practice drills with completing field data collection form

SSMP Effectiveness

o KPI D-6(b)	o Were Agency notification procedures outlined in the SERP adhered to for each spill event?	Element Review Frequency/Tasks: o Annual review
o KPI D-6(c)	o Procedures reviewed to provide prompt notification to appropriate Agency parties for a spill event?	Element Review Frequency/Tasks: o Annual review
o KPI D-6(d)	o Was Agency SERP training performed as prescribed in SSMP? o % of employees that completed annual training on SERP versus total field staff	Element Review Frequency/Tasks:
o KPI D-6(e)	o Did the Agency complete a Category 1 spill assessment checklist for all large spills?	Element Review Frequency/Tasks: o Annual review of completed checklists for all Category 1 spills >1,000 gallons reaching surface waters

SSMP Resilience

o KPI D-6(f)	o o Coordinate meetings to improve mapping and Spill response activities with Kern County o % of Bi-annual meetings with Kern County completed	o None

7. ELEMENT 7 (Sewer Pipe Blockage Control Program)

Attach. D-7 (Sewer Pipe Blockage Control Program)

SSMP Implementation		
o KPI D-7(a)	o Is Agency commercial FOG program being implemented and are goals being achieved?	Element Review Frequency/Tasks: o Annual review of goals
SSMP Effectiveness		
o KPI D-7(b)	o Is Agency residential FOG and root programs being administered and are goals being achieved?	o Annual review
	o Number of spills caused by hot spots or FOG	o Annual review
	o % of spills caused by FOG	o Annual review
	o % of spills caused by Roots	o Annual review
	o % of spills caused by debris/rags (non-Dispersables)	o Annual review o
	o % of hot spots inspected annually	o Annual review
	o Number of hot spots removed from Hot Spot list annually?	o Annual review
SSMP Resilience		
o KPI D-7(c)	o None	o None

8. ELEMENT 8 (System Eval./CapaAgency/Cap. Improvements)

Attach. D-7 (Sewer Pipe Blockage Control Program)

SSMP Implementation

o KPI D-8(a)	o Has the Agency been adhered to its system evaluation/condition assessment efforts?	Element Review Frequency/Tasks: o Annual review/update of system inspections/evaluations

SSMP Effectiveness

- o % of sewer system condition assessment completed annually
- o # of flowmeters installed to evaluate system capaAgency

o KPI D-8(b)	o Has the Agency experienced any capaAgency-related spills or surcharge events?	Element Review Frequency o Annual review
o KPI D-8(c)	o Have any changes occurred within the Agency service area that might affect the hydraulic model?	o Annual review
o KPI D-8(d)	o Has CIP capaAgency-related projects/schedule been adhered to?	o Annual review
o KPI D-8(e)	o Has the prioritization/corrective actions for sewer repairs been adhered to?	o Annual review
o KPI D-8(f)	o Has the capital improvement plan been adhered to?	o Annual review

SSMP Resilience

o KPI D-8(g)	o Improve capaAgency-related investigations and inspections	Element Review Frequency/Tasks: o Periodic review of flow/level sensor data (wet weather months) o Periodic review of goals and KPIs (wet weather months)

9. ELEMENT 9 (Monitoring, Measurement, Program Modifications)

Att. D-9 (Monitoring, Measurement. Program Modifications)		
<u>SSMP Implementation</u>		
o KPI D-9(a)	o Were Agency KPIs reviewed and evaluated for each element of the SSMP efforts?	<u>Element Review Frequency/Tasks:</u> o Annual review
<u>SSMP Effectiveness</u>		
o KPI D-9(b)	o Were annual Agency maintenance/repair activities including Performance Measures evaluated/updated?	<u>Element Review Frequency/Tasks:</u> o Annual review
o KPI D-9(c)	o Were any Agency SSMP program compliance point(s) corrected and/or updated based on results of performance measures? o Spills per 100 miles of pipe o Volume of spills per 100 miles of pipe o Number of Category 1 spills o Number of spills caused by lift station failure o Number of repeat spills from same location	<u>Element Review Frequency/Tasks:</u> o Annual review
<u>SSMP Resilience</u>		
o KPI D-9(d)	o None	o None

10. ELEMENT 10 (Internal Audits)

Att. D-10 (SSMP Internal Audits)

SSMP Implementation

o KPI D-10(a)	o Were SSMP internal program audits completed?	Element Review Frequency/Tasks: o Review of Audit reports

SSMP Effectiveness

o KPI D-10(b)	o Did the SSMP internal audit evaluate the SSMP for compliance?	Element Review Frequency/Tasks: o Review of completed SSMP internal audits
o KPI D-10(c)	o Did the SSMP internal audit evaluate the SSMP for effectiveness?	Element Review Frequency/Tasks: o Review of completed SSMP internal audits
o KPI D-10(d)	o Were all past SSMP internal audit findings and schedule met for incorporating new changes into SSMP?	Element Review Frequency/Tasks: o Review of past SSMP internal audit commitments and priorities, including any outstanding items not captured in SSMP/change log to be flagged for carry-over for next SSMP update
o KPI D-10(e)	o Were any upgrades made to enhance SSMP work programs?	Element Review Frequency/Tasks: o Review of SSMP/change log

SSMP Resilience

o KPI D-10(f)	o None	o None

11. ELEMENT 11 (Communication Program)

Att. D-11 (Communication Program)

SSMP Implementation

- KPI D-10(a)
  - Was the public afforded the opportunity to provide input as the program is being implemented?

Element Review Frequency/Tasks:

- Periodic review to ensure board has approved latest SSMP.
- Periodic review to verify latest SSMP/docs are posted on website.
- Periodic review of any public comments received via website or direct contact with Agency staff annual review/update of KPIs

SSMP Effectiveness

- KPI D-10(b)
  - Were all outside agency/communications documented?
  - Number of annual public outreach events
  - Number of Regional Partner meetings
  - % of customers receiving public outreach information

Element Review Frequency/Tasks:

- Element Review Frequency periodic review of outside agency/satellite meetings/emails/notices of communications.

SSMP Resilience

- KPI D-10(c)
  - External communications verifications

Element Review Frequency/Tasks:

- Annual review/update to ensure the general public has access to the Agency SSMP via website with a mechanism to provide input/comments

12. SPEC. 5.2 (Designation of LRO)

Spec. 5.1 (Designation of Legally Responsible Official)

SSMP Implementation

KPI 5.1(a)	Does the Agency LRO and supporting staff possess adequate knowledgeable, training, skills, and abilities for implementing all Reissued WDR requirements?	Element Review Frequency/Tasks: o Annual review/update of staff competency checks/tests

SSMP Effectiveness

KPI 5.1(b)	Are Agency LRO policies in place adequate, including authorization for making managerial decisions governing operation of the sanitary sewer system, including having the explicit or implicit duty of making major capital improvement recommendations to ensure long-term environmental compliance?	Element Review Frequency/Tasks: o Annual review/update of any issues arisen attributable to inadequate LRO oversight, training/competency o Annual review/update of KPI frequency and success rate/adjust as necessary
KPI 5.1(c)	Has the Agency complied with all the ongoing WDR deadlines?	Annual review/update of Agency compliance performance with spill notification, monitoring, reporting, recordkeeping
KPI 5.1(d)	Has the Agency complied with the change notification requirements for its LROs?	Review of any change(s) in LRO designation(s) and meeting compliance deadlines specified in Attachment E1
KPI 5.1(e)	Compliance with SWRCB pre-inspection questionnaire	Annual review/update of questionnaire, document changes to work programs/accomplishments
KPI 5.1(f)	Compliance with internal SSMP Audit findings and recommendations	Annual review/update of past SSMP Audit findings and recommendations for improving compliance, implementation, and spill reduction performance

13. SPEC. 5.2 (Develop/Implement SSMP)

Spec. 5.2 (Development and Implementation of SSMP)

SSMP Implementation

- KPI 5.2(a)
  - Are the Agency's existing work programs effective in reducing spills to meet SSMP goals and objectives?

  Element Review Frequency/Tasks:
  - Annual review/update of exiting work programs to ensure conformance with SSMP goals and objectives

SSMP Effectiveness

- KPI 5.2(b)
  - Does the Agency implement standard operator procedures (SOPs) to measure and support improving SSMP effectiveness?

  Element Review Frequency/Tasks:
  - Annual review/update of Agency SOPs

- KPI 5.2(c)
  - Does the Agency implement standard operator procedures (SOPs) to measure and support improving SSMP effectiveness?

  Element Review Frequency/Tasks:
  - Annual review/update of all related SSMP procedures and work programs

- KPI 5.2(d)
  - Does the Agency's existing data collection and work order system adequately allow analysis of potential impacts that could cause spills?

  Element Review Frequency/Tasks:
  - Annual review/update data collection methods and work orders and documentation of accomplishments, including instances where spills were eliminated

- KPI 5.2(e)
  - Do the Agency work programs include procedures for spill containment/recovery, sewer mapping, work order system/tracking, emergency responses, and operator training?

  Element Review Frequency/Tasks:
  - Annual review/update of Agency work programs

- KPI 5.2(f)
  - Does the Agency meet its proposed objectives with improving its SSMP ranking >80% by October 2024?

  Element Review Frequency/Tasks:
  - Annual review/update and assessment/ranking of all SSMP requirements

SSMP Resilience

- KPI 5.2(g)
  - Collection system certification (CWEA)

  Element Review Frequency/Tasks:
  - Annual survey of line staff resources

14. SPEC. 5.6 (System Resilience)

Spec. 5.6 (Sewer System Resilience)		
SSMP Implementation		
o KPI 5.6(a)	o Are the Agency's existing efforts in identifying possible spill vulnerabilities effective?	Element Review Frequency/Tasks: o Annual review/update/update of historic spill causes and vulnerabilities
SSMP Effectiveness		
o KPI 5.6(b)	o Does the Agency proactively prioritize its operation and maintenance, condition assessments, and repair, and rehabilitation efforts to help further reduce vulnerabilities for spills??	Element Review Frequency/Tasks: o Annual review/update of Agency CCTV records and data
o KPI 5.6(c)	o Does the Agency assess/review its ongoing historic spills, causes, and vulnerabilities?	Element Review Frequency/Tasks: o Annual review/update/update of historic spill causes and vulnerabilities; adjust resilience matrix as necessary
o KPI 5.6(d)	o Does the Agency implement a program to address existing "Hot Spots" to help further reduce vulnerabilities for spills?	Element Review Frequency/Tasks: o Annual review/update/update of "hot spot" implementation plan/schedule conformance
o KPI 5.6(e)	o Does the Agency have a "Hot Spot" reduction program to help further reduce vulnerabilities for spills??	Element Review Frequency/Tasks: o Annual review/update of specific "hot spot" resources (time/labor/materials) spent on cleaning all locations and list of locations repaired, resolved, and eliminated
SSMP Resilience		
o KPI 5.6(f)	o Collection system electronic monitoring	Element Review Frequency/Tasks: o Evaluation for installation of flow/level sensors in system areas necessary for further reducing risks for future spills and improve monitoring
	o Collection system resilience	o Development of Agency "resilience indicators" for measuring how well the collection system can withstand and recovery quickly from real-world stresses, setbacks and /or difficulties including major infrastructure failures

15. SPEC. 5.7 (Allocate Necessary Resources)

Spec. 5.7 (Allocate Necessary Resources)		
SSMP Implementation		
o KPI 5.7(a)	o Are the Agency's existing resources adequate?	Element Review Frequency/Tasks: o Annual review/update of resource allocations and budgets specific to sewer collection system operations, maintenance, and capital improvements
SSMP Effectiveness		
o KPI 5.7(b)	o Does the Agency maintain adequate means to manage revenues and expenditures for supporting the sewer collection system?	Element Review Frequency/Tasks: o Annual review/update of Agency budget allocations/funds spent on sewer system o Long-range review (5-10 years) of Agency financial planning for ensuring adequate budgets/allocations for sewer system operations/maintenance and capital projects
o KPI 5.7(c)	o Does the Agency maintain adequate sewer fees for supporting its the sewer system requirements?	Element Review Frequency/Tasks: o Annual review/update of Agency sewer fees
SSMP Resilience		
o KPI 5.7(d)	o None	o None

16. SPEC. 5.13 (Comply with Attachment E1 Requirements)

Spec. 5.13 (Compliance with Attachment E1 Requirements)

SSMP Implementation

o KPI 5.13(a)	o Are the Agency's data collection efforts (field forms, work order system) adequate for supporting all required information required by Attachment E1?	Element Review Frequency/Tasks: o Annual review/update of Agency data collection and reporting efforts against Attachment E1 requirements

SSMP Effectiveness

o KPI 5.13(b)	o Do Agency field data collection efforts comply with Attachment E1?	Element Review Frequency/Tasks: o Element Review Frequency annual review/update of all Agency field data collection forms against requirements
o KPI 5.13(c)	o Are required spill notification timeframes for Category 1 spills being met?	Element Review Frequency/Tasks: o Element Review Frequency annual review/update of all Category 1 spills against requirements for notifying Cal-OES within 2 hours
o KPI 5.13(d)	o Are required spill notification timeframes for Category 2 spills being met?	Element Review Frequency/Tasks: o Element Review Frequency annual review/update of all Category 2 spills against requirements for notifying Cal-OES
o KPI 5.13(e)	o Are required spill reporting timeframes for Category 3 spills being met?	Element Review Frequency/Tasks: o Element Review Frequency annual review/update of all Category 1 spills vs. requirements
o KPI 5.13(f)	o Are required spill reporting timeframes for Category 4 spills being met?	Element Review Frequency/Tasks: o Element Review Frequency annual review/update of all Category 1 spills vs. requirements
o KPI 5.13(g)	o Are the Agency field staff competent with operations, maintenance, repair, and spill response procedures?	Element Review Frequency/Tasks: o Assessments (every 3 years) for all Agency field staff

SSMP Resilience

o KPI 5.13(h)	o Quarterly training on Agency field data collection form and required procedures	Element Review Frequency/Tasks: o Quarterly training to ensure consistency with staff data collection and improving procedures as necessary

APPENDIX 5 – References (Key Regulatory References for SSMP Development and Updating)

Guide for Developing and Updating of Sewer System Management Plans

JULY 2024

Appendix 1 (Key Regulatory Changes for Sewer System Management Plan Development/Updates)

2006 WDR (rescinded)	2022 WDR (current)	2022 Changes	Summary of Key 2022 WDR Changes
1. Goal Provision D.13(i)	1. Goal and Introduction Att. D-6, Spec. 5.2	Many	• Implementation of SSMP as "living document." • Enforcement of development, update, and implementation. • Narratives for regulatory context, assets, updated sewer map(s).
2. Organization Provision D.13(ii)	2. Organization Attachment D-6, Spec. 5.1	Few	• Name of Legally Responsible Official. • Enhanced details on LRO training and experience requirements.
3. Legal Authority Provision D.13 (iii)	3. Legal Authority Attachment D-6	Few	• Collaboration with storm drain agencies; easement accessibility agreements.
4. O/M Program Provision D.13 (iv)	4. O/M Program Attachment D-6	Many	• Procedures for maintaining/providing Water Board access to sewer map(s) • Enhanced training/WDR, drills/skilled vol. est., CIWQS reporting; scheduling system in place.
5. Design and Performance Provisions Provision D.13 (v)	5. Design and Performance Provisions Attachment D-6	Few	• Few changes.
6. Overflow Emergency Response Plan Provision D.13 (vi)	6. Spill Emergency Response Plan Attachment D-6	Many	• Numerous upgrades to notification, monitoring, reporting, record keeping, definitions. • Staff/contractor requirements for implementation, removing/cleaning sewage from drainage conveyance systems not impacting beneficial uses/receiving waters. • Coordination/collaboration with storm drain agencies (prior, during, after) spills. • Post-spill assessments, annual assessment, implement containment tech/practices. • Requires annual certification in Annual Report that plan is up-do-date.
7. Fats, Oils, and Grease Control Program Provision D.13 (vii)	7. Sewer Pipe Blockage Control Program Attachment D-6	Few	• Plan/schedule for pipe-blocking substances. • Commercial controls/authority to inspect, "hot spot" program, source controls.
8. System Evaluation and Capacity Assurance Plan Provision D.13 (viii)	8. System Evaluation, Capacity Assurance, and Capital Improvements Attachment D-6	Many	• Implementation of capital improvements. • Identify/justify and prioritize specific system areas (high env. consequences/areas, new surface waters, steep terrain, high groundwater, near surface waters), exfiltration, recordkeeping enhancements, assets vulnerable to climate impacts. • More information for capacity assessments, inspections, audits. • Capacity of flood-prone systems subject to inflow/infiltration. • Increases in erosive forces, pumping redundancy, prioritization of corrective actions.

Appendix 1 (Key Regulatory Changes for Sewer System Management Plan Development/Updates)

2006 WDR (rescinded)	2022 WDR (current)	2022 Changes	Summary of Key 2022 WDR Changes
			• Enhanced coordination (operations/maintenance/engineering, other utilities).
9. Monitoring, Measurement, and Program Modifications Provision D.13 (ix)	9. Monitoring, Measurement, and Program Modifications Attachment D-6	Few	• Adaptive management/implementation effectiveness (Key Performance Indicators) • Update plan procedures/activities based on monitoring/performance evaluations.
10. SSMP Audits	10. Internal Audits Attachment D-6	Few	• Completed every 3 years (vs. every 2 years), input from operators, and cert/upload/LRO.
11. Communication Program Provision D.13 (xi)	11. Communication Program Attachment D-6	Few	• Enhanced communications procedures (public/owners/operators connected to sewers).

2006 WDR (rescinded)	2022 WDR (current)	2022 Changes	Summary of Key 2022 WDR Changes
Legally Responsible Official	Designation of LRO Spec. 5.1 (pg. 18)	Major	• Legally Responsible Official must have authority to ensure compliance, authority over management of the entire sewer system, and authorized to make managerial decisions governing operations, capital improvements, and ensuring long-term environmental compliance. • Legally Responsible Official must possess recognized degree/certificate for O/M of sewer systems and/or professional training and experience demonstrated through extensive knowledge, training, and experience.
SSMP Development and Implementation Provision D.11 (pg. 9)	SSMP Development and Implementation Spec. 5.2 (pgs. 18-19)	Major	• Agencies must develop and implement an SSMP (ensuring adequate funding/management, matching size, scale and complexity, procedures for management, operation, maintenance, prioritization of system repairs and maintenance, implementation of current standard industry practices through available equipment, technologies, and strategies)."
Certification of System Management Plan + Updates Provision D.14 (pg. 15)	Certification of SSMP and Updates Spec. 5.3 (pg. 19)	Major	• Legally Responsible Official must certify/upload SSMPs to CIWQS.
SSMP Internal Audits Provision D.13(x) (pg. 14)	SSMP Development and Update Spec. 5.4 (pgs. 19-20)	Minor	• Audits of SSMPs every 3 years (vs. every 2 years under 2006 WDR). • Within 6 months after the end of the required 3- year Audit period, the agency Legally Responsible Official shall submit the Audit report into the online CIWQS database per requirements of section 3.10 of Attachment E1 of the Reissued WDR). Audit reports will only be viewable publicly in CIWQS by Water Board staff. • Audits must : 1) be sized/scaled to system, 2) evaluate implementation and effectiveness of SSMP in preventing spills, 3) identify necessary modifications to SSMP for correcting deficiencies, and 4) include a proposed schedule for correcting

2006 WDR (rescinded)	2022 WDR (current)	2022 Changes	Summary of Key 2022 WDR Changes
			deficiencies.
SSMP Updates Provision D.14 (pg. 15)	Six-Year SSMP Update Spec. 5.5 (pgs. 21)	Minor	• Agencies must update their SSMPs and include a summary of revisions based on Audit findings every 6 years (vs. every 5 years under 2006 WDR).
N/A	System Resilience Spec 5.6 (pg. 22)	N/A	• Agencies must include and implement system-specific procedures to proactively prioritize O/M, condition assessments, and repair/rehabilitation.
Notif, Monit, Report., Records 2013-0058-EXEC	Notif, Monit, Report., Records Attachment E1	Major	• Numerous changes throughout; adds one new spill category (Category 4); new reporting requirements for systems with enrollee-owned laterals.
Collection System Questionnaire	Annual Report	Minor	• Streamlined (fewer) reporting fields; requires uploading of spill performance charts; includes options for adding comments and/or attaching doc(s) to elaborate on answers.
N/A	Sanitary Sewer System Service Area Boundary Map	Major	• New requirements (Specifications 5.14) for uploading an electronic boundary map (required between July1 to Dec 31, 2025, for all continuing enrollees).
N/A	Pre-Insp. Questionnaire	Major	• Requires agencies to provide pre-inspection information to State and Regional Water Board staff through the completion of a Questionnaire (see Provisions 6.4.2).