North Hudson Sewerage Authority

Long Term Control Plan

System Characterization Report for the Adams Street WWTP

NJPDES Permit: NJ0026085

Date: July 1, 2018

Status: **Final**

Prepared by:

CH2M Hill, Inc.
299 Madison Avenue
Morristown, NJ 07960

North Hudson Sewerage Authority

1600 Adams Street
Hoboken, NJ 07030
(201) 963-6043

www.nhudsonsa.com

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Document Name (s): Adams Street Wastewater Treatment Plant System Characterization Report

Signature: Richard J Wolff

Name, printed: Richard J. Wolff

Date: 6/29/18

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Acronyms and Abbreviations

BCMP	Baseline Compliance Monitoring Program
BSF	base sanitary flow
CIPP	cured in place pipe
CIU	Categorical Industrial Users
CIWEM	Chartered Institution of Water and Environmental Management
CSO	Combined Sewer Overflow
CSS	combined sewer systems
DWF	Dry Weather Flow
fps	feet per second
GIS	geographic information system
gpd	gallons per day
GWI	groundwater infiltration
I/I	Infiltration and Inflow
MCC	Motor Control Center
mgd	million gallons per day
NHSA	North Hudson Sewerage Authority
NJDEP	New Jersey Department of Environmental Protection
NJHDG	New Jersey Harbor Dischargers Group
NJPDES	New Jersey Pollutant Discharge Elimination System
OMI	CH2MHILL Operations Management International
PVSC	Passaic Valley Sewerage Commission
RCCP	reinforced concrete cylinder pipe
RCP	reinforced concrete pipe
RDII	Rainfall Derived Infiltration and Inflow
S/F	Solids/Floatables
sf	square feet
SIU	Significant Industrial Users
TDH	Total Dynamic Head
UDG	Urban Drainage Group
USEPA	U.S. Environmental Protection Agency
VFDs	variable frequency drives
WWTP	Wastewater Treatment Plant

SECTION 1

Introduction

The project background, regulatory requirements, the purpose of this document, a facilities overview, and the contents of this report are herein introduced.

1.1 Background

The North Hudson Sewerage Authority (NHSA or "the Authority") owns two wastewater treatment plants (WWTPs) and the combined sewer systems (CSS) tributary to these facilities. The Adams Street and River Road WWTPs are regulated by the New Jersey Department of Environmental Protection (NJDEP) under the New Jersey Pollutant Discharge Elimination System (NJPDES) permit program.

1.2 Regulatory Requirements

On March 12, 2015, the NJDEP issued individual permits to municipalities and authorities that own and operate segments of CSSs. The NJPDES permits addressed requirements for overall water quality improvements, routine reporting, and development of a CSO LTCP.

Pursuant to NJPDES Permit NJ0026085 (Adams Street WWTP), Part IV, Combined Sewer Management Section, Section D.3.b.i, a System Characterization Work Plan for the LTCPs was submitted to NJDEP on December 31, 2015. The document fulfills the requirement in Part IV, Combined Sewer Management, Section D.3.b.ii, to submit the System Characterization Report by July1, 2018. Information generated from the System Characterization Work Plan comprises this System Characterization Report, including:

- Sewer System Inventory Update
- Service Area and Land Use Update
- Identification of Sensitive Areas
- Collection System Investigations
- Hydraulic Collection System Modeling
- Baseline Characterization Summary

1.3 Purpose and Scope

The purpose of this report is to fulfill federal CSO Control Policy and NJDEP requirements to describe the Authority's characterization of its combined sewer system. The characterization includes a thorough review of the collection system that conveys flow to the Adams Street WWTP, including areas of sewage overflows to streets, and other public and private areas, to adequately address the response of the CSS to various precipitation events. The number, location, frequency, and characteristics of CSOs in the Adams Street WWTP service area are described.

1.4 System History and Description

The Authority owns and operates two WWTPs and their associated collection systems in four Hudson County, New Jersey communities: Hoboken, West New York, Weehawken and Union City, with some small areas in Hoboken, Weehakwen, and West New York having separate privately owned systems.The Authority's two WWTPs are the Adams Street WWTP in Hoboken, and the River Road WWTP (also known as the West New York WWTP) in West New York. The collection systems in these communities are combined sewer systems. The WWTPs and collection systems are operated by CH2M HILL Operations Management International (OMI).

The Adams Street WWTP (NJPDES No. NJ0026085) is located at 1600 Adams Street in Hoboken. The WWTP serves the municipalities of Hoboken, Weehawken and Union City with a service area of 2.6 square miles. The Adams Street WWTP is permitted by NJDEP to discharge 20.8 million gallons per day (mgd). It has a dry weather design flow of 24 mgd and a wet weather capacity of 40 mgd.

The River Road WWTP (NJPDES No. NJ0025321) is located at 6400 River Road (Anthony M. Delfino Way) in West New York. The WWTP serves the municipalities of Weehawken, Union City, and West New York with a service area of 1.4 square miles. The River Road WWTP is permitted by NJDEP to discharge 10 mgd and has a wet weather capacity of 20 mgd.

NHSA owns the following facilities in its two WWTP service areas:

- 2 wastewater treatments plants (Adams Street and River Road)
- 106 miles of combined sewer (including interceptors, siphons and force mains)
- 9 Wastewater Pump Stations
- 2 Wet Weather Pump Stations (H1 and H5)
- 17 CSO Regulators
- 10 CSO Outfalls
- 11 Solids/floatables screening facilities

The Adams street WWTP treats all of the sewage generated within the City of Hoboken, approximately 83-percent of the sewage generated in Weehawken, and approximately 45-percent of the sewage generated in Union City. Figure 1-1 shows the Adams Street WWTP service area shaded in purple. A schematic diagram of the collection system is shown in Figure 1-2.

Figure 1-1. Adams Street WWTP Service Area

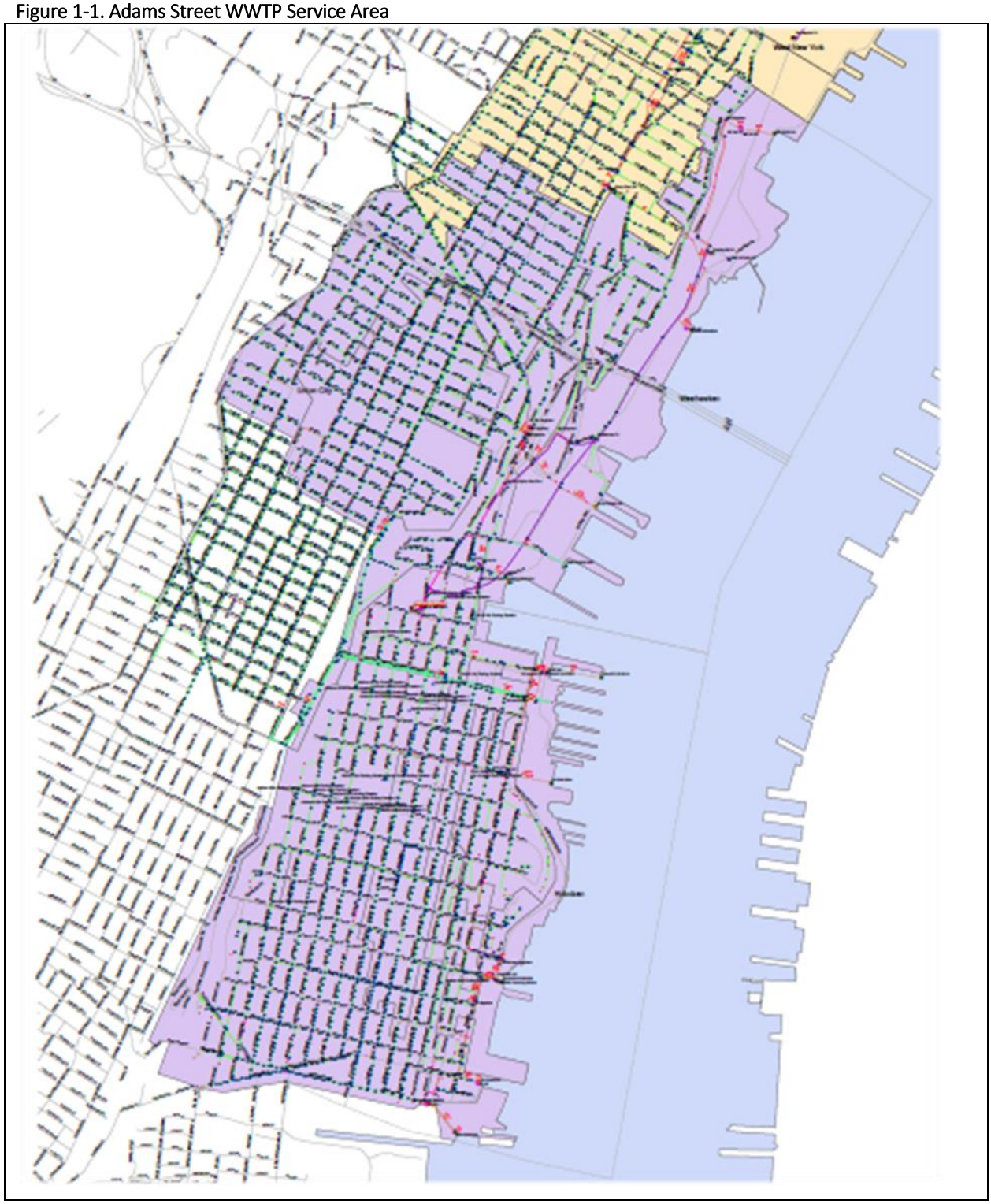
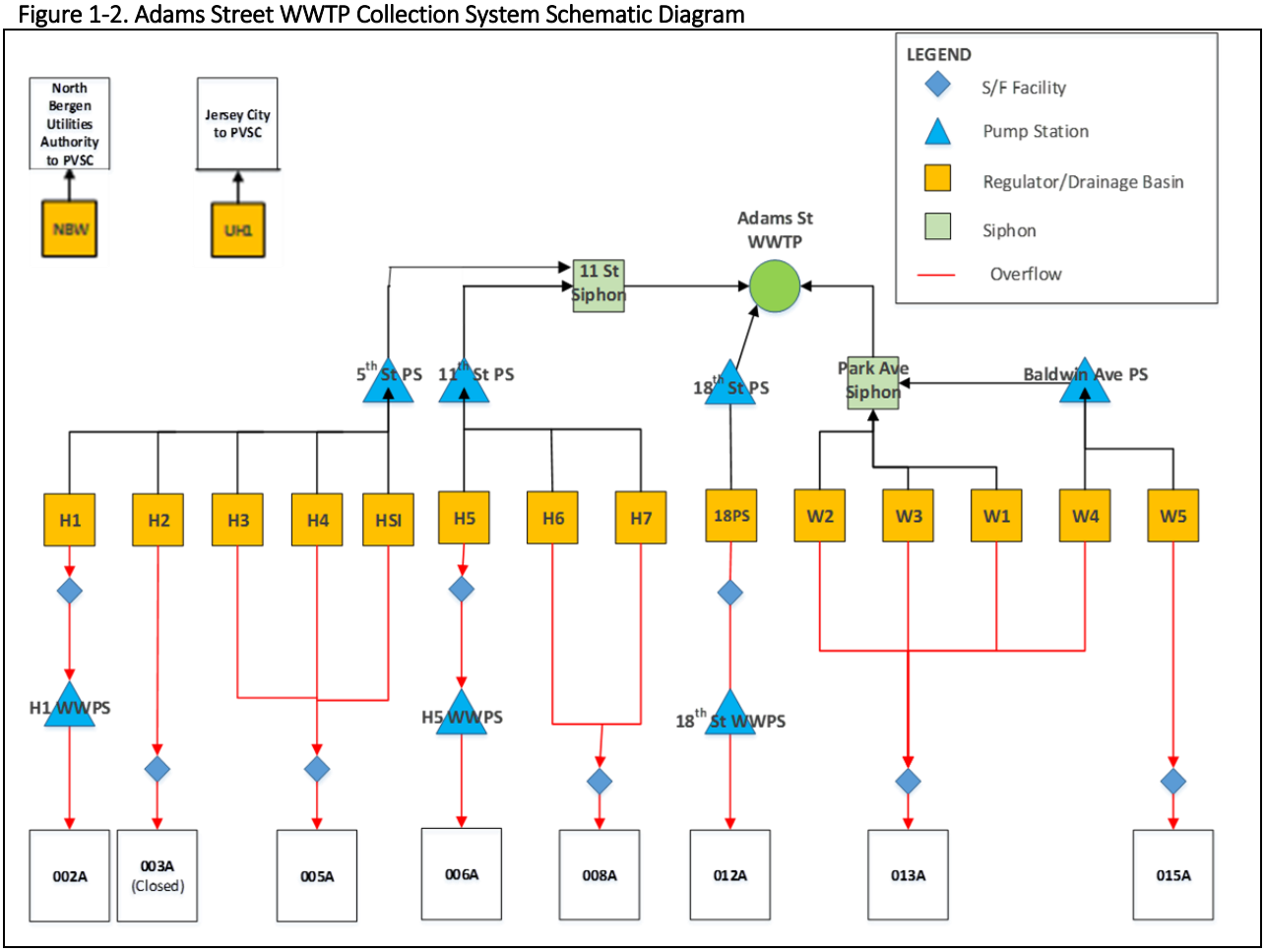


Figure 1-2. Adams Street WWTP Collection System Schematic Diagram



1.5 Surface Water Quality Conditions

The Authority's CSOs discharge to the Hudson River. These saline waters are classified by the State of New Jersey as SE2. The designated uses of SE2 waters are maintenance, migration and propagation of the natural and established biota; migration of diadromous fish; maintenance of wildlife; secondary contact recreation; and any other reasonable uses. The dissolved oxygen water quality standard is never less than 4.0 mg/L. The bacteria water quality standard for fecal coliform is a geometric mean of 770 cfu/100mL.

The State of New Jersey integrates its Water Quality Inventory Report (required under Section 305(b) of the federal Clean Water Act) with their List of Water Quality Limited Segments (required under Section 303(d) of the Clean Water Act), as per a 2001 recommendation by the U.S. Environmental Protection Agency (USEPA). New Jersey submitted its first Integrated Water Quality Monitoring and Assessment Report (Integrated Report) in 2002 and reissues the report every two years. The last readily available report published on the NJDEP's website (http://www.nj.gov/dep/wms/bears/assessment.htm) was the 2014 report. The 2016 report is listed as "in progress" on the NJDEP website at the of writing this document. The 2014 Integrated Report listed both Hudson River assessment units (Hudson River Upper and Hudson River Lower) as not supporting aquatic life-general and not supporting fish consumption. The report lists both Hudson River waters as fully supporting recreation.

Section 2.6, below, provides data collected in 2016/2017 on these surface waters during the Baseline Compliance Monitoring Program, as required by the NJPDES permit.

SECTION 2

Collection System Investigations

A comprehensive characterization of the Adams Street CSS has been developed through records review, monitoring, modeling and other means as appropriate to establish the existing baseline conditions, evaluate the efficacy of the CSO technology based controls, and to determine the baseline conditions for which the LTCP will be based. To accomplish those goals, collection system investigations took place to develop a baseline. Investigations included:

- Sewer GIS update
- Condition Assessments
- Rainfall Monitoring
- Sewer Metering
- Overflow Event Monitoring
- Overflow Water Quality Sampling

2.1 Sewer System GIS Update

A Sewer Atlas was originally developed for the Adams Street WWTP service area in 1995 based on information developed by Boswell Engineering. The atlas was revised in 1998 by CH2M HILL to include the River Road WWTP service area. The NHSA's collection system modeling efforts used the revised 1998 Sewer Atlas as a basis.

The NHSA performed a sewer GIS update in 2015. The 1998 revised Sewer Atlas was used as the basis for the 2015 GIS update. GPS data was obtained in degrees-minutes-seconds for all CSO regulators, pump stations and outfalls, pursuant to Part IV, Combined Sewer Management, Section D.2.a of the NJPDES permits, as well as manholes, catch basins and solids/floatables (S/F) facilities. This GPS information was included on an updated GIS map that now supersedes the NHSA's Sewer Atlas. The updated GIS data was transmitted to NJDEP on September 17, 2015. Since then, new information pertaining to condition assessments and land use and population has been updated and overlaid on the GIS map.

2.2 Condition Assessments

Several reference documents contain information on the condition of the Authority's Adams Street collection system, including a Sewer System Inventory and Assessment dated July 1995 (Reference Document 5). However, this document was limited to assessing the operational status and condition of the CSO control devices and the conveyance facilities of the treatment works. The combined sewers themselves were not assessed. Information in the original condition assessment reports has been updated to reflect new information from recent condition assessment work and enhanced with information from sewer rehabilitation and capital improvement projects.

The Authority continually performs condition assessments to maintain its collection systems. Condition assessments of the CSS in the Adams Street Service Area were performed in 2016 and 2017 via cleaning and CCTV by RedZone in order to determine sewer integrity and identify any leaks or obstructions. Data from these condition assessments has been integrated with the most recent GIS data including updated sewer pipe material, sizes, connections, conditions, etc. Additional information was also compiled from recent sewer rehabilitation and capital improvement projects and any remaining data gaps were identified and investigated. Condition assessments of combined sewers, regulators, outfalls and tide gates, pump stations and force mains, interceptors, and solids/floatables control facilities are documented in Section 3.

2.3 Rainfall Monitoring and Sewer Metering

Rainfall monitoring and combined sewer metering was performed to calibrate the updated collection system models of the Adams Street and River Road WWTP service areas and to calculate the discharge statistics for CSOs. The Authority has operated a rain gage at the Adams Street WWTP with digital recording at desired intervals as well as at the Baldwin Avenue Pump Station. The data is maintained and can be evaluated along with rain data that can be accessed for Newark Liberty International Airport and Central Park. It was determined that this may not be representative of the entire service areas for both WWTPs and/or capture localized storm cells that may move through the service areas. The Authority evaluated rainfall data and findings from past reports and determined that an additional rain gauge should be deployed during system characterization efforts.

The Authority retained Greeley and Hansen and its sub-consultant ADS, Inc. to collect rain data and perform sewer system metering concurrently. The sewer metering program was designed to characterize dry and wet weather flow generated by the drainage basins and to assist in determining overflow frequencies. Metering was also used to identify areas of sewage overflows to streets and other public and private areas via hydraulic elevation data, to adequately characterize the response of the CSS to various precipitation events. Meters were deployed at 19 regulators in Hoboken, Union City, Weehawken, and West New York from May 17, 2016 through November 16, 2016. A rain gage was installed at the River Road WWTP for the same period. Table 2-1 lists the site name, location, dimensions, silt volume observed and manhole ID code for each monitoring location. Figure 2-1 shows the locations of the meters and

Figure 2-2 shows an example of the data recorded specifically at the H1 regulator during the month of August 2016. During the 6-month monitoring period, the goal of capturing a minimum of five (5) rain events greater than 0.5 inches in a 24-hour period was achieved. As shown in Table 2-2, a total of 43 rain events were captured, 14 of which recorded over 0.5 inches and four of which recorded over 1 inch of rain. Meters were verified during the monitoring period to meet the minimum of 90% uptime for the metering equipment with 95% preferred. The uptimes for each metering location as well as all other results of the rainfall monitoring and sewer metering effort are documented in the Collection System Flow Monitoring Data Report attached as **Appendix A**.

Table 2-1. Summary of Sewer Flow Metering Locations

Site Name	Site Location	Pipe Dimensions (in.)	Silt (in.)	Manhole ID Code
H1	Observer Highway at Washington St Hoboken, NJ	H-1 (43.63 in H, 98.00 in W)	0.25	H1-OB-010
H2	River Street at Newark Street Hoboken, NJ	Elliptical (41.63 in H, 42.00 in W)	4.00 - 2.00	H2-NE-010
H3	3rd Street at River Street Hoboken, NJ	H-3 (54.13 in H, 40.00 in W)	8.00 - 4.00	H3-03-002
H4	4th Street West Hoboken, NJ	H-4 (55.75 in H, 84.00 in W)	1.50	H4-04-010
H5	11th Street at Washington Street Hoboken, NJ	Non-standard (58.25 H, 85.00 W)	7.00	H5-11-510
H6	133 Hudson Street Hoboken, NJ	Standard Egg (42.00 H, 29.00 W)	0.00	H6 Regulator
H7	14th Street, East of Washington Street Hoboken, NJ	H-7 (54.00 in H, 84.00 in W)	0.00	H7-15-012
HSI	5th Street Pump Station Hoboken, NJ	Circular (12.00 in H)	0.00	HSI-05-003

Table 2-1. Summary of Sewer Flow Metering Locations

Site Name	Site Location	Pipe Dimensions (in.)	Silt (in.)	Manhole ID Code
NHW	Secaucus Road at Patterson Plank Rd Union City, NJ	Elliptical (48.00 in H, 49.75 in W)	0.50	UH1-05-006
UC1	Park Avenue at 43rd Street Union City, NJ	Elliptical (58.00 in H, 59.25 in W)	1.00	UC1 Regulator
UC2	131 49th Street Union City, NJ	Elliptical (74.50 in H, 77.00 in W)	0.00	UC2 Regulator
UH1	1409 Union Turnpike Union City, NJ	Elliptical (8.00 in H, 7.50 in W)	0.00	NBW-HA-003A
W1	321 Park Avenue Weehawken, NJ	Circular (54.13 in H)	0.00	PANYNJ-PA-012B
W2-A	506 Gregory Avenue Weehawken, NJ	Elliptical (46.50 in H, 45.75 in W)	0.00	W2-GR-004
W2-B	506 Gregory Avenue Weehawken, NJ	Elliptical (46.50 in H, 45.13 in W)	0.00	W2-GR=004
W3	99 Hackensack Plank Road Weehawken, NJ	Circular (47.75 in H)	0.00	W3-HA-002
W4	700 JFKennedy Blvd East Weehawken, NJ	Elliptical (23.63 in H, 25.00 in W)	0.00	W4-JFK-009
W5	995 JFKennedy Blvd East Weehawken, NJ	Elliptical (24.00 in H, 24.50 in W)	0.00	W5 Regulator
WNY1	East of JFK Blvd and Anthony M Delfino Way Intersection, West New York, NJ	Circular (84.00 in H)	0.00	WNY1 Regulator
WNY2	211 51st Street West New York, NJ	Elliptical (75.63 in H, 77.38 in W)	0.50	WNY2 Regulator

Figure 2-1. NHSA Combined Sewer Flow Monitoring Location Map

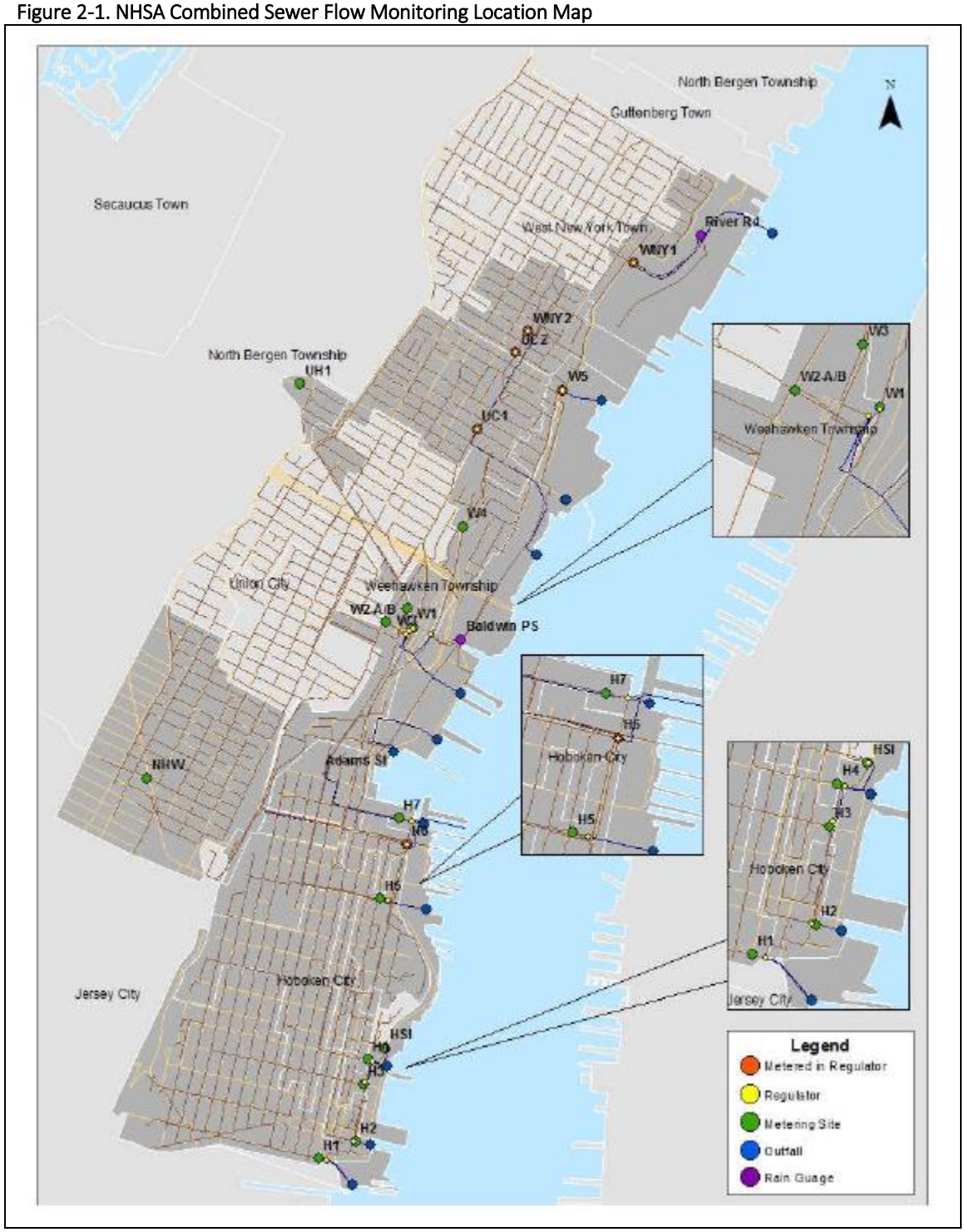


Figure 2-2. August 2016 Flow Metering Data at H1

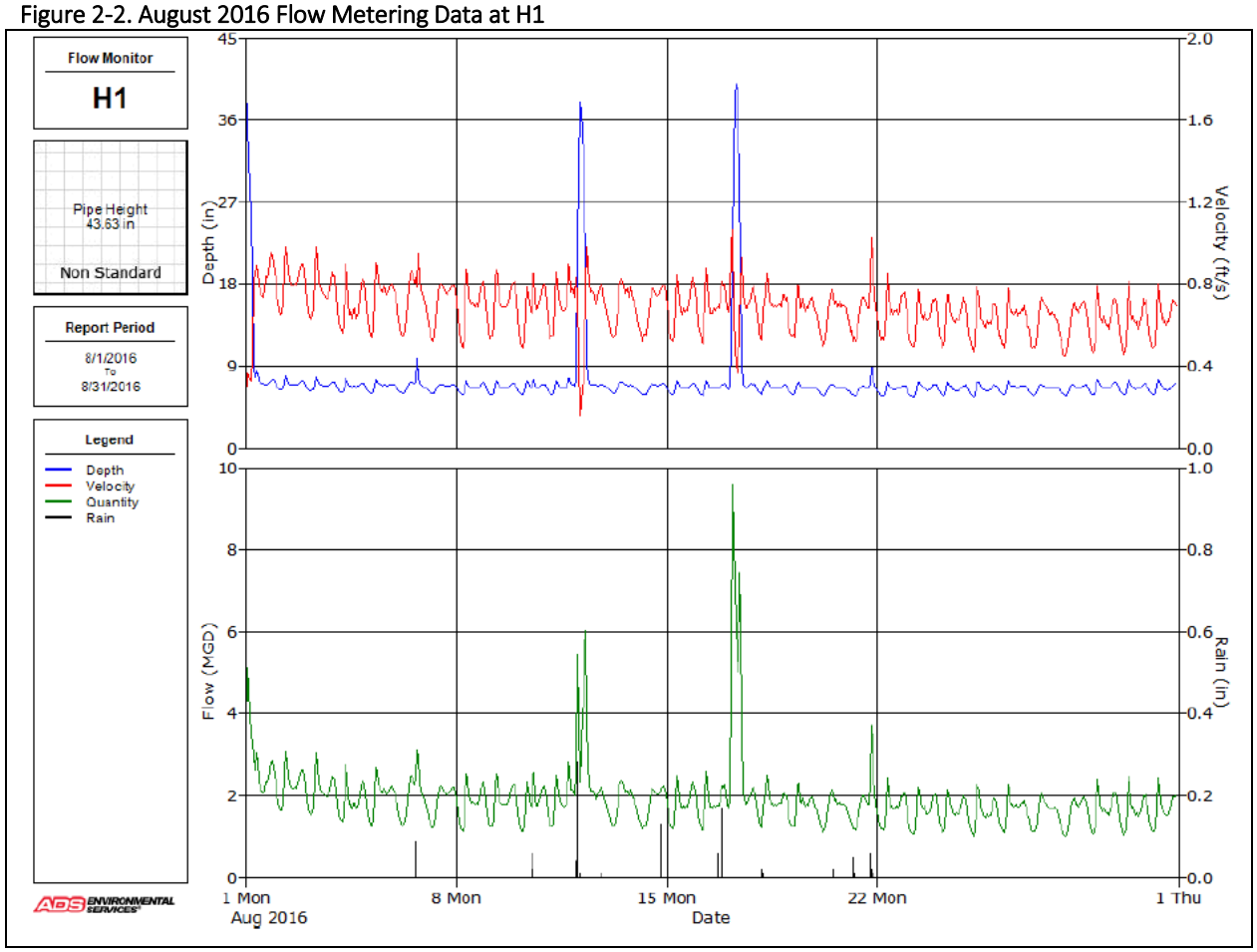


Table 2-2. 2016 Recorded Rainfall Events and Totals

Rainfall Totals	Events Observed
Over 1 inch	5/30, 7/1, 7/5, 11/15
Between 0.5 and 1 inch	6/4, 6/5, 6/27-28, 7/14, 7/25, 7/29, 7/31, 9/16, 9/14, 10/8-9
Between 0.1 and 0.5 inches	16 events
Under 0.1 inches	13 events

2.4 CSO Event Monitoring

The Authority installed technology to indicate if overflows may be occurring in real time at the following regulators in the Adams Street Service Area:

- H1 (discharging to Adams Street 002A)
- H3 and H4 (discharging to Adams Street 005A)
- H5 (discharging to Adams Street 006A)
- 18th Street (discharging to Adams Street 012A)
- W1, W2 and W3 (discharging to Adams Street 013A)
- W5 (discharging to Adams Street 015A)
- H6 (discharging to Adams Street 008A)

Data from these locations is also used as part of the Authority's CSO public notification system via its website. The system utilizes level sensors in the sewer system connected to a cellular based Mission Monitoring unit to monitor and report CSO incidents to both the online mission system, as well as the NHSA website.

Figure 2-3 below shows the waterbody advisory system map designated to alert the public when a CSO event is likely occurring. The map depicts inactive CSOs as green circles, indicating no CSO activity near that outfall. Red circles indicate that there has been CSO activity and contact with the water in areas within 100 feet of the outfall should be avoided.

The Authority's Dishcarge Monitoring Reports indicate the number of days of overflows that occur at each outfall. Table 2-3 shows the number of days of overflows at each outfall per month throughout 2017. The number of days of overflows per year at each regulator during this time period ranged from 43 to 72 with the highest number of days of overflow occurring at outfall 013A.

Figure 2-3. NHSA Public Advisory Map

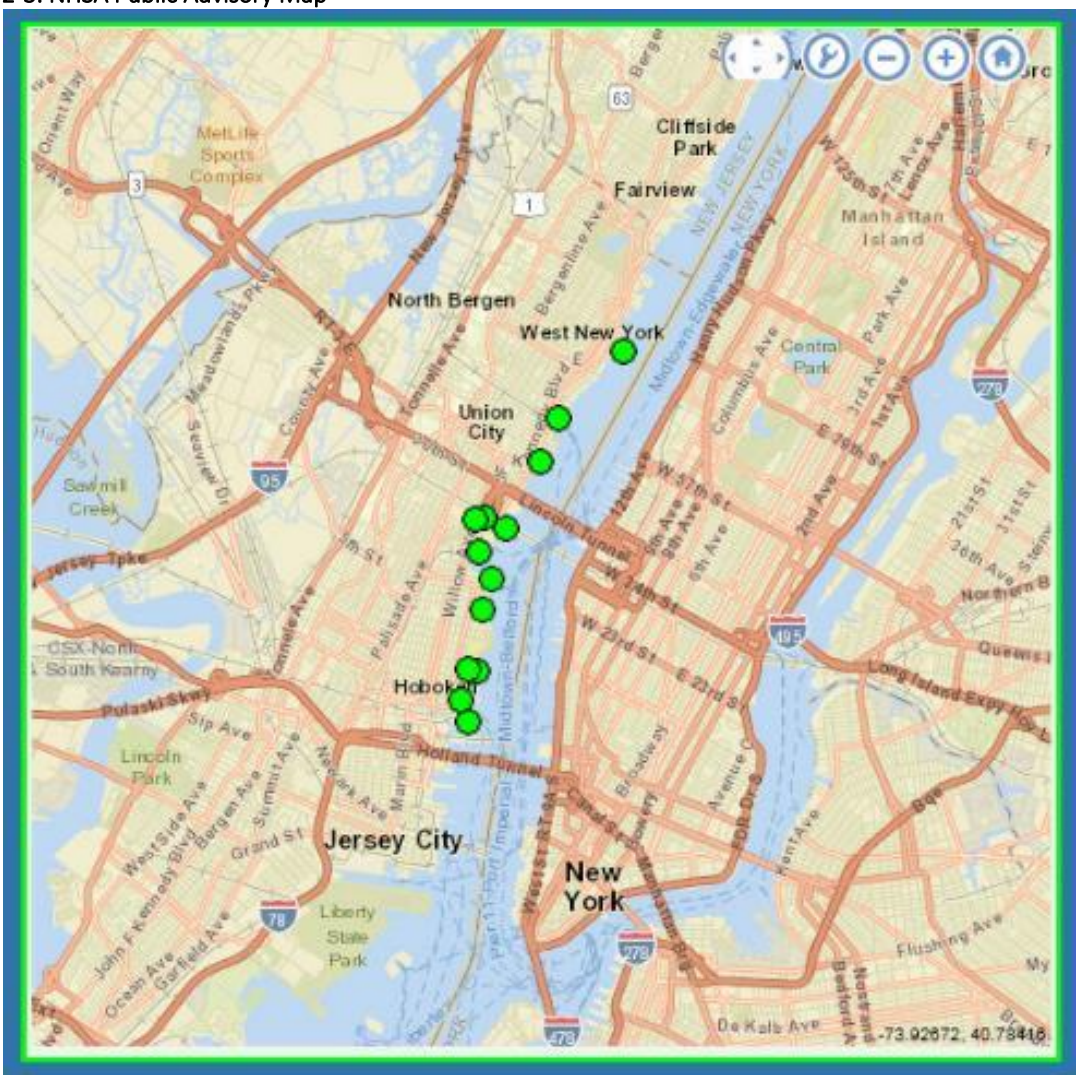


Table 2-3. Adams Street Service Area Days of Overflows Detected by NHSA, 2017

Outfall	Regulator	Number of Days of Overflows
DSN002A	H1	49
DSN003A	Newark & Sinatra - H2	47
DSN005A	H3, H4	50
DSN006A	11th & Sinatra - H5	43
DSN008A	15th & Hudson - H6/H7	45
DSN0012A	Hoboken Cove - 18th St.	44
DSN013A	W1, W2, W3, W4	72
DSN015A	W5	45

2.5 CSO Water Quality Sampling

The Authority performed water quality sampling of its combined sewer systems from August 2016 to August 2017. CSO water quality sampling was designed to characterize CSO discharges to the Hudson River. The data collected enables a water quality characterization of combined sewer overflow discharges for the Authority's sewer system characterization.

The characterization focused on bacteriological indicators of current and future recreational standards - fecal coliform and Enterococcus. Representative sampling locations at CSO regulators were selected to enable the water quality characterization of CSO discharges and to facilitate evaluation of LTCP alternatives. Sampling locations were selected based on GIS information of drainage area land use types and availability of monitoring systems to detect overflows. Sampling locations are listed in Table 2-4 with site characteristics.

Table 2-4. CSO Water Quality Sampling Locations

Basin ID	Location	Land Usage	% Imperviousness	Monitoring System
H3	3rd St. at River St. (In crosswalk)	Low/Medium Residential	71%	ADS/Mission (H3 + H4)
H7	14th St. East at Washington St.	Commercial/ Industrial	46%	ADS/Mission (H6 + H7)
18TH Street PS	W 18th St.	Open Space/ Park	39%	Mission
W2	506 Gregory Ave.	High Residential	59%	ADS/Mission
WNY1	JF Kennedy Blvd. at Anthony Delfino Way	Mixed Uses	~75%	Mission

Sampling was performed at five regulators during dry and wet weather events from August 2016 to August 2017. The goal of the wet weather sampling was to monitor at least three rain events with rainfall greater than 0.5 inches in a 24-hour period. Sampling and analyses was performed in accordance with the NJDEP approved Quality Assurance/Quality Control Plan that was submitted to the NJDEP on July 27, 2016 as as part of the Authority's System Characterization Work Plans for the Adams Street and River Road WWTPs. A description of the sampling effort and the data collected are discussed in an abridged technical memorandum provided in **Appendix B**.

2.6 Baseline Compliance Monitoring Program

Ambient monitoring data was also collected by the NJ CSO Group in 2016 following the baseline Compliance Monitoring Program Work Plan/Quality Assurance Project Plan prepared by the Passaic Valley Sewerage Commissioners on behalf of the Authority that was submitted to NJDEP electronically by the Authority on December 28, 2015. Baseline compliance monitoring routine sampling locations corresponding to the Adams Street service area are B18A, B18B, B23A, and B23B. One baseline compliance monitoring event sampling location corresponds to the Adams Street service area (33). Figure 2-4 shows these sampling locations amongst others. Baseline sampling was modeled after and intended to supplement the approved routine sampling program of the New Jersey Harbor Dischargers Group (NJHDG), of which the Authority is a member. The sampling frequency matched NJHDG, varying with time of year as follows:

- Spring (May-Jun): Biweekly (4 dates);
- Summer (Jul-Sep): Weekly (12 dates); and
- Winter (Oct-Apr): Monthly (7 dates).

Event sampling was timed to coincide with rainfall to capture three discrete wet-weather events over the course of the year. Field work for both the baseline sampling and event sampling was completed on April 28, 2017. Similar to the Authority's CSO water quality sampling, the goal was to capture three significant wet weather events with precipitation greater than 0.5 inches in 24 hours at the targeted location (33) shown in Figure 2-5. Surface water monitoring data from sampling waters adjacent to the Adams Street service area are shown in

Figure 2-6 through Figure 2-8. In general, concentrations of fecal coliforms were higher than those of enterococci with concentrations of both indicators tending to peak around July or August when temperatures were the warmest. Baseline results for fecal coliforms ranged from 1 cfu/100mL to 5,000 cfu/100mL. Baseline results for enterococci sampling ranged from 1 cfu/100mL to 500 cfu/100mL. Figure 2-9 shows the 3 wet weather sampling events that were monitored in May 2016, January 2017 and April 2017 with indicator concentrations peaking around 1,000 cfu/100mL. The Baseline Compliance Monitoring Program was found to be sufficient for the intended goal of calibrating the NJ CSO Group's surface water quality model to be used for the Authority's LTCP. Results of all sampling locations as well as a further explanation of methods and data quality are discussed in the Baseline Compliance Monitoring Program Data Summary attached as **Appendix C**.

Figure 2-4. Baseline Compliance Monitoring Sampling Locations

Baseline Compliance Monitoring Program Data Summary Memo, updated

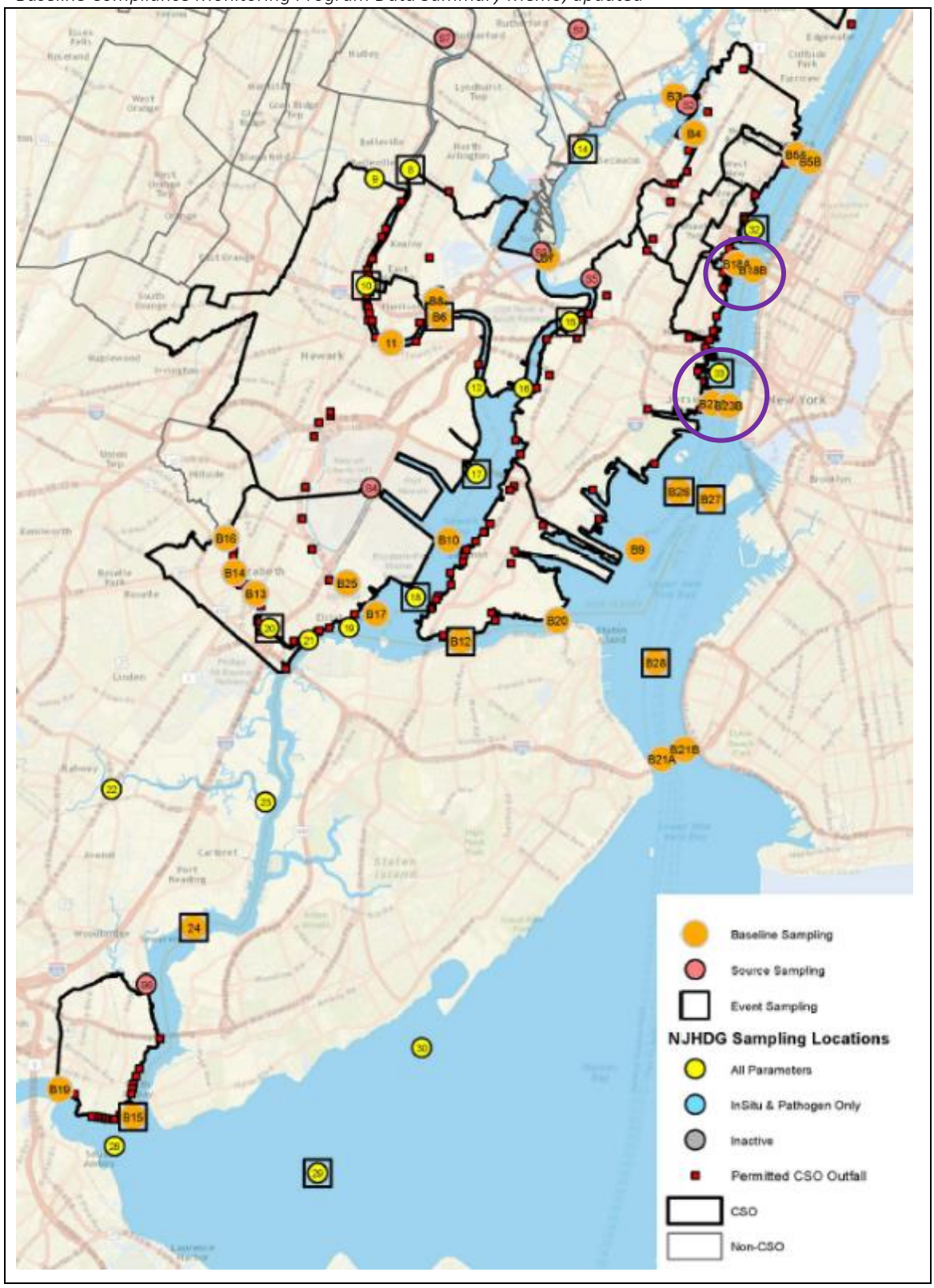


Figure 2-5. Baseline Sampling Results at B18A

Baseline Compliance Monitoring Program Data Summary Memo

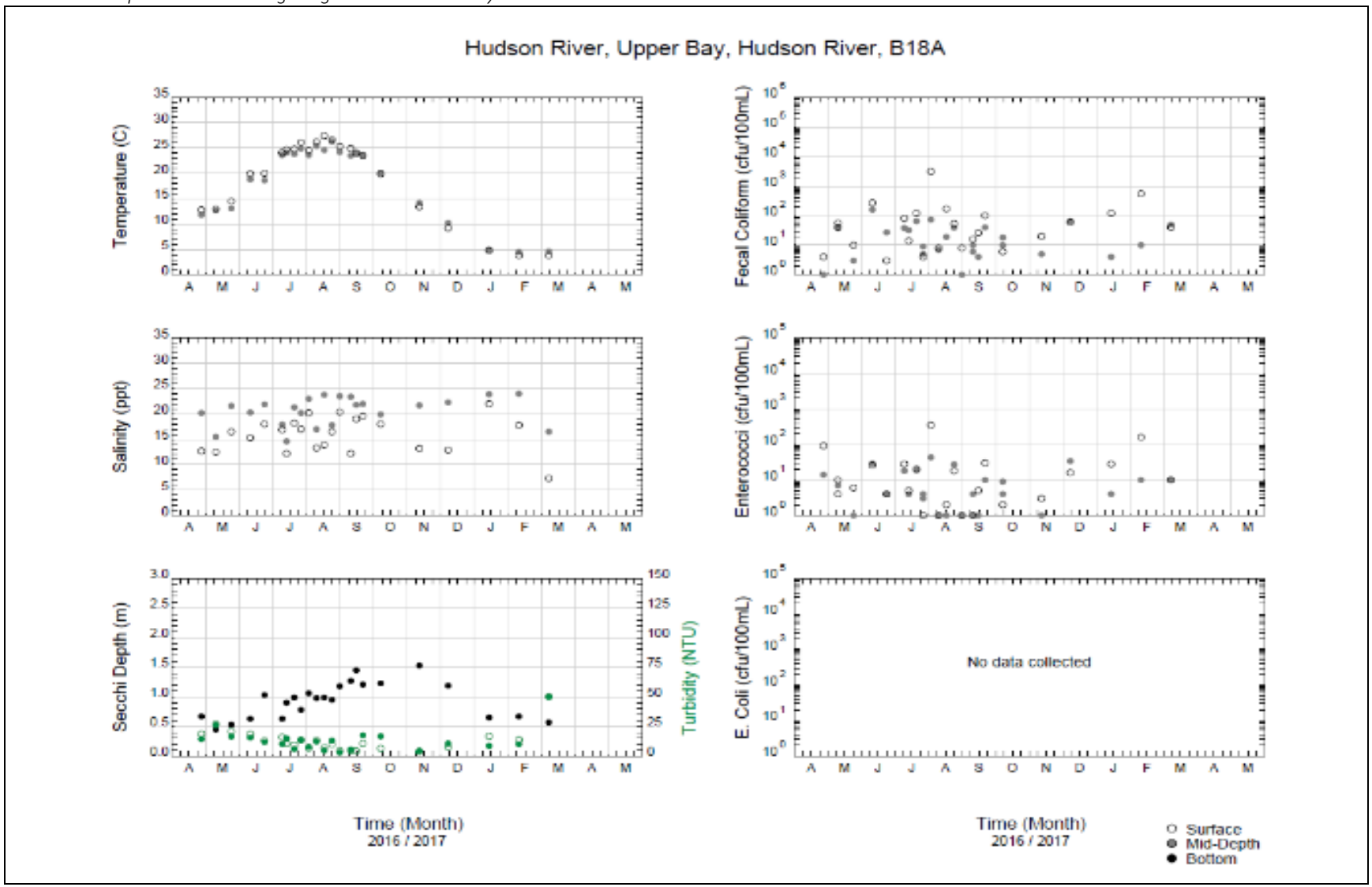


Figure 2-6. Baseline Sampling Results at B18B

Baseline Compliance Monitoring Program Data Summary Memo

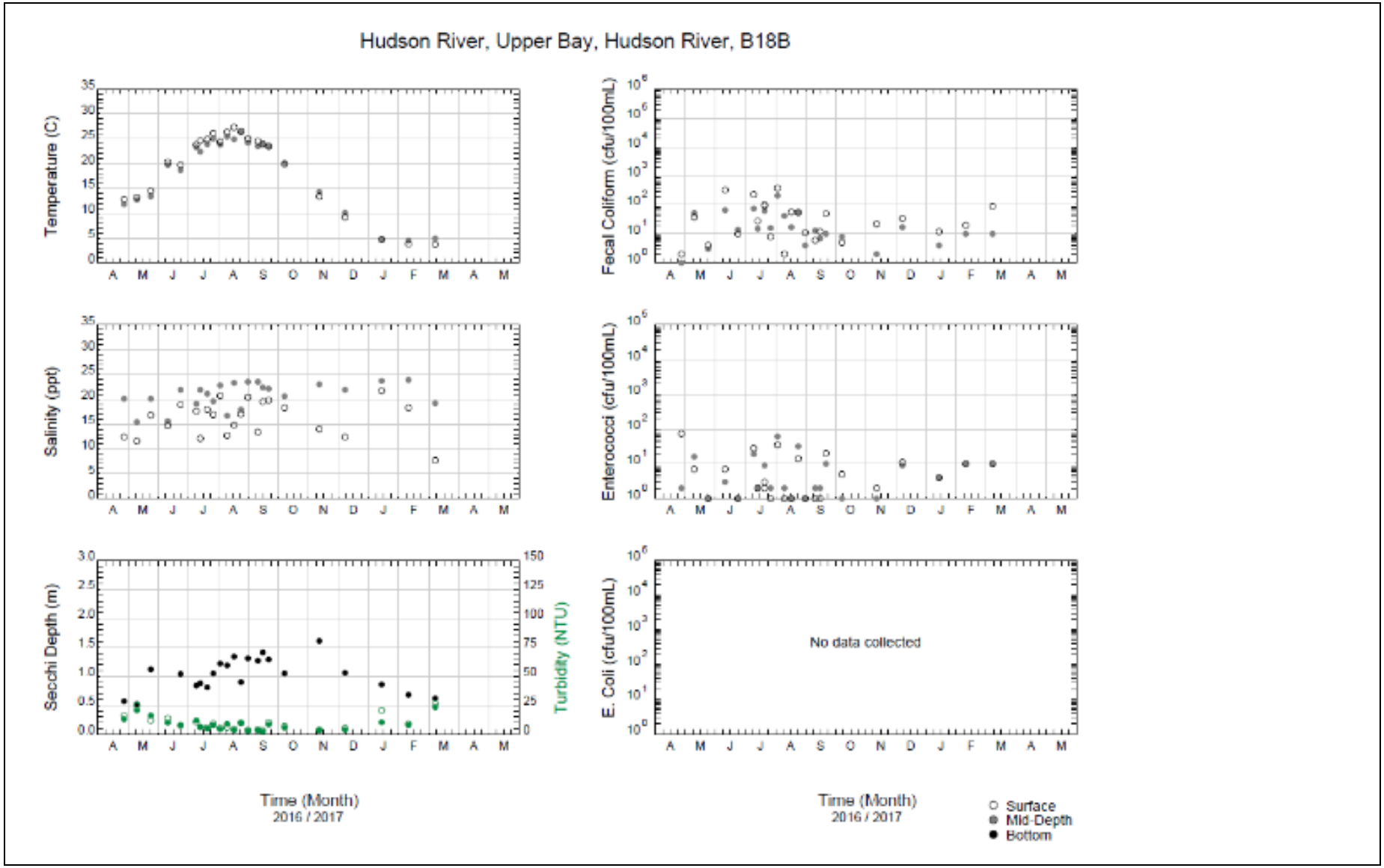


Figure 2-7. Baseline Sampling Results at B23A

Baseline Compliance Monitoring Program Data Summary Memo

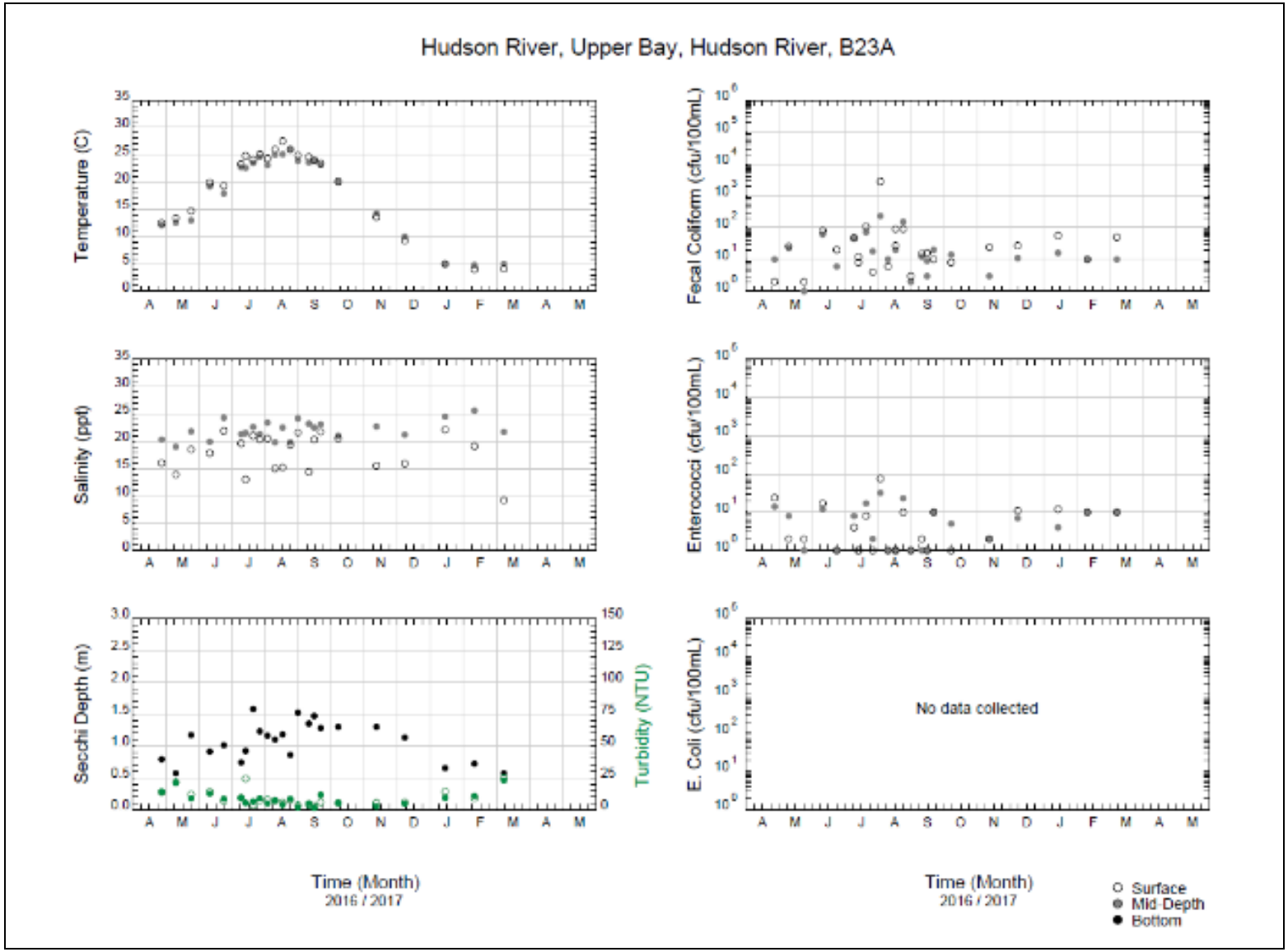


Figure 2-8. Baseline Sampling Results at B23B

Baseline Compliance Monitoring Program Data Summary Memo

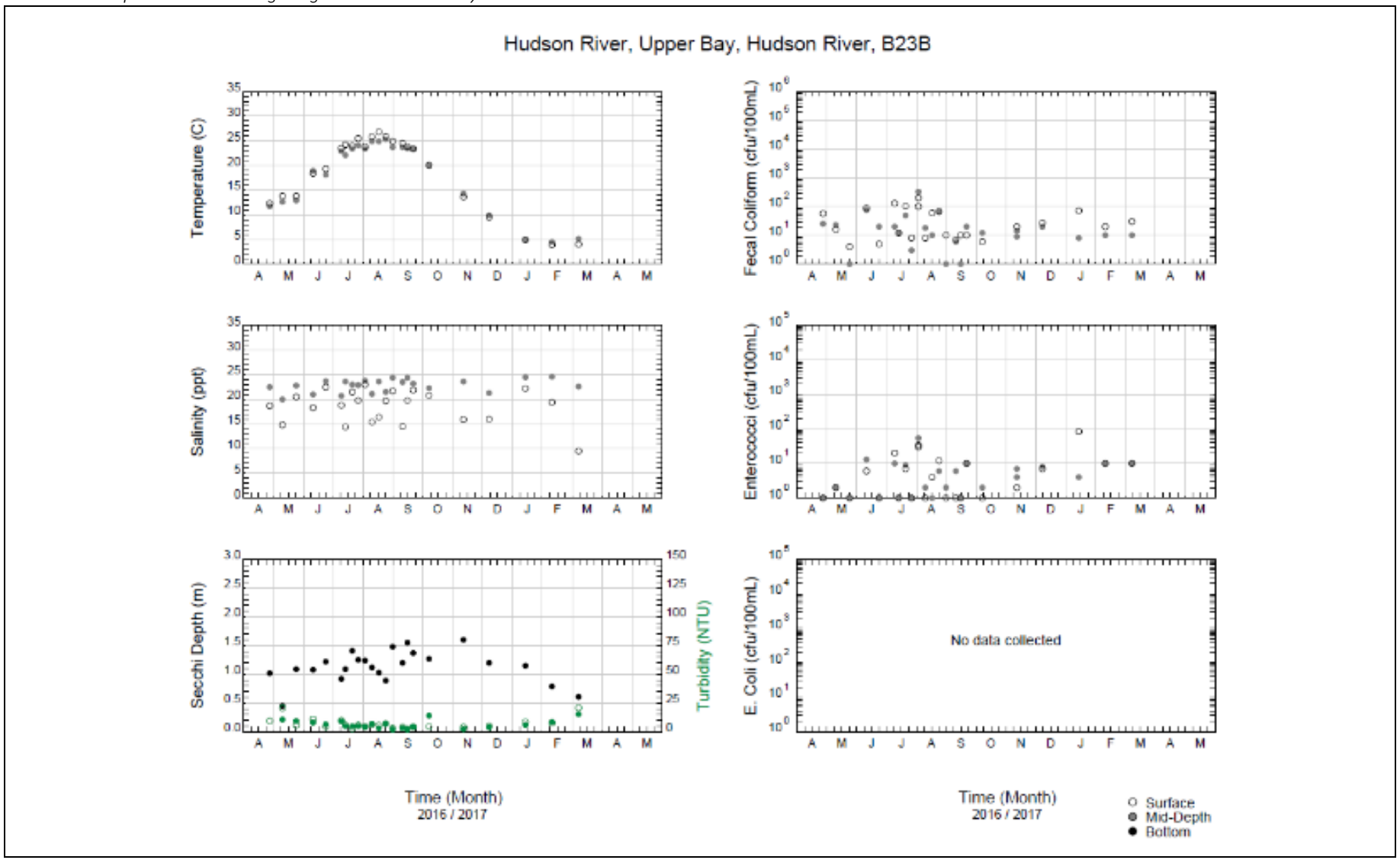
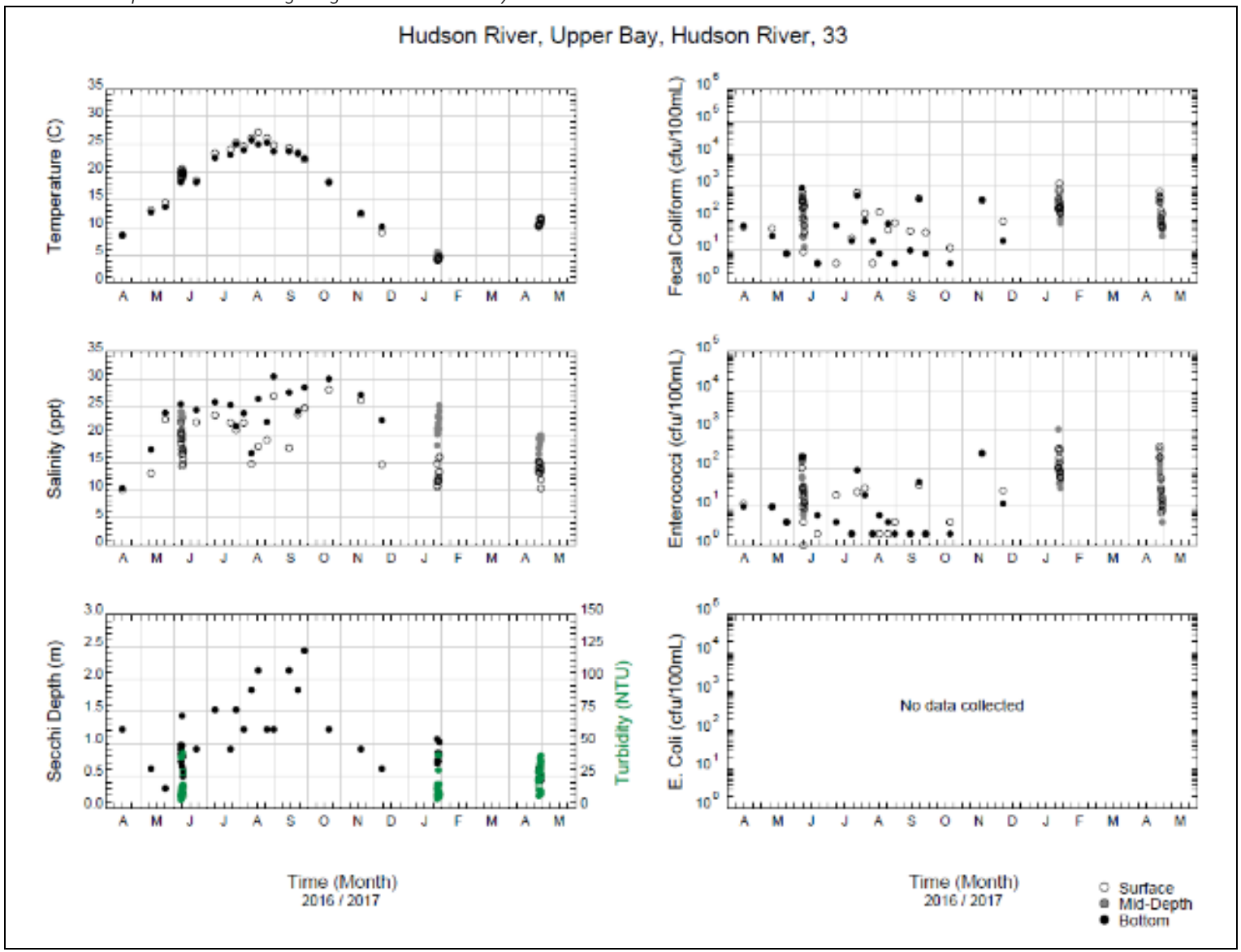


Figure 2-9. Baseline Sampling Results at 33

Baseline Compliance Monitoring Program Data Summary Memo



SECTION 3

Sewer System Inventory

The Adams Street WWTP Sewer System consists of the following assets:

- 1 wastewater treatment plant (Adams Street)
- 75 miles of combined sewer (including interceptors, siphons and force mains)
- 4 Wastewater Pump Stations
- 3 Wet Weather Pump Stations (18th Street, H1, H5)
- 13 CSO Regulators
- 9 CSO Outfalls
- 9 Solids/floatables screening facilities

The Sewer System Inventory and Assessment, dated July 1995 was used as a basis for the sewer system inventory update. Since 1995 there have been many changes including, but not limited to, acquisition of the River Road WWTP and the associated collection system, construction of additional pump stations and sewers, and installation of solids and floatables facilities. Updates to the Adams Street WWTP service area are reflected in the sections to follow.

3.1 Combined Sewer Collection System

The Authority owns a total of approximately 75 miles of combined sewer, including interceptors, siphons, and force mains in the Adams Street WWTP service area. Based on a combination of historical data review, geographic information system (GIS) data, and fieldwork, the lengths, ages, materials, shapes and sizes of the pipes were determined. The lengths of pipe within each basin and the percentage of the total amount in the service area are shown in Table 3-1. Basins with the largest amount of piping include H1, UH1, and W2. The pipes are of various materials, the most prominent being vitrified clay pipe and brick sewers as can be seen in Table 3-1**.** Inventories of the ages, shapes, and sizes of pipe are also shown by basin in Table 3-2 through Table 3-5.

Table 3-1. Adams Street Service Area Inventory
GIS Database

Basin ID	Number of Manholes	Number of Pipes	Total Length of Pipe (ft)	% of Total Pipe
18PS	202	216	12,532	8%
H1	639	669	19,986	13%
H2	86	95	4,046	3%
H3	173	192	5,628	4%
H4	183	195	7,911	5%
H5	239	268	13,675	9%
H6	60	68	2,863	2%
H7	113	128	9,034	6%
HSI	29	29	965	1%
HWF	79	69	6,698	4%
NBW	39	40	1,420	1%
PANYNJ	22	23	1,242	1%
UH1	545	549	20,691	13%

Table 3-1. Adams Street Service Area Inventory

GIS Database

Basin ID	Number of Manholes	Number of Pipes	Total Length of Pipe (ft)	% of Total Pipe
W1	302	310	11,386	7%
W2	493	509	19,384	12%
W3	247	258	10,422	7%
W4	68	77	5,635	4%
W5	30	36	2,213	1%
Total	3,558	3,741	156,449	100%

Table 3-2. NHSA Adams Street Service Area Material Inventory by Basin

Material	18PS	H1	H2	H3	H4	H5	H6	H7	HSI	HWF	NBW	PANYNJ	UH1	W1	W2	W3	W4	W5
BRK	13%	53%	48%	75%	49%	-	19%	1%	-	2%	-	48%	29%	19%	23%	22%	-	-
CIP	44%	1%	-	-	1%	0%	0%	17%	-	10%	-	-	-	-	0%	-	3%	-
CONC	0%	14%	6%	8%	46%	31%	18%	38%	15%	6%	-	-	1%	-	5%	-	-	-
CP	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DIP	-	-	-	-	-	-	-	8%	-	40%	-	-	-	-	-	-	-	-
IRON	-	-	-	-	-	-	-	-	-	-	-	-	1%	-	-	-	-	-
PCP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PVC	-	1%	-	-	-	-	-	-	-	7%	-	-	-	-	-	-	-	-
RCP	21%	2%	8%	-	-	10%	-	13%	-	26%	-	28%	-	-	1%	11%	7%	4%
VCP	13%	17%	29%	3%	4%	34%	63%	19%	80%	8%	68%	24%	56%	76%	67%	60%	86%	88%
WD	-	9%*	-	1%	-	-	-	0%	-	-	-	-	-	-	-	-	-	-
OTHER	6%	2%	3%	1%	-	1%	-	4%	5%	2%	-	-	1%	4%	4%	6%	4%	7%

* The wood sewers in H1 are gunite lined.

Table 3-3. NHSA Adams Street Service Area Inventory By Size

Diameter	18PS	H1	H2	H3	H4	H5	H6	H7	HSI	HWF	NBW	PANYNJ	UH1	W1	W2	W3	W4	W5
6" - 12"	35%	7%	30%	3%	5%	20%	23%	30%	42%	48%	7%	0%	1%	7%	34%	14%	61%	65%
14" - 20"	3%	4%	6%	1%	3%	8%	41%	8%	35%	40%	54%	24%	56%	67%	28%	47%	14%	23%
21" - 30"	38%	11%	2%	1%	8%	9%	21%	15%	3%	6%	0%	13%	3%	2%	5%	1%	14%	8%
33" - 48"	9%	12%	21%	22%	3%	17%	2%	7%	15%	4%	0%	48%	4%	6%	17%	23%	7%	0%
54" - 72"	4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	15%	0%	2%	0%	3%	0%	0%
1'X2' - 2'X2'6"	0%	1%	0%	0%	15%	13%	0%	17%	0%	0%	0%	0%	16%	0%	0%	4%	0%	0%
2'X3' - 2'6"X4'	2%	35%	30%	53%	50%	22%	12%	9%	0%	0%	0%	0%	3%	11%	10%	1%	0%	0%
2'9"X3'6" - 4'X3'	1%	16%	0%	0%	8%	0%	0%	0%	0%	0%	0%	0%	4%	0%	0%	2%	0%	0%
4'X3'6" - 4'9"X4'	0%	10%	0%	0%	1%	2%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
5'X4'9" - 7'X4'9"	0%	2%	1%	8%	8%	7%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
OTHER	8%	3%	10%	11%	0%	4%	0%	4%	5%	2%	39%	0%	14%	4%	6%	6%	4%	3%

Table 3-4. NHSA Adams Street Service Area Age Inventory By Basin

Age	18PS	H1	H2	H3	H4	H5	H6	H7	HSI	HWF	NBW	PANYNJ	UH1	W1	W2	W3	W4	W5
Pre-1900	97%	-	-	-	-	-	-	14%	-	92%	100%	100%	100%	100%	100%	89%	100%	100%
Pre-1916	2%	93%	84%	86%	41%	54%	94%	27%	100%	4%	-	-	0%	-	-	0%	-	-
1916	0%	5%	1%	9%	41%	31%	-	29%	-	0%	-	-	-	-	-	-	-	-
1919	-	0%	-	-	18%	4%	-	22%	-	-	-	-	-	-	-	-	-	-
1954	-	0%	14%	5%	-	11%	6%	7%	-	3%	-	-	-	-	-	-	-	-
2008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11%	-	-

Table 3-5. NHSA Adams Street Service Area Shape Inventory by Basin

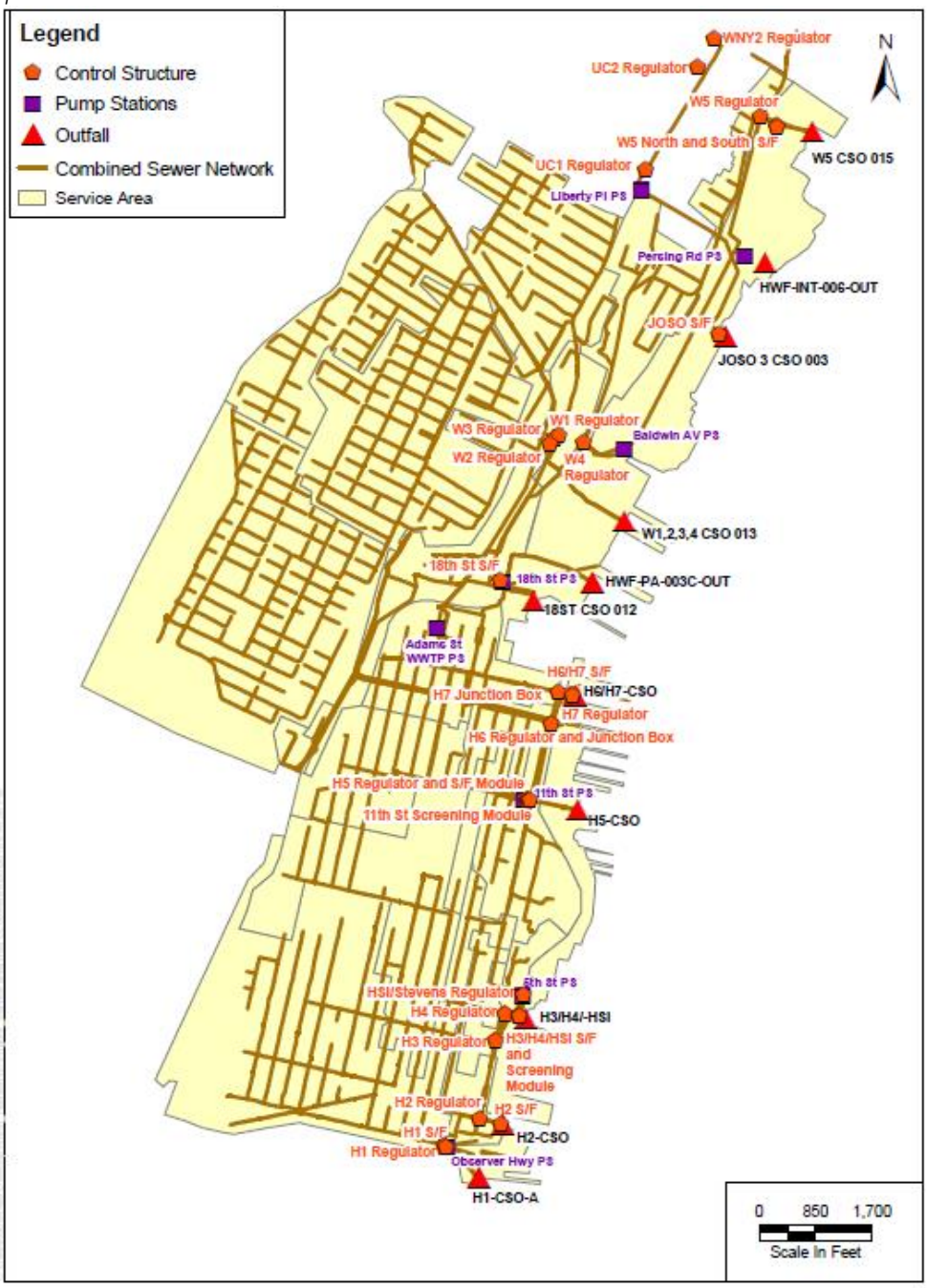
Shape	18PS	H1	H2	H3	H4	H5	H6	H7	HSI	HWF	NBW	PANYNJ	UH1	W1	W2	W3	W4	W5
CIRC	89%	33%	60%	27%	19%	53%	88%	53%	95%	58%	61%	100%	63%	85%	84%	78%	96%	97%
OVAL	4%	-	-	-	-	-	-	-	-	-	-	-	23%	11%	10%	15%	-	-
OTHER	7%	67%	40%	73%	81%	47%	12%	47%	5%	42%	39%	-	14%	4%	6%	6%	4%	3%

3.1.1 System Maps

GIS technology was used to create the sewer system maps for this inventory and assessment. A GIS schematic layer was created that showed the location of each of the sewer pipes within the service area, which was found using a GPS location system. Figure 3-1 shows the location of pipes that comprise the collection system. Also shown in Figure 3-1 are the locations of CSO regulators, pump stations, other facilities, outfalls, and drainage area divide lines.

Figure 3-1. NHSA Adams Street WWTP Service Area GIS Map

Updated GIS



3.1.2 Condition Assessment

Condition assessments of the CSS in the Adams Street Service Area were performed in 2016 and 2017 via a cleaning and CCTV inspection projec. Data from these condition assessments can be found in **Appendix D** and has been integrated with GIS data to update sewer pipe material, sizes, connections, conditions, etc. RedZone performed inspections of sewers and is approximately 80% complete in the Weehawken areas, the 18th Street Pump Station area, and the UH1 and NBW areas. Progress has also been made in other drainage basins. Figure 3-2 depicts the condition assessment of sewers in the Adams Street Service Area performed according to the Pipeline Assessment and Certification Program (PACP) rating system, where a rating of 5 (red) represents a pipe segment which has failed or will likely fail within the next five years and a rating of 1 (green) indicates that the pipe segment has minor defects and failure is unlikely in the foreseeable future. A pipe segment with no condition defects has a pipe rating of zero (0). CCTV work will continue in the areas of Hoboken that do not currently have data.

Figure 3-2. Condition Assessment of Adams Street Service Area

3.2 Pump Stations and Force Mains

The Authority owns a total of seven (7) pump stations in the Adams Street Service area as summarized in Table 3-6. Pump Stations in the Adams Street Service Area that were constructed post-1996 include Pershing Road, the H1 Wet Weather Pump Station and the H5 Wet Weather Pump Station. An evaluation of each pump stations capacity, dimensions, age, type of material and specific location was performed based on a combination of historical data review, GIS data, fieldwork and modeling. The locations of the pump stations are shown in Figure 3-3. Figure 3-4 through Figure 3-16 are plan and profile drawings showing the location and elevations of critical hydraulic and mechanical elements in each of the pump stations.

Table 3-6. NHSA Adams Street WWTP Service Area Pump Station General Information

Pump Station	Basin	Capacity	Notes
5th Street	H1, H2, H3, H4, HSI	3 pumps at 7.9 mgd	
11th Street	H5, H6, H7	3 pumps at 5.8 mgd	
18th Street	18PS	3 sanitary pumps at 4.3 mgd and 2 storm water pumps at 47.5 mgd	Includes both a dry weather and wet weather pump station
Pershing Road	W3	3 pumps at 3.6 mgd	
Baldwin Ave	W4, W5	2 pumps at 1.4 mgd	
H1 WWPS	H1	2 pumps at 50.4 mgd	Wet weather pump station
H5 WWPS	H5	2 pumps at 41 mgd	Wet weather pump station

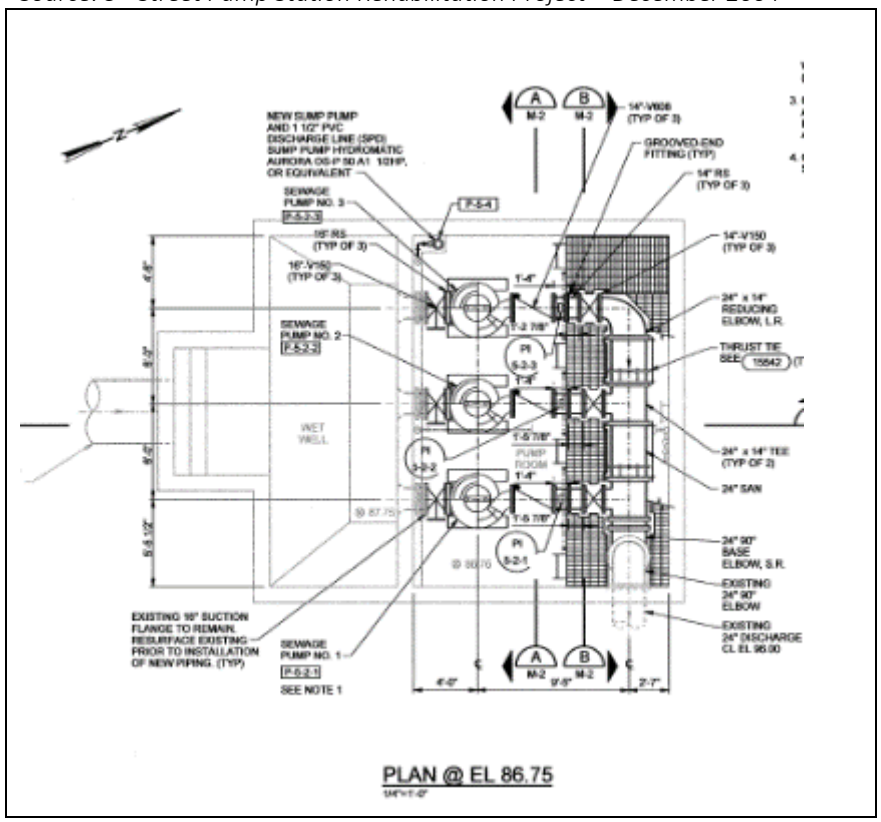
3.2.1 5th Street Pump Station

The 5th Street Pump Station receives sewage from regulators H1, H2, H3 and H4 via the “south interceptor” in the southern portion of Hoboken. The station is equipped with three dry pit submersible centrifugal pumps and an emergency generator. The pumps have variable frequency drives (VFDs) and float controls. The station discharges via force mains and gravity sewers to a chamber adjacent to the 11th Street pump station. The outlet from this chamber discharges to 48-inch diameter siphon to the Adams Street WWTP.

In 2014 the pumps at the 5th Street pump station were replaced with the ABS Contrablock, non-clog pumps which had been used successfully at the 11th Street Pump Station. Each pump is rated at 5,508 gpm (7.9 mgd) at 43 feet total dynamic head (TDH) with an 85 hp motor. Two of the three pumps run and the remaining is standby. The manufacturer of the variable speed drives is Robicon, which no longer produces replacement parts. The generator for this pump station is working, but is located at ground elevation. In the event of extreme weather condition, the generator is at risk of flooding. There are currently no proposed improvements for the 5th Street Pump Station however, future capital improvement needs include repair of building façade and roof system, replacement of VFDs and relocation of the generator and electrical equipment to a higher elevation such as the second floor of the pump station building.

Figure 3-3. 5th Street Pump Station Plan

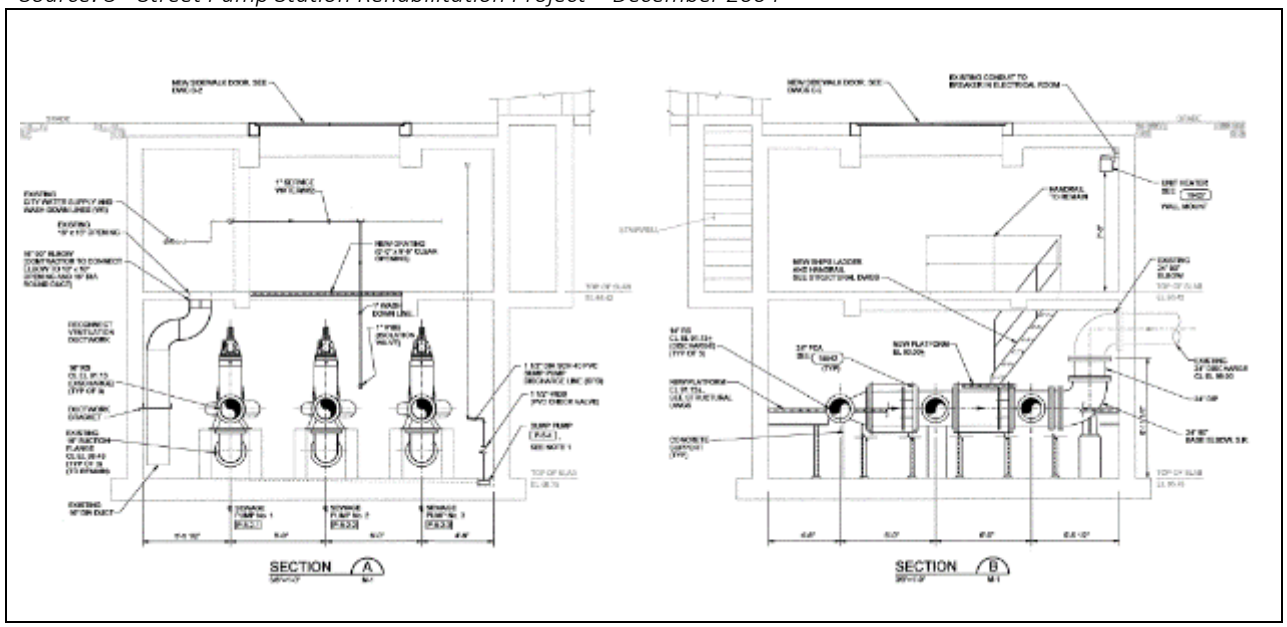
Source: 5th Street Pump Station Rehabilitation Project – December 2004



Scales not applicable.

Figure 3-4. 5th Street Pump Station Section

Source: 5th Street Pump Station Rehabilitation Project – December 2004



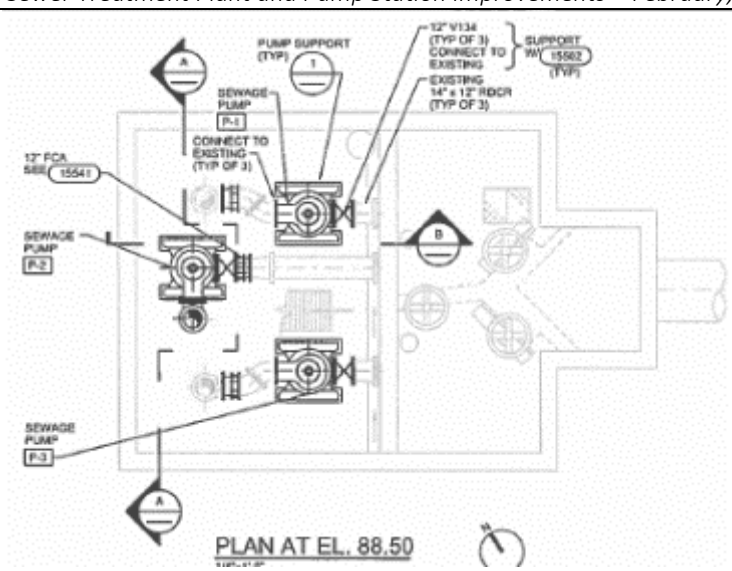
Scales not applicable.

3.2.2 11th Street Pump Station

The 11th Street Pump Station receives sewage from drainage areas H5, H6, and H7 via the "north interceptor" in the norther portion of Hoboken. The station is a dry well/wet well style pump station located in the center median of 11th Street and is equipped with three (3) new dry pit open impeller style submersible pumps (Contra-block Plus by ABS), Motor Control Center (MCC), VFDs, flow meters, an auto-dialer and an emergency generator. The station discharges via force mains and gravity sewers to a chamber adjacent to the 11th Street pump station. The outlet from this chamber supplies a 48-inch diameter siphon to the Adams Street WWTP. Each pump is rated at 4,000 gpm (5.8 mgd) at 20 feet of Total Dynamic Head (TDH) with a 74 hp motor. In 2016 a new generator was installed at the 11th Street Pump Station, designed to serve the new H5 Stormwater Pump Station (Section 3.2.7) and the 11th Street Pump Station. There are no proposed capital improvements at this time.

Figure 3-5. 11th Street Pump Station Plan

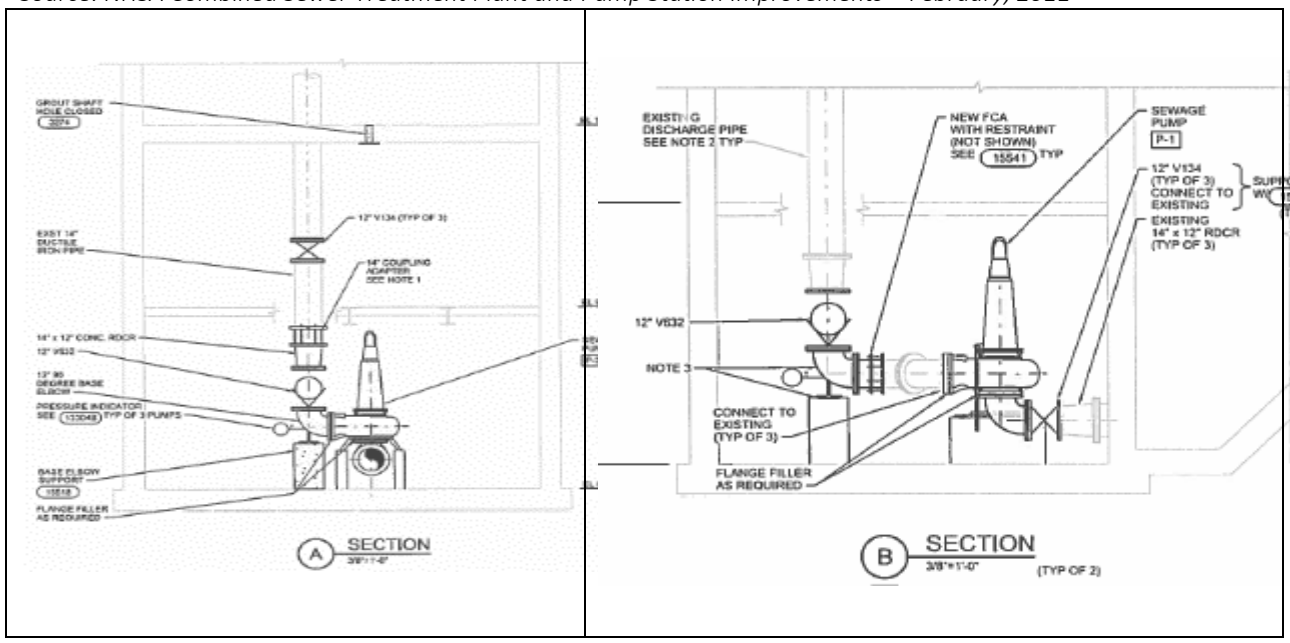
Source: NHSA Combined Sewer Treatment Plant and Pump Station Improvements – February, 2011



Scales not applicable.

Figure 3-6. 11th Street Pump Station Section

Source: NHSA Combined Sewer Treatment Plant and Pump Station Improvements – February, 2011



Scales not applicable.

3.2.3 18th Street Pump Station

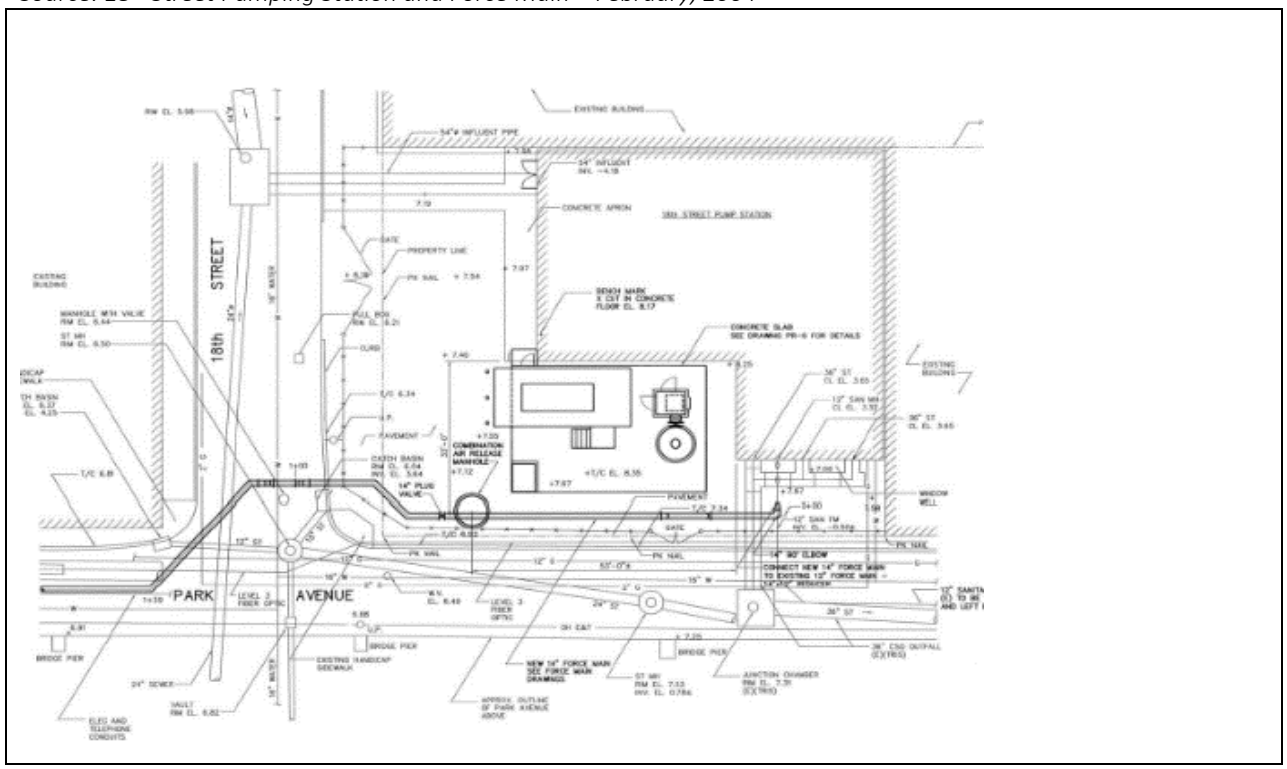
The 18th Street Pump Station is located on the corner of 18th Street and Park Avenue in Hoboken and receives sewage flows from surrounding sections of Weehawken, including the area known as the "Shades" and discharges directly to the Adams Street WWTP via a 15-inch force main. The pump station includes a mechanical bar screen and five (5) pumps. Three (3) pumps are sanitary pumps that are dry pit submersibles rated at 3,000 gpm (4.3 mgd) at 56 feet TDH and 75 HP each. These pumps handle normal sanitary sewage flow and discharge to a force main that conveys the sewage directly to the Adams Street WWTP. The pump station also includes two (2) large, electrical motors driven, vertical turbine style CSO pumps that are rated at 33,000 gpm (47.5 mgd) at 20 feet of TDH and 250 HP each. These pumps are only used during wet weather, pumping directly to the CSO outfall, to keep the low lying area of the Shades from flooding. The pump station includes VFDs and controls for all pumps, a standby generator with automatic transfer switch located in an outdoor walk in, acoustical enclosure and an odor control system which pulls ventilation air from the wet well and scrubs it using an activated carbon.

Normally during dry weather, the sewage entering the pump station is pumped by the sanitary pumps. The wet well includes an overflow weir to allow wet weather flow to enter the CSO pump wet well whenever the capacity of the sanitary pumps is exceeded. Once the CSO wet well level rises, one of the CSO pumps starts and conveys the excess wet weather flow to the Hudson River. All flow into the pump station is first screened by an automatic mechanical bar screen controlled by the level in the influent channel.

The pump station suffered heavy damage as the result of Hurricane Sandy in 2012. All equipment within the dry well area was flooded and submerged in salt water. The replacement and/or repair of the damaged components included flow meters for the three pumps, plug valve, swing check valves, air release valves, a sewage surge relief valve, fire alarm system, sump pumps, and associated electrical work. There are no proposed improvements for the 18th Street Pump Station at this time.

Figure 3-7. 18th Street Pump Station Location

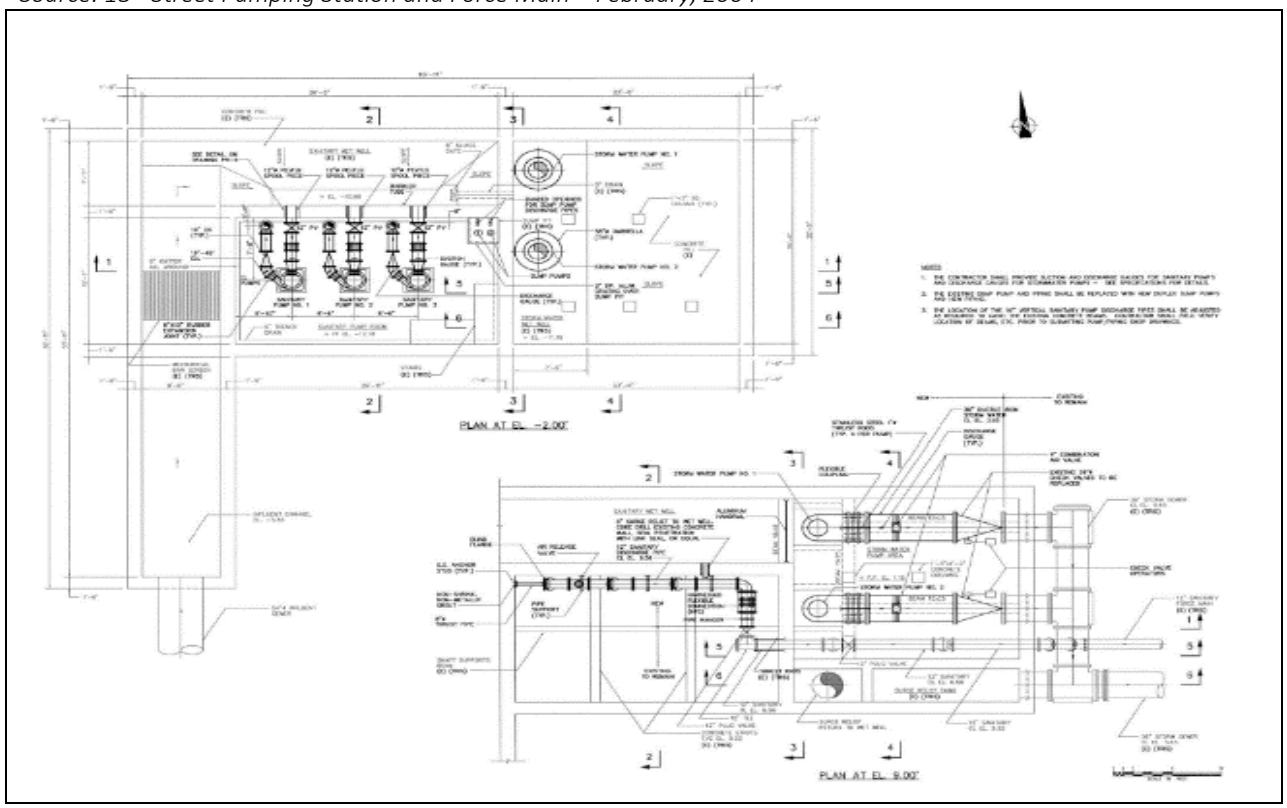
Source: 18th Street Pumping Station and Force Main – February, 2004



Scales not applicable.

Figure 3-8. 18th Street Pump Station Plan

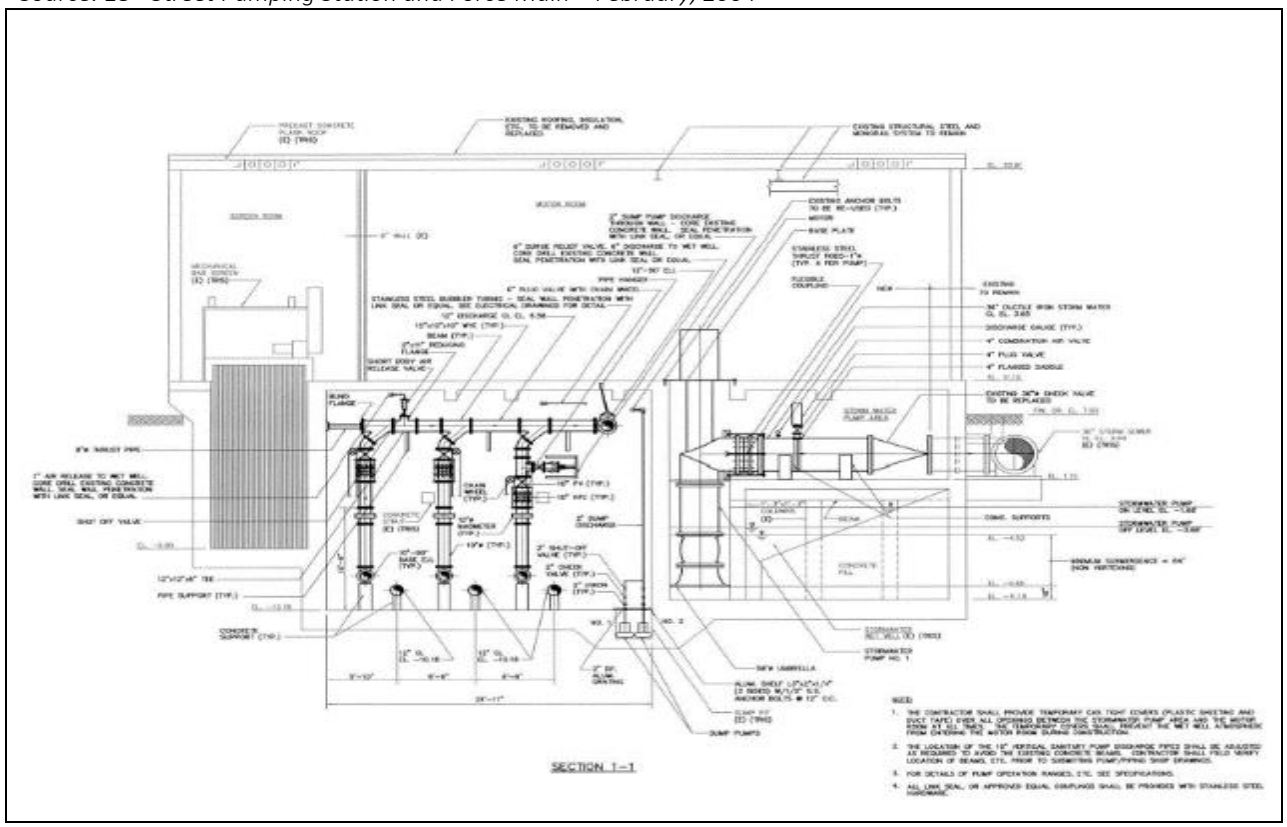
Source: 18th Street Pumping Station and Force Main – February, 2004



Scales not applicable.

Figure 3-9. 18th Street Pump Station Section

Source: 18th Street Pumping Station and Force Main – February, 2004

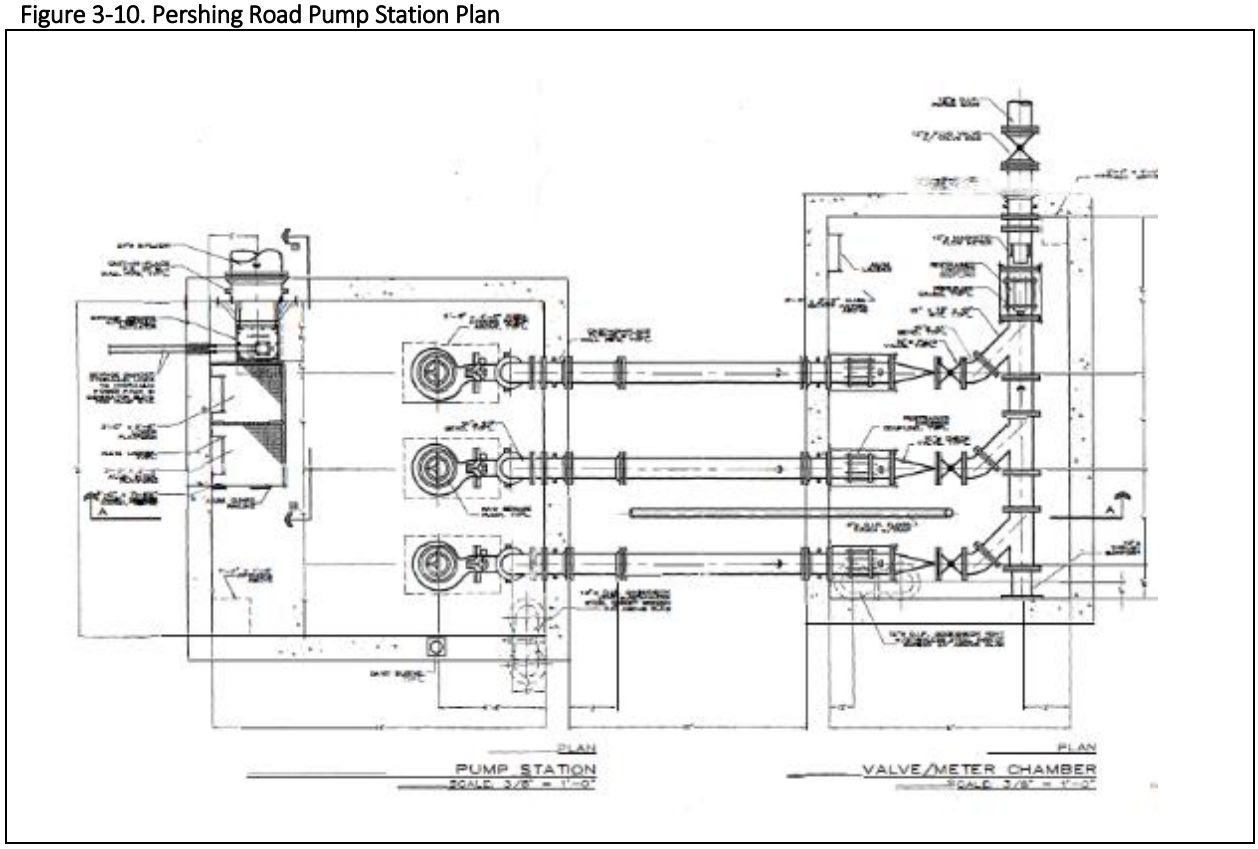


Scales not applicable.

3.2.4 Pershing Road Pump Station

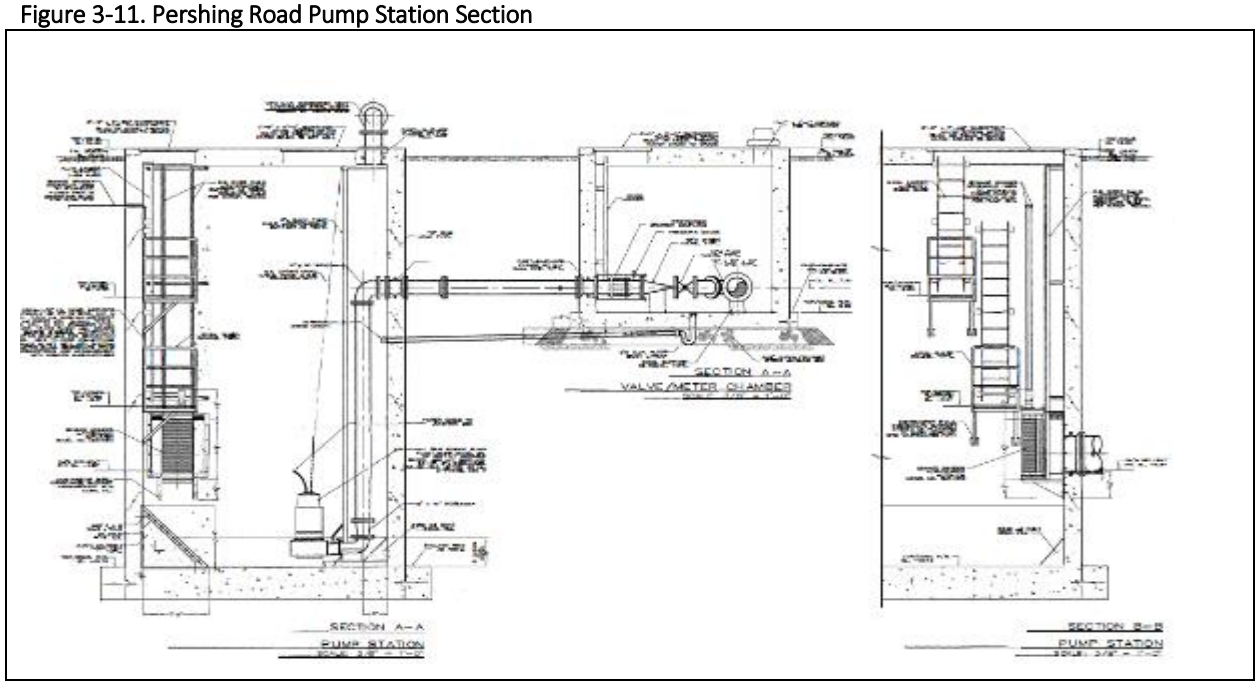
The Pershing Road Pump Station is located at the intersection of Port Imperial Boulevard and Pershing Road and receives flow from a privately owned collection system operated by the Port Imperial Property Owners Association. This system is a sanitary sewer system. The Pershing Road Pump Station conveys sanitary flow directly to the Adams Street WWTP via a 14-inch force main. The pump station was constructed in 2003 and consists of three Flygt CP3231 submersible pumps, rated for 2500 gpm (3.6 mgd) at 103 feet TDH and 90 hp each (one lead, one lag and one stand-by), three ABB variable frequency drives (VFDs), one Muffin Monster comminutor and a Kohler 250RZD natural gas emergency generator. The generator and VFDs are housed in a building and the pumps and comminutor are located in the below-ground wetwell. There are eight (8) air release valves on the force main leaving Pump Station No. 3. There are no proposed improvements or capital needs at the Pershing Road Pump Station at this time.

Figure 3-10. Pershing Road Pump Station Plan



Scales not applicable.

Figure 3-11. Pershing Road Pump Station Section



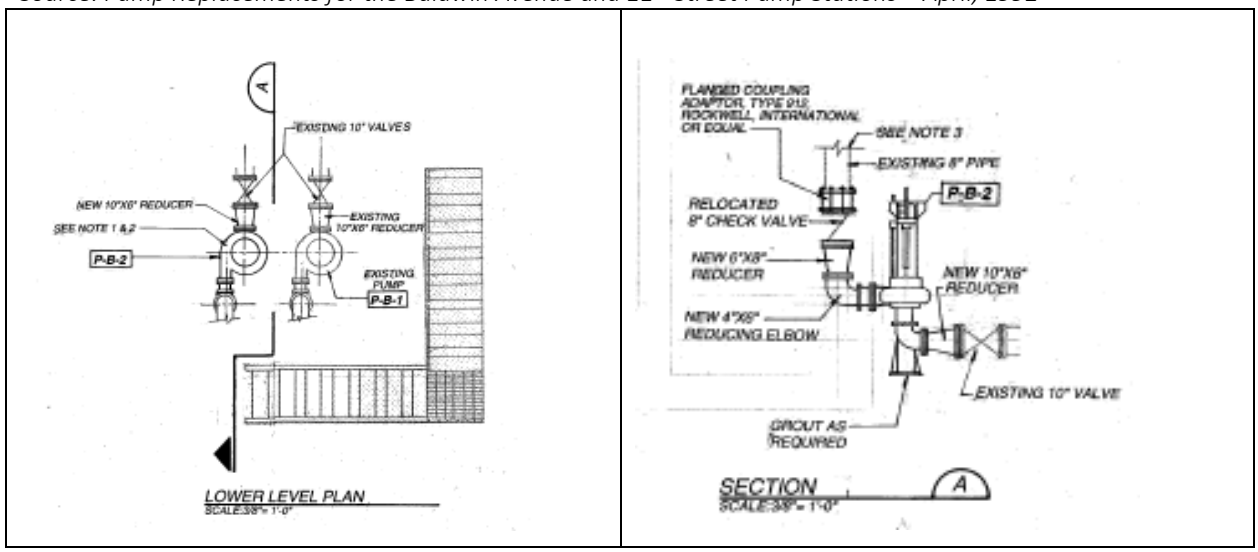
Scales not applicable.

3.2.5 Baldwin Avenue Pump Station

The Baldwin Avenue Pump Station receives flow from drainage areas W4 and W5 in Weehawken via individual interceptors. The Park Avenue siphon conveys flow from this pump station to the Adams Street WWTP. The pump station includes two (2) dry pit submersible pumps rated at 1.4 mgd, an MCC, an auto-dialer, a chart recorder, an explosion proof heater in the wet well and an emergency generator. Each pump is equipped with a 25 HP motor. The station was flooded resulting from Hurricane Sandy in 2012 and the generator was partially submerged. There are no proposed improvements for the Baldwin Avenue Pump Station at this time.

Figure 3-12. Baldwin Avenue Pump Station Plan and Section

Source: Pump Replacements for the Baldwin Avenue and 11th Street Pump Stations – April, 1992



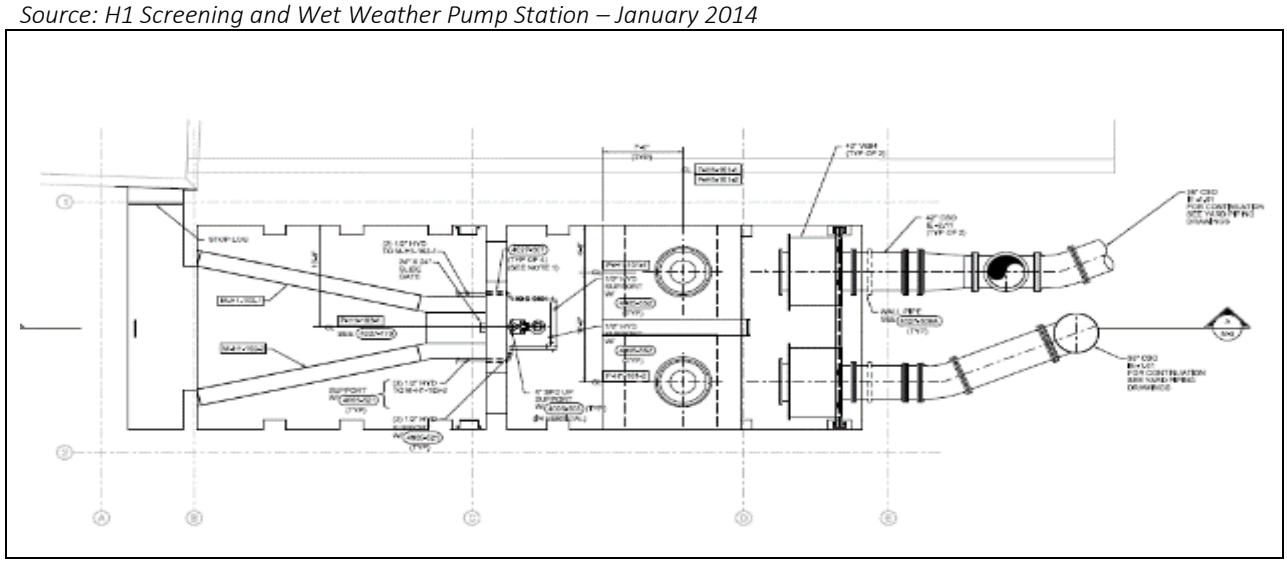
Scales not applicable.

3.2.6 H1 Wet Weather Pump Station

The H1 Wet Weather Pump Station is a new pump station located at the intersection of Hudson Street and Observer Highway adjacent to the New Jersey Transit Hoboken Train Station. The wet weather station pumps CSOs from regulator H1 to the Hudson River to relieve street flooding in the H1 area during high tides. The station includes 2 high capacity, low head submersible propeller type pumps rated for 35,000 gpm (50.4 mgd) at 23 feet TDH. Each pump is equipped with a 350 HP motor. The station also consists of a two-story control building. The building includes a large standby generator on the first floor, above the 100-year flood elevation, MCC, VFDs and electrical controls on the second floor. All flow to the pump station is screened through a horizontal screen with 0.5-inch openings. After screening, the screened flow either flows by gravity to the Hudson River or is pumped depending on the tides. There are no proposed improvements at this time. Continued operation of the wet weather pump station is currently an essential flood control measure in Hoboken, and will be an important component of the Rebuild-by-Design Hudson River plan for Hoboken.

Figure 3-13. H1 Wet Weather Pump Station Plan

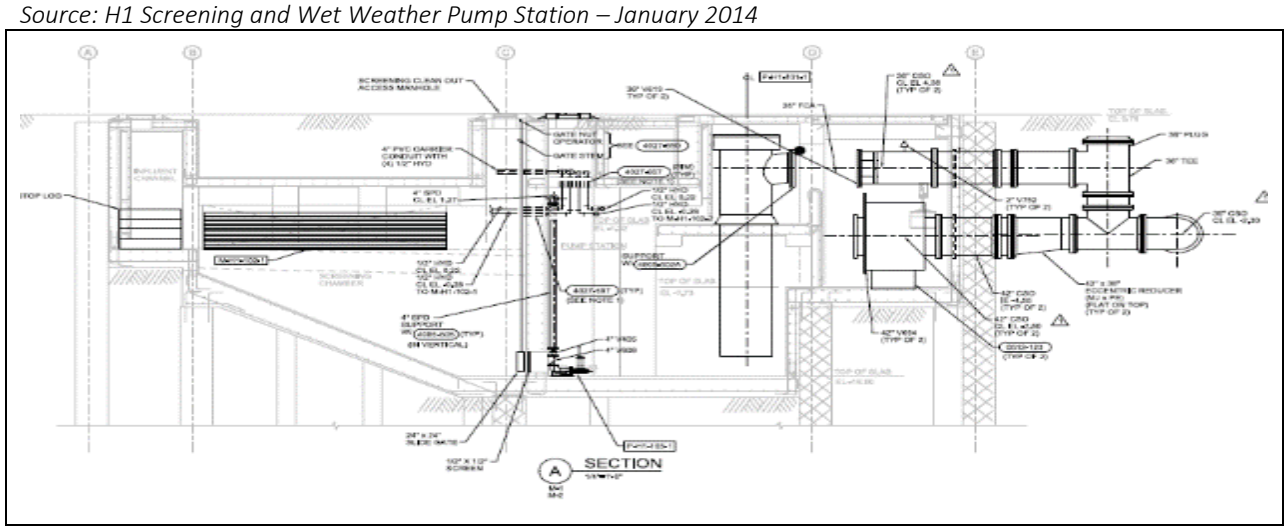
Source: H1 Screening and Wet Weather Pump Station – January 2014



Scales not applicable.

Figure 3-14. H1 Wet Weather Pump Station Section

Source: H1 Screening and Wet Weather Pump Station – January 2014



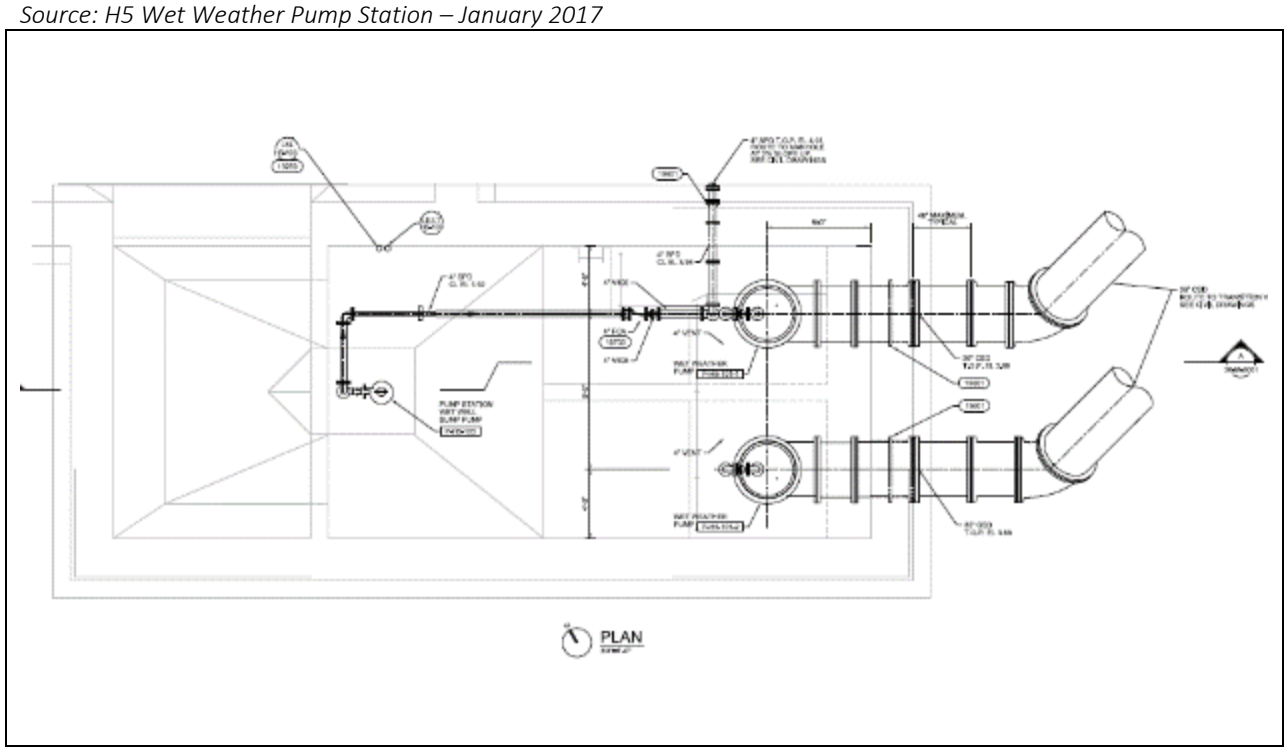
Scales not applicable.

3.2.7 H5 Wet Weather Pump Station

This new H5 Wet Weather Pump Station commenced operation in September 2016 and has relieved street flooding in the H5 drainage area during high tides. The wet weather pumping station is located below grade in the center island of 11th Street just west of the intersection with Sinatra Drive North. It contains a diversion from outfall 006A to a wet well and pump intake chamber. The diversion is on CSOs from regulator H5. The pump station includes two high-capacity 40 mgd submersible pumps located in the below grade chamber. The two pumps convey wet weather overflows back to outfall 006A via parallel force mains and can be operated one at a time or in parallel. A tide gate chamber between the diversion and the wet well where the force mains discharge back to outfall 006A prevents backflow. The station has a backup generator above grade, above the 100-year flood elevation, located adjacent to the 11th Street sanitary sewer pump station. There are no proposed improvements at this time. Continued operation of the wet weather pump station is currently an essential flood control measure in Hoboken, and will be an important component of the Rebuild-by-Design Hudson River plan for Hoboken.

Figure 3-15. H5 Wet Weather Pump Station Plan

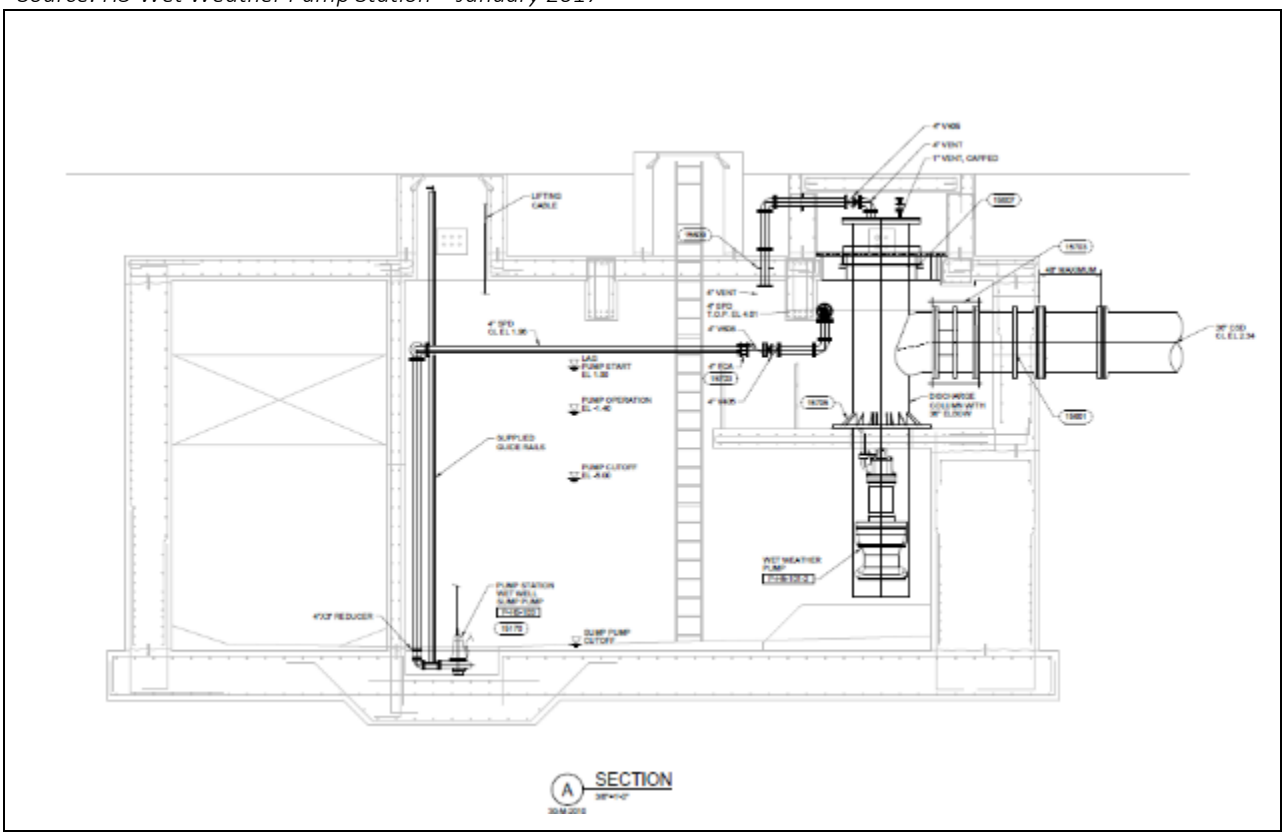
Source: H5 Wet Weather Pump Station – January 2017



Scales not applicable.

Figure 3-16. H5 Wet Weather Pump Station Section

Source: H5 Wet Weather Pump Station – January 2017



Scales not applicable.

3.3 CSO Regulators

The Authority owns a total of thirteen (13) CSO regulators (6 float operated and 7 weir controlled) in the Adams Street Service Area, as summarized in Table 3-7. The CSO regulators are designed to direct flows during dry weather to the Adams Street WWTP and convey excess flows during wet weather directly to the Hudson River. All regulators in the Adams Street Service Area were originally constructed in the 1950s and 1960s and regulators H1, H2, H3, H4, H5, H6, H7, W4, and W5 underwent rehabilitation in 2015. The location of each of the CSO regulator facilities is shown in Figure 3-17. An evaluation of each regulator's capacity, dimensions, age, type of material, and specific location was performed based on a combination of historical data review, GIS data, fieldwork, and modeling.

Table 3-7. NHSA Adams Street WWTP Service Area Regulator General Information

Regulator	Basin	Outfall	Notes
H1	H1	002A	Weir controlled
H2	H2	003A	Weir controlled
H3	H3	005A	Weir controlled
H4	H4	005A	Weir controlled
H5	H5	006A	Float operated

Table 3-7. NHSA Adams Street WWTP Service Area Regulator General Information

Regulator	Basin	Outfall	Notes
H6	H6	008A	Float operated
H7	H7	008A	Float operated
HSI	HSI/Stevens	005A	Weir controlled
W1	W1	013A	Float operated
W2	W2	013A	Float operated
W3	W3	013A	Float operated
W4	W4	013A	Float operated
W5	W5	015A	Float operated

3.3.1 Hoboken Regulators

The regulator chambers in Hoboken (H1 through H7) are somewhat different than those in Weehawken (W1 through W5). The regulators in Hoboken consist of three distinct sections: influent, diversion, and a tide gate. The influent section consists of an influent chamber and channel. The diversion section includes overflow weirs or regulator float gates to ensure dry weather flows are directed into the interceptor and excess wet weather flows directed to the outfall to the Hudson River. Tide gates prevent river water from flowing back into the collection system during high tides. Recent regulator upgrades removed floats and gates from regulators H1, H2, H3, and H4.

Monthly maintenance of Hoboken regulators by operation crews includes removal of debris and in the regulator chamber after each wet weather event, application of grease to equipment as required for reliable operation of regulator and tide gates to prevent the jamming of the gates and associated equipment, and removal of debris around the floats to prevent potential interference during regulator operation. There are no proposed capital improvements to the Hoboken regulators at this time.

Table 3-8 summarizes the dimensions of the Hoboken regulators. Figure 3-17 through Figure 3-23 show the locations of the Hoboken Regulators and Figure 3-24 through Figure 3-30 show plan and profile views of the Hoboken regulators. The HSI regulator is a simple weir and no record drawings exist.

Table 3-8. Hoboken Regulator Dimensions

Source: Reference Document 5, updated

Dimension Reference No.	Hydraulic Element	Parameter	Regulator						
			H1	H2	H3	H4	H5	H6	H7
1	Inlet Trunk Sewer	Dimensions	8’0” x 4’0”	42”	60”	7’ x 4’9”	7’ x 4’9”	30” x 42”	7’ x 4’9”
		Invert Elevation	-2.95	-2.00	-2.00	-1.84	-1.50	-1.11	-1.80
		Material	BR	RCP	BR	Conc.	Conc.	BR	Conc.
		Dimensions	N/A	N/A	N/A	N/A	42”	N/A	N/A
		Invert Elevation	N/A	N/A	N/A	N/A	-0.25	N/A	N/A
		Material	N/A	N/A	N/A	N/A	RCP	N/A	N/A
		Dimensions	N/A	N/A	N/A	N/A	24”	N/A	N/A
		Invert Elevation	N/A	N/A	N/A	N/A	VC	N/A	N/A
		Material	N/A	N/A	N/A	N/A	0.18	N/A	N/A
2	CSO Outfall	Dimensions	42”	12’ x 6’	7’ x 4’9”		72”	8’6” x 4’2”	
		Invert Elevation	-4.00	-5.50	-1.86		-3.27	-2.00	
		Material	DIP	RC	RCP		RCP	RCP	
3	Upstream Interceptor	Dimensions	N/A	42”	45”	48”	36”	30”	N/A
		Invert Elevation		-4.85	-6.44	-6.96	-5.59	-4.11	N/A
		Material		RCP	RCP	RCP	RCP	RCP	N/A
4	Downstream Interceptor	Dimensions	42”	45”	48”	48”	36”	36”	30”
		Invert Elevation	-4.20	-5.72	-6.65	-6.96	-5.59	-4.61	-3.25
		Material	RCP	RCP	RCP	RCP	RCP	RCP	RCP
5	Low-Flow Regulator Gate	Open Dim.	16” x 24-5/8”	7-1/2” x 9-3/4”	7-1/2” x 15-3/8”	7-1/2” x 12-3/8”	12” x 12”	5” x 6”	16” x 24-5/8”
		Invert Elevation	-2.95	-2.00	-2.00	-1.84	-1.50	-1.11	-1.80
6	High-Flow Regulator Gate	Open Dim.	12” x 26-5/16”	7-1/2” x 9-3/4”	12” x 12”	7-1/2” x 12-3/8”	7-1/2” x 15-3/8”	5” x 6”	7-1/2” x 15-3/8”
		Invert Elevation	-2.95	-2.00	-2.00	-1.84	-1.50	-1.11	-1.80
7	Bar Screen Openings	Openings	3”	3”	3”	3”	4”	3”	3”
		Bar Width	½”	½”	½”	½”	½”	½”	½”
		Bar Depth	3”	3”	3”	3”	3”	3”	3”
8	Tide Gate 1	Dimensions	48” x 72”	36” x 54”	48” x 72”	36” x 54”	36” x 54”	30” x 45”	36” x 48”
		Invert Elevations	-1.55	-1.00	-0.50	-1.00	-1.00	-0.11	-0.80
9	Tide Gate 2	Dimensions	N/A	N/A	N/A	36” x 54”	36” x 54”	N/A	36” x 48”
		Invert Elevations				-1.00	-1.00		-0.80
10	Weir Wall/Plate	Invert Elevation	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 3-8. Hoboken Regulator Dimensions

Source: Reference Document 5, updated

Dimension Reference No.	Hydraulic Element	Parameter	Regulator						
			H1	H2	H3	H4	H5	H6	H7
		Weir Length	4’6” / 12’3”	8’0” / 9’0”	9’0”	12’0” / 7’0”	13’0” / 14’0”	7’0”	13’0”
		Orientation	Parallel / diagonal	Perp. / parallel	Perpendicular	Perp. / parallel	Perp. / parallel	Perpendicular	Perpendicular
11	Diversion Chamber Platform	Top Elevation	3.75’	3.25’	4.5’	6.0’	9.75’	3.89’	6.95’
		Thickness	6”	9”	9”	9”	9”	Deck grating	Top of chamber

Notes:

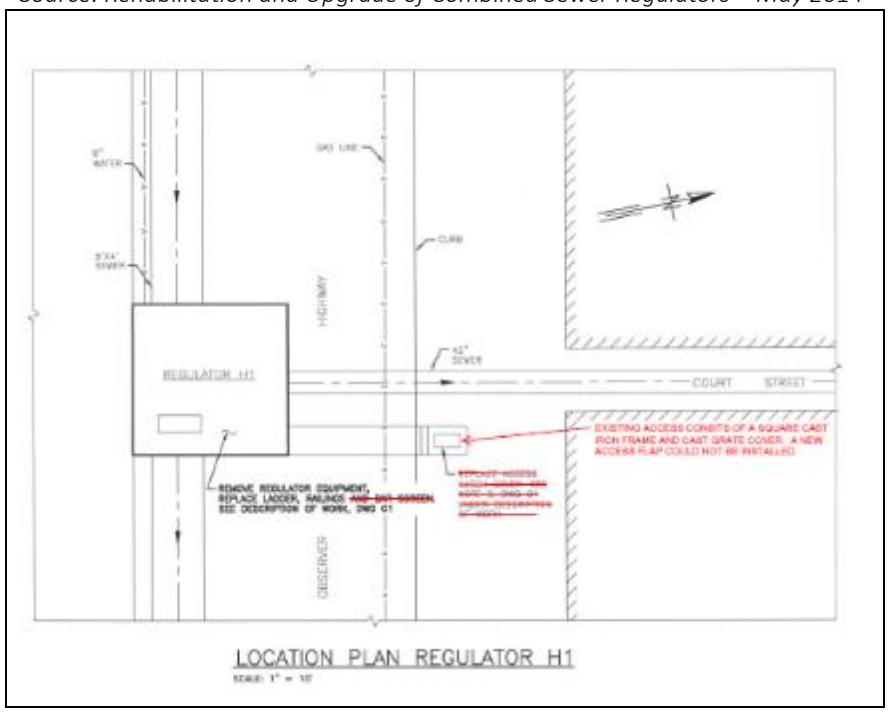
1. Invert elevations are based on 1986 LMS rehabilitation drawings. Original mean sea level datum of 100 feet has been converted to 0.0 feet.
2. Tide gate dimensions are shown as height by width.
3. Weir plate orientation is relative to influent flow direction. Weir lengths shown are for the orientation below. For example, Hoboken Regulator No. 2 is equipped with 8’0” of weir length that is perpendicular to the incoming flow, and 9’0” of weir length that is parallel to the incoming flow.
4. Deck slab elevation is effectively equivalent to overflow elevation of bar racks.
5. Abbreviations:

   BR – Brick Conc. – Concrete

   RCP – Reinforced Concrete Pipe VC – Vitrified Clay

Figure 3-17. H1 Regulator Location Plan

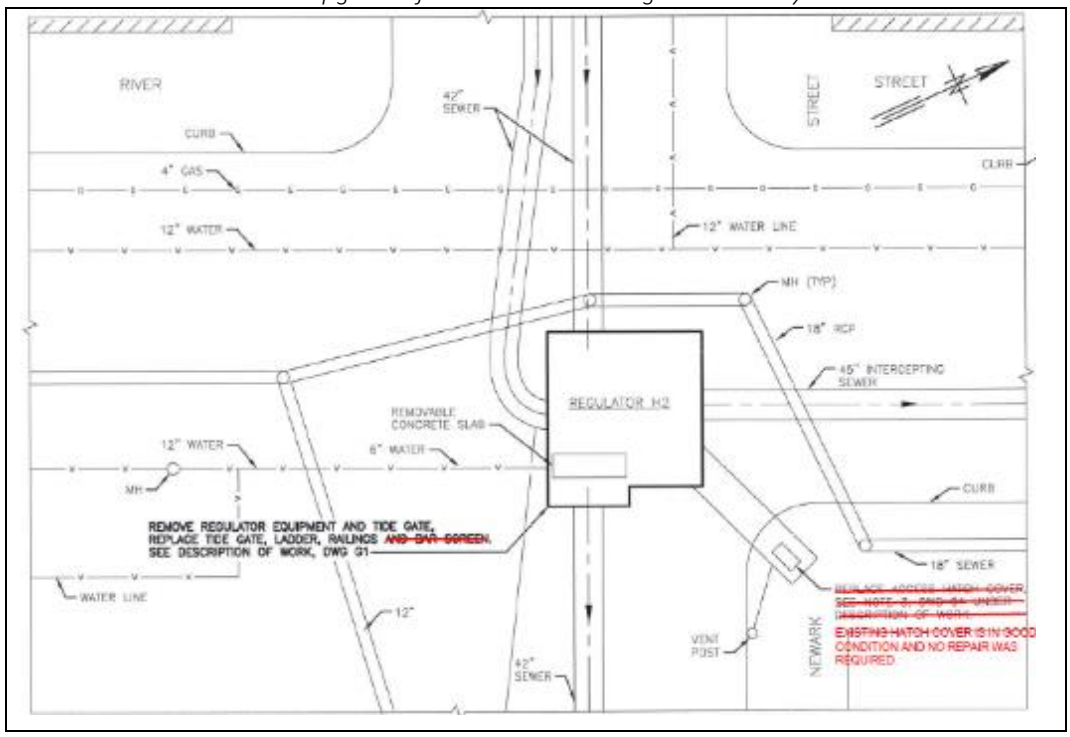
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-18. H2 Regulator Location Plan

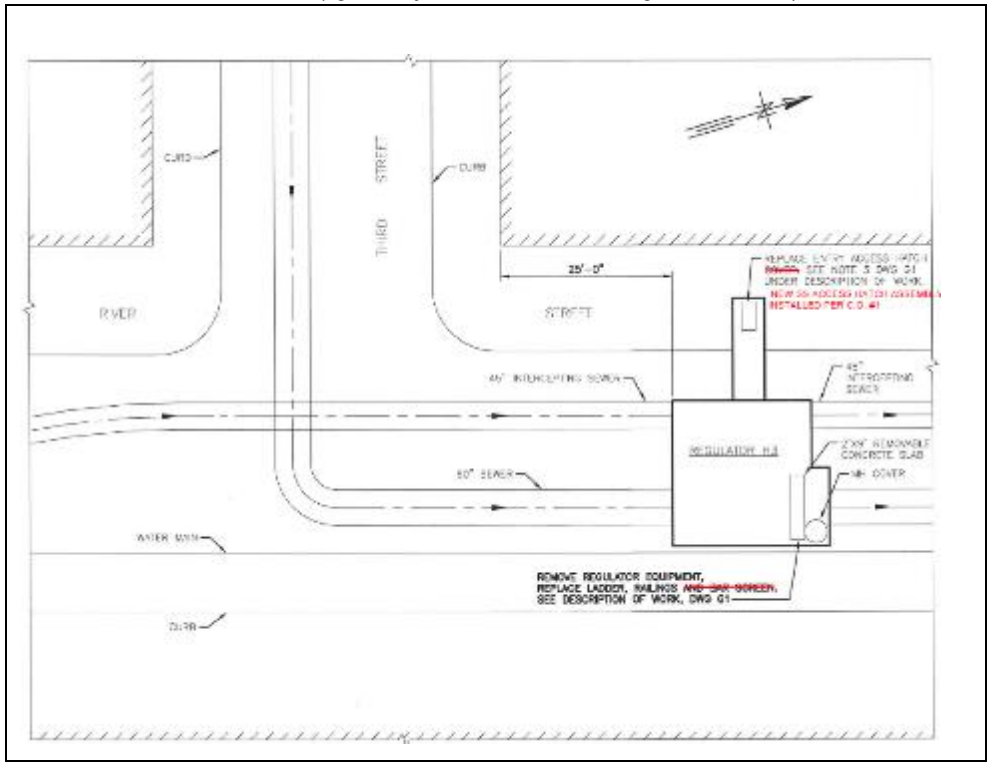
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-19. H3 Regulator Location Plan

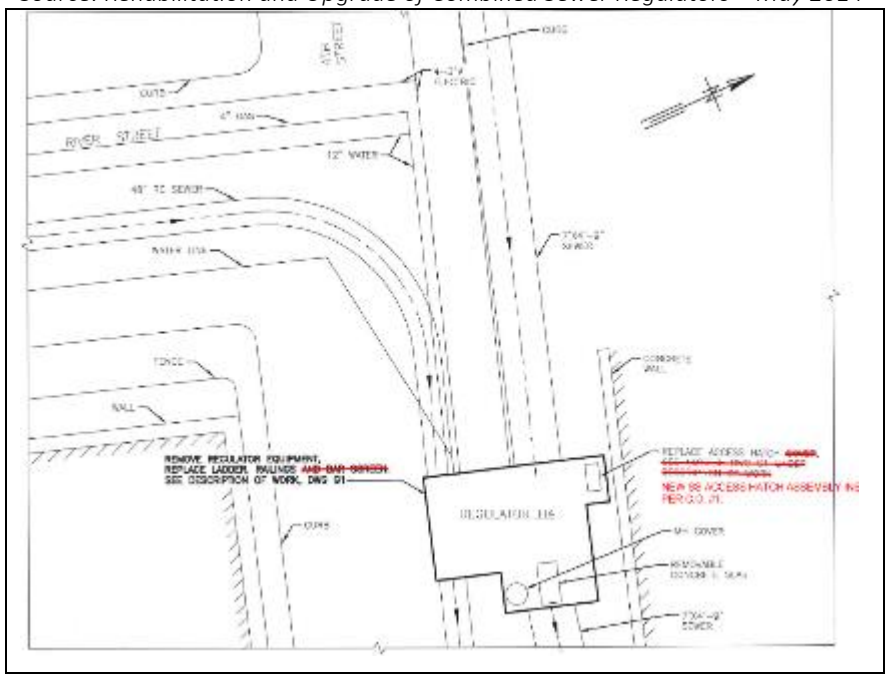
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-20. H4 Regulator Location Plan

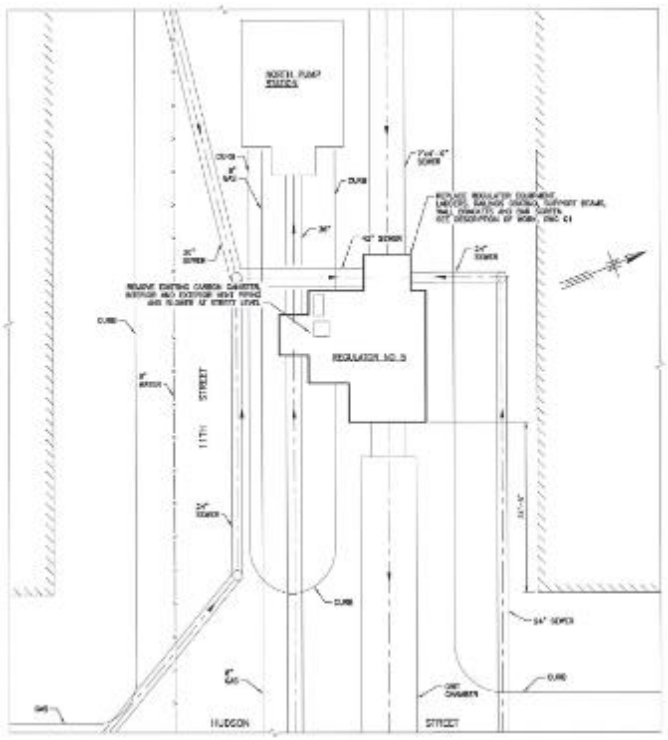
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-21. H5 Regulator Location Plan

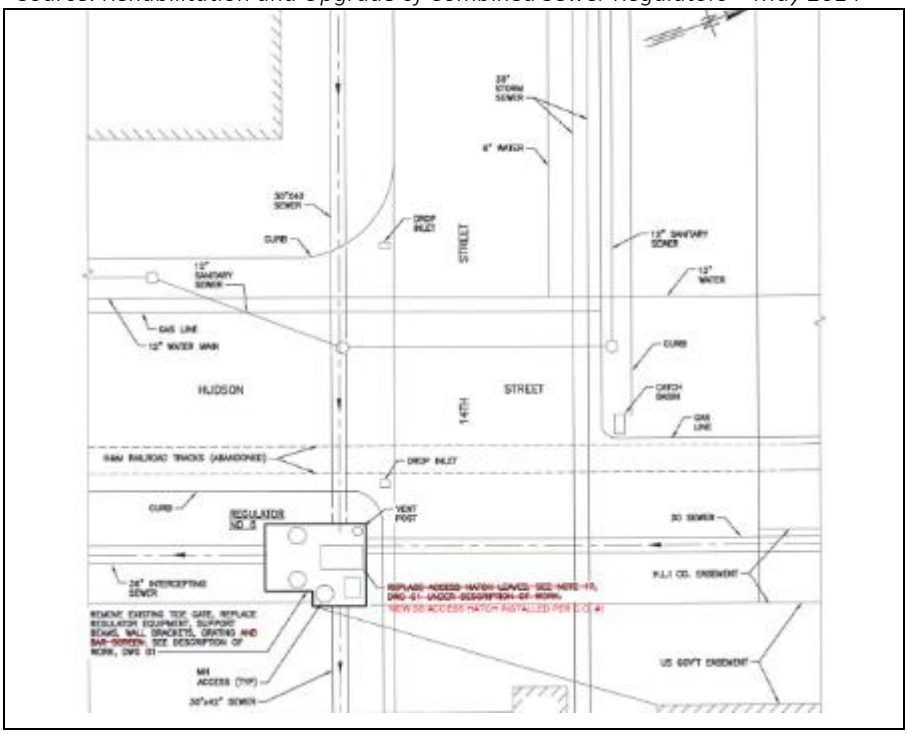
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-22. H6 Regulator Location Plan

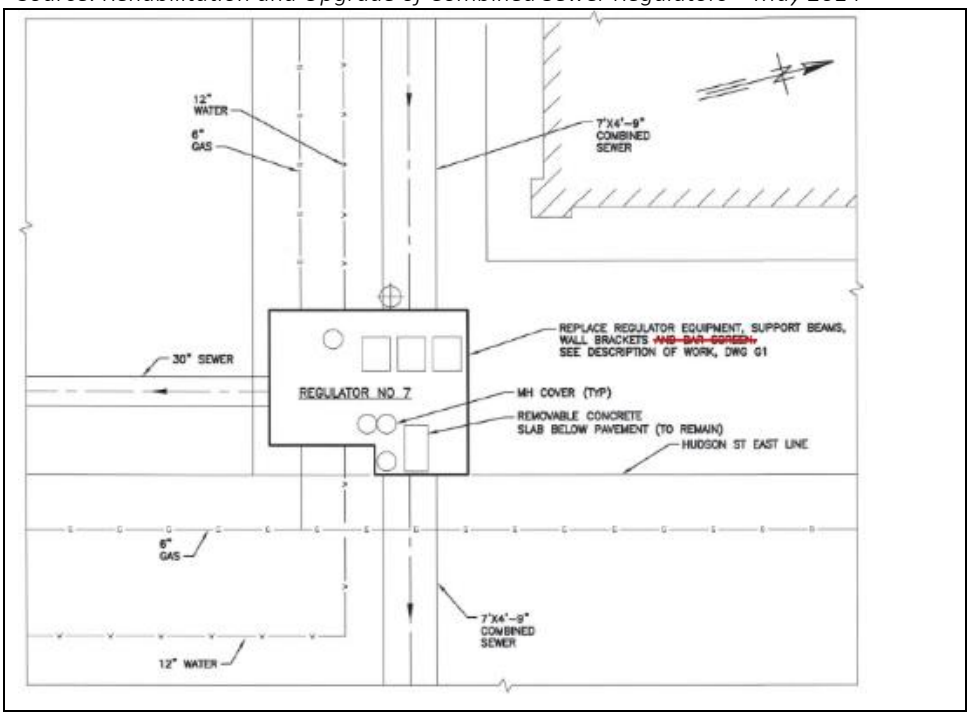
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-23. H7 Regulator Location Plan

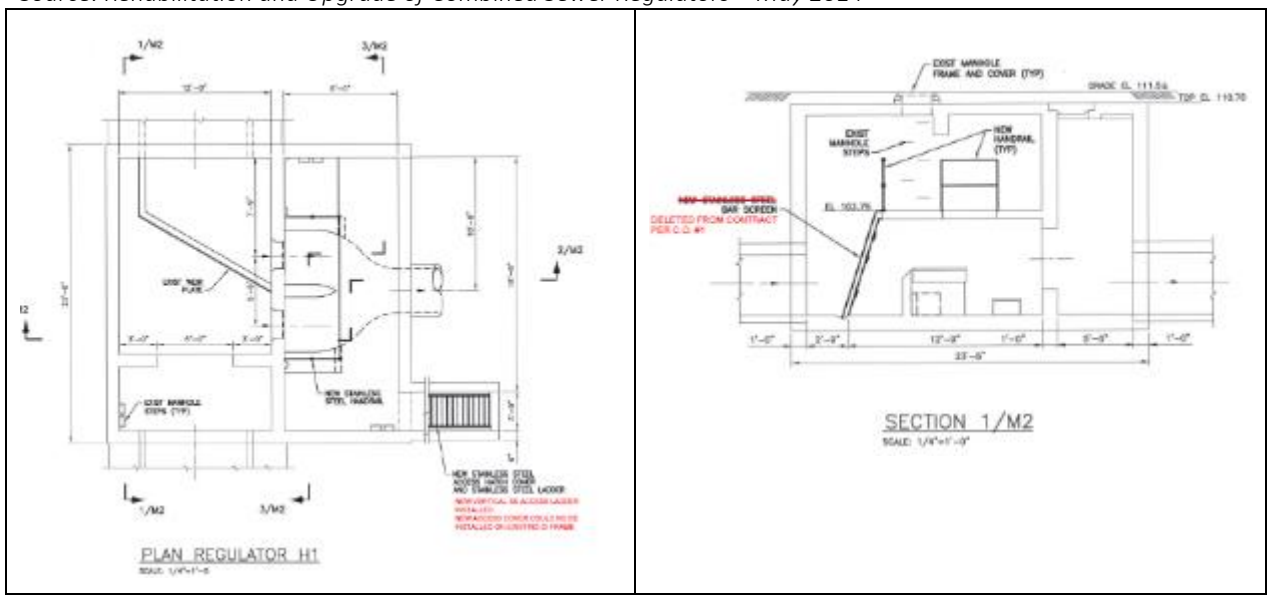
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-24. H1 Regulator Plan and Section

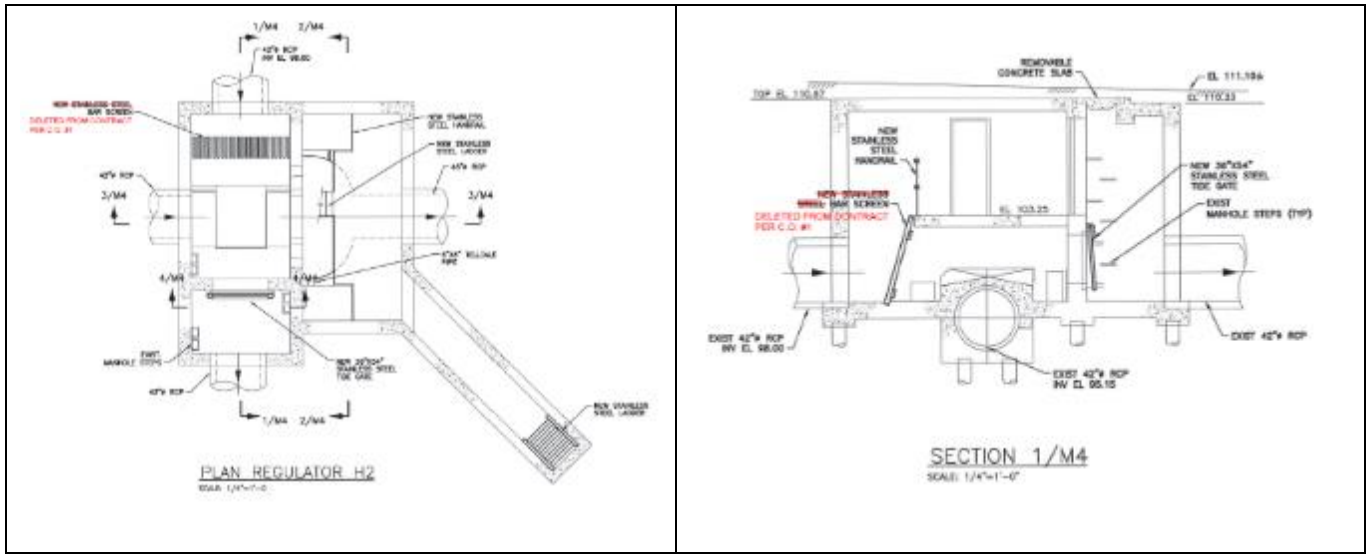
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-25. H2 Regulator Plan and Section

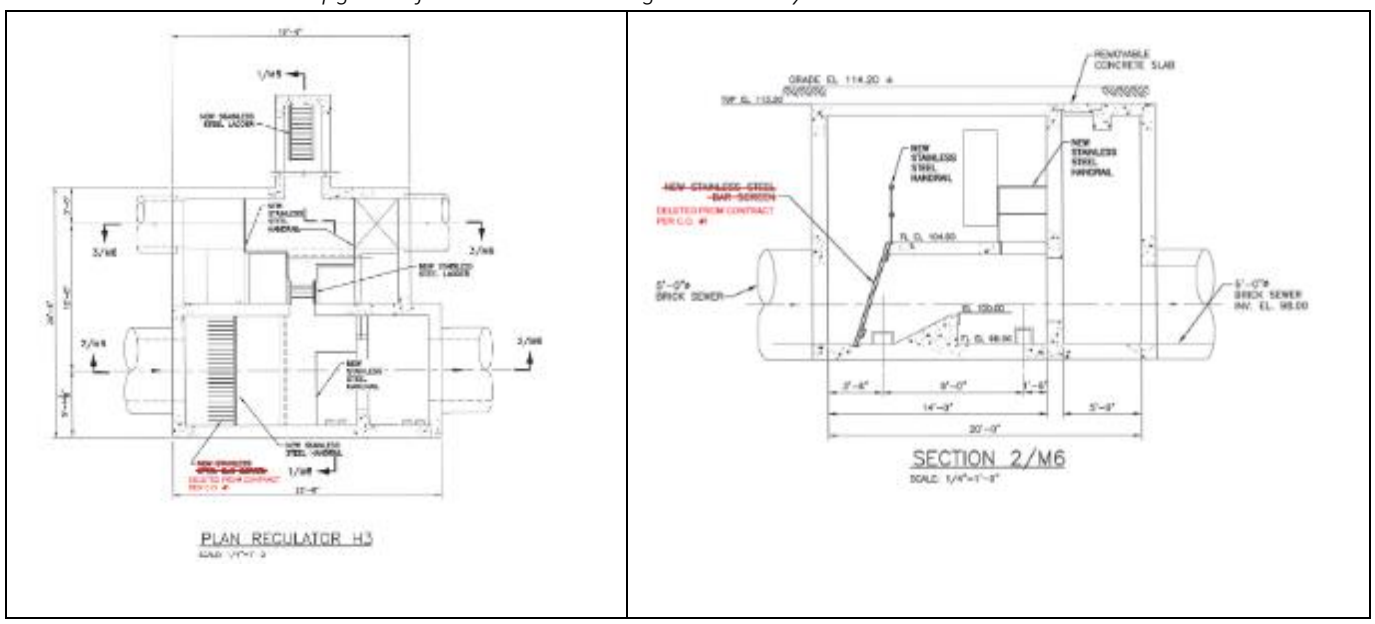
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-26. H3 Regulator Plan and Section

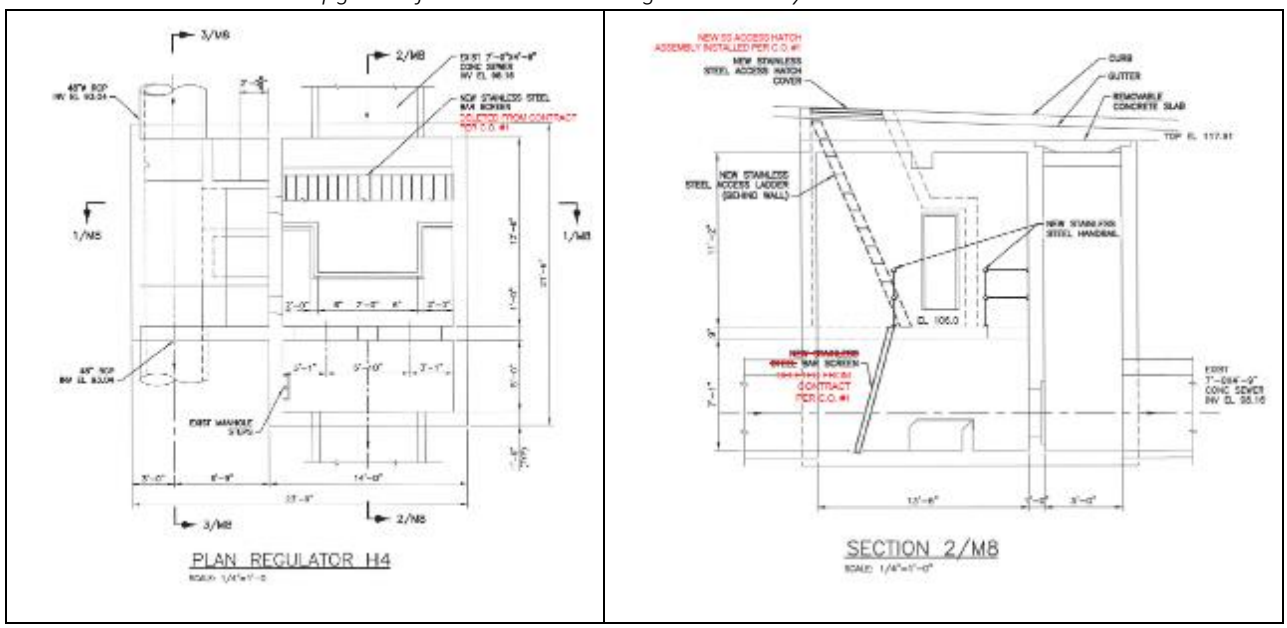
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-27. H4 Regulator Plan and Section

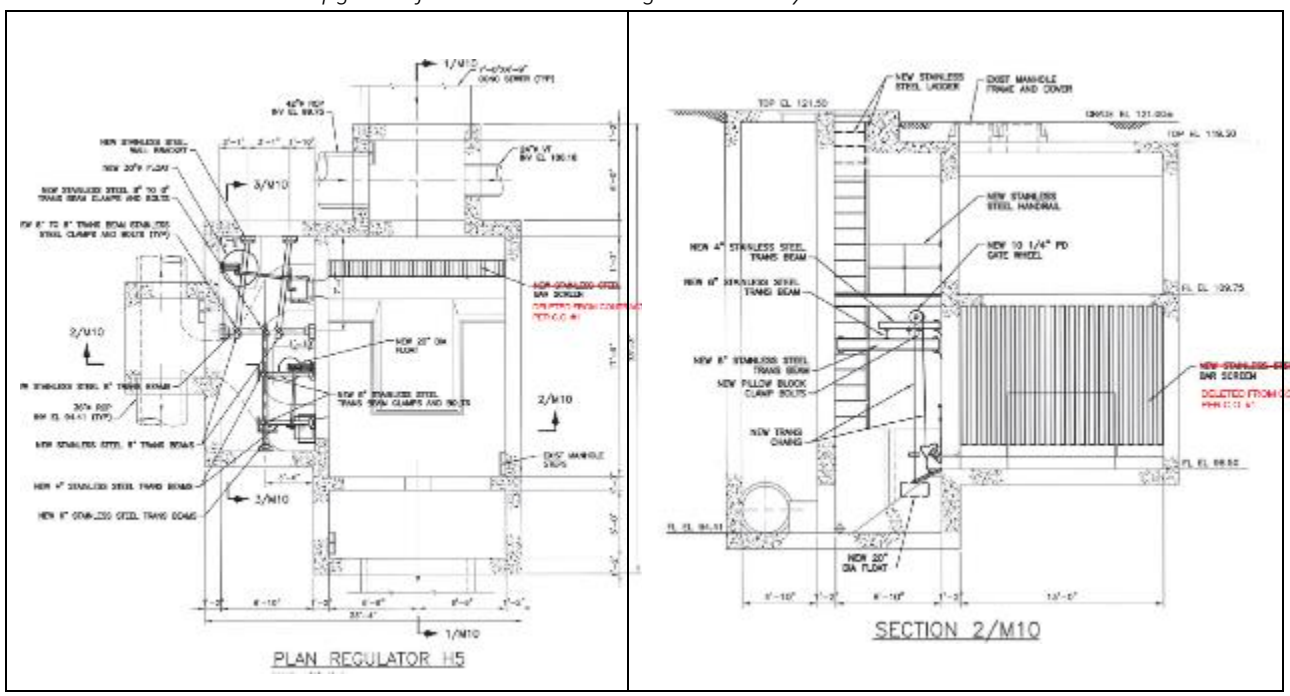
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-28. H5 Regulator Plan and Section

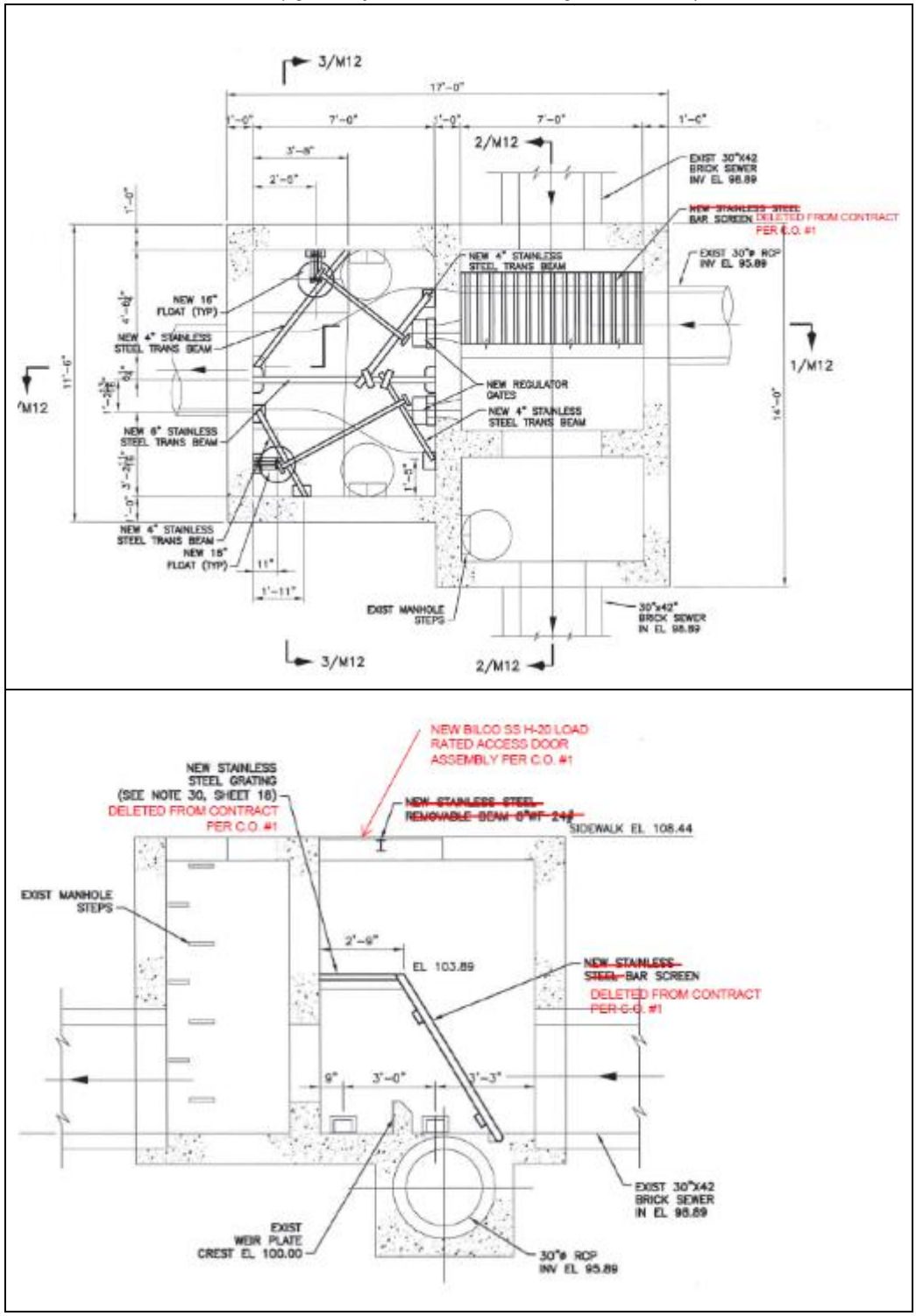
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-29. H6 Regulator Plan and Section

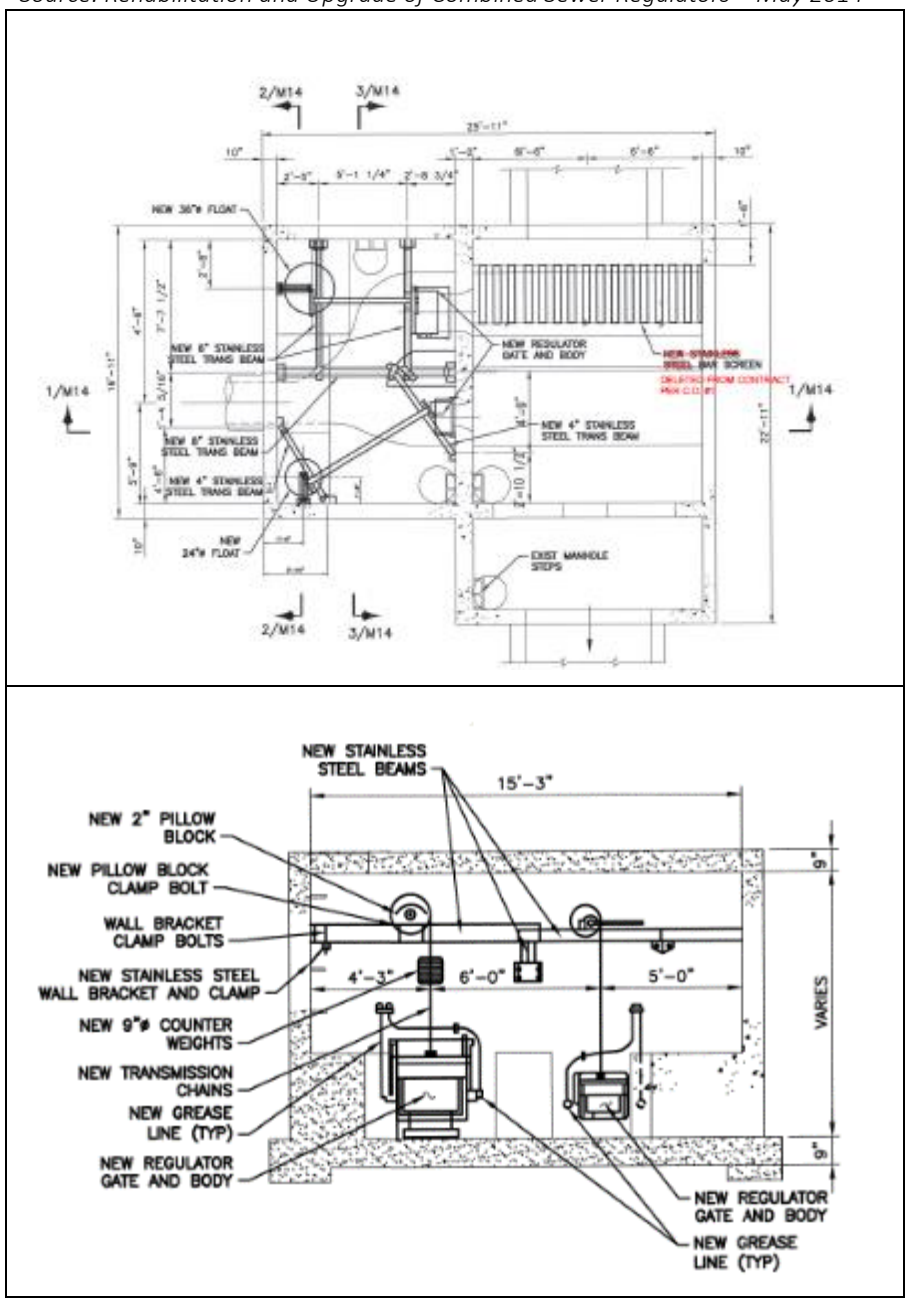
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-30. H7 Regulator Plan and Section

Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

3.3.2 Weehawken Regulators

The five regulators in Weehawken are similar to those in Hoboken, however they are not equipped with tide gates because they are all located well above the highest high tide elevation. Three of the five regulators (W1, W2 and W3) are manually operated. CSOs from regulators W1, W2, W3 and W4 discharge through outfall 013A. Regulator W5 discharges at outfall 015A. As with the Hoboken regulators, regular maintenance is required to keep the regulators functioning properly. Cable systems were installed in Regulators W1, W2, and W3 to enable operators to manually control the regulators during storms without having to enter the chambers. The float and gate mechanisms for regulators W4 and W5 did not operate efficiently due to the high velocity flows entering the regulators from steep sloped interceptors and were recently rehabilitated as part of the Regulators Improvements Project. Table 3-9 summarizes the dimensions of the Weehawken regulators. Figure 3-31 through Figure 3-35 show locations of the Weehawken regulators and Figure 3-36 through Figure 3-40 show plan and profile views of the Weehawken regulators.

Table 3-9. Weehawken Regulator Dimensions
Source: Reference Document 5, updated

Dimension Reference No.	Hydraulic Element	Parameter	Regulator				
			W1	W2	W3	W4	W5
1	Inlet Trunk Sewer (s)	Dimensions	45”	30”	30”	36”	24”
		Invert Elevation	54.44	50.45	51.80	22.25	137.30
		Material	BR	CI	CI	RCP	BR
		Dimensions	NA	30”	NA	NA	12”
		Invert Elevation		50.45			TBD
		Material		CI			CI
2	CSO Outfall	Dimensions	72” and 96” Twin Outfalls				12”
		Invert Elevation	-7.58 and -10.30				TBD
		Material	RCP and RCCP				CI
3	Interceptor	Dimensions	30”	30”	30”	12”	12”
		Invert Elevation	52.50	48.50	49.85	20.25	136.18
		Material	RCP	RCP	RCP	RCP	RCP
4	Regulator Gate	Mrf. Model No.	#0	#3-A	#0	#4-0	#7-0
		Open Dim.	7-1/2” x 15-3/8”	12”x21”	7-1/2” x 15-3/8”	7-1/2” x 7-3/4”	5” x 6”
		Closed Dim.	3-1/2” x 15-3/8”	5-7/8” x 21”	2-7/8” x 15-3/8”	2-1/2” x 7-3/4”	1” x 6”
		Invert Elevation	53.82	49.00	50.35	20.75	136.68
5	Sluice Gate	Open Dim.	6-1/2” x 27”	6-1/8” x 27”	4-1/2” x 21”	4-3/8” x 11”	2-3/8” x 6”
		Invert Elevation	52.50	48.50	49.85	20.25	136.18
6	Baffle Wall/Weir Plate	Invert Elevation	54.84	NA	NA	22.75	137.30

Table 3-9. Weehawken Regulator Dimensions

Source: Reference Document 5, updated

Dimension Reference No.	Hydraulic Element	Parameter	Regulator				
			W1	W2	W3	W4	W5

Notes:

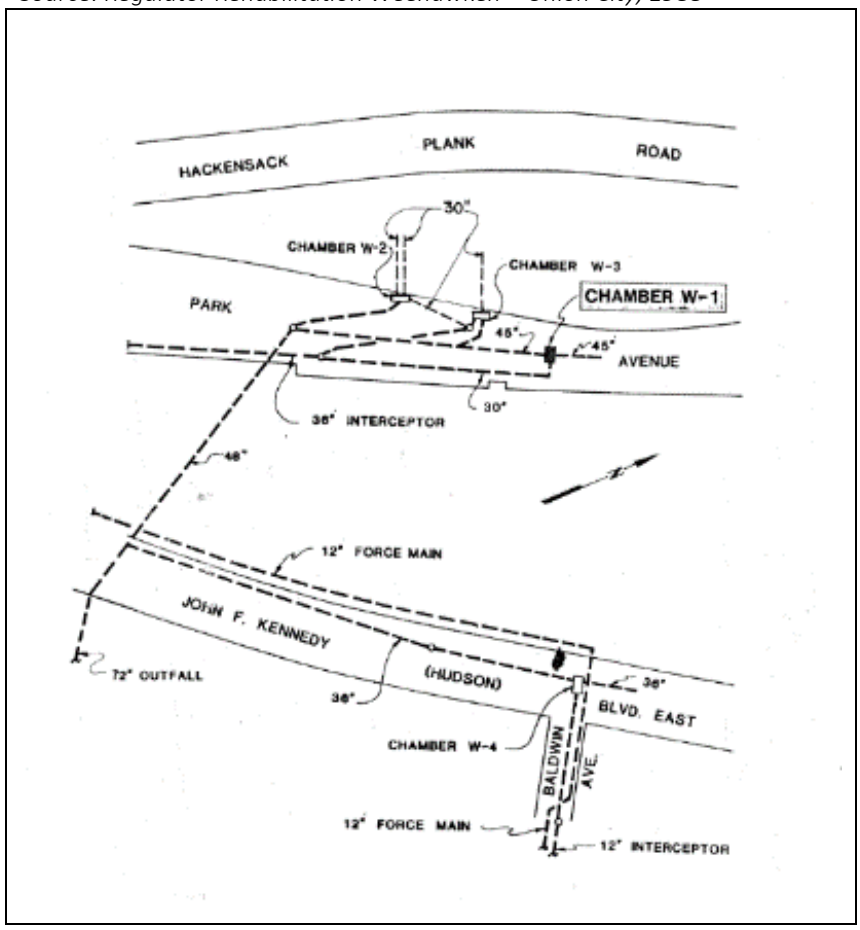
1. Invert elevations are based on 1986 LMS rehabilitation drawings. Original mean sea level datum of 300 feet has been converted to 0.0 feet.
2. Regulator gate manufacturer is Brown & Brown, Inc., Lima, Ohio.
3. Sluice gates are fabricated from two sheets of metal. Dimensions shown are effective opening.
4. NA indicates that feature does not exist in this regulator.
5. Abbreviations:

   BR – Brick CI – Cast Iron

   RCP – Reinforced Concrete Pipe VC – Vitrified Clay

Figure 3-31. W1 Regulator Location

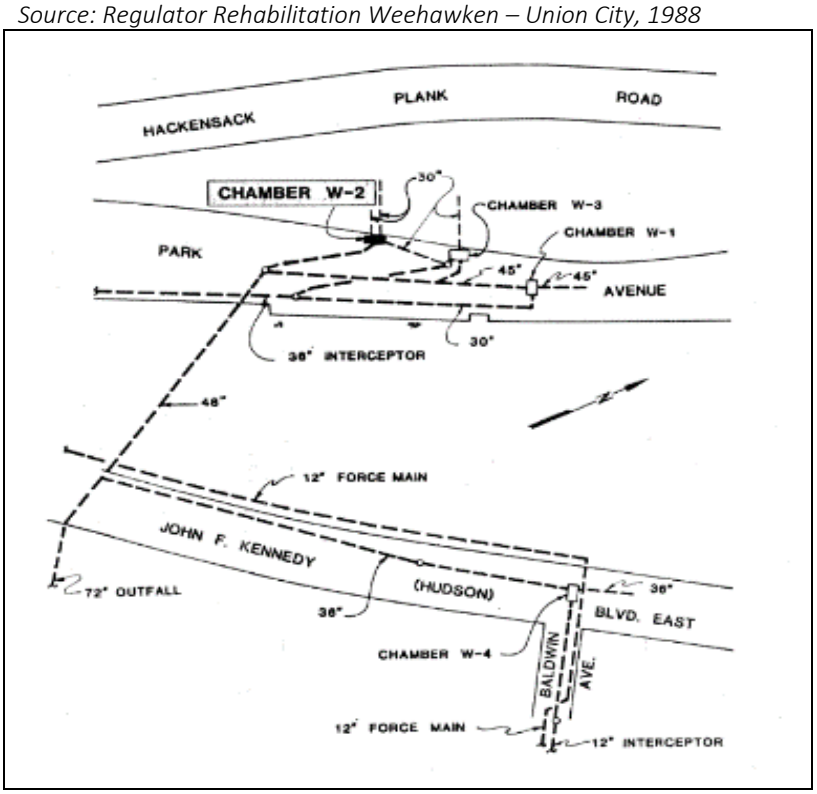
Source: Regulator Rehabilitation Weehawken – Union City, 1988



Scales not applicable

Figure 3-32. W2 Regulator Location

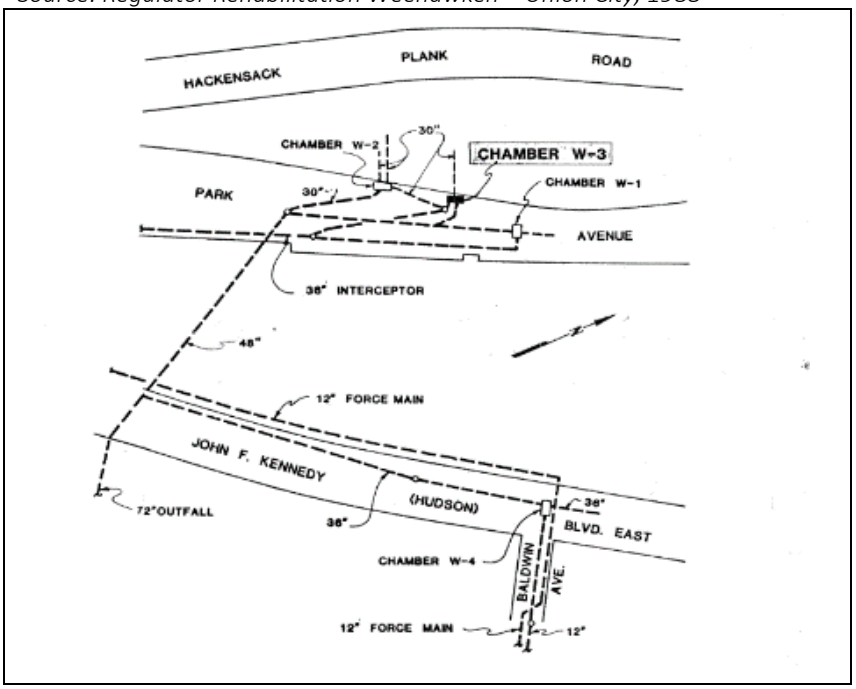
Source: Regulator Rehabilitation Weehawken – Union City, 1988



Scales not applicable

Figure 3-33. W3 Regulator Location

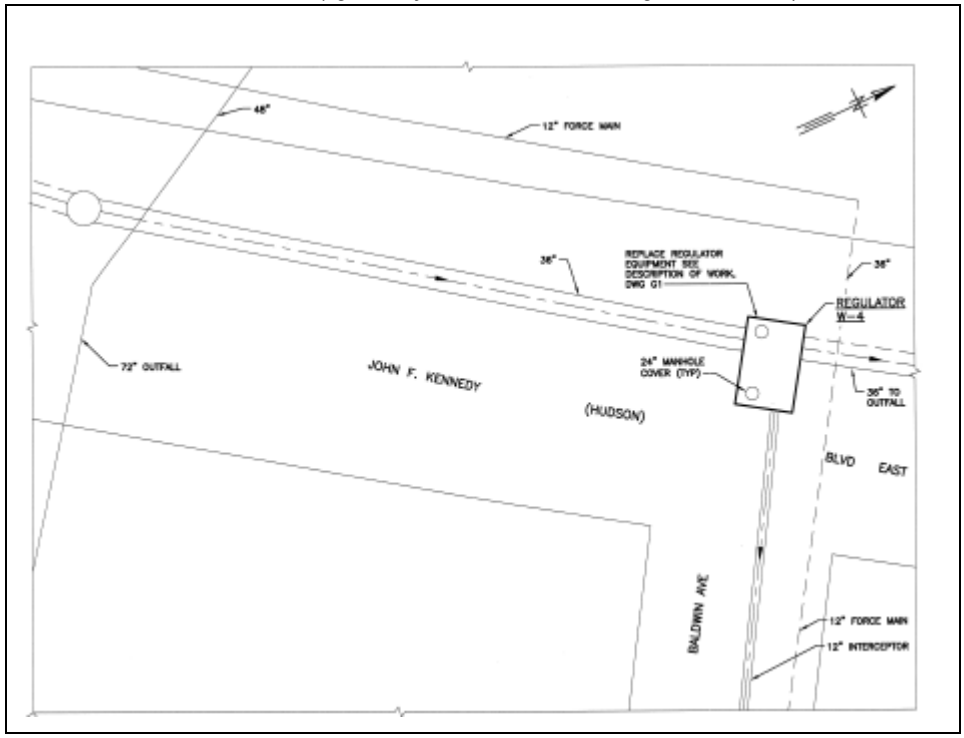
Source: Regulator Rehabilitation Weehawken – Union City, 1988



Scales not applicable

Figure 3-34. W4 Regulator Location

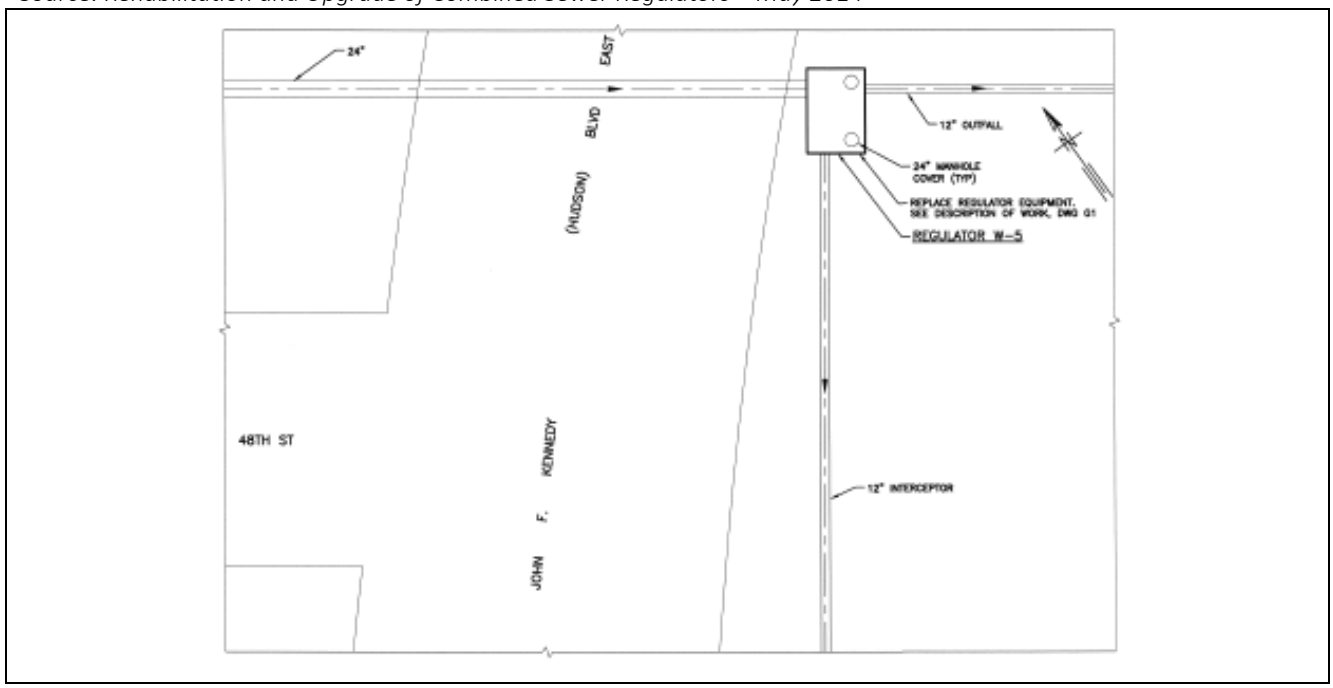
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-35. W5 Regulator Location

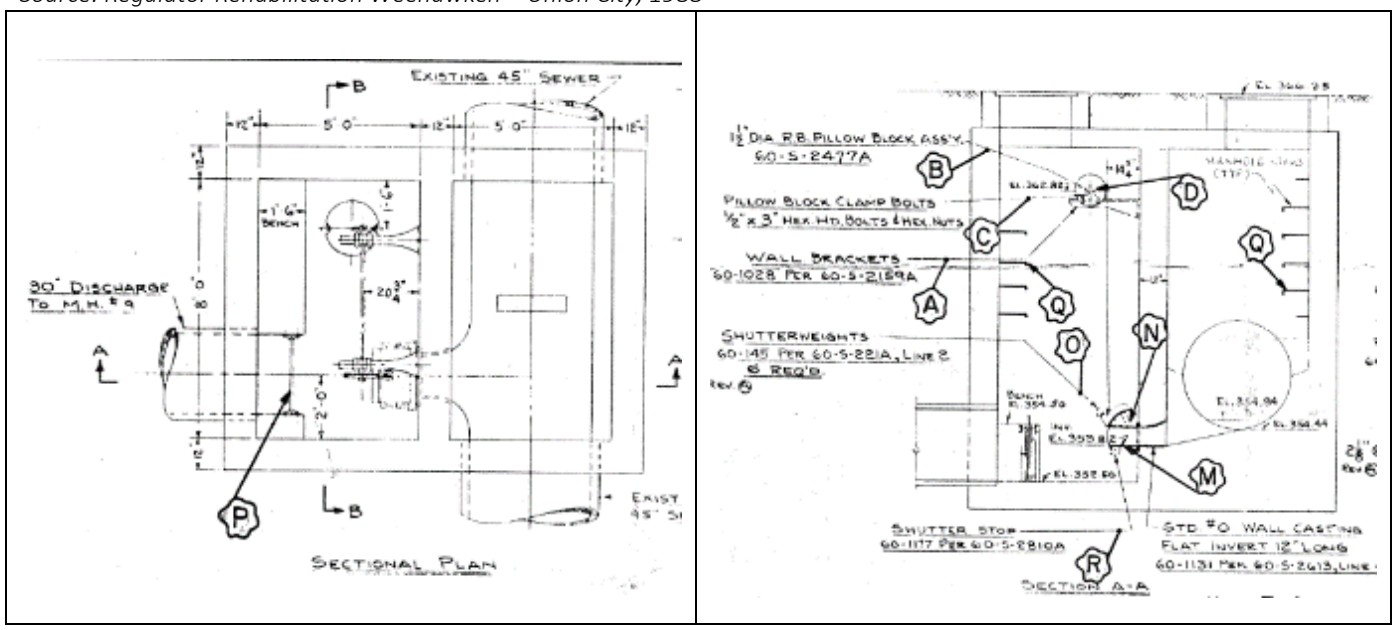
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-36. W1 Regulator Plan and Section

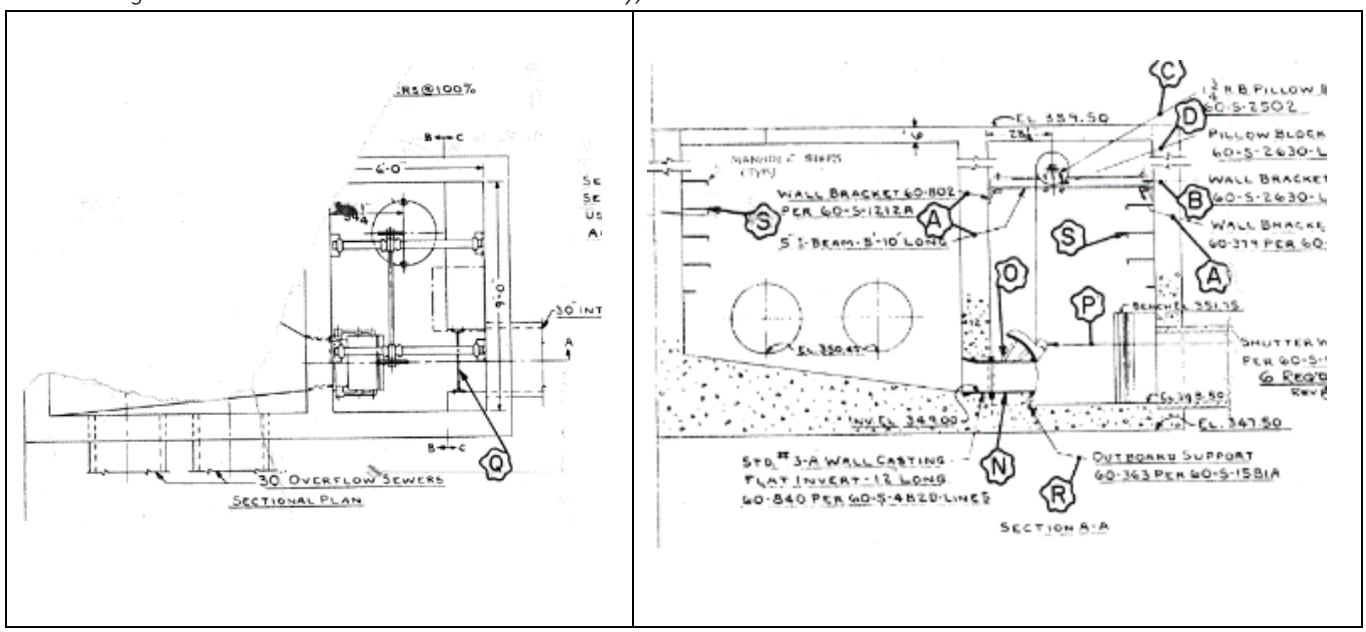
Source: Regulator Rehabilitation Weehawken – Union City, 1988



Scales not applicable

Figure 3-37. W2 Regulator Plan and Section

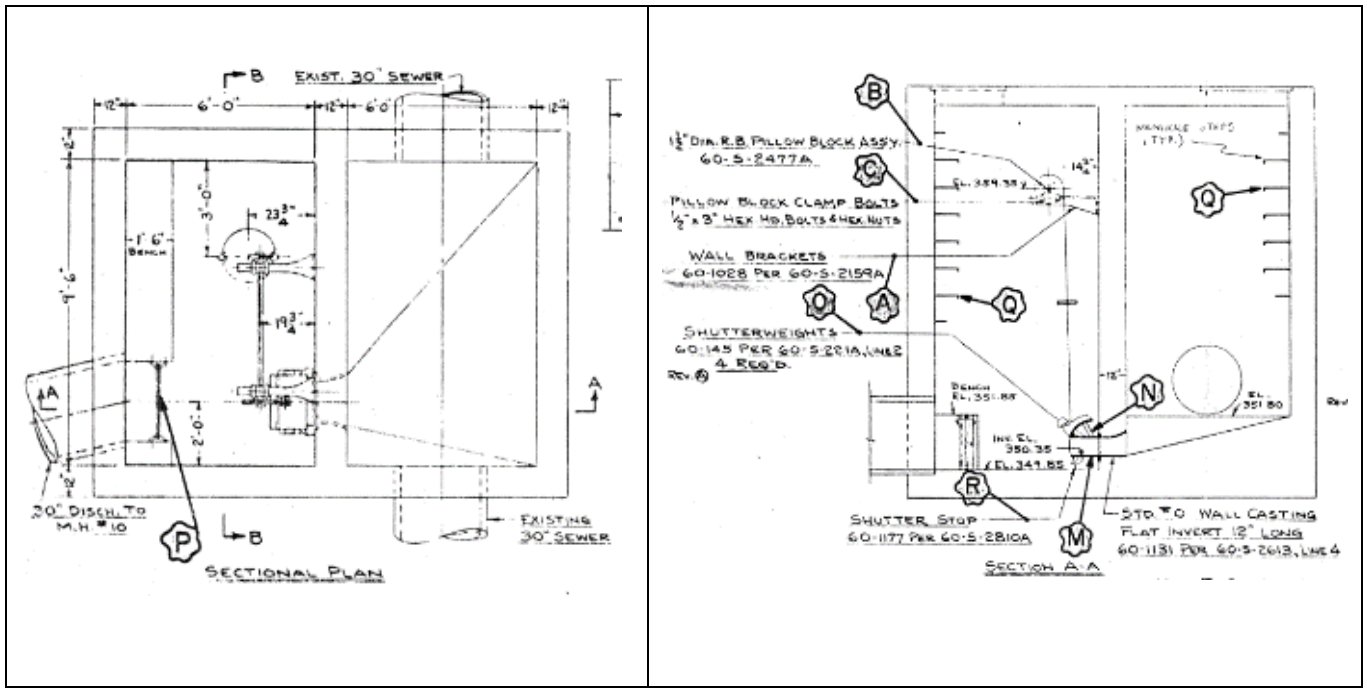
Source: Regulator Rehabilitation Weehawken – Union City, 1988



Scales not applicable

Figure 3-38. W3 Regulator Plan and Section

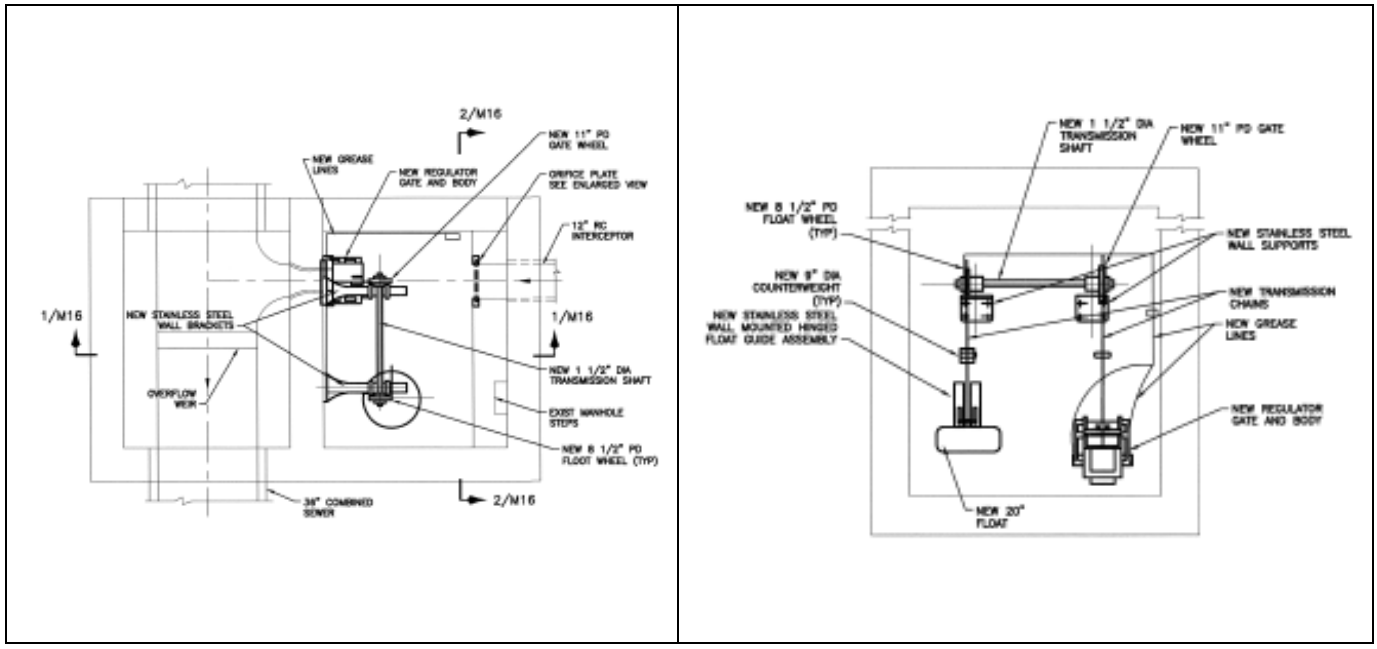
Source: Regulator Rehabilitation Weehawken – Union City, 1988



Scales not applicable

Figure 3-39. W4 Regulator Plan and Section

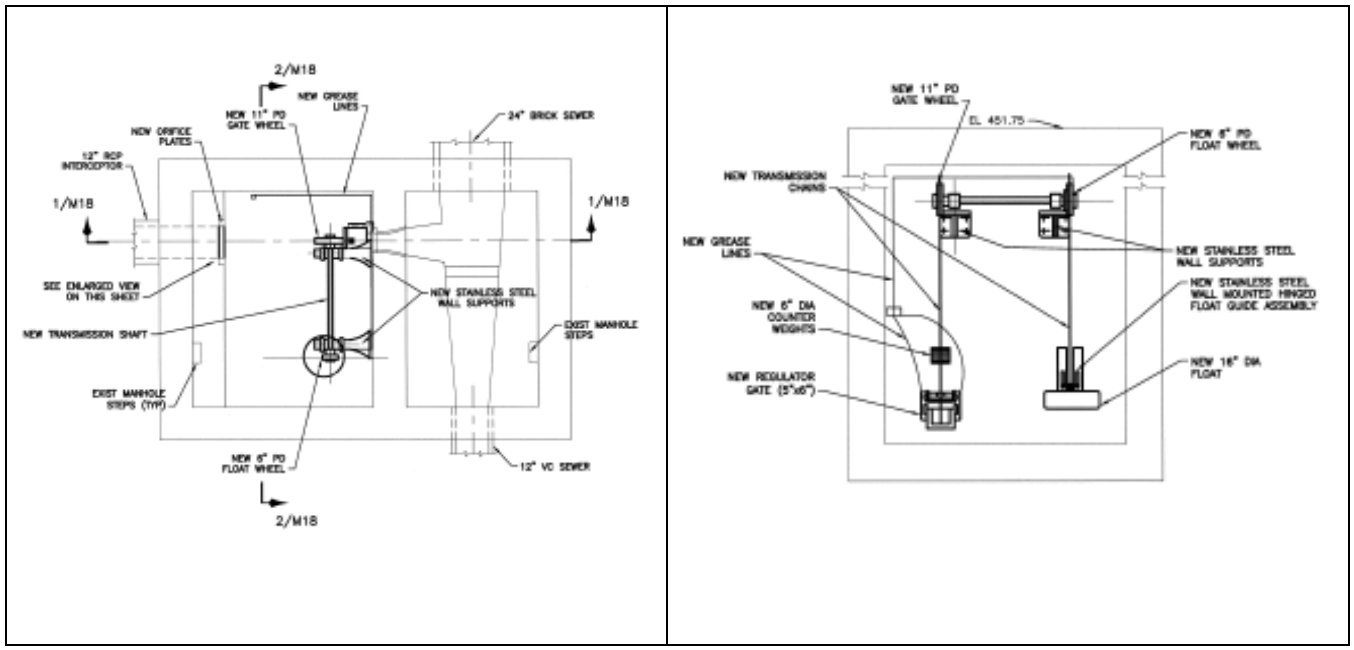
Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

Figure 3-40. W5 Regulator Plan and Section

Source: Rehabilitation and Upgrade of Combined Sewer Regulators – May 2014



Scales not applicable

3.4 CSO Outfalls

The Authority owns a total of nine (9) CSO Outfalls in the Adams Street Service Area, as summarized in Table 3-10. An evaluation of each outfall's capacity, dimensions, age, type of material and specific location was performed based on a combination of historical data review, GIS data, fieldwork, and modeling. Figure 3-41 shows the locations and alignments of the outfalls from each of the CSO control facilities. Table 3-10 summarizes construction materials, dimensions and elevations of each of the outfalls. There are no record drawings for Outfall 015A as the outfall was relocated by Roseland Property Company around 2004.

Table 3-10. NHSA Adams Street WWTP Service Area CSO Outfalls General Information

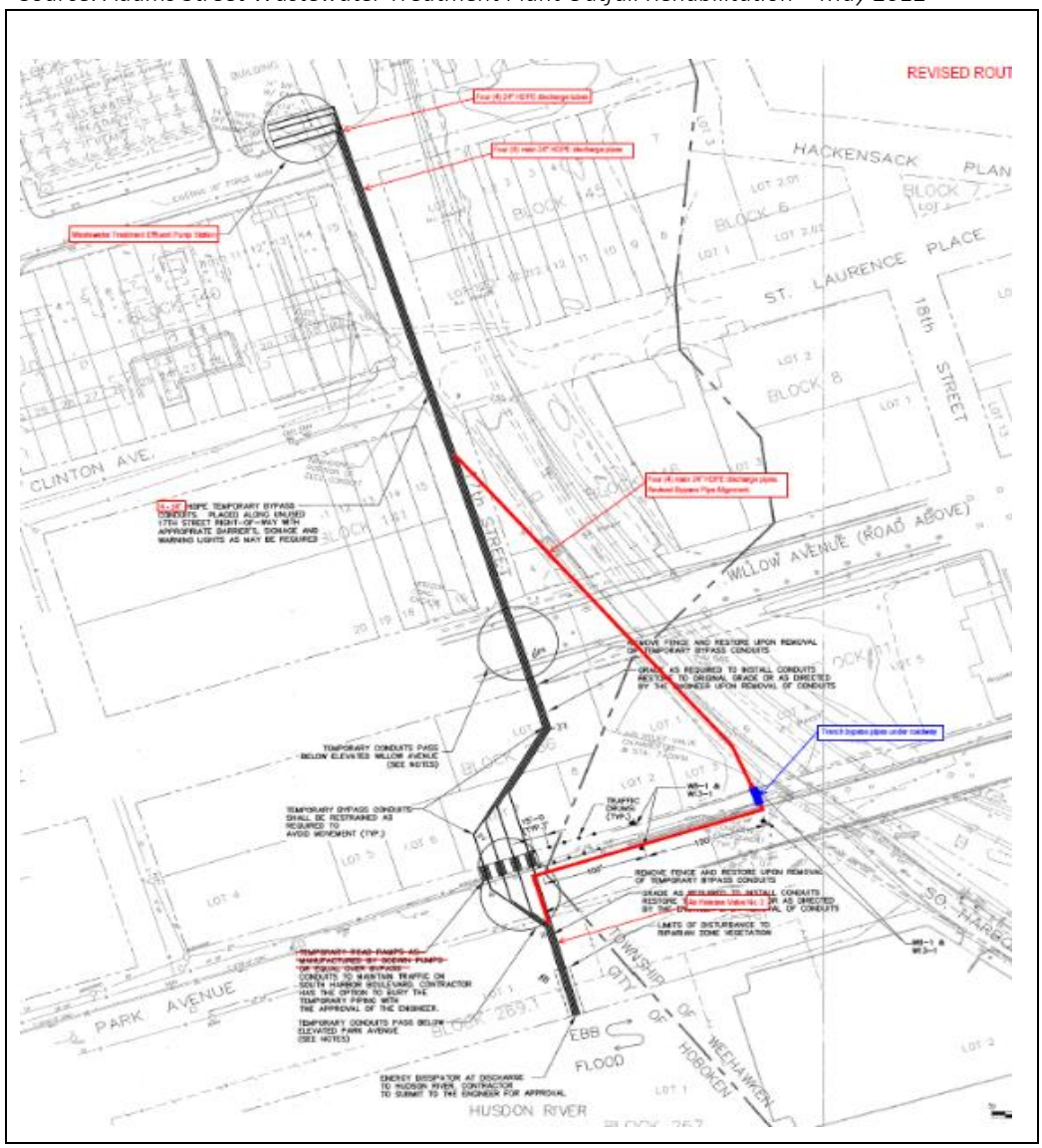
Outfall NJPDES DSN	NHSA Name	Associated Regulator(s)	Dimensions	Material	Invert Elevation (ft)
001A	WWTP	-	48"	RCP	-3.7
002A	H1	H1	42"	DIP	-4.00
003A	H2	H2	12'X6'	RC	-5.50
005A	H3/H4/HSI	H3, H4, HSI	7'x4'9"	RCP	-1.86
006A	H5	H5	72"	RCP	-3.27
008A	H6/H7	H6, H7	8'6"x4'2"	RCP	-2.00
012A	18th Street	18th Street PS	48"	DIP	-4.00
013A	W1234	W1, W2, W3, W4	72" 96"	RCP RCCP	-7.58 -10.30
015A	W5	W5	12"	CI	TBD

3.4.1 Outfall 001A

Outfall 001A is the Adams Street WWTP sanitary outfall that discharges to the Hudson River at Latitude N: 40 degrees 45 minutes 13 seconds and Longitude @: 74 degrees 01 minutes 15 seconds. The outfall was rehabilitated in 2014 and is a 48-inch RCP. Figure 3-41 shows a plan view of the alignment from the Adams Street WWTP to the Hudson River.

Figure 3-41. NHSA Outfall 001A Plan

Source: Adams Street Wastewater Treatment Plant Outfall Rehabilitation – May 2012



Scale not applicable.

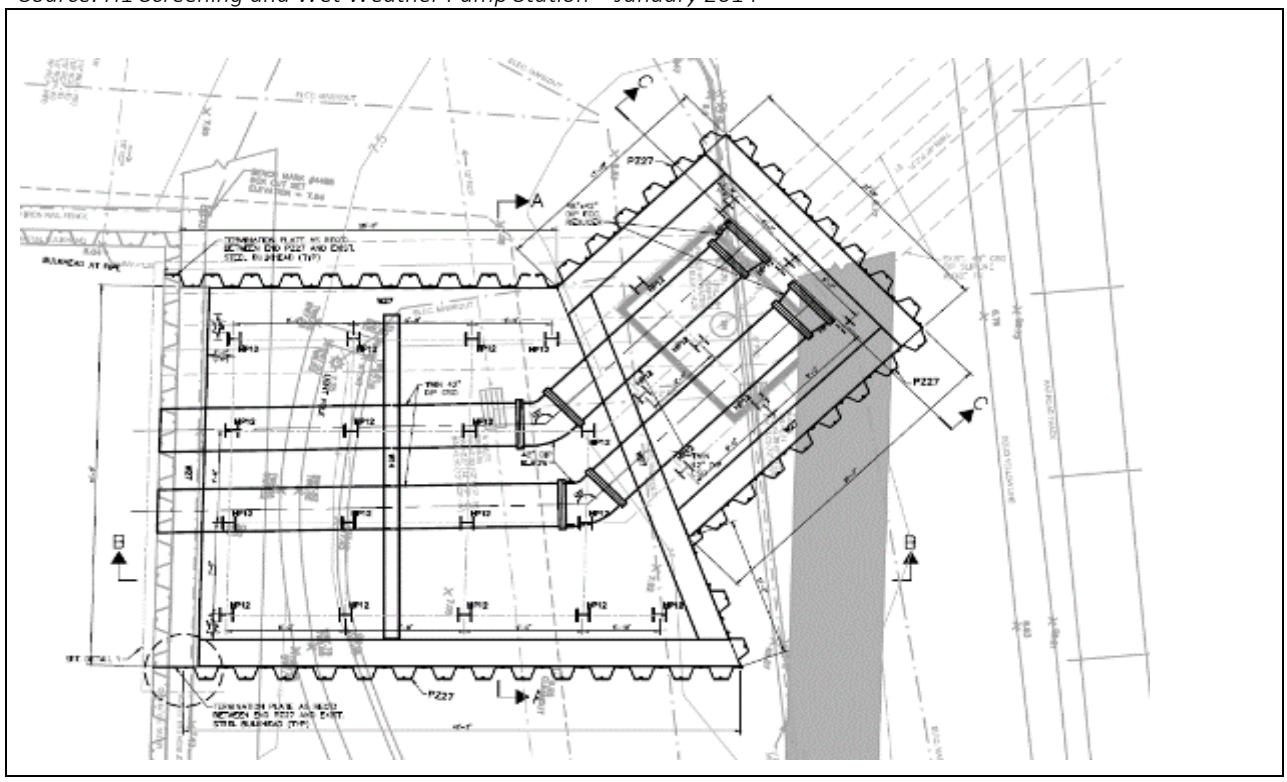
3.4.2 Outfall 002A

CSO Outfall 002A is located at Observer Highway and River Street. There are two discharge pipes from the H1 Screening and Wet Weather Pump Station to the Hudson River, the East Outfall and West Outfall. The two pipes are separate from each other, they are not tied together with valves or piping. The East pump discharges into the East outfall pipeline. Similarly, the west pump discharges into the west outfall pipeline. When a pump is called into service, the flow from the pump closes the gravity check valve connected to its pipeline, preventing recirculation of pumped flow into the pump station sump area.

This action also seals off gravity flow from the pump station to the river. Both outfall pipes originate at the H1 Wet Weather Pump Station as 36-inch ductile iron pipe transitioning to 48-inch diameter cured in place pipe (CIPP) at the location of the old “gate chamber.” The 48-inch section is approximately 480 feet long and transitions to a 42-inch CIPP. The 42-inch CIPP pipeline is approximately 40 feet long and terminates immediately upstream of the 42-inch ductile iron tee fitting near the end of the outfall. From the tee fitting to the bulkhead at the Hudson river, the outfall pipe is 42-inch ductile iron pipe and the section is approximately 84 feet long. Figure 3-42 shows a plan view of the twin outfalls and Figure 3-43 shows a profile view.

Figure 3-42. NHSA Outfall 002A Plan

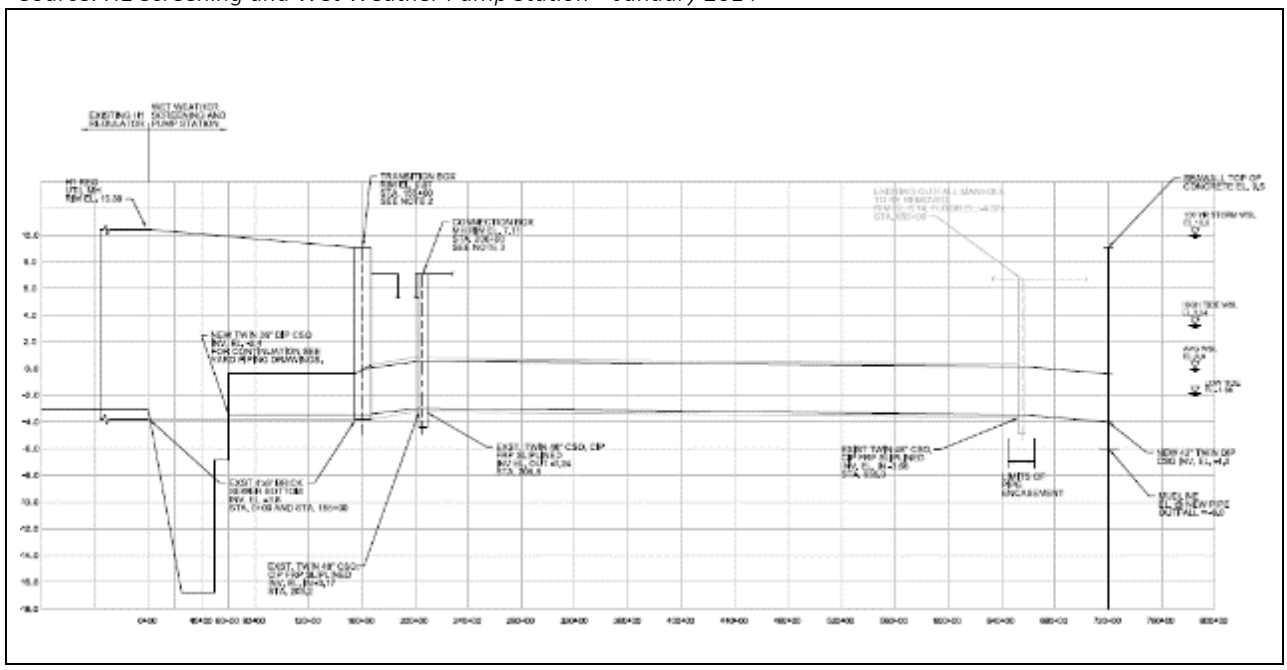
Source: H1 Screening and Wet Weather Pump Station – January 2014



Scale not applicable.

Figure 3-43. NHSA Outfall 002A Profile

Source: H1 Screening and Wet Weather Pump Station – January 2014



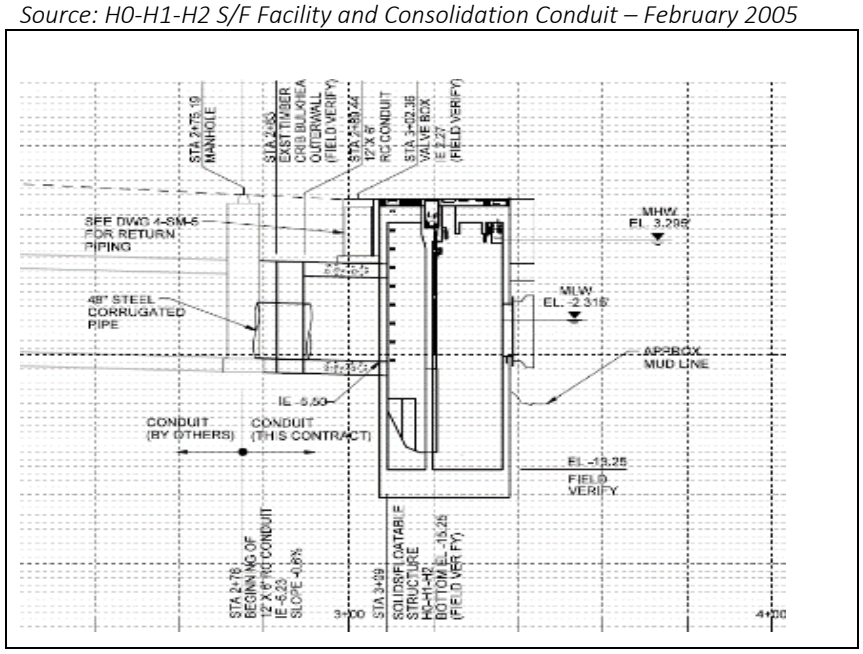
Scale not applicable.

3.4.3 Outfall 003A

CSO Outfall 003A is located at Newark Street and Sinatra Drive. A 12’ x 6’ reinforced concrete consolidation conduit was constructed to convey flow to the H2 S/F treatment facility. The facility consists of three (3) 48-inch tide flex check valves that act as tide gates on the Hudson River.

Figure 3-44. NHSA Outfall 003A Profile

Source: H0-H1-H2 S/F Facility and Consolidation Conduit – February 2005



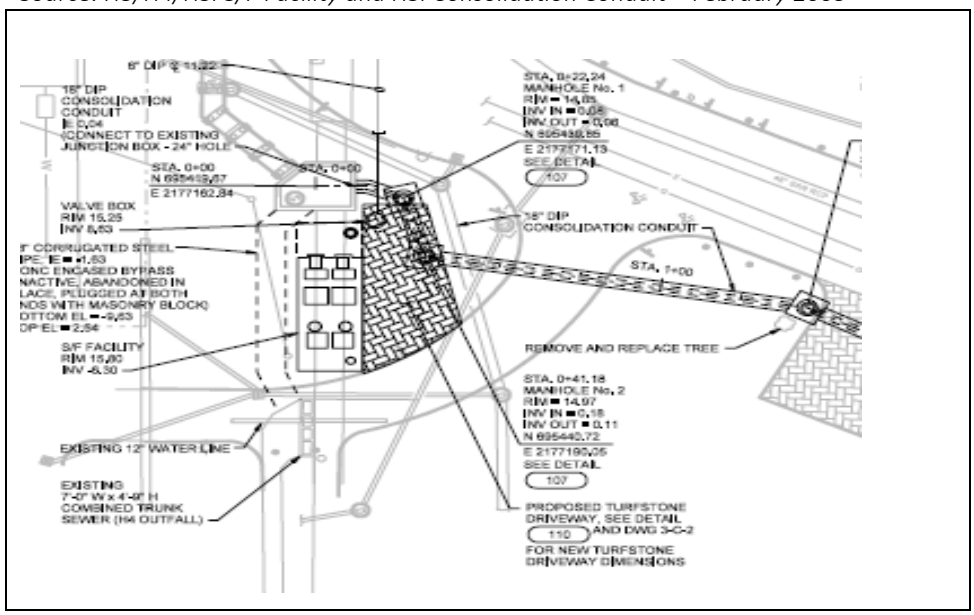
Scale not applicable.

3.4.4 Outfall 005A

CSO Outfall 005A is located at 4th Street and Sinatra Drive. An 18-inch DIP consolidation conduit was constructed to combine flow from regulators H3, H4, and HSI and convey to the H3/H4/HSI S/F facility. The facility ties into the existing 7'-0" W x 4'-9" H combined trunk sewer outfall. Figure 3-45 shows a plan view of the conduit, S/F facility and outfall, and Figure 3-46 shows a profile view.

Figure 3-45. NHSA Outfall 005A Plan

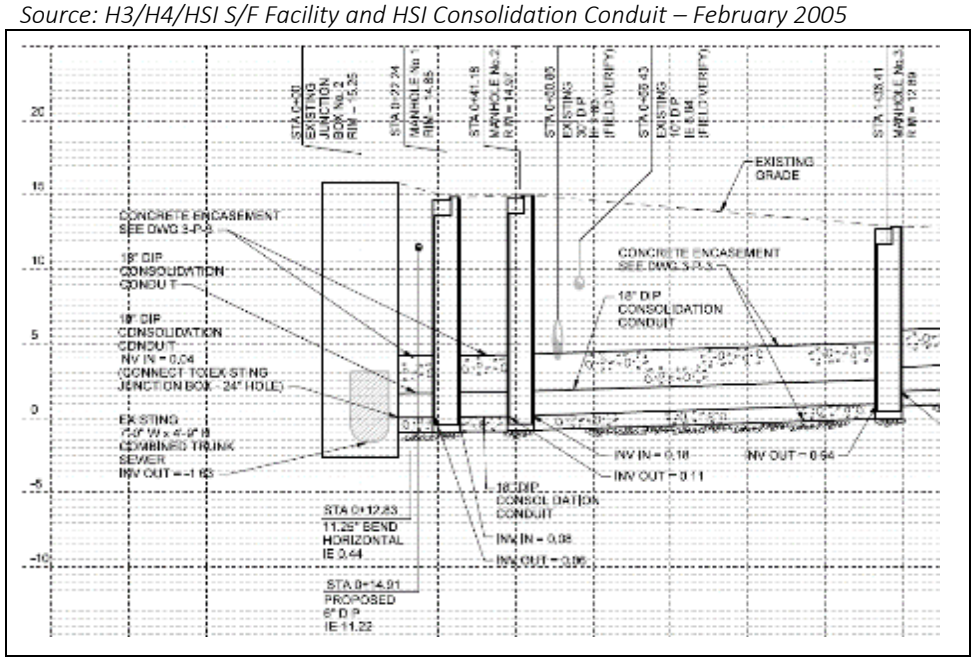
Source: H3/H4/HSI S/F Facility and HSI Consolidation Conduit – February 2005



Scale not applicable.

Figure 3-46. NHSA Outfall 005A Profile

Source: H3/H4/HSI S/F Facility and HSI Consolidation Conduit – February 2005



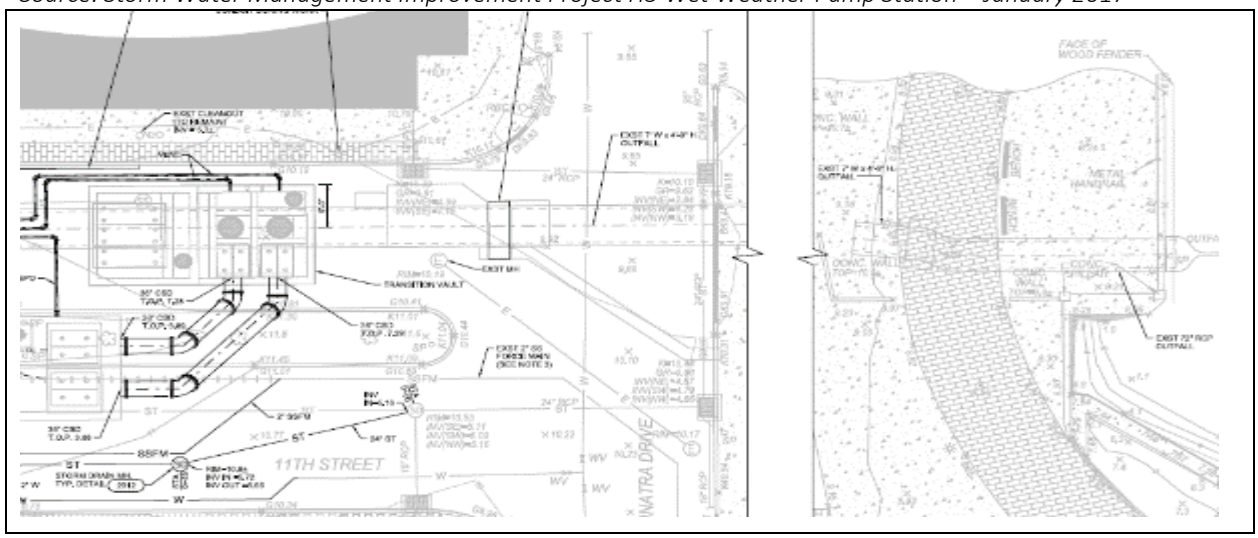
Scale not applicable.

3.4.5 Outfall 006A

CSO Outfall 006A is located at Maxwell Place and Sinatra Drive North. When the collection system is operating under gravity flow, CSOs from regulator H5 will discharge through the in-line 72-inch Tide flex valve (flexible check valve), and out the outfall to the Hudson River. When the H5 Wet Weather Pump Station is operating in the pumping mode the Tide flex valve will close, forcing the flow out of the end of the outfall into the Hudson River, and preventing the recirculation of flow into the upstream side of the pump station. Also, during periods of high tides in the River, which are not coincident with a wet weather event, the Tide flex valve prevents River water from entering the collection system. Figure 3-47 shows a plan view of the outfall and Figure 3-48 shows a profile view.

Figure 3-47. NHSA Outfall 006A Plan

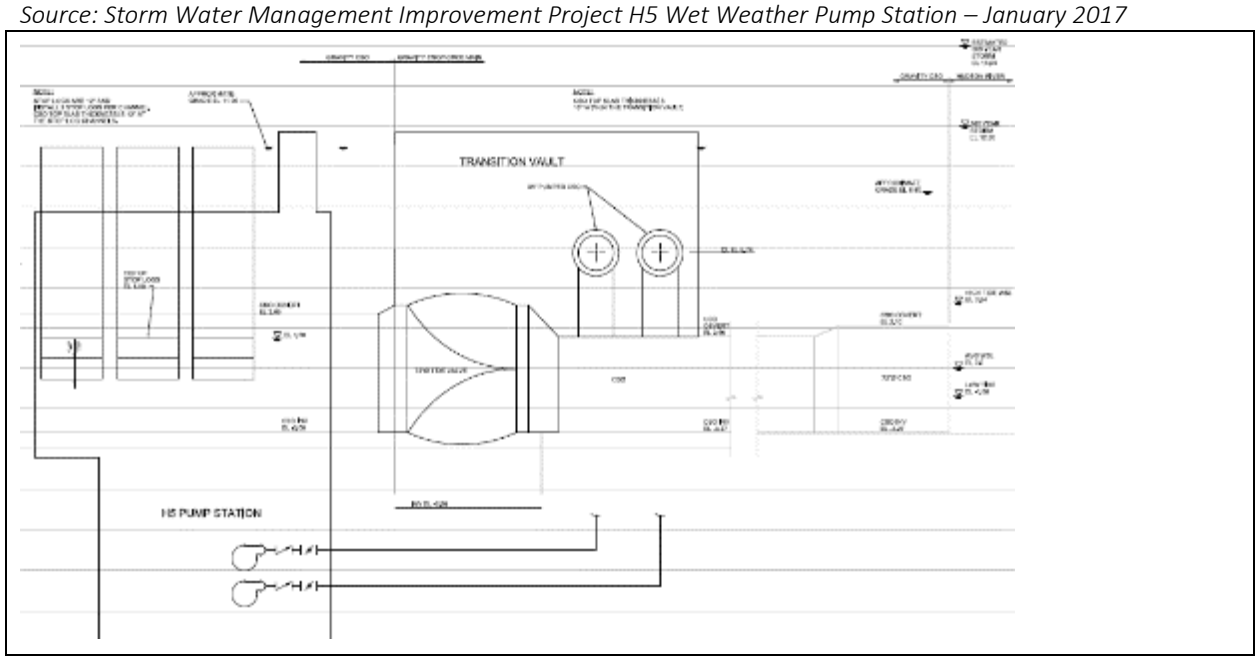
Source: Storm Water Management Improvement Project H5 Wet Weather Pump Station – January 2017



Scale not applicable.

Figure 3-48. NHSA Outfall 006A Profile

Source: Storm Water Management Improvement Project H5 Wet Weather Pump Station – January 2017



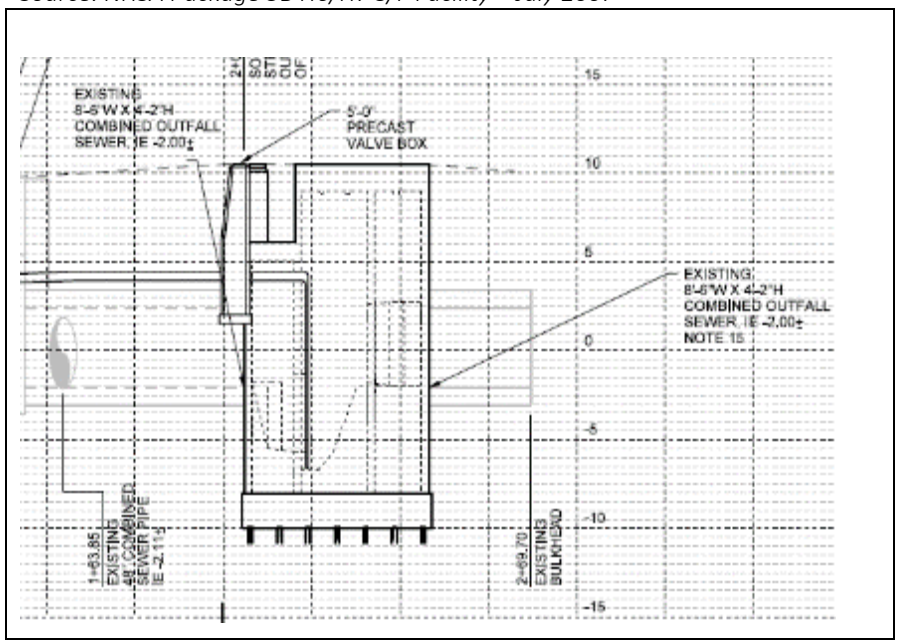
Scale not applicable.

3.4.6 Outfall 008A

CSO Outfall 008A is located at 15th Street and Sinatra Drive North. A 36-inch consolidation conduit was constructed to combine flow from regulators H6 and H7 and convey to the H6/H7 S/F facility. The facility ties into the existing 8’-6” W x 4’-2” H sewer outfall. Figure 3-49 shows a profile view of the S/F facility and outfall.

Figure 3-49. NHSA Outfall 008A Profile

Source: NHSA Package 3B H6/H7 S/F Facility – July 2007



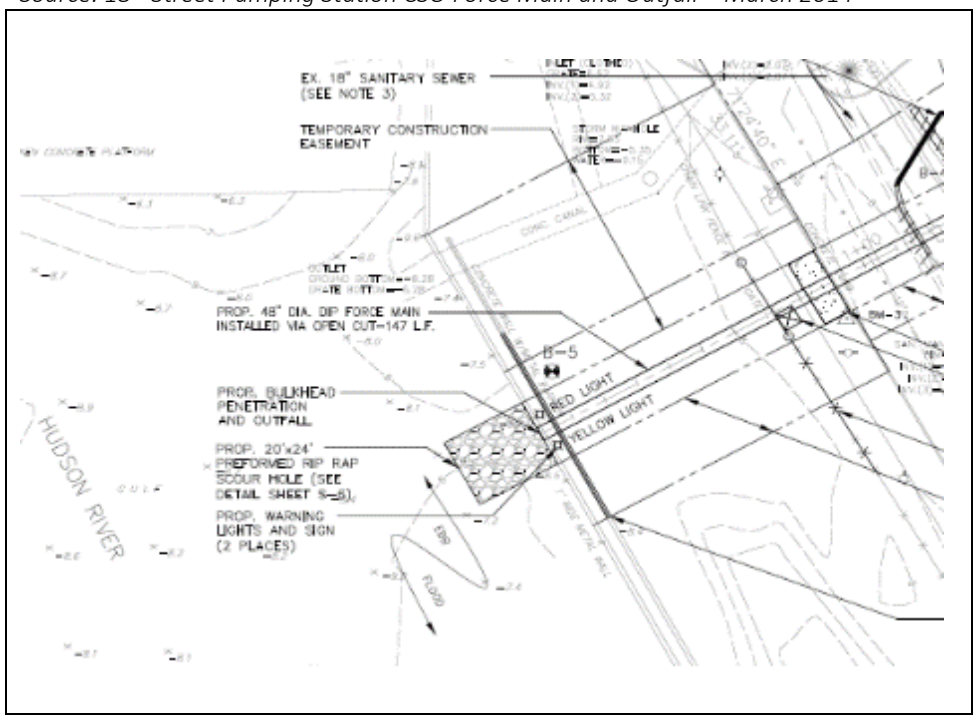
Scale not applicable.

3.4.7 Outfall 012A

CSO Outfall 0012A is located at 19th Street and Harbor Boulevard. Flow is conveyed through a 48-inch DIP force main from the 18th Street pumping station to the outfall consisting of a flexible flap gate. Plan and profile views of Outfall 012A are shown in Figure 3-50 and Figure 3-51, respectively.

Figure 3-50. NHSA Outfall 012A Plan

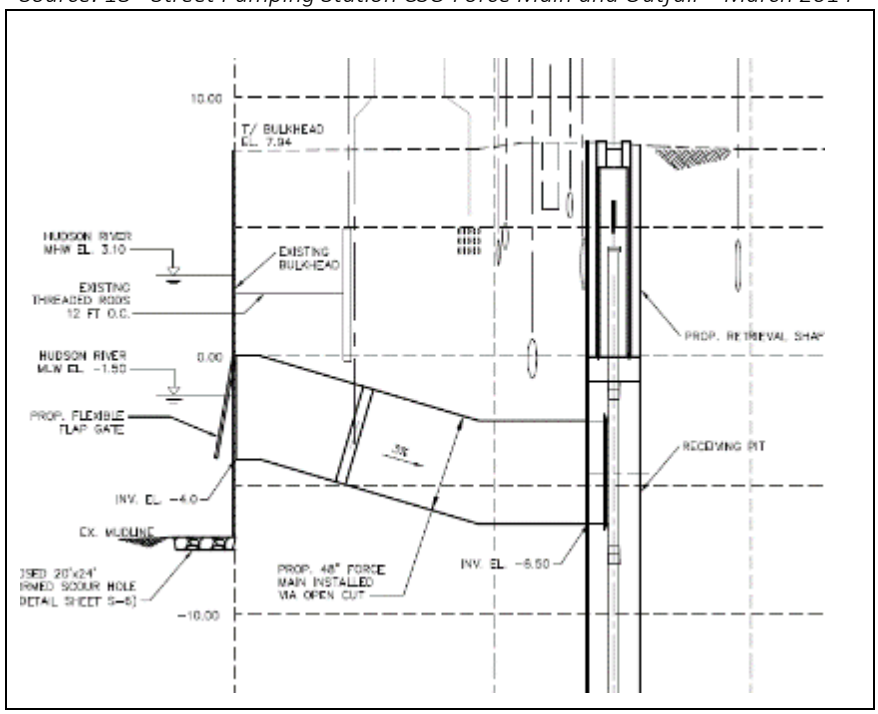
Source: 18th Street Pumping Station CSO Force Main and Outfall – March 2014



Scale not applicable.

Figure 3-51. NHSA Outfall 012A Section

Source: 18th Street Pumping Station CSO Force Main and Outfall – March 2014

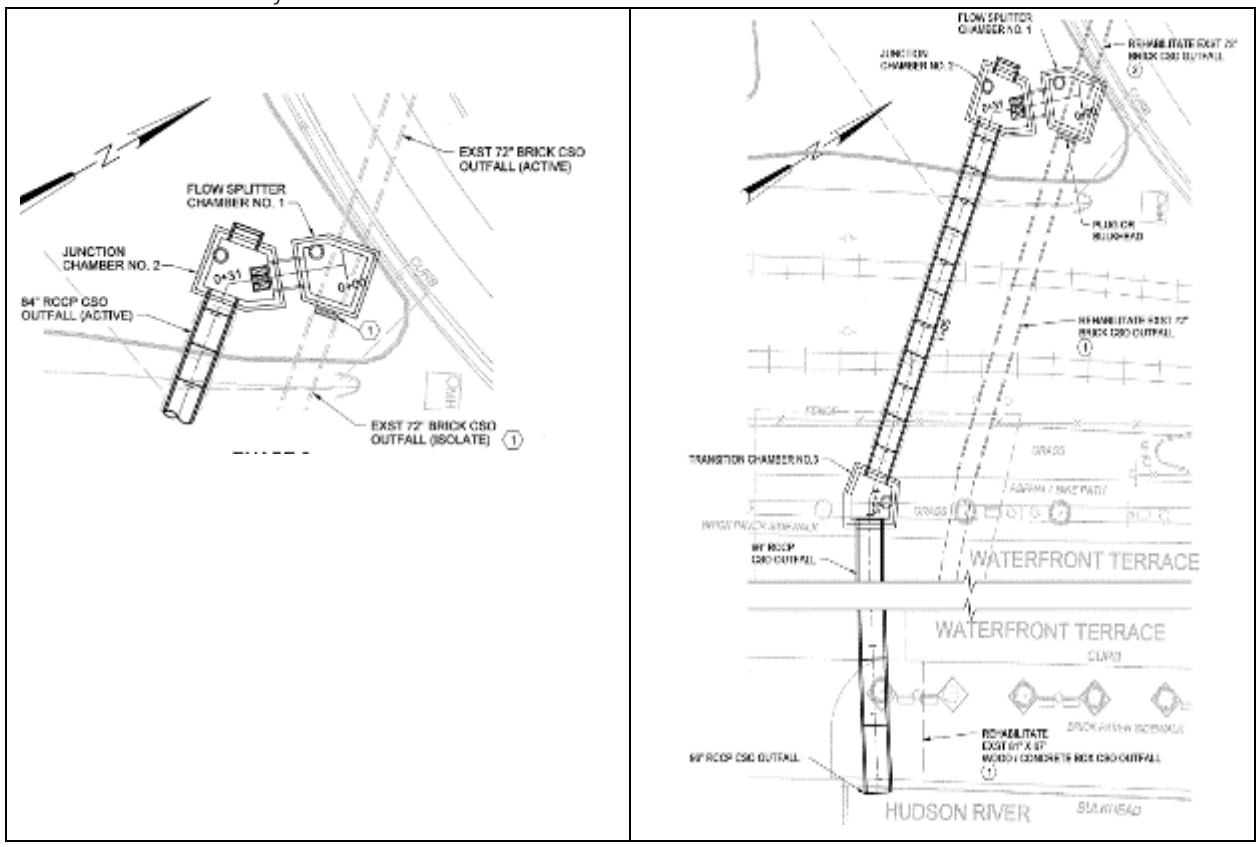


Scale not applicable.

3.4.8 Outfall 013A

CSO Outfall 013A, also known as the W1234 outfall, is located at Harbor Boulevard and Riverview Drive. The outfall configuration was modified starting in 2014 as part of constructing the W1234 S/F facility, which is ongoing at the time of writing this report. The W1234 outfall consists of two (2) parallel pipes that end at the face of the Hudson River bulkhead. The original outfall is a reconditioned combination of 72-inch brick sewer, 81-inch x 67-inch wood/concrete outfall, and a 72-inch diameter reinforced concrete pipe (RCP). The second parallel outfall is an 86-inch and 96-inch diameter reinforced concrete cylinder pipe (RCCP). Alignment of the second outfall is parallel to the existing outfall, offset to the south approximately 15 feet and penetrating the sheet piling sea wall approximately 2 feet below the invert of the existing outfall. Plan views of the twin outfalls are shown in Figure 3-52.

Figure 3-52. NHSA Outfall 013A Plan
Source: W1234 CSO Outfall – October 2014



Scale not applicable.

3.4.9 Outfall 015A

Outfall 015A is a 12-inch cast iron pipe conveying CSOs from the W5 regulator to the Hudson River. The outfall was relocated around 2004 by Roseland Property Company and no record drawings exist.

3.5 Solids/Floatables Facilities

The Authority embarked on a capital program to construct solids/floatables screening structures at its CSO outfalls along the Hudson River in order to minimize floatables and suspended solids entering the receiving water. Under permit conditions established by the NJDEP, the screening chambers needed to capture solids and floatables larger than a half inch. Work included the installation of six bar screen facilities, one proprietary pressurized vortex separation facility (with two chambers), one netting facility,

and two CSO outfall consolidation conduits. The Authority owns a total of eight (8) Solids/floatables facilities in the Adams Street Service Area as summarized in Table 3-11. The facilities were constructed between 2004 and 2010, with the exception of the W1234 S/F Facility, which is currently under construction. An evaluation of each S/F facility's capacity, dimensions, age, type of material, and specific location was performed based on a combination of historical data review, GIS data, and field work.

Table 3-11. NHSA Adams Street WWTP Service Area Solids/Floatables Facilities General Information

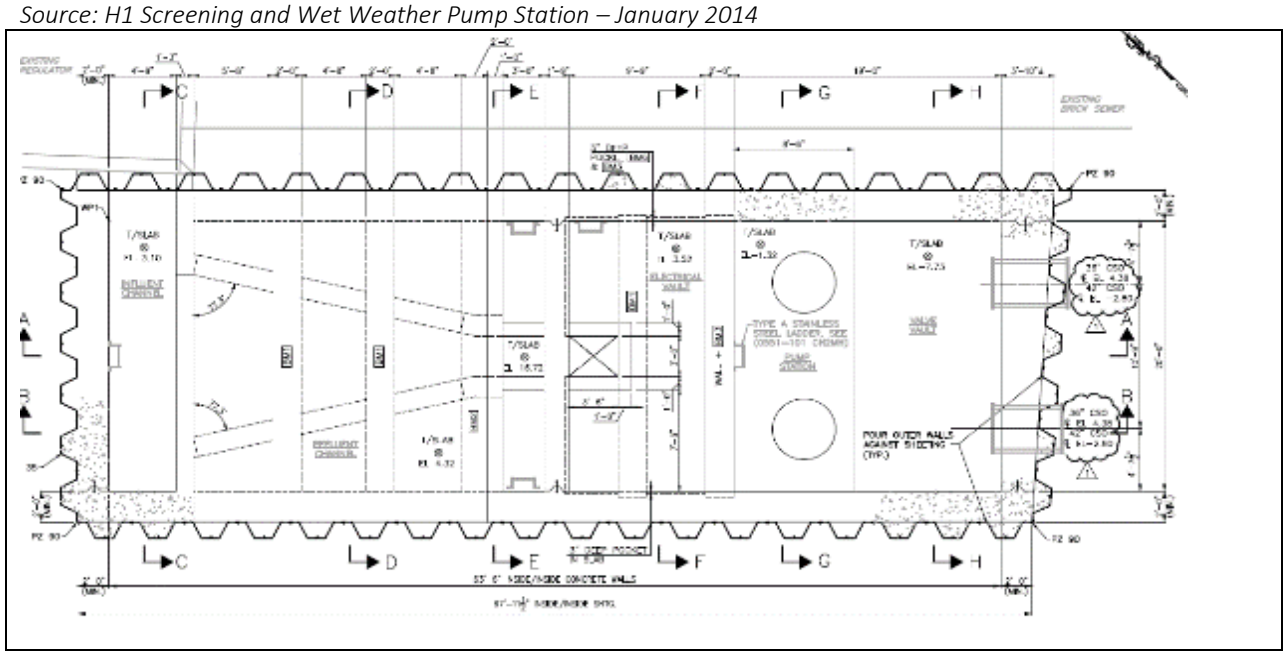
Solids/Floatables Facility	NJPDES DSN	Basin	Type
H1	002A	H1	Mechanical Bar Screens (2)
H2	003A	H2	Static Bar Screens (3)
H3/H4/HSI	005A	H3, H4, HIS	Static Bar Screens (2)
H5	006A	H5	Static Bar Screens (2)
H6/H7	008A	H6, H7	Static Bar Screens (2)
W1234	013A	W1, W2, W3, W4	Netting Facility (12 nets)
18th St	012A	18PS	Mechanical Bar Screen (1)
W5	015A	W5	Pressurized Vortex Separation (2)

3.5.1 H1 Wet Weather Pump Station S/F Facility

The H1 S/F facility is part of the H1 Wet Weather Pump Station. The screening facility is an underground concrete structure within the southern portion of Observer Highway. The purpose of the screening portion of the facility is to remove solids and floatables greater than ½-inch in diameter in CSOs from regulator H1. The removal of solids and floatables is accomplished with two mechanically cleaned bar screens. Plan and profile drawings of the facility are shown in Figure 3-53 and Figure 3-54, respectively.

Figure 3-53. H1 S/F Facility Plan

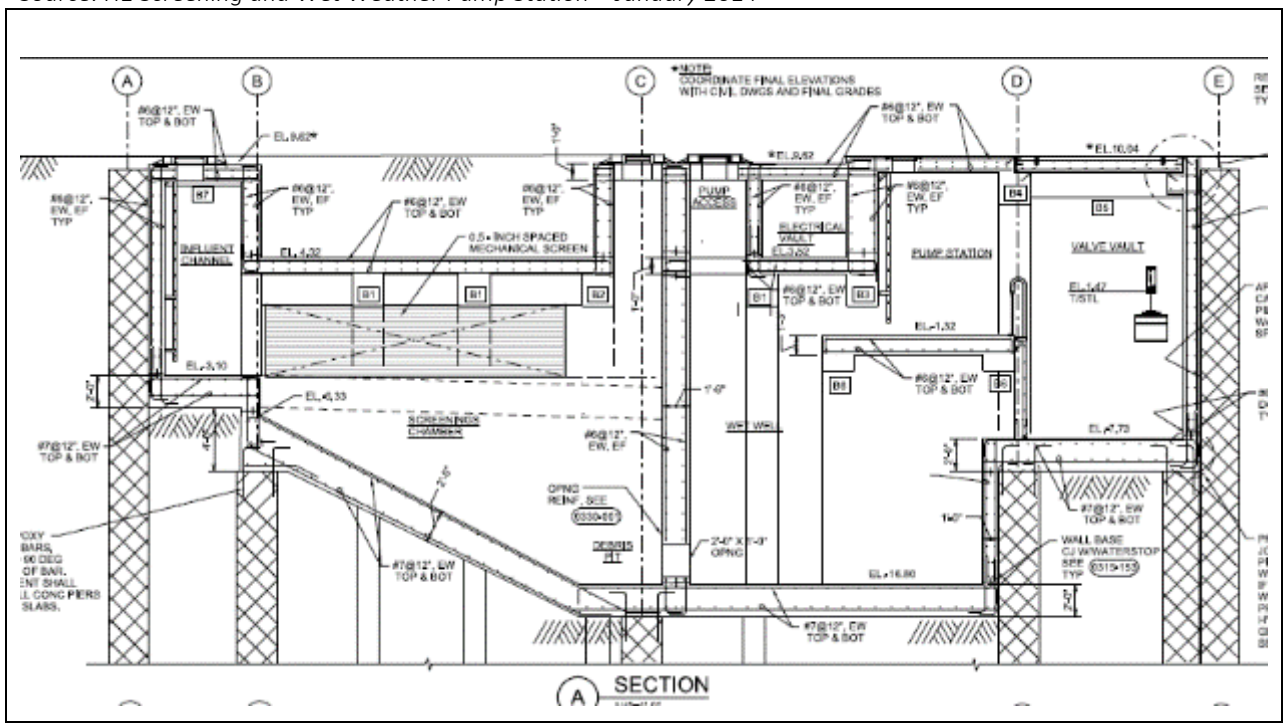
Source: H1 Screening and Wet Weather Pump Station – January 2014



Scale not applicable.

Figure 3-54. H1 S/F Facility Profile

Source: H1 Screening and Wet Weather Pump Station – January 2014



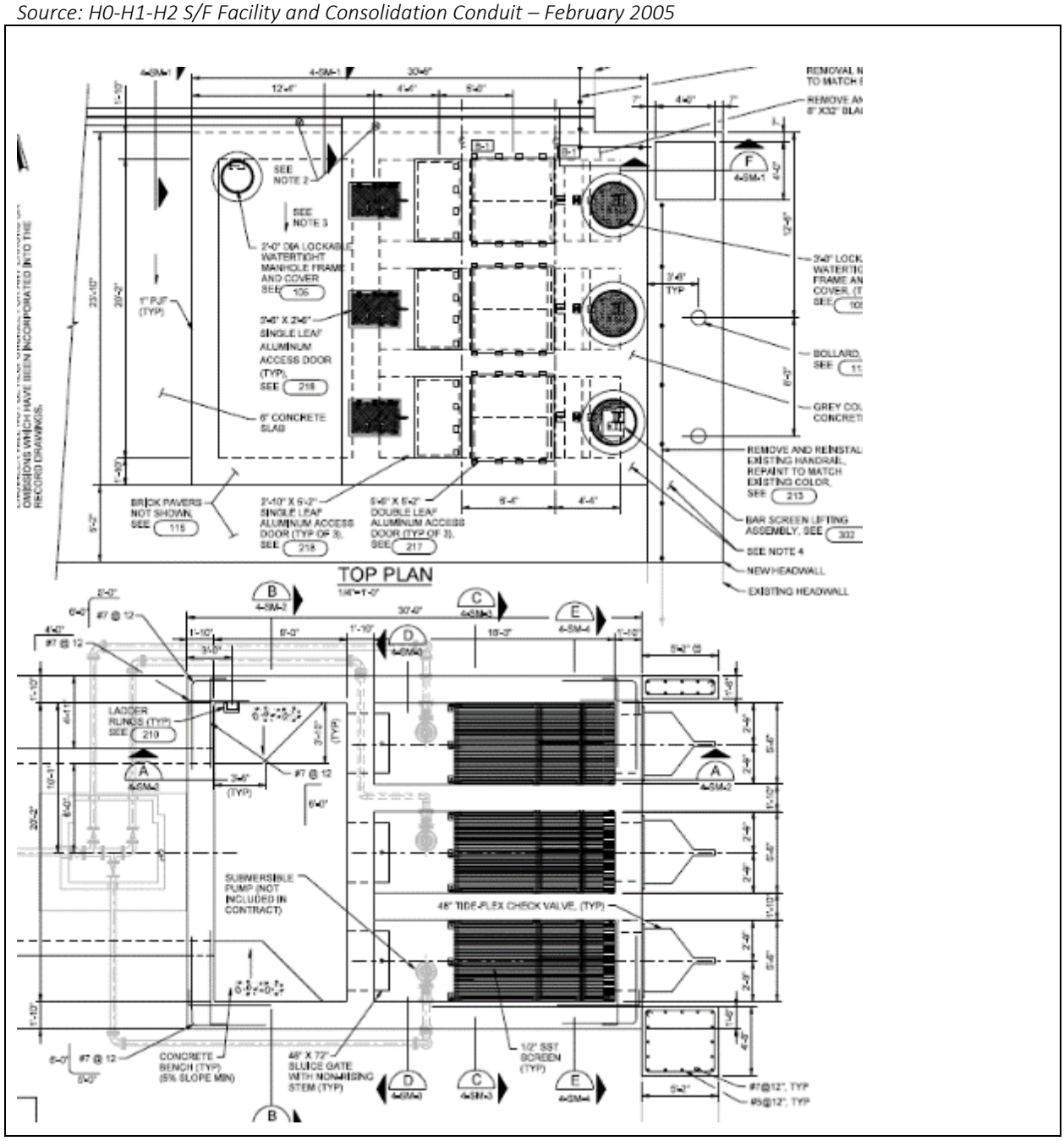
Scale not applicable.

3.5.2 H2 S/F Facility

The H2 S/F facility is designed to remove all solids and floatables that are greater than ½-inch in diameter in CSOs from regulator H2 within a below-grade concrete facility. The facility is divided into two sections: inlet chamber and screening chamber with three channels. All channels of the facility are operational at all times. Plan and profile drawings of the facility are shown in Figure 3-55 and Figure 3-56, respectively.

Figure 3-55. H2 S/F Facility Plan

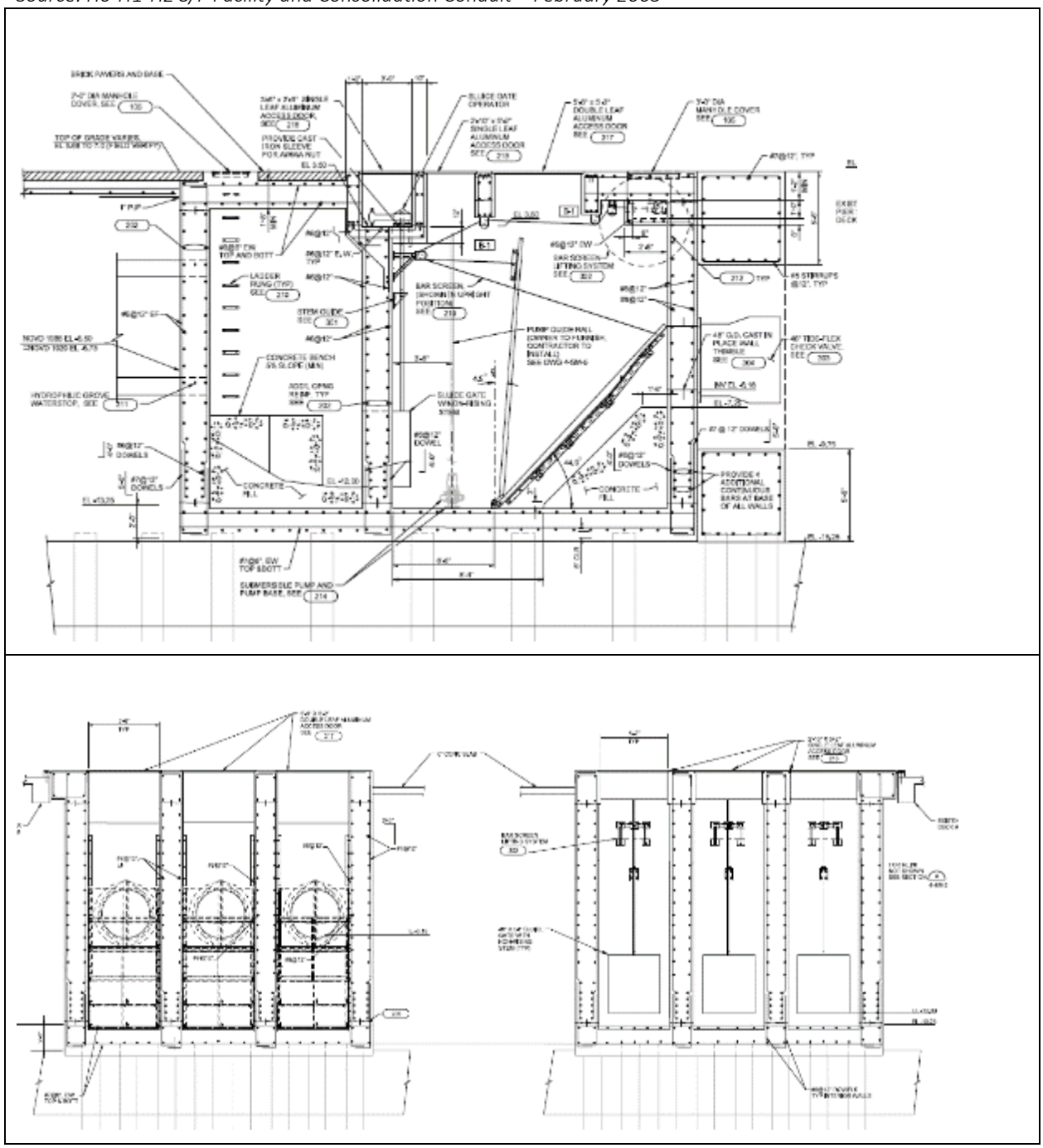
Source: H0-H1-H2 S/F Facility and Consolidation Conduit – February 2005



Scale not applicable.

Figure 3-56. H2 S/F Facility Profile

Source: H0-H1-H2 S/F Facility and Consolidation Conduit – February 2005



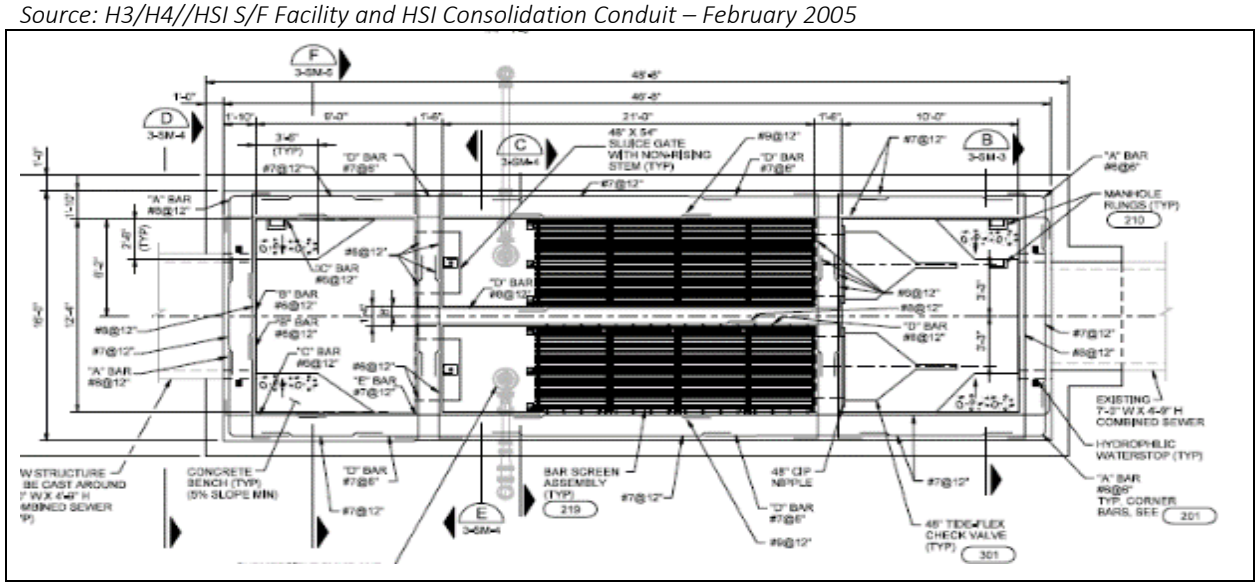
Scale not applicable.

3.5.3 H3/H4/HSI S/F Facility

The H3/H4/HSI S/F facility is designed to remove all solids and floatables that are greater than ½-inch in diameter in CSOs from regulators H3, H4 and HSI within a below-grade concrete facility. The facility is divided into three sections: inlet chamber; screening chamber (two-channels); and, outlet chamber. Flow from the screening chamber converges in the outlet chamber and flows through the tide flex valves and into the outfall. All channels of the facility are operational at all times. Plan and profile drawings of the facility are shown in Figure 3-57 and Figure 3-58, respectively.

Figure 3-57. H3/H4/HSI S/F Facility Plan

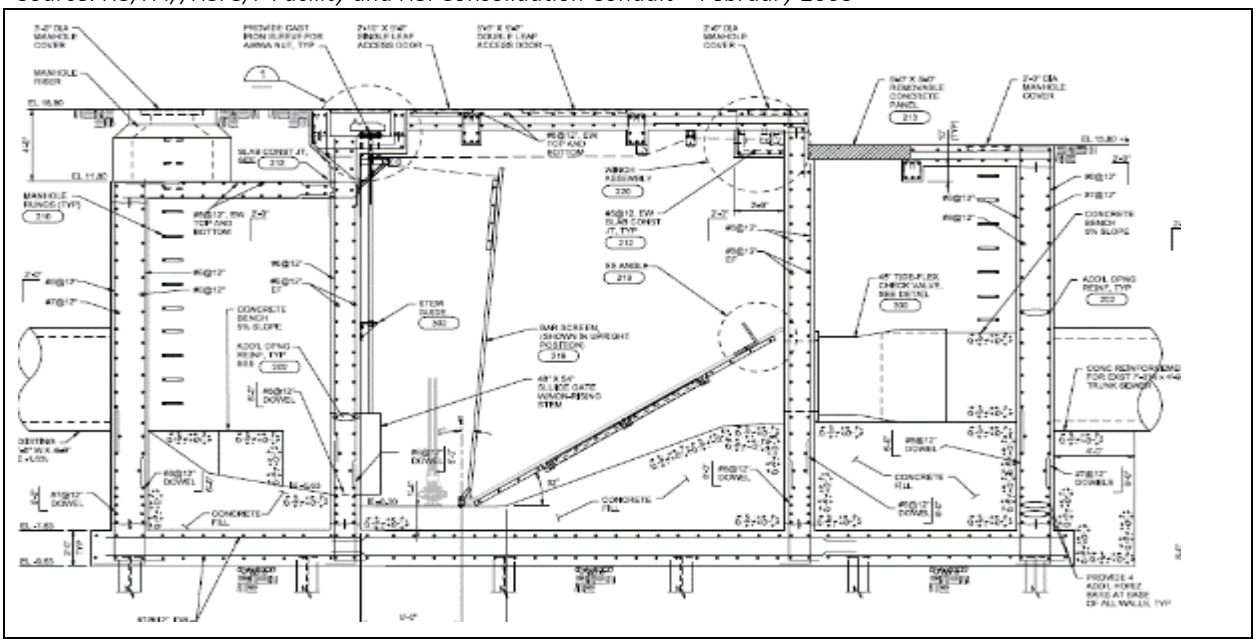
Source: H3/H4//HSI S/F Facility and HSI Consolidation Conduit – February 2005



Scale not applicable.

Figure 3-58. H3/H4/HSI S/F Facility Profile

Source: H3/H4//HSI S/F Facility and HSI Consolidation Conduit – February 2005



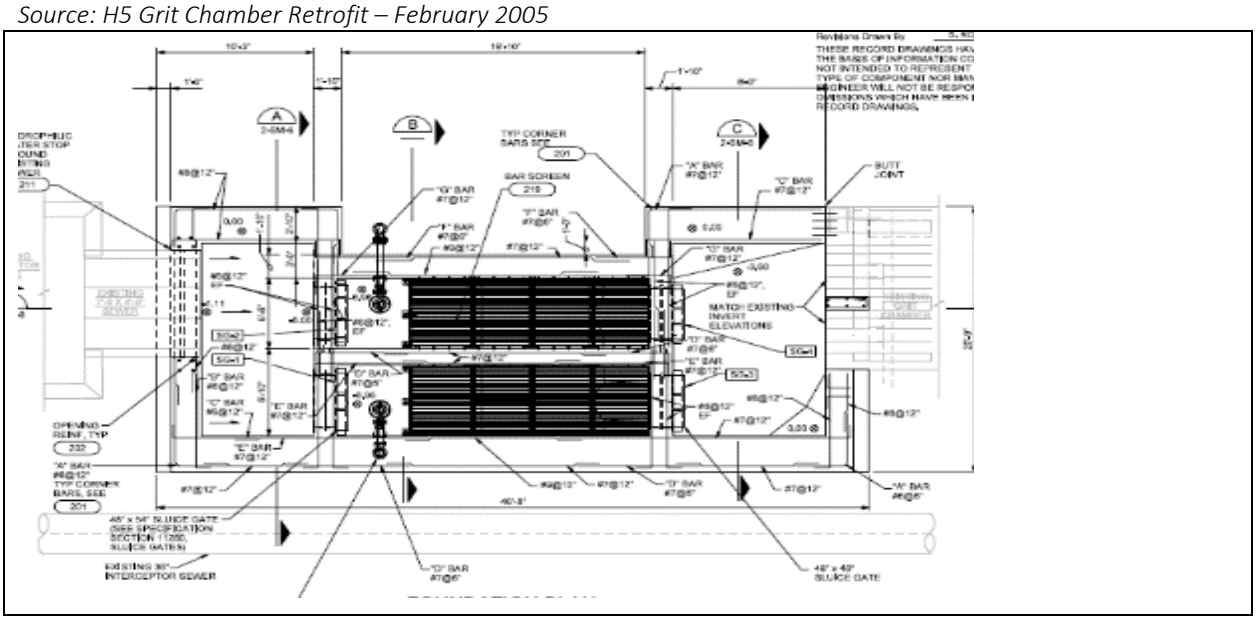
Scale not applicable.

3.5.4 H5 S/F Facility

The H5 S/F facility is designed to remove all solids and floatables that are greater than ½-inch in dimeter in the CSOs from regulator H5 within a below-grade concrete facility. The facility is divided into three sections: inlet chamber; screening chamber (two channels); and, outlet chamber. Flow from the screening chamber converges in the outlet chamber and flows through the remaining portion of the grit chamber and into the outfall. All channels of the facility are operational at all times. Plan and profile drawings of the facility are shown in Figure 3-59 and Figure 3-60, respectively.

Figure 3-59. H5 S/F Facility Plan

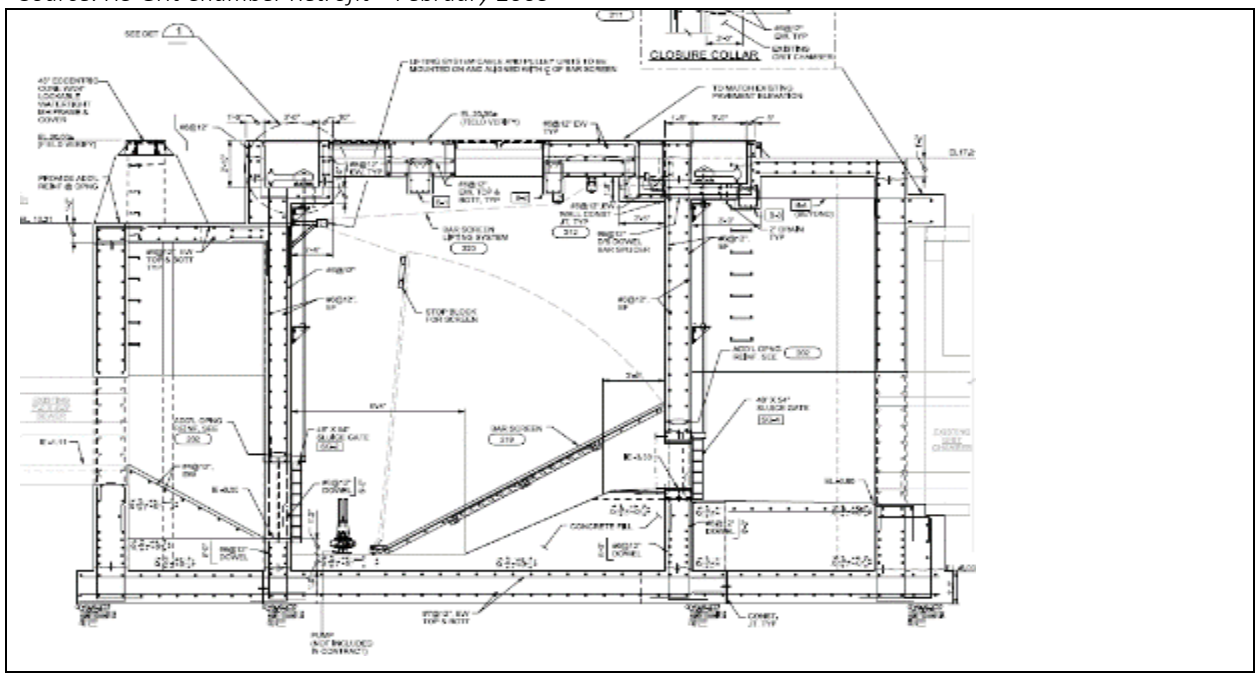
Source: H5 Grit Chamber Retrofit – February 2005



Scale not applicable.

Figure 3-60. H5 S/F Facility Profile

Source: H5 Grit Chamber Retrofit – February 2005



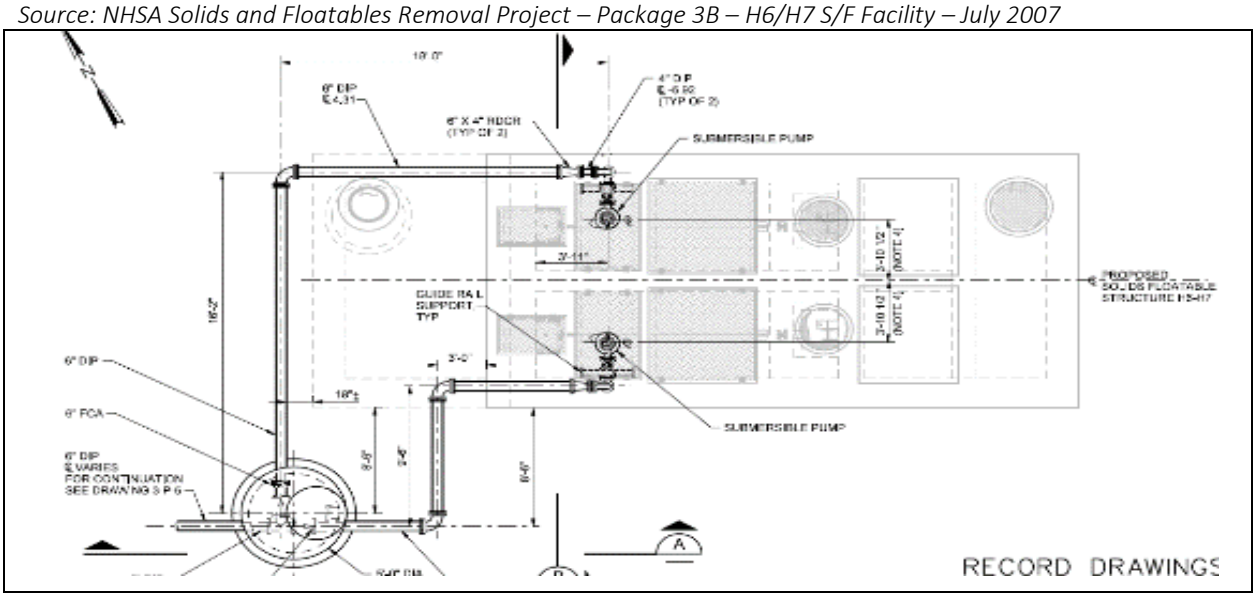
Scale not applicable.

3.5.5 H6/H7 S/F Facility

The H6/H7 Solids and Floatables Facility is located at the end of 15th Street Extension, East of Shipyard Lane in Hoboken. The S/F facility is designed to remove solids and floatables that are greater than ½-inch in diameter in the CSOs from regulators H6 and H7. The below-grade facility is divided into three sections: inlet chamber; screening chamber (two channels); and, outlet chamber. Flow from the screening chamber converges in the outlet chamber and flows through the tide gate valves (48" diameter flap gate) and into the outfall. All channels of the facility are operational at all times. Plan and profile drawings of the facility are shown in Figure 3-61 and Figure 3-62, respectively.

Figure 3-61. H6/H7 S/F Facility Plan

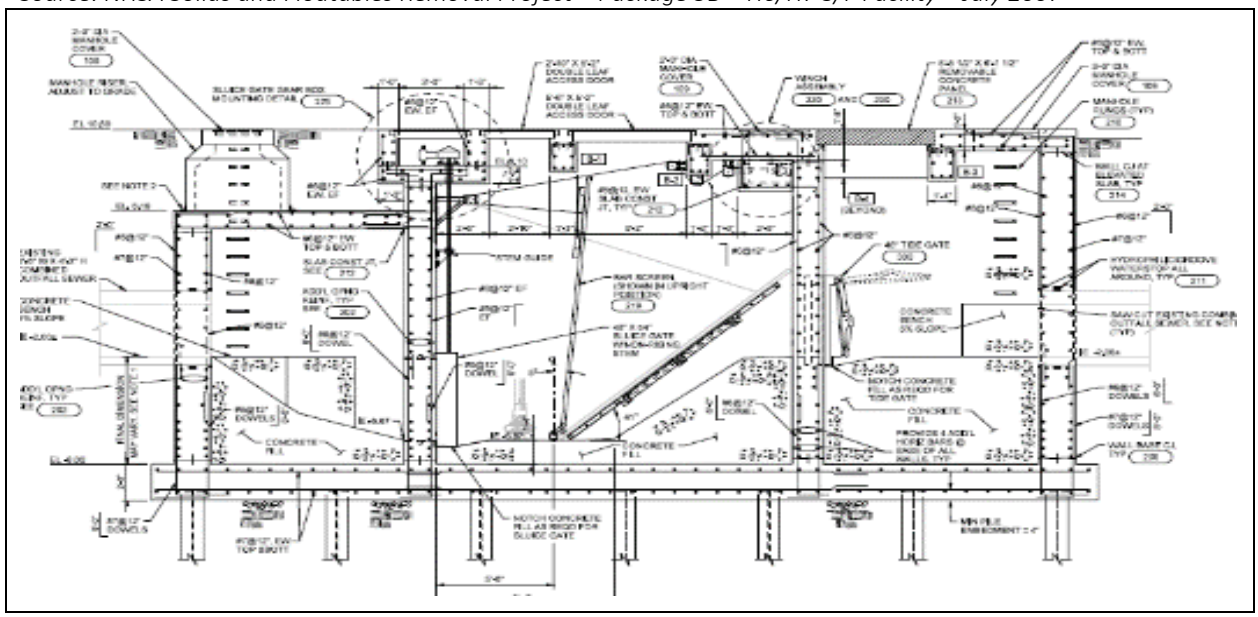
Source: NHSA Solids and Floatables Removal Project – Package 3B – H6/H7 S/F Facility – July 2007



Scale not applicable.

Figure 3-62. H6/H7 S/F Facility Profile

Source: NHSA Solids and Floatables Removal Project – Package 3B – H6/H7 S/F Facility – July 2007



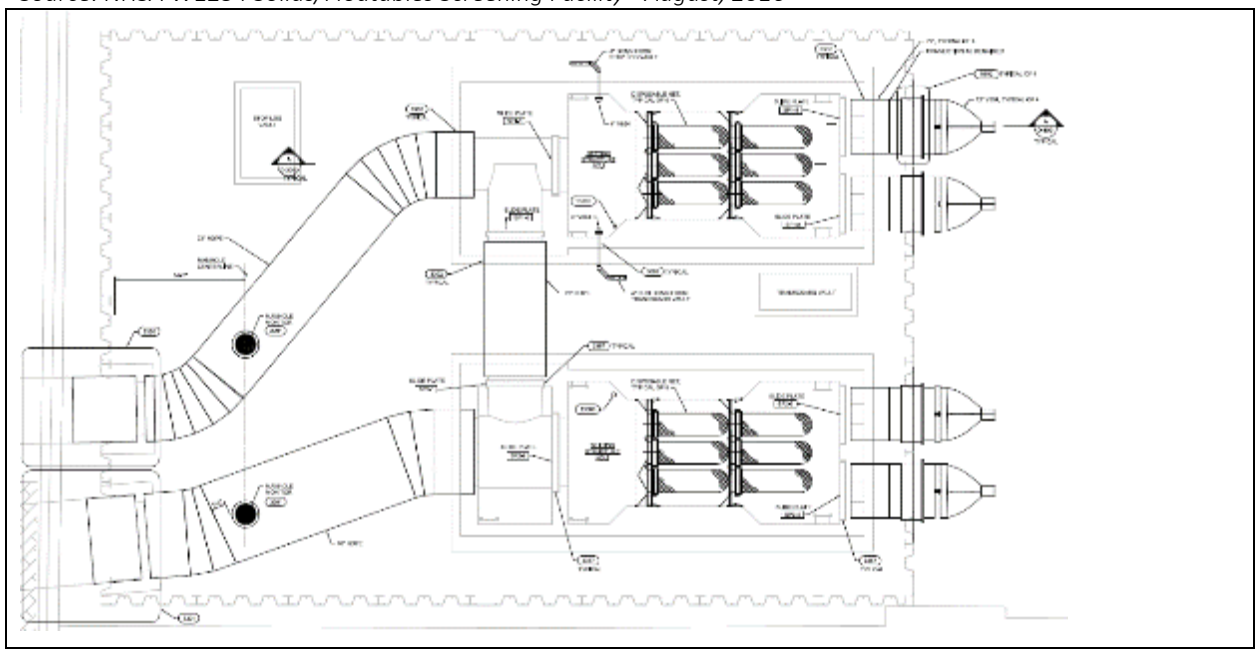
Scale not applicable.

3.5.6 W1234 S/F Facility

The W1234 Solids and Floatables Facility is currently under construction. It will be located below a pier extension in the Hudson River in Lincoln Harbor, adjacent to the sea wall, connecting into the W1234 CSO outfall (013A). Solids and floatables in CSOs from regulators W1, W2, W3 and W4 will be screened through ½-inch replaceable nets. The facility is divided into two trains with a combined junction structure immediately upstream. Plan and profile drawings of the facility are shown in Figure 3-63 and Figure 3-64, respectively. Construction is anticipated to be completed by 2019.

Figure 3-63. W1234 S/F Facility Plan

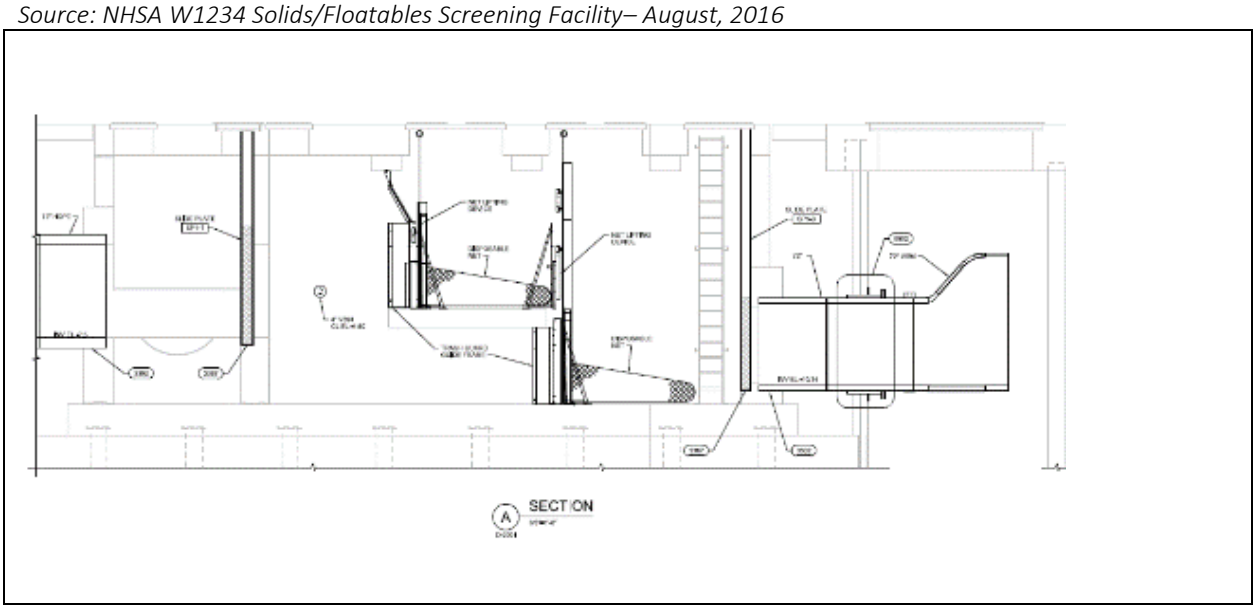
Source: NHSA W1234 Solids/Floatables Screening Facility– August, 2016



Scale not applicable.

Figure 3-64. W1234 S/F Facility Profile

Source: NHSA W1234 Solids/Floatables Screening Facility– August, 2016



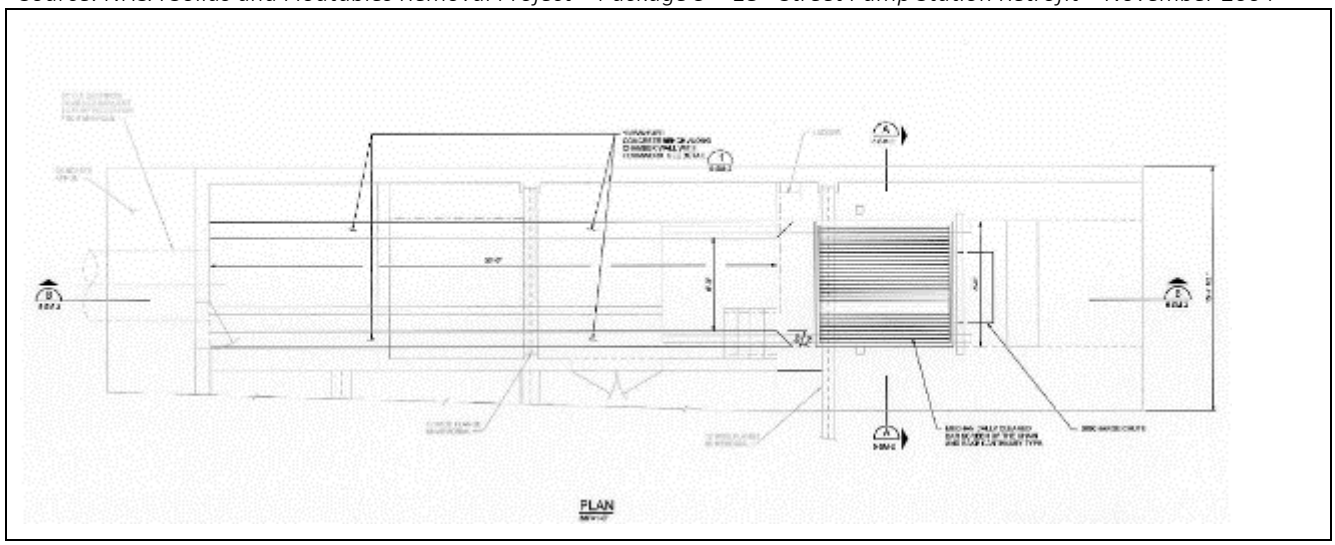
Scale not applicable.

3.5.7 18th Street Pump Station S/F Facility

The 18th Street Pumping Station was retrofitted with smaller screens around 2004. The existing 3-inch bar rack was removed and replaced with a mechanically cleaned bar screen with clear openings between bars of ½-inch spacing to remove solids and floatables. Plan and profile drawings of the facility are shown in Figure 3-65 and Figure 3-66, respectively.

Figure 3-65. 18th Street S/F Facility Plan

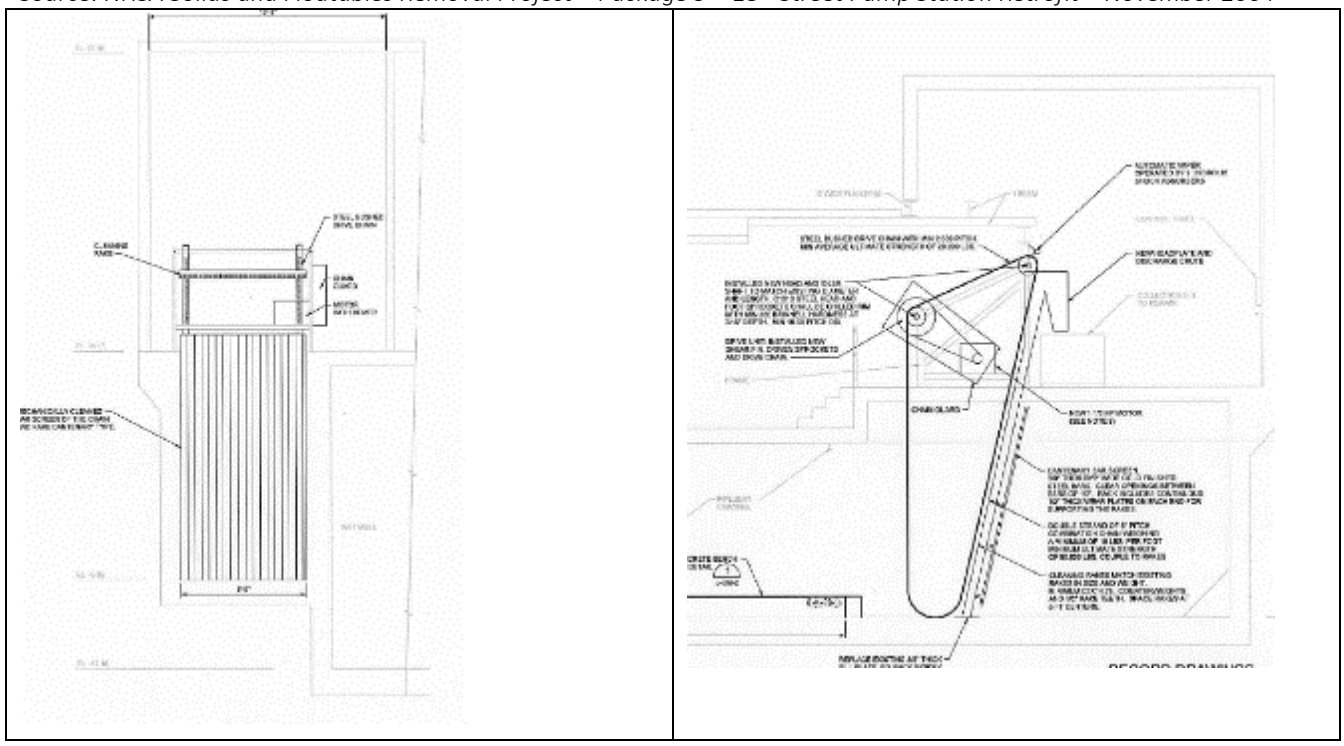
Source: NHSA Solids and Floatables Removal Project – Package 5 – 18th Street Pump Station Retrofit – November 2004



Scale not applicable.

Figure 3-66. 18th Street S/F Facility Profile

Source: NHSA Solids and Floatables Removal Project – Package 5 – 18th Street Pump Station Retrofit – November 2004



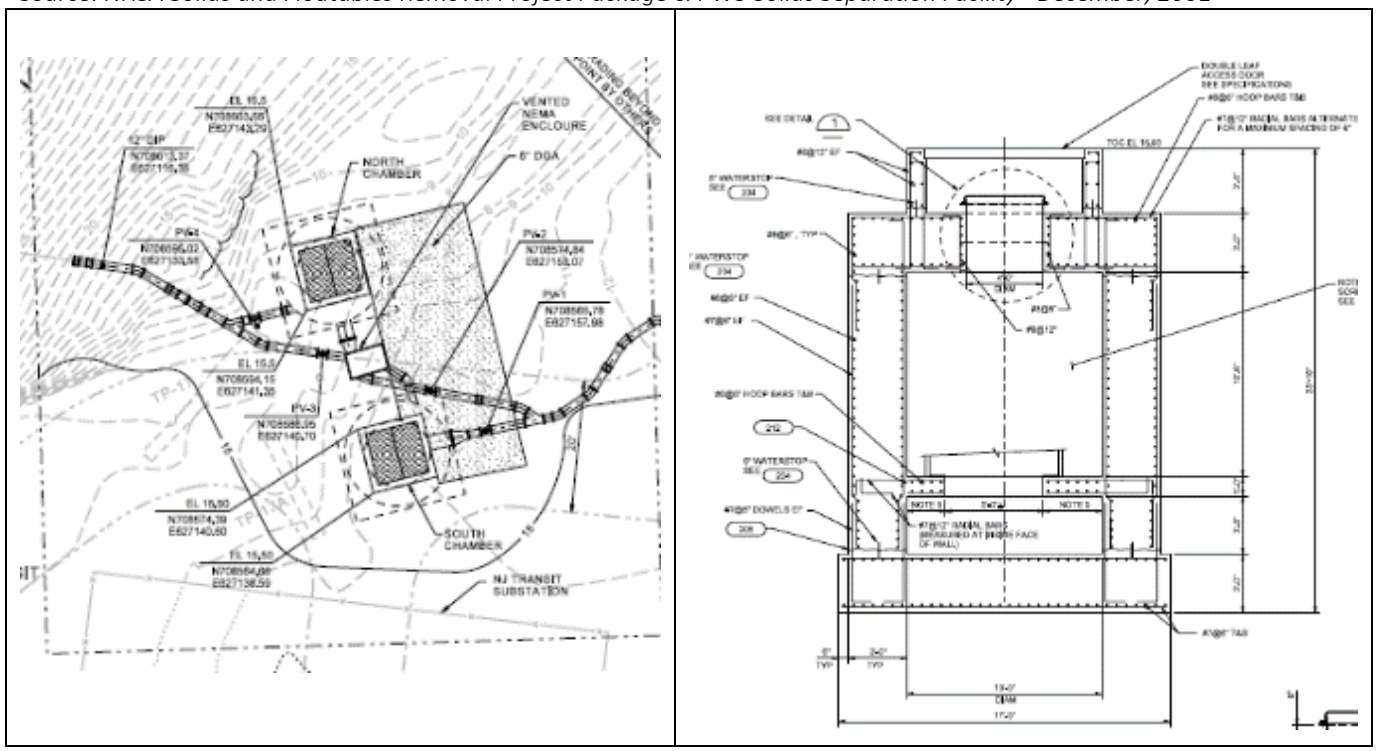
Scale not applicable.

3.5.8 W5 S/F Facility

The W5 S/F control facility is designed to remove all solids and floatables that are greater than ½-inch in diameter in CSOs from regulator W5 using a vortex screening chamber. The facility consists of two chambers, North and South, with 7’-0” diameter screens. Both chambers are operational at all times. Plan and profile drawings of the facility are shown in Figure 3-67.

Figure 3-67. W5 S/F Facility Plan and Section

Source: NHSA Solids and Floatables Removal Project Package 6A-W5 Solids Separation Facility– December, 2001



Scale not applicable.

4. Wastewater Treatment Plant

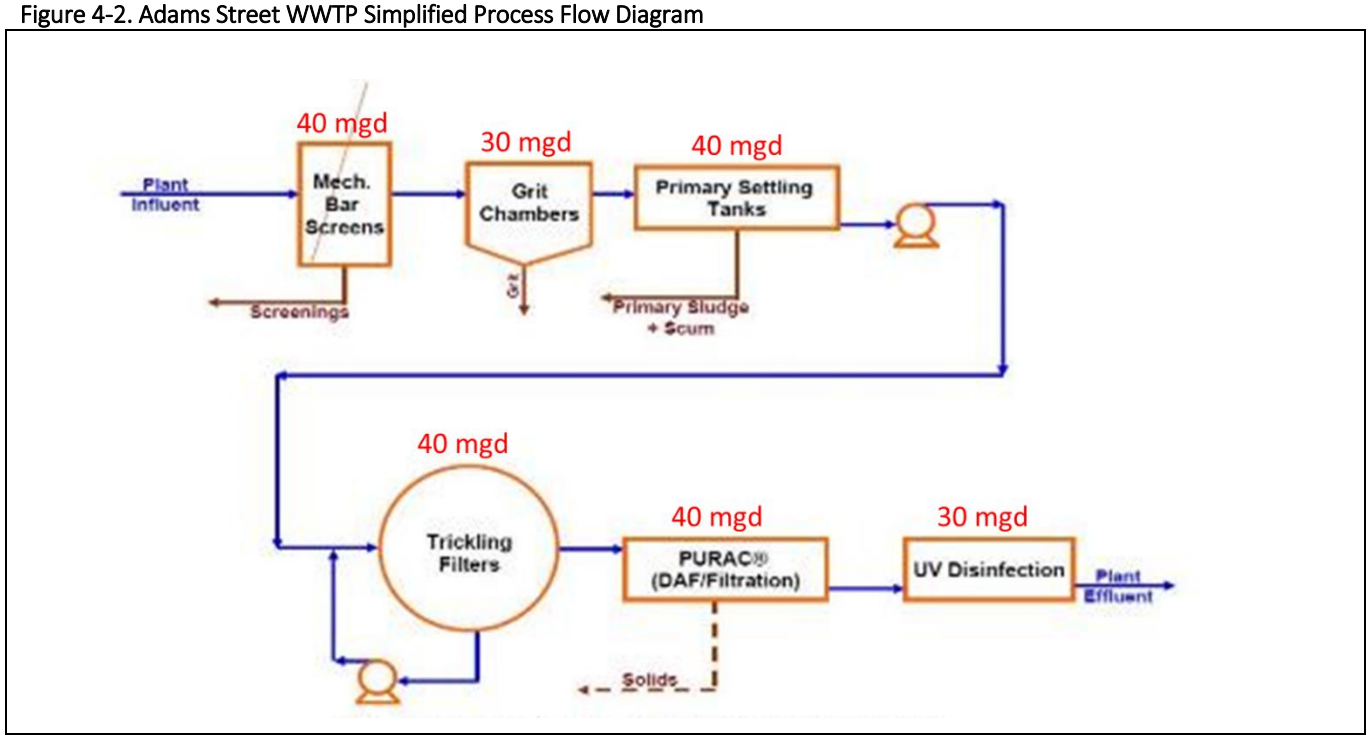
The Authority owns the Adams Street WWTP. The plant's NJPDES Permit Number is NJ0026085 and permitted flow is 20.8 mgd. The plant serves a 2.6 square mile service area with a dry weather design flow of 24 mgd and a wet weather capacity of 40 mgd. This section includes a summary of processes, flow data, influent loadings, effluent data, and removal data associated with permit compliance.

4.1 Facility Overview

The Adams Street WWTP was constructed as a primary wastewater treatment plant in 1958. It was upgraded to full secondary treatment capacity in 1990. The current upgraded physical characteristics of the facility are described in Table 1 below. The current plant layout and facilities are shown in Figure 4-1. A simplified process flow diagram is shown in Figure 4-2.

Figure 4-1. Adams Street WWTP Layout and Facilities

Figure 4-2. Adams Street WWTP Simplified Process Flow Diagram



Note: Grit chamber capacity is based on having limited inlet velocity of 2 feet/second (fps). If inlet velocity is extended to 3 fps peak capacity of 30 mgd can be reached with the loss of capture efficiency.

4.2 Treatment Capacities

The Adams WWTP plant capacity review is based on the existing processes within the treatment plant and includes the following major liquids processes.

- Preliminary Treatment (Screenings & Grit Removal)
- Primary Treatment (Primary Clarifiers)
- Trickling Filters
- Secondary Treatment (Dissolved Air Flotations/Granular Media Filters)
- UV Disinfection

Table 4-1 below lists the plant capacity information from the original 1994 Operations and Maintenance Manual. The treatment plant is designed to treat an average daily flow of 24 mgd, while being able to handle a maximum hydraulic flow of 40 mgd. The Authority's New Jersey Pollutant Discharge Elimination System (NJPDES) Permit allows the Adams Street WWTP to treat up to 20.8 mgd on a daily average basis.

Table 4-1. Plant Design Capacity

Parameter	Units	Annual Average (Projected)	Max. Month (Design)	Peak(Design)
Flow	mgd	20	24	40/48[1,2]
BOD_5	mg/L	253	253	
	lbs/d	42,200	50,640	
TSS	mg/L	193	193	
	lbs/d	32,190	38,631	

Notes:

1. 40 mgd represents peak hydraulic flow handled by all process units
2. 48 mgd represents peak hydraulic flow through plant (portion of flow will bypass the gravity sand filters)

4.3 Performance

An analysis of the plant performance was prepared using operational data from January 2017 through March 2018. The summary is presented in Table 4-2 below. As shown in the table the actual plant loadings are significantly less than the design loadings and plant flows are less than the projected plant flows identified in the 1994 Operations and Maintenance Manual. This translates into additional available plant capacity and the ability to take greater flows into the treatment plant during wet weather. Currently only two of the three trickling filters are in service. The major bottleneck in the plant is the secondary treatment process which is currently planned for a major rehabilitation. The disinfection capacity and performance has been impacted due the recent performance degradation of the PURAC DAF/Flofilters.

Table 4-2. Adams Street WWTP Plant Historical Data 2017-2018

	mgd									
	Average	Median	Max. Month	Peak Week	Peak Day[1]					
Plant Influent Flow	**12.98**	**12.15**	**15.95**	**19.61**	**29.18**					
	mg/L					lb/day				
	Average	Median	Max. Month	Peak Week	Peak Day[1]	Average	Median	Max. Month	Peak Week	Peak Day[1]
Plant Influent										
TSS	145	138	177	199	145	15,702	14,006	19,330	26,570	35,220
BOD	149	146	178	193	114	15,813	15,697	16,837	18,291	27,635
Primary Effluent										
TSS	102	97	124	140	101					
BOD	63	69	87	96	75					
Primary Clarifier Performance										
HLR (gpd/ft^2)	371	348	456	561	835					
%TSS Removed[2]	30%	30%	30%	30%	30%					
%BOD Removed	58%	53%	51%	50%	34%					
Trickling Filters										
THL (gpm/mgd)	1.02	0.95	1.26	1.50	2.28					
SLR (lb/day/1000ft^3)	47	43	57	70	105					

Table 4-2. Adams Street WWTP Plant Historical Data 2017-2018

	mgd									
	Average	Median	Max. Month	Peak Week	Peak Day[1]					
Plant Influent Flow	**12.98**	**12.15**	**15.95**	**19.61**	**29.18**					
	mg/L					lb/day				
	Average	Median	Max. Month	Peak Week	Peak Day[1]	Average	Median	Max. Month	Peak Week	Peak Day[1]
DAF/Flofilter Secondary Treatment Performance										
HLR (gpm/ft^2)	1.02	0.96	1.26	1.55	2.30					
SLR (lb/day*ft2)[3]	1.376	1.224	2.054	2.853	3.082					
Final Effluent										
TSS	17	16	22	39	18	1,820	1,598	2,406	4,169	6,975
BOD	19	18	25	36	18	2,033	1,903	2,823	3,787	5,598
%TSS Removed	87.1%	87.0%	85.9%	82.1%	87.6%					
%BOD Removed	87.4%	87.7%	86.1%	81.5%	84.2%					

Notes:

1 Wet Weather BOD and TSS averages for Flows Greater Than 16 mgd Used for Peak Day

2 Assumed 30 % Removal

3 Assumes Nine Flofilters in Service

Table 4-3 provides the NPDES permit requirements for the Adams Street Treatment Plant discharging to outfall 001A.

Table 4-3. Existing NPDES Permit Effluent Limitations for Adams Street WWTP

Parameter	Average Month	Maximum Day	Average Month	Weekly Average	Maximum Daily
Flow	12.7 mgd	29.1 mgd			
BOD_5	5,214 lb/d	7,385 lb/d	30 mg/L	45 mg/L	
BOD_5 % Removal	85%				
TSS	5,214 lb/d	7,385 lb/d	30 mg/L	45 mg/L	
TSS % Removal	85%				
Oil & Grease	10 mg/L	15 mg/L			
Fecal Coliform			200 MPN/100mL	400 MPN/100mL	400 MPN/100mL
pH			6.0 SU Minimum		9.0 SU Minimum

Figure 4-3 through Figure 4-7 below show the plant performance. The figures below depict weekly averages. These figures are typical of secondary treatment plant wastewater performance and show that the treatment plant achieves the 85% removal for BOD and TSS under typical flows and loads.

Figure 4-3. BOD Influent and Effluent Concentrations vs Flow

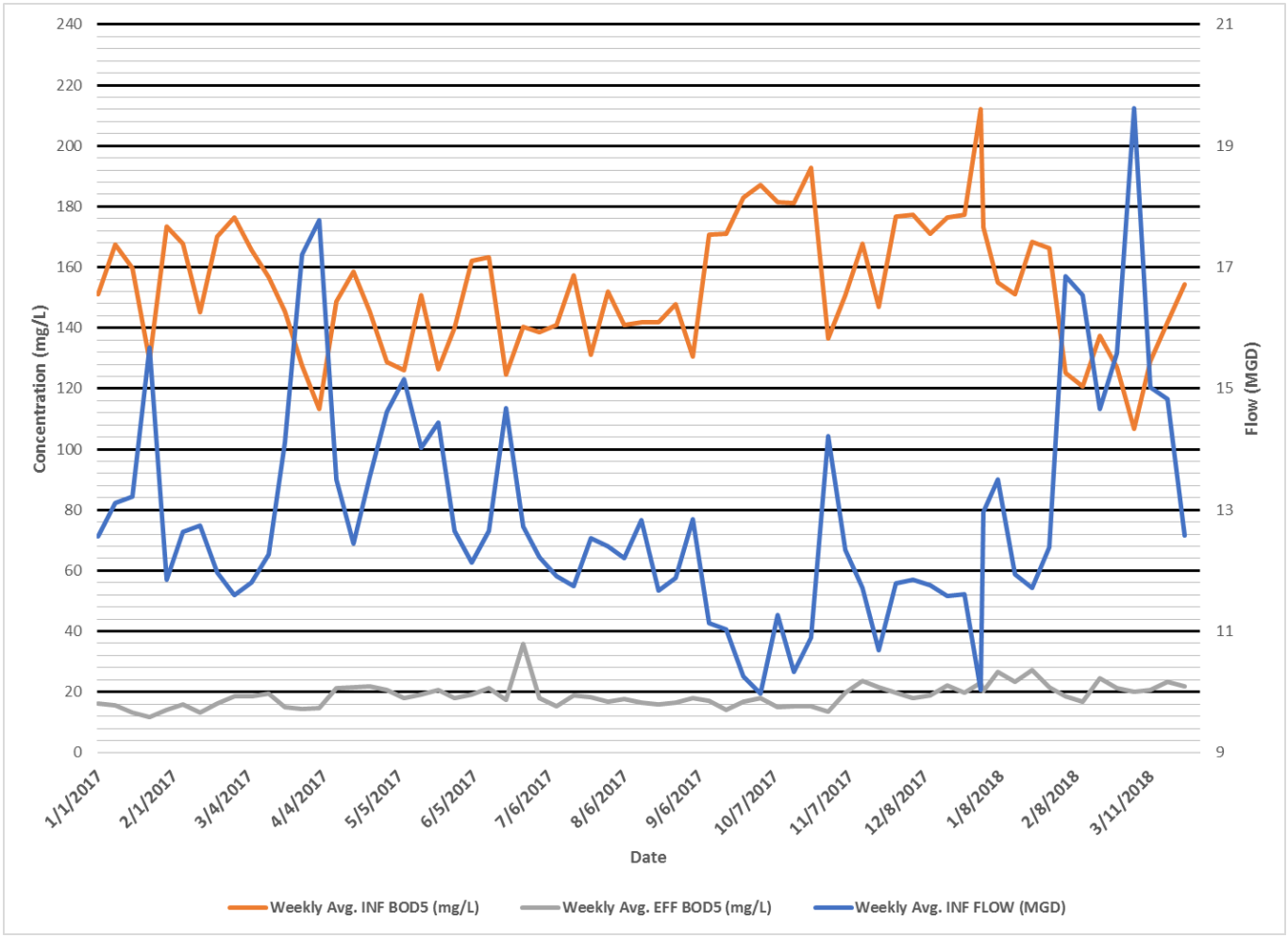


Figure 4-4. TSS Influent and Effluent Concentrations vs Flow

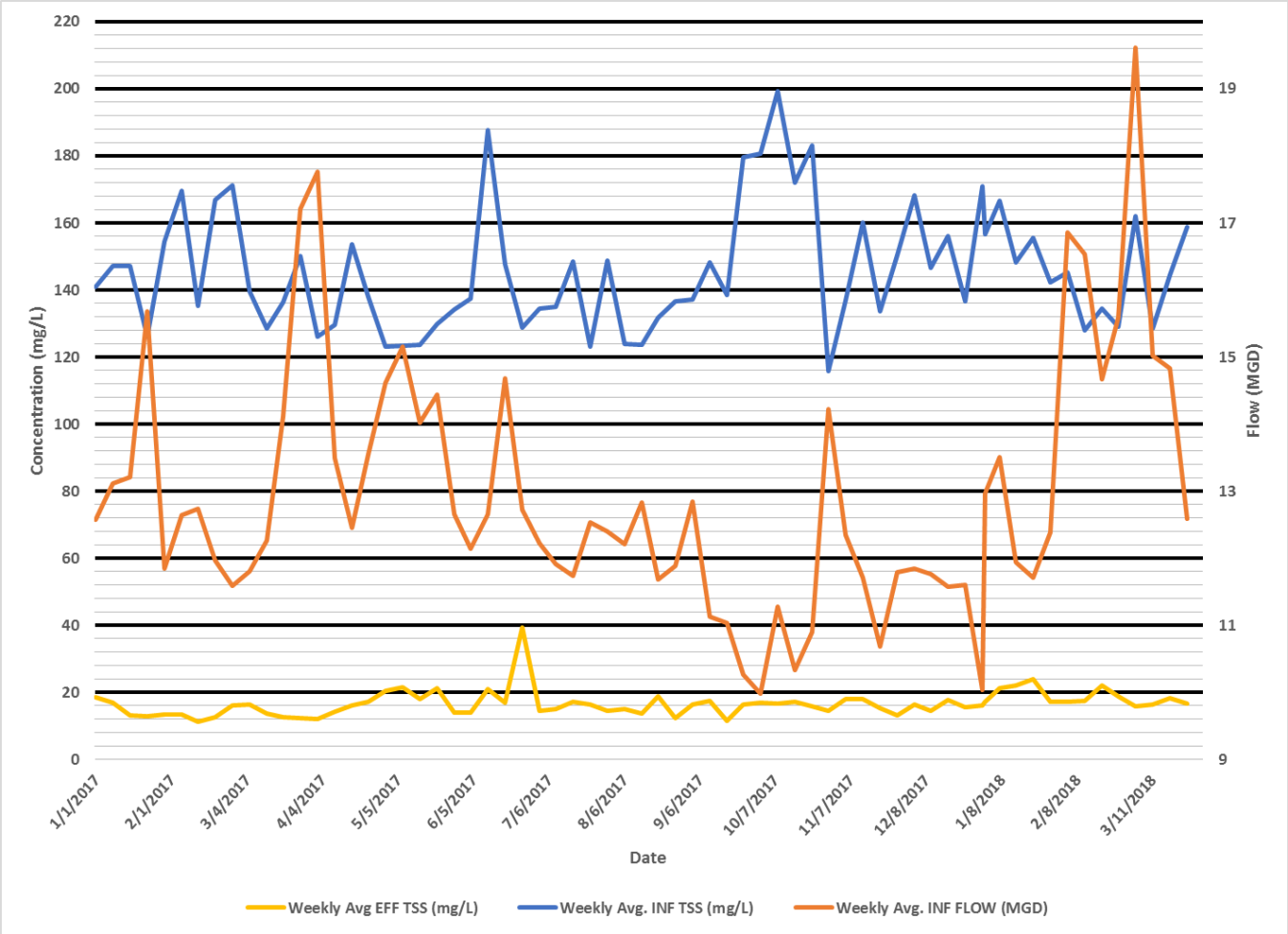


Figure 4-5. BOD_5 Influent and Effluent Loads vs Flow

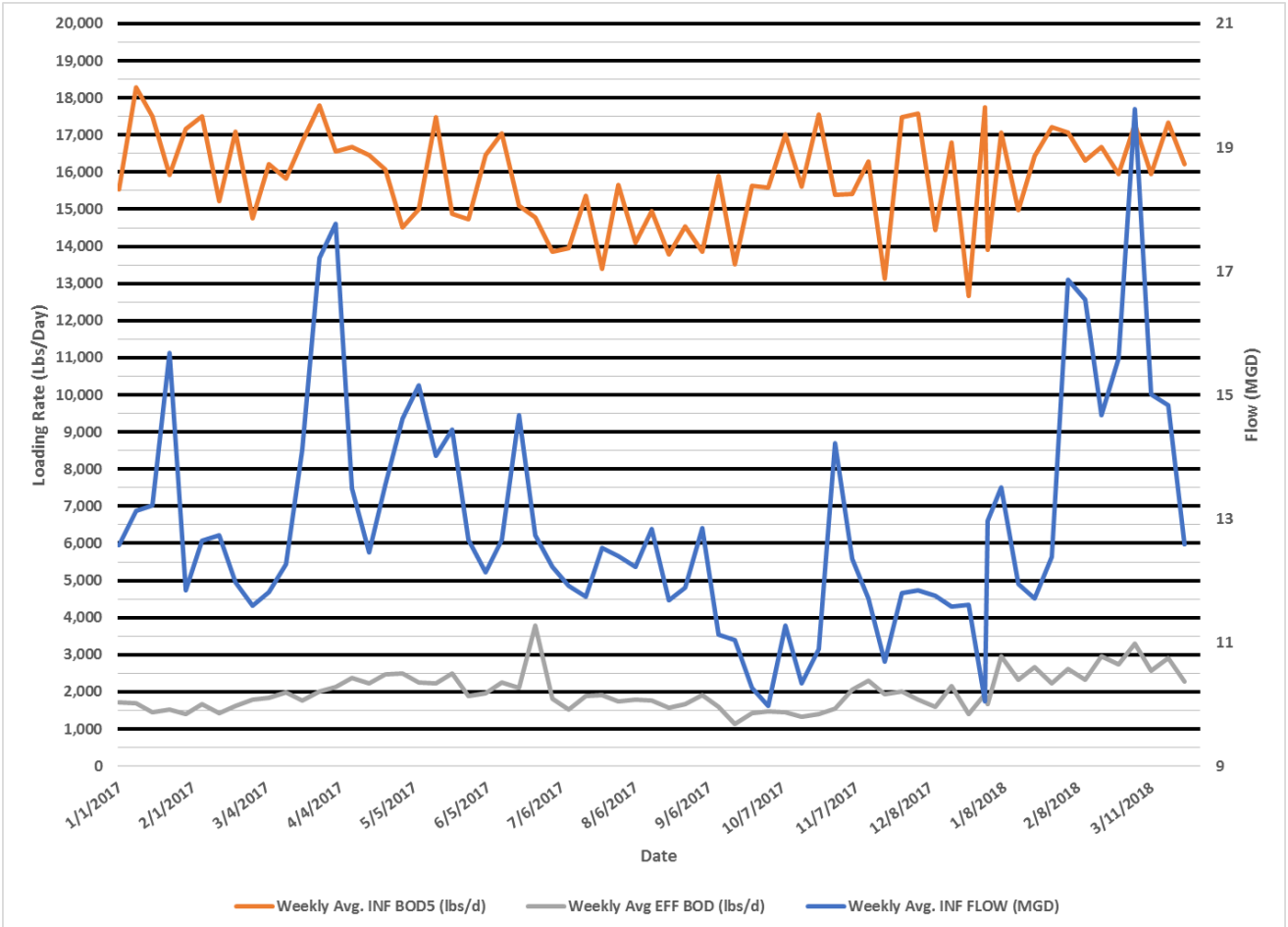


Figure 4-6. TSS Influent and Effluent Loads vs Flow

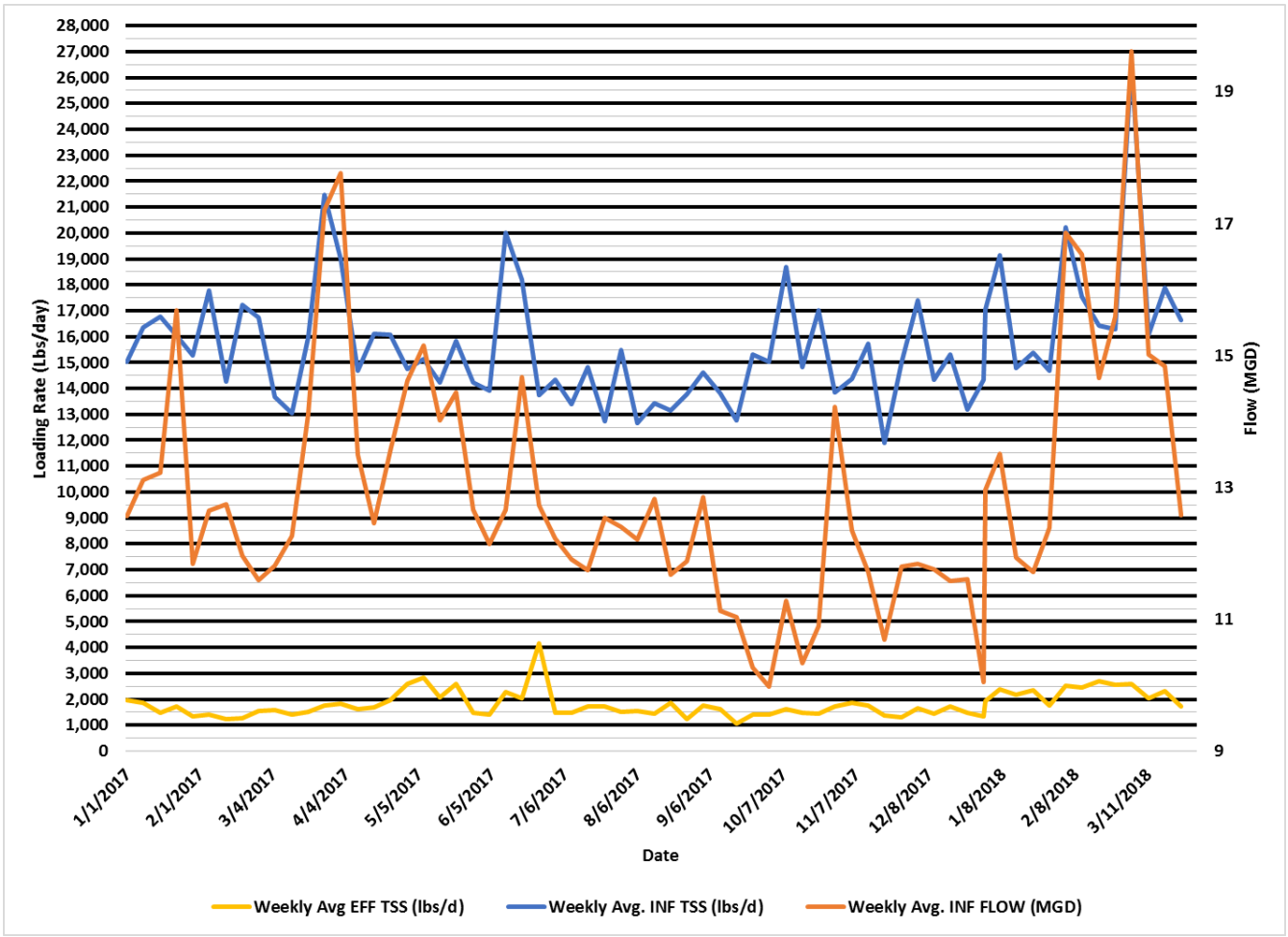
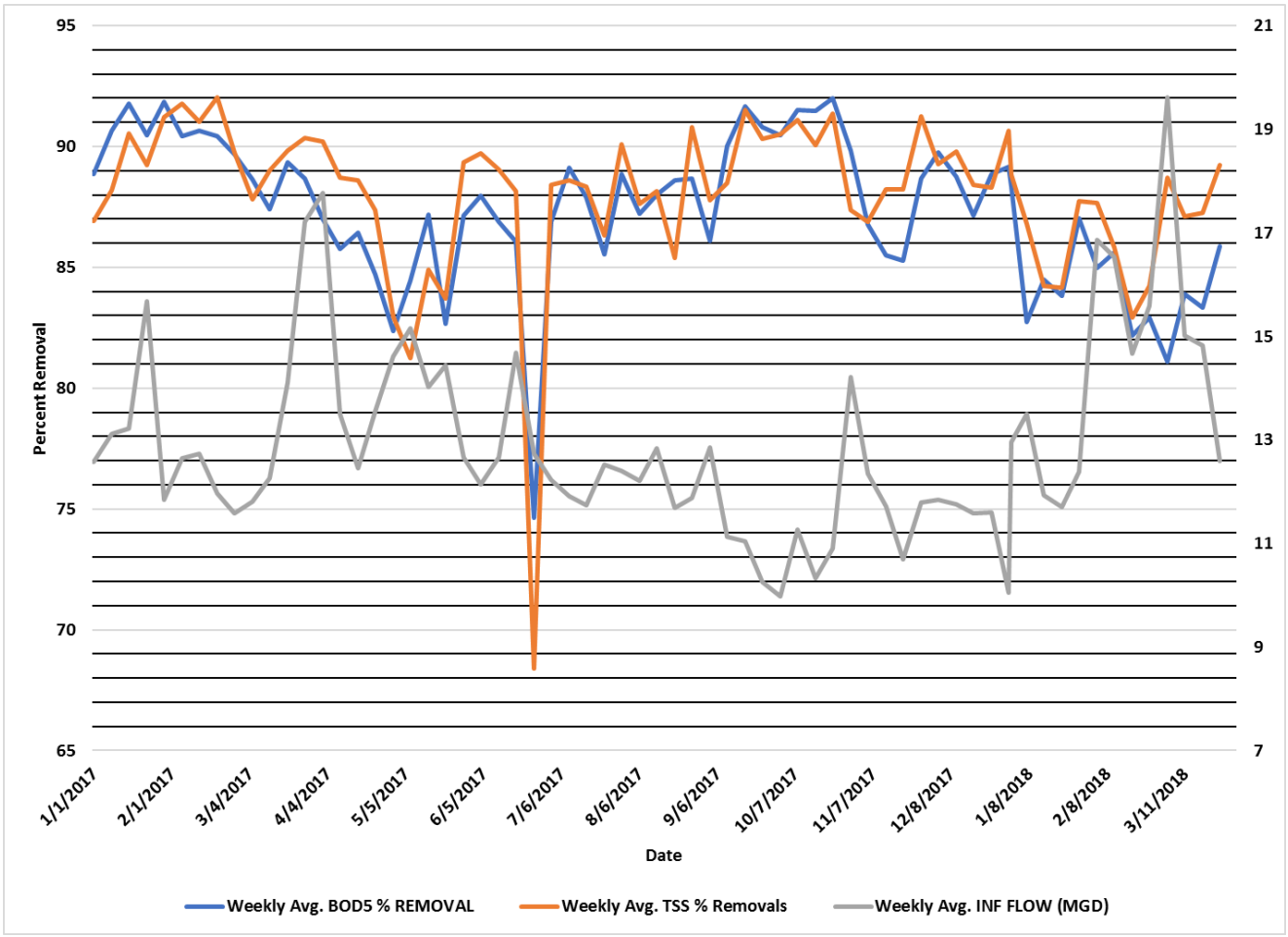


Figure 4-7. Percent Removal BOD_5 and TSS vs Flow



4.4 Preliminary Treatment (Screening and Grit Removal)

The capacity of the preliminary treatment is based on the hydraulic capacity of the mechanical screens and the grit removal system. The bar screens and belt conveyor were replaced in 2006, and the grit classifiers were replaced in 2017. The capacity of the screens is 40 mgd with one screen out of service. However, it is possible to increase the flow through the screens during wet weather and treat flows significantly higher than the 40 mgd if all three units are in service. The capacity of the grit removal system is the limiting process in the preliminary treatment building. There are two grit chambers and each is rated at approximately 24 mgd. This capacity limits the preliminary treatment capacity to approximately 24 mgd when one unit is out of service with inlet velocities of 2 fps. However, the inlet velocity can be increased to 3 fps to extend peak day capacity to 30 mgd with one unit out of service with a reduction in grit capture efficiency.

4.5 Primary Treatment (Primary Clarifiers)

There are three (3) primary clarifiers each with a surface area of 11,100 square feet (sf). The average overflow rate for the existing clarifiers is 371 gpd/sf at approximately 13 mgd whereas the recommended design average overflow rate is typically 1,200 gpd/sf for most tanks deeper than 12 feet.

The primary clarifiers at the Adams Street WWTP are only 10 feet deep and relatively shallow and therefore derating the overflow rate to 10,00 gpd/sf is a reasonable design criteria. At an overflow rate of 1,000 gpd/sf the primary clarifiers are rated for 33 mgd average flow. For peak hour flow, the recommended design overflow rate is approximately 1,800 gpd/sf. At 1,800 gpd/sf the capacity of the clarifiers is 59 mgd with all three units in service. When one unit is out of service the capacity is approximately 40 mgd.

4.6 Trickling Filters

There are three (3) trickling filters at the treatment plant. The tricking filters have 34-feet deep beds of plastic cross-flow media. When the treatment plant was constructed these units were hydraulically driven and during periods of high flow the media would slough and could blind the secondary treatment process. Mechanically driven adjustable speed drives were installed on the units in the 1990's. This change allowed a controlled flush and sloughing did not blind the downstream filters. Currently only two trickling filters are in service at a time. One filter is taken offline every year for maintenance; and because there is not enough loading to sustain all three trickling filters at the same time, the average hydraulic loading is approximately 1 gpm/mgd and the solids loading is approximately 47 lbs/d/1,000 ft^3. The capacity of two trickling filters is approximately 40 mgd. Due to the deep bed media a significant amount of flushing needs to occur to shear off the biofilm when loadings are greater than 50 lbs/d/1,000 ft^3.

The trickling filter pump station has two pump stations in one building; the first to pump the flow up to the trickling filter, and the second to then pump the trickling filter effluent up to PURAC. Each side of the pump station has a wet well and four submersible pumps on VFDs. There is also a valve between the two wet wells to allow for recirculation. The SCADA system modulates the recirculation valve to maintain a constant wetting rate on the trickling filters. Typically two pumps are running on each side of the pump station, and the third pump will kick on during rain events.

4.7 Secondary Treatment (PURAC)

There are ten (10) dissolved air floatation (DAF)/flofilters in the secondary treatment system. These PURAC units are unique in that they are the only units in the world to treat wastewater from a tricking filter. The plant operations staff has spent many years working to understand the PURAC process and the operational constraints with these units. The hydraulic capacity of each unit is limited to approximately 4 gpm/sf which equates to 32 mgd with one unit in backwash or out of service. However, if the flow across the filters is allowed to bypass the filters by opening an emergency bypass valve, it will allow up to 40 mgd capacity with one unit out of service. The use of this bypass feature is not currently allowed in the NJPDES permit. The historical effluent quality for BOD5 ranges between 19 mg/L at average flows of 13 mgd and 36 mg/L at peak week flows of 19.6 mgd. The TSS effluent quality ranges from 17 mg/L at average daily flows of 13 mgd and 39 mg/L at 19.6 mgd. Since the wet weather flows are much more dilute during peak hour periods the influent solids and BOD5 are much more dilute and effluent quality is better than the peak week condition. However, calculated removal percentages are typically degraded when the wastewater is too dilute. There is an ongoing upgrade project currently being undertaken to rehabilitate the entire PURAC system. It is expected to last another two years.

4.8 Disinfection

There are three (3) channels of ultraviolet (UV) disinfection. The hydraulic capacity of each channel is limited to 15 mgd due to headlosses in the UV banks, baffles and control gates. When one channel is out of service, the capacity is 30 mgd. However, the disinfection capacity is currently significantly below the required design capacity and is impacted due to the sand that migrates through failed underdrains in

several DAF/Flofilter cells in the PURAC system. Once the DAF/Flofilters are rehabilitated in 2021, the UV disinfection capacity should be restored to the design flows.

4.9 Process Treatment Physical Characteristics

The summary of each of the treatment plant unit process physical elements is shown in Table 4-4 below. These capacities are based on the plant Operation and Maintenance Manual from 1994 and includes several plant upgrades.

Table 4-4. Adams Street WWTP Physical Characteristics Summary

Mechanical Bar Screens	
Number of Bar Screens	3
Opening Size	¾ inch
Angle	80 degrees
Width	3’-6”
Depth	6’-6”
Average Flow per Screen	12 mgd
Maximum Flow per Screen	20 mgd
Grit Chambers	
Number of Chambers	2
Diameter	22 feet
Inlet	4’ x 4’
Removals	>95% grit @ 50 mesh
Maximum Flow per Chamber	24 mgd
Grit Pumps	
Number of Pumps	4
Flow	300 gpm
TDH	31 feet
Horsepower	15
Type	Variable Speed
Cyclones and Classifiers	
Number of Cyclones and Classifiers	2 each
Flow	300 gpm
Underflow	30 gpm
Pressure	10 psi
Horsepower	2
Screw	16 inches
Primary Clarifier Configuration	
Longitudinal Sludge and Scum Collectors	
Type	Chain & Flight
No. of Longitudinal Collectors/Clarifier	3
No. of Longitudinal Collectors/Bay	1
Length of each Longitudinal Collector	208 ft

Table 4-4. Adams Street WWTP Physical Characteristics Summary

Width of each Longitudinal Collector	18 ft
No. of Longitudinal Collector Drives/Clarifier	2
Side Water Depth	10 ft
Weir Length	642 ft
Tank Volume	2.37 MG
Surface Area	33,370 sf
Sludge Cross Collectors	
Type	Chain & Flight
No. of Sludge Cross Collectors/Primary Clarifier	1
Length of Each Cross Collector	56 ft (tank width)
Width of Each Cross Collector	3 ft 8 inches
Rotating Scum Skimmers	
Type	Rotating slotted barrel
No. of Rotating Scum Skimmers/Primary Clarifier	3
Length of Each Rotating Scum Skimmer	18 ft
Primary Sludge Pumps	
Type	Induced Flow Centrifugal
No. of Sludge Pumps	2
Design Point	200 gpm @ 19 ft TDH
Motor Size	7.5 Hp
Scum Pumps	
No. of Mixers	2
Horsepower	3
Scum Pump Type	Submersible
Total No. of Scum Pumps	4
Flow	250 gpm
Scum Pump Motor Size	1 Hp
Scum Pit Mixer Type	Submersible
Trickling Filters	
Type	Plastic Cross-flow Media
Number	3
Diameter	106 ft
Depth	34 ft
Specific Surface Area	30 ft/ft2

Table 4-4. Adams Street WWTP Physical Characteristics Summary

Volume of Media in Each	300,040 ft 3
Total Media	900,120 ft3
Minimum Flowrate to Each Filter	9.5 mgd
Maximum Flowrate to Each Filter	16 mgd
Peak Flowrate	24 mgd
Influent BOD5	173 mg/l
Organic Loading (BOD lb/d/1000 ft3)	45.7
Trickling Filter Design Capacity	28.5 mgd
Min HLR gpm/sf	0.75
Max HLR gpm/sf (w/o recycle)	1.26
Trickling Filter Pump Station	
Type of Influent Pumps	Submersible
Number of Pumps	4
Flow (gpm)	11,100
Horsepower	214
TDH(ft)	52
Type of Effluent Pumps	Submersible
Number of Pumps	4
Flow (gpm)	11,100
Horsepower	134
TDH(ft)	29
DAF/Flo-filters	
Type	Dissolved Air/Granular Media Filters
Number of Cells	10 cells
Size	40 ft x 22 ft
Maximum Capacity Each	2778 gpm
Max Rate	4 gpm/sf
Influent Design TSS	150 mg/l
Saturation Air Tanks	
Number	3
Capacity	450 gallons
Pressure	75-90 psi
Recycle	8-10 percent
Float Skimmers	

Table 4-4. Adams Street WWTP Physical Characteristics Summary

Number	10
Horsepower	0.5
Sludge/Scum Pumps	
Type	Positive Displacement
Number	2
Flow	75 gpm
TDH	30 ft
Horsepower	2
DAF Recycle Pumps	
Type	Centrifugal
Number	6
Flow	556 gpm
TDH	250 ft
Horsepower	50
Process Air Compressors	
Type	Rotary Screw
Number	2
Flow	67 scfm
Pressure	125 psi
Horsepower	25
Plant Air Compressors	
Type	Rotary Screw
Number	2
Flow	67 scfm
Pressure	125 psi
Horsepower	25
Air Dryer	
Dry Air	-40 deg F
Backwash Pumps	
Type	Centrifugal
Number	3
Flow	4400 gpm
TDH	25 ft
Horsepower	40

Table 4-4. Adams Street WWTP Physical Characteristics Summary

Backwash Waste Pumps	
Type	Submersible
Number	3
Flow	1200 gpm
TDH	30 ft
Horsepower	15
Backwash Air Scour Blowers	
Type	Positive Displacement
Number	4
Flow	1467 scfm
Pressure	5 psi
Horsepower	50
Backwash Tank Mixer	
Type	Shafted Impeller
Number	1
Horsepower	10
UV Disinfection	
Type	Horizontal Low Pressure High Output
Number Channels	3
Design Flow Per Channel	15 mgd
Effluent Pump Station	
Type	Submersible
Number	4
Flow	11,100 gpm
TDH	26 ft
Horsepower	100
Outfall Pipe	
Effluent Header Size	42 inches
Outfall with Liner	45 inches
Solids	
Storage Tank	
Number	1
Size	70 ft diameter
Depth	27 feet

Table 4-4. Adams Street WWTP Physical Characteristics Summary

Capacity	700,000 gallons
Sludge Recirculation Pumps	
Type	Centrifugal
Number	3
Flow	1800 gpm
TDH	25 feet
Horsepower	75
Sludge Transfer Pumps	
Type	Positive Displacement
Number	2
Flow	132 gpm
TDH	76 feet
Horsepower	10

4.10 Plant Process Pro2D Model

The Authority maintains a computer process model of the treatment plant. The model software is Pro2D™, a wastewater plant simulation program that calculates complete mass balances using International Water Association-based models including Activated Sludge Model 2d (ASM2d). The model calculates the mass balance for over 70 different wastewater components and performance of the various treatment flow streams, based on plant influent flows and loads, treatment plant processes and configuration, operational criteria, and chemical dosages.

The process model is a whole plant model representing primary treatment, trickling filters, and secondary treatment (DAF/Flofilters). The filtration process is modeled after a granular media filter and includes the backwash process, recycles and the ability to blend primary effluent after the DAF/Flofilters. The model does not include the preliminary treatment and disinfection process. Additional model scenarios and calibration is required to develop an accurate model. Process model calculations are shown in Table 4-5. The results indicate that the plant performance with two trickling filters in service and one Flofilter in backwash will meet permitted effluent requirements under average day, maximum month and peak day flows and loads.

In addition to the Pro2D model, the plant operations staff maintains a plant model in Biowin that is updated every 5 years, or after a process change. The operations staff uses the model on occasion to determine if plant performance improvements can be made.

Table 4-5. Pro2D Model Inputs of Adams Street Wastewater Treatment Plant

Linked Model Input	Current Run:	Actual Reported Average	Design Max Month	Design Peak Day
Flow (mgd)	29.2	13	16	29.2
CBOD5 (lbs/day)	27,743	15,700	23,752	27,743
TSS (lbs/day)	35,287	15,800	23,618	35,287
% VS	92%	92%	92%	0.92
TKN (lbs/d)	1,867	1,867	1,867	1,867
Ammonia -N (lbs/day)	1,400	1,400	1,400	1,400
Total Phosphate - P (lbs/day)	366	366	366	366
Primary Clarifier Area (sqft)	32,448	32,448	32,448	32,448
TSS Removal Efficiency	50%	50%	50%	0.5
Primary Sludge Concentration (mg/L)	10,000	10,000	10,000	10,000
Percent of COD that is soluble	30%	30%	30%	0.3
SRT	14.1	14.1	14.1	14.1
Temperature ^{o}C	20	20	20	20
Bypass Amount to Blending (remaining to TFs)	0%	0%	0%	0
TF Media Volume - ft3	600,000	600,000	600,000	600,000
TF Media Depth - ft	34.00	34.00	34.00	34
TF Recirculation Flow - mgd	14.00	14.00	14.00	14
TF % Denitrification (if it is able to nitrify)	0	0	0	0
Media Specific Surface Area (ft2/ft3)	30.5	30.5	30.5	30.5
Use Secondary Clarifier/DAF	no	no	no	no
Secondary Clarifier/DAF Area (sqft)	8,000	8,000	8,000	8,000
Secondary Effluent/DAF TSS (mg/L)	15	15	15	15
Sludge Concentration (Overflow Sludge for DAF) - mg/L	8000	8000	8000	8,000
Filter Area, ft^2	8000	8000	8000	8,000
Backwash flow, gpm/ft^2	8	8	8	8
Backwash time, 10 min	10	10	10	10
Filter %TSS Removal	85%	85%	85%	0.85
Dewatering % Capture	95%	95%	95%	0.95
Dewatered Cake, %TS	10%	10%	10%	0.1

Table 4-5. Pro2D Model Inputs of Adams Street Wastewater Treatment Plant

Linked Model Input	Current Run:	Actual Reported Average	Design Max Month	Design Peak Day
BFP Washwater Flow	109.00	109.00	109.00	109
Results				
PCE TSS - mg/L	63.28	69.17	79.27	63.28
PCE BOD5	63.34	77.93	96.06	63.34
PCE TKN	5.69	12.21	10.07	5.69
PCE ALK	248.66	247.14	247.64	248.66
Secondary Effluent CBOD5 (mg/L)	25.1	29.3	35.6	25.15
Secondary Effluent NH3-N (mg/L)	2.0	2.0	2.0	2.00
Secondary Effluent TSS (mg/L)	52	68	76	51.62
Secondary Effluent Total P (mg/L)	0.5	2.3	1.5	0.51
TF Hydraulic Loading Rate, gpm/ft2	1.73	1.10	1.22	1.73
TF Loading Rate, lbs BOD/1000 ft3/d	26	15	23	26.48
TF Eff sBOD5	2.8	0.6	1.2	2.80
Sufficient Oxygen for Nitrification?	YES	YES	YES	YES
Filter Effluent BOD5 - mg/L	5.20	5.23	6.46	5.20
Filter Effluent TSS	8.09	11.15	12.36	8.09
Filter Effluent TKN	3.09	3.45	3.69	3.09
Filter Effluent NH3-N	2.00	2.00	2.00	2.00
Blended Effluent BOD5 - mg/L	5.20	5.23	6.46	5.20
Blended Effluent TSS	8.09	11.15	12.36	8.09
Blended Effluent TKN	3.09	3.45	3.69	3.09
Blended Effluent NH3-N	2.00	2.00	2.00	2.00
Blended Effluent TP	-0.21	1.39	0.45	-0.21
Primary Sludge (lbs/day)	23,808	12,116	16,807	23,808
WAS (lbs/d)	0	0	0	-
Total Sludge to Dewatering	23,808	12,116	16,807	23,808
Total Sludge Flow to Dewatering	285,280	145,178	201,385	285,280
Biosolids Cake, lbs/d	23,808	12,116	16,807	23,808
Cake, DT/d	11.904	6.058	8.403	11.90

Service Area and Land Uses

A service area and land use update was performed to collect data to delineate and characterize CSO drainage basin areas and subareas for use in developing the hydraulic model and in planning modifications and improvements to the Authority's Adams Street Service area. Since the 1996 Combined Sewer Overflow Service Area and Land Use Report, many changes have taken place including population increases, land use changes from industrial to commercial, and substantial development in the collection systems service area along the waterfronts.

Specifically, the objectives of the update were as follows:

- Revise or confirm existing delineations of drainage basins and subbasins in sufficient detail to allow development of a hydrologic model of the CSS.
- Define runoff characteristics of drainage basins and subbasins in sufficient detail to allow model development, including definition of total contributing area, average percent imperviousness, average slope, and average roughness.
- Define dry weather sewage flow characteristics of drainage basins and subbasins in sufficient detail to allow model development and CSO facility planning. Development of planning includes definition of population, average dry weather wastewater flow, and infiltration and inflow

5.1 Service Area Drainage Basins

The Adams Street service area consists of fourteen (14) drainage basins as shown in Table 5-1. Figure 5-1 shows a map of the drainage basins. In addition to the 14 drainage basins, there are two drainage basins where flow is not conveyed to the Adams Street WWTP, also shown in Table 5-1. These areas are not hydraulically connected to the Adams Street WWTP service area but rather, drain to the Passaic Valley Sewerage Commissioners (PVSC). Drainage basin HWF is a separately sewered area with stormwater discharged to the Hudson River. The areas of the drainage basins were updated from the 1996 delineations and confirmed as necessary in GIS. In addition, subcatchments were further delineated, and observed flow direction and average basin slopes were determined using a combination of historical data review, GIS use, and fieldwork.

Table 5-1. NHSA Adams Street WWTP Service Area Drainage Basins

Basin ID	Basin Area (acres)	Notes
H1	285.44	
H2	32.42	
H3	64.62	
H4	99.02	
H5	150.68	
H6	23.98	
H7	79.92	
HWF	303.22	Sanitary flow to Adams Street WWTP, Stormwater flow to Hudson River
W1	115.95	
W2	206.70	
W3	128.15	

Table 5-1. NHSA Adams Street WWTP Service Area Drainage Basins

Basin ID	Basin Area (acres)	Notes
W4	68.00	
W5	22.58	
18 PS	104.44	
NBW	22.06	Drains through North Bergen MUA to PVSC
UH1	333.02	Drains through Jersey City to PVSC

Figure 5-1. Adams Street WWTP Service Area Drainage Basins

5.2 Land Uses, Imperviousness, and Zoning

Following delineation of the drainage basins and subbasins, land use, zoning, and imperviousness were reviewed and updated as necessary to allow for basin characteristics to be defined, including average percent imperviousness and average slope. Updated GIS was used to perform this task.

5.2.1 Land Use and Imperviousness

As part of the update, land use characterization was examined using NJDEP Land Use/Land Cover (LULC) Anderson classification system published in 2016. Land uses present in the service area are as follows:

- Transitional Areas
- Brushland/shrubland
- Deciduous Forest
- Commercial and Services
- Industrial
- Industrial and Commercial Complexes
- Mixed Urban/Built Up Land
- Other Urban/Built Up Land
- Recreational Land
- Residential
- Transportation/Communication/Utilities
- Artificial Lakes
- Tidal River/Inland Bays

The land uses listed above were sorted into four simplified categories based on their Anderson code descriptions. The four simplified land use categories are as follows:

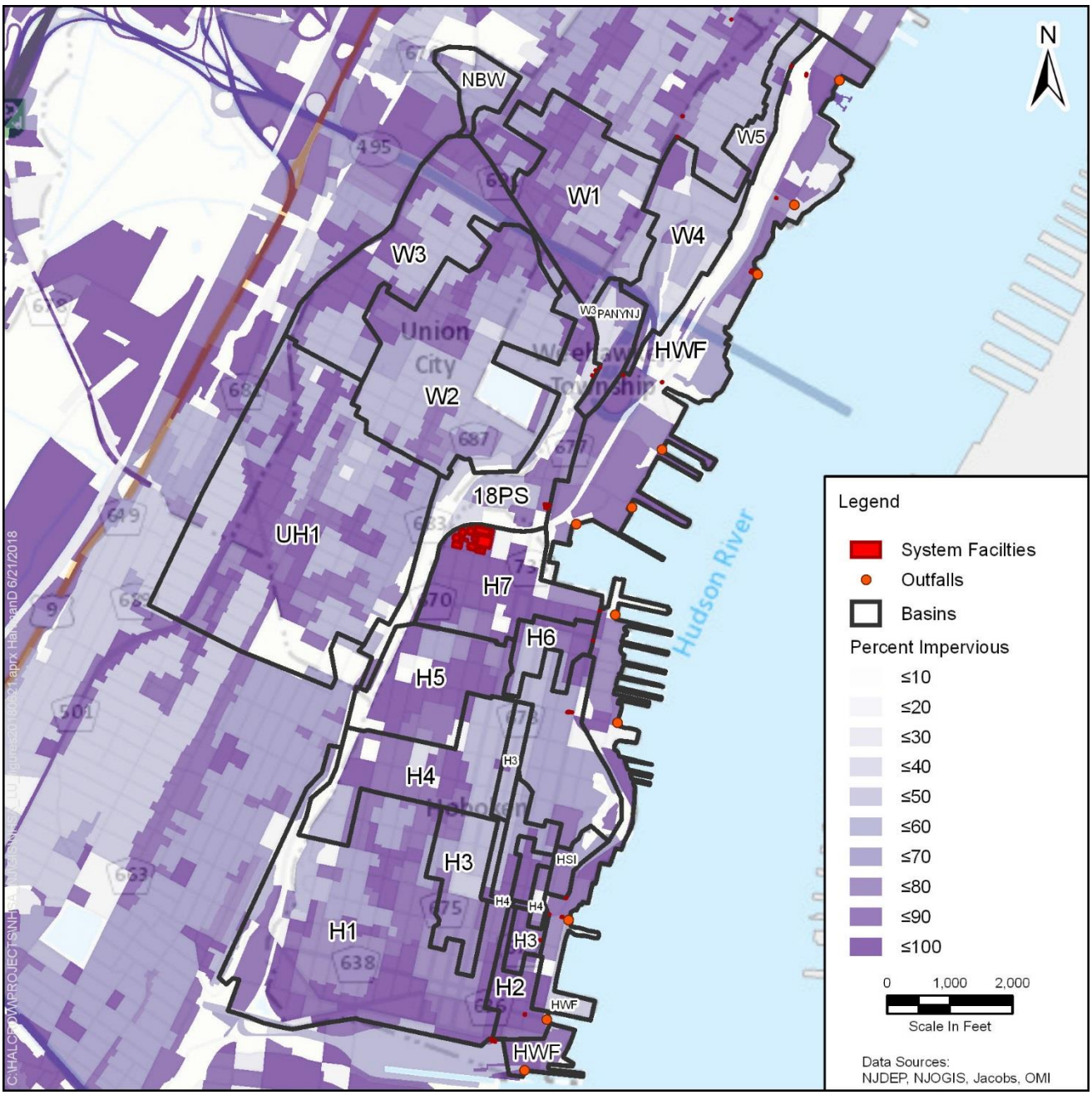
- Medium density residential/Mixed Use
- High density residential
- Commercial/industrial/Transportation
- Open space/park/other

The entire service area is mainly high density residential (49%) and commercial/industrial/ transportation (31%) with open space/park/other (14%) and medium density residential/mixed use (6%) as the next highest land use percentages. Table 5-2 and Figure 5-3 through Figure 5-20 summarize the land use areas for each drainage basin. Updated GIS was also used to determine impervious cover for each basin within the Adams Street WWTP service area. The service area average is approximately 67% impervious. Basins with the highest percentages of impervious cover are H2, H7 and W1. Table 5-2 and Figure 5-2 summarize the average imperviousness percentages for each drainage basin.

Table 5-2. NHSA Adams Street Land Use Area (Acres) and Impervious Cover by Basin

Basin	Medium Density Residential/Mixed Use	High Density Residential	Commercial/Industrial/Transportation	Open space/Park/Other	Average Imperviousness (Percent)
H1	20.67	173.09	75.53	16.15	74.73
H2	5.17	6.53	19.71	1.01	90.71
H3	7.05	47.11	6.10	4.36	69.48
H4	2.66	63.99	22.03	10.34	65.77
H5	0.00	76.90	39.45	34.33	67.27
H6	0.00	19.08	4.89	0.00	75.16
H7	0.00	12.07	57.34	10.51	79.49
HSI	0.00	0.00	9.06	1.62	70.20
HWF	3.97	38.65	147.59	113.02	59.68
W1	11.19	57.53	46.01	1.22	78.45
W2	14.04	141.07	29.11	22.48	63.55
W3	5.52	60.61	60.29	1.73	75.86
W4	8.75	41.67	13.70	3.87	58.79
W5	0.00	19.66	1.11	1.81	58.04
18PS	2.22	48.18	26.33	27.71	26.16
NBW	4.41	13.74	1.43	2.48	72.13
PANYNJ	0.00	7.50	14.58	3.31	68.41
HWF	44.61	183.73	78.46	26.23	74.73
UH1	20.67	173.09	75.53	16.15	90.71

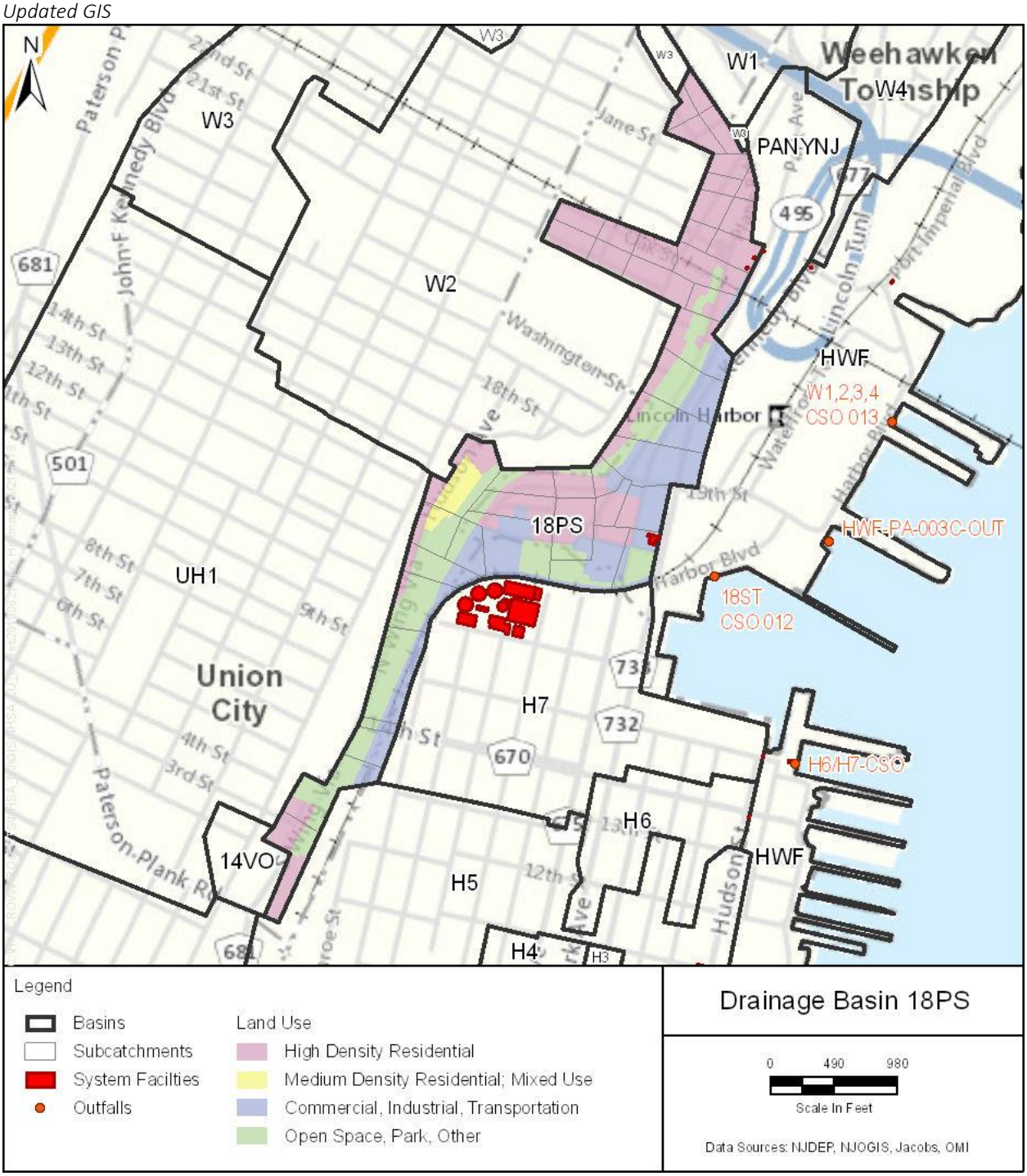
Figure 5-2. NHSA Adams Street WWTP Service Area Imperviousness of Drainage Basins



The 18PS drainage basin is 104 acres. The land uses in this combined sewer area are as follows: 46% high density residential, 26% open space/park/other, 25% commercial/industrial/transportation, and 2% medium density residential/mixed use. Figure 5-3 shows the 18PS basin and its land uses. The overall percent imperviousness of the basin is 48%.

Figure 5-3. NHSA 18PS Service Area Land Use

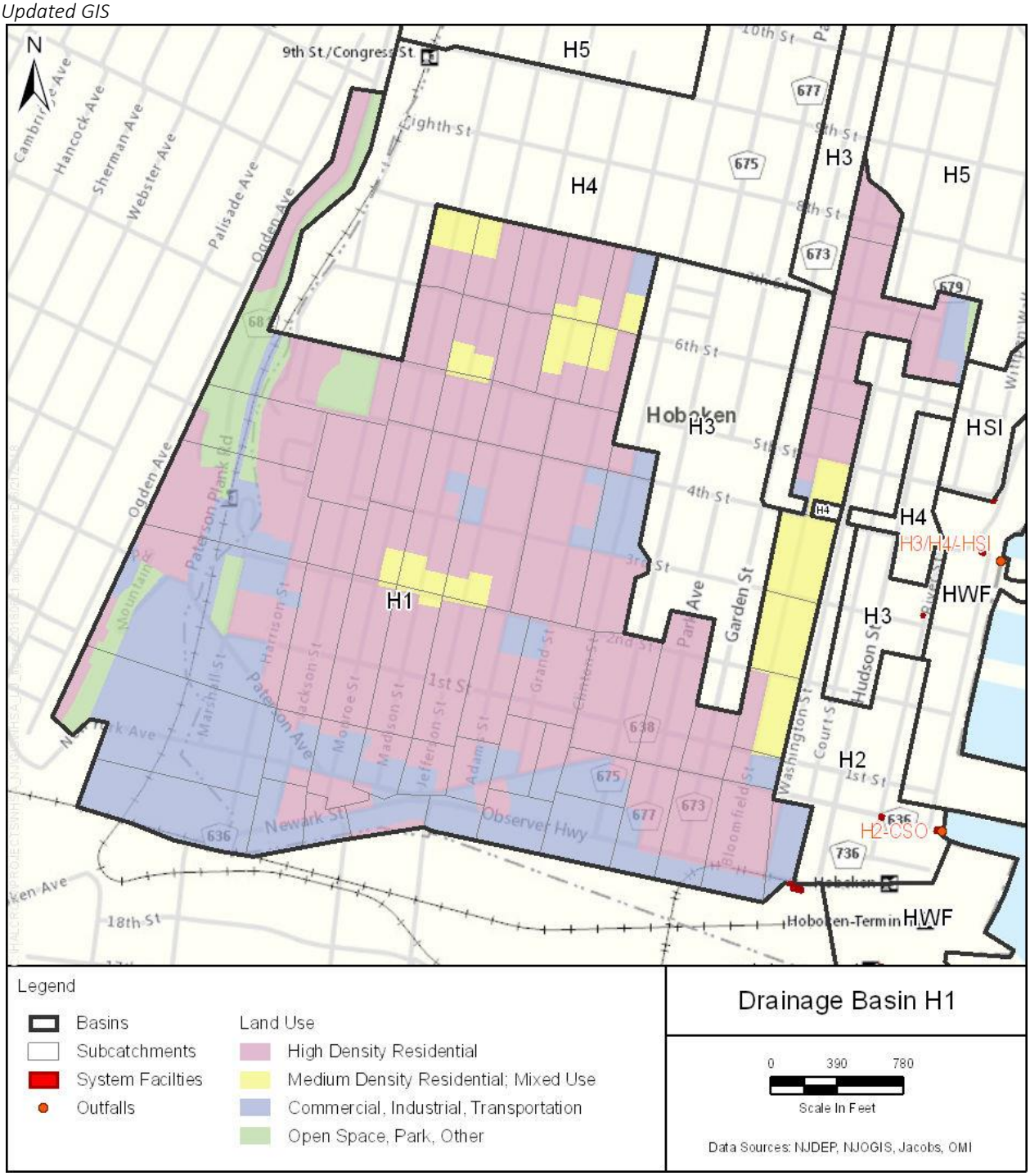
Updated GIS



The H1 drainage basin is 285 acres. The land uses in this combined sewer area are as follows: 61% high density residential, 26% commercial/industrial/transportation, 7% medium density residential/mixed use, and 6% open space/park/other. Figure 5-4 shows the H1 basin and its land uses. The overall percent imperviousness of the basin is 75%.

Figure 5-4. NHSA H1 Service Area Land Use

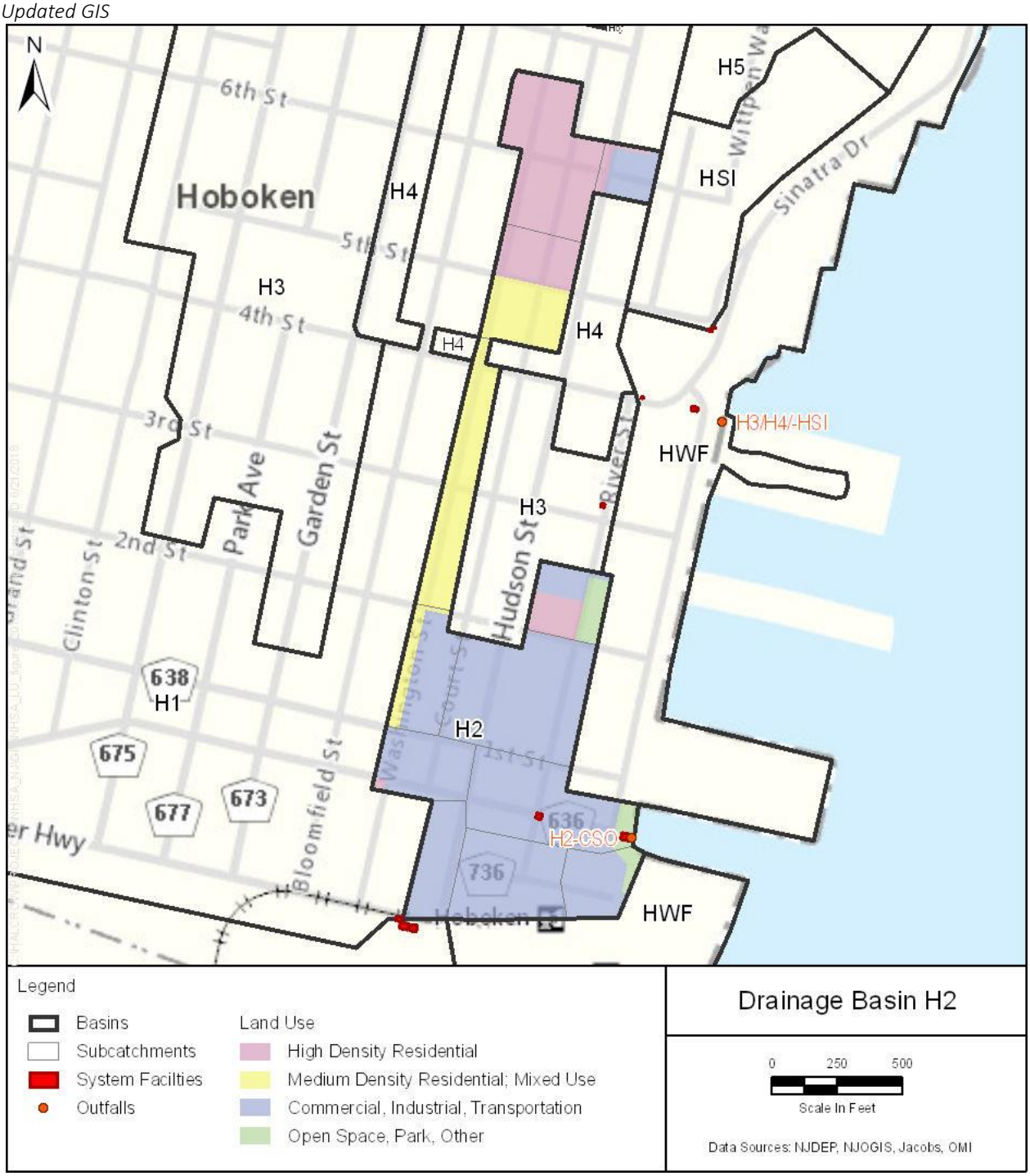
Updated GIS



The H2 drainage basin is 32 acres. The land uses in this combined sewer area are as follows: 61% commercial/industrial/transportation, 20% high density residential, 16% medium density residential/mixed use, and 3% open space/park/other. Figure 5-5 shows the H2 basin and its land uses. The overall percent imperviousness of the basin is 91%.

Figure 5-5. NHSA H2 Service Area Land Use

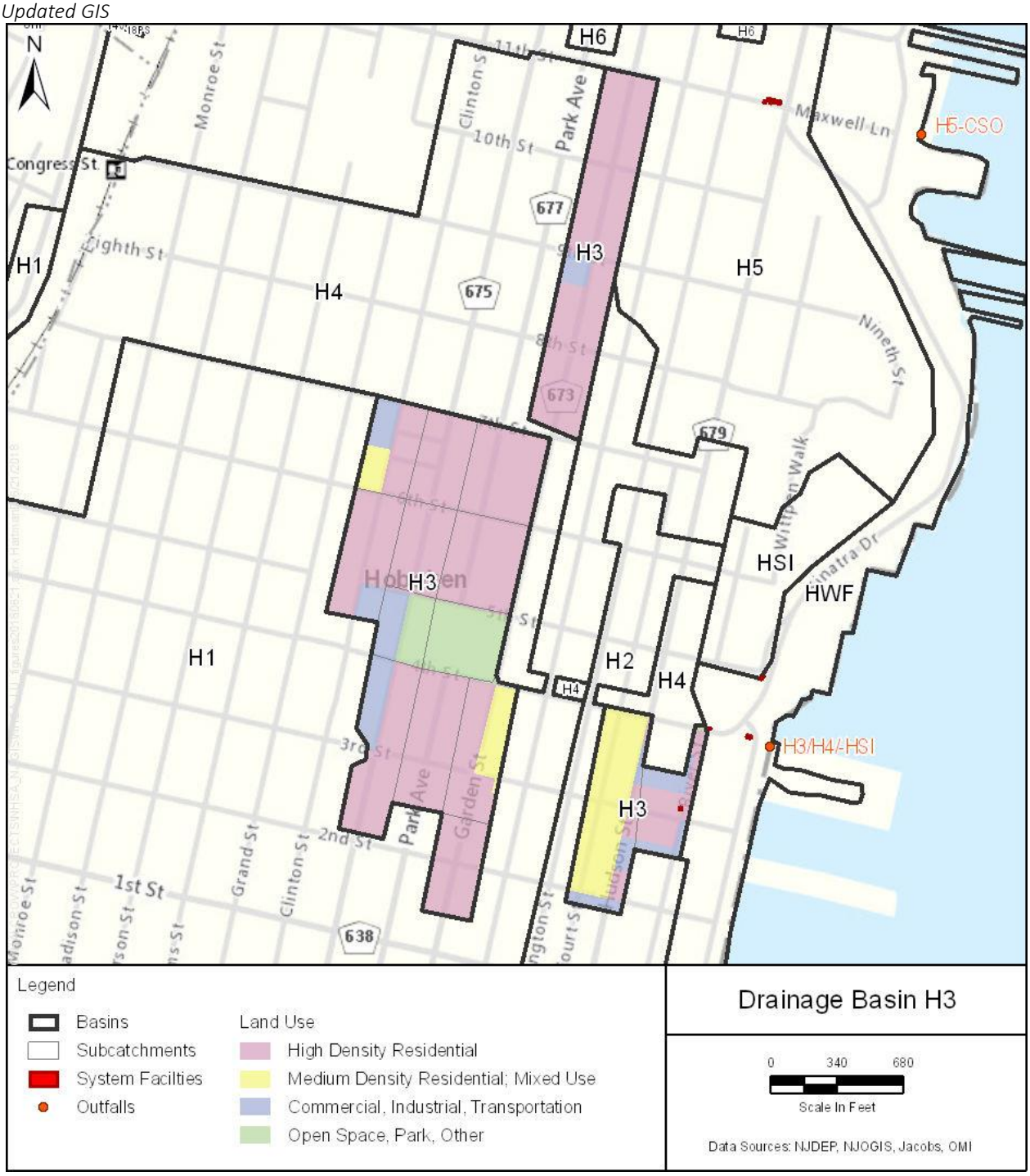
Updated GIS



The H3 drainage basin is 65 acres. The land uses in this combined sewer area are as follows: 73% high density residential, 11% medium density residential/mixed use, 9% commercial/industrial/ transportation, and 7% open space/park/other. Figure 5-6 shows the H3 basin and its land uses. The overall percent imperviousness of the basin is 69%.

Figure 5-6. NHSA H3 Service Area Land Use

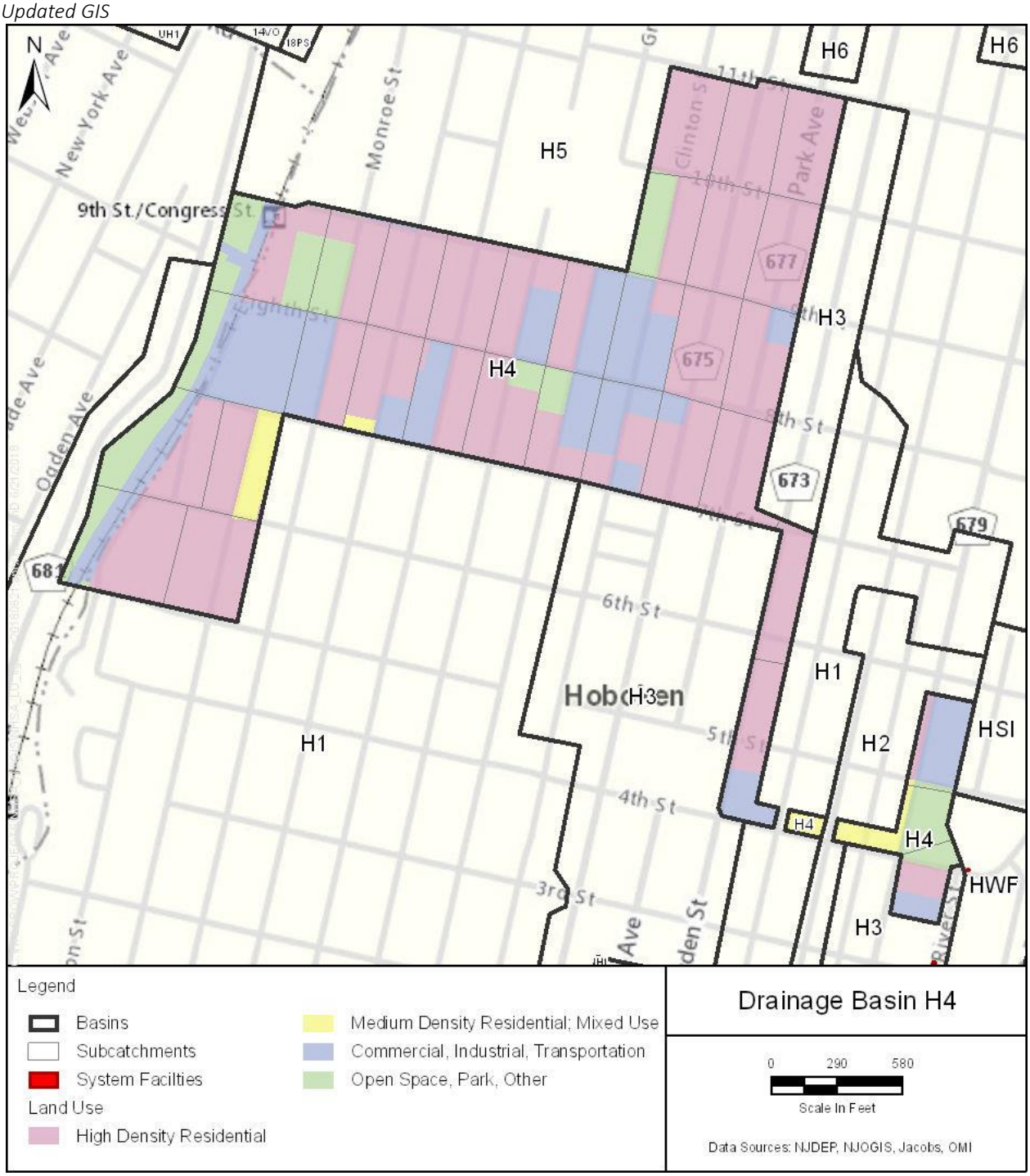
Updated GIS



The H4 drainage basin is 99 acres. The land uses in this combined sewer area are as follows: 65% high density residential, 22% commercial/industrial/transportation, 10% open space/park/other, and 3% medium density residential/mixed use. Figure 5-7 shows the H4 basin and its land uses. The overall percent imperviousness of the basin is 66%.

Figure 5-7. NHSA H4 Service Area Land Use

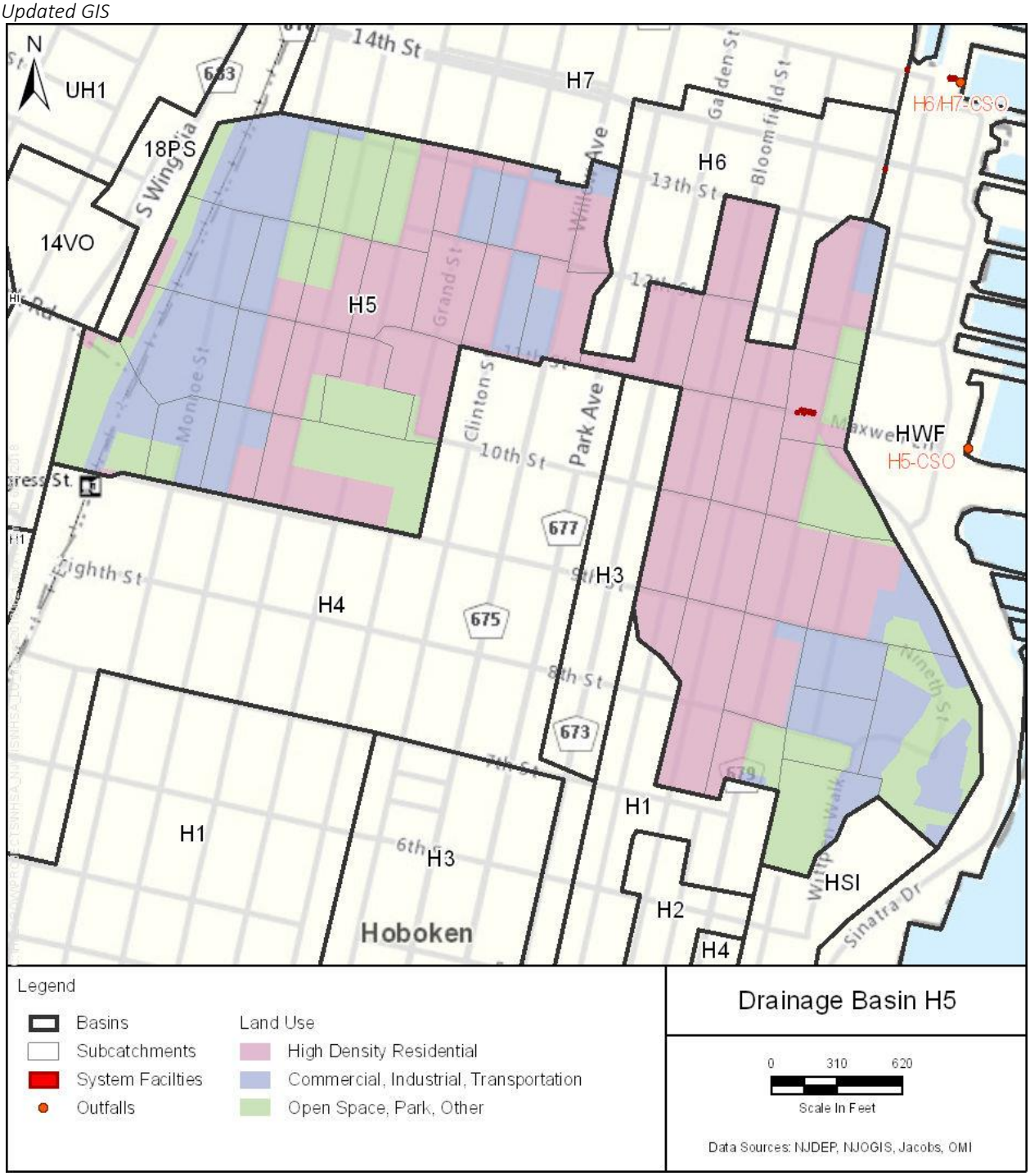
Updated GIS



The H5 drainage basin is 151 acres. The land uses in this combined sewer area are as follows: 51% high density residential, 26% commercial/industrial/transportation, and 23% open space/park/other. Figure 5-8 shows the H5 basin and its land uses. The overall percent imperviousness of the basin is 67%.

Figure 5-8. NHSA H5 Service Area Land Use

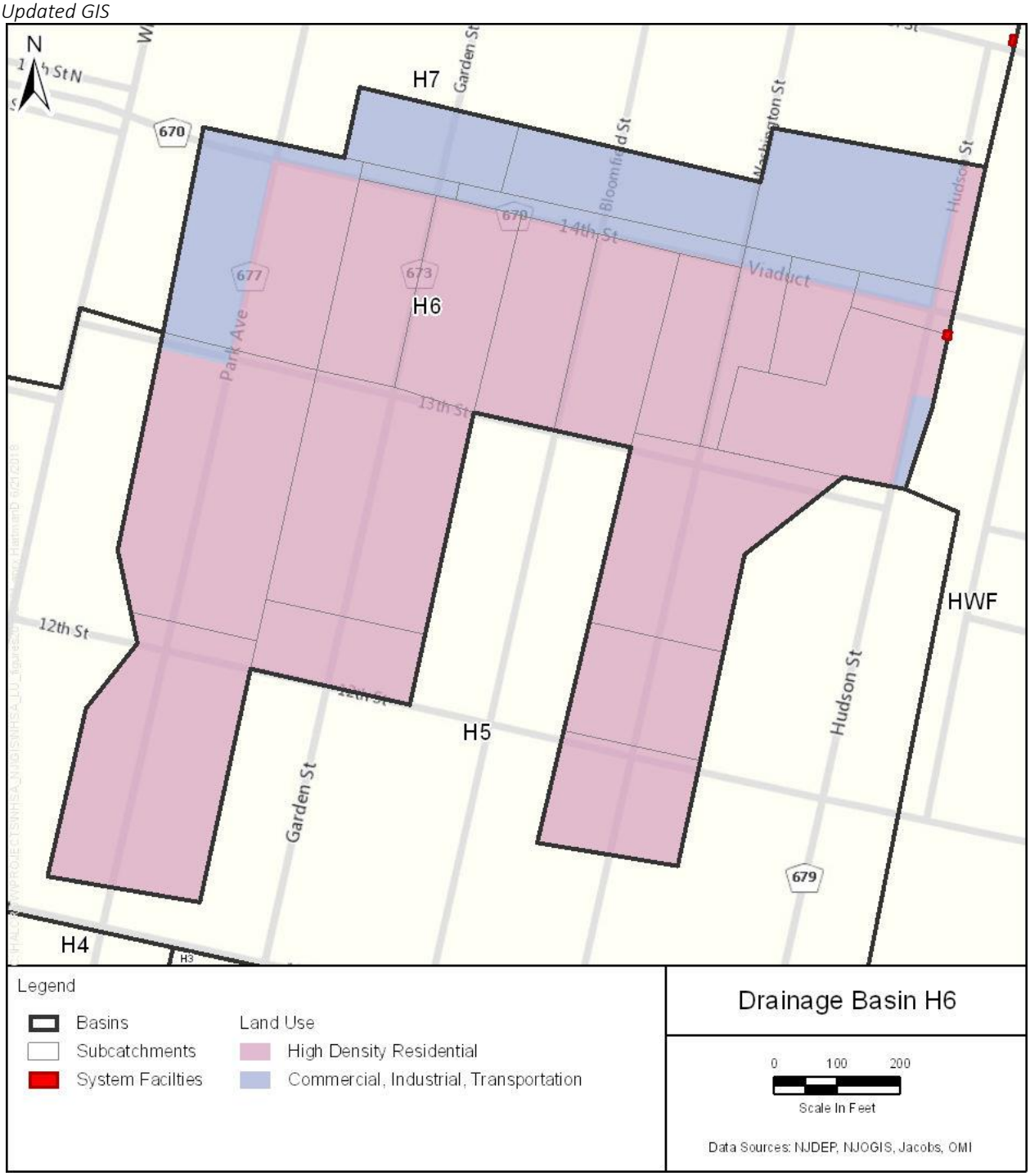
Updated GIS



The H6 drainage basin is 24 acres. The land uses in this combined sewer area are as follows: 80% high density residential, and 20% commercial/industrial/transportation. Figure 5-9 shows the H6 basin and its land uses. The overall percent imperviousness of the basin is 75%.

Figure 5-9. NHSA H6 Service Area Land Use

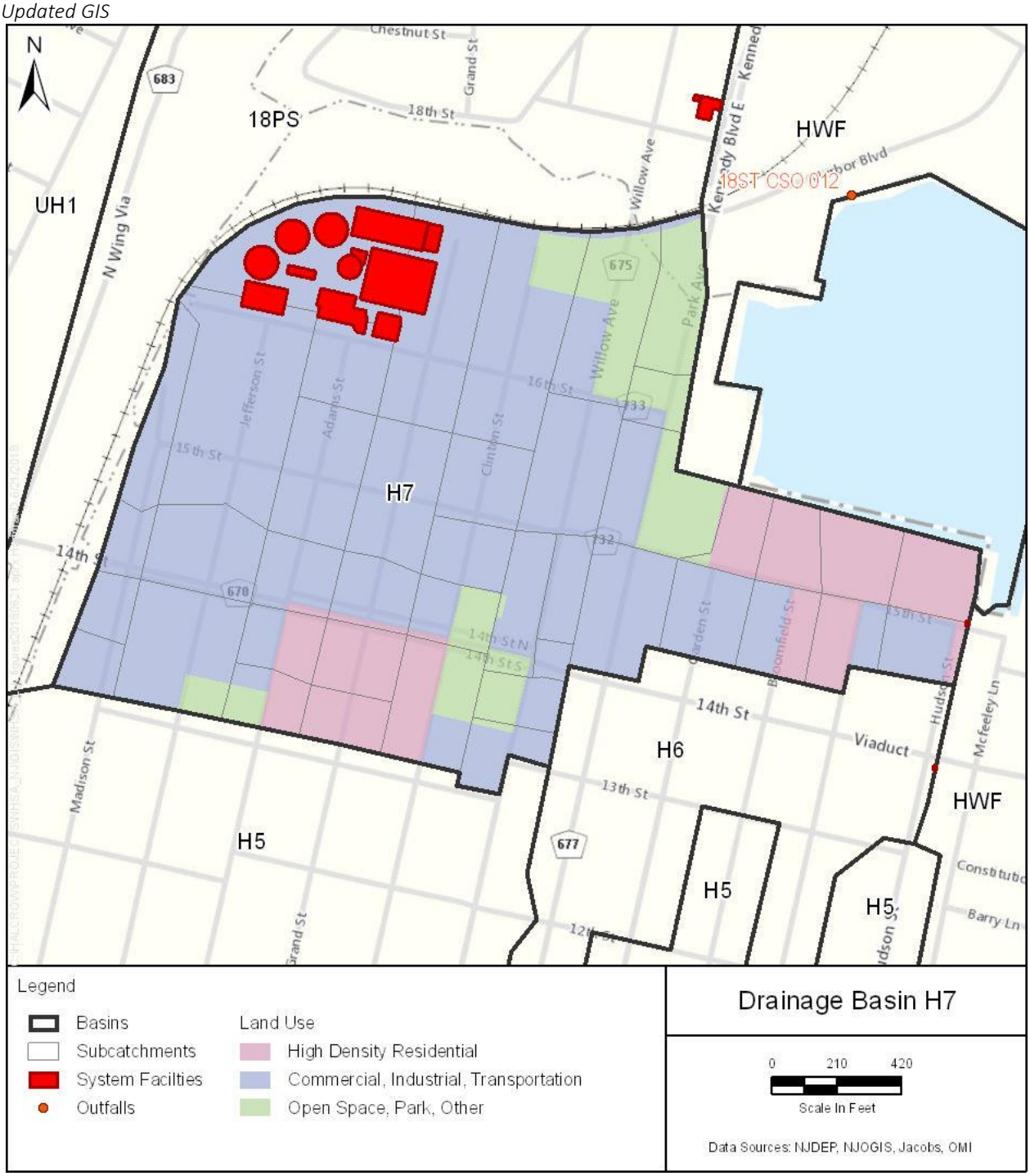
Updated GIS



The H7 drainage basin is 80 acres. The land uses in this combined sewer area are as follows: 72% commercial/industrial/transportation, 15% high density residential, and 13% open space/park/other. Figure 5-10 shows the H7 basin and its land uses. The overall percent imperviousness of the basin is 79%.

Figure 5-10. NHSA H7 Service Area Land Use

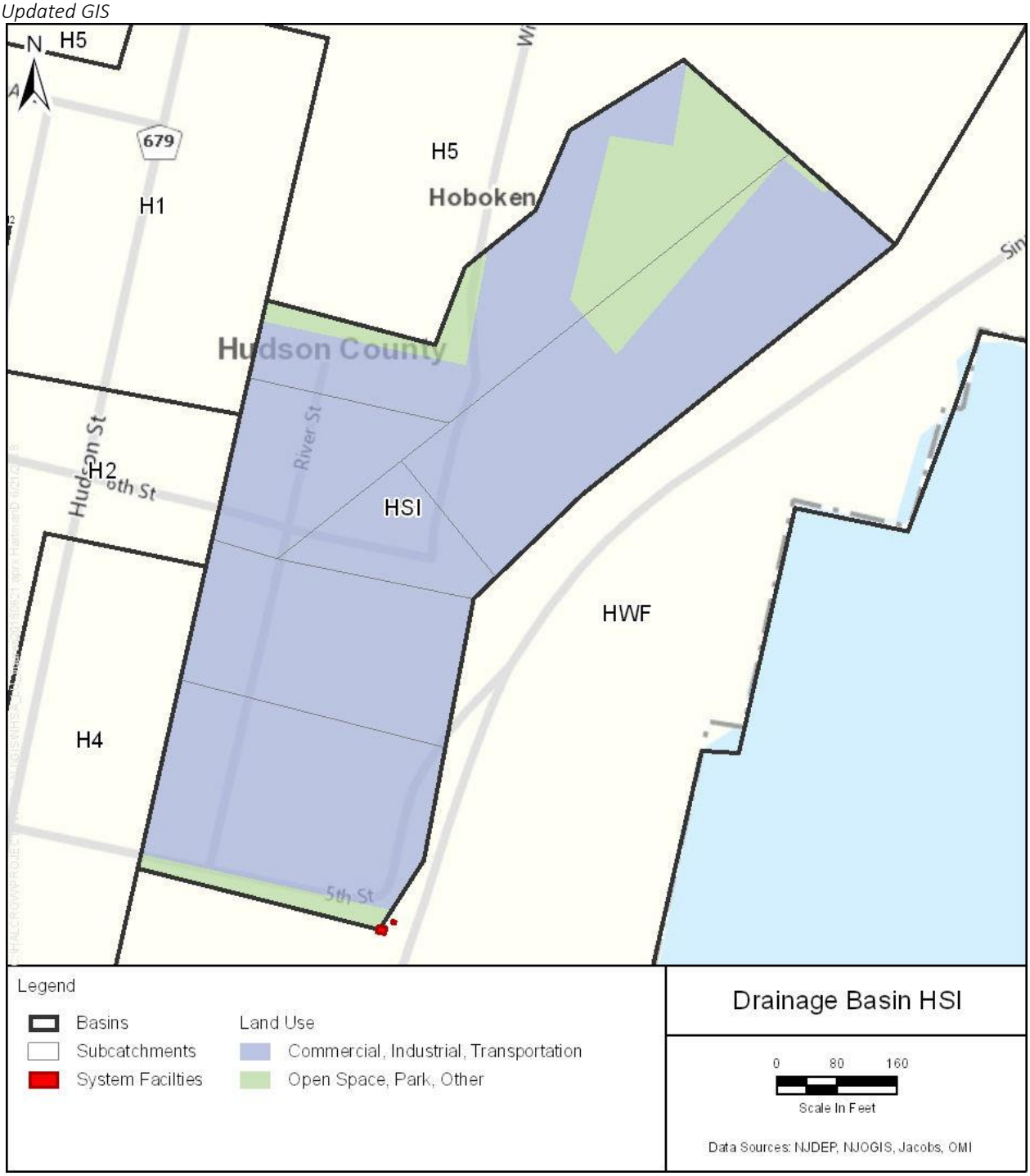
Updated GIS



The HSI drainage basin is 11 acres. The land uses in this combined sewer area are as follows: 85% commercial/industrial/transportation, and 15% open space/park/other. Figure 5-11 shows the HSI basin and its land uses. The overall percent imperviousness of the basin is 70%.

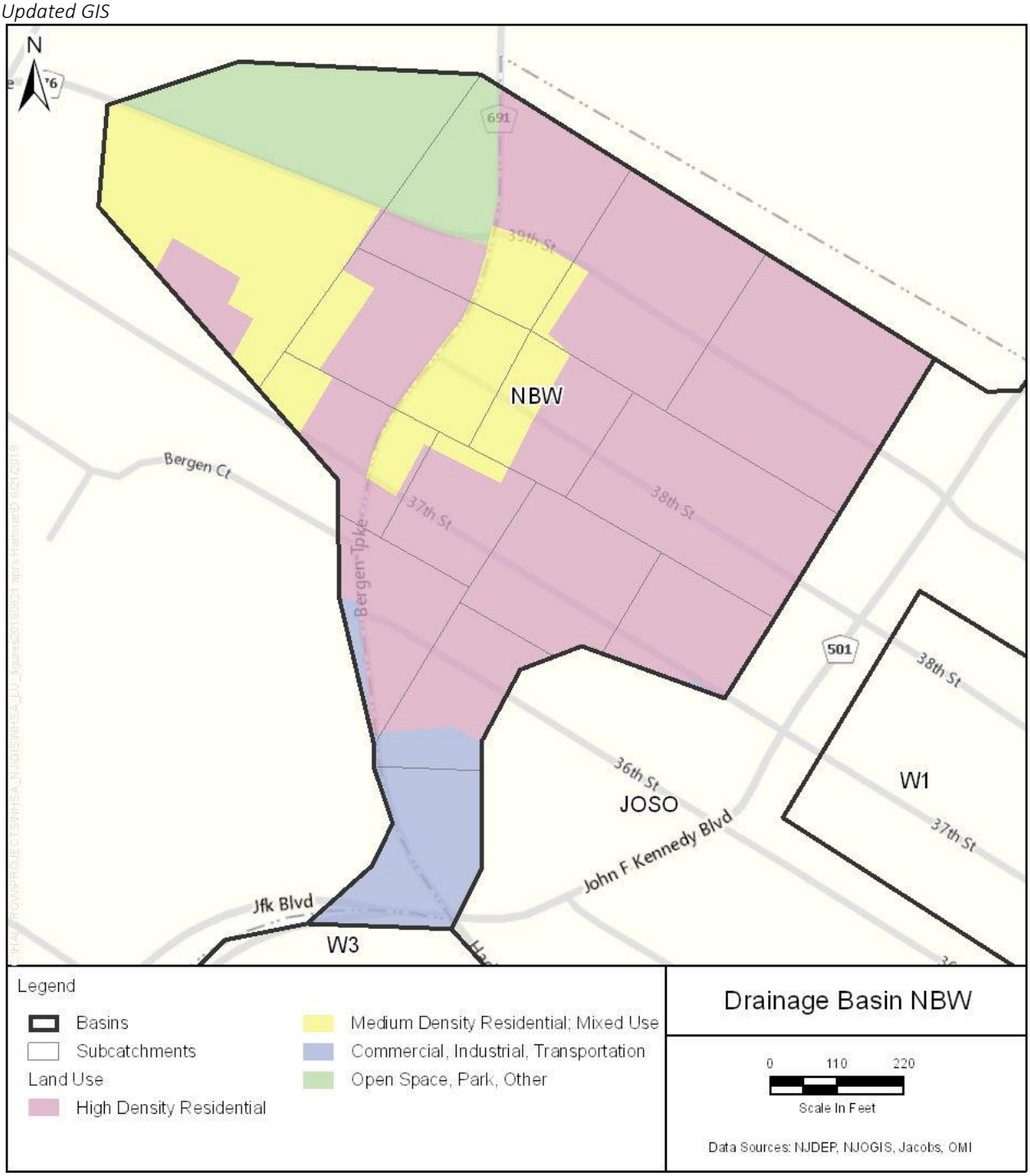
Figure 5-11. NHSA HSI Service Area Land Use

Updated GIS



The NBW drainage basin is 22 acres. The land uses in this combined sewer area are as follows: 62% high density residential/20% medium density residential/mixed use, 11% open space/park/other, and 6% commercial/industrial/transportation. Figure 5-12 shows the NBW basin and its land uses. The overall percent imperviousness of the basin is 62%.

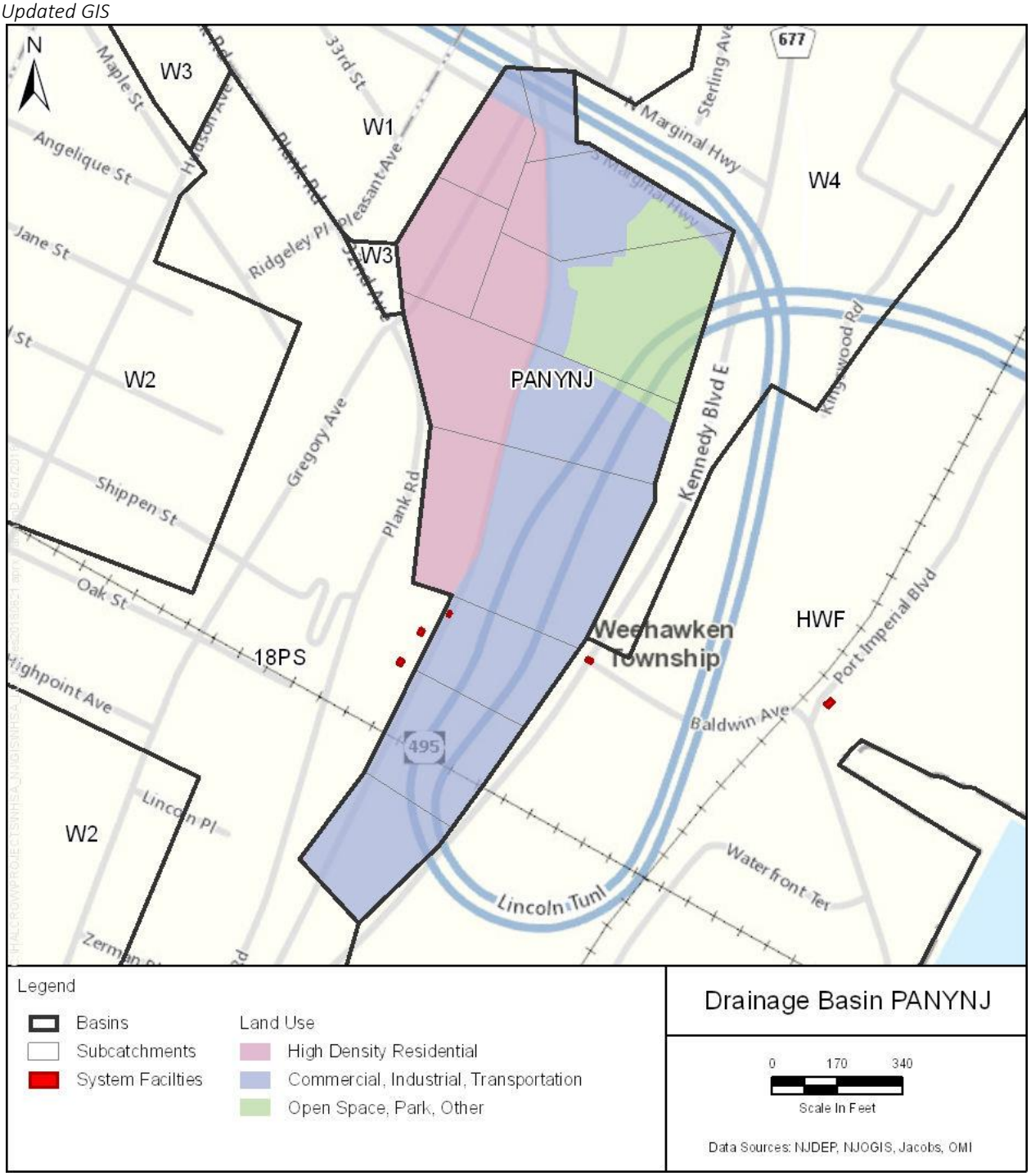
Figure 5-12. NHSA NBW Service Area Land Use
Updated GIS



The PANYNJ drainage basin is 25 acres. The land uses in this combined sewer area are as follows: 57% commercial/industrial/transportation, 30% high density residential, and 13% open space/park/other. Figure 5-13 shows the PANYNJ basin and its land uses. The overall percent imperviousness of the basin is 72%.

Figure 5-13. NHSA PANYNJ Service Area Land Use

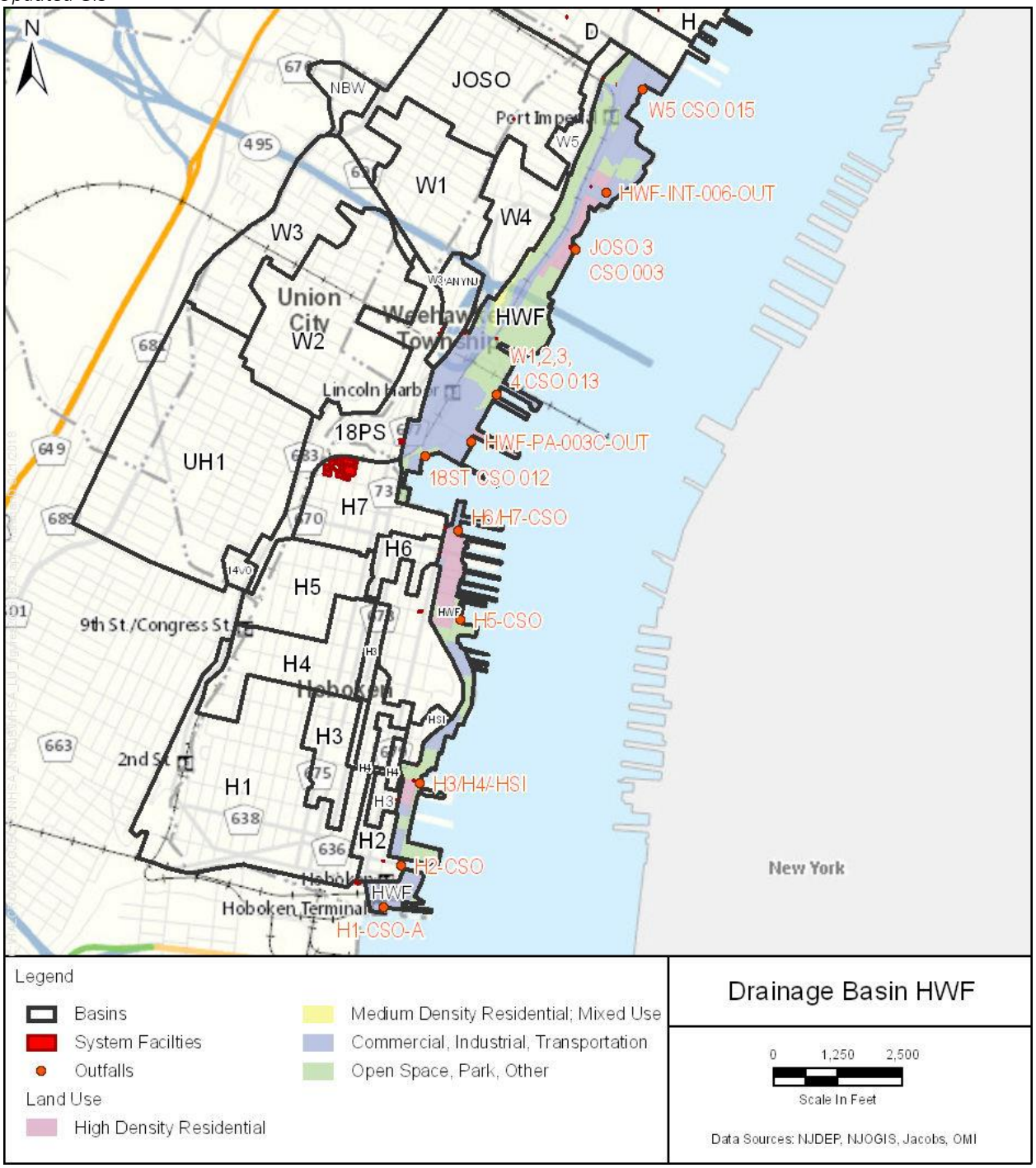
Updated GIS



The HWF drainage basin is 303 acres. The land uses in this combined sewer area are as follows: 62% high density residential, 20% medium density residential/mixed use, 11% open space/park/other, and 6% commercial/industrial/transportation. Figure 5-14 shows the HWF basin and its land uses. The overall percent imperviousness of the basin is 60%.

Figure 5-14. NHSA HWF Service Area Land Use

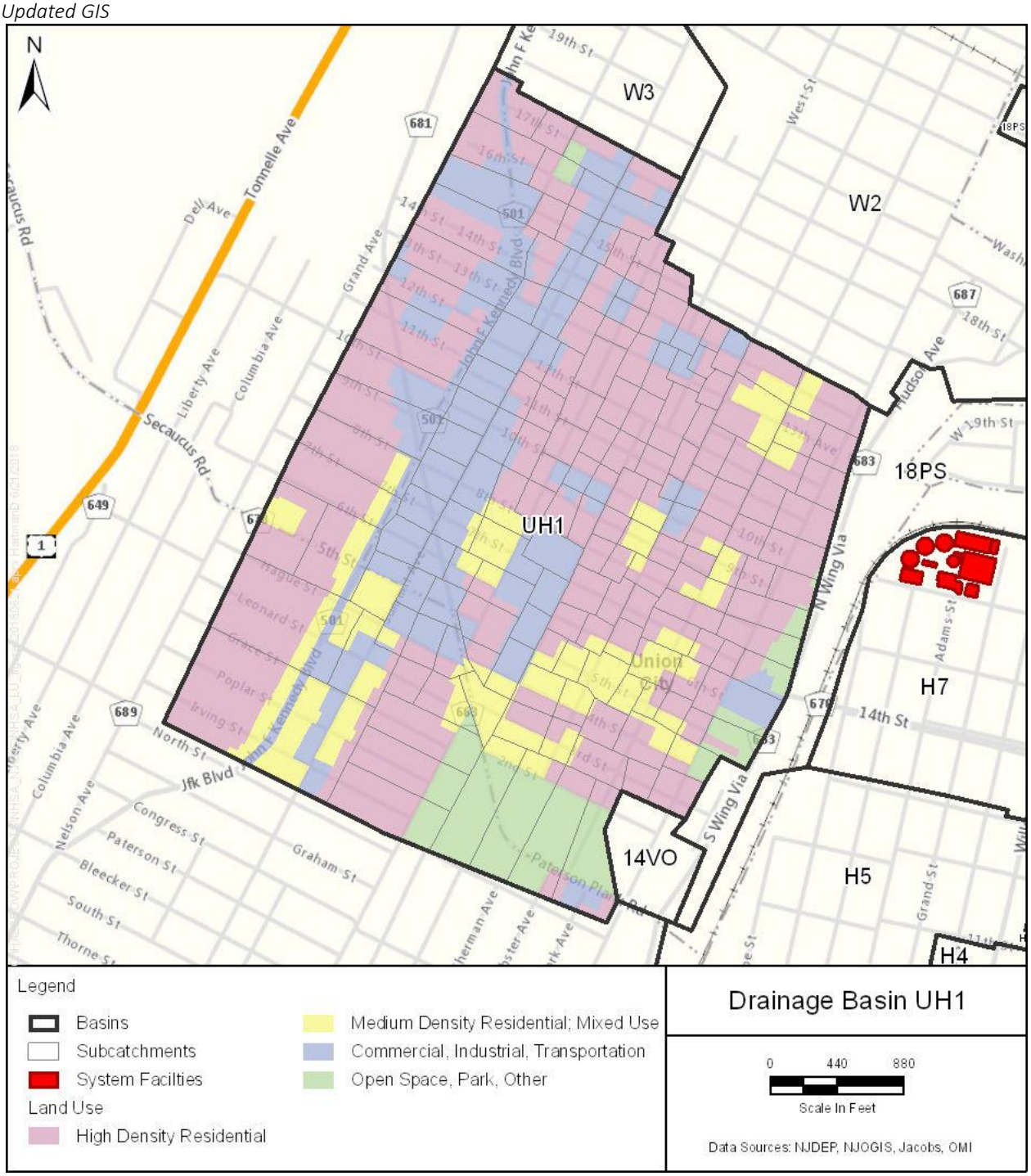
Updated GIS



The UH1 drainage basin is 333 acres. The land uses in this combined sewer area are as follows: 55% high density residential, 24% commercial/industrial/transportation, 13% medium density residential/mixed use, and 8% open space/park/other. Figure 5-15 shows the UH1 basin and its land uses. The overall percent imperviousness of the basin is 68%.

Figure 5-15. NHSA UH1 Service Area Land Use

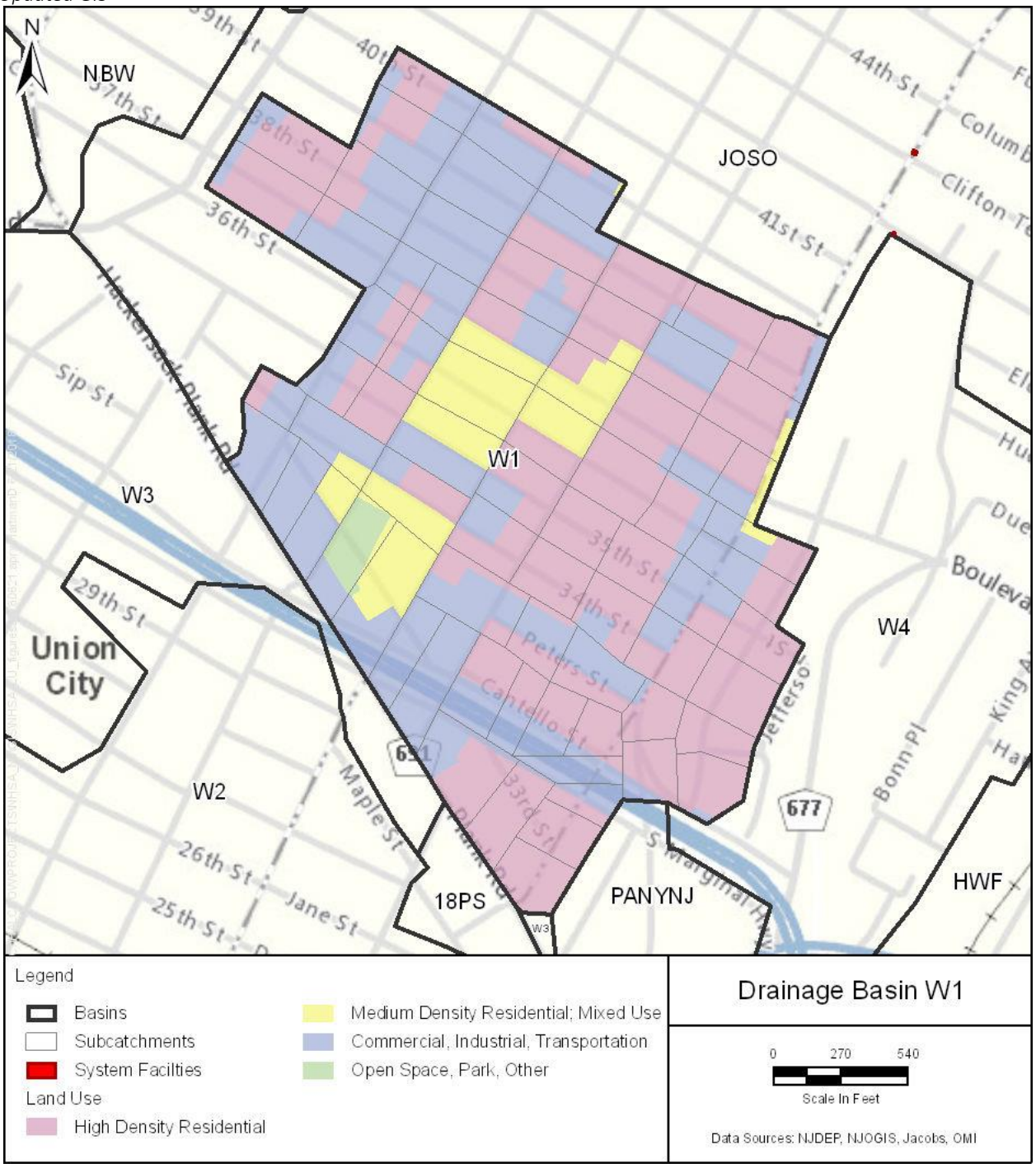
Updated GIS



The W1 drainage basin is 116 acres. The land uses in this combined sewer area are as follows: 50% high density residential, 40% commercial/industrial/transportation, 10% medium density residential/mixed use, and 1% open space/park/other. Figure 5-16 shows the W1 basin and its land uses. The overall percent imperviousness of the basin is 78%.

Figure 5-16. NHSA W1 Service Area Land Use

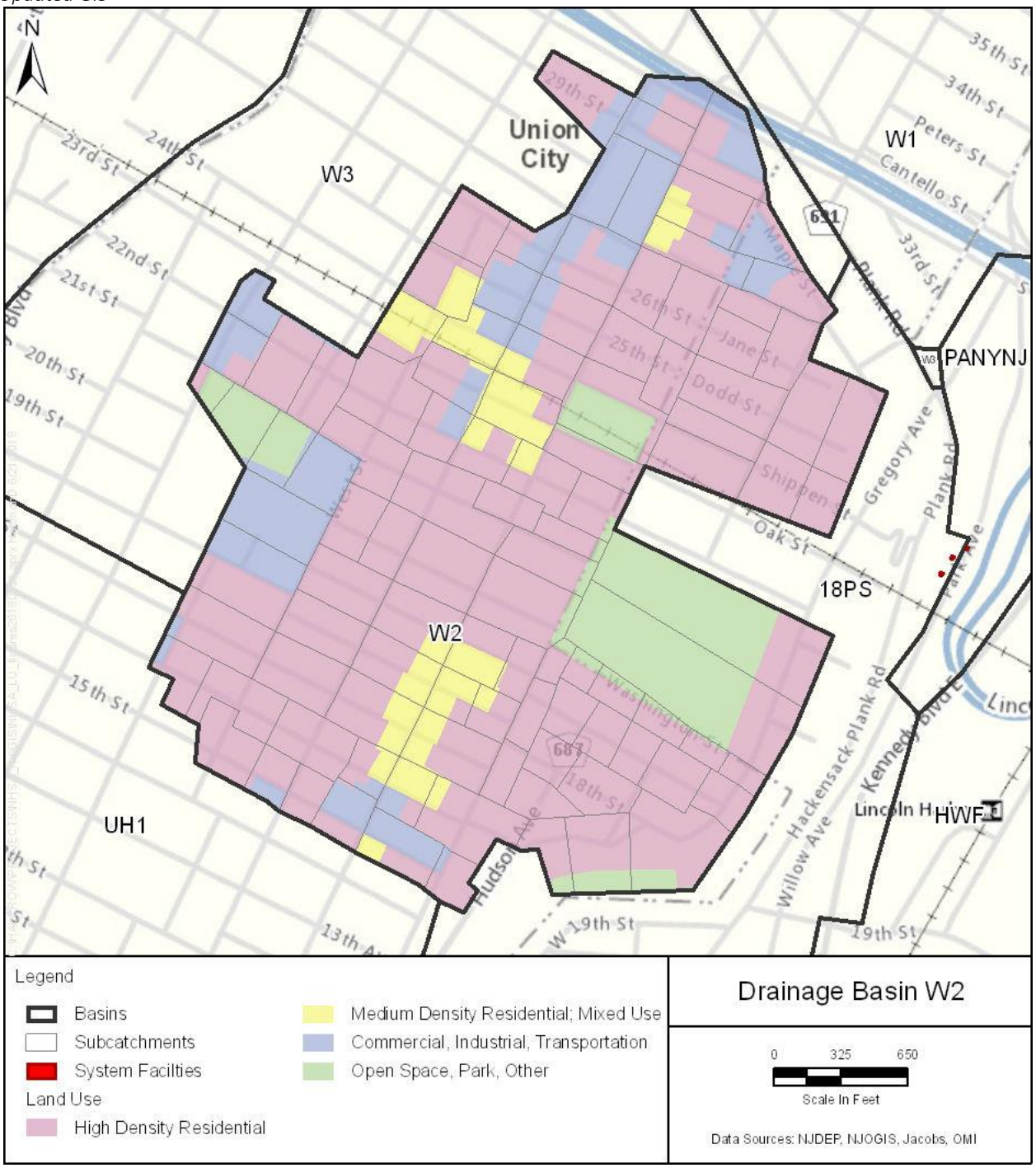
Updated GIS



The W2 drainage basin is 207 acres. The land uses in this combined sewer area are as follows: 68% high density residential, 14% commercial/industrial/transportation, 11% open space/park/other, and 7% medium density residential/mixed use. Figure 5-17 shows the W2 basin and its land uses. The overall percent imperviousness of the basin is 64%.

Figure 5-17. NHSA W2 Service Area Land Use

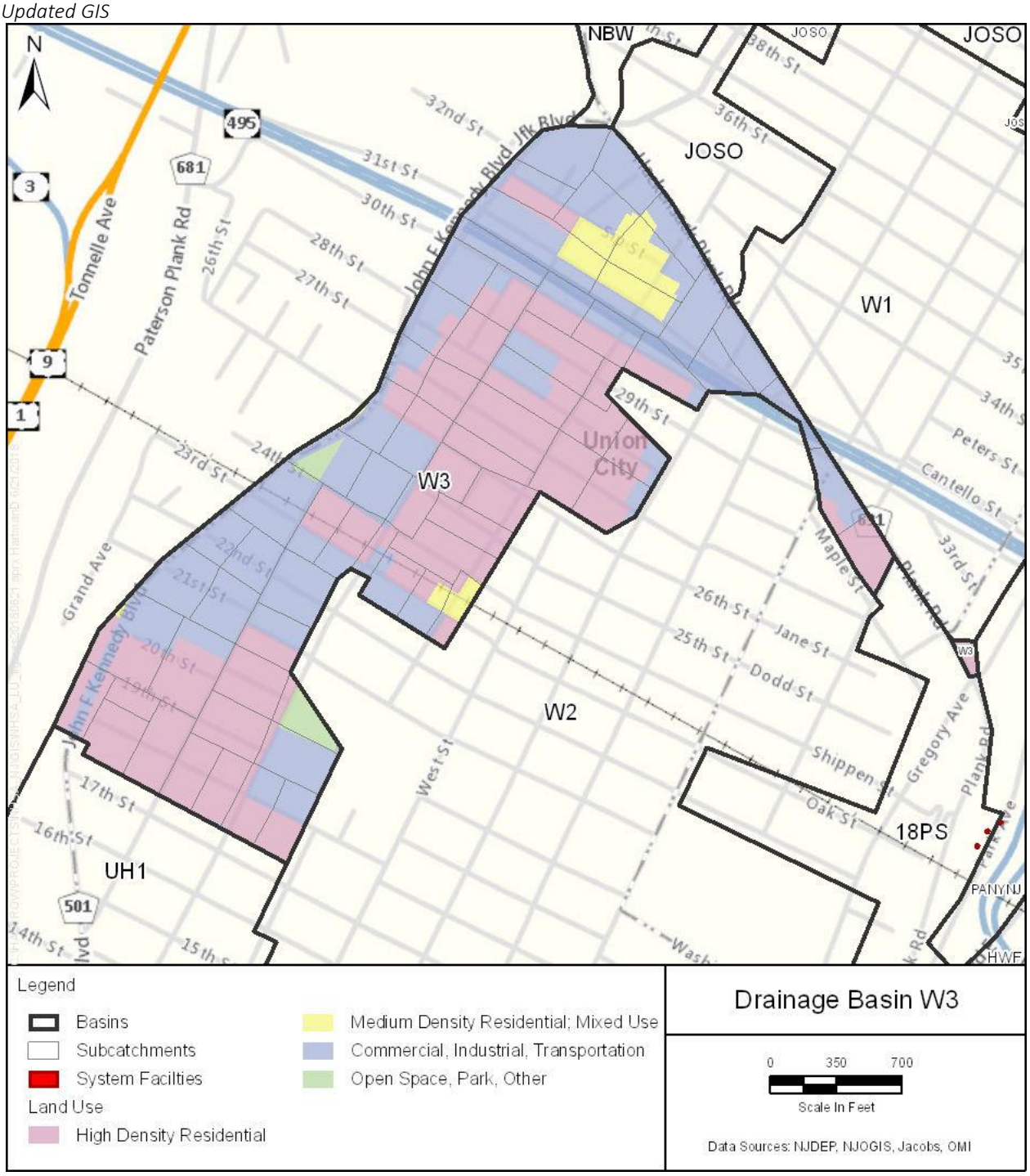
Updated GIS



The W3 drainage basin is 128 acres. The land uses in this combined sewer area are as follows: 47% high density residential, 47% commercial/industrial/transportation, 3% medium residential/mixed use, and 1% open space/park/other. Figure 5-18 shows the W3 basin and its land uses. The overall percent imperviousness of the basin is 76%.

Figure 5-18. NHSA W3 Service Area Land Use

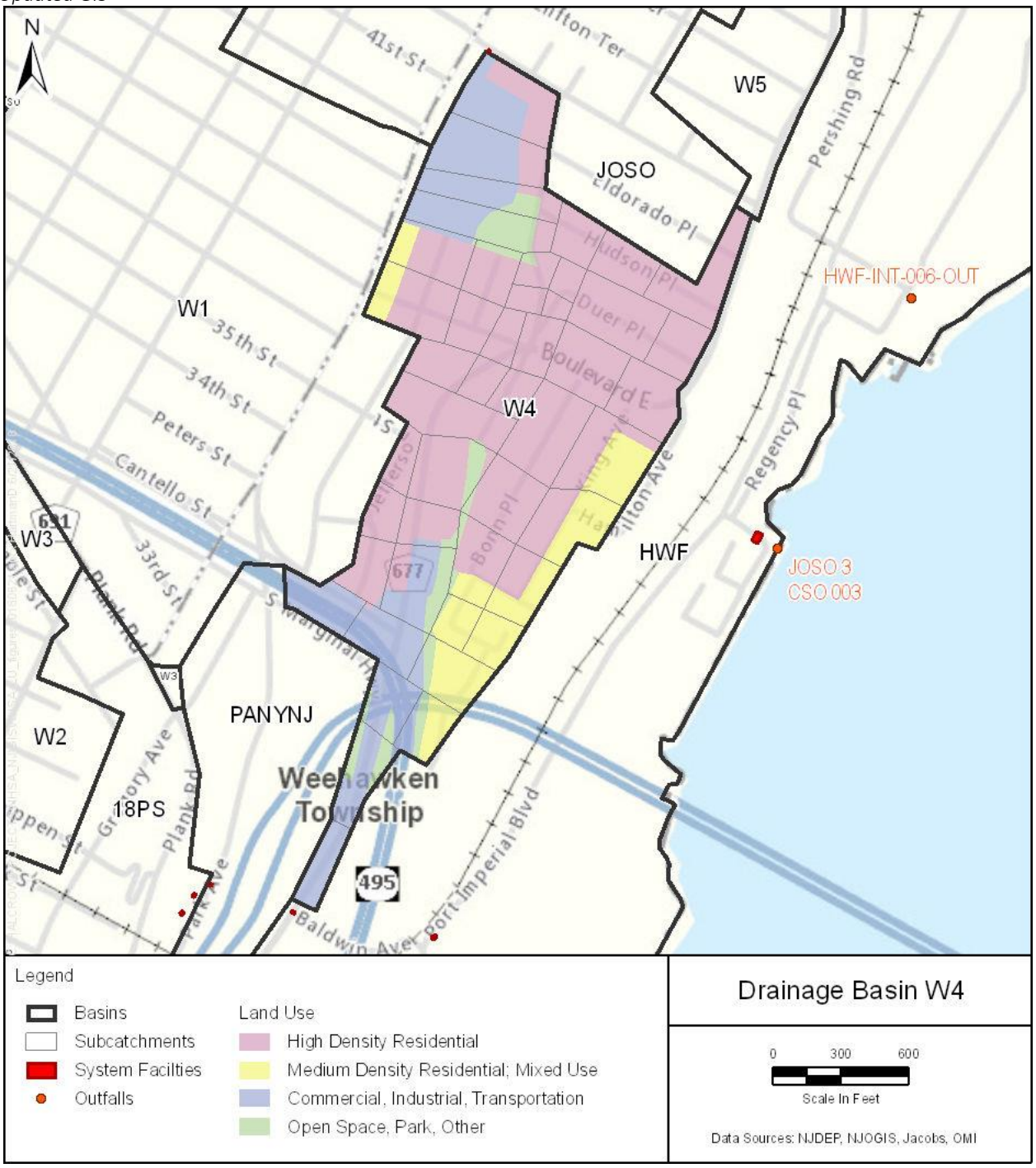
Updated GIS



The W4 drainage basin is 68 acres. The land uses in this combined sewer area are as follows: 61% high density residential, 20% commercial/industrial/transportation, 13% medium density residential, and 6% open space/park/other. Figure 5-19 shows the W4 basin and its land uses. The overall percent imperviousness of the basin is 59%.

Figure 5-19. NHSA W4 Service Area Land Use

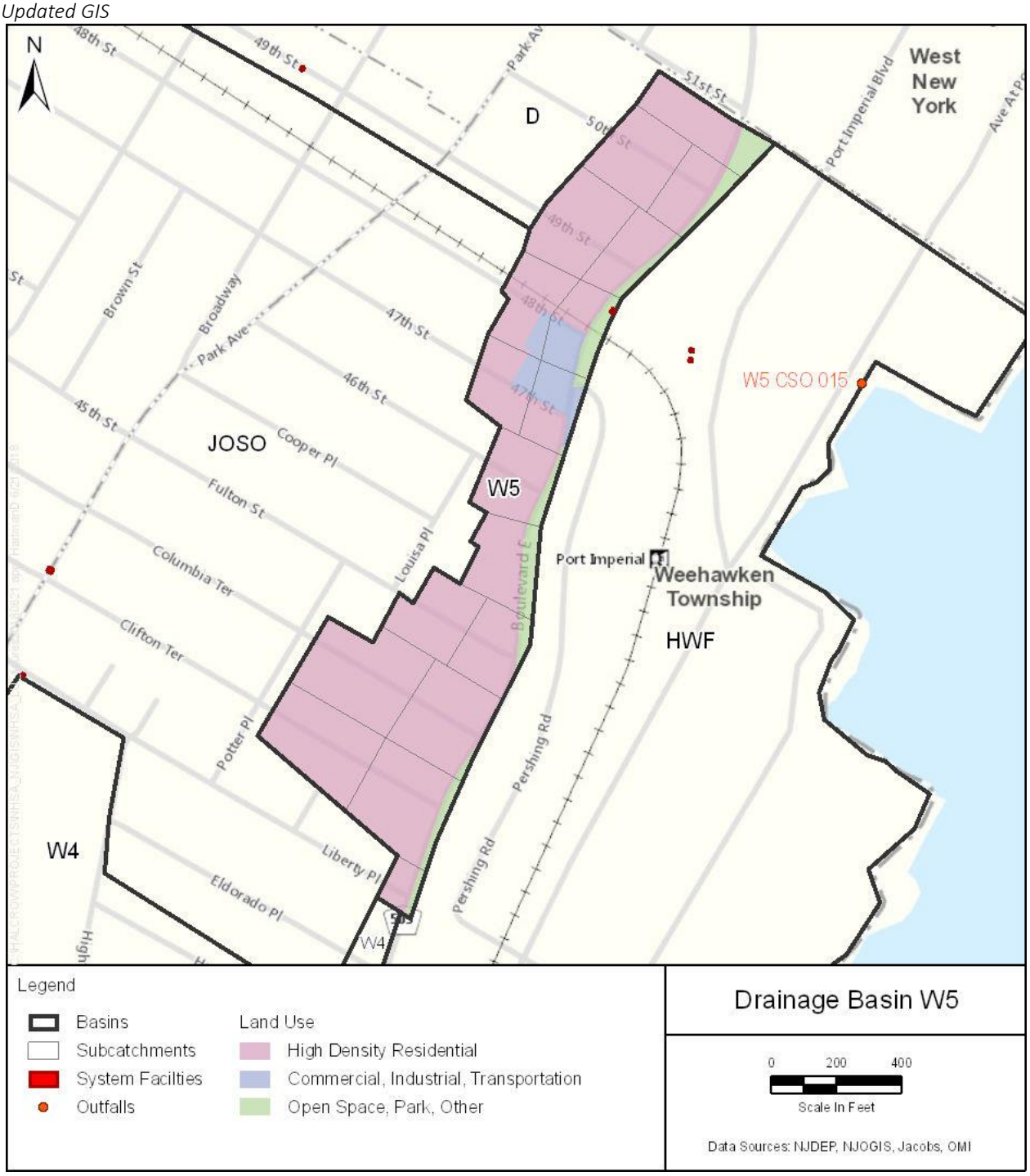
Updated GIS



The W5 drainage basin is 23 acres. The land uses in this combined sewer area are as follows: 87% high density residential, 8% open space/park/other, and 5% commercial/industrial/transportation. Figure 5-20 shows the W5 basin and its land uses. The overall percent imperviousness of the basin is 58%.

Figure 5-20. NHSA W5 Service Area Land Use

Updated GIS

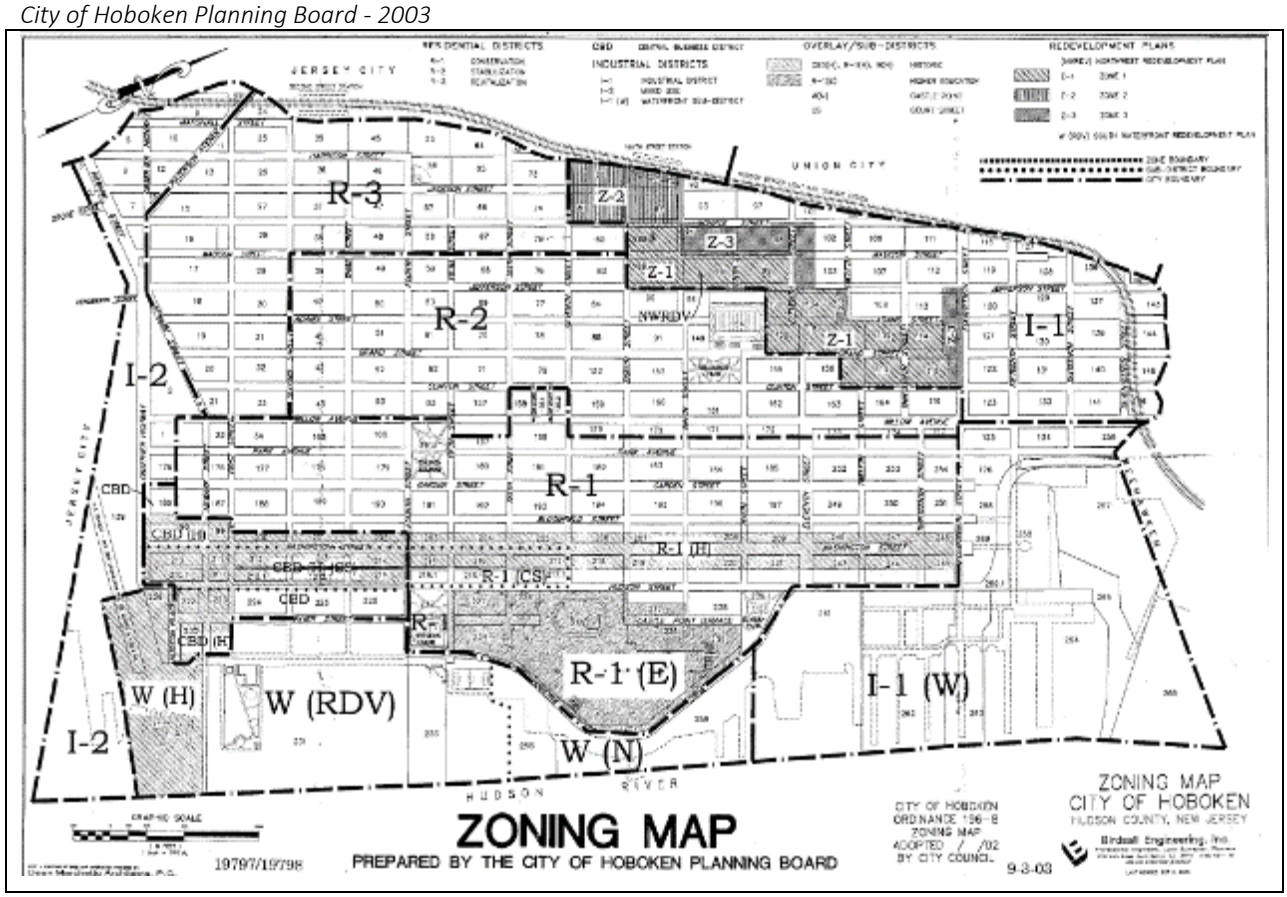


5.2.2 Zoning

The Adams Street WWTP service area consists of Hoboken, Weehawken and parts of Union City. Zoning maps for each of the cities are shown in Figure 5-21 through Figure 5-23. As per the 2003 Hoboken zoning map, the area is mainly residential districts with some industrial districts. As per the 1974 Weehawken zoning map, the area is primarily residential with significant amounts of planned waterfront development, industrial and office park, and shopping or recreation areas. As per the 2012 Union City zoning map, the majority is low/medium density residential, with some areas of Historic Preservation and Palisades Preservation.

Figure 5-21. City of Hoboken Zoning Map

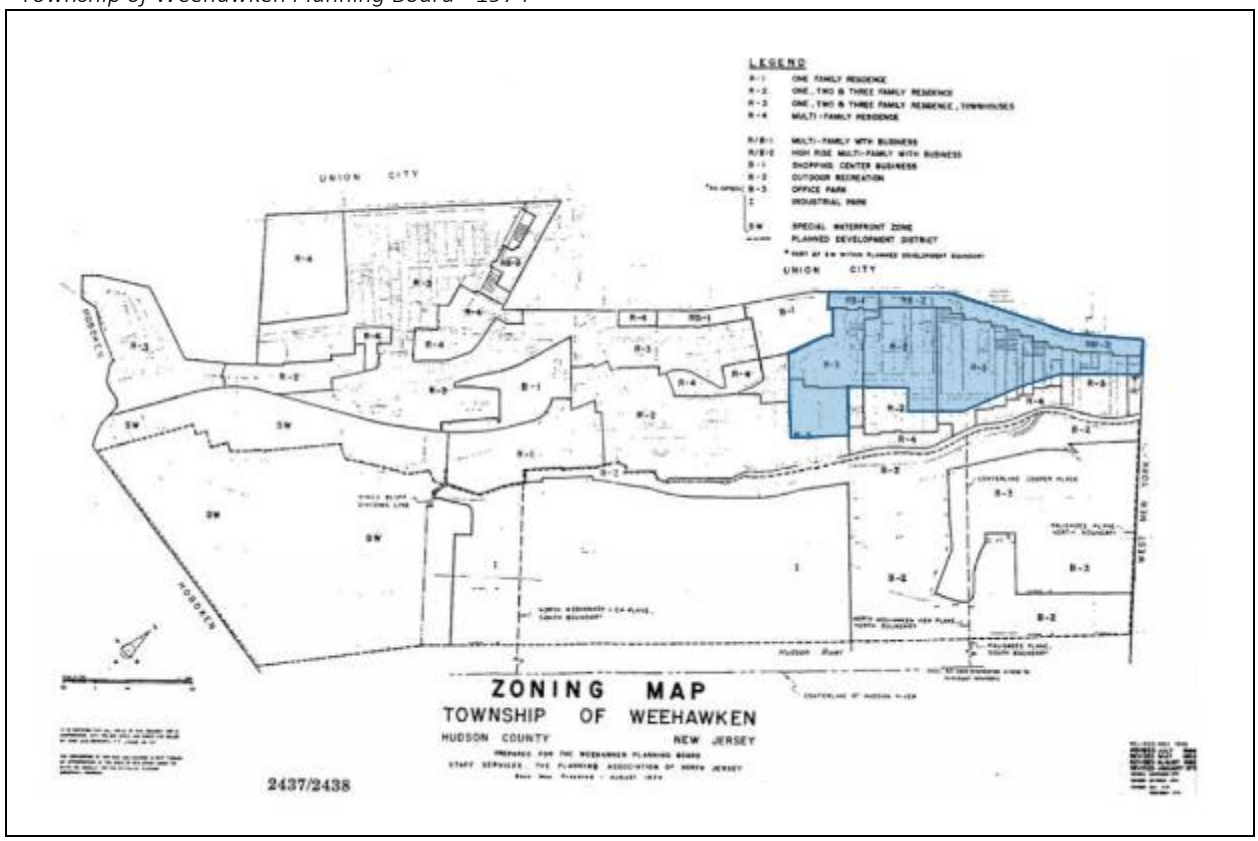
City of Hoboken Planning Board - 2003



Scale not applicable.

Figure 5-22. Township of Weehawken Zoning Map

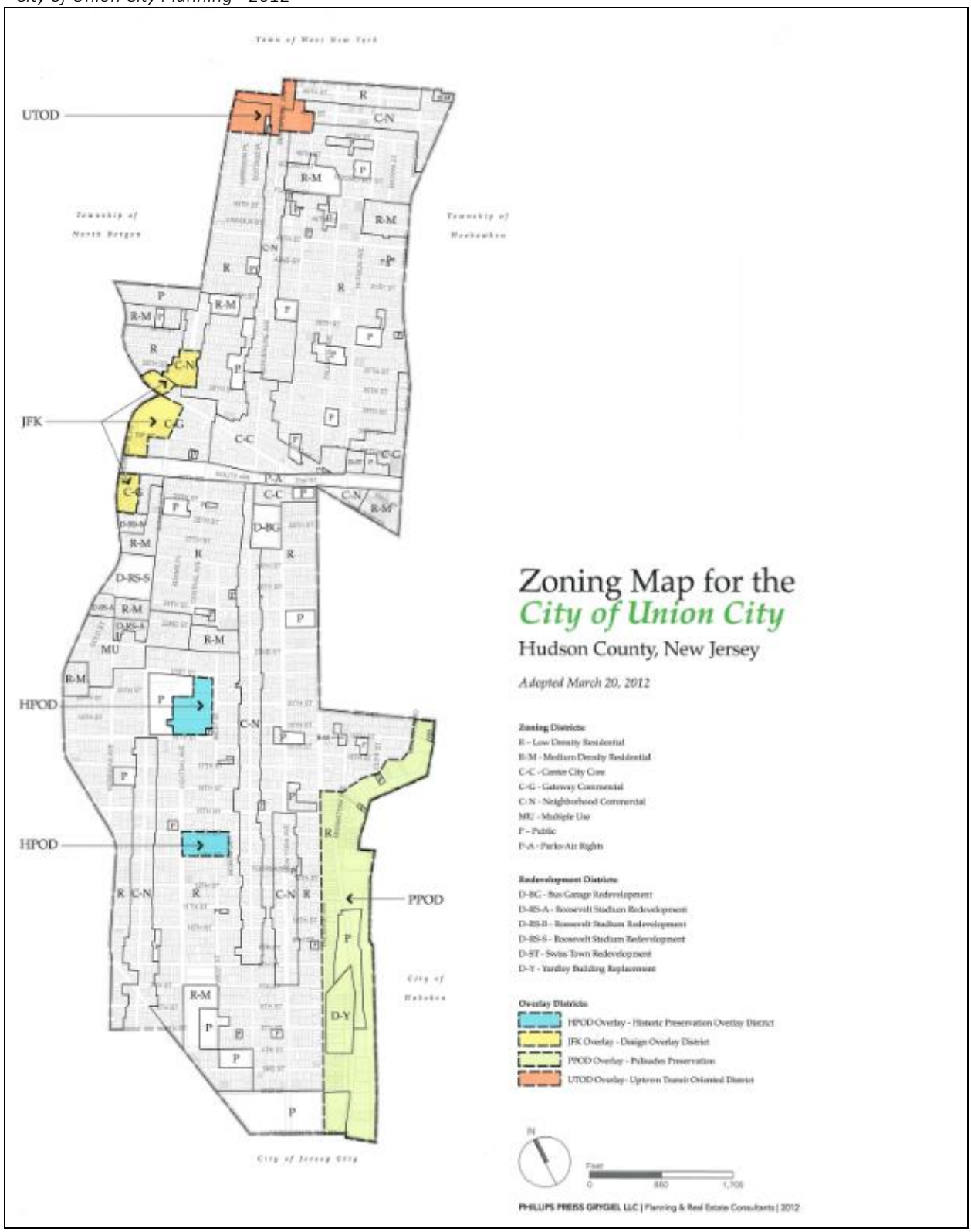
Township of Weehawken Planning Board - 1974



Scale not applicable.

Figure 5-23. Union City Zoning Map

City of Union City Planning - 2012



Scale not applicable.

5.3 Significant Indirect Users

The Authority has few permitted industrial users that are listed as either Categorical Industrial Users (CIU) or Significant Industrial Users (SIU). A CIU is defined as any user of the City's wastewater treatment system whose discharges are regulated under 40 CFR, Part 430 and 40 CFR Part 405 through 471 or who is otherwise subject to EPA pretreatment requirements as a categorical user.

An SIU is defined as:

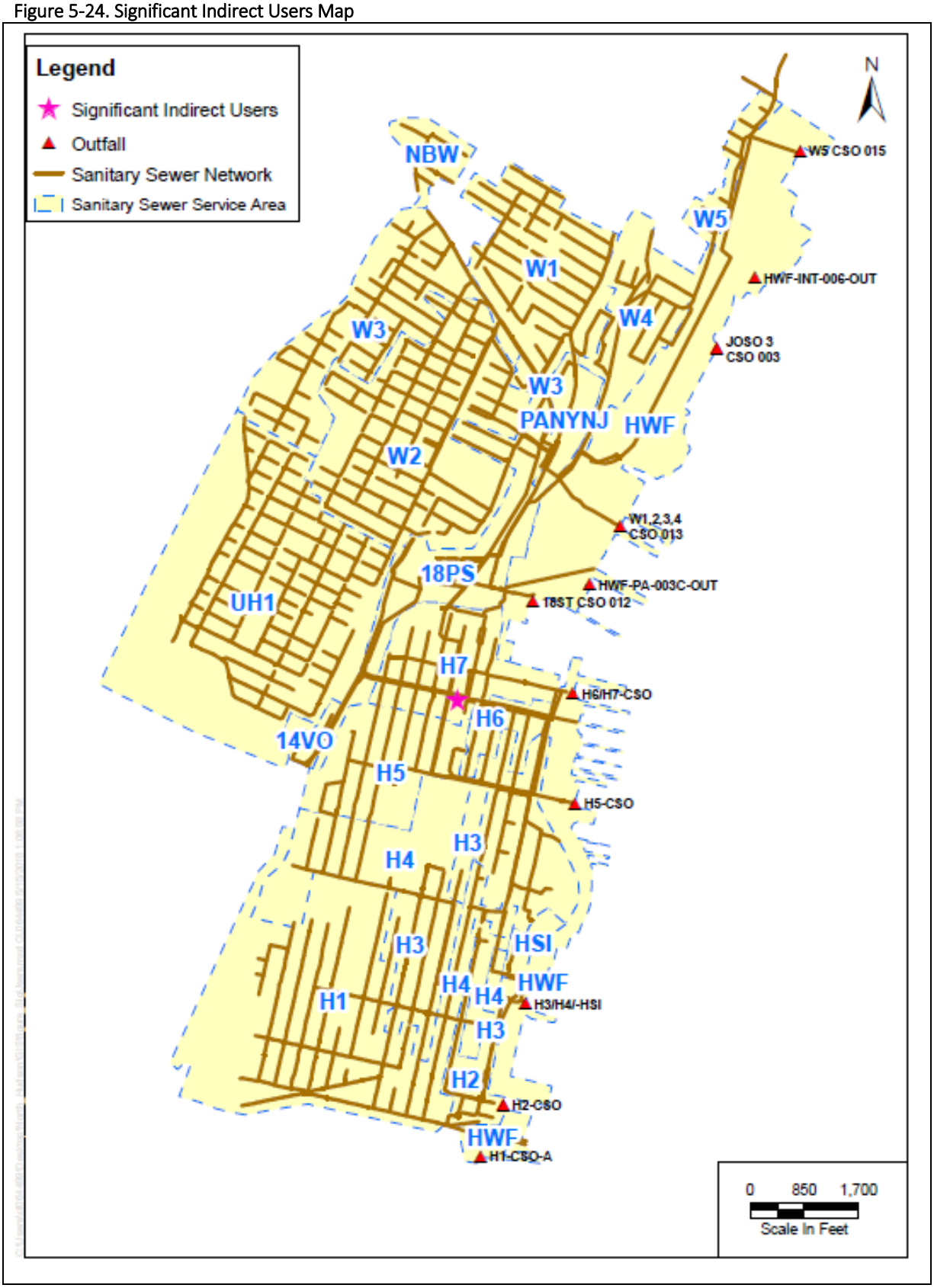
1. A user subject to categorical pretreatment standards OR,
2. A user that:
    a. Discharges an average of 25,000 gpd or more of process wastewater to the Publicly Owned Treatment Works (POTW), excluding sanitary, noncontact cooling and boiler blow-down wastewater; or
    b. Contributes a process waste stream which makes up 5% or more of the average dry weather hydraulic or organic capacity of the POTW; or
    c. Is designated as such by the City on the basis that it has a reasonable potential for adversely affecting POTW's operation or for violating any pretreatment standard or requirement.
3. Upon a finding that a user meeting the criteria in Subsection (2) has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the City may at any time, on its own initiative or in response to a petition received from a user and in accordance with procedures in 40 CFR 403.8(f)(6), determine that such user should not be considered a significant industrial user.

The Authority only has one significant user in the Adams Street Service Area listed below in Table 5-3, Advance at Hoboken LLC, which is a construction/groundwater remediation site. The site is located in the H7 drainage area and CSOs from that area are discharged at outfall 008A. A map showing the location of the significant user location is shown in Figure 5-24.

Table 5-3. NHSA Adams Street WWTP Service Area Significant Users

DEP Site ID	Name	Address	Estimated Flow (gpd)
00007533	Advance at Hoboken LLC	1316-1330 Willow Avenue Hoboken, NJ 07030	18,603

Figure 5-24. Significant Indirect Users Map



SECTION 6

Population, Sewage Flows, and Infiltration and Inflow

Population, sewage flows, and infiltration and inflow were characterized for the Adams Street WWTP service area. This section includes the following:

- Summary of population
- Comparison of Water Usage and Dry-Weather Sewage Flows

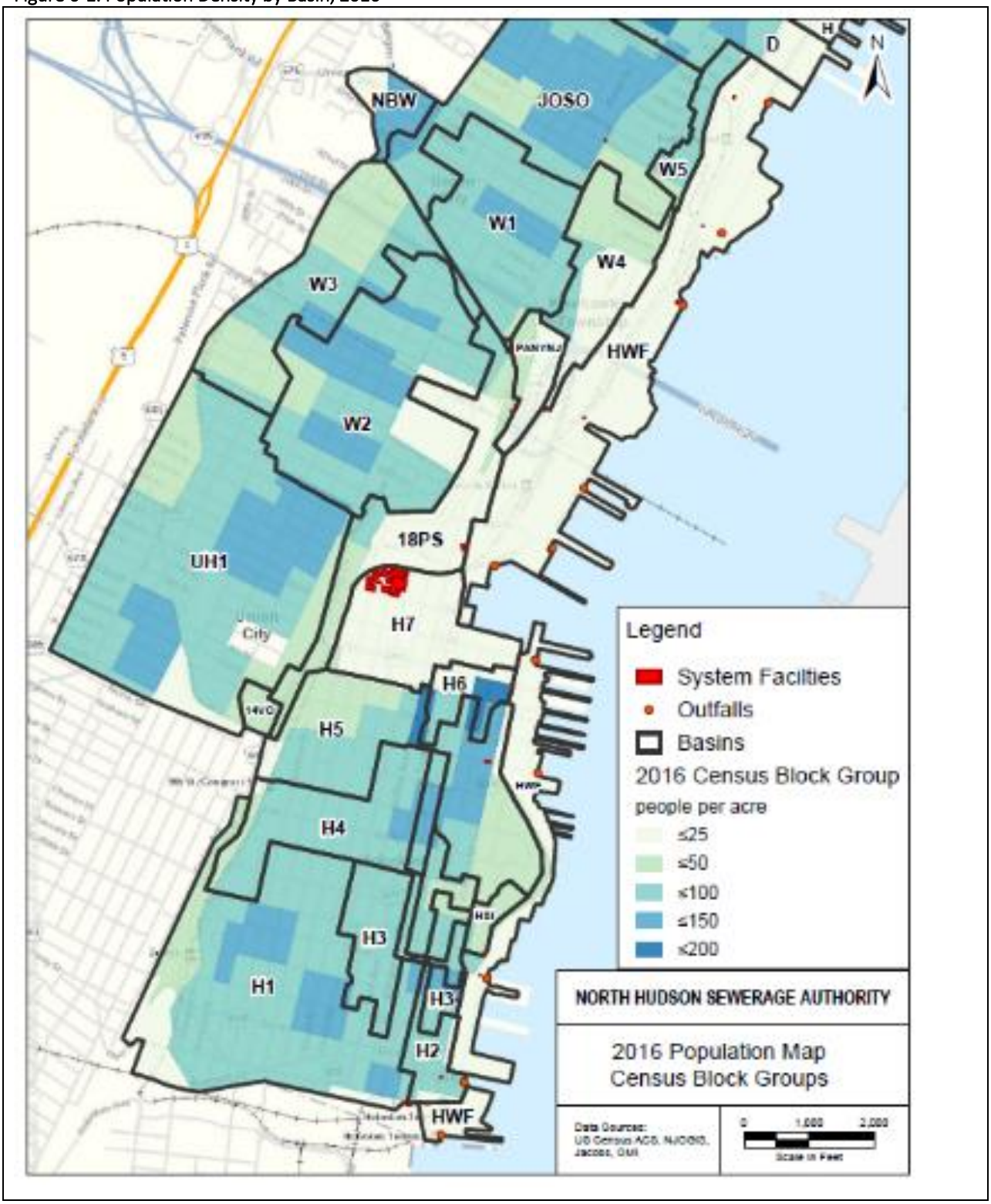
6.1 Summary of Population

Based on U.S. Census population data for the years of 2010, 2011, 2015 and 2016, a GIS correlation was performed to obtain estimates of population by basin in the Adams Street Service Area. The resulting population estimates per basin are shown in Table 6-1. The highest increases in population have occurred in NBW, HWF, HSI, W1, H4, H5, and H6. Overall there was a total increase in population in the Adams Street service area of approximately 6.4% between 2010 and 2016 with the total population as of 2016 being 120,340. Figure 6-1 shows a map of people per acre based on the 2016 U.S. Census data. Based on the 2016 U.S. Census data, the population estimate in Hoboken is 54,379. The population estimate in Weehawken is 15,138, and the population estimate in Union City is 69,296.

Table 6-1. Population by Basin in 2010, 2011, 2015 and 2016

Drainage Basin	2010	2011	2015	2016	Percent Change 2010-2016
H1	18893	19671	19963	19,916	5.4%
H2	2007	1923	1928	2,007	0.0%
H3	5352	5359	5634	5,712	6.7%
H4	6453	6405	7230	7,235	12.1%
H5	8810	8830	9488	9,909	12.5%
H6	1816	1906	2057	2,012	10.8%
H7	1438	1315	1358	1,318	-8.3%
HSI	323	370	381	384	18.9%
18PS	3179	3066	2907	2,923	-8.1%
HWF	1490	1521	1825	1,937	30.0%
NBW	1276	1460	1801	1,706	4.2%
UH1	25667	26336	26231	26,642	-1.4%
W1	8059	7494	9103	9,451	17.3%
W2	16036	15619	16668	16,611	3.6%
W3	8264	8612	8157	8,579	3.8%
W4	1737	1603	1584	1,702	-2.0%
W5	1,620	1,671	1,666	1,629	0.6%
TOTAL	**113,081**	**113,848**	**118,683**	**120,340**	**6.4%**

Figure 6-1. Population Density by Basin, 2016



6.2 Comparison of Water Usage and Dry-Weather Sewage Flows

To compare water usage to dry-weather sewage flows, an inflow and infiltration assessment was necessary. The analysis was able to separate flow data into base sanitary flow (BSF) and groundwater infiltration (GWI) for each basin in the CSS. BSF is the residential, commercial, institutional, and industrial flow discharged to a sanitary sewer system. BSF normally varies with water use patterns within a service area throughout a 24-hour period with higher flows during the morning period and lower during the night. BSF often represents a significant portion of the flows treated at wastewater treatment facilities.

GWI represents the infiltration of groundwater that enters the collection system through leaking pipes, pipe joints, and manhole walls. GWI varies throughout the year, often trending higher in late winter and spring as groundwater levels and soil moisture levels rise, and subsiding in late summer or after an extended dry period. GWI and BSF together comprise the Dry Weather Flow (DWF) that occurs in a sanitary and combined sewer system.

6.2.1 SSOAP Analysis

The SSOAP Toolbox is a computer software used for the quantification of inflow and infiltration to assist with condition assessment of sewer systems. SSOAP was used to disaggregate flow into base sanitary flow (BSF) and groundwater infiltration (GWI) using the flow monitoring data and rainfall data collected between May 17, 2016 and November 16, 2016. The monitoring and metering was described previously in Section 2.3, Rainfall Monitoring and Sewer Metering.

The flow monitoring and rainfall data were imported to SSOAP. The preceding days maximum rain values were adjusted to ensure a reasonable size set of days with which to perform a dry weather flow data analysis, generally dry weather flow days were defined as a day with no rainfall preceded by at least two days of no rainfall. During the dry weather flow analysis, SSOAP develops weekday and weekend diurnal patterns based on the imported flows and dry weather flow day definitions. Weekdays with abnormal dry weather flow patterns relative to other days, a shifted dry weather flow pattern, or significantly greater flows that increased the average, were removed as outliers. This process was repeated for weekend days. Once the dry weather flow diurnal patterns were established, the dry weather flow was disaggregated into base sanitary flow and groundwater infiltration components. GWI was assumed to be 90% of the minimum nighttime flow. The GWI value was subtracted from the total DWF to determine the average BSF. The average BSF for each metershed was divided by the population for the corresponding metershed to calculate per capita water usage. The resulting BSF contributions, GWI, and per capita usage are presented in Table 6-2. Figure 6-2 shows the per capita consumption by basin in the Adams Street WWTP service area.

Table 6-2. Adams Street Service Area Flow Analysis

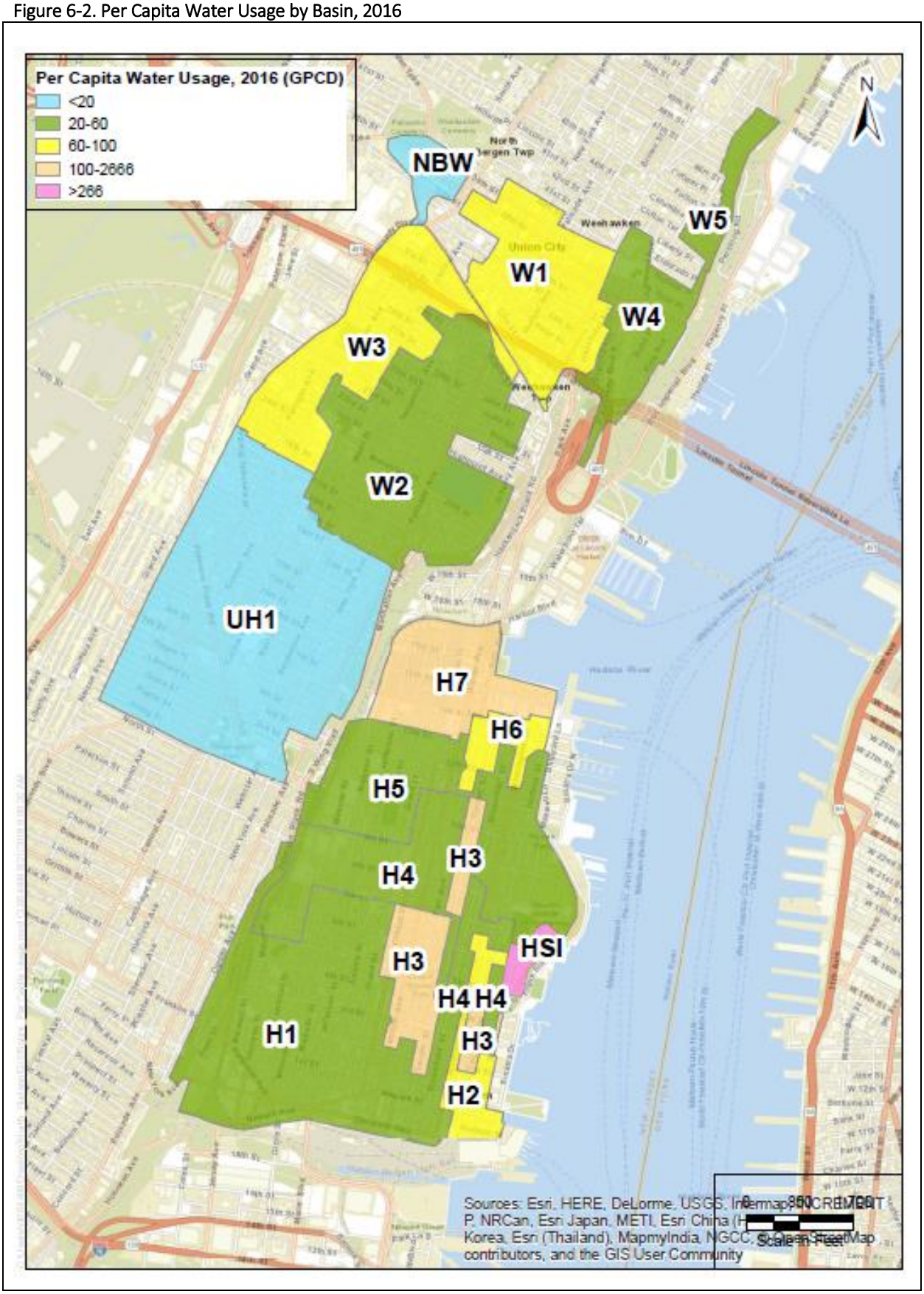
Basin	Average Dry Weather Flow (mgd)		Groundwater Infiltration (mgd)	BSF (mgd)	Per Capita Wastewater Flow (gpcd)	% Infiltration
	Weekday	Weekend				
H1	1.696	1.804	1.090	0.605	30.4	64%
H2	0.406	0.406	0.275	0.131	65.3	68%
H3	1.439	1.355	0.835	0.604	105.7	58%
H4	0.754	0.701	0.408	0.346	47.8	54%

Table 6-2. Adams Street Service Area Flow Analysis

Basin	Average Dry Weather Flow (mgd)		Groundwater Infiltration (mgd)	BSF (mgd)	Per Capita Wastewater Flow (gpcd)	% Infiltration
	Weekday	Weekend				
H5	0.706	0.720	0.451	0.255	25.8	64%
H6	0.227	0.232	0.106	0.121	60.1	47%
H7	0.966	0.972	0.834	0.132	100.2	86%
HSI	0.248	0.166	0.146	0.102	266.9	59%
UH1	1.170	1.237	0.693	0.476	17.9	59%
NBW	0.089	0.088	0.058	0.031	18.1	65%
W1	1.192	1.235	0.600	0.592	62.6	50%
W2-A	0.916	0.902	0.442	0.474	28.5	48%
W2-B	0.662	0.690	0.406	0.256	15.4	61%
W3	1.683	1.679	1.103	0.580	67.6	66%
W4	0.397	0.390	0.346	0.051	30.0	87%
W5	0.123	0.128	0.086	0.037	22.5	70%
Total	**12.674**	**12.705**	**7.879**	**4.793**	**47.8**	**62%**

Note: 18th Street PS Basin was not analyzed because a flow meter was not placed at the pump station during the 2016 metering effort described in Section 2.3. No flow data for 18th Street Pump Station is available for the SSOAP analysis.

Figure 6-2. Per Capita Water Usage by Basin, 2016



SECTION 7

Collection System Hydraulic Modeling

The Authority's Adams Street Service Area hydraulic model (model) was originally developed and calibrated in XP-SWMM software more than fifteen years ago and then converted and recalibrated in InfoWorks CS software in 2007. The model was periodically updated and used on an as-needed basis for conceptual facility planning. However, the model was both out of date with numerous capital improvements and other changes made in the collection systems since 2007 and therefore, was converted to InfoWorks ICM software and updated with infrastructure and facility operations information to reflect existing conditions in the Adams Street collection system. After model updates, the model was calibrated and verified using data collected during flow monitoring activities completed from May 2016 through November 2016.

7.1 Collection System Model Updates

The existing model, in InfoWorks CS, was upgraded to InfoWorks ICM and then updated to reflect conditions during the 2016 flow monitoring period. The model updates included both hydraulic and hydrologic updates, as discussed below.

7.1.1 Physical Model Updates

Prior to update, the model included only the major trunk sewers within each drainage basin. For the purposes of the characterization effort and future analysis of the collection system using the model, all sewer pipes were added to the model. The Authority's GIS database, dated December 2017, was provided by the Authority for model updates. All pipes and manholes located within the Adams Street collection system were imported to the model. The imported pipes and manholes were reviewed in the model to ensure all attributes necessary for modeling were available and to verify pipe connectivity. There were instances throughout the collection system where important attribute information was not available, such as missing pipe inverts and sizes. Additionally, for a large portion of the Adams Street system the vertical datums used in GIS for pipe attributes were inconsistent. The GIS database was provided in NAVD88, which is the coordinate system used in the model, however, many of the street level pipes in the GIS database still reference the Authority's vertical datum. For instances of missing pipe inverts and pipe inverts using the Authority's vertical datum, the following strategy was used to prepare the data for use in the model:

- When the pipe inverts were in the Authority's vertical datum, the closest connecting pipe using NAVD88 was found to calculate the conversion between the Authority's datum and NAVD88, and that conversion factor was applied to the pipe inverts using the Authority's datum in that area. This applied to approximately 50% of the sewer pipes in Hoboken.
- When pipe inverts were missing and invert information was available for points both upstream and downstream, the missing inverts were interpolated between two points with known inverts. This applied to approximately 25% of the sewer pipes in the system.
- When pipe inverts were missing but invert information was not available for any point upstream, the pipes with missing inverts were not included in the model network. This was the case in the most upstream areas of the drainage basins and applied to approximately 5% of the sewer pipes in the system.

Additionally, there were instances of missing pipe sizes and pipe sizes that were inconsistent between the GIS data and the flow monitoring report. When pipe sizes were missing, they were assumed based on the pipe size of the closest downstream pipe with an available pipe size. For the instances where the

GIS pipe size was inconsistent with the pipe size in the flow monitoring report, the pipe size from the flow monitoring report was used since it was measured in the field. This would be consistent with the basis for the flow calculated based on the measured depth and velocity during flow monitoring.

After the pipe network was updated, the regulators, solids and floatables facilities, and pump stations were updated based on as-built drawings. The collection of the drawings provided used three different vertical datums (NGVD29, NAVD88, and the Authority's datum), so the available information for each facility was used to correlate the datums and develop a conversion when they were not in the model datum. The operations for the H1 Wet Weather Pump Station and the H5 Wet Weather Pump Station were also updated based on information from their respective O&M manuals.

7.1.2 Hydrologic Model Updates

After the physical network was updated in the model, the flow generation parameters were updated. The flow generation parameters are applied to subcatchments in the model. Subcatchments were delineated and their attributes were developed during the service area and land use analysis, discussed in Section 5.0. These subcatchments and their respective attributes were imported to the model. The subcatchments represent the spatial area associated with area of similar land use draining to a point in the collection system. The associated subcatchment parameters developed during the service area and land use analysis and imported to the model include the drainage point, acreage, slope, width, impervious and pervious area, and population.

As discussed in Section 6.0, SSOAP was used to disaggregate the total flow at each of the flow meter locations into the base sanitary flow, groundwater infiltration, and runoff components. The base sanitary flow and groundwater infiltration comprise the dry weather flow and the runoff represents the wet weather flow. The flow components developed in SSOAP for each metershed were allocated to the subcatchments within each metershed in the model in the following manner:

- Base Sanitary Flow. Base sanitary flow is generated for each subcatchment in the model based on the population for the subcatchment and the per capita flow and diurnal patterns assigned to the metershed for which the subcatchment is associated with. The population, per capita flow, and diurnal pattern development were discussed in Section 6.0. These parameters were entered in the model to generate the base sanitary flow for each drainage basin.
- Groundwater Infiltration. Groundwater infiltration for each metershed was determined to be 90% of the minimum nighttime dry weather flow. The total groundwater flow for each metershed was allocated to each subcatchment within the drainage basin based on area.
- Runoff. Runoff is generated in the model based on the impervious and pervious areas within each subcatchment. The runoff associated with the impervious areas is generated using the fixed runoff model with SWMM routing. The model parameters impacting the runoff are the runoff routing value, fixed runoff coefficient, and initial loss value. The runoff routing value impacts the timing of the flow response to rainfall, the fixed runoff coefficient impacts the volume of runoff, and the initial loss value impacts the amount of initial abstraction available. Flow from the pervious area is generated in the model using the Horton infiltration model, based on the Horton infiltration equation. The parameters impacting the infiltration from the Horton model are the Horton decay, Horton initial, Horton limiting, and Horton recovery coefficients. The values used in the previous model were used as a starting point and were adjusted during calibration to reflect the flow monitoring data.

7.2 Model Calibration

Model calibration is the process of comparing model results with measurements and resolving differences until satisfactory agreement is obtained. The model calibration process entailed running the

model with the measured rainfall as input and comparing modeled system flows and hydraulic depth to the measured data. The goal of the model calibration process was to achieve as close a match as possible between the modeled flows and depths on a system-wide basis with minimum error. The model was calibrated for both dry weather flow and wet weather flow conditions, as discussed below.

7.2.1 Dry Weather Flow Calibration

7.2.1.1 Event Selection

Two 2-day dry weather flow periods were selected for dry weather flow calibration. The two selected dry weather flow calibration periods represented a consecutive weekday and weekend day because flow typically varies between weekday and weekend days and the model includes both a weekday and weekend diurnal pattern for each metershed. The selected dry weather flow calibration periods include the following:

- Dry Weather Flow Calibration Event 1: June 24, 2016 – June 26, 2016
- Dry Weather Flow Calibration Event 2: October 2, 2016 – October 4, 2016

7.2.1.2 Calibration Criteria

Table 7-1 shows the criteria used for dry weather flow calibration. These criteria are based on the Chartered Institution of Water and Environmental Management (CIWEM) Urban Drainage Group (UDG), *Code of Practice for Hydraulic Modelling of Urban Drainage Systems*, dated November 2017. CIWEM was formerly known as the Wastewater Planning Users Group (WaPUG) and their recently released *Code of Practice* supersedes WaPUG's *Code of Practice for Hydraulic Modelling of Sewer Systems*, though the calibration criteria and parameter tolerances closely follow-up the criteria and tolerances from the former WaPUG *Code of Practice*.

Table 7-1. Dry-Weather Flow Calibration Criteria

Criterion	Description
Peak Flow Rate[(a)]	-10 to +10 percent of observed
Flow Volume[(b)]	-10 to +10 percent of observed
Maximum Depth	±0.33 foot at non-surcharged locations
Shape	The shape of the modeled hydrograph closely follows the observed.

[(a)] ±0.1 mgd peak flow rate calibration criteria used at the locations with observed peak flow less than or equal to 1 mgd, rather than percentage.

[(b)] ±0.1 MG flow volume validation criteria used at the locations with observed flow volume less than or equal to 1 MG, rather than percentage.

7.2.1.3 Model Calibration

The following parameters were adjusted during dry weather flow calibration to match the observed flows and depths:

- Per capita flow rate
- Diurnal patterns
- Groundwater infiltration flow rate

Table 7-2 summarizes the dry weather flow calibration results by metershed for both dry weather flow calibration events. The cells highlighted in green indicate compliance within the calibration tolerances. All of the metersheds except for H1, H2, H3, H4, H5, and H7 met the calibration tolerances for peak flow, volume, and depth for at least one of the calibration events. The modeled dry weather flows for the

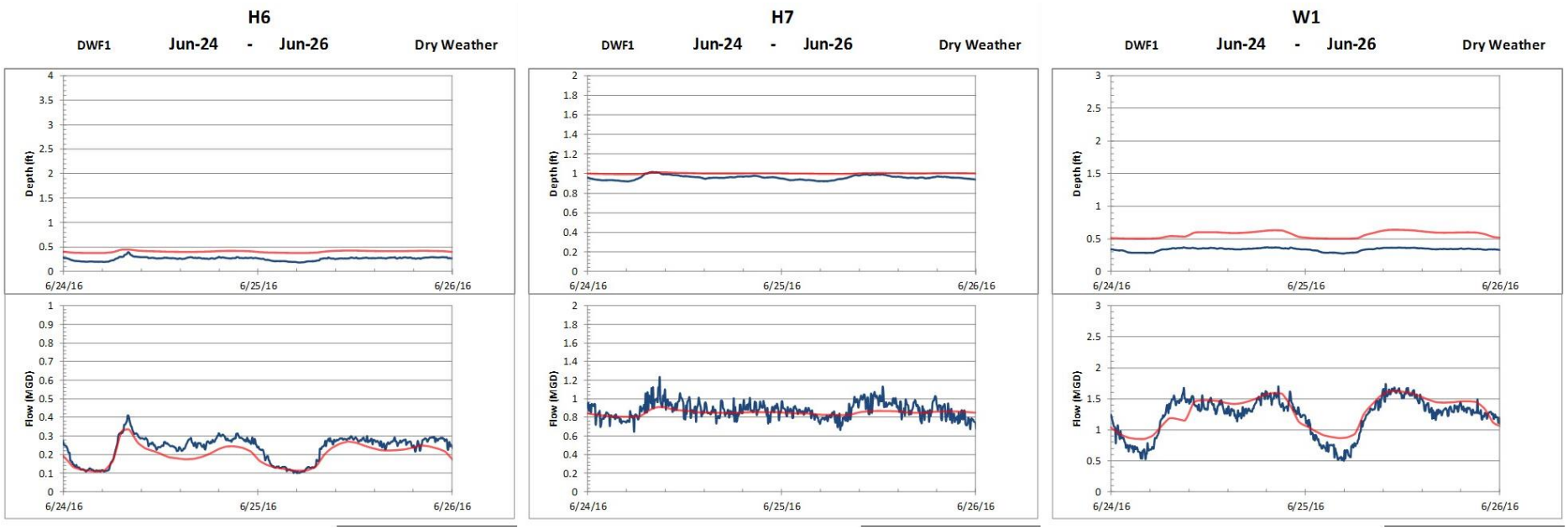
remaining metersheds were impacted by regulator adjustments made during subsequent wet weather flow calibration and thus don't meet the calibration tolerances for either dry weather flow event for all three calibration metrics.

Table 7-2. Dry Weather Calibration Results Summary

	Dry Weather Flow Event 1: 6/24 - 6/26			Dry Weather Flow Event 2: 10/2 - 10/4		
Metershed	**Peak Flow % Difference**	**Volume % Difference**	**Peak Depth Difference (ft)**	**Peak Flow % Difference**	**Volume % Difference**	**Peak Depth Difference (ft)**
H1	-33%	-26%	-0.2	-28%	0%	-0.2
H2	-15% (-0.09 mgd)	9%	-0.4	-11% (-0.06 mgd)	10%	-0.4
H3	23%	78%	0.3	-9%	25%	0.2
H4	3%	-9%	-1.1	0%	-14%	-1.1
H5	7%	29%	-0.4	9%	29%	-0.4
H6	-19% (-0.08 mgd)	-15% (-0.07 mg)	0.1	-6%	-4%	0.1
H7	-11%	20%	0.0	-16%	6%	0.0
HSI	-7%	27% (0.09 mg)	0.1	-46%	-24%	0.1
NHW	-8%	3%	0.1	6%	9%	0.1
UH1	-48% (-0.08 mgd)	-17% (-0.03 mg)	-0.1	-48% (-0.08 mgd)	-16% (-0.03 mg)	-0.2
W1	-7%	5%	0.3	-10%	9%	0.3
W2A	-7%	9%	0.2	-9%	3%	0.2
W2B	-8%	10%	0.3	0%	40%	0.3
W3	6%	-4%	0.2	-10%	-18%	0.2
W4	-20% (-0.09 mgd)	-1%	0.1	-35%	-22%	0.1
W5	-45% (-0.10 mgd)	-20% (-0.05 mg)	-0.2	-35% (-0.07 mgd)	-17% (-0.04 mg)	-0.2

Figure 7-1 shows three example hydrographs showing the calibration comparison for three of the metersheds for dry weather flow calibration event 1. The top hydrograph for each meter shows the meter and model depth comparison and the bottom hydrograph for each meter shows the meter and model flow comparison. The remaining dry weather flow calibration hydrographs are provided in **Appendix E**.

Figure 7-1. Example Dry Weather Flow Calibration Hydrographs



7.2.2 Wet Weather Flow Calibration

7.2.2.1 Rainfall Analysis and Event Selection

During the 2016 flow monitoring period rain gauge rainfall data were collected at the River Road WWTP. Rain gauge rainfall data were also collected beginning in August 2016 at the Baldwin Avenue Pump Station. Because the rainfall data collected at the River Road WWTP spanned the entire duration of the flow monitoring period, that data were used to simulate wet weather flow to rainfall in the model. The rainfall data collected at the Baldwin Avenue Pump Station were used to validate the rainfall data collected at River Road WWTP for the period of time in which rainfall data were collected at both locations and was also used to fill in a period of time in October for which the River Road WWTP rain gauge malfunctioned. The total resulting rainfall for the flow monitoring period was 19.14 inches and was broken down into 32 events, summarized in Table 7-3.

Table 7-3. Rainfall Event Summary

Event ID	Event Start	Event End	Duration (hr)	Rain Total (in)
1	5/21/2016 0:00	5/22/2016 0:00	24	0.11
2	5/24/2016 0:00	5/25/2016 0:00	24	0.16
3	5/30/2016 0:00	5/31/2016 0:00	24	1.38
4	6/4/2016 0:00	6/7/2016 0:00	72	0.96
5	6/8/2016 0:00	6/9/2016 0:00	24	0.4
6	6/16/2016 0:00	6/17/2016 0:00	24	0.2
7	6/27/2016 0:00	6/30/2016 0:00	72	0.65
8	7/1/2016 0:00	7/3/2016 0:00	48	1.28
9	7/4/2016 0:00	7/6/2016 0:00	48	1.42
10	7/9/2016 0:00	7/11/2016 0:00	48	0.38
11	7/14/2016 0:00	7/14/2016 21:00	21	0.62
12	7/18/2016 0:00	7/18/2016 21:00	21	0.32
13	7/25/2016 0:00	7/25/2016 21:00	21	0.77
14	7/29/2016 0:00	7/29/2016 21:00	21	0.86
15	7/30/2016 0:00	7/31/2016 6:00	30	0.24
16	7/31/2016 0:00	8/2/2016 0:00	48	0.77
17	8/6/2016 0:00	8/7/2016 0:00	24	0.09
18	8/10/2016 0:00	8/11/2016 0:00	24	0.08
19	8/12/2016 0:00	8/13/2016 0:00	24	0.34
20	8/21/2016 0:00	8/22/2016 0:00	24	0.09
21	9/1/2016 0:00	9/2/2016 0:00	24	0.56
22	9/14/2016 0:00	9/15/2016 0:00	24	0.64

Table 7-3. Rainfall Event Summary

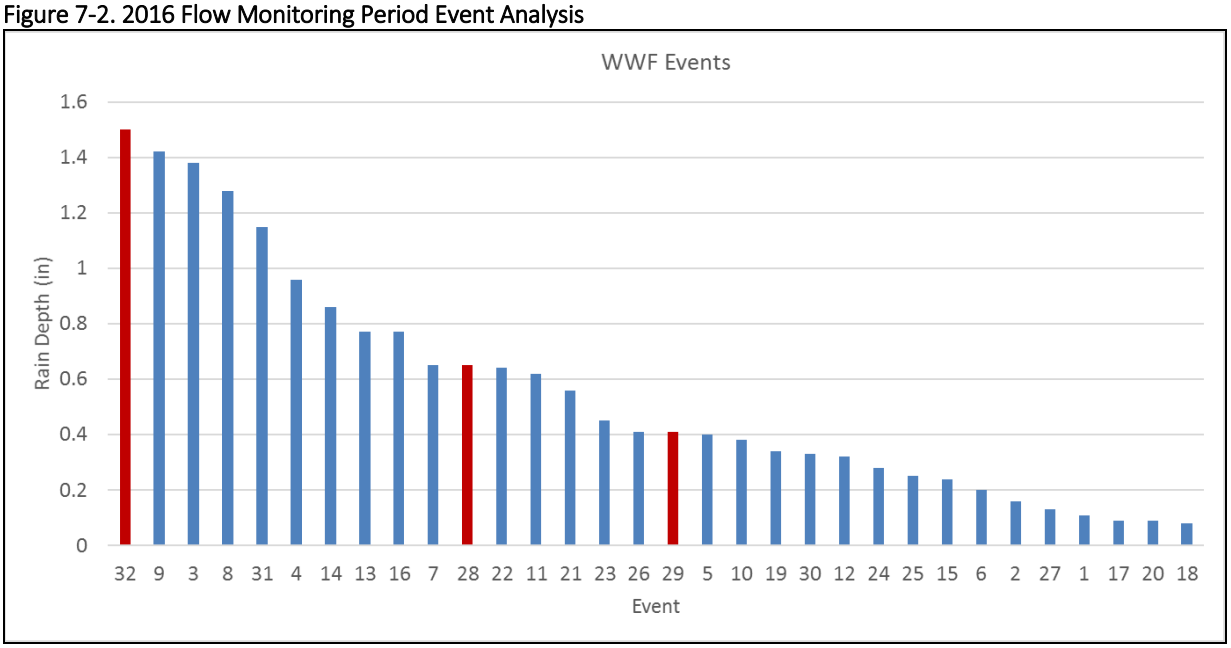
Event ID	Event Start	Event End	Duration (hr)	Rain Total (in)
23	9/19/2016 0:00	9/20/2016 0:00	24	0.45
24	9/24/2016 0:00	9/25/2016 0:00	24	0.28
25	9/27/2016 0:00	9/28/2016 0:00	24	0.25
26	9/30/2016 0:00	10/1/2016 0:00	24	0.41
27	10/8/2016 0:00	10/9/2016 0:00	24	0.13
28	10/9/2016 0:00	10/10/2016 0:00	24	0.65
29	10/21/2016 0:00	10/22/2016 0:00	24	0.41
30	10/22/2016 0:00	10/23/2016 0:00	24	0.33
31	10/27/2016 0:00	10/29/2016 0:00	48	1.15
32	11/15/2016 0:00	11/16/2016 0:00	24	1.5

Three events were selected for wet weather flow calibration: one event representing a large event, one event representing a medium event, and one event representing a small event by total rainfall depth per event. The rainfall events defined above were analyzed and compared to their flow responses for a handful of meters for event selection. It was found that for many of the events that occurred during summer 2016 the peak flow responses at some meters occurred slightly earlier than the peak of the rainfall. This was not exhibited during the fall 2016 events which were generally characterized by less intense, longer duration rainfalls. Thus, it was surmised that the discrepancy between the flow peaks and rainfall peaks during the more intense, shorter duration rainfalls during the summer was impacted by spatial variation in the rainfall and because the River Road WWTP rain gauge was located further north and west than the Adams Street collection system. Because of this, the summer events were avoided during wet weather flow calibration. The following events were selected for wet weather flow calibration:

- Wet Weather Calibration Event 1: October 9, 2016 – October 10, 2016, representing a medium event
- Wet Weather Calibration Event 2: October 21, 2016 – October 22, 2016, representing a small event
- Wet Weather Calibration Event 3: November 15, 2016 – November 16, 2016, representing a large event

Figure 7-2 shows a plot of the rainfall depth for each event sorted by total depth. The events numbers shown in the plot correspond to the event numbers in Table 7-3 above and the events highlighted in red were those selected for calibration.

Figure 7-2. 2016 Flow Monitoring Period Event Analysis



7.2.2.2 Calibration Criteria

Table 7-4 shows the criteria used for wet weather flow calibration, based on the CIWEM *Code of Practice*. The model is considered calibrated if the modeled flows are within the calibration tolerances for at two of the three wet weather flow calibration events, or 67% of the events.

Table 7-4. Wet-Weather Calibration Criteria

Criterion	Description
Shape	The shape of modeled hydrographs should closely align with the observed one
Peak Flow Rate[(a)]	-15 to +25 percent of observed flow
Flow Volume[(b)]	-10 to +20 percent of observed flow
Maximum Depth	-0.33 feet to +1.67 feet of observed depth at surcharged locations or ±0.33 foot of observed depth at non-surcharged locations OR ±10% of observed depth (whichever is greater)
(a)±0.1 mgd peak flow rate validation criteria used at locations with very small flow, rather than percentage. (b)±0.1 MG flow volume validation criteria used at the locations with very small flow, rather than percentage.	

7.2.2.3 Model Calibration

Calibration was performed using a continuous calibration approach. The entire duration of the flow monitoring period was run and the wet weather flow calibration parameters were adjusted to best match the model to the observed flows and depths for the three calibration events. In addition to the matching the flow monitoring data, the modeled CSO discharge events were also compared to the Mission data.

The following hydrologic parameters were adjusted during wet weather flow calibration to meet the observed flows and depths and the Mission data:

- Fixed runoff coefficients, runoff routing values, and initial losses for impervious area
- Horton infiltration coefficients and initial losses for pervious area

In addition to the hydrologic parameters listed above, it was necessary to increase the impervious areas in the model for some metersheds in order to increase the flows generated in the model within the metershed based on the flow monitoring data (the pervious areas for those areas were decreased accordingly such that the total percentage of the impervious and pervious areas equaled 100%). Even after the impervious adjustments the model was still not generating enough wet weather flow for a few of the metersheds in the model, so RTK was added to increase the modeled flows to match observed.

Several hydraulic parameters were also adjusted during wet weather flow calibration as needed, including the following:

- Manning's pipe roughness
- Sediment (as indicated in the flow monitoring report)
- Regulator adjustments (adjustment of regulator gate openings and coefficients and adjustments of weir height and coefficients to better match the Mission overflow data)

Table 7-5 summarizes the wet weather flow calibration results by metershed for the three wet weather flow calibration events. The table also summarizes the percent of events that are calibrated for peak flow, volume, and depth for each metershed. The cells highlighted in green indicate compliance within the calibration tolerances. Ten (10) of the 16 metersheds calibrated for at least 67% of the events for peak flow, volume, and peak depth. In general, the model better represented the flows and depths for Wet Weather Flow Calibration Event 1 and Wet Weather Flow Calibration Event 2, than it did for Wet Weather Flow Calibration Event 3. The metersheds that did not calibrate within tolerances for at least 67% of the events for peak flow, volume, and peak depth area H1, H2, H4, H5, W1, and W4. These metersheds are discussed below:

- H1: Peak flow and volume were both calibrated for at least two of the three calibration events, but peak depth only calibrated for one of the three calibration events. The H1 trunk sewer and regulator elevations could not be verified which may have contributed to the fact that this metershed did not calibrate for depth. Additionally, the H1 Wet Weather Pump Station impacts the depth recorded at this meter location.

- H2: Peak flow and volume were both calibrated for at least two of the three calibration events, but peak depth only calibrated for one of the three calibration events. The difference in peak depth for one of the calibration events was just inches from meeting the calibration criteria tolerances.

- H4: Peak depth was calibrated for at least two of the three calibration events, but peak flow and volume did not calibrate for any of the calibration events. The H4 trunk sewer and regulator elevations could not be verified which may have contributed to the fact that this metershed did not calibrate for depth. Additionally, there is interaction between this metershed and the H1 and H5 metersheds. The slopes and inverts for many of the street level pipes connecting these metersheds were estimated and interpolated because of missing or incorrect GIS data, which likely impacted the flow and hydraulics between these metersheds.

- H5: Peak flow and volume were both calibrated for at least two of the three calibration events, but peak depth only calibrated for one of the three calibration events. The H5 trunk sewer and regulator elevations could not be verified which may have contributed to the fact that this metershed did not calibrate for depth. Though, the modeled depths for the two events that did not meet the calibration criteria tolerances were just outside of the given tolerances.

- H7: Peak flow and volume were both calibrated for at least two of the three calibration events, but peak depth did not calibrate for any of the three calibration events; however, the peak depth for one event was just outside of the peak depth calibration tolerances.

- W1: Peak flow calibrated for at least two of the three calibration events, but volume and peak depth each only calibrated for one of the three calibration events. Though, the modeled volumes and peak depths for the two events that did not meet the calibration criteria tolerances were just outside of the given tolerances.
- W4: Peak flow and peak depth calibrated for at least two of the three calibration events, but volume only calibrated for one of the three calibration events. The modeled volume for one event was too high, while the modeled volume for the other event was too low.

Table 7-5. Wet Weather Flow Calibration Results

Metershed	Wet Weather Flow Event 1: 10/9			Wet Weather Flow Event 2: 10/21			Wet Weather Flow Event 3: 11/15			% Calibrated for Peak Flow	% Calibrated for Volume	% Calibrated for Peak Depth
	Peak Flow % Difference	Volume % Difference	Peak Depth Difference (ft)	Peak Flow % Difference	Volume % Difference	Peak Depth Difference (ft)	Peak Flow % Difference	Volume % Difference	Peak Depth Difference (ft)			
H1	22%	14%	-1.0	-17%	-14%	-1.4	20%	0%	0.1	67%	67%	33%
H2	-8%	20%	0.1	-13%	-5%	-0.7	-29%	1%	2.2	67%	100%	33%
H3	-9%	-10%	0.1	-4%	0%	-0.1	184%	39%	-0.5	67%	67%	67%
H4	39%	28%	0.1	28%	-11%	-0.4	413%	122%	0.2	0%	0%	67%
H5	-14%	20%	-0.1	7%	34%	-0.6	58%	6%	-0.4	67%	67%	33%
H6	18%	1%	-0.4	-1%	-7%	-0.3	-4%	-1%	-1.9	100%	100%	67%
H7	9%	-8%	-0.6	-10%	-4%	-0.4	158%	23%	-1.5	67%	67%	0%
HSI	-6%	-11% (-0.04 mg)	0.2	-10%	-2%	0.2	99%	7%	0.4	67%	100%	67%
NHW	16%	5%	0.0	6%	5%	0.0	-12%	6%	2.1	100%	100%	67%
UH1	39% (-0.04 mg)	-7%	-0.1	-11%	-19% (-0.02 mg)	-0.1	137%	39% (0.05 mg)	6.4	67%	100%	67%
W1	0%	18%	-0.1	-13%	27%	0.4	18%	24%	0.5	100%	33%	33%
W2A	18%	6%	0.0	-2%	10%	0.0	62%	26%	-1.2	67%	67%	67%
W2B	4%	9%	0.2	-6%	5%	0.2	-78%	4%	-1.3	67%	100%	67%
W3	15%	2%	0.1	24%	-5%	0.1	15%	21%	-0.1	100%	67%	100%
W4	-34%	-18%	0.0	17%	1%	0.1	-3%	36%	0.0	67%	33%	100%
W5	-6%	68%	0.3	0%	20%	0.0	-29%	12%	0.9	67%	67%	100%

Figure 7-3 through Figure 7-5 show example hydrographs with the calibration comparison for three of the metersheds for the three wet weather calibration events. The top hydrograph for each meter shows the meter and model depth comparison and the bottom hydrograph for each meter shows the meter and model flow comparison. The remaining wet weather flow calibration hydrographs are provided in **Appendix F**.

Figure 7-3. Wet Weather Calibration Event 1 Example Hydrographs

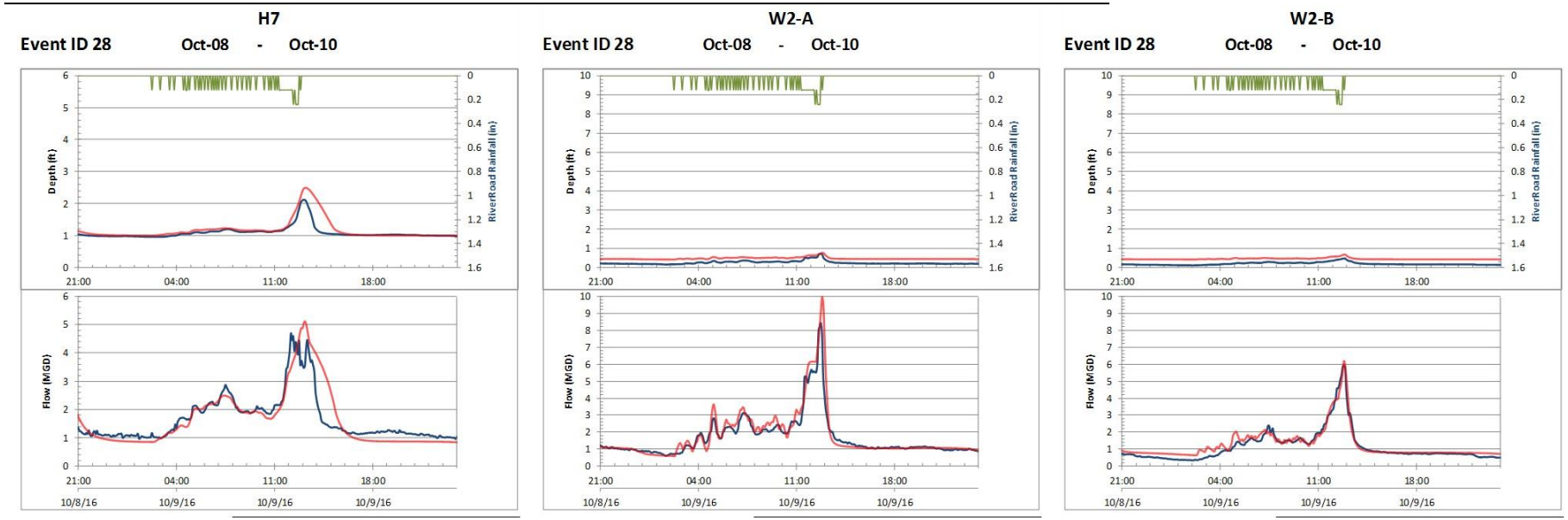


Figure 7-4. Wet Weather Calibration Event 2 Example Hydrographs

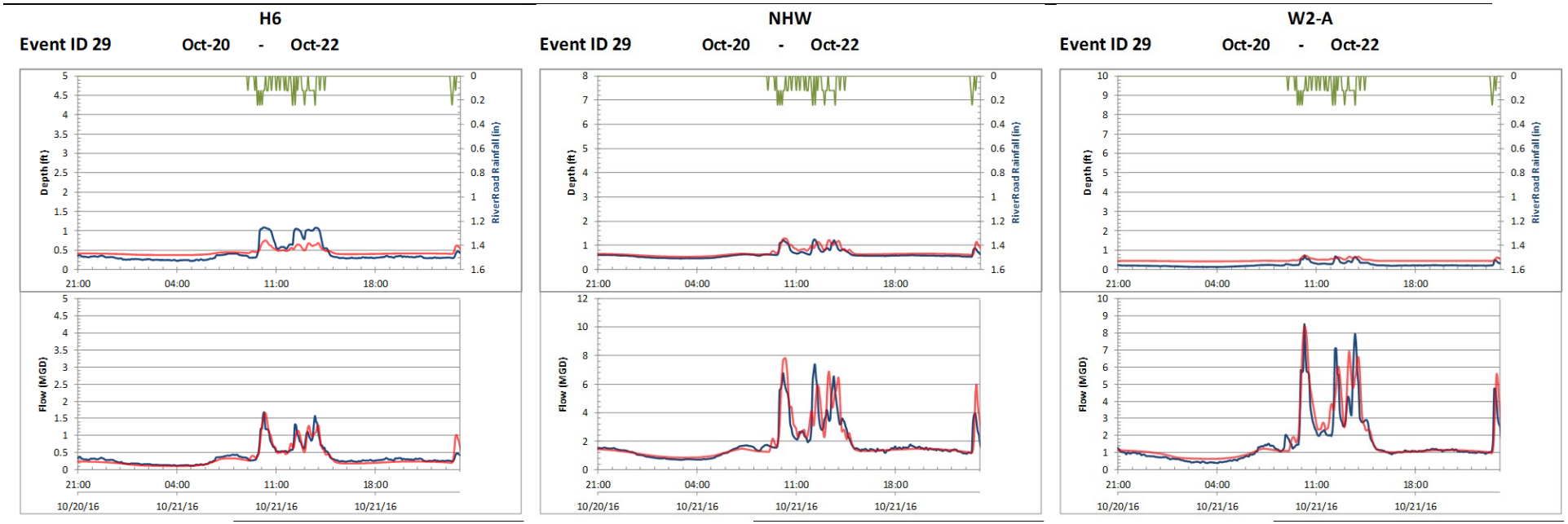


Figure 7-5. Wet Weather Calibration Event 3 Example Hydrographs

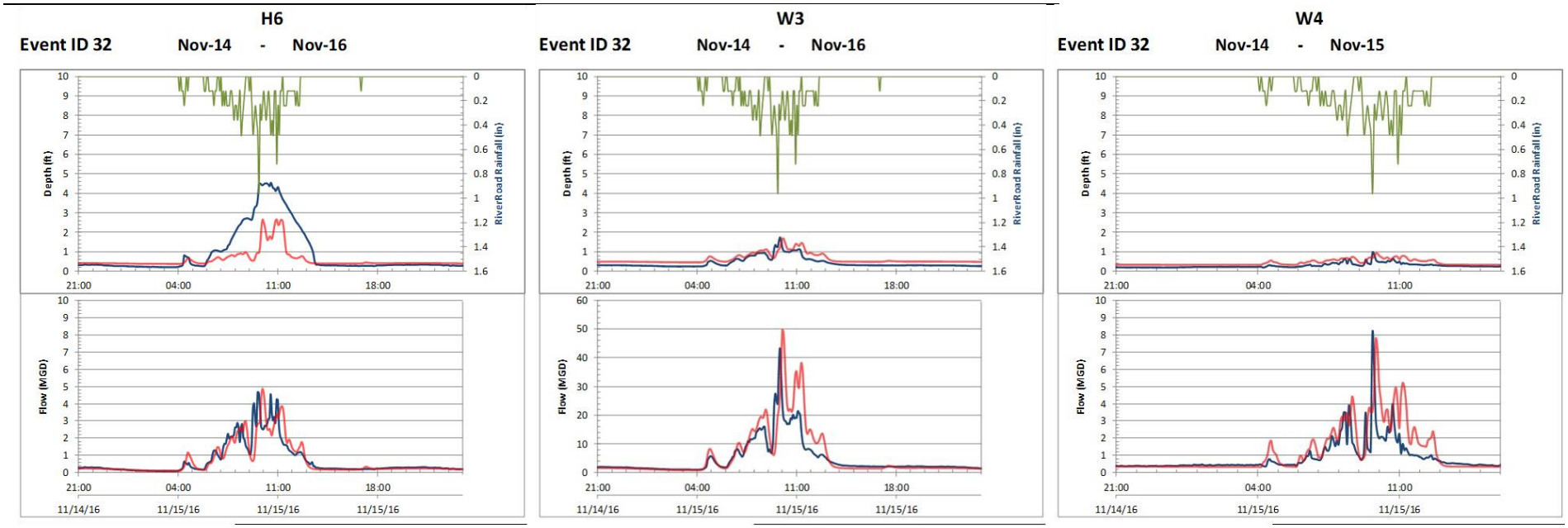


Table 7-6 provides a comparison of the modeled CSOs at each outfall to the Mission data for the flow monitoring period. In general, the modeled overflows aligned well with the Mission data except for Outfall 015A, in which the model significantly over-calculated the number of overflows. Flow monitoring was not performed within the area associated with Outfall 012A (the 18th Street Pump Station drainage area) and pump station flow data were not available, so the model was not calibrated for that area.

Table 7-6. CSO Discharge Comparison

CSO Outfall	# of Observed Overflows	# of Modeled Overflows	% Difference	Notes
002A	20	23	15%	
005A	21	21	0%	
006A	4	3	-25%	No data prior to September 2016
008A	20	16	-20%	
012A	2	13	NA	No data for calibration
013A	27	30	11%	
015A	16	26	63%	

7.3 Model Verification

7.3.1 Verification Approach

The model was calibrated using a continuous approach and the calibration parameter values represent the best-fit for the three wet weather calibration events. Hence, the model verification involved comparison of all wet weather events for the duration of the 2016 flow monitoring period to the calibration criteria defined in Table 7-6 above. The goal of the model verification is to achieve as close a match as possible between the calculated flows and hydraulic elevations on a long-term, system-wide basis with minimum differences between calculations and data.

7.3.2 Verification Findings

Table 7-7 summarizes the results of the model verification by metershed. **Appendix G** provides peak flow, volume, and peak depth scatterplots for each metershed. While the overall verification results shown in the table don't look impressive compared to the strict calibration criteria tolerances, it is important to consider the following factors:

- Overall, the model is well-calibrated for the three calibration events. There were some metershed for which the results did not meet the strict calibration criteria, but for several of the metersheds the calibration metrics that did not meet the calibration tolerances were just outside of the calibration tolerances. For the other metershed, there were data uncertainties associated with those areas making calibration more difficult.
- Overall, the model-calculated overflows at the outfalls aligned well with the Mission data.
- Similar to the calibration events, for many of the verification events the metrics that were not within the calibration tolerances were not far outside the calibration tolerances. It is important to consider the scatterplots when assessing the results of the model verification, as they provide a larger picture of how the model compares to the observed data. Further, the best-fit lines for the scatterplots

generally fall within, or very close to, the calibration tolerance envelope for the respective calibration metric. This indicates that, while the model may over-calculate some events and under-calculate some events, the overall fit is good, which is important for analysis of extended time periods, such as the typical year analysis that will be used to perform the baseline characterization and to characterize the performance of alternatives to reduce CSO frequency and volume in the Adams Street service area.

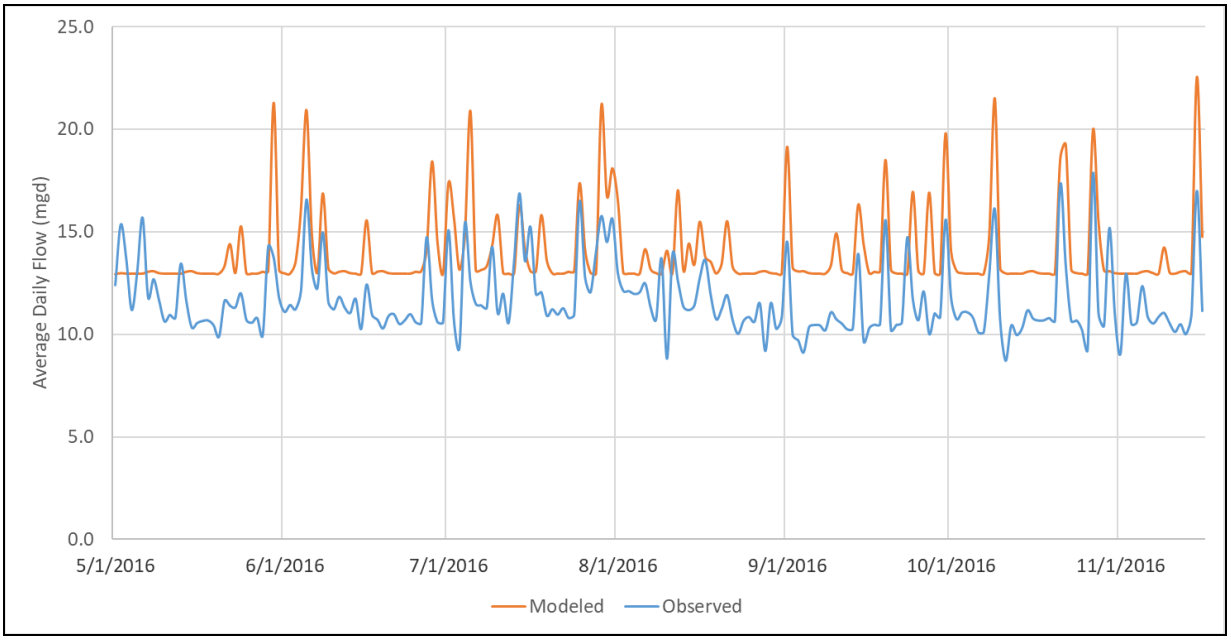
- For many of the wet weather events, mainly the more intense, shorter duration events characteristic of storm events occurring during the summer months, comparison of the recorded rainfall and measured flows led to uncertainty in the rainfall used for model calibration. There were many occurrences in which the peak of the flow response occurred just before the peak of the rainfall causing that response. This was likely seen because the rain gauge located at the River Road WWTP was located northwest of the Adams Street collection system and weather patterns in this area typically follow a west to east path. Additionally, the intense, short duration summer storm events often exhibit a great spatial variation.
- Generally, the model verification volume results look better than the peak flow results. The volume of flow will drive the alternatives that will be evaluated to reduce CSO frequency and volume in the Adams Street service area.

Table 7-7. Model Verification Results

Meter	Number of Wet Weather Verification Events	Number of Events within Calibration Tolerances for Peak Flow	Number of Events within Calibration Tolerances for Volume	Number of Events within Calibration Tolerances for Depth	% within Calibration Tolerances for Peak Flow	% within Calibration Tolerances for Volume	% within Calibration Tolerances for Peak Depth
H1	32	10	13	10	31%	41%	31%
H2	32	8	19	8	25%	59%	25%
H3	32	10	11	10	31%	34%	31%
H4	32	4	15	8	13%	47%	25%
H5	32	17	16	4	53%	50%	13%
H6	32	9	17	8	28%	53%	25%
H7	32	13	18	11	41%	56%	34%
HSI	32	8	18	13	25%	56%	41%
NHW	32	11	26	12	34%	81%	38%
UH1	32	16	32	15	50%	100%	47%
W1	31	9	15	13	29%	48%	42%
W2A	32	8	15	21	25%	47%	66%
W2B	32	9	23	17	28%	72%	53%
W3	32	10	25	23	31%	78%	72%
W4	32	7	21	18	22%	66%	56%
W5	32	15	7	17	47%	22%	53%

Daily influent flow data for the Adams Street WWTP was collected for the flow monitoring period. The modeled influent WWTP flow was compared to the observed data for the flow monitoring period, as shown in Figure 7-6. The figure shows that the modeled daily influent dry weather is consistently approximately 2 mgd higher than the observed influent flow at the WWTP. It also shows that the modeled daily influent flow during wet weather is up to 8 mgd higher than the observed influent flow at the WWTP. All of the collection system flow monitors were located upstream of the regulators, so the underflow to the WWTP from the regulators was not directly monitored and could not be directly calibrated. The model calibration is based on the flow data collected in the collection system upstream of the regulators and the comparison of overflow events at the CSO outfalls.

Figure 7-6. Adams Street WWTP Hydrograph



Baseline Characterization

The updated, calibrated model was used perform the baseline characterization of the Adams Street collection system. The baseline characterization, using the typical year, was performed to enable a thorough hydraulic review of the Adams Street collection system. The number, location, frequency and characteristics of the CSOs were identified for the typical year.

8.1 Typical Year Selection

Following the national CSO Control Policy, characterizations and planning are performed based on CSO performance in a typical year that is identified via long-term rainfall data analyses. The NHSA's long-term CSO control planning will be performed using the typical year identified by the NJ CSO Group and will be used for collection system and pathogens water quality modeling and baseline compliance evaluations, subject to NJDEP approval.

Passaic Valley Sewerage Commission (PVSC) was selected to lead the technical work required for CSO permit compliance and led the analysis for the selection of the typical year to be used for the long-term continuous precipitation modeling. PVSC performed statistical analysis of precipitation records from years 1970 through 2015 collected at the Newark Liberty International Airport rain gauge for selection of the typical year. The objective for selection of the typical year was to provide a representative and unbiased approximation of future expected conditions in terms of both averages and historical variability. PVSC recommended that 2004 be selected as the typical hydrologic year for the CSO LTCP because 2004 had the least deviation from criteria including annual rainfall, river flow, storm volume, number of events, peak intensity, etc. Additionally, the 2004 rainfall also contained a wide range of storms and antecedent conditions.

Hourly precipitation data for 2004 was obtained for the Newark rain gauge for the completion of the typical year analysis.

8.2 Frequency and Volumes of CSO Discharges

Figure 8-1 shows the schematic of the Adams Street collection system, summarizing the typical year CSO calculations by outfall. The typical year CSO summary includes the number of days with overflow, the number of overflow events, and the total volume of overflow for the typical year for each outfall. Overflow events were defined as any event for which the model calculated at least 0.05 MG of overflow at an outfall and an inter-event time of 24 hours.

Figure 8-1. Adams Street Baseline Characterization- Typical Year CSOs

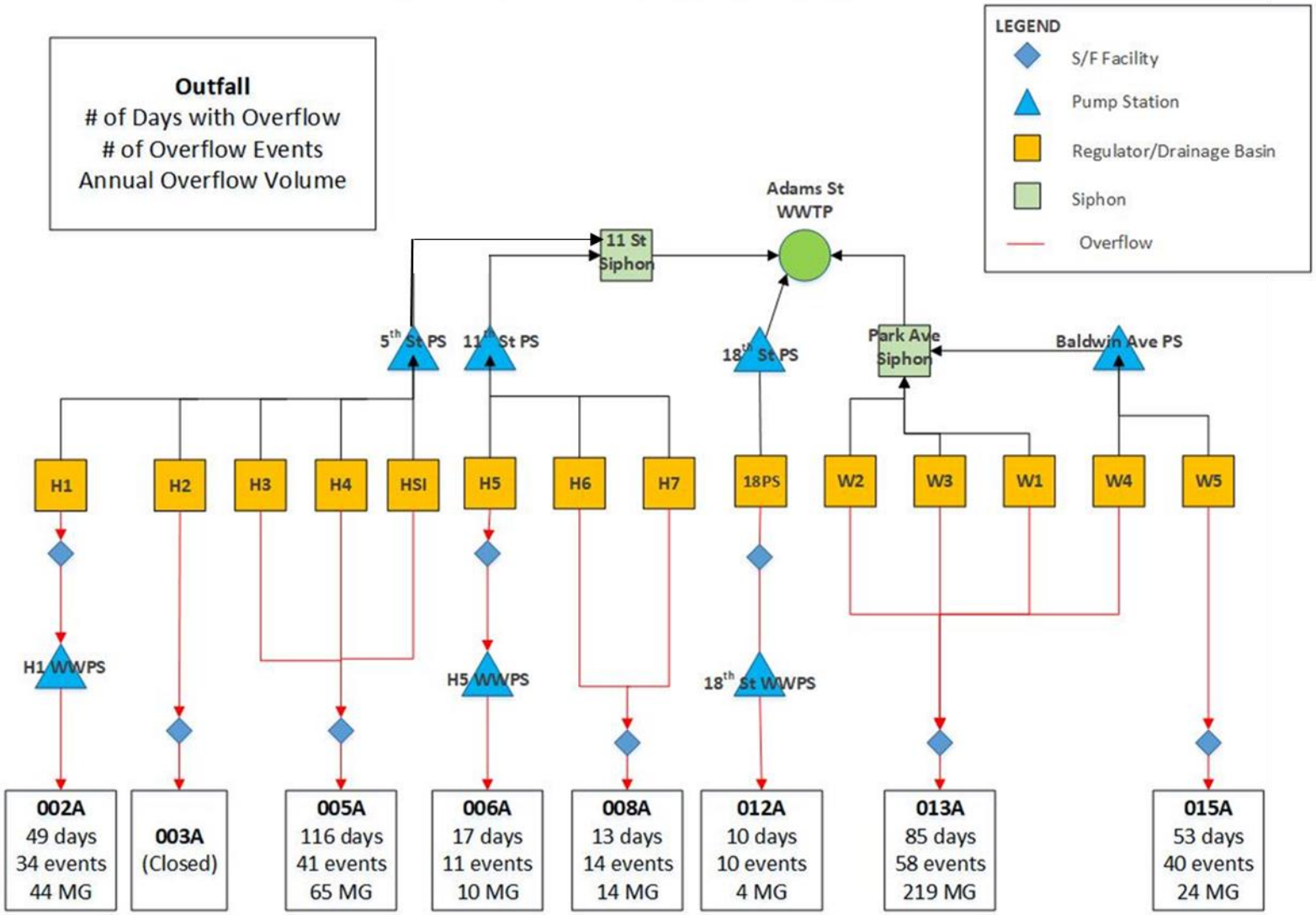


Figure 8-2 through Figure 8-8 shows calculations of sorted typical year overflow volumes for each outfall. The fifth largest overflow and the corresponding overflow volume is highlighted, indicating the overflow volume that would need to be addressed to meet the CSO requirements of four overflows per year. Figure 8-9 through Figure 8-15 show plots of the typical year overflow frequency vs peak flow for each outfall.

Figure 8-2. Adams Street Baseline Characterization- Outfall 002A Overflow Frequency vs Volume
2004 Typical Rainfall Year

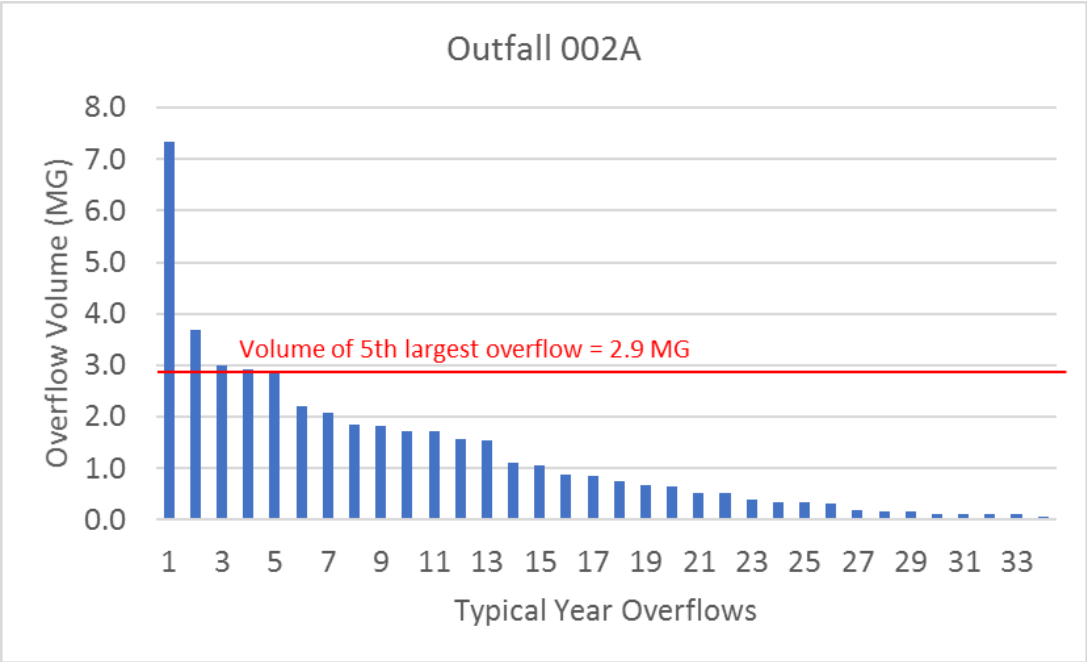


Figure 8-3. Adams Street Baseline Characterization- Outfall 005A Overflow Frequency vs Volume
2004 Typical Rainfall Year

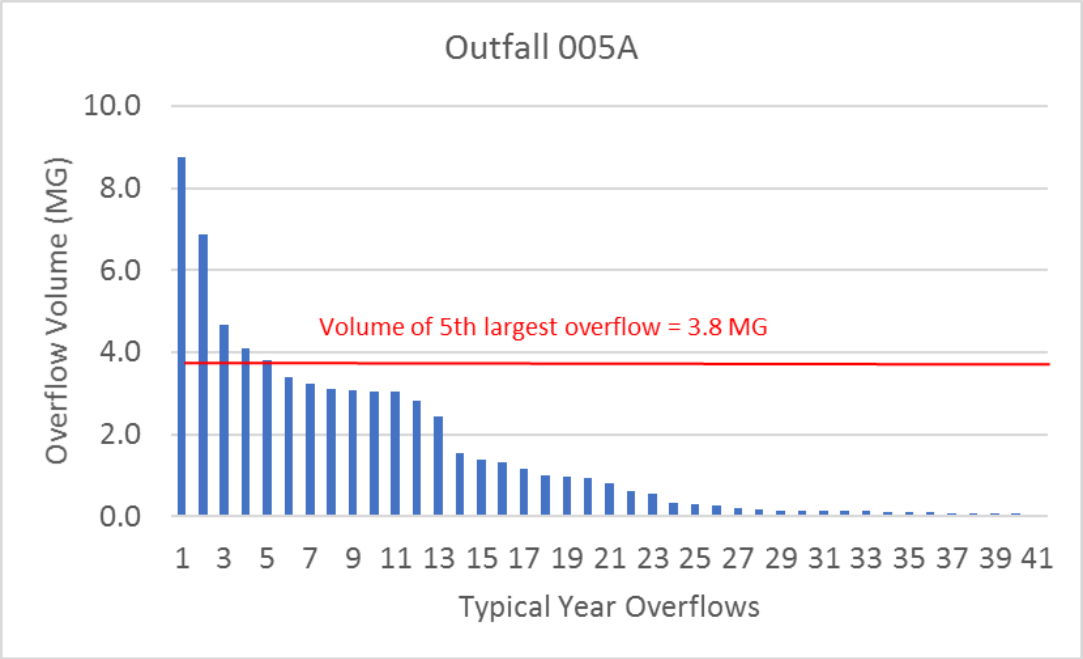


Figure 8-4. Adams Street Baseline Characterization- Outfall 006A Overflow Frequency vs Volume
2004 Typical Rainfall Year

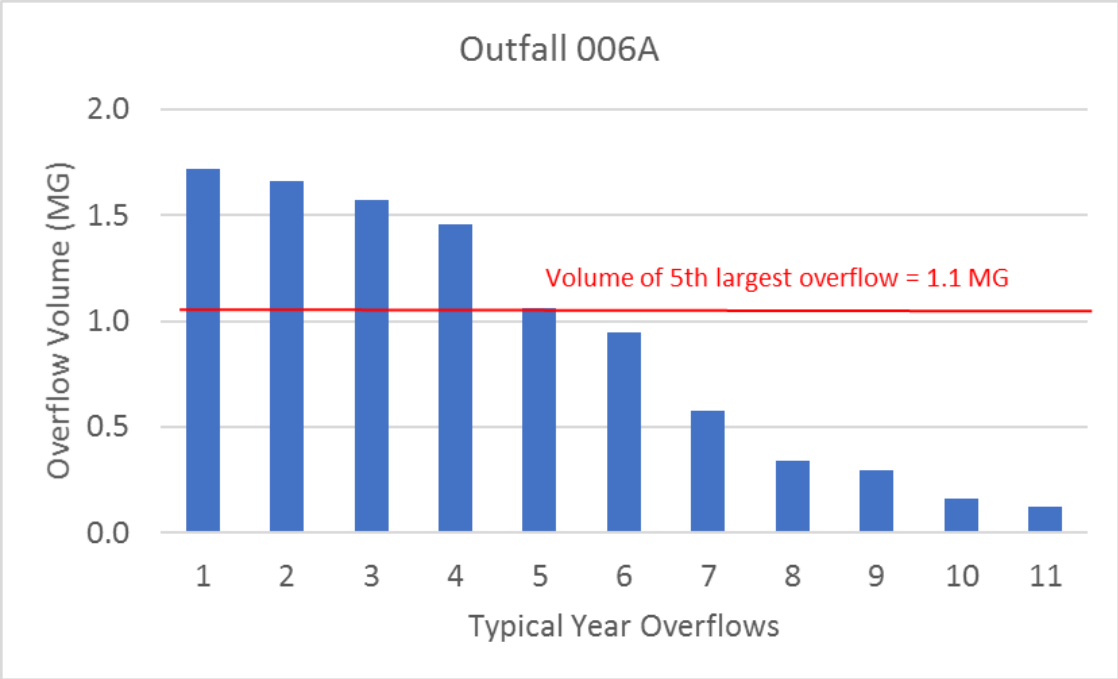


Figure 8-5. Adams Street Baseline Characterization- Outfall 008A Overflow Frequency vs Volume
2004 Typical Rainfall Year

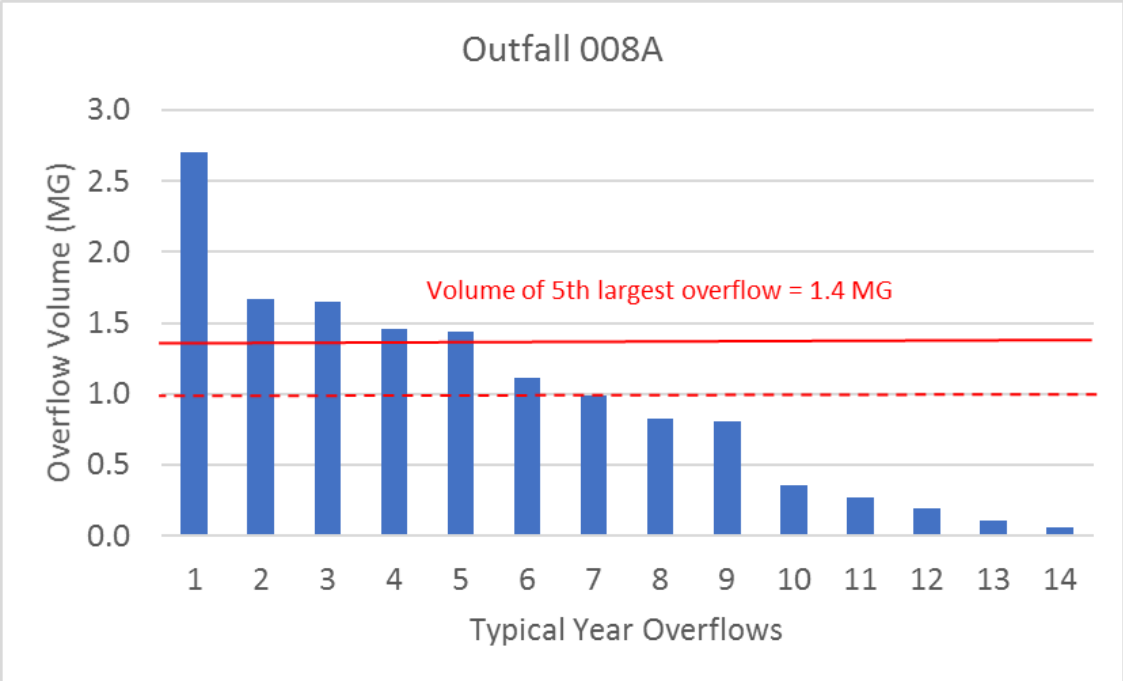


Figure 8-6. Adams Street Baseline Characterization- Outfall 012A Overflow Frequency vs Volume
2004 Typical Rainfall Year

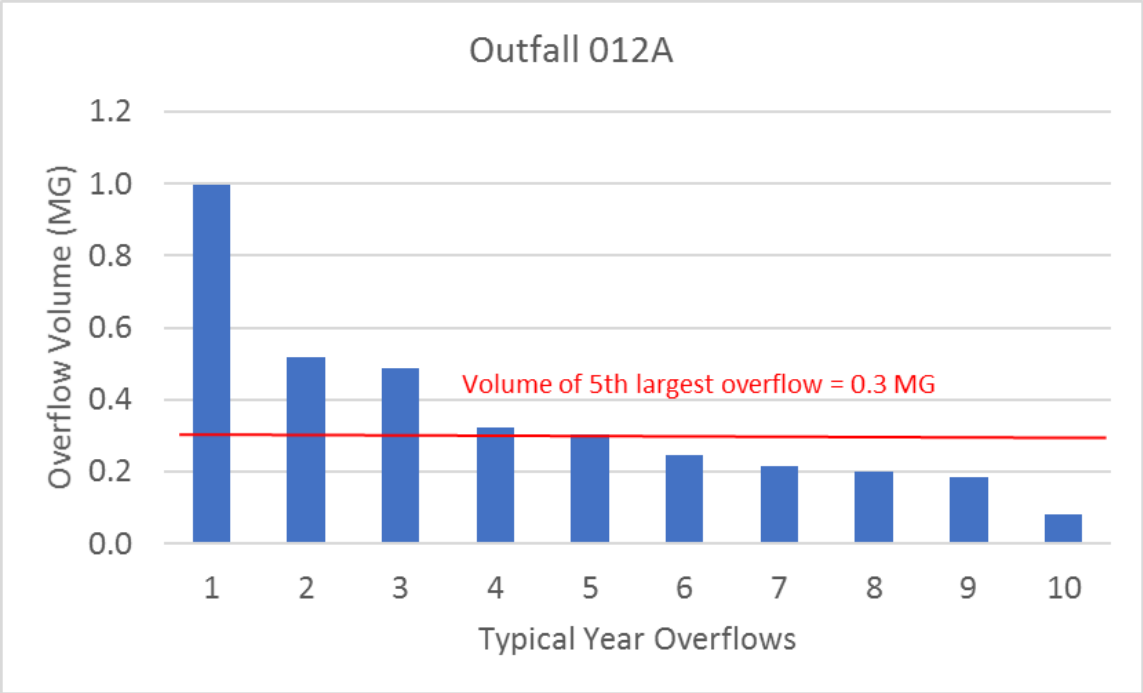


Figure 8-7. Adams Street Baseline Characterization- Outfall 013A Overflow Frequency vs Volume
2004 Typical Rainfall Year

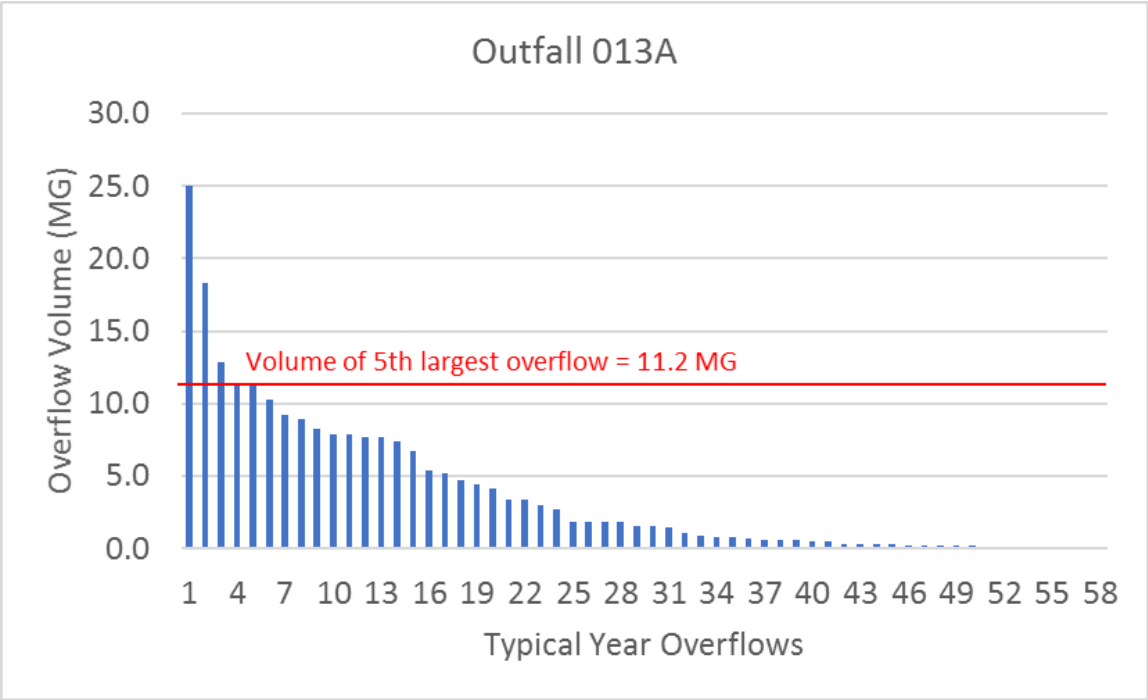


Figure 8-8. Adams Street Baseline Characterization- Outfall 015A Overflow Frequency vs Volume
2004 Typical Rainfall Year

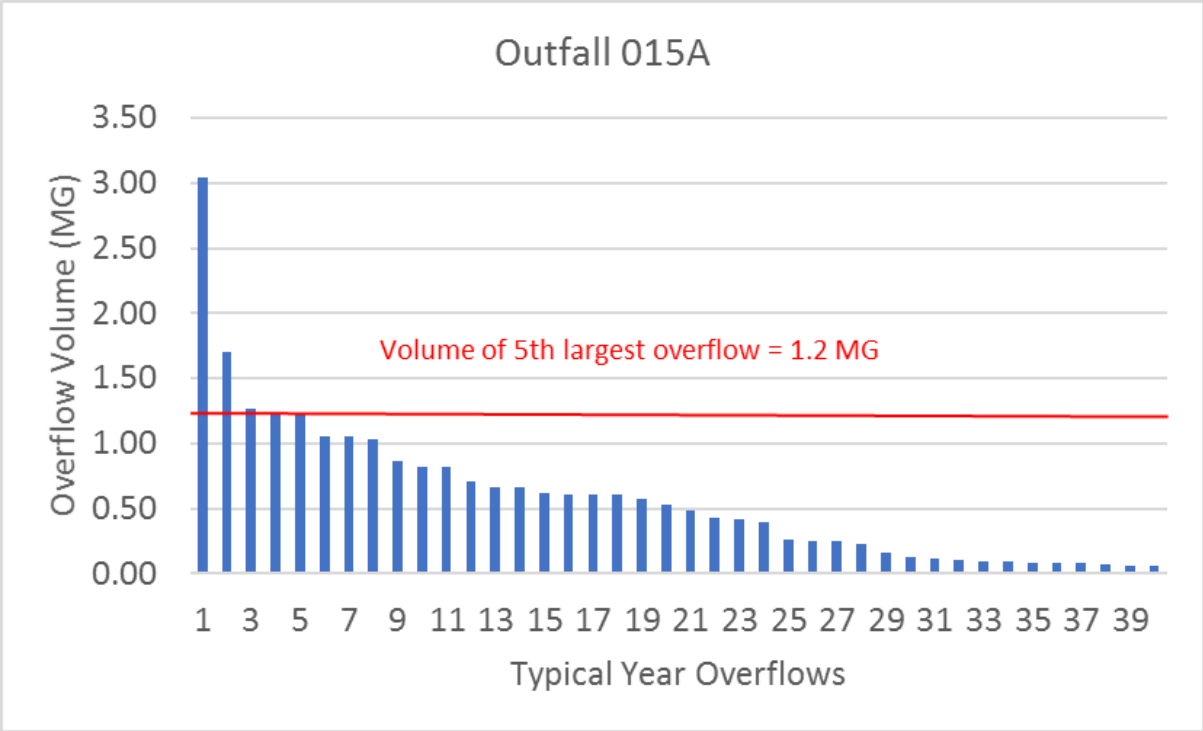


Figure 8-9. Adams Street Baseline Characterization- Outfall 002A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year

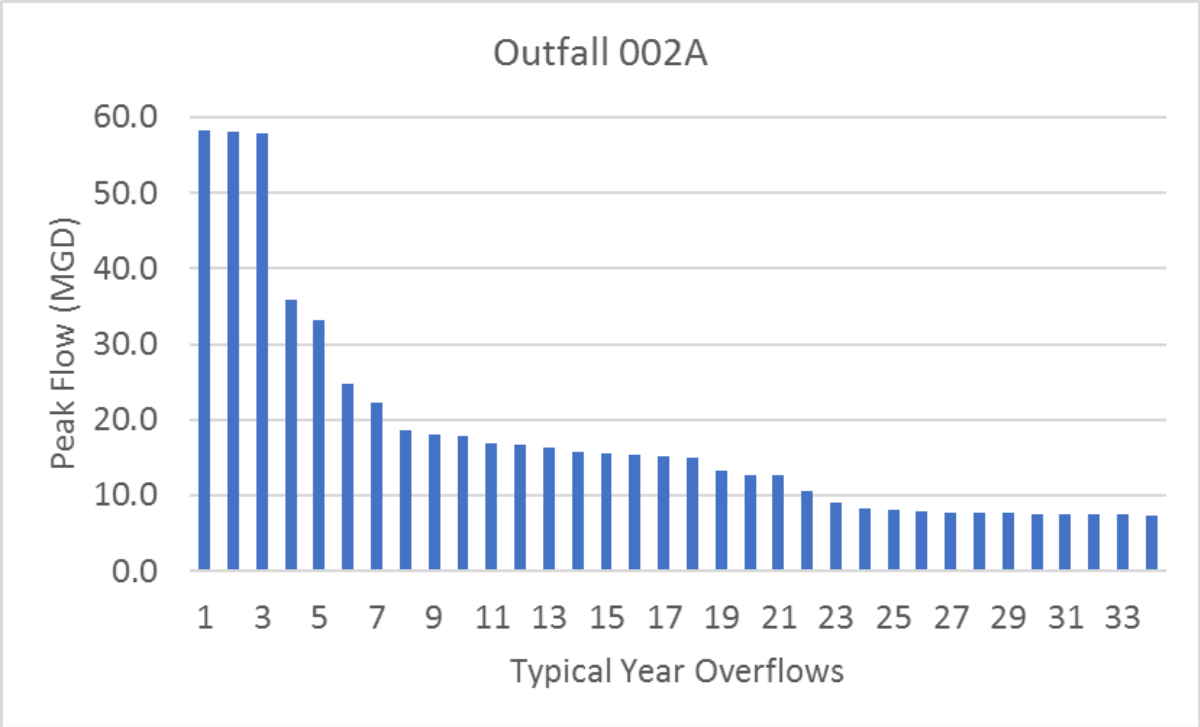


Figure 8-10. Adams Street Baseline Characterization- Outfall 005A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year

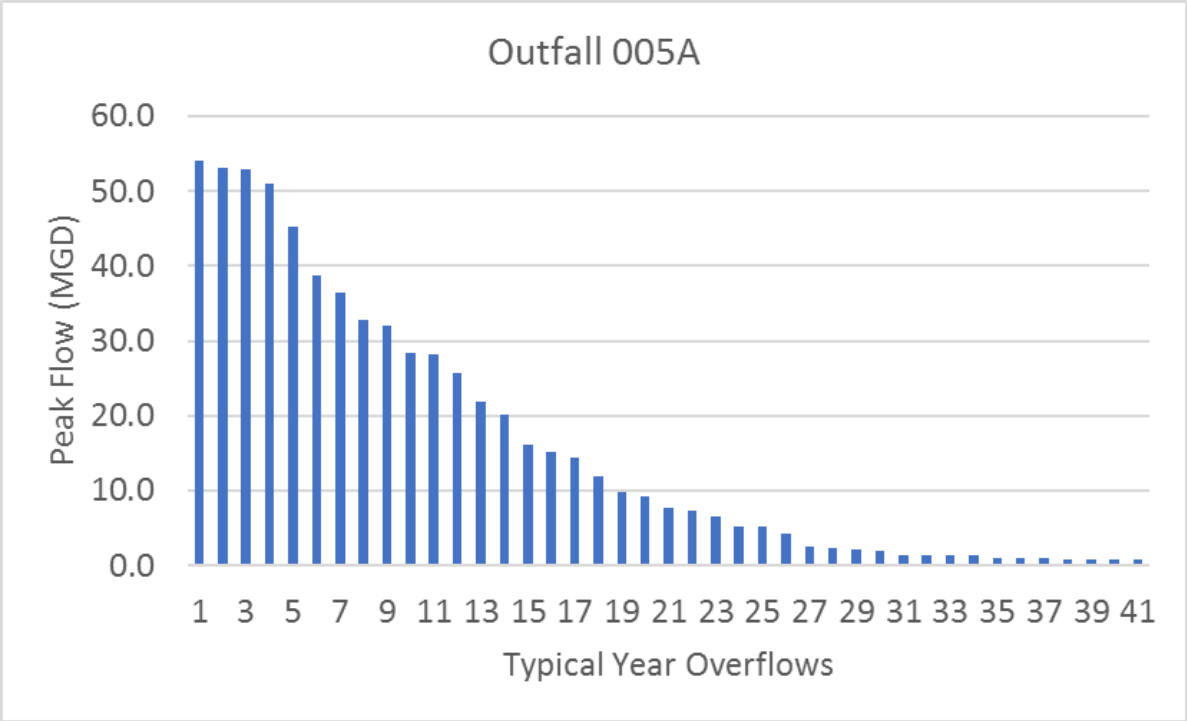


Figure 8-11. Adams Street Baseline Characterization- Outfall 006A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year

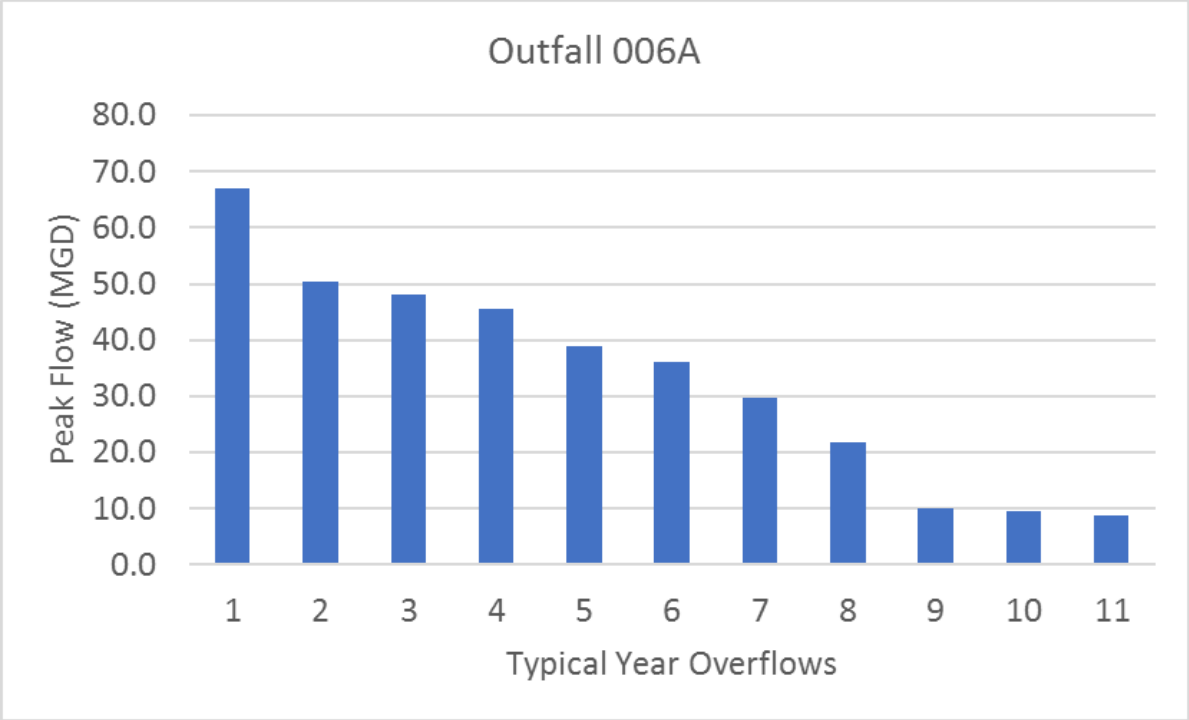


Figure 8-12. Adams Street Baseline Characterization- Outfall 008A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year

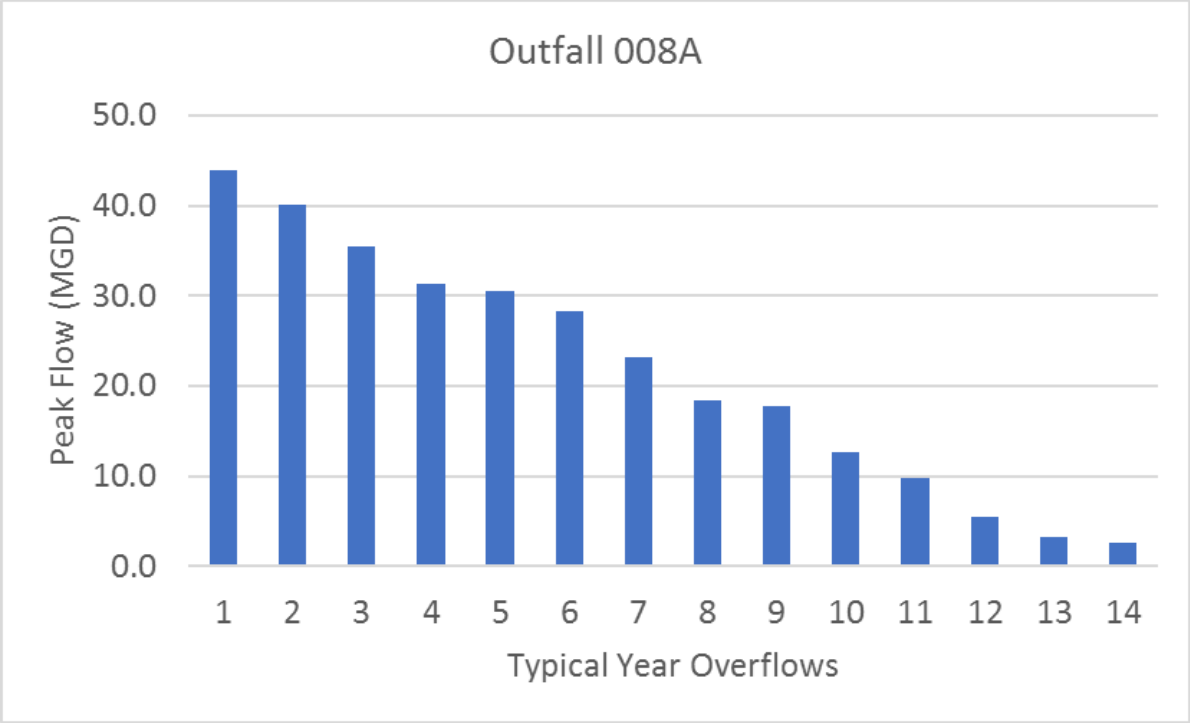


Figure 8-13. Adams Street Baseline Characterization- Outfall 012A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year

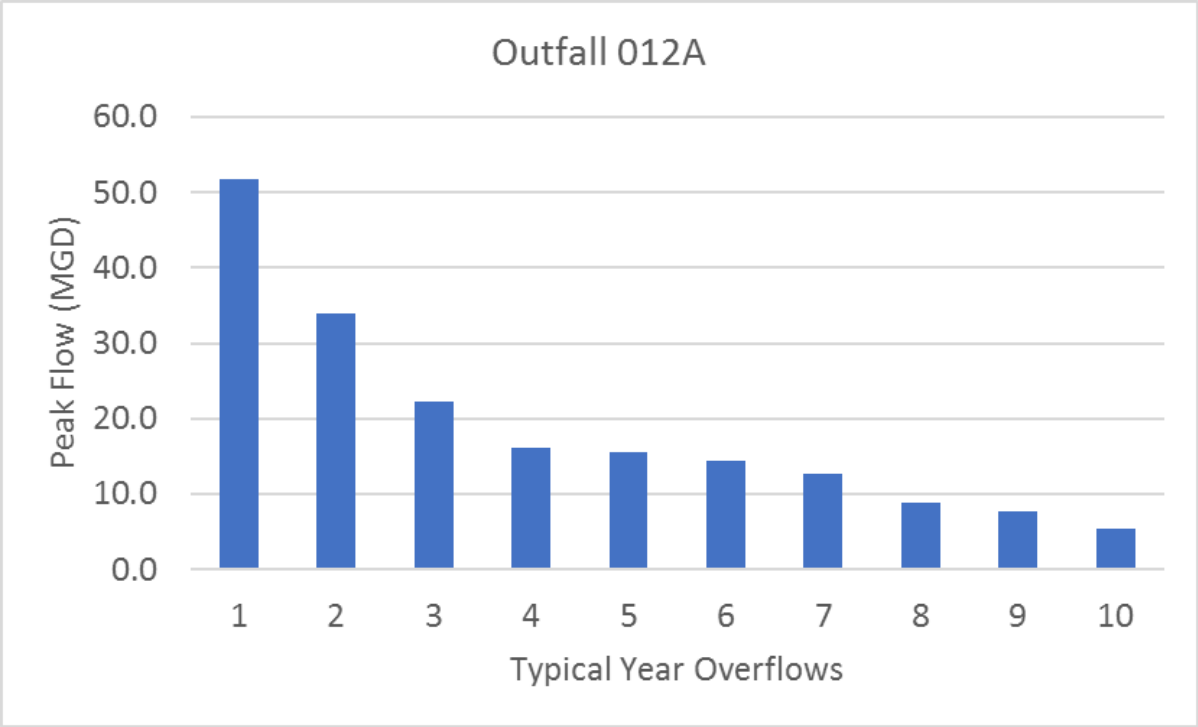


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Figure 8-14. Adams Street Baseline Characterization- Outfall 013A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year

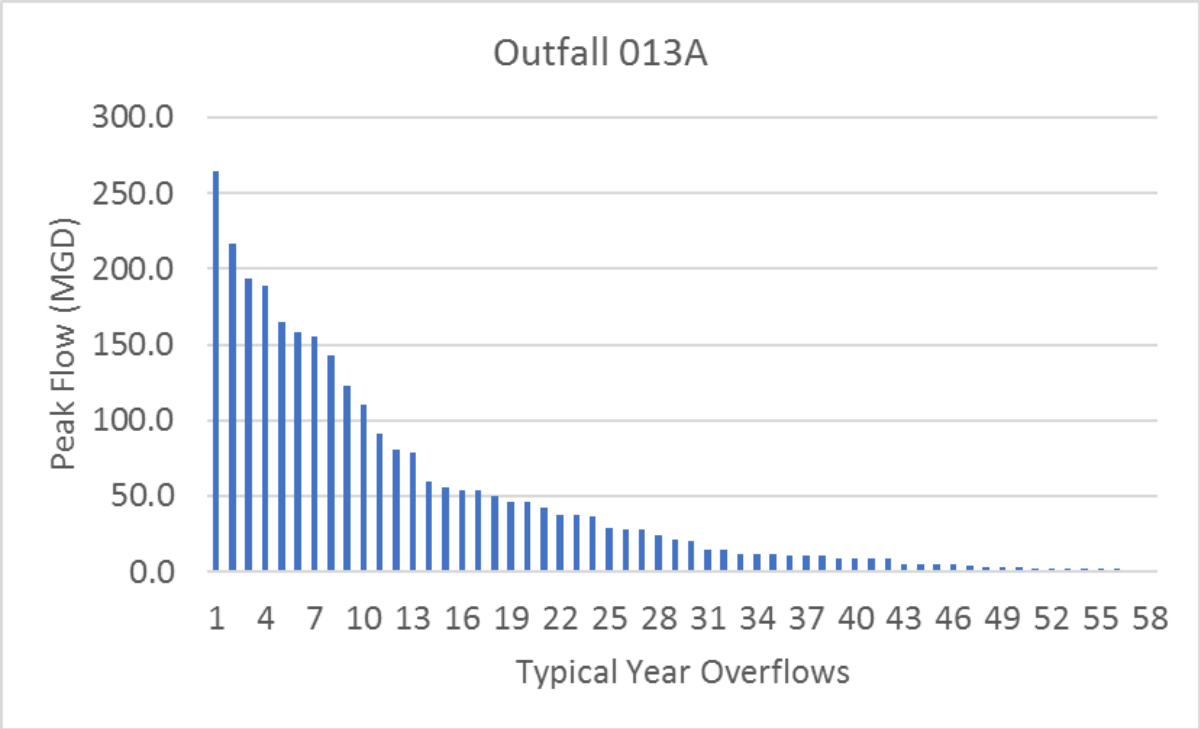
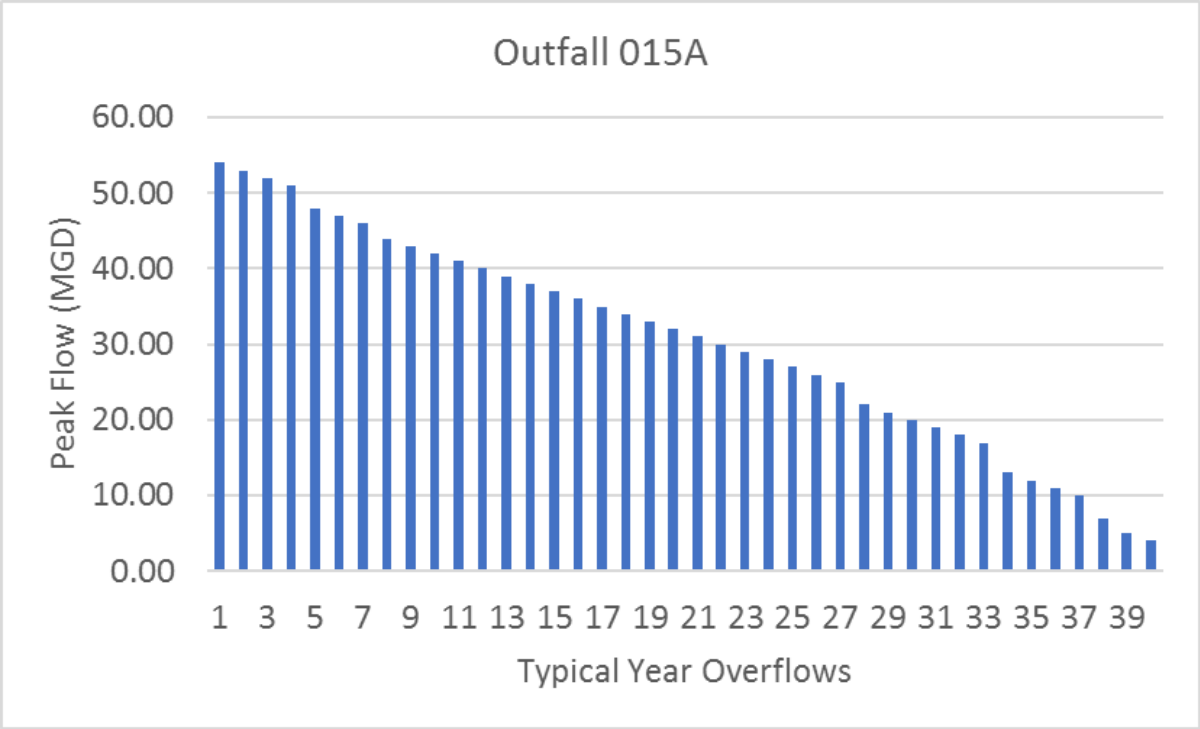


Figure 8-15. Adams Street Baseline Characterization- Outfall 015A Overflow Frequency vs Peak Flow
2004 Typical Rainfall Year



SECTION 9

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Appendix A – NHSA Collection System Flow Monitoring Data Report

Collection System Flow Monitoring Data Report FINAL

North Hudson Sewerage Authority

February 2017

GREELEY AND HANSEN

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Introduction

The North Hudson Sewage Authority (NHSA) has been making positive strides towards improving water quality conditions of the Hudson River and its tributaries due to combined sewer overflows (CSO). Under the Final New Jersey Pollutant Discharge Elimination Permit (NJPDES) Permits that were issued to the NHSA on March 12, 2015 for both the Adams Street WWTP and the River Road WWTP, the NHSA will develop a CSO Long Term Control Plan (LTCP). The Permits require the LTCP development to be completed within 59 months with interim milestones of various deliverables to be completed during the 59 month period. The NHSA has engaged CH2M as the program manager for the LTCP.

As a requirement of the NJPDES permit, the combined sewer system (CSS) is required to be characterized through records review, monitoring, modeling and other means to establish existing baseline conditions upon which the LTCP based. As CSO controls are implemented, the characterization of the combined sewer system will assist with the evaluation of the effectiveness of the CSO controls on CSO volume reductions. Characterization of the CSS can be best achieved through the data obtained from a flow monitoring program. The data from this program may be used to assist in the calibration of the hydraulic collection system models to understand how the CSS reacts in both dry and wet weather conditions as a result of the flow generated by the drainage basins collecting in the combined sewer system.

Under this project, the NHSA retained Greeley and Hansen and its sub-consultant ADS, Inc. to facilitate and manage a flow monitoring program and to provide equipment and maintenance of meters and rainfall monitoring equipment to obtain accurate flow and rain data within areas of the NHSA combined sewer system. Greeley and Hansen commenced work on March 17, 2016.

A copy of the ADS Collection System Flow Report Dated December 2016 is attached as Appendix A.

Scope of Monitoring Program

The scope of the project was to identify and quantify accurate data during both periods of dry weather and wet weather flow conditions. The intent was to obtain sufficient data to define I/I areas impacted by direct stormwater inflow, groundwater infiltration, and rainfall infiltration. A total of 19 locations were monitored and metered from May 17, 2016 through November 16, 2016. All meters were installed from April 25, 2016 to May 16, 2016 and were removed from the system by December 2, 2016. Collected data was uploaded regularly by ADS, Inc. to a web site that was accessible for review by the LTCP program manager, NHSA, OMI and Greeley and Hansen.

A summary of the program and the data collected follows. The details of the data monitoring, including the site layouts, equipment selection, installation report, calibrations, data processing, QC processes are all included in the ADS Collection System Flow Monitoring Report provided in Appendix A.

Rainfall Summary

During this time period, the goal of capturing a minimum of five (5) rain events greater than 0.5 inches in a 24 hour period was achieved as a total of 14 rainfall events over 0.5 inches were recorded, while four (4) of those events recorded over a total 1 inch of rain. A total of 43 rain events were captured during the 6 month flow monitoring period (Table 1). One (1) rain gauge was installed at the River Road WWTP during the same time period, and information from NHSA Baldwin Pump Station Rain Gauge was also obtained for verification purposes. .

Table 1: Recorded rainfall events and totals

Rainfall Totals	Events observed
Over 1 inch	5/30, 7/1, 7/5, 11/15
Between 0.5 and 1 inch	6/4, 6/5, 6/27-28, 7/14, 7/25, 7/29, 7/31, 9/16, 9/14, 10/8-9
Between 0.1 and 0.5 inches	16 events
Under 0.1 inches	13 events

The highest intensity rainfall recorded at the River Road WWTP rain gauge (RG1) on 7/31/16, where a total of 0.21 inches fell during a 5 minute interval. The Adams Street WWTP rain gauge recorded a maximum 0.26 inches within a 5 minute interval during the 9/14/16 rainfall.

Summary of Site Information for each Monitoring Location

Flow monitoring occurred at 19 separate locations within the Cities of Hoboken, Union City, Weehawken, and West New York. Two meters were located in the Weehawken site W2. Listed in Table 2 is the site name, location, dimensions, silt volume observed and manhole ID code for each monitoring location.

Table 2: Summary of Site Information for each Monitoring Location

Site Name	Site Information Location	Pipe Dimensions (in.)	Silt (in.)	Manhole ID Code
H1	Observer Highway at Washington St Hoboken, NJ	H-1 (43.63 in H, 98.00 in W)	0.25	H1-OB-010
H2	River Street at Newark Street Hoboken NJ	Elliptical (41.63 in H, 42.00 in W)	4.00 - 2.00	H2-NE-010
H3	3rd Street at River Street Hoboken NJ	H-3 (54.13 in H, 40.00 in W)	8.00 - 4.00	H3-03-002
H4	4th Street West Hoboken NJ	H-4 (55.75 in H, 84.00 in W)	1.50	H4-04-010
H5	11th Street at Washington Street Hoboken, NJ	Non-standard (58.25 H, 85.00 W)	7.00	H5-11-510
H6	133 Hudson Street Hoboken NJ	Standard Egg (42.00 H, 29.00 W)	0.00	H6 Regulator
H7	14th Street, East of Washington Street Hoboken NJ	H-7 (54.00 in H, 84.00 in W)	0.00	H7-15-012
HSI	5th Street Pump Station Hoboken, NJ	Circular (12.00 in H)	0.00	HSI-05-003
NHW	Secaucus Road at Patterson Plank Rd Union City, NJ	Elliptical (48.00 in H, 49.75 in W)	0.50	UH1-05-006
UC1	Park Avenue at 43rd Street Union City, NJ	Elliptical (58.00 in H, 59.25 in W)	1.00	UC1 Regulator
UC2	131 49th Street Union City, NJ	Elliptical (74.50 in H, 77.00 in W)	0.00	UC2 Regulator
UH1	1409 Union Turnpike Union City, NJ	Elliptical (8.00 in H, 7.50 in W)	0.00	NBW-HA-003A
W1	321 Park Avenue Weehawken, NJ	Circular (54.13 in H)	0.00	PANYNJ-PA-012B
W2-A	506 Gregory Avenue, Weehawken, NJ	Elliptical (46.50 in H, 45.75 in W)	0.00	W2-GR-004
W2-B	506 Gregory Avenue, Weehawken, NJ	Elliptical (46.50 in H, 45.13 in W)	0.00	W2-GR-004
W3	99 Hackensack Plank Road Weehawken, NJ	Circular (47.75 in H)	0.00	W3-HA-002
W4	700 JF Kennedy Blvd East Weehawken, NJ	Elliptical (23.63 in H, 25.00 in W)	0.00	W4-JFK-009
W5	995 JF Kennedy Blvd East Weehawken, NJ	Elliptical (24.00 in H, 24.50 in W)	0.00	W5 Regulator
WNY1	East of JFK Blvd and Anthony M Delfino Way Intersection, West New York, NJ	Circular (84.00 in H)	0.00	WNY1 Regulator
WNY2	211 51st Street West New York, NJ	Elliptical (75.63 in H, 77.38 in W)	0.50	WNY2 Regulator

Summary of Observed Depth, Velocity and Quantity during Monitoring Period

A summary table of the observed average, maximum and minimum depth, velocity and quantity recorded at each monitoring location, along with the date and time the maximum and minimum was recorded, is presented in Tables 3, 4 and 5.

Table 3: Summary of Observed Depth recorded during Monitoring Period

	Depth				
Site Name	**Average (in.)**	**Minimum (in.)**	**Time of Minimum**	**Maximum (in.)**	**Time of Maximum**
H1	8.35	5.53	9/18/2016 6:25	75.61	5/30/2016 1:50
H2	9.99	5.59	6/7/2016 4:05	104.27	7/25/2016 17:40
H3	23.71	50.56	6/27/2016 4:30	101.22	7/25/2016 17:45
H4	9.51	6.65	6/23/2016 5:20	87.89	7/25/2016 17:45
H5	16.02	13.91	5/27/2016 5:15	117.11	7/25/2016 17:40
H6	4.02	1.9	10/26/2016 4:10	72.95	7/25/2016 17:40
H7	12.30	10.62	9/14/2016 4:35	74.77	5/30/2016 1:55
HSI	1.55	0.19	7/15/2016 2:25	53.96	7/25/2016 17:40
NHW	6.71	4.97	10/15/2016 3:50	83.45	7/25/2016 17:40
UC1	19.57	18.09	9/28/2016 3:45	54.2	7/25/2016 17:40
UC2	17.14	14.58	5/23/2016 4:25	48.91	7/1/2016 18:00
UH1	3.21	2.15	6/15/2016 3:25	31.72	9/14/2016 17:40
W1	4.61	1.36	9/14/2016 17:30	81.19	9/14/2016 17:40
W2-A	2.48	1.38	7/26/2016 15:20	45.72	7/25/2016 17:40
W2-B	2.09	1.17	11/1/2016 4:55	45.12	7/25/2016 17:35
W3	3.55	2.27	6/5/2016 5:05	37.49	7/25/2016 17:40
W4	2.53	1.79	10/31/2016 5:50	34.63	7/25/2016 17:35
W5	5.62	4.3	9/5/2016 5:55	76.31	9/14/2016 17:40
WNY1	10.84	7.44	9/15/2016 4:25	110.87	7/1/2016 18:00
WNY2	2.75	21.27	6/14/2016 4:20	77.04	7/1/2016 18:00

Table 4: Summary of Observed Velocity recorded during Monitoring Period

	Velocity				
Site Name	**Average (ft/s)**	**Minimum (ft/s)**	**Time of Minimum**	**Maximum (ft/s)**	**Time of Maximum**
H1	0.63	0.00	7/9/2016 23:35	3.72	7/25/2016 17:35
H2	0.73	0.00	6/5/2016 11:55	4.37	7/25/2016 17:35
H3	0.62	0.16	5/30/2016 1:55	3.55	7/25/2016 17:35
H4	0.81	0.00	5/30/2016 2:15	1.99	9/1/2016 14:45
H5	0.55	0.00	5/30/2016 1:45	1.33	6/8/2016 15:10
H6	1.79	0.00	9/1/2016 15:00	4.68	7/25/2016 17:35
H7	0.68	0.00	5/30/2016 2:00	2.03	10/30/2016 16:40

Site Name	Velocity				
	Average (ft/s)	Minimum (ft/s)	Time of Minimum	Maximum (ft/s)	Time of Maximum
HSI	5.47	1.95	6/25/2016 18:10	10.77	6/5/2016 18:35
NHW	1.80	0.88	8/10/2016 3:25	9.18	7/25/2016 17:45
UC1	0.60	0.30	5/31/2016 3:55	4.56	7/5/2016 3:20
UC2	0.71	0.40	10/15/2016 4:10	7.04	5/30/2016 1:55
UH1	1.19	0.23	8/30/2016 3:30	10.47	7/25/2016 17:35
W1	3.52	-8.99	7/18/2016 10:20	13.83	7/5/2016 1:45
W2-A	6.27	2.07	10/22/2016 4:20	12.80	10/30/2016 16:40
W2-B	6.03	0.73	9/24/2016 1:00	16.49	7/1/2016 22:15
W3	6.60	4.42	6/3/2016 2:50	14.67	7/25/2016 17:50
W4	3.31	1.59	7/25/2016 17:30	12.08	5/30/2016 1:40
W5	0.44	0.24	9/5/2016 5:55	9.58	11/15/2016 9:25
WNY1	3.61	2.27	5/24/2016 6:50	10.06	7/1/2016 18:00
WNY2	0.64	0.29	9/13/2016 4:05	7.27	7/5/2016 3:10

Table 5: Summary of Observed Flow recorded during Monitoring Period

Site Name	Quantity				
	Average (MGD)	Minimum (MGD)	Time of Minimum	Maximum (MGD)	Time of Maximum
H1	1.982	0.000	7/9/2016 23:35	57.445	7/25/2016 17:35
H2	0.476	0.000	6/5/2016 11:55	25.623	7/25/2016 17:35
H3	1.450	0.513	6/11/2016 5:25	25.021	7/25/2016 17:35
H4	0.785	0.000	5/30/2016 2:15	14.889	9/1/2016 14:50
H5	0.888	0.000	5/30/2016 1:45	14.696	6/5/2016 18:45
H6	0.268	0.000	9/1/2016 15:00	18.919	7/25/2016 17:35
H7	1.126	0.000	5/30/2016 2:00	13.557	7/14/2016 16:15
HSI	0.214	0.011	7/15/2016 2:25	5.285	7/25/2016 17:40
NHW	1.342	0.469	10/12/2016 3:05	77.110	7/25/2016 17:45
UC1	2.213	0.980	5/31/2016 3:55	49.277	7/5/2016 3:20
UC2	2.603	1.250	6/10/2016 4:50	76.961	9/14/2016 17:40
UH1	0.096	0.030	8/28/2016 2:30	2.215	7/25/2016 17:35
W1	1.378	0.000	6/5/2016 23:55	75.422	7/14/2016 13:45
W2-A	1.044	0.238	6/15/2016 3:15	73.144	7/25/2016 17:40
W2-B	0.806	0.213	10/3/2016 4:15	97.724	7/25/2016 17:35
W3	1.914	0.852	6/3/2016 5:05	98.162	7/25/2016 17:45
W4	0.412	0.171	7/21/2016 4:35	17.347	9/1/2016 14:30
W5	0.217	0.060	9/5/2016 5:55	19.777	11/15/2016 9:25
WNY1	7.088	3.220	9/30/2016 4:30	250.306	7/1/2016 18:00
WNY2	3.672	1.411	9/13/2016 4:10	80.749	7/1/2016 17:55

Verification of Meter Operation during the Monitoring Period

Table 6 presents a listing of each meter and the total amount of time that recording was verified during the 6 month monitoring period. A minimum 90% uptime for the metering equipment was required (95% preferred).

Table 6: Uptime for Metering at Monitoring Locations

Site Name	Percent Uptime			Site Name	Percent Uptime		
	Depth	Velocity	Quantity		Depth	Velocity	Quantity
H1	100	100	100	**UC2**	100	100	100
H2	99	99	99	**UH1**	100	100	100
H3	100	100	100	**W1**	98	98	98
H4	100	100	100	**W2-A**	99	99	99
H5	97	97	97	**W2-B**	100	100	100
H6	100	100	100	**W3**	100	100	100
H7	100	100	100	**W4**	99	98	98
HSI	99	99	99	**W5**	100	100	100
NHW	100	100	100	**WNY1**	100	100	100
UC1	100	100	100	**WNY2**	99	99	99

Conclusions

Based upon discussions and review of the data during the flow monitoring program, the data collected during the time period May 17 to November 16, 2016 and presented herein and in Appendix A is sufficient to support the ongoing development of the LTCP and hydraulic models. The flow meters have been removed from the collection system.

Appendix A

ADS Collection System Flow Monitoring Report

North Hudson Sewerage Authority

COLLECTION SYSTEM FLOW MONITORING

5/17/2016 – 11/16/2016

FINAL REPORT

Prepared for:

GREELEY AND HANSEN

ADS ENVIRONMENTAL SERVICES®

February 2017

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APPENDICES

Appendix 1 - Confirmation Report

Appendix 2 - Additional Site Photos and Sketches

Letter of Transmittal

A Division of ADS LLC

60 N. Harrison Ave.
Suite 32
Congers, NY 10920
www.adsenv.com

February 14, 2017

North Hudson Sewerage Authority
1600 Adams St. #2
Hoboken, NJ 07030

To Whom It May Concern,

ADS is pleased to submit the final report for the North Hudson Sewerage Authority Temporary Flow Monitoring Study 2016. Data beginning Tuesday, May 17, 2016 through Wednesday, November 16, 2016 includes depth, velocity and quantity hydrographs as well as scattergraphs, longtables and 5-minute data in Excel format.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, please contact the Project Manager, Joeseph Scarcia at 717-554-7552 or me at 410-859-4148.

Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Rodianne Cadet
Data Manager

An IDEX Fluid & Metering Business
Accusonic
ADS Environmental Services
Hydra-Stop

Scope and Methodology

Introduction

Background and Scope

North Hudson Sewerage Authority (NHSA) entered into an agreement with ADS Environmental Services to monitor flow at twenty (20) metering locations and to measure rain at one (1) rain gauge located in the NHSA sewer system. The monitoring period began on Tuesday, May 17, 2016 and ended on Wednesday, November 16, 2016. The objectives of this study were to measure rainfall, depth of flow, velocity, and quantify flows.

Monitoring Tasks

Monitoring tasks included:

- Investigating proposed flow-monitoring sites for proper hydraulic conditions
- Investigating proposed rain gauge sites for sufficient exposure and non-excessive wind
- Installing flow monitors and rain gauges
- Precisely measuring pipe geometry
- Manually confirming monitor depth and velocity readings
- Manually confirming rain gauge tipping bucket operation
- QA/QC data for bias and outliers, correcting as necessary
- Flow data analysis

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Equipment

Flow Monitoring Equipment

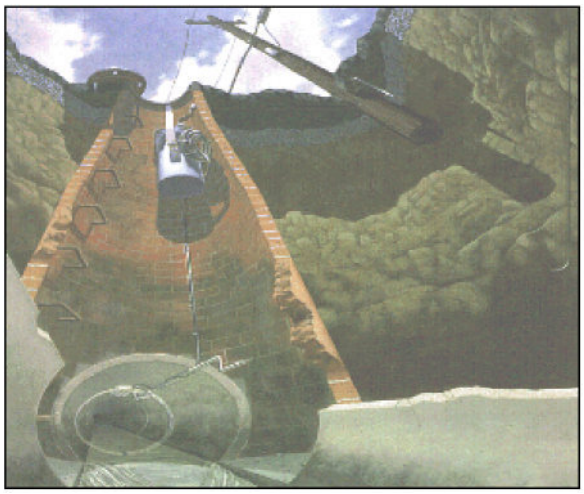
The ***ADS FlowShark Triton*** monitor was selected for this project. This flow monitor is an area velocity flow monitor that uses both the Continuity and Manning's equations to measure flow.
The ADS FlowShark Triton monitor consists of data acquisition sensors and a battery-powered microcomputer. The microcomputer includes a processor unit, data storage, and an on-board clock to control and synchronize the sensor recordings. The monitor was programmed to acquire and store depth of flow and velocity readings at 5-minute intervals.
The FS Triton monitor features cross-checking using multiple technologies in each sensor for continuous running of comparisons and tolerances. The FS Triton monitor can support two (2) sets of sensors. The sensor options used for this project were:

The Peak Combo Sensor installed at the bottom of the pipe includes three types of data acquisition technologies.
The ***up looking ultrasonic depth*** uses sound waves from two independent transceivers to measure the distance from the sensor upward toward the flow surface; applying the speed of sound in the water and the temperature

measured by sensor to calculate depth.
The ***pressure depth*** is calculated by using a piezo-resistive crystal to determine the difference between hydrostatic and atmospheric pressure. The pressure sensor is temperature compensated and vented to the atmosphere through a desiccant filled breather tube.
To obtain ***peak velocity*,** the sensor sends an ultrasonic signal at an angle upward through the widest cross-section of the oncoming flow. The signal is reflected by suspended particles, air bubbles, or organic matter with a frequency shift proportional to the velocity of the reflecting objects. The reflected signal is received by the sensor and processed using digital spectrum analysis to determine the peak flow velocity.

The Ultrasonic Level Sensor installed at the top of the pipe features four measurement technologies.
The sensor uses four independent ultrasonic transceivers to measure the distance from the face of the transceiver housing to the water surface then applies the speed of sound in air & the sensor measured temperature to the elapsed time between transmitting and receiving the ultrasonic waves to calculate the ***ultrasonic depth*.**

Installation



Installation of flow monitoring equipment typically proceeds in four steps. First, the site is investigated for safety and to determine physical and hydraulic suitability for the flow monitoring equipment. Second, the equipment is physically installed at the selected location. Third, the monitor is tested to assure proper operation of the velocity and depth of flow sensors and verify that the monitor clock is operational and synchronized to the master computer clock. Fourth, the depth and velocity sensors are confirmed and line confirmations are performed.
In pipes up to 42 inches in diameter, the sensors were mounted on expandable stainless steel rings, inserted at least a foot upstream into influent pipes and tightened against the inside walls of the pipes. Influent pipe installations reduce the influences of turbulence and backwater often caused by changes in channel geometry in manholes.

In pipes larger than 42 inches in diameter, a special installation is made using two sections of the ring installed one to two feet upstream of the pipe/manhole connection; one bolted to the crown of the pipe for the ultrasonic level sensor and the other bolted to the bottom of the pipe (bolts are usually placed just above the water line) to hold the peak combo sensor.

Data Collection, Confirmation, and Quality Assurance

Data collects were done remotely via telemetry by a Data Analyst. Periodically during the monitoring period, field crews visit each monitoring location to verify proper monitor operation and document field conditions. The following quality assurance steps are taken to assure the integrity of the collected data:

Measure power supplies: monitors were powered by dry cell battery packs. Voltages were recorded and battery packs replaced, as necessary. Separate batteries provided back-up power to memory allowing primary batteries to be replaced without loss of data.
Clock synchronization: Field crews synchronized monitor clocks to master clocks.
Confirm depth and velocity readings: Field crews descended into meter manholes to manually measure depths and velocities and compare them meter readings to confirm that they agreed. They also measured silt levels, if any, in the inverts of the pipes. Silt areas were subtracted from flow areas to compute true areas of flow.
Confirm average velocities through cross-sectional velocity profiles: Since ADS velocity sensors measures peak velocity, field crews collected cross-sectional velocity profiles in order to develop a relationship between peak and average velocity in lines that meet the hydraulic criteria.
Confirm flows using V-notched weirs: For monitoring locations where the depth of flow is less than 2.00", flow may be verified by inserting a v-notch weir into the mouth of pipe to directly measure the flow rate. This method requires the field crew to seal and level the weir, wait for it to fill and stabilize, then record the flow rates from the numbers on the weir (gpd). Depth and manually recorded flow rates were then used to calculate the average velocity needed to verify velocity sensor readings.
Upload and Review Data: Data collected from the monitors were uploaded and reviewed by a Data Analyst for completeness, outliers and deviations in the flow patterns, which indicate system anomalies or equipment failure.

Methodology

Flow Quantification Methods

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

Continuity Equation

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

$$Q = A * V$$

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

Flow Classifications

Flow classifications can be determined using factors such as, varying flow cross-sections, fluctuating flow rates, the presence of surface waves and erratic flows.
Ideal Uniform Flowsremain steady throughout the cross-section of the line whereas ***Gradually Varied Flows,*** as seen in drawdown or backwater, change slowly as we move upstream and/or downstream in the line.
When flow rates remain constant over a period of time, they are classified as having ***Steady Flow***; if not, they have ***Unsteady Flow***.
The speed of surface waves versus that of the flow can be subcategorized to 3 groups: ***supercritical***, ***subcritical***, and ***transitional*** (changing from sub to supercritical). The Froude Number (flow speed divided by surface wave speed) is used to characterize these patterns. Froude numbers greater than one are defined as supercritical and Froude numbers less than one are defined as subcritical. Subcritical flow surfaces are always smooth with is good for depth measurements, but may not be good in terms of silt deposition.
Turbulent flow account for 99.9% of all gravity sewer flow even if the flow surface is smooth.

An ideal monitoring location tend to have near-uniform, near-steady, turbulent flow with a smooth surface.

Data Analysis and Presentation

Data Analysis

A flow monitor is typically programmed to collect data at either 15-minute or 5-minute intervals throughout the monitoring period. The monitor stores raw data consisting of (1) the Range (distance from sensor to top of flow) for each active ultrasonic depth sensor, (2) the peak velocity and (3) the pressure depth. When the field personnel collects the data, the air range is converted to depth data based on the pipe height and physical offset (distance from the top of the pipe to the surface of the ultrasonic sensor). The data is imported into ADS's proprietary software and is examined by a data analyst to verify its integrity. The data analyst also reviews the daily field reports and site visit records to identify conditions that would affect the collected data.
Velocity profiles and the line confirmation data developed by the field personnel are reviewed by the data analyst to identify inconsistencies and verify data integrity. Velocity profiles are reviewed and an average to peak velocity ratio is calculated for the site. This ratio is used in converting the peak velocity measured by the sensor to the

average velocity used in the Continuity equation. The data analyst selects which ultrasonic pairs and/or depth sensor entity will be used to calculate the final depth information. Silt levels present at each site visit are reviewed and representative silt levels established.
Occasionally the velocity sensorâ€™s performance may be compromised resulting in invalid readings sporadically during the monitoring period. This is generally caused by excessive debris (silt) blocking the sensor's crystals, shallow flows (~< 2") that may drop below the top of the sensor or very clear flows lacking the particles needed to measure rate. In order to use the Continuity equation to quantify the flow during these periods, a Sr. Analyst and/or Engineer will use the siteâ€™s historical pipe curve (depth vs. velocity) data along with valid field confirmations to reconstitute and replace the false velocity recordings with expected velocity readings for a given historical depth along the curve.
Selections for the above parameters can be constant or can change during the monitoring period. While the data analysis process is described in a linear manner, it often requires an iterative approach to accurately complete.

Data Presentation

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

DEPTH - Final calculated depth measurement (in inches)
QUANTITY - Final calculated flow rate (in MGD)

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

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

Hydraulic Terms

Backwater: Increased depth of water upstream from a dam or obstruction in a stream channel due to the existence of such obstruction, and the raising by it of the water level a considerable distance upstream.[1]

Critical velocity: flow in which the velocity of the flow exactly matches the velocity of a surface wave.

Diurnal: A term which describes the repeatable pattern of flow for a typical day at a particular site.

Free gravity flow: uniform, near-steady open channel flow unimpeded by backwater.

Froude Number: is a dimensionless number defined as the ratio of flow velocity to gravitational wave velocity. It is defines as: $F_r = v/c$

Where: ***v*** is the characteristic velocity of water in this case and
c is the characteristic water-wave propagation velocity

Hydraulic jump: A steady-state, finite-amplitude disturbance in a channel, in which water passes turbulently from a region of (uniform) low depth and high velocity [supercritical velocity] to a region of (uniform) high depth and low velocity [subcritical velocity].[2]

Hydraulic radius: Cross-sectional area of flow divided by the wetted perimeter.[3]

Non-uniform flow: occurs when the slope, the cross-sectional area and the velocity are changing from section to section.

Open channel flow: The flow of liquid in a conduit may be classified as pipe (or closed conduit) flow or open-channel flow depending on whether the free-liquid surface is subject to atmospheric pressure. If the flow is in a partially filled sewer the flow is referred to as open-channel flow.[4]

Steady flow: steady flow occurs when the discharge or rate of flow at any cross section is constant.[5]

Uniform flow: occurs when the depth, cross-sectional area and other elements of flow are substantially constant from section to section. [6]

Non-steady flow: Unsteady flow occurs when the discharge or rate of flow at any cross-section is varied.[7]

Subcritical velocity: flow in which the velocity of the flow is less than the velocity of a surface wave in that fluid.

Supercritical velocity: flow in which the velocity of the flow exceeds the velocity of a surface wave in that fluid.

Surcharge: Flow is surcharged in a pipe when the depth in a manhole is greater than the height of a pipe. Surcharge is a subset of backwater.

Wetted perimeter: Cross-sectional area of a submerged channel bottom.

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[1] Water and Wastewater Control Engineering, 3rd Edition, 1981

[2] http://www.answers.com/topic/hydraulic-jump

[3] Tchobanoglous, G., "Wastewater Engineering: Collection and Pumping of Wastewater" Metcalf & Eddy, Inc. 1981, p. 24, McGraw-Hill, Inc. ISBN 0-07-041680-X

[4] Ibid, p. 11.

[5] Ibid, p. 12.

[6] Ibid, p. 13.

[7] Ibid, p.12.

NORTH HUDSON SEWERAGE AUTHORITY
COMBINED SEWER FLOW MONITORING
LOCATION MAP

Site Commentary

Site Information

H1	
Pipe Dimensions (in.)	H-1 (43.63 in H, 98.00 in W)
Silt (in.)	0.25

Overview

A review of the hydrograph and scattergraph for H1 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	8.35	0.63	1.982
Minimum	5.53	0.00	0.000
Maximum	75.61	3.72	57.445
Time of Minimum	9/18/2016 6:25 AM	7/9/2016 11:35 PM	7/9/2016 11:35 PM
Time of Maximum	5/30/2016 1:50 AM	7/25/2016 5:35 PM	7/25/2016 5:35 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Site Report

ADS ENVIRONMENTAL SERVICES®
a division of ADS LLC. HOBOKEN, NJ

FM Initials:	MEJ
Project Name:	NHSA

Site Name:	H1	Meter Type:	TRITON+	Monitor S/N:	61039	Manhole #:	H1-OB-010
Address / Location:	OBSERVER HIGHWAY AT WASHINGTON STREET			Map Page #:		O2	
				Pipe Height:		43.63 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		99 Inches	
				I.P. Address		107.80.25.41	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 7, 2016	9:30 AM	Manhole Depth:	13 Feet		
Site Hydraulics:	SLOW, SMOOTH FLOW		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	No		
			Pipe Material / Condition:	Brick		Fair
			Mini System Character:	COMMERCIAL	INDUSTRIAL	RESIDENTIAL
			Telephone Information:			
Depth of Flow (Wet Dof):	7.75 +/-		Access Pole #:	N/A		
Range (Air Dof):	36 +/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	0.84 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40° 44.133' W 74° 01.879'

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		REGULATOR	900'

Additional Site Information / Comments:

UPSTREAM INSTALLATION

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H1 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

TRAFFIC CONTROL TO BE PROVIDED BY NHSA.

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	M. JOHNSON	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/7/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

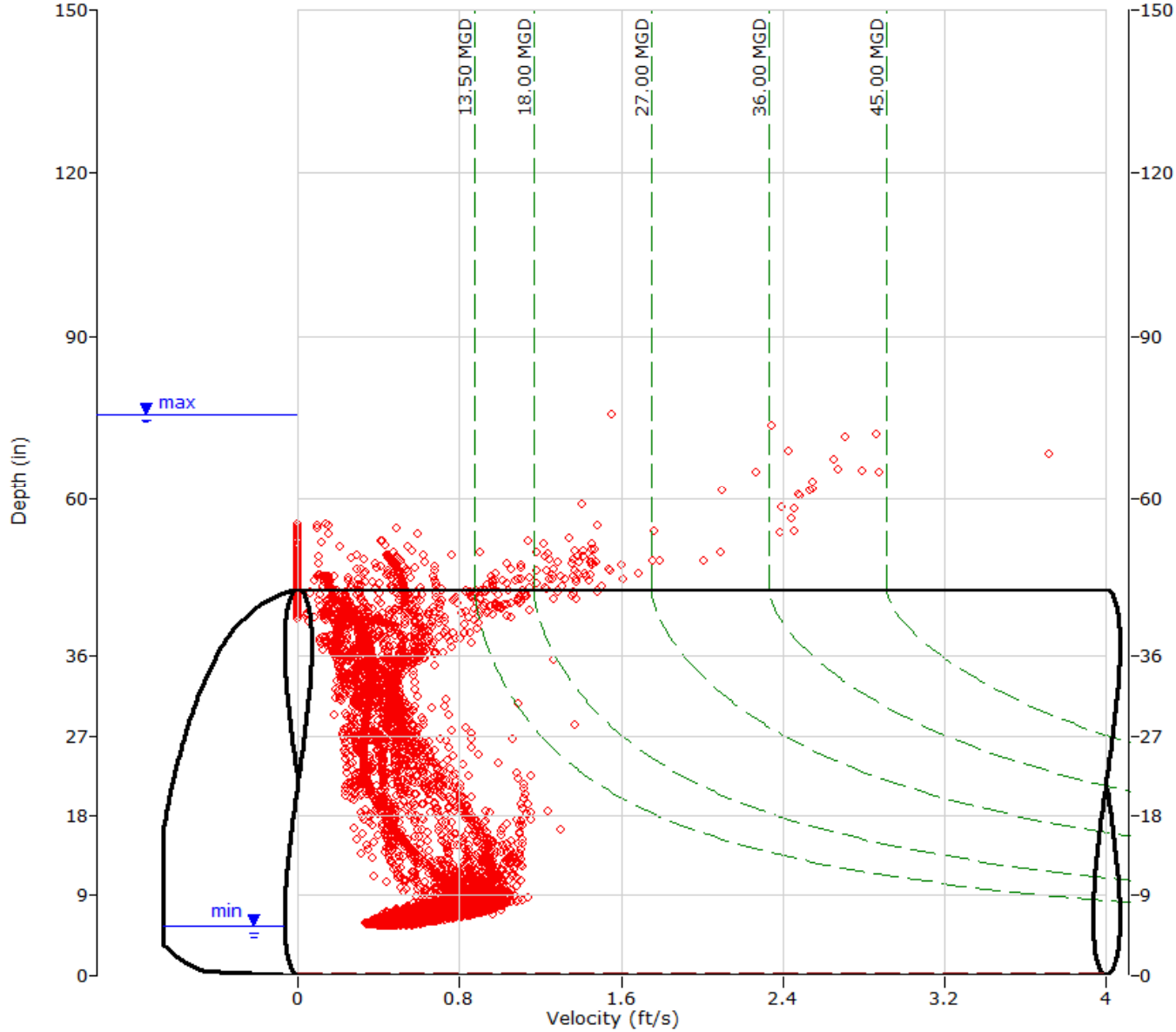
Non Standard

Report Period

5/17/2016
To
11/16/2016

Legend

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



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HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

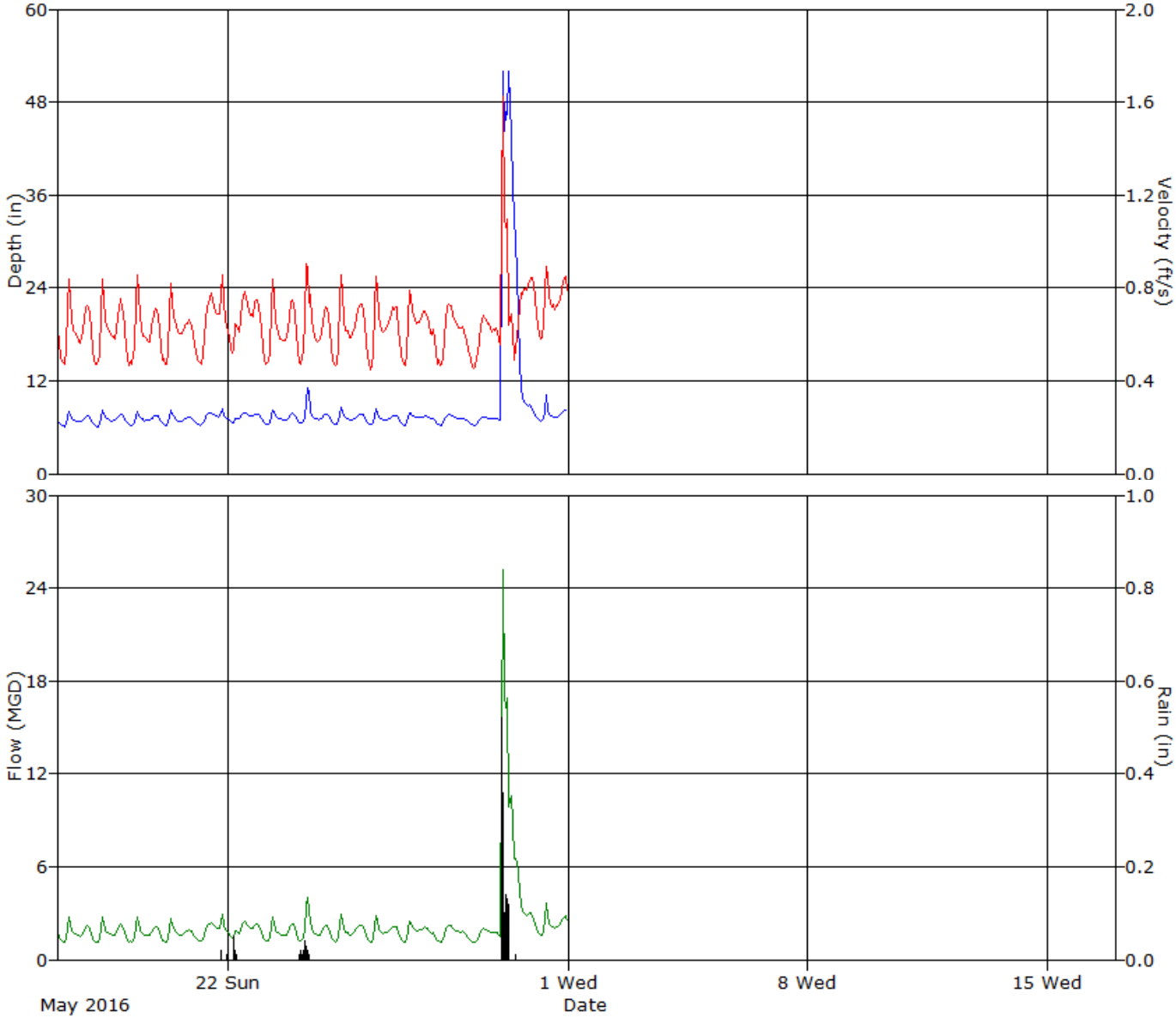
Non Standard

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

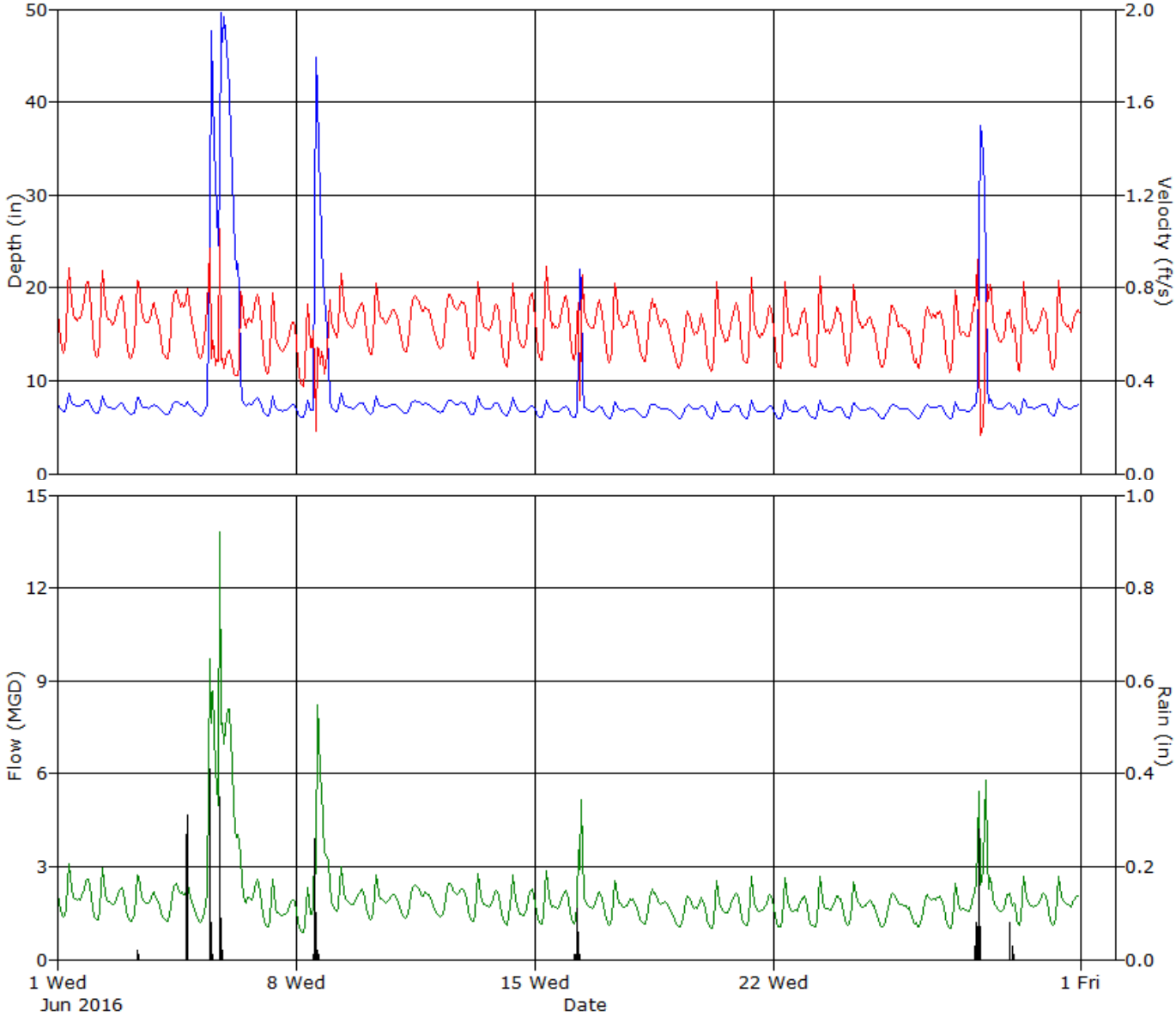
Non Standard

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

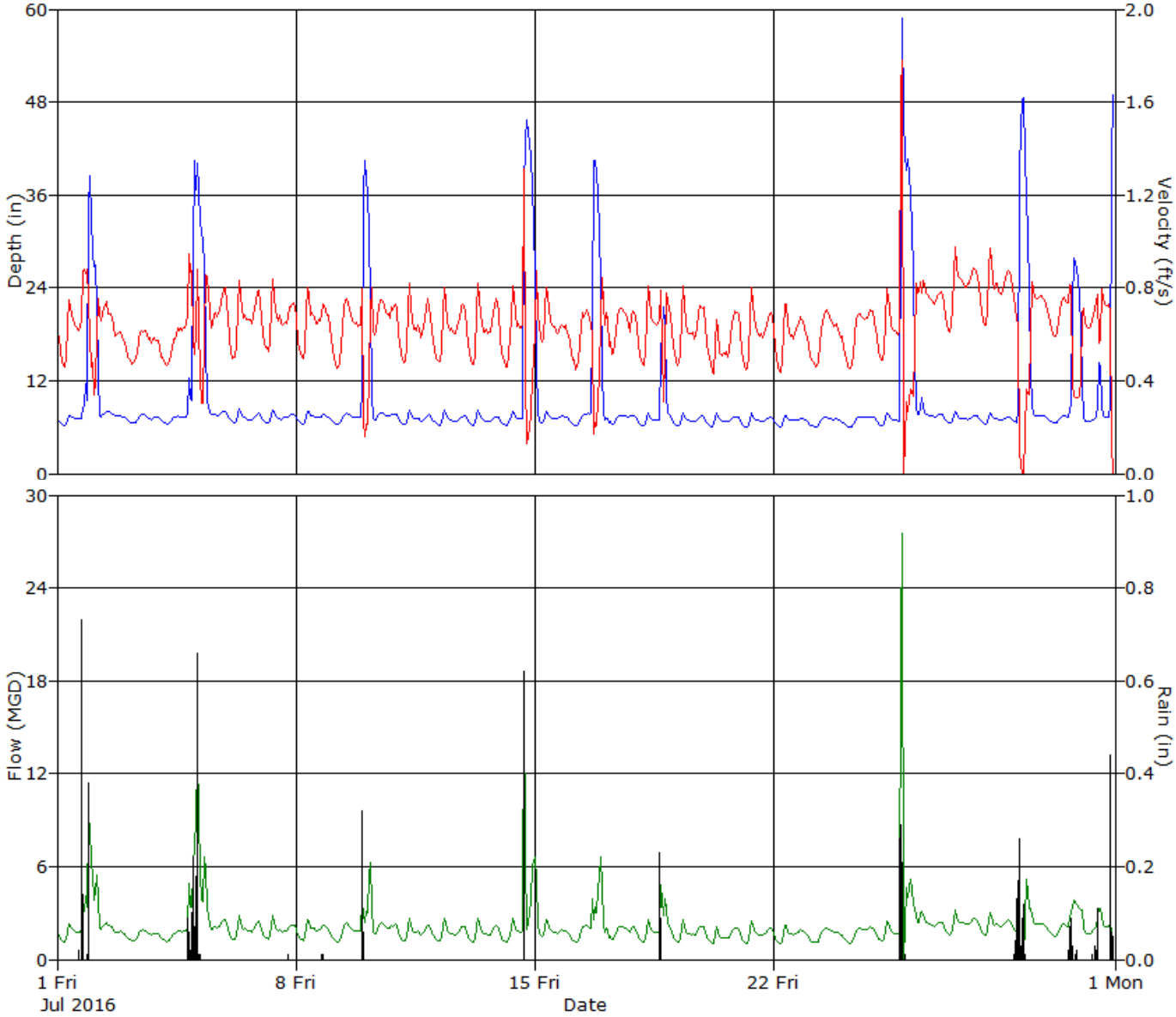
Non Standard

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

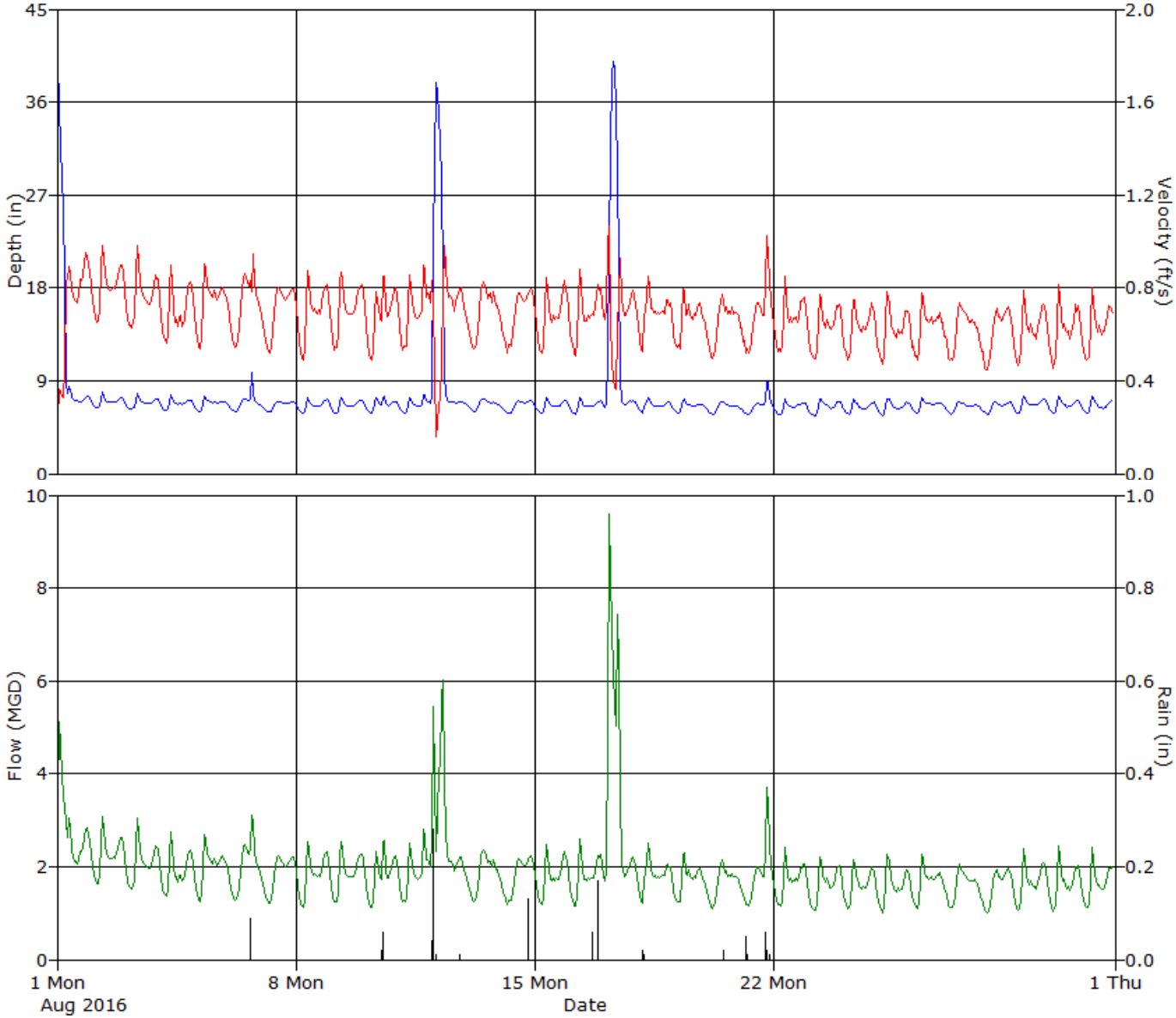
Non Standard

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

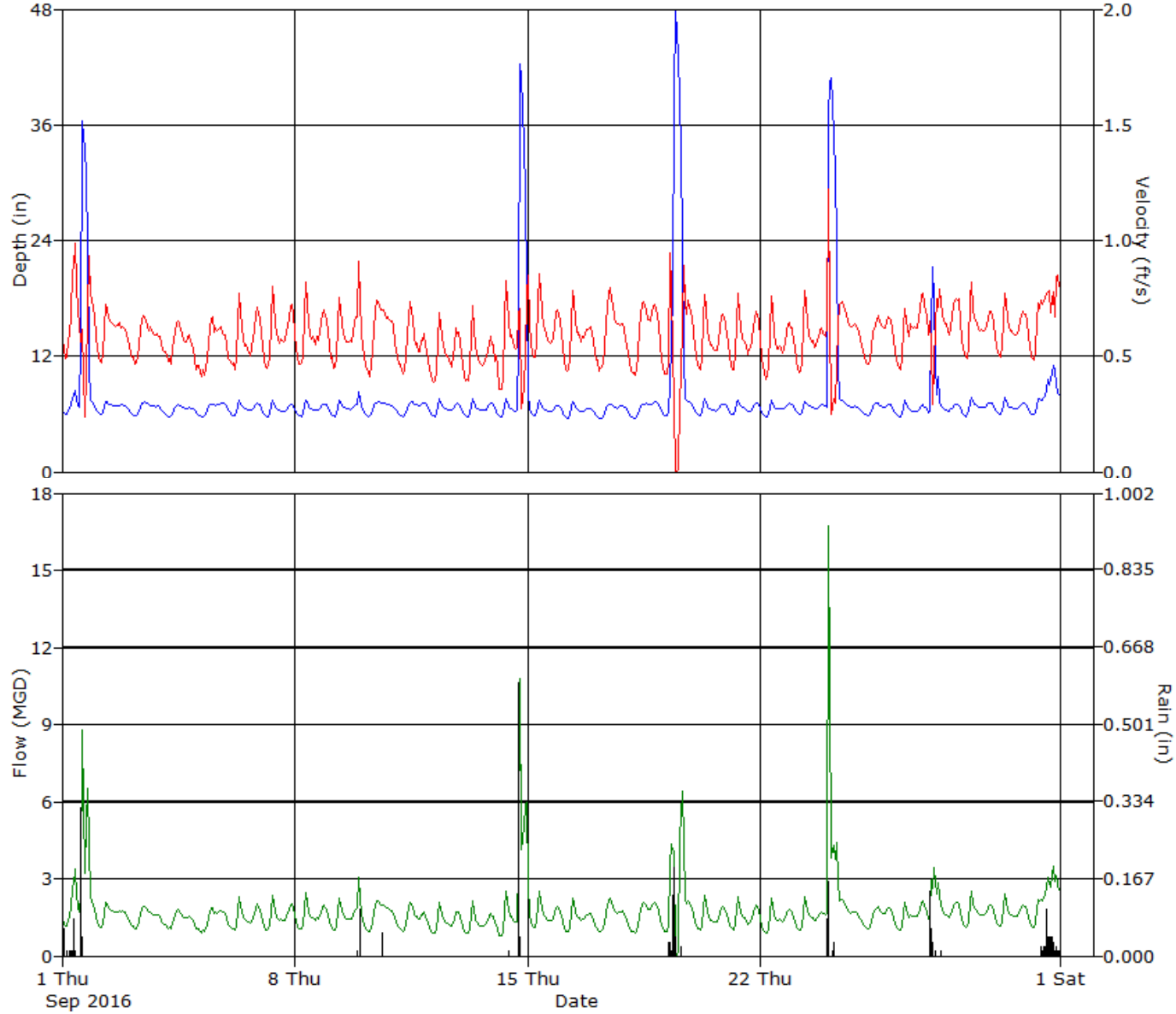
Non Standard

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

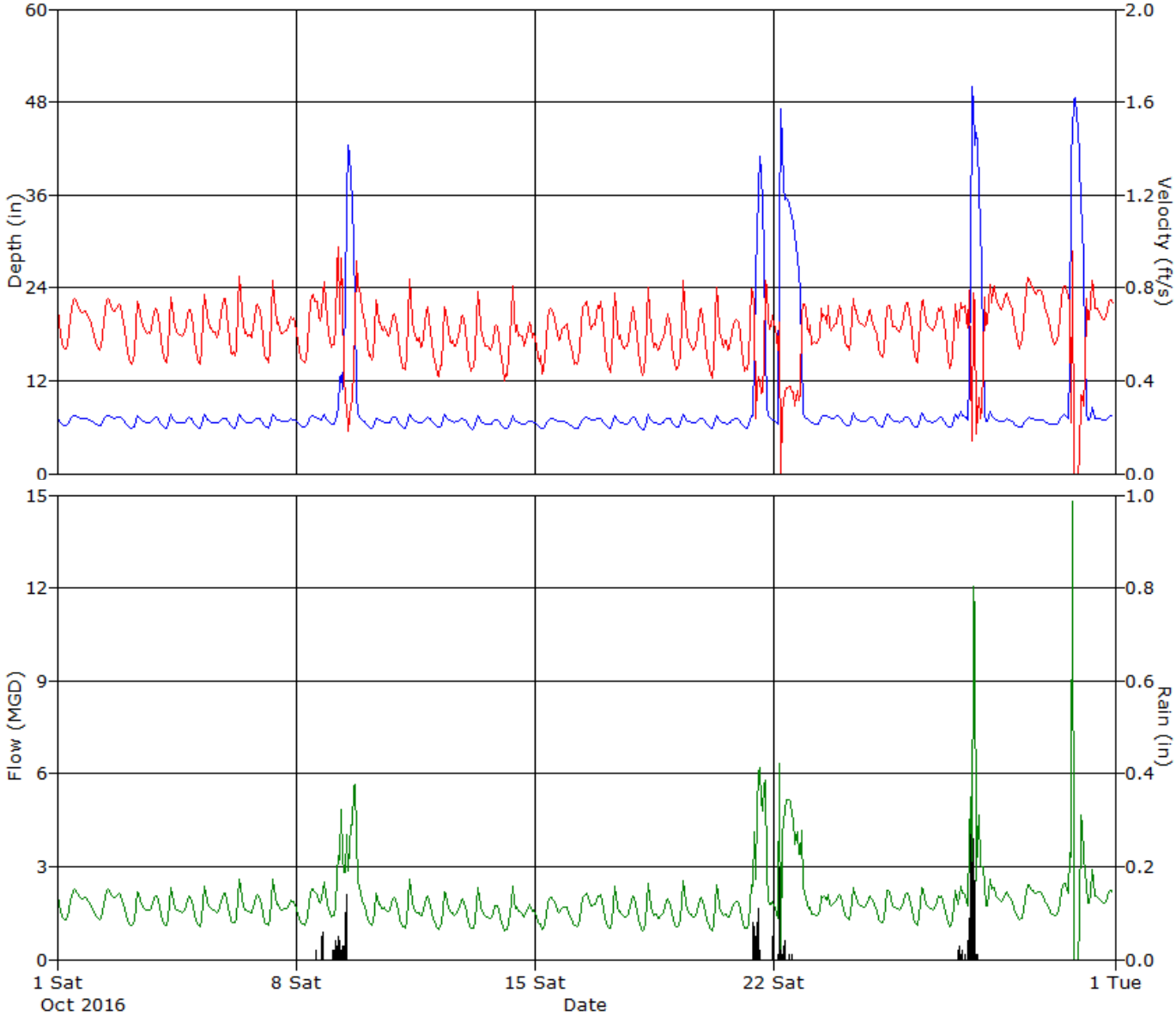
Non Standard

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

H1

Flow Monitor

H1

Pipe Height
43.63 in

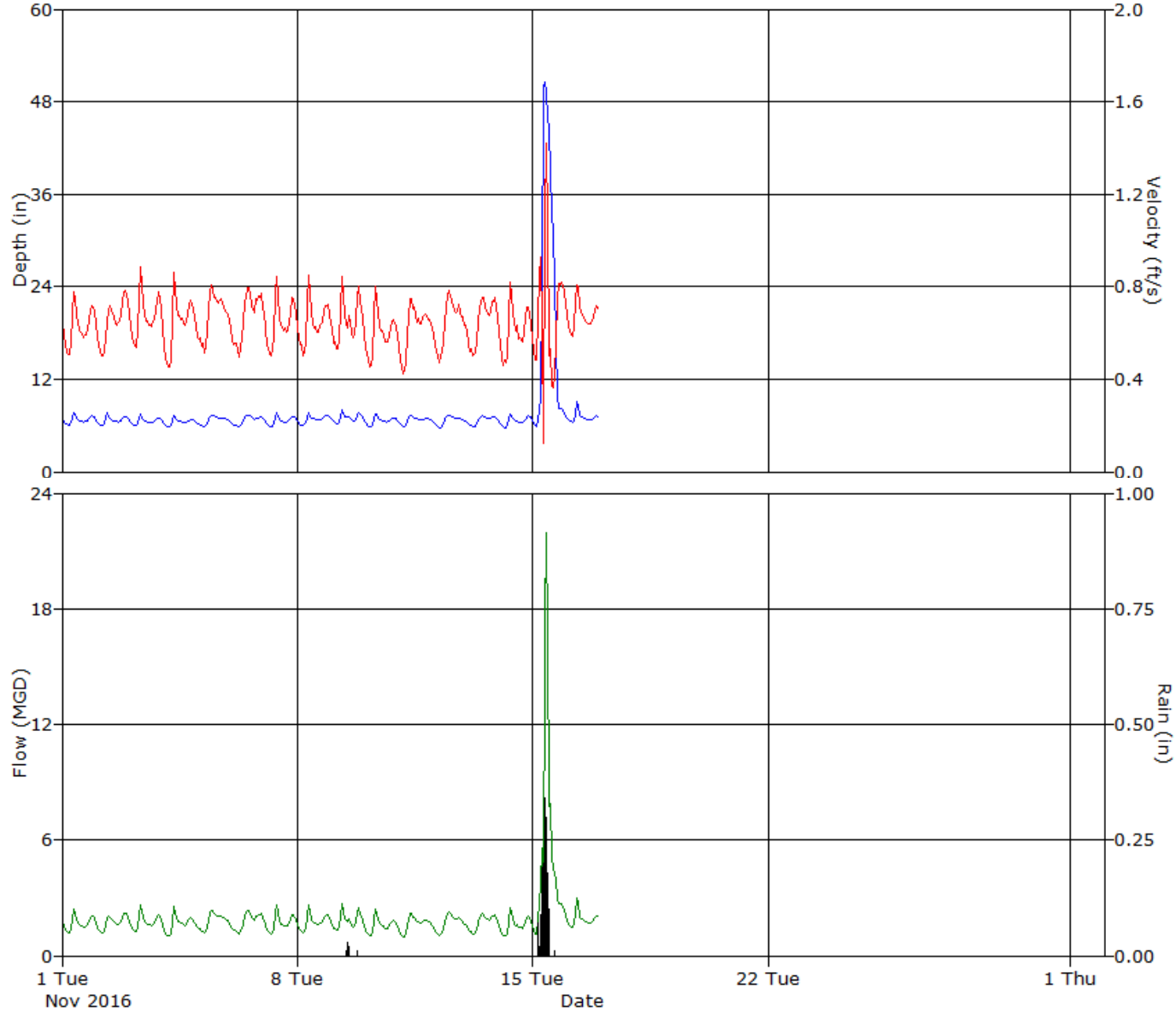
Non Standard

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	05:05	6.10	08:35	8.14	6.94	04:30	0.46	08:35	0.87	0.62	05:05	1.097	08:35	2.849	1.733	231653	
5/18/2016	05:25	6.09	08:30	8.23	7.01	03:30	0.45	08:30	0.88	0.62	05:00	1.084	08:30	2.906	1.758	234975	
5/19/2016	05:05	6.24	08:35	8.16	7.05	03:30	0.43	08:30	0.87	0.62	03:30	1.063	08:30	2.871	1.755	234561	
5/20/2016	05:30	6.23	08:30	8.26	7.01	04:00	0.44	08:40	0.85	0.62	05:25	1.090	08:35	2.807	1.730	231216	
5/21/2016	05:50	6.27	20:10	8.66	7.22	05:20	0.46	20:00	0.91	0.65	05:20	1.138	20:00	3.164	1.884	251898	0.03
5/22/2016	04:15	6.53	12:55	7.91	7.36	04:10	0.49	12:30	0.79	0.67	04:10	1.261	12:30	2.518	1.985	265408	0.08
5/23/2016	04:55	6.33	08:35	8.30	7.17	04:10	0.43	08:25	0.86	0.62	04:10	1.076	08:25	2.882	1.794	239768	
5/24/2016	03:10	6.48	09:10	11.44	7.59	02:55	0.46	08:05	1.00	0.64	02:55	1.187	08:05	4.544	1.988	265742	0.16
5/25/2016	05:15	6.38	08:30	8.56	7.20	05:25	0.45	08:10	0.88	0.63	05:25	1.131	08:30	3.019	1.824	243850	
5/26/2016	04:50	6.31	08:30	8.50	7.16	04:05	0.41	09:00	0.87	0.64	04:05	1.030	08:25	2.957	1.836	245435	
5/27/2016	05:15	6.22	08:55	8.00	7.15	05:10	0.44	08:35	0.82	0.63	05:10	1.061	08:35	2.601	1.821	243426	
5/28/2016	05:50	6.27	11:55	7.59	7.05	05:55	0.43	10:30	0.75	0.61	05:55	1.064	13:15	2.262	1.723	230353	
5/29/2016	05:50	6.21	12:50	7.40	6.91	04:10	0.42	12:10	0.73	0.58	04:10	1.056	12:10	2.148	1.608	214900	
5/30/2016	01:15	6.79	01:50	75.61	23.98	09:20	0.47	01:45	2.43	0.82	00:40	1.446	01:45	37.508	7.460	997311	1.38
5/31/2016	04:50	6.83	08:20	11.07	7.64	03:45	0.57	09:00	0.92	0.74	04:30	1.547	08:25	4.067	2.277	304165	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4434661	1.65
Avg	8.30	0.65	2.212	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:40	6.68	08:35	8.72	7.45	04:25	0.51	08:35	0.90	0.70	04:25	1.355	08:35	3.194	2.094	279916	
6/2/2016	04:05	6.45	08:35	8.46	7.20	04:35	0.50	08:55	0.90	0.67	04:00	1.267	08:55	3.038	1.943	259780	
6/3/2016	05:05	6.36	09:00	8.20	7.13	04:05	0.49	08:40	0.85	0.66	04:15	1.225	08:40	2.801	1.889	252482	0.03
6/4/2016	06:05	6.38	12:10	7.74	7.15	05:15	0.49	11:55	0.81	0.67	05:15	1.223	11:55	2.520	1.920	256665	0.58
6/5/2016	06:05	6.27	18:45	60.52	24.12	12:10	0.21	18:45	2.48	0.57	05:40	1.185	18:45	38.388	4.919	657558	0.96
6/6/2016	13:55	7.21	00:05	44.66	16.16	08:05	0.42	09:35	0.87	0.61	13:55	1.771	01:10	8.182	3.506	468669	
6/7/2016	04:45	6.28	08:35	8.35	7.01	04:45	0.43	08:35	0.79	0.57	04:45	1.060	08:35	2.658	1.615	215872	
6/8/2016	05:10	6.00	14:35	45.86	15.55	14:00	0.11	13:05	0.88	0.50	05:10	0.869	15:50	9.186	2.898	387437	0.40
6/9/2016	05:35	6.70	00:00	9.27	7.34	05:00	0.55	08:30	0.87	0.68	05:00	1.470	08:30	3.069	2.011	268800	
6/10/2016	04:30	6.43	08:40	8.33	7.21	04:30	0.51	08:40	0.83	0.66	04:30	1.287	08:40	2.797	1.904	254514	
6/11/2016	06:00	6.50	12:25	7.88	7.27	06:00	0.52	12:25	0.77	0.67	06:00	1.334	12:25	2.438	1.951	260840	
6/12/2016	05:40	6.55	11:55	7.95	7.31	05:40	0.53	11:55	0.78	0.67	05:40	1.375	11:55	2.500	1.979	264572	
6/13/2016	05:15	6.37	08:30	8.42	7.15	05:15	0.49	08:30	0.84	0.65	05:15	1.237	08:30	2.864	1.853	247705	
6/14/2016	05:15	6.18	08:35	8.30	6.92	05:15	0.46	08:35	0.83	0.62	05:15	1.102	08:35	2.776	1.724	230498	
6/15/2016	05:20	6.02	08:35	7.99	6.83	04:50	0.44	08:40	0.92	0.66	04:50	1.048	08:40	2.968	1.813	242301	
6/16/2016	04:40	6.01	09:05	23.25	8.36	08:10	0.27	07:25	1.07	0.64	04:20	1.108	09:45	7.412	2.064	275975	0.20
6/17/2016	05:10	5.94	08:40	7.82	6.80	04:10	0.46	09:10	0.85	0.64	04:10	1.079	08:50	2.653	1.739	232463	
6/18/2016	05:55	5.99	11:40	7.51	6.83	05:10	0.47	11:30	0.76	0.62	05:10	1.099	11:30	2.285	1.702	227522	
6/19/2016	05:55	5.97	12:05	7.37	6.80	05:45	0.44	10:55	0.72	0.59	05:45	1.017	11:30	2.089	1.603	214238	
6/20/2016	05:15	5.93	08:40	7.82	6.80	04:45	0.42	08:30	0.86	0.61	04:45	0.982	08:30	2.681	1.664	222432	
6/21/2016	05:10	5.93	08:35	7.94	6.78	05:30	0.45	08:25	0.87	0.62	05:30	1.030	08:25	2.761	1.682	224911	
6/22/2016	05:15	5.91	08:35	8.01	6.78	05:40	0.43	08:45	0.85	0.62	05:40	1.000	08:45	2.725	1.676	224007	
6/23/2016	04:55	5.93	08:45	8.02	6.81	05:00	0.44	08:30	0.87	0.62	05:00	1.016	08:30	2.791	1.703	227688	
6/24/2016	05:10	5.99	08:50	7.71	6.83	04:45	0.45	08:05	0.83	0.63	04:45	1.063	08:40	2.544	1.721	230006	
6/25/2016	05:55	5.95	11:50	7.40	6.79	05:45	0.44	12:00	0.76	0.60	05:45	1.021	12:00	2.232	1.631	218034	
6/26/2016	05:45	5.98	12:40	7.39	6.83	05:15	0.42	21:45	0.75	0.61	05:15	0.993	21:45	2.201	1.676	223986	
6/27/2016	05:20	5.93	23:55	13.75	6.93	04:30	0.42	23:50	1.10	0.63	04:30	0.967	23:55	5.962	1.759	235142	0.18
6/28/2016	15:20	6.91	01:30	37.67	13.31	01:20	0.14	00:00	1.04	0.59	14:45	1.476	00:05	7.018	2.483	331873	0.43
6/29/2016	05:20	6.31	08:40	8.14	7.17	05:35	0.43	08:20	0.87	0.63	05:20	1.075	08:20	2.821	1.822	243511	0.04
6/30/2016	05:00	6.21	08:45	8.09	7.06	04:15	0.43	08:35	0.86	0.63	04:15	1.055	08:35	2.785	1.788	238877	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			8118274	2.82
Avg	8.42	0.63	2.024	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	05:25	6.22	22:40	44.91	9.85	22:40	0.33	22:10	1.30	0.66	04:25	1.015	22:25	19.531	2.571	343707	1.28
7/2/2016	23:55	7.30	00:00	35.50	11.96	02:45	0.25	05:55	0.78	0.62	18:30	1.640	00:00	7.248	2.721	363690	
7/3/2016	06:05	6.48	12:20	7.76	7.11	02:40	0.46	13:05	0.65	0.56	05:00	1.190	13:05	1.996	1.588	212313	
7/4/2016	06:05	6.39	21:25	13.10	7.46	03:55	0.44	21:20	1.05	0.60	03:55	1.142	21:20	5.711	1.872	250271	0.27
7/5/2016	16:25	7.54	01:05	42.24	17.92	00:50	0.20	03:30	1.01	0.66	13:00	1.810	03:30	15.411	4.272	571089	1.15
7/6/2016	05:00	6.63	08:30	8.49	7.28	03:30	0.47	08:35	0.85	0.66	05:05	1.248	08:35	2.921	1.947	260325	
7/7/2016	04:50	6.48	08:40	8.35	7.25	04:00	0.49	08:10	0.86	0.66	04:00	1.257	08:10	2.843	1.936	258741	0.01
7/8/2016	05:20	6.40	08:40	8.15	7.24	06:00	0.43	08:40	0.83	0.65	06:00	1.101	08:40	2.726	1.900	253934	0.02
7/9/2016	05:45	6.34	23:55	40.91	8.49	23:35	0.00	22:50	1.14	0.61	23:35	0.000	22:50	9.328	1.885	251940	0.38
7/10/2016	07:20	6.90	00:05	40.97	13.09	00:00	0.13	04:45	0.93	0.63	08:05	1.570	04:45	7.220	2.556	341687	
7/11/2016	05:15	6.35	08:35	8.19	7.11	04:40	0.46	08:20	0.84	0.63	04:40	1.143	08:35	2.758	1.790	239291	
7/12/2016	04:55	6.25	08:35	8.26	7.01	02:20	0.46	09:00	0.83	0.63	04:30	1.151	08:50	2.709	1.768	236314	
7/13/2016	05:05	6.24	08:35	8.23	7.00	05:50	0.45	08:05	0.84	0.63	05:50	1.109	08:50	2.732	1.772	236853	
7/14/2016	04:50	6.24	16:20	59.04	18.10	17:30	0.00	16:25	2.09	0.54	17:30	0.000	16:25	32.376	3.123	417436	0.62
7/15/2016	05:30	6.56	00:00	29.25	8.30	16:00	0.51	01:25	0.93	0.66	16:00	1.424	00:45	6.974	2.212	295667	
7/16/2016	06:10	6.22	17:50	40.89	14.88	17:15	0.13	16:30	1.11	0.53	05:10	0.935	22:35	7.150	2.519	336748	
7/17/2016	06:50	6.37	00:00	9.00	7.20	06:35	0.50	00:00	0.81	0.65	06:35	1.250	00:00	2.961	1.877	250890	
7/18/2016	05:05	6.13	18:50	22.05	8.58	18:05	0.29	17:10	1.05	0.63	05:20	1.080	17:20	6.236	2.091	279549	0.32
7/19/2016	05:10	6.14	08:30	7.94	6.91	04:30	0.44	08:45	0.83	0.62	04:30	1.065	08:20	2.645	1.718	229676	
7/20/2016	05:05	6.07	08:40	7.89	6.88	05:40	0.38	08:55	0.73	0.56	05:40	0.916	08:55	2.299	1.548	206982	
7/21/2016	04:20	6.01	08:40	7.86	6.85	01:45	0.41	08:25	0.82	0.61	04:40	0.995	08:25	2.567	1.670	223312	
7/22/2016	05:25	5.96	08:45	7.62	6.83	04:05	0.40	21:00	0.76	0.60	04:05	0.952	08:45	2.272	1.627	217554	
7/23/2016	05:50	5.99	12:30	7.30	6.76	05:30	0.44	13:00	0.73	0.60	05:30	1.023	13:00	2.107	1.614	215705	
7/24/2016	06:15	5.97	21:20	7.39	6.86	05:35	0.44	22:25	0.74	0.61	06:10	1.019	22:25	2.165	1.676	224003	
7/25/2016	04:15	6.16	17:40	72.04	17.26	18:40	0.00	17:35	3.72	0.61	18:40	0.000	17:35	57.445	3.809	509200	0.77
7/26/2016	17:20	7.31	00:00	37.40	11.09	02:35	0.32	07:25	0.85	0.71	17:20	2.130	00:25	5.182	2.740	366337	
7/27/2016	05:20	6.57	08:40	8.17	7.17	05:20	0.60	08:40	0.99	0.80	05:20	1.564	08:40	3.266	2.294	306717	
7/28/2016	05:10	6.40	08:45	7.94	7.03	04:40	0.62	08:35	0.99	0.80	04:40	1.566	08:35	3.151	2.246	300269	
7/29/2016	04:20	6.48	08:15	51.37	18.19	05:15	0.00	14:30	0.85	0.55	05:15	0.000	10:20	5.182	2.239	299304	0.86
7/30/2016	06:25	6.48	19:40	28.04	11.72	22:30	0.32	17:10	0.85	0.61	06:25	1.502	19:40	3.864	2.387	319135	0.24
7/31/2016	06:25	6.68	23:10	53.08	11.65	22:25	0.00	15:25	0.84	0.63	22:25	0.000	22:10	5.172	2.166	289322	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			9107958	6.64
Avg	9.71	0.63	2.198	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	15:40	6.98	00:00	43.23	13.11	00:00	0.00	20:30	0.98	0.71	00:00	0.000	01:20	5.181	2.876	384484	0.05
8/2/2016	05:30	6.38	08:35	7.91	7.00	04:10	0.63	08:15	1.00	0.81	04:10	1.588	08:30	3.162	2.262	302402	
8/3/2016	04:45	6.21	08:40	7.81	6.90	05:20	0.61	08:30	1.01	0.77	05:20	1.489	08:30	3.168	2.116	282815	
8/4/2016	05:15	6.13	08:40	7.70	6.81	04:20	0.54	08:40	0.91	0.70	04:20	1.290	08:40	2.812	1.906	254743	
8/5/2016	05:30	6.02	08:50	7.52	6.78	05:35	0.51	08:50	0.92	0.74	05:35	1.194	08:50	2.766	1.996	266846	
8/6/2016	06:00	6.05	17:25	10.27	6.88	06:00	0.54	18:10	1.09	0.73	06:00	1.284	18:10	3.681	2.013	269128	0.09
8/7/2016	06:15	5.95	12:30	7.04	6.63	06:15	0.51	12:30	0.81	0.70	06:15	1.192	12:30	2.256	1.848	247050	
8/8/2016	05:10	5.86	08:45	7.37	6.63	05:10	0.49	08:45	0.89	0.70	05:10	1.112	08:45	2.612	1.847	246842	
8/9/2016	04:40	5.82	08:40	7.43	6.61	03:55	0.52	08:20	0.92	0.70	04:50	1.175	08:20	2.720	1.854	247781	
8/10/2016	05:00	5.85	13:55	7.95	6.70	06:20	0.48	13:55	0.95	0.69	05:00	1.105	13:55	3.035	1.847	246915	0.08
8/11/2016	05:30	5.86	18:45	8.41	6.70	06:10	0.50	18:45	1.03	0.70	06:10	1.153	18:45	3.497	1.879	251220	
8/12/2016	00:25	6.64	02:35	38.22	13.89	02:10	0.11	08:45	1.11	0.68	02:10	1.627	01:25	8.104	2.880	384962	0.34
8/13/2016	06:05	6.02	13:05	7.26	6.70	03:45	0.50	10:05	0.89	0.70	05:30	1.214	12:55	2.484	1.859	248505	
8/14/2016	06:25	5.85	21:35	7.06	6.61	05:50	0.50	19:15	0.89	0.69	05:50	1.149	19:15	2.444	1.824	243859	0.13
8/15/2016	05:15	5.85	08:40	7.39	6.59	04:05	0.46	20:20	0.90	0.69	04:05	1.070	08:40	2.640	1.800	240675	
8/16/2016	05:10	5.78	08:40	7.42	6.59	05:15	0.48	08:30	0.91	0.69	05:15	1.079	08:30	2.698	1.809	241798	0.23
8/17/2016	01:20	6.40	07:45	40.22	15.51	09:10	0.34	04:00	1.16	0.70	01:25	1.552	04:40	10.401	3.809	509184	
8/18/2016	04:45	5.85	08:45	7.45	6.64	04:00	0.50	08:40	0.87	0.70	04:00	1.150	08:40	2.584	1.835	245254	0.03
8/19/2016	05:15	5.79	09:25	7.41	6.53	04:55	0.50	12:45	0.85	0.67	04:55	1.116	09:20	2.478	1.728	231007	
8/20/2016	05:55	5.72	13:00	7.03	6.43	04:40	0.46	19:45	0.80	0.65	04:40	1.049	12:20	2.179	1.656	221325	0.02
8/21/2016	06:00	5.75	19:55	9.48	6.65	06:45	0.43	19:25	1.05	0.68	06:45	0.969	19:45	3.978	1.839	245801	0.15
8/22/2016	05:25	5.70	08:40	7.23	6.48	04:30	0.48	08:40	0.87	0.66	04:30	1.051	08:40	2.513	1.703	227721	
8/23/2016	05:00	5.61	08:40	7.27	6.49	05:00	0.44	08:45	0.83	0.64	05:00	0.946	08:45	2.391	1.649	220390	
8/24/2016	05:15	5.78	08:45	7.24	6.48	04:15	0.45	08:50	0.83	0.63	05:20	1.017	08:50	2.383	1.619	216435	
8/25/2016	05:35	5.57	08:50	7.44	6.47	05:15	0.43	08:45	0.80	0.62	05:15	0.939	08:45	2.376	1.581	211413	
8/26/2016	05:35	5.84	08:45	7.37	6.64	05:25	0.45	08:40	0.81	0.63	05:25	1.024	08:40	2.382	1.671	223418	
8/27/2016	05:20	5.80	11:15	7.09	6.47	04:45	0.43	11:30	0.78	0.62	04:45	0.966	11:30	2.150	1.590	212616	
8/28/2016	07:10	5.68	11:25	7.05	6.50	06:10	0.42	20:50	0.75	0.61	06:10	0.947	20:50	2.030	1.572	210179	
8/29/2016	04:50	5.83	08:40	7.58	6.72	03:30	0.41	08:30	0.83	0.62	03:30	0.951	08:30	2.519	1.668	222952	
8/30/2016	05:20	5.82	08:35	7.58	6.65	04:20	0.44	08:40	0.84	0.62	04:20	1.005	08:40	2.540	1.654	221139	
8/31/2016	05:20	5.84	08:35	7.58	6.59	04:55	0.46	08:25	0.82	0.63	04:55	1.044	08:25	2.474	1.646	219893	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			7998750	1.12
Avg	7.37	0.68	1.930	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	04:00	5.88	15:10	36.43	12.56	17:20	0.22	10:20	1.01	0.65	03:45	1.081	15:30	10.257	2.881	385184	0.56
9/2/2016	05:40	5.94	08:45	7.31	6.74	04:20	0.46	09:00	0.74	0.61	05:35	1.067	09:00	2.146	1.639	219112	
9/3/2016	05:55	5.80	12:10	7.25	6.61	05:15	0.43	14:10	0.72	0.58	05:15	0.969	11:05	2.046	1.523	203613	
9/4/2016	05:50	5.72	12:20	6.97	6.41	07:45	0.40	20:50	0.69	0.56	07:45	0.901	13:40	1.873	1.418	189564	
9/5/2016	05:55	5.72	20:30	7.19	6.58	02:15	0.37	13:15	0.72	0.54	02:15	0.889	13:15	2.006	1.426	190685	
9/6/2016	05:00	5.74	08:25	7.41	6.55	05:25	0.41	08:35	0.79	0.57	05:25	0.916	08:35	2.345	1.494	199774	
9/7/2016	04:25	5.68	08:40	7.44	6.47	03:45	0.42	08:20	0.82	0.60	04:50	0.926	08:40	2.428	1.540	205851	
9/8/2016	05:15	5.74	08:30	7.56	6.56	05:35	0.43	08:25	0.85	0.60	05:35	0.950	08:30	2.553	1.569	209687	
9/9/2016	05:20	5.73	22:35	8.75	6.67	04:25	0.42	22:15	0.98	0.60	04:25	0.949	22:30	3.422	1.618	216337	0.11
9/10/2016	05:55	5.76	12:25	7.24	6.68	06:30	0.40	17:30	0.78	0.61	06:30	0.897	17:30	2.190	1.628	217657	0.05
9/11/2016	06:40	5.74	12:35	7.31	6.67	06:00	0.39	11:35	0.75	0.55	06:00	0.873	11:35	2.155	1.467	196134	
9/12/2016	05:10	5.74	08:35	7.57	6.56	05:15	0.36	08:40	0.72	0.52	05:15	0.801	08:40	2.164	1.346	179976	0.00
9/13/2016	05:10	5.71	08:35	7.59	6.54	03:20	0.38	08:20	0.74	0.50	05:45	0.838	08:20	2.232	1.312	175454	
9/14/2016	05:10	5.66	17:55	47.27	13.58	18:30	0.22	18:00	1.51	0.53	05:10	0.753	18:00	23.282	2.647	353874	0.64
9/15/2016	05:00	5.78	00:00	11.47	6.54	05:55	0.49	00:10	0.96	0.63	05:15	1.100	00:00	4.494	1.656	221309	
9/16/2016	04:35	5.55	08:35	7.33	6.36	04:45	0.41	08:10	0.80	0.59	04:45	0.871	08:55	2.323	1.477	197507	
9/17/2016	05:30	5.55	12:10	7.04	6.44	05:00	0.42	12:25	0.86	0.60	05:00	0.891	12:25	2.392	1.548	206913	
9/18/2016	06:25	5.53	20:50	7.26	6.57	05:55	0.40	21:15	0.75	0.60	05:55	0.849	21:15	2.175	1.591	212629	
9/19/2016	05:00	5.77	11:15	48.44	17.12	10:45	0.00	08:00	1.05	0.51	10:45	0.000	10:15	9.322	2.388	319289	0.45
9/20/2016	04:55	5.84	08:35	7.67	6.58	05:35	0.42	08:40	0.80	0.58	05:35	0.949	08:40	2.453	1.516	202719	
9/21/2016	05:15	5.95	08:25	7.50	6.62	04:55	0.40	08:30	0.80	0.58	04:55	0.936	08:30	2.386	1.534	205089	
9/22/2016	05:15	5.65	08:35	7.48	6.56	04:30	0.36	08:20	0.79	0.56	04:30	0.786	08:20	2.333	1.456	194640	
9/23/2016	04:55	5.90	08:35	7.36	6.66	04:40	0.41	08:15	0.80	0.57	04:40	0.945	08:20	2.315	1.516	202611	
9/24/2016	23:55	6.52	01:40	46.30	15.36	05:45	0.21	01:40	1.68	0.61	23:55	1.512	01:40	26.025	3.333	445601	0.28
9/25/2016	06:25	5.83	12:10	7.13	6.58	06:25	0.46	12:50	0.69	0.59	06:25	1.048	12:50	1.957	1.545	206542	
9/26/2016	05:10	5.71	08:35	7.45	6.43	05:10	0.44	20:45	0.78	0.61	05:10	0.973	08:50	2.173	1.563	208993	
9/27/2016	02:30	5.89	04:35	21.75	8.45	04:15	0.23	03:00	1.02	0.65	02:25	1.186	08:25	4.043	2.059	275273	0.25
9/28/2016	04:20	5.71	08:35	7.79	6.72	04:00	0.46	07:50	0.87	0.63	04:00	1.009	08:15	2.628	1.685	225245	
9/29/2016	05:00	5.97	08:35	7.74	6.72	05:00	0.49	08:35	0.78	0.62	05:00	1.142	08:35	2.429	1.659	221806	
9/30/2016	05:30	5.91	19:25	11.06	7.91	05:20	0.48	21:40	0.92	0.69	05:20	1.101	19:10	3.928	2.238	298930	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			6987998	2.75
Avg	7.76	0.59	1.743	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	06:35	6.20	00:00	7.55	6.96	06:35	0.53	00:00	0.76	0.66	06:35	1.293	00:00	2.285	1.839	245891	
10/2/2016	06:55	6.16	12:40	7.56	6.95	06:55	0.52	12:40	0.76	0.66	06:55	1.264	12:40	2.286	1.834	245114	
10/3/2016	05:05	5.86	08:40	7.51	6.72	05:05	0.47	08:40	0.75	0.62	05:05	1.066	08:40	2.248	1.663	222264	
10/4/2016	05:15	5.89	08:30	7.65	6.69	05:15	0.47	08:30	0.77	0.62	05:15	1.087	08:30	2.357	1.646	220045	
10/5/2016	05:30	5.86	08:40	7.71	6.70	05:30	0.47	22:45	0.78	0.63	05:30	1.067	08:40	2.409	1.683	224990	
10/6/2016	05:05	5.92	08:40	7.76	6.73	06:20	0.47	08:25	0.88	0.64	03:35	1.109	08:25	2.715	1.709	228447	0.00
10/7/2016	05:15	5.93	08:35	7.76	6.77	05:55	0.44	08:30	0.85	0.63	05:55	1.024	08:30	2.657	1.693	226306	
10/8/2016	06:00	5.98	20:25	7.62	6.85	05:35	0.45	20:10	0.86	0.65	05:35	1.049	20:10	2.618	1.774	237180	0.13
10/9/2016	02:30	6.38	13:20	42.55	16.84	13:05	0.14	07:15	1.01	0.59	03:40	1.296	18:40	6.490	3.056	408578	0.52
10/10/2016	04:55	5.86	21:35	7.31	6.67	04:40	0.47	08:35	0.78	0.62	04:40	1.060	08:35	2.255	1.636	218761	
10/11/2016	04:45	5.89	08:45	7.79	6.75	05:10	0.42	08:35	0.87	0.60	05:10	0.964	08:35	2.712	1.615	215939	0.00
10/12/2016	05:15	5.94	08:45	7.66	6.76	04:45	0.39	09:10	0.77	0.58	04:45	0.910	09:10	2.340	1.556	207982	
10/13/2016	04:30	5.75	08:35	7.53	6.53	03:30	0.41	08:15	0.83	0.57	03:30	0.917	08:15	2.479	1.485	198573	
10/14/2016	05:20	5.77	08:40	7.45	6.51	04:20	0.37	08:30	0.83	0.58	04:20	0.826	08:30	2.455	1.492	199481	
10/15/2016	05:55	5.82	11:30	7.11	6.56	05:50	0.38	12:45	0.75	0.60	05:50	0.869	12:45	2.102	1.551	207373	
10/16/2016	06:20	5.82	12:40	7.26	6.66	04:20	0.44	22:10	0.79	0.62	04:20	1.018	22:10	2.240	1.655	221240	
10/17/2016	04:45	5.87	08:40	7.64	6.65	05:35	0.43	08:00	0.82	0.59	05:10	0.982	08:20	2.486	1.563	208993	
10/18/2016	04:50	5.72	08:35	7.63	6.63	04:10	0.40	08:30	0.87	0.58	04:10	0.898	08:30	2.646	1.540	205888	0.00
10/19/2016	04:35	6.02	08:35	7.74	6.73	04:25	0.42	08:05	0.89	0.59	04:25	0.978	08:05	2.706	1.586	212077	
10/20/2016	05:05	5.82	08:40	7.63	6.66	05:20	0.38	08:30	0.82	0.58	05:20	0.866	08:35	2.513	1.533	204968	
10/21/2016	05:05	5.88	14:40	41.25	15.47	15:05	0.19	10:20	1.03	0.55	03:50	0.836	17:55	8.199	2.931	391811	0.46
10/22/2016	03:55	6.29	05:20	47.89	25.02	04:45	0.00	04:15	1.08	0.44	04:45	0.000	04:35	15.641	3.538	473017	0.33
10/23/2016	06:25	6.34	10:40	7.55	7.05	01:35	0.52	20:55	0.75	0.64	05:00	1.316	20:55	2.229	1.799	240436	
10/24/2016	05:00	6.20	08:35	7.82	6.89	05:10	0.49	08:35	0.79	0.64	05:10	1.192	08:35	2.493	1.764	235864	
10/25/2016	05:05	6.06	08:40	7.81	6.82	03:50	0.44	08:35	0.79	0.63	03:50	1.053	08:35	2.484	1.717	229553	
10/26/2016	05:10	5.98	08:45	7.83	6.81	05:10	0.42	09:05	0.79	0.64	05:10	0.987	09:05	2.466	1.728	231044	
10/27/2016	04:45	5.93	20:10	55.32	16.00	19:25	0.00	20:30	1.18	0.58	19:25	0.000	20:30	18.286	2.931	391809	1.15
10/28/2016	05:50	6.72	00:00	39.18	10.52	02:05	0.18	10:40	0.88	0.67	05:50	1.678	00:05	5.473	2.308	308486	
10/29/2016	06:30	5.97	12:45	7.24	6.69	05:55	0.52	11:15	0.91	0.72	05:55	1.226	11:15	2.592	1.907	254892	
10/30/2016	03:50	6.28	19:35	50.21	18.19	17:05	0.00	18:05	1.61	0.53	17:05	0.000	18:05	24.910	2.175	290793	
10/31/2016	05:35	6.84	00:00	38.83	10.69	01:35	0.19	08:25	0.85	0.65	05:35	1.774	00:40	5.182	2.377	317568	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			7925363	2.59
Avg	8.85	0.61	1.912	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H1, Pipe Height: 43.632 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:45	6.04	08:35	7.75	6.72	04:45	0.50	08:35	0.79	0.63	04:45	1.181	08:35	2.447	1.685	225278	
11/2/2016	05:05	6.03	08:40	7.68	6.71	06:45	0.46	21:10	0.80	0.65	06:45	1.149	21:10	2.266	1.731	231423	
11/3/2016	04:40	5.96	08:35	7.48	6.58	04:40	0.51	08:10	0.95	0.67	04:40	1.184	08:10	2.813	1.762	235515	
11/4/2016	05:05	5.79	08:45	7.41	6.49	06:40	0.44	08:05	0.90	0.64	05:05	1.010	08:30	2.593	1.655	221289	
11/5/2016	06:40	5.89	12:05	7.40	6.68	07:00	0.49	18:40	0.85	0.67	07:00	1.139	11:40	2.493	1.797	240221	
11/6/2016	05:55	5.91	12:25	7.37	6.70	06:45	0.47	22:30	0.83	0.67	06:45	1.088	12:25	2.405	1.803	241050	
11/7/2016	05:10	5.82	09:35	7.74	6.63	05:05	0.48	20:55	0.88	0.65	05:05	1.075	09:35	2.703	1.709	228491	
11/8/2016	03:55	5.89	08:10	7.75	6.79	03:45	0.48	08:35	0.87	0.65	03:45	1.106	08:15	2.672	1.752	234235	
11/9/2016	05:05	6.21	08:25	8.00	6.96	05:00	0.49	08:20	0.89	0.65	05:00	1.195	08:20	2.851	1.822	243561	0.07
11/10/2016	05:00	5.80	08:45	7.63	6.63	04:10	0.43	08:30	0.83	0.60	04:10	0.969	08:30	2.536	1.583	211673	
11/11/2016	05:20	5.82	08:50	7.42	6.66	04:10	0.40	11:30	0.88	0.62	04:10	0.925	11:30	2.443	1.643	219646	
11/12/2016	06:05	5.74	12:20	7.34	6.64	05:35	0.47	11:20	0.86	0.64	05:45	1.040	11:20	2.474	1.704	227843	
11/13/2016	06:15	5.81	12:35	7.30	6.66	05:30	0.45	21:25	0.84	0.65	05:30	1.030	21:25	2.372	1.728	230957	
11/14/2016	05:00	5.71	08:40	7.61	6.58	03:00	0.44	08:25	0.84	0.61	05:20	0.995	08:30	2.535	1.608	215021	
11/15/2016	03:50	5.85	08:45	55.32	21.24	08:15	0.00	09:15	1.79	0.68	08:15	0.000	09:15	27.663	5.263	703600	1.50
11/16/2016	05:00	6.45	09:00	9.93	7.08	05:40	0.57	09:25	0.85	0.68	05:40	1.448	09:00	3.142	1.917	256075	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4165877	1.57
Avg	7.61	0.65	1.948	

Site Commentary

Site Information

H2	
Pipe Dimensions (in.)	Elliptical (41.63 in H, 42.00 in W)
Silt (in.)	4.00 - 2.00

Overview

A review of the hydrograph and scattergraph for H2 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

This site experienced moving silt/debris affecting the site hydraulics over the course of the monitoring period. Backwater was evident between the 7/1 and 7/5 rain events. Velocity dropped out between 7/10 and 7/11 due to a significant restriction in the downstream regulator structure (cleared by NHSA on 7/11). Using this location's backwater hydraulic curve, velocity was estimated periodically during 7/26 - 8/17, when a downstream blockage caused the line to experience backwater (NHSA line cleaning was reported week of 8/15); irregular velocity patterns continued until the 9/1 rain event.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	9.99	0.73	0.476
Minimum	5.59	0.00	0.000
Maximum	104.27	4.37	25.623
Time of Minimum	6/7/2016 4:05 AM	6/5/2016 11:55 AM	6/5/2016 11:55 AM
Time of Maximum	7/25/2016 5:40 PM	7/25/2016 5:35 PM	7/25/2016 5:35 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

Site Report

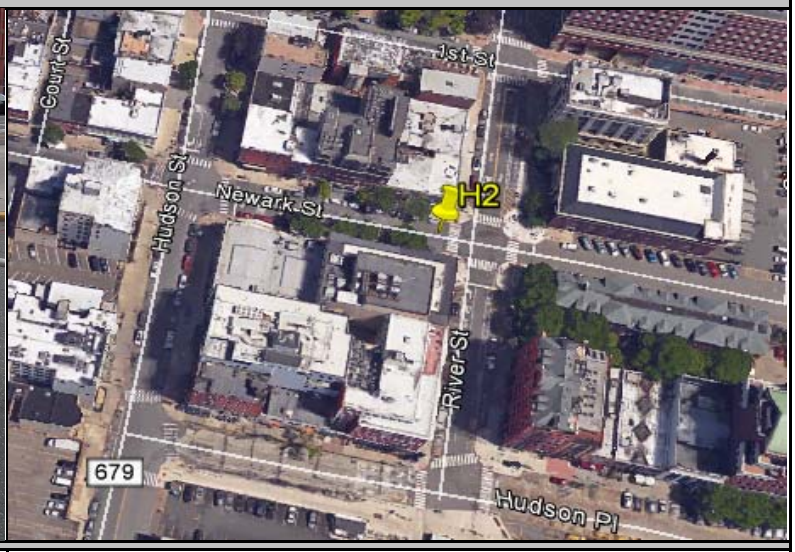
ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. HOBOKEN, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	H2	Meter Type:	Triton+	Monitor S/N:	61026	Manhole #:	H2-NE-010
Address / Location:	RIVER STREET AT NEWARK STREET			Map Page #:		O3	
				Pipe Height:		41.63 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		42 Inches	
				I.P. Address		107.80.25.48	



Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 8, 2016	2:45 PM	Manhole Depth:	13.8 Feet	
Site Hydraulics:	GOOD		Manhole Material / Condition:	Concrete	Good
			Active Drop Connections?	No	
			Pipe Material / Condition:	Concrete	Good
			Mini System Character:	COMMERCIAL	
			Telephone Information:		
Depth of Flow (Wet Dof):	1 +/- 0.25		Access Pole #:	N/A	
Range (Air Dof):	37 +/- 0.5		Distance From Manhole:	N/A Feet	
Peak Velocity:	1.5 fps		Road Cut Length:	N/A Feet	
Silt:	4 Inches		Trench Length:	N/A Feet	

Other Information:

N 40.73661 W 74.02914

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	8 Feet	WWTP		X		
Rain Gauge Zone:	RG1	Other	X		Regulator	200'

Additional Site Information / Comments:

DOWNSTREAM INSTALL. CLEANING REQUIRED.

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H2 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
BUS THOROUGHFARE - REQUIRES EARLY MORNING WORK SCHEDULE

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H2

Flow Monitor

H2

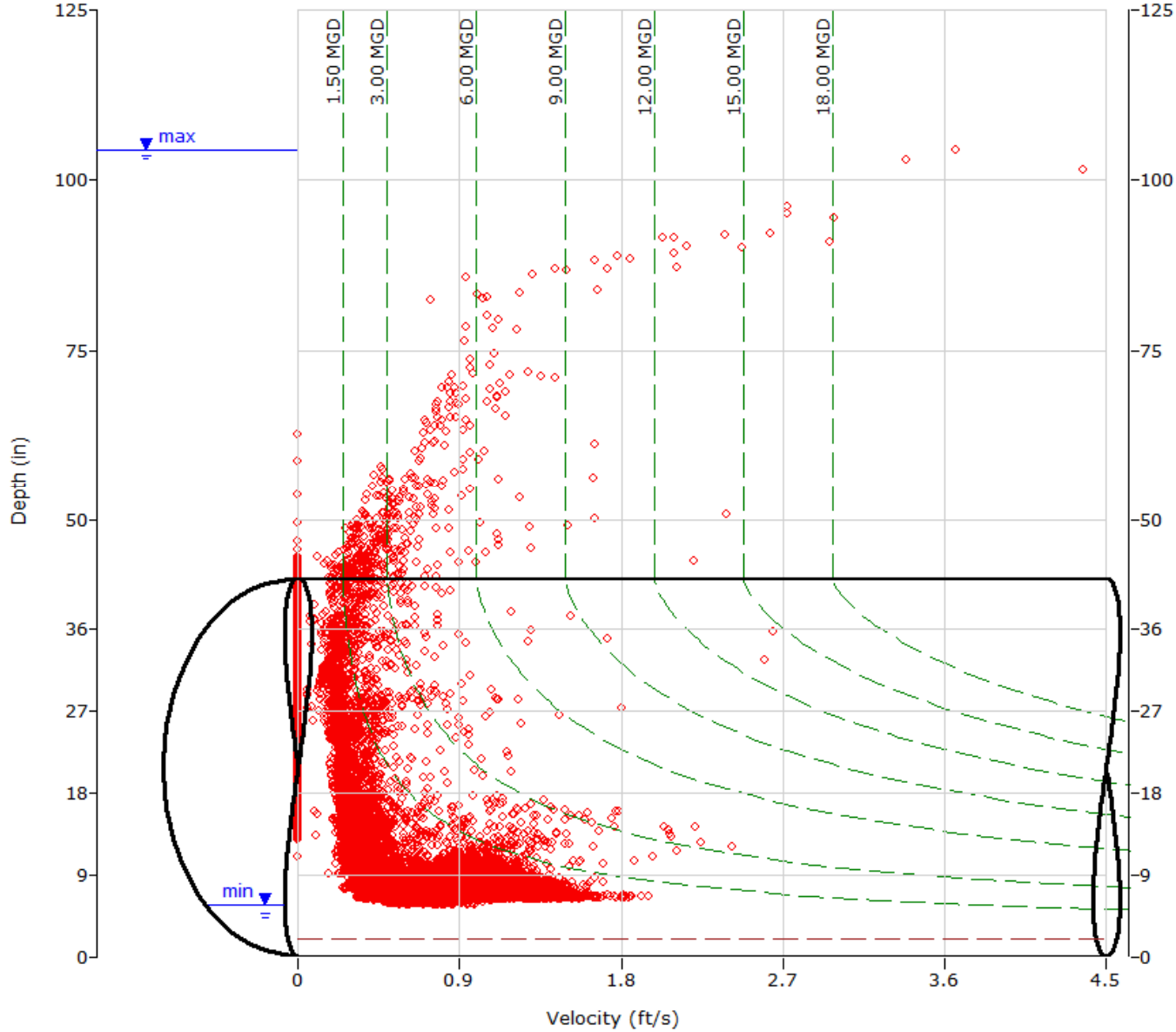
Pipe Height
41.63 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



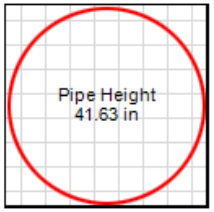
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

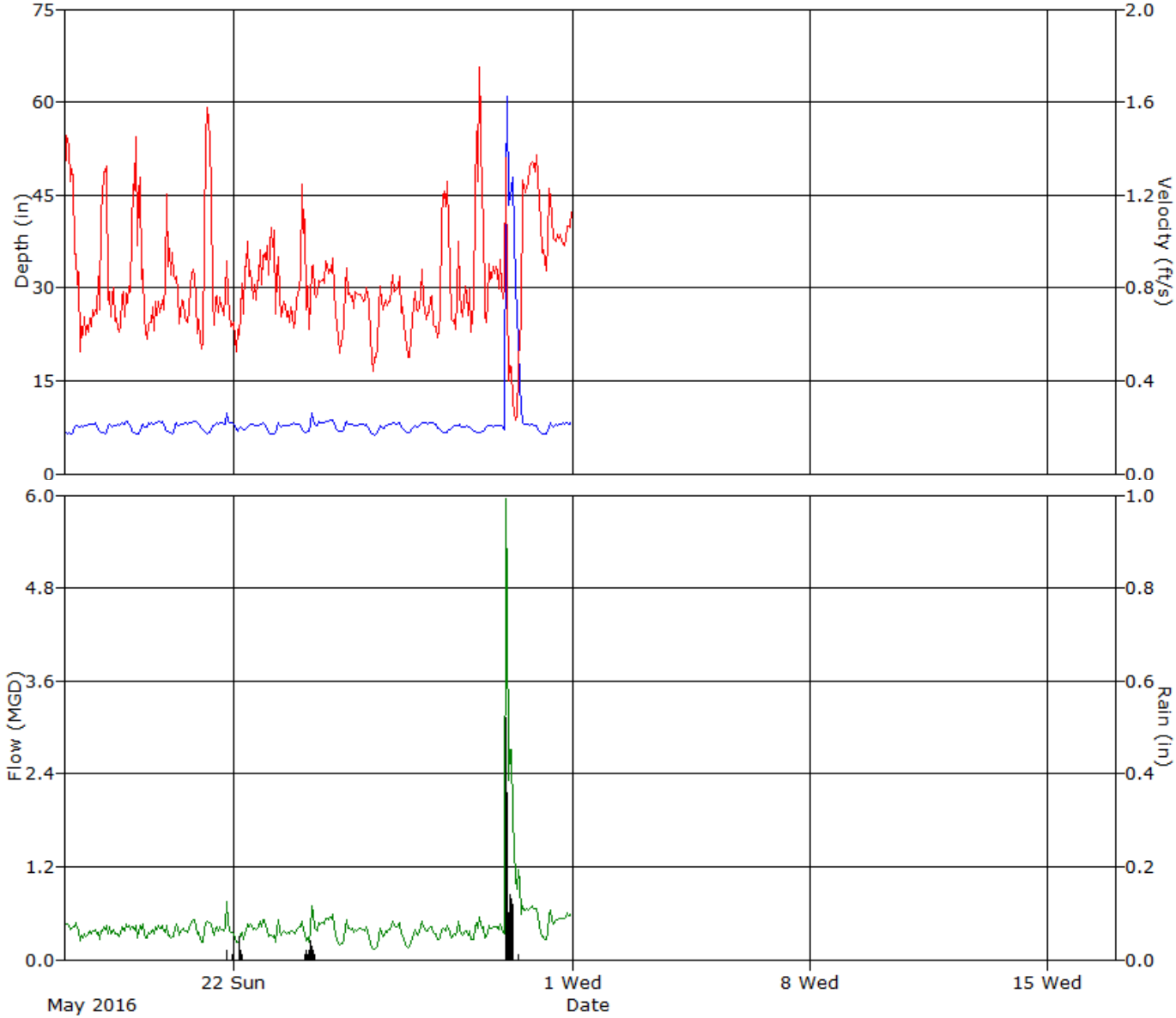


Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

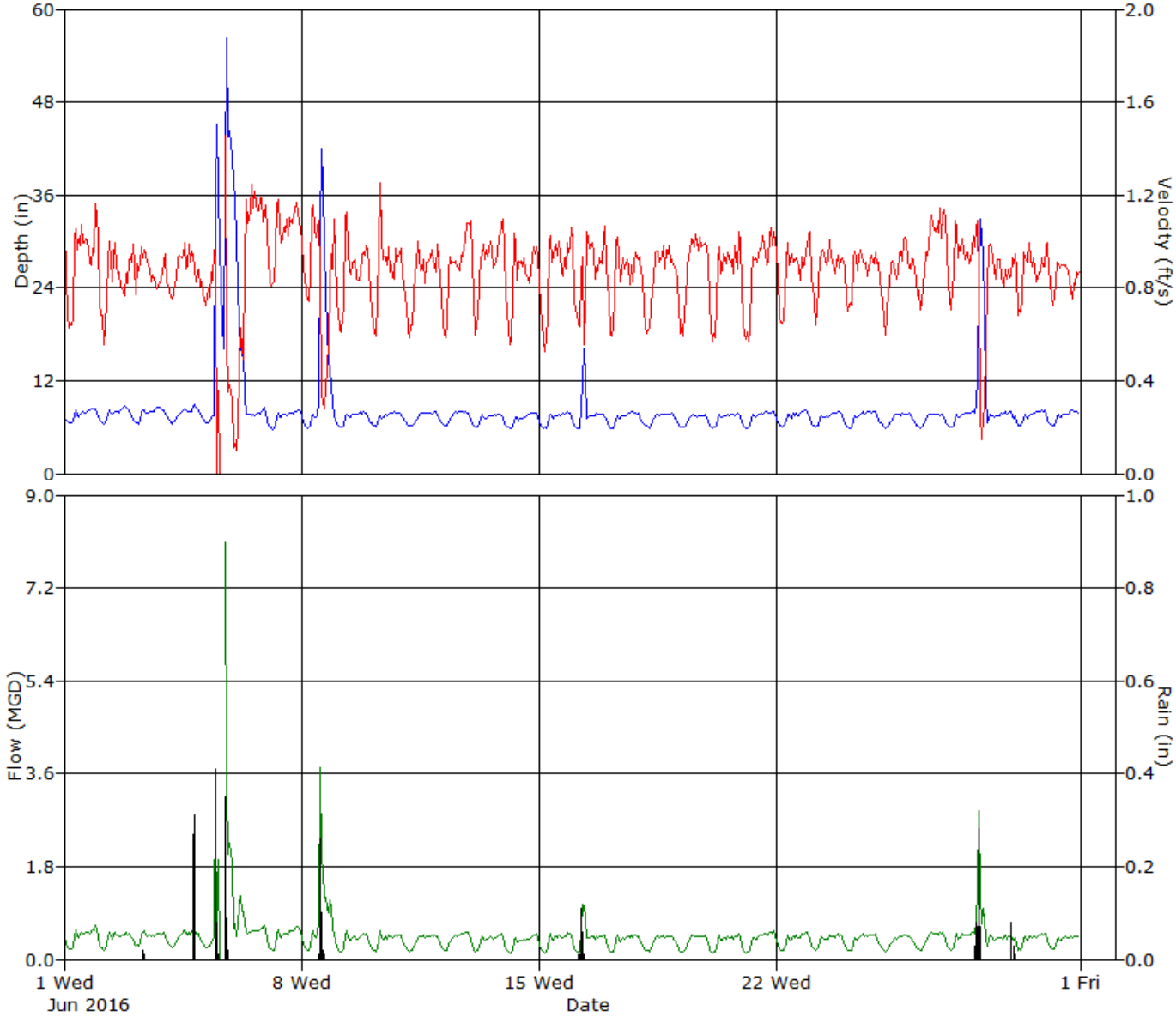
Pipe Height
41.63 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



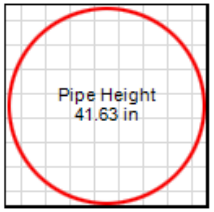
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

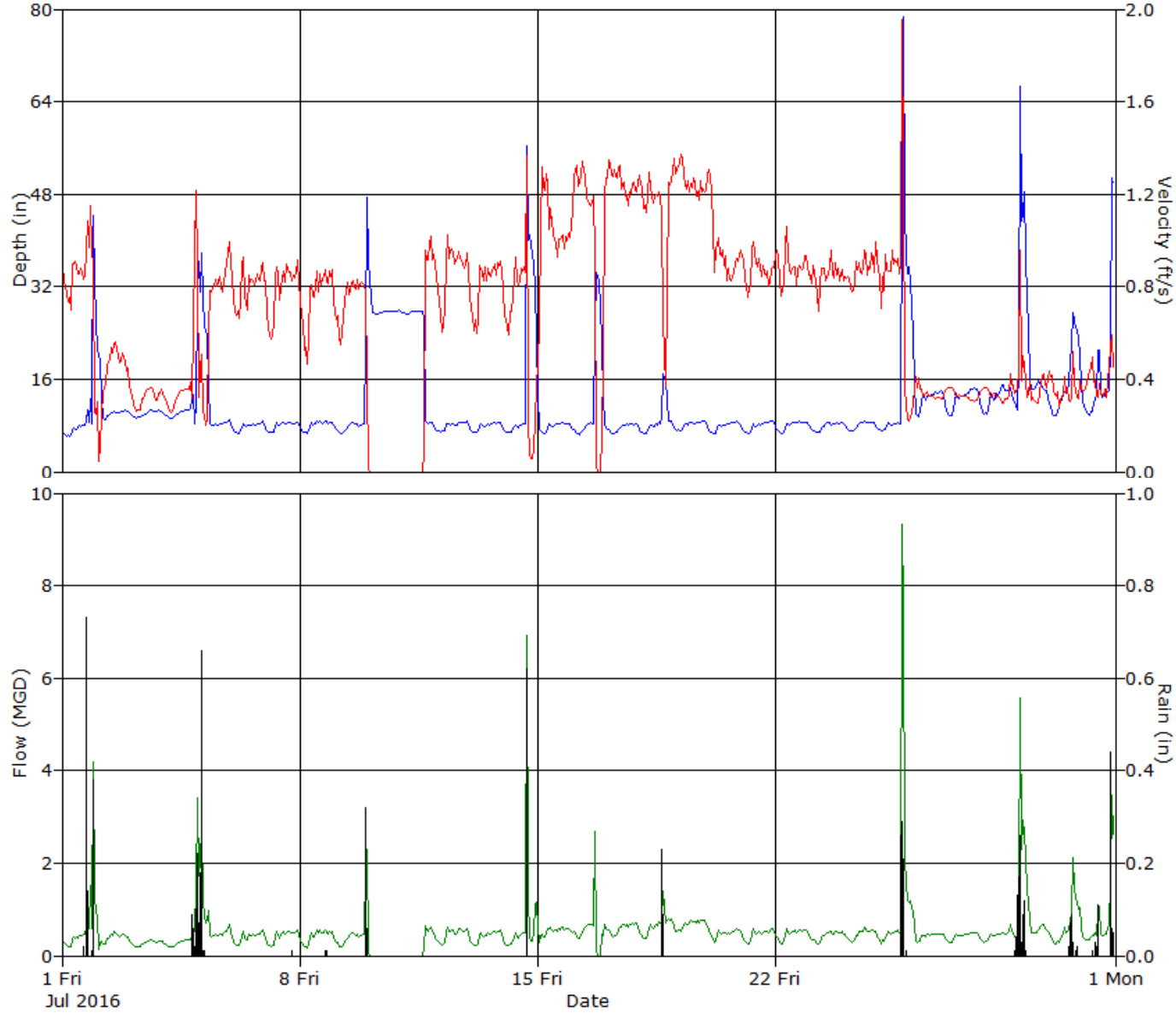


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

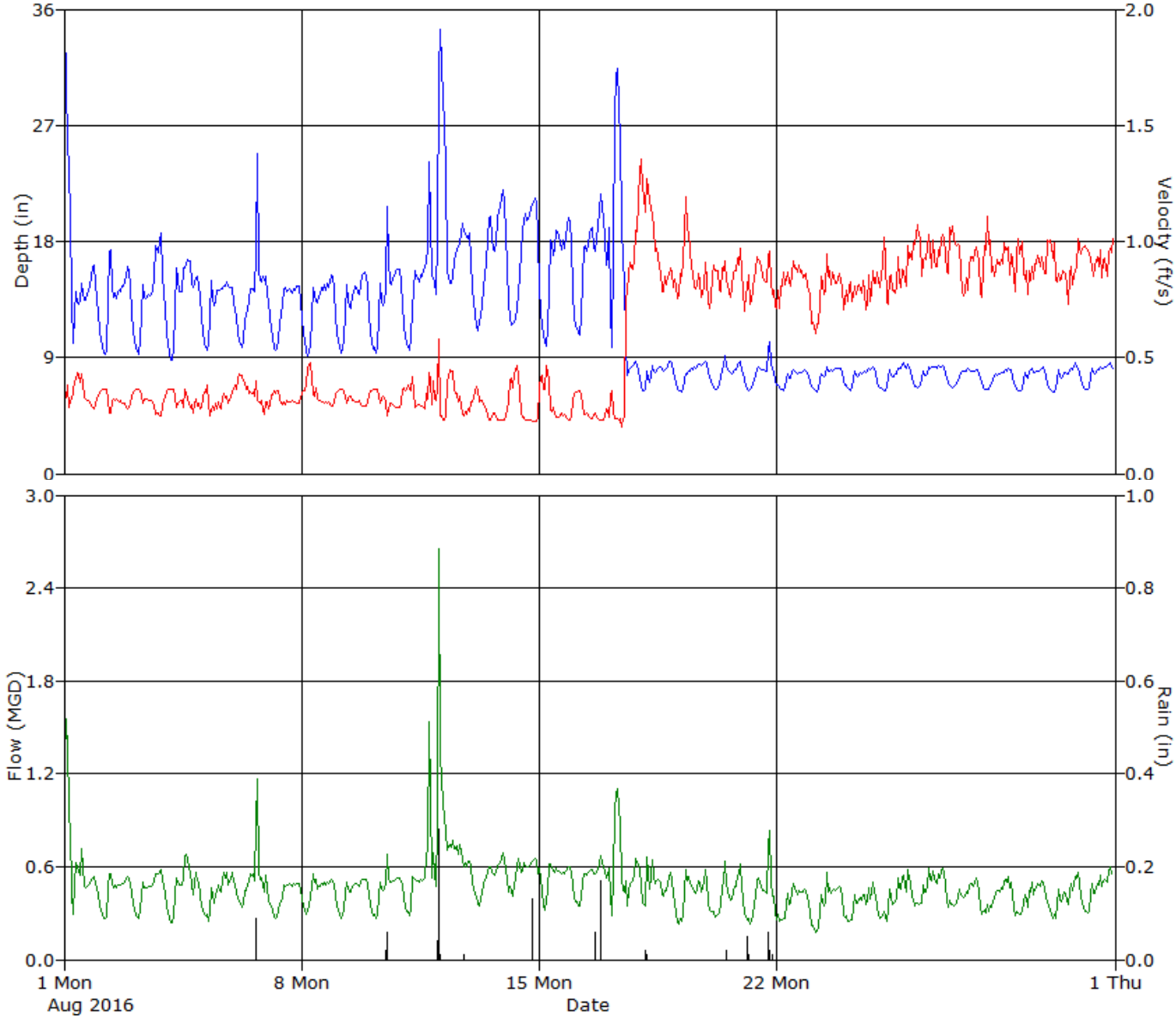
Pipe Height
41.63 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

Pipe Height
41.63 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain

ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

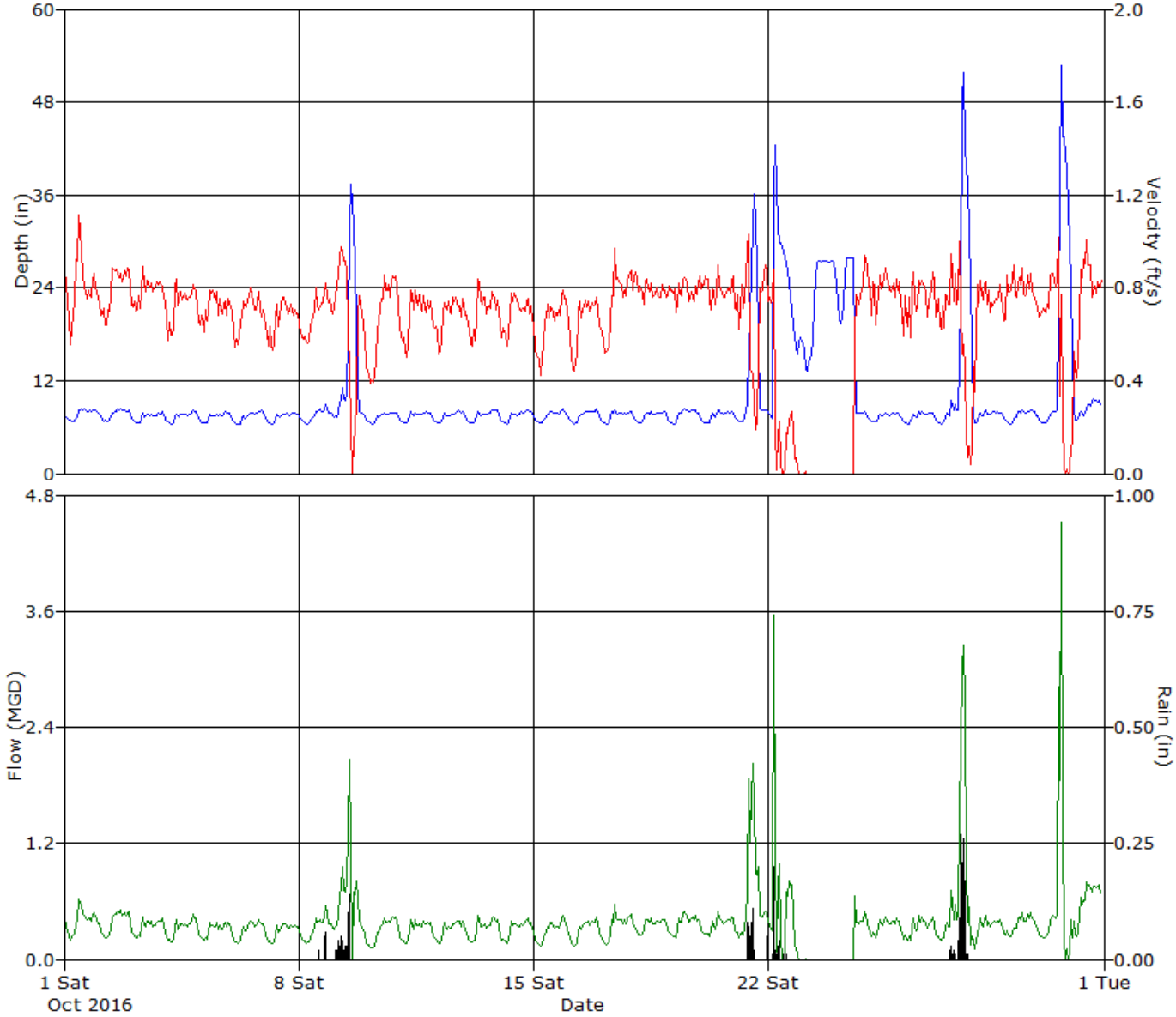
Pipe Height
41.63 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H2

Flow Monitor

H2

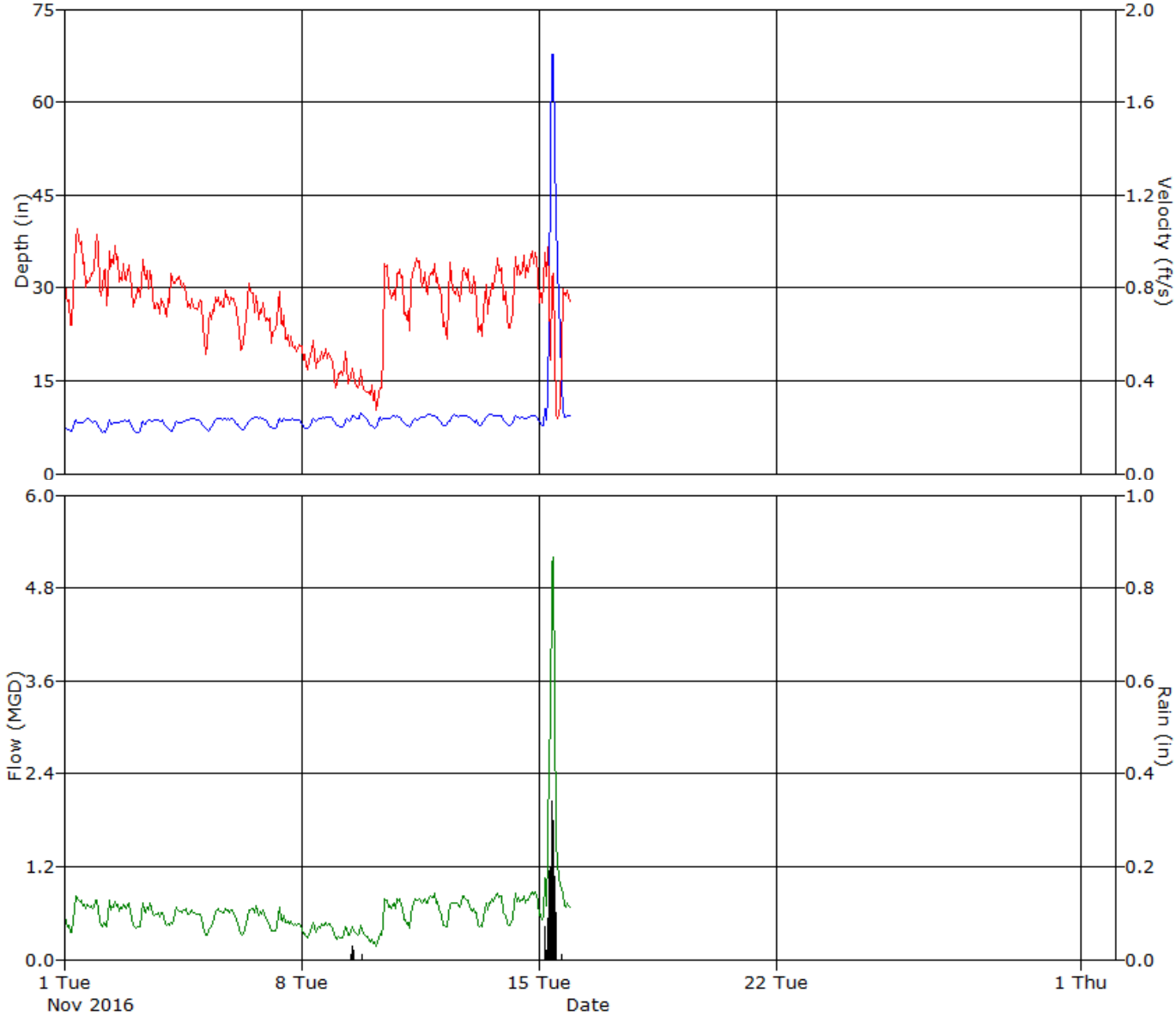
Pipe Height
41.63 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:00	6.33	21:50	8.74	7.47	06:25	0.35	03:15	1.86	0.89	06:25	0.126	21:50	0.732	0.375	50164	
5/18/2016	05:25	6.39	21:20	8.90	7.57	01:00	0.39	06:15	1.62	0.84	01:20	0.150	17:40	0.705	0.374	49959	
5/19/2016	04:40	6.32	17:55	8.88	7.62	02:50	0.44	03:40	1.81	0.85	02:50	0.160	12:05	0.680	0.380	50782	
5/20/2016	05:25	6.45	20:35	8.57	7.72	04:25	0.40	04:40	1.43	0.80	04:25	0.137	20:35	0.647	0.384	51347	
5/21/2016	05:55	6.48	19:45	10.78	7.74	02:10	0.41	06:40	1.81	0.87	03:50	0.158	19:40	1.094	0.403	53903	0.03
5/22/2016	03:55	6.83	12:30	8.61	7.66	04:10	0.41	10:55	1.59	0.79	04:10	0.147	22:15	0.799	0.381	50924	0.08
5/23/2016	04:05	6.38	21:50	8.57	7.50	01:40	0.41	22:55	1.61	0.80	06:20	0.152	22:55	0.794	0.354	47317	
5/24/2016	02:25	6.48	07:30	10.37	7.99	01:40	0.41	00:50	1.49	0.86	03:05	0.140	07:50	0.865	0.453	60519	0.16
5/25/2016	04:40	6.62	08:40	8.61	7.66	04:30	0.43	08:40	1.14	0.73	04:35	0.148	08:40	0.708	0.353	47241	
5/26/2016	03:55	6.21	17:30	8.73	7.47	05:10	0.42	21:45	1.06	0.70	03:55	0.116	21:45	0.647	0.328	43899	
5/27/2016	05:10	6.48	13:45	8.78	7.65	06:30	0.47	13:40	1.29	0.68	05:25	0.148	13:40	0.657	0.329	43982	
5/28/2016	05:35	6.55	16:15	8.71	7.37	03:50	0.38	15:15	1.61	0.84	08:10	0.143	15:15	0.748	0.354	47296	
5/29/2016	06:50	6.52	13:35	8.45	7.30	05:20	0.34	06:15	1.95	0.96	05:20	0.111	21:15	0.697	0.392	52342	
5/30/2016	00:45	7.04	01:55	96.00	21.86	08:30	0.21	01:50	2.73	0.88	01:10	0.193	01:50	15.977	1.411	188621	1.38
5/31/2016	05:20	6.28	20:15	8.76	7.54	05:55	0.79	07:30	1.43	1.04	05:55	0.238	08:25	0.737	0.480	64113	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			902408	1.65
Avg	8.54	0.83	0.450	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:00	6.48	19:45	8.76	7.63	05:20	0.54	23:10	1.42	0.93	05:20	0.166	22:05	0.763	0.448	59941	
6/2/2016	04:35	6.46	19:05	8.98	7.76	04:50	0.50	08:50	1.26	0.83	04:50	0.154	08:50	0.651	0.414	55409	
6/3/2016	05:45	6.33	20:30	8.94	7.80	03:05	0.50	07:35	1.44	0.88	03:05	0.187	07:35	0.670	0.437	58388	0.03
6/4/2016	05:20	6.38	19:15	9.21	7.76	07:40	0.50	16:40	1.18	0.88	05:40	0.188	20:25	0.695	0.436	58334	0.58
6/5/2016	05:15	6.39	18:45	92.21	22.91	11:55	0.00	18:45	2.63	0.62	11:55	0.000	18:45	15.409	1.152	132625	0.96
6/6/2016	23:55	7.24	00:00	39.67	13.40	00:10	0.00	20:35	1.43	0.87	00:10	0.000	01:05	2.194	0.656	87723	
6/7/2016	04:05	5.59	19:55	8.62	7.26	05:40	0.70	08:20	1.47	1.03	05:40	0.144	21:35	0.812	0.443	59224	
6/8/2016	05:20	5.78	14:35	42.66	13.68	16:55	0.25	21:10	1.65	0.80	05:25	0.147	15:40	4.725	0.833	111356	0.40
6/9/2016	04:15	6.01	18:00	8.56	7.26	04:05	0.56	07:50	1.38	0.87	04:10	0.139	07:50	0.638	0.374	50012	
6/10/2016	05:40	6.07	18:20	8.19	7.30	05:05	0.48	08:20	1.54	0.88	05:10	0.127	08:20	0.702	0.380	50857	
6/11/2016	06:50	6.10	22:50	8.10	7.29	05:15	0.52	14:10	1.16	0.84	05:15	0.136	14:10	0.574	0.364	48699	
6/12/2016	05:55	6.23	17:45	8.14	7.36	06:20	0.52	21:20	1.28	0.88	06:20	0.148	21:20	0.633	0.393	52478	
6/13/2016	05:15	6.06	17:50	7.75	7.09	03:55	0.54	23:30	1.31	0.92	03:55	0.139	21:35	0.554	0.370	49459	
6/14/2016	05:40	5.74	22:00	8.11	7.01	04:15	0.50	07:55	1.21	0.86	05:35	0.112	21:25	0.546	0.337	45032	
6/15/2016	04:25	5.85	19:50	8.32	7.21	04:05	0.48	07:55	1.33	0.87	04:25	0.113	07:55	0.607	0.370	49497	
6/16/2016	04:40	5.73	08:50	17.13	7.96	08:25	0.44	00:25	1.25	0.87	05:15	0.117	07:35	1.418	0.449	60026	0.20
6/17/2016	03:55	5.76	21:30	8.21	7.21	04:20	0.50	08:45	1.20	0.85	03:30	0.114	21:40	0.609	0.361	48232	
6/18/2016	06:50	5.88	19:50	8.09	7.19	05:25	0.51	12:20	1.14	0.86	06:50	0.129	22:30	0.576	0.362	48331	
6/19/2016	07:05	5.85	13:40	8.04	7.02	06:40	0.51	22:45	1.26	0.89	06:40	0.122	22:45	0.586	0.352	46993	
6/20/2016	03:20	5.88	21:40	8.20	7.14	03:55	0.50	22:40	1.25	0.86	03:55	0.119	22:40	0.585	0.357	47672	
6/21/2016	04:15	5.80	17:25	9.46	7.25	06:05	0.51	20:00	1.22	0.87	03:25	0.117	17:25	0.765	0.379	50683	
6/22/2016	04:30	5.99	18:45	9.69	7.32	02:20	0.57	08:45	1.20	0.87	04:25	0.146	18:45	0.723	0.383	51162	
6/23/2016	04:40	5.96	20:35	8.38	7.24	04:55	0.54	00:35	1.15	0.89	04:40	0.137	20:00	0.559	0.376	50291	
6/24/2016	05:40	5.82	14:25	8.35	7.27	05:30	0.55	20:10	1.15	0.88	05:30	0.125	20:10	0.573	0.377	50347	
6/25/2016	05:40	5.84	22:45	8.17	7.11	05:45	0.55	15:00	1.19	0.87	05:45	0.124	19:40	0.562	0.352	47109	
6/26/2016	06:50	5.84	13:35	8.10	7.07	06:35	0.62	23:50	1.40	0.96	06:45	0.141	13:25	0.604	0.387	51707	
6/27/2016	05:20	5.93	23:45	17.31	7.53	04:50	0.65	00:35	1.29	0.95	04:50	0.157	23:45	2.410	0.450	60155	0.18
6/28/2016	06:40	6.32	00:55	34.58	11.90	03:10	0.00	07:50	1.23	0.76	03:10	0.000	00:50	3.538	0.601	80319	0.43
6/29/2016	05:00	6.07	16:00	8.33	7.43	06:00	0.57	14:05	1.10	0.88	03:40	0.157	20:30	0.583	0.393	52556	0.04
6/30/2016	05:20	6.15	17:45	8.39	7.39	05:40	0.57	00:10	1.13	0.85	05:30	0.170	11:40	0.552	0.374	49929	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1764546	2.82
Avg	8.42	0.87	0.442	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	05:40	6.02	22:15	71.54	10.34	23:50	0.22	22:10	2.39	0.85	04:50	0.148	22:10	14.001	0.653	87254	1.28
7/2/2016	06:55	8.78	00:00	28.93	12.15	02:00	0.00	16:50	0.78	0.42	02:00	0.000	00:10	1.464	0.427	57136	
7/3/2016	06:10	9.12	14:40	10.96	10.09	06:05	0.17	20:20	0.63	0.33	06:05	0.122	20:20	0.593	0.281	37505	
7/4/2016	23:00	8.17	21:00	26.38	10.28	21:00	0.00	23:50	1.77	0.40	21:00	0.000	23:50	3.311	0.345	46099	0.27
7/5/2016	09:50	7.73	00:50	42.21	15.81	05:45	0.17	00:00	1.42	0.68	11:05	0.329	02:35	5.069	0.910	121704	1.15
7/6/2016	05:45	6.56	22:10	9.02	7.82	04:15	0.53	08:25	1.09	0.80	04:15	0.178	22:10	0.658	0.404	54057	
7/7/2016	05:00	6.68	22:45	9.15	7.92	04:40	0.48	21:10	1.07	0.79	04:40	0.162	21:10	0.723	0.416	55660	0.01
7/8/2016	04:45	6.53	18:25	9.26	8.03	06:00	0.44	21:05	1.11	0.76	04:50	0.146	18:35	0.766	0.415	55539	0.02
7/9/2016	06:35	6.51	23:25	51.34	9.97	23:55	0.25	22:35	1.25	0.73	06:35	0.165	22:35	4.582	0.510	68199	0.38
7/10/2016	07:20	27.35	00:00	40.61	28.39	00:05	0.00	00:00	0.22	0.00	00:05	0.000	00:00	1.274	0.004	591	
7/11/2016	23:55	7.69	14:55	27.89	21.98	00:00	0.00	21:40	1.15	0.28	00:00	0.000	16:55	2.007	0.173	23073	
7/12/2016	03:55	6.80	09:00	9.21	7.97	05:45	0.54	21:45	1.21	0.87	04:05	0.205	22:30	0.810	0.464	62033	
7/13/2016	04:35	6.63	22:00	8.93	7.84	06:10	0.55	22:00	1.21	0.81	05:10	0.193	22:00	0.810	0.418	55877	
7/14/2016	04:00	6.67	16:20	90.94	17.74	17:45	0.00	16:20	2.96	0.62	17:45	0.000	16:20	17.339	0.746	99700	0.62
7/15/2016	05:05	6.51	00:00	18.45	8.10	00:05	0.30	06:45	1.49	1.03	01:15	0.186	00:00	0.737	0.532	71163	
7/16/2016	06:20	6.38	16:35	46.29	13.23	17:05	0.00	04:20	1.49	0.94	17:05	0.000	16:30	6.632	0.548	73193	
7/17/2016	04:55	6.51	22:25	8.82	7.67	21:35	1.05	03:40	1.50	1.26	04:55	0.383	22:25	0.830	0.598	79974	
7/18/2016	04:10	6.61	17:05	24.95	8.73	17:00	0.27	02:55	1.40	1.13	05:05	0.356	17:05	3.369	0.647	86460	0.32
7/19/2016	02:40	7.04	22:40	9.22	8.10	08:25	0.88	07:15	1.47	1.26	07:00	0.449	22:40	0.892	0.679	90752	
7/20/2016	05:50	6.49	21:40	9.16	7.87	04:50	0.65	01:50	1.41	0.97	04:50	0.216	00:05	0.708	0.488	65225	
7/21/2016	05:35	6.55	21:40	9.10	7.93	14:20	0.63	00:30	1.12	0.87	05:25	0.212	22:00	0.727	0.454	60679	
7/22/2016	05:20	6.63	22:40	9.23	8.01	05:30	0.62	07:40	1.26	0.89	05:30	0.215	18:40	0.734	0.472	63145	
7/23/2016	05:40	6.68	12:25	8.93	7.89	06:20	0.58	15:35	1.10	0.85	06:00	0.206	23:35	0.665	0.436	58231	
7/24/2016	06:40	6.76	15:05	9.07	8.03	06:30	0.65	15:15	1.16	0.87	07:25	0.238	15:15	0.707	0.466	62252	
7/25/2016	03:25	6.67	17:40	104.27	18.61	23:30	0.18	17:35	4.37	0.81	05:20	0.228	17:35	25.623	1.319	176262	0.77
7/26/2016	05:40	9.09	00:00	30.63	13.90	00:00	0.19	05:55	0.54	0.33	05:40	0.252	00:05	1.599	0.486	65002	
7/27/2016	03:45	9.06	20:30	14.89	12.64	20:30	0.30	03:35	0.36	0.33	03:45	0.250	20:30	0.503	0.420	56201	
7/28/2016	03:40	9.26	16:35	15.30	12.80	16:35	0.29	23:20	0.46	0.34	03:40	0.262	22:15	0.690	0.440	58795	
7/29/2016	04:20	10.45	05:20	85.65	22.38	06:50	0.17	05:05	1.50	0.39	04:20	0.327	05:05	8.802	1.168	156176	0.86
7/30/2016	06:05	9.25	18:00	28.47	15.79	08:15	0.23	18:00	0.81	0.36	06:45	0.192	18:00	3.402	0.682	91184	0.24
7/31/2016	06:25	9.30	21:55	67.90	16.48	12:25	0.23	21:50	1.12	0.40	06:25	0.264	21:50	6.544	0.760	101503	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2240626	6.64
Avg	12.08	0.69	0.541	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	06:00	9.35	00:00	40.20	16.60	03:05	0.20	09:45	0.51	0.34	05:40	0.186	00:15	2.759	0.673	89996	0.05
8/2/2016	05:50	9.07	09:05	17.78	13.50	09:05	0.25	06:00	0.36	0.32	05:50	0.251	09:05	0.559	0.445	59441	
8/3/2016	05:10	9.18	21:15	20.64	13.76	21:15	0.23	05:10	0.36	0.31	05:10	0.257	21:15	0.627	0.449	60032	
8/4/2016	05:40	8.69	17:40	16.92	13.72	22:45	0.20	14:45	0.41	0.32	05:40	0.229	14:50	0.795	0.468	62554	
8/5/2016	05:05	9.36	08:45	15.61	13.20	07:10	0.21	17:55	0.48	0.31	07:10	0.228	17:55	0.779	0.426	57007	
8/6/2016	06:40	9.67	16:55	28.46	13.78	22:00	0.22	16:55	0.57	0.36	06:30	0.312	16:55	2.371	0.519	69373	0.09
8/7/2016	06:30	9.33	00:00	15.02	12.83	11:55	0.21	00:00	0.47	0.32	05:55	0.240	00:00	0.799	0.414	55316	
8/8/2016	04:35	9.11	21:40	15.63	13.03	09:10	0.24	05:50	0.54	0.35	04:40	0.242	09:30	0.689	0.452	60446	
8/9/2016	04:55	9.14	21:30	16.01	13.14	21:30	0.28	04:55	0.36	0.32	04:55	0.254	21:30	0.531	0.436	58295	
8/10/2016	05:40	9.00	13:35	23.56	13.69	13:55	0.23	10:50	0.37	0.32	05:40	0.247	13:35	0.817	0.451	60272	0.08
8/11/2016	05:30	9.54	18:25	28.10	14.53	19:45	0.27	18:20	0.73	0.34	05:30	0.277	18:20	2.946	0.555	74210	
8/12/2016	00:10	12.88	02:10	35.36	20.35	02:45	0.13	01:05	0.77	0.33	00:10	0.438	01:05	3.300	0.854	114159	0.34
8/13/2016	04:55	10.96	23:50	22.14	16.49	14:30	0.21	08:55	0.40	0.28	05:55	0.318	23:50	0.700	0.528	70622	
8/14/2016	05:05	11.16	00:00	21.94	17.00	00:30	0.23	05:00	0.54	0.30	06:30	0.293	14:55	0.987	0.571	76375	0.13
8/15/2016	05:45	9.67	21:40	20.04	16.12	12:55	0.23	05:45	0.51	0.30	04:00	0.294	07:55	0.853	0.539	72074	
8/16/2016	05:05	10.69	20:30	21.85	16.58	21:05	0.23	05:05	0.36	0.28	05:05	0.339	20:30	0.683	0.523	69871	0.23
8/17/2016	15:30	6.11	08:20	31.61	15.47	11:15	0.18	23:25	1.31	0.54	15:20	0.200	08:20	1.112	0.606	81050	
8/18/2016	02:45	6.24	20:15	8.85	7.82	23:40	0.66	01:15	1.41	1.00	04:40	0.308	05:15	0.798	0.491	65636	0.03
8/19/2016	05:20	6.28	22:10	8.91	7.74	04:20	0.64	10:35	1.49	0.88	04:20	0.189	10:35	0.782	0.429	57384	
8/20/2016	05:55	6.49	12:45	9.51	7.73	01:45	0.66	12:20	1.27	0.84	06:30	0.222	12:20	0.921	0.414	55382	0.02
8/21/2016	05:55	6.41	18:40	10.83	7.77	03:15	0.64	00:00	1.11	0.83	06:10	0.207	18:40	1.045	0.418	55905	0.15
8/22/2016	05:40	6.38	11:30	8.34	7.46	02:35	0.57	04:00	1.18	0.84	02:35	0.187	12:20	0.567	0.377	50425	
8/23/2016	05:50	6.32	12:00	10.41	7.54	06:50	0.51	12:00	1.58	0.78	05:30	0.164	12:00	1.425	0.369	49305	
8/24/2016	05:45	6.47	22:00	8.50	7.54	16:55	0.56	18:20	1.05	0.79	05:35	0.204	21:15	0.597	0.363	48538	
8/25/2016	04:50	6.43	21:25	9.36	7.64	05:35	0.60	21:10	1.20	0.85	05:35	0.186	21:25	0.822	0.407	54402	
8/26/2016	05:00	6.67	12:45	9.02	7.74	17:55	0.64	13:40	1.25	0.97	05:10	0.247	12:50	0.732	0.472	63100	
8/27/2016	05:55	6.56	16:00	8.49	7.56	17:00	0.53	04:30	1.18	0.92	06:05	0.238	17:30	0.618	0.424	56643	
8/28/2016	05:45	6.46	20:20	8.37	7.42	05:55	0.61	07:05	1.30	0.92	05:55	0.212	20:20	0.667	0.408	54499	
8/29/2016	04:00	6.38	13:35	9.80	7.50	07:10	0.57	13:35	1.23	0.89	07:10	0.218	13:35	0.990	0.404	54057	
8/30/2016	04:30	6.32	20:30	8.83	7.52	15:10	0.59	23:00	1.22	0.89	02:25	0.203	20:00	0.666	0.406	54221	
8/31/2016	05:35	6.48	21:25	8.89	7.73	06:40	0.59	18:00	1.15	0.93	06:40	0.199	21:25	0.746	0.453	60461	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1971051	1.12
Avg	11.63	0.58	0.476	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	03:20	6.52	14:50	49.02	11.94	16:35	0.00	14:50	1.29	0.78	16:35	0.000	14:50	7.580	0.644	86038	0.56
9/2/2016	05:35	6.78	22:45	8.79	7.89	02:50	0.63	02:25	1.19	0.83	05:10	0.234	17:25	0.679	0.427	57027	
9/3/2016	07:15	6.75	22:20	8.64	7.75	12:50	0.56	13:10	1.03	0.77	05:05	0.214	13:10	0.620	0.381	50911	
9/4/2016	07:35	6.71	22:20	8.61	7.59	06:50	0.61	16:45	1.05	0.80	06:40	0.210	22:35	0.576	0.376	50255	
9/5/2016	06:55	6.61	12:00	8.32	7.50	05:40	0.52	04:00	1.07	0.77	05:40	0.178	12:25	0.571	0.352	47021	
9/6/2016	05:30	6.65	17:30	8.57	7.75	06:20	0.54	19:15	1.05	0.76	06:20	0.196	19:15	0.603	0.376	50294	
9/7/2016	05:10	6.55	22:15	8.58	7.70	04:20	0.50	13:30	1.09	0.77	04:20	0.165	18:20	0.615	0.377	50428	
9/8/2016	05:20	6.70	22:15	8.95	7.83	05:20	0.57	15:10	1.01	0.81	05:20	0.194	17:50	0.645	0.411	54882	
9/9/2016	04:10	6.67	22:10	12.49	8.02	04:20	0.62	12:35	1.16	0.84	04:25	0.218	22:15	1.292	0.453	60567	0.11
9/10/2016	07:25	6.81	15:35	11.11	7.99	07:20	0.64	15:35	1.28	0.88	07:20	0.228	15:35	1.302	0.471	63013	0.05
9/11/2016	07:15	6.90	13:55	8.87	7.92	03:50	0.67	17:05	1.14	0.87	05:30	0.261	13:55	0.750	0.452	60469	
9/12/2016	04:40	6.71	14:50	8.69	7.65	06:05	0.59	21:05	1.13	0.82	04:35	0.208	21:05	0.655	0.394	52646	0.00
9/13/2016	03:35	6.76	16:15	8.77	7.78	06:55	0.63	12:30	1.07	0.82	03:00	0.240	18:30	0.642	0.407	54409	
9/14/2016	04:15	6.70	17:55	71.29	13.19	18:55	0.00	17:45	1.66	0.70	18:55	0.000	17:45	9.702	0.634	84743	0.64
9/15/2016	04:35	6.81	20:15	9.37	7.76	03:10	0.38	22:25	1.19	0.66	03:10	0.143	19:50	0.731	0.335	44757	
9/16/2016	06:10	6.65	22:15	8.94	7.77	06:20	0.51	02:35	1.24	0.88	06:20	0.172	22:15	0.811	0.432	57786	
9/17/2016	05:40	6.64	22:40	8.95	7.79	02:00	0.54	20:25	1.10	0.83	06:30	0.199	22:40	0.699	0.418	55930	
9/18/2016	06:50	6.65	21:40	8.86	7.81	06:55	0.63	22:20	1.24	0.87	06:55	0.212	22:20	0.737	0.438	58519	
9/19/2016	05:05	6.62	11:00	45.63	15.30	12:00	0.00	06:55	1.49	0.71	12:00	0.000	10:25	3.758	0.722	96551	0.45
9/20/2016	05:00	6.68	11:35	8.70	7.76	01:40	0.57	11:20	1.08	0.86	03:35	0.211	11:20	0.670	0.427	57105	
9/21/2016	04:30	6.65	22:20	8.93	7.73	05:55	0.53	19:25	1.20	0.82	04:25	0.181	19:25	0.736	0.403	53852	
9/22/2016	02:15	6.83	14:00	8.81	7.81	05:10	0.54	23:45	1.08	0.83	05:10	0.208	12:55	0.674	0.418	55900	
9/23/2016	03:55	6.72	20:50	9.12	7.71	03:10	0.57	07:40	1.31	0.83	03:10	0.201	18:05	0.781	0.406	54255	
9/24/2016	00:35	7.67	01:15	71.22	15.59	02:50	0.00	01:05	2.64	0.77	02:50	0.000	01:05	14.057	0.938	125401	0.28
9/25/2016	05:30	7.15	14:45	10.22	8.68	05:15	0.50	06:30	1.47	0.92	05:15	0.212	17:10	0.909	0.582	77810	
9/26/2016	04:50	7.09	21:05	9.94	8.58	01:40	0.52	06:25	1.18	0.86	03:20	0.247	21:45	0.857	0.536	71697	
9/27/2016	06:45	7.36	04:30	15.99	8.74	04:20	0.47	05:20	2.42	0.98	06:45	0.277	03:55	3.447	0.686	91736	0.25
9/28/2016	05:20	6.83	21:30	9.15	7.83	03:20	0.58	17:40	1.23	0.84	04:35	0.211	17:40	0.752	0.424	56682	
9/29/2016	05:20	6.81	08:30	8.92	7.65	06:20	0.58	08:10	1.08	0.84	05:15	0.210	08:10	0.685	0.401	53570	
9/30/2016	04:25	6.83	14:35	12.02	8.77	06:00	0.62	22:20	1.22	0.89	06:00	0.231	14:25	1.219	0.599	79956	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1914210	2.75
Avg	8.73	0.82	0.477	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	07:20	6.81	10:40	9.85	7.73	04:05	0.50	10:35	1.45	0.81	04:10	0.183	10:40	0.996	0.402	53746	
10/2/2016	06:30	6.64	22:15	8.51	7.69	07:50	0.56	10:50	1.02	0.80	07:50	0.196	16:25	0.547	0.389	52016	
10/3/2016	04:30	6.53	22:00	8.19	7.35	03:05	0.55	22:00	0.99	0.79	03:05	0.183	22:00	0.550	0.342	45654	
10/4/2016	04:55	6.39	20:05	8.51	7.39	03:45	0.50	07:50	1.01	0.73	03:45	0.157	20:00	0.553	0.326	43546	
10/5/2016	05:20	6.48	19:35	8.09	7.34	06:30	0.51	13:15	0.92	0.72	06:30	0.163	13:15	0.488	0.311	41524	
10/6/2016	06:20	6.37	21:05	8.22	7.36	03:55	0.43	14:15	0.96	0.69	03:55	0.130	14:15	0.469	0.305	40807	0.00
10/7/2016	05:20	6.37	15:20	8.05	7.34	05:35	0.43	15:15	0.95	0.67	05:35	0.129	15:15	0.504	0.293	39120	
10/8/2016	05:50	6.39	20:00	9.12	7.54	07:15	0.48	12:30	0.90	0.68	07:15	0.149	19:55	0.609	0.322	43059	0.13
10/9/2016	23:55	7.25	12:55	39.90	14.49	13:50	0.00	06:50	1.31	0.64	13:50	0.000	12:50	2.578	0.643	85987	0.52
10/10/2016	04:55	6.34	21:40	8.30	7.36	04:15	0.36	18:40	1.05	0.66	05:25	0.107	18:40	0.547	0.299	40019	
10/11/2016	04:10	6.51	21:45	8.35	7.45	04:35	0.45	20:15	0.95	0.69	04:35	0.143	20:15	0.534	0.313	41780	0.00
10/12/2016	05:25	6.47	18:30	8.42	7.43	05:40	0.44	17:05	0.95	0.68	05:40	0.136	17:05	0.526	0.308	41171	
10/13/2016	03:20	6.47	18:10	8.62	7.51	04:30	0.48	10:30	1.04	0.70	04:00	0.153	18:10	0.599	0.327	43659	
10/14/2016	05:25	6.38	19:10	8.45	7.48	04:55	0.45	12:05	0.97	0.69	05:35	0.139	20:10	0.530	0.316	42214	
10/15/2016	05:45	6.42	21:35	8.57	7.48	05:00	0.35	23:25	0.90	0.65	05:00	0.114	21:35	0.519	0.300	40085	
10/16/2016	05:10	6.46	21:35	8.40	7.51	04:35	0.38	09:40	0.94	0.66	04:55	0.123	21:35	0.514	0.308	41148	
10/17/2016	04:35	6.38	10:10	10.13	7.48	05:15	0.45	10:10	1.70	0.74	04:20	0.139	10:10	1.455	0.346	46199	
10/18/2016	04:30	6.54	11:55	8.39	7.48	07:35	0.63	01:15	1.08	0.79	05:45	0.208	12:20	0.594	0.359	47951	0.00
10/19/2016	05:00	6.43	12:40	8.64	7.61	04:25	0.58	12:30	1.05	0.79	04:25	0.183	12:30	0.647	0.372	49690	
10/20/2016	05:05	6.47	13:10	8.89	7.48	02:55	0.48	12:00	1.27	0.80	02:55	0.162	12:00	0.721	0.360	48118	
10/21/2016	03:50	6.65	14:00	36.34	13.73	15:05	0.00	10:20	1.30	0.68	15:05	0.000	10:20	2.605	0.720	96311	0.46
10/22/2016	03:30	6.97	04:35	54.93	22.94	05:45	0.00	04:15	1.80	0.25	05:45	0.000	04:15	7.169	0.529	70772	0.33
10/23/2016	04:15	12.81	13:20	27.61	22.60	00:00	0.00	03:25	0.10	0.00	00:00	0.000	03:25	0.138	0.000	64	
10/24/2016	23:45	7.19	12:00	27.96	18.03	00:00	0.00	21:40	1.18	0.33	00:00	0.000	14:15	2.079	0.180	24110	
10/25/2016	05:00	6.59	21:50	8.13	7.40	05:30	0.49	18:15	1.07	0.79	05:30	0.166	18:15	0.535	0.350	46809	
10/26/2016	04:25	6.38	12:20	9.10	7.38	04:45	0.42	20:25	1.20	0.75	04:45	0.136	20:25	0.630	0.333	44524	
10/27/2016	04:25	6.38	20:35	56.88	16.09	22:35	0.00	17:00	1.38	0.67	22:35	0.000	20:15	4.912	0.835	111585	1.15
10/28/2016	05:05	6.45	00:00	34.06	9.63	00:05	0.00	07:50	1.16	0.65	00:05	0.000	00:00	0.883	0.339	45334	
10/29/2016	07:10	6.32	14:05	8.69	7.50	02:05	0.55	18:25	1.16	0.79	06:30	0.190	18:25	0.709	0.362	48356	
10/30/2016	06:10	6.44	18:05	67.36	17.86	20:05	0.00	18:00	1.65	0.61	20:05	0.000	18:00	9.685	0.671	89745	
10/31/2016	05:30	6.83	00:00	31.99	10.32	00:00	0.00	12:25	1.32	0.69	00:00	0.000	12:25	1.183	0.572	76404	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1581506	2.59
Avg	10.00	0.66	0.382	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H2, Pipe Height: 41.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:35	6.64	16:30	9.24	8.06	15:05	0.44	09:00	1.24	0.87	04:35	0.257	09:00	0.969	0.640	85532	
11/2/2016	03:55	6.65	18:40	9.12	7.96	04:15	0.51	00:50	1.15	0.87	04:15	0.316	08:45	0.856	0.622	83143	
11/3/2016	04:20	6.51	17:40	9.30	8.03	22:50	0.53	13:35	1.02	0.78	03:15	0.301	13:35	0.843	0.568	75905	
11/4/2016	04:55	6.70	18:10	9.32	8.19	06:00	0.55	06:05	1.17	0.77	05:10	0.296	14:40	0.841	0.572	76522	
11/5/2016	06:10	6.93	20:00	9.35	8.27	04:45	0.47	18:05	0.92	0.70	05:20	0.276	18:05	0.824	0.542	72438	
11/6/2016	06:50	6.94	15:50	9.62	8.34	06:10	0.42	13:30	0.90	0.69	06:10	0.250	17:10	0.821	0.541	72353	
11/7/2016	05:15	6.99	09:05	10.13	8.31	04:10	0.40	09:55	0.89	0.61	04:10	0.263	09:05	0.876	0.470	62844	
11/8/2016	04:45	7.19	20:45	9.50	8.46	04:05	0.32	08:10	0.74	0.50	04:05	0.199	08:10	0.649	0.396	52996	
11/9/2016	05:10	7.39	18:35	10.15	8.64	04:20	0.29	12:00	0.60	0.41	04:20	0.198	12:00	0.581	0.333	44544	0.07
11/10/2016	03:35	7.31	17:30	9.68	8.62	05:35	0.25	11:45	1.10	0.61	05:35	0.163	17:30	0.982	0.518	69243	
11/11/2016	05:45	7.49	18:55	10.01	8.80	04:40	0.48	06:05	1.27	0.82	04:40	0.310	17:50	1.028	0.694	92766	
11/12/2016	05:45	7.62	19:50	9.88	8.85	07:15	0.47	09:15	1.07	0.78	07:15	0.334	19:50	0.961	0.669	89495	
11/13/2016	07:00	7.56	15:05	10.00	8.84	08:55	0.48	02:50	1.04	0.77	08:25	0.346	15:10	0.996	0.663	88646	
11/14/2016	03:35	7.71	19:20	9.86	8.77	06:30	0.52	19:05	1.13	0.83	04:50	0.366	23:05	0.992	0.705	94276	
11/15/2016	03:15	7.71	09:45	82.84	24.05	13:40	0.17	06:25	1.37	0.67	02:55	0.282	09:35	7.759	1.583	186597	1.50
11/16/2016																	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1247300	1.57
Avg	9.36	0.71	0.627	

Site Commentary

Site Information

H3	
Pipe Dimensions (in.)	H-3 (54.13 in H, 40.00 in W)
Silt (in.)	8.00 - 4.00

Overview

A review of the hydrograph and scattergraph for H3 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	23.71	0.62	1.450
Minimum	20.56	0.16	0.513
Maximum	101.22	3.55	25.021
Time of Minimum	6/27/2016 4:30 AM	5/30/2016 1:55 AM	6/11/2016 5:25 AM
Time of Maximum	7/25/2016 5:45 PM	7/25/2016 5:35 PM	7/25/2016 5:35 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Site Report

ADS ENVIRONMENTAL SERVICES®
a division of ADS LLC. HOBOKEN, NJ

FM Initials: MEJ
Project Name: NHSA

Site Name:	H3	Meter Type:	TRITON+	Monitor S/N:	61008	Manhole #:	H3-03-002
Address / Location:	3RD STREET AT RIVER STREET (IN CROSSWALK)			Map Page #:		N3	
				Pipe Height:		54.13 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		40 Inches	
				I.P. Address		107.80.25.38	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 7, 2016	12:00 PM	Manhole Depth:	16.5 Feet		
Site Hydraulics:	SLOW, SMOOTH FLOW WITH SILT		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	PARGED	BRICK	Fair
			Mini System Character:	COMMERCIAL		RESIDENTIAL
			Telephone Information:			
Depth of Flow (Wet Dof):	19.5 +/-		Access Pole #:	N/A		
Range (Air Dof):	32.13 +/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	0.64 fps		Road Cut Length:	N/A Feet		
Silt:	5 Inches		Trench Length:	N/A Feet		

Other Information:

N 40° 44' 23" W 74° 1' 42"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		Regulator	50'

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H3 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

TEMP CLOSURE OF ONE WAY STREET

NHSA TO PROVIDE TRAFFIC CONTROL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	M. JOHNSON	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/7/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

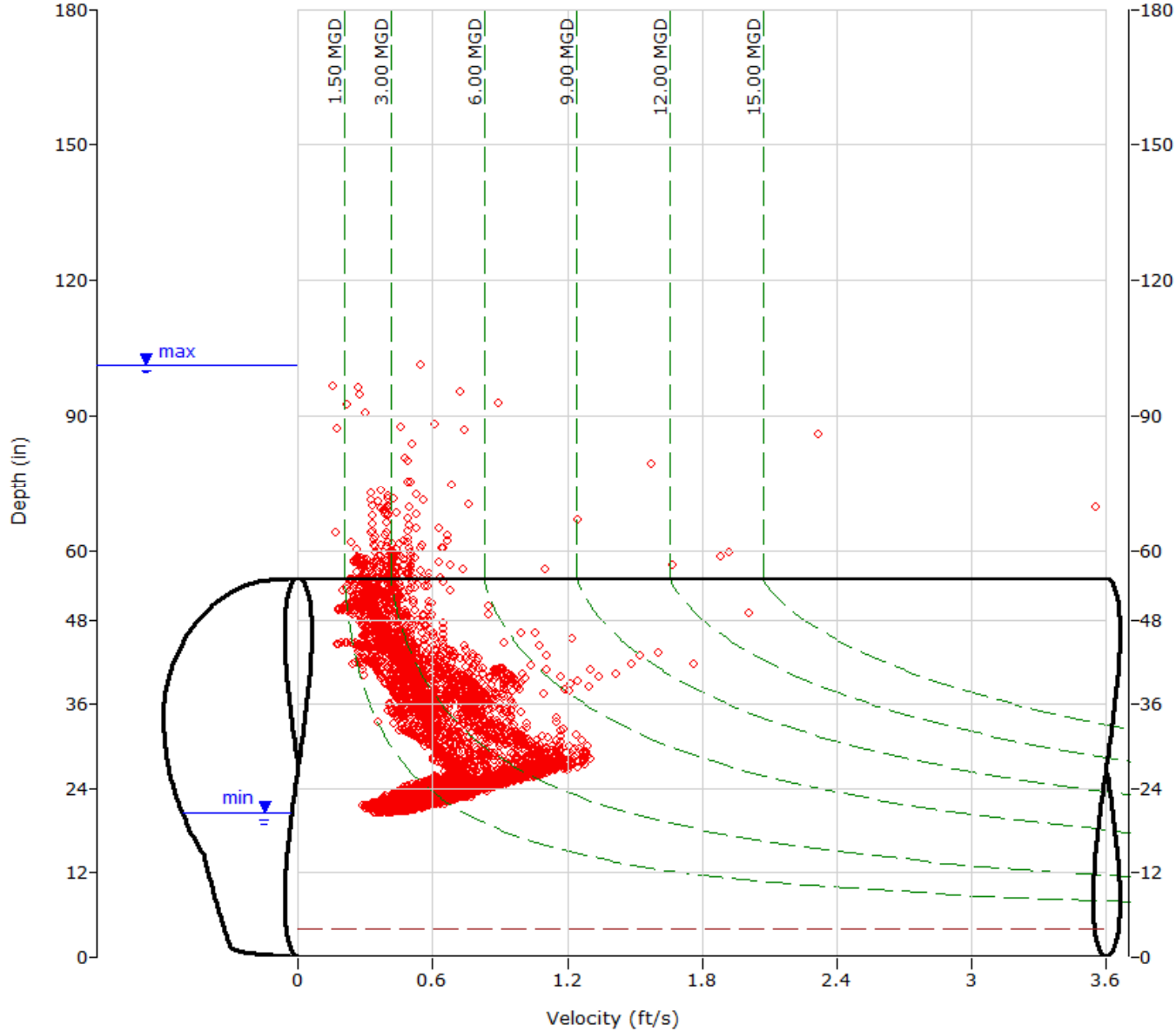
Non Standard

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

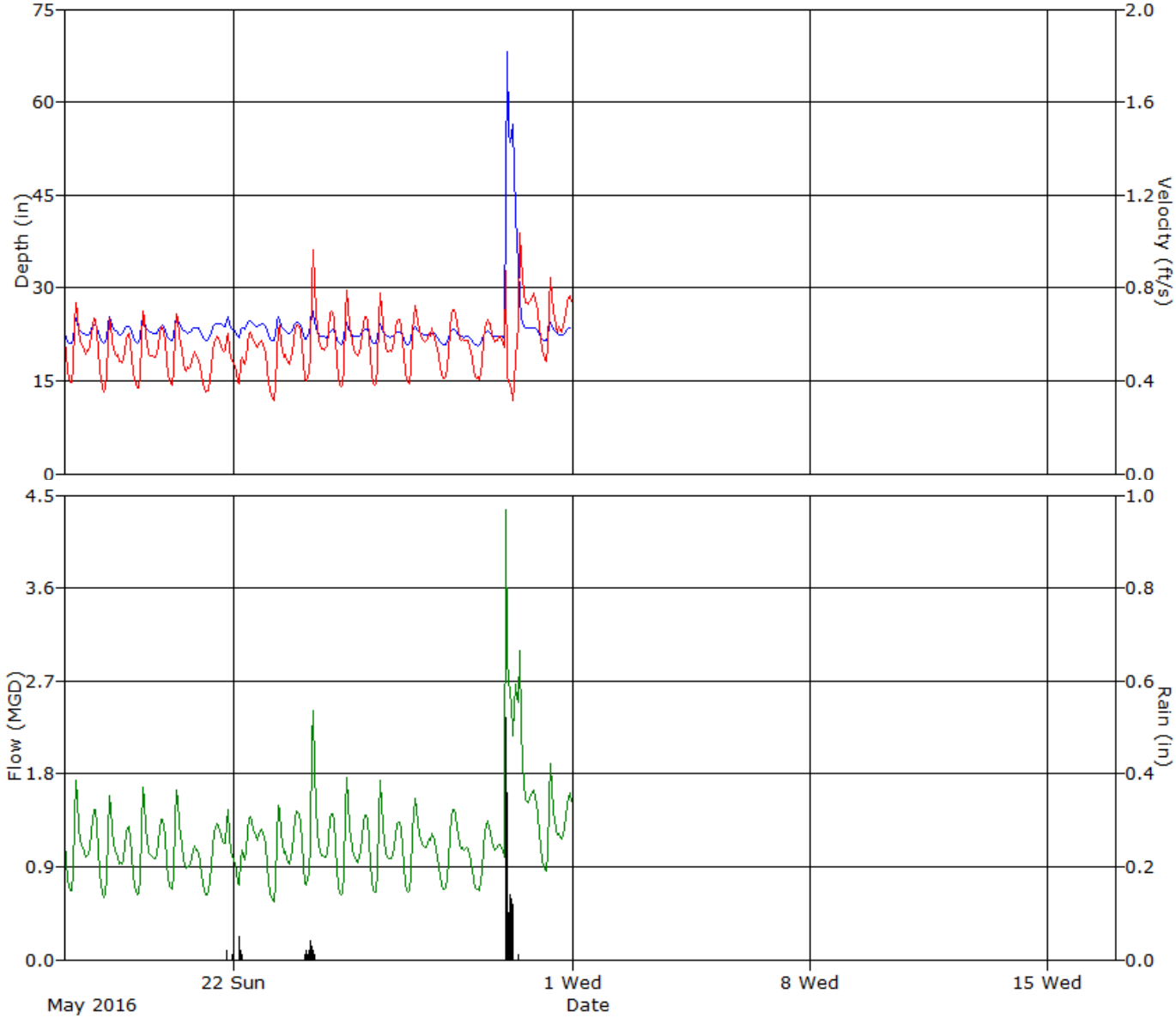
Non Standard

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

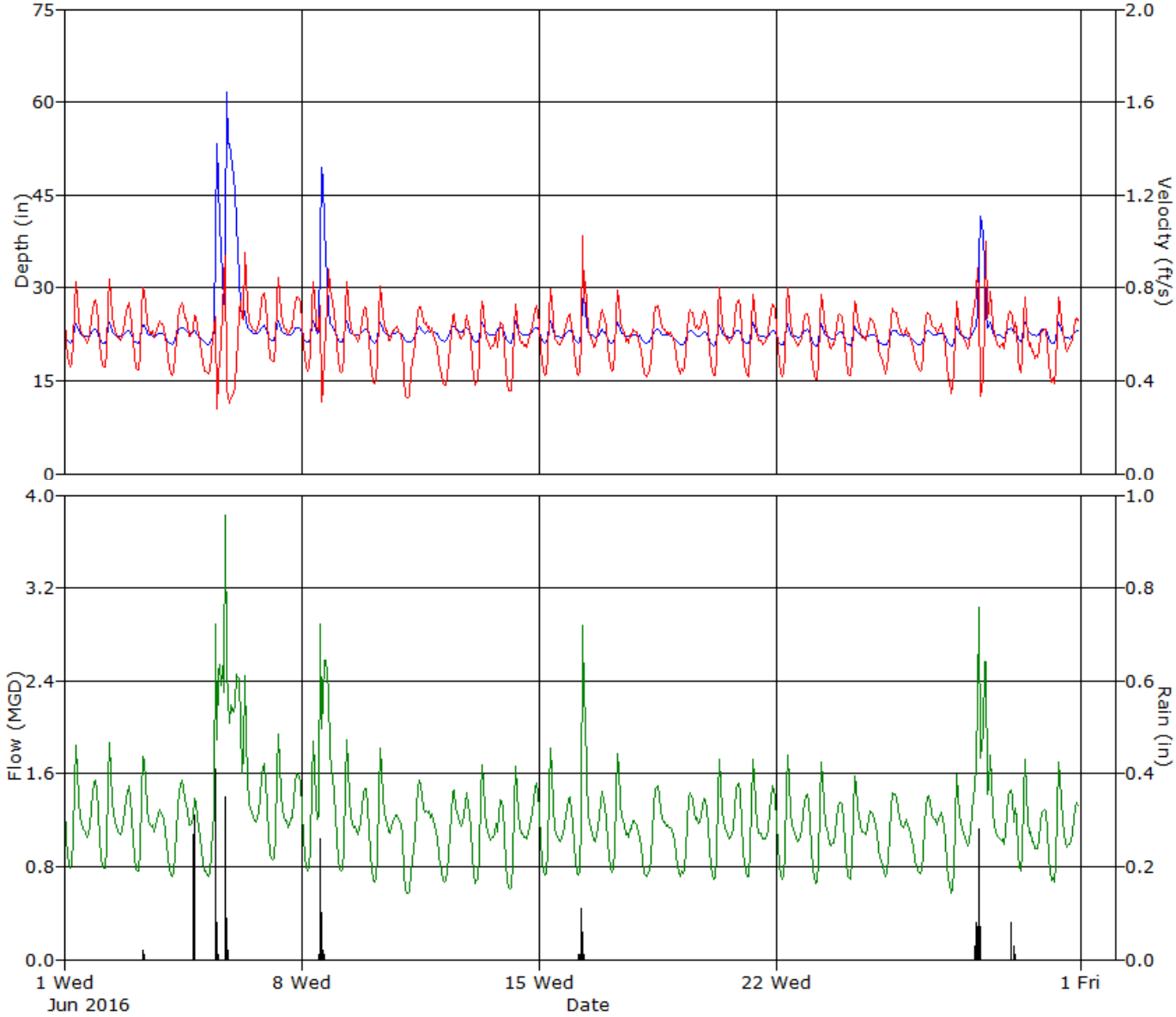
Non Standard

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

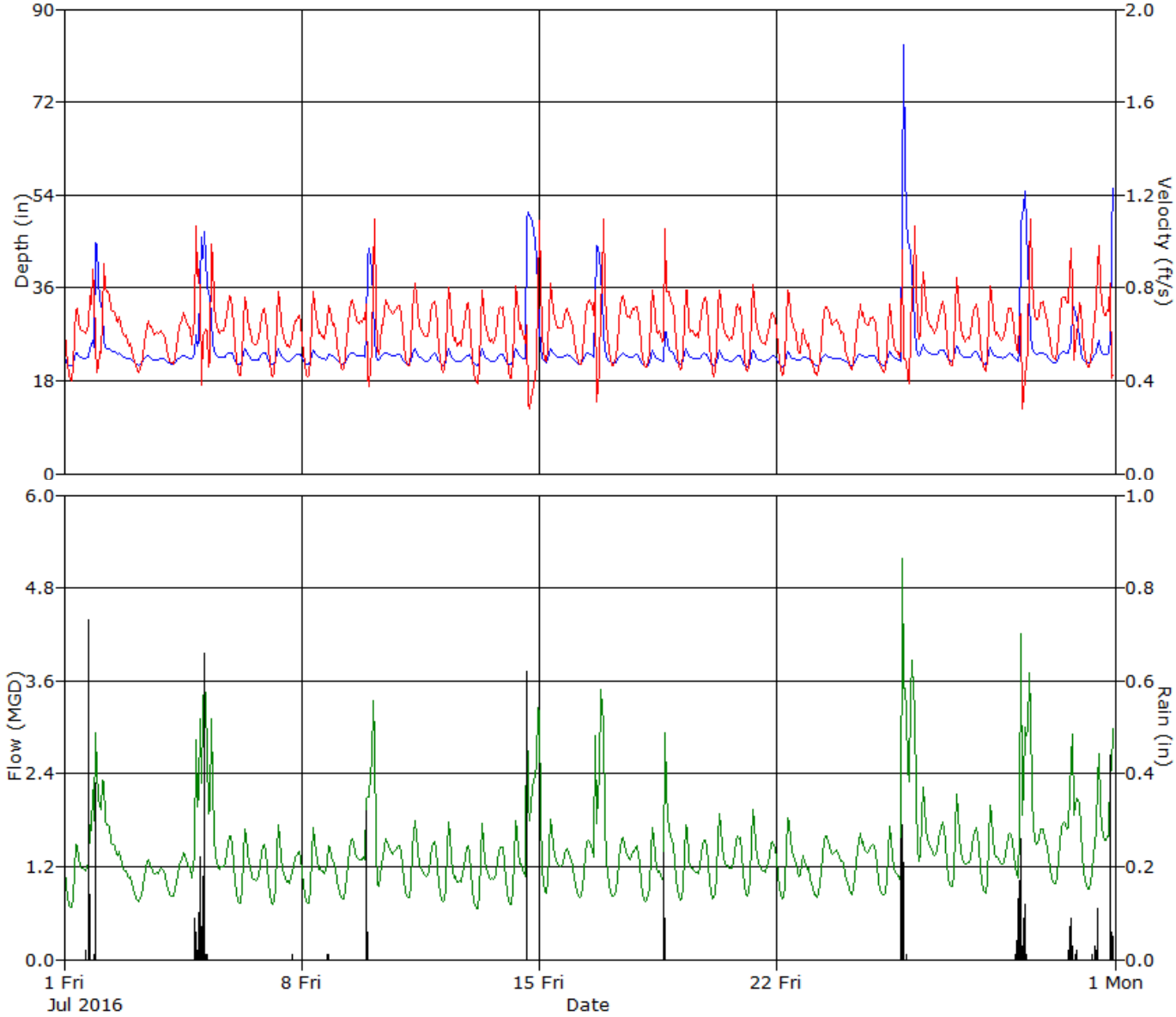
Non Standard

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

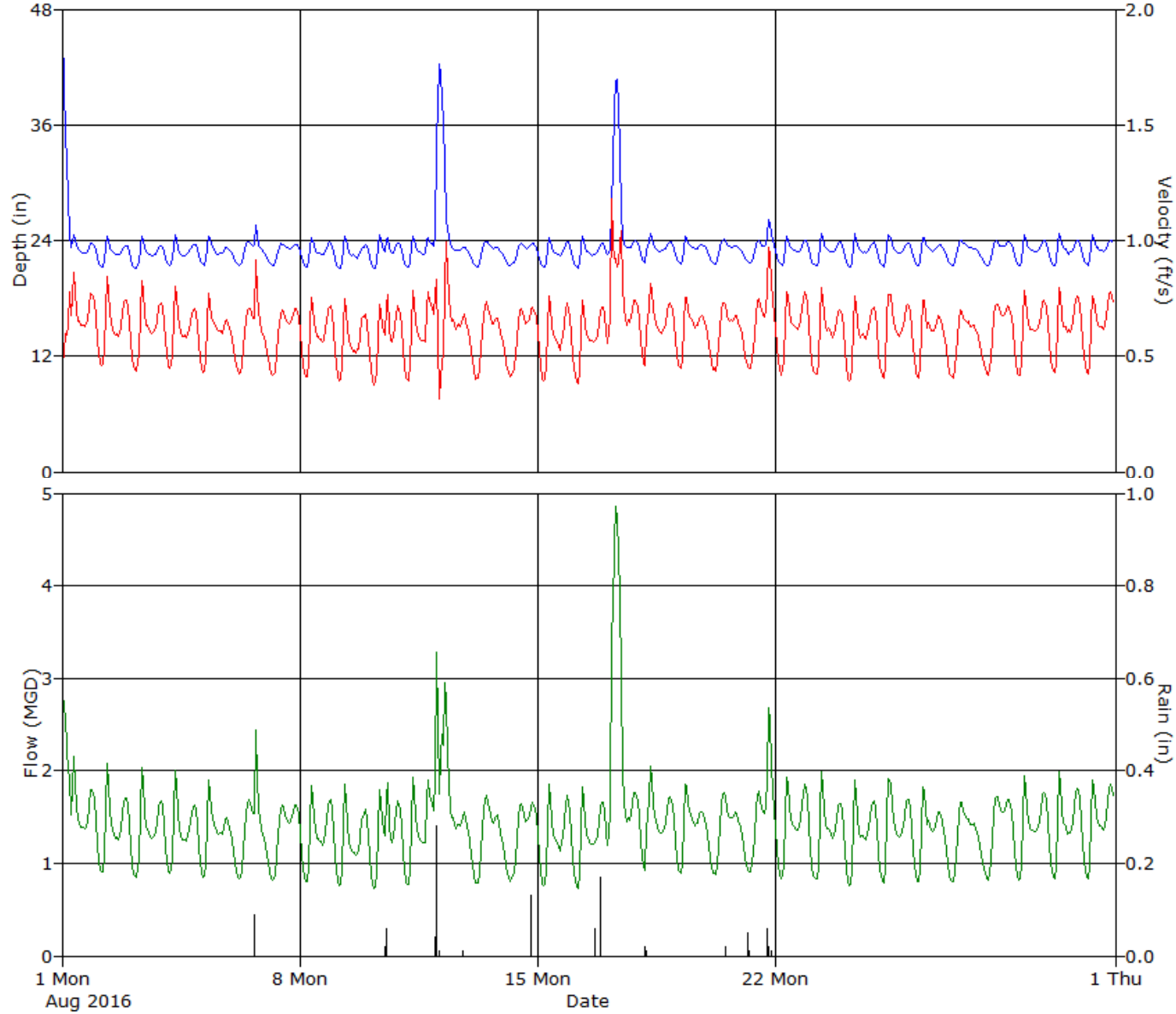
Non Standard

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

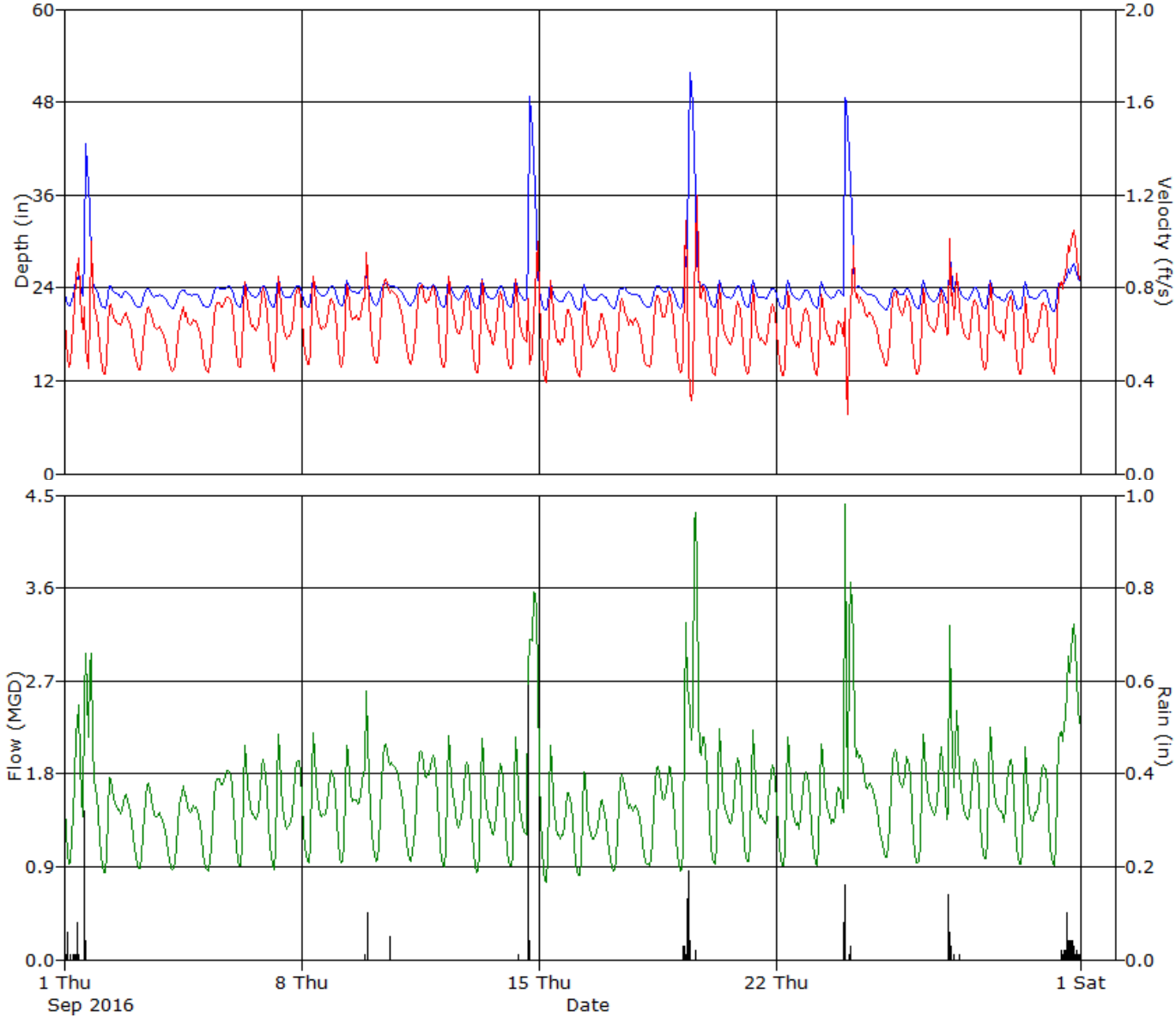
Non Standard

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

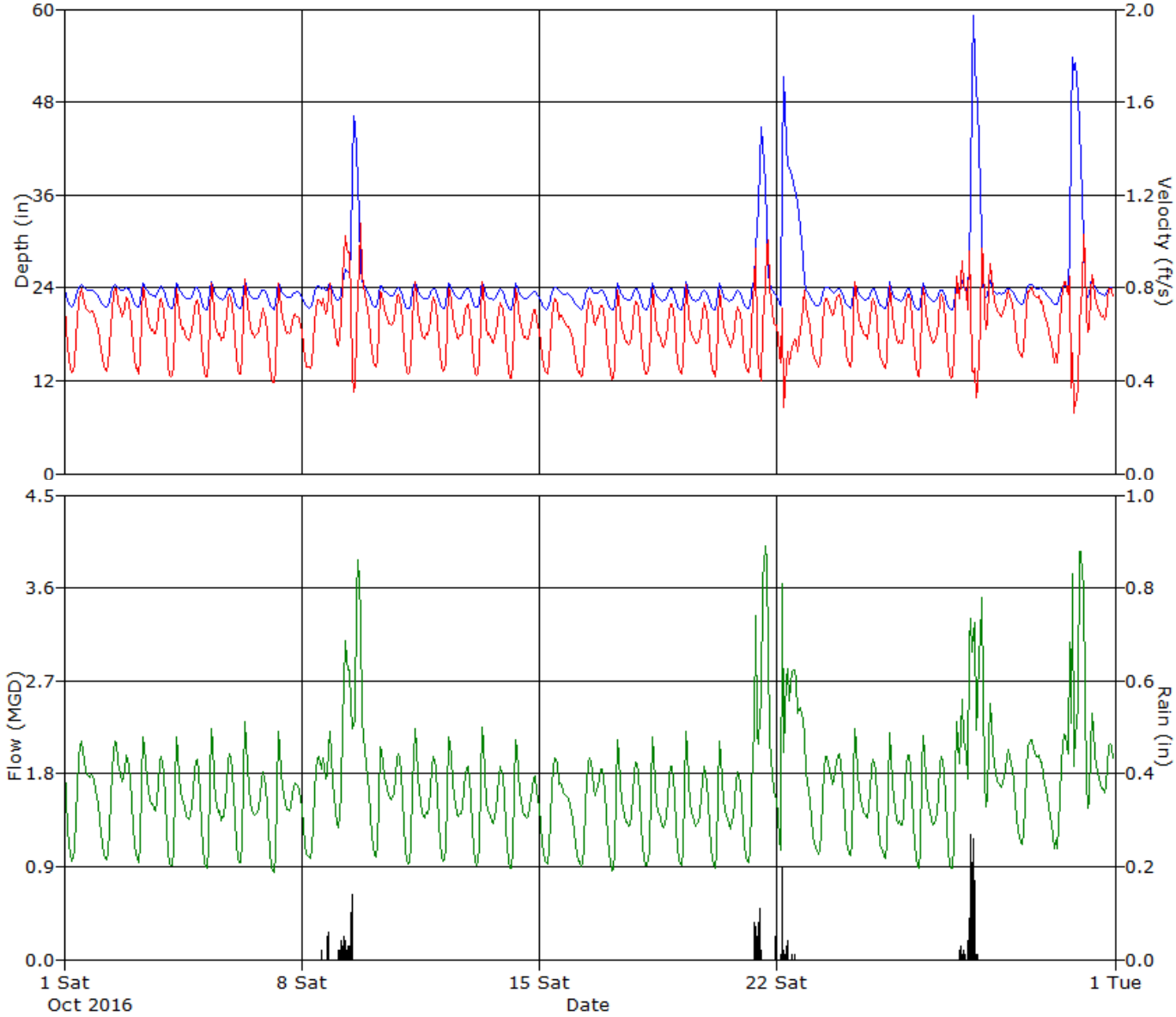
Non Standard

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H3

Flow Monitor

H3

Pipe Height
54.13 in

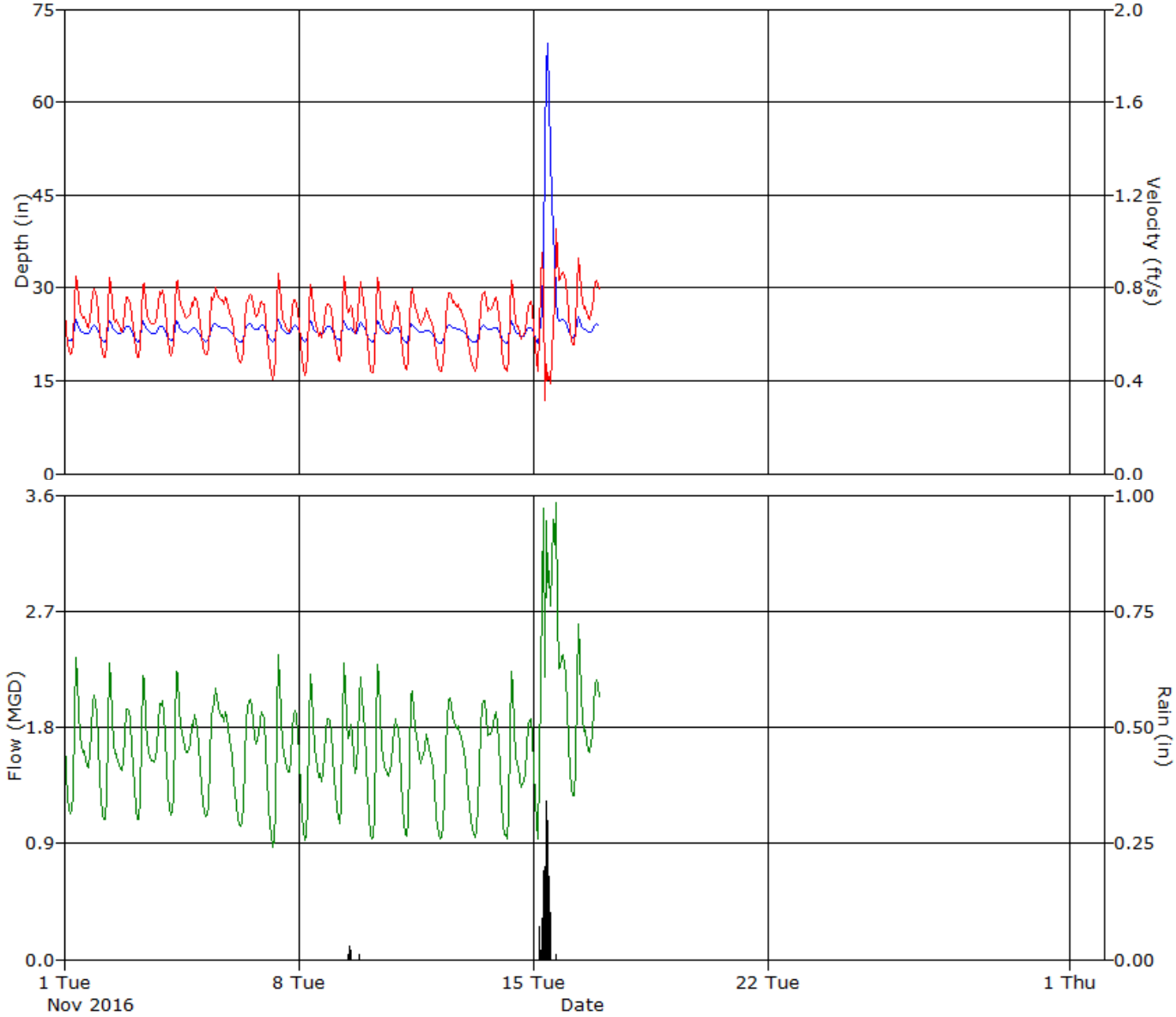
Non Standard

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:55	20.99	08:30	25.12	22.83	04:35	0.38	08:20	0.76	0.56	04:35	0.651	08:20	1.796	1.125	150451	
5/18/2016	05:10	21.11	08:35	25.33	22.97	04:55	0.34	08:55	0.69	0.51	04:55	0.589	08:55	1.650	1.039	138875	
5/19/2016	04:35	21.01	08:40	25.37	22.97	04:30	0.35	08:45	0.72	0.52	04:30	0.598	08:45	1.725	1.069	142878	
5/20/2016	05:05	21.45	08:35	25.34	23.13	05:20	0.37	09:00	0.71	0.50	05:20	0.658	08:50	1.689	1.026	137115	
5/21/2016	05:25	21.45	20:15	25.63	23.36	04:50	0.33	19:40	0.62	0.49	04:50	0.595	20:05	1.503	1.036	138484	0.03
5/22/2016	04:05	21.74	11:45	24.81	23.67	04:15	0.37	12:40	0.62	0.52	04:10	0.673	12:40	1.413	1.113	148846	0.08
5/23/2016	03:50	21.42	08:25	25.48	23.22	05:10	0.29	09:10	0.67	0.50	05:05	0.517	08:55	1.563	1.041	139134	
5/24/2016	03:00	21.49	07:30	27.71	22.97	03:00	0.39	07:35	1.06	0.60	03:00	0.692	07:35	2.918	1.221	163184	0.16
5/25/2016	04:55	20.87	08:10	24.45	22.45	04:35	0.36	08:30	0.81	0.56	04:35	0.607	08:30	1.824	1.098	146760	
5/26/2016	04:45	21.00	08:15	24.43	22.41	04:40	0.37	08:30	0.79	0.56	04:40	0.633	08:15	1.775	1.096	146494	
5/27/2016	03:55	20.82	08:20	23.92	22.35	05:10	0.38	08:35	0.74	0.56	05:00	0.642	08:35	1.592	1.084	144903	
5/28/2016	05:10	20.65	12:15	23.30	22.07	04:50	0.39	11:45	0.72	0.56	04:50	0.641	11:45	1.476	1.053	140784	
5/29/2016	06:00	20.68	11:40	23.05	21.93	04:30	0.40	12:15	0.68	0.54	05:55	0.654	12:15	1.369	1.011	135158	
5/30/2016	01:15	21.68	01:55	96.58	34.63	01:55	0.16	01:35	2.01	0.65	01:15	0.895	01:40	12.879	2.130	284740	1.38
5/31/2016	04:55	21.40	08:25	24.51	22.73	05:05	0.46	08:30	0.87	0.65	05:05	0.818	08:30	1.962	1.291	172521	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2330328	1.65
Avg	23.58	0.55	1.162	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:30	21.06	08:25	24.32	22.52	04:10	0.44	08:35	0.84	0.63	04:10	0.742	08:35	1.880	1.224	163628	
6/2/2016	05:25	21.06	08:15	24.45	22.45	04:35	0.45	08:40	0.85	0.62	04:35	0.779	08:30	1.892	1.212	162040	
6/3/2016	05:10	20.96	08:55	24.18	22.39	04:35	0.43	08:55	0.81	0.61	04:35	0.722	08:55	1.784	1.186	158552	0.03
6/4/2016	05:55	20.89	11:30	23.54	22.38	06:35	0.41	10:40	0.75	0.59	05:40	0.687	11:10	1.565	1.149	153660	0.58
6/5/2016	05:55	20.84	18:55	73.26	34.13	20:40	0.20	18:45	1.92	0.50	06:10	0.696	18:45	13.142	1.742	232876	0.96
6/6/2016	16:05	22.57	00:00	48.49	27.35	00:00	0.33	08:05	1.10	0.66	16:10	1.145	08:05	3.036	1.702	227503	
6/7/2016	04:50	21.45	08:25	24.74	22.78	04:55	0.47	08:15	0.87	0.64	04:55	0.822	08:15	1.989	1.288	172154	
6/8/2016	05:15	21.12	14:50	50.64	27.31	14:05	0.29	13:10	1.07	0.62	04:45	0.751	13:25	3.850	1.621	216671	0.40
6/9/2016	04:35	21.26	08:25	24.84	22.66	04:20	0.42	08:40	0.84	0.61	04:20	0.732	08:30	1.930	1.212	162004	
6/10/2016	05:10	21.11	08:30	24.52	22.54	03:35	0.37	08:30	0.87	0.58	04:35	0.641	08:30	1.958	1.146	153207	
6/11/2016	06:00	21.14	11:20	23.88	22.51	05:25	0.30	11:20	0.73	0.56	05:25	0.513	11:20	1.584	1.099	146916	
6/12/2016	06:00	21.31	12:00	23.75	22.70	05:55	0.37	12:50	0.72	0.55	06:00	0.636	12:50	1.526	1.101	147145	
6/13/2016	05:20	21.15	08:30	24.59	22.66	03:10	0.37	08:40	0.78	0.56	03:50	0.638	08:35	1.776	1.113	148812	
6/14/2016	05:15	21.11	08:10	24.63	22.64	04:00	0.34	08:35	0.77	0.56	04:00	0.576	08:35	1.750	1.115	149118	
6/15/2016	04:55	21.07	08:30	24.76	22.48	04:25	0.42	08:55	0.81	0.59	05:00	0.712	08:30	1.855	1.156	154518	
6/16/2016	05:00	21.12	08:30	29.12	23.04	04:45	0.37	07:30	1.15	0.62	04:45	0.637	07:30	3.273	1.287	172078	0.20
6/17/2016	03:35	21.04	08:35	24.51	22.37	03:25	0.41	08:40	0.81	0.59	03:25	0.704	08:40	1.830	1.143	152835	
6/18/2016	04:55	21.01	12:00	23.41	22.20	04:40	0.38	12:45	0.74	0.58	04:40	0.647	12:45	1.512	1.109	148252	
6/19/2016	06:05	20.76	11:15	23.16	22.07	03:20	0.40	13:05	0.72	0.59	04:30	0.674	10:55	1.462	1.120	149663	
6/20/2016	04:15	20.64	08:35	23.95	22.26	03:50	0.40	08:40	0.82	0.61	03:50	0.660	08:40	1.781	1.163	155537	
6/21/2016	04:15	20.95	08:15	24.38	22.36	05:35	0.40	08:25	0.83	0.60	05:30	0.679	08:25	1.851	1.156	154506	
6/22/2016	05:15	20.63	08:10	24.37	22.31	04:40	0.41	08:15	0.82	0.60	04:55	0.672	08:15	1.821	1.148	153530	
6/23/2016	05:30	20.59	08:40	24.23	22.14	04:40	0.39	08:35	0.79	0.59	04:40	0.642	08:35	1.758	1.115	148993	
6/24/2016	05:30	20.60	08:40	23.73	22.11	05:40	0.40	08:35	0.78	0.60	05:40	0.662	08:35	1.660	1.122	150004	
6/25/2016	06:15	20.73	11:55	23.21	22.06	05:10	0.42	11:00	0.73	0.59	05:10	0.699	11:00	1.485	1.108	148072	
6/26/2016	06:50	20.75	12:30	23.19	22.09	07:00	0.43	21:40	0.74	0.58	07:00	0.713	21:40	1.446	1.099	146916	
6/27/2016	04:30	20.56	23:55	28.24	22.31	04:30	0.34	23:55	1.04	0.58	04:30	0.551	23:55	3.025	1.136	151810	0.18
6/28/2016	16:05	21.93	01:30	42.03	26.15	01:10	0.25	05:10	1.15	0.62	17:45	0.965	00:05	3.353	1.527	204139	0.43
6/29/2016	05:40	21.35	08:15	24.61	22.76	05:25	0.43	08:10	0.80	0.57	05:25	0.752	08:10	1.820	1.138	152176	0.04
6/30/2016	05:25	20.99	08:30	24.41	22.39	05:35	0.36	08:45	0.80	0.57	05:35	0.616	08:45	1.779	1.101	147105	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4884424	2.82
Avg	23.27	0.59	1.218	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:05	20.69	22:30	51.52	24.46	22:30	0.27	22:15	1.22	0.60	05:00	0.651	22:15	7.166	1.346	179951	1.28
7/2/2016	23:55	22.20	00:00	40.05	25.18	02:45	0.35	04:10	0.95	0.66	22:35	1.013	04:10	2.598	1.539	205684	
7/3/2016	05:35	20.95	11:35	22.92	21.99	05:20	0.43	12:20	0.66	0.56	05:20	0.723	12:40	1.311	1.043	139452	
7/4/2016	04:20	21.22	23:55	27.61	22.58	04:25	0.46	23:55	1.18	0.63	04:25	0.799	23:55	3.287	1.252	167316	0.27
7/5/2016	16:05	22.52	03:40	48.76	29.03	01:00	0.31	00:00	1.19	0.66	14:45	1.128	03:25	3.996	1.930	258009	1.15
7/6/2016	04:30	21.11	08:35	24.33	22.49	05:20	0.40	08:40	0.80	0.60	05:20	0.699	08:40	1.781	1.164	155568	
7/7/2016	05:00	21.18	08:35	24.33	22.41	04:35	0.41	08:45	0.80	0.59	04:35	0.711	08:45	1.778	1.140	152352	0.01
7/8/2016	04:50	21.17	08:30	24.09	22.48	04:30	0.41	08:30	0.80	0.60	04:30	0.698	08:30	1.751	1.177	157400	0.02
7/9/2016	05:25	21.18	23:55	44.18	23.40	23:35	0.27	22:50	0.99	0.61	06:15	0.728	22:50	4.059	1.261	168609	0.38
7/10/2016	06:45	21.80	00:05	44.23	25.85	00:00	0.30	04:10	1.28	0.67	07:25	0.923	03:55	3.639	1.624	217138	
7/11/2016	05:30	21.14	08:15	24.16	22.34	04:45	0.45	08:20	0.83	0.63	04:45	0.774	08:20	1.825	1.212	162079	
7/12/2016	04:35	20.99	08:20	24.36	22.21	04:40	0.43	08:25	0.82	0.60	04:40	0.720	08:25	1.835	1.151	153836	
7/13/2016	05:10	20.95	08:25	24.31	22.27	05:10	0.35	08:35	0.81	0.59	05:10	0.592	08:35	1.804	1.135	151699	
7/14/2016	04:15	21.14	16:25	64.98	30.30	16:30	0.17	16:15	1.76	0.54	05:00	0.668	16:20	11.413	1.587	212172	0.62
7/15/2016	05:30	21.44	00:00	32.36	23.06	05:50	0.47	00:30	1.20	0.67	05:50	0.835	00:20	3.471	1.386	185268	
7/16/2016	05:20	21.09	17:05	44.63	26.81	17:05	0.25	16:35	1.30	0.63	06:05	0.792	16:35	6.129	1.646	220053	
7/17/2016	04:55	21.31	12:40	23.32	22.47	04:20	0.45	12:50	0.78	0.64	04:20	0.786	12:40	1.610	1.239	165598	
7/18/2016	05:00	20.70	17:50	28.37	22.86	05:20	0.43	17:25	1.23	0.65	05:20	0.718	17:25	3.393	1.341	179244	0.32
7/19/2016	04:15	21.15	08:30	24.31	22.49	04:25	0.43	08:30	0.82	0.63	04:25	0.744	08:30	1.835	1.219	162954	
7/20/2016	04:20	21.01	08:35	23.97	22.19	04:35	0.41	08:50	0.81	0.61	03:20	0.735	08:50	1.915	1.280	171096	
7/21/2016	04:45	20.65	08:35	23.99	22.12	04:25	0.42	08:35	0.83	0.61	04:25	0.782	08:35	1.985	1.281	171260	
7/22/2016	04:15	20.74	08:45	23.73	22.15	04:15	0.36	08:45	0.81	0.58	04:15	0.680	08:45	1.904	1.221	163276	
7/23/2016	05:50	20.86	11:45	23.07	22.07	05:45	0.39	10:55	0.74	0.59	05:45	0.727	10:55	1.632	1.237	165318	
7/24/2016	06:25	20.82	11:25	23.24	22.22	05:40	0.42	12:30	0.75	0.60	05:40	0.798	12:30	1.674	1.277	170689	
7/25/2016	04:10	20.79	17:45	101.22	31.22	17:50	0.22	17:35	3.55	0.55	04:10	0.699	17:35	25.021	1.789	239206	0.77
7/26/2016	05:45	22.79	00:00	40.49	24.86	05:55	0.56	02:25	1.16	0.71	05:55	1.233	00:50	3.961	1.845	246695	
7/27/2016	05:25	21.67	08:40	24.91	22.95	05:20	0.46	08:35	0.85	0.62	05:20	0.918	08:35	2.170	1.390	185847	
7/28/2016	05:25	21.13	08:45	24.47	22.68	06:00	0.43	09:15	0.82	0.62	05:20	0.833	08:25	2.013	1.352	180795	
7/29/2016	04:20	21.55	08:25	56.92	30.20	06:15	0.22	12:00	1.29	0.65	04:15	0.946	05:15	6.568	2.022	270290	0.86
7/30/2016	05:55	21.38	18:55	32.76	24.66	19:20	0.47	18:00	1.20	0.66	06:20	0.943	18:05	3.872	1.661	221977	0.24
7/31/2016	05:35	21.35	23:15	58.73	25.39	22:45	0.28	21:55	1.21	0.64	06:00	0.874	21:55	6.090	1.627	217319	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5798154	6.64
Avg	24.11	0.62	1.399	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	14:40	22.68	00:00	50.30	26.09	00:00	0.42	05:15	0.89	0.68	16:30	1.341	00:25	3.009	1.802	240888	0.05
8/2/2016	04:50	21.29	08:30	24.58	22.75	04:45	0.45	08:40	0.86	0.63	04:45	0.887	08:40	2.140	1.395	186500	
8/3/2016	05:10	21.11	08:30	24.54	22.64	05:30	0.43	08:15	0.85	0.63	05:30	0.821	08:20	2.093	1.369	183004	
8/4/2016	05:25	21.46	08:35	24.75	22.77	04:30	0.44	08:40	0.84	0.61	04:30	0.867	08:40	2.098	1.358	181477	
8/5/2016	05:05	21.39	08:35	24.43	22.80	04:30	0.42	08:35	0.79	0.60	04:30	0.831	08:35	1.950	1.329	177649	
8/6/2016	05:40	21.34	17:30	25.82	22.98	06:00	0.40	17:35	0.94	0.61	06:00	0.795	17:30	2.523	1.370	183140	0.09
8/7/2016	06:05	21.31	11:30	23.69	22.80	05:10	0.40	20:25	0.73	0.59	05:10	0.794	20:25	1.680	1.319	176291	
8/8/2016	05:15	21.19	08:25	24.45	22.80	04:50	0.41	08:15	0.77	0.59	04:50	0.789	08:15	1.902	1.312	175428	
8/9/2016	05:05	21.03	08:30	24.57	22.61	04:30	0.39	08:20	0.77	0.56	05:05	0.740	08:20	1.911	1.228	164110	
8/10/2016	05:15	20.99	13:55	24.73	22.96	04:55	0.37	14:05	0.83	0.59	05:00	0.705	14:05	2.076	1.331	177965	0.08
8/11/2016	05:45	21.18	18:30	24.70	22.93	05:15	0.39	18:35	0.81	0.60	05:15	0.749	18:35	2.031	1.355	181127	
8/12/2016	23:55	22.69	02:35	42.64	27.01	02:15	0.28	01:20	1.11	0.66	23:40	1.316	01:20	4.032	1.828	244321	0.34
8/13/2016	05:45	21.16	11:45	23.89	22.75	04:20	0.38	12:15	0.74	0.59	06:05	0.754	12:15	1.764	1.298	173495	
8/14/2016	06:05	21.36	21:05	23.74	22.81	06:40	0.40	20:35	0.72	0.59	06:40	0.793	20:35	1.682	1.319	176289	0.13
8/15/2016	05:05	21.17	08:40	24.31	22.75	03:30	0.39	08:40	0.77	0.58	05:05	0.751	08:40	1.885	1.288	172207	
8/16/2016	05:10	21.14	08:30	24.45	22.75	04:55	0.34	08:35	0.79	0.58	04:55	0.663	08:35	1.951	1.280	171104	0.23
8/17/2016	03:20	22.17	08:15	41.02	27.14	03:20	0.52	04:45	1.30	0.78	03:20	1.095	06:45	5.011	2.399	320640	
8/18/2016	04:40	21.69	08:30	24.80	23.22	04:20	0.45	08:45	0.84	0.65	04:25	0.910	08:45	2.105	1.473	196957	0.03
8/19/2016	05:55	21.54	08:55	24.49	23.08	05:20	0.44	09:15	0.79	0.62	05:20	0.870	09:10	1.936	1.402	187436	
8/20/2016	06:05	21.52	12:25	24.21	22.99	04:40	0.42	12:55	0.76	0.61	04:40	0.842	12:55	1.832	1.361	181946	0.02
8/21/2016	06:40	21.66	19:45	26.47	23.31	05:10	0.43	19:50	1.02	0.65	05:10	0.861	19:50	2.858	1.515	202512	0.15
8/22/2016	05:10	21.44	08:35	24.53	23.00	04:30	0.39	08:40	0.81	0.63	04:30	0.777	08:40	2.000	1.419	189759	
8/23/2016	05:10	21.33	08:20	24.79	22.98	04:40	0.36	08:35	0.83	0.61	04:40	0.708	08:35	2.092	1.364	182315	
8/24/2016	05:05	21.18	08:35	24.83	22.90	04:50	0.38	08:50	0.78	0.59	04:50	0.742	08:35	1.963	1.325	177175	
8/25/2016	05:25	21.26	08:35	24.70	22.92	05:35	0.38	08:45	0.79	0.61	05:35	0.740	08:45	1.968	1.364	182377	
8/26/2016	05:35	21.34	08:55	24.49	22.96	05:20	0.39	08:55	0.77	0.60	05:20	0.768	08:55	1.898	1.341	179200	
8/27/2016	06:15	21.34	11:55	24.08	22.83	05:50	0.40	11:25	0.71	0.57	06:10	0.777	11:25	1.702	1.272	170091	
8/28/2016	06:00	21.33	12:20	23.97	22.94	06:25	0.40	13:10	0.74	0.61	06:25	0.793	13:10	1.751	1.363	182233	
8/29/2016	05:30	21.37	08:20	24.61	23.02	04:30	0.41	08:40	0.80	0.62	04:30	0.802	08:30	1.996	1.388	185601	
8/30/2016	05:35	21.33	08:30	24.77	23.03	05:45	0.42	08:45	0.82	0.63	05:30	0.824	08:45	2.052	1.412	188762	
8/31/2016	05:30	21.37	08:35	24.70	23.09	06:00	0.37	21:40	0.80	0.63	06:00	0.730	08:45	1.971	1.436	191833	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5883836	1.12
Avg	23.28	0.62	1.420	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	04:00	21.50	14:55	44.19	26.38	17:30	0.42	14:45	1.42	0.67	04:05	0.893	14:45	7.474	1.872	250246	0.56
9/2/2016	05:15	21.33	08:55	24.33	22.97	04:25	0.41	08:25	0.75	0.62	04:25	0.814	08:25	1.828	1.388	185527	
9/3/2016	05:35	21.43	12:05	23.95	22.76	05:45	0.42	12:45	0.73	0.60	05:45	0.836	12:45	1.730	1.317	175991	
9/4/2016	05:45	21.29	12:40	23.78	22.72	06:10	0.44	12:40	0.73	0.60	05:50	0.857	12:40	1.719	1.311	175227	
9/5/2016	05:40	21.39	21:25	24.19	23.09	06:35	0.43	20:40	0.78	0.64	06:35	0.849	20:40	1.887	1.452	194162	
9/6/2016	05:00	21.44	08:30	24.79	23.16	05:00	0.44	08:35	0.85	0.65	05:00	0.872	08:35	2.138	1.482	198151	
9/7/2016	05:35	21.47	08:25	25.19	23.18	05:20	0.42	08:25	0.86	0.64	05:20	0.837	08:25	2.235	1.470	196558	
9/8/2016	05:15	21.48	08:30	25.20	23.27	05:10	0.45	08:30	0.87	0.65	05:10	0.899	08:30	2.242	1.501	200615	
9/9/2016	05:20	21.60	22:25	26.26	23.54	04:35	0.45	22:30	1.04	0.68	05:05	0.902	22:30	2.865	1.586	212014	0.11
9/10/2016	05:40	21.64	11:45	24.66	23.54	06:05	0.43	12:40	0.89	0.70	06:05	0.868	12:40	2.211	1.630	217836	0.05
9/11/2016	06:05	21.61	12:05	24.64	23.50	07:00	0.46	13:50	0.84	0.69	05:25	0.940	13:50	2.070	1.602	214147	
9/12/2016	05:30	21.45	08:30	25.02	23.14	05:10	0.45	08:40	0.88	0.65	05:10	0.888	08:40	2.241	1.488	198975	0.00
9/13/2016	05:35	21.34	08:25	25.19	23.07	04:20	0.42	08:25	0.85	0.63	04:20	0.816	08:25	2.208	1.431	191359	
9/14/2016	05:25	21.54	18:00	53.41	26.90	18:35	0.36	17:50	1.53	0.64	06:00	0.835	17:50	8.687	1.875	250713	0.64
9/15/2016	05:00	21.11	08:25	24.66	22.73	05:10	0.36	00:00	0.86	0.61	05:10	0.694	00:00	2.140	1.353	180816	
9/16/2016	05:45	21.14	08:40	24.51	22.62	05:25	0.41	09:00	0.76	0.58	05:20	0.795	08:50	1.883	1.277	170656	
9/17/2016	05:55	21.32	13:10	24.02	22.90	06:30	0.41	10:35	0.80	0.61	06:30	0.815	10:35	1.907	1.364	182397	
9/18/2016	06:10	21.42	12:15	24.32	23.14	06:50	0.44	20:45	0.81	0.64	06:50	0.872	20:45	1.928	1.463	195606	
9/19/2016	05:05	21.40	11:30	52.07	29.33	12:05	0.30	16:20	1.29	0.68	05:20	0.823	15:45	4.795	2.160	288794	0.45
9/20/2016	05:00	21.43	08:30	24.99	23.12	05:40	0.42	08:45	0.83	0.61	05:40	0.917	08:35	2.273	1.508	201611	
9/21/2016	05:05	21.49	08:25	25.05	23.05	05:10	0.42	08:15	0.84	0.61	05:10	0.915	08:15	2.315	1.494	199711	
9/22/2016	05:20	21.35	08:30	25.04	22.94	04:30	0.41	08:45	0.80	0.60	04:30	0.879	08:45	2.212	1.463	195620	
9/23/2016	05:15	21.37	08:30	24.81	22.98	04:35	0.41	08:20	0.80	0.59	04:35	0.893	08:20	2.170	1.448	193616	
9/24/2016	23:55	22.73	01:50	57.93	28.37	02:55	0.18	01:10	1.60	0.68	02:55	1.082	01:10	9.554	2.173	290464	0.28
9/25/2016	06:30	21.08	12:20	23.98	22.84	05:25	0.43	12:05	0.81	0.66	05:25	0.914	12:05	2.088	1.592	212842	
9/26/2016	04:30	21.29	08:25	25.00	22.85	03:50	0.42	08:35	0.81	0.63	03:50	0.900	08:35	2.224	1.531	204628	
9/27/2016	02:25	21.57	03:40	28.30	23.72	02:25	0.50	03:10	1.09	0.70	02:25	1.092	03:30	3.485	1.800	240628	0.25
9/28/2016	04:35	21.35	08:30	24.97	22.87	04:35	0.43	09:00	0.84	0.63	04:35	0.935	08:25	2.280	1.544	206361	
9/29/2016	03:30	21.20	08:30	24.86	22.84	05:50	0.41	08:35	0.78	0.61	05:50	0.893	08:35	2.120	1.474	197026	
9/30/2016	05:00	21.00	19:30	27.07	24.32	05:10	0.41	19:20	1.07	0.78	05:10	0.857	19:20	3.331	2.136	285278	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			6307575	2.75
Avg	23.73	0.64	1.573	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	06:05	21.55	12:35	24.42	23.25	05:10	0.41	12:05	0.81	0.65	05:10	0.905	12:05	2.147	1.611	215341	
10/2/2016	05:45	21.41	12:50	24.38	23.17	06:55	0.41	13:00	0.82	0.65	06:55	0.904	13:00	2.181	1.605	214568	
10/3/2016	04:15	21.56	08:40	24.71	23.15	04:00	0.41	08:15	0.83	0.63	04:00	0.896	08:15	2.236	1.566	209332	
10/4/2016	05:45	21.34	08:35	24.75	22.98	05:00	0.41	08:20	0.81	0.61	05:00	0.894	08:50	2.188	1.501	200612	
10/5/2016	05:30	21.16	08:35	24.87	22.92	05:15	0.40	08:30	0.84	0.62	05:15	0.864	08:30	2.294	1.524	203683	
10/6/2016	04:55	21.22	08:35	24.91	22.94	03:55	0.40	08:50	0.86	0.62	05:00	0.874	08:25	2.349	1.521	203292	0.00
10/7/2016	05:25	21.19	08:40	24.73	22.91	05:15	0.38	08:30	0.84	0.61	05:15	0.804	08:30	2.278	1.484	198417	
10/8/2016	05:10	21.41	20:25	24.68	23.16	06:55	0.44	20:15	0.83	0.64	06:55	0.959	20:15	2.254	1.596	213289	0.13
10/9/2016	02:10	22.30	13:25	46.53	28.66	13:15	0.34	18:05	1.20	0.74	02:40	1.248	16:25	4.121	2.394	320088	0.52
10/10/2016	05:30	21.43	08:30	24.35	23.09	04:50	0.44	20:55	0.80	0.65	04:50	0.968	08:45	2.126	1.605	214540	
10/11/2016	04:20	21.20	08:35	24.81	22.92	04:40	0.42	08:30	0.83	0.62	04:40	0.901	08:35	2.270	1.524	203668	0.00
10/12/2016	04:20	21.35	08:40	24.80	23.00	04:50	0.44	08:50	0.83	0.62	04:50	0.948	08:50	2.255	1.529	204391	
10/13/2016	05:25	21.40	08:20	24.93	22.90	04:30	0.42	08:40	0.84	0.61	04:30	0.910	08:40	2.307	1.495	199916	
10/14/2016	05:30	21.17	08:40	24.65	22.82	05:50	0.40	09:05	0.83	0.61	05:50	0.863	09:00	2.228	1.477	197452	
10/15/2016	06:25	21.22	12:10	24.11	22.84	06:30	0.42	12:55	0.78	0.61	06:30	0.903	12:55	2.016	1.481	198042	
10/16/2016	06:55	21.19	12:50	24.13	22.90	06:15	0.40	12:00	0.77	0.61	06:15	0.847	12:40	2.012	1.490	199148	
10/17/2016	04:35	21.15	08:35	24.77	22.78	04:20	0.39	08:10	0.80	0.60	04:20	0.840	08:15	2.158	1.455	194472	
10/18/2016	04:40	21.08	08:35	24.77	22.78	06:00	0.39	08:40	0.81	0.61	06:00	0.849	08:40	2.194	1.466	195960	0.00
10/19/2016	05:10	21.08	08:30	24.89	22.74	05:40	0.41	08:45	0.83	0.61	05:40	0.886	08:45	2.262	1.465	195822	
10/20/2016	04:40	21.06	08:35	24.60	22.73	05:00	0.39	08:50	0.82	0.60	05:00	0.839	08:50	2.190	1.451	193992	
10/21/2016	05:05	21.26	14:40	45.04	27.61	14:55	0.38	17:50	1.23	0.65	05:05	0.906	16:00	5.037	2.072	276966	0.46
10/22/2016	03:35	21.69	05:30	51.56	32.96	05:15	0.25	04:25	1.49	0.57	03:55	1.019	04:25	8.471	2.263	302541	0.33
10/23/2016	05:55	21.55	11:45	24.13	23.12	06:00	0.44	21:05	0.78	0.65	06:00	0.972	21:05	2.027	1.599	213784	
10/24/2016	05:30	21.31	08:40	24.76	22.90	05:10	0.45	08:15	0.85	0.64	05:10	0.976	08:25	2.294	1.548	206928	
10/25/2016	05:50	21.31	08:30	24.80	22.78	05:15	0.45	08:45	0.83	0.62	05:15	0.969	08:45	2.252	1.506	201289	
10/26/2016	05:15	21.06	08:40	24.78	22.72	04:55	0.41	07:50	0.83	0.62	04:55	0.863	08:35	2.224	1.505	201147	
10/27/2016	04:20	21.13	20:30	62.10	29.83	22:35	0.22	17:45	1.08	0.63	04:55	0.864	20:20	4.681	2.038	272474	1.15
10/28/2016	05:45	22.68	00:00	44.93	25.26	00:00	0.45	02:45	1.18	0.74	05:45	1.450	02:30	3.977	2.069	276580	
10/29/2016	05:50	21.80	12:05	24.45	23.37	06:25	0.49	13:00	0.83	0.68	06:25	1.094	13:00	2.214	1.717	229513	
10/30/2016	07:00	21.78	18:20	56.22	31.10	19:05	0.18	16:45	1.21	0.58	06:55	0.970	18:00	8.006	1.976	264193	
10/31/2016	06:00	22.81	00:00	42.43	25.19	00:10	0.57	02:45	1.16	0.75	06:05	1.446	00:05	4.394	2.127	284154	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			6905594	2.59
Avg	24.24	0.63	1.666	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H3, Pipe Height: 54.132 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	05:20	21.50	08:30	25.05	22.98	04:35	0.49	08:40	0.87	0.68	04:35	1.069	08:40	2.407	1.664	222506	
11/2/2016	04:35	21.30	08:45	24.84	22.95	04:55	0.49	08:45	0.88	0.66	04:55	1.058	08:45	2.405	1.617	216228	
11/3/2016	05:15	21.22	08:30	24.74	22.94	04:30	0.48	08:55	0.86	0.67	04:30	1.038	08:55	2.327	1.641	219359	
11/4/2016	05:20	21.44	08:50	24.71	22.93	04:40	0.49	08:55	0.90	0.69	04:40	1.085	08:55	2.441	1.668	223023	
11/5/2016	06:20	21.34	11:30	24.25	22.98	06:15	0.50	12:15	0.85	0.68	06:15	1.087	12:15	2.214	1.675	223873	
11/6/2016	06:05	21.28	12:20	24.29	22.98	05:35	0.46	11:15	0.80	0.65	05:35	0.998	11:15	2.073	1.604	214377	
11/7/2016	05:30	21.27	09:10	24.98	23.00	05:30	0.39	09:45	0.88	0.64	05:30	0.843	09:30	2.410	1.561	208696	
11/8/2016	04:20	21.33	08:25	24.78	22.97	04:50	0.42	08:30	0.84	0.63	04:50	0.905	08:30	2.288	1.546	206649	
11/9/2016	05:10	21.50	08:35	24.75	23.18	06:05	0.45	08:25	0.88	0.67	06:05	1.007	08:25	2.379	1.667	222867	0.07
11/10/2016	04:35	21.30	08:30	24.85	22.88	04:50	0.42	08:05	0.86	0.63	04:50	0.898	08:50	2.352	1.546	206669	
11/11/2016	05:30	21.02	08:50	24.33	22.77	04:50	0.44	08:45	0.83	0.64	05:15	0.927	08:45	2.184	1.551	207339	
11/12/2016	05:45	21.00	12:15	24.01	22.72	05:15	0.43	13:10	0.80	0.64	05:45	0.905	12:00	2.051	1.544	206348	
11/13/2016	07:10	21.16	12:45	23.98	22.79	06:35	0.42	13:15	0.80	0.64	06:35	0.897	13:15	2.057	1.559	208357	
11/14/2016	04:55	21.07	08:40	24.69	22.66	04:50	0.43	08:45	0.85	0.63	04:50	0.910	08:45	2.293	1.503	200959	
11/15/2016	04:05	21.04	09:40	74.77	33.99	09:00	0.26	06:45	1.15	0.68	04:00	0.898	09:35	5.521	2.441	326370	1.50
11/16/2016	05:00	21.95	08:25	25.36	23.40	04:45	0.54	08:40	0.94	0.73	04:45	1.238	08:25	2.648	1.823	243545	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3557164	1.57
Avg	23.63	0.66	1.663	

Site Commentary

Site Information

H4	
Pipe Dimensions (in.)	H-4 (55.75 in H, 84.00 in W)
Silt (in.)	1.50

Overview

A review of the hydrograph and scattergraph for H4 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

The following rain events velocities were estimated using this location's back-water hydraulic curve: 7/1, 7/10, 7/14, 7/16, 8/12, 8/17, 9/14, 9/19, 9/24, 10/21, 10/22,& 10/30.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	9.51	0.81	0.785
Minimum	6.65	0.00	0.000
Maximum	87.89	1.99	14.889
Time of Minimum	6/23/2016 5:20 AM	5/30/2016 2:15 AM	5/30/2016 2:15 AM
Time of Maximum	7/25/2016 5:45 PM	9/1/2016 2:45 PM	9/1/2016 2:50 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Quantity (MGD)	100

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a division of ADS LLC. HOBOKEN, NJ

Site Report

FM Initials: MEJ

Project Name: NHSA

Site Name:	H4	Meter Type:	TRITON+	Monitor S/N:	60824	Manhole #:	H4-04-010
Address / Location:	4TH STREET WEST AT RIVER STREET(IN SIDEWALK)			Map Page #:		N3	
				Pipe Height:		55.75 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		84 Inches	
				I.P. Address		107.80.25.35	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 7, 2016	10:20 AM	Manhole Depth:	23 Feet	
Site Hydraulics:	SLOW, SMOOTH FLOW		Manhole Material / Condition:	PC	Fair
			Active Drop Connections?	No	
			Pipe Material / Condition:	Concrete	
			Mini System Character:	COMMERCIAL	RESIDENTIAL
			Telephone Information:		
Depth of Flow (Wet Dof):	7.13 +/-		Access Pole #:	N/A	
Range (Air Dof):	47.63 +/-		Distance From Manhole:	N/A Feet	
Peak Velocity:	0.89 fps		Road Cut Length:	N/A Feet	
Silt:	1.5 Inches		Trench Length:	N/A Feet	

Other Information:

N 40° 44.453' W 74° 01.657'

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station	X			800'
Surcharge Height:	Not evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		Regulator	100'

Additional Site Information / Comments:

UPSTREAM INSTALLATION. Photos affected by high moisture atmosphere.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H4 **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

*** Site Classification**

	Class	*Description*
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		***Reviewed/Approved***	
Field Mgr Name:	M. JOHNSON	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/7/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

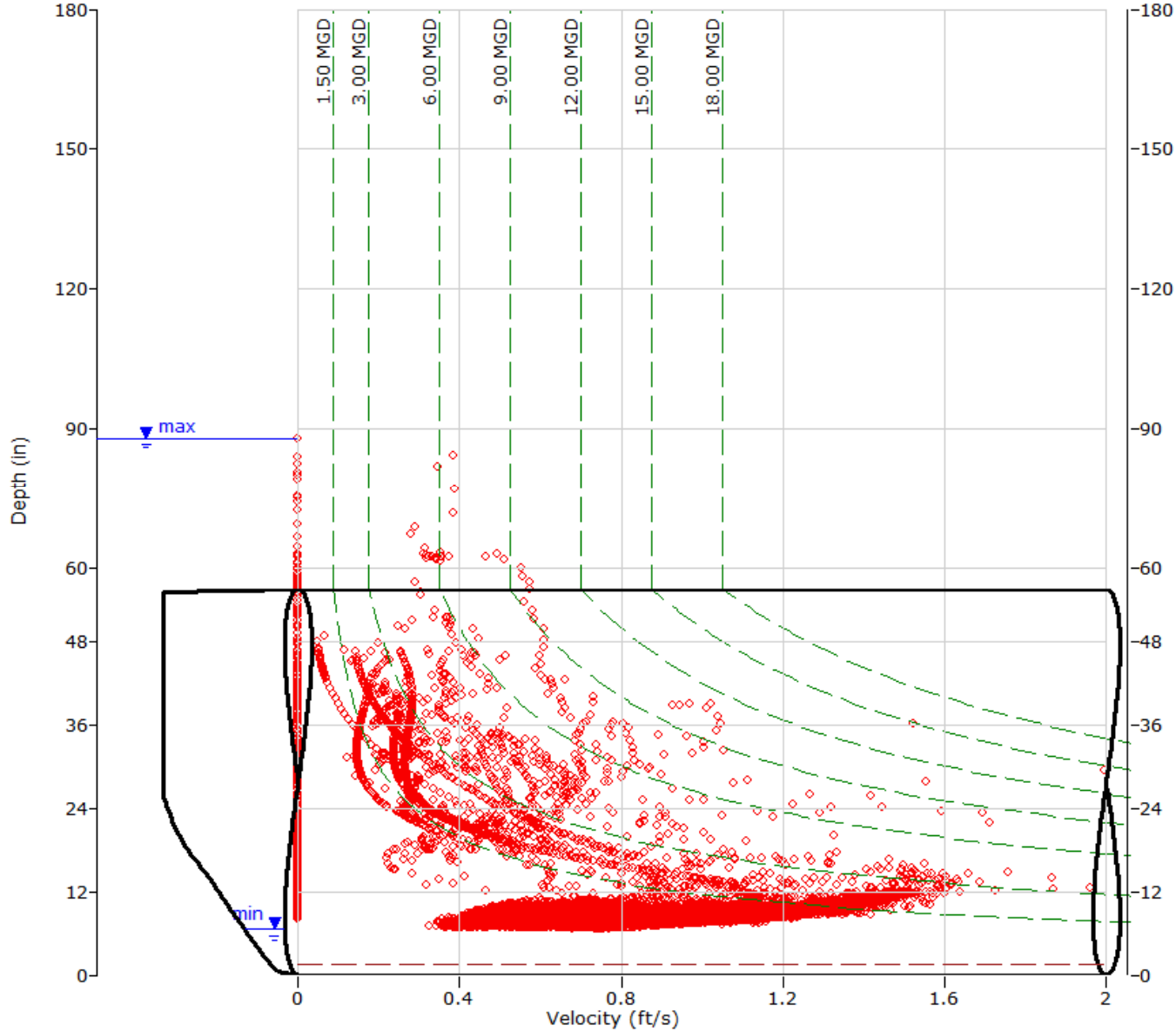
Non Standard

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

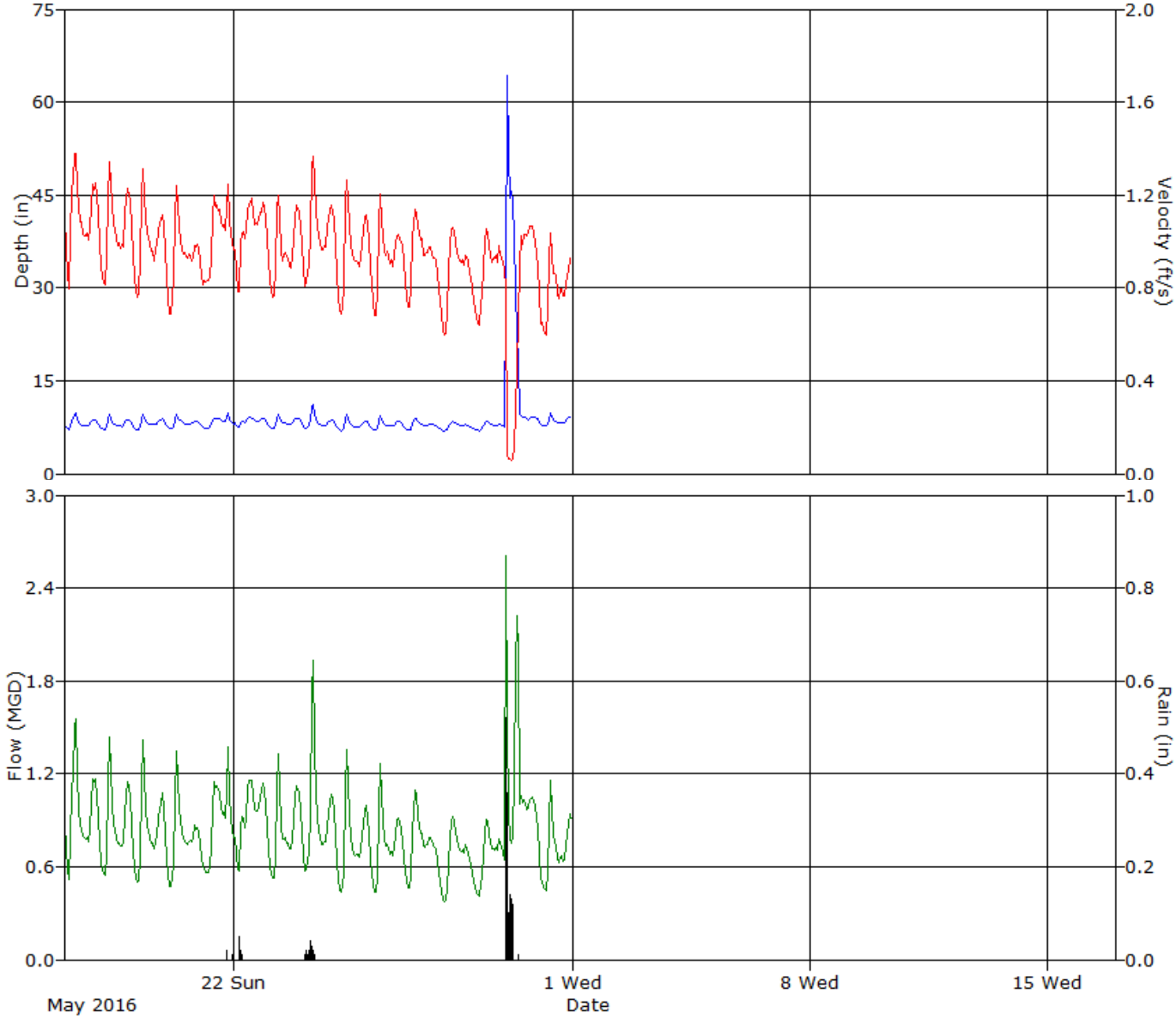
Non Standard

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

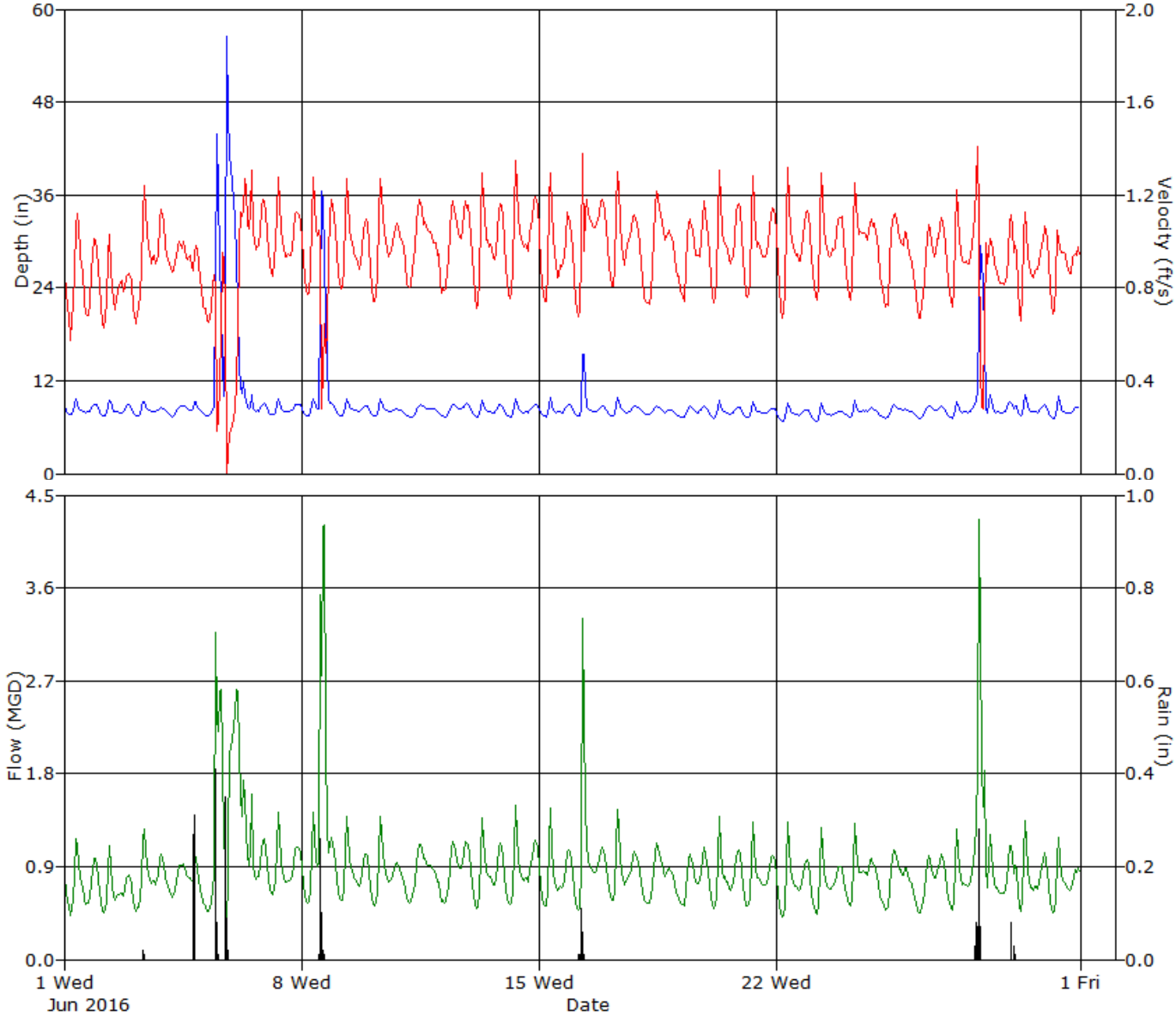
Non Standard

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

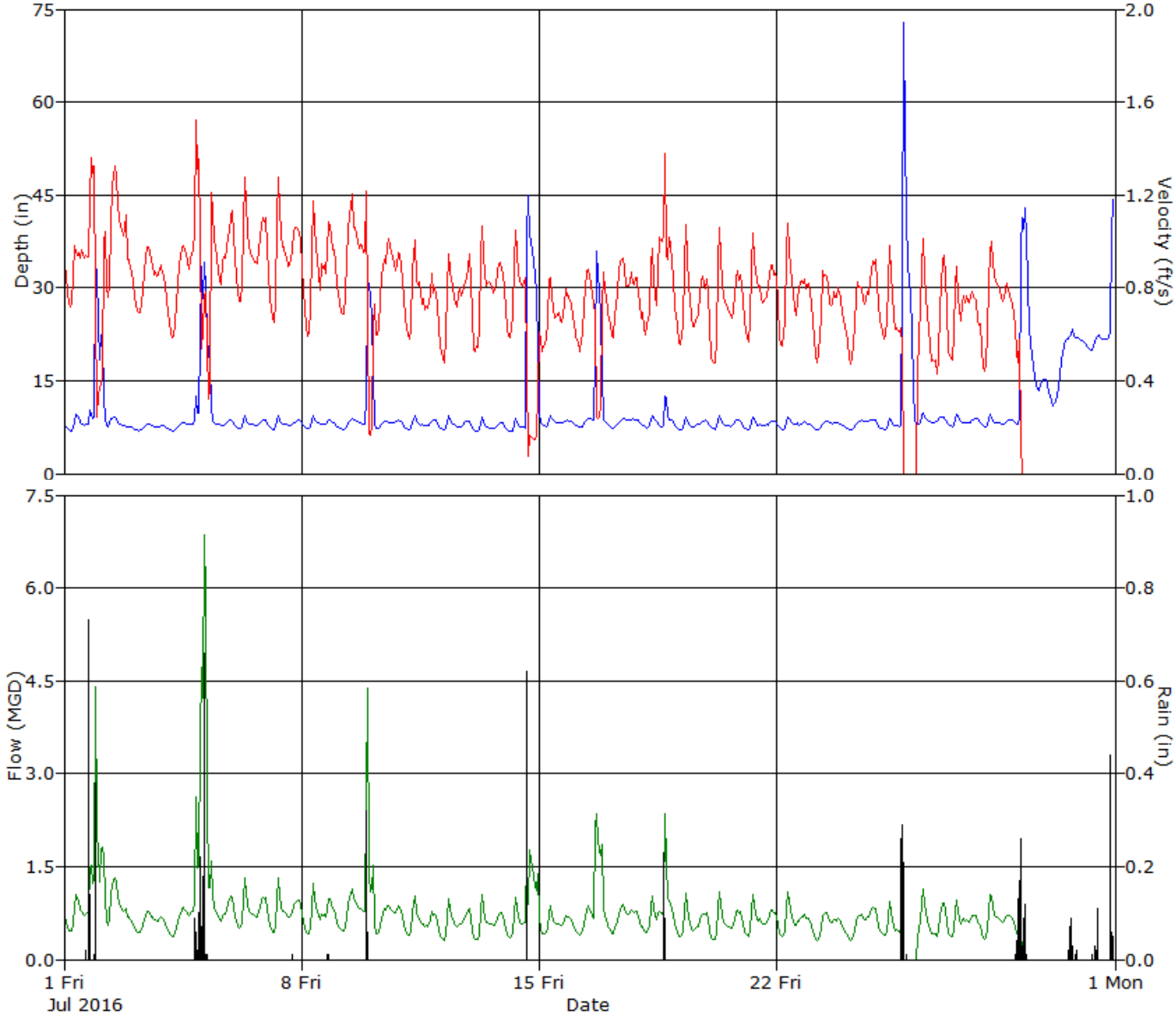
Non Standard

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

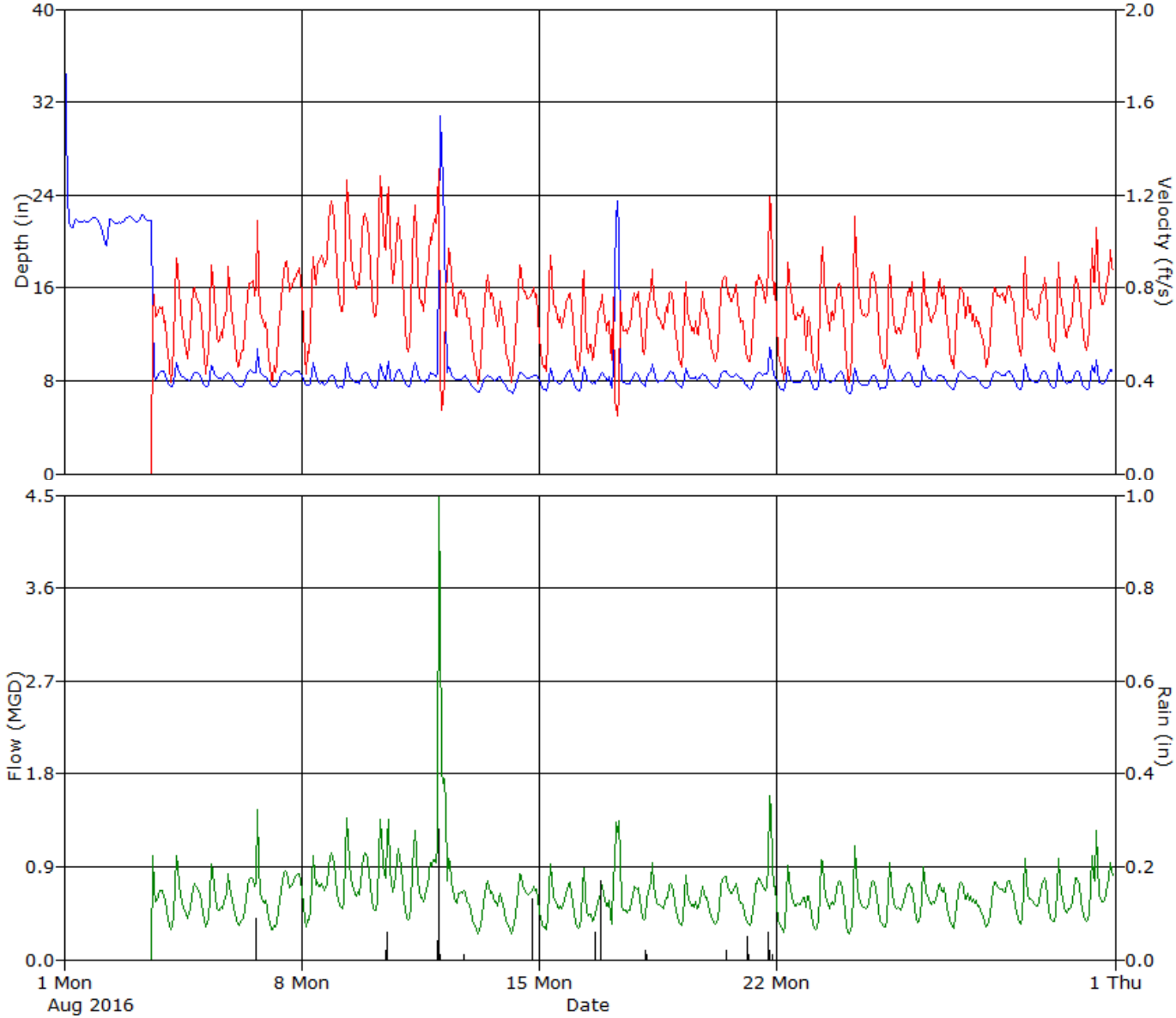
Non Standard

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

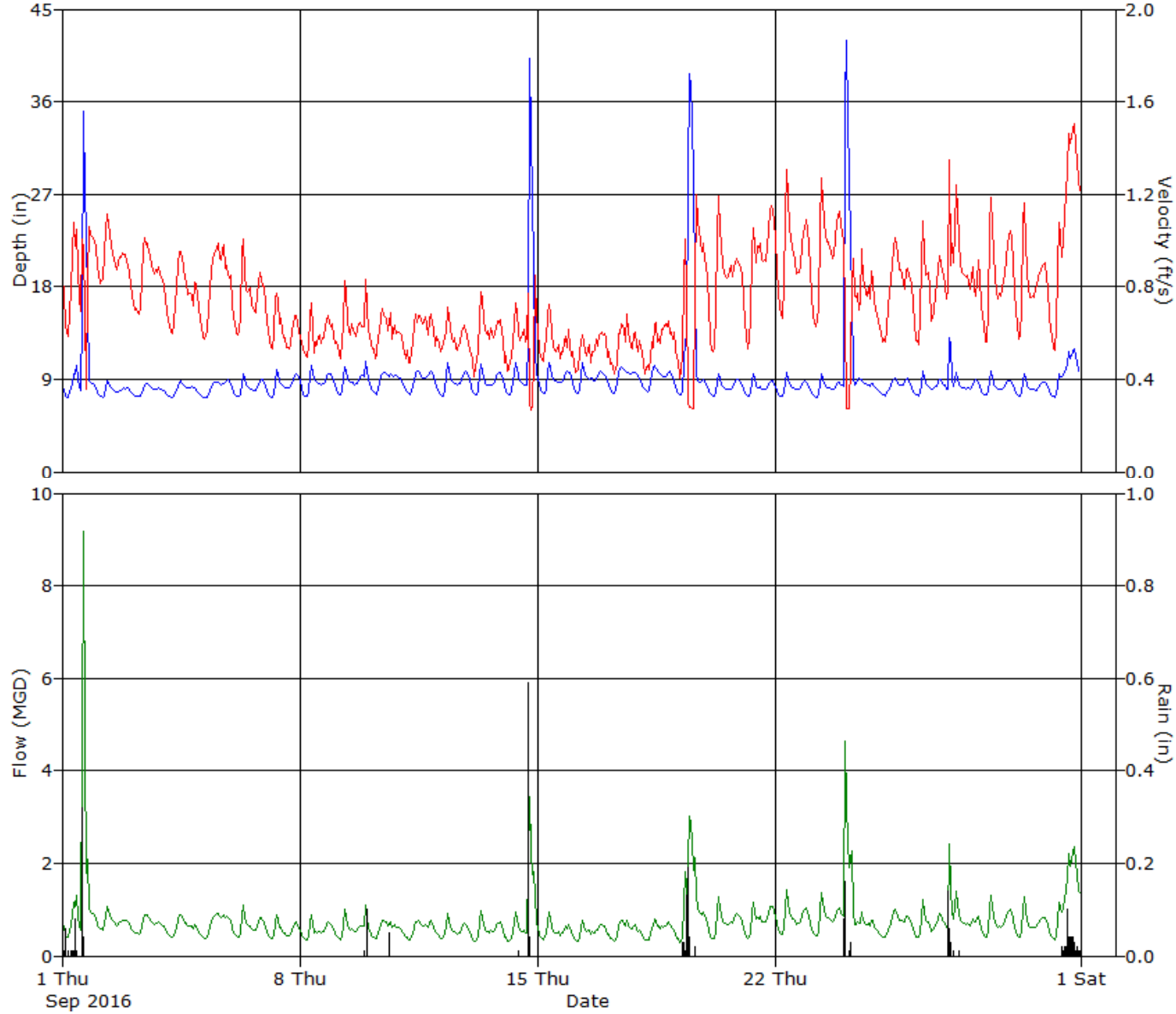
Non Standard

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

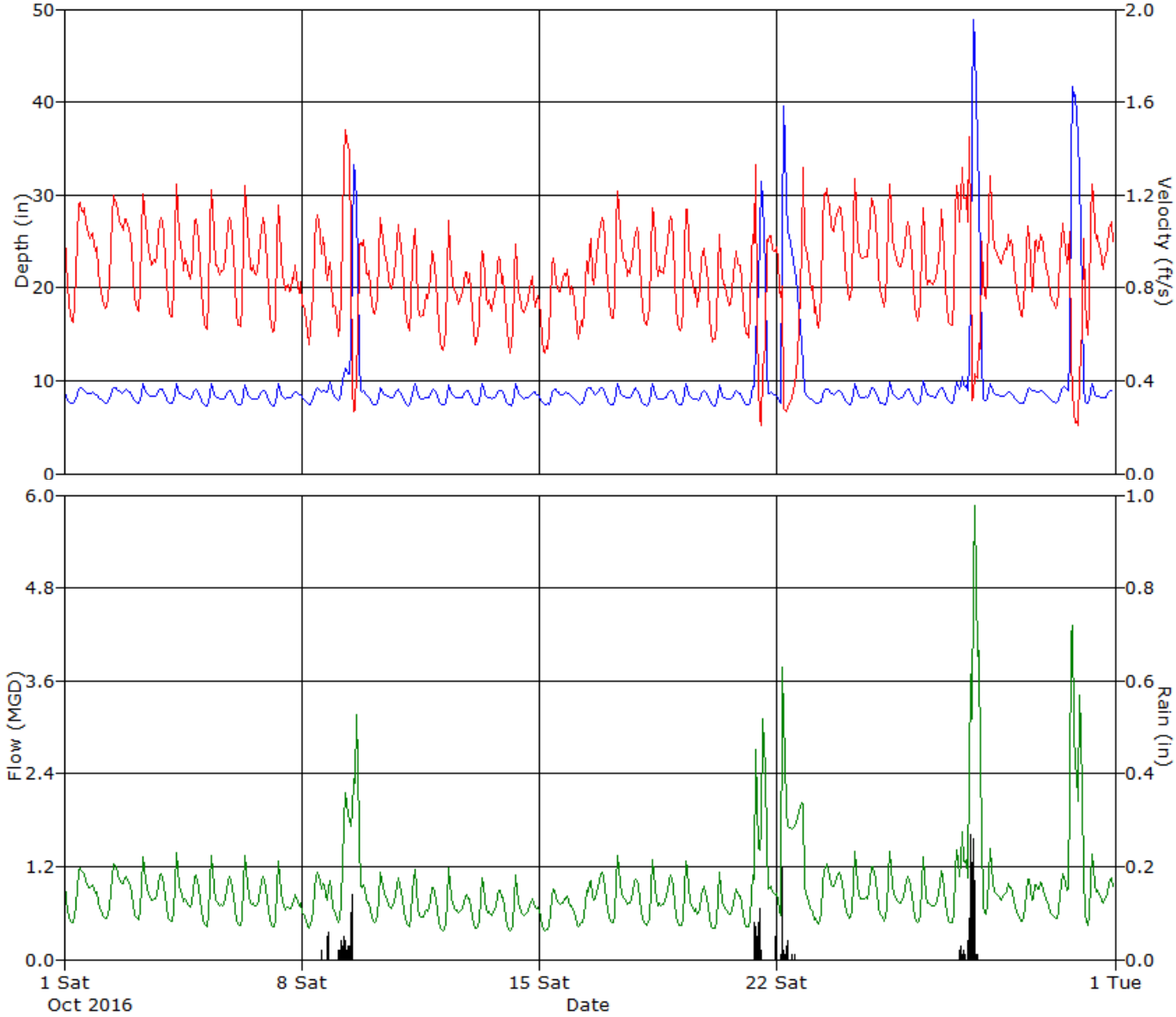
Non Standard

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H4

Flow Monitor

H4

Pipe Height
55.75 in

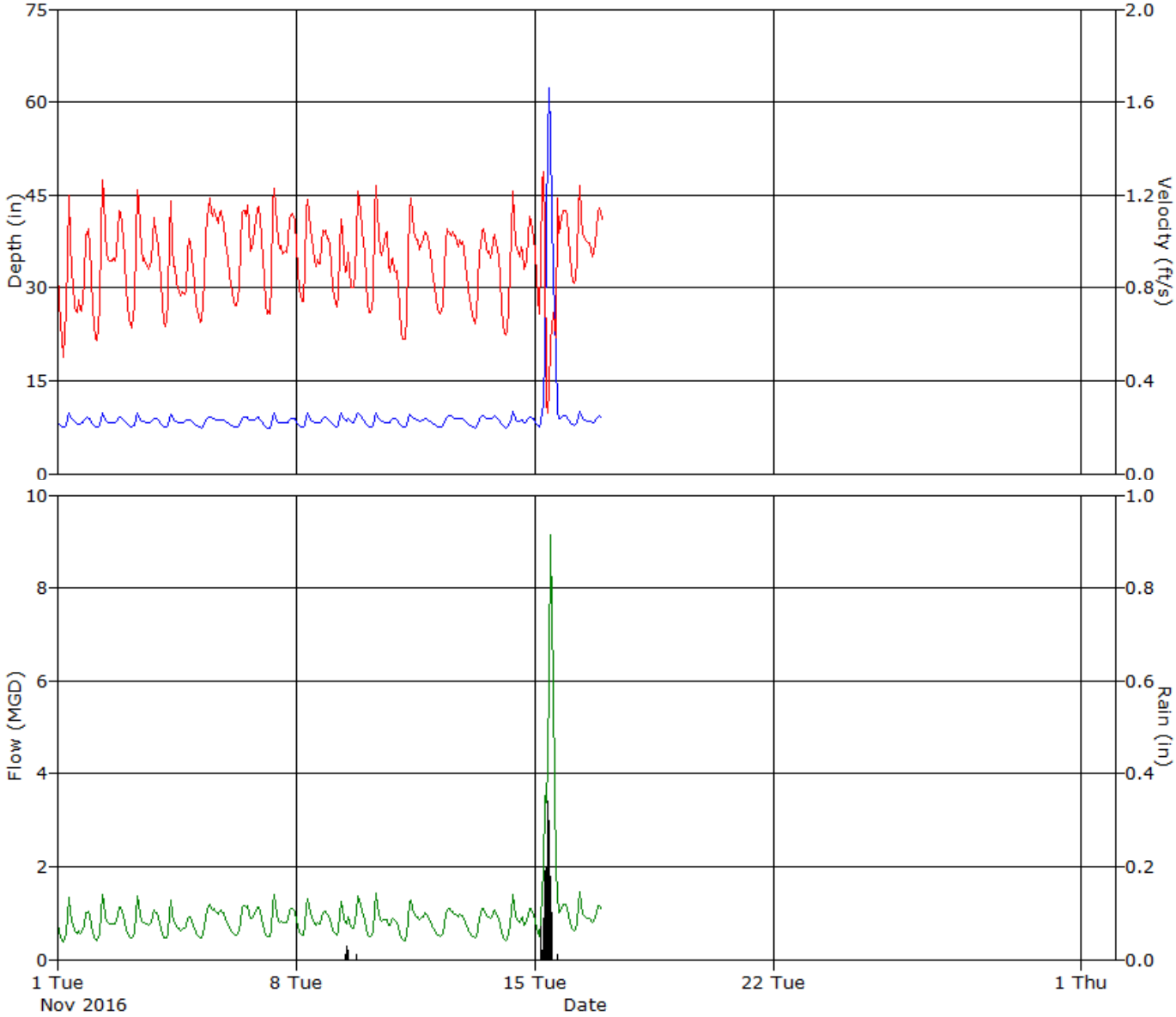
Non Standard

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	03:25	7.01	08:00	10.06	8.22	03:45	0.78	07:40	1.44	1.12	03:30	0.504	08:00	1.692	0.960	128303	
5/18/2016	04:55	7.09	08:30	9.60	8.05	05:15	0.77	08:35	1.39	1.06	05:25	0.519	08:35	1.517	0.874	116874	
5/19/2016	04:45	7.09	08:25	9.59	8.13	04:45	0.75	08:25	1.35	1.01	04:45	0.489	08:25	1.464	0.847	113226	
5/20/2016	04:10	7.17	08:30	9.63	8.15	03:40	0.66	08:40	1.27	0.94	03:40	0.446	08:40	1.390	0.791	105698	
5/21/2016	06:35	7.23	20:20	9.85	8.30	02:45	0.79	20:00	1.30	1.01	06:15	0.551	20:10	1.465	0.884	118237	0.03
5/22/2016	03:55	7.46	11:30	9.15	8.51	04:05	0.75	13:40	1.20	1.05	04:05	0.534	12:50	1.195	0.948	126767	0.08
5/23/2016	04:05	7.30	08:20	9.74	8.26	04:45	0.74	08:25	1.25	0.97	04:40	0.511	08:25	1.390	0.836	111699	
5/24/2016	02:55	7.35	08:10	11.72	8.39	02:55	0.78	07:50	1.41	1.04	02:55	0.541	08:10	2.093	0.937	125293	0.16
5/25/2016	04:10	6.97	08:30	9.56	7.92	05:25	0.66	08:30	1.29	0.96	04:25	0.428	08:30	1.394	0.775	103586	
5/26/2016	04:50	6.97	08:25	9.44	7.94	04:50	0.65	07:40	1.23	0.94	04:50	0.414	08:15	1.294	0.759	101427	
5/27/2016	05:00	6.98	09:00	9.02	7.86	05:50	0.69	09:05	1.21	0.94	05:50	0.446	09:05	1.187	0.745	99529	
5/28/2016	05:05	6.86	11:00	8.45	7.67	05:20	0.57	11:05	1.11	0.87	05:20	0.361	11:05	0.971	0.660	88206	
5/29/2016	06:10	6.90	11:35	8.42	7.67	06:05	0.59	11:15	1.08	0.87	06:05	0.368	11:15	0.930	0.661	88305	
5/30/2016	01:00	7.52	01:55	84.25	21.36	02:15	0.00	01:30	1.48	0.69	02:15	0.000	02:00	6.655	1.177	157370	1.38
5/31/2016	04:40	7.63	08:15	9.74	8.45	05:35	0.55	08:00	1.06	0.80	05:35	0.412	08:10	1.184	0.714	95357	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1679877	1.65
Avg	8.99	0.95	0.838	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	05:35	7.60	08:20	9.69	8.33	04:05	0.52	10:00	1.19	0.84	04:05	0.386	08:35	1.263	0.736	98378	
6/2/2016	04:55	7.46	08:40	9.58	8.23	04:25	0.59	08:00	1.09	0.80	04:25	0.428	08:40	1.142	0.683	91350	
6/3/2016	03:40	7.49	08:40	9.48	8.22	03:15	0.60	08:50	1.35	0.93	03:15	0.440	08:50	1.418	0.797	106533	0.03
6/4/2016	05:35	7.28	20:40	9.61	8.26	05:20	0.84	21:30	1.07	0.93	05:20	0.584	20:50	1.117	0.796	106408	0.58
6/5/2016	05:35	7.42	19:00	61.41	21.09	18:50	0.00	11:25	1.86	0.57	18:50	0.000	11:35	6.457	1.284	171614	0.96
6/6/2016	16:50	7.87	00:00	36.42	12.73	00:00	0.22	12:50	1.52	0.98	17:05	0.737	03:00	2.680	1.394	186403	
6/7/2016	04:25	7.52	08:35	9.79	8.35	04:50	0.84	08:40	1.29	1.01	04:45	0.612	08:35	1.452	0.885	118277	
6/8/2016	04:00	7.40	14:55	37.64	12.88	14:50	0.25	13:10	1.72	0.90	04:20	0.541	13:35	4.813	1.445	193159	0.40
6/9/2016	04:50	7.46	08:25	9.66	8.32	05:25	0.78	08:15	1.30	0.98	05:25	0.560	08:20	1.421	0.857	114572	
6/10/2016	05:15	7.37	08:35	9.68	8.20	04:00	0.72	08:35	1.32	0.98	03:40	0.514	08:35	1.456	0.837	111840	
6/11/2016	05:15	7.22	11:35	8.91	8.16	05:15	0.78	11:20	1.24	1.00	05:15	0.528	11:20	1.190	0.843	112635	
6/12/2016	05:55	7.27	12:00	9.06	8.29	03:55	0.74	11:25	1.22	1.01	05:55	0.525	11:25	1.193	0.875	116937	
6/13/2016	05:00	7.28	08:35	9.58	8.21	05:15	0.69	08:25	1.33	1.00	05:15	0.472	08:35	1.438	0.851	113707	
6/14/2016	05:05	7.13	08:30	9.77	8.21	04:55	0.74	08:20	1.42	1.02	05:05	0.495	08:20	1.586	0.875	117029	
6/15/2016	05:00	7.34	08:30	9.87	8.21	05:45	0.71	08:40	1.35	0.96	05:45	0.501	08:40	1.540	0.822	109919	
6/16/2016	05:15	7.37	07:55	16.86	8.86	04:20	0.66	07:15	1.56	1.03	04:20	0.468	07:30	3.571	1.040	139022	0.20
6/17/2016	05:00	7.36	08:35	9.88	8.27	05:45	0.79	08:30	1.36	1.01	05:00	0.554	08:30	1.544	0.874	116889	
6/18/2016	05:40	7.60	11:25	8.77	8.14	06:20	0.69	11:25	1.31	0.98	06:20	0.516	11:25	1.230	0.816	109036	
6/19/2016	05:15	7.20	11:00	8.83	8.02	06:45	0.69	21:40	1.25	0.96	06:45	0.478	21:40	1.163	0.784	104832	
6/20/2016	05:10	7.17	08:30	9.56	8.02	04:40	0.72	08:05	1.47	0.99	04:40	0.482	08:05	1.538	0.813	108747	
6/21/2016	04:50	7.20	08:25	9.40	8.03	03:45	0.74	08:15	1.33	0.99	04:50	0.503	08:30	1.371	0.814	108847	
6/22/2016	05:00	6.73	08:25	9.27	7.77	04:20	0.66	08:10	1.35	0.97	04:20	0.401	08:20	1.383	0.763	101946	
6/23/2016	05:20	6.65	08:25	9.09	7.68	05:20	0.73	08:40	1.32	0.99	05:20	0.431	08:40	1.315	0.756	101006	
6/24/2016	04:15	7.34	08:20	9.46	8.09	05:00	0.71	08:50	1.28	1.01	05:00	0.498	08:25	1.345	0.834	111510	
6/25/2016	05:10	7.19	11:50	8.88	8.04	07:05	0.68	12:25	1.16	0.95	07:05	0.466	11:00	1.088	0.785	104880	
6/26/2016	06:50	7.17	12:05	8.86	8.07	05:45	0.64	21:15	1.18	0.92	05:45	0.431	21:15	1.088	0.760	101569	
6/27/2016	05:45	7.17	23:55	13.56	8.24	05:05	0.70	23:50	1.59	0.97	05:05	0.466	23:55	3.078	0.848	113305	0.18
6/28/2016	06:00	7.66	01:30	29.92	11.74	03:35	0.27	00:00	1.57	0.85	16:25	0.611	00:55	5.817	1.193	159458	0.43
6/29/2016	05:35	7.37	08:40	10.26	8.41	05:35	0.64	08:10	1.17	0.92	05:35	0.447	08:10	1.393	0.816	109037	0.04
6/30/2016	04:40	7.04	08:35	10.19	8.11	04:45	0.67	08:05	1.09	0.90	04:40	0.437	08:20	1.277	0.754	100738	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3559584	2.82
Avg	9.04	0.95	0.888	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	05:40	6.91	22:30	43.15	10.28	23:30	0.24	22:10	1.62	0.92	05:30	0.443	22:15	10.296	1.042	139298	1.28
7/2/2016	07:05	7.50	00:00	27.57	10.60	00:00	0.26	10:45	1.34	0.94	23:50	0.523	04:10	2.592	1.048	140128	
7/3/2016	05:00	6.96	12:05	8.05	7.51	06:20	0.67	12:35	1.08	0.84	06:20	0.428	12:35	0.864	0.615	82218	
7/4/2016	05:20	6.91	21:20	13.80	8.05	06:30	0.57	21:05	1.64	0.90	06:30	0.363	21:10	3.100	0.787	105187	0.27
7/5/2016	18:10	7.72	03:45	36.48	14.18	06:55	0.29	00:05	1.69	0.87	15:40	0.604	03:50	7.903	1.832	244958	1.15
7/6/2016	03:35	7.27	08:25	9.37	8.06	04:55	0.73	08:20	1.30	0.97	04:50	0.501	08:20	1.359	0.803	107325	
7/7/2016	04:30	7.15	08:25	9.34	8.02	05:10	0.62	08:20	1.31	0.94	05:10	0.419	08:20	1.365	0.775	103580	0.01
7/8/2016	05:35	7.18	08:30	9.45	8.11	04:45	0.57	08:20	1.22	0.89	04:50	0.384	08:25	1.281	0.744	99495	0.02
7/9/2016	06:25	7.12	23:50	31.72	9.04	23:55	0.32	22:40	1.96	0.93	06:10	0.443	22:50	8.451	0.992	132611	0.38
7/10/2016	05:55	7.28	00:00	31.69	10.97	00:15	0.12	13:50	1.10	0.77	05:40	0.400	00:00	2.641	0.816	109058	
7/11/2016	05:05	7.06	08:25	9.37	7.99	05:55	0.55	08:15	1.05	0.76	04:55	0.368	08:15	1.094	0.618	82562	
7/12/2016	05:15	7.02	08:25	9.34	7.91	05:00	0.46	08:10	0.97	0.75	05:00	0.299	08:25	1.008	0.600	80188	
7/13/2016	04:05	6.79	08:25	9.10	7.64	03:20	0.42	07:55	1.10	0.79	03:20	0.261	08:30	1.082	0.602	80465	
7/14/2016	03:50	6.76	16:30	57.13	16.42	16:35	0.00	16:15	1.53	0.59	16:35	0.000	16:25	5.852	0.847	113170	0.62
7/15/2016	06:00	7.59	00:00	12.69	8.37	02:45	0.45	08:10	0.88	0.69	02:45	0.352	00:00	1.199	0.601	80311	
7/16/2016	06:00	7.52	17:05	37.42	12.81	18:20	0.24	16:35	1.32	0.64	05:10	0.351	16:35	6.973	0.957	127881	
7/17/2016	05:25	7.34	12:30	8.92	8.32	04:35	0.56	11:35	0.95	0.79	04:35	0.391	12:20	0.910	0.683	91254	
7/18/2016	05:20	7.36	17:40	14.08	8.60	04:00	0.57	17:15	1.54	0.87	04:30	0.411	17:30	3.010	0.822	109949	0.32
7/19/2016	04:25	7.10	08:35	9.17	7.95	04:40	0.53	08:25	1.13	0.74	04:40	0.352	08:25	1.130	0.600	80155	
7/20/2016	05:35	7.14	08:25	9.37	8.03	03:45	0.44	08:25	1.09	0.73	03:45	0.293	08:25	1.137	0.606	81071	
7/21/2016	05:30	7.10	08:25	9.25	8.00	05:35	0.56	08:40	1.06	0.79	05:35	0.367	08:40	1.088	0.648	86634	
7/22/2016	04:15	7.16	08:40	9.30	8.03	04:30	0.53	08:50	1.11	0.78	04:30	0.352	08:50	1.138	0.643	85921	
7/23/2016	05:55	7.02	11:35	8.56	7.88	05:05	0.43	09:40	0.95	0.72	05:05	0.278	11:30	0.810	0.574	76675	
7/24/2016	05:05	7.01	20:10	8.74	8.05	05:20	0.45	21:45	0.94	0.72	05:20	0.290	21:45	0.871	0.602	80477	
7/25/2016	04:40	7.10	17:45	87.89	17.76	17:40	0.00	17:35	1.55	0.52	17:40	0.000	17:35	3.998	0.414	55360	0.77
7/26/2016	05:05	7.94	00:00	25.76	9.48	00:00	0.00	08:30	1.04	0.56	00:00	0.000	08:30	1.188	0.526	70262	
7/27/2016	05:10	7.63	08:25	9.59	8.43	05:00	0.46	08:05	0.99	0.71	05:00	0.340	08:05	1.061	0.628	83963	
7/28/2016	04:40	7.61	08:25	9.63	8.34	04:30	0.37	09:20	1.02	0.74	04:35	0.277	08:15	1.097	0.646	86331	
7/29/2016	04:20	7.87	05:50	44.85	20.14	05:15	0.00	04:45	0.80	0.13	05:15	0.000	05:05	2.677	0.129	17193	0.86
7/30/2016	04:35	10.91	18:25	23.43	17.89	00:00	0.00	00:00	0.00	0.00	00:00	0.000	00:00	0.000	0.000	0	0.24
7/31/2016	07:55	19.82	23:25	46.17	23.04	00:00	0.00	00:00	0.00	0.00	00:00	0.000	00:00	0.000	0.000	0	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2833679	6.64
Avg	10.51	0.71	0.684	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	06:05	21.18	00:00	42.01	22.91	00:00	0.00	00:00	0.00	0.00	00:00	0.000	00:00	0.000	0.000	0	0.05
8/2/2016	06:20	19.55	23:30	22.13	21.43	00:00	0.00	00:00	0.00	0.00	00:00	0.000	00:00	0.000	0.000	0	
8/3/2016	17:10	8.06	08:25	22.35	17.13	00:00	0.00	15:35	1.10	0.26	00:00	0.000	15:25	1.700	0.253	33828	
8/4/2016	04:40	7.51	08:25	9.63	8.33	04:25	0.37	08:40	1.00	0.65	04:25	0.269	08:40	1.094	0.569	76024	
8/5/2016	05:25	7.48	08:40	9.43	8.31	04:25	0.40	08:05	0.94	0.66	04:25	0.293	08:25	0.971	0.578	77282	
8/6/2016	06:35	7.47	17:30	11.38	8.42	03:55	0.39	17:15	1.18	0.68	03:55	0.287	17:25	1.682	0.620	82884	0.09
8/7/2016	05:30	7.51	21:55	8.93	8.31	04:30	0.35	14:30	1.02	0.70	04:30	0.253	14:30	0.942	0.613	81976	
8/8/2016	05:35	7.55	08:35	9.60	8.14	03:20	0.41	21:10	1.19	0.85	03:20	0.309	21:10	1.056	0.711	95054	
8/9/2016	05:30	7.37	08:25	9.64	8.14	06:20	0.67	08:15	1.30	0.94	04:50	0.479	08:25	1.420	0.791	105717	
8/10/2016	04:55	7.39	14:00	10.13	8.37	04:40	0.66	13:55	1.41	0.97	04:40	0.465	13:55	1.676	0.860	114996	0.08
8/11/2016	04:30	7.49	08:20	9.56	8.26	04:20	0.51	08:00	1.22	0.84	04:40	0.371	08:00	1.289	0.728	97262	
8/12/2016	23:55	7.85	02:20	31.26	12.04	03:00	0.26	01:20	1.60	0.74	21:40	0.484	01:40	7.501	1.135	151714	0.34
8/13/2016	06:00	6.97	12:50	8.52	7.88	05:15	0.35	12:40	0.88	0.64	05:15	0.229	12:40	0.787	0.515	68799	
8/14/2016	05:50	6.95	11:55	8.81	7.99	05:35	0.37	11:15	0.95	0.67	05:35	0.232	11:25	0.873	0.556	74369	0.13
8/15/2016	05:20	7.16	08:35	9.14	8.05	05:20	0.41	08:35	0.99	0.67	05:20	0.274	08:35	0.992	0.554	74028	
8/16/2016	04:45	7.17	08:40	9.30	8.04	04:30	0.43	08:10	1.07	0.61	04:30	0.288	08:10	1.090	0.506	67665	0.23
8/17/2016	04:55	7.35	08:30	23.66	10.36	06:25	0.22	05:20	0.99	0.60	04:50	0.305	10:10	1.563	0.680	90962	
8/18/2016	04:25	7.54	08:30	9.58	8.28	02:45	0.49	08:15	0.93	0.69	02:45	0.368	08:15	0.999	0.598	79986	0.03
8/19/2016	05:50	7.41	08:30	9.19	8.20	05:40	0.45	08:15	0.89	0.64	05:40	0.321	08:15	0.888	0.543	72614	
8/20/2016	05:50	7.40	11:40	8.94	8.24	05:00	0.46	12:40	0.90	0.69	05:00	0.331	12:40	0.868	0.596	79610	0.02
8/21/2016	06:30	7.23	19:55	11.02	8.43	06:10	0.46	19:25	1.27	0.75	06:10	0.315	19:25	1.724	0.689	92058	0.15
8/22/2016	05:45	7.12	08:30	9.21	8.03	05:35	0.32	08:15	0.96	0.65	05:35	0.215	08:15	0.968	0.532	71178	
8/23/2016	04:35	7.24	08:30	9.52	8.14	05:10	0.42	09:00	1.06	0.69	05:10	0.289	08:55	1.114	0.581	77666	
8/24/2016	05:05	6.84	08:25	9.18	7.86	04:40	0.36	08:00	1.17	0.71	04:40	0.225	08:30	1.153	0.570	76219	
8/25/2016	02:45	7.25	08:30	9.48	8.15	04:35	0.42	08:30	0.93	0.66	04:40	0.297	08:30	0.992	0.556	74371	
8/26/2016	04:05	7.46	08:50	9.37	8.20	04:20	0.48	08:10	0.90	0.71	04:15	0.342	08:15	0.925	0.601	80319	
8/27/2016	06:15	7.24	12:00	8.86	8.10	06:15	0.42	10:05	0.87	0.66	06:15	0.283	12:05	0.785	0.552	73728	
8/28/2016	05:30	7.35	13:10	8.89	8.21	05:30	0.42	20:45	0.87	0.69	05:30	0.293	20:45	0.817	0.588	78640	
8/29/2016	05:30	7.23	08:25	9.45	8.17	05:50	0.49	08:20	0.98	0.71	05:50	0.333	08:20	1.042	0.598	79880	
8/30/2016	05:10	7.32	08:35	9.65	8.17	05:15	0.48	08:20	0.94	0.69	05:15	0.332	08:20	1.020	0.583	77958	
8/31/2016	05:10	7.25	11:45	11.19	8.24	04:30	0.50	11:35	1.35	0.78	04:30	0.343	11:35	1.865	0.677	90483	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2397270	1.12
Avg	9.57	0.65	0.578	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	03:45	7.19	15:00	39.19	11.58	18:00	0.31	14:45	1.99	0.84	04:40	0.384	14:50	14.889	1.533	204948	0.56
9/2/2016	05:30	7.20	08:35	8.96	7.95	05:00	0.78	07:30	1.22	0.93	05:15	0.534	08:30	1.093	0.747	99843	
9/3/2016	06:45	7.29	12:45	8.58	7.94	06:50	0.66	10:10	1.07	0.85	06:50	0.455	10:10	0.908	0.682	91116	
9/4/2016	05:15	7.22	11:55	8.84	8.00	06:10	0.59	12:55	1.00	0.77	06:10	0.399	11:55	0.943	0.631	84319	
9/5/2016	06:50	7.16	21:30	8.97	8.17	04:55	0.56	14:05	1.03	0.81	04:55	0.375	14:05	0.956	0.690	92301	
9/6/2016	05:00	7.27	08:35	9.61	8.21	04:50	0.57	07:50	1.08	0.76	04:50	0.388	08:30	1.117	0.648	86639	
9/7/2016	05:25	7.23	08:25	10.07	8.49	16:20	0.50	08:45	0.84	0.63	05:25	0.342	08:40	0.983	0.566	75668	
9/8/2016	04:20	7.32	08:20	10.43	8.73	10:40	0.44	07:55	0.78	0.59	05:25	0.330	08:00	0.951	0.558	74614	
9/9/2016	05:10	7.43	22:35	11.31	8.84	05:00	0.43	08:25	0.93	0.63	05:00	0.309	22:25	1.285	0.611	81723	0.11
9/10/2016	06:15	7.52	11:40	9.78	8.94	05:50	0.45	10:35	0.78	0.61	05:50	0.324	10:35	0.844	0.595	79498	0.05
9/11/2016	06:30	7.54	11:50	10.21	8.93	05:35	0.41	16:55	0.75	0.60	05:35	0.308	21:10	0.804	0.592	79108	
9/12/2016	04:45	7.36	08:20	10.73	8.81	23:25	0.48	18:40	0.76	0.58	04:00	0.362	08:40	0.931	0.559	74688	0.00
9/13/2016	04:05	7.47	08:05	10.58	8.77	03:15	0.38	09:05	0.80	0.59	03:35	0.281	08:15	1.004	0.568	75958	
9/14/2016	05:25	7.44	18:10	42.61	12.52	19:50	0.26	17:50	1.42	0.55	04:35	0.269	17:50	8.334	0.926	123773	0.64
9/15/2016	04:30	7.57	08:30	10.73	8.97	18:35	0.42	08:30	0.74	0.56	04:35	0.331	08:30	0.975	0.555	74231	
9/16/2016	05:15	7.55	08:30	10.65	9.05	06:05	0.36	12:25	0.67	0.53	06:05	0.273	08:10	0.800	0.531	71039	
9/17/2016	06:00	7.64	11:20	10.26	9.19	06:55	0.34	15:25	0.72	0.55	06:55	0.259	09:40	0.804	0.568	75940	
9/18/2016	06:15	7.73	11:45	10.51	9.15	04:25	0.36	12:40	0.77	0.56	04:25	0.287	12:40	0.899	0.570	76212	
9/19/2016	05:10	7.46	11:40	39.26	14.51	14:10	0.26	15:50	1.38	0.68	04:30	0.279	11:40	3.097	1.216	162522	0.45
9/20/2016	05:15	7.34	08:30	9.59	8.26	05:00	0.51	08:10	1.23	0.84	05:00	0.353	08:10	1.328	0.726	97013	
9/21/2016	05:20	7.36	08:15	9.64	8.27	04:15	0.49	08:00	1.18	0.90	04:15	0.345	08:00	1.277	0.780	104315	
9/22/2016	05:00	7.27	08:30	9.75	8.26	05:35	0.64	08:40	1.32	0.95	05:35	0.437	08:35	1.474	0.819	109524	
9/23/2016	05:05	7.22	08:30	9.59	8.23	05:35	0.62	08:30	1.34	0.96	04:45	0.423	08:30	1.454	0.826	110445	
9/24/2016	23:55	8.09	01:55	46.60	13.97	01:55	0.25	01:10	1.71	0.72	23:40	0.567	01:20	8.245	1.244	166347	0.28
9/25/2016	06:50	7.42	12:40	9.22	8.33	04:05	0.51	12:20	1.05	0.79	04:05	0.364	12:35	1.046	0.691	92307	
9/26/2016	05:15	7.40	08:35	9.84	8.32	04:50	0.53	08:20	1.13	0.79	04:50	0.374	08:30	1.281	0.689	92098	
9/27/2016	02:25	7.67	03:50	13.62	8.86	02:05	0.66	03:20	1.54	0.91	02:05	0.506	03:20	2.835	0.900	120257	0.25
9/28/2016	04:25	7.45	08:35	9.85	8.33	04:25	0.53	07:55	1.27	0.85	04:25	0.377	08:15	1.403	0.745	99646	
9/29/2016	05:45	7.41	08:20	9.66	8.24	04:25	0.56	08:25	1.19	0.82	04:25	0.398	08:25	1.307	0.706	94367	
9/30/2016	05:15	7.23	19:05	12.03	9.52	05:05	0.50	19:25	1.53	1.06	05:05	0.337	19:25	2.410	1.248	166774	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3037232	2.75
Avg	9.18	0.74	0.757	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:30	7.58	00:00	9.34	8.47	05:40	0.63	11:30	1.19	0.96	05:40	0.468	11:30	1.220	0.864	115491	
10/2/2016	05:35	7.61	11:45	9.33	8.53	05:00	0.70	11:45	1.23	0.97	05:00	0.521	11:45	1.278	0.888	118690	
10/3/2016	05:00	7.59	08:35	9.73	8.48	05:10	0.68	08:50	1.25	0.95	05:10	0.505	08:50	1.390	0.857	114540	
10/4/2016	05:25	7.55	08:25	9.77	8.38	05:30	0.65	08:15	1.28	0.92	05:25	0.473	08:30	1.433	0.816	109088	
10/5/2016	04:55	7.30	08:35	9.78	8.27	05:25	0.59	08:30	1.24	0.91	05:25	0.409	08:35	1.389	0.793	106044	
10/6/2016	04:50	7.34	08:35	9.68	8.28	04:55	0.61	08:25	1.27	0.92	04:55	0.422	08:30	1.399	0.798	106683	0.00
10/7/2016	05:05	7.30	08:30	9.69	8.27	04:25	0.60	08:30	1.18	0.82	04:25	0.412	08:30	1.306	0.715	95519	
10/8/2016	06:05	7.45	20:35	9.86	8.54	05:40	0.53	11:00	1.14	0.84	05:40	0.376	11:45	1.151	0.769	102793	0.13
10/9/2016	02:40	7.89	13:30	33.57	13.54	12:50	0.24	07:40	1.52	0.88	02:50	0.444	15:20	3.723	1.438	192229	0.52
10/10/2016	05:15	7.35	08:35	9.40	8.33	04:35	0.67	08:10	1.15	0.88	04:35	0.473	08:20	1.187	0.773	103345	
10/11/2016	04:55	7.26	08:35	9.80	8.29	05:40	0.59	08:25	1.12	0.79	05:40	0.417	08:25	1.253	0.686	91709	0.00
10/12/2016	05:00	7.34	08:40	9.69	8.30	03:20	0.51	08:40	1.15	0.77	04:50	0.362	08:40	1.276	0.671	89732	
10/13/2016	04:45	7.39	08:25	9.73	8.33	03:55	0.53	07:50	1.02	0.77	03:55	0.380	08:35	1.132	0.676	90384	
10/14/2016	05:15	7.30	08:35	9.78	8.29	04:35	0.49	08:20	1.08	0.73	04:35	0.343	08:20	1.192	0.636	85000	
10/15/2016	05:40	7.38	11:35	9.17	8.33	03:40	0.47	09:55	0.95	0.75	04:25	0.340	11:10	0.943	0.659	88142	
10/16/2016	05:45	7.46	20:40	9.24	8.48	04:20	0.52	20:55	1.15	0.85	04:20	0.383	20:55	1.173	0.771	103071	
10/17/2016	04:40	7.38	08:30	9.78	8.38	05:50	0.65	08:30	1.23	0.92	04:25	0.465	08:30	1.389	0.814	108807	
10/18/2016	05:20	7.31	08:20	9.86	8.29	05:15	0.61	08:35	1.17	0.90	05:15	0.423	08:35	1.320	0.788	105403	0.00
10/19/2016	04:20	7.38	08:30	9.90	8.27	04:10	0.60	08:50	1.20	0.84	04:10	0.425	08:40	1.354	0.727	97201	
10/20/2016	04:40	7.26	08:30	9.68	8.24	03:55	0.55	08:35	1.05	0.79	03:55	0.377	08:35	1.158	0.681	90989	
10/21/2016	05:15	7.37	14:50	31.97	12.70	13:50	0.14	10:25	1.63	0.77	05:15	0.395	15:30	4.480	1.177	157279	0.46
10/22/2016	03:55	7.57	04:55	40.62	18.35	07:15	0.26	04:20	1.87	0.65	03:55	0.529	04:30	8.795	1.642	219497	0.33
10/23/2016	05:35	7.46	12:20	9.18	8.41	05:50	0.60	10:35	1.32	0.98	05:50	0.431	10:35	1.288	0.876	117082	
10/24/2016	05:10	7.38	08:30	9.72	8.40	05:00	0.73	08:25	1.31	0.99	05:00	0.516	08:25	1.457	0.878	117355	
10/25/2016	04:50	7.34	08:30	9.88	8.38	04:45	0.70	08:35	1.31	0.95	04:45	0.488	08:35	1.501	0.844	112801	
10/26/2016	04:40	7.45	08:25	10.03	8.49	04:40	0.65	08:10	1.18	0.87	04:40	0.462	08:15	1.376	0.792	105940	
10/27/2016	04:45	7.56	20:40	51.61	16.35	19:30	0.19	17:35	1.60	0.88	05:25	0.458	21:15	6.940	1.889	252551	1.15
10/28/2016	05:15	7.75	00:00	32.55	10.17	01:40	0.45	08:30	1.32	0.93	05:20	0.554	00:10	4.380	1.114	148866	
10/29/2016	05:45	7.51	11:20	9.24	8.45	05:30	0.64	10:45	1.12	0.89	05:30	0.463	10:50	1.141	0.792	105919	
10/30/2016	07:15	7.59	18:35	43.48	17.08	19:50	0.17	16:45	1.76	0.71	07:15	0.511	16:55	7.516	1.511	202004	
10/31/2016	04:15	7.60	00:00	28.99	9.63	01:05	0.45	02:00	1.42	0.93	06:00	0.417	00:00	3.364	1.008	134590	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3788744	2.59
Avg	9.64	0.86	0.914	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H4, Pipe Height: 55.752 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	05:05	7.42	08:25	9.76	8.40	05:00	0.47	08:15	1.29	0.81	05:00	0.333	08:20	1.439	0.726	97017	
11/2/2016	04:40	7.50	08:35	9.75	8.41	04:30	0.53	08:25	1.30	0.92	04:30	0.386	08:25	1.452	0.822	109926	
11/3/2016	05:20	7.46	08:30	9.76	8.44	04:50	0.61	08:15	1.27	0.92	04:55	0.436	08:15	1.406	0.824	110219	
11/4/2016	05:15	7.43	08:45	9.63	8.35	04:45	0.60	08:25	1.21	0.85	04:45	0.431	08:25	1.315	0.743	99389	
11/5/2016	06:05	7.39	11:40	9.22	8.39	06:05	0.62	11:25	1.24	0.96	06:05	0.438	11:25	1.259	0.855	114321	
11/6/2016	06:00	7.54	11:25	9.23	8.45	06:05	0.71	12:55	1.20	0.97	06:05	0.518	12:55	1.222	0.873	116689	
11/7/2016	06:30	7.35	09:20	9.97	8.35	06:15	0.66	08:55	1.29	0.97	06:15	0.462	08:55	1.448	0.861	115061	
11/8/2016	05:00	7.38	08:25	9.82	8.47	05:05	0.69	07:50	1.21	0.96	05:05	0.484	08:25	1.361	0.860	114975	
11/9/2016	05:20	7.57	08:25	9.94	8.64	04:55	0.68	20:05	1.24	0.91	04:55	0.501	20:20	1.390	0.852	113919	0.07
11/10/2016	04:00	7.50	08:30	10.00	8.43	03:55	0.68	08:05	1.31	0.92	03:55	0.489	08:20	1.495	0.821	109734	
11/11/2016	05:20	7.38	08:35	9.63	8.50	03:35	0.56	08:25	1.23	0.92	05:20	0.397	08:25	1.331	0.834	111510	
11/12/2016	05:10	7.54	12:45	9.42	8.53	07:10	0.65	11:10	1.09	0.92	05:05	0.480	11:40	1.130	0.834	111555	
11/13/2016	06:30	7.39	11:45	9.39	8.56	06:50	0.62	19:45	1.13	0.89	06:40	0.442	19:45	1.152	0.818	109399	
11/14/2016	04:15	7.39	08:25	9.99	8.50	05:15	0.57	08:15	1.26	0.91	05:15	0.404	08:15	1.456	0.832	111182	
11/15/2016	03:55	7.40	09:45	64.54	20.23	08:55	0.13	06:50	1.56	0.86	03:55	0.478	11:20	9.854	2.554	341396	1.50
11/16/2016	04:20	7.75	08:25	10.04	8.65	05:25	0.80	07:55	1.27	1.01	04:20	0.619	08:25	1.477	0.935	124930	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2011222	1.57
Avg	9.21	0.92	0.940	

Site Commentary

Site Information

H5	
Pipe Dimensions (in.)	H5 Non-standard (58.25 in H, 85.00 in W)
Silt (in.)	7.00

Overview

A review of the hydrograph and scattergraph for H5 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	16.02	0.55	0.888
Minimum	13.91	0.00	0.000
Maximum	117.11	1.33	14.696
Time of Minimum	5/27/2016 5:15 AM	5/30/2016 1:45 AM	5/30/2016 1:45 AM
Time of Maximum	7/25/2016 5:40 PM	6/8/2016 3:10 PM	6/5/2016 6:45 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	97
Velocity (ft/s)	97
Quantity (MGD)	97

Site Report

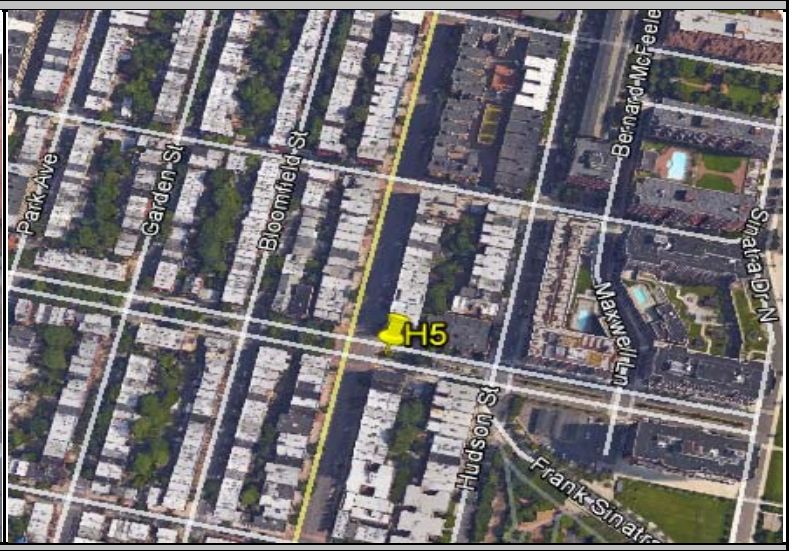
ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. HOBOKEN, NJ

FM Initials: MEJ

Project Name: NHSA

Site Name:	H5	Meter Type:	TRITON+	Monitor S/N:	61037	Manhole #:	H5-11-510
Address / Location:	11th STREET AT WASHINGTON STREET			Map Page #:		L3	
				Pipe Height:		58.25 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		85 Inches	
				I.P. Address		107.80.25.42	



Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 7, 2016	12:30 PM	Manhole Depth:	30 Feet		
Site Hydraulics:	SLOW, SMOOTH FLOW		Manhole Material / Condition:	PC		Fair
			Active Drop Connections?	No		
			Pipe Material / Condition:	PARGED	BRICK	FAIR
			Mini System Character:	COMMERCIAL		RESIDENTIAL
			Telephone Information:			
Depth of Flow (Wet Dof):	9 +/-		Access Pole #:	N/A		
Range (Air Dof):	43.75 +/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	0.61 fps		Road Cut Length:	N/A Feet		
Silt:	5.75 Inches		Trench Length:	N/A Feet		

Other Information:

N 40° 44' 59.70" W 74° 01' 36.79"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk	X			300'
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		REGULATOR	300'

Additional Site Information / Comments:

UPSTREAM INSTALLATION. Location for possible second meter not identified.

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H5 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

TEMP CLOSURE OF ONE WAY RESIDENTIAL STREET

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	M. JOHNSON	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/7/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

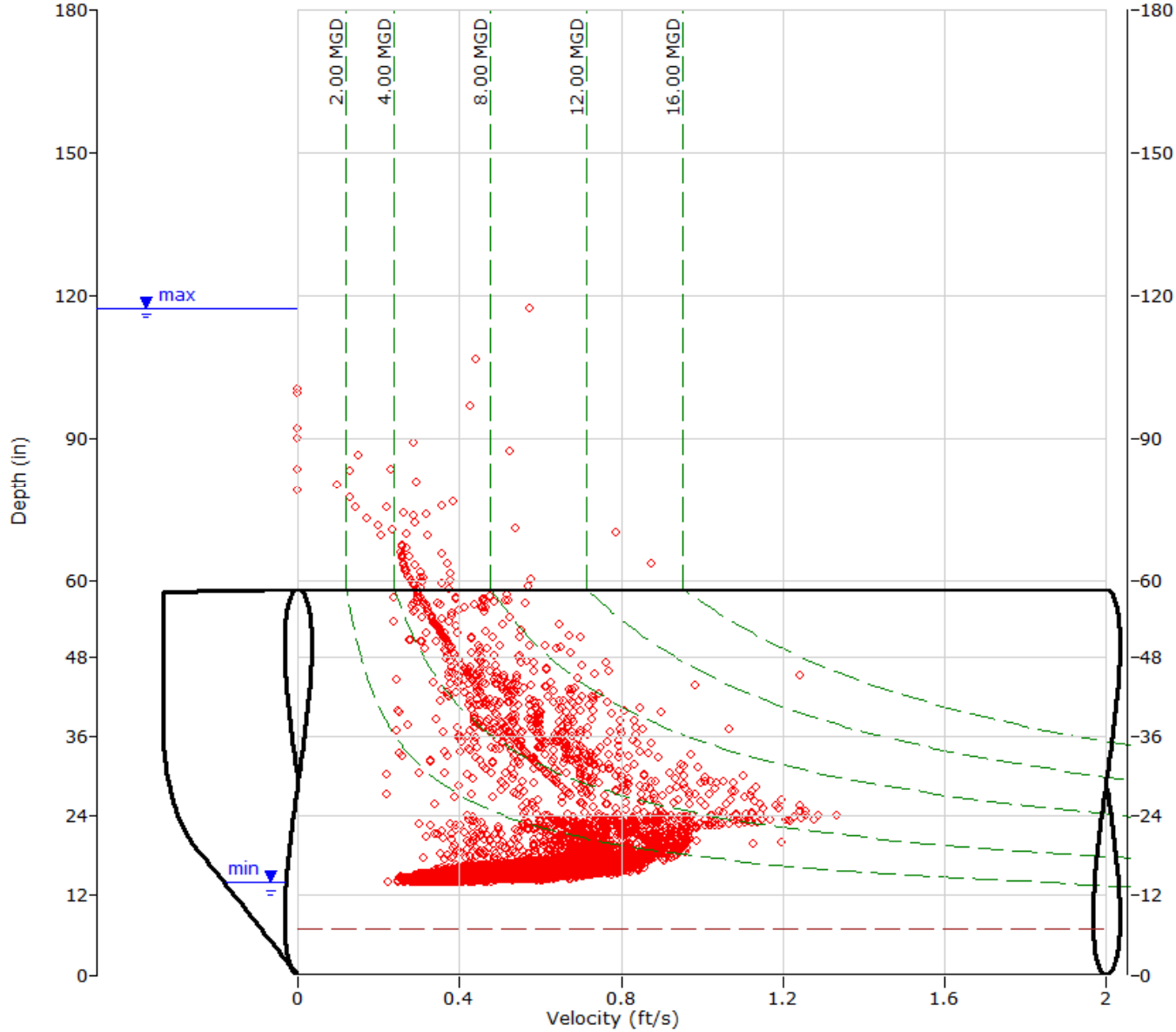
Non Standard

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

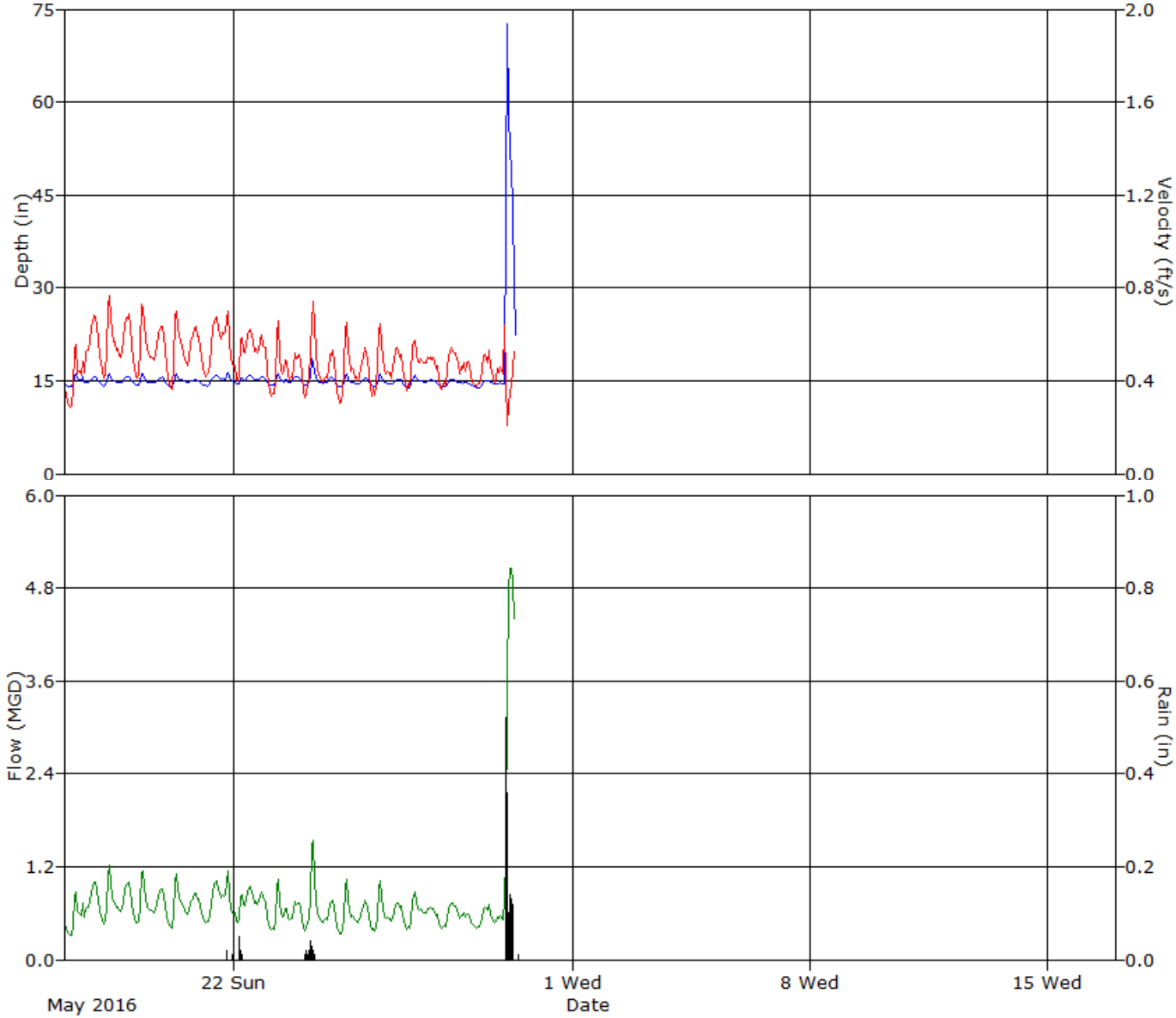
Non Standard

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

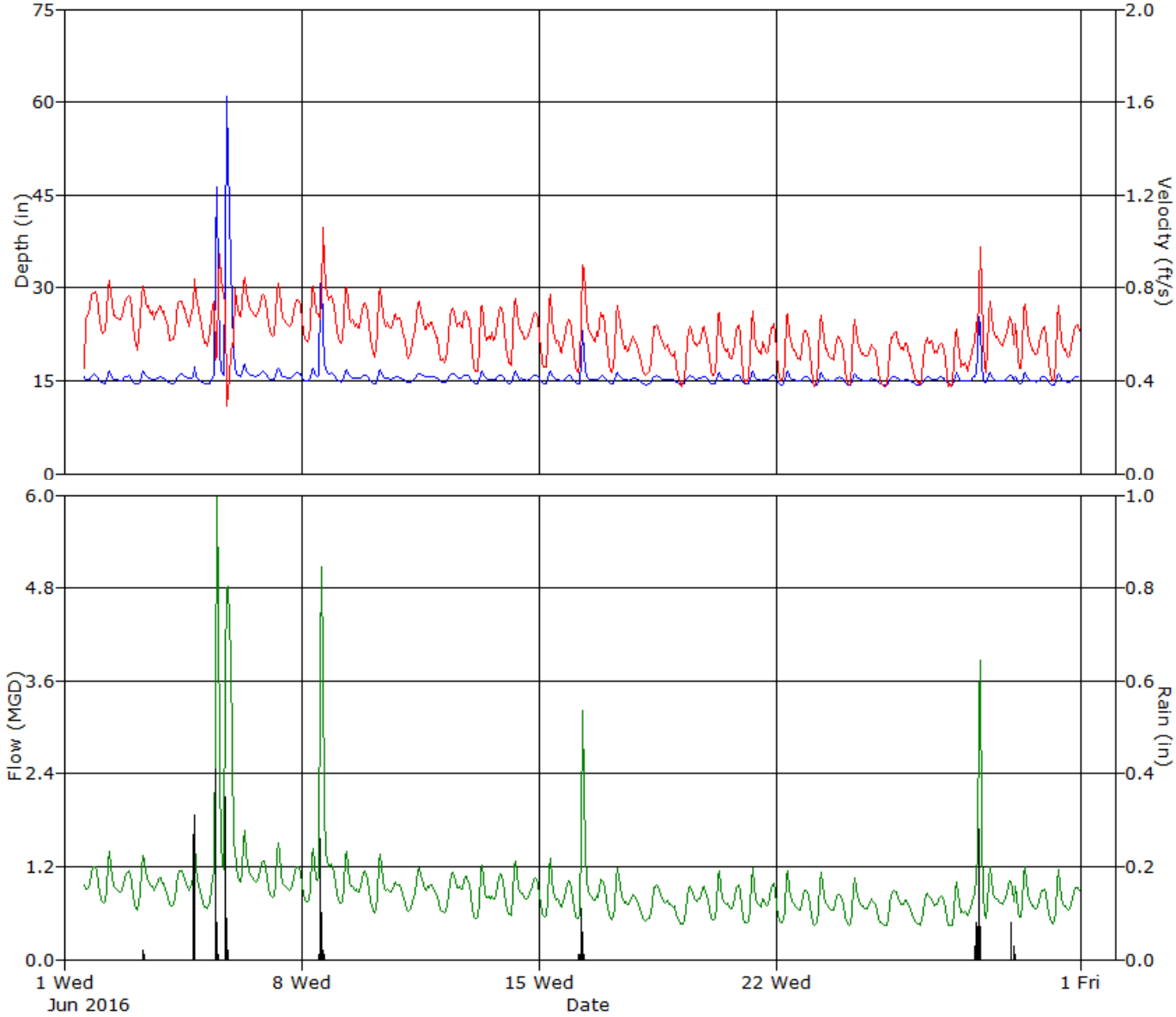
Non Standard

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

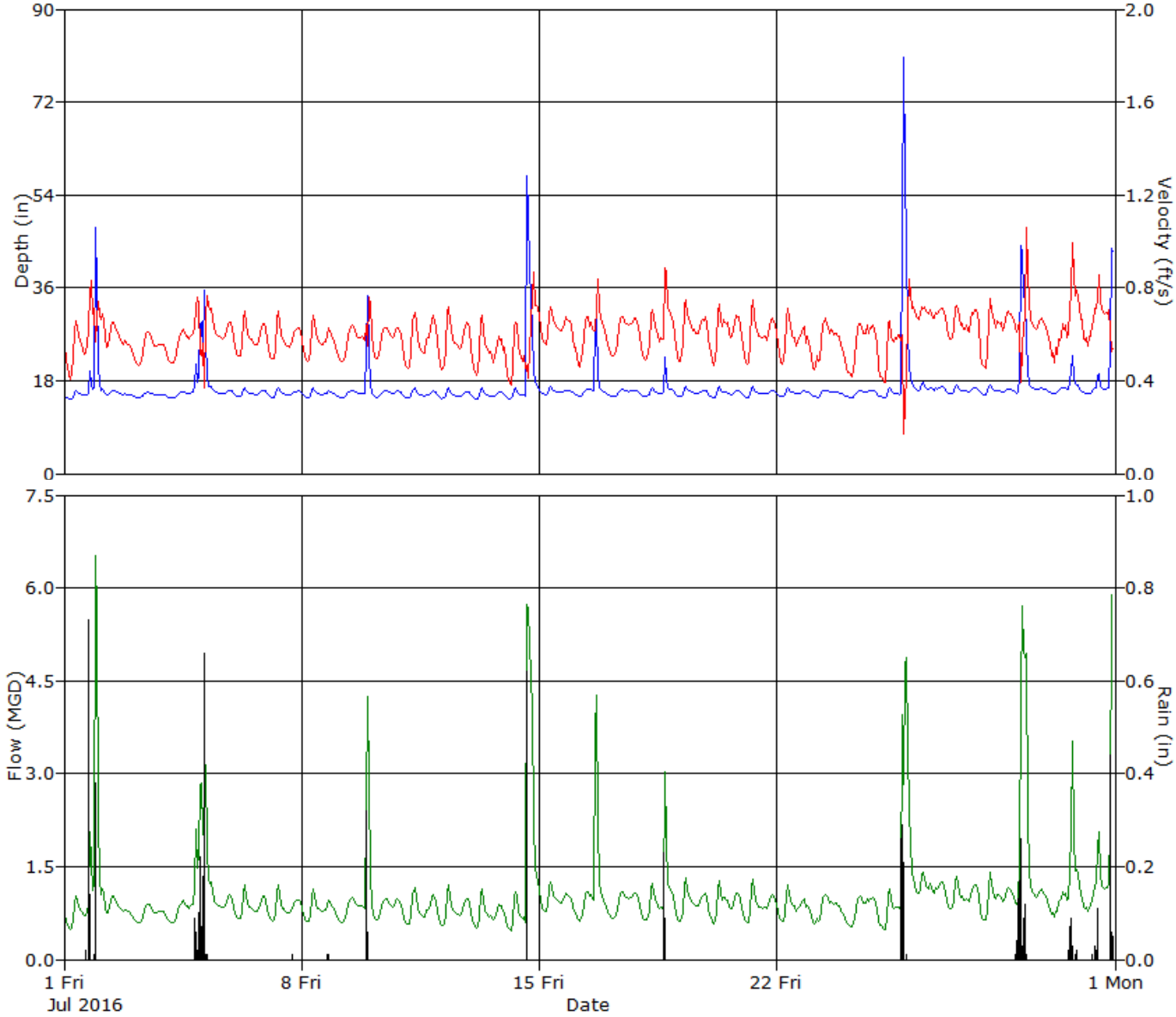
Non Standard

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

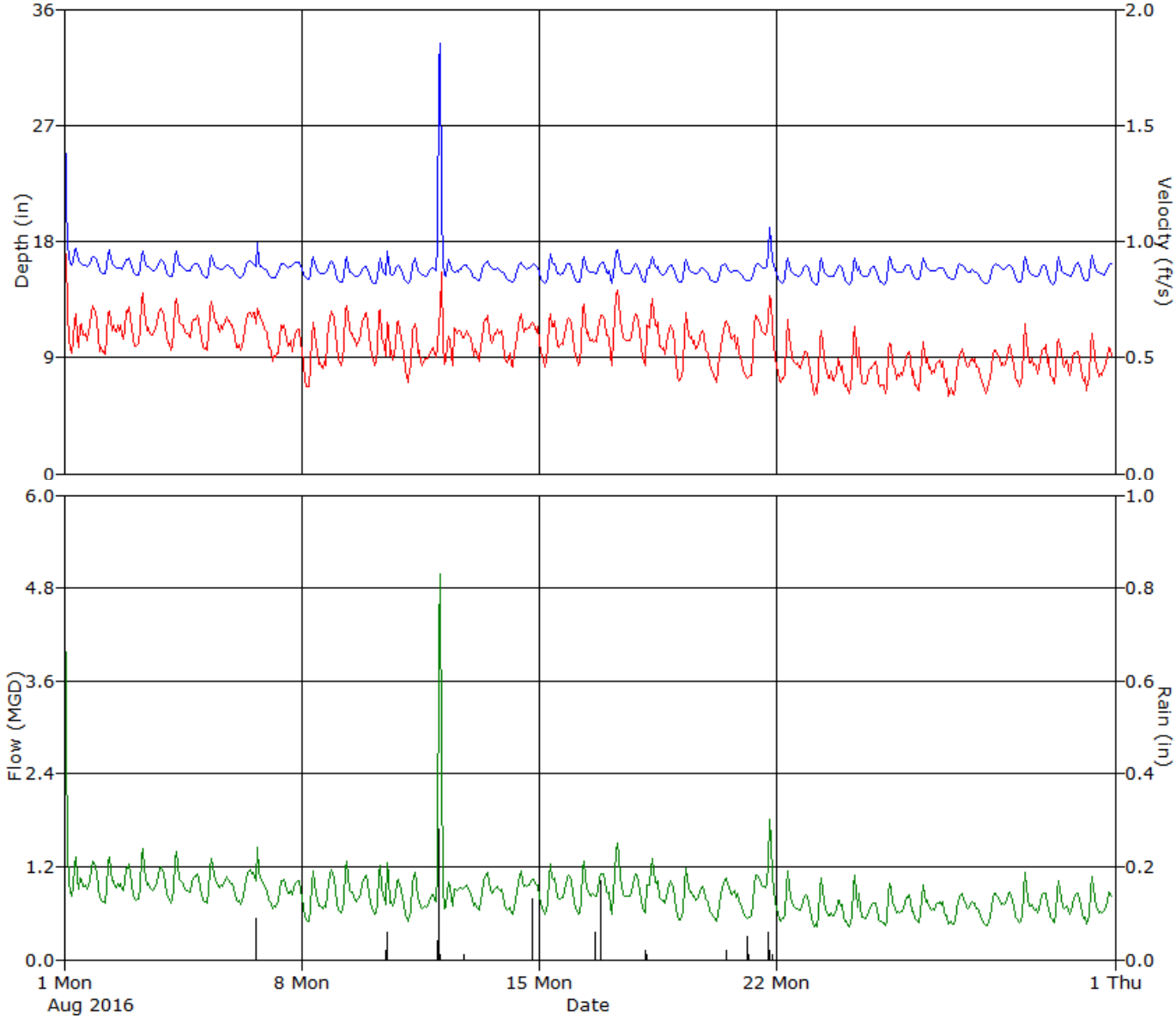
Non Standard

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

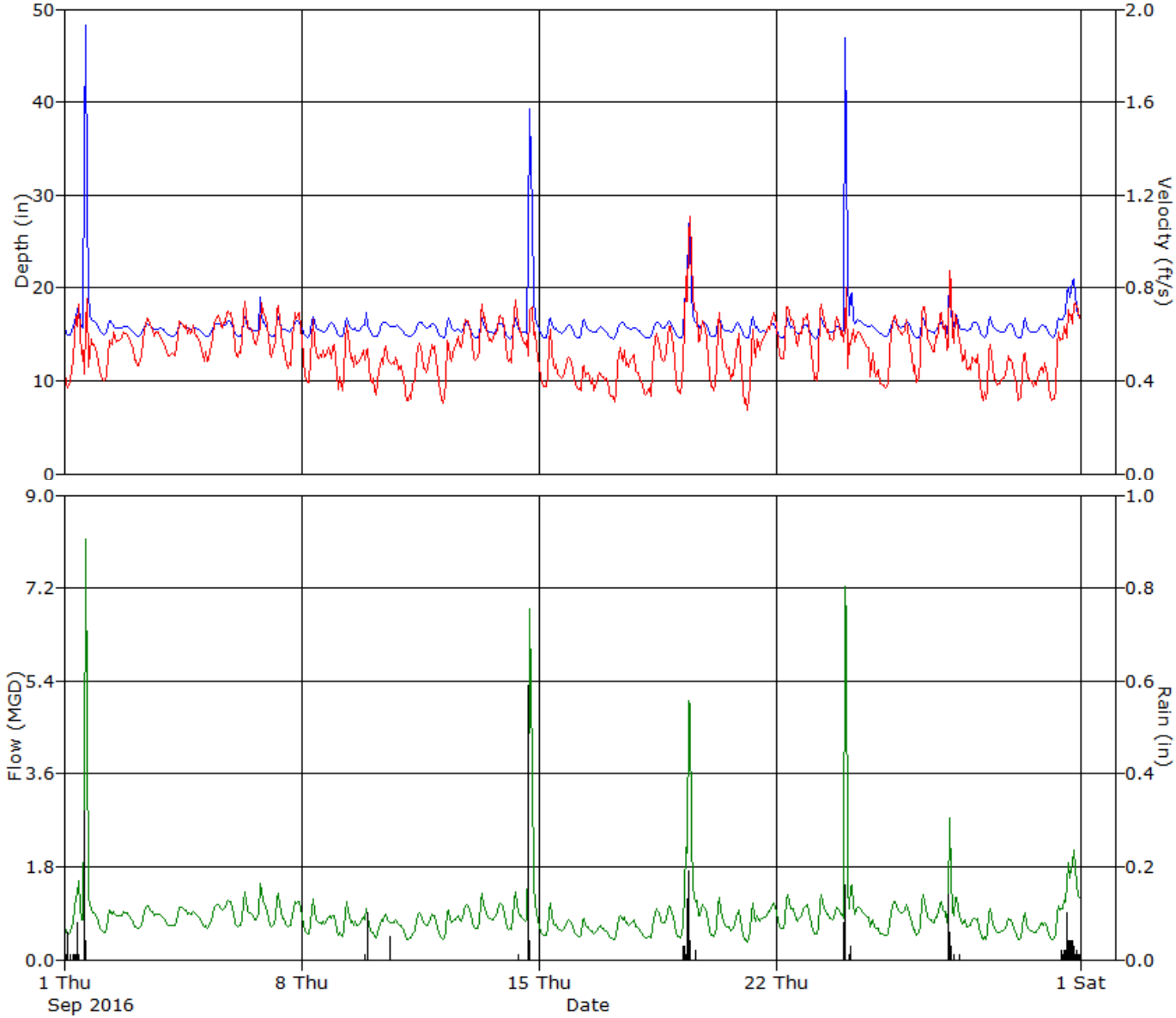
Non Standard

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

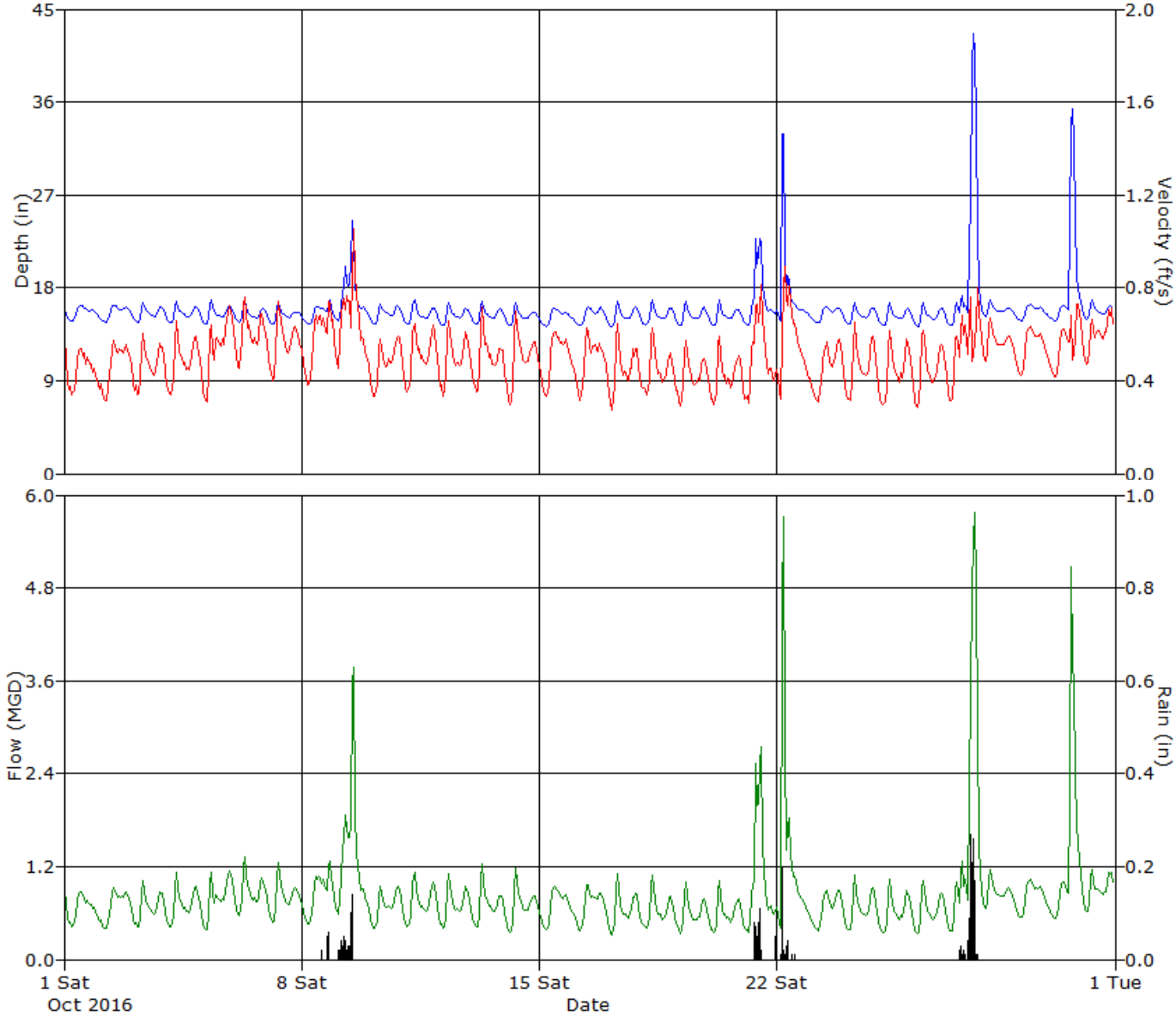
Non Standard

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H5

Flow Monitor

H5

Pipe Height
58.25 in

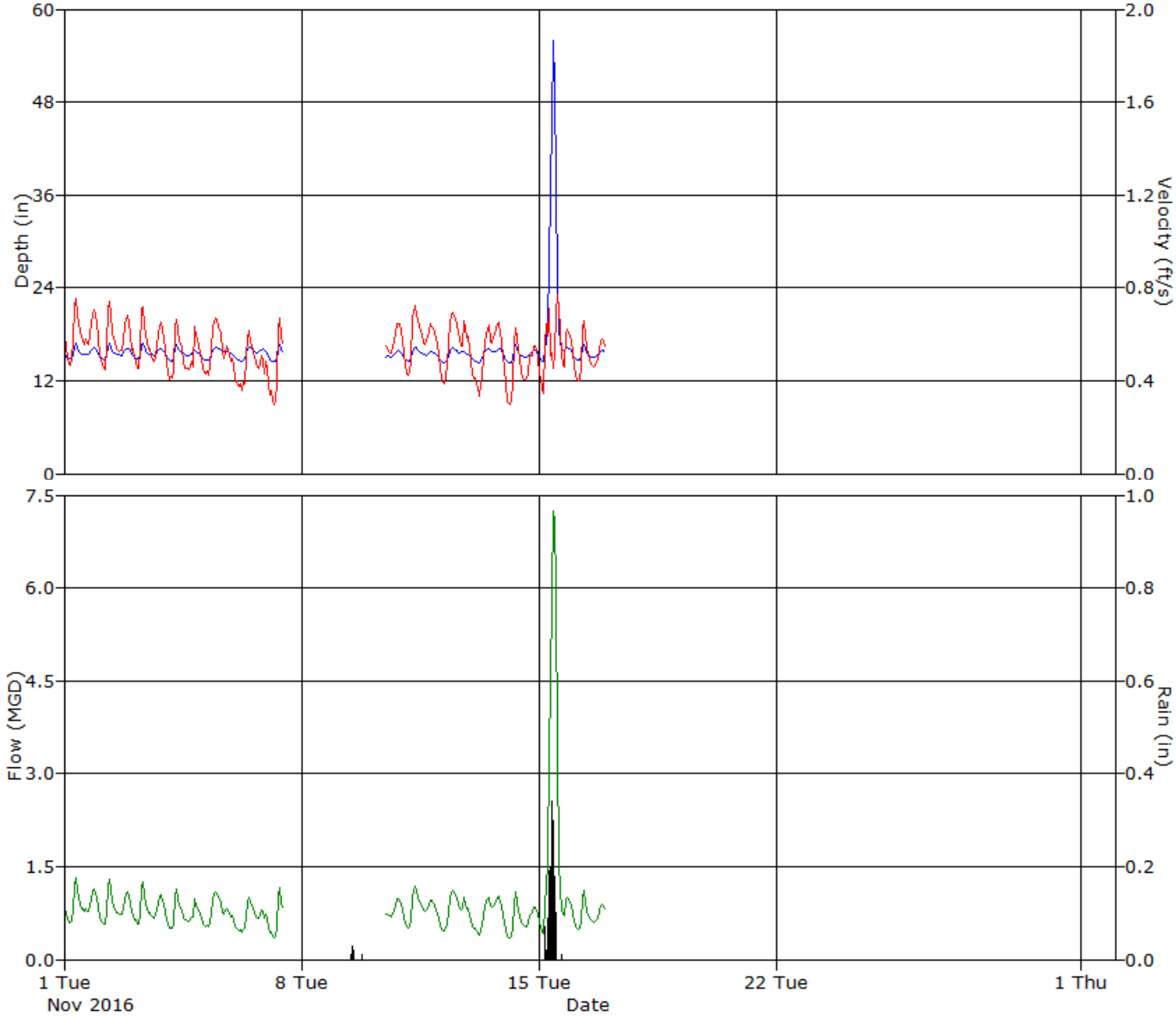
Non Standard

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	05:00	13.99	08:10	16.22	15.01	03:30	0.22	20:55	0.71	0.48	03:30	0.249	20:55	1.042	0.643	85931	
5/18/2016	05:00	14.18	08:05	16.32	15.01	04:35	0.39	08:00	0.79	0.57	04:35	0.442	08:00	1.272	0.770	102920	
5/19/2016	04:15	14.23	08:10	16.40	15.00	04:10	0.40	07:50	0.76	0.55	04:10	0.459	08:05	1.241	0.734	98164	
5/20/2016	05:15	14.15	08:15	16.23	14.93	05:05	0.35	08:10	0.73	0.53	05:05	0.398	08:10	1.160	0.704	94151	
5/21/2016	05:00	14.16	20:15	16.48	15.11	04:25	0.40	20:05	0.75	0.56	04:25	0.461	20:10	1.239	0.763	102005	0.03
5/22/2016	04:20	14.37	12:20	15.86	15.29	03:10	0.39	12:25	0.65	0.54	04:00	0.461	12:25	0.979	0.747	99885	0.08
5/23/2016	03:45	14.18	07:55	16.29	15.00	04:50	0.32	08:25	0.68	0.45	04:50	0.363	08:15	1.082	0.603	80636	
5/24/2016	02:50	14.25	07:45	19.63	15.26	02:00	0.31	08:40	0.76	0.47	02:55	0.358	07:55	1.845	0.668	89348	0.16
5/25/2016	04:15	13.98	08:15	16.25	14.81	03:50	0.26	08:15	0.69	0.45	03:50	0.292	08:15	1.103	0.586	78379	
5/26/2016	05:15	14.01	08:20	16.10	14.79	02:50	0.28	08:00	0.66	0.47	02:50	0.316	08:15	1.041	0.602	80493	
5/27/2016	05:15	13.91	08:25	15.86	14.81	03:55	0.31	09:15	0.63	0.47	03:55	0.336	09:15	0.913	0.604	80753	
5/28/2016	04:55	14.06	10:45	15.22	14.62	06:50	0.33	12:05	0.59	0.46	06:50	0.367	12:05	0.789	0.571	76347	
5/29/2016	04:45	13.93	11:50	15.07	14.49	01:40	0.29	13:05	0.57	0.44	01:40	0.333	13:05	0.753	0.528	70629	
5/30/2016	01:15	14.18	01:55	100.37	44.77	01:45	0.00	01:30	0.76	0.40	01:45	0.000	02:15	5.985	3.672	151703	1.38
5/31/2016																	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1291344	1.65
Avg	15.70	0.49	0.726	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	16:35	15.08	21:15	16.02	15.55	14:00	0.00	19:30	0.80	0.71	16:15	0.876	21:55	1.235	1.059	55521	
6/2/2016	05:05	14.51	08:15	16.62	15.30	01:30	0.57	08:25	0.84	0.70	04:35	0.717	08:25	1.433	0.980	131053	
6/3/2016	04:05	14.46	08:35	16.49	15.33	04:25	0.52	08:35	0.82	0.69	04:25	0.618	08:35	1.368	0.965	129041	0.03
6/4/2016	05:25	14.49	20:15	17.61	15.39	05:50	0.55	20:30	0.87	0.68	05:50	0.662	20:20	1.674	0.964	128877	0.58
6/5/2016	06:10	14.44	18:50	76.60	24.65	18:55	0.22	13:50	1.21	0.62	04:50	0.648	18:45	14.696	2.234	298582	0.96
6/6/2016	16:40	15.66	00:00	22.46	16.38	00:40	0.44	08:15	0.85	0.73	16:40	0.984	00:00	2.035	1.197	159979	
6/7/2016	04:15	15.14	08:05	17.11	15.79	04:15	0.59	08:05	0.82	0.68	04:15	0.798	08:05	1.500	1.033	138077	
6/8/2016	04:30	14.97	13:50	35.00	17.52	04:30	0.57	15:10	1.33	0.72	04:30	0.742	15:05	5.290	1.509	201735	0.40
6/9/2016	04:20	14.86	08:05	16.91	15.59	02:55	0.54	08:35	0.83	0.67	04:35	0.694	08:10	1.455	0.977	130667	
6/10/2016	04:25	14.57	08:15	16.74	15.41	04:50	0.49	08:00	0.83	0.64	04:50	0.602	08:10	1.429	0.917	122590	
6/11/2016	05:30	14.67	11:40	16.19	15.45	03:25	0.46	10:10	0.78	0.62	03:25	0.583	11:40	1.206	0.884	118198	
6/12/2016	05:55	14.77	11:55	16.17	15.50	05:40	0.47	23:55	0.79	0.61	05:40	0.590	11:05	1.171	0.887	118529	
6/13/2016	03:55	14.51	08:15	16.62	15.37	04:15	0.42	21:05	0.75	0.60	04:15	0.511	08:20	1.268	0.847	113181	
6/14/2016	05:10	14.60	08:00	16.72	15.40	04:20	0.44	07:55	0.77	0.61	04:20	0.539	07:55	1.319	0.875	117024	
6/15/2016	05:05	14.50	08:15	16.68	15.33	04:00	0.42	08:20	0.80	0.59	04:00	0.512	08:20	1.366	0.826	110410	
6/16/2016	04:10	14.48	06:50	23.40	15.92	04:15	0.41	07:40	0.96	0.62	04:15	0.488	07:40	3.427	1.023	136784	0.20
6/17/2016	05:20	14.43	08:15	16.44	15.22	04:50	0.41	08:25	0.74	0.56	04:50	0.495	08:10	1.215	0.773	103287	
6/18/2016	05:05	14.39	11:30	15.87	15.13	05:00	0.38	13:15	0.69	0.53	05:00	0.455	13:15	1.017	0.722	96531	
6/19/2016	05:40	14.44	11:55	15.81	15.20	03:45	0.36	11:40	0.74	0.53	03:45	0.438	11:40	1.113	0.732	97788	
6/20/2016	04:05	14.46	08:20	16.51	15.29	04:20	0.41	07:30	0.75	0.54	04:20	0.487	08:15	1.202	0.762	101855	
6/21/2016	04:00	14.48	08:15	16.60	15.29	03:25	0.37	08:30	0.78	0.54	03:25	0.447	08:30	1.305	0.752	100518	
6/22/2016	03:45	14.32	08:10	16.62	15.21	03:45	0.38	08:00	0.72	0.53	03:45	0.442	08:00	1.221	0.738	98670	
6/23/2016	04:30	14.35	08:20	16.48	15.15	03:30	0.36	09:20	0.71	0.52	03:30	0.422	08:10	1.170	0.718	95924	
6/24/2016	05:10	14.34	08:30	16.22	15.10	04:50	0.36	08:15	0.68	0.51	04:50	0.421	08:35	1.078	0.698	93279	
6/25/2016	06:05	14.26	10:45	15.67	14.99	04:20	0.36	13:30	0.65	0.51	05:35	0.422	13:30	0.938	0.678	90605	
6/26/2016	05:05	14.22	21:45	15.63	15.04	04:50	0.36	11:00	0.66	0.50	04:50	0.419	11:00	0.967	0.674	90098	
6/27/2016	04:00	14.23	23:55	22.62	15.26	04:15	0.35	23:50	0.74	0.49	04:15	0.398	23:50	2.469	0.697	93181	0.18
6/28/2016	05:45	14.62	00:50	30.28	16.18	00:45	0.42	01:25	1.28	0.63	05:30	0.521	00:55	5.215	1.097	146590	0.43
6/29/2016	05:00	14.39	08:15	16.40	15.23	04:35	0.41	08:15	0.77	0.58	04:35	0.489	08:15	1.273	0.796	106344	0.04
6/30/2016	04:15	14.28	08:20	16.23	15.10	04:05	0.38	08:05	0.74	0.55	04:05	0.438	08:05	1.181	0.746	99708	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3624626	2.82
Avg	15.78	0.60	0.923	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	05:00	14.42	22:20	60.50	17.82	22:20	0.31	22:10	1.24	0.58	04:25	0.445	22:10	14.641	1.306	174569	1.28
7/2/2016	06:45	15.20	00:00	24.13	15.95	06:45	0.54	00:00	1.09	0.61	06:45	0.734	00:00	4.303	0.957	127972	
7/3/2016	06:00	14.75	13:00	15.71	15.24	06:00	0.47	13:00	0.61	0.54	06:00	0.587	13:00	0.904	0.746	99697	
7/4/2016	05:45	14.68	21:05	23.17	15.86	05:45	0.48	23:35	0.80	0.58	05:45	0.592	21:05	2.330	0.910	121638	0.27
7/5/2016	16:25	15.54	03:35	39.76	18.80	02:50	0.22	04:10	1.10	0.61	16:25	0.835	04:10	6.655	1.385	185098	1.15
7/6/2016	04:25	14.91	08:20	16.80	15.60	04:25	0.50	08:20	0.71	0.59	04:25	0.655	08:20	1.233	0.858	114710	
7/7/2016	04:10	14.80	08:05	16.81	15.52	04:10	0.49	08:05	0.71	0.58	04:10	0.624	08:05	1.238	0.834	111540	0.01
7/8/2016	04:25	14.74	08:20	16.55	15.48	04:25	0.48	08:20	0.68	0.57	04:25	0.608	08:20	1.153	0.821	109788	0.02
7/9/2016	04:30	14.72	22:40	37.01	16.57	04:30	0.48	22:30	0.80	0.57	04:30	0.605	22:40	4.503	1.017	135916	0.38
7/10/2016	05:55	14.81	00:00	30.26	16.00	05:55	0.49	00:55	0.92	0.60	05:55	0.627	00:00	3.792	0.957	127923	
7/11/2016	04:15	14.67	08:20	16.60	15.37	04:15	0.45	08:20	0.70	0.57	04:15	0.561	08:20	1.188	0.807	107923	
7/12/2016	03:45	14.56	08:15	16.59	15.33	03:40	0.43	08:05	0.75	0.57	03:40	0.528	08:05	1.269	0.809	108194	
7/13/2016	04:25	14.52	08:20	16.56	15.32	04:20	0.40	08:15	0.70	0.53	04:20	0.480	08:15	1.180	0.750	100258	
7/14/2016	04:05	14.56	16:20	87.10	20.49	16:30	0.29	20:45	0.94	0.55	04:15	0.424	16:15	13.213	1.590	212510	0.62
7/15/2016	05:35	15.29	08:25	16.92	15.94	05:35	0.55	19:00	0.73	0.64	05:35	0.764	08:25	1.272	0.981	131199	
7/16/2016	05:45	15.06	16:35	44.03	17.14	16:35	0.33	18:35	0.94	0.61	04:55	0.575	16:30	8.708	1.218	162798	
7/17/2016	05:05	14.99	11:50	16.31	15.74	05:05	0.51	11:50	0.68	0.61	05:05	0.664	11:50	1.099	0.913	122098	
7/18/2016	04:20	14.89	17:10	23.44	16.17	17:00	0.30	17:10	1.10	0.63	04:20	0.632	17:10	4.120	1.050	140308	0.32
7/19/2016	03:55	14.88	08:15	16.99	15.71	03:30	0.44	07:45	0.77	0.62	03:30	0.576	08:10	1.375	0.920	123034	
7/20/2016	04:15	14.74	08:20	16.92	15.64	03:10	0.43	08:20	0.74	0.61	03:10	0.545	08:20	1.313	0.909	121469	
7/21/2016	04:45	14.74	08:10	16.89	15.60	04:00	0.43	08:00	0.76	0.60	04:00	0.544	08:20	1.345	0.883	118063	
7/22/2016	05:25	14.86	08:30	16.63	15.63	03:45	0.44	20:25	0.73	0.58	04:50	0.564	08:00	1.222	0.859	114770	
7/23/2016	06:10	14.82	12:15	16.15	15.57	03:20	0.39	16:20	0.70	0.57	03:20	0.513	11:45	1.086	0.829	110811	
7/24/2016	06:10	14.72	12:10	16.19	15.59	02:55	0.38	17:40	0.71	0.56	06:25	0.492	17:40	1.088	0.821	109796	
7/25/2016	04:15	14.69	17:40	117.11	23.37	18:30	0.10	17:35	0.98	0.54	04:40	0.424	17:35	11.071	1.550	207174	0.77
7/26/2016	16:10	16.15	00:00	18.20	16.69	16:10	0.66	09:10	0.72	0.70	16:10	1.050	00:00	1.510	1.199	160310	
7/27/2016	04:35	15.46	08:15	17.33	16.17	04:35	0.58	23:55	0.74	0.65	04:35	0.818	08:15	1.359	1.042	139246	
7/28/2016	04:15	15.29	08:25	17.27	16.09	03:50	0.44	08:00	0.78	0.62	03:50	0.604	08:10	1.436	0.986	131791	
7/29/2016	02:50	15.61	05:40	50.53	20.77	05:40	0.28	09:30	1.26	0.66	02:15	0.845	09:10	6.028	1.950	260741	0.86
7/30/2016	05:25	15.46	18:10	24.08	16.86	05:50	0.45	18:25	1.08	0.65	05:50	0.647	18:20	4.070	1.200	160401	0.24
7/31/2016	05:55	15.49	23:15	45.91	18.99	21:50	0.37	13:25	0.88	0.66	05:50	0.694	22:55	7.383	1.566	209263	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4361008	6.64
Avg	16.68	0.60	1.052	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	16:15	16.08	00:00	35.37	17.27	05:00	0.50	00:55	1.15	0.65	05:00	0.786	00:00	6.709	1.309	174988	0.05
8/2/2016	04:05	15.49	08:20	17.44	16.17	01:15	0.48	22:25	0.79	0.62	05:05	0.708	08:45	1.363	0.991	132486	
8/3/2016	05:15	15.34	08:10	17.35	16.07	03:15	0.52	08:25	0.84	0.64	03:15	0.732	08:25	1.564	1.007	134662	
8/4/2016	05:05	15.28	08:15	17.28	15.98	04:40	0.49	08:00	0.79	0.63	04:40	0.682	08:00	1.461	0.982	131285	
8/5/2016	04:50	15.19	08:15	16.91	15.91	05:35	0.51	08:00	0.77	0.63	05:25	0.694	08:00	1.354	0.972	129930	
8/6/2016	05:25	15.18	17:10	18.65	15.99	05:15	0.49	17:20	0.80	0.63	05:15	0.670	17:20	1.705	0.988	132016	0.09
8/7/2016	05:10	15.15	21:50	16.40	15.87	04:05	0.46	22:15	0.72	0.57	04:05	0.620	22:15	1.189	0.865	115601	
8/8/2016	05:05	15.04	08:10	16.91	15.80	04:10	0.36	20:40	0.73	0.53	04:10	0.474	21:30	1.208	0.805	107615	
8/9/2016	04:35	14.80	08:10	16.93	15.57	04:15	0.44	09:25	0.76	0.60	04:20	0.556	08:10	1.328	0.879	117466	
8/10/2016	05:00	14.73	13:35	18.29	15.70	04:20	0.42	13:45	0.80	0.57	04:20	0.525	13:45	1.659	0.852	113957	0.08
8/11/2016	05:00	14.75	08:20	16.78	15.56	04:45	0.37	09:20	0.72	0.51	04:45	0.465	09:20	1.189	0.742	99145	
8/12/2016	06:00	15.23	01:35	38.42	17.57	00:40	0.34	03:00	1.19	0.59	05:40	0.581	01:50	5.459	1.268	169546	0.34
8/13/2016	05:45	14.98	12:30	16.49	15.72	05:20	0.46	10:10	0.77	0.59	05:20	0.612	10:10	1.254	0.873	116758	
8/14/2016	06:05	14.83	12:25	16.48	15.70	05:25	0.39	12:55	0.79	0.58	05:25	0.498	12:55	1.278	0.870	116353	0.13
8/15/2016	04:25	14.78	08:25	17.09	15.74	03:20	0.42	07:55	0.73	0.59	03:20	0.538	08:25	1.263	0.884	118107	
8/16/2016	04:50	14.81	08:05	16.88	15.73	04:50	0.45	07:55	0.79	0.60	04:50	0.571	07:55	1.391	0.898	120005	0.23
8/17/2016	04:35	14.71	08:15	17.45	15.88	04:25	0.40	07:45	0.81	0.62	04:30	0.507	08:05	1.538	0.962	128657	
8/18/2016	04:00	14.82	08:15	16.83	15.77	04:35	0.44	08:05	0.78	0.60	03:55	0.560	08:05	1.357	0.899	120126	0.03
8/19/2016	04:00	14.83	08:35	16.61	15.61	03:20	0.38	08:20	0.78	0.55	03:20	0.488	08:20	1.315	0.804	107454	
8/20/2016	06:25	14.80	12:45	16.35	15.56	06:55	0.36	13:45	0.68	0.54	06:55	0.461	12:50	1.102	0.784	104781	0.02
8/21/2016	06:00	14.90	19:45	19.46	15.99	03:40	0.37	20:05	0.81	0.57	03:40	0.493	19:50	1.928	0.904	120874	0.15
8/22/2016	04:55	14.79	08:15	16.72	15.59	03:00	0.36	08:05	0.68	0.49	03:00	0.465	08:10	1.180	0.714	95459	
8/23/2016	05:05	14.66	08:15	16.81	15.50	05:00	0.31	08:15	0.66	0.45	05:00	0.388	08:15	1.157	0.646	86403	
8/24/2016	04:50	14.67	08:15	16.74	15.54	13:45	0.32	08:20	0.67	0.44	04:15	0.405	08:20	1.159	0.648	86587	
8/25/2016	04:35	14.69	08:30	16.86	15.68	05:25	0.32	09:10	0.67	0.45	05:25	0.399	09:05	1.144	0.673	89912	
8/26/2016	04:55	15.08	08:20	16.71	15.76	04:30	0.29	08:05	0.61	0.45	04:30	0.393	08:25	1.040	0.678	90686	
8/27/2016	06:35	15.03	10:30	16.25	15.62	05:35	0.29	10:55	0.62	0.44	05:35	0.383	10:55	1.001	0.654	87475	
8/28/2016	06:05	14.73	12:20	16.30	15.63	05:05	0.29	11:55	0.61	0.46	05:05	0.368	11:55	0.979	0.680	90968	
8/29/2016	05:20	14.81	08:30	16.84	15.61	02:20	0.33	08:15	0.81	0.48	05:35	0.432	08:15	1.418	0.709	94804	
8/30/2016	04:50	14.66	08:25	16.85	15.61	04:45	0.33	07:55	0.71	0.48	04:45	0.414	07:55	1.226	0.711	95026	
8/31/2016	05:10	14.91	08:25	17.01	15.73	04:20	0.32	01:00	0.66	0.47	04:20	0.417	08:20	1.133	0.704	94013	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3523146	1.12
Avg	15.85	0.55	0.850	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	03:25	14.87	14:45	74.01	18.97	14:50	0.25	16:20	0.99	0.53	04:05	0.430	15:00	9.577	1.423	190247	0.56
9/2/2016	04:50	14.98	08:40	16.53	15.69	04:50	0.40	20:45	0.64	0.54	04:50	0.524	10:45	1.001	0.794	106185	
9/3/2016	05:10	14.83	11:15	16.14	15.48	04:25	0.44	11:30	0.70	0.57	05:40	0.561	11:30	1.106	0.826	110416	
9/4/2016	05:40	14.77	11:30	16.11	15.44	07:00	0.42	18:20	0.75	0.58	07:00	0.533	18:20	1.079	0.828	110711	
9/5/2016	04:55	14.75	20:50	16.45	15.66	06:10	0.42	22:40	0.74	0.61	06:10	0.536	21:00	1.206	0.903	120714	
9/6/2016	04:10	14.78	19:40	21.89	15.80	19:20	0.42	19:50	0.99	0.61	03:35	0.587	19:50	2.659	0.938	125399	
9/7/2016	04:55	14.75	08:10	16.96	15.65	03:30	0.42	00:00	0.79	0.58	03:30	0.528	08:05	1.375	0.865	115586	
9/8/2016	05:00	14.69	08:15	17.02	15.60	04:25	0.34	08:15	0.72	0.51	04:25	0.422	08:15	1.293	0.753	100642	
9/9/2016	04:40	14.71	22:05	18.69	15.66	02:45	0.32	08:45	0.70	0.49	02:45	0.413	08:45	1.202	0.728	97277	0.11
9/10/2016	05:40	14.75	11:35	16.36	15.64	05:50	0.31	19:45	0.63	0.46	05:50	0.389	11:50	0.998	0.674	90063	0.05
9/11/2016	05:00	14.76	11:50	16.40	15.64	03:25	0.26	22:00	0.68	0.45	03:25	0.332	22:00	1.066	0.672	89846	
9/12/2016	04:55	14.63	08:10	16.82	15.55	04:35	0.27	15:25	0.70	0.51	04:35	0.330	21:15	1.087	0.754	100842	0.00
9/13/2016	05:20	14.56	08:10	16.88	15.48	04:55	0.42	08:45	0.79	0.60	04:55	0.516	08:45	1.360	0.873	116640	
9/14/2016	03:55	14.54	17:50	47.26	17.53	17:45	0.24	19:45	0.96	0.59	03:35	0.515	18:00	9.541	1.282	171363	0.64
9/15/2016	05:15	14.62	08:20	16.86	15.50	05:15	0.37	08:20	0.63	0.45	05:15	0.459	08:20	1.110	0.659	88102	
9/16/2016	05:00	14.56	08:10	16.63	15.41	06:35	0.31	07:35	0.56	0.41	05:10	0.419	07:35	0.927	0.578	77204	
9/17/2016	05:30	14.51	12:15	16.30	15.46	05:30	0.27	20:20	0.65	0.44	05:30	0.328	13:10	1.004	0.637	85136	
9/18/2016	06:15	14.55	20:50	16.41	15.58	06:35	0.25	12:30	0.72	0.49	06:35	0.306	20:40	1.172	0.723	96591	
9/19/2016	03:50	14.62	10:55	29.21	17.21	03:55	0.31	11:35	1.26	0.64	03:55	0.382	11:10	6.124	1.381	184563	0.45
9/20/2016	04:45	14.76	08:15	16.90	15.58	02:35	0.32	07:50	0.79	0.49	02:35	0.413	07:50	1.396	0.716	95774	
9/21/2016	04:45	14.59	08:10	16.93	15.55	04:45	0.26	22:55	0.83	0.52	04:45	0.313	22:55	1.284	0.770	102947	
9/22/2016	04:45	14.61	08:05	16.83	15.50	04:25	0.42	22:55	0.84	0.61	04:25	0.522	08:00	1.358	0.888	118685	
9/23/2016	04:25	14.55	08:20	16.75	15.44	04:05	0.35	08:10	0.78	0.59	04:05	0.432	08:10	1.354	0.844	112821	
9/24/2016	00:55	15.22	01:10	54.03	18.68	04:10	0.31	01:00	1.20	0.56	05:25	0.527	01:25	9.828	1.434	191670	0.28
9/25/2016	05:25	14.74	11:15	16.40	15.66	03:35	0.33	12:25	0.85	0.54	03:35	0.433	12:25	1.380	0.813	108639	
9/26/2016	05:00	14.59	08:10	16.87	15.49	04:35	0.34	10:45	0.84	0.57	04:35	0.413	08:10	1.429	0.827	110600	
9/27/2016	02:25	14.80	03:25	22.24	16.24	22:35	0.41	03:50	0.96	0.56	02:10	0.551	03:05	2.917	0.944	126136	0.25
9/28/2016	04:45	14.70	08:10	16.99	15.58	03:15	0.29	09:10	0.70	0.43	03:15	0.371	09:10	1.172	0.626	83737	
9/29/2016	05:00	14.59	08:20	16.76	15.46	03:35	0.30	07:45	0.66	0.42	03:35	0.372	07:45	1.106	0.599	80084	
9/30/2016	04:20	14.69	19:20	21.18	17.20	05:10	0.30	19:35	0.77	0.56	05:10	0.371	19:35	2.263	1.113	148739	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3457360	2.75
Avg	15.98	0.53	0.862	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	05:40	14.77	00:00	16.44	15.66	05:35	0.31	00:15	0.73	0.46	05:35	0.392	00:15	1.166	0.676	90430	
10/2/2016	06:10	14.69	11:50	16.33	15.62	04:05	0.30	15:25	0.63	0.47	04:05	0.373	11:25	0.973	0.691	92414	
10/3/2016	05:10	14.64	08:20	16.59	15.52	04:50	0.32	08:05	0.63	0.47	04:50	0.395	08:05	1.056	0.681	91057	
10/4/2016	04:55	14.60	08:15	16.74	15.51	05:00	0.33	21:50	0.68	0.48	05:00	0.403	08:25	1.180	0.704	94164	
10/5/2016	04:45	14.52	08:10	16.92	15.50	05:00	0.28	21:50	0.84	0.54	05:00	0.339	21:50	1.337	0.789	105421	
10/6/2016	04:40	14.68	08:15	16.90	15.47	04:45	0.42	19:05	0.82	0.60	04:45	0.528	08:05	1.409	0.867	115884	0.00
10/7/2016	04:50	14.47	08:20	16.63	15.36	05:50	0.37	08:10	0.77	0.56	05:50	0.448	08:10	1.312	0.799	106748	
10/8/2016	05:05	14.47	20:20	16.85	15.53	06:30	0.35	19:20	0.84	0.58	06:30	0.418	20:25	1.349	0.857	114543	0.13
10/9/2016	02:10	14.83	12:50	26.91	17.43	02:15	0.42	13:10	1.29	0.67	02:15	0.538	13:05	5.519	1.379	184281	0.52
10/10/2016	05:10	14.53	08:15	16.46	15.50	05:50	0.31	19:50	0.66	0.48	05:50	0.377	19:50	1.040	0.698	93290	
10/11/2016	03:55	14.49	08:15	16.87	15.39	03:40	0.32	21:35	0.67	0.50	03:40	0.388	08:00	1.165	0.722	96553	0.00
10/12/2016	04:55	14.40	08:20	16.60	15.37	04:50	0.31	07:55	0.67	0.50	04:50	0.368	08:20	1.140	0.709	94842	
10/13/2016	05:05	14.44	08:20	16.79	15.38	04:45	0.33	08:40	0.74	0.50	04:45	0.399	08:40	1.280	0.714	95442	
10/14/2016	04:50	14.35	08:25	16.57	15.25	04:25	0.28	08:05	0.72	0.49	04:25	0.327	08:10	1.204	0.687	91796	
10/15/2016	05:35	14.28	10:30	16.04	15.24	05:40	0.32	11:55	0.63	0.50	05:40	0.367	11:55	0.978	0.699	93484	
10/16/2016	05:50	14.34	20:45	16.13	15.37	05:20	0.30	21:00	0.66	0.49	05:25	0.358	21:00	1.038	0.699	93473	
10/17/2016	03:35	14.28	08:20	16.72	15.33	04:40	0.25	08:15	0.68	0.45	04:40	0.290	08:15	1.178	0.643	85919	
10/18/2016	04:10	14.43	08:15	16.86	15.37	04:40	0.31	08:50	0.64	0.45	04:40	0.373	08:00	1.112	0.641	85677	0.00
10/19/2016	04:50	14.34	08:20	16.84	15.33	04:25	0.27	08:00	0.63	0.42	04:25	0.313	08:00	1.084	0.598	79978	
10/20/2016	04:50	14.34	08:20	16.84	15.33	04:50	0.27	07:55	0.70	0.42	04:50	0.322	07:55	1.211	0.601	80307	
10/21/2016	04:50	14.39	13:55	23.76	16.97	02:50	0.28	13:55	0.94	0.50	02:50	0.343	13:55	3.621	1.028	137414	0.46
10/22/2016	04:00	14.69	04:30	43.93	17.88	03:35	0.29	06:05	1.05	0.58	03:35	0.363	04:45	8.046	1.359	181698	0.33
10/23/2016	05:45	14.58	11:00	16.15	15.50	06:40	0.29	12:15	0.67	0.46	06:40	0.360	12:15	1.057	0.666	89002	
10/24/2016	04:50	14.49	08:15	16.63	15.39	04:15	0.30	08:25	0.69	0.46	04:15	0.357	08:25	1.170	0.663	88565	
10/25/2016	04:40	14.37	08:15	16.67	15.31	04:00	0.28	08:20	0.66	0.45	04:00	0.327	08:20	1.125	0.634	84752	
10/26/2016	04:20	14.28	08:15	16.56	15.29	04:25	0.27	20:50	0.65	0.45	04:25	0.318	08:40	1.066	0.633	84636	
10/27/2016	05:20	14.32	20:35	45.74	20.57	03:25	0.30	23:10	1.01	0.54	04:05	0.353	21:00	7.519	1.759	235180	1.15
10/28/2016	05:40	15.21	00:00	19.80	16.01	05:40	0.48	01:15	0.77	0.58	05:40	0.660	00:00	1.885	0.909	121463	
10/29/2016	06:10	14.81	12:35	16.39	15.70	06:10	0.42	10:45	0.64	0.55	06:10	0.536	12:35	1.040	0.817	109242	
10/30/2016	06:15	14.76	16:50	40.80	18.83	19:10	0.33	20:55	0.84	0.55	06:15	0.523	17:05	6.430	1.397	186724	
10/31/2016	04:40	14.98	00:00	16.99	15.82	04:40	0.47	22:35	0.74	0.60	04:40	0.614	00:00	1.215	0.914	122034	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3426412	2.59
Avg	15.93	0.51	0.827	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H5, Pipe Height: 58.248 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:55	14.78	08:10	16.89	15.62	05:10	0.42	08:10	0.78	0.60	05:10	0.528	08:10	1.383	0.891	119167	
11/2/2016	04:55	14.75	08:15	16.89	15.62	05:40	0.42	08:05	0.77	0.58	05:40	0.542	08:05	1.351	0.856	114368	
11/3/2016	05:10	14.80	08:15	16.91	15.61	04:55	0.42	08:20	0.73	0.56	04:55	0.535	08:20	1.299	0.825	110306	
11/4/2016	05:10	14.52	08:25	16.78	15.47	04:55	0.35	07:45	0.70	0.51	04:55	0.422	08:25	1.214	0.736	98330	
11/5/2016	05:10	14.62	11:50	16.31	15.51	04:25	0.40	10:45	0.69	0.53	04:35	0.492	10:45	1.109	0.775	103609	
11/6/2016	06:00	14.55	12:20	16.34	15.52	02:40	0.33	11:40	0.70	0.47	05:20	0.405	11:40	1.133	0.679	90722	
11/7/2016	05:10	14.45	09:00	16.88	15.25	06:10	0.27	09:00	0.73	0.43	06:10	0.325	09:00	1.280	0.622	38414	
11/8/2016																	
11/9/2016																	0.07
11/10/2016	12:00	14.89	21:15	15.90	15.40	14:45	0.50	22:50	0.68	0.58	16:05	0.666	21:00	1.023	0.820	53291	
11/11/2016	05:05	14.49	08:25	16.41	15.41	04:45	0.37	08:45	0.74	0.58	04:45	0.448	08:45	1.213	0.830	110935	
11/12/2016	05:25	14.38	11:50	16.30	15.37	05:10	0.36	13:00	0.72	0.56	05:10	0.419	11:40	1.156	0.800	106993	
11/13/2016	06:20	14.34	20:45	16.14	15.41	06:35	0.31	11:55	0.71	0.52	06:35	0.369	11:55	1.118	0.748	100024	
11/14/2016	05:05	14.26	08:15	16.85	15.30	03:45	0.27	21:45	0.68	0.46	03:45	0.311	08:05	1.158	0.648	86573	
11/15/2016	04:00	14.42	11:00	57.33	23.08	04:10	0.29	04:30	0.91	0.55	04:10	0.349	11:00	8.491	2.196	293587	1.50
11/16/2016	04:45	14.65	08:10	16.78	15.40	04:45	0.40	08:10	0.67	0.51	04:45	0.492	08:10	1.161	0.721	96261	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1522582	1.57
Avg	16.05	0.53	0.880	

Site Commentary

Site Information

H6	
Pipe Dimensions (in.)	Standard Egg (42.00 in H, 29.00 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for H6 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.02	1.79	0.268
Minimum	1.90	0.00	0.000
Maximum	72.95	4.68	18.919
Time of Minimum	10/26/2016 4:10 AM	9/1/2016 3:00 PM	9/1/2016 3:00 PM
Time of Maximum	7/25/2016 5:40 PM	7/25/2016 5:35 PM	7/25/2016 5:35 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. HOBOKEN, NJ

Site Report

FM Initials: CK

Project Name: NHSA

Site Name:	H6	Meter Type:	TRITON+	Monitor S/N:	60837	Manhole #:	H6 Regulator
Address / Location:	1333 HUDSON STREET (IN SIDEWALK)			Map Page #:		K3	
				Pipe Height:		42 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		29 Inches	
				I.P. Address		107.80.25.37	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 8, 2016	8:30 AM	Manhole Depth:	9.1 Feet	
Site Hydraulics:	SMOOTH SLOW FLOW		Manhole Material / Condition:	Concrete 85"X85"	Good
			Active Drop Connections?	No	
			Pipe Material / Condition:	Brick	Fair
			Mini System Character:	COMMERCIAL	
			Telephone Information:		
Depth of Flow (Wet Dof):	3.5 +/- 0.5		Access Pole #:	N/A	
Range (Air Dof):	38.5 +/- 0.5		Distance From Manhole:	N/A Feet	
Peak Velocity:	1.89 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

N 40.75300 W 74.02494

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		Regulator	1'

Additional Site Information / Comments:

UPSTREAM INSTALL IN REGULATOR CHAMBER. UPSTREAM JUNCTION MANHOLE NOT SUITABLE.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H6 **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

*** Site Classification**

	Class	*Description*
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H6

Flow Monitor

H6

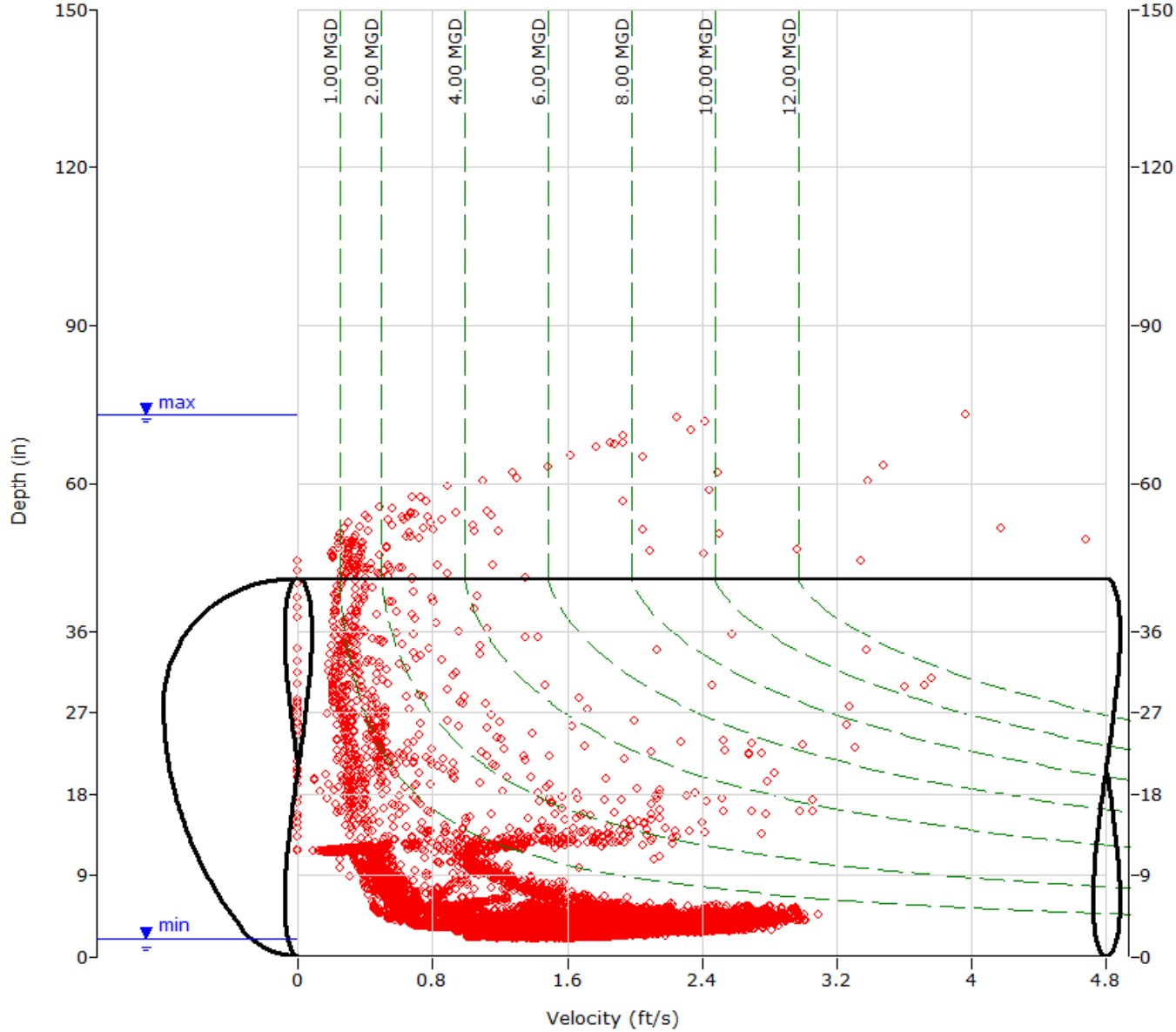
Pipe Height
42.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

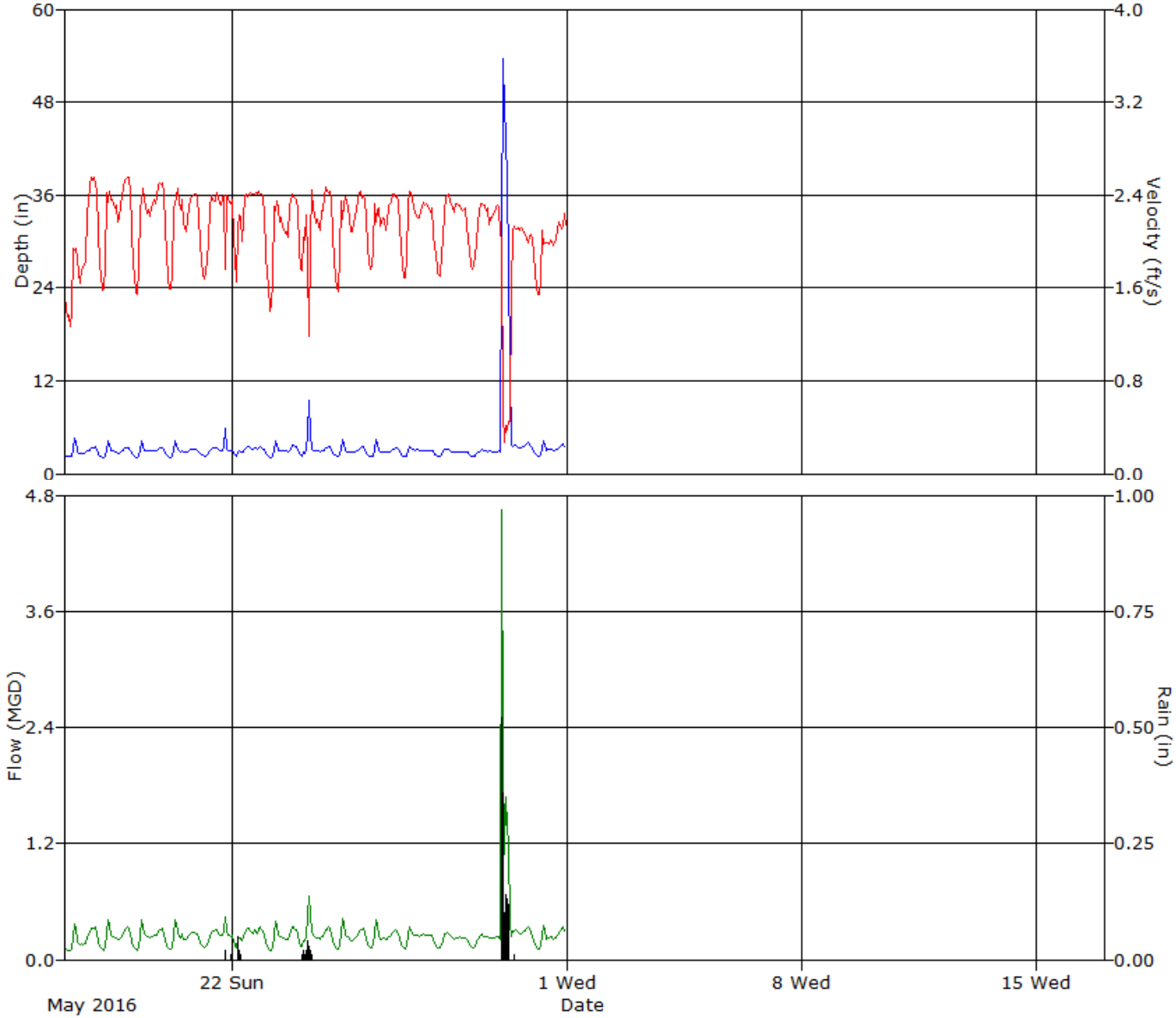
Pipe Height
42.00 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

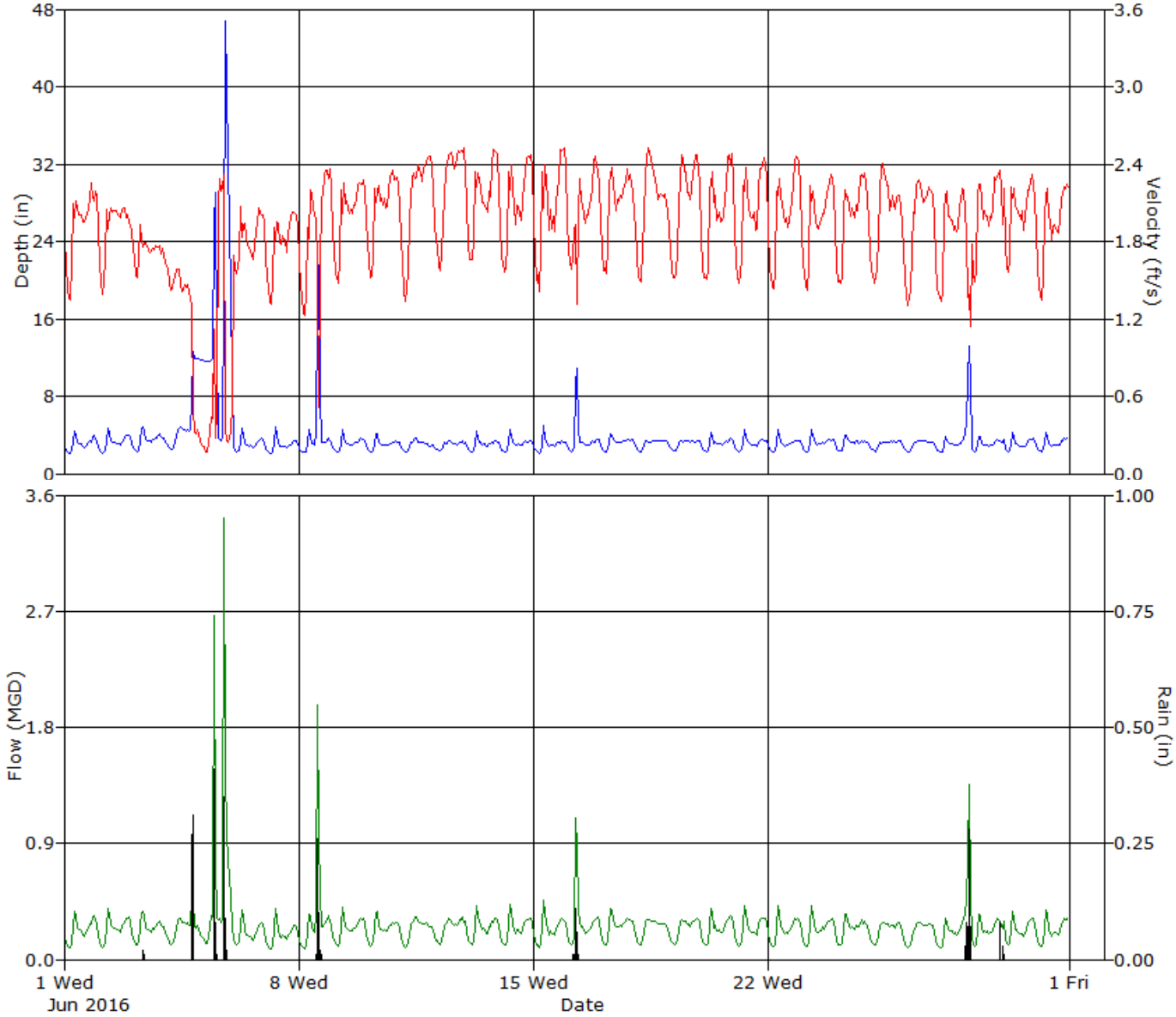
Pipe Height
42.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

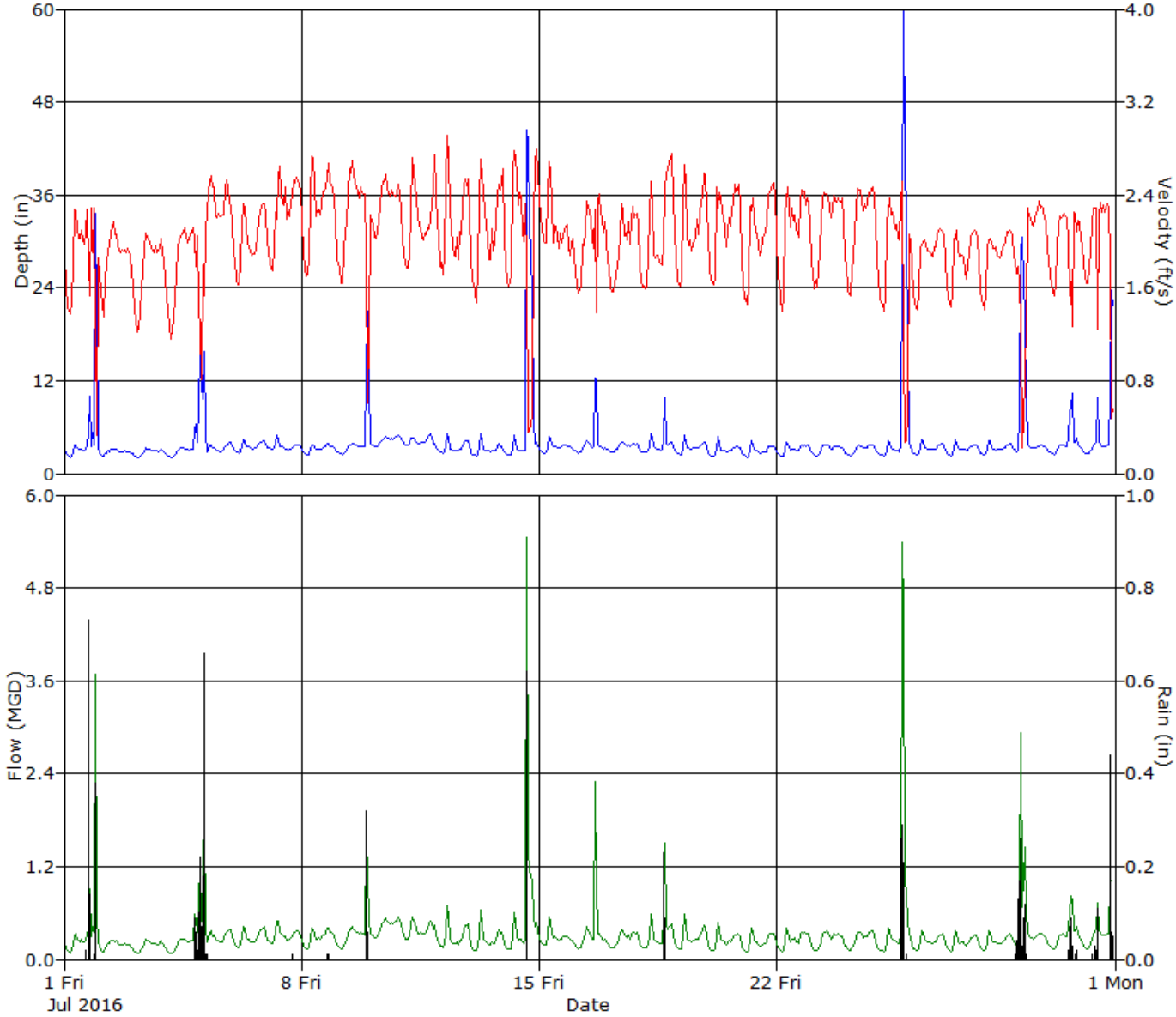
Pipe Height
42.00 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

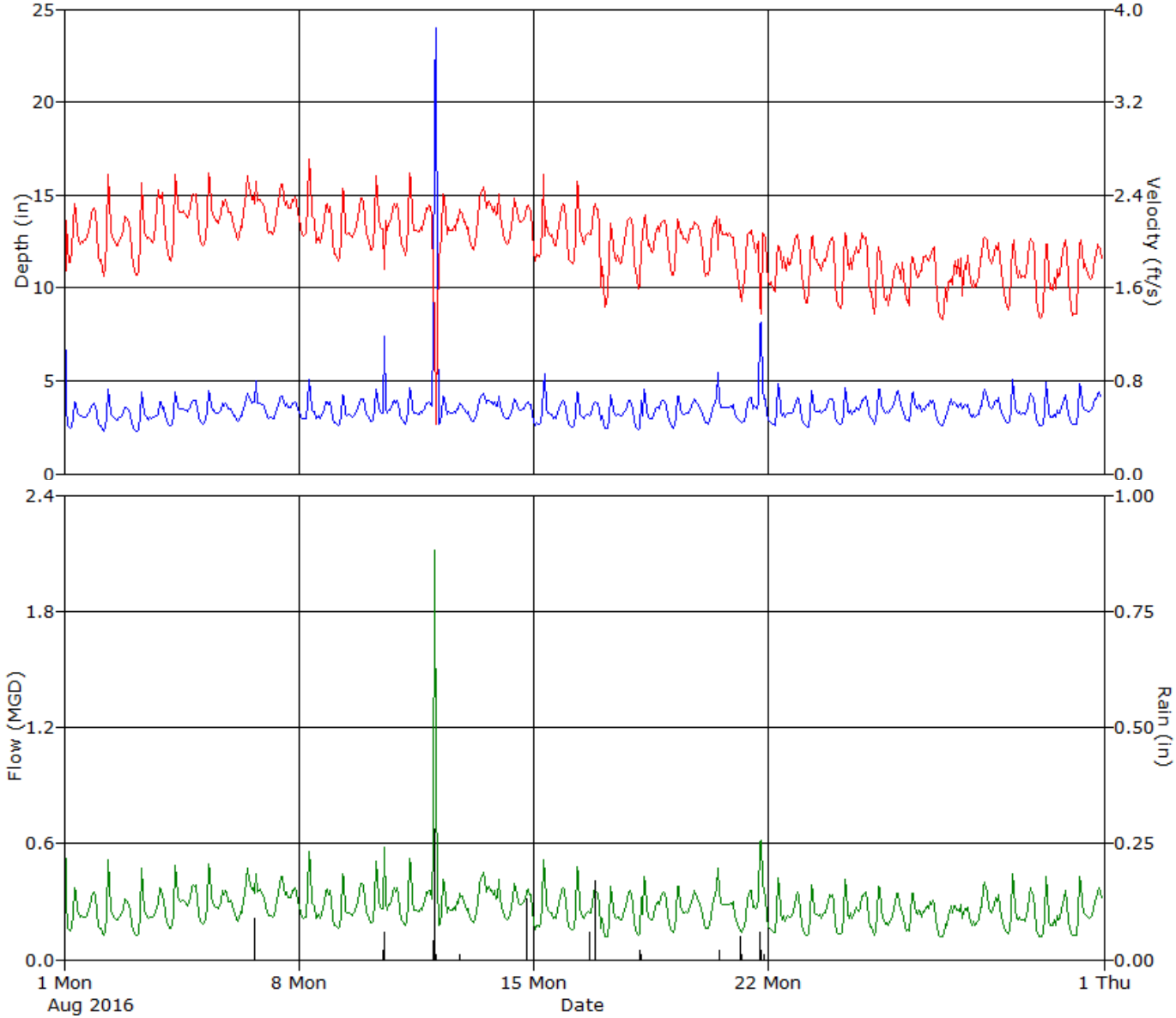
Pipe Height
42.00 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

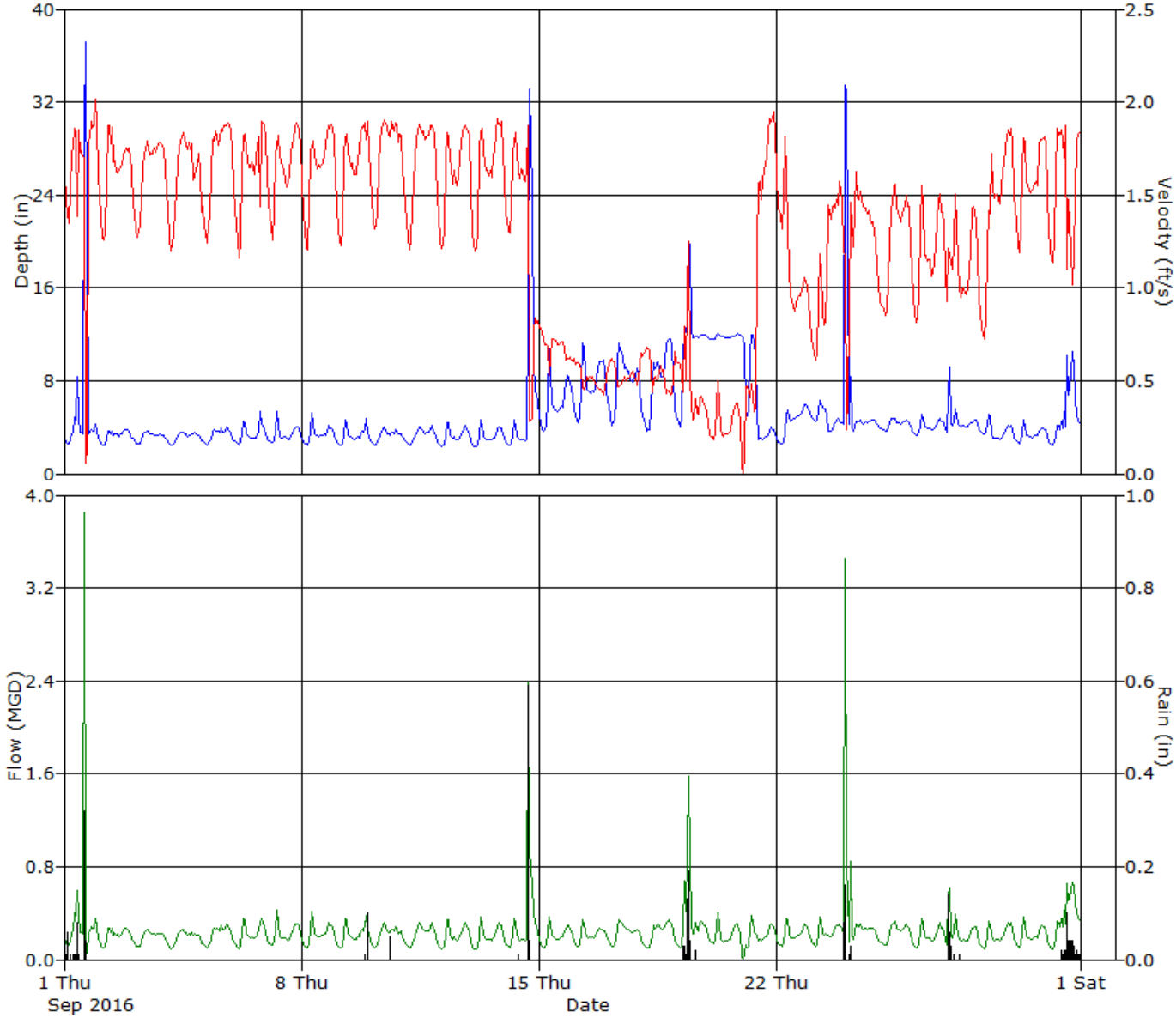
Pipe Height
42.00 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

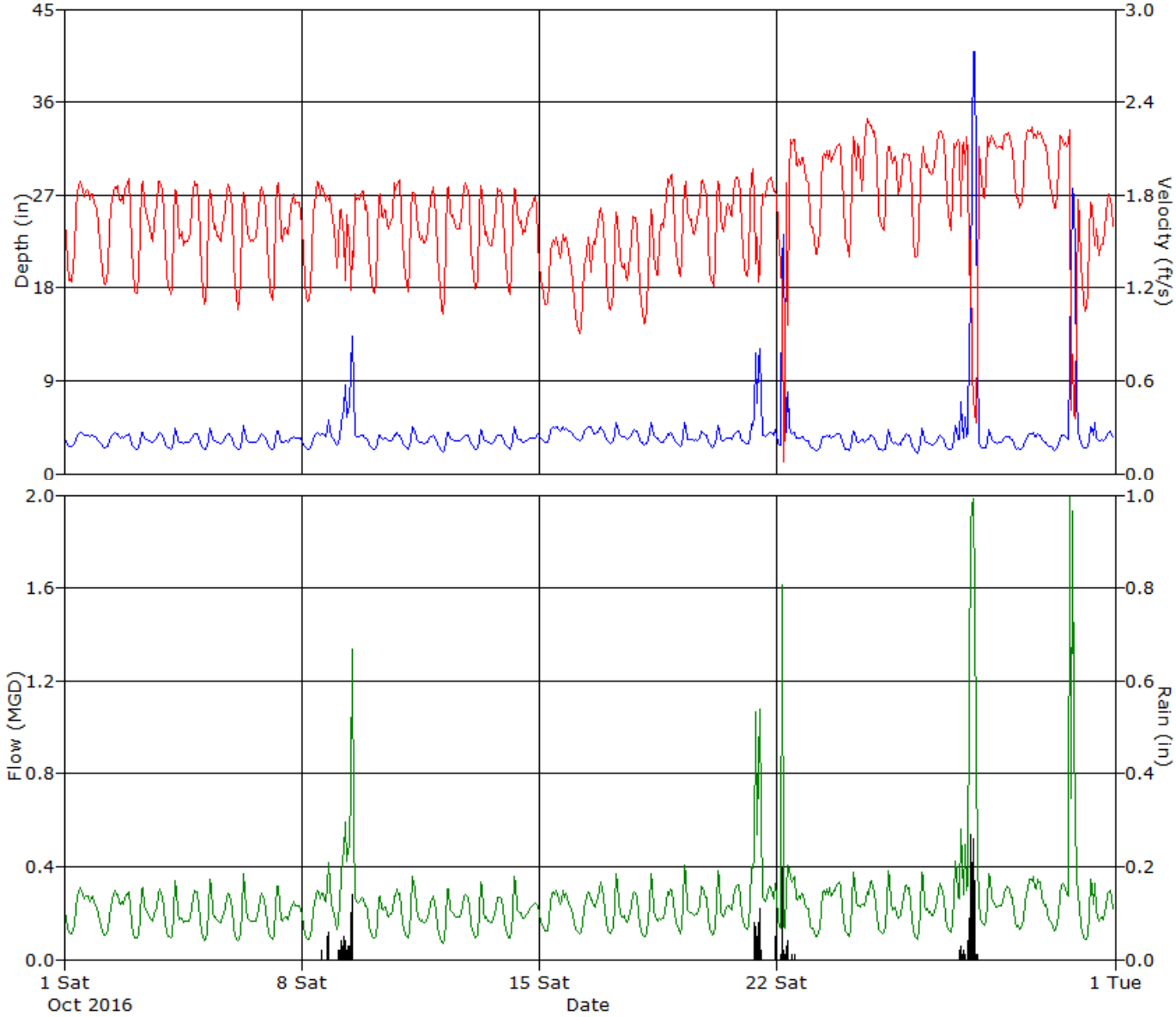
Pipe Height
42.00 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H6

Flow Monitor

H6

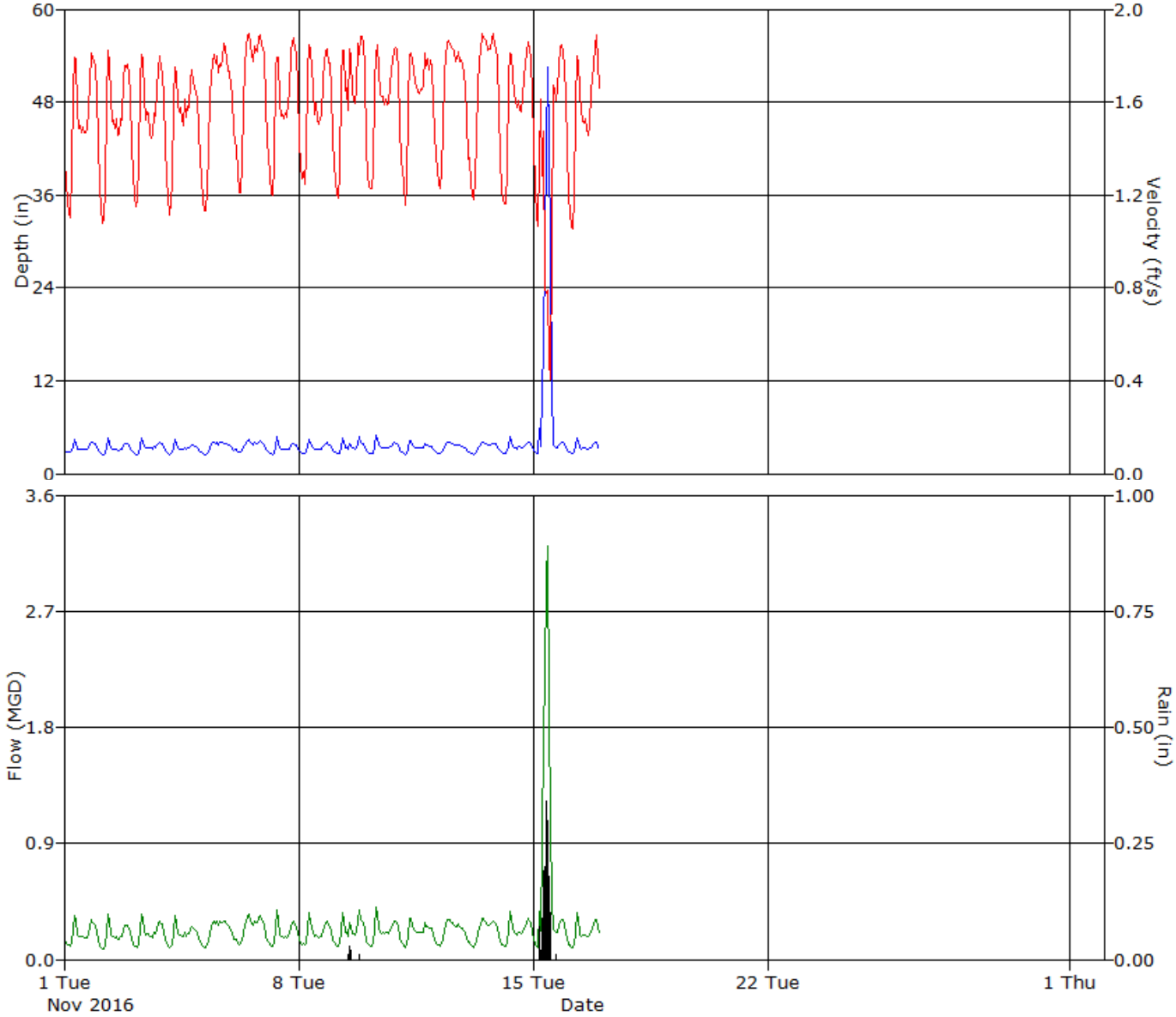
Pipe Height
42.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:55	2.15	08:00	5.06	2.91	04:30	1.15	20:15	2.57	1.92	04:30	0.078	08:00	0.410	0.210	28115	
5/18/2016	04:25	1.99	07:15	4.57	2.89	04:25	1.40	20:55	2.64	2.23	04:25	0.084	07:20	0.440	0.238	31826	
5/19/2016	04:00	2.04	07:40	4.70	2.94	03:40	1.43	22:10	2.54	2.21	04:10	0.090	07:40	0.446	0.241	32184	
5/20/2016	04:55	2.07	07:15	4.62	2.90	05:00	1.42	12:15	2.61	2.18	05:00	0.090	07:15	0.430	0.233	31129	
5/21/2016	04:55	2.24	19:30	9.23	3.04	19:25	1.02	13:25	2.47	2.17	04:55	0.115	19:35	0.589	0.242	32387	0.03
5/22/2016	03:55	2.29	21:10	3.69	3.08	03:55	1.63	17:30	2.47	2.27	03:55	0.120	20:20	0.349	0.260	34811	0.08
5/23/2016	03:55	2.04	07:40	4.63	3.00	04:35	1.30	19:20	2.46	2.09	03:45	0.083	07:40	0.435	0.236	31575	
5/24/2016	01:45	2.30	07:30	10.38	3.42	07:25	1.05	18:35	2.51	2.14	01:50	0.117	07:15	0.709	0.275	36700	0.16
5/25/2016	04:50	2.16	08:00	4.70	2.97	04:20	1.54	21:40	2.49	2.16	04:45	0.105	08:00	0.438	0.237	31744	
5/26/2016	04:25	2.16	07:40	4.63	2.93	03:50	1.69	21:50	2.44	2.18	03:50	0.116	07:50	0.427	0.234	31292	
5/27/2016	03:40	2.14	07:30	3.97	2.92	05:00	1.63	07:25	2.47	2.19	03:40	0.110	07:30	0.392	0.233	31156	
5/28/2016	05:10	2.22	09:05	3.26	2.76	05:10	1.60	10:45	2.52	2.17	05:10	0.113	10:45	0.304	0.212	28366	
5/29/2016	04:05	2.13	11:15	3.14	2.75	04:05	1.58	13:00	2.37	2.14	04:05	0.105	11:25	0.274	0.209	27921	
5/30/2016	01:10	2.65	01:55	72.48	13.04	03:30	0.20	01:35	3.34	1.64	01:10	0.177	01:35	13.515	0.724	96775	1.38
5/31/2016	04:40	2.23	08:05	4.56	3.13	04:00	1.48	21:15	2.35	1.96	04:00	0.106	07:35	0.377	0.232	30980	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			536960	1.65
Avg	3.64	2.11	0.268	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:40	2.11	07:40	4.89	3.08	03:15	1.24	19:25	2.34	1.93	03:15	0.084	07:50	0.405	0.226	30246	
6/2/2016	03:35	2.12	07:50	5.07	3.25	03:35	1.33	06:35	2.24	1.91	03:35	0.088	07:50	0.420	0.240	32047	
6/3/2016	04:40	2.24	08:55	5.33	3.47	04:30	1.42	06:25	2.02	1.74	04:30	0.101	08:50	0.419	0.237	31683	0.03
6/4/2016	04:50	2.40	19:55	15.47	5.34	22:30	0.29	09:00	1.65	1.30	04:50	0.110	19:55	1.182	0.254	33989	0.58
6/5/2016	16:55	3.29	18:50	50.94	16.39	05:25	0.09	18:40	3.60	0.72	05:25	0.068	18:45	11.992	0.626	83716	0.96
6/6/2016	03:20	2.27	00:00	15.14	3.34	00:10	0.31	06:35	2.17	1.77	05:15	0.110	07:55	0.406	0.213	28444	
6/7/2016	04:05	2.07	07:45	5.22	2.95	03:05	1.26	18:30	2.11	1.79	03:05	0.082	07:45	0.421	0.197	26315	
6/8/2016	04:35	2.16	14:05	22.47	4.68	14:40	0.47	22:10	2.41	1.85	04:35	0.083	13:35	2.987	0.348	46553	0.40
6/9/2016	04:05	2.18	07:30	4.78	3.13	04:05	1.35	08:40	2.37	2.01	04:05	0.093	07:35	0.423	0.239	31974	
6/10/2016	03:30	2.17	08:05	4.86	3.03	04:25	1.48	18:55	2.43	2.07	03:30	0.103	08:05	0.435	0.234	31344	
6/11/2016	04:55	2.12	11:20	3.96	2.98	04:40	1.25	22:15	2.50	2.12	04:40	0.083	11:20	0.347	0.236	31508	
6/12/2016	05:20	2.22	21:10	3.66	2.99	05:15	1.50	21:25	2.61	2.23	05:15	0.106	21:15	0.348	0.246	32873	
6/13/2016	04:20	2.18	07:10	4.82	3.06	04:45	1.52	18:35	2.62	2.14	04:45	0.106	07:50	0.442	0.245	32799	
6/14/2016	04:45	2.18	07:45	5.09	3.07	04:15	1.37	18:50	2.54	2.10	04:15	0.095	07:40	0.468	0.243	32449	
6/15/2016	04:35	2.11	07:35	5.38	3.02	04:40	1.19	19:45	2.57	2.07	04:35	0.078	07:40	0.495	0.236	31553	
6/16/2016	03:45	2.24	06:40	15.24	3.66	07:40	1.02	19:15	2.58	2.02	03:55	0.110	06:40	2.435	0.300	40126	0.20
6/17/2016	03:45	2.24	07:25	4.50	3.22	04:05	1.41	08:40	2.58	2.09	04:05	0.102	07:50	0.436	0.258	34486	
6/18/2016	05:00	2.21	08:25	3.49	3.11	05:35	1.35	12:20	2.56	2.10	05:25	0.097	08:40	0.325	0.246	32891	
6/19/2016	05:20	2.33	22:10	3.48	3.09	04:20	1.35	21:50	2.60	2.10	05:20	0.105	21:50	0.327	0.245	32749	
6/20/2016	04:30	2.24	08:00	4.68	3.12	02:55	1.37	22:35	2.52	2.04	02:55	0.104	08:05	0.442	0.242	32349	
6/21/2016	03:20	2.21	07:55	4.88	3.11	02:40	1.33	21:45	2.52	2.04	02:40	0.098	08:00	0.467	0.241	32280	
6/22/2016	03:50	2.15	07:50	5.53	3.08	04:55	1.37	20:35	2.54	2.02	03:50	0.094	07:50	0.484	0.236	31595	
6/23/2016	04:40	2.15	07:40	5.23	3.18	05:05	1.38	06:40	2.53	1.98	05:05	0.095	07:35	0.467	0.241	32215	
6/24/2016	05:00	2.33	08:00	4.74	3.16	02:45	1.40	23:20	2.42	2.00	02:45	0.109	08:00	0.411	0.241	32172	
6/25/2016	05:05	2.17	21:25	3.50	3.05	04:25	1.33	09:30	2.48	2.01	04:50	0.100	13:30	0.300	0.230	30707	
6/26/2016	04:35	2.21	12:35	3.43	3.02	04:30	1.19	11:00	2.33	1.95	04:30	0.084	12:35	0.297	0.221	29576	
6/27/2016	03:25	2.16	23:40	12.38	3.38	23:30	1.08	06:35	2.27	1.85	04:45	0.086	23:55	1.470	0.246	32839	0.18
6/28/2016	04:30	2.16	00:40	18.54	3.73	01:25	0.63	21:40	2.42	1.98	04:25	0.100	00:40	3.025	0.291	38877	0.43
6/29/2016	05:05	2.21	00:55	5.36	3.10	05:05	1.51	06:50	2.44	2.03	05:05	0.106	00:50	0.465	0.238	31782	0.04
6/30/2016	04:35	2.25	07:35	4.71	3.10	04:35	1.26	23:00	2.44	1.92	04:35	0.091	07:35	0.430	0.226	30176	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1032311	2.82
Avg	3.73	1.93	0.257	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:20	2.07	22:10	51.39	5.52	23:20	0.27	22:10	4.17	1.81	04:00	0.086	22:10	16.860	0.425	56782	1.28
7/2/2016	04:55	2.13	00:00	9.05	2.85	00:00	0.78	00:10	2.24	1.88	04:50	0.087	00:05	0.418	0.191	25598	
7/3/2016	04:45	2.03	10:50	3.32	2.77	04:25	1.18	10:10	2.10	1.78	04:45	0.073	10:50	0.261	0.178	23764	
7/4/2016	04:45	2.06	20:50	14.37	3.37	21:10	0.97	23:05	2.24	1.78	04:35	0.067	20:50	1.919	0.241	32211	0.27
7/5/2016	13:45	2.53	00:45	19.61	5.02	00:45	0.10	02:45	2.79	2.17	00:45	0.159	02:45	4.469	0.454	60639	1.15
7/6/2016	04:40	2.64	07:50	4.71	3.49	03:20	1.45	07:10	2.40	2.02	03:25	0.136	07:45	0.468	0.281	37509	
7/7/2016	14:55	2.94	07:50	5.25	3.49	04:30	1.55	08:40	2.76	2.26	04:30	0.183	08:30	0.573	0.308	41180	0.01
7/8/2016	04:55	2.35	18:40	4.47	3.24	03:15	1.55	08:10	2.82	2.30	03:15	0.122	18:40	0.506	0.287	38320	0.02
7/9/2016	05:30	2.36	22:35	23.34	4.39	23:55	0.26	12:40	2.77	2.17	05:30	0.114	22:40	5.249	0.373	49882	0.38
7/10/2016	05:20	3.45	00:00	19.30	4.62	00:05	0.22	12:25	2.62	2.29	05:20	0.266	00:30	1.314	0.432	57750	
7/11/2016	23:55	3.40	20:10	5.35	4.16	03:00	1.72	07:00	3.09	2.17	03:10	0.242	07:00	0.612	0.378	50468	
7/12/2016	04:00	2.62	07:55	5.59	3.41	04:55	1.60	07:00	3.01	2.18	04:05	0.148	08:05	0.756	0.299	39932	
7/13/2016	03:55	2.30	07:45	5.54	3.12	04:30	1.43	19:55	2.96	2.12	04:30	0.108	07:45	0.695	0.257	34412	
7/14/2016	04:20	2.31	16:20	63.47	8.74	16:50	0.24	16:20	3.47	2.00	04:40	0.112	16:20	14.039	0.620	82842	0.62
7/15/2016	04:40	2.61	07:30	5.41	3.42	14:20	1.63	07:15	2.85	2.14	04:50	0.171	07:30	0.656	0.285	38092	
7/16/2016	04:45	2.64	16:30	23.10	4.10	17:05	0.71	16:30	3.31	2.01	04:45	0.131	16:30	6.776	0.379	50644	
7/17/2016	05:40	2.69	12:00	4.26	3.46	05:15	1.52	10:55	2.84	1.99	05:45	0.145	10:55	0.464	0.270	36142	
7/18/2016	00:10	2.54	16:55	16.09	3.76	04:20	1.55	16:55	3.06	2.08	03:50	0.144	16:55	3.742	0.351	46939	0.32
7/19/2016	04:55	2.44	08:00	5.32	3.37	03:40	1.54	07:00	2.94	2.11	04:55	0.129	08:00	0.645	0.283	37815	
7/20/2016	03:05	2.25	07:25	5.34	3.05	04:50	1.56	06:40	2.86	2.16	04:50	0.114	07:30	0.510	0.248	33190	
7/21/2016	04:40	2.06	07:40	4.64	3.00	04:25	1.22	18:40	2.61	2.06	04:25	0.080	07:55	0.446	0.234	31306	
7/22/2016	04:50	2.20	07:45	4.54	3.15	04:50	1.23	06:40	2.63	2.12	04:50	0.086	07:45	0.430	0.257	34383	
7/23/2016	05:05	2.22	12:45	3.83	3.17	05:05	1.43	17:05	2.66	2.16	05:05	0.100	12:40	0.379	0.262	35080	
7/24/2016	04:55	2.26	20:10	3.83	3.17	04:55	1.28	12:05	2.59	2.15	04:55	0.092	21:50	0.389	0.263	35141	
7/25/2016	04:55	2.26	17:40	72.95	9.97	19:55	0.22	17:35	4.68	1.76	04:45	0.096	17:35	18.919	0.694	92765	0.77
7/26/2016	04:15	2.42	07:45	4.83	3.27	04:15	1.39	19:50	2.18	1.88	04:15	0.110	07:45	0.402	0.236	31600	
7/27/2016	04:35	2.30	07:55	4.75	3.21	04:45	1.39	18:35	2.22	1.85	04:45	0.103	07:55	0.401	0.228	30503	
7/28/2016	04:30	2.33	07:50	5.18	3.24	04:25	1.37	19:00	2.17	1.88	04:30	0.103	08:05	0.424	0.234	31298	
7/29/2016	04:20	2.49	05:45	35.00	7.60	06:25	0.20	18:20	2.47	1.84	04:20	0.117	05:10	4.842	0.526	70279	0.86
7/30/2016	05:35	2.47	18:00	12.71	4.11	18:30	0.81	08:45	2.43	1.94	04:55	0.121	17:45	1.548	0.329	44015	0.24
7/31/2016	05:00	2.51	23:05	25.77	5.50	23:05	0.44	21:40	3.00	1.91	05:00	0.135	21:40	6.253	0.383	51173	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1361658	6.64
Avg	4.15	2.03	0.329	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:30	2.41	00:00	13.38	3.49	00:00	0.95	01:05	2.79	2.05	03:50	0.146	00:00	0.890	0.275	36815	0.05
8/2/2016	05:10	2.17	07:20	4.94	3.11	05:10	1.65	07:20	2.71	2.04	05:10	0.112	07:20	0.599	0.241	32168	
8/3/2016	05:20	2.29	07:30	4.81	3.11	05:20	1.70	07:30	2.66	2.08	05:20	0.125	07:30	0.566	0.247	33006	
8/4/2016	05:10	2.52	07:25	4.82	3.43	05:10	1.81	07:25	2.75	2.21	05:10	0.153	07:25	0.586	0.297	39767	
8/5/2016	03:40	2.62	07:50	5.12	3.40	03:40	1.93	08:05	2.72	2.22	03:40	0.173	08:05	0.569	0.293	39110	
8/6/2016	04:10	2.74	17:05	7.26	3.63	04:10	1.98	11:15	2.72	2.29	04:10	0.189	11:15	0.569	0.326	43575	0.09
8/7/2016	05:40	2.88	12:05	4.42	3.54	05:40	2.03	12:05	2.59	2.27	05:40	0.208	12:05	0.488	0.315	42148	
8/8/2016	05:20	2.77	07:15	5.56	3.44	12:00	1.90	07:45	2.80	2.19	05:20	0.193	07:45	0.615	0.293	39123	
8/9/2016	05:20	2.48	07:35	4.65	3.31	23:55	1.70	07:35	2.60	2.11	05:20	0.148	07:35	0.526	0.272	36294	
8/10/2016	04:30	2.72	13:15	12.29	3.64	13:10	0.95	13:05	2.72	2.16	04:30	0.179	13:15	0.913	0.308	41136	0.08
8/11/2016	04:25	2.63	08:00	5.12	3.42	04:25	1.85	08:00	2.79	2.16	04:25	0.167	08:00	0.650	0.289	38620	
8/12/2016	05:05	2.63	02:05	26.16	5.37	02:20	0.23	08:00	2.57	1.99	05:05	0.166	01:30	3.811	0.405	54167	0.34
8/13/2016	05:10	2.75	12:05	4.54	3.62	05:10	1.90	12:05	2.55	2.23	05:10	0.182	12:05	0.500	0.322	43060	
8/14/2016	05:20	2.89	10:30	4.25	3.47	05:20	1.96	10:30	2.45	2.17	05:20	0.202	10:30	0.437	0.293	39197	0.13
8/15/2016	01:25	2.51	08:10	11.75	3.35	08:10	0.90	07:25	2.77	2.08	01:25	0.152	08:10	0.693	0.270	36065	
8/16/2016	04:55	2.49	08:05	5.04	3.26	04:55	1.80	08:05	2.76	2.09	04:55	0.149	08:05	0.627	0.263	35210	0.23
8/17/2016	05:10	2.37	07:55	4.55	3.27	04:10	1.28	22:20	2.24	1.89	04:10	0.102	07:50	0.425	0.240	32041	
8/18/2016	04:45	2.30	05:05	6.18	3.35	04:00	1.42	04:55	2.30	2.00	04:00	0.109	05:05	0.524	0.261	34941	0.03
8/19/2016	05:10	2.40	08:05	4.75	3.36	03:35	1.64	07:05	2.30	2.02	04:25	0.136	08:00	0.451	0.262	35077	
8/20/2016	04:20	2.61	12:30	7.52	3.51	12:30	1.42	13:05	2.24	2.00	03:55	0.147	12:35	0.603	0.275	36713	0.02
8/21/2016	05:20	2.68	18:35	10.93	3.86	18:35	1.01	09:20	2.18	1.84	05:05	0.132	18:40	0.706	0.287	38356	0.15
8/22/2016	05:30	2.57	07:45	5.36	3.36	01:25	1.49	21:15	2.10	1.82	05:25	0.133	08:00	0.463	0.239	31933	
8/23/2016	05:30	2.46	07:40	5.06	3.39	03:45	1.43	22:55	2.19	1.81	04:30	0.123	07:40	0.448	0.241	32207	
8/24/2016	03:15	2.58	08:05	5.34	3.45	05:20	1.27	19:10	2.18	1.82	03:15	0.114	07:50	0.515	0.249	33282	
8/25/2016	04:30	2.63	08:00	5.31	3.57	04:15	1.33	07:10	2.14	1.64	04:30	0.120	08:05	0.442	0.234	31334	
8/26/2016	05:35	2.67	08:00	4.94	3.56	05:50	1.29	23:25	2.11	1.76	05:35	0.127	08:00	0.420	0.248	33112	
8/27/2016	05:35	2.50	11:30	4.52	3.39	05:35	1.28	18:20	1.98	1.63	05:35	0.107	11:30	0.341	0.217	28951	
8/28/2016	02:20	2.89	11:25	4.84	3.63	02:20	1.51	11:40	2.04	1.83	02:20	0.155	11:25	0.435	0.264	35322	
8/29/2016	04:40	2.68	07:30	5.47	3.50	04:40	1.39	20:20	2.04	1.75	04:40	0.128	07:55	0.467	0.244	32557	
8/30/2016	02:20	2.56	07:30	5.80	3.32	02:20	1.31	07:05	2.04	1.68	02:20	0.114	07:30	0.529	0.219	29314	
8/31/2016	02:10	2.47	07:35	5.28	3.57	02:10	1.26	08:20	2.04	1.72	02:10	0.103	07:35	0.466	0.249	33243	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1127844	1.12
Avg	3.51	1.99	0.272	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:20	2.38	14:40	65.07	6.97	15:00	0.00	14:25	3.72	1.58	15:00	0.000	14:25	10.854	0.406	54223	0.56
9/2/2016	04:10	2.43	13:55	5.51	3.30	04:10	1.23	08:15	1.97	1.63	04:10	0.099	13:55	0.429	0.209	27878	
9/3/2016	04:30	2.52	11:40	3.82	3.21	04:30	1.23	16:15	1.90	1.63	04:30	0.104	11:35	0.278	0.198	26463	
9/4/2016	05:00	2.35	11:40	3.73	3.14	04:50	1.17	12:25	1.87	1.60	04:55	0.090	12:20	0.275	0.190	25436	
9/5/2016	06:15	2.45	19:40	4.36	3.31	05:15	1.02	12:30	1.98	1.68	05:15	0.085	19:50	0.345	0.216	28926	
9/6/2016	04:30	2.42	19:45	8.79	3.42	19:45	0.60	22:40	2.04	1.63	04:30	0.089	07:45	0.393	0.219	29222	
9/7/2016	03:30	2.61	07:30	5.85	3.33	04:40	1.18	08:15	2.02	1.64	04:45	0.111	07:35	0.478	0.213	28460	
9/8/2016	04:20	2.45	07:45	5.61	3.42	04:40	1.17	21:25	1.94	1.65	04:40	0.098	07:45	0.451	0.223	29873	
9/9/2016	04:10	2.37	22:00	6.78	3.29	04:50	1.16	20:10	1.99	1.65	04:10	0.092	22:00	0.529	0.212	28330	0.11
9/10/2016	04:15	2.33	11:40	4.16	3.29	05:30	1.27	16:10	2.05	1.73	04:15	0.097	11:40	0.335	0.220	29397	0.05
9/11/2016	05:35	2.41	20:25	4.22	3.34	05:15	1.17	11:15	1.93	1.68	05:30	0.093	20:45	0.329	0.219	29312	
9/12/2016	03:15	2.31	07:55	5.29	3.25	05:05	1.19	19:15	1.92	1.63	03:25	0.090	07:50	0.429	0.206	27560	0.00
9/13/2016	03:50	2.25	07:30	5.06	3.19	03:15	1.16	19:45	1.96	1.64	03:55	0.085	07:25	0.417	0.203	27092	
9/14/2016	04:25	2.40	17:55	35.97	6.37	18:55	0.21	17:40	3.28	1.35	04:25	0.100	17:40	8.547	0.345	46185	0.64
9/15/2016	03:25	3.60	07:45	11.25	6.18	07:15	0.52	01:35	0.80	0.68	04:45	0.099	07:50	0.387	0.207	27630	
9/16/2016	04:30	4.26	08:05	11.64	7.68	22:15	0.42	00:50	0.72	0.51	03:20	0.108	07:45	0.369	0.210	28123	
9/17/2016	04:10	4.10	09:30	11.45	7.95	17:30	0.42	03:55	0.63	0.53	04:10	0.105	09:35	0.352	0.231	30890	
9/18/2016	05:55	3.59	22:30	12.00	8.12	09:05	0.33	05:45	0.68	0.54	06:15	0.094	19:50	0.361	0.238	31761	
9/19/2016	04:25	3.77	11:10	21.36	10.63	15:05	0.26	10:25	1.53	0.52	04:25	0.092	10:30	2.014	0.370	49421	0.45
9/20/2016	04:45	11.52	21:35	12.10	11.79	04:35	0.17	07:50	0.53	0.28	04:35	0.126	07:50	0.426	0.216	28810	
9/21/2016	12:40	2.81	08:00	12.04	6.34	00:15	0.00	19:45	2.01	1.07	00:15	0.000	07:30	0.407	0.200	26800	
9/22/2016	04:50	2.50	20:45	6.08	4.48	11:30	0.77	06:45	1.93	1.17	04:45	0.108	08:05	0.426	0.217	28992	
9/23/2016	12:40	3.53	08:00	6.49	4.76	04:55	0.60	21:15	1.70	1.12	04:55	0.114	08:00	0.405	0.229	30566	
9/24/2016	07:15	3.59	01:50	37.91	7.59	02:35	0.18	01:05	3.76	1.28	04:35	0.141	01:05	11.309	0.450	60211	0.28
9/25/2016	05:30	3.65	10:05	5.42	4.30	05:30	0.82	12:25	1.61	1.26	05:30	0.118	10:05	0.353	0.233	31164	
9/26/2016	03:55	3.21	07:55	5.39	4.04	03:55	0.78	07:25	1.59	1.20	03:55	0.094	07:50	0.391	0.206	27486	
9/27/2016	02:15	3.42	02:45	13.76	4.62	02:15	0.86	02:40	2.15	1.16	02:15	0.112	02:45	1.640	0.246	32860	0.25
9/28/2016	14:20	2.95	07:55	5.34	3.67	04:50	0.70	09:00	1.92	1.41	04:55	0.090	07:55	0.363	0.206	27590	
9/29/2016	04:45	2.54	07:55	5.17	3.39	04:40	1.12	22:55	1.86	1.58	04:45	0.096	07:50	0.417	0.210	28062	
9/30/2016	03:35	2.46	14:25	11.66	5.12	14:30	0.94	22:35	1.95	1.51	03:35	0.090	14:25	0.807	0.350	46820	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			975545	2.75
Avg	5.12	1.28	0.243	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	05:40	2.59	11:00	4.08	3.43	03:50	1.21	10:50	1.91	1.66	04:45	0.107	11:00	0.321	0.224	29951	
10/2/2016	05:20	2.46	12:10	4.21	3.35	05:20	1.14	22:20	1.99	1.65	05:20	0.093	12:10	0.344	0.216	28891	
10/3/2016	04:15	2.31	08:00	4.45	3.22	04:10	1.11	19:35	1.93	1.60	04:10	0.084	08:00	0.357	0.200	26765	
10/4/2016	05:10	2.34	07:55	4.74	3.20	05:10	1.10	22:35	1.94	1.56	05:10	0.083	08:00	0.380	0.194	25933	
10/5/2016	03:45	2.24	08:05	4.79	3.21	03:40	1.03	21:55	1.98	1.57	03:40	0.074	07:30	0.379	0.196	26146	
10/6/2016	03:50	2.26	07:20	5.40	3.20	03:45	1.02	20:40	1.94	1.54	03:50	0.074	07:20	0.442	0.191	25591	0.00
10/7/2016	04:05	2.31	08:00	4.53	3.18	03:40	1.08	08:15	1.92	1.58	03:40	0.082	08:05	0.367	0.193	25751	
10/8/2016	04:35	2.32	19:45	5.94	3.43	04:30	1.08	15:05	1.92	1.61	04:30	0.082	19:45	0.495	0.222	29695	0.13
10/9/2016	01:40	2.72	12:50	14.16	5.16	13:10	0.78	18:40	1.90	1.60	01:40	0.120	12:40	1.709	0.376	50305	0.52
10/10/2016	04:55	2.33	20:40	4.08	3.24	04:50	1.12	22:05	1.92	1.61	04:55	0.084	20:40	0.320	0.202	26962	
10/11/2016	04:35	2.35	07:55	4.99	3.18	04:15	1.15	07:05	1.91	1.57	04:30	0.088	07:55	0.401	0.192	25602	0.00
10/12/2016	04:15	2.12	08:10	4.44	3.17	04:15	1.00	18:30	1.95	1.58	04:15	0.066	08:00	0.355	0.195	26017	
10/13/2016	04:10	2.36	08:10	4.70	3.20	03:45	1.15	21:45	1.92	1.57	03:45	0.089	08:10	0.370	0.194	25909	
10/14/2016	04:30	2.36	08:00	4.89	3.26	04:30	1.14	08:30	1.90	1.58	04:30	0.088	08:00	0.392	0.199	26596	
10/15/2016	05:30	3.00	12:35	4.77	3.96	04:15	1.07	12:25	1.72	1.37	04:15	0.117	12:25	0.362	0.227	30294	
10/16/2016	05:20	3.16	20:20	4.66	3.93	05:10	0.84	20:30	1.75	1.35	05:10	0.098	20:15	0.354	0.221	29571	
10/17/2016	03:15	2.93	07:40	5.30	3.68	03:05	1.03	07:15	1.75	1.39	03:05	0.108	07:35	0.408	0.208	27808	
10/18/2016	03:10	2.78	07:50	5.45	3.47	03:10	0.94	22:10	1.96	1.49	03:10	0.091	07:50	0.428	0.206	27555	0.00
10/19/2016	04:35	2.38	07:50	5.35	3.46	04:35	1.24	22:10	2.01	1.64	04:35	0.096	07:20	0.469	0.225	30072	
10/20/2016	03:15	2.37	08:10	5.10	3.46	04:10	1.19	21:05	2.00	1.65	03:15	0.096	08:10	0.431	0.227	30407	
10/21/2016	05:05	2.65	10:10	13.07	5.00	09:50	0.96	20:50	2.09	1.64	04:55	0.114	10:10	1.673	0.380	50806	0.46
10/22/2016	03:55	2.72	04:45	28.98	5.56	04:55	0.00	04:20	2.69	1.70	04:55	0.000	04:20	5.685	0.318	42567	0.33
10/23/2016	05:10	1.97	19:45	4.09	3.21	05:10	1.27	19:45	2.18	1.87	05:10	0.076	19:45	0.367	0.234	31313	
10/24/2016	04:40	2.10	07:55	4.41	3.15	04:40	1.35	10:00	2.49	1.97	04:40	0.087	07:55	0.415	0.238	31804	
10/25/2016	03:25	1.99	07:55	4.73	3.10	04:25	1.54	07:15	2.21	1.93	03:25	0.095	07:40	0.423	0.227	30340	
10/26/2016	04:10	1.90	07:30	4.93	3.04	03:00	1.36	18:45	2.34	1.92	04:10	0.080	07:45	0.432	0.220	29460	
10/27/2016	03:40	2.29	20:30	44.40	10.19	21:10	0.22	13:50	2.27	1.62	04:05	0.114	20:15	4.202	0.612	81809	1.15
10/28/2016	04:15	2.38	08:00	4.85	3.18	04:15	1.76	06:55	2.34	2.09	04:15	0.137	08:00	0.428	0.249	33318	
10/29/2016	04:25	2.19	14:45	4.22	3.21	05:30	1.70	13:40	2.35	2.06	04:25	0.118	12:55	0.392	0.253	33785	
10/30/2016	05:50	2.13	18:25	30.71	7.07	18:55	0.24	16:40	3.26	1.68	05:50	0.114	16:40	7.658	0.443	59279	
10/31/2016	03:35	2.44	10:40	7.62	3.43	03:20	1.03	11:25	1.86	1.50	03:25	0.083	10:35	0.496	0.205	27430	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1027731	2.59
Avg	3.86	1.65	0.248	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H6, Pipe Height: 42 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:45	2.60	07:55	4.84	3.38	04:45	1.08	19:10	1.88	1.52	04:45	0.095	08:00	0.391	0.202	27002	
11/2/2016	04:15	2.33	07:55	4.82	3.24	04:10	1.02	07:05	1.87	1.52	04:10	0.077	07:50	0.381	0.191	25540	
11/3/2016	04:35	2.45	07:55	4.99	3.38	04:00	1.11	20:30	1.89	1.54	04:00	0.092	07:55	0.403	0.205	27376	
11/4/2016	03:10	2.48	07:50	4.86	3.29	03:05	1.09	19:10	1.82	1.53	03:10	0.090	07:50	0.377	0.194	25976	
11/5/2016	05:10	2.46	15:10	4.31	3.47	05:10	1.10	18:45	1.91	1.60	05:10	0.090	15:10	0.321	0.222	29641	
11/6/2016	05:45	2.52	11:40	4.39	3.63	05:30	1.13	19:20	1.93	1.67	05:45	0.100	11:40	0.356	0.246	32886	
11/7/2016	05:25	2.45	08:30	5.40	3.29	05:25	1.14	20:25	1.91	1.59	05:25	0.093	08:30	0.420	0.204	27212	
11/8/2016	04:15	2.57	07:40	4.92	3.33	04:10	1.23	07:20	1.88	1.60	04:10	0.107	07:40	0.398	0.207	27719	
11/9/2016	04:10	2.54	19:30	5.43	3.46	03:30	1.16	21:10	1.93	1.63	04:10	0.099	19:30	0.435	0.225	30108	0.07
11/10/2016	03:35	2.51	07:40	5.60	3.45	03:35	1.16	08:20	1.88	1.60	03:35	0.097	07:40	0.456	0.220	29437	
11/11/2016	04:25	2.46	07:50	4.77	3.36	04:20	1.12	20:00	1.90	1.62	04:25	0.092	07:50	0.381	0.212	28365	
11/12/2016	05:30	2.56	12:10	4.15	3.40	05:30	1.20	17:20	1.90	1.65	05:30	0.103	12:15	0.319	0.221	29543	
11/13/2016	05:05	2.44	12:10	4.25	3.39	05:35	1.12	19:40	2.06	1.65	05:05	0.091	12:10	0.335	0.222	29719	
11/14/2016	04:40	2.57	07:30	5.49	3.43	04:40	1.12	20:05	1.94	1.58	04:40	0.098	07:40	0.440	0.216	28838	
11/15/2016	03:45	2.51	10:30	54.50	12.14	12:10	0.33	07:25	1.96	1.33	03:50	0.088	09:35	4.663	0.752	100526	1.50
11/16/2016	04:50	2.57	07:30	4.93	3.37	04:50	1.00	21:20	1.96	1.53	04:50	0.087	07:40	0.400	0.203	27121	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			527009	1.57
Avg	3.94	1.57	0.246	

Site Commentary

Site Information

H7	
Pipe Dimensions (in.)	H-7 (54.00 in H, 84.00 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for H7 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	12.30	0.68	1.126
Minimum	10.62	0.00	0.000
Maximum	74.77	2.03	13.557
Time of Minimum	9/14/2016 4:35 AM	5/30/2016 2:00 AM	5/30/2016 2:00 AM
Time of Maximum	5/30/2016 1:55 AM	10/30/2016 4:40 PM	7/14/2016 4:15 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

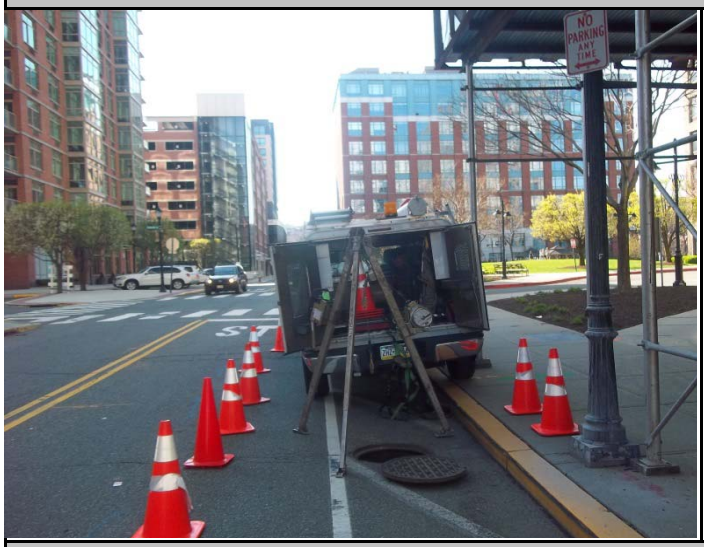
Site Report

ADS ENVIRONMENTAL SERVICES®
a division of ADS LLC.

HOBOKEN, NJ

FM Initials: CK
Project Name: NHSA

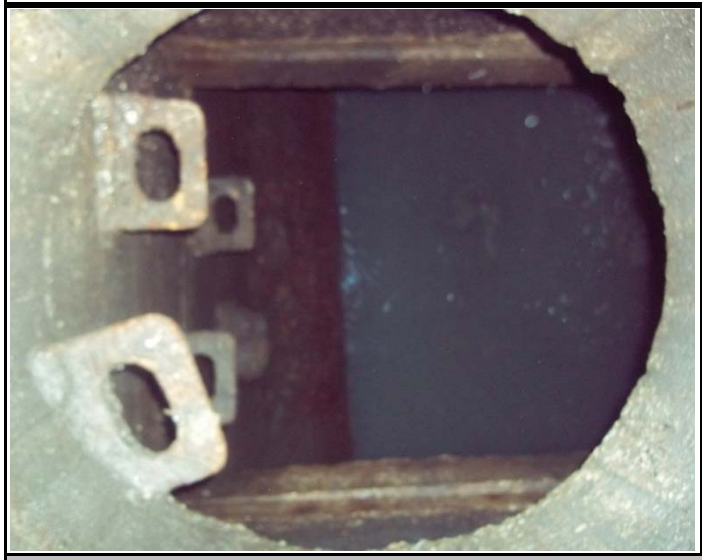
Site Name:	H7	Meter Type:	TRITON+	Monitor S/N:	60801	Manhole #:	H7-15-012
Address / Location:	14th STREET EAST OF WASHINGTON STREET INTERSECTION			Map Page #:	K3		
				Pipe Height:	54 Inches		
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:	84 Inches		
				I.P. Address	107.80.25.39		



Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 13, 2016	4:20 PM	Manhole Depth:	8.9 Feet		
Site Hydraulics:	SMOOTH FLOW		Manhole Material / Condition:	Concrete	BLOCK	Fair
			Active Drop Connections?	Yes	Combined	
			Pipe Material / Condition:	Concrete		Fair
			Mini System Character:	COMMERCIAL		
			Telephone Information:			
Depth of Flow (Wet Dof):	11 +/-		Access Pole #:	N/A		
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	1.5 fps		Road Cut Length:	N/A Feet		
Silt:	7 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.75447 W 74.02578



Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		Regulator	250'

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** H7 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		***Reviewed/Approved***	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

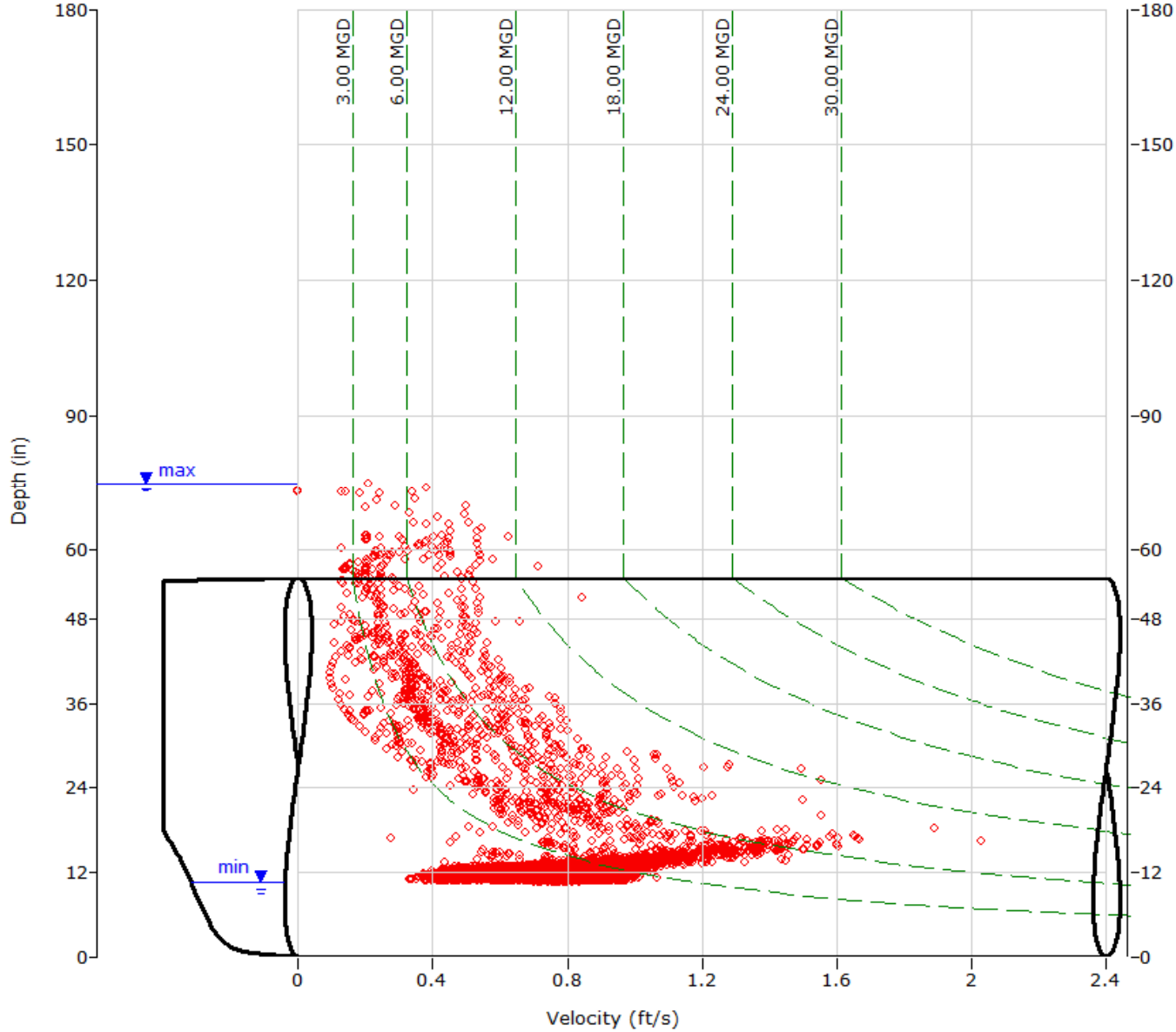
Non Standard

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

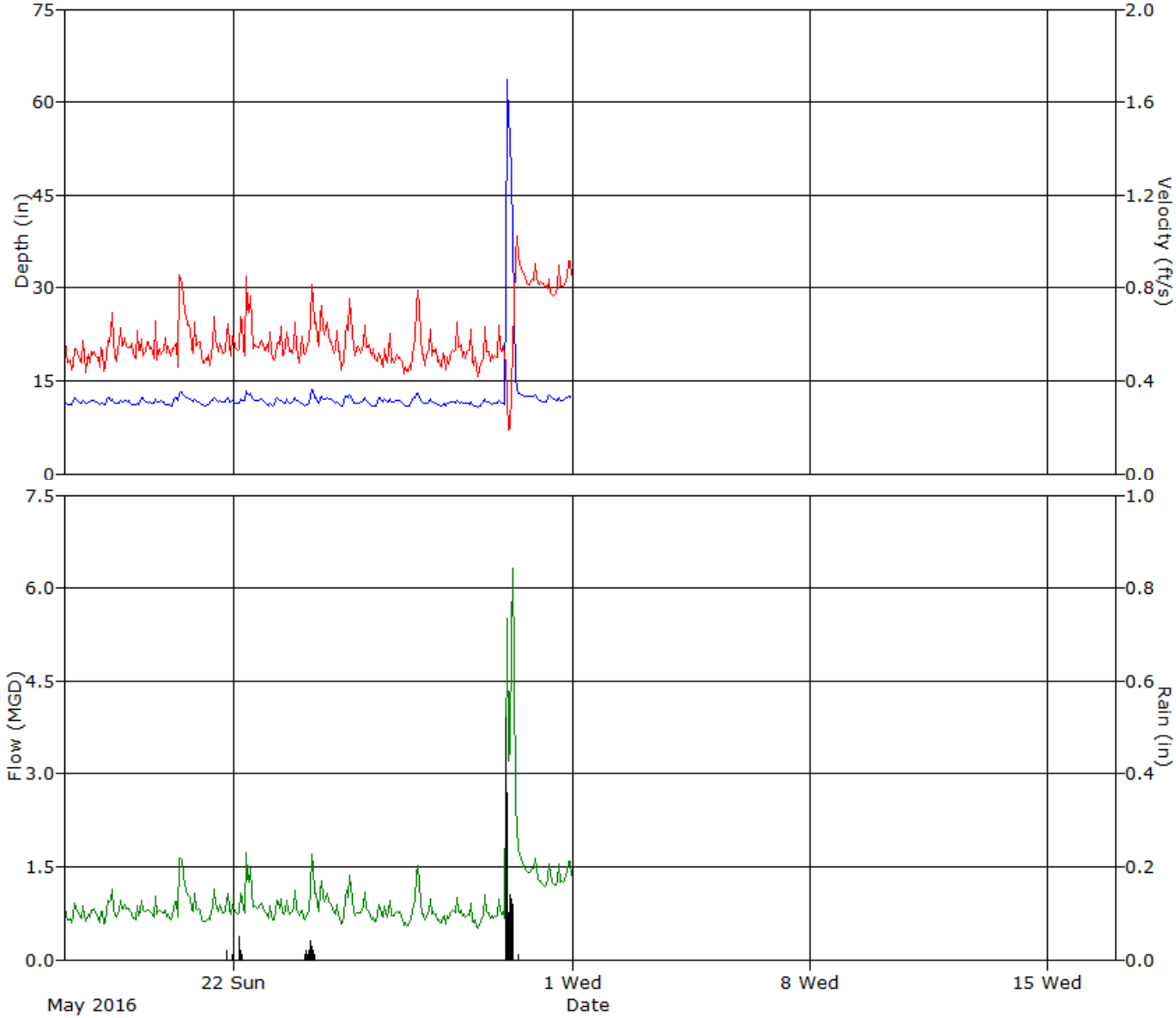
Non Standard

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

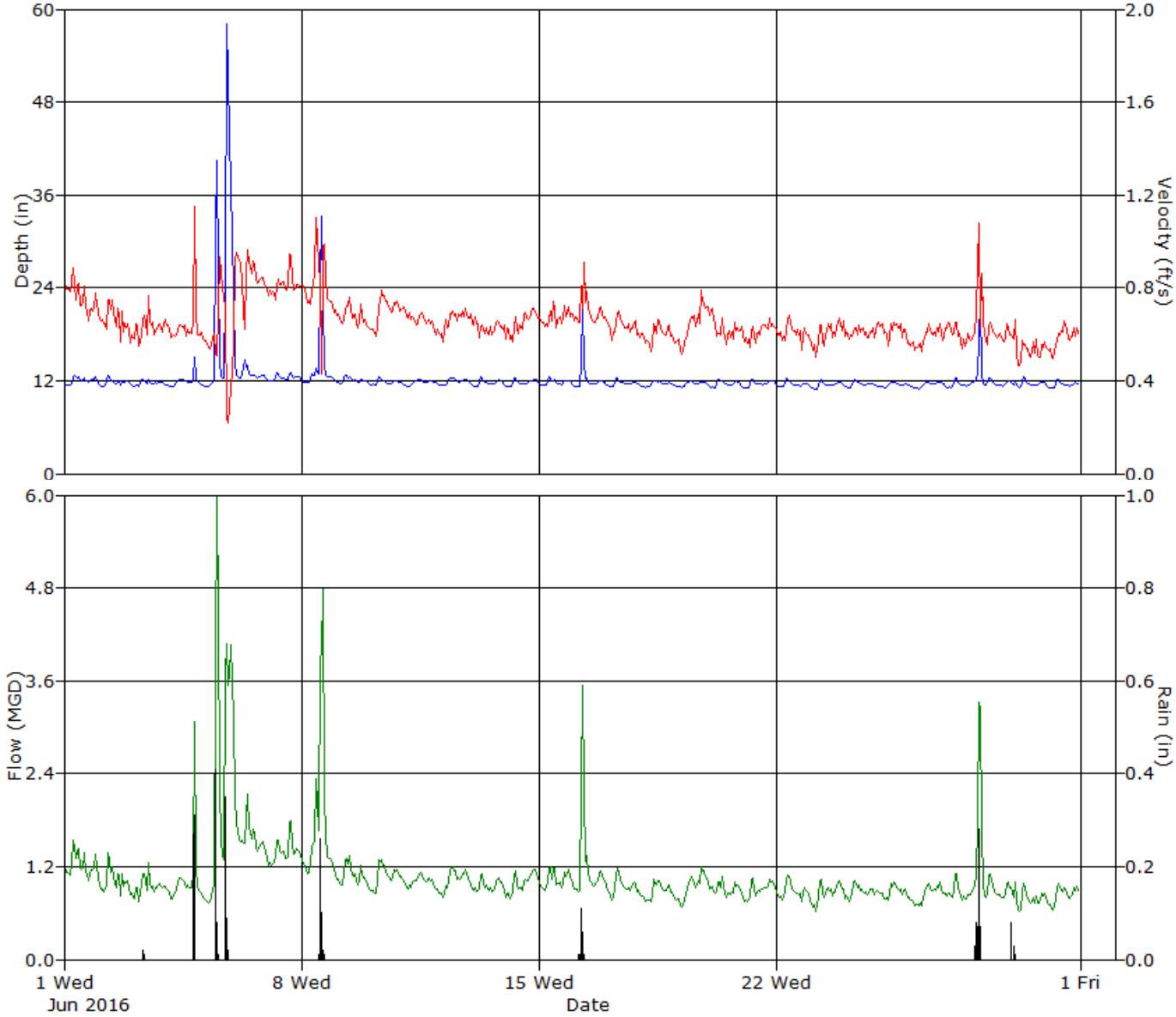
Non Standard

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

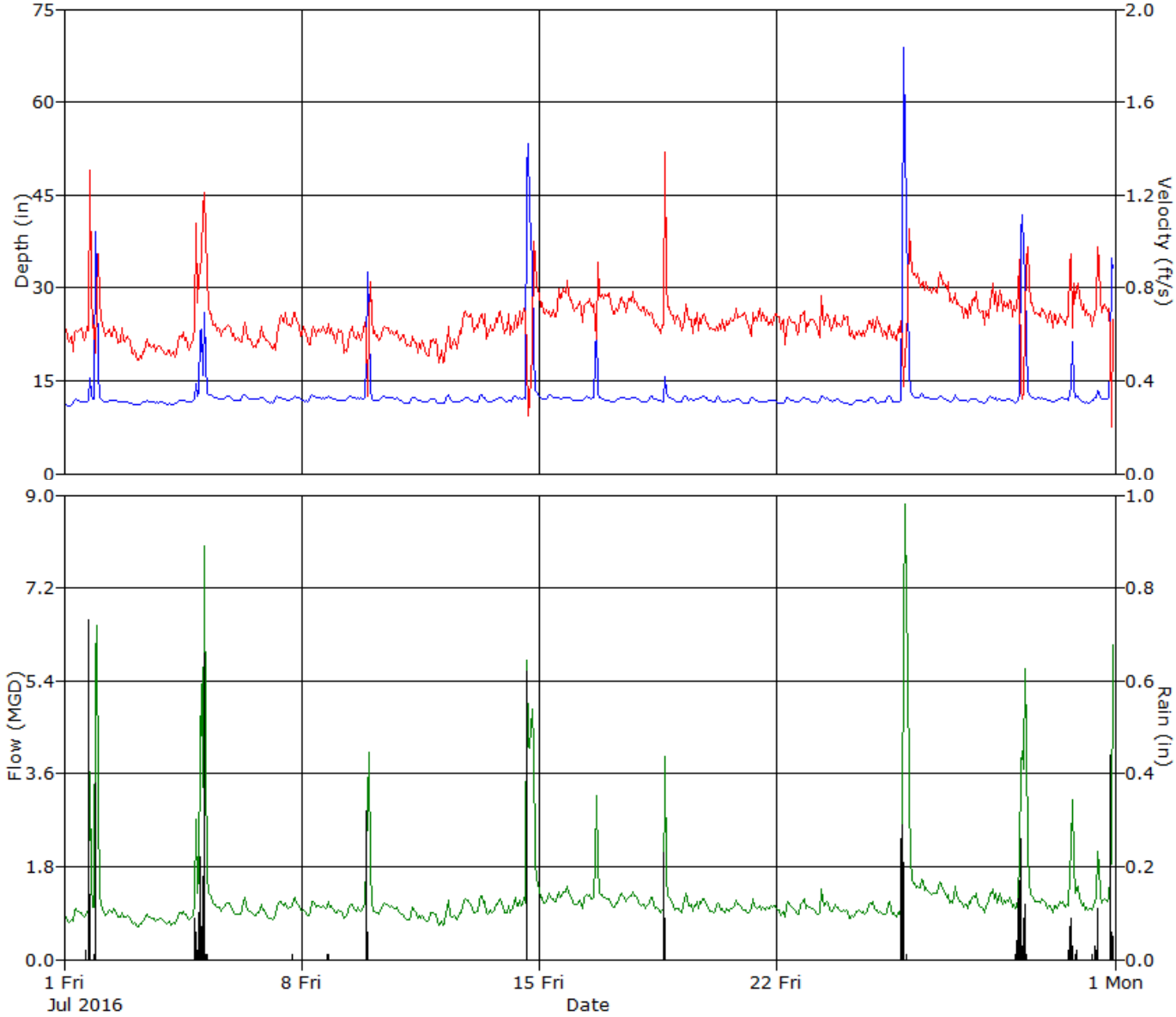
Non Standard

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

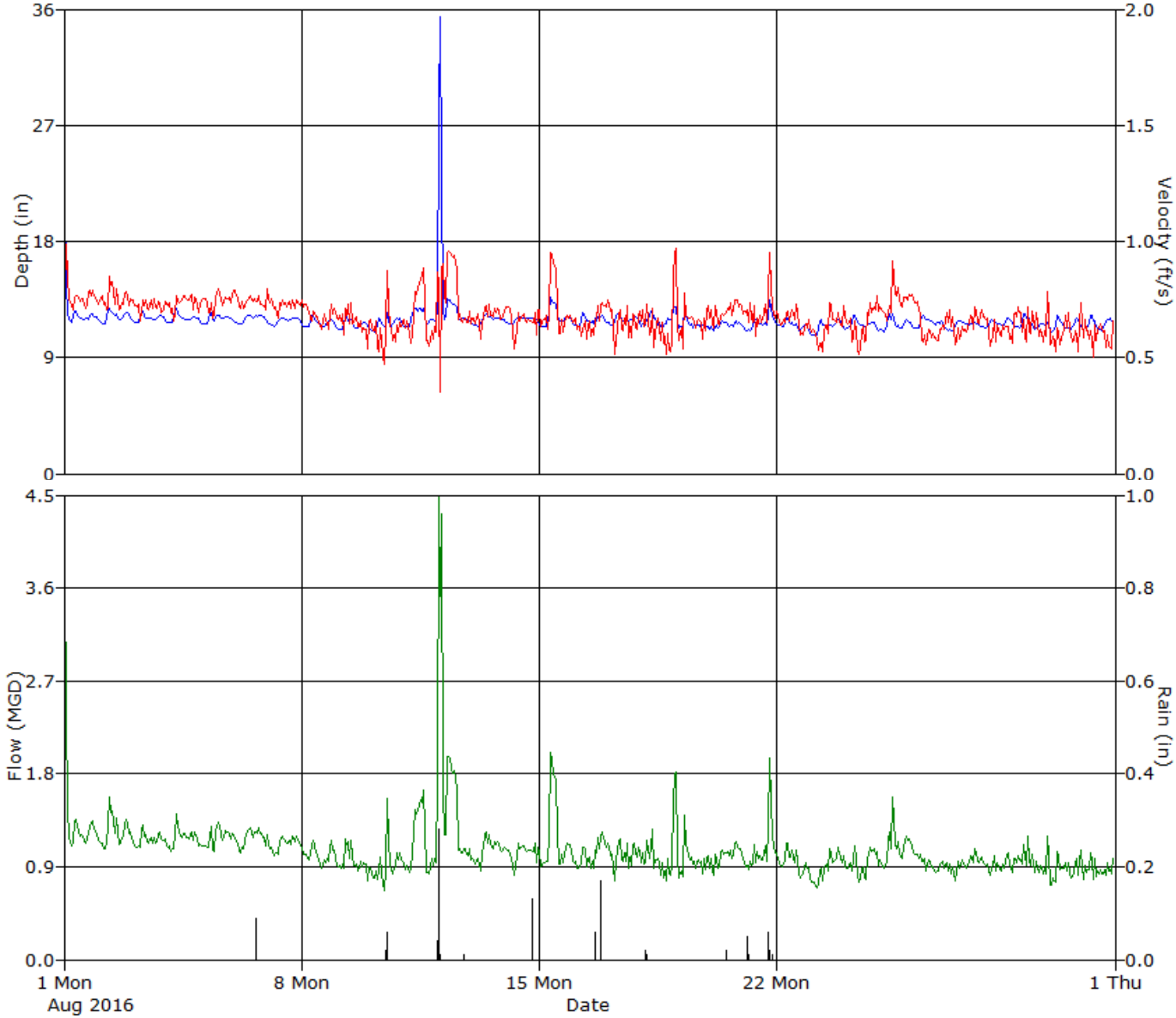
Non Standard

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

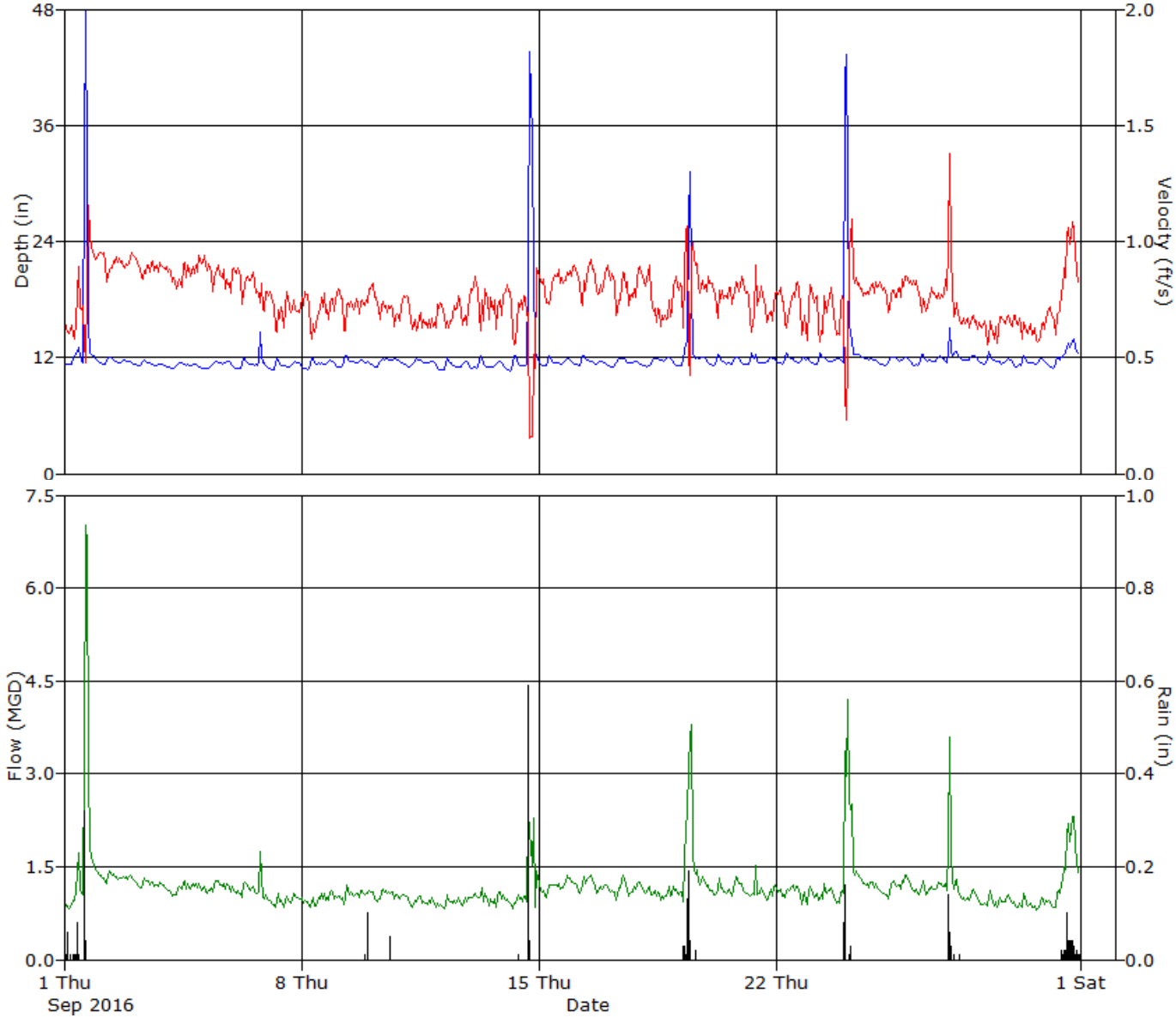
Non Standard

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

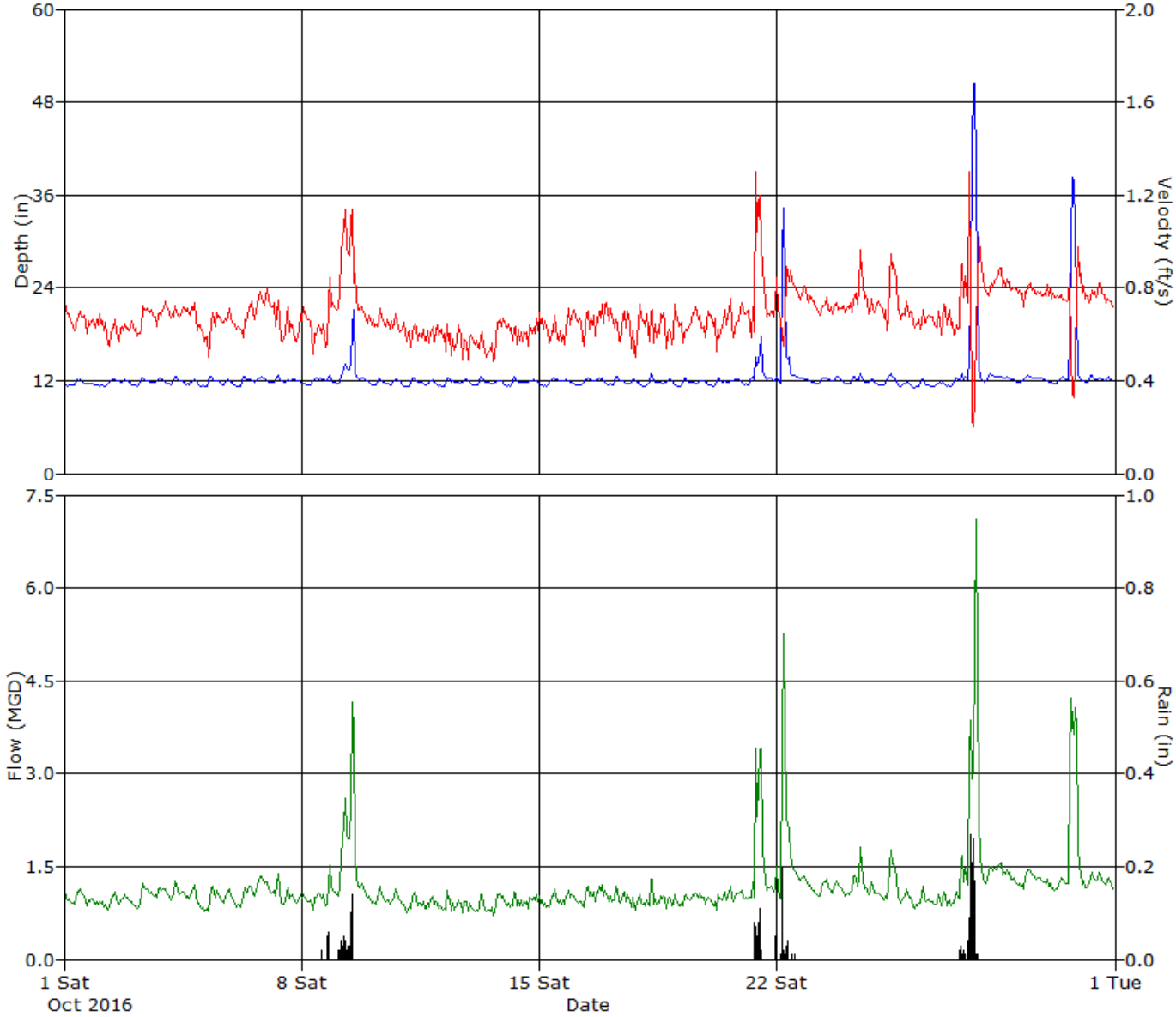
Non Standard

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

H7

Flow Monitor

H7

Pipe Height
54.00 in

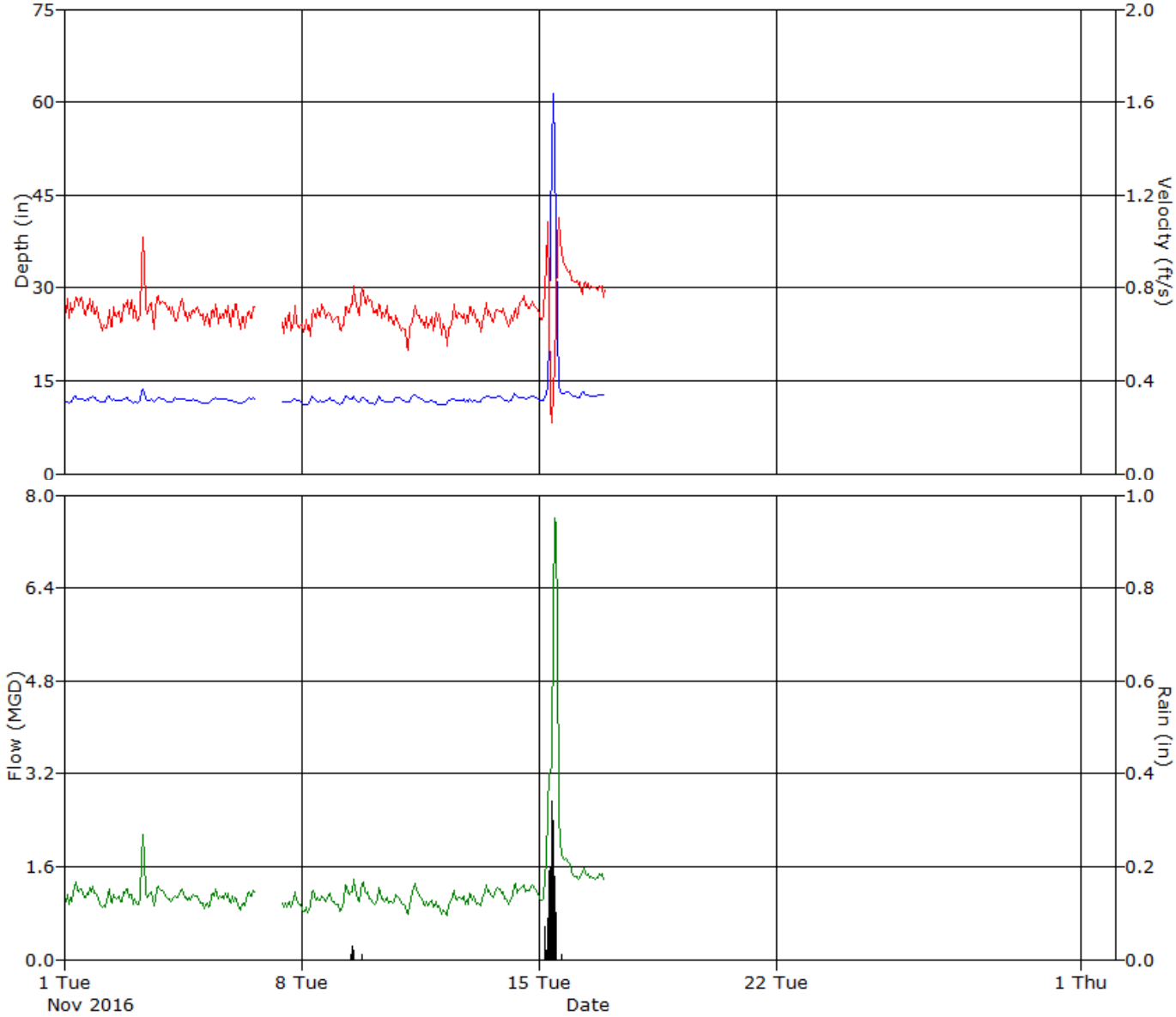
Non Standard

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	05:10	11.15	07:35	12.48	11.57	15:40	0.37	17:30	0.70	0.51	15:40	0.523	13:40	1.025	0.738	98719	
5/18/2016	04:50	11.08	10:10	12.44	11.62	06:50	0.40	10:00	0.76	0.54	04:45	0.548	10:00	1.292	0.804	107462	
5/19/2016	04:00	11.00	07:55	12.58	11.53	16:10	0.35	17:30	0.71	0.54	16:10	0.491	07:50	1.149	0.776	103753	
5/20/2016	04:50	10.89	11:05	13.49	11.87	09:30	0.37	10:55	0.93	0.60	01:40	0.539	10:55	1.914	0.948	126763	
5/21/2016	04:20	10.93	10:45	12.57	11.59	05:10	0.39	19:55	0.73	0.54	05:10	0.513	10:40	1.272	0.796	106358	0.03
5/22/2016	04:10	11.15	09:30	13.82	11.95	08:40	0.44	09:25	0.94	0.60	04:25	0.646	09:25	2.037	0.953	127421	0.08
5/23/2016	04:45	10.90	20:30	12.45	11.60	22:55	0.39	10:35	0.71	0.55	22:55	0.565	20:25	1.221	0.803	107290	
5/24/2016	02:00	10.92	07:45	14.00	11.93	19:55	0.48	07:25	0.88	0.61	02:15	0.627	07:55	1.929	0.970	129670	0.16
5/25/2016	04:50	10.92	10:30	12.99	11.70	05:05	0.33	10:40	0.81	0.56	05:05	0.417	10:40	1.526	0.852	113910	
5/26/2016	04:55	10.89	07:45	12.49	11.60	10:40	0.41	15:20	0.65	0.51	05:35	0.550	15:35	1.060	0.743	99305	
5/27/2016	04:45	10.92	10:25	13.16	11.62	03:15	0.34	10:25	0.85	0.54	04:30	0.427	10:25	1.664	0.804	107500	
5/28/2016	04:15	10.91	14:45	12.06	11.37	03:50	0.40	14:30	0.70	0.52	03:50	0.501	14:40	1.125	0.720	96313	
5/29/2016	05:40	10.80	10:35	12.25	11.34	05:45	0.38	10:15	0.71	0.51	05:45	0.460	10:15	1.171	0.716	95780	
5/30/2016	01:20	10.97	01:55	74.77	22.32	02:00	0.00	09:30	1.07	0.72	02:00	0.000	01:45	10.792	2.416	322954	1.38
5/31/2016	04:10	11.62	07:25	12.86	12.06	10:20	0.73	21:45	1.02	0.82	02:50	1.135	22:05	1.814	1.319	176268	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1919466	1.65
Avg	12.38	0.58	0.957	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:40	11.38	10:00	12.85	12.04	23:50	0.62	06:05	0.95	0.76	23:55	0.959	09:50	1.684	1.225	163755	
6/2/2016	04:45	11.21	07:50	13.00	11.81	23:05	0.46	14:50	0.91	0.66	23:05	0.686	14:50	1.592	1.018	136092	
6/3/2016	05:30	11.14	12:40	12.49	11.70	07:40	0.48	12:20	0.89	0.63	02:00	0.658	12:30	1.450	0.942	125958	0.03
6/4/2016	05:00	11.16	20:05	16.64	11.89	18:50	0.48	20:05	1.48	0.64	04:35	0.717	20:05	4.640	1.032	137936	0.58
6/5/2016	05:15	11.20	19:00	61.15	21.68	20:00	0.20	14:20	1.03	0.57	07:15	0.672	18:50	12.250	2.185	292100	0.96
6/6/2016	05:20	12.24	00:00	26.97	13.35	00:00	0.50	10:15	1.10	0.85	07:35	1.279	00:05	3.547	1.673	223713	
6/7/2016	04:30	11.95	17:10	13.34	12.38	06:40	0.69	16:55	1.03	0.81	01:40	1.164	17:05	2.066	1.390	185811	
6/8/2016	04:50	11.75	14:05	33.96	14.29	14:20	0.36	13:15	1.59	0.81	04:55	1.048	14:55	6.259	1.791	239360	0.40
6/9/2016	05:10	11.65	07:30	12.83	12.06	16:10	0.61	10:30	0.83	0.68	04:40	0.932	10:30	1.504	1.094	146200	
6/10/2016	02:00	11.39	07:35	12.66	11.82	03:10	0.56	09:45	0.83	0.70	05:20	0.805	10:00	1.382	1.073	143374	
6/11/2016	04:45	11.29	10:25	12.19	11.77	10:15	0.57	05:30	0.82	0.67	23:50	0.861	13:40	1.189	1.009	134894	
6/12/2016	05:10	11.36	11:15	12.43	11.88	04:10	0.53	20:30	0.82	0.66	04:10	0.742	11:05	1.356	1.024	136829	
6/13/2016	04:30	11.25	08:00	12.65	11.75	13:45	0.52	00:35	0.79	0.63	13:45	0.776	08:00	1.205	0.955	127624	
6/14/2016	04:55	11.23	07:45	12.52	11.75	01:00	0.52	19:10	0.84	0.65	01:00	0.716	19:10	1.327	0.979	130910	
6/15/2016	04:50	11.38	07:40	12.66	11.82	16:55	0.57	23:25	0.88	0.67	16:55	0.815	10:55	1.507	1.032	138013	
6/16/2016	04:55	11.23	07:30	21.89	12.33	06:25	0.54	06:45	1.45	0.70	06:15	0.815	06:45	5.321	1.227	163984	0.20
6/17/2016	04:50	11.18	08:05	12.48	11.66	04:20	0.53	21:35	0.74	0.64	04:20	0.713	08:10	1.222	0.945	126375	
6/18/2016	04:50	11.12	09:30	12.15	11.60	07:40	0.50	13:50	0.77	0.60	04:05	0.693	13:50	1.201	0.884	118135	
6/19/2016	05:35	11.13	12:25	12.01	11.58	05:30	0.47	19:15	0.87	0.64	05:30	0.625	19:15	1.323	0.930	124342	
6/20/2016	04:40	11.09	08:05	12.33	11.62	13:45	0.51	19:25	0.79	0.63	13:45	0.740	10:55	1.285	0.921	123086	
6/21/2016	05:10	11.06	08:10	12.33	11.61	06:10	0.51	20:20	0.72	0.61	04:15	0.675	20:20	1.136	0.898	120049	
6/22/2016	05:05	11.15	07:55	12.40	11.55	18:30	0.49	10:00	0.73	0.61	18:30	0.695	10:00	1.208	0.884	118139	
6/23/2016	04:55	10.88	08:25	12.15	11.48	02:55	0.45	07:50	0.79	0.60	02:55	0.570	07:50	1.294	0.858	114728	
6/24/2016	05:00	11.03	08:05	12.20	11.54	05:45	0.48	08:55	0.77	0.61	05:45	0.645	08:55	1.234	0.881	117741	
6/25/2016	05:15	11.06	10:30	11.90	11.47	07:15	0.48	12:30	0.73	0.61	07:15	0.666	12:30	1.130	0.873	116745	
6/26/2016	05:45	10.98	20:30	11.93	11.51	04:45	0.45	12:20	0.72	0.59	04:45	0.581	12:20	1.104	0.847	113180	
6/27/2016	02:00	11.10	23:55	14.66	11.63	13:20	0.49	23:55	1.22	0.62	05:30	0.681	23:55	2.983	0.918	122677	0.18
6/28/2016	16:00	11.33	01:10	24.87	12.44	01:10	0.50	00:05	1.37	0.64	15:55	0.725	00:05	3.702	1.137	151999	0.43
6/29/2016	04:55	11.12	07:55	12.63	11.63	04:45	0.41	01:20	0.72	0.54	04:45	0.541	07:20	1.117	0.792	105848	0.04
6/30/2016	04:45	11.00	07:45	12.20	11.49	04:00	0.42	10:25	0.71	0.58	04:00	0.541	08:20	1.157	0.837	111864	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4311460	2.82
Avg	12.24	0.65	1.075	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:30	10.95	22:20	48.84	13.76	22:15	0.31	18:20	1.67	0.64	06:05	0.585	22:25	8.713	1.453	194175	1.28
7/2/2016	22:55	11.38	00:00	23.15	11.89	16:20	0.51	00:25	1.20	0.62	16:20	0.727	00:00	5.055	0.993	132788	
7/3/2016	05:25	11.11	11:05	11.82	11.45	04:35	0.41	12:00	0.64	0.53	04:35	0.544	12:00	0.963	0.755	100867	
7/4/2016	05:10	11.14	21:05	16.17	11.74	00:20	0.44	21:05	1.36	0.59	00:20	0.609	21:05	4.054	0.932	124615	0.27
7/5/2016	15:15	11.98	00:50	30.12	14.20	00:40	0.31	03:15	1.55	0.73	14:55	0.857	03:20	10.338	1.903	254440	1.15
7/6/2016	01:55	11.72	08:30	12.92	12.09	12:45	0.48	08:25	0.70	0.58	12:45	0.777	08:25	1.306	0.946	126437	
7/7/2016	04:45	11.45	07:45	12.58	11.98	07:10	0.49	14:30	0.76	0.62	02:05	0.725	20:30	1.253	0.988	132074	0.01
7/8/2016	04:50	11.51	07:45	12.84	12.16	06:15	0.51	11:50	0.74	0.61	04:30	0.802	11:50	1.230	0.997	133315	0.02
7/9/2016	05:15	11.74	23:30	33.63	13.22	23:15	0.25	22:35	1.61	0.58	06:55	0.681	22:35	5.152	1.085	145015	0.38
7/10/2016	23:55	11.69	00:00	31.04	12.74	00:00	0.44	01:05	1.10	0.62	22:55	0.760	00:30	4.699	1.147	153336	
7/11/2016	03:05	11.33	07:50	12.45	11.75	17:40	0.40	02:35	0.69	0.56	17:40	0.584	07:30	1.064	0.842	112496	
7/12/2016	05:05	11.27	08:25	12.71	11.82	02:15	0.36	20:15	0.80	0.58	02:15	0.494	20:15	1.316	0.898	120103	
7/13/2016	03:30	11.59	07:40	12.86	11.99	12:20	0.53	07:10	0.85	0.65	12:20	0.793	07:10	1.521	1.027	137322	
7/14/2016	01:45	11.55	16:25	68.42	17.94	17:30	0.24	20:35	1.34	0.65	04:35	0.747	16:15	13.557	1.857	248232	0.62
7/15/2016	04:55	11.93	07:55	12.96	12.26	08:55	0.59	14:25	0.95	0.73	11:10	0.982	14:25	1.590	1.225	163696	
7/16/2016	03:55	11.67	16:55	27.95	12.87	16:55	0.34	16:30	1.44	0.73	07:20	0.939	17:55	3.905	1.316	175974	
7/17/2016	05:25	11.56	11:40	12.39	12.01	15:05	0.64	11:10	0.93	0.73	05:20	0.961	11:10	1.555	1.169	156320	
7/18/2016	04:30	11.51	17:10	17.15	12.16	10:30	0.54	17:05	1.66	0.71	16:30	0.804	17:10	5.502	1.206	161186	0.32
7/19/2016	05:15	11.46	09:05	12.63	12.03	19:25	0.55	12:20	0.86	0.66	05:20	0.849	21:40	1.473	1.058	141454	
7/20/2016	15:40	11.55	07:35	12.77	11.83	09:25	0.53	16:30	0.80	0.65	09:25	0.803	07:55	1.255	0.995	133000	
7/21/2016	04:40	11.33	08:15	12.39	11.73	07:50	0.54	12:40	0.80	0.66	06:20	0.845	08:20	1.290	0.998	133370	
7/22/2016	04:30	11.22	08:15	12.45	11.79	06:30	0.48	20:45	0.86	0.65	06:30	0.718	20:45	1.433	0.991	132442	
7/23/2016	05:35	11.37	08:45	12.78	11.84	07:40	0.50	09:10	0.81	0.65	07:40	0.747	09:10	1.442	1.008	134791	
7/24/2016	05:05	11.15	20:50	12.53	11.71	15:00	0.46	03:40	0.78	0.62	15:00	0.689	21:45	1.229	0.936	125073	
7/25/2016	01:05	11.22	18:10	73.11	18.97	17:45	0.00	22:20	1.35	0.64	17:45	0.000	17:40	9.374	2.133	285093	0.77
7/26/2016	16:15	11.90	07:55	13.09	12.32	16:00	0.73	21:45	0.97	0.82	16:00	1.152	21:45	1.696	1.387	185415	
7/27/2016	03:50	11.64	07:25	12.91	11.94	16:55	0.61	02:20	0.93	0.74	16:55	0.916	07:15	1.571	1.161	155142	
7/28/2016	04:40	11.37	08:30	12.48	11.91	02:45	0.60	20:50	0.90	0.72	04:35	0.855	10:20	1.462	1.129	150929	
7/29/2016	01:25	11.44	05:45	45.91	16.71	05:25	0.23	04:50	1.51	0.69	01:20	0.906	08:45	6.744	1.878	251048	0.86
7/30/2016	05:25	11.46	18:25	22.36	12.58	11:15	0.57	17:00	1.09	0.71	05:30	0.850	18:10	3.426	1.277	170729	0.24
7/31/2016	05:25	11.40	23:05	36.63	14.03	22:40	0.15	12:40	1.26	0.70	21:40	0.884	23:15	7.042	1.427	190632	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4961507	6.64
Avg	12.82	0.66	1.197	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	05:30	11.74	00:00	25.41	12.64	15:50	0.65	01:15	1.08	0.77	14:10	1.048	00:00	5.194	1.392	186079	0.05
8/2/2016	05:15	11.52	08:25	12.97	12.18	07:05	0.63	10:55	0.93	0.75	06:00	1.027	08:25	1.700	1.244	166263	
8/3/2016	05:20	11.67	07:35	12.78	12.07	06:35	0.63	14:20	0.83	0.72	06:00	0.992	07:40	1.394	1.161	155209	
8/4/2016	05:05	11.67	08:25	12.89	12.05	23:05	0.64	17:10	0.84	0.74	05:55	1.002	08:30	1.492	1.179	157606	
8/5/2016	04:00	11.56	08:25	12.58	12.01	07:25	0.63	13:50	0.85	0.74	10:45	0.967	13:50	1.422	1.181	157933	
8/6/2016	05:40	11.56	19:00	12.30	12.01	07:40	0.64	03:00	0.85	0.74	07:40	0.978	15:20	1.386	1.181	157915	0.09
8/7/2016	05:35	11.45	19:20	12.10	11.84	08:05	0.62	01:00	0.88	0.73	05:20	0.931	18:15	1.366	1.125	150388	
8/8/2016	05:10	11.32	07:30	12.39	11.69	19:05	0.54	00:45	0.84	0.68	14:50	0.774	09:10	1.319	1.020	136315	
8/9/2016	05:20	11.15	07:40	12.30	11.56	23:25	0.45	05:45	0.83	0.66	23:25	0.644	11:50	1.313	0.954	127476	
8/10/2016	04:35	10.99	13:40	13.33	11.61	12:00	0.37	13:30	1.08	0.62	12:00	0.521	13:35	2.128	0.915	122322	0.08
8/11/2016	04:05	11.34	15:05	12.97	12.05	23:05	0.46	13:20	0.94	0.68	05:45	0.688	15:05	1.705	1.098	146832	
8/12/2016	00:30	11.58	02:10	37.29	14.56	02:00	0.16	01:15	1.89	0.78	00:20	0.623	01:15	7.018	1.763	235708	0.34
8/13/2016	06:10	11.43	11:10	12.47	11.91	07:50	0.48	11:05	0.80	0.68	07:50	0.719	11:05	1.378	1.059	141553	
8/14/2016	04:50	11.54	21:20	12.22	11.93	07:50	0.47	14:55	0.84	0.66	07:50	0.712	14:55	1.351	1.037	138678	0.13
8/15/2016	02:50	11.35	08:30	13.74	12.17	14:40	0.53	08:55	1.01	0.71	01:45	0.764	08:55	2.160	1.194	159669	
8/16/2016	05:10	11.37	07:45	12.59	11.88	13:30	0.48	23:10	0.91	0.65	13:30	0.723	23:10	1.469	1.016	135828	0.23
8/17/2016	03:05	11.40	07:50	12.52	11.91	07:00	0.42	15:35	0.82	0.66	06:05	0.640	15:35	1.302	1.022	136662	
8/18/2016	16:15	11.34	23:50	12.95	11.86	21:10	0.40	23:25	0.96	0.63	14:40	0.592	23:50	1.797	0.973	130031	0.03
8/19/2016	03:10	11.22	00:40	12.98	11.72	06:30	0.43	01:20	1.12	0.68	06:00	0.604	01:20	2.109	1.029	137523	
8/20/2016	04:15	10.97	09:40	11.90	11.52	04:10	0.56	20:35	0.89	0.70	04:10	0.710	20:35	1.365	1.005	134328	0.02
8/21/2016	04:25	11.02	19:45	13.58	11.73	08:55	0.53	19:45	0.98	0.70	08:55	0.797	19:45	2.044	1.066	142490	0.15
8/22/2016	23:55	11.07	07:50	12.30	11.51	17:30	0.52	22:20	0.81	0.66	17:30	0.682	07:20	1.218	0.951	127174	
8/23/2016	04:25	10.72	07:50	12.09	11.43	05:55	0.45	14:45	0.88	0.63	05:55	0.560	14:45	1.293	0.887	118555	
8/24/2016	01:55	11.18	07:50	12.37	11.60	10:45	0.39	00:20	0.83	0.64	15:05	0.565	08:25	1.370	0.936	125154	
8/25/2016	04:20	10.88	10:20	12.68	11.59	09:30	0.57	10:25	0.97	0.75	03:00	0.795	10:25	1.735	1.093	146167	
8/26/2016	04:05	11.20	07:55	12.48	11.70	18:05	0.39	00:25	0.87	0.64	18:05	0.561	00:25	1.241	0.946	126424	
8/27/2016	06:00	11.01	10:40	11.89	11.52	07:45	0.43	21:25	0.84	0.64	07:45	0.623	21:25	1.272	0.923	123394	
8/28/2016	05:45	11.23	19:30	12.16	11.65	12:30	0.40	03:15	0.87	0.62	12:30	0.602	20:40	1.350	0.923	123387	
8/29/2016	15:35	11.18	10:40	12.50	11.62	09:05	0.45	03:20	0.81	0.64	20:20	0.700	10:40	1.350	0.946	126462	
8/30/2016	02:55	10.83	07:30	12.39	11.55	06:40	0.42	00:40	0.90	0.61	15:00	0.590	00:40	1.438	0.886	118456	
8/31/2016	15:20	11.02	08:25	12.34	11.58	09:35	0.40	00:35	0.81	0.61	09:35	0.606	19:20	1.202	0.883	117994	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4409974	1.12
Avg	11.89	0.68	1.064	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	04:00	11.08	14:45	60.58	15.26	14:45	0.13	17:15	1.37	0.76	09:05	0.730	14:40	9.992	1.839	245861	0.56
9/2/2016	04:10	11.28	08:20	12.12	11.62	06:10	0.77	04:10	0.99	0.91	06:10	1.105	08:25	1.495	1.337	178708	
9/3/2016	06:55	11.05	09:45	11.80	11.33	07:20	0.78	00:05	1.00	0.89	07:20	1.065	00:05	1.430	1.234	164937	
9/4/2016	05:25	10.88	10:35	11.51	11.18	09:30	0.65	13:10	1.02	0.87	09:30	0.899	13:10	1.423	1.154	154317	
9/5/2016	05:55	10.78	20:40	11.66	11.26	09:05	0.63	02:15	0.97	0.86	09:05	0.863	11:05	1.385	1.172	156621	
9/6/2016	04:40	10.84	19:45	18.36	11.45	19:30	0.45	19:55	1.26	0.81	22:00	0.892	19:55	2.995	1.149	153549	
9/7/2016	04:40	10.72	07:40	12.01	11.20	22:35	0.50	15:15	0.94	0.72	13:40	0.704	08:25	1.231	0.957	127899	
9/8/2016	05:10	10.74	07:30	12.15	11.34	06:50	0.40	02:55	0.90	0.71	06:50	0.581	08:00	1.186	0.974	130252	
9/9/2016	01:45	10.95	07:50	12.32	11.53	07:50	0.46	23:15	0.90	0.73	06:50	0.755	08:30	1.428	1.050	140390	0.11
9/10/2016	06:05	10.90	18:05	11.97	11.57	21:50	0.52	11:15	0.93	0.72	21:50	0.781	11:15	1.432	1.050	140337	0.05
9/11/2016	05:35	11.04	09:50	11.93	11.44	09:35	0.54	04:20	0.87	0.67	23:00	0.745	00:20	1.223	0.951	127161	
9/12/2016	02:00	10.70	07:40	12.08	11.20	11:35	0.54	12:45	0.86	0.69	11:35	0.718	07:10	1.148	0.927	123908	0.00
9/13/2016	01:00	10.86	07:45	12.25	11.26	22:30	0.54	05:25	0.99	0.74	16:40	0.724	08:05	1.476	1.002	134013	
9/14/2016	04:35	10.62	18:05	46.26	14.43	18:50	0.10	17:40	1.55	0.66	06:20	0.765	17:40	6.870	1.172	156621	0.64
9/15/2016	05:00	11.14	07:25	12.24	11.54	05:40	0.60	03:45	1.01	0.82	05:40	0.815	20:25	1.451	1.191	159183	
9/16/2016	05:10	11.06	07:35	12.31	11.54	07:05	0.59	01:30	0.98	0.84	19:20	0.922	08:00	1.484	1.207	161305	
9/17/2016	05:10	10.95	12:15	11.99	11.48	08:40	0.58	02:20	1.07	0.81	07:45	0.843	12:20	1.453	1.148	153498	
9/18/2016	05:25	11.07	19:15	12.02	11.59	16:55	0.52	06:10	0.96	0.75	16:55	0.772	23:40	1.343	1.083	144755	
9/19/2016	04:30	11.11	11:10	32.74	13.66	11:00	0.29	09:50	1.42	0.82	06:30	0.760	12:00	5.073	1.619	216478	0.45
9/20/2016	04:15	11.20	07:50	12.44	11.62	07:10	0.60	10:55	0.94	0.78	17:50	0.906	08:25	1.487	1.147	153314	
9/21/2016	01:55	11.24	10:30	12.82	11.69	18:05	0.50	10:25	1.04	0.74	18:05	0.734	10:25	1.919	1.098	146748	
9/22/2016	04:45	11.29	07:50	12.57	11.76	21:55	0.48	15:15	0.97	0.72	21:55	0.743	15:15	1.377	1.085	145087	
9/23/2016	04:55	11.25	08:00	12.53	11.73	20:45	0.43	01:55	0.98	0.71	20:45	0.659	00:00	1.415	1.055	141095	
9/24/2016	00:55	11.45	01:55	47.86	15.62	02:05	0.11	05:35	1.45	0.77	00:30	0.818	01:05	6.953	1.705	227981	0.28
9/25/2016	04:35	11.06	11:35	12.14	11.69	07:45	0.58	19:40	1.05	0.79	07:45	0.839	19:40	1.684	1.184	158313	
9/26/2016	04:50	11.19	07:30	12.41	11.71	06:50	0.57	01:00	0.96	0.77	06:50	0.904	21:05	1.414	1.148	153451	
9/27/2016	02:00	11.38	03:00	15.78	12.16	10:40	0.57	02:50	1.61	0.74	18:00	0.879	02:55	4.548	1.246	166625	0.25
9/28/2016	04:55	11.35	07:25	12.63	11.68	07:10	0.49	04:50	0.84	0.64	13:05	0.736	08:30	1.322	0.945	126325	
9/29/2016	02:00	11.00	07:50	12.34	11.51	17:25	0.46	07:50	0.79	0.63	16:55	0.667	07:50	1.343	0.899	120177	
9/30/2016	04:45	10.87	19:25	14.03	12.24	06:55	0.55	14:40	1.21	0.83	05:40	0.735	14:50	2.648	1.420	189685	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4698593	2.75
Avg	11.98	0.76	1.172	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	02:40	11.32	09:55	12.17	11.64	16:20	0.54	13:55	0.78	0.66	16:20	0.789	11:50	1.205	0.980	130945	
10/2/2016	01:25	11.27	11:30	12.22	11.78	08:25	0.50	01:30	0.80	0.62	07:15	0.742	12:05	1.296	0.943	126106	
10/3/2016	05:00	11.32	08:00	12.49	11.87	04:05	0.52	15:30	0.85	0.67	04:05	0.726	11:35	1.308	1.038	138749	
10/4/2016	23:55	11.39	07:30	12.67	11.82	22:55	0.52	21:25	0.85	0.69	22:55	0.764	20:35	1.366	1.066	142450	
10/5/2016	00:40	11.14	08:20	12.58	11.78	06:45	0.44	21:15	0.81	0.64	06:45	0.698	21:15	1.279	0.974	130246	
10/6/2016	04:15	11.23	20:50	12.62	11.98	07:05	0.51	19:55	0.95	0.69	03:35	0.778	19:55	1.672	1.091	145794	0.00
10/7/2016	05:00	11.66	08:20	12.91	12.03	21:45	0.45	00:00	0.92	0.66	21:45	0.718	08:20	1.546	1.057	141339	
10/8/2016	05:15	11.38	20:25	12.79	11.95	08:05	0.45	20:05	0.91	0.65	08:05	0.691	20:05	1.625	1.025	137003	0.13
10/9/2016	02:10	11.52	13:05	25.42	13.24	13:05	0.54	12:10	1.60	0.84	23:55	0.960	12:10	4.688	1.713	229057	0.52
10/10/2016	05:25	11.40	08:10	12.41	11.78	20:40	0.51	19:50	0.83	0.65	15:15	0.800	19:50	1.374	0.988	132102	
10/11/2016	04:25	11.17	07:45	12.56	11.71	16:25	0.47	14:05	0.75	0.60	16:25	0.675	07:40	1.160	0.903	120657	0.00
10/12/2016	05:20	11.20	07:50	12.68	11.80	18:25	0.43	16:25	0.74	0.58	18:25	0.658	07:50	1.280	0.883	118003	
10/13/2016	05:00	11.33	07:40	12.71	11.82	10:50	0.40	22:50	0.74	0.57	10:50	0.624	07:25	1.166	0.876	117151	
10/14/2016	04:35	11.23	07:50	12.49	11.78	11:30	0.45	14:45	0.75	0.61	11:30	0.678	08:10	1.205	0.931	124474	
10/15/2016	05:45	11.23	09:50	12.35	11.85	19:10	0.45	15:20	0.83	0.63	07:20	0.681	11:35	1.304	0.964	128907	
10/16/2016	04:55	11.32	11:20	12.35	11.92	08:40	0.43	23:20	0.82	0.66	08:40	0.667	21:15	1.316	1.034	138179	
10/17/2016	05:00	11.32	07:35	12.74	11.84	09:00	0.44	06:45	0.87	0.64	18:10	0.679	07:30	1.438	0.979	130848	
10/18/2016	04:55	11.22	07:45	13.13	11.80	22:50	0.43	07:35	0.84	0.64	22:50	0.660	07:35	1.621	0.970	129610	0.00
10/19/2016	04:50	11.25	07:35	12.41	11.76	06:15	0.48	14:10	0.80	0.65	06:10	0.712	07:55	1.284	0.983	131353	
10/20/2016	04:35	11.23	07:40	12.44	11.84	06:35	0.45	16:25	0.85	0.65	06:35	0.699	16:25	1.338	1.001	133830	
10/21/2016	04:20	11.37	14:05	20.89	12.77	07:50	0.54	10:25	1.43	0.79	04:05	0.859	13:50	4.385	1.530	204539	0.46
10/22/2016	03:30	11.65	04:45	40.03	14.77	04:40	0.28	04:20	1.50	0.76	03:25	0.942	04:20	7.889	1.787	238839	0.33
10/23/2016	06:15	11.52	19:50	12.62	12.06	16:50	0.64	03:10	0.84	0.72	06:15	0.934	19:50	1.409	1.159	154894	
10/24/2016	23:30	11.53	12:20	13.00	12.01	06:20	0.61	12:20	1.01	0.75	06:20	0.939	12:20	1.916	1.198	160160	
10/25/2016	16:45	11.24	09:00	12.97	11.83	06:55	0.54	13:10	1.04	0.74	16:45	0.840	09:20	1.841	1.148	153480	
10/26/2016	01:20	10.99	08:25	12.28	11.51	20:50	0.48	19:50	0.90	0.66	20:50	0.717	19:50	1.389	0.948	126795	
10/27/2016	04:40	11.15	20:30	53.21	18.62	20:30	0.13	17:40	1.55	0.68	05:40	0.723	22:35	8.227	2.059	275233	1.15
10/28/2016	04:25	11.80	00:00	17.82	12.45	07:15	0.70	00:20	1.08	0.84	05:45	1.173	00:00	3.313	1.451	194004	
10/29/2016	02:55	11.72	10:15	12.70	12.20	21:10	0.67	14:35	0.93	0.78	07:05	1.033	11:40	1.586	1.294	173031	
10/30/2016	05:50	11.52	18:25	41.18	16.45	18:25	0.23	16:40	2.03	0.72	05:50	1.027	16:45	9.148	1.889	252572	
10/31/2016	05:05	11.64	08:20	12.74	12.18	23:35	0.64	10:55	0.98	0.77	23:35	0.977	10:55	1.654	1.269	169526	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4829878	2.59
Avg	12.41	0.68	1.166	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

H7, Pipe Height: 54 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	03:40	11.40	07:55	12.71	11.99	15:30	0.58	02:20	0.90	0.72	03:35	0.868	20:40	1.489	1.142	152609	
11/2/2016	05:10	11.42	08:00	12.50	11.90	03:00	0.57	18:55	0.84	0.68	03:00	0.801	08:55	1.378	1.054	140917	
11/3/2016	01:35	11.43	08:00	13.74	12.02	15:40	0.58	08:45	1.06	0.74	01:25	0.849	08:50	2.237	1.192	159350	
11/4/2016	04:30	11.50	07:50	12.41	11.86	13:00	0.60	11:05	0.80	0.70	23:10	0.933	11:20	1.295	1.080	144414	
11/5/2016	04:50	11.18	11:30	12.33	11.81	06:05	0.58	18:45	0.85	0.68	06:05	0.789	18:45	1.396	1.042	139256	
11/6/2016	05:40	11.19	13:00	12.36	11.72	08:15	0.54	01:05	0.82	0.68	08:15	0.769	13:00	1.253	1.019	82771	
11/7/2016	11:10	11.36	20:40	12.11	11.71	11:10	0.52	20:25	0.81	0.65	11:10	0.718	20:25	1.292	0.976	69765	
11/8/2016	04:15	11.01	07:05	12.55	11.71	06:10	0.52	14:25	0.83	0.67	01:30	0.710	08:10	1.299	1.005	134376	
11/9/2016	04:55	11.13	07:45	12.82	11.90	03:20	0.54	23:50	0.85	0.71	03:20	0.727	13:35	1.443	1.112	148595	0.07
11/10/2016	04:05	11.11	07:40	12.54	11.76	18:05	0.54	07:15	0.80	0.69	04:00	0.814	07:20	1.388	1.037	138693	
11/11/2016	21:50	11.36	07:55	12.72	11.87	04:05	0.47	08:55	0.81	0.65	04:05	0.713	08:55	1.424	1.002	133915	
11/12/2016	03:40	10.93	11:50	12.22	11.64	07:10	0.50	23:35	0.83	0.66	06:55	0.662	12:15	1.325	0.976	130451	
11/13/2016	04:10	11.48	11:20	12.56	12.10	07:00	0.56	00:15	0.89	0.68	07:00	0.806	20:45	1.450	1.108	148069	
11/14/2016	03:25	11.64	07:30	12.91	12.21	02:45	0.55	21:05	0.87	0.70	02:45	0.849	21:05	1.506	1.163	155519	
11/15/2016	04:20	11.61	10:05	63.16	21.15	09:30	0.13	06:55	1.38	0.77	02:30	0.866	11:20	8.299	2.688	359376	1.50
11/16/2016	04:20	12.23	07:50	13.25	12.62	22:30	0.69	21:40	0.92	0.81	22:30	1.259	21:40	1.664	1.438	192143	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2430218	1.57
Avg	12.54	0.70	1.201	

Site Commentary

Site Information

HSI	
Pipe Dimensions (in.)	Circular (12.00 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for HSI indicate this location functioned in mostly back-water conditions (increase in depth with a corresponding decrease in velocity) during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	1.55	5.47	0.214
Minimum	0.19	1.95	0.011
Maximum	53.96	10.77	5.285
Time of Minimum	7/15/2016 2:25 AM	6/25/2016 6:10 PM	7/15/2016 2:25 AM
Time of Maximum	7/25/2016 5:40 PM	6/5/2016 6:35 PM	7/25/2016 5:40 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. HOBOKEN, NJ

Site Report

FM Initials: MEJ

Project Name: NHSA

Site Name:	HSI	Meter Type:	TRITON+	Monitor S/N:	60804	Manhole #:	HSI-05-003
Address / Location:	5TH STREET PUMP STATION (INSIDE GATE)			Map Page #:		N3	
				Pipe Height:		12 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		12 Inches	
				I.P. Address		107.80.25.36	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 7, 2016	11:15 AM	Manhole Depth:	4.5 Feet		
Site Hydraulics:	FAST, SHALLOW FLOW		Manhole Material / Condition:	Brick	RUBBLE	Poor
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	Ductile Iron Pipe		Fair
			Mini System Character:	RESIDENTIAL		
			Telephone Information:			
Depth of Flow (Wet Dof):	1 +/- 0.25		Access Pole #:	N/A		
Range (Air Dof):	11 +/- 0.25		Distance From Manhole:	N/A Feet		
Peak Velocity:	3.6 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40° 44.501' W 74° 01.588'

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station	X			100'
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		Regulator	50'

Additional Site Information / Comments:

UPSTREAM INSTALLATION. VERY TIGHT MANHOLE <5' DEEP 25" WIDE.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** HSI **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

*** Site Classification**

	Class	*Description*
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		***Reviewed/Approved***	
Field Mgr Name:	M. JOHNSON	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/7/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

HSI

Flow Monitor

HSI

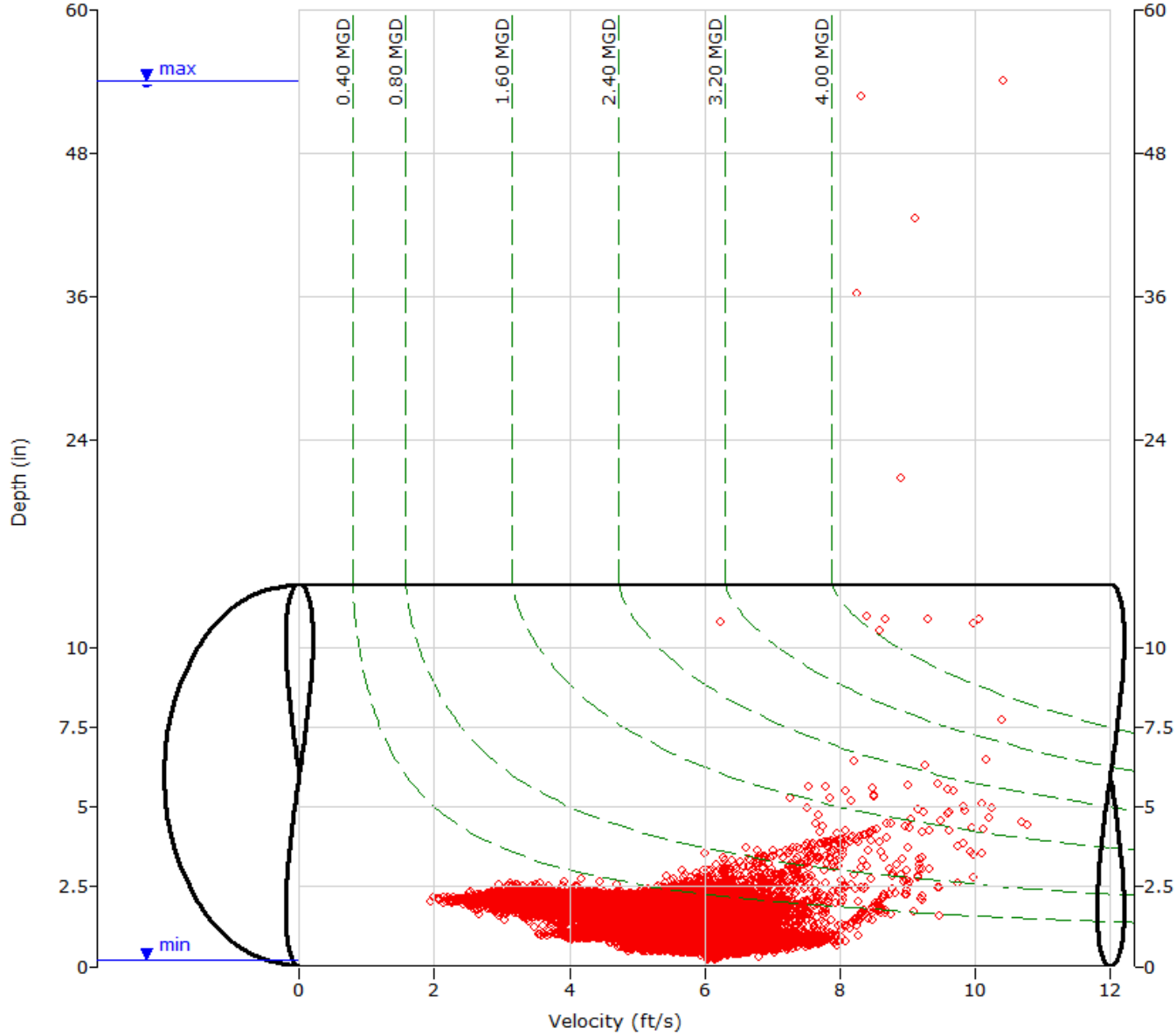
Pipe Height
12.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



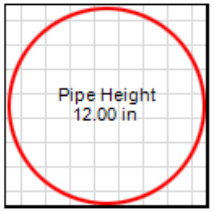
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

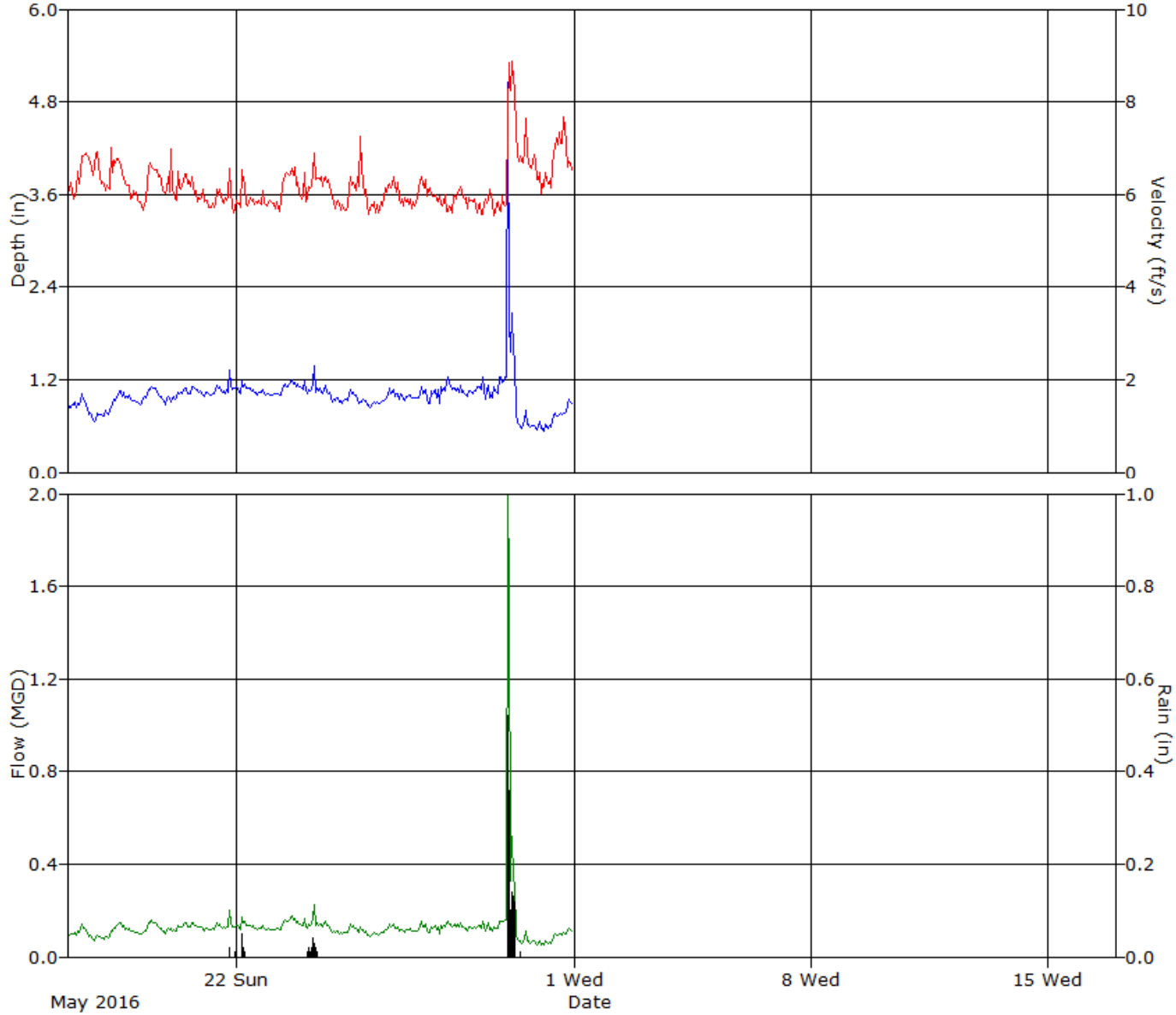


Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

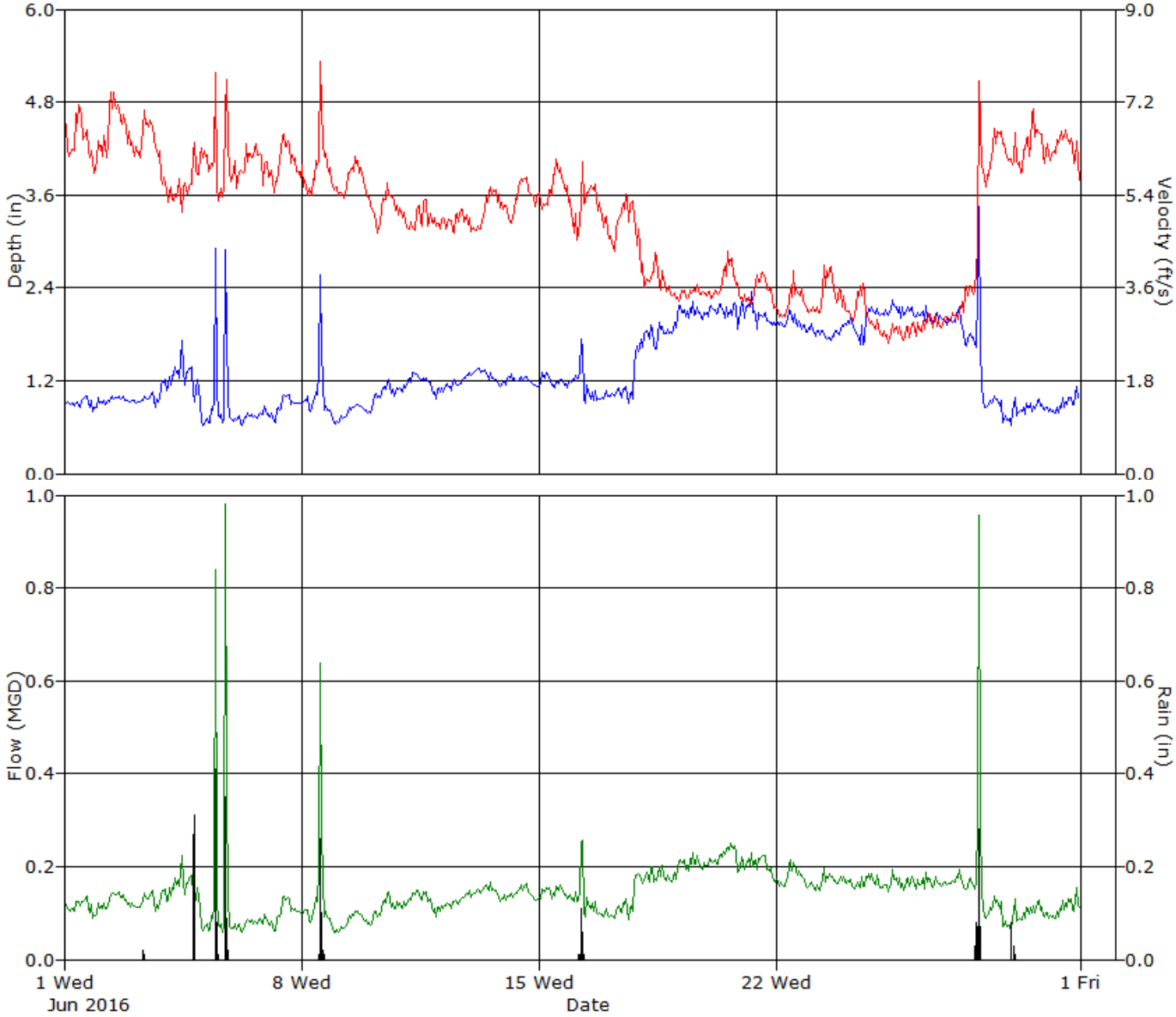
Pipe Height
12.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

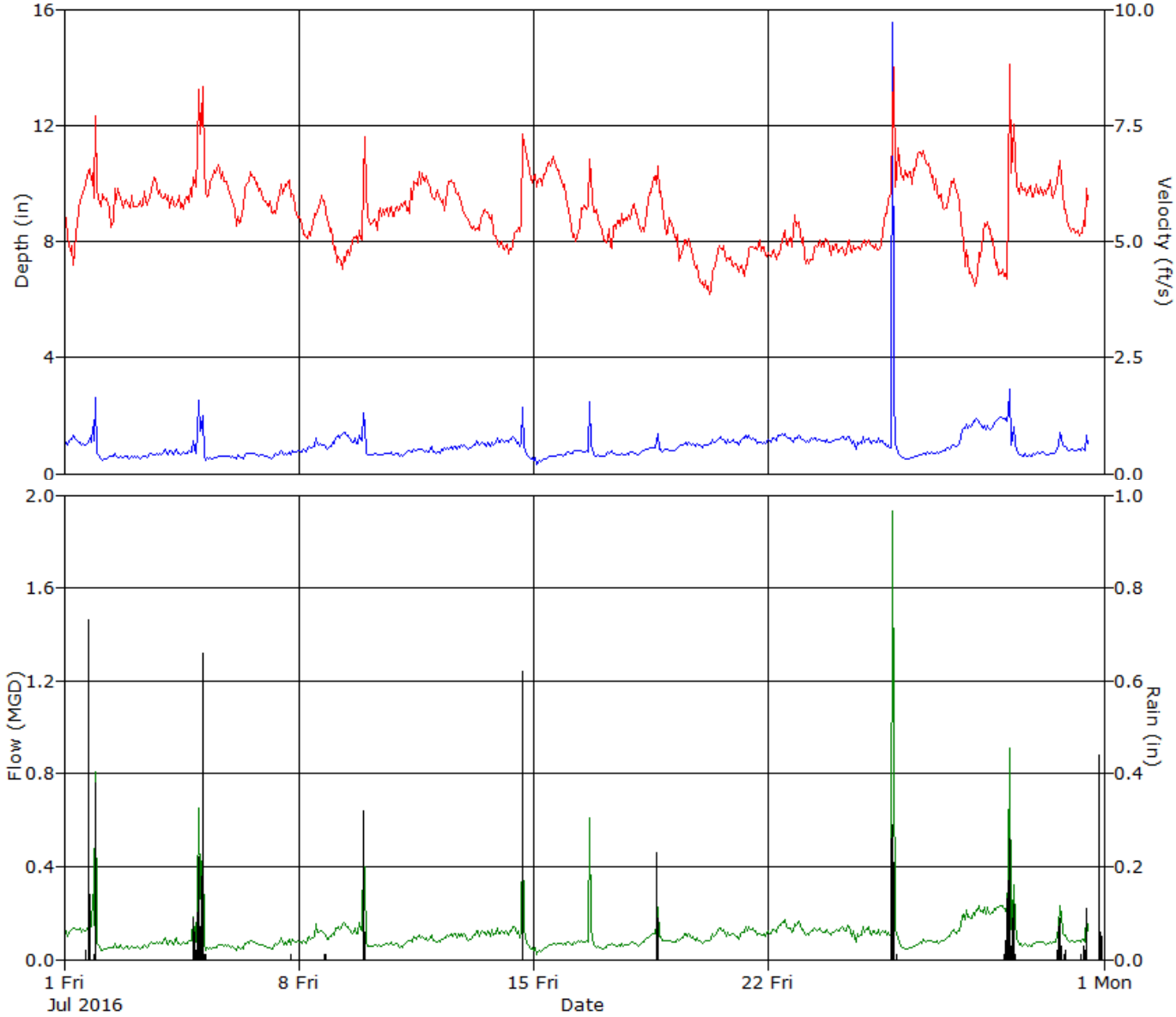
Pipe Height
12.00 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



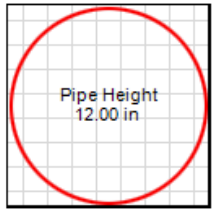
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

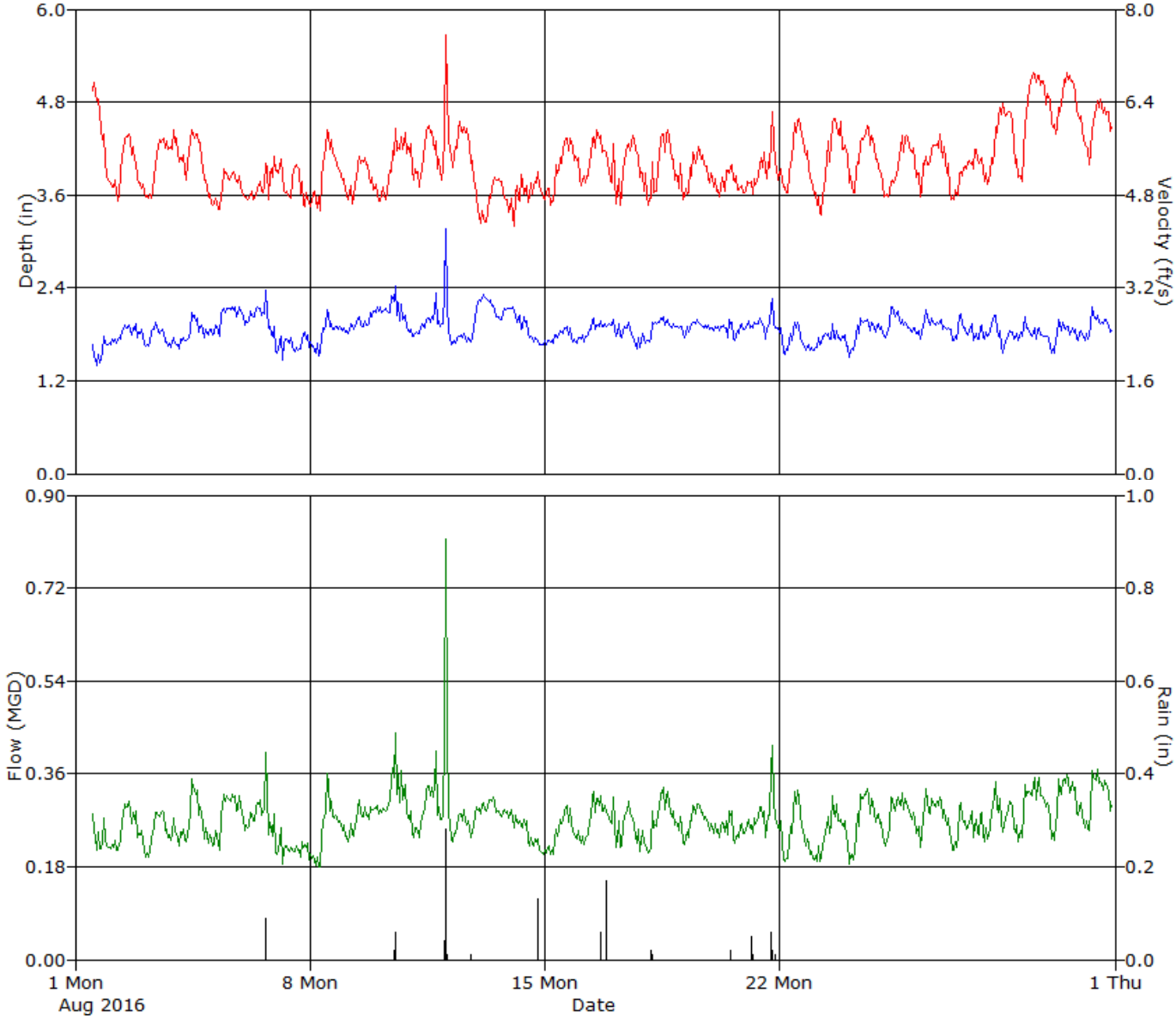


Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

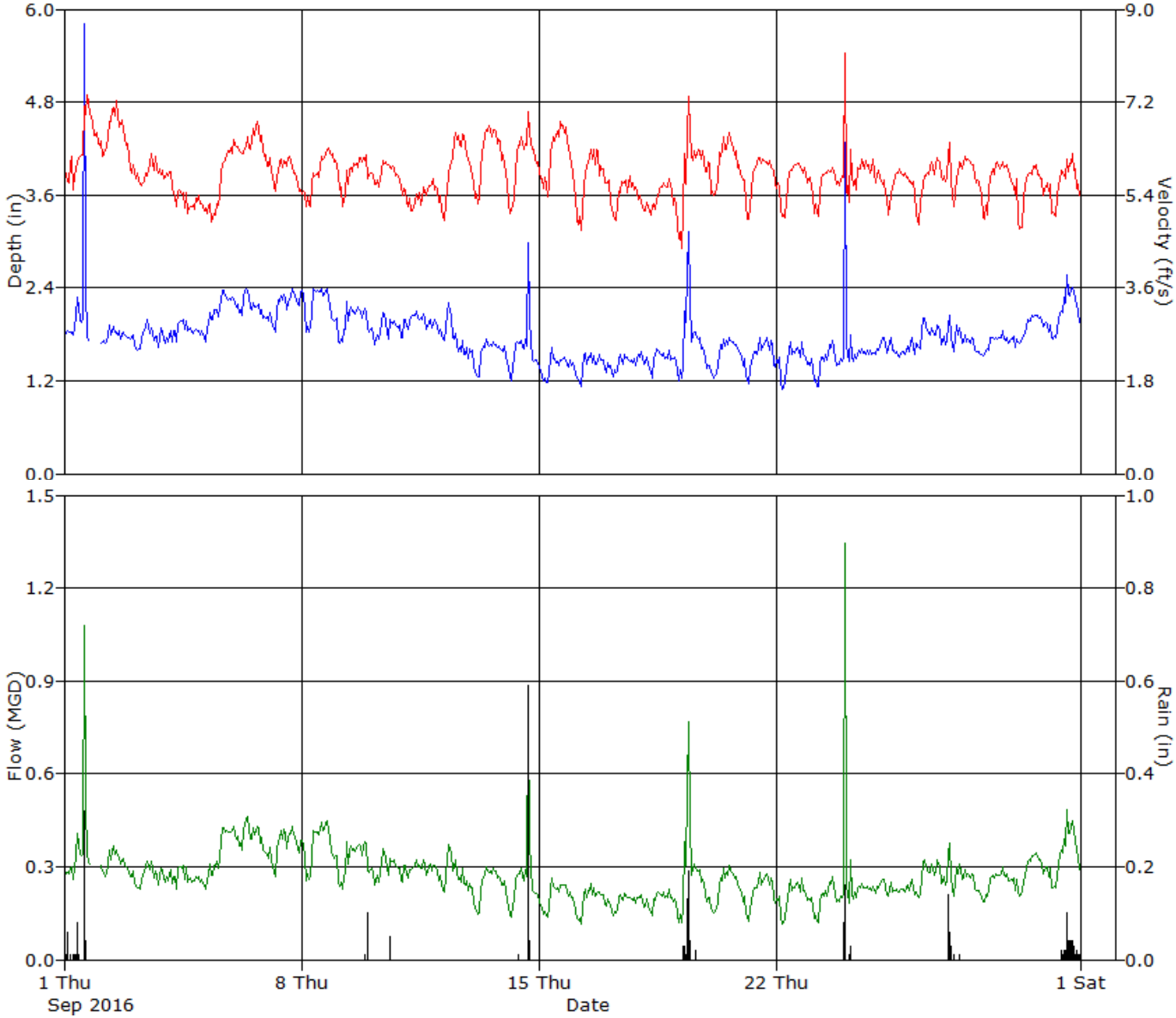
Pipe Height
12.00 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



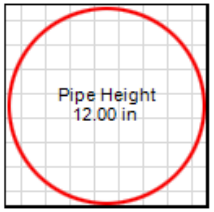
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

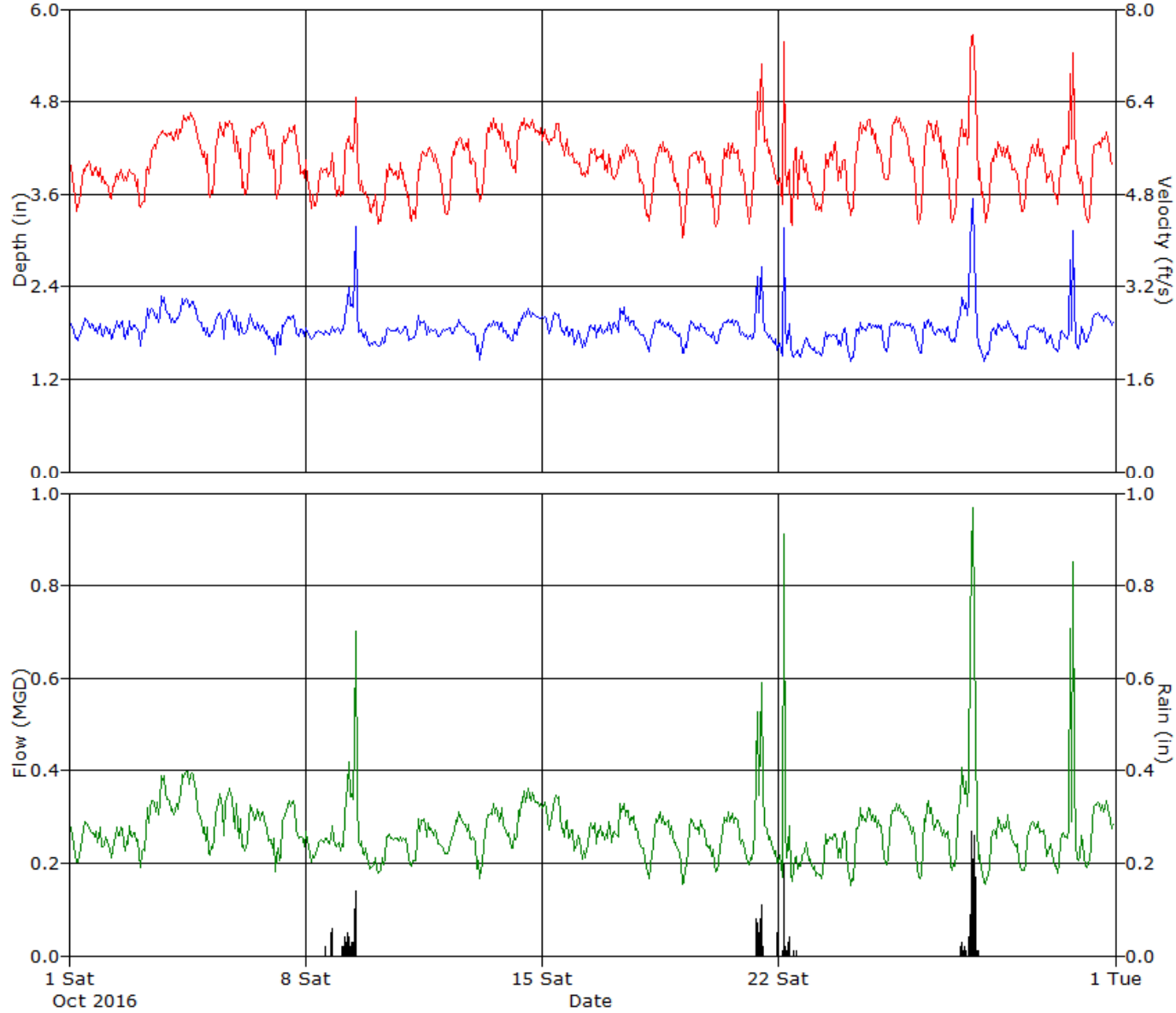


Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

HSI

Flow Monitor

HSI

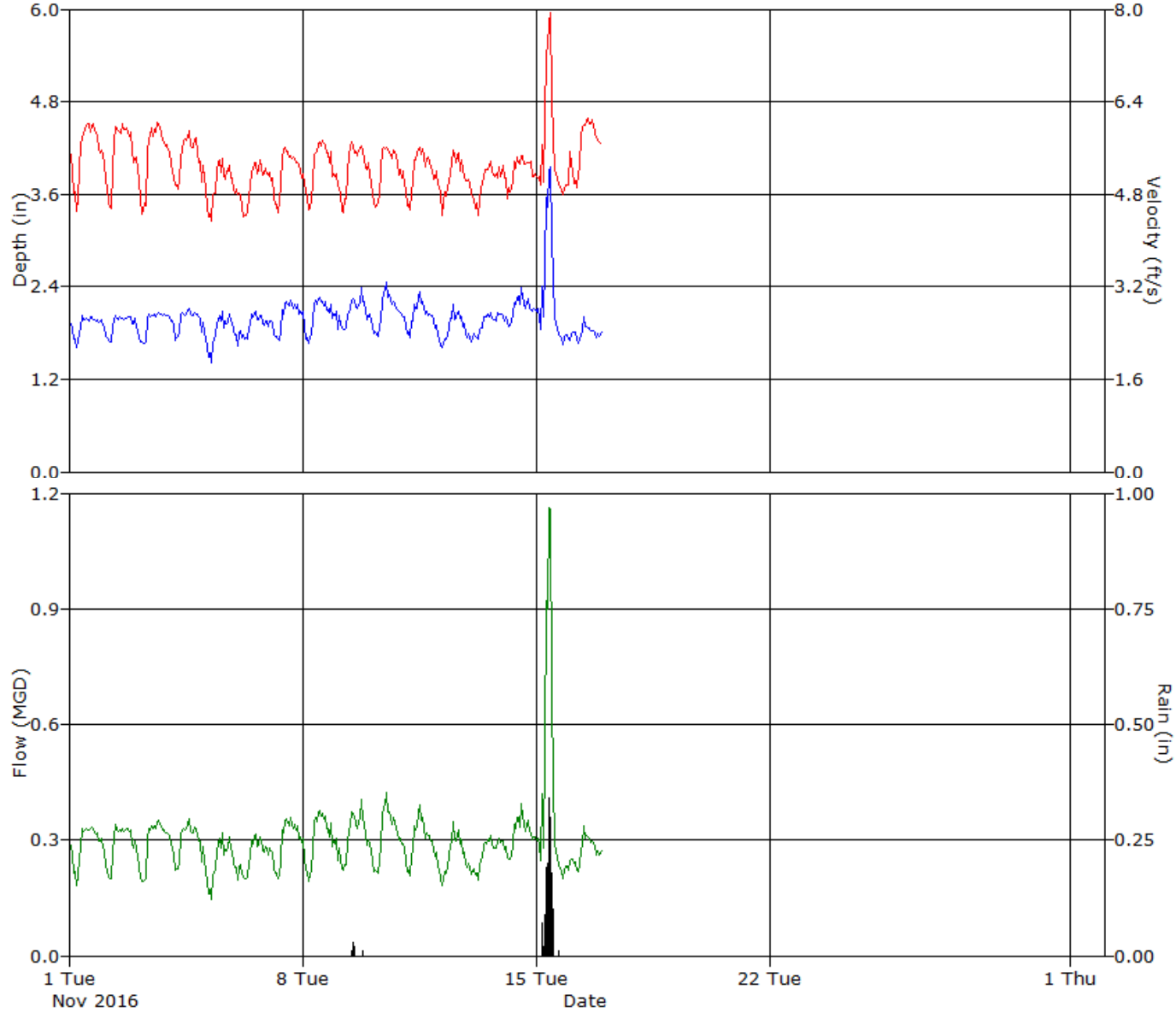
Pipe Height
12.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	20:00	0.61	00:15	1.17	0.83	05:00	5.60	20:05	7.97	6.50	19:30	0.063	10:50	0.178	0.100	13403	
5/18/2016	01:10	0.68	14:15	1.18	0.91	22:45	5.45	07:15	7.90	6.36	01:05	0.069	13:05	0.176	0.112	14999	
5/19/2016	22:05	0.77	12:35	1.20	0.98	06:55	5.31	18:15	7.63	6.18	22:05	0.082	12:35	0.186	0.122	16337	
5/20/2016	02:30	0.77	17:05	1.27	1.02	22:35	5.45	02:10	7.96	6.17	02:30	0.091	17:05	0.204	0.129	17296	
5/21/2016	00:50	0.88	19:20	1.53	1.06	22:40	5.38	19:30	7.11	5.89	15:10	0.098	19:30	0.264	0.131	17507	0.03
5/22/2016	14:20	0.93	04:25	1.28	1.06	18:25	5.43	04:25	6.92	5.90	14:20	0.105	04:25	0.201	0.131	17502	0.08
5/23/2016	08:30	0.97	11:35	1.32	1.08	22:35	5.12	11:35	7.04	6.12	07:40	0.109	11:35	0.214	0.140	18745	
5/24/2016	20:00	0.84	07:15	1.59	1.06	22:25	5.38	07:15	7.09	6.20	22:30	0.089	07:15	0.282	0.137	18367	0.16
5/25/2016	23:50	0.75	09:55	1.21	0.94	22:30	5.14	16:35	8.27	6.04	23:50	0.074	20:45	0.189	0.112	15018	
5/26/2016	01:20	0.82	23:10	1.21	0.96	08:25	5.25	19:05	6.97	5.95	01:20	0.084	16:30	0.179	0.114	15214	
5/27/2016	17:50	0.71	23:35	1.34	1.00	07:00	5.45	17:05	6.82	6.00	17:50	0.071	23:35	0.197	0.121	16197	
5/28/2016	00:55	0.69	06:30	1.53	1.07	20:00	4.86	03:50	6.81	5.88	00:55	0.069	03:50	0.216	0.132	17589	
5/29/2016	10:10	0.80	19:05	1.48	1.09	15:55	5.08	04:10	6.66	5.78	10:10	0.080	10:55	0.216	0.133	17779	
5/30/2016	19:00	0.48	01:55	10.86	1.07	00:00	5.26	02:00	10.70	7.15	21:45	0.042	01:45	4.769	0.269	35953	1.38
5/31/2016	01:55	0.45	03:30	1.02	0.73	00:00	5.65	16:15	8.08	6.73	01:55	0.038	03:30	0.151	0.086	11543	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			263449	1.65
Avg	0.99	6.19	0.131	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	22:00	0.65	19:00	1.34	0.91	23:10	5.34	11:25	7.87	6.44	22:25	0.063	19:00	0.200	0.114	15196	
6/2/2016	00:45	0.83	00:00	1.30	0.95	00:20	5.56	09:10	7.85	6.74	01:35	0.098	00:00	0.174	0.127	16987	
6/3/2016	17:15	0.58	22:35	1.53	0.98	21:25	5.16	08:20	7.51	6.38	17:15	0.057	22:35	0.212	0.126	16835	0.03
6/4/2016	20:20	0.61	11:05	2.10	1.24	11:15	4.37	20:25	7.24	5.58	20:20	0.065	11:50	0.280	0.156	20792	0.58
6/5/2016	16:25	0.55	18:45	10.87	0.99	13:15	5.00	18:35	10.77	6.08	16:25	0.044	18:45	4.859	0.163	21739	0.96
6/6/2016	07:20	0.47	23:05	1.06	0.74	02:05	5.09	09:20	7.24	6.03	07:20	0.036	10:25	0.135	0.078	10407	
6/7/2016	06:30	0.61	11:40	1.20	0.87	02:00	5.34	12:05	6.96	6.02	06:05	0.054	11:40	0.183	0.101	13437	
6/8/2016	22:10	0.54	13:10	3.13	1.01	04:20	5.01	13:35	8.90	5.94	22:10	0.043	13:10	0.841	0.134	17873	0.40
6/9/2016	00:10	0.56	15:45	1.02	0.79	22:35	4.96	14:50	6.55	5.68	00:10	0.047	15:45	0.135	0.083	11038	
6/10/2016	00:00	0.69	15:30	1.44	1.03	08:00	4.30	14:10	6.04	5.17	00:00	0.061	15:30	0.206	0.110	14747	
6/11/2016	23:05	0.94	09:40	1.48	1.18	17:50	4.17	16:45	5.88	4.95	23:00	0.084	09:40	0.206	0.128	17116	
6/12/2016	10:40	0.95	23:25	1.39	1.16	11:50	4.14	03:45	5.68	4.91	10:40	0.085	22:45	0.171	0.124	16556	
6/13/2016	21:10	1.09	14:35	1.44	1.26	06:50	4.21	17:05	5.92	5.11	07:50	0.107	14:35	0.200	0.146	19452	
6/14/2016	21:40	1.04	03:40	1.37	1.20	07:35	4.55	13:50	6.20	5.35	06:45	0.108	13:50	0.184	0.142	18998	
6/15/2016	20:40	1.03	05:25	1.43	1.19	23:35	4.36	13:20	6.46	5.51	23:35	0.107	15:05	0.204	0.145	19328	
6/16/2016	17:10	0.74	06:40	2.40	1.12	22:55	3.83	07:25	6.51	5.19	17:10	0.065	06:40	0.443	0.126	16835	0.20
6/17/2016	19:25	0.79	22:40	1.96	1.12	06:20	3.72	21:00	6.23	4.89	16:30	0.071	20:20	0.236	0.117	15654	
6/18/2016	02:30	1.26	19:05	2.29	1.79	14:50	3.05	00:00	5.59	3.79	06:45	0.134	19:05	0.258	0.179	23911	
6/19/2016	19:20	1.64	15:45	2.49	2.07	01:35	3.14	13:40	4.00	3.49	19:20	0.147	15:45	0.281	0.205	27362	
6/20/2016	21:40	1.62	16:05	2.51	2.10	23:35	3.02	14:55	5.01	3.71	21:35	0.138	16:30	0.313	0.221	29556	
6/21/2016	10:55	1.70	07:10	2.59	2.06	01:30	2.77	11:20	4.69	3.52	01:30	0.141	07:10	0.286	0.204	27326	
6/22/2016	14:15	1.60	13:00	2.24	1.95	02:35	2.62	12:15	4.69	3.32	22:50	0.128	12:15	0.249	0.177	23696	
6/23/2016	11:55	1.37	01:10	2.27	1.82	01:25	2.95	14:25	4.75	3.48	04:05	0.127	10:25	0.223	0.168	22444	
6/24/2016	12:10	1.34	18:00	2.60	1.94	23:45	2.58	12:10	4.17	3.17	14:15	0.105	18:00	0.253	0.167	22387	
6/25/2016	12:55	1.63	10:05	2.56	2.11	18:10	1.95	00:25	3.32	2.74	18:10	0.109	10:05	0.234	0.164	21981	
6/26/2016	15:00	1.74	17:50	2.35	2.04	03:00	2.13	13:25	3.56	2.91	03:00	0.118	12:55	0.231	0.166	22189	
6/27/2016	14:35	1.22	23:25	2.75	1.90	02:40	2.45	23:45	4.99	3.33	14:35	0.094	23:30	0.374	0.171	22918	0.18
6/28/2016	22:10	0.51	00:45	6.41	0.99	05:25	5.33	00:45	8.21	6.25	22:10	0.043	00:45	2.262	0.144	19190	0.43
6/29/2016	02:25	0.58	10:25	1.08	0.85	10:50	5.52	14:10	7.63	6.36	02:25	0.055	10:25	0.158	0.103	13725	0.04
6/30/2016	01:50	0.65	21:00	1.27	0.90	23:10	5.08	03:20	6.97	6.32	01:50	0.063	21:00	0.184	0.110	14653	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			574328	2.82
Avg	1.34	4.94	0.143	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	23:50	0.55	22:10	10.87	1.17	06:20	3.90	22:15	9.83	5.77	23:50	0.047	22:10	4.500	0.163	21734	1.28
7/2/2016	03:00	0.36	16:00	0.83	0.57	09:30	4.95	15:30	6.54	5.82	03:00	0.027	16:00	0.098	0.052	6925	
7/3/2016	17:50	0.44	17:05	0.94	0.63	02:50	5.38	15:30	6.71	5.96	06:40	0.036	14:10	0.122	0.061	8167	
7/4/2016	15:50	0.51	20:45	2.52	0.78	13:55	5.37	23:45	7.67	5.97	15:50	0.044	20:45	0.566	0.089	11869	0.27
7/5/2016	11:00	0.28	02:40	3.60	0.79	08:30	5.61	02:40	9.94	6.57	05:10	0.019	02:40	1.271	0.120	15987	1.15
7/6/2016	07:00	0.43	13:40	0.85	0.63	03:00	5.10	13:40	6.96	5.98	07:00	0.032	13:40	0.111	0.062	8300	
7/7/2016	00:40	0.47	12:00	1.02	0.68	23:25	4.95	17:05	6.76	5.90	00:40	0.037	12:00	0.133	0.068	9077	0.01
7/8/2016	00:25	0.54	12:35	1.43	0.92	22:20	4.31	16:20	6.22	5.46	00:25	0.042	12:35	0.188	0.098	13119	0.02
7/9/2016	01:40	0.89	22:35	5.66	1.28	07:10	3.74	22:35	9.01	5.00	01:40	0.078	22:35	2.124	0.154	20584	0.38
7/10/2016	01:50	0.53	00:00	0.89	0.68	08:45	5.00	00:35	6.48	5.59	01:50	0.044	00:00	0.102	0.064	8521	
7/11/2016	00:15	0.55	16:50	1.04	0.77	07:10	5.26	16:05	6.95	6.08	00:15	0.046	10:25	0.142	0.084	11181	
7/12/2016	05:00	0.65	08:05	1.30	0.85	08:40	4.94	13:25	6.65	5.98	05:00	0.062	08:05	0.172	0.096	12813	
7/13/2016	01:20	0.75	22:40	1.36	1.01	22:30	4.09	15:30	6.02	5.37	17:20	0.071	18:50	0.181	0.110	14670	
7/14/2016	21:40	0.40	16:10	5.60	1.03	06:20	4.40	16:15	8.64	5.60	21:40	0.033	16:10	1.751	0.125	16757	0.62
7/15/2016	02:25	0.19	22:55	0.86	0.55	06:30	5.52	10:50	7.26	6.44	02:25	0.011	22:55	0.109	0.055	7397	
7/16/2016	19:45	0.45	16:25	10.79	0.81	06:50	4.84	16:30	9.63	5.60	19:45	0.035	16:25	2.996	0.095	12722	
7/17/2016	10:50	0.48	08:35	0.86	0.68	08:30	4.68	20:35	6.12	5.32	02:25	0.034	15:00	0.092	0.061	8100	
7/18/2016	02:30	0.61	16:55	2.64	0.84	23:35	4.77	17:00	6.94	5.77	03:50	0.051	16:55	0.572	0.093	12477	0.32
7/19/2016	05:10	0.72	18:25	1.21	0.94	20:50	3.93	02:10	5.88	4.88	00:00	0.062	13:30	0.138	0.090	11987	
7/20/2016	01:35	0.84	16:40	1.39	1.09	06:35	3.55	16:55	5.22	4.44	01:35	0.063	16:40	0.164	0.103	13806	
7/21/2016	14:15	0.86	08:10	1.43	1.14	09:00	3.86	18:25	5.42	4.67	14:15	0.075	11:55	0.162	0.115	15316	
7/22/2016	18:10	0.80	11:05	1.56	1.24	06:40	4.27	22:45	6.02	4.99	18:10	0.073	12:25	0.221	0.138	18473	
7/23/2016	05:10	0.98	10:30	1.32	1.15	21:05	4.25	01:40	5.62	4.83	05:10	0.087	13:45	0.161	0.120	15983	
7/24/2016	15:40	0.62	09:50	1.42	1.14	11:40	4.48	21:50	5.50	4.87	15:40	0.046	09:50	0.181	0.121	16116	
7/25/2016	23:55	0.54	17:40	53.96	1.69	07:10	4.68	17:40	10.41	5.75	23:55	0.054	17:40	5.285	0.221	29507	0.77
7/26/2016	05:05	0.42	19:45	0.85	0.61	07:40	5.58	13:00	7.47	6.58	04:15	0.035	13:00	0.115	0.065	8722	
7/27/2016	00:50	0.63	22:30	1.91	1.02	21:40	4.04	13:50	6.84	5.74	02:45	0.062	19:50	0.264	0.119	15910	
7/28/2016	12:50	1.30	23:40	2.03	1.72	06:20	3.35	12:35	5.68	4.69	02:05	0.152	07:15	0.279	0.208	27826	
7/29/2016	14:20	0.55	05:15	4.65	1.11	01:00	3.89	05:15	10.20	6.04	14:20	0.046	05:15	1.855	0.162	21606	0.86
7/30/2016	09:20	0.56	17:50	2.08	0.81	20:55	4.93	17:55	7.12	6.07	07:05	0.049	17:55	0.417	0.094	12562	0.24
7/31/2016	09:10	0.67	12:35	1.65	0.86	09:00	5.01	12:35	6.71	5.32	09:10	0.056	12:35	0.281	0.089	6456	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			434671	6.64
Avg	0.94	5.59	0.106	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	17:40	1.27	23:10	2.10	1.57	23:45	4.63	13:45	7.10	5.98	18:35	0.163	12:35	0.344	0.234	14864	0.05
8/2/2016	01:05	1.59	19:05	2.19	1.81	07:00	4.41	13:35	6.19	5.27	00:20	0.188	19:05	0.368	0.254	34018	
8/3/2016	19:20	1.52	09:30	2.09	1.76	06:35	4.51	22:15	6.22	5.35	04:25	0.177	10:35	0.323	0.248	33198	
8/4/2016	19:35	1.57	11:35	2.23	1.83	23:20	4.58	11:45	6.09	5.46	19:35	0.195	11:35	0.392	0.268	35815	
8/5/2016	02:50	1.67	18:45	2.24	2.02	06:35	4.37	16:35	5.62	4.93	02:50	0.193	18:40	0.363	0.281	37520	
8/6/2016	23:30	1.47	16:50	3.62	2.01	03:30	4.48	16:55	7.16	4.95	23:30	0.181	16:50	0.877	0.279	37294	0.09
8/7/2016	13:35	1.34	18:25	1.96	1.68	20:35	4.30	03:30	6.09	5.00	04:55	0.162	03:30	0.314	0.215	28782	
8/8/2016	01:45	1.44	13:25	2.26	1.81	05:55	4.28	15:45	6.31	5.19	01:45	0.151	13:25	0.403	0.252	33753	
8/9/2016	14:35	1.74	21:20	2.22	1.95	23:40	4.37	15:00	5.76	5.07	03:55	0.212	11:30	0.348	0.272	36301	
8/10/2016	22:40	1.74	13:15	2.72	2.10	07:15	4.43	20:00	6.44	5.30	23:35	0.241	13:15	0.542	0.317	42313	0.08
8/11/2016	00:05	1.63	18:20	3.40	1.94	06:30	4.51	14:40	6.37	5.45	06:35	0.208	18:20	0.742	0.291	38919	
8/12/2016	05:40	1.47	01:30	3.92	1.88	23:55	4.42	01:30	8.47	5.73	05:40	0.191	01:30	1.222	0.300	40134	0.34
8/13/2016	17:35	1.94	04:25	2.39	2.16	02:10	3.86	19:15	5.64	4.72	15:55	0.250	04:05	0.362	0.292	39083	
8/14/2016	16:00	1.55	01:40	2.22	1.87	02:15	4.06	14:20	5.75	4.85	16:00	0.173	00:35	0.341	0.245	32717	0.13
8/15/2016	06:50	1.54	07:50	2.08	1.77	05:05	4.44	14:10	6.08	5.27	06:50	0.172	16:10	0.341	0.247	33049	
8/16/2016	02:30	1.56	11:25	2.19	1.87	06:30	4.60	14:30	6.41	5.43	02:30	0.199	11:25	0.384	0.275	36705	0.23
8/17/2016	19:50	1.49	01:40	2.23	1.81	06:05	4.34	15:35	6.13	5.30	20:05	0.178	01:40	0.396	0.256	34234	
8/18/2016	00:20	1.65	13:50	2.25	1.89	02:15	4.28	13:40	6.23	5.30	02:15	0.184	13:50	0.401	0.274	36601	0.03
8/19/2016	05:20	1.65	11:10	2.07	1.90	06:55	4.29	14:30	5.91	5.20	04:45	0.201	11:10	0.329	0.269	35912	
8/20/2016	11:50	1.65	12:20	2.42	1.87	19:40	4.48	12:20	5.76	5.02	15:20	0.213	12:20	0.420	0.254	33913	0.02
8/21/2016	22:50	1.68	18:35	2.37	1.94	02:45	4.65	19:30	6.65	5.25	22:50	0.209	19:30	0.470	0.281	37503	0.15
8/22/2016	19:55	1.47	11:05	2.07	1.73	05:35	4.64	14:15	6.35	5.44	04:10	0.180	11:00	0.369	0.247	33066	
8/23/2016	00:15	1.53	15:00	2.05	1.74	05:55	4.26	20:45	6.54	5.37	03:30	0.174	15:00	0.352	0.246	32916	
8/24/2016	02:30	1.45	08:15	2.13	1.83	05:05	4.63	15:35	6.47	5.49	02:30	0.167	15:35	0.369	0.271	36186	
8/25/2016	23:10	1.68	12:15	2.35	1.94	06:40	4.38	20:55	6.40	5.27	04:05	0.199	12:25	0.391	0.281	37559	
8/26/2016	02:50	1.67	09:45	2.47	1.92	06:35	4.53	22:35	6.31	5.42	05:10	0.200	09:45	0.406	0.285	38091	
8/27/2016	23:15	1.59	10:50	2.16	1.84	05:30	4.36	20:35	6.15	5.17	04:40	0.193	10:30	0.328	0.255	34129	
8/28/2016	16:25	1.49	11:05	2.25	1.82	06:00	4.73	14:55	6.66	5.75	02:45	0.199	11:05	0.384	0.279	37240	
8/29/2016	20:45	1.58	15:00	2.22	1.82	03:45	4.70	13:35	7.50	6.19	04:20	0.210	15:00	0.462	0.300	40128	
8/30/2016	05:35	1.38	15:00	2.13	1.80	06:45	5.64	19:20	7.26	6.43	05:35	0.197	15:00	0.432	0.308	41185	
8/31/2016	03:20	1.57	08:25	2.28	1.91	07:05	5.12	17:25	6.72	6.02	03:20	0.206	08:50	0.410	0.315	42052	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1105182	1.12
Avg	1.87	5.36	0.271	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	06:35	1.71	14:40	36.28	2.15	06:25	5.10	14:45	9.59	6.34	06:30	0.227	14:40	4.186	0.368	37248	0.56
9/2/2016	05:50	1.59	14:55	2.05	1.78	23:25	5.68	11:55	7.52	6.58	23:00	0.245	11:55	0.432	0.313	37651	
9/3/2016	02:55	1.50	11:25	2.10	1.77	03:15	5.41	17:35	6.57	5.84	07:05	0.205	10:45	0.351	0.273	36483	
9/4/2016	08:45	1.58	10:20	2.31	1.84	15:25	4.80	04:00	6.33	5.41	08:50	0.205	04:00	0.376	0.268	35773	
9/5/2016	04:05	1.57	16:15	2.52	2.08	08:15	4.78	23:40	6.63	5.51	04:05	0.200	16:15	0.476	0.328	43864	
9/6/2016	04:30	1.72	09:30	2.54	2.17	22:50	5.60	17:55	7.32	6.40	04:30	0.279	14:00	0.523	0.401	53660	
9/7/2016	06:20	1.64	12:00	2.74	2.17	23:15	5.14	16:35	6.59	5.88	06:20	0.225	12:00	0.529	0.370	49407	
9/8/2016	05:40	1.73	15:05	2.62	2.20	06:00	4.92	18:15	6.68	5.82	06:00	0.228	15:05	0.528	0.373	49831	
9/9/2016	03:50	1.57	21:55	3.38	2.00	05:30	5.02	21:55	6.97	5.84	03:50	0.206	21:55	0.817	0.327	43772	0.11
9/10/2016	14:05	1.25	10:25	2.28	1.87	23:25	5.18	17:40	6.61	5.82	04:10	0.161	10:25	0.417	0.296	39548	0.05
9/11/2016	21:30	1.63	14:35	2.30	1.97	13:55	4.90	21:25	5.91	5.40	00:40	0.223	14:35	0.401	0.295	39391	
9/12/2016	22:15	1.35	08:25	2.33	1.77	05:55	4.83	13:00	7.09	5.94	22:15	0.184	08:45	0.406	0.277	37045	0.00
9/13/2016	06:15	1.17	14:00	1.99	1.57	06:30	4.93	14:00	7.23	6.18	06:30	0.134	14:00	0.398	0.244	32674	
9/14/2016	05:20	1.08	17:40	5.61	1.61	06:50	4.77	17:35	8.60	6.02	05:20	0.112	17:45	1.831	0.258	34480	0.64
9/15/2016	06:20	1.00	09:05	1.91	1.40	07:05	5.18	15:00	7.59	6.20	06:20	0.114	09:05	0.349	0.207	27690	
9/16/2016	06:05	0.92	19:05	1.89	1.41	05:20	4.47	13:50	6.76	5.72	06:10	0.080	13:50	0.319	0.194	25950	
9/17/2016	05:00	0.95	01:35	1.91	1.43	07:05	4.51	01:35	6.45	5.45	05:00	0.099	01:35	0.335	0.187	25001	
9/18/2016	05:20	1.10	12:30	1.88	1.49	09:25	4.66	05:45	6.32	5.35	05:20	0.110	05:45	0.285	0.196	26139	
9/19/2016	03:05	1.11	10:30	3.39	1.74	05:00	4.15	10:35	7.85	5.82	03:05	0.101	10:35	0.909	0.280	37448	0.45
9/20/2016	04:30	0.99	11:00	2.03	1.55	02:40	4.66	15:20	6.89	6.05	04:30	0.101	11:00	0.374	0.235	31443	
9/21/2016	05:25	1.04	15:25	1.92	1.53	04:10	4.74	12:35	6.41	5.77	05:25	0.103	15:25	0.326	0.220	29348	
9/22/2016	05:50	0.99	13:55	2.02	1.47	06:25	4.56	18:10	6.33	5.66	06:25	0.093	13:55	0.347	0.204	27255	
9/23/2016	05:55	0.92	16:10	1.89	1.44	07:05	4.70	14:55	6.38	5.61	05:55	0.086	16:10	0.307	0.197	26304	
9/24/2016	07:25	1.38	01:05	10.94	1.67	02:35	4.67	01:10	9.45	5.92	05:15	0.161	01:05	4.084	0.274	36636	0.28
9/25/2016	06:00	1.39	08:50	1.82	1.62	07:55	4.85	00:50	6.36	5.65	06:00	0.175	09:05	0.287	0.231	30820	
9/26/2016	01:50	1.37	18:10	2.38	1.79	03:40	4.51	20:55	6.52	5.67	01:50	0.168	18:10	0.463	0.270	36034	
9/27/2016	06:20	1.45	02:40	3.09	1.74	06:20	4.61	02:40	7.37	5.86	06:20	0.161	02:40	0.764	0.269	36023	0.25
9/28/2016	03:05	1.36	19:40	2.04	1.69	04:25	4.64	18:00	6.43	5.68	03:10	0.152	19:40	0.348	0.248	33166	
9/29/2016	02:00	1.58	13:00	2.32	1.89	06:55	4.57	13:00	6.34	5.54	04:35	0.191	13:00	0.438	0.287	38339	
9/30/2016	03:30	1.69	14:20	2.65	2.09	06:40	4.74	14:15	6.54	5.64	03:40	0.209	14:15	0.544	0.338	45198	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1083621	2.75
Avg	1.76	5.82	0.273	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	06:00	1.55	11:40	2.24	1.86	05:15	4.14	14:45	5.69	5.08	06:00	0.173	11:40	0.357	0.255	34138	
10/2/2016	06:45	1.57	19:20	2.11	1.85	05:10	4.61	19:50	5.56	5.05	06:45	0.183	19:20	0.323	0.251	33573	
10/3/2016	03:25	1.51	18:15	2.42	2.00	02:45	4.21	19:40	6.15	5.37	03:15	0.169	18:20	0.437	0.301	40279	
10/4/2016	23:20	1.78	15:00	2.53	2.06	22:30	5.19	14:50	6.59	5.89	23:25	0.249	14:55	0.508	0.343	45904	
10/5/2016	22:00	1.53	17:10	2.33	1.93	03:15	4.44	19:35	6.43	5.61	04:15	0.203	17:10	0.420	0.298	39871	
10/6/2016	22:30	1.57	09:55	2.16	1.86	07:05	4.62	15:00	6.26	5.59	22:30	0.203	14:50	0.376	0.280	37497	0.00
10/7/2016	03:50	1.38	16:00	2.17	1.83	04:20	4.57	02:30	6.21	5.47	03:50	0.158	16:00	0.389	0.270	36123	
10/8/2016	04:00	1.61	18:25	2.01	1.81	04:05	4.44	19:45	5.78	5.02	04:00	0.183	19:45	0.312	0.241	32196	0.13
10/9/2016	22:15	1.57	12:40	3.60	1.99	23:40	4.23	12:40	7.53	5.19	23:40	0.172	12:40	0.963	0.296	39596	0.52
10/10/2016	10:25	1.48	23:50	2.05	1.76	08:35	4.02	14:00	5.83	4.91	06:20	0.160	10:15	0.303	0.229	30647	
10/11/2016	02:55	1.62	12:00	2.38	1.83	07:10	3.99	20:50	5.99	5.15	06:50	0.175	12:00	0.417	0.253	33848	0.00
10/12/2016	11:15	1.59	18:00	2.22	1.84	07:10	4.29	13:00	6.22	5.29	01:55	0.190	18:00	0.384	0.262	35048	
10/13/2016	04:35	1.24	14:00	2.18	1.80	06:45	4.48	14:55	6.48	5.56	04:35	0.126	14:00	0.401	0.269	35975	
10/14/2016	04:05	1.50	15:00	2.34	1.93	06:10	4.89	00:45	6.35	5.79	04:05	0.185	15:00	0.428	0.307	41066	
10/15/2016	23:10	1.45	08:25	2.25	1.90	16:20	4.78	11:10	6.27	5.70	23:10	0.179	08:05	0.394	0.296	39605	
10/16/2016	08:30	1.41	14:15	2.10	1.79	21:10	4.59	06:05	5.92	5.35	08:30	0.173	14:15	0.340	0.253	33878	
10/17/2016	02:40	1.64	08:35	2.37	1.93	01:30	4.69	01:45	5.90	5.36	22:15	0.214	08:35	0.388	0.284	37976	
10/18/2016	03:55	1.45	09:50	2.23	1.83	04:50	4.10	17:45	6.14	5.19	03:55	0.146	14:55	0.384	0.257	34371	0.00
10/19/2016	05:20	1.47	10:00	2.09	1.80	04:50	3.94	15:05	5.92	5.08	04:45	0.144	10:00	0.331	0.245	32698	
10/20/2016	04:40	1.51	14:55	2.38	1.85	03:55	3.97	13:55	6.11	5.15	04:40	0.150	14:55	0.414	0.259	34634	
10/21/2016	23:20	1.42	09:50	3.30	1.89	04:20	4.10	13:40	7.81	5.41	23:30	0.170	13:40	0.862	0.287	38369	0.46
10/22/2016	10:50	1.28	04:25	4.98	1.69	09:40	3.79	04:25	10.26	5.19	10:50	0.113	04:25	2.040	0.241	32158	0.33
10/23/2016	11:55	1.36	16:20	1.94	1.67	05:40	4.23	16:30	6.07	5.09	12:00	0.155	16:20	0.316	0.221	29565	
10/24/2016	06:05	1.38	20:00	2.04	1.78	04:35	4.28	18:00	6.44	5.51	06:05	0.139	18:10	0.352	0.262	35016	
10/25/2016	06:25	1.38	15:15	2.12	1.85	06:35	4.69	13:30	6.38	5.66	06:25	0.164	15:15	0.380	0.283	37883	
10/26/2016	01:55	1.43	08:45	2.15	1.81	04:30	4.19	18:10	6.36	5.44	06:25	0.153	18:10	0.381	0.264	35318	
10/27/2016	23:35	1.46	19:20	4.48	2.14	07:10	4.10	20:30	8.84	5.70	04:25	0.168	19:20	1.502	0.380	50759	1.15
10/28/2016	03:05	1.29	13:50	2.12	1.74	01:50	3.76	14:00	6.03	5.20	01:55	0.124	13:50	0.355	0.241	32178	
10/29/2016	01:35	1.40	12:10	2.17	1.77	05:35	4.27	17:00	6.14	5.23	01:35	0.163	16:50	0.371	0.246	32931	
10/30/2016	17:40	1.33	18:00	5.48	1.83	07:30	4.43	18:00	9.67	5.41	07:40	0.169	18:00	2.183	0.284	37980	
10/31/2016	04:05	1.62	18:00	2.19	1.93	04:55	4.09	18:15	6.10	5.29	05:00	0.173	18:05	0.370	0.281	37598	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1128678	2.59
Avg	1.86	5.35	0.272	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

HSI, Pipe Height: 12 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	06:00	1.42	16:55	2.10	1.91	05:15	4.24	16:50	6.31	5.56	06:00	0.151	16:55	0.371	0.292	38982	
11/2/2016	22:05	1.60	11:00	2.11	1.92	06:50	4.25	14:00	6.36	5.53	05:00	0.181	11:00	0.366	0.292	38968	
11/3/2016	03:00	1.47	13:05	2.17	1.93	04:10	4.26	11:00	6.40	5.48	03:00	0.171	13:05	0.381	0.293	39212	
11/4/2016	04:15	1.55	15:00	2.31	1.97	22:45	4.23	15:00	6.08	5.44	04:15	0.183	15:00	0.417	0.299	39907	
11/5/2016	03:45	1.28	14:15	2.17	1.83	05:30	4.06	14:35	5.94	4.99	03:45	0.122	14:35	0.359	0.248	33134	
11/6/2016	01:20	1.54	14:30	2.29	1.89	05:55	4.20	17:35	5.82	4.97	01:20	0.184	14:30	0.391	0.257	34340	
11/7/2016	07:45	1.52	18:10	2.49	2.02	05:35	4.29	12:30	6.14	5.20	05:55	0.178	18:10	0.433	0.296	39575	
11/8/2016	03:15	1.59	13:55	2.58	2.04	05:25	4.33	15:00	6.07	5.27	04:15	0.187	13:55	0.481	0.305	40775	
11/9/2016	01:45	1.67	18:05	2.57	2.07	05:15	4.27	11:00	6.13	5.25	01:45	0.208	11:00	0.473	0.310	41488	0.07
11/10/2016	06:30	1.63	12:00	2.79	2.08	05:50	4.51	12:05	5.80	5.21	06:30	0.193	12:00	0.519	0.311	41623	
11/11/2016	23:20	1.53	12:10	2.50	2.03	04:50	4.38	11:50	5.85	5.20	03:00	0.173	12:10	0.442	0.299	39947	
11/12/2016	04:25	1.49	12:25	2.27	1.87	04:25	4.20	18:25	5.75	5.11	04:25	0.153	12:25	0.380	0.260	34710	
11/13/2016	01:35	1.58	11:55	2.20	1.92	06:45	4.30	15:20	5.67	5.01	06:20	0.181	15:20	0.342	0.264	35267	
11/14/2016	05:00	1.84	11:10	2.81	2.11	03:30	4.58	18:05	5.91	5.21	05:00	0.230	11:10	0.493	0.314	42039	
11/15/2016	18:50	1.53	09:35	5.59	2.30	18:50	4.61	09:40	9.15	5.60	18:50	0.174	09:35	1.968	0.427	57134	1.50
11/16/2016	06:15	1.52	09:55	2.16	1.80	02:50	4.68	12:30	6.77	5.66	06:25	0.193	09:55	0.389	0.273	36406	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			633509	1.57
Avg	1.98	5.29	0.296	

Site Commentary

Site Information

NHW	
Pipe Dimensions (in.)	Elliptical (48.00 in H, 49.75 in W)
Silt (in.)	0.50

Overview

A review of the hydrograph for NHW shows this location functioned mostly in free- flow conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the rain-induced surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	6.71	1.80	1.342
Minimum	4.97	0.88	0.469
Maximum	83.45	9.18	77.110
Time of Minimum	10/15/2016 3:50 AM	8/10/2016 3:25 AM	10/12/2016 3:05 AM
Time of Maximum	7/25/2016 5:40 PM	7/25/2016 5:45 PM	7/25/2016 5:45 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Site Report

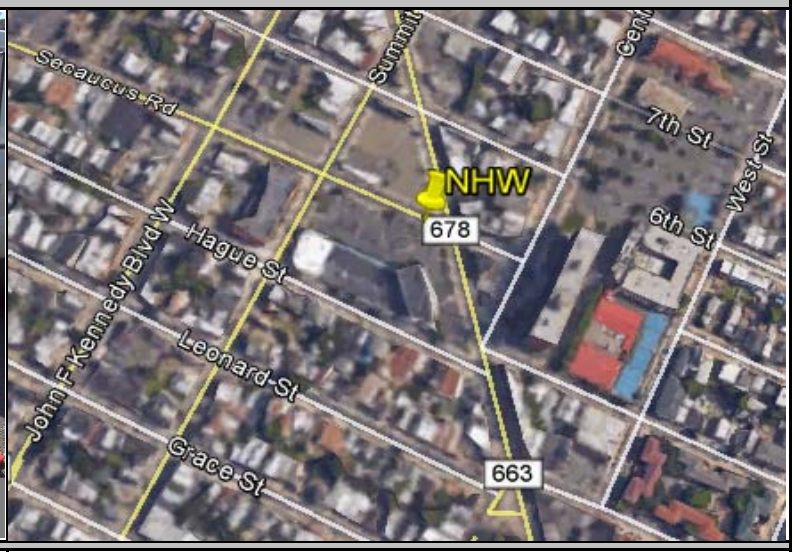
ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. UNION CITY, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	NHW	Meter Type:	TRITON+	Monitor S/N:	61010	Manhole #:	UHI-05-006
Address / Location:	SEACAUCUS ROAD AT PATERSON PLANK ROAD			Map Page #:		J1	
				Pipe Height:		47 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		49.5 Inches	
				I.P. Address		107.80.25.40	



Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 13, 2016	3:08 PM	Manhole Depth:	12.45 Feet		
Site Hydraulics:	GOOD, SMOOTH		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	Brick		Fair
			Mini System Character:	COMMERCIAL		RESIDENTIAL
			Telephone Information:			
Depth of Flow (Wet Dof):	5.5 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	2.1 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.75672 W 74.04390

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other		X		

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** NHW **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

NHW

Flow Monitor

NHW

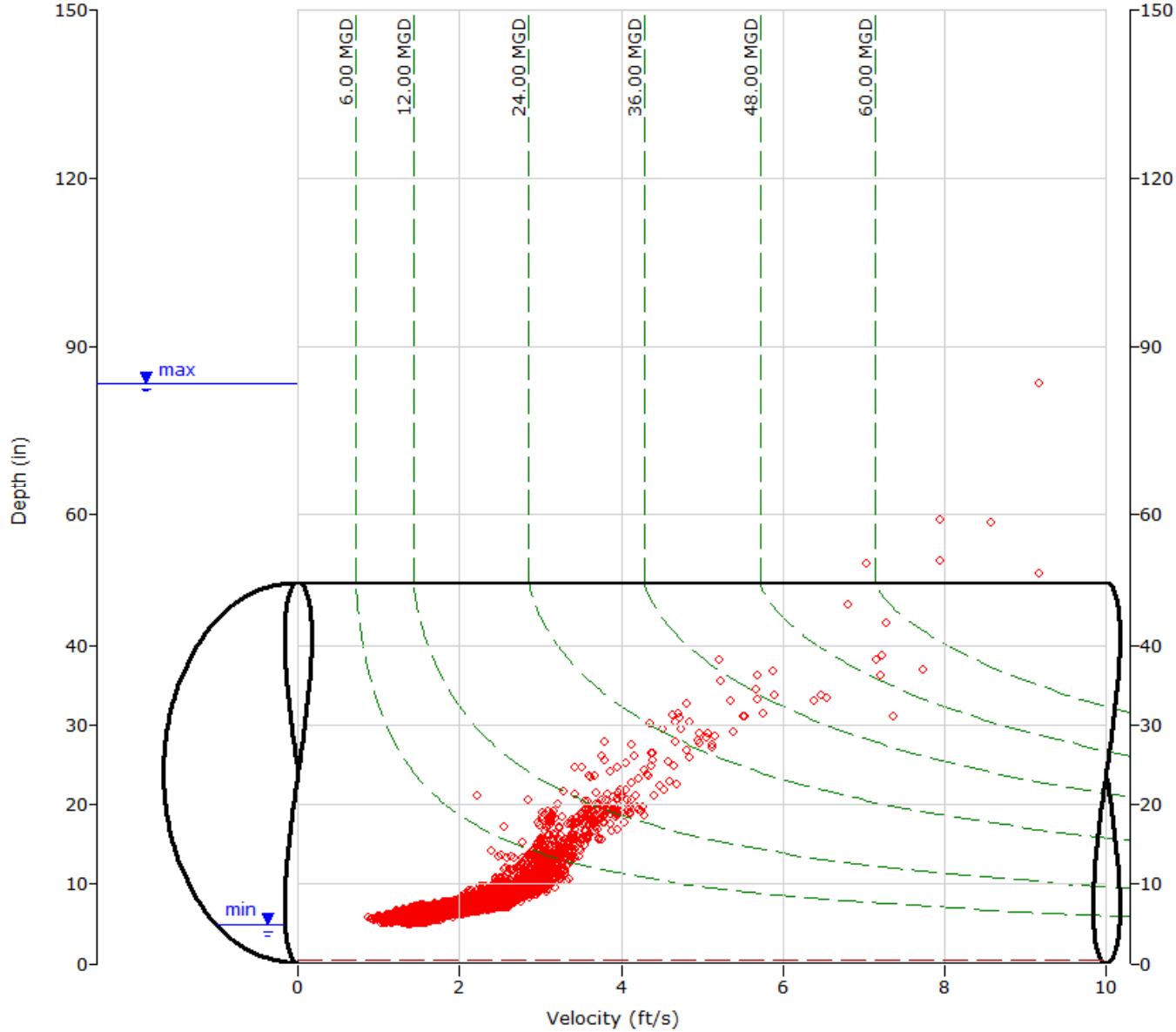
Pipe Height
48.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

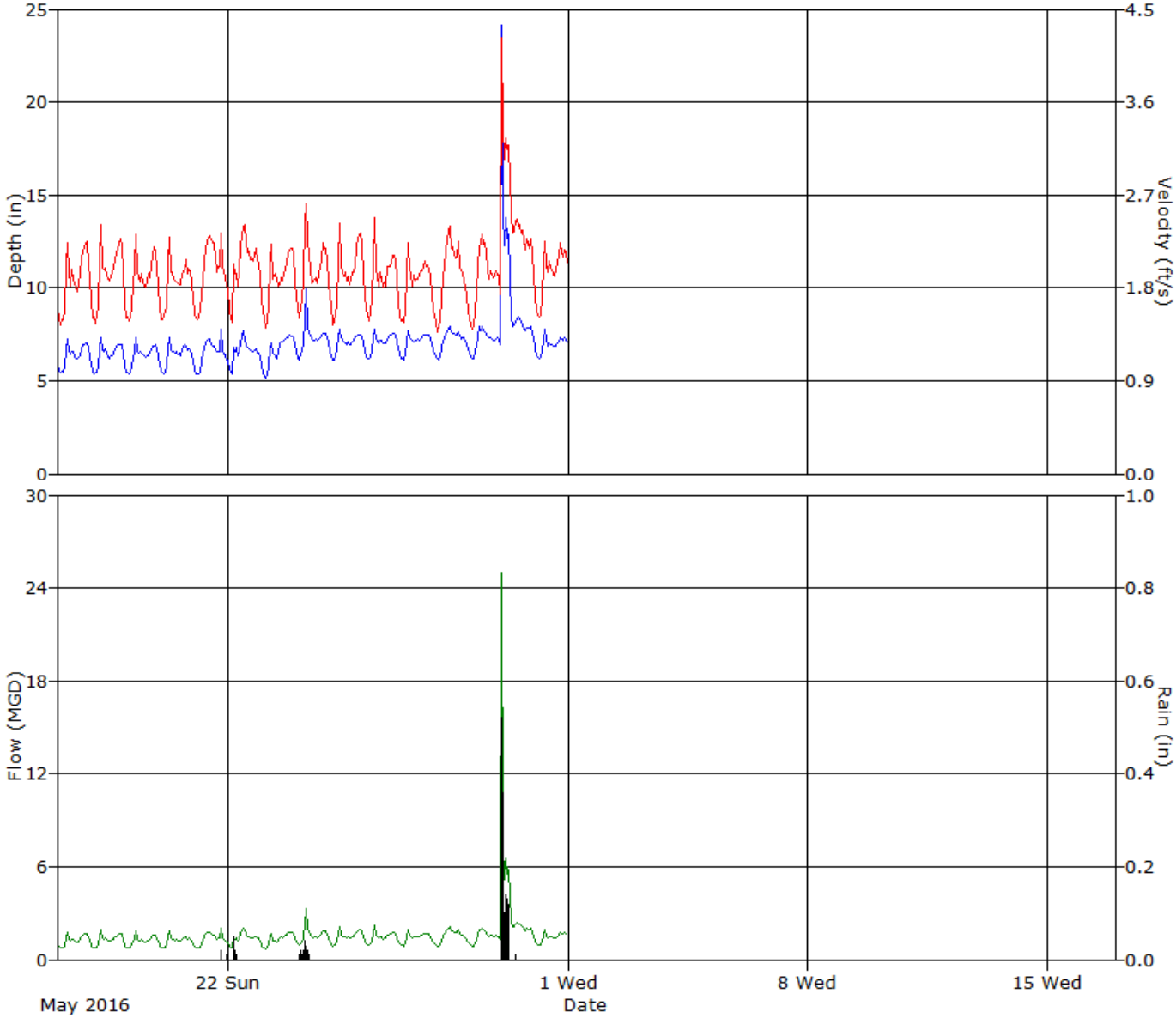
Pipe Height
48.00 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

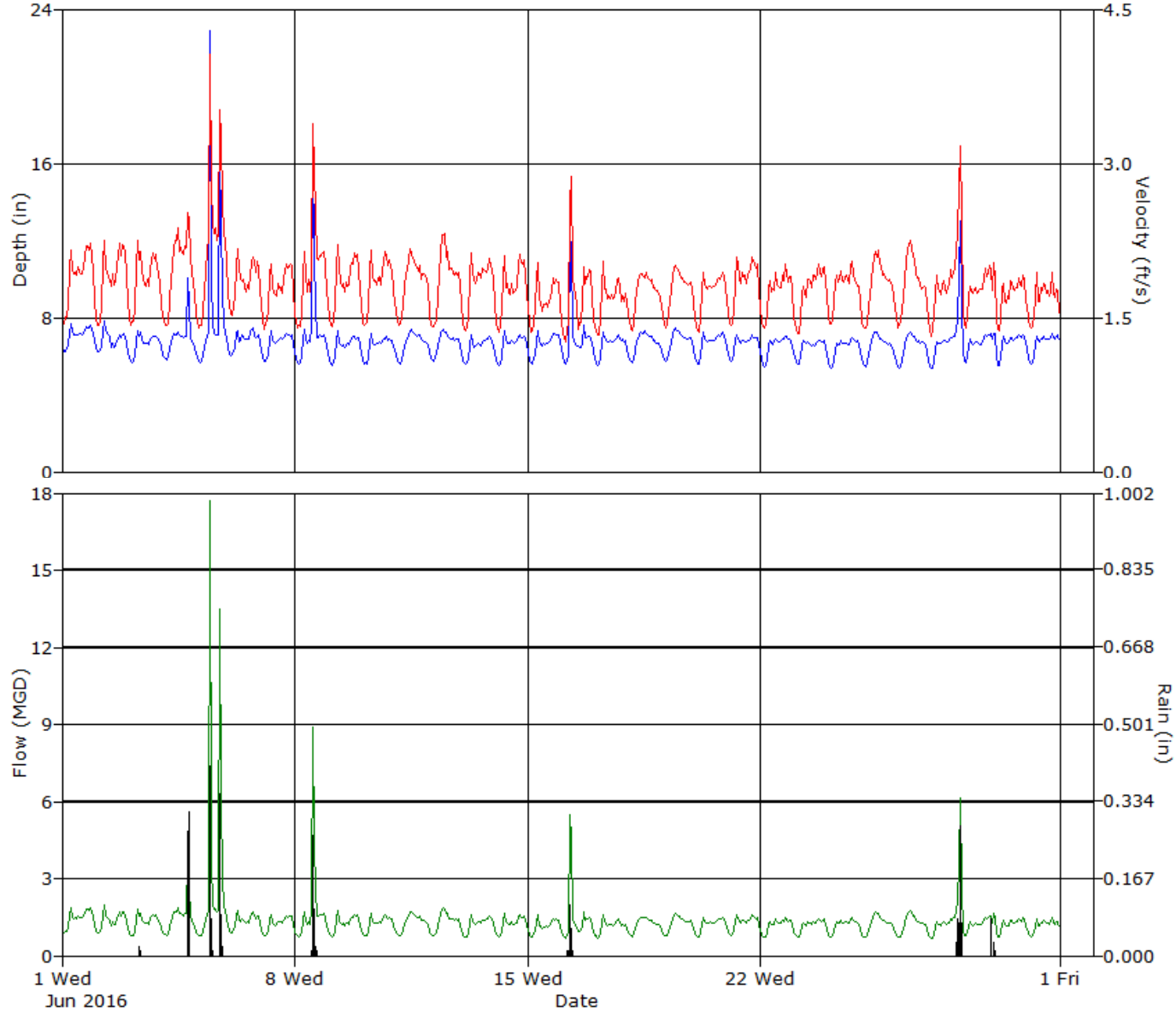
Pipe Height
47.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

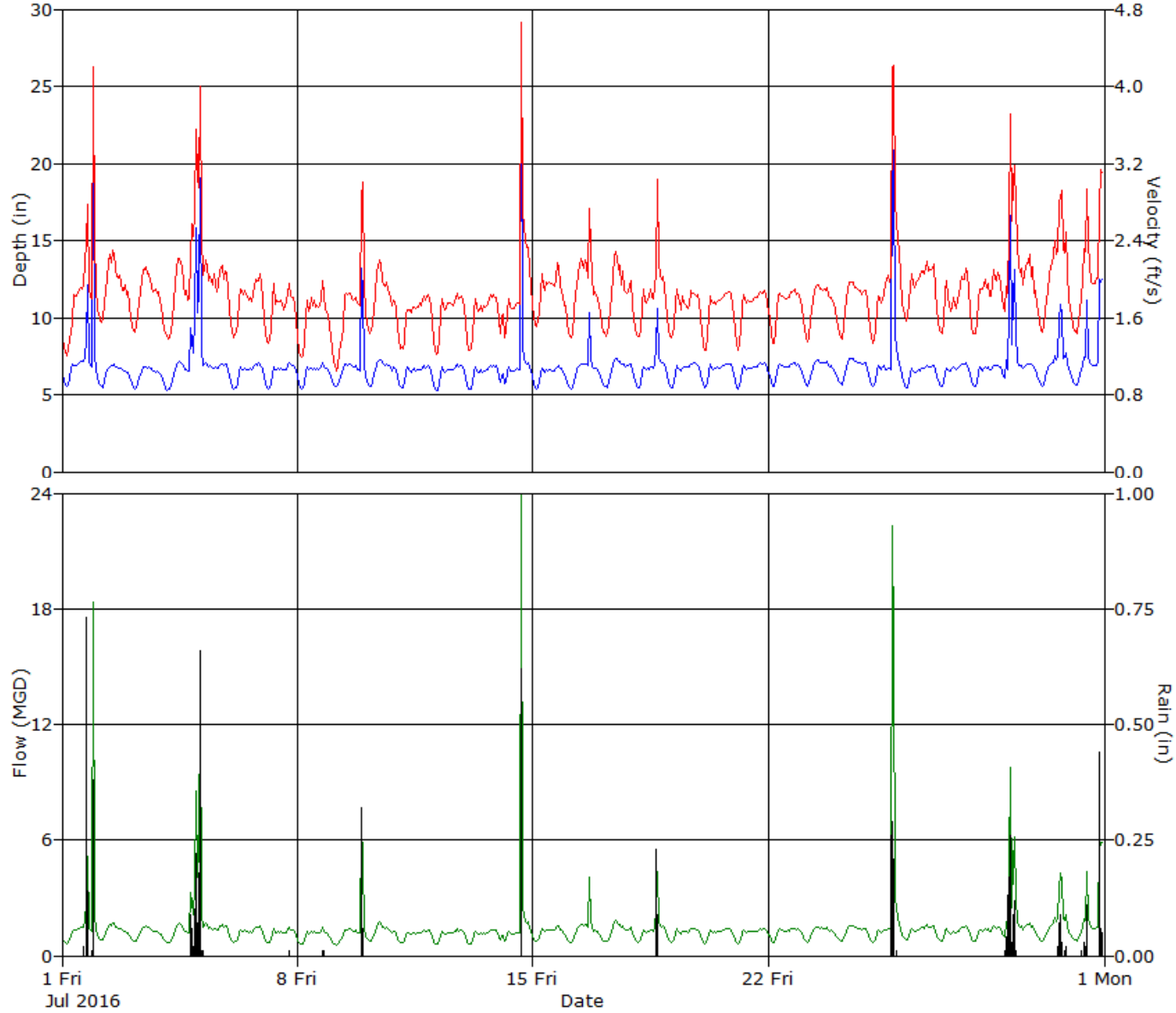
Pipe Height
48.00 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

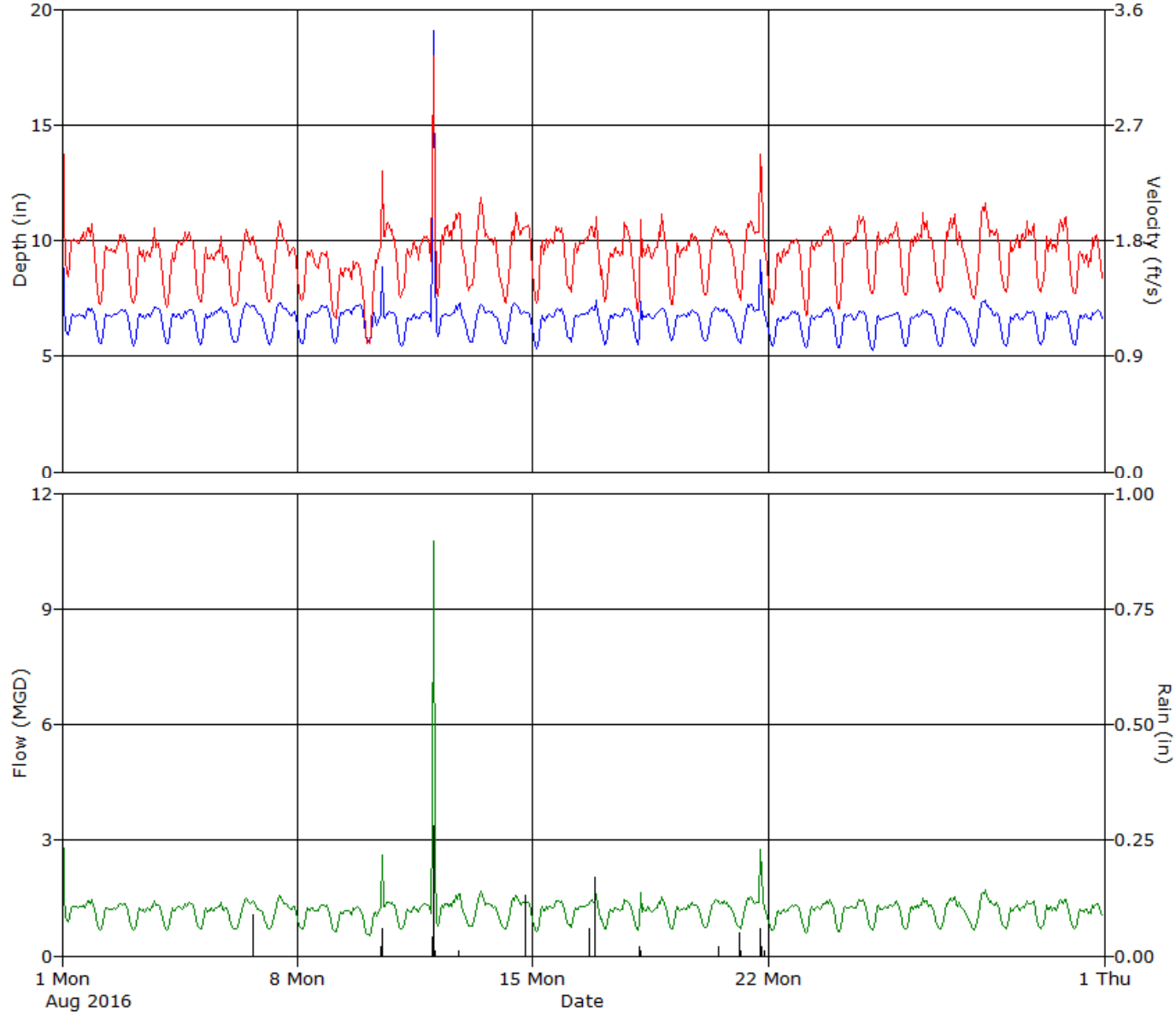
Pipe Height
48.00 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



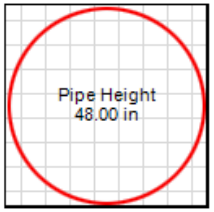
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

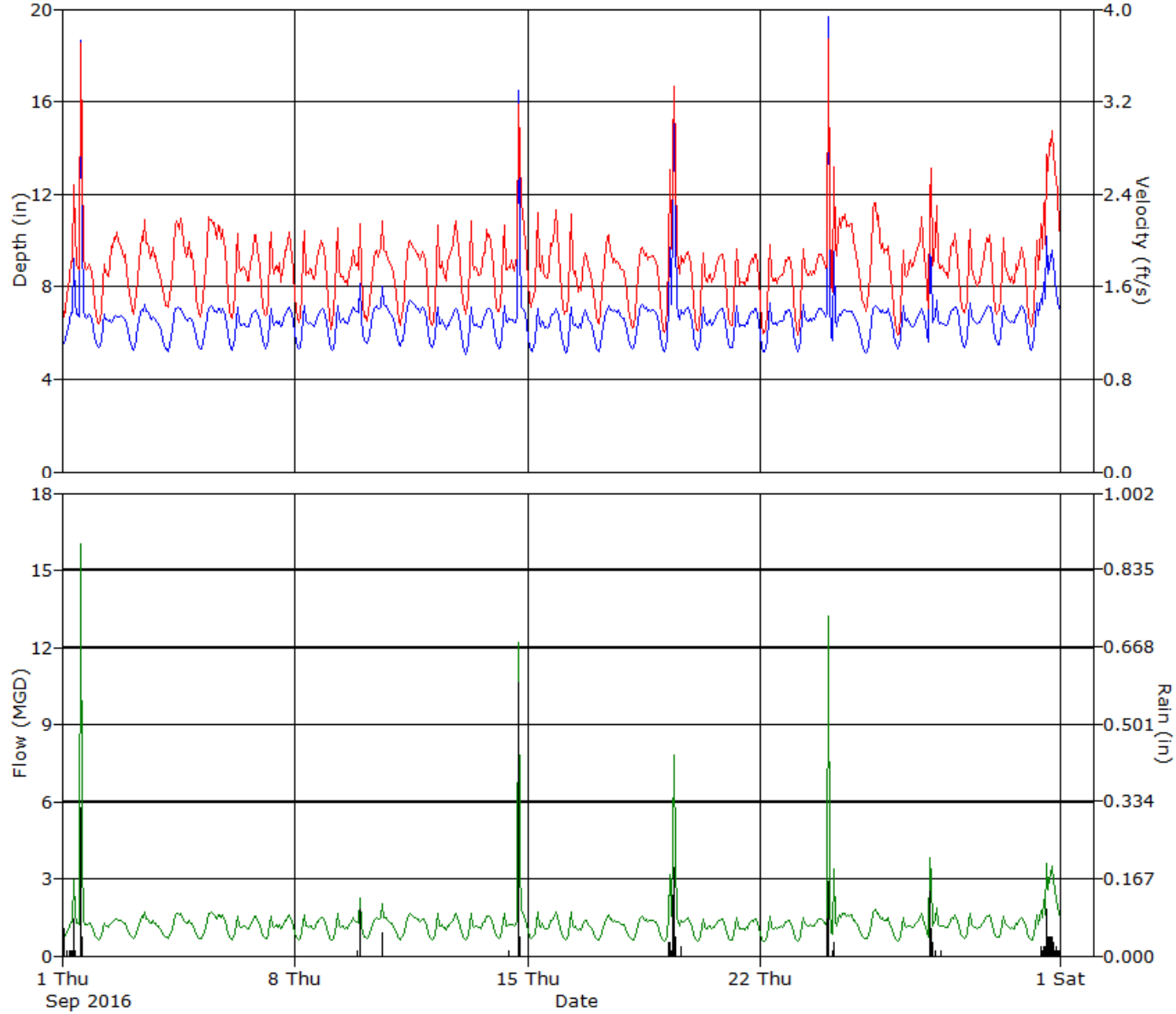


Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

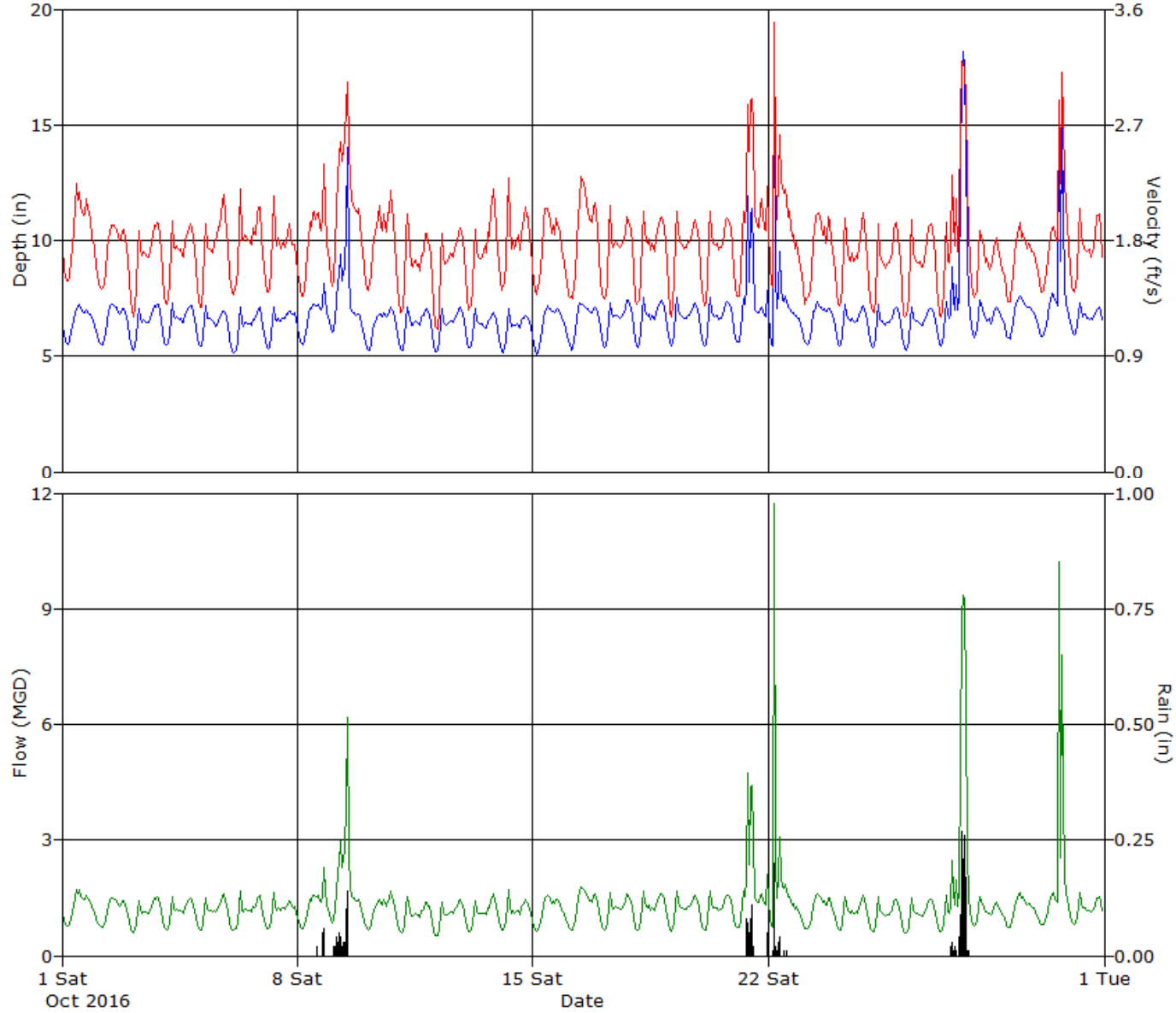
Pipe Height
48.00 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

NHW

Flow Monitor

NHW

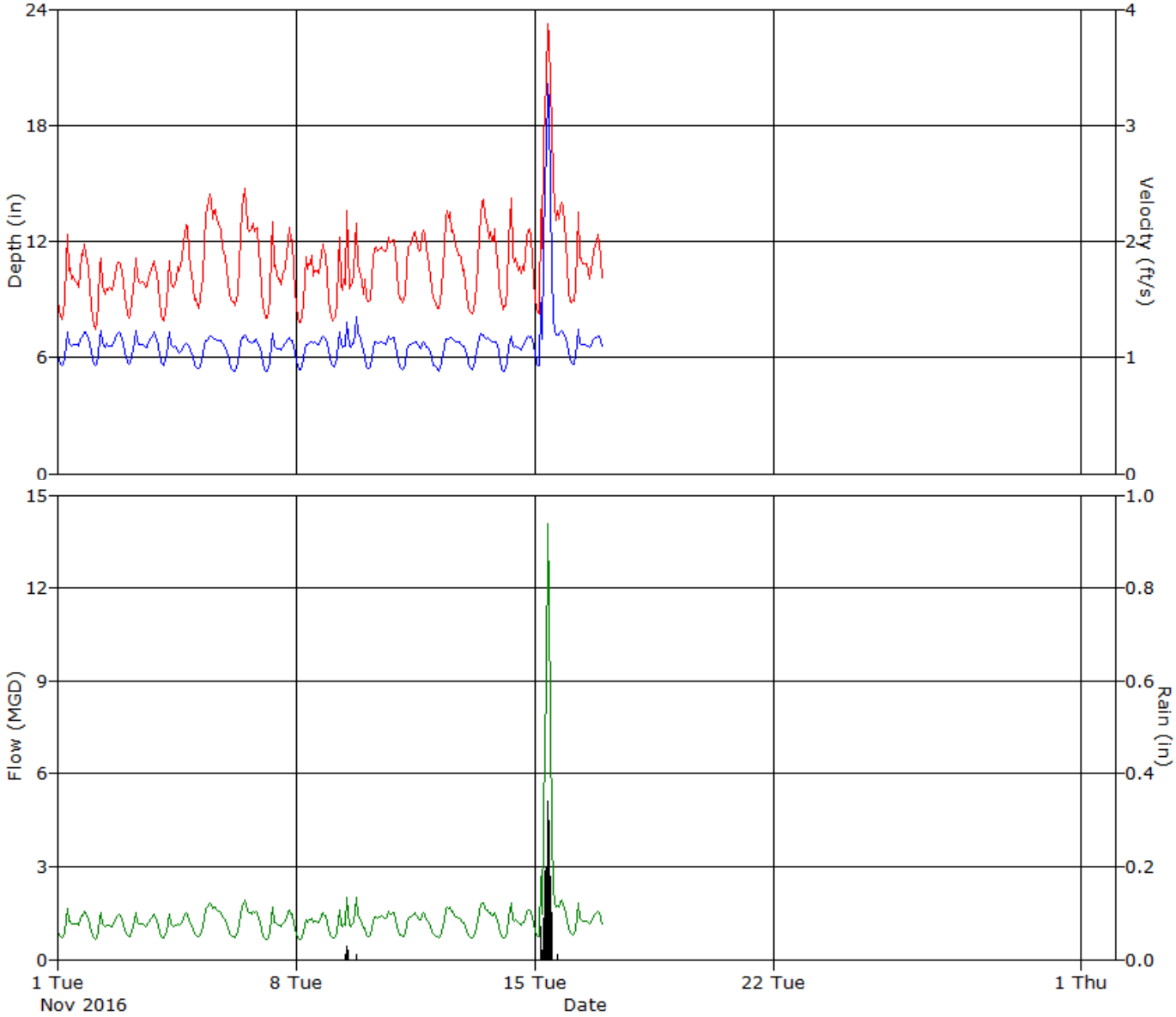
Pipe Height
48.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

NHW, Pipe Height: 47 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	02:40	5.13	20:05	7.50	6.37	02:00	1.35	07:30	2.40	1.88	02:40	0.642	20:05	1.932	1.238	165500	
5/18/2016	02:50	5.29	11:00	7.83	6.39	03:35	1.37	07:35	2.50	1.93	03:50	0.688	11:00	2.095	1.282	171439	
5/19/2016	03:40	5.23	07:15	7.90	6.34	03:00	1.36	07:40	2.47	1.87	01:40	0.678	07:15	2.072	1.219	162904	
5/20/2016	03:35	5.33	07:30	7.59	6.39	02:45	1.42	07:30	2.43	1.85	02:55	0.716	07:30	2.041	1.220	163149	
5/21/2016	04:40	5.27	19:25	8.98	6.44	02:25	1.37	19:35	2.64	1.94	02:25	0.693	19:25	2.795	1.309	174954	0.03
5/22/2016	03:55	5.19	11:50	9.22	6.59	04:00	1.41	11:05	2.56	2.02	03:55	0.670	11:50	2.466	1.400	187149	0.08
5/23/2016	03:45	5.08	19:15	7.58	6.59	03:10	1.33	07:20	2.41	1.89	03:50	0.626	22:05	1.897	1.317	176032	
5/24/2016	02:55	6.09	07:20	10.72	7.30	02:00	1.38	07:30	2.79	1.97	02:00	0.840	07:30	3.838	1.598	213585	0.16
5/25/2016	02:30	6.00	07:40	7.80	7.03	02:20	1.35	07:40	2.76	1.92	03:15	0.824	07:40	2.415	1.459	195041	
5/26/2016	02:15	6.13	07:30	7.87	7.06	03:05	1.41	07:30	2.66	1.89	03:05	0.871	07:30	2.351	1.447	193402	
5/27/2016	04:25	6.10	07:35	7.91	7.07	05:05	1.36	07:30	2.40	1.86	04:20	0.836	07:30	2.135	1.419	189629	
5/28/2016	04:40	6.10	12:30	8.00	7.19	04:20	1.29	11:35	2.53	1.94	04:20	0.786	11:35	2.210	1.526	203978	
5/29/2016	05:20	6.10	09:05	8.43	7.14	04:40	1.29	10:10	2.47	1.88	04:40	0.785	11:40	2.156	1.469	196426	
5/30/2016	01:10	6.76	01:40	51.24	9.69	01:10	1.54	01:45	7.28	2.54	01:10	1.090	01:40	59.180	3.861	516154	1.38
5/31/2016	03:30	6.17	07:35	7.89	6.94	04:35	1.43	19:00	2.40	1.95	04:35	0.908	07:35	2.119	1.447	193304	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3102645	1.65
Avg	6.97	1.96	1.547	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

NHW, Pipe Height: 47 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	03:10	6.20	07:30	7.79	7.08	02:40	1.35	19:00	2.35	1.91	02:40	0.847	21:25	1.999	1.465	195824	
6/2/2016	02:50	6.20	07:35	7.89	6.83	02:20	1.39	07:05	2.42	1.89	03:45	0.873	07:20	2.111	1.373	183606	
6/3/2016	04:00	5.65	09:00	7.45	6.64	02:40	1.37	09:00	2.40	1.87	02:40	0.762	09:00	1.955	1.306	174530	0.03
6/4/2016	04:45	5.77	19:45	18.53	6.92	05:40	1.37	19:45	3.79	1.97	05:00	0.781	19:45	11.309	1.522	203469	0.58
6/5/2016	04:05	5.60	18:40	36.76	8.27	04:00	1.35	18:45	7.37	2.22	04:05	0.724	18:45	42.420	2.934	392253	0.96
6/6/2016	02:20	5.95	18:25	7.54	6.84	02:55	1.41	07:50	2.32	1.85	02:55	0.840	07:30	1.897	1.344	179724	
6/7/2016	03:05	5.68	07:30	7.40	6.69	02:10	1.28	21:20	2.20	1.78	02:10	0.721	07:00	1.667	1.253	167526	
6/8/2016	03:35	5.52	13:35	19.11	7.34	03:30	1.35	13:35	3.97	1.97	03:40	0.714	13:35	12.330	1.798	240309	0.40
6/9/2016	03:10	5.46	07:35	7.35	6.53	03:00	1.36	07:30	2.33	1.84	03:10	0.720	07:30	1.858	1.252	167328	
6/10/2016	04:15	5.46	07:00	7.27	6.52	02:10	1.33	17:40	2.36	1.84	02:10	0.712	07:05	1.812	1.250	167095	
6/11/2016	04:10	5.57	12:40	7.46	6.67	03:35	1.34	11:40	2.34	1.85	03:35	0.723	11:40	1.894	1.302	173989	
6/12/2016	04:15	5.74	11:00	7.61	6.70	04:45	1.35	11:20	2.58	1.87	04:45	0.753	11:20	2.084	1.327	177377	
6/13/2016	03:00	5.53	07:50	7.13	6.50	03:15	1.34	16:00	2.28	1.83	03:00	0.708	07:20	1.712	1.235	165099	
6/14/2016	03:35	5.47	07:30	7.38	6.59	03:20	1.30	07:20	2.32	1.78	03:20	0.671	07:20	1.844	1.232	164632	
6/15/2016	03:00	5.55	07:40	7.43	6.61	02:45	1.28	07:40	2.22	1.67	03:00	0.678	07:40	1.808	1.159	154954	
6/16/2016	03:50	5.54	06:35	19.63	7.02	03:35	1.19	06:35	3.83	1.72	03:35	0.628	06:35	12.359	1.449	193664	0.20
6/17/2016	03:20	5.51	07:25	7.39	6.60	04:25	1.24	07:05	2.22	1.67	04:25	0.663	07:05	1.741	1.155	154441	
6/18/2016	04:50	5.57	13:10	7.48	6.68	04:50	1.35	13:10	2.01	1.74	04:50	0.713	13:10	1.650	1.228	164202	
6/19/2016	04:20	5.63	11:25	7.59	6.73	04:20	1.37	11:25	2.05	1.77	04:20	0.738	11:25	1.722	1.259	168293	
6/20/2016	04:05	5.58	21:45	7.32	6.67	04:05	1.35	21:45	1.97	1.74	04:05	0.716	21:45	1.563	1.224	163587	
6/21/2016	03:10	5.72	07:30	7.21	6.66	03:10	1.40	22:00	2.25	1.84	03:10	0.772	07:20	1.695	1.286	171901	
6/22/2016	04:05	5.44	19:10	7.10	6.54	03:00	1.35	19:10	2.12	1.75	03:00	0.697	19:10	1.614	1.193	159537	
6/23/2016	03:55	5.50	14:05	7.75	6.46	02:50	1.29	16:55	2.21	1.76	04:15	0.688	14:05	1.819	1.176	157185	
6/24/2016	03:20	5.34	19:00	6.99	6.44	02:55	1.33	18:55	2.15	1.80	02:55	0.670	18:55	1.590	1.198	160194	
6/25/2016	04:50	5.43	11:10	7.34	6.52	04:35	1.33	11:00	2.35	1.81	04:35	0.686	11:00	1.852	1.236	165168	
6/26/2016	03:55	5.32	12:15	7.37	6.50	04:50	1.36	10:55	2.41	1.83	03:50	0.677	10:55	1.883	1.245	166453	
6/27/2016	04:05	5.32	23:40	13.19	6.72	03:35	1.28	23:40	2.97	1.81	03:35	0.635	23:40	5.534	1.328	177548	0.18
6/28/2016	04:20	5.63	00:40	19.44	7.00	04:50	1.35	00:35	3.89	1.85	04:10	0.727	00:35	12.141	1.492	199407	0.43
6/29/2016	04:05	5.41	00:50	9.12	6.72	02:50	1.32	00:45	2.96	1.74	04:05	0.683	00:50	3.231	1.240	165815	0.04
6/30/2016	03:55	5.52	18:25	7.22	6.65	04:10	1.29	07:35	2.12	1.68	04:10	0.686	07:35	1.610	1.174	156787	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5431897	2.82
Avg	6.75	1.82	1.354	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

NHW, Pipe Height: 48 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	03:20	5.43	22:10	58.51	7.59	03:05	1.16	22:10	8.58	1.88	03:20	0.595	22:10	72.125	2.167	289626	1.28
7/2/2016	05:30	5.40	13:00	7.15	6.45	04:10	1.46	12:55	2.53	1.93	04:15	0.770	13:00	1.942	1.287	172095	
7/3/2016	04:15	5.36	14:50	7.04	6.31	04:15	1.40	14:45	2.31	1.82	04:15	0.700	14:45	1.707	1.177	157405	
7/4/2016	03:15	5.27	20:50	18.75	6.72	05:35	1.30	20:50	3.60	1.89	05:35	0.643	20:50	10.912	1.455	194442	0.27
7/5/2016	23:55	6.49	03:10	28.98	8.14	23:30	1.71	03:15	5.07	2.27	23:30	1.182	03:15	26.688	2.569	343374	1.15
7/6/2016	03:45	5.35	20:35	7.21	6.48	03:55	1.35	21:35	2.23	1.79	03:50	0.672	19:05	1.657	1.202	160727	
7/7/2016	03:40	5.37	18:45	7.14	6.46	04:05	1.26	07:15	2.10	1.69	04:05	0.635	18:55	1.572	1.134	151585	0.01
7/8/2016	03:00	5.29	18:40	7.48	6.43	03:10	1.11	18:50	2.23	1.61	03:10	0.544	18:50	1.763	1.075	143656	0.02
7/9/2016	04:00	5.38	22:30	26.68	6.94	04:50	0.96	22:30	4.81	1.67	04:50	0.504	22:30	23.054	1.452	194071	0.38
7/10/2016	05:05	5.50	00:00	7.71	6.60	04:35	1.34	11:35	2.42	1.81	04:35	0.704	11:35	1.950	1.260	168377	
7/11/2016	04:10	5.38	21:00	6.98	6.42	04:45	1.18	21:00	1.86	1.64	04:15	0.616	21:00	1.379	1.087	145364	
7/12/2016	03:30	5.20	18:45	7.09	6.40	03:30	1.20	18:45	1.89	1.65	03:30	0.573	18:45	1.437	1.094	146258	
7/13/2016	03:10	5.26	22:20	6.99	6.39	03:10	1.22	22:20	1.86	1.65	03:10	0.594	22:20	1.381	1.088	145381	
7/14/2016	04:35	5.63	16:15	59.03	7.42	04:35	1.37	16:20	7.94	1.97	04:35	0.736	16:20	66.730	2.249	300632	0.62
7/15/2016	02:55	5.30	19:10	6.98	6.36	03:50	1.43	19:00	2.44	1.86	03:50	0.706	19:00	1.772	1.216	162513	
7/16/2016	04:00	5.31	16:30	17.43	6.62	03:10	1.35	16:30	3.67	1.89	04:05	0.683	16:30	10.076	1.372	183406	
7/17/2016	05:20	5.43	11:45	7.44	6.59	04:40	1.33	10:05	2.45	1.84	04:40	0.686	12:50	1.968	1.278	170870	
7/18/2016	03:55	5.39	16:55	20.92	6.78	03:55	1.34	16:55	4.01	1.83	03:55	0.676	16:55	14.071	1.397	186708	0.32
7/19/2016	03:50	5.34	08:00	7.14	6.55	03:55	1.31	07:50	2.09	1.71	03:55	0.658	07:50	1.593	1.170	156461	
7/20/2016	03:55	5.41	19:50	7.07	6.56	03:40	1.16	19:50	1.88	1.69	03:55	0.589	19:50	1.423	1.161	155156	
7/21/2016	03:30	5.31	21:55	7.11	6.56	03:30	1.24	21:55	1.90	1.71	03:30	0.612	21:55	1.448	1.172	156720	
7/22/2016	04:10	5.50	19:15	7.22	6.63	04:10	1.32	19:15	1.93	1.73	04:10	0.683	19:15	1.507	1.207	161370	
7/23/2016	04:05	5.54	11:55	7.33	6.67	04:05	1.33	11:55	1.97	1.75	04:05	0.699	11:55	1.573	1.229	164359	
7/24/2016	05:25	5.60	12:00	7.41	6.74	05:25	1.36	12:00	1.99	1.77	05:25	0.724	12:00	1.614	1.263	168854	
7/25/2016	03:35	5.40	17:40	83.45	7.88	03:35	1.28	17:45	9.18	2.08	03:35	0.645	17:45	77.110	2.848	380747	0.77
7/26/2016	03:35	5.43	17:55	6.95	6.44	02:10	1.49	22:30	2.38	1.94	03:05	0.784	22:30	1.734	1.291	172641	
7/27/2016	04:05	5.48	21:35	7.14	6.52	04:45	1.37	21:30	2.28	1.78	04:45	0.727	21:30	1.742	1.209	161574	
7/28/2016	03:15	5.47	17:40	6.99	6.49	02:15	1.36	20:55	2.28	1.83	03:15	0.719	17:35	1.675	1.233	164816	
7/29/2016	02:30	5.62	05:30	19.37	7.99	02:15	1.43	05:30	4.21	2.26	03:50	0.799	05:30	13.334	2.394	320026	0.86
7/30/2016	04:05	5.45	17:45	15.58	7.16	04:30	1.31	17:55	3.43	2.07	04:30	0.682	17:45	8.022	1.727	230853	0.24
7/31/2016	05:15	5.60	21:40	25.08	7.55	04:50	1.40	22:55	4.18	2.05	05:15	0.750	21:40	17.985	2.016	269260	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			6079328	6.64
Avg	6.80	1.84	1.467	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

NHW, Pipe Height: 48 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	03:55	5.89	00:45	13.08	6.86	04:45	1.40	00:45	3.38	1.84	04:45	0.815	00:45	6.226	1.375	183797	0.05
8/2/2016	04:00	5.44	19:10	7.17	6.57	02:55	1.27	07:10	2.00	1.67	03:00	0.656	19:10	1.493	1.143	152835	
8/3/2016	03:25	5.38	18:55	7.20	6.57	03:55	1.28	18:40	1.98	1.63	03:55	0.649	18:40	1.526	1.120	149757	
8/4/2016	04:15	5.52	20:55	7.06	6.56	04:00	1.25	18:55	1.95	1.67	03:05	0.660	18:55	1.458	1.142	152621	
8/5/2016	04:00	5.40	18:30	7.16	6.58	04:30	1.29	18:50	1.94	1.61	04:05	0.667	18:50	1.480	1.108	148119	
8/6/2016	04:05	5.50	11:40	7.40	6.66	03:00	1.28	11:35	2.16	1.64	04:05	0.668	11:35	1.743	1.152	154054	0.09
8/7/2016	04:20	5.45	12:10	7.43	6.62	03:00	1.26	11:10	2.09	1.66	04:15	0.673	12:05	1.677	1.157	154703	
8/8/2016	03:45	5.47	21:00	7.31	6.65	03:50	1.30	11:15	1.91	1.59	03:50	0.669	21:00	1.429	1.113	148782	
8/9/2016	03:25	5.46	21:55	7.30	6.71	03:05	1.17	18:10	1.78	1.49	03:05	0.616	18:10	1.394	1.052	140689	
8/10/2016	04:15	5.50	13:10	11.93	6.60	03:25	0.88	13:10	2.88	1.61	03:25	0.485	13:10	4.650	1.134	151611	0.08
8/11/2016	03:40	5.38	18:55	7.07	6.46	02:35	1.32	19:00	2.05	1.67	02:45	0.683	19:00	1.547	1.116	149195	
8/12/2016	04:50	5.79	01:25	27.76	7.45	03:45	1.27	01:35	4.01	1.89	04:45	0.740	01:25	19.119	1.808	241722	0.34
8/13/2016	04:15	5.52	11:35	7.32	6.57	02:55	1.38	11:35	2.25	1.75	03:55	0.742	11:35	1.785	1.203	160760	
8/14/2016	05:05	5.45	10:45	7.43	6.60	05:55	1.28	11:50	2.15	1.73	05:10	0.661	11:50	1.699	1.199	160330	0.13
8/15/2016	03:35	5.26	19:00	7.16	6.51	03:20	1.29	19:00	2.02	1.71	03:20	0.630	19:00	1.558	1.161	155237	
8/16/2016	04:10	5.50	21:20	8.64	6.62	02:40	1.32	21:20	2.26	1.72	03:55	0.692	21:20	2.294	1.197	159981	0.23
8/17/2016	03:30	5.51	18:05	7.14	6.57	03:10	1.30	17:10	2.06	1.67	04:15	0.677	17:55	1.548	1.146	153154	
8/18/2016	04:00	5.48	05:05	8.93	6.63	03:15	1.18	05:05	2.57	1.69	03:15	0.615	05:05	2.744	1.182	158046	0.03
8/19/2016	04:10	5.63	17:50	7.04	6.58	03:10	1.25	17:50	1.88	1.68	03:10	0.676	17:50	1.409	1.151	153818	
8/20/2016	04:10	5.57	11:30	7.20	6.60	04:10	1.34	11:30	1.93	1.72	04:10	0.710	11:30	1.498	1.192	159395	0.02
8/21/2016	05:10	5.50	18:20	10.26	6.77	05:10	1.32	18:15	2.84	1.76	05:10	0.685	18:15	3.672	1.292	172653	0.15
8/22/2016	04:00	5.39	17:15	6.98	6.45	04:25	1.25	16:50	1.91	1.64	03:50	0.640	16:50	1.403	1.095	146418	
8/23/2016	03:35	5.29	20:10	7.20	6.52	03:35	1.11	20:10	1.93	1.69	03:35	0.541	20:10	1.497	1.150	153728	
8/24/2016	02:45	5.30	17:50	7.01	6.48	02:45	1.24	21:00	2.13	1.73	02:45	0.608	21:00	1.571	1.168	156075	
8/25/2016	03:50	5.19	20:15	6.99	6.42	03:25	1.35	07:20	2.06	1.73	03:55	0.644	20:15	1.518	1.148	153465	
8/26/2016	02:55	5.32	15:15	7.09	6.47	04:00	1.32	15:40	2.16	1.73	02:55	0.660	15:40	1.619	1.161	155195	
8/27/2016	02:35	5.37	10:50	7.17	6.50	03:00	1.35	10:30	2.14	1.71	03:05	0.684	10:30	1.630	1.161	155210	
8/28/2016	03:25	5.34	11:15	7.51	6.59	03:30	1.28	11:15	2.22	1.74	03:30	0.644	11:15	1.833	1.212	161957	
8/29/2016	02:30	5.42	17:45	6.98	6.52	02:10	1.35	19:05	2.19	1.74	02:10	0.691	19:05	1.623	1.180	157742	
8/30/2016	03:00	5.41	17:00	7.06	6.49	03:25	1.35	20:05	2.18	1.73	03:25	0.699	20:05	1.622	1.165	155804	
8/31/2016	04:00	5.47	20:05	7.08	6.50	03:35	1.29	18:25	2.03	1.63	03:35	0.667	19:15	1.468	1.101	147127	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4903982	1.12
Avg	6.60	1.69	1.183	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

NHW, Pipe Height: 48 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:50	5.49	14:30	38.66	7.31	02:50	1.31	14:30	7.23	1.86	02:50	0.681	14:30	52.406	1.960	262018	0.56
9/2/2016	02:45	5.31	19:10	6.87	6.35	02:45	1.24	14:40	2.24	1.74	02:45	0.611	14:40	1.584	1.141	152468	
9/3/2016	04:45	5.20	12:50	7.25	6.38	03:00	1.32	12:50	2.33	1.77	04:10	0.640	12:50	1.828	1.171	156582	
9/4/2016	05:20	5.16	12:05	7.17	6.36	05:10	1.33	11:30	2.38	1.82	05:10	0.636	11:30	1.808	1.204	160914	
9/5/2016	04:15	5.24	12:45	7.40	6.48	04:45	1.30	10:55	2.34	1.86	04:00	0.634	12:40	1.886	1.265	169064	
9/6/2016	03:10	5.17	07:20	7.24	6.34	03:10	1.28	07:20	2.22	1.73	03:10	0.605	07:20	1.741	1.132	151391	
9/7/2016	03:40	5.25	21:00	7.22	6.39	04:00	1.22	06:50	2.22	1.74	04:00	0.600	20:55	1.695	1.152	154028	
9/8/2016	03:30	5.27	07:25	7.28	6.39	01:50	1.18	07:00	2.21	1.72	03:30	0.609	07:25	1.729	1.137	152018	
9/9/2016	03:45	5.20	23:30	12.29	6.50	03:15	1.15	23:35	3.21	1.69	03:15	0.550	23:30	5.397	1.162	155335	0.11
9/10/2016	04:45	5.53	15:30	9.45	6.70	03:55	1.28	15:40	2.77	1.73	04:45	0.675	15:35	3.143	1.235	165097	0.05
9/11/2016	04:30	5.37	11:10	7.48	6.66	04:35	1.15	11:10	2.02	1.74	04:35	0.580	11:10	1.660	1.227	164033	
9/12/2016	02:55	5.33	06:50	7.28	6.35	02:55	1.25	06:55	2.37	1.75	02:55	0.618	06:55	1.863	1.150	153732	0.00
9/13/2016	03:25	4.97	07:15	7.21	6.32	05:10	1.33	06:55	2.30	1.77	03:45	0.598	07:30	1.753	1.154	154286	
9/14/2016	03:15	5.26	17:40	36.22	6.97	04:00	1.29	17:40	5.68	1.89	03:05	0.648	17:40	38.621	1.753	234279	0.64
9/15/2016	03:20	5.12	07:25	7.20	6.30	03:00	1.22	07:25	2.58	1.80	03:00	0.581	07:25	2.004	1.169	156312	
9/16/2016	03:35	5.10	07:30	7.21	6.26	02:20	1.28	07:15	2.48	1.67	03:20	0.612	07:15	1.911	1.073	143457	
9/17/2016	04:20	5.17	11:40	7.26	6.44	04:05	1.26	11:40	2.25	1.71	04:05	0.598	11:40	1.765	1.147	153360	
9/18/2016	05:00	5.26	12:10	7.34	6.51	05:00	1.22	12:10	1.97	1.69	05:00	0.592	12:10	1.576	1.154	154232	
9/19/2016	03:45	5.20	10:25	17.41	7.38	03:45	1.20	10:25	3.42	1.88	03:45	0.570	10:25	9.365	1.769	236466	0.45
9/20/2016	03:40	5.21	07:30	7.18	6.39	03:40	1.20	07:30	1.92	1.64	03:40	0.576	07:30	1.484	1.089	145584	
9/21/2016	03:35	5.28	07:30	7.26	6.38	03:35	1.23	07:30	1.95	1.64	03:35	0.600	07:30	1.530	1.086	145208	
9/22/2016	02:45	5.12	07:25	7.62	6.35	02:45	1.16	07:25	2.06	1.63	02:45	0.543	07:25	1.739	1.075	143723	
9/23/2016	03:10	5.08	07:15	7.33	6.46	03:10	1.15	07:15	1.97	1.67	03:10	0.529	07:15	1.571	1.126	150589	
9/24/2016	04:25	5.56	01:05	38.19	7.35	04:55	1.47	01:05	5.22	2.10	04:55	0.791	01:05	37.406	1.987	265564	0.28
9/25/2016	05:30	5.05	10:55	7.30	6.43	05:30	1.30	10:15	2.48	1.83	05:30	0.592	11:25	1.913	1.237	165322	
9/26/2016	03:50	5.25	07:00	7.35	6.37	03:20	1.11	20:30	2.37	1.71	03:20	0.545	20:30	1.794	1.128	150844	
9/27/2016	02:20	5.42	02:40	20.00	6.83	02:10	1.37	02:40	3.91	1.88	02:15	0.708	02:40	12.912	1.438	192207	0.25
9/28/2016	03:15	5.31	07:20	7.54	6.50	02:20	1.30	07:20	2.27	1.72	03:20	0.664	07:20	1.886	1.168	156193	
9/29/2016	04:30	5.43	07:40	7.29	6.50	02:15	1.30	07:25	2.13	1.69	03:35	0.674	07:25	1.667	1.142	152719	
9/30/2016	03:10	5.23	14:25	11.18	7.41	03:10	1.22	16:40	3.08	2.09	03:10	0.590	14:20	4.284	1.834	244957	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5141982	2.75
Avg	6.58	1.77	1.282	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

NHW, Pipe Height: 48 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:30	5.44	12:05	7.31	6.54	02:35	1.42	10:45	2.38	1.87	03:40	0.749	10:45	1.825	1.278	170905	
10/2/2016	04:50	5.44	12:20	7.31	6.54	03:55	1.36	11:30	1.96	1.72	05:20	0.712	11:30	1.557	1.177	157385	
10/3/2016	03:10	5.18	20:40	7.41	6.46	03:10	1.19	20:40	2.00	1.67	03:10	0.563	20:40	1.617	1.126	150458	
10/4/2016	03:35	5.40	07:25	7.45	6.52	03:35	1.28	07:25	2.01	1.69	03:35	0.646	07:25	1.641	1.153	154118	
10/5/2016	04:15	5.34	13:30	7.43	6.42	04:15	1.25	20:35	2.28	1.74	04:15	0.621	20:35	1.697	1.159	154999	
10/6/2016	03:15	5.09	07:05	7.26	6.30	03:40	1.31	07:20	2.45	1.78	03:40	0.615	07:20	1.872	1.152	154041	0.00
10/7/2016	03:25	5.24	07:30	7.24	6.45	02:00	1.35	07:25	2.25	1.73	03:20	0.663	07:25	1.745	1.157	154712	
10/8/2016	04:10	5.31	19:45	9.29	6.70	04:20	1.32	19:40	2.77	1.79	04:10	0.670	19:40	3.123	1.283	171569	0.13
10/9/2016	02:00	5.92	12:40	17.26	7.71	02:00	1.39	11:55	3.15	2.15	02:00	0.807	12:40	8.450	1.993	266404	0.52
10/10/2016	03:30	5.20	19:35	7.19	6.40	03:30	1.25	20:20	2.34	1.81	03:30	0.596	19:20	1.779	1.204	160905	
10/11/2016	04:15	5.18	07:30	7.17	6.35	04:10	1.18	07:15	2.27	1.62	03:25	0.564	07:15	1.706	1.062	141906	0.00
10/12/2016	03:10	5.05	20:15	7.20	6.35	03:05	1.03	07:35	1.96	1.61	03:05	0.469	20:15	1.499	1.060	141761	
10/13/2016	02:25	5.27	07:35	7.17	6.30	02:25	1.23	20:05	2.36	1.71	02:25	0.597	20:05	1.704	1.108	148183	
10/14/2016	03:30	5.09	07:35	7.22	6.23	02:05	1.34	07:20	2.44	1.79	02:05	0.638	07:40	1.878	1.140	152443	
10/15/2016	03:50	4.97	11:25	7.22	6.43	03:25	1.34	11:40	2.26	1.77	03:25	0.614	11:40	1.754	1.189	158901	
10/16/2016	04:25	5.19	10:20	7.45	6.57	03:20	1.28	11:30	2.45	1.82	05:00	0.637	11:30	1.931	1.269	169692	
10/17/2016	04:05	5.32	20:05	7.54	6.61	02:45	1.26	07:00	2.23	1.73	02:45	0.645	19:55	1.776	1.204	160986	
10/18/2016	03:40	5.37	07:30	7.66	6.66	02:05	1.26	07:30	2.07	1.74	03:50	0.637	07:30	1.766	1.227	163968	0.00
10/19/2016	03:45	5.41	07:35	7.67	6.64	03:15	1.18	07:35	2.08	1.72	03:45	0.603	07:35	1.772	1.207	161395	
10/20/2016	03:45	5.23	07:35	7.60	6.64	03:45	1.21	07:35	2.05	1.73	03:45	0.583	07:35	1.726	1.216	162500	
10/21/2016	02:55	5.53	12:20	14.85	7.48	02:55	1.33	12:25	3.36	2.02	02:55	0.696	12:25	7.383	1.839	245781	0.46
10/22/2016	03:50	5.39	04:20	32.70	7.57	03:00	1.39	04:20	4.82	2.01	03:45	0.704	04:20	29.346	1.945	260021	0.33
10/23/2016	05:15	5.41	11:15	7.59	6.60	02:20	1.25	12:30	2.22	1.72	03:45	0.668	12:35	1.734	1.203	160753	
10/24/2016	03:35	5.41	20:35	7.35	6.51	03:05	1.20	20:00	2.18	1.67	03:05	0.623	07:25	1.674	1.135	151706	
10/25/2016	03:15	5.30	07:25	7.39	6.42	03:25	1.13	07:30	2.13	1.62	03:25	0.558	07:30	1.712	1.083	144809	
10/26/2016	02:55	5.24	07:30	7.21	6.38	03:50	1.16	07:30	2.11	1.62	03:10	0.569	07:30	1.641	1.072	143298	
10/27/2016	03:50	5.36	20:15	29.50	8.84	03:35	1.16	20:15	4.51	1.99	03:35	0.582	20:15	24.409	2.680	358316	1.15
10/28/2016	03:45	5.78	07:45	7.70	6.66	03:00	1.29	07:25	2.03	1.64	03:00	0.729	07:45	1.703	1.145	153054	
10/29/2016	05:05	5.63	12:05	7.70	6.82	03:50	1.22	12:00	2.09	1.66	03:50	0.674	12:00	1.792	1.212	161960	
10/30/2016	05:00	5.70	16:40	33.72	7.81	05:00	1.34	16:40	5.90	1.89	05:00	0.736	16:40	37.179	2.086	278923	
10/31/2016	03:50	5.78	07:25	7.44	6.66	03:45	1.30	07:00	2.17	1.73	03:45	0.733	07:25	1.681	1.207	161292	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5477142	2.59
Avg	6.73	1.77	1.322	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

NHW, Pipe Height: 48 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	03:15	5.57	07:35	7.43	6.60	03:00	1.25	07:15	2.26	1.68	03:00	0.665	07:15	1.834	1.168	156127	
11/2/2016	03:25	5.54	07:40	7.44	6.62	03:20	1.18	06:40	1.96	1.60	03:20	0.622	07:35	1.595	1.112	148674	
11/3/2016	03:50	5.64	07:20	7.51	6.62	03:50	1.32	07:20	1.88	1.63	03:50	0.714	07:20	1.552	1.130	151113	
11/4/2016	02:55	5.52	07:25	7.47	6.38	02:55	1.28	19:10	2.26	1.71	02:55	0.671	20:35	1.604	1.118	149496	
11/5/2016	04:55	5.37	12:00	7.23	6.46	04:00	1.37	11:55	2.60	1.93	03:50	0.693	12:00	2.020	1.306	174523	
11/6/2016	04:50	5.21	12:40	7.33	6.41	06:55	1.37	12:30	2.62	1.92	05:20	0.686	12:45	2.062	1.288	172150	
11/7/2016	03:35	5.19	08:30	7.36	6.36	04:30	1.28	08:25	2.34	1.72	04:30	0.622	08:25	1.877	1.134	151612	
11/8/2016	02:40	5.20	20:20	7.15	6.48	03:15	1.26	20:20	2.15	1.68	02:40	0.620	20:20	1.648	1.136	151799	
11/9/2016	03:20	5.47	19:20	8.76	6.64	03:20	1.22	12:20	2.56	1.68	03:20	0.632	19:20	2.620	1.185	158443	0.07
11/10/2016	02:30	5.37	18:05	7.16	6.50	02:30	1.45	18:05	2.05	1.84	02:30	0.727	18:05	1.581	1.246	166578	
11/11/2016	03:35	5.28	18:30	6.91	6.35	03:35	1.38	11:55	2.28	1.85	03:35	0.674	11:55	1.660	1.206	161218	
11/12/2016	04:50	5.20	13:30	7.12	6.41	03:20	1.33	10:25	2.49	1.83	03:20	0.668	10:25	1.878	1.224	163686	
11/13/2016	03:30	5.31	10:20	7.37	6.52	03:35	1.29	12:25	2.59	1.86	03:35	0.641	12:25	2.001	1.278	170786	
11/14/2016	02:50	5.16	07:20	7.31	6.43	04:00	1.32	07:30	2.49	1.80	02:55	0.644	07:20	1.938	1.201	160544	
11/15/2016	04:05	5.55	09:40	32.93	9.42	03:45	1.32	09:40	5.36	2.40	03:45	0.703	09:40	32.927	3.516	469997	1.50
11/16/2016	03:40	5.60	07:15	7.62	6.59	02:55	1.36	07:15	2.42	1.79	02:55	0.725	07:15	2.042	1.234	164785	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2871531	1.57
Avg	6.67	1.81	1.343	

Site Commentary

Site Information

UC1	
Pipe Dimensions (in.)	Elliptical (58.00 in H, 59.25 in W)
Silt (in.)	1.00

Overview

A review of the hydrograph and scattergraph for UC1 indicate this location functioned mostly in free-flow conditions for the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016 . Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	19.57	0.60	2.213
Minimum	18.09	0.30	0.980
Maximum	54.20	4.56	49.277
Time of Minimum	9/28/2016 3:45 AM	5/31/2016 3:55 AM	5/31/2016 3:55 AM
Time of Maximum	7/25/2016 5:40 PM	7/5/2016 3:20 AM	7/5/2016 3:20 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

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a division of ADS LLC.

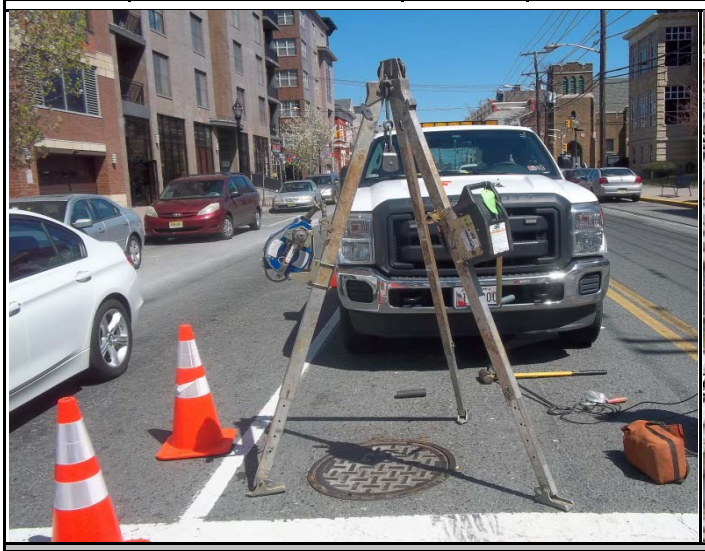
Site Report

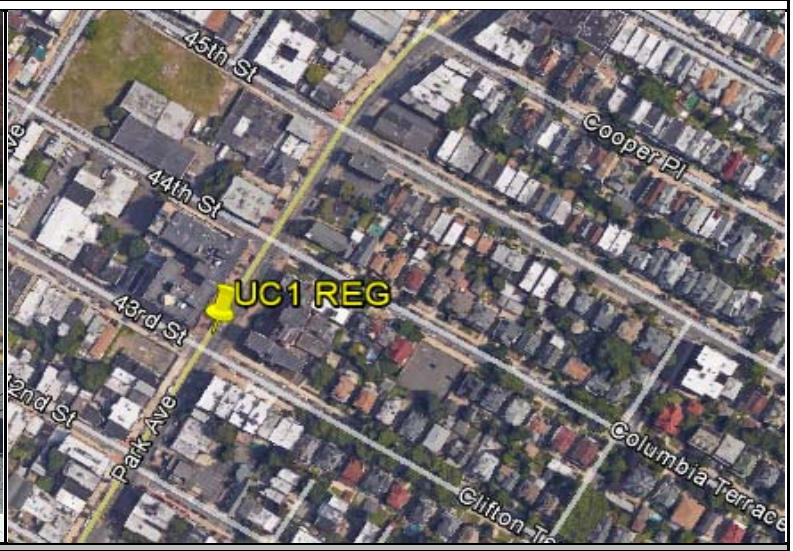
UNION CITY, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	UC1	Meter Type:	TRITON+	Monitor S/N:	61035	Manhole #:	UC1 Regulator
Address / Location:	PARK AVENUE AT 43RD STREET			Map Page #:		F4	
				Pipe Height:		58 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		59.25 Inches	
				I.P. Address		107.80.25.47	





Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 8, 2016	12:00 PM	Manhole Depth:	10.5 Feet		
Site Hydraulics:	SMOOTH. VELOCITY PROFILE IS FASTER ON EAST SIDE OF PIPE.		Manhole Material / Condition:	Concrete		Good
			Active Drop Connections?	No		
			Pipe Material / Condition:	PARGED	BRICK	Good
			Mini System Character:	COMMERCIAL		RESIDENTIAL
			Telephone Information:			
Depth of Flow (Wet Dof):	14.5 +/- 1		Access Pole #:	N/A		
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	1 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.77595 W 74.01959

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other	X		Regulator	1'

Additional Site Information / Comments:

UPSTREAM INSTALLATION. UPSTREAM JUNCTION MANHOLE NOT SUITABLE.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** UC1 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

UC1

Flow Monitor

UC1

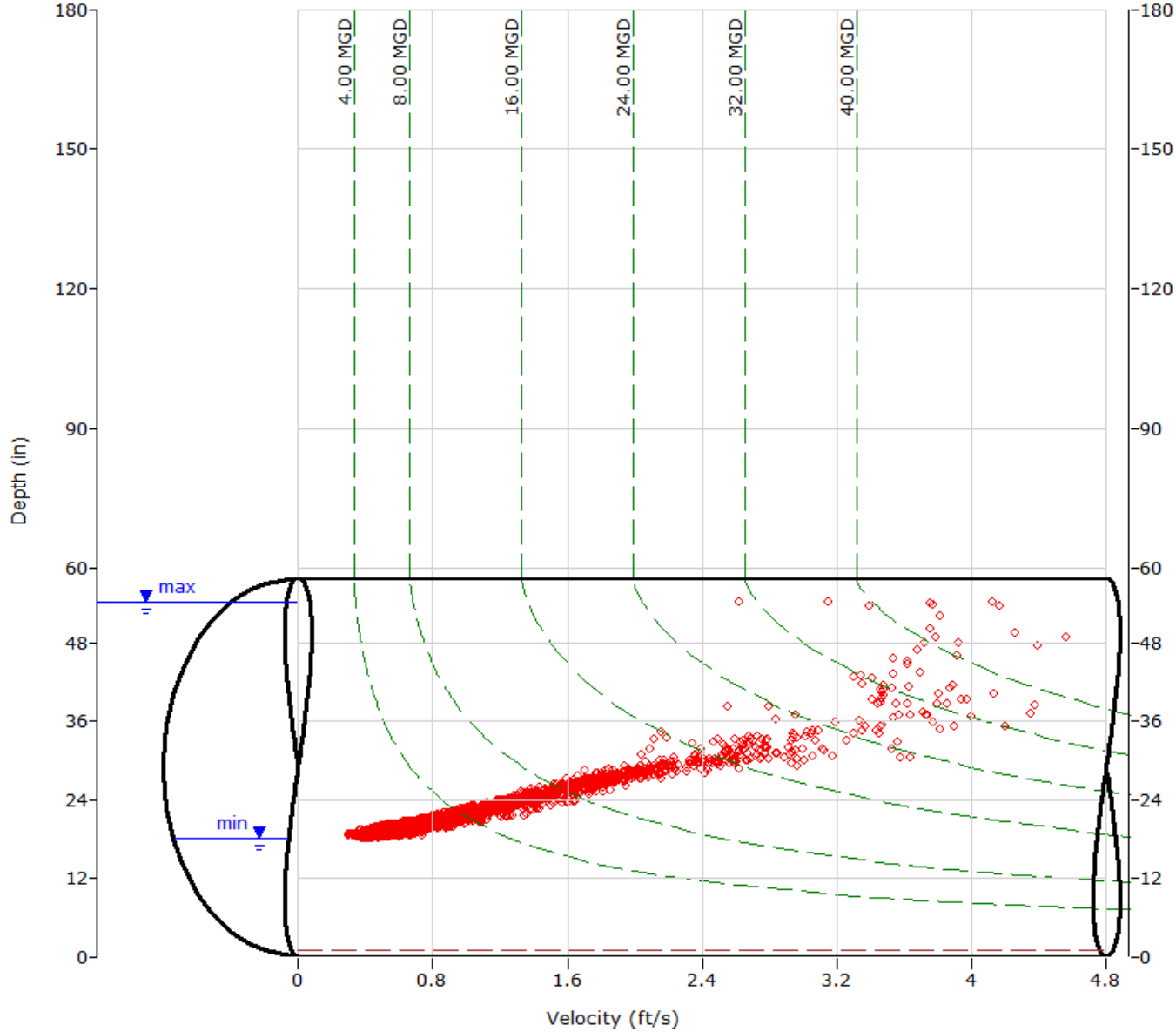
Pipe Height
58.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

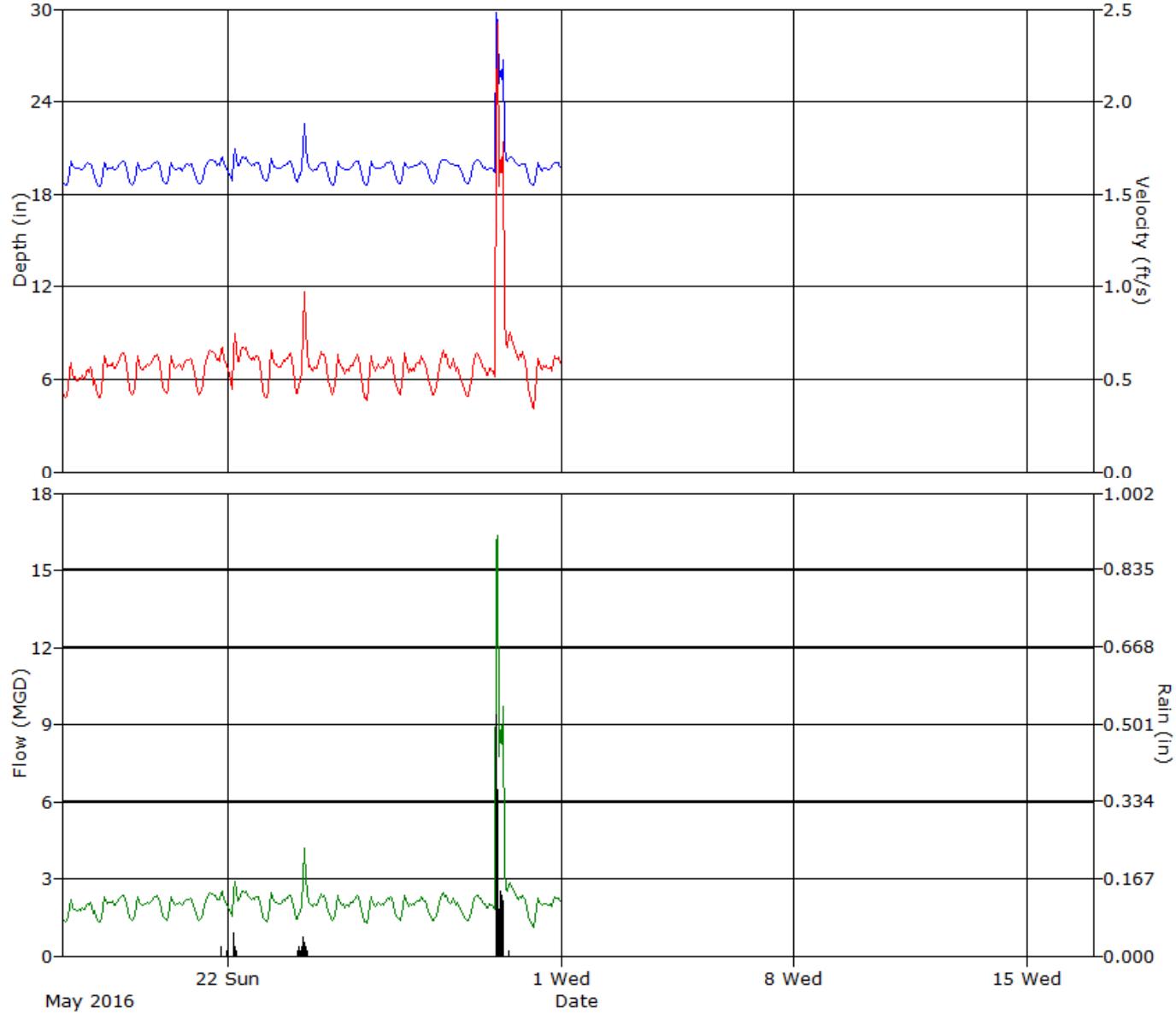
Pipe Height
58.00 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

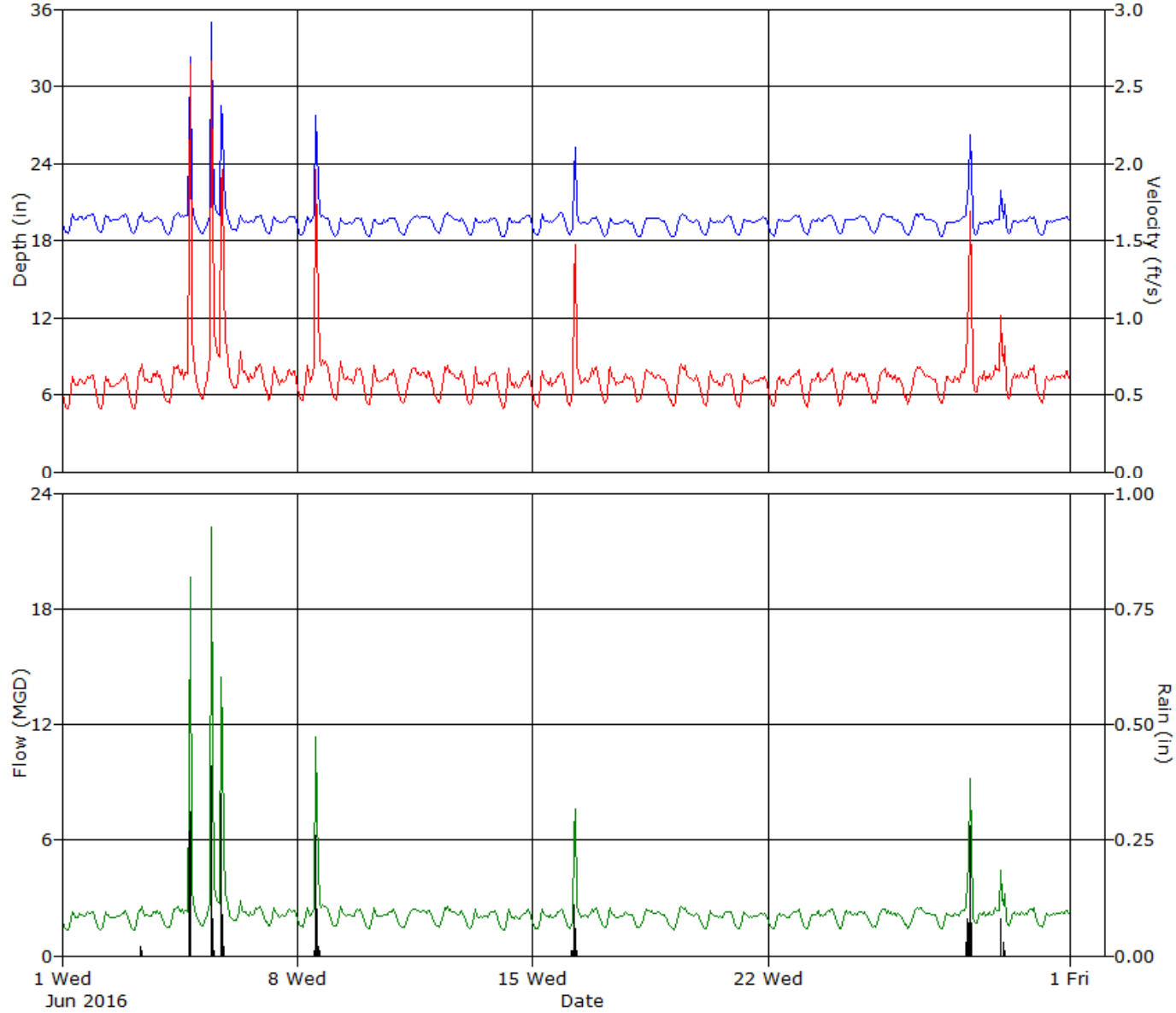
Pipe Height
58.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



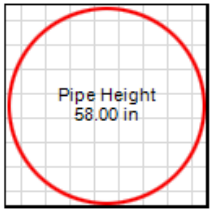
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

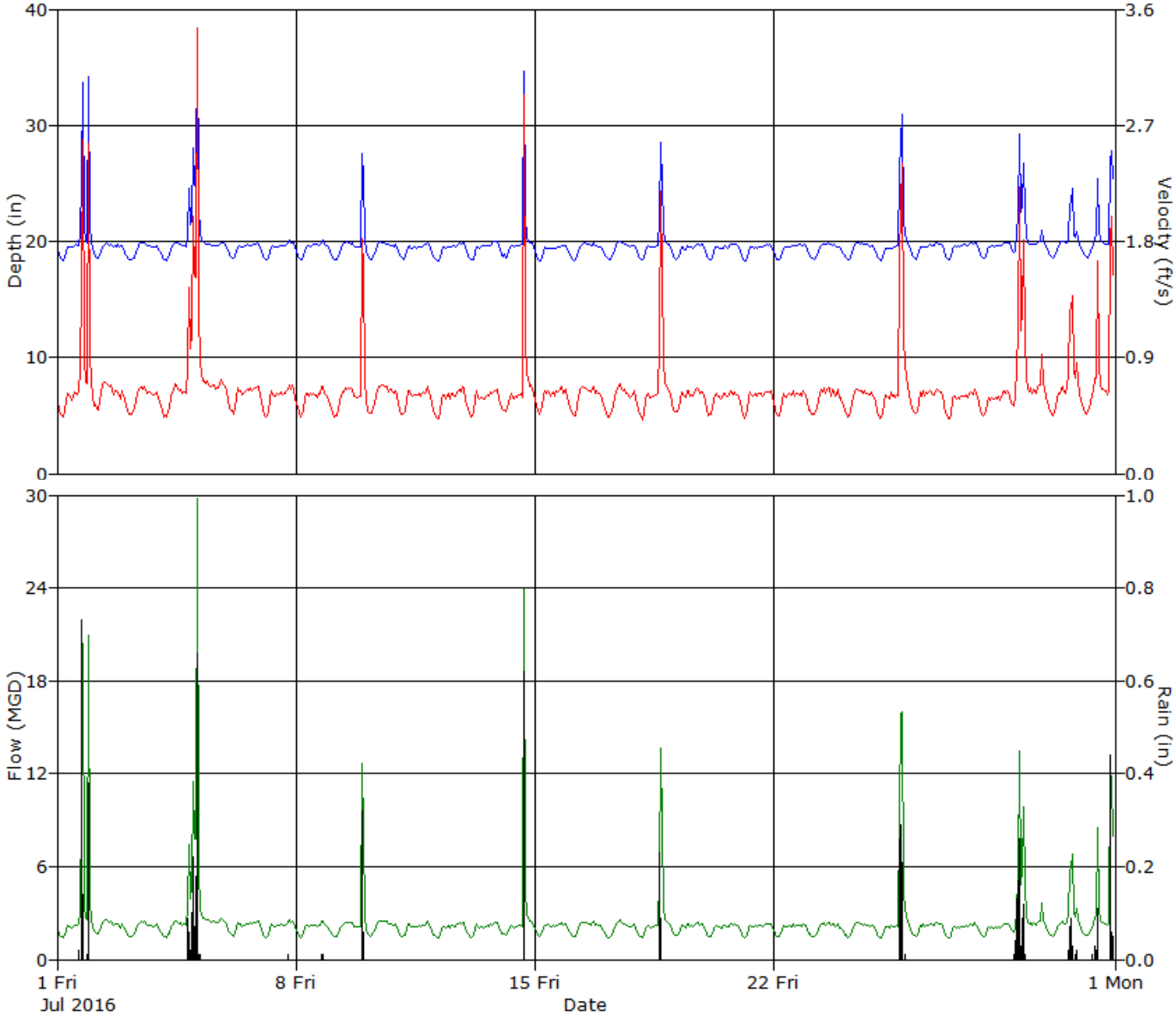


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



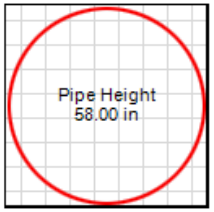
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

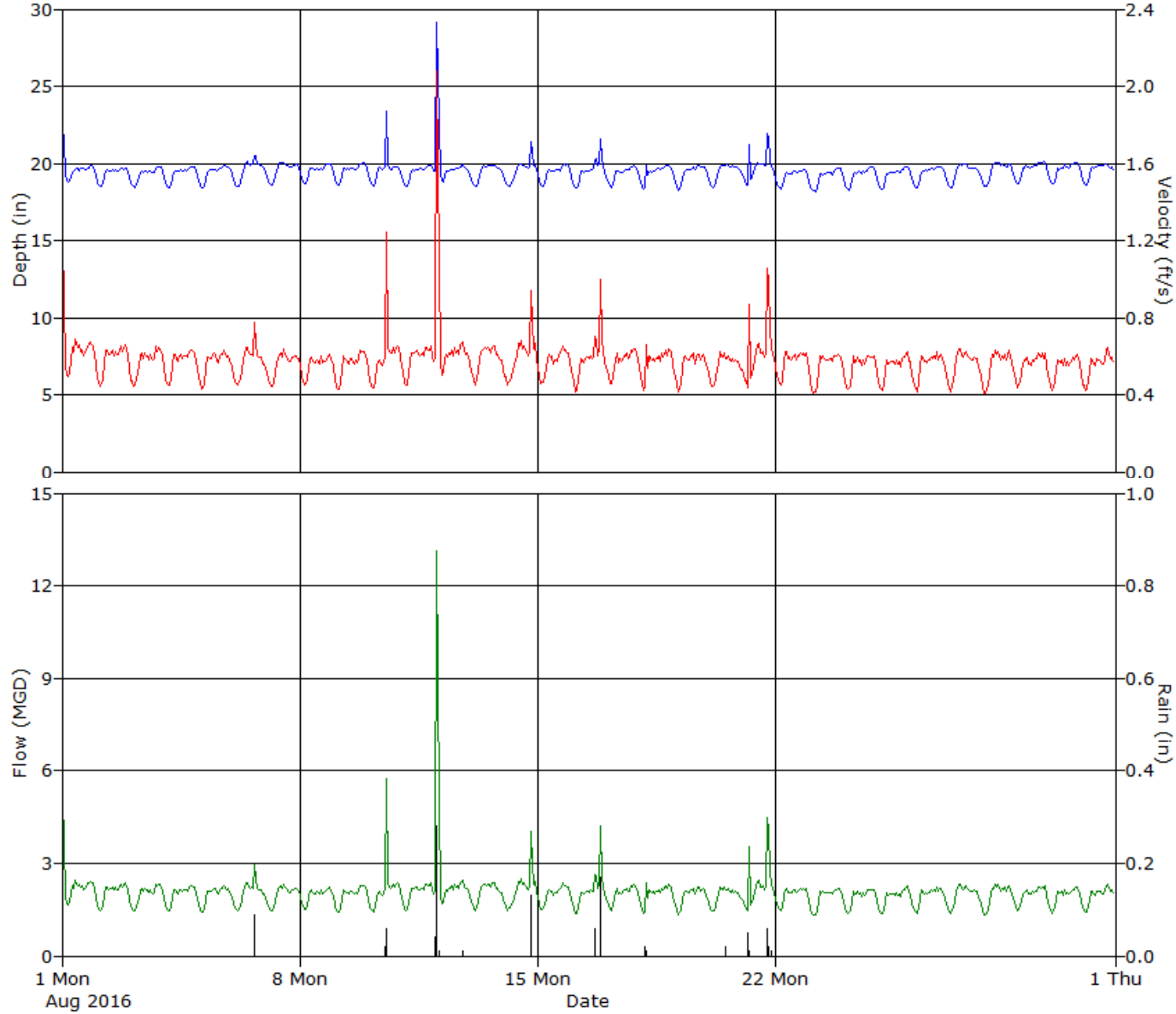


Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



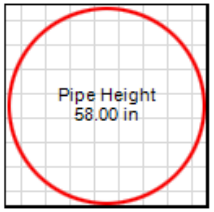
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

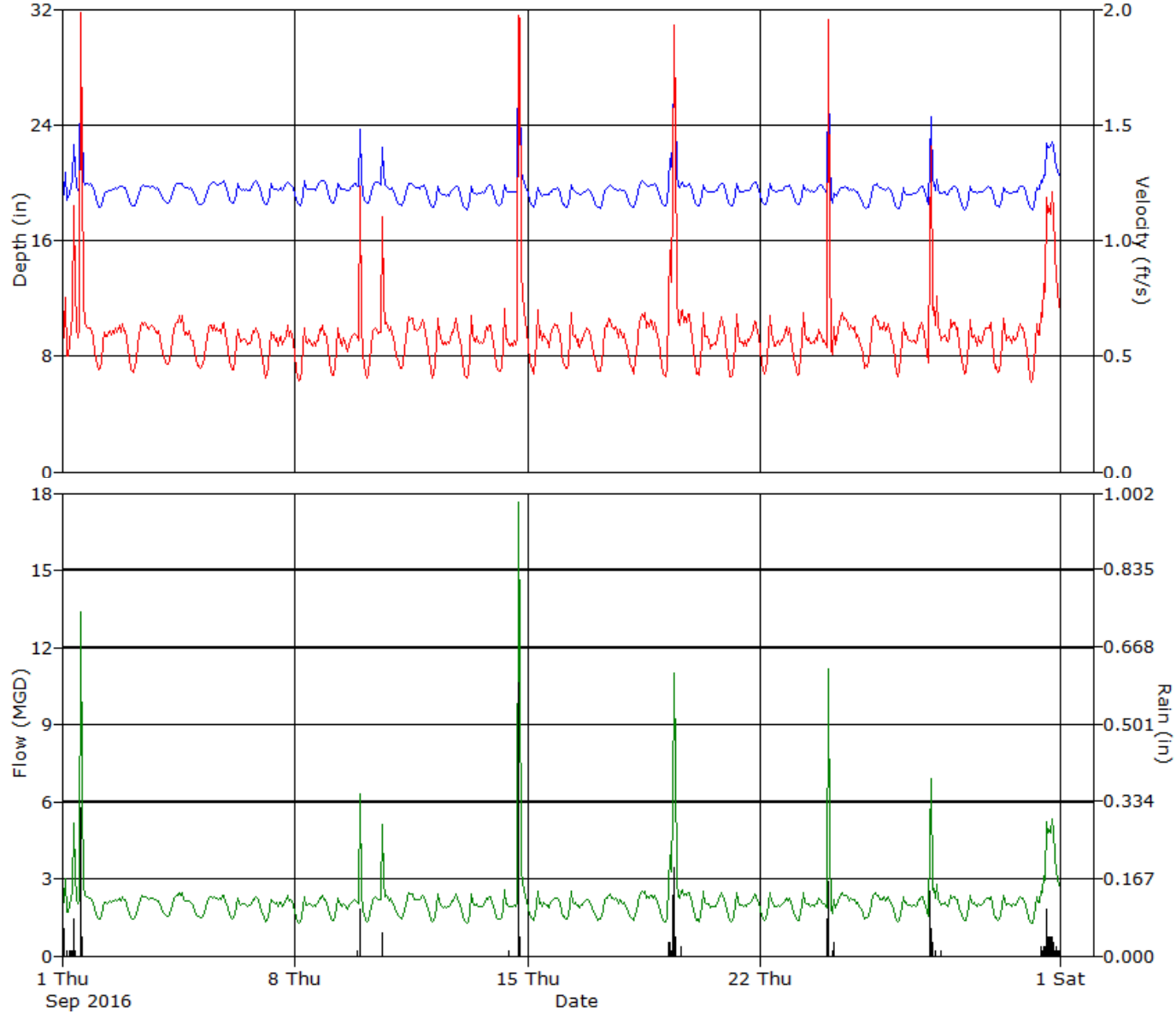


Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



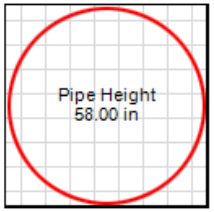
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

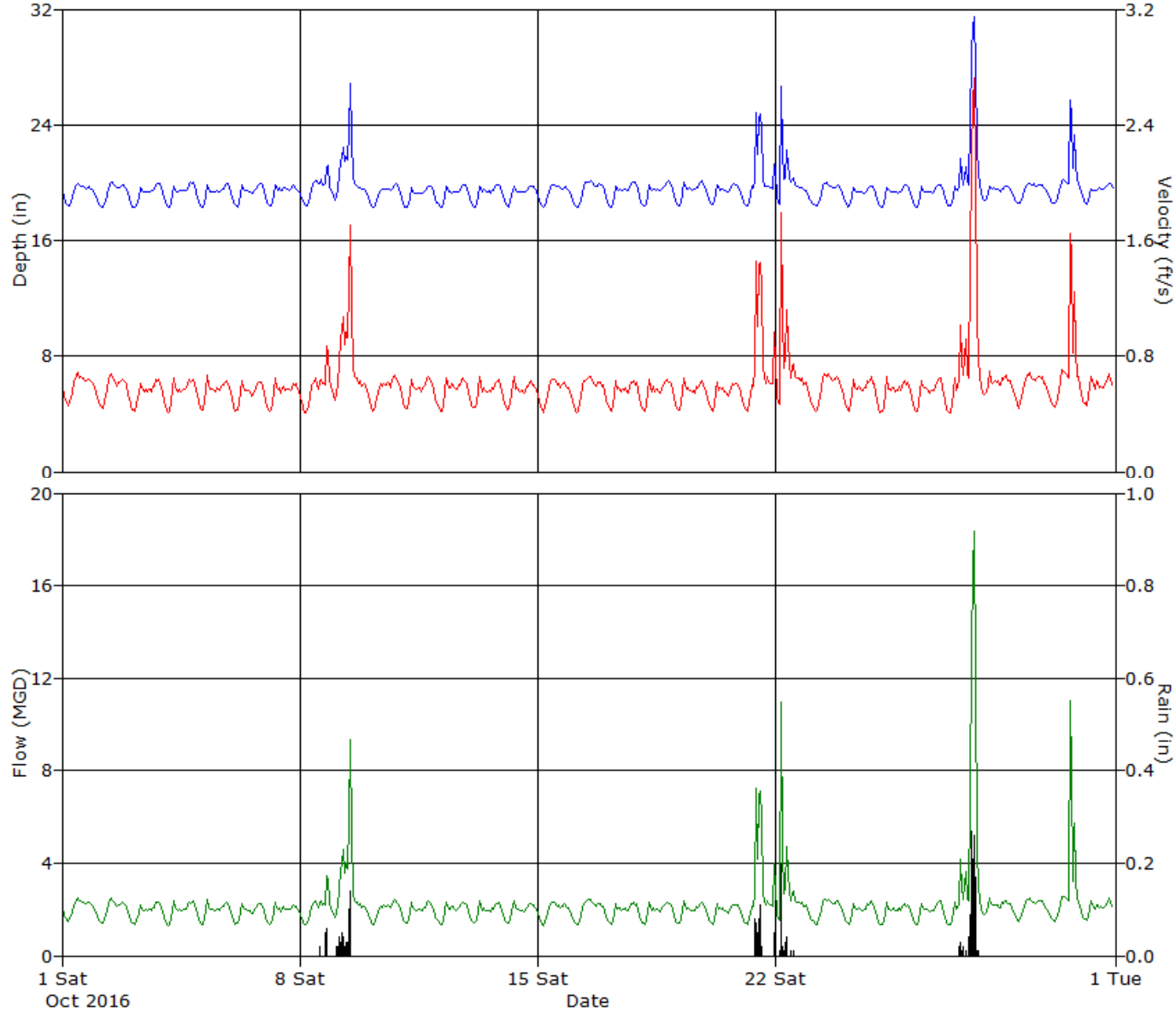


Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC1

Flow Monitor

UC1

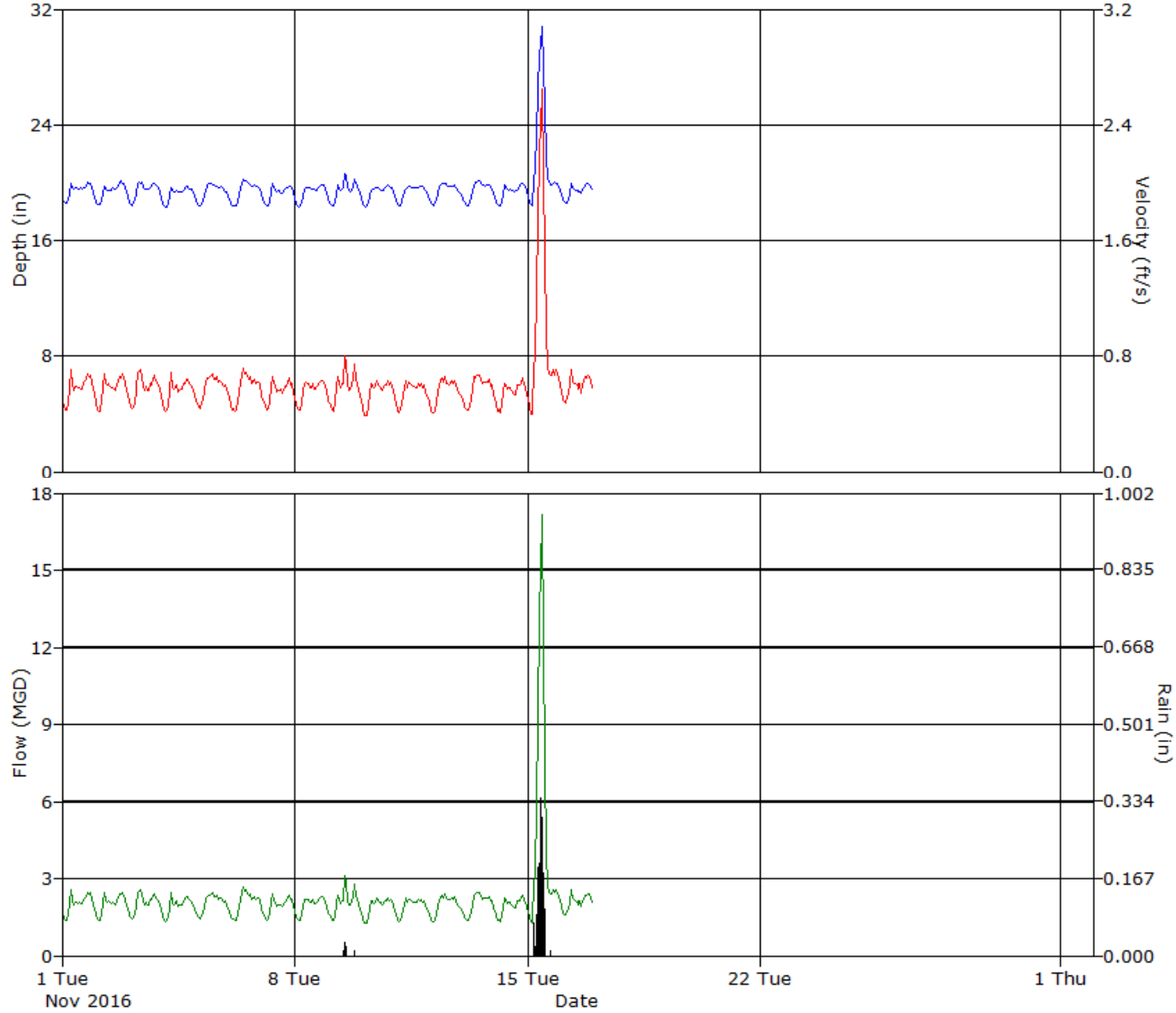
Pipe Height
58.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:10	18.57	07:45	20.26	19.53	02:45	0.37	07:10	0.65	0.50	02:45	1.213	07:45	2.419	1.772	236833	
5/18/2016	04:15	18.47	21:05	20.29	19.55	04:15	0.39	21:05	0.66	0.55	04:15	1.278	21:05	2.453	1.966	262838	
5/19/2016	03:25	18.59	07:40	20.17	19.55	03:25	0.41	07:40	0.64	0.55	03:25	1.350	07:40	2.373	1.966	262828	
5/20/2016	04:20	18.64	07:40	20.23	19.54	04:20	0.42	07:40	0.65	0.55	04:20	1.383	07:40	2.411	1.957	261551	
5/21/2016	04:20	18.61	19:55	20.80	19.70	04:20	0.41	19:55	0.73	0.57	04:20	1.364	19:55	2.807	2.066	276140	0.03
5/22/2016	03:35	18.75	04:55	21.77	19.99	03:35	0.43	04:55	0.86	0.61	03:35	1.454	04:55	3.519	2.256	301518	0.08
5/23/2016	04:10	18.75	07:40	20.49	19.66	04:10	0.38	07:40	0.68	0.56	04:10	1.284	07:40	2.588	1.995	266697	
5/24/2016	02:15	18.71	07:30	23.15	19.89	02:15	0.40	07:30	1.05	0.59	02:15	1.346	07:30	4.698	2.176	290882	0.16
5/25/2016	04:05	18.57	08:00	20.25	19.58	03:15	0.37	07:05	0.75	0.55	03:15	1.230	07:05	2.742	1.951	260833	
5/26/2016	04:30	18.50	07:35	20.27	19.60	04:30	0.36	21:20	0.73	0.54	04:30	1.185	21:20	2.686	1.938	259083	
5/27/2016	04:25	18.59	07:50	20.18	19.63	04:25	0.36	19:25	0.74	0.55	04:25	1.187	19:25	2.741	1.960	261972	
5/28/2016	04:25	18.67	12:45	20.27	19.68	03:55	0.37	14:00	0.73	0.54	03:55	1.241	14:00	2.725	1.953	261133	
5/29/2016	05:10	18.64	13:00	20.31	19.57	04:40	0.36	10:45	0.75	0.53	04:40	1.203	10:45	2.781	1.901	254164	
5/30/2016	01:00	19.25	01:55	47.98	21.83	00:35	0.41	02:05	4.35	0.95	00:35	1.425	01:55	41.861	4.610	616254	1.38
5/31/2016	04:00	18.56	07:50	20.14	19.53	03:55	0.30	18:50	0.65	0.53	03:55	0.980	18:50	2.383	1.897	253412	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4326141	1.65
Avg	19.79	0.58	2.158	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:10	18.57	21:55	20.18	19.55	04:10	0.41	21:55	0.64	0.55	04:10	1.337	21:55	2.381	1.968	263074	
6/2/2016	03:45	18.58	21:40	20.17	19.51	03:45	0.41	21:40	0.64	0.55	03:45	1.345	21:40	2.374	1.939	259173	
6/3/2016	03:50	18.52	09:10	20.47	19.44	03:50	0.40	22:15	0.88	0.58	03:50	1.306	22:15	3.143	2.031	271550	0.03
6/4/2016	05:35	18.35	20:05	42.68	20.39	05:15	0.40	20:10	3.97	0.74	05:15	1.313	20:10	34.421	3.196	427224	0.58
6/5/2016	04:55	18.45	11:40	54.16	21.34	05:10	0.42	18:55	4.17	0.93	05:10	1.392	18:55	48.517	4.570	610945	0.96
6/6/2016	03:40	18.72	21:50	20.03	19.47	03:40	0.47	07:10	0.90	0.63	03:40	1.580	07:10	3.265	2.236	298893	
6/7/2016	03:25	18.45	07:50	20.00	19.40	04:45	0.45	07:30	0.74	0.59	03:50	1.485	07:30	2.703	2.082	278350	
6/8/2016	03:30	18.38	13:30	30.03	20.14	04:25	0.43	13:40	2.38	0.73	04:25	1.404	13:40	14.713	2.892	386547	0.40
6/9/2016	03:35	18.32	22:00	19.82	19.26	04:15	0.42	07:45	0.85	0.60	04:15	1.371	07:45	3.063	2.078	277807	
6/10/2016	03:35	18.20	14:05	19.94	19.27	02:35	0.38	07:40	0.79	0.58	02:35	1.222	07:40	2.825	2.019	269891	
6/11/2016	04:05	18.41	13:15	19.97	19.44	05:35	0.41	09:45	0.76	0.59	05:35	1.343	12:50	2.748	2.084	278644	
6/12/2016	05:25	18.53	11:25	20.21	19.46	05:45	0.39	11:30	0.77	0.59	05:45	1.272	11:30	2.843	2.083	278396	
6/13/2016	04:05	18.35	07:50	19.89	19.30	04:00	0.39	07:25	0.81	0.57	04:00	1.276	07:25	2.917	1.984	265174	
6/14/2016	04:15	18.17	21:50	20.09	19.32	03:35	0.37	07:10	0.77	0.56	03:35	1.193	07:10	2.729	1.957	261667	
6/15/2016	03:55	18.34	20:40	20.21	19.43	04:00	0.38	20:20	0.74	0.56	04:00	1.240	20:20	2.718	1.991	266222	
6/16/2016	03:35	18.43	06:50	29.80	19.75	03:55	0.37	06:50	2.40	0.65	03:55	1.206	06:50	14.960	2.464	329363	0.20
6/17/2016	03:45	18.30	08:00	19.84	19.22	03:30	0.37	07:30	0.84	0.58	03:30	1.211	07:30	3.019	1.998	267120	
6/18/2016	02:55	18.23	09:45	19.88	19.30	02:45	0.41	11:10	0.75	0.58	02:50	1.334	11:10	2.689	2.030	271419	
6/19/2016	05:20	18.22	11:50	20.09	19.30	04:10	0.38	10:40	0.78	0.58	04:10	1.217	10:40	2.872	2.019	269837	
6/20/2016	04:10	18.36	20:20	19.99	19.33	04:35	0.38	07:35	0.75	0.57	04:35	1.226	07:35	2.698	1.985	265351	
6/21/2016	04:20	18.39	19:45	19.89	19.32	04:20	0.39	19:40	0.74	0.56	04:20	1.257	19:40	2.697	1.958	261714	
6/22/2016	04:45	18.33	20:30	20.03	19.38	03:50	0.39	22:10	0.77	0.57	03:50	1.265	22:10	2.794	1.999	267201	
6/23/2016	04:05	18.42	21:00	19.98	19.43	03:25	0.36	21:50	0.78	0.58	03:25	1.192	21:50	2.838	2.033	271790	
6/24/2016	03:55	18.44	18:05	20.02	19.46	03:55	0.41	08:55	0.73	0.58	03:55	1.324	08:55	2.620	2.051	274235	
6/25/2016	05:05	18.52	11:15	20.10	19.45	04:40	0.39	12:55	0.77	0.58	05:05	1.283	12:55	2.790	2.041	272897	
6/26/2016	05:00	18.34	14:10	20.18	19.41	04:10	0.40	13:00	0.76	0.59	05:30	1.308	14:10	2.789	2.072	276963	
6/27/2016	04:25	18.22	23:55	23.98	19.50	03:15	0.38	23:50	1.35	0.62	03:15	1.238	23:55	6.296	2.208	295108	0.18
6/28/2016	05:10	18.41	00:50	29.34	19.94	04:35	0.46	00:40	2.19	0.71	04:20	1.515	00:40	13.340	2.721	363730	0.43
6/29/2016	04:40	18.44	01:05	21.96	19.48	04:30	0.41	00:55	1.24	0.62	04:30	1.332	00:55	4.972	2.193	293140	0.04
6/30/2016	03:25	18.36	21:45	19.97	19.34	04:30	0.40	21:20	0.73	0.58	04:30	1.313	21:20	2.647	2.031	271302	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			8944727	2.82
Avg	19.54	0.61	2.230	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:10	18.33	22:10	53.90	20.99	04:25	0.41	18:00	3.91	0.82	04:25	1.341	22:10	43.854	4.067	543708	1.28
7/2/2016	05:10	18.49	00:00	20.34	19.44	05:05	0.44	00:00	0.80	0.63	05:10	1.455	00:00	3.002	2.205	294741	
7/3/2016	04:40	18.37	12:10	20.00	19.33	03:15	0.41	23:35	0.77	0.59	03:15	1.349	13:40	2.740	2.076	277467	
7/4/2016	04:50	18.27	21:00	29.03	19.75	05:50	0.39	21:00	2.23	0.66	05:50	1.263	21:00	13.411	2.499	334104	0.27
7/5/2016	23:55	19.39	03:10	53.82	21.48	23:55	0.59	03:20	4.56	0.96	23:55	2.078	03:20	49.277	4.618	617393	1.15
7/6/2016	04:05	18.49	21:40	19.95	19.42	04:30	0.41	20:30	0.77	0.61	04:30	1.353	20:30	2.781	2.148	287130	
7/7/2016	04:00	18.30	19:20	20.27	19.41	03:50	0.41	21:15	0.80	0.59	04:00	1.315	19:05	2.981	2.087	278977	0.01
7/8/2016	03:55	18.39	19:55	20.19	19.43	03:05	0.41	19:35	0.78	0.58	03:05	1.339	19:35	2.893	2.059	275235	0.02
7/9/2016	04:50	18.33	22:40	53.59	19.96	03:35	0.39	22:40	3.39	0.67	03:35	1.290	22:40	39.516	2.729	364795	0.38
7/10/2016	04:45	18.32	00:00	21.80	19.45	05:15	0.42	00:00	0.99	0.61	04:20	1.366	00:00	4.088	2.170	290052	
7/11/2016	04:20	18.42	21:35	19.96	19.34	03:10	0.41	08:25	0.77	0.59	03:10	1.364	21:35	2.761	2.050	274088	
7/12/2016	04:50	18.26	22:25	19.96	19.33	03:30	0.41	21:35	0.84	0.58	03:30	1.339	21:35	3.044	2.030	271358	
7/13/2016	04:10	18.36	21:50	20.10	19.40	05:15	0.40	20:10	0.75	0.58	05:15	1.317	21:50	2.774	2.031	271532	
7/14/2016	05:10	18.54	16:30	47.58	20.22	04:00	0.44	16:30	4.40	0.71	04:35	1.468	16:30	46.561	3.128	418150	0.62
7/15/2016	04:20	18.29	19:30	19.70	19.26	03:35	0.44	22:30	0.75	0.60	03:35	1.417	22:30	2.666	2.091	279496	
7/16/2016	05:05	18.33	17:10	20.01	19.35	02:35	0.42	16:40	0.78	0.59	04:35	1.370	17:45	2.824	2.087	279017	
7/17/2016	05:40	18.40	11:55	20.09	19.37	04:45	0.37	11:55	0.81	0.58	04:45	1.218	11:55	2.972	2.046	273506	
7/18/2016	04:20	18.38	17:00	38.56	19.91	03:05	0.38	16:55	3.57	0.68	04:15	1.245	17:00	30.238	2.714	362855	0.32
7/19/2016	03:45	18.43	21:50	19.85	19.33	02:20	0.43	21:50	0.75	0.59	02:20	1.427	21:50	2.711	2.063	275773	
7/20/2016	04:25	18.38	19:30	19.86	19.32	04:15	0.40	19:25	0.74	0.58	04:15	1.317	19:25	2.683	2.020	270013	
7/21/2016	03:55	18.26	21:50	19.77	19.31	03:05	0.38	07:20	0.73	0.58	03:05	1.249	07:20	2.594	2.038	272447	
7/22/2016	03:25	18.33	22:15	19.78	19.33	04:45	0.42	12:45	0.77	0.58	03:25	1.359	12:45	2.729	2.032	271683	
7/23/2016	05:10	18.38	14:10	19.96	19.39	04:45	0.42	14:10	0.76	0.59	04:45	1.365	14:10	2.765	2.067	276318	
7/24/2016	05:35	18.37	11:35	19.99	19.38	05:30	0.39	11:35	0.76	0.58	05:30	1.255	11:35	2.785	2.043	273091	
7/25/2016	04:20	18.29	17:40	54.20	20.58	04:05	0.40	17:35	4.20	0.79	04:05	1.298	17:40	48.343	3.614	483093	0.77
7/26/2016	04:55	18.39	19:15	19.92	19.41	02:45	0.44	09:25	0.75	0.59	02:45	1.451	18:35	2.724	2.079	277888	
7/27/2016	03:30	18.43	18:55	19.98	19.44	03:55	0.37	21:25	0.72	0.57	03:55	1.222	21:40	2.639	2.006	268106	
7/28/2016	03:55	18.49	19:00	20.00	19.44	04:40	0.42	20:40	0.77	0.57	04:40	1.368	20:40	2.798	1.996	266829	
7/29/2016	02:40	18.74	05:30	30.94	20.99	01:25	0.44	05:20	2.52	0.85	01:25	1.489	05:20	16.307	3.640	486645	0.86
7/30/2016	04:25	18.56	18:00	27.15	20.17	05:15	0.41	18:05	1.77	0.71	05:15	1.353	18:05	9.751	2.725	364268	0.24
7/31/2016	05:05	18.56	21:40	38.55	20.70	02:55	0.43	21:45	3.47	0.80	04:05	1.433	21:40	29.307	3.499	467453	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			10247210	6.64
Avg	19.73	0.65	2.473	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:30	18.76	01:00	24.11	19.71	05:05	0.45	00:45	1.60	0.65	05:05	1.501	00:50	7.331	2.369	316658	0.05
8/2/2016	03:55	18.47	22:30	19.76	19.34	04:05	0.41	20:25	0.73	0.59	04:05	1.349	22:30	2.597	2.052	274311	
8/3/2016	03:50	18.40	19:30	19.87	19.32	03:40	0.43	08:55	0.74	0.57	03:40	1.388	08:55	2.636	2.005	268078	
8/4/2016	04:00	18.38	19:45	19.90	19.34	03:30	0.41	20:15	0.73	0.57	03:30	1.351	20:15	2.615	1.998	267141	
8/5/2016	04:10	18.33	19:00	19.96	19.38	04:10	0.38	11:05	0.69	0.56	04:10	1.243	20:00	2.489	1.977	264270	
8/6/2016	04:25	18.44	16:55	21.55	19.57	02:45	0.41	16:35	0.97	0.57	02:45	1.348	16:50	3.841	2.047	273686	0.09
8/7/2016	05:20	18.54	10:45	20.13	19.54	04:30	0.41	14:00	0.70	0.56	04:30	1.352	14:00	2.562	1.984	265163	
8/8/2016	04:15	18.61	21:15	20.03	19.51	03:05	0.41	20:55	0.71	0.55	03:05	1.386	20:55	2.604	1.964	262541	
8/9/2016	04:20	18.52	21:25	20.11	19.50	03:40	0.38	22:00	0.72	0.56	03:40	1.247	21:25	2.628	1.966	262803	
8/10/2016	05:00	18.52	13:20	25.76	19.62	05:25	0.38	13:10	1.64	0.60	05:25	1.258	13:15	8.133	2.167	289626	0.08
8/11/2016	03:50	18.45	20:40	19.94	19.40	03:25	0.41	20:05	0.75	0.58	03:25	1.356	20:05	2.700	2.056	274787	
8/12/2016	05:05	18.74	01:30	33.53	20.06	04:35	0.43	01:25	2.97	0.69	04:35	1.436	01:25	21.294	2.724	364203	0.34
8/13/2016	05:00	18.45	14:25	19.96	19.44	05:00	0.42	11:40	0.73	0.59	05:00	1.364	11:40	2.651	2.075	277342	
8/14/2016	03:50	18.49	19:45	25.39	19.57	03:20	0.42	19:45	1.76	0.60	03:20	1.372	19:45	8.875	2.174	290662	0.13
8/15/2016	04:15	18.46	19:10	20.06	19.41	03:40	0.43	18:55	0.75	0.57	03:40	1.393	19:10	2.744	2.013	269044	
8/16/2016	04:10	18.36	20:40	24.14	19.52	03:55	0.39	20:35	1.54	0.59	03:55	1.267	20:40	7.277	2.109	281901	0.23
8/17/2016	04:25	18.39	20:40	19.91	19.35	04:25	0.41	20:25	0.71	0.57	04:25	1.324	20:25	2.583	2.004	267954	
8/18/2016	04:45	18.31	05:20	20.38	19.41	03:45	0.39	05:20	0.81	0.57	03:45	1.268	05:20	3.030	2.016	269470	0.03
8/19/2016	03:15	18.23	17:55	19.93	19.37	04:25	0.39	18:00	0.68	0.56	04:25	1.254	18:00	2.469	1.953	261095	
8/20/2016	04:40	18.40	14:15	20.01	19.45	04:00	0.40	11:35	0.70	0.55	04:00	1.296	11:35	2.527	1.944	259900	0.02
8/21/2016	04:30	18.43	18:45	23.56	19.80	04:45	0.40	18:45	1.42	0.63	04:45	1.297	18:45	6.471	2.305	308102	0.15
8/22/2016	04:05	18.30	20:00	19.69	19.19	04:05	0.40	13:30	0.71	0.57	04:05	1.301	13:30	2.510	1.977	264232	
8/23/2016	04:05	18.11	21:55	19.81	19.17	02:50	0.37	07:55	0.69	0.55	02:50	1.210	20:15	2.462	1.915	256056	
8/24/2016	04:35	18.21	19:20	19.88	19.24	05:00	0.38	16:20	0.69	0.55	05:00	1.225	16:20	2.450	1.907	254984	
8/25/2016	04:10	18.24	21:25	19.83	19.25	04:20	0.40	20:20	0.73	0.55	04:20	1.275	20:20	2.644	1.897	253610	
8/26/2016	04:20	18.37	18:35	19.85	19.36	04:15	0.38	18:15	0.69	0.55	04:15	1.246	18:15	2.475	1.943	259723	
8/27/2016	04:10	18.40	13:35	20.03	19.42	04:25	0.39	13:35	0.73	0.56	04:25	1.269	13:35	2.659	1.961	262091	
8/28/2016	03:50	18.43	13:45	20.17	19.51	04:45	0.37	21:35	0.75	0.55	04:50	1.210	21:35	2.753	1.966	262776	
8/29/2016	03:20	18.65	21:50	20.19	19.60	04:10	0.41	19:55	0.71	0.55	04:10	1.378	19:55	2.596	1.972	263570	
8/30/2016	04:00	18.58	18:55	20.13	19.57	03:20	0.36	22:15	0.71	0.55	03:20	1.213	22:15	2.605	1.942	259591	
8/31/2016	04:25	18.55	18:15	20.01	19.54	03:30	0.35	19:00	0.69	0.55	03:30	1.149	19:00	2.528	1.950	260538	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			8465908	1.12
Avg	19.47	0.57	2.043	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:40	18.68	14:30	40.79	20.39	04:25	0.46	14:30	3.46	0.73	04:25	1.549	14:30	31.337	2.996	400544	0.56
9/2/2016	04:05	18.21	18:45	19.74	19.28	02:45	0.41	20:05	0.71	0.57	02:45	1.338	20:05	2.561	1.989	265926	
9/3/2016	04:55	18.32	13:45	19.88	19.31	03:40	0.40	10:10	0.73	0.57	03:40	1.306	10:10	2.630	2.004	267906	
9/4/2016	05:20	18.55	13:55	20.06	19.41	03:55	0.43	15:20	0.74	0.58	05:10	1.424	15:20	2.722	2.028	271085	
9/5/2016	04:25	18.41	21:15	20.13	19.43	02:50	0.42	20:25	0.73	0.56	02:50	1.394	21:10	2.688	1.995	266755	
9/6/2016	04:30	18.51	20:45	20.12	19.45	04:10	0.37	19:55	0.70	0.55	04:10	1.219	19:55	2.574	1.949	260594	
9/7/2016	04:05	18.44	19:45	20.13	19.44	03:25	0.37	07:45	0.71	0.55	03:25	1.218	07:45	2.597	1.935	258636	
9/8/2016	04:00	18.40	07:35	20.24	19.49	04:10	0.37	20:45	0.68	0.54	04:10	1.214	20:45	2.520	1.920	256702	
9/9/2016	04:15	18.53	23:35	29.10	19.61	04:10	0.38	23:30	2.31	0.57	04:10	1.264	23:30	13.406	2.088	279067	0.11
9/10/2016	04:45	18.53	15:40	26.89	19.69	03:45	0.37	15:45	1.85	0.60	03:45	1.220	15:45	9.991	2.184	291914	0.05
9/11/2016	05:05	18.42	10:55	19.99	19.38	05:05	0.41	13:00	0.76	0.58	05:05	1.330	13:00	2.791	2.042	272931	
9/12/2016	03:55	18.24	07:45	19.96	19.16	03:00	0.35	07:35	0.73	0.56	03:00	1.142	07:35	2.666	1.922	256997	0.00
9/13/2016	04:20	18.11	21:40	19.94	19.18	04:40	0.38	07:20	0.73	0.55	04:40	1.222	07:20	2.637	1.907	254960	
9/14/2016	03:00	18.41	17:35	52.13	20.15	04:05	0.39	17:55	4.13	0.69	04:05	1.265	17:35	43.554	3.074	410900	0.64
9/15/2016	04:55	18.26	07:40	19.78	19.16	04:35	0.40	07:55	0.80	0.57	04:35	1.282	07:55	2.869	1.970	263366	
9/16/2016	03:25	18.32	07:40	19.95	19.15	03:35	0.41	07:30	0.75	0.56	03:35	1.331	07:30	2.727	1.926	257422	
9/17/2016	05:05	18.20	12:35	19.91	19.21	05:55	0.40	11:30	0.74	0.57	05:55	1.279	11:30	2.667	1.974	263945	
9/18/2016	05:05	18.30	12:00	20.17	19.41	05:50	0.38	11:45	0.75	0.58	05:50	1.221	11:45	2.781	2.063	275795	
9/19/2016	03:50	18.32	10:45	28.89	20.34	03:50	0.38	10:45	2.23	0.74	03:50	1.217	10:45	13.313	2.996	400504	0.45
9/20/2016	03:15	18.36	21:15	20.04	19.32	03:05	0.40	07:20	0.78	0.56	03:05	1.298	07:20	2.825	1.952	260879	
9/21/2016	04:10	18.36	21:35	20.05	19.35	02:30	0.36	21:15	0.71	0.55	02:30	1.180	21:15	2.587	1.946	260169	
9/22/2016	04:15	18.43	07:50	20.06	19.34	02:45	0.41	07:20	0.75	0.55	02:45	1.335	07:20	2.732	1.936	258845	
9/23/2016	04:05	18.39	07:25	19.91	19.33	03:40	0.40	07:25	0.79	0.55	03:55	1.300	07:25	2.870	1.925	257382	
9/24/2016	04:50	18.51	01:40	28.80	19.83	04:50	0.45	01:45	2.16	0.68	04:50	1.484	01:40	12.859	2.598	347267	0.28
9/25/2016	05:55	18.20	11:30	20.03	19.23	03:50	0.41	11:00	0.78	0.58	03:50	1.302	11:00	2.820	2.028	271075	
9/26/2016	03:55	18.13	21:15	19.83	19.11	03:50	0.37	07:25	0.70	0.56	03:50	1.195	07:25	2.534	1.925	257314	
9/27/2016	02:20	18.35	02:50	27.51	19.75	02:15	0.44	02:50	1.94	0.66	02:15	1.420	02:50	10.882	2.451	327605	0.25
9/28/2016	03:45	18.09	20:40	19.81	19.19	03:20	0.40	07:10	0.73	0.56	04:05	1.268	07:10	2.623	1.949	260583	
9/29/2016	04:10	18.28	21:05	19.88	19.22	03:00	0.41	19:05	0.71	0.56	03:45	1.326	19:05	2.525	1.943	259779	
9/30/2016	04:30	18.14	14:35	24.07	20.38	03:50	0.38	14:35	1.40	0.76	03:50	1.211	14:35	6.579	2.952	394345	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			8631195	2.75
Avg	19.49	0.59	2.152	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:45	18.33	11:10	19.98	19.35	04:40	0.44	12:10	0.77	0.60	04:40	1.431	12:10	2.805	2.087	278992	
10/2/2016	05:35	18.26	12:05	20.12	19.32	04:05	0.42	10:40	0.73	0.58	04:05	1.363	10:40	2.648	2.017	269650	
10/3/2016	04:55	18.25	19:40	19.97	19.27	04:50	0.37	18:35	0.70	0.55	04:50	1.202	18:35	2.534	1.928	257780	
10/4/2016	03:30	18.27	19:15	20.06	19.33	03:10	0.37	07:25	0.70	0.56	03:10	1.211	19:15	2.520	1.947	260227	
10/5/2016	04:25	18.27	20:50	20.01	19.28	02:35	0.38	07:25	0.71	0.56	02:35	1.251	07:25	2.598	1.945	259975	
10/6/2016	04:30	18.29	07:35	20.01	19.31	03:30	0.38	19:55	0.67	0.55	03:30	1.245	19:55	2.451	1.905	254694	0.00
10/7/2016	03:20	18.34	07:40	20.01	19.34	03:05	0.39	07:15	0.75	0.55	03:05	1.272	07:15	2.719	1.918	256376	
10/8/2016	04:45	18.31	19:55	22.91	19.60	04:35	0.39	19:50	1.18	0.58	04:35	1.253	19:55	5.131	2.087	279006	0.13
10/9/2016	01:50	18.65	12:50	28.02	20.76	02:00	0.47	12:55	1.96	0.79	02:00	1.564	12:55	11.273	3.206	428524	0.52
10/10/2016	03:30	18.25	20:05	19.98	19.24	04:45	0.40	18:35	0.73	0.57	04:45	1.304	18:35	2.605	1.983	265054	
10/11/2016	04:10	18.29	19:50	19.84	19.20	04:40	0.40	19:00	0.74	0.56	04:40	1.297	19:00	2.657	1.958	261720	0.00
10/12/2016	04:05	18.27	20:40	19.88	19.24	04:35	0.39	19:50	0.73	0.56	04:05	1.265	19:50	2.623	1.963	262407	
10/13/2016	04:25	18.28	19:40	19.87	19.27	03:40	0.41	21:30	0.71	0.56	03:40	1.335	21:30	2.566	1.936	258828	
10/14/2016	04:35	18.32	07:50	19.93	19.30	04:25	0.40	07:20	0.74	0.55	04:25	1.306	07:20	2.639	1.931	258079	
10/15/2016	05:05	18.29	12:50	19.93	19.32	04:35	0.37	09:35	0.72	0.56	04:35	1.204	09:35	2.582	1.971	263484	
10/16/2016	04:40	18.33	13:40	20.20	19.42	04:55	0.37	12:10	0.70	0.57	04:55	1.200	12:45	2.547	1.998	267123	
10/17/2016	04:50	18.31	20:40	20.12	19.37	04:30	0.40	19:05	0.73	0.55	04:30	1.287	19:05	2.677	1.937	258924	
10/18/2016	04:10	18.37	20:45	20.12	19.39	02:45	0.38	19:35	0.72	0.55	02:45	1.233	19:35	2.655	1.947	260300	0.00
10/19/2016	03:40	18.40	20:45	20.13	19.44	03:40	0.39	07:55	0.74	0.55	03:40	1.278	07:55	2.718	1.946	260087	
10/20/2016	04:30	18.41	07:50	20.00	19.38	04:25	0.37	18:50	0.69	0.55	04:25	1.190	18:50	2.497	1.919	256540	
10/21/2016	03:30	18.37	13:50	27.12	20.40	04:05	0.39	14:00	1.77	0.74	04:05	1.279	14:00	9.653	2.986	399227	0.46
10/22/2016	03:30	18.46	04:25	34.47	20.31	03:35	0.43	04:25	3.06	0.74	03:35	1.401	04:25	22.806	2.940	393033	0.33
10/23/2016	05:25	18.33	12:35	20.03	19.35	04:55	0.39	13:05	0.76	0.58	04:55	1.252	13:05	2.782	2.048	273824	
10/24/2016	04:00	18.31	19:55	19.86	19.25	04:00	0.40	20:30	0.74	0.56	04:00	1.308	20:30	2.664	1.950	260647	
10/25/2016	03:05	18.32	19:55	19.87	19.24	04:10	0.37	07:25	0.71	0.55	04:10	1.204	07:25	2.533	1.909	255249	
10/26/2016	03:30	18.34	20:45	19.90	19.26	04:25	0.39	21:20	0.72	0.55	04:25	1.259	21:20	2.613	1.930	258009	
10/27/2016	04:30	18.34	20:25	34.39	21.61	04:30	0.39	20:15	3.26	0.96	04:30	1.251	20:15	22.985	4.664	623421	1.15
10/28/2016	04:25	18.74	00:00	20.26	19.47	05:15	0.48	19:25	0.75	0.61	05:15	1.599	00:00	2.727	2.167	289741	
10/29/2016	04:00	18.54	12:45	20.03	19.45	04:10	0.41	17:25	0.75	0.60	04:10	1.349	13:15	2.750	2.103	281158	
10/30/2016	05:45	18.56	16:45	43.15	20.24	04:30	0.42	16:50	3.64	0.72	04:30	1.376	16:45	34.047	2.951	394548	
10/31/2016	04:10	18.50	20:45	20.06	19.42	04:05	0.42	20:35	0.75	0.58	04:05	1.374	20:35	2.756	2.052	274108	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			9120733	2.59
Avg	19.55	0.60	2.201	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

UC1, Pipe Height: 58 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:25	18.54	07:50	20.08	19.44	04:15	0.40	07:50	0.77	0.57	04:15	1.319	07:50	2.838	2.027	270997	
11/2/2016	03:25	18.41	19:30	20.14	19.40	04:25	0.39	07:15	0.73	0.58	04:25	1.272	07:15	2.627	2.027	271007	
11/3/2016	03:35	18.40	07:45	20.17	19.45	01:55	0.42	09:45	0.77	0.58	03:40	1.386	09:45	2.816	2.056	274863	
11/4/2016	03:45	18.27	19:05	19.79	19.23	03:05	0.38	07:30	0.76	0.56	03:05	1.244	07:30	2.731	1.948	260423	
11/5/2016	04:00	18.40	10:30	20.01	19.36	04:20	0.42	12:00	0.74	0.58	04:20	1.368	12:00	2.701	2.050	273990	
11/6/2016	05:35	18.38	11:45	20.28	19.42	03:25	0.40	11:15	0.80	0.58	03:25	1.292	11:15	2.942	2.056	274913	
11/7/2016	05:30	18.40	08:50	20.06	19.29	05:35	0.41	09:10	0.70	0.56	05:35	1.332	08:30	2.571	1.945	259997	
11/8/2016	03:30	18.27	19:00	19.90	19.34	03:55	0.39	21:15	0.71	0.56	03:55	1.279	21:15	2.583	1.975	264085	
11/9/2016	04:30	18.40	12:35	21.18	19.44	03:35	0.39	12:30	0.91	0.58	03:35	1.280	12:30	3.592	2.071	276888	0.07
11/10/2016	03:40	18.26	19:35	19.84	19.31	04:45	0.35	11:05	0.68	0.55	04:45	1.157	11:05	2.450	1.931	258139	
11/11/2016	04:30	18.40	20:10	19.78	19.35	05:10	0.38	08:20	0.68	0.55	03:50	1.261	08:20	2.419	1.941	259464	
11/12/2016	04:20	18.41	12:45	19.98	19.42	05:00	0.38	10:30	0.73	0.56	04:35	1.237	10:30	2.661	1.971	263460	
11/13/2016	05:20	18.41	12:50	20.18	19.46	05:05	0.39	12:50	0.78	0.57	05:05	1.261	12:50	2.873	2.022	270351	
11/14/2016	04:00	18.42	07:50	20.00	19.35	04:05	0.39	20:30	0.73	0.55	04:05	1.278	20:30	2.649	1.930	257965	
11/15/2016	04:05	18.31	09:40	33.55	22.04	03:35	0.37	09:45	2.96	1.03	03:35	1.194	09:45	19.827	5.026	671829	1.50
11/16/2016	03:15	18.60	07:35	20.06	19.38	03:45	0.43	20:55	0.77	0.59	03:45	1.410	20:55	2.806	2.082	278165	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4686538	1.57
Avg	19.54	0.60	2.191	

Site Commentary

Site Information

UC2	
Pipe Dimensions (in.)	Elliptical (74.50 in H, 77.00 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for UC2 indicate this location functioned mostly in free-flow conditions for the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016 . Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	17.14	0.71	2.603
Minimum	14.58	0.40	1.250
Maximum	48.91	7.04	76.961
Time of Minimum	5/23/2016 4:25 AM	10/15/2016 4:10 AM	6/10/2016 4:50 AM
Time of Maximum	7/1/2016 6:00 PM	5/30/2016 1:55 AM	9/14/2016 5:40 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

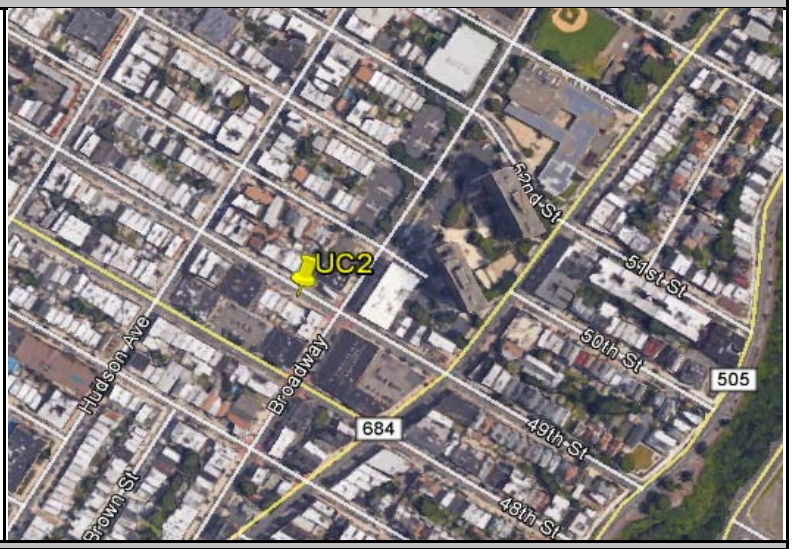
ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. UNION CITY, NJ

Site Report

FM Initials:	CK
Project Name:	NHSA

Site Name:	UC2	Meter Type:	TRITON+	Monitor S/N:	61018	Manhole #:	UC2 Regulator
Address / Location:	131 49th STREET			Map Page #:		E4	
				Pipe Height:		74.5 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		77 Inches	
				I.P. Address		107.80.25.49	



Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 29, 2016	10:40 AM	Manhole Depth:	17.8 Feet	
Site Hydraulics:	SLOW, DEEP FLOW		Manhole Material / Condition:	Concrete	Good
			Active Drop Connections?	No	
			Pipe Material / Condition:	Brick	Fair
			Mini System Character:	COMMERCIAL	RESIDENTIAL
			Telephone Information:		
Depth of Flow (Wet Dof):	16.25 +/-		Access Pole #:	N/A	
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet	
Peak Velocity:	0.7 fps		Road Cut Length:	N/A Feet	
Silt:	2 Inches		Trench Length:	N/A Feet	

Other Information:

N 40° 46' 48.31" W 74° 1' 0.35"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other	X		Regulator	1'

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** UC2 **Classification (Below):** 4

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	☑
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	☑
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
LARGE COMBINED SEWER REGULATOR CHAMBER

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
☑	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
5-PERSON CS ENTRY TEAM REQUIRED

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/29/2016	Date:	5/11/2016

SCATTERGRAPH REPORT

UC2

Flow Monitor

UC2

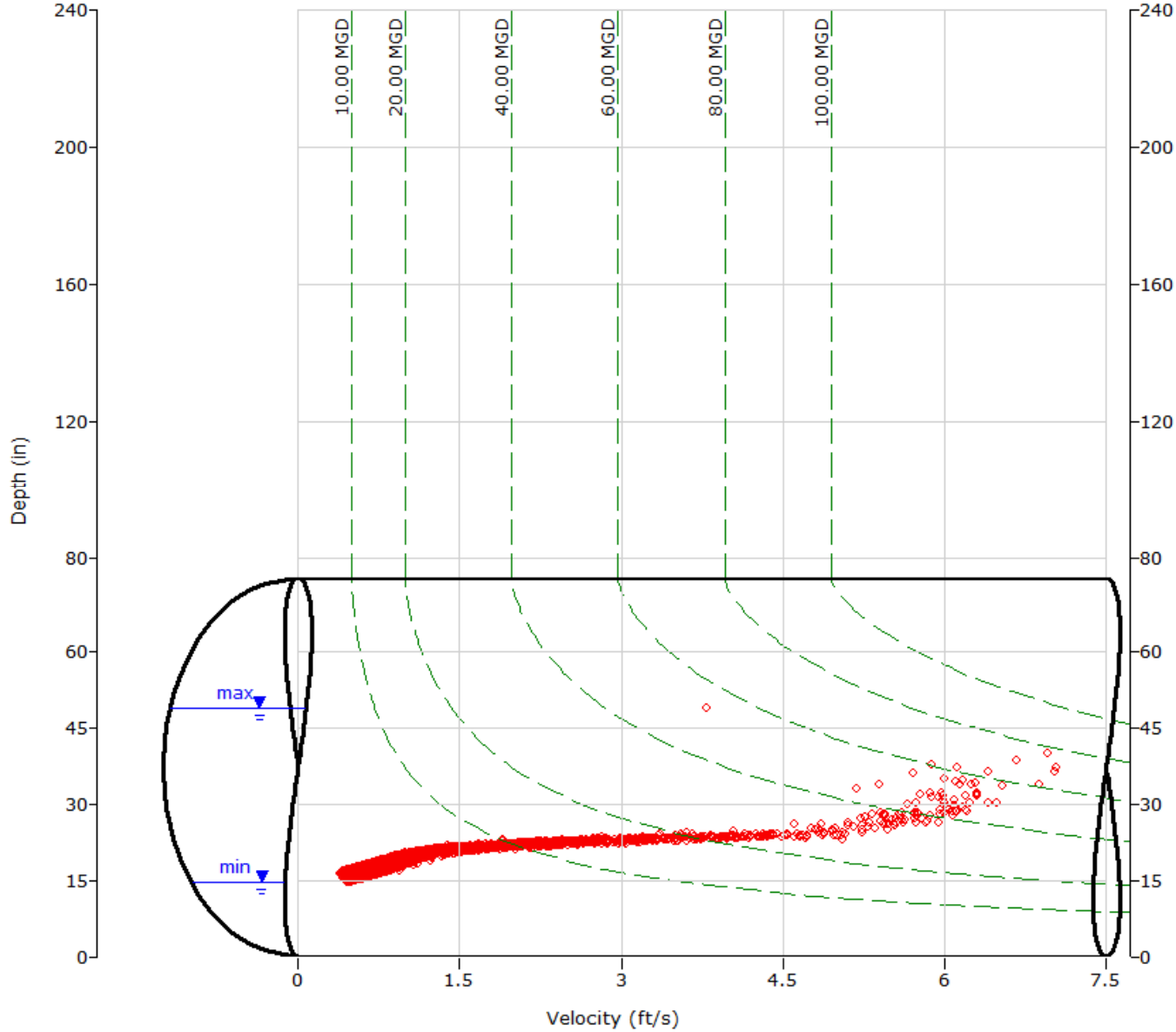
Pipe Height
74.50 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



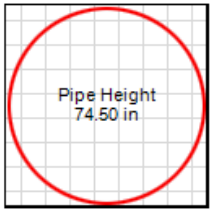
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

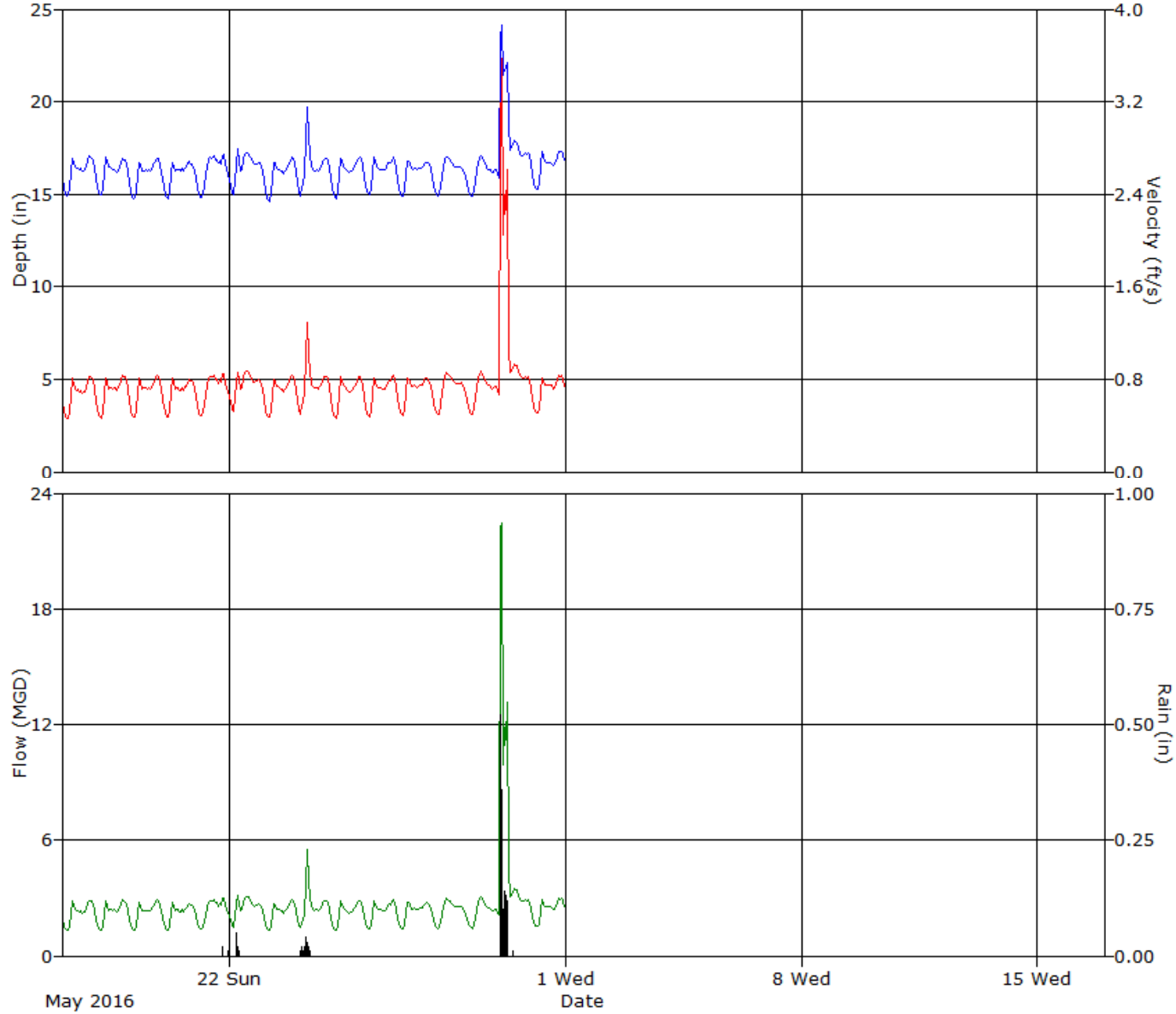


Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



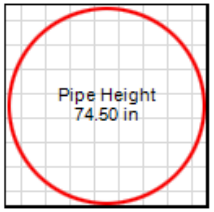
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

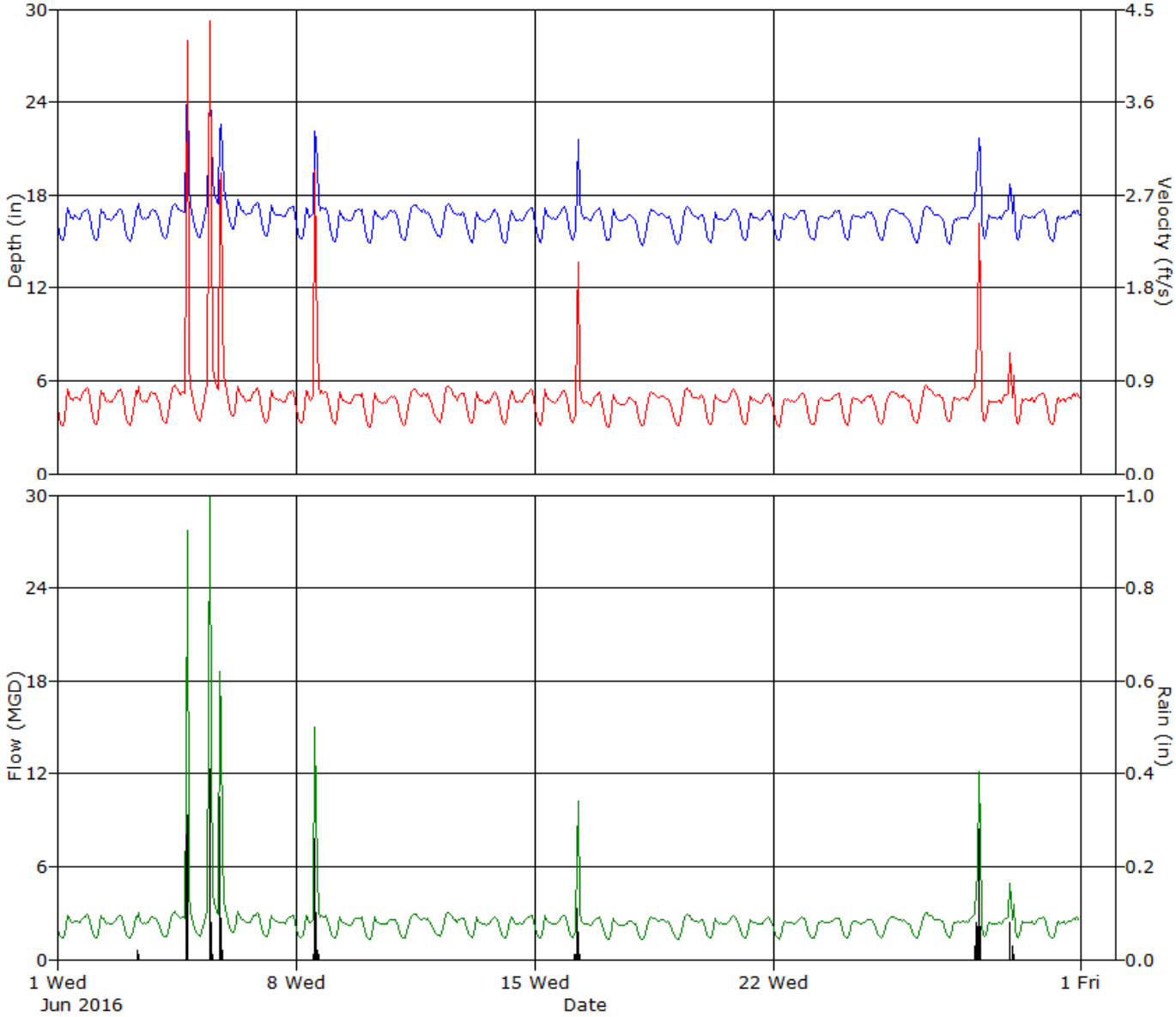


Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

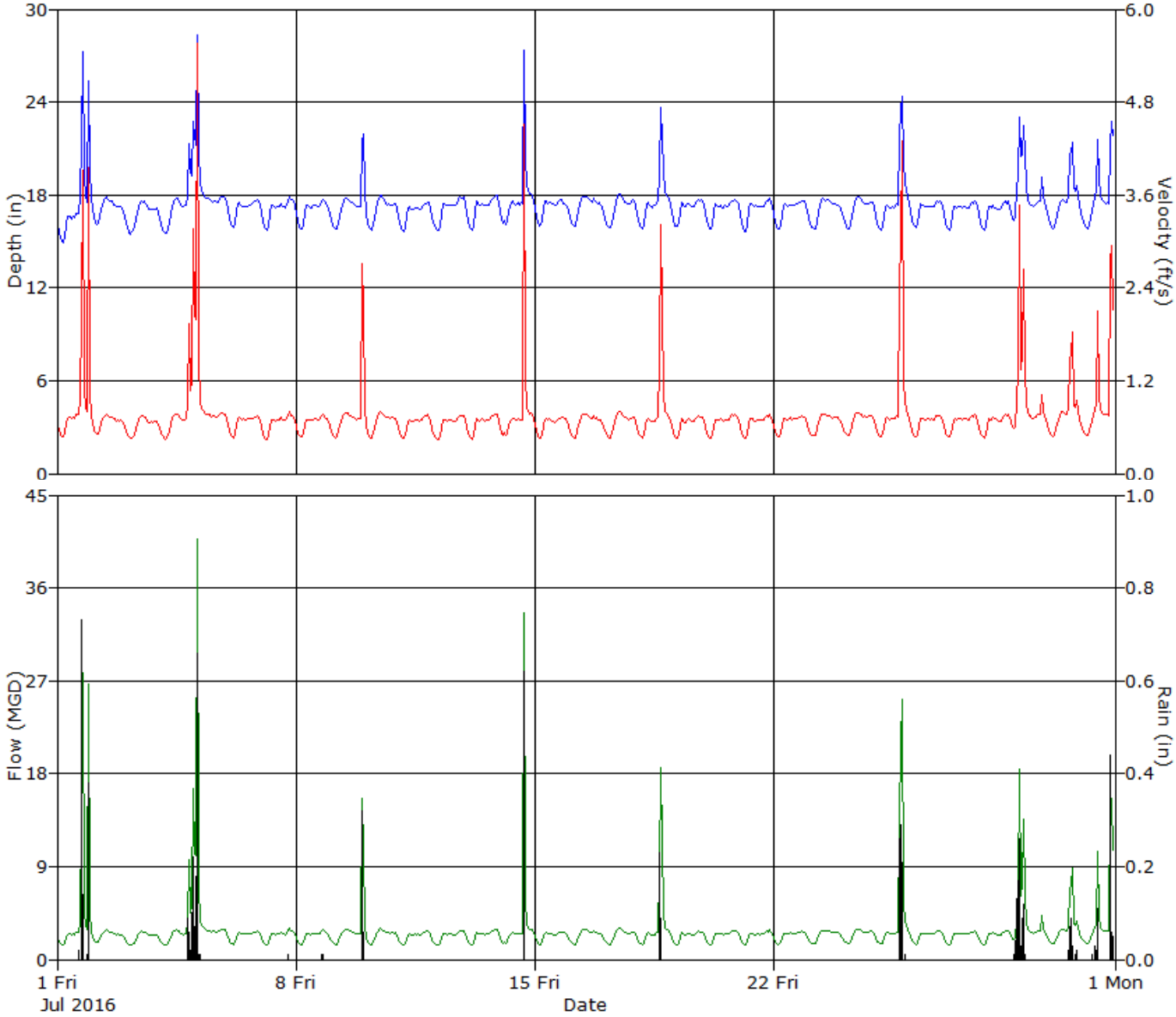
Pipe Height
74.50 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



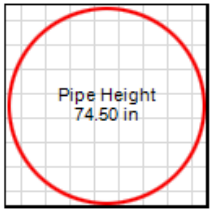
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

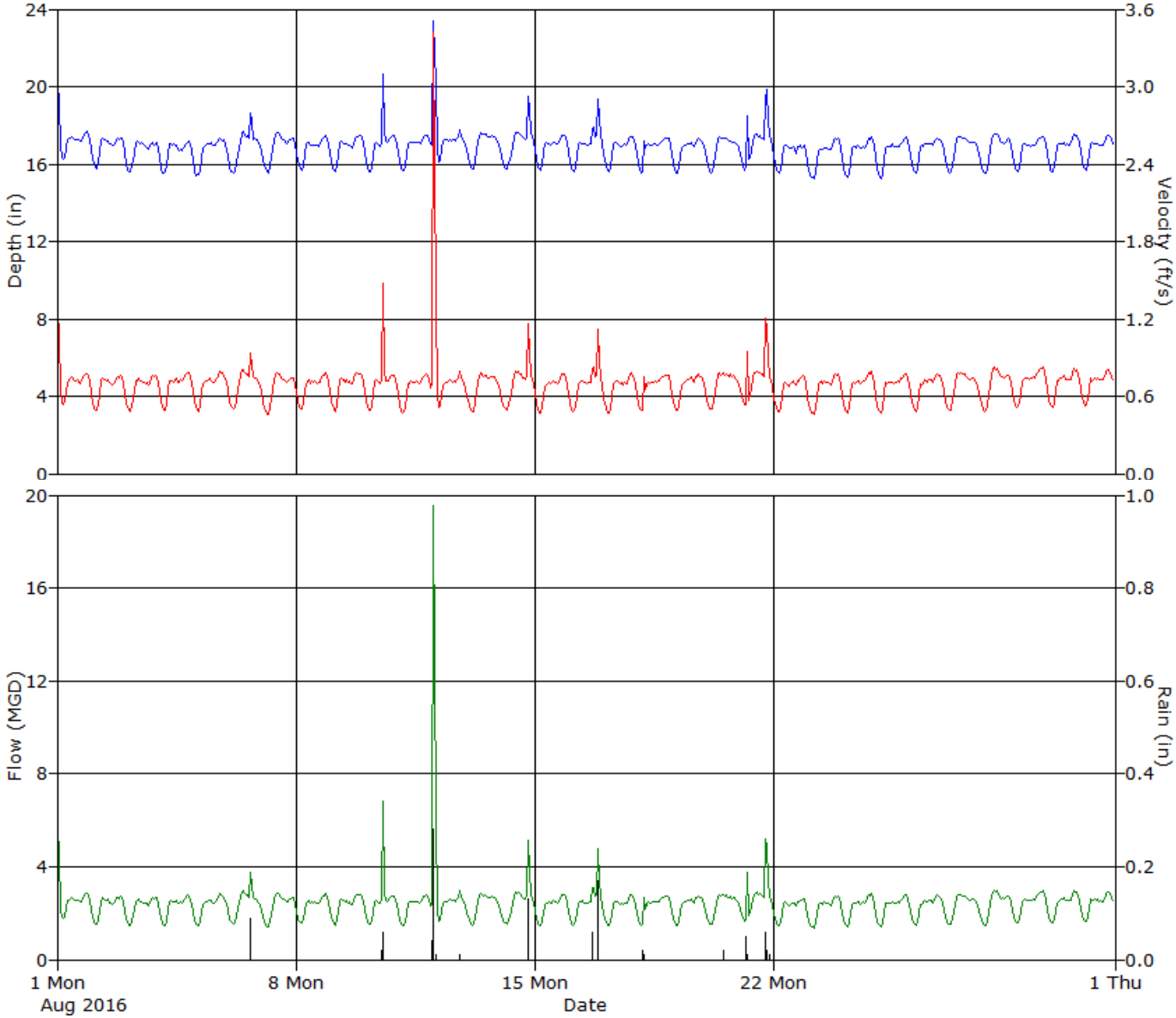


Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



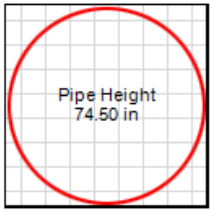
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

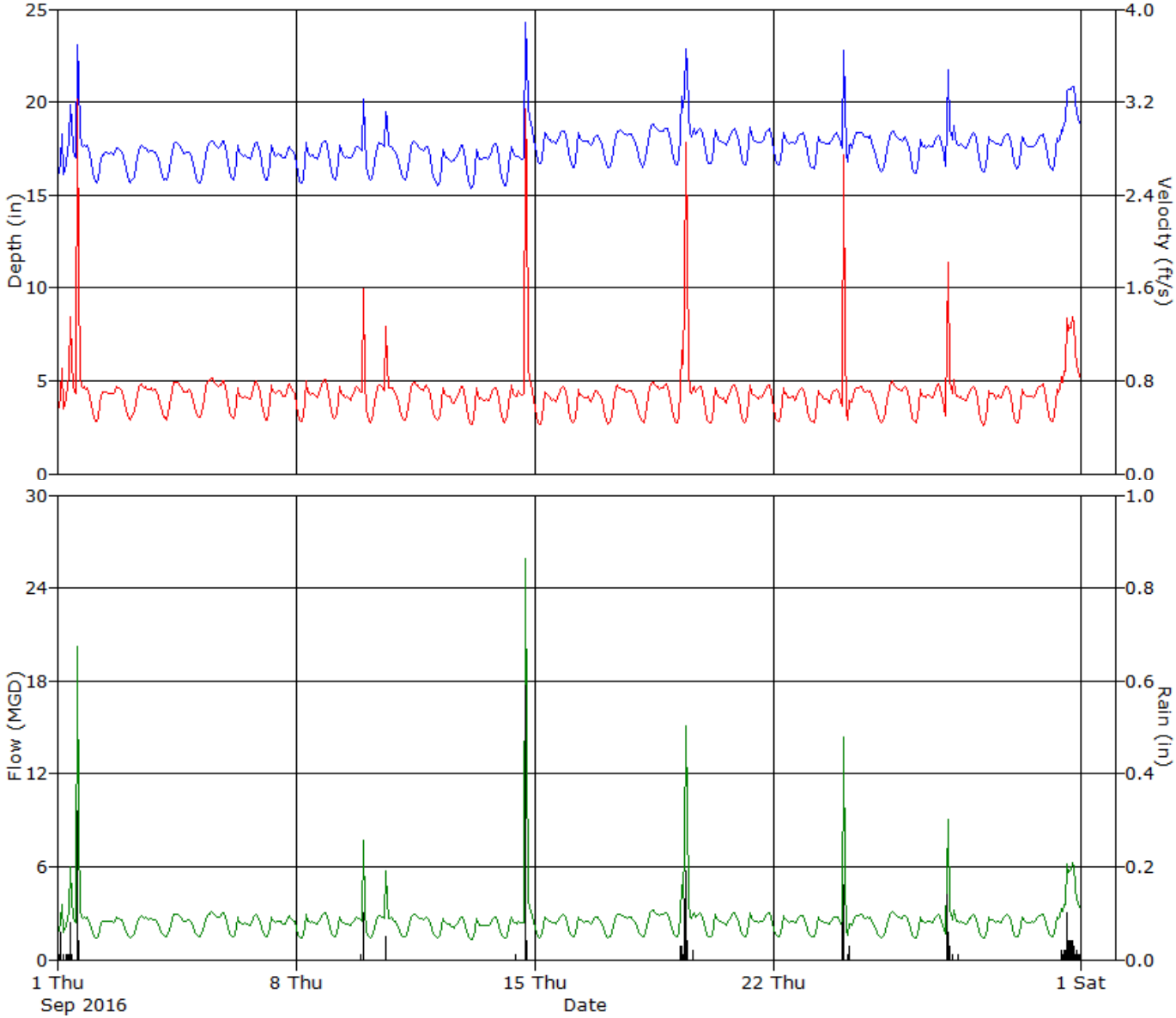


Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



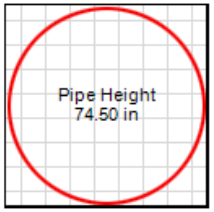
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

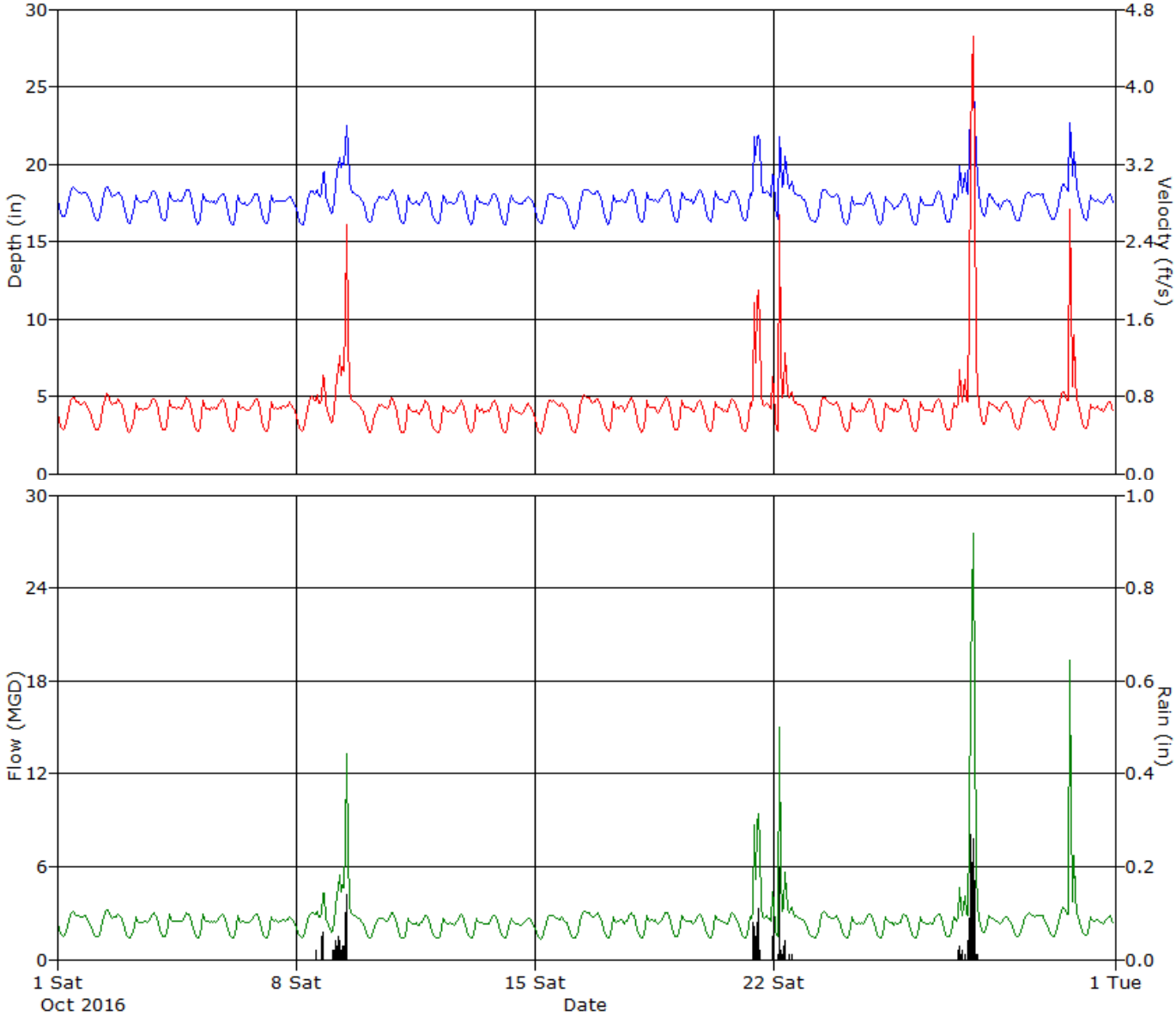


Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



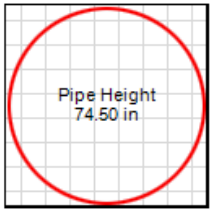
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UC2

Flow Monitor

UC2

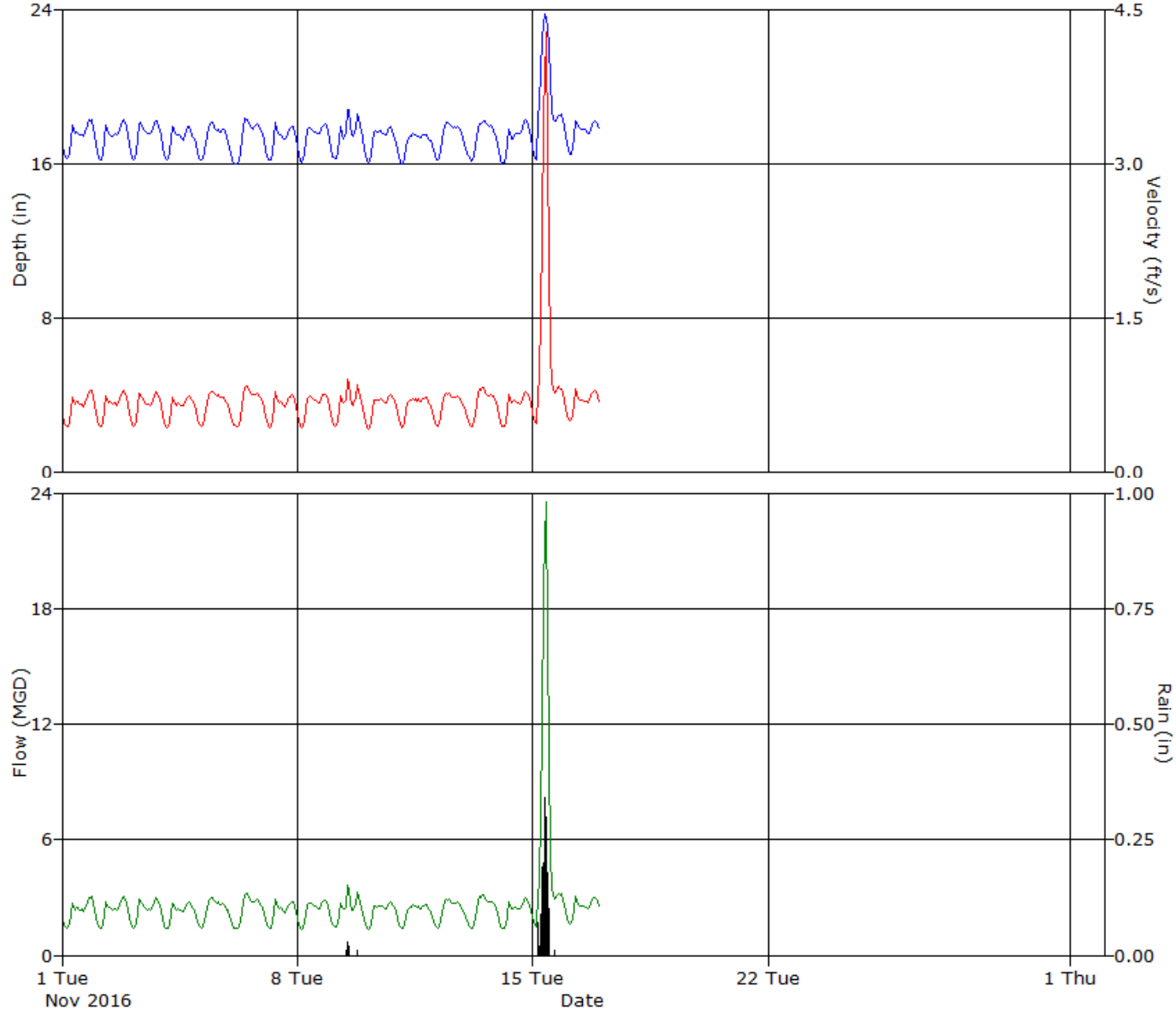


Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	03:45	14.89	19:55	17.11	16.24	04:15	0.45	07:35	0.84	0.68	04:15	1.294	07:35	2.949	2.243	299837	
5/18/2016	04:15	14.91	07:50	17.14	16.21	04:25	0.45	19:10	0.86	0.69	04:25	1.303	19:10	2.984	2.272	303780	
5/19/2016	03:05	14.65	20:25	17.00	16.11	03:05	0.46	20:25	0.85	0.70	03:05	1.290	20:25	2.950	2.261	302295	
5/20/2016	04:00	14.61	07:35	16.85	16.12	04:00	0.46	07:30	0.83	0.69	04:00	1.281	07:30	2.836	2.240	299428	
5/21/2016	04:25	14.80	19:45	17.64	16.29	04:30	0.48	19:45	0.93	0.72	04:25	1.360	19:45	3.405	2.371	316924	0.03
5/22/2016	03:20	14.97	05:00	18.27	16.55	03:45	0.51	04:50	1.11	0.76	03:45	1.469	04:50	4.236	2.571	343743	0.08
5/23/2016	04:25	14.58	20:45	17.04	16.10	04:05	0.46	20:25	0.85	0.69	04:20	1.293	20:25	2.957	2.251	300977	
5/24/2016	02:30	14.83	07:30	20.17	16.56	02:35	0.48	07:25	1.45	0.76	02:35	1.383	07:25	6.389	2.608	348576	0.16
5/25/2016	04:15	14.69	07:35	17.08	16.19	04:40	0.46	07:50	0.85	0.69	03:45	1.302	07:50	2.949	2.263	302454	
5/26/2016	04:05	14.98	07:45	17.21	16.25	03:55	0.47	21:35	0.86	0.70	04:00	1.363	21:35	2.986	2.305	308069	
5/27/2016	03:50	14.87	08:00	16.95	16.17	04:25	0.48	08:00	0.84	0.71	04:25	1.379	08:00	2.901	2.305	308172	
5/28/2016	04:05	14.87	11:00	17.08	16.21	05:05	0.47	10:55	0.87	0.72	05:05	1.368	10:55	3.054	2.348	313934	
5/29/2016	04:35	14.86	11:25	17.16	16.11	05:00	0.48	11:50	0.89	0.70	05:00	1.390	11:50	3.107	2.287	305748	
5/30/2016	01:05	15.68	01:55	37.04	18.62	01:10	0.63	01:55	7.04	1.29	01:10	1.943	01:55	70.617	6.070	811450	1.38
5/31/2016	04:15	15.19	07:45	17.47	16.55	05:10	0.49	21:55	0.86	0.71	05:10	1.468	21:55	3.066	2.406	321450	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5186836	1.65
Avg	16.42	0.75	2.587	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	03:55	15.01	08:00	17.28	16.41	03:30	0.45	21:50	0.85	0.70	03:30	1.335	07:55	3.020	2.327	311097	
6/2/2016	04:55	15.05	08:00	17.24	16.37	03:15	0.46	07:55	0.83	0.69	03:15	1.354	07:55	2.935	2.296	306899	
6/3/2016	04:25	14.92	09:15	17.64	16.40	04:05	0.46	09:10	0.91	0.69	04:10	1.329	09:10	3.322	2.294	306718	0.03
6/4/2016	04:30	15.11	20:05	31.60	17.24	04:30	0.47	20:05	5.99	0.94	04:30	1.381	20:05	48.901	3.923	524446	0.58
6/5/2016	05:05	15.20	18:50	31.52	18.04	05:00	0.49	11:25	6.41	1.19	05:00	1.448	18:50	51.311	5.619	751170	0.96
6/6/2016	04:30	15.72	07:35	17.79	16.87	04:25	0.55	07:20	0.86	0.72	04:30	1.711	07:35	3.182	2.492	333159	
6/7/2016	04:15	15.32	07:45	17.45	16.58	03:55	0.48	07:45	0.82	0.69	03:55	1.445	07:45	2.954	2.333	311826	
6/8/2016	05:00	15.06	13:40	22.91	17.08	03:20	0.48	13:40	3.75	0.87	03:20	1.408	13:40	19.780	3.337	446094	0.40
6/9/2016	04:05	14.91	22:10	17.23	16.32	04:00	0.47	07:25	0.80	0.67	04:00	1.362	22:20	2.803	2.229	297975	
6/10/2016	04:50	14.82	07:30	17.15	16.35	04:50	0.44	07:50	0.79	0.66	04:50	1.250	07:35	2.777	2.195	293463	
6/11/2016	04:15	15.01	13:25	17.41	16.53	05:15	0.46	21:20	0.94	0.69	04:50	1.348	21:20	3.229	2.342	313090	
6/12/2016	05:35	15.20	11:35	17.45	16.51	05:40	0.49	10:15	0.85	0.71	05:40	1.454	11:35	3.070	2.376	317597	
6/13/2016	04:10	14.83	20:35	17.09	16.27	04:15	0.48	20:25	0.82	0.68	04:15	1.381	20:25	2.863	2.236	298906	
6/14/2016	03:55	14.74	22:00	17.27	16.29	03:35	0.47	21:35	0.84	0.69	03:50	1.355	22:05	2.960	2.275	304098	
6/15/2016	04:10	14.85	07:35	17.35	16.39	04:55	0.46	07:40	0.85	0.69	04:15	1.326	07:40	3.027	2.285	305501	
6/16/2016	03:45	15.06	07:00	22.76	16.73	03:15	0.48	06:50	3.61	0.77	03:15	1.413	06:50	18.869	2.790	372956	0.20
6/17/2016	03:55	15.00	07:45	17.14	16.24	04:45	0.44	07:25	0.79	0.65	04:45	1.286	07:25	2.759	2.136	285530	
6/18/2016	04:45	14.65	12:50	17.06	16.24	04:00	0.45	09:50	0.80	0.67	04:10	1.275	09:50	2.766	2.214	295981	
6/19/2016	04:40	14.83	11:10	17.31	16.28	04:45	0.45	11:25	0.86	0.68	04:40	1.288	11:25	3.055	2.253	301199	
6/20/2016	04:25	14.83	19:55	17.15	16.27	04:20	0.47	20:10	0.84	0.68	04:20	1.344	20:10	2.948	2.243	299889	
6/21/2016	04:30	15.07	21:15	17.07	16.31	04:00	0.47	21:10	0.80	0.67	04:00	1.380	21:15	2.778	2.210	295491	
6/22/2016	04:05	14.99	22:05	17.10	16.35	04:15	0.46	21:50	0.80	0.67	04:05	1.323	21:50	2.791	2.214	296022	
6/23/2016	04:10	15.05	22:15	17.07	16.35	03:15	0.46	22:05	0.80	0.68	04:10	1.363	22:05	2.795	2.236	298913	
6/24/2016	04:10	14.99	19:05	16.92	16.34	04:05	0.46	21:00	0.78	0.67	04:05	1.346	21:00	2.695	2.208	295168	
6/25/2016	05:30	14.99	10:20	17.14	16.37	04:40	0.46	11:35	0.81	0.69	04:40	1.356	10:20	2.837	2.282	305029	
6/26/2016	04:35	14.79	11:55	17.31	16.36	05:05	0.47	11:25	0.87	0.71	05:05	1.348	11:25	3.102	2.357	315146	
6/27/2016	04:40	14.74	23:55	20.80	16.50	03:55	0.46	23:55	1.63	0.73	03:55	1.318	23:55	7.512	2.501	334322	0.18
6/28/2016	04:30	15.16	00:50	22.83	17.00	04:30	0.49	00:45	3.96	0.83	04:30	1.441	00:45	20.712	3.097	413988	0.43
6/29/2016	04:30	15.03	01:10	18.80	16.52	04:30	0.47	01:05	1.09	0.70	04:30	1.377	01:10	4.366	2.356	314892	0.04
6/30/2016	04:10	14.96	19:25	17.24	16.31	04:15	0.46	21:50	0.80	0.68	04:15	1.331	19:25	2.785	2.239	299045	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			10145610	2.82
Avg	16.53	0.72	2.530	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:30	14.87	18:00	48.91	17.69	04:30	0.46	22:20	6.19	1.05	04:30	1.333	17:55	60.191	5.059	676228	1.28
7/2/2016	04:20	16.02	00:00	18.40	17.20	05:00	0.50	00:00	0.82	0.67	05:00	1.589	00:00	3.185	2.384	318716	
7/3/2016	05:10	15.43	13:40	17.69	16.81	05:00	0.45	11:00	0.77	0.63	05:05	1.356	11:00	2.814	2.174	290566	
7/4/2016	05:20	15.46	21:05	22.88	17.25	04:30	0.44	21:00	3.40	0.74	04:30	1.335	21:00	17.892	2.787	372634	0.27
7/5/2016	23:55	17.30	03:10	36.22	18.91	23:50	0.67	03:15	7.02	1.21	23:55	2.405	03:15	68.353	5.820	778042	1.15
7/6/2016	04:35	15.85	21:50	17.79	17.12	04:10	0.46	21:50	0.77	0.66	04:35	1.462	21:50	2.870	2.338	312506	
7/7/2016	04:10	15.64	19:20	17.97	17.06	03:30	0.44	19:10	0.82	0.66	04:05	1.365	19:10	3.068	2.309	308658	0.01
7/8/2016	04:05	15.75	20:05	17.79	17.04	03:20	0.45	20:10	0.79	0.66	03:20	1.426	20:05	2.929	2.308	308469	0.02
7/9/2016	05:10	15.72	22:40	28.09	17.40	05:05	0.46	22:40	5.74	0.81	05:05	1.421	22:40	40.073	3.226	431239	0.38
7/10/2016	04:30	15.70	00:00	20.45	17.14	04:50	0.45	00:00	1.20	0.67	04:50	1.399	00:00	5.403	2.398	320549	
7/11/2016	04:10	15.58	21:50	17.59	16.90	03:45	0.45	21:40	0.78	0.65	03:45	1.388	21:45	2.825	2.249	300686	
7/12/2016	05:00	15.62	19:45	17.99	17.10	03:50	0.43	19:55	0.79	0.65	03:45	1.334	19:55	2.944	2.285	305494	
7/13/2016	03:50	15.72	22:15	18.07	17.16	04:10	0.44	22:05	0.79	0.65	03:55	1.360	22:05	2.993	2.327	311035	
7/14/2016	04:55	15.98	16:25	37.01	17.88	04:45	0.48	16:30	6.28	0.86	04:50	1.519	16:25	61.344	3.866	516768	0.62
7/15/2016	03:45	15.98	17:50	17.86	17.20	04:05	0.45	19:50	0.75	0.65	04:05	1.449	19:40	2.764	2.305	308108	
7/16/2016	04:15	15.95	10:40	17.97	17.21	05:45	0.45	11:45	0.78	0.66	04:45	1.432	11:45	2.945	2.341	312910	
7/17/2016	05:20	15.87	11:35	18.15	17.18	04:35	0.45	12:00	0.81	0.66	05:20	1.435	12:05	3.095	2.365	316221	
7/18/2016	04:00	15.79	16:55	32.07	17.59	04:00	0.45	17:00	6.04	0.81	04:00	1.404	16:55	49.739	3.342	446811	0.32
7/19/2016	04:55	15.91	19:20	17.76	17.13	03:20	0.45	19:20	0.77	0.65	03:20	1.446	19:20	2.849	2.297	307123	
7/20/2016	04:05	15.73	22:05	17.75	17.07	03:40	0.44	18:55	0.77	0.65	03:40	1.379	19:00	2.842	2.304	308002	
7/21/2016	04:05	15.50	21:30	17.89	17.03	04:05	0.45	21:35	0.78	0.66	04:05	1.360	21:30	2.918	2.304	307963	
7/22/2016	03:50	15.73	22:00	17.75	17.06	04:00	0.46	20:55	0.76	0.66	04:00	1.432	20:55	2.778	2.331	311622	
7/23/2016	05:20	15.76	09:55	17.82	17.10	05:20	0.47	09:50	0.79	0.68	05:20	1.458	09:50	2.932	2.384	318685	
7/24/2016	05:10	15.73	12:20	17.93	17.10	05:40	0.47	13:00	0.80	0.68	05:40	1.482	13:00	3.006	2.404	321370	
7/25/2016	03:55	15.70	17:40	34.28	17.95	03:55	0.46	17:40	6.10	1.01	03:55	1.436	17:40	55.417	4.685	626242	0.77
7/26/2016	05:00	15.84	21:45	17.65	17.06	04:25	0.46	21:40	0.77	0.66	04:25	1.447	21:40	2.819	2.332	311706	
7/27/2016	04:10	15.72	21:50	17.68	16.97	03:10	0.46	21:35	0.79	0.66	03:10	1.445	21:35	2.914	2.306	308264	
7/28/2016	04:05	15.72	21:35	17.65	16.93	04:25	0.45	20:50	0.79	0.66	04:25	1.412	20:50	2.866	2.295	306745	
7/29/2016	02:40	16.19	05:25	23.40	18.40	02:25	0.54	05:35	4.08	1.06	02:25	1.751	05:35	22.007	4.492	600513	0.86
7/30/2016	04:30	15.78	18:05	22.29	17.67	04:25	0.47	18:00	2.66	0.82	04:30	1.470	18:00	13.505	3.170	423784	0.24
7/31/2016	05:10	15.79	21:40	26.21	17.93	04:55	0.48	21:40	5.74	1.00	05:00	1.508	21:40	36.467	4.265	569728	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			11957390	6.64
Avg	17.33	0.75	2.885	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:10	16.22	00:55	20.92	17.39	04:10	0.53	00:50	1.68	0.74	04:10	1.725	00:50	7.773	2.698	360610	0.05
8/2/2016	04:05	15.72	10:05	17.41	16.89	04:05	0.48	21:25	0.77	0.67	04:05	1.502	21:25	2.753	2.330	311526	
8/3/2016	04:00	15.53	19:20	17.24	16.71	03:50	0.46	22:05	0.77	0.67	03:50	1.396	22:05	2.723	2.293	306480	
8/4/2016	02:45	15.48	21:05	17.22	16.63	04:05	0.47	20:10	0.80	0.68	04:05	1.429	21:05	2.813	2.309	308711	
8/5/2016	02:55	15.30	18:55	17.42	16.67	04:05	0.47	18:50	0.81	0.68	04:05	1.422	18:50	2.925	2.321	310287	
8/6/2016	04:35	15.52	16:35	20.66	16.93	04:35	0.49	16:35	1.33	0.70	04:35	1.484	16:35	6.095	2.446	326944	0.09
8/7/2016	05:30	15.49	11:55	17.69	16.86	04:55	0.44	11:55	0.83	0.67	04:55	1.353	11:55	3.032	2.305	308182	
8/8/2016	04:00	15.63	21:35	17.52	16.81	03:55	0.50	21:20	0.79	0.68	03:55	1.532	21:20	2.879	2.326	310998	
8/9/2016	04:30	15.58	21:55	17.49	16.81	04:30	0.46	19:00	0.80	0.68	04:30	1.414	19:00	2.890	2.346	313592	
8/10/2016	04:15	15.56	13:25	21.55	17.01	04:15	0.48	13:20	2.02	0.71	04:15	1.474	13:20	9.787	2.524	337474	0.08
8/11/2016	04:00	15.60	19:30	17.52	16.86	04:05	0.46	20:40	0.78	0.67	04:05	1.409	20:40	2.839	2.304	308059	
8/12/2016	04:55	16.09	01:25	28.10	17.51	04:55	0.50	01:25	5.60	0.83	04:55	1.606	01:25	39.100	3.295	440475	0.34
8/13/2016	04:40	15.70	10:15	17.61	16.99	05:05	0.47	10:25	0.79	0.68	05:05	1.450	10:25	2.888	2.365	316134	
8/14/2016	04:40	15.75	19:35	21.81	17.13	05:20	0.49	19:50	1.75	0.71	05:20	1.521	19:35	8.635	2.553	341283	0.13
8/15/2016	03:55	15.66	21:40	17.52	16.87	05:00	0.46	20:30	0.79	0.66	05:00	1.422	20:30	2.854	2.298	307158	
8/16/2016	04:15	15.53	20:45	20.73	17.01	03:15	0.44	20:45	1.51	0.70	03:15	1.366	20:45	6.956	2.466	329671	0.23
8/17/2016	04:10	15.55	20:55	17.51	16.79	05:00	0.46	20:35	0.79	0.66	03:40	1.412	20:50	2.852	2.275	304138	
8/18/2016	04:05	15.52	05:30	17.41	16.84	04:10	0.47	05:30	0.79	0.68	04:10	1.445	05:30	2.841	2.349	313982	0.03
8/19/2016	04:00	15.47	19:10	17.34	16.73	04:00	0.47	19:10	0.81	0.68	04:00	1.426	19:10	2.912	2.310	308772	
8/20/2016	04:50	15.52	10:25	17.45	16.80	04:05	0.49	10:25	0.81	0.69	04:05	1.494	10:25	2.904	2.378	317884	0.02
8/21/2016	04:45	15.52	18:45	20.87	17.23	04:40	0.50	18:40	1.63	0.75	04:45	1.531	18:40	7.558	2.724	364179	0.15
8/22/2016	05:05	15.47	19:30	17.07	16.58	04:15	0.46	21:55	0.78	0.66	04:10	1.412	21:55	2.718	2.222	296973	
8/23/2016	04:10	15.17	21:45	17.40	16.55	04:05	0.45	19:50	0.79	0.66	04:10	1.335	19:50	2.827	2.240	299431	
8/24/2016	04:35	15.22	21:10	17.44	16.61	04:35	0.46	21:10	0.81	0.67	04:35	1.377	21:10	2.927	2.279	304625	
8/25/2016	04:25	15.14	21:00	17.46	16.64	04:25	0.47	20:45	0.80	0.67	04:25	1.372	20:45	2.893	2.267	303086	
8/26/2016	05:00	15.50	19:00	17.39	16.74	04:30	0.47	19:00	0.79	0.67	04:30	1.429	19:00	2.843	2.301	307658	
8/27/2016	04:50	15.51	12:05	17.45	16.78	05:00	0.47	09:55	0.80	0.68	05:00	1.447	12:00	2.888	2.339	312628	
8/28/2016	04:35	15.47	11:30	17.58	16.79	04:35	0.47	11:30	0.84	0.69	04:35	1.439	11:30	3.048	2.393	319883	
8/29/2016	04:00	15.56	21:40	17.44	16.77	03:35	0.48	21:10	0.83	0.70	03:35	1.490	21:10	2.997	2.408	321880	
8/30/2016	04:10	15.52	19:10	17.57	16.81	04:05	0.50	19:05	0.83	0.70	04:05	1.532	19:05	3.012	2.406	321625	
8/31/2016	03:55	15.64	20:00	17.55	16.83	03:50	0.51	20:45	0.82	0.70	03:50	1.564	19:55	2.979	2.412	322148	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			9956476	1.12
Avg	16.86	0.69	2.403	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:40	15.94	14:30	30.22	17.84	02:40	0.51	14:35	6.08	0.90	02:40	1.623	14:35	45.696	3.740	499983	0.56
9/2/2016	04:25	15.57	18:50	17.64	16.93	04:45	0.44	18:30	0.76	0.65	04:45	1.371	18:40	2.759	2.260	302092	
9/3/2016	04:35	15.61	11:50	17.67	16.95	04:35	0.45	11:40	0.78	0.66	04:35	1.391	11:40	2.846	2.311	308968	
9/4/2016	03:40	15.77	12:10	17.92	16.98	05:30	0.45	11:55	0.81	0.66	05:30	1.410	11:55	3.015	2.326	310930	
9/5/2016	05:40	15.62	20:55	18.03	17.07	04:30	0.47	12:05	0.83	0.69	04:30	1.446	12:05	3.127	2.439	326098	
9/6/2016	04:30	15.76	20:55	17.89	17.01	04:55	0.46	20:20	0.81	0.65	04:55	1.446	20:20	3.016	2.270	303452	
9/7/2016	04:15	15.76	07:40	17.81	16.97	04:10	0.46	19:20	0.79	0.66	04:10	1.423	07:40	2.922	2.304	307957	
9/8/2016	04:00	15.55	21:25	17.99	17.00	03:40	0.45	07:20	0.83	0.66	03:40	1.367	07:25	3.101	2.331	311662	
9/9/2016	04:05	15.77	23:35	22.71	17.10	03:35	0.47	23:30	3.22	0.68	04:05	1.467	23:30	16.773	2.475	330863	0.11
9/10/2016	04:40	15.76	15:50	21.74	17.33	04:30	0.43	15:45	2.17	0.70	04:30	1.350	15:45	10.635	2.557	341866	0.05
9/11/2016	05:35	15.77	11:55	17.90	17.08	05:50	0.45	11:50	0.80	0.67	05:50	1.417	11:50	2.995	2.351	314248	
9/12/2016	03:30	15.44	21:00	17.77	16.79	03:25	0.45	20:45	0.78	0.63	03:30	1.371	20:50	2.866	2.171	290167	0.00
9/13/2016	03:25	15.33	20:35	17.78	16.80	04:40	0.42	07:40	0.77	0.62	04:40	1.255	07:40	2.820	2.141	286195	
9/14/2016	03:55	15.46	17:40	40.00	17.67	03:50	0.44	17:40	6.96	0.84	03:55	1.323	17:40	76.961	3.814	509849	0.64
9/15/2016	03:40	16.61	19:35	18.46	17.80	03:25	0.41	20:40	0.77	0.63	03:25	1.401	20:40	2.983	2.335	312190	
9/16/2016	03:50	16.39	07:45	18.46	17.66	03:05	0.43	19:50	0.75	0.62	03:50	1.414	07:45	2.900	2.290	306072	
9/17/2016	03:40	16.43	12:45	18.54	17.77	03:15	0.41	10:10	0.78	0.64	03:15	1.368	10:10	3.020	2.385	318765	
9/18/2016	04:40	16.47	11:35	18.84	17.96	05:45	0.43	11:10	0.80	0.66	05:45	1.462	11:20	3.205	2.519	336721	
9/19/2016	04:00	16.57	10:35	23.12	18.60	04:50	0.43	10:35	3.29	0.86	04:50	1.455	10:35	17.605	3.677	491565	0.45
9/20/2016	02:45	16.66	07:40	18.62	17.78	03:25	0.42	19:55	0.78	0.63	03:25	1.423	21:10	3.090	2.340	312757	
9/21/2016	04:00	16.52	07:40	18.70	17.80	03:40	0.41	20:45	0.78	0.64	03:40	1.383	07:40	3.089	2.389	319315	
9/22/2016	04:05	16.59	07:40	18.44	17.72	04:25	0.43	19:55	0.76	0.63	04:25	1.459	20:50	2.925	2.339	312631	
9/23/2016	04:20	16.31	20:25	18.35	17.65	04:25	0.43	07:25	0.75	0.62	04:25	1.404	07:25	2.892	2.303	307913	
9/24/2016	04:55	16.67	01:45	23.05	18.19	05:00	0.45	01:40	3.24	0.78	05:00	1.517	01:40	17.216	3.128	418093	0.28
9/25/2016	04:55	16.23	12:20	18.46	17.56	04:15	0.43	10:45	0.81	0.65	04:15	1.410	10:45	3.145	2.394	320090	
9/26/2016	04:05	16.03	21:15	18.28	17.43	04:05	0.43	20:20	0.79	0.63	04:05	1.382	20:20	3.022	2.298	307162	
9/27/2016	02:05	16.39	02:55	22.39	18.07	02:20	0.47	02:45	2.56	0.75	02:20	1.557	02:45	13.072	2.941	393096	0.25
9/28/2016	04:05	16.14	20:45	18.37	17.56	03:30	0.41	20:35	0.78	0.63	03:30	1.337	20:35	3.011	2.314	309320	
9/29/2016	03:20	16.41	21:10	18.32	17.55	03:50	0.43	21:15	0.79	0.64	03:50	1.429	21:15	3.063	2.340	312838	
9/30/2016	04:05	16.27	14:45	21.35	18.66	04:35	0.44	14:35	1.68	0.86	04:35	1.432	14:35	8.006	3.546	473747	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			10296610	2.75
Avg	17.51	0.68	2.568	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	03:45	16.54	11:20	18.52	17.75	04:30	0.44	11:15	0.82	0.66	04:30	1.484	11:15	3.221	2.453	327965	
10/2/2016	04:20	16.30	12:20	18.63	17.62	04:45	0.44	12:00	0.84	0.66	04:40	1.434	12:00	3.312	2.439	326045	
10/3/2016	03:50	16.11	19:55	18.31	17.44	03:05	0.43	19:50	0.80	0.64	03:10	1.378	19:50	3.090	2.324	310717	
10/4/2016	03:55	16.27	21:20	18.36	17.52	02:45	0.43	19:10	0.79	0.65	02:45	1.433	19:10	3.058	2.367	316394	
10/5/2016	04:15	16.05	07:45	18.21	17.39	03:25	0.43	21:00	0.80	0.64	03:25	1.383	21:00	3.042	2.327	311013	
10/6/2016	04:25	16.01	20:00	18.18	17.31	03:55	0.43	21:20	0.78	0.64	03:55	1.364	21:20	2.963	2.297	307089	0.00
10/7/2016	03:50	16.08	07:40	18.16	17.34	04:30	0.43	07:30	0.77	0.64	04:30	1.394	07:30	2.926	2.289	305998	
10/8/2016	05:00	16.02	20:00	20.58	17.62	04:50	0.43	19:55	1.29	0.68	04:50	1.364	20:00	5.851	2.542	339874	0.13
10/9/2016	02:10	16.55	12:45	22.82	18.81	02:10	0.47	12:50	3.01	0.94	02:10	1.562	12:50	15.819	3.946	527473	0.52
10/10/2016	04:00	16.19	20:40	18.36	17.45	03:10	0.42	19:30	0.81	0.63	04:30	1.372	19:30	3.094	2.300	307441	
10/11/2016	04:20	16.09	19:55	18.28	17.35	04:00	0.42	19:50	0.77	0.61	04:00	1.343	19:50	2.965	2.217	296354	0.00
10/12/2016	04:20	16.12	20:50	18.30	17.38	03:20	0.41	20:45	0.78	0.61	03:20	1.323	20:45	3.001	2.207	295080	
10/13/2016	04:10	16.07	07:40	18.16	17.34	03:45	0.42	19:50	0.76	0.62	03:45	1.344	19:50	2.898	2.236	298917	
10/14/2016	03:45	16.06	07:45	18.09	17.30	03:55	0.42	07:25	0.74	0.61	03:55	1.346	07:55	2.799	2.190	292812	
10/15/2016	05:10	16.05	10:40	18.14	17.38	04:10	0.40	13:05	0.77	0.64	04:10	1.285	13:05	2.931	2.305	308174	
10/16/2016	04:50	15.81	11:50	18.42	17.45	04:35	0.42	11:05	0.83	0.66	04:35	1.322	11:05	3.213	2.426	324360	
10/17/2016	03:20	15.98	20:45	18.41	17.46	05:15	0.43	20:45	0.79	0.64	04:25	1.402	20:45	3.091	2.342	313126	
10/18/2016	04:05	16.20	20:25	18.40	17.51	03:15	0.41	19:20	0.80	0.64	03:20	1.344	20:25	3.099	2.342	313014	0.00
10/19/2016	03:55	16.28	20:55	18.41	17.52	02:55	0.43	07:30	0.80	0.64	02:55	1.411	07:30	3.056	2.338	312563	
10/20/2016	03:55	16.26	07:35	18.34	17.53	04:30	0.43	18:55	0.79	0.64	04:30	1.408	19:10	3.024	2.330	311539	
10/21/2016	03:35	16.31	13:55	22.54	18.49	03:30	0.43	13:55	2.44	0.85	03:30	1.395	13:55	12.591	3.582	478843	0.46
10/22/2016	03:55	16.43	04:25	26.37	18.49	03:45	0.43	04:25	5.30	0.85	03:45	1.422	04:25	33.947	3.562	476193	0.33
10/23/2016	04:55	16.20	11:50	18.41	17.47	04:55	0.43	11:50	0.80	0.65	04:55	1.391	11:50	3.113	2.367	316398	
10/24/2016	04:00	15.95	20:00	18.20	17.27	04:35	0.43	19:50	0.79	0.63	04:00	1.369	19:50	3.006	2.258	301862	
10/25/2016	03:30	16.11	19:35	18.10	17.26	04:15	0.43	19:15	0.79	0.63	04:15	1.398	19:15	2.983	2.267	302988	
10/26/2016	04:10	16.07	20:45	18.26	17.29	03:50	0.43	20:35	0.78	0.63	03:50	1.367	20:35	2.993	2.277	304346	
10/27/2016	03:10	16.21	20:20	28.10	19.03	03:25	0.44	20:20	5.72	1.27	03:25	1.437	20:20	39.927	6.072	811701	1.15
10/28/2016	04:20	16.59	00:00	18.49	17.47	04:00	0.50	00:00	0.79	0.67	04:20	1.685	00:00	3.094	2.424	324032	
10/29/2016	03:20	16.31	21:15	18.23	17.51	04:30	0.45	21:20	0.80	0.66	04:30	1.468	12:50	3.046	2.427	324389	
10/30/2016	04:40	16.39	16:45	33.79	18.26	05:20	0.45	16:45	6.25	0.86	05:20	1.486	16:45	55.697	3.761	502751	
10/31/2016	04:00	16.37	21:15	18.15	17.44	03:40	0.46	20:55	0.76	0.64	04:00	1.521	20:55	2.893	2.316	309413	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			10898870	2.59
Avg	17.63	0.69	2.630	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

UC2, Pipe Height: 74.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	03:00	16.24	21:20	18.35	17.42	02:35	0.43	21:20	0.80	0.64	02:35	1.397	21:20	3.108	2.310	308786	
11/2/2016	04:40	16.18	20:15	18.27	17.39	04:20	0.42	20:50	0.80	0.64	04:20	1.377	20:50	3.083	2.330	311413	
11/3/2016	03:45	16.16	07:55	18.29	17.45	02:45	0.43	07:45	0.80	0.65	02:45	1.417	07:45	3.090	2.355	314884	
11/4/2016	03:35	16.13	07:40	18.05	17.26	03:25	0.42	19:40	0.75	0.62	03:25	1.362	19:40	2.823	2.232	298317	
11/5/2016	03:30	16.15	12:55	18.20	17.34	04:20	0.44	12:50	0.79	0.66	04:20	1.424	12:50	3.025	2.363	315909	
11/6/2016	03:50	15.89	10:50	18.41	17.37	05:25	0.43	11:55	0.85	0.67	04:00	1.389	12:00	3.292	2.425	324123	
11/7/2016	03:35	16.17	08:40	18.23	17.26	04:25	0.42	08:55	0.79	0.63	04:25	1.359	08:55	3.021	2.268	303242	
11/8/2016	03:45	16.03	20:05	18.10	17.37	03:35	0.41	18:50	0.77	0.65	03:35	1.326	18:50	2.917	2.331	311613	
11/9/2016	01:50	16.18	12:40	19.26	17.47	03:35	0.44	12:40	1.00	0.66	03:35	1.435	12:40	4.158	2.413	322528	0.07
11/10/2016	03:30	16.02	19:50	17.93	17.25	04:20	0.41	19:45	0.76	0.64	03:30	1.315	19:45	2.860	2.274	303950	
11/11/2016	03:10	15.93	20:20	17.59	17.07	04:25	0.42	20:20	0.74	0.64	04:25	1.338	20:20	2.687	2.236	298885	
11/12/2016	04:20	16.13	10:10	18.14	17.39	03:55	0.43	12:05	0.79	0.65	03:55	1.401	12:00	2.994	2.356	314927	
11/13/2016	04:45	15.98	13:40	18.31	17.37	05:20	0.43	13:00	0.83	0.66	05:20	1.391	11:45	3.167	2.401	320982	
11/14/2016	02:20	15.93	19:35	18.29	17.27	02:30	0.42	19:30	0.80	0.64	02:30	1.344	19:30	3.063	2.303	307875	
11/15/2016	03:25	16.15	09:45	26.01	19.41	02:45	0.46	09:45	5.46	1.39	03:05	1.491	09:45	34.330	6.664	890903	1.50
11/16/2016	04:00	16.39	07:40	18.30	17.61	03:25	0.49	07:45	0.81	0.68	03:40	1.624	07:45	3.140	2.482	331560	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5579897	1.57
Avg	17.48	0.69	2.609	

Site Commentary

Site Information

UH1	
Pipe Dimensions (in.)	Elliptical (8.00 in H, 7.50 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for UH1 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	3.21	1.19	0.096
Minimum	2.15	0.23	0.030
Maximum	31.72	10.47	2.215
Time of Minimum	6/15/2016 3:25 AM	8/30/2016 3:30 AM	8/28/2016 2:30 AM
Time of Maximum	9/14/2016 5:40 PM	7/25/2016 5:35 PM	7/25/2016 5:35 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Site Report

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. UNION CITY, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	UH1	Meter Type:	TRITON+	Monitor S/N:	60597	Manhole #:	NBW-HA-003A
Address / Location:	1409 UNION TURNPIKE			Map Page #:		E2	
				Pipe Height:		8 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		7.5 Inches	
				I.P. Address		107.80.17.110	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 13, 2016	1:48 PM	Manhole Depth:	6.9 Feet		
Site Hydraulics:	GOOD, SMOOTH		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	VCP		Fair
			Mini System Character:	COMMERCIAL		RESIDENTIAL
			Telephone Information:			
Depth of Flow (Wet Dof):	3 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	1.94 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.77834 W 74.03152

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other		X		

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** UH1 **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

*** Site Classification**

	Class	*Description*
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

UH1

Flow Monitor

UH1

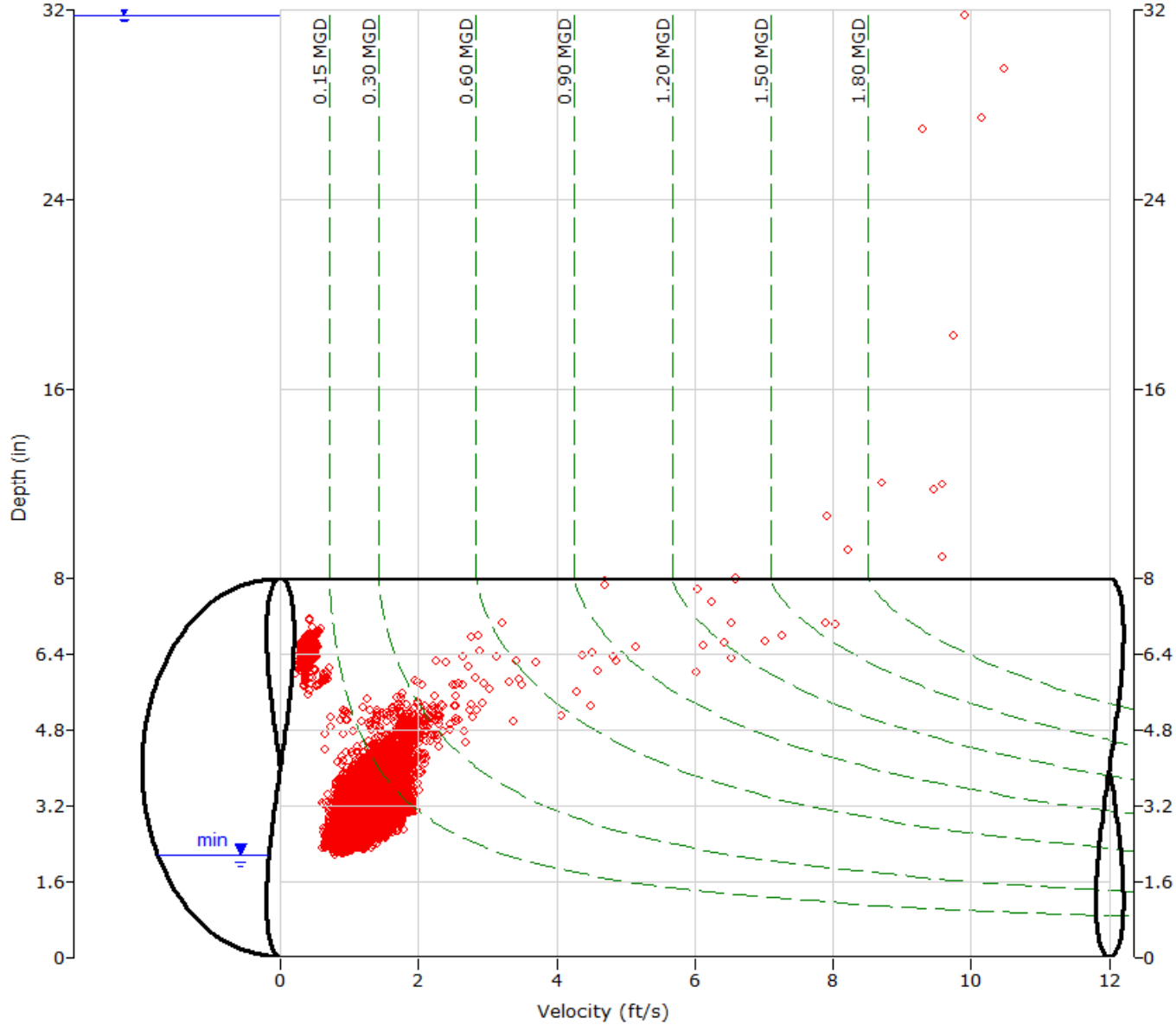
Pipe Height
8.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

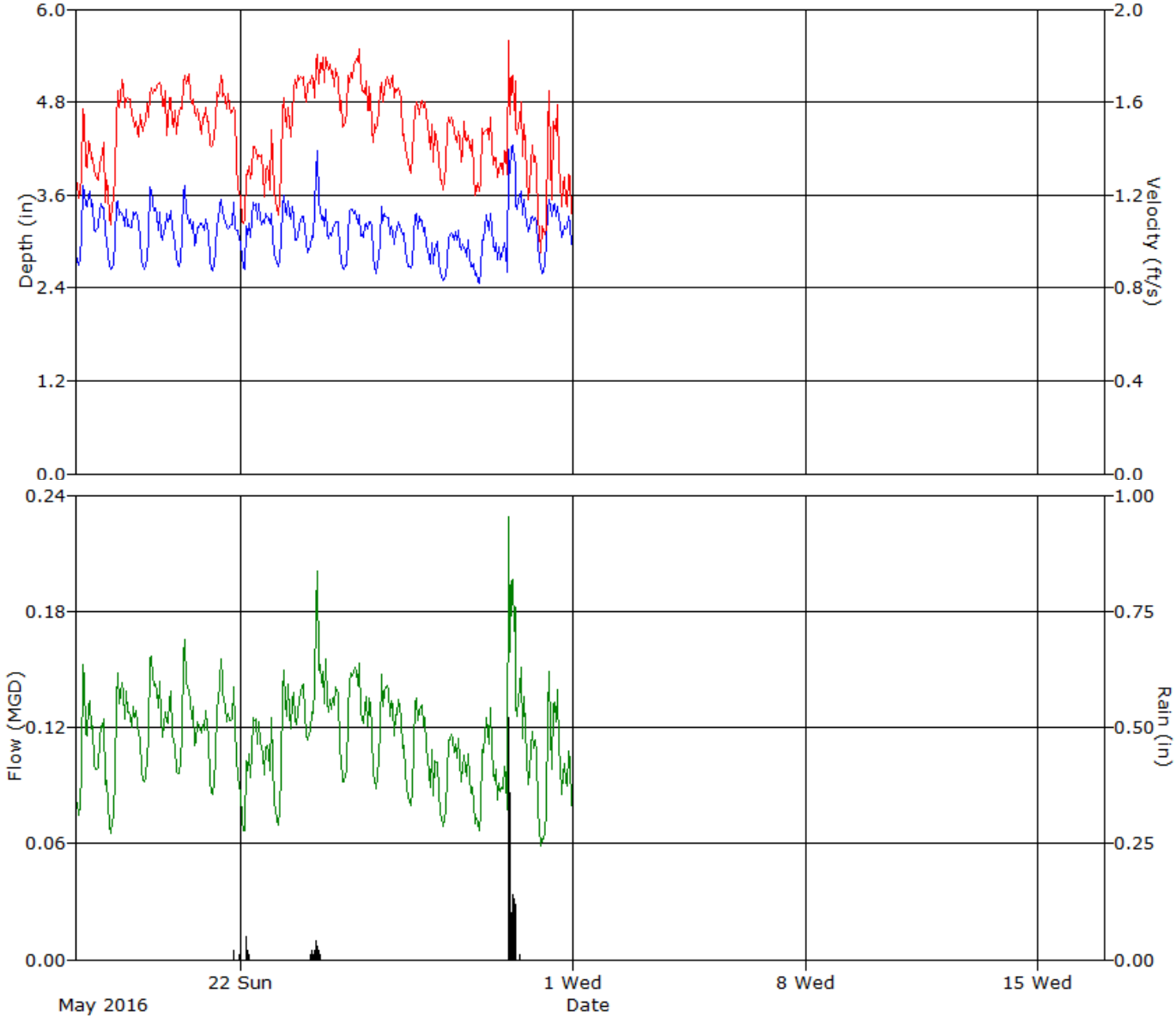
Pipe Height
8.00 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

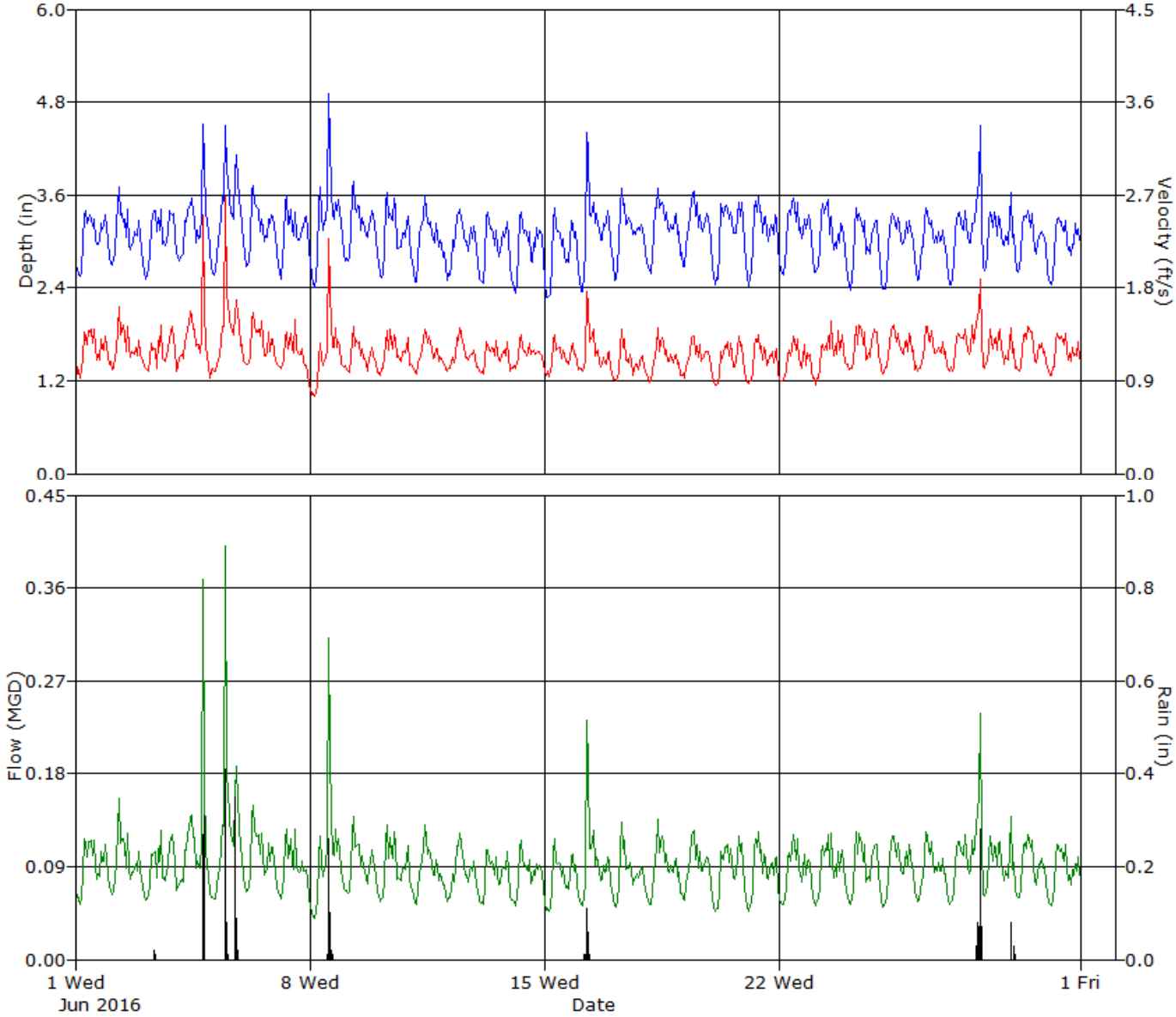
Pipe Height
8.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

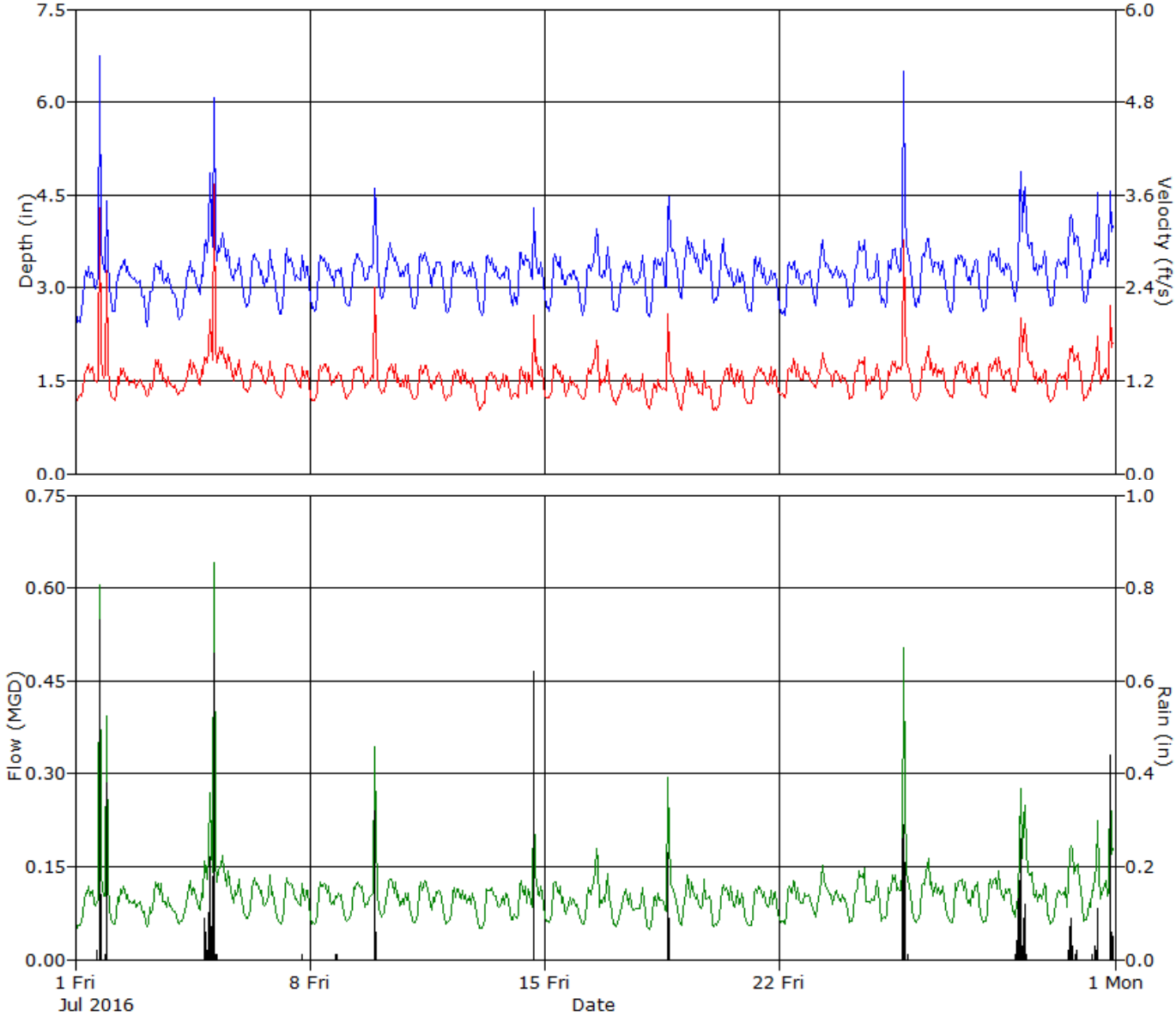
Pipe Height
8.00 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

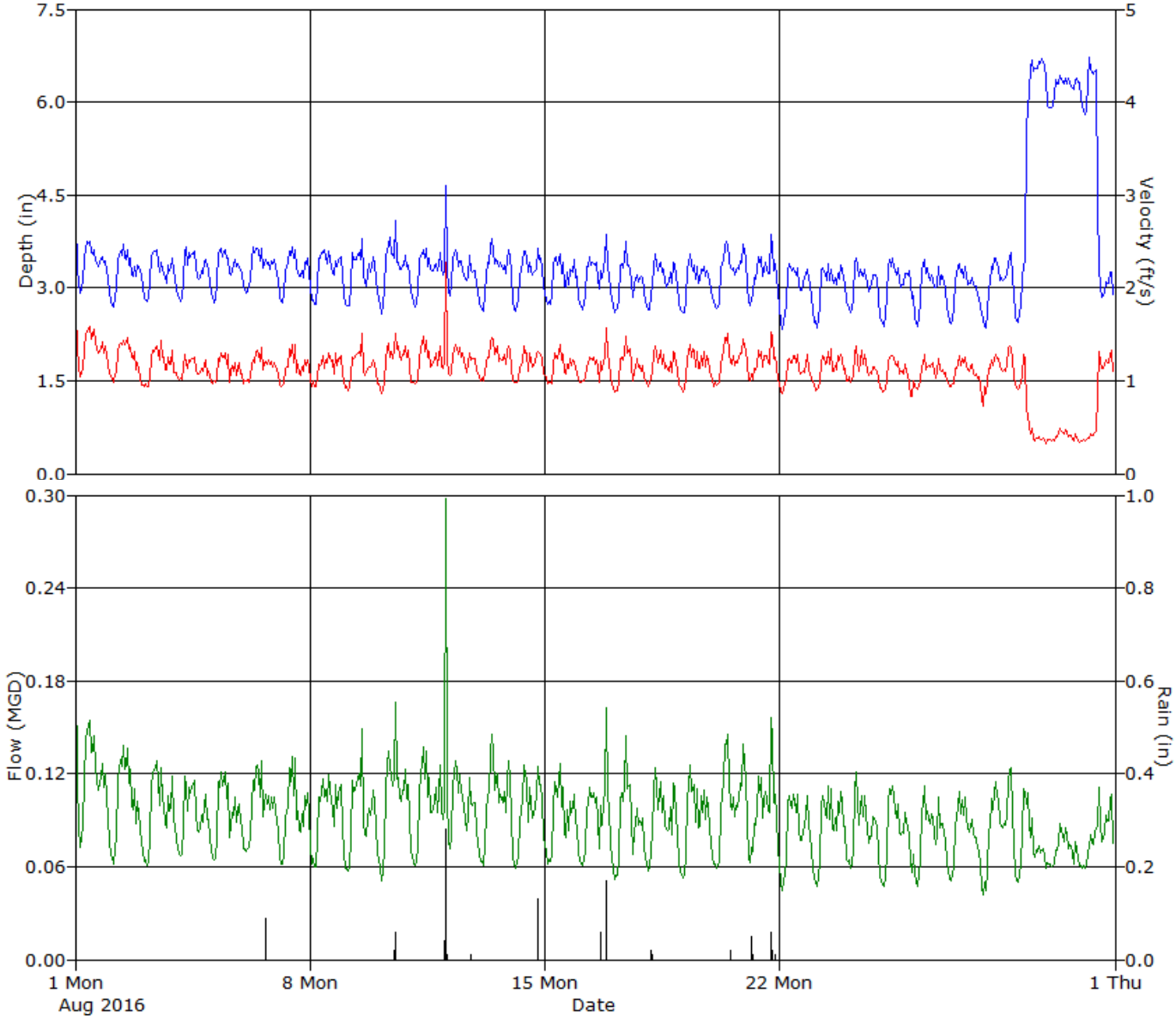
Pipe Height
8.00 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

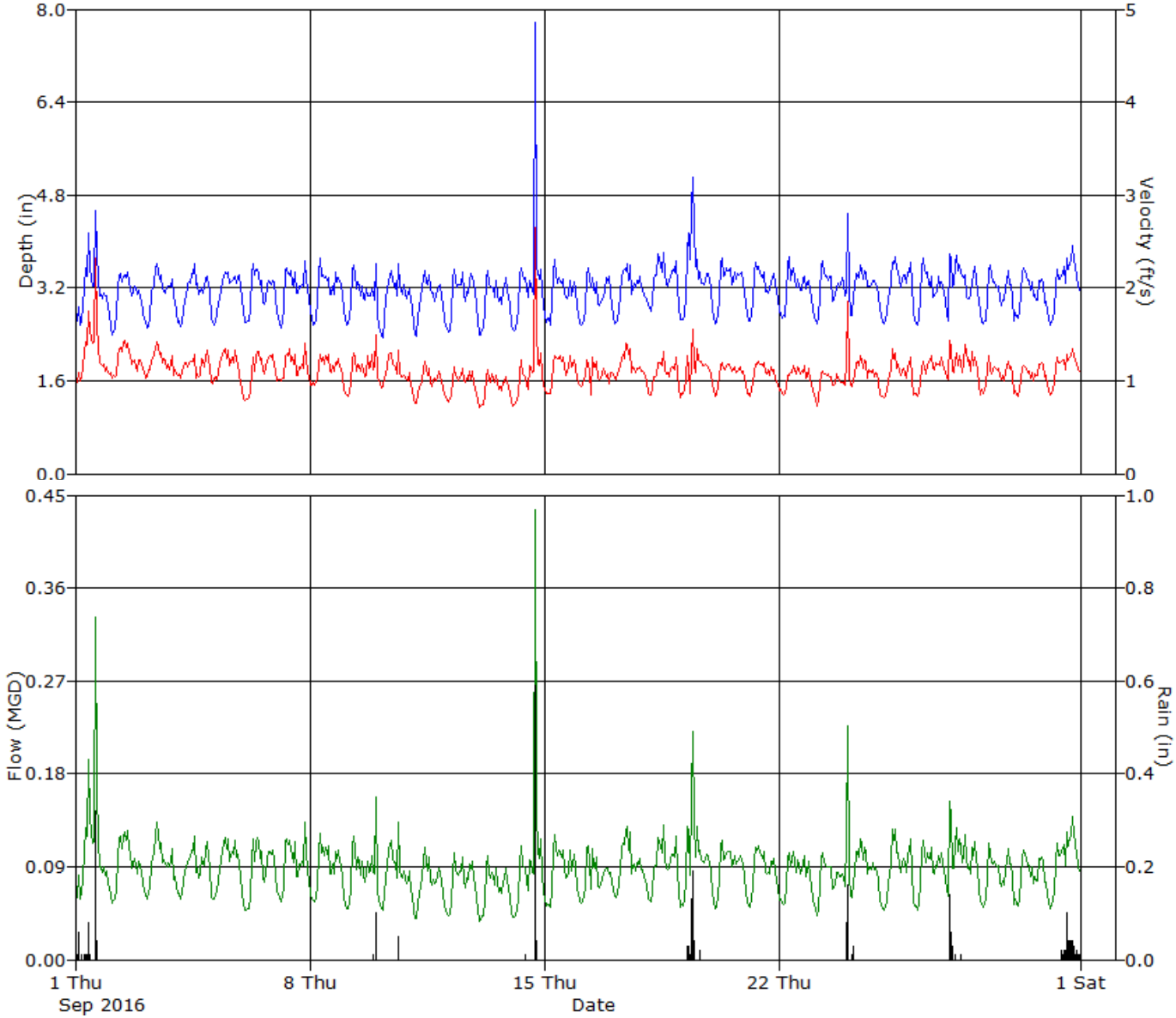
Pipe Height
8.00 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

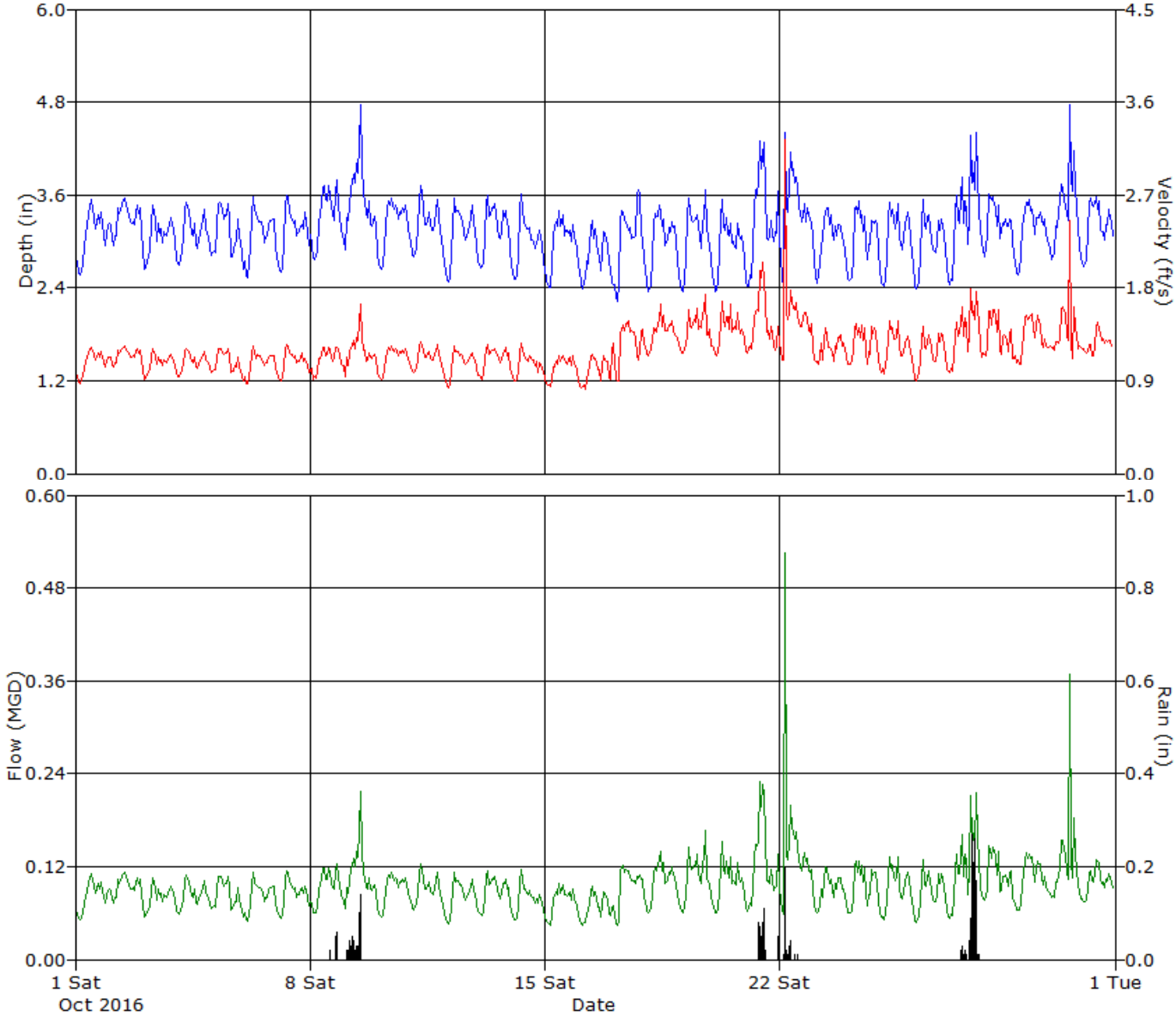
Pipe Height
8.00 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

UH1

Flow Monitor

UH1

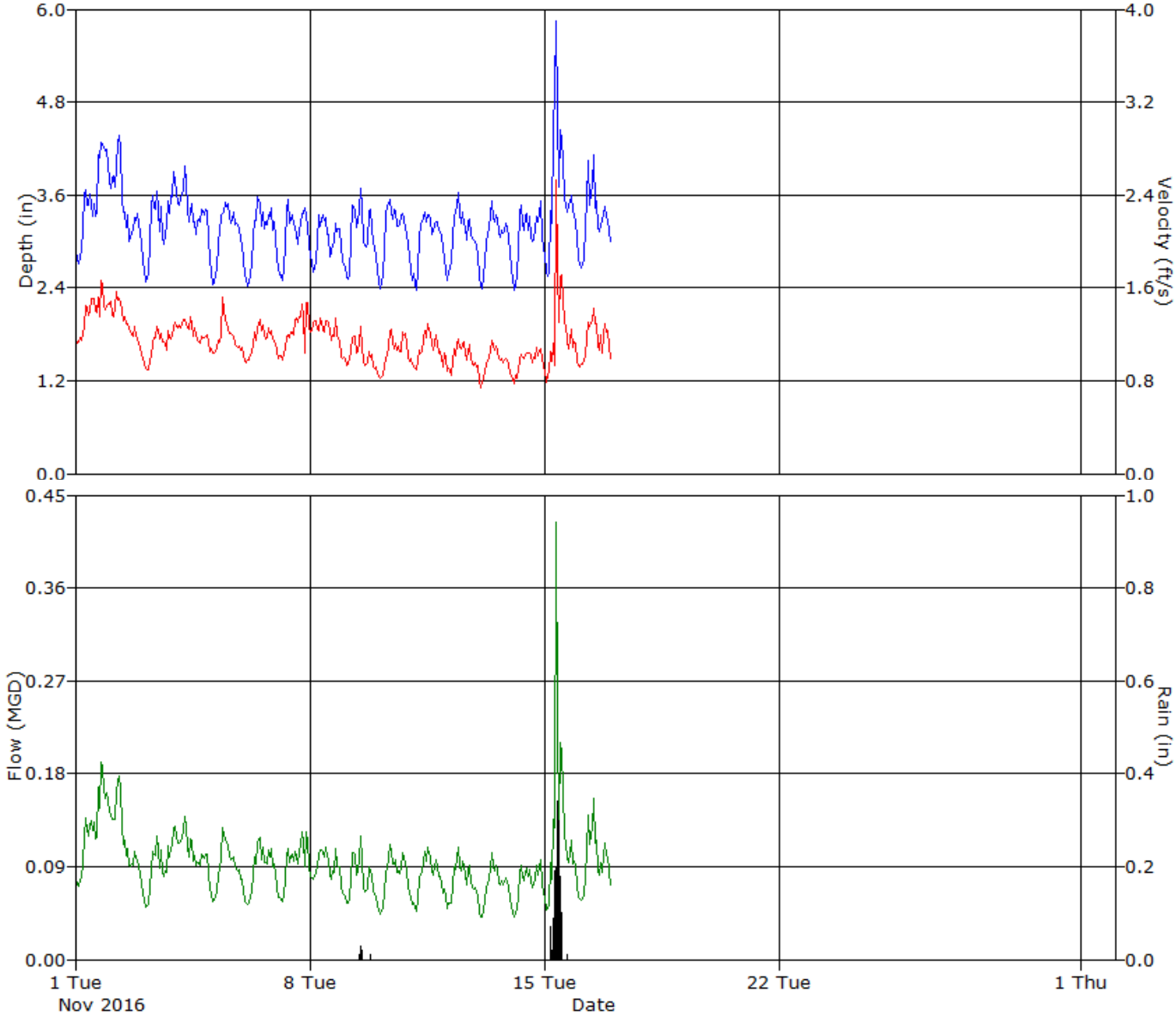
Pipe Height
8.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	03:00	2.65	06:55	4.17	3.25	22:35	0.99	10:00	1.84	1.32	03:35	0.066	21:35	0.194	0.108	14435	
5/18/2016	02:20	2.59	09:50	3.68	3.17	01:45	0.95	11:20	1.83	1.47	01:55	0.060	10:15	0.163	0.116	15561	
5/19/2016	02:55	2.56	06:55	4.03	3.17	00:15	1.11	11:15	1.88	1.59	00:15	0.071	11:15	0.190	0.125	16649	
5/20/2016	03:30	2.60	06:55	4.04	3.15	01:50	1.16	10:00	1.86	1.58	01:50	0.074	07:50	0.183	0.123	16408	
5/21/2016	03:50	2.54	19:35	4.07	3.15	23:35	1.06	12:15	1.87	1.53	01:10	0.072	19:35	0.187	0.119	15923	0.03
5/22/2016	03:00	2.58	13:50	3.91	3.21	00:20	1.00	13:05	1.73	1.30	03:00	0.061	13:05	0.175	0.104	13855	0.08
5/23/2016	03:35	2.61	10:10	4.17	3.17	03:35	1.07	20:25	1.92	1.51	03:35	0.064	10:10	0.201	0.119	15908	
5/24/2016	23:30	2.69	07:40	4.52	3.24	23:45	1.18	16:10	1.97	1.72	23:45	0.077	07:40	0.227	0.139	18520	0.16
5/25/2016	02:25	2.47	10:55	3.82	3.13	23:10	1.27	11:05	1.92	1.65	02:25	0.079	10:55	0.186	0.128	17062	
5/26/2016	02:40	2.55	06:45	3.97	3.08	23:30	1.15	09:10	1.90	1.60	00:20	0.076	06:25	0.184	0.121	16162	
5/27/2016	20:00	2.55	06:55	3.88	2.97	00:25	1.15	12:05	1.79	1.47	23:55	0.074	06:55	0.176	0.106	14174	
5/28/2016	02:55	2.38	16:15	3.57	2.86	01:05	1.06	09:35	1.67	1.42	02:55	0.063	16:15	0.144	0.097	12963	
5/29/2016	03:55	2.33	16:00	3.78	2.91	00:40	1.08	12:05	1.71	1.36	03:55	0.061	16:00	0.167	0.095	12731	
5/30/2016	00:10	2.45	01:30	6.04	3.50	23:05	0.99	01:30	4.59	1.45	00:05	0.064	01:30	0.787	0.133	17754	1.38
5/31/2016	03:00	2.51	08:25	3.88	3.15	01:15	0.85	13:30	1.88	1.26	01:15	0.053	13:30	0.174	0.099	13247	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			231352	1.65
Avg	3.14	1.48	0.115	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	03:10	2.48	07:20	3.71	3.07	00:25	0.68	06:35	1.72	1.20	00:25	0.042	06:35	0.154	0.091	12148	
6/2/2016	02:15	2.61	07:05	4.12	3.10	03:25	0.87	07:10	1.83	1.23	03:25	0.055	07:10	0.178	0.094	12596	
6/3/2016	02:30	2.42	19:40	4.11	3.08	14:55	0.90	21:10	1.68	1.19	03:55	0.054	19:30	0.151	0.090	12064	0.03
6/4/2016	02:10	2.62	19:55	9.16	3.24	23:55	0.83	19:55	8.22	1.32	00:45	0.060	19:55	1.739	0.113	15106	0.58
6/5/2016	03:40	2.47	11:20	7.04	3.36	04:10	0.81	11:20	7.90	1.37	04:10	0.046	11:20	1.556	0.124	16608	0.96
6/6/2016	03:10	2.61	06:35	3.91	3.18	04:35	0.93	07:05	1.71	1.26	04:35	0.059	07:05	0.171	0.100	13345	
6/7/2016	03:20	2.46	07:35	3.92	3.09	23:50	0.81	09:30	1.57	1.15	03:35	0.052	13:30	0.150	0.088	11772	
6/8/2016	02:15	2.37	13:30	5.19	3.28	02:15	0.71	13:25	2.78	1.17	02:15	0.037	13:30	0.400	0.102	13639	0.40
6/9/2016	00:30	2.66	06:45	4.37	3.20	17:10	0.82	07:05	1.59	1.15	04:20	0.056	06:45	0.171	0.092	12255	
6/10/2016	03:35	2.44	06:30	4.07	3.09	01:10	0.86	22:55	1.68	1.17	03:45	0.048	22:55	0.166	0.089	11961	
6/11/2016	04:00	2.34	10:40	3.81	3.02	04:00	0.89	10:45	1.58	1.16	04:00	0.046	10:45	0.152	0.086	11540	
6/12/2016	02:15	2.41	10:15	3.68	3.00	02:55	0.88	09:10	1.59	1.15	02:15	0.048	09:10	0.146	0.084	11290	
6/13/2016	03:30	2.33	21:05	4.23	2.96	23:25	0.92	21:05	1.64	1.14	03:35	0.049	21:05	0.186	0.082	10954	
6/14/2016	03:40	2.26	09:55	3.60	2.93	23:55	0.90	09:55	1.56	1.15	03:35	0.049	09:55	0.144	0.082	10959	
6/15/2016	03:25	2.15	19:05	4.05	2.89	03:25	0.79	22:15	1.63	1.13	03:25	0.036	22:15	0.166	0.079	10604	
6/16/2016	03:00	2.25	06:40	5.89	3.16	16:55	0.89	06:40	2.83	1.18	03:35	0.048	06:40	0.472	0.095	12762	0.20
6/17/2016	02:55	2.44	07:20	3.95	3.12	02:10	0.79	07:30	1.60	1.07	02:10	0.045	07:20	0.166	0.083	11132	
6/18/2016	04:00	2.49	12:10	4.43	3.17	03:25	0.74	12:10	1.78	1.12	03:35	0.043	12:10	0.214	0.089	11863	
6/19/2016	04:00	2.53	00:10	4.20	3.19	01:20	0.82	00:10	1.62	1.13	04:10	0.050	00:10	0.182	0.090	12016	
6/20/2016	02:30	2.40	20:50	4.50	3.14	01:15	0.79	20:50	1.74	1.10	02:15	0.044	20:50	0.213	0.087	11641	
6/21/2016	02:50	2.39	06:55	3.88	3.10	05:05	0.74	09:55	1.55	1.11	02:05	0.041	09:10	0.154	0.086	11489	
6/22/2016	02:20	2.49	13:25	3.87	3.14	01:40	0.82	10:00	1.51	1.10	01:40	0.048	10:05	0.147	0.087	11570	
6/23/2016	02:45	2.50	11:10	4.14	3.07	02:30	0.76	11:10	1.66	1.16	02:30	0.045	11:10	0.184	0.089	11843	
6/24/2016	03:45	2.35	07:50	3.78	2.99	04:20	0.85	06:35	1.72	1.23	04:20	0.046	06:35	0.158	0.091	12111	
6/25/2016	04:00	2.29	13:20	3.69	2.99	03:10	0.78	22:50	1.60	1.22	03:10	0.043	10:30	0.139	0.090	11975	
6/26/2016	03:30	2.40	10:25	3.69	3.01	03:20	0.91	09:15	1.61	1.19	03:20	0.051	09:15	0.141	0.088	11717	
6/27/2016	04:00	2.35	23:35	4.05	3.10	02:15	0.89	23:55	1.87	1.25	02:30	0.048	23:55	0.196	0.097	13031	0.18
6/28/2016	03:20	2.55	00:25	5.63	3.17	17:10	0.88	00:25	3.03	1.24	17:05	0.053	00:25	0.482	0.100	13387	0.43
6/29/2016	02:40	2.46	00:40	3.95	3.05	13:05	0.79	00:45	1.68	1.20	03:20	0.052	00:45	0.165	0.090	12050	0.04
6/30/2016	01:30	2.30	10:55	3.61	2.97	02:35	0.81	13:20	1.53	1.17	02:40	0.043	09:30	0.134	0.085	11357	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			366785	2.82
Avg	3.09	1.18	0.091	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	01:45	2.30	17:50	27.41	3.28	02:00	0.80	17:50	10.16	1.37	02:00	0.043	17:50	2.149	0.127	17041	1.28
7/2/2016	03:05	2.53	10:15	3.75	3.10	04:15	0.87	22:30	1.53	1.17	04:15	0.051	10:15	0.146	0.089	11958	
7/3/2016	03:50	2.34	10:50	3.65	3.03	03:15	0.91	09:05	1.63	1.20	03:35	0.048	09:05	0.147	0.089	11909	
7/4/2016	02:10	2.35	20:55	5.32	3.11	01:15	0.91	20:55	2.77	1.27	02:05	0.049	20:55	0.414	0.100	13384	0.27
7/5/2016	17:20	2.94	03:10	18.22	3.66	02:40	0.98	03:10	9.74	1.56	17:10	0.072	03:10	2.060	0.157	20955	1.15
7/6/2016	02:15	2.58	19:35	4.19	3.18	06:15	0.76	19:30	1.69	1.25	06:15	0.060	19:35	0.187	0.099	13230	
7/7/2016	03:30	2.48	07:35	4.08	3.17	03:45	0.88	10:35	1.65	1.23	02:40	0.051	07:35	0.165	0.097	12996	0.01
7/8/2016	03:45	2.49	11:15	3.84	3.16	01:35	0.81	09:50	1.65	1.21	03:45	0.048	09:50	0.157	0.095	12749	0.02
7/9/2016	04:00	2.63	22:35	6.58	3.30	02:30	0.89	22:35	6.13	1.27	02:30	0.056	22:35	1.140	0.110	14751	0.38
7/10/2016	03:40	2.77	10:20	4.12	3.28	04:30	0.91	11:25	1.76	1.21	04:30	0.061	11:25	0.162	0.100	13312	
7/11/2016	02:40	2.61	07:00	4.27	3.22	03:45	0.84	18:45	1.64	1.19	03:45	0.052	07:00	0.177	0.096	12861	
7/12/2016	03:00	2.54	21:15	3.84	3.16	12:05	0.83	11:25	1.58	1.16	02:10	0.053	21:15	0.154	0.091	12216	
7/13/2016	04:45	2.48	06:30	4.09	3.15	02:15	0.72	06:30	1.60	1.12	02:15	0.043	06:30	0.174	0.089	11877	
7/14/2016	04:30	2.63	16:25	7.96	3.27	10:55	0.84	16:25	6.59	1.24	00:30	0.054	16:25	1.392	0.105	14097	0.62
7/15/2016	03:20	2.55	07:15	4.04	3.14	03:40	0.88	08:20	1.70	1.16	03:40	0.052	07:20	0.163	0.091	12119	
7/16/2016	03:40	2.50	12:55	4.12	3.24	03:00	0.81	13:00	1.93	1.24	03:00	0.047	13:00	0.212	0.102	13686	
7/17/2016	03:45	2.48	08:05	3.83	3.11	03:55	0.85	21:05	1.49	1.10	03:45	0.049	22:30	0.146	0.085	11314	
7/18/2016	02:50	2.43	16:50	11.71	3.31	03:50	0.77	16:50	9.47	1.15	02:50	0.044	16:50	2.003	0.101	13488	0.32
7/19/2016	02:30	2.74	06:10	4.12	3.42	02:20	0.71	06:10	1.66	1.11	02:20	0.047	06:10	0.182	0.097	12996	
7/20/2016	02:10	2.69	08:30	5.43	3.17	04:20	0.74	13:25	1.57	1.14	01:50	0.047	08:30	0.194	0.090	12064	
7/21/2016	04:20	2.55	07:25	3.83	3.10	03:05	0.80	09:55	1.60	1.18	03:05	0.047	09:30	0.150	0.090	12096	
7/22/2016	04:35	2.48	22:05	3.94	3.09	04:45	0.89	10:35	1.63	1.24	02:35	0.050	11:25	0.156	0.095	12643	
7/23/2016	02:15	2.62	08:00	4.09	3.24	14:10	0.89	07:55	1.70	1.28	02:40	0.062	06:40	0.174	0.104	13855	
7/24/2016	02:35	2.56	09:15	4.02	3.25	04:50	0.86	18:00	1.71	1.24	02:30	0.053	09:35	0.177	0.102	13650	
7/25/2016	04:20	2.59	17:35	29.49	3.46	01:40	0.85	17:35	10.47	1.38	01:40	0.053	17:35	2.215	0.129	17263	0.77
7/26/2016	02:10	2.65	10:10	4.20	3.28	03:30	0.85	11:35	1.74	1.27	02:10	0.054	11:20	0.181	0.106	14137	
7/27/2016	03:30	2.48	22:10	4.17	3.19	03:45	0.85	22:30	1.68	1.25	03:45	0.050	22:10	0.186	0.101	13440	
7/28/2016	03:15	2.46	13:20	4.07	3.22	04:30	0.89	13:20	1.67	1.26	03:15	0.054	13:20	0.181	0.102	13676	
7/29/2016	01:55	2.63	04:30	5.83	3.61	03:35	1.00	05:25	2.93	1.39	01:05	0.062	05:25	0.440	0.135	17992	0.86
7/30/2016	02:05	2.55	17:45	5.05	3.41	02:40	0.86	17:55	1.99	1.27	02:05	0.052	17:55	0.275	0.113	15069	0.24
7/31/2016	02:25	2.63	21:30	10.57	3.50	02:45	0.88	21:30	7.92	1.31	02:45	0.056	21:30	1.676	0.123	16426	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			429252	6.64
Avg	3.25	1.24	0.104	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	03:25	2.83	00:40	4.70	3.44	04:30	0.88	00:40	2.02	1.37	04:30	0.061	00:40	0.261	0.120	16077	0.05
8/2/2016	04:00	2.62	15:50	4.11	3.26	22:10	0.79	15:50	1.85	1.23	03:45	0.053	15:50	0.202	0.101	13534	
8/3/2016	04:05	2.73	23:25	4.16	3.25	01:45	0.81	13:35	1.65	1.18	01:45	0.053	23:25	0.182	0.097	12912	
8/4/2016	01:00	2.70	06:35	3.97	3.28	04:10	0.88	06:30	1.58	1.14	04:10	0.057	06:30	0.165	0.094	12501	
8/5/2016	03:10	2.66	17:30	4.20	3.30	05:40	0.82	11:15	1.49	1.13	03:10	0.060	11:15	0.159	0.094	12584	
8/6/2016	02:55	2.76	07:40	4.21	3.35	00:10	0.86	10:15	1.55	1.16	02:55	0.056	07:40	0.158	0.099	13222	0.09
8/7/2016	03:10	2.70	10:45	4.02	3.27	02:55	0.80	13:10	1.55	1.14	02:55	0.052	13:10	0.158	0.094	12607	
8/8/2016	04:05	2.66	13:30	3.89	3.29	03:20	0.83	18:05	1.57	1.15	03:20	0.053	13:05	0.153	0.096	12769	
8/9/2016	04:15	2.64	13:40	4.05	3.24	02:15	0.78	13:40	1.73	1.15	03:35	0.048	13:40	0.186	0.094	12566	
8/10/2016	03:50	2.51	13:10	4.70	3.32	04:50	0.76	13:05	1.79	1.22	03:20	0.046	13:05	0.231	0.103	13799	0.08
8/11/2016	03:10	2.61	11:35	4.06	3.27	00:30	0.84	09:35	1.72	1.20	03:10	0.051	11:05	0.165	0.099	13253	
8/12/2016	23:50	2.81	01:10	5.21	3.34	04:35	0.94	01:20	4.06	1.27	04:35	0.063	01:20	0.578	0.109	14620	0.34
8/13/2016	04:10	2.57	10:45	4.21	3.27	04:00	0.91	09:45	1.73	1.24	04:00	0.054	09:45	0.183	0.102	13681	
8/14/2016	03:45	2.58	19:30	4.80	3.22	01:50	0.83	19:30	1.75	1.17	03:45	0.051	19:30	0.232	0.095	12723	0.13
8/15/2016	00:25	2.67	11:10	3.95	3.18	05:05	0.84	10:30	1.61	1.15	00:25	0.056	11:15	0.165	0.092	12252	
8/16/2016	02:00	2.59	20:15	4.76	3.19	01:55	0.80	20:15	2.67	1.16	01:55	0.048	20:15	0.351	0.093	12390	0.23
8/17/2016	01:55	2.58	10:30	4.12	3.11	01:55	0.78	10:30	1.81	1.14	01:55	0.046	10:30	0.198	0.088	11777	
8/18/2016	02:30	2.58	21:10	3.80	3.14	02:30	0.86	07:55	1.50	1.17	02:30	0.051	08:00	0.140	0.091	12166	0.03
8/19/2016	04:50	2.58	13:05	3.98	3.11	03:55	0.80	13:05	1.59	1.16	03:55	0.047	13:05	0.167	0.090	12021	
8/20/2016	03:30	2.57	10:50	4.07	3.27	01:05	0.84	22:15	1.76	1.21	04:55	0.051	22:15	0.186	0.101	13479	0.02
8/21/2016	04:15	2.58	18:25	4.37	3.24	03:35	0.92	18:25	1.86	1.21	04:15	0.056	18:25	0.219	0.099	13182	0.15
8/22/2016	02:25	2.27	13:35	3.90	3.02	02:45	0.80	06:40	1.55	1.11	02:25	0.041	13:35	0.154	0.083	11061	
8/23/2016	02:05	2.23	18:15	3.71	3.04	04:15	0.74	09:00	1.54	1.14	01:55	0.037	09:00	0.146	0.086	11456	
8/24/2016	03:35	2.54	06:50	3.84	3.07	04:25	0.89	11:45	1.51	1.13	03:35	0.053	06:50	0.143	0.085	11423	
8/25/2016	03:05	2.34	10:25	3.83	3.05	23:35	0.71	08:35	1.51	1.07	03:05	0.043	10:25	0.145	0.081	10830	
8/26/2016	03:40	2.30	21:05	3.81	3.03	02:35	0.83	12:10	1.41	1.10	03:45	0.043	18:20	0.130	0.082	10927	
8/27/2016	03:50	2.37	08:45	3.72	3.00	03:20	0.75	13:10	1.50	1.10	03:20	0.040	13:10	0.139	0.081	10786	
8/28/2016	03:50	2.23	11:05	4.04	3.08	02:30	0.60	21:20	1.62	1.13	02:30	0.030	11:05	0.173	0.087	11639	
8/29/2016	02:10	2.37	20:25	6.93	5.10	16:45	0.28	07:45	1.40	0.66	02:25	0.043	07:45	0.125	0.075	10049	
8/30/2016	02:10	5.79	06:50	6.70	6.23	03:30	0.23	09:45	0.55	0.40	03:30	0.040	09:45	0.101	0.071	9501	
8/31/2016	17:15	2.63	06:45	7.13	4.72	00:30	0.27	13:35	1.57	0.78	00:30	0.047	13:35	0.132	0.080	10669	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			382457	1.12
Avg	3.41	1.11	0.092	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	01:45	2.36	14:20	7.03	3.20	02:15	0.75	14:20	6.52	1.31	02:15	0.040	14:20	1.285	0.110	14731	0.56
9/2/2016	01:35	2.29	07:55	3.84	3.08	02:35	0.88	07:50	1.68	1.22	02:35	0.046	08:30	0.167	0.093	12461	
9/3/2016	03:05	2.44	09:55	4.22	3.11	02:20	0.88	09:55	1.70	1.20	02:20	0.052	09:55	0.192	0.092	12300	
9/4/2016	03:45	2.45	13:05	4.11	3.11	17:10	0.76	21:25	1.77	1.16	17:10	0.049	21:25	0.191	0.089	11879	
9/5/2016	01:10	2.49	18:00	3.85	3.15	23:05	0.79	11:30	1.64	1.16	01:55	0.052	18:00	0.153	0.091	12144	
9/6/2016	01:50	2.46	09:10	3.95	3.14	00:05	0.72	18:00	1.55	1.11	01:50	0.043	18:00	0.156	0.087	11690	
9/7/2016	03:50	2.48	06:40	4.54	3.16	10:20	0.82	06:50	1.70	1.15	03:25	0.051	06:50	0.175	0.091	12203	
9/8/2016	03:25	2.50	18:40	3.97	3.17	01:00	0.81	09:25	1.45	1.13	02:25	0.049	13:25	0.145	0.089	11953	
9/9/2016	02:45	2.48	23:20	6.25	3.09	03:05	0.77	23:20	3.42	1.11	03:05	0.045	23:20	0.606	0.086	11517	0.11
9/10/2016	04:10	2.33	15:25	5.07	3.05	17:30	0.83	15:25	2.33	1.10	03:45	0.046	15:25	0.329	0.083	11099	0.05
9/11/2016	03:50	2.32	13:20	3.95	3.04	03:50	0.70	10:35	1.38	0.99	03:50	0.036	10:35	0.140	0.074	9908	
9/12/2016	03:00	2.35	13:40	3.84	3.08	04:45	0.70	07:15	1.36	0.97	03:00	0.037	07:15	0.130	0.075	9965	0.00
9/13/2016	02:55	2.33	07:15	3.84	3.01	04:30	0.67	10:55	1.58	0.93	01:30	0.035	07:20	0.140	0.069	9282	
9/14/2016	00:20	2.37	17:40	31.72	3.31	01:00	0.64	17:40	9.90	1.10	01:00	0.035	17:40	2.094	0.096	12840	0.64
9/15/2016	01:25	2.47	06:50	4.05	3.11	01:55	0.76	08:50	1.50	1.11	04:35	0.045	06:50	0.143	0.086	11521	
9/16/2016	02:50	2.47	06:45	4.17	3.07	09:25	0.60	10:45	1.53	1.07	01:25	0.047	06:45	0.154	0.081	10774	
9/17/2016	04:25	2.49	11:30	3.87	3.17	17:35	0.83	11:05	1.56	1.16	02:25	0.054	11:05	0.151	0.092	12253	
9/18/2016	04:45	2.74	13:00	4.12	3.34	03:30	0.77	22:25	1.45	1.08	04:55	0.052	09:05	0.155	0.092	12277	
9/19/2016	03:00	2.56	10:35	5.28	3.45	02:50	0.76	10:35	1.74	1.12	02:50	0.045	10:35	0.258	0.101	13453	0.45
9/20/2016	02:35	2.52	06:45	4.17	3.27	03:15	0.70	07:00	1.35	1.08	03:15	0.042	06:40	0.141	0.089	11891	
9/21/2016	02:40	2.53	06:40	3.95	3.20	02:40	0.66	09:15	1.30	1.06	02:40	0.038	09:15	0.124	0.085	11365	
9/22/2016	02:10	2.57	10:00	4.19	3.20	03:35	0.66	18:20	1.34	1.04	03:35	0.041	06:40	0.139	0.083	11089	
9/23/2016	03:15	2.50	21:20	4.31	3.16	04:40	0.63	18:00	1.25	0.98	03:00	0.038	06:45	0.126	0.077	10301	
9/24/2016	04:00	2.64	00:55	5.58	3.31	00:25	0.85	00:55	4.30	1.14	00:25	0.054	00:55	0.678	0.097	12992	0.28
9/25/2016	02:50	2.50	09:40	4.12	3.23	02:30	0.71	09:35	1.54	1.07	02:30	0.041	09:40	0.163	0.087	11688	
9/26/2016	03:50	2.51	13:25	4.18	3.15	02:50	0.73	07:10	1.41	1.10	02:50	0.043	13:25	0.149	0.086	11535	
9/27/2016	01:45	2.47	02:40	5.18	3.31	23:50	0.83	02:40	2.07	1.20	02:05	0.052	02:40	0.300	0.101	13492	0.25
9/28/2016	02:20	2.51	06:50	4.06	3.11	00:50	0.73	06:50	1.39	1.07	00:40	0.043	06:50	0.150	0.082	11019	
9/29/2016	00:15	2.52	09:20	3.90	3.13	03:20	0.80	18:15	1.31	1.05	00:15	0.046	09:20	0.130	0.082	10932	
9/30/2016	02:35	2.48	18:40	4.07	3.28	02:35	0.80	07:25	1.40	1.14	02:35	0.045	18:40	0.150	0.095	12747	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			353301	2.75
Avg	3.17	1.10	0.088	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	03:25	2.50	11:50	4.01	3.09	03:25	0.85	11:50	1.37	1.08	03:25	0.048	11:50	0.146	0.083	11044	
10/2/2016	03:30	2.90	11:55	4.15	3.30	03:30	1.01	11:55	1.42	1.15	03:30	0.070	11:55	0.157	0.095	12764	
10/3/2016	02:00	2.59	11:25	3.89	3.08	02:00	0.89	11:25	1.33	1.07	02:00	0.053	11:25	0.136	0.081	10861	
10/4/2016	02:25	2.64	07:00	3.68	3.11	02:25	0.91	07:00	1.27	1.09	02:25	0.055	07:00	0.121	0.083	11117	
10/5/2016	17:05	2.58	12:50	3.78	3.12	23:45	0.77	12:50	1.30	1.08	23:45	0.051	12:50	0.127	0.084	11174	
10/6/2016	03:40	2.45	14:10	3.97	3.10	00:55	0.67	14:10	1.36	1.07	00:55	0.038	14:10	0.142	0.083	11044	0.00
10/7/2016	02:55	2.54	07:50	3.78	3.13	02:55	0.86	17:40	1.33	1.08	02:55	0.050	07:50	0.128	0.084	11275	
10/8/2016	03:55	2.58	19:40	4.18	3.32	04:50	0.72	19:25	1.42	1.11	04:50	0.045	19:25	0.157	0.094	12532	0.13
10/9/2016	00:10	2.75	12:35	5.46	3.56	00:10	0.74	12:40	1.83	1.20	00:10	0.047	12:40	0.273	0.111	14869	0.52
10/10/2016	03:35	2.58	10:30	3.85	3.22	03:35	0.88	10:30	1.32	1.12	03:35	0.052	10:30	0.133	0.091	12106	
10/11/2016	23:50	2.74	09:05	4.24	3.21	23:50	0.95	09:05	1.47	1.12	23:50	0.061	09:05	0.167	0.090	12025	0.00
10/12/2016	03:50	2.40	11:50	3.72	3.09	03:50	0.80	22:20	1.28	1.07	03:50	0.042	10:40	0.122	0.082	10998	
10/13/2016	02:00	2.57	06:45	3.84	3.16	03:05	0.82	06:45	1.32	1.11	02:00	0.052	06:45	0.132	0.088	11746	
10/14/2016	02:30	2.42	07:20	3.89	3.00	02:30	0.81	07:20	1.46	1.06	02:30	0.044	07:20	0.149	0.078	10421	
10/15/2016	04:30	2.35	10:35	3.71	2.99	01:55	0.78	10:35	1.28	1.03	01:55	0.041	10:35	0.122	0.076	10111	
10/16/2016	03:50	2.29	12:35	3.62	2.83	05:00	0.74	10:45	1.30	0.99	03:35	0.041	12:35	0.117	0.068	9058	
10/17/2016	03:50	2.18	20:00	4.07	3.02	00:25	0.77	11:15	1.66	1.27	04:55	0.037	11:15	0.162	0.094	12625	
10/18/2016	02:40	2.31	12:50	3.84	3.01	01:45	1.00	11:35	1.86	1.37	01:45	0.054	12:50	0.168	0.101	13548	0.00
10/19/2016	01:35	2.28	19:15	4.29	3.05	23:40	0.92	19:15	2.09	1.40	03:25	0.053	19:15	0.241	0.105	14081	
10/20/2016	02:15	2.27	07:20	4.14	2.96	03:15	0.99	07:10	1.94	1.39	03:15	0.052	07:10	0.191	0.101	13447	
10/21/2016	01:20	2.34	09:55	5.19	3.27	01:35	1.02	10:05	2.54	1.46	00:30	0.058	10:05	0.351	0.124	16517	0.46
10/22/2016	03:35	2.40	04:15	7.47	3.44	03:20	1.04	04:15	6.25	1.54	03:20	0.056	04:15	1.284	0.145	19333	0.33
10/23/2016	03:25	2.40	10:15	3.95	3.05	02:55	0.91	09:55	1.57	1.21	02:55	0.051	10:15	0.157	0.091	12157	
10/24/2016	03:50	2.38	09:50	3.83	3.05	12:20	0.96	07:55	1.67	1.26	03:40	0.054	07:55	0.161	0.095	12711	
10/25/2016	03:30	2.29	13:30	3.93	3.04	00:20	0.87	13:30	1.64	1.22	02:55	0.047	13:30	0.170	0.092	12322	
10/26/2016	01:45	2.30	11:10	3.74	2.99	02:05	0.82	18:35	1.57	1.18	03:10	0.043	11:25	0.143	0.087	11641	
10/27/2016	04:30	2.37	21:20	6.20	3.34	03:55	0.88	21:20	2.39	1.37	04:30	0.047	21:20	0.421	0.120	16042	1.15
10/28/2016	03:15	2.74	06:50	4.02	3.23	23:50	0.96	09:55	1.85	1.33	23:50	0.064	06:30	0.181	0.108	14480	
10/29/2016	01:55	2.49	10:35	3.81	3.16	04:15	0.91	17:55	1.85	1.33	02:45	0.055	11:40	0.169	0.105	14073	
10/30/2016	03:55	2.66	16:40	11.93	3.39	18:35	0.89	16:40	9.58	1.38	05:20	0.069	16:40	2.026	0.123	16450	
10/31/2016	02:15	2.55	06:55	3.95	3.19	08:55	1.03	11:30	1.64	1.26	02:15	0.069	11:50	0.160	0.100	13360	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			395931	2.59
Avg	3.15	1.21	0.096	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

UH1, Pipe Height: 8 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	02:40	2.68	18:25	4.60	3.56	10:30	0.98	18:10	1.99	1.38	02:30	0.067	18:10	0.225	0.128	17065	
11/2/2016	14:45	2.77	06:55	4.67	3.50	23:15	0.93	09:05	1.71	1.31	23:40	0.063	07:00	0.205	0.119	15885	
11/3/2016	03:30	2.42	23:00	4.17	3.23	04:55	0.73	11:00	1.60	1.12	02:15	0.043	11:00	0.151	0.091	12161	
11/4/2016	23:50	2.80	07:05	4.35	3.42	15:20	1.01	10:45	1.59	1.23	16:50	0.073	07:15	0.163	0.107	14284	
11/5/2016	02:55	2.38	13:35	4.12	3.09	02:55	0.91	09:40	1.61	1.17	02:55	0.048	10:30	0.142	0.089	11899	
11/6/2016	03:55	2.34	10:45	4.01	3.08	02:10	0.87	11:40	1.56	1.15	02:10	0.048	11:40	0.157	0.088	11705	
11/7/2016	03:55	2.42	07:45	3.97	3.08	03:55	0.88	21:30	1.62	1.21	03:55	0.048	17:45	0.144	0.092	12332	
11/8/2016	02:55	2.53	09:40	3.69	3.02	22:40	0.92	11:50	1.50	1.23	23:35	0.058	09:40	0.129	0.090	12037	
11/9/2016	03:35	2.45	13:05	4.18	3.08	09:15	0.74	12:15	1.39	1.03	04:25	0.047	13:05	0.140	0.078	10466	0.07
11/10/2016	02:10	2.29	09:05	3.88	3.10	02:30	0.71	19:55	1.44	1.04	02:30	0.037	09:05	0.142	0.081	10766	
11/11/2016	04:20	2.20	17:45	3.80	3.04	23:10	0.82	13:55	1.41	1.07	04:20	0.039	17:45	0.127	0.080	10713	
11/12/2016	02:25	2.39	10:20	3.88	3.08	05:00	0.81	00:25	1.39	1.01	02:20	0.043	10:20	0.121	0.077	10261	
11/13/2016	03:40	2.32	10:00	3.78	3.03	01:20	0.66	10:05	1.19	0.96	02:00	0.034	10:05	0.112	0.072	9590	
11/14/2016	03:15	2.26	21:05	3.96	3.06	02:30	0.65	20:50	1.31	0.97	02:30	0.033	13:50	0.126	0.073	9815	
11/15/2016	01:30	2.49	08:30	7.03	3.65	07:05	0.64	08:30	3.22	1.23	01:50	0.040	08:30	0.635	0.125	16691	1.50
11/16/2016	02:50	2.61	11:15	4.66	3.28	17:35	0.79	11:10	1.61	1.15	03:35	0.054	11:15	0.204	0.096	12761	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			198430	1.57
Avg	3.21	1.14	0.093	

Site Commentary

Site Information

W1	
Pipe Dimensions (in.)	Circular (54.13 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph for W1 shows this location experienced free-flow conditions and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016; although the scattergraph show hydraulic jumps occurring in the line. A hydraulic jump develops when flow transitions between supercritical and subcritical conditions, which can arise in any sewer with near or above critical velocity. The jump may be caused by imperfections in the pipe and/or a fixed downstream condition. Standing waves are also likely in flow near critical velocity. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location. However it is possible that during the transition as the jump moves through the meter location, the flow rate calculation based on measured depth and velocity can have momentary error.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	4.61	3.52	1.378
Minimum	1.36	-8.99	0.000
Maximum	81.19	13.83	75.422
Time of Minimum	9/14/2016 5:30 PM	7/18/2016 10:20 AM	6/5/2016 11:55 PM
Time of Maximum	9/14/2016 5:40 PM	7/5/2016 1:45 AM	7/14/2016 1:45 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	98

Velocity (ft/s)	98
Quantity (MGD)	98

Site Report

ADS ENVIRONMENTAL SERVICES®
a division of ADS LLC. WEEHAWKEN, NJ

FM Initials: CK
Project Name: NHSA

Site Name:	W1	Meter Type:	TRITON+	Monitor S/N:	60595	Manhole #:	PANYNJ-PA-012B
Address / Location:	321 PARK AVENUE			Map Page #:		H3	
				Pipe Height:		54.13 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		54.13 Inches	
				I.P. Address		107.80.25.32	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 8, 2016	10:45 AM	Manhole Depth:	12.4 Feet	
Site Hydraulics:	GOOD, SMOOTH, FAST		Manhole Material / Condition:	Concrete	Fair
			Active Drop Connections?	No	
			Pipe Material / Condition:	Concrete	Good
			Mini System Character:	RESIDENTIAL	
			Telephone Information:		
Depth of Flow (Wet Dof):	4 +/- 0.5		Access Pole #:	N/A	
Range (Air Dof):	50.13 +/- 0.5		Distance From Manhole:	N/A Feet	
Peak Velocity:	4 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

N 40.76490 W 74.02441

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other	X		Regulator	50'

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** W1 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

W1

Flow Monitor

W1

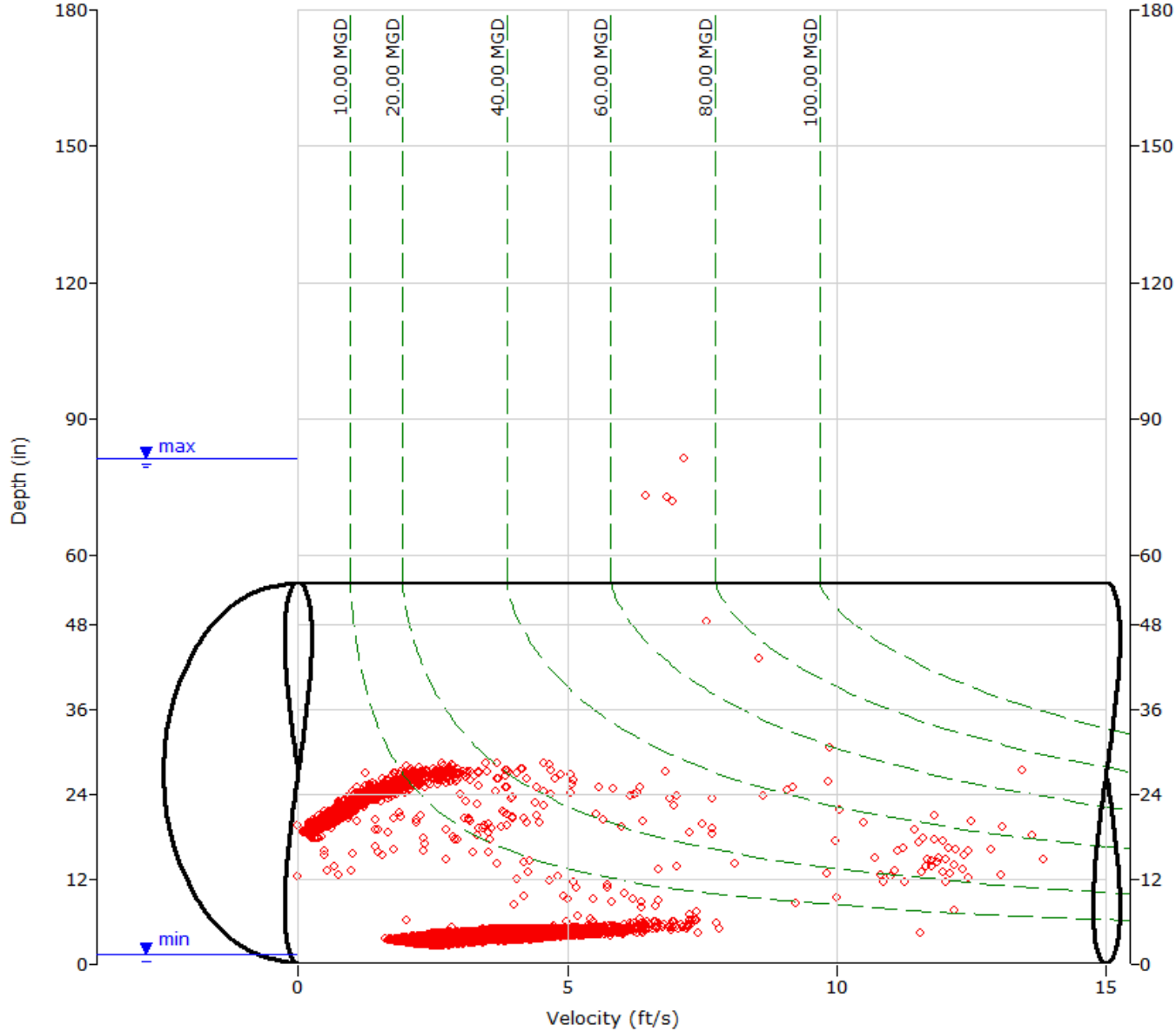
Pipe Height
54.13 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

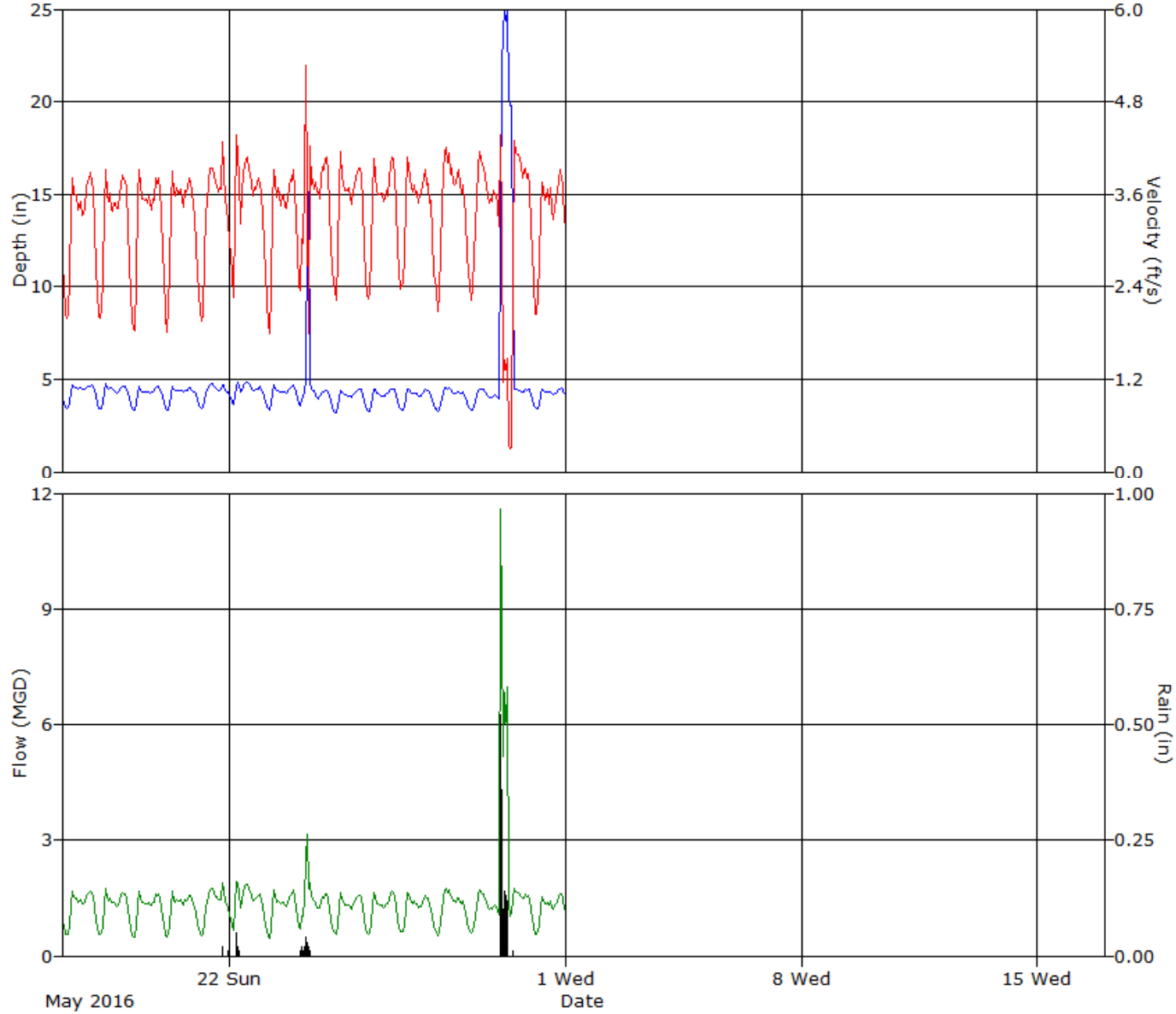
Pipe Height
54.13 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

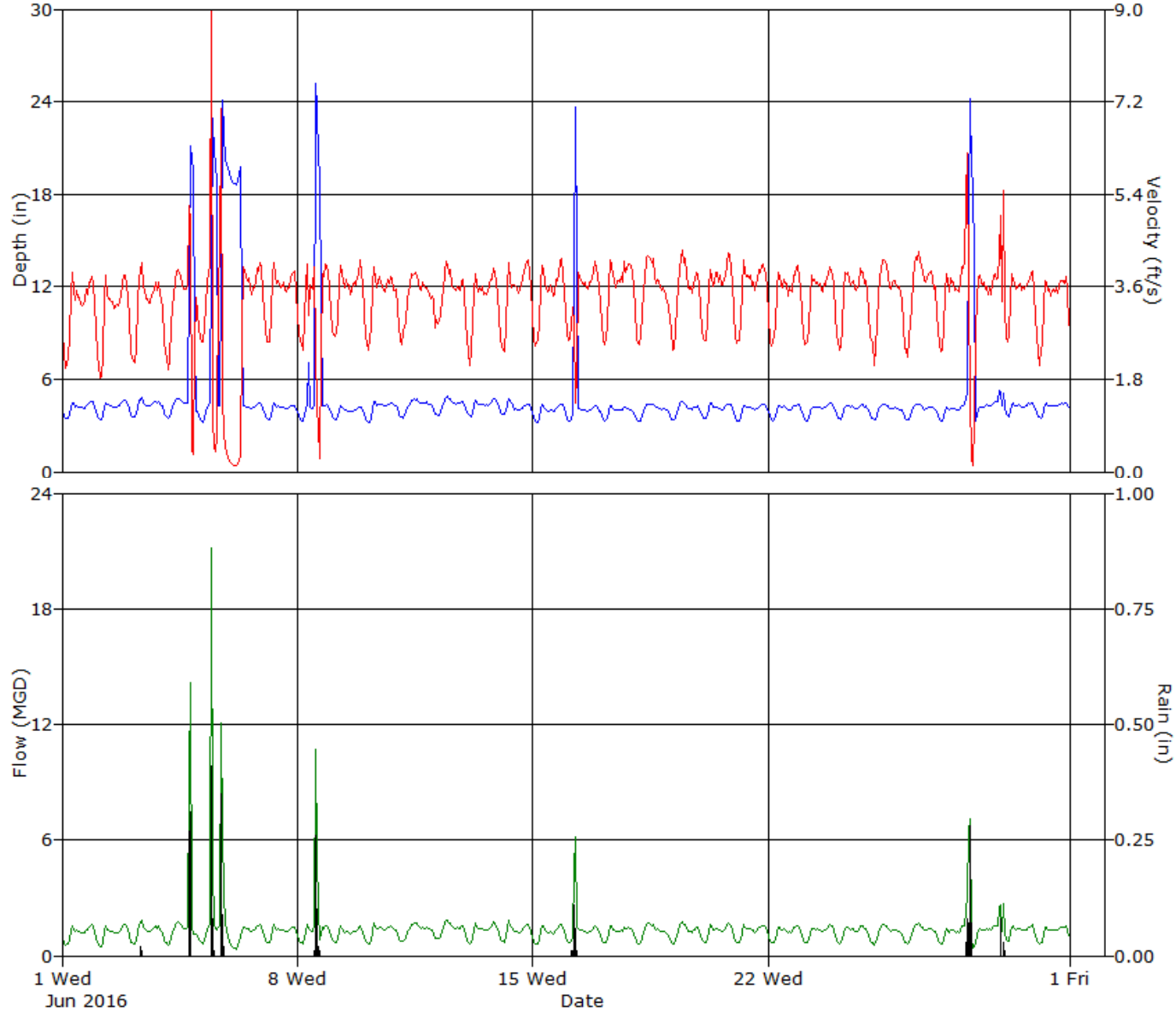
Pipe Height
54.13 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



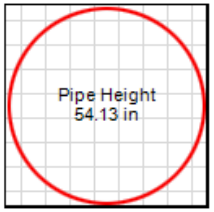
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

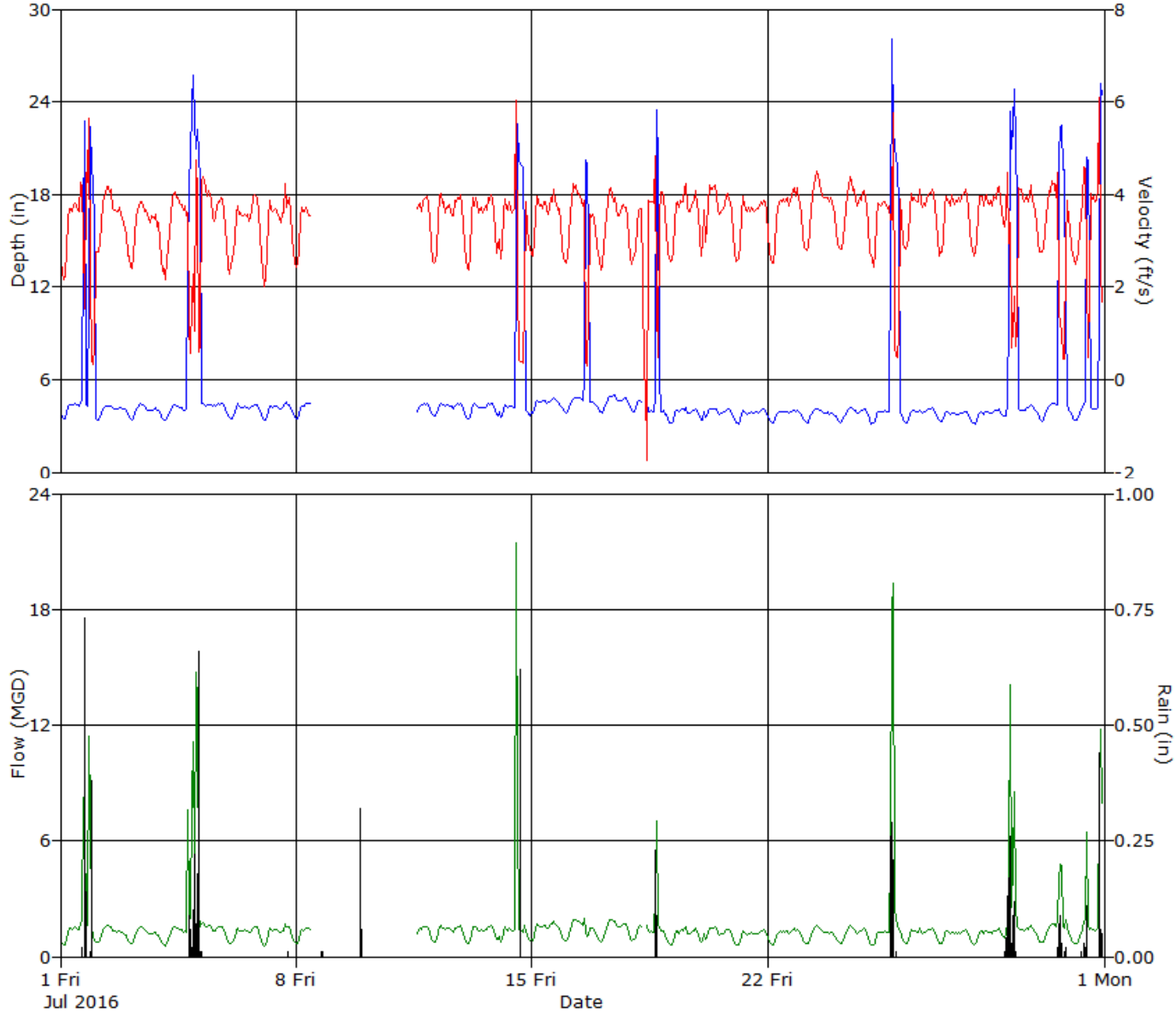


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

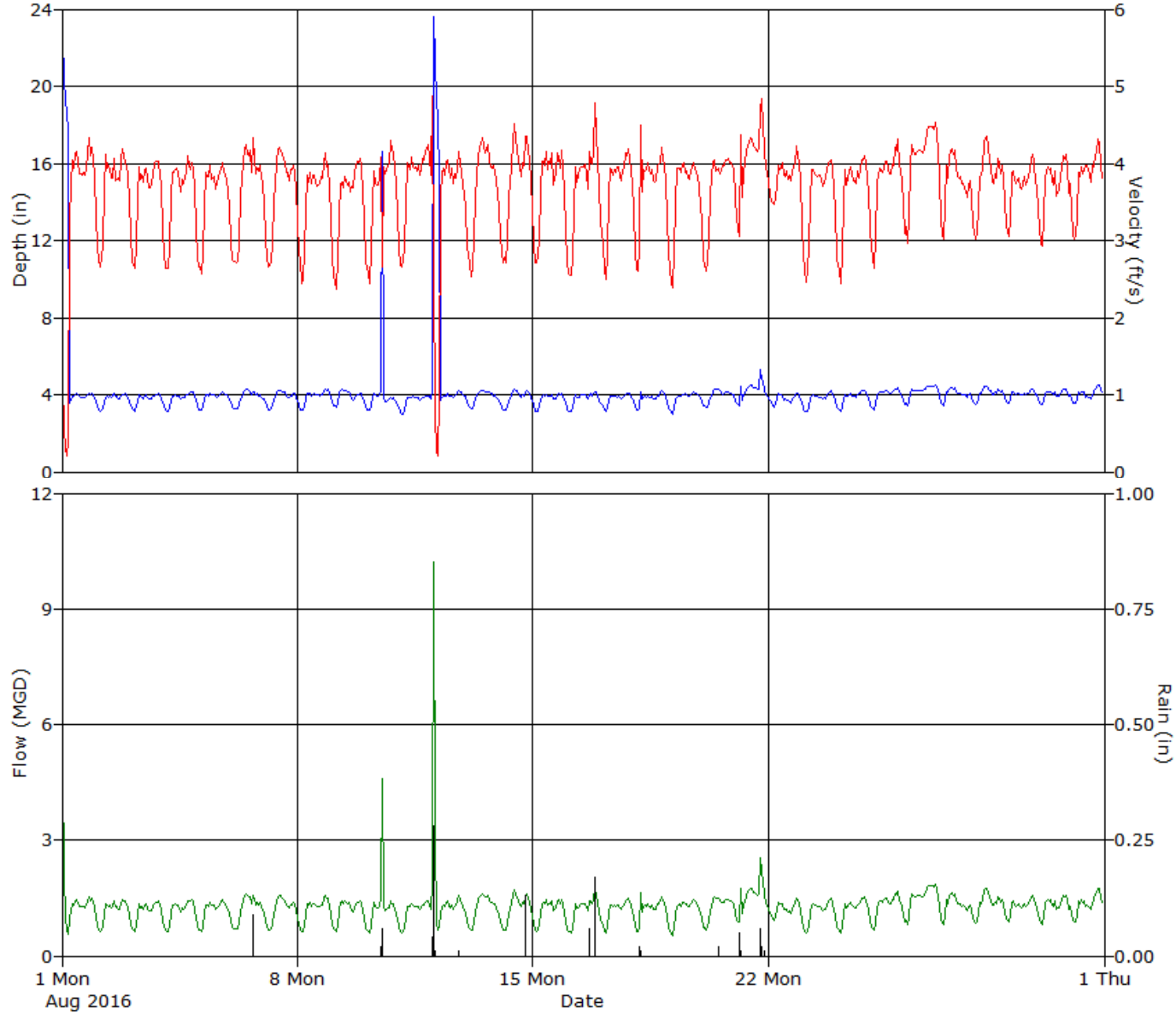
Pipe Height
54.13 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



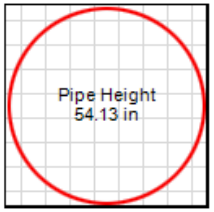
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

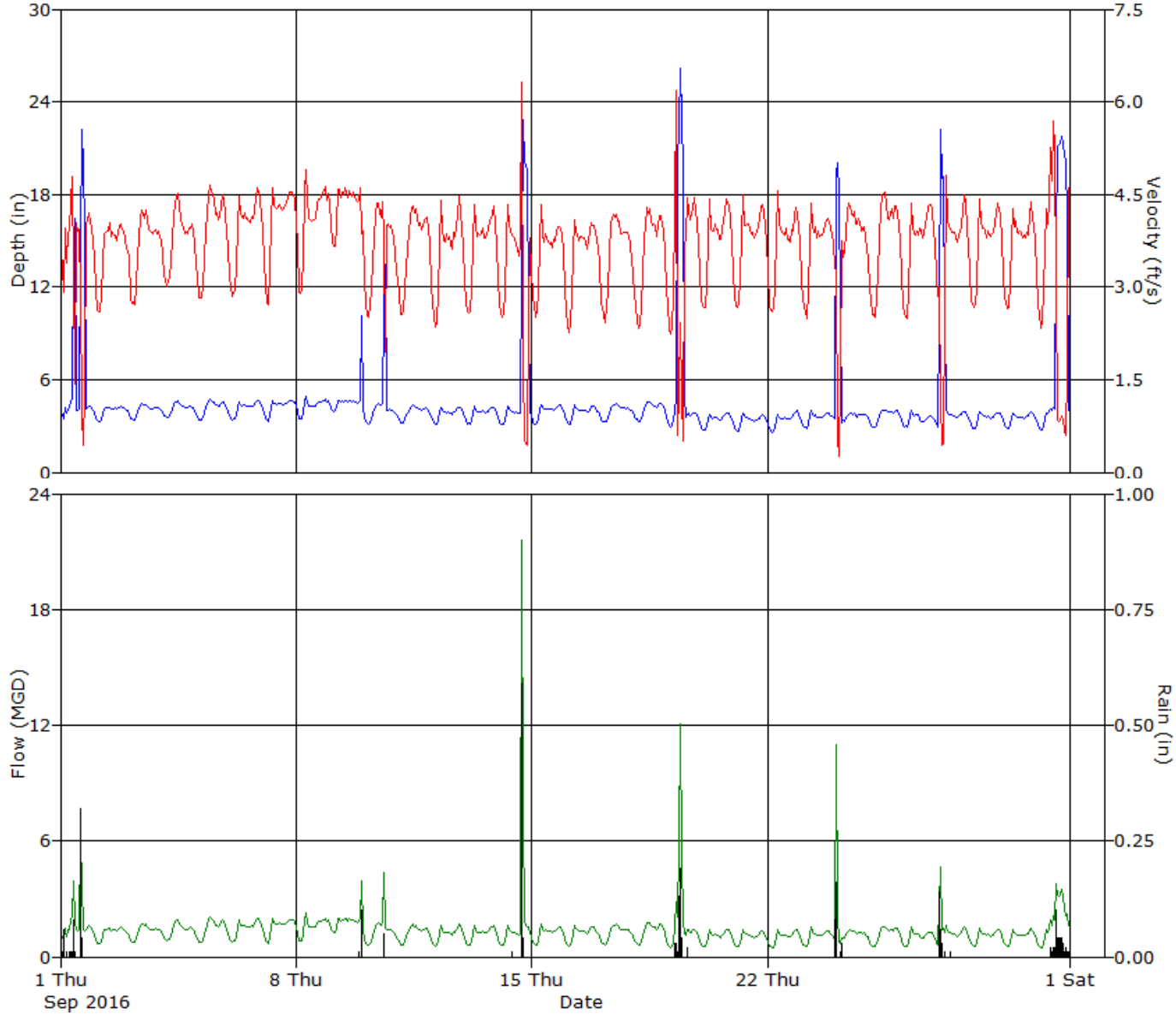


Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



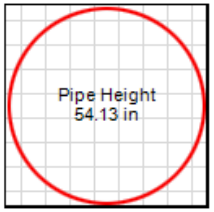
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

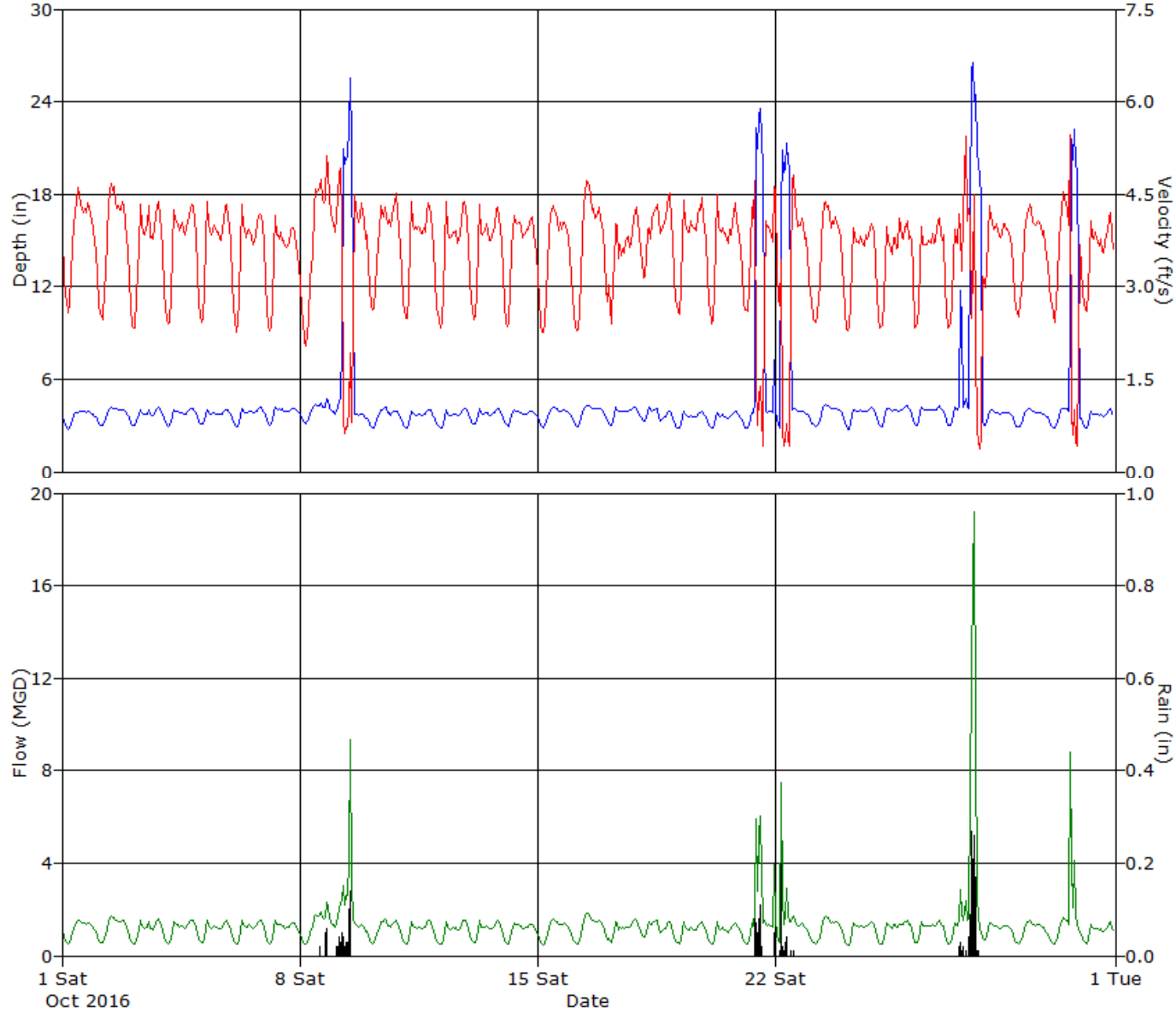


Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W1

Flow Monitor

W1

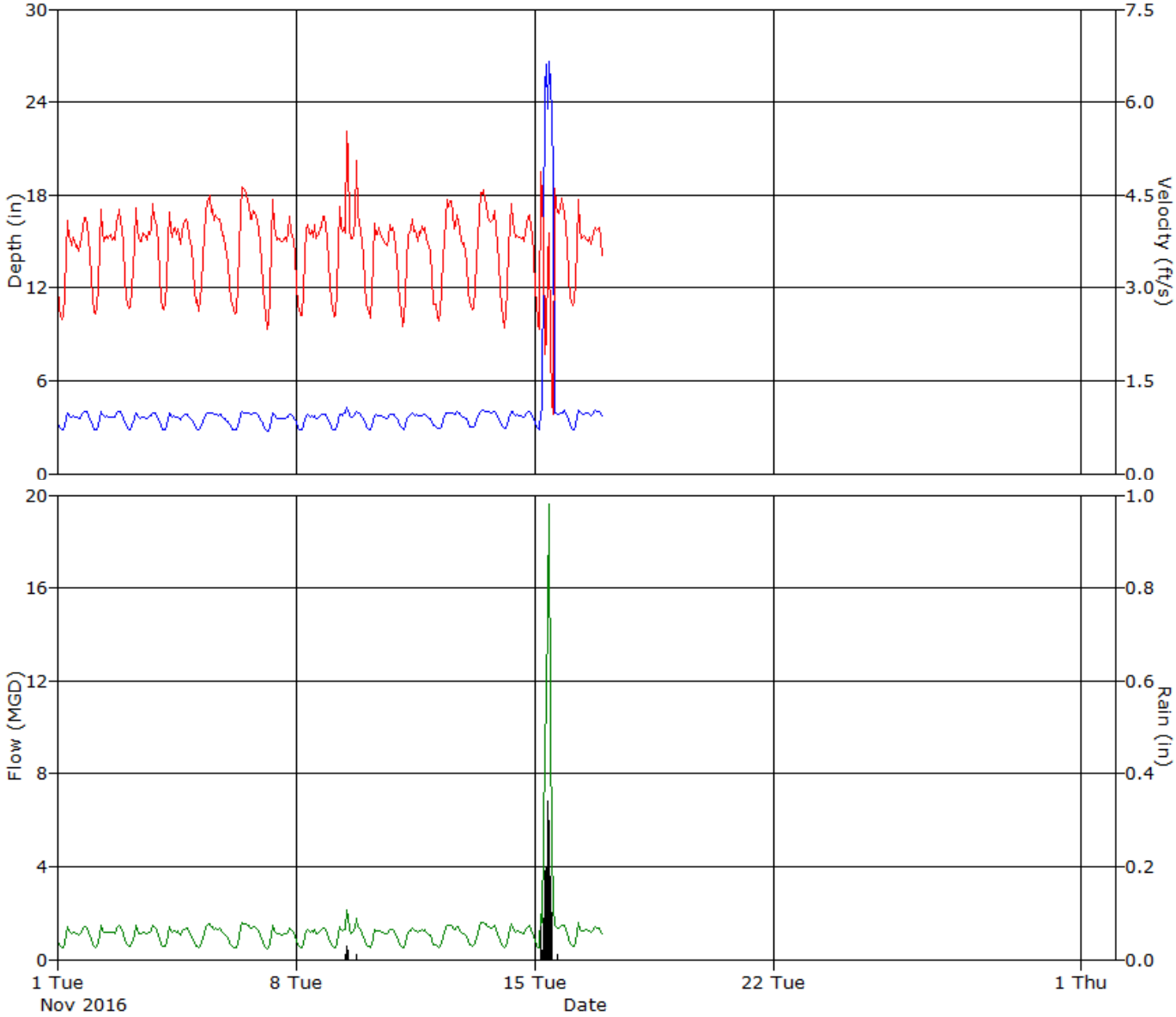
Pipe Height
54.13 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	03:20	3.43	07:45	4.81	4.32	03:20	1.97	21:30	4.20	3.25	03:20	0.540	21:30	1.856	1.286	171904	
5/18/2016	03:25	3.42	07:40	4.86	4.26	03:25	1.96	21:20	4.27	3.25	03:25	0.533	07:25	1.827	1.262	168759	
5/19/2016	04:10	3.31	07:45	4.72	4.20	04:10	1.79	21:50	4.19	3.25	04:10	0.465	21:50	1.810	1.235	165085	
5/20/2016	04:15	3.29	07:30	4.72	4.21	03:55	1.76	19:10	4.15	3.29	03:55	0.453	07:30	1.778	1.253	167541	
5/21/2016	05:05	3.36	20:00	4.97	4.27	05:05	1.87	19:40	4.79	3.32	05:05	0.498	19:40	2.242	1.303	174208	0.03
5/22/2016	04:00	3.50	04:50	5.08	4.46	03:50	1.88	04:40	5.68	3.60	04:00	0.540	04:40	2.754	1.486	198620	0.08
5/23/2016	04:20	3.30	21:45	4.80	4.22	04:20	1.77	21:45	4.36	3.29	04:20	0.458	21:45	1.964	1.260	168418	
5/24/2016	02:35	3.50	07:40	21.27	5.05	08:20	0.30	07:20	6.97	3.54	02:35	0.593	07:20	4.231	1.465	195806	0.16
5/25/2016	03:55	3.15	22:10	4.53	4.03	04:35	2.00	07:45	4.41	3.45	04:35	0.490	22:20	1.778	1.230	164372	
5/26/2016	03:55	3.17	07:40	4.53	4.08	03:30	1.97	08:30	4.77	3.43	03:30	0.487	08:30	1.940	1.245	166461	
5/27/2016	03:30	3.29	08:10	4.53	4.06	02:35	2.07	07:45	4.29	3.41	03:15	0.543	07:45	1.770	1.225	163819	
5/28/2016	04:35	3.25	10:45	4.57	4.09	05:10	1.80	10:50	4.45	3.46	05:10	0.470	10:50	1.864	1.265	169170	
5/29/2016	04:30	3.32	12:35	4.51	4.02	03:55	1.92	12:10	4.36	3.39	03:55	0.523	12:10	1.770	1.202	160730	
5/30/2016	01:10	3.86	01:50	30.50	11.04	08:40	0.21	01:45	12.50	2.95	08:40	0.720	01:50	59.131	2.978	398161	1.38
5/31/2016	04:30	3.40	21:35	4.61	4.15	04:10	1.71	22:20	4.26	3.29	04:10	0.464	22:20	1.790	1.221	163101	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2796156	1.65
Avg	4.70	3.34	1.395	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:35	3.45	21:25	4.62	4.13	02:05	1.82	10:05	4.25	3.20	02:05	0.515	21:10	1.754	1.182	158039	
6/2/2016	04:00	3.24	20:45	4.71	4.16	04:00	1.67	22:05	4.17	3.13	04:00	0.421	22:05	1.828	1.177	157338	
6/3/2016	04:10	3.45	09:10	4.90	4.25	04:10	2.01	08:55	4.51	3.25	04:10	0.556	08:55	2.066	1.256	167851	0.03
6/4/2016	04:55	3.35	20:25	27.36	6.78	22:55	0.24	20:00	13.07	3.10	04:55	0.492	20:00	43.179	2.118	283085	0.58
6/5/2016	05:15	3.21	18:45	61.37	11.05	23:55	0.00	18:50	12.85	2.69	23:55	0.000	11:30	38.914	2.920	390385	0.96
6/6/2016	23:55	4.03	07:35	19.86	9.39	04:35	0.11	21:25	4.42	2.53	04:35	0.346	21:25	1.757	1.134	151655	
6/7/2016	04:00	3.34	07:35	4.44	4.06	03:30	2.24	07:20	4.33	3.47	03:30	0.596	07:20	1.733	1.238	165555	
6/8/2016	03:50	3.25	13:35	28.16	7.41	16:55	0.23	12:55	5.97	2.99	04:15	0.522	13:35	15.472	1.814	242535	0.40
6/9/2016	04:15	3.31	07:35	4.30	3.92	02:55	2.26	21:40	4.30	3.50	02:55	0.619	07:40	1.608	1.187	158617	
6/10/2016	04:45	3.15	07:45	4.72	4.11	03:20	2.15	07:15	4.29	3.42	03:20	0.535	07:40	1.799	1.255	167803	
6/11/2016	04:45	3.41	13:10	4.82	4.26	03:35	2.30	12:55	4.15	3.39	03:35	0.666	13:20	1.854	1.308	174831	
6/12/2016	05:25	3.62	11:00	4.92	4.34	04:00	2.47	10:35	4.47	3.50	04:00	0.759	10:35	2.071	1.378	184230	
6/13/2016	04:45	3.49	20:45	4.79	4.28	04:00	1.82	21:30	4.30	3.35	04:00	0.518	21:30	1.884	1.299	173634	
6/14/2016	03:55	3.65	07:45	4.84	4.16	04:00	2.08	20:45	4.33	3.46	04:00	0.635	07:35	1.945	1.276	170616	
6/15/2016	04:10	3.21	21:45	4.42	3.95	03:00	2.19	21:10	4.45	3.46	03:00	0.550	21:45	1.776	1.192	159317	
6/16/2016	03:05	3.27	06:55	27.54	5.49	06:45	0.16	06:50	6.41	3.31	06:45	0.509	06:50	22.530	1.538	205664	0.20
6/17/2016	03:20	3.29	00:00	4.41	3.93	03:35	1.97	17:15	5.43	3.59	03:35	0.516	17:15	2.116	1.221	163186	
6/18/2016	05:00	3.22	11:50	4.43	3.99	03:05	2.24	10:05	4.38	3.53	04:45	0.562	10:30	1.739	1.239	165614	
6/19/2016	05:05	3.31	11:00	4.60	4.03	05:05	2.18	11:00	4.98	3.51	05:05	0.568	11:00	2.108	1.249	166970	
6/20/2016	03:20	3.44	07:50	4.57	4.07	03:40	2.17	19:45	4.54	3.56	03:40	0.601	19:45	1.767	1.277	170775	
6/21/2016	03:50	3.24	20:50	4.39	4.02	02:50	2.22	07:55	4.34	3.53	02:50	0.567	07:55	1.698	1.252	167352	
6/22/2016	03:20	3.31	21:40	4.40	4.02	03:30	2.18	21:25	4.24	3.44	03:30	0.571	21:30	1.664	1.216	162537	
6/23/2016	03:55	3.30	20:45	4.48	4.05	04:25	2.25	21:25	4.28	3.45	04:25	0.587	20:25	1.735	1.232	164677	
6/24/2016	04:30	3.39	19:20	4.44	4.07	04:15	1.93	20:40	4.30	3.45	04:15	0.524	20:40	1.702	1.239	165669	
6/25/2016	04:35	3.30	11:25	4.37	4.00	04:00	1.92	09:55	4.47	3.42	04:45	0.503	09:55	1.741	1.203	160807	
6/26/2016	04:40	3.36	11:10	4.44	4.01	04:45	2.02	10:40	4.62	3.51	04:45	0.539	10:40	1.811	1.240	165789	
6/27/2016	04:05	3.28	23:50	26.87	4.57	23:40	0.87	22:55	7.29	3.60	04:00	0.465	23:55	10.222	1.519	203021	0.18
6/28/2016	03:45	3.12	00:00	27.64	6.77	03:10	0.09	22:05	7.39	3.19	03:10	0.274	00:00	22.052	1.594	213096	0.43
6/29/2016	04:30	3.56	00:15	5.60	4.24	04:05	2.25	00:15	6.93	3.55	04:05	0.659	00:15	3.914	1.359	181635	0.04
6/30/2016	03:15	3.42	21:15	4.55	4.17	02:40	1.93	17:40	4.07	3.31	03:10	0.548	17:40	1.660	1.232	164632	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5526913	2.82
Avg	4.86	3.35	1.378	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	03:00	3.45	20:50	72.87	7.76	16:40	0.00	20:45	12.34	3.15	16:40	0.000	20:50	66.746	2.511	335733	1.28
7/2/2016	00:50	3.35	00:00	18.55	4.52	00:45	0.26	09:45	4.38	3.43	02:40	0.670	09:50	1.706	1.233	164781	
7/3/2016	04:00	3.39	09:25	4.46	4.00	02:50	1.93	08:30	4.10	3.33	02:50	0.528	09:40	1.623	1.163	155477	
7/4/2016	02:45	3.34	22:45	27.33	7.39	20:25	0.46	20:00	6.47	3.05	03:25	0.530	19:35	20.714	2.228	297805	0.27
7/5/2016	23:55	3.83	02:25	25.64	7.83	04:45	0.40	01:45	13.83	3.49	23:55	0.861	02:05	43.388	2.685	358937	1.15
7/6/2016	03:00	3.45	06:45	4.48	4.09	01:25	2.08	18:55	4.38	3.37	01:55	0.604	18:55	1.695	1.220	163121	
7/7/2016	01:30	3.38	17:45	4.57	4.07	01:55	1.62	16:25	4.67	3.35	01:55	0.439	16:25	1.897	1.212	161984	0.01
7/8/2016	00:10	3.44	08:20	4.54	4.09	00:20	2.07	04:15	4.09	3.31	00:20	0.572	07:00	1.645	1.202	65258	0.02
7/9/2016																	0.38
7/10/2016																	
7/11/2016	14:45	3.87	19:20	4.46	4.31	23:55	3.01	20:10	4.16	3.78	23:55	0.997	19:15	1.662	1.458	75139	
7/12/2016	02:05	3.61	07:35	4.49	4.19	01:25	2.29	17:50	4.33	3.53	01:25	0.708	17:50	1.743	1.320	176448	
7/13/2016	03:05	3.44	08:20	4.66	4.11	02:55	2.05	08:15	4.94	3.45	02:55	0.571	08:15	2.124	1.263	168877	
7/14/2016	00:25	3.47	13:50	48.50	8.30	18:45	0.30	13:55	13.44	2.88	02:25	0.678	13:45	75.422	2.350	314174	0.62
7/15/2016	01:05	3.77	16:10	4.84	4.46	23:15	2.44	04:55	4.31	3.56	01:35	0.822	16:15	1.941	1.457	194831	
7/16/2016	00:45	3.62	14:20	20.33	6.26	15:45	0.19	13:30	4.98	3.15	15:45	0.666	13:55	3.872	1.425	190435	
7/17/2016	02:05	3.86	10:25	4.99	4.54	01:00	2.11	08:20	4.48	3.42	01:00	0.698	09:15	2.080	1.445	193158	
7/18/2016	14:55	3.59	17:10	26.10	5.95	10:20	-8.99	16:55	11.56	2.84	00:30	0.786	16:55	22.056	1.697	197734	0.32
7/19/2016	04:30	3.15	14:25	4.27	3.81	03:55	2.33	13:45	4.90	3.55	03:55	0.564	14:15	1.795	1.156	154480	
7/20/2016	02:00	3.02	09:55	4.18	3.89	02:00	2.32	10:05	4.46	3.69	02:00	0.529	10:05	1.628	1.232	164674	
7/21/2016	04:45	3.13	21:05	4.11	3.76	04:10	2.30	07:40	4.23	3.49	04:10	0.553	07:40	1.490	1.111	148480	
7/22/2016	02:55	3.18	09:45	4.08	3.78	02:45	2.25	09:35	4.70	3.60	02:45	0.555	09:35	1.633	1.158	154833	
7/23/2016	04:45	3.15	11:40	4.09	3.75	05:50	2.69	11:35	4.70	3.74	04:05	0.663	11:35	1.672	1.190	159100	
7/24/2016	00:15	3.18	11:45	4.20	3.81	05:05	2.66	11:40	4.71	3.68	05:05	0.674	11:40	1.735	1.200	160441	
7/25/2016	02:10	2.95	17:35	72.59	8.59	22:45	0.37	18:10	12.44	3.06	04:10	0.559	17:40	71.694	2.849	380800	0.77
7/26/2016	04:10	3.20	21:40	4.18	3.82	03:45	2.67	13:15	4.88	3.67	03:45	0.665	13:15	1.755	1.198	160110	
7/27/2016	04:20	3.24	07:50	4.01	3.74	04:05	2.54	11:55	4.86	3.65	04:05	0.642	11:55	1.617	1.151	153890	
7/28/2016	04:20	3.12	21:15	4.09	3.74	03:35	2.47	20:50	4.38	3.64	03:35	0.604	20:50	1.544	1.154	154281	
7/29/2016	02:40	3.29	08:20	27.38	8.75	10:20	0.39	05:15	7.50	3.24	02:40	0.716	05:15	25.566	2.583	345325	0.86
7/30/2016	05:15	3.32	17:50	25.61	7.83	20:15	0.39	16:00	7.25	3.01	03:05	0.682	17:50	9.670	1.732	231511	0.24
7/31/2016	04:20	3.35	23:10	27.36	7.66	13:50	0.31	21:35	13.04	3.24	04:35	0.586	22:00	35.420	2.453	327710	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5909528	6.64
Avg	5.31	3.38	1.598	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:55	3.33	00:45	25.62	7.21	04:45	0.17	19:20	4.65	3.24	04:45	0.536	00:50	8.870	1.432	191406	0.05
8/2/2016	03:55	3.12	13:45	4.10	3.76	03:00	2.48	07:40	4.50	3.67	03:00	0.617	07:40	1.526	1.172	156693	
8/3/2016	04:10	3.09	21:20	4.11	3.76	04:25	2.52	21:10	4.38	3.62	04:25	0.596	21:10	1.563	1.154	154209	
8/4/2016	04:25	3.10	22:00	4.21	3.78	04:10	2.53	09:00	4.99	3.59	04:10	0.601	09:00	1.806	1.160	155071	
8/5/2016	04:25	3.20	19:45	4.20	3.83	04:35	2.39	19:35	4.28	3.55	04:35	0.597	19:35	1.572	1.165	155681	
8/6/2016	04:00	3.22	11:15	4.29	3.88	04:30	2.54	16:45	4.92	3.67	04:30	0.644	16:50	1.871	1.233	164783	0.09
8/7/2016	04:00	3.20	11:15	4.24	3.85	05:00	2.48	11:05	4.57	3.63	04:55	0.626	11:05	1.715	1.203	160874	
8/8/2016	04:00	3.17	22:30	4.35	3.89	04:00	2.26	20:50	4.37	3.55	04:00	0.552	20:50	1.668	1.195	159722	
8/9/2016	04:10	3.29	10:55	4.32	3.91	04:15	2.23	19:15	4.34	3.52	04:15	0.578	10:50	1.556	1.190	159039	
8/10/2016	04:25	3.18	13:20	24.00	4.26	13:45	0.45	13:00	6.59	3.57	04:00	0.564	13:10	11.716	1.279	171030	0.08
8/11/2016	04:00	2.96	22:00	3.98	3.68	03:20	2.48	21:10	4.48	3.70	03:20	0.560	21:10	1.521	1.148	153443	
8/12/2016	00:10	3.57	01:05	28.28	7.22	05:00	0.21	00:35	7.15	3.31	05:00	0.650	01:05	20.127	1.719	229761	0.34
8/13/2016	04:55	3.25	12:20	4.23	3.89	05:05	2.43	10:20	4.56	3.68	05:05	0.619	10:20	1.701	1.240	165757	
8/14/2016	04:05	3.16	11:40	4.29	3.84	05:20	2.57	19:50	5.26	3.73	05:20	0.636	19:50	1.962	1.238	165486	0.13
8/15/2016	03:10	3.09	19:15	4.11	3.78	02:55	2.58	13:10	4.78	3.70	02:55	0.610	13:10	1.693	1.192	159297	
8/16/2016	04:20	3.07	20:45	4.34	3.78	02:45	2.37	20:40	5.86	3.66	02:45	0.568	20:40	2.263	1.186	158565	0.23
8/17/2016	04:25	3.10	19:55	4.15	3.78	04:05	2.44	16:45	4.35	3.66	04:05	0.585	21:05	1.553	1.178	157445	
8/18/2016	04:35	3.15	05:15	4.33	3.81	04:35	2.33	05:15	5.74	3.72	04:35	0.563	05:15	2.223	1.213	162091	0.03
8/19/2016	04:30	2.95	21:20	4.20	3.80	04:30	2.31	21:20	4.29	3.60	04:30	0.506	21:20	1.586	1.171	156578	
8/20/2016	04:50	3.28	10:50	4.35	3.94	04:20	2.35	09:55	4.27	3.65	04:20	0.615	12:25	1.594	1.250	167047	0.02
8/21/2016	04:40	3.23	18:35	8.22	4.19	04:40	2.69	18:45	5.49	4.04	04:40	0.676	18:35	3.979	1.526	204002	0.15
8/22/2016	04:15	3.29	10:40	4.20	3.79	03:30	3.39	20:55	4.47	3.83	04:10	0.881	20:55	1.601	1.222	163384	
8/23/2016	03:55	3.10	21:45	4.22	3.77	03:50	2.34	21:10	4.24	3.58	03:50	0.558	21:10	1.548	1.150	153775	
8/24/2016	04:20	3.09	19:55	4.31	3.85	04:50	2.34	19:55	4.42	3.60	04:15	0.558	19:55	1.699	1.195	159695	
8/25/2016	04:20	3.15	21:30	4.42	3.98	04:20	2.59	21:30	4.42	3.74	04:20	0.628	21:30	1.765	1.302	174102	
8/26/2016	04:35	3.37	21:05	4.54	4.13	04:35	2.93	21:05	4.58	4.02	04:35	0.782	21:05	1.901	1.475	197164	
8/27/2016	05:05	3.37	13:35	4.46	4.04	05:05	2.93	00:00	4.47	3.80	05:05	0.786	00:00	1.805	1.344	179638	
8/28/2016	04:20	3.45	11:05	4.57	4.07	04:20	2.90	11:05	4.48	3.80	04:20	0.805	11:05	1.880	1.358	181561	
8/29/2016	04:35	3.51	21:05	4.38	4.00	04:35	2.99	21:05	4.23	3.70	04:35	0.847	21:05	1.667	1.284	171661	
8/30/2016	03:45	3.44	20:55	4.44	4.00	03:45	2.87	20:55	4.30	3.70	03:45	0.790	20:55	1.726	1.288	172233	
8/31/2016	03:00	3.49	21:05	4.63	4.01	03:00	2.96	21:10	4.55	3.80	03:00	0.835	21:10	1.941	1.328	177352	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5238545	1.12
Avg	4.11	3.67	1.264	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	14:25	2.06	14:40	25.99	7.36	17:40	0.38	14:35	10.81	3.35	02:55	0.744	14:35	19.515	1.824	243793	0.56
9/2/2016	04:25	3.24	19:10	4.38	3.97	04:20	2.40	11:25	4.24	3.60	04:20	0.608	19:10	1.631	1.249	167001	
9/3/2016	04:35	3.33	10:35	4.53	4.03	05:05	2.51	11:30	4.57	3.68	05:00	0.669	11:30	1.835	1.307	174748	
9/4/2016	04:10	3.47	11:55	4.65	4.12	06:35	2.91	11:55	4.59	3.81	04:10	0.820	11:55	1.977	1.391	185955	
9/5/2016	04:05	3.35	11:40	4.77	4.17	04:05	2.74	11:40	4.73	3.91	04:05	0.726	11:40	2.111	1.469	196438	
9/6/2016	03:40	3.38	21:00	4.72	4.20	03:40	2.79	21:00	4.68	3.96	03:40	0.750	21:00	2.061	1.493	199566	
9/7/2016	04:15	3.30	07:45	4.81	4.28	04:15	2.66	07:45	4.79	4.07	04:15	0.689	07:45	2.163	1.582	211526	
9/8/2016	02:40	3.40	07:40	5.01	4.31	02:40	2.82	07:40	5.04	4.11	02:40	0.766	07:40	2.415	1.612	215498	
9/9/2016	03:40	3.91	23:25	21.33	4.71	23:40	0.21	23:45	6.37	4.33	23:40	0.672	23:30	11.238	1.868	249738	0.11
9/10/2016	04:05	3.12	15:50	21.74	4.58	16:30	0.39	15:30	6.68	3.60	03:40	0.565	15:40	11.634	1.398	186917	0.05
9/11/2016	05:00	3.15	11:45	4.35	3.89	04:20	2.32	11:45	4.57	3.69	04:20	0.566	11:45	1.779	1.248	166770	
9/12/2016	03:50	3.07	20:45	4.25	3.80	03:55	2.21	07:25	4.67	3.60	03:55	0.516	20:35	1.753	1.177	157379	0.00
9/13/2016	04:55	3.06	07:30	4.30	3.83	04:15	2.45	07:30	4.61	3.66	04:15	0.574	07:30	1.767	1.209	161605	
9/14/2016	17:30	1.36	17:40	81.19	7.22	22:15	0.34	17:45	12.45	3.09	03:50	0.541	17:40	74.011	2.305	308195	0.64
9/15/2016	03:50	3.09	07:25	4.50	3.95	03:40	2.38	07:25	4.53	3.57	03:40	0.570	07:25	1.855	1.234	164898	
9/16/2016	04:00	3.09	07:45	4.50	3.90	04:25	2.12	18:25	4.47	3.52	04:25	0.506	07:30	1.734	1.193	159517	
9/17/2016	05:25	3.25	12:35	4.46	3.96	04:35	2.21	10:35	4.46	3.58	04:35	0.567	10:35	1.766	1.247	166670	
9/18/2016	04:10	3.21	10:25	4.61	4.07	03:55	2.18	10:15	4.51	3.59	04:05	0.556	10:15	1.898	1.308	174817	
9/19/2016	04:25	2.90	10:30	27.97	7.57	08:55	0.40	07:50	6.65	3.21	03:30	0.443	10:35	16.012	2.049	273895	0.45
9/20/2016	03:25	2.75	20:30	3.82	3.42	02:40	2.44	07:40	4.79	3.74	02:40	0.484	07:40	1.520	1.046	139855	
9/21/2016	04:05	2.66	07:40	3.85	3.37	02:55	2.47	07:35	4.78	3.74	02:55	0.478	07:35	1.554	1.021	136475	
9/22/2016	03:20	2.58	21:45	3.99	3.41	03:10	2.46	07:20	4.72	3.68	03:10	0.447	20:40	1.507	1.027	137299	
9/23/2016	04:20	2.82	07:45	4.09	3.53	04:30	2.36	07:45	4.61	3.65	04:30	0.489	07:45	1.640	1.067	142577	
9/24/2016	04:30	2.56	01:55	23.83	5.88	04:20	0.22	01:00	7.68	3.53	04:30	0.498	01:00	25.125	1.600	213870	0.28
9/25/2016	05:05	2.90	10:45	4.06	3.66	03:30	2.39	12:50	4.82	3.76	04:55	0.521	12:50	1.671	1.173	156857	
9/26/2016	04:15	2.94	13:00	4.23	3.45	02:55	2.18	07:15	4.81	3.67	02:55	0.487	07:20	1.667	1.034	138247	
9/27/2016	02:15	2.85	02:50	25.42	6.26	06:05	0.34	02:35	6.95	3.42	02:10	0.570	02:50	10.903	1.436	192030	0.25
9/28/2016	03:00	2.82	07:40	3.94	3.52	03:40	2.53	20:15	4.72	3.72	03:15	0.526	07:40	1.583	1.084	144892	
9/29/2016	03:25	2.79	20:30	3.90	3.49	03:45	2.52	20:30	4.57	3.68	03:45	0.512	20:30	1.517	1.059	141600	
9/30/2016	04:10	2.72	14:30	22.33	9.68	22:40	0.53	14:15	7.25	2.85	03:20	0.446	14:20	6.050	1.865	249096	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5557721	2.75
Avg	4.59	3.65	1.386	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:35	2.72	12:50	3.97	3.59	04:30	2.43	10:55	4.87	3.85	04:30	0.475	12:40	1.616	1.161	155269	
10/2/2016	04:30	2.95	11:50	4.18	3.73	05:20	2.31	11:45	4.92	3.81	05:20	0.513	11:50	1.809	1.224	163570	
10/3/2016	03:20	2.87	20:45	4.22	3.67	02:40	2.03	20:40	4.68	3.65	02:40	0.461	20:40	1.737	1.136	151909	
10/4/2016	03:55	2.92	21:15	4.18	3.71	03:05	2.19	21:00	4.60	3.68	03:05	0.478	21:15	1.673	1.164	155631	
10/5/2016	04:10	3.03	07:50	4.11	3.67	04:35	2.23	07:30	4.59	3.67	04:35	0.518	07:35	1.639	1.137	152028	
10/6/2016	04:10	2.87	21:20	4.21	3.74	03:25	2.09	07:25	4.57	3.60	03:25	0.463	07:40	1.654	1.152	154037	0.00
10/7/2016	03:00	3.01	07:35	4.31	3.82	03:40	2.11	07:35	4.40	3.47	03:40	0.488	07:35	1.693	1.143	152779	
10/8/2016	04:55	3.04	19:50	5.32	3.97	04:45	1.82	19:45	5.78	3.76	04:45	0.424	19:45	2.994	1.338	178917	0.13
10/9/2016	23:55	3.40	12:45	27.03	9.54	14:25	0.46	06:00	5.50	3.20	22:10	0.978	12:45	13.610	2.171	290223	0.52
10/10/2016	02:55	2.78	12:35	4.26	3.65	02:45	2.47	20:35	4.73	3.77	03:15	0.503	12:30	1.774	1.166	155816	
10/11/2016	04:05	2.83	20:35	4.06	3.59	03:05	2.35	19:00	4.66	3.69	04:00	0.489	19:00	1.591	1.110	148397	0.00
10/12/2016	04:05	2.80	21:45	4.10	3.60	04:05	2.27	07:35	4.68	3.63	04:05	0.460	07:35	1.640	1.100	147106	
10/13/2016	03:40	3.04	07:45	4.16	3.69	03:45	2.21	07:35	4.77	3.64	03:45	0.507	07:35	1.736	1.135	151717	
10/14/2016	04:10	2.92	07:40	4.13	3.67	04:25	2.15	11:00	4.37	3.62	04:25	0.472	07:40	1.555	1.118	149500	
10/15/2016	04:15	2.84	12:00	4.23	3.71	03:10	2.10	12:30	4.51	3.57	04:20	0.444	12:25	1.655	1.141	152541	
10/16/2016	04:55	2.90	11:40	4.31	3.80	03:40	2.11	11:35	4.85	3.69	04:55	0.473	11:35	1.862	1.225	163807	
10/17/2016	04:10	2.99	21:10	4.25	3.79	04:15	2.07	21:00	4.52	3.56	04:15	0.463	21:00	1.699	1.156	154572	
10/18/2016	03:40	3.20	07:50	4.28	3.72	03:40	3.04	19:15	4.77	3.94	03:40	0.753	07:45	1.731	1.229	164296	0.00
10/19/2016	04:10	2.81	07:45	3.94	3.51	04:10	2.29	07:30	4.65	3.73	04:10	0.468	07:30	1.554	1.082	144633	
10/20/2016	03:25	2.77	20:40	3.95	3.50	03:20	2.22	07:25	4.74	3.65	03:20	0.446	07:45	1.585	1.057	141324	
10/21/2016	03:20	2.80	13:50	25.59	8.51	16:05	0.34	23:30	7.77	2.95	02:55	0.493	10:05	12.994	1.991	266098	0.46
10/22/2016	04:00	2.78	04:35	26.35	8.64	06:25	0.35	04:20	8.12	3.02	03:45	0.528	04:20	17.266	1.706	228068	0.33
10/23/2016	04:15	2.93	12:00	4.40	3.79	03:40	2.23	12:00	4.62	3.61	04:15	0.507	12:00	1.830	1.190	159048	
10/24/2016	04:15	2.72	20:15	4.22	3.75	03:55	2.18	20:50	4.23	3.47	03:55	0.427	20:15	1.559	1.118	149451	
10/25/2016	04:35	2.94	21:45	4.33	3.83	02:15	2.25	20:50	4.58	3.48	03:20	0.498	20:50	1.753	1.158	154753	
10/26/2016	03:35	3.04	20:30	4.32	3.86	02:55	2.21	14:50	4.30	3.54	02:55	0.510	20:20	1.635	1.182	158008	
10/27/2016	03:25	2.99	20:40	28.01	9.84	23:50	0.45	20:10	9.07	3.21	04:10	0.501	20:10	41.205	3.789	506465	1.15
10/28/2016	04:10	2.98	00:00	19.49	4.92	01:50	0.28	07:50	4.52	3.51	04:40	0.647	07:50	1.537	1.170	156413	
10/29/2016	04:50	2.85	12:15	4.11	3.61	04:15	2.34	11:45	4.66	3.61	04:50	0.507	11:45	1.653	1.101	147188	
10/30/2016	05:25	2.73	17:00	26.72	7.74	21:20	0.34	16:35	10.85	2.95	05:05	0.449	16:50	42.911	1.727	230922	
10/31/2016	04:10	2.81	21:45	4.08	3.58	04:15	2.39	21:35	4.39	3.56	04:15	0.492	21:40	1.551	1.060	141608	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			5526094	2.59
Avg	4.57	3.55	1.334	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

W1, Pipe Height: 54.13 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:15	2.77	07:45	4.09	3.56	02:45	2.26	20:25	4.38	3.54	04:15	0.458	07:55	1.522	1.052	140640	
11/2/2016	03:00	2.81	07:50	4.08	3.57	02:55	2.42	18:40	4.54	3.63	02:55	0.495	07:35	1.584	1.086	145195	
11/3/2016	04:05	2.80	08:00	4.06	3.55	04:05	2.50	07:30	4.69	3.65	04:05	0.509	07:30	1.613	1.076	143894	
11/4/2016	03:55	2.79	07:45	3.98	3.51	03:55	2.46	07:35	4.50	3.65	03:55	0.498	07:35	1.529	1.059	141532	
11/5/2016	03:45	2.81	11:15	3.95	3.52	04:35	2.47	11:10	4.65	3.69	04:35	0.505	11:15	1.570	1.084	144879	
11/6/2016	06:05	2.80	10:40	4.04	3.56	04:50	2.40	13:20	4.89	3.77	04:50	0.488	10:25	1.681	1.132	151265	
11/7/2016	05:00	2.72	08:50	3.93	3.46	04:35	2.23	08:40	4.69	3.54	04:35	0.440	08:40	1.562	1.012	135311	
11/8/2016	04:10	2.79	19:20	3.88	3.52	04:20	2.33	19:25	4.40	3.60	04:20	0.471	19:25	1.442	1.053	140740	
11/9/2016	04:30	2.81	12:25	4.43	3.61	04:15	2.36	12:20	6.41	3.79	04:15	0.484	12:25	2.550	1.163	155467	0.07
11/10/2016	04:05	2.80	07:50	3.91	3.53	04:35	2.33	18:35	4.34	3.55	04:40	0.477	18:40	1.409	1.036	138546	
11/11/2016	04:25	2.80	10:10	3.95	3.56	04:35	2.24	10:10	4.34	3.56	04:35	0.466	10:10	1.466	1.054	140869	
11/12/2016	04:05	2.89	19:05	4.04	3.59	04:10	2.25	10:35	4.84	3.64	04:10	0.479	10:35	1.644	1.101	147187	
11/13/2016	02:45	2.99	11:15	4.09	3.69	05:45	2.41	11:15	4.80	3.74	04:00	0.552	11:15	1.710	1.176	157168	
11/14/2016	03:25	2.89	08:00	4.11	3.62	03:45	2.25	07:30	4.57	3.60	03:50	0.484	07:30	1.629	1.096	146461	
11/15/2016	04:10	2.79	10:30	28.38	10.12	13:50	0.51	06:20	7.27	3.40	03:20	0.434	09:50	29.585	4.058	542527	1.50
11/16/2016	04:20	2.83	07:35	4.14	3.70	04:00	2.50	07:40	4.69	3.62	04:00	0.519	07:40	1.691	1.135	151648	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2723330	1.57
Avg	3.98	3.62	1.273	

Site Commentary

Site Information

W2-A	
Pipe Dimensions (in.)	Elliptical (46.50 in H, 45.75 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph for W2-A indicates this location functioned mostly in free-flow conditions and the scattergraph shows the supercritical flows for the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.48	6.27	1.044
Minimum	1.38	2.07	0.238
Maximum	45.72	12.80	73.144
Time of Minimum	7/26/2016 3:20 PM	10/22/2016 4:20 AM	6/15/2016 3:15 AM
Time of Maximum	7/25/2016 5:40 PM	10/30/2016 4:40 PM	7/25/2016 5:40 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. WEEHAWKEN, NJ

Site Report

FM Initials: CK

Project Name: NHSA

Site Name:	W2-A	Meter Type:	TRITON+	Monitor S/N:	60993	Manhole #:	W2-GR-004
Address / Location:	506 GREGORY AVENUE			Map Page #:		H3	
				Pipe Height:		46.5 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		45.75 Inches	
				I.P. Address		107.80.25.33	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 8, 2016	9:45 AM	Manhole Depth:	11 Feet		
Site Hydraulics:	FAST SHALLOW FLOW, RIPPLES		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	Brick		Fair
			Mini System Character:	RESIDENTIAL		
			Telephone Information:			
Depth of Flow (Wet Dof):	4 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	42.5 +/- 0.5		Distance From Manhole:	N/A Feet		
Peak Velocity:	6.8 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.76528 W 74.02626

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other		X		

Additional Site Information / Comments:

UPSTREAM INSTALLATION. TWO INFLUENT LINES. TWO EFFLUENT LINES.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** W2-A **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

W2-A

Flow Monitor

W2-A

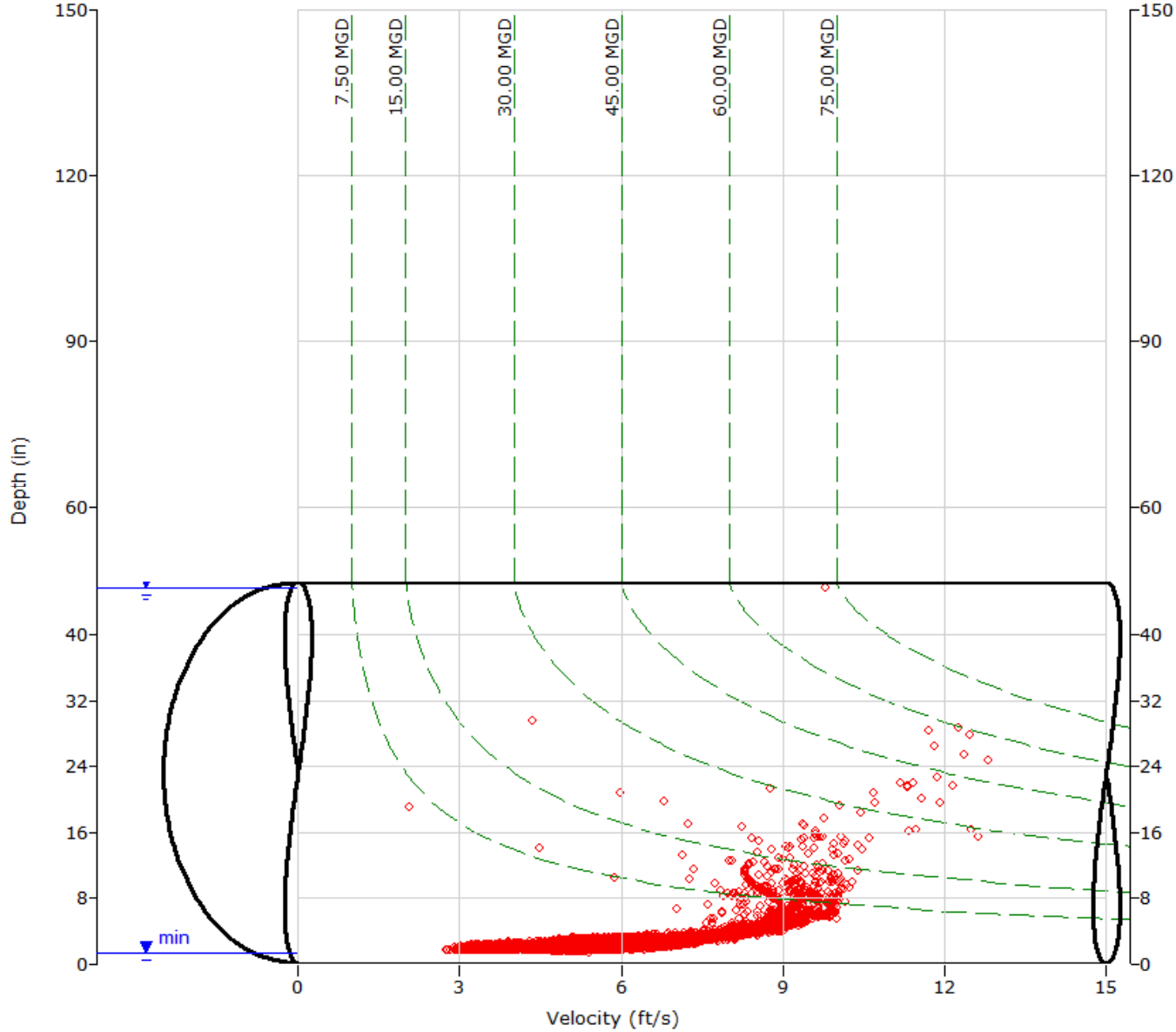
Pipe Height
46.50 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



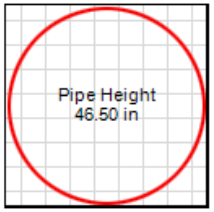
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

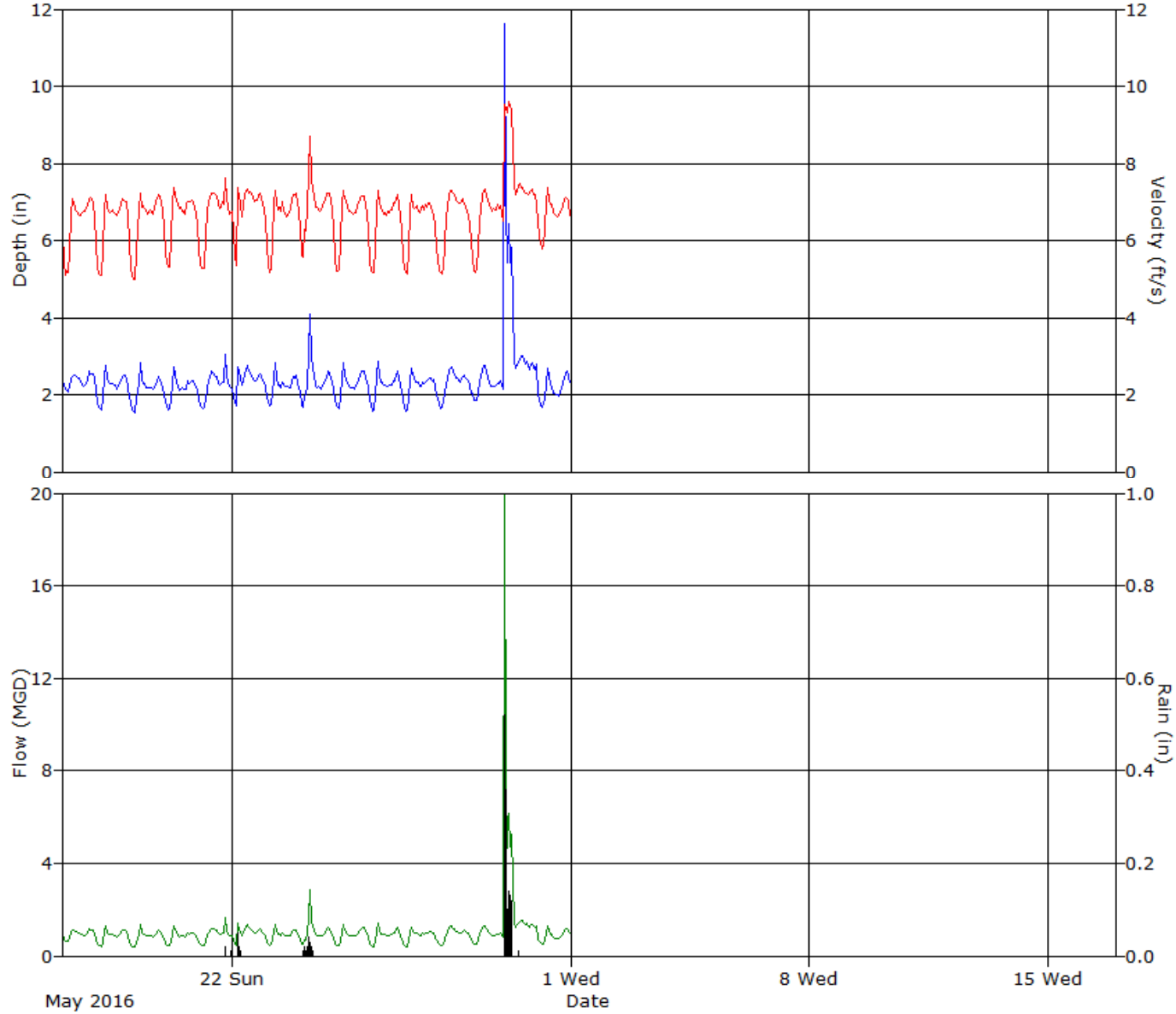


Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



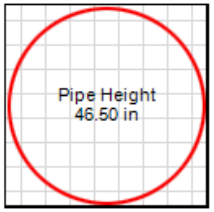
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

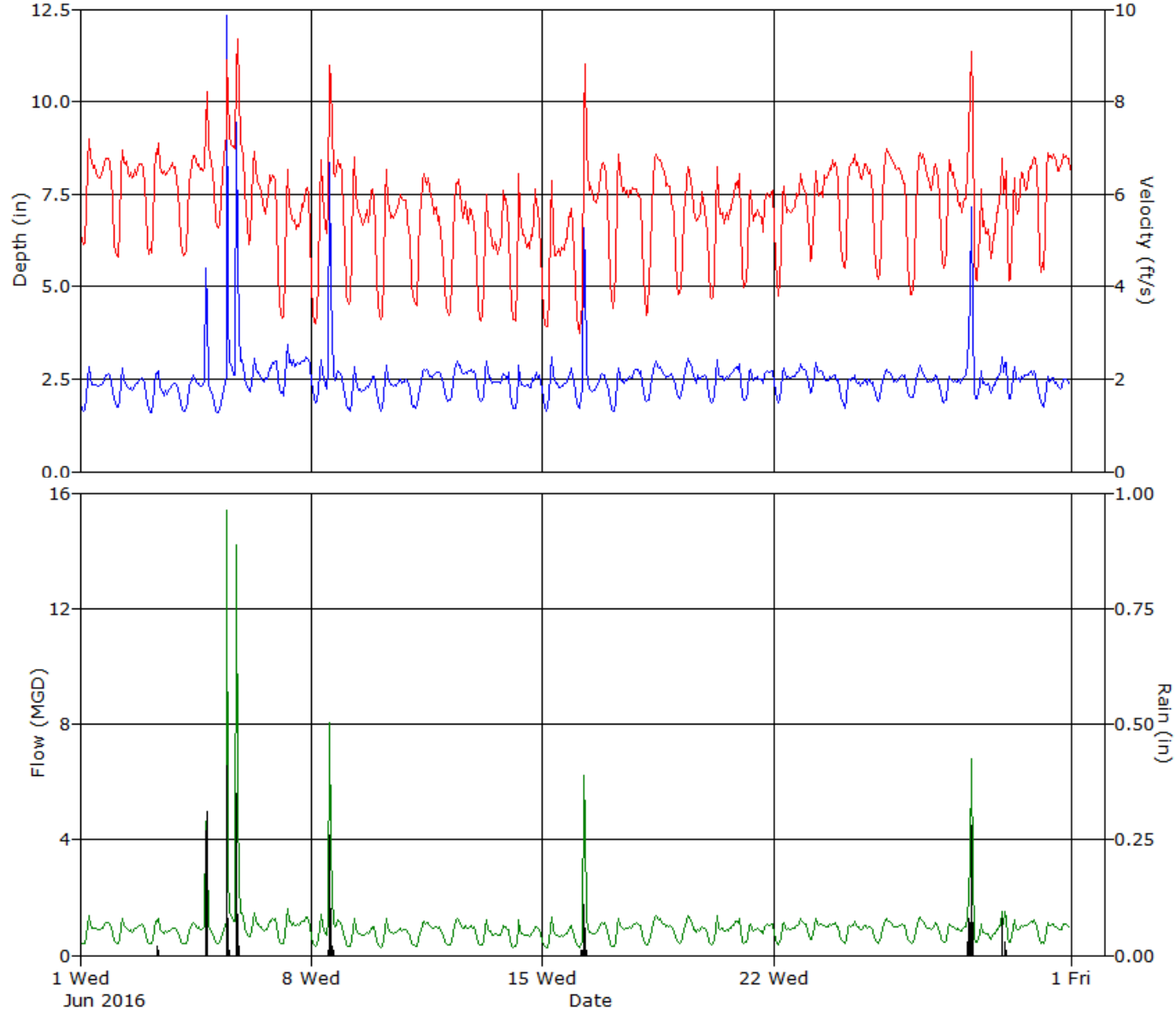


Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



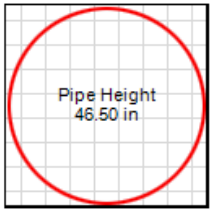
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

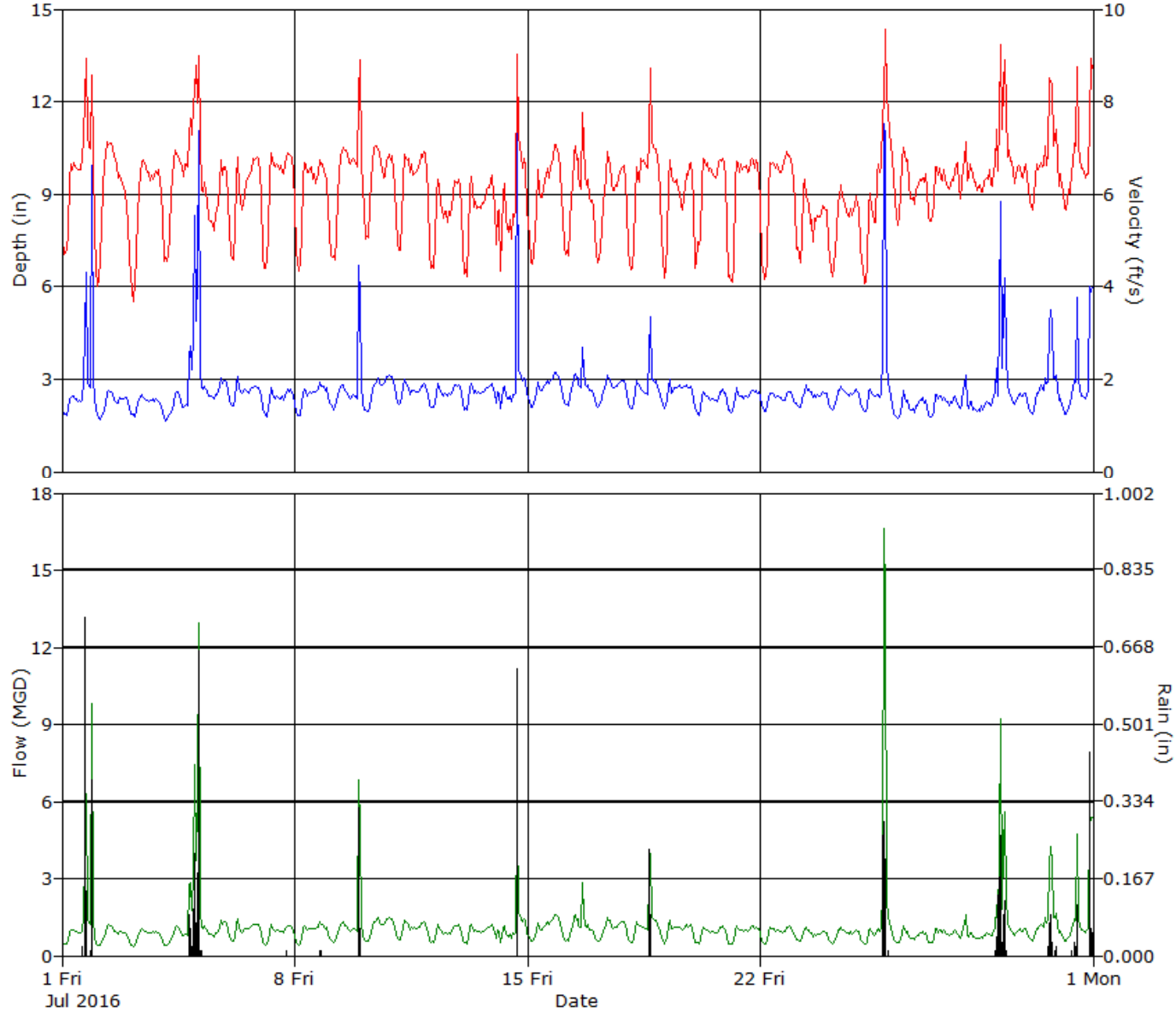


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



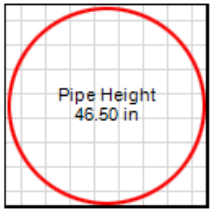
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

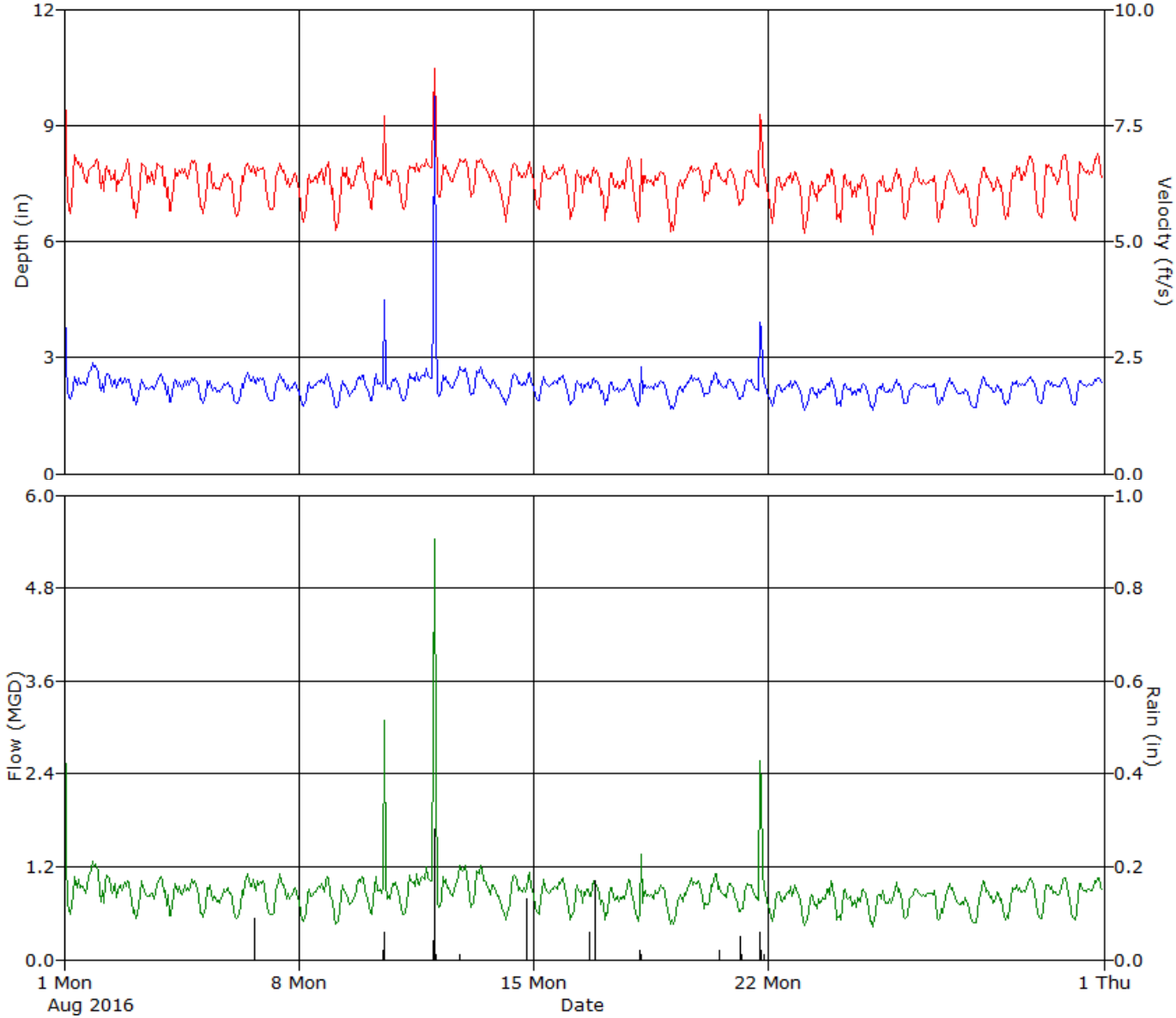


Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

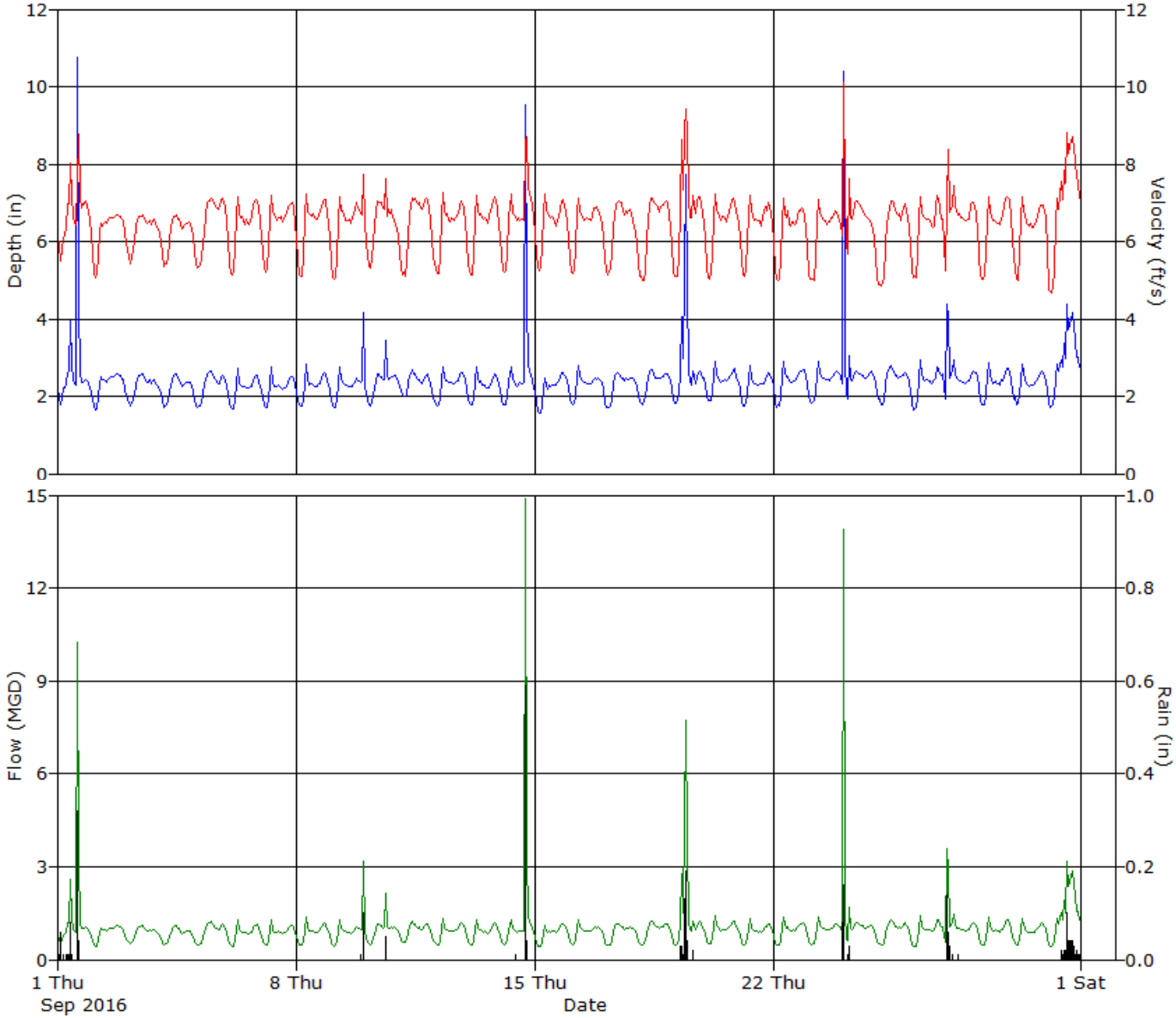
Pipe Height
46.50 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



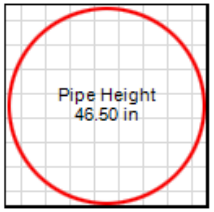
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

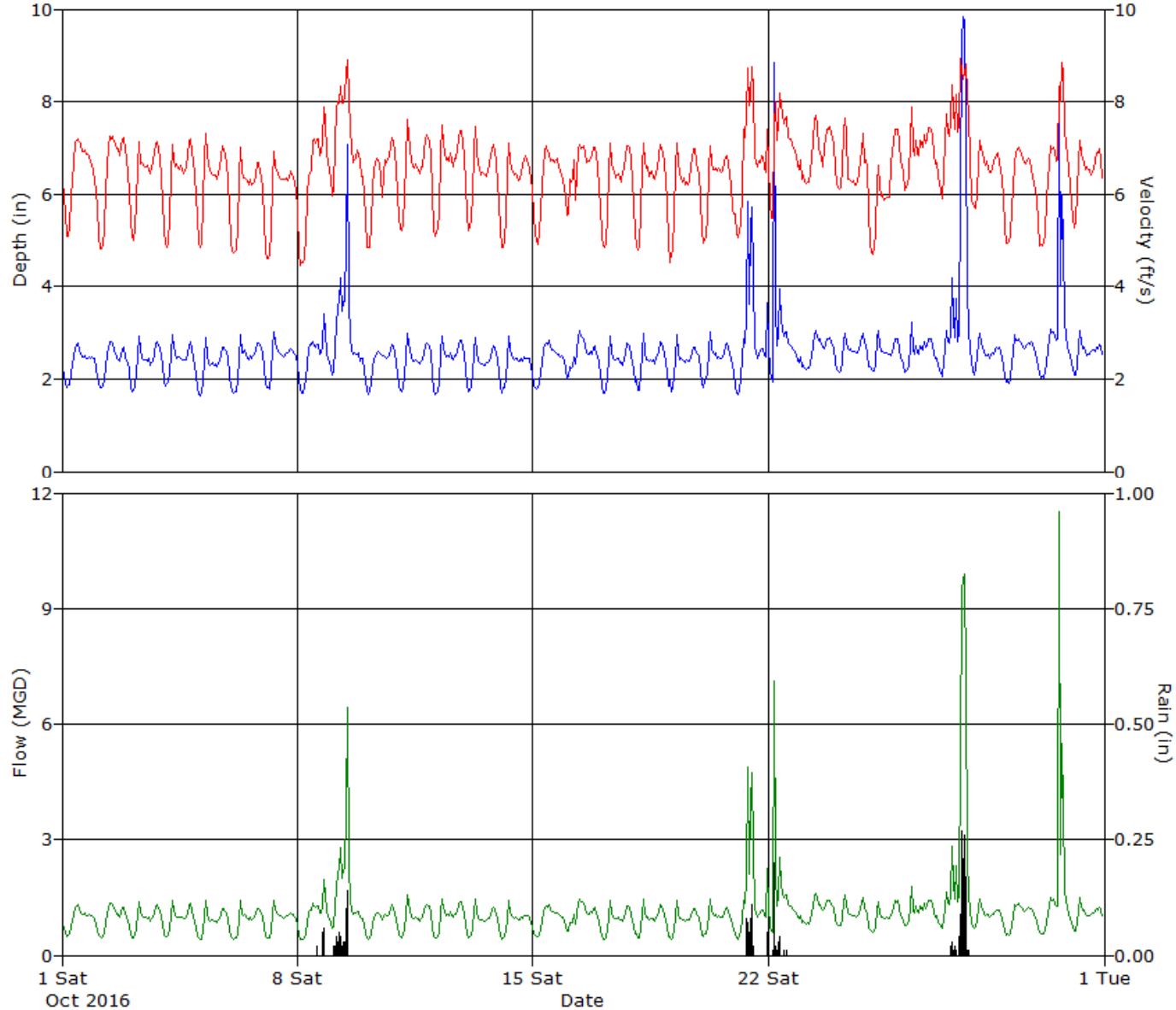


Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-A

Flow Monitor

W2-A

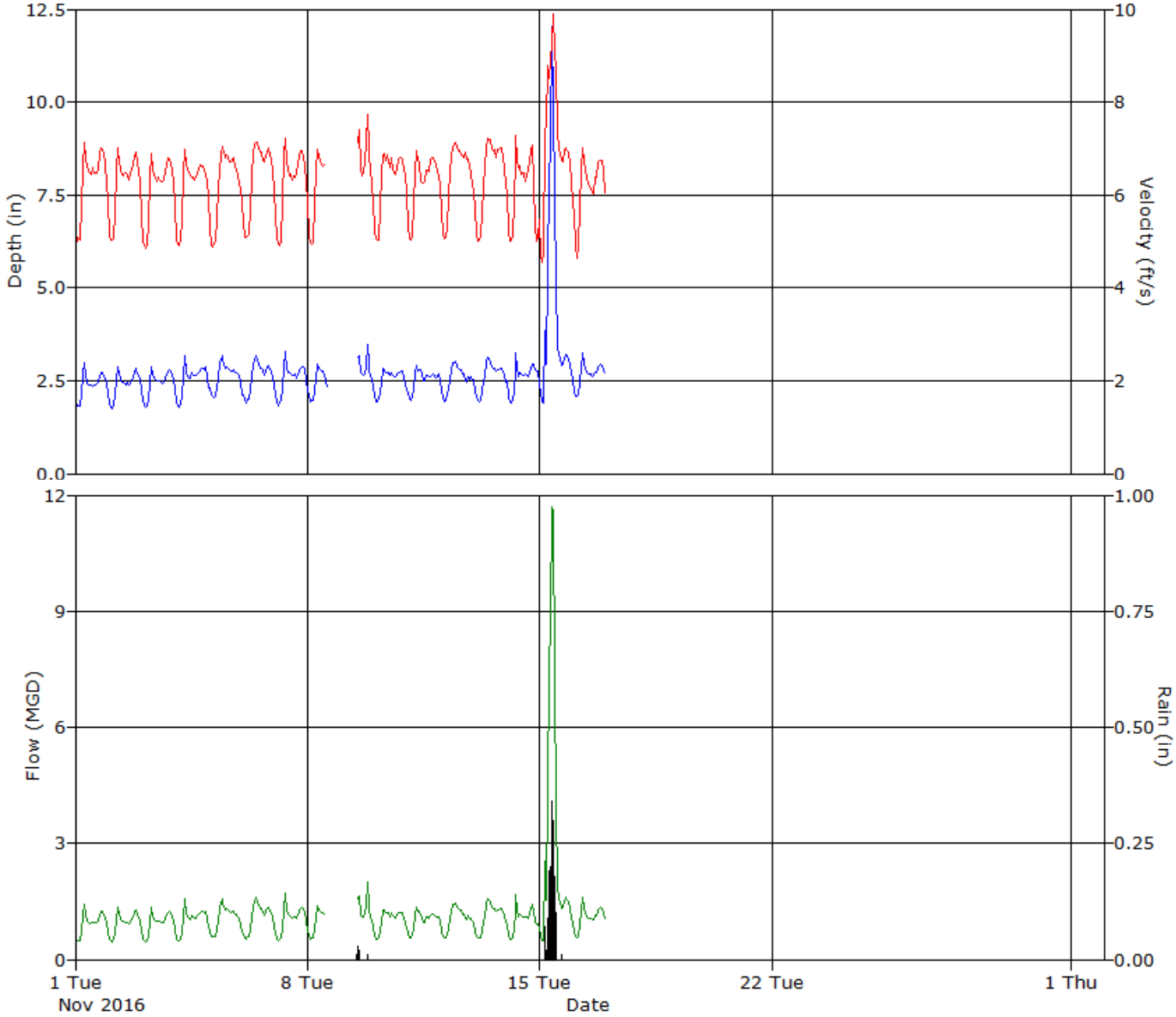
Pipe Height
46.50 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:00	2.06	19:35	2.66	2.37	02:45	4.94	19:35	7.19	6.50	04:00	0.597	19:35	1.232	0.944	126186	
5/18/2016	04:10	1.58	07:35	2.97	2.22	03:20	4.89	07:10	7.25	6.48	04:50	0.403	07:35	1.458	0.872	116515	
5/19/2016	04:30	1.47	07:35	3.02	2.15	04:20	4.74	07:30	7.40	6.51	04:30	0.344	07:35	1.500	0.837	111941	
5/20/2016	03:55	1.49	07:40	2.80	2.15	03:45	5.20	07:40	7.45	6.63	03:55	0.385	07:40	1.375	0.847	113293	
5/21/2016	05:15	1.60	19:30	3.72	2.23	03:05	4.98	19:30	8.32	6.62	05:10	0.425	19:30	2.342	0.899	120233	0.03
5/22/2016	03:10	1.64	04:50	3.32	2.39	02:40	5.24	04:45	8.22	6.92	03:10	0.449	04:45	1.939	1.030	137692	0.08
5/23/2016	04:00	1.65	07:40	2.87	2.24	04:00	5.08	12:50	7.36	6.63	04:00	0.428	07:20	1.408	0.894	119477	
5/24/2016	02:25	1.62	07:25	4.39	2.39	02:00	5.30	07:25	8.98	6.92	02:20	0.440	07:25	3.217	1.054	140921	0.16
5/25/2016	04:45	1.59	07:30	2.88	2.25	02:00	4.99	07:10	7.36	6.59	04:45	0.410	07:30	1.414	0.899	120120	
5/26/2016	04:15	1.48	07:25	2.89	2.24	03:55	4.98	07:25	7.40	6.53	04:10	0.368	07:25	1.430	0.886	118464	
5/27/2016	04:20	1.52	07:35	2.77	2.23	04:00	4.91	07:05	7.24	6.53	04:00	0.382	07:40	1.309	0.881	117799	
5/28/2016	03:15	1.59	11:10	2.76	2.30	02:45	4.93	11:05	7.45	6.58	03:25	0.413	11:10	1.328	0.932	124586	
5/29/2016	05:10	1.76	10:35	2.83	2.27	04:55	4.97	11:25	7.41	6.55	05:10	0.489	10:35	1.371	0.906	121103	
5/30/2016	01:00	1.98	01:35	27.78	3.81	01:00	6.19	01:45	12.61	7.79	01:00	0.685	01:35	58.276	3.004	401620	1.38
5/31/2016	03:15	1.64	07:20	2.75	2.16	03:30	5.70	07:25	7.51	6.69	03:30	0.476	07:20	1.350	0.857	114431	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2104381	1.65
Avg	2.36	6.70	1.050	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	03:10	1.54	07:40	2.88	2.31	03:05	4.72	07:30	7.32	6.29	03:05	0.364	07:40	1.402	0.895	119614	
6/2/2016	03:45	1.66	07:30	2.86	2.28	04:05	4.29	07:25	7.06	6.16	04:05	0.394	07:30	1.342	0.857	114522	
6/3/2016	03:45	1.54	09:00	2.92	2.18	02:30	4.49	08:55	7.40	6.17	04:25	0.365	08:55	1.449	0.809	108139	0.03
6/4/2016	04:25	1.56	19:55	13.15	2.42	05:10	4.47	20:00	9.75	6.27	04:30	0.368	19:45	15.026	1.082	144635	0.58
6/5/2016	04:10	1.53	18:45	26.51	3.33	05:20	5.04	18:50	11.92	6.97	04:10	0.403	18:45	52.207	2.441	326293	0.96
6/6/2016	04:20	2.08	23:50	3.12	2.62	03:00	4.78	07:25	7.04	5.99	04:10	0.585	07:25	1.499	1.017	135938	
6/7/2016	03:00	1.98	07:30	3.47	2.81	02:55	3.02	07:30	6.66	5.19	03:05	0.362	07:30	1.689	1.002	133993	
6/8/2016	03:35	1.73	13:35	9.83	2.85	03:25	3.01	13:15	9.40	5.75	03:30	0.281	13:35	9.717	1.330	177823	0.40
6/9/2016	04:00	1.60	07:45	2.87	2.24	03:30	3.37	07:40	6.91	5.36	04:40	0.295	07:40	1.316	0.735	98272	
6/10/2016	03:45	1.60	07:30	2.92	2.29	04:15	2.91	07:00	6.72	5.23	04:15	0.240	07:30	1.282	0.746	99692	
6/11/2016	04:40	1.63	12:10	2.83	2.40	05:05	3.31	10:30	6.72	5.31	05:05	0.278	10:30	1.231	0.816	109092	
6/12/2016	04:00	1.84	11:00	3.03	2.53	05:05	2.91	09:50	6.67	5.12	03:20	0.307	09:50	1.338	0.847	113276	
6/13/2016	03:35	1.82	07:40	3.04	2.42	02:45	3.06	19:15	6.34	4.87	03:30	0.309	07:10	1.292	0.749	100113	
6/14/2016	02:45	1.62	07:00	2.95	2.31	04:50	3.08	07:25	6.69	4.93	03:00	0.261	07:00	1.294	0.712	95160	
6/15/2016	03:15	1.59	07:30	3.19	2.35	03:10	2.97	07:30	6.54	4.68	03:15	0.238	07:30	1.463	0.695	92864	
6/16/2016	02:40	1.65	06:35	11.36	2.60	03:05	2.75	07:20	9.50	5.70	03:05	0.238	06:35	13.219	1.163	155523	0.20
6/17/2016	04:05	1.56	20:10	2.87	2.40	03:00	3.35	07:30	7.10	5.63	04:00	0.272	07:30	1.312	0.862	115236	
6/18/2016	04:45	1.85	10:20	3.05	2.51	03:50	3.20	12:50	7.07	5.70	03:50	0.331	10:20	1.454	0.930	124340	
6/19/2016	03:55	1.93	10:30	3.14	2.52	04:10	3.60	10:30	6.66	5.41	04:10	0.389	10:30	1.458	0.879	117526	
6/20/2016	04:00	1.79	07:25	3.10	2.50	04:00	3.28	07:20	6.80	5.42	04:00	0.313	07:20	1.448	0.877	117241	
6/21/2016	02:15	1.87	00:00	2.97	2.47	02:15	3.82	00:00	6.57	5.42	02:15	0.389	00:00	1.322	0.851	113821	
6/22/2016	03:10	1.80	19:10	3.03	2.53	03:10	3.59	19:10	6.69	5.55	03:10	0.343	19:10	1.387	0.904	120787	
6/23/2016	04:10	2.08	07:40	3.01	2.53	04:10	4.42	19:00	6.94	5.99	04:10	0.525	07:40	1.370	0.961	128437	
6/24/2016	04:20	1.63	11:50	2.88	2.32	03:20	3.91	11:40	7.46	6.10	04:25	0.360	11:50	1.429	0.875	117002	
6/25/2016	04:55	1.81	10:25	2.85	2.44	04:30	3.69	10:35	7.07	6.03	04:30	0.377	10:25	1.329	0.929	124210	
6/26/2016	05:10	1.86	10:40	2.93	2.43	05:15	2.92	10:30	7.15	5.84	05:15	0.311	10:35	1.380	0.900	120320	
6/27/2016	02:55	1.76	23:40	6.50	2.53	03:45	3.81	23:50	9.42	5.95	03:45	0.389	23:40	5.576	1.010	135078	0.18
6/28/2016	04:10	1.86	00:40	12.50	2.66	04:10	3.82	01:15	9.81	5.54	04:10	0.384	00:40	12.992	1.131	151240	0.43
6/29/2016	03:45	1.75	00:45	5.04	2.54	03:45	3.47	00:45	9.36	5.98	03:45	0.319	00:45	4.112	0.990	132407	0.04
6/30/2016	04:10	1.69	09:55	2.82	2.29	04:05	3.95	09:55	7.64	6.24	04:05	0.351	09:55	1.430	0.879	117423	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3860019	2.82
Avg	2.49	5.69	0.963	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:30	1.79	22:15	25.15	2.95	02:20	4.17	22:05	9.95	6.54	02:25	0.427	22:10	20.476	1.653	221019	1.28
7/2/2016	04:25	1.62	10:45	2.78	2.25	02:30	3.58	09:25	7.24	6.10	03:50	0.333	10:45	1.303	0.836	111692	
7/3/2016	05:10	1.75	10:35	2.63	2.22	04:20	3.51	10:55	6.89	5.82	04:50	0.336	10:35	1.147	0.782	104474	
7/4/2016	03:35	1.53	20:50	10.60	2.41	04:20	4.08	21:05	9.87	6.30	03:30	0.351	20:50	11.204	1.077	143973	0.27
7/5/2016	14:35	2.21	03:10	17.03	3.52	14:35	4.90	03:30	9.62	6.43	14:35	0.637	03:10	23.300	2.146	286868	1.15
7/6/2016	04:25	2.03	07:20	3.19	2.60	04:25	4.32	07:20	7.05	6.05	04:25	0.495	07:20	1.577	1.016	135821	
7/7/2016	03:30	1.67	07:45	2.95	2.37	02:55	4.03	07:50	7.09	6.21	03:30	0.361	07:50	1.400	0.921	123071	0.01
7/8/2016	02:45	1.72	18:45	3.31	2.48	02:55	3.95	18:40	7.14	6.08	02:55	0.371	18:45	1.671	0.967	129220	0.02
7/9/2016	04:50	1.97	22:30	15.22	2.75	03:05	4.28	22:40	9.84	6.35	04:50	0.482	22:30	20.072	1.358	181529	0.38
7/10/2016	02:40	1.89	20:25	3.32	2.68	03:35	4.51	00:00	7.31	6.41	03:35	0.480	20:25	1.729	1.143	152842	
7/11/2016	02:30	2.04	07:55	3.09	2.63	04:05	4.31	07:40	7.05	6.30	04:05	0.522	07:55	1.483	1.074	143621	
7/12/2016	03:55	1.97	22:20	2.98	2.53	04:00	4.08	22:20	6.64	5.63	03:55	0.452	22:20	1.347	0.913	122092	
7/13/2016	02:35	1.92	22:10	3.05	2.55	02:35	4.01	22:10	6.79	5.66	02:35	0.425	22:10	1.427	0.932	124583	
7/14/2016	04:35	1.83	16:15	28.73	3.05	04:35	3.72	16:40	9.78	5.94	04:35	0.364	16:35	9.214	1.191	159222	0.62
7/15/2016	02:55	2.01	20:20	3.34	2.74	02:55	4.26	20:20	7.33	6.08	02:55	0.481	20:20	1.760	1.122	150030	
7/16/2016	05:45	2.12	16:30	6.91	2.76	05:45	4.58	16:35	9.89	6.07	05:45	0.562	16:30	6.871	1.151	153836	
7/17/2016	03:00	2.03	22:10	3.21	2.69	03:00	4.33	22:10	7.08	5.97	03:00	0.498	22:10	1.599	1.063	142086	
7/18/2016	03:05	1.96	16:55	13.40	2.75	03:05	4.11	16:55	10.03	6.30	03:05	0.447	16:55	17.938	1.250	167125	0.32
7/19/2016	03:35	1.94	07:05	3.08	2.62	04:20	3.87	07:30	6.87	5.92	03:35	0.453	07:30	1.458	1.010	134997	
7/20/2016	04:55	1.69	21:20	2.81	2.35	01:30	4.07	21:15	6.93	6.16	04:45	0.409	21:25	1.267	0.894	119467	
7/21/2016	03:30	1.83	23:55	2.86	2.40	04:10	3.84	10:30	7.05	6.04	03:35	0.385	19:00	1.271	0.912	121958	
7/22/2016	03:00	1.87	20:20	2.68	2.39	03:15	3.69	20:00	7.06	6.13	03:15	0.380	20:20	1.198	0.910	121714	
7/23/2016	06:00	2.00	09:35	2.90	2.45	05:20	4.07	08:30	6.68	5.50	05:20	0.460	09:20	1.211	0.840	112226	
7/24/2016	04:25	1.90	10:45	2.93	2.46	04:25	3.94	10:45	6.54	5.44	04:25	0.410	10:45	1.291	0.844	112792	
7/25/2016	04:20	1.86	17:40	45.72	3.22	04:20	3.83	17:45	11.72	6.21	04:20	0.388	17:40	73.144	2.189	292665	0.77
7/26/2016	15:20	1.38	08:00	2.78	2.13	03:50	5.05	07:55	7.10	6.19	15:20	0.348	08:00	1.296	0.773	103272	
7/27/2016	03:25	1.57	06:55	2.72	2.22	03:25	4.97	22:20	6.82	6.20	03:25	0.390	06:55	1.200	0.824	110205	
7/28/2016	09:05	1.69	04:30	4.14	2.22	00:30	5.35	04:30	8.51	6.33	00:30	0.562	04:30	2.799	0.842	112509	
7/29/2016	03:25	2.05	05:30	11.91	3.24	03:25	5.75	05:50	9.82	7.02	03:25	0.670	05:30	13.981	1.937	258912	0.86
7/30/2016	04:30	1.72	17:50	8.50	2.84	04:30	5.33	18:05	9.37	6.76	04:30	0.477	17:50	8.747	1.419	189638	0.24
7/31/2016	03:05	1.80	21:40	15.26	2.99	03:05	5.52	23:15	9.84	6.75	03:05	0.531	21:40	18.061	1.681	224576	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4768036	6.64
Avg	2.63	6.16	1.151	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	03:15	1.80	00:45	7.85	2.53	04:45	5.39	00:50	9.92	6.56	03:15	0.551	00:45	7.976	1.098	146778	0.05
8/2/2016	01:55	1.95	06:25	2.83	2.38	01:55	5.82	21:35	6.90	6.41	01:55	0.630	06:25	1.278	0.936	125095	
8/3/2016	03:25	1.74	22:00	2.84	2.23	03:25	5.37	09:15	7.04	6.31	03:25	0.488	22:00	1.269	0.840	112252	
8/4/2016	03:55	1.77	02:20	2.97	2.28	03:55	5.44	02:20	7.09	6.38	03:55	0.507	02:20	1.428	0.875	116946	
8/5/2016	03:30	1.78	06:35	2.66	2.18	01:00	5.39	07:40	6.84	6.20	03:30	0.517	06:35	1.099	0.798	106654	
8/6/2016	01:20	1.69	11:10	2.92	2.28	02:15	5.36	11:10	6.82	6.32	02:15	0.485	11:10	1.340	0.876	117075	0.09
8/7/2016	05:25	1.71	10:25	2.80	2.21	05:25	5.30	10:25	6.80	6.23	05:25	0.469	10:25	1.254	0.822	109890	
8/8/2016	02:45	1.55	20:00	2.90	2.23	02:45	4.93	20:55	6.85	6.22	02:45	0.380	20:00	1.322	0.828	110677	
8/9/2016	02:20	1.56	18:55	3.18	2.18	02:20	4.83	07:50	6.94	6.23	02:20	0.376	18:55	1.502	0.808	108023	
8/10/2016	04:35	1.79	13:15	6.44	2.37	04:35	5.48	13:15	9.04	6.37	04:35	0.519	13:15	5.679	0.957	127916	0.08
8/11/2016	03:30	1.79	19:20	3.04	2.37	03:30	5.50	19:20	6.90	6.42	03:30	0.524	19:20	1.436	0.938	125343	
8/12/2016	05:05	1.91	01:25	16.34	2.86	05:05	5.74	00:40	9.01	6.66	05:05	0.600	00:35	8.240	1.295	173172	0.34
8/13/2016	03:30	1.84	10:35	2.95	2.38	03:30	5.60	10:30	6.82	6.45	03:30	0.556	10:35	1.358	0.947	126545	
8/14/2016	04:20	1.66	21:30	2.82	2.27	04:20	5.19	21:30	6.81	6.29	04:20	0.441	21:30	1.271	0.863	115360	0.13
8/15/2016	04:20	1.70	05:25	2.89	2.29	04:20	5.29	05:25	6.82	6.34	04:20	0.468	05:25	1.317	0.875	116957	
8/16/2016	03:05	1.70	06:40	2.64	2.21	03:05	5.30	06:40	6.73	6.24	03:05	0.468	06:40	1.139	0.822	109896	0.23
8/17/2016	05:05	1.65	20:35	2.73	2.18	05:05	5.18	20:35	6.96	6.22	05:05	0.437	20:35	1.241	0.799	106750	
8/18/2016	04:35	1.62	05:00	4.42	2.20	04:35	5.10	05:00	8.60	6.21	04:35	0.419	05:00	3.111	0.821	109738	0.03
8/19/2016	04:50	1.48	14:20	2.89	2.18	04:50	4.74	14:20	6.82	6.15	04:50	0.339	14:20	1.320	0.799	106785	
8/20/2016	02:45	1.85	01:05	2.99	2.30	02:45	5.61	01:05	6.85	6.36	02:45	0.559	01:05	1.392	0.883	118080	0.02
8/21/2016	02:55	1.70	18:30	5.22	2.37	02:55	5.29	18:30	8.86	6.38	02:55	0.467	18:30	4.104	0.966	129069	0.15
8/22/2016	03:40	1.64	18:00	2.81	2.17	03:40	5.15	18:00	6.80	6.18	03:40	0.431	18:00	1.263	0.792	105824	
8/23/2016	02:05	1.51	21:50	2.79	2.10	02:05	4.81	21:50	6.80	6.05	02:05	0.354	21:50	1.253	0.741	99030	
8/24/2016	04:15	1.58	21:50	2.49	2.12	04:15	5.00	21:50	6.62	6.09	04:15	0.396	21:50	1.029	0.752	100534	
8/25/2016	03:50	1.52	15:20	2.96	2.11	03:50	4.85	15:20	6.83	6.07	03:50	0.361	15:20	1.374	0.751	100340	
8/26/2016	02:50	1.65	23:05	2.56	2.18	02:50	5.17	10:05	6.80	6.17	02:50	0.435	23:05	1.081	0.792	105916	
8/27/2016	02:45	1.53	04:00	2.82	2.12	02:45	4.86	04:00	6.81	6.09	02:45	0.364	04:00	1.274	0.755	100982	
8/28/2016	03:55	1.57	09:55	2.71	2.12	03:55	4.97	09:55	6.77	6.07	03:55	0.389	09:55	1.191	0.753	100677	
8/29/2016	01:45	1.59	07:45	2.60	2.23	01:45	5.03	20:20	6.95	6.32	01:45	0.401	07:45	1.109	0.843	112704	
8/30/2016	03:50	1.75	21:30	2.52	2.23	02:55	5.38	19:05	7.03	6.32	03:50	0.496	21:30	1.095	0.842	112616	
8/31/2016	04:00	1.74	21:00	2.50	2.24	05:10	5.36	20:50	6.97	6.35	04:00	0.492	20:50	1.084	0.852	113784	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3571406	1.12
Avg	2.26	6.28	0.862	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:35	1.71	14:30	29.56	2.83	14:30	4.35	14:20	10.69	6.76	02:35	0.470	14:20	34.616	1.494	199667	0.56
9/2/2016	03:50	1.59	18:55	2.67	2.32	04:25	4.92	18:55	6.75	6.29	03:50	0.402	18:55	1.165	0.895	119603	
9/3/2016	04:15	1.71	10:55	2.63	2.28	04:15	5.31	11:00	6.72	6.31	04:15	0.472	11:00	1.129	0.872	116618	
9/4/2016	03:40	1.65	11:05	2.67	2.23	03:40	5.16	10:30	6.78	6.23	03:40	0.432	11:10	1.143	0.834	111439	
9/5/2016	04:05	1.69	12:30	2.78	2.26	04:05	5.27	20:15	7.22	6.47	04:05	0.462	12:30	1.309	0.892	119226	
9/6/2016	04:35	1.62	07:25	2.83	2.21	03:50	5.09	07:15	7.25	6.42	04:25	0.425	07:25	1.354	0.855	114307	
9/7/2016	04:10	1.68	07:20	2.80	2.23	03:35	5.04	07:30	7.29	6.46	03:35	0.444	07:30	1.346	0.866	115730	
9/8/2016	04:00	1.68	07:35	2.91	2.27	03:40	4.88	07:40	7.33	6.43	03:40	0.429	07:35	1.421	0.891	119114	
9/9/2016	03:40	1.67	23:30	11.13	2.31	03:50	5.01	23:30	9.68	6.42	03:40	0.432	23:30	13.357	0.956	127859	0.11
9/10/2016	03:50	1.70	15:35	5.99	2.37	03:45	5.27	15:30	9.49	6.50	04:00	0.473	15:30	5.361	0.969	129552	0.05
9/11/2016	04:30	1.92	10:35	2.72	2.37	05:10	4.81	20:30	7.25	6.48	05:10	0.510	10:35	1.265	0.951	127128	
9/12/2016	03:35	1.71	07:20	2.83	2.31	03:55	5.13	07:35	7.35	6.42	03:35	0.460	07:20	1.374	0.909	121556	0.00
9/13/2016	03:20	1.73	07:25	2.80	2.27	03:30	5.02	20:20	7.32	6.44	03:50	0.470	07:25	1.336	0.887	118633	
9/14/2016	02:20	1.75	17:40	28.72	2.68	03:30	5.17	17:40	12.25	6.63	02:20	0.478	17:40	59.561	1.591	212739	0.64
9/15/2016	04:15	1.51	19:45	2.70	2.22	02:10	5.17	07:15	7.29	6.46	03:10	0.391	19:45	1.252	0.863	115336	
9/16/2016	03:05	1.75	07:35	2.80	2.30	03:40	5.02	07:00	7.19	6.41	03:20	0.473	07:35	1.324	0.903	120658	
9/17/2016	02:55	1.64	10:50	2.65	2.28	03:45	5.03	13:10	7.17	6.37	02:55	0.428	10:50	1.195	0.892	119250	
9/18/2016	04:05	1.76	11:05	2.74	2.35	05:50	4.86	10:45	7.27	6.38	04:05	0.463	10:45	1.287	0.934	124882	
9/19/2016	02:00	1.78	10:35	8.56	2.89	02:50	5.00	11:00	9.94	6.86	02:00	0.475	10:30	9.081	1.589	212425	0.45
9/20/2016	03:00	1.83	07:40	2.93	2.39	03:25	4.84	07:35	7.28	6.42	03:00	0.483	07:25	1.434	0.958	128010	
9/21/2016	03:00	1.70	07:15	2.87	2.30	03:40	5.00	07:40	7.27	6.41	03:00	0.448	07:25	1.382	0.901	120400	
9/22/2016	02:50	1.68	07:40	2.94	2.38	02:00	4.89	07:25	7.23	6.30	04:00	0.435	07:45	1.427	0.936	125172	
9/23/2016	02:55	1.76	07:20	2.99	2.41	03:20	4.90	07:20	7.18	6.29	02:55	0.466	07:20	1.464	0.949	126885	
9/24/2016	04:10	1.87	01:00	21.94	2.85	04:45	5.56	01:05	11.32	6.80	04:10	0.568	01:00	38.926	1.607	214833	0.28
9/25/2016	04:55	1.69	10:10	2.83	2.38	05:15	4.75	11:35	7.15	6.23	04:55	0.430	10:10	1.322	0.933	124665	
9/26/2016	02:50	1.58	07:25	3.01	2.34	04:15	4.97	19:15	7.23	6.36	02:50	0.402	07:25	1.487	0.926	123760	
9/27/2016	02:10	1.76	02:40	11.84	2.62	02:00	4.71	02:50	9.68	6.75	02:05	0.447	02:40	14.116	1.217	162645	0.25
9/28/2016	04:20	1.68	07:45	2.93	2.35	02:15	4.94	12:40	7.48	6.38	04:20	0.442	12:40	1.457	0.932	124625	
9/29/2016	03:55	1.73	07:25	2.87	2.32	04:20	4.80	07:05	7.20	6.35	03:55	0.445	07:10	1.362	0.907	121263	
9/30/2016	02:10	1.66	14:20	5.04	2.92	03:25	4.52	14:25	9.23	7.05	02:10	0.395	14:20	4.046	1.527	204031	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4122012	2.75
Avg	2.41	6.47	1.028	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	03:30	1.79	11:55	2.87	2.37	05:15	4.85	11:05	7.22	6.48	05:15	0.470	11:55	1.367	0.952	127263	
10/2/2016	04:15	1.73	10:55	2.92	2.38	04:55	4.62	20:20	7.35	6.45	03:40	0.442	10:55	1.431	0.966	129146	
10/3/2016	03:05	1.61	07:20	2.99	2.38	02:40	4.83	20:30	7.20	6.41	03:05	0.406	07:25	1.460	0.956	127833	
10/4/2016	02:40	1.79	07:35	3.04	2.41	04:00	4.76	20:35	7.30	6.33	02:35	0.465	07:25	1.510	0.958	128019	
10/5/2016	03:50	1.52	07:25	2.99	2.30	04:00	4.70	07:20	7.40	6.33	03:50	0.366	07:25	1.503	0.901	120512	
10/6/2016	03:00	1.67	07:25	3.07	2.41	03:10	4.51	07:20	7.12	6.06	03:10	0.392	07:25	1.491	0.923	123328	0.00
10/7/2016	04:25	1.70	07:25	3.06	2.45	03:45	4.44	07:25	7.01	6.01	04:25	0.407	07:25	1.474	0.934	124916	
10/8/2016	03:40	1.62	19:45	4.21	2.47	02:55	4.27	19:45	8.37	6.30	03:40	0.360	19:45	2.826	1.016	135868	0.13
10/9/2016	01:40	1.94	12:45	8.70	3.16	01:40	5.68	12:05	9.01	7.30	01:40	0.608	12:45	8.417	1.768	236401	0.52
10/10/2016	03:10	1.57	20:25	2.80	2.36	02:55	4.64	20:25	7.30	6.32	03:10	0.380	20:25	1.347	0.933	124738	
10/11/2016	02:35	1.68	07:25	3.07	2.38	02:35	5.14	07:25	7.75	6.52	02:35	0.446	07:25	1.639	0.970	129734	0.00
10/12/2016	01:45	1.57	07:40	2.95	2.41	01:45	4.89	07:40	7.56	6.57	01:45	0.383	07:40	1.509	1.003	134103	
10/13/2016	02:55	1.64	07:35	2.96	2.34	02:55	5.04	07:35	7.57	6.43	02:55	0.421	07:35	1.520	0.930	124330	
10/14/2016	02:40	1.63	07:25	3.01	2.32	03:40	4.75	07:05	7.23	6.22	02:40	0.401	07:20	1.472	0.893	119398	
10/15/2016	04:55	1.73	12:25	2.94	2.41	04:15	4.87	10:35	7.11	6.27	04:55	0.445	12:25	1.384	0.952	127213	
10/16/2016	01:30	1.86	10:35	3.13	2.52	02:00	5.11	20:40	7.14	6.56	01:30	0.543	10:35	1.550	1.051	140522	
10/17/2016	04:05	1.51	07:25	3.03	2.35	03:50	4.68	07:10	7.20	6.26	04:05	0.357	07:25	1.491	0.921	123061	
10/18/2016	04:30	1.64	07:40	3.06	2.39	03:30	4.64	19:40	7.15	6.27	04:30	0.402	07:40	1.501	0.942	125960	0.00
10/19/2016	03:15	1.67	07:20	3.16	2.36	02:30	4.37	07:20	7.24	6.17	03:20	0.397	07:20	1.598	0.910	121687	
10/20/2016	02:00	1.69	07:15	3.09	2.43	03:20	4.81	07:10	7.14	6.23	02:00	0.434	07:15	1.516	0.956	127798	
10/21/2016	04:05	1.60	10:10	8.76	2.98	03:20	4.91	13:50	9.38	6.79	03:20	0.397	10:10	8.487	1.599	213760	0.46
10/22/2016	03:55	1.84	04:20	19.04	3.01	04:20	2.07	04:25	9.04	7.08	03:30	0.495	04:25	17.497	1.561	208704	0.33
10/23/2016	02:45	2.13	10:00	3.18	2.64	02:45	6.06	10:00	7.93	6.93	02:45	0.744	10:00	1.769	1.191	159176	
10/24/2016	04:25	1.98	20:30	3.10	2.60	04:25	5.76	20:30	7.79	6.57	04:25	0.635	20:30	1.669	1.098	146802	
10/25/2016	04:35	2.11	07:35	3.14	2.57	04:00	4.58	21:15	7.54	6.14	04:55	0.571	21:15	1.501	1.016	135878	
10/26/2016	02:55	2.06	07:30	3.43	2.59	02:55	5.92	07:35	8.24	6.93	02:55	0.693	07:35	2.021	1.158	154815	
10/27/2016	04:10	1.98	20:15	17.03	4.05	04:10	5.77	18:50	10.15	7.53	04:10	0.640	20:15	18.029	2.881	385143	1.15
10/28/2016	03:05	1.99	07:25	3.08	2.55	00:55	5.53	00:00	7.44	6.53	03:25	0.649	07:25	1.548	1.060	141748	
10/29/2016	02:45	1.86	08:35	3.03	2.55	02:05	4.77	10:10	7.10	6.25	04:20	0.497	10:10	1.416	1.034	138225	
10/30/2016	05:45	1.98	16:40	24.66	3.14	04:05	4.60	16:40	12.80	6.58	04:05	0.528	16:40	51.721	1.876	250797	
10/31/2016	04:40	2.02	07:20	3.10	2.56	04:35	5.03	22:15	7.27	6.44	04:35	0.586	07:20	1.551	1.056	141091	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4727972	2.59
Avg	2.58	6.49	1.141	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

W2-A, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:20	1.72	07:05	3.05	2.39	04:00	4.84	07:40	7.20	6.33	04:20	0.448	07:05	1.494	0.946	126496	
11/2/2016	03:45	1.67	07:35	2.95	2.40	03:40	4.84	07:45	7.11	6.25	03:40	0.427	07:35	1.419	0.944	126240	
11/3/2016	03:05	1.74	07:45	3.00	2.43	03:20	4.67	07:35	7.00	6.14	03:05	0.437	07:45	1.429	0.942	125982	
11/4/2016	03:35	1.75	07:25	3.37	2.54	03:30	4.82	07:25	7.06	6.18	03:35	0.444	07:25	1.713	1.014	135611	
11/5/2016	03:30	2.03	10:15	3.27	2.64	03:45	4.79	11:50	7.16	6.27	03:25	0.558	10:15	1.655	1.092	145998	
11/6/2016	03:45	1.82	11:35	3.30	2.60	03:30	4.93	10:55	7.24	6.39	03:45	0.498	11:35	1.702	1.094	146303	
11/7/2016	03:55	1.78	08:25	3.39	2.56	03:00	4.86	08:20	7.34	6.27	03:55	0.465	08:25	1.795	1.044	139526	
11/8/2016	03:55	1.84	07:50	3.07	2.45	03:25	4.84	07:25	7.14	6.07	03:55	0.501	07:45	1.480	0.956	70114	
11/9/2016	23:40	2.46	19:25	3.78	2.86	23:10	6.16	19:15	8.45	6.85	23:40	0.943	19:25	2.378	1.320	83299	0.07
11/10/2016	03:15	1.88	08:05	2.94	2.52	04:20	4.90	08:10	7.06	6.33	03:15	0.515	08:05	1.399	1.024	136851	
11/11/2016	03:40	1.91	08:00	2.95	2.53	04:10	4.97	09:35	7.18	6.28	03:40	0.523	08:00	1.403	1.015	135672	
11/12/2016	03:45	1.87	11:45	3.13	2.56	03:40	4.96	11:35	7.18	6.42	03:45	0.502	11:45	1.556	1.062	141994	
11/13/2016	05:25	1.82	10:05	3.25	2.62	03:30	4.92	12:05	7.33	6.44	05:00	0.497	10:05	1.665	1.108	148160	
11/14/2016	02:20	1.87	07:25	3.39	2.61	23:15	4.70	07:15	7.32	6.14	03:55	0.500	07:25	1.791	1.042	139232	
11/15/2016	02:45	1.81	09:40	29.97	4.41	01:40	4.34	10:10	10.30	7.21	02:45	0.437	09:25	22.138	3.242	433352	1.50
11/16/2016	02:40	2.02	07:45	3.31	2.66	03:20	4.44	06:55	7.14	6.16	03:20	0.507	07:45	1.667	1.075	143625	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2378456	1.57
Avg	2.67	6.35	1.185	

Site Commentary

Site Information

W2-B	
Pipe Dimensions (in.)	Elliptical (46.50 in H, 45.13 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph for W2-B indicates this location functioned mostly in free-flow conditions and the scattergraph shows the supercritical flows for the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.09	6.03	0.806
Minimum	1.17	0.73	0.213
Maximum	45.12	16.49	97.724
Time of Minimum	11/1/2016 4:55 AM	9/24/2016 1:00 AM	10/3/2016 4:15 AM
Time of Maximum	7/25/2016 5:35 PM	7/1/2016 10:15 PM	7/25/2016 5:35 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

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a division of ADS LLC. WEEHAWKEN, NJ

Site Report

FM Initials: CK

Project Name: NHSA

Site Name:	W2- B	Meter Type:	TRITON+	Monitor S/N:	61007	Manhole #:	W2-GR-004
Address / Location:	506 GREGORY AVENUE			Map Page #:		H3	
				Pipe Height:		46.5 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		45.13 Inches	
				I.P. Address		107.80.25.34	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 8, 2016	9:45 AM	Manhole Depth:	11 Feet		
Site Hydraulics:	FAST SHALLOW FLOW, RIPPLES		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	Brick		Fair
			Mini System Character:	RESIDENTIAL		
			Telephone Information:			
Depth of Flow (Wet Dof):	4 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet		
Peak Velocity:	6.2 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.76528 W 74.02626

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RGNH	Other		X		

Additional Site Information / Comments:

UPSTREAM INSTALLATION. TWO INFLUENT LINES. TWO EFFLUENT LINES.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** W2-B **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

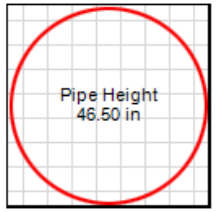
Approved		***Reviewed/Approved***	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

W2-B

Flow Monitor

W2-B

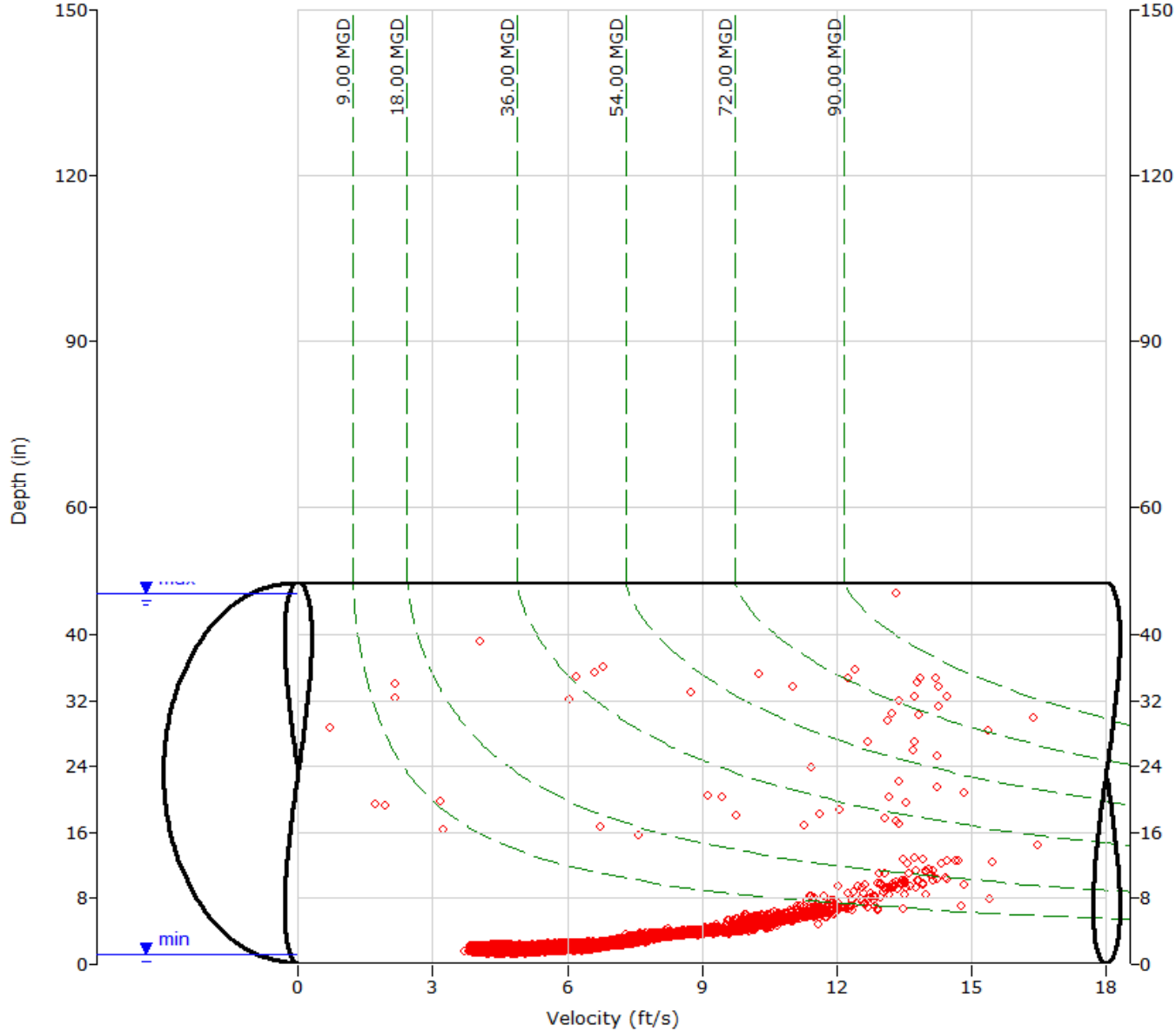


Report Period

5/17/2016
To
11/16/2016

Legend

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



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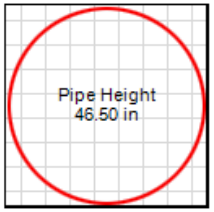
HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

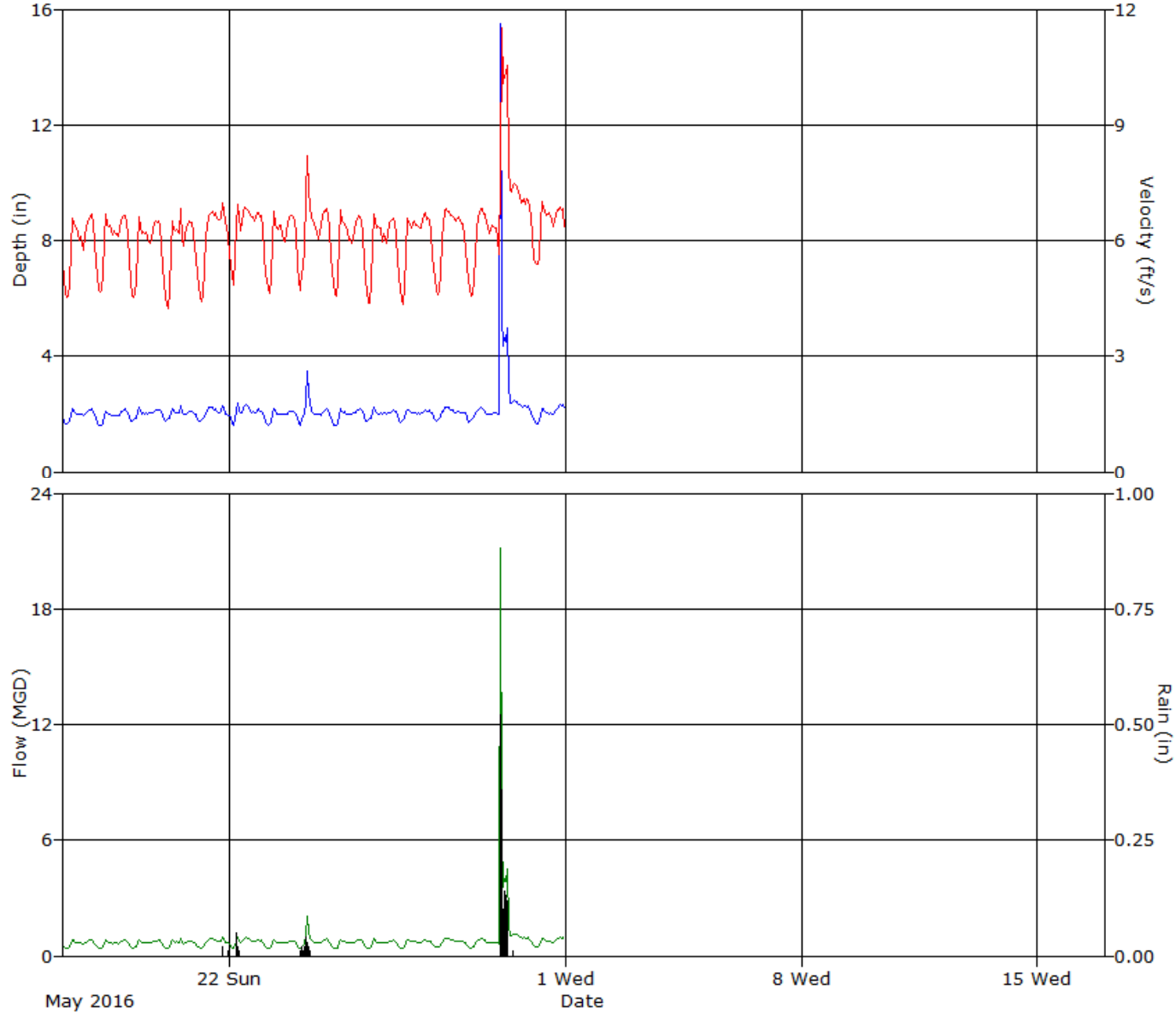


Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

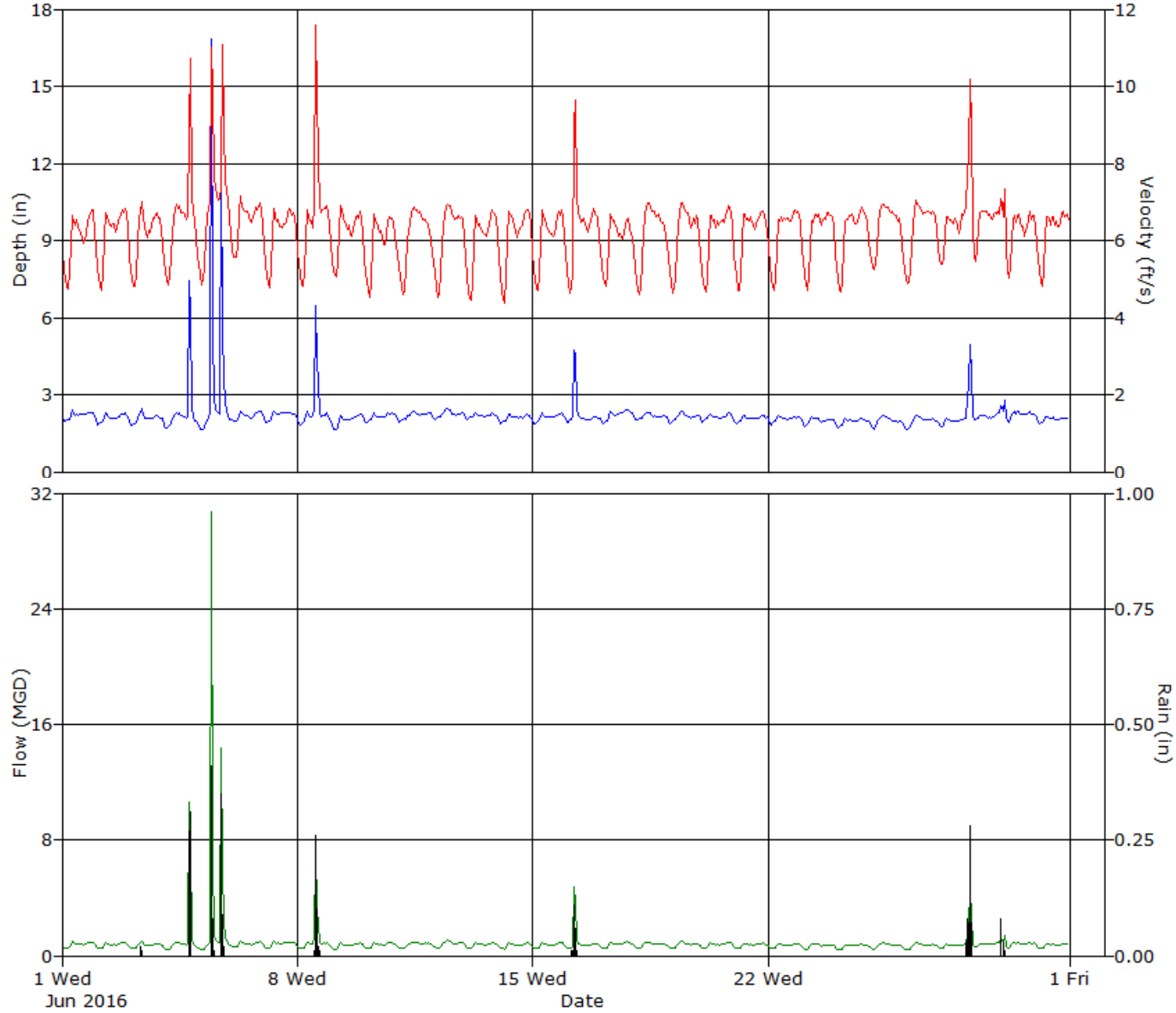
Pipe Height
46.50 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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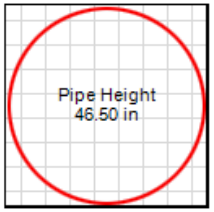
HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

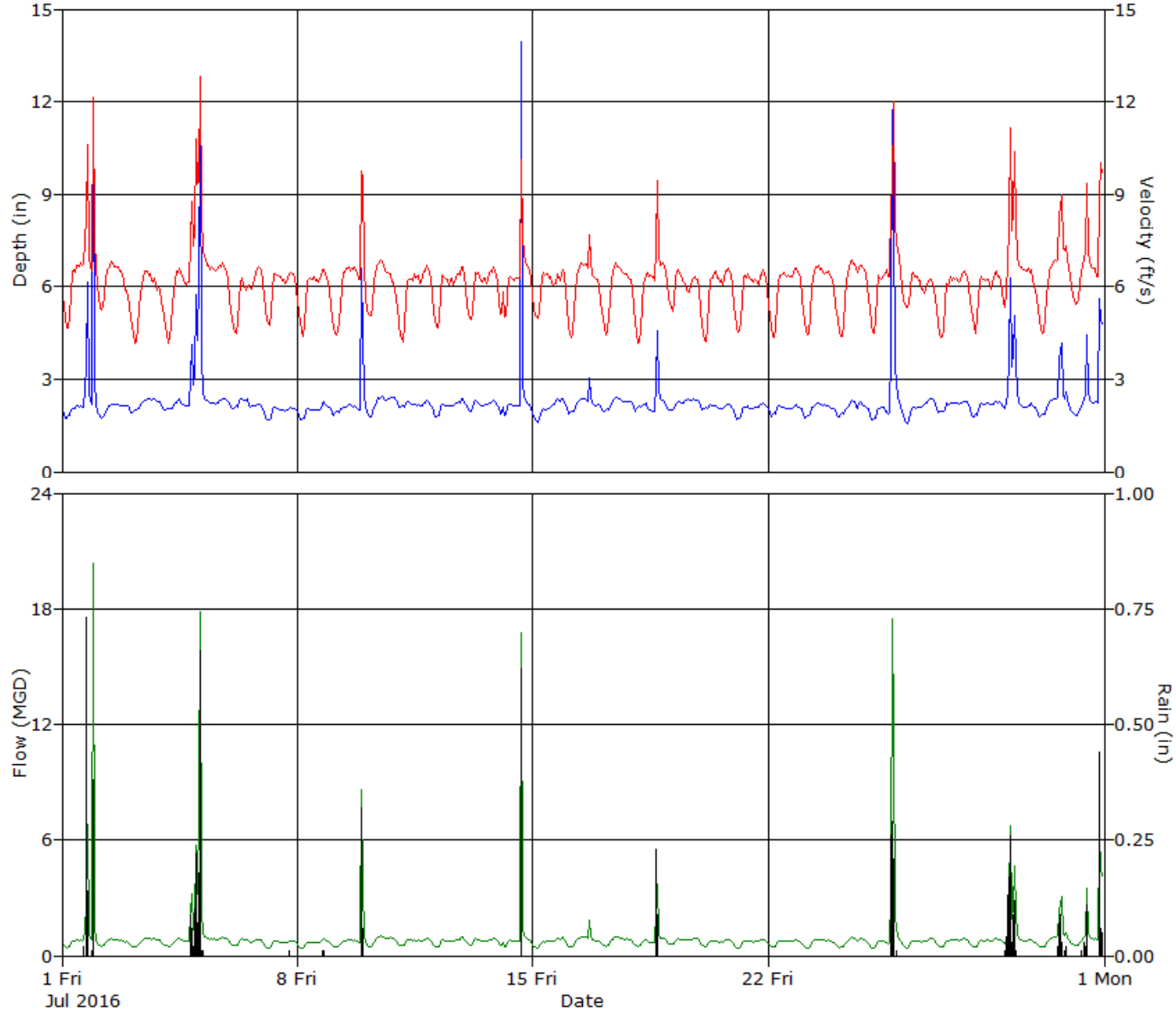


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



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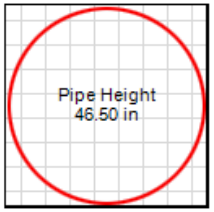
HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

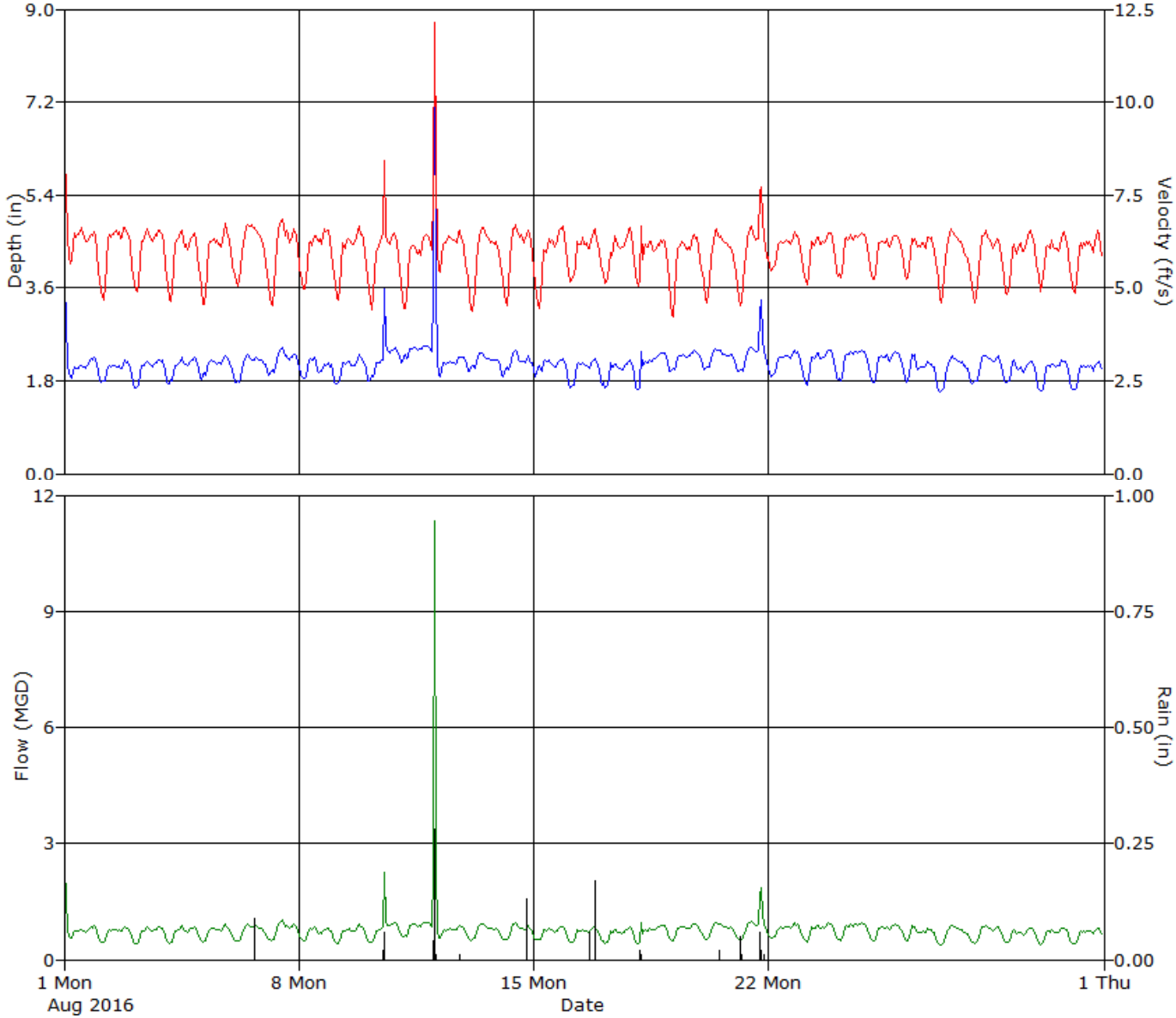


Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

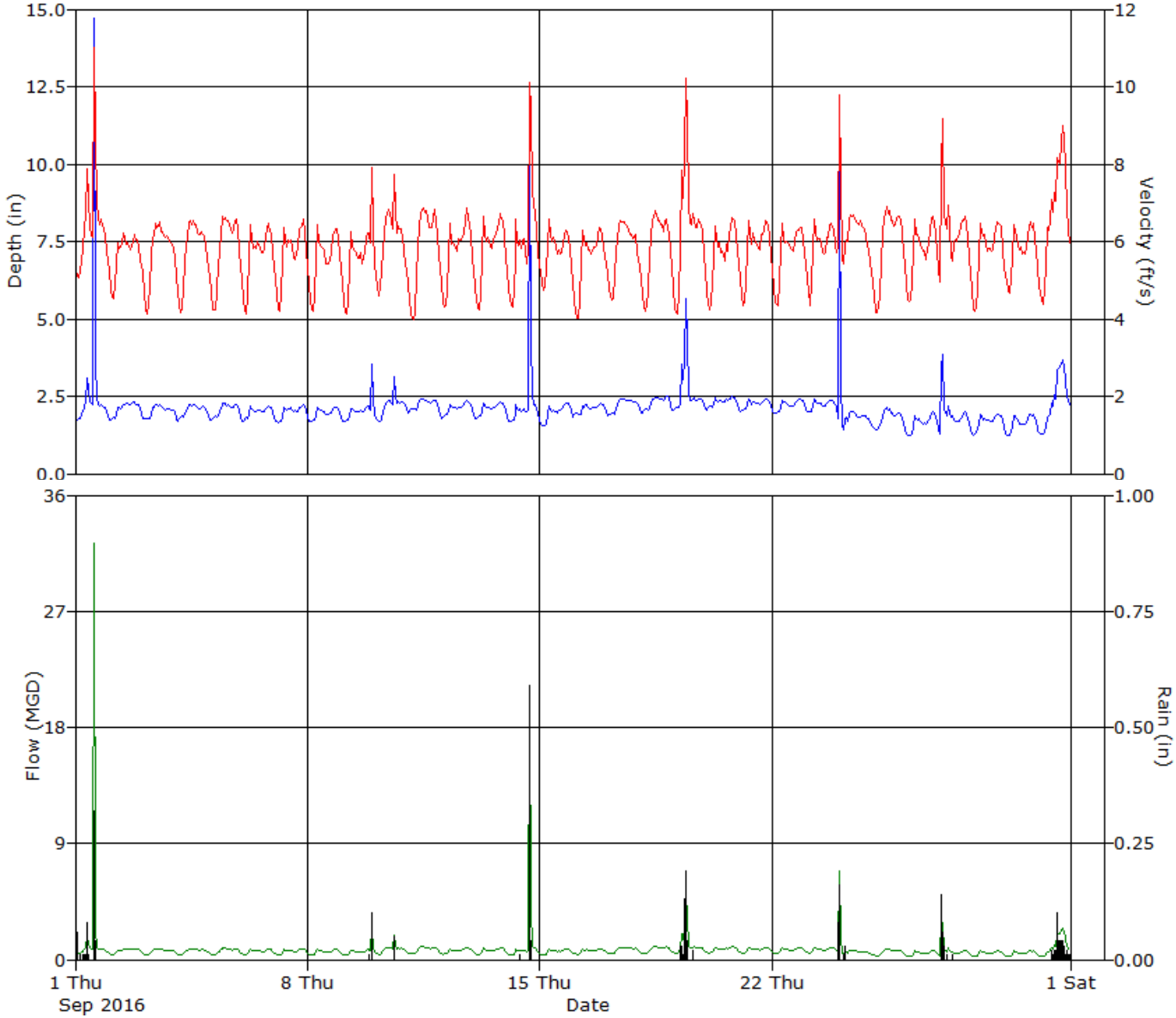
Pipe Height
46.50 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



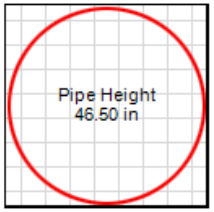
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

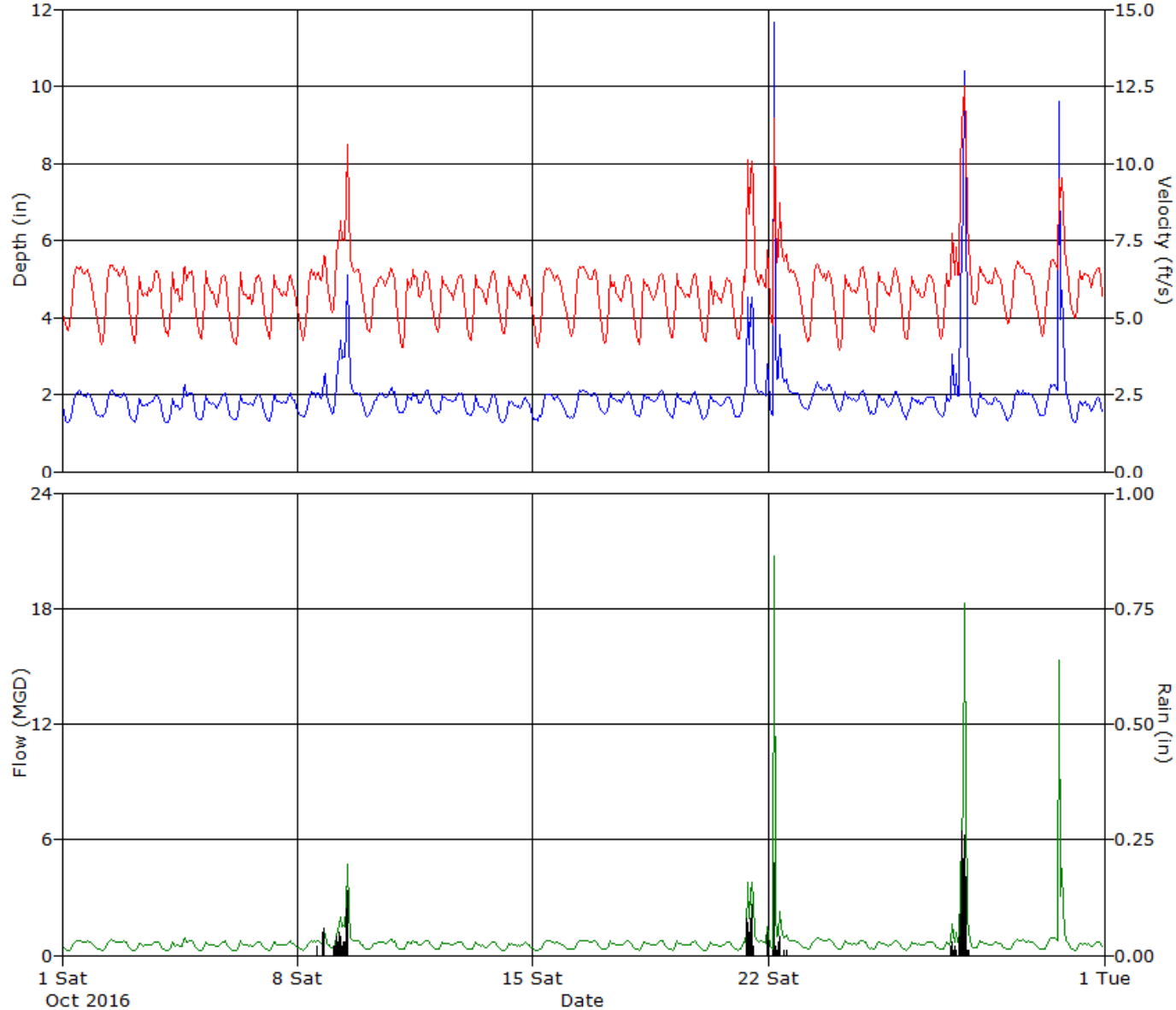


Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W2-B

Flow Monitor

W2-B

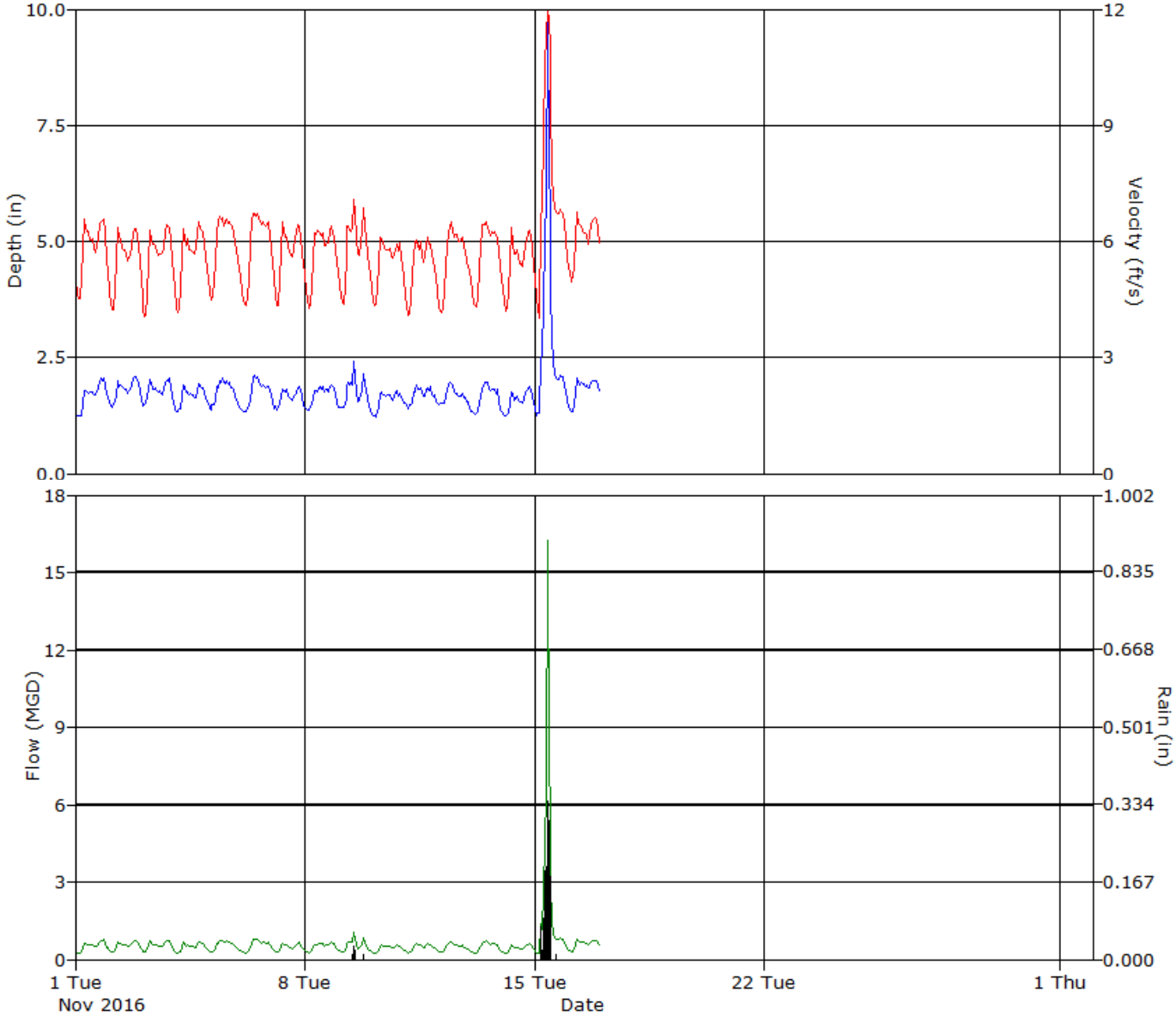
Pipe Height
46.50 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	02:40	1.66	07:50	2.28	1.97	03:45	4.37	21:20	6.81	5.91	03:45	0.372	07:50	0.900	0.651	87002	
5/18/2016	04:05	1.58	20:50	2.22	1.93	03:30	4.47	07:50	6.78	6.01	03:30	0.352	20:50	0.859	0.643	85917	
5/19/2016	02:10	1.73	07:50	2.32	2.01	03:40	4.38	07:50	6.78	5.88	02:10	0.404	07:50	0.935	0.665	88885	
5/20/2016	02:35	1.73	13:40	2.35	2.01	04:30	4.01	13:20	7.05	5.86	04:30	0.389	13:30	0.977	0.664	88706	
5/21/2016	02:40	1.73	19:50	2.52	2.04	04:10	4.26	19:50	7.28	6.08	04:05	0.394	19:50	1.134	0.703	93949	0.03
5/22/2016	04:00	1.57	04:55	2.61	2.08	03:50	4.63	04:50	7.56	6.41	03:50	0.361	04:55	1.241	0.761	101784	0.08
5/23/2016	03:10	1.63	08:00	2.25	1.96	04:35	4.47	07:35	6.84	6.04	04:35	0.369	07:45	0.894	0.655	87590	
5/24/2016	02:15	1.62	07:40	3.68	2.10	02:25	4.54	07:40	8.49	6.32	02:25	0.368	07:40	2.312	0.783	104730	0.16
5/25/2016	02:35	1.59	07:50	2.22	1.97	04:30	4.38	07:35	6.87	6.00	04:30	0.347	07:50	0.878	0.661	88354	
5/26/2016	02:20	1.71	07:30	2.29	2.00	04:20	4.26	07:35	6.79	5.92	02:55	0.403	07:40	0.917	0.665	88911	
5/27/2016	02:15	1.71	21:55	2.19	2.01	04:35	4.19	18:55	6.79	6.02	03:00	0.382	21:55	0.848	0.677	90493	
5/28/2016	03:05	1.74	10:25	2.28	2.04	05:10	4.46	10:10	6.90	6.10	03:30	0.418	10:30	0.925	0.704	94162	
5/29/2016	02:55	1.71	12:05	2.28	2.00	05:05	4.39	12:05	6.99	6.00	03:05	0.416	12:05	0.942	0.674	90089	
5/30/2016	01:15	1.70	01:35	39.14	3.39	01:30	1.72	02:05	15.42	7.85	01:05	0.528	01:45	75.665	2.554	341399	1.38
5/31/2016	03:55	1.64	22:15	2.40	2.04	03:30	5.30	08:00	7.21	6.41	04:00	0.439	22:15	1.003	0.742	99122	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1631094	1.65
Avg	2.10	6.19	0.813	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	01:45	1.92	07:55	2.45	2.20	04:05	4.58	22:20	6.96	6.05	04:05	0.520	07:50	1.016	0.778	103983	
6/2/2016	01:40	1.80	07:55	2.36	2.10	04:20	4.52	21:35	6.91	6.17	04:20	0.477	08:00	0.967	0.744	99520	
6/3/2016	02:15	1.79	09:20	2.52	2.08	04:05	4.67	09:15	7.25	6.12	04:10	0.467	09:15	1.132	0.725	96956	0.03
6/4/2016	03:15	1.66	19:55	31.91	2.46	04:30	4.74	19:45	14.70	6.55	03:15	0.413	19:55	72.499	1.444	193050	0.58
6/5/2016	04:40	1.62	18:40	34.06	3.49	18:35	1.94	11:25	14.83	7.10	04:55	0.381	11:50	79.744	3.155	421699	0.96
6/6/2016	00:55	1.94	22:00	2.40	2.18	04:30	5.48	07:25	7.21	6.55	03:45	0.588	07:50	1.038	0.826	110459	
6/7/2016	01:55	1.87	07:55	2.40	2.20	04:15	4.69	07:30	6.95	6.21	02:35	0.504	07:50	1.006	0.802	107275	
6/8/2016	02:30	1.80	13:35	7.47	2.45	03:20	4.66	13:25	12.01	6.69	03:20	0.474	13:35	9.098	1.207	161399	0.40
6/9/2016	04:00	1.61	07:55	2.29	2.02	03:05	4.92	07:55	7.00	6.20	03:05	0.404	07:55	0.948	0.706	94406	
6/10/2016	01:30	1.89	07:55	2.33	2.15	04:15	4.37	07:40	6.86	5.96	04:15	0.487	07:45	0.933	0.739	98756	
6/11/2016	01:55	1.93	10:40	2.37	2.19	04:55	4.44	11:30	6.99	6.11	04:55	0.511	10:40	0.972	0.781	104382	
6/12/2016	01:55	2.01	11:30	2.50	2.24	04:25	4.34	13:10	7.10	6.15	04:25	0.526	11:25	1.074	0.815	108917	
6/13/2016	01:20	1.98	19:45	2.33	2.18	04:20	4.38	19:40	6.82	6.02	02:05	0.532	19:45	0.940	0.759	101465	
6/14/2016	01:55	1.87	08:10	2.29	2.10	04:30	4.20	07:45	6.92	6.09	04:30	0.458	07:55	0.933	0.731	97721	
6/15/2016	01:50	1.85	07:50	2.33	2.12	04:50	4.59	07:50	6.90	6.08	02:55	0.481	07:50	0.957	0.742	99170	
6/16/2016	01:25	1.88	06:30	8.73	2.31	03:40	4.49	06:30	13.03	6.42	03:40	0.500	06:30	12.544	1.028	137400	0.20
6/17/2016	02:00	1.85	19:15	2.45	2.21	04:15	4.49	07:40	6.87	6.02	04:15	0.480	19:15	0.990	0.783	104607	
6/18/2016	02:15	2.00	11:55	2.33	2.16	04:30	4.48	11:05	7.04	6.18	04:30	0.520	11:05	0.969	0.771	103128	
6/19/2016	02:10	1.84	11:25	2.38	2.14	04:20	4.42	11:15	7.07	6.15	04:20	0.485	10:40	1.005	0.757	101247	
6/20/2016	01:25	1.90	20:35	2.33	2.13	04:15	4.52	20:35	7.01	6.16	02:45	0.512	20:35	0.974	0.753	100601	
6/21/2016	02:15	1.84	07:55	2.25	2.08	04:05	4.52	08:05	6.92	6.17	03:40	0.479	08:00	0.898	0.729	97494	
6/22/2016	02:20	1.81	07:45	2.22	2.05	04:30	4.55	18:40	6.86	6.19	02:20	0.475	07:45	0.858	0.716	95719	
6/23/2016	03:00	1.76	07:20	2.16	1.99	04:25	4.61	12:20	6.88	6.20	02:45	0.442	08:00	0.814	0.686	91737	
6/24/2016	02:00	1.67	19:05	2.12	1.95	03:45	4.49	19:15	6.89	6.19	03:45	0.421	19:05	0.829	0.667	89216	
6/25/2016	04:05	1.66	10:55	2.24	1.98	05:10	5.16	11:50	7.08	6.38	03:55	0.434	10:55	0.924	0.703	93963	
6/26/2016	03:30	1.65	11:10	2.26	1.97	04:20	4.76	10:25	7.13	6.28	04:20	0.402	11:10	0.918	0.689	92074	
6/27/2016	04:35	1.74	23:55	3.96	2.07	04:30	5.30	23:55	8.91	6.43	04:35	0.478	23:55	2.706	0.773	103278	0.18
6/28/2016	04:00	2.01	00:45	6.60	2.38	04:55	5.36	00:40	11.65	6.80	03:50	0.600	00:45	7.438	1.069	142901	0.43
6/29/2016	04:00	1.91	01:05	3.45	2.25	04:35	4.85	01:00	8.15	6.32	04:30	0.505	01:05	2.025	0.844	112883	0.04
6/30/2016	01:45	1.85	12:40	2.23	2.05	04:20	4.61	18:55	6.91	6.21	04:10	0.488	19:05	0.852	0.716	95689	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3561095	2.82
Avg	2.20	6.27	0.888	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	03:00	1.70	22:10	34.71	2.73	04:25	4.52	22:15	16.49	6.75	03:10	0.401	22:10	84.196	1.929	257841	1.28
7/2/2016	04:45	1.72	00:00	2.38	2.06	04:25	5.16	00:00	6.91	6.23	04:25	0.463	00:00	0.988	0.728	97318	
7/3/2016	01:50	1.88	18:40	2.40	2.21	05:30	4.02	12:15	6.73	5.68	05:30	0.452	12:15	0.953	0.737	98519	
7/4/2016	02:05	1.99	20:50	7.87	2.33	04:10	4.08	20:50	12.69	6.02	04:10	0.465	20:50	10.525	0.938	125365	0.27
7/5/2016	14:10	2.16	03:10	26.97	3.11	23:55	5.86	03:20	13.91	7.38	23:55	0.779	03:10	56.424	2.254	301357	1.15
7/6/2016	23:40	2.02	13:05	2.39	2.19	04:30	4.39	22:00	6.72	5.88	03:55	0.523	08:10	0.912	0.747	99809	
7/7/2016	02:35	1.65	19:35	2.14	1.96	04:10	4.60	19:25	6.63	5.99	04:10	0.397	19:35	0.802	0.651	87045	0.01
7/8/2016	02:50	1.65	18:55	2.32	1.99	04:10	4.34	18:50	6.73	5.89	03:15	0.383	18:55	0.928	0.653	87333	0.02
7/9/2016	02:10	1.83	22:30	18.19	2.34	04:05	4.33	22:25	13.19	6.20	02:35	0.433	22:30	31.190	1.129	150992	0.38
7/10/2016	04:45	1.74	00:00	3.05	2.24	04:00	4.95	00:00	7.43	6.15	05:30	0.452	00:00	1.535	0.816	109046	
7/11/2016	01:15	2.07	20:40	2.35	2.19	04:15	4.08	20:35	6.78	5.89	04:20	0.503	20:40	0.953	0.746	99750	
7/12/2016	03:20	1.78	22:05	2.44	2.12	04:30	4.44	21:40	6.78	5.97	03:25	0.428	22:05	1.006	0.729	97398	
7/13/2016	03:20	1.94	07:50	2.35	2.18	03:55	4.80	20:20	6.70	6.07	04:05	0.514	20:35	0.937	0.765	102312	
7/14/2016	04:50	1.78	16:20	35.34	2.65	02:25	4.68	16:30	14.16	6.32	04:55	0.459	16:20	39.808	1.441	192577	0.62
7/15/2016	04:05	1.60	22:15	2.42	2.05	03:35	4.89	22:25	6.69	6.02	03:35	0.392	22:20	0.978	0.705	94198	
7/16/2016	02:25	1.86	16:30	6.05	2.21	04:20	4.13	16:30	11.64	6.06	04:20	0.434	16:30	6.591	0.809	108102	
7/17/2016	02:35	1.93	11:50	2.45	2.21	05:05	4.39	11:45	6.88	5.96	04:15	0.487	11:50	1.026	0.775	103620	
7/18/2016	16:45	1.92	16:55	10.08	2.28	03:50	4.09	16:55	13.51	6.12	03:45	0.487	16:55	15.968	0.923	123417	0.32
7/19/2016	03:40	1.97	19:25	2.41	2.23	04:10	5.10	08:05	6.64	6.04	04:10	0.565	19:15	0.915	0.786	105096	
7/20/2016	01:20	1.97	00:00	2.24	2.10	03:55	4.11	20:25	6.66	5.87	04:20	0.479	20:25	0.852	0.701	93711	
7/21/2016	02:40	1.68	20:40	2.24	2.03	03:55	4.38	20:40	6.68	5.89	02:35	0.378	20:40	0.872	0.676	90311	
7/22/2016	02:20	1.77	20:25	2.20	2.04	04:20	4.24	19:00	6.69	5.94	02:45	0.422	20:25	0.842	0.684	91475	
7/23/2016	02:30	1.73	10:50	2.25	2.05	05:00	4.31	10:35	6.76	5.98	03:45	0.407	10:45	0.884	0.697	93241	
7/24/2016	16:25	1.53	12:05	2.32	2.07	05:10	4.16	12:40	6.92	6.01	03:45	0.417	11:55	0.952	0.714	95402	
7/25/2016	02:30	1.67	17:35	45.12	2.85	03:55	4.34	17:55	14.23	6.61	03:40	0.384	17:35	97.724	2.015	269340	0.77
7/26/2016	04:25	1.56	20:45	2.38	2.05	04:20	5.20	08:00	6.53	5.96	04:20	0.397	21:20	0.911	0.693	92582	
7/27/2016	01:40	1.91	20:25	2.31	2.16	03:40	4.23	20:15	6.62	5.82	03:40	0.457	20:25	0.902	0.731	97720	
7/28/2016	02:45	1.76	19:15	2.32	2.12	04:35	4.40	19:00	6.58	5.90	03:55	0.431	19:30	0.904	0.720	96301	
7/29/2016	04:20	1.91	04:35	7.37	2.72	02:35	5.05	04:35	12.05	7.00	02:35	0.528	04:35	9.071	1.478	197598	0.86
7/30/2016	02:15	1.77	18:00	5.61	2.39	04:05	4.25	17:55	11.27	6.44	04:05	0.415	17:55	5.684	1.025	136982	0.24
7/31/2016	04:55	1.76	21:40	17.95	2.62	04:45	5.33	21:50	13.10	6.85	04:50	0.492	21:40	25.733	1.426	190442	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3986202	6.64
Avg	2.27	6.16	0.962	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	05:10	1.79	00:55	4.59	2.19	04:30	5.59	00:50	10.28	6.44	05:10	0.527	00:55	3.827	0.847	113171	0.05
8/2/2016	02:25	1.75	19:00	2.23	2.03	04:35	4.50	18:55	6.79	6.06	04:15	0.426	18:55	0.881	0.690	92284	
8/3/2016	02:40	1.64	20:15	2.24	2.03	04:10	4.80	19:25	6.70	6.06	04:10	0.408	19:25	0.873	0.696	92985	
8/4/2016	02:10	1.70	21:20	2.29	2.07	04:30	4.38	11:30	6.75	5.93	03:00	0.417	12:10	0.891	0.698	93290	
8/5/2016	02:00	1.79	19:20	2.32	2.10	03:50	4.28	19:50	6.81	5.93	03:50	0.447	19:20	0.935	0.714	95468	
8/6/2016	02:50	1.75	12:00	2.32	2.10	04:50	4.99	13:35	6.84	6.12	04:00	0.464	11:50	0.940	0.737	98536	0.09
8/7/2016	02:10	1.87	12:10	2.46	2.20	05:05	4.40	11:40	6.97	6.01	05:05	0.480	12:10	1.036	0.776	103673	
8/8/2016	03:50	1.82	12:30	2.27	2.06	03:55	4.62	21:10	6.68	6.02	03:55	0.449	12:30	0.868	0.701	93748	
8/9/2016	02:05	1.74	19:30	2.33	2.06	04:35	4.52	19:30	6.81	5.95	04:45	0.410	19:30	0.946	0.698	93360	
8/10/2016	01:40	1.77	13:20	4.05	2.24	04:40	4.28	13:20	9.84	5.98	03:15	0.446	13:20	3.093	0.816	109139	0.08
8/11/2016	01:30	2.12	18:15	2.52	2.37	03:40	4.32	18:00	6.60	5.78	03:30	0.572	18:00	1.028	0.830	110975	
8/12/2016	05:20	1.85	01:05	12.24	2.51	05:10	5.26	01:05	15.48	6.55	05:10	0.529	01:05	24.083	1.327	177429	0.34
8/13/2016	02:10	1.95	12:10	2.38	2.19	04:25	4.20	12:00	6.71	5.86	03:05	0.483	12:00	0.959	0.746	99722	
8/14/2016	02:25	1.84	12:05	2.42	2.16	05:50	4.42	11:00	6.75	5.98	03:20	0.495	12:00	0.979	0.748	99975	0.13
8/15/2016	01:40	1.84	21:45	2.26	2.11	03:45	4.33	21:05	6.79	5.88	01:55	0.475	21:05	0.888	0.707	94473	
8/16/2016	02:20	1.65	20:00	2.25	2.02	02:25	5.04	20:00	6.74	5.99	02:25	0.418	20:00	0.887	0.682	91172	0.23
8/17/2016	03:45	1.64	21:40	2.25	1.99	03:45	5.07	21:35	6.81	5.97	03:45	0.418	21:35	0.895	0.664	88800	
8/18/2016	02:10	1.62	05:20	2.46	2.13	04:20	5.00	05:20	7.34	5.97	03:35	0.406	05:20	1.106	0.736	98344	0.03
8/19/2016	01:45	1.96	19:15	2.42	2.23	04:15	3.84	19:15	6.60	5.79	04:15	0.441	19:15	0.971	0.761	101775	
8/20/2016	02:15	2.00	10:00	2.43	2.25	04:00	4.42	11:30	6.63	5.87	04:00	0.505	10:55	0.971	0.782	104533	0.02
8/21/2016	06:10	1.96	18:45	3.63	2.34	05:00	4.38	18:45	8.64	6.04	03:50	0.485	18:45	2.314	0.872	116600	0.15
8/22/2016	01:55	1.87	19:40	2.43	2.19	01:55	5.42	19:40	6.55	6.08	01:55	0.541	19:40	0.968	0.775	103627	
8/23/2016	04:15	1.69	19:25	2.46	2.17	04:15	5.03	19:25	6.59	6.04	04:15	0.433	19:25	0.990	0.765	102247	
8/24/2016	04:15	1.76	19:20	2.45	2.21	04:15	5.18	19:20	6.58	6.11	04:15	0.474	19:20	0.983	0.792	105872	
8/25/2016	04:25	1.72	19:35	2.41	2.17	04:25	5.11	19:35	6.50	6.04	04:25	0.453	19:35	0.947	0.761	101786	
8/26/2016	03:00	1.75	07:50	2.37	2.07	03:00	5.16	18:45	6.52	6.02	03:00	0.468	07:50	0.916	0.706	94321	
8/27/2016	03:10	1.58	12:35	2.28	2.00	05:00	4.34	11:25	6.71	5.90	04:40	0.351	11:25	0.891	0.667	89158	
8/28/2016	03:25	1.73	10:10	2.33	2.08	04:40	4.47	12:35	6.60	5.86	04:40	0.417	10:10	0.912	0.701	93670	
8/29/2016	02:25	1.76	20:00	2.21	2.02	03:55	4.66	20:15	6.61	5.88	03:55	0.431	20:00	0.849	0.666	88988	
8/30/2016	03:30	1.59	18:35	2.22	1.99	04:00	4.72	20:05	6.70	5.92	04:00	0.376	20:05	0.856	0.659	88079	
8/31/2016	02:20	1.62	21:25	2.21	1.97	03:25	4.79	21:10	6.60	5.90	03:25	0.393	21:25	0.834	0.647	86479	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3123679	1.12
Avg	2.14	6.00	0.754	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	01:45	1.71	14:20	34.21	2.75	03:50	4.82	14:20	13.79	6.47	03:50	0.441	14:20	80.467	2.170	290094	0.56
9/2/2016	01:40	1.71	19:15	2.36	2.10	04:05	4.30	11:30	6.45	5.66	04:05	0.400	19:15	0.874	0.681	91051	
9/3/2016	02:25	1.75	13:40	2.26	2.03	04:45	3.86	13:35	6.62	5.72	04:45	0.360	13:40	0.877	0.656	87706	
9/4/2016	02:00	1.70	10:30	2.28	2.05	04:40	4.06	11:25	6.67	5.75	03:30	0.387	11:20	0.894	0.670	89589	
9/5/2016	01:55	1.72	11:35	2.31	2.06	04:00	4.06	13:00	6.82	5.82	03:25	0.390	11:15	0.925	0.686	91740	
9/6/2016	01:30	1.68	20:50	2.22	1.99	04:00	3.96	20:30	6.53	5.65	04:00	0.368	20:30	0.842	0.630	84198	
9/7/2016	03:25	1.65	21:10	2.24	1.98	03:40	4.10	20:55	6.77	5.67	03:40	0.344	21:10	0.877	0.631	84408	
9/8/2016	01:40	1.65	07:35	2.19	1.95	03:40	3.99	07:35	6.67	5.56	03:40	0.353	07:35	0.846	0.604	80698	
9/9/2016	02:10	1.65	23:35	5.56	2.03	04:40	3.99	23:35	10.42	5.59	03:20	0.352	23:35	5.217	0.677	90521	0.11
9/10/2016	04:40	1.68	15:30	5.18	2.20	04:15	4.52	15:40	10.04	6.05	04:20	0.395	15:30	4.329	0.805	107546	0.05
9/11/2016	01:40	1.95	10:10	2.44	2.23	04:55	3.85	11:05	6.98	5.82	05:00	0.449	11:05	1.017	0.772	103208	
9/12/2016	01:20	1.75	20:00	2.38	2.11	04:20	4.06	19:20	7.03	5.76	02:25	0.407	19:20	0.995	0.699	93430	0.00
9/13/2016	02:00	1.75	19:35	2.37	2.09	04:30	4.08	19:25	6.95	5.78	03:45	0.407	19:25	0.980	0.695	92933	
9/14/2016	02:15	1.67	17:35	33.75	2.46	03:25	4.18	17:30	14.64	6.06	03:25	0.362	17:35	82.073	1.601	214001	0.64
9/15/2016	04:55	1.52	21:10	2.31	1.97	03:10	4.61	07:35	6.77	5.74	03:05	0.346	07:40	0.894	0.634	84797	
9/16/2016	00:40	1.82	19:55	2.31	2.10	03:45	3.86	20:00	6.48	5.54	04:50	0.399	19:55	0.885	0.665	88913	
9/17/2016	01:10	1.86	10:40	2.42	2.21	05:10	4.24	11:15	6.66	5.81	05:10	0.446	11:15	0.976	0.759	101403	
9/18/2016	01:35	1.93	20:45	2.54	2.29	04:35	4.07	11:40	6.86	5.88	04:35	0.478	20:35	1.045	0.807	107825	
9/19/2016	00:35	2.02	10:40	6.01	2.66	03:35	3.96	10:40	10.70	6.38	03:35	0.480	10:40	5.994	1.241	165862	0.45
9/20/2016	01:00	2.01	19:25	2.52	2.31	03:40	3.96	19:35	6.74	5.68	03:40	0.496	19:30	1.045	0.787	105142	
9/21/2016	01:05	2.01	07:40	2.47	2.25	03:45	4.14	07:35	6.63	5.79	03:45	0.480	07:40	1.001	0.771	103072	
9/22/2016	01:55	1.94	20:00	2.43	2.21	03:40	4.13	07:45	6.66	5.71	03:40	0.448	07:45	0.971	0.740	98944	
9/23/2016	03:15	1.97	07:55	2.46	2.21	04:30	4.26	07:45	6.77	5.76	03:50	0.469	07:55	1.014	0.748	99957	
9/24/2016	04:35	1.36	01:05	32.21	2.21	01:00	0.73	01:10	12.86	6.40	04:35	0.335	01:05	11.828	0.911	121840	0.28
9/25/2016	03:40	1.36	11:25	2.19	1.80	04:10	4.05	11:25	7.03	5.90	03:40	0.252	11:25	0.891	0.579	77352	
9/26/2016	02:30	1.19	20:05	2.02	1.63	02:35	4.30	19:50	6.89	5.75	02:30	0.224	20:05	0.767	0.485	64772	
9/27/2016	02:15	1.20	02:40	9.34	1.95	02:10	4.71	02:40	13.25	6.34	02:15	0.245	02:40	14.051	0.791	105768	0.25
9/28/2016	02:25	1.22	07:45	2.02	1.67	02:45	4.06	07:45	6.62	5.71	02:15	0.224	07:45	0.745	0.500	66783	
9/29/2016	03:35	1.19	07:50	1.99	1.64	04:55	4.54	07:50	6.66	5.77	03:35	0.236	07:50	0.732	0.487	65039	
9/30/2016	02:00	1.24	14:30	3.97	2.31	04:45	4.25	18:25	9.25	6.61	03:55	0.238	18:25	2.697	1.048	139950	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3198542	2.75
Avg	2.12	5.87	0.798	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:35	1.24	12:20	2.16	1.78	03:30	4.49	10:25	6.74	5.87	04:35	0.248	12:20	0.811	0.566	75668	
10/2/2016	04:10	1.36	12:00	2.19	1.80	04:00	4.04	11:45	6.83	5.86	04:10	0.256	11:50	0.858	0.575	76900	
10/3/2016	04:15	1.21	07:55	2.01	1.69	04:30	4.04	19:25	6.65	5.64	04:15	0.213	07:55	0.736	0.501	67000	
10/4/2016	04:40	1.22	15:50	2.53	1.72	04:30	4.32	15:35	7.29	5.72	04:45	0.235	15:35	1.140	0.529	70774	
10/5/2016	02:25	1.28	21:05	2.11	1.71	04:30	4.20	07:40	6.70	5.61	04:40	0.248	21:00	0.786	0.506	67705	
10/6/2016	02:35	1.29	07:40	2.10	1.72	04:25	4.03	07:40	6.62	5.54	02:35	0.236	07:40	0.789	0.504	67388	0.00
10/7/2016	04:25	1.23	07:50	2.13	1.74	04:25	4.24	07:50	6.55	5.62	04:25	0.228	07:50	0.795	0.517	69153	
10/8/2016	04:20	1.33	19:50	3.26	1.84	04:15	4.09	19:55	7.92	5.83	04:25	0.257	19:55	1.797	0.595	79568	0.13
10/9/2016	02:05	1.45	12:50	5.72	2.49	01:40	4.96	12:50	11.37	6.94	02:05	0.341	12:50	5.929	1.208	161520	0.52
10/10/2016	02:20	1.38	20:00	2.29	1.85	03:25	4.41	19:40	6.73	5.81	02:25	0.295	20:00	0.903	0.587	78519	
10/11/2016	04:20	1.46	21:00	2.17	1.83	04:25	3.82	10:05	6.79	5.68	04:25	0.265	21:00	0.813	0.564	75364	0.00
10/12/2016	03:15	1.42	07:50	2.15	1.81	04:10	4.41	07:35	6.57	5.71	03:20	0.311	07:50	0.799	0.553	73955	
10/13/2016	04:10	1.41	07:50	2.07	1.69	04:00	4.07	20:40	6.60	5.63	04:00	0.276	07:50	0.757	0.493	65948	
10/14/2016	02:55	1.23	19:30	1.97	1.65	04:15	4.38	18:55	6.52	5.67	02:55	0.239	19:30	0.691	0.481	64253	
10/15/2016	04:05	1.24	13:30	2.06	1.73	04:15	3.96	12:25	6.69	5.73	04:05	0.219	11:40	0.767	0.528	70577	
10/16/2016	05:50	1.30	19:55	2.16	1.81	04:25	4.25	12:30	6.73	5.84	05:50	0.269	19:55	0.819	0.577	77119	
10/17/2016	03:30	1.47	07:45	2.13	1.82	03:45	4.01	07:50	6.50	5.59	03:35	0.288	07:45	0.786	0.548	73244	
10/18/2016	04:10	1.39	20:05	2.14	1.81	05:00	3.97	20:05	6.55	5.61	04:10	0.264	20:05	0.804	0.547	73147	0.00
10/19/2016	04:10	1.37	21:00	2.12	1.78	03:30	4.23	07:50	6.54	5.62	04:20	0.271	07:50	0.783	0.534	71353	
10/20/2016	02:40	1.32	07:40	2.08	1.73	04:40	3.98	07:45	6.46	5.53	03:30	0.253	07:40	0.757	0.503	67271	
10/21/2016	04:05	1.32	10:20	5.25	2.36	03:50	4.11	10:20	10.95	6.55	04:05	0.255	10:20	5.034	1.159	154872	0.46
10/22/2016	03:55	1.40	04:25	34.72	2.64	03:50	4.54	04:20	13.86	6.76	03:50	0.298	04:20	81.944	1.746	233384	0.33
10/23/2016	04:55	1.53	11:20	2.42	2.00	03:55	4.02	11:40	6.81	5.77	04:55	0.303	11:15	0.974	0.658	88013	
10/24/2016	04:10	1.45	20:00	2.19	1.87	03:40	3.71	19:55	6.75	5.65	03:40	0.269	20:00	0.853	0.576	77047	
10/25/2016	01:40	1.42	19:35	2.11	1.78	05:05	4.41	19:25	6.68	5.76	04:00	0.298	19:35	0.798	0.548	73208	
10/26/2016	03:35	1.32	21:55	2.05	1.76	04:15	4.08	19:50	6.44	5.63	03:25	0.250	21:50	0.721	0.525	70147	
10/27/2016	03:45	1.32	20:15	29.93	3.03	03:05	4.18	20:15	16.38	7.15	03:45	0.262	20:15	82.453	2.430	324874	1.15
10/28/2016	03:40	1.39	00:00	2.32	1.79	04:55	5.33	00:00	7.12	6.16	03:40	0.349	00:00	0.985	0.583	77986	
10/29/2016	03:25	1.31	10:35	2.18	1.82	02:50	4.62	10:35	6.93	6.03	03:45	0.279	10:35	0.871	0.598	79940	
10/30/2016	05:00	1.34	16:40	35.18	2.51	04:50	4.14	16:50	13.80	6.50	05:00	0.257	16:45	57.808	1.597	213505	
10/31/2016	05:00	1.23	20:30	1.97	1.66	04:50	4.84	21:05	6.72	6.03	04:35	0.268	21:10	0.718	0.514	68707	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			2988109	2.59
Avg	1.91	5.91	0.721	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

W2-B, Pipe Height: 46.5 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:55	1.17	21:05	2.10	1.67	04:15	4.41	21:45	6.66	5.82	04:55	0.230	21:45	0.785	0.510	68241	
11/2/2016	03:20	1.38	20:35	2.15	1.80	04:25	4.11	07:50	6.54	5.57	03:20	0.266	20:35	0.786	0.537	71757	
11/3/2016	02:40	1.39	08:00	2.11	1.78	03:05	3.91	19:50	6.52	5.56	02:40	0.271	08:00	0.775	0.527	70426	
11/4/2016	03:20	1.27	18:50	1.99	1.67	03:40	4.08	18:30	6.60	5.64	03:20	0.232	18:50	0.719	0.490	65453	
11/5/2016	03:00	1.32	12:20	2.09	1.74	03:25	4.28	10:55	6.72	5.85	03:25	0.267	12:15	0.782	0.540	72188	
11/6/2016	05:35	1.28	11:00	2.14	1.73	05:25	4.25	12:05	6.80	5.88	04:00	0.248	11:30	0.825	0.545	72870	
11/7/2016	01:30	1.31	20:00	1.93	1.64	05:05	4.23	08:30	6.60	5.62	04:00	0.260	20:00	0.682	0.470	62796	
11/8/2016	02:55	1.31	18:45	1.96	1.70	03:30	4.24	11:00	6.47	5.71	03:00	0.255	19:40	0.680	0.505	67536	
11/9/2016	03:40	1.33	12:25	2.68	1.74	03:40	4.33	12:30	7.33	5.81	03:40	0.261	12:25	1.254	0.541	72313	0.07
11/10/2016	04:25	1.21	08:35	1.85	1.58	03:35	4.22	07:15	6.28	5.49	04:25	0.222	08:30	0.608	0.436	58232	
11/11/2016	03:25	1.34	10:30	1.98	1.69	03:55	3.98	18:45	6.29	5.43	03:25	0.252	10:30	0.666	0.475	63483	
11/12/2016	03:10	1.43	11:10	2.02	1.67	05:05	4.04	11:20	6.56	5.55	03:10	0.282	11:10	0.730	0.479	64017	
11/13/2016	03:35	1.23	13:10	1.99	1.65	05:40	4.14	13:20	6.63	5.69	03:35	0.231	13:10	0.720	0.489	65393	
11/14/2016	02:15	1.19	08:05	1.95	1.57	05:00	4.15	07:45	6.48	5.48	03:45	0.217	08:05	0.677	0.433	57843	
11/15/2016	01:25	1.18	09:40	28.30	3.11	03:50	3.90	09:40	15.37	7.54	04:00	0.214	09:40	72.422	2.462	329134	1.50
11/16/2016	04:05	1.28	08:00	2.18	1.80	03:45	4.77	07:45	6.87	6.07	04:05	0.281	07:50	0.844	0.588	78579	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1340260	1.57
Avg	1.78	5.79	0.627	

Site Commentary

Site Information

W3	
Pipe Dimensions (in.)	Circular (47.75 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for W3 indicate this location functioned mostly in free-flow conditions for the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016 . Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016 , along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	3.55	6.60	1.914
Minimum	2.27	4.42	0.852
Maximum	37.49	14.67	98.162
Time of Minimum	6/5/2016 5:05 AM	6/3/2016 2:50 AM	6/3/2016 5:05 AM
Time of Maximum	7/25/2016 5:40 PM	7/25/2016 5:50 PM	7/25/2016 5:45 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Site Report

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. WEEHAWKEN, NJ

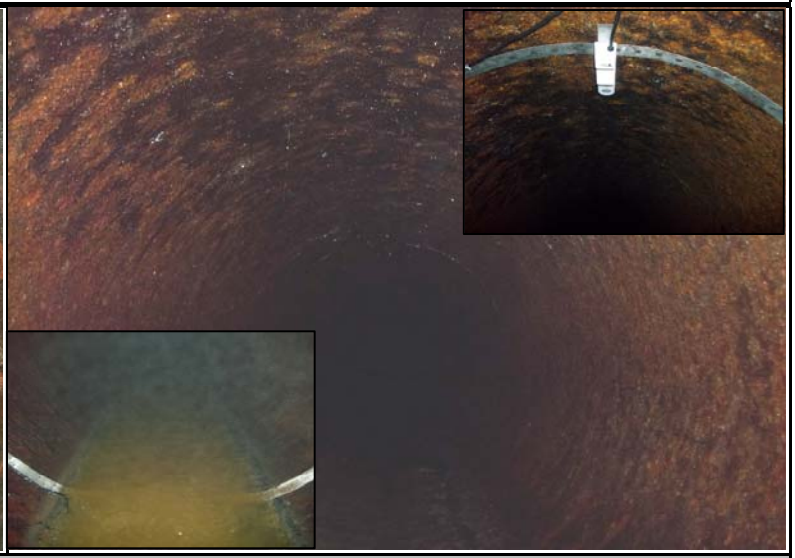
FM Initials:	CK
Project Name:	NHSA

Site Name:	W3	Meter Type:	TRITON+	Monitor S/N:	61038	Manhole #:	W3-HA-002
Address / Location:	99 HACKENSACK PLANK ROAD			Map Page #:		H3	
				Pipe Height:		47.75 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		47.75 Inches	
				I.P. Address		107.80.25.46	

Investigation Information:			Manhole Information:			
Date/Time of Investigation:	April 13, 2016	5:40 AM	Manhole Depth:	13.65 Feet		
Site Hydraulics:	FAST FLOW. SOME RIPPLES		Manhole Material / Condition:	Brick		Fair
			Active Drop Connections?	Yes	Stormwater	
			Pipe Material / Condition:	STEEL		Fair
			Mini System Character:	RESIDENTIAL		
			Telephone Information:			
Depth of Flow (Wet Dof):	4 +/- 0.5		Access Pole #:	N/A		
Range (Air Dof):	+/- 0.5		Distance From Manhole:	N/A Feet		
Peak Velocity:	6.1 fps		Road Cut Length:	N/A Feet		
Silt:	0 Inches		Trench Length:	N/A Feet		

Other Information:

N 40.76586 W 74.02472



Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other		X		

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** W3 **Classification (Below):** 3

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	☑
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	☑
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	☑
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
☑	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL
WORK MAY REQUIRE EARLY MORNING SCHEDULING

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

W3

Flow Monitor

W3

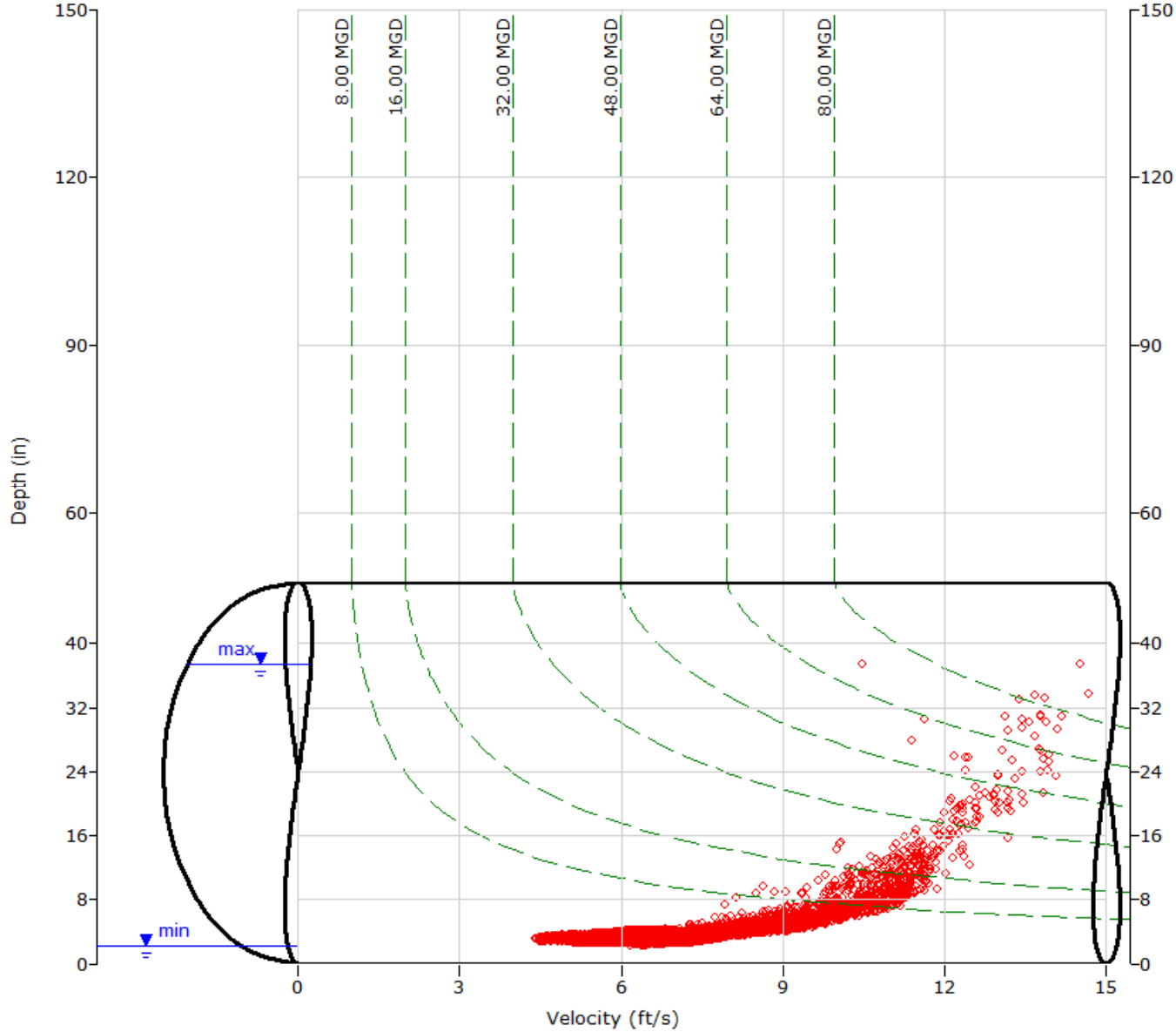
Pipe Height
47.75 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

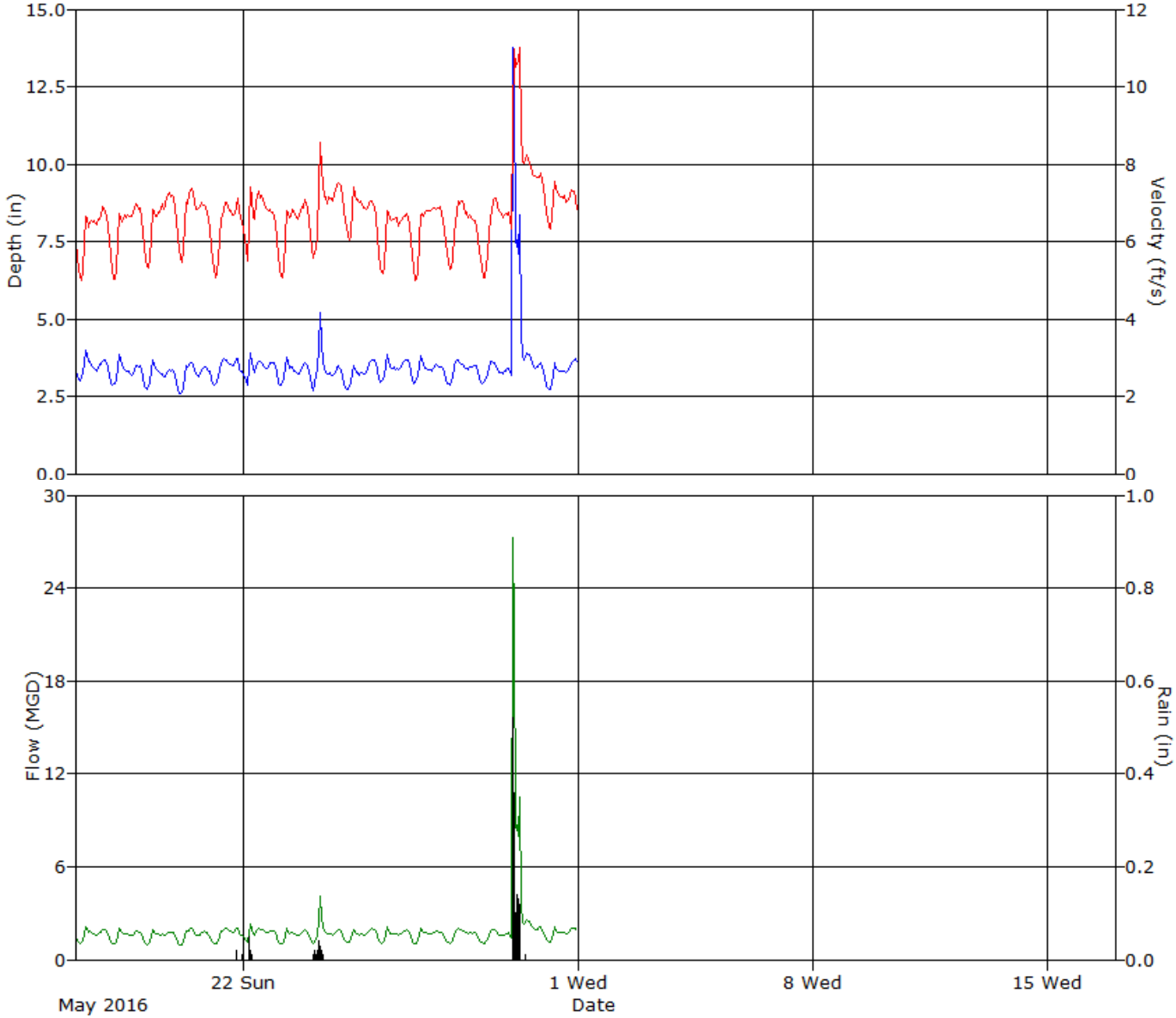
Pipe Height
47.75 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

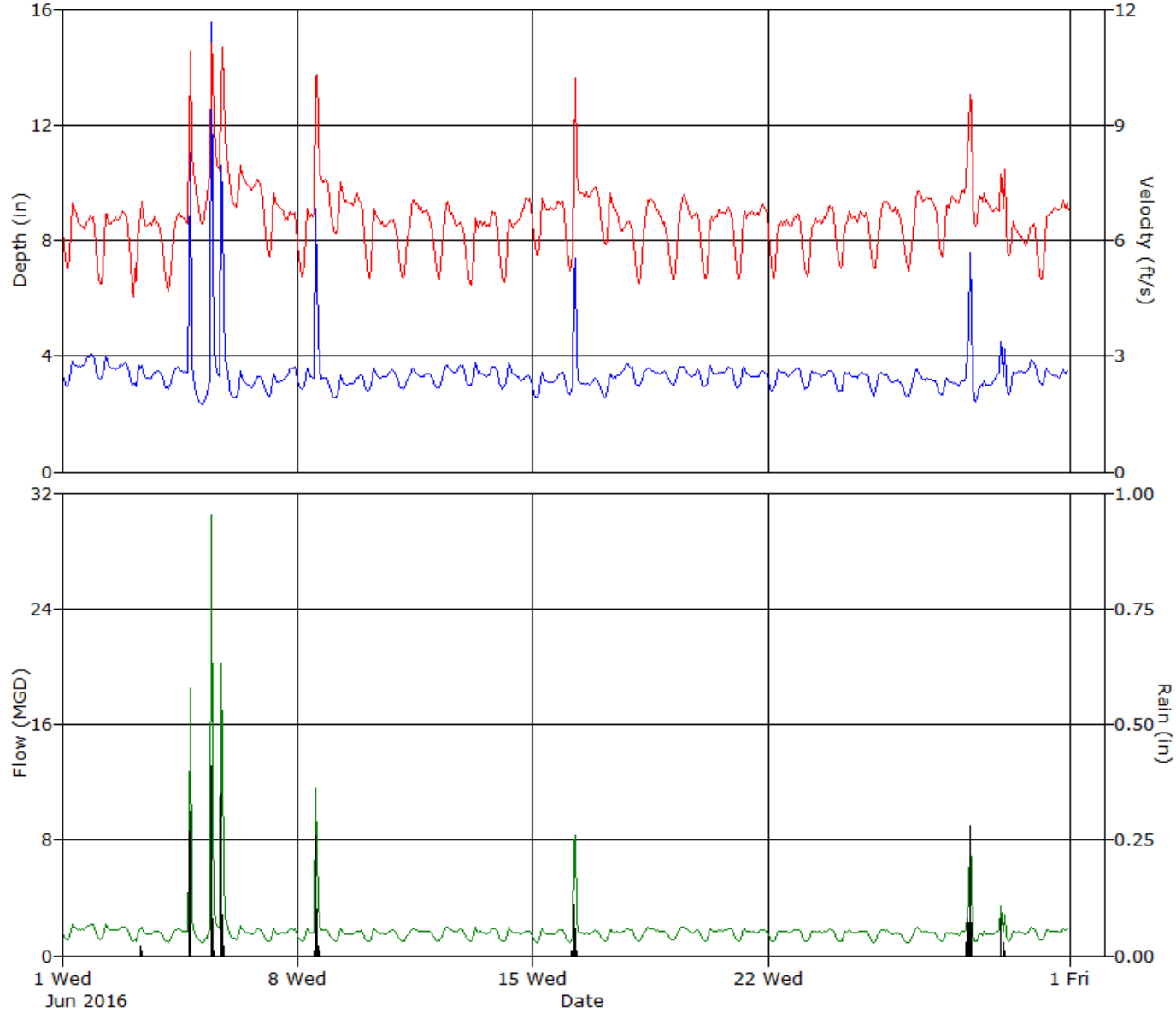
Pipe Height
47.75 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



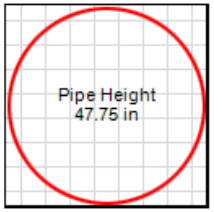
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

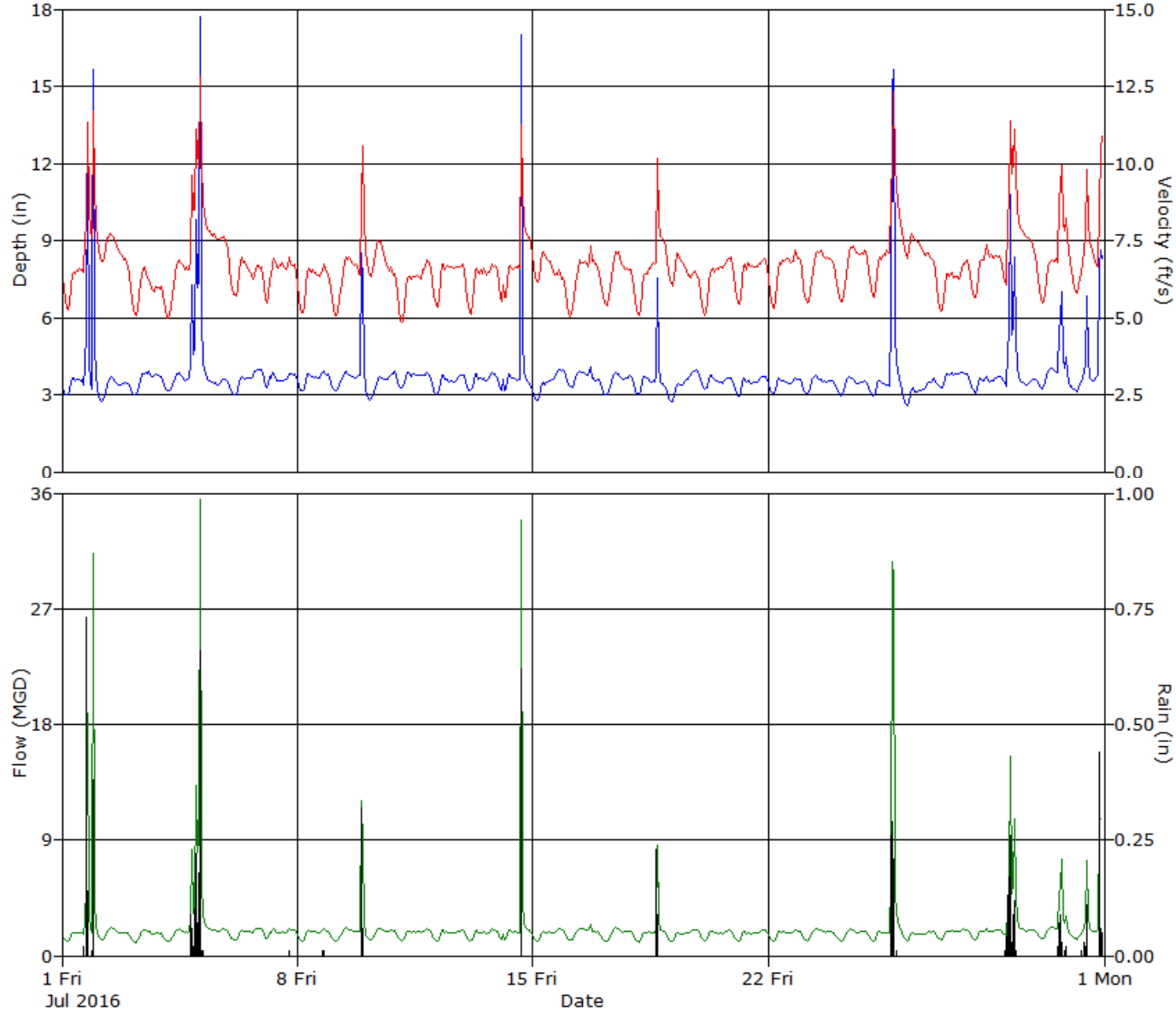


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



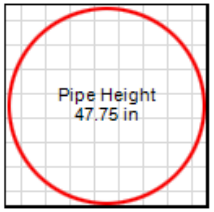
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

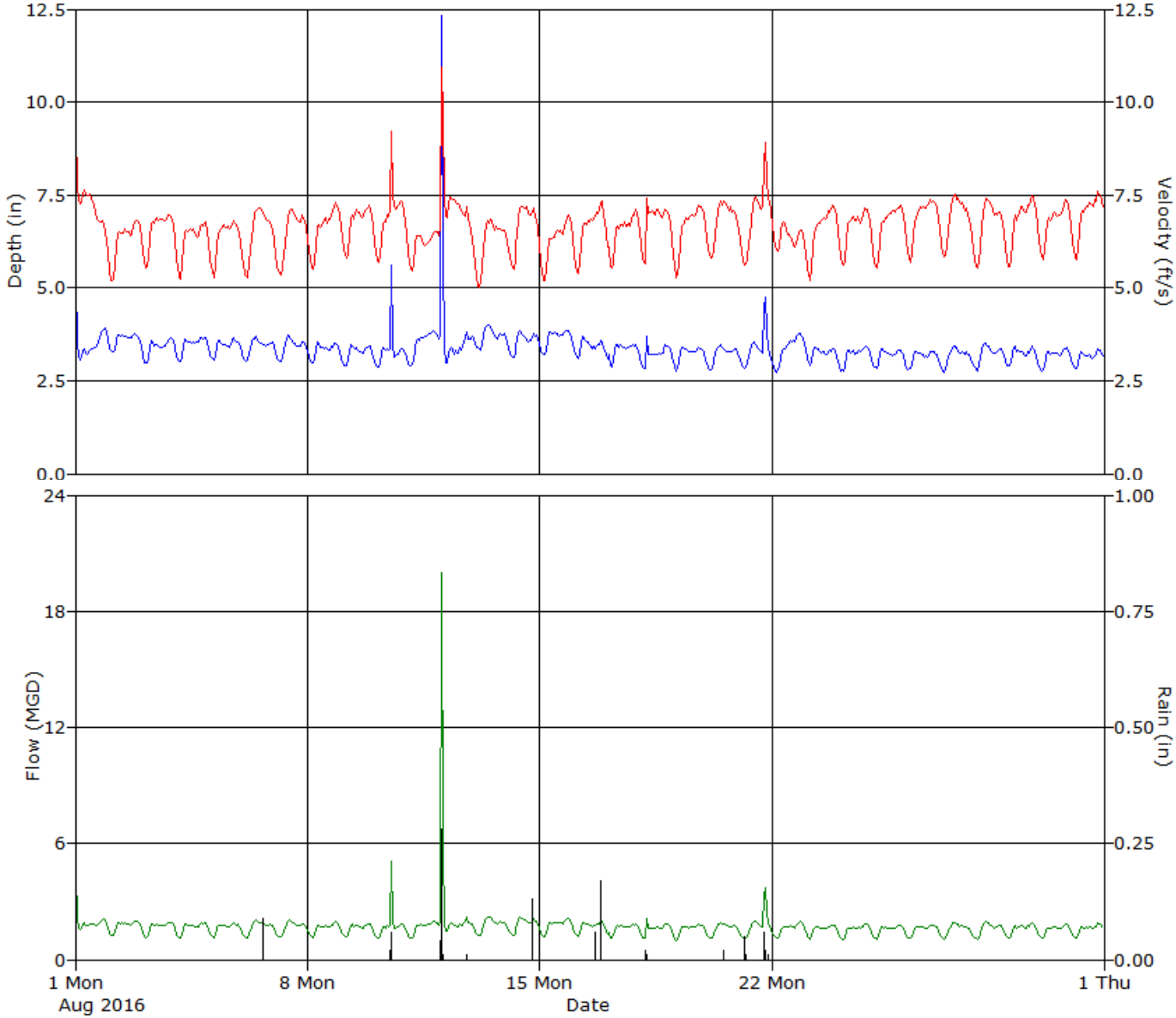


Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

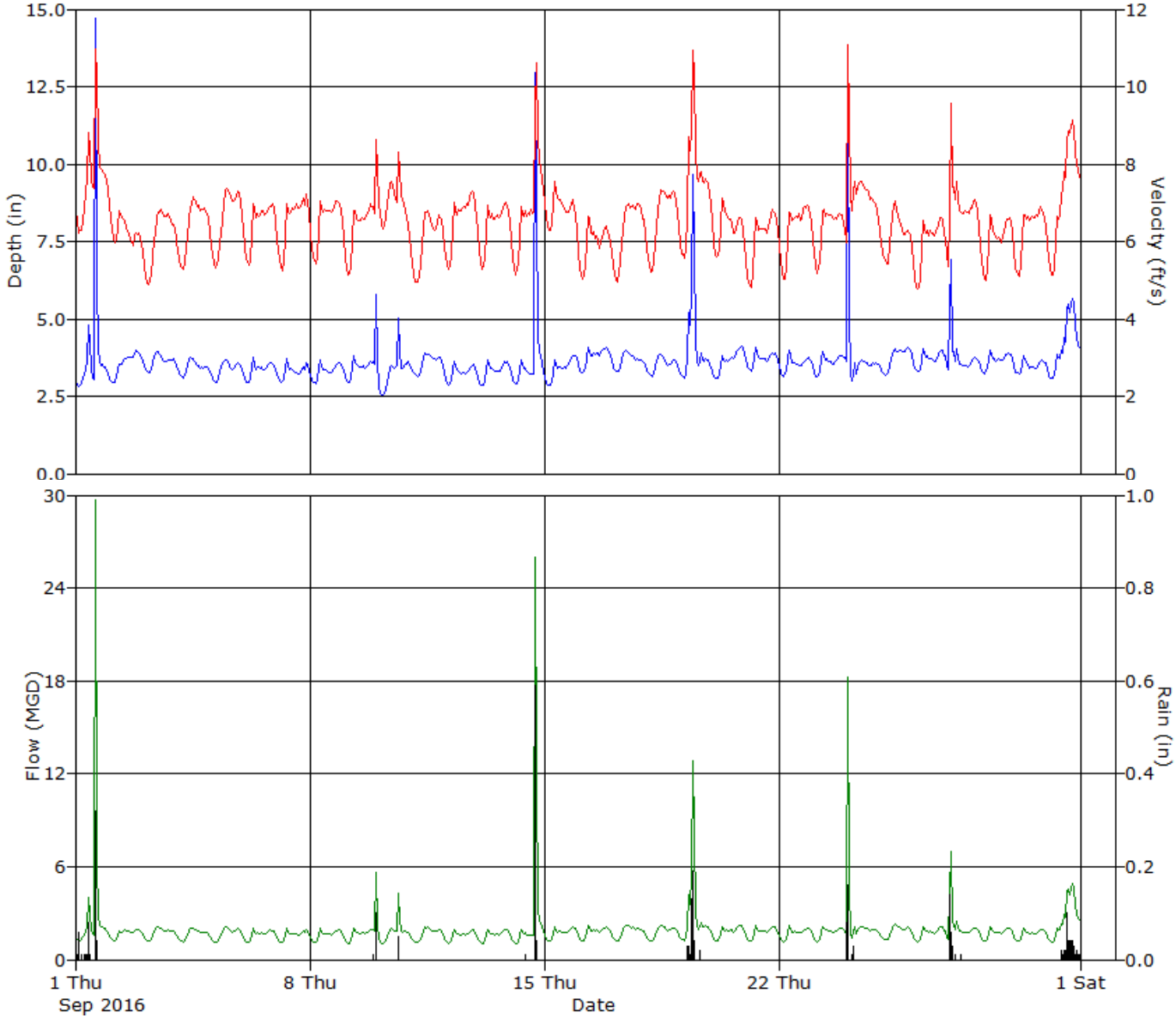
Pipe Height
47.75 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

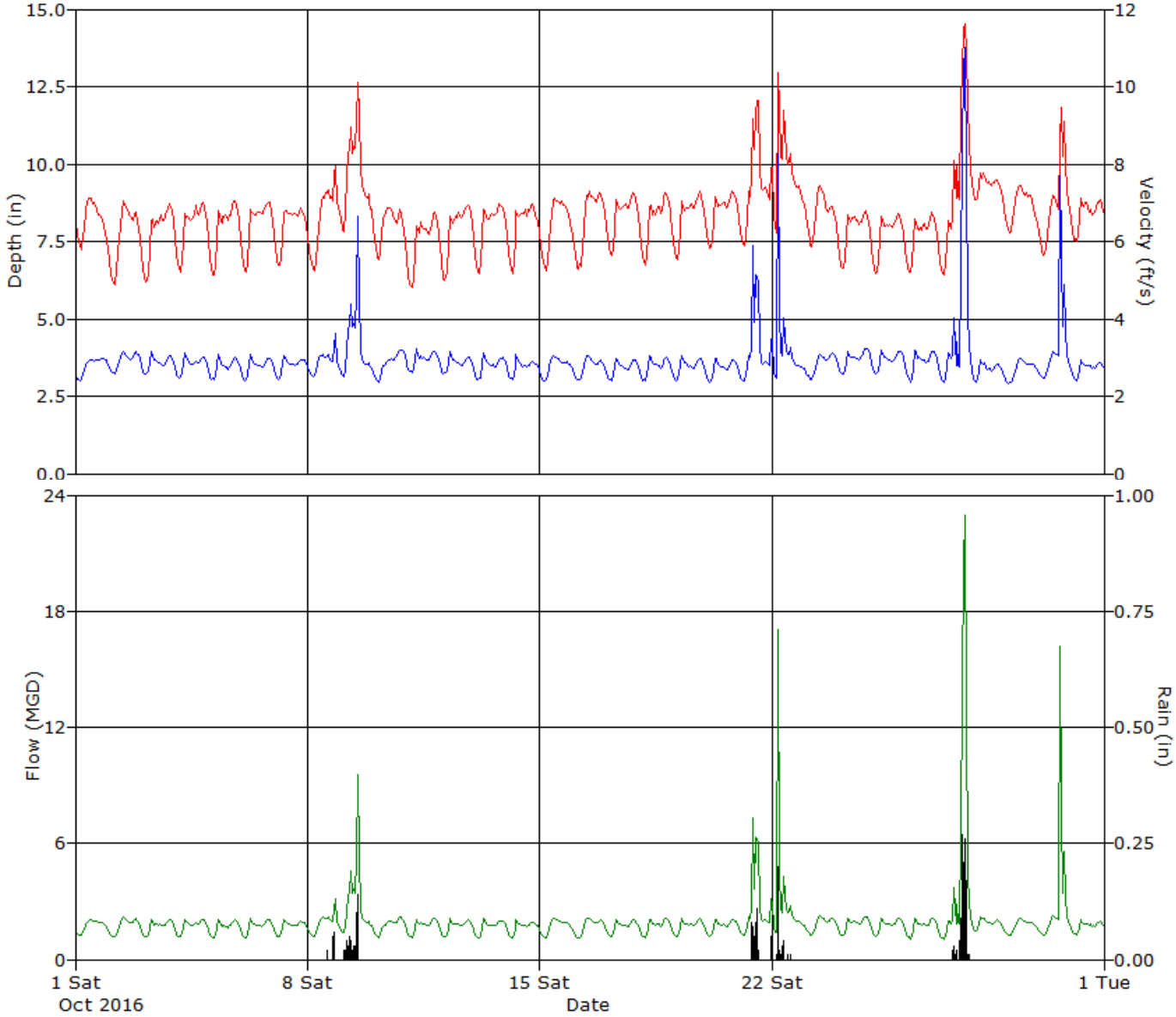
Pipe Height
47.75 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W3

Flow Monitor

W3

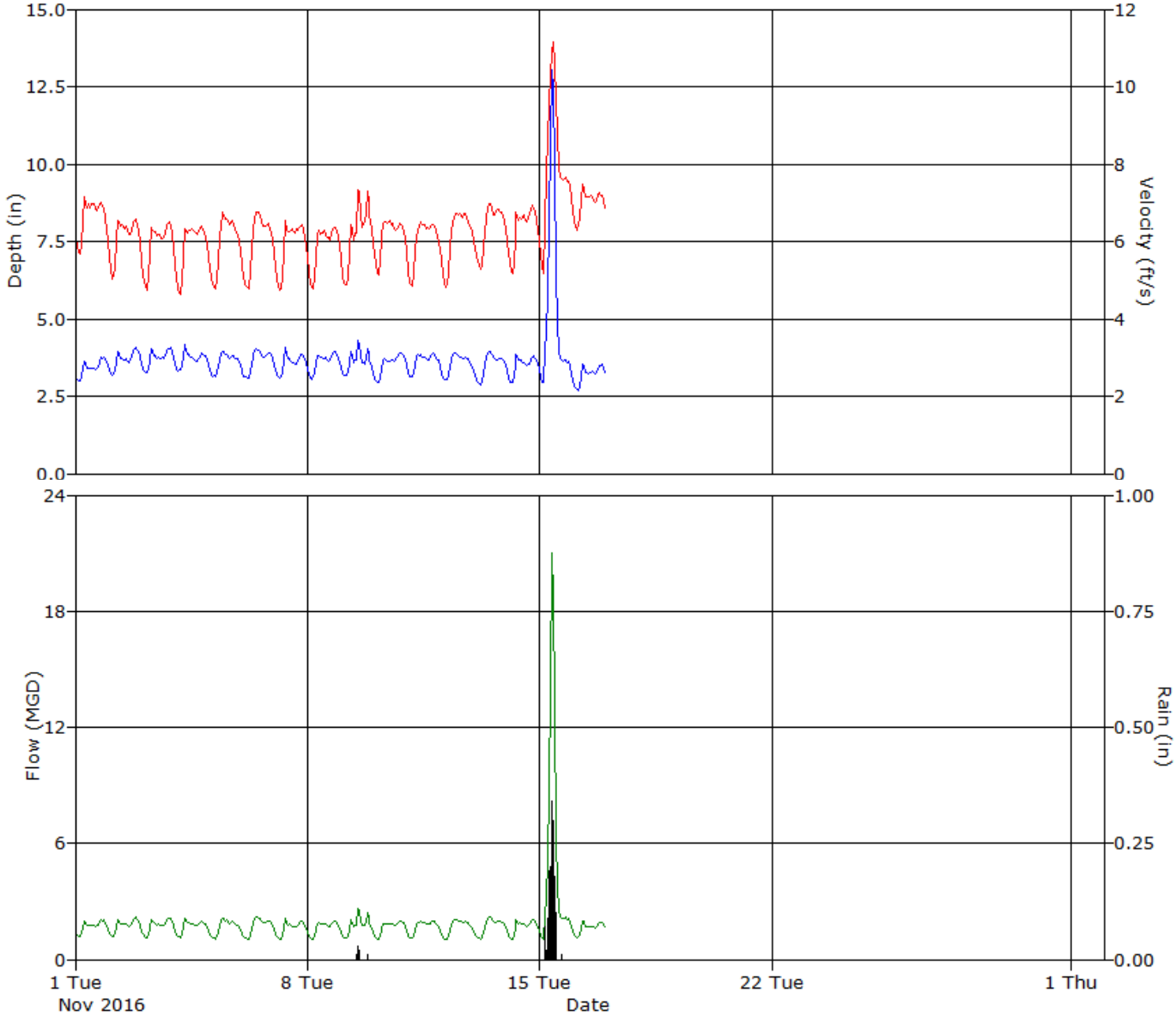
Pipe Height
47.75 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	03:40	2.95	07:30	4.09	3.46	04:25	4.88	20:00	7.02	6.26	03:40	1.046	07:40	2.295	1.647	220139	
5/18/2016	02:05	2.87	07:55	3.88	3.30	04:25	4.92	20:15	7.19	6.35	03:50	0.988	07:45	2.102	1.559	208421	
5/19/2016	03:20	2.66	07:45	3.72	3.20	02:40	5.19	19:25	7.41	6.58	03:20	0.948	08:00	2.031	1.544	206437	
5/20/2016	02:25	2.56	11:00	3.61	3.21	04:15	5.29	11:40	7.50	6.69	04:15	0.898	10:55	2.067	1.581	211387	
5/21/2016	03:25	2.81	20:05	3.99	3.39	04:55	4.98	20:05	7.42	6.39	04:55	1.002	20:05	2.382	1.639	219106	0.03
5/22/2016	03:35	2.83	05:05	4.46	3.45	03:35	5.39	05:10	7.84	6.74	03:35	1.041	05:00	2.931	1.761	235397	0.08
5/23/2016	02:35	2.84	07:45	3.80	3.32	04:45	4.91	21:55	7.26	6.40	03:25	0.986	07:40	2.104	1.582	211440	
5/24/2016	02:40	2.60	07:35	5.68	3.38	02:25	5.38	07:30	9.16	7.00	02:40	0.946	07:30	4.921	1.811	242047	0.16
5/25/2016	02:25	2.68	21:55	3.74	3.26	04:45	5.99	07:10	7.49	6.82	03:45	1.089	22:10	2.068	1.639	219157	
5/26/2016	02:25	2.90	07:45	3.90	3.42	03:40	4.98	07:45	7.14	6.29	03:40	1.031	07:45	2.216	1.622	216850	
5/27/2016	02:20	2.89	07:40	3.84	3.36	04:10	4.87	14:30	7.01	6.40	04:10	1.004	07:45	2.073	1.613	215583	
5/28/2016	04:35	2.82	10:30	3.71	3.36	04:40	5.17	10:15	7.16	6.40	04:35	0.995	10:25	2.050	1.613	215681	
5/29/2016	03:35	2.90	10:55	3.70	3.29	05:10	4.79	13:30	7.26	6.33	05:10	0.975	10:55	2.067	1.546	206635	
5/30/2016	00:40	3.12	01:55	33.07	5.09	00:25	6.17	01:55	13.85	8.48	00:50	1.397	01:55	82.288	5.177	692058	1.38
5/31/2016	03:50	2.69	22:20	3.74	3.28	04:50	6.24	07:20	7.60	7.04	03:40	1.130	07:45	2.155	1.707	228010	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			3748348	1.65
Avg	3.45	6.68	1.869	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	03:40	2.94	22:05	4.12	3.62	04:05	5.14	07:35	7.14	6.31	03:40	1.061	22:05	2.260	1.780	237965	
6/2/2016	03:35	3.16	07:55	4.11	3.59	04:20	4.79	07:50	7.04	6.20	03:35	1.102	07:55	2.354	1.719	229788	
6/3/2016	05:00	2.74	09:25	3.76	3.32	02:50	4.42	09:15	7.11	6.12	05:05	0.852	09:25	2.084	1.513	202235	0.03
6/4/2016	04:15	2.81	20:00	23.90	3.77	04:40	4.49	20:00	13.45	6.53	04:15	0.869	20:00	54.105	2.485	332226	0.58
6/5/2016	05:05	2.27	18:50	28.45	4.45	05:10	6.16	18:45	13.83	8.12	05:10	0.860	18:50	68.287	4.668	624019	0.96
6/6/2016	03:40	2.50	07:50	3.65	3.02	04:35	6.79	07:45	8.08	7.40	03:35	1.102	07:50	2.271	1.583	211682	
6/7/2016	02:45	2.60	22:25	3.67	3.17	04:20	5.48	07:45	7.58	6.55	04:20	0.937	07:45	2.017	1.517	202765	
6/8/2016	03:40	2.86	13:40	11.48	3.66	05:10	4.88	13:35	11.36	7.02	03:30	0.964	13:35	16.682	2.298	307182	0.40
6/9/2016	03:35	2.53	07:50	3.46	3.02	04:20	6.06	07:50	7.74	6.88	03:40	1.008	07:50	2.017	1.481	197936	
6/10/2016	02:20	2.77	07:45	3.64	3.25	04:10	4.88	07:40	7.12	6.21	03:00	0.956	07:45	1.988	1.492	199461	
6/11/2016	04:40	2.84	10:45	3.63	3.27	04:00	4.85	11:10	7.23	6.34	04:40	0.964	10:50	2.003	1.533	204912	
6/12/2016	03:15	2.87	10:20	3.76	3.38	05:05	4.93	11:10	7.06	6.20	05:05	0.998	10:20	2.043	1.578	210970	
6/13/2016	04:30	2.95	07:10	3.81	3.37	04:50	4.63	20:10	6.98	6.13	04:50	0.963	07:45	1.977	1.550	207224	
6/14/2016	02:25	2.85	07:35	3.81	3.25	04:15	4.81	19:15	7.20	6.29	03:05	0.963	07:35	1.992	1.505	201128	
6/15/2016	03:40	2.51	07:50	3.50	3.10	04:00	5.50	07:45	7.26	6.64	03:40	0.901	07:50	1.902	1.487	198738	
6/16/2016	03:40	2.60	06:45	14.16	3.39	04:15	5.13	06:50	11.68	7.01	03:40	0.881	06:50	23.150	2.041	272883	0.20
6/17/2016	03:10	2.56	20:35	3.76	3.26	04:35	5.66	07:55	7.53	6.47	04:35	0.974	20:30	1.949	1.555	207884	
6/18/2016	04:30	2.92	10:10	3.62	3.35	04:50	4.75	13:10	7.15	6.30	04:30	0.979	13:10	1.965	1.583	211645	
6/19/2016	05:25	2.95	11:35	3.69	3.36	05:25	4.77	12:50	7.36	6.32	05:25	0.981	11:30	2.044	1.590	212542	
6/20/2016	03:10	2.92	07:35	3.71	3.38	03:45	4.84	14:40	7.02	6.32	03:45	1.003	21:35	1.953	1.603	214344	
6/21/2016	03:45	2.84	07:55	3.69	3.31	03:40	4.84	20:05	7.10	6.37	03:45	0.946	08:10	1.946	1.562	208871	
6/22/2016	02:40	2.75	21:55	3.61	3.32	03:50	4.91	21:45	6.82	6.21	03:55	0.939	21:45	1.872	1.536	205272	
6/23/2016	02:40	2.80	08:00	3.55	3.29	04:15	4.91	23:00	7.03	6.26	04:15	0.975	20:25	1.864	1.530	204543	
6/24/2016	02:40	2.68	10:35	3.57	3.23	05:10	5.01	10:35	7.09	6.33	05:15	0.936	10:35	1.938	1.505	201207	
6/25/2016	04:25	2.55	09:50	3.52	3.14	04:35	5.13	14:50	7.14	6.44	04:25	0.859	09:45	1.859	1.466	195919	
6/26/2016	03:20	2.57	11:05	3.58	3.10	05:20	5.11	12:45	7.42	6.56	03:35	0.866	10:45	1.987	1.478	197589	
6/27/2016	04:30	2.61	23:55	6.11	3.14	04:20	5.38	23:50	9.72	6.90	04:20	0.931	23:50	5.805	1.603	214280	0.18
6/28/2016	04:05	2.42	00:45	11.55	3.41	04:15	6.31	00:50	10.93	7.16	04:15	0.974	00:45	15.826	2.039	272511	0.43
6/29/2016	04:55	2.63	01:10	5.07	3.43	04:45	5.42	01:05	8.90	6.23	04:55	0.949	01:05	4.059	1.621	216682	0.04
6/30/2016	04:30	2.95	07:20	3.59	3.33	04:30	4.82	22:30	7.18	6.39	04:30	0.994	19:40	1.924	1.585	211683	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			7016088	2.82
Avg	3.36	6.54	1.750	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:15	2.96	22:15	30.92	4.47	05:00	5.15	22:20	14.17	7.10	04:15	1.077	22:20	77.873	3.935	526070	1.28
7/2/2016	03:30	2.71	00:00	4.13	3.33	22:10	6.53	00:00	8.59	7.24	04:10	1.226	00:00	2.901	1.794	239871	
7/3/2016	05:00	2.96	14:35	3.94	3.57	05:50	4.91	11:00	6.75	5.95	04:25	1.028	11:00	2.060	1.635	218554	
7/4/2016	06:10	3.10	21:00	12.61	3.80	03:35	4.82	21:15	11.04	6.48	03:40	1.096	21:05	18.429	2.131	284899	0.27
7/5/2016	15:20	3.30	03:15	24.13	4.84	23:55	7.08	03:20	14.08	8.38	15:20	1.829	03:15	56.611	4.669	624215	1.15
7/6/2016	03:50	2.97	22:10	4.03	3.60	03:45	5.53	08:15	7.09	6.46	03:45	1.151	21:55	2.262	1.797	240162	
7/7/2016	03:00	3.20	06:30	3.92	3.63	02:45	5.32	18:45	7.29	6.51	03:00	1.238	18:45	2.225	1.825	243990	0.01
7/8/2016	02:25	3.11	19:35	3.95	3.62	03:25	4.98	19:10	6.85	6.20	04:30	1.123	19:10	2.147	1.739	232438	0.02
7/9/2016	04:25	3.15	22:40	18.90	3.95	04:00	4.96	22:40	12.99	6.52	04:25	1.127	22:40	38.457	2.444	326741	0.38
7/10/2016	05:35	2.78	00:00	5.06	3.47	23:45	5.83	00:00	9.37	6.87	05:10	1.180	00:00	4.268	1.811	242083	
7/11/2016	01:55	3.22	07:10	3.90	3.66	04:00	4.70	20:20	6.97	6.12	03:25	1.122	20:15	2.131	1.747	233580	
7/12/2016	03:35	2.99	22:25	3.82	3.51	04:20	5.25	22:20	6.96	6.38	04:20	1.115	22:20	2.098	1.711	228725	
7/13/2016	03:35	3.10	19:20	3.91	3.58	04:45	4.99	19:25	6.82	6.25	03:35	1.121	19:20	2.129	1.723	230378	
7/14/2016	04:40	3.03	16:25	30.52	4.15	02:20	5.29	16:35	13.94	6.95	04:50	1.181	16:30	74.329	3.239	432993	0.62
7/15/2016	03:55	2.75	19:35	4.03	3.47	21:45	6.04	00:00	7.36	6.59	03:55	1.148	19:35	2.154	1.733	231698	
7/16/2016	05:05	3.22	17:15	4.30	3.66	03:10	4.81	17:20	7.59	6.31	03:10	1.185	17:20	2.701	1.802	240948	
7/17/2016	05:10	2.92	12:05	3.93	3.52	05:10	5.25	11:45	7.32	6.38	05:10	1.067	11:45	2.255	1.722	230199	
7/18/2016	04:25	2.96	17:05	11.22	3.63	03:45	4.92	17:05	11.01	6.65	03:45	1.040	17:05	15.851	2.003	267811	0.32
7/19/2016	04:20	2.71	21:10	4.00	3.43	04:10	5.97	07:55	7.41	6.53	04:20	1.087	21:10	2.091	1.687	225479	
7/20/2016	03:30	3.19	08:00	3.82	3.53	04:40	4.96	22:05	7.07	6.32	03:20	1.156	20:55	2.032	1.704	227766	
7/21/2016	03:40	2.89	22:20	3.75	3.46	04:20	5.27	17:50	7.10	6.47	03:45	1.094	22:15	2.034	1.695	226528	
7/22/2016	04:05	2.98	07:50	3.72	3.44	04:15	5.01	20:15	7.36	6.53	04:15	1.061	20:15	2.062	1.701	227404	
7/23/2016	03:30	2.97	09:30	3.79	3.46	04:15	5.36	11:45	7.35	6.58	04:15	1.131	11:10	2.100	1.725	230632	
7/24/2016	04:50	2.95	10:20	3.73	3.41	04:55	5.41	11:50	7.43	6.66	04:30	1.125	11:55	2.159	1.711	228716	
7/25/2016	03:45	2.94	17:40	37.49	4.59	04:20	5.56	17:50	14.67	7.55	04:20	1.147	17:45	98.162	4.464	596685	0.77
7/26/2016	04:15	2.54	22:25	3.67	3.16	23:55	6.26	00:05	7.98	7.24	04:20	1.134	00:05	2.010	1.650	220625	
7/27/2016	03:20	3.24	11:15	3.94	3.68	02:40	5.05	21:45	6.94	6.23	03:10	1.229	19:20	2.115	1.791	239484	
7/28/2016	04:40	3.06	12:10	3.80	3.52	04:15	5.55	11:50	7.52	6.68	04:15	1.220	12:10	2.253	1.793	239705	
7/29/2016	02:40	3.23	05:20	12.13	4.40	02:40	5.84	05:30	11.83	8.12	02:40	1.373	05:20	18.592	3.510	469271	0.86
7/30/2016	04:40	3.18	18:05	8.92	4.07	03:40	5.32	18:00	11.28	7.03	04:40	1.269	18:00	11.535	2.500	334152	0.24
7/31/2016	05:00	3.10	21:45	18.94	4.28	04:35	5.72	21:45	12.17	7.27	05:00	1.278	21:45	36.133	3.182	425034	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			9166839	6.64
Avg	3.74	6.73	2.212	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:05	3.04	00:55	8.19	3.62	23:50	6.12	00:55	11.29	7.37	04:05	1.543	00:55	10.361	2.124	283996	0.05
8/2/2016	04:40	3.23	08:05	3.80	3.60	02:45	4.91	20:05	7.05	6.28	02:45	1.186	20:05	2.060	1.745	233252	
8/3/2016	02:50	2.89	22:40	3.67	3.40	03:00	5.39	21:50	7.09	6.56	03:00	1.093	21:50	1.990	1.676	224085	
8/4/2016	04:00	3.00	18:50	3.71	3.47	04:10	5.08	18:50	6.84	6.32	04:10	1.093	18:50	1.974	1.661	222107	
8/5/2016	03:55	3.02	19:20	3.68	3.43	04:00	5.05	18:35	6.92	6.37	04:00	1.087	19:25	1.959	1.644	219780	
8/6/2016	03:35	3.01	11:00	3.70	3.41	04:10	5.09	14:05	7.30	6.48	04:15	1.087	11:15	2.039	1.668	223043	0.09
8/7/2016	04:15	2.98	10:10	3.76	3.41	05:55	5.22	12:05	7.28	6.46	04:15	1.118	10:55	2.082	1.663	222284	
8/8/2016	04:05	2.93	07:45	3.62	3.33	04:05	5.40	20:00	7.58	6.60	04:05	1.102	20:00	2.070	1.637	218796	
8/9/2016	03:25	2.87	20:30	3.51	3.27	04:25	5.70	21:20	7.37	6.78	04:20	1.132	20:30	1.938	1.632	218116	
8/10/2016	03:35	2.83	13:25	7.29	3.31	05:00	5.65	13:25	10.55	6.87	03:45	1.104	13:25	8.184	1.738	232286	0.08
8/11/2016	02:40	2.87	19:00	3.88	3.51	05:25	5.38	00:00	6.70	6.20	04:00	1.079	19:40	2.019	1.665	222622	
8/12/2016	04:45	2.92	01:30	20.21	3.89	00:05	6.13	01:30	12.93	7.34	04:50	1.390	01:30	41.851	2.733	365366	0.34
8/13/2016	05:30	3.31	11:55	4.02	3.70	04:10	4.92	12:35	6.97	6.25	04:40	1.219	12:35	2.246	1.809	241848	
8/14/2016	04:35	3.09	10:15	3.88	3.56	05:20	5.31	15:25	7.43	6.60	04:05	1.211	10:55	2.243	1.808	241687	0.13
8/15/2016	03:40	3.19	21:25	3.89	3.65	04:25	4.99	21:00	7.04	6.29	04:25	1.155	21:00	2.180	1.786	238696	
8/16/2016	04:20	3.05	20:55	3.81	3.43	04:35	5.28	20:50	7.59	6.58	04:20	1.154	20:50	2.275	1.699	227143	0.23
8/17/2016	04:50	2.84	19:20	3.53	3.33	04:50	5.40	21:35	7.22	6.53	04:50	1.052	21:35	1.902	1.615	215839	
8/18/2016	04:20	2.80	05:25	4.14	3.22	04:30	5.48	05:25	7.86	6.81	04:25	1.056	05:25	2.670	1.608	214914	0.03
8/19/2016	03:45	2.74	19:50	3.45	3.23	03:55	5.04	19:25	7.44	6.61	03:55	0.945	19:25	1.897	1.568	209557	
8/20/2016	03:50	2.76	11:20	3.51	3.21	03:55	5.69	13:45	7.50	6.79	03:55	1.062	11:25	1.972	1.597	213524	0.02
8/21/2016	04:40	2.80	18:45	5.90	3.36	04:35	5.54	18:45	9.54	6.92	04:40	1.056	18:45	5.446	1.784	238507	0.15
8/22/2016	03:30	2.71	19:30	3.84	3.36	04:15	5.79	00:10	6.96	6.38	03:30	1.084	20:10	2.013	1.602	214139	
8/23/2016	04:30	2.89	00:00	3.53	3.24	04:20	5.12	20:25	7.33	6.50	04:35	1.030	20:25	1.849	1.547	206859	
8/24/2016	04:20	2.73	20:20	3.47	3.19	03:50	5.53	20:10	7.29	6.62	04:20	1.028	20:15	1.900	1.544	206399	
8/25/2016	04:15	2.80	08:00	3.43	3.18	03:40	5.35	21:50	7.31	6.67	03:40	1.041	21:15	1.834	1.546	206653	
8/26/2016	02:55	2.78	07:45	3.33	3.13	04:05	5.67	17:00	7.54	6.85	04:25	1.081	18:50	1.815	1.552	207512	
8/27/2016	04:20	2.71	11:25	3.49	3.17	04:30	5.71	12:30	7.62	6.90	04:30	1.041	11:25	1.992	1.594	213035	
8/28/2016	05:15	2.73	11:10	3.52	3.21	05:50	5.41	12:55	7.53	6.71	05:15	1.010	11:50	1.992	1.584	211750	
8/29/2016	02:30	2.86	20:15	3.52	3.22	04:35	5.50	20:30	7.68	6.77	03:40	1.093	20:30	2.022	1.597	213530	
8/30/2016	03:40	2.74	20:50	3.40	3.16	04:20	5.70	20:35	7.48	6.77	04:20	1.069	21:10	1.893	1.555	207884	
8/31/2016	03:15	2.79	19:35	3.43	3.14	04:00	5.71	19:40	7.80	6.94	04:10	1.100	19:40	1.990	1.577	210634	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			7025843	1.12
Avg	3.37	6.65	1.695	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	03:00	2.79	14:30	31.09	3.98	02:45	6.07	14:35	14.10	7.67	02:55	1.157	14:30	76.416	3.277	438046	0.56
9/2/2016	02:20	2.91	20:00	4.04	3.55	23:55	5.79	00:00	7.20	6.31	04:30	1.216	20:00	2.073	1.710	228543	
9/3/2016	05:05	3.24	10:45	3.97	3.63	04:35	4.71	13:25	7.06	6.12	04:40	1.129	11:40	2.168	1.725	230643	
9/4/2016	05:50	3.06	10:00	3.77	3.44	05:25	5.09	12:35	7.31	6.40	05:25	1.112	11:55	2.092	1.667	222781	
9/5/2016	04:15	2.90	11:45	3.72	3.38	04:30	5.06	12:35	7.59	6.60	04:30	1.042	12:35	2.157	1.677	224165	
9/6/2016	04:10	2.92	07:35	3.82	3.36	04:35	5.23	07:15	7.24	6.48	04:35	1.083	07:15	2.146	1.632	218225	
9/7/2016	03:10	2.93	07:40	3.76	3.31	04:45	5.06	21:15	7.30	6.54	04:10	1.049	07:55	2.120	1.605	214618	
9/8/2016	04:05	2.87	07:35	3.77	3.32	04:15	5.22	07:45	7.23	6.54	04:15	1.048	07:45	2.108	1.617	216161	
9/9/2016	03:10	2.90	23:35	9.90	3.52	04:25	5.03	23:35	10.99	6.44	03:10	1.022	23:35	13.241	1.806	241413	0.11
9/10/2016	04:10	2.52	15:40	7.98	3.33	23:55	5.94	15:40	10.50	7.03	04:40	1.005	15:40	9.282	1.796	240097	0.05
9/11/2016	05:40	3.07	10:45	3.91	3.58	04:55	4.71	11:00	7.04	6.07	05:55	1.071	11:00	2.181	1.683	225003	
9/12/2016	03:20	2.86	07:40	3.70	3.27	03:15	5.11	20:00	7.41	6.56	03:15	1.005	07:45	2.046	1.587	212096	0.00
9/13/2016	03:20	2.83	07:45	3.72	3.32	03:25	5.12	20:15	7.09	6.44	03:25	1.006	07:45	2.033	1.595	213250	
9/14/2016	04:10	2.88	17:45	33.49	3.98	03:10	4.98	17:45	13.67	6.92	03:25	1.004	17:45	82.320	3.138	419552	0.64
9/15/2016	03:15	2.82	23:15	3.85	3.39	23:50	5.99	07:20	7.72	6.83	03:00	1.204	07:45	2.255	1.737	232166	
9/16/2016	02:55	3.24	07:55	4.11	3.78	04:05	4.89	07:45	6.99	5.96	04:05	1.168	07:45	2.338	1.785	238666	
9/17/2016	05:30	3.28	10:05	4.04	3.67	04:50	4.75	19:15	7.13	6.33	04:50	1.171	12:15	2.265	1.812	242257	
9/18/2016	05:30	3.10	11:20	3.91	3.54	05:05	5.04	13:50	7.47	6.60	05:35	1.131	11:20	2.320	1.794	239802	
9/19/2016	04:05	3.07	10:40	11.34	4.17	04:50	5.46	10:45	11.27	7.50	04:00	1.200	10:40	16.373	2.944	393527	0.45
9/20/2016	02:35	3.03	21:30	4.14	3.65	03:15	5.47	07:25	7.41	6.36	03:15	1.192	07:45	2.252	1.805	241236	
9/21/2016	04:05	3.28	07:50	4.18	3.70	04:40	4.57	19:00	7.05	6.10	04:40	1.129	07:50	2.354	1.771	236717	
9/22/2016	03:15	3.11	07:50	4.06	3.55	03:00	4.85	07:40	7.06	6.33	03:00	1.098	07:55	2.311	1.726	230754	
9/23/2016	03:05	3.09	07:50	4.01	3.60	03:45	5.06	07:55	7.10	6.34	03:35	1.133	07:55	2.291	1.762	235504	
9/24/2016	05:15	2.91	01:10	20.02	3.92	00:40	5.81	01:10	13.02	7.41	05:15	1.354	01:10	41.630	2.694	360148	0.28
9/25/2016	04:40	3.16	20:35	4.08	3.74	06:05	5.14	11:20	7.18	6.20	06:05	1.214	11:20	2.370	1.826	244132	
9/26/2016	03:50	3.22	07:50	4.13	3.70	04:00	4.57	07:55	6.91	5.97	04:00	1.087	07:55	2.327	1.731	231434	
9/27/2016	01:55	3.26	02:50	10.81	3.83	02:15	5.07	03:00	10.29	6.91	01:55	1.220	02:55	13.900	2.222	297070	0.25
9/28/2016	03:15	3.19	07:45	4.04	3.65	04:20	4.82	07:50	7.00	6.06	03:15	1.147	07:50	2.277	1.723	230351	
9/29/2016	04:35	3.17	07:50	3.89	3.48	04:35	4.94	19:25	7.06	6.30	04:35	1.132	08:00	2.095	1.664	222429	
9/30/2016	02:55	3.04	14:40	6.29	4.19	04:30	5.02	14:35	9.42	7.23	04:30	1.103	14:35	5.886	2.668	356442	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			7777227	2.75
Avg	3.62	6.55	1.939	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:45	2.98	19:40	3.78	3.49	05:00	5.64	10:25	7.35	6.58	05:00	1.186	11:10	2.077	1.748	233679	
10/2/2016	05:25	3.21	11:40	4.00	3.65	05:05	4.72	11:35	7.16	6.17	05:05	1.121	11:40	2.279	1.758	235050	
10/3/2016	02:35	3.20	07:55	4.00	3.57	03:45	4.75	19:50	7.17	6.24	03:45	1.108	07:55	2.186	1.715	229254	
10/4/2016	03:35	3.06	07:55	3.98	3.54	04:10	5.05	15:35	7.37	6.39	04:40	1.129	07:50	2.280	1.735	231998	
10/5/2016	02:35	3.00	07:45	3.95	3.46	03:20	4.98	19:20	7.22	6.37	03:20	1.068	07:45	2.229	1.675	223876	
10/6/2016	03:15	2.99	07:55	3.91	3.47	04:40	5.05	20:20	7.11	6.45	04:15	1.083	07:55	2.201	1.706	228025	0.00
10/7/2016	04:00	3.00	07:40	3.90	3.50	05:05	5.21	19:25	7.01	6.42	03:50	1.124	07:40	2.158	1.714	229176	
10/8/2016	04:05	3.13	20:00	5.31	3.62	05:05	5.13	19:55	8.94	6.62	05:05	1.156	19:55	4.339	1.873	250402	0.13
10/9/2016	02:20	3.10	12:50	10.00	4.24	02:20	6.14	13:00	10.69	7.71	02:20	1.359	12:50	13.058	2.935	392317	0.52
10/10/2016	03:50	2.92	19:55	4.03	3.57	03:20	5.44	10:30	7.15	6.42	03:55	1.123	19:30	2.237	1.765	235999	
10/11/2016	04:35	3.25	07:35	4.10	3.68	04:05	4.51	20:15	6.91	6.03	04:05	1.076	07:40	2.189	1.739	232501	0.00
10/12/2016	02:30	3.20	07:45	4.02	3.57	05:15	4.81	18:45	7.18	6.31	02:05	1.145	07:45	2.213	1.731	231379	
10/13/2016	03:40	2.99	07:55	3.96	3.50	04:15	4.96	07:55	7.10	6.39	04:15	1.085	07:55	2.255	1.708	228356	
10/14/2016	04:25	2.99	07:50	3.94	3.46	04:40	5.08	20:05	7.12	6.42	04:25	1.072	07:35	2.199	1.687	225493	
10/15/2016	04:20	2.96	10:35	3.84	3.48	05:50	5.20	11:25	7.26	6.46	04:35	1.113	11:25	2.177	1.713	229028	
10/16/2016	05:05	2.99	12:45	3.83	3.46	05:15	5.13	12:50	7.44	6.57	05:15	1.095	12:45	2.239	1.735	231975	
10/17/2016	04:15	2.99	07:40	3.80	3.41	04:10	5.57	20:40	7.43	6.68	04:10	1.167	07:45	2.154	1.719	229792	
10/18/2016	02:55	2.97	08:00	3.87	3.46	04:35	5.28	20:00	7.36	6.59	04:35	1.120	08:00	2.214	1.737	232216	0.00
10/19/2016	03:55	2.97	07:50	3.90	3.45	04:40	5.45	20:50	7.46	6.66	03:30	1.146	07:45	2.246	1.743	233020	
10/20/2016	03:20	2.92	07:50	3.83	3.40	03:20	5.75	20:00	7.48	6.78	03:20	1.165	07:50	2.213	1.737	232189	
10/21/2016	04:20	2.98	10:20	9.00	4.10	04:20	5.77	12:40	10.79	7.45	04:20	1.207	12:40	9.949	2.746	367062	0.46
10/22/2016	03:55	3.05	04:25	20.44	4.08	03:30	6.15	04:25	12.48	7.82	03:55	1.331	04:25	41.008	2.983	398730	0.33
10/23/2016	05:00	3.01	20:35	3.92	3.55	05:05	5.78	12:30	7.66	6.71	05:05	1.229	11:05	2.342	1.829	244506	
10/24/2016	03:00	3.21	19:45	4.09	3.69	03:40	5.18	20:25	7.03	6.30	02:30	1.219	20:25	2.314	1.822	243528	
10/25/2016	03:30	3.16	07:45	4.11	3.67	03:15	5.04	19:05	7.05	6.20	03:30	1.161	07:45	2.317	1.777	237609	
10/26/2016	04:25	2.92	07:50	4.11	3.60	03:25	5.01	19:30	6.97	6.17	04:30	1.049	07:50	2.266	1.726	230743	
10/27/2016	04:45	2.91	20:25	19.33	5.18	04:20	4.82	20:25	13.17	7.55	04:20	1.010	20:25	40.174	4.827	645261	1.15
10/28/2016	04:20	2.92	00:05	3.85	3.38	04:20	6.93	00:15	8.10	7.48	04:20	1.406	00:05	2.463	1.886	252077	
10/29/2016	03:50	2.89	12:30	3.77	3.37	05:25	6.13	12:25	7.57	6.93	05:25	1.233	12:25	2.239	1.750	233974	
10/30/2016	04:40	3.05	16:50	25.73	4.15	04:25	5.56	16:55	12.66	7.00	04:30	1.207	16:50	54.991	2.917	389941	
10/31/2016	04:20	3.00	07:45	3.77	3.41	04:30	5.93	07:45	7.26	6.71	04:30	1.252	07:45	2.144	1.722	229982	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			8269139	2.59
Avg	3.65	6.66	1.995	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

W3, Pipe Height: 47.75 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	03:35	2.94	19:25	3.81	3.41	04:20	5.50	07:50	7.28	6.64	03:35	1.160	07:55	2.126	1.705	227901	
11/2/2016	03:10	3.14	20:20	4.12	3.67	03:55	4.85	20:05	6.84	6.11	03:55	1.129	20:05	2.253	1.752	234195	
11/3/2016	03:35	3.24	07:55	4.13	3.72	03:25	4.61	07:40	6.68	5.92	03:25	1.090	07:40	2.243	1.735	231911	
11/4/2016	02:40	3.28	07:35	4.24	3.70	04:30	4.49	07:40	6.60	5.89	04:35	1.097	07:40	2.313	1.711	228683	
11/5/2016	05:25	3.06	11:50	4.01	3.63	05:35	4.66	11:50	6.94	6.00	05:25	1.038	11:50	2.247	1.697	226849	
11/6/2016	05:25	3.05	11:45	4.07	3.64	06:25	4.54	12:35	6.94	5.99	06:25	0.995	11:40	2.241	1.710	228560	
11/7/2016	04:25	3.07	08:15	4.11	3.57	04:15	4.61	08:35	6.82	5.91	04:45	1.024	08:35	2.285	1.630	217845	
11/8/2016	03:25	3.01	20:15	4.01	3.61	04:05	4.66	18:20	6.50	5.89	03:35	0.997	20:15	2.062	1.651	220652	
11/9/2016	03:20	3.14	12:35	4.65	3.63	02:00	4.68	12:35	7.83	6.19	03:20	1.076	12:35	3.150	1.762	235520	0.07
11/10/2016	03:10	2.92	20:05	3.95	3.54	04:45	4.99	19:00	6.71	6.16	04:45	1.032	20:05	2.097	1.677	224138	
11/11/2016	03:55	3.09	10:50	3.95	3.63	04:40	4.65	10:45	6.73	6.01	04:10	1.043	10:45	2.127	1.696	226665	
11/12/2016	04:30	2.97	11:05	3.95	3.55	04:35	4.56	12:25	6.86	6.14	04:35	0.962	11:05	2.140	1.687	225461	
11/13/2016	04:50	2.82	12:15	4.00	3.50	05:30	5.12	12:05	7.16	6.34	04:55	0.999	12:05	2.308	1.710	228639	
11/14/2016	03:10	2.92	07:55	3.98	3.50	04:40	4.86	18:55	7.06	6.34	04:40	0.998	07:55	2.199	1.697	226843	
11/15/2016	02:40	2.93	09:50	20.84	5.36	03:50	4.97	09:50	12.84	7.98	03:50	1.023	09:50	43.269	5.109	683000	1.50
11/16/2016	05:15	2.57	08:00	3.67	3.20	03:20	6.21	07:35	7.63	6.99	05:15	1.095	07:45	2.148	1.635	218365	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			4085227	1.57
Avg	3.68	6.28	1.910	

Site Commentary

Site Information

W4	
Pipe Dimensions (in.)	Elliptical (23.63 in H, 25.00 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph for W4 indicate this location functioned mostly in free-flow conditions over the course for the monitoring period, although the scattergraph shows hydraulic jumps occurring in the line. A hydraulic jump develops when flow transitions between supercritical and subcritical conditions, which can arise in any sewer with near or above critical velocity. The jump may be caused by imperfections in the pipe and/or a fixed downstream condition. Standing waves are also likely in flow near critical velocity. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location. However it is possible that during the transition as the jump moves through the meter location, the flow rate calculation based on measured depth and velocity can have momentary error.

Daily longtables displaying final quantities are also provided.

From 7/1 to 7/25, irregular flow patterns between storm events are evidence of downstream conditions that affected normal free flow during dry weather. Also, there was a velocity sensor malfunction during the 7/25 storm event and the sensor was subsequently replaced on 7/27.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	2.53	3.31	0.412
Minimum	1.79	1.59	0.171
Maximum	34.63	12.08	17.347
Time of Minimum	10/31/2016 5:50 AM	7/25/2016 5:30 PM	7/21/2016 4:35 AM
Time of Maximum	7/25/2016 5:35 PM	5/30/2016 1:40 AM	9/1/2016 2:30 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period. Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	98
Quantity (MGD)	98

Site Report

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. WEEHAWKEN, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	W4	Meter Type:	TRITON+	Monitor S/N:	61019	Manhole #:	W4-JFK-009
Address / Location:	700 JF KENNEDY BLVD EAST (IN SIDEWALK)			Map Page #:		G4	
				Pipe Height:		23.63 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		25 Inches	
				I.P. Address		107.80.25.51	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	May 16, 2016	2:50 PM	Manhole Depth:	8 Feet	
Site Hydraulics:	SMOOTH FAST FLOW		Manhole Material / Condition:	Brick	Fair
			Active Drop Connections?	No	
			Pipe Material / Condition:	VCP	Fair
			Mini System Character:	COMMERCIAL	
			Telephone Information:		
Depth of Flow (Wet Dof):	2 +/- 0.5		Access Pole #:	N/A	
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet	
Peak Velocity:	3.98 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

N 40.77052 W 74.02048

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other		X		

Additional Site Information / Comments:

UPSTREAM INSTALLATION

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** W4 **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	☑
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

*** Site Classification**

	Class	*Description*
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	5/11/2016	Date:	5/13/2016

SCATTERGRAPH REPORT

W4

Flow Monitor

W4

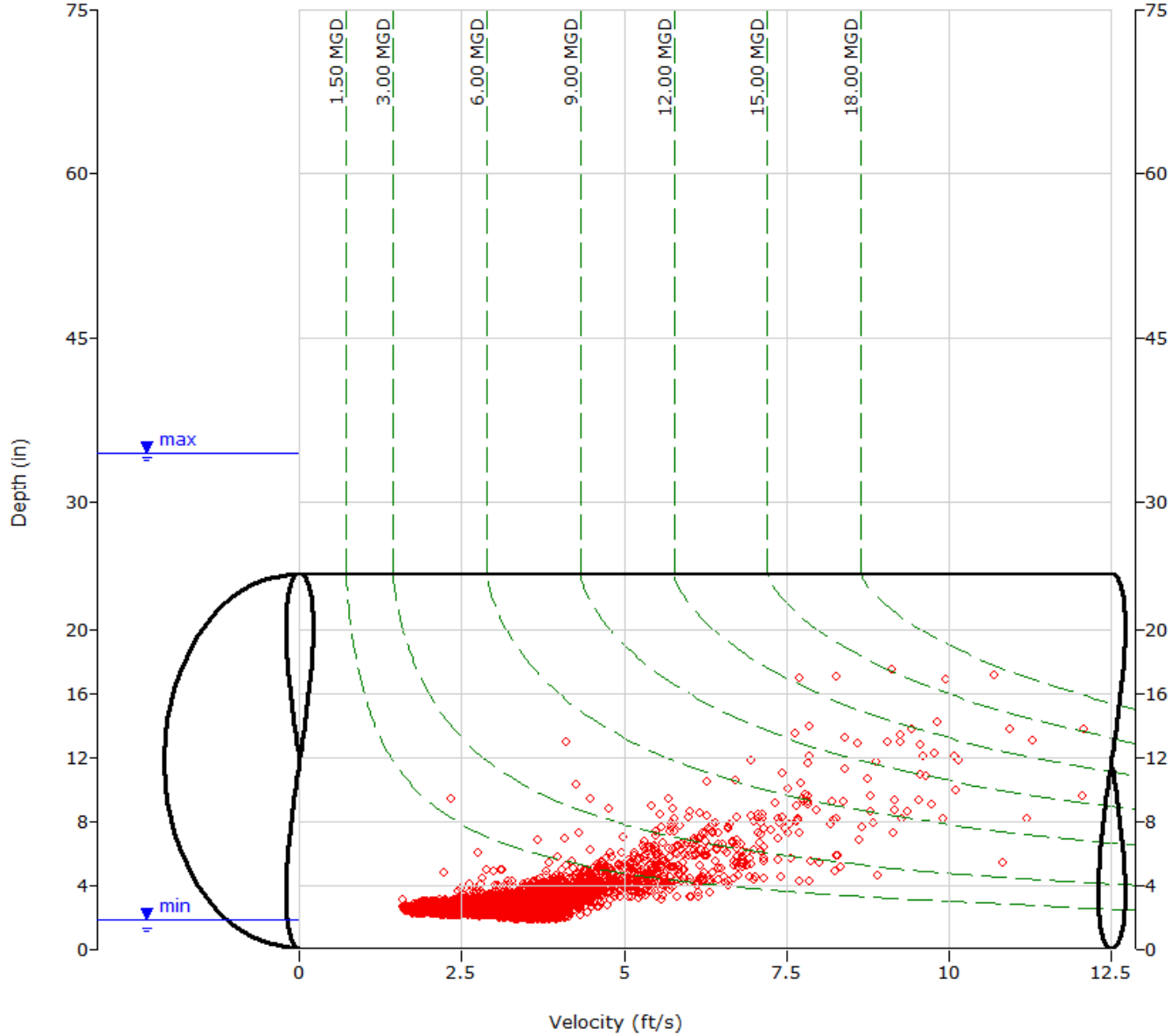
Pipe Height
23.63 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

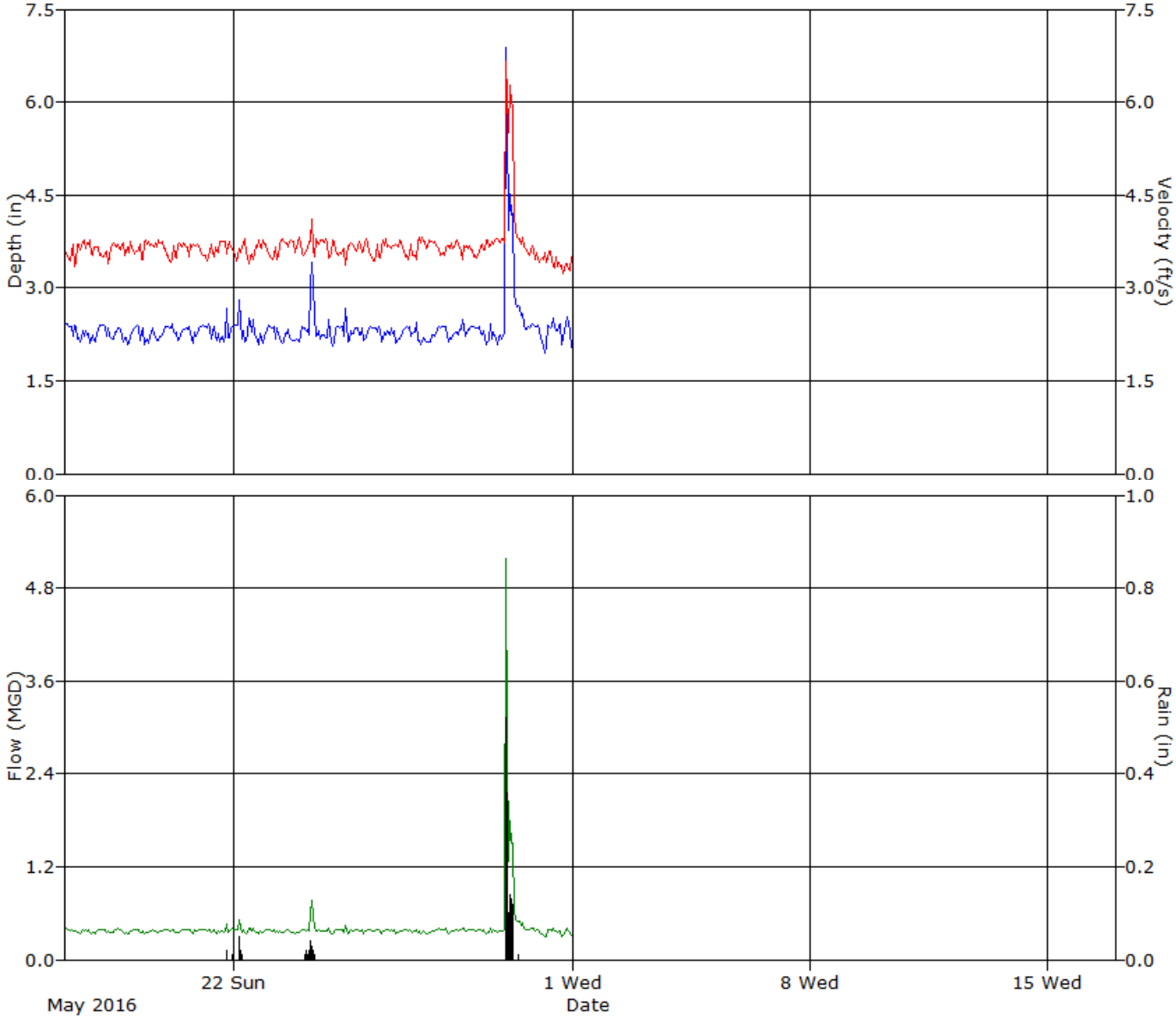
Pipe Height
23.63 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



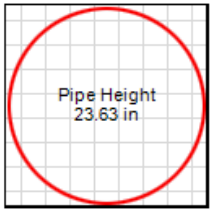
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

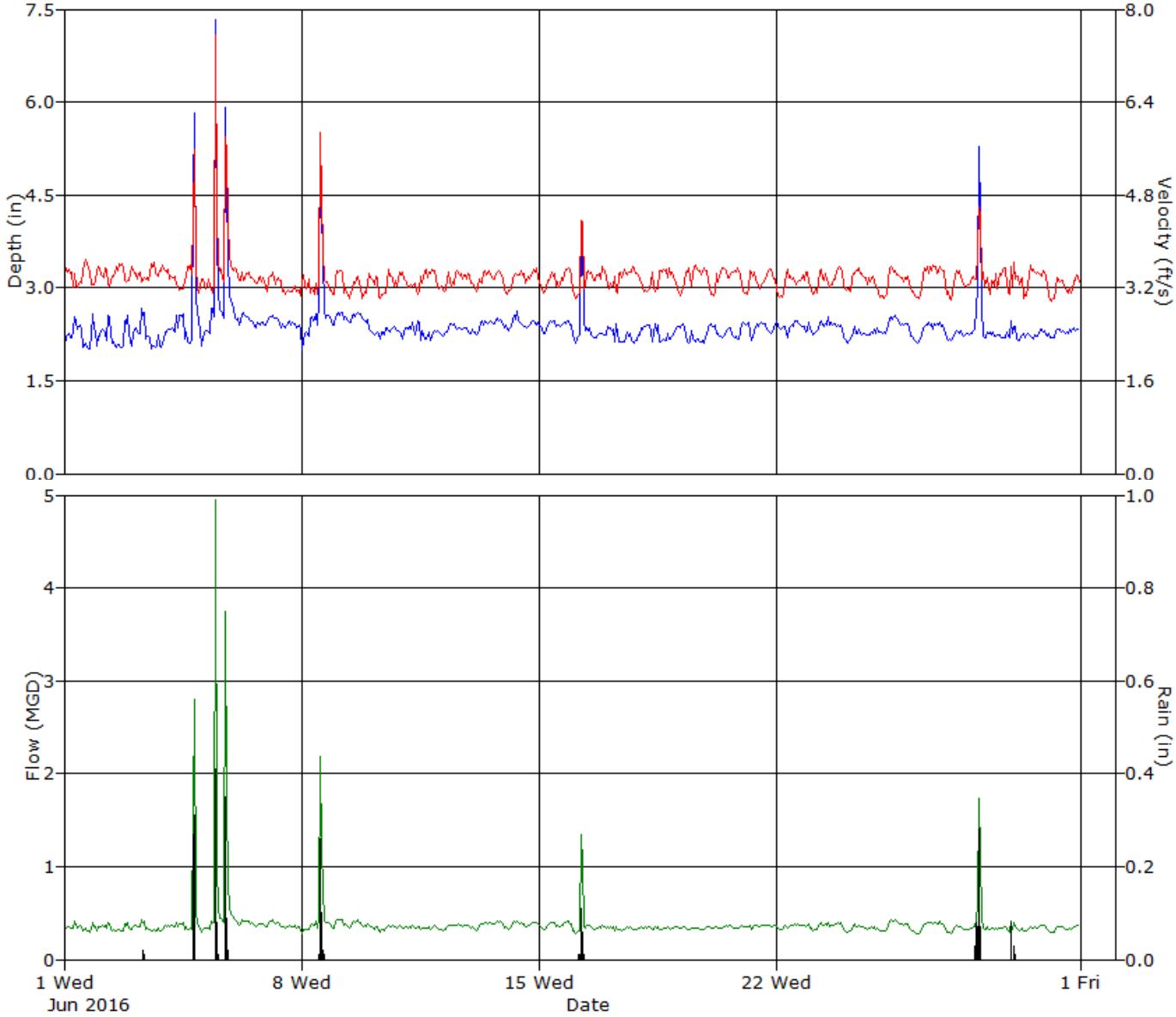


Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



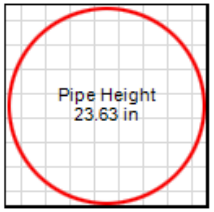
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

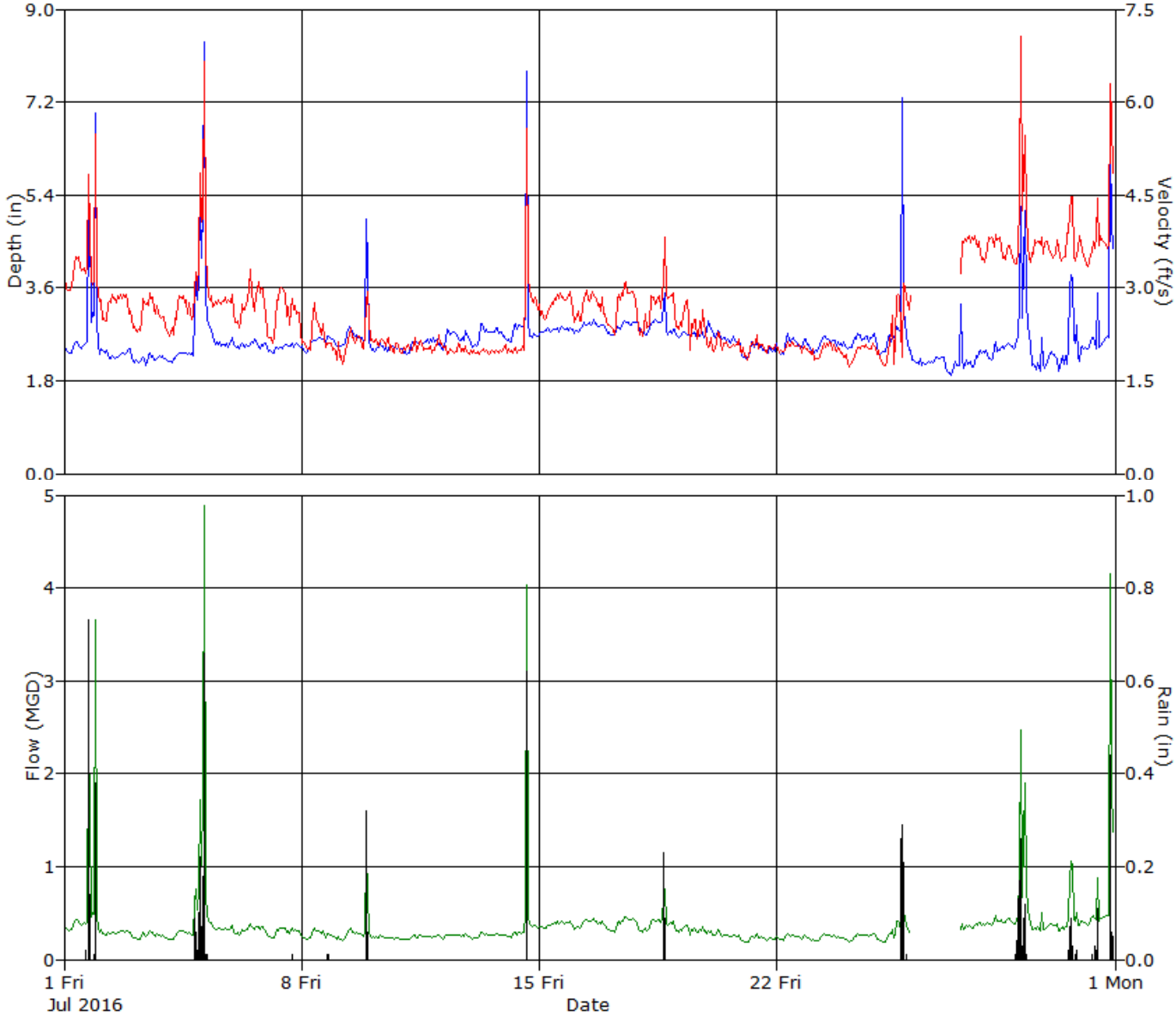


Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

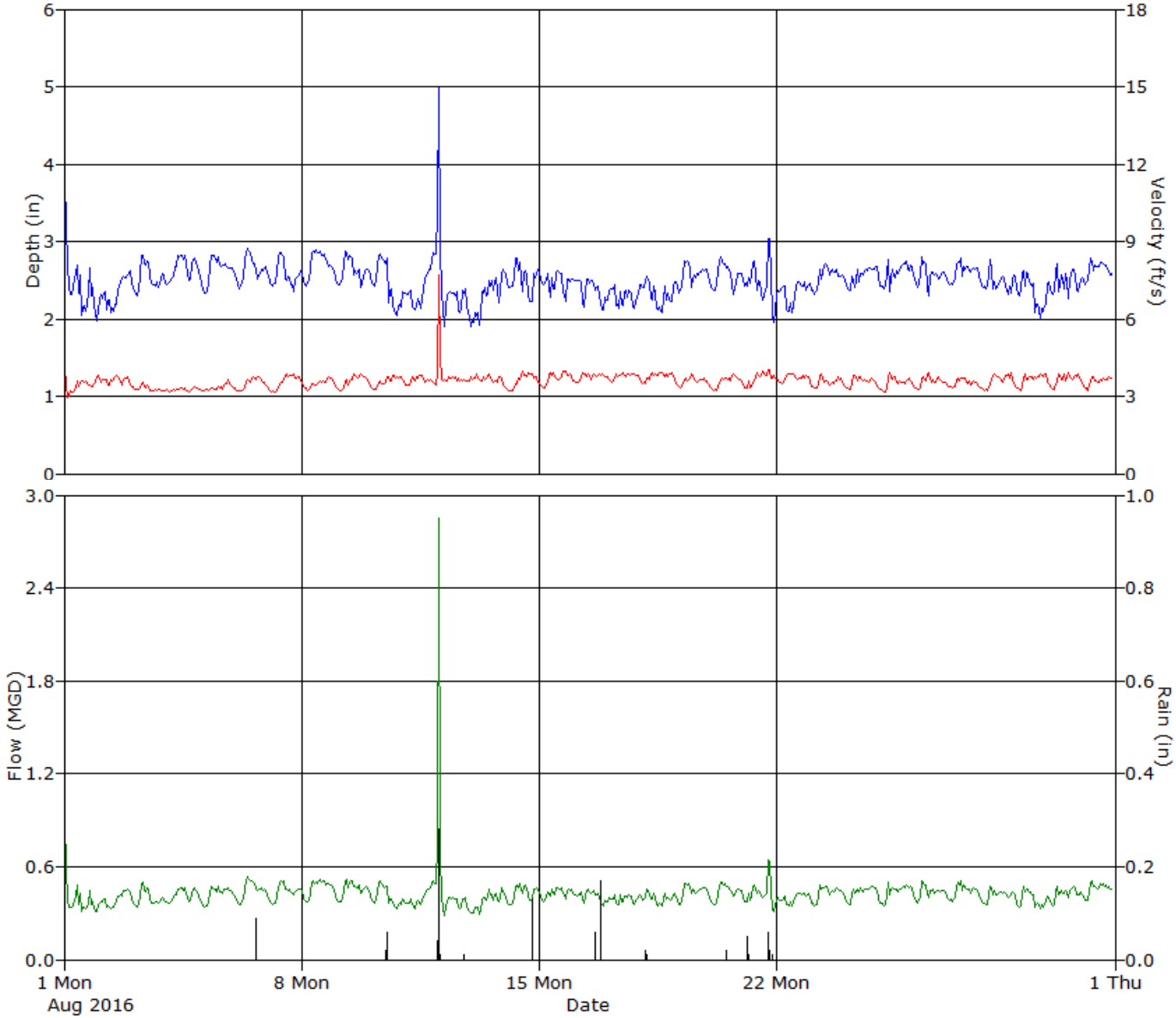
Pipe Height
23.63 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



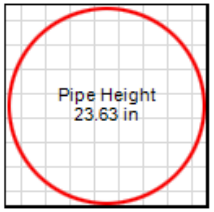
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

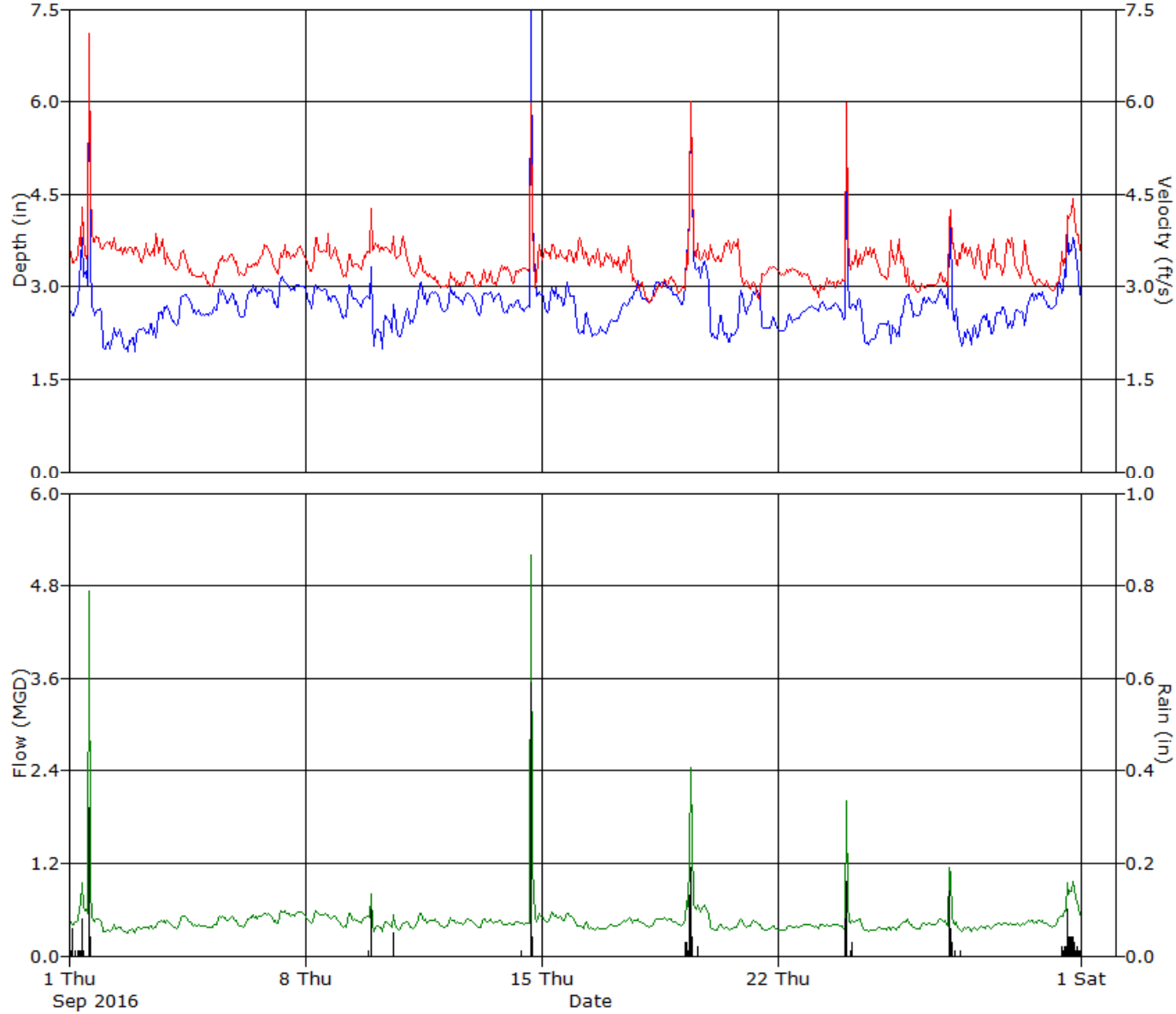


Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

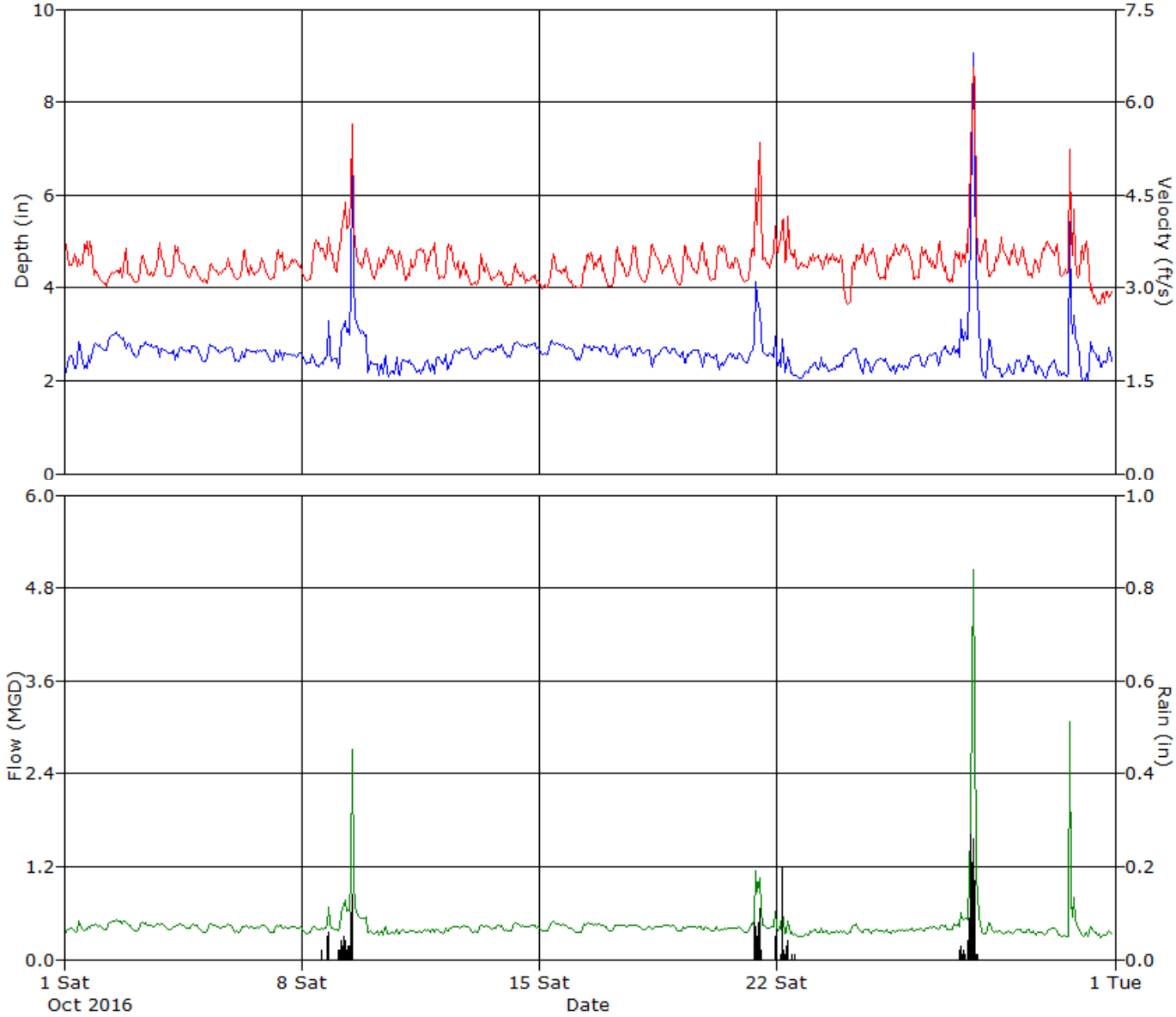
Pipe Height
23.63 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W4

Flow Monitor

W4

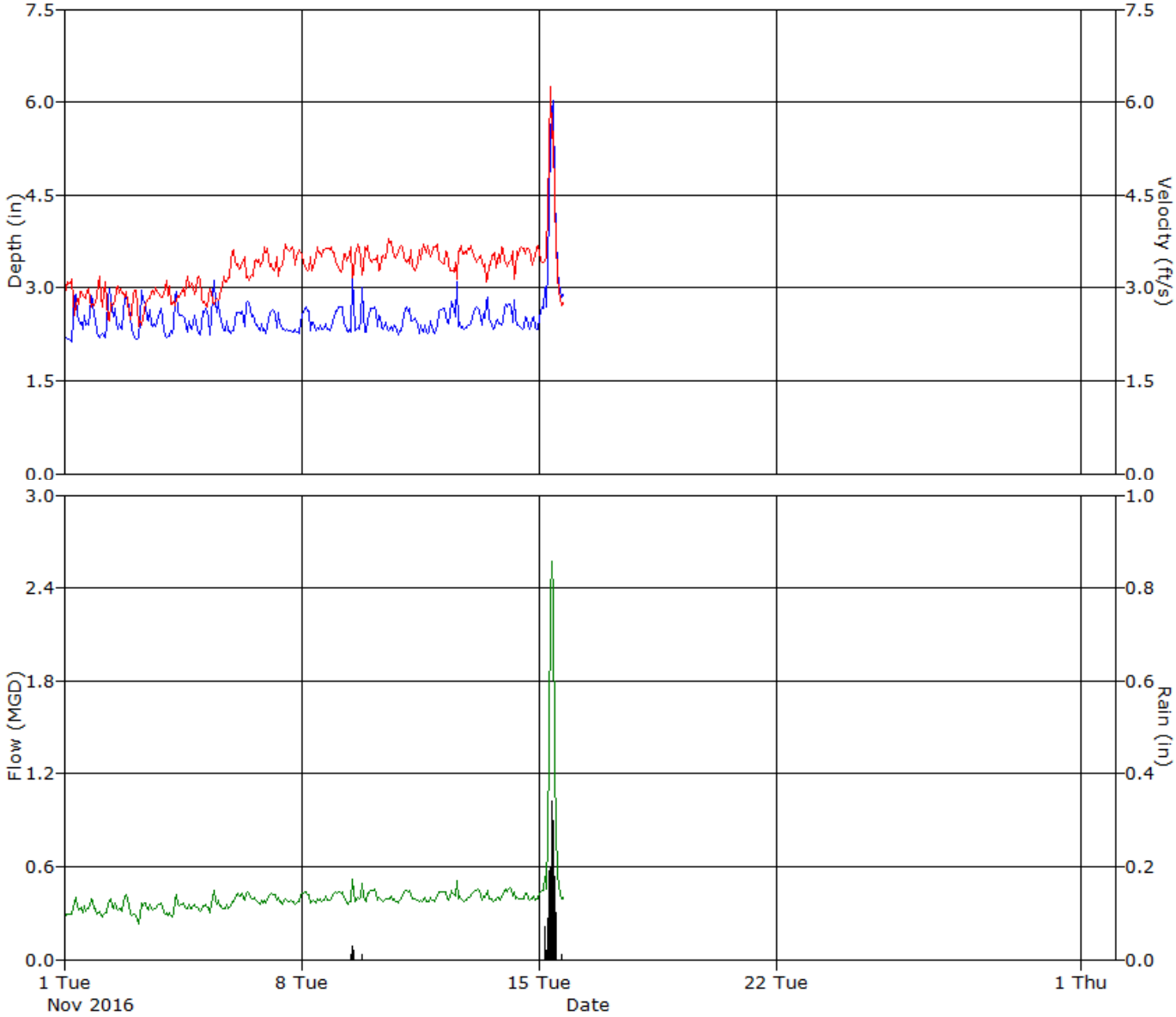
Pipe Height
23.63 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	19:15	2.04	07:30	2.72	2.27	04:10	3.20	09:00	3.99	3.61	21:50	0.311	07:30	0.442	0.368	49200	
5/18/2016	18:40	1.99	20:10	2.71	2.27	07:25	3.23	12:00	4.01	3.61	22:15	0.304	20:10	0.429	0.368	49247	
5/19/2016	09:00	2.02	08:05	2.69	2.25	07:35	3.25	16:45	3.96	3.66	18:30	0.314	03:15	0.434	0.369	49340	
5/20/2016	19:45	2.06	08:00	2.56	2.30	04:50	3.27	19:10	3.87	3.62	10:15	0.316	17:25	0.419	0.376	50270	
5/21/2016	17:10	2.03	19:45	3.06	2.30	09:45	3.24	12:20	3.89	3.62	12:30	0.315	19:40	0.561	0.377	50366	0.03
5/22/2016	18:30	2.01	04:50	3.05	2.31	11:40	3.25	21:30	3.97	3.61	20:50	0.313	04:45	0.616	0.378	50520	0.08
5/23/2016	12:10	2.01	09:00	2.60	2.24	20:45	3.28	16:05	3.96	3.66	12:10	0.317	09:05	0.425	0.366	48983	
5/24/2016	22:50	2.01	07:25	3.51	2.38	20:05	3.28	07:25	4.34	3.69	23:05	0.319	07:25	0.839	0.408	54543	0.16
5/25/2016	19:15	2.02	07:20	2.93	2.31	19:20	3.25	09:05	3.95	3.63	19:15	0.314	07:20	0.487	0.379	50714	
5/26/2016	20:35	2.04	21:10	2.76	2.27	08:20	3.28	09:30	3.91	3.63	20:35	0.309	21:10	0.469	0.371	49649	
5/27/2016	12:40	2.04	09:10	2.60	2.24	04:55	3.35	11:40	4.01	3.66	19:15	0.318	09:10	0.424	0.366	48947	
5/28/2016	08:00	2.07	19:55	2.79	2.30	18:10	3.29	12:15	3.90	3.64	09:45	0.331	19:55	0.485	0.380	50805	
5/29/2016	19:00	2.05	14:40	2.83	2.26	13:30	3.29	15:15	4.04	3.68	13:05	0.320	14:40	0.502	0.373	49887	
5/30/2016	17:45	2.13	01:40	13.78	3.10	21:15	3.08	01:40	12.08	4.30	17:45	0.315	01:40	15.235	0.916	122497	1.38
5/31/2016	05:05	1.85	20:35	2.68	2.28	20:20	3.01	12:15	3.87	3.42	05:05	0.254	20:40	0.451	0.352	47066	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			822031	1.65
Avg	2.34	3.67	0.410	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	17:00	1.89	20:20	2.76	2.24	09:15	3.05	15:40	3.97	3.42	23:15	0.268	20:30	0.456	0.341	45621	
6/2/2016	12:35	1.88	19:00	2.80	2.24	08:40	3.08	17:45	3.91	3.44	12:10	0.272	19:35	0.487	0.344	45936	
6/3/2016	14:05	1.93	07:40	2.82	2.22	10:10	3.05	16:45	3.78	3.46	11:30	0.268	08:55	0.497	0.342	45734	0.03
6/4/2016	18:10	1.99	20:00	12.10	2.60	23:30	2.97	20:00	7.86	3.51	13:20	0.283	20:00	8.431	0.518	69210	0.58
6/5/2016	00:50	2.00	11:20	13.06	3.03	09:15	2.93	11:20	11.29	3.82	00:50	0.271	11:20	13.337	0.829	110781	0.96
6/6/2016	18:45	2.28	01:00	2.74	2.48	20:00	3.02	06:30	3.66	3.38	20:00	0.325	01:00	0.479	0.392	52455	
6/7/2016	23:55	2.06	03:00	2.68	2.44	15:45	2.89	05:40	3.60	3.23	23:55	0.267	03:00	0.444	0.369	49280	
6/8/2016	05:45	1.92	13:30	6.58	2.67	23:45	2.81	13:30	6.51	3.42	00:35	0.258	13:30	3.084	0.490	65469	0.40
6/9/2016	11:15	2.35	16:10	2.66	2.53	11:05	2.77	02:15	3.75	3.25	11:05	0.305	02:15	0.480	0.390	52156	
6/10/2016	08:20	2.11	00:00	2.51	2.30	07:25	2.87	17:05	3.74	3.29	08:30	0.278	00:00	0.405	0.343	45842	
6/11/2016	15:25	2.08	07:50	2.88	2.29	10:50	2.95	16:50	3.74	3.35	08:30	0.289	07:50	0.463	0.345	46185	
6/12/2016	04:00	2.18	09:45	2.47	2.32	12:10	2.95	09:00	3.74	3.33	05:00	0.301	09:10	0.423	0.353	47124	
6/13/2016	04:25	2.17	10:35	2.55	2.40	04:55	3.02	13:35	3.67	3.37	04:20	0.298	10:35	0.434	0.375	50095	
6/14/2016	16:05	2.24	09:50	3.95	2.42	02:00	2.99	20:50	3.70	3.36	03:00	0.315	07:00	0.450	0.377	50343	
6/15/2016	04:05	2.17	09:30	2.51	2.40	03:10	3.01	09:50	3.72	3.34	04:05	0.294	20:05	0.426	0.370	49484	
6/16/2016	02:20	2.05	06:40	7.36	2.40	02:15	2.78	06:45	6.45	3.41	02:15	0.251	06:45	3.528	0.407	54386	0.20
6/17/2016	11:15	2.03	07:35	2.77	2.22	08:05	2.89	14:35	3.80	3.38	06:40	0.281	07:30	0.404	0.335	44772	
6/18/2016	21:40	2.07	10:35	3.03	2.26	09:40	2.85	18:30	3.73	3.34	10:10	0.284	10:35	0.476	0.339	45282	
6/19/2016	18:10	2.05	12:50	2.54	2.24	04:40	2.89	11:40	3.77	3.39	11:25	0.293	06:35	0.384	0.338	45177	
6/20/2016	18:40	2.09	07:55	2.58	2.28	04:20	2.91	21:50	3.73	3.38	18:40	0.295	16:35	0.395	0.348	46530	
6/21/2016	07:45	2.11	23:55	2.48	2.36	04:00	2.95	19:40	3.68	3.32	07:55	0.309	22:05	0.394	0.359	47956	
6/22/2016	08:35	2.15	14:05	2.49	2.37	04:00	2.91	22:35	3.65	3.29	04:00	0.301	23:45	0.401	0.359	48026	
6/23/2016	02:20	2.21	13:20	2.67	2.38	12:50	2.97	12:05	3.73	3.33	02:20	0.300	08:35	0.443	0.365	48807	
6/24/2016	03:35	2.05	08:40	2.50	2.24	04:30	2.98	11:30	3.67	3.34	03:35	0.277	08:45	0.410	0.336	44958	
6/25/2016	23:35	2.10	12:35	2.62	2.40	06:25	2.93	09:05	3.75	3.31	23:35	0.290	12:35	0.450	0.369	49301	
6/26/2016	04:25	2.07	20:15	2.51	2.32	02:55	2.94	13:45	3.77	3.37	02:55	0.265	20:10	0.430	0.357	47763	
6/27/2016	02:10	2.08	23:40	3.33	2.30	04:00	2.83	23:45	4.11	3.30	04:00	0.264	23:45	0.717	0.345	46165	0.18
6/28/2016	17:05	2.08	00:40	7.85	2.47	08:00	2.69	00:45	6.36	3.43	21:15	0.282	00:45	3.834	0.430	57518	0.43
6/29/2016	14:10	2.08	00:50	2.62	2.25	07:45	2.78	00:55	4.04	3.38	07:45	0.272	00:55	0.510	0.341	45568	0.04
6/30/2016	05:05	2.13	18:55	2.47	2.28	05:05	2.85	07:25	3.64	3.21	05:05	0.266	22:05	0.397	0.332	44366	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1542293	2.82
Avg	2.38	3.37	0.385	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	00:00	2.28	22:10	17.06	2.95	18:50	2.47	17:55	10.09	3.40	17:10	0.302	22:10	13.319	0.661	88407	1.28
7/2/2016	08:30	2.13	00:10	2.81	2.33	05:05	2.26	00:00	3.25	2.75	05:55	0.243	00:00	0.435	0.292	39089	
7/3/2016	10:40	2.06	13:25	2.52	2.22	06:20	2.11	16:15	3.12	2.58	02:10	0.201	19:40	0.336	0.256	34286	
7/4/2016	05:10	2.12	20:55	7.02	2.48	04:15	2.03	20:55	4.99	2.65	04:15	0.197	20:55	2.590	0.329	43945	0.27
7/5/2016	15:30	2.40	03:05	17.00	3.16	21:10	2.38	03:10	9.06	3.19	21:10	0.286	03:05	12.351	0.698	93298	1.15
7/6/2016	02:15	2.36	00:00	2.72	2.50	14:50	2.09	13:10	3.47	2.75	04:30	0.250	12:05	0.418	0.325	43388	
7/7/2016	04:20	2.30	21:25	2.59	2.45	04:00	1.97	17:35	3.33	2.58	04:00	0.207	17:35	0.393	0.295	39456	0.01
7/8/2016	03:25	2.31	18:40	2.74	2.55	18:10	1.77	09:30	3.16	2.21	04:35	0.195	09:30	0.389	0.268	35858	0.02
7/9/2016	22:05	2.34	22:40	9.44	2.78	05:40	1.62	22:35	5.69	2.15	01:35	0.184	22:35	4.415	0.320	42767	0.38
7/10/2016	13:55	2.26	00:00	2.82	2.45	15:00	1.83	00:10	3.32	2.11	12:45	0.201	00:00	0.398	0.240	32145	
7/11/2016	03:25	2.24	23:15	2.69	2.50	21:45	1.79	08:35	3.11	2.03	03:45	0.194	11:55	0.350	0.240	32056	
7/12/2016	04:30	2.32	07:25	2.86	2.63	22:50	1.78	20:20	2.70	2.02	04:20	0.212	20:20	0.374	0.256	34194	
7/13/2016	02:05	2.40	07:10	2.98	2.70	13:40	1.78	18:55	2.29	1.97	01:25	0.210	18:55	0.333	0.259	34686	
7/14/2016	05:25	2.49	16:10	13.25	2.96	02:25	1.80	16:20	8.60	2.44	02:25	0.216	16:10	10.103	0.467	62463	0.62
7/15/2016	00:10	2.58	07:05	2.91	2.78	04:35	2.27	13:20	3.11	2.75	03:25	0.305	13:15	0.443	0.379	50660	
7/16/2016	01:35	2.66	15:35	3.02	2.85	07:05	2.26	16:05	3.15	2.71	01:30	0.302	08:55	0.477	0.388	51913	
7/17/2016	04:10	2.64	22:25	3.02	2.84	06:50	2.01	14:50	3.24	2.70	06:40	0.268	14:25	0.491	0.385	51452	
7/18/2016	19:05	2.62	16:50	5.64	2.87	00:15	1.99	16:55	6.83	2.75	00:30	0.272	16:55	2.261	0.407	54367	0.32
7/19/2016	15:35	2.55	14:25	2.86	2.71	11:30	1.64	20:40	3.07	2.42	11:30	0.208	08:55	0.413	0.321	42848	
7/20/2016	23:45	2.46	00:30	3.02	2.66	10:30	1.80	08:30	3.15	2.09	16:20	0.219	07:40	0.415	0.269	35917	
7/21/2016	04:20	2.18	07:40	2.63	2.39	04:35	1.75	06:50	2.79	2.03	04:35	0.171	08:25	0.335	0.224	29880	
7/22/2016	05:35	2.25	08:35	2.78	2.51	05:15	1.79	01:10	2.46	2.03	05:15	0.189	08:45	0.310	0.241	32224	
7/23/2016	02:25	2.31	10:35	2.75	2.51	03:20	1.72	12:45	2.41	1.99	03:20	0.182	12:45	0.306	0.237	31678	
7/24/2016	02:15	2.38	10:25	2.78	2.59	05:15	1.64	23:35	2.38	1.96	05:15	0.184	16:15	0.303	0.244	32559	
7/25/2016	02:10	2.25	17:35	34.63	2.80	17:30	1.59	18:45	3.65	2.32	04:35	0.178	18:45	0.599	0.297	39267	0.77
7/26/2016	05:25	1.98	00:00	2.45	2.18												
7/27/2016	04:45	1.89	11:45	8.56	2.15	11:35	3.08	12:45	4.10	3.73	11:20	0.252	12:00	0.537	0.355	25519	
7/28/2016	13:00	2.01	12:55	3.79	2.39	04:10	3.24	07:20	4.15	3.64	13:00	0.332	12:55	0.881	0.402	53748	
7/29/2016	21:55	1.93	05:40	7.51	2.74	12:25	3.18	05:20	8.90	3.97	16:45	0.287	05:40	4.252	0.621	83026	0.86
7/30/2016	09:15	1.94	17:55	5.49	2.48	10:55	3.21	17:50	5.74	3.70	09:05	0.273	17:55	2.059	0.450	60125	0.24
7/31/2016	13:35	2.23	21:35	16.93	2.89	04:55	3.22	21:30	10.14	3.91	05:35	0.354	21:35	15.888	0.705	94152	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1425371	6.64
Avg	2.61	2.64	0.361	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	14:45	1.96	00:45	4.33	2.44	03:20	2.59	00:45	5.05	3.43	22:30	0.292	00:45	1.322	0.395	52855	0.05
8/2/2016	00:00	1.96	23:20	2.65	2.34	06:30	3.18	21:50	3.97	3.64	06:30	0.289	21:50	0.478	0.389	51985	
8/3/2016	04:35	2.25	08:00	2.88	2.53	21:40	3.07	08:20	3.69	3.30	04:35	0.330	08:20	0.532	0.397	53057	
8/4/2016	00:55	2.40	11:10	2.94	2.64	10:00	3.07	10:25	3.49	3.26	17:20	0.356	11:20	0.504	0.416	55654	
8/5/2016	04:15	2.32	08:20	2.94	2.63	12:25	3.14	20:15	3.79	3.33	04:45	0.335	07:50	0.504	0.424	56741	
8/6/2016	16:55	2.34	16:30	3.14	2.64	08:40	3.03	18:40	3.94	3.50	04:30	0.349	16:30	0.566	0.447	59724	0.09
8/7/2016	19:55	2.25	09:40	2.92	2.57	07:00	3.08	19:20	4.01	3.54	04:10	0.348	10:35	0.545	0.434	58060	
8/8/2016	02:40	2.39	11:45	2.95	2.71	04:00	3.15	11:55	3.86	3.50	03:00	0.357	13:10	0.558	0.465	62149	
8/9/2016	18:45	2.30	07:25	2.91	2.62	02:35	3.17	18:50	3.98	3.58	02:15	0.355	08:00	0.552	0.452	60403	
8/10/2016	23:10	1.97	13:40	3.14	2.46	05:25	3.19	13:30	4.04	3.57	19:35	0.302	13:40	0.564	0.409	54688	0.08
8/11/2016	09:20	2.04	23:30	2.91	2.43	22:00	3.28	13:20	4.05	3.61	08:35	0.309	21:00	0.540	0.408	54487	
8/12/2016	05:20	1.82	01:25	9.55	2.42	23:30	3.31	01:25	12.04	3.87	05:25	0.267	01:25	9.502	0.498	66566	0.34
8/13/2016	01:25	1.82	18:55	2.70	2.28	23:40	3.29	13:35	4.00	3.68	06:15	0.261	13:30	0.518	0.379	50666	
8/14/2016	18:30	2.16	09:00	2.81	2.52	03:20	3.09	13:20	4.09	3.58	03:20	0.337	15:55	0.538	0.427	57092	0.13
8/15/2016	08:20	2.16	06:50	2.67	2.48	03:55	3.28	19:25	4.15	3.71	08:00	0.358	16:45	0.496	0.430	57486	
8/16/2016	22:25	1.97	12:40	2.59	2.39	02:50	3.33	07:25	4.04	3.75	22:10	0.304	12:40	0.475	0.413	55185	0.23
8/17/2016	01:45	2.03	16:20	2.50	2.28	04:40	3.42	07:30	4.07	3.78	01:45	0.329	16:20	0.449	0.390	52105	
8/18/2016	14:50	2.00	05:00	3.15	2.31	02:45	3.36	22:15	4.11	3.77	15:00	0.329	05:00	0.598	0.394	52704	0.03
8/19/2016	12:45	2.19	09:55	2.79	2.56	04:00	3.28	11:55	4.10	3.60	03:05	0.347	08:05	0.515	0.441	58947	
8/20/2016	18:15	2.09	09:15	2.84	2.55	06:50	3.16	18:15	4.02	3.57	04:10	0.339	09:05	0.531	0.434	58075	0.02
8/21/2016	22:50	1.90	18:35	3.45	2.48	02:40	3.14	18:35	4.62	3.67	22:00	0.300	18:35	0.870	0.429	57358	0.15
8/22/2016	09:20	1.99	15:50	2.54	2.34	04:15	3.35	13:10	4.09	3.72	11:05	0.303	22:10	0.456	0.397	53006	
8/23/2016	03:25	2.29	13:15	2.73	2.55	03:00	3.23	20:30	3.98	3.54	04:05	0.344	11:45	0.514	0.430	57464	
8/24/2016	11:05	2.19	23:50	2.72	2.55	05:45	3.14	20:40	4.05	3.58	04:20	0.343	20:50	0.504	0.435	58145	
8/25/2016	08:50	2.22	07:20	2.83	2.59	05:30	3.04	08:15	4.07	3.53	04:45	0.336	07:20	0.531	0.439	58642	
8/26/2016	12:00	2.11	07:15	2.83	2.57	03:25	3.17	12:05	4.08	3.57	04:50	0.348	07:25	0.540	0.437	58420	
8/27/2016	12:05	2.36	11:05	2.81	2.61	05:50	3.20	12:05	3.96	3.52	05:45	0.351	11:50	0.527	0.442	59119	
8/28/2016	21:10	2.08	08:00	2.84	2.47	06:55	3.17	21:15	4.09	3.59	05:35	0.348	08:00	0.507	0.415	55441	
8/29/2016	19:45	1.95	07:05	2.76	2.35	05:15	2.94	18:35	4.16	3.64	19:25	0.303	07:40	0.500	0.391	52262	
8/30/2016	15:35	2.15	07:20	2.75	2.47	04:40	3.18	15:15	4.03	3.65	04:50	0.335	08:00	0.506	0.423	56499	
8/31/2016	03:50	2.33	07:50	2.83	2.63	05:15	3.14	09:15	4.02	3.58	03:35	0.358	08:20	0.531	0.454	60697	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1755680	1.12
Avg	2.50	3.59	0.424	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	22:55	2.21	14:30	17.18	3.03	02:45	3.28	14:35	11.19	3.84	22:55	0.351	14:30	17.347	0.710	94968	0.56
9/2/2016	18:30	1.85	08:00	2.60	2.11	14:35	3.31	08:30	4.19	3.63	18:40	0.267	08:00	0.462	0.334	44671	
9/3/2016	12:10	1.94	23:25	2.71	2.40	21:15	3.18	19:20	4.13	3.57	12:10	0.286	22:10	0.481	0.395	52814	
9/4/2016	05:25	2.34	11:00	2.92	2.62	22:50	3.08	10:15	3.96	3.30	05:35	0.349	10:15	0.559	0.418	55853	
9/5/2016	00:25	2.51	11:50	3.12	2.73	06:15	2.96	20:55	3.73	3.31	05:35	0.360	11:50	0.550	0.444	59389	
9/6/2016	03:15	2.47	13:20	3.10	2.83	01:05	3.08	19:35	3.87	3.39	04:45	0.366	19:45	0.580	0.480	64210	
9/7/2016	04:55	2.61	08:50	3.20	2.97	05:20	3.07	10:35	3.89	3.48	05:20	0.394	10:35	0.625	0.528	70581	
9/8/2016	04:05	2.53	06:30	3.11	2.87	03:30	3.17	16:15	4.07	3.53	04:05	0.384	07:40	0.600	0.509	68032	
9/9/2016	02:30	2.44	23:25	4.80	2.77	05:10	3.09	23:30	5.50	3.41	03:25	0.355	23:25	1.633	0.474	63333	0.11
9/10/2016	07:20	1.92	15:30	3.65	2.35	19:25	3.31	15:30	4.47	3.62	07:50	0.288	15:30	0.912	0.390	52139	0.05
9/11/2016	03:15	2.34	10:30	3.14	2.76	23:55	2.87	00:15	3.71	3.24	05:40	0.347	09:55	0.588	0.442	59110	
9/12/2016	01:45	2.58	07:15	3.02	2.80	02:40	2.85	08:00	3.39	3.09	02:40	0.354	07:15	0.501	0.429	57384	0.00
9/13/2016	05:25	2.51	12:50	2.94	2.77	00:30	2.95	20:00	3.45	3.14	05:25	0.357	07:35	0.496	0.430	57538	
9/14/2016	00:45	2.54	17:35	17.50	2.99	19:20	2.73	17:45	9.83	3.41	05:25	0.383	17:35	15.089	0.668	89256	0.64
9/15/2016	15:30	2.44	14:05	3.21	2.83	06:35	3.16	07:40	3.89	3.52	15:30	0.393	07:30	0.605	0.498	66538	
9/16/2016	12:45	2.13	00:00	3.06	2.32	14:30	3.08	03:05	3.96	3.50	15:05	0.311	00:00	0.558	0.370	49415	
9/17/2016	00:00	2.15	21:10	3.26	2.68	22:10	2.81	14:30	3.93	3.32	00:00	0.319	21:10	0.528	0.432	57788	
9/18/2016	04:40	2.72	20:10	3.17	2.94	06:15	2.57	20:10	3.35	2.99	06:15	0.354	20:10	0.558	0.446	59570	
9/19/2016	03:35	2.68	10:40	6.52	3.39	01:10	2.80	10:25	6.54	3.55	03:45	0.385	10:40	2.834	0.704	94149	0.45
9/20/2016	05:45	2.05	00:00	3.01	2.33	23:15	3.00	13:25	3.96	3.55	05:35	0.301	22:15	0.514	0.377	50333	
9/21/2016	16:50	2.25	07:10	3.09	2.60	12:35	2.71	17:50	3.43	3.12	14:55	0.330	07:10	0.494	0.387	51738	
9/22/2016	04:20	2.26	09:05	2.75	2.48	23:45	3.02	12:00	3.36	3.22	01:45	0.321	09:05	0.446	0.374	50060	
9/23/2016	23:35	2.39	09:05	2.85	2.66	05:35	2.75	11:40	3.25	3.02	23:45	0.338	18:00	0.429	0.390	52127	
9/24/2016	14:40	1.88	01:00	6.62	2.56	00:25	2.88	01:40	6.83	3.58	14:40	0.258	01:00	3.182	0.467	62492	0.28
9/25/2016	08:10	2.01	21:25	2.97	2.47	22:15	2.94	14:40	3.95	3.32	12:30	0.312	20:05	0.502	0.384	51368	
9/26/2016	00:25	2.48	20:55	2.99	2.74	03:30	2.82	19:50	3.36	3.04	03:30	0.339	19:35	0.508	0.409	54728	
9/27/2016	11:45	1.97	02:45	6.74	2.47	00:55	2.96	02:40	6.74	3.55	12:05	0.293	02:40	3.197	0.432	57714	0.25
9/28/2016	06:25	2.12	15:55	2.72	2.46	15:45	3.00	19:40	3.98	3.46	09:05	0.330	18:00	0.464	0.395	52842	
9/29/2016	07:45	2.33	20:40	2.98	2.72	15:25	2.56	07:15	3.87	3.22	04:30	0.375	18:20	0.492	0.429	57346	
9/30/2016	23:55	2.43	14:25	4.33	3.13	03:30	2.83	18:50	4.56	3.52	03:30	0.366	14:25	1.182	0.595	79448	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1836936	2.75
Avg	2.69	3.38	0.458	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	01:15	2.07	10:45	3.00	2.48	21:00	2.90	14:55	4.04	3.48	01:20	0.321	10:45	0.557	0.405	54187	
10/2/2016	20:00	2.45	12:55	3.09	2.84	06:00	2.99	19:45	3.96	3.22	06:25	0.380	16:00	0.554	0.459	61369	
10/3/2016	20:35	2.38	10:50	2.88	2.69	01:55	3.06	22:25	3.88	3.31	03:40	0.357	10:40	0.510	0.434	57962	
10/4/2016	07:50	2.30	19:35	2.79	2.64	16:45	3.04	07:50	3.90	3.31	07:35	0.371	10:50	0.480	0.423	56502	
10/5/2016	02:25	2.39	07:25	2.83	2.63	06:40	2.96	20:25	3.66	3.26	02:20	0.340	20:25	0.484	0.415	55466	
10/6/2016	08:00	2.32	22:05	2.72	2.59	03:30	3.07	08:30	3.87	3.30	03:25	0.336	09:10	0.484	0.409	54616	0.00
10/7/2016	11:15	2.29	06:50	2.73	2.54	03:50	3.09	07:55	3.82	3.35	04:30	0.340	07:20	0.469	0.405	54199	
10/8/2016	12:10	2.17	19:50	3.77	2.47	03:45	3.06	19:40	4.17	3.46	03:50	0.327	19:50	0.850	0.403	53906	0.13
10/9/2016	23:40	1.97	12:40	7.92	3.18	01:50	3.09	12:40	6.40	3.80	23:40	0.294	12:40	3.919	0.683	91323	0.52
10/10/2016	15:00	1.91	12:20	2.79	2.28	20:40	3.02	13:30	3.89	3.43	18:40	0.286	12:20	0.505	0.352	47030	
10/11/2016	12:55	2.05	07:55	2.85	2.33	05:30	3.04	20:50	3.91	3.45	08:20	0.302	20:15	0.472	0.365	48807	0.00
10/12/2016	07:20	2.18	22:20	2.77	2.54	01:50	3.02	08:50	3.89	3.33	04:50	0.330	19:45	0.474	0.400	53527	
10/13/2016	08:00	2.39	19:20	2.78	2.63	04:20	2.92	07:40	3.84	3.20	04:50	0.338	11:50	0.487	0.407	54448	
10/14/2016	03:00	2.47	09:40	2.88	2.71	12:40	2.93	08:25	3.74	3.16	03:00	0.351	08:25	0.504	0.419	56079	
10/15/2016	05:25	2.54	10:40	2.92	2.71	06:40	2.91	10:20	3.74	3.20	06:40	0.352	10:35	0.522	0.425	56845	
10/16/2016	02:55	2.43	12:45	2.83	2.66	00:15	2.89	18:45	3.84	3.28	05:10	0.340	22:05	0.491	0.424	56627	
10/17/2016	08:35	2.35	16:55	2.79	2.65	05:15	2.97	19:50	3.92	3.32	04:15	0.360	06:55	0.477	0.425	56748	
10/18/2016	08:30	2.25	00:35	2.79	2.61	04:05	3.04	11:20	3.88	3.36	08:25	0.356	17:45	0.465	0.420	56206	0.00
10/19/2016	20:55	2.20	00:25	2.74	2.55	03:20	2.95	20:25	3.96	3.36	04:30	0.348	19:25	0.456	0.408	54557	
10/20/2016	08:10	2.16	22:30	2.68	2.48	02:15	3.08	11:40	3.96	3.39	08:20	0.338	22:30	0.469	0.395	52774	
10/21/2016	04:00	2.33	10:05	5.18	2.79	02:20	2.98	13:45	5.92	3.65	04:00	0.331	10:05	1.776	0.529	70682	0.46
10/22/2016	19:00	1.95	04:25	4.17	2.26	07:15	3.08	04:25	4.73	3.56	19:00	0.259	04:25	1.170	0.367	49057	0.33
10/23/2016	14:15	2.12	08:20	2.74	2.30	09:25	3.05	19:30	3.97	3.46	13:30	0.309	08:20	0.468	0.362	48368	
10/24/2016	14:15	2.00	11:10	2.74	2.45	04:00	2.59	13:25	3.95	3.33	14:10	0.301	09:55	0.490	0.379	50653	
10/25/2016	07:15	2.09	11:30	2.59	2.34	04:15	3.05	18:40	4.01	3.47	07:10	0.306	06:30	0.433	0.369	49350	
10/26/2016	09:20	2.25	22:20	2.73	2.50	01:30	2.99	20:00	3.87	3.41	01:35	0.353	22:15	0.460	0.402	53747	
10/27/2016	10:40	2.37	20:15	13.94	3.66	05:45	2.82	21:20	9.65	3.89	03:55	0.340	20:15	10.025	1.020	136408	1.15
10/28/2016	16:15	1.92	00:00	3.84	2.35	09:45	3.04	15:10	3.97	3.49	16:15	0.286	00:00	0.778	0.374	50038	
10/29/2016	00:25	2.02	10:45	2.92	2.31	13:05	2.76	06:35	3.97	3.44	22:25	0.288	10:45	0.483	0.359	48031	
10/30/2016	14:20	2.01	16:40	13.38	2.58	22:55	2.94	16:40	9.25	3.55	10:25	0.280	16:40	11.254	0.521	69618	
10/31/2016	05:50	1.79	17:45	3.06	2.39	14:10	2.31	04:20	3.86	3.06	17:00	0.237	08:05	0.493	0.336	44855	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1803984	2.59
Avg	2.59	3.40	0.435	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

W4, Pipe Height: 23.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	05:40	2.11	20:05	3.36	2.45	07:35	2.24	03:40	3.35	2.88	05:55	0.265	20:10	0.472	0.329	43934	
11/2/2016	01:20	2.14	08:55	3.15	2.52	22:55	1.97	01:40	3.32	2.83	03:20	0.228	19:25	0.453	0.337	45019	
11/3/2016	03:35	2.14	09:10	3.28	2.47	06:00	2.11	01:10	3.22	2.78	06:00	0.215	09:10	0.451	0.323	43148	
11/4/2016	02:20	2.16	07:20	3.11	2.43	07:40	2.37	16:05	3.34	2.96	04:25	0.247	08:40	0.461	0.333	44472	
11/5/2016	22:40	2.16	10:40	3.19	2.51	02:40	2.38	23:25	3.73	2.97	01:05	0.257	10:55	0.478	0.350	46750	
11/6/2016	00:55	2.18	12:05	3.21	2.50	11:05	3.04	22:40	3.78	3.37	21:40	0.321	12:05	0.543	0.396	52964	
11/7/2016	17:25	2.21	07:45	2.87	2.41	08:35	3.03	13:25	3.85	3.48	16:00	0.328	03:55	0.450	0.388	51855	
11/8/2016	06:25	2.22	02:15	2.72	2.44	07:20	3.07	17:55	3.92	3.50	06:30	0.342	01:15	0.452	0.397	53046	
11/9/2016	21:40	2.23	12:30	3.51	2.52	12:50	2.98	23:55	3.88	3.46	09:15	0.342	12:30	0.616	0.411	54945	0.07
11/10/2016	21:00	2.21	07:25	2.80	2.43	08:15	3.12	22:15	3.89	3.53	21:00	0.339	04:40	0.489	0.400	53435	
11/11/2016	17:10	2.22	19:45	2.81	2.43	10:50	3.04	21:55	3.96	3.53	12:00	0.329	06:05	0.481	0.398	53201	
11/12/2016	23:15	2.28	14:20	3.38	2.53	14:00	2.95	00:20	3.87	3.47	15:30	0.355	14:35	0.587	0.415	55507	
11/13/2016	16:05	2.30	12:40	3.03	2.52	11:45	2.98	22:20	3.91	3.46	16:25	0.328	07:55	0.487	0.412	55089	
11/14/2016	13:20	2.28	07:35	3.26	2.50	07:50	3.04	12:25	3.92	3.51	06:45	0.351	07:35	0.543	0.413	55255	
11/15/2016	04:15	2.30	09:40	11.63	3.59	16:30	2.58	09:40	7.84	3.89	16:30	0.344	09:40	8.003	0.917	92325	1.50
11/16/2016																	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			800946	1.57
Avg	2.53	3.30	0.406	

Site Commentary

Site Information

W5	
Pipe Dimensions (in.)	Elliptical (24.00 in H, 24.50 in W)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for W5 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	5.62	0.44	0.217
Minimum	4.30	0.24	0.060
Maximum	76.31	9.58	19.777
Time of Minimum	9/5/2016 5:55 AM	9/5/2016 5:55 AM	9/5/2016 5:55 AM
Time of Maximum	9/14/2016 5:40 PM	11/15/2016 9:25 AM	11/15/2016 9:25 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

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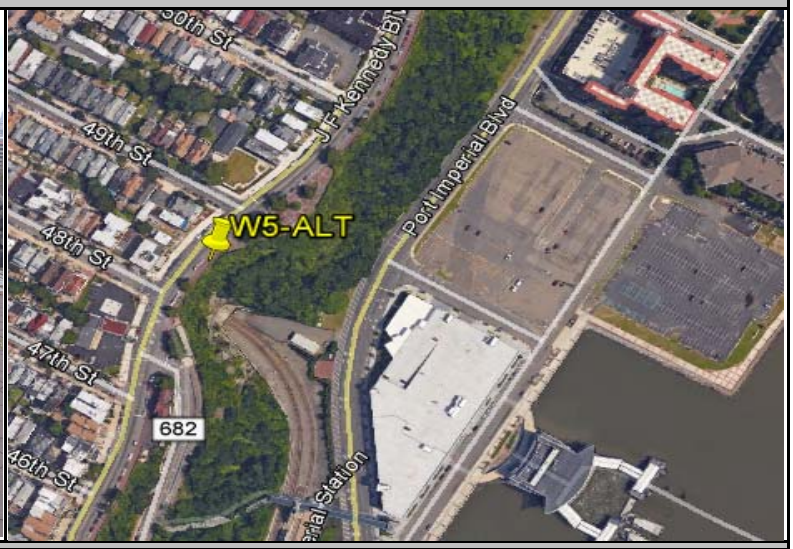
a division of ADS LLC. WEEHAWKEN, NJ

Site Report

FM Initials: CK

Project Name: NHSA

Site Name:	W5	Meter Type:	TRITON+	Monitor S/N:	61002	Manhole #:	W5 Regulator
Address / Location:	995 JFK BOULEVARD EAST (IN SIDEWALK)			Map Page #:		E4	
				Pipe Height:		24 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		24.5 Inches	
				I.P. Address		107.80.25.50	



Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 8, 2016	1:15 PM	Manhole Depth:	15.3 Feet	
Site Hydraulics:	SMOOTH SLOW FLOW		Manhole Material / Condition:	Concrete	Good
			Active Drop Connections?	No	
			Pipe Material / Condition:	Brick	Fair
			Mini System Character:	RESIDENTIAL	
			Telephone Information:		
Depth of Flow (Wet Dof):	4 +/- 0.5		Access Pole #:	N/A	
Range (Air Dof):	20.5 +/- 0.5		Distance From Manhole:	N/A Feet	
Peak Velocity:	1.4 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

N 40.77815 W 74.01327

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Standard Ring and Crank Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other	X		Regulator	1'

Additional Site Information / Comments:

UPSTREAM INSTALLATION IN REGULATOR CHAMBER. UPSTREAM MANHOLE UNSUITABLE DUE TO ACTIVE SPLASH CONNECTION.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** W5 **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

*** Site Classification**

	Class	*Description*
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

WEEHAWKEN POLICE DETAIL REQUIRED FOR METER EQUIPMENT INSTALLATION AND REMOVAL

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/8/2016	Date:	4/22/2016

SCATTERGRAPH REPORT

W5

Flow Monitor

W5

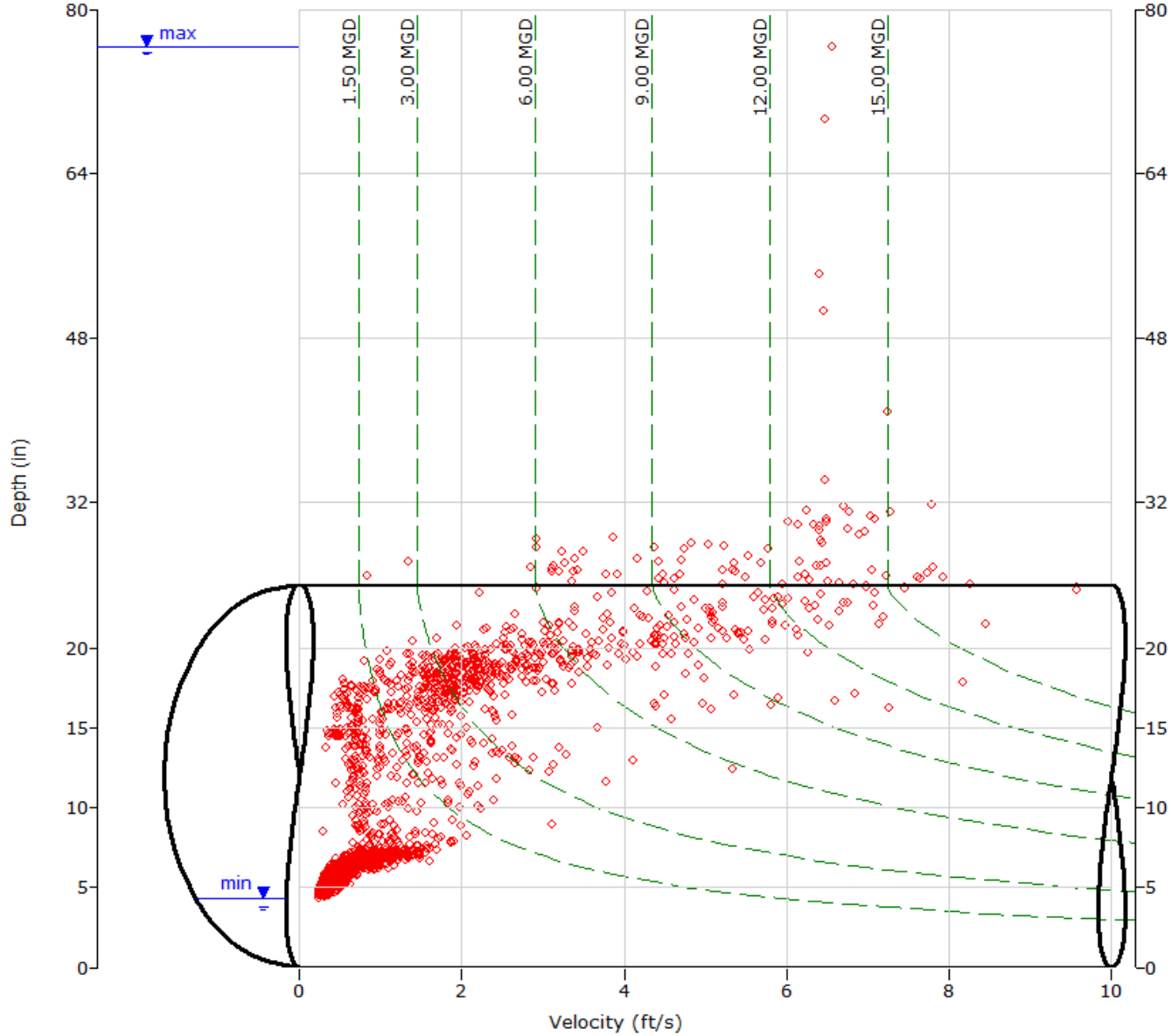
Pipe Height
24.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

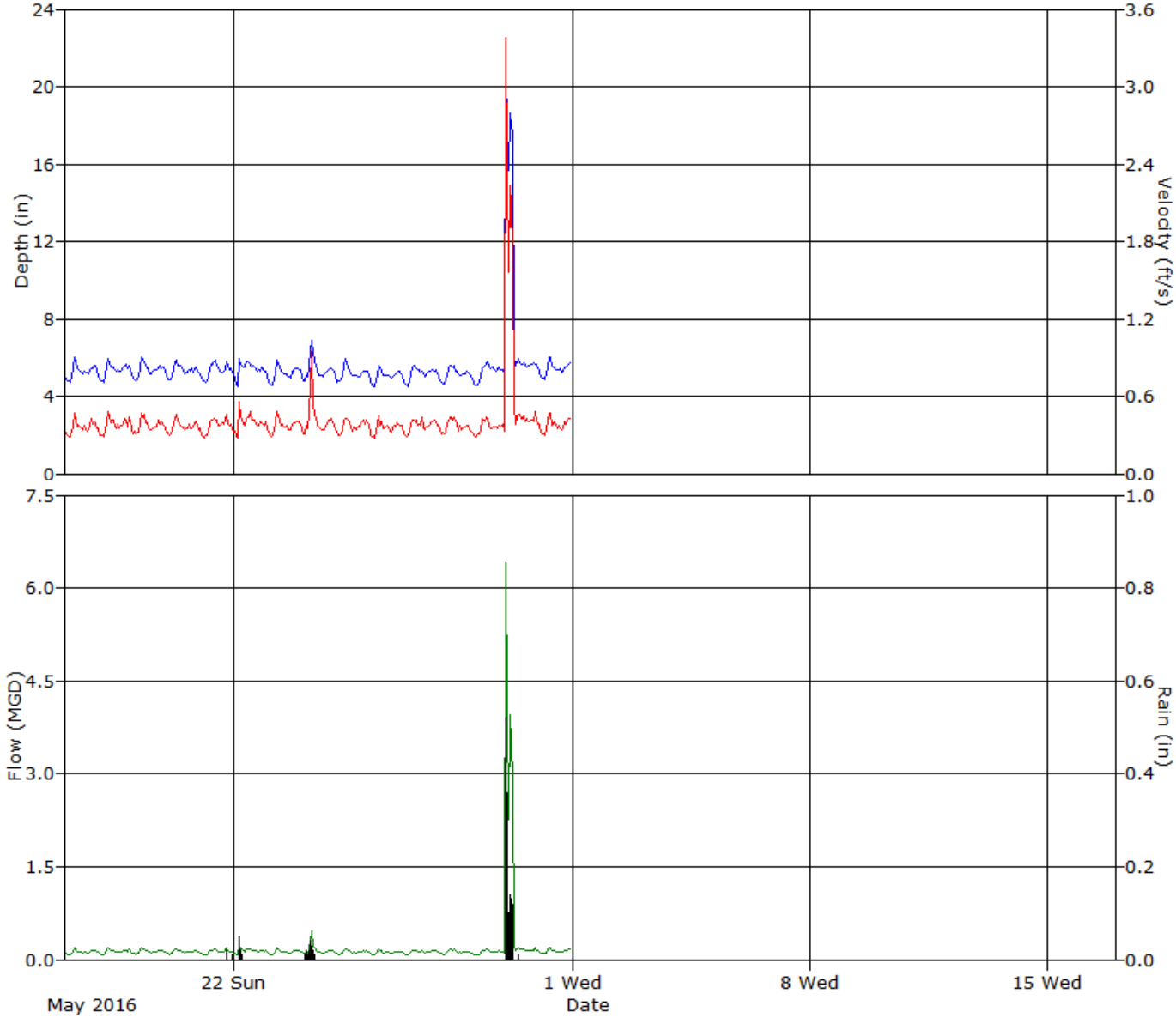
Pipe Height
24.00 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

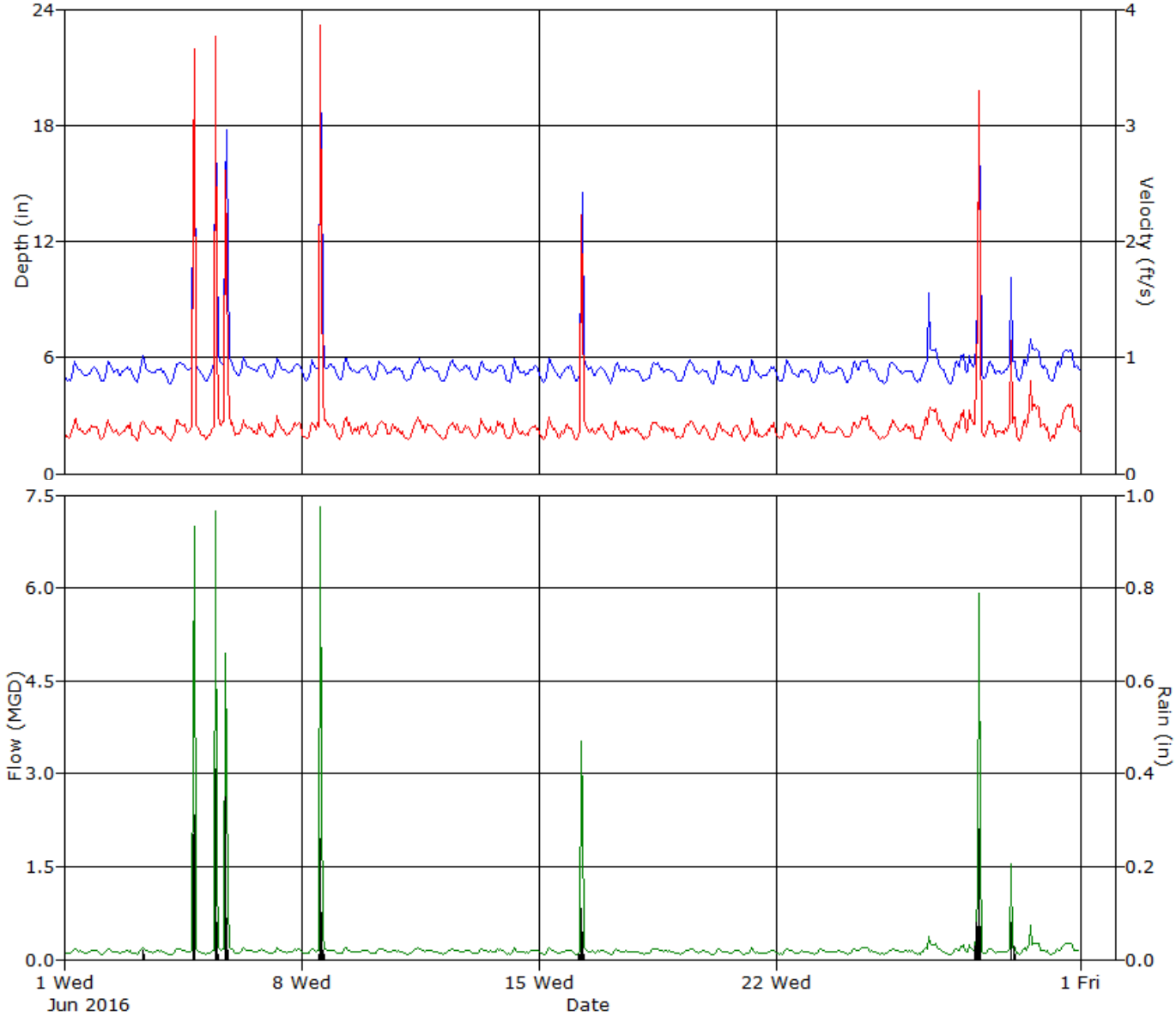
Pipe Height
24.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

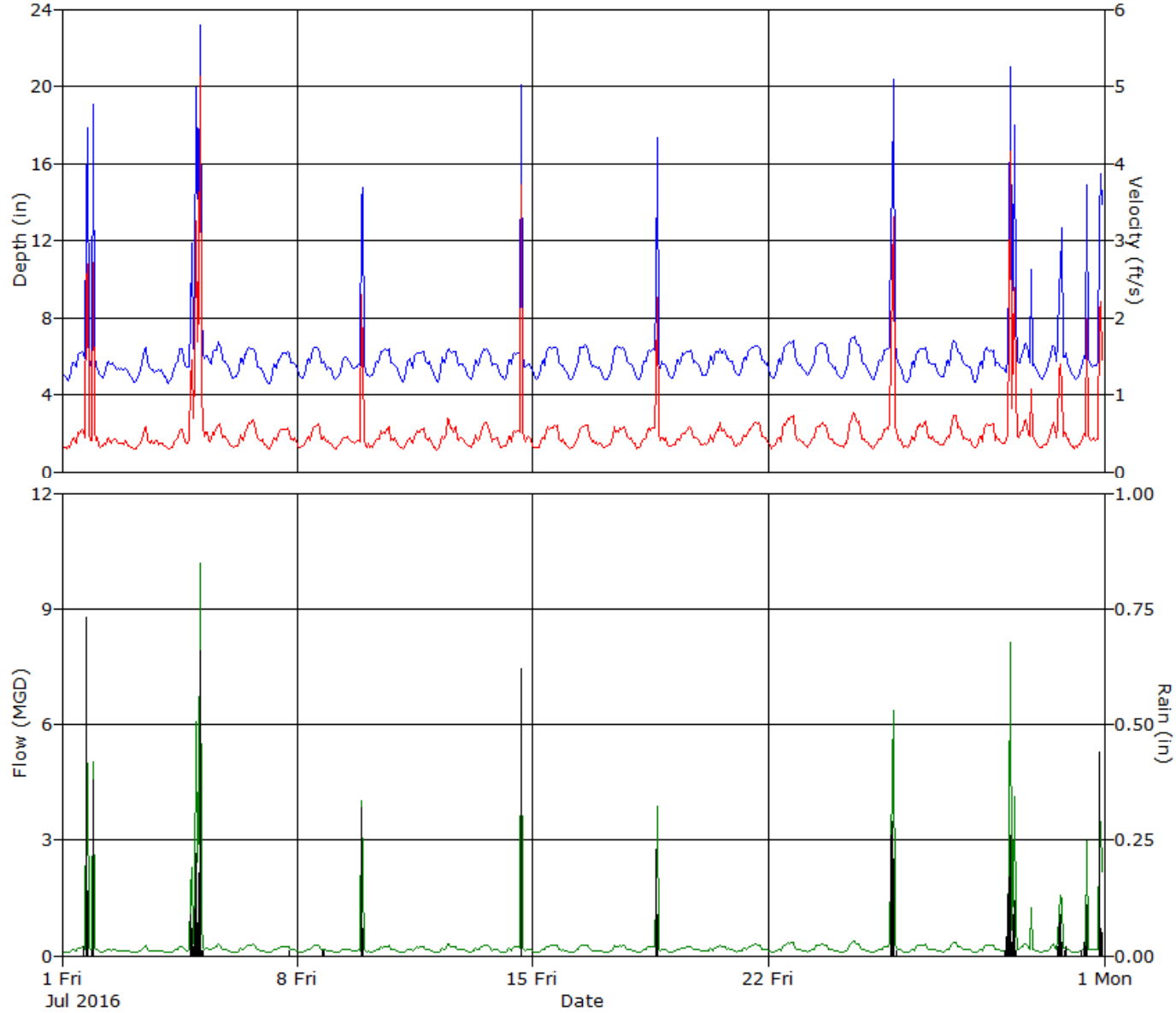
Pipe Height
24.00 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

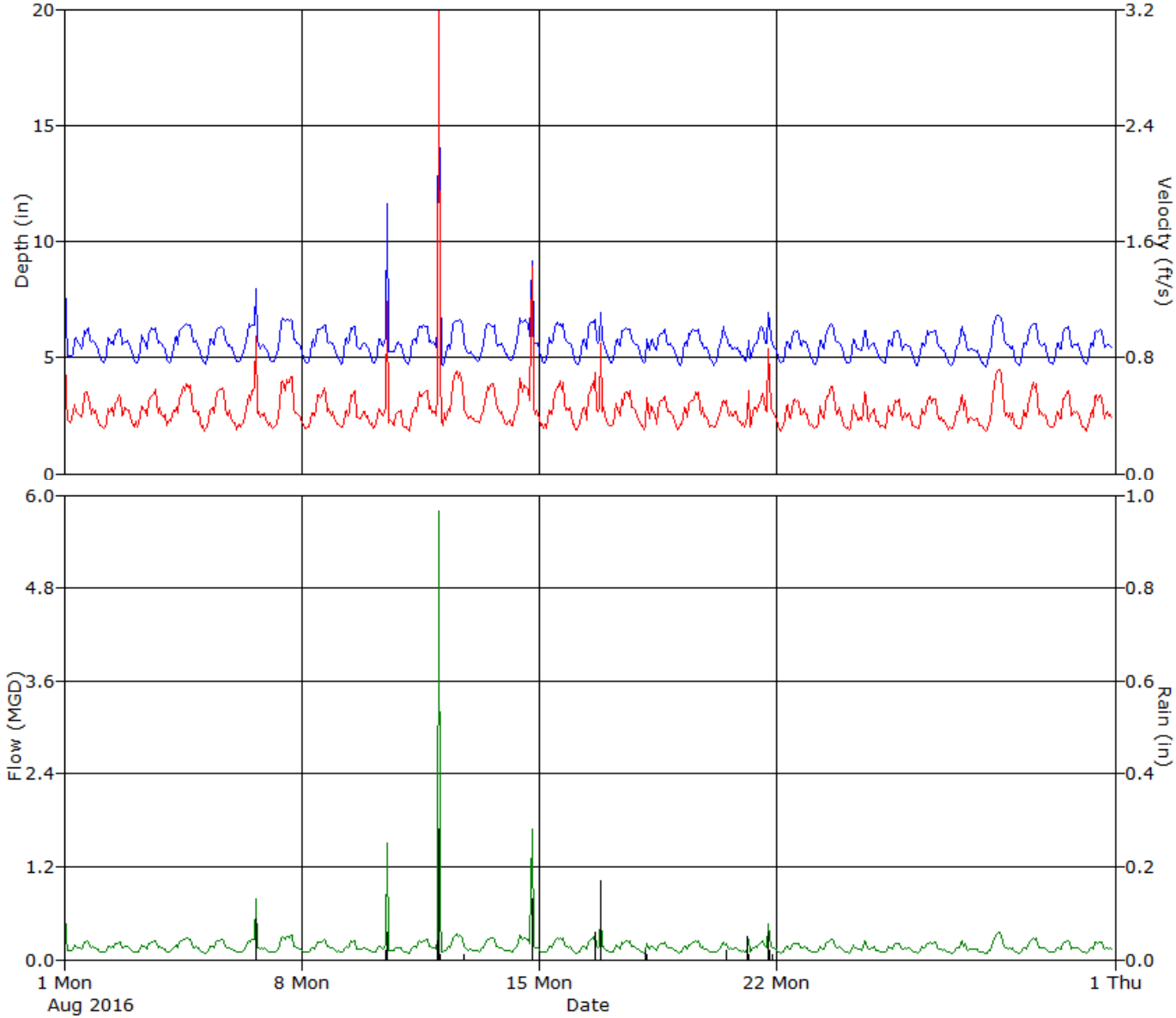
Pipe Height
24.00 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

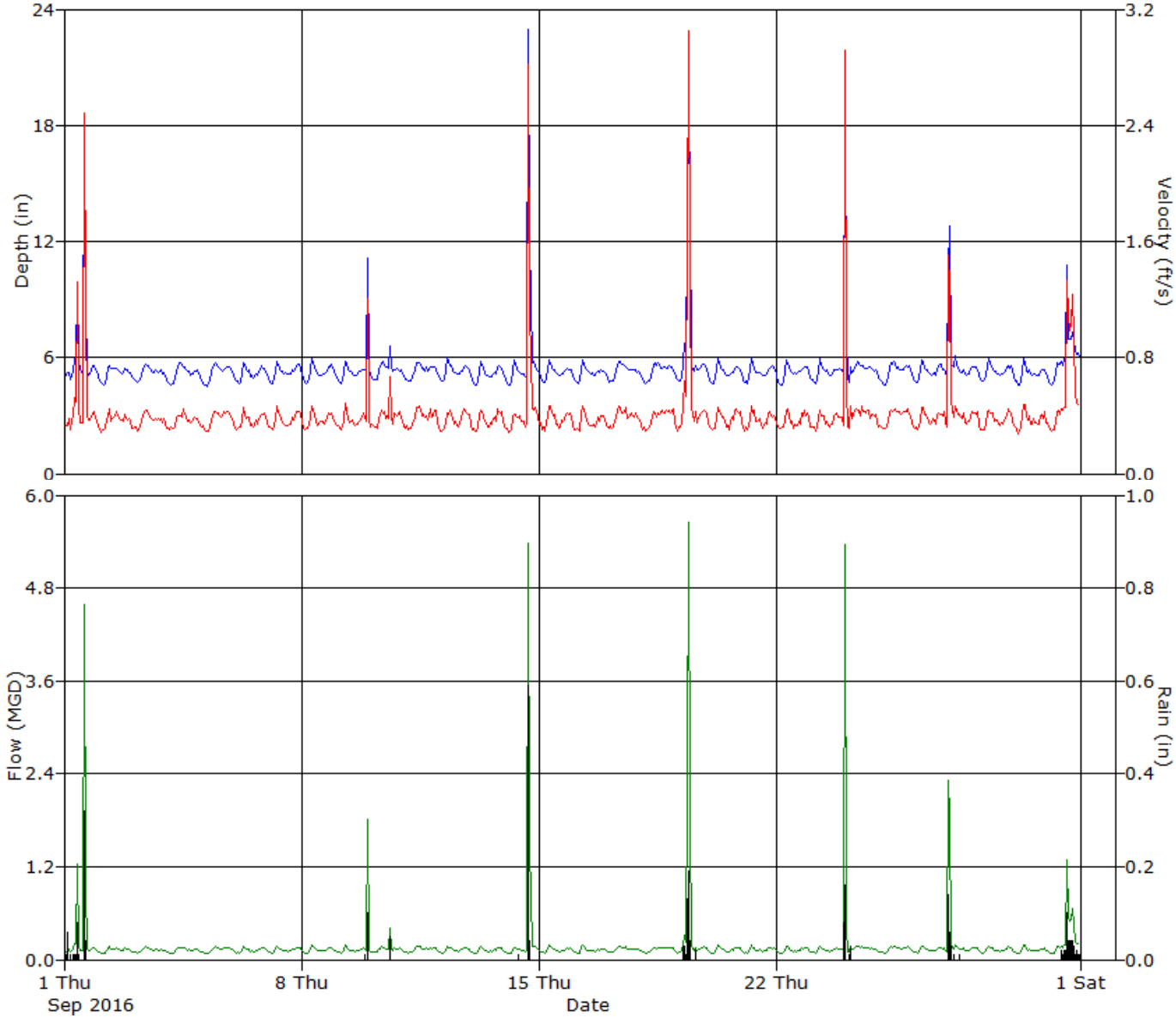
Pipe Height
24.00 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

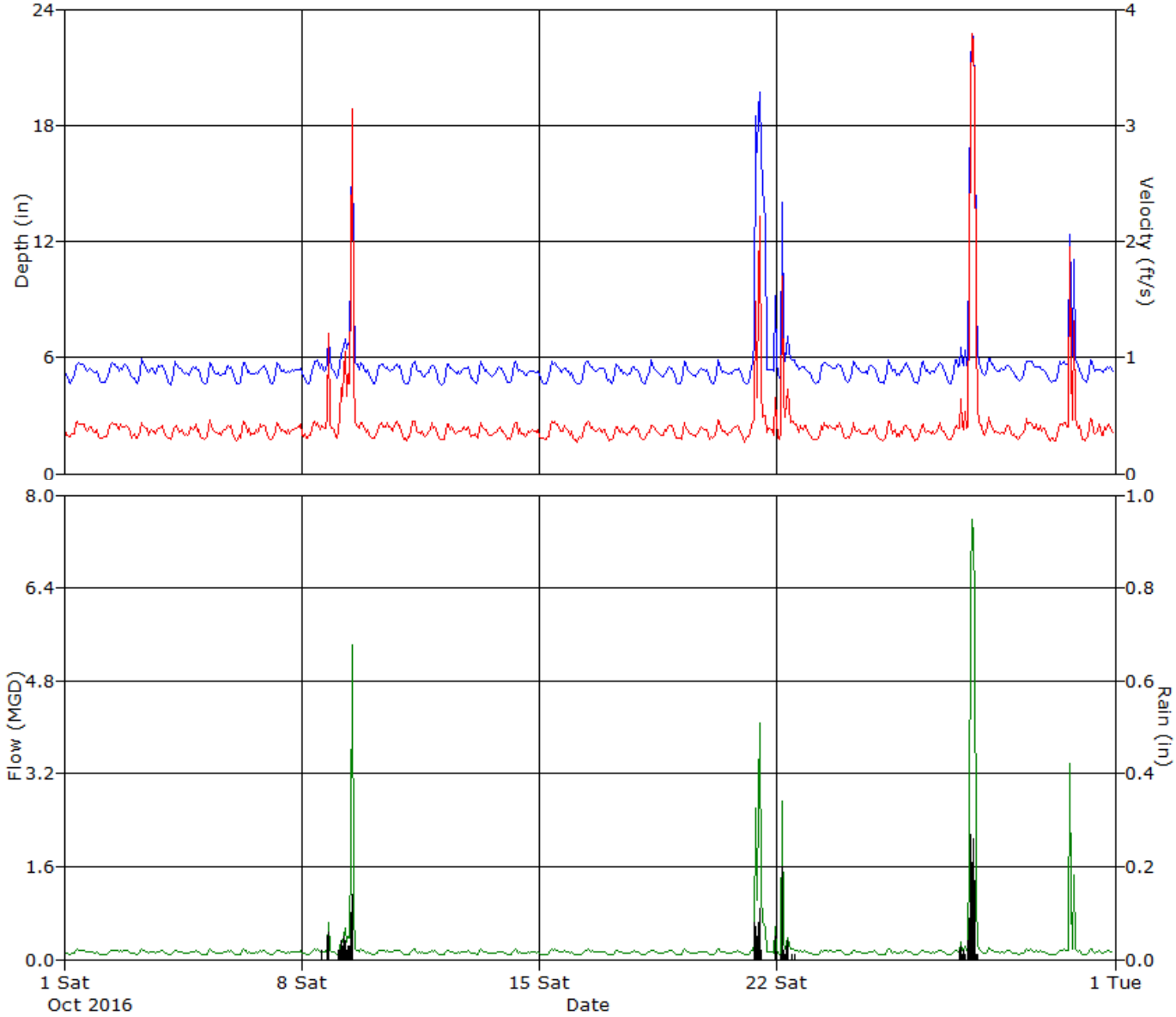
Pipe Height
24.00 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

W5

Flow Monitor

W5

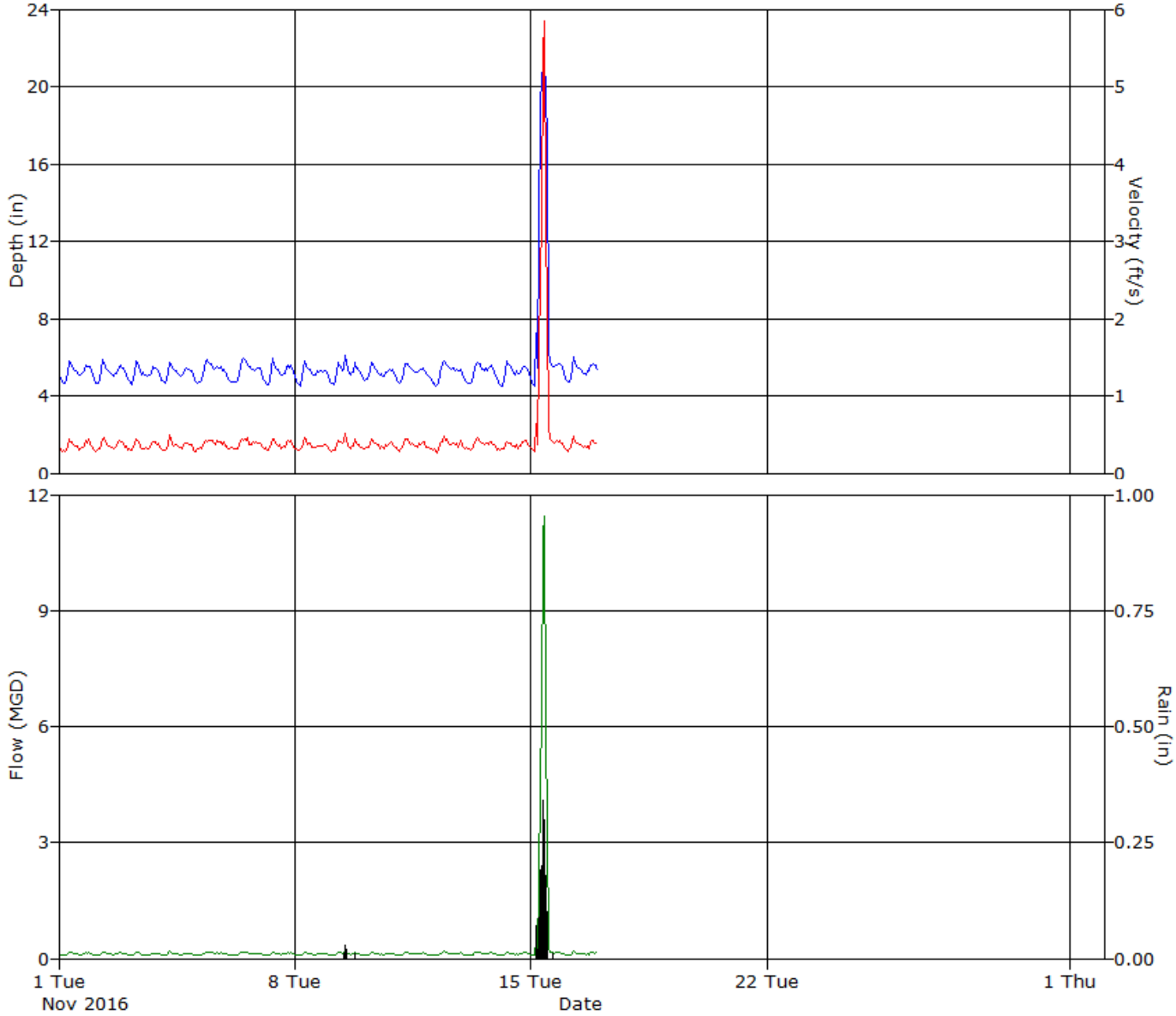
Pipe Height
24.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:20	4.72	07:30	6.16	5.29	03:45	0.27	07:20	0.53	0.36	03:45	0.079	07:30	0.219	0.123	16492	
5/18/2016	04:45	4.68	07:50	6.12	5.35	04:25	0.27	07:20	0.63	0.38	04:25	0.078	07:20	0.256	0.132	17599	
5/19/2016	03:15	4.69	07:35	6.15	5.36	01:35	0.27	08:20	0.58	0.37	01:35	0.083	08:20	0.231	0.130	17374	
5/20/2016	02:25	4.64	07:35	5.99	5.32	04:00	0.27	08:45	0.50	0.37	04:00	0.082	08:45	0.198	0.126	16816	
5/21/2016	02:10	4.69	19:35	6.56	5.31	03:00	0.24	19:35	0.72	0.37	03:00	0.071	19:35	0.330	0.128	17117	0.03
5/22/2016	03:40	4.47	04:20	6.75	5.42	03:45	0.26	04:20	1.00	0.40	03:45	0.071	04:20	0.476	0.141	18910	0.08
5/23/2016	04:05	4.52	07:30	6.02	5.17	03:20	0.27	07:15	0.54	0.37	03:20	0.076	07:25	0.216	0.123	16481	
5/24/2016	02:25	4.70	07:20	7.02	5.39	02:05	0.29	07:20	1.48	0.42	02:25	0.084	07:20	0.747	0.154	20602	0.16
5/25/2016	01:15	4.62	07:45	6.14	5.18	03:05	0.27	13:45	0.54	0.37	02:30	0.082	08:00	0.197	0.123	16377	
5/26/2016	03:35	4.46	07:35	5.80	5.06	04:25	0.25	07:55	0.63	0.35	04:25	0.068	07:55	0.234	0.114	15250	
5/27/2016	04:40	4.46	08:25	5.62	5.16	04:15	0.27	13:45	0.59	0.37	04:15	0.073	13:45	0.202	0.122	16330	
5/28/2016	04:45	4.54	10:40	5.70	5.16	05:20	0.28	12:15	0.51	0.37	05:20	0.080	12:15	0.189	0.122	16354	
5/29/2016	05:00	4.53	12:50	5.89	5.25	03:25	0.27	11:25	0.56	0.36	03:25	0.075	11:25	0.216	0.122	16252	
5/30/2016	01:10	5.02	01:40	54.19	8.78	01:10	0.30	01:35	6.78	0.88	01:10	0.093	01:35	14.048	1.084	144913	1.38
5/31/2016	04:15	4.84	07:35	6.18	5.42	03:50	0.29	07:30	0.61	0.38	04:20	0.087	07:30	0.254	0.135	17978	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			384845	1.65
Avg	5.51	0.41	0.192	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:55	4.71	07:05	5.89	5.24	03:40	0.25	08:10	0.56	0.38	03:40	0.074	07:25	0.213	0.127	16920	
6/2/2016	03:35	4.73	07:50	5.94	5.28	03:00	0.28	07:55	0.55	0.37	03:00	0.082	07:55	0.218	0.127	16920	
6/3/2016	04:35	4.70	08:55	6.29	5.30	04:40	0.27	10:15	0.56	0.37	04:40	0.077	09:00	0.226	0.126	16866	0.03
6/4/2016	03:45	4.58	20:00	31.57	6.34	03:30	0.27	20:20	7.09	0.60	03:30	0.075	20:20	14.599	0.573	76619	0.58
6/5/2016	05:00	4.75	11:20	29.55	7.43	04:35	0.28	11:15	8.18	0.74	04:35	0.084	11:30	16.179	0.853	113986	0.96
6/6/2016	04:45	5.02	07:30	6.20	5.47	02:00	0.29	07:20	0.57	0.38	02:00	0.097	07:20	0.238	0.137	18296	
6/7/2016	03:00	4.82	07:35	6.01	5.38	16:45	0.29	08:40	0.57	0.38	04:40	0.089	08:00	0.225	0.134	17957	
6/8/2016	03:35	4.74	13:30	24.08	6.60	12:35	0.27	13:25	7.07	0.60	12:35	0.086	13:25	14.319	0.559	74770	0.40
6/9/2016	03:15	4.82	08:00	6.11	5.36	03:00	0.28	08:10	0.61	0.39	03:00	0.083	08:10	0.245	0.135	18067	
6/10/2016	04:50	4.79	08:00	6.04	5.33	15:55	0.29	11:55	0.57	0.38	04:15	0.088	11:55	0.205	0.131	17509	
6/11/2016	03:35	4.76	11:45	6.12	5.35	03:40	0.25	10:10	0.60	0.38	03:40	0.073	10:10	0.230	0.133	17784	
6/12/2016	05:55	4.73	11:10	5.90	5.34	05:30	0.28	20:25	0.57	0.37	05:25	0.084	20:25	0.216	0.129	17246	
6/13/2016	03:35	4.79	08:35	5.86	5.33	03:15	0.28	08:35	0.61	0.38	03:45	0.084	08:35	0.238	0.132	17588	
6/14/2016	03:05	4.67	07:40	6.02	5.28	02:50	0.29	07:15	0.54	0.36	02:55	0.083	07:15	0.217	0.124	16597	
6/15/2016	03:10	4.68	07:35	6.10	5.27	14:30	0.27	07:25	0.65	0.37	03:05	0.082	07:30	0.263	0.125	16748	
6/16/2016	03:05	4.68	06:40	23.38	5.95	02:10	0.27	06:45	6.41	0.50	02:10	0.082	06:45	13.188	0.366	48861	0.20
6/17/2016	03:30	4.60	08:25	5.80	5.28	03:20	0.28	07:50	0.57	0.36	03:30	0.078	07:50	0.216	0.124	16595	
6/18/2016	02:40	4.70	11:45	5.82	5.28	03:45	0.28	08:05	0.61	0.38	03:45	0.080	08:05	0.220	0.129	17270	
6/19/2016	04:45	4.72	11:50	6.11	5.26	19:15	0.28	11:55	0.64	0.37	01:55	0.083	11:55	0.265	0.127	16962	
6/20/2016	03:35	4.59	07:45	5.95	5.24	02:15	0.26	08:15	0.50	0.36	02:15	0.077	08:15	0.198	0.122	16341	
6/21/2016	01:20	4.69	08:05	6.07	5.19	02:05	0.27	21:55	0.59	0.36	02:05	0.080	07:10	0.214	0.119	15891	
6/22/2016	02:35	4.69	07:55	6.02	5.23	02:30	0.28	09:55	0.56	0.37	02:30	0.080	07:10	0.209	0.123	16501	
6/23/2016	03:25	4.66	08:30	5.92	5.24	02:20	0.29	08:00	0.58	0.36	03:25	0.081	08:00	0.225	0.122	16369	
6/24/2016	03:35	4.62	07:40	5.94	5.39	02:10	0.28	07:35	0.58	0.40	03:35	0.083	07:35	0.232	0.140	18774	
6/25/2016	04:45	4.61	11:00	5.80	5.24	00:55	0.28	20:20	0.57	0.37	04:45	0.084	11:00	0.195	0.127	16931	
6/26/2016	04:35	4.72	12:15	14.64	5.71	06:00	0.27	12:45	0.69	0.43	06:00	0.080	12:20	0.696	0.168	22412	
6/27/2016	03:30	4.59	23:55	14.97	5.65	04:30	0.27	23:45	2.69	0.46	04:30	0.075	23:45	3.092	0.202	27002	0.18
6/28/2016	04:30	4.87	00:45	24.57	6.44	12:15	0.27	00:30	6.59	0.57	04:55	0.090	00:40	12.602	0.502	67151	0.43
6/29/2016	04:25	4.72	12:35	13.25	5.80	04:20	0.26	12:35	3.28	0.47	04:20	0.075	12:35	3.855	0.195	26056	0.04
6/30/2016	03:30	4.71	13:05	6.44	5.66	03:25	0.26	17:55	0.64	0.44	03:25	0.074	18:05	0.281	0.168	22441	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			839429	2.82
Avg	5.56	0.42	0.209	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:25	4.63	22:10	31.71	6.99	05:30	0.28	22:10	7.78	0.69	05:30	0.084	22:10	16.129	0.743	99386	1.28
7/2/2016	05:25	4.80	08:35	5.81	5.34	23:15	0.27	09:25	0.56	0.38	04:40	0.087	09:25	0.210	0.132	17581	
7/3/2016	03:40	4.58	12:10	6.49	5.30	04:20	0.28	12:05	0.68	0.38	04:05	0.078	12:05	0.309	0.134	17871	
7/4/2016	04:40	4.58	21:00	23.09	5.95	04:40	0.27	21:00	6.03	0.52	04:40	0.074	21:00	12.335	0.349	46648	0.27
7/5/2016	23:55	5.34	03:05	30.50	8.10	10:45	0.32	03:00	8.44	0.94	10:45	0.121	03:20	17.107	1.109	148214	1.15
7/6/2016	04:00	4.78	13:40	6.55	5.67	00:40	0.28	16:25	0.73	0.47	03:40	0.085	16:30	0.326	0.180	24096	
7/7/2016	02:55	4.55	17:45	6.36	5.53	04:00	0.28	12:20	0.61	0.44	04:00	0.078	18:05	0.258	0.163	21855	0.01
7/8/2016	03:55	4.83	13:00	6.52	5.65	01:35	0.29	12:50	0.71	0.44	02:15	0.090	12:50	0.322	0.169	22639	0.02
7/9/2016	02:55	4.71	22:35	26.14	6.15	03:45	0.26	22:35	6.16	0.51	03:45	0.077	22:35	12.767	0.379	50654	0.38
7/10/2016	04:15	4.90	12:40	6.49	5.66	02:35	0.29	12:40	0.70	0.43	02:35	0.089	12:40	0.316	0.163	21794	
7/11/2016	04:30	4.60	18:30	6.37	5.61	04:20	0.27	18:30	0.62	0.42	04:20	0.077	18:30	0.272	0.160	21362	
7/12/2016	04:40	4.62	12:35	6.46	5.65	03:55	0.27	11:25	0.91	0.45	03:55	0.076	11:25	0.407	0.173	23138	
7/13/2016	04:50	4.78	14:00	6.49	5.65	04:45	0.31	13:50	0.68	0.45	04:45	0.091	13:50	0.304	0.173	23168	
7/14/2016	04:35	4.73	16:20	30.32	6.19	02:30	0.28	16:15	6.97	0.57	02:30	0.083	16:15	14.446	0.450	60211	0.62
7/15/2016	03:50	4.77	18:15	6.56	5.73	04:05	0.27	18:05	0.66	0.45	04:05	0.080	18:05	0.301	0.177	23672	
7/16/2016	04:25	4.80	13:25	6.62	5.60	02:35	0.29	14:25	0.71	0.42	03:10	0.087	14:25	0.326	0.162	21639	
7/17/2016	04:35	4.71	12:30	6.54	5.69	04:55	0.30	10:55	0.70	0.44	04:55	0.087	10:55	0.307	0.173	23161	
7/18/2016	04:30	4.77	16:55	29.71	6.25	02:35	0.28	17:00	6.53	0.55	02:35	0.084	16:55	13.128	0.383	51216	0.32
7/19/2016	05:00	4.79	16:45	6.34	5.66	03:05	0.29	16:40	0.63	0.44	03:05	0.089	16:40	0.277	0.167	22382	
7/20/2016	03:45	4.85	14:55	6.60	5.76	05:50	0.32	14:55	0.73	0.45	01:35	0.102	14:55	0.340	0.177	23610	
7/21/2016	04:10	4.95	15:25	6.53	5.83	02:30	0.30	15:40	0.69	0.48	02:30	0.095	15:40	0.314	0.190	25411	
7/22/2016	04:05	4.81	18:30	6.86	5.86	02:55	0.28	18:30	0.83	0.49	02:55	0.088	18:30	0.407	0.202	27058	
7/23/2016	05:00	4.96	15:10	6.71	5.84	04:05	0.30	10:45	0.75	0.47	04:10	0.098	10:45	0.344	0.189	25314	
7/24/2016	05:00	4.75	13:40	7.06	5.82	05:45	0.30	13:00	0.89	0.48	05:40	0.089	13:00	0.442	0.199	26545	
7/25/2016	04:10	4.72	17:35	30.95	6.97	04:05	0.27	17:35	7.28	0.70	04:05	0.079	17:35	15.085	0.721	96440	0.77
7/26/2016	02:40	4.60	17:25	6.51	5.64	01:45	0.28	17:35	0.75	0.46	01:45	0.081	17:35	0.340	0.179	23911	
7/27/2016	02:20	4.86	14:15	7.12	5.74	02:05	0.31	14:15	0.88	0.48	02:05	0.094	14:15	0.452	0.191	25544	
7/28/2016	04:00	4.59	12:20	6.64	5.64	03:20	0.29	16:55	0.72	0.46	03:20	0.081	16:55	0.318	0.178	23738	
7/29/2016	02:30	4.76	05:15	25.94	7.78	04:20	0.31	05:30	6.70	0.89	04:20	0.092	05:30	13.627	0.963	128729	0.86
7/30/2016	04:15	4.76	18:00	18.65	6.30	03:20	0.29	17:55	2.84	0.54	03:20	0.087	17:55	4.895	0.326	43554	0.24
7/31/2016	04:45	4.78	21:35	28.45	6.90	05:50	0.25	21:55	6.29	0.65	05:50	0.077	21:55	13.036	0.618	82545	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			1293086	6.64
Avg	6.01	0.51	0.312	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	05:30	4.91	00:50	16.51	5.77	10:20	0.29	00:45	1.75	0.46	04:05	0.100	00:45	1.766	0.188	25083	0.05
8/2/2016	04:50	4.77	16:30	6.35	5.56	02:25	0.29	15:45	0.60	0.42	04:20	0.089	16:30	0.263	0.155	20722	
8/3/2016	03:10	4.77	14:55	6.37	5.60	01:45	0.28	14:25	0.63	0.44	01:50	0.085	14:25	0.276	0.163	21856	
8/4/2016	03:55	4.76	14:15	6.49	5.73	03:50	0.30	14:20	0.77	0.47	03:50	0.089	14:20	0.349	0.183	24510	
8/5/2016	04:15	4.66	17:40	6.37	5.61	03:35	0.28	12:50	0.68	0.44	03:55	0.083	12:50	0.295	0.166	22144	
8/6/2016	05:00	4.78	16:35	13.76	5.65	02:30	0.28	16:35	3.20	0.44	02:30	0.082	16:35	3.937	0.183	24401	0.09
8/7/2016	05:05	4.74	11:50	6.75	5.79	04:10	0.30	18:10	0.79	0.47	04:10	0.089	18:10	0.368	0.191	25517	
8/8/2016	04:35	4.73	16:30	6.48	5.63	05:00	0.29	15:50	0.66	0.43	05:15	0.085	15:50	0.289	0.164	21944	
8/9/2016	05:05	4.68	14:05	6.50	5.52	05:10	0.30	14:40	0.62	0.41	05:10	0.084	14:45	0.276	0.151	20171	
8/10/2016	04:00	4.71	13:15	18.84	5.62	03:30	0.29	13:05	2.89	0.42	03:30	0.084	13:10	3.846	0.192	25640	0.08
8/11/2016	04:15	4.66	14:35	6.45	5.67	05:20	0.27	17:25	0.66	0.44	05:20	0.078	17:25	0.292	0.169	22581	
8/12/2016	04:25	4.63	01:25	27.51	6.47	04:35	0.31	01:05	7.26	0.63	04:35	0.086	01:15	12.107	0.455	60870	0.34
8/13/2016	06:35	4.83	12:50	6.56	5.63	07:00	0.29	15:50	0.73	0.46	07:00	0.089	14:10	0.326	0.176	23515	
8/14/2016	04:45	4.85	19:35	17.10	5.89	02:05	0.30	19:35	6.84	0.50	05:30	0.098	19:35	10.811	0.246	32828	0.13
8/15/2016	04:25	4.76	13:05	6.55	5.71	03:30	0.30	15:20	0.69	0.46	03:30	0.087	15:20	0.307	0.179	23964	
8/16/2016	04:00	4.65	20:25	12.26	5.70	03:45	0.28	20:25	3.08	0.46	03:45	0.081	20:25	3.276	0.190	25408	0.23
8/17/2016	04:15	4.76	15:10	6.33	5.62	03:25	0.30	07:20	0.63	0.44	03:25	0.089	14:55	0.265	0.166	22152	
8/18/2016	03:50	4.72	05:00	6.82	5.55	03:40	0.29	05:00	1.08	0.42	03:40	0.084	05:00	0.523	0.157	21009	0.03
8/19/2016	04:15	4.61	17:55	6.29	5.58	02:50	0.28	16:10	0.63	0.43	02:50	0.082	16:10	0.269	0.161	21580	
8/20/2016	04:30	4.65	11:35	6.39	5.39	02:25	0.29	13:25	0.61	0.40	04:20	0.088	11:20	0.268	0.140	18744	0.02
8/21/2016	04:20	4.77	18:35	8.97	5.61	04:00	0.28	05:00	2.07	0.45	04:00	0.083	05:00	1.305	0.177	23621	0.15
8/22/2016	03:45	4.76	15:20	6.21	5.52	03:35	0.26	08:25	0.59	0.41	03:35	0.077	15:25	0.242	0.151	20141	
8/23/2016	04:35	4.69	15:05	6.54	5.59	06:00	0.29	17:15	0.67	0.43	03:25	0.085	17:15	0.305	0.163	21743	
8/24/2016	02:55	4.67	16:55	6.34	5.41	02:15	0.29	16:40	0.60	0.39	04:50	0.087	16:50	0.262	0.140	18760	
8/25/2016	05:00	4.70	13:00	6.25	5.49	05:25	0.30	12:20	0.62	0.41	05:25	0.087	12:20	0.253	0.148	19768	
8/26/2016	04:30	4.58	11:10	6.34	5.52	04:15	0.28	16:05	0.69	0.41	04:25	0.079	16:05	0.294	0.152	20351	
8/27/2016	04:50	4.58	12:25	6.41	5.34	02:25	0.27	14:15	0.62	0.39	04:40	0.081	14:15	0.265	0.136	18208	
8/28/2016	05:05	4.58	12:50	6.86	5.61	04:45	0.28	12:50	0.79	0.45	04:45	0.078	12:50	0.389	0.174	23307	
8/29/2016	04:55	4.60	15:50	6.49	5.59	01:00	0.29	14:15	0.67	0.44	03:25	0.082	14:15	0.301	0.166	22146	
8/30/2016	04:55	4.65	16:25	6.40	5.50	01:50	0.29	16:10	0.62	0.42	03:30	0.085	16:25	0.273	0.155	20666	
8/31/2016	04:45	4.66	10:55	6.36	5.51	04:30	0.28	11:10	0.73	0.41	04:30	0.082	11:10	0.314	0.152	20347	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			733697	1.12
Avg	5.63	0.44	0.177	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	04:05	4.75	14:30	27.97	6.16	03:50	0.26	14:15	5.35	0.55	03:50	0.078	14:20	10.847	0.400	53513	0.56
9/2/2016	04:25	4.57	08:10	5.77	5.19	02:25	0.26	13:10	0.50	0.37	02:25	0.075	08:15	0.189	0.122	16329	
9/3/2016	04:25	4.62	10:20	5.86	5.21	04:30	0.27	11:45	0.56	0.37	04:30	0.078	11:45	0.209	0.123	16396	
9/4/2016	04:30	4.58	09:55	5.83	5.17	02:40	0.26	13:15	0.59	0.36	03:25	0.077	13:15	0.210	0.120	16046	
9/5/2016	05:55	4.30	11:40	5.92	5.22	05:55	0.24	21:30	0.58	0.38	05:55	0.060	21:30	0.212	0.127	16988	
9/6/2016	04:25	4.62	07:40	5.95	5.18	02:25	0.27	10:45	0.54	0.36	02:25	0.079	07:40	0.205	0.121	16154	
9/7/2016	03:55	4.59	07:30	5.86	5.24	04:45	0.29	22:05	0.59	0.37	04:20	0.084	22:05	0.219	0.124	16526	
9/8/2016	03:55	4.62	07:40	6.03	5.24	11:45	0.29	07:20	0.58	0.37	03:10	0.085	07:20	0.234	0.124	16623	
9/9/2016	04:55	4.61	23:25	21.34	5.45	03:20	0.28	23:30	5.15	0.40	03:20	0.080	23:30	9.968	0.192	25657	0.11
9/10/2016	06:10	4.79	15:35	10.80	5.38	01:35	0.28	15:35	2.08	0.39	04:25	0.085	15:35	1.878	0.142	19038	0.05
9/11/2016	04:35	4.73	10:45	5.89	5.30	04:25	0.28	11:45	0.58	0.39	04:25	0.082	11:45	0.225	0.133	17843	
9/12/2016	04:30	4.71	07:20	6.14	5.30	02:40	0.27	18:55	0.58	0.37	02:40	0.079	18:55	0.207	0.128	17059	0.00
9/13/2016	03:10	4.52	08:05	6.04	5.16	01:45	0.28	19:20	0.52	0.37	04:35	0.077	08:10	0.206	0.121	16213	
9/14/2016	04:00	4.54	17:40	76.31	6.24	03:40	0.26	17:35	7.24	0.50	03:50	0.073	17:35	15.003	0.399	53314	0.64
9/15/2016	04:45	4.68	07:30	5.99	5.24	04:40	0.28	07:30	0.60	0.37	04:50	0.081	07:30	0.243	0.127	16932	
9/16/2016	04:25	4.61	08:00	6.06	5.20	05:00	0.27	06:50	0.60	0.36	05:00	0.076	06:50	0.234	0.121	16120	
9/17/2016	02:40	4.69	10:10	5.85	5.30	01:40	0.27	10:25	0.60	0.39	01:45	0.078	10:25	0.234	0.133	17844	
9/18/2016	04:30	4.60	10:00	5.91	5.31	04:55	0.28	23:00	0.55	0.39	04:30	0.079	09:55	0.214	0.134	17979	
9/19/2016	03:55	4.73	10:30	20.97	6.64	02:10	0.27	10:35	4.75	0.60	02:10	0.082	10:35	9.071	0.531	71001	0.45
9/20/2016	04:30	4.61	07:45	6.04	5.23	01:20	0.28	23:30	0.53	0.38	03:30	0.080	07:35	0.200	0.127	16945	
9/21/2016	04:20	4.63	07:30	6.14	5.24	02:40	0.27	07:40	0.58	0.37	02:40	0.080	07:40	0.240	0.126	16781	
9/22/2016	03:30	4.57	07:25	5.95	5.23	01:55	0.29	20:20	0.53	0.37	04:55	0.082	08:10	0.206	0.123	16479	
9/23/2016	04:25	4.59	07:15	5.99	5.23	04:25	0.29	07:40	0.59	0.36	04:25	0.079	07:40	0.235	0.123	16399	
9/24/2016	04:45	4.68	01:30	22.57	6.08	04:50	0.29	01:00	5.83	0.52	04:45	0.083	01:00	11.484	0.373	49903	0.28
9/25/2016	05:35	4.57	11:20	5.89	5.30	04:00	0.29	21:55	0.57	0.39	04:00	0.080	12:40	0.217	0.136	18129	
9/26/2016	03:30	4.67	08:05	6.11	5.27	02:50	0.29	08:40	0.52	0.38	04:50	0.084	07:05	0.197	0.128	17173	
9/27/2016	02:20	4.77	02:40	22.46	5.92	01:30	0.29	02:40	6.27	0.49	01:30	0.088	02:40	12.653	0.304	40689	0.25
9/28/2016	03:35	4.77	07:55	6.02	5.29	02:05	0.29	20:10	0.56	0.37	02:30	0.084	20:10	0.211	0.128	17060	
9/29/2016	03:55	4.55	07:30	6.06	5.17	03:45	0.24	06:35	0.56	0.37	03:45	0.066	07:40	0.216	0.122	16259	
9/30/2016	03:25	4.55	14:30	14.59	6.03	04:15	0.28	14:15	2.23	0.58	04:20	0.077	14:25	2.689	0.278	37161	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			720548	2.75
Avg	5.44	0.41	0.180	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:10	4.59	09:35	5.96	5.30	03:10	0.29	09:30	0.56	0.38	04:05	0.082	09:30	0.215	0.130	17429	
10/2/2016	03:30	4.63	10:35	5.87	5.28	01:50	0.27	13:25	0.54	0.38	03:30	0.080	13:25	0.196	0.130	17343	
10/3/2016	04:40	4.61	07:35	6.03	5.30	00:45	0.28	08:00	0.49	0.37	03:50	0.082	07:25	0.197	0.126	16859	
10/4/2016	04:05	4.54	07:55	5.94	5.25	02:10	0.27	20:55	0.48	0.36	04:10	0.078	08:00	0.184	0.122	16293	
10/5/2016	04:40	4.60	07:45	5.86	5.19	03:00	0.27	07:25	0.53	0.36	03:00	0.077	07:25	0.205	0.121	16225	
10/6/2016	03:40	4.59	07:55	5.92	5.21	01:55	0.27	11:35	0.55	0.37	02:35	0.076	07:45	0.190	0.123	16420	0.00
10/7/2016	04:40	4.62	08:05	5.86	5.24	03:30	0.28	07:00	0.56	0.37	03:30	0.077	07:00	0.209	0.123	16482	
10/8/2016	05:00	4.61	19:35	8.00	5.43	04:20	0.28	19:40	1.91	0.42	04:20	0.079	19:40	1.132	0.156	20903	0.13
10/9/2016	02:10	4.82	12:40	20.11	6.72	02:10	0.28	12:40	4.01	0.70	02:10	0.084	12:40	7.441	0.529	70773	0.52
10/10/2016	04:40	4.63	07:50	5.82	5.32	03:05	0.27	20:35	0.60	0.38	03:05	0.077	20:35	0.223	0.133	17735	
10/11/2016	04:20	4.59	08:10	5.91	5.20	03:50	0.27	20:00	0.60	0.36	03:50	0.075	20:00	0.219	0.120	16017	0.00
10/12/2016	03:35	4.53	07:25	5.88	5.21	04:10	0.27	07:45	0.48	0.36	04:10	0.074	07:45	0.178	0.121	16213	
10/13/2016	04:45	4.62	07:25	5.99	5.19	02:20	0.29	07:15	0.57	0.36	04:45	0.082	08:15	0.216	0.119	15930	
10/14/2016	04:25	4.61	08:35	5.90	5.19	01:55	0.28	08:55	0.55	0.35	03:15	0.079	08:55	0.214	0.118	15776	
10/15/2016	05:15	4.60	09:35	5.88	5.23	05:25	0.28	13:50	0.57	0.37	05:25	0.079	11:25	0.206	0.125	16658	
10/16/2016	04:00	4.62	11:25	5.91	5.25	03:20	0.27	14:05	0.51	0.36	03:40	0.077	11:40	0.190	0.124	16571	
10/17/2016	04:20	4.57	07:35	5.76	5.20	02:30	0.27	20:45	0.51	0.36	04:40	0.077	20:45	0.185	0.119	15894	
10/18/2016	03:10	4.63	07:35	6.00	5.21	02:25	0.27	08:30	0.49	0.36	02:25	0.078	08:30	0.183	0.121	16185	0.00
10/19/2016	03:50	4.57	08:00	6.01	5.19	05:45	0.28	07:30	0.55	0.35	04:40	0.083	07:30	0.216	0.118	15773	
10/20/2016	03:40	4.61	07:30	6.13	5.21	01:40	0.28	21:45	0.55	0.37	03:50	0.080	07:20	0.214	0.123	16459	
10/21/2016	04:20	4.64	13:45	21.20	8.81	02:05	0.26	13:40	3.03	0.59	02:05	0.074	13:40	5.623	0.644	86077	0.46
10/22/2016	04:00	4.82	04:25	25.38	6.05	02:45	0.28	04:20	5.80	0.49	02:45	0.085	04:20	8.737	0.278	37220	0.33
10/23/2016	04:50	4.65	20:10	5.95	5.32	03:20	0.27	21:05	0.51	0.37	04:05	0.078	19:50	0.190	0.129	17279	
10/24/2016	03:10	4.71	08:00	5.92	5.29	00:55	0.28	07:30	0.54	0.35	02:50	0.081	07:30	0.209	0.121	16209	
10/25/2016	04:05	4.54	07:50	6.02	5.27	04:10	0.24	07:50	0.53	0.36	04:05	0.065	07:50	0.215	0.123	16433	
10/26/2016	04:20	4.55	08:10	5.93	5.28	02:25	0.25	20:30	0.52	0.36	02:25	0.073	20:30	0.199	0.123	16395	
10/27/2016	03:40	4.57	20:15	28.29	8.60	05:15	0.27	19:45	7.61	1.00	04:00	0.079	19:45	15.766	1.373	183516	1.15
10/28/2016	04:35	4.98	07:40	6.17	5.45	04:40	0.31	07:50	0.62	0.38	04:35	0.096	07:50	0.263	0.137	18253	
10/29/2016	04:20	4.74	11:10	5.92	5.36	02:50	0.26	22:20	0.63	0.38	02:50	0.080	09:30	0.237	0.132	17676	
10/30/2016	06:25	4.54	16:40	28.18	6.09	05:35	0.26	16:40	6.42	0.50	05:35	0.076	16:40	13.316	0.361	48285	
10/31/2016	04:40	4.70	07:45	6.07	5.31	03:45	0.27	08:45	0.58	0.37	03:45	0.078	07:50	0.228	0.127	16931	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			862211	2.59
Avg	5.59	0.41	0.208	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

W5, Pipe Height: 24 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:00	4.55	08:00	5.95	5.24	04:50	0.26	08:55	0.51	0.35	04:40	0.073	08:55	0.189	0.119	15863	
11/2/2016	04:00	4.60	07:30	6.00	5.22	02:35	0.27	09:45	0.59	0.36	02:35	0.077	09:45	0.212	0.120	16076	
11/3/2016	04:15	4.53	07:30	5.98	5.18	03:45	0.27	09:35	0.54	0.35	03:45	0.077	07:45	0.199	0.117	15648	
11/4/2016	04:35	4.61	07:50	6.00	5.19	03:45	0.27	08:15	0.56	0.36	03:45	0.076	07:45	0.220	0.120	15995	
11/5/2016	03:20	4.66	11:05	6.03	5.29	01:55	0.25	18:40	0.54	0.38	01:55	0.075	20:10	0.196	0.129	17219	
11/6/2016	05:10	4.63	11:05	6.04	5.29	06:15	0.29	10:15	0.56	0.38	06:15	0.082	10:15	0.210	0.129	17232	
11/7/2016	04:35	4.53	08:30	6.06	5.21	04:35	0.27	09:10	0.61	0.36	04:35	0.073	09:10	0.232	0.122	16284	
11/8/2016	04:30	4.45	07:30	5.85	5.16	03:05	0.28	07:55	0.54	0.35	03:05	0.076	07:55	0.211	0.116	15573	
11/9/2016	04:20	4.54	12:20	6.43	5.27	02:30	0.27	12:20	0.60	0.37	03:35	0.075	12:20	0.266	0.125	16764	0.07
11/10/2016	02:10	4.70	08:15	5.78	5.19	02:20	0.29	07:55	0.56	0.36	02:20	0.085	07:55	0.213	0.120	16017	
11/11/2016	02:55	4.63	08:00	5.75	5.21	03:20	0.25	07:40	0.55	0.36	03:20	0.070	07:40	0.207	0.120	16102	
11/12/2016	04:25	4.49	10:05	5.91	5.22	05:30	0.26	09:55	0.53	0.37	06:00	0.070	09:55	0.209	0.124	16554	
11/13/2016	04:05	4.63	11:55	5.82	5.23	05:40	0.29	10:50	0.56	0.37	05:40	0.082	10:10	0.209	0.125	16699	
11/14/2016	03:40	4.44	07:30	5.98	5.20	02:00	0.27	18:50	0.51	0.36	02:00	0.076	18:50	0.184	0.120	15993	
11/15/2016	03:50	4.46	10:35	24.95	9.38	03:00	0.26	09:25	9.58	1.29	03:00	0.070	09:25	19.777	1.968	263122	1.50
11/16/2016	03:05	4.61	07:35	6.15	5.31	03:25	0.26	07:15	0.58	0.37	03:10	0.073	07:15	0.236	0.126	16881	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			508021	1.57
Avg	5.49	0.42	0.238	

Site Commentary

Site Information

WNY1	
Pipe Dimensions (in.)	Circular (84.00 in H)
Silt (in.)	0.00

Overview

A review of the hydrograph and scattergraph for WNY1 indicate this location experienced both open channel flow and back-water conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	10.84	3.61	7.088
Minimum	7.44	2.27	3.220
Maximum	110.87	10.06	250.306
Time of Minimum	9/15/2016 4:25 AM	5/24/2016 6:50 AM	9/30/2016 4:30 AM
Time of Maximum	7/1/2016 6:00 PM	7/1/2016 6:00 PM	7/1/2016 6:00 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

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

Site Report

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. WEST NEW YORK, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	WNY1	Meter Type:	TRITON+	Monitor S/N:	60797	Manhole #:	WNY1 Regulator
Address / Location:	EAST OF JF KENNEDY BLVD AND ANTHONY M DELFINO WAY INTERSECTION			Map Page #:		C5	
				Pipe Height:		84 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		84 Inches	
				I.P. Address		107.80.25.44	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 13, 2016	9:40 AM	Manhole Depth:	10.7 Feet	
Site Hydraulics:	SMOOTH FAST FLOW		Manhole Material / Condition:	Concrete	Good
			Active Drop Connections?	No	
			Pipe Material / Condition:	Concrete	Good
			Mini System Character:	COMMERCIAL	RESIDENTIAL
			Telephone Information:		
Depth of Flow (Wet Dof):	18 +/- 1		Access Pole #:	N/A	
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet	
Peak Velocity:	6 fps		Road Cut Length:	N/A Feet	
Silt:	0 Inches		Trench Length:	N/A Feet	

Other Information:

N 40.78508 W 74.00812

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other	X		Regulator	1'

Additional Site Information / Comments:

UPSTREAM INSTALLATION IN REGULATOR CHAMBER. UPSTREAM MANHOLE NOT SUITABLE DUE TO EXCESSIVE TRAFFIC PER NHSA. Photos affected by high moisture atmosphere. REQUIRES 5-PERSON CREW.

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Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** WNY1 **Classification (Below):** 4

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	☑
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	☑
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	☑
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

LARGE COMBINED SEWER REGULATOR CHAMBER

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
☑	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

5-PERSON CS ENTRY TEAM REQUIRED

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		*Reviewed/Approved*	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	5/9/2016

SCATTERGRAPH REPORT

WNY1

Flow Monitor

WNY1

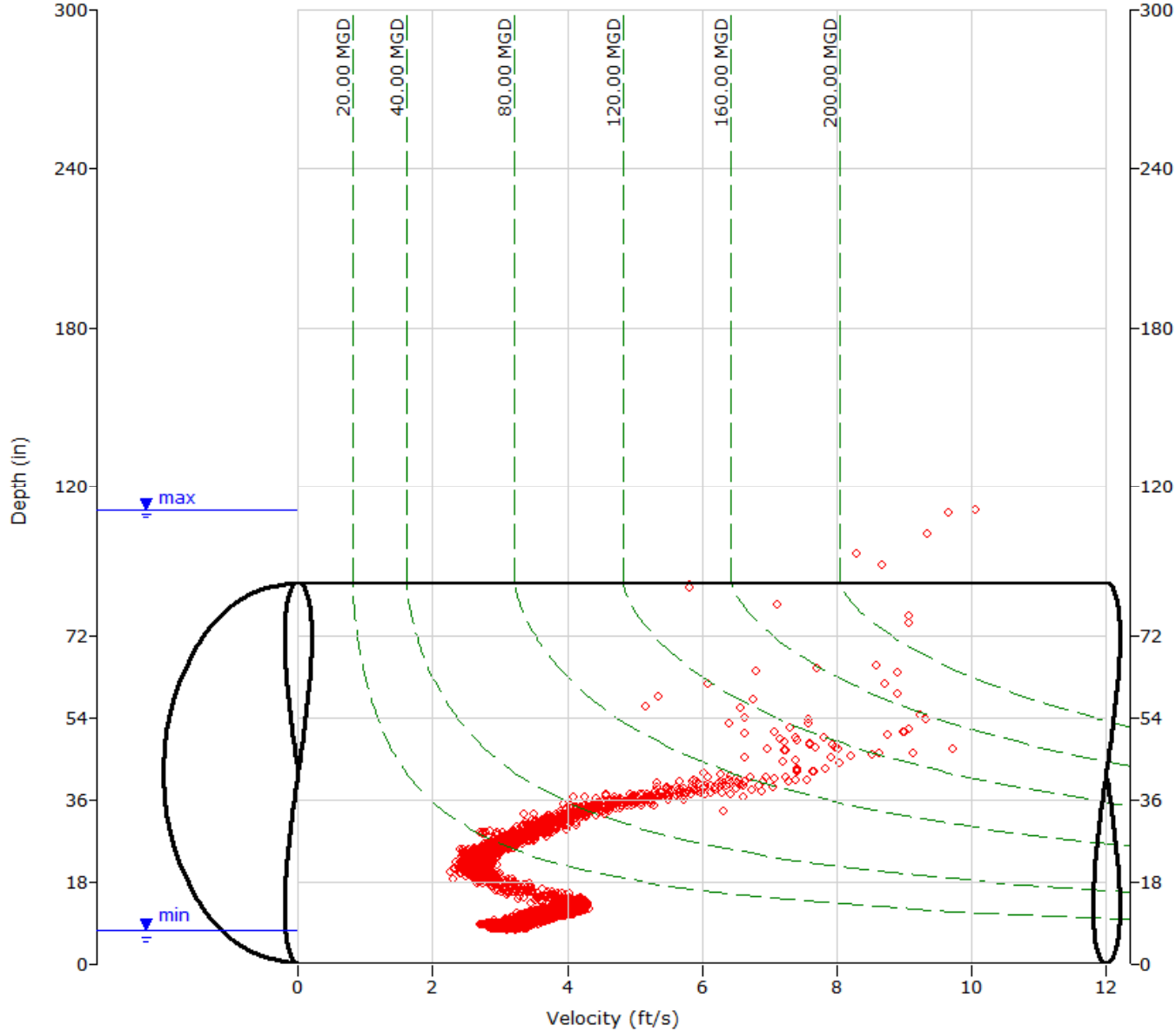
Pipe Height
84.00 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

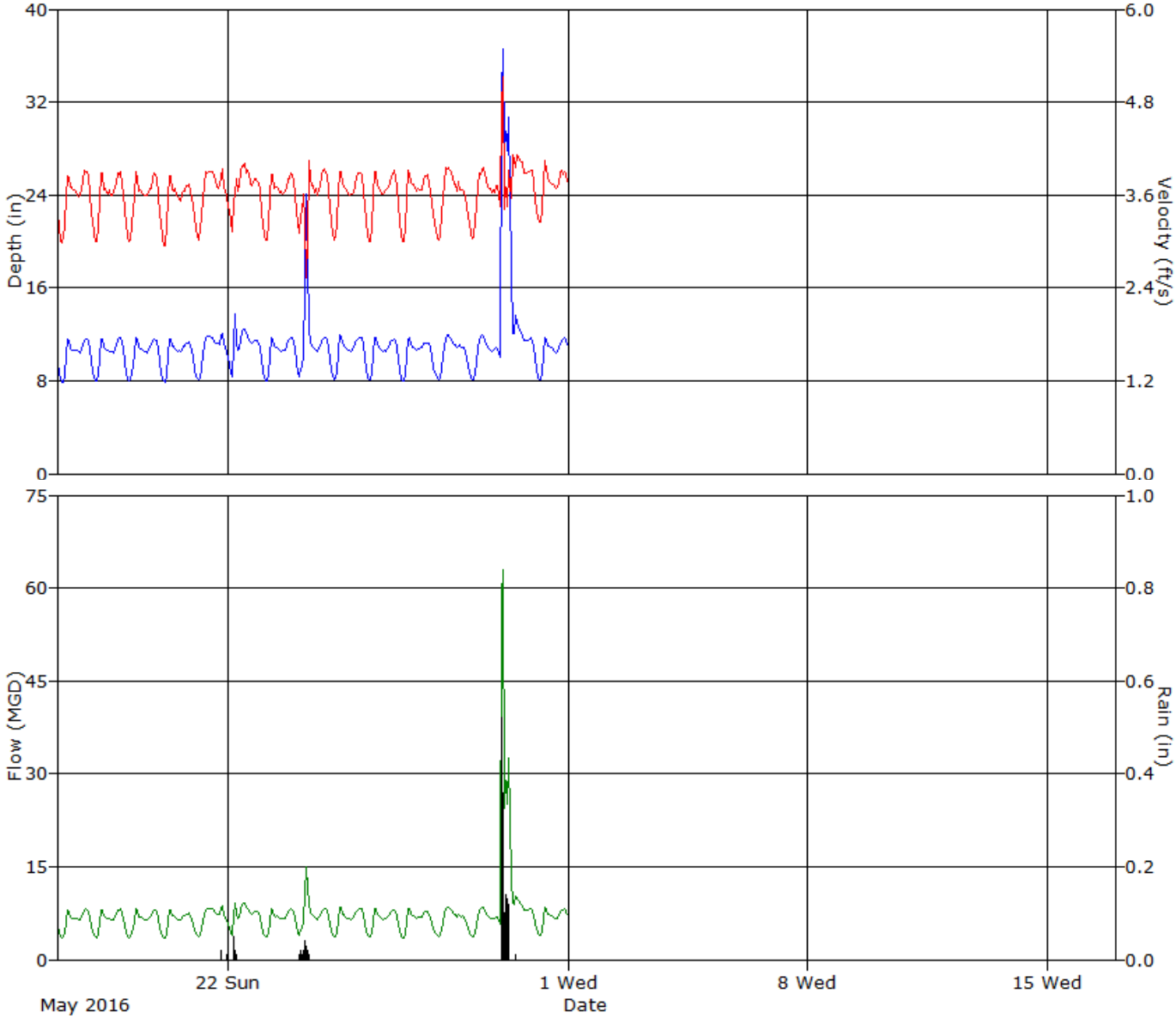
Pipe Height
84.00 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

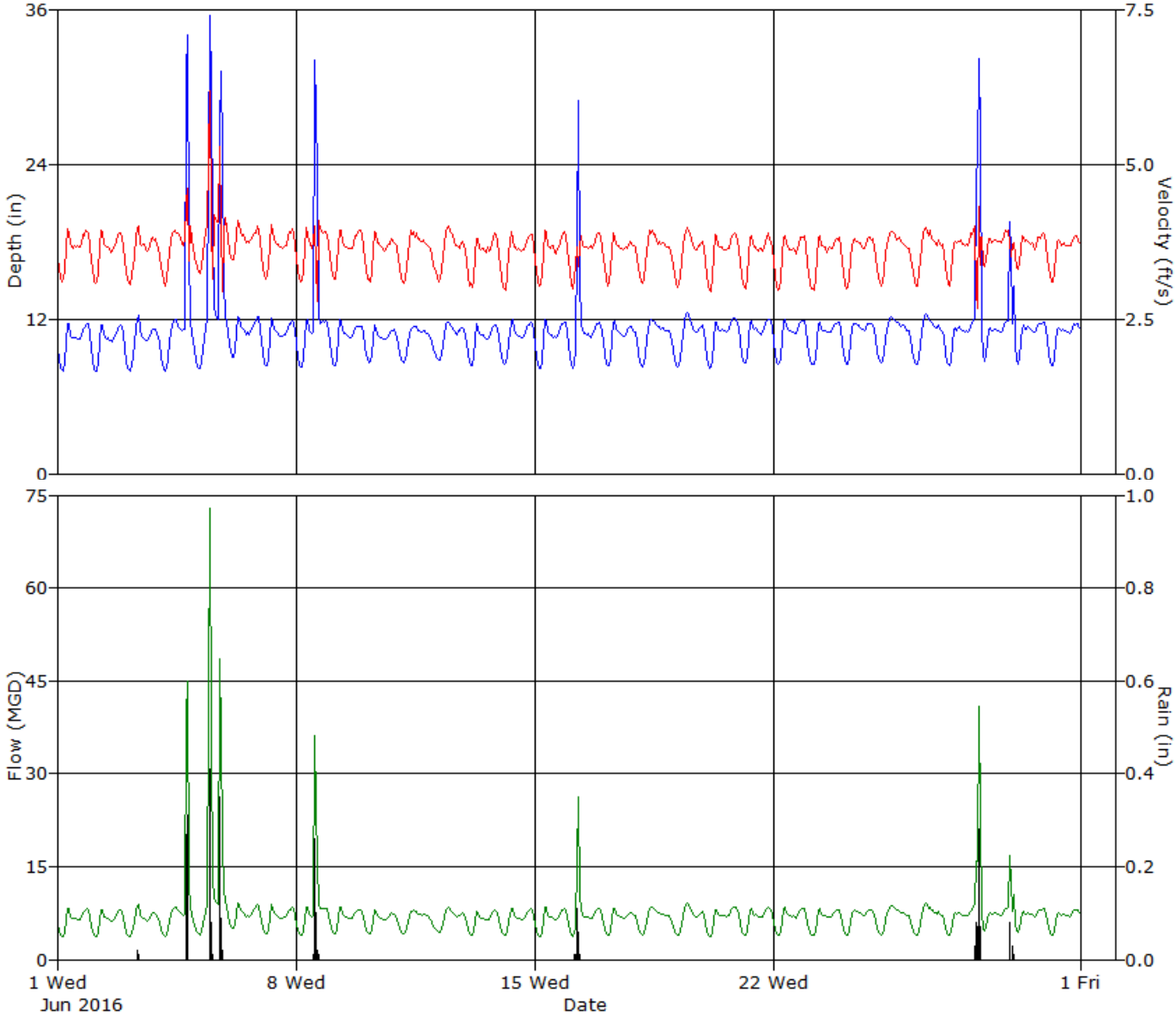
Pipe Height
84.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

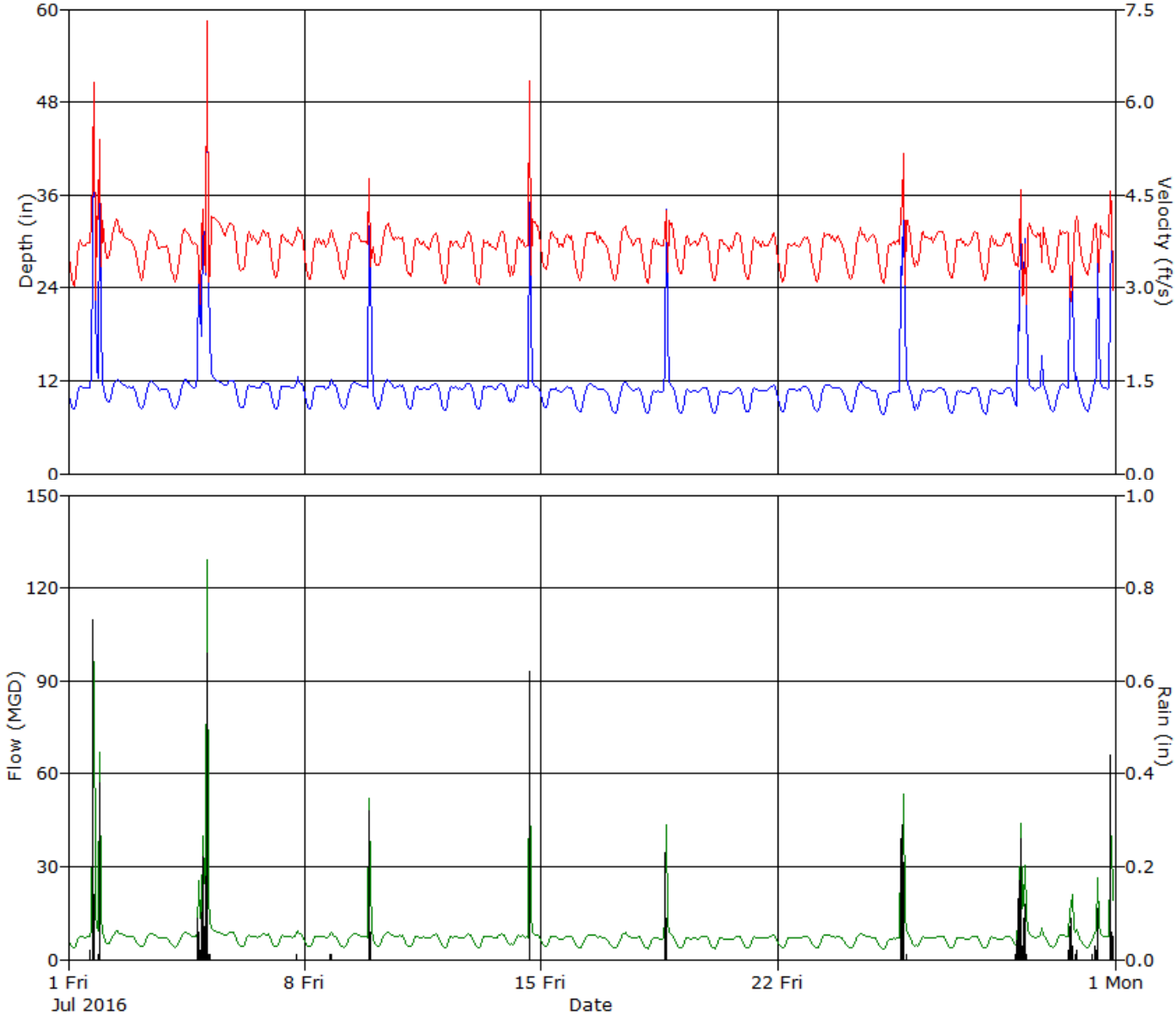
Pipe Height
84.00 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

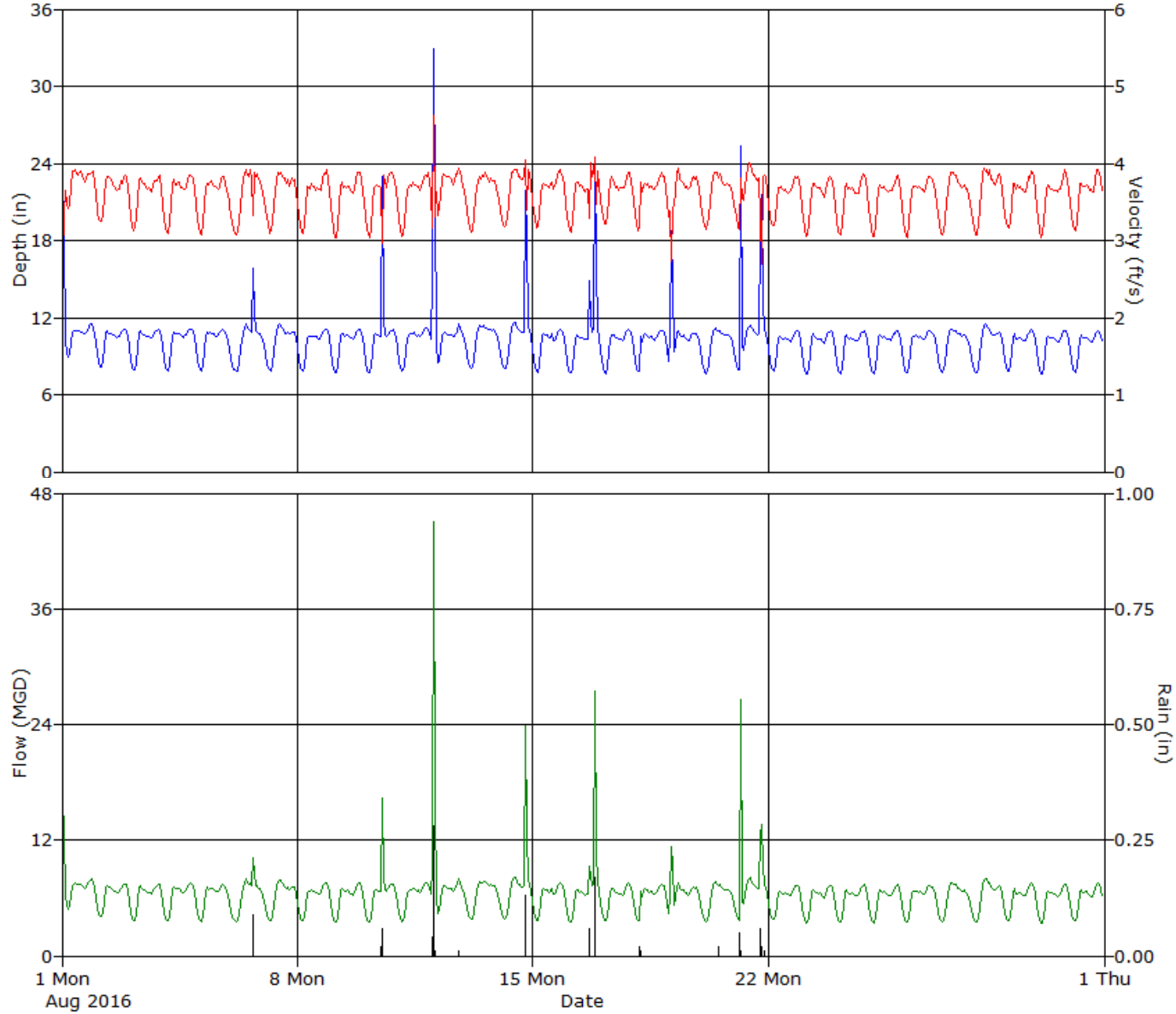
Pipe Height
84.00 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



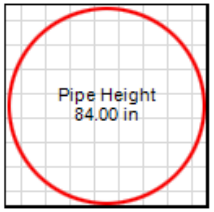
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

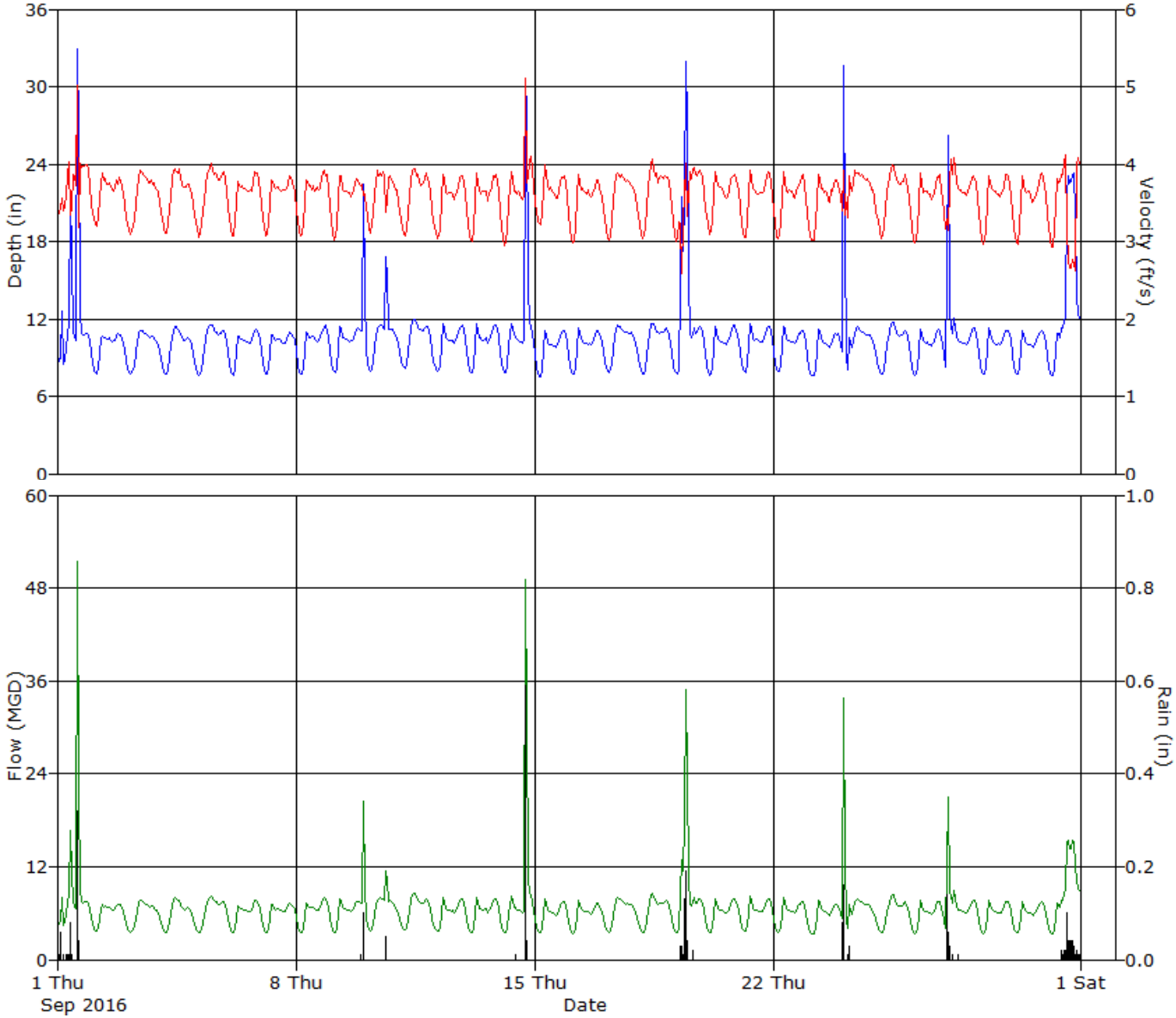


Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

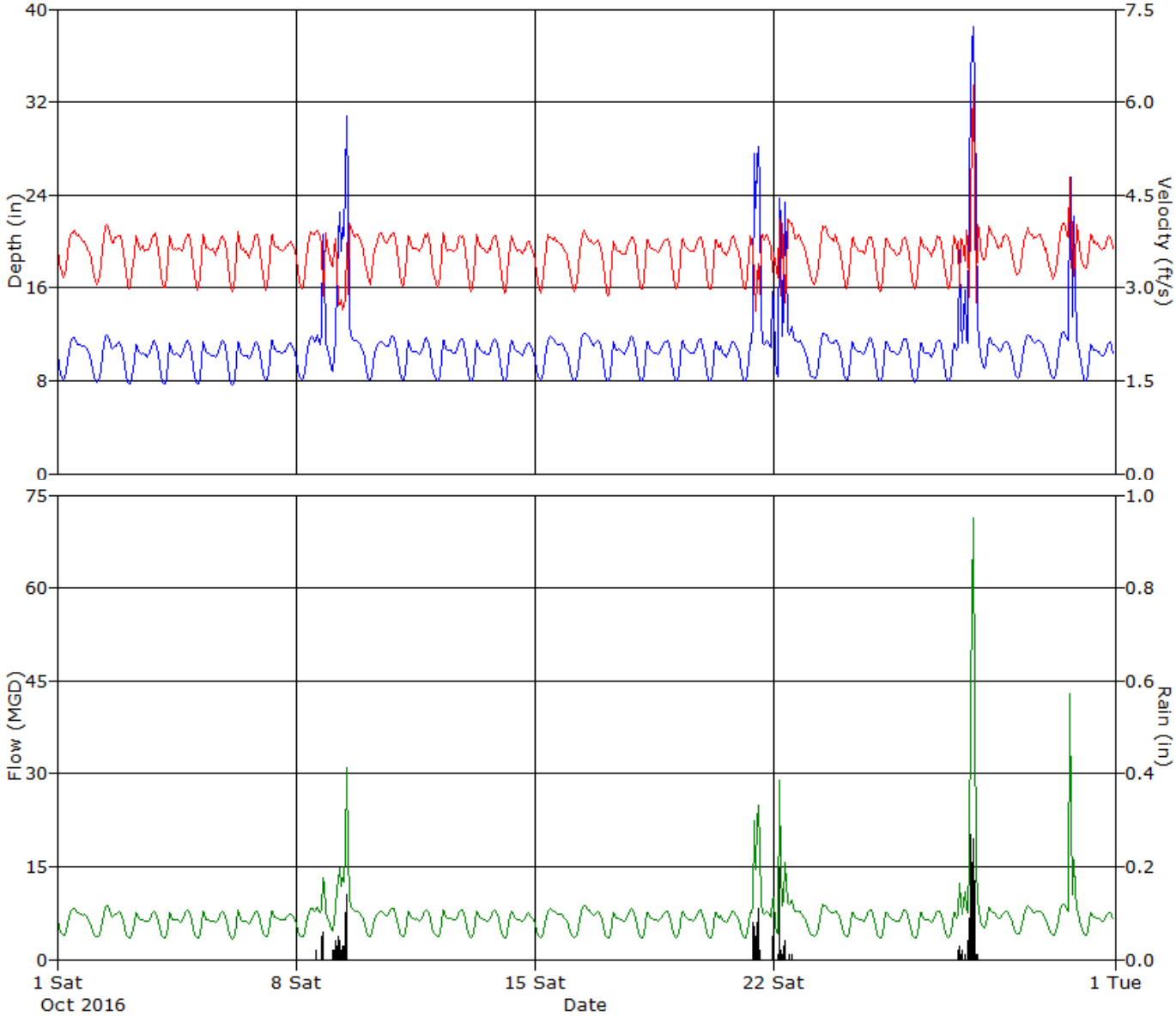
Pipe Height
84.00 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY1

Flow Monitor

WNY1

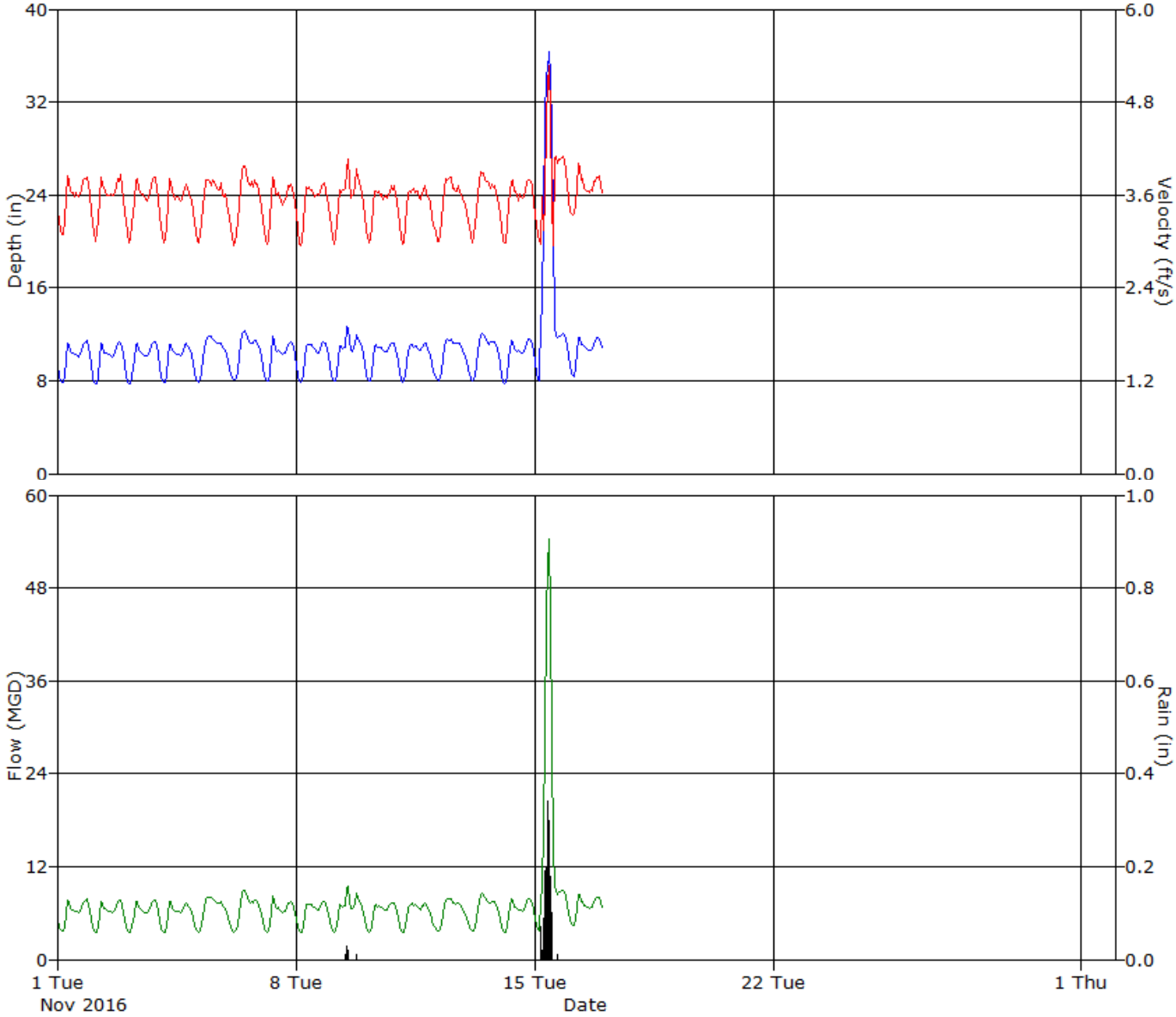
Pipe Height
84.00 in

Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	04:05	7.82	07:50	12.07	10.33	02:40	2.90	21:05	4.06	3.58	03:20	3.449	07:40	8.589	6.383	853258	
5/18/2016	04:20	7.90	08:00	11.96	10.35	04:20	2.96	22:10	4.08	3.58	04:20	3.494	08:10	8.637	6.394	854754	
5/19/2016	03:45	7.92	07:55	12.09	10.36	04:00	2.91	20:10	4.05	3.57	04:00	3.481	07:50	8.670	6.377	852521	
5/20/2016	04:25	7.85	07:55	11.98	10.31	03:55	2.86	07:50	3.95	3.52	03:55	3.391	07:50	8.530	6.258	836596	
5/21/2016	04:30	8.11	19:50	13.10	10.58	04:15	2.96	13:30	4.07	3.61	04:15	3.658	20:00	9.805	6.686	893736	0.03
5/22/2016	04:05	8.20	05:05	19.79	11.21	05:05	2.40	12:25	4.10	3.71	04:05	3.837	05:00	10.847	7.401	989314	0.08
5/23/2016	04:00	7.91	07:40	11.95	10.44	04:50	2.95	19:55	4.02	3.58	04:15	3.578	07:55	8.658	6.484	866782	
5/24/2016	02:35	8.16	07:30	25.18	11.76	06:50	2.27	09:20	4.12	3.57	02:30	3.734	07:35	16.173	7.484	1000519	0.16
5/25/2016	03:40	8.11	07:50	12.29	10.53	03:35	2.93	21:40	4.04	3.59	03:35	3.646	07:50	9.059	6.575	879016	
5/26/2016	04:15	8.01	07:55	12.16	10.46	04:15	2.90	07:40	4.09	3.60	04:15	3.501	07:40	8.791	6.521	871778	
5/27/2016	04:10	7.89	08:10	12.17	10.41	04:30	2.98	07:45	4.06	3.60	04:00	3.530	07:45	8.891	6.482	866464	
5/28/2016	04:20	8.08	10:05	12.04	10.47	03:55	2.99	11:05	4.05	3.60	04:20	3.700	11:05	8.814	6.549	875483	
5/29/2016	05:00	8.08	11:45	12.04	10.31	05:25	2.99	12:05	4.08	3.58	05:25	3.672	12:05	8.915	6.368	851302	
5/30/2016	01:15	9.36	01:45	82.62	16.81	01:30	2.49	01:50	9.24	3.95	01:10	5.096	01:55	215.209	16.219	2168168	1.38
5/31/2016	04:05	8.06	07:55	11.94	10.47	03:10	3.12	07:40	4.19	3.70	04:05	3.829	07:55	9.030	6.693	894114	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			14553810	1.65
Avg	10.99	3.62	7.258	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:05	7.94	08:00	12.16	10.33	02:55	3.04	08:00	4.14	3.63	03:35	3.664	08:00	9.191	6.463	864000	
6/2/2016	03:55	7.90	08:00	11.87	10.26	03:05	3.03	08:25	4.14	3.61	03:50	3.621	07:55	8.632	6.355	849544	
6/3/2016	04:30	7.92	09:05	12.59	10.31	04:30	2.95	08:10	4.04	3.60	04:30	3.498	09:05	9.326	6.389	854103	0.03
6/4/2016	04:45	7.95	19:15	39.72	12.58	21:15	2.53	19:15	6.53	3.69	04:50	3.561	19:15	75.640	9.781	1307486	0.58
6/5/2016	05:25	8.06	11:25	54.05	15.05	20:35	2.52	18:50	8.98	3.88	05:05	3.885	18:50	141.280	14.717	1967399	0.96
6/6/2016	03:20	8.93	08:00	12.40	10.97	03:30	3.34	08:10	4.22	3.79	03:30	4.770	08:10	9.536	7.308	976979	
6/7/2016	04:00	8.30	07:55	12.40	10.63	03:05	2.90	07:35	4.27	3.66	03:05	3.872	07:35	9.645	6.784	906869	
6/8/2016	03:25	8.18	13:40	36.10	12.85	15:50	2.51	13:40	5.06	3.63	03:25	3.759	13:40	51.688	9.228	1233540	0.40
6/9/2016	04:20	8.32	08:10	12.24	10.55	03:45	2.92	07:55	4.16	3.64	03:45	3.806	07:55	9.313	6.661	890422	
6/10/2016	03:35	8.58	07:55	11.66	10.36	04:00	3.03	07:45	4.10	3.59	03:20	4.072	07:45	8.554	6.381	853025	
6/11/2016	04:10	8.56	12:55	11.57	10.45	04:00	2.99	09:35	4.08	3.61	04:00	4.010	09:35	8.074	6.510	870234	
6/12/2016	05:15	8.76	11:55	11.82	10.61	04:30	3.06	12:10	4.18	3.62	04:45	4.243	12:10	8.890	6.670	891634	
6/13/2016	04:00	8.21	08:00	11.85	10.44	04:20	2.74	20:10	4.02	3.55	04:20	3.604	20:35	8.150	6.389	854037	
6/14/2016	04:00	8.38	08:00	12.35	10.54	04:30	2.69	07:45	4.04	3.56	04:30	3.614	07:50	9.104	6.519	871447	
6/15/2016	04:00	8.09	07:55	12.38	10.52	03:20	2.98	07:45	4.10	3.59	03:25	3.717	07:50	9.342	6.558	876626	
6/16/2016	03:50	8.17	06:50	34.81	11.79	08:10	2.52	06:50	4.27	3.58	03:10	3.666	06:50	41.566	7.923	1059214	0.20
6/17/2016	04:10	8.30	07:50	12.02	10.54	04:45	3.00	08:15	4.01	3.57	04:45	3.839	08:15	8.656	6.525	872264	
6/18/2016	04:40	8.28	10:35	12.05	10.64	04:35	3.02	09:45	4.01	3.60	04:35	3.853	10:30	8.643	6.694	894899	
6/19/2016	04:55	8.28	11:50	12.60	10.69	04:45	2.90	11:30	4.03	3.58	04:45	3.679	11:50	9.326	6.712	897250	
6/20/2016	04:00	8.09	21:40	12.12	10.72	04:05	2.85	07:45	4.02	3.57	04:10	3.530	21:35	8.634	6.714	897518	
6/21/2016	03:55	8.56	07:50	12.15	10.78	04:15	2.94	08:00	3.95	3.56	04:15	3.927	08:00	8.711	6.730	899697	
6/22/2016	04:05	8.42	07:45	12.48	10.77	04:10	2.88	07:45	4.01	3.55	04:10	3.744	07:45	9.251	6.718	898061	
6/23/2016	03:55	8.45	08:00	11.95	10.71	04:50	2.92	07:50	4.04	3.55	04:40	3.844	07:50	8.729	6.657	889867	
6/24/2016	04:05	8.44	18:50	11.76	10.79	03:30	2.86	18:30	3.93	3.58	03:30	3.789	09:40	8.166	6.775	905748	
6/25/2016	04:25	8.51	10:40	12.27	10.83	04:20	2.93	13:10	4.06	3.60	04:20	3.881	11:50	8.812	6.864	917579	
6/26/2016	04:55	8.44	11:25	12.50	10.81	04:55	2.94	11:30	4.05	3.62	04:55	3.835	11:30	9.336	6.891	921153	
6/27/2016	04:20	8.35	23:55	26.58	11.71	22:10	2.44	21:50	4.09	3.55	04:50	3.813	23:55	19.611	7.469	998433	0.18
6/28/2016	04:45	8.67	00:40	39.98	13.03	01:45	2.79	00:45	6.90	3.73	04:30	4.432	00:45	80.499	9.783	1307840	0.43
6/29/2016	04:30	8.50	01:00	20.97	11.05	01:00	2.58	00:50	4.27	3.69	04:05	4.302	01:05	12.559	7.186	960602	0.04
6/30/2016	04:10	8.34	22:20	11.86	10.63	04:00	3.02	20:00	3.93	3.60	04:00	3.882	22:15	8.343	6.666	890477	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			29277950	2.82
Avg	11.06	3.62	7.301	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:35	8.35	18:00	110.87	15.03	19:25	2.49	18:00	10.06	3.81	04:40	3.874	18:00	250.306	15.434	2063280	1.28
7/2/2016	05:15	9.10	00:00	12.74	11.03	03:20	3.36	10:25	4.18	3.81	04:45	4.970	00:00	9.931	7.395	988551	
7/3/2016	04:55	8.40	11:45	12.03	10.51	04:20	3.04	10:15	4.02	3.61	04:20	3.984	11:45	8.618	6.563	877292	
7/4/2016	04:55	8.37	21:10	34.80	12.05	22:25	2.44	21:05	4.65	3.56	05:10	3.910	21:05	45.309	8.071	1078986	0.27
7/5/2016	23:55	11.18	03:15	101.98	16.83	04:50	2.64	03:15	9.34	4.04	23:55	7.419	03:15	232.206	16.940	2264613	1.15
7/6/2016	04:35	8.51	18:20	12.17	10.80	03:25	3.21	18:15	4.16	3.71	03:25	4.280	18:15	9.138	7.013	937442	
7/7/2016	04:00	8.27	19:05	12.78	10.71	04:00	3.13	18:45	4.11	3.67	04:00	3.968	18:50	9.556	6.860	917001	0.01
7/8/2016	04:25	8.35	19:40	12.28	10.68	04:15	3.05	18:40	4.06	3.63	04:15	3.919	19:40	9.078	6.760	903643	0.02
7/9/2016	04:20	8.33	22:45	78.75	12.18	22:25	2.63	22:45	7.12	3.66	04:20	3.981	22:45	172.607	9.289	1241769	0.38
7/10/2016	05:10	8.30	00:00	24.00	10.93	00:00	2.62	10:30	4.17	3.72	05:30	4.252	00:00	15.390	7.147	955458	
7/11/2016	04:10	8.36	21:25	11.76	10.55	02:55	3.13	21:20	4.05	3.62	04:10	4.088	21:20	8.539	6.615	884264	
7/12/2016	04:10	8.16	20:00	11.68	10.55	03:45	3.02	20:45	3.97	3.60	03:45	3.776	20:45	8.225	6.607	883257	
7/13/2016	04:05	8.21	20:55	11.71	10.62	03:45	2.96	20:25	4.03	3.59	03:50	3.750	20:25	8.364	6.645	888315	
7/14/2016	02:35	9.13	16:25	47.01	12.21	17:25	2.66	16:25	9.72	3.77	04:45	4.599	16:25	139.173	9.941	1328886	0.62
7/15/2016	03:50	8.56	12:05	11.37	10.43	04:35	3.27	08:45	4.00	3.69	04:35	4.364	19:05	7.785	6.613	884013	
7/16/2016	05:10	7.94	12:00	11.68	10.25	04:40	3.04	11:00	3.97	3.64	04:40	3.631	11:00	8.255	6.406	856387	
7/17/2016	04:55	7.86	11:20	12.00	10.24	04:35	3.01	12:25	4.13	3.63	04:35	3.550	12:25	8.874	6.405	856164	
7/18/2016	04:05	7.76	17:00	57.91	11.60	18:15	2.52	17:00	6.76	3.65	04:05	3.503	17:00	123.587	8.392	1121824	0.32
7/19/2016	04:05	7.72	20:10	11.19	10.12	04:20	3.16	19:35	3.99	3.65	04:15	3.628	19:35	7.834	6.297	841802	
7/20/2016	04:20	7.70	20:40	11.12	10.05	03:25	3.01	20:45	3.96	3.61	04:00	3.455	20:45	7.697	6.155	822743	
7/21/2016	04:35	7.89	22:00	11.47	10.26	03:25	3.08	21:00	3.96	3.61	04:40	3.660	21:00	8.054	6.343	847977	
7/22/2016	04:05	7.98	19:15	11.39	10.28	03:25	3.07	18:55	3.91	3.60	04:10	3.702	18:55	7.872	6.334	846774	
7/23/2016	04:50	7.94	13:00	11.72	10.33	04:35	3.03	12:10	4.01	3.63	04:35	3.661	12:10	8.292	6.457	863196	
7/24/2016	04:45	7.96	12:25	11.90	10.27	04:25	3.06	12:05	4.06	3.64	04:50	3.712	12:30	8.658	6.421	858387	
7/25/2016	04:15	7.56	16:20	47.00	12.80	17:10	2.52	16:25	7.25	3.71	04:10	3.340	16:25	102.961	10.741	1435804	0.77
7/26/2016	04:40	8.02	19:55	11.11	10.22	02:05	3.28	19:20	3.99	3.72	04:35	3.998	21:25	7.674	6.481	866427	
7/27/2016	04:05	7.74	21:15	11.13	10.04	04:10	3.08	20:55	3.97	3.64	04:10	3.547	21:55	7.697	6.204	829377	
7/28/2016	03:55	7.69	21:25	11.15	10.05	03:40	3.04	19:35	3.97	3.63	03:40	3.456	19:35	7.747	6.190	827487	
7/29/2016	02:35	8.39	05:35	36.78	15.09	09:30	2.48	05:35	5.31	3.66	02:45	4.322	05:35	55.569	11.621	1553440	0.86
7/30/2016	04:20	7.98	18:00	29.55	12.34	17:30	2.45	20:45	4.26	3.61	04:20	3.833	17:55	27.707	8.255	1103504	0.24
7/31/2016	05:30	8.02	21:35	41.88	13.35	23:55	2.47	21:40	6.96	3.68	05:40	3.858	21:40	83.972	10.470	1398601	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			33026660	6.64
Avg	11.37	3.67	7.970	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:30	8.88	00:15	25.64	11.54	00:05	2.53	01:45	4.12	3.73	04:10	4.715	01:00	19.167	7.618	1018344	0.05
8/2/2016	04:15	8.09	20:55	11.11	10.22	04:35	3.13	07:55	3.98	3.65	04:35	3.904	07:55	7.671	6.352	849162	
8/3/2016	03:55	7.85	21:25	11.15	10.11	03:40	3.07	22:10	4.03	3.61	03:40	3.630	22:10	7.752	6.214	830711	
8/4/2016	04:05	7.84	20:50	11.18	10.15	04:35	3.04	20:30	3.92	3.60	03:45	3.579	20:30	7.694	6.239	833993	
8/5/2016	04:05	7.77	18:55	11.17	10.12	04:35	3.02	19:30	3.91	3.59	03:55	3.512	19:30	7.651	6.184	826631	
8/6/2016	04:15	7.78	16:45	23.55	10.36	16:35	2.35	17:25	4.06	3.60	04:45	3.466	16:45	15.447	6.433	860013	0.09
8/7/2016	05:10	7.80	11:50	11.65	10.14	05:15	3.07	12:25	3.99	3.62	05:15	3.564	11:45	8.133	6.269	838004	
8/8/2016	04:20	7.80	20:55	11.11	10.02	04:20	2.99	21:35	3.97	3.60	04:20	3.474	21:35	7.697	6.108	816459	
8/9/2016	04:00	7.68	21:15	11.16	10.02	03:35	2.97	21:40	3.97	3.58	03:50	3.399	21:40	7.768	6.094	814624	
8/10/2016	04:05	7.69	13:20	28.14	10.61	13:55	2.47	14:10	4.10	3.58	04:10	3.422	13:20	23.011	6.611	883795	0.08
8/11/2016	03:50	7.82	20:45	11.32	10.12	03:40	3.01	20:55	3.99	3.59	03:50	3.510	20:55	7.789	6.196	828270	
8/12/2016	04:55	8.32	01:25	42.28	12.03	00:45	2.40	01:25	7.42	3.74	04:30	4.247	01:25	93.076	8.815	1178427	0.34
8/13/2016	04:45	8.01	10:05	11.52	10.30	05:00	3.04	14:20	3.95	3.62	05:00	3.690	13:45	8.052	6.415	857600	
8/14/2016	04:45	7.96	19:40	38.80	11.05	20:15	2.56	19:35	5.49	3.66	04:30	3.692	19:35	60.751	7.417	991522	0.13
8/15/2016	04:20	7.72	14:40	12.65	10.04	04:30	3.11	14:40	4.16	3.64	04:30	3.560	14:40	9.777	6.203	829178	
8/16/2016	03:50	7.63	20:30	39.84	10.96	21:05	2.50	20:30	5.66	3.60	04:10	3.373	20:30	65.752	7.261	970606	0.23
8/17/2016	04:05	7.59	20:55	11.15	9.96	04:10	3.13	20:10	3.97	3.64	04:10	3.508	20:10	7.684	6.114	817265	
8/18/2016	03:55	7.74	20:25	11.03	10.13	03:45	3.09	20:45	3.96	3.64	03:45	3.564	20:50	7.580	6.265	837570	0.03
8/19/2016	02:25	8.01	03:45	19.16	10.88	03:30	2.65	02:40	4.15	3.64	02:30	3.862	04:10	12.295	6.850	915691	
8/20/2016	04:35	7.60	11:05	11.35	9.97	04:05	3.08	11:35	3.96	3.62	04:35	3.492	11:05	7.847	6.112	817104	0.02
8/21/2016	04:50	7.68	05:05	39.81	11.73	19:00	2.57	05:05	6.26	3.63	04:50	3.442	05:05	72.688	7.905	1056754	0.15
8/22/2016	04:10	7.82	22:00	11.06	9.93	04:20	3.09	21:35	3.90	3.59	04:20	3.629	21:40	7.503	6.003	802515	
8/23/2016	03:50	7.58	21:10	11.01	9.87	03:20	2.97	21:35	3.93	3.57	03:45	3.381	21:35	7.453	5.930	792694	
8/24/2016	04:20	7.63	21:45	11.07	9.88	04:15	3.01	21:30	3.96	3.57	04:15	3.387	21:30	7.661	5.944	794610	
8/25/2016	04:10	7.63	21:30	11.02	9.89	03:35	3.00	20:10	4.01	3.56	04:45	3.410	20:10	7.656	5.942	794336	
8/26/2016	04:10	7.66	19:50	11.03	9.92	04:45	2.98	19:40	3.95	3.57	04:45	3.418	19:40	7.564	5.976	798933	
8/27/2016	04:15	7.73	10:25	11.13	9.97	04:25	3.02	10:45	4.04	3.59	04:20	3.470	10:45	7.896	6.075	812044	
8/28/2016	04:40	7.71	11:45	11.77	10.04	05:15	3.00	14:15	4.07	3.63	05:15	3.441	11:45	8.450	6.212	830466	
8/29/2016	03:50	7.79	20:30	11.20	9.94	04:55	3.10	21:40	4.00	3.61	03:40	3.619	20:50	7.758	6.053	809114	
8/30/2016	03:35	7.55	19:40	11.07	9.87	03:55	2.94	20:20	4.03	3.58	03:55	3.272	20:20	7.706	5.945	794738	
8/31/2016	04:15	7.73	20:45	11.03	9.88	03:20	3.08	19:45	4.04	3.61	03:20	3.569	20:50	7.763	6.003	801963	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			26703130	1.12
Avg	10.31	3.61	6.444	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:40	8.00	14:25	48.83	12.77	15:55	2.45	14:20	7.41	3.75	02:40	3.930	14:25	108.413	9.839	1315301	0.56
9/2/2016	04:10	7.66	19:25	10.90	9.90	04:00	3.02	20:30	3.93	3.63	04:00	3.438	20:30	7.359	6.052	809090	
9/3/2016	04:30	7.69	10:45	11.18	9.92	03:05	3.04	13:30	3.99	3.61	04:30	3.471	10:15	7.788	6.058	809876	
9/4/2016	05:10	7.70	11:50	11.56	9.89	04:05	3.04	14:00	4.12	3.61	04:05	3.509	11:40	8.291	6.040	807485	
9/5/2016	04:35	7.65	12:30	11.67	10.02	04:55	3.00	12:05	4.11	3.64	04:55	3.400	12:05	8.483	6.232	833064	
9/6/2016	04:05	7.61	20:40	11.31	9.92	04:25	3.03	20:30	4.12	3.60	04:25	3.413	20:30	8.193	6.026	805522	
9/7/2016	03:50	7.65	19:25	11.20	9.92	03:40	2.99	19:10	3.97	3.59	03:40	3.409	19:15	7.753	6.008	803208	
9/8/2016	03:40	7.63	20:55	11.80	10.09	04:15	3.01	20:50	4.07	3.60	04:15	3.403	20:50	8.626	6.199	828744	
9/9/2016	04:30	7.79	23:30	36.48	10.60	23:55	2.97	23:30	4.10	3.57	04:10	3.525	23:30	42.504	6.722	898613	0.11
9/10/2016	04:30	7.88	15:45	25.80	10.94	15:35	2.48	00:15	4.16	3.63	05:00	3.580	15:40	19.182	6.972	931966	0.05
9/11/2016	05:20	8.16	12:05	12.10	10.50	05:10	3.02	12:00	4.07	3.62	05:10	3.771	12:00	8.977	6.610	883613	
9/12/2016	03:15	7.93	07:50	11.97	10.16	03:25	2.95	08:20	3.99	3.56	03:25	3.520	07:45	8.374	6.184	826730	0.00
9/13/2016	03:50	7.81	07:40	11.94	10.16	03:55	2.94	07:30	3.94	3.56	03:55	3.424	07:40	8.487	6.190	827491	
9/14/2016	04:10	7.79	17:45	63.90	11.67	18:50	2.56	17:50	9.08	3.64	03:40	3.364	17:45	180.681	9.111	1217939	0.64
9/15/2016	04:25	7.44	07:35	11.39	9.77	04:25	3.10	07:55	4.15	3.62	04:25	3.365	07:40	8.183	5.936	793519	
9/16/2016	03:55	7.62	07:45	11.60	9.88	04:05	2.90	07:45	4.02	3.54	04:05	3.275	07:45	8.345	5.891	787521	
9/17/2016	04:30	7.84	10:40	11.76	10.16	04:25	2.97	10:25	4.01	3.59	04:25	3.477	10:25	8.218	6.260	836880	
9/18/2016	04:35	7.61	10:35	11.78	10.16	03:50	2.96	11:30	4.11	3.64	04:55	3.380	10:35	8.656	6.358	849908	
9/19/2016	04:15	7.72	10:40	33.70	13.26	08:20	2.40	10:35	4.54	3.55	03:50	3.366	10:45	41.771	9.393	1255653	0.45
9/20/2016	03:50	7.58	21:00	11.70	9.99	03:50	3.02	20:10	3.98	3.60	03:50	3.366	07:35	8.216	6.105	816057	
9/21/2016	04:10	7.83	07:50	11.98	10.13	04:20	2.98	07:50	4.12	3.59	04:20	3.482	07:50	8.952	6.204	829337	
9/22/2016	03:50	7.83	08:00	11.84	10.02	04:10	2.97	07:05	3.95	3.56	04:10	3.505	08:00	8.437	6.062	810400	
9/23/2016	04:00	7.56	07:40	11.57	9.81	03:15	2.93	08:10	4.05	3.54	04:10	3.273	07:40	8.074	5.852	782328	
9/24/2016	04:50	7.88	01:35	34.02	11.64	02:20	2.61	01:35	4.55	3.73	04:40	3.797	01:35	43.007	8.087	1081128	0.28
9/25/2016	04:30	7.66	12:15	11.81	10.07	04:30	2.96	10:10	4.06	3.61	04:30	3.343	11:20	8.556	6.218	831208	
9/26/2016	03:30	7.61	07:30	11.48	9.84	03:50	2.93	21:00	4.00	3.54	04:10	3.301	07:50	8.040	5.870	784698	
9/27/2016	02:20	7.83	02:50	31.98	11.47	02:40	2.59	05:15	4.32	3.68	02:10	3.527	02:55	32.321	7.642	1021525	0.25
9/28/2016	04:00	7.68	07:45	11.69	9.93	02:50	2.88	21:05	3.97	3.55	04:00	3.304	07:45	8.259	5.967	797624	
9/29/2016	03:50	7.71	07:45	11.31	9.82	04:20	2.91	20:00	4.04	3.53	04:20	3.353	07:45	7.822	5.839	780532	
9/30/2016	04:10	7.58	14:30	26.11	13.83	16:35	2.44	13:15	4.20	3.36	04:30	3.220	14:40	19.829	8.892	1187872	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			26844840	2.75
Avg	10.54	3.59	6.694	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:50	8.06	12:40	11.76	10.34	05:00	3.07	12:00	4.14	3.64	05:00	3.752	12:00	8.668	6.481	866389	
10/2/2016	04:40	7.86	11:30	11.99	10.23	04:20	3.03	12:40	4.14	3.62	04:40	3.568	10:30	8.919	6.391	854339	
10/3/2016	04:15	7.66	07:40	11.49	10.00	03:50	2.92	21:35	3.94	3.57	03:50	3.326	07:40	8.018	6.060	810118	
10/4/2016	04:10	7.71	07:40	11.60	10.01	03:55	2.89	21:45	3.95	3.56	03:55	3.312	07:40	8.099	6.054	809343	
10/5/2016	03:55	7.68	07:40	11.74	10.00	03:50	2.92	07:35	4.01	3.55	03:45	3.330	07:40	8.325	6.027	805685	
10/6/2016	03:35	7.60	07:50	11.76	9.96	03:20	2.89	07:35	4.03	3.54	03:20	3.259	07:45	8.489	5.978	799161	0.00
10/7/2016	04:15	7.98	07:50	11.78	10.19	04:10	2.92	07:30	3.94	3.54	04:10	3.512	08:10	8.282	6.164	823995	
10/8/2016	04:35	8.03	19:50	24.98	11.17	19:00	2.47	20:35	4.24	3.55	04:35	3.534	19:55	17.278	7.035	940503	0.13
10/9/2016	02:15	8.54	12:45	32.58	15.19	13:45	2.38	05:45	4.18	3.43	02:10	4.280	12:50	36.106	10.423	1393367	0.52
10/10/2016	03:30	8.01	20:45	12.02	10.45	04:00	2.96	12:05	4.02	3.63	04:00	3.617	20:45	8.643	6.575	879012	
10/11/2016	04:05	7.99	20:15	11.86	10.25	03:30	2.91	21:30	4.05	3.57	03:30	3.533	20:00	8.371	6.286	840343	0.00
10/12/2016	04:10	7.91	07:55	11.81	10.27	04:10	2.94	07:45	4.07	3.56	04:10	3.485	07:45	8.584	6.279	839409	
10/13/2016	04:10	7.90	07:40	11.83	10.22	03:00	2.87	20:50	4.05	3.55	04:10	3.407	07:45	8.430	6.216	831004	
10/14/2016	04:15	7.91	07:45	11.76	10.17	03:30	2.88	07:15	3.97	3.51	04:10	3.425	08:00	8.202	6.105	816122	
10/15/2016	04:20	8.03	10:55	11.93	10.40	04:30	2.85	14:20	3.99	3.54	04:25	3.456	11:35	8.364	6.379	852721	
10/16/2016	04:35	7.97	11:00	12.11	10.47	04:10	2.88	11:35	3.99	3.54	04:10	3.475	11:35	8.779	6.472	865187	
10/17/2016	04:15	7.89	20:45	12.02	10.27	04:20	2.83	07:50	3.91	3.50	04:20	3.360	20:45	8.488	6.191	827561	
10/18/2016	04:10	7.90	07:55	12.04	10.22	04:00	2.95	07:55	3.89	3.53	04:00	3.511	07:55	8.510	6.195	828160	0.00
10/19/2016	03:30	7.92	07:55	11.89	10.23	03:30	2.98	07:55	3.86	3.54	03:30	3.537	07:55	8.308	6.215	830812	
10/20/2016	04:00	7.88	07:45	11.76	10.17	04:00	2.97	19:50	3.93	3.53	04:00	3.497	07:45	8.131	6.146	821538	
10/21/2016	03:55	7.91	13:50	29.89	13.91	23:35	2.43	15:15	4.16	3.44	03:30	3.411	13:50	28.119	9.497	1269555	0.46
10/22/2016	04:05	8.21	04:30	39.01	13.17	00:10	2.46	04:30	6.12	3.67	04:05	3.808	04:30	69.243	9.380	1253895	0.33
10/23/2016	05:05	8.13	11:10	12.17	10.51	04:55	3.00	11:15	4.12	3.62	04:55	3.740	11:15	9.082	6.634	886793	
10/24/2016	04:05	7.95	20:40	11.90	10.26	03:40	2.91	19:50	3.98	3.54	04:10	3.495	20:45	8.401	6.241	834297	
10/25/2016	03:50	7.86	19:40	11.77	10.20	03:30	2.91	08:35	3.91	3.52	03:30	3.451	20:55	8.176	6.147	821796	
10/26/2016	03:40	7.82	20:15	11.64	10.13	04:10	2.90	07:50	4.02	3.53	04:10	3.422	07:50	8.204	6.118	817886	
10/27/2016	04:00	7.93	20:20	45.36	16.20	17:10	2.32	20:20	7.92	3.72	03:45	3.470	20:20	108.535	15.358	2053045	1.15
10/28/2016	04:45	8.94	08:10	12.01	10.76	05:15	3.33	00:00	4.15	3.74	04:45	4.827	00:00	8.967	6.993	934805	
10/29/2016	04:10	8.22	12:00	12.04	10.54	03:20	3.13	11:00	4.17	3.65	04:10	3.943	11:00	9.002	6.695	895046	
10/30/2016	04:50	8.17	16:45	59.12	12.49	16:35	2.31	16:45	8.90	3.67	04:45	3.866	16:45	166.408	9.504	1270488	
10/31/2016	04:15	7.93	21:00	11.39	10.13	03:10	3.25	08:35	3.95	3.64	03:10	3.908	21:20	7.800	6.253	835360	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			29207740	2.59
Avg	10.92	3.57	7.048	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

WNY1, Pipe Height: 84 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	04:10	7.76	07:55	11.57	10.06	04:10	2.89	07:30	3.93	3.57	04:10	3.329	21:30	8.063	6.104	815968	
11/2/2016	04:00	7.67	07:40	11.52	10.00	03:35	2.99	07:40	4.05	3.55	03:55	3.401	07:40	8.312	6.030	806132	
11/3/2016	04:10	7.68	07:55	11.57	10.05	04:00	2.92	21:20	3.97	3.54	04:05	3.333	08:00	8.037	6.052	809046	
11/4/2016	03:50	7.85	08:10	11.43	10.01	04:20	2.93	07:55	3.93	3.50	04:20	3.458	07:55	7.921	5.936	793528	
11/5/2016	04:25	7.82	11:25	11.96	10.35	04:45	2.87	09:30	3.92	3.53	04:45	3.369	11:30	8.339	6.318	844659	
11/6/2016	05:00	8.03	12:30	12.37	10.48	04:55	2.89	11:20	4.05	3.56	04:55	3.505	12:30	9.219	6.515	870863	
11/7/2016	04:05	7.94	08:35	12.01	10.18	05:05	2.90	08:15	3.99	3.49	04:20	3.497	08:40	8.368	6.083	813201	
11/8/2016	03:50	7.80	19:10	11.38	10.22	03:50	2.88	07:35	3.89	3.50	03:50	3.351	20:20	7.696	6.137	820456	
11/9/2016	04:00	7.96	12:30	15.04	10.45	04:05	2.93	12:55	4.17	3.56	04:05	3.507	12:35	10.709	6.473	865296	0.07
11/10/2016	03:45	7.88	19:30	11.42	10.21	03:40	2.90	21:00	3.81	3.49	03:40	3.456	19:30	7.699	6.090	814090	
11/11/2016	04:00	7.83	09:20	11.41	10.20	04:10	2.92	19:40	3.79	3.49	04:10	3.421	19:05	7.494	6.099	815333	
11/12/2016	04:15	7.97	13:30	11.68	10.31	03:30	2.94	13:10	4.03	3.52	04:10	3.535	13:10	8.351	6.259	836704	
11/13/2016	04:45	7.92	11:25	12.24	10.44	04:20	2.92	11:55	4.12	3.55	04:20	3.542	11:55	8.984	6.448	862000	
11/14/2016	03:45	7.71	07:40	11.88	10.22	04:35	2.89	08:05	3.97	3.52	04:05	3.374	08:05	8.316	6.183	826557	
11/15/2016	03:15	7.93	09:45	41.01	17.67	06:25	2.44	09:40	6.74	3.84	03:15	3.506	09:45	81.030	16.774	2242407	1.50
11/16/2016	04:10	8.31	08:00	12.09	10.59	04:55	3.25	07:25	4.17	3.67	03:40	4.256	08:05	9.078	6.732	899275	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			14735510	1.57
Avg	10.72	3.55	6.890	

Site Commentary

Site Information

WNY2	
Pipe Dimensions (in.)	Elliptical (75.63 in H, 77.38 in W)
Silt (in.)	0.50

Overview

A review of the hydrograph for WNY2 shows this location functioned mostly in free- flow conditions during the monitoring period of Tuesday, May 17, 2016 to Wednesday, November 16, 2016. The scattergraph further details the rain-induced back-water conditions and surcharge events, characterized by an increase in depth to the crown of the pipe or manhole entry, also observed during the study. Flow depth and velocity measurements recorded by the flow monitor are consistent with field confirmations conducted to date and support the relative accuracy of the flow monitor at this location.

Daily longtables displaying final quantities are also provided.

Observations

Average flow depth, velocity, and quantity data observed during Tuesday, May 17, 2016 to Wednesday, November 16, 2016, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	Depth (in)	Velocity (ft/s)	Quantity (MGD)
Average	23.75	0.64	3.672
Minimum	21.27	0.29	1.411
Maximum	77.04	7.27	80.749
Time of Minimum	6/14/2016 4:20 AM	9/13/2016 4:05 AM	9/13/2016 4:10 AM
Time of Maximum	7/1/2016 6:00 PM	7/5/2016 3:10 AM	7/1/2016 5:55 PM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.
Graphical data reports are based on an hourly average.

Data Quality

Data uptime observed during the Tuesday, May 17, 2016 to the Wednesday, November 16, 2016 monitoring period is provided in the table below.

Percent Uptime	
Depth (in)	99
Velocity (ft/s)	99
Quantity (MGD)	99

Site Report

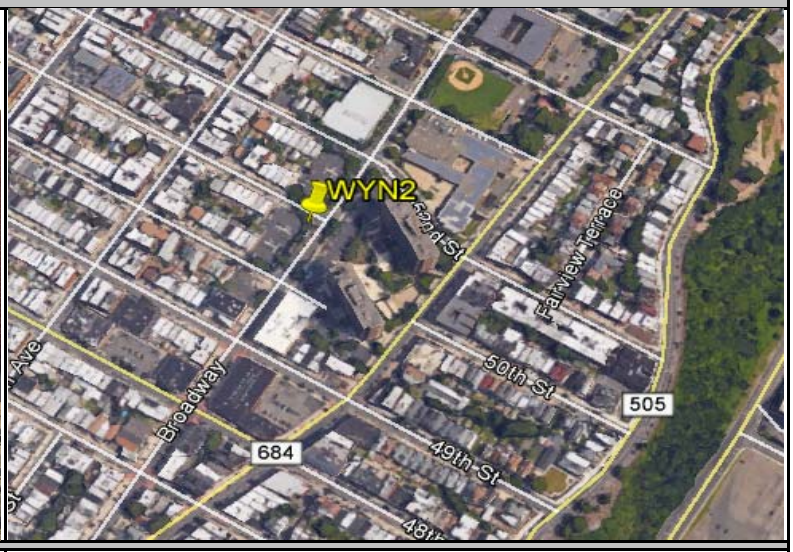
ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. WEST NEW YORK, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	WNY2	Meter Type:	TRITON+	Monitor S/N:	60809	Manhole #:	WNY2 Regulator
Address / Location:	211 51ST STREET			Map Page #:		D4	
				Pipe Height:		76 Inches	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		76.5 Inches	
				I.P. Address		107.80.25.45	



Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 13, 2016	8:50 AM	Manhole Depth:	13 Feet	
Site Hydraulics:	SMOOTH SLOW FLOW		Manhole Material / Condition:	Concrete	Good
			Active Drop Connections?	No	
			Pipe Material / Condition:	Brick	Good
			Mini System Character:	COMMERCIAL	RESIDENTIAL
			Telephone Information:		
Depth of Flow (Wet Dof):	2.8 +/- 0.5		Access Pole #:	N/A	
Range (Air Dof):	+/-		Distance From Manhole:	N/A Feet	
Peak Velocity:	1.5 fps		Road Cut Length:	N/A Feet	
Silt:	1 Inches		Trench Length:	N/A Feet	

Other Information:

N 40° 46' 52" W 74° 0' 56"

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Doppler Special Installation	Trunk		X		
Sensors / Devices:	CS4 COMBO SENSOR	Lift/Pump Station		X		
Surcharge Height:	Not Evident	WWTP		X		
Rain Gauge Zone:	RG1	Other	X		Regulator	1'

Additional Site Information / Comments:

UPSTREAM INSTALLATION IN REGULATOR (Chamber 1)

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** WNY2 **Classification (Below):** 4

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

*** Hazards found at this site (Discuss checked items below)**

Type	*No.*	*Specific Hazard*	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	☑
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	☑
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	☑
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
LARGE COMBINED SEWER REGULATOR CHAMBER

*** Site Classification**

	Class	*Description*
	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
☑	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

NHSA TO PROVIDE TRAFFIC CONTROL
5-PERSON CS ENTRY TEAM REQUIRED

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☐ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

Approved		***Reviewed/Approved***	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	5/9/2016

SCATTERGRAPH REPORT

WNY2

Flow Monitor

WNY2

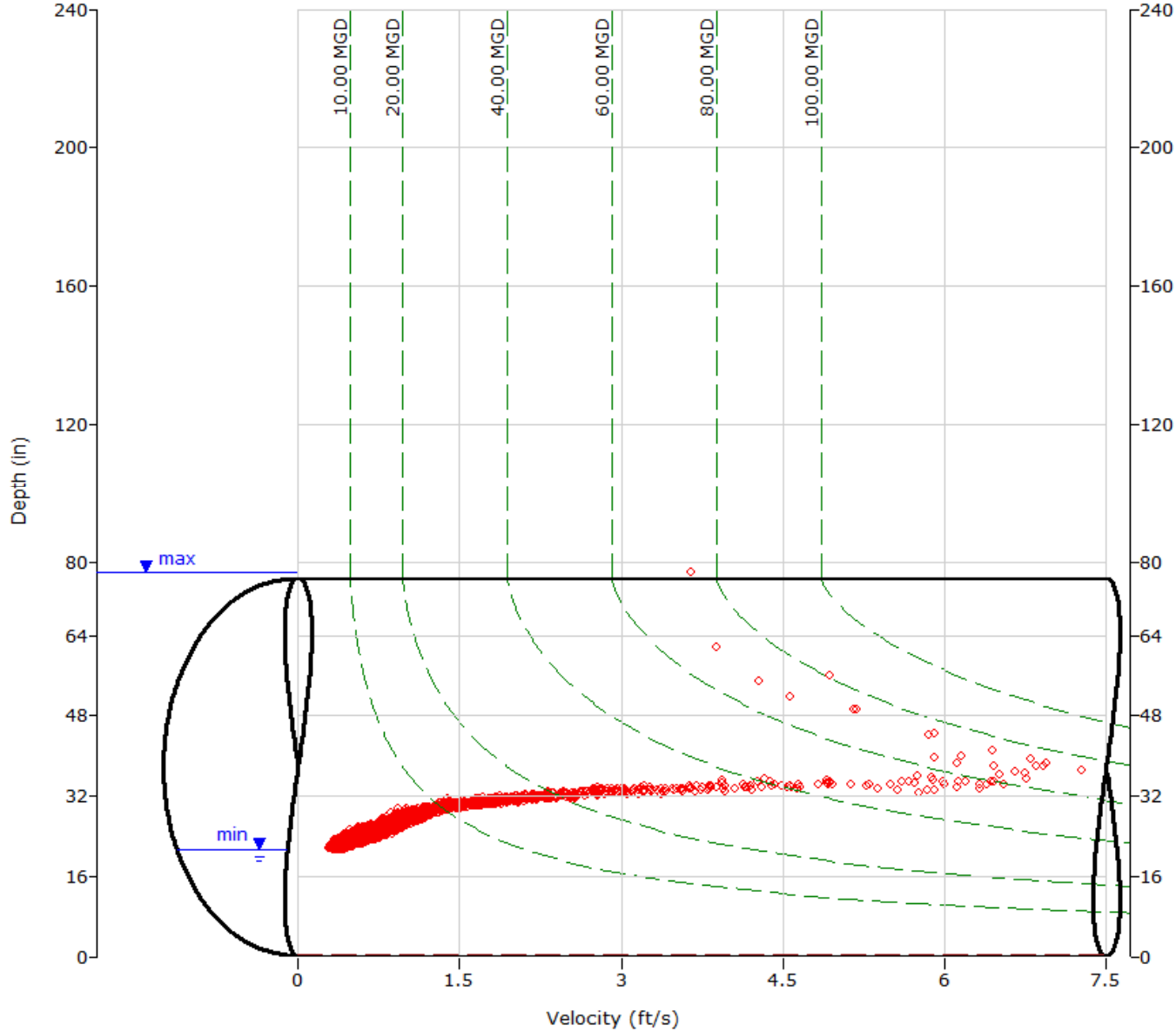
Pipe Height
75.63 in

Report Period

5/17/2016
To
11/16/2016

Legend

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



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

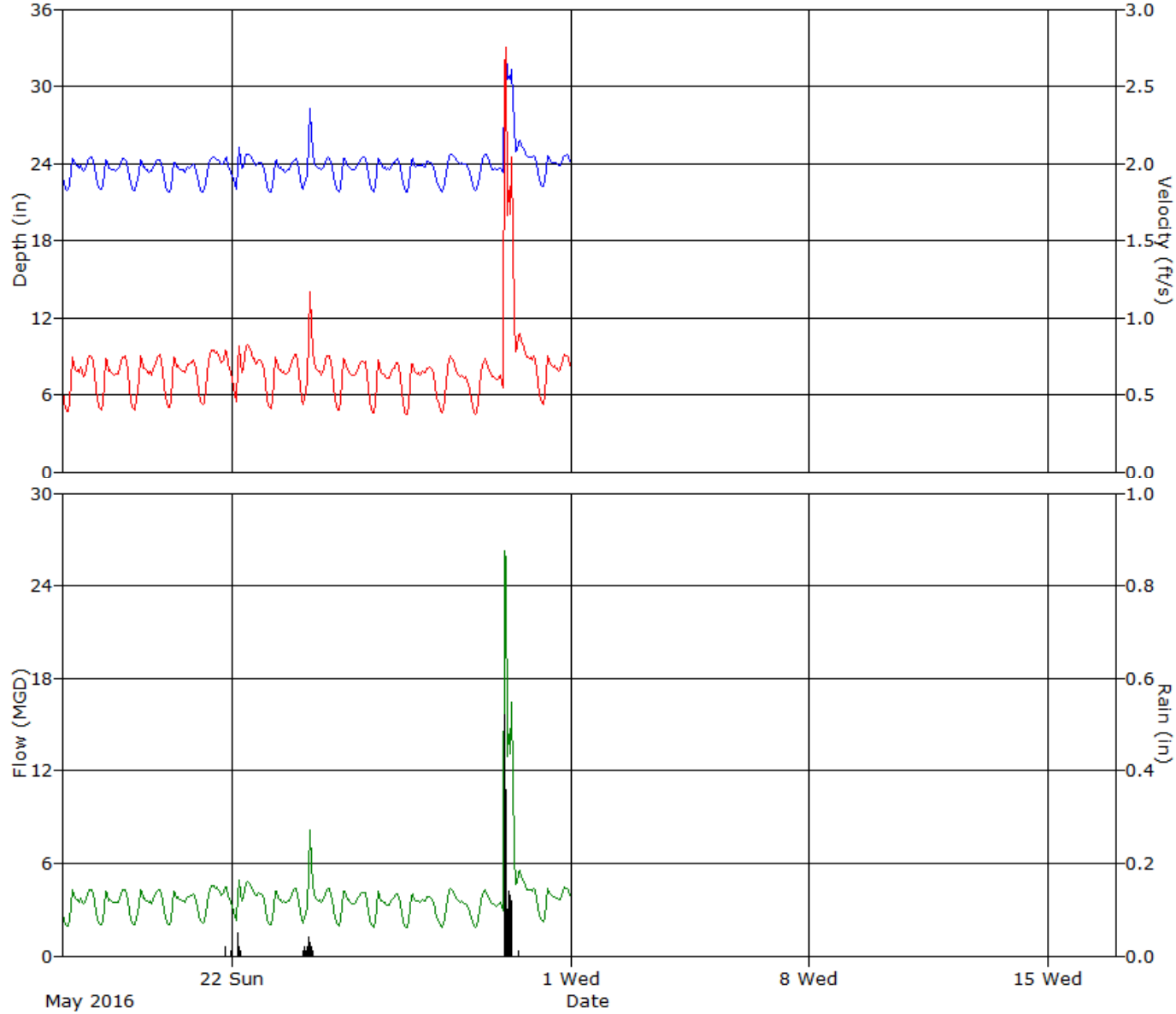
Pipe Height
75.63 in

Report Period

5/17/2016
To
5/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

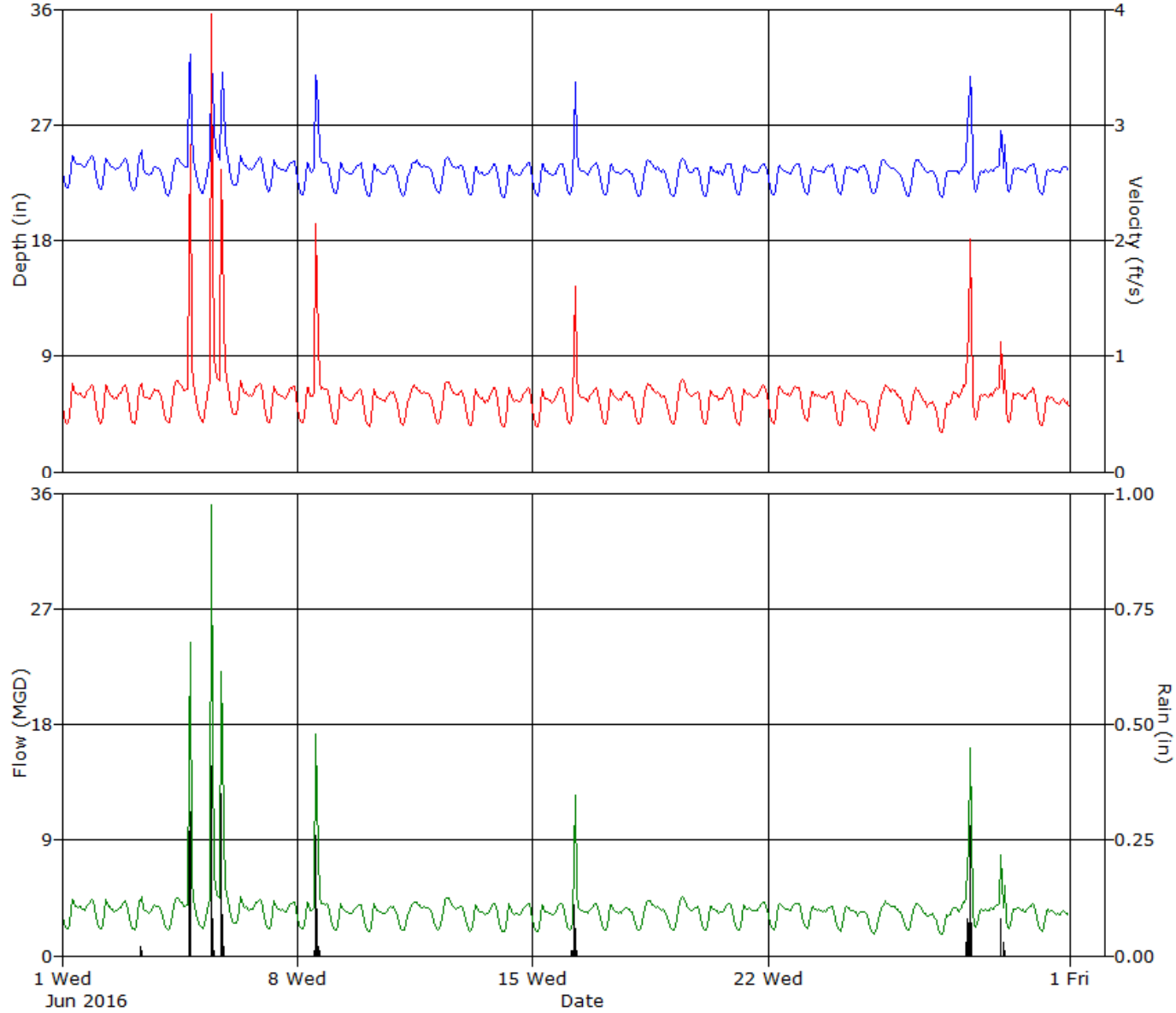
Pipe Height
76.00 in

Report Period

6/1/2016
To
6/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

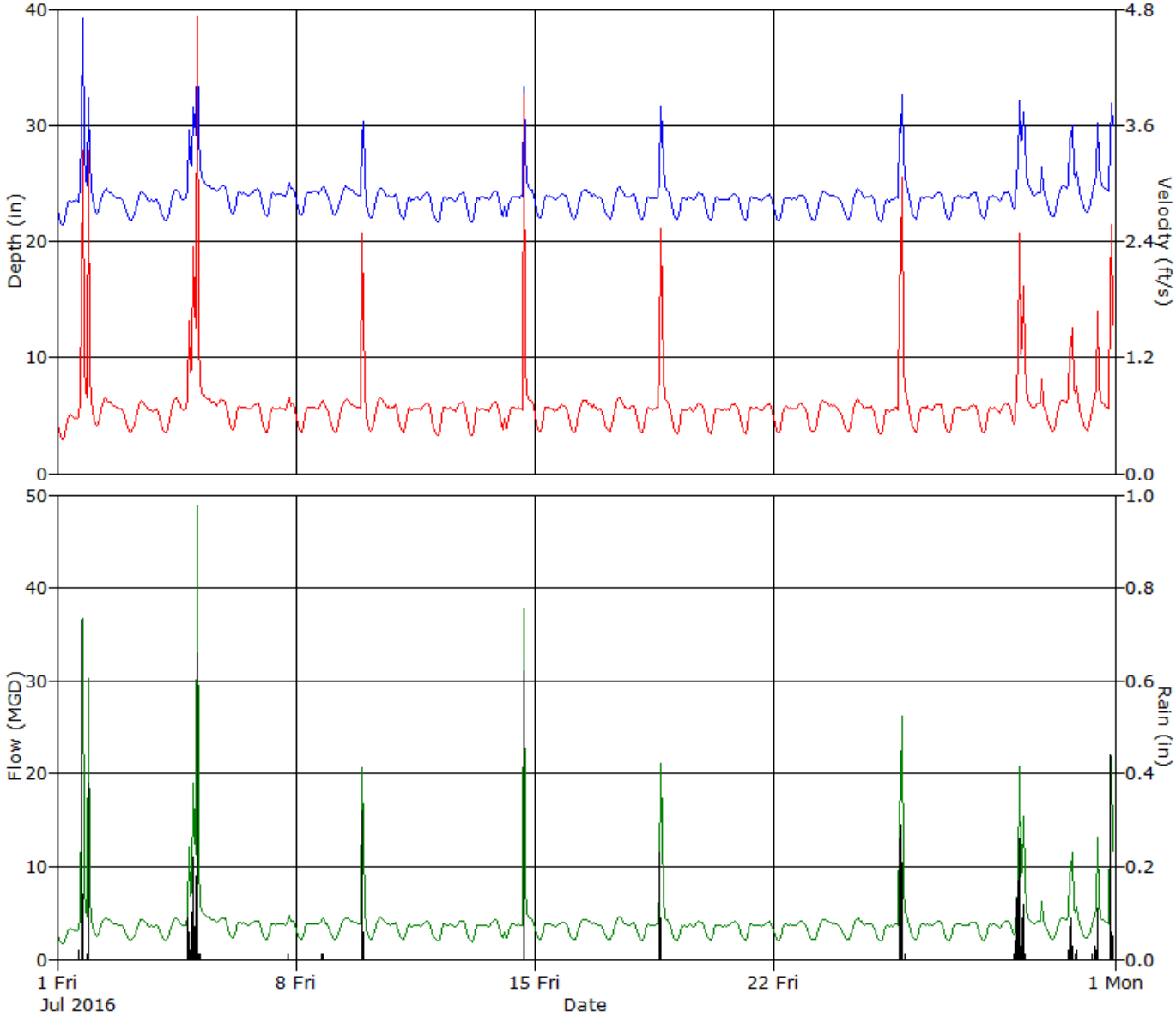
Pipe Height
75.63 in

Report Period

7/1/2016
To
7/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

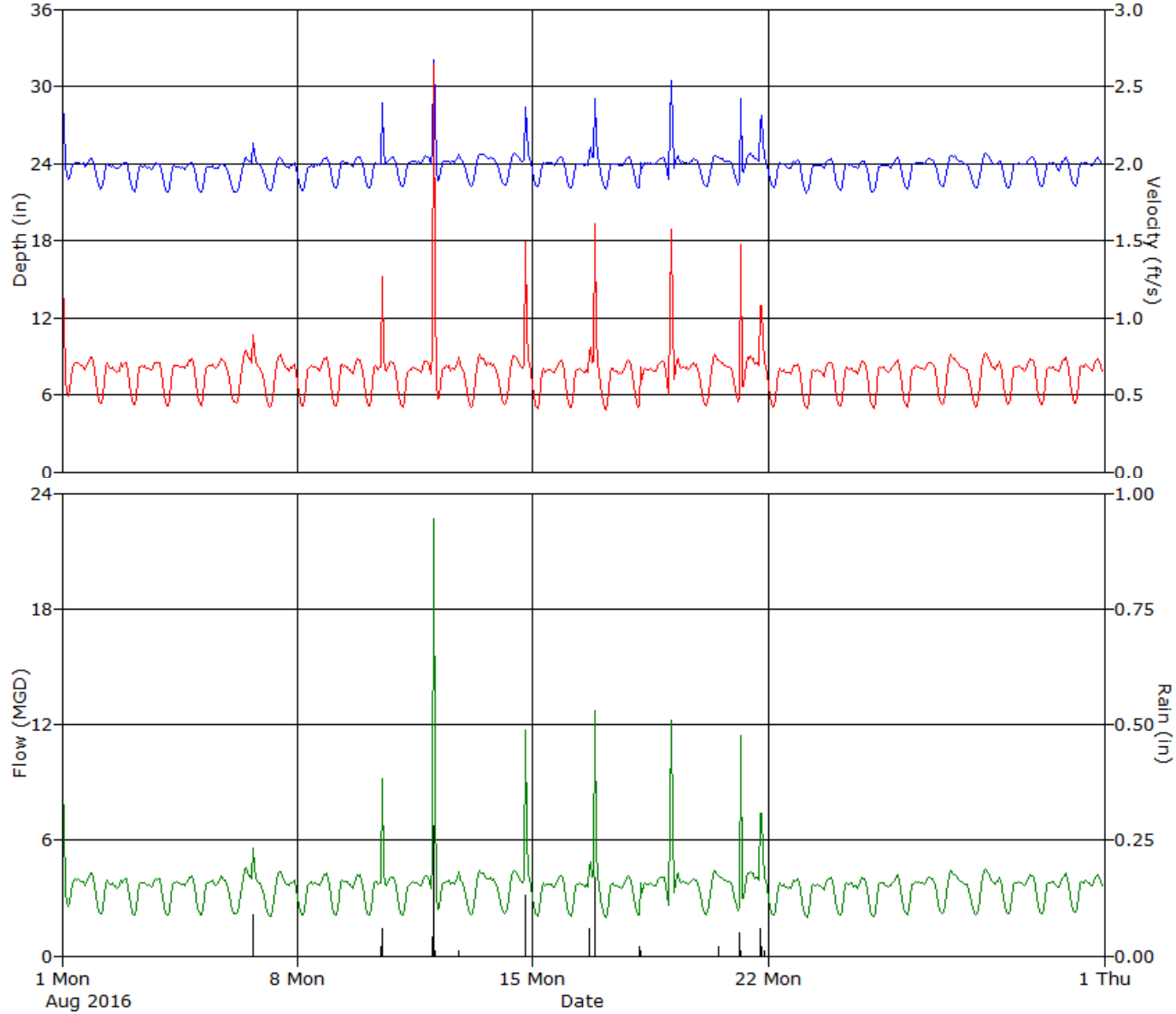
Pipe Height
75.63 in

Report Period

8/1/2016
To
8/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

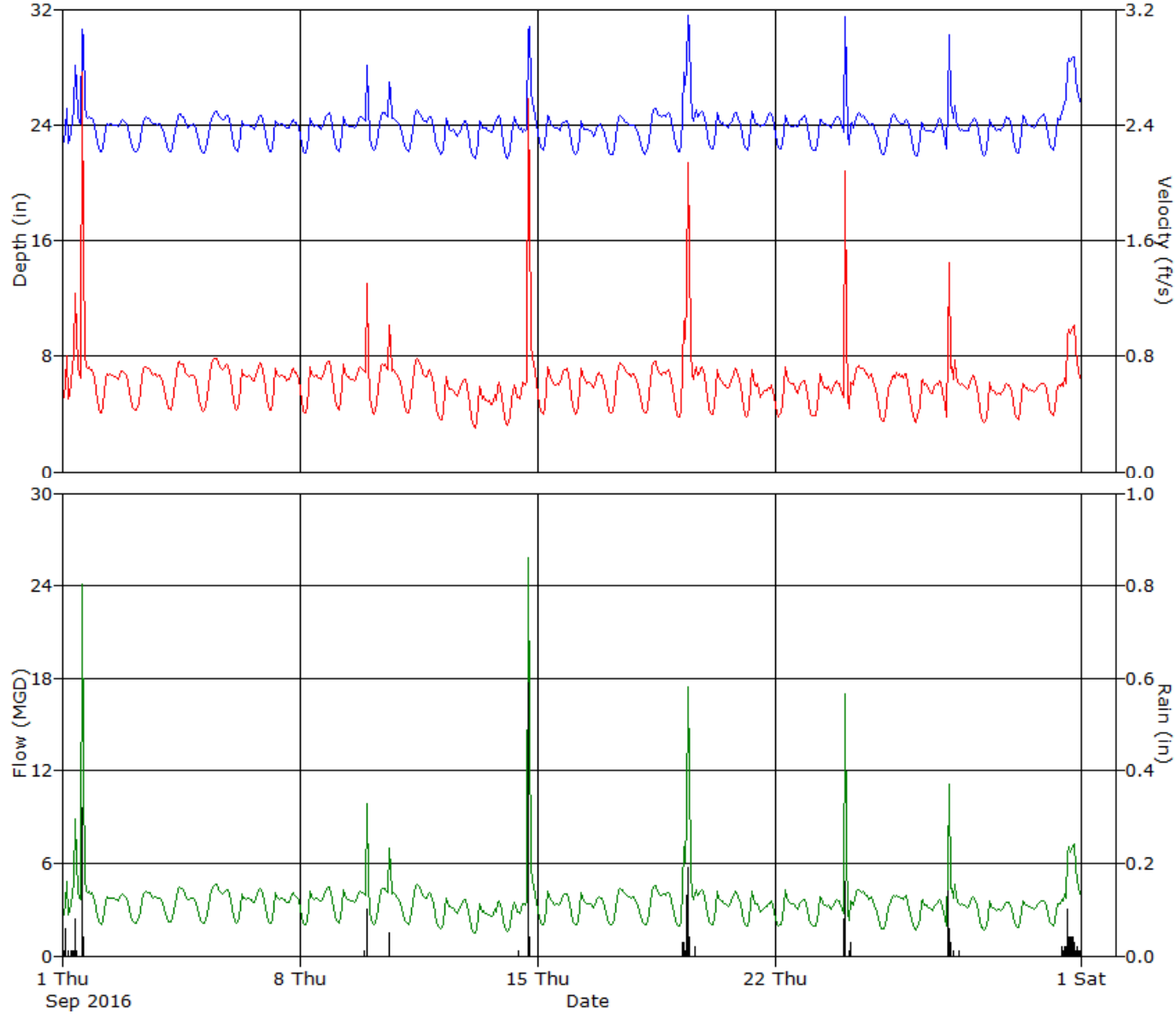
Pipe Height
75.63 in

Report Period

9/1/2016
To
9/30/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

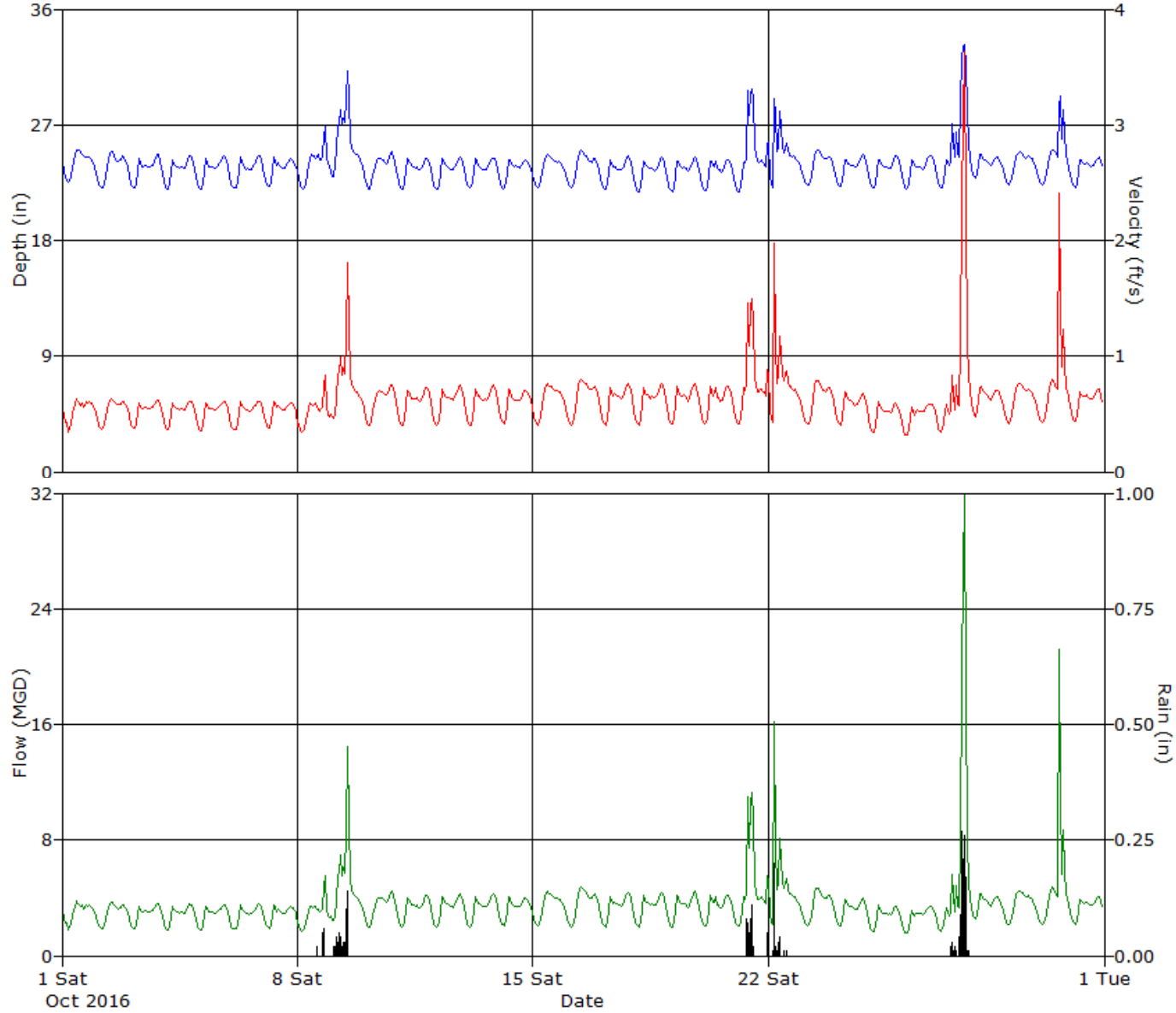
Pipe Height
75.63 in

Report Period

10/1/2016
To
10/31/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



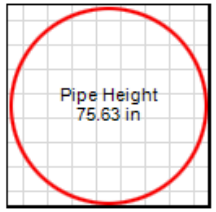
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

WNY2

Flow Monitor

WNY2

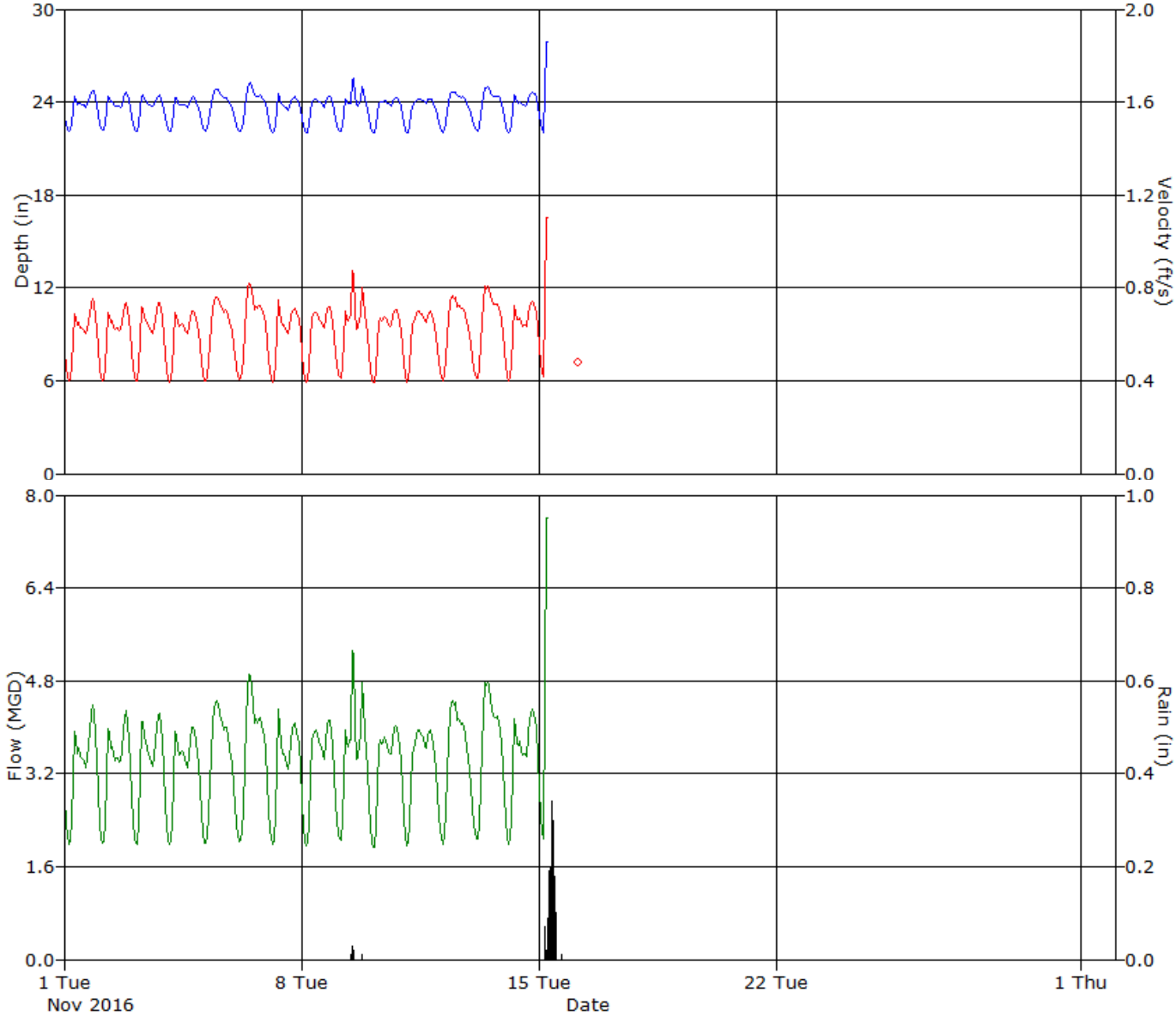


Report Period

11/1/2016
To
11/16/2016

Legend

- Depth
- Velocity
- Quantity
- Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

WNY2, Pipe Height: 76 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016	03:45	21.86	07:55	24.61	23.51	04:15	0.38	07:40	0.78	0.62	04:15	1.893	07:40	4.506	3.405	455235	
5/18/2016	03:50	21.93	07:55	24.52	23.45	04:30	0.40	19:20	0.78	0.62	04:30	1.965	19:20	4.490	3.389	452987	
5/19/2016	04:15	21.87	07:50	24.56	23.42	04:20	0.40	07:50	0.79	0.63	04:20	1.961	07:50	4.578	3.425	457917	
5/20/2016	04:00	21.71	07:50	24.38	23.29	04:00	0.40	07:55	0.78	0.63	04:00	1.960	07:55	4.464	3.412	456141	
5/21/2016	04:05	21.73	19:50	24.98	23.52	04:30	0.43	19:50	0.86	0.66	04:30	2.107	19:50	5.101	3.647	487586	0.03
5/22/2016	03:55	21.85	04:55	26.30	23.92	04:00	0.43	05:05	0.95	0.70	04:00	2.126	04:55	6.015	3.941	526845	0.08
5/23/2016	04:00	21.70	07:45	24.55	23.39	03:55	0.40	08:00	0.78	0.63	03:55	1.943	08:00	4.467	3.429	458438	
5/24/2016	02:30	21.90	07:30	28.97	23.98	02:40	0.42	07:25	1.28	0.69	02:40	2.096	07:35	9.286	3.917	523644	0.16
5/25/2016	04:40	21.74	08:05	24.60	23.49	04:15	0.39	08:00	0.77	0.61	04:15	1.921	08:00	4.479	3.369	450348	
5/26/2016	04:00	21.77	07:45	24.67	23.50	04:45	0.37	07:50	0.75	0.60	04:45	1.813	07:45	4.392	3.273	437528	
5/27/2016	04:05	21.75	07:55	24.59	23.49	03:05	0.37	07:50	0.74	0.60	03:35	1.794	07:50	4.276	3.271	437279	
5/28/2016	04:40	21.77	11:20	24.73	23.59	04:05	0.37	09:55	0.77	0.59	04:05	1.825	09:55	4.492	3.267	436782	
5/29/2016	04:35	21.78	11:30	24.79	23.44	04:40	0.37	11:30	0.76	0.58	04:40	1.818	11:30	4.457	3.174	424238	
5/30/2016	01:10	22.95	01:55	49.12	26.43	01:10	0.49	01:45	6.66	1.11	01:10	2.604	01:50	73.503	7.991	1068308	1.38
5/31/2016	03:55	22.20	07:45	24.75	23.81	04:25	0.43	07:30	0.79	0.65	04:10	2.155	07:30	4.607	3.629	484762	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			7558037	1.65
Avg	23.75	0.66	3.769	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

WNY2, Pipe Height: 76 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016	04:05	22.04	07:55	24.80	23.69	03:50	0.40	07:50	0.79	0.64	03:50	2.006	07:50	4.622	3.533	472283	
6/2/2016	03:45	21.87	08:00	24.61	23.52	03:50	0.41	07:45	0.79	0.63	03:50	2.020	07:45	4.552	3.457	462188	
6/3/2016	03:30	21.91	09:15	25.61	23.28	04:15	0.40	09:10	0.83	0.62	04:15	1.983	09:15	5.071	3.369	450311	0.03
6/4/2016	04:35	21.41	20:10	34.23	24.11	04:15	0.41	20:10	4.13	0.80	04:15	1.988	20:10	37.373	5.010	669754	0.58
6/5/2016	05:00	21.63	18:50	35.42	25.02	05:30	0.42	18:50	6.76	1.04	05:30	2.035	18:50	64.009	7.223	965559	0.96
6/6/2016	03:50	22.27	07:50	24.72	23.64	03:45	0.48	07:40	0.81	0.67	03:45	2.431	07:40	4.720	3.679	491831	
6/7/2016	03:55	21.72	07:50	24.45	23.37	04:00	0.41	07:40	0.76	0.63	04:00	2.004	07:40	4.386	3.437	459448	
6/8/2016	04:05	21.54	13:35	32.19	24.11	03:55	0.41	13:35	2.79	0.76	03:55	1.997	13:35	23.325	4.569	610745	0.40
6/9/2016	04:00	21.61	08:00	24.23	23.17	04:05	0.40	07:45	0.75	0.61	04:05	1.958	07:45	4.284	3.271	437207	
6/10/2016	04:45	21.44	07:35	24.14	23.09	04:50	0.39	07:40	0.74	0.60	04:50	1.850	07:35	4.199	3.202	428042	
6/11/2016	05:05	21.49	13:25	24.33	23.26	04:05	0.40	13:15	0.76	0.62	04:05	1.922	13:15	4.332	3.373	450925	
6/12/2016	05:35	21.71	11:40	24.56	23.34	05:05	0.41	12:40	0.80	0.63	05:05	2.000	11:40	4.624	3.440	459881	
6/13/2016	04:05	21.45	21:10	23.99	23.05	03:45	0.39	20:00	0.74	0.60	03:45	1.896	20:05	4.146	3.226	431254	
6/14/2016	04:20	21.27	22:00	24.22	23.02	03:50	0.38	07:45	0.76	0.60	03:50	1.814	07:45	4.282	3.197	427385	
6/15/2016	04:20	21.31	07:55	24.25	23.09	04:20	0.38	20:25	0.76	0.60	04:20	1.784	20:25	4.272	3.218	430185	
6/16/2016	03:45	21.53	07:00	31.69	23.64	03:45	0.40	06:55	2.23	0.68	03:45	1.945	06:55	18.195	3.905	522020	0.20
6/17/2016	04:25	21.55	08:00	24.10	23.03	03:45	0.40	07:30	0.74	0.61	04:25	1.953	07:40	4.133	3.226	431231	
6/18/2016	04:10	21.41	10:30	24.28	23.13	03:45	0.40	10:50	0.77	0.62	03:45	1.930	10:50	4.396	3.356	448695	
6/19/2016	04:45	21.35	11:20	24.46	23.12	05:00	0.40	10:35	0.81	0.63	05:00	1.929	11:10	4.627	3.389	453020	
6/20/2016	03:55	21.42	22:05	24.13	23.09	04:05	0.40	21:40	0.75	0.61	04:15	1.907	21:40	4.194	3.292	440017	
6/21/2016	04:20	21.50	21:15	24.03	23.13	04:35	0.40	21:05	0.77	0.63	04:35	1.910	21:05	4.334	3.366	449976	
6/22/2016	04:10	21.54	20:05	24.05	23.14	03:35	0.41	22:25	0.75	0.64	03:35	2.000	20:00	4.219	3.441	459964	
6/23/2016	04:25	21.55	22:20	23.98	23.14	03:45	0.42	07:15	0.72	0.62	03:45	2.031	19:50	3.921	3.301	441216	
6/24/2016	04:20	21.57	20:35	23.87	23.18	04:10	0.39	08:35	0.70	0.59	04:10	1.895	08:35	3.899	3.148	420877	
6/25/2016	04:10	21.61	10:05	24.33	23.19	04:00	0.34	12:10	0.77	0.60	04:00	1.625	12:10	4.364	3.236	432648	
6/26/2016	05:00	21.39	10:40	24.35	23.12	05:00	0.41	10:45	0.75	0.58	05:00	1.936	10:45	4.309	3.139	419589	
6/27/2016	04:15	21.37	23:55	29.01	23.36	02:55	0.32	23:55	1.28	0.63	02:55	1.548	23:55	9.305	3.498	467607	0.18
6/28/2016	04:55	21.76	00:50	32.89	24.03	04:55	0.44	00:45	3.39	0.76	04:55	2.161	00:45	28.950	4.528	605359	0.43
6/29/2016	04:40	21.72	01:15	26.62	23.41	04:40	0.42	01:10	1.07	0.64	04:40	2.045	01:10	6.909	3.505	468553	0.04
6/30/2016	04:10	21.54	22:00	23.83	23.09	04:05	0.39	08:05	0.67	0.57	04:05	1.898	08:05	3.683	3.060	408746	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			14516520	2.82
Avg	23.39	0.65	3.620	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

WNY2, Pipe Height: 75.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016	04:30	21.37	18:00	77.04	24.83	04:30	0.33	22:15	6.92	0.89	04:30	1.556	17:55	80.749	6.562	877275	1.28
7/2/2016	04:25	22.38	00:00	25.32	23.73	05:15	0.49	00:00	0.85	0.67	04:25	2.485	00:00	5.152	3.718	497023	
7/3/2016	04:40	21.75	11:05	24.39	23.26	04:50	0.42	10:55	0.77	0.62	04:50	2.058	11:05	4.391	3.359	449084	
7/4/2016	05:00	21.76	21:10	31.55	23.85	04:50	0.42	21:05	2.41	0.70	04:50	2.033	21:05	19.459	4.081	545556	0.27
7/5/2016	23:55	24.09	03:20	54.80	26.26	23:50	0.67	03:10	7.27	1.09	23:55	3.794	03:15	73.770	7.876	1052926	1.15
7/6/2016	04:15	22.32	21:50	24.64	23.83	04:10	0.44	20:50	0.76	0.64	04:10	2.240	21:55	4.392	3.585	479186	
7/7/2016	04:10	22.11	19:15	25.27	23.78	04:00	0.42	18:55	0.83	0.63	04:15	2.087	18:55	4.972	3.538	473002	0.01
7/8/2016	04:10	22.26	20:10	24.88	23.83	04:05	0.42	19:55	0.78	0.63	04:05	2.124	19:55	4.580	3.524	471030	0.02
7/9/2016	04:05	22.15	22:40	34.25	24.23	04:15	0.42	22:40	6.33	0.75	04:15	2.126	22:40	57.327	4.636	619789	0.38
7/10/2016	05:25	22.04	00:00	28.39	23.69	05:00	0.44	00:00	1.18	0.66	04:00	2.198	00:00	8.359	3.664	489823	
7/11/2016	04:25	21.90	20:35	24.21	23.41	04:25	0.42	21:10	0.75	0.63	04:25	2.089	21:10	4.261	3.413	456281	
7/12/2016	04:30	21.66	21:45	24.24	23.32	03:25	0.39	21:35	0.75	0.62	03:25	1.917	21:35	4.285	3.380	451833	
7/13/2016	03:55	21.57	21:45	24.44	23.39	04:10	0.39	21:45	0.77	0.62	04:10	1.897	21:45	4.421	3.387	452717	
7/14/2016	04:55	21.91	16:25	44.41	24.22	02:45	0.44	16:20	6.85	0.81	04:55	2.192	16:25	74.295	5.195	694468	0.62
7/15/2016	04:10	21.98	19:45	24.14	23.49	04:00	0.43	19:50	0.72	0.63	04:00	2.137	19:50	4.084	3.441	460011	
7/16/2016	04:20	21.90	12:45	24.44	23.49	04:50	0.42	11:45	0.77	0.63	04:50	2.063	11:45	4.411	3.472	464134	
7/17/2016	05:50	21.91	12:30	24.75	23.51	05:00	0.43	12:20	0.81	0.64	05:00	2.108	12:20	4.716	3.501	467969	
7/18/2016	04:05	21.83	16:55	34.86	23.98	04:10	0.41	17:00	5.90	0.74	04:10	2.025	16:55	51.995	4.482	599108	0.32
7/19/2016	04:30	21.91	19:55	24.18	23.39	03:25	0.41	20:40	0.73	0.62	03:25	2.024	20:40	4.144	3.371	450610	
7/20/2016	04:35	21.81	21:50	24.08	23.34	04:00	0.40	21:30	0.75	0.62	04:00	1.954	21:30	4.231	3.375	451190	
7/21/2016	04:05	21.74	21:40	24.13	23.33	04:05	0.41	21:30	0.74	0.63	04:05	2.002	21:30	4.152	3.402	454719	
7/22/2016	04:40	21.74	19:10	24.09	23.34	03:30	0.41	18:30	0.74	0.63	03:30	2.020	19:10	4.174	3.424	457672	
7/23/2016	04:50	21.83	10:15	24.35	23.42	04:25	0.43	10:00	0.77	0.64	04:25	2.095	10:00	4.418	3.492	466790	
7/24/2016	05:05	21.87	12:10	24.60	23.44	03:50	0.43	11:30	0.79	0.63	05:00	2.102	11:30	4.588	3.472	464178	
7/25/2016	04:30	21.61	17:50	34.58	24.42	04:10	0.40	17:40	4.93	0.86	04:10	1.947	17:45	45.026	5.646	754740	0.77
7/26/2016	04:45	21.94	21:45	24.27	23.49	04:20	0.42	20:35	0.74	0.63	04:20	2.089	20:35	4.221	3.458	462227	
7/27/2016	04:40	21.89	21:50	24.29	23.46	03:45	0.41	20:15	0.73	0.62	03:45	2.026	22:20	4.131	3.411	455972	
7/28/2016	04:30	21.96	21:30	24.35	23.48	04:05	0.41	21:40	0.75	0.62	04:05	2.037	21:40	4.283	3.414	456429	
7/29/2016	02:40	22.51	05:35	32.84	25.61	02:40	0.48	05:30	2.93	0.92	02:40	2.483	05:30	25.125	6.066	810942	0.86
7/30/2016	04:30	22.09	18:05	31.01	24.70	04:05	0.43	18:05	1.89	0.76	04:05	2.133	18:05	15.054	4.606	615776	0.24
7/31/2016	05:15	22.42	22:05	33.92	25.14	05:00	0.44	22:05	4.39	0.86	05:00	2.247	22:05	39.295	5.705	762080	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			17064540	6.64
Avg	23.89	0.70	4.118	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

WNY2, Pipe Height: 75.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016	04:35	22.64	01:05	29.43	24.19	04:45	0.45	01:05	1.40	0.70	04:45	2.349	01:05	10.398	4.051	541602	0.05
8/2/2016	03:30	22.01	22:00	24.16	23.43	03:35	0.43	08:00	0.72	0.62	03:35	2.157	21:50	4.053	3.408	455586	
8/3/2016	04:10	21.78	22:00	24.07	23.36	04:10	0.42	18:55	0.74	0.63	04:10	2.054	18:55	4.128	3.419	457073	
8/4/2016	03:35	21.76	21:40	24.12	23.34	04:25	0.41	21:00	0.75	0.63	04:25	2.031	21:00	4.213	3.433	458869	
8/5/2016	04:30	21.73	18:50	24.08	23.29	04:20	0.42	18:50	0.75	0.64	04:20	2.029	18:50	4.247	3.437	459481	
8/6/2016	04:05	21.74	16:40	28.72	23.52	04:05	0.43	16:40	1.25	0.65	04:05	2.086	16:40	8.978	3.616	483418	0.09
8/7/2016	04:50	21.83	11:55	24.50	23.41	04:25	0.41	12:25	0.77	0.62	04:25	2.011	12:25	4.439	3.409	455725	
8/8/2016	04:05	21.84	21:40	24.47	23.51	03:45	0.42	20:55	0.75	0.63	03:45	2.065	20:55	4.341	3.454	461723	
8/9/2016	03:40	22.14	20:55	24.52	23.67	03:40	0.41	19:05	0.75	0.63	03:40	2.054	19:05	4.298	3.469	463724	
8/10/2016	03:50	22.01	13:25	30.17	23.91	04:00	0.41	13:20	1.53	0.65	04:00	2.056	13:25	11.629	3.712	496165	0.08
8/11/2016	04:25	22.20	19:20	24.65	23.75	04:35	0.41	18:50	0.74	0.62	04:35	2.087	18:50	4.260	3.439	459756	
8/12/2016	04:55	22.57	01:30	34.29	24.55	04:55	0.45	01:25	5.13	0.76	04:55	2.300	01:25	46.526	4.683	625974	0.34
8/13/2016	04:40	22.23	10:45	24.78	23.86	04:25	0.41	10:45	0.77	0.63	04:25	2.078	10:45	4.509	3.548	474334	
8/14/2016	04:30	22.29	19:45	33.42	24.14	04:15	0.43	19:40	2.82	0.68	04:15	2.157	19:40	24.711	3.975	531388	0.13
8/15/2016	04:25	22.16	21:45	24.59	23.71	04:30	0.40	20:25	0.74	0.61	04:30	2.018	21:45	4.257	3.409	455750	
8/16/2016	04:20	21.99	20:35	33.49	24.00	04:15	0.41	20:30	3.65	0.67	04:15	2.036	20:30	32.059	3.918	523722	0.23
8/17/2016	04:10	21.95	20:55	24.55	23.60	04:15	0.39	20:40	0.74	0.61	04:15	1.944	20:40	4.271	3.358	448864	
8/18/2016	04:10	22.05	22:00	24.45	23.75	04:10	0.40	18:45	0.74	0.63	04:10	2.014	18:45	4.257	3.503	468268	0.03
8/19/2016	02:15	22.52	03:30	30.50	24.54	02:15	0.46	03:30	1.69	0.73	02:15	2.363	03:30	13.118	4.356	582254	
8/20/2016	04:55	22.16	10:35	24.67	23.73	04:05	0.42	10:30	0.77	0.63	04:05	2.095	10:30	4.498	3.521	470675	0.02
8/21/2016	04:45	22.20	05:15	32.85	24.47	04:40	0.43	05:10	3.03	0.72	04:40	2.167	05:10	25.950	4.307	575766	0.15
8/22/2016	04:45	22.08	21:20	24.29	23.54	03:25	0.41	21:00	0.71	0.61	03:35	2.045	21:00	4.048	3.336	445919	
8/23/2016	03:55	21.65	21:50	24.41	23.42	04:10	0.40	20:25	0.73	0.61	04:10	1.954	20:25	4.154	3.321	443993	
8/24/2016	04:45	21.86	21:15	24.25	23.44	04:45	0.42	19:30	0.75	0.62	04:45	2.043	19:30	4.237	3.364	449689	
8/25/2016	03:40	21.72	20:50	24.50	23.43	04:05	0.40	20:50	0.75	0.62	04:05	1.986	20:50	4.301	3.372	450746	
8/26/2016	04:30	21.96	19:00	24.40	23.62	04:10	0.41	21:30	0.72	0.62	04:25	2.052	19:05	4.136	3.440	459850	
8/27/2016	04:55	22.20	11:25	24.68	23.71	04:55	0.42	09:50	0.78	0.63	04:55	2.113	09:55	4.501	3.506	468693	
8/28/2016	04:35	22.03	11:35	24.79	23.67	04:05	0.41	11:55	0.79	0.63	04:05	2.055	11:55	4.600	3.517	470153	
8/29/2016	04:05	22.06	20:30	24.52	23.63	03:35	0.43	19:50	0.75	0.63	03:35	2.162	19:50	4.337	3.479	465055	
8/30/2016	04:05	22.15	21:30	24.51	23.58	04:05	0.42	21:35	0.75	0.63	04:05	2.086	21:30	4.317	3.451	461335	
8/31/2016	04:40	22.18	20:50	24.50	23.67	03:50	0.43	20:50	0.74	0.63	03:50	2.144	20:50	4.292	3.502	467809	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			14933360	1.12
Avg	23.72	0.64	3.604	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

WNY2, Pipe Height: 75.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016	02:40	22.54	14:25	35.10	24.92	02:40	0.46	14:30	5.99	0.83	02:40	2.363	14:30	55.724	5.330	712478	0.56
9/2/2016	03:50	22.11	18:50	24.39	23.63	04:45	0.40	19:25	0.71	0.61	04:45	2.019	18:45	4.046	3.372	450830	
9/3/2016	05:20	22.10	11:50	24.60	23.63	04:40	0.42	09:40	0.74	0.62	04:40	2.098	12:05	4.272	3.406	455345	
9/4/2016	05:10	22.15	12:20	24.79	23.65	05:20	0.42	11:55	0.78	0.62	05:20	2.114	11:55	4.564	3.450	461200	
9/5/2016	04:55	22.00	13:35	24.96	23.79	04:50	0.41	12:55	0.81	0.64	04:50	2.050	12:55	4.795	3.581	478664	
9/6/2016	04:05	22.18	20:55	24.69	23.69	03:25	0.42	20:15	0.76	0.62	03:25	2.117	20:45	4.448	3.460	462537	
9/7/2016	04:00	22.12	08:00	24.46	23.66	04:40	0.42	07:20	0.74	0.62	04:20	2.102	07:25	4.200	3.423	457537	
9/8/2016	04:05	22.00	21:20	24.84	23.71	04:10	0.40	21:25	0.78	0.63	04:10	1.979	21:25	4.603	3.492	466838	
9/9/2016	04:00	22.14	23:35	32.01	23.89	04:20	0.42	23:30	2.39	0.65	04:20	2.110	23:30	19.718	3.718	496980	0.11
9/10/2016	04:50	22.16	15:50	29.73	24.14	04:30	0.39	15:50	1.41	0.65	04:30	1.983	15:50	10.556	3.773	504317	0.05
9/11/2016	05:05	22.14	10:45	25.04	23.84	05:10	0.40	10:45	0.79	0.62	05:05	1.995	10:45	4.721	3.493	466991	
9/12/2016	03:50	21.94	07:50	24.68	23.40	04:00	0.34	07:45	0.68	0.54	04:00	1.686	07:45	3.947	2.931	391751	0.00
9/13/2016	04:40	21.63	21:30	24.67	23.43	04:05	0.29	21:45	0.65	0.48	04:10	1.411	21:45	3.745	2.625	350911	
9/14/2016	04:00	21.64	17:45	51.83	24.24	04:00	0.31	17:50	6.80	0.69	04:00	1.518	17:50	73.406	4.547	607876	0.64
9/15/2016	03:55	22.25	08:00	24.79	23.65	03:40	0.40	07:55	0.75	0.60	03:40	2.004	07:55	4.378	3.310	442437	
9/16/2016	03:35	21.89	07:45	24.48	23.33	04:10	0.40	07:45	0.74	0.59	04:10	1.987	07:45	4.260	3.193	426864	
9/17/2016	04:10	21.88	10:05	24.72	23.53	03:35	0.40	10:20	0.77	0.62	05:10	1.983	10:15	4.473	3.391	453270	
9/18/2016	04:00	21.96	12:00	25.23	23.90	05:15	0.40	12:00	0.78	0.61	05:15	2.003	12:00	4.705	3.470	463872	
9/19/2016	04:00	22.16	10:45	32.10	25.07	03:15	0.37	10:45	2.45	0.77	03:15	1.847	10:45	20.407	4.917	657254	0.45
9/20/2016	03:20	22.27	07:40	24.99	23.83	03:15	0.39	07:40	0.73	0.59	03:15	1.964	07:40	4.336	3.278	438219	
9/21/2016	04:35	22.24	07:45	25.06	23.86	03:35	0.38	07:40	0.74	0.54	03:45	1.897	07:40	4.399	3.035	405755	
9/22/2016	04:00	22.22	07:45	24.84	23.77	01:55	0.37	07:35	0.75	0.56	02:50	1.912	07:35	4.387	3.129	418244	
9/23/2016	04:05	22.14	19:45	24.61	23.74	04:30	0.38	07:35	0.69	0.55	04:30	1.916	07:30	4.002	3.046	407136	
9/24/2016	04:50	22.54	01:40	32.00	24.55	04:50	0.43	01:35	2.55	0.72	04:50	2.184	01:35	21.048	4.327	578391	0.28
9/25/2016	04:10	21.91	11:05	24.77	23.63	04:10	0.34	20:05	0.73	0.56	04:10	1.667	20:05	4.174	3.121	417275	
9/26/2016	03:40	21.83	20:35	24.49	23.40	03:30	0.30	08:00	0.68	0.53	03:30	1.477	08:00	3.914	2.906	388430	
9/27/2016	02:15	22.09	03:00	31.10	24.33	01:50	0.32	02:55	1.99	0.66	01:50	1.612	02:55	15.826	3.877	518219	0.25
9/28/2016	03:55	21.81	19:05	24.67	23.54	05:20	0.33	07:30	0.64	0.52	03:55	1.638	07:35	3.719	2.840	379687	
9/29/2016	04:25	22.02	07:45	24.83	23.75	04:25	0.36	07:45	0.62	0.54	04:25	1.784	07:45	3.648	2.991	399875	
9/30/2016	04:10	22.24	14:45	29.63	25.43	04:10	0.39	14:40	1.21	0.68	04:10	1.947	14:45	9.027	4.258	568812	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			14128000	2.75
Avg	23.90	0.61	3.523	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

WNY2, Pipe Height: 75.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016	04:50	22.55	12:00	25.14	24.06	04:40	0.33	10:50	0.66	0.54	04:40	1.721	10:50	3.945	3.045	407059	
10/2/2016	04:30	22.07	12:00	25.04	23.75	04:30	0.37	12:00	0.63	0.53	04:30	1.821	12:00	3.736	2.980	398406	
10/3/2016	04:05	22.04	21:05	24.83	23.60	04:05	0.36	21:05	0.62	0.53	04:05	1.801	21:05	3.648	2.907	388556	
10/4/2016	04:00	21.96	19:20	24.75	23.56	04:00	0.35	19:20	0.62	0.52	04:00	1.746	19:20	3.610	2.876	384416	
10/5/2016	03:55	21.90	21:00	24.71	23.56	03:55	0.34	21:00	0.62	0.52	03:55	1.702	21:00	3.591	2.876	384512	
10/6/2016	04:05	22.09	20:10	24.70	23.55	04:05	0.37	20:10	0.61	0.52	04:05	1.836	20:10	3.584	2.868	383432	0.00
10/7/2016	03:55	22.16	07:50	24.72	23.60	03:55	0.38	07:50	0.62	0.53	03:55	1.888	07:50	3.595	2.902	387985	
10/8/2016	04:35	21.95	20:05	28.61	23.93	02:55	0.31	20:10	1.10	0.52	02:55	1.564	20:10	7.823	2.953	394791	0.13
10/9/2016	02:10	22.68	12:50	31.87	25.78	00:00	0.42	12:50	2.30	0.79	02:10	2.268	12:50	18.958	5.112	683318	0.52
10/10/2016	04:00	21.96	20:25	24.99	23.72	03:45	0.39	20:35	0.77	0.61	03:45	1.924	20:35	4.528	3.423	457535	
10/11/2016	04:05	21.91	19:55	24.57	23.50	04:00	0.40	19:45	0.76	0.60	04:00	1.966	19:45	4.407	3.289	439709	0.00
10/12/2016	03:45	21.92	07:45	24.56	23.49	04:05	0.40	07:45	0.75	0.61	04:05	1.969	07:45	4.348	3.326	444627	
10/13/2016	04:00	22.09	07:55	24.66	23.50	03:35	0.39	19:55	0.76	0.61	03:35	1.951	19:55	4.370	3.333	445572	
10/14/2016	03:15	21.98	07:40	24.52	23.52	04:15	0.41	07:55	0.74	0.60	04:15	2.052	07:55	4.289	3.305	441863	
10/15/2016	04:15	22.11	10:40	24.73	23.67	04:05	0.38	10:55	0.78	0.63	04:05	1.924	10:55	4.527	3.476	464633	
10/16/2016	04:40	22.13	11:50	25.06	23.75	04:35	0.39	11:30	0.82	0.64	04:35	1.967	11:40	4.860	3.568	476935	
10/17/2016	03:50	21.91	20:40	24.63	23.47	04:10	0.40	20:40	0.78	0.62	04:10	1.970	20:40	4.541	3.398	454270	
10/18/2016	04:05	21.77	21:00	24.55	23.38	04:15	0.39	20:25	0.79	0.62	04:15	1.894	20:25	4.564	3.389	453050	0.00
10/19/2016	04:25	21.76	20:55	24.62	23.40	03:00	0.41	08:00	0.78	0.62	04:15	1.990	20:35	4.499	3.391	453365	
10/20/2016	03:25	21.82	11:20	24.43	23.40	03:40	0.41	11:15	0.78	0.62	03:40	2.002	11:15	4.484	3.379	451702	
10/21/2016	04:10	21.73	13:55	30.77	24.72	03:35	0.40	13:55	1.93	0.78	03:35	1.956	13:55	15.201	4.868	650739	0.46
10/22/2016	04:00	21.96	04:30	33.51	25.00	03:55	0.41	04:30	3.95	0.81	03:55	2.034	04:30	34.740	5.041	673906	0.33
10/23/2016	05:00	22.27	11:40	25.04	23.88	04:55	0.40	11:05	0.80	0.63	04:55	2.045	11:05	4.741	3.555	475256	
10/24/2016	03:40	22.03	20:45	24.77	23.66	04:25	0.40	07:50	0.71	0.58	04:25	1.995	07:50	4.098	3.182	425329	
10/25/2016	04:25	22.03	19:45	24.68	23.59	04:05	0.33	07:25	0.63	0.50	04:05	1.647	19:35	3.623	2.769	370214	
10/26/2016	04:00	22.01	20:50	24.59	23.56	02:35	0.30	07:20	0.59	0.49	04:05	1.502	20:50	3.391	2.697	360536	
10/27/2016	03:55	22.01	20:20	34.38	25.85	03:25	0.33	20:20	4.96	0.97	03:25	1.657	20:20	45.196	7.029	939584	1.15
10/28/2016	04:10	22.83	00:00	24.99	24.00	04:10	0.47	00:00	0.77	0.64	04:10	2.440	00:00	4.594	3.615	483313	
10/29/2016	04:35	22.34	12:45	24.93	23.92	03:40	0.41	12:40	0.78	0.63	03:40	2.071	12:40	4.602	3.561	476025	
10/30/2016	04:50	22.31	16:45	38.47	24.59	04:55	0.42	16:45	6.95	0.78	04:55	2.107	16:45	73.110	4.948	661422	
10/31/2016	04:15	22.09	21:15	24.59	23.65	04:10	0.42	20:50	0.74	0.61	04:10	2.081	21:05	4.258	3.375	450849	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			14762910	2.59
Avg	23.89	0.62	3.562	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

WNY2, Pipe Height: 75.63 in

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016	03:50	22.15	21:10	24.78	23.67	03:45	0.39	20:35	0.76	0.60	03:45	1.941	20:15	4.439	3.345	447112	
11/2/2016	04:15	22.15	20:15	24.67	23.63	03:40	0.40	21:00	0.75	0.60	03:40	1.996	20:50	4.365	3.334	445624	
11/3/2016	04:10	22.06	07:55	24.69	23.63	04:15	0.38	07:45	0.76	0.61	04:15	1.901	07:45	4.413	3.365	449772	
11/4/2016	04:35	21.98	19:05	24.45	23.56	03:25	0.39	07:35	0.72	0.60	03:25	1.942	07:35	4.133	3.281	438603	
11/5/2016	03:55	22.13	13:00	24.94	23.75	03:50	0.39	12:25	0.78	0.62	03:50	1.976	12:25	4.546	3.472	464082	
11/6/2016	04:40	22.06	12:00	25.39	23.83	05:35	0.40	11:00	0.84	0.64	04:20	1.998	11:40	5.015	3.584	479146	
11/7/2016	04:25	22.03	08:30	24.64	23.52	04:15	0.38	08:35	0.76	0.60	04:15	1.911	08:35	4.440	3.306	441966	
11/8/2016	04:00	21.99	20:05	24.44	23.60	03:55	0.39	20:00	0.74	0.61	03:55	1.921	20:00	4.245	3.366	450025	
11/9/2016	03:40	22.05	12:40	26.13	23.76	04:10	0.40	12:40	0.95	0.63	04:10	2.006	12:40	6.007	3.542	473551	0.07
11/10/2016	04:00	21.96	19:50	24.34	23.56	03:55	0.38	20:00	0.72	0.60	03:55	1.895	20:00	4.110	3.323	444156	
11/11/2016	04:20	22.00	10:45	24.26	23.59	03:35	0.38	10:45	0.71	0.61	03:35	1.906	10:45	4.061	3.370	450479	
11/12/2016	04:20	21.99	11:05	24.74	23.72	04:35	0.39	11:00	0.81	0.63	04:35	1.947	11:00	4.730	3.504	468415	
11/13/2016	05:15	22.14	11:50	25.07	23.82	05:30	0.40	12:45	0.89	0.65	05:30	1.993	12:45	5.242	3.627	484879	
11/14/2016	04:05	22.03	19:40	24.75	23.66	02:55	0.37	19:25	0.76	0.62	02:55	1.845	19:25	4.438	3.425	457904	
11/15/2016	04:00	21.97	05:00	27.90	23.11	04:05	0.41	05:05	1.10	0.54	04:05	2.013	05:05	7.593	2.979	85727	1.50
11/16/2016						04:55	0.48	04:50	0.48	0.48							

Report Summary For The Period 11/1/2016 - 11/16/2016

	Depth (in)	Velocity (ft/s)	Quantity (MGD - Total ft3)	Rain (in)
Total			6481442	1.57
Avg	23.66	0.61	3.411	

Site Commentary

Site Information

RG1

RGNHSA

Overview

Rain gauge RG1 was installed on the roof of the NHSA River Road Water Pollution Control Facility. The rain gauge operated reliably throughout the study except from 10/21-10/31/2016 when the roof was not accessible to service the rain gauge. The total rainfall measured at RG1 from May 17, 2016 to November 16, 2016 is 17.20 inches.

The NHSA Rain Gauge located at the Baldwin Pump Station operated from August 25, 2016 to November 16, 2016. The total rainfall measured at RGNHSA during that period is 6.51 inches.

The maximum 5-minute rain intensities occurred as follows:

Date / Time	Maximum Rainfall (in.)
7/31/2016 9:30 PM	0.21 - RG1
9/14/2016 5:35 PM	0.26 - RGNHSA

Site Report

ADS ENVIRONMENTAL SERVICES®

a division of ADS LLC. WEST NEW YORK, NJ

FM Initials: CK

Project Name: NHSA

Site Name:	RG1	Meter Type:	RainAlert II	Monitor S/N:	7077	Manhole #:	N/A
Address / Location:	6400 ANTHONY M DEFINO WAY			Map Page #:		C6	
				Pipe Height:		NA	
Access:	DRIVE	Type of System:	COMBINED	Pipe Width:		NA	
				I.P. Address		107.80.25.43	

Investigation Information:			Manhole Information:		
Date/Time of Investigation:	April 14, 2016	8:00 AM	Manhole Depth:	NA	Feet
Site Hydraulics:	NA		Manhole Material / Condition:	NA	
			Active Drop Connections?	NA	
			Pipe Material / Condition:	NA	
			Mini System Character:	COMERCIAL	
			Telephone Information:		
Depth of Flow (Wet Dof):	NA	+/-	Access Pole #:	N/A	
Range (Air Dof):	NA	+/-	Distance From Manhole:	N/A	Feet
Peak Velocity:	NA	fps	Road Cut Length:	N/A	Feet
Silt:	NA	Inches	Trench Length:	N/A	Feet

Other Information:

N 40.78712 W 74.00279

Installation Information		Backup	Yes	No	?	Distance
Installation Type:	Rain Gauge	Trunk	NA			
Sensors / Devices:	Rain Gauge Tipping Bucket	Lift/Pump Station	NA			
Surcharge Height:	NA	WWTP	NA			
Rain Gauge Zone:	NA	Other	NA			

Additional Site Information / Comments:

THIRD FLOOR ACCESS TO HATCH TO ROOF

ADS ENVIRONMENTAL SERVICES

Flow Monitoring Site Safety Plan

Project Name: NHSA **Site ID:** RG1 **Classification (Below):** 1

Note: Class 5 Site Safety Plans must be approved by the corporate Safety Manager

* Hazards found at this site (Discuss checked items below)			
Type	***No.***	***Specific Hazard***	
Rescue Evaluation	1	Rescue Team-Rescue Service Form completed and approved for site (if not checked, do not proceed w/ CSE)	☑
Communications	2	The site is in a communications "Dead - Zone"	
Traffic	3	The site is located in or adjacent to an intersection	
	4	The site is located on a hill, curve, or where motorists visibility of the site or other vehicles is reduced	
	5	The site is located in a high speed (>45 MPH) or high density roadway	
	6	Site traffic is congested at peak hours	
Access	7	Site has access obstacles (rough terrain, fences, deep easement, etc.)	
Worksite	8	Work contains hazards (terrain, slope, obstructions, etc.)	
	9	Worksite contains poisonous plants, insects, snake or animal hazards	
	10	Elevated work requiring a ladder / work near an unguarded edge., Raised manhole (indicate height below)	
	11	Pedestrian control necessary as the site is located in or near a walkway, school, playground, etc.	
	12	Work may be performed during darkness - requiring additional site lighting	
	13	Site is located in a high crime area (check with client & local authorities if unsure)	
Confined Space	14	Confined Space does not have useable rungs	
	15	Confined Space has Biological Hazards (medical waste, micro-organisms, virus or toxins from biological source)	
	16	Confined Space depth is greater than 50 feet	
	17	Confined space has internal platforms, weirs or other obstructions that interfere with or prevent unobstructed vertical retrieval	
	18	Work requires lateral movement that would interfere with or prevent unobstructed vertical retrieval	
	19	Flow is hazardous due to depth, velocity, pipe diameter, or is industrial process flow.	
	20	Confined Space subject to surcharge during / after a rain event	
	21	Continuous ventilation required where applicable and in confined spaces >15 ft. depth	
	22	Lockout Tagout required	
	23	Hot Work Permit required	
	24	CO, H2S, low O2 or other toxic/flammable gases present or anticipated	
	25	Confined space has active drop connections - lines required to b e bled or blanked	

*** Details of above hazards and any additional hazards found. (Attach additional sheet if necessary)**

* Site Classification		
	Class	***Description***
☑	1	2 - person crew. Standard procedures and equipment. No Special Requirements
	2	Worksite (non-traffic) with access obstacles and or worksite hazards
	3	Traffic site requiring special scheduling, additional personnel and / or traffic control equipment, or outsourcing
	4	Confined Space Entry requiring special scheduling , additional personnel and / or safety equipment.
	5	Special Operation requiring a separate safety plan. *Must be approved by Corporate Safety Manager*

*** Site Specific Safety Requirements. Must complete for any site Class 2 & above (attach additional sheets as necessary)**

Traffic Control Plan

Note: All worksites located in or immediately adjacent to a roadway, where the operation may impede the normal flow of traffic, are required to have a Traffic Control Plan. Standard Traffic Control Plans are to be carried in the vehicle and referred to when setting up the worksite. Special Traffic Control Plans are to be developed when required by clients or regulating agencies or when a standard Traffic Control Plan is not sufficient to control traffic at the worksite.

☑ This worksite dos NOT require a traffic control plan.
☐ Standard Traffic Control Plan _____ is to be used at this worksite
☐ This site requires a special Traffic Control Plan which is attached

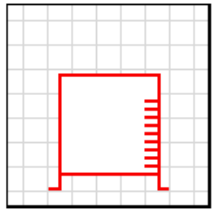
Approved		***Reviewed/Approved***	
Field Mgr Name:	C. KEY	Project Mgr Name:	J Scarcia
Signature:		Signature:	
Date:	4/13/2016	Date:	4/22/2016

HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

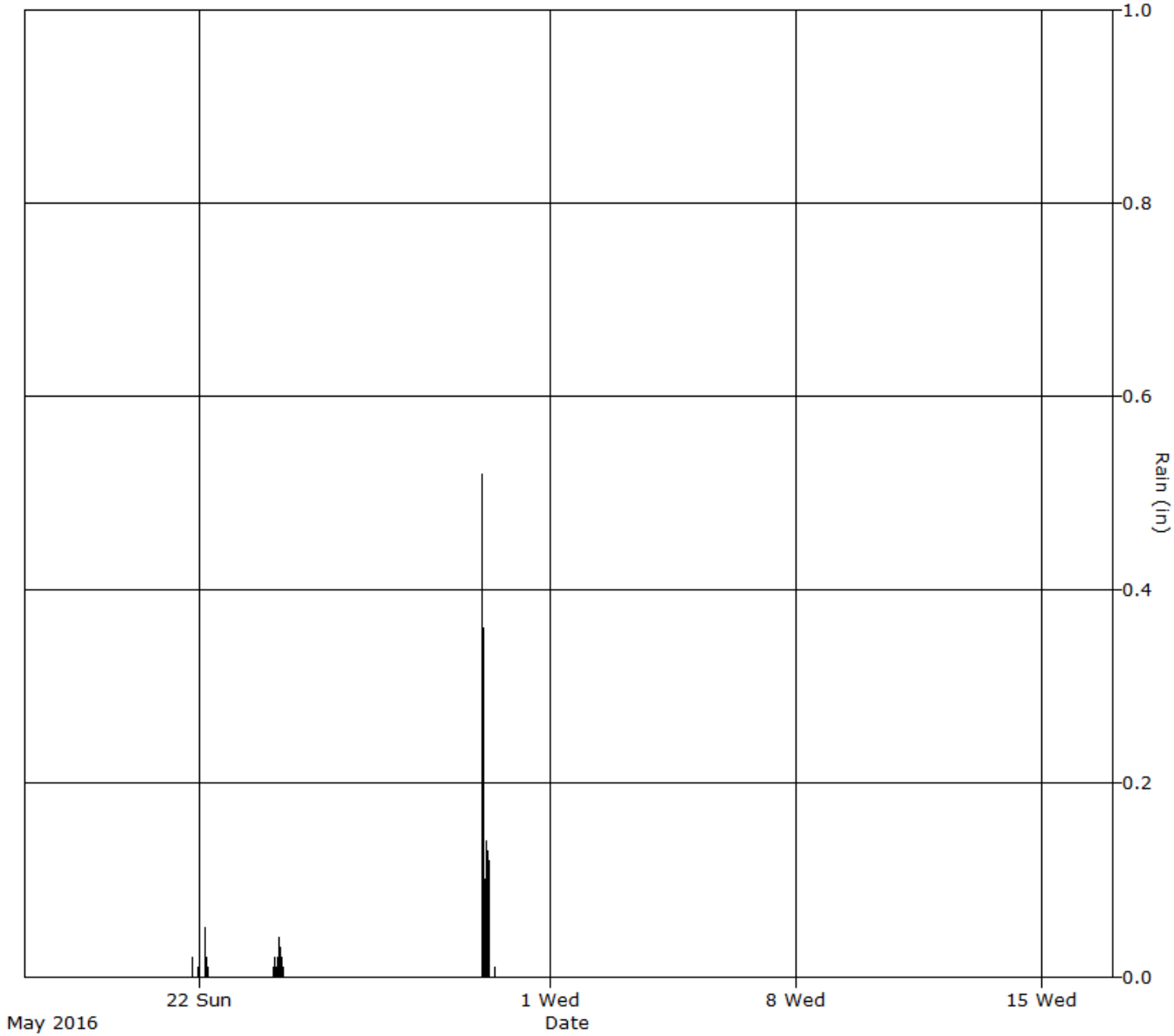


Report Period

5/17/2016
To
5/31/2016

Legend

Rain



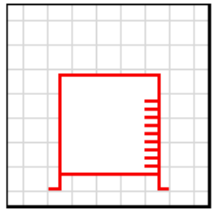
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

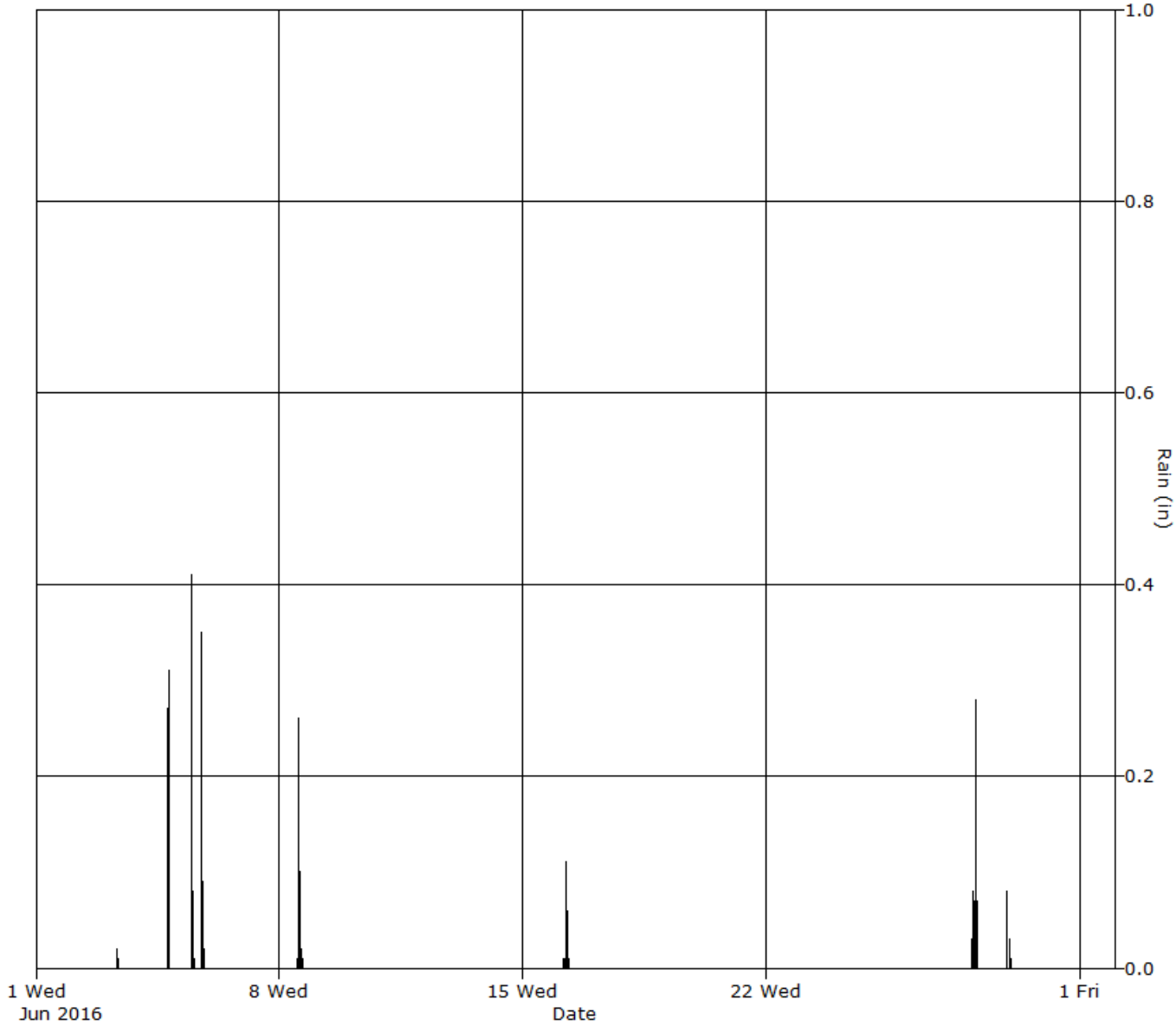


Report Period

6/1/2016
To
6/30/2016

Legend

Rain



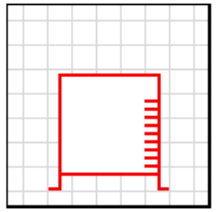
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

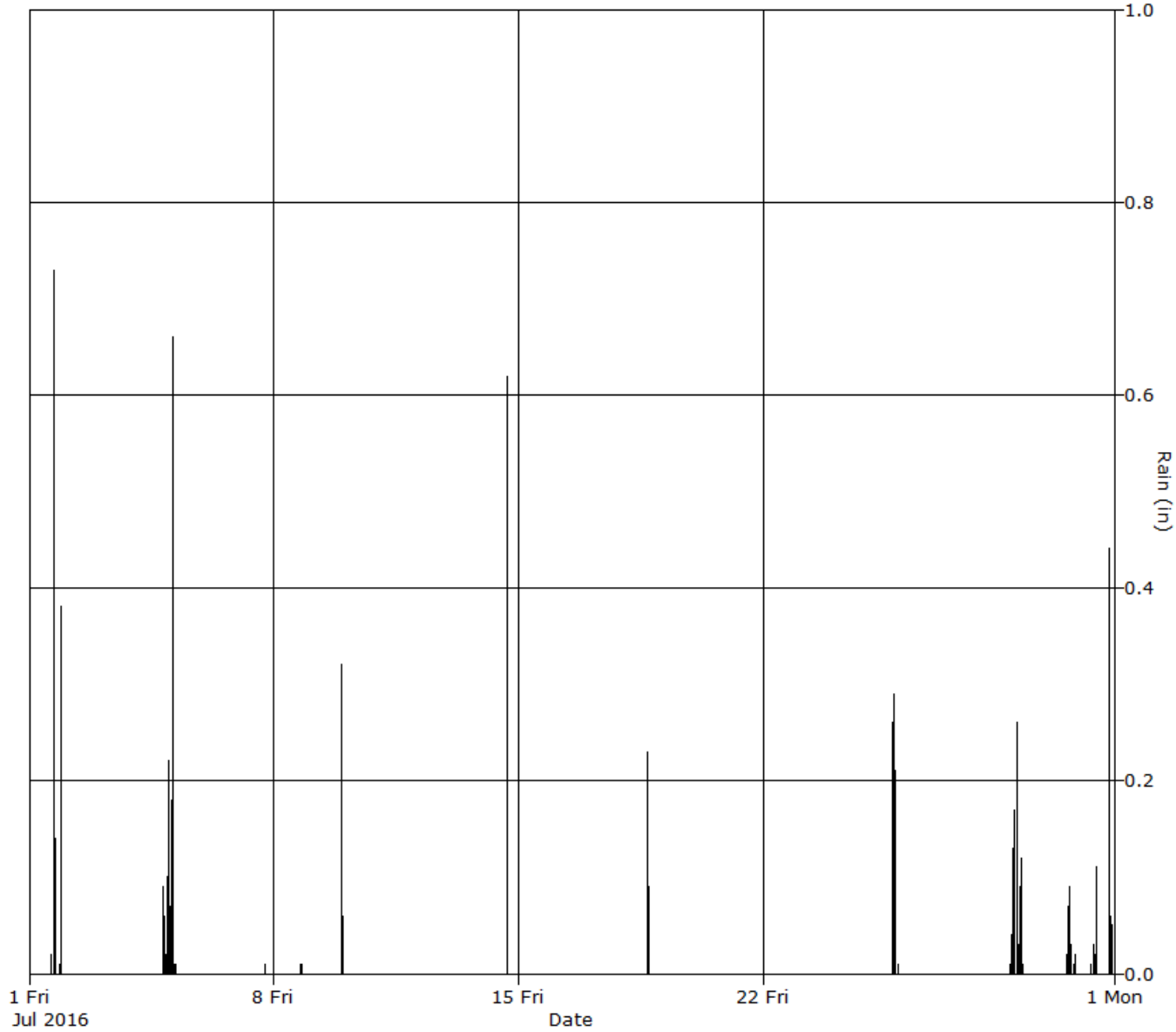


Report Period

7/1/2016
To
7/31/2016

Legend

Rain



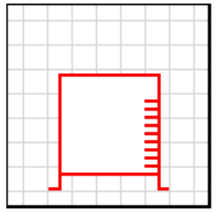
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

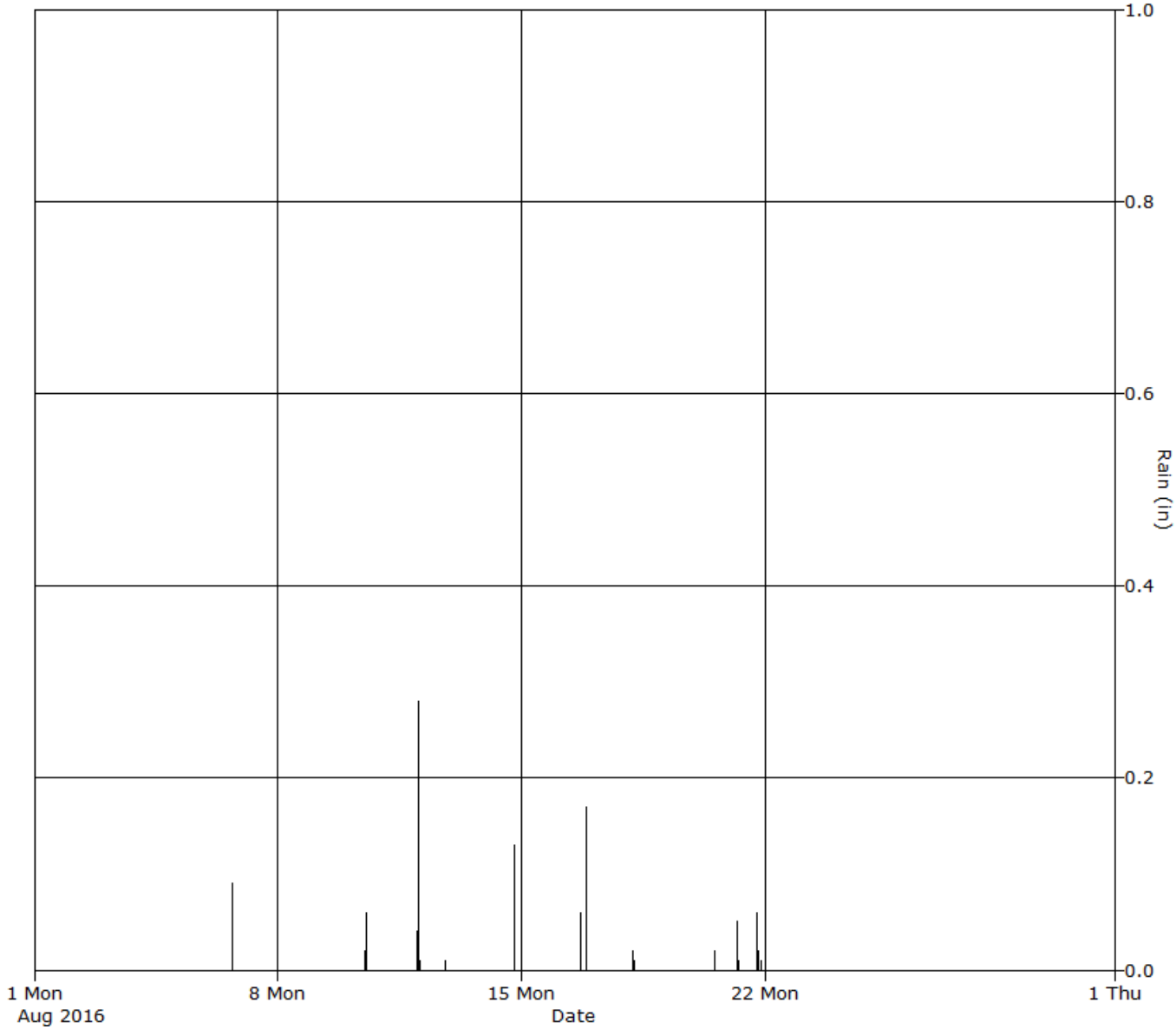


Report Period

8/1/2016
To
8/31/2016

Legend

Rain



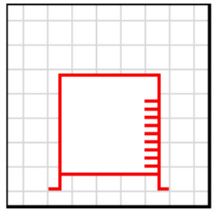
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

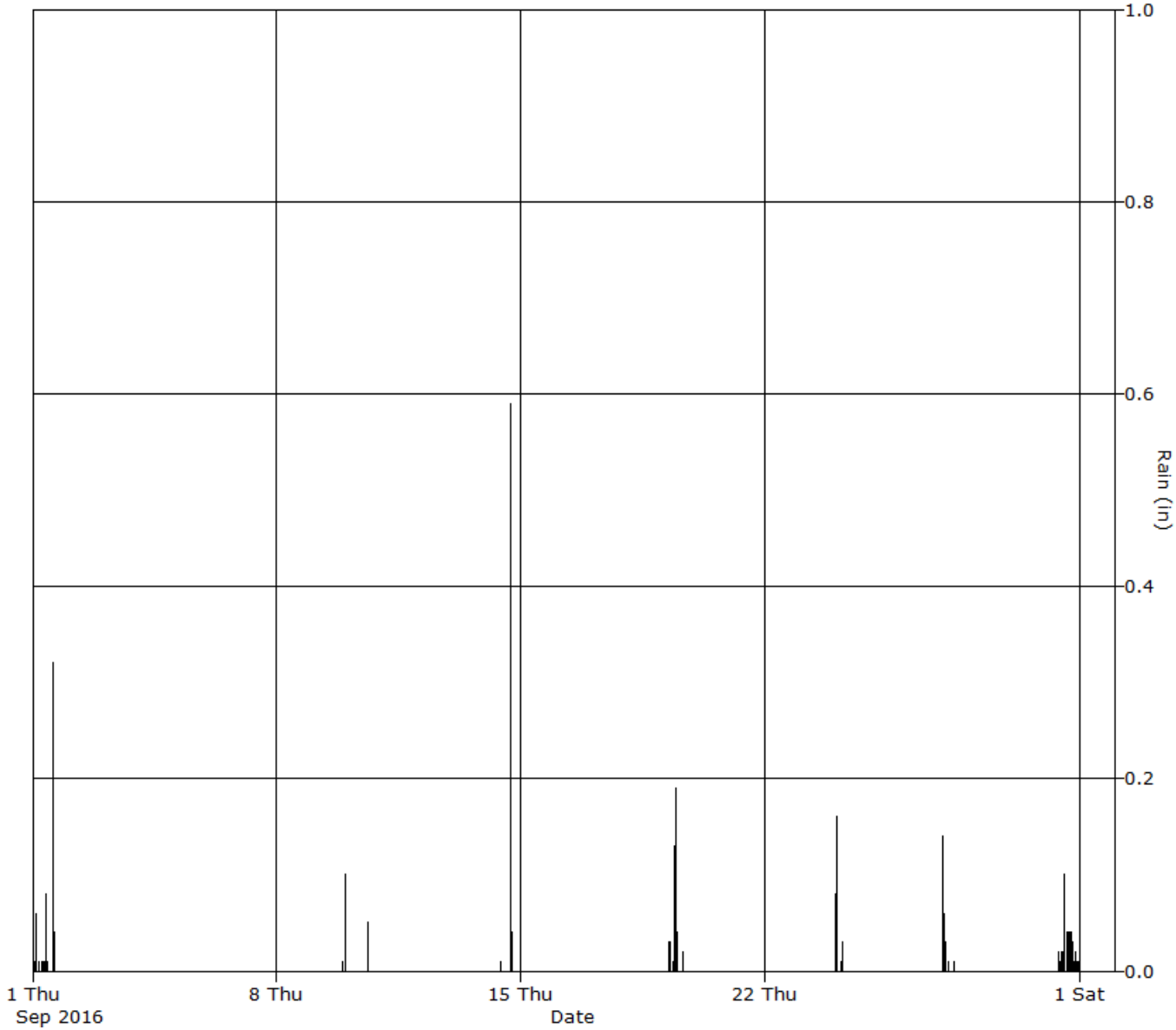


Report Period

9/1/2016
To
9/30/2016

Legend

Rain



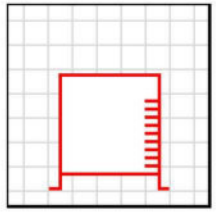
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

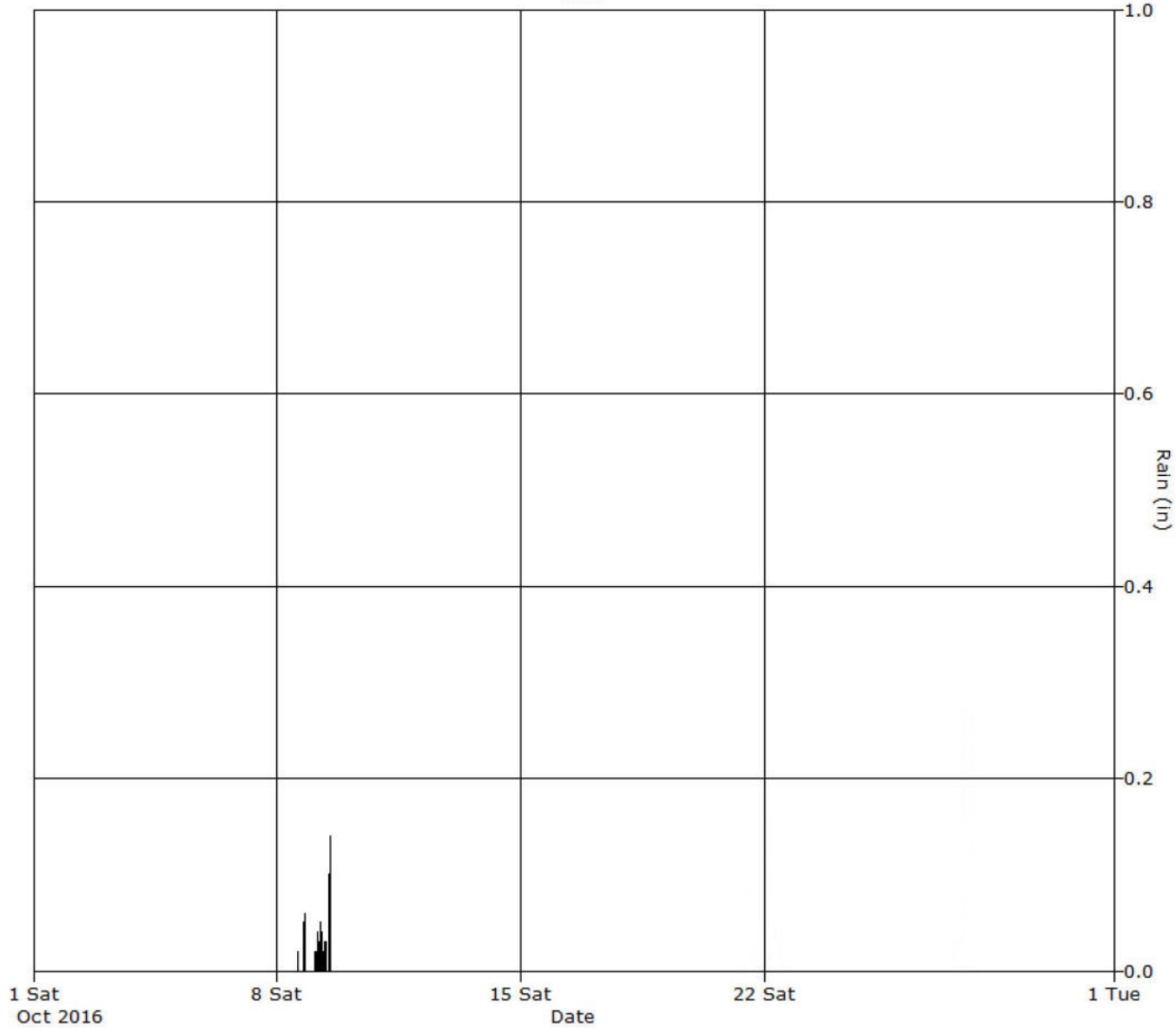


Report Period

10/1/2016
To
10/31/2016

Legend

Rain

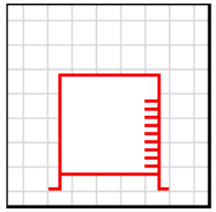


HYDROGRAPH REPORT

RG1

Rain Gauge

RG1

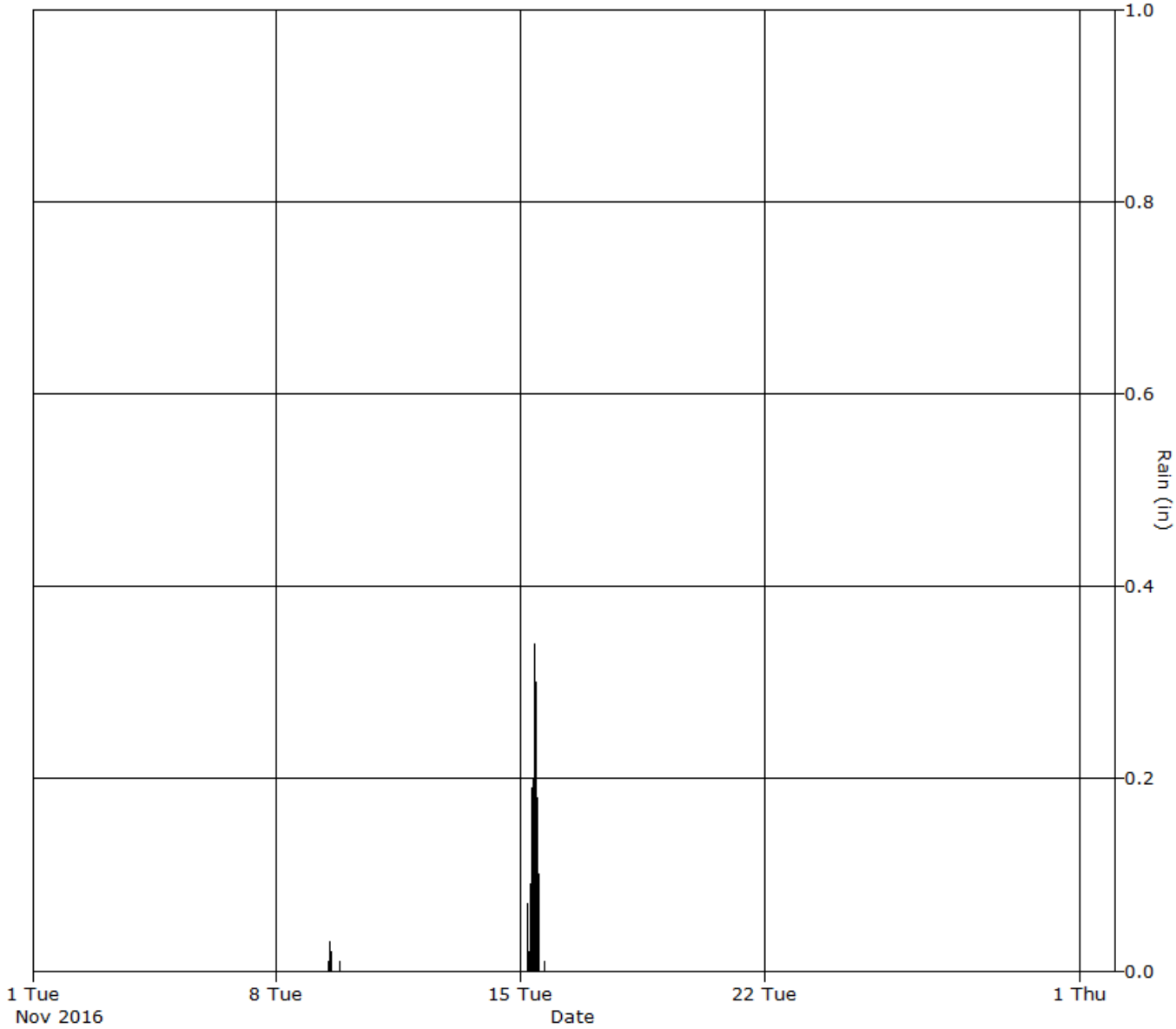


Report Period

11/1/2016
To
11/16/2016

Legend

Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016																	
5/18/2016																	
5/19/2016																	
5/20/2016																	
5/21/2016																	0.03
5/22/2016																	0.08
5/23/2016																	
5/24/2016																	0.16
5/25/2016																	
5/26/2016																	
5/27/2016																	
5/28/2016																	
5/29/2016																	
5/30/2016																	1.38
5/31/2016																	

Report Summary For The Period 5/17/2016 - 5/31/2016

	Rain (in)
Total	1.65
Avg	

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016																	
6/2/2016																	
6/3/2016																	0.03
6/4/2016																	0.58
6/5/2016																	0.96
6/6/2016																	
6/7/2016																	
6/8/2016																	0.40
6/9/2016																	
6/10/2016																	
6/11/2016																	
6/12/2016																	
6/13/2016																	
6/14/2016																	
6/15/2016																	
6/16/2016																	0.20
6/17/2016																	
6/18/2016																	
6/19/2016																	
6/20/2016																	
6/21/2016																	
6/22/2016																	
6/23/2016																	
6/24/2016																	
6/25/2016																	
6/26/2016																	
6/27/2016																	0.18
6/28/2016																	0.43
6/29/2016																	0.04
6/30/2016																	

Report Summary For The Period 6/1/2016 - 6/30/2016

	Rain (in)
Total	2.82
Avg	

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016																	1.28
7/2/2016																	
7/3/2016																	
7/4/2016																	0.27
7/5/2016																	1.15
7/6/2016																	
7/7/2016																	0.01
7/8/2016																	0.02
7/9/2016																	0.38
7/10/2016																	
7/11/2016																	
7/12/2016																	
7/13/2016																	
7/14/2016																	0.62
7/15/2016																	
7/16/2016																	
7/17/2016																	
7/18/2016																	0.32
7/19/2016																	
7/20/2016																	
7/21/2016																	
7/22/2016																	
7/23/2016																	
7/24/2016																	
7/25/2016																	0.77
7/26/2016																	
7/27/2016																	
7/28/2016																	
7/29/2016																	0.86
7/30/2016																	0.24
7/31/2016																	0.72

Report Summary For The Period 7/1/2016 - 7/31/2016

	Rain (in)
Total	6.64
Avg	

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016																	0.05
8/2/2016																	
8/3/2016																	
8/4/2016																	
8/5/2016																	
8/6/2016																	0.09
8/7/2016																	
8/8/2016																	
8/9/2016																	
8/10/2016																	0.08
8/11/2016																	
8/12/2016																	0.34
8/13/2016																	
8/14/2016																	0.13
8/15/2016																	
8/16/2016																	0.23
8/17/2016																	
8/18/2016																	0.03
8/19/2016																	
8/20/2016																	0.02
8/21/2016																	0.15
8/22/2016																	
8/23/2016																	
8/24/2016																	
8/25/2016																	
8/26/2016																	
8/27/2016																	
8/28/2016																	
8/29/2016																	
8/30/2016																	
8/31/2016																	

Report Summary For The Period 8/1/2016 - 8/31/2016

	Rain (in)
Total	1.12
Avg	

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016																	0.56
9/2/2016																	
9/3/2016																	
9/4/2016																	
9/5/2016																	
9/6/2016																	
9/7/2016																	
9/8/2016																	
9/9/2016																	0.11
9/10/2016																	0.05
9/11/2016																	
9/12/2016																	0.00
9/13/2016																	
9/14/2016																	0.64
9/15/2016																	
9/16/2016																	
9/17/2016																	
9/18/2016																	
9/19/2016																	0.45
9/20/2016																	
9/21/2016																	
9/22/2016																	
9/23/2016																	
9/24/2016																	0.28
9/25/2016																	
9/26/2016																	
9/27/2016																	0.25
9/28/2016																	
9/29/2016																	
9/30/2016																	0.41

Report Summary For The Period 9/1/2016 - 9/30/2016

	Rain (in)
Total	2.75
Avg	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016																	
10/2/2016																	
10/3/2016																	
10/4/2016																	
10/5/2016																	
10/6/2016																	
10/7/2016																	
10/8/2016																	0.13
10/9/2016																	0.52
10/10/2016																	
10/11/2016																	
10/12/2016																	
10/13/2016																	
10/14/2016																	
10/15/2016																	
10/16/2016																	
10/17/2016																	
10/18/2016																	
10/19/2016																	
10/20/2016																	
10/21/2016																	
10/22/2016																	
10/23/2016																	
10/24/2016																	
10/25/2016																	
10/26/2016																	
10/27/2016																	
10/28/2016																	
10/29/2016																	
10/30/2016																	
10/31/2016																	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Rain (in)
Total	0.65
Avg	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

RG1, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016																	
11/2/2016																	
11/3/2016																	
11/4/2016																	
11/5/2016																	
11/6/2016																	
11/7/2016																	
11/8/2016																	
11/9/2016																	0.07
11/10/2016																	
11/11/2016																	
11/12/2016																	
11/13/2016																	
11/14/2016																	
11/15/2016																	1.50
11/16/2016																	

Report Summary For The Period 11/1/2016 - 11/16/2016

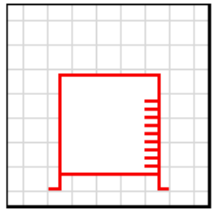
	Rain (in)
Total	1.57
Avg	

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

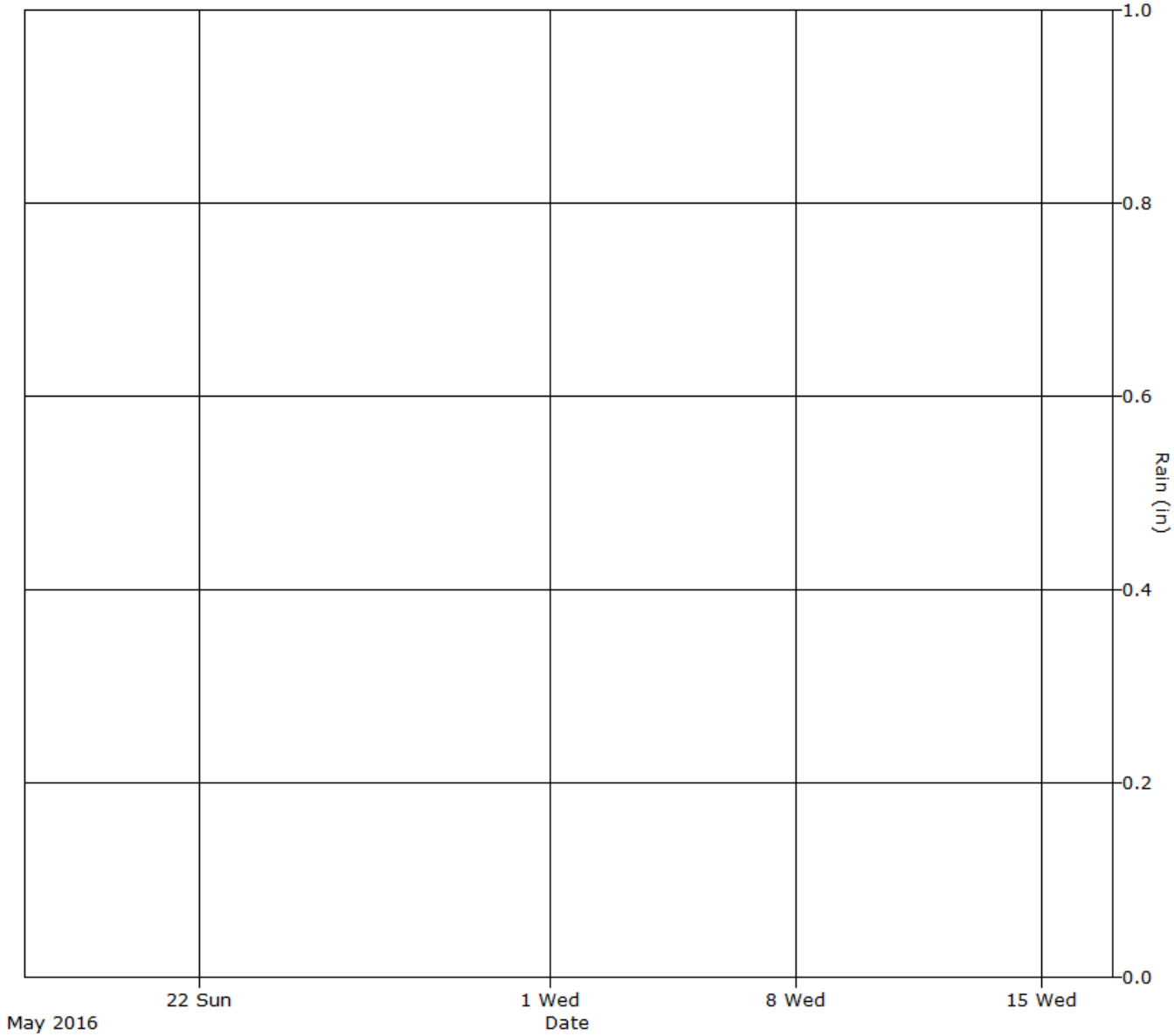


Report Period

5/17/2016
To
5/31/2016

Legend

Rain



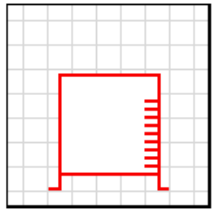
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

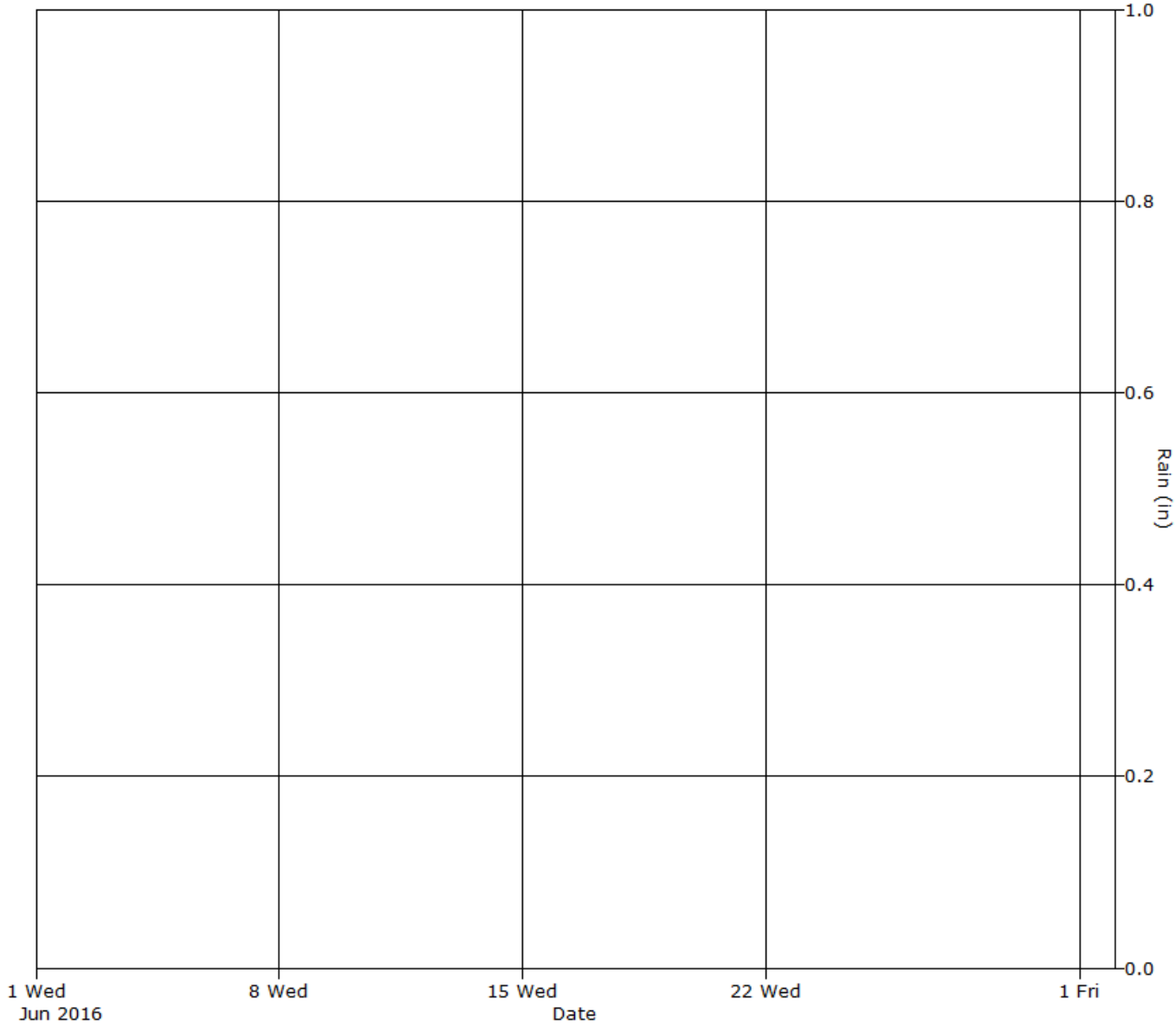


Report Period

6/1/2016
To
6/30/2016

Legend

Rain



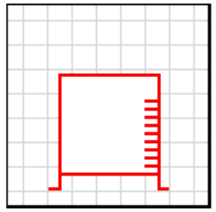
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

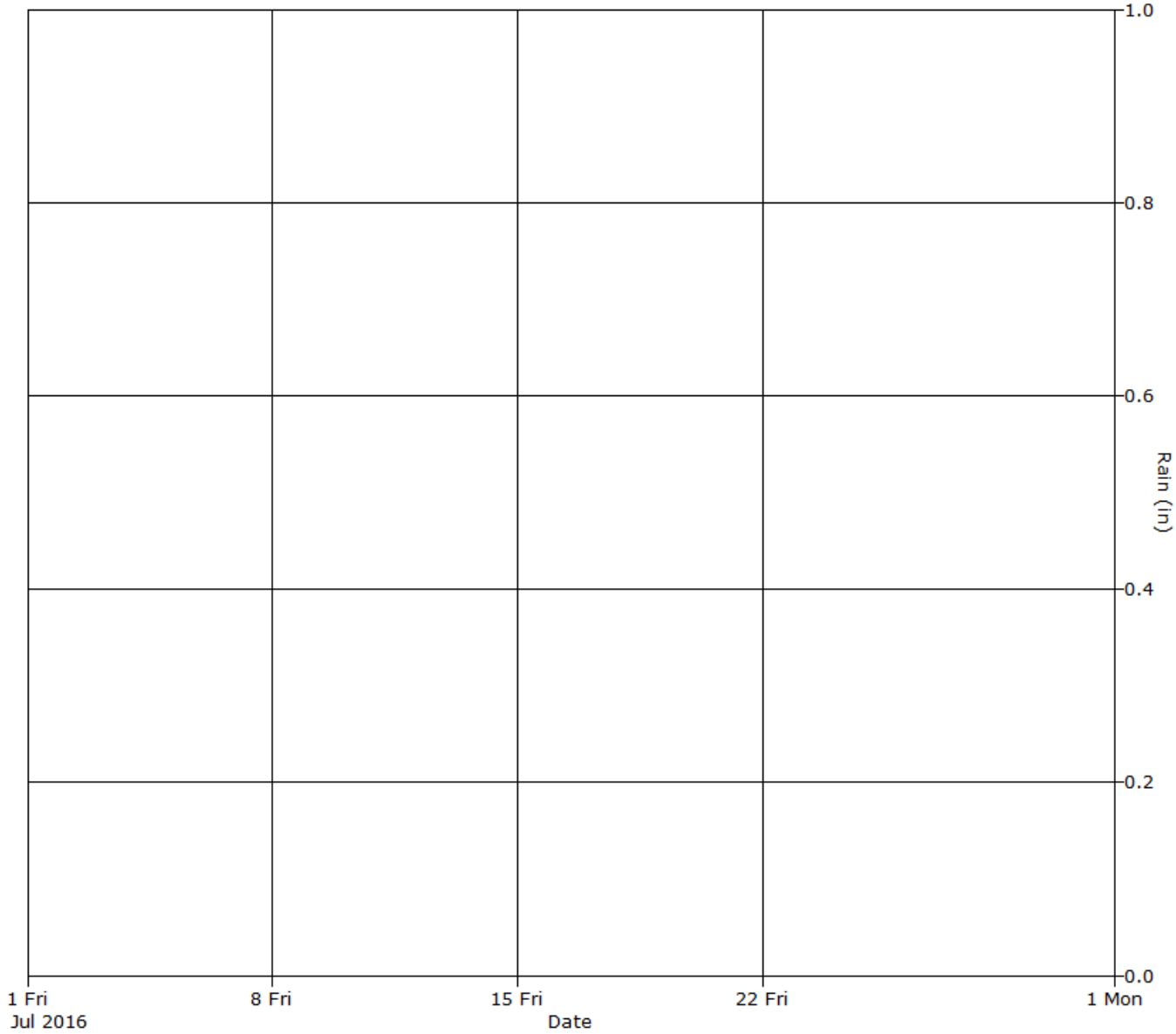


Report Period

7/1/2016
To
7/31/2016

Legend

Rain



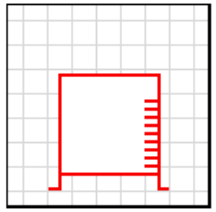
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

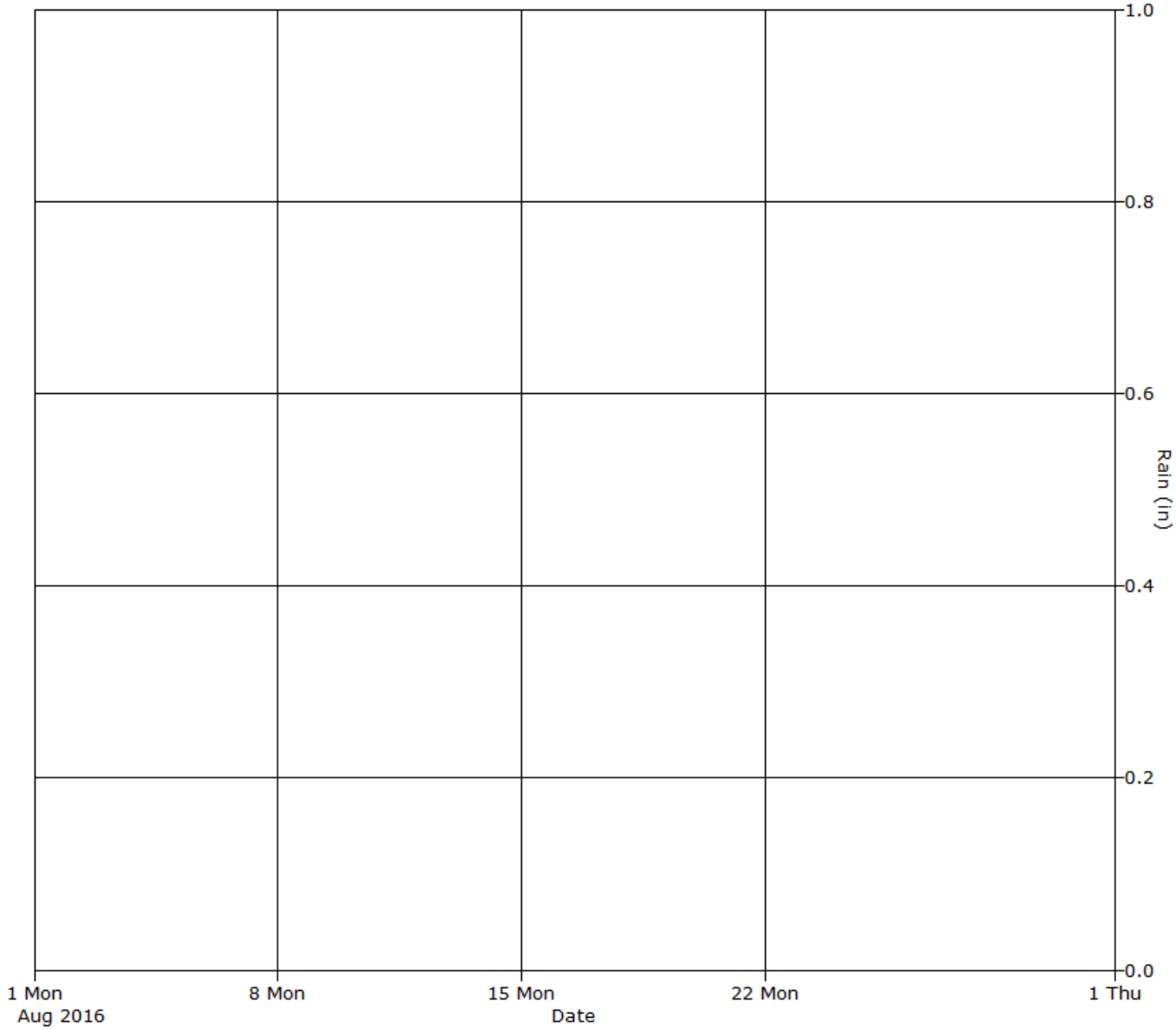


Report Period

8/1/2016
To
8/31/2016

Legend

Rain



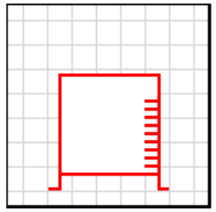
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

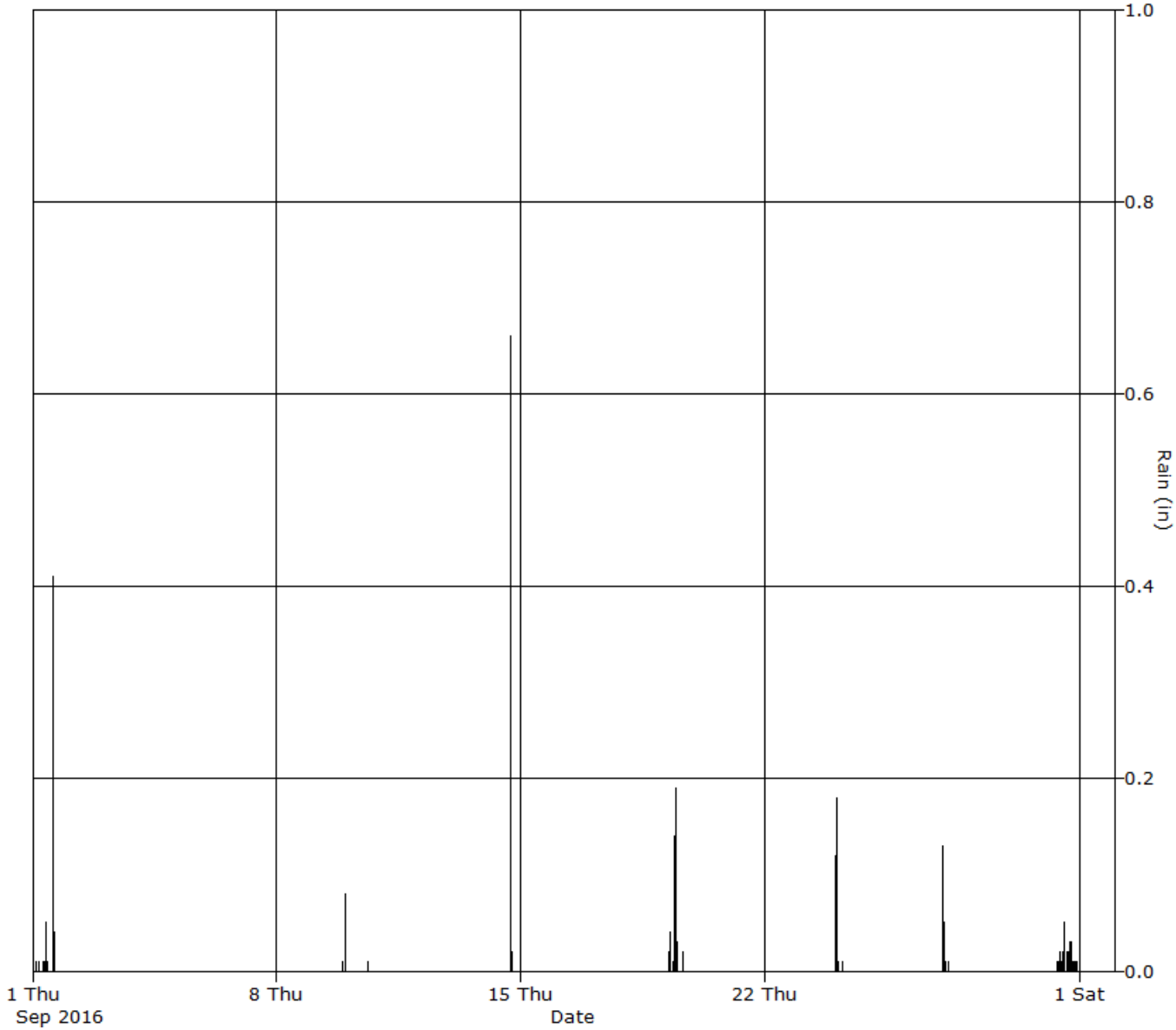


Report Period

9/1/2016
To
9/30/2016

Legend

Rain



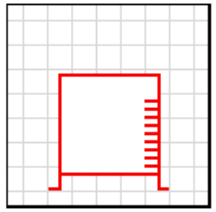
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

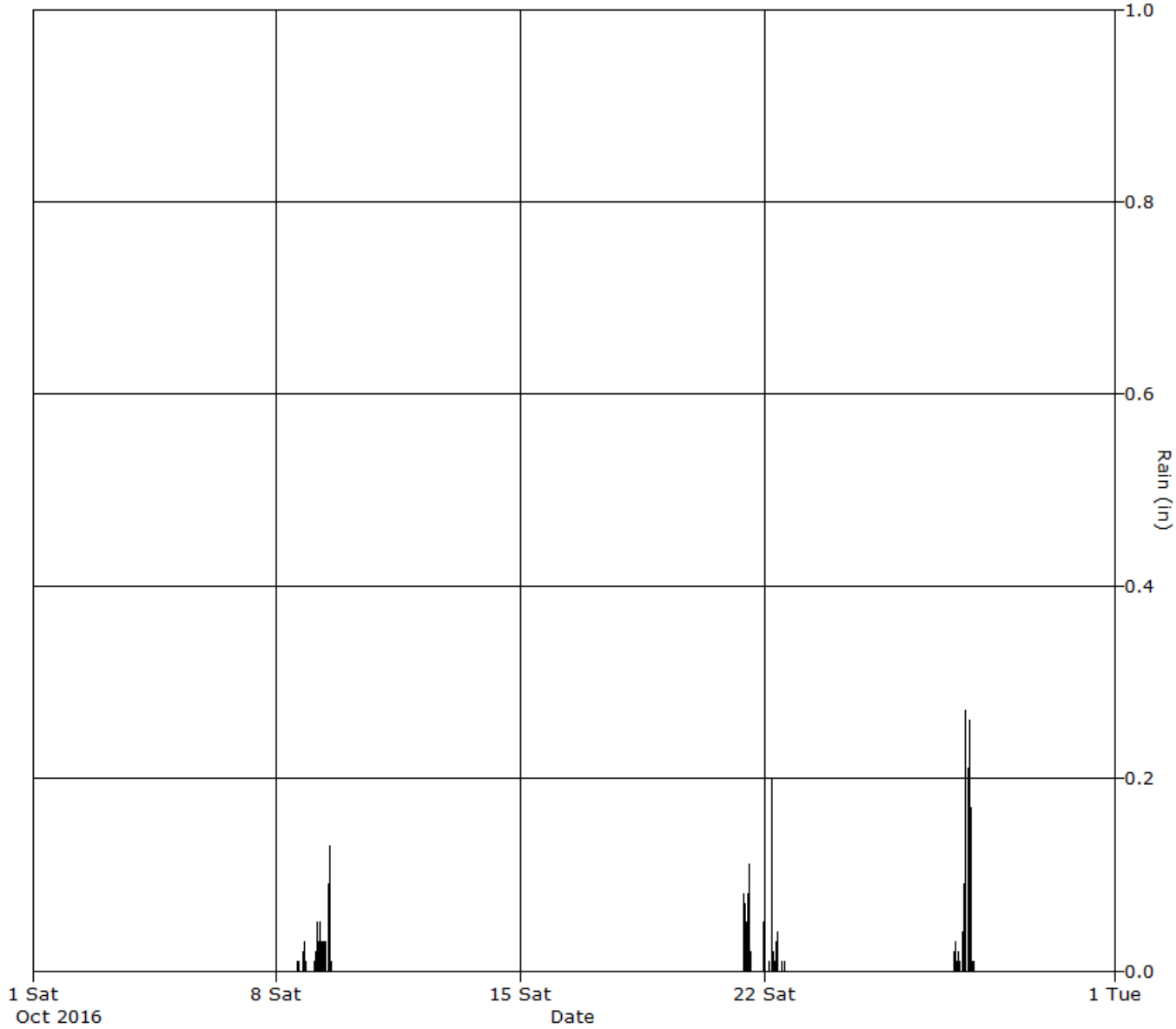


Report Period

10/1/2016
To
10/31/2016

Legend

Rain



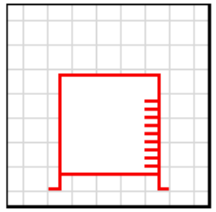
ADS ENVIRONMENTAL SERVICES

HYDROGRAPH REPORT

RGNHSA

Rain Gauge

RGNHSA

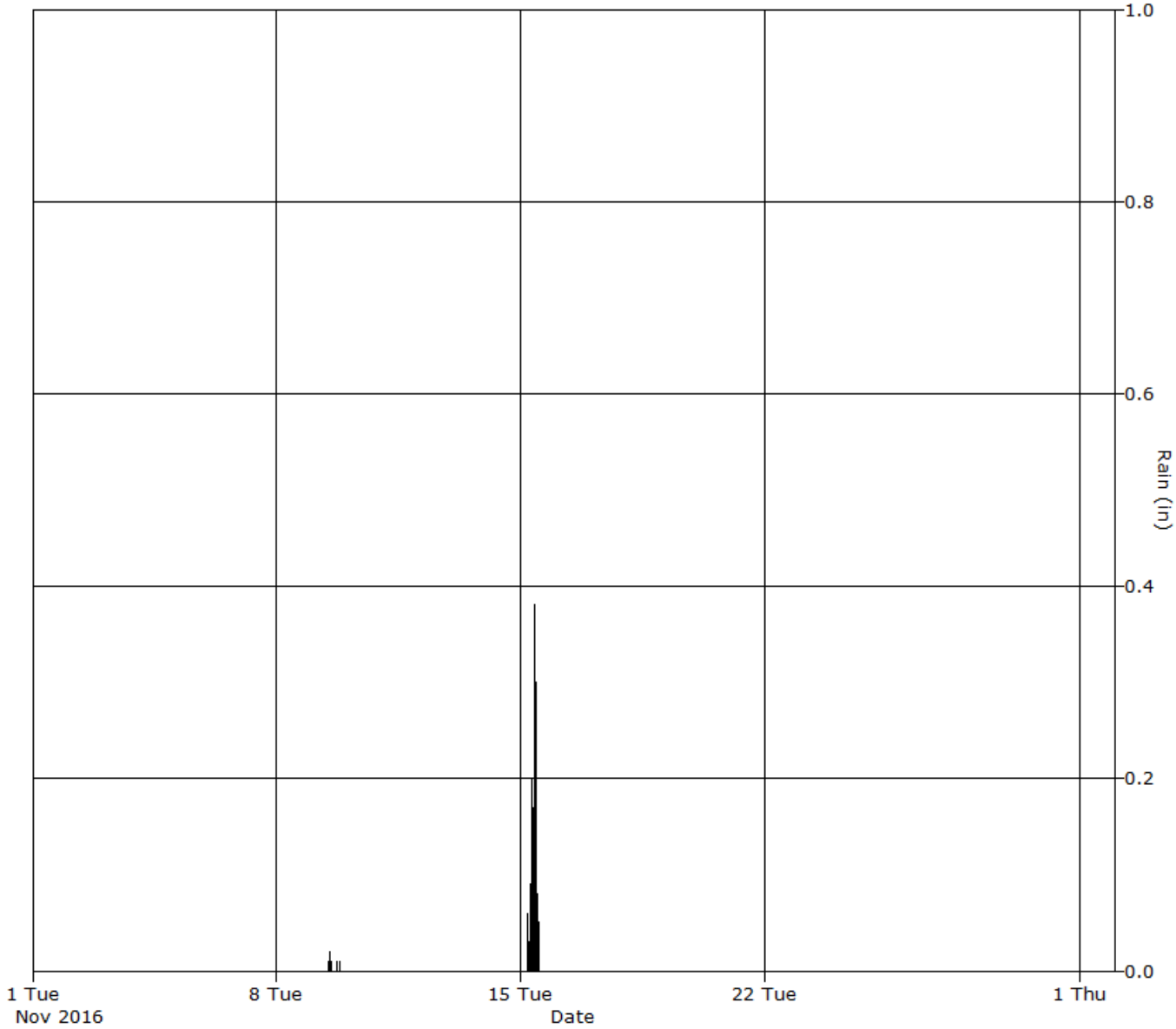


Report Period

11/1/2016
To
11/16/2016

Legend

Rain



ADS ENVIRONMENTAL SERVICES

Daily Tabular Report For The Period 5/17/2016 - 5/31/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
5/17/2016																	
5/18/2016																	
5/19/2016																	
5/20/2016																	
5/21/2016																	
5/22/2016																	
5/23/2016																	
5/24/2016																	
5/25/2016																	
5/26/2016																	
5/27/2016																	
5/28/2016																	
5/29/2016																	
5/30/2016																	
5/31/2016																	

Report Summary For The Period 5/17/2016 - 5/31/2016

Daily Tabular Report For The Period 6/1/2016 - 6/30/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
6/1/2016																	
6/2/2016																	
6/3/2016																	
6/4/2016																	
6/5/2016																	
6/6/2016																	
6/7/2016																	
6/8/2016																	
6/9/2016																	
6/10/2016																	
6/11/2016																	
6/12/2016																	
6/13/2016																	
6/14/2016																	
6/15/2016																	
6/16/2016																	
6/17/2016																	
6/18/2016																	
6/19/2016																	
6/20/2016																	
6/21/2016																	
6/22/2016																	
6/23/2016																	
6/24/2016																	
6/25/2016																	
6/26/2016																	
6/27/2016																	
6/28/2016																	
6/29/2016																	
6/30/2016																	

Report Summary For The Period 6/1/2016 - 6/30/2016

Daily Tabular Report For The Period 7/1/2016 - 7/31/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
7/1/2016																	
7/2/2016																	
7/3/2016																	
7/4/2016																	
7/5/2016																	
7/6/2016																	
7/7/2016																	
7/8/2016																	
7/9/2016																	
7/10/2016																	
7/11/2016																	
7/12/2016																	
7/13/2016																	
7/14/2016																	
7/15/2016																	
7/16/2016																	
7/17/2016																	
7/18/2016																	
7/19/2016																	
7/20/2016																	
7/21/2016																	
7/22/2016																	
7/23/2016																	
7/24/2016																	
7/25/2016																	
7/26/2016																	
7/27/2016																	
7/28/2016																	
7/29/2016																	
7/30/2016																	
7/31/2016																	

Report Summary For The Period 7/1/2016 - 7/31/2016

Daily Tabular Report For The Period 8/1/2016 - 8/31/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
8/1/2016																	
8/2/2016																	
8/3/2016																	
8/4/2016																	
8/5/2016																	
8/6/2016																	
8/7/2016																	
8/8/2016																	
8/9/2016																	
8/10/2016																	
8/11/2016																	
8/12/2016																	
8/13/2016																	
8/14/2016																	
8/15/2016																	
8/16/2016																	
8/17/2016																	
8/18/2016																	
8/19/2016																	
8/20/2016																	
8/21/2016																	
8/22/2016																	
8/23/2016																	
8/24/2016																	
8/25/2016																	
8/26/2016																	
8/27/2016																	
8/28/2016																	
8/29/2016																	
8/30/2016																	
8/31/2016																	

Report Summary For The Period 8/1/2016 - 8/31/2016

Daily Tabular Report For The Period 9/1/2016 - 9/30/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
9/1/2016																	0.55
9/2/2016																	
9/3/2016																	
9/4/2016																	
9/5/2016																	
9/6/2016																	
9/7/2016																	
9/8/2016																	
9/9/2016																	0.09
9/10/2016																	0.01
9/11/2016																	
9/12/2016																	
9/13/2016																	
9/14/2016																	0.68
9/15/2016																	
9/16/2016																	
9/17/2016																	
9/18/2016																	
9/19/2016																	0.45
9/20/2016																	
9/21/2016																	
9/22/2016																	
9/23/2016																	
9/24/2016																	0.32
9/25/2016																	
9/26/2016																	
9/27/2016																	0.20
9/28/2016																	
9/29/2016																	
9/30/2016																	0.26

Report Summary For The Period 9/1/2016 - 9/30/2016

	Rain (in)
Total	2.56
Avg	

Daily Tabular Report For The Period 10/1/2016 - 10/31/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
10/1/2016																	
10/2/2016																	
10/3/2016																	
10/4/2016																	
10/5/2016																	
10/6/2016																	
10/7/2016																	
10/8/2016																	0.08
10/9/2016																	0.51
10/10/2016																	
10/11/2016																	
10/12/2016																	
10/13/2016																	
10/14/2016																	
10/15/2016																	
10/16/2016																	
10/17/2016																	
10/18/2016																	
10/19/2016																	
10/20/2016																	
10/21/2016																	0.46
10/22/2016																	0.33
10/23/2016																	
10/24/2016																	
10/25/2016																	
10/26/2016																	
10/27/2016																	1.15
10/28/2016																	
10/29/2016																	
10/30/2016																	
10/31/2016																	

Report Summary For The Period 10/1/2016 - 10/31/2016

	Rain (in)
Total	2.53
Avg	

Daily Tabular Report For The Period 11/1/2016 - 11/16/2016

RGNHSA, Pipe Height:

Daily Tabular Report

Date	Depth (in)					Velocity (ft/s)					Quantity (MGD - Total ft3)						Rain (in)
	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
11/1/2016																	
11/2/2016																	
11/3/2016																	
11/4/2016																	
11/5/2016																	
11/6/2016																	
11/7/2016																	
11/8/2016																	
11/9/2016																	0.06
11/10/2016																	
11/11/2016																	
11/12/2016																	
11/13/2016																	
11/14/2016																	
11/15/2016																	1.36
11/16/2016																	

Report Summary For The Period 11/1/2016 - 11/16/2016

	Rain (in)
Total	1.42
Avg	

Appendix 1

CONFIRMATION REPORT

NHSA Confirmation Report

Flow Meter Confirmations

2016

Site	Date/Time	Field Depth (in)	Meter Depth (in)	Depth Tolerance (+/- in.)	Depth Difference (in)	Silt Level	Field Peak Velocity (fps)	Meter Peak Velocity (fps)
H1	4/28/16 4:06 PM	7.38	7.41	0.50	0.03	0.00	0.64	0.66
H1	4/28/16 4:10 PM	7.38	7.39	0.50	0.01	0.00	0.65	0.65
H1	5/18/16 1:08 PM	7.50	7.50	0.50	0.00	0.00	0.65	0.68
H1	6/14/16 12:13 PM	7.00	7.07	0.13	0.07	0.13	0.69	0.71
H1	6/20/16 10:27 AM	7.13	7.03	0.25	0.10	0.13	0.69	0.71
H1	7/20/16 5:25 AM	6.50	6.28	0.38	0.22	0.00	0.48	0.48
H1	8/1/16 2:42 PM	7.13	7.03	0.25	0.10	0.25	1.01	1.02
H1	9/7/16 11:28 AM	6.63	6.67	0.25	0.04	0.13	0.69	0.64
H1	10/5/16 10:27 AM	6.88	7.06	0.25	0.18	0.25	0.68	0.74
H1	11/2/16 10:24 AM	7.25	7.13	0.25	0.12	0.25	0.88	0.82
H1	11/28/16 10:17 AM	7.25	7.31	0.25	0.06	0.00	0.68	0.69
H1	11/28/16 10:36 AM	7.25	7.23	0.25	0.02	0.00	0.65	0.63
H2	5/12/16 4:30 PM	7.00	6.98	0.50	0.02	4.00	1.12	0.94
H2	5/12/16 4:37 PM	7.00	6.99	0.50	0.01	4.00	1.27	1.55
H2	6/3/16 3:56 AM	6.50	6.50	0.25	0.00	4.75	1.02	1.02
H2	7/7/16 3:43 PM	7.00	6.87	0.38	0.13	0.00	0.68	0.62
H2	7/20/16 4:40 AM	6.50	6.38	0.38	0.12	3.00	1.24	0.90
H2	8/1/16 1:58 PM	14.00	13.70	0.38	0.30	5.00	0.76	0.75
H2	9/12/16 10:40 AM	7.75	8.01	0.38	0.26	4.00	0.96	0.86
H2	10/5/16 10:53 AM	7.75	7.64	0.25	0.11	0.50	0.79	0.86
H2	11/2/16 10:47 AM	8.13	8.15	0.25	0.02	1.50	0.97	1.02
H2	11/28/16 11:43 AM	7.50	7.56	0.25	0.06	3.00	0.80	0.87
H2	11/28/16 11:58 AM	7.50	7.74	0.25	0.24	3.13	0.84	0.86
H3	4/27/16 3:17 PM	22.00	21.94	0.50	0.06	11.00	0.62	0.60
H3	4/27/16 3:22 PM	22.00	21.94	0.50	0.06	11.00	0.63	0.60
H3	5/17/16 10:27 AM	23.25	23.59	0.50	0.34	8.00	0.63	0.69
H3	6/14/16 1:04 PM	22.13	22.42	0.38	0.29	8.00	0.62	0.65
H3	6/20/16 10:59 AM	22.38	22.55	0.25	0.17	8.38	0.59	0.68
H3	7/20/16 6:08 AM	21.00	21.16	0.38	0.16	4.00	0.40	0.56
H3	8/3/16 11:11 AM	22.75	22.80	0.25	0.05	0.88	0.71	0.71
H3	9/21/16 9:54 AM	24.00	23.93	0.38	0.07	0.75	0.69	0.77
H3	10/6/16 9:57 AM	24.00	23.98	0.25	0.02	1.00	0.79	0.84
H3	11/2/16 11:40 AM	23.50	23.38	0.38	0.12	1.50	0.71	0.71
H3	11/28/16 2:29 PM	22.25	22.49	0.38	0.24	8.25	0.77	0.69
H3	11/28/16 2:43 PM	22.38	22.51	0.38	0.13	8.25	0.71	0.69
H4	4/26/16 5:14 PM	11.25	11.19	0.50	0.06	2.00	1.63	1.64
H4	4/26/16 5:17 PM	11.25	11.28	0.50	0.03	2.00	1.63	1.64
H4	5/17/16 1:16 AM	7.75	7.62	0.50	0.13	2.00	1.08	1.12
H4	6/20/16 12:00 AM	8.00	8.05	0.38	0.05	2.00	1.19	1.11

NHSA Confirmation Report

Flow Meter Confirmations

2016

Site	Date/Time	Field Depth (in)	Meter Depth (in)	Depth Tolerance (+/- in.)	Depth Difference (in)	Silt Level	Field Peak Velocity (fps)	Meter Peak Velocity (fps)
H4	7/18/16 12:27 PM	8.13	8.25	0.38	0.12	1.00	0.73	1.04
H4	8/8/16 11:28 AM	8.25	8.19	0.25	0.06	1.50	1.01	1.10
H4	9/21/16 10:50 AM	8.50	8.33	0.38	0.17	0.50	1.16	1.12
H4	10/6/16 10:48 AM	8.50	8.40	0.38	0.10	1.00	1.07	1.14
H4	11/4/16 10:35 AM	8.50	8.63	0.25	0.13	1.50	1.01	0.96
H4	12/2/16 12:06 PM	8.75	8.91	0.38	0.16	3.50	1.09	1.14
H4	12/2/16 12:21 PM	8.75	8.88	0.38	0.13	3.50	1.11	1.14
H5	5/2/16 5:34 PM	15.63	15.36	0.50	0.27	9.00	0.59	0.60
H5	5/2/16 5:57 PM	15.63	15.39	0.50	0.24	9.00	0.58	0.61
H5	5/17/16 3:18 PM	14.50	14.72	0.50	0.22	9.00	0.48	0.58
H5	6/20/16 1:12 PM	15.00	15.15	0.38	0.15	7.00	0.64	0.57
H5	7/7/16 8:16 AM	22.50	22.28	0.38	0.22	2.00	0.80	0.81
H5	7/25/16 11:14 AM	15.75	15.68	0.25	0.07	6.00	0.54	0.64
H5	8/3/16 11:54 AM	16.00	16.06	0.25	0.06	5.25	0.71	0.70
H5	9/12/16 11:40 AM	15.50	15.55	0.38	0.05	4.50	0.66	0.62
H5	10/5/16 11:19 AM	15.75	15.60	0.38	0.15	5.00	0.69	0.65
H5	11/4/16 11:14 AM	15.75	15.69	0.25	0.06	5.00	0.48	0.56
H5	11/18/16 10:50 AM	16.63	16.71	0.25	0.08	5.25	0.46	0.47
H5	11/18/16 11:04 AM	16.50	16.48	0.25	0.02	5.25	0.46	0.48
H6	4/27/16 10:56 AM	3.13	3.22	0.50	0.09	0.00	1.91	1.91
H6	4/27/16 11:20 AM	3.13	3.19	0.50	0.06	0.00	1.90	1.82
H6	5/17/16 4:05 PM	2.63	2.88	0.50	0.25	0.00	2.65	2.58
H6	6/20/16 1:37 PM	3.38	3.24	0.25	0.14	0.00	2.12	2.30
H6	7/20/16 7:07 AM	4.50	4.33	0.38	0.17	0.00	2.05	2.53
H6	8/3/16 12:30 PM	3.00	2.82	0.25	0.18	0.00	2.25	2.23
H6	9/7/16 12:27 PM	3.13	3.28	0.25	0.15	0.00	1.77	1.75
H6	10/18/16 1:40 PM	3.25	3.17	0.25	0.08	0.00	2.05	1.84
H6	11/4/16 11:34 AM	3.25	3.22	0.25	0.03	0.00	1.64	1.78
H6	11/18/16 9:33 AM	3.38	3.17	0.25	0.21	0.00	1.74	1.79
H6	11/18/16 9:46 AM	3.25	3.19	0.25	0.06	0.00	1.69	1.76
H7	4/27/16 6:22 PM	11.63	11.72	0.50	0.09	7.00	0.66	0.64
H7	4/27/16 6:32 PM	11.75	11.73	0.50	0.02	7.00	0.65	0.67
H7	5/18/16 2:15 PM	11.38	11.41	0.50	0.03	6.50	0.68	0.76
H7	5/23/16 10:37 AM	11.50	11.84	0.50	0.34	4.50	0.80	0.78
H7	5/23/16 10:47 AM	11.88	11.87	0.50	0.01	4.50	0.72	0.66
H7	6/20/16 12:00 AM	11.38	11.58	0.25	0.20	6.00	0.69	0.64
H7	7/20/16 7:44 AM	11.63	12.27	0.75	0.64	6.25	0.48	0.64
H7	8/3/16 1:18 PM	12.00	11.99	0.25	0.01	6.50	0.80	0.83
H7	9/7/16 1:04 PM	11.13	11.15	0.38	0.02	6.00	0.79	0.84

NHSA Confirmation Report

Flow Meter Confirmations

2016

Site	Date/Time	Field Depth (in)	Meter Depth (in)	Depth Tolerance (+/- in.)	Depth Difference (in)	Silt Level	Field Peak Velocity (fps)	Meter Peak Velocity (fps)
H7	10/5/16 11:51 AM	12.00	12.04	0.25	0.04	6.50	0.79	0.81
H7	11/7/16 10:44 AM	12.00	11.90	0.25	0.10	6.38	0.80	0.81
H7	11/23/16 9:17 AM	12.00	11.83	0.25	0.17	6.00	0.81	0.74
H7	11/23/16 9:28 AM	12.00	11.86	0.25	0.14	6.00	0.79	0.72
HSI	4/26/16 7:15 PM	1.38	1.23	0.50	0.15	0.00	7.38	7.32
HSI	4/26/16 7:20 PM	1.50	1.16	0.50	0.34	0.00	7.67	7.30
HSI	5/17/16 11:32 AM	1.25	0.93	0.50	0.32	0.00	7.28	8.15
HSI	6/20/16 11:27 AM	2.25	2.16	0.50	0.09	0.00	4.19	4.24
HSI	6/29/16 12:45 PM	0.75	0.75	0.25	0.00	0.00	7.18	7.18
HSI	7/7/16 7:32 AM	0.63	0.40	0.38	0.23	0.00	6.11	6.24
HSI	7/25/16 10:23 AM	1.25	1.02	0.25	0.23	0.00	5.68	5.81
HSI	8/1/16 12:43 PM	1.88	1.62	0.50	0.26	0.00	7.00	7.27
HSI	9/7/16 11:55 AM	1.88	1.64	0.50	0.24	0.00	6.65	6.70
HSI	10/6/16 10:20 AM	1.75	1.47	0.50	0.28	0.00	6.45	6.66
HSI	11/4/16 10:12 AM	1.63	1.43	0.38	0.20	0.00	6.37	6.50
HSI	11/18/16 12:20 PM	1.50	1.17	0.38	0.33	0.00	6.13	6.39
HSI	11/18/16 12:32 PM	1.38	1.21	0.38	0.17	0.00	6.44	6.64
NHW	4/28/16 10:34 AM	6.63	6.54	0.50	0.09	0.00	2.32	2.30
NHW	4/28/16 10:45 AM	6.63	6.58	0.50	0.05	0.00	2.24	2.12
NHW	5/18/16 10:58 AM	7.50	7.83	0.50	0.33	0.00	1.37	2.51
NHW	5/23/16 1:08 PM	6.88	7.03	0.50	0.15	0.00	2.00	1.91
NHW	6/23/16 2:18 PM	6.88	6.88	0.25	0.00	0.00	1.92	1.92
NHW	7/7/16 6:04 AM	5.75	5.71	0.25	0.04	1.00	1.69	1.74
NHW	8/22/16 1:55 PM	6.00	6.11	0.38	0.11	0.75	1.69	1.73
NHW	9/12/16 2:17 PM	5.88	5.86	0.38	0.02	0.00	1.86	1.93
NHW	10/5/16 1:38 PM	5.63	5.72	0.38	0.09	0.50	1.93	1.83
NHW	11/4/16 12:44 PM	5.75	6.18	0.50	0.43	0.00	1.74	1.89
NHW	11/23/16 10:22 AM	5.75	5.79	0.38	0.04	0.00	1.81	1.91
UC1	5/11/16 2:08 PM	19.60	19.50	0.50	0.10	0.00	1.04	1.01
UC1	5/11/16 2:29 PM	19.60	19.66	0.50	0.06	0.00	1.10	1.09
UC1	5/24/16 11:07 AM	19.38	19.38	0.50	0.00	0.00	1.20	1.20
UC1	6/3/16 6:05 AM	18.88	19.25	0.50	0.37	0.00	1.00	1.02
UC1	7/6/16 12:28 PM	19.75	19.71	0.38	0.04	0.50	1.27	1.39
UC1	8/22/16 1:20 PM	19.50	19.44	0.38	0.06	0.50	1.11	1.18
UC1	9/14/16 10:52 AM	19.38	19.29	0.25	0.09	0.38	1.06	1.12
UC1	10/5/16 2:20 PM	19.50	19.42	0.38	0.08	0.50	1.14	1.21
UC1	11/7/16 12:32 PM	19.50	19.44	0.25	0.06	0.50	1.07	1.13
UC1	11/21/16 1:10 PM	19.00	19.00	0.63	0.00	0.00	0.89	0.89
UC1	11/21/16 1:35 PM	19.00	19.36	0.63	0.36	0.00	0.89	1.09

NHSA Confirmation Report

Flow Meter Confirmations

2016

Site	Date/Time	Field Depth (in)	Meter Depth (in)	Depth Tolerance (+/- in.)	Depth Difference (in)	Silt Level	Field Peak Velocity (fps)	Meter Peak Velocity (fps)
UC2	5/12/16 10:11 AM	16.00	16.30	0.50	0.30	1.00	0.68	0.79
UC2	5/12/16 10:33 AM	16.00	16.41	0.50	0.41	1.00	0.68	0.72
UC2	6/3/16 8:52 AM	17.63	17.32	0.50	0.31	0.00	0.82	0.80
UC2	7/14/16 1:12 PM	17.25	17.37	0.38	0.12	0.00	0.66	0.65
UC2	8/15/16 1:43 PM	17.13	17.27	0.38	0.14	0.00	0.77	0.75
UC2	9/14/16 12:06 PM	16.75	17.08	0.38	0.33	0.38	0.77	0.71
UC2	10/11/16 1:15 PM	16.88	17.00	0.50	0.12	0.00	0.60	0.66
UC2	11/14/16 11:23 AM	17.13	17.44	0.50	0.31	0.00	0.66	0.71
UC2	11/21/16 5:13 AM	17.25	17.49	0.50	0.24	0.00	0.71	0.77
UC2	11/21/16 5:33 AM	17.38	17.31	0.50	0.07	0.00	0.71	0.71
UH1	4/25/16 1:12 PM	3.50	3.43	0.50	0.07	0.00	1.82	1.88
UH1	4/25/16 1:40 PM	3.50	3.33	0.50	0.17	0.00	1.79	1.97
UH1	5/18/16 9:48 AM	3.38	3.68	0.50	0.30	0.00	1.80	1.88
UH1	6/23/16 11:52 AM	3.50	3.48	0.25	0.02	0.00	1.48	1.57
UH1	7/20/16 8:32 AM	3.75	3.51	0.38	0.24	0.00	1.40	1.39
UH1	8/22/16 2:35 PM	3.00	2.99	0.38	0.01	0.00	1.14	1.19
UH1	9/14/16 11:26 AM	3.38	3.24	0.25	0.14	0.00	1.04	1.13
UH1	10/5/16 2:59 PM	2.63	2.52	0.50	0.11	0.00	1.39	1.44
UH1	10/11/16 12:19 PM	3.00	3.02	0.38	0.02	0.00	1.27	1.18
UH1	11/7/16 1:24 PM	3.38	3.31	0.38	0.07	0.00	1.29	1.22
UH1	11/22/16 10:23 AM	3.75	3.65	0.25	0.10	0.00	1.47	1.56
UH1	11/22/16 10:35 AM	3.50	3.38	0.25	0.12	0.00	1.33	1.27
W1	4/25/16 4:38 PM	3.75	3.59	0.50	0.16	0.00	4.28	3.92
W1	4/25/16 4:47 PM	3.88	3.59	0.50	0.29	0.00	4.29	4.31
W1	5/9/16 1:21 PM	3.50	3.73	0.25	0.23	0.00	4.25	4.12
W1	5/24/16 1:21 PM	3.50	3.50	0.38	0.00	0.00	4.25	4.25
W1	6/14/16 10:47 AM	4.00	3.97	0.25	0.03	0.00	4.10	3.92
W1	7/6/16 2:16 PM	4.00	4.02	0.25	0.02	0.00	3.79	3.91
W1	8/3/16 2:02 PM	4.25	3.80	0.50	0.45	0.00	4.10	4.02
W1	10/18/16 2:15 PM	3.88	3.66	0.25	0.22	0.00	4.23	4.45
W1	11/7/16 11:13 AM	4.13	3.91	0.38	0.22	0.00	4.02	4.16
W1	11/17/16 11:26 AM	4.50	4.18	0.50	0.32	0.00	4.07	4.18
W1	11/17/16 11:37 AM	4.38	4.31	0.50	0.07	0.00	4.29	4.39
W2-A	4/26/16 12:19 PM	2.25	2.05	0.50	0.20	0.00	7.69	7.66
W2-A	4/26/16 12:47 PM	2.13	2.15	0.50	0.02	0.00	7.40	7.62
W2-A	5/16/16 10:07 AM	2.00	2.45	0.50	0.45	0.00	7.01	7.34
W2-A	6/23/16 1:10 PM	2.25	2.24	0.25	0.01	0.00	7.17	7.32
W2-A	6/29/16 11:20 AM	2.63	2.55	0.50	0.08	0.00	7.01	7.05
W2-A	7/6/16 1:25 PM	2.63	2.51	0.50	0.12	0.00	7.07	7.13

NHSA Confirmation Report

Flow Meter Confirmations

2016

Site	Date/Time	Field Depth (in)	Meter Depth (in)	Depth Tolerance (+/- in.)	Depth Difference (in)	Silt Level	Field Peak Velocity (fps)	Meter Peak Velocity (fps)
W2-A	8/8/16 12:48 PM	2.25	2.25	0.50	0.00	0.00	7.40	7.40
W2-A	9/27/16 3:59 PM	2.50	2.50	0.50	0.00	0.00	7.31	7.41
W2-A	10/13/16 9:18 AM	2.50	2.41	0.50	0.09	0.00	7.27	7.35
W2-A	11/9/16 1:06 PM	3.50	2.99	0.75	0.51	0.00	8.01	8.34
W2-A	11/21/16 10:31 AM	2.50	2.57	0.38	0.07	0.00	7.38	7.52
W2-B	4/26/16 12:08 PM	2.00	1.91	0.50	0.09	0.00	7.00	7.02
W2-B	4/26/16 12:39 PM	2.00	1.90	0.50	0.10	0.00	7.08	7.23
W2-B	5/16/16 10:16 AM	2.00	2.00	0.50	0.00	0.00	6.83	7.04
W2-B	6/23/16 1:06 PM	2.25	2.02	0.25	0.23	0.00	7.38	7.27
W2-B	7/6/16 1:33 PM	2.25	2.02	0.50	0.23	0.00	6.55	6.68
W2-B	8/8/16 12:54 PM	2.00	2.00	0.50	0.00	0.00	7.00	7.00
W2-B	9/27/16 3:55 PM	2.25	1.91	0.50	0.34	0.00	6.41	6.65
W2-B	10/13/16 9:43 AM	2.00	1.94	0.50	0.06	0.00	6.67	6.59
W2-B	11/9/16 1:11 PM	3.25	2.67	0.75	0.58	0.00	8.56	8.86
W2-B	11/21/16 10:39 AM	2.38	2.16	0.38	0.22	0.00	6.95	7.15
W2-B	11/21/16 10:51 AM	2.38	2.17	0.38	0.21	0.00	7.02	7.30
W3	5/11/16 10:51 AM	3.75	3.55	0.50	0.20	0.00	7.20	7.34
W3	5/11/16 11:05 AM	3.75	3.53	0.50	0.22	0.00	7.22	7.45
W3	6/3/16 4:53 AM	3.00	3.03	0.50	0.03	0.00	5.17	5.19
W3	7/7/16 4:40 AM	3.75	3.41	0.50	0.34	0.00	7.03	7.14
W3	8/10/16 11:47 AM	3.50	3.33	0.50	0.17	0.00	7.93	7.81
W3	9/27/16 3:04 PM	3.75	3.43	0.50	0.32	0.00	7.26	7.45
W3	10/13/16 5:59 AM	3.13	3.00	0.50	0.13	0.00	6.59	6.44
W3	11/16/16 5:09 AM	2.50	2.57	0.38	0.07	0.00	7.04	7.24
W3	11/17/16 10:32 AM	3.38	3.32	0.50	0.06	0.00	7.37	7.52
W3	11/17/16 10:43 AM	3.38	3.30	0.50	0.08	0.00	7.42	7.59
W4	5/16/16 2:56 PM	2.00	2.35	0.50	0.35	0.00	3.98	4.04
W4	5/16/16 3:20 PM	2.00	2.31	0.50	0.50	0.00	4.06	4.25
W4	5/24/16 12:25 PM	2.25	2.32	0.25	0.07	0.00	4.19	4.17
W4	6/14/16 9:55 AM	2.38	2.29	0.25	0.09	0.00	3.88	3.94
W4	7/6/16 11:47 AM	2.25	2.28	0.38	0.03	0.00	3.15	3.04
W4	8/10/16 11:05 AM	3.00	2.74	0.50	0.26	0.00	3.74	3.82
W4	9/19/16 10:32 AM	1.50	1.28	0.50	0.22	0.00	7.25	7.14
W4	10/11/16 11:11 AM	2.50	2.35	0.38	0.15	0.00	3.77	3.95
W4	11/7/16 12:01 PM	2.50	2.36	0.50	0.14	0.00	3.77	3.68
W4	11/21/16 11:47 AM	2.50	2.69	0.38	0.19	0.00	3.64	3.75
W4	11/21/16 11:58 AM	2.63	2.80	0.38	0.17	0.00	3.52	3.59
W5	5/16/16 1:11 PM	5.25	5.29	0.50	0.04	0.00	0.42	0.38
W5	5/16/16 1:14 PM	5.25	5.31	0.50	0.06	0.00	0.41	0.39

NHSA Confirmation Report

Flow Meter Confirmations

2016

Site	Date/Time	Field Depth (in)	Meter Depth (in)	Depth Tolerance (+/- in.)	Depth Difference (in)	Silt Level	Field Peak Velocity (fps)	Meter Peak Velocity (fps)
W5	6/23/16 11:09 AM	5.00	5.15	0.25	0.15	0.00	0.42	0.38
W5	7/6/16 10:40 AM	6.38	6.25	0.50	0.13	0.00	0.56	0.64
W5	8/8/16 12:00 AM	6.25	6.23	0.25	0.02	0.00	0.58	0.58
W5	9/14/16 1:53 PM	5.00	5.25	0.25	0.25	0.00	0.31	0.40
W5	10/13/16 6:51 AM	5.63	5.52	0.25	0.11	0.00	0.39	0.43
W5	11/9/16 2:03 PM	5.50	5.54	0.25	0.04	0.00	0.49	0.53
W5	11/17/16 12:28 PM	5.50	5.48	0.25	0.02	0.00	0.42	0.39
W5	11/17/16 12:37 PM	5.25	5.20	0.25	0.05	0.00	0.36	0.39
WNY1	5/10/16 2:35 PM	11.87	11.90	0.50	0.03	0.00	3.09	3.16
WNY1	5/10/16 2:54 PM	11.87	11.85	0.50	0.02	0.00	2.98	3.15
WNY1	6/3/16 10:24 AM	11.50	11.13	0.50	0.37	0.00	3.83	3.90
WNY1	7/14/16 11:40 AM	12.00	11.54	1.00	0.46	0.00	4.30	4.28
WNY1	8/15/16 2:39 PM	13.00	12.65	0.75	0.35	0.00	3.50	2.99
WNY1	9/14/16 1:18 PM	11.00	10.95	0.75	0.05	0.00	4.11	3.91
WNY1	10/11/16 2:31 AM	11.13	10.87	0.50	0.26	0.00	3.94	4.07
WNY1	11/14/16 12:32 PM	11.25	10.80	1.00	0.45	0.00	4.01	3.87
WNY1	11/21/16 3:40 PM	11.00	10.71	0.50	0.29	0.00	3.70	3.69
WNY1	11/21/16 3:57 PM	11.13	10.68	0.50	0.45	0.00	3.80	4.02
WNY2	5/10/16 10:42 AM	23.75	24.06	0.50	0.31	1.00	0.54	0.76
WNY2	5/10/16 11:02 AM	23.63	24.02	0.50	0.39	1.00	0.54	0.74
WNY2	6/3/16 9:23 AM	25.50	25.54	0.50	0.04	0.00	0.83	0.90
WNY2	7/14/16 2:09 PM	23.38	23.90	0.38	0.52	0.00	1.10	0.74
WNY2	8/15/16 1:00 PM	23.88	24.11	0.50	0.23	0.00	0.75	0.75
WNY2	9/14/16 12:39 PM	23.50	23.78	0.50	0.28	0.00	0.61	0.58
WNY2	10/11/16 7:10 AM	24.00	24.26	0.38	0.26	0.00	0.60	0.66
WNY2	11/14/16 11:50 AM	23.37	23.91	0.50	0.54	0.00	0.77	0.72
WNY2	11/22/16 12:20 PM	24.00	24.10	0.25	0.10	1.00	0.69	0.67
WNY2	11/22/16 12:33 PM	23.88	24.09	0.25	0.21	1.00	0.67	0.69

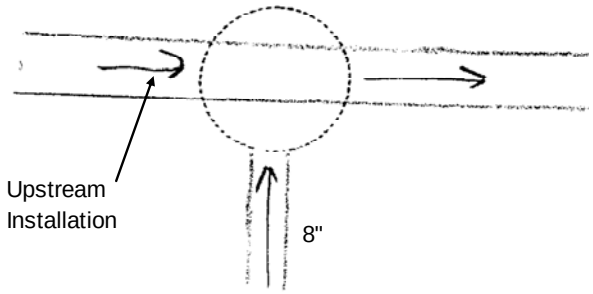
Appendix 2

ADDITIONAL SITE PHOTOS AND SKETCHES

Additional Information

Site Name: **H1**

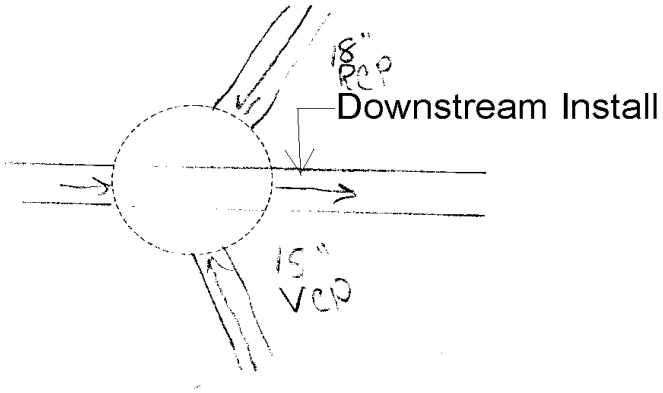
Project Name: **NHSA**



Additional Information

Site Name: **H2**

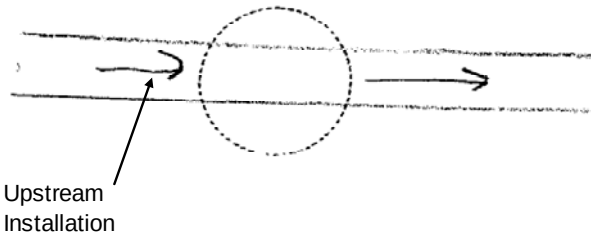
Project Name: **NHSA**



Additional Information

Site Name: **H3**

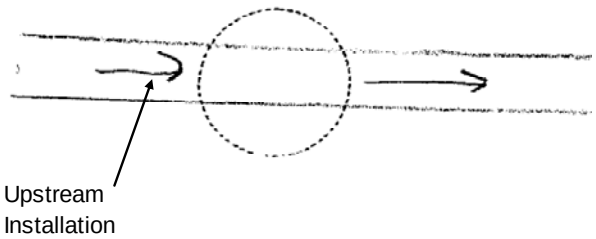
Project Name: **NHSA**



Additional Information

Site Name: **H4**

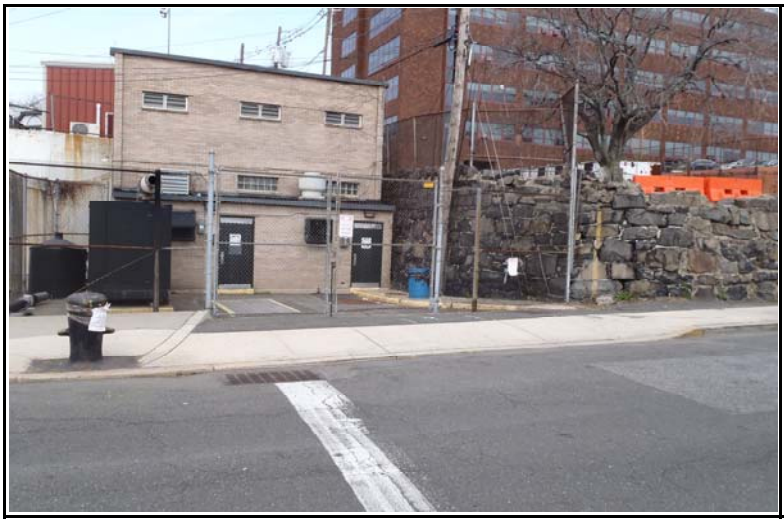
Project Name: **NHSA**

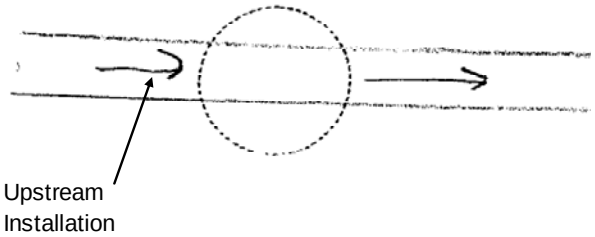


Additional Information

Site Name: **HSI**

Project Name: **NHSA**

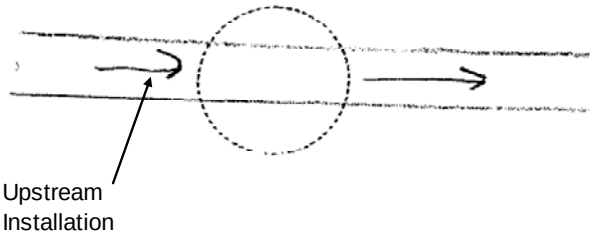




Additional Information

Site Name: **H5**

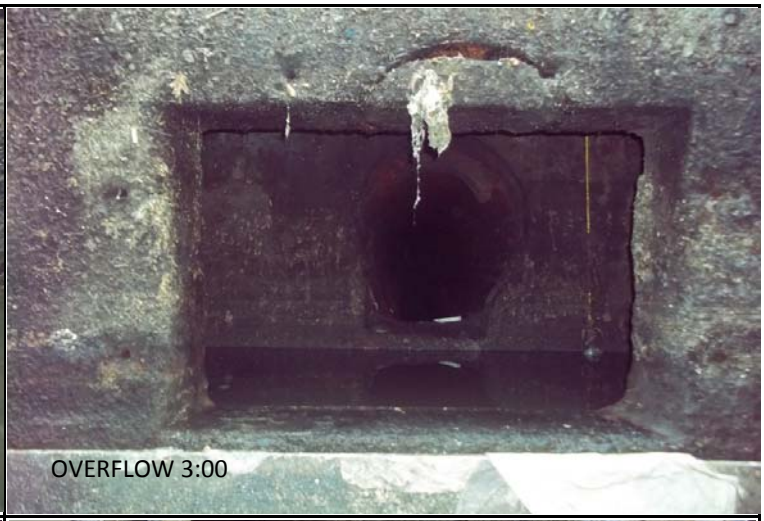
Project Name: **NHSA**



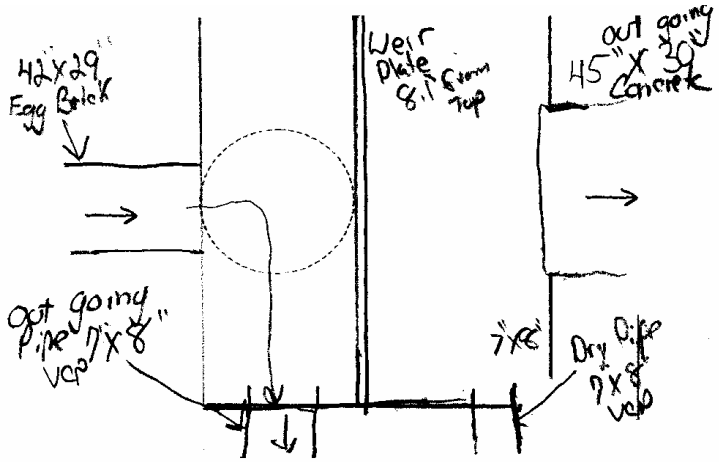
Additional Information

Site Name: **H6**

Project Name: **NHSA**



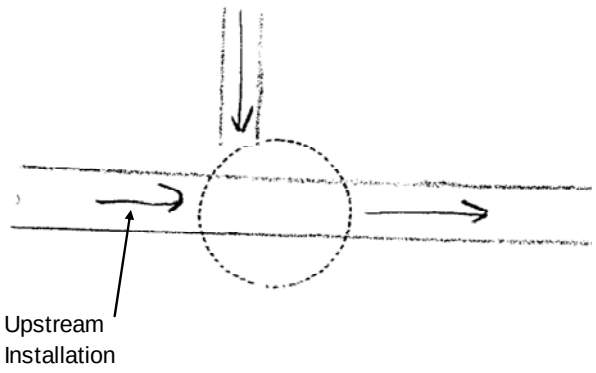
SITE SKETCH:



Additional Information

Site Name: **H7**

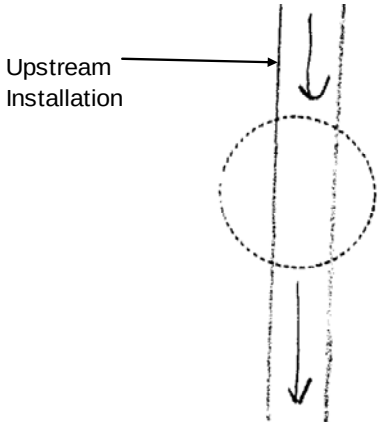
Project Name: **NHSA**



Additional Information

Site Name: **W1**

Project Name: **NHSA**

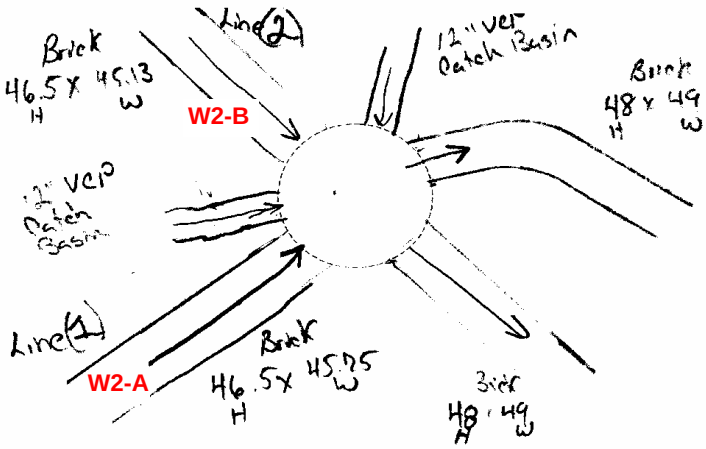


Additional Information

Site Name: **W2-A, W2-B**

Project Name: **NHSA**

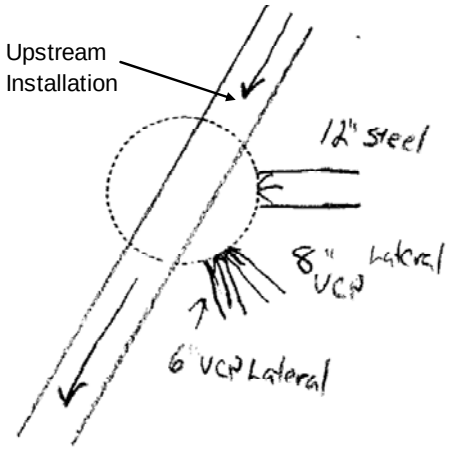
SITE SKETCH:



Additional Information

Site Name: **W3**

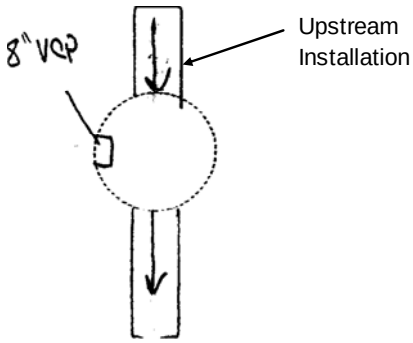
Project Name: **NHSA**



Additional Information

Site Name: **W4**

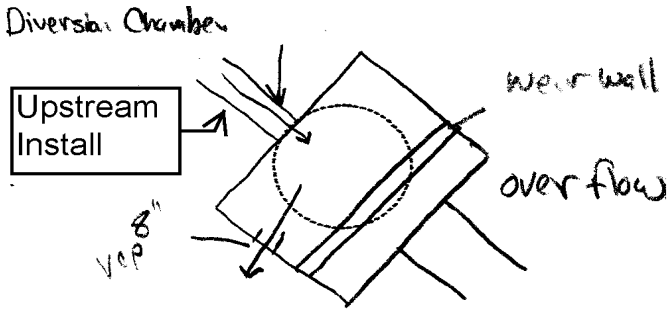
Project Name: **NHSA**



Additional Information

Site Name: **W5**

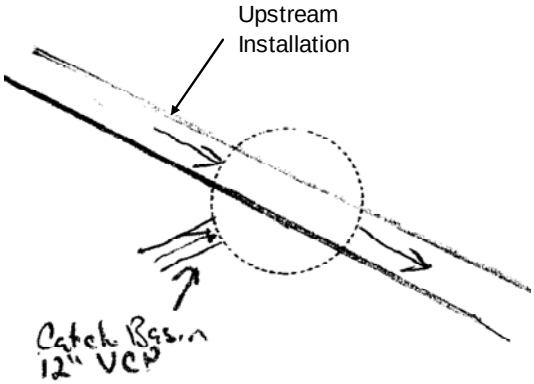
Project Name: **NHSA**



Additional Information

Site Name: **NHW**

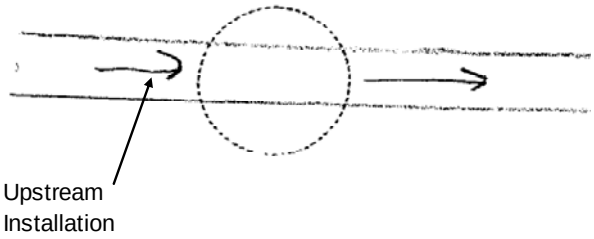
Project Name: **NHSA**



Additional Information

Site Name: **UH1**

Project Name: **NHSA**

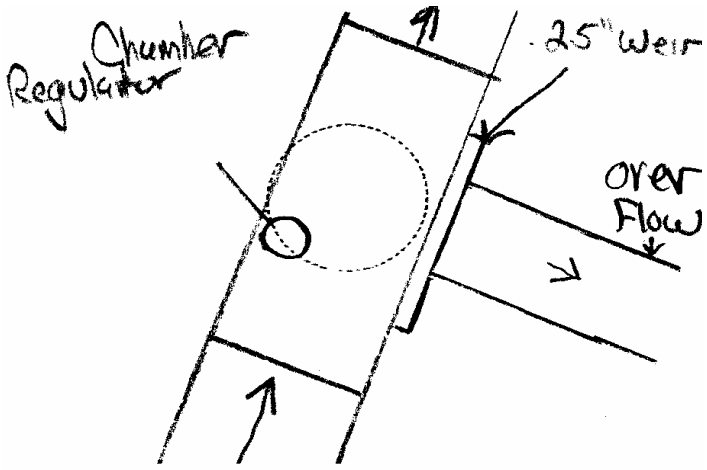


Additional Information

Site Name: **UC1**

Project Name: **NHSA**

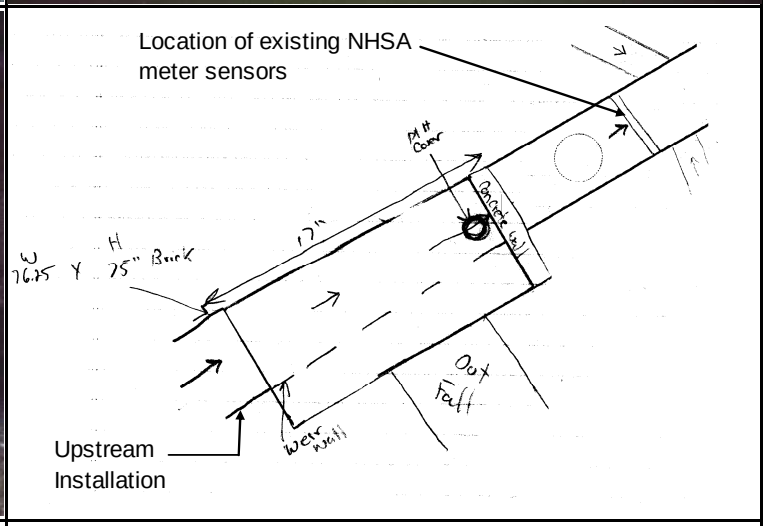
SITE SKETCH:



Additional Information

Site Name: **UC2**

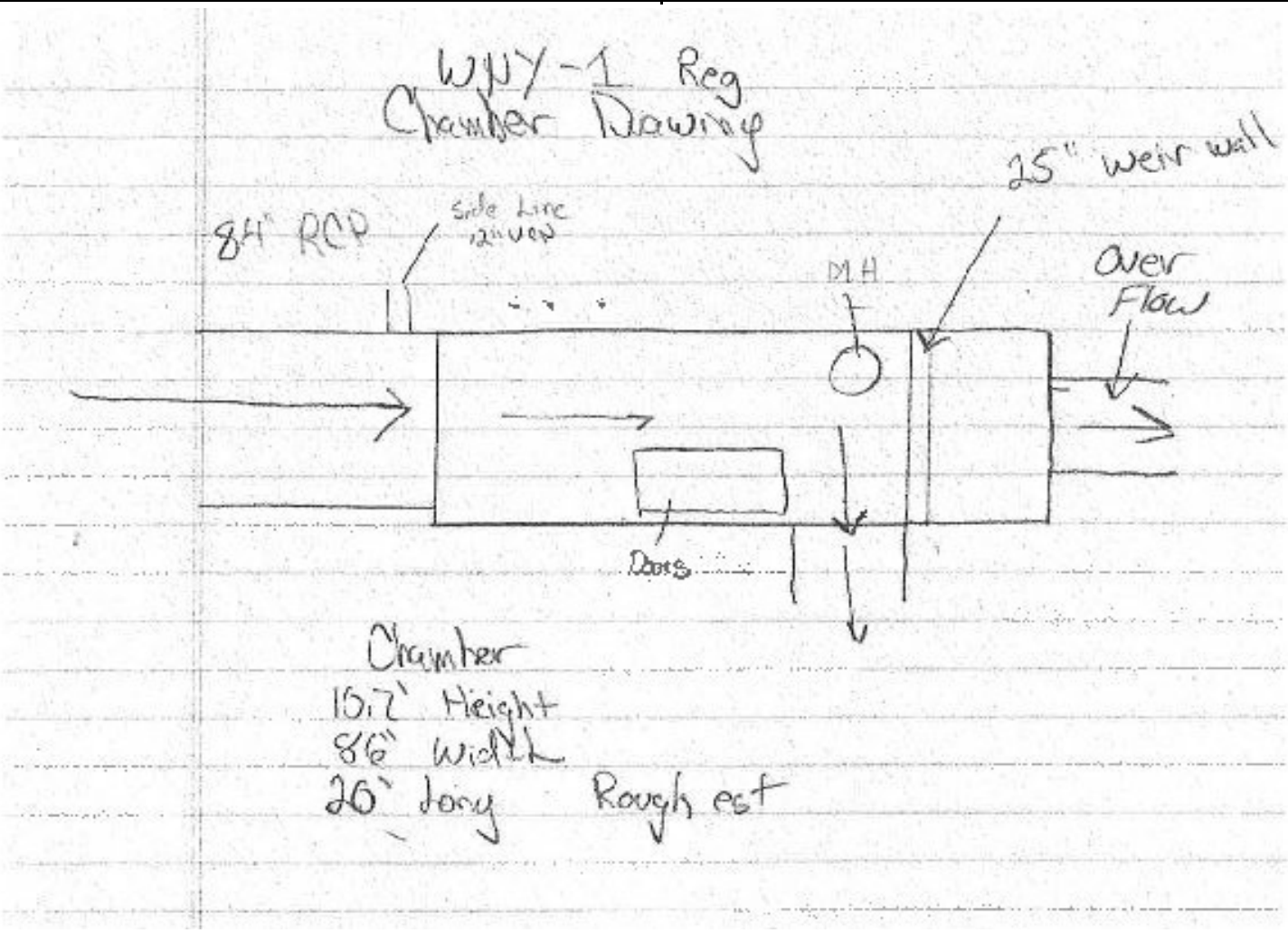
Project Name: **NHSA**



Additional Information

Site Name: **WNY1**

Project Name: **NHSA**



Additional Information

Site Name: **WNY2 (Chamber 1)**

Project Name: **NHSA**

CHAMBER 1 - OUTGOING 6:00

CHAMBER 1 - LOOKING UPSTREAM

CHAMBER 1 - OVERFLOW 9:00

CHAMBER 1 - OVERFLOW 9:00

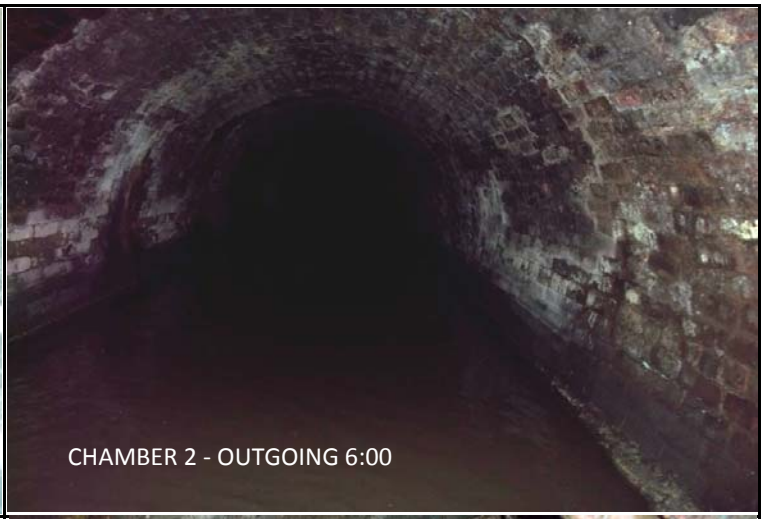
CHAMBER 1 - WEIR WALL

Additional Information

Site Name: **WNY2 (Chamber 2)**

Project Name: **NHSA**

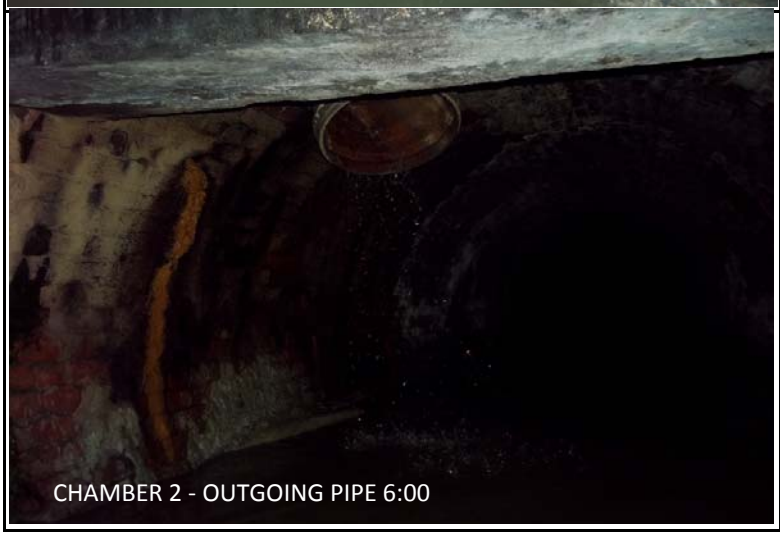
CHAMBER 2 - TOP VIEW



CHAMBER 2 - OUTGOING 6:00

PIPE FROM BROADWAY BLVD COMING INTO OUTGOING PIPE

PIPE FROM BROADWAY BLVD COMING INTO OUTGOING PIPE

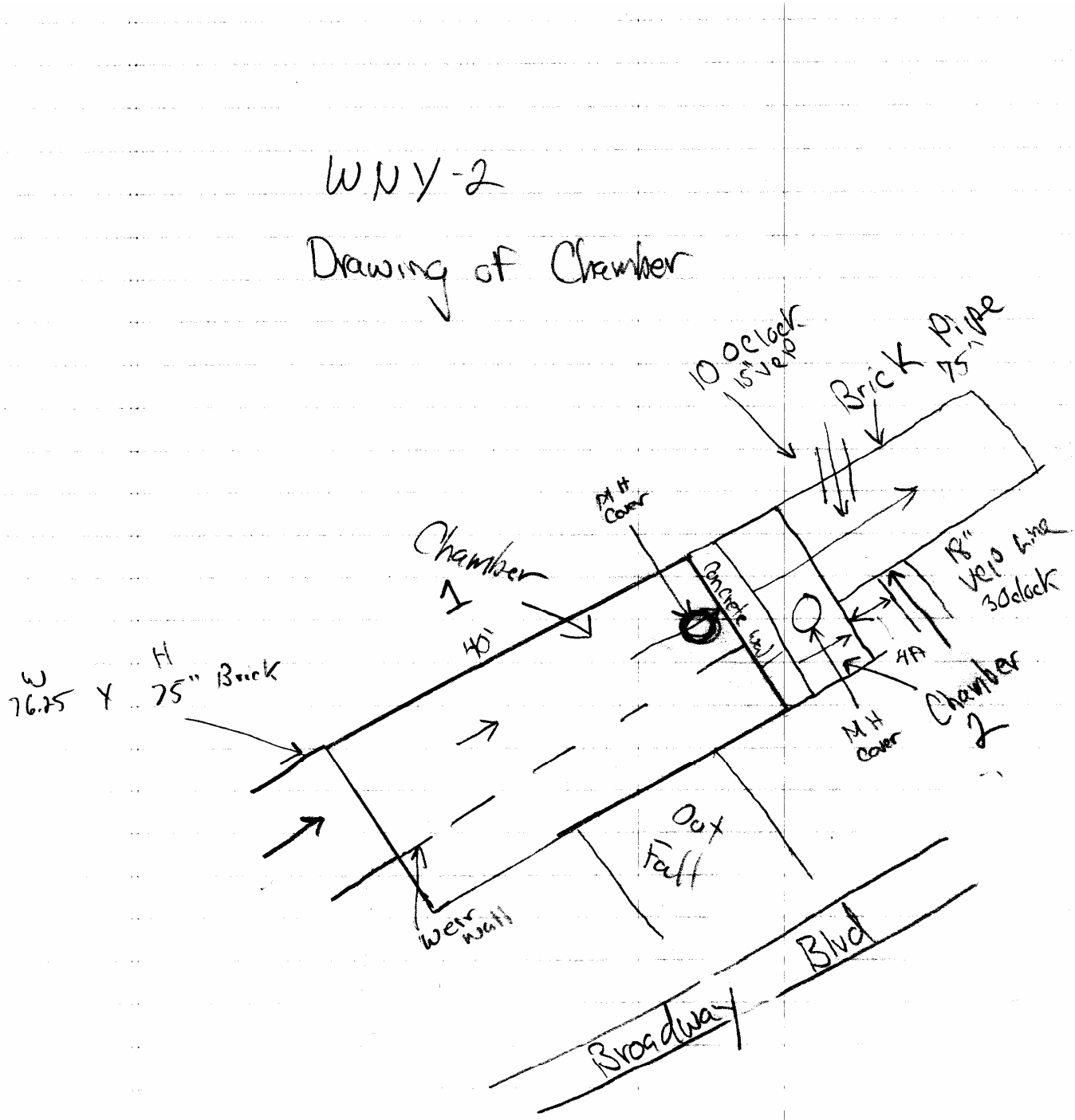


CHAMBER 2 - OUTGOING PIPE 6:00

Additional Information

Site Name: **WNY2 Site Sketch**

Project Name: **NHSA**



Greeley and Hansen LLC
111 Broadway, 21st Floor
New York, NY 10006
212 227 1250
www.greeley-hansen.com

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Appendix B – NHSA LTCP Combined Sewer Overflow Water Quality Sampling

North Hudson Sewerage Authority Long Term Control Plan Combined Sewer Overflow Water Quality Sampling

PREPARED FOR:	Fredric Pocci, PE
COPY TO:	Don Conger, PE; Phil Reeve
PREPARED BY:	Erin McGovern; Amy Gao, PE
DATE:	June 21, 2018
PROJECT NUMBER:	676549
REVISION NO.:	**DRAFT FINAL**
APPROVED BY:	Bill McMillin, PE

CH2M performed water quality sampling of the North Hudson Sewerage Authority's combined sewer systems from August 2016 to August 2017. The data collected will enable a water quality characterization of combined sewer overflow discharges for the Authority's sewer system characterization and will aid in development of a Long Term Control Plan. This technical memorandum describes the sampling effort and the data collected.

1.0 Introduction

The following provides information on this effort, its goals and the sampling plan.

1.1 Background

The North Hudson Sewerage Authority (the Authority or NHSA) owns and operates the Adams Street and River Road Wastewater Treatment Plants (WWTPs) and their associated collection systems in Hoboken, West New York, Weehawken and Union City. The collection systems in all of these communities are combined sewer systems (CSS). The Adams Street and River Road WWTPs are regulated by the New Jersey Department of Environmental Protection (NJDEP) and under the New Jersey Pollutant Discharge Elimination System (NJPDES) permit program. The Authority's CSS and WWTPs are operated under a long-term contract with Operations Management International (OMI).

On March 12, 2015, the NJDEP issued final individual NJPDES permits to municipalities and authorities that own and operate segments of CSS. The final NJPDES permits address requirements for overall water quality improvements, routine reporting, and development of a Combined Sewer Overflow (CSO) Long Term Control Plan (LTCP). The NJPDES requires that a comprehensive characterization of the CSS developed through records review, monitoring, modeling and other means, as appropriate, to establish the existing baseline conditions, evaluate the efficacy of the CSO technology based controls, and determine the baseline conditions upon which the LTCP will be based. The characterization must include a thorough review of the entire collection system to adequately address the response of the CSS to various precipitation events and to identify the number, location, frequency and characteristics of CSOs.

The Authority submitted a Sewer System Characterization Work Plan to the NJDEP in December 2015 that was prepared by CH2M. The Work Plan describes collection system water quality monitoring that

has since been performed to characterize bacterial concentrations in CSO discharges to the Hudson River. Dry and wet weather sampling has been performed to assure that representative Fecal Coliform and Enterococcus concentrations will be used for CSO discharges in surface water quality modeling to determine baseline compliance and for developing the LTCP.

1.2 Project Description

The CSO Water Quality Sampling Program was designed to characterize CSO discharges to the Hudson River. Sampling was performed at five regulators during dry and wet weather events from August 2016 to August 2017. The goal of the wet weather sampling was to monitor at least three rain events with rainfall greater than 0.5 inches in a 24-hour period.

1.2.1 Sampling Locations

Sampling locations were selected at CSO regulators based on GIS information of drainage area land use types evaluated by CH2M and availability of monitoring systems to detect overflows. Maps of the Authority's service area with sampling locations highlighted is provided at the end of this document. The sampling locations are also listed in Table 1-1 with site characteristics.

Regulator overflows are monitored by the Authority with Mission float sensors at CSO regulators. These sensors monitor water surface elevations in the sewers at the regulators and are linked to the Authority's Supervisory Control and Data Acquisition (SCADA) system. They indicate in real time that an overflow may be occurring when the water surface elevation rises above the regulator overflow weir elevation. The system is also used for the Authority's public notification system and records the times when overflows may be occurring. The sensors at regulators in Hoboken may indicate an overflow but tidal conditions may be higher than the water surface in the CSS preventing an overflow. All other regulators are above tidal ranges and are overflowing when the Mission sensor indicates so.

Hydraulic elevations were also metered upstream of CSO regulators from April to December 2016 under a separate LTCP characterization effort by ADS as a subcontractor to Greeley & Hansen.

TABLE 1-1
CSO Water Quality Sampling Locations

Basin ID	Location	Land Usage	% Impervious	Monitoring System
H3	3rd St. at River St. (In crosswalk)	Low/Medium Residential	71%	ADS/Mission (H3 + H4)
H7	14th St. East at Washington St.	Commercial/ Industrial	46%	ADS/Mission (H6 + H7)
18TH Street PS	W 18th St.	Open Space/ Park	39%	Mission
W2	506 Gregory Ave.	High Residential	59%	ADS/Mission
WNY1	JF Kennedy Blvd. at Anthony Delfino Way	Mixed Uses	~75%	Mission

1.2.2 Scope of Sampling

Dry weather event sampling was performed by collecting three (3) samples over a six-hour period at each designated sampling location. Dry weather event sampling was preceded by 24 hours of dry weather and monitored flows at the WWTP during the time of sampling were consistent with dry weather conditions.

The goal for wet weather sampling was to sample at least three (3) wet weather events between the months of August 2016 and August 2017 at each location. Mobilization for sampling was initiated when wet weather events were forecasted with rainfall of 0.5 inches or greater in a 24-hour period preceded

by three (3) days of dry weather. Samples were to be collected at the following time intervals following the start of overflow at a regulator: 0.5, 1, 2, 4, 6, and 8 hours. Sampling ended following the 8th hour of overflow from the first regulator that opened, or when the overflow stopped, whichever came first. Samples were transported to the Eurofins QC Laboratories where they were analyzed for the parameters identified in Table 1-2.

TABLE 1-2
Analytical Parameters

Parameter	Description	Method
FC	Fecal Coliform	Membrane Filter Technique (SM 9222D-1997)
EC	Enterococci	Membrane Filter Technique (EPA 1600)

1.3 Quality Control

The Quality Assurance Project Plan (QAPP) integrated quality control policies and project-specific work tasks to successfully conduct water quality monitoring to support development of the CSO Long Term Control Plan. The QAPP was submitted to NJDEP on July 27, 2016 as part of the Authority's System Characterization Work Plans for the Adams Street and River Road WWTPs. The same QAPP was submitted in both work plans. All laboratory services were performed by Eurofins QC Laboratories.

2.0 Dry and Wet Weather Sampling

One dry weather sampling event and several wet weather events were sampled between August 2016 and August 2017. Sampling was suspended during winter months. The following describes the dry and weather sampling events and the data collected.

2.1 Dry Weather Sampling

Dry weather sampling was conducted at five (5) regulator locations on August 23, 2016. This sampling event was preceded by more than 24 hours of dry weather. Three representative samples were grabbed from each of the sampling locations at different times throughout the day. Enterococcus concentrations ranged from <100,000 cfu/100 mL to approximately 4.5 million cfu/100 mL. Fecal Coliform concentrations ranged from <100,000 cfu/100 mL to approximately 18 million cfu/100 mL. The results of dry weather sampling are shown below in Table 2-1.

TABLE 2-1
Dry Weather Sampling Event – August 23, 2016

Sampling Location	Time	Enterococcus Concentration (cfu/100mL)	Fecal Coliform Concentration (cfu/100mL)
H3	9:30	1,900,000 [Q]	1,200,000 [Q]
	13:02	3,600,000	7,000,000 [E]
	15:30	300,000	<100,000
H7	9:56	<100,000 [Q]	900,000 [Q]
	13:20	1,900,000	18,000,000
	15:50	100,000	200,000
18th Street PS	9:42	<100,000 [Q]	900,000 [Q]
	13:06	600,000	1,000,000
	16:05	<100,000	300,000
W2	8:50	400,000 [Q]	700,000 [Q]
	12:53	3,800,000	3,900,000

TABLE 2-1
Dry Weather Sampling Event – August 23, 2016

Sampling Location	Time	Enterococcus Concentration (cfu/100mL)	Fecal Coliform Concentration (cfu/100mL)
	15:23	100,000	500,000
WNY1	8:30	<100,000	1,600,000 Q
	12:34	4,500,000	4,800,000
	14:58	<100,000	600,000

Notes:

E - Count is outside of recommended range of test. Reported value may be considered estimate.

Q - Samples analyzed outside of hold time.

2.2 Wet Weather Sampling

Wet weather sampling was performed during four (4) events on the following dates:

- October 27, 2016
- November 29, 2016
- April 25, 2017
- August 8, 2017

Wet weather sampling events are defined as events with total rainfall of 0.5 inches or greater within a 24-hour period. Rainfall data, collected from the Authority's rain gage at the Baldwin Avenue Pump Station, confirms that all the wet weather sampling events had rainfall greater than 0.5 inches within a 24-hour period. Table 2-2 summarizes rainfall data for each of the wet weather events sampled including total rainfall depth, duration and maximum intensity.

TABLE 2-2
Wet Weather Sampling Rainfall Data

Event #	Date	Total Rainfall (inches)	Duration (hours)	Maximum Intensity (inches/hour)
1	10/27/16	1.15	13.00	0.15
2	11/29/16	1.97	12.25	0.14
3	4/25/17	0.70	6.75	0.13
4	8/7/17	0.59	11.00	0.04

Wet weather sampling was conducted as regulators opened. Some events did not provide sufficient rainfall to open all five (5) regulators that were desired for sampling. A summary of the number of samples that were analyzed at each sampling location per wet weather event is shown in Table 2-3.

TABLE 2-3

Wet Weather Sampling Event Summary

Sampling Location	# of Samples Taken				Total # Wet Weather Samples/ Location
	10/27/2016 *	11/29/2016	4/25/2017	8/7/2017	
H3	0	0	0	0	0
H7	0	6	0	0	6
18th Street PS	0	0	0	1	1
W2	0	6	4	5	15
WNY1	1	6	0	6	13

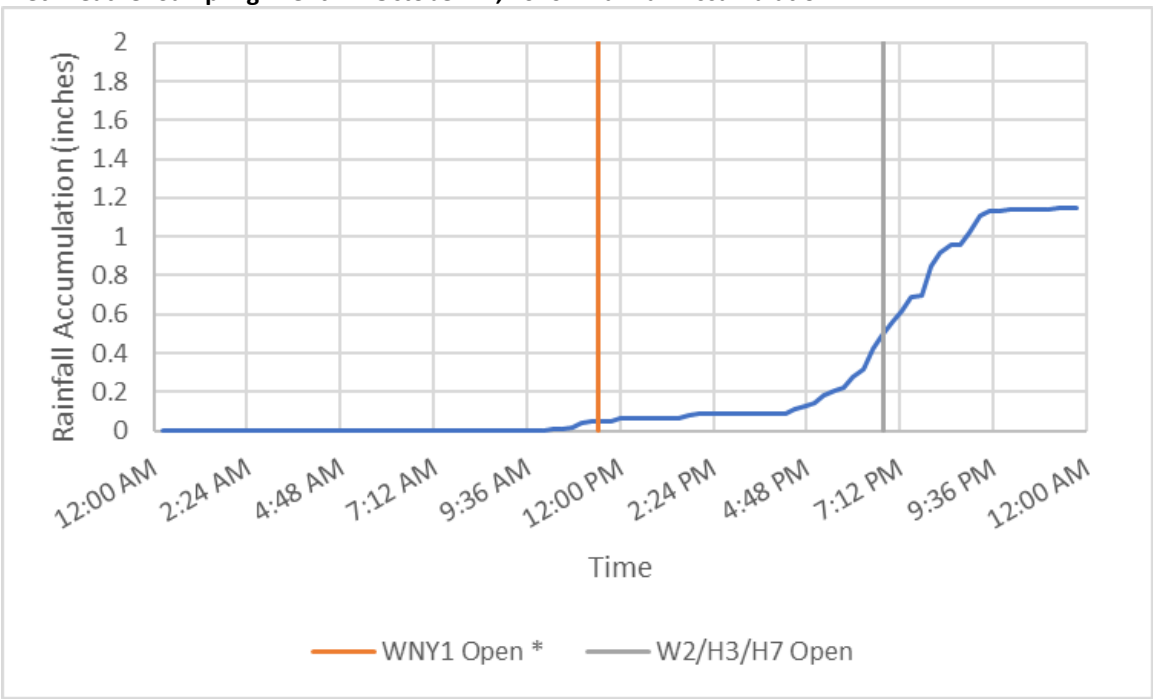
*Unfavorable event, insufficient rainfall to continue sampling

2.2.1 Wet Weather Event 1 - October 27, 2016

On October 27, 2016, one (1) water quality sample was collected from the WNY1 sampling location. The sampling team mobilized at 6:00 am to capture the forecasted rainfall, however, increased rainfall accumulation did not occur until later in the evening as shown in Figure 2-1. Sampling was called off after the WNY1 regulator opened at 11:27 am and then closed shortly after at 12:08 pm due to a lack of precipitation. Total rainfall recorded on October 27, 2016 was 1.15 inches with a majority of the rainfall occurring later in the evening. The data from this sampling event are shown in Table 2-4.

FIGURE 2-1

Wet Weather Sampling Event 1 – October 27, 2016 – Rainfall Accumulation



* This is the initial opening of the regulator. Regulator closed and re-opened several times during the event.

TABLE 2-4

Wet Weather Sampling Event 1 – October 27, 2016

Sampling Location	Time from Regulator Opening (mins)	Sample Time	Enterococcus Concentration (cfu/100mL)	Fecal Coliform Concentration (cfu/100mL)
WNY1	40	11:27	30,000,000	120,000,000 [E]

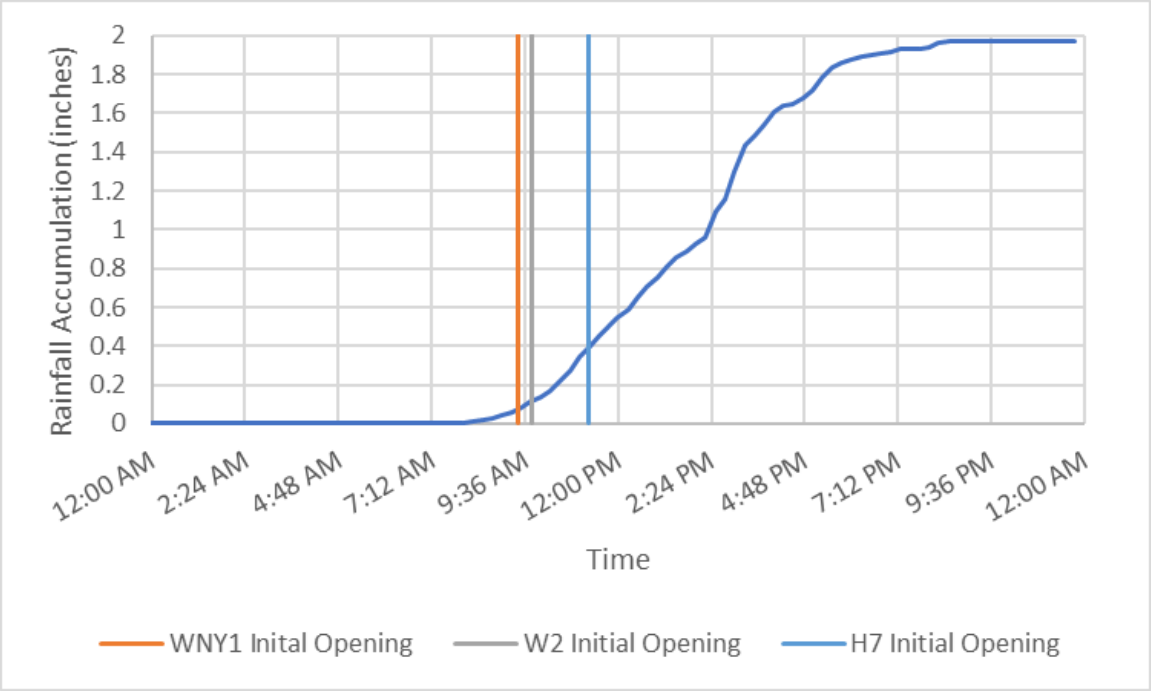
E - Count is outside of recommended range of test. Reported value may be considered estimate.

2.2.2 Wet Weather Event 2 - November 29, 2016

On November 29, 2016 eighteen (18) water quality samples were collected. During this event, 1.97 inches of rainfall was recorded over 12.25 hours, the H7, W2 and WNY1 regulators opened as shown in Figure 2-2 below.

FIGURE 2-2

Wet Weather Sampling Event 2 – November 29, 2016 – Rainfall Accumulation



Regulators H7, W2 and WNY1 remained open for the duration of rainfall allowing the sampling team to grab samples at each of the target times following the start of overflow (approximately 0.5, 1, 2, 4, 6, and 8 hours). The concentrations of Enterococcus and Fecal Coliform for this wet weather event are shown in Figures 2-3 and 2-4, respectively. The data from this sampling event are also shown in Table 2-5.

FIGURE 2-3

Wet Weather Sampling Event 2 – November 29, 2016 – Enterococcus Concentrations

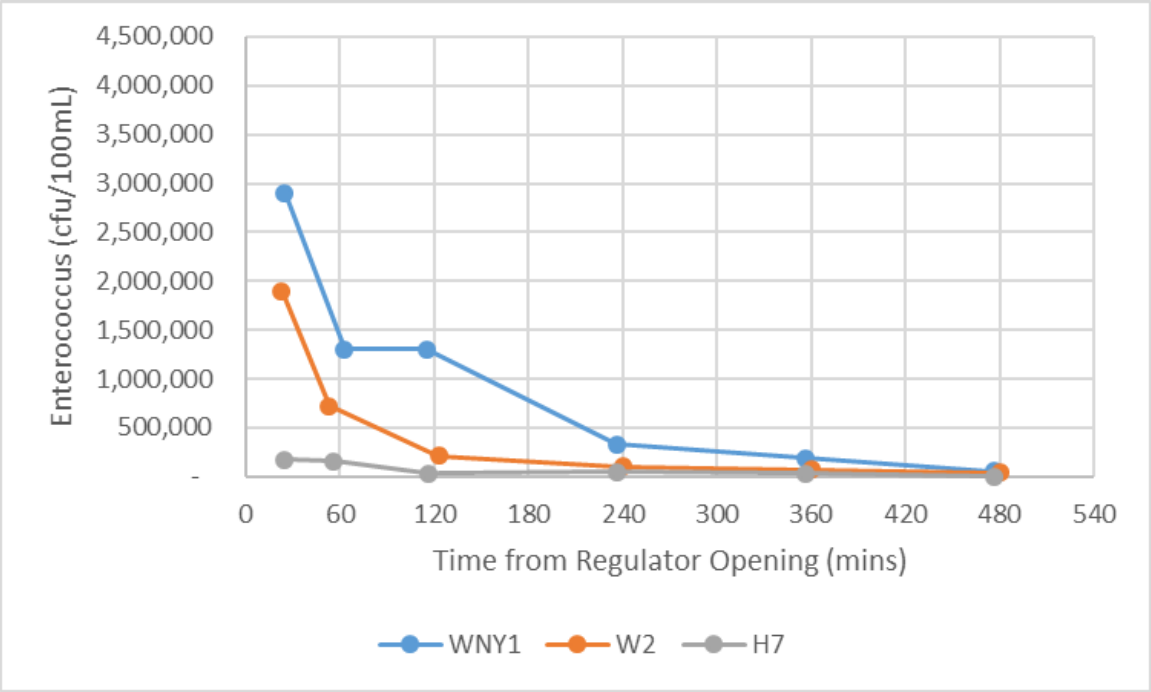


FIGURE 2-4

Wet Weather Sampling Event 2 – November 29, 2016 – Fecal Coliform Concentrations

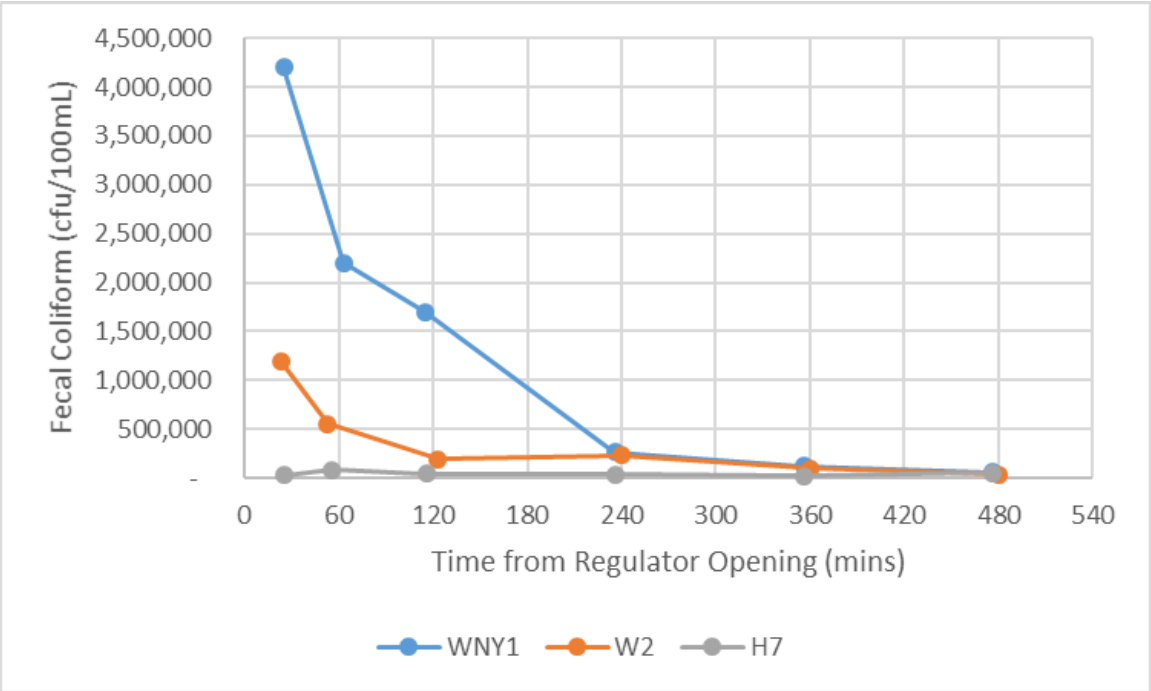


TABLE 2-5

Wet Weather Sampling Event 2 – November 29, 2016

Sampling Location	Time from Regulator Opening (mins)	Sample Time	Enterococcus Concentration (cfu/100mL)	Fecal Coliform Concentration (cfu/100mL)
WNY1	25	9:50	2,900,000	4,200,000
	63	10:28	1,300,000 [E]	2,200,000
	115	11:20	1,300,000 [E]	1,700,000 [E]
	236	13:21	330,000	260,000
	356	15:21	190,000 [E]	120,000 [E]
	476	17:21	57,000	58,000
W2	23	10:10	1,900,000 [E]	1,200,000 [E]
	53	10:40	720,000 [E]	550,000
	123	11:50	210,000	190,000
	240	13:47	100,000 [E]	230,000
	360	15:47	71,000 [E]	98,000 [E]
	480	17:47	42,000 [E]	40,000
H7	25	11:40	170,000 [E]	27,000
	56	12:11	160,000 [E]	81,000 [E]
	116	13:11	35,000	44,000
	236	15:11	47,000	35,000
	356	17:11	35,000	23,000
	476	19:11	1,800 [E]	50,000 [E]

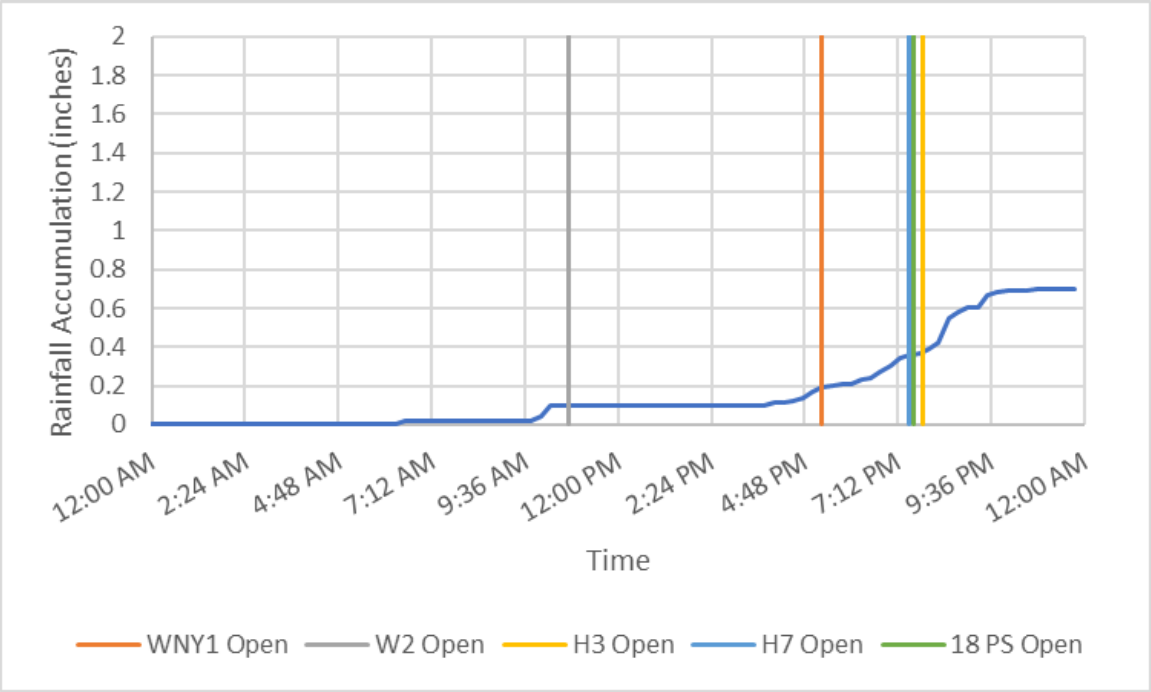
E - Count is outside of recommended range of test. Reported value may be considered estimate.

2.2.3 Wet Weather Event 3 - April 25, 2017

Sixteen (16) water quality samples were collected on April 25, 2017 between 11:00 am and 4:00 pm. The rainfall recorded during the event was 0.7 inches from about 10:00 am to 9:30 pm. The Authority's Mission system was being monitored and initially indicated that overflows may have been occurring once the rainfall started. Upon collecting Mission system data after the event, only the W2 regulator had elevations indicating an overflow may have been occurring during the sampling period. The Mission system data indicated that Regulators WNY1, H3, H7 and the 18th Street Pump Station likely discharged later in the evening as rainfall accumulation increased. But weather flow from about 0.1 inches of rainfall was in the CSS during sampling. See Figure 2-5 below for rainfall accumulation and Mission data.

FIGURE 2-5

Wet Weather Sampling Event 3 – April 25, 2017 – Rainfall Accumulation



Only the samples collected from W2 are likely representative of a wet weather event. The observed concentrations of enterococcus and fecal coliforms are shown in Figures 2-6 and 2-7, respectively. The data of all other samples are likely not representative of a wet weather event as the other regulators did not open until later in the evening when the rainfall intensity increased and sampling had ended. The bacteria data for all samples are shown in Table 2-6.

FIGURE 2-6

Wet Weather Sampling Event 3 – April 25, 2017 – Enterococcus Concentrations

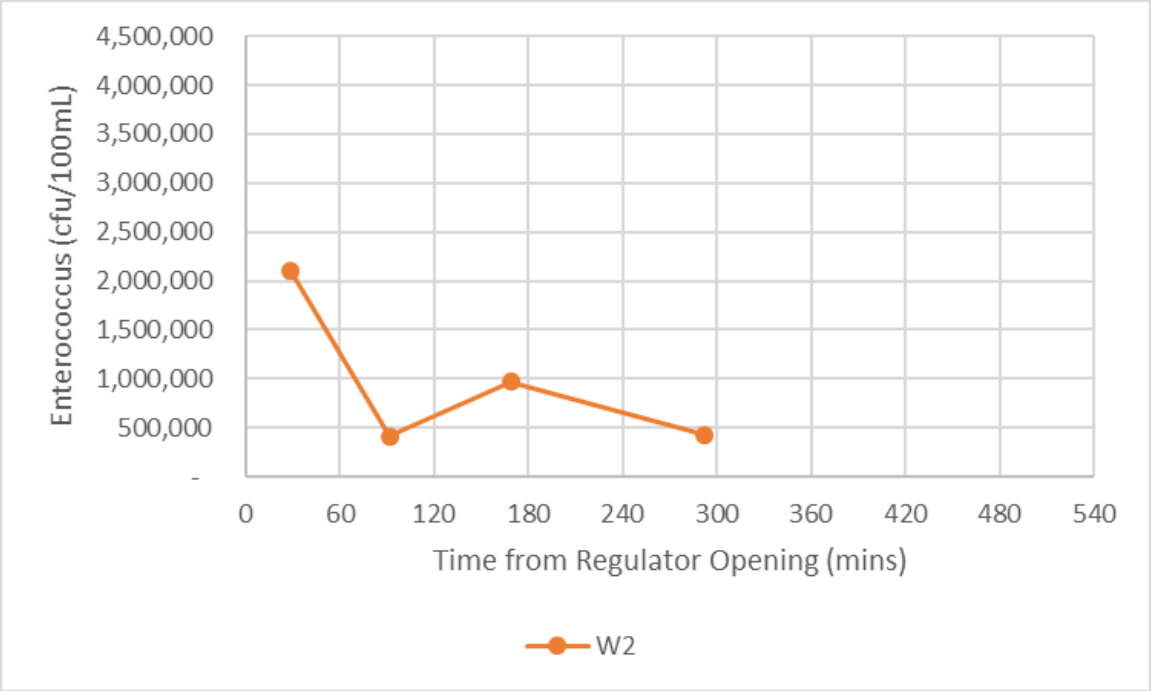


FIGURE 2-7

Wet Weather Sampling Event 3 – April 25, 2017 – Fecal Coliform Concentrations

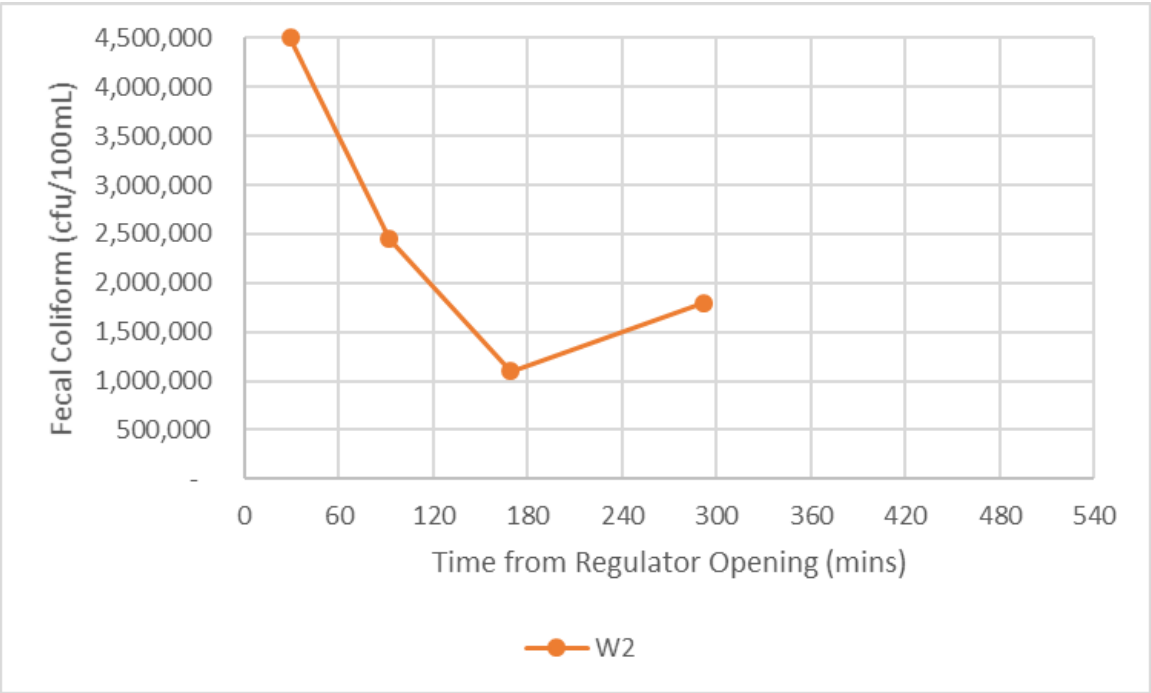


TABLE 2-6
Wet Weather Sampling Event 3 – April 25, 2017

Sampling Location	Time from Regulator Opening (mins)	Sample Time	Enterococcus Concentration (cfu/100mL)	Fecal Coliform Concentration (cfu/100mL)
WNY1	30	11:00	210,000	390,000
	90	12:00	420,000	2,500,000
	168	13:18	700,000 [E]	2,500,000
	275	15:05	450,000	1,400,000 [E]
W2	29	11:12	2,100,000	4,500,000
	92	12:15	410,000	2,450,000 [E]
	169	13:32	972,973 [E]	1,100,000 [E]
	292	15:35	430,000	1,800,000 [E]
H7	30	11:30	380,000	3,200,000
	90	12:32	540,000	2,500,000
	147	13:47	250,000	620,000 [E]
	275	15:40	280,000	763,636 [E]
H3	30	11:50	300,000	630,000 [E]
	92	12:50	240,000	1,700,000 [E]
	167	13:57	1,500,000 [E]	1,600,000 [E]
	280	16:05	2,600,000	3,100,000

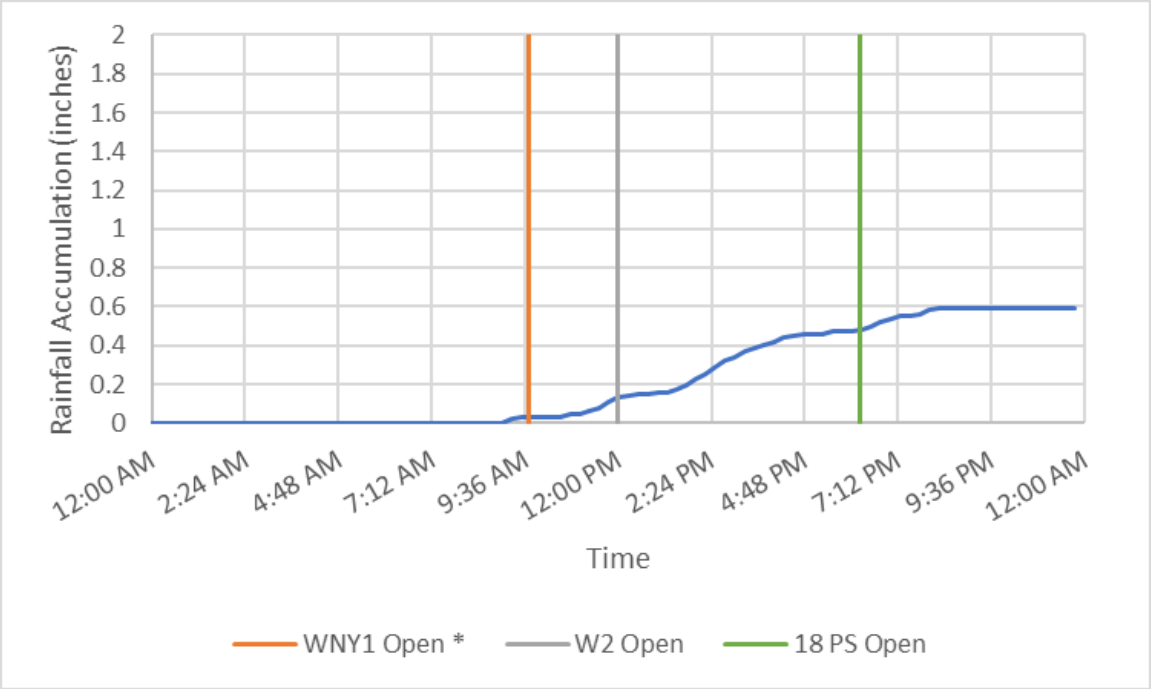
E - Count is outside of recommended range of test. Reported value may be considered estimate.

2.2.4 Wet Weather Event 4 - August 7, 2017

On August 7, 2017, a total of twelve (12) water quality samples were collected. The rainfall recorded was 0.59 inches of over eleven hours. Rainfall and Mission system data showing overflow conditions for Regulators W2, WNY1 and the 18th Street Pump Station are shown in Figure 2-8.

FIGURE 2-8

Wet Weather Sampling Event 4 – August 7, 2017 – Rainfall Accumulation



* This is the initial opening of the regulator. Regulator closed and re-opened several times during the event.

The sampling of this event was modified slightly from the QAPP to collect viable samples. The WNY1 regulator opened and closed several times throughout the event. Samples taken from WNY1 followed the QAPP in that they were taken until approximately eight hours after the initial regulator opening. Some samples were grabbed while the regulator was not overflowing but wet weather flow was in the CSS. The data for this sampling event are shown in Figures 2-9 and 2-10 below as well as in Table 2-7.

FIGURE 2-9

Wet Weather Sampling Event 4– August 8, 2017 – Enterococcus Concentrations

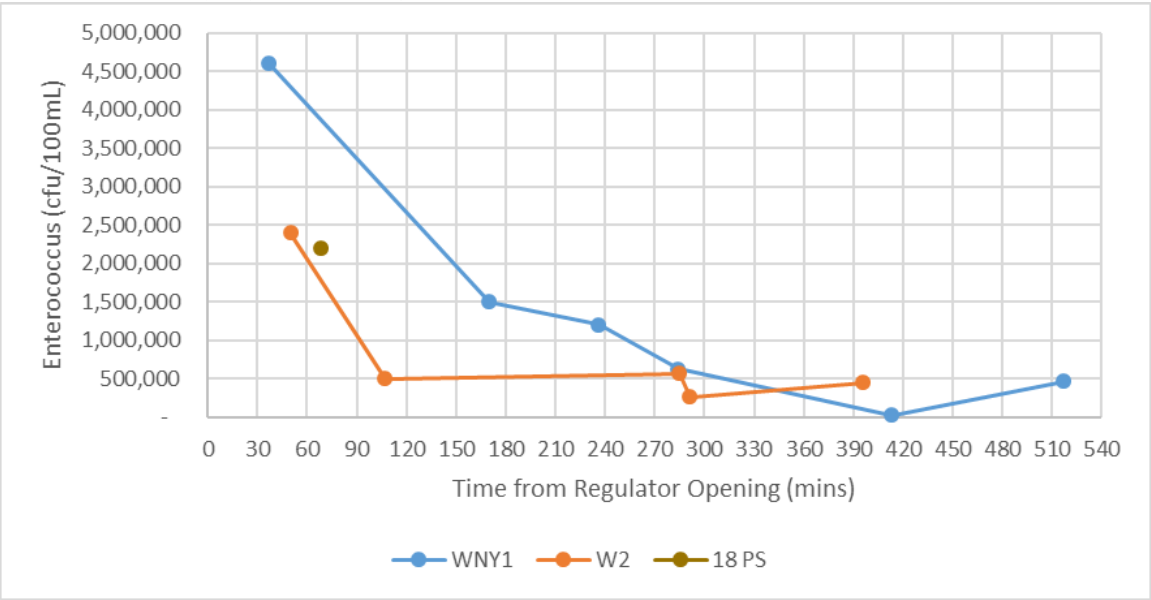


FIGURE 2-10
Wet Weather Sampling Event 4– August 8, 2017 – Fecal Coliform Concentrations

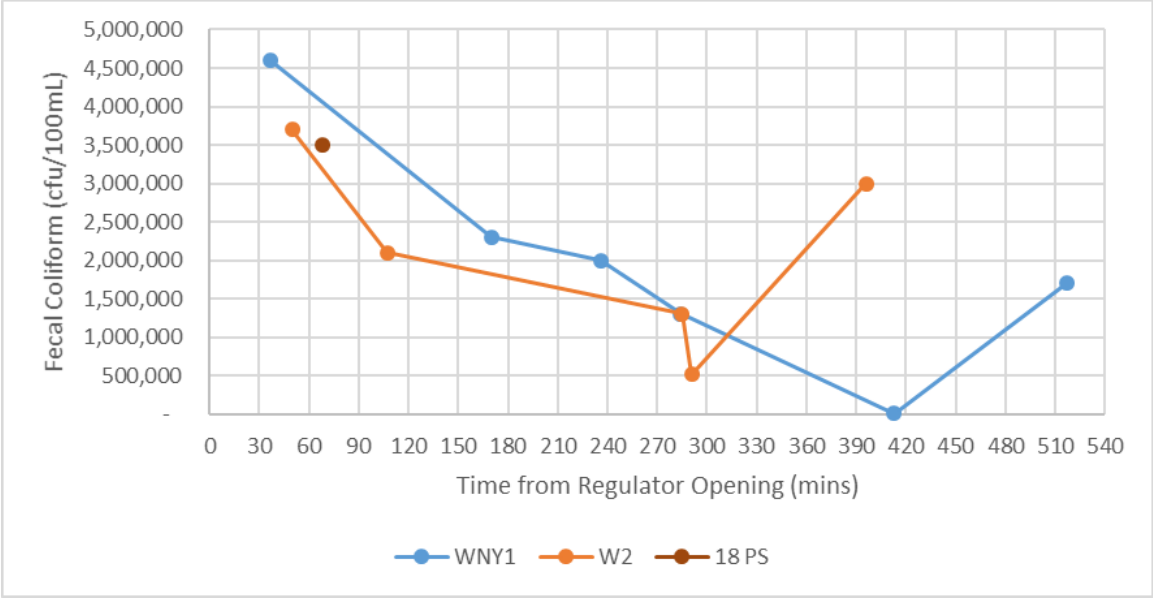


TABLE 2-7
Wet Weather Sampling Event 4 – August 8, 2017

Sampling Location	Time from Regulator Opening (mins)	Sample Time	Enterococcus Concentration (cfu/100mL)	Fecal Coliform Concentration (cfu/100mL)
WNY1	37	10:20	4,600,000	4,600,000
	170	12:33	1,500,000 [E]	2,300,000
	236	13:39	1,200,000 [E]	2,000,000
	284	14:27	630,000 [E]	1,300,000 [E]
	413	16:36	25,000	4,100
	517	18:20	470,000	1,700,000 [E]
W2	50	12:50	2,400,000	3,700,000
	107	13:47	500,000	2,100,000
	285	14:45	570,000	1,300,000
	291	16:51	260,000	520,000
	396	18:36	450,000	3,000,000
18 PS	68	19:21	2,200,000	3,500,000

E - Count is outside of recommended range of test. Reported value may be considered estimate.

3.0 Summary of Findings

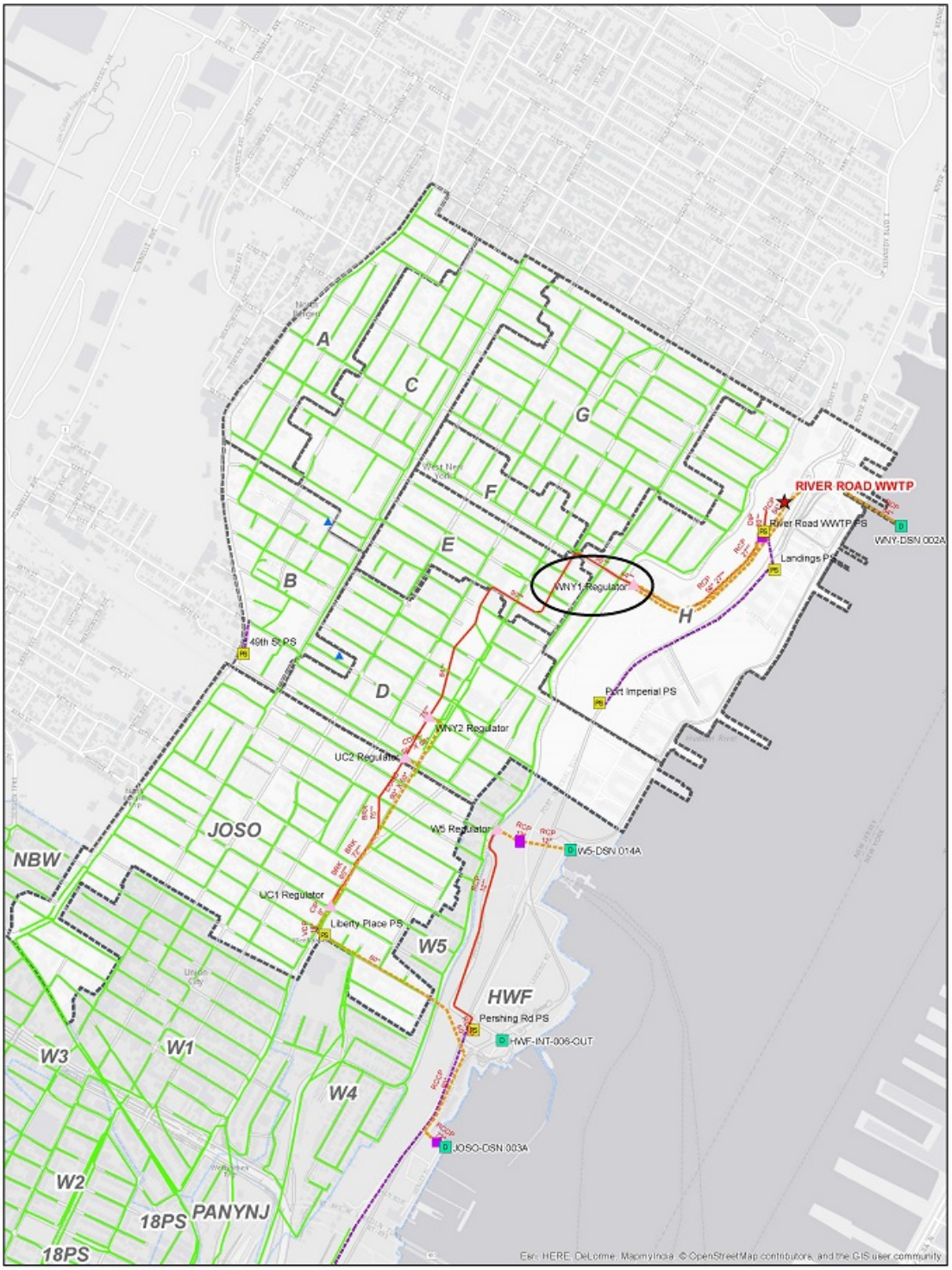
This work effort was performed to characterize bacterial concentrations in CSO discharges to the Hudson River. The procedures in the QAPP were executed and quality control was followed. Many analytical results were outside the recommended range of tests and should be considered estimates. Bacterial samples collected from wastewater, stormwater, combined sewage and surface waters can

vary by orders of magnitude at the same location on the same day in dry and wet weather depending on the conditions when the sample was collected.

Dry weather sampling provided a range of baseline concentrations for sanitary enterococcus and fecal coliform within the CSS. Dry weather enterococcus samples ranged from less than 100,000 cfu/100mL to 4,500,000 cfu/100mL. Fecal coliform samples ranged from less than 100,000 cfu/100mL to 18,000,000 cfu/100mL.

Wet weather sampling provided a range of concentrations that may be expected to be discharged at times of combined sewer overflows. Wet weather enterococcus samples generally ranged from 1,800 cfu/100mL to 4,500,000 cfu/100mL, although a 30,000,000 cfu/100mL was reported in one sample. Fecal coliform samples generally ranged from 4,100 cfu/100mL to 4,600,000 cfu/100mL, although a 120,000,000 cfu/100mL was reported in one sample. All wet weather samples showed data starting with high concentrations at the beginning of the event and dropping during the event, indicating a first flush followed by more dilution as rainfall fell and wet weather flow increased.

The NJ CSO Group was also performing stormwater and CSO sampling at the same time for the hydraulically connected permittees in northern New Jersey. CSO samples were collected in Paterson, Newark, Harrison and Kearny. In general, their wet weather CSO data ranged from 625,000 cfu/100mL to 8,500,00 cfu/100mL for enterococcus and 2,700.000 cfu/100mL to 72,000,000 cfu/100mL for fecal coliform. The Authority's data was in the same range as the NJ CSO Group data.



North Hudson Sewerage Authority

Hoboken, Union City, Weehawken, and West New York
New Jersey

North Hudson Service Area

Tributary Areas to River Road WWTP

Notes:
1. The locations of features and facilities shown on this map are approximate. Pipe attributes and connectivity are based on sewer atlases, record drawings, and field verifications of manholes and catch basins.
2. Elevation Datum: NAVD88
3. ~~A flow meter will be placed upstream of each regulator.~~

N

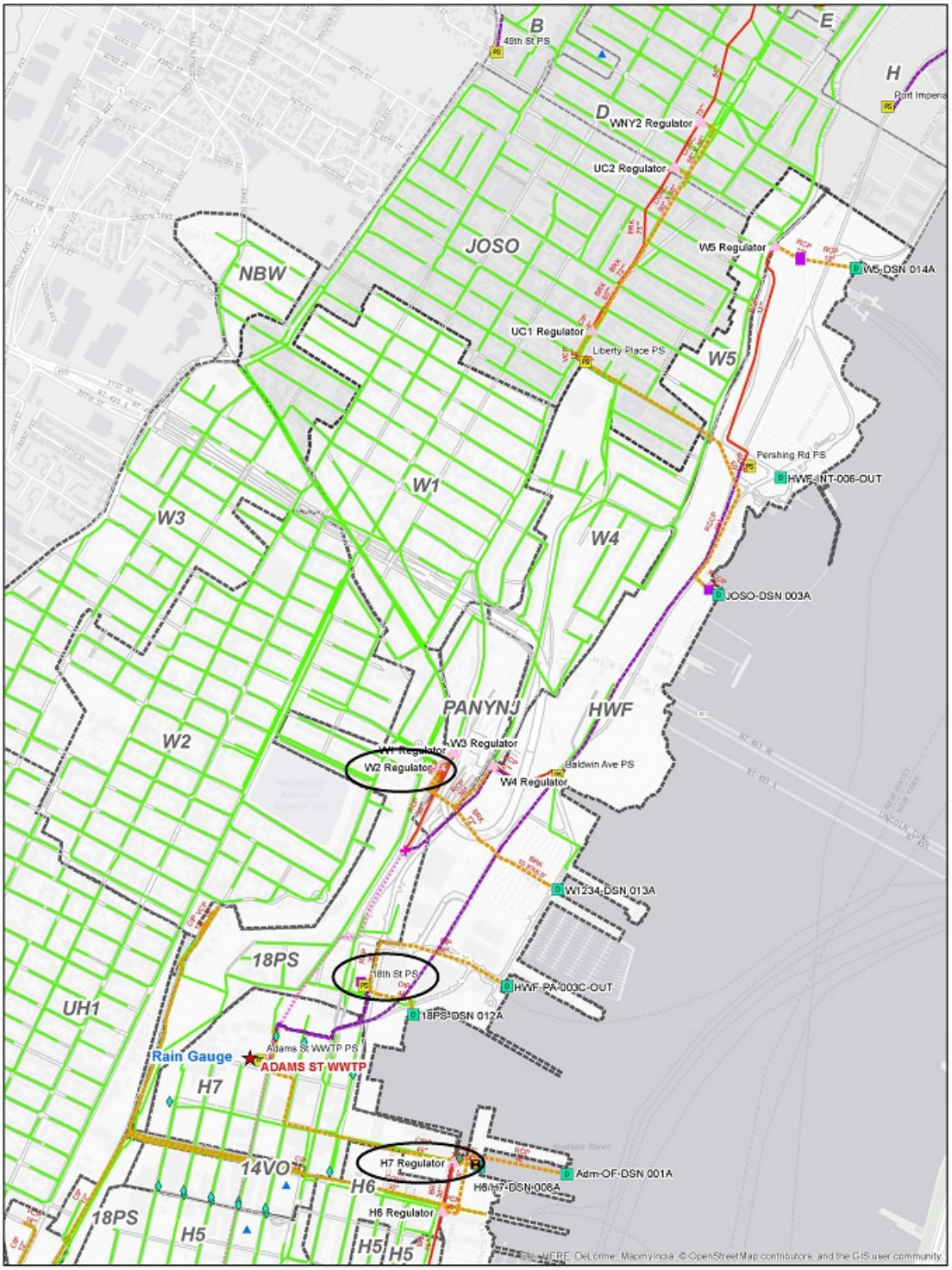
0 300 600 900 1,200 Feet

Legend

Sewer System
- Gravity Sewer
- Force Main
- Interceptor
- Siphon
- Outfall Pipe
- WWTP

Planimetric Features
- Street
- Basins

Structures
- Outfall Point
- Screening Module
- Pump Station
- Regulator
- Flushing Chamber
- Siphon Head Box
- Significant Indirect User
- Solids & Floatables Module
- Junction Box



North Hudson Sewerage Authority

Hoboken, Union City, Weehawken, and West New York
New Jersey

North Hudson Service Area

Tributary Areas to Adams Street WWTP
Sheet 1 of 2

Notes:
1. The locations of features and facilities shown on this map are approximate. Pipe attributes and connectivity are based on sewer atlases, record drawings, and field verifications of manholes and catch basins.
2. Elevation Datum: NAVD88
3. ~~A flow meter will be placed upstream of each regulator.~~

N

0 300 600 900 1,200 Feet

Legend

Sewer System
- Gravity Sewer
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- WWTP

Planimetric Features
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North Hudson Sewerage Authority

Hoboken, Union City, Weehawken, and West New York
New Jersey

North Hudson Service Area

Tributary Areas to Adams Street WWTP
Sheet 2 of 2

Notes:
1. The locations of features and facilities shown on this map are approximate. Pipe attributes and connectivity are based on sewer atlases, record drawings, and field verifications of manholes and catch basins.
2. Elevation Datum: NAVD88
3. ~~A flow meter will be placed upstream of each regulator.~~

N

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Legend

Sewer System
- Gravity Sewer
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- Junction Box

Appendix C – Baseline Compliance Monitoring Program Data Summary

Memo

Date:	October 16, 2017
Project:	Long Term Control Planning Support for PVSC
To:	Michael Hope, P.E., Greeley and Hansen Timothy Dupuis, P.E., CDM Smith
From:	Timothy J. Groninger, P.E., HDR Engineering
Subject:	Baseline Compliance Monitoring Program Data Summary

Introduction

This memorandum and its attachments summarize the data that HDR has collected in support of PVSC's LTCP modeling under the Baseline Compliance Monitoring Program (BCMP). The BCMP was designed to generate sufficient data to establish existing ambient water quality conditions for pathogens in the CSO receiving waters and to update, calibrate and validate a pathogen water quality model of the receiving water bodies. The resulting model will be used to support the development of CSO Long Term Control Plans (LTCPs) by the Passaic Valley Sewerage Commission (PVSC) and participating members of the NJ CSO Group. The data collected was paid for by the participating members of the NJ CSO group, who own the data and may use it to satisfy certain NJPDES permit requirements. Table 1 defines the participating members of the NJ CSO Group.

The BCMP conforms to the "Baseline Compliance Monitoring Program Quality Assurance Project Plan" (QAPP) prepared by PVSC on behalf of the NJ CSO Group and submitted to the New Jersey Department of Environmental Protection (DEP) December 31, 2015 as revised February 19, 2016.

The BCMP included three parallel data collection efforts:

1) Baseline Sampling, which was modeled after and intended to supplement the approved routine sampling program of the New Jersey Harbor Discharges Group (NJHDG), of which PVSC is a member. The sampling frequency matched NJHDG, varying with time of year as follows:

1 International Boulevard, 10th Floor, Suite 1000, Mahwah, NJ 07495-0027
(201) 335-9300

a. Spring (May-Jun): Biweekly (4 dates);
b. Summer (Jul-Sep): Weekly (12 dates); and
c. Winter (Oct-Apr): Monthly (7 dates).

Table 1. NJ CSO Group Members and Associated Central Sewage Treatment Facilities

NJ CSO Group Member	Associated Treatment Facility*
Bayonne MUA	PVSC
East Newark	PVSC
Elizabeth	JMEUC
Fort Lee	BCUA
Guttenberg	NBMUA
Hackensack	BCUA
Harrison	PVSC
Hoboken**	NHSA
Jersey City	PVSC
Kearny	PVSC
Newark	PVSC
North Bergen MUA	PVSC
North Bergen Township	NBMUA
Paterson	PVSC
Perth Amboy	MCUA
Ridgefield Park	BCUA
Union City**	NHSA
Weehawken**	NHSA
West New York**	NHSA

*BCUA: Bergen County Utility Authority; JMEUC: Joint Meeting of Essex and Union Counties; MCUA: Middlesex County Utilities Authority; NBMUA: North Bergen Municipal Utility Authority; NHSA: North Hudson Sewage Authority; PVSC: Passaic Valley Sewage Commission. **Municipality with CSOs within their limits but not a permit holder.

2) Source Sampling, which targeted the major influent streams within the study area to establish non-CSO loadings, and coincided with the NJHDG and Baseline Sampling. Any discussion of field activities applicable to Baseline Sampling is also applicable to Source Sampling because both sets of stations were sampled during the same field efforts.

3) Event Sampling, which was timed to coincide with rainfall to capture three discrete wet-weather events over the course of the year on each segment of the NY-NJ Harbor complex impacted by CSOs.

Field work for these three elements was completed on April 28, 2017; the last of the laboratory results were provided June 10, 2017. A total of 23 baseline and source sampling events were completed. The goal of the event sampling was to capture three significant wet weather events (precipitation >0.5 inches in 24 hours) at each targeted station, which was completed across four sampling events (one set of samples was collected across two precipitation events). All samples collected were analyzed for fecal coliform and enterococcus; freshwater samples were also analyzed for E. coli.

The remainder of the body of this memo discusses methods and data quality. Assessment of the data quality will continue through the model calibration process, but a preliminary review indicates the data have met the goals of the QAPP and will be acceptable for its intended uses (baseline conditions assessment and model development).

The data itself is provided as an attachment and includes preliminary NJHDG data collected between March and December 2016 in addition to the data collected by HDR. Data is shown in 6-panel time series plots of temperature, salinity, Secchi depth / turbidity, fecal coliform, enterococcus, and E. coli by sampling location, and are ordered spatially by waterbody, generally starting from the head end of a waterbody and continuing toward the mouth.

Methods

The BCMP is modeled in part on the program performed by the New Jersey Harbor Dischargers Group. NJHDG is a similarly allied collaborative undertaking that has been collecting data since 2003. PVSC has taken the lead for the NJHDG monitoring program which is modeled after the successful New York City Department of Environmental Protection (NYCDEP) Harbor Survey.

Field Methods

Field sampling activities were performed HDR Engineering, Inc., in conformance with the applicable requirements of the NJDEP *Field Sampling Procedures Manual* (FSPM, 2005). HDR holds NJDEP certifications for all parameters for which field sampling was conducted. Table 2 presents the measurement methodologies.

Table 2. Field Sampling Parameters

Parameter	Method	RL[1]	MDL[2]	Holding Time
Temperature	SM 2550 B	0.1 °C	0 °C	Analyze Immediately
Salinity	SM 2520 B	0.1 ppt	0 ppt	Analyze Immediately
Dissolved Oxygen	SM 4500-O C, G	0.1 mg/L	0 mg/L	Analyze Immediately
pH	SM 4500-H B, EPA 150.2	0.1 Units	0 Units	Analyze Immediately
Light Penetration	Secchi Depth	0.1 ft	0.1 ft	Analyze Immediately
Turbidity	SM 2130 B	0 FNU	0 FNU	Analyze Immediately

[1]Reporting Limit. [2]Method Detection Limit

Data were collected during wet and dry conditions. At all locations, fecal coliform and enterococcus were sampled; E. coli was sampled at seven freshwater sites located on the Upper Passaic and Elizabeth Rivers. Table 3 lists details of the routine sampling locations; Table 4 presents the source sampling locations; and Table 5 lists the event sampling locations. A map of these sampling locations is provided in the attachment.

Laboratory Methods

Laboratory analyses were performed by Eurofins QC analytical laboratories, a New Jersey certified analytical testing laboratory. Table 6 presents the laboratory methodologies. The following parameters were analyzed in a laboratory:

- Fecal Coliform (all locations)
- Enterococcus (all locations)
- E. coli (freshwater locations only; Elizabeth River & Upper Passaic River)

Table 3. Baseline Compliance Monitoring Routine Sampling Locations*

Station		Waterbody	Samples	Station		Waterbody	Samples
Passaic River	B24**	Passaic R	1	Hackensack River	B1	Hackensack R	1
	2**	Passaic R	1		B2	Hackensack R	1
	B22**	Passaic R	1		B11	Overpeck Cr	1
	S7**	Third R	1		S1	Berry's Cr	1
	11	Passaic R	1		B3	Cromakill Cr	2
	B8	Franks Cr	1		S2	Cromakill Cr	1
	B6	Passaic R	2		B4	Cromakill Cr	1
Hudson River	B5A	Hudson R	2		S3	Sawmill Cr	1
	B5B	Hudson R	2		B7	Hackensack R	2
	B18A	Hudson R	2		S5	Penhorn Cr	1
	B18B	Hudson R	2	Newark Bay	B10	Newark Bay	2
	B23A	Hudson R	2		B17	Newark Bay	1
	B23B	Hudson R	2		B16**	Elizabeth R	1
Upper Bay	B9	Upper Bay	2		B14**	Elizabeth R	1
	B20	Upper Bay	2		B13**	Elizabeth R	1
	B12	Kill Van Kull	2		S4	Peripheral Ditch	1
	B21B	Upper Bay	2		B25	Great Ditch	1
	B21A	Upper Bay	2	Arthur Kill, Raritan	24	Arthur Kill	2
	B26	Upper Bay	2		S6	Woodbridge Cr	1
	B27	Upper Bay	2		B15	Arthur Kill	2
	B28	Upper Bay	2		B19	Raritan R	2

*All locations sampled for enterococcus and fecal coliform. **Also sampled for E coli.

Table 4. Routine Source Monitoring Locations*

Station		Waterbody
Hackensack River	S1	Berry's Cr
	S2	Cromakill Cr
	S3	Sawmill Cr
	S5	Penhorn Cr
Newark Bay	S4	Peripheral Ditch
Arthur Kill	S6	Woodbridge Cr
Passaic River	S7**	Third River

*All locations sampled at mid-depth for enterococcus and fecal coliform.
**Also sampled for E coli.

Table 5. Baseline Compliance Monitoring Event Sampling Locations*

Station		Waterbody	Samples	Station		Waterbody	Samples
Passaic River	1**	Passaic R	1	Hudson River	31	Hudson R	2
	B24**	Passaic R	1		32	Hudson R	2
	3**	Passaic R	1		33***	Hudson R	2
	4**	Passaic R	1	Hackensack River	B1	Hackensack R	1
	7**	Passaic R	1		B2	Hackensack R	1
	8**	Passaic R	1		14	Hackensack R	2
	10***	Passaic R	1		15	Hackensack R	2
	B6	Passaic R	2	Newark Bay	17	Newark Bay	2
Upper Bay	B12	Kill Van Kull	2		18***	Newark Bay	2
	B26	Upper Bay	2		20	Elizabeth R	1
	B27	Upper Bay	2	Arthur Kill, Raritan	24	Arthur Kill	2
	B28	Upper Bay	2		B15	Arthur Kill	2
					29	Raritan Bay	2

*All locations sampled for enterococcus and fecal coliform twice per day for 3 days, except as noted. **Also sampled for E coli. ***Sampled for enterococcus and fecal coliform four times per day for 3 days.

Data Quality Objectives

Quality control (QC) measures were applied in the field and the laboratory to characterize the data quality to ensure end-users are aware of any qualified data. Field measurements and sample collection addressed goals of completeness, precision, and representativeness through data validation, duplicate collection, and field and equipment blank samples. Laboratory quality controls addressed bias, accuracy, sensitivity, and comparability through analyzing Laboratory Fortified Blanks, establishing and reporting predetermined method detection and reporting limits, and analyzing Performance Test (PT) samples as part of annual laboratory & method certification. Tables 7 and 8 present the data quality criteria.

Table 6. Fecal Indicator Bacteria Laboratory Methodologies

Parameter	Laboratory Method	Preservation	Holding Time	RL*
Fecal Coliform	EPA Micro Manual p. 124 (1978), Single Step Membrane Filtration	Cool ≤ 4°C	6 hrs	1, 2, 4, 10 CFU/100 mL
Enterococcus	EPA 1600 (Dec 2009), Membrane Filtration	Cool ≤ 4°C	6 hrs	1, 2, 4, 10 PE/100 mL
E. coli	EPA 1603 (Dec 2009), Membrane Filtration	Cool ≤ 4°C	6 hrs	1, 2, 4, 10 CFU/100 mL

*Reporting Limit; values are current as of issuance of QAPP and are based on dilutions, i.e., lower dilutions yield lower reporting limits and vice versa. CFU: colony forming units; PE: presumptive enterococci.

Table 7. Data Quality Criteria and Performance Measurement for Field Collection

Data Quality Indicator	Performance Criterion	Assessment Activity
Completeness	Valid data from 90% of collected samples	Percentage of valid measurements
Precision	RPD[1] < 30% for duplicates	1 field duplicate/crew-day
Representativeness	Blanks ≤MDL[2]	1 field blank/crew-day 1 equipment blank/crew-day

[1]Relative Percent Difference on a log basis; non-representative when (a) both the original and duplicate results are not detected or are less than 5x the reporting limit or (b) either result is estimated, rejected, or suspected of contamination. [2]Method Detection Limit, calculated where applicable.

Table 8. Data Quality Criteria and Performance Measurement for Laboratory Analyses

Data Quality Indicator	Performance Criterion	Assessment Activity
Bias/Accuracy	80%-120% Recovery	Reference material
Sensitivity	MDL[1] and RL[2]	Daily calibration curve
Comparability	Acceptable PT[3] samples	PT[3] samples and recertification

[1]Method Detection Limit. [2]Reporting Limit. [3]Performance Test. Part of annual laboratory & method certification for the laboratory performing the analysis.

Results

Samples were collected during a 377-day span from April 17, 2016 through April 28, 2017. Table 9 summarizes the observed and normal precipitation at Newark Liberty International Airport (KEWR). Note that April 2016 included only 14 days and April 2017 included 28 days. Both the rainfall totals and number of days exceeding the target threshold were below normal for the time window the field program was executed.

Table 9. Precipitation Summary, April 17, 2016 – April 28, 2017

	Volume (inches)			Days ≥ 0.50 inches		
Month	**Observed**	**Normal**	**Difference**	**Observed**	**Normal**	**Difference**
Apr-16	0.17	1.91	(1.74)	0	1.2	(1.2)
May-16	3.85	4.02	(0.17)	3	2.9	0.1
Jun-16	2.40	4.76	(2.36)	2	2.7	(0.7)
Jul-16	6.08	3.70	2.38	4	3.0	1.0
Aug-16	0.93	3.82	(2.89)	0	2.6	(2.6)
Sep-16	2.17	3.60	(1.43)	1	2.7	(1.7)
Oct-16	3.00	3.65	(0.65)	3	2.5	0.5
Nov-16	6.51	3.81	2.70	3	2.7	0.3
Dec-16	2.46	3.54	(1.08)	1	2.9	(1.9)
Jan-17	3.86	2.88	0.98	3	2.6	0.4
Feb-17	2.09	4.18	(2.09)	2	2.1	(0.1)
Mar-17	5.09	4.20	0.89	3	2.7	0.3
Apr-17	3.28	3.82	(0.54)	3	2.4	0.6
Total	**41.89**	**47.89**	**(6.00)**	**28**	**33.0**	**(5.0)**

Table 10 shows the number of days of field measurement activities versus the precipitation condition. Water quality data was collected during 19 of the 28 target events that occurred during the field program (68%). Data was collected during an additional 36 wet weather days, and 81 days with little to no rain were also captured.

Table 10. Summary of Precipitation during Field Collection Days

Rainfall	Days	BCMP	Wet Weather	Other Sampling**	No Sampling
Rain > Target*	28	5	5	9	9
Rain < Target*	94	27	6	3	58
No Rain / Trace	255	76	5	0	174
Total Days	**377**	**108**	**16**	**12**	**241**

*Target = precipitation >0.5 inches in 24 hours . **System Characterization sampling for CSO and stormwater was executed in parallel to the BCMP

Completeness

Tables 11 and 12 present the collection dates for routine and event sampling respectively, along with the percentage of samples collected during each survey. In total, 1,439 samples out of a targeted 1,449 samples were collected during the 23 baseline surveys (99.4%), and a 100% success rate was attained during 19 of the 23 routine surveys. Only one survey had more than one missed sample: survey 22, which was hindered by snowpack on the boat launch used to deploy the small boat. As a result, stations B2 (1-depth), B3 (2-depths), B11 (1-depth), S2 (1-depth), S3 (1-depth) and S5 (1-depth) could not be sampled. These six stations are inaccessible by the larger boats, due to shallow station depths and low bridge clearances. The three remaining missed samples were due to site access (S4 during survey 6) or laboratory accident (B23A during survey 7 and B18A during survey 21).

Table 11. Routine Baseline and Source Sampling Dates and Completeness

Survey	Week of	Percent of Targeted Samples Collected	Number Missed	Survey	Week of	Percent of Targeted Samples Collected	Number Missed
1	4/25/2016	100	0	13	8/22/2016	100	0
2	5/9/2016	100	0	14	8/29/2016	100	0
3	5/23/2016	100	0	15	9/6/2016	100	0
4	6/9/2016	100	0	16	9/12/2016	100	0
5	6/22/2016	100	0	17	9/19/2016	100	0
6	7/5/2016	98.4	1	18	10/3/2016	100	0
7	7/11/2016	98.4	1	19	11/7/2016	100	0
8	7/18/2016	100	0	20	12/5/2016	100	0
9	7/25/2016	100	0	21	1/9/2017	98.4	1
10	8/1/2016	100	0	22	2/6/2017	88.9	7
11	8/8/2016	100	0	23	3/6/2017	100	0
12	8/15/2016	100	0	**Total**		**99.4**	**10**

Table 12. Baseline Compliance Monitoring Event Sampling Dates and Completeness

Survey Number	Date (week of)	Percent of Samples Collected	Number Missed
1	6/6/2016	97.4	7 of 270
2a	1/4/2017	100	0 of 110
3	1/26/2017	95.9	11 of 270
2b	4/26/2017	100	0 of 160
Total		**97.8**	**18 of 810**

In total, 792 of a targeted 810 samples were collected during the event sampling surveys. The seven samples not collected during the first event included B2 (2-depth), B6 (1-depth), 14 (2-depth), and 15 (2-depth). These stations were accessed using a small aluminum-hulled boat, and thunderstorms and high winds during the afternoon of the third day rendered it unsafe to sample. The eleven samples not collected during the third event included four at station 29 (2-depth) and one at station 18 (2-depth) due to high winds, and one at station 20 that was not analyzed as the bottle broke in transit to the lab.

In addition to field issues, one sample 20 on 6/8 was not analyzed for fecal coliform due to a lab accident, and all twelve samples collected on 6/8 were not analyzed for E. coli because of a lab oversight.

Qualified Data

The methodologies approved for bacteria require preparation of appropriate sample dilutions so that the number of colonies to be counted on the plate is between 20 and 60. Due to the wide variability of bacteria concentrations across 'clean' surface waters, stormwater, and sanitary sewage, it is not always possible to accurately estimate the level of dilution necessary. As a result, some of the concentrations reported are considered estimates because the number of colonies fell outside of this range when counted. These results are given a qualifier of "E." E-qualified data still meet the needs of the program and can be used in the water quality analysis, but must be treated as estimates rather than direct measured values.

The bacteria measurements also have a specific holding time required by the laboratory methodology, which is less than 8 hours. When analysis is conducted outside of 8 hours, the concentrations are given a qualifier of "Q[1]." Q-qualified data still meet the needs of the program and can be used in the water quality analysis, but could not be used for a regulatory assessment of compliance.

Q-qualified data occurred more frequently during the initial stages of the sampling program, most notably during the first event-based sampling in early June 2016. The laboratory processed coolers as they arrived rather than based on the coolers' chain-of-custody end sample times. Procedures were adopted to address this issue and the number of Q-qualified data decreased over the course of the sampling program. Table 13 presents the number of non-qualified, E qualified, and Q qualified samples.

[1] Other types of Q-qualifying issues can arise, but in this sampling program all Q-qualified data was flagged as such based on holding time exceedance.

Table 13. Counts for Qualified Data

Qualifier	Routine			Event			Total		
	Fecal	Entero	Ecoli	Fecal	Entero	Ecoli	Fecal	Entero	Ecoli
None	1,125	1,210	99	417	361	63	1,542	1,571	162
E	313	229	40	349	390	30	662	619	70
Q	1	0	0	13	15	3	14	15	3
Both	0	0	0	11	25	0	11	25	0
Qualified	**22%**	**16%**	**29%**	**52%**	**62%**	**34%**	**31%**	**30%**	**31%**

Precision

Precision assesses the variability associated with sample collection, handling, and storage in the field, as well as variability associated with the analytical processes. To measure this, one sample from each crew-day was collected in duplicate, and the laboratory analyses of duplicate samples were compared against one another. Table 14 summarizes these comparisons for routine, event, and source sampling by indicator bacteria. Overall, 92% of usable duplicates had a relative percent difference at or below 30% (on a log basis). Usable duplicates are those where both samples are at least five times the reporting limit and neither is estimated, suspected of contamination, or otherwise rejected.

Table 14. Analysis of Duplicates

Duplicates	Fecal	Entero	Ecoli	Total
Total Pairs	179	180	31	390
Usable Pairs	85	68	20	173
RPD <30%	80	60	20	160
Percent Good	**94%**	**88%**	**100%**	**92%**

Representativeness

Representativeness is a measure of the degree to which data accurately and precisely represent conditions at the sampling point. Programmatic and procedural controls are designed to minimize contamination between sample collection and the laboratory (or subsequent sample collections), and the effectiveness of these controls can be measured by analyzing blank samples that underwent similar handling to collected samples.

The sampling program relied on two types of blanks. Equipment blanks were generated each sampling crew-day by passing laboratory de-ionized (DI) water through sampling equipment prior to collecting the first sample. Field blanks were similarly prepared, but were collected between sampling events within the crew-day.

Table 15. Equipment and Field Blank Results, Routine, Event, and Source Sampling

Blanks	Equipment			Field			All Blanks		
	Fecal	Entero	Ecoli	Fecal	Entero	Ecoli	Fecal	Entero	Ecoli
Lab Analyses	181	181	61	180	180	60	361	361	121
≤MDL	150	179	45	144	164	42	294	343	87
Percent Good	**83%**	**99%**	**74%**	**80%**	**91%**	**70%**	**81%**	**95%**	**72%**

Preliminary Conclusions

The data collected under the Baseline Compliance Monitoring Program appears to be sufficient for the intended goal of calibrating the water quality model to be used for PVSC and NJCSO communities' LTCPs. Data quality met QAPP objectives, i.e.:

- The data completeness goal of valid data from 90% of collected samples was achieved. Over 99% of targeted samples were collected and analyzed, representing nearly 4,700 points of pathogen data. Of this data, 29% were reportable as estimates based on laboratory plate counts being outside of the recommended window, and less than 1% were qualified based on holding times. The preliminary review of flagged data shows that it is consistent with comparable non-flagged data and is likely to be informative to the model calibration process.

- The sample duplicate goal of calculated relative percent difference (RPD) being less than 30% on a log-basis was achieved in 92% of duplicates analyzed, which excludes pairs disqualified after collection and analysis for failure to meet reporting or method detection limit requirements, a determination that cannot be made prior to collecting and analyzing samples.

- The field and equipment blanks were below the method detection limit (MDL) for 86% of all blanks analyzed. The overwhelming majority of the remaining 14% were in the range of 1 to 10 colonies per 100 mL, indicating that sample contamination was very low in those cases and not likely to have altered the results.

The BCMP was not designed to provide an adequate data volume for assessing attainment of water quality standards, which would have required five samples per month at each sampling location to compute monthly geometric means. However, a review of the data collected can indicate the *likelihood* of attainment in a particular area:

- The lower regions of the Passaic and Hackensack Rivers appear likely to violate water quality criteria, but attainment appears to improve closer to Newark Bay.

- The larger waterbodies (Newark Bay, Hudson River, Arthur Kill, Kill Van Kull) appear to meet existing water quality criteria. Newark Bay and the Kills are primarily SE3 waterbodies, and Raritan Bay is subject to more stringent shellfishing water quality standards.

- Several smaller riverine waterbodies appear unlikely to meet attainment. This includes the Rahway River, Saddler River, Second River, and Elizabeth River. The Raritan River may also have attainment issues.

- Many rivers without CSOs have high bacteria loads. Data collected at source sampling locations indicate non-attainment of waters entering the Passaic and Hackensack Rivers, contributing pollutant loads into the study area from areas that do not have CSOs.

The attachments to this memo list the applicable water quality standards for each waterbody region, and provide the numeric criteria associated with those standards in a summary table at the front. However, it should be noted that NJDEP may upgrade waterbodies in the future.

Attachment 1

Receiving Water Quality Data

Graphs of available receiving water data collected by HDR during April 2016 through March 2017 and NJHDG data collected between March 2016 and December 2016 are presented here within. Note the NJHDG data is still considered preliminary. Figure A-1 presents a map of the station locations. On the following figures, temperature, salinity, Secchi depth, turbidity, fecal coliform, enterococci, and E. coli are plotted by station. The pages are ordered spatially by waterbody, generally starting from the head end of a waterbody and continuing toward the mouth. Tributaries to the main waterbody are included in a manner consistent within the location of the tributary along the main waterbody. Figures are labelled with a waterbody grouping, specific waterbody name, station, and waterbody classification. Table 1 presents the NJ water quality standards for reference against the data. Data collected during this period were not collected frequently enough to assess attainment of geometric mean standards, which require five samples within a 30-day period.

Data are presented as open circles for surface data, filled gray circles for mid-depth data, and filled black circles for bottom data. Secchi depth does not fall into a specific depth category, but is plotted with filled black circles. Turbidity is shown on the same panel as Secchi depth and is presented with filled green circles. All planned receiving water data has been collected.

The post-collection review of the data indicates the data have met the goals of the QAPP and will be acceptable for use in baseline conditions assessment, and for use in the model calibration. Assessment of the data quality will continue through the model calibration process.

Table 1. Water Quality Standards						
Class	Type	Bacteria Standard			Highest Protected Uses	
		Path	GM	SSM	Recreational	Other
SC	Saline	Entero	35	104	Primary	Shellfishing*
SE1	Saline	Entero	35	104	Primary	Shellfishing*
SE2	Saline	Fecal	770	na	Secondary	Diadromous fish migration
SE3	Saline	Fecal	1500	na	Secondary	Diadromous fish migration
FW2	Fresh	Ecoli	126	235	Primary	Public water supply

* Shellfish Waters are subject to the National Shellfish Sanitation Program standard for approved shellfish waters. The fecal coliform geometric mean shall not exceed 14 per 100mL, and not more than 10 percent shall exceed 31 CFU/100mL.

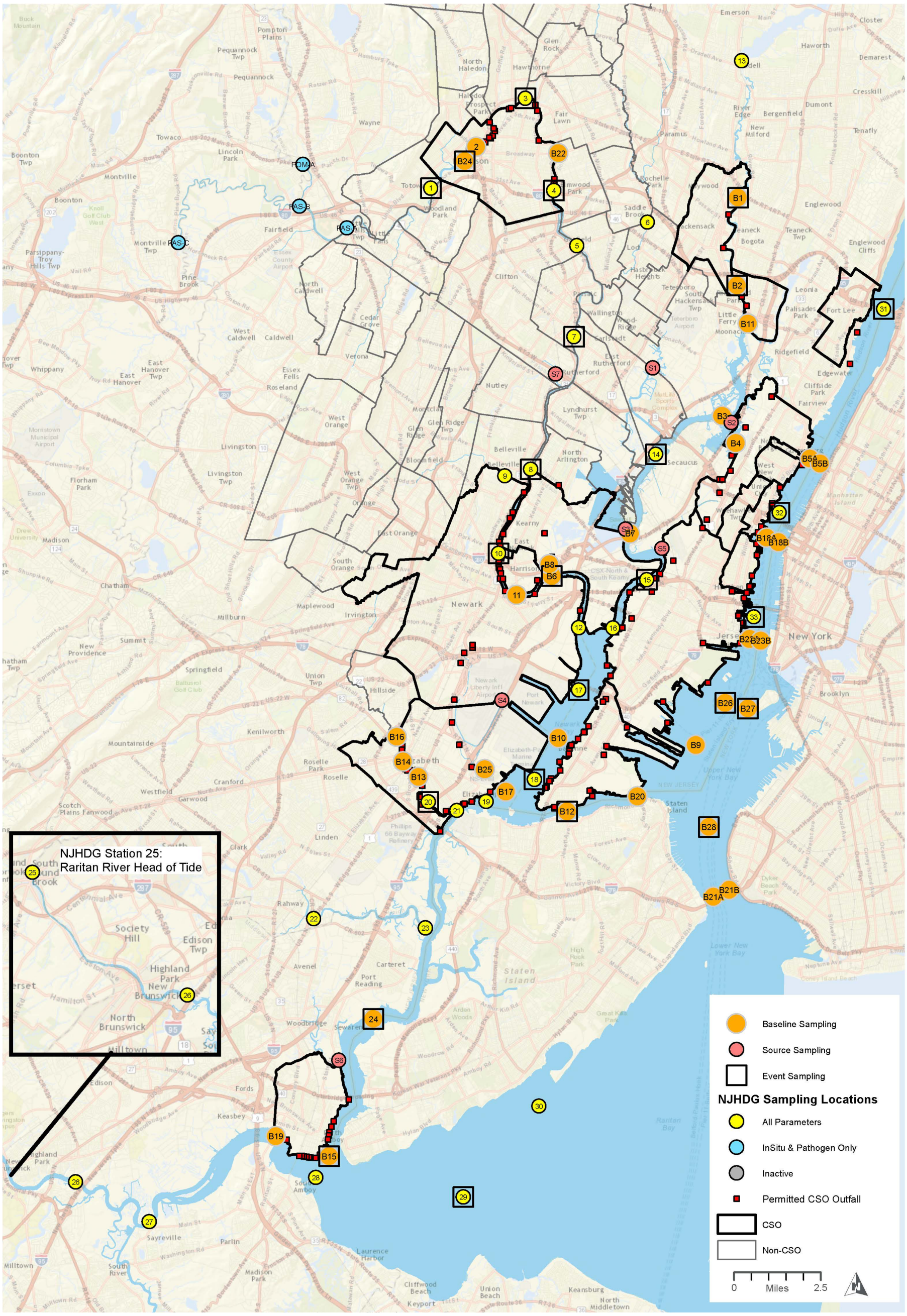
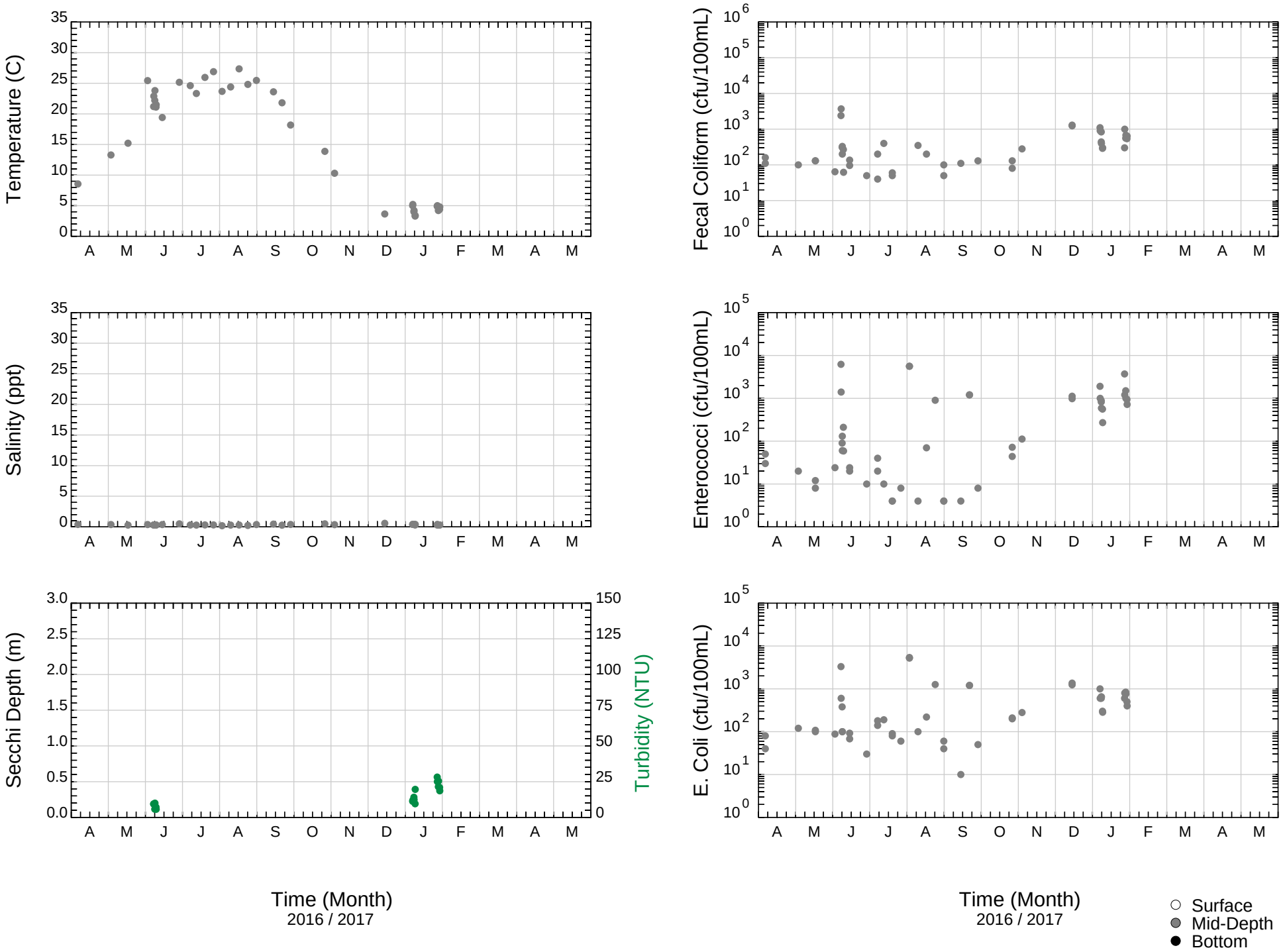
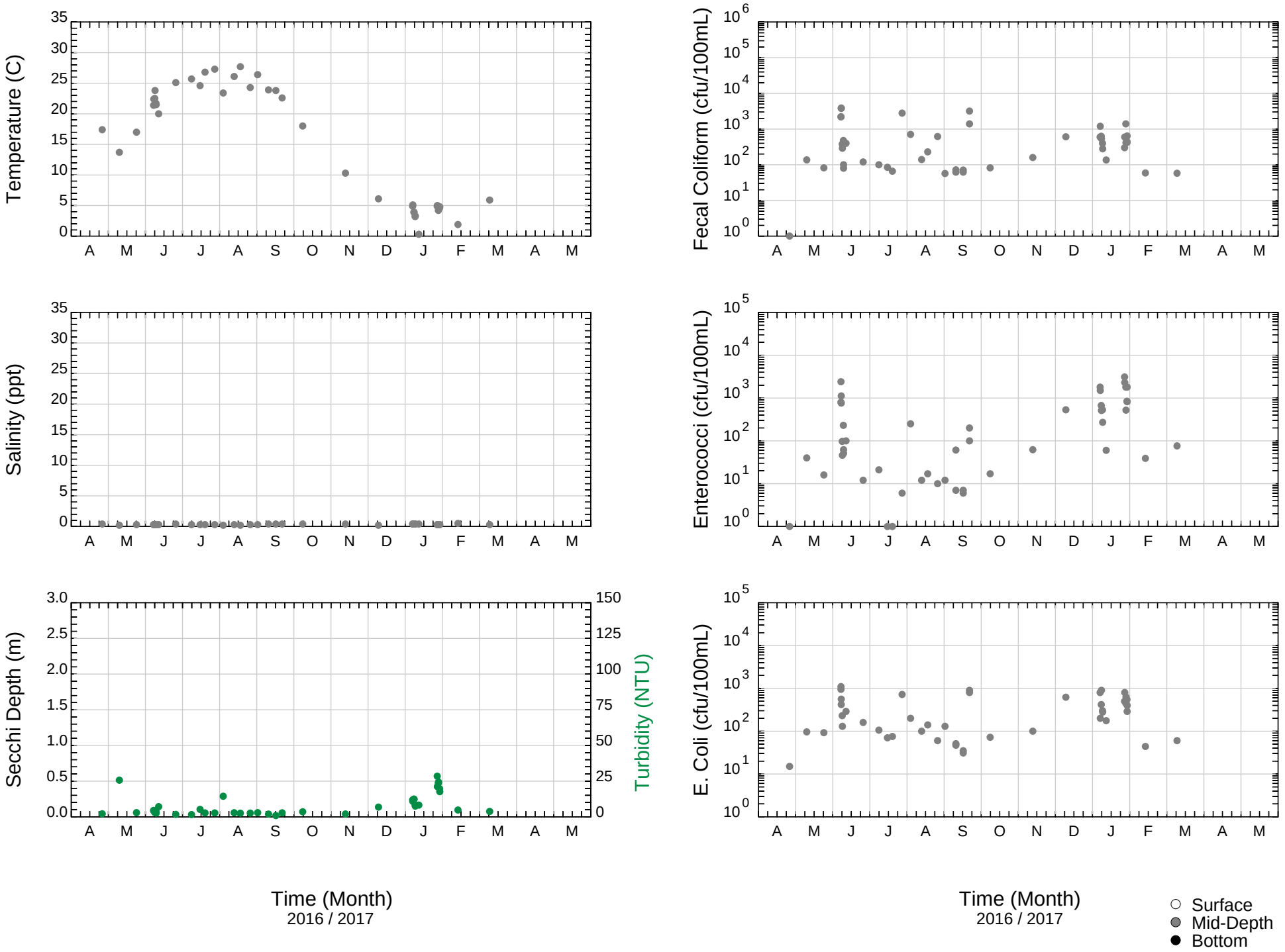


Figure 1 - Source, Routine, and Event Sampling Stations

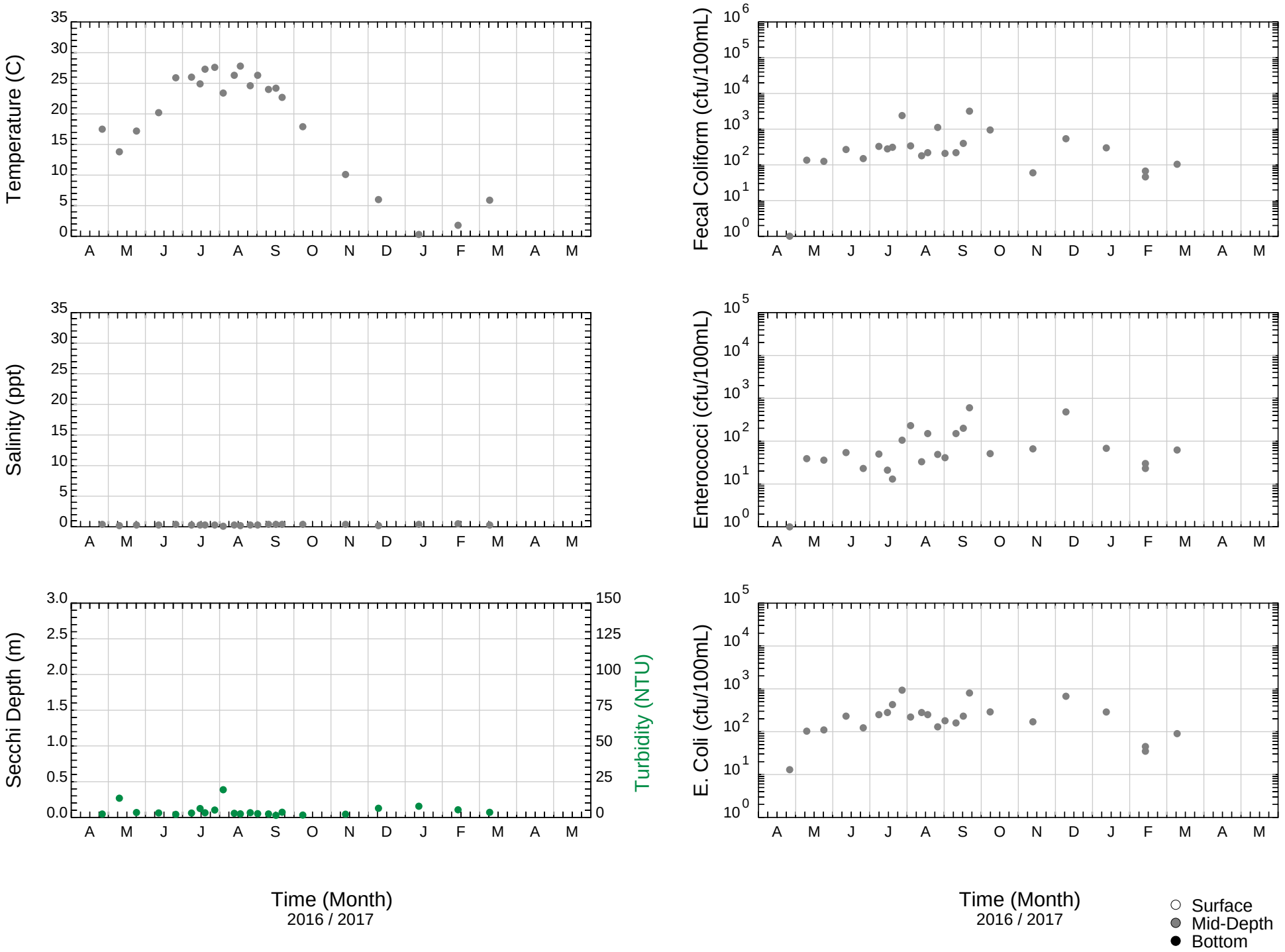
Passaic River & Tributaries, Passaic River, 1



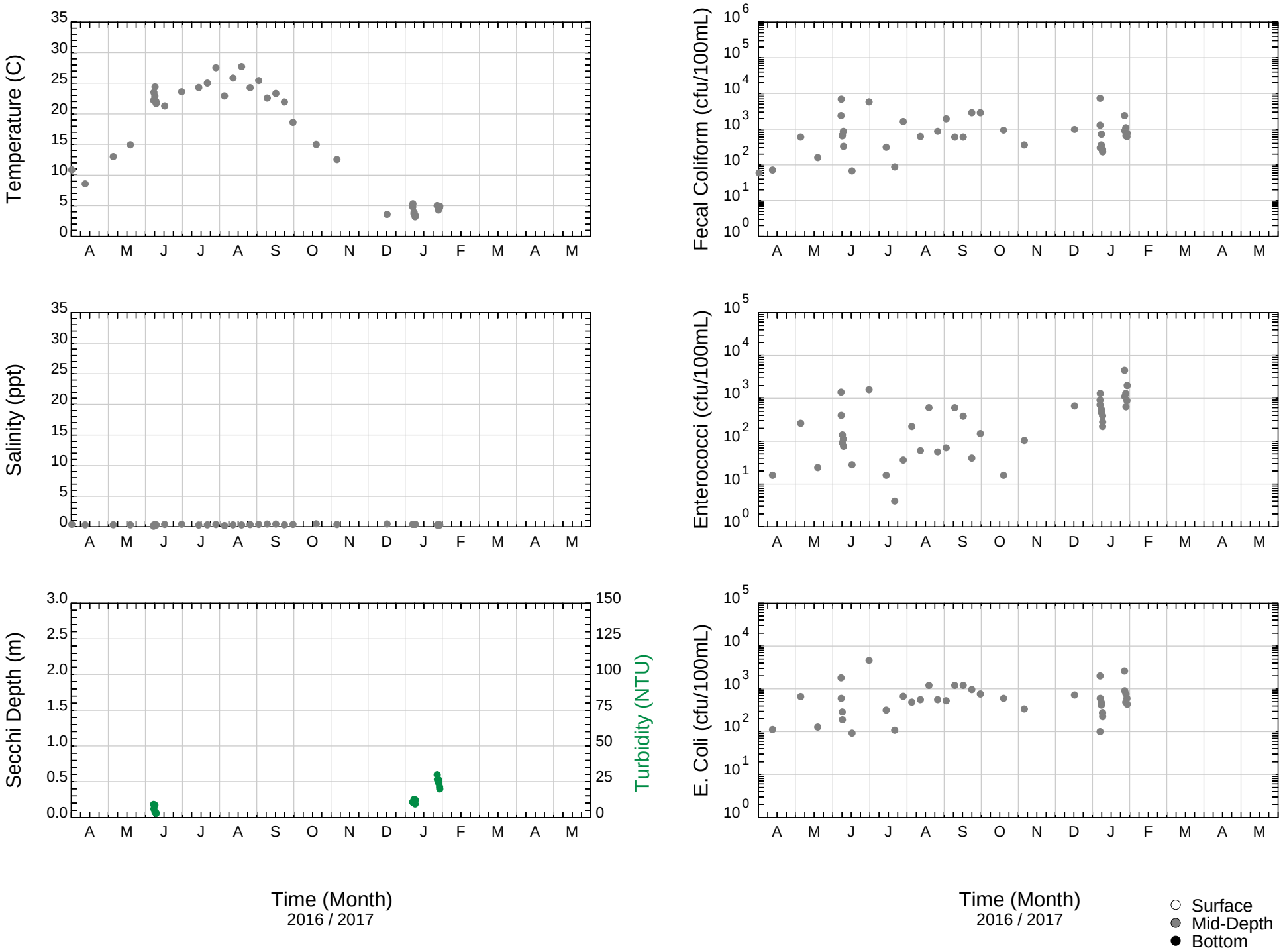
Passaic River & Tributaries, Passaic River, B24



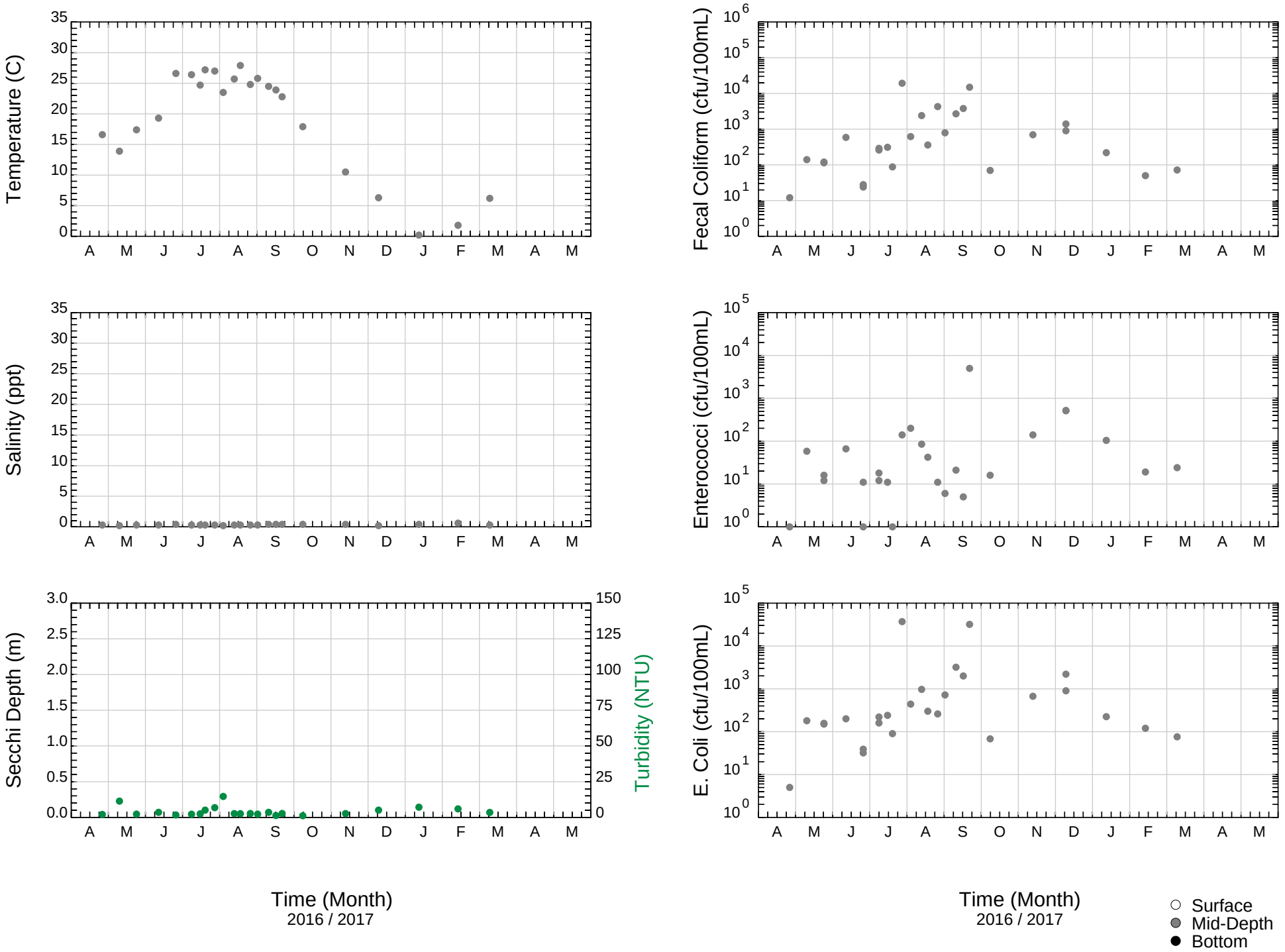
Passaic River & Tributaries, Passaic River, 2



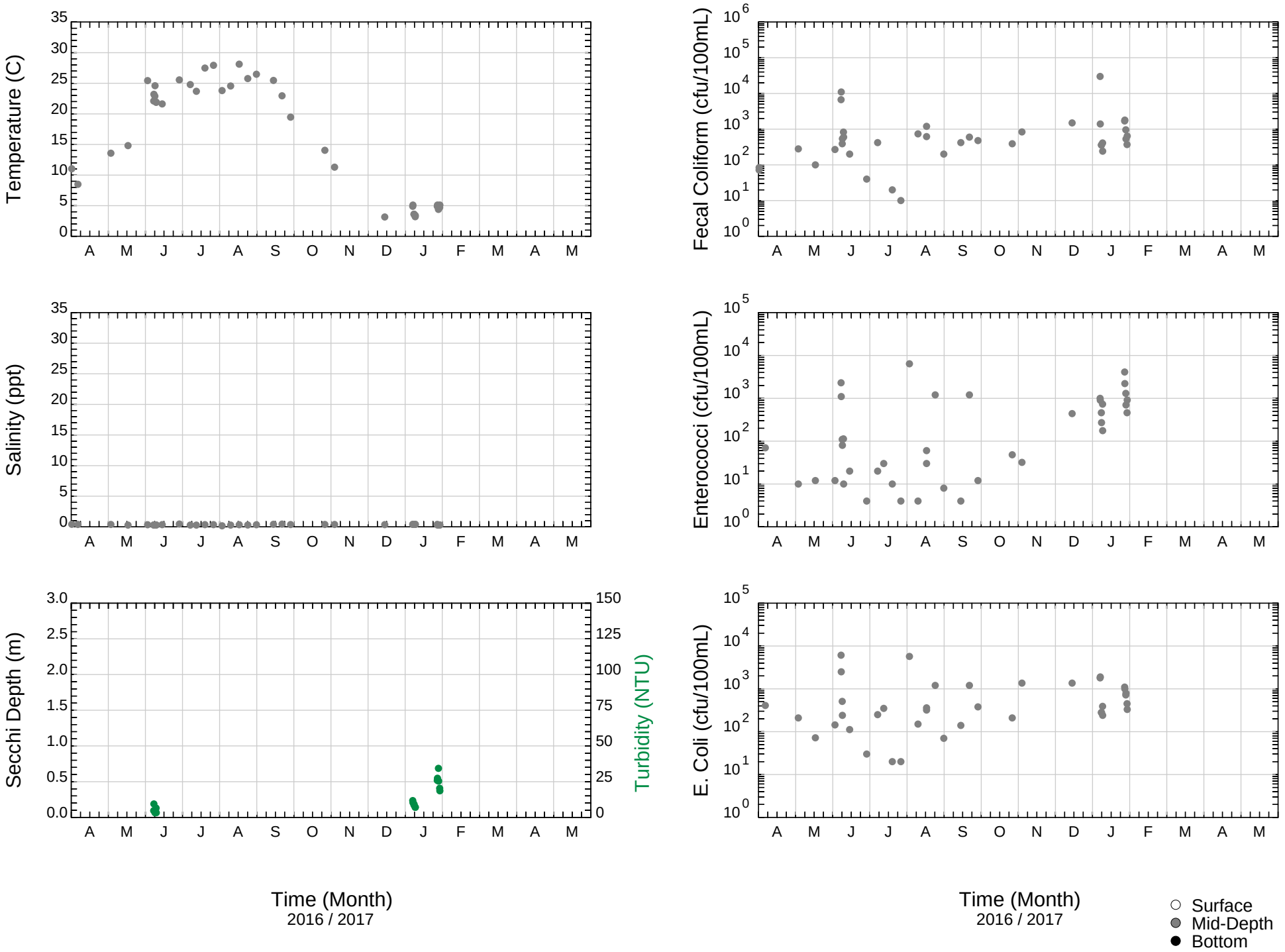
Passaic River & Tributaries, Passaic River, 3



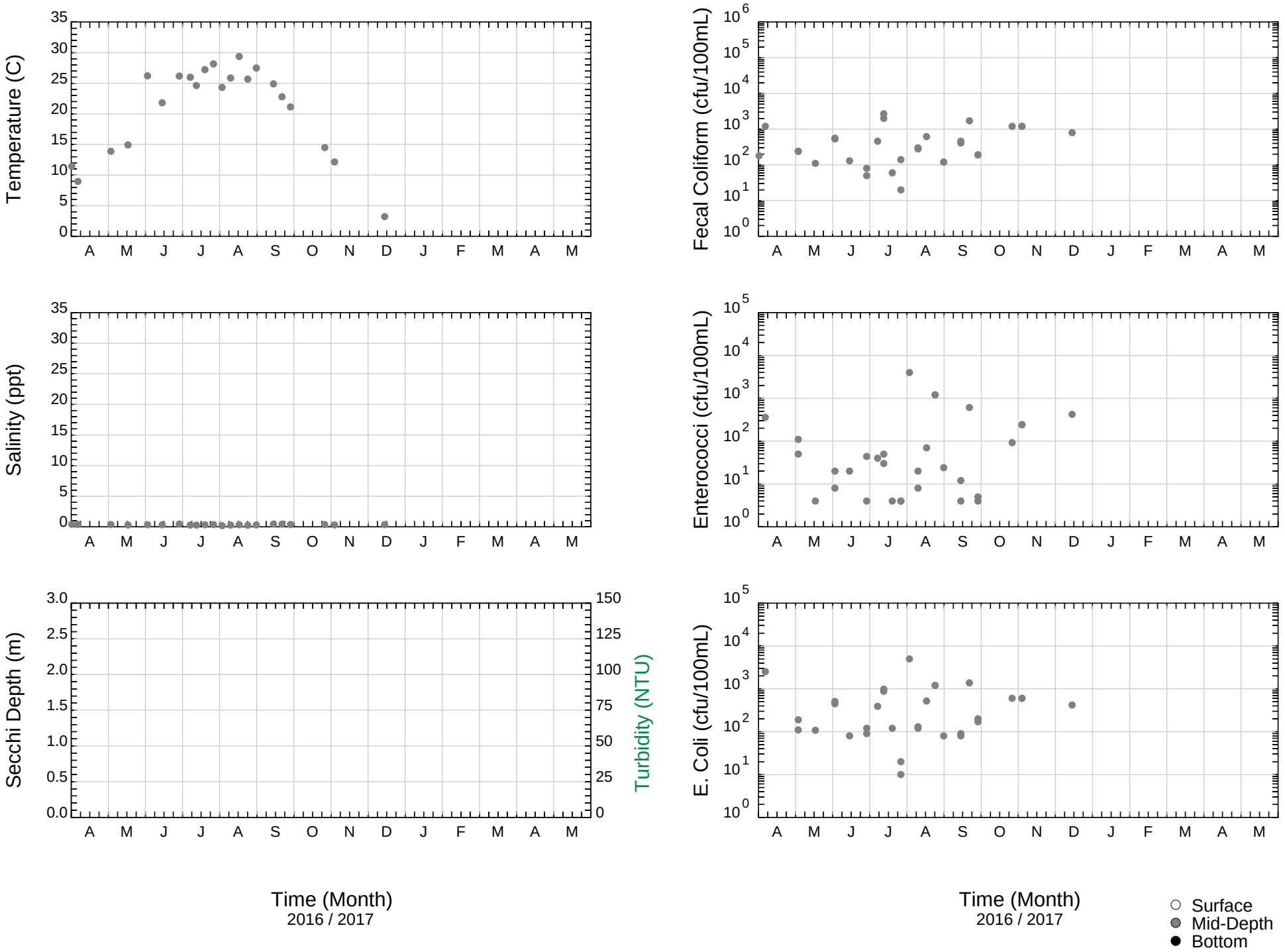
Passaic River & Tributaries, Passaic River, B22



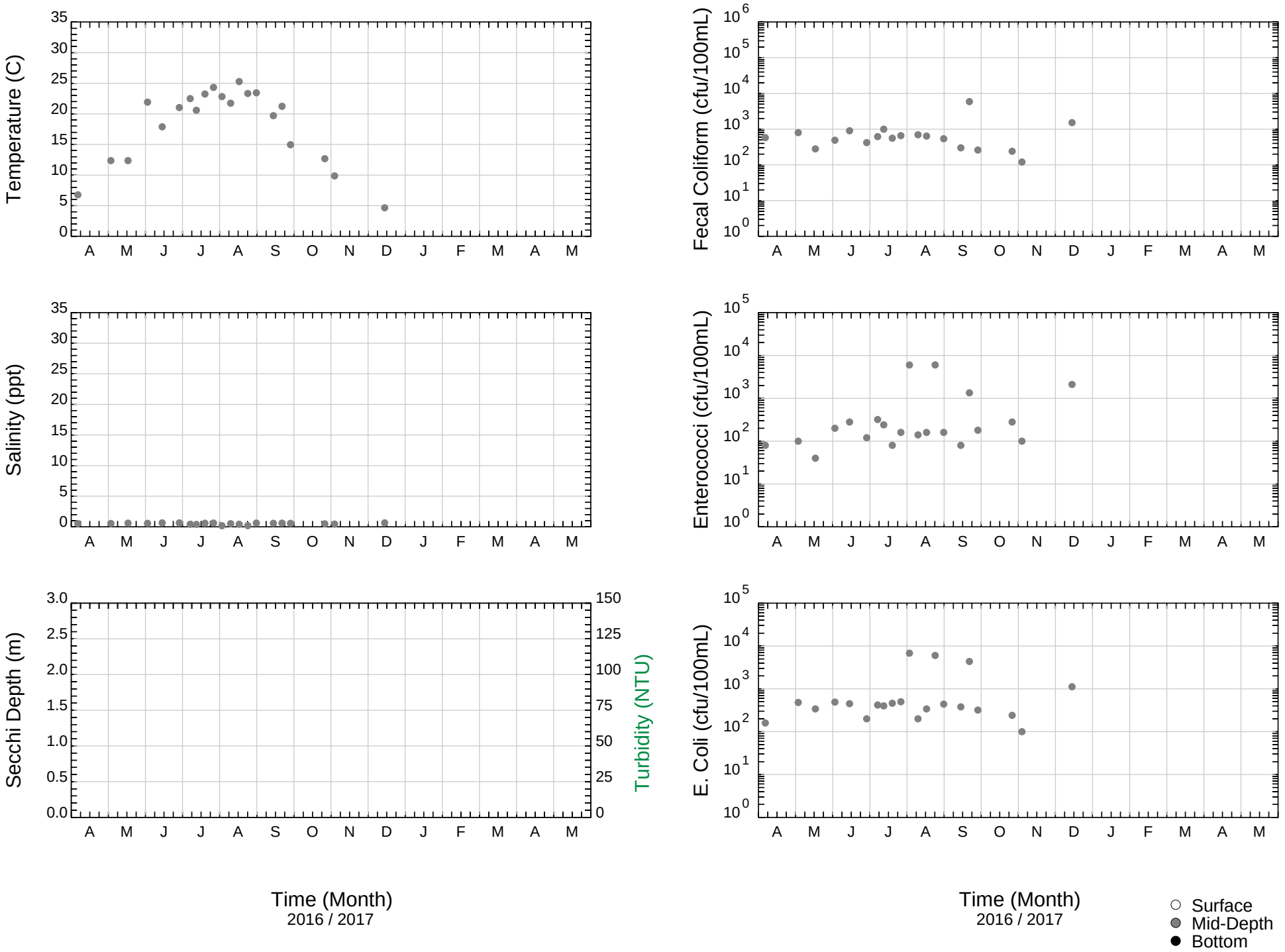
Passaic River & Tributaries, Passaic River, 4



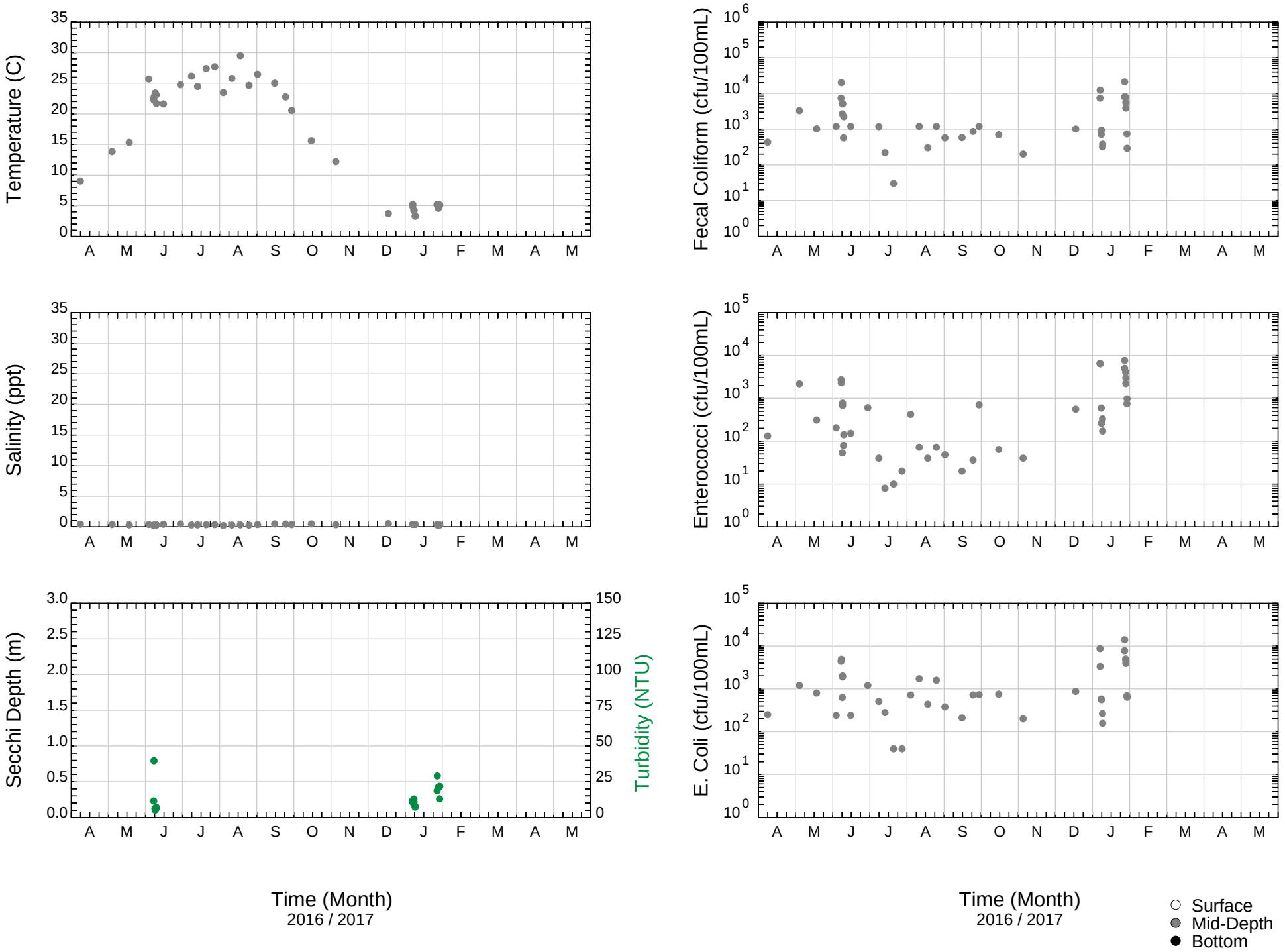
Passaic River & Tributaries, Passaic River, 5



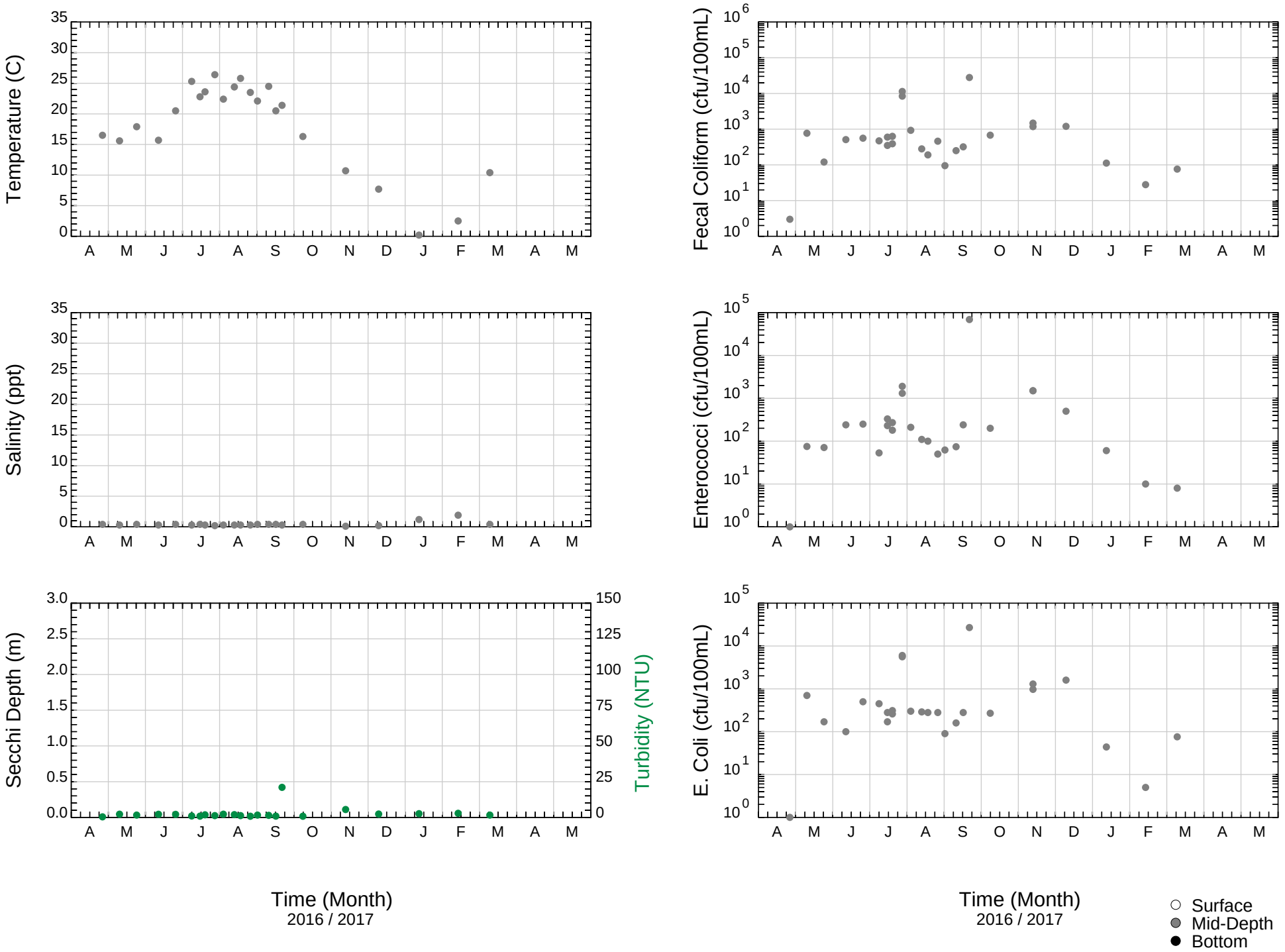
Passaic River & Tributaries, Saddle River, 6



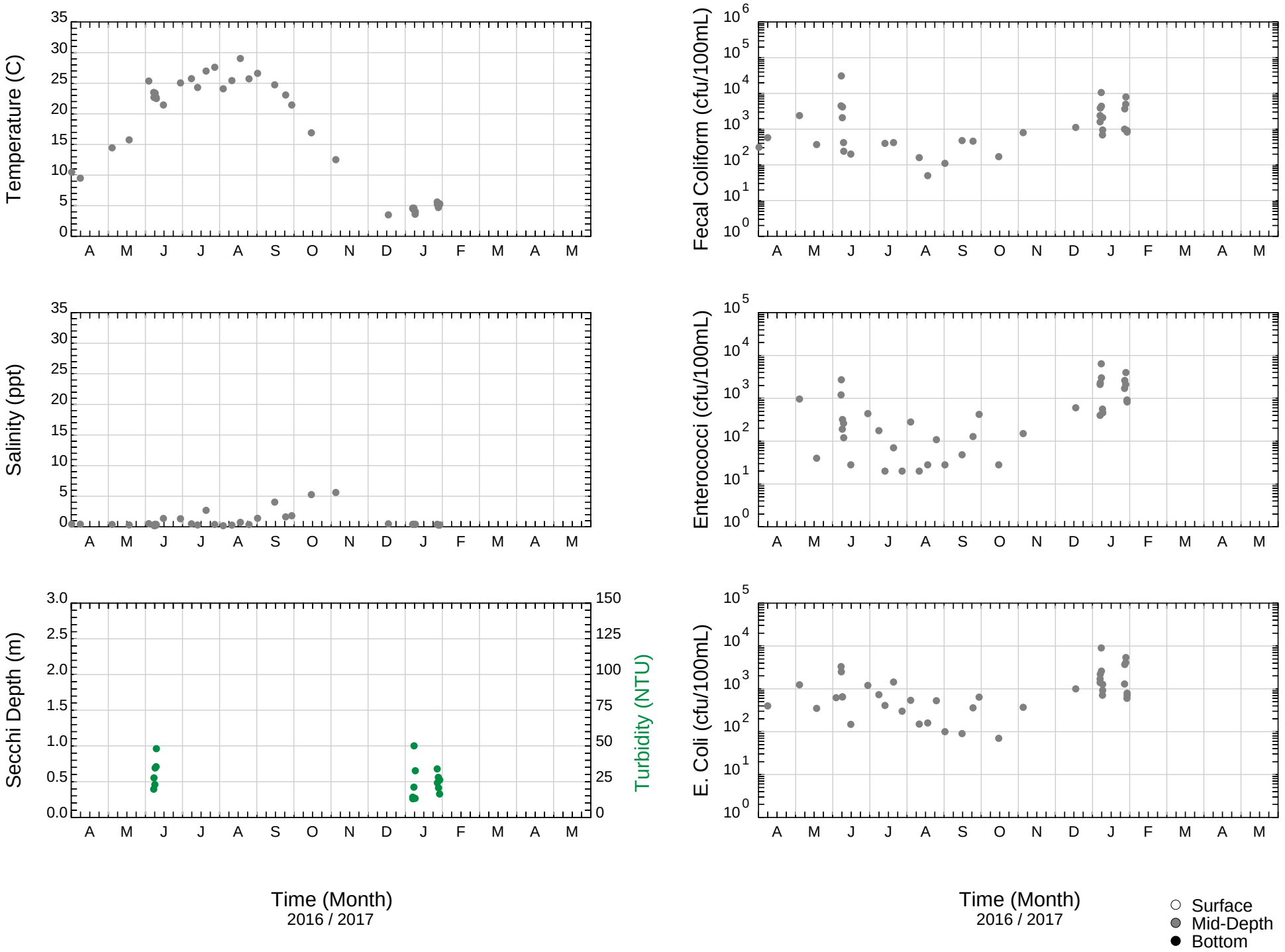
Passaic River & Tributaries, Passaic River, 7



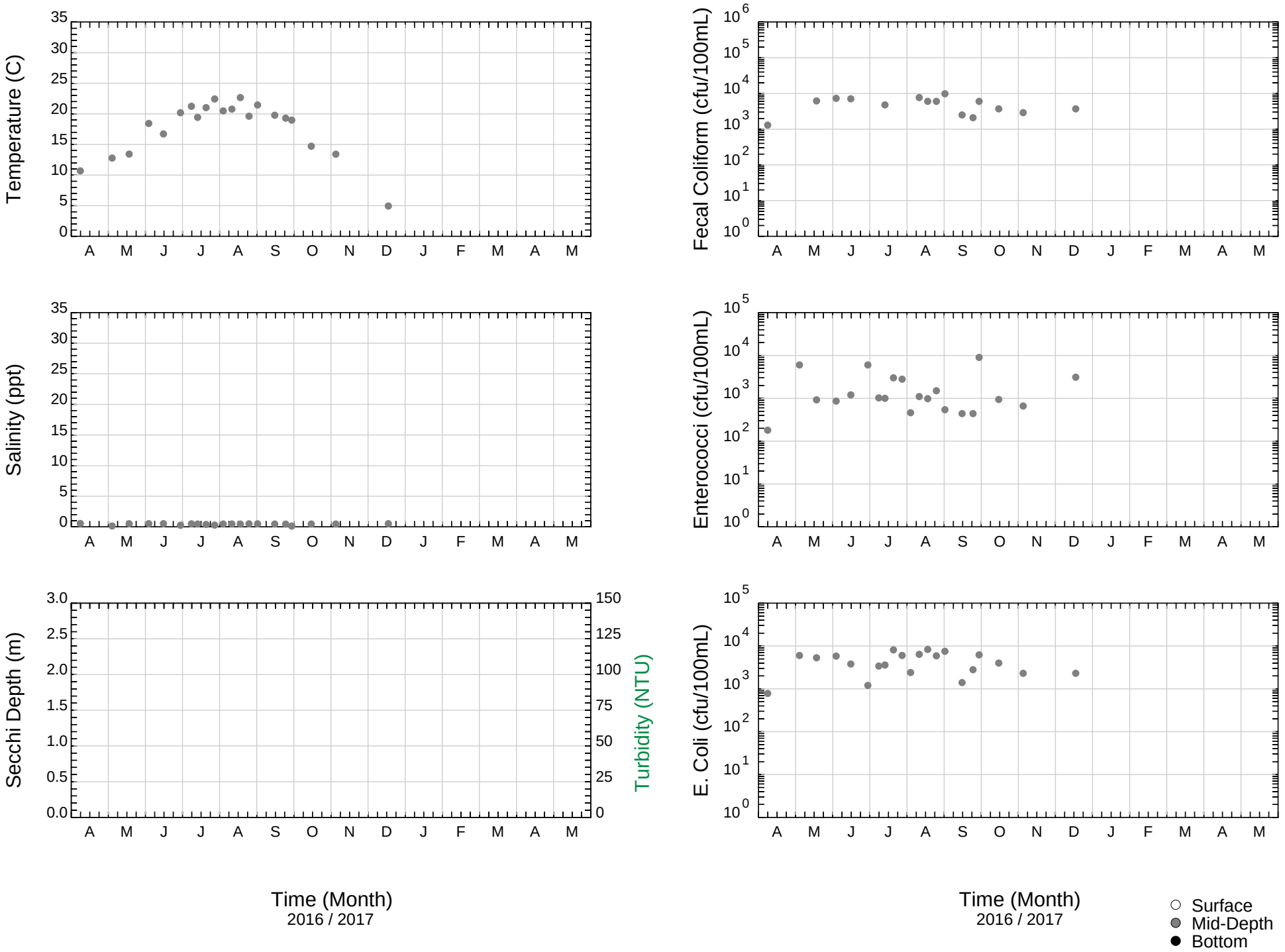
Passaic River & Tributaries, Third River, S7



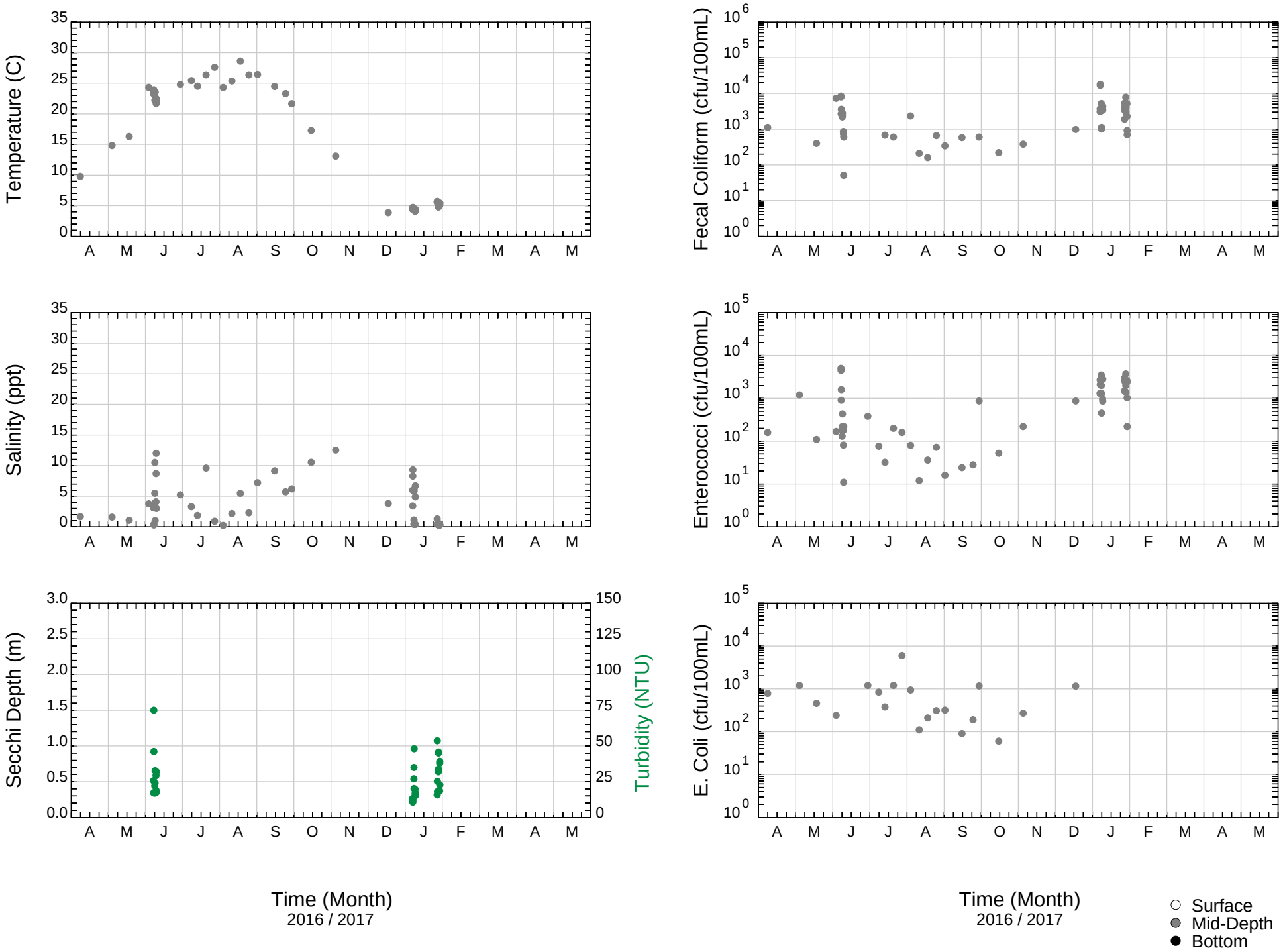
Passaic River & Tributaries, Passaic River, 8



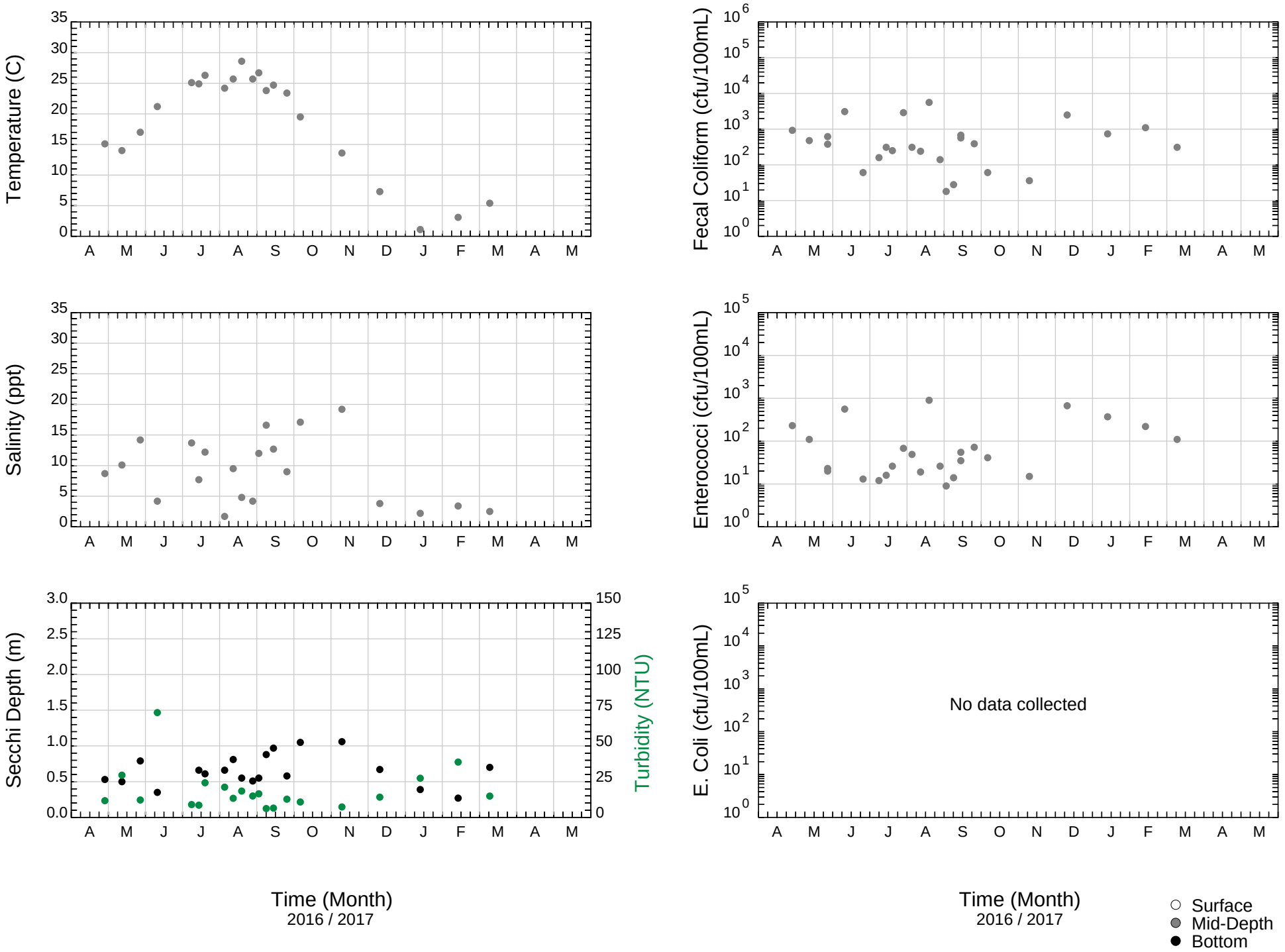
Passaic River & Tributaries, Second River, 9



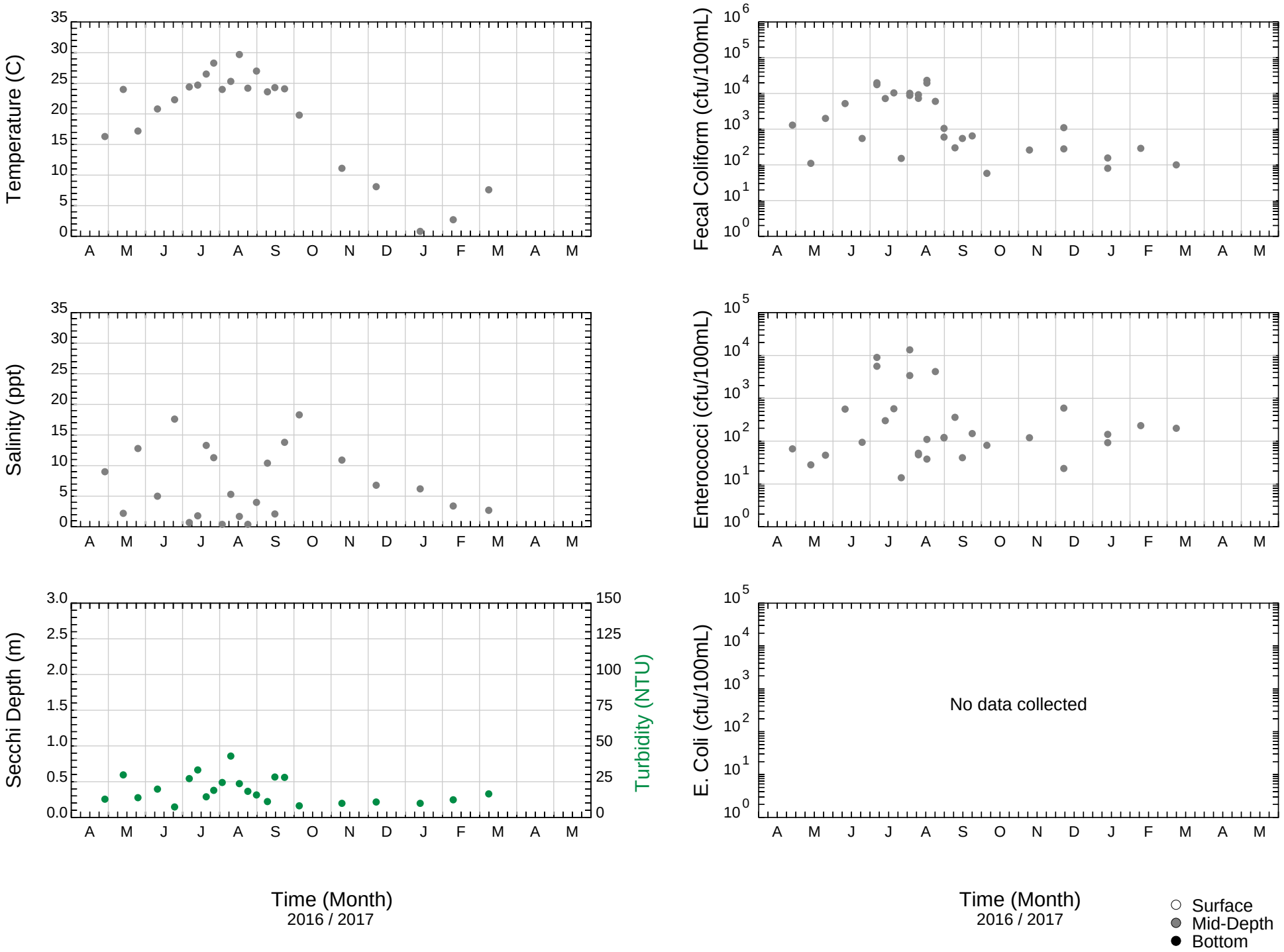
Passaic River & Tributaries, Passaic River, 10



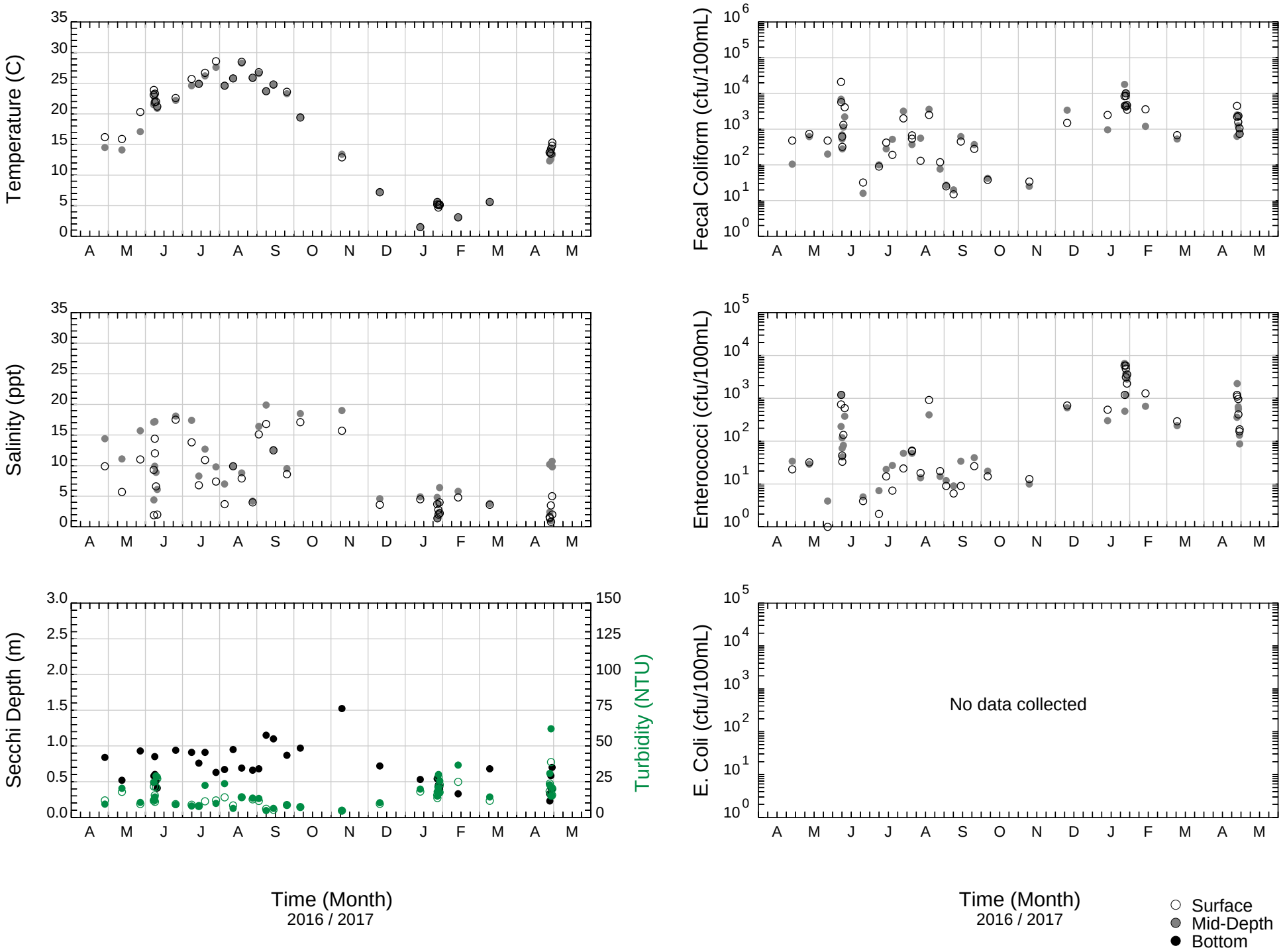
Passaic River & Tributaries, Passaic River, 11



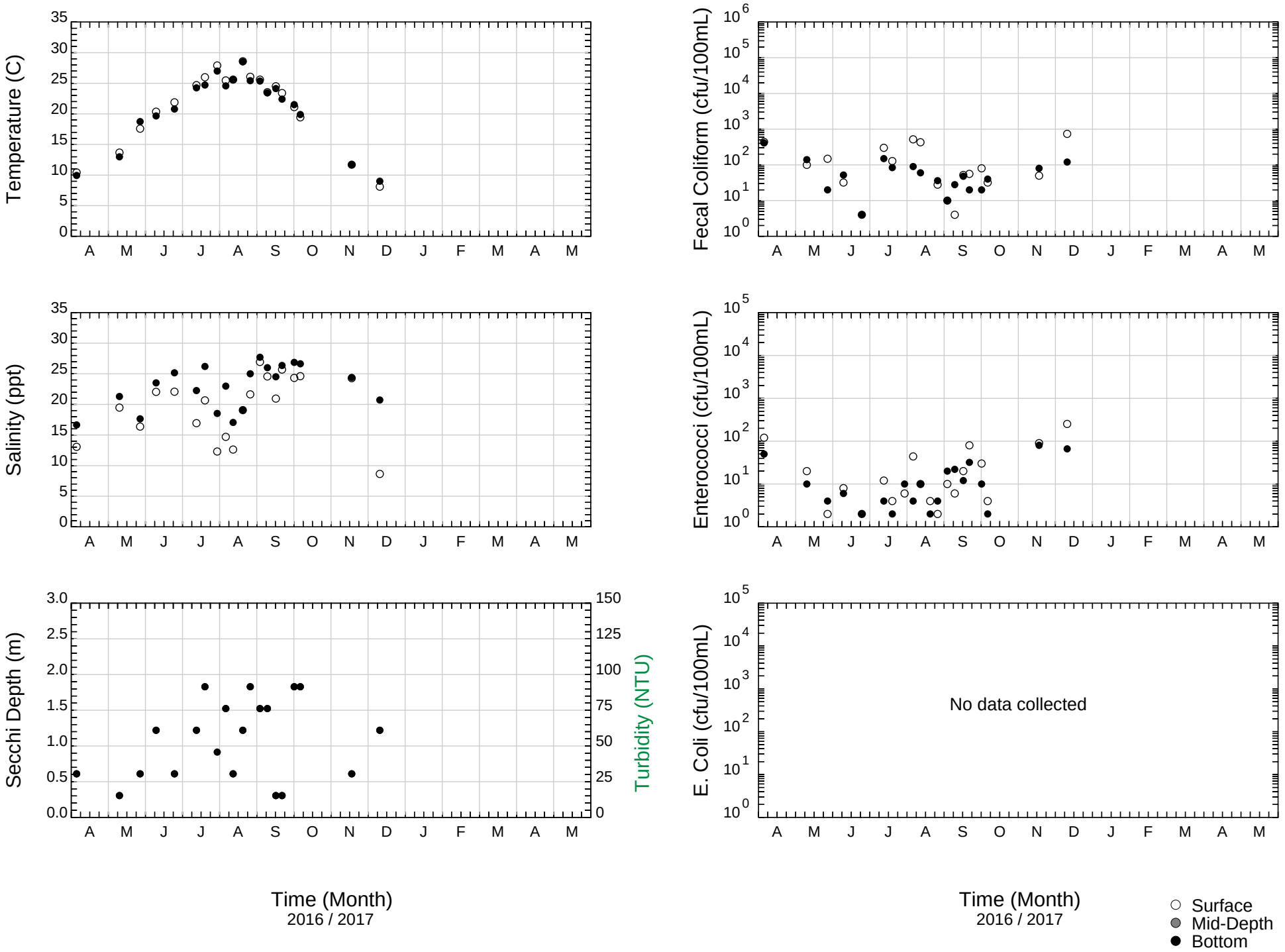
Passaic River & Tributaries, Franks Creek, B8



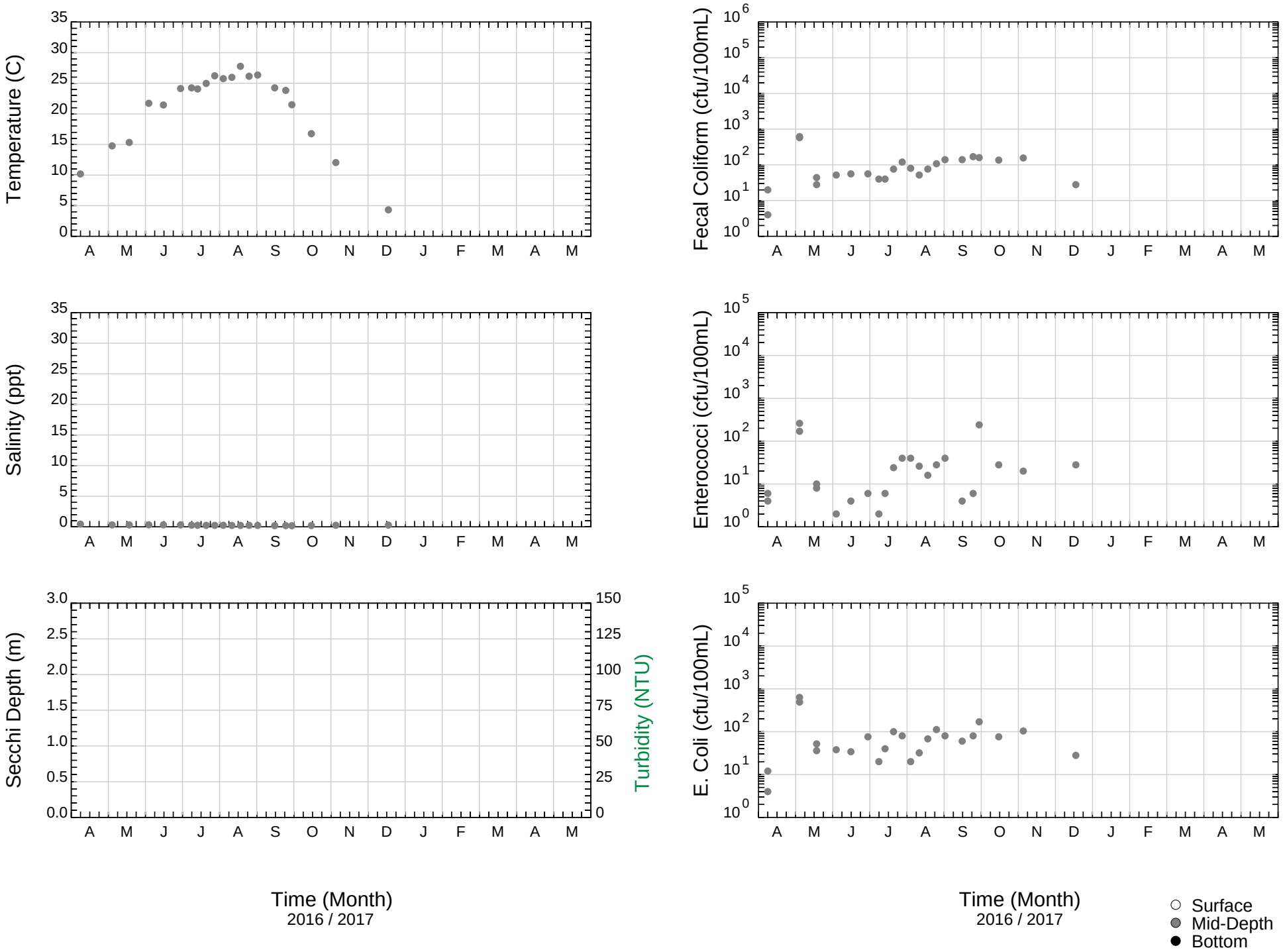
Passaic River & Tributaries, Passaic River, B6



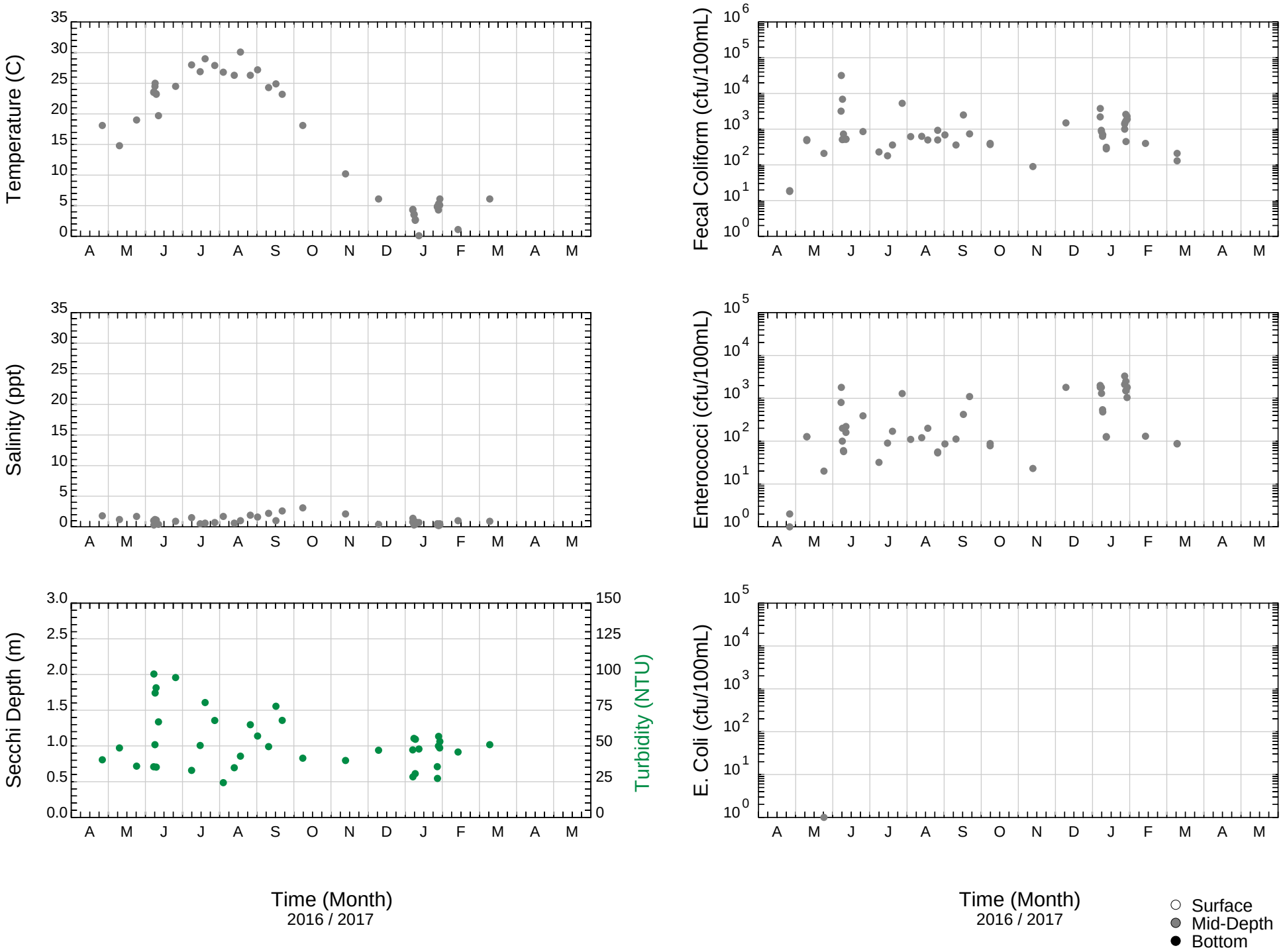
Passaic River & Tributaries, Passaic River, 12



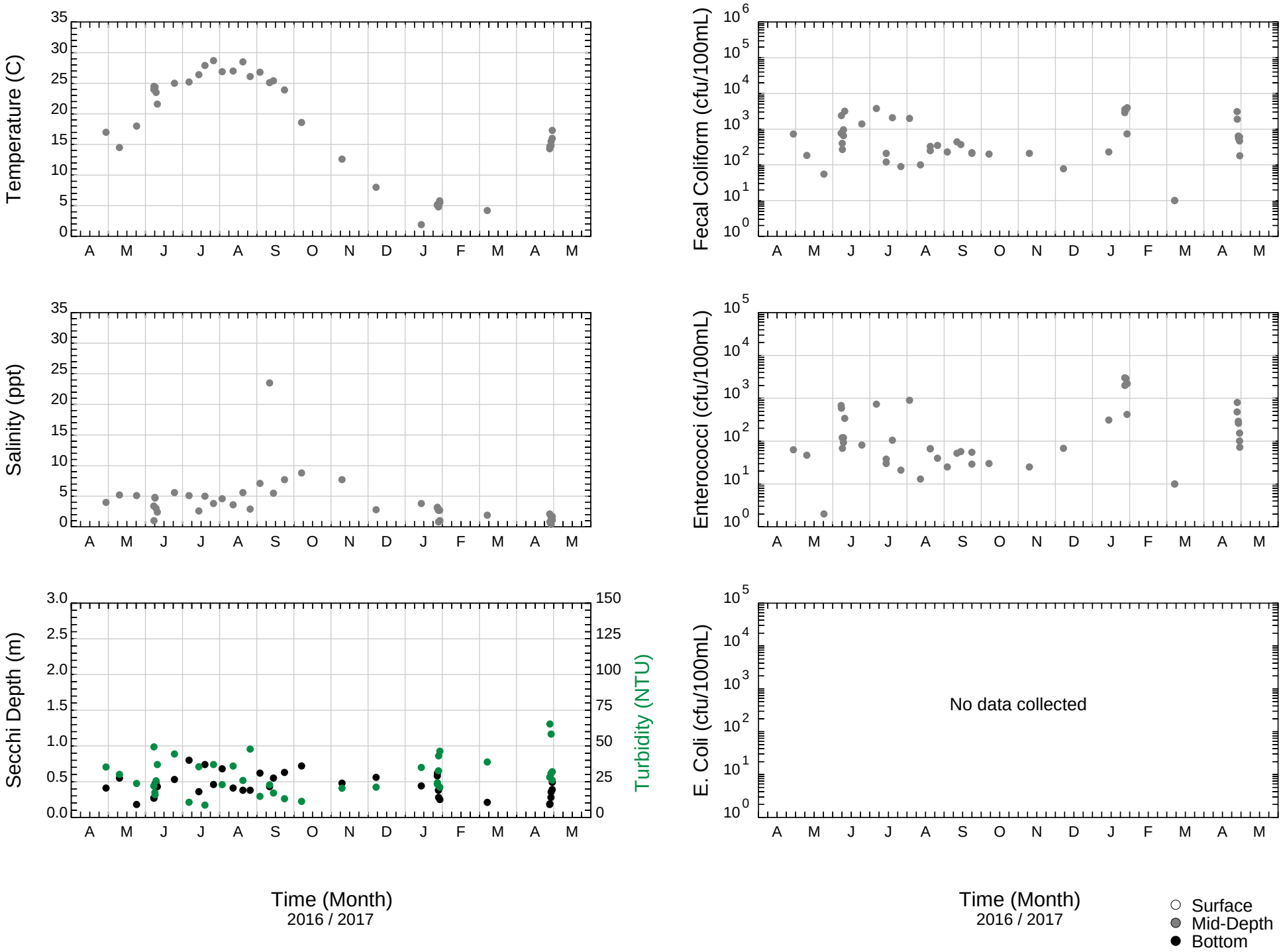
Hackensack River & Tributaries, Hackensack River, 13



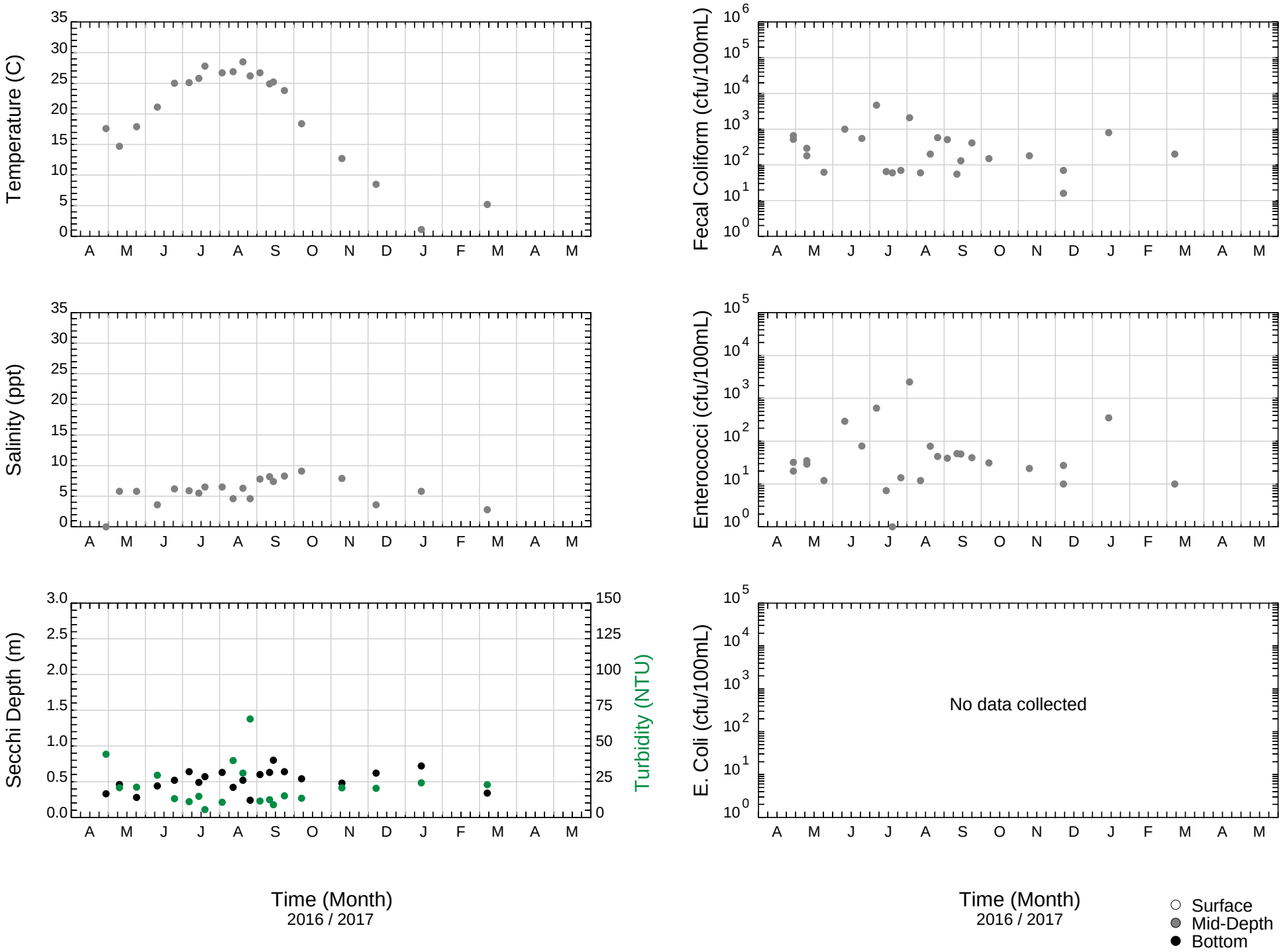
Hackensack River & Tributaries, Hackensack River, B1



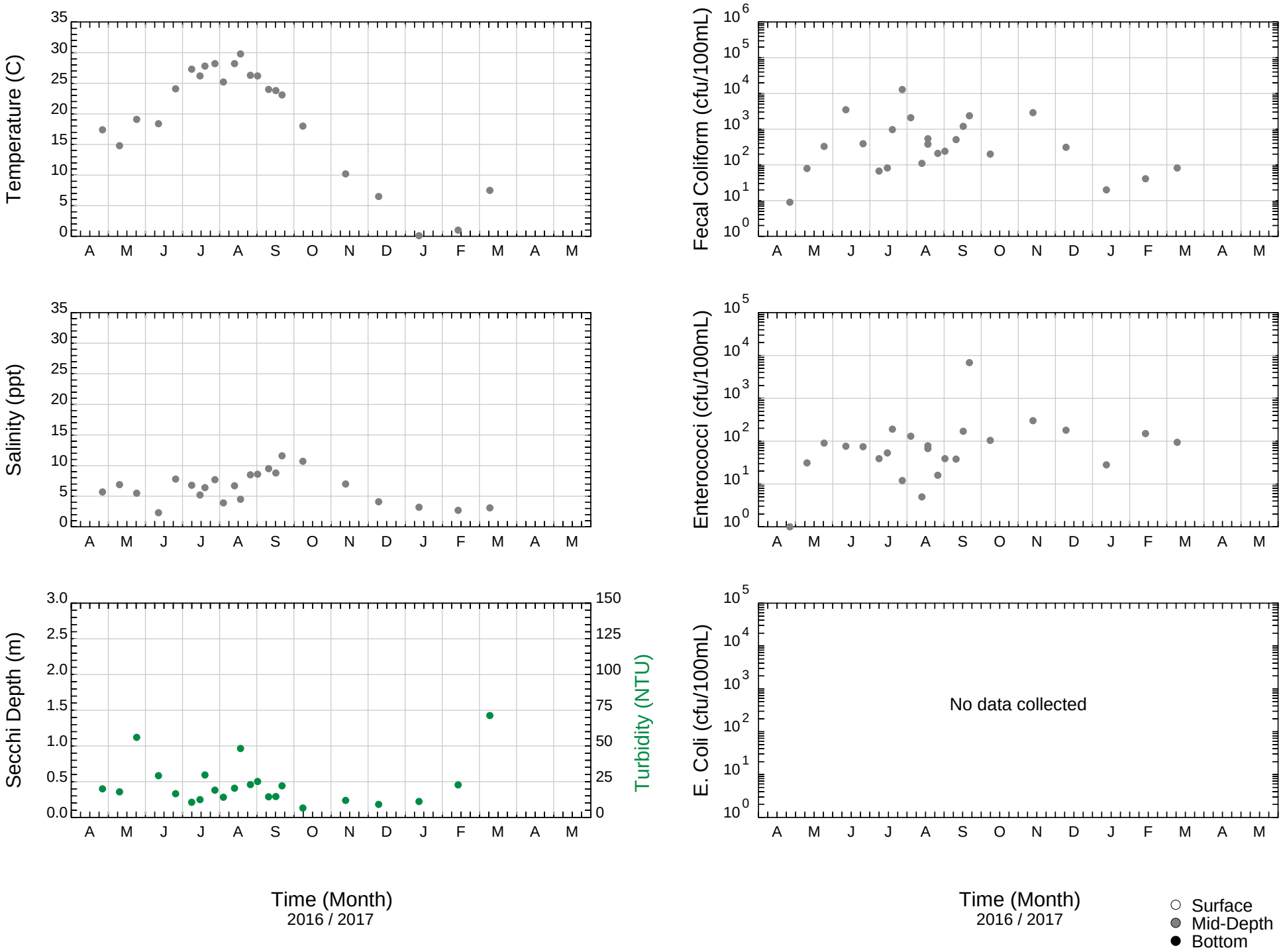
Hackensack River & Tributaries, Hackensack River, B2



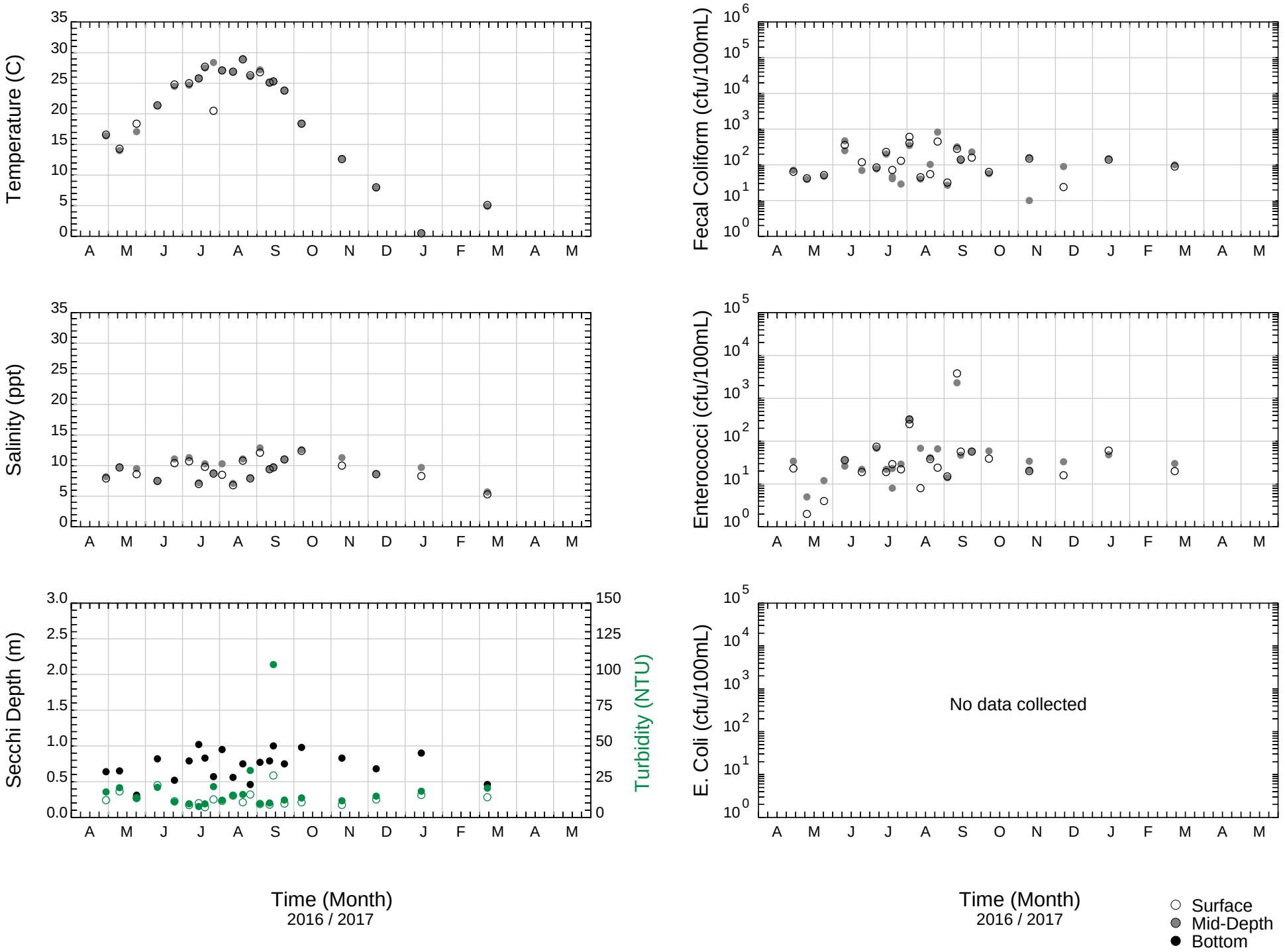
Hackensack River & Tributaries, Overpeck Creek, B11



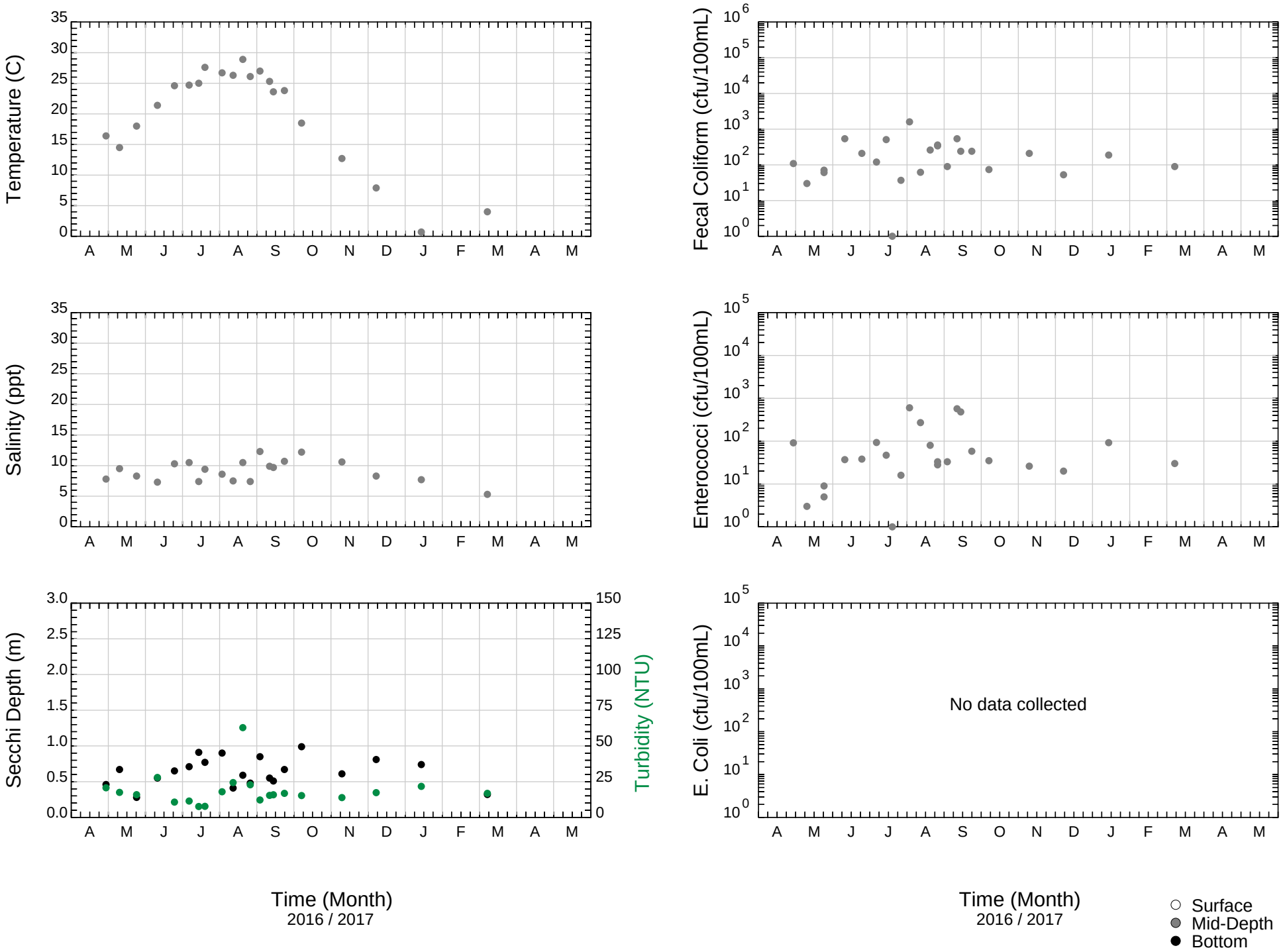
Hackensack River & Tributaries, Berry's Creek, S1



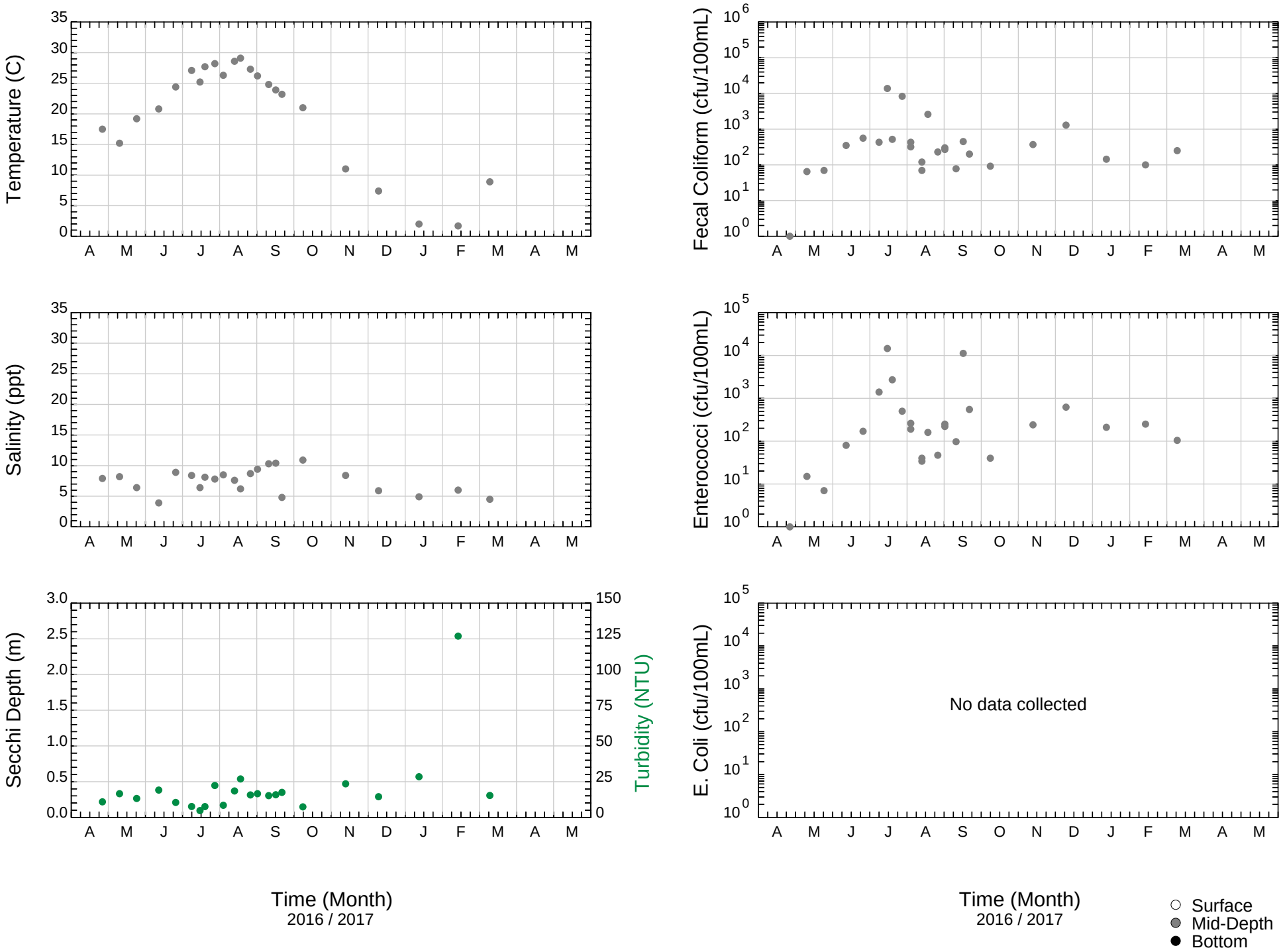
Hackensack River & Tributaries, Cromakill Creek, B3



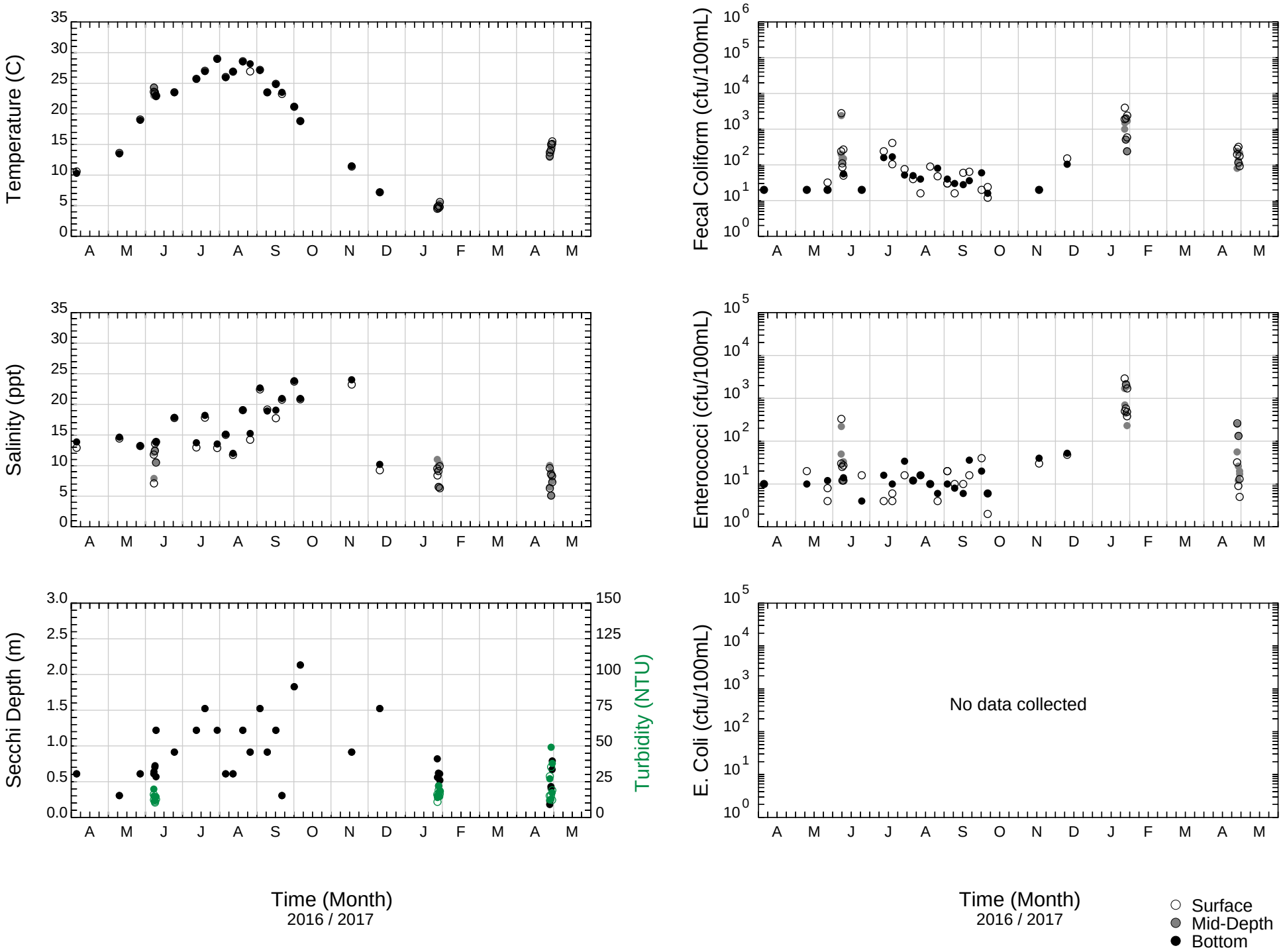
Hackensack River & Tributaries, Cromakill Creek, S2



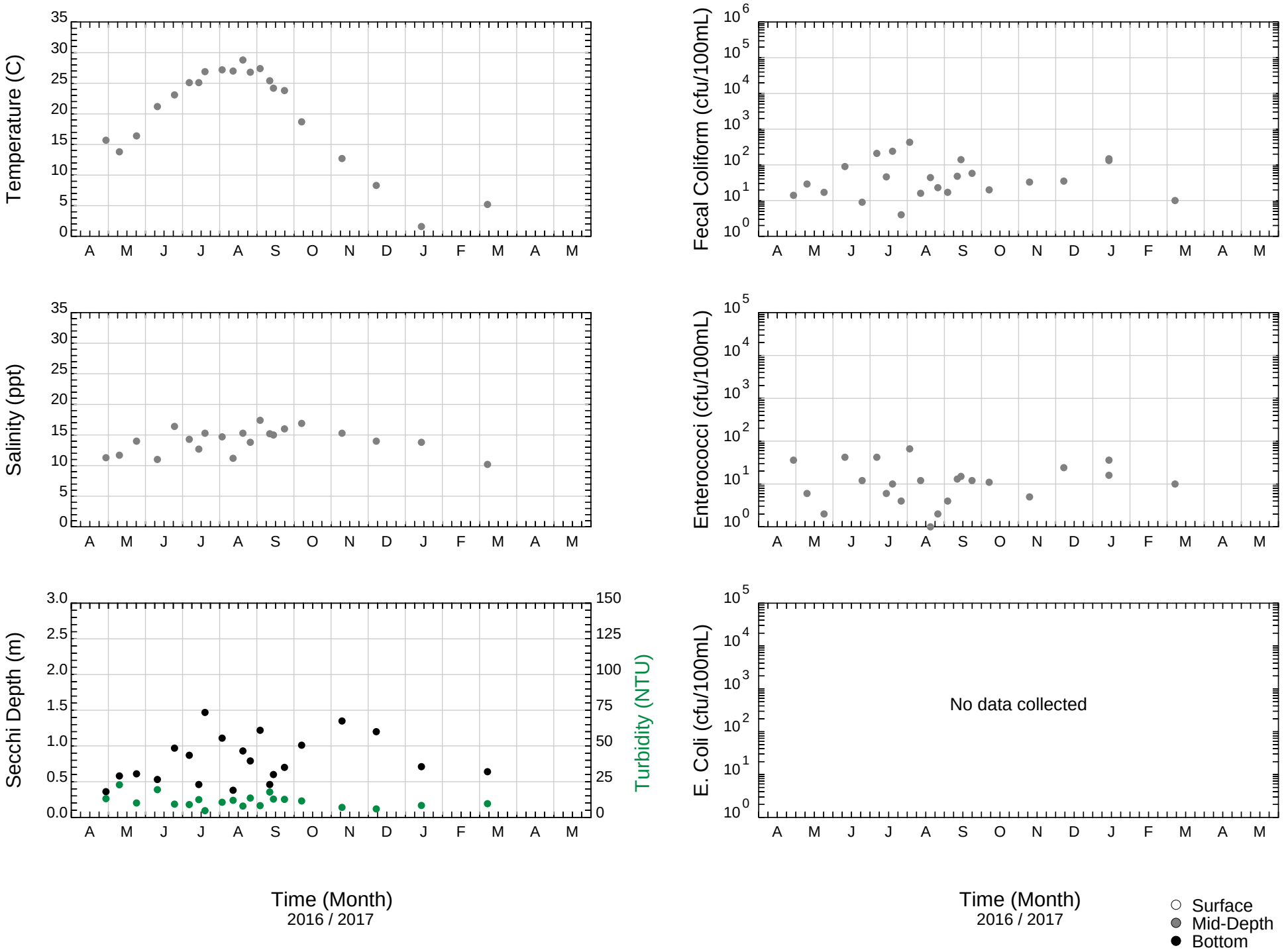
Hackensack River & Tributaries, Cromakill Creek, B4



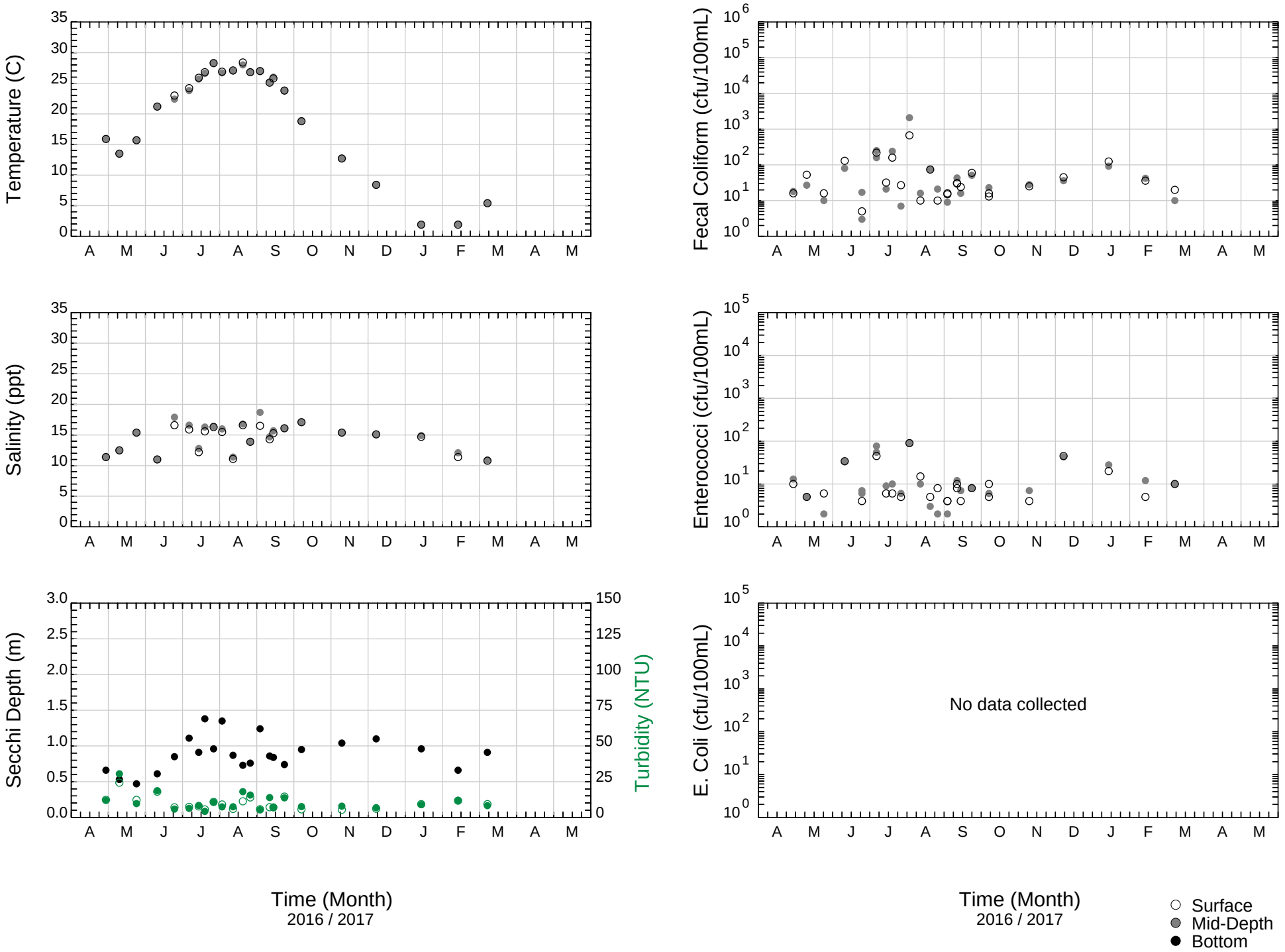
Hackensack River & Tributaries, Hackensack River, 14



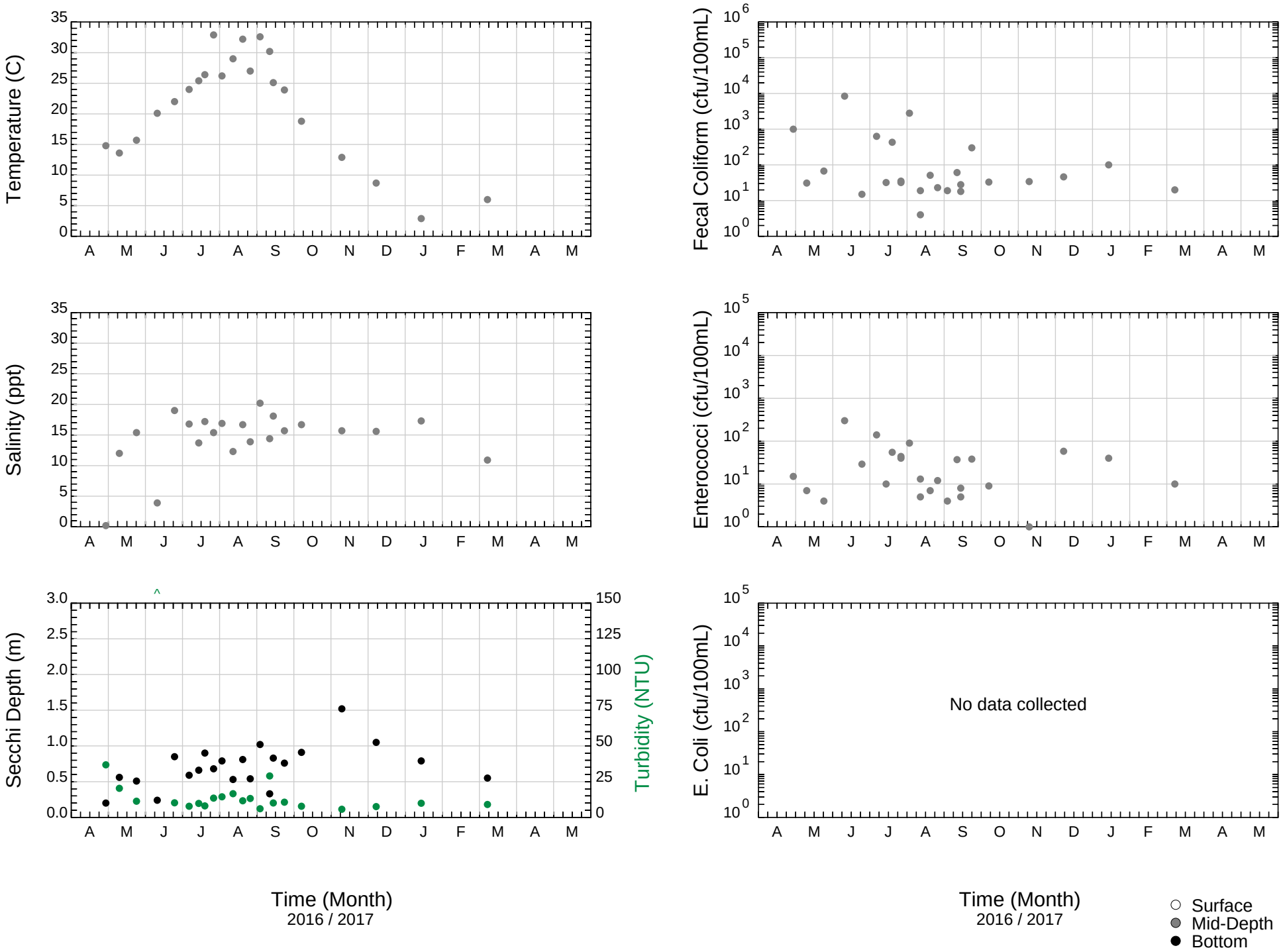
Hackensack River & Tributaries, Sawmill River, S3



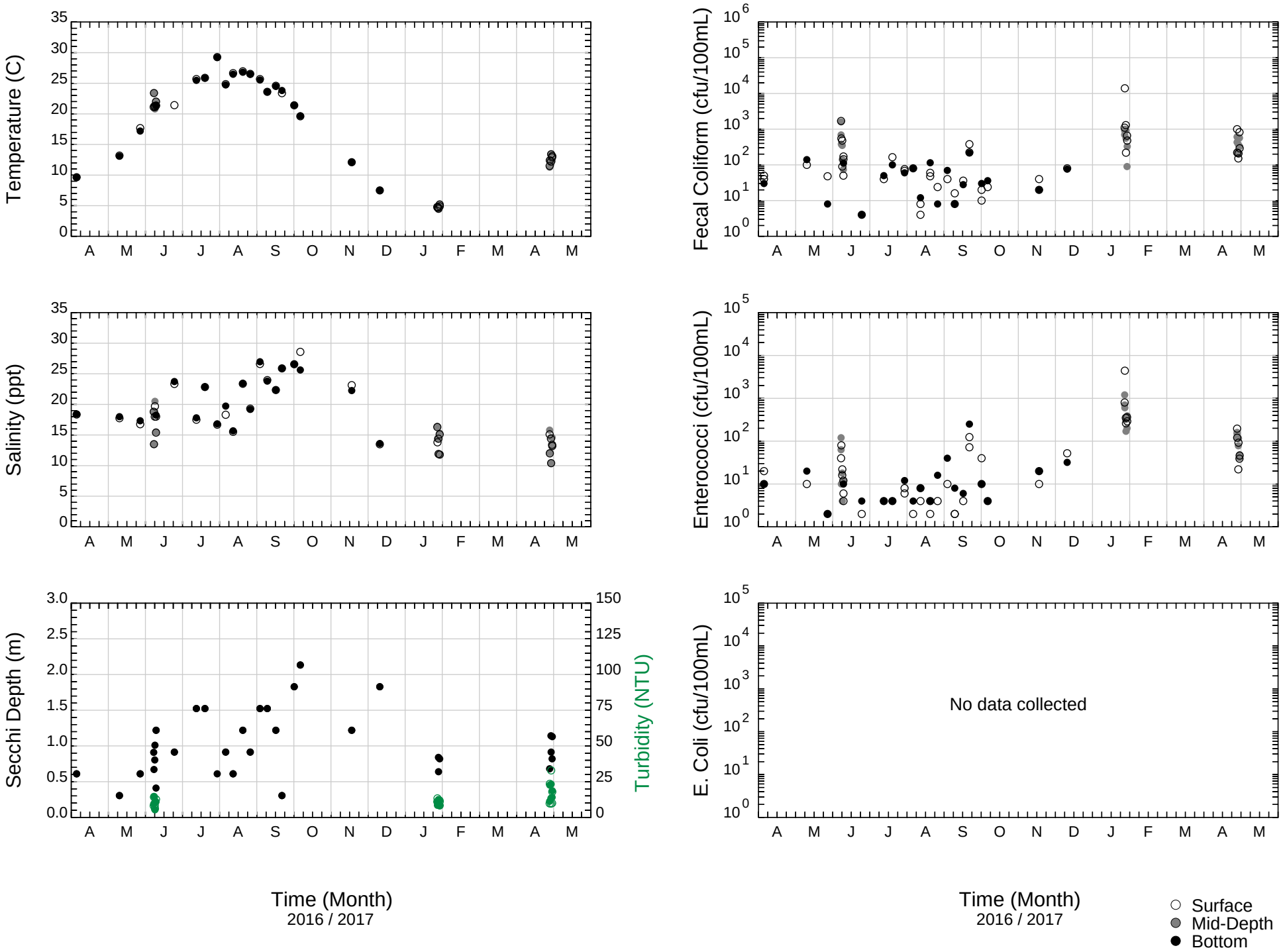
Hackensack River & Tributaries, Hackensack River, B7



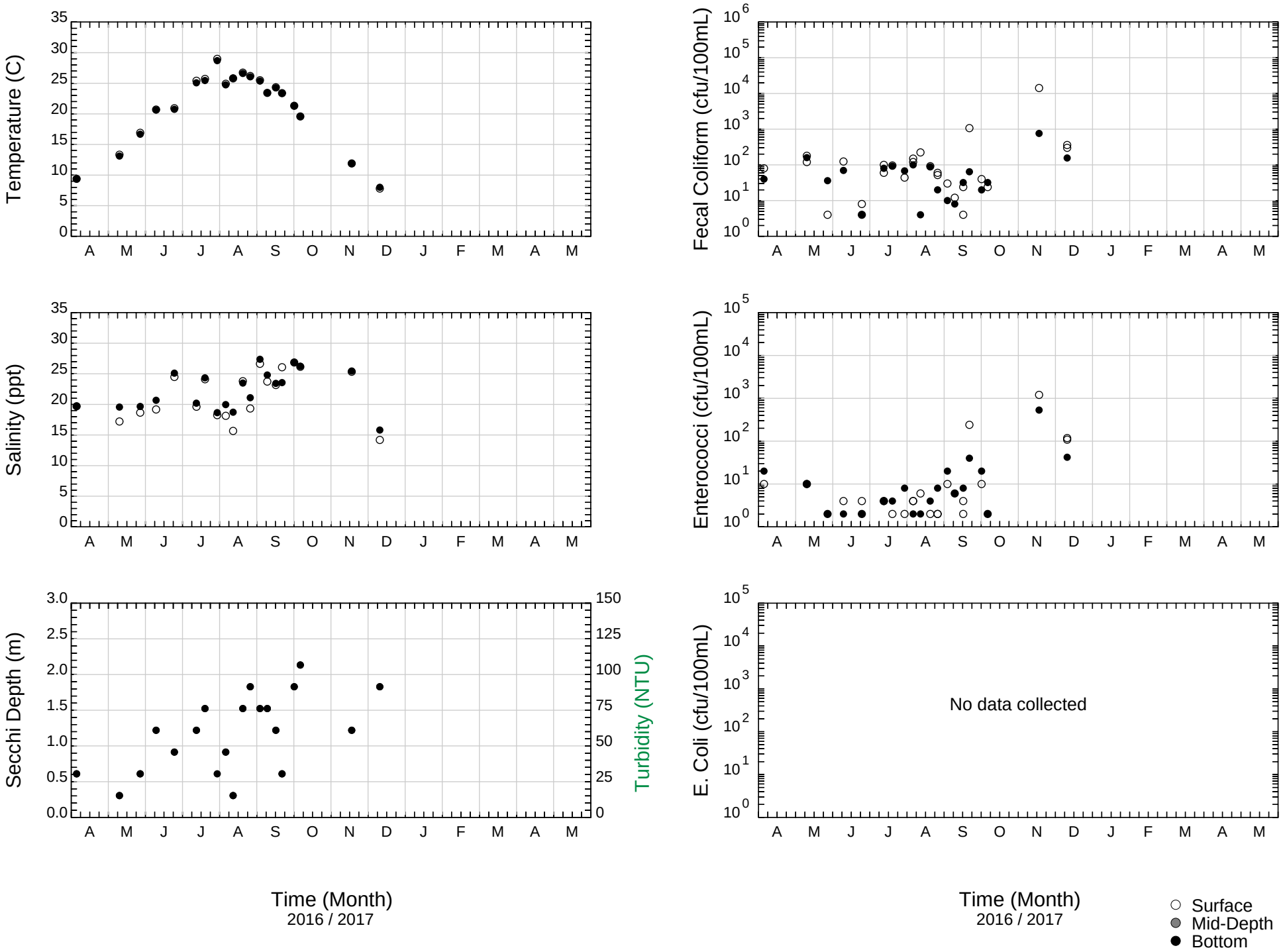
Hackensack River & Tributaries, Penhorn Creek, S5



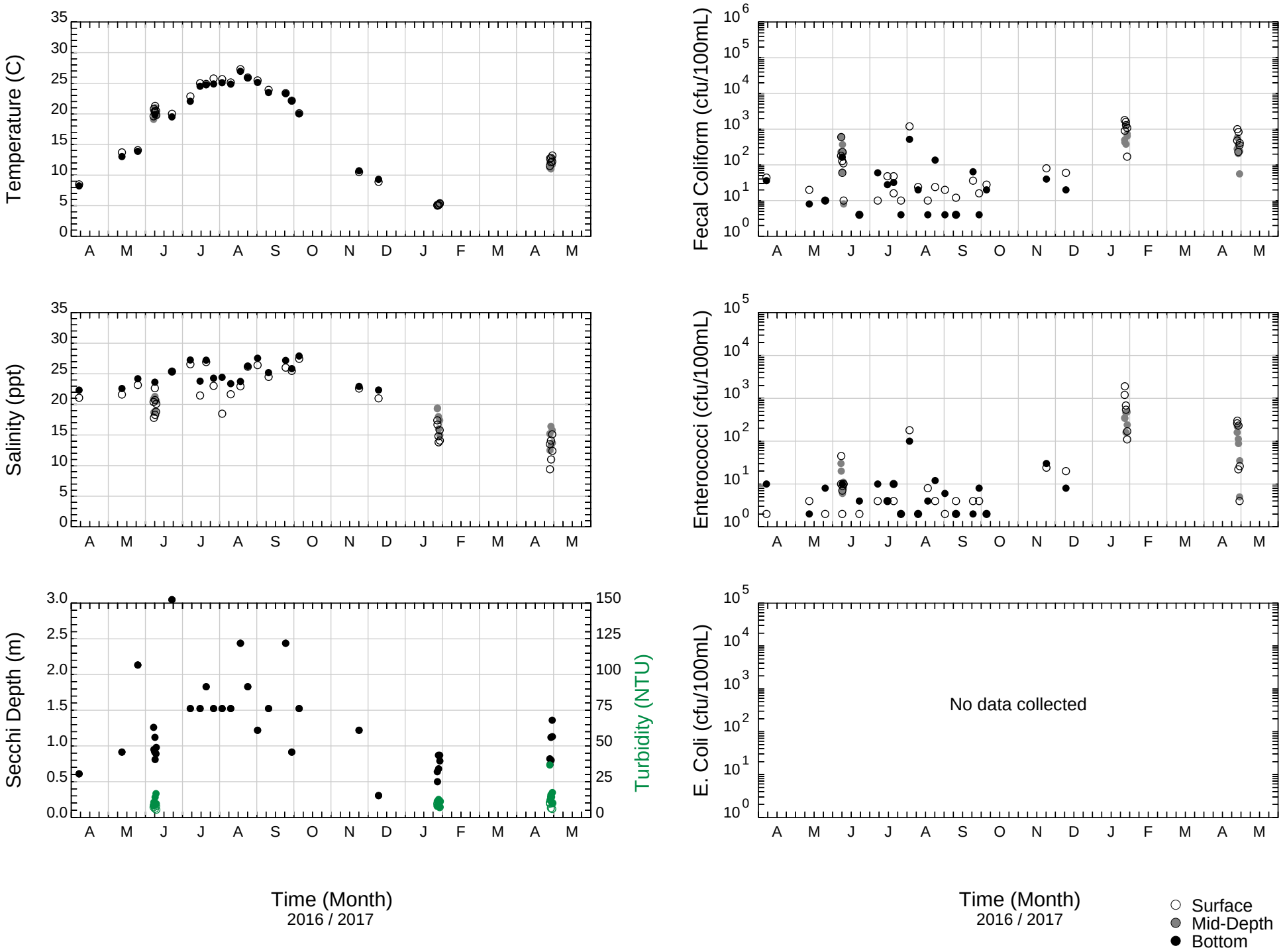
Hackensack River & Tributaries, Hackensack River, 15



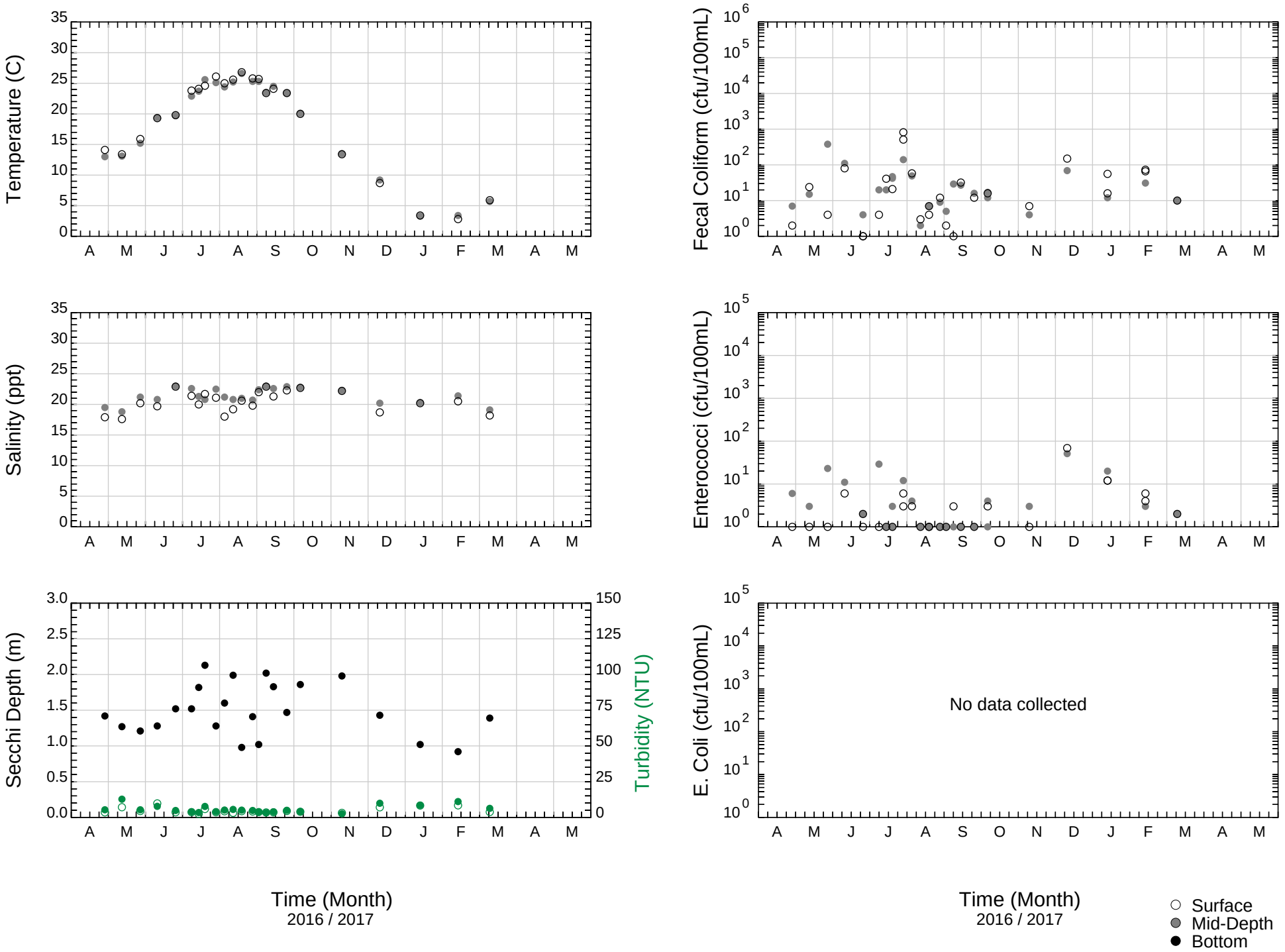
Hackensack River & Tributaries, Hackensack River, 16



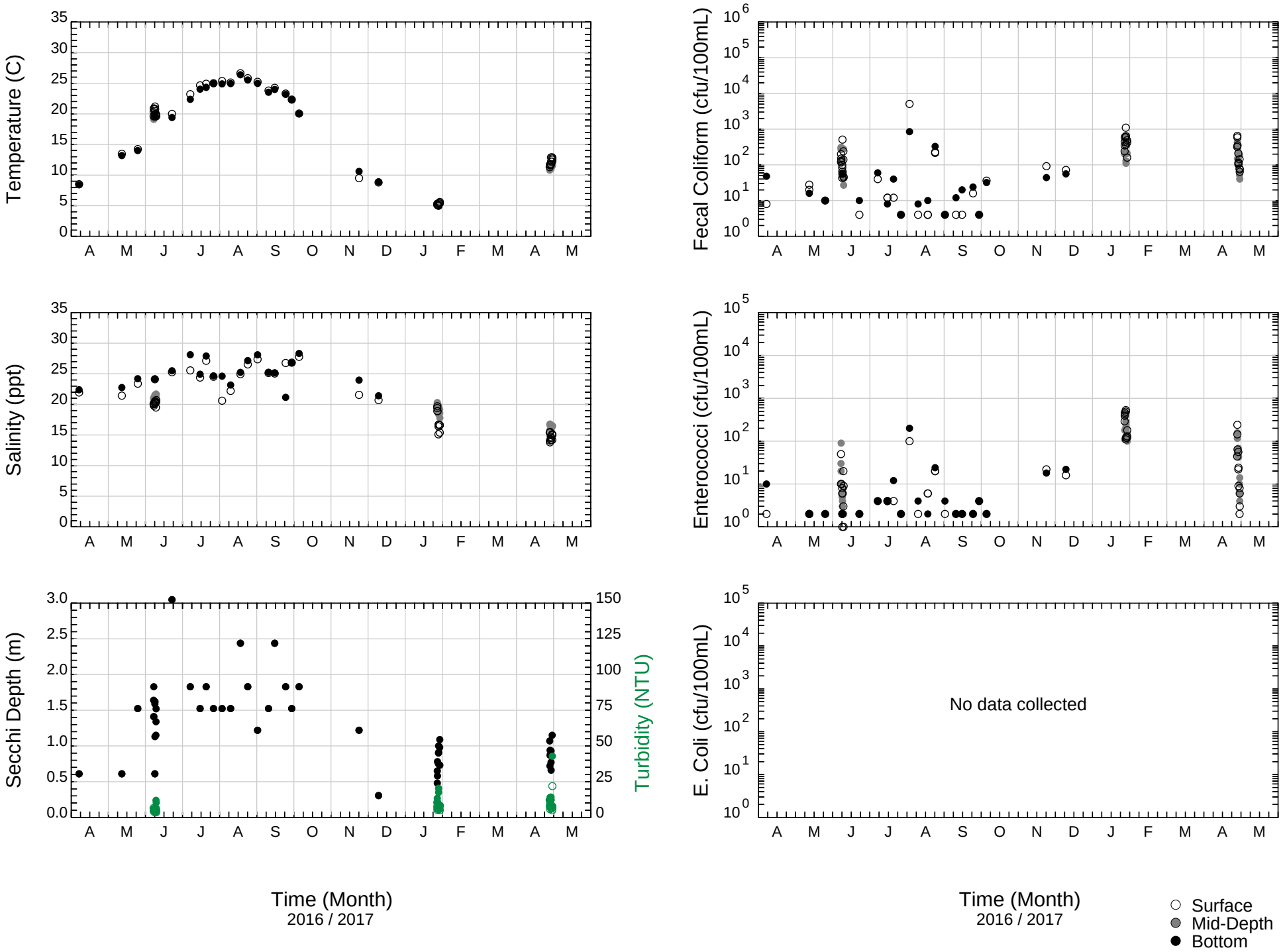
Newark Bay & Tributaries, Newark Bay, 17



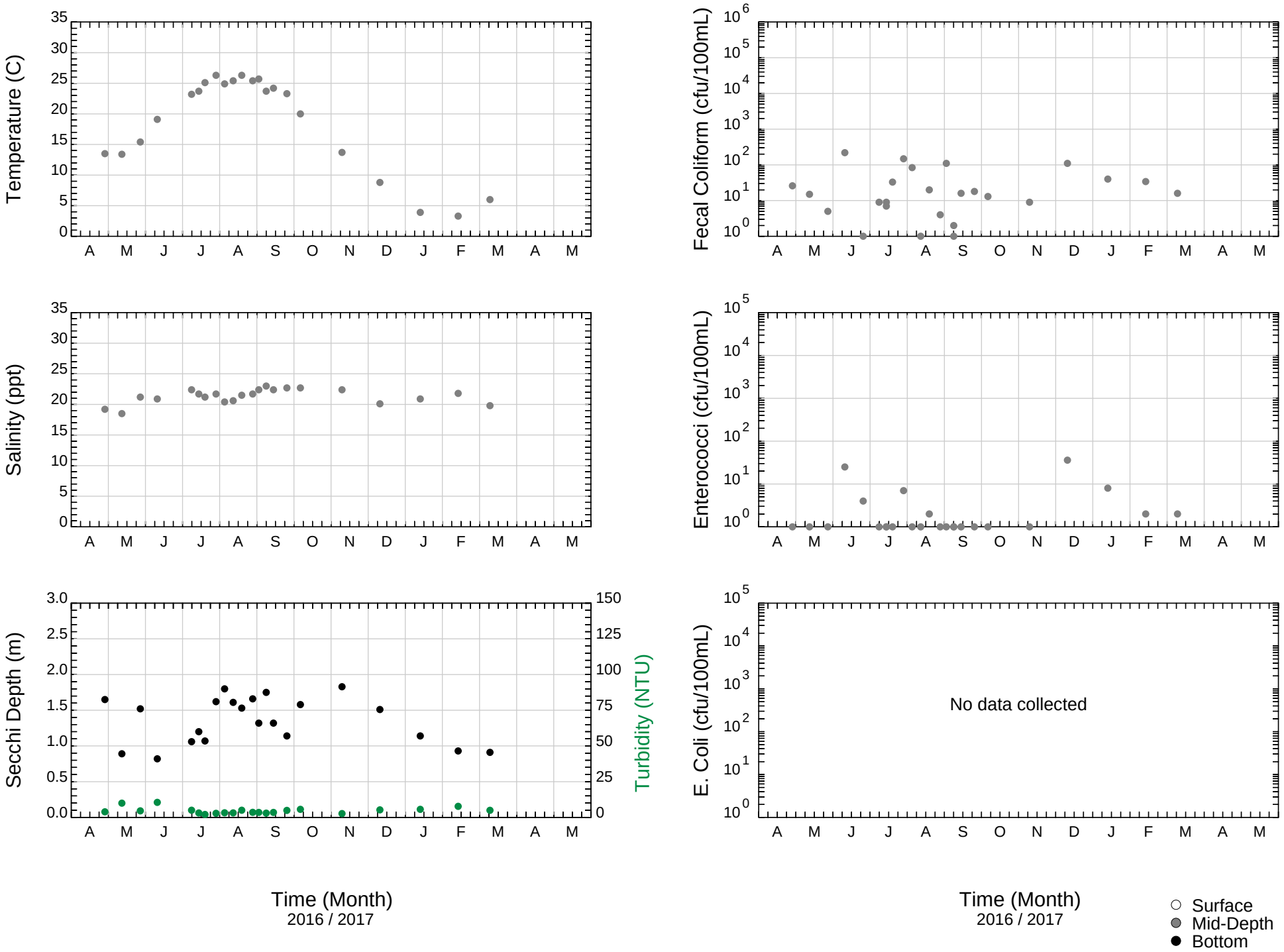
Newark Bay & Tributaries, Newark Bay, B10



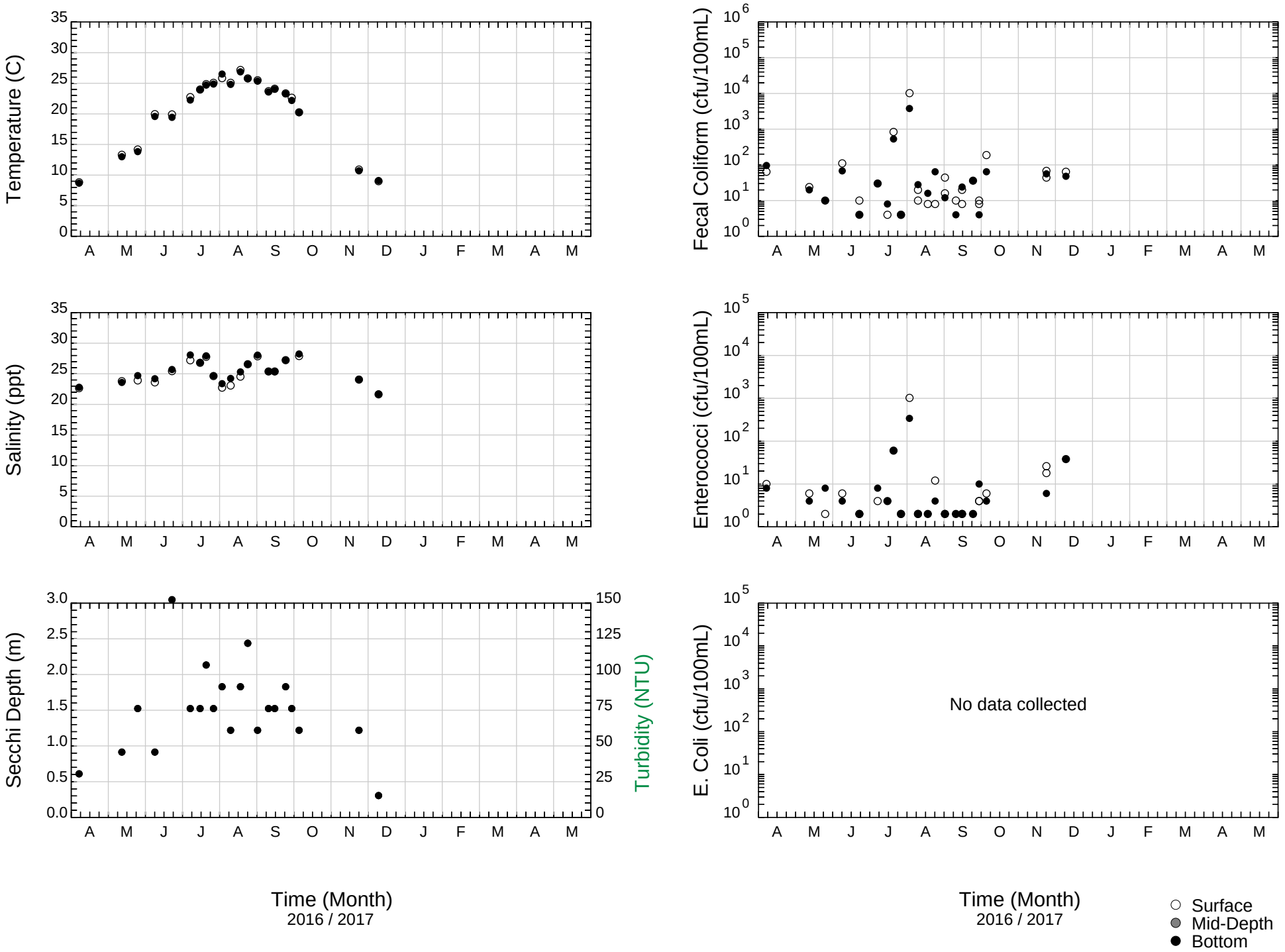
Newark Bay & Tributaries, Newark Bay, 18



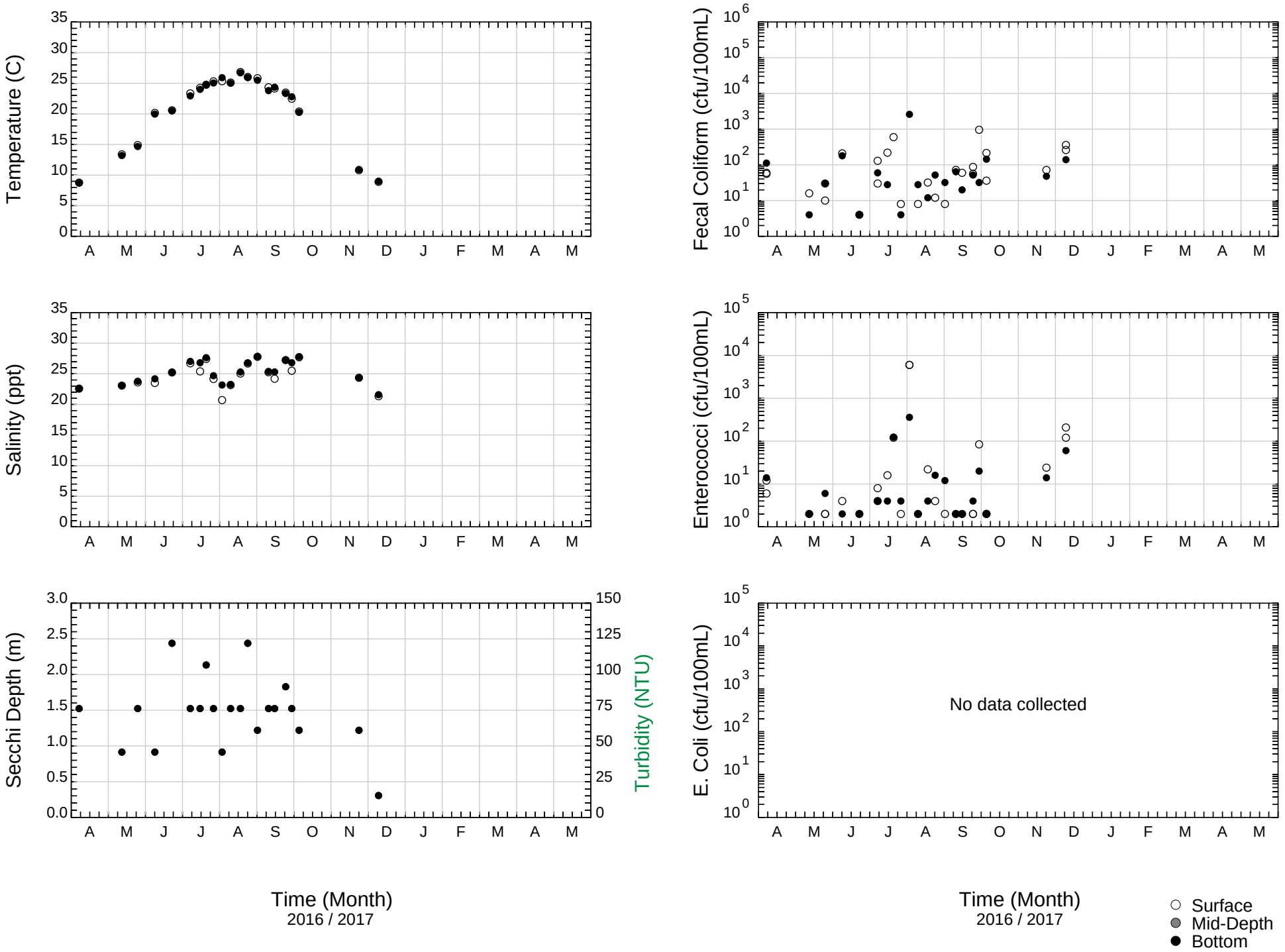
Newark Bay & Tributaries, Newark Bay, B17



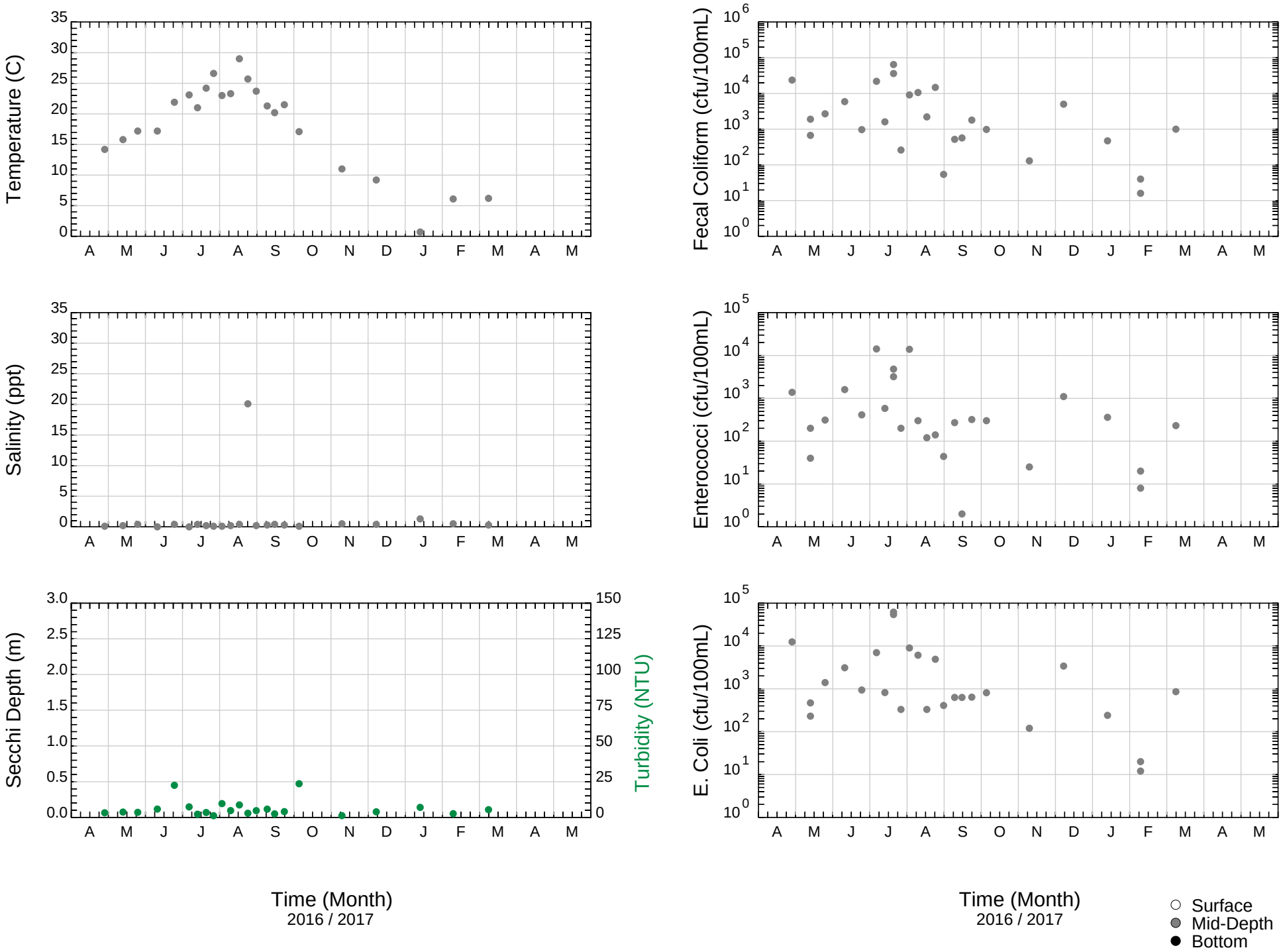
Newark Bay & Tributaries, Newark Bay, 19



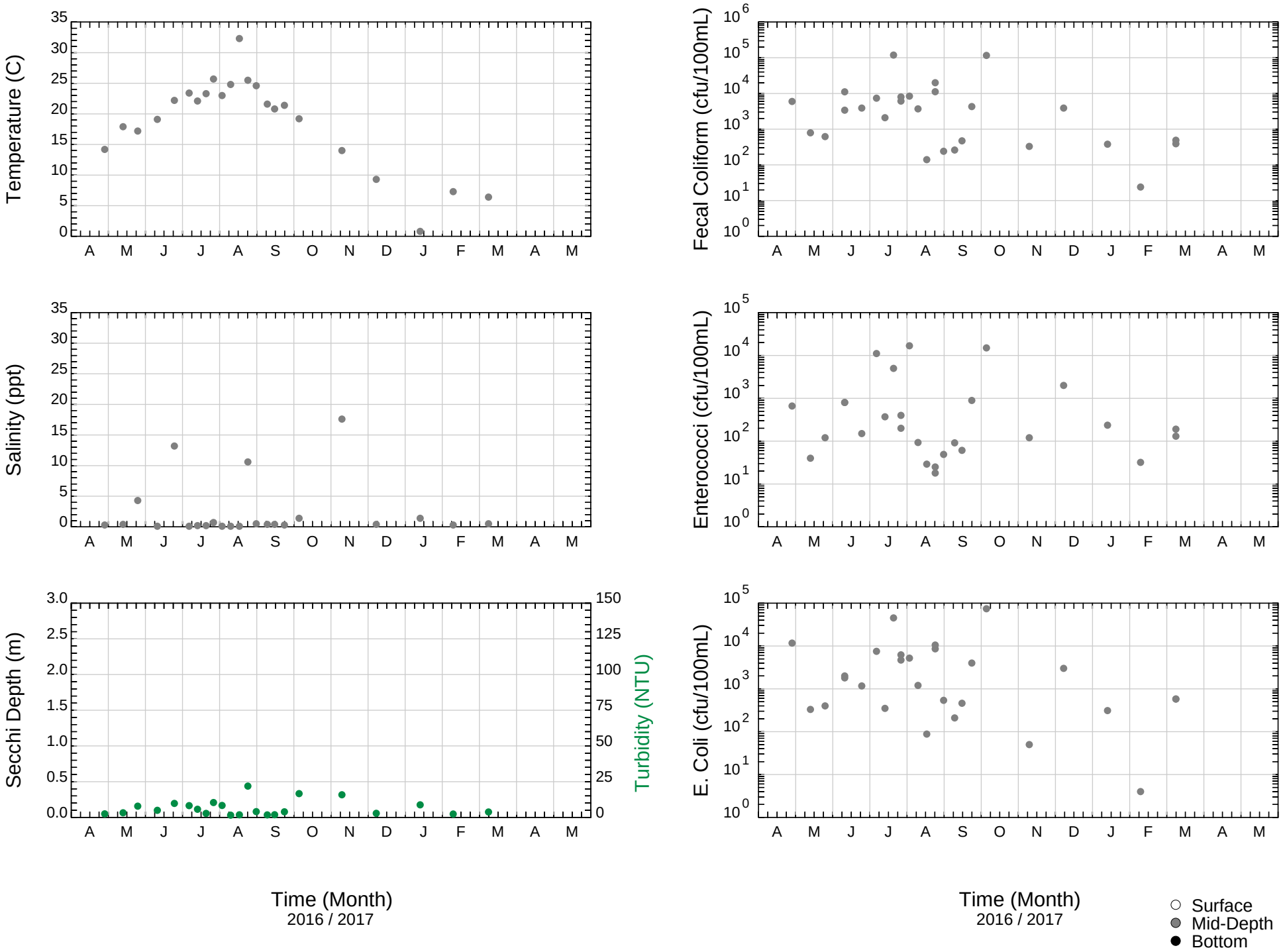
Newark Bay & Tributaries, Arthur Kill, 21



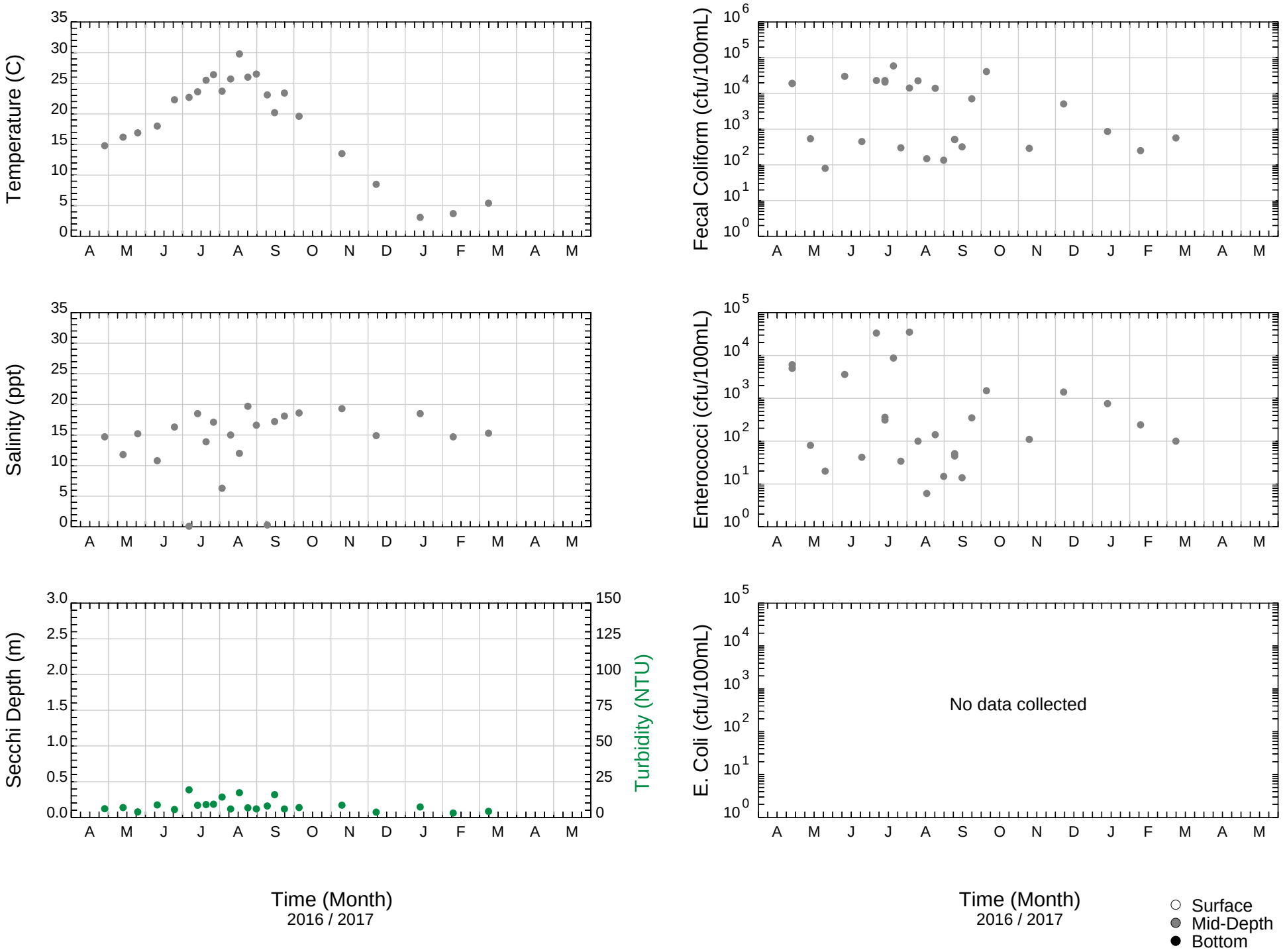
Newark Bay & Tributaries, Elizabeth River, B16



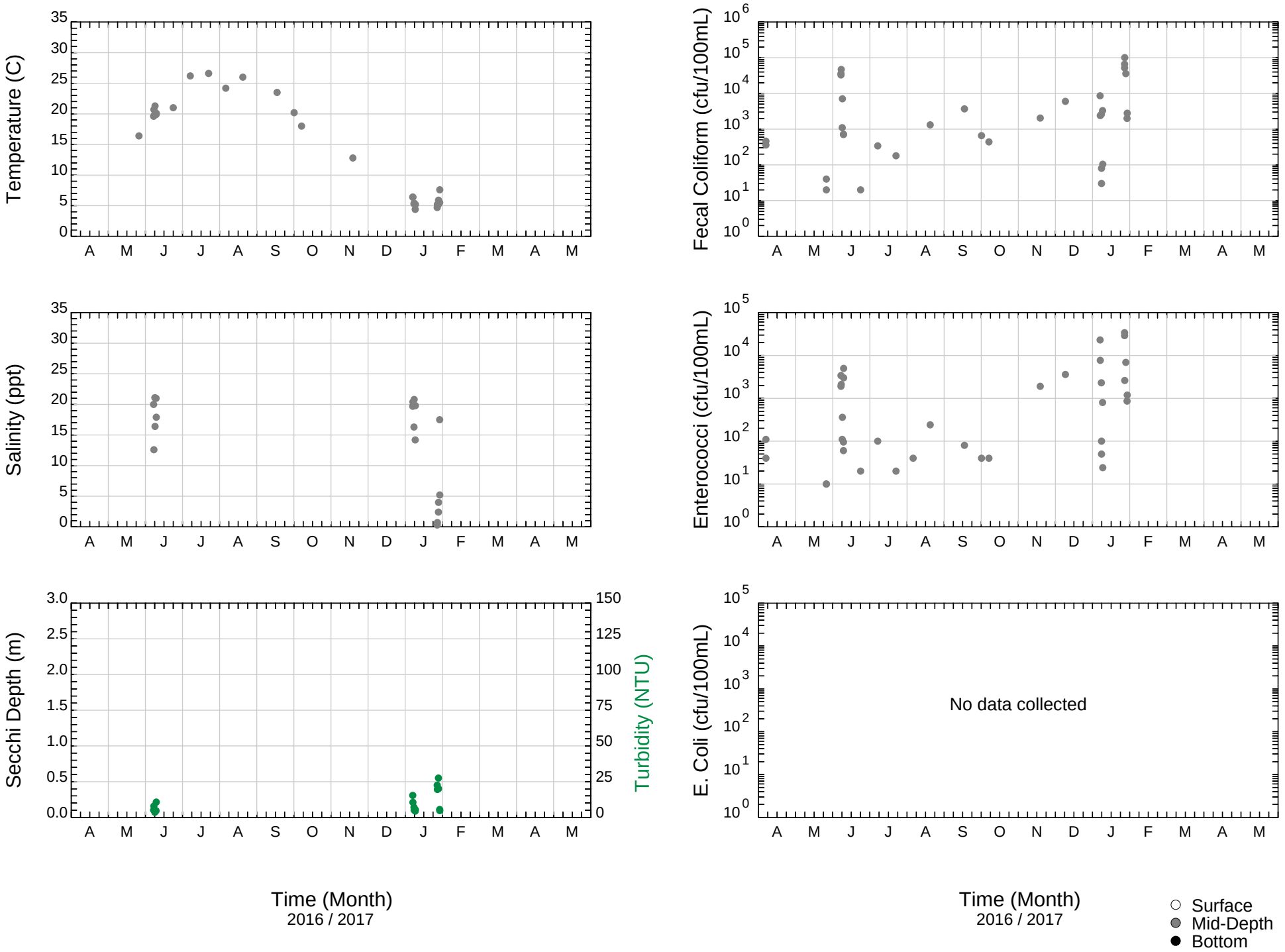
Newark Bay & Tributaries, Elizabeth River, B14



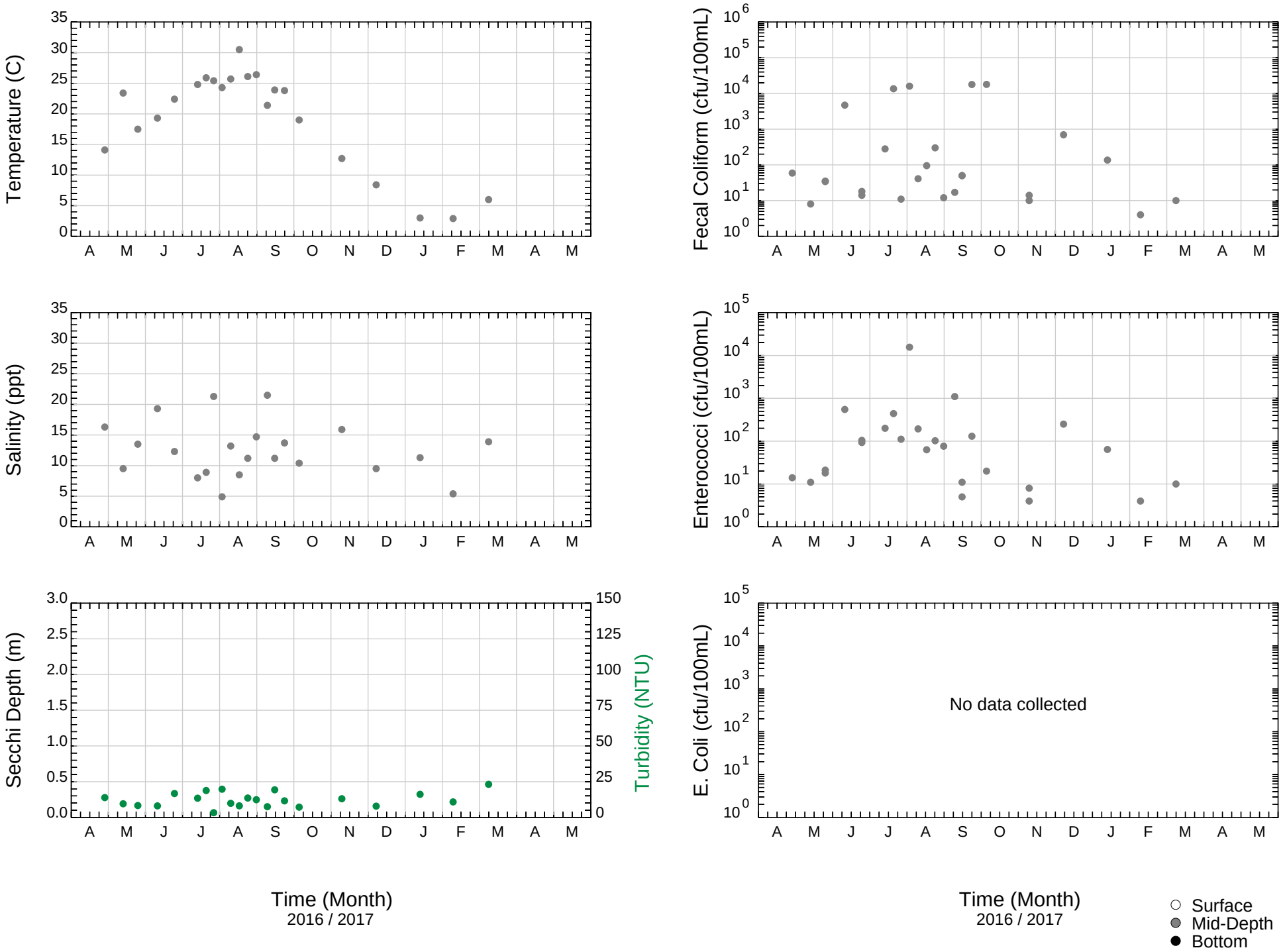
Newark Bay & Tributaries, Elizabeth River, B13



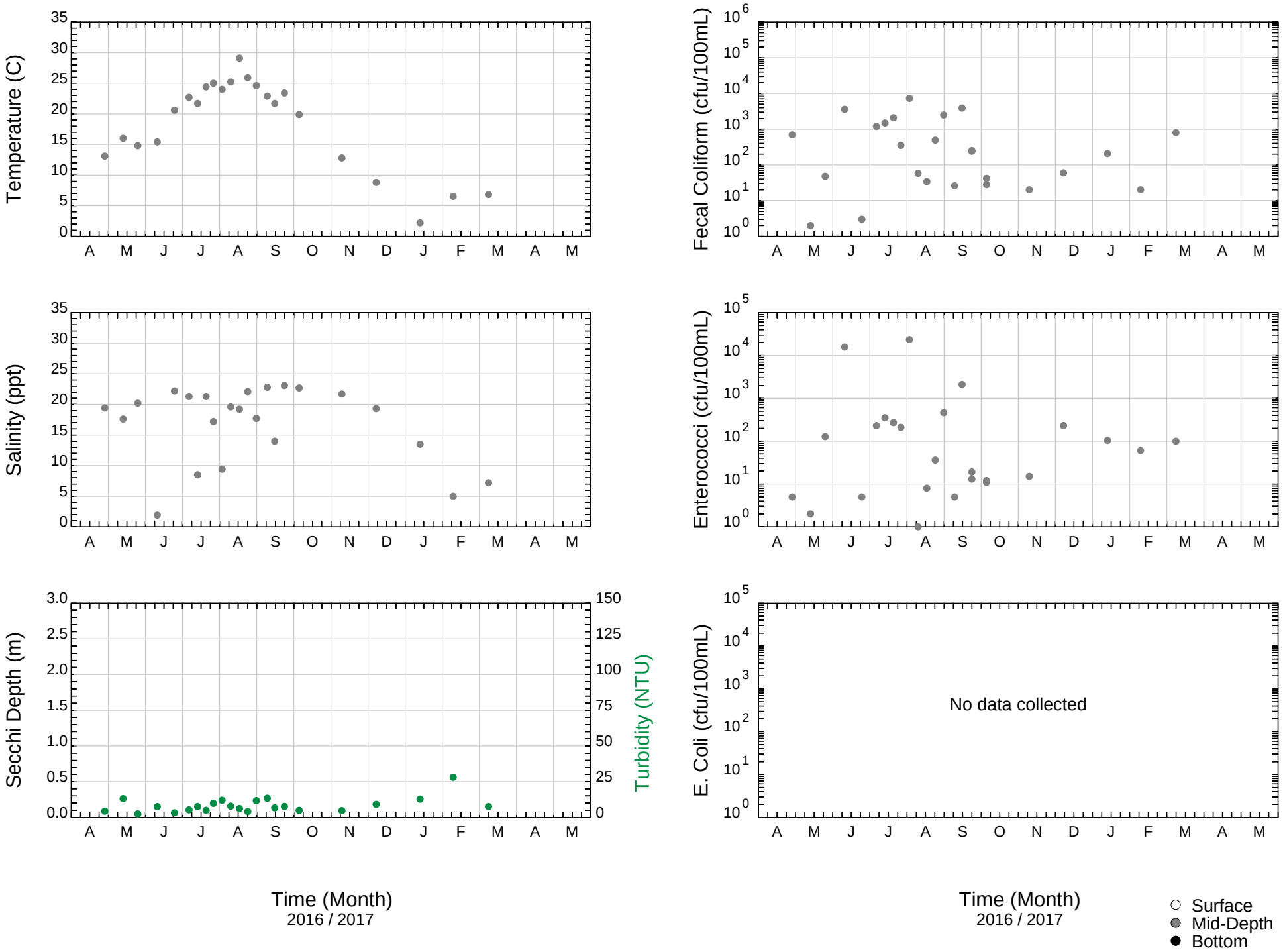
Newark Bay & Tributaries, Elizabeth River, 20



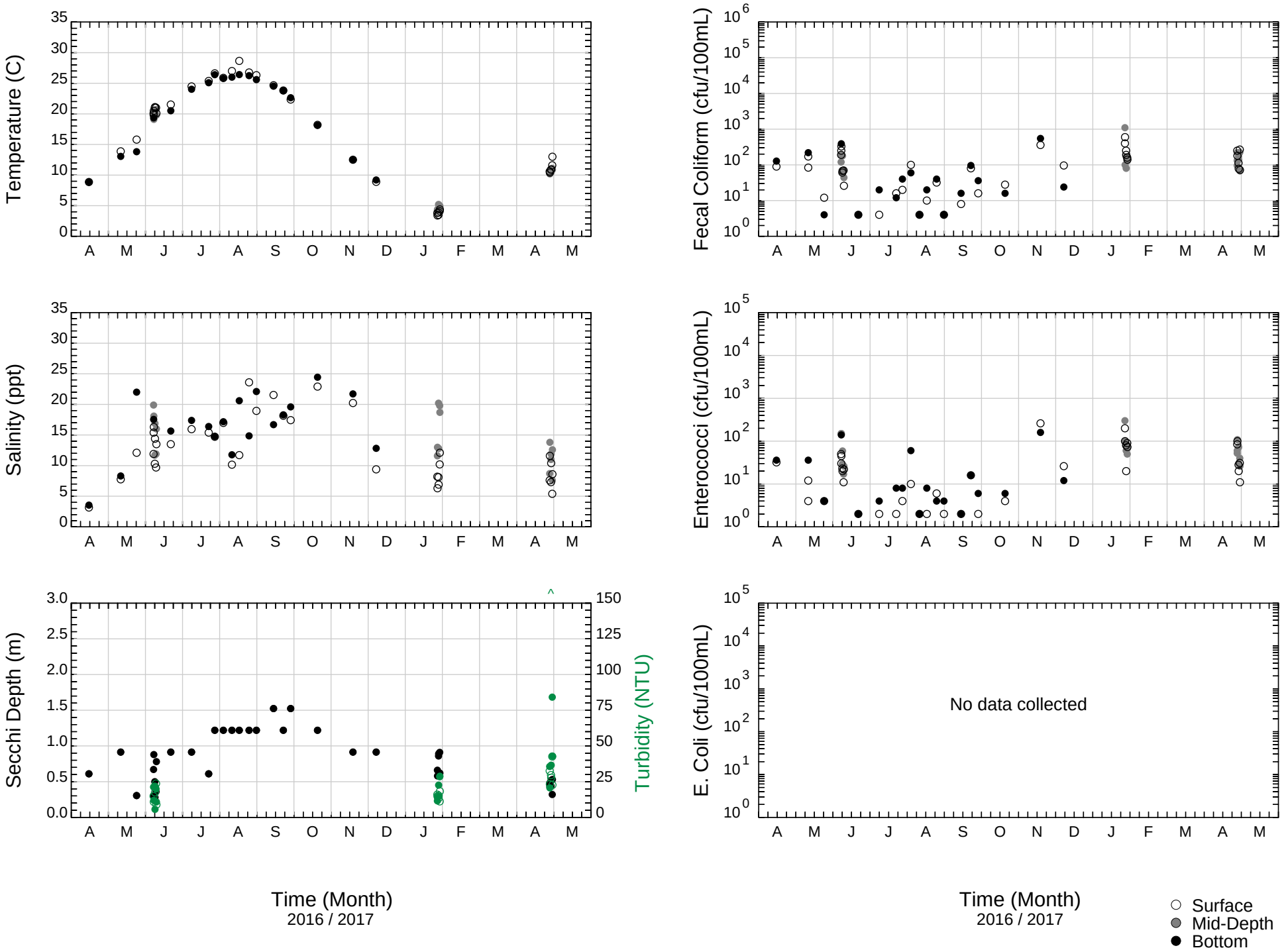
Newark Bay & Tributaries, Peripheral Ditch, S4



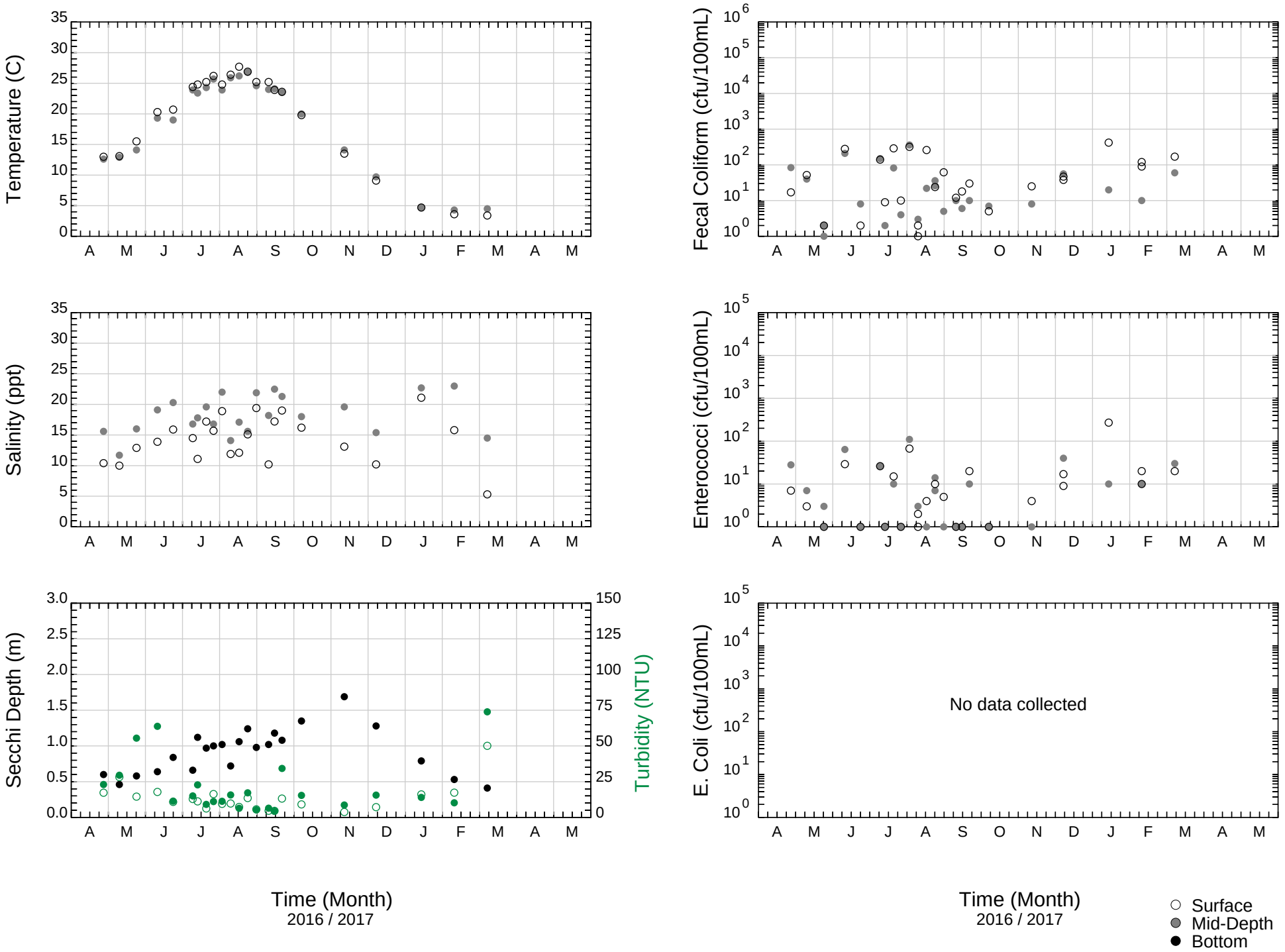
Newark Bay & Tributaries, Great Ditch, B25



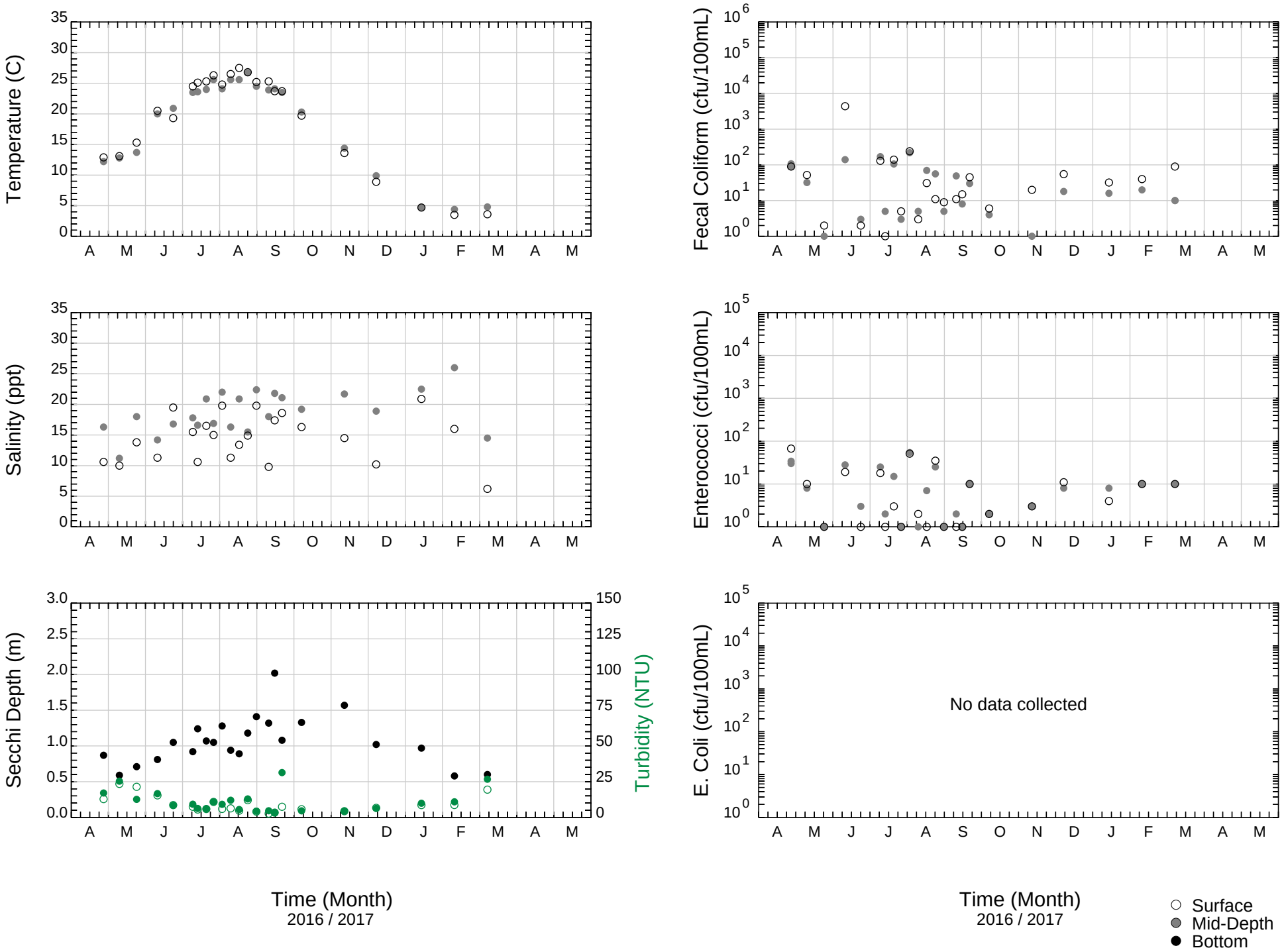
Hudson River, Upper Bay, Hudson River, 31



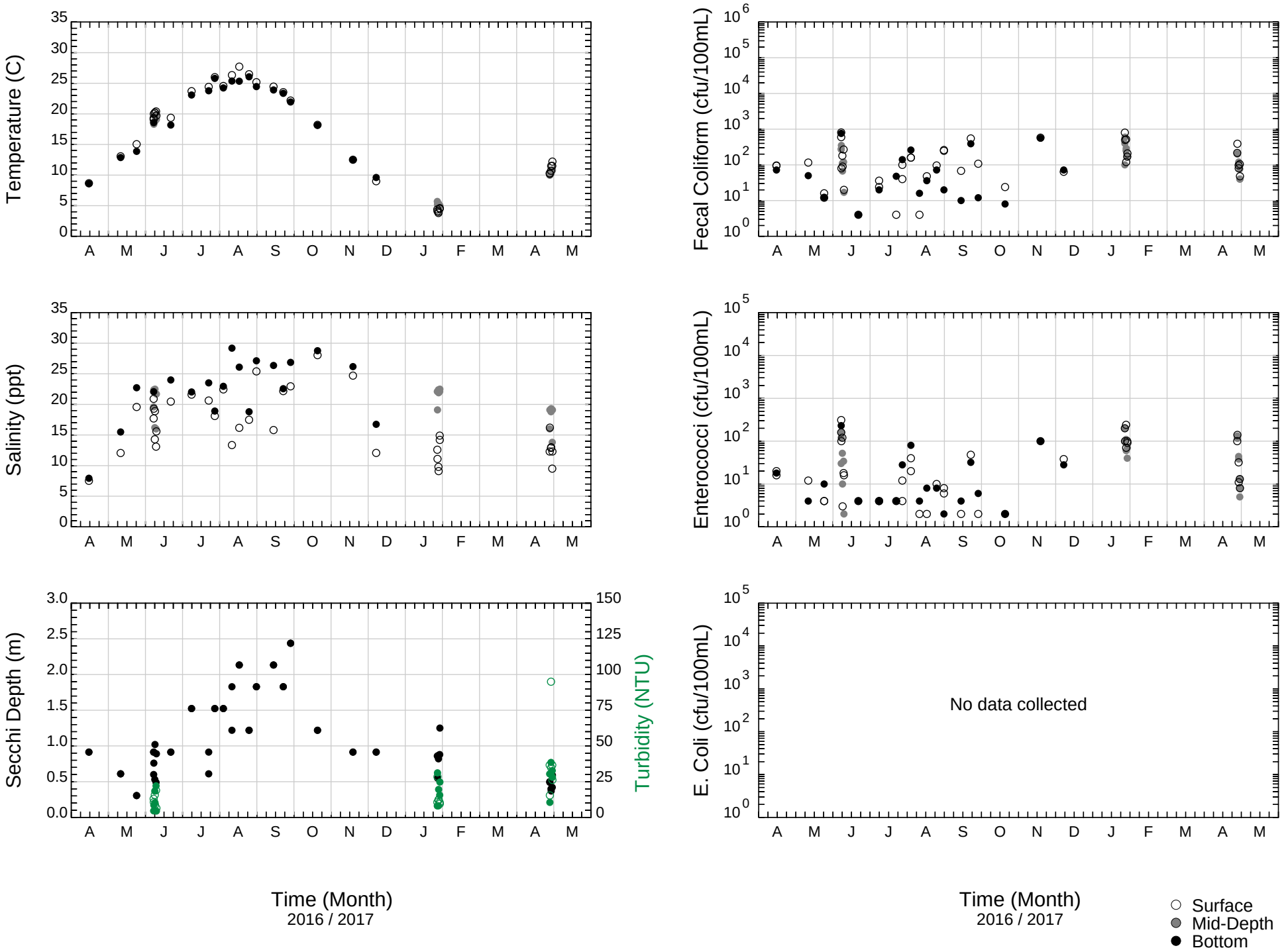
Hudson River, Upper Bay, Hudson River, B5A



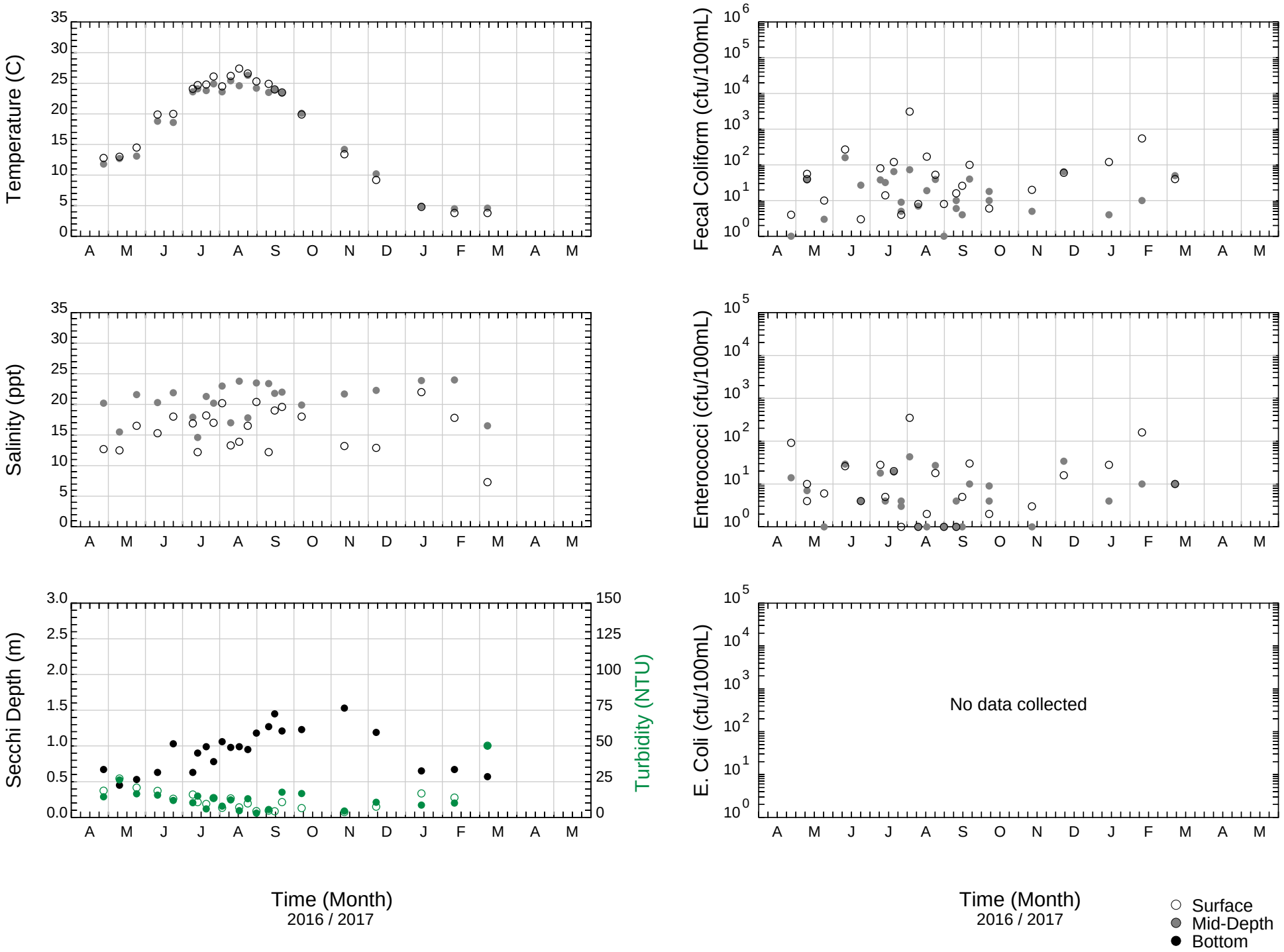
Hudson River, Upper Bay, Hudson River, B5B



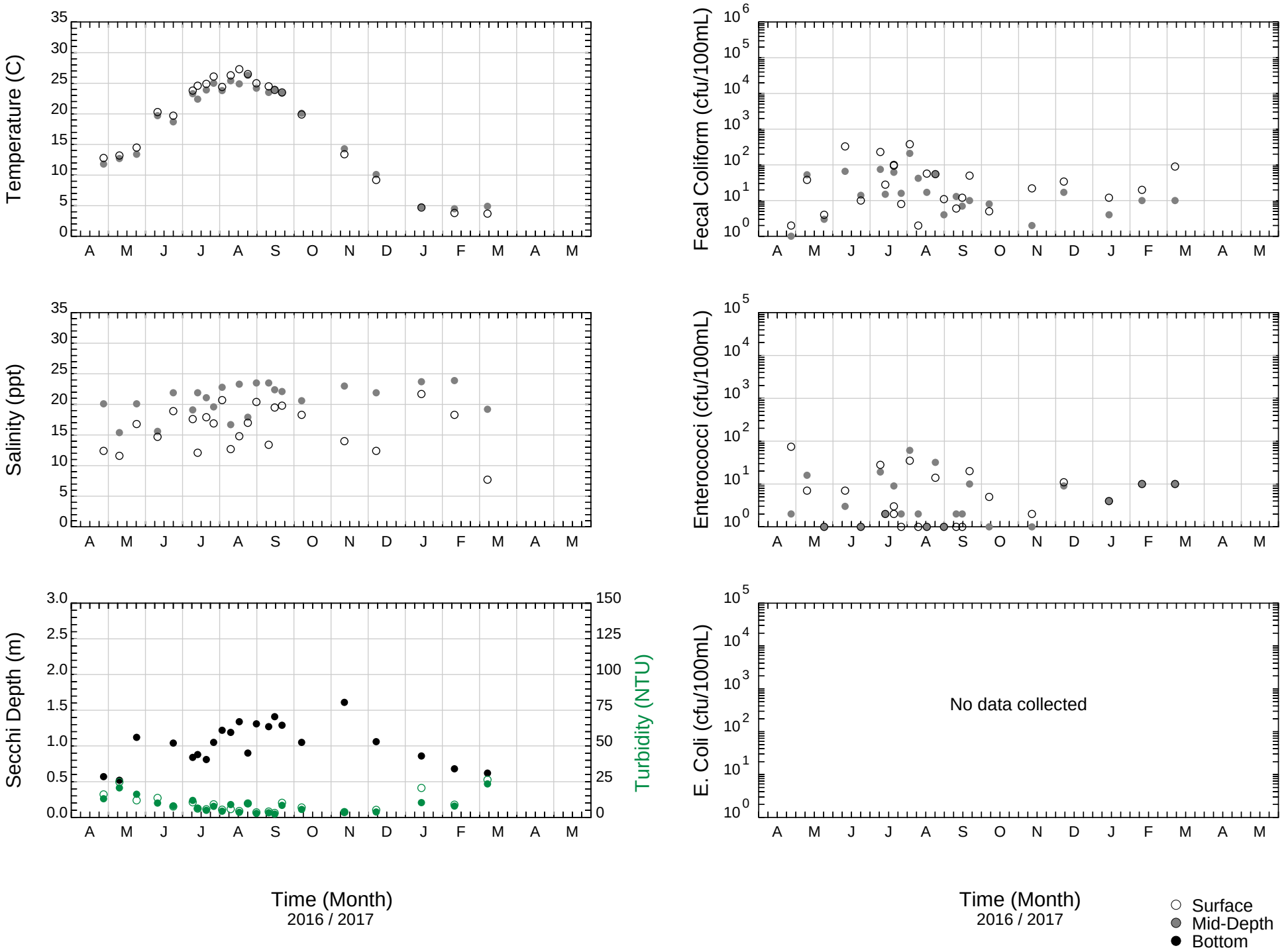
Hudson River, Upper Bay, Hudson River, 32



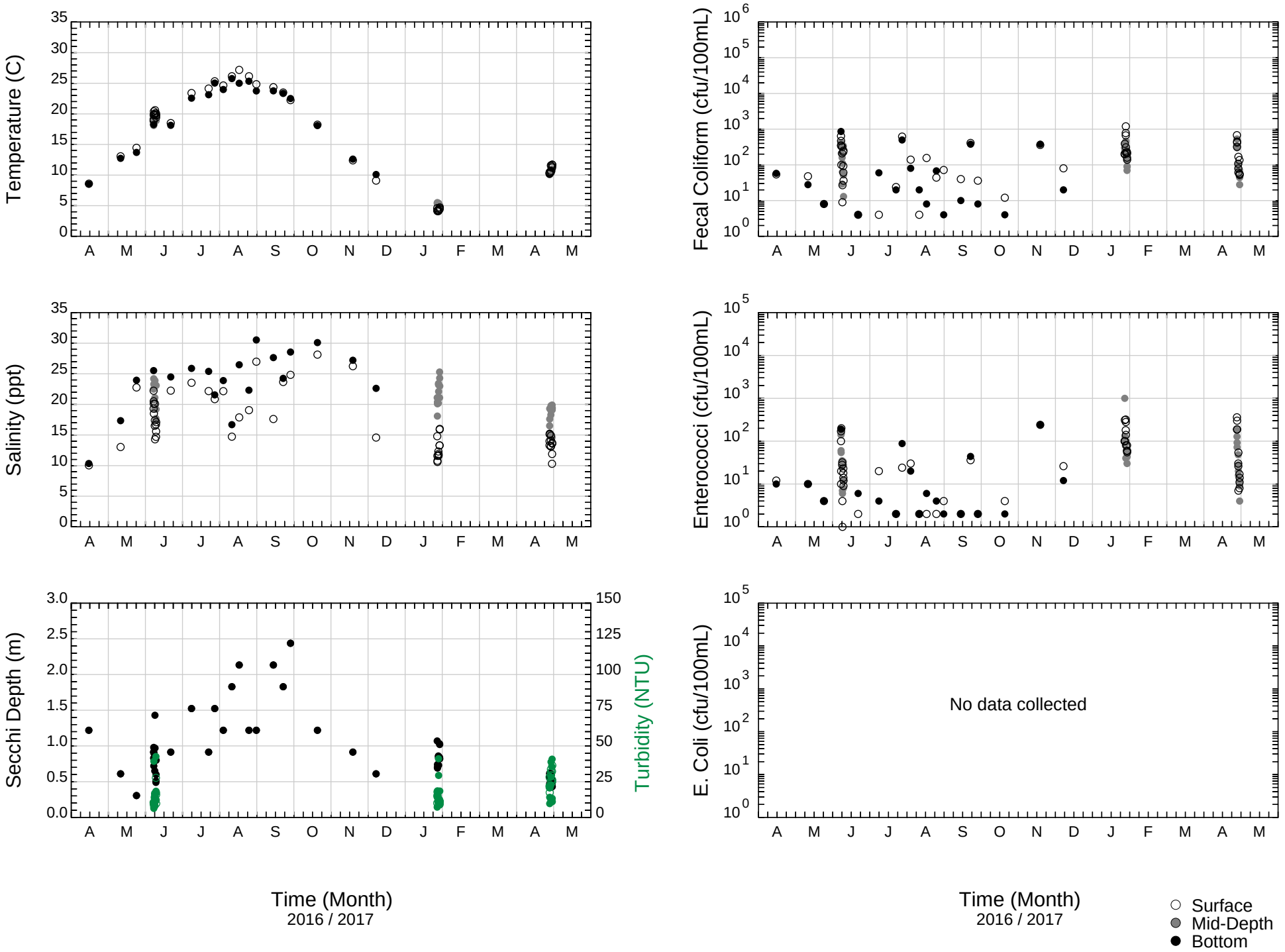
Hudson River, Upper Bay, Hudson River, B18A



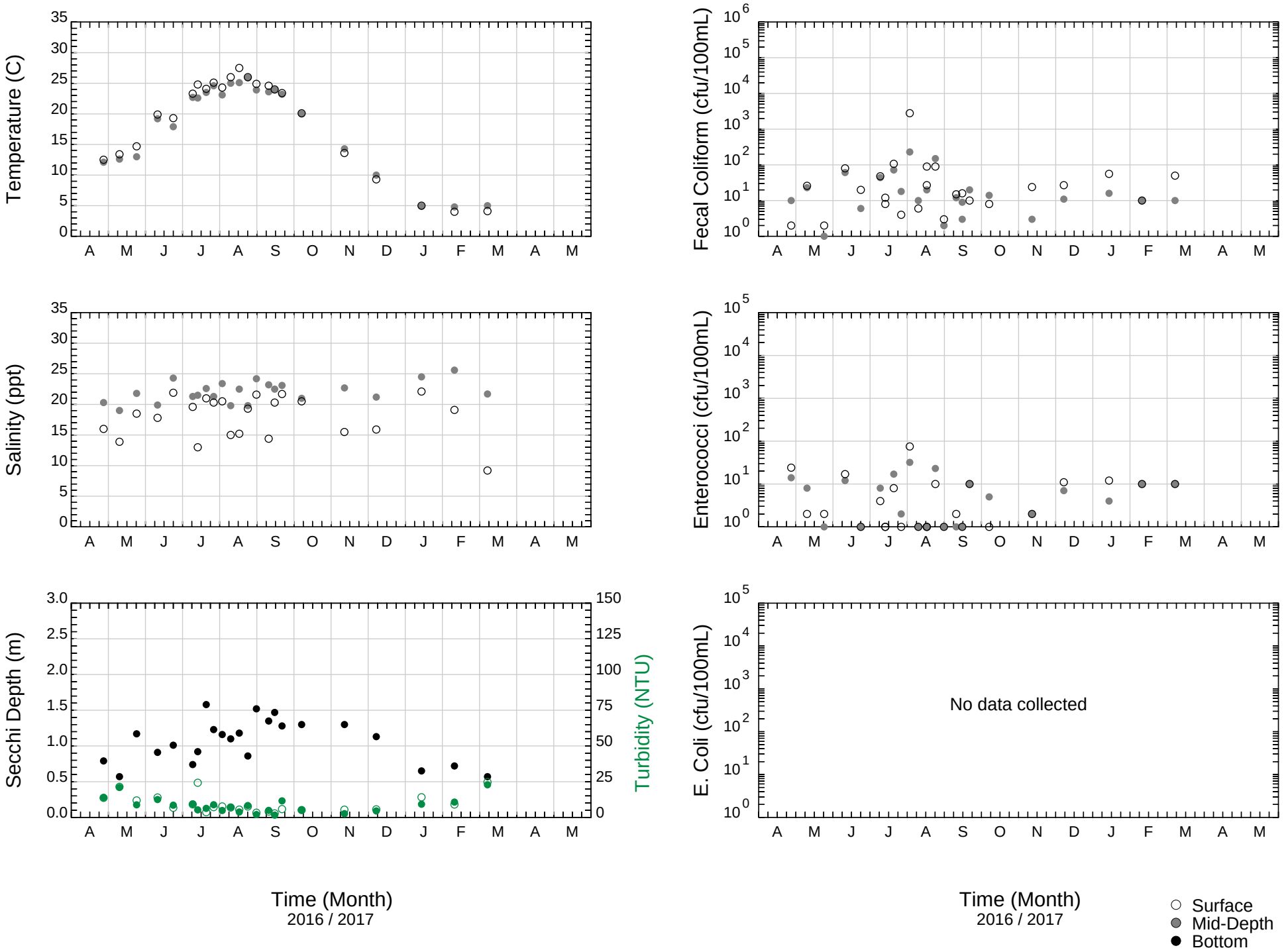
Hudson River, Upper Bay, Hudson River, B18B



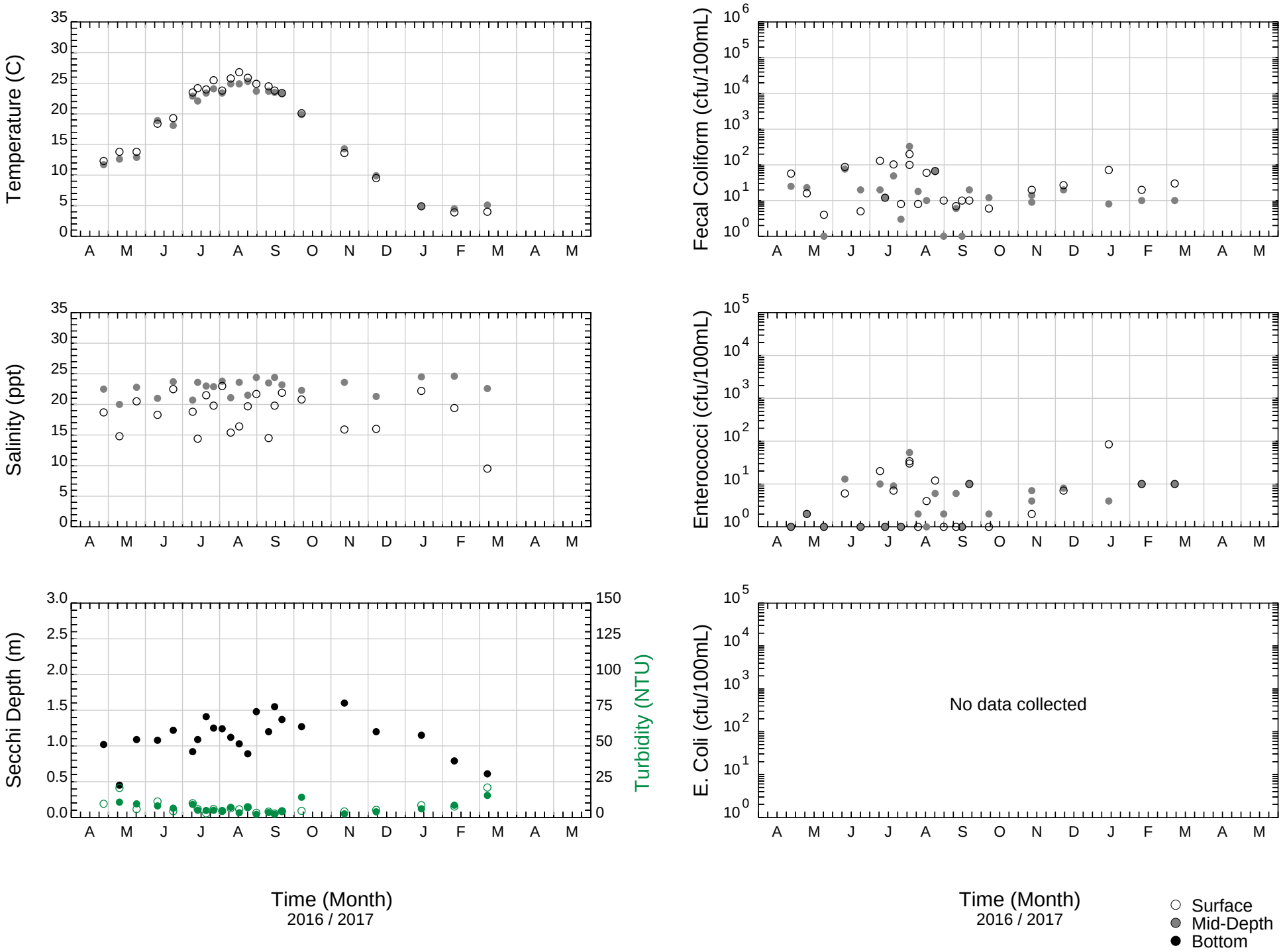
Hudson River, Upper Bay, Hudson River, 33



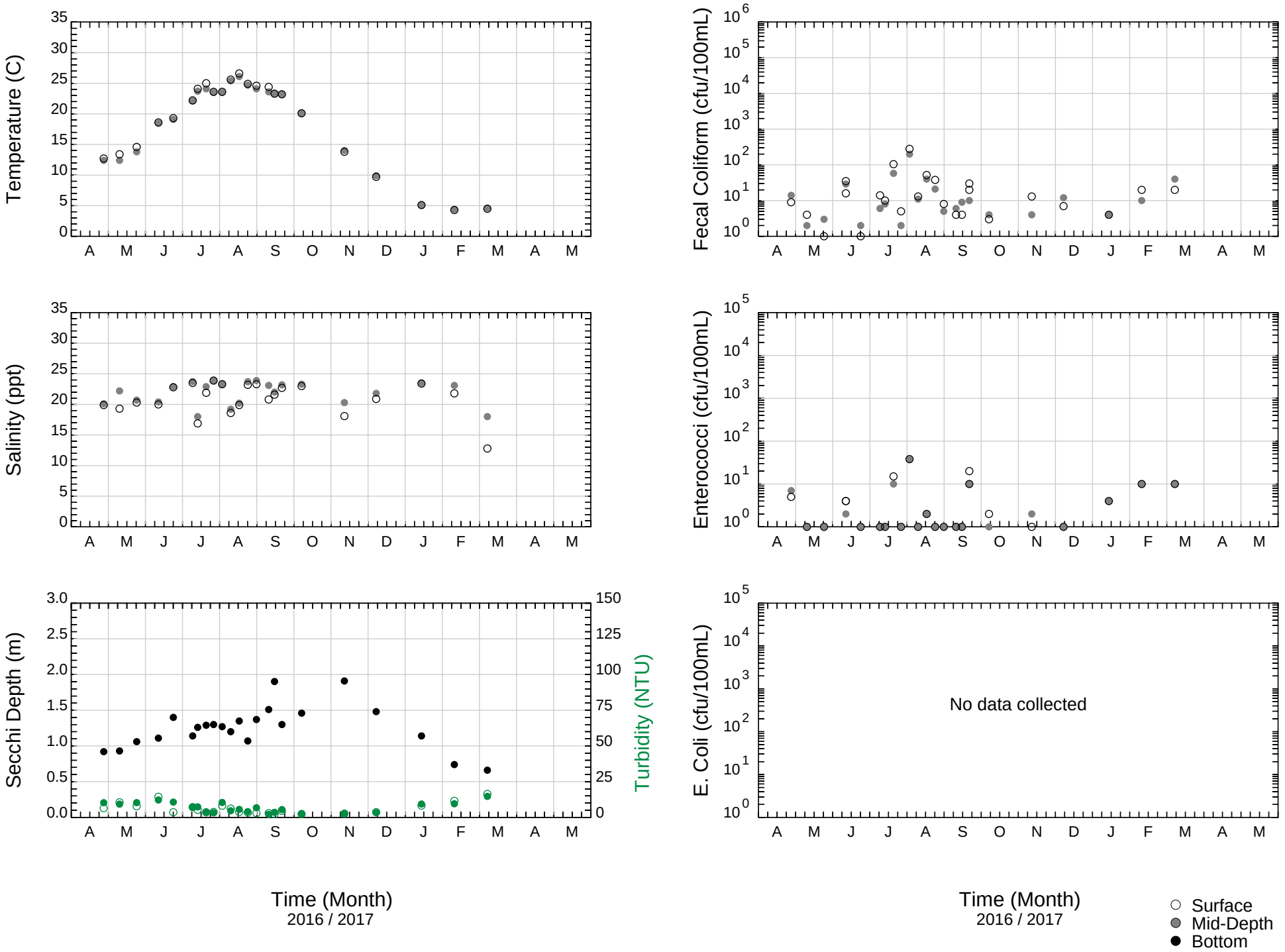
Hudson River, Upper Bay, Hudson River, B23A



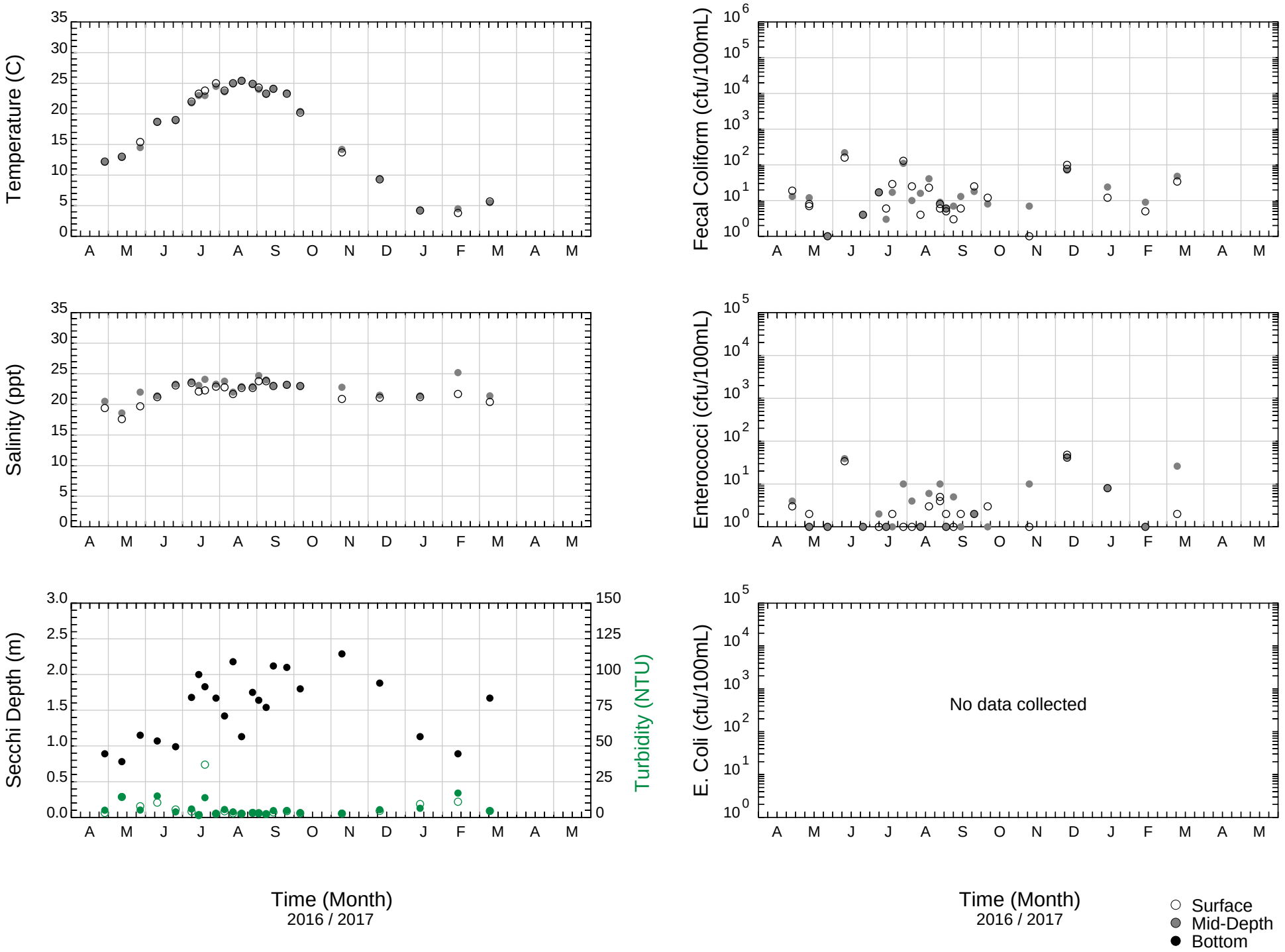
Hudson River, Upper Bay, Hudson River, B23B



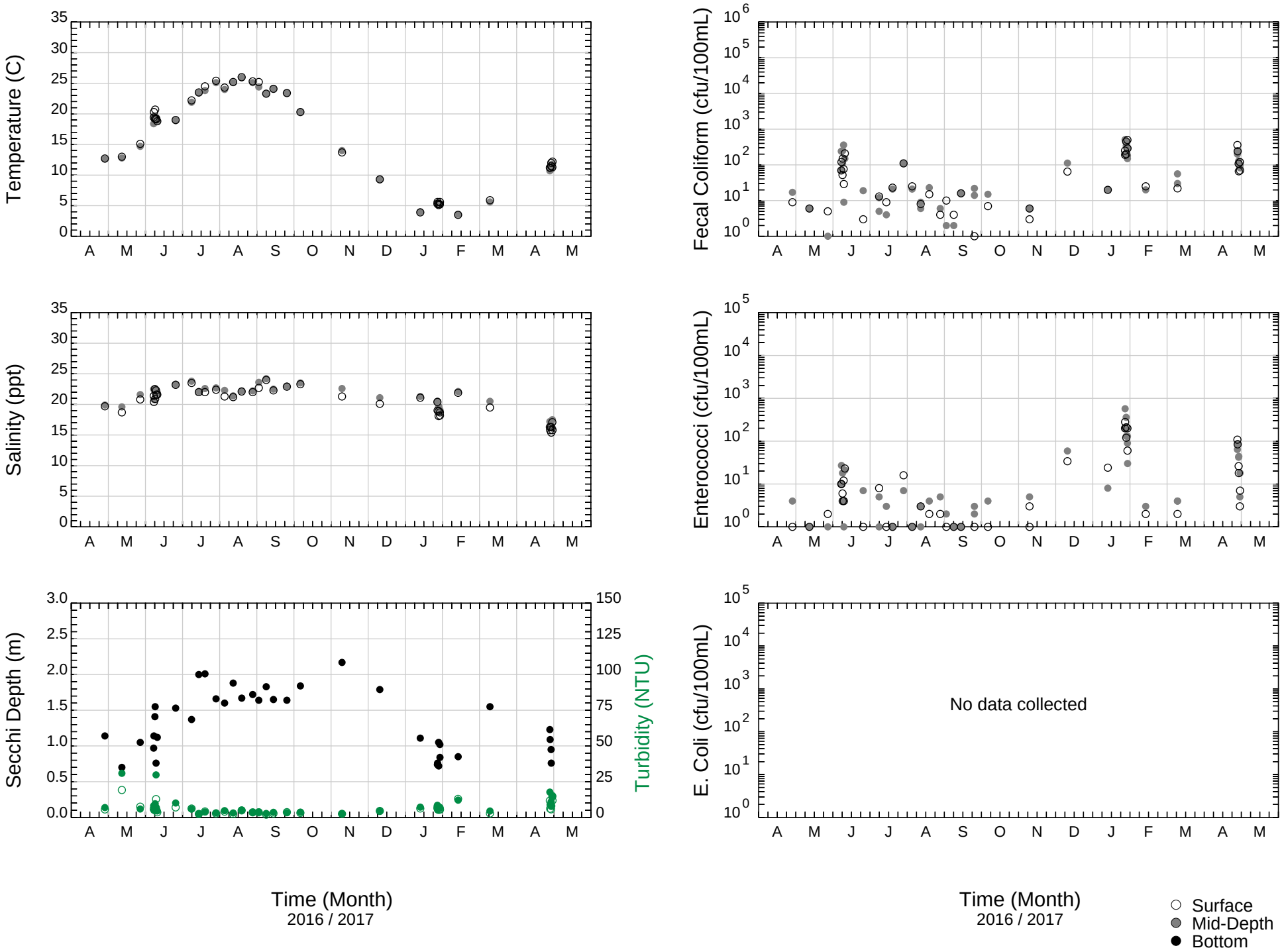
Hudson River, Upper Bay, Upper Bay, B9



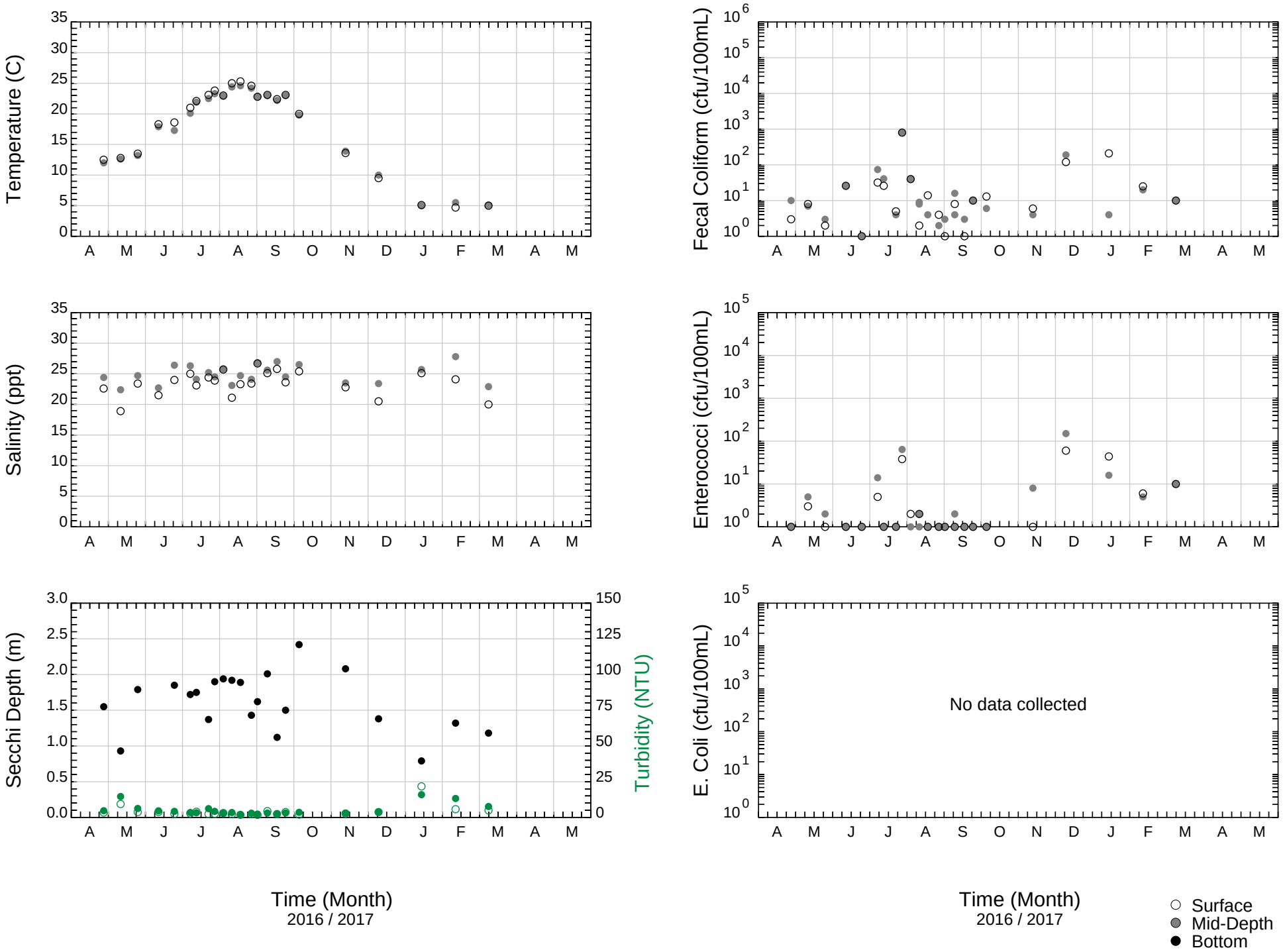
Hudson River, Upper Bay, Upper Bay, B20



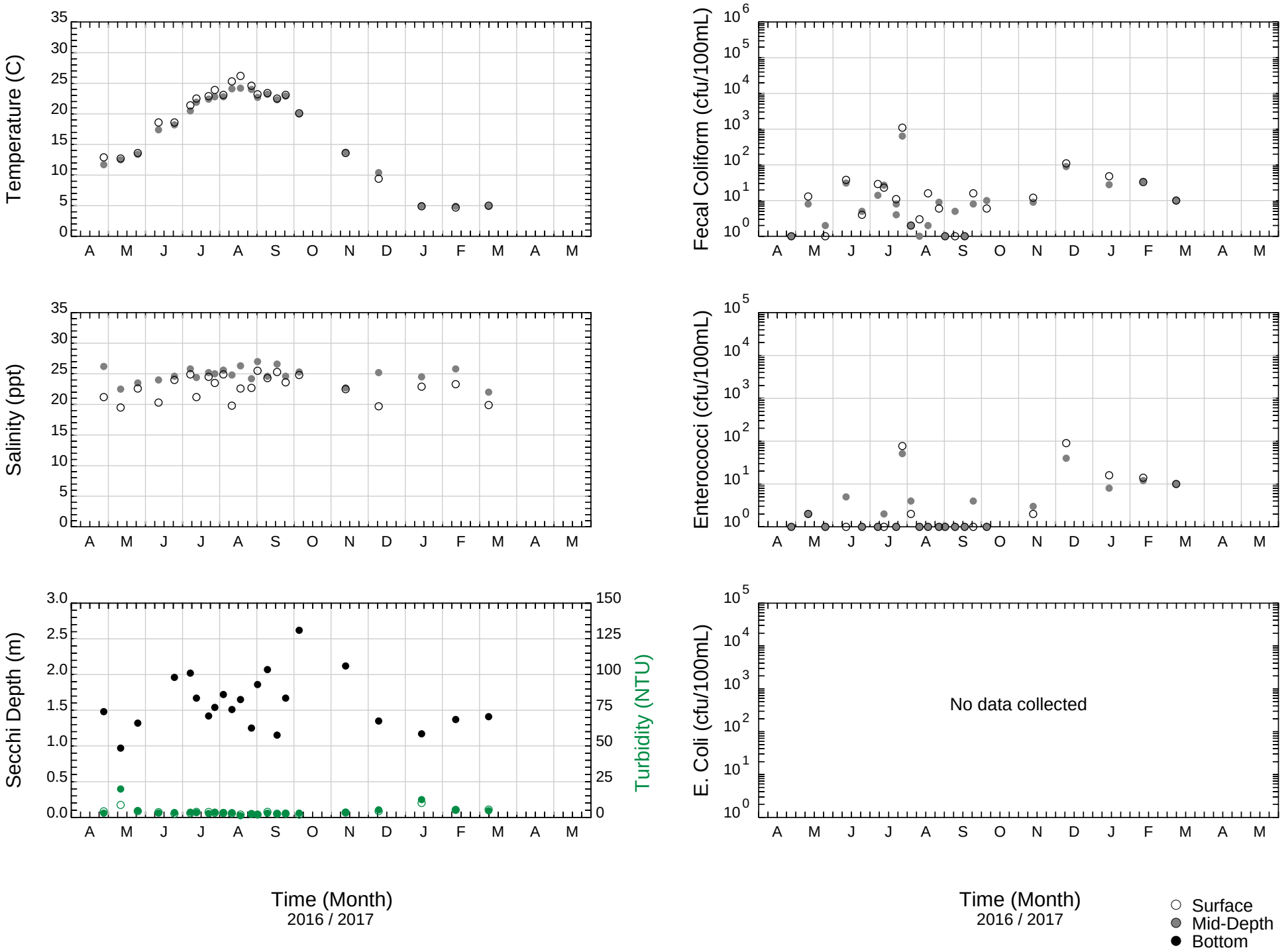
Hudson River, Upper Bay, Kill Van Kull, B12



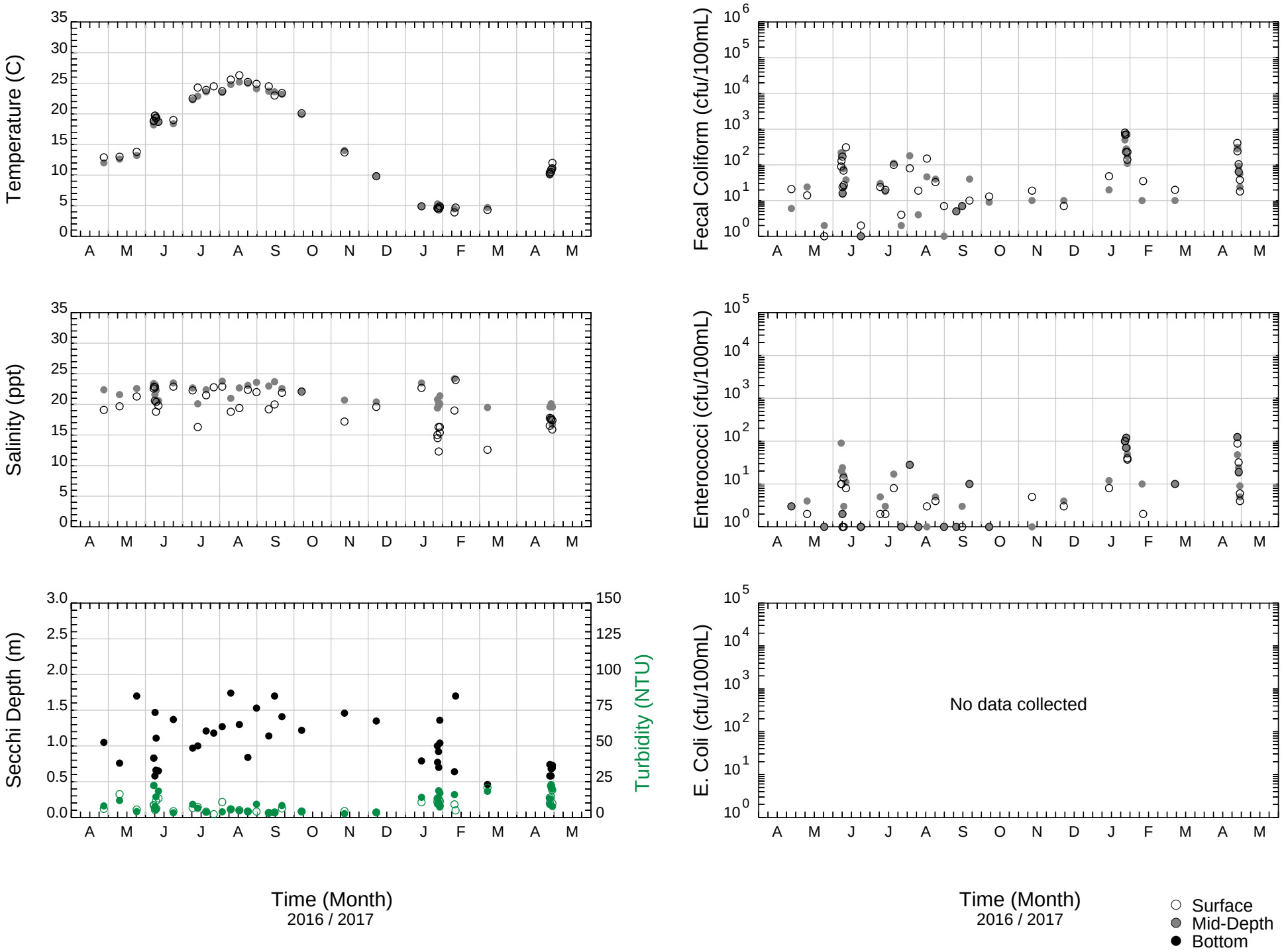
Hudson River, Upper Bay, Upper Bay, B21B



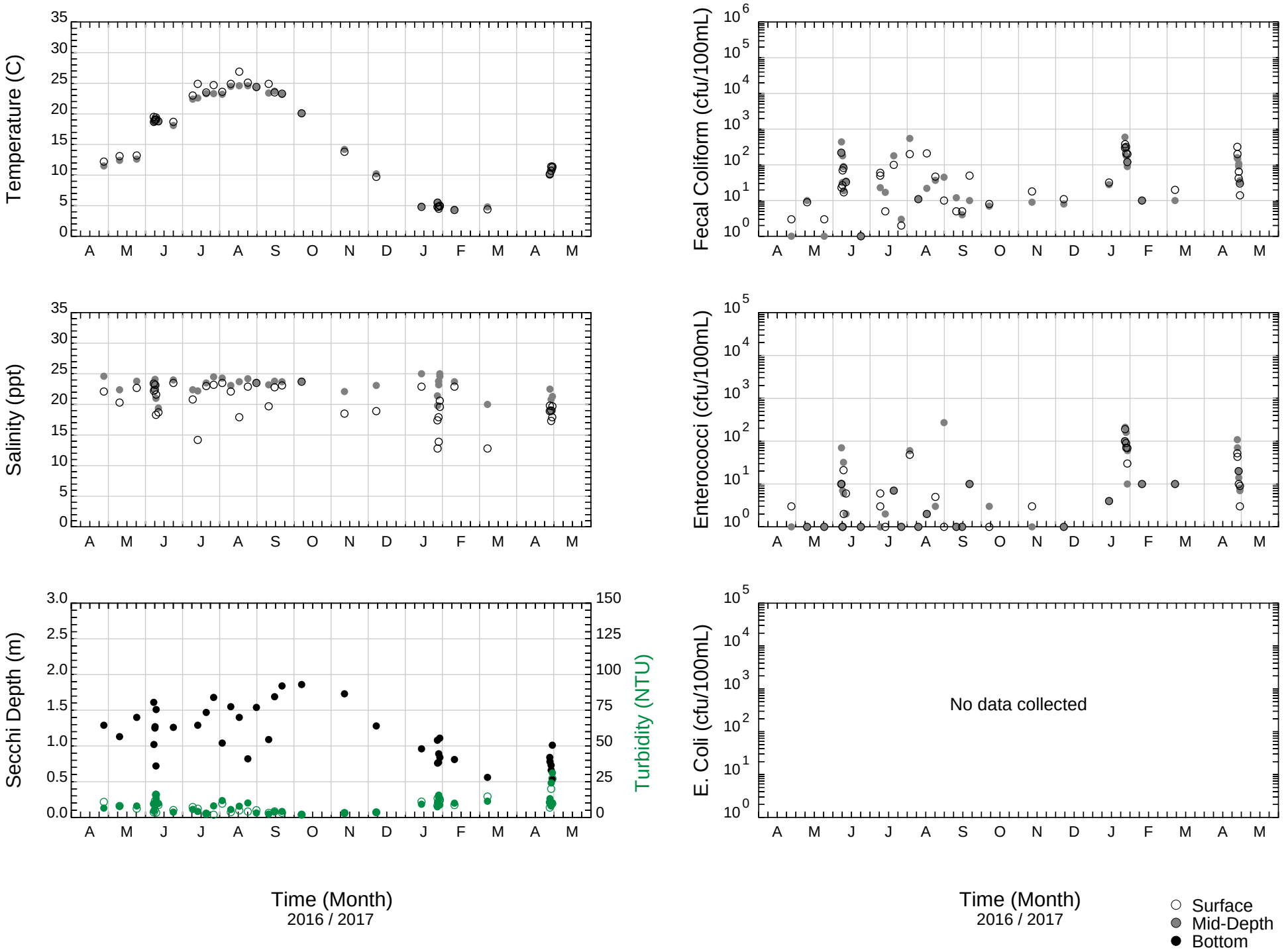
Hudson River, Upper Bay, Upper Bay, B21A



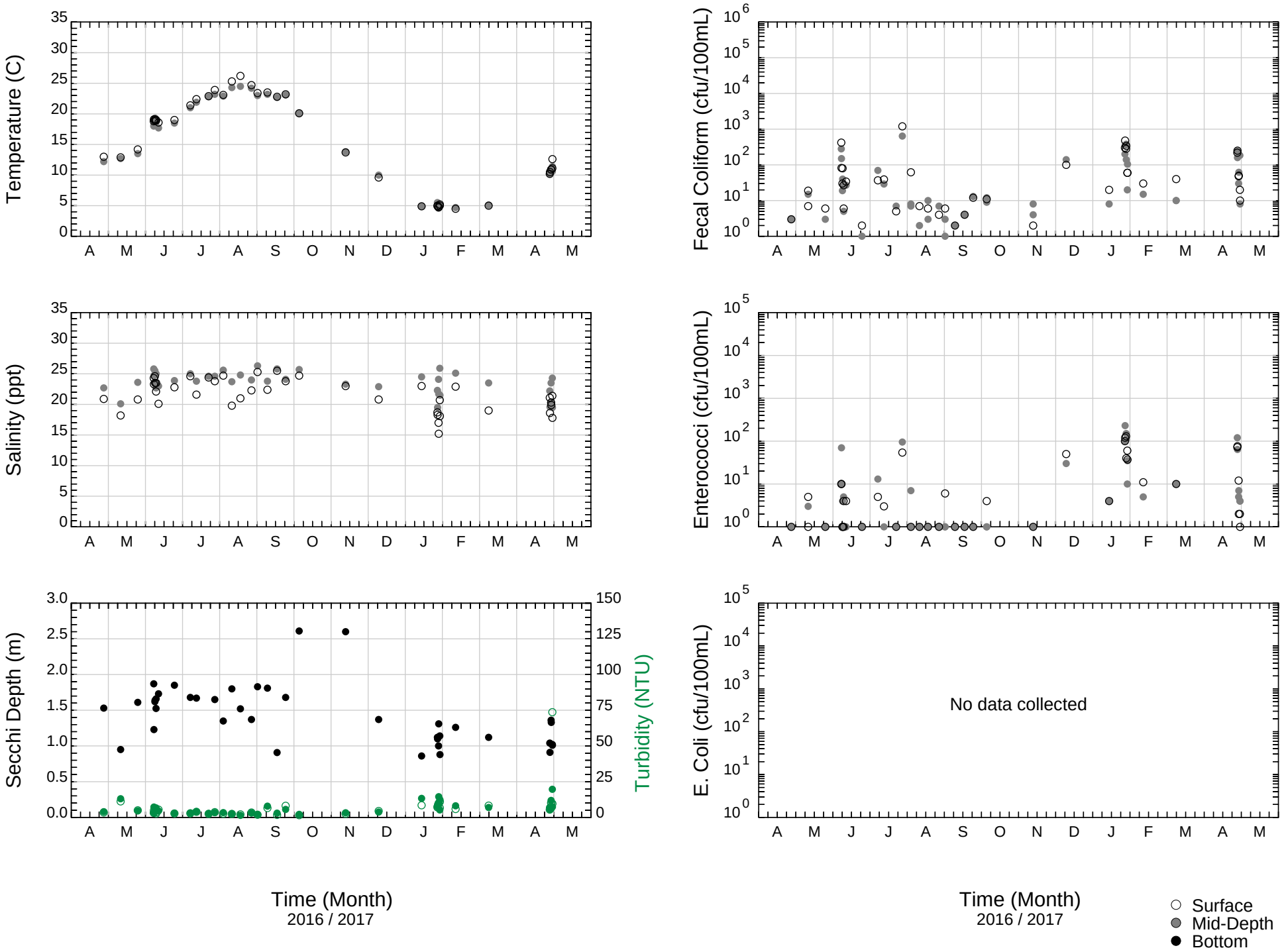
Hudson River, Upper Bay, Upper Bay, B26



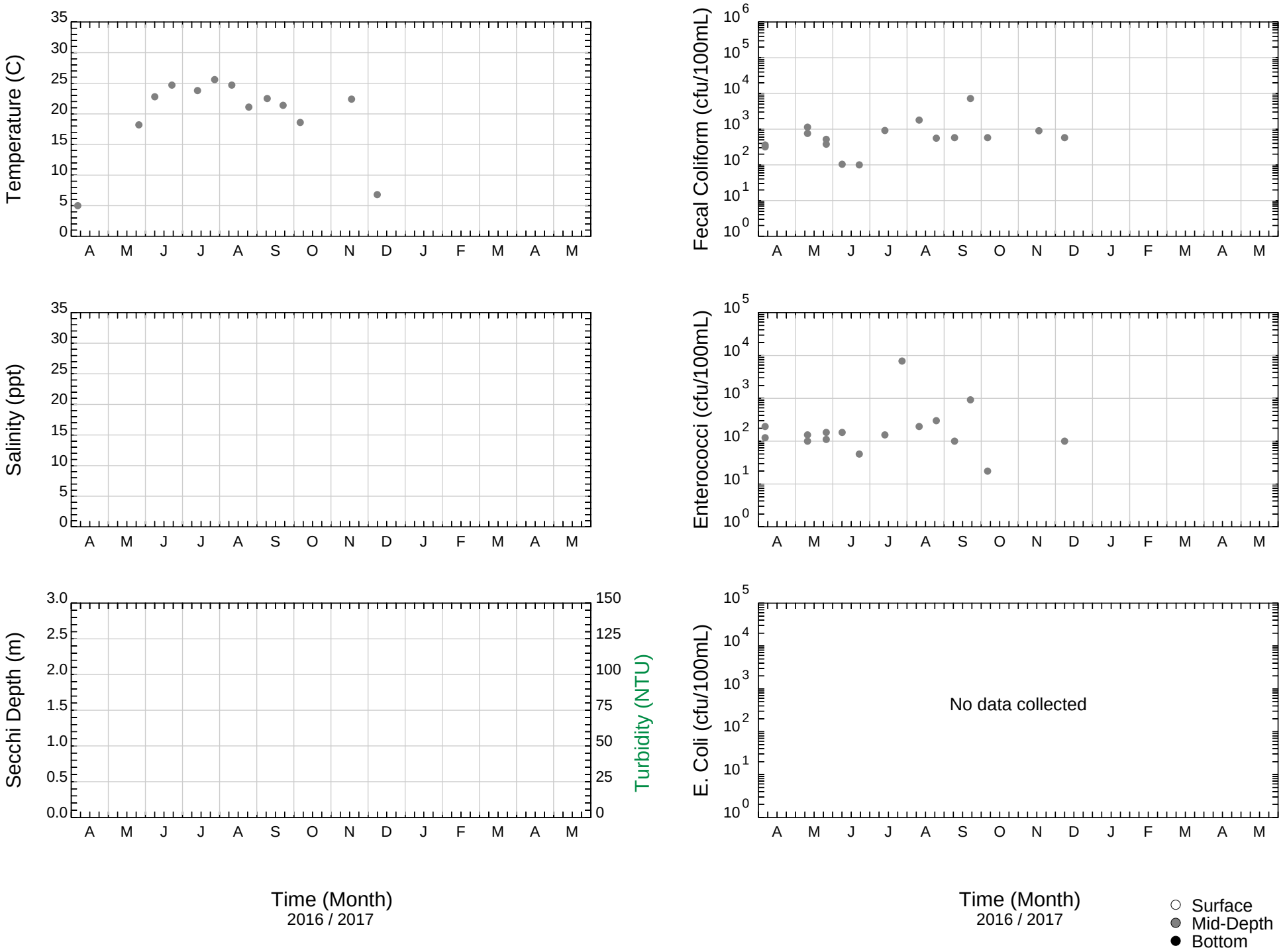
Hudson River, Upper Bay, Upper Bay, B27



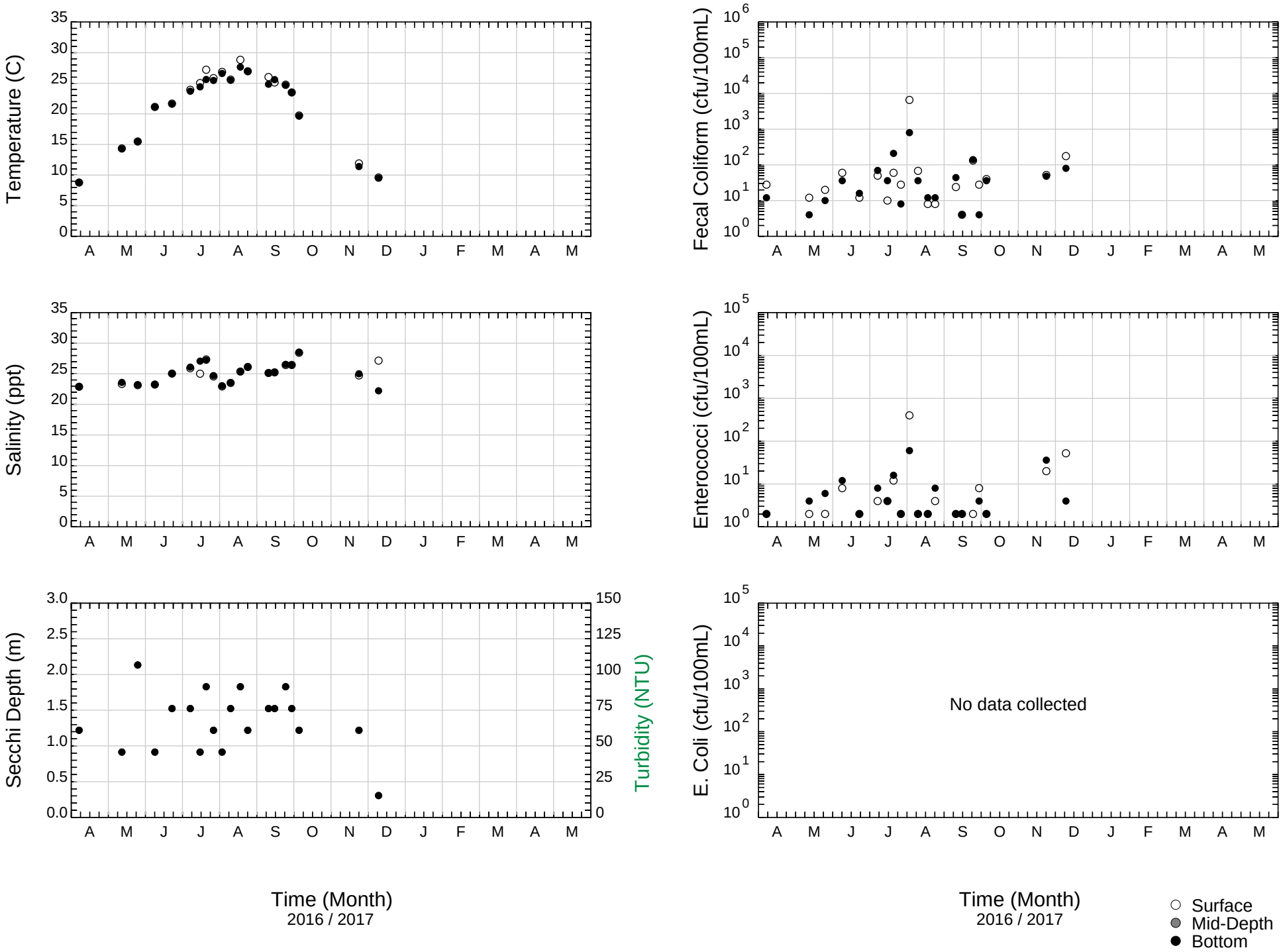
Hudson River, Upper Bay, Upper Bay, B28



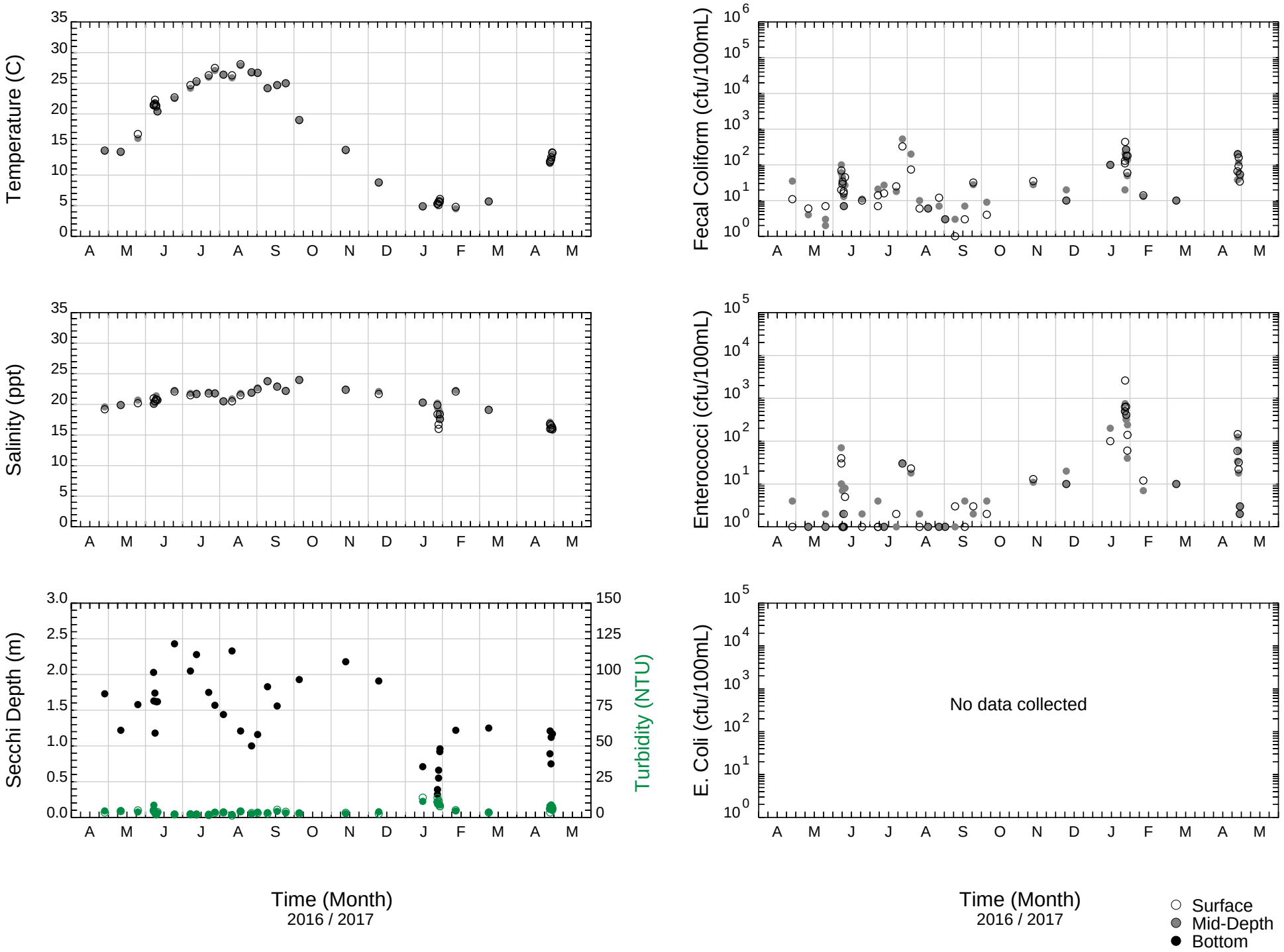
Arthur Kill, Raritan River/Bay & Tributaries, Rahway River, 22



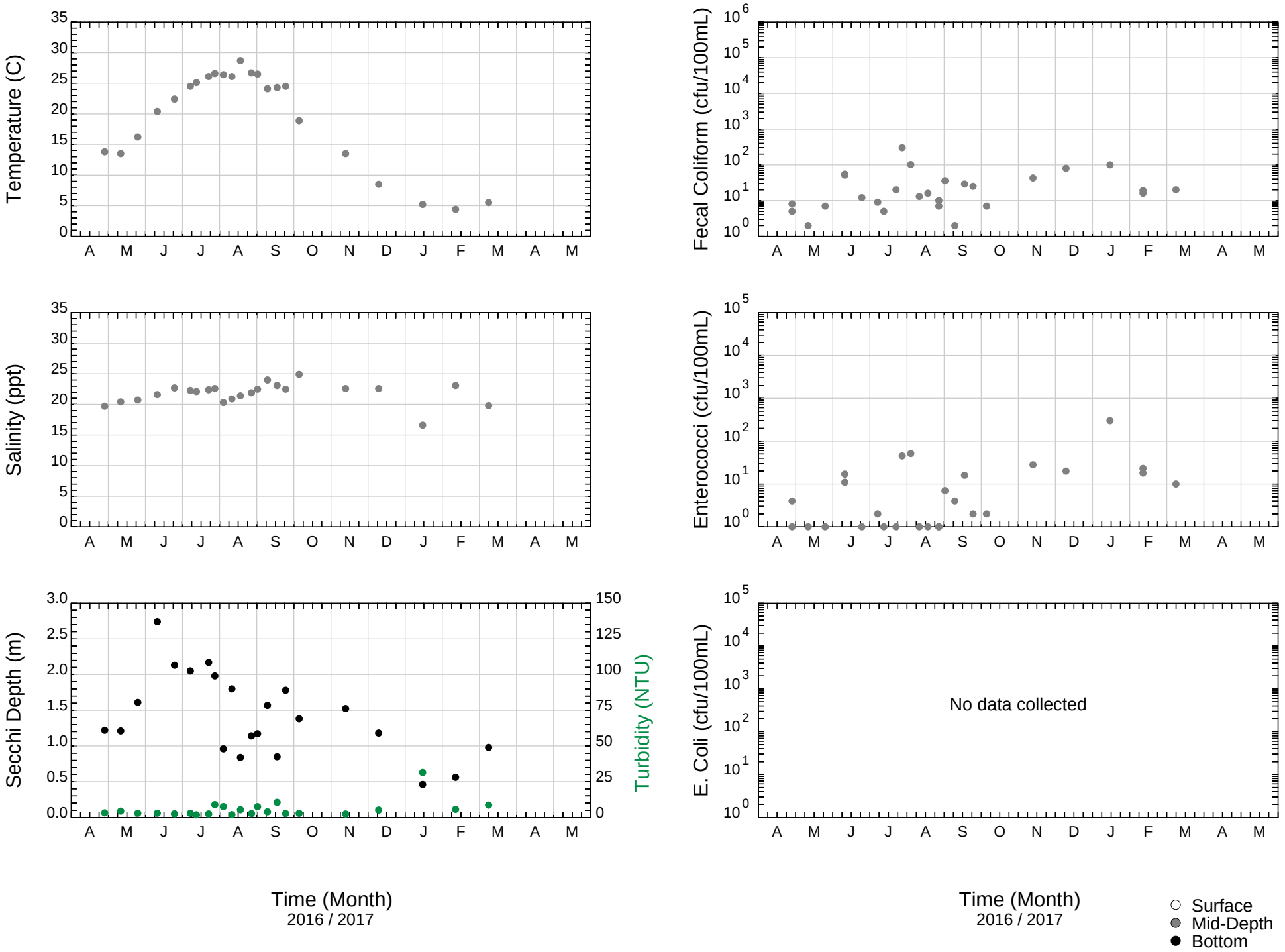
Arthur Kill, Raritan River/Bay & Tributaries, Arthur Kill, 23



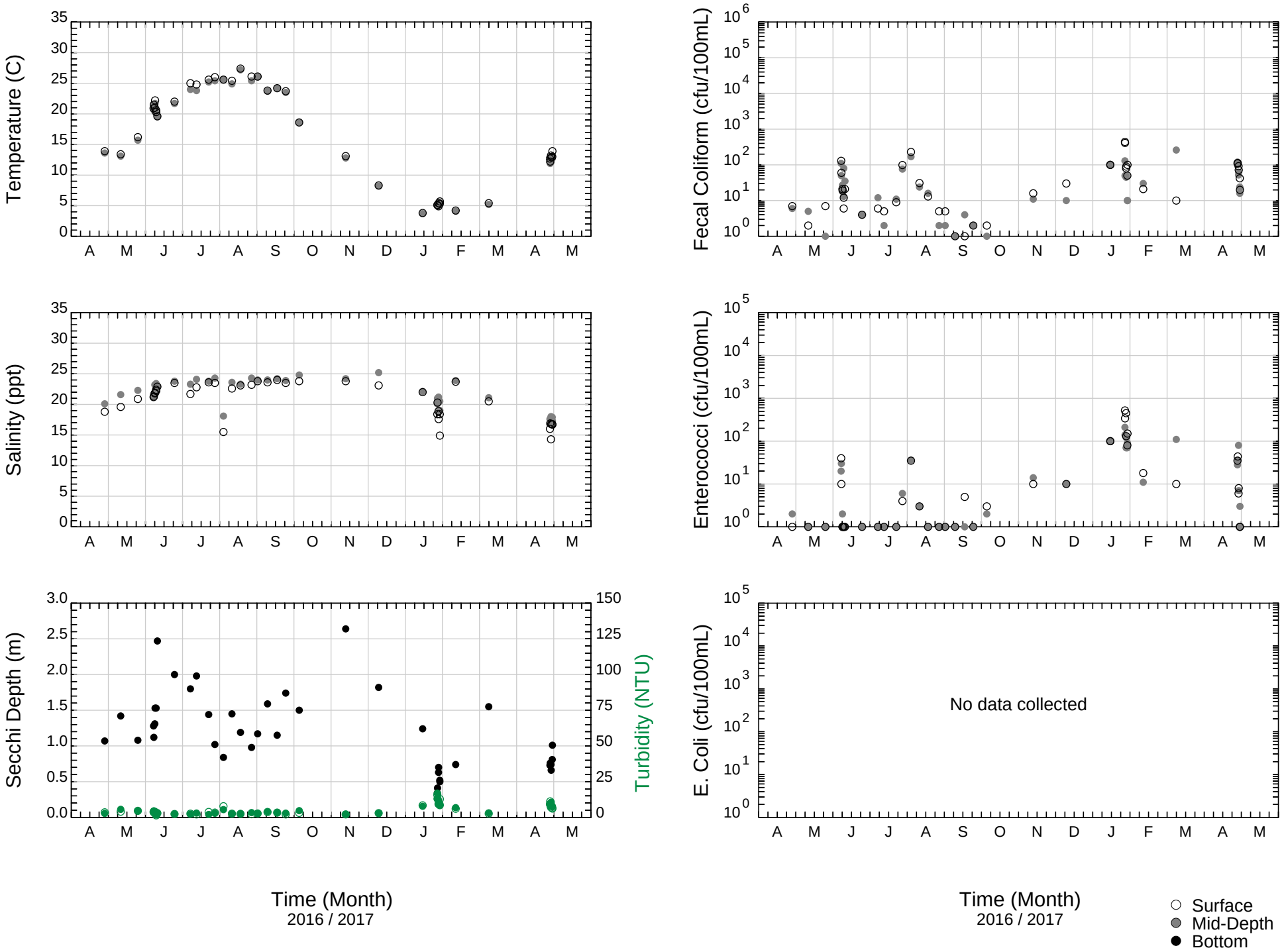
Arthur Kill, Raritan River/Bay & Tributaries, Arthur Kill, 24



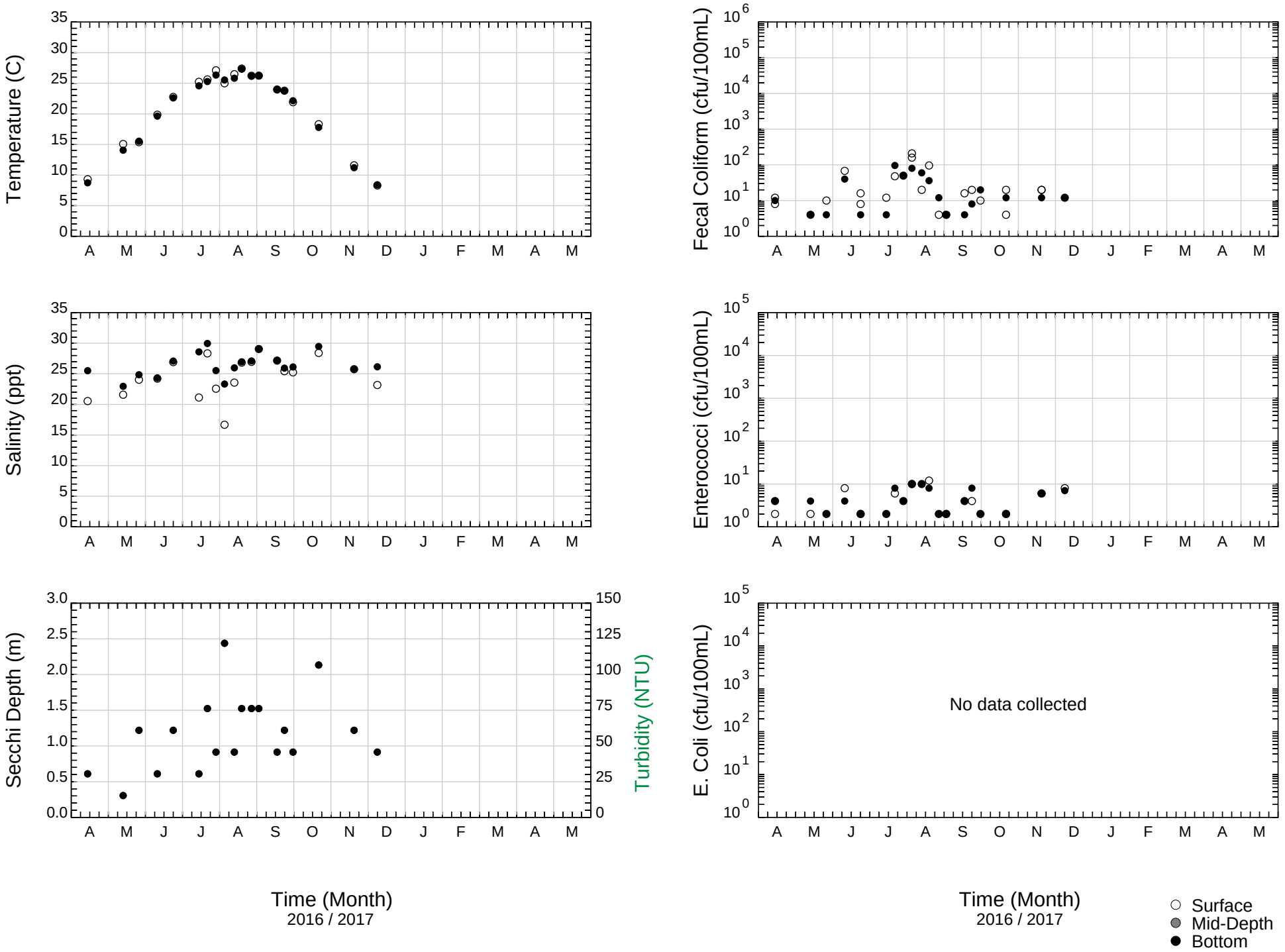
Arthur Kill, Raritan River/Bay & Tributaries, Woodbridge Creek, S6



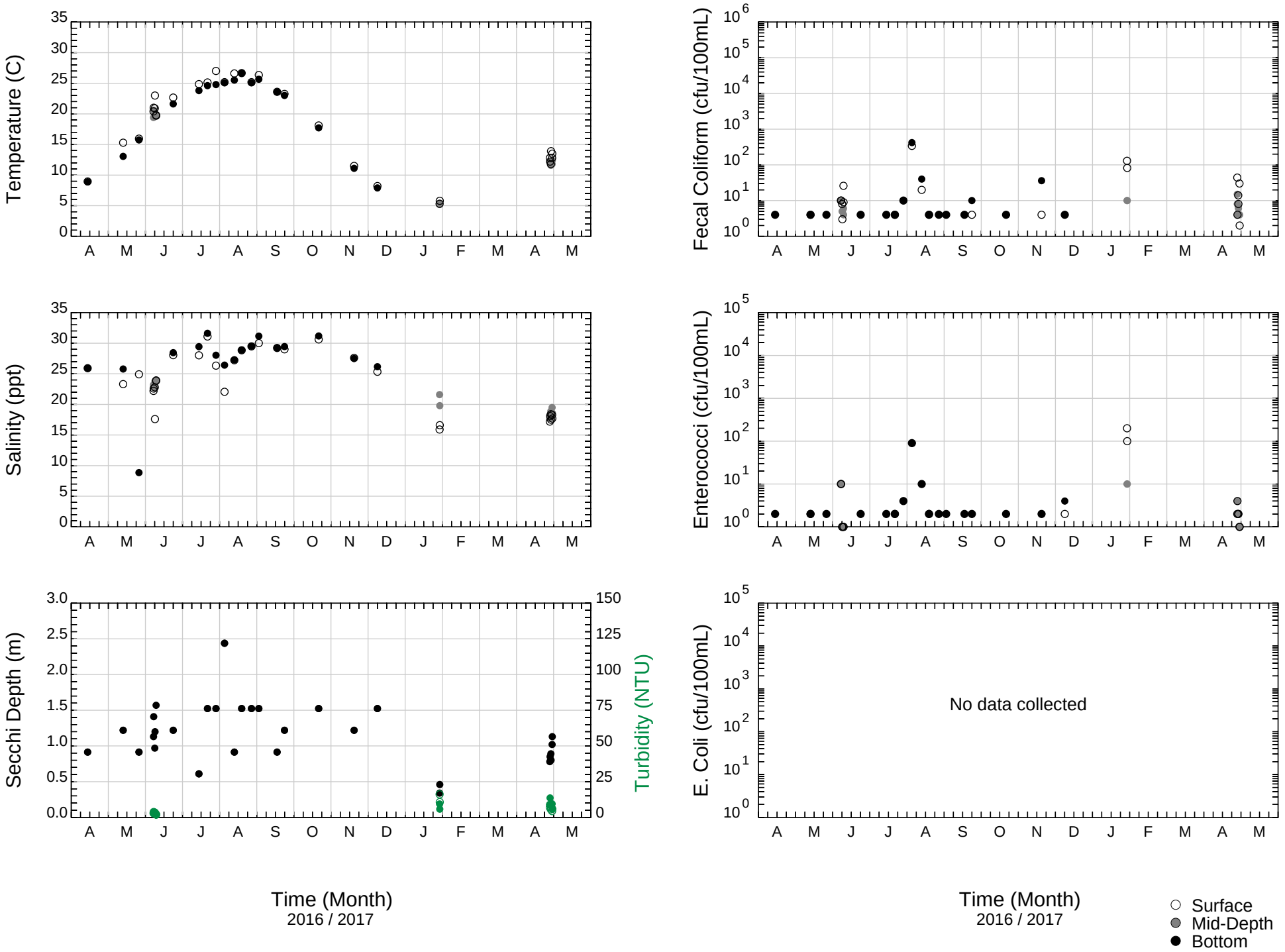
Arthur Kill, Raritan River/Bay & Tributaries, Arthur Kill, B15



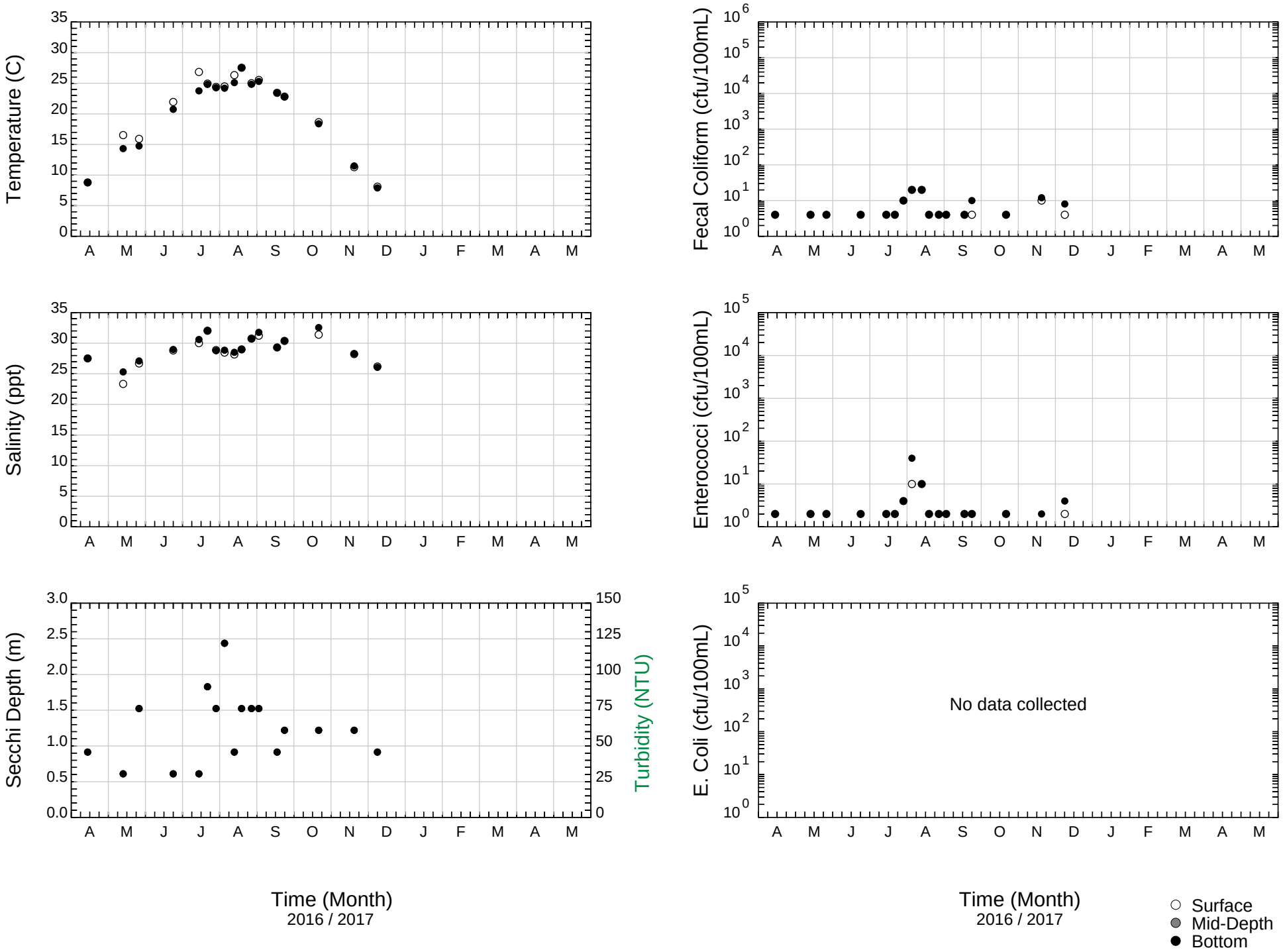
Arthur Kill, Raritan River/Bay & Tributaries, Raritan Bay, 28



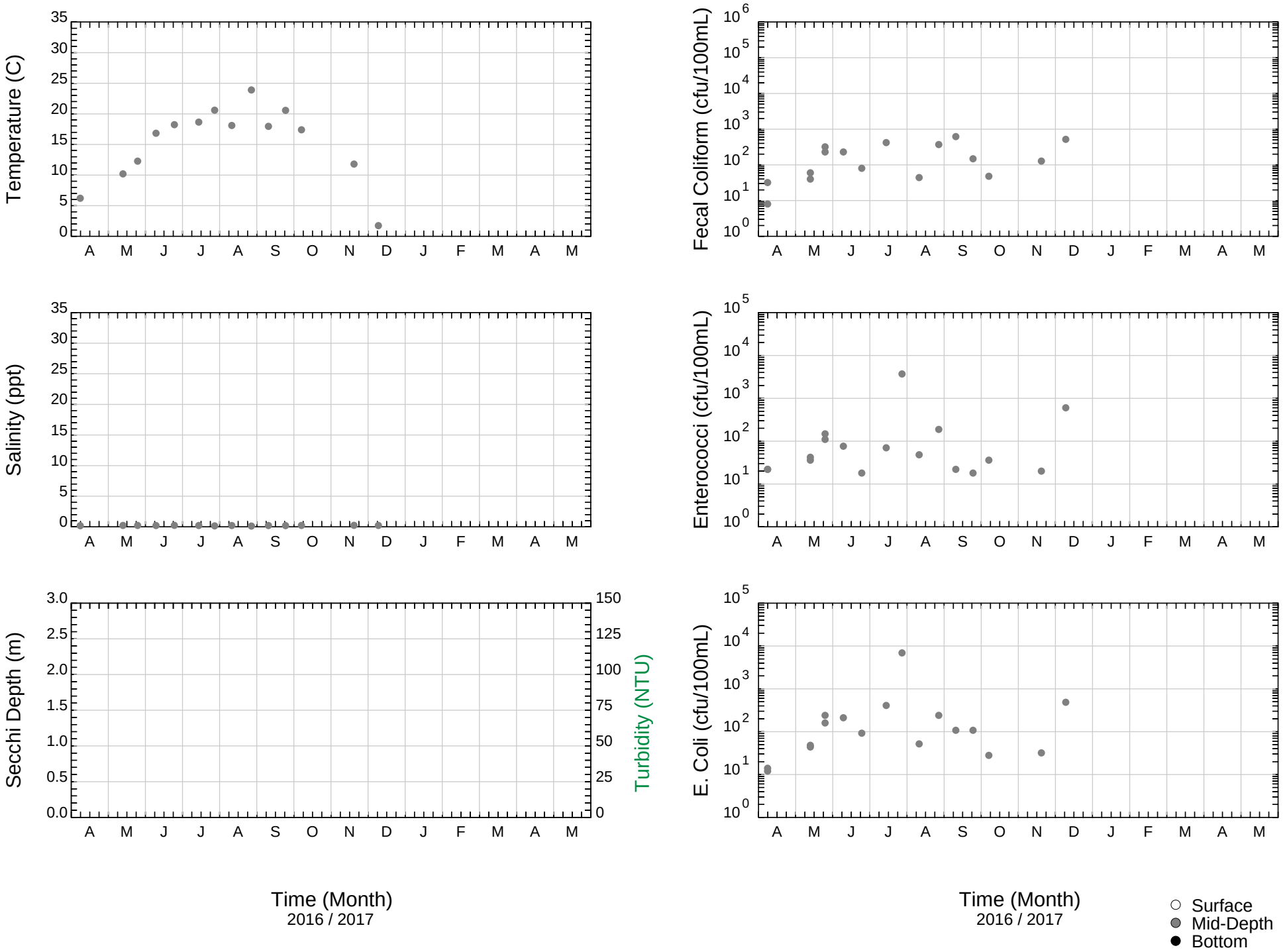
Arthur Kill, Raritan River/Bay & Tributaries, Raritan Bay, 29



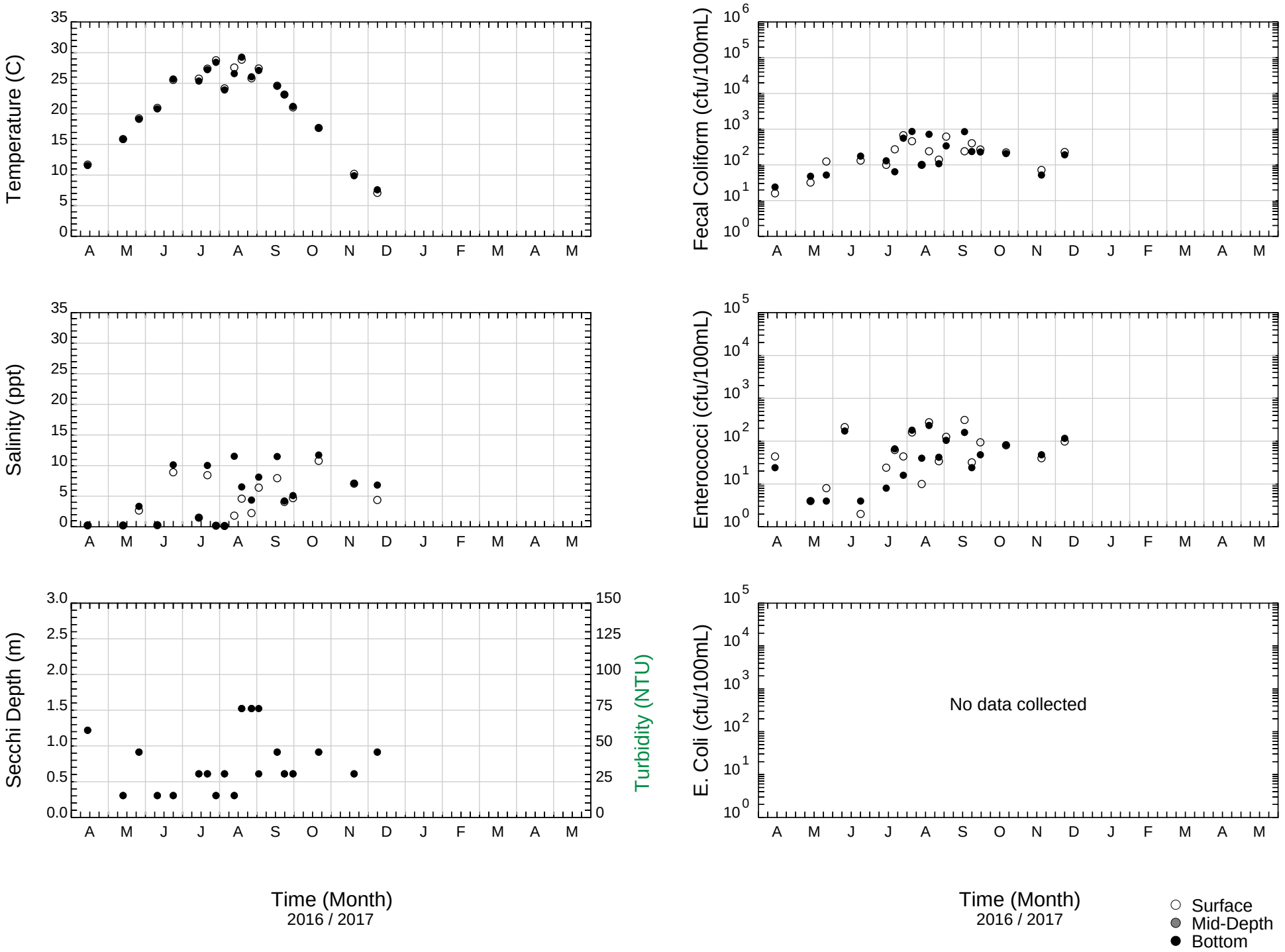
Arthur Kill, Raritan River/Bay & Tributaries, Raritan Bay, 30



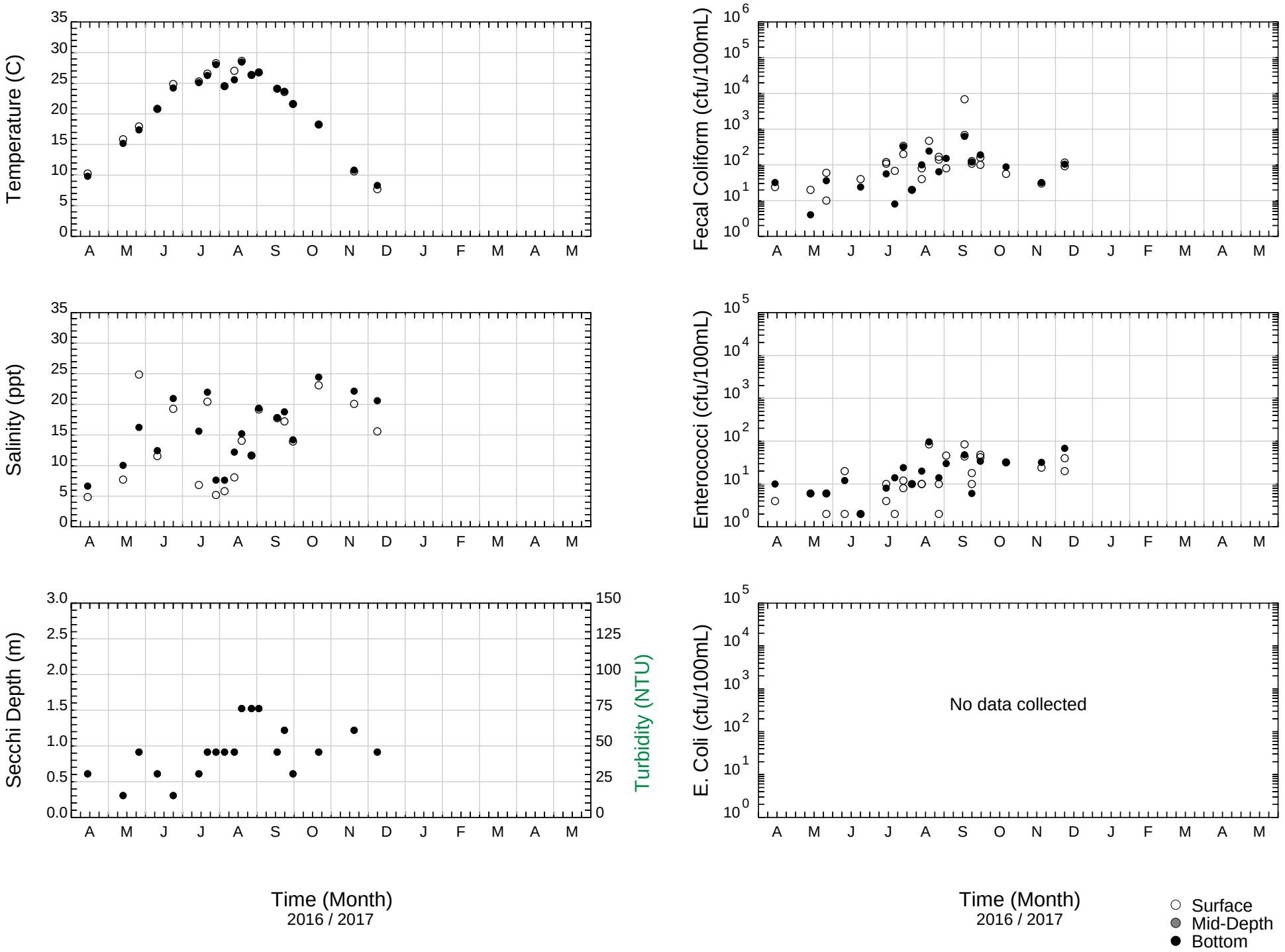
Arthur Kill, Raritan River/Bay & Tributaries, Raritan River, 25



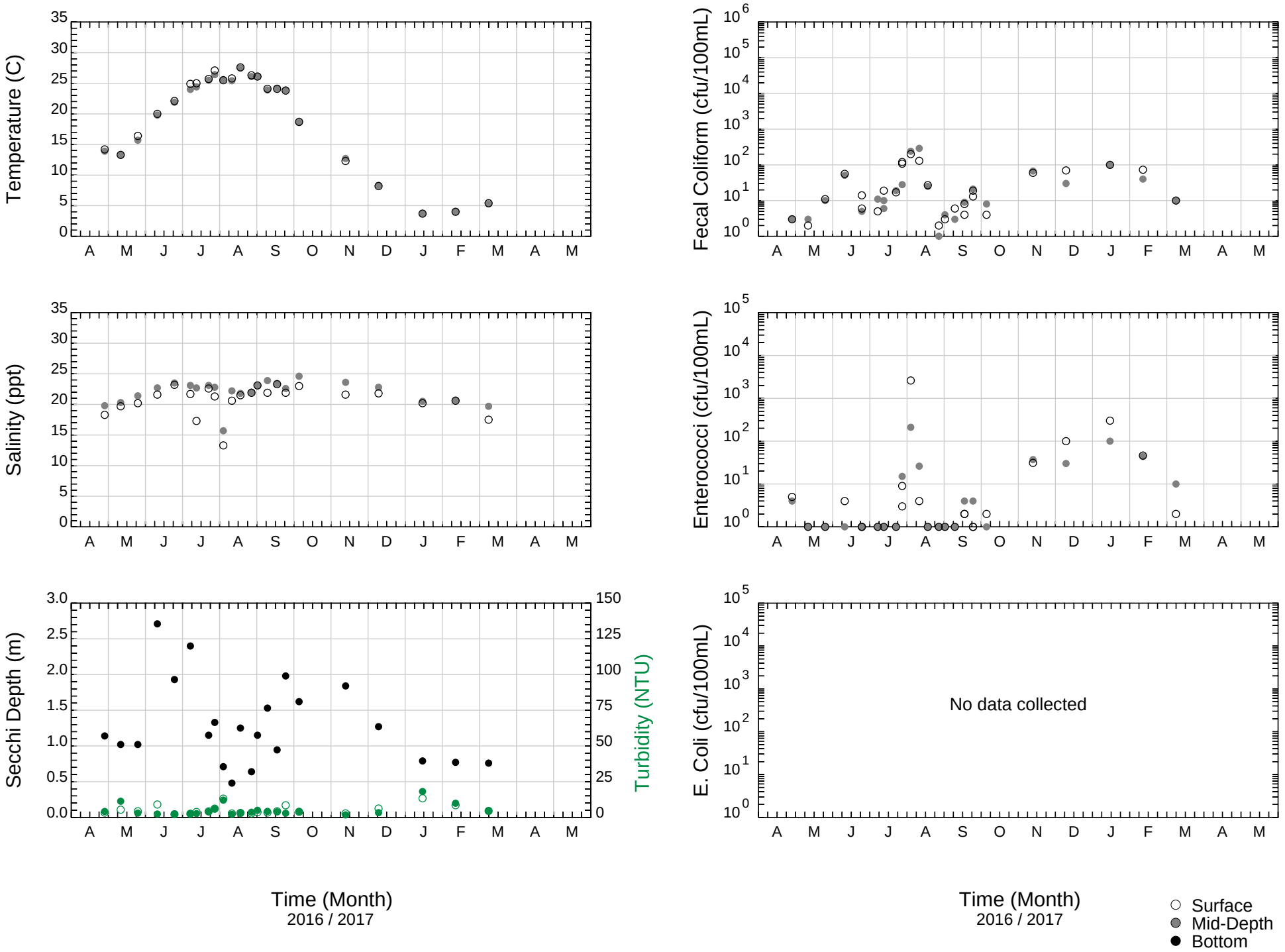
Arthur Kill, Raritan River/Bay & Tributaries, Raritan River, 26



Arthur Kill, Raritan River/Bay & Tributaries, Raritan River, 27



Arthur Kill, Raritan River/Bay & Tributaries, Raritan River, B19



Appendix D – RedZone CCTV Data

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-DO-999A_W2-D	W2-DO-999A	W2-DO-999B	SOLO	8	Vitrified Clay Pipe	5122	0000	5122	3	0	3	3
W2-27-004_W2-27-0	W2-27-004	W2-27-004A	SOLO	8	Vitrified Clay Pipe	5100	0000	5100	5	0	5	5
18PS-GR-008-7_18F	18PS-GR-008-7	18PS-GR-008-6	SOLO	8	Vitrified Clay Pipe	5122	0000	5122	3	0	3	3
W2-25-012_W2-HU-	W2-25-012	W2-HU-004AA	SOLO	8	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W4-JFK-006A_W4-J	W4-JFK-006A	W4-JFK-006	SOLO	10	Vitrified Clay Pipe		0000		4	0	4	4
W4-HI-004B_JOSO-	W4-HI-004B	JOSO-HI-004A2	SOLO	10	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W2-AN-999_W2-PA-	W2-AN-999	W2-PA-999	SOLO	12	Polyvinyl Chloride	0000	0000	0000	0	0	0	0
W4-ELD-001_W4-EL	W4-ELD-001	W4-ELD-002	SOLO	12	Vitrified Clay Pipe	2500	0000	2500	2	0	2	2
G-67-111A_G-67-11	G-67-111A	G-67-111	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
G-67-111A_G-67-11	G-67-111A	G-67-111	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
G-FI-086_G-FI-087	G-FI-086	G-FI-087	SOLO	12	Vitrified Clay Pipe	3226	0000	3226	2.25	0	2.25	2.25
D-55-006_D-55-007	D-55-006	D-55-007	SOLO	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-JFK-027B_JO	JOSO-JFK-027B	JOSO-JFK-027A	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W1-39-003_W1-39-0	W1-39-003	W1-39-004	SOLO	12	Vitrified Clay Pipe		0000		2.5	0	2.5	2.5
W3-SI-004_W3-SI-0	W3-SI-004	W3-SI-005	SOLO	12	Vitrified Clay Pipe	1100	0000	1100	1	0	1	1
W5-JFK-014A_W5-J	W5-JFK-014A	W5-JFK-014	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W5-JFK-014A_W5-J	W5-JFK-014A	W5-JFK-014	SOLO	12	Vitrified Clay Pipe	5100	0000	5100	5	0	5	5
JOSO-LI-004A_JOS	JOSO-LI-004A	JOSO-LI-004	SOLO	12	Vitrified Clay Pipe	5100	0000	5100	5	0	5	5
W4-ELD-001_W4-EL	W4-ELD-001	W4-ELD-002	SOLO	12	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
	W5-JFK-003A	JOSO-44-022B	SOLO	12	Vitrified Clay Pipe	2600	0000	2600	2	0	2	2
JOSO-47-017A_JOS	JOSO-47-017A	JOSO-47-018	SOLO	12	Steel Pipe		0000		4	0	4	4
C-65-008_C-PO-012	C-65-008	C-PO-012	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
B-56-004_B-56-003	B-56-004	B-56-003	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W1-39-002_W1-39-0	W1-39-002	W1-39-003	SOLO	12	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
D-BR-130_D-BR-131	D-BR-130	D-BR-131	SOLO	12	Vitrified Clay Pipe	5100	0000	5100	5	0	5	5
W1-39-003_W1-39-0	W1-39-003	W1-39-004	SOLO	12	Vitrified Clay Pipe	3922	0000	3922	2.82	0	2.82	2.82
E-GR-049A_E-GR-0	E-GR-049A	E-GR-049	SOLO	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
NBW-36-003A_NBW	NBW-36-003A	NBW-36-003	SOLO	8	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-LI-002A_JOS	JOSO-LI-002A	JOSO-LI-002AA	SOLO	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	18PS-HI-006E	18PS-HI-006E1	SOLO	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
E-GR-049B_E-GR-0	E-GR-049B	E-GR-049A	SOLO	8	Ductile Iron Pipe	0000	0000	0000	0	0	0	0
	SNM-2404-065	SNM-2404-064	SOLO	8	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W4-BO-001_W4-BO	W4-BO-002	W4-BO-001	SOLO	10	Vitrified Clay Pipe	2200	0000	2200	2	0	2	2
	W4-ST-004A	W4-ST-005	SOLO	10	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W4-JFK-006A_W4-J	W4-JFK-006A	W4-JFK-006	SOLO	10	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
G-65-116_G-65-117	G-65-116	G-65-117	SOLO	12	Polyvinyl Chloride	1100	0000	1100	1	0	1	1
D-BR-131_D-BR-088	D-BR-131	D-BR-088	SOLO	12	Vitrified Clay Pipe	2300	0000	2300	2	0	2	2
W4-KI-001D_W4-KI-	W4-KI-001D	W4-KI-001E	SOLO	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-LI-005AA_JO	JOSO-LI-005AA	JOSO-LI-004AA	SOLO	12	Vitrified Clay Pipe		0000		4	0	4	4
B-56-005_B-56-003	B-56-005	B-56-003	SOLO	12	Vitrified Clay Pipe	2111	0000	2111	1.5	0	1.5	1.5
B-MU-039_B-MU-04	B-MU-039	B-MU-040	SOLO	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	W4-JFK-009	W4-JFK-009A	MSI PROFILER	24	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
G-62-152B_G-62-15	G-62-152B	G-62-152A	MSI PROFILER	24	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
G-62-152A_G-62-15	G-62-152A	G-62-152	MSI PROFILER	24	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
JOSO-45-022_JOSO	JOSO-45-022	JOSO-BR-003	MSI PROFILER	24	Brick	0000	0000	0000	0	0	0	0
JOSO-45-021_JOSO	JOSO-45-021	JOSO-45-022	MSI PROFILER	24	Brick	2111	0000	2111	1.5	0	1.5	1.5
JOSO-45-020_JOSO	JOSO-45-020	JOSO-45-021	MSI PROFILER	24	Brick	2D00	0000	2D00	2	0	2	2
JOSO-45-019_JOSO	JOSO-45-019	JOSO-45-020	MSI PROFILER	24	Brick	2D00	0000	2D00	2	0	2	2
	JOSO-45-017	JOSO-45-019	MSI PROFILER	24	Brick	2G00	0000	2G00	2	0	2	2
W3-CE-010_W3-27-0	W3-CE-010	W3-27-008A	MSI PROFILER	24	Reinforced Concrete	0000	0000	0000	0	0	0	0
JOSO-45-002C_JOS	JOSO-45-002C	JOSO-45-002B	PicAx 2.1	0	Reinforced Concrete	0000	0000	0000	0	0	0	0

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-SU-040A_UH1-	UH1-SU-040A	UH1-SU-039BA	PicAx 2.1	0	Brick	3F00	0000	3F00	3	0	3	3
W1-33-013A_W1-33-	W1-33-013A	W1-33-013	PicAx 2.1	0	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-19-015_W2-19-0	W2-19-015	W2-19-014	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
14VO-MA-002A_14V	14VO-MA-002A	14VO-14-001L	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-26-003A_W3-26-	W3-26-003A	W3-26-003	PicAx 2.1	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W2-19-009_W2-19-0	W2-19-009	W2-19-010	PACP 6.0	12	Vitrified Clay Pipe	3311	0000	3311	2.5	0	2.5	2.5
18PS-MA-003B_18P	18PS-MA-003B	18PS-MA-003A	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-NY-034_W2-17-0	W2-NY-034	W2-17-013	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-17-005_UH1-17	UH1-17-005	UH1-17-004	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
D-49-012_D-49-011A	D-49-012	D-49-011A	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-CE-011_UH1-1	UH1-CE-011	UH1-12-007	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-CE-017_UH1-1	UH1-CE-017	UH1-10-007	PicAx 2.1	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W3-18-001_W3-18-0	W3-18-001	W3-18-002	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-18-003_W3-18-0	W3-18-003	W3-18-004	PACP 6.0	15	Vitrified Clay Pipe	3321	0000	3321	2.75	0	2.75	2.75
W3-22-003_W3-22-0	W3-22-003	W3-22-004	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-04-013_UH1-04	UH1-04-013	UH1-04-012	PicAx 2.1	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W1-37-018_W1-37-0	W1-37-018	W1-37-019	PicAx 2.1	18	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
W1-38-017_W1-NY-	W1-38-017	W1-NY-007	PicAx 2.1	18	Vitrified Clay Pipe	3900	0000	3900	3	0	3	3
UH1-SU-040B_UH1-	UH1-SU-040B	UH1-SU-040A	PicAx 2.1	0	Brick	3I00	0000	3I00	3	0	3	3
UH1-08-012_UH1-08	UH1-08-011	UH1-08-012	PicAx 2.1	0	Vitrified Clay Pipe	3600	0000	3600	3	0	3	3
D-BR-061_D-56-T05	D-BR-061	D-56-T056	PicAx 2.1	10	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
G-67-111A_G-67-11	G-67-111A	G-67-111	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-MA-003CA_18	18PS-MA-003CA	18PS-MA-003CB	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-22-010_W2-WE-	W2-22-010	W2-WE-012	PACP 6.0	12	Vitrified Clay Pipe		0000		3.67	0	3.67	3.67
18PS-MA-003C_18P	18PS-MA-003C	18PS-MA-003B	PicAx 2.1	12	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
18PS-MA-003D_18P	18PS-MA-003D	18PS-MA-003CA	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
G-BR-127_G-63-124	G-BR-127	G-63-124	PicAx 2.1	12	Vitrified Clay Pipe	3221	0000	3221	2.67	0	2.67	2.67
W2-WE-029_W2-WE	W2-WE-029	W2-WE-030	PicAx 2.1	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-BE-020_UH1-B	UH1-BE-020	UH1-BE-021	PicAx 2.1	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
UH1-08-010_UH1-08	UH1-08-010	UH1-08-009	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W1-35-009_W1-35-0	W1-35-009	W1-35-008	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
UH1-10-008_UH1-10	UH1-10-008	UH1-10-009A	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	UH-WE-003	UH1-WE-004	PicAx 2.1	15	Polyvinyl Chloride	3100	0000	3100	3	0	3	3
UH1-09-003_UH1-09	UH1-09-003	UH1-09-002	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-37-008_W1-BE-0	W1-37-008	W1-BE-014	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-07-006A_UH1-0	UH1-07-006A	UH1-07-005	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
UH1-06-003_UH1-SU	UH1-06-003	UH1-SU-034	PicAx 2.1	15	Vitrified Clay Pipe	3121	0000	3121	2.5	0	2.5	2.5
JOSO-45-013_JOSO	JOSO-45-013	JOSO-45-014	PicAx 2.1	15	Vitrified Clay Pipe		0000		3.25	0	3.25	3.25
W3-30-006_W3-30-0	W3-30-006	W3-30-007	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-PA-003_UH1-P	UH1-PA-003	UH1-PA-004	PicAx 2.1	15	Vitrified Clay Pipe		0000		3.07	0	3.07	3.07
	D-BR-140A	Z	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	D-50-121	Z	PicAx 2.1	15	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
JOSO-41-020_JOSO	JOSO-41-020	JOSO-41-021	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	W3-31-006	W3-31-007	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W1-33-004_W1-33-0	W1-33-004	W1-33-005	PicAx 2.1	15	Vitrified Clay Pipe	3B23	0000	3B23	2.83	0	2.83	2.83
UH1-JFK-001_UH1-J	UH1-JFK-001	UH1-JFK-002	PicAx 2.1	15	Brick	3900	0000	3900	3	0	3	3
UH1-17-001_UH1-JF	UH1-17-001	UH1-JFK-002	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W1-35-012_W1-35-0	W1-35-012	W1-35-013	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-CE-005_W3-31-0	W3-CE-005	W3-31-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-38-029_W1-PA-0	W1-38-029	W1-PA-004	PicAx 2.1	18	Vitrified Clay Pipe	3A22	0000	3A22	2.83	0	2.83	2.83
UH1-11-019_UH1-11	UH1-11-019	UH1-11-017A	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W1-37-015_W1-37-0	W1-37-015	W1-37-016	PicAx 2.1	18	Vitrified Clay Pipe	3B00	0000	3B00	3	0	3	3
W1-37-022_W1-37-0	W1-37-022	W1-37-023	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-42-020_JOSO	JOSO-42-020	JOSO-42-021	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-NY-022_UH1-N	UH1-NY-022	UH1-NY-023	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-42-003_JOSO	JOSO-42-003	JOSO-42-002	PicAx 2.1	18	Vitrified Clay Pipe	3800	0000	3800	3	0	3	3
UH1-NY-012_UH1-N	UH1-NY-012	UH1-NY-013	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-HA-011_18PS	18PS-HA-011	18PS-18-008	PicAx 2.1	24	Brick	0000	0000	0000	0	0	0	0
18PS-MA-008_18PS	18PS-MA-008	18PS-MA-009	PicAx 2.1	24	Reinforced Concrete	2100	0000	2100	2	0	2	2
18PS-18-012AA_18F	18PS-18-012AA	18PS-18-012	PicAx 2.1	24	Reinforced Concrete	0000	0000	0000	0	0	0	0
18PS-18-012B_18PS	18PS-18-012B	18PS-18-012CC	PicAx 2.1	24	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-PA-018_UH1-P	UH1-PA-018	UH1-PA-019	PicAx 2.1	24	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-45-002A_JOS	JOSO-45-002A	JOSO-45-002	PicAx 2.1	0	Reinforced Concrete	2100	0000	2100	2	0	2	2
UH1-NY-025_UH1-0	UH1-NY-025	UH1-07-020	PicAx 2.1	0	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-SI-001A_W3-SI-	W3-SI-001A	W3-SI-001	PicAx 2.1	0	Vitrified Clay Pipe	3321	0000	3321	2.75	0	2.75	2.75
18PS-GR-009EB_18	18PS-GR-009EB	18PS-GR-009EA	PicAx 2.1	0	Vitrified Clay Pipe		0000		4	0	4	4
UH1-CE-028_UH1-C	UH1-CE-028	UH1-CE-027	PicAx 2.1	0	Brick	3C21	0000	3C21	2.95	0	2.95	2.95
W3-CE-008_W3-29-0	W3-CE-008	W3-29-004	PicAx 2.1	0	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
D-52-130D_D-52-130	D-52-130D	D-52-130B	PicAx 2.1	0	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
18PS-MA-003CC_18	18PS-MA-003CC	18PS-MA-003CD	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-25-003_W3-25-0	W3-25-003	W3-25-004	PACP 6.0	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
D-52-130A_D-52-130	D-52-130A	D-52-130	PicAx 2.1	12	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
D-BR-147A_D-BR-14	D-BR-147	D-BR-147A	PicAx 2.1	12	Concrete Pipe (non-r	3B00	0000	3B00	3	0	3	3
W2-WE-015_W2-WE	W2-WE-015	W2-WE-014	PACP 6.0	12	Vitrified Clay Pipe	3800	0000	3800	3	0	3	3
JOSO-34-002_JOSO	JOSO-34-002	JOSO-34-001	PicAx 2.1	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
18PS-MA-003A_18P	18PS-MA-003A	18PS-MA-003	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
D-BR-137_D-50-122	D-BR-137	D-50-122	PicAx 2.1	12	Concrete Pipe (non-r	3A00	0000	3A00	3	0	3	3
JOSO-34-001_JOSO	JOSO-34-001	JOSO-HA-004B	PicAx 2.1	12	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
UH1-10-009_UH1-W	UH1-10-009	UH1-WE-007	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
JOSO-45-020AA_JO	JOSO-45-020AA	JOSO-45-020A	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W1-34-012_W1-34-0	W1-34-012	W1-34-013	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-44-020_JOSO	JOSO-44-020	JOSO-44-021A	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-JFK-007_W3-JF	W3-JFK-007	W3-JFK-006	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-09-001_UH1-W	UH1-09-001	UH1-WE-010	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-05-025_UH1-05	UH1-05-025	UH1-05-026	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-38-005_W1-38-0	W1-38-005	W1-38-006	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-44-005_JOSO	JOSO-44-005	JOSO-44-004	PicAx 2.1	15	Vitrified Clay Pipe	3600	0000	3600	3	0	3	3
UH1-09-005_UH1-09	UH1-09-005	UH1-09-004	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-36-013_W1-36-0	W1-36-013	W1-36-014	PicAx 2.1	15	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
UH1-17-003_UH1-17	UH1-17-003	UH1-17-002	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W1-38-006_W1-38-0	W1-38-006	W1-38-007	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
JOSO-45-015_JOSO	JOSO-45-015	JOSO-45-016	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-12-008_UH1-12	UH1-12-008	UH1-12-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-10-012_UH1-10	UH1-10-012	UH1-10-011	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-12-007_UH1-12	UH1-12-007	UH1-12-006	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W1-34-014_W1-34-0	W1-34-014	W1-34-015	PicAx 2.1	15	Vitrified Clay Pipe	3121	0000	3121	2.5	0	2.5	2.5
JOSO-35-009_JOSO	JOSO-35-009	JOSO-35-008	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-14-004_UH1-14	UH1-14-004	UH1-14-003	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-BE-021_UH1-B	UH1-BE-021	UH1-BE-022	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W2-30-008B_W2-30-	W2-30-008B	W2-30-008C	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W3-31-009_W3-CE-	W3-31-009	W3-CE-004	PicAx 2.1	15	Vitrified Clay Pipe	3223	0000	3223	2.4	0	2.4	2.4
UH1-10-003_UH1-SU	UH1-10-003	UH1-SU-023	PicAx 2.1	15	Vitrified Clay Pipe	3324	0000	3324	2.43	0	2.43	2.43

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-06-006_UH1-06	UH1-06-006	UH1-06-005	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
W1-38-006_W1-38-0	W1-38-006	W1-38-007	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W1-35-015_W1-35-0	W1-35-015	W1-35-016	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-11-022_UH1-11	UH1-11-022	UH1-11-021	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W2-30-008A_W2-30-	W2-30-008A	W2-30-008B	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
UH1-06-016_UH1-06	UH1-06-016	UH1-06-017	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-PA-019_JOSO	JOSO-PA-019	JOSO-PA-018	PicAx 2.1	15	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
W1-37-016_W1-37-0	W1-37-016	W1-37-017	PicAx 2.1	18	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
UH1-WE-014_UH1-W	UH1-WE-014	UH1-WE-015	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	W1-32-003	W1-33-013DD	PicAx 2.1	18	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
18PS-18-005AA_18P	18PS-18-005AA	18PS-18-005AB	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
14VO-02-001D_14VO	14VO-02-001D	14VO-MA-001C	PicAx 2.1	18	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
JOSO-JFK-005_JOS	JOSO-JFK-005	JOSO-JFK-006	PicAx 2.1	24	Brick	3B00	0000	3B00	3	0	3	3
JOSO-JFK-002_JOS	JOSO-JFK-002	JOSO-JFK-003	PicAx 2.1	24	Brick	3C21	0000	3C21	2.96	0	2.96	2.96
JOSO-40-007_JOSO	JOSO-40-007	JOSO-40-008	PicAx 2.1	24	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
18PS-18-012CC_18P	18PS-18-012CC	18PS-18-012BB	PicAx 2.1	24	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
D-PA-094_D-52-130	D-PA-094	D-52-130K	PicAx 2.1	0	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
W1-37-014A_W1-37-	W1-37-014A	W1-37-014	PicAx 2.1	0	Vitrified Clay Pipe	3321	0000	3321	2.75	0	2.75	2.75
B-52-T033C_B-52-T0	B-52-T033C	B-52-T033B	PicAx 2.1	0	Polyethylene	0000	0000	0000	0	0	0	0
B-52-T033D_B-52-T0	B-52-T033D	B-52-T033C	PicAx 2.1	0	Polyethylene	3100	0000	3100	3	0	3	3
JOSO-45-013G_JOS	JOSO-45-013G	JOSO-45-013F	PicAx 2.1	0	Reinforced Concrete	3B00	0000	3B00	3	0	3	3
W1-33-013B_W1-33-	W1-33-013B	W1-33-013A	PicAx 2.1	0	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	B-52-T033B	B-52-T033	PicAx 2.1	10	Polyethylene	0000	0000	0000	0	0	0	0
	18PS-18-010BD	18PS-18-010BA	PicAx 2.1	10	Polypropylene	0000	0000	0000	0	0	0	0
18PS-MA-003CB_18	18PS-MA-003CB	18PS-MA-003CC	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-26-004_W3-26-0	W3-26-004	W3-26-005	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-HA-004B_JOS	JOSO-HA-004B	JOSO-HA-004A	PicAx 2.1	12	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
D-BR-138_D-50-122	D-BR-138	D-50-122	PicAx 2.1	12	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
W2-26-001A_W2-26-	W2-26-001A	W2-26-001	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	JOSO-36-010	Z	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-36-008_W1-36-0	W1-36-008	W1-36-009	PicAx 2.1	15	Vitrified Clay Pipe	3600	0000	3600	3	0	3	3
UH1-17-006_UH1-17	UH1-17-006	UH1-17-005	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-21-005_W3-KE-0	W3-21-005	W3-KE-009	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-CE-008_W3-CE-	W3-CE-008	W3-CE-007	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
UH1-BE-022_UH1-06	UH1-BE-022	UH1-06-011	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-11-020_UH1-NY	UH1-11-020	UH1-NY-013	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-MO-001_UH1-M	UH1-MO-001	UH1-MO-002	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-NY-021_UH1-N	UH1-NY-021	UH1-NY-022	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-38-009_W1-38-0	W1-38-009	W1-38-010	PicAx 2.1	15	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
UH1-06-001_UH1-JF	UH1-06-001	UH1-JFK-028	PicAx 2.1	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W2-WE-019_W2-WE	W2-WE-019	W2-WE-018	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-07-001_UH1-JF	UH1-07-001	UH1-JFK-025	PicAx 2.1	15	Vitrified Clay Pipe	3222	0000	3222	2.5	0	2.5	2.5
UH1-17-004_UH1-KE	UH1-17-004	UH1-KE-001	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	W2-WE-020	W2-WE-019	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-08-005_UH1-08	UH1-08-005	UH1-08-004A	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-45-014_JOSO	JOSO-45-014	JOSO-45-015	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-09-004_UH1-BE	UH1-09-004	UH1-BE-016	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-47-017_JOSO	JOSO-47-017	JOSO-47-016	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-12-006_UH1-12	UH1-12-006	UH1-12-005	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-41-022_JOSO	JOSO-41-022	JOSO-41-023	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W2-WE-031_W2-WE	W2-WE-031	W2-WE-032	PicAx 2.1	15	Vitrified Clay Pipe	3322	0000	3322	2.6	0	2.6	2.6

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
D-49-012_D-49-011A	D-49-012	D-49-011A	PicAx 2.1	15	Reinforced Plastic Pi	0000	0000	0000	0	0	0	0
W1-35-016_W1-35-0	W1-35-016	W1-35-017	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-CE-009_UH1-C	UH1-CE-009	UH1-CE-010	PicAx 2.1	15	Vitrified Clay Pipe		0000		3.14	0	3.14	3.14
JOSO-45-020AA_JO	JOSO-45-020AA	JOSO-45-020A	PicAx 2.1	15	Vitrified Clay Pipe	3121	0000	3121	2.5	0	2.5	2.5
UH1-11-018_UH1-11	UH1-11-018	UH1-11-017	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-03-012A_UH1-0	UH1-03-012A	UH1-03-012	PicAx 2.1	18	Reinforced Concrete	0000	0000	0000	0	0	0	0
18PS-18-005BD_18P	18PS-18-005BD	18PS-18-005A	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
18PS-18-005A_18PS	18PS-18-005A	18PS-18-005AA	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-42-002_JOSO	JOSO-42-002	JOSO-42-001	PicAx 2.1	18	Vitrified Clay Pipe	3500	0000	3500	3	0	3	3
	18PS-MA-007A	18PS-MA-008	PicAx 2.1	24	Reinforced Concrete	0000	0000	0000	0	0	0	0
JOSO-JFK-007_JOS	JOSO-JFK-007	JOSO-JFK-008	PicAx 2.1	24	Brick	5346	0000	5346	3.44	0	3.44	3.44
JOSO-JFK-006_JOS	JOSO-JFK-006	JOSO-JFK-007	PicAx 2.1	24	Brick	3D00	0000	3D00	3	0	3	3
UH1-02-001_UH1-02	UH1-02-001	UH1-02-001A	PicAx 2.1	0	Brick	3123	0000	3123	2.25	0	2.25	2.25
JOSO-45-013B_JOS	JOSO-45-013B	JOSO-45-013A	PicAx 2.1	0	Reinforced Concrete	3100	0000	3100	3	0	3	3
W1-34-015B_W1-34-	W1-34-015B	W1-34-015A	PicAx 2.1	0	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
UH1-04-001_UH1-C	UH1-04-001	UH1-CE-027	PicAx 2.1	0	Brick	3B00	0000	3B00	3	0	3	3
D-49-011AA_D-49-0	D-49-011AA	D-49-011A	PicAx 2.1	0	Polyvinyl Chloride	0000	0000	0000	0	0	0	0
JOSO-45-013A_JOS	JOSO-45-013A	JOSO-45-013	PicAx 2.1	0	Reinforced Concrete	3300	0000	3300	3	0	3	3
D-52-130BB_D-52-1	D-52-130BB	D-52-130B	PicAx 2.1	0	Concrete Pipe (non-r	3200	0000	3200	3	0	3	3
W1-NM-001A_W1-N	W1-NM-001A	W1-NM-002	PicAx 2.1	12	Reinforced Concrete	3100	0000	3100	3	0	3	3
W3-26-003A_W3-26-	W3-26-003A	W3-26-003	PicAx 2.1	12	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
B-56-004_B-56-003	B-56-004	B-56-003	PicAx 2.1	12	Concrete Pipe (non-r		0000		3.5	0	3.5	3.5
W2-16-019_W2-16-0	W2-16-019	W2-16-018	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-35-009_JOSO	JOSO-35-009	JOSO-35-008	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-15-002_UH1-15	UH1-15-002	UH1-15-001	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-36-010_W1-36-0	W1-36-010	W1-36-011	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-44-001_JOSO	JOSO-44-001	JOSO-JFK-011	PicAx 2.1	15	Vitrified Clay Pipe		0000		3	0	3	3
UH1-CE-025_UH1-C	UH1-CE-025	UH1-CE-026	PicAx 2.1	15	Vitrified Clay Pipe	3621	0000	3621	2.86	0	2.86	2.86
UH1-08-006_UH1-08	UH1-08-006	UH1-08-005	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
JOSO-BE-005_JOSO	JOSO-BE-005	JOSO-BE-006	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
UH1-09-009_UH1-09	UH1-09-009	UH1-09-008	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	UH1-12-012	UH1-WE-003	PicAx 2.1	15	Polyvinyl Chloride	3600	0000	3600	3	0	3	3
W2-MO-005_W2-MO	W2-MO-005	W2-MO-006	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-34-003_W1-BE-0	W1-34-003	W1-BE-006	PicAx 2.1	15	Vitrified Clay Pipe	3721	0000	3721	2.88	0	2.88	2.88
W3-22-005_W3-KE-0	W3-22-005	W3-KE-007	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-PA-017_JOSO	JOSO-PA-017	JOSO-PA-016	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-11-001_UH1-JF	UH1-11-001	UH1-JFK-017	PicAx 2.1	15	Vitrified Clay Pipe	3500	0000	3500	3	0	3	3
UH1-14-005_UH1-14	UH1-14-005	UH1-14-004	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	JOSO-44-019	JOSO-44-019A	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
	W1-33-004	W1-NY-011	PicAx 2.1	15	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
W3-31-003_W3-SU-0	W3-31-003	W3-SU-004	PicAx 2.1	15	Vitrified Clay Pipe	3600	0000	3600	3	0	3	3
UH1-11-010_UH1-W	UH1-11-010	UH1-WE-005	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W3-18-002_W3-18-0	W3-18-002	W3-18-003	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W1-33-001_W1-33-0	W1-33-001	W1-33-002	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-05-027_UH1-PA	UH1-05-027	UH1-PA-022	PicAx 2.1	15	Vitrified Clay Pipe		0000		4	0	4	4
UH1-CE-010_UH1-C	UH1-CE-010	UH1-CE-011	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
D-50-001_D-BR-145	D-50-001	D-BR-145	PicAx 2.1	15	Concrete Pipe (non-r	3A22	0000	3A22	2.83	0	2.83	2.83
W3-22-001_W3-22-0	W3-22-001	W3-22-002	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-12-008_UH1-12	UH1-12-008	UH1-12-009	PicAx 2.1	15	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
UH1-12-002_UH1-12	UH1-12-002	UH1-12-001	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-38-005_W1-38-0	W1-38-005	W1-38-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
JOSO-42-013_JOSO	JOSO-42-013	JOSO-42-014	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-18-005AC_18P	18PS-18-005AC	18PS-18-005	PicAx 2.1	18	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
UH1-07-021_UH1-07	UH1-07-021	UH1-07-022	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-WE-010_UH1-W	UH1-WE-010	UH1-WE-011	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-42-012_JOSO	JOSO-42-012	JOSO-42-013	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-BE-020_JOSO	JOSO-BE-020	JOSO-BE-021	PicAx 2.1	18	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
UH1-NY-017_UH1-N	UH1-NY-017	UH1-NY-018	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-12-021_UH1-12	UH1-12-021	UH1-12-020	PACP 6.0	21	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	W1-33-013	W1-33-016	PicAx 2.1	24	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
JOSO-JFK-001_JOS	JOSO-JFK-001	JOSO-JFK-002	PicAx 2.1	24	Brick	3D00	0000	3D00	3	0	3	3
18PS-18-011A_18PS	18PS-18-011A	18PS-18-011	PicAx 2.1	24	Vitrified Clay Pipe	3C00	0000	3C00	3	0	3	3
	D-52-130C	D-52-130A	PicAx 2.1	24	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
D-52-130K_D-52-130	D-52-130K	D-52-130J	PicAx 2.1	0	Concrete Pipe (non-r	3A00	0000	3A00	3	0	3	3
UH1-CE-027_UH1-S	UH1-CE-027	UH1-SU-040B	PicAx 2.1	0	Brick	3F00	0000	3F00	3	0	3	3
D-52-130B_D-52-130	D-52-130B	D-52-130A	PicAx 2.1	0	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
JOSO-45-013D_JOS	JOSO-45-013D	JOSO-45-013C	PicAx 2.1	0	Reinforced Concrete	0000	0000	0000	0	0	0	0
W2-23-013_W2-23-0	W2-23-013	W2-23-014	PACP 6.0	8	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
D-BR-143_D-BR-142	D-BR-143	D-BR-142	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-MA-003CD_18	18PS-MA-003CD	18PS-MA-003C	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W1-36-010B_W1-36-	W1-36-010B	W1-36-010A	PicAx 2.1	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	W1-34-015A	Z	PicAx 2.1	12	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
B-56-004_B-56-003	B-56-004	B-56-003	PicAx 2.1	12	Not known	3B00	0000	3B00	3	0	3	3
W1-36-010B_W1-36-	W1-36-010B	W1-36-010A	PicAx 2.1	12	Vitrified Clay Pipe	3C11	0000	3C11	2.91	0	2.91	2.91
	W3-31-006	W3-31-007	PicAx 2.1	15	Vitrified Clay Pipe	3500	0000	3500	3	0	3	3
JOSO-44-015_JOSO	JOSO-44-015	JOSO-44-016	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-45-009_JOSO	JOSO-45-009	JOSO-45-010	PicAx 2.1	15	Brick	3200	0000	3200	3	0	3	3
UH1-08-004_UH1-08	UH1-08-004	UH1-08-003	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-08-004A_UH1-0	UH1-08-004A	UH1-08-004	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
NBW-37-006_NBW-3	NBW-37-006	NBW-37-006A	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W3-CE-005_W3-31-0	W3-CE-005	W3-31-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-36-004_W1-36-0	W1-36-004	W1-36-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-14-010_UH1-14	UH1-14-010	UH1-14-009A	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-17-007_UH1-17	UH1-17-007	UH1-17-006	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-36-001_W1-BE-0	W1-36-001	W1-BE-012	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-30-008A_W2-30-	W2-30-008A	W2-30-008B	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
UH1-06-018_UH1-PA	UH1-06-018	UH1-PA-019	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-14-009A_UH1-1	UH1-14-009A	UH1-14-009	PicAx 2.1	15	Vitrified Clay Pipe	3321	0000	3321	2.75	0	2.75	2.75
UH1-16-002_UH1-16	UH1-16-002	UH1-16-001	PicAx 2.1	15	Vitrified Clay Pipe	3C00	0000	3C00	3	0	3	3
JOSO-PA-011_JOSO	JOSO-PA-011	JOSO-PA-012	PicAx 2.1	15	Not known	3B11	0000	3B11	2.88	0	2.88	2.88
JOSO-41-020_JOSO	JOSO-41-020	JOSO-41-021	PicAx 2.1	15	Vitrified Clay Pipe	3500	0000	3500	3	0	3	3
UH1-09-006_UH1-09	UH1-09-006	UH1-09-005	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
JOSO-PA-012_JOSO	JOSO-PA-012	JOSO-PA-013	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
W1-36-010_W1-36-0	W1-36-010	W1-36-011	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
14VO-MA-002C_14V	14VO-MA-002C	14VO-MA-002	PACP 6.0	15	Asbestos Cement	3816	0000	3816	2.14	0	2.14	2.14
W1-38-009_W1-38-0	W1-38-009	W1-38-010	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-CE-016_UH1-C	UH1-CE-016	UH1-CE-017	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-09-005_UH1-09	UH1-09-005	UH1-09-004	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
D-49-014_D-PA-011	D-PA-011B	D-49-014	PicAx 2.1	15	Vitrified Clay Pipe	1100	0000	1100	1	0	1	1
UH1-CE-023_UH1-0	UH1-CE-023	UH1-06-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-18-001_W3-18-0	W3-18-001	W3-18-002	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W1-35-011_W1-35-0	W1-35-011	W1-35-012	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
18PS-18-005BB_18F	18PS-18-005BB	18PS-18-005BC	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-42-019_JOSO	JOSO-42-019	JOSO-42-020	PicAx 2.1	18	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
18PS-18-005BC_18F	18PS-18-005BC	18PS-18-005BD	PicAx 2.1	18	Vitrified Clay Pipe	3600	0000	3600	3	0	3	3
UH1-11-019_UH1-11	UH1-11-019	UH1-11-017A	PicAx 2.1	18	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
18PS-18-001_18PS-	18PS-18-001	18PS-18-002	PicAx 2.1	24	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
18PS-18-012B_18PS	18PS-18-012B	18PS-18-012CC	PicAx 2.1	24	Polyvinyl Chloride	3100	0000	3100	3	0	3	3
18PS-18-012CC_18F	18PS-18-012CC	18PS-18-012BB	PicAx 2.1	24	Reinforced Concrete	3100	0000	3100	3	0	3	3
D-52-130B_D-52-130	D-52-130B	D-52-130A	PicAx 2.1	0	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
JOSO-45-002B_JOS	JOSO-45-002B	JOSO-45-002A	PicAx 2.1	0	Reinforced Concrete	3300	0000	3300	3	0	3	3
JOSO-45-013G_JOS	JOSO-45-013G	JOSO-45-013F	PicAx 2.1	0	Reinforced Concrete	3100	0000	3100	3	0	3	3
W1-34-015B_W1-34-	W1-34-015B	W1-34-015A	PicAx 2.1	0	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
D-52-130I_D-52-130	D-52-130I	D-52-130H	PicAx 2.1	0	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
18PS-18-010BB_18F	18PS-18-010BB	18PS-18-010BA	PicAx 2.1	0	Polyethylene	0000	0000	0000	0	0	0	0
	Z	G-PA-025	PicAx 2.1	10	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	18PS-18-010BD	18-PS-18-010BC	PicAx 2.1	10	Polypropylene	0000	0000	0000	0	0	0	0
G-DE-119A_G-DE-1	G-DE-119A	G-DE-119	PicAx 2.1	12	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
	W2-26-001	W2-26-001B	PACP 6.0	12	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W2-WE-005_W2-WE	W2-WE-005	W2-WE-004	PACP 6.0	12	Vitrified Clay Pipe	5331	0000	5331	4.5	0	4.5	4.5
G-DE-119_G-DE-120	G-DE-119	G-DE-120	PicAx 2.1	12	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
B-56-005_B-56-003	B-56-005	B-56-003	PicAx 2.1	12	Concrete Pipe (non-r	3221	0000	3221	2.67	0	2.67	2.67
W2-24-010_W2-24-0	W2-24-011	W2-24-010	PACP 6.0	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-44-003_JOSO	JOSO-44-003	JOSO-44-002	PicAx 2.1	15	Vitrified Clay Pipe	3A21	0000	3A21	2.93	0	2.93	2.93
UH1-09-002_UH1-09	UH1-09-002	UH1-09-001	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-BE-026_UH1-04	UH1-BE-026	UH1-04-009	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
UH1-05-026_UH1-05	UH1-05-026	UH1-05-027	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W3-SI-007_W3-SU-0	W3-SI-007	W3-SU-002	PicAx 2.1	15	Vitrified Clay Pipe	2200	0000	2200	2	0	2	2
UH1-06-017_UH1-06	UH1-06-017	UH1-06-018	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W2-WE-016_W2-21-	W2-WE-016	W2-21-009	PicAx 2.1	15	Vitrified Clay Pipe	2500	0000	2500	2	0	2	2
UH1-17-001_UH1-JF	UH1-17-001	UH1-JFK-002	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-33-008_W1-33-0	W1-33-008	W1-33-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
D-49-013_D-49-012	D-49-013	D-49-012	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-MO-006_UH1-1	UH1-MO-006	UH1-12-012	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-09-010_UH1-09	UH1-09-010	UH1-09-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-34-011_W1-34-0	W1-34-011	W1-34-010	PicAx 2.1	15	Vitrified Clay Pipe	3621	0000	3621	2.86	0	2.86	2.86
UH1-15-001_UH1-KE	UH1-15-001	UH1-KE-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	UH1-14-018	UH1-NY-003	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-16-003_UH1-KE	UH1-16-003	UH1-KE-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W1-34-013_W1-34-0	W1-34-013	W1-34-014	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
UH1-15-003_UH1-15	UH1-15-003	UH1-15-002	PicAx 2.1	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
W2-19-005_W2-19-0	W2-19-005	W2-19-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	UH1-05-024	UH1-05-025	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-NY-029_UH1-N	UH1-NY-029	UH1-NY-030	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-CE-018_UH1-C	UH1-CE-018	UH1-CE-019	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-36-009_JOSO	JOSO-36-008	JOSO-36-009	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-NY-028_UH1-0	UH1-NY-028	UH1-06-015	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
	D-49-011A	D-49-010	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-11-010_UH1-W	UH1-11-010	UH1-WE-005	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
W1-35-006_W1-35-0	W1-35-006	W1-35-005	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-47-018_JOSO	JOSO-47-018	JOSO-47-017	PicAx 2.1	15	Vitrified Clay Pipe		0000		4	0	4	4
UH1-05-025_UH1-05	UH1-05-025	UH1-05-026	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
UH1-07-008_UH1-07	UH1-07-008	UH1-07-007	PicAx 2.1	15	Vitrified Clay Pipe	3800	0000	3800	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W1-38-022_W1-38-0	W1-38-022	W1-38-023	PicAx 2.1	18	Vitrified Clay Pipe	3211	0000	3211	2.33	0	2.33	2.33
18PS-18-005BA_18F	18PS-18-005BA	18PS-18-005BB	PicAx 2.1	18	Vitrified Clay Pipe	3600	0000	3600	3	0	3	3
W1-38-018_W1-38-0	W1-38-018	W1-38-017	PicAx 2.1	18	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
18PS-18-005AC_18F	18PS-18-005AC	18PS-18-005	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
JOSO-42-012_JOSO	JOSO-42-012	JOSO-42-013	PicAx 2.1	18	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-MA-006A_18P	18PS-MA-006A	18PS-MA-006B	PicAx 2.1	24	Ductile Iron Pipe	0000	0000	0000	0	0	0	0
18PS-MA-009_18PS	18PS-MA-009	18PS-MA-010	PicAx 2.1	24	Ductile Iron Pipe	0000	0000	0000	0	0	0	0
	JOSO-JFK-003A	JOSO-JFK-004	PicAx 2.1	24	Brick	3B11	0000	3B11	2.9	0	2.9	2.9
18PS-18-012BB_18F	18PS-18-012BB	18PS-18-012AA	PicAx 2.1	24	Reinforced Concrete	0000	0000	0000	0	0	0	0
W3-20-001A_W3-20-	W3-20-001A	W3-20-001	PACP 6.0	8	Polyvinyl Chloride	3300	0000	3300	3	0	3	3
G-BR-127_G-63-124	G-BR-127	G-63-124	PicAx 2.1	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-16-008_UH1-16	UH1-16-008	UH1-16-007	PACP 6.0	12	Vitrified Clay Pipe		0000		2.95	0	2.95	2.95
W2-WE-030_W2-16-	W2-WE-030	W2-16-004	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-BE-024_W2-BE-	W2-BE-024	W2-BE-023	PACP 6.0	12	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W3-SU-026_W3-SU-	W3-SU-026	W3-SU-025	PACP 6.0	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W2-BE-030_W2-BE-	W2-BE-030	W2-BE-029	PACP 6.0	12	Vitrified Clay Pipe	3321	0000	3321	2.75	0	2.75	2.75
W2-BE-001_W2-BE-	W2-BE-001	W2-BE-002	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
UH1-14-012_UH1-14	UH1-14-012	UH1-14-013	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
JOSO-45-020A_JOS	JOSO-45-020A	JOSO-45-020	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-18-002_W3-18-0	W3-18-002	W3-18-003	PACP 6.0	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
	UH1-14-007	UH1-14-005	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-CE-019_UH1-C	UH1-CE-019	UH1-CE-020	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-13-002_UH1-13	UH1-13-002	UH1-13-001	PACP 6.0	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W3-KE-020_W3-KE-	W3-KE-020	W3-KE-019	PACP 6.0	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W3-23-004_W3-23-0	W3-23-004	W3-23-003	PACP 6.0	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W3-30-006_W3-30-0	W3-30-006	W3-30-007	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
W2-MO-003A_W2-M	W2-MO-003A	W2-MO-003AA	PACP 6.0	15	Vitrified Clay Pipe	2111	0000	2111	1.5	0	1.5	1.5
W1-38-023_W1-38-0	W1-38-023	W1-38-024	PicAx 2.1	18	Vitrified Clay Pipe	3D22	0000	3D22	2.94	0	2.94	2.94
W1-38-017_W1-NY-0	W1-38-017	W1-NY-007	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-13-017_UH1-13	UH1-13-017	UH1-13-018	PACP 6.0	20	Brick		0000		3.03	0	3.03	3.03
UH1-13-018_UH1-13	UH1-13-018	UH1-13-019	PACP 6.0	20	Brick		0000		3.06	0	3.06	3.06
UH1-JFK-006_UH1-J	UH1-JFK-006	UH1-JFK-007	PACP 6.0	20	Brick	5100	0000	5100	5	0	5	5
UH1-12-018_UH1-12	UH1-12-018	UH1-12-017	PACP 6.0	20	Brick		0000		3.25	0	3.25	3.25
	JOSO-JFK-003	JOSO-JFK-003A	PicAx 2.1	24	Brick	3C21	0000	3C21	2.95	0	2.95	2.95
JOSO-JFK-005_JOS	JOSO-JFK-005	JOSO-JFK-006	PicAx 2.1	24	Brick	3400	0000	3400	3	0	3	3
UH1-PA-023_UH1-P	UH1-PA-023	UH1-PA-024	PicAx 2.1	24	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W3-CE-017_W3-CE-	W3-CE-017	W3-CE-016	PACP 6.0	27	Brick	3200	0000	3200	3	0	3	3
W3-CE-016_W3-CE-	W3-CE-016	W3-CE-015	PACP 6.0	27	Brick	3221	0000	3221	2.67	0	2.67	2.67
W3-CE-013_W3-CE-	W3-CE-013	W3-CE-012	PACP 6.0	27	Brick	3200	0000	3200	3	0	3	3
W2-25-013_W2-25-0	W2-25-013	W2-25-013A	PicAx 2.1	8	Brick	3A00	0000	3A00	3	0	3	3
W4-KI-003AB_W4-K	W4-KI-003AB	W4-KI-003A	PicAx 2.1	8	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W2-26-008_W2-26-0	W2-26-008	W2-26-007	PACP 6.0	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
PANYNJ-PA-001C_F	PANYNJ-PA-001C	PANYNJ-PA-001D	PicAx 2.1	8	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
	18PS-18-010BA	18PS-18-010BA_1	PicAx 2.1	10	Ductile Iron Pipe	0000	0000	0000	0	0	0	0
W2-PA-012_W2-PA-	W2-PA-012	W2-PA-012A	PACP 6.0	12	Vitrified Clay Pipe		0000		3.33	0	3.33	3.33
W2-26-007_W2-NY-0	W2-26-007	W2-NY-011	PACP 6.0	12	Vitrified Clay Pipe	3800	0000	3800	3	0	3	3
W2-BE-029_W2-BE-	W2-BE-029	W2-BE-028	PACP 6.0	12	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
HWF-HA-001B_HWF	HWF-HA-001B	HWF-HA-001A	PicAx 2.1	12	Polyvinyl Chloride	0000	0000	0000	0	0	0	0
W2-BE-028_W2-BE-	W2-BE-028	W2-BE-027	PACP 6.0	12	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
H2-WA-012A_H2-WA	H2-WA-012A	H2-WA-011	PicAx 2.1	12	Reinforced Concrete	3100	0000	3100	3	0	3	3
18PS-18-012DB_18F	18PS-18-012DB	18PS-18-012DA	PicAx 2.1	12	Vitrified Clay Pipe	3B00	0000	3B00	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-23-001_W2-23-0	W2-23-001	W2-23-002	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	W3-24-001	W3-24-001A	PACP 6.0	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
	H5-WA-356	H5-WA-356A	PicAx 2.1	15	Brick	3523	0000	3523	2.63	0	2.63	2.63
	H5-WA-358	H5-WA-356	PicAx 2.1	15	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
H6-WA-010_H6-WA-	H6-WA-010	H6-WA-011	PicAx 2.1	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
H6-WA-001_H6-WA-	H6-WA-001	H6-WA-002	PicAx 2.1	15	Vitrified Clay Pipe	3B00	0000	3B00	3	0	3	3
D-52-130J_D-52-130	D-52-130J	D-52-130I	PicAx 2.1	15	Reinforced Concrete	0000	0000	0000	0	0	0	0
	W3-18-010	W3-KE-009	PACP 6.0	15	Vitrified Clay Pipe	3400	0000	3400	3	0	3	3
H6-WA-006_H6-WA-	H6-WA-006	H6-WA-007	PicAx 2.1	15	Vitrified Clay Pipe	3311	0000	3311	2.5	0	2.5	2.5
H6-WA-001_H6-WA-	H6-WA-001	H6-WA-002	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W2-26-001_W2-26-0	W2-26-001	W2-26-002	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
H6-WA-003_H6-WA-	H6-WA-003	H6-WA-004	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
H6-WA-004_H6-WA-	H6-WA-004	H6-WA-005	PicAx 2.1	18	Vitrified Clay Pipe	3E11	0000	3E11	2.94	0	2.94	2.94
W4-JFK-005_W4-JF	W4-JFK-005	W4-JFK-006	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
H6-WA-002_H6-WA-	H6-WA-002	H6-WA-003	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
H6-WA-003_H6-WA-	H6-WA-003	H6-WA-004	PicAx 2.1	18	Vitrified Clay Pipe	3121	0000	3121	2.5	0	2.5	2.5
UH1-13-019_UH1-N	UH1-13-019	UH1-NY-005	PACP 6.0	20	Brick	5131	0000	5131	4	0	4	4
UH1-12-017_UH1-12	UH1-12-017	UH1-12-016	PACP 6.0	20	Brick		0000		4	0	4	4
UH1-NY-011_UH1-1	UH1-NY-011	UH1-12-018	PACP 6.0	20	Brick	2100	0000	2100	2	0	2	2
W3-31-006_W3-31-0	W3-31-006	W3-31-005	PicAx 2.1	6	Vitrified Clay Pipe	3121	0000	3121	2.5	0	2.5	2.5
W3-31-001_W3-31-0	W3-31-001	W3-31-002	PicAx 2.1	6	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W4-HI-006EA_W4-H	W4-HI-006EA	W4-HI-006EB	PicAx 2.1	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-27-004AA_W2-2	W2-27-004AA	W2-27-003	PACP 6.0	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	PANYNJ-PA-001DA	PANYNJ-PA-001DAE	PicAx 2.1	8	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W4-KI-003AB_W4-K	W4-KI-003AB	W4-KI-003A	PicAx 2.1	8	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
W2-25-013B_W2-25-	W2-25-013B	W2-25-013C	PicAx 2.1	8	Brick		0000		4	0	4	4
	18PS-18-010BA_4	18PS-18-010BA_5	PicAx 2.1	10	Ductile Iron Pipe	0000	0000	0000	0	0	0	0
	18PS-18-010BA_3	18PS-18-010BA_4	PicAx 2.1	10	Polyvinyl Chloride	3100	0000	3100	3	0	3	3
	18PS-18-010BA_5	18PS-18-010B	PicAx 2.1	10	Polyvinyl Chloride	3100	0000	3100	3	0	3	3
	18PS-18-010BA_2	18PS-18-010BA_3	PicAx 2.1	10	Ductile Iron Pipe	0000	0000	0000	0	0	0	0
	18PS-18-010BA_1	18PS-18-010BA_2	PicAx 2.1	10	Polyvinyl Chloride	0000	0000	0000	0	0	0	0
18PS-18-012DB_18	18PS-18-012DB	18PS-18-012DA	PicAx 2.1	12	Vitrified Clay Pipe	3700	0000	3700	3	0	3	3
W3-SU-026_W3-SU-	W3-SU-026	W3-SU-025	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	W2-BE-026	W2-BE-013A	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
H1-WA-011_H1-WA-	H1-WA-011	H1-WA-010	PicAx 2.1	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-WE-008A_W2-W	W2-WE-008A	W2-WE-008	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	W3-GR-002C	W3-GR-001	PicAx 2.1	12	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W3-GR-002C_W3-G	W3-GR-002C	W3-GR-002B	PicAx 2.1	12	Reinforced Concrete	3100	0000	3100	3	0	3	3
W3-GR-002B_W3-G	W3-GR-002B	W3-GR-002A	PicAx 2.1	12	Reinforced Concrete	3300	0000	3300	3	0	3	3
W2-23-002_W2-WE-	W2-23-002	W2-WE-008A	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-PA-010_W2-26-0	W2-PA-010	W2-26-009A	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W2-22-004_W2-22-0	W2-22-004	W2-22-005	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-18-012DC_18	18PS-18-012DC	18PS-18-012DB	PicAx 2.1	12	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
D-PA-011B_D-PA-01	D-PA-011B	D-PA-011A	PicAx 2.1	12	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
	W2-PA-009	W2-26-008	PACP 6.0	12	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
18PS-18-012A_18PS	18PS-18-012A	18PS-18-012	PicAx 2.1	15	Reinforced Concrete	3100	0000	3100	3	0	3	3
W3-20-003_W3-KE-0	W3-20-003	W3-KE-012	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
W3-23-003_W3-KE-0	W3-23-003	W3-KE-005	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
PANYNJ-PA-001AB_	PANYNJ-PA-001AB	PANYNJ-PA-001	PicAx 2.1	15	Vitrified Clay Pipe	2100	0000	2100	2	0	2	2
	H5-HW-552	H5-HW-548	PicAx 2.1	15	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
H6-GA-007_H6-GA-0	H6-GA-007	H6-GA-008	PicAx 2.1	15	Vitrified Clay Pipe	3411	0000	3411	2.6	0	2.6	2.6

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W3-26-005_W3-CE-0	W3-26-005	W3-CE-012	PACP 6.0	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
H5-HW-544_H5-HW-	H5-HW-544	H5-HW-542	PicAx 2.1	15	Vitrified Clay Pipe	3D00	0000	3D00	3	0	3	3
	H6-HU-003	H6-HU-002	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
H6-GA-008_H6-14-0	H6-GA-008	H6-14-003	PicAx 2.1	15	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	H6-11-580	H5-PA-582	PicAx 2.1	15	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
H5-HW-548_H5-HW-	H5-HW-548	H5-HW-546A	PicAx 2.1	15	Vitrified Clay Pipe	3411	0000	3411	2.6	0	2.6	2.6
	H5-HW-552	H5-HW-548	PicAx 2.1	15	Vitrified Clay Pipe	3113	0000	3113	1.5	0	1.5	1.5
H6-PA-586_H6-PA-5	H6-PA-584	H6-PA-586	PicAx 2.1	15	Vitrified Clay Pipe	3A00	0000	3A00	3	0	3	3
W4-HI-006B_W4-HI-	W4-HI-006B	W4-HI-006A	PicAx 2.1	18	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
W5-JFK-006_W5-JF	W5-JFK-006	W5-JFK-007	PicAx 2.1	18	Vitrified Clay Pipe	3200	0000	3200	3	0	3	3
H5-CL-652_H5-11-6	H5-CL-652	H5-11-640B	PicAx 2.1	18	Reinforced Concrete	0000	0000	0000	0	0	0	0
UH1-12-018_UH1-12	UH1-12-018	UH1-12-017	PACP 6.0	20	Brick	0000	0000	0000	0	0	0	0
UH1-BE-007_UH1-B	UH1-BE-007	UH1-BE-008	PACP 6.0	20	Brick	0000	0000	0000	0	0	0	0
W1-AU-060_W1-AU-	W1-AU-060	W1-AU-050	PicAx 2.1	24	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
H5-12-786_H5-MO-7	H5-12-786	H5-MO-784	PicAx 2.1	24	Vitrified Clay Pipe	3A21	0000	3A21	2.92	0	2.92	2.92
H5-CL-658_H5-CL-6	H5-CL-658	H5-CL-656	PicAx 2.1	24	Brick	3700	0000	3700	3	0	3	3
W4-HI-006_W4-HI-0	W4-HI-006	W4-HI-006A	PicAx 2.1	24	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
H5-CL-656_H5-CL-6	H5-CL-656	H5-CL-654	PicAx 2.1	24	Brick	3B21	0000	3B21	2.95	0	2.95	2.95
H5-CL-660_H5-CL-6	H5-CL-660	H5-CL-658	PicAx 2.1	24	Brick	3A00	0000	3A00	3	0	3	3
H5-CL-662_H5-CL-6	H5-CL-662	H5-CL-660	PicAx 2.1	24	Brick	3800	0000	3800	3	0	3	3
	W2-GR-004	W2-GR004	MSI PROFILER	45	Brick	2A00	0000	2A00	2	0	2	2
	18PS-GR-009E-A	18PS-GR-008	MSI PROFILER	45	Brick	2800	0000	2800	2	0	2	2
18PS-GR-009A1_18	18PS-GR-009A1	18PS-GR-009A	MSI PROFILER	45	Brick	2A00	0000	2A00	2	0	2	2
18PS-GR-009B_18P	18PS-GR-009B	18PS-GR-009C	MSI PROFILER	45	Brick	2B00	0000	2B00	2	0	2	2
18PS-GR-007_18PS	18PS-GR-007	18PS-GR-007AAB	MSI PROFILER	45	Brick	2A00	0000	2A00	2	0	2	2
18PS-GR-007AAA_1	18PS-GR-007AAA	18PS-GR-007	MSI PROFILER	45	Brick	2300	0000	2300	2	0	2	2
18PS-GR-008_18PS	18PS-GR-008	18PS-GR-007AA	MSI PROFILER	45	Brick	2500	0000	2500	2	0	2	2
18PS-GR-007AA_18	18PS-GR-007AA	18PS-GR-007AAA	MSI PROFILER	45	Brick	2700	0000	2700	2	0	2	2
18PS-GR-009D_18P	18PS-GR-009D	18PS-GR-009E	MSI PROFILER	45	Brick	312B	0000	312B	2.05	0	2.05	2.05
18PS-GR-009E_18P	18PS-GR-009E	18PS-GR-008	MSI PROFILER	45	Brick	2600	0000	2600	2	0	2	2
W2-24-016_W2-24-0	W2-24-016	W2-24-017	MSI PROFILER	45	Brick	3227	0000	3227	2.22	0	2.22	2.22
W2-24-017_W2-24-0	W2-24-017	W2-24-017A	MSI PROFILER	45	Brick	2B00	0000	2B00	2	0	2	2
W2-24-017A_W2-24-	W2-24-017A	W2-24-017B	MSI PROFILER	45	Brick	2311	0000	2311	1.75	0	1.75	1.75
W2-24-017B_W2-24-	W2-24-017B	W2-24-017C	MSI PROFILER	45	Brick	2C00	0000	2C00	2	0	2	2
W2-24-017C_W2-GF	W2-24-017C	W2-GR-005	MSI PROFILER	45	Brick	322C	0000	322C	2.08	0	2.08	2.08
	W2-HU-002	W2-HU-002-A	MSI PROFILER	45	Brick	2D13	0000	2D13	1.89	0	1.89	1.89
	W2-HU-002-A	W2-HU-003	MSI PROFILER	45	Brick	2F00	0000	2F00	2	0	2	2
W2-HU-003_W2-HU-	W2-HU-003	W2-HU-004A	MSI PROFILER	45	Brick	2C17	0000	2C17	1.77	0	1.77	1.77
W2-HU-005_W2-HU-	W2-HU-004	W2-HU-005	MSI PROFILER	45	Brick	2200	0000	2200	2	0	2	2
W2-HU-004A_W2-H	W2-HU-004A	W2-HU-004	MSI PROFILER	45	Brick	342E	0000	342E	2.03	0	2.03	2.03
	W2-MA-002-A	W2-MA-002-B	MSI PROFILER	45	Brick	2E00	0000	2E00	2	0	2	2
	W2-MA-002-C	W2-MA-002-D	MSI PROFILER	45	Brick	2F00	0000	2F00	2	0	2	2
	W2-MA-002-D	W2-MA-002-E	MSI PROFILER	45	Brick	2E12	0000	2E12	1.94	0	1.94	1.94
W2-GR-005_W2-GR	W2-GR-005	W2-GR-004	MSI PROFILER	45	Brick	2F00	0000	2F00	2	0	2	2
W2-24-017C_W2-GF	W2-24-017C	W2-GR-005	MSI PROFILER	45	Brick	312G	0000	312G	2.02	0	2.02	2.02
	W2-24-017D	W2-24-017B	MSI PROFILER	45	Brick	3123	0000	3123	2	0	2	2
PANYNJ-PA-001_PA	PANYNJ-PA-001	PANYNJ-PA-002	MSI PROFILER	48	Brick	2B00	0000	2B00	2	0	2	2
PANYNJ-PA-002_PA	PANYNJ-PA-002	PANYNJ-PA-003	MSI PROFILER	48	Brick	2100	0000	2100	2	0	2	2
PANYNJ-PA-003_PA	PANYNJ-PA-003	PANYNJ-PA-004A	MSI PROFILER	48	Brick	2D00	0000	2D00	2	0	2	2
PANYNJ-PA-005A_F	PANYNJ-PA-005A	PANYNJ-PA-005	MSI PROFILER	48	Brick	2100	0000	2100	2	0	2	2
PANYNJ-PA-005_PA	PANYNJ-PA-005	PANYNJ-PA-006	MSI PROFILER	48	Reinforced Concrete	2100	0000	2100	2	0	2	2

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
	PANYNJ-PA-012A-1	PANYNJ-PA-012B	MSI PROFILER	54	Reinforced Concrete	2212	0000	2212	1.5	0	1.5	1.5
	PANYNJ-PA-012B	W1-Regulator	MSI PROFILER	54	Reinforced Concrete	2100	0000	2100	2	0	2	2
	JOSO-JFK-013	JOSO-JFK-015	MSI PROFILER	30	Brick	2200	0000	2200	2	0	2	2
	JOSO-JFK-011	JOSO-JFK-013	MSI PROFILER	30	Brick	2500	0000	2500	2	0	2	2
JOSO-JFK-009_JOS	JOSO-JFK-009	JOSO-JFK-010	MSI PROFILER	30	Brick	2600	0000	2600	2	0	2	2
W3-CE-011_W3-CE-	W3-CE-011	W3-CE-010	MSI PROFILER	30	Brick	2400	0000	2400	2	0	2	2
W3-CE-015_W3-CE-	W3-CE-015	W3-CE-014	MSI PROFILER	30	Brick	2500	0000	2500	2	0	2	2
W3-CE-016_W3-CE-	W3-CE-016	W3-CE-015	MSI PROFILER	30	Brick	2300	0000	2300	2	0	2	2
W3-CE-018_W3-CE-	W3-CE-018	W3-CE-017	MSI PROFILER	30	Brick	2C00	0000	2C00	2	0	2	2
JOSO-JFK-039_JOS	JOSO-JFK-039	JOSO-JFK-038	MSI PROFILER	36	Brick	2111	0000	2111	1.5	0	1.5	1.5
JOSO-JFK-038_JOS	JOSO-JFK-038	JOSO-JFK-037	MSI PROFILER	36	Brick	2200	0000	2200	2	0	2	2
JOSO-JFK-037_JOS	JOSO-JFK-037	JOSO-JFK-036	MSI PROFILER	36	Brick	2G00	0000	2G00	2	0	2	2
JOSO-JFK-036_JOS	JOSO-JFK-036	JOSO-JFK-034	MSI PROFILER	36	Brick	2C00	0000	2C00	2	0	2	2
JOSO-JFK-034_JOS	JOSO-JFK-034	JOSO-JFK-033	MSI PROFILER	36	Brick	2E00	0000	2E00	2	0	2	2
JOSO-JFK-032_JOS	JOSO-JFK-032	JOSO-JFK-031	MSI PROFILER	36	Brick	2100	0000	2100	2	0	2	2
JOSO-JFK-031_JOS	JOSO-JFK-031	JOSO-JFK-030	MSI PROFILER	36	Brick	2G00	0000	2G00	2	0	2	2
JOSO-JFK-030_JOS	JOSO-JFK-030	JOSO-JFK-029	MSI PROFILER	36	Brick		0000		3.71	0	3.71	3.71
W1-39-016_W1-39-0	W1-39-016	W1-39-017	MSI PROFILER	36	Brick	2D00	0000	2D00	2	0	2	2
W1-39-015_W1-39-0	W1-39-015	W1-39-016	MSI PROFILER	36	Brick		0000		2.22	0	2.22	2.22
W1-39-014_W1-39-0	W1-39-014	W1-39-015	MSI PROFILER	36	Brick	352H	0000	352H	2.09	0	2.09	2.09
W1-39-013_W1-39-0	W1-39-013	W1-39-014	MSI PROFILER	36	Brick	5142	0000	5142	2.08	0	2.08	2.08
W1-39-013A_W1-39-	W1-39-013A	W1-39-013	MSI PROFILER	36	Brick	2800	0000	2800	2	0	2	2
W1-39-012_W1-39-0	W1-39-012	W1-39-013A	MSI PROFILER	36	Brick	2E00	0000	2E00	2	0	2	2
	W1-39-009	W1-39-011	MSI PROFILER	36	Brick	2E00	0000	2E00	2	0	2	2
W1-39-008_W1-39-0	W1-39-008	W1-39-009	MSI PROFILER	36	Brick	2A00	0000	2A00	2	0	2	2
W1-39-007_W1-39-0	W1-39-007	W1-39-008	MSI PROFILER	36	Brick	2C00	0000	2C00	2	0	2	2
W1-39-006_W1-39-0	W1-39-006	W1-39-007	MSI PROFILER	36	Brick	3124	0000	3124	2.2	0	2.2	2.2
JOSO-JFK-021_JOS	JOSO-JFK-021	JOSO-JFK-022	MSI PROFILER	36	Brick	1100	0000	1100	1	0	1	1
JOSO-JFK-020_JOS	JOSO-JFK-020	JOSO-JFK-021	MSI PROFILER	36	Brick	2C00	0000	2C00	2	0	2	2
	JOSO-JFK-018	JOSO-JFK-020	MSI PROFILER	36	Brick	2D00	0000	2D00	2	0	2	2
JOSO-JFK-017_JOS	JOSO-JFK-017	JOSO-JFK-018	MSI PROFILER	36	Brick	2C00	0000	2C00	2	0	2	2
	JOSO-JFK-015	JOSO-JFK-017	MSI PROFILER	36	Brick	2211	0000	2211	1.67	0	1.67	1.67
	UH1-JFK-022	UH1-JFK-024	MSI PROFILER	36	Brick	5100	0000	5100	5	0	5	5
UH1-JFK-017_UH1-J	UH1-JFK-017	UH1-JFK-018	MSI PROFILER	36	Brick	2C00	0000	2C00	2	0	2	2
UH1-JFK-015_UH1-J	UH1-JFK-015	UH1-JFK-016	MSI PROFILER	36	Brick	2H00	0000	2H00	2	0	2	2
UH1-JFK-014_UH1-J	UH1-JFK-014	UH1-JFK-015	MSI PROFILER	36	Brick	2E00	0000	2E00	2	0	2	2
	UH1-JFK-012	UH1-JFK-014	MSI PROFILER	36	Brick	3222	0000	3222	2.5	0	2.5	2.5
UH1-JFK-012A_UH1	UH1-JFK-012A	UH1-JFK-012	MSI PROFILER	36	Brick	2900	0000	2900	2	0	2	2
W3-SU-004A_W3-SU	W3-SU-004A	W3-SU-004	MSI PROFILER	36	Brick	0000	0000	0000	0	0	0	0
	W3-SU-005	W3-SU-004A	MSI PROFILER	36	Reinforced Concrete	2100	0000	2100	2	0	2	2
	W3-HP-005A	W3-HP-006	MSI PROFILER	36	Brick	2G00	0000	2G00	2	0	2	2
	W3-HP-005	W3-HP-005A	MSI PROFILER	36	Brick	2J00	0000	2J00	2	0	2	2
W3-HP-004_W3-HP-	W3-HP-004	W3-HP-005	MSI PROFILER	36	Brick	312H	0000	312H	2.02	0	2.02	2.02
W2-23-005_W2-23-0	W2-23-005	W2-23-006	MSI PROFILER	36	Brick	2C11	0000	2C11	1.96	0	1.96	1.96
W2-23-003_W2-23-0	W2-23-003	W2-23-004	MSI PROFILER	36	Brick	2C00	0000	2C00	2	0	2	2
W2-WE-009_W2-23-	W2-WE-009	W2-23-003	MSI PROFILER	36	Brick	0000	0000	0000	0	0	0	0
W3-27-009B_W3-27-	W3-27-009B	W3-27-009A	MSI PROFILER	42	Brick	2A11	0000	2A11	1.93	0	1.93	1.93
W3-27-009C_W3-27-	W3-27-009C	W3-27-009B	MSI PROFILER	42	Brick	2E00	0000	2E00	2	0	2	2
W3-27-009D_W3-27-	W3-27-009D	W3-27-009C	MSI PROFILER	42	Brick	2G00	0000	2G00	2	0	2	2
W3-27-009E_W3-27-	W3-27-009E	W3-27-009D	MSI PROFILER	42	Brick	2F00	0000	2F00	2	0	2	2
W3-27-008_W3-27-0	W3-27-008	W3-27-009E	MSI PROFILER	42	Brick	2C00	0000	2C00	2	0	2	2

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W3-27-008A_W3-27-	W3-27-008A	W3-27-008	MSI PROFILER	45	Reinforced Concrete	2600	0000	2600	2	0	2	2
W3-BE-001_W3-HP-	W3-BE-001	W3-HP-007	MSI PROFILER	48	Brick	2A00	0000	2A00	2	0	2	2
W3-BE-002_W3-BE-	W3-BE-002	W3-BE-001	MSI PROFILER	48	Brick	2111	0000	2111	1.5	0	1.5	1.5
	W3-BE-004AA	Z	MSI PROFILER	48	Brick	2200	0000	2200	2	0	2	2
W2-BE-004_W2-BE-	W2-BE-004	W2-BE-004AA	MSI PROFILER	48	Brick	2A12	0000	2A12	1.87	0	1.87	1.87
W2-BE-004A_W2-BE	W2-BE-004A	W2-BE-004	MSI PROFILER	48	Brick	2F00	0000	2F00	2	0	2	2
W2-BE-005_W2-BE-	W2-BE-005	W2-BE-004A	MSI PROFILER	48	Brick	0000	0000	0000	0	0	0	0
W3-27-007_W3-27-0	W3-27-007	W3-27-008A	MSI PROFILER	48	Reinforced Concrete	2100	0000	2100	2	0	2	2
W3-27-006_W3-27-0	W3-27-006	W3-27-007	MSI PROFILER	48	Reinforced Concrete	0000	0000	0000	0	0	0	0
W3-27-005_W3-27-0	W3-27-005	W3-27-006	MSI PROFILER	48	Reinforced Concrete	0000	0000	0000	0	0	0	0
W3-SU-013_W3-27-0	W3-SU-013	W3-27-005	MSI PROFILER	48	Reinforced Concrete	2100	0000	2100	2	0	2	2
W3-SU-014_W3-SU-	W3-SU-014	W3-SU-013	MSI PROFILER	48	Reinforced Concrete	0000	0000	0000	0	0	0	0
W3-SU-015_W3-SU-	W3-SU-015	W3-SU-014	MSI PROFILER	48	Reinforced Concrete	2100	0000	2100	2	0	2	2
W3-26-002_W3-SU-0	W3-26-002	W3-SU-015	MSI PROFILER	48	Reinforced Concrete	5121	0000	5121	3.5	0	3.5	3.5
B-55-T027_B-JA-T02	B-55-T027	B-JA-T028	MSI PROFILER	50	Brick	2200	0000	2200	2	0	2	2
	JOSO-JFK-029	JOSO-JFK-027	MSI PROFILER	57	Brick	0000	0000	0000	0	0	0	0
JOSO-JFK-025_JOS	JOSO-JFK-025	JOSO-JFK-024	MSI PROFILER	57	Brick	2H00	0000	2H00	2	0	2	2
JOSO-JFK-023_JOS	JOSO-JFK-023	JOSO-JFK-022	MSI PROFILER	57	Brick		0000		2.13	0	2.13	2.13
JOSO-BR-003_JOS	JOSO-BR-003	JOSO-BR-002	MSI PROFILER	60	Brick	2O00	0000	2O00	2	0	2	2
	W3-HP-007A	W3-HP-008	MSI PROFILER	60	Brick	2F00	0000	2F00	2	0	2	2
	W3-HP-007	W3-HP-007A	MSI PROFILER	60	Brick	3100	0000	3100	3	0	3	3
	Z	W3-BE-002	MSI PROFILER	60	Brick	1100	0000	1100	1	0	1	1
B-BE-T040_D-50-T0	B-BE-T040	D-50-T041A	MSI PROFILER	64	Brick	2300	0000	2300	2	0	2	2
D-50-T041A_D-50-T	D-50-T041A	D-50-T041	MSI PROFILER	64	Brick		0000		3.71	0	3.71	3.71
D-50-T041_D-50-T0	D-50-T041	D-50-T042	MSI PROFILER	64	Brick	3123	0000	3123	2.25	0	2.25	2.25
D-50-T042_D-50-T0	D-50-T042	D-50-T043	MSI PROFILER	64	Brick	2200	0000	2200	2	0	2	2
D-50-T043_D-50-T0	D-50-T043	D-50-T044	MSI PROFILER	64	Brick	0000	0000	0000	0	0	0	0
D-50-T044_D-50-T0	D-50-T044	D-50-T045	MSI PROFILER	64	Brick	2400	0000	2400	2	0	2	2
D-50-T045_D-50-T0	D-50-T045	D-50-T046	MSI PROFILER	64	Brick	2500	0000	2500	2	0	2	2
D-50-T046_D-50-T0	D-50-T046	D-50-T047	MSI PROFILER	64	Brick	3124	0000	3124	2.2	0	2.2	2.2
	D-50-T047	D-50-T047A	MSI PROFILER	64	Brick	2700	0000	2700	2	0	2	2
	D-50-T047A	D-50-T048	MSI PROFILER	64	Brick	2600	0000	2600	2	0	2	2
D-50-T048_D-50-T0	D-50-T048	D-50-T049	MSI PROFILER	64	Brick	2200	0000	2200	2	0	2	2
D-50-T049_D-50-T0	D-50-T049	D-50-T050	MSI PROFILER	64	Brick	2C00	0000	2C00	2	0	2	2
D-50-T050_D-50-T0	D-50-T050	D-50-T050A	MSI PROFILER	64	Brick	2A00	0000	2A00	2	0	2	2
W2-PA-021A_W2-PA	W2-PA-021A	W2-PA-021	MSI PROFILER	30	Reinforced Concrete	2K00	0000	2K00	2	0	2	2
W2-PA-006A_W2-PA	W2-PA-006A	W2-PA-006	MSI PROFILER	30	Reinforced Concrete	2400	0000	2400	2	0	2	2
W2-PA-009_W2-PA-	W2-PA-009	W2-PA-006A	MSI PROFILER	30	Reinforced Concrete	2H00	0000	2H00	2	0	2	2
W2-PA-009A_W2-PA	W2-PA-009A	W2-PA-009	MSI PROFILER	30	Reinforced Concrete	2B00	0000	2B00	2	0	2	2
18PS-18-010BF_18P	18PS-18-010BF	18PS-18-010BG	PicAx 2.1	30	Polyethylene	3700	0000	3700	3	0	3	3
18PS-18-010BG_18P	18PS-18-010BG	18PS-18-010BH	PicAx 2.1	30	Brick	3900	0000	3900	3	0	3	3
UH1-04-007_UH1-04	UH1-04-007	UH1-04-006	PicAx 2.1	30	Brick	3100	0000	3100	3	0	3	3
JOSO-BR-017_JOS	JOSO-BR-017	JOSO-BR-016	MSI PROFILER	36	Brick	312H	0000	312H	2.02	0	2.02	2.02
	JOSO-BR-019	JOSO-BR-017	MSI PROFILER	36	Brick	2H00	0000	2H00	2	0	2	2
JOSO-BR-020_JOS	JOSO-BR-020	JOSO-BR-019	MSI PROFILER	36	Brick	312I	0000	312I	2.02	0	2.02	2.02
JOSO-BR-021_JOS	JOSO-BR-021	JOSO-BR-020	MSI PROFILER	36	Brick	362I	0000	362I	2.11	0	2.11	2.11
W3-KE-004_W3-KE-	W3-KE-004	W3-KE-003	MSI PROFILER	36	Reinforced Concrete	0000	0000	0000	0	0	0	0
W3-KE-012_W3-KE-	W3-KE-012	W3-KE-011	MSI PROFILER	36	Reinforced Concrete	0000	0000	0000	0	0	0	0
W3-KE-005_W3-KE-	W3-KE-005	W3-KE-004	MSI PROFILER	36	Reinforced Concrete	3111	0000	3111	2	0	2	2
W2-PA-038_W2-PA-	W2-PA-038	W2-PA-037	PACP 6.0	36	Brick	3100	0000	3100	3	0	3	3
18PS-HA-010A_18P	18PS-HA-010A	18PS-HA-010	PicAx 2.1	36	Brick	3100	0000	3100	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
18PS-18-005_18PS-	18PS-18-005	18PS-18-005-1	PicAx 2.1	36	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
W3-SU-012_W3-SU-	W3-SU-012	W3-SU-011	PicAx 2.1	36	Brick	3100	0000	3100	3	0	3	3
18PS-HA-010CB_18	18PS-HA-010CB	18PS-HA-010B	PicAx 2.1	36	Brick	3700	0000	3700	3	0	3	3
UH1-02-001C_UH1-0	UH1-02-001C	UH1-02-001D	PicAx 2.1	42	Brick	3200	0000	3200	3	0	3	3
W2-20-012_W2-20-0	W2-20-012	W2-20-013	MSI PROFILER	45	Brick	2F00	0000	2F00	2	0	2	2
W2-20-004_W2-20-0	W2-20-004	W2-20-005	MSI PROFILER	45	Brick	312F	0000	312F	2.03	0	2.03	2.03
W2-20-003_W2-20-0	W2-20-003	W2-20-004	MSI PROFILER	45	Brick	2F00	0000	2F00	2	0	2	2
	W2-PA-030	W2-PA-028	PACP 6.0	45	Brick		0000		3.55	0	3.55	3.55
W3-26-001_W3-26-0	W3-26-001	W3-26-002	MSI PROFILER	48	Reinforced Concrete	0000	0000	0000	0	0	0	0
18PS-HA-010-5_18P	18PS-HA-010-5	18PS-HA-010-6	PicAx 2.1	48	Brick	2100	0000	2100	2	0	2	2
18PS-18-012_18th S	18PS-18-012	18th St S/F	PicAx 2.1	60	Reinforced Concrete	0000	0000	0000	0	0	0	0
18PS-18-011_18PS-	18PS-18-010	18PS-18-011	PicAx 2.1	60	Reinforced Concrete	3400	0000	3400	3	0	3	3
18PS-18-012C_18PS	18PS-18-012C	18PS-18-012	PicAx 2.1	60	Reinforced Concrete		0000		4	0	4	4
UH1-05-016_UH1-05	UH1-05-016	UH1-05-015	PicAx 2.1	30	Brick	3C00	0000	3C00	3	0	3	3
	UH1-05-019	UH1-05-017	PicAx 2.1	30	Brick	3C00	0000	3C00	3	0	3	3
18PS-18-003_18PS-	18PS-18-003	18PS-18-004	PicAx 2.1	30	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
18PS-18-002A_18PS	18PS-18-002A	18PS-18-002B	PicAx 2.1	30	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-04-003_UH1-04	UH1-04-003	UH1-04-002	PicAx 2.1	30	Brick	3400	0000	3400	3	0	3	3
18PS-18-004_18PS-	18PS-18-004	18PS-18-005	PicAx 2.1	30	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
18PS-HA-010BC_18	18PS-HA-010BC	18PS-HA-010BD	PicAx 2.1	36	Brick	3A22	0000	3A22	2.83	0	2.83	2.83
W3-SU-011_W3-SU-	W3-SU-011	W3-SU-010	PicAx 2.1	36	Brick	3800	0000	3800	3	0	3	3
18PS-HA-010B_18P	18PS-HA-010B	18PS-HA-010BA	PicAx 2.1	36	Brick	3500	0000	3500	3	0	3	3
18PS-18-006_18PS-	18PS-18-006	18PS-18-007	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
	W2-MO-001AAA	18PS-GR-009A1	PicAx 2.1	36	Reinforced Concrete	0000	0000	0000	0	0	0	0
UH1-02-001B_UH1-0	UH1-02-001B	UH1-02-001C	PicAx 2.1	42	Brick	3H00	0000	3H00	3	0	3	3
UH1-CE-028_UH1-C	UH1-CE-029	UH1-CE-028	PicAx 2.1	42	Brick	3D00	0000	3D00	3	0	3	3
	W1-PA-003B	W1-PA-004	PicAx 2.1	45	Brick	3C00	0000	3C00	3	0	3	3
UH1-BE-011_UH1-B	UH1-BE-011	UH1-BE-012	PicAx 2.1	45	Brick	3100	0000	3100	3	0	3	3
W1-38-011_W1-BE-0	W1-38-011	W1-BE-017	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
W1-BE-008_W1-BE-	W1-BE-008	W1-BE-009	PicAx 2.1	45	Brick	3300	0000	3300	3	0	3	3
18PS-18-008_18PS-	18PS-18-008	18PS-18-008-1	PicAx 2.1	48	Reinforced Plastic Pi	0000	0000	0000	0	0	0	0
18PS-18-009A_18PS	18PS-18-009A	18PS-18-009B	PicAx 2.1	54	Reinforced Concrete	3B00	0000	3B00	3	0	3	3
18PS-18-009_18PS-	18PS-18-009	18PS-18-009A	PicAx 2.1	54	Reinforced Concrete	0000	0000	0000	0	0	0	0
UH1-JFK-004_UH1-J	UH1-JFK-004	UH1-JFK-005	PicAx 2.1	30	Brick	3C00	0000	3C00	3	0	3	3
UH1-JFK-002_UH1-J	UH1-JFK-002	UH1-JFK-003	PicAx 2.1	30	Brick	3D21	0000	3D21	2.96	0	2.96	2.96
18PS-18-010BC_18P	18PS-18-010BC	18PS-18-010BD	PicAx 2.1	30	Brick	3600	0000	3600	3	0	3	3
UH1-NY-001_UH1-N	UH1-NY-001	UH1-NY-002	PicAx 2.1	30	Brick	3B00	0000	3B00	3	0	3	3
18PS-18-010BBB_18	18PS-18-010BBB	18PS-18-010BC	PicAx 2.1	30	Brick	3200	0000	3200	3	0	3	3
	18PS-HA-010BDA	18PS-HA-010A	PicAx 2.1	36	Brick	2100	0000	2100	2	0	2	2
W2-MO-010_W2-MO	W2-MO-010	W2-MO-011	PACP 6.0	36	Brick		0000		3.05	0	3.05	3.05
18PS-HA-010C_18P	18PS-HA-010C	18PS-HA-010CA	PicAx 2.1	36	Brick	3A21	0000	3A21	2.92	0	2.92	2.92
	UH1-03-005	UH1-03-001	PicAx 2.1	36	Reinforced Concrete	3C21	0000	3C21	2.95	0	2.95	2.95
18PS-18-005-1_18PS	18PS-18-005-1	18PS-18-006	PicAx 2.1	36	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
18PS-18-005_18PS-	18PS-18-005	18PS-18-005-1	PicAx 2.1	36	Concrete Segments (	3100	0000	3100	3	0	3	3
18PS-18-005-1_18PS	18PS-18-005-1	18PS-18-006	PicAx 2.1	36	Concrete Pipe (non-r	3100	0000	3100	3	0	3	3
	W2-MO-013	W2-20-002	PACP 6.0	42	Brick		0000		3.43	0	3.43	3.43
18PS-18-007_18PS-	18PS-18-007	18PS-18-008	PicAx 2.1	42	Reinforced Plastic Pi	0000	0000	0000	0	0	0	0
18PS-18-010A_18PS	18PS-18-010A	18PS-18-010	PicAx 2.1	42	Reinforced Concrete	3100	0000	3100	3	0	3	3
W1-BE-011_W1-BE-	W1-BE-011	W1-BE-012	PicAx 2.1	45	Brick	3300	0000	3300	3	0	3	3
18PS-HA-010-7_18P	18PS-HA-010-7	18PS-HA-011	PicAx 2.1	48	Brick	3A22	0000	3A22	2.86	0	2.86	2.86
18PS-18-008-1_18PS	18PS-18-008-1	18PS-18-009	PicAx 2.1	48	Reinforced Concrete	3B00	0000	3B00	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
18PS-HA-010-1_18P	18PS-HA-010-1	18PS-HA-010-2	PicAx 2.1	48	Brick	3922	0000	3922	2.82	0	2.82	2.82
18PS-18-009C_18P	18PS-18-009C	18PS-18-010	PicAx 2.1	54	Reinforced Concrete	3500	0000	3500	3	0	3	3
UH1-04-006_UH1-04	UH1-04-006	UH1-04-005	PicAx 2.1	30	Brick	3100	0000	3100	3	0	3	3
UH1-02-004_UH1-02	UH1-02-004	UH1-02-003	PicAx 2.1	30	Brick	3F00	0000	3F00	3	0	3	3
	UH1-03-012	UH1-03-010	PicAx 2.1	36	Reinforced Concrete	3300	0000	3300	3	0	3	3
18PS-HA-010BB_18	18PS-HA-010BB	18PS-HA-010BC	PicAx 2.1	36	Brick	3300	0000	3300	3	0	3	3
18PS-HA-010BA_18	18PS-HA-010BA	18PS-HA-010BB	PicAx 2.1	36	Brick	3C21	0000	3C21	2.96	0	2.96	2.96
	W2-MO-001AA	W2-MO-001AAA	PicAx 2.1	36	Reinforced Concrete	0000	0000	0000	0	0	0	0
UH1-02-001C_UH1-	UH1-02-001C	UH1-02-001D	PicAx 2.1	42	Brick	3500	0000	3500	3	0	3	3
W1-BE-009_W1-BE-	W1-BE-009	W1-BE-010	PicAx 2.1	45	Brick	3100	0000	3100	3	0	3	3
	W2-PA-035	W2-PA-033	PACP 6.0	45	Brick		0000		3.2	0	3.2	3.2
W2-29-011_W2-29-	W2-29-011	W2-29-012	PicAx 2.1	45	Brick	3E00	0000	3E00	3	0	3	3
W2-23-009_W2-23-	W2-23-009	W2-23-008	PACP 6.0	45	Brick	3C00	0000	3C00	3	0	3	3
W1-BE-011_W1-BE-	W1-BE-011	W1-BE-012	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
W1-BE-012_W1-BE-	W1-BE-012	W1-BE-013	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
	W1-BE-017	W1-39-006	PicAx 2.1	45	Brick	3C21	0000	3C21	2.96	0	2.96	2.96
UH1-BE-012_UH1-B	UH1-BE-012	UH1-BE-013	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
W2-23-007_W2-BE-	W2-23-007	W2-BE-023	PACP 6.0	45	Brick	3500	0000	3500	3	0	3	3
18PS-HA-010-6_18P	18PS-HA-010-6	18PS-HA-010-7	PicAx 2.1	48	Brick	3121	0000	3121	2.5	0	2.5	2.5
18PS-18-009B_18P	18PS-18-009B	18PS-18-009C	PicAx 2.1	54	Reinforced Concrete	3A00	0000	3A00	3	0	3	3
18PS-18-010BE_18P	18PS-18-010BF	18PS-18-010BE	PicAx 2.1	30	Polyethylene	0000	0000	0000	0	0	0	0
18PS-18-002B_18P	18PS-18-002B	18PS-18-002C	PicAx 2.1	30	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
UH1-05-017_UH1-05	UH1-05-017	UH1-05-016	PicAx 2.1	30	Brick	3500	0000	3500	3	0	3	3
18PS-18-010BF_18P	18PS-18-010BF	18PS-18-010BG	PicAx 2.1	30	Brick	3600	0000	3600	3	0	3	3
W2-MO-011_W2-MO	W2-MO-011	W2-MO-012	PACP 6.0	36	Brick		0000		3.35	0	3.35	3.35
18PS-18-006_18PS-	18PS-18-006	18PS-18-007	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
	18PS-HA-010BD	18PS-HA-010BDA	PicAx 2.1	36	Brick	0000	0000	0000	0	0	0	0
W3-SU-011_W3-SU-	W3-SU-011	W3-SU-010	PicAx 2.1	36	Brick	3200	0000	3200	3	0	3	3
W2-23-006_W2-BE-	W2-23-006	W2-BE-023	PACP 6.0	36	Brick	3800	0000	3800	3	0	3	3
	UH1-BE-013	UH1-BE-015	PicAx 2.1	42	Brick	3100	0000	3100	3	0	3	3
W2-29-012_W2-29-	W2-29-012	W2-29-013	PicAx 2.1	45	Brick	3C22	0000	3C22	2.92	0	2.92	2.92
W2-PA-031_W2-PA-	W2-PA-031	W2-PA-030	PACP 6.0	45	Brick		0000		3.47	0	3.47	3.47
W1-BE-009_W1-BE-	W1-BE-009	W1-BE-010	PicAx 2.1	45	Brick	3100	0000	3100	3	0	3	3
18PS-HA-010_18PS	18PS-HA-010	18PS-HA-010-1	PicAx 2.1	48	Brick	3521	0000	3521	2.83	0	2.83	2.83
18PS-HA-010-3_18P	18PS-HA-010-3	18PS-HA-010-4	PicAx 2.1	48	Brick	2100	0000	2100	2	0	2	2
18PS-18-011_18PS-	18PS-18-011	18PS-18-012D	PicAx 2.1	60	Reinforced Concrete	0000	0000	0000	0	0	0	0
18PS-18-012D_18P	18PS-18-012D	18PS-18-012C	PicAx 2.1	60	Reinforced Concrete	0000	0000	0000	0	0	0	0
18PS-18-002C_18P	18PS-18-002C	18PS-18-003	PicAx 2.1	30	Concrete Pipe (non-r	3200	0000	3200	3	0	3	3
18PS-18-010BBB_18	18PS-18-010BBB	18PS-18-010BC	PicAx 2.1	30	Brick	3100	0000	3100	3	0	3	3
18PS-18-002_18PS-	18PS-18-002	18PS-18-002A	PicAx 2.1	30	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
UH1-04-007_UH1-04	UH1-04-007	UH1-04-006	PicAx 2.1	30	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-07-018_UH1-07	UH1-07-018	UH1-07-017	PicAx 2.1	30	Vitrified Clay Pipe	3100	0000	3100	3	0	3	3
UH1-07-019_UH1-07	UH1-07-019	UH1-07-018	PicAx 2.1	30	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
18PS-18-010BAA_18	18PS-18-010BAA	18PS-18-010BBB	PicAx 2.1	30	Brick	3600	0000	3600	3	0	3	3
18PS-18-004_18PS-	18PS-18-004	18PS-18-005	PicAx 2.1	30	Concrete Pipe (non-r		0000		3.5	0	3.5	3.5
18PS-18-010BD_18P	18PS-18-010BE	18PS-18-010BD	PicAx 2.1	30	Polypropylene	0000	0000	0000	0	0	0	0
	UH1-CE-030AA	UH1-CE-030B	PicAx 2.1	30	Brick	3A21	0000	3A21	2.91	0	2.91	2.91
18PS-18-010B1_18P	18PS-18-010B1	18PS-18-010B	PicAx 2.1	30	Brick	3200	0000	3200	3	0	3	3
W2-MO-012_W2-MO	W2-MO-012	W2-MO-013	PACP 6.0	36	Brick		0000		3.45	0	3.45	3.45
	UH1-03-010	UH1-03-008	PicAx 2.1	36	Reinforced Concrete	0000	0000	0000	0	0	0	0
	UH1-PA-027	UH1-03-012A	PicAx 2.1	36	Reinforced Concrete	0000	0000	0000	0	0	0	0

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W3-SU-012_W3-SU-	W3-SU-012	W3-SU-011	PicAx 2.1	36	Brick	3C00	0000	3C00	3	0	3	3
	UH1-03-008	UH1-03-005	PicAx 2.1	36	Reinforced Concrete	3300	0000	3300	3	0	3	3
UH1-02-001A_UH1-0	UH1-02-001A	UH1-02-001B	PicAx 2.1	42	Brick	3F00	0000	3F00	3	0	3	3
	W1-PA-003A	W1-PA-003B	PicAx 2.1	45	Brick	3C00	0000	3C00	3	0	3	3
W2-23-010_W2-23-0	W2-23-010	W2-23-009	PACP 6.0	45	Brick	3B00	0000	3B00	3	0	3	3
W1-BE-014_W1-BE-	W1-BE-014	W1-BE-015	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
18PS-HA-010-4_18P	18PS-HA-010-4	18PS-HA-010-5	PicAx 2.1	48	Brick	3121	0000	3121	2.5	0	2.5	2.5
18PS-18-010B_18PS	18PS-18-010B	18PS-18-010BAA	PicAx 2.1	30	Brick	3B23	0000	3B23	2.86	0	2.86	2.86
UH1-06-007_UH1-W	UH1-06-007	UH1-WE-018	PicAx 2.1	30	Brick	3223	0000	3223	2.4	0	2.4	2.4
18PS-18-010B1_18P	18PS-18-010B1	18PS-18-010B	PicAx 2.1	30	Brick	3A21	0000	3A21	2.92	0	2.92	2.92
UH1-JFK-004_UH1-J	UH1-JFK-004	UH1-JFK-005	PicAx 2.1	30	Brick	3100	0000	3100	3	0	3	3
UH1-04-006_UH1-04	UH1-04-006	UH1-04-005	PicAx 2.1	30	Brick	3200	0000	3200	3	0	3	3
UH1-04-007_UH1-04	UH1-04-007	UH1-04-006	PicAx 2.1	30	Brick	0000	0000	0000	0	0	0	0
UH1-JFK-002_UH1-J	UH1-JFK-002	UH1-JFK-003	PicAx 2.1	30	Brick	3500	0000	3500	3	0	3	3
UH1-07-020_UH1-07	UH1-07-020	UH1-07-019	PicAx 2.1	30	Vitrified Clay Pipe	3300	0000	3300	3	0	3	3
18PS-18-010BI_18P	18PS-18-010BI	18PS-18-010A	PicAx 2.1	30	Reinforced Concrete	3A00	0000	3A00	3	0	3	3
18PS-18-010BH_18P	18PS-18-010BH	18PS-18-010BI	PicAx 2.1	30	Reinforced Concrete	0000	0000	0000	0	0	0	0
JOSO-JFK-008_JOS	JOSO-JFK-008	JOSO-JFK-009	PicAx 2.1	36	Brick	3100	0000	3100	3	0	3	3
	UH1-PA-024	UH1-PA-027	PicAx 2.1	36	Reinforced Concrete	3F00	0000	3F00	3	0	3	3
UH1-02-001D_UH1-0	UH1-02-001D	UH1-CE-029	PicAx 2.1	42	Brick	3500	0000	3500	3	0	3	3
UH1-CE-028_UH1-C	UH1-CE-029	UH1-CE-028	PicAx 2.1	42	Brick	3700	0000	3700	3	0	3	3
W2-23-008_W2-23-0	W2-23-008	W2-23-007	PACP 6.0	45	Brick	3C22	0000	3C22	2.92	0	2.92	2.92
W2-29-010_W2-29-0	W2-29-010	W2-29-011	PicAx 2.1	45	Brick	3C00	0000	3C00	3	0	3	3
W1-BE-010_W1-BE-	W1-BE-010	W1-BE-011	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
18PS-HA-010-2_18P	18PS-HA-010-2	18PS-HA-010-3	PicAx 2.1	48	Brick	3A24	0000	3A24	2.76	0	2.76	2.76
UH1-JFK-003_UH1-J	UH1-JFK-003	UH1-JFK-004	PicAx 2.1	30	Brick	3H00	0000	3H00	3	0	3	3
UH1-NY-007_UH1-N	UH1-NY-007	UH1-NY-008	PACP 6.0	30	Brick	3A00	0000	3A00	3	0	3	3
UH1-SU-021_UH1-S	UH1-SU-021	UH1-SU-022	PACP 6.0	30	Brick	3400	0000	3400	3	0	3	3
W2-BE-021_W2-BE-	W2-BE-021	W2-BE-020	PACP 6.0	30	Brick	3300	0000	3300	3	0	3	3
UH1-SU-005_UH1-S	UH1-SU-005	UH1-SU-006	PACP 6.0	30	Brick		0000		3.06	0	3.06	3.06
UH1-SU-016_UH1-S	UH1-SU-016	UH1-SU-017	PACP 6.0	30	Brick	3300	0000	3300	3	0	3	3
UH1-NY-010_UH1-N	UH1-NY-010	UH1-NY-011	PACP 6.0	30	Brick		0000		3	0	3	3
UH1-SU-011_UH1-S	UH1-SU-011	UH1-SU-012	PACP 6.0	30	Brick	3100	0000	3100	3	0	3	3
UH1-SU-006_UH1-S	UH1-SU-006	UH1-SU-007	PACP 6.0	30	Brick	3200	0000	3200	3	0	3	3
UH1-SU-015_UH1-S	UH1-SU-015	UH1-SU-016	PACP 6.0	30	Brick	3300	0000	3300	3	0	3	3
UH1-SU-022_UH1-S	UH1-SU-022	UH1-SU-023	PACP 6.0	30	Brick	3D00	0000	3D00	3	0	3	3
UH1-SU-008_UH1-S	UH1-SU-008	UH1-SU-009	PACP 6.0	30	Brick	3100	0000	3100	3	0	3	3
UH1-SU-012_UH1-S	UH1-SU-012	UH1-SU-013	PACP 6.0	30	Brick	3100	0000	3100	3	0	3	3
W2-BE-021A_W2-BE	W2-BE-021A	W2-BE-021	PACP 6.0	30	Brick	3300	0000	3300	3	0	3	3
W2-PA-042_W2-PA-	W2-PA-042	W2-PA-041	PACP 6.0	36	Brick	3421	0000	3421	2.8	0	2.8	2.8
	W1-39-019	W1-PA-003A	PicAx 2.1	45	Brick	3A21	0000	3A21	2.92	0	2.92	2.92
W2-BE-007_W2-27-0	W2-BE-007	W2-27-001	PACP 6.0	45	Brick		0000		3.5	0	3.5	3.5
W2-BE-020_W2-BE-	W2-BE-020	W2-BE-019	PACP 6.0	30	Brick	3200	0000	3200	3	0	3	3
UH1-BE-010_UH1-11	UH1-BE-010	UH1-11-015	PACP 6.0	30	Brick	5142	0000	5142	3.14	0	3.14	3.14
UH1-NY-004_UH1-N	UH1-NY-004	UH1-NY-005	PACP 6.0	30	Brick		0000		3.5	0	3.5	3.5
	UH1-SU-017	UH1-SU-019	PACP 6.0	30	Brick	3300	0000	3300	3	0	3	3
	UH1-SU-003	UH1-SU-005	PACP 6.0	30	Brick	3A00	0000	3A00	3	0	3	3
	UH1-SU-023	UH1-SU-024A	PACP 6.0	30	Brick	3100	0000	3100	3	0	3	3
	UH1-SU-019	UH1-SU-021	PACP 6.0	30	Brick	3100	0000	3100	3	0	3	3
	UH1-BE-008	UH1-BE-010	PACP 6.0	30	Brick		0000		3.06	0	3.06	3.06
	UH1-NY-008	UH1-NY-010	PACP 6.0	30	Brick	3300	0000	3300	3	0	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
18PS-18-010BD_18P	18PS-18-010BD	18PS-18-010BE	PicAx 2.1	30	Brick	3800	0000	3800	3	0	3	3
UH1-SU-007_UH1-S	UH1-SU-007	UH1-SU-008	PACP 6.0	30	Brick	0000	0000	0000	0	0	0	0
UH1-SU-008_UH1-S	UH1-SU-008	UH1-SU-009	PACP 6.0	30	Brick	0000	0000	0000	0	0	0	0
18PS-18-010C_18PS	18PS-18-010C	18PS-18-010B1	PicAx 2.1	30	Brick	3B25	0000	3B25	2.78	0	2.78	2.78
	UH1-SU-019	UH1-SU-021	PACP 6.0	30	Brick	3B00	0000	3B00	3	0	3	3
	UH1-SU-023	UH1-SU-024A	PACP 6.0	30	Brick	3100	0000	3100	3	0	3	3
	W2-BE-023	W2-BE-021A	PACP 6.0	30	Brick	3B00	0000	3B00	3	0	3	3
	UH1-SU-003	UH1-SU-005	PACP 6.0	30	Brick	3400	0000	3400	3	0	3	3
UH1-NY-004_UH1-N	UH1-NY-004	UH1-NY-005	PACP 6.0	30	Brick	0000	0000	0000	0	0	0	0
H6-14-007_H6-14-00	H6-14-007	H6-14-008	PicAx 2.1	42	Brick	3100	0000	3100	3	0	3	3
H6-14-006_H6-14-00	H6-14-006	H6-14-007	PicAx 2.1	42	Brick	3I1A	0000	3I1A	2.65	0	2.65	2.65
H6-14-008_H6-14-00	H6-14-008	H6-14-009	PicAx 2.1	42	Brick	3F00	0000	3F00	3	0	3	3
H6-14-007_H6-14-00	H6-14-007	H6-14-008	PicAx 2.1	42	Brick	3600	0000	3600	3	0	3	3
W2-27-001_W2-NY-0	W2-27-001	W2-NY-009AB	PACP 6.0	45	Brick		0000		3.33	0	3.33	3.33
W2-BE-009_W2-BE-	W2-BE-009	W2-BE-007A	PACP 6.0	45	Brick	3300	0000	3300	3	0	3	3
W2-NY-009A_W2-N	W2-NY-009A	W2-NY-009	PACP 6.0	45	Brick	3100	0000	3100	3	0	3	3
	W1-PL-008A	W1-PL-013	PACP 6.0	45	Brick		0000		4	0	4	4
H5-WA-430_H5-WA-	H5-WA-430	H5-WA-420	PicAx 2.1	45	Brick	3B00	0000	3B00	3	0	3	3
	H2-03-020	H2-WA-004	PicAx 2.1	45	Brick	3400	0000	3400	3	0	3	3
	H2-WA-003	H2-WA-002	PicAx 2.1	45	Brick	3C11	0000	3C11	2.9	0	2.9	2.9
	H5-WA-356A	H5-WA-350	PicAx 2.1	45	Brick	2200	0000	2200	2	0	2	2
H5-WA-410_H5-WA-	H5-WA-410	H5-WA-400	PicAx 2.1	45	Brick	3E00	0000	3E00	3	0	3	3
H5-WA-440_H5-WA-	H5-WA-440	H5-WA-430	PicAx 2.1	45	Brick	3J11	0000	3J11	2.96	0	2.96	2.96
H2-WA-007_H2-WA-	H2-WA-007	H2-WA-006	PicAx 2.1	45	Brick	3100	0000	3100	3	0	3	3
H2-WA-009A_H2-WA	H2-WA-009A	H2-WA-008	PicAx 2.1	45	Brick	3B11	0000	3B11	2.89	0	2.89	2.89
H5-WA-390_H5-WA-	H5-WA-390	H5-WA-380	PicAx 2.1	45	Brick	3522	0000	3522	2.71	0	2.71	2.71
	H5-WA-370	H5-WA-350	PicAx 2.1	45	Brick	3D26	0000	3D26	2.76	0	2.76	2.76
	H5-11-316	H5-WA-356A	PicAx 2.1	45	Brick	3700	0000	3700	3	0	3	3
H2-WA-009_H2-WA-	H2-WA-009	H2-WA-009A	PicAx 2.1	45	Brick	1100	0000	1100	1	0	1	1
	H5-WA-370	H5-WA-350	PicAx 2.1	45	Brick	3B23	0000	3B23	2.86	0	2.86	2.86
	H2-WA-002	H2-WA-001	PicAx 2.1	45	Brick	3F00	0000	3F00	3	0	3	3
H5-WA-380_H5-WA-	H5-WA-380	H5-WA-370	PicAx 2.1	45	Brick	3A00	0000	3A00	3	0	3	3
	H2-WA-001	H2-NE-007	PicAx 2.1	45	Brick	1100	0000	1100	1	0	1	1
	H5-WA-400A	H5-WA-390	PicAx 2.1	45	Brick	3B11	0000	3B11	2.89	0	2.89	2.89
	W1-PA-008	W1-PA-009A	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
H5-WA-430_H5-WA-	H5-WA-430	H5-WA-420	PicAx 2.1	45	Brick	3F00	0000	3F00	3	0	3	3
H5-WA-470_H5-WA-	H5-WA-470	H5-WA-460	PicAx 2.1	45	Brick	3H00	0000	3H00	3	0	3	3
	H2-WA-002	H2-WA-001	PicAx 2.1	45	Brick	3100	0000	3100	3	0	3	3
H2-WA-005_H2-03-0	H2-WA-005	H2-03-020	PicAx 2.1	45	Brick	3100	0000	3100	3	0	3	3
H5-WA-420_H5-WA-	H5-WA-420	H5-WA-410	PicAx 2.1	45	Brick	3G21	0000	3G21	2.93	0	2.93	2.93
H5-11-318_H5-11-31	H5-11-318	H5-11-316	PicAx 2.1	45	Brick	3C21	0000	3C21	2.95	0	2.95	2.95
H2-WA-007_H2-WA-	H2-WA-007	H2-WA-006	PicAx 2.1	45	Brick	3B11	0000	3B11	2.89	0	2.89	2.89
W1-PA-012_W1-PA-	W1-PA-012	W1-PA-013	PicAx 2.1	48	Brick	3100	0000	3100	3	0	3	3
	W3-KE-015	W3-KE-013	PACP 6.0	48	Polyvinyl Chloride	3700	0000	3700	3	0	3	3
	W3-KE-017	W3-KE-015	PACP 6.0	48	Polyvinyl Chloride	3300	0000	3300	3	0	3	3
W1-PA-017_W1-PA-	W1-PA-017	W1-PA-016	PicAx 2.1	30	Vitrified Clay Pipe	0000	0000	0000	0	0	0	0
	H7-INT-001_1	H7-INT-001	PicAx 2.1	30	Reinforced Concrete		0000		3.11	0	3.11	3.11
H7-INT-001_H6-INT-	H7-INT-001	H6-INT-002	PicAx 2.1	30	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-CL-646_H5-CL-6	H5-CL-646	H5-CL-644	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-CL-644_H5-CL-6	H5-CL-644	H5-CL-642	PicAx 2.1	36	Reinforced Concrete	3121	0000	3121	2.5	0	2.5	2.5
H5-GR-674_H5-GR-0	H5-GR-674	H5-GR-672	PicAx 2.1	36	Reinforced Concrete	3B21	0000	3B21	2.95	0	2.95	2.95

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
H5-CL-642_H5-11-64	H5-CL-642	H5-11-640B	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-CL-648_H5-CL-6	H5-CL-648	H5-CL-646	PicAx 2.1	36	Reinforced Concrete	3A23	0000	3A23	2.79	0	2.79	2.79
	H5-GR-678	H5-11-670	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-GR-676_H5-GR-(	H5-GR-676	H5-GR-674	PicAx 2.1	36	Reinforced Concrete	3800	0000	3800	3	0	3	3
	H5-GR-672	H5-GR-672	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-CL-648_H5-CL-6	H5-CL-648	H5-CL-646	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-CL-646_H5-CL-6	H5-CL-646	H5-CL-644	PicAx 2.1	36	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-GR-672_H5-11-6	H5-GR-672	H5-11-670	PicAx 2.1	39	Reinforced Concrete	3100	0000	3100	3	0	3	3
H6-14-007_H6-14-00	H6-14-007	H6-14-008	PicAx 2.1	42	Brick	3100	0000	3100	3	0	3	3
H6-14-006_H6-14-00	H6-14-006	H6-14-007	PicAx 2.1	42	Brick	3H2A	0000	3H2A	2.82	0	2.82	2.82
H5-MO-784_H5-MO-	H5-MO-784	H5-MO-782	PicAx 2.1	42	Reinforced Concrete	3600	0000	3600	3	0	3	3
H6-14-010_H6 REGU	H6-14-010	H6 REGULATOR	PicAx 2.1	42	Brick	3200	0000	3200	3	0	3	3
H6-14-005_H6-14-00	H6-14-005	H6-14-006	PicAx 2.1	42	Brick	3122	0000	3122	2	0	2	2
H6-14-009_H6-14-01	H6-14-009	H6-14-010	PicAx 2.1	42	Brick	3D00	0000	3D00	3	0	3	3
H6-14-008_H6-14-00	H6-14-008	H6-14-009	PicAx 2.1	42	Brick	3A00	0000	3A00	3	0	3	3
H5-MO-784_H5-MO-	H5-MO-784	H5-MO-782	PicAx 2.1	42	Reinforced Concrete	3100	0000	3100	3	0	3	3
	H6-14-003A	H6-14-003	PicAx 2.1	42	Brick	3100	0000	3100	3	0	3	3
H6-14-003_H6-14-00	H6-14-003	H6-14-004	PicAx 2.1	42	Brick	3B00	0000	3B00	3	0	3	3
H6-14-004_H6-14-00	H6-14-004	H6-14-005	PicAx 2.1	42	Brick	3B00	0000	3B00	3	0	3	3
	H5-WA-400	H5-WA-400A	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
W1-PA-008A_W1-PA	W1-PA-008A	W1-PA-008	PicAx 2.1	45	Brick	3D21	0000	3D21	2.89	0	2.89	2.89
W2-GR-004_W2-GR	W2-GR-004	W2-GR-004A	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
	H5-09-442A	H5-WA-440	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
	W1-PA-009A	W1-PA-009	PicAx 2.1	45	Brick	3A21	0000	3A21	2.92	0	2.92	2.92
W1-PA-007_W1-PA-	W1-PA-007	W1-PA-008A	PicAx 2.1	45	Brick	3B11	0000	3B11	2.9	0	2.9	2.9
H2-WA-009A_H2-WA	H2-WA-009A	H2-WA-008	PicAx 2.1	45	Brick	0000	0000	0000	0	0	0	0
W1-PA-013_W1-PA-	W1-PA-013	W1-PA-014	PicAx 2.1	48	Brick	3B00	0000	3B00	3	0	3	3
W1-PA-009_W1-PA-	W1-PA-009	W1-PA-010	PicAx 2.1	48	Brick	3522	0000	3522	2.5	0	2.5	2.5
W3-KE-013_W3-KE-	W3-KE-013	W3-KE-012	PACP 6.0	48	Polyvinyl Chloride	0000	0000	0000	0	0	0	0
W1-PA-010_W1-PA-	W1-PA-010	W1-PA-012	PicAx 2.1	48	Brick	3221	0000	3221	2.67	0	2.67	2.67
	W1-PA-014	W1-PA-015A	PicAx 2.1	48	Brick	3C11	0000	3C11	2.91	0	2.91	2.91
	W1-PA-015A	W1-PA-015	PicAx 2.1	54	Brick	3100	0000	3100	3	0	3	3
H7-15-012_H7 REGU	H7-15-012	H7 REGULATOR	PicAx 2.1	57	Reinforced Concrete	3100	0000	3100	3	0	3	3
H5-11-691_H5-11-69	H5-11-691	H5-11-690	PicAx 2.1	57	Reinforced Concrete	3121	0000	3121	2.5	0	2.5	2.5
JOSO-41-010_JOSO	JOSO-41-010	JOSO-NY-005	MSI PROFILER	76	Concrete Pipe (non-r	1600	0000	1600	1	0	1	1
JOSO-NY-005_JOSO	JOSO-NY-005	JOSO-NY-004	MSI PROFILER	76	Concrete Pipe (non-r	2111	0000	2111	1.5	0	1.5	1.5
JOSO-NY-004_JOSO	JOSO-NY-004	JOSO-NY-003	MSI PROFILER	76	Brick	312C	0000	312C	2	0	2	2
JOSO-NY-003_JOSO	JOSO-NY-003	JOSO-NY-002	MSI PROFILER	76	Brick	312G	0000	312G	2	0	2	2
D-57-T057_E-57-T08	D-57-T057	E-57-T088	MSI PROFILER	84	Brick	0000	0000	0000	0	0	0	0
JOSO-BR-001D_UC2	JOSO-BR-001D	UC2-Regulator	MSI PROFILER	84	Reinforced Concrete	2B11	0000	2B11	1.94	0	1.94	1.94
UH1-BE-015_UH1-B	UH1-BE-015	UH1-BE-016	PicAx 2.1	52	Brick	2100	0000	2100	2	0	2	2
UH1-BE-017_UH1-B	UH1-BE-017	UH1-BE-018	PicAx 2.1	52	Brick	3121	0000	3121	2.5	0	2.5	2.5
UH1-BE-019_UH1-07	UH1-BE-019	UH1-07-016	PicAx 2.1	52	Brick	0000	0000	0000	0	0	0	0
UH1-07-015_UH1-07	UH1-07-015	UH1-07-014	PicAx 2.1	52	Brick	2300	0000	2300	2	0	2	2
UH1-BE-018_UH1-B	UH1-BE-018	UH1-BE-018A	PicAx 2.1	52	Brick	3224	0000	3224	2.33	0	2.33	2.33
UH1-07-014_UH1-07	UH1-07-014	UH1-07-013	PicAx 2.1	52	Brick	2200	0000	2200	2	0	2	2
UH1-07-013_UH1-W	UH1-07-013	UH1-WE-015	PicAx 2.1	52	Brick	3121	0000	3121	2.5	0	2.5	2.5
	UH1-NY-002	UH1-NY-004	PicAx 2.1	28	Brick	0000	0000	0000	0	0	0	0
UH1-07-016_UH1-07	UH1-07-016	UH1-07-015	PicAx 2.1	52	Brick	0000	0000	0000	0	0	0	0
UH1-SU-025_UH1-S	UH1-SU-025	UH1-SU-026	PACP 6.0	38	Brick	3500	0000	3500	3	0	3	3
UH1-SU-024A_UH1-	UH1-SU-024A	UH1-SU-025	PACP 6.0	38	Brick		0000		3.86	0	3.86	3.86

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-BE-016_UH1-B	UH1-BE-016	UH1-BE-017	PicAx 2.1	52	Brick	2300	0000	2300	2	0	2	2
UH1-BE-018A_UH1-	UH1-BE-018A	UH1-BE-019	PicAx 2.1	52	Brick	2400	0000	2400	2	0	2	2
UH1-BE-019_UH1-0	UH1-BE-019	UH1-07-016	PicAx 2.1	52	Brick	3121	0000	3121	2.5	0	2.5	2.5
UH1-SU-026_UH1-S	UH1-SU-026	UH1-SU-027	PACP 6.0	38	Brick	3C00	0000	3C00	3	0	3	3
JOSO-43-015_JOSO	JOSO-43-015	JOSO-43-016	MSI PROFILER	75	Brick	2C00	0000	2C00	2	0	2	2
JOSO-43-014_JOSO	JOSO-43-014	JOSO-43-015	MSI PROFILER	75	Brick	2B00	0000	2B00	2	0	2	2
JOSO-PA-009_JOSO	JOSO-PA-009	JOSO-43-014	MSI PROFILER	75	Brick	2F00	0000	2F00	2	0	2	2
JOSO-43-013_JOSO	JOSO-43-013	JOSO-PA-009	MSI PROFILER	75	Brick		0000		2.08	0	2.08	2.08
JOSO-43-011_JOSO	JOSO-43-011	JOSO-43-012	MSI PROFILER	75	Brick	5142	0000	5142	2.2	0	2.2	2.2
JOSO-43-010_JOSO	JOSO-43-010	JOSO-43-011	MSI PROFILER	75	Brick		0000		4	0	4	4
JOSO-JFK-022_JOS	JOSO-JFK-022	JOSO-41-001	MSI PROFILER	74	Brick	2711	0000	2711	1.88	0	1.88	1.88
JOSO-41-001_JOSO	JOSO-41-001	JOSO-41-002	MSI PROFILER	74	Brick	2C11	0000	2C11	1.96	0	1.96	1.96
JOSO-41-002_JOSO	JOSO-41-002	JOSO-41-003	MSI PROFILER	74	Brick	2F00	0000	2F00	2	0	2	2
JOSO-41-003_JOSO	JOSO-41-003	JOSO-41-004	MSI PROFILER	74	Brick	2H00	0000	2H00	2	0	2	2
JOSO-41-004_JOSO	JOSO-41-004	JOSO-41-005	MSI PROFILER	74	Brick	2F00	0000	2F00	2	0	2	2
JOSO-41-006_JOSO	JOSO-41-006	JOSO-41-007	MSI PROFILER	74	Brick	2F00	0000	2F00	2	0	2	2
JOSO-41-007_JOSO	JOSO-41-007	JOSO-41-008	MSI PROFILER	74	Brick	2600	0000	2600	2	0	2	2
JOSO-41-008_JOSO	JOSO-41-008	JOSO-41-009	MSI PROFILER	74	Brick	312E	0000	312E	2	0	2	2
JOSO-41-009_JOSO	JOSO-41-009	JOSO-41-010	MSI PROFILER	74	Brick	2C00	0000	2C00	2	0	2	2
JOSO-BR-010_UC1-	JOSO-BR-010	UC1-Regulator	MSI PROFILER	58	Concrete Pipe (non-r	0000	0000	0000	0	0	0	0
JOSO-43-021_JOSO	JOSO-43-021	JOSO-BR-010	MSI PROFILER	58	Brick		0000		3.55	0	3.55	3.55
JOSO-43-019_JOSO	JOSO-43-019	JOSO-43-020	MSI PROFILER	58	Brick	2300	0000	2300	2	0	2	2
JOSO-43-018_JOSO	JOSO-43-018	JOSO-43-019	MSI PROFILER	58	Brick	2C00	0000	2C00	2	0	2	2
JOSO-43-017_JOSO	JOSO-43-017	JOSO-43-018	MSI PROFILER	58	Brick	2B00	0000	2B00	2	0	2	2
JOSO-43-016_JOSO	JOSO-43-016	JOSO-43-017	MSI PROFILER	58	Brick	312C	0000	312C	2.05	0	2.05	2.05
W3-KE-002_W3-KE-	W3-KE-002	W3-KE-001	MSI PROFILER	53	Reinforced Concrete	2100	0000	2100	2	0	2	2
W3-JFK-005_W3-JF	W3-JFK-005	W3-JFK-004	MSI PROFILER	53	Reinforced Concrete	3100	0000	3100	3	0	3	3
W3-JFK-004_W3-26-	W3-JFK-004	W3-26-001	MSI PROFILER	53	Reinforced Concrete	0000	0000	0000	0	0	0	0
UH1-NY-027_UH1-N	UH1-NY-027	UH1-NY-028	PicAx 2.1	15	Vitrified Clay Pipe	2100	1100	2111	2	1	1.5	1.5
W2-19-016_W2-19-0	W2-19-016	W2-19-017	PACP 6.0	15	Vitrified Clay Pipe	3200	1100	3211	3	1	2.33	2.33
UH1-BE-025_UH1-B	UH1-BE-025	UH1-BE-026	PicAx 2.1	15	Vitrified Clay Pipe	0000	1100	1100	0	1	1	1
UH1-08-013_UH1-W	UH1-08-013	UH1-WE-012	PicAx 2.1	15	Vitrified Clay Pipe	0000	1100	1100	0	1	1	1
W2-WE-023_W2-19-	W2-WE-023	W2-19-001	PicAx 2.1	0	Vitrified Clay Pipe	3200	1100	3211	3	1	2.33	2.33
W3-22-002_W3-22-0	W3-22-002	W3-22-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	1100	3111	3	1	2	2
UH1-10-013_UH1-10	UH1-10-013	UH1-10-012	PicAx 2.1	15	Vitrified Clay Pipe	3100	1100	3111	3	1	2	2
W2-27-004AA_W2-2	W2-27-004AA	W2-27-003	PACP 6.0	12	Vitrified Clay Pipe		1100		4	1	2.5	2.5
JOSO-43-001_JOSO	JOSO-43-001	JOSO-JFK-015	PicAx 2.1	18	Vitrified Clay Pipe	0000	1100	1100	0	1	1	1
W2-PA-005_W2-PA-	W2-PA-005	W2-PA-004	PACP 6.0	12	Vitrified Clay Pipe		1100		3.04	1	2.96	2.96
H5-HW-546A_H5-HW	H5-HW-546A	H5-HW-546	PicAx 2.1	15	Vitrified Clay Pipe	3500	1100	3511	3	1	2.67	2.67
UH1-07-017_UH1-07	UH1-07-017	UH1-07-016	PicAx 2.1	30	Vitrified Clay Pipe	3200	1100	3211	3	1	2.33	2.33
W2-WE-032_W2-WE	W2-WE-032	W2-WE-033	PicAx 2.1	15	Vitrified Clay Pipe	362B	1200	362B	2.29	1	2.17	2.17
W2-HU-006_W2-19-	W2-HU-006	W2-19-016	PACP 6.0	12	Vitrified Clay Pipe	3121	1200	3121	2.5	1	1.75	1.75
W2-17-004_W2-WE-	W2-17-004	W2-WE-027	PicAx 2.1	12	Vitrified Clay Pipe	2500	1200	2512	2	1	1.71	1.71
	H5-GR-678	H5-11-670	PicAx 2.1	36	Reinforced Concrete	3300	1200	3312	3	1	2.2	2.2
W1-32-014_W1-PL-0	W1-32-014	W1-PL-009	PACP 6.0	18	Vitrified Clay Pipe	0000	1300	1300	0	1	1	1
	H6-INT-002	H6-INT-002A	PicAx 2.1	36	Reinforced Concrete	3300	1300	3313	3	1	2	2
W2-17-003_W2-17-0	W2-17-003	W2-17-004	PicAx 2.1	12	Vitrified Clay Pipe	3100	1400	3114	3	1	1.4	1.4
	H2-WA-010	H2-WA-010A	PicAx 2.1	12	Concrete Pipe (non-r	0000	1500	1500	0	1	1	1
W2-WE-008_W2-WE	W2-WE-008	W2-WE-007	PACP 6.0	12	Vitrified Clay Pipe		1A00		4	1	1.21	1.21
D-PA-011_D-PA-012	D-PA-011	D-PA-012	PicAx 2.1	15	Reinforced Concrete	3C00	1A00	3C1A	3	1	2.22	2.22
D-PA-013_D-52-130	D-PA-013	D-52-130J	PicAx 2.1	15	Reinforced Concrete	3221	1B00	3221	2.67	1	1.28	1.28

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-16-007_UH1-16	UH1-16-007	UH1-16-006	PACP 6.0	12	Vitrified Clay Pipe	3C00	1C00	3C1C	3	1	1.96	1.96
W2-24-014_W2-24-0	W2-24-014	W2-24-015AB	SOLO	8	Vitrified Clay Pipe	5121	2100	5122	1.36	2	1.4	2
18PS-GR-008-2_18F	18PS-GR-008-2	18PS-GR-008-1	SOLO	8	Vitrified Clay Pipe	5121	2100	5122	3.5	2	3	3
JOSO-36-003_JOSC	JOSO-36-003	JOSO-36-003A	SOLO	12	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
	18PS-HI-006E	18PS-HI-006E1	SOLO	8	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
JOSO-HI-001A_JOS	JOSO-HI-001A	JOSO-LI-004	SOLO	12	Vitrified Clay Pipe	2100	2100	2200	2	2	2	2
W1-33-013DD_W1-3	W1-33-013DD	W1-33-013D	PicAx 2.1	0	Vitrified Clay Pipe	3B00	2100	3B21	3	2	2.95	2.95
W2-25-009_W2-NY-0	W2-25-009	W2-NY-013	PACP 6.0	12	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
W2-NY-035_W2-NY-	W2-NY-035	W2-NY-034	PACP 6.0	15	Vitrified Clay Pipe	3500	2100	3521	3	2	2.83	2.83
UH1-16-001_UH1-JF	UH1-16-001	UH1-JFK-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W3-29-002_W3-29-0	W3-29-002	W3-29-001	PicAx 2.1	15	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
UH1-11-022_UH1-11	UH1-11-022	UH1-11-021	PicAx 2.1	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W2-19-006_W2-19-0	W2-19-006	W2-19-007	PicAx 2.1	15	Vitrified Clay Pipe	3400	2100	3421	3	2	2.8	2.8
W2-18-006_W2-18-0	W2-18-006	W2-18-007	PACP 6.0	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W1-38-003_W1-38-0	W1-38-003	W1-38-004	PicAx 2.1	15	Vitrified Clay Pipe	3A00	2100	3A21	3	2	2.93	2.93
W2-BE-001_W2-BE-	W2-BE-001	W2-BE-002	PicAx 2.1	15	Vitrified Clay Pipe	3600	2100	3621	3	2	2.86	2.86
W1-38-001_W1-38-0	W1-38-001	W1-38-002	PicAx 2.1	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
G-67-093_G-67-094	G-67-093	G-67-094	PicAx 2.1	12	Concrete Pipe (non-r	3100	2100	3121	3	2	2.5	2.5
W2-BE-003_W2-29-0	W2-BE-003	W2-29-006	PicAx 2.1	15	Vitrified Clay Pipe	3521	2100	3522	2.83	2	2.71	2.71
UH1-10-001_UH1-JF	UH1-10-001	UH1-JFK-019	PicAx 2.1	15	Vitrified Clay Pipe	3121	2100	3122	2.5	2	2.33	2.33
UH1-13-015_UH1-BE	UH1-13-015	UH1-BE-005	PicAx 2.1	15	Vitrified Clay Pipe	3121	2100	3122	2.5	2	2.33	2.33
W3-SI-006_W3-SI-00	W3-SI-006	W3-SI-007	PicAx 2.1	15	Polyvinyl Chloride	3200	2100	3221	3	2	2.67	2.67
UH1-CE-012_UH1-C	UH1-CE-012	UH1-CE-013	PicAx 2.1	15	Vitrified Clay Pipe	3900	2100	3921	3	2	2.9	2.9
W1-37-011_W1-37-0	W1-37-011	W1-37-010	PicAx 2.1	18	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W1-33-013C_W1-33	W1-33-013C	W1-33-013B	PicAx 2.1	0	Vitrified Clay Pipe	3500	2100	3521	3	2	2.83	2.83
UH1-10-007_UH1-10	UH1-10-007	UH1-10-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
UH1-CE-013_UH1-C	UH1-CE-013	UH1-CE-014	PicAx 2.1	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
UH1-17-007_UH1-17	UH1-17-007	UH1-17-006	PicAx 2.1	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
	D-BR-145	D-BR-147	PicAx 2.1	18	Concrete Pipe (non-r		2100		2.71	2	2.63	2.63
JOSO-45-013E_JOS	JOSO-45-013E	JOSO-45-013D	PicAx 2.1	0	Reinforced Concrete	0000	2100	2100	0	2	2	2
W2-21-001_W2-21-0	W2-21-001	W2-21-002	PACP 6.0	12	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
	18PS-MA-001B	18PS-MA-001C	PicAx 2.1	15	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
UH1-09-009_UH1-09	UH1-09-009	UH1-09-008	PicAx 2.1	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W1-38-021_W1-38-0	W1-38-021	W1-38-022	PicAx 2.1	18	Vitrified Clay Pipe	3A00	2100	3A21	3	2	2.93	2.93
W2-WE-013_W2-WE	W2-WE-013	W2-WE-012	PACP 6.0	12	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W1-33-009_W1-33-0	W1-33-009	W1-33-010	PicAx 2.1	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W1-35-005_W1-35-0	W1-35-005	W1-35-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
UH1-08-014_UH1-W	UH1-08-014	UH1-WE-012	PicAx 2.1	15	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
UH1-NY-022_UH1-N	UH1-NY-022	UH1-NY-023	PicAx 2.1	18	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
JOSO-45-013C_JOS	JOSO-45-013C	JOSO-45-013B	PicAx 2.1	0	Reinforced Concrete	0000	2100	2100	0	2	2	2
W3-AD-001_W3-26-0	W3-AD-001	W3-26-003	PicAx 2.1	12	Vitrified Clay Pipe	3600	2100	3621	3	2	2.86	2.86
W2-17-001_W2-17-0	W2-17-001	W2-17-002	PicAx 2.1	12	Vitrified Clay Pipe	3221	2100	3222	2.67	2	2.5	2.5
JOSO-48-010_JOSC	JOSO-48-010	JOSO-48-011	PicAx 2.1	12	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W3-29-004_W3-29-0	W3-29-004	W3-29-003	PicAx 2.1	15	Vitrified Clay Pipe	0000	2100	2100	0	2	2	2
JOSO-41-015_JOSC	JOSO-41-015	JOSO-PA-016	PicAx 2.1	18	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
UH1-NY-018_UH1-1	UH1-NY-018	UH1-10-017	PicAx 2.1	18	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W1-37-017_W1-37-0	W1-37-017	W1-37-018	PicAx 2.1	18	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W1-38-018_W1-38-0	W1-38-018	W1-38-017	PicAx 2.1	18	Vitrified Clay Pipe	3A00	2100	3A21	3	2	2.93	2.93
JOSO-42-019_JOSC	JOSO-42-019	JOSO-42-020	PicAx 2.1	18	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W3-SU-025_W3-SU-	W3-SU-025	W3-SU-024	PACP 6.0	12	Vitrified Clay Pipe	3600	2100	3621	3	2	2.86	2.86
W2-27-002_W2-NY-0	W2-27-002	W2-NY-008	PACP 6.0	12	Vitrified Clay Pipe	3500	2100	3521	3	2	2.83	2.83

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-16-005_UH1-16	UH1-16-005	UH1-16-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W3-20-002_W3-20-0	W3-20-002	W3-20-003	PACP 6.0	15	Vitrified Clay Pipe	3200	2100	3221	3	2	2.67	2.67
W2-BE-042_W2-BE-	W2-BE-042	W2-BE-041	PACP 6.0	15	Vitrified Clay Pipe		2100		3.5	2	3	3
PANYNJ-PA-001D_P	PANYNJ-PA-001D	PANYNJ-PA-001A	PicAx 2.1	8	Vitrified Clay Pipe	2300	2100	2400	2	2	2	2
	W2-BE-026	W2-22-013A	PACP 6.0	12	Vitrified Clay Pipe	3121	2100	3122	2.5	2	2.33	2.33
H6-WA-009_H6-WA-	H6-WA-009	H6-WA-010	PicAx 2.1	15	Vitrified Clay Pipe	3500	2100	3521	3	2	2.83	2.83
UH1-13-002_UH1-13	UH1-13-002	UH1-13-001	PACP 6.0	15	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W2-25-013B_W2-25-	W2-25-013B	W2-25-013C	PicAx 2.1	8	Brick	3200	2100	3221	3	2	2.67	2.67
W4-KI-003AB_W4-K	W4-KI-003AB	W4-KI-003ABA	PicAx 2.1	8	Vitrified Clay Pipe	3100	2100	3121	3	2	2.5	2.5
W3-GR-002A_W3-G	W3-GR-002A	W3-GR-002	PicAx 2.1	12	Reinforced Concrete	3200	2100	3221	3	2	2.67	2.67
H6-GA-006_H6-GA-0	H6-GA-006	H6-GA-007	PicAx 2.1	15	Vitrified Clay Pipe		2100		2.13	2	2.11	2.11
H6-HW-001_H6-HW-	H6-HW-001	H6-HW-002	PicAx 2.1	15	Vitrified Clay Pipe	3300	2100	3321	3	2	2.75	2.75
H5-HW-538_H5-HW-	H5-HW-538	H5-HW-536	PicAx 2.1	15	Vitrified Clay Pipe	3C00	2100	3C21	3	2	2.95	2.95
H5-HW-546_H5-HW-	H5-HW-546	H5-HW-544	PicAx 2.1	15	Vitrified Clay Pipe	3A00	2100	3A21	3	2	2.93	2.93
W4-JFK-004_W4-JF	W4-JFK-004	W4-JFK-005	PicAx 2.1	18	Vitrified Clay Pipe	3F00	2100	3F21	3	2	2.97	2.97
	W2-MA-002-B	W2-MA-002-C	MSI PROFILER	45	Brick	312H	2100	312H	2.02	2	2.02	2.02
PANYNJ-PA-006_PA	PANYNJ-PA-006	PANYNJ-PA-012A	MSI PROFILER	54	Reinforced Concrete	0000	2100	2100	0	2	2	2
W3-HP-003A_W3-HP	W3-HP-003A	W3-HP-003	MSI PROFILER	36	Brick	1200	2100	2112	1	2	1.33	2
	W3-SU-009	W3-SU-007	MSI PROFILER	36	Brick	3122	2100	3123	2	2	2	2
W2-PA-002_W2-29-0	W2-PA-002	W2-29-015	PACP 6.0	30	Reinforced Concrete	0000	2100	2100	0	2	2	2
W3-KE-001_W3-JFK	W3-KE-001	W3-JFK-005	MSI PROFILER	53	Reinforced Concrete	2100	2100	2200	2	2	2	2
W2-17-002_W2-17-0	W2-17-002	W2-17-003	PicAx 2.1	12	Vitrified Clay Pipe	0000	2111	2111	0	1.5	1.5	1.5
UH1-CE-026_UH1-0	UH1-CE-026	UH1-05-009	PicAx 2.1	15	Vitrified Clay Pipe	3121	2111	3122	2.5	1.5	2	2
	JOSO-48-011	JOSO-48-011A	PicAx 2.1	15	Vitrified Clay Pipe	3800	2111	3821	3	1.5	2.7	2.7
W3-31-002_W3-31-0	W3-31-002	W3-31-003	PicAx 2.1	15	Vitrified Clay Pipe	3B00	2111	3B21	3	1.5	2.83	2.83
W2-PA-008_W2-PA-	W2-PA-008	W2-PA-007	PACP 6.0	12	Vitrified Clay Pipe	3100	2111	3121	3	1.5	2	2
W2-BE-029_W2-BE-	W2-BE-029	W2-BE-028	PACP 6.0	12	Vitrified Clay Pipe		2111		3.07	1.5	2.97	2.97
	W2-22-13B	W2-22-013	PACP 6.0	12	Vitrified Clay Pipe	0000	2111	2111	0	1.5	1.5	1.5
	UH1-11-016	UH1-11-015	PACP 6.0	15	Vitrified Clay Pipe	0000	2111	2111	0	1.5	1.5	1.5
W2-25-013C_W2-HU	W2-25-013C	W2-HU-004	PicAx 2.1	15	Brick	0000	2111	2111	0	1.5	1.5	1.5
	W2-PA-017	W2-PA-017A	MSI PROFILER	30	Reinforced Concrete	322C	2111	322C	2.08	1.5	2.04	2.04
W2-MO-007B_W2-M	W2-MO-007B	W2-MO-008	PicAx 2.1	15	Vitrified Clay Pipe	3624	2112	3625	2.6	1.33	2.31	2.31
UH1-13-001_UH1-JF	UH1-13-001	UH1-JFK-012	PACP 6.0	15	Vitrified Clay Pipe	0000	2112	2112	0	1.33	1.33	1.33
W2-16-018_W2-16-0	W2-16-018	W2-16-017	PACP 6.0	12	Vitrified Clay Pipe	3200	2116	3221	3	1.14	1.56	1.56
UH1-WE-002_UH1-1	UH1-WE-002	UH1-14-011	PACP 6.0	15	Vitrified Clay Pipe	0000	2119	2119	0	1.1	1.1	1.1
W2-MO-004_W2-MO	W2-MO-004	W2-MO-003AA	PACP 6.0	18	Concrete Pipe (non-r	3500	211A	3521	3	1.07	1.58	1.58
	D-PA-12	D-PA-13	PicAx 2.1	15	Reinforced Concrete	3B00	211E	3B21	3	1.03	1.69	1.69
	JOSO-44-22B	W5-JFK-003A	SOLO	12	Vitrified Clay Pipe	1100	2200	2211	1	2	1.67	2
JOSO-34-003_JOSO	JOSO-34-003	JOSO-34-002	PicAx 2.1	12	Vitrified Clay Pipe	3200	2200	3222	3	2	2.5	2.5
JOSO-45-009_JOSO	JOSO-45-009	JOSO-45-010	PicAx 2.1	15	Vitrified Clay Pipe	3B00	2200	3B22	3	2	2.89	2.89
W2-19-018_W2-19-0	W2-19-018	W2-19-019	PACP 6.0	15	Vitrified Clay Pipe	0000	2200	2200	0	2	2	2
	W2-MO-008	W2-MO-008A	PicAx 2.1	18	Vitrified Clay Pipe	3827	2200	3829	2.53	2	2.47	2.47
W4-HI-001_W4-HI-0	W4-HI-002	W4-HI-001	PicAx 2.1	18	Vitrified Clay Pipe	0000	2200	2200	0	2	2	2
UH1-10-011_UH1-1	UH1-10-011	UH1-10-010	PicAx 2.1	15	Vitrified Clay Pipe	3600	2200	3622	3	2	2.75	2.75
W1-35-007_W1-35-0	W1-35-007	W1-35-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	2200	2200	0	2	2	2
D-52-130H_D-52-13	D-52-130H	D-52-130F	PicAx 2.1	0	Concrete Pipe (non-r	3100	2200	3122	3	2	2.33	2.33
W2-MO-001_W2-MO	W2-MO-001	W2-MO-002A	PicAx 2.1	15	Vitrified Clay Pipe	2100	2200	2300	2	2	2	2
UH1-10-002_UH1-1	UH1-10-002	UH1-10-001	PicAx 2.1	15	Vitrified Clay Pipe	3D00	2200	3D22	3	2	2.93	2.93
UH1-11-003_UH1-S	UH1-11-003	UH1-SU-021	PicAx 2.1	15	Vitrified Clay Pipe	3321	2200	3323	2.75	2	2.5	2.5
W1-38-016_W1-NY-0	W1-38-016	W1-NY-007	PicAx 2.1	15	Vitrified Clay Pipe	3A00	2200	3A22	3	2	2.85	2.85
JOSO-41-022_JOSO	JOSO-41-022	JOSO-41-023	PicAx 2.1	15	Vitrified Clay Pipe	3300	2200	3322	3	2	2.6	2.6

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
JOSO-45-020B_JOS	JOSO-45-020B	JOSO-45-020AA	PicAx 2.1	15	Vitrified Clay Pipe	3100	2200	3122	3	2	2.33	2.33
UH1-KE-005_UH1-K	UH1-KE-005	UH1-KE-006	PicAx 2.1	18	Vitrified Clay Pipe	3100	2200	3122	3	2	2.33	2.33
UH1-CE-020_UH1-C	UH1-CE-020	UH1-CE-021	PicAx 2.1	15	Vitrified Clay Pipe	3621	2200	3623	2.86	2	2.67	2.67
UH1-13-023_UH1-P	UH1-13-023	UH1-PA-005	PACP 6.0	15	Vitrified Clay Pipe	0000	2200	2200	0	2	2	2
W3-SI-008_W3-SI-0	W3-SI-008	W3-SI-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	2200	3122	3	2	2.33	2.33
W3-KE-013A_W3-KE	W3-KE-013A	W3-KE-013B	PACP 6.0	12	Vitrified Clay Pipe	0000	2200	2200	0	2	2	2
W1-PL-007_W1-PL-0	W1-PL-007	W1-PL-008A	PACP 6.0	15	Vitrified Clay Pipe	0000	2200	2200	0	2	2	2
H5-GA-574_H5-GA-5	H5-GA-574	H5-GA-572	PicAx 2.1	15	Vitrified Clay Pipe	3B00	2200	3B22	3	2	2.89	2.89
H6-HW-003_H6-14-0	H6-HW-003	H6-14-006	PicAx 2.1	15	Vitrified Clay Pipe	3200	2200	3222	3	2	2.5	2.5
H6-GA-007_H6-GA-0	H6-GA-007	H6-GA-008	PicAx 2.1	15	Vitrified Clay Pipe	3100	2200	3122	3	2	2.33	2.33
	W2-MA-002	W2-MA-002-A	MSI PROFILER	45	Brick	2900	2200	2A00	2	2	2	2
	W4-JFK-012C	W4-JFK-012D	MSI PROFILER	36	Reinforced Concrete	0000	2200	2200	0	2	2	2
UH1-11-002_UH1-11	UH1-11-002	UH1-11-001	PicAx 2.1	15	Vitrified Clay Pipe	3900	2211	3922	3	1.67	2.67	2.67
	JOSO-48-011A	JOSO-48-012	PicAx 2.1	15	Vitrified Clay Pipe	3A00	2211	3A22	3	1.67	2.71	2.71
C-66-007_C-BE-035	C-66-007	C-BE-035	PicAx 2.1	12	Vitrified Clay Pipe	3122	2211	3124	2.33	1.67	2	2
UH1-13-022_UH1-13	UH1-13-022	UH1-13-023	PACP 6.0	15	Vitrified Clay Pipe		2211		3.5	1.67	2.71	2.71
W2-17-006_W2-17-0	W2-17-006	W2-17-007	PicAx 2.1	15	Vitrified Clay Pipe	3200	2211	3222	3	1.67	2.2	2.2
W1-33-002_W1-33-0	W1-33-002	W1-33-003	PicAx 2.1	15	Vitrified Clay Pipe	3200	2211	3222	3	1.67	2.2	2.2
W2-PA-004_W2-MA-	W2-PA-004	W2-MA-001A	PACP 6.0	12	Vitrified Clay Pipe	0000	2211	2211	0	1.67	1.67	1.67
UH1-16-006_UH1-S	UH1-16-006	UH1-SU-003	PACP 6.0	12	Vitrified Clay Pipe	3600	2216	3622	3	1.25	2	2
G-DE-098_G-DE-099	G-DE-098	G-DE-099	MSI PROFILER	24	Vitrified Clay Pipe	2600	2300	2900	2	2	2	2
W1-33-002_W1-33-0	W1-33-002	W1-33-003	PicAx 2.1	15	Vitrified Clay Pipe	3300	2300	3323	3	2	2.5	2.5
W1-NY-006_W1-NY-	W1-NY-006	W1-NY-005	PicAx 2.1	18	Vitrified Clay Pipe	3100	2300	3123	3	2	2.25	2.25
UH1-08-009_UH1-08	UH1-08-009	UH1-08-008	PicAx 2.1	15	Vitrified Clay Pipe	0000	2300	2300	0	2	2	2
W1-37-023_W1-37-0	W1-37-023	W1-37-024	PicAx 2.1	18	Vitrified Clay Pipe	3211	2300	3223	2.33	2	2.17	2.17
W1-37-009_W1-BE-0	W1-37-009	W1-BE-014	PicAx 2.1	18	Vitrified Clay Pipe	0000	2300	2300	0	2	2	2
W1-38-004_W1-38-0	W1-38-004	W1-38-005	PicAx 2.1	15	Vitrified Clay Pipe	3B00	2300	3B23	3	2	2.86	2.86
	UH1-08-008	UH1-08-006	PicAx 2.1	18	Vitrified Clay Pipe	0000	2300	2300	0	2	2	2
W3-26-005_W3-CE-0	W3-26-005	W3-CE-012	PicAx 2.1	12	Vitrified Clay Pipe	3122	2300	3125	2.33	2	2.17	2.17
W1-38-019_W1-38-0	W1-38-019	W1-38-018	PicAx 2.1	18	Vitrified Clay Pipe	3C00	2300	3C23	3	2	2.88	2.88
JOSO-45-020B_JOS	JOSO-45-020B	JOSO-45-020AA	PicAx 2.1	15	Vitrified Clay Pipe	3121	2300	3124	2.5	2	2.2	2.2
W3-KE-019_W3-KE-	W3-KE-019	W3-KE-018	PACP 6.0	18	Vitrified Clay Pipe	3900	2300	3923	3	2	2.75	2.75
	W2-MA-002-E	W2-HU-001	MSI PROFILER	45	Brick	312D	2300	312E	2.03	2	2.03	2.03
W2-PA-013A_W2-PA	W2-PA-013A	W2-PA-013	MSI PROFILER	30	Reinforced Concrete	2811	2300	2A11	1.89	2	1.92	2
W3-KE-007_W3-KE-	W3-KE-007	W3-KE-006	MSI PROFILER	36	Reinforced Concrete	0000	2300	2300	0	2	2	2
W2-PA-006_W2-PA-	W2-PA-006	W2-PA-003	PACP 6.0	30	Reinforced Concrete	0000	2300	2300	0	2	2	2
W2-PA-043_W2-PA-	W2-PA-043	W2-PA-042	PACP 6.0	30	Brick	0000	2300	2300	0	2	2	2
JOSO-43-021A_JOS	JOSO-43-021A	JOSO-43-021	MSI PROFILER	58	Brick	2100	2300	2400	2	2	2	2
W2-19-002_W2-19-0	W2-19-002	W2-19-003	PicAx 2.1	15	Vitrified Clay Pipe		2311		2.92	1.75	2.77	2.77
18PS-MA-007B_18P	18PS-MA-007B	18PS-MA-007A	PicAx 2.1	24	Reinforced Concrete	0000	2400	2400	0	2	2	2
W1-38-008_W1-38-0	W1-38-008	W1-38-009	PicAx 2.1	15	Vitrified Clay Pipe	3900	2400	3924	3	2	2.69	2.69
UH1-10-014_UH1-B	UH1-10-014	UH1-BE-013	PicAx 2.1	18	Vitrified Clay Pipe	0000	2400	2400	0	2	2	2
JOSO-47-003_JOS	JOSO-47-003	JOSO-47-002	PicAx 2.1	18	Vitrified Clay Pipe	3100	2400	3124	3	2	2.2	2.2
18PS-HA-009A_18P	18PS-HA-009A	18PS-HA-010	PicAx 2.1	24	Vitrified Clay Pipe	0000	2400	2400	0	2	2	2
H5-GA-572_H5-GA-5	H5-GA-572	H5-GA-568	PicAx 2.1	15	Vitrified Clay Pipe	3A21	2400	3A25	2.77	2	2.59	2.59
18PS-GR-009C_18P	18PS-GR-009C	18PS-GR-009D	MSI PROFILER	45	Brick	312C	2400	312C	2.05	2	2.04	2.04
	W2-HU-001	W2-HU-001-A	MSI PROFILER	45	Brick	2800	2400	2A00	2	2	2	2
W2-PA-019C_W2-PA	W2-PA-019C	W2-PA-019	MSI PROFILER	30	Reinforced Concrete	2G00	2400	2H00	2	2	2	2
H2-WA-006_H2-WA-	H2-WA-006	H2-WA-005A	PicAx 2.1	45	Brick	3D11	2400	3D24	2.93	2	2.82	2.82
UH1-06-015_UH1-06	UH1-06-015	UH1-06-014	PicAx 2.1	15	Vitrified Clay Pipe	3B00	2500	3B25	3	2	2.79	2.79
W2-21-015_W2-NY-0	W2-21-015	W2-NY-024A	PicAx 2.1	15	Vitrified Clay Pipe	3800	2500	3825	3	2	2.62	2.62

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W3-KE-006_W3-KE-	W3-KE-006	W3-KE-005	MSI PROFILER	36	Reinforced Concrete	2100	2500	2600	2	2	2	2
W1-33-003_W1-33-0	W1-33-003	W1-33-004	PicAx 2.1	15	Vitrified Clay Pipe	0000	2511	2511	0	1.83	1.83	1.83
18PS-MA-004A_18P	18PS-MA-004A	18PS-MA-004	PicAx 2.1	24	Ductile Iron Pipe	0000	2600	2600	0	2	2	2
UH1-KE-001_UH1-K	UH1-KE-001	UH1-KE-002	PicAx 2.1	18	Vitrified Clay Pipe	3121	2600	3127	2.5	2	2.13	2.13
W2-PA-019A_W2-PA	W2-PA-019A	W2-PA-017	MSI PROFILER	30	Reinforced Concrete	312H	2600	312J	2.02	2	2.02	2.02
W2-BE-042_W2-BE-	W2-BE-042	W2-BE-041	PACP 6.0	15	Vitrified Clay Pipe		2613		3.5	1.67	2	2
UH1-NY-015_UH1-1	UH1-NY-015	UH1-11-019	PicAx 2.1	18	Vitrified Clay Pipe	0000	2700	2700	0	2	2	2
UH1-CE-005_UH1-1	UH1-CE-005	UH1-14-007	PACP 6.0	15	Vitrified Clay Pipe	0000	2700	2700	0	2	2	2
	W2-HU-001-A	W2-HU-002	MSI PROFILER	45	Brick	2B11	2700	2C11	1.94	2	1.96	2
W3-CE-017_W3-CE-	W3-CE-017	W3-CE-016	MSI PROFILER	30	Brick	0000	2700	2700	0	2	2	2
	W2-22-008	W2-WE-012	MSI PROFILER	36	Brick	2D00	2700	2F00	2	2	2	2
18PS-MA-001_18PS	18PS-MA-001	18PS-MA-002	PicAx 2.1	15	Ductile Iron Pipe	3800	2800	3828	3	2	2.5	2.5
W2-MO-006_W2-MO	W2-MO-006	W2-MO-007B	PicAx 2.1	15	Vitrified Clay Pipe	3621	2800	3629	2.86	2	2.4	2.4
W2-24-001_W2-24-0	W2-24-001	W2-24-002	PACP 6.0	15	Vitrified Clay Pipe		2800		3.5	2	2.3	2.3
W2-20-005_W2-20-0	W2-20-005	W2-20-006	MSI PROFILER	45	Brick		2800		2.06	2	2.05	2.05
	W2-17-016	W2-PA-036A	PACP 6.0	15	Vitrified Clay Pipe	3700	2900	3729	3	2	2.44	2.44
W1-38-028_W1-38-0	W1-38-028	W1-38-029	PicAx 2.1	18	Vitrified Clay Pipe	3A00	2900	3A29	3	2	2.57	2.57
18PS-GR-009A_18P	18PS-GR-009A	18PS-GR-009B	MSI PROFILER	45	Brick	2B00	2900	2D00	2	2	2	2
18PS-MA-002_18PS	18PS-MA-002	18PS-MA-003	PicAx 2.1	18	Ductile Iron Pipe	0000	2A00	2A00	0	2	2	2
18PS-MA-004_18PS	18PS-MA-004	18PS-MA-005	PicAx 2.1	24	Ductile Iron Pipe	0000	2A00	2A00	0	2	2	2
UH1-PA-022_UH1-P	UH1-PA-022	UH1-PA-023	PicAx 2.1	24	Vitrified Clay Pipe	0000	2A00	2A00	0	2	2	2
W3-30-005_W3-30-0	W3-30-005	W3-30-006	PicAx 2.1	15	Vitrified Clay Pipe	3A00	2A00	3A2A	3	2	2.48	2.48
	18PS-MA-001	18PS-MA-001A	PicAx 2.1	15	Ductile Iron Pipe	0000	2A00	2A00	0	2	2	2
	W3-27-001A	W3-27-002	PicAx 2.1	15	Vitrified Clay Pipe	5141	2A00	5141	3.17	2	2.66	2.66
UH1-KE-002_UH1-K	UH1-KE-002	UH1-KE-003	PicAx 2.1	18	Vitrified Clay Pipe	0000	2A00	2A00	0	2	2	2
W1-39-017_W1-39-0	W1-39-017	W1-39-018	MSI PROFILER	36	Brick	2O00	2A00	2Q00	2	2	2	2
JOSO-JFK-024_JOS	JOSO-JFK-024	JOSO-JFK-023	MSI PROFILER	57	Brick		2A00		2.43	2	2.3	2.3
W2-20-011_W2-20-0	W2-20-011	W2-20-012	MSI PROFILER	45	Brick	2D00	2A00	2F00	2	2	2	2
W2-20-009_W2-20-0	W2-20-009	W2-20-010	MSI PROFILER	45	Brick	2H00	2A00	2J00	2	2	2	2
W2-20-008_W2-20-0	W2-20-008	W2-20-009	MSI PROFILER	45	Brick	2D00	2A00	2G00	2	2	2	2
W2-20-007_W2-20-0	W2-20-007	W2-20-008	MSI PROFILER	45	Brick	2C00	2A00	2E00	2	2	2	2
W2-PA-003_W2-PA-	W2-PA-003	W2-PA-002	PACP 6.0	30	Reinforced Concrete	0000	2A00	2A00	0	2	2	2
W2-NY-009AB_W2-N	W2-NY-009AB	W2-NY-009A	PACP 6.0	45	Brick	3200	2A00	322A	3	2	2.14	2.14
W2-16-015_W2-16-0	W2-16-015	W2-16-016	PACP 6.0	15	Vitrified Clay Pipe	3100	2A1A	312A	3	1.56	1.62	1.62
W1-PA-001_W1-PA-	W1-PA-001	W1-PA-002	PicAx 2.1	24	Vitrified Clay Pipe	3E00	2B00	3E2B	3	2	2.64	2.64
W1-PL-007_W1-PL-0	W1-PL-007	W1-PL-008A	PACP 6.0	15	Vitrified Clay Pipe	0000	2B00	2B00	0	2	2	2
JOSO-42-007_JOSO	JOSO-42-007	JOSO-42-008	PicAx 2.1	18	Vitrified Clay Pipe	3300	2B00	332B	3	2	2.16	2.16
W1-39-011_W1-39-0	W1-39-011	W1-39-012	MSI PROFILER	36	Brick	2E00	2B00	2I00	2	2	2	2
W2-20-006_W2-20-0	W2-20-006	W2-20-007	MSI PROFILER	45	Brick	2B00	2B00	2F00	2	2	2	2
W2-BE-007A_W2-BE	W2-BE-007A	W2-BE-007	PACP 6.0	45	Brick	0000	2B00	2B00	0	2	2	2
JOSO-43-020_JOSO	JOSO-43-020	JOSO-43-021A	MSI PROFILER	58	Brick	2B00	2B00	2E00	2	2	2	2
JOSO-45-013F_JOS	JOSO-45-013F	JOSO-45-013E	PicAx 2.1	0	Reinforced Concrete	3A00	2C00	3A2C	3	2	2.36	2.36
UH1-PA-021_UH1-P	UH1-PA-021	UH1-PA-022	PicAx 2.1	24	Vitrified Clay Pipe	3100	2C00	312C	3	2	2.04	2.04
18PS-MA-003_18PS	18PS-MA-003	18PS-MA-004A	PicAx 2.1	24	Ductile Iron Pipe	0000	2C00	2C00	0	2	2	2
	18PS-MA-001A	18PS-MA-001B	PicAx 2.1	15	Ductile Iron Pipe	0000	2C00	2C00	0	2	2	2
UH1-PA-023_UH1-P	UH1-PA-023	UH1-PA-024	PicAx 2.1	24	Vitrified Clay Pipe	2200	2C00	2C00	2	2	2	2
W3-CE-013_W3-CE-	W3-CE-013	W3-CE-012	PACP 6.0	27	Brick	3200	2C00	322C	3	2	2.09	2.09
W2-20-010_W2-20-0	W2-20-010	W2-20-011	MSI PROFILER	45	Brick	2F00	2C00	2J00	2	2	2	2
18PS-MA-005_18PS	18PS-MA-005	18PS-MA-006A	PicAx 2.1	24	Ductile Iron Pipe	0000	2E00	2E00	0	2	2	2
18PS-GR-008-8_18P	18PS-GR-008-8	18PS-GR-007A	SOLO	8	Vitrified Clay Pipe	5131	3100	5132	2.17	3	2.29	3
W2-27-004A_W2-27-	W2-27-004A	W2-27-004B	SOLO	8	Vitrified Clay Pipe	2300	3100	3123	2	3	2.25	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
18PS-GR-001C_18P	18PS-GR-001C	18PS-GR-001B	SOLO	12	Vitrified Clay Pipe	2200	3100	3122	2	3	2.33	3
H-67-001_G-67-103	H-67-001	G-67-103	SOLO	12	Concrete Pipe (non-r	0000	3100	3100	0	3	3	3
W4-ST-001_W1-AU-	W4-ST-001	W1-AU-080B	SOLO	8	Vitrified Clay Pipe		3100		4	3	3.67	3.67
18PS-GR-007C_18P	18PS-GR-007B	18PS-GR-007C	SOLO	8	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
W4-KI-003_W4-KI-0	W4-KI-003	W4-KI-004	SOLO	10	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W4-JFK-006C_W4-J	W4-JFK-006C	W4-JFK-006D	SOLO	10	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
W4-KI-001BB_W4-K	W4-KI-001BB	W4-KI-003	SOLO	10	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
C-PO-010_C-PO-01	C-PO-010	C-PO-011	SOLO	12	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
D-PA-010_D-54-014	D-PA-010	D-54-014	SOLO	12	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
G-67-093_G-67-094	G-67-093	G-67-094	SOLO	12	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
JOSO-BE-021_JOS	JOSO-BE-021	JOSO-41-008A	PicAx 2.1	0	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
UH1-10-003_UH1-S	UH1-10-003	UH1-SU-023	PicAx 2.1	15	Vitrified Clay Pipe	3122	3100	3222	2.33	3	2.5	3
UH1-07-006A_UH1-	UH1-07-006A	UH1-07-005	PicAx 2.1	15	Vitrified Clay Pipe	3700	3100	3800	3	3	3	3
W1-33-013D_W1-33	W1-33-013D	W1-33-013C	PicAx 2.1	0	Vitrified Clay Pipe	3C00	3100	3C00	3	3	3	3
W3-SU-020_W3-SU-	W3-SU-020	W3-SU-019	PACP 6.0	12	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
W1-38-010_W1-38-0	W1-38-010	W1-38-011	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
UH1-06-013_UH1-06	UH1-06-013	UH1-06-012	PicAx 2.1	15	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
	W2-WE-004A	W2-WE-004	PACP 6.0	15	Vitrified Clay Pipe	5100	3100	5131	5	3	4	4
W3-SI-010_W3-SI-01	W3-SI-010	W3-SI-011	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
	W3-27-001	W3-27-001A	PicAx 2.1	15	Vitrified Clay Pipe	3200	3100	3300	3	3	3	3
G-66-131_G-66-132	G-66-131	G-66-132	PicAx 2.1	15	Concrete Pipe (non-r	0000	3100	3100	0	3	3	3
D-BR-098_D-52-130	D-BR-098	D-52-130	PicAx 2.1	15	Concrete Pipe (non-r	0000	3100	3100	0	3	3	3
JOSO-BE-021_JOS	JOSO-BE-021	JOSO-42-007	PicAx 2.1	18	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
W3-23-001_W3-23-0	W3-23-001	W3-23-002	PicAx 2.1	15	Vitrified Clay Pipe	3200	3100	3300	3	3	3	3
W2-BE-033_W2-BE-	W2-BE-033	W2-BE-032	PACP 6.0	15	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
	JOSO-44-019A	JOSO-44-020	PicAx 2.1	15	Vitrified Clay Pipe	3300	3100	3400	3	3	3	3
UH1-14-009_UH1-14	UH1-14-009	UH1-14-008	PicAx 2.1	15	Vitrified Clay Pipe	3821	3100	3921	2.89	3	2.9	3
W2-BE-031_W2-MO	W2-BE-031	W2-MO-005	PACP 6.0	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
UH1-12-001_UH1-JF	UH1-12-001	UH1-JFK-015	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W2-NY-001_W2-NY-	W2-NY-001	W2-NY-002	PicAx 2.1	15	Vitrified Clay Pipe	3700	3100	3800	3	3	3	3
	UH1-KE-006	UH1-JFK-008	PicAx 2.1	18	Vitrified Clay Pipe	3400	3100	3500	3	3	3	3
W3-CE-012_W3-CE-	W3-CE-012	W3-CE-011	PicAx 2.1	27	Brick		3100		4	3	3.67	3.67
14VO-MA-002_14VO	14VO-MA-002	14VO-14-001K	PACP 6.0	15	Asbestos Cement	3212	3100	3312	2	3	2.2	3
W1-38-012_W1-38-0	W1-38-012	W1-38-011	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
UH1-NY-028_UH1-0	UH1-NY-028	UH1-06-015	PicAx 2.1	15	Vitrified Clay Pipe	3200	3100	3300	3	3	3	3
W2-30-008D_W2-BE	W2-30-008D	W2-BE-002A	PicAx 2.1	15	Vitrified Clay Pipe	5122	3100	5131	3	3	3	3
UH1-CE-022_UH1-C	UH1-CE-022	UH1-CE-023	PicAx 2.1	15	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
W2-WE-003_W2-WE	W2-WE-003	W2-WE-002	PACP 6.0	12	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W2-21-012_W2-21-0	W2-21-012	W2-21-013	PicAx 2.1	15	Vitrified Clay Pipe	3C2C	3100	3D2C	2.55	3	2.56	3
JOSO-44-016_JOS	JOSO-44-016	JOSO-44-017	PicAx 2.1	15	Vitrified Clay Pipe	3B00	3100	3B00	3	3	3	3
W1-33-012_W1-33-0	W1-33-012	W1-33-013	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
UH1-06-004_UH1-06	UH1-06-004	UH1-06-003	PicAx 2.1	15	Vitrified Clay Pipe	3200	3100	3300	3	3	3	3
W3-30-005_W3-30-0	W3-30-005	W3-30-006	PicAx 2.1	15	Vitrified Clay Pipe	3300	3100	3400	3	3	3	3
	W2-WE-005	W2-WE-004A	PACP 6.0	15	Vitrified Clay Pipe		3100		3.5	3	3.33	3.33
JOSO-BE-004_JOS	JOSO-BE-004	JOSO-BE-003	PicAx 2.1	18	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
W2-SU-001_W3-SU-	W2-SU-001	W3-SU-021	PACP 6.0	12	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W2-BE-034_W2-BE-	W2-BE-034	W2-BE-033	PACP 6.0	12	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
	W2-29-001	W2-29-003	PicAx 2.1	15	Vitrified Clay Pipe	3B21	3100	3C21	2.95	3	2.95	3
W2-MO-002A_W2-M	W2-MO-002A	W2-MO-003	PicAx 2.1	15	Vitrified Clay Pipe	3200	3100	3300	3	3	3	3
UH1-NY-031_UH1-0	UH1-NY-031	UH1-05-023	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W1-37-005_W1-37-0	W1-37-005	W1-37-006	PicAx 2.1	15	Vitrified Clay Pipe	3200	3100	3300	3	3	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
	W1-37-019	W1-37-019A	PicAx 2.1	18	Vitrified Clay Pipe	3B00	3100	3B00	3	3	3	3
	18PS-18-010B	18PS-18-010BF	PicAx 2.1	10	Polyethylene	3100	3100	3200	3	3	3	3
UH1-CE-022_UH1-C	UH1-CE-022	UH1-CE-023	PicAx 2.1	15	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
	W2-26-001B	W2-26-002	PACP 6.0	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W3-23-002_W3-23-0	W3-23-002	W3-23-003A	PicAx 2.1	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
UH1-12-019_UH1-N	UH1-12-019	UH1-NY-009	PACP 6.0	21	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
W2-27-003_W2-27-0	W2-27-003	W2-27-002	PACP 6.0	8	Vitrified Clay Pipe	3A21	3100	3A21	2.92	3	2.93	3
UH1-14-001_UH1-JF	UH1-14-001	UH1-JFK-009	PACP 6.0	12	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W2-28-003_W2-28-0	W2-28-003	W2-28-002	PACP 6.0	12	Vitrified Clay Pipe		3100		3.07	3	3.07	3.07
W3-22-006_W3-KE-0	W3-22-006	W3-KE-007	PACP 6.0	15	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
W2-25-013A_W2-25-	W2-25-013A	W2-25-013B	PicAx 2.1	8	Brick	3100	3100	3200	3	3	3	3
	W2-BE-028	W2-22-027	PACP 6.0	12	Vitrified Clay Pipe	3800	3100	3900	3	3	3	3
W3-SI-004_W3-SI-00	W3-SI-004	W3-SI-005	PicAx 2.1	12	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
H6-WA-012_H6-14-0	H6-WA-012	H6-14-008	PicAx 2.1	15	Vitrified Clay Pipe	3222	3100	3322	2.5	3	2.6	3
	UH1-11-014	UH1-11-015	PACP 6.0	15	Vitrified Clay Pipe		3100		3.5	3	3.33	3.33
UH1-SU-001_UH1-S	UH1-SU-001	UH1-SU-002	PACP 6.0	18	Vitrified Clay Pipe	3322	3100	3422	2.6	3	2.67	3
	W4-HI-003A	W4-HI-004	PicAx 2.1	18	Vitrified Clay Pipe	1100	3100	3111	1	3	2	3
UH1-12-016_UH1-12	UH1-12-016	UH1-12-015	PACP 6.0	20	Brick	3A00	3100	3A00	3	3	3	3
W3-GR-002C_W3-G	W3-GR-002C	W3-GR-002B	PicAx 2.1	12	Reinforced Concrete	3400	3100	3500	3	3	3	3
H5-HW-534_H5-HW-	H5-HW-534	H5-HW-532	PicAx 2.1	15	Vitrified Clay Pipe	3A11	3100	3B11	2.87	3	2.88	3
H5-11-530_H5-11-31	H5-11-530	H5-11-318	PicAx 2.1	15	Vitrified Clay Pipe	2100	3100	3121	2	3	2.5	3
H5-HW-542_H5-HW-	H5-HW-542	H5-HW-538	PicAx 2.1	15	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
W4-HI-006A_W4-JF	W4-HI-006A	W4-JFK-008	PicAx 2.1	24	Vitrified Clay Pipe	0000	3100	3100	0	3	3	3
JOSO-JFK-010_JOS	JOSO-JFK-010	JOSO-JFK-011	MSI PROFILER	30	Brick	2A00	3100	312A	2	3	2.09	3
	UH1-JFK-018A	UH1-JFK-018B	MSI PROFILER	36	Brick	2100	3100	3121	2	3	2.5	3
	UH1-JFK-018	UH1-JFK-018A	MSI PROFILER	36	Brick	2200	3100	3122	2	3	2.33	3
W3-SU-002_W3-SU-	W3-SU-002	W3-SU-001	MSI PROFILER	36	Brick	2900	3100	3129	2	3	2.1	3
W3-SU-004_W3-SU-	W3-SU-004	W3-SU-003	MSI PROFILER	36	Brick	2500	3100	3125	2	3	2.17	3
W3-SU-007_W3-SU-	W3-SU-007	W3-SU-006	MSI PROFILER	36	Brick		3100		2.09	3	2.13	3
W3-SU-010_W3-SU-	W3-SU-010	W3-SU-009	MSI PROFILER	36	Brick	3123	3100	3223	2.25	3	2.4	3
W2-WE-011_W2-WE	W2-WE-011	W2-WE-010	MSI PROFILER	36	Brick	2F00	3100	312F	2	3	2.03	3
W3-KE-010_W3-KE-	W3-KE-010	W3-KE-009	MSI PROFILER	36	Reinforced Concrete	0000	3100	3100	0	3	3	3
UH1-04-005_UH1-04	UH1-04-005	UH1-04-004	PicAx 2.1	30	Brick	3F00	3100	3F00	3	3	3	3
	W2-PA-033	W2-PA-031	PACP 6.0	45	Brick		3100		3.04	3	3.04	3.04
W2-PA-044_W2-PA-	W2-PA-044	W2-PA-043	PACP 6.0	36	Brick	3100	3100	3200	3	3	3	3
UH1-07-018_UH1-07	UH1-07-018	UH1-07-017	PicAx 2.1	30	Vitrified Clay Pipe	3100	3100	3200	3	3	3	3
W2-PA-046_W2-PA-	W2-PA-046	W2-PA-045	PACP 6.0	36	Brick	3300	3100	3400	3	3	3	3
H5-GR-676_H5-GR-0	H5-GR-676	H5-GR-674	PicAx 2.1	36	Reinforced Concrete	3100	3100	3200	3	3	3	3
H5-11-640B_H5-11-6	H5-11-640B	H5-11-640A	PicAx 2.1	36	Reinforced Concrete	3200	3100	3300	3	3	3	3
H5-CL-642_H5-11-64	H5-CL-642	H5-11-640B	PicAx 2.1	36	Reinforced Concrete	3100	3100	3200	3	3	3	3
H5-AD-696_H5-AD-6	H5-AD-696	H5-AD-694	PicAx 2.1	39	Reinforced Concrete	3100	3100	3200	3	3	3	3
H5-AD-696_H5-AD-6	H5-AD-696	H5-AD-694	PicAx 2.1	39	Reinforced Concrete	3100	3100	3200	3	3	3	3
H5-AD-694_H5-AD-6	H5-AD-694	H5-AD-692	PicAx 2.1	39	Reinforced Concrete	3121	3100	3221	2.5	3	2.67	3
JOSO-BR-001C_JOS	JOSO-BR-001C	JOSO-BR-001D	MSI PROFILER	84	Brick	2E13	3100	312E	1.92	3	1.95	3
W2-WE-024A_W2-W	W2-WE-024A	W2-WE-024	PicAx 2.1	12	Vitrified Clay Pipe	3100	3111	3211	3	2	2.33	2.33
W3-18-006_W3-18-0	W3-18-006	W3-18-005	PACP 6.0	15	Vitrified Clay Pipe	3100	3111	3211	3	2	2.33	2.33
W1-33-019_W1-33-0	W1-33-019	W1-33-020	PACP 6.0	15	Vitrified Clay Pipe	3400	3111	3511	3	2	2.67	2.67
W2-23-012_W2-23-0	W2-23-012	W2-23-013	PACP 6.0	8	Vitrified Clay Pipe	3100	3111	3211	3	2	2.33	2.33
W2-21-013_W2-21-0	W2-21-013	W2-21-014	PicAx 2.1	15	Vitrified Clay Pipe	3B26	3111	3B26	2.71	2	2.65	2.65
UH1-08-013_UH1-W	UH1-08-013	UH1-WE-012	PicAx 2.1	15	Vitrified Clay Pipe	0000	3111	3111	0	2	2	2
UH1-NY-016_UH1-N	UH1-NY-016	UH1-NY-017	PicAx 2.1	18	Vitrified Clay Pipe	3100	3111	3211	3	2	2.33	2.33

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
	W3-CE-019	W3-CE-017	PACP 6.0	27	Brick	3221	3111	3321	2.67	2	2.4	2.4
W2-WE-020_W2-MO	W2-WE-020	W2-MO-001	PicAx 2.1	15	Vitrified Clay Pipe	2400	3112	3124	2	1.67	1.86	1.86
W2-19-003_W2-19-0	W2-19-003	W2-19-004	PicAx 2.1	15	Vitrified Clay Pipe	3300	3112	3412	3	1.67	2.33	2.33
W2-WE-007_W2-WE	W2-WE-007	W2-WE-006	PACP 6.0	12	Vitrified Clay Pipe	3700	3114	3814	3	1.4	2.33	2.33
W2-PA-007_W2-PA-	W2-PA-007	W2-PA-005	PACP 6.0	12	Vitrified Clay Pipe	331B	311A	341D	1.3	1.17	1.25	1.25
W4-HI-007_W4-HI-0	W4-HI-007	W4-HI-006	PicAx 2.1	12	Vitrified Clay Pipe	0000	311A	311A	0	1.17	1.17	1.17
W4-HI-008_W4-HI-0	W4-HI-008	W4-HI-007	PicAx 2.1	12	Vitrified Clay Pipe	3100	311C	321C	3	1.1	1.18	1.18
	JOSO-46-004	JOSO-46-004B	SOLO	12	Vitrified Clay Pipe	2500	3121	3126	2	2.5	2.14	2.5
W3-SI-005_W3-SI-0	W3-SI-005	W3-SI-006	SOLO	12	Vitrified Clay Pipe	0000	3121	3121	0	2.5	2.5	2.5
C-PO-009_C-PO-01	C-PO-009	C-PO-010	SOLO	12	Vitrified Clay Pipe	0000	3121	3121	0	2.5	2.5	2.5
D-55-006_D-55-007	D-55-006	D-55-007	SOLO	12	Vitrified Clay Pipe	0000	3121	3121	0	2.5	2.5	2.5
UH1-12-011_UH1-12	UH1-12-011	UH1-12-012	PicAx 2.1	15	Vitrified Clay Pipe	3700	3121	3821	3	2.5	2.89	2.89
UH1-12-004_UH1-12	UH1-12-004	UH1-12-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	3121	3221	3	2	2.25	2.25
B-56-001A_B-56-001	B-56-001A	B-56-001	PicAx 2.1	12	Vitrified Clay Pipe	3100	3121	3221	3	2.5	2.67	2.67
W2-15-003_W2-15-0	W2-15-003	W2-15-004	PACP 6.0	15	Vitrified Clay Pipe	3100	3121	3221	3	2	2.25	2.25
UH1-10-018_UH1-N	UH1-10-018	UH1-NY-017	PicAx 2.1	15	Vitrified Clay Pipe		3121		4	2.5	3	3
W1-34-011_W1-34-0	W1-34-011	W1-34-010	PicAx 2.1	15	Vitrified Clay Pipe	3200	3121	3321	3	2.5	2.75	2.75
W3-JE-003_W3-JE-0	W3-JE-003	W3-JE-002	PicAx 2.1	15	Vitrified Clay Pipe	3400	3121	3521	3	2.5	2.83	2.83
	W2-MO-008A	W2-MO-008B	PicAx 2.1	18	Vitrified Clay Pipe	3221	3121	3322	2.67	1.6	2	2
B-52-T034A_B-52-T0	B-52-T034A	B-52-T034	PicAx 2.1	12	Vitrified Clay Pipe	0000	3121	3121	0	2.5	2.5	2.5
UH1-13-009_UH1-13	UH1-13-009	UH1-13-008	PicAx 2.1	15	Vitrified Clay Pipe	3100	3121	3221	3	2.5	2.67	2.67
JOSO-PA-018_JOS	JOSO-PA-018	JOSO-PA-017	PicAx 2.1	15	Vitrified Clay Pipe	3900	3121	3A21	3	2.5	2.91	2.91
W1-39-013C_W1-39	W1-39-013C	W1-39-013B	PicAx 2.1	15	Vitrified Clay Pipe	3E00	3121	3E21	3	2.5	2.97	2.97
W2-21-002_W2-21-0	W2-21-002	W2-21-003	PACP 6.0	12	Vitrified Clay Pipe	0000	3121	3121	0	2.5	2.5	2.5
UH1-06-017_UH1-06	UH1-06-017	UH1-06-018	PicAx 2.1	15	Vitrified Clay Pipe		3121		3.4	2.5	3.14	3.14
D-BR-144_D-BR-145	D-BR-144	D-BR-145	PicAx 2.1	12	Concrete Pipe (non-r	3B00	3121	3B21	3	2.5	2.95	2.95
G-67-106A_G-67-10	G-67-106A	G-67-106	PicAx 2.1	12	Vitrified Clay Pipe	0000	3121	3121	0	2.5	2.5	2.5
W2-25-010_W2-25-0	W2-25-010	W2-25-009	PACP 6.0	8	Vitrified Clay Pipe	3100	3121	3221	3	2.5	2.67	2.67
JOSO-42-015_JOS	JOSO-42-015	JOSO-42-016	PicAx 2.1	15	Vitrified Clay Pipe	2100	3121	3122	2	2.5	2.33	2.5
W3-25-001_W3-25-0	W3-25-001	W3-25-002	PicAx 2.1	12	Vitrified Clay Pipe	3100	3121	3221	3	2.5	2.67	2.67
W1-32-001_W1-32-0	W1-32-001	W1-32-002	PicAx 2.1	15	Vitrified Clay Pipe	3400	3121	3521	3	2.5	2.83	2.83
W1-34-002_W1-34-0	W1-34-002	W1-34-003	PicAx 2.1	15	Vitrified Clay Pipe	3600	3121	3721	3	2.5	2.88	2.88
W3-SI-008_W3-SI-0	W3-SI-008	W3-SI-009	PicAx 2.1	15	Vitrified Clay Pipe	3200	3121	3321	3	2	2.4	2.4
UH1-10-009_UH1-W	UH1-10-009	UH1-WE-007	PicAx 2.1	15	Vitrified Clay Pipe	3300	3121	3421	3	2.5	2.8	2.8
W2-26-008_W2-26-0	W2-26-008	W2-26-007	PACP 6.0	8	Vitrified Clay Pipe	3200	3121	3321	3	2	2.4	2.4
W2-WE-027_W2-WE	W2-WE-027	W2-WE-026	PicAx 2.1	12	Vitrified Clay Pipe	3300	3121	3421	3	1.75	2.29	2.29
W3-25-003_W3-25-0	W3-25-003	W3-25-004	PACP 6.0	12	Vitrified Clay Pipe	3A00	3121	3A21	3	2.5	2.93	2.93
UH1-14-002_UH1-14	UH1-14-002	UH1-14-001	PACP 6.0	12	Vitrified Clay Pipe	3A00	3121	3A21	3	2.5	2.92	2.92
W2-BE-043_W2-BE-	W2-BE-043	W2-BE-042	PACP 6.0	15	Vitrified Clay Pipe	3400	3121	3521	3	1.16	1.48	1.48
W2-PA-014_W2-PA-	W2-PA-014	W2-PA-012	PACP 6.0	12	Vitrified Clay Pipe		3121		3	2.5	2.89	2.89
H6-WA-006_H6-WA-	H6-WA-006	H6-WA-007	PicAx 2.1	18	Vitrified Clay Pipe	3C11	3121	3C21	2.92	1.75	2.75	2.75
D-PA-011A_D-PA-01	D-PA-011A	D-PA-011	PicAx 2.1	12	Vitrified Clay Pipe	3B00	3121	3B21	3	2.5	2.95	2.95
H6-HW-001A_H5-HV	H6-HW-001A	H5-HW-552	PicAx 2.1	15	Vitrified Clay Pipe	3300	3121	3421	3	2.5	2.8	2.8
H6-HW-002_H6-HW-	H6-HW-002	H6-HW-003	PicAx 2.1	15	Vitrified Clay Pipe	3800	3121	3921	3	2.5	2.9	2.9
W3-CE-012_W3-CE-	W3-CE-012	W3-CE-011	MSI PROFILER	30	Brick	2300	3121	3124	2	2.5	2.2	2.5
W3-HP-003_W3-HP-	W3-HP-003	W3-HP-004	MSI PROFILER	36	Brick	2A00	3121	312B	2	2.5	2.06	2.5
UH1-07-020_UH1-07	UH1-07-020	UH1-07-019	PicAx 2.1	30	Vitrified Clay Pipe	3700	3121	3821	3	2.5	2.89	2.89
JOSO-45-003C_JOS	JOSO-45-003C	JOSO-45-003B	SOLO	12	Vitrified Clay Pipe	2200	3122	3124	2	2.33	2.2	2.33
JOSO-BR-002A1C_J	JOSO-BR-002A1C	JOSO-BR-002A1B	SOLO	12	Vitrified Clay Pipe	2211	3122	3124	1.67	2.33	2	2.33
W2-17-010_W2-17-0	W2-17-010	W2-17-011	PicAx 2.1	15	Vitrified Clay Pipe	3200	3122	3322	3	2	2.33	2.33
W1-37-007_W1-37-0	W1-37-007	W1-37-008	PicAx 2.1	15	Vitrified Clay Pipe	0000	3122	3122	0	2	2	2

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-28-004_W2-28-0	W2-28-004	W2-28-003	PACP 6.0	12	Vitrified Clay Pipe		3122		3.17	2	2.7	2.7
JOSO-42-020_JOSO	JOSO-42-020	JOSO-42-021	PicAx 2.1	18	Vitrified Clay Pipe	3300	3122	3422	3	2.33	2.67	2.67
W2-PA-008_W2-PA-	W2-PA-008	W2-PA-007	PACP 6.0	12	Vitrified Clay Pipe	3218	3122	3322	1.4	2	1.57	2
H6-WA-008_H6-WA-	H6-WA-008	H6-WA-009	PicAx 2.1	15	Vitrified Clay Pipe	3711	3122	3822	2.75	2.33	2.64	2.64
	18PS-HA-007AB	18PS-HA-007ABA	PicAx 2.1	12	Vitrified Clay Pipe	0000	3122	3122	0	2	2	2
W3-SU-001_W3-HP-	W3-SU-001	W3-HP-003B	MSI PROFILER	36	Brick	312C	3122	322D	2.04	2.33	2.07	2.33
UH1-10-020_UH1-10	UH1-10-020	UH1-10-019	PicAx 2.1	15	Vitrified Clay Pipe	3100	3123	3223	3	2.25	2.4	2.4
UH1-10-015_UH1-10	UH1-10-015	UH1-10-014	PicAx 2.1	18	Vitrified Clay Pipe	3B00	3123	3C23	3	2	2.79	2.79
UH1-NY-017_UH1-N	UH1-NY-017	UH1-NY-018	PicAx 2.1	18	Vitrified Clay Pipe	3200	3123	3323	3	2.25	2.5	2.5
UH1-16-004_UH1-16	UH1-16-004	UH1-16-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	3123	3223	3	2.25	2.4	2.4
W1-NY-002_W1-NY-	W1-NY-002	W1-NY-003	PicAx 2.1	18	Vitrified Clay Pipe	3A00	3123	3B23	3	2.25	2.83	2.83
H6-WA-005_H6-WA-	H6-WA-005	H6-WA-006	PicAx 2.1	18	Vitrified Clay Pipe	3D11	3123	3D23	2.92	2.25	2.83	2.83
H5-HW-542_H5-HW-	H5-HW-542	H5-HW-538	PicAx 2.1	15	Vitrified Clay Pipe	3E21	3123	3E24	2.97	2.25	2.89	2.89
	W4-JFK-012B	W4-JFK-012C	MSI PROFILER	36	Reinforced Concrete	2100	3123	3124	2	2	2	2
W2-BE-041_W2-17-0	W2-BE-041	W2-17-009	PACP 6.0	15	Vitrified Clay Pipe	0000	3124	3124	0	2	2	2
W4-JFK-004A_W4-J	W4-JFK-004A	W4-JFK-004	PicAx 2.1	18	Vitrified Clay Pipe	3A21	3124	3B25	2.93	2.2	2.75	2.75
W2-PA-011_W2-PA-	W2-PA-011	W2-PA-009A	MSI PROFILER	30	Reinforced Concrete	2G11	3124	312H	1.98	2.2	2	2.2
W1-37-001_W1-37-0	W1-37-002	W1-37-001	PicAx 2.1	15	Vitrified Clay Pipe	3500	3125	3625	3	2.17	2.55	2.55
	UH1-PA-005	UH1-PA-007	PicAx 2.1	18	Vitrified Clay Pipe	0000	3127	3127	0	2	2	2
H6-PA-001_H6-PA-0	H6-PA-001	H6-PA-002	PicAx 2.1	12	Vitrified Clay Pipe	3D00	3129	3D29	3	1.55	2.4	2.4
W2-17-013_W2-17-0	W2-17-013	W2-17-014	PicAx 2.1	15	Vitrified Clay Pipe		312A		2.8	2.07	2.26	2.26
W2-BE-039_W2-BE-	W2-BE-039	W2-BE-038	PACP 6.0	15	Vitrified Clay Pipe		312A		4	2	2.13	2.13
W1-PL-010_W1-PL-0	W1-PL-010	W1-PL-011	PACP 6.0	18	Vitrified Clay Pipe	3400	312A	352A	3	1.56	1.74	1.74
W2-BE-017_W2-BE-	W2-BE-017	W2-BE-015	PACP 6.0	30	Brick	3121	312A	322A	2.5	2.07	2.13	2.13
JOSO-42-011_JOSO	JOSO-42-011	JOSO-42-012	PicAx 2.1	18	Vitrified Clay Pipe	2100	312B	312B	2	2	2	2
W2-NY-012_W2-NY-	W2-NY-012	W2-NY-011	PACP 6.0	15	Vitrified Clay Pipe	3800	312B	392B	3	2	2.31	2.31
W2-24-009_W2-24-0	W2-24-009	W2-24-010	PACP 6.0	12	Vitrified Clay Pipe	3300	3200	3500	3	3	3	3
JOSO-45-011_JOSO	JOSO-45-011	JOSO-45-012	PicAx 2.1	15	Vitrified Clay Pipe	3100	3200	3300	3	3	3	3
W2-19-001_W2-19-0	W2-19-001	W2-19-002	PicAx 2.1	15	Vitrified Clay Pipe	3121	3200	3321	2.5	3	2.75	3
W1-33-023_W1-33-0	W1-33-023	W1-33-024	PACP 6.0	15	Vitrified Clay Pipe	3300	3200	3500	3	3	3	3
UH1-07-009_UH1-07	UH1-07-009	UH1-07-008	PicAx 2.1	15	Vitrified Clay Pipe	3800	3200	3A00	3	3	3	3
UH1-10-012_UH1-10	UH1-10-012	UH1-10-011	PicAx 2.1	15	Vitrified Clay Pipe	3100	3200	3300	3	3	3	3
W2-24-001_W2-24-0	W2-24-001	W2-24-002	PACP 6.0	15	Vitrified Clay Pipe		3200		4	3	3.33	3.33
W1-36-012_W1-36-0	W1-36-012	W1-36-013	PicAx 2.1	15	Vitrified Clay Pipe	3300	3200	3500	3	3	3	3
JOSO-40-001_JOSO	JOSO-40-001	JOSO-40-002	PicAx 2.1	18	Vitrified Clay Pipe	3100	3200	3300	3	3	3	3
UH1-04-017_UH1-PA	UH1-04-017	UH1-PA-024	PicAx 2.1	0	Vitrified Clay Pipe	3200	3200	3400	3	3	3	3
	W2-WE-001	W2-26-001B	PACP 6.0	12	Vitrified Clay Pipe	3200	3200	3400	3	3	3	3
JOSO-43-002_JOSO	JOSO-43-002	JOSO-43-001	PicAx 2.1	18	Vitrified Clay Pipe	3100	3200	3300	3	3	3	3
	UH1-KE-003	UH1-KE-005	PicAx 2.1	18	Vitrified Clay Pipe	0000	3200	3200	0	3	3	3
JOSO-42-002_JOSO	JOSO-42-002	JOSO-42-001	PicAx 2.1	18	Vitrified Clay Pipe	3300	3200	3500	3	3	3	3
W2-28-002_W2-28-0	W2-28-002	W2-28-001	PACP 6.0	12	Vitrified Clay Pipe	3C21	3200	3C21	2.95	3	2.96	3
H2-06-001_H2-WA-0	H2-06-001	H2-WA-009	PicAx 2.1	15	Ductile Iron Pipe	1100	3200	3211	1	3	2.33	3
W3-SU-006_W3-SU-	W3-SU-006	W3-SU-005	MSI PROFILER	36	Brick	2200	3200	3222	2	3	2.5	3
	W3-KE-009	W3-KE-007	MSI PROFILER	36	Reinforced Concrete	0000	3200	3200	0	3	3	3
W2-PA-045_W2-PA-	W2-PA-045	W2-PA-044	PACP 6.0	36	Brick	3100	3200	3300	3	3	3	3
A-61-T006A_A-61-T0	A-61-T006A	A-61-T006	PicAx 2.1	36	Vitrified Clay Pipe	2100	3200	3221	2	3	2.67	3
UH1-SU-002_UH1-S	UH1-SU-002	UH1-SU-003	PACP 6.0	30	Brick	3E00	3200	3F00	3	3	3	3
	UH1-SU-013	UH1-SU-015	PACP 6.0	30	Brick	3200	3200	3400	3	3	3	3
H5-CL-644_H5-CL-6	H5-CL-644	H5-CL-642	PicAx 2.1	36	Reinforced Concrete	3100	3200	3300	3	3	3	3
JOSO-41-005_JOSO	JOSO-41-005	JOSO-41-006	MSI PROFILER	74	Brick	2C00	3200	322C	2	3	2.09	3
W2-16-017_W2-PA-0	W2-16-017	W2-PA-040	PACP 6.0	12	Vitrified Clay Pipe	3200	3213	3413	3	1.8	2.14	2.14

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W1-PL-009_W1-PL-(	W1-PL-009	W1-PL-010	PACP 6.0	18	Vitrified Clay Pipe	3200	3219	3419	3	1.36	1.62	1.62
UH1-WE-001_UH1-V	UH1-WE-001	UH1-WE-002	PACP 6.0	15	Vitrified Clay Pipe	3300	321B	351B	3	1.19	1.42	1.42
G-BR-115_G-67-111	G-BR-115	G-67-111A	SOLO	12	Vitrified Clay Pipe	3111	3221	3321	2	2.67	2.4	2.67
W2-18-006_W2-18-0	W2-18-006	W2-18-007	PACP 6.0	15	Vitrified Clay Pipe	3600	3221	3821	3	2.67	2.89	2.89
UH1-14-019_UH1-14	UH1-14-019	UH1-14-020	PACP 6.0	15	Vitrified Clay Pipe	3100	3221	3321	3	2.67	2.75	2.75
W2-BE-032_W2-BE-	W2-BE-032	W2-BE-031	PACP 6.0	15	Vitrified Clay Pipe	3100	3221	3321	3	2.67	2.75	2.75
W2-23-012_W2-23-0	W2-23-012	W2-23-013	PACP 6.0	8	Vitrified Clay Pipe	3300	3221	3521	3	2.67	2.83	2.83
UH1-BE-001_UH1-B	UH1-BE-001	UH1-BE-002	PACP 6.0	15	Vitrified Clay Pipe	0000	3221	3221	0	1.83	1.83	1.83
W3-AD-002_W3-AD-	W3-AD-002	W3-AD-001	PicAx 2.1	12	Vitrified Clay Pipe	3A00	3221	3A21	3	2.67	2.93	2.93
UH1-12-009_UH1-12	UH1-12-009	UH1-12-010	PicAx 2.1	15	Polyvinyl Chloride	3D22	3221	3D23	2.93	2.67	2.9	2.9
UH1-06-002_UH1-06	UH1-06-002	UH1-06-001	PicAx 2.1	15	Vitrified Clay Pipe	3C00	3221	3D21	3	2.67	2.96	2.96
UH1-10-019_UH1-10	UH1-10-019	UH1-10-018	PicAx 2.1	15	Vitrified Clay Pipe	0000	3221	3221	0	2.67	2.67	2.67
W2-21-014_W2-21-0	W2-21-014	W2-21-015	PicAx 2.1	15	Vitrified Clay Pipe	3A21	3221	3A22	2.92	2.67	2.88	2.88
W2-WE-023_W2-WE	W2-WE-023	W2-WE-022	PicAx 2.1	15	Vitrified Clay Pipe	0000	3221	3221	0	2.25	2.25	2.25
	W2-MO-008	W2-MO-007A	PACP 6.0	12	Vitrified Clay Pipe	3221	3221	3422	2.67	1.63	1.91	1.91
W5-48-002_W5-JFK-	W5-48-002	W5-JFK-008	PicAx 2.1	12	Vitrified Clay Pipe	3121	3221	3322	2.5	2.67	2.6	2.67
W2-MA-001A_W2-M	W2-MA-001A	W2-MA-001	PicAx 2.1	12	Vitrified Clay Pipe	3121	3221	3322	2	2.25	2.14	2.25
	JOSO-35-004	JOSO-35-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	3222	3322	3	2.5	2.6	2.6
W1-37-010_W1-37-0	W1-37-010	W1-37-009	PicAx 2.1	18	Vitrified Clay Pipe	0000	3222	3222	0	2.5	2.5	2.5
B-53-001_B-52-T034	B-53-001	B-52-T034A	PicAx 2.1	12	Vitrified Clay Pipe	3A00	3222	3A22	3	2.5	2.88	2.88
W2-21-009_W2-21-0	W2-21-009	W2-21-010	PicAx 2.1	15	Vitrified Clay Pipe	3500	3222	3722	3	2	2.45	2.45
W2-25-010_W2-25-0	W2-25-010	W2-25-009	PACP 6.0	8	Vitrified Clay Pipe	3600	3222	3822	3	2.2	2.64	2.64
UH1-15-011_UH1-15	UH1-15-011	UH1-15-010	PACP 6.0	15	Vitrified Clay Pipe	3500	3222	3722	3	1.5	1.94	1.94
UH1-CE-008_UH1-1	UH1-CE-008	UH1-13-007	PACP 6.0	15	Vitrified Clay Pipe	0000	3222	3222	0	1.75	1.75	1.75
H6-WA-007_H6-WA-	H6-WA-007	H6-WA-008	PicAx 2.1	15	Vitrified Clay Pipe	3611	3222	3822	2.71	2.5	2.64	2.64
W2-WE-017_W2-WE	W2-WE-017	W2-WE-016	PicAx 2.1	15	Vitrified Clay Pipe	3500	3223	3723	3	2.4	2.7	2.7
W2-WE-029_W2-WE	W2-WE-029	W2-WE-030	PicAx 2.1	12	Vitrified Clay Pipe	392B	3223	3A2B	2.36	2.17	2.32	2.32
UH1-CE-007_UH1-C	UH1-CE-007	UH1-CE-008	PACP 6.0	15	Vitrified Clay Pipe	3100	3223	3323	3	2.4	2.5	2.5
W3-HP-003B_W3-HI	W3-HP-003B	W3-HP-003A	MSI PROFILER	36	Brick	2A00	3223	322B	2	2.4	2.12	2.4
W2-16-008_W2-16-0	W2-16-008	W2-16-009	PicAx 2.1	15	Vitrified Clay Pipe		3224		3	2.14	2.4	2.4
UH1-17-002_UH1-17	UH1-17-002	UH1-17-001	PicAx 2.1	15	Vitrified Clay Pipe	3200	3224	3424	3	2.33	2.5	2.5
	H6-PA-586	H6-PA-558	PicAx 2.1	15	Vitrified Clay Pipe	3100	3224	3324	3	2.33	2.43	2.43
UH1-CE-004_UH1-C	UH1-CE-004	UH1-CE-005	PACP 6.0	15	Vitrified Clay Pipe	3200	3225	3425	3	1.5	1.65	1.65
W2-PA-019_W2-PA-	W2-PA-019	W2-PA-019A	MSI PROFILER	30	Reinforced Concrete	2F00	3225	322G	2	2.29	2.05	2.29
D-52-130E_D-52-130	D-52-130E	D-52-130C	PicAx 2.1	0	Concrete Pipe (non-r	0000	3226	3226	0	2.25	2.25	2.25
W2-17-009_W2-17-0	W2-17-009	W2-17-010	PicAx 2.1	15	Vitrified Clay Pipe		3226		3.33	2.25	2.55	2.55
H6-GA-001_H6-GA-(	H6-GA-001	H6-GA-002	PicAx 2.1	15	Vitrified Clay Pipe	3400	3226	3626	3	2.25	2.5	2.5
	UH1-WE-007	UH1-WE-009	PicAx 2.1	18	Vitrified Clay Pipe	3700	3227	3927	3	2.22	2.56	2.56
W2-19-018_W2-19-0	W2-19-018	W2-19-019	PACP 6.0	15	Vitrified Clay Pipe	3300	3228	3528	3	2	2.2	2.2
W1-NY-007_W1-NY-	W1-NY-007	W1-NY-006	PicAx 2.1	18	Vitrified Clay Pipe	3322	322A	352A	2.6	2.17	2.29	2.29
W2-BE-036_W2-BE-	W2-BE-036	W2-BE-035	PACP 6.0	15	Vitrified Clay Pipe		322A		3.33	1.74	1.95	1.95
W2-15-011_W2-15-0	W2-15-011	W2-15-012	PACP 6.0	15	Vitrified Clay Pipe	0000	322B	322B	0	2.11	2.11	2.11
W1-39-018_W1-39-0	W1-39-018	W1-39-019	MSI PROFILER	36	Brick	2I00	322B	322M	2	2.1	2.03	2.1
18PS-18-005AB_18F	18PS-18-005AB	18PS-18-005AC	PicAx 2.1	18	Vitrified Clay Pipe	3100	3300	3400	3	3	3	3
W1-36-015_W1-36-0	W1-36-015	W1-36-016	PicAx 2.1	15	Vitrified Clay Pipe	3400	3300	3700	3	3	3	3
W1-35-001_W1-BE-(	W1-35-001	W1-BE-010	PicAx 2.1	15	Vitrified Clay Pipe	3100	3300	3400	3	3	3	3
JOSO-BE-009_JOSO	JOSO-BE-009	JOSO-BE-010	PicAx 2.1	18	Vitrified Clay Pipe	3400	3300	3700	3	3	3	3
W2-WE-018_W2-WE	W2-WE-018	W2-WE-017	PicAx 2.1	15	Vitrified Clay Pipe	3200	3300	3500	3	3	3	3
UH1-10-010_UH1-W	UH1-10-010	UH1-WE-007	PicAx 2.1	15	Vitrified Clay Pipe	0000	3300	3300	0	3	3	3
W1-38-020_W1-38-0	W1-38-020	W1-38-021	PicAx 2.1	18	Vitrified Clay Pipe	3500	3300	3800	3	3	3	3
W2-BE-039_W2-BE-	W2-BE-039	W2-BE-038	PACP 6.0	15	Vitrified Clay Pipe		3300		3.5	3	3.2	3.2

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
	W3-GR-001	W3-HP-014	PicAx 2.1	12	Ductile Iron Pipe	3121	3300	3421	2	3	2.5	3
W2-PA-045_W2-PA-	W2-PA-045	W2-PA-044	PACP 6.0	36	Brick	3100	3300	3400	3	3	3	3
UH1-04-004_UH1-04	UH1-04-004	UH1-04-003	PicAx 2.1	30	Brick	3H00	3300	3I00	3	3	3	3
H7-INT-001_H6-INT-	H7-INT-001	H6-INT-002	PicAx 2.1	30	Reinforced Concrete	3400	3300	3700	3	3	3	3
UH1-BE-030_UH1-0	UH1-BE-030	UH1-02-005	PicAx 2.1	15	Vitrified Clay Pipe	3700	3311	3A11	3	2.5	2.82	2.82
UH1-08-012_UH1-08	UH1-08-012	UH1-08-013	PicAx 2.1	15	Vitrified Clay Pipe	3400	3311	3711	3	2.5	2.75	2.75
UH1-09-007_UH1-N	UH1-09-007	UH1-NY-020	PicAx 2.1	15	Vitrified Clay Pipe	3200	3321	3521	3	2.75	2.83	2.83
UH1-WE-010_UH1-W	UH1-WE-010	UH1-WE-011	PicAx 2.1	18	Vitrified Clay Pipe	3221	3321	3522	2.67	2.75	2.71	2.75
UH1-NY-024_UH1-N	UH1-NY-024	UH1-NY-025	PicAx 2.1	18	Vitrified Clay Pipe	0000	3321	3321	0	2.75	2.75	2.75
W2-16-003_W2-16-0	W2-16-003	W2-16-004	PicAx 2.1	12	Vitrified Clay Pipe	3200	3321	3521	3	2.17	2.38	2.38
W3-20-001_W3-20-0	W3-20-001	W3-20-002	PACP 6.0	15	Vitrified Clay Pipe	3100	3321	3421	3	2.75	2.8	2.8
W3-22-007A_W3-22-	W3-22-007A	W3-22-007	PACP 6.0	15	Vitrified Clay Pipe	3100	3321	3421	3	2.75	2.8	2.8
W2-PA-026_W2-PA-	W2-PA-026	W2-PA-024	MSI PROFILER	30	Reinforced Concrete	2A00	3321	332A	2	2.75	2.18	2.75
W1-AU-050_W1-PA-	W1-AU-050	W1-PA-017	PicAx 2.1	30	Vitrified Clay Pipe	0000	3321	3321	0	2.4	2.4	2.4
JOSO-46-002_JOSO	JOSO-46-002	JOSO-46-001	SOLO	12	Vitrified Clay Pipe	2500	3322	3327	2	2.6	2.3	2.6
	W2-18-006A	W2-18-006	PACP 6.0	12	Vitrified Clay Pipe	3521	3322	3823	2.83	1.53	1.9	1.9
D-PA-095_D-52-096	D-PA-095	D-52-096	PicAx 2.1	12	Vitrified Clay Pipe	3B00	3322	3B22	3	2.6	2.9	2.9
UH1-CE-014_UH1-1	UH1-CE-014	UH1-11-007	PicAx 2.1	15	Vitrified Clay Pipe	0000	3322	3322	0	2.6	2.6	2.6
UH1-10-016_UH1-10	UH1-10-016	UH1-10-015	PicAx 2.1	18	Vitrified Clay Pipe		3322		3.04	2.6	2.97	2.97
W2-22-011_W2-22-0	W2-22-011	W2-22-010	PACP 6.0	12	Vitrified Clay Pipe	3800	3322	3A22	3	2.6	2.85	2.85
UH1-10-006_UH1-10	UH1-10-006	UH1-10-005	PicAx 2.1	15	Vitrified Clay Pipe	3300	3322	3622	3	2.6	2.75	2.75
W2-WE-033_W2-15-	W2-WE-033	W2-15-001	PicAx 2.1	15	Vitrified Clay Pipe	3621	3322	3923	2.86	2.33	2.62	2.62
C-66-006_C-66-007	C-66-006	C-66-007	SOLO	12	Vitrified Clay Pipe	0000	3323	3323	0	2.5	2.5	2.5
UH1-10-017_UH1-10	UH1-10-017	UH1-10-016	PicAx 2.1	18	Vitrified Clay Pipe	3400	3323	3723	3	2.5	2.7	2.7
UH1-WE-011_UH1-W	UH1-WE-011	UH1-WE-012	PicAx 2.1	18	Vitrified Clay Pipe	3200	3323	3523	3	2.29	2.44	2.44
W2-17-005_W2-17-0	W2-17-005	W2-17-006	PicAx 2.1	15	Vitrified Clay Pipe	3300	3324	3624	3	2	2.23	2.23
	W2-22-13A	W2-22-013B	PACP 6.0	12	Vitrified Clay Pipe	3500	3324	3824	3	1.53	1.83	1.83
14VO-MA-002A_14V	14VO-MA-002A	14VO-14-001L	PACP 6.0	12	Vitrified Clay Pipe	3C11	3325	3D25	2.91	1.92	2.57	2.57
D-52-130F_D-52-130	D-52-130F	D-52-130E	PicAx 2.1	0	Concrete Pipe (non-r	0000	3325	3325	0	2.38	2.38	2.38
W2-19-004_W2-BE-0	W2-19-004	W2-BE-034	PicAx 2.1	15	Vitrified Clay Pipe	2100	3325	3326	2	2.38	2.33	2.38
W2-25-002_W2-25-0	W2-25-002	W2-25-003	PACP 6.0	15	Vitrified Clay Pipe		3328		4	2.27	2.42	2.42
W2-17-012_W2-17-0	W2-17-012	W2-17-013	PicAx 2.1	15	Vitrified Clay Pipe		332A		3.5	2.07	2.24	2.24
	W2-BE-038	W2-BE-036	PACP 6.0	15	Vitrified Clay Pipe	5233	332B	5236	3.13	1.53	1.77	1.77
D-55-008_D-PA-009	D-55-008	D-PA-009	SOLO	12	Vitrified Clay Pipe	0000	3400	3400	0	3	3	3
	W2-PA-036A	W2-PA-036	PACP 6.0	15	Vitrified Clay Pipe	2900	3400	3429	2	3	2.31	3
UH1-WE-009_UH1-W	UH1-WE-009	UH1-WE-010	PicAx 2.1	18	Vitrified Clay Pipe	3100	3400	3500	3	3	3	3
UH1-BE-029_UH1-B	UH1-BE-029	UH1-BE-030	PicAx 2.1	15	Vitrified Clay Pipe	3900	3400	3A00	3	3	3	3
W3-22-003_W3-22-0	W3-22-003	W3-22-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	3400	3600	3	3	3	3
W2-22-012_W2-22-0	W2-22-012	W2-22-011	PACP 6.0	12	Vitrified Clay Pipe	3B00	3400	3C00	3	3	3	3
W2-26-002_W2-26-0	W2-26-002	W2-26-003	PACP 6.0	15	Vitrified Clay Pipe	3800	3400	3A00	3	3	3	3
18PS-GR-008-5_18P	18PS-GR-008-5	18PS-GR-008AE	PicAx 2.1	15	Ductile Iron Pipe	0000	3400	3400	0	3	3	3
H6-PA-003_H6-PA-0	H6-PA-003	H6-PA-004	PicAx 2.1	12	Vitrified Clay Pipe	3800	3400	3A00	3	3	3	3
	H6-INT-002A	H6 REGULATOR	PicAx 2.1	36	Reinforced Concrete	3400	3400	3800	3	3	3	3
W2-PA-012A_W2-PA	W2-PA-012A	W2-PA-010	PACP 6.0	12	Vitrified Clay Pipe		341A		3.14	1.57	2.1	2.1
JOSO-47-014A_JOS	JOSO-47-014A	JOSO-47-014	SOLO	12	Vitrified Clay Pipe	0000	3421	3421	0	2.8	2.8	2.8
G-65-102_G-HU-011	G-65-102	G-HU-011	MSI PROFILER	24	Vitrified Clay Pipe	2111	3421	3422	1.5	2.8	2.43	2.8
W1-PL-009_W1-PL-0	W1-PL-009	W1-PL-010	PACP 6.0	18	Vitrified Clay Pipe	3500	3421	3921	3	1.14	1.27	1.27
W2-WE-022_W2-WE	W2-WE-022	W2-WE-021	PicAx 2.1	15	Vitrified Clay Pipe	3200	3422	3622	3	2.25	2.4	2.4
W3-25-001_W3-25-0	W3-25-001	W3-25-002	PACP 6.0	12	Vitrified Clay Pipe	3500	3422	3922	3	2.67	2.82	2.82
UH1-15-005_UH1-15	UH1-15-005	UH1-15-004	PACP 6.0	15	Vitrified Clay Pipe	3100	3422	3522	3	1.91	2	2
UH1-12-005_UH1-12	UH1-12-005	UH1-12-004	PicAx 2.1	15	Vitrified Clay Pipe	3100	3423	3523	3	2.57	2.63	2.63

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-10-009A_UH1-1	UH1-10-009A	UH1-10-009	PicAx 2.1	15	Vitrified Clay Pipe	3100	3423	3523	3	2.57	2.63	2.63
	W4-HI-001	Z	PicAx 2.1	18	Vitrified Clay Pipe	3900	3423	3A23	3	2.57	2.81	2.81
JOSO-HU-001_JOS	JOSO-HU-001	JOSO-47-012	PicAx 2.1	12	Vitrified Clay Pipe	3300	3424	3724	3	2.33	2.5	2.5
W3-21-003_W3-21-0	W3-21-003	W3-21-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	3424	3624	3	2.5	2.6	2.6
W2-19-024_W2-MO-	W2-19-024	W2-MO-003AA	PACP 6.0	15	Vitrified Clay Pipe	3624	3425	3A29	2.6	2.44	2.53	2.53
G-62-156_G-62-155	G-62-156	G-62-155	SOLO	12	Vitrified Clay Pipe	2815	3429	342B	1.62	2.31	1.96	2.31
UH1-07-007_UH1-07	UH1-07-007	UH1-07-006A	PicAx 2.1	15	Vitrified Clay Pipe	3A00	3500	3B00	3	3	3	3
	UH1-NY-013	UH1-NY-015	PicAx 2.1	24	Vitrified Clay Pipe	0000	3500	3500	0	3	3	3
W3-JFK-006_W3-22	W3-JFK-006	W3-22-001	PicAx 2.1	15	Vitrified Clay Pipe	3321	3500	3821	2.75	3	2.89	3
W2-25-003_W2-25-0	W2-25-003	W2-25-004	PACP 6.0	15	Vitrified Clay Pipe	3500	3500	3A00	3	3	3	3
W3-KE-013B_W3-KE	W3-KE-013B	W3-KE-013	PACP 6.0	12	Vitrified Clay Pipe	3100	3500	3600	3	3	3	3
	W2-PA-009A	W2-26-009	PACP 6.0	12	Vitrified Clay Pipe	3500	3500	3A00	3	3	3	3
18PS-GR-008-2_18F	18PS-GR-008-2	18PS-GR-008AB	PicAx 2.1	15	Vitrified Clay Pipe	0000	3500	3500	0	3	3	3
	W4-HI-003	W4-HI-003A	PicAx 2.1	18	Vitrified Clay Pipe	3100	3500	3600	3	3	3	3
UH1-BE-005_UH1-B	UH1-BE-005	UH1-BE-006	PACP 6.0	18	Vitrified Clay Pipe	3100	3511	3611	3	2.67	2.71	2.71
UH1-14-019_UH1-14	UH1-14-019	UH1-14-020	PACP 6.0	15	Vitrified Clay Pipe	3600	3521	3A21	3	2.83	2.92	2.92
W2-16-011_W2-16-0	W2-16-011	W2-16-012	PicAx 2.1	15	Vitrified Clay Pipe	3300	3521	3821	3	2.83	2.89	2.89
W1-35-016_W1-35-0	W1-35-016	W1-35-017	PicAx 2.1	15	Vitrified Clay Pipe	0000	3521	3521	0	2.83	2.83	2.83
UH1-13-006_UH1-13	UH1-13-006	UH1-13-005	PicAx 2.1	15	Vitrified Clay Pipe	3100	3521	3621	3	2.83	2.86	2.86
W2-25-004_W2-BE-0	W2-25-004	W2-BE-018	PACP 6.0	15	Vitrified Clay Pipe	0000	3521	3521	0	2.22	2.22	2.22
UH1-07-005_UH1-07	UH1-07-005	UH1-07-004	PicAx 2.1	15	Vitrified Clay Pipe	3B00	3521	3C21	3	2.83	2.96	2.96
W1-40-012_W1-40-0	W1-40-012	W1-40-011	PicAx 2.1	15	Vitrified Clay Pipe	3900	3521	3A21	3	2.83	2.93	2.93
JOSO-BE-005_JOS	JOSO-BE-005	JOSO-BE-006	PicAx 2.1	15	Vitrified Clay Pipe	3B00	3521	3C21	3	2.83	2.96	2.96
	W3-21-002A	W3-21-003	PicAx 2.1	15	Vitrified Clay Pipe	3400	3521	3921	3	2.83	2.9	2.9
H6-PA-005_H6-PA-0	H6-PA-005	H6-PA-006	PicAx 2.1	12	Vitrified Clay Pipe	3A00	3521	3B21	3	2.83	2.94	2.94
	H6-PA-592	H5-12-594	PicAx 2.1	15	Vitrified Clay Pipe	3421	3521	3922	2.8	2.83	2.82	2.83
UH1-12-023_UH1-12	UH1-12-023	UH1-12-022	PACP 6.0	21	Vitrified Clay Pipe	0000	3523	3523	0	2.63	2.63	2.63
W2-18-007_W2-18-0	W2-18-007	W2-18-008	PACP 6.0	15	Vitrified Clay Pipe	0000	3524	3524	0	2.56	2.56	2.56
JOSO-BR-002A1D_J	JOSO-BR-002A1D	JOSO-BR-002A1C	SOLO	12	Vitrified Clay Pipe	2311	3525	3528	1.75	2.5	2.29	2.5
W2-GR-005_W2-GR	W2-GR-005	W2-GR-004	MSI PROFILER	45	Brick	312E	3525	362F	1.97	2.5	2.09	2.5
JOSO-47-020_JOS	JOSO-47-020	JOSO-47-019C	SOLO	12	Vitrified Clay Pipe	2900	3526	352B	2	2.45	2.25	2.45
	JOSO-46-004B	JOSO-46-005	SOLO	12	Vitrified Clay Pipe	2411	3526	352A	1.8	2.45	2.25	2.45
G-67-094_G-67-095	G-67-094	G-67-095	PicAx 2.1	12	Concrete Pipe (non-r	3122	3526	3628	2.33	2.33	2.33	2.33
W2-25-001_W2-25-0	W2-25-001	W2-25-002	PACP 6.0	15	Vitrified Clay Pipe	3622	3527	3A29	2.75	2.42	2.55	2.55
W2-16-004_W2-16-0	W2-16-004	W2-16-005	PicAx 2.1	15	Vitrified Clay Pipe	3A21	352A	3B2B	2.92	2.2	2.48	2.48
W3-CE-014_W3-CE-	W3-CE-014	W3-CE-013	PACP 6.0	27	Brick	3421	352D	392D	2.8	2.16	2.25	2.25
JOSO-46-005_JOS	JOSO-46-005	JOSO-HU-002	SOLO	12	Vitrified Clay Pipe	2600	3600	3626	2	3	2.5	3
18PS-GR-009EB_18	18PS-GR-009EB	18PS-GR-009EA	PicAx 2.1	0	Vitrified Clay Pipe		3600		3.14	3	3.08	3.08
JOSO-BE-003_JOS	JOSO-BE-003	JOSO-BE-002	PicAx 2.1	18	Vitrified Clay Pipe	3100	3600	3700	3	3	3	3
W2-WE-003_W2-WE	W2-WE-003	W2-WE-002	PACP 6.0	12	Vitrified Clay Pipe		3600		4	3	3.25	3.25
JOSO-40-002_JOS	JOSO-40-002	JOSO-40-003	PicAx 2.1	18	Vitrified Clay Pipe	3A00	3600	3B00	3	3	3	3
W2-WE-024_W2-WE	W2-WE-024	W2-WE-023	PicAx 2.1	12	Vitrified Clay Pipe	3A22	3600	3C22	2.88	3	2.91	3
W1-BE-012_W1-BE-	W1-BE-012	W1-BE-013	PicAx 2.1	45	Brick	3300	3600	3900	3	3	3	3
W4-JFK-006B_W4-J	W4-JFK-006B	W4-JFK-006C	SOLO	10	Vitrified Clay Pipe	5633	3621	5639	2.84	2.86	2.84	2.86
W4-JFK-005A_W4-J	W4-JFK-005A	W4-JFK-005	SOLO	10	Vitrified Clay Pipe	261D	3621	3627	1.19	2.86	1.49	2.86
JOSO-45-016_JOS	JOSO-45-016	JOSO-45-017	PicAx 2.1	0	Vitrified Clay Pipe	0000	3621	3621	0	2.86	2.86	2.86
W2-16-001_W2-16-0	W2-16-001	W2-16-002	PicAx 2.1	12	Vitrified Clay Pipe	392A	3621	3B2A	2.45	2.3	2.4	2.4
W3-27-004_W3-SU-0	W3-27-004	W3-SU-012	PicAx 2.1	0	Vitrified Clay Pipe	0000	3621	3621	0	2.86	2.86	2.86
W2-MO-006B_W2-18	W2-MO-006B	W2-18-007A	PACP 6.0	12	Vitrified Clay Pipe	3122	3622	3724	2.33	2	2.06	2.06
W3-CE-015_W3-CE-	W3-CE-015	W3-CE-014	PACP 6.0	27	Brick	3700	3622	3A22	3	2.75	2.87	2.87
W2-16-010_W2-16-0	W2-16-010	W2-16-011	PicAx 2.1	15	Vitrified Clay Pipe	3111	3623	3723	2	2.5	2.42	2.5

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W3-GR-002B_W3-G	W3-GR-002B	W3-GR-002A	PicAx 2.1	12	Reinforced Concrete	3A22	3624	3B26	2.71	2.33	2.54	2.54
W2-16-002_W2-16-0	W2-16-002	W2-16-003	PicAx 2.1	12	Vitrified Clay Pipe		3625		3.33	2.21	2.41	2.41
18PS-GR-001B_18P	18PS-GR-001B	18PS-GR-001BA	SOLO	12	Vitrified Clay Pipe	2100	3700	3721	2	3	2.88	3
W1-35-006_W1-35-0	W1-35-006	W1-35-005	PicAx 2.1	15	Vitrified Clay Pipe	3500	3700	3A00	3	3	3	3
14VO-14-001L_14V	14VO-14-001L	14VO-14-001K	PACP 6.0	12	Vitrified Clay Pipe	0000	3700	3700	0	3	3	3
UH1-10-011_UH1-10	UH1-10-011	UH1-10-010	PicAx 2.1	15	Vitrified Clay Pipe	3100	3700	3800	3	3	3	3
	W4-HI-005A	W4-HI-006	PicAx 2.1	18	Vitrified Clay Pipe	3600	3700	3A00	3	3	3	3
	H5-12-599	H5-12-599	PicAx 2.1	15	Vitrified Clay Pipe	3621	3700	3A21	2.86	3	2.93	3
UH1-10-009A_UH1-1	UH1-10-009A	UH1-10-009	PicAx 2.1	15	Vitrified Clay Pipe	3900	3711	3B11	3	2.75	2.88	2.88
W2-MO-007A_W2-M	W2-MO-007	W2-MO-007A	PACP 6.0	12	Vitrified Clay Pipe	3324	3718	3A24	2.43	1.93	2.09	2.09
18PS-HA-009_18PS	18PS-HA-009	18PS-HA-009A	PicAx 2.1	24	Vitrified Clay Pipe	0000	3721	3721	0	2.88	2.88	2.88
	H1-07-013	H1-07-013A	PicAx 2.1	15	Vitrified Clay Pipe	3321	3721	3A22	2.75	2.88	2.83	2.88
UH1-07-023_UH1-P	UH1-07-023	UH1-PA-016	PicAx 2.1	18	Vitrified Clay Pipe	0000	3722	3722	0	2.78	2.78	2.78
W3-SU-025_W3-SU	W3-SU-025	W3-SU-024	PACP 6.0	12	Vitrified Clay Pipe	0000	3722	3722	0	2.07	2.07	2.07
A-65-057_A-65-056	A-65-057	A-65-056	SOLO	12	Vitrified Clay Pipe	2111	3724	3725	1.5	2.64	2.46	2.64
	W2-BE-019	W2-BE-018	PACP 6.0	30	Brick	3A00	3725	3C25	3	2.58	2.8	2.8
W2-19-023_W2-19-0	W2-19-023	W2-19-024	PACP 6.0	15	Vitrified Clay Pipe	3C00	372A	3D2A	3	2.33	2.67	2.67
	W2-19-013	W2-PA-30	PACP 6.0	12	Vitrified Clay Pipe	3100	372A	382A	3	2.39	2.42	2.42
18PS-GR-001C_18P	18PS-GR-001C	18PS-GR-001B	SOLO	12	Vitrified Clay Pipe	2400	3800	3824	2	3	2.67	3
	18PS-GR-009EA	Z	PicAx 2.1	12	Vitrified Clay Pipe	3400	3800	3A00	3	3	3	3
JOSO-BE-008_JOS	JOSO-BE-008	JOSO-BE-009	PicAx 2.1	0	Vitrified Clay Pipe	3700	3800	3B00	3	3	3	3
UH1-BE-005_UH1-B	UH1-BE-005	UH1-BE-006	PACP 6.0	18	Vitrified Clay Pipe		3816		3.75	2.14	2.5	2.5
	W2-18-006	W2-18-007A	PACP 6.0	12	Vitrified Clay Pipe	3100	3816	3916	3	2.14	2.2	2.2
W2-BE-029_W2-BE-	W2-BE-029	W2-BE-028	PACP 6.0	12	Vitrified Clay Pipe		3821		3.19	2.7	3	3
18PS-GR-007D_18P	18PS-GR-007D	18PS-GR-007C	SOLO	8	Vitrified Clay Pipe	2811	3822	382A	1.89	2.8	2.37	2.8
W2-MO-003_W2-MO	W2-MO-003	W2-MO-004A	PicAx 2.1	15	Vitrified Clay Pipe	3B21	3822	3D23	2.95	2.5	2.78	2.78
W2-PA-010A_W2-PA	W2-PA-010A	W2-PA-008	PACP 6.0	12	Vitrified Clay Pipe	3100	3824	3924	3	2.54	2.57	2.57
W1-NM-003_W1-PL-	W1-NM-003	W1-PL-008	PACP 6.0	12	Vitrified Clay Pipe	3B00	3825	3D25	3	2.4	2.72	2.72
W4-ST-002_W4-ST-	W4-ST-002	W4-ST-003	SOLO	10	Vitrified Clay Pipe	2411	3826	382A	1.8	2.47	2.3	2.47
W3-24-002_W3-24-0	W3-24-002	W3-24-001	PACP 6.0	15	Vitrified Clay Pipe	3300	3900	3A00	3	3	3	3
H5-CL-654_H5-CL-6	H5-CL-654	H5-CL-652	PicAx 2.1	24	Brick	3B21	3900	3D21	2.94	3	2.96	3
W2-WE-006_W2-24-	W2-WE-006	W2-24-001	PACP 6.0	15	Vitrified Clay Pipe	3A00	3911	3B11	3	2.8	2.9	2.9
W2-27-003_W2-27-0	W2-27-003	W2-27-002	PACP 6.0	8	Vitrified Clay Pipe	3A00	3911	3C11	3	2.8	2.9	2.9
W2-21-004_W2-21-0	W2-21-004	W2-21-005	PACP 6.0	12	Vitrified Clay Pipe	3200	3921	3A21	3	2.9	2.92	2.92
W3-18-007_W3-18-0	W3-18-007	W3-18-006	PACP 6.0	15	Vitrified Clay Pipe	3A21	3921	3B22	2.91	2.9	2.9	2.9
W3-KE-011_W3-KE-	W3-KE-011	W3-KE-010	MSI PROFILER	36	Reinforced Concrete	0000	3922	3922	0	2.82	2.82	2.82
JOSO-41-011_JOS	JOSO-41-011	JOSO-41-012	PicAx 2.1	18	Vitrified Clay Pipe	3500	3923	3A23	3	2.75	2.82	2.82
UH1-04-010_UH1-04	UH1-04-010	UH1-04-009	PicAx 2.1	15	Vitrified Clay Pipe	3A00	3923	3C23	3	2.62	2.81	2.81
H6-GA-002_H6-GA-	H6-GA-002	H6-GA-003	PicAx 2.1	15	Vitrified Clay Pipe	3100	3925	3A25	3	2.64	2.67	2.67
JOSO-BE-007_JOS	JOSO-BE-007	JOSO-BE-008	PicAx 2.1	15	Vitrified Clay Pipe	3B21	3927	3D28	2.94	2.56	2.76	2.76
JOSO-PA-003_JOS	JOSO-PA-003	JOSO-PA-004	PicAx 2.1	15	Vitrified Clay Pipe	3A00	3A00	3D00	3	3	3	3
W3-23-001_W3-23-0	W3-23-001	W3-23-002	PicAx 2.1	15	Vitrified Clay Pipe	3621	3A00	3B21	2.86	3	2.95	3
W1-38-015_W1-38-0	W1-38-015	W1-38-014	PicAx 2.1	15	Vitrified Clay Pipe	0000	3A00	3A00	0	3	3	3
	18PS-HA-008A	18PS-HA-009	PicAx 2.1	24	Vitrified Clay Pipe	2100	3A00	3A21	2	3	2.93	3
W2-21-004_W2-21-0	W2-21-004	W2-21-005	PACP 6.0	12	Vitrified Clay Pipe	3515	3A00	3B15	2	3	2.55	3
H1-WA-010_H1-07-0	H1-WA-010	H1-07-013	PicAx 2.1	12	Vitrified Clay Pipe	3600	3A00	3B00	3	3	3	3
W3-23-004_W3-23-0	W3-23-004	W3-23-003	PACP 6.0	15	Vitrified Clay Pipe	3700	3A00	3B00	3	3	3	3
	H5-12-598	H5-12-599	PicAx 2.1	15	Vitrified Clay Pipe	3700	3A00	3C00	3	3	3	3
	H5-12-594	H5-12-596	PicAx 2.1	15	Vitrified Clay Pipe	3A00	3A00	3C00	3	3	3	3
	H5-12-596	H5-12-598	PicAx 2.1	15	Vitrified Clay Pipe	0000	3A00	3A00	0	3	3	3
UH1-02-002_UH1-02	UH1-02-002	UH1-02-001	PicAx 2.1	30	Brick	3B00	3A00	3D00	3	3	3	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-18-002A_W2-18-	W2-18-002A	W2-18-001	PACP 6.0	12	Vitrified Clay Pipe	3500	3A21	3B21	3	2.91	2.94	2.94
W3-18-007_W3-18-0	W3-18-007	W3-18-006	PACP 6.0	15	Vitrified Clay Pipe	3700	3A21	3B21	3	2.77	2.85	2.85
UH1-05-024_UH1-05	UH1-05-024	UH1-05-023	PicAx 2.1	15	Vitrified Clay Pipe	3B00	3A21	3E21	3	2.92	2.97	2.97
W2-MO-004A_W2-M	W2-MO-004A	W2-MO-005	PicAx 2.1	15	Vitrified Clay Pipe	3221	3A21	3A22	2.67	2.91	2.86	2.91
W2-25-003_W2-25-0	W2-25-003	W2-25-004	PACP 6.0	15	Vitrified Clay Pipe	3A00	3A21	3D21	3	2.92	2.96	2.96
	W2-21-011	W2-21-012	PicAx 2.1	18	Vitrified Clay Pipe	3B26	3A22	3D28	2.65	2.47	2.58	2.58
UH1-04-011_UH1-04	UH1-04-011	UH1-04-010	PicAx 2.1	15	Vitrified Clay Pipe	0000	3A22	3A22	0	2.85	2.85	2.85
W2-19-021_W2-19-0	W2-19-021	W2-19-022	PACP 6.0	15	Vitrified Clay Pipe	3421	3A22	3B23	2.8	2.88	2.86	2.88
UH1-15-005_UH1-15	UH1-15-005	UH1-15-004	PACP 6.0	15	Vitrified Clay Pipe	3200	3A22	3A22	3	2.41	2.47	2.47
W3-25-004_W3-25-0	W3-25-004	W3-25-005	PACP 6.0	12	Vitrified Clay Pipe	3E00	3A23	3H23	3	2.82	2.94	2.94
W2-HU-006A_W2-HU	W2-HU-006A	W2-HU-006	PACP 6.0	12	Vitrified Clay Pipe	3321	3A23	3B24	2.75	2.29	2.36	2.36
UH1-07-022_UH1-07	UH1-07-022	UH1-07-023	PicAx 2.1	18	Vitrified Clay Pipe	3100	3A24	3A24	3	2.75	2.76	2.76
W2-16-009_W2-16-0	W2-16-009	W2-16-010	PicAx 2.1	15	Vitrified Clay Pipe	3300	3A25	3A25	3	2.69	2.74	2.74
W2-18-004A_W2-18-	W2-18-004A	W2-18-005A	PACP 6.0	12	Vitrified Clay Pipe	3827	3A26	3C2A	2.53	1.81	2	2
W2-17-008_W2-17-0	W2-17-008	W2-17-009	PicAx 2.1	15	Vitrified Clay Pipe	3121	3A2A	3A2B	2.5	2.46	2.46	2.46
W1-PL-010_W1-PL-0	W1-PL-010	W1-PL-011	PACP 6.0	18	Vitrified Clay Pipe	0000	3A2A	3A2A	0	2.08	2.08	2.08
	W4-JFK-009B	W4-JFK-010	MSI PROFILER	24	Vitrified Clay Pipe	0000	3B00	3B00	0	3	3	3
W2-18-014_W2-18-0	W2-18-014	W2-18-015	PACP 6.0	12	Vitrified Clay Pipe		3B00		3.11	3	3.04	3.04
W2-17-015_W2-17-0	W2-17-015	W2-17-016	PACP 6.0	15	Vitrified Clay Pipe	3C00	3B00	3F00	3	3	3	3
W2-17-013_W2-17-0	W2-17-013	W2-17-014	PACP 6.0	15	Vitrified Clay Pipe	3400	3B00	3C00	3	3	3	3
W1-37-003_W1-37-0	W1-37-003	W1-37-004	PicAx 2.1	15	Vitrified Clay Pipe	0000	3B00	3B00	0	3	3	3
W2-15-012_W2-15-0	W2-15-012	W2-15-013	PACP 6.0	15	Vitrified Clay Pipe	0000	3B00	3B00	0	3	3	3
UH1-04-012_UH1-04	UH1-04-012	UH1-04-011	PicAx 2.1	15	Vitrified Clay Pipe	3221	3B00	3B21	2.67	3	2.95	3
W2-PA-999_W2-MA-	W2-PA-999	W2-MA-001	PicAx 2.1	12	Polyvinyl Chloride		3B00		3	3	3	3
W2-24-016A_W2-24-	W2-24-016A	W2-24-016	MSI PROFILER	45	Brick	312D	3B00	3C2D	2.04	3	2.43	3
W2-PA-013_W2-PA-	W2-PA-013	W2-PA-011A	MSI PROFILER	30	Reinforced Concrete	2C00	3B00	3B2C	2	3	2.44	3
W2-16-013_W2-16-0	W2-16-013	W2-16-014	PACP 6.0	15	Vitrified Clay Pipe	3200	3B11	3B11	3	2.89	2.9	2.9
W2-19-022_W2-19-0	W2-19-022	W2-19-023	PACP 6.0	15	Vitrified Clay Pipe	3400	3B12	3B12	3	2.76	2.81	2.81
UH1-15-009_UH1-15	UH1-15-009	UH1-15-008	PACP 6.0	15	Vitrified Clay Pipe	3B00	3B12	3E12	3	2.78	2.88	2.88
UH1-SU-001_UH1-S	UH1-SU-001	UH1-SU-002	PACP 6.0	18	Vitrified Clay Pipe	3300	3B12	3B12	3	2.76	2.8	2.8
W1-37-002_W1-37-0	W1-37-003	W1-37-002	PicAx 2.1	15	Vitrified Clay Pipe	2100	3B21	3B22	2	2.95	2.9	2.95
	W2-16-006	W2-16-008	PicAx 2.1	18	Vitrified Clay Pipe	3621	3B21	3C22	2.63	2.94	2.84	2.94
W2-BE-011_W2-BE-	W2-BE-011	W2-BE-008A	PACP 6.0	24	Vitrified Clay Pipe		3B21		3.33	2.95	3	3
W4-HI-004_W4-HI-0	W4-HI-004	W4-HI-005	PicAx 2.1	18	Vitrified Clay Pipe	3221	3B21	3C22	1.63	2.95	2.56	2.95
	W2-18-006	W2-18-007A	PACP 6.0	12	Vitrified Clay Pipe	3724	3B22	3D26	2.64	2.18	2.29	2.29
W2-NY-011_W2-NY-	W2-NY-011	W2-NY-010	PACP 6.0	15	Vitrified Clay Pipe		3B22		3.03	2.81	2.95	2.95
W2-PA-024_W2-PA-	W2-PA-024	W2-PA-021A	MSI PROFILER	30	Reinforced Concrete	2E00	3B22	3B2F	2	2.89	2.33	2.89
W3-GR-002A_W3-G	W3-GR-002A	W3-GR-002	PicAx 2.1	12	Reinforced Concrete	513J	3B23	513M	2.68	2.65	2.67	2.67
W3-22-008_W3-22-0	W3-22-008	W3-22-007A	PACP 6.0	15	Vitrified Clay Pipe	3700	3B24	3D24	3	2.62	2.7	2.7
W3-SU-024_W3-SU-	W3-SU-024	W3-SU-023	PACP 6.0	15	Vitrified Clay Pipe	3200	3B26	3B26	3	1.67	1.71	1.71
JOSO-BR-002A_JOS	JOSO-BR-002A	JOSO-BR-002AA	SOLO	12	Vitrified Clay Pipe	312H	3C00	3C2H	2	3	2.31	3
W5-46-001_W5-JFK-	W5-46-001	W5-JFK-005	SOLO	12	Vitrified Clay Pipe	312D	3C00	3C2D	2.03	3	2.46	3
G-DE-099_G-DE-100	G-DE-099	G-DE-100	MSI PROFILER	24	Vitrified Clay Pipe	2811	3C00	3C28	1.89	3	2.69	3
W3-22-001_W3-22-0	W3-22-001	W3-22-002	PicAx 2.1	15	Vitrified Clay Pipe	3A00	3C00	3E00	3	3	3	3
W2-30-008C_W2-30-	W2-30-008C	W2-30-008D	PicAx 2.1	15	Vitrified Clay Pipe	3H00	3C00	3L00	3	3	3	3
H1-WA-011_H1-WA-	H1-WA-011	H1-WA-010	PicAx 2.1	12	Vitrified Clay Pipe	3A00	3C00	3E00	3	3	3	3
W2-15-006_W2-15-0	W2-15-006	W2-15-007	PACP 6.0	15	Vitrified Clay Pipe	3521	3C11	3D21	2.83	2.9	2.89	2.9
W2-15-005_W2-15-0	W2-15-005	W2-15-006	PACP 6.0	15	Vitrified Clay Pipe	3C21	3C12	3G21	2.95	2.83	2.89	2.89
W3-21-001_W3-21-0	W3-21-001	W3-21-002	PicAx 2.1	15	Vitrified Clay Pipe	3123	3C12	3C23	2.25	2.83	2.74	2.83
W2-18-009A_W2-MO	W2-18-009A	W2-MO-005A	PACP 6.0	15	Vitrified Clay Pipe	3D00	3C16	3I16	3	2.59	2.79	2.79
W2-21-007_W2-21-0	W2-21-007	W2-21-006	PACP 6.0	12	Vitrified Clay Pipe		3C1A		3.13	2.26	2.41	2.41

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-24-002_W2-24-0	W2-24-002	W2-24-003	PACP 6.0	15	Vitrified Clay Pipe		3C1A		3.24	2.35	2.65	2.65
	W2-MO-003A	W2-MO-002	PACP 6.0	30	Vitrified Clay Pipe	3300	3C1A	3D1A	3	2.26	2.32	2.32
G-FI-086_G-FI-087	G-FI-086	G-FI-087	SOLO	12	Vitrified Clay Pipe	2400	3C21	3C25	2	2.95	2.8	2.95
JOSO-44-011_JOSO	JOSO-44-011	JOSO-44-012	MSI PROFILER	18	Vitrified Clay Pipe	2300	3C21	3C24	2	2.95	2.83	2.95
UH1-PA-015_UH1-P	UH1-PA-015	UH1-PA-016	PicAx 2.1	24	Vitrified Clay Pipe		3C21		3.5	2.96	3	3
W3-19-002_W3-19-0	W3-19-002	W3-19-003	PACP 6.0	15	Vitrified Clay Pipe	3800	3C21	3E21	3	2.88	2.91	2.91
W2-BE-008A_W2-BE	W2-BE-008A	W2-BE-008	PACP 6.0	24	Vitrified Clay Pipe	3A00	3C21	3E21	3	2.95	2.97	2.97
	W4-HI-006	W4-HI-006_1	PicAx 2.1	24	Vitrified Clay Pipe	3D21	3C21	3I22	2.97	2.96	2.96	2.96
	W2-MO-008A	W2-MO-008	PACP 6.0	12	Vitrified Clay Pipe	3A21	3C22	3F23	2.93	2.59	2.7	2.7
W2-15-007_W2-15-0	W2-15-007	W2-15-008	PACP 6.0	15	Vitrified Clay Pipe	3100	3C22	3C22	3	2.91	2.91	2.91
	W2-MO-008	W2-MO-007A	PACP 6.0	12	Vitrified Clay Pipe	3922	3C22	3E24	2.82	2.28	2.4	2.4
W4-JFK-003_W4-JF	W4-JFK-003	W4-JFK-004A	PicAx 2.1	18	Vitrified Clay Pipe	3311	3C22	3D22	2.5	2.92	2.86	2.92
W2-WE-026_W2-WE	W2-WE-026	W2-WE-025	PicAx 2.1	12	Vitrified Clay Pipe	3921	3C23	3D24	2.9	2.65	2.72	2.72
W2-24-003_W2-24-0	W2-24-003	W2-24-004	PACP 6.0	15	Vitrified Clay Pipe		3C2C		3.67	2.47	2.54	2.54
W2-24-015A_W2-24-	W2-24-015A	W2-24-015	SOLO	8	Vitrified Clay Pipe	3221	3D00	3D21	1.24	3	2.2	3
	W4-JFK-009A	W4-JFK-009B	MSI PROFILER	24	Vitrified Clay Pipe	2B00	3D00	3D2B	2	3	2.59	3
	W4-JFK-010	W4-JFK-010A	MSI PROFILER	24	Vitrified Clay Pipe	2A00	3D00	3D2A	2	3	2.72	3
	W4-HI-006_1	W4-HI-006_2	PicAx 2.1	24	Vitrified Clay Pipe	3F22	3D00	3K22	2.95	3	2.97	3
W4-JFK-011_W4-JF	W4-JFK-011	W4-JFK-012	MSI PROFILER	36	Reinforced Concrete	0000	3D21	3D21	0	2.97	2.97	2.97
W2-22-014_W2-22-0	W2-22-014	W2-22-015	PACP 6.0	12	Vitrified Clay Pipe	3I22	3D22	3N24	2.96	2.86	2.93	2.93
W1-32-002_W1-32-0	W1-32-002	W1-32-003	PicAx 2.1	15	Vitrified Clay Pipe	3B00	3D22	3G22	3	2.93	2.95	2.95
W3-19-001_W3-19-0	W3-19-001	W3-19-002	PACP 6.0	15	Vitrified Clay Pipe	3A00	3D22	3G22	3	2.88	2.91	2.91
W3-CE-013_W3-CE-	W3-CE-013	W3-CE-012	MSI PROFILER	30	Brick	2700	3D23	3D2A	2	2.9	2.74	2.9
UH1-BE-004_UH1-B	UH1-BE-004	UH1-BE-005	PACP 6.0	15	Vitrified Clay Pipe		3D26		3.13	2.26	2.39	2.39
W5-JFK-011_W5-JF	W5-JFK-011	W5-JFK-010	PicAx 2.1	15	Vitrified Clay Pipe	3C00	3E00	3I00	3	3	3	3
	H7 REGULATOR	H7-INT-001_1	PicAx 2.1	24	Reinforced Concrete		3E00		2.97	3	2.98	3
	PANYNJ-PA-012A	PANYNJ-PA-012A-1	MSI PROFILER	54	Concrete Pipe (non-r	2100	3E00	3E21	2	3	2.97	3
	W4-JFK-010A	W4-JFK-011	MSI PROFILER	36	Reinforced Concrete	0000	3E00	3E00	0	3	3	3
W2-HU-008_W2-HU-	W2-HU-008	W2-HU-007	PACP 6.0	12	Vitrified Clay Pipe	3923	3E1D	3F23	2.75	2.07	2.19	2.19
	UH1-PA-016	UH1-PA-018	PicAx 2.1	24	Vitrified Clay Pipe	0000	3E21	3E21	0	2.97	2.97	2.97
W2-MO-007_W2-MO	W2-MO-007	W2-MO-006B	PACP 6.0	12	Vitrified Clay Pipe		3E25		2.44	2.1	2.17	2.17
JOSO-BE-004_JOSO	JOSO-BE-004	JOSO-BE-003	PicAx 2.1	18	Vitrified Clay Pipe	3300	3F00	3F00	3	3	3	3
W3-GR-003_W3-GR	W3-GR-003	W3-GR-003A	PicAx 2.1	45	Brick		3G00		3	3	3	3
W3-KE-003_W3-KE-	W3-KE-003	W3-KE-002	MSI PROFILER	53	Reinforced Concrete	2100	3G00	3G21	2	3	2.98	3
	W4-JFK-012	W4-JFK-012A	MSI PROFILER	36	Reinforced Concrete	2113	3G23	3G24	1.25	2.94	2.8	2.94
W1-PL-011_W1-PL-0	W1-PL-011	W1-PL-012	PACP 6.0	18	Vitrified Clay Pipe	3400	3H2G	3I2G	3	1.8	1.82	1.82
	W4-JFK-012A	W4-JFK-012B	MSI PROFILER	36	Reinforced Concrete	1A00	3N27	3N27	1	2.92	2.68	2.92
W2-DO-999B_18PS-	W2-DO-999B	18PS-GR-007A	SOLO	8	Vitrified Clay Pipe				4	4	4	4
W2-26-010_W2-HU-	W2-26-010	W2-HU-003	SOLO	8	Polyvinyl Chloride	0000			0	4	4	4
JOSO-48-008_JOSO	JOSO-48-008	JOSO-48-009	SOLO	12	Vitrified Clay Pipe	2200			2	4	2.67	4
JOSO-47-007_JOSO	JOSO-47-007	JOSO-47-008	SOLO	12	Vitrified Clay Pipe	0000			0	4	4	4
G-64-126_G-DE-119	G-64-126	G-DE-119A	SOLO	12	Vitrified Clay Pipe	0000			0	4	4	4
D-55-007_D-55-008	D-55-007	D-55-008	SOLO	12	Vitrified Clay Pipe	0000			0	4	4	4
W1-39-004_W1-39-0	W1-39-004	W1-39-005	SOLO	12	Vitrified Clay Pipe	3126			2.14	4	2.38	4
JOSO-48-008_JOSO	JOSO-48-008	JOSO-48-009	SOLO	12	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-LI-006A_JOS	JOSO-LI-006A	JOSO-LI-005AA	SOLO	12	Vitrified Clay Pipe	2100			2	4	3	4
G-MO-047_G-62-046	G-MO-047	G-62-046	SOLO	8	Vitrified Clay Pipe				4	4	4	4
18PS-GR-007XX2_1	18PS-GR-007XX2	18PS-GR-007XX1	SOLO	8	Vitrified Clay Pipe	2100			2	4	3	4
18PS-GR-007XX2_1	18PS-GR-007XX2	18PS-GR-007XX1	SOLO	8	Vitrified Clay Pipe	2100			2	4	3	4
	18PS-HI-006F	18PS-HI-006E	SOLO	8	Vitrified Clay Pipe	2100			2	4	3	4
18PS-GR-007XX3_1	18PS-GR-007XX3	18PS-GR-007XX2	SOLO	8	Vitrified Clay Pipe	2100			2	4	3	4

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W4-KI-001B_W4-KI-(	W4-KI-001B	W4-KI-001C	SOLO	10	Vitrified Clay Pipe	0000			0	4	4	4
	W4-ST-004	W4-ST-004A	SOLO	10	Vitrified Clay Pipe				4	4	4	4
W3-SI-004_W3-SI-0(	W3-SI-004	W3-SI-005	SOLO	12	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-48-001_JOSC	JOSO-48-001	JOSO-JFK-001	MSI PROFILER	18	Vitrified Clay Pipe	0000			0	4	4	4
G-67-095_G-DE-096	G-67-095	G-DE-096	PicAx 2.1	12	Concrete Pipe (non-r	0000			0	4	4	4
W1-34-015_W1-34-0	W1-34-015	W1-34-016	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	4	3.33	4
JOSO-PA-012_JOSC	JOSO-PA-012	JOSO-PA-013	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	4	3.33	4
W1-40-011_W1-40-0	W1-40-011	W1-40-010	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.5	4
JOSO-45-010_JOSC	JOSO-45-010	JOSO-45-011	PicAx 2.1	15	Vitrified Clay Pipe	3C22			2.91	4	2.96	4
W1-36-009_W1-36-0	W1-36-009	W1-36-010	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	4	3.33	4
W3-31-007_W3-31-0	W3-31-007	W3-31-008	PicAx 2.1	15	Vitrified Clay Pipe	3C21			2.96	4	3	4
W3-30-008_W2-30-0	W3-30-008	W2-30-008A	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.5	4
W1-40-013_W1-40-0	W1-40-013	W1-40-012	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	4	3.17	4
UH1-13-011_UH1-13	UH1-13-011	UH1-13-010	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	4	3.09	4
UH1-JFK-030_UH1-J	UH1-JFK-030	UH1-JFK-031	PicAx 2.1	0	Brick	3100			3	4	3.5	4
W1-36-011_W1-36-0	W1-36-011	W1-36-012	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.25	4
JOSO-42-004_JOSC	JOSO-42-004	JOSO-42-003	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	4	3.33	4
UH1-12-003_UH1-SU	UH1-12-003	UH1-SU-017	PicAx 2.1	15	Vitrified Clay Pipe	3221			2.67	4	3	4
	W1-36-008	W1-36-007	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.25	4
JOSO-HU-002_JOSC	JOSO-HU-002	JOSO-HU-001	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-41-023_JOSC	JOSO-41-023	JOSO-BR-019	PicAx 2.1	15	Vitrified Clay Pipe	3800			3	4	3.11	4
W3-30-007_W3-30-0	W3-30-007	W3-30-008	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	4	3.2	4
JOSO-PA-006_JOSC	JOSO-PA-006	JOSO-PA-007	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.5	4
G-66-131_G-66-132	G-66-131	G-66-132	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	4	3.09	4
W3-30-003_W3-SU-(	W3-30-003	W3-SU-005	PicAx 2.1	15	Vitrified Clay Pipe	3721			2.88	4	3	4
UH1-06-005_UH1-06	UH1-06-005	UH1-06-004	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	4	3.07	4
JOSO-41-019_JOSC	JOSO-41-019	JOSO-41-020	PicAx 2.1	15	Vitrified Clay Pipe	3321			2.75	4	3	4
UH1-JFK-031_UH1-J	UH1-JFK-031	UH1-JFK-032	PicAx 2.1	0	Brick	0000			0	4	4	4
JOSO-44-018_JOSC	JOSO-44-018	JOSO-44-019	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-44-021A_JOS	JOSO-44-021A	JOSO-44-021	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
UH1-07-002_UH1-07	UH1-07-001	UH1-07-002	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	4	3.05	4
W5-49-002_W5-JFK-	W5-49-002	W5-JFK-012	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	4	4	4
H5-CL-658_H5-CL-6	H5-CL-658	H5-CL-656	PicAx 2.1	24	Brick	3800			3	4	3.11	4
UH1-JFK-016_UH1-J	UH1-JFK-016	UH1-JFK-017	MSI PROFILER	36	Brick	2D00			2	4	2.07	4
W3-HP-006A_W3-HP	W3-HP-006A	W3-HP-007	MSI PROFILER	36	Brick	2E00			2	4	2.06	4
W3-HP-006_W3-HP-	W3-HP-006	W3-HP-006A	MSI PROFILER	36	Brick	5142		5143	2.16	4	2.2	4
W2-23-004_W2-23-0	W2-23-004	W2-23-005	MSI PROFILER	36	Brick				2.1	4	2.18	4
W2-WE-012_W2-WE	W2-WE-012	W2-WE-011	MSI PROFILER	36	Brick	2100			2	4	3	4
	W3-27-009A	W2-BE-005	MSI PROFILER	42	Brick	2100			2	4	3	4
JOSO-JFK-027_JOS	JOSO-JFK-027	JOSO-JFK-026	MSI PROFILER	57	Brick	2400			2	4	2.4	4
JOSO-JFK-026_JOS	JOSO-JFK-026	JOSO-JFK-025	MSI PROFILER	57	Brick	2D15			1.83	4	1.9	4
W2-PA-011A_W2-PA	W2-PA-011A	W2-PA-011	MSI PROFILER	30	Reinforced Concrete	2A00			2	4	2.15	4
UH1-04-003_UH1-04	UH1-04-003	UH1-04-002	PicAx 2.1	30	Brick	3E00			3	4	3.03	4
W2-PA-039_W2-PA-	W2-PA-039	W2-PA-038	PACP 6.0	36	Brick	3100			3	4	3.5	4
	W2-29-013	W2-PA-001	PicAx 2.1	45	Brick	3A00			3	4	3.08	4
C-BE-134_C-BE-T07	C-BE-134	C-BE-T077	PicAx 2.1	48	Vitrified Clay Pipe	2100			2	4	3	4
W2-MO-009_W2-MC	W2-MO-009	W2-MO-010	PACP 6.0	36	Brick	3C00			3	4	3.05	4
18PS-HA-010CB_18	18PS-HA-010CB	18PS-HA-010B	PicAx 2.1	36	Brick	3A00			3	4	3.08	4
W1-BE-016_W1-38-(	W1-BE-016	W1-38-011	PicAx 2.1	45	Brick	3100			3	4	3.5	4
UH1-02-003_UH1-02	UH1-02-003	UH1-02-002	PicAx 2.1	30	Brick	3G00			3	4	3.02	4
W2-PA-047_W2-PA-	W2-PA-047	W2-PA-046	PACP 6.0	36	Brick	3100			3	4	3.5	4

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
	W1-BE-006	W1-BE-008	PicAx 2.1	45	Brick	3100			3	4	3.5	4
	UH1-JFK-028	UH1-JFK-030	PicAx 2.1	30	Brick	3100			3	4	3.5	4
	UH1-NY-005	UH1-NY-007	PACP 6.0	30	Brick				3.17	4	3.29	4
	H5-WA-450	H5-09-442A	PicAx 2.1	45	Brick	3C23			2.88	4	2.93	4
H2-WA-008_H2-WA-	H2-WA-008	H2-WA-007	PicAx 2.1	45	Brick	3I22			2.92	4	2.94	4
	H5-WA-490	H5-WA-470	PicAx 2.1	45	Brick	3I11			2.96	4	2.98	4
JOSO-43-012_JOSO	JOSO-43-012	JOSO-43-013	MSI PROFILER	75	Brick	3300			3	4	3.25	4
W3-29-003_W3-29-0	W3-29-003	W3-29-002	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	2.5	2.8	2.8
H2-WA-011_H2-WA-	H2-WA-011	H2-WA-010	PicAx 2.1	12	Reinforced Concrete	3300			3	1.75	2.29	2.29
JOSO-46-001_JOSO	JOSO-46-001	JOSO-BE-006	SOLO	12	Vitrified Clay Pipe	0000			0	3	3	3
W4-KI-002A_W4-KI-	W4-KI-002A	W4-KI-002	SOLO	8	Vitrified Clay Pipe				4	3	3.33	3.33
W2-NY-033_W2-NY-	W2-NY-033	W2-NY-032	PACP 6.0	15	Vitrified Clay Pipe	3321			2.75	3	2.83	3
UH1-BE-025_UH1-B	UH1-BE-025	UH1-BE-026	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
W2-25-011_W2-25-0	W2-25-011	W2-25-010	PACP 6.0	8	Vitrified Clay Pipe	3200			3	2.33	2.6	2.6
W3-CE-009_W3-CE-	W3-CE-009	W3-CE-008	PicAx 2.1	15	Vitrified Clay Pipe	3J21			2.98	3	2.98	3
UH1-MO-005_UH1-M	UH1-MO-005	UH1-MO-006	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
W2-28-001_W2-NY-0	W2-28-001	W2-NY-006	PACP 6.0	12	Vitrified Clay Pipe	3500			3	2.33	2.75	2.75
UH1-08-017_UH1-08	UH1-08-017	UH1-08-016	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
W2-23-001_W2-23-0	W2-23-001	W2-23-002	PACP 6.0	12	Vitrified Clay Pipe	0000			0	2	2	2
UH1-CE-006_UH1-C	UH1-CE-006	UH1-CE-007	PACP 6.0	15	Vitrified Clay Pipe	3400			3	2.33	2.71	2.71
H6-GA-001_H6-GA-0	H6-GA-001	H6-GA-002	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3	3	3
H6-PA-009_H6-PA-0	H6-PA-009	H6-PA-010	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3	3	3
JOSO-47-014B_JOS	JOSO-47-014B	JOSO-47-014A	SOLO	12	Vitrified Clay Pipe	3100			3	2.25	2.4	2.4
C-66-005_C-66-006	C-66-005	C-66-006	SOLO	12	Vitrified Clay Pipe	0000			0	2.67	2.67	2.67
W2-WE-014_W2-WE	W2-WE-014	W2-WE-013	PACP 6.0	12	Vitrified Clay Pipe	3400			3	2.67	2.86	2.86
	UH1-07-003A	UH1-SU-030	PicAx 2.1	15	Vitrified Clay Pipe	3121			2.5	2.67	2.6	2.67
UH1-13-007_UH1-13	UH1-13-007	UH1-13-006	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.67	2.67	2.67
W2-PA-007_W2-PA-	W2-PA-007	W2-PA-005	PACP 6.0	12	Vitrified Clay Pipe	3100			3	2.67	2.75	2.75
W2-19-007_W2-19-0	W2-19-007	W2-19-008	PicAx 2.1	15	Vitrified Clay Pipe	3511			2.67	1.86	2.23	2.23
UH1-13-021_UH1-13	UH1-13-021	UH1-13-022	PACP 6.0	15	Vitrified Clay Pipe	3300			3	2.5	2.71	2.71
W1-35-020_W1-35-0	W1-35-020	W1-35-021	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	2.5	2.88	2.88
W1-35-007_W1-35-0	W1-35-007	W1-35-006	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	2.5	2.87	2.87
W2-WE-028_W2-WE	W2-WE-028	W2-WE-029	PicAx 2.1	12	Vitrified Clay Pipe	3A27			2.61	1.86	2.4	2.4
JOSO-42-021_JOSO	JOSO-42-021	JOSO-BR-015	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	2.5	2.6	2.6
W1-37-004_W1-37-0	W1-37-004	W1-37-005	PicAx 2.1	15	Vitrified Clay Pipe	3700			3	2.4	2.75	2.75
JOSO-HA-006_JOSO	JOSO-HA-006	JOSO-HA-005	PicAx 2.1	15	Vitrified Clay Pipe				2.73	2.33	2.62	2.62
W1-PE-002_W1-PE-	W1-PE-002	W1-PE-003	PicAx 2.1	16	Vitrified Clay Pipe	3300			3	2.33	2.56	2.56
H6-PA-007_H6-PA-0	H6-PA-007	H6-PA-008	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	2.33	2.79	2.79
UH1-JFK-011_UH1-J	UH1-JFK-011	UH1-JFK-012A	MSI PROFILER	36	Brick	0000			0	2.33	2.33	2.33
	UH1-WE-012	UH1-WE-014	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	1.94	2	2
18PS-GR-008-8_18P	18PS-GR-008-8	18PS-GR-008-7	SOLO	8	Vitrified Clay Pipe	3417			1.73	2.75	2	2.75
W2-27-004_W2-27-0	W2-27-004	W2-27-004A	SOLO	8	Vitrified Clay Pipe	5131		5141	1.95	3	2.09	3
H-67-001_G-67-103	H-67-001	G-67-103	SOLO	12	Vitrified Clay Pipe	2200			2	3.5	2.75	3.5
18PS-GR-007B_18P	18PS-GR-007B	18PS-GR-007	SOLO	8	Vitrified Clay Pipe	2500			2	3.5	2.43	3.5
	W4-ST-004A	W4-ST-005	SOLO	10	Vitrified Clay Pipe	2100			2	2.67	2.5	2.67
JOSO-BR-002AA_JO	JOSO-BR-002AA	JOSO-BR-002A1	SOLO	12	Vitrified Clay Pipe	0000			0	3.5	3.5	3.5
W2-18-016_W2-PA-0	W2-18-016	W2-PA-032	PACP 6.0	12	Vitrified Clay Pipe	3221			2.67	2.25	2.43	2.43
W2-NY-032_W2-NY-	W2-NY-032	W2-NY-031	PACP 6.0	15	Vitrified Clay Pipe	3400			3	2.67	2.86	2.86
W2-30-008B_W2-30-	W2-30-008B	W2-30-008C	PicAx 2.1	15	Vitrified Clay Pipe	3600			3	3.5	3.13	3.5
JOSO-43-003_JOSO	JOSO-43-003	JOSO-43-002	PicAx 2.1	18	Vitrified Clay Pipe	3400			3	2.67	2.86	2.86
W3-BE-001A_W3-BE	W3-BE-001A	W3-BE-001	PicAx 2.1	0	Vitrified Clay Pipe	2300			2	3	2.5	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W1-NM-001_W1-NM	W1-NM-001	W1-NM-001A	PicAx 2.1	12	Reinforced Concrete	3100			3	3.5	3.33	3.5
W2-21-008_W2-21-0	W2-21-008	W2-21-007	PACP 6.0	12	Vitrified Clay Pipe	3300			3	2	2.23	2.23
UH1-13-010_UH1-13	UH1-13-010	UH1-13-009	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
UH1-08-015_UH1-08	UH1-08-015	UH1-08-014	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.67	2.67	2.67
JOSO-42-001_JOSO	JOSO-42-001	JOSO-JFK-019	PicAx 2.1	18	Vitrified Clay Pipe	3C00			3	3	3	3
D-49-010_D-49-T050	D-49-010	D-49-T050	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.75	2.75	2.75
UH1-08-014_UH1-W	UH1-08-014	UH1-WE-012	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.5	2.5	2.5
JOSO-35-006_JOSO	JOSO-35-006	JOSO-35-004	PicAx 2.1	15	Vitrified Clay Pipe				3	3	3	3
W2-22-018_W2-PA-0	W2-22-018	W2-PA-020	PACP 6.0	12	Vitrified Clay Pipe	3B00			3	3	3	3
UH1-11-009_UH1-11	UH1-11-009	UH1-11-010	PicAx 2.1	15	Vitrified Clay Pipe	3900			3	2.5	2.85	2.85
W3-28-011_W3-28-0	W3-28-011	W3-28-012	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.5	3.08	3.5
W3-27-002_W3-27-0	W3-27-002	W3-27-003	PicAx 2.1	15	Vitrified Clay Pipe	3D00			3	3	3	3
W2-16-014_W2-16-0	W2-16-014	W2-16-015	PACP 6.0	15	Vitrified Clay Pipe				3.2	2.5	2.89	2.89
UH1-10-004_UH1-10	UH1-10-004	UH1-10-003	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.5	2.6	2.6
UH1-05-020_UH1-05	UH1-05-020	UH1-05-019	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.18	2.22	2.22
UH1-14-003_UH1-SU	UH1-14-003	UH1-SU-009	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
JOSO-BE-021_JOSO	JOSO-BE-021	JOSO-42-007	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	2.18	2.31	2.31
D-52-130G_D-52-130	D-52-130G	D-52-130D	PicAx 2.1	0	Concrete Pipe (non-r	3100			3	2.25	2.33	2.33
W2-19-014_W2-19-0	W2-19-014	W2-19-013	PACP 6.0	12	Vitrified Clay Pipe	0000			0	2	2	2
UH1-06-006_UH1-06	UH1-06-006	UH1-06-005	PicAx 2.1	15	Vitrified Clay Pipe	3A22			2.87	3	2.89	3
UH1-NY-020_UH1-N	UH1-NY-020	UH1-NY-021	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.67	2.67	2.67
W2-17-007_W2-17-0	W2-17-007	W2-17-008	PicAx 2.1	15	Vitrified Clay Pipe	3324			2.43	2.33	2.38	2.38
	W2-18-008B	W2-18-009A	PACP 6.0	15	Vitrified Clay Pipe	3300			3	2.67	2.83	2.83
H6-HU-003_H6-14-0	H6-HU-003	H6-14-010	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	3	3	3
H5-HW-536_H5-HW-	H5-HW-536	H5-HW-534	PicAx 2.1	15	Vitrified Clay Pipe	3C21			2.64	3.5	2.7	3.5
	UH1-JFK-021	UH1-JFK-022	MSI PROFILER	36	Brick	0000			0	3.5	3.5	3.5
W3-SU-003_W3-SU-	W3-SU-003	W3-SU-002	MSI PROFILER	36	Brick	2C00			2	3.5	2.12	3.5
W3-HP-008_W3-HP-	W3-HP-008	W3-HP-009	MSI PROFILER	60	Brick	2300			2	3	2.5	3
W2-20-013_W2-MO-	W2-20-013	W2-MO-001AA	MSI PROFILER	45	Brick	2100			2	3	2.75	3
W2-BE-012_W2-BE-	W2-BE-012	W2-BE-009	PACP 6.0	30	Brick	3500			3	3.5	3.14	3.5
	UH1-SU-009	UH1-SU-011	PACP 6.0	30	Brick	3300			3	3.5	3.2	3.5
JOSO-LI-002_JOSO	JOSO-LI-002	JOSO-LI-001	SOLO	12	Vitrified Clay Pipe	2300			2	2.6	2.38	2.6
JOSO-48-006_JOSO	JOSO-48-006	JOSO-48-007	SOLO	12	Vitrified Clay Pipe	2112			1.33	2.8	2.25	2.8
JOSO-LI-002A_JOSO	JOSO-LI-002A	JOSO-LI-002AA	SOLO	12	Vitrified Clay Pipe				2.17	2.36	2.29	2.36
UH1-13-014_UH1-13	UH1-13-014	UH1-13-015	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.5	2.5	2.5
W1-37-021_W1-37-0	W1-37-021	W1-37-022	PicAx 2.1	18	Vitrified Clay Pipe	3300			3	3	3	3
UH1-08-016_UH1-08	UH1-08-016	UH1-08-015	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.43	2.43	2.43
W2-WE-025_W2-WE	W2-WE-025	W2-WE-024A	PicAx 2.1	12	Vitrified Clay Pipe	3321			2.75	2.6	2.67	2.67
	W2-29-004A	W2-29-005	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3	3	3
UH1-14-018_UH1-N	UH1-14-018	UH1-NY-002	PicAx 2.1	15	Vitrified Clay Pipe	3321			2.75	3	2.88	3
	UH1-BE-002	UH1-BE-004	PACP 6.0	15	Vitrified Clay Pipe	2100			2	2.29	2.25	2.29
UH1-13-013_UH1-13	UH1-13-013	UH1-13-014	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.44	2.5	2.5
UH1-06-014_UH1-06	UH1-06-014	UH1-06-013	PicAx 2.1	15	Vitrified Clay Pipe	3211			2.33	2.75	2.57	2.75
JOSO-36-007_JOSO	JOSO-36-006	JOSO-36-007	PicAx 2.1	15	Vitrified Clay Pipe	3821			2.89	2.23	2.5	2.5
UH1-11-018_UH1-11	UH1-11-017A	UH1-11-018	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	2.36	2.42	2.42
JOSO-35-006_JOSO	JOSO-35-006	JOSO-35-004	PicAx 2.1	15	Vitrified Clay Pipe				4	2.8	3	3
W3-GR-001AB_W3-0	W3-GR-001AB	W3-GR-001	PicAx 2.1	12	Vitrified Clay Pipe	3722			2.23	2.33	2.26	2.33
UH1-17-009_UH1-17	UH1-17-009	UH1-17-008	PACP 6.0	15	Vitrified Clay Pipe	3200			3	2.75	2.83	2.83
W2-PA-021_W2-PA-	W2-PA-021	W2-PA-019C	MSI PROFILER	30	Reinforced Concrete	2G11			1.98	3.33	2.07	3.33
18PS-GR-008-3_18P	18PS-GR-008-3	18PS-GR-008-2	SOLO	8	Vitrified Clay Pipe	2B00			2	3	2.24	3
	JOSO-44-022B	JOSO-44-022A	SOLO	12	Vitrified Clay Pipe	2300			2	2.63	2.45	2.63

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
JOSO-47-009_JOSO	JOSO-47-009	JOSO-47-010	SOLO	12	Vitrified Clay Pipe	3121			2.5	3	2.86	3
JOSO-47-020_JOSO	JOSO-47-020	JOSO-47-019C	SOLO	12	Vitrified Clay Pipe	2700			2	3.25	2.45	3.25
H-67-001_G-67-103	H-67-001	G-67-103	PicAx 2.1	12	Vitrified Clay Pipe	3G00			3	3	3	3
W2-19-020_W2-19-0	W2-19-020	W2-19-021	PACP 6.0	15	Vitrified Clay Pipe	3822			2.8	2.56	2.68	2.68
W1-34-001_W1-34-0	W1-34-001	W1-34-002	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	2.56	2.83	2.83
UH1-CE-021_UH1-0	UH1-CE-021	UH1-08-008	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.42	2.46	2.46
UH1-14-015_UH1-BE	UH1-14-015	UH1-BE-002	PACP 6.0	15	Vitrified Clay Pipe				3.5	2.67	2.88	2.88
18PS-18-005B_18PS	18PS-18-005B	18PS-18-005BA	PicAx 2.1	18	Vitrified Clay Pipe	0000			0	3	3	3
W3-CE-012_W3-CE-	W3-CE-012	W3-CE-011	PicAx 2.1	27	Brick	3300			3	3.25	3.14	3.25
UH1-06-012_UH1-06	UH1-06-012	UH1-06-011	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3	3	3
JOSO-44-014_JOSO	JOSO-44-014	JOSO-44-015	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.25	3.14	3.25
W1-33-023_W1-33-0	W1-33-023	W1-33-024	PACP 6.0	15	Vitrified Clay Pipe	3500			3	2.71	2.83	2.83
W3-18-005_W3-KE-0	W3-18-005	W3-KE-019	PACP 6.0	15	Vitrified Clay Pipe	3200			3	2.83	2.88	2.88
	PANYNJ-PA-001DAB	PANYNJ-PA-001A	PicAx 2.1	8	Vitrified Clay Pipe	3121			2.5	2.57	2.56	2.57
G-PA-105_G-67-106	G-PA-105	G-67-106A	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	3.2	3.2	3.2
JOSO-44-008_JOSO	JOSO-44-008	JOSO-44-007	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.5	2.54	2.54
UH1-WE-011_UH1-W	UH1-WE-011	UH1-WE-012	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	2.57	2.63	2.63
W2-WE-020A_W2-W	W2-WE-020A	W2-WE-020	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	2.33	2.3	2.33
JOSO-35-001_JOSO	JOSO-35-001	JOSO-JFK-038	PicAx 2.1	15	Vitrified Clay Pipe	3321			2.75	2.86	2.82	2.86
UH1-CE-007_UH1-C	UH1-CE-007	UH1-CE-008	PACP 6.0	15	Vitrified Clay Pipe	3200			3	2.57	2.67	2.67
UH1-17-008_UH1-SU	UH1-17-008	UH1-SU-001	PACP 6.0	15	Vitrified Clay Pipe	3323			2.5	3.2	2.82	3.2
W4-KI-001A_W4-JFK	W4-KI-001A	W4-JFK-004	SOLO	10	Vitrified Clay Pipe	2D00			2	3	2.22	3
W2-21-010_W2-21-0	W2-21-010	W2-21-011	PicAx 2.1	15	Vitrified Clay Pipe	3E23			2.86	2.67	2.82	2.82
UH1-09-008_UH1-09	UH1-09-008	UH1-09-007	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.54	2.57	2.57
C-PO-014_C-PO-015	C-PO-014	C-PO-015	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3	3	3
C-66-003_C-66-004	C-66-003	C-66-004	SOLO	12	Vitrified Clay Pipe	2500			2	2.8	2.53	2.8
JOSO-36-008_JOSO	JOSO-36-007	JOSO-36-008	PicAx 2.1	15	Vitrified Clay Pipe	3221			2.67	2.89	2.83	2.89
JOSO-BE-014_JOSO	JOSO-BE-014	JOSO-BE-015	PicAx 2.1	18	Vitrified Clay Pipe	3800			3	2.8	2.89	2.89
UH1-05-021_UH1-05	UH1-05-021	UH1-05-020	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	2.89	2.8	2.89
W2-22-002_W2-22-0	W2-22-002	W2-22-003	PACP 6.0	12	Vitrified Clay Pipe	0000			0	3	3	3
W2-21-001_W2-21-0	W2-21-001	W2-21-002	PACP 6.0	12	Vitrified Clay Pipe				3	3.14	3.11	3.14
UH1-05-023_UH1-05	UH1-05-023	UH1-05-022	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.13	3.13	3.13
JOSO-43-005_JOSO	JOSO-43-005	JOSO-43-004A	PicAx 2.1	18	Vitrified Clay Pipe	3400			3	3.13	3.08	3.13
UH1-WE-004_UH1-W	UH1-WE-004	UH1-WE-005	PicAx 2.1	15	Polyvinyl Chloride	0000			0	3	3	3
W3-SU-023_W3-SU-	W3-SU-023	W3-SU-022	PACP 6.0	15	Vitrified Clay Pipe	3100			3	1.95	2	2
UH1-PA-018_UH1-P	UH1-PA-018	UH1-PA-019	PicAx 2.1	24	Vitrified Clay Pipe	3222			2.5	3	2.86	3
JOSO-BE-015_JOSO	JOSO-BE-015	JOSO-BE-016	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	3.11	3.09	3.11
W2-16-005_W2-16-0	W2-16-005	W2-16-006	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	2.25	2.36	2.36
18PS-GR-008-1_18P	18PS-GR-008-1	18PS-GR-008	SOLO	8	Vitrified Clay Pipe	312D			1.78	3	2.06	3
W2-24-015_W2-24-0	W2-24-015	W2-24-016	SOLO	8	Vitrified Clay Pipe	251A			1.28	3.09	1.97	3.09
G-62-151_G-62-152	G-62-151	G-62-152B	MSI PROFILER	24	Vitrified Clay Pipe	2C00			2	3.09	2.36	3.09
W1-38-013_W1-38-0	W1-38-013	W1-38-012	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3	3	3
JOSO-43-009_JOSO	JOSO-43-009	JOSO-43-008	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	3.09	3.08	3.09
W3-22-004_W3-22-0	W3-22-004	W3-22-005	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.93	2.93	2.93
JOSO-BE-010_JOSO	JOSO-BE-010	JOSO-BE-011	PicAx 2.1	18	Vitrified Clay Pipe	3B00			3	2.76	2.89	2.89
W1-NM-002_W1-NM	W1-NM-002	W1-NM-003	PicAx 2.1	12	Reinforced Concrete	3421			2.8	2.71	2.73	2.73
UH1-02-009_UH1-02	UH1-02-009	UH1-02-008	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	2.94	2.95	2.95
NBW-38-002_NBW-3	NBW-38-002	NBW-38-003	PicAx 2.1	16	Vitrified Clay Pipe	3100			3	2.73	2.75	2.75
W2-15-004_W2-15-0	W2-15-004	W2-15-005	PACP 6.0	15	Vitrified Clay Pipe	3100			3	2.72	2.74	2.74
JOSO-PA-010_JOSO	JOSO-PA-010	JOSO-PA-011	PicAx 2.1	15	Vitrified Clay Pipe	3A22			2.85	3.09	2.96	3.09
W2-22-002_W2-22-0	W2-22-002	W2-22-003	PACP 6.0	12	Vitrified Clay Pipe				3.25	2.71	2.81	2.81

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W3-JFK-009_W3-JFI	W3-JFK-009	W3-JFK-008	PACP 6.0	12	Vitrified Clay Pipe	3A00			3	2.86	2.92	2.92
W2-18-009A_W2-MC	W2-18-009A	W2-MO-005A	PACP 6.0	15	Vitrified Clay Pipe	3500			3	3	3	3
	W1-PA-002	W1-PA-004	PicAx 2.1	24	Vitrified Clay Pipe	3C21			2.96	3.08	3	3.08
W3-21-004_W3-21-0	W3-21-004	W3-21-005	PicAx 2.1	15	Vitrified Clay Pipe	3A21			2.93	2.43	2.6	2.6
W3-CE-003_W3-CE-	W3-CE-003	W3-CE-002	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
W2-WE-002_W2-WE	W2-WE-002	W2-WE-001	PACP 6.0	12	Vitrified Clay Pipe				3	2.86	2.87	2.87
D-49-006_D-49-007	D-49-006	D-49-007	PicAx 2.1	15	Vitrified Clay Pipe	3B22			2.9	3.06	2.97	3.06
W2-15-009_W2-15-0	W2-15-009	W2-15-010	PACP 6.0	15	Vitrified Clay Pipe	3300			3	2.89	2.9	2.9
W2-PA-010_W2-PA-	W2-PA-010	W2-PA-010A	PACP 6.0	12	Vitrified Clay Pipe	3B11			2.89	1.88	2.2	2.2
W3-24-002_W3-24-0	W3-24-002	W3-24-001	PACP 6.0	15	Vitrified Clay Pipe	3500			3	3.06	3.04	3.06
W3-25-002_W3-25-0	W3-25-002	W3-25-003	PACP 6.0	12	Vitrified Clay Pipe	3400			3	3.04	3.03	3.04
W3-22-007_W3-22-0	W3-22-007	W3-22-006	PACP 6.0	15	Vitrified Clay Pipe	3700			3	3.04	3.03	3.04
18PS-GR-008-4_18F	18PS-GR-008-4	18PS-GR-008-3	SOLO	8	Vitrified Clay Pipe	312J			2	2.93	2.31	2.93
UH1-PA-014_UH1-P	UH1-PA-014	UH1-PA-015	PicAx 2.1	24	Vitrified Clay Pipe	0000			0	3	3	3
UH1-PA-013_UH1-P	UH1-PA-013	UH1-PA-014	PicAx 2.1	24	Vitrified Clay Pipe	3100			3	3	3	3
JOSO-48-002_JOSC	JOSO-48-002	JOSO-48-001	MSI PROFILER	18	Vitrified Clay Pipe	0000			0	4	4	4
W3-HE-001_W3-HE-	W3-HE-001	W3-HE-002	PicAx 2.1	10	Vitrified Clay Pipe	3600			3	4	3.25	4
W1-36-007_W1-36-0	W1-36-007	W1-36-006	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.4	4
UH1-07-004_UH1-07	UH1-07-004	UH1-07-003	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-35-022_W1-PA-0	W1-35-022	W1-PA-007	PicAx 2.1	15	Vitrified Clay Pipe	3A22			2.85	4	3	4
JOSO-47-019_JOSC	JOSO-47-019	JOSO-47-018	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.67	4
W1-37-024_W1-PA-0	W1-37-024	W1-PA-005	PicAx 2.1	18	Vitrified Clay Pipe	3900			3	4	3.18	4
W3-BE-001B_W3-BE	W3-BE-001B	W3-BE-001A	PicAx 2.1	0	Vitrified Clay Pipe	3300			3	4	3.4	4
UH1-13-003_UH1-SU	UH1-13-003	UH1-SU-013	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-42-013_JOSC	JOSO-42-013	JOSO-42-014	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	4	3.67	4
W1-38-007_W1-38-0	W1-38-007	W1-38-008	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	4	3.33	4
W1-40-013_W1-40-0	W1-40-013	W1-40-012	PicAx 2.1	15	Vitrified Clay Pipe	3600			3	4	3.25	4
W1-34-004_W1-BE-0	W1-34-004	W1-BE-005	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
H5-WA-460_H5-WA-	H5-WA-460	H5-WA-450	PicAx 2.1	45	Brick	3E11			2.94	4	3	4
H2-WA-005_H2-03-0	H2-WA-005	H2-03-020	PicAx 2.1	45	Brick	3K11			2.97	4	3	4
JOSO-48-012_JOSC	JOSO-48-012	JOSO-BR-001D	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.33	3.25	3.33
JOSO-JFK-039A_JO	JOSO-JFK-039A	JOSO-JFK-039	PicAx 2.1	0	Vitrified Clay Pipe	3122			2.33	3.33	2.83	3.33
W1-36-006_W1-36-0	W1-36-006	W1-36-005	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.33	3.25	3.33
G-DE-118_G-DE-119	G-DE-118	G-DE-119A	PicAx 2.1	12	Vitrified Clay Pipe	3100			3	2	2.13	2.13
	W1-BE-003	W1-BE-006	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	3.33	3.2	3.33
W3-JFK-009_W3-JFI	W3-JFK-009	W3-JFK-008	PACP 6.0	15	Vitrified Clay Pipe	3211			2.33	3.33	2.83	3.33
JOSO-47-005_JOSC	JOSO-47-005	JOSO-47-004	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	2.8	2.86	2.86
UH1-NY-030_UH1-N	UH1-NY-030	UH1-NY-031	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.29	2.29	2.29
W1-BE-015_W1-BE-	W1-BE-015	W1-BE-016	PicAx 2.1	45	Brick	3300			3	2.22	2.33	2.33
UH1-11-006_UH1-11	UH1-11-006	UH1-11-005	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.67	3.67	3.67
D-PA-093_D-PA-094	D-PA-093	D-PA-094	PicAx 2.1	8	Vitrified Clay Pipe	2100			2	3.67	3.25	3.67
JOSO-42-008_JOSC	JOSO-42-008	JOSO-42-009	PicAx 2.1	18	Reinforced Concrete	3721			2.88	2.6	2.77	2.77
	H5-WA-358	H5-WA-356	PicAx 2.1	15	Vitrified Clay Pipe	3C00			3	3.67	3.08	3.67
18PS-GR-007XX3_1	18PS-GR-007XX3	18PS-GR-007XX2	SOLO	8	Vitrified Clay Pipe	2413			1.57	3	2.23	3
W2-19-010_W2-19-0	W2-19-010	W2-19-011	PACP 6.0	15	Vitrified Clay Pipe	3400			3	3.5	3.25	3.5
JOSO-45-004_JOSC	JOSO-45-004	JOSO-45-003	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3	3	3
W1-36-014_W1-36-0	W1-36-014	W1-36-015	PicAx 2.1	15	Vitrified Clay Pipe				3.17	3	3.08	3.08
UH1-MO-003_UH1-1	UH1-MO-003	UH1-13-013	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	3	2.86	3
	JOSO-HU-002	JOSO-45-017	PicAx 2.1	18	Vitrified Clay Pipe	3521			2.83	2.71	2.77	2.77
UH1-07-021_UH1-07	UH1-07-021	UH1-07-022	PicAx 2.1	18	Vitrified Clay Pipe	0000			0	3.5	3.5	3.5
W2-29-005_W2-BE-0	W2-29-005	W2-BE-004AA	PicAx 2.1	15	Vitrified Clay Pipe	3900			3	3.5	3.15	3.5

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-WE-010_W2-WE	W2-WE-010	W2-WE-009	MSI PROFILER	36	Brick	2D11			1.96	3.5	2.17	3.5
18PS-GR-007XX1_1	18PS-GR-007XX1	18PS-GR-007XX	SOLO	8	Vitrified Clay Pipe	2400			2	3.17	2.7	3.17
W4-KI-001A_W4-KI-	W4-KI-001A	W4-KI-001	SOLO	8	Vitrified Clay Pipe	322K			2.03	3	2.13	3
D-52-136_D-52-135	D-52-136	D-52-135	SOLO	12	Vitrified Clay Pipe	1100			1	2.75	2.56	2.75
W2-16-012_W2-16-0	W2-16-012	W2-16-013	PicAx 2.1	15	Vitrified Clay Pipe	3B21			2.94	3	2.96	3
UH1-14-013_UH1-14	UH1-14-013	UH1-14-014	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	3.17	3.1	3.17
JOSO-42-017_JOSO	JOSO-42-017	JOSO-42-018	PicAx 2.1	18	Vitrified Clay Pipe	3221			2.67	3.4	3.13	3.4
W2-WE-021_W2-WE	W2-WE-021	W2-WE-020A	PicAx 2.1	15	Vitrified Clay Pipe	3121			2.5	3.4	3.14	3.4
W2-18-005A_W2-18-	W2-18-005A	W2-18-006A	PACP 6.0	12	Vitrified Clay Pipe	3921			2.9	1.94	2.3	2.3
JOSO-35-010_JOSO	JOSO-35-010	JOSO-35-009	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.17	3.14	3.17
UH1-10-005_UH1-10	UH1-10-005	UH1-10-004	PicAx 2.1	15	Vitrified Clay Pipe				4	3.14	3.25	3.25
UH1-12-012_UH1-12	UH1-12-012	UH1-12-013	PicAx 2.1	15	Vitrified Clay Pipe	3700			3	3.14	3.07	3.14
G-67-093_G-67-094	G-67-093	G-67-094	PicAx 2.1	12	Concrete Pipe (non-r	3221			2.67	2.89	2.83	2.89
UH1-13-012_UH1-13	UH1-13-012	UH1-13-013	PicAx 2.1	15	Vitrified Clay Pipe	3422			2.67	3.14	2.92	3.14
JOSO-48-017_JOSO	JOSO-48-017	JOSO-48-016B	SOLO	12	Vitrified Clay Pipe	2200			2	3.13	2.9	3.13
JOSO-BE-019_JOSO	JOSO-BE-019	JOSO-BE-020	PicAx 2.1	18	Vitrified Clay Pipe	3C00			3	3.13	3.03	3.13
W2-17-011_W2-17-0	W2-17-011	W2-17-012	PicAx 2.1	15	Vitrified Clay Pipe	3700			3	2.4	2.56	2.56
UH1-12-013_UH1-12	UH1-12-013	UH1-12-014	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.82	2.83	2.83
JOSO-45-023_W5-F	JOSO-45-023	W5-FU-001	SOLO	12	Vitrified Clay Pipe	2F00			2	3	2.22	3
	18PS-GR-009BA	Z	PicAx 2.1	10	Vitrified Clay Pipe	3B00			3	2.64	2.84	2.84
UH1-07-004_UH1-07	UH1-07-004	UH1-07-003	PicAx 2.1	15	Vitrified Clay Pipe	5538		5542	3.53	3.25	3.43	3.43
	W3-21-002	W3-21-002A	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.82	2.82	2.82
UH1-MO-004_UH1-M	UH1-MO-004	UH1-MO-005	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.1	3.09	3.1
W3-SU-023_W3-SU-	W3-SU-023	W3-SU-022	PACP 6.0	15	Vitrified Clay Pipe	3500			3	2.77	2.83	2.83
W3-23-005_W3-23-0	W3-23-005	W3-23-004	PACP 6.0	15	Vitrified Clay Pipe	3421			2.8	2.94	2.91	2.94
C-PO-013_C-PO-014	C-PO-013	C-PO-014	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.9	2.9	2.9
UH1-14-021_UH1-14	UH1-14-021	UH1-14-022	PACP 6.0	15	Vitrified Clay Pipe				3.33	3.08	3.13	3.13
W4-HI-004A_W4-HI-	W4-HI-004A	W4-HI-004	PicAx 2.1	12	Vitrified Clay Pipe				3.5	2.93	3.1	3.1
18PS-GR-008-5_18P	18PS-GR-008-5	18PS-GR-008-4	SOLO	8	Vitrified Clay Pipe	2E00			2	3.12	2.38	3.12
W2-15-008_W2-15-0	W2-15-008	W2-15-009	PACP 6.0	15	Vitrified Clay Pipe	3100			3	3.04	3.04	3.04
W3-18-009_W3-18-0	W3-18-009	W3-18-008	PACP 6.0	15	Vitrified Clay Pipe	3521			2.83	2.89	2.88	2.89
JOSO-BR-002A1B_J	JOSO-BR-002A1B	JOSO-BR-002A1A	SOLO	12	Vitrified Clay Pipe	2F00			2	3	2.62	3
W4-KI-003A_W4-KI-	W4-KI-003A	W4-KI-003	SOLO	10	Vitrified Clay Pipe	5231		5243	3.75	4	3.86	4
W3-28-014_W3-28-0	W3-28-014	W3-28-015	PicAx 2.1	15	Vitrified Clay Pipe	3C00			3	4	3.13	4
JOSO-BE-013_JOSO	JOSO-BE-013	JOSO-BE-014	PicAx 2.1	18	Vitrified Clay Pipe	3300			3	4	3.5	4
W3-CE-001_W3-HP-	W3-CE-001	W3-HP-005	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	4	3.5	4
H2-WA-005A_H2-WA	H2-WA-005A	H2-WA-005	PicAx 2.1	45	Brick	3B11			2.9	4	3.04	4
W3-30-003_W3-30-0	W3-30-004	W3-30-003	PicAx 2.1	15	Vitrified Clay Pipe	3D11			2.93	3.25	2.97	3.25
W1-38-027_W1-38-0	W1-38-027	W1-38-028	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	3.5	3.4	3.5
	H2-WA-010A	H2-WA-009	PicAx 2.1	12	Reinforced Concrete	3600			3	1.91	2.29	2.29
W1-36-003_W1-36-0	W1-36-003	W1-36-002	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	2.86	2.9	2.9
H6-PA-584_H6-PA-5	H6-PA-582	H6-PA-584	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	2.86	2.94	2.94
C-PO-009_C-PO-010	C-PO-009	C-PO-010	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	2.75	2.75	2.75
JOSO-BR-002A_JOS	JOSO-BR-002A	JOSO-BR-002AA	SOLO	12	Vitrified Clay Pipe	2B00			2	3.4	2.3	3.4
	JOSO-45-0023B	JOSO-BR-004A	SOLO	12	Vitrified Clay Pipe	2400			2	3.75	2.88	3.75
JOSO-43-008_JOSO	JOSO-43-008	JOSO-43-007	PicAx 2.1	18	Vitrified Clay Pipe	0000			0	3.75	3.75	3.75
JOSO-42-006_JOSO	JOSO-42-006	JOSO-42-005	PicAx 2.1	18	Vitrified Clay Pipe	3321			2.75	3.75	3.25	3.75
UH1-MO-002_UH1-M	UH1-MO-002	UH1-MO-003	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.75	3.75	3.75
	UH1-13-20	UH1-13-021	PACP 6.0	15	Vitrified Clay Pipe	3300			3	3.75	3.43	3.75
W3-SI-011_W3-CE-0	W3-SI-011	W3-CE-002	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	3.4	3.17	3.4
W1-38-002_W1-38-0	W1-38-002	W1-38-003	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.4	3.33	3.4

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-15-010_W2-15-0	W2-15-010	W2-15-011	PACP 6.0	15	Vitrified Clay Pipe	3200			3	3.75	3.5	3.75
W1-40-008_W1-40-0	W1-40-008	W1-40-009	PicAx 2.1	18	Vitrified Clay Pipe	3A00			3	3	3	3
W4-HI-002_W4-HI-0	W4-HI-002	W4-HI-003	PicAx 2.1	18	Vitrified Clay Pipe	3B00			3	3.6	3.13	3.6
W1-33-020_W1-33-0	W1-33-020	W1-33-021	PACP 6.0	15	Vitrified Clay Pipe	3C21			2.95	2.88	2.93	2.93
E-59-009A_E-BU-T0	E-59-009A	E-BU-T092	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	3.33	3.33	3.33
14VO-MA-001B_14V	14VO-MA-001B	14VO-MA-001A	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	3	3	3
JOSO-35-008_JOSO	JOSO-35-008	JOSO-35-007	PicAx 2.1	15	Vitrified Clay Pipe	3921			2.9	3.5	3.13	3.5
H6-WA-011_H6-WA-	H6-WA-011	H6-WA-012	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	3	3	3
C-BE-134_C-BE-T07	C-BE-134	C-BE-T077	PicAx 2.1	48	Concrete Pipe (non-r	0000			0	3.5	3.5	3.5
UH1-13-008_UH1-13	UH1-13-008	UH1-13-007	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.91	2.92	2.92
	JOSO-47-002	JOSO-JFK-003	PicAx 2.1	18	Vitrified Clay Pipe	0000			0	2.75	2.75	2.75
W2-29-007_W2-29-0	W2-29-007	W2-29-008	PicAx 2.1	15	Vitrified Clay Pipe	3C00			3	3.25	3.07	3.25
	UH1-07-003	UH1-07-003A	PicAx 2.1	15	Vitrified Clay Pipe	3600			3	2.48	2.59	2.59
JOSO-47-006_JOSO	JOSO-47-006	JOSO-47-007	SOLO	12	Vitrified Clay Pipe	2400			2	2.76	2.62	2.76
W1-36-016_W1-36-0	W1-36-016	W1-36-017	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	3.17	3.13	3.17
W1-35-008_W1-35-0	W1-35-008	W1-35-007	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	3.17	3.12	3.17
W2-JA-999_W2-AN-9	W2-JA-999	W2-AN-999	SOLO	8	Vitrified Clay Pipe	3326			1.34	2.94	1.84	2.94
JOSO-42-009_JOSO	JOSO-42-009	JOSO-42-010	PicAx 2.1	18	Reinforced Concrete	2100			2	3.15	3.07	3.15
	18PS-HI-006EA	18PS-HI-006EB	SOLO	8	Vitrified Clay Pipe	2717			1.5	3.13	2.37	3.13
G-62-155_G-62-151	G-62-155	G-62-151	SOLO	12	Vitrified Clay Pipe	2611			1.86	3.05	2.76	3.05
D-53-021_D-PA-036	D-PA-036	D-53-021	SOLO	12	Vitrified Clay Pipe	0000			0	2.61	2.61	2.61
UH1-PA-012_UH1-P	UH1-PA-012	UH1-PA-013	PicAx 2.1	24	Vitrified Clay Pipe	0000			0	3.15	3.15	3.15
JOSO-45-003B_JOS	JOSO-45-003B	JOSO-45-003A	SOLO	12	Vitrified Clay Pipe	2300			2	4	3.14	4
JOSO-47-015_JOSO	JOSO-47-015	JOSO-BR-001C	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	4	3.6	4
JOSO-45-012_JOSO	JOSO-45-012	JOSO-45-013	PicAx 2.1	15	Vitrified Clay Pipe	3C21			2.96	4	3.11	4
W3-31-008_W3-31-0	W3-31-008	W3-31-009	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	4	3.19	4
JOSO-45-005_JOSO	JOSO-45-005	JOSO-BE-009	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	4	3.67	4
W3-JE-001_W3-30-0	W3-JE-001	W3-30-001	PicAx 2.1	15	Vitrified Clay Pipe	2111			1.5	4	3.17	4
JOSO-HA-001_JOSO	JOSO-HA-001	JOSO-JFK-039A	PicAx 2.1	0	Vitrified Clay Pipe	3600			3	4	3.4	4
JOSO-48-013_JOSO	JOSO-48-013	JOSO-BR-001D	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-NY-004_W1-39-0	W1-NY-004	W1-39-009	PicAx 2.1	18	Vitrified Clay Pipe	0000			0	4	4	4
UH1-05-017_UH1-05	UH1-05-017	UH1-05-016	PicAx 2.1	30	Brick	3B21			2.94	4	3.14	4
NBW-37-007_NBW-H	NBW-37-007	NBW-HA-005	PicAx 2.1	0	Vitrified Clay Pipe	3121			2.5	2.86	2.78	2.86
H6-PA-002_H6-PA-0	H6-PA-002	H6-PA-003	PicAx 2.1	12	Vitrified Clay Pipe	3B00			3	1.93	2.48	2.48
W3-SI-010_W3-SI-01	W3-SI-010	W3-SI-011	PicAx 2.1	15	Vitrified Clay Pipe	3621			2.86	3.14	3	3.14
W1-35-019_W1-35-0	W1-35-019	W1-35-020	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3	3	3
W1-36-002_W1-36-0	W1-36-002	W1-36-001	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	2.73	2.77	2.77
JOSO-44-006_JOSO	JOSO-44-006	JOSO-BE-013	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.8	3.8	3.8
UH1-WE-009_UH1-W	UH1-WE-009	UH1-WE-010	PicAx 2.1	18	Vitrified Clay Pipe	3700			3	3.8	3.33	3.8
UH1-PA-007_UH1-P	UH1-PA-007	UH1-PA-008	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.13	3.13	3.13
JOSO-PA-002_JOSO	JOSO-PA-002	JOSO-PA-003	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3.5	3.38	3.5
H6-GA-004_H6-GA-0	H6-GA-004	H6-GA-005	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.13	3.09	3.13
W5-FU-001_W5-JFK	W5-FU-001	W5-JFK-004	SOLO	12	Vitrified Clay Pipe	2F00			2	3	2.21	3
W1-36-018_W1-36-0	W1-36-018	W1-36-019	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.43	3.38	3.43
W3-SI-005_W3-SI-00	W3-SI-005	W3-SI-006	PicAx 2.1	12	Polyvinyl Chloride	3821			2.89	3.5	3.18	3.5
C-PO-015_C-PO-016	C-PO-015	C-PO-016	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.93	2.93	2.93
JOSO-42-018_JOSO	JOSO-42-018	JOSO-42-019	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	3.08	3.07	3.08
	18PS-HI-006EB	18PS-HI-007EC	SOLO	8	Vitrified Clay Pipe	2100			2	3.17	3.08	3.17
UH1-WE-005_UH1-W	UH1-WE-005	UH1-WE-006	PicAx 2.1	15	Vitrified Clay Pipe	5200		5244	5	3	3.24	3.24
NBW-36-001_NBW-3	NBW-36-001	NBW-36-002	SOLO	8	Vitrified Clay Pipe	3123			1.83	2.68	2.48	2.68
	JOSO-BE-002AA	JOSO-BE-002	PicAx 2.1	24	Vitrified Clay Pipe	3B21			2.94	3	2.97	3

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-11-008_UH1-11	UH1-11-008	UH1-11-009	PicAx 2.1	15	Vitrified Clay Pipe	3800			3	3.06	3.04	3.06
	NBW-37-004	NBW-37-006	PicAx 2.1	15	Vitrified Clay Pipe	3G11			2.96	3.05	2.99	3.05
W2-22-001_W2-22-0	W2-22-001	W2-22-002	PACP 6.0	12	Vitrified Clay Pipe				3.25	2.63	2.69	2.69
NBW-36-002_NBW-3	NBW-36-002	NBW-36-003A	SOLO	8	Vitrified Clay Pipe	2519			1.36	3.12	2.49	3.12
	JOSO-LI-003A	JOSO-BR-010B	SOLO	12	Vitrified Clay Pipe	312D			2.04	3.04	2.78	3.04
JOSO-45-003A_JOS	JOSO-45-003A	JOSO-45-003	SOLO	12	Vitrified Clay Pipe	1100			1	4	3.5	4
JOSO-45-023_W5-F	JOSO-45-023	W5-FU-001	SOLO	12	Vitrified Clay Pipe	2600			2	4	2.91	4
G-DE-100_G-65-101	G-DE-100	G-65-101	MSI PROFILER	24	Vitrified Clay Pipe	2213			1.4	4	2.7	4
W3-28-016_W2-BE-0	W3-28-016	W2-BE-004	PicAx 2.1	0	Vitrified Clay Pipe	3100			3	4	3.83	4
	W1-32-003	W1-33-013DD	PicAx 2.1	18	Vitrified Clay Pipe	3121			2.5	4	3.57	4
W3-31-004_W3-SU-0	W3-31-004	W3-SU-004	PicAx 2.1	15	Vitrified Clay Pipe	3322			2.6	4	3.3	4
W2-29-007_W2-29-0	W2-29-007	W2-29-008	PicAx 2.1	15	Vitrified Clay Pipe	3900			3	4	3.36	4
W1-40-003_W1-40-0	W1-40-003	W1-40-004	PicAx 2.1	18	Vitrified Clay Pipe	3600			3	4	3.45	4
W3-28-010_W3-28-0	W3-28-010	W3-28-009	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.63	4
W3-30-002_W3-SU-0	W3-30-002	W3-SU-005	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-40-011_JOSO	JOSO-40-011	JOSO-BR-021	PicAx 2.1	24	Vitrified Clay Pipe	3200			3	4	3.71	4
H6-PA-010_H6-14-0	H6-PA-010	H6-14-001	PicAx 2.1	15	Vitrified Clay Pipe	3600			3	4	3.45	4
W2-NY-033_W2-NY-	W2-NY-033	W2-NY-032	PACP 6.0	15	Vitrified Clay Pipe	3300			3	3.5	3.33	3.5
	H6-HW-001A	H6-HW-001	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	3.5	3.27	3.5
W3-28-005_W3-SU-0	W3-28-005	W3-SU-010	PicAx 2.1	15	Vitrified Clay Pipe	2200			2	2.6	2.5	2.6
JOSO-HA-004A_JOS	JOSO-HA-004A	JOSO-HA-004	PicAx 2.1	0	Vitrified Clay Pipe	3321			2.75	3.43	3.18	3.43
W1-35-009_W1-35-0	W1-35-009	W1-35-008	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.43	3.3	3.43
W1-36-017_W1-36-0	W1-36-017	W1-36-018	PicAx 2.1	15	Vitrified Clay Pipe	3700			3	3.22	3.13	3.22
W1-40-001_W1-40-0	W1-40-001	W1-40-002	PicAx 2.1	18	Vitrified Clay Pipe	3121			2.5	3.83	3.5	3.83
UH1-BE-028_UH1-03	UH1-BE-028	UH1-03-008	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3.38	3.3	3.38
W1-NY-003_W1-NY-	W1-NY-003	W1-NY-004	PicAx 2.1	18	Vitrified Clay Pipe	3900			3	3.57	3.25	3.57
H6-GA-005_H6-GA-0	H6-GA-005	H6-GA-006	PicAx 2.1	15	Vitrified Clay Pipe	3421			2.8	3.83	3.36	3.83
H6-GA-003_H6-GA-0	H6-GA-003	H6-GA-004	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.22	3.17	3.22
W1-36-005_W1-36-0	W1-36-005	W1-36-004	PicAx 2.1	15	Vitrified Clay Pipe	3321			2.75	3.71	3.36	3.71
W1-37-014_W1-37-0	W1-37-014	W1-37-013	PicAx 2.1	18	Vitrified Clay Pipe	3222			2.5	3.71	3.27	3.71
W1-38-026_W1-38-0	W1-38-026	W1-38-027	PicAx 2.1	18	Vitrified Clay Pipe	3800			3	3.71	3.33	3.71
JOSO-PA-016_JOSO	JOSO-PA-016	JOSO-41-016	PicAx 2.1	24	Vitrified Clay Pipe	3100			3	3.3	3.27	3.3
18PS-GR-008-5_18F	18PS-GR-008-5	18PS-GR-008-4	SOLO	8	Vitrified Clay Pipe	2B14			1.81	3.27	2.31	3.27
UH1-PA-004_UH1-P	UH1-PA-004	UH1-PA-005	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.08	3.08	3.08
	W2-19-008	W2-19-009	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.36	3.36	3.36
D-49-007_D-49-008	D-49-007	D-49-008	PicAx 2.1	15	Vitrified Clay Pipe	3722			2.78	2.58	2.63	2.63
JOSO-35-007_JOSO	JOSO-35-007	JOSO-35-006	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3	3	3
W4-JFK-006C_W4-J	W4-JFK-006C	W4-JFK-006D	SOLO	10	Vitrified Clay Pipe	2700			2	3.21	2.81	3.21
E-BR-037_E-BR-038	E-BR-037	E-BR-038	SOLO	12	Vitrified Clay Pipe	2212			1.5	2.83	2.59	2.83
	JOSO-BE-002A	JOSO-BE-002AA	PicAx 2.1	24	Vitrified Clay Pipe	3C00			3	3.05	3.03	3.05
	JOSO-45-023	JOSO-45-023A	SOLO	12	Vitrified Clay Pipe	2O00			2	2.93	2.24	2.93
W5-CL-001_W5-JFK	W5-CL-001	W5-JFK-002	SOLO	12	Vitrified Clay Pipe	231A			1.21	3	2.43	3
	NBW-37-002	NBW-37-004	PicAx 2.1	15	Vitrified Clay Pipe	3F00			3	2.88	2.95	2.95
W2-21-003_W2-21-0	W2-21-003	W2-21-004	PACP 6.0	12	Vitrified Clay Pipe	3600			3	3.07	3.06	3.07
JOSO-42-003_JOSO	JOSO-42-003	JOSO-42-002	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	4	3.75	4
W3-28-006_W3-SU-0	W3-28-006	W3-SU-010	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.86	4
D-49-009_D-49-T050	D-49-009	D-49-T050	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-40-003_W1-40-0	W1-40-003	W1-40-004	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	4	3.86	4
UH1-PA-008_UH1-12	UH1-PA-008	UH1-12-023	PACP 6.0	21	Vitrified Clay Pipe	0000			0	4	4	4
H6-14-001_H6-14-00	H6-14-001	H6-14-002	PicAx 2.1	15	Vitrified Clay Pipe	3721			2.88	4	3.36	4
JOSO-45-006_JOSO	JOSO-45-006	JOSO-45-005	PicAx 2.1	15	Vitrified Clay Pipe	3800			3	3.38	3.19	3.38

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W1-35-004_W1-35-0	W1-35-004	W1-35-003	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.5	3.44	3.5
W2-BE-035_W2-19-0	W2-BE-035	W2-19-005	PACP 6.0	15	Vitrified Clay Pipe	0000			0	2.33	2.33	2.33
W1-33-005_W1-33-0	W1-33-005	W1-33-006	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	2.71	2.72	2.72
	JOSO-HU-002	JOSO-47-012	SOLO	12	Vitrified Clay Pipe	2200			2	3.86	3.44	3.86
W2-29-008_W2-NY-0	W2-29-008	W2-NY-004	PicAx 2.1	15	Vitrified Clay Pipe	3G00			3	3.86	3.13	3.86
JOSO-36-010_JOSO	JOSO-36-009	JOSO-36-010	PicAx 2.1	15	Vitrified Clay Pipe	3B22			2.9	3.75	3.14	3.75
JOSO-35-003_JOSO	JOSO-35-003	JOSO-35-002	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.27	3.21	3.27
W2-28-003_W2-28-0	W2-28-003	W2-28-002	PACP 6.0	12	Vitrified Clay Pipe				3.25	3.27	3.26	3.27
JOSO-35-002_JOSO	JOSO-35-002	JOSO-35-001	PicAx 2.1	15	Vitrified Clay Pipe				3.5	3.67	3.64	3.67
W3-JE-002_W3-JE-0	W3-JE-002	W3-JE-001	PicAx 2.1	15	Vitrified Clay Pipe	3D21			2.96	2.94	2.95	2.95
W1-33-024_W1-PL-0	W1-33-024	W1-PL-003	PACP 6.0	15	Vitrified Clay Pipe	2300			2	3.5	3.2	3.5
JOSO-45-023_JOSO	JOSO-45-023	JOSO-BR-004A	SOLO	12	Vitrified Clay Pipe	312V			2.01	3.05	2.17	3.05
JOSO-48-016_JOSO	JOSO-48-016	JOSO-48-015	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	3.25	3.2	3.25
C-PO-010_C-PO-011	C-PO-010	C-PO-011	PicAx 2.1	12	Vitrified Clay Pipe	3300			3	3.11	3.09	3.11
D-49-005_D-49-006	D-49-005	D-49-006	PicAx 2.1	15	Vitrified Clay Pipe	3900			3	2.93	2.95	2.95
C-PO-017_C-PO-018	C-PO-017	C-PO-018	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.1	3.09	3.1
W2-CE-003_W2-CE-	W2-CE-003	W2-CE-002	PACP 6.0	15	Vitrified Clay Pipe	3300			3	2.33	2.38	2.38
UH1-11-004_UH1-11	UH1-11-004	UH1-11-003	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.98	2.98	2.98
W4-JFK-006B_W4-J	W4-JFK-006B	W4-JFK-006C	SOLO	10	Vitrified Clay Pipe	2D00			2	4	2.42	4
JOSO-BR-002A1E_J	JOSO-BR-002A1E	JOSO-BR-002A1D	SOLO	12	Vitrified Clay Pipe	3224			2.33	4	3.23	4
G-62-152_G-62-T103	G-62-152	G-62-T103	MSI PROFILER	24	Vitrified Clay Pipe	2200			2	4	3.56	4
W3-29-001_W3-SU-0	W3-29-001	W3-SU-008	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W2-30-003_W2-NY-0	W2-30-003	W2-NY-002	PicAx 2.1	18	Vitrified Clay Pipe	3900			3	4	3.44	4
JOSO-45-006_JOSO	JOSO-45-006	JOSO-45-005	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.88	4
D-BR-136_D-BR-061	D-BR-136	D-BR-061	MSI PROFILER	60	Brick	2D00			2	4	2.44	4
W1-34-021_W1-PA-0	W1-34-021	W1-PA-008	PicAx 2.1	15	Vitrified Clay Pipe	3A21			2.91	3.75	3.26	3.75
UH1-17-010_UH1-17	UH1-17-010	UH1-17-009	PACP 6.0	15	Vitrified Clay Pipe	3200			3	3.44	3.36	3.44
W1-34-010_W1-34-0	W1-34-010	W1-34-009	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	3.56	3.19	3.56
W3-28-012_W3-28-0	W3-28-012	W3-28-013	PicAx 2.1	15	Vitrified Clay Pipe	3C00			3	3.27	3.09	3.27
W1-33-011_W1-33-0	W1-33-011	W1-33-012	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.17	3.15	3.17
	JOSO-41-008A	Z	PicAx 2.1	18	Vitrified Clay Pipe	3422			2.67	2.82	2.78	2.82
W3-28-009_W3-28-0	W3-28-009	W3-28-008	PicAx 2.1	15	Vitrified Clay Pipe	5139		5147	3.2	3.36	3.29	3.36
W2-29-003_W2-29-0	W2-29-003	W2-29-004	PicAx 2.1	15	Vitrified Clay Pipe	3C00			3	3.88	3.25	3.88
JOSO-45-008_JOSO	JOSO-45-008	JOSO-45-007	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	3.27	3.11	3.27
H6-GA-001A_H6-GA	H6-GA-001A	H6-GA-001	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.36	3.17	3.36
W2-DO-999_W2-JA-	W2-DO-999	W2-JA-999	SOLO	8	Vitrified Clay Pipe	211D			1.04	3.6	1.75	3.6
JOSO-44-004_JOSO	JOSO-44-004	JOSO-44-003	PicAx 2.1	15	Vitrified Clay Pipe	3800			3	3.78	3.41	3.78
W1-34-017_W1-34-0	W1-34-017	W1-34-018	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3.78	3.64	3.78
C-PO-011_C-PO-012	C-PO-011	C-PO-012	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.45	3.45	3.45
	W4-HI-006_2	W4-HI-006A	PicAx 2.1	24	Vitrified Clay Pipe	3B00			3	3.07	3.03	3.07
C-PO-016_C-PO-017	C-PO-016	C-PO-017	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.19	3.18	3.19
UH1-11-007_UH1-11	UH1-11-007	UH1-11-006	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.54	3.54	3.54
W4-JFK-006_W4-JF	W4-JFK-006	W4-JFK-007	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	3.11	3.11	3.11
JOSO-HI-004A1_W4	JOSO-HI-004A1	W4-HI-004A	SOLO	12	Vitrified Clay Pipe	2100			2	4	3.78	4
	JOSO-HA-004	JOSO-HA-002	PicAx 2.1	18	Vitrified Clay Pipe	3800			3	4	3.5	4
JOSO-41-021_JOSO	JOSO-41-021	JOSO-41-022	PicAx 2.1	15	Vitrified Clay Pipe	3221			2.67	4	3.64	4
JOSO-36-004_JOSO	JOSO-JFK-035	JOSO-36-004	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.89	4
JOSO-BR-002_JOSO	JOSO-BR-002	JOSO-BR-001	MSI PROFILER	60	Reinforced Concrete	2F11			1.98	4	2.31	4
W2-18-015_W2-18-0	W2-18-015	W2-18-016	PACP 6.0	12	Vitrified Clay Pipe	3200			3	3.5	3.42	3.5
W1-36-019_W1-PA-0	W1-36-019	W1-PA-006	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.78	3.7	3.78
W1-35-014_W1-35-0	W1-35-014	W1-35-014A	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.89	3.36	3.89

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
D-49-013A_D-49-013	D-49-013A	D-49-013	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3.21	3.19	3.21
JOSO-36-005A_JOS	JOSO-36-004	JOSO-36-005A	PicAx 2.1	15	Vitrified Clay Pipe	3311			2.5	3.21	3.06	3.21
JOSO-40-010_JOSO	JOSO-40-010	JOSO-40-011	PicAx 2.1	24	Vitrified Clay Pipe	0000			0	3.7	3.7	3.7
W1-35-003_W1-35-0	W1-35-003	W1-35-002	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.64	3.58	3.64
D-54-013_D-54-014	D-54-013	D-54-014	SOLO	12	Polyvinyl Chloride	0000			0	3.73	3.73	3.73
JOSO-43-007_JOSO	JOSO-43-007	JOSO-43-006	PicAx 2.1	18	Vitrified Clay Pipe	2100			2	3.58	3.46	3.58
G-67-106_G-67-107	G-67-106	G-67-107	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	3.62	3.62	3.62
18PS-GR-001BA_18	18PS-GR-001BA	18PS-GR-001A	SOLO	12	Vitrified Clay Pipe				1.82	3.26	2.53	3.26
JOSO-36-001_JOSO	JOSO-36-001	JOSO-36-002	SOLO	12	Vitrified Clay Pipe	2100			2	4	3.8	4
W2-18-013_W2-18-0	W2-18-013	W2-18-014	PACP 6.0	12	Vitrified Clay Pipe	3200			3	4	3.82	4
W1-35-018_W1-35-0	W1-35-018	W1-35-019	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	4	3.82	4
W1-34-016_W1-34-0	W1-34-016	W1-34-017	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.75	4
H6-GA-009_H6-14-0	H6-GA-009	H6-14-003	PicAx 2.1	8	Vitrified Clay Pipe	3821			2.89	3.7	3.32	3.7
JOSO-41-011_JOSO	JOSO-41-011	JOSO-41-012	PicAx 2.1	18	Vitrified Clay Pipe	3600			3	3.55	3.35	3.55
H6-14-001_H6-14-00	H6-14-001	H6-14-002	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.8	3.35	3.8
JOSO-39-004_JOSO	JOSO-39-004	JOSO-39-003	SOLO	12	Vitrified Clay Pipe	2200			2	3.9	3.58	3.9
W3-28-015_W3-28-0	W3-28-015	W3-28-016	PicAx 2.1	15	Vitrified Clay Pipe	3C00			3	3.36	3.13	3.36
JOSO-42-014_JOSO	JOSO-42-014	JOSO-PA-013	PicAx 2.1	18	Vitrified Clay Pipe	5131		5149	2.75	3.9	3.57	3.9
JOSO-34-002_JOSO	JOSO-34-002	JOSO-34-001	PicAx 2.1	12	Vitrified Clay Pipe	3521			2.83	3	2.96	3
JOSO-48-010_JOSO	JOSO-48-010	JOSO-48-011	PicAx 2.1	12	Vitrified Clay Pipe	3A21			2.92	3.56	3.29	3.56
UH1-02-008_UH1-02	UH1-02-008	UH1-02-007	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	3.35	3.2	3.35
UH1-14-020_UH1-14	UH1-14-020	UH1-14-021	PACP 6.0	15	Vitrified Clay Pipe	2100			2	3.36	3.31	3.36
W1-39-002_W1-39-0	W1-39-002	W1-39-003	SOLO	12	Vitrified Clay Pipe	3124			2.2	4	3.44	4
	JOSO-44-022B	JOSO-44-022A	SOLO	12	Vitrified Clay Pipe	2C00			2	4	2.71	4
JOSO-LI-004AA_JO	JOSO-LI-004AA	JOSO-LI-003AA	SOLO	12	Vitrified Clay Pipe	2300			2	4	3.57	4
W4-KI-002_W4-KI-00	W4-KI-002	W4-KI-001BBB	SOLO	8	Vitrified Clay Pipe	2311			1.75	4	3.44	4
G-67-112_G-DE-096	G-67-112	G-DE-096	MSI PROFILER	24	Vitrified Clay Pipe	0000			0	4	4	4
W1-33-007_W1-33-0	W1-33-007	W1-33-008	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	4	3.78	4
JOSO-PA-006_JOSO	JOSO-PA-006	JOSO-PA-007	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	4	3.46	4
W1-40-004_W1-40-0	W1-40-004	W1-40-005	PicAx 2.1	18	Vitrified Clay Pipe	3A00			3	4	3.5	4
JOSO-PA-014_JOSO	JOSO-PA-014	JOSO-PA-015	MSI PROFILER	24	Vitrified Clay Pipe	2300			2	4	3.65	4
	W2-29-013	W2-29-015	PicAx 2.1	24	Brick	3900			3	4	3.53	4
JOSO-JFK-039A_JO	JOSO-JFK-039A	JOSO-JFK-039	PicAx 2.1	0	Vitrified Clay Pipe	3A00			3	4	3.45	4
JOSO-45-009_JOSO	JOSO-45-009	JOSO-45-010	PicAx 2.1	15	Vitrified Clay Pipe	3B22			2.89	4	3.34	4
W1-40-007_W1-40-0	W1-40-007	W1-40-008	PicAx 2.1	18	Vitrified Clay Pipe	3A21			2.91	4	3.5	4
W1-37-020_W1-37-0	W1-37-020	W1-37-021	PicAx 2.1	18	Vitrified Clay Pipe	3900			3	4	3.53	4
W1-40-009_W1-40-0	W1-40-009	W1-40-010	PicAx 2.1	18	Vitrified Clay Pipe	3A00			3	4	3.48	4
JOSO-HU-004_JOSO	JOSO-HU-004	JOSO-HU-005	PicAx 2.1	24	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-47-016_JOSO	JOSO-47-016	JOSO-BR-001B	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-34-019_W1-34-0	W1-34-019	W1-34-020	PicAx 2.1	15	Vitrified Clay Pipe	3521			2.83	4	3.59	4
W1-40-005_W1-40-0	W1-40-005	W1-40-005A	PicAx 2.1	18	Vitrified Clay Pipe	3B00			3	4	3.4	4
JOSO-41-018_JOSO	JOSO-41-018	JOSO-HU-004	PicAx 2.1	24	Vitrified Clay Pipe	3100			3	4	3.93	4
	JOSO-PA-004	JOSO-PA-006	PicAx 2.1	15	Vitrified Clay Pipe	3800			3	4	3.58	4
JOSO-44-009_JOSO	JOSO-44-009	JOSO-44-008	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-34-008_W1-34-0	W1-34-008	W1-34-007	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.82	4
W2-30-001_W2-30-0	W2-30-001	W2-30-002	PicAx 2.1	18	Vitrified Clay Pipe	3B00			3	4	3.48	4
JOSO-PA-007_JOSO	JOSO-PA-007	JOSO-PA-008	PicAx 2.1	15	Vitrified Clay Pipe	3421			2.8	4	3.68	4
	JOSO-40-004	JOSO-40-006	PicAx 2.1	24	Vitrified Clay Pipe	3100			3	4	3.93	4
W2-BE-002_W2-BE-	W2-BE-002	W2-BE-003	PicAx 2.1	15	Vitrified Clay Pipe	3A21			2.93	4	3.43	4
W3-20-001_W3-20-0	W3-20-001	W3-20-002	PACP 6.0	15	Vitrified Clay Pipe	3500			3	4	3.71	4
H6-PA-009_H6-PA-0	H6-PA-009	H6-PA-010	PicAx 2.1	15	Vitrified Clay Pipe	3B21			2.94	4	3.43	4

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-PA-040_W2-PA-	W2-PA-040	W2-PA-039	PACP 6.0	36	Brick	3200			3	4	3.88	4
W3-SI-001_W3-SI-00	W3-SI-002	W3-SI-001	SOLO	12	Vitrified Clay Pipe	2B00			2	3.85	2.86	3.85
JOSO-41-012_JOSO	JOSO-41-012	JOSO-41-013	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	3.86	3.8	3.86
JOSO-PA-015_JOSO	JOSO-PA-015	JOSO-PA-016	MSI PROFILER	24	Vitrified Clay Pipe	2200			2	3.67	3.47	3.67
JOSO-HA-001_JOSO	JOSO-HA-001	JOSO-JFK-039A	PicAx 2.1	0	Vitrified Clay Pipe	3A00			3	3.86	3.43	3.86
W1-39-013B_W1-39-	W1-39-013B	W1-39-013A	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.82	3.38	3.82
W1-35-021_W1-35-0	W1-35-021	W1-35-022	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	3.83	3.83	3.83
W1-38-025_W1-38-0	W1-38-025	W1-38-026	PicAx 2.1	18	Vitrified Clay Pipe	3700			3	3.83	3.53	3.83
W1-40-006_W1-40-0	W1-40-006	W1-40-007	PicAx 2.1	18	Vitrified Clay Pipe	3B00			3	3.86	3.4	3.86
JOSO-HA-008_JOSO	JOSO-HA-008	JOSO-HA-007	PicAx 2.1	15	Vitrified Clay Pipe	3321			2.75	3.87	3.63	3.87
JOSO-HU-005_JOSO	JOSO-HU-005	JOSO-HU-006	PicAx 2.1	24	Vitrified Clay Pipe	0000			0	3.86	3.86	3.86
JOSO-41-016_JOSO	JOSO-41-016	JOSO-41-017	PicAx 2.1	24	Vitrified Clay Pipe	5133		514A	3.5	3.86	3.78	3.86
JOSO-41-013_JOSO	JOSO-41-013	JOSO-41-014	PicAx 2.1	18	Vitrified Clay Pipe				3	3.09	3.07	3.09
18PS-GR-008-2_18P	18PS-GR-008-2	18PS-GR-008-1	SOLO	8	Vitrified Clay Pipe				2.2	3.92	3.41	3.92
JOSO-48-016B_JOS	JOSO-48-016B	JOSO-48-016A	SOLO	12	Vitrified Clay Pipe	2C12			1.92	3.92	2.61	3.92
JOSO-44-022A_JOS	JOSO-44-022A	JOSO-BR-010AB	SOLO	12	Vitrified Clay Pipe	2500			2	3.17	2.91	3.17
JOSO-45-003F_JOS	JOSO-45-003F	JOSO-45-003E	SOLO	12	Vitrified Clay Pipe	2100			2	3.75	3.65	3.75
W1-37-012_W1-NY-0	W1-37-012	W1-NY-009A	PicAx 2.1	18	Vitrified Clay Pipe	3500			3	3.77	3.56	3.77
W3-JE-003_W3-JE-0	W3-JE-003	W3-JE-002	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.75	3.35	3.75
JOSO-42-016_JOSO	JOSO-42-016	JOSO-42-017	PicAx 2.1	15	Vitrified Clay Pipe	3121			2.5	3.64	3.5	3.64
JOSO-BE-012_JOSO	JOSO-BE-012	JOSO-BE-013	PicAx 2.1	18	Vitrified Clay Pipe	3B00			3	3.91	3.38	3.91
JOSO-44-007_JOSO	JOSO-44-007	JOSO-44-006	PicAx 2.1	15	Vitrified Clay Pipe	2100			2	3.67	3.56	3.67
JOSO-BE-017_JOSO	JOSO-BE-017	JOSO-BE-018	PicAx 2.1	18	Vitrified Clay Pipe	3100			3	3.62	3.57	3.62
H5-HW-532_H5-11-5	H5-HW-532	H5-11-530	PicAx 2.1	15	Vitrified Clay Pipe	3400			3	3.53	3.42	3.53
	W1-BE-003	W1-BE-006	PicAx 2.1	45	Brick	3B00			3	3.79	3.37	3.79
JOSO-45-003D_JOS	JOSO-45-003D	JOSO-45-003C	SOLO	12	Vitrified Clay Pipe	2E00			2	3.67	2.6	3.67
W1-33-006_W1-33-0	W1-33-006	W1-33-007	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.85	3.79	3.85
JOSO-45-003E_JOS	JOSO-45-003E	JOSO-45-003D	SOLO	12	Vitrified Clay Pipe	2F00			2	3.81	2.54	3.81
W1-37-006_W1-37-0	W1-37-006	W1-37-007	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3.72	3.65	3.72
18PS-GR-007C_18P	18PS-GR-007C	18PS-GR-007B	SOLO	8	Vitrified Clay Pipe	2800			2	3.65	3.12	3.65
JOSO-LI-003AA_JOS	JOSO-LI-003AA	JOSO-LI-002	SOLO	12	Vitrified Clay Pipe	2A00			2	3.67	2.86	3.67
B-54-033A_B-54-033	B-54-033A	B-54-033	PicAx 2.1	12	Vitrified Clay Pipe	0000			0	3.72	3.72	3.72
D-HU-045_D-HU-046	D-HU-045	D-HU-046	PicAx 2.1	12	Vitrified Clay Pipe	3600			3	3.38	3.3	3.38
JOSO-45-007_JOSO	JOSO-45-007	JOSO-45-006	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	3.53	3.41	3.53
W4-KI-001_W4-KI-00	W4-KI-001	W4-KI-001B	SOLO	8	Vitrified Clay Pipe	3125			1.28	3.59	2.36	3.59
JOSO-HA-002A_JOS	JOSO-HA-002A	JOSO-HA-001	PicAx 2.1	0	Vitrified Clay Pipe	3E00			3	3.55	3.22	3.55
14VO-MA-001C_14V	14VO-MA-001C	14VO-MA-001B	PicAx 2.1	18	Vitrified Clay Pipe	2100			2	3.12	3.08	3.12
W3-CE-002_W3-CE-	W3-CE-002	W3-CE-001	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.57	3.38	3.57
UH1-11-005_UH1-11	UH1-11-005	UH1-11-004	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	2.94	2.94	2.94
W1-33-021_W1-33-0	W1-33-021	W1-33-022	PACP 6.0	15	Vitrified Clay Pipe	3224			2.33	3.5	3.27	3.5
JOSO-36-006_JOSO	JOSO-36-005	JOSO-36-006	PicAx 2.1	15	Vitrified Clay Pipe	3200			3	3.43	3.4	3.43
W4-JFK-005_W4-JF	W4-JFK-005	W4-JFK-006	PicAx 2.1	18	Vitrified Clay Pipe	3200			3	3.25	3.23	3.25
UH1-12-021_UH1-12	UH1-12-021	UH1-12-020	PACP 6.0	21	Vitrified Clay Pipe				3.2	3.48	3.44	3.48
W3-24-003_W3-24-0	W3-24-003	W3-24-002	PACP 6.0	15	Vitrified Clay Pipe	3621			2.86	3.2	3.14	3.2
	W2-18-008A	W2-18-008B	PACP 6.0	15	Vitrified Clay Pipe	3521			2.83	3.41	3.31	3.41
W3-23-006_W3-23-0	W3-23-006	W3-23-005	PACP 6.0	15	Vitrified Clay Pipe	5141		514B	3.21	3.34	3.31	3.34
W4-ELD-003_W4-EL	W4-ELD-003	W4-ELD-004	SOLO	12	Vitrified Clay Pipe	2500			2	4	3.58	4
JOSO-39-001_JOSO	JOSO-39-001	JOSO-JFK-028	SOLO	12	Vitrified Clay Pipe	2C00			2	4	2.86	4
W1-39-001_W1-39-0	W1-39-001	W1-39-002	SOLO	12	Vitrified Clay Pipe	2200			2	4	3.8	4
JOSO-44-013_JOSO	JOSO-44-013	JOSO-PA-006	MSI PROFILER	18	Vitrified Clay Pipe	2212			1.5	4	3.5	4
JOSO-44-012_JOSO	JOSO-44-012	JOSO-44-013	MSI PROFILER	18	Vitrified Clay Pipe	2200			2	4	3.76	4

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
G-67-111_G-67-112	G-67-111	G-67-112	MSI PROFILER	24	Vitrified Clay Pipe	2200			2	4	3.8	4
G-65-101_G-65-102	G-65-101	G-65-102	MSI PROFILER	24	Vitrified Clay Pipe	2100			2	4	3.9	4
W2-17-014_W2-17-0	W2-17-014	W2-17-015	PACP 6.0	15	Vitrified Clay Pipe	3100			3	4	3.94	4
JOSO-PA-008_JOSO	JOSO-PA-008	JOSO-PA-009	PicAx 2.1	15	Vitrified Clay Pipe	3821			2.89	4	3.6	4
W2-19-010_W2-19-0	W2-19-010	W2-19-011	PACP 6.0	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-34-005_W1-34-0	W1-34-005	W1-34-004	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
W1-40-005A_W1-40-	W1-40-005A	W1-40-006	PicAx 2.1	18	Vitrified Clay Pipe	3B21			2.94	4	3.45	4
W2-29-006_W2-29-0	W2-29-006	W2-29-007	PicAx 2.1	15	Vitrified Clay Pipe	3321			2.75	4	3.76	4
W3-CE-004_W3-CE-	W3-CE-004	W3-CE-003	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	4	3.86	4
W3-28-007_W3-28-0	W3-28-007	W3-28-006	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.95	4
W1-40-002_W1-40-0	W1-40-002	W1-40-003	PicAx 2.1	18	Vitrified Clay Pipe	3B21			2.94	4	3.45	4
JOSO-41-017_JOSO	JOSO-41-017	JOSO-41-018	PicAx 2.1	24	Vitrified Clay Pipe	3500			3	4	3.77	4
UH1-13-004_UH1-13	UH1-13-004	UH1-13-003	PicAx 2.1	15	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-41-014_JOSO	JOSO-41-014	JOSO-41-015	PicAx 2.1	18	Vitrified Clay Pipe	0000			0	4	4	4
JOSO-40-009_JOSO	JOSO-40-009	JOSO-40-010	PicAx 2.1	24	Vitrified Clay Pipe	3100			3	4	3.95	4
W1-35-017_W1-35-0	W1-35-017	W1-35-018	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	4	3.94	4
JOSO-40-008_JOSO	JOSO-40-008	JOSO-40-009	PicAx 2.1	24	Vitrified Clay Pipe	3100			3	4	3.94	4
W2-PA-037_W2-PA-	W2-PA-037	W2-PA-036	PACP 6.0	36	Brick				3.17	4	3.77	4
D-PA-009_D-PA-010	D-PA-009	D-PA-010	SOLO	12	Vitrified Clay Pipe	3112			1.67	3.89	3.57	3.89
W1-34-020_W1-34-0	W1-34-020	W1-34-021	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.9	3.78	3.9
W3-28-013_W3-28-0	W3-28-013	W3-28-014	PicAx 2.1	15	Vitrified Clay Pipe	3D00			3	3.88	3.36	3.88
W1-32-001_W1-32-0	W1-32-001	W1-32-002	PicAx 2.1	15	Vitrified Clay Pipe	3823			2.73	3.8	3.42	3.8
W2-NY-036_W2-NY-	W2-NY-036	W2-NY-035	PACP 6.0	15	Vitrified Clay Pipe	3100			3	3.57	3.55	3.57
W1-38-014_W1-38-0	W1-38-014	W1-38-013	PicAx 2.1	15	Vitrified Clay Pipe	3100			3	3.57	3.54	3.57
W4-ELD-004_JOSO-	W4-ELD-004	JOSO-HI-002	SOLO	12	Vitrified Clay Pipe	2300			2	3.86	3.63	3.86
W4-BO-002_W4-BO-	W4-BO-003	W4-BO-002	SOLO	10	Vitrified Clay Pipe	2A17			1.67	3.82	2.63	3.82
W2-15-002_W2-15-0	W2-15-002	W2-15-003	PACP 6.0	15	Vitrified Clay Pipe	3700			3	3.95	3.7	3.95
	W1-37-019A	W1-37-020	PicAx 2.1	18	Vitrified Clay Pipe	3800			3	3.83	3.58	3.83
W2-PA-036_W2-PA-	W2-PA-036	W2-PA-035	PACP 6.0	36	Brick				3.5	3.95	3.87	3.95
W2-DO-999_W2-JA-	W2-DO-999	W2-JA-999	SOLO	8	Vitrified Clay Pipe	3B2B			2.1	3.58	2.59	3.58
JOSO-44-010_JOSO	JOSO-44-010	JOSO-44-011	MSI PROFILER	18	Vitrified Clay Pipe	2200			2	3.58	3.46	3.58
JOSO-40-006_JOSO	JOSO-40-006	JOSO-40-007	PicAx 2.1	24	Vitrified Clay Pipe	3300			3	3.9	3.78	3.9
	JOSO-47-011	JOSO-47-013	PicAx 2.1	15	Vitrified Clay Pipe	3500			3	3.43	3.36	3.43
D-49-001_D-49-002	D-49-001	D-49-002	PicAx 2.1	15	Vitrified Clay Pipe	3B00			3	3.5	3.3	3.5
JOSO-39-002_JOSO	JOSO-39-002	JOSO-39-001	SOLO	12	Vitrified Clay Pipe	2H00			2	3.75	2.53	3.75
W2-HU-007_W2-HU-	W2-HU-007	W2-HU-006A	PACP 6.0	12	Vitrified Clay Pipe	3625			2.55	2.51	2.52	2.52
G-MO-047_G-62-046	G-MO-047	G-62-046	PicAx 2.1	12	Vitrified Clay Pipe	3H21			2.98	3.35	3.13	3.35
W2-27-004A_W2-27-	W2-27-004A	W2-27-004B	SOLO	8	Vitrified Clay Pipe	281A			1.44	3.52	2.76	3.52
UH1-12-020_UH1-12	UH1-12-020	UH1-12-019	PACP 6.0	21	Vitrified Clay Pipe	3B00			3	3.53	3.33	3.53
D-49-002_D-49-003	D-49-002	D-49-003	PicAx 2.1	15	Vitrified Clay Pipe	3A00			3	3.46	3.33	3.46
UH1-12-022_UH1-12	UH1-12-022	UH1-12-021	PACP 6.0	21	Vitrified Clay Pipe	3421			2.8	3.34	3.28	3.34
UH1-BE-007_UH1-B	UH1-BE-007	UH1-BE-008	PACP 6.0	18	Vitrified Clay Pipe				3.5	2.54	2.6	2.6
W2-MO-002_W2-MO	W2-MO-002	W2-MO-001AA	PACP 6.0	30	Vitrified Clay Pipe	0000			0	3.43	3.43	3.43
W4-JFK-001_W4-JFI	W4-JFK-001	W4-JFK-002	SOLO	12	Vitrified Clay Pipe	2D14			1.86	3.16	2.81	3.16
JOSO-39-003_JOSO	JOSO-39-003	JOSO-39-002	SOLO	12	Vitrified Clay Pipe	2H00			2	4	2.64	4
W1-35-002_W1-35-0	W1-35-002	W1-35-001	PicAx 2.1	15	Vitrified Clay Pipe	3221			2.67	4	3.83	4
JOSO-HA-005_JOSO	JOSO-HA-005	JOSO-HA-004	PicAx 2.1	15	Vitrified Clay Pipe	3A21			2.91	3.9	3.56	3.9
JOSO-47-019_JOSO	JOSO-47-019	JOSO-47-018	PicAx 2.1	15	Vitrified Clay Pipe	3300			3	3.91	3.8	3.91
W3-KE-018_W3-KE-	W3-KE-018	W3-KE-017	PACP 6.0	18	Polyvinyl Chloride	3600			3	3.75	3.6	3.75
W2-18-007A_W2-18-	W2-18-007A	W2-18-008A	PACP 6.0	15	Vitrified Clay Pipe				3.14	3.35	3.32	3.35
JOSO-48-003_JOSO	JOSO-48-003	JOSO-48-002	MSI PROFILER	18	Vitrified Clay Pipe	2211			1.67	3.76	3.56	3.76

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W4-JFK-006D_W4-J	W4-JFK-006D	W4-JFK-002	SOLO	10	Vitrified Clay Pipe	2A11			1.93	4	3.33	4
	JOSO-45-002	JOSO-45-002	MSI PROFILER	18	Vitrified Clay Pipe	2211			1.67	4	3.77	4
	G-67-108	G-67-110	MSI PROFILER	24	Concrete Pipe (non-r	312A			2	4	3.4	4
	JOSO-HA-004	JOSO-HA-002	PicAx 2.1	15	Vitrified Clay Pipe	3900			3	4	3.76	4
W5-JFK-003A_W5-J	W5-JFK-003A	W5-JFK-003	SOLO	12	Vitrified Clay Pipe	2C00			2	3.71	3	3.71
JOSO-48-005_JOSO	JOSO-48-005	JOSO-48-006	SOLO	12	Vitrified Clay Pipe	2600			2	3.93	3.61	3.93
D-49-003_D-49-004	D-49-003	D-49-004	PicAx 2.1	15	Vitrified Clay Pipe	3421			2.8	3.83	3.69	3.83
D-BE-053_D-50-T04	D-BE-053	D-50-T048	PicAx 2.1	18	Concrete Pipe (non-r	3100			3	3.43	3.42	3.43
W2-CE-002_W2-CE-	W2-CE-002	W2-CE-001	PACP 6.0	15	Vitrified Clay Pipe	3B00			3	3.04	3.03	3.04
JOSO-47-008_JOSO	JOSO-47-008	JOSO-47-009	SOLO	12	Vitrified Clay Pipe	2A00			2	4	3.49	4
JOSO-48-004_JOSO	JOSO-48-004	JOSO-48-003	MSI PROFILER	18	Vitrified Clay Pipe	2100			2	4	3.94	4
JOSO-BE-002_JOSO	JOSO-BE-002	JOSO-48-004	MSI PROFILER	18	Vitrified Clay Pipe	2B11			1.94	4	3.26	4
G-67-107_G-67-108	G-67-107	G-67-108	MSI PROFILER	24	Vitrified Clay Pipe	2B11			1.94	4	3.23	4
G-67-110_G-67-111	G-67-110	G-67-111	MSI PROFILER	24	Reinforced Concrete	2B00			2	4	3.25	4
JOSO-HI-004A2_JO	JOSO-HI-004A2	JOSO-HI-004A1	SOLO	12	Vitrified Clay Pipe	2M00			2	3.94	2.63	3.94
JOSO-47-010_JOSO	JOSO-47-010	JOSO-47-011	SOLO	12	Vitrified Clay Pipe	2900			2	3.94	3.53	3.94
D-55-007_D-55-008	D-55-007	D-55-008	SOLO	12	Vitrified Clay Pipe	2C00			2	3.78	3.12	3.78
D-49-004_D-49-005	D-49-004	D-49-005	PicAx 2.1	15	Vitrified Clay Pipe	3421			2.8	3.83	3.71	3.83
W4-KI-001D_W4-KI-	W4-KI-001D	W4-KI-001E	SOLO	12	Vitrified Clay Pipe	3A22			1.68	3.97	2.78	3.97
	JOSO-BR-001	JOSO-BR-001C	MSI PROFILER	84	Reinforced Concrete	2K00			2	3.53	2.96	3.53
	JOSO-46-003	JOSO-46-004	SOLO	12	Vitrified Clay Pipe	312I			2	3.96	3.07	3.96
18PS-GR-008-7_18F	18PS-GR-008-7	18PS-GR-008-6	SOLO	8	Vitrified Clay Pipe		5100	5147	3.45	5	3.58	5
W5-49-001_W5-49-0	W5-49-001	W5-49-002	SOLO	12	Vitrified Clay Pipe	0000	5100	5100	0	5	5	5
W3-SI-003_W3-SI-0	W3-SI-003	W3-SI-004	SOLO	12	Vitrified Clay Pipe	2200	5100	5122	2	5	3	5
W1-35-010_W1-35-0	W1-35-010	W1-35-009	PicAx 2.1	15	Vitrified Clay Pipe	3A00	5100	513A	3	5	3.14	5
JOSO-48-014_JOSO	JOSO-48-014	JOSO-48-013	PicAx 2.1	15	Vitrified Clay Pipe	3200	5100	5132	3	5	3.67	5
W1-38-022_W1-38-0	W1-38-022	W1-38-023	PicAx 2.1	18	Vitrified Clay Pipe	3B00	5100	513B	3	5	3.11	5
W2-25-013_W2-25-0	W2-25-013	W2-25-013A	PicAx 2.1	8	Brick	3B00	5100	513B	3	5	3.13	5
D-PA-011B_D-PA-01	D-PA-011B	D-PA-011A	PicAx 2.1	15	Vitrified Clay Pipe	3200	5100	5132	3	5	3.67	5
H5-HW-534_H5-HW-	H5-HW-534	H5-HW-532	PicAx 2.1	15	Vitrified Clay Pipe	0000	5100	5100	0	5	5	5
18PS-HA-010CA_18	18PS-HA-010CA	18PS-HA-010CB	PicAx 2.1	36	Brick	3C00	5100	513C	3	5	3.09	5
JOSO-47-014B_JOS	JOSO-47-014B	JOSO-47-014A	SOLO	12	Vitrified Clay Pipe	0000	5121	5121	0	3.5	3.5	3.5
14VO-MA-002B_14V	14VO-MA-002B	14VO-MA-002A	PACP 6.0	12	Vitrified Clay Pipe	0000	5121	5121	0	3.5	3.5	3.5
W1-35-013_W1-35-0	W1-35-013	W1-35-014	PicAx 2.1	15	Vitrified Clay Pipe	3900	5121	5139	3	3.5	3.09	3.5
PANYNJ-PA-001C_F	PANYNJ-PA-001C	PANYNJ-PA-001D	PicAx 2.1	8	Vitrified Clay Pipe	3400	5121	5134	3	2	2.44	2.44
H6-PA-004_H6-PA-0	H6-PA-004	H6-PA-005	PicAx 2.1	12	Vitrified Clay Pipe	3800	5121	5138	3	3.5	3.1	3.5
PANYNJ-PA-004_PA	PANYNJ-PA-004	PANYNJ-PA-005A	MSI PROFILER	48	Brick	2100	5121	5122	2	3.5	3	3.5
W2-MO-013_W2-PA-	W2-MO-013	W2-PA-026	PACP 6.0	36	Concrete Pipe (non-r		5121	5141	3.14	2.67	3	3
	JOSO-45-023A	JOSO-45-023B	SOLO	12	Vitrified Clay Pipe	2300	5122	5125	2	3	2.5	3
	W2-BE-035A	W2-BE-034	PACP 6.0	15	Vitrified Clay Pipe	0000	5122	5122	0	3	3	3
W3-23-002_W3-23-0	W3-23-002	W3-23-003A	PicAx 2.1	15	Vitrified Clay Pipe	3922	5122	5139	2.82	3	2.86	3
JOSO-47-004_JOSO	JOSO-47-004	JOSO-47-003	PicAx 2.1	18	Vitrified Clay Pipe	2100	5123	5124	2	2.75	2.6	2.75
UH1-11-017_UH1-11	UH1-11-017	UH1-11-016	PicAx 2.1	18	Vitrified Clay Pipe	0000	512C	512C	0	2.14	2.14	2.14
W2-DO-999A_W2-D	W2-DO-999A	W2-DO-999B	SOLO	8	Vitrified Clay Pipe	3122	5131	5132	1.67	4	2.25	4
W2-MO-002A_W2-M	W2-MO-002A	W2-MO-003	PicAx 2.1	15	Vitrified Clay Pipe	3321	5131	5134	2.75	3.33	3	3.33
W1-PE-003_W1-PA-	W1-PE-003	W1-PA-014	PicAx 2.1	16	Vitrified Clay Pipe	3200	5131	5133	3	4	3.5	4
W2-16-016_W2-PA-0	W2-16-016	W2-PA-041	PACP 6.0	15	Vitrified Clay Pipe	0000	5131	5131	0	1.67	1.67	1.67
UH1-CE-024_UH1-C	UH1-CE-024	UH1-CE-025	PicAx 2.1	15	Vitrified Clay Pipe	3B00	5131	513B	3	3	3	3
UH1-PA-001_UH1-P	UH1-PA-001	UH1-PA-002	PACP 6.0	15	Vitrified Clay Pipe	3200	5131	5133	3	2.57	2.67	2.67
W3-JFK-006_W3-22-	W3-JFK-006	W3-22-001	PicAx 2.1	15	Vitrified Clay Pipe	3523	5131	5136	2.63	4	2.9	4
W1-37-013_W1-37-0	W1-37-013	W1-37-012	PicAx 2.1	18	Vitrified Clay Pipe	3200	5131	5133	3	2.8	2.86	2.86

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W2-15-001_W2-15-0	W2-15-001	W2-15-002	PicAx 2.1	15	Vitrified Clay Pipe	3200	5131	5133	3	2.75	2.83	2.83
W1-PL-006_W1-PL-0	W1-PL-006	W1-PL-007	PACP 6.0	15	Vitrified Clay Pipe	0000	5131	5131	0	2.8	2.8	2.8
W3-18-004_W3-KE-0	W3-18-004	W3-KE-019	PACP 6.0	15	Vitrified Clay Pipe	5141	5131	5241	3.6	4	3.71	4
H5-GA-568_H5-GA-5	H5-GA-568	H5-GA-566	PicAx 2.1	15	Vitrified Clay Pipe	3C21	5131	513C	2.95	4	3.04	4
H5-AD-694_H5-AD-6	H5-AD-694	H5-AD-692	PicAx 2.1	39	Reinforced Concrete	3300	5131	5134	3	4	3.4	4
JOSO-LI-005AA_JOS	JOSO-LI-005AA	JOSO-LI-004AA	SOLO	12	Vitrified Clay Pipe		5132	5141	2.29	3	2.58	3
UH1-14-022_UH1-PA	UH1-14-022	UH1-PA-002	PACP 6.0	15	Vitrified Clay Pipe	0000	5132	5132	0	3.25	3.25	3.25
W2-NY-010_W2-NY-	W2-NY-010	W2-NY-009	PACP 6.0	15	Vitrified Clay Pipe	3C00	5132	513C	3	2.67	2.93	2.93
PANYNJ-PA-001B_P	PANYNJ-PA-001B	PANYNJ-PA-001C	PicAx 2.1	12	Vitrified Clay Pipe	3B00	5132	513B	3	3.67	3.1	3.67
	JOSO-46-003	JOSO-46-003	PicAx 2.1	12	Vitrified Clay Pipe	3200	5132	5134	3	3.25	3.17	3.25
H5-GA-574_H6-GA-0	H5-GA-574	H6-GA-001A	PicAx 2.1	15	Vitrified Clay Pipe	3800	5132	513A	3	2.83	2.93	2.93
W3-SU-021_W3-SU-	W3-SU-021	W3-SU-020	PACP 6.0	12	Vitrified Clay Pipe	3121	5133	5134	2.5	3.5	3.17	3.5
W3-JFK-008_W3-19-	W3-JFK-008	W3-19-001	PACP 6.0	15	Vitrified Clay Pipe	3321	5133	5136	2.75	3.5	3.13	3.5
W4-JFK-007_W4-JF	W4-JFK-007	W4-JFK-008	PicAx 2.1	18	Vitrified Clay Pipe	3A00	5133	513A	3	3	3	3
H5-AD-692_H5-11-6	H5-AD-692	H5-11-691	PicAx 2.1	39	Reinforced Concrete	3500	5133	5138	3	3.5	3.22	3.5
D-PA-042_D-PA-042	D-PA-042	D-PA-042A	SOLO	12	Vitrified Clay Pipe	2100	5134	5134	2	3.4	3.17	3.4
W2-18-003A_W2-18-	W2-18-003A	W2-18-002A	PACP 6.0	12	Vitrified Clay Pipe	3300	5134	5137	3	2.56	2.67	2.67
JOSO-44-021_JOSO	JOSO-44-021	JOSO-BR-006	PicAx 2.1	15	Vitrified Clay Pipe	0000	5134	5134	0	3.17	3.17	3.17
UH1-11-021_UH1-11	UH1-11-021	UH1-11-020	PicAx 2.1	15	Vitrified Clay Pipe	0000	5134	5134	0	3.4	3.4	3.4
W2-16-018_W2-16-0	W2-16-018	W2-16-017	PACP 6.0	12	Vitrified Clay Pipe	3300	5134	5137	3	1.88	2.05	2.05
W2-18-008_W2-BE-0	W2-18-008	W2-BE-038	PACP 6.0	15	Vitrified Clay Pipe	0000	5134	5134	0	3.4	3.4	3.4
W3-GR-002_W3-GR	W3-GR-002	W3-GR-003	PicAx 2.1	12	Vitrified Clay Pipe	3400	5134	5138	3	3.17	3.1	3.17
W2-CE-001_W2-22-0	W2-CE-001	W2-22-006	PACP 6.0	15	Vitrified Clay Pipe	0000	5134	5134	0	3.4	3.4	3.4
	W2-WE-004A	W2-WE-004	PACP 6.0	15	Vitrified Clay Pipe		5137	5142	3.67	2.31	2.53	2.53
W2-27-004B_W2-HU	W2-27-004B	W2-HU-002	SOLO	8	Vitrified Clay Pipe	0000	5138	5138	0	3.22	3.22	3.22
UH1-15-010_UH1-15	UH1-15-010	UH1-15-009	PACP 6.0	15	Vitrified Clay Pipe	3A00	5138	513C	3	3	3	3
JOSO-JFK-035_JOS	JOSO-JFK-034	JOSO-JFK-035	PicAx 2.1	15	Vitrified Clay Pipe	0000	5139	5139	0	3.2	3.2	3.2
W2-22-004_W2-22-0	W2-22-004	W2-22-005	PACP 6.0	12	Vitrified Clay Pipe		5139	5141	3.33	1.88	2.04	2.04
W2-18-007_W2-18-0	W2-18-007	W2-18-008	PACP 6.0	15	Vitrified Clay Pipe	3100	513A	513A	3	3	3	3
W2-25-001_W2-25-0	W2-25-001	W2-25-002	PACP 6.0	15	Vitrified Clay Pipe		513A	5141	3.5	2.94	3	3
W1-33-018_W1-33-0	W1-33-018	W1-33-019	PACP 6.0	15	Vitrified Clay Pipe	3100	513A	513A	3	3	3	3
W2-SU-001_W3-SU-	W2-SU-001	W3-SU-021	PACP 6.0	12	Vitrified Clay Pipe	3300	513A	513B	3	3.13	3.11	3.13
W2-19-019_W2-19-0	W2-19-019	W2-19-020	PACP 6.0	15	Vitrified Clay Pipe	3700	513B	513C	3	2.64	2.72	2.72
W2-22-003_W2-22-0	W2-22-003	W2-22-004	PACP 6.0	12	Vitrified Clay Pipe	3B00	513B	513F	3	2.43	2.65	2.65
W2-18-010_W2-18-0	W2-18-010	W2-18-011	PACP 6.0	12	Vitrified Clay Pipe	3300	513C	513C	3	3.09	3.08	3.09
W2-19-011_W2-19-0	W2-19-011	W2-19-012	PACP 6.0	15	Vitrified Clay Pipe	3400	513C	513D	3	3.08	3.07	3.08
	W2-HU-010	W2-HU-008	PACP 6.0	12	Vitrified Clay Pipe	3600	513C	513D	3	2.06	2.17	2.17
W1-AU-080_W1-AU-	W1-AU-080	W1-AU-070	PicAx 2.1	15	Vitrified Clay Pipe	3D21	513C	513I	2.74	2.96	2.83	2.96
	W4-HI-005	W4-HI-005A	PicAx 2.1	18	Vitrified Clay Pipe	3A00	513C	513E	3	2.8	2.85	2.85
W4-HI-002_W4-HI-0	W4-HI-002	W4-HI-003	PicAx 2.1	18	Vitrified Clay Pipe	3200	513D	513E	3	3.03	3.03	3.03
JOSO-48-008_JOSO	JOSO-48-008	JOSO-48-009	PicAx 2.1	12	Vitrified Clay Pipe	3621	513E	513F	2.86	2.97	2.95	2.97
	18PS-GR-001A	18PS-GR-001AA	SOLO	12	Vitrified Clay Pipe	1100	5141	5141	1	4.5	3.33	4.5
W5-JFK-014_W5-JF	W5-JFK-014	W5-JFK-013A	SOLO	12	Vitrified Clay Pipe	1100	5141	5141	1	4.5	3.33	4.5
18PS-GR-001D_18P	18PS-GR-001D	18PS-GR-001A	SOLO	12	Vitrified Clay Pipe	1A00	5141	5141	1	4.5	1.58	4.5
W4-ST-001_W1-AU-	W4-ST-001	W1-AU-080B	SOLO	8	Vitrified Clay Pipe		5141	5142	2.67	3.29	3.1	3.29
W4-ST-002_W4-ST-	W4-ST-001A	W4-ST-002	SOLO	10	Vitrified Clay Pipe	2217	5141	5141	1.22	2.63	1.88	2.63
D-54-012_D-54-013	D-54-012	D-54-013	SOLO	12	Vitrified Clay Pipe		5141	5142	2.4	2.65	2.59	2.65
JOSO-45-001_JOSO	JOSO-45-001	JOSO-JFK-009	MSI PROFILER	18	Vitrified Clay Pipe	0000	5141	5141	0	3	3	3
W2-18-009_W2-18-0	W2-18-009	W2-18-010	PACP 6.0	12	Vitrified Clay Pipe	3500	5141	5141	3	2.94	2.95	2.95
W2-18-013_W2-18-0	W2-18-013	W2-18-014	PACP 6.0	12	Vitrified Clay Pipe	3100	5141	5141	3	2.7	2.73	2.73
W2-18-011_W2-18-0	W2-18-011	W2-18-012	PACP 6.0	12	Vitrified Clay Pipe	0000	5141	5141	0	2.4	2.4	2.4

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
UH1-NY-023_UH1-N	UH1-NY-023	UH1-NY-024	PicAx 2.1	18	Vitrified Clay Pipe	0000	5141	5141	0	4.5	4.5	4.5
W3-26-003_W3-26-0	W3-26-003	W3-26-004	PicAx 2.1	12	Vitrified Clay Pipe	3800	5141	5141	3	3.33	3.18	3.33
W2-15-003_W2-15-0	W2-15-003	W2-15-004	PACP 6.0	15	Vitrified Clay Pipe	3100	5141	5141	3	3.25	3.22	3.25
	W3-30-005	W3-30-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	5141	5141	3	4.5	3.75	4.5
W3-27-003_W3-27-0	W3-27-003	W3-27-004	PicAx 2.1	15	Vitrified Clay Pipe	3A00	5141	5141	3	3.23	3.13	3.23
UH1-14-017_UH1-14	UH1-14-017	UH1-14-018	PACP 6.0	15	Vitrified Clay Pipe	3100	5141	5141	3	3.75	3.6	3.75
W2-25-002_W2-25-0	W2-25-002	W2-25-003	PACP 6.0	15	Vitrified Clay Pipe	0000	5141	5141	0	3.4	3.4	3.4
JOSO-42-010_JOSO	JOSO-42-010	JOSO-NY-003	PicAx 2.1	18	Reinforced Concrete	3100	5141	5141	3	3	3	3
UH1-NY-023_UH1-N	UH1-NY-023	UH1-NY-024	PicAx 2.1	18	Vitrified Clay Pipe	0000	5141	5141	0	2.83	2.83	2.83
W2-21-002_W2-21-0	W2-21-002	W2-21-003	PACP 6.0	12	Vitrified Clay Pipe	3221	5141	5141	2.67	2.86	2.83	2.86
UH1-NY-026_UH1-N	UH1-NY-026	UH1-NY-027	PicAx 2.1	15	Vitrified Clay Pipe	0000	5141	5141	0	4.5	4.5	4.5
W1-33-010_W1-33-0	W1-33-010	W1-33-011	PicAx 2.1	15	Vitrified Clay Pipe	3321	5141	5141	2.75	2.24	2.32	2.32
14VO-MA-002B_14V	14VO-MA-002B	14VO-MA-002A	PACP 6.0	12	Vitrified Clay Pipe	3400	5141	5141	3	2.87	2.89	2.89
JOSO-34-003_JOSO	JOSO-34-003	JOSO-34-002	PicAx 2.1	12	Vitrified Clay Pipe	3100	5141	5141	3	2.83	2.86	2.86
W2-19-016_W2-19-0	W2-19-016	W2-19-017	PACP 6.0	15	Vitrified Clay Pipe	3600	5141	5141	3	2	2.14	2.14
UH1-15-007_UH1-15	UH1-15-007	UH1-15-006	PACP 6.0	15	Vitrified Clay Pipe	3400	5141	5141	3	2.03	2.08	2.08
W4-HI-006EA_W4-H	W4-HI-006EA	W4-HI-006EB	PicAx 2.1	8	Vitrified Clay Pipe	3422	5141	5141	2.67	3.2	2.91	3.2
18PS-GR-001A_W3-	18PS-GR-001A	W3-HP-013	PicAx 2.1	12	Vitrified Clay Pipe	3222	5141	5141	2.5	3.6	3.11	3.6
H6-PA-006A_H6-PA	H6-PA-006A	H6-PA-007	PicAx 2.1	12	Vitrified Clay Pipe	3600	5141	5141	3	3.75	3.3	3.75
H6-PA-006_H6-PA-0	H6-PA-006	H6-PA-006A	PicAx 2.1	12	Vitrified Clay Pipe	3A00	5141	5141	3	3.25	3.07	3.25
PANYNJ-PA-001A_P	PANYNJ-PA-001A	PANYNJ-PA-001AB	PicAx 2.1	15	Vitrified Clay Pipe	2100	5141	5141	2	4	3.5	4
H5-GA-566_H5-GA-5	H5-GA-566	H5-GA-564	PicAx 2.1	15	Vitrified Clay Pipe	3B00	5141	5141	3	2.83	2.96	2.96
H6-14-002_H6-14-00	H6-14-002	H6-14-003A	PicAx 2.1	18	Vitrified Clay Pipe	3200	5141	5141	3	4.5	3.75	4.5
	W4-JFK-006A	W4-JFK-007	PicAx 2.1	18	Vitrified Clay Pipe	0000	5141	5141	0	4.5	4.5	4.5
W3-CE-014_W3-CE-	W3-CE-014	W3-CE-013	MSI PROFILER	30	Brick	2400	5141	5141	2	4.5	2.83	4.5
UH1-04-002_UH1-04	UH1-04-002	UH1-04-001	PicAx 2.1	30	Brick	3E00	5141	5141	3	4.5	3.09	4.5
UH1-05-015_UH1-05	UH1-05-015	UH1-05-014	PicAx 2.1	30	Brick	3621	5141	5141	2.86	4.5	3.22	4.5
W2-GR-004_W2-GR	W2-GR-004	W2-GR-004A	PicAx 2.1	45	Brick	3400	5141	5141	3	4.5	3.5	4.5
JOSO-LI-002AA_JOS	JOSO-LI-002AA	JOSO-LI-003B	SOLO	12	Vitrified Clay Pipe	2311	5142	5142	1.75	3.57	2.91	3.57
	W1-AU-080B	W1-AU-80	SOLO	8	Vitrified Clay Pipe	2200	5142	5142	2	3.5	3.13	3.5
JOSO-48-006_JOSO	JOSO-48-006	JOSO-48-007	SOLO	12	Vitrified Clay Pipe	3125	5142	5142	2.17	2.83	2.7	2.83
JOSO-47-009_JOSO	JOSO-47-009	JOSO-47-010	SOLO	12	Vitrified Clay Pipe		5142	5143	2.29	2.71	2.63	2.71
UH1-11-021_UH1-11	UH1-11-021	UH1-11-020	PicAx 2.1	15	Vitrified Clay Pipe	3821	5142	5142	2.7	3.17	3.03	3.17
D-49-014_D-49-013A	D-49-014	D-49-013A	PicAx 2.1	15	Vitrified Clay Pipe	3400	5142	5142	3	3.14	3.09	3.14
W1-36-004_W1-36-0	W1-36-004	W1-36-003	PicAx 2.1	15	Vitrified Clay Pipe	3500	5142	5142	3	3.17	3.09	3.17
UH1-05-022_UH1-05	UH1-05-022	UH1-05-021	PicAx 2.1	15	Vitrified Clay Pipe	3300	5142	5142	3	3.27	3.22	3.27
	UH1-PA-019	UH1-PA-021	PicAx 2.1	24	Vitrified Clay Pipe	3100	5142	5142	3	3.15	3.15	3.15
H5-WA-490A_H5-WA	H5-WA-490A	H5-WA-490	PicAx 2.1	12	Brick	3924	5142	5142	2.69	4.33	3	4.33
	PANYNJ-PA-001DAB	PANYNJ-PA-001A	PicAx 2.1	8	Vitrified Clay Pipe	3221	5142	5142	2.67	3.5	3.14	3.5
UH1-06-008_UH1-06	UH1-06-008	UH1-06-007	PicAx 2.1	30	Brick	3400	5142	5142	3	4	3.5	4
	W2-BE-015	W2-BE-012	PACP 6.0	30	Brick	3200	5142	5142	3	2.39	2.45	2.45
JOSO-BR-002A1C_J	JOSO-BR-002A1C	JOSO-BR-002A1B	SOLO	12	Vitrified Clay Pipe	2G12	5143	5143	1.95	3.05	2.65	3.05
G-65-117_G-DE-118	G-65-117	G-DE-118	SOLO	12	Vitrified Clay Pipe	2112	5143	5143	1.33	3.8	2.88	3.8
	W4-KI-002A	W4-BO-001	SOLO	8	Vitrified Clay Pipe	2300	5143	5143	2	3.83	3.22	3.83
JOSO-BE-006_JOSO	JOSO-BE-006	JOSO-BE-007	PicAx 2.1	15	Vitrified Clay Pipe		5143	5144	3.03	2.9	2.98	2.98
UH1-14-008_UH1-14	UH1-14-008	UH1-14-007	PicAx 2.1	15	Vitrified Clay Pipe	0000	5143	5143	0	3.3	3.3	3.3
W3-28-008_W3-28-0	W3-28-008	W3-28-007	PicAx 2.1	15	Vitrified Clay Pipe	3A00	5143	5143	3	2.91	2.96	2.96
JOSO-44-017_JOSO	JOSO-44-017	JOSO-44-018	PicAx 2.1	15	Vitrified Clay Pipe	3C21	5143	5143	2.95	4.25	3.16	4.25
	H6-PA-558	H6-PA-592	PicAx 2.1	15	Vitrified Clay Pipe	3900	5143	5143	3	3.23	3.14	3.23
	UH1-JFK-018B	UH1-JFK-019	MSI PROFILER	36	Brick	2300	5143	5143	2	4	3.25	4
JOSO-BR-004A_JOS	JOSO-BR-004A	JOSO-BR-004	SOLO	12	Vitrified Clay Pipe	0000	5144	5144	0	4.2	4.2	4.2

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
C-66-007_C-BE-035	C-66-007	C-BE-035	SOLO	12	Vitrified Clay Pipe		5144	5145	4	3.67	3.71	3.71
JOSO-45-002_JOSO	JOSO-45-002	JOSO-45-001	MSI PROFILER	18	Vitrified Clay Pipe	3324	5144	5144	2.11	2.79	2.65	2.79
JOSO-HA-004B_JOS	JOSO-HA-004B	JOSO-HA-004A	PicAx 2.1	12	Vitrified Clay Pipe	3800	5144	5144	3	3.44	3.24	3.44
JOSO-BE-009_JOSO	JOSO-BE-009	JOSO-BE-010	PicAx 2.1	18	Vitrified Clay Pipe	3400	5144	5144	3	4.2	3.67	4.2
	H5-GA-564	H5-11-560	PicAx 2.1	15	Vitrified Clay Pipe	2100	5144	5144	2	3.83	3.57	3.83
G-65-117_G-DE-118	G-65-117	G-DE-118	SOLO	12	Vitrified Clay Pipe	2211	5145	5145	1.67	3.55	3.14	3.55
JOSO-44-002_JOSO	JOSO-44-002	JOSO-44-001	PicAx 2.1	15	Vitrified Clay Pipe	3B21	5145	5145	2.95	3.44	3.11	3.44
	UH1-BE-002	UH1-BE-004	PACP 6.0	15	Vitrified Clay Pipe		5145	5146	3.33	3.5	3.45	3.5
	UH1-JFK-019	UH1-JFK-021	MSI PROFILER	36	Brick		5145	5146	2.5	2.58	2.57	2.58
18PS-HA-007A_18P	18PS-HA-007A	18PS-HA-007AB	SOLO	12	Vitrified Clay Pipe		5146	5147	2.06	3.09	2.66	3.09
W2-18-012_W2-18-0	W2-18-012	W2-18-013	PACP 6.0	12	Vitrified Clay Pipe	3200	5146	5146	3	3.38	3.33	3.38
W1-38-024_W1-38-0	W1-38-024	W1-38-025	PicAx 2.1	18	Vitrified Clay Pipe	3800	5146	5146	3	3.58	3.35	3.58
W1-37-011_W1-37-0	W1-37-011	W1-37-010	PicAx 2.1	18	Vitrified Clay Pipe	3A00	5146	5146	3	3.58	3.32	3.58
JOSO-43-006_JOSO	JOSO-43-006	JOSO-BE-017	PicAx 2.1	18	Vitrified Clay Pipe	513B	5147	5247	3.11	4	3.39	4
	JOSO-43-004A	JOSO-43-003	PicAx 2.1	15	Vitrified Clay Pipe	3300	5147	5147	3	3.82	3.64	3.82
JOSO-BE-011_JOSO	JOSO-BE-011	JOSO-BE-012	PicAx 2.1	18	Vitrified Clay Pipe	3121	5147	5147	2.5	3.12	3.05	3.12
JOSO-PA-001_JOSO	JOSO-PA-001	JOSO-PA-002	PicAx 2.1	15	Vitrified Clay Pipe	3200	5147	5147	3	3.89	3.73	3.89
W4-KI-002_W4-KI-0	W4-KI-002	W4-KI-001BBB	SOLO	8	Vitrified Clay Pipe	2400	5148	5148	2	4	3.43	4
JOSO-48-009_JOSO	JOSO-48-009	JOSO-48-010	PicAx 2.1	12	Vitrified Clay Pipe	3600	5148	5148	3	3.15	3.13	3.15
JOSO-HU-006_JOSO	JOSO-HU-006	JOSO-40-005	PicAx 2.1	24	Vitrified Clay Pipe		5148	5149	4	3.67	3.69	3.69
JOSO-BE-018_JOSO	JOSO-BE-018	JOSO-BE-019	PicAx 2.1	18	Vitrified Clay Pipe	3300	5148	5148	3	3.62	3.5	3.62
18PS-GR-008-3_18F	18PS-GR-008-3	18PS-GR-008-2	SOLO	8	Vitrified Clay Pipe	352A	5149	5149	1.85	3.64	2.46	3.64
D-PA-010_D-PA-036	D-PA-010	D-PA-036	SOLO	12	Vitrified Clay Pipe	0000	5149	5149	0	4.1	4.1	4.1
W2-HU-004AA_W2-H	W2-HU-004AA	W2-HU-004	SOLO	8	Vitrified Clay Pipe	2500	514A	514A	2	3.5	3.29	3.5
W4-JFK-005B_W4-J	W4-JFK-005B	W4-JFK-005A	SOLO	10	Vitrified Clay Pipe	5131	514A	524A	1.94	3.69	2.52	3.69
JOSO-36-001_JOSO	JOSO-36-001	JOSO-36-002	SOLO	12	Vitrified Clay Pipe	2400	514A	514A	2	4	3.5	4
W4-KI-001BBB_W4-	W4-KI-001BBB	W4-KI-001	SOLO	8	Vitrified Clay Pipe	2G00	514A	514A	2	3.29	2.69	3.29
W4-JFK-002_W4-JF	W4-JFK-002	W4-JFK-003	SOLO	12	Vitrified Clay Pipe	5124	514A	524A	2.14	4.09	3.33	4.09
JOSO-PA-013_JOSO	JOSO-PA-013	JOSO-PA-014	MSI PROFILER	24	Vitrified Clay Pipe	2600	514A	514A	2	4.08	3.39	4.08
W1-34-007_W1-34-0	W1-34-007	W1-34-006	PicAx 2.1	15	Vitrified Clay Pipe	3600	514A	514A	3	3.75	3.58	3.75
W1-34-009_W1-34-0	W1-34-009	W1-34-008	PicAx 2.1	15	Vitrified Clay Pipe	3A21	514A	514A	2.93	3.83	3.44	3.83
JOSO-BE-016_JOSO	JOSO-BE-016	JOSO-BE-017	PicAx 2.1	18	Vitrified Clay Pipe	3100	514A	514A	3	3.88	3.83	3.88
W3-30-001_W3-30-0	W3-30-001	W3-30-002	PicAx 2.1	15	Vitrified Clay Pipe	3700	514A	514A	3	3.86	3.57	3.86
UH1-BE-006_UH1-B	UH1-BE-006	UH1-BE-007	PACP 6.0	18	Vitrified Clay Pipe		514A	514A	3.43	1.76	1.92	1.92
W2-DO-999A_W2-D	W2-DO-999A	W2-DO-999	SOLO	8	Vitrified Clay Pipe	3629	514B	514B	1.53	3.95	2.31	3.95
JOSO-LI-004AA_JOS	JOSO-LI-004AA	JOSO-LI-003AA	SOLO	12	Vitrified Clay Pipe	2411	514B	514B	1.8	3.94	3.48	3.94
UH1-WE-006_UH1-V	UH1-WE-006	UH1-WE-007	PicAx 2.1	15	Vitrified Clay Pipe	3100	514B	514B	3	3.55	3.53	3.55
W1-34-018_W1-34-0	W1-34-018	W1-34-019	PicAx 2.1	15	Vitrified Clay Pipe	3500	514B	514B	3	3.95	3.77	3.95
JOSO-HA-002_JOSO	JOSO-HA-002	JOSO-HA-002A	PicAx 2.1	0	Vitrified Clay Pipe	513B	514B	524B	3.1	3.85	3.48	3.85
W3-SI-009_W3-SI-01	W3-SI-009	W3-SI-010	PicAx 2.1	15	Vitrified Clay Pipe	3B22	514B	514B	2.89	3.82	3.39	3.82
D-49-008_D-49-009	D-49-008	D-49-009	PicAx 2.1	15	Vitrified Clay Pipe	3400	514B	514B	3	3.58	3.5	3.58
UH1-13-005_UH1-13	UH1-13-005	UH1-13-004	PicAx 2.1	15	Vitrified Clay Pipe	3200	514B	514B	3	3.95	3.87	3.95
JOSO-36-005_JOSO	JOSO-36-005A	JOSO-36-005	PicAx 2.1	15	Vitrified Clay Pipe		514B	514B	3.2	4.06	3.86	4.06
W2-30-002_W2-30-0	W2-30-002	W2-30-003	PicAx 2.1	18	Vitrified Clay Pipe	3B21	514B	514B	2.95	4.05	3.5	4.05
JOSO-40-003_JOSO	JOSO-40-003	JOSO-40-004	PicAx 2.1	18	Vitrified Clay Pipe	3400	514B	514B	3	4.06	3.86	4.06
W1-34-006_W1-34-0	W1-34-006	W1-34-005	PicAx 2.1	15	Vitrified Clay Pipe	3800	514B	514B	3	3.67	3.48	3.67
H6-PA-008_H6-PA-0	H6-PA-008	H6-PA-009	PicAx 2.1	15	Vitrified Clay Pipe	3C00	514B	514B	3	3.75	3.37	3.75
W4-KI-001B_W4-KI-	W4-KI-001B	W4-KI-001C	SOLO	10	Vitrified Clay Pipe	211A	514C	514C	1.09	3.92	3.03	3.92
W4-JFK-003_W4-KI-	W4-JFK-003	W4-KI-001E	SOLO	12	Vitrified Clay Pipe		514C	514C	2.08	4	3.34	4
UH1-BE-027_UH1-B	UH1-BE-027	UH1-BE-028	PicAx 2.1	15	Vitrified Clay Pipe	3A00	514C	514C	3	3.83	3.51	3.83
JOSO-HA-007_JOSO	JOSO-HA-007	JOSO-HA-006	PicAx 2.1	15	Vitrified Clay Pipe	3721	514C	514C	2.88	4.05	3.72	4.05

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W4-KI-001C_W4-KI-	W4-KI-001C	W4-KI-001D	SOLO	12	Vitrified Clay Pipe	312D	514D	514D	2	3.96	2.95	3.96
W3-29-002_W3-29-0	W3-29-002	W3-29-001	PicAx 2.1	15	Vitrified Clay Pipe	3A21	514D	514D	2.92	3.9	3.63	3.9
W4-ELD-002_W4-EL	W4-ELD-002	W4-ELD-003	SOLO	12	Vitrified Clay Pipe	3127	514E	514E	2.13	3.97	3.62	3.97
JOSO-LI-002AA_JO	JOSO-LI-002AA	JOSO-LI-003B	SOLO	12	Vitrified Clay Pipe	3128	514H	514H	1.91	4	3.62	4
18PS-GR-007XX1_1	18PS-GR-007XX1	18PS-GR-007XX	SOLO	8	Vitrified Clay Pipe	2100	5200	5221	2	5	4	5
	W2-25-018A	W2-25-013B	PicAx 2.1	8	Vitrified Clay Pipe	3700	5231	5238	3	3.4	3.17	3.4
18PS-18-012DA_18F	18PS-18-012DA	18PS-18-012D	PicAx 2.1	12	Vitrified Clay Pipe		5231	5241	3.2	3	3.09	3.09
W1-33-022_W1-33-0	W1-33-022	W1-33-023	PACP 6.0	15	Vitrified Clay Pipe	2100	5232	5232	2	4	3.6	4
W3-JFK-007_W3-JF	W3-JFK-007	W3-JFK-006	PicAx 2.1	15	Vitrified Clay Pipe	3A23	5234	523B	2.59	3.25	2.8	3.25
W2-BE-007_W2-BE-	W2-BE-007	W2-BE-005	PACP 6.0	30	Vitrified Clay Pipe	0000	5237	5237	0	3.2	3.2	3.2
W2-19-017_W2-19-0	W2-19-017	W2-19-018	PACP 6.0	15	Vitrified Clay Pipe	3A21	523A	523C	2.92	2.56	2.67	2.67
W2-22-013_W2-22-0	W2-22-013	W2-22-014	PACP 6.0	12	Vitrified Clay Pipe	3I00	523D	523N	3	2.91	2.97	2.97
H1-WA-010_H1-07-0	H1-WA-010	H1-07-013	PicAx 2.1	12	Vitrified Clay Pipe	3B00	523D	523G	3	3.11	3.07	3.11
W4-JFK-005A_W4-J	W4-JFK-005A	W4-JFK-005	SOLO	10	Vitrified Clay Pipe	2100	5241	5241	2	2.58	2.55	2.58
W4-KI-001A_W4-KI-	W4-KI-001A	W4-KI-001	SOLO	10	Vitrified Clay Pipe	2E1E	5241	5241	1.51	3.14	2.12	3.14
C-66-004_C-66-005	C-66-004	C-66-005	SOLO	12	Vitrified Clay Pipe	1100	5241	5241	1	3.33	3.1	3.33
W2-18-011_W2-18-0	W2-18-011	W2-18-012	PACP 6.0	12	Vitrified Clay Pipe	0000	5241	5241	0	3.2	3.2	3.2
W1-HU-004_W1-PE-	W1-HU-004	W1-PE-001	PicAx 2.1	10	Vitrified Clay Pipe	3221	5241	5241	2.67	4.67	3.67	4.67
	NBW-38-005	NBW-38-007	PicAx 2.1	15	Vitrified Clay Pipe	3300	5241	5241	3	3.17	3.15	3.17
JOSO-48-015_JOSO	JOSO-48-015	JOSO-48-014	PicAx 2.1	15	Vitrified Clay Pipe	3222	5241	5241	2.5	4	3.25	4
UH1-06-014_UH1-06	UH1-06-014	UH1-06-013	PicAx 2.1	15	Vitrified Clay Pipe	3100	5241	5241	3	3.75	3.6	3.75
JOSO-48-015_JOSO	JOSO-48-015	JOSO-48-014	PicAx 2.1	15	Vitrified Clay Pipe	0000	5241	5241	0	3.75	3.75	3.75
18PS-GR-008-6_18F	18PS-GR-008-6	18PS-GR-008-5	SOLO	8	Vitrified Clay Pipe		5242	5243	1.88	3.22	2.52	3.22
W2-24-015AB_W2-2	W2-24-015AB	W2-24-015A	SOLO	8	Vitrified Clay Pipe	211A	5242	5242	1.09	3.5	2.11	3.5
	NBW-38-003	NBW-38-005	PicAx 2.1	15	Vitrified Clay Pipe	3600	5242	5242	3	2.73	2.76	2.76
	PANYNJ-PA-001DA	PANYNJ-PA-001A	PicAx 2.1	8	Vitrified Clay Pipe	3225	5242	5242	1.69	2.73	2.17	2.73
W4-JFK-002_W4-JF	W4-JFK-002	W4-JFK-003	SOLO	12	Vitrified Clay Pipe	312C	5243	5243	2.04	3.3	2.67	3.3
NBW-37-006A_NBW	NBW-37-006A	NBW-37-007	PicAx 2.1	15	Vitrified Clay Pipe	3100	5243	5243	3	4.4	4.17	4.4
JOSO-48-005_JOSO	JOSO-48-005	JOSO-48-006	SOLO	12	Vitrified Clay Pipe	2800	5244	5244	2	3.89	3	3.89
UH1-NY-019_UH1-N	UH1-NY-019	UH1-NY-020	PicAx 2.1	18	Vitrified Clay Pipe		5244	5245	3.25	4	3.75	4
W2-22-017_W2-22-0	W2-22-017	W2-22-018	PACP 6.0	12	Vitrified Clay Pipe	3A00	5244	5244	3	3.22	3.14	3.22
C-PO-012_C-PO-013	C-PO-012	C-PO-013	PicAx 2.1	15	Vitrified Clay Pipe	0000	5245	5245	0	3.69	3.69	3.69
G-DE-118_G-DE-119	G-DE-118	G-DE-119A	SOLO	12	Vitrified Clay Pipe	2900	5246	5246	2	3	2.77	3
W4-JFK-005A_W4-J	W4-JFK-005A	W4-JFK-005	SOLO	10	Vitrified Clay Pipe	2300	5247	5247	2	3.77	3.44	3.77
18PS-GR-007XX_18	18PS-GR-007XX	18PS-GR-007D	SOLO	8	Vitrified Clay Pipe	2812	524B	524B	1.8	3.96	3.32	3.96
W4-JFK-008_W4-JF	W4-JFK-009	W4-JFK-008	MSI PROFILER	24	Vitrified Clay Pipe	3123	524D	524D	2	4.07	3.75	4.07
D-54-011_D-54-012	D-54-011	D-54-012	SOLO	12	Vitrified Clay Pipe	2A17	524G	524G	1.59	3.98	3.34	3.98
	PANYNJ-PA-004A	PANYNJ-PA-004A-1	MSI PROFILER	48	Concrete Pipe (non-r	0000	5321	5321	0	4.25	4.25	4.25
JOSO-HI-004A1_W4	JOSO-HI-004A1	W4-HI-004A	SOLO	12	Vitrified Clay Pipe	2300	5335	5335	2	2.74	2.64	2.74
JOSO-47-013_JOSO	JOSO-47-013	JOSO-47-014	PicAx 2.1	15	Vitrified Clay Pipe	3321	5341	5341	2.75	3.3	3.14	3.3
W2-PA-010A_W2-PA	W2-PA-010A	W2-PA-008	PACP 6.0	12	Vitrified Clay Pipe	3200	5341	5341	3	1.75	1.8	1.8
	18PS-HA-007ABA	18PS-HA-007ABA_1	PicAx 2.1	12	Ductile Iron Pipe	3321	5341	5341	2.4	4.4	3.4	4.4
18PS-18-012DA_18F	18PS-18-012DA	18PS-18-012D	PicAx 2.1	12	Vitrified Clay Pipe	3200	5342	5342	3	4	3.78	4
W3-KE-020_W3-KE-	W3-KE-020	W3-KE-019	PACP 6.0	15	Vitrified Clay Pipe	3A00	5343	5343	3	3.3	3.19	3.3
JOSO-48-007_JOSO	JOSO-48-007	JOSO-48-008	SOLO	12	Vitrified Clay Pipe		534B	534B	2.33	4.17	3.71	4.17
W4-HI-004B_JOSO-	W4-HI-004B	JOSO-HI-004A2	SOLO	12	Vitrified Clay Pipe	2F00	534C	534C	2	3.76	2.89	3.76
JOSO-47-007_JOSO	JOSO-47-007	JOSO-47-008	SOLO	12	Vitrified Clay Pipe	312A	534D	534D	2.07	4.1	3.44	4.1
W2-21-019_W2-PA-	W2-21-019	W2-PA-025	PACP 6.0	24	Vitrified Clay Pipe	3A00	5432	543A	3	2.24	2.35	2.35
W2-21-019_W2-PA-	W2-21-019	W2-PA-025	PACP 6.0	24	Vitrified Clay Pipe	3A00	5432	543A	3	2.24	2.35	2.35
	18PA-MA-014J	14VO-MA-002A	PACP 6.0	12	Vitrified Clay Pipe	3400	543B	543C	3	2.55	2.59	2.59
	PANYNJ-PA-004A-1	PANYNJ-PA-004	MSI PROFILER	48	Concrete Pipe (non-r	2211	5500	5522	1.67	5	3.75	5

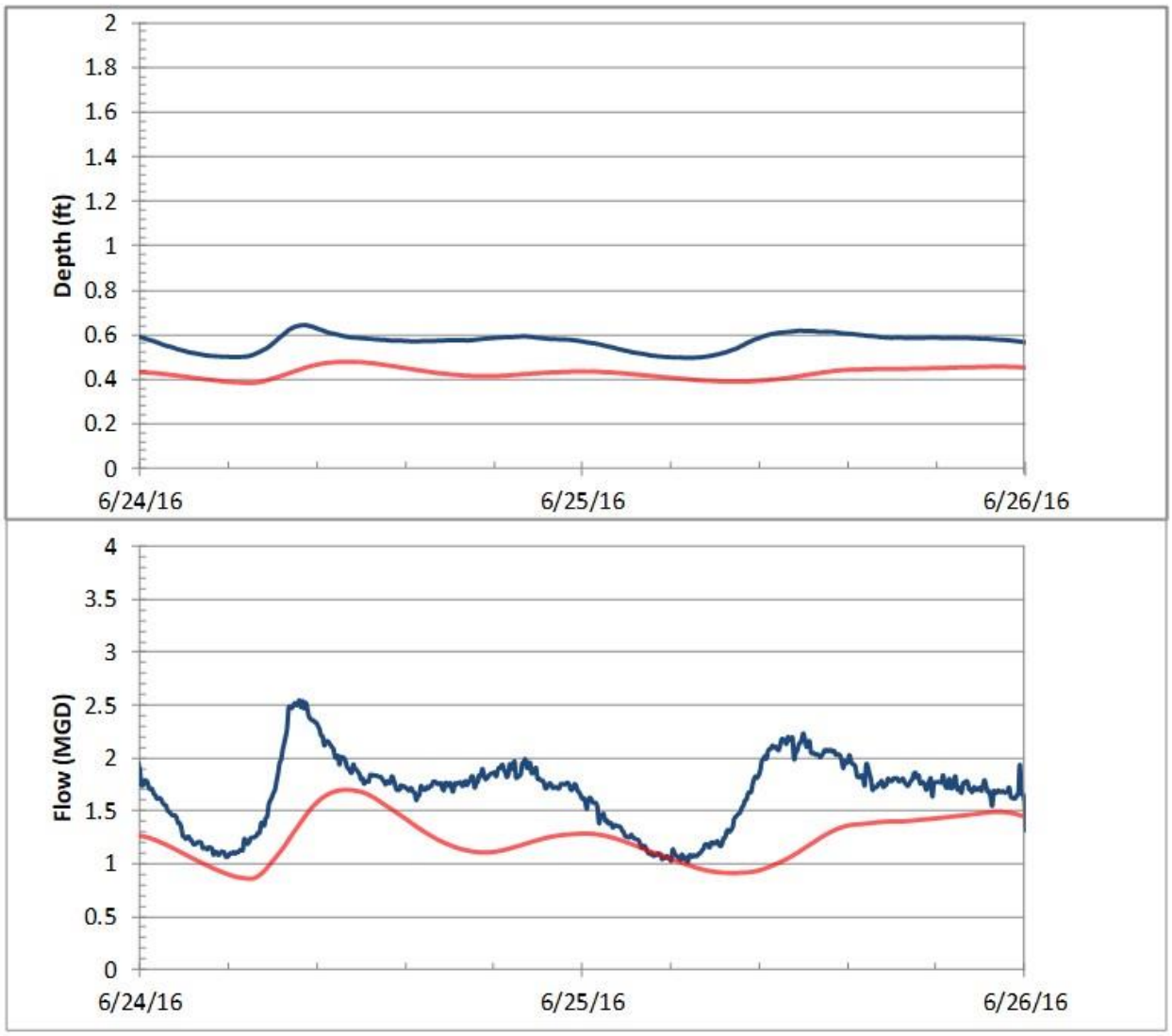
Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
W4-ST-001A_W4-ST	W4-ST-001	W4-ST-001A	SOLO	8	Vitrified Clay Pipe	2411	554A	554A	1.8	3.58	3.29	3.58
JOSO-47-014_JOSO	JOSO-47-014	JOSO-47-015	PicAx 2.1	15	Vitrified Clay Pipe	3300	554B	554B	3	4.04	3.93	4.04
W4-JFK-008_W4-JFI	W4-JFK-008	W4-JFK-009	MSI PROFILER	24	Vitrified Clay Pipe		554W	554W	1.51	4	3.04	4
W4-JFK-006B_W4-JI	W4-JFK-006B	W4-JFK-006	SOLO	10	Vitrified Clay Pipe	322A	564E	564E	1.37	3.88	2.69	3.88
W2-MO-005A_W2-M	W2-MO-005A	W2-MO-004	PACP 6.0	15	Concrete Pipe (non-r	3C00	5B3B	5B3G	3	3.81	3.49	3.81
W2-24-014_W2-24-0	W2-24-014	W2-24-015AB	SOLO	8	Vitrified Clay Pipe							0
W2-26-010_W2-HU-0	W2-26-010	W2-HU-003	SOLO	8	Vitrified Clay Pipe							0
W2-DO-999A_W2-D	W2-DO-999A	W2-DO-999	SOLO	8	Vitrified Clay Pipe							0
W2-24-015A_W2-24-	W2-24-015A	W2-24-015	SOLO	8	Vitrified Clay Pipe							0
18PS-GR-008-8_18F	18PS-GR-008-8	18PS-GR-008-7	SOLO	8	Vitrified Clay Pipe							0
W2-25-012_W2-HU-0	W2-25-012	W2-HU-004AA	SOLO	8	Vitrified Clay Pipe							0
W2-24-013_W2-24-0	W2-24-013	W2-24-017	SOLO	8	Vitrified Clay Pipe							0
18PS-GR-008-8_18F	18PS-GR-008-8	18PS-GR-007A	SOLO	8	Vitrified Clay Pipe							0
W2-DO-999B_18PS-	W2-DO-999B	18PS-GR-007A	SOLO	8	Vitrified Clay Pipe							0
18PS-HA-007AB_18	18PS-HA-007AB	18PS-HA-007	SOLO	12	Vitrified Clay Pipe							0
W3-GR-002_W3-GR	W3-GR-002	W3-GR-003	SOLO	12	Vitrified Clay Pipe							0
	18PS-GR-001AA	W3-GR-001AB	SOLO	12	Vitrified Clay Pipe							0
W4-HI-004A_W4-HI-	W4-HI-004A	W4-HI-004	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-004A_JOS	JOSO-LI-004A	JOSO-LI-004	SOLO	12	Vitrified Clay Pipe							0
W5-JFK-001_W4-JFI	W5-JFK-001	W4-JFK-001	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-003A_JOS	JOSO-LI-003A	JOSO-43-022A	SOLO	12	Vitrified Clay Pipe							0
JOSO-44-022B_JOS	JOSO-44-022B	JOSO-44-022	SOLO	12	Vitrified Clay Pipe							0
JOSO-44-022_JOSO	JOSO-44-022	JOSO-44-022A	SOLO	12	Vitrified Clay Pipe							0
W5-46-001_W5-JFK-	W5-46-001	W5-JFK-005	SOLO	12	Vitrified Clay Pipe							0
JOSO-HI-002_JOSO	JOSO-HI-002	JOSO-HI-001	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-003B_JOS	JOSO-LI-003B	JOSO-LI-003	SOLO	12	Vitrified Clay Pipe							0
W5-JFK-002_W5-JFI	W5-JFK-002	W5-JFK-001	SOLO	12	Vitrified Clay Pipe							0
JOSO-BR-010B_JOS	JOSO-BR-010B	JOSO-BR-010A	SOLO	12	Vitrified Clay Pipe							0
JOSO-45-023_JOSO	JOSO-45-023	JOSO-BR-004A	SOLO	12	Vitrified Clay Pipe							0
	JOSO-46-006	JOSO-BR-002A1C	SOLO	12	Vitrified Clay Pipe							0
JOSO-48-009_JOSO	JOSO-48-009	JOSO-48-010	SOLO	12	Vitrified Clay Pipe							0
JOSO-48-010_JOSO	JOSO-48-010	JOSO-48-011	SOLO	12	Vitrified Clay Pipe							0
JOSO-46-003_JOSO	JOSO-46-003	JOSO-46-004A	SOLO	12	Vitrified Clay Pipe							0
JOSO-47-017A_JOS	JOSO-47-017A	JOSO-47-018	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-001_JOSO-	JOSO-LI-001	JOSO-JFK-013	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-006A_JOS	JOSO-LI-006A	JOSO-LI-005AA	SOLO	12	Vitrified Clay Pipe							0
C-65-008_C-PO-012	C-65-008	C-PO-012	SOLO	12	Vitrified Clay Pipe							0
G-67-094_G-67-095	G-67-094	G-67-095	SOLO	12	Vitrified Clay Pipe							0
G-67-095_G-DE-096	G-67-095	G-DE-096	SOLO	12	Vitrified Clay Pipe							0
G-DE-119A_G-DE-1	G-DE-119A	G-DE-119	SOLO	12	Vitrified Clay Pipe							0
B-56-004_B-56-003	B-56-004	B-56-003	SOLO	12	Vitrified Clay Pipe							0
JOSO-JFK-027A_JO	JOSO-JFK-027A	JOSO-JFK-027	SOLO	12	Vitrified Clay Pipe							0
W4-JFK-001_W4-JFI	W4-JFK-001	W4-JFK-002	SOLO	12	Vitrified Clay Pipe							0
JOSO-43-022A_JOS	JOSO-43-022A	JOSO-BR-010B	SOLO	12	Vitrified Clay Pipe							0
W5-CO-001_W5-JFK	W5-CO-001	W5-JFK-003A	SOLO	12	Vitrified Clay Pipe							0
JOSO-BR-002AA_JO	JOSO-BR-002AA	JOSO-BR-002A1	SOLO	12	Vitrified Clay Pipe							0
JOSO-48-007_JOSO	JOSO-48-007	JOSO-48-008	SOLO	12	Vitrified Clay Pipe							0
	JOSO-46-003	JOSO-46-004	SOLO	12	Vitrified Clay Pipe							0
	G-BR-135	G-65-116	SOLO	12	Polyvinyl Chloride							0
G-64-126_G-DE-119	G-64-126	G-DE-119A	SOLO	12	Vitrified Clay Pipe							0
G-DE-118_G-DE-119	G-DE-118	G-DE-119A	SOLO	12	Vitrified Clay Pipe							0

Line Segment	Upstream MH	Dnstream MH	Inspection Platform	Pipe Size (Height)	Pipe Material	OM Quick	Structural Quick	Overall Quick	OM Index	Structural Index	Overall Severity Index	Total
JOSO-JFK-027C_JO	JOSO-JFK-027C	JOSO-JFK-027B	SOLO	12	Vitrified Clay Pipe							0
D-PA-010_D-PA-036	D-PA-010	D-PA-036	SOLO	12	Vitrified Clay Pipe							0
JOSO-JFK-027B_JO	JOSO-JFK-027B	JOSO-JFK-027A	SOLO	12	Vitrified Clay Pipe							0
	18PS-HI-006EA	18PS-HI-006EB	SOLO	8	Vitrified Clay Pipe							0
W4-BO-001_W4-BO-	W4-BO-001	W4-BO-002	SOLO	8	Vitrified Clay Pipe							0
W4-KI-002_W4-BO-0	W4-KI-002	W4-BO-001	SOLO	8	Vitrified Clay Pipe							0
W4-KI-002-E_W4-KI-	W4-KI-002-E	W4-KI-002	SOLO	8	Vitrified Clay Pipe							0
G-MO-047_G-62-046	G-MO-047	G-62-046	SOLO	8	Vitrified Clay Pipe							0
NBW-36-003A_NBW	NBW-36-003A	NBW-36-003	SOLO	8	Vitrified Clay Pipe							0
	W4-KI-002A	W4-BO-001	SOLO	8	Vitrified Clay Pipe							0
	W4-ST-004	W4-ST-004A	SOLO	10	Vitrified Clay Pipe							0
W4-ST-003_W4-ST-	W4-ST-003	W4-ST-004	SOLO	10	Vitrified Clay Pipe							0
W4-ST-005_W4-ST-	W4-ST-005	W4-ST-006	SOLO	10	Vitrified Clay Pipe							0
W4-ST-007_W4-ST-	W4-ST-007	W4-ST-008	SOLO	10	Vitrified Clay Pipe							0
W4-ST-008_W4-ST-	W4-ST-008	W4-ST-009	SOLO	10	Vitrified Clay Pipe							0
W4-ST-009_W4-JFK	W4-ST-009	W4-JFK-011	SOLO	10	Vitrified Clay Pipe							0
18PS-GR-001E_18P	18PS-GR-001E	18PS-GR-001D	SOLO	10	Vitrified Clay Pipe							0
HWF-HA-001D_HWF	HWF-HA-001D	HWF-HA-001C	SOLO	10	Vitrified Clay Pipe							0
HWF-HA-001C_HWF	HWF-HA-001C	HWF-HA-001B	SOLO	10	Vitrified Clay Pipe							0
HWF-HA-001B_HWF	HWF-HA-001B	HWF-HA-001A	SOLO	10	Vitrified Clay Pipe							0
HWF-HA-001A_HWF	HWF-HA-001A	HWF-HA-001	SOLO	10	Vitrified Clay Pipe							0
HWF-HA-001_Baldw	HWF-HA-001	Baldwin AV PS	SOLO	10	Vitrified Clay Pipe							0
	WF-KI-003-ABA	WF-KI-003AB	SOLO	10	Vitrified Clay Pipe							0
	WF-KI-003-AB	WF-KI-003A	SOLO	10	Vitrified Clay Pipe							0
	WF-KI-003A	WF-KI-003	SOLO	10	Vitrified Clay Pipe							0
	WF-KI-003	WF-KI-004	SOLO	10	Vitrified Clay Pipe							0
	WF-KI-004	WF-KI-012	SOLO	10	Vitrified Clay Pipe							0
	WF-KI-001BB	WF-KI-003	SOLO	10	Vitrified Clay Pipe							0
W4-ST-002_W4-ST-	W4-ST-002	W4-ST-003	SOLO	10	Vitrified Clay Pipe							0
	W4-ST-004A	W4-ST-005	SOLO	10	Vitrified Clay Pipe							0
W1-AU-080B_W1-AU	W1-AU-080	W1-AU-080B	SOLO	10	Vitrified Clay Pipe							0
18PS-GR-001D_18P	18PS-GR-001A	18PS-GR-001D	SOLO	10	Vitrified Clay Pipe							0
JOSO-HI-001A_JOS	JOSO-HI-001A	JOSO-LI-004	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-005A_JOS	JOSO-LI-005A	JOSO-LI-005	SOLO	12	Vitrified Clay Pipe							0
JOSO-BR-002A1A_J	JOSO-BR-002A1A	JOSO-BR-001A	SOLO	12	Vitrified Clay Pipe							0
JOSO-BR-002A1_JO	JOSO-BR-002A1	JOSO-BR-002	SOLO	12	Vitrified Clay Pipe							0
JOSO-BR-002A1A_J	JOSO-BR-002A1A	JOSO-BR-002A1	SOLO	12	Vitrified Clay Pipe							0
JOSO-48-017_JOSO	JOSO-48-017	JOSO-48-016B	SOLO	12	Vitrified Clay Pipe							0
JOSO-47-011_JOSO	JOSO-47-011	JOSO-47-012	SOLO	12	Vitrified Clay Pipe							0
JOSO-46-004_JOSO	JOSO-46-004	JOSO-46-005	SOLO	12	Vitrified Clay Pipe							0
C-PO-009_C-PO-010	C-PO-009	C-PO-010	SOLO	12	Vitrified Clay Pipe							0
C-MA-023_C-MA-02	C-MA-023	C-MA-024	SOLO	12	Vitrified Clay Pipe							0
C-66-004_C-66-005	C-66-004	C-66-005	SOLO	12	Vitrified Clay Pipe							0
B-56-005_B-56-003	B-56-005	B-56-003	SOLO	12	Vitrified Clay Pipe							0
B-MU-039_B-MU-040	B-MU-039	B-MU-040	SOLO	12	Vitrified Clay Pipe							0
JOSO-LI-005A_JOS	JOSO-LI-005A	JOSO-LI-005	SOLO	12	Vitrified Clay Pipe							0
C-MA-023_C-MA-02	C-MA-023	C-MA-024	SOLO	12	Vitrified Clay Pipe							0
E-BR-037_E-BR-038	E-BR-037	E-BR-038	SOLO	12	Vitrified Clay Pipe							0
D-HU-045_D-HU-046	D-HU-045	D-HU-046	SOLO	12	Vitrified Clay Pipe							0
W3-SI-002_W3-SI-00	W3-SI-003	W3-SI-002	SOLO	12	Vitrified Clay Pipe							0

Appendix E – Dry Weather Flow Calibration Hydrographs

H1

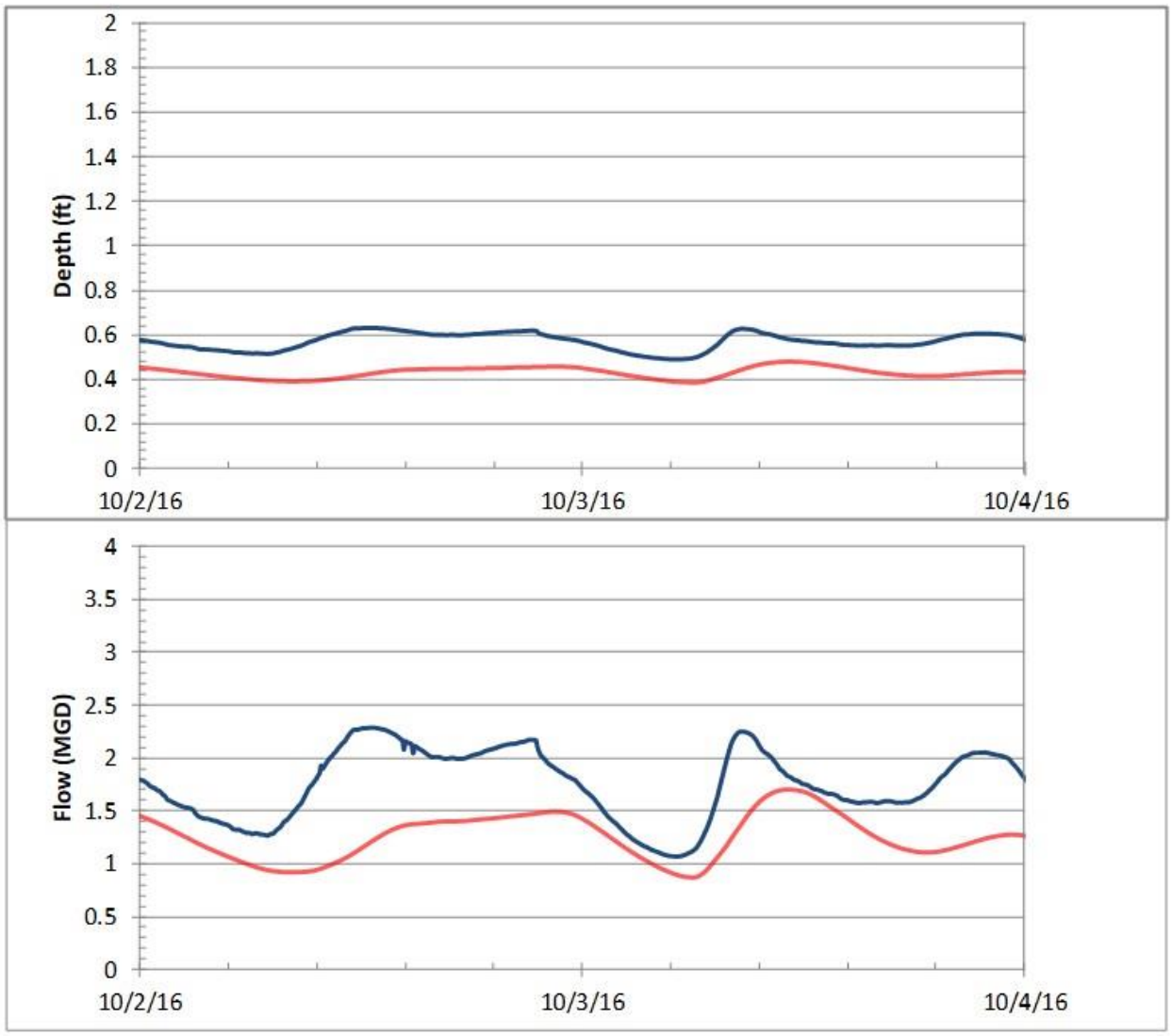
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.64	2.54	3.36
Model	0.48	1.70	2.48
Difference	-0.17	-33%	-26%

H1

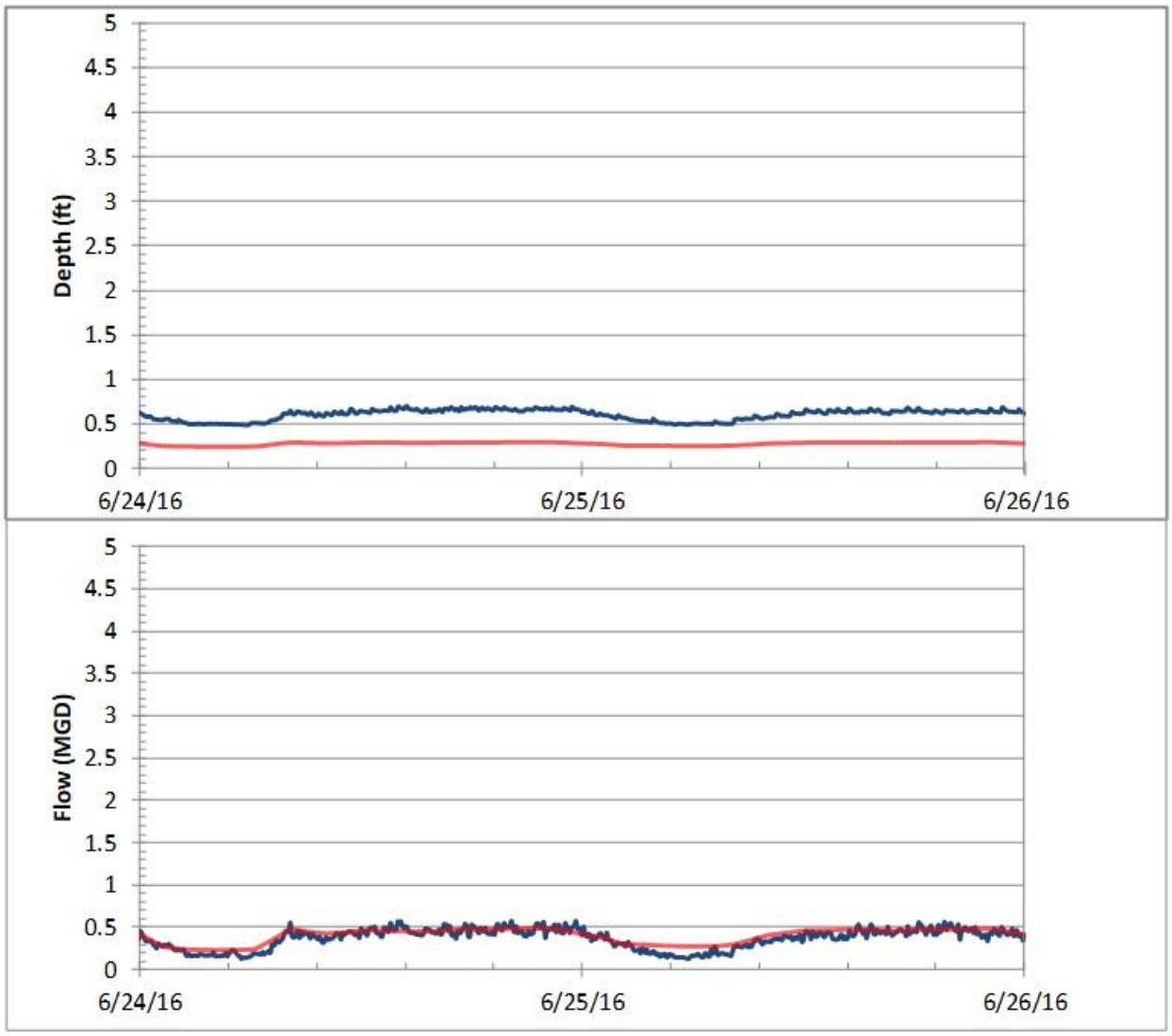
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.63	2.29	3.50
Model	0.48	1.70	2.51
Difference	-0.15	-26%	-28%

H2

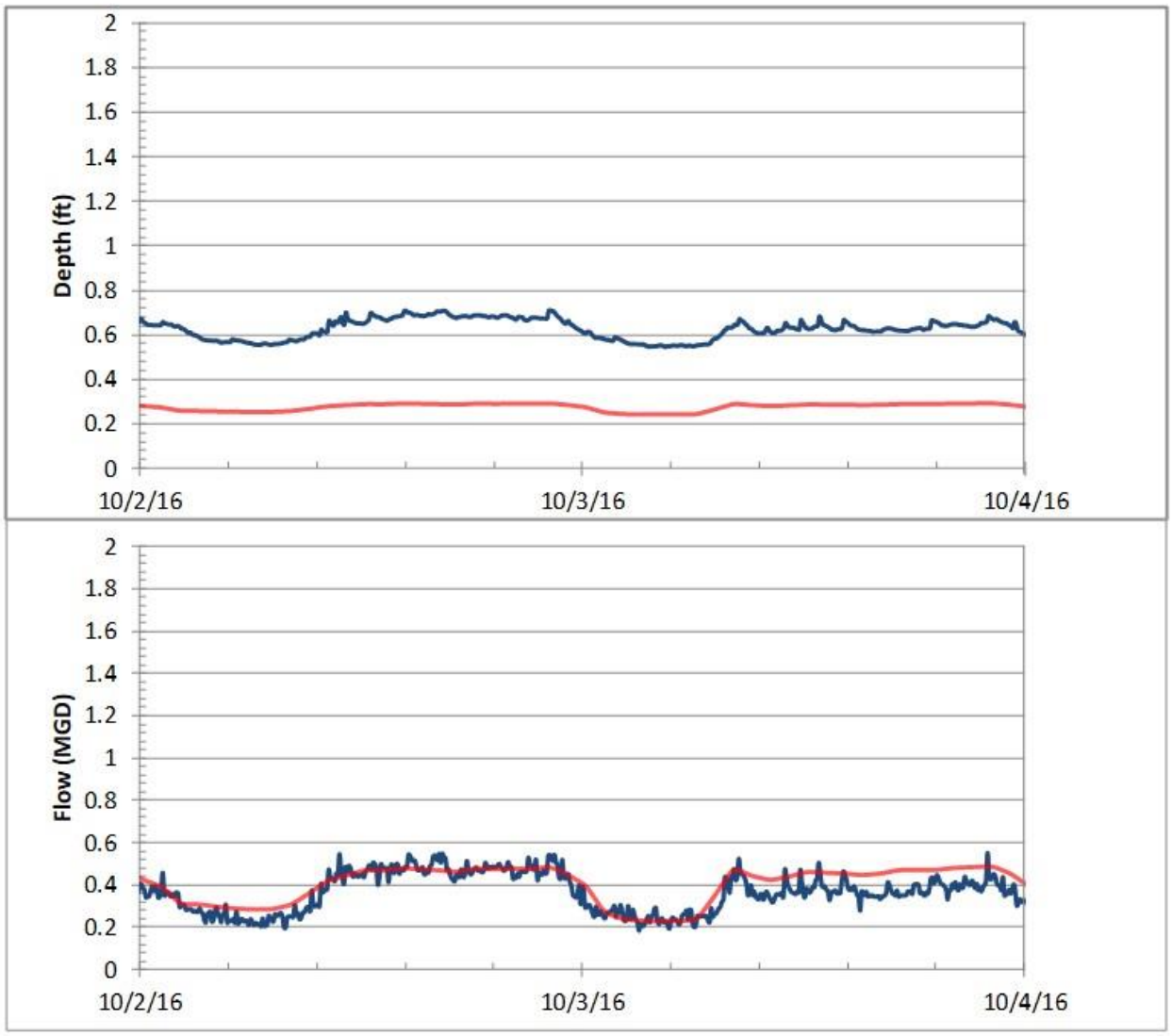
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.70	0.57	0.73
Model	0.29	0.49	0.80
Difference	-0.40	-15%	9%

H2

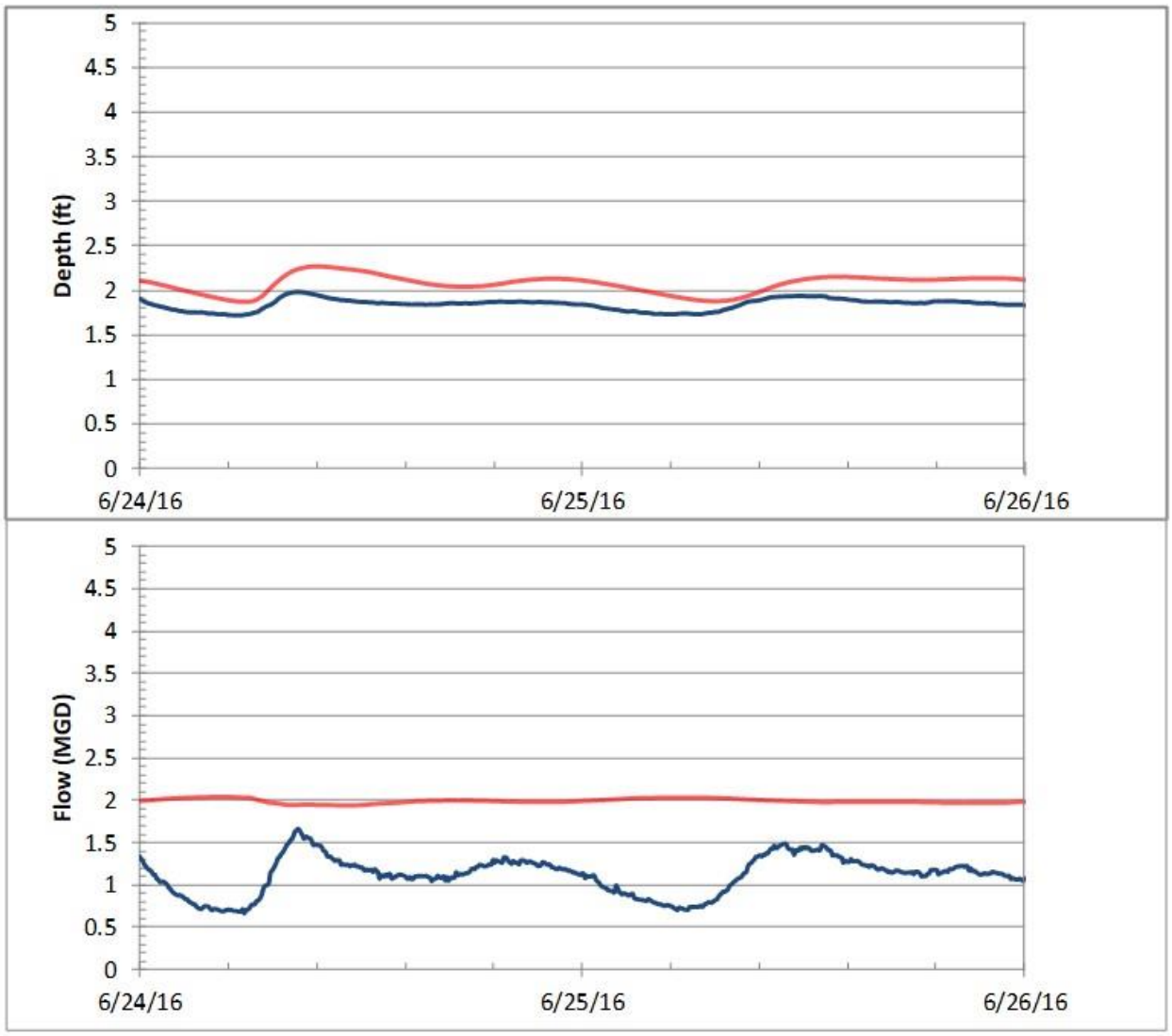
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.71	0.55	0.73
Model	0.29	0.49	0.81
Difference	-0.42	-11%	10%

H3

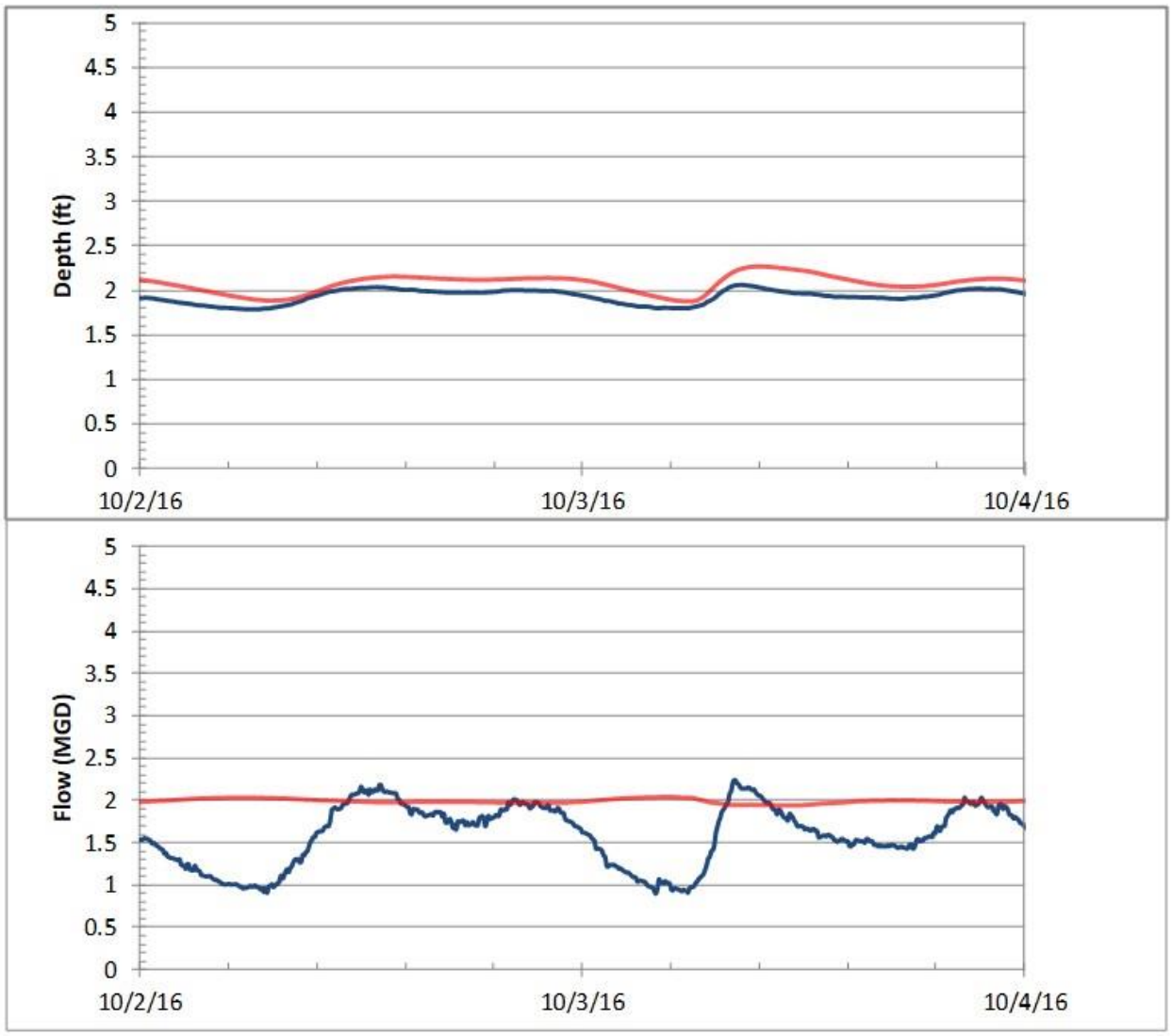
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	1.98	1.66	2.23
Model	2.27	2.04	3.99
Difference	0.29	23%	78%

H3

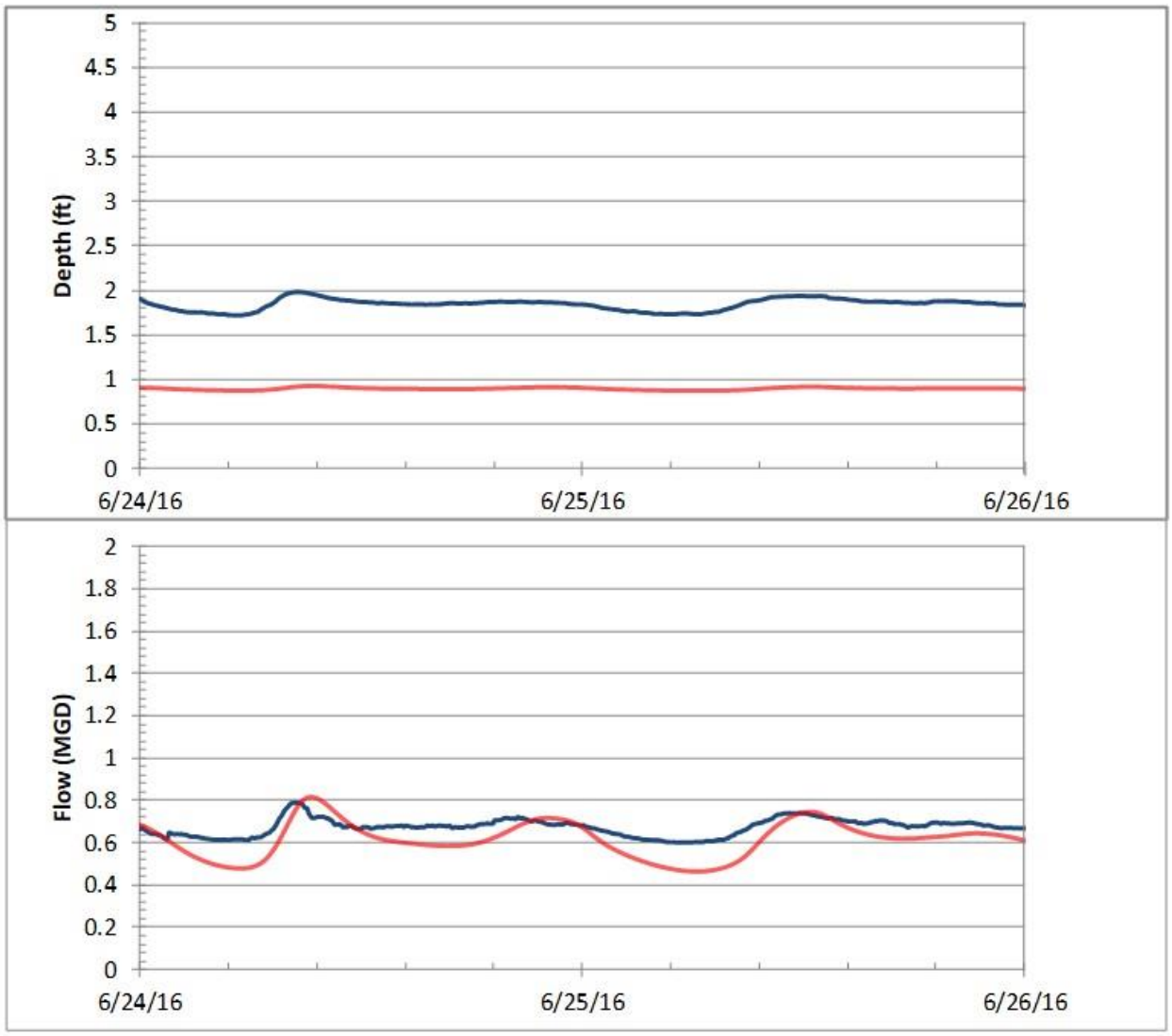
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	2.06	2.24	3.18
Model	2.27	2.04	3.98
Difference	0.21	-9%	25%

H4

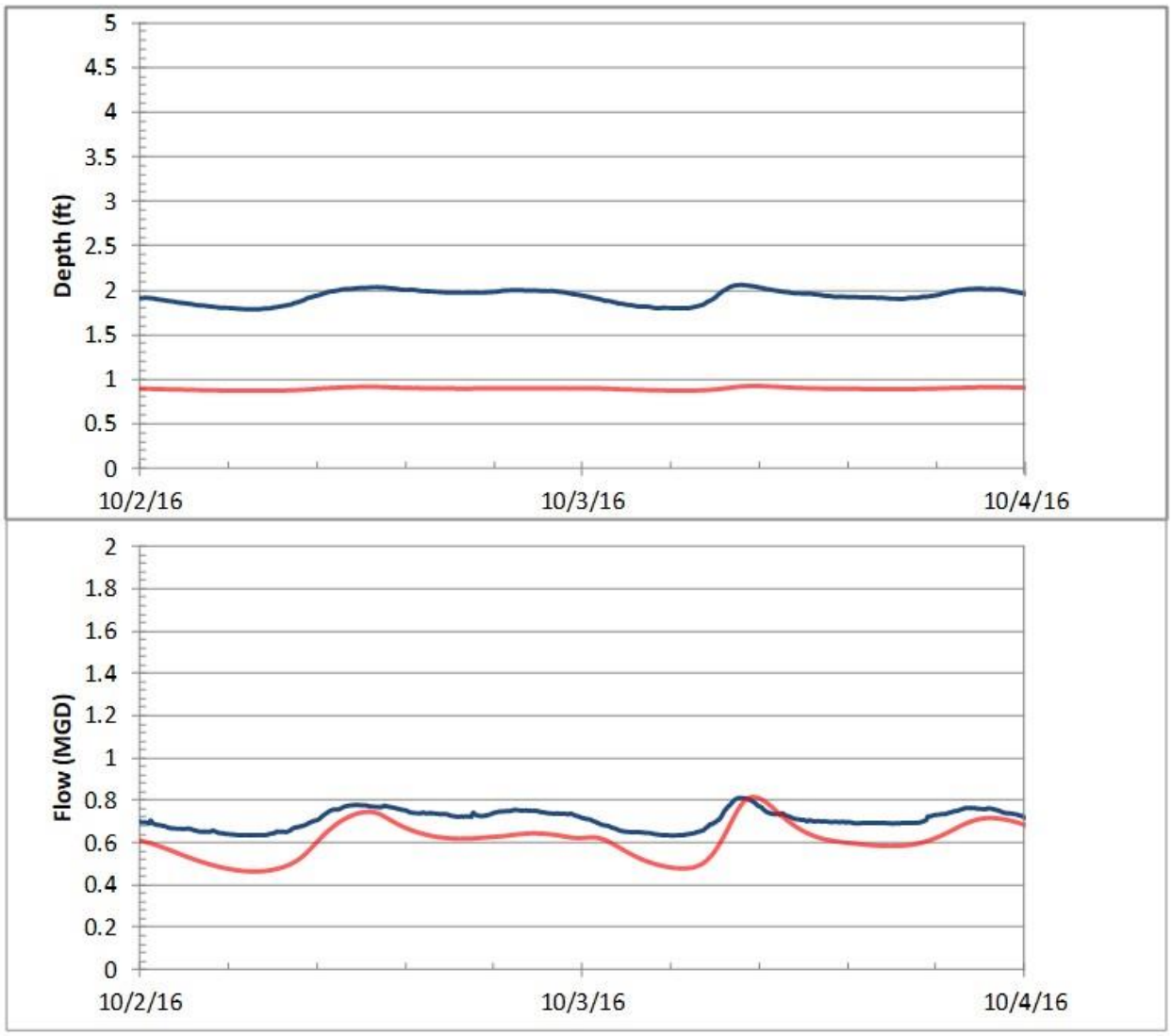
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	1.98	0.79	1.35
Model	0.92	0.81	1.23
Difference	-1.05	3%	-9%

H4

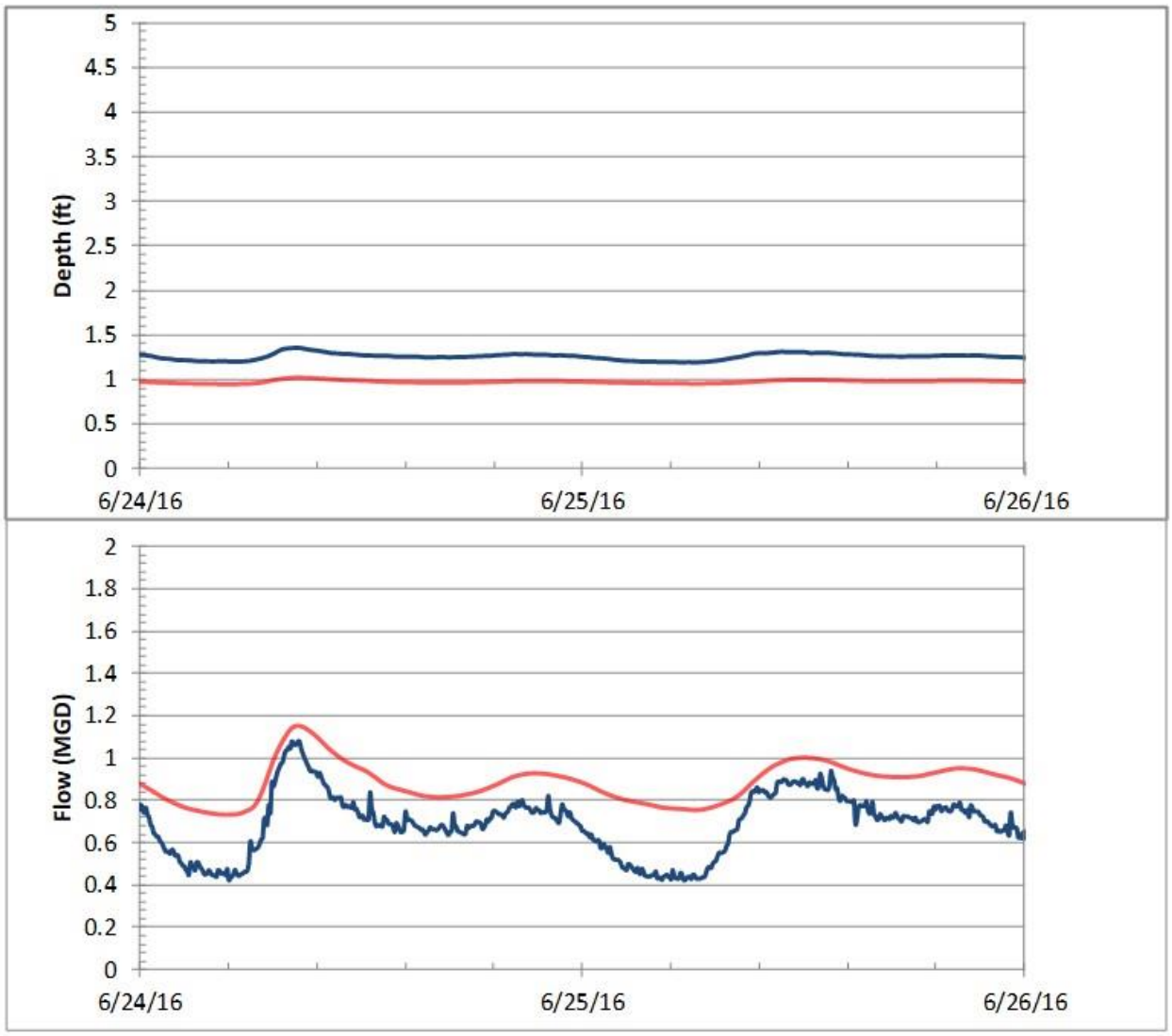
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	2.06	0.81	1.42
Model	0.92	0.81	1.23
Difference	-1.14	0%	-14%

H5

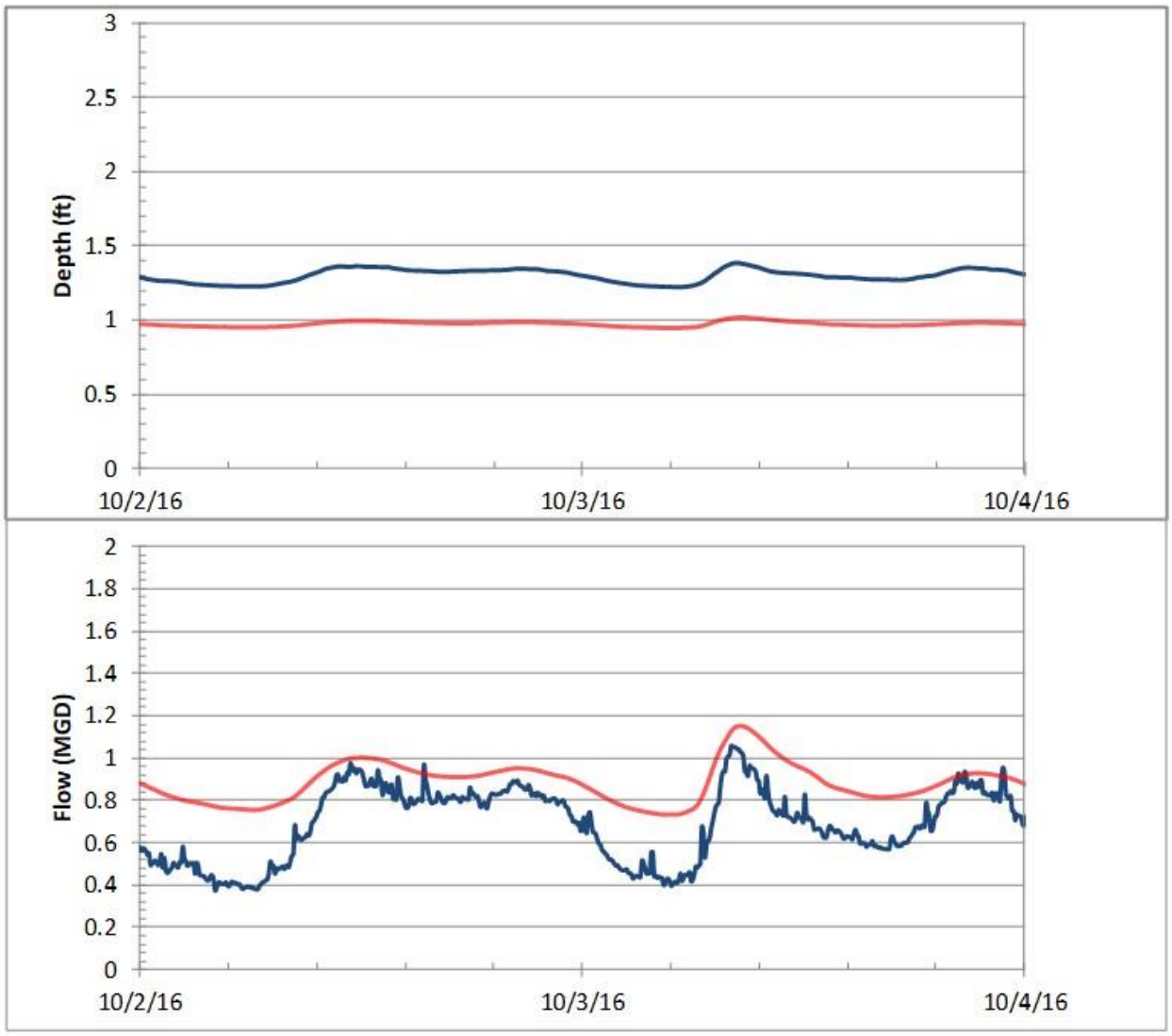
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	1.35	1.08	1.38
Model	1.02	1.15	1.77
Difference	-0.34	7%	29%

H5

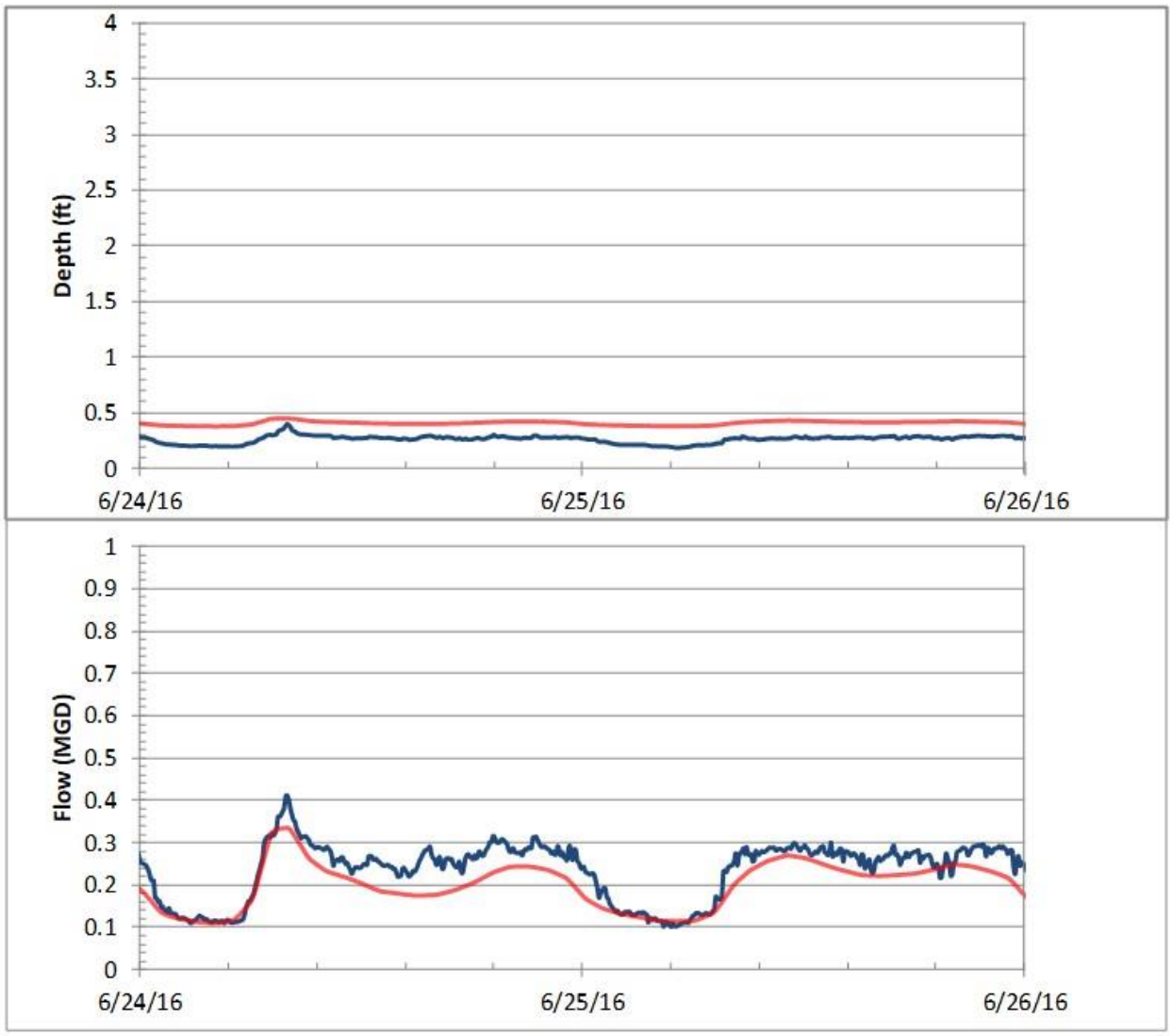
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	1.38	1.06	1.37
Model	1.02	1.15	1.77
Difference	-0.37	9%	29%

H6

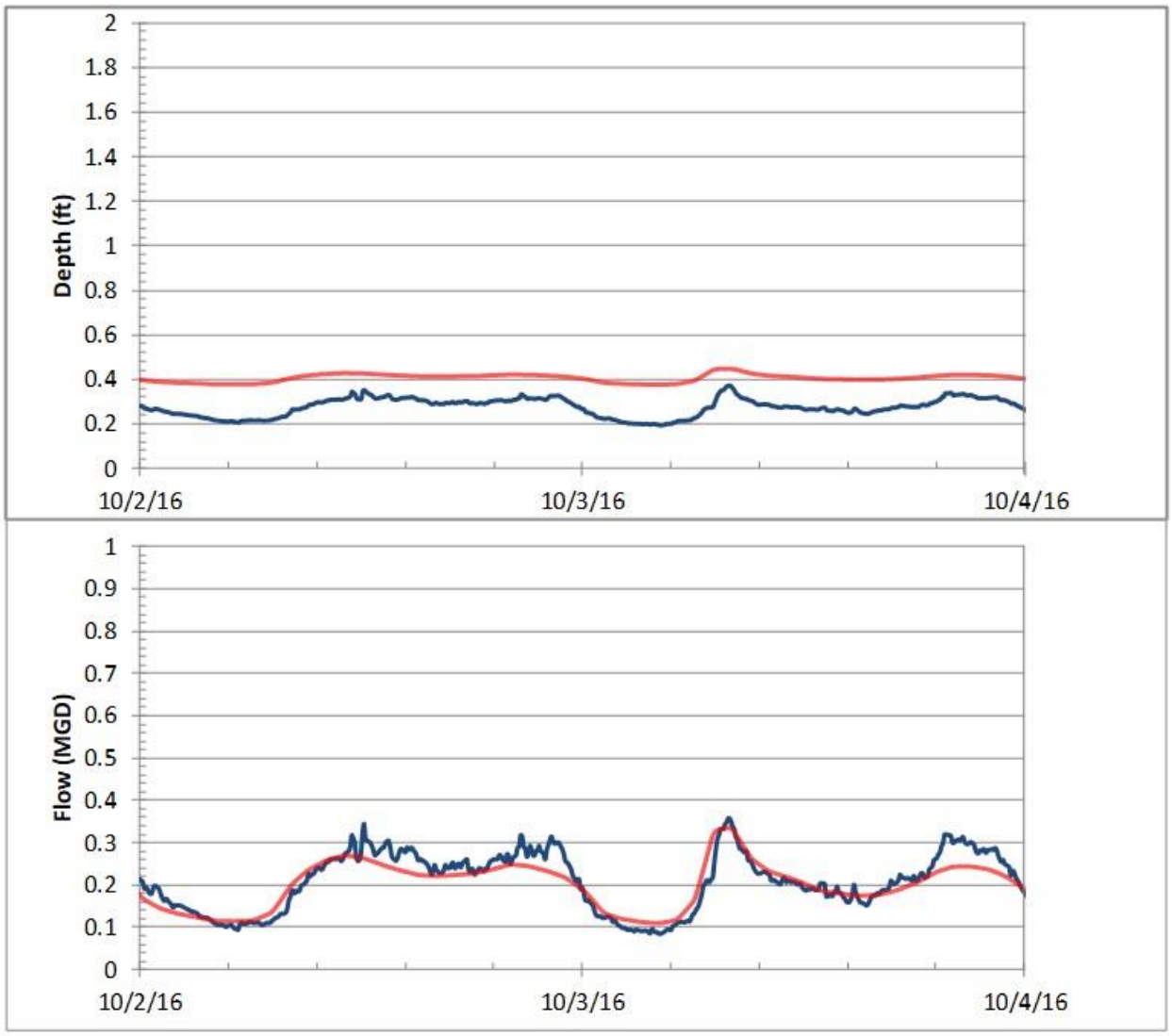
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.40	0.41	0.47
Model	0.45	0.33	0.40
Difference	0.05	-19%	-15%

H6

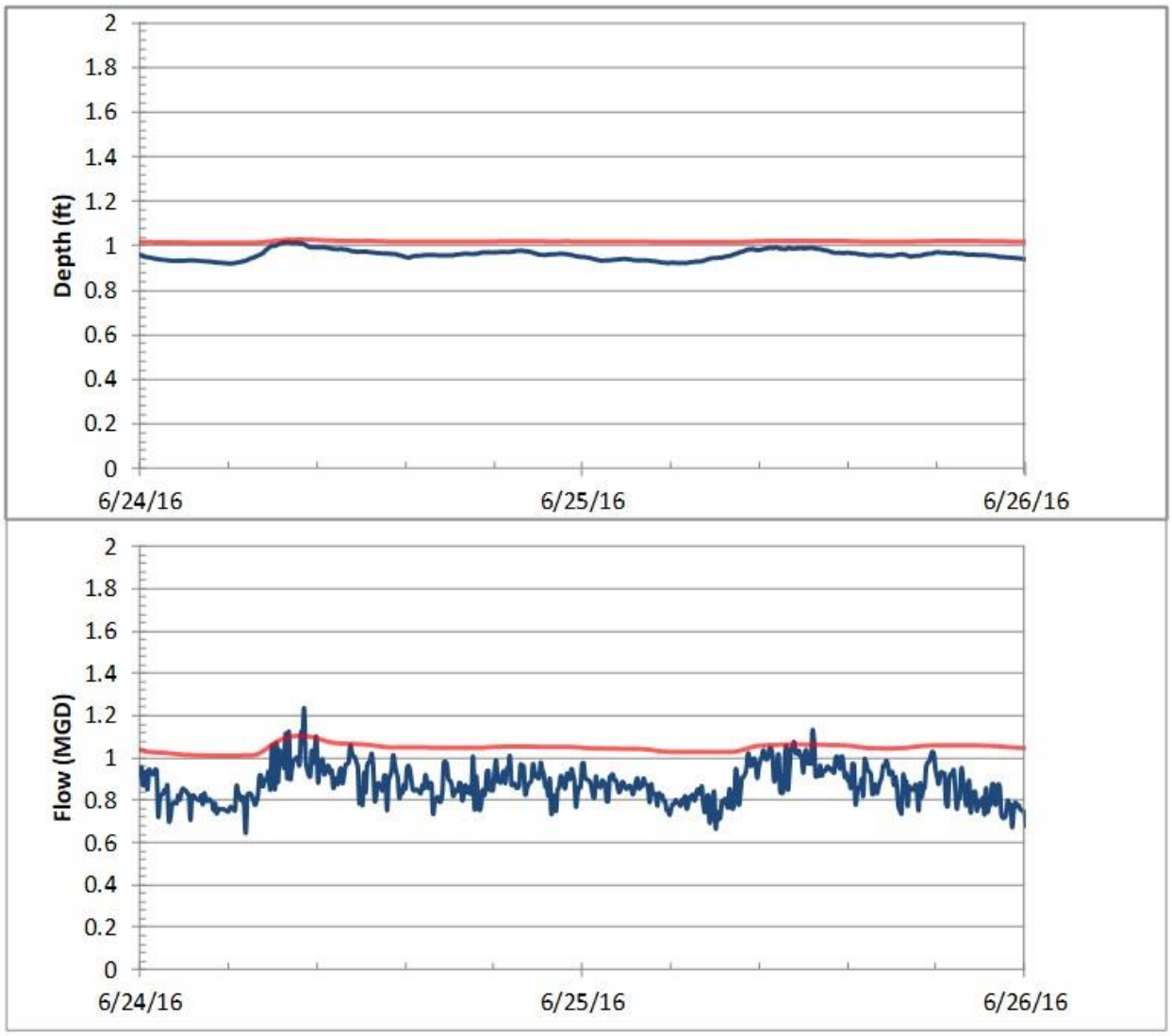
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.37	0.36	0.42
Model	0.45	0.33	0.40
Difference	0.08	-6%	-4%

H7

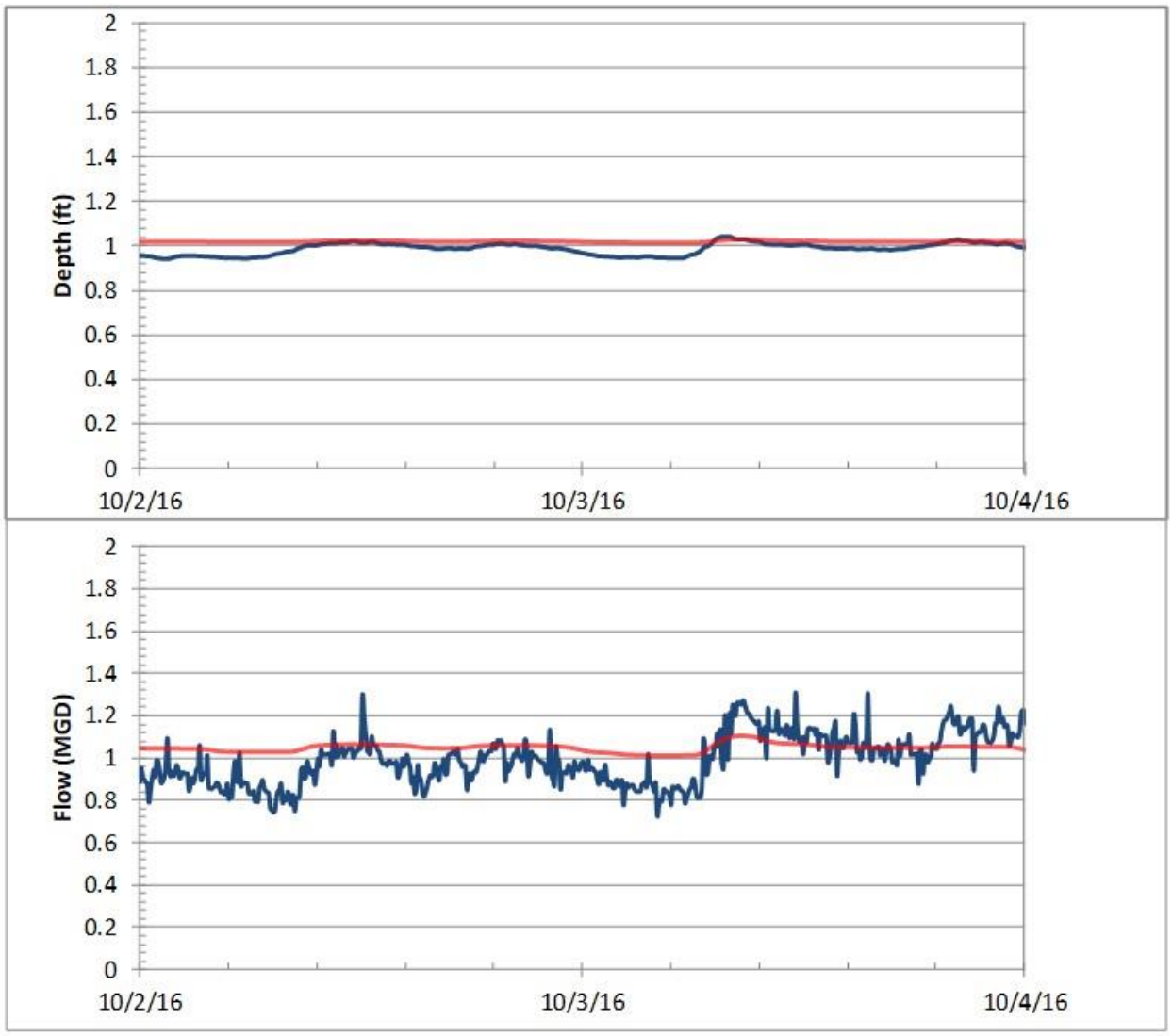
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	1.02	1.23	1.76
Model	1.03	1.10	2.10
Difference	0.01	-11%	20%

H7

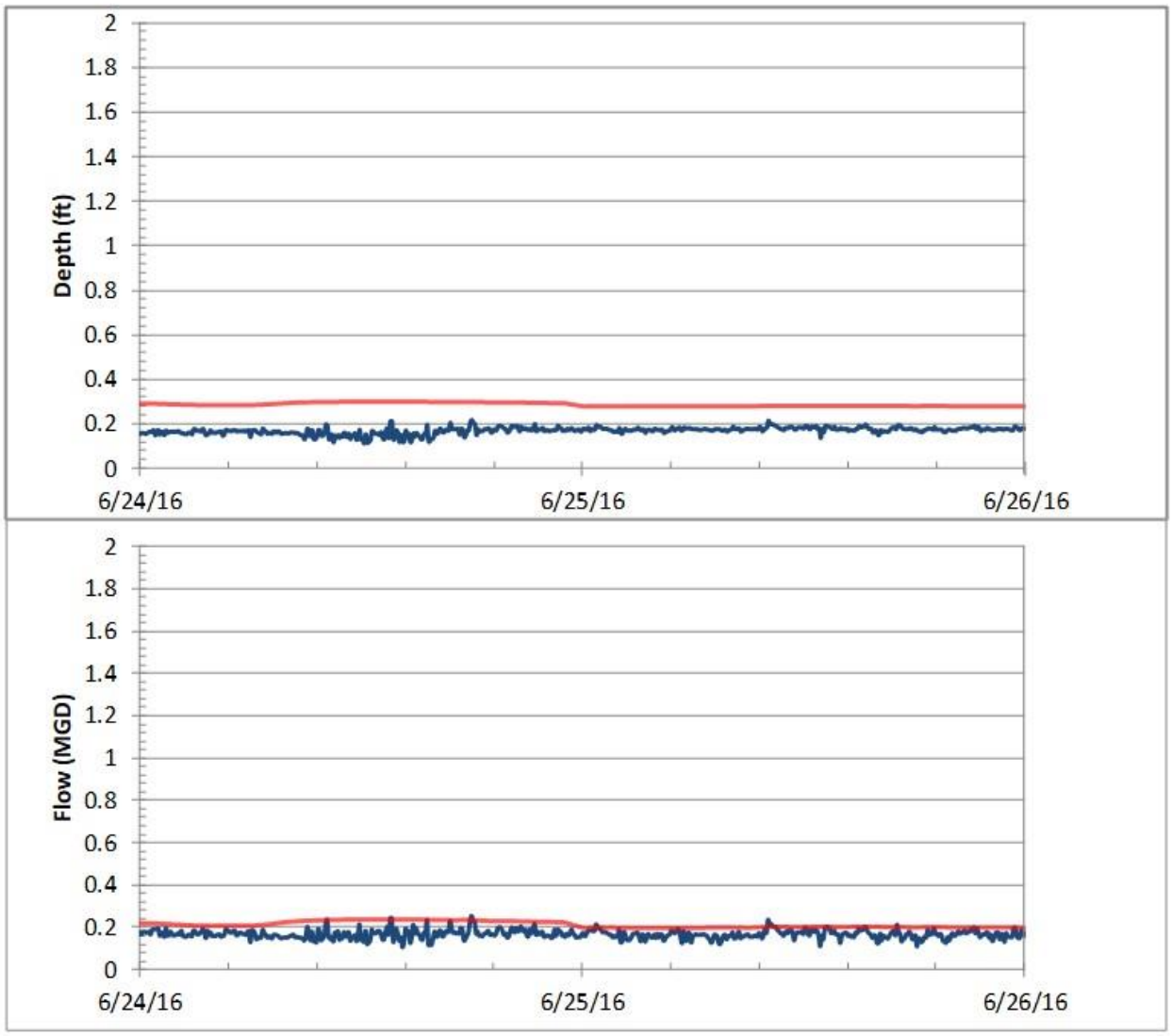
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	1.04	1.31	1.99
Model	1.03	1.10	2.10
Difference	-0.01	-16%	6%

HSI

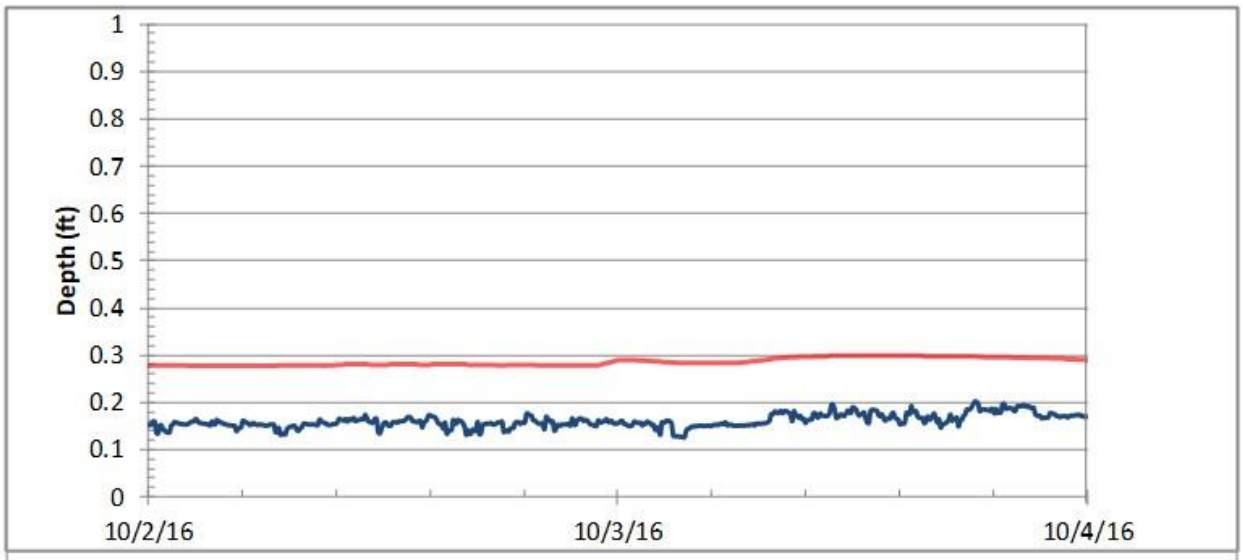
DWF1 **Jun-24 - Jun-26** **Dry Weather**

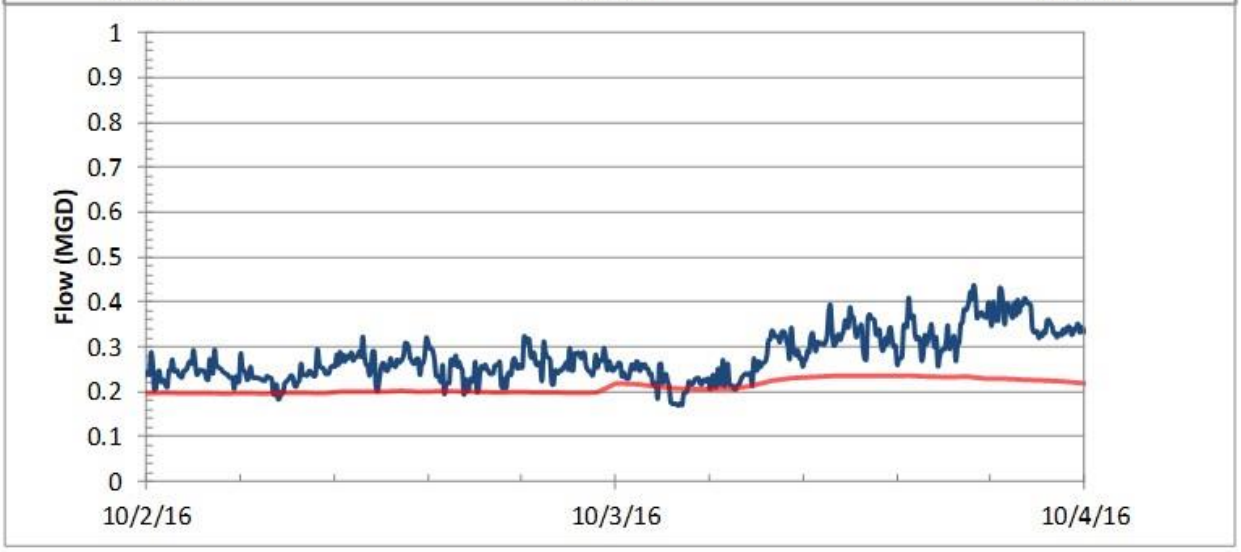


	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.22	0.25	0.33
Model	0.30	0.24	0.42
Difference	0.08	-7%	27%

HSI

DWF2 **Oct-02 - Oct-04** **Dry Weather**

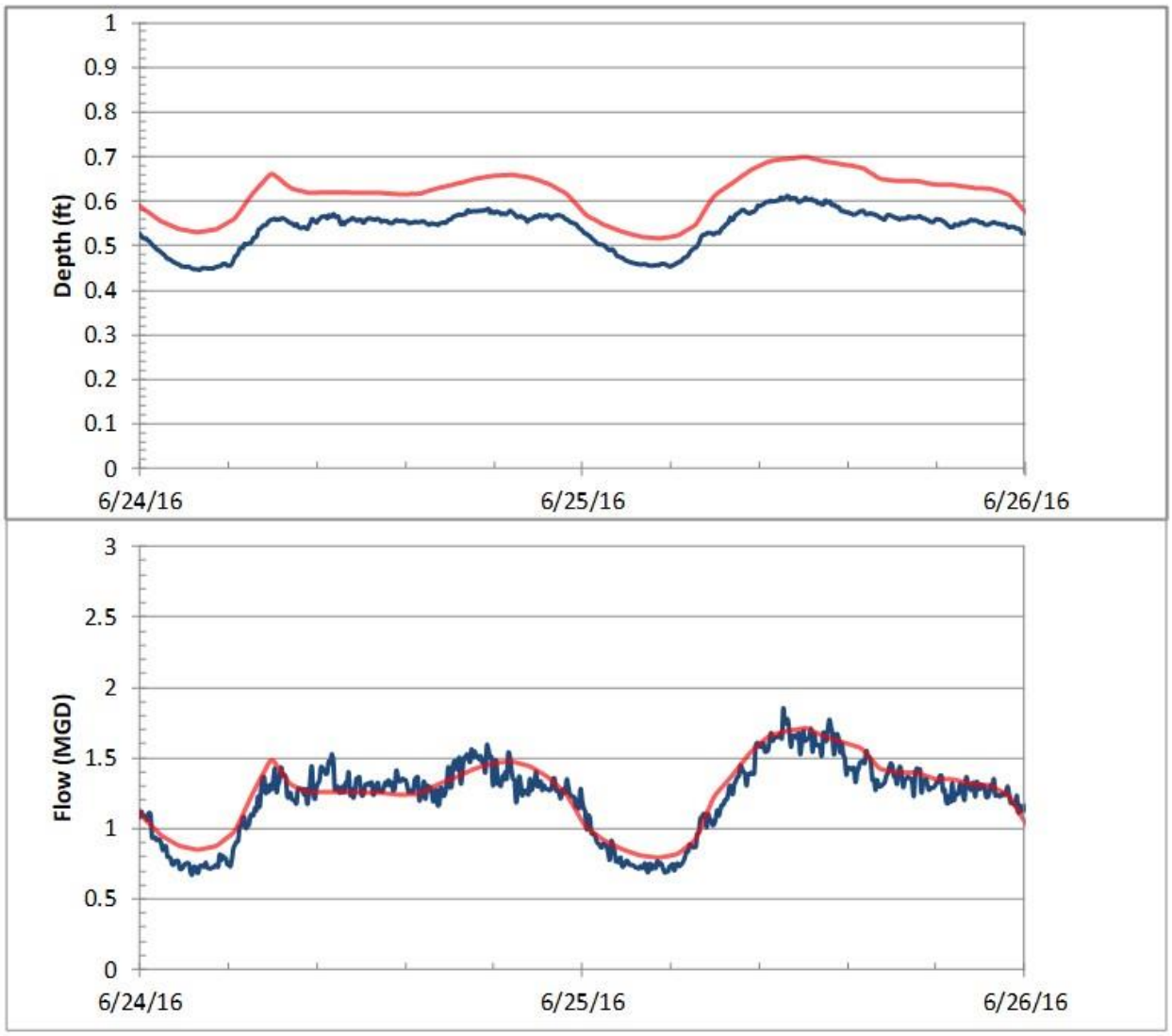




	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.20	0.44	0.55
Model	0.30	0.24	0.42
Difference	0.10	-46%	-24%

NHW

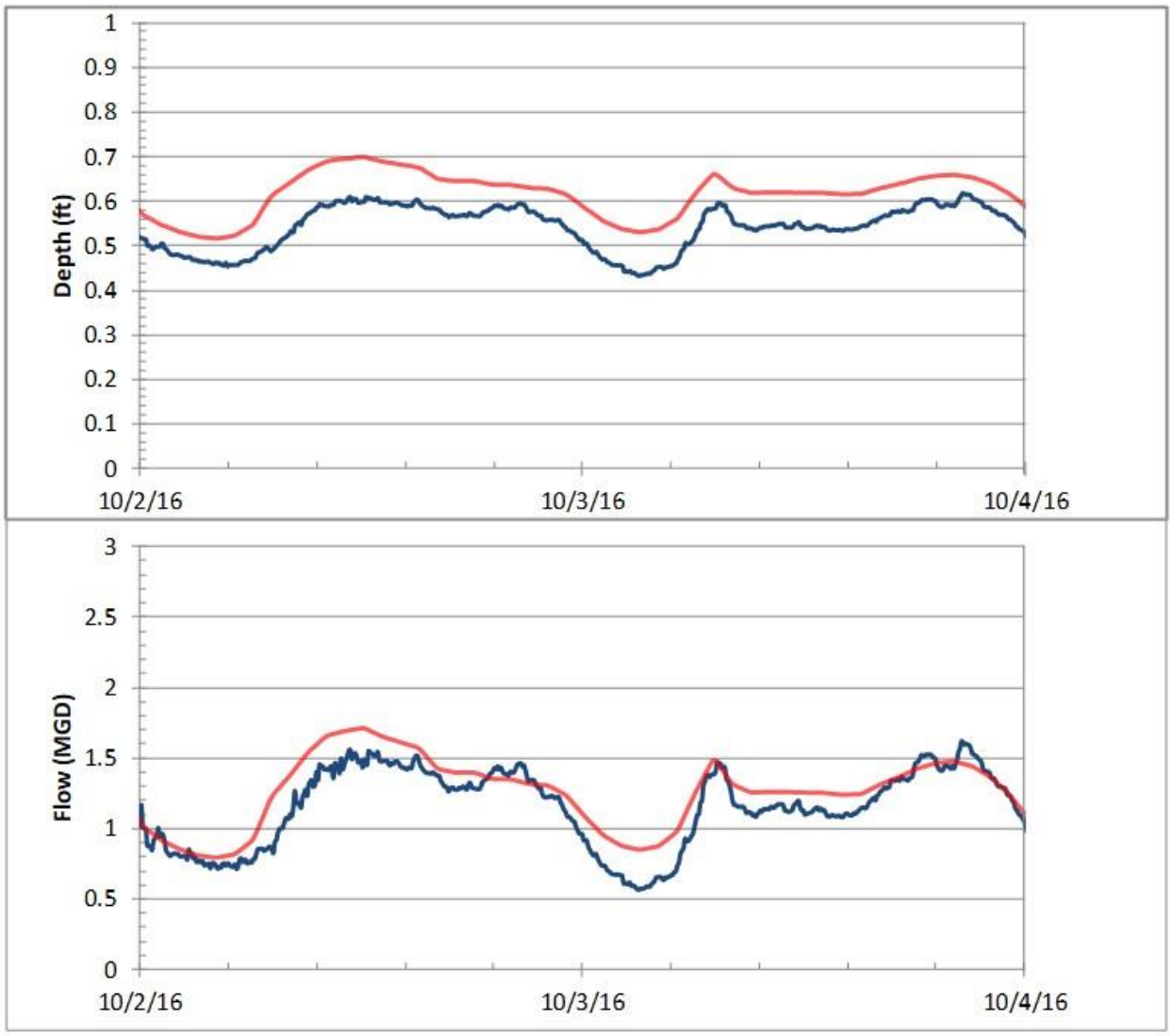
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.61	1.85	2.44
Model	0.70	1.71	2.52
Difference	0.09	-8%	3%

NHW

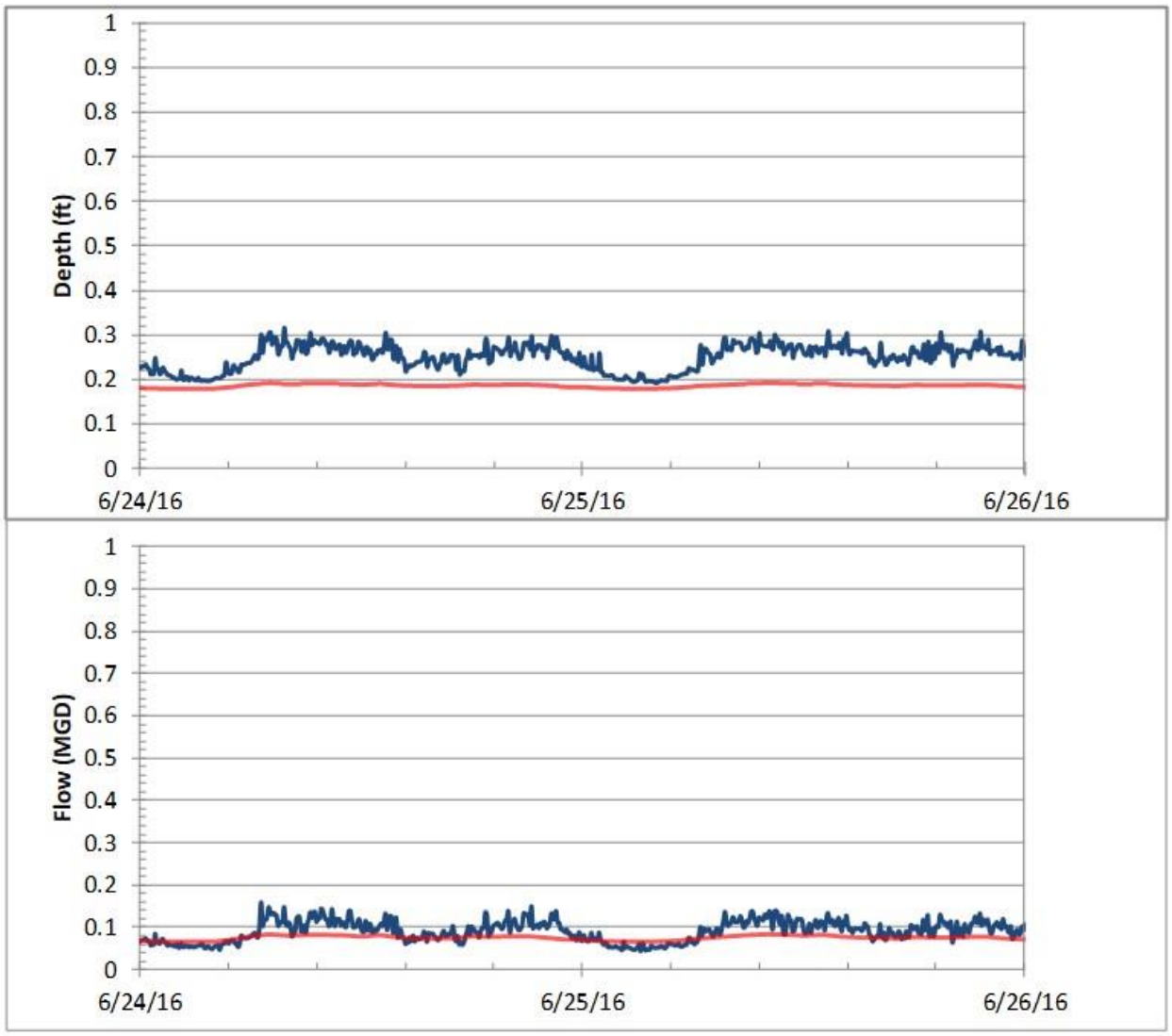
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.62	1.62	2.31
Model	0.70	1.71	2.52
Difference	0.08	6%	9%

UH1

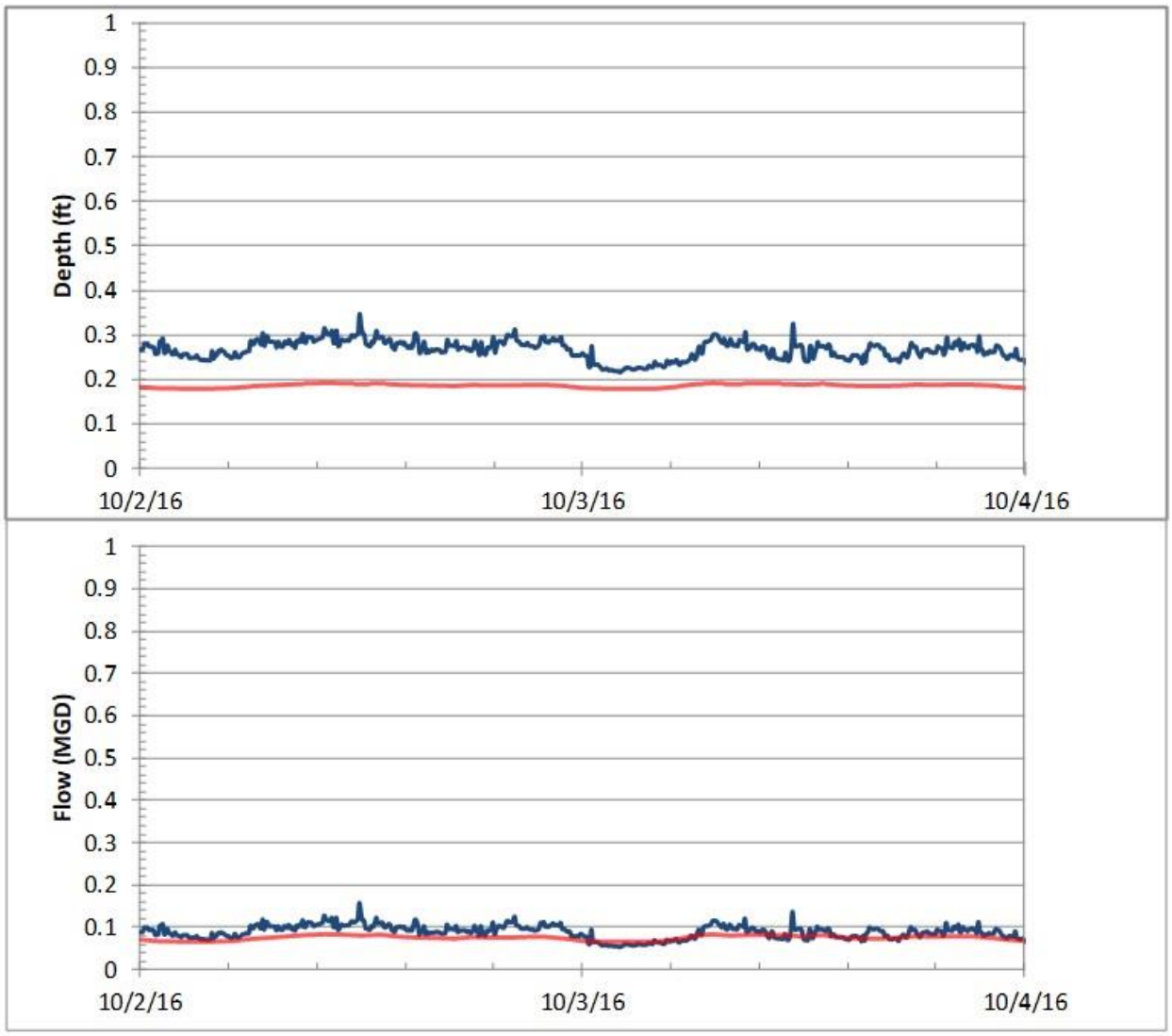
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.32	0.16	0.18
Model	0.19	0.08	0.15
Difference	-0.12	-48%	-17%

UH1

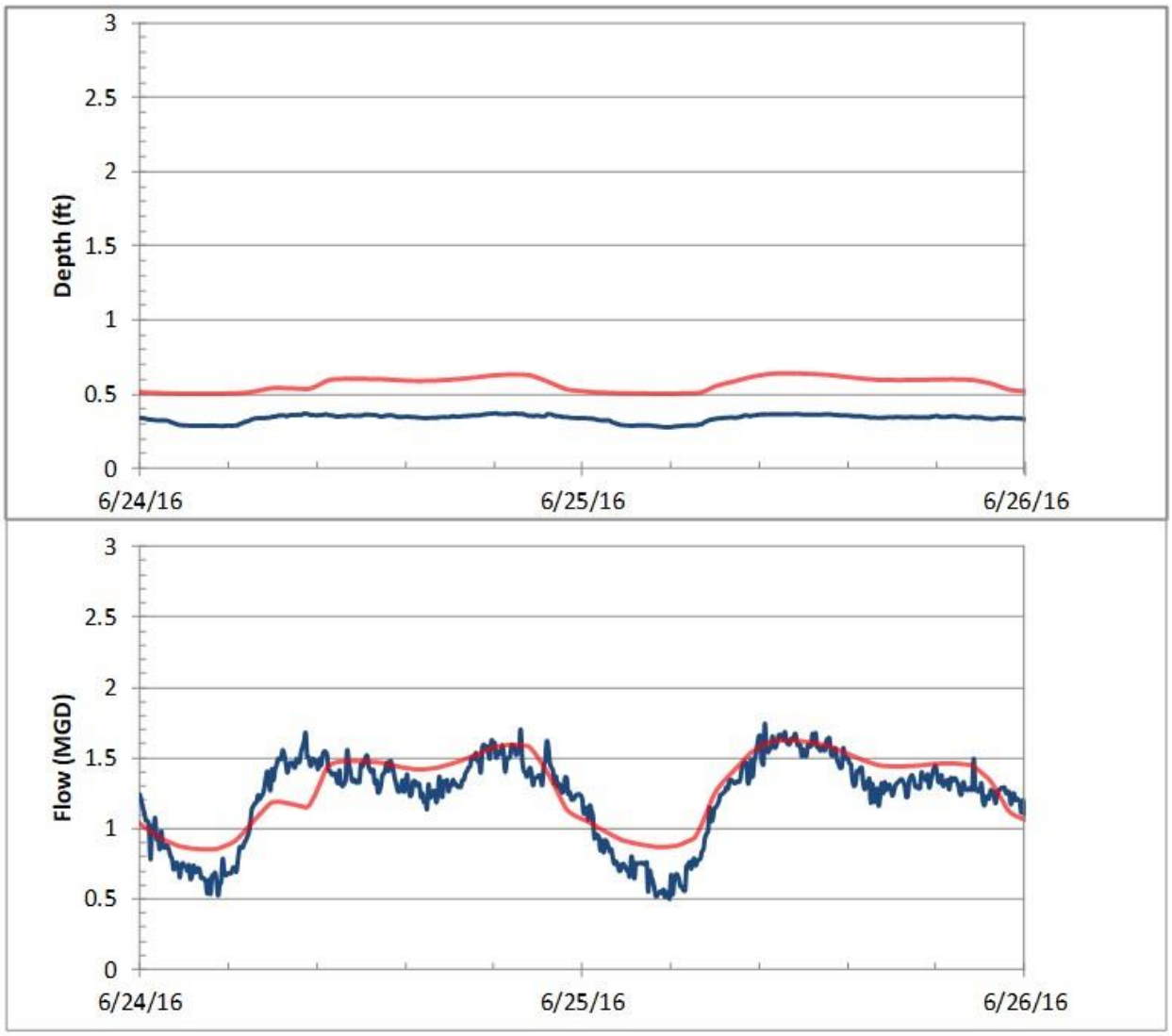
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.35	0.16	0.18
Model	0.19	0.08	0.15
Difference	-0.15	-47%	-16%

W1

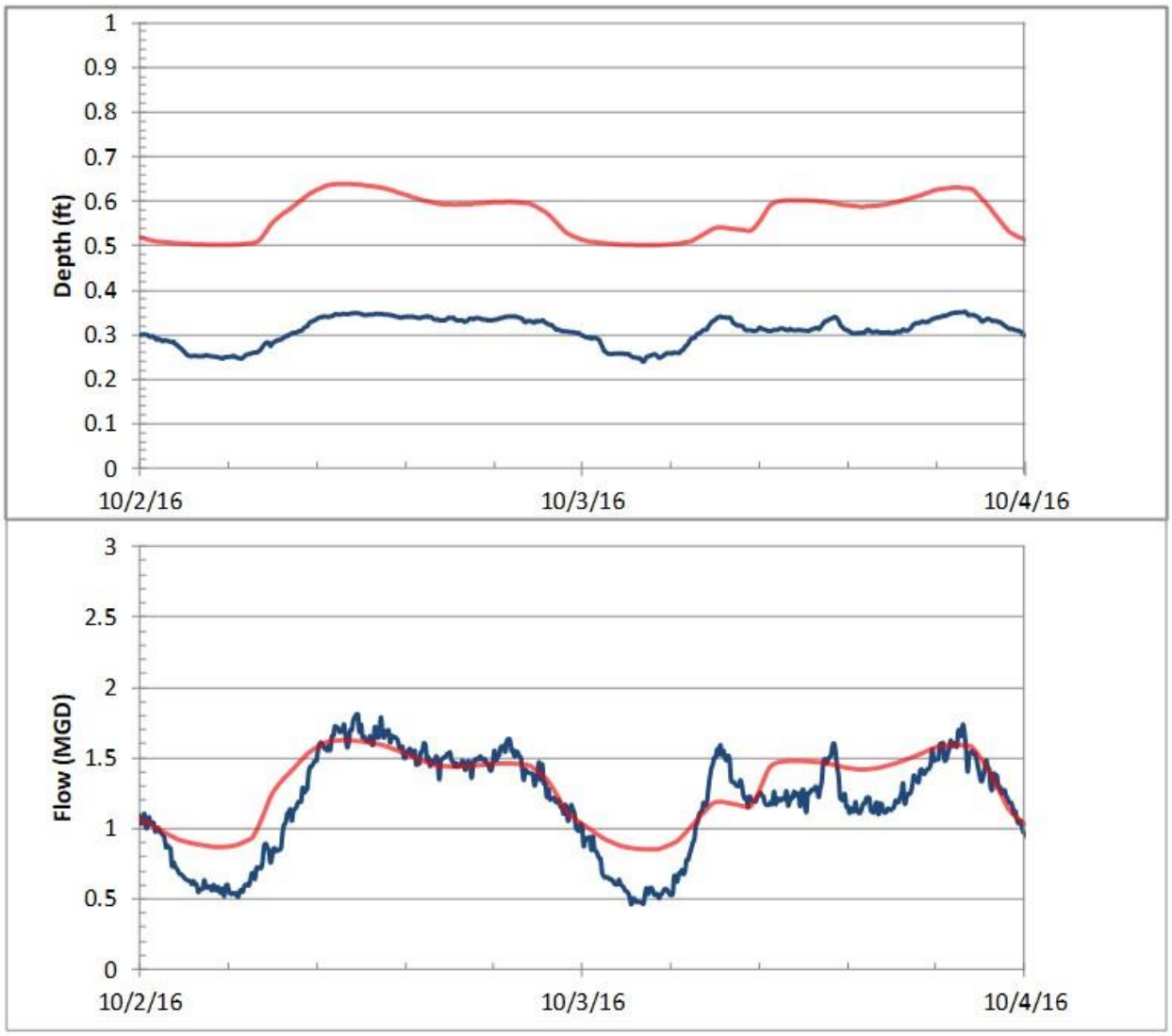
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.37	1.74	2.45
Model	0.64	1.63	2.58
Difference	0.27	-7%	5%

W1

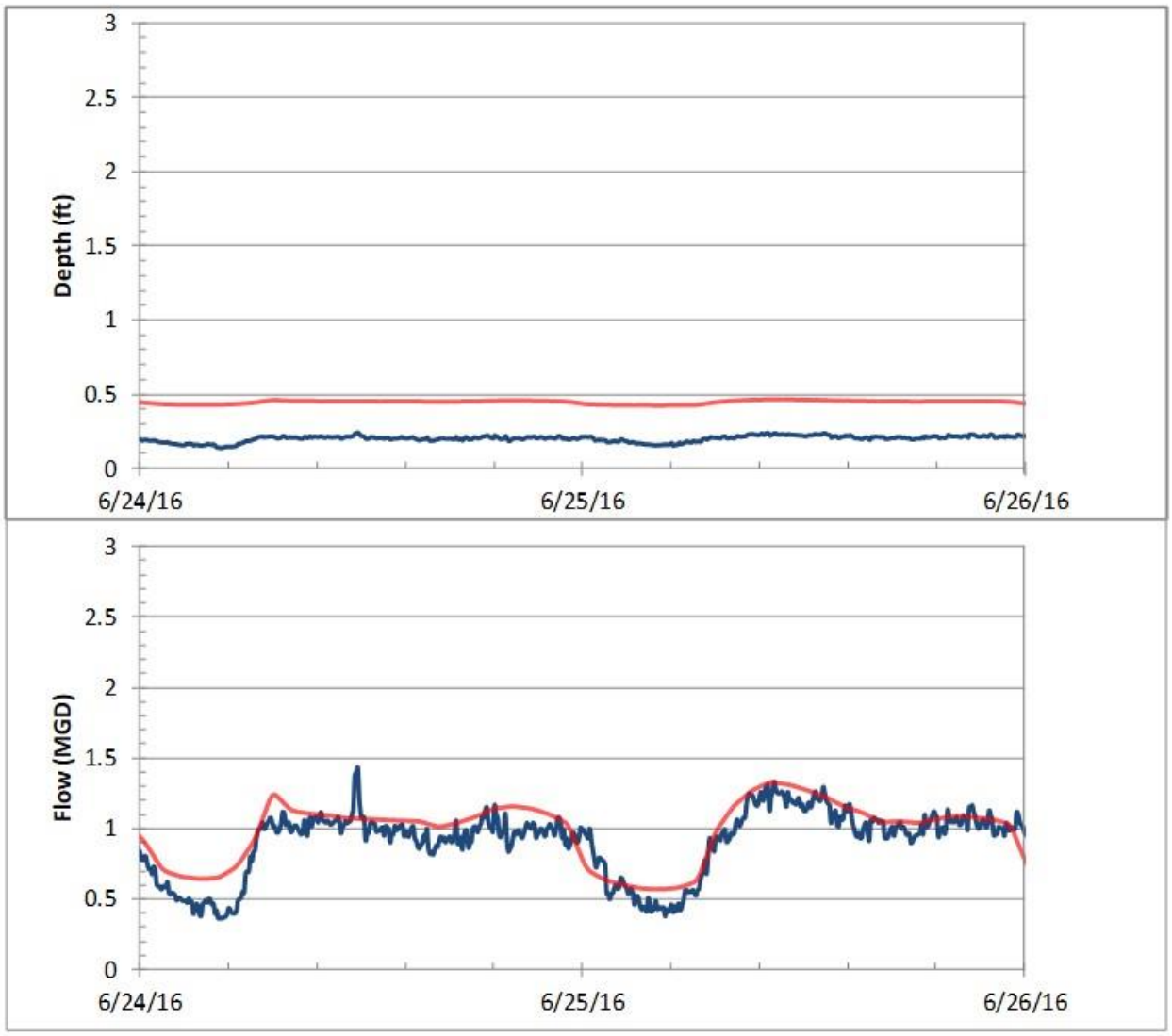
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.35	1.81	2.36
Model	0.64	1.63	2.57
Difference	0.29	-10%	9%

W2-A

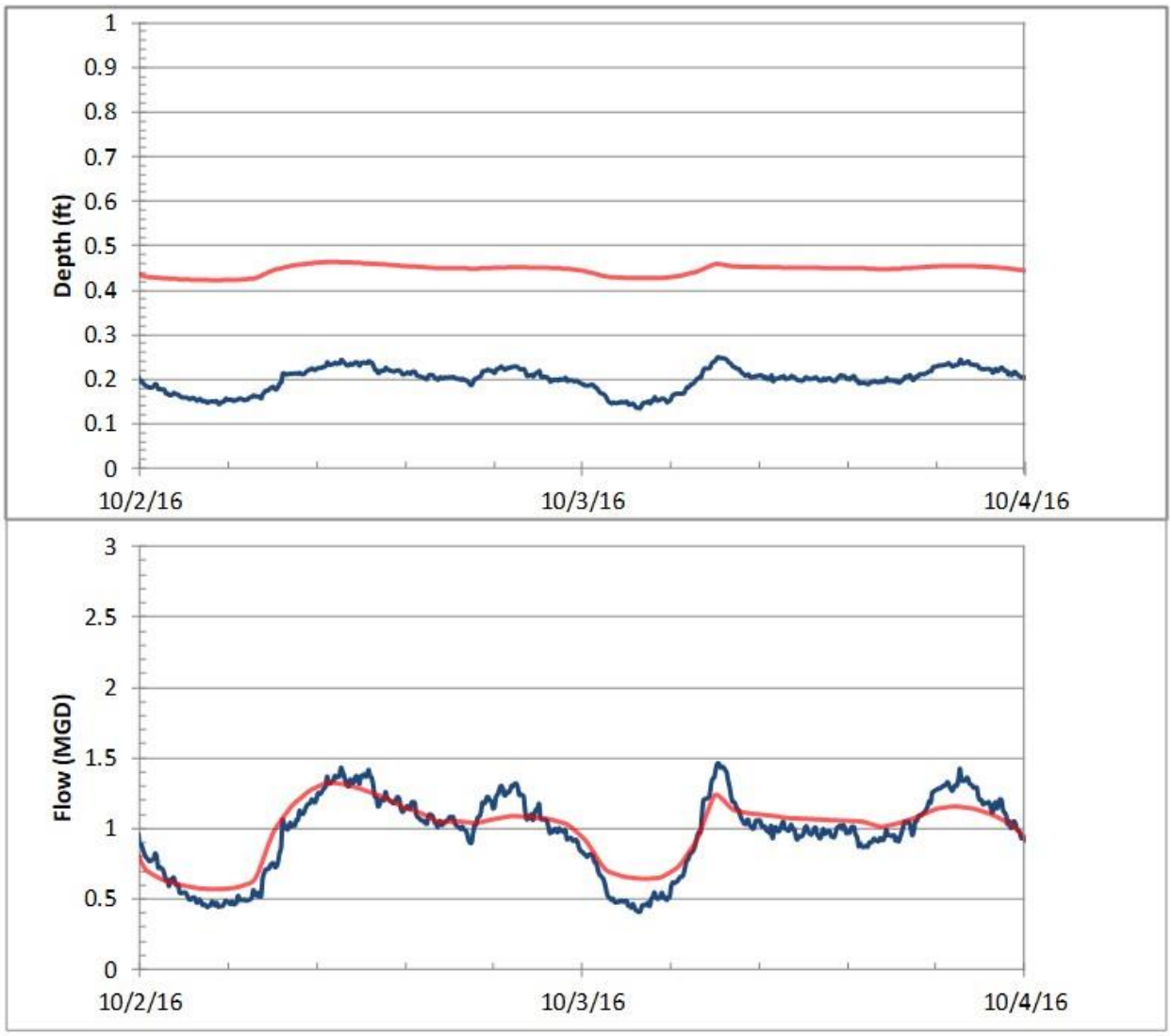
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.24	1.43	1.81
Model	0.46	1.33	1.97
Difference	0.22	-7%	9%

W2-A

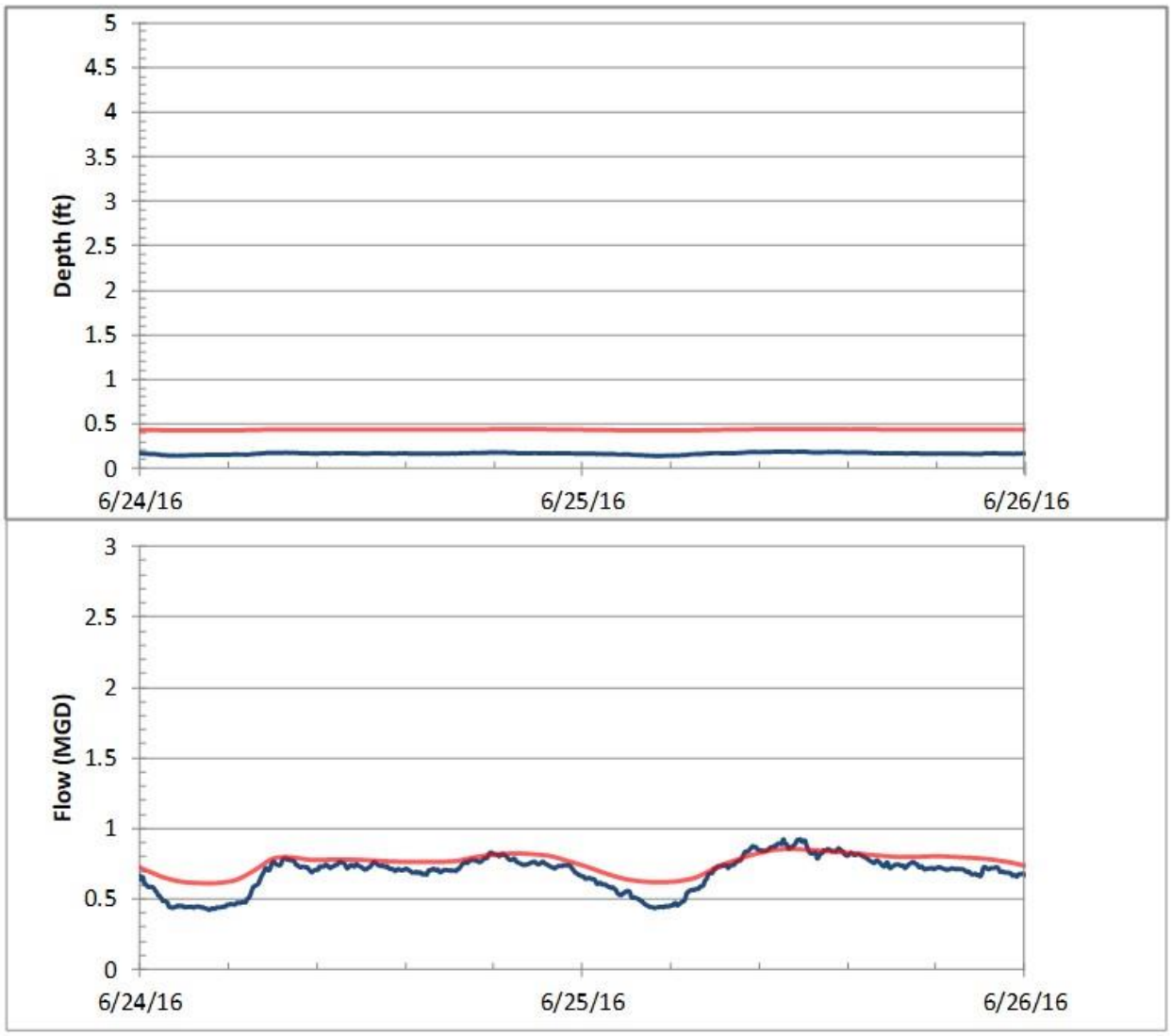
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.25	1.46	1.93
Model	0.46	1.33	1.98
Difference	0.21	-9%	3%

W2-B

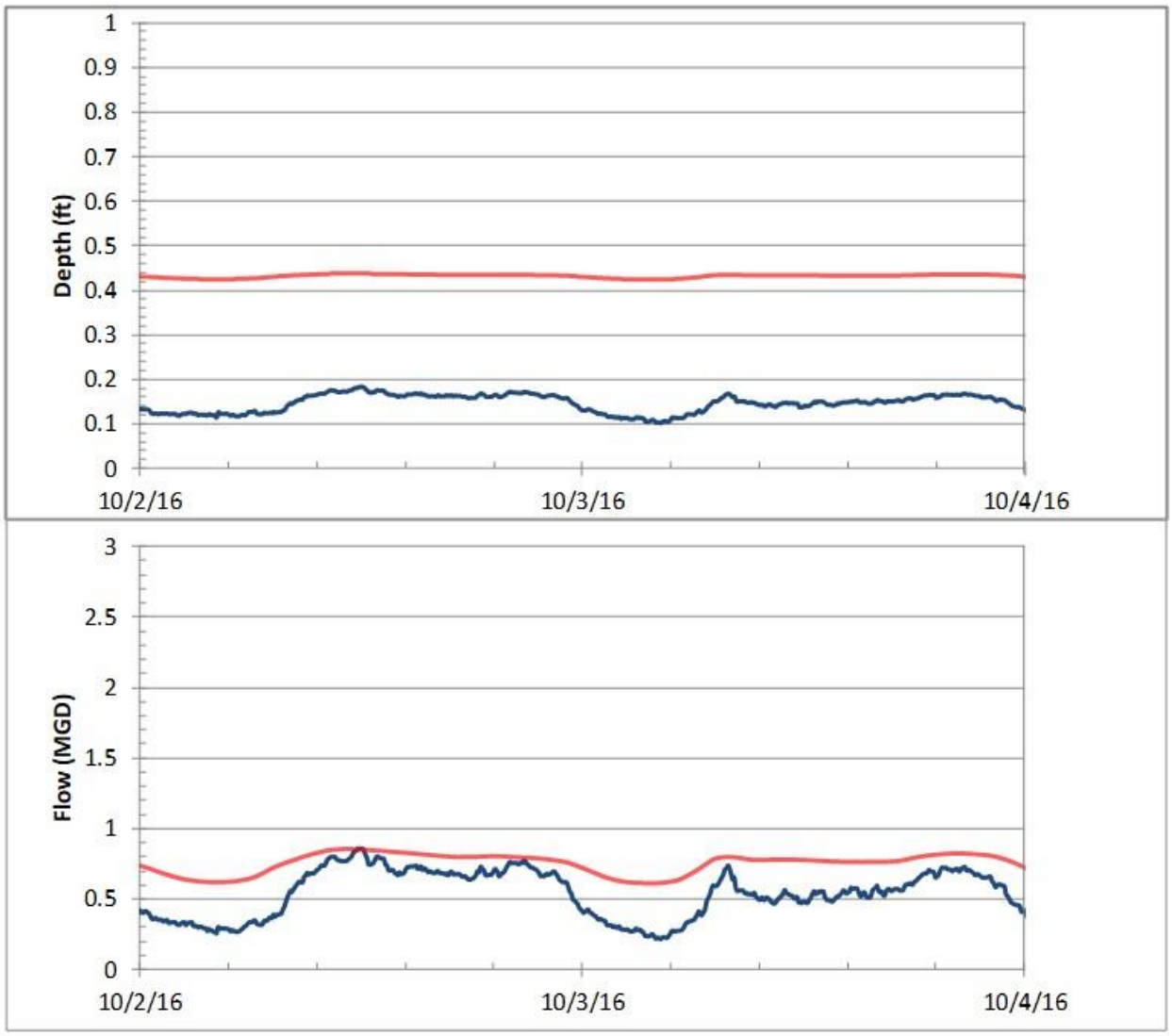
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.19	0.92	1.37
Model	0.44	0.85	1.51
Difference	0.25	-8%	10%

W2-B

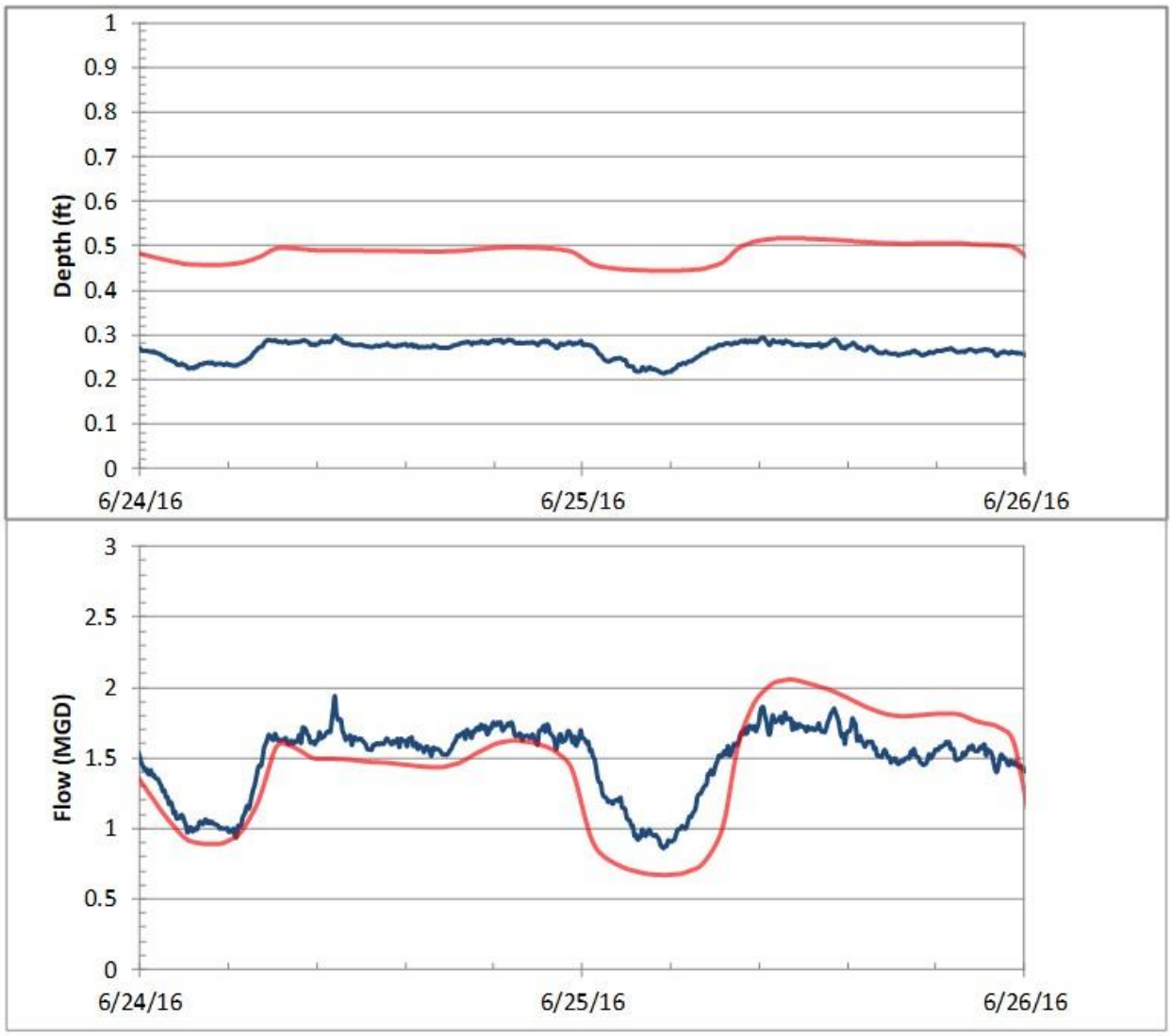
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.18	0.86	1.08
Model	0.44	0.85	1.51
Difference	0.25	0%	40%

W3

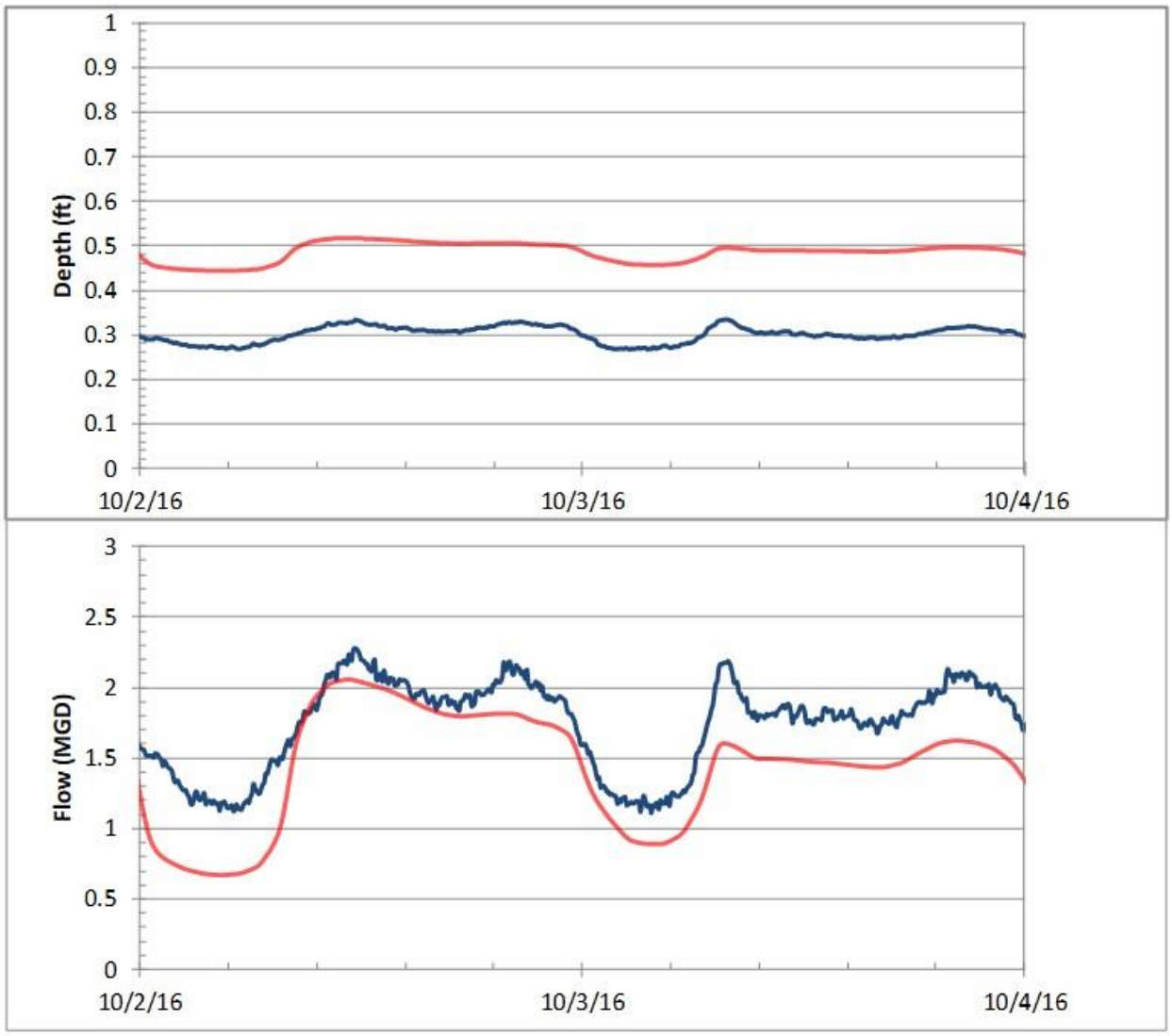
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.30	1.94	2.98
Model	0.52	2.06	2.86
Difference	0.22	6%	-4%

W3

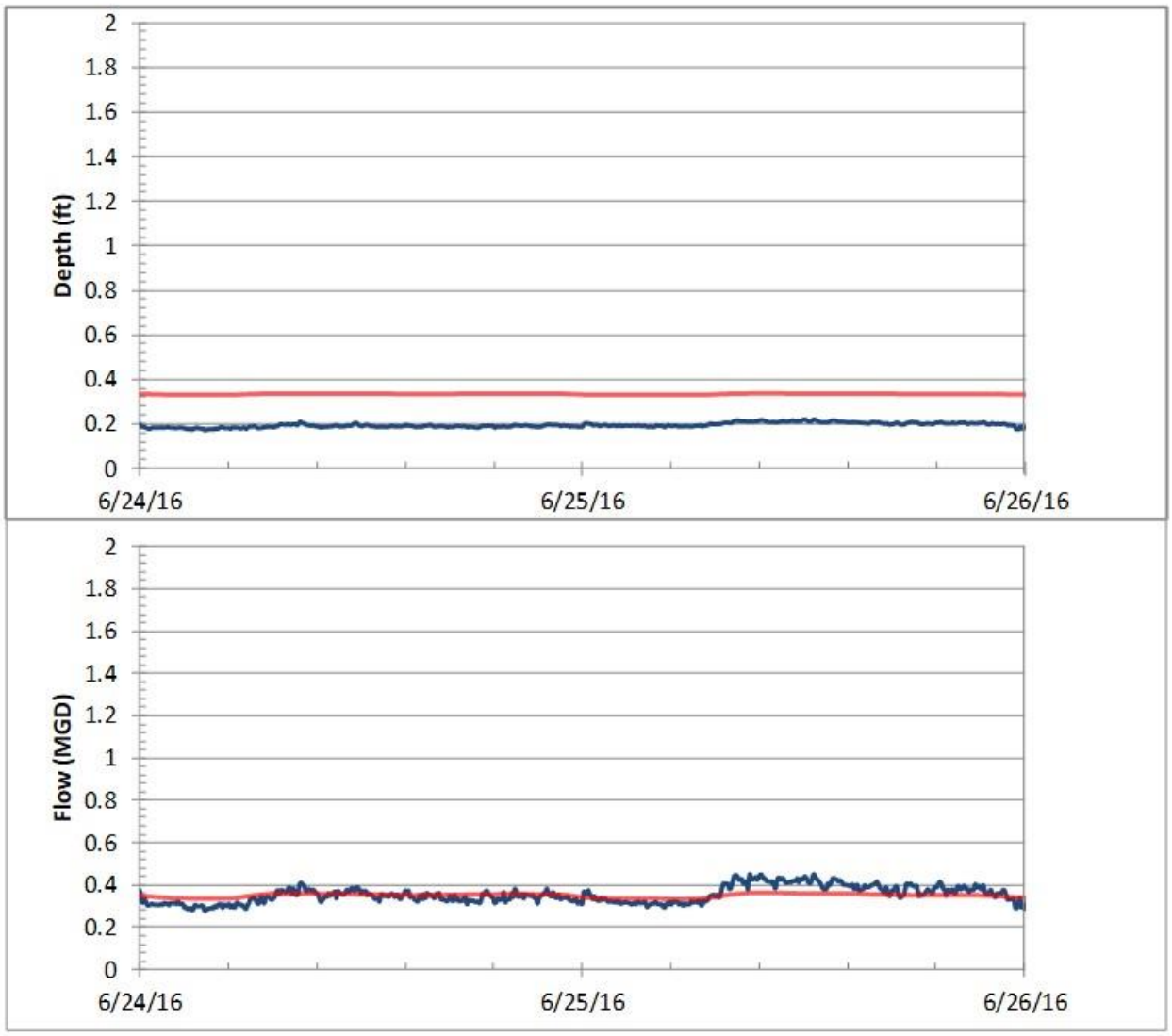
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.33	2.28	3.48
Model	0.52	2.06	2.87
Difference	0.18	-10%	-18%

W4

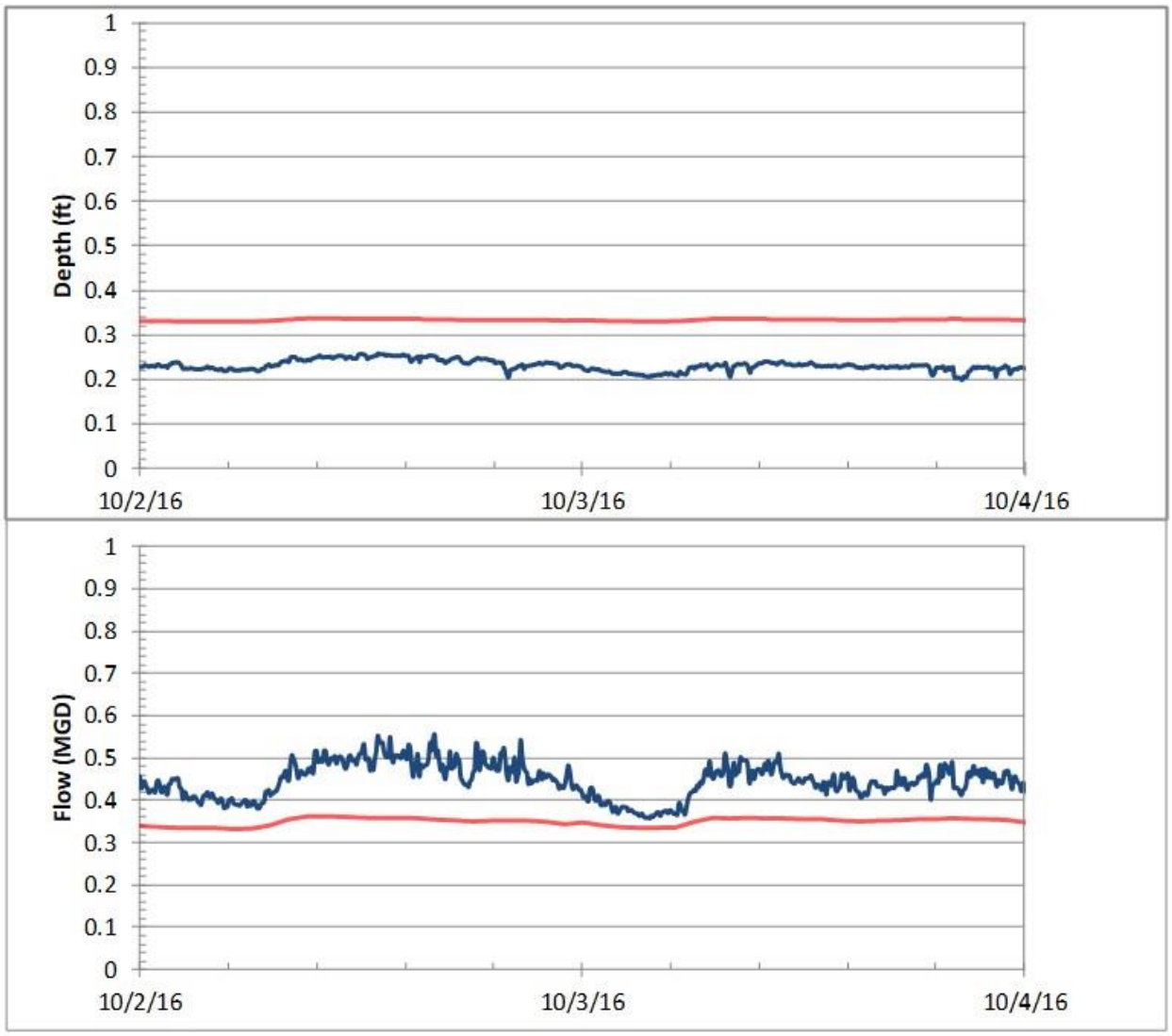
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.22	0.45	0.71
Model	0.34	0.36	0.70
Difference	0.12	-20%	-1%

W4

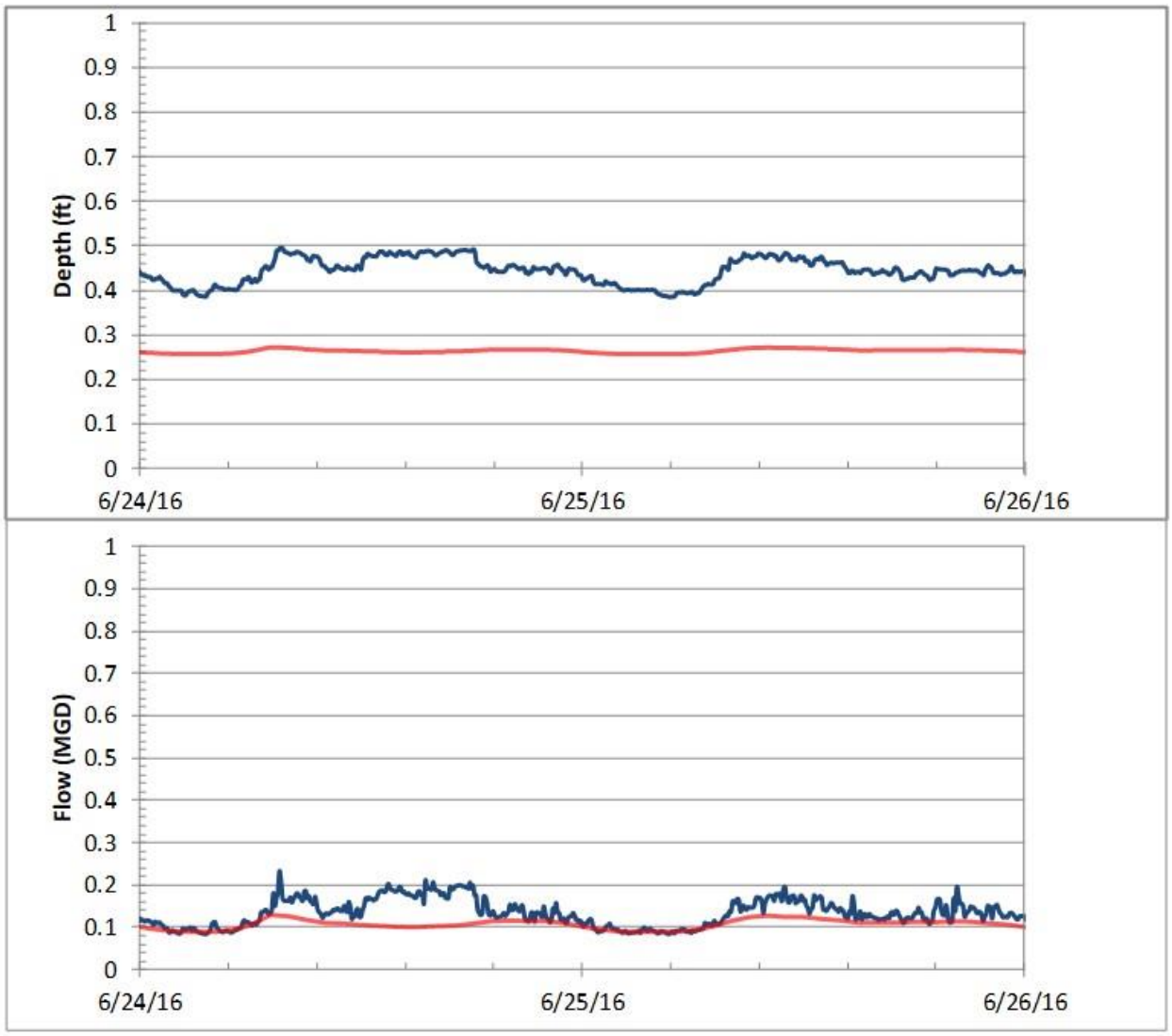
DWF2 **Oct-02 - Oct-04** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.26	0.55	0.89
Model	0.34	0.36	0.70
Difference	0.08	-35%	-22%

W5

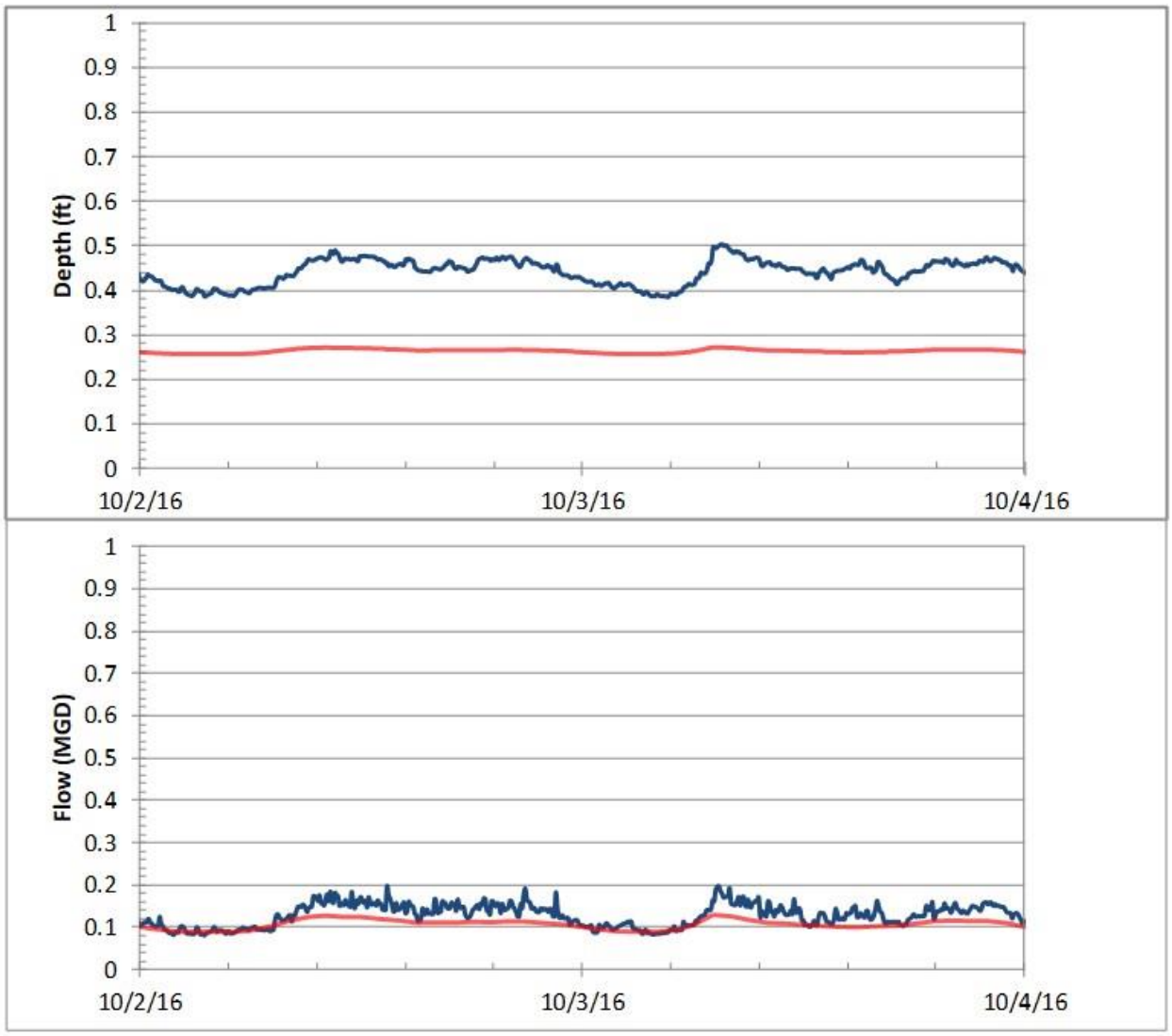
DWF1 **Jun-24 - Jun-26** **Dry Weather**



	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.50	0.23	0.27
Model	0.27	0.13	0.21
Difference	-0.22	-45%	-20%

W5

DWF2 **Oct-02 - Oct-04** **Dry Weather**

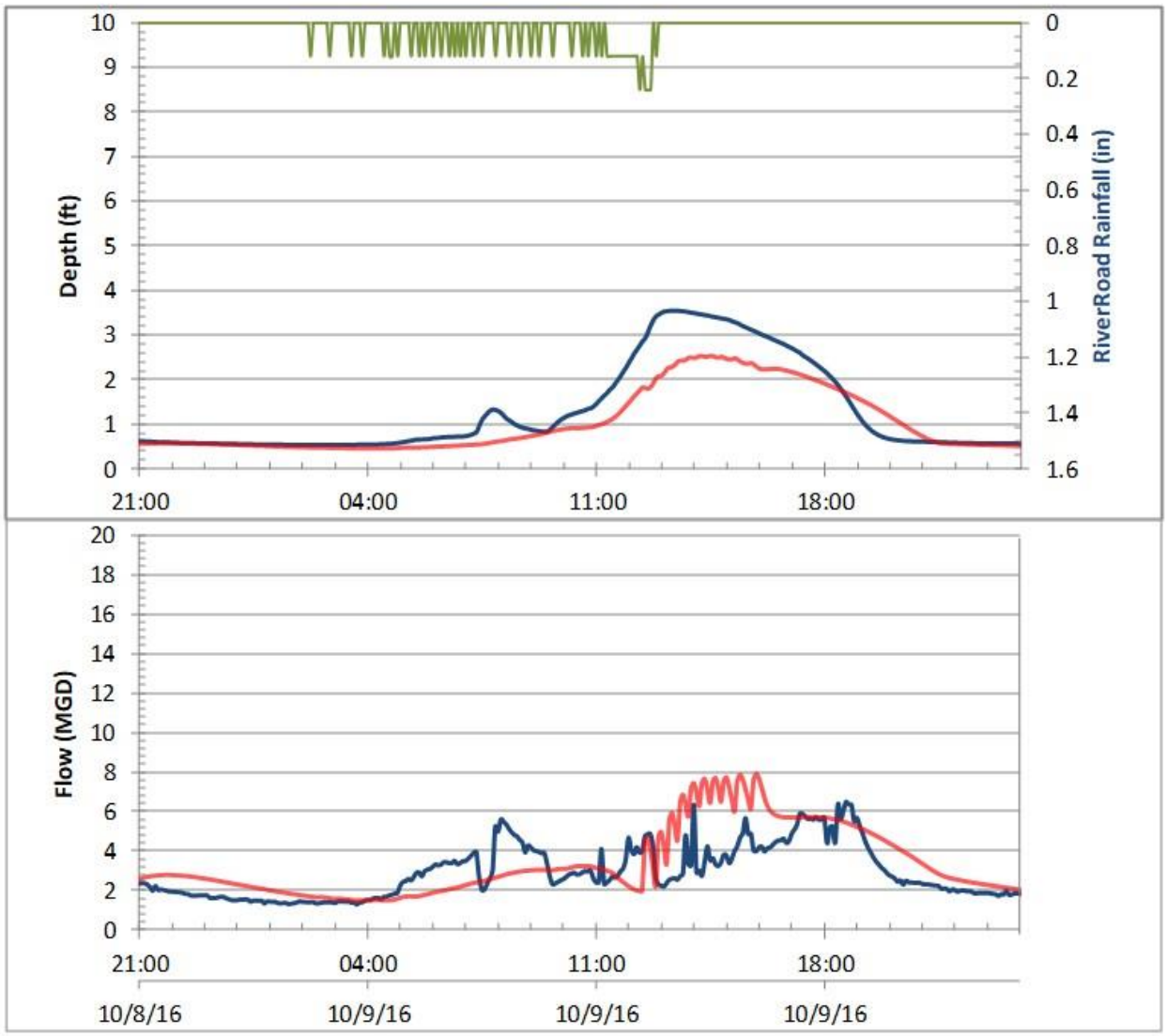


	Depth	Flow	
	Max (ft)	Max (MGD)	Volume (US MG)
Meter	0.50	0.20	0.26
Model	0.27	0.13	0.21
Difference	-0.23	-35%	-17%

Appendix F – Wet Weather Flow Calibration Hydrographs

H1

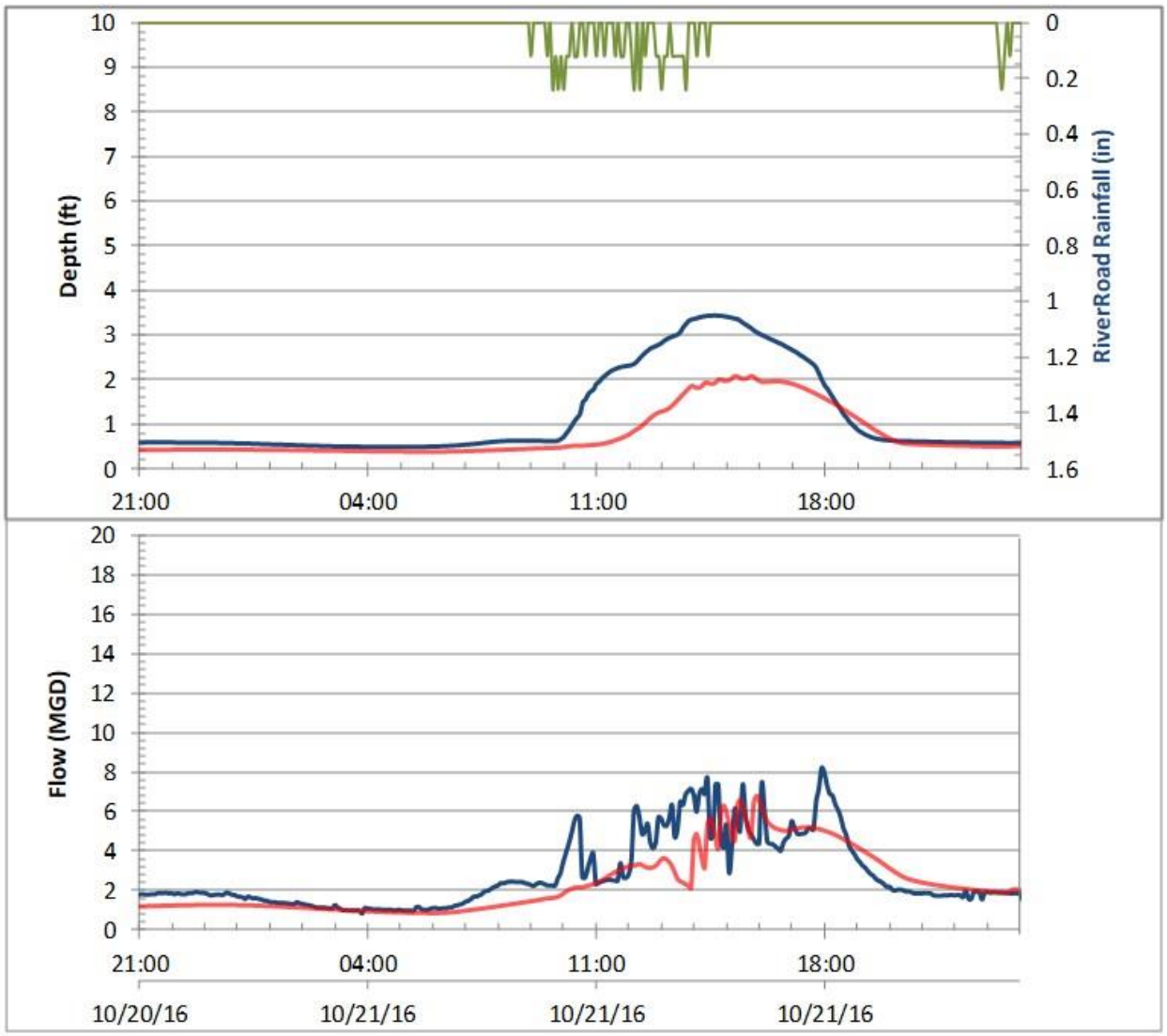
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			3.55	6.49	3.06
Model			2.54	7.91	3.49
		Difference	-1.01	22%	14%

H1

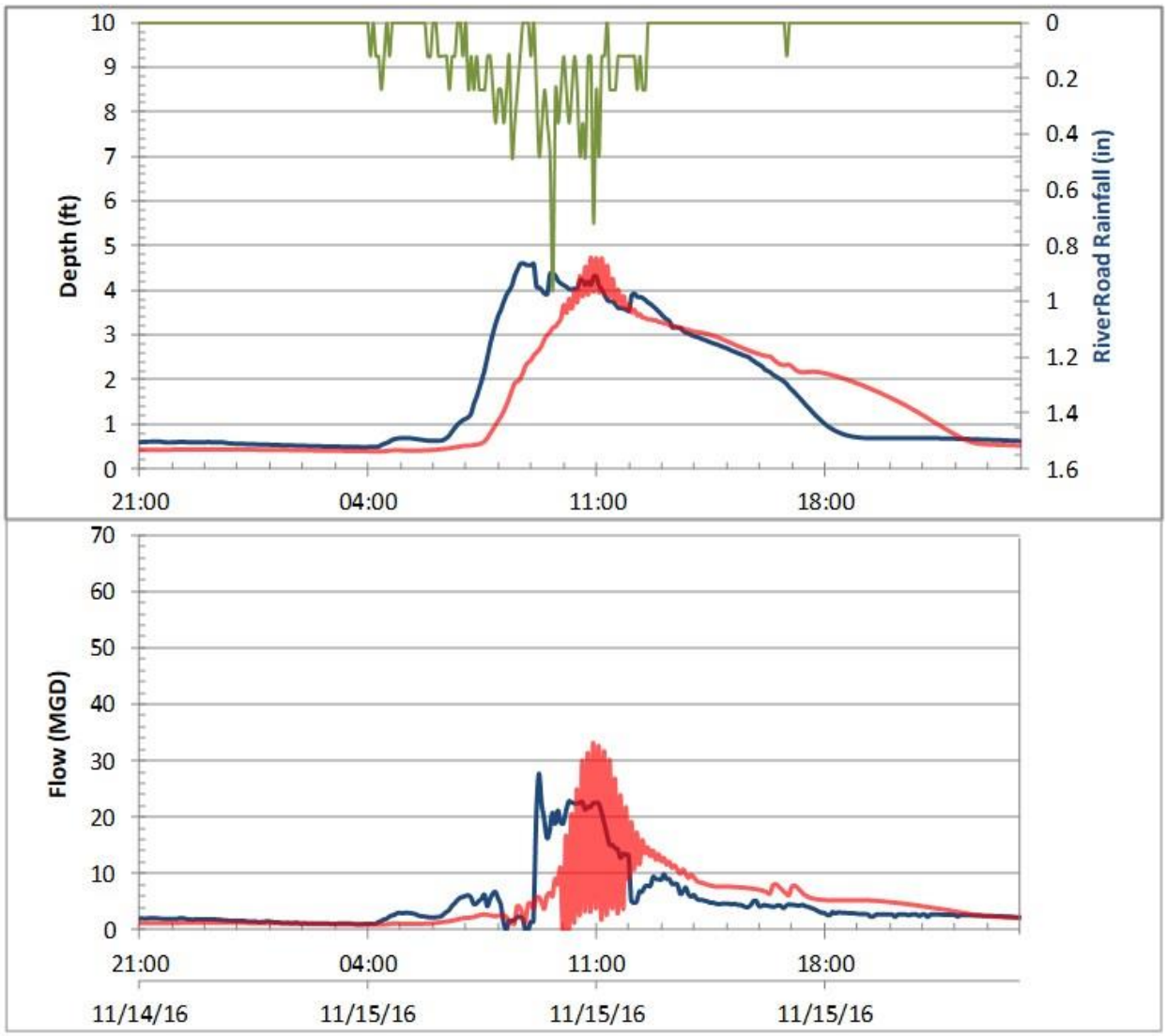
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			3.44	8.20	2.94
Model			2.09	6.79	2.54
		Difference	-1.35	-17%	-14%

H1

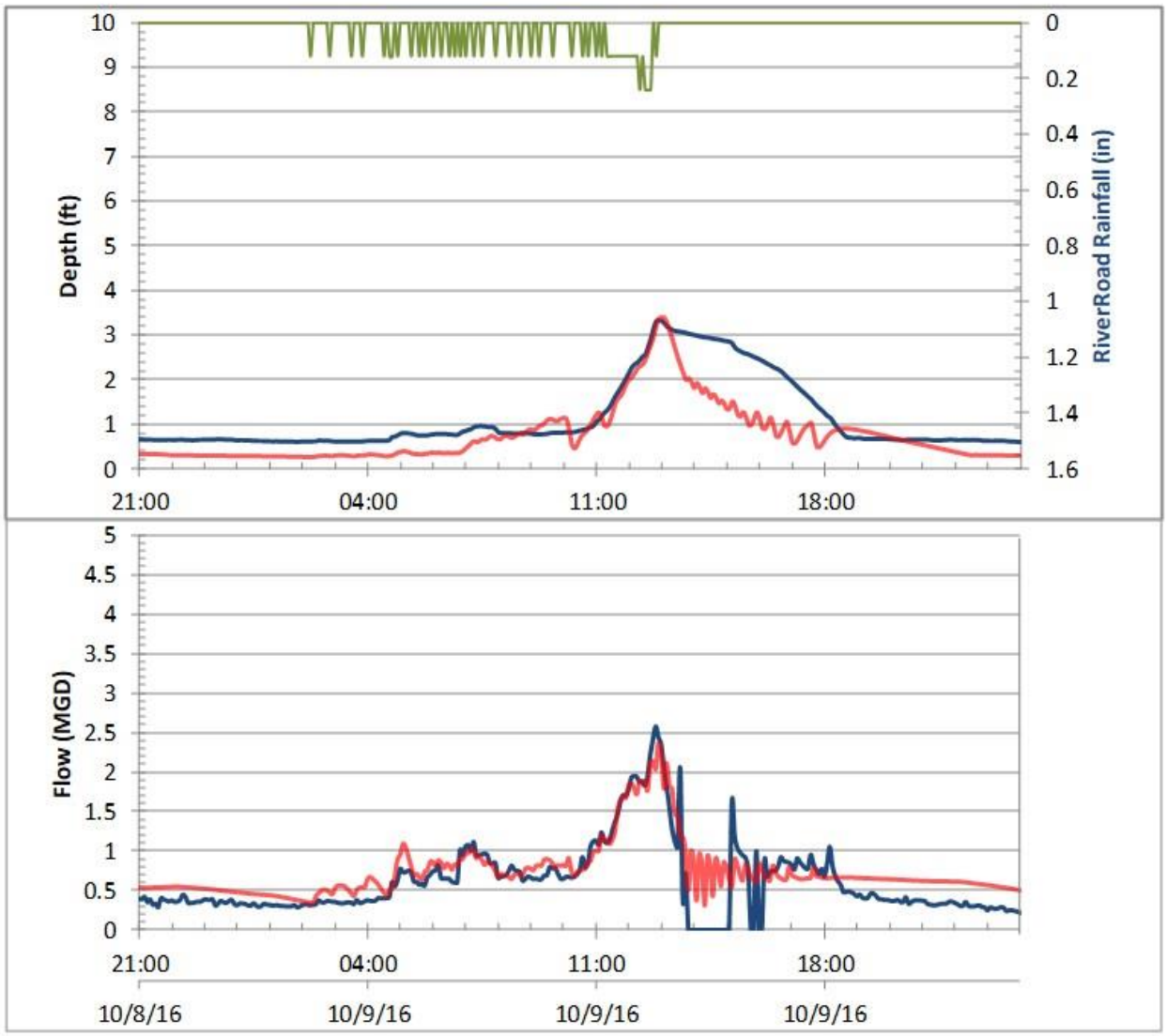
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			4.61	27.66	5.27
Model			4.73	33.18	5.29
		Difference	0.12	20%	0%

H2

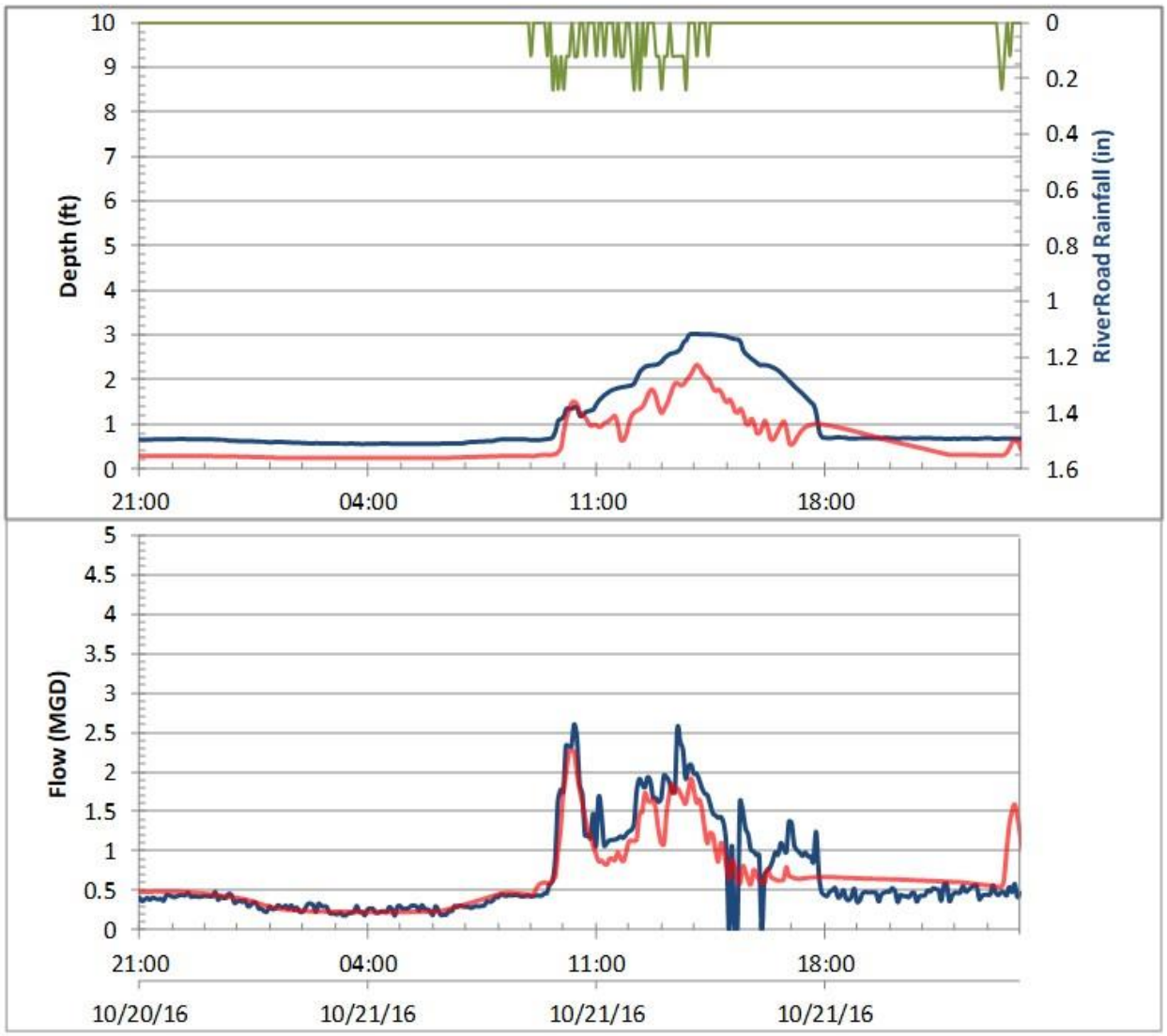
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			3.33	2.58	0.64
Model			3.39	2.36	0.77
		Difference	0.06	-8%	20%

H2

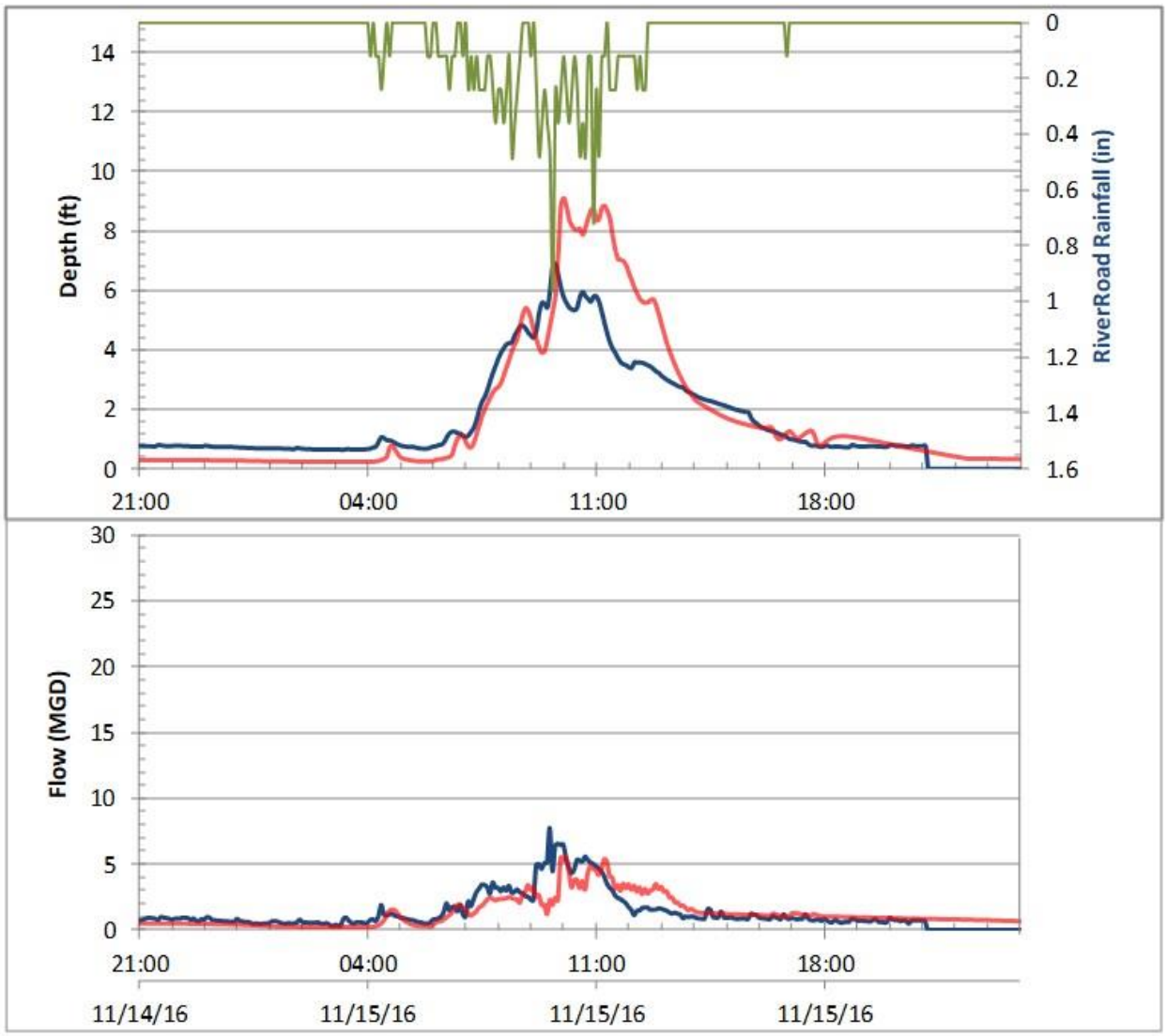
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			3.03	2.61	0.72
Model			2.33	2.27	0.69
		Difference	-0.70	-13%	-5%

H2

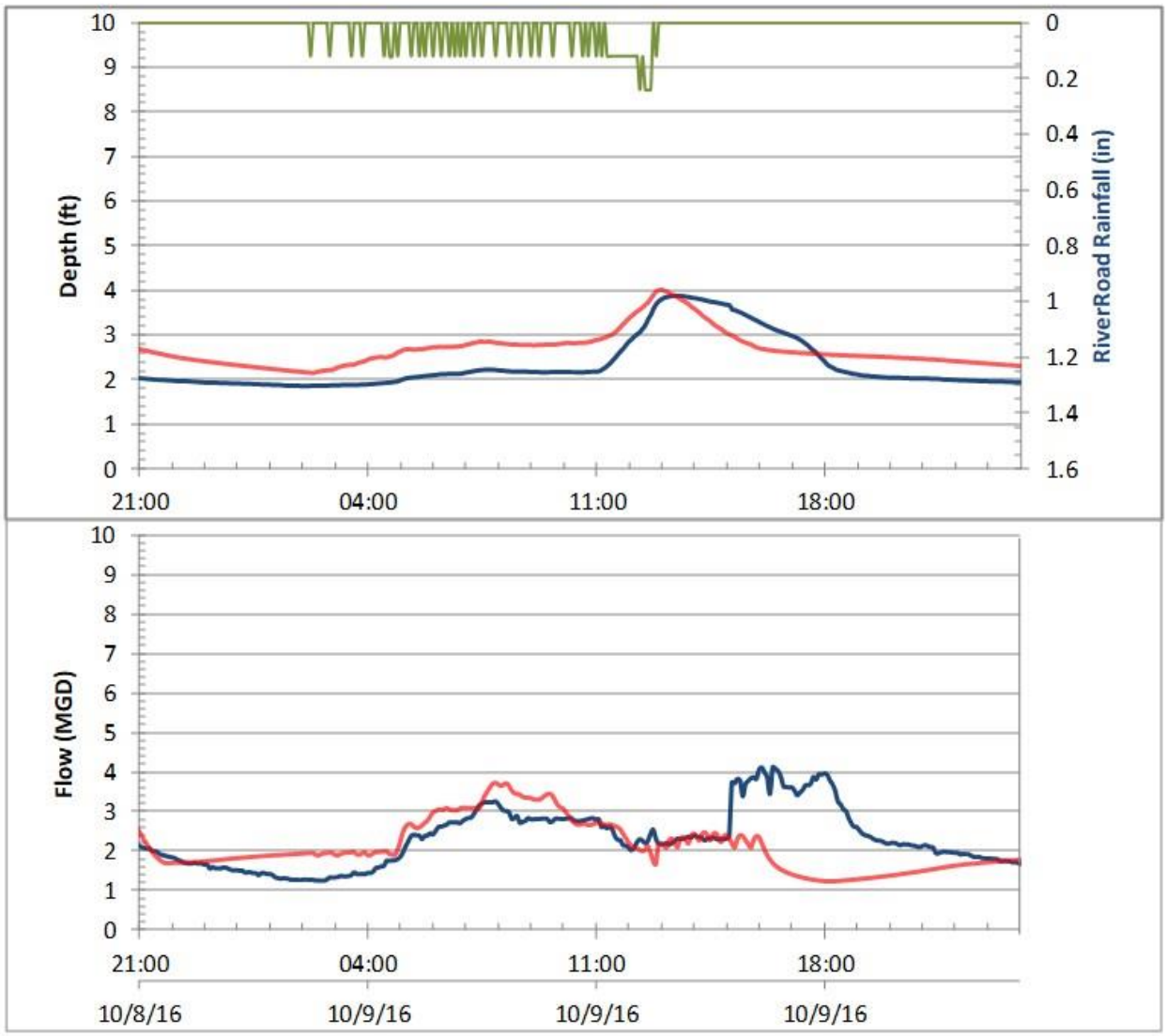
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			6.90	7.76	1.40
Model			9.11	5.50	1.41
		Difference	2.21	-29%	1%

H3

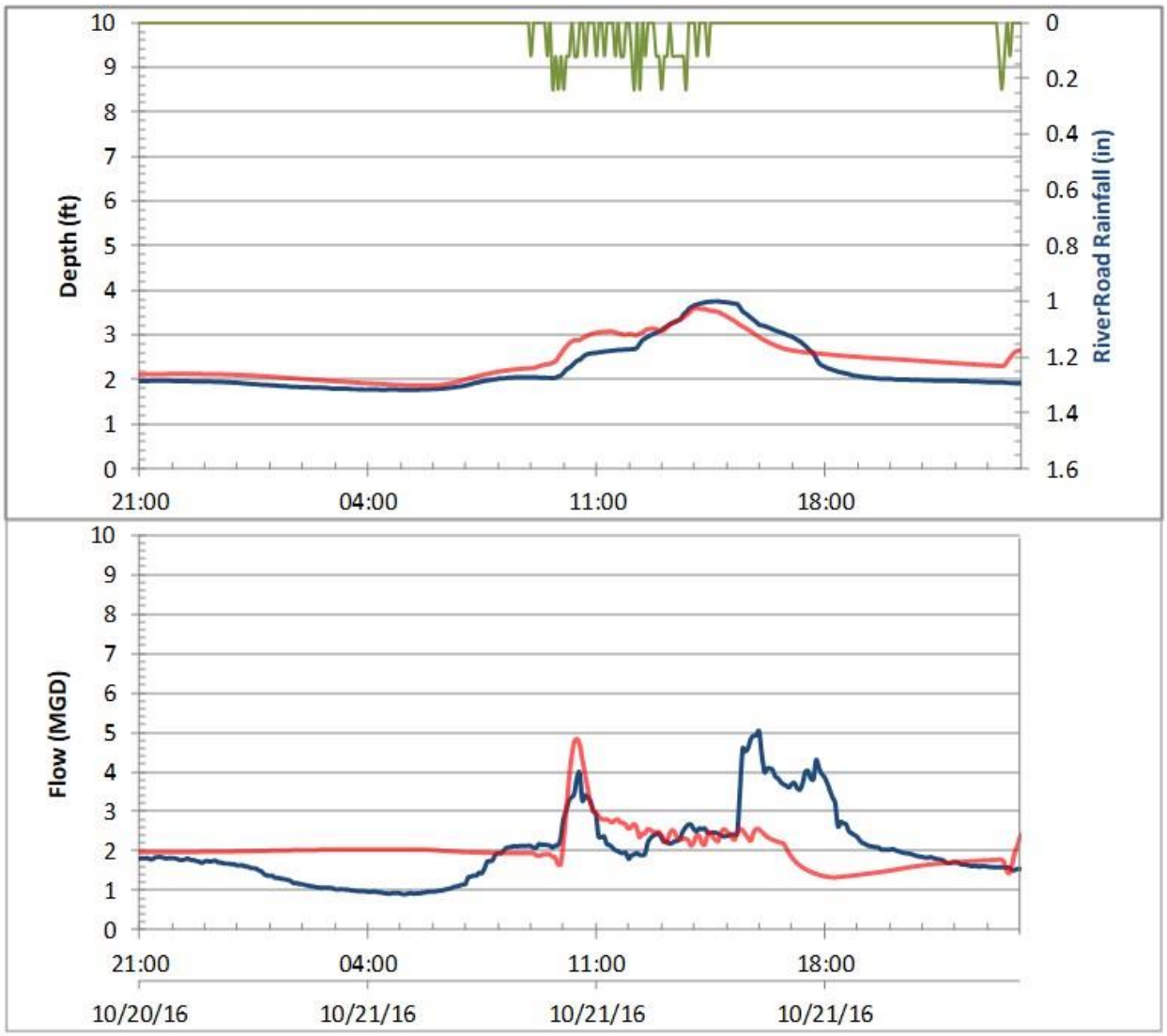
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			3.88	4.12	2.40
Model			4.02	3.73	2.16
		Difference	0.14	-9%	-10%

H3

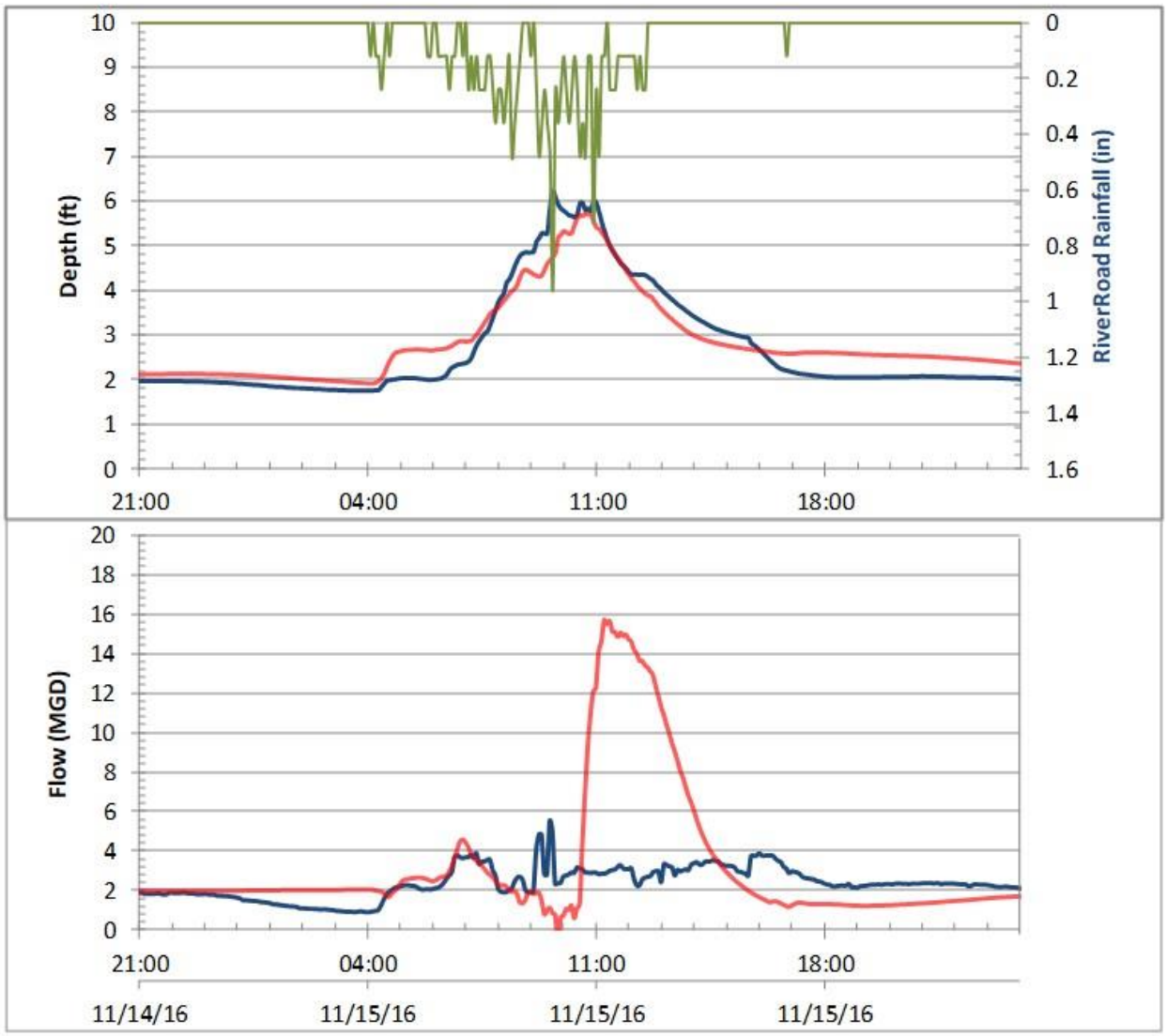
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			3.75	5.04	2.08
Model			3.61	4.84	2.07
		Difference	-0.15	-4%	0%

H3

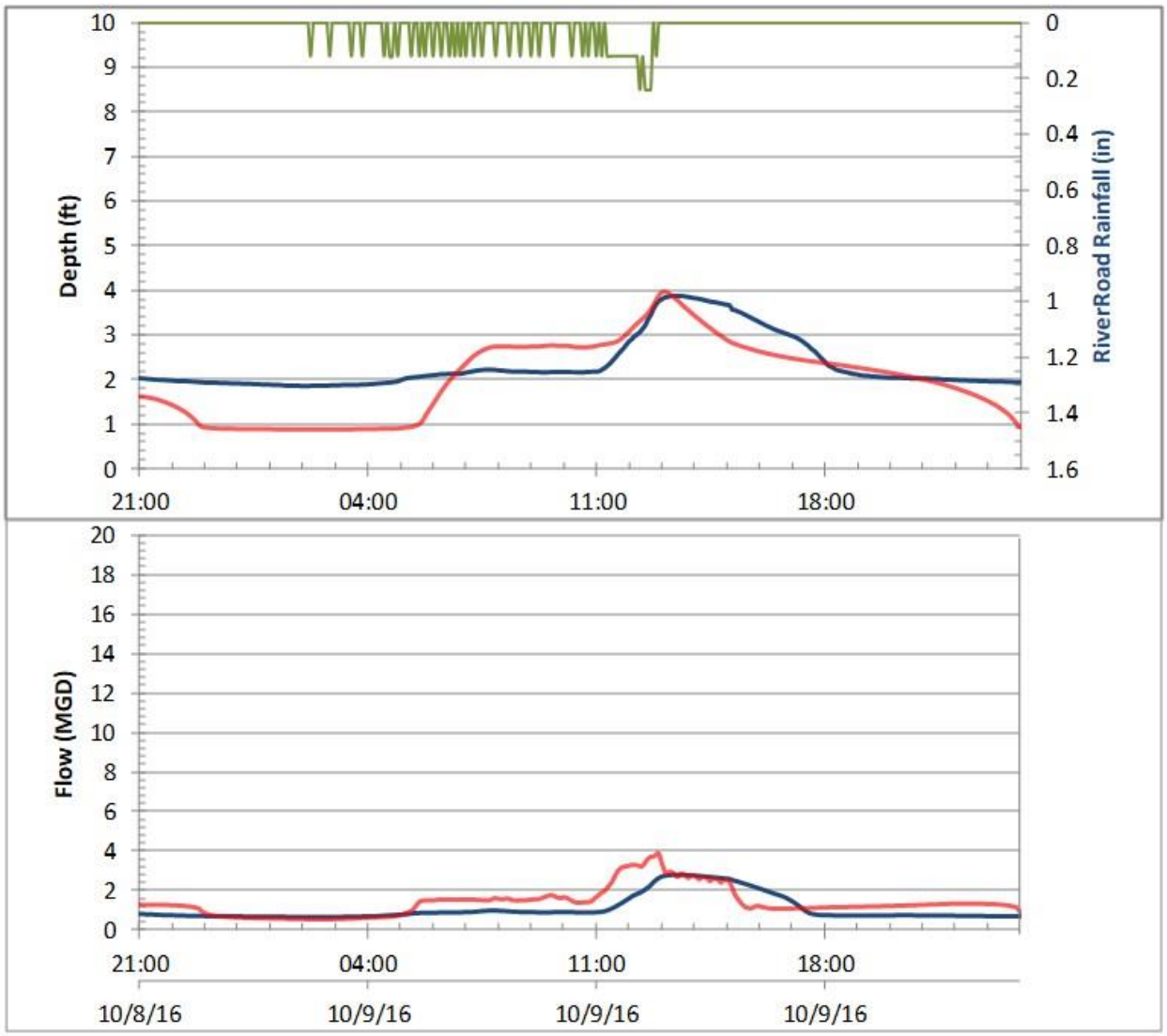
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			6.23	5.52	2.45
Model			5.73	15.69	3.40
		Difference	-0.50	184%	39%

H4

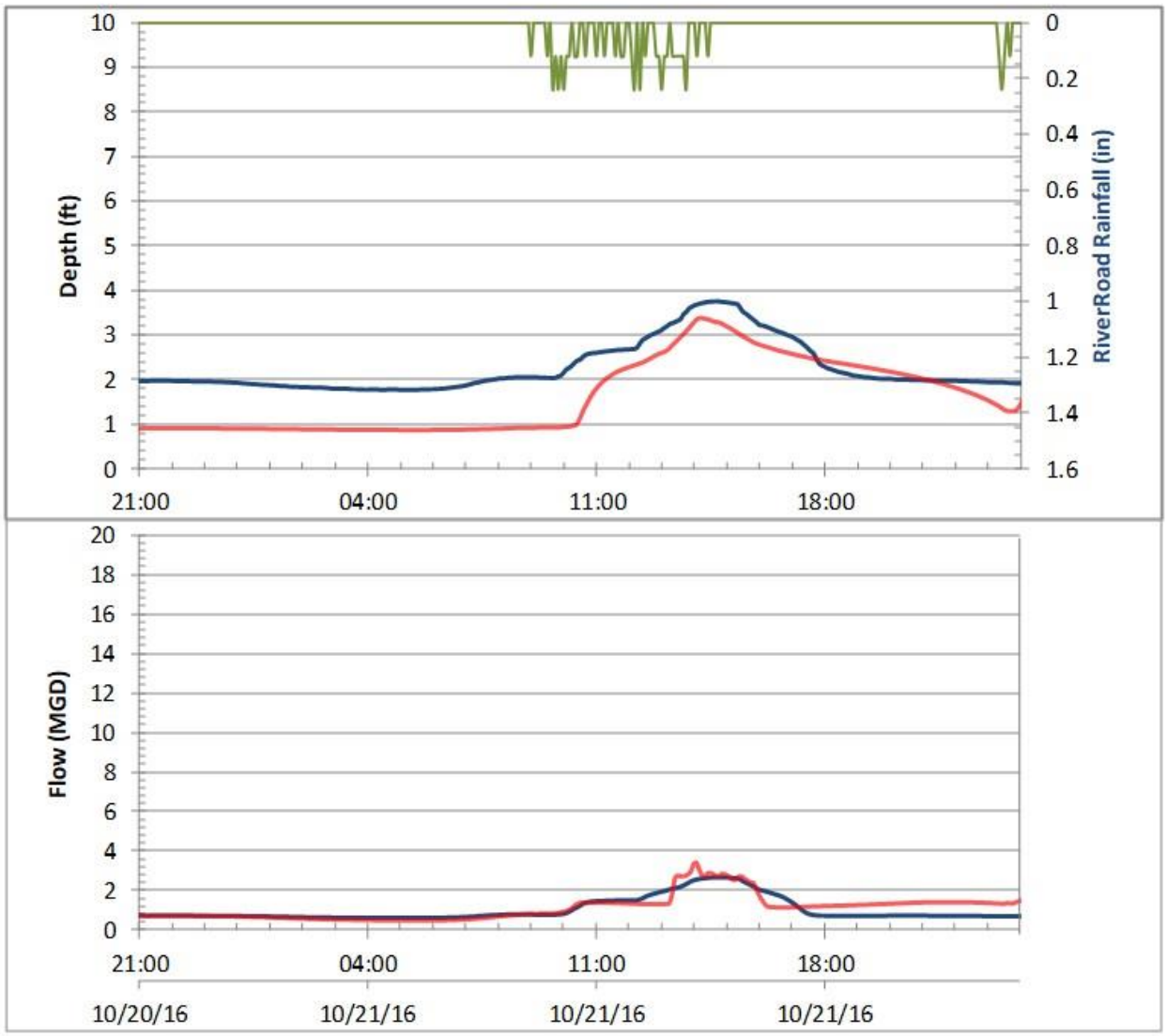
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			3.88	2.80	1.13
Model			3.97	3.90	1.44
		Difference	0.09	39%	28%

H4

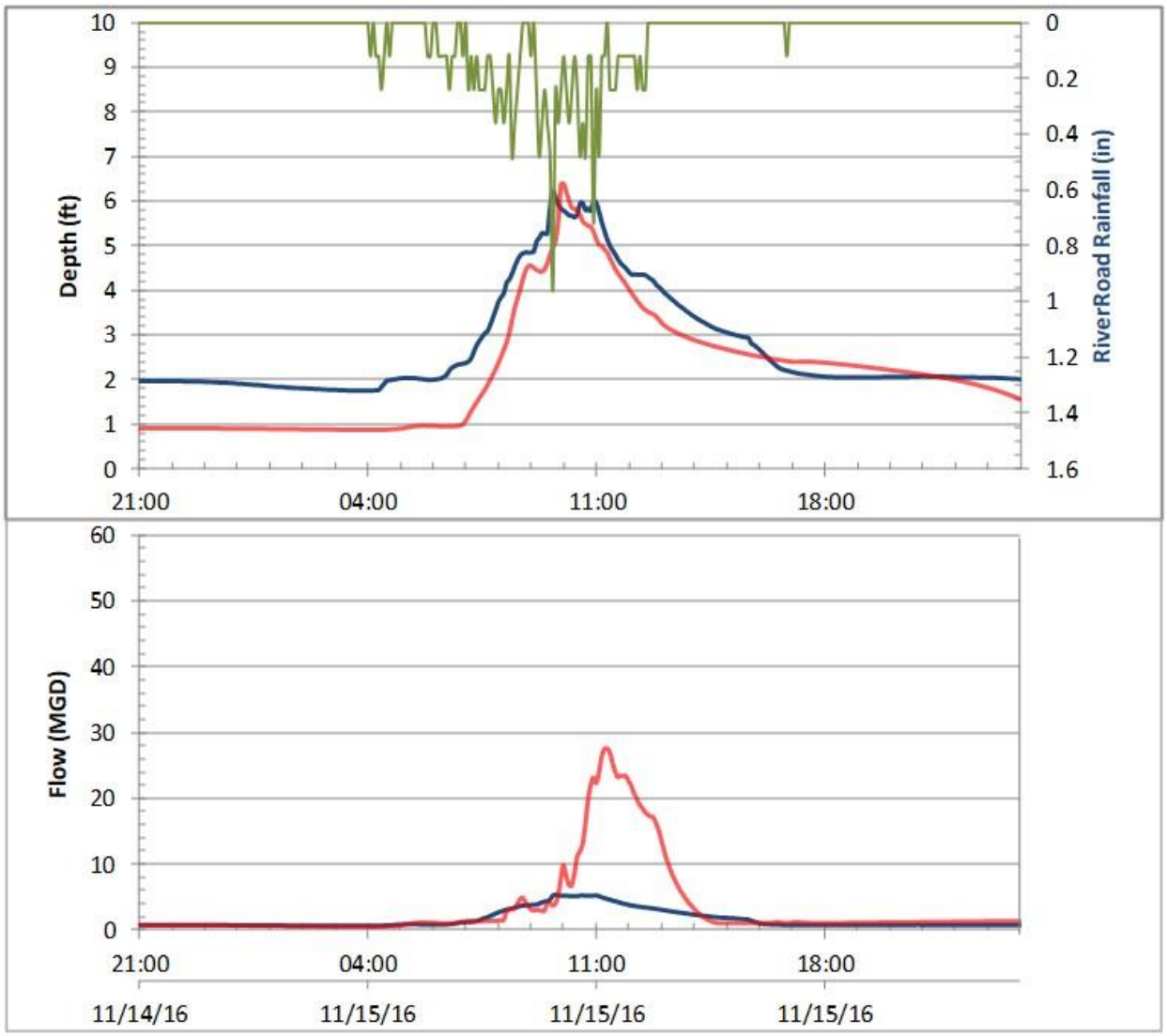
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			3.75	2.66	1.06
Model			3.38	3.40	1.18
		Difference	-0.38	28%	11%

H4

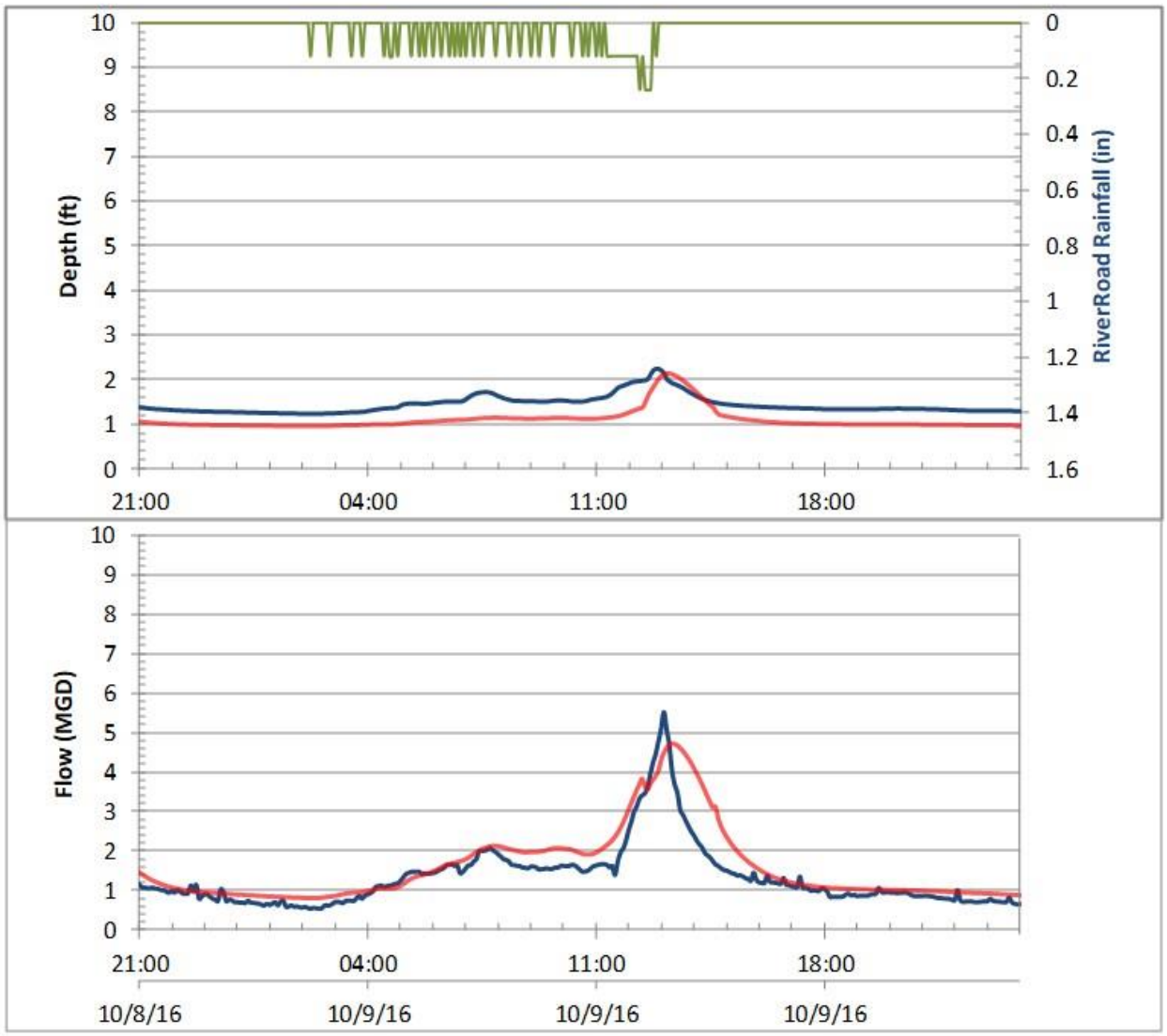
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			6.23	5.38	1.69
Model			6.39	27.60	3.74
		Difference	0.15	413%	122%

H5

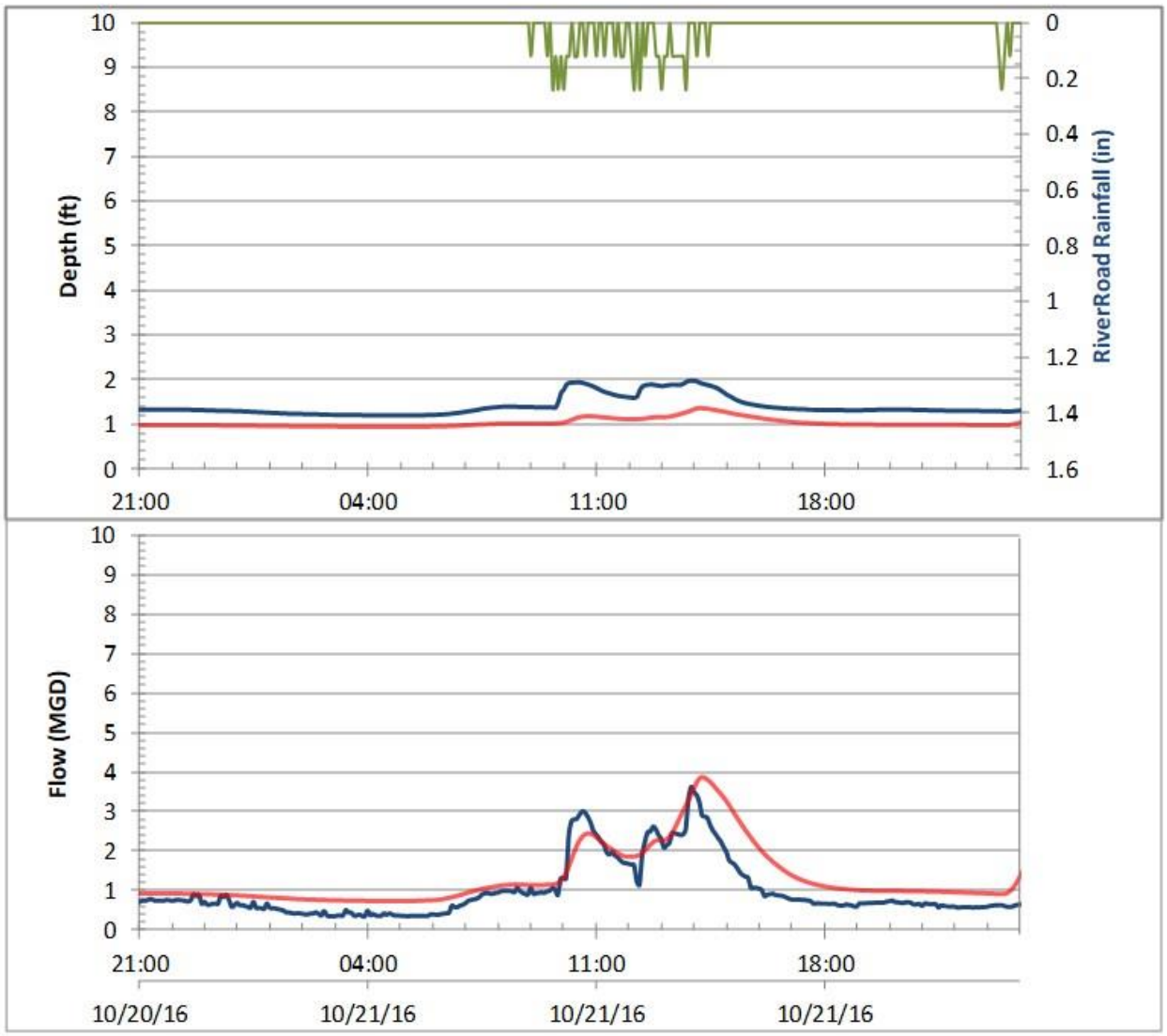
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			2.24	5.52	1.38
Model			2.14	4.73	1.65
		Difference	-0.10	-14%	20%

H5

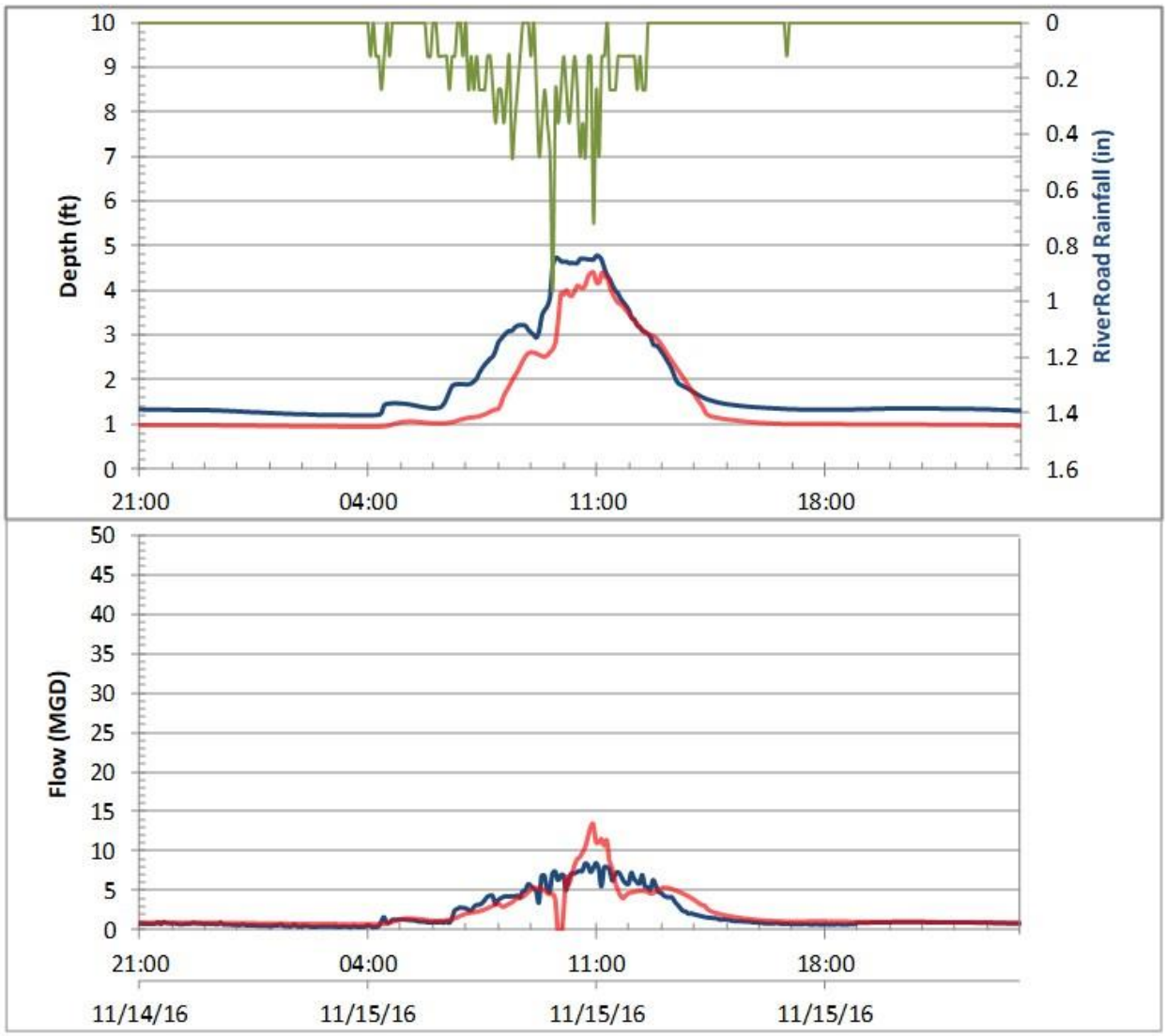
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			1.98	3.62	1.03
Model			1.36	3.87	1.38
		Difference	-0.62	7%	34%

H5

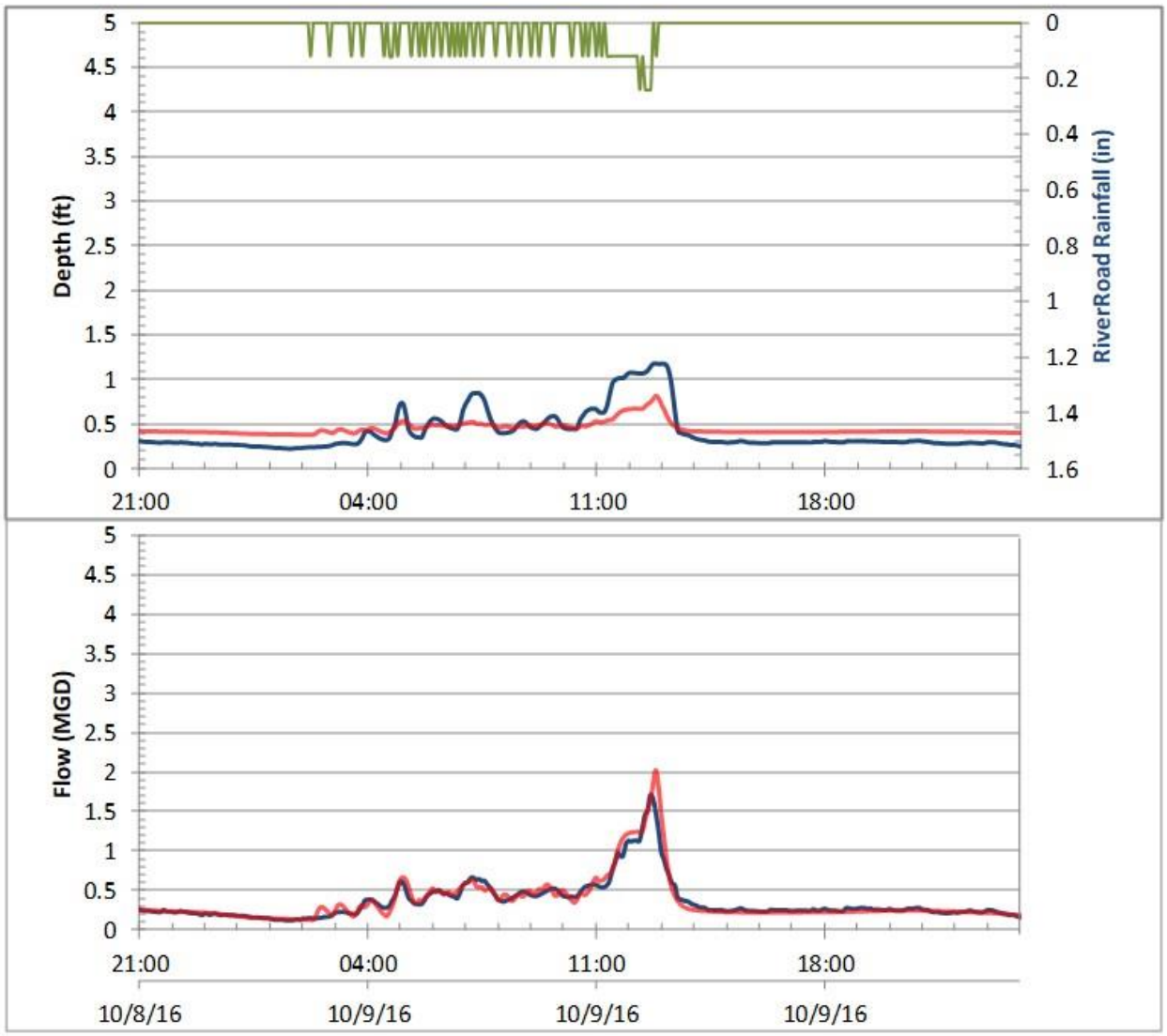
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			4.78	8.49	2.20
Model			4.40	13.42	2.34
		Difference	-0.38	58%	6%

H6

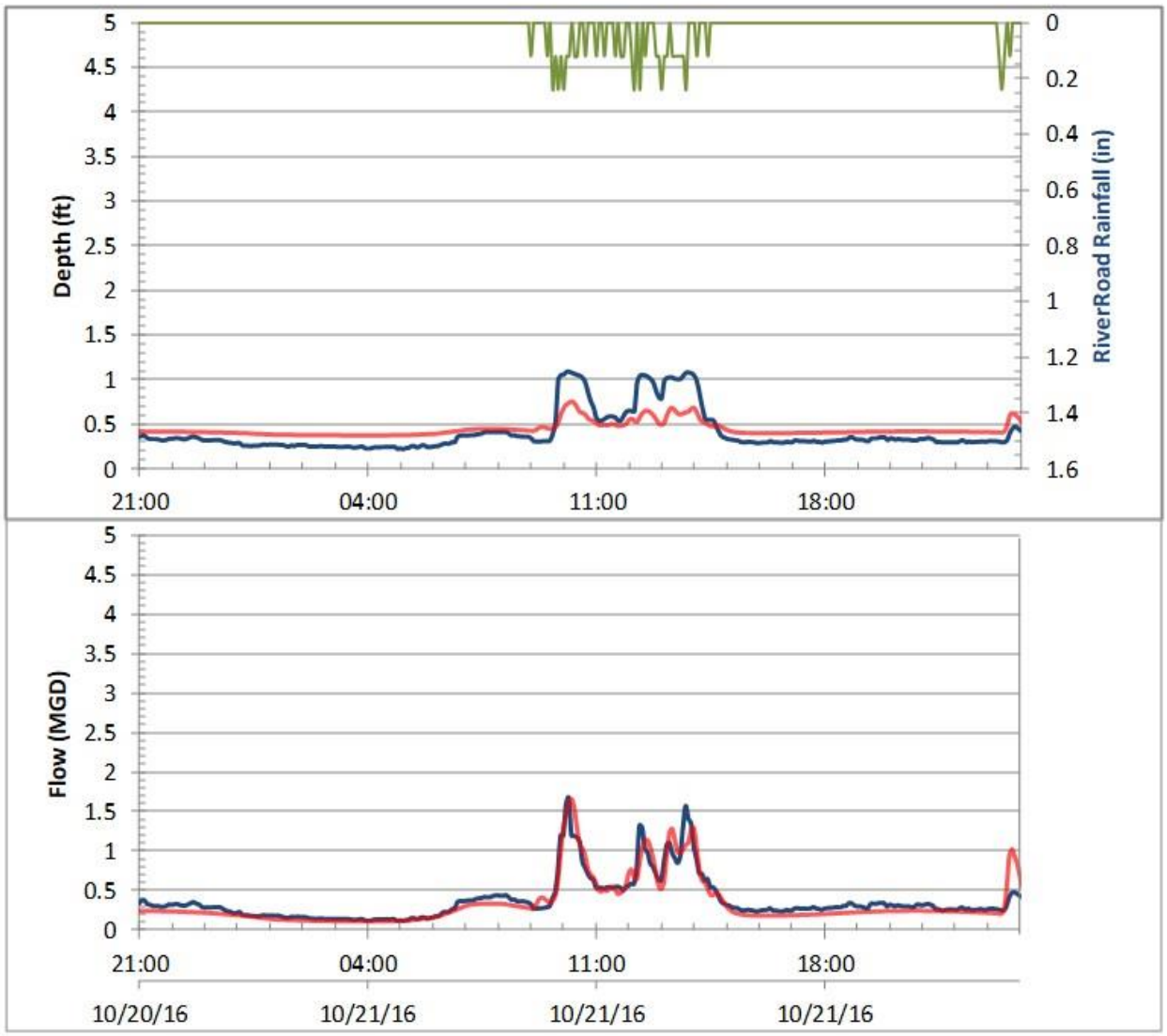
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			1.18	1.71	0.38
Model			0.82	2.02	0.38
		Difference	-0.36	18%	1%

H6

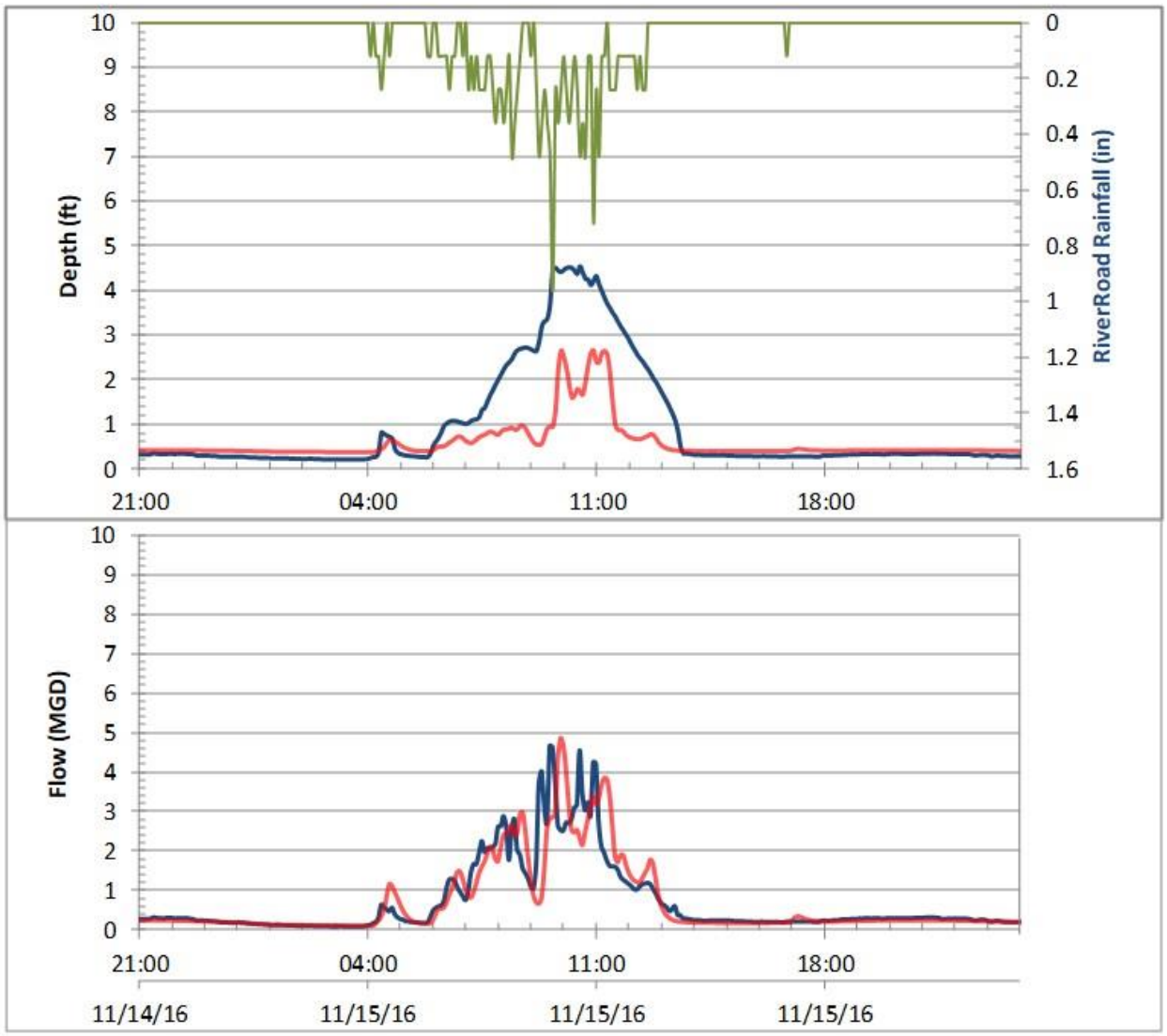
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			1.09	1.67	0.38
Model			0.76	1.66	0.35
		Difference	-0.33	-1%	-7%

H6

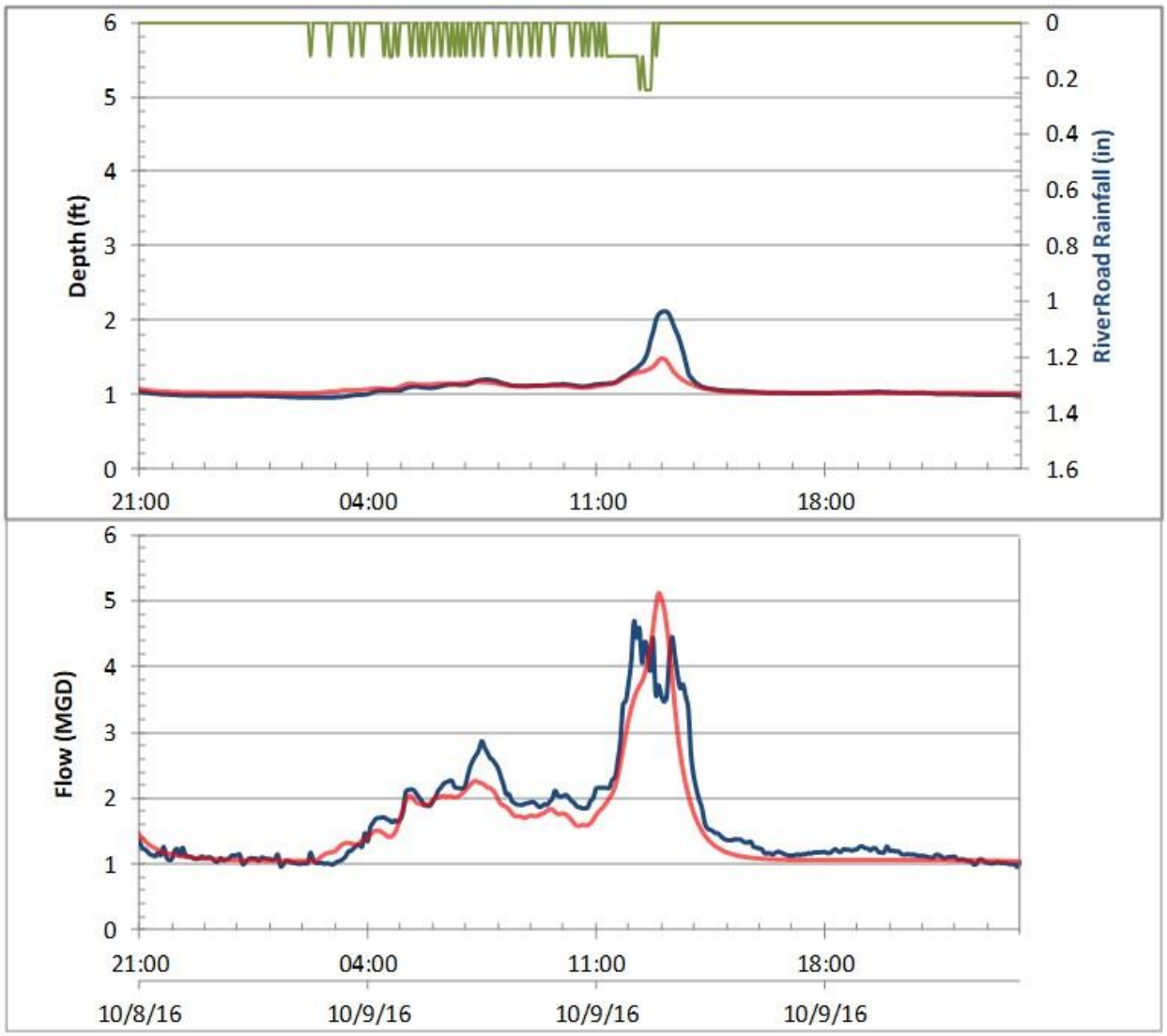
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			4.54	4.66	0.75
Model			2.66	4.86	0.74
		Difference	-1.88	4%	-1%

H7

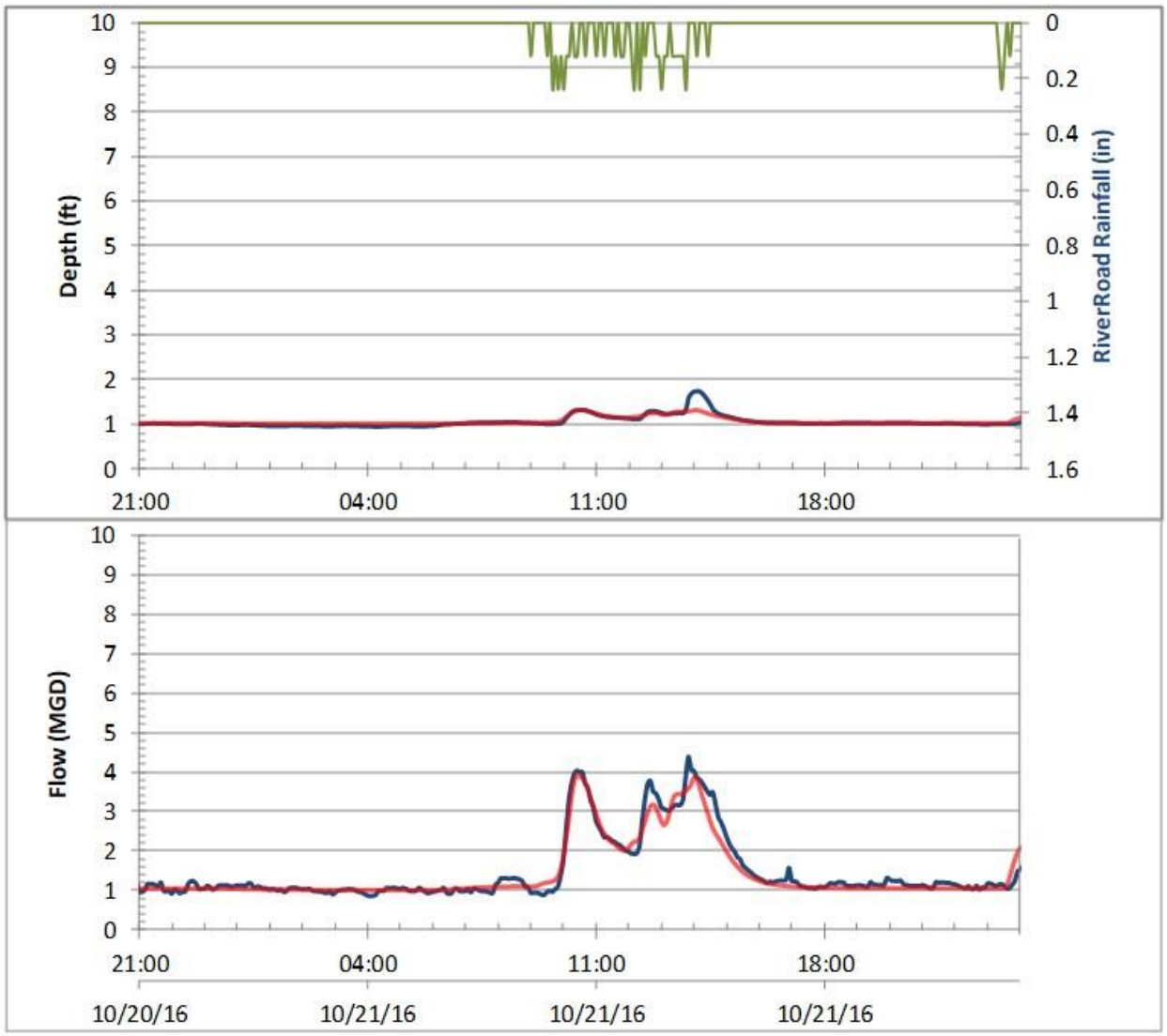
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			2.12	4.69	1.72
Model			1.49	5.12	1.58
		Difference	-0.63	9%	-8%

H7

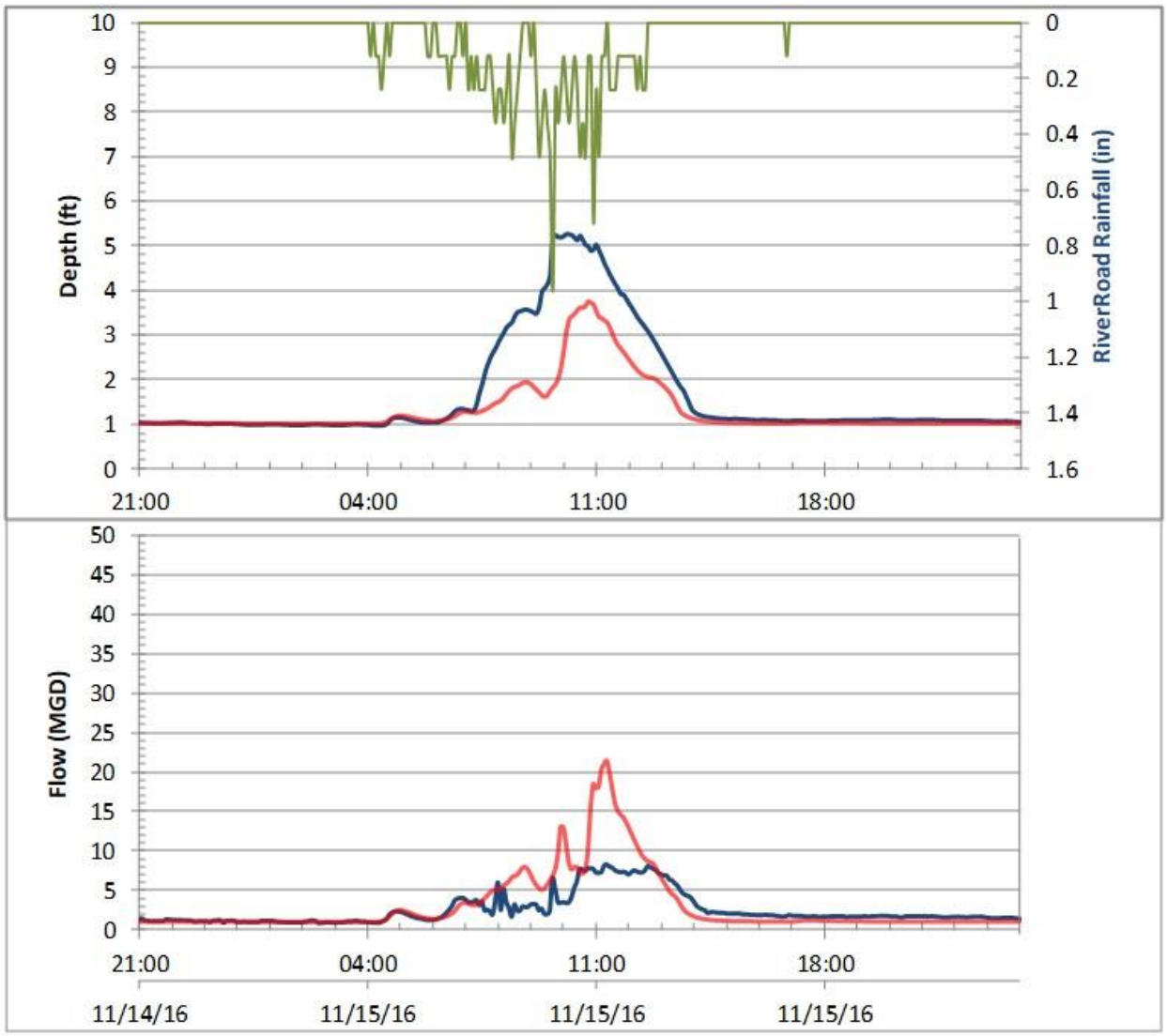
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			1.74	4.39	1.54
Model			1.32	3.93	1.48
		Difference	-0.42	-10%	-4%

H7

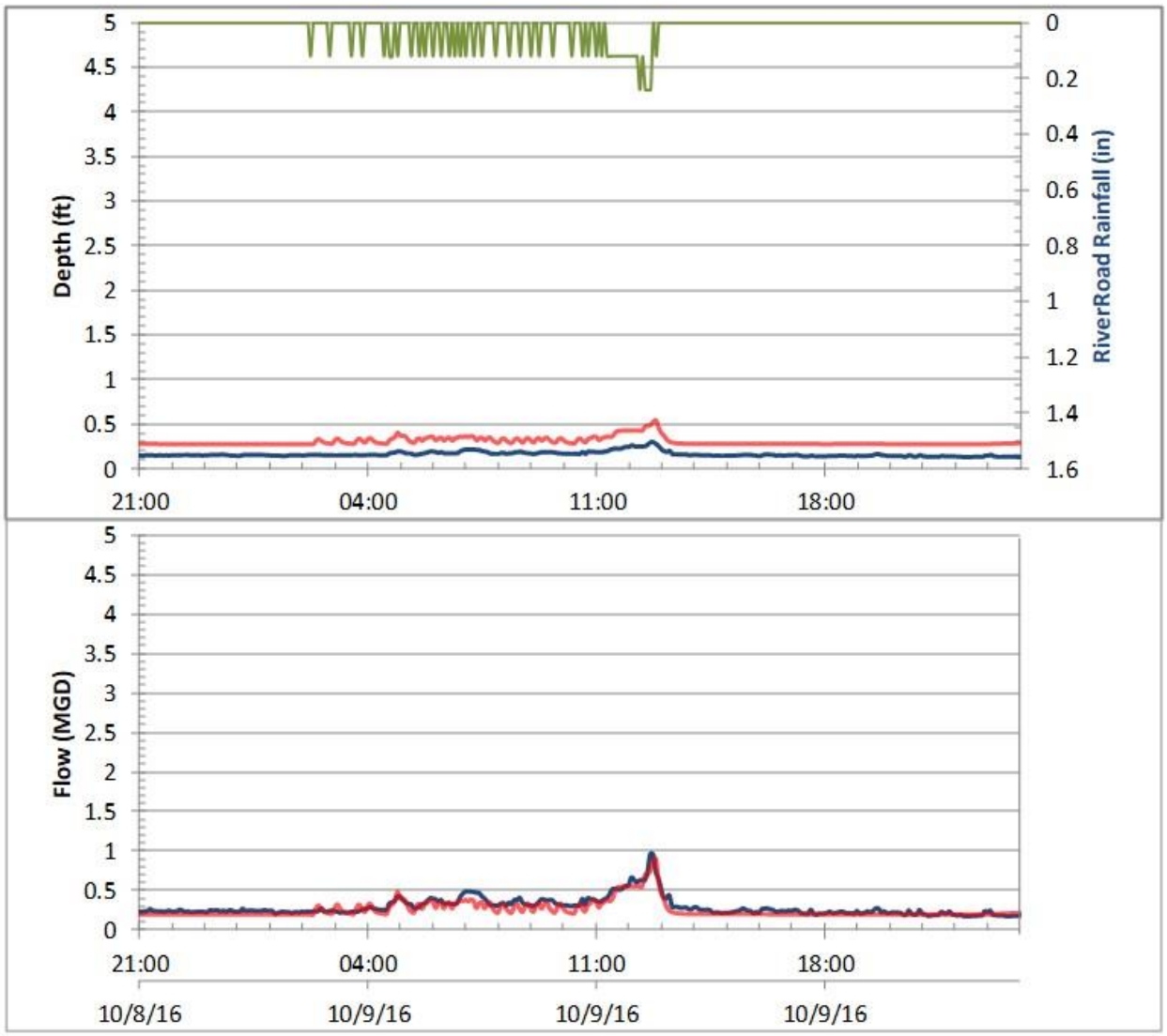
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			5.26	8.30	2.69
Model			3.75	21.44	3.32
		Difference	-1.51	158%	23%

HSI

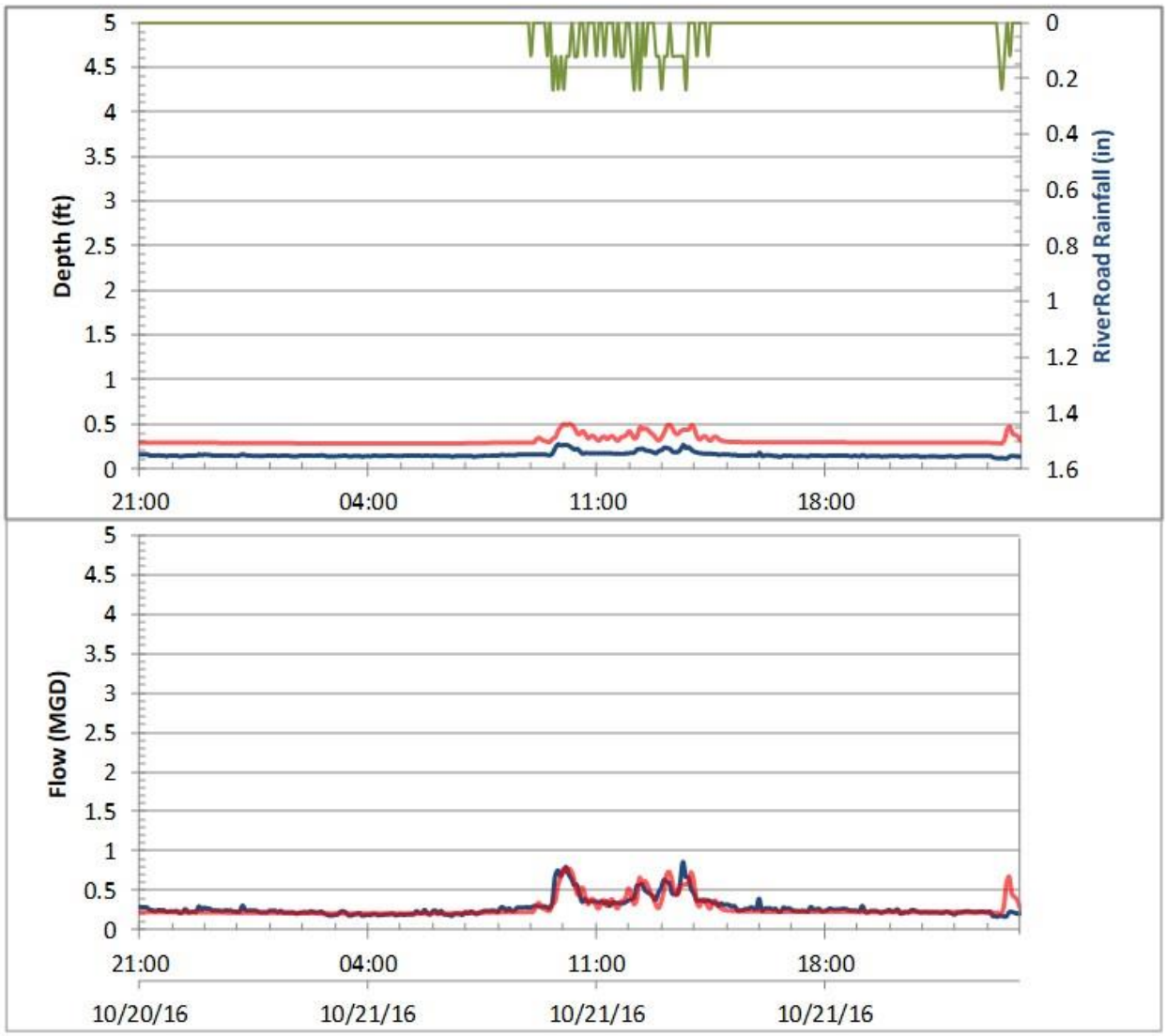
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			0.30	0.96	0.30
Model			0.54	0.90	0.26
		Difference	0.24	-6%	-11%

HSI

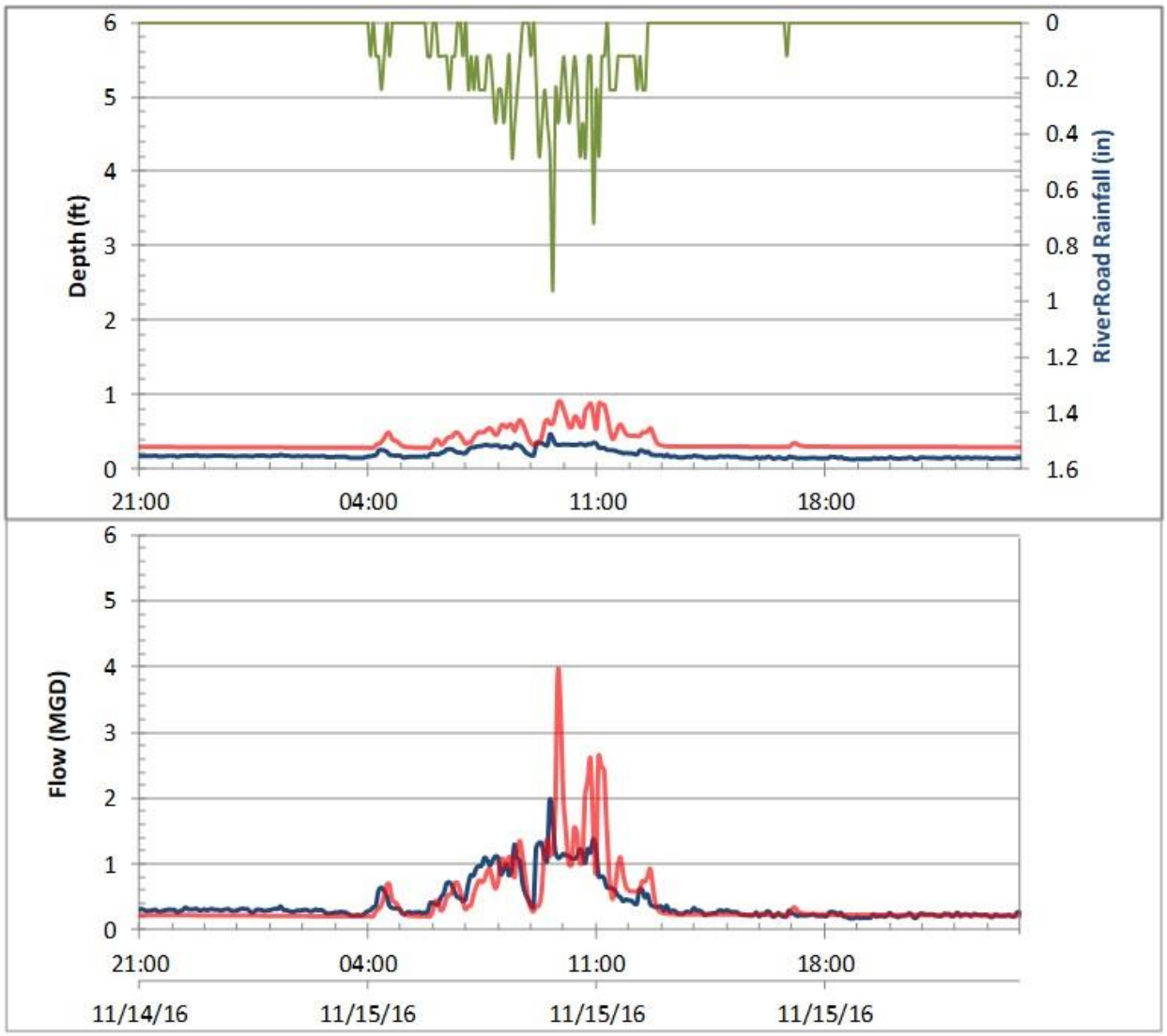
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			0.28	0.86	0.29
Model			0.50	0.78	0.28
		Difference	0.23	-10%	-2%

HSI

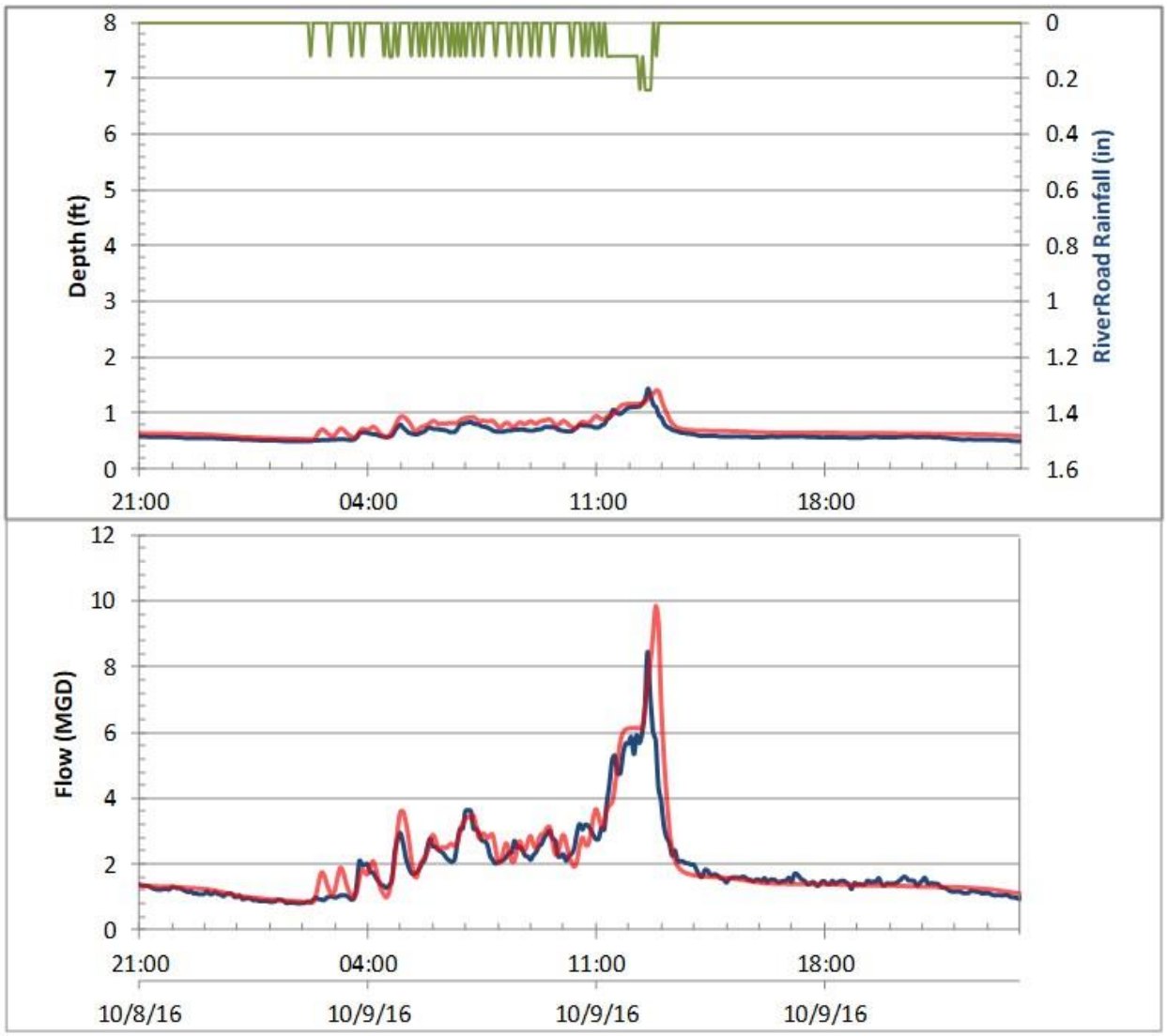
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			0.47	1.97	0.43
Model			0.90	3.91	0.46
		Difference	0.43	99%	7%

NHW

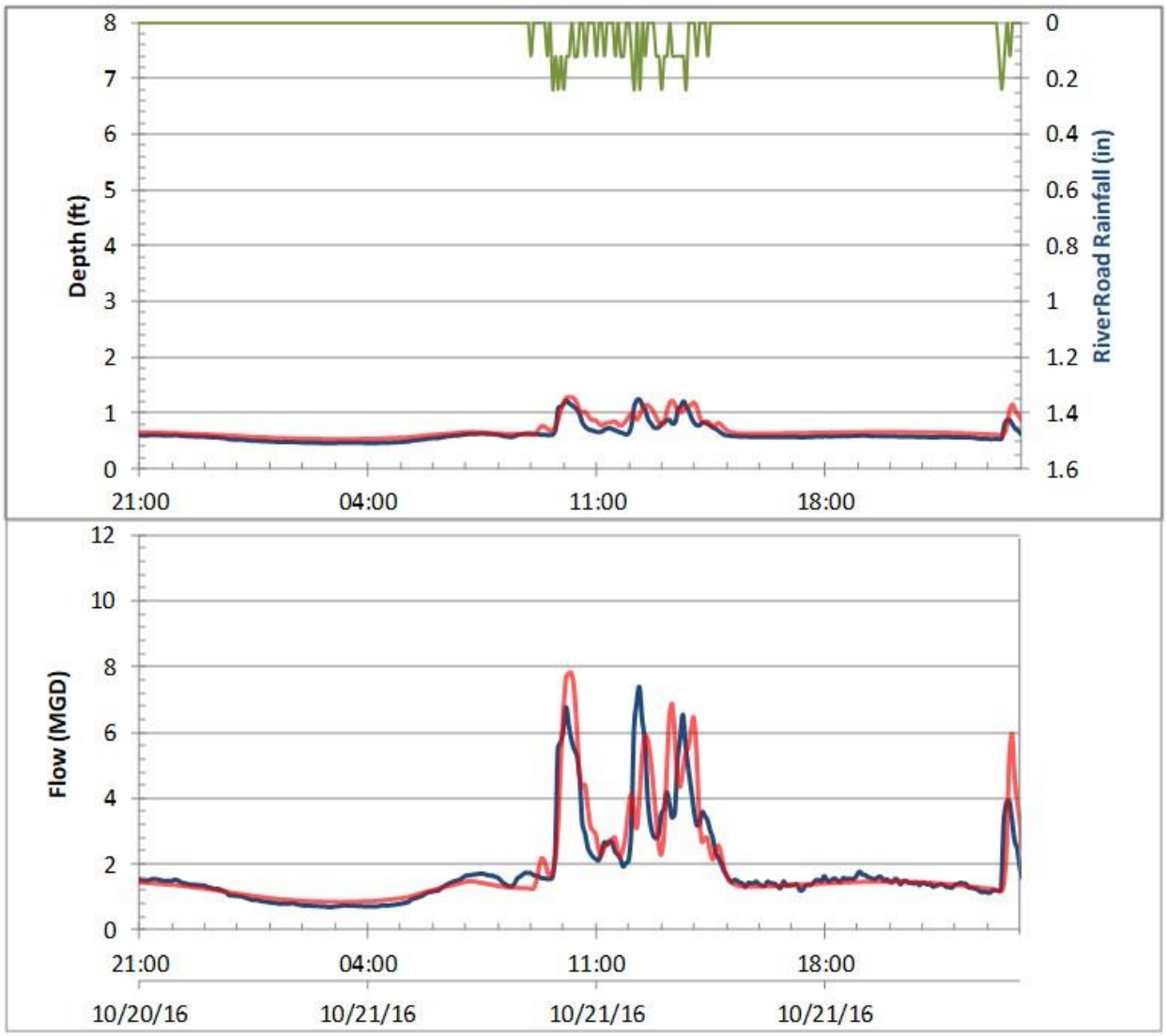
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			1.44	8.45	2.00
Model			1.41	9.84	2.11
		Difference	-0.03	16%	5%

NHW

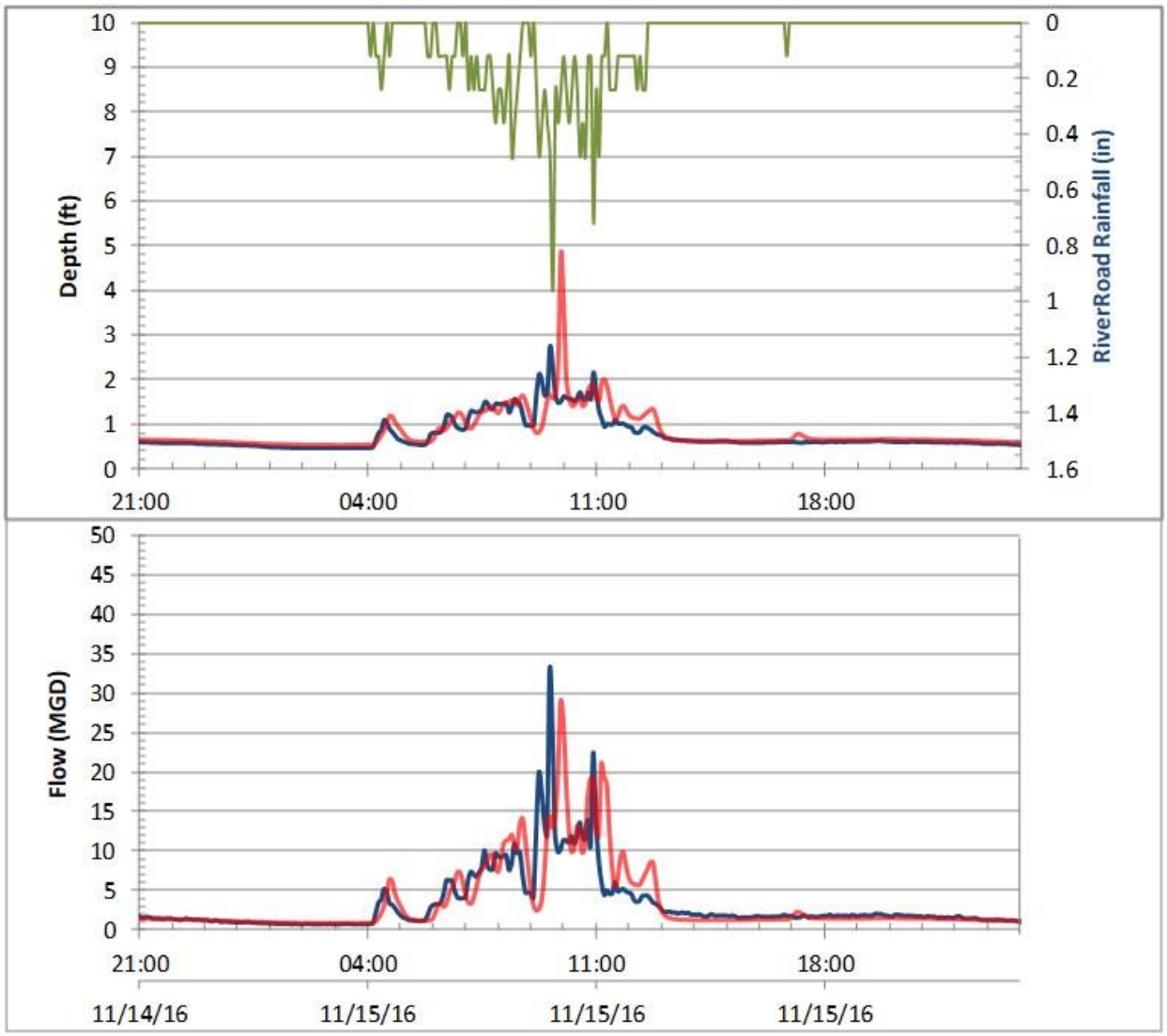
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			1.24	7.38	1.85
Model			1.29	7.81	1.93
		Difference	0.05	6%	5%

NHW

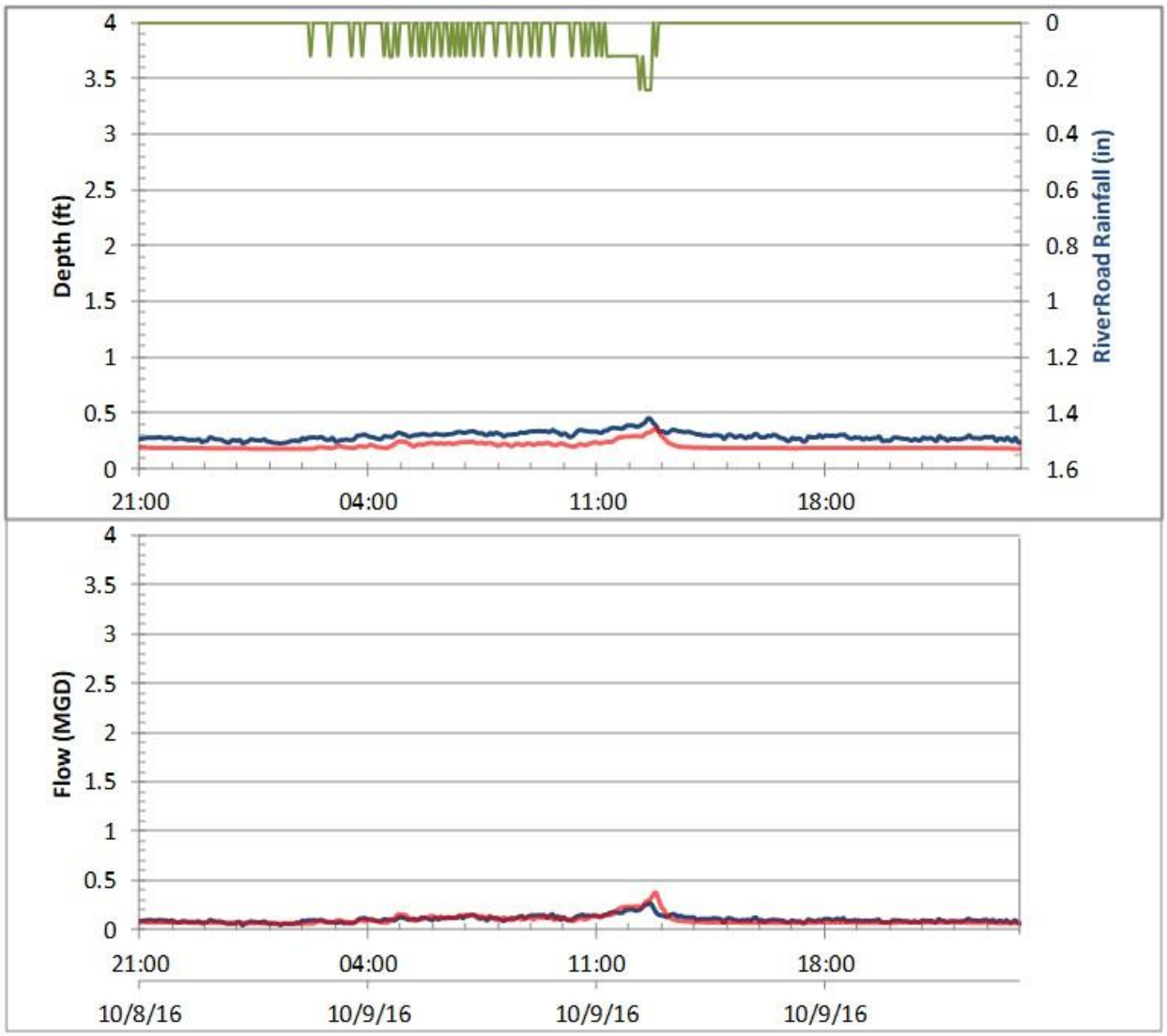
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			2.74	32.93	3.52
Model			4.85	28.94	3.74
		Difference	2.10	-12%	6%

UH1

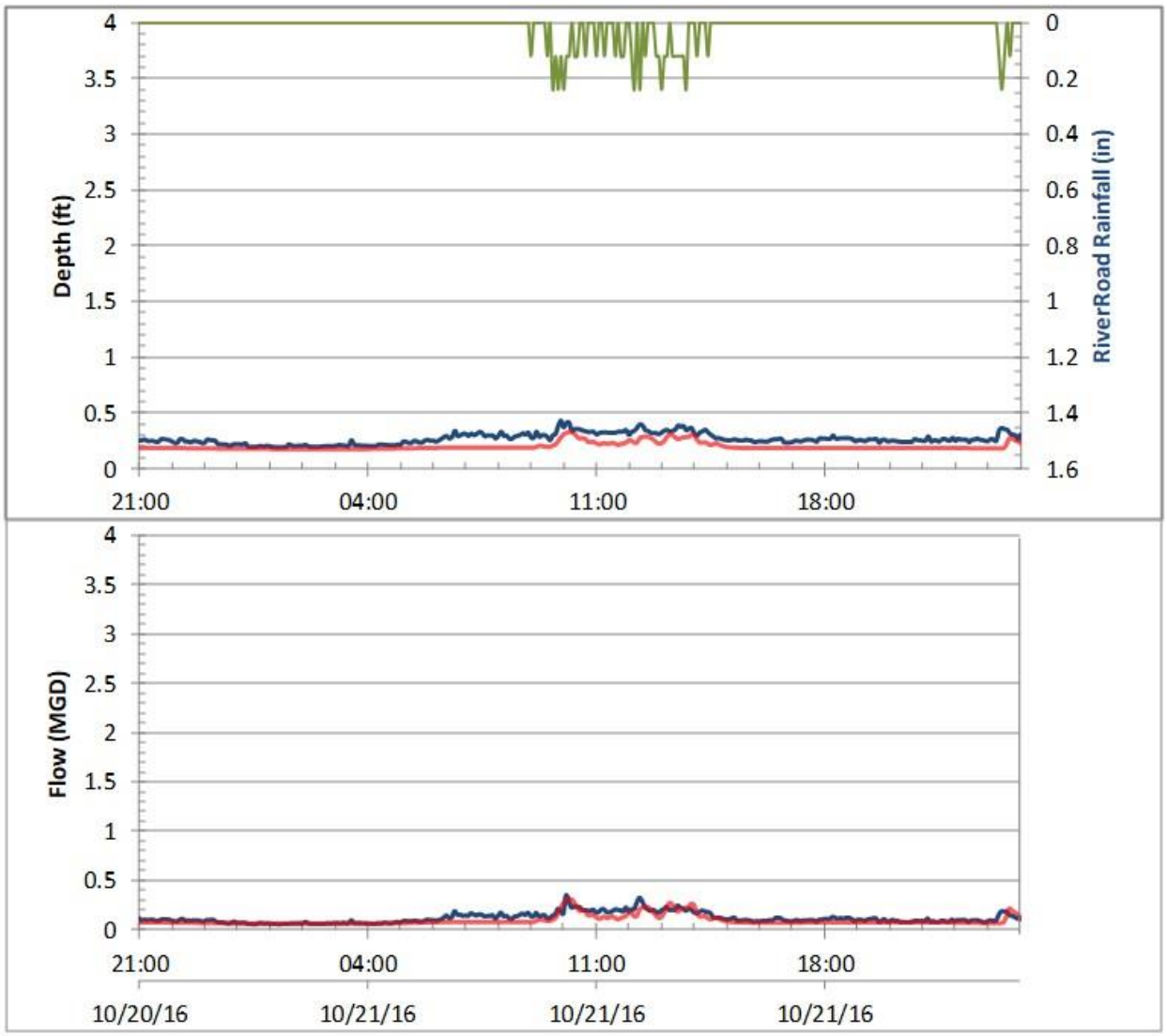
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			0.46	0.27	0.11
Model			0.37	0.38	0.10
		Difference	-0.09	39%	-7%

UH1

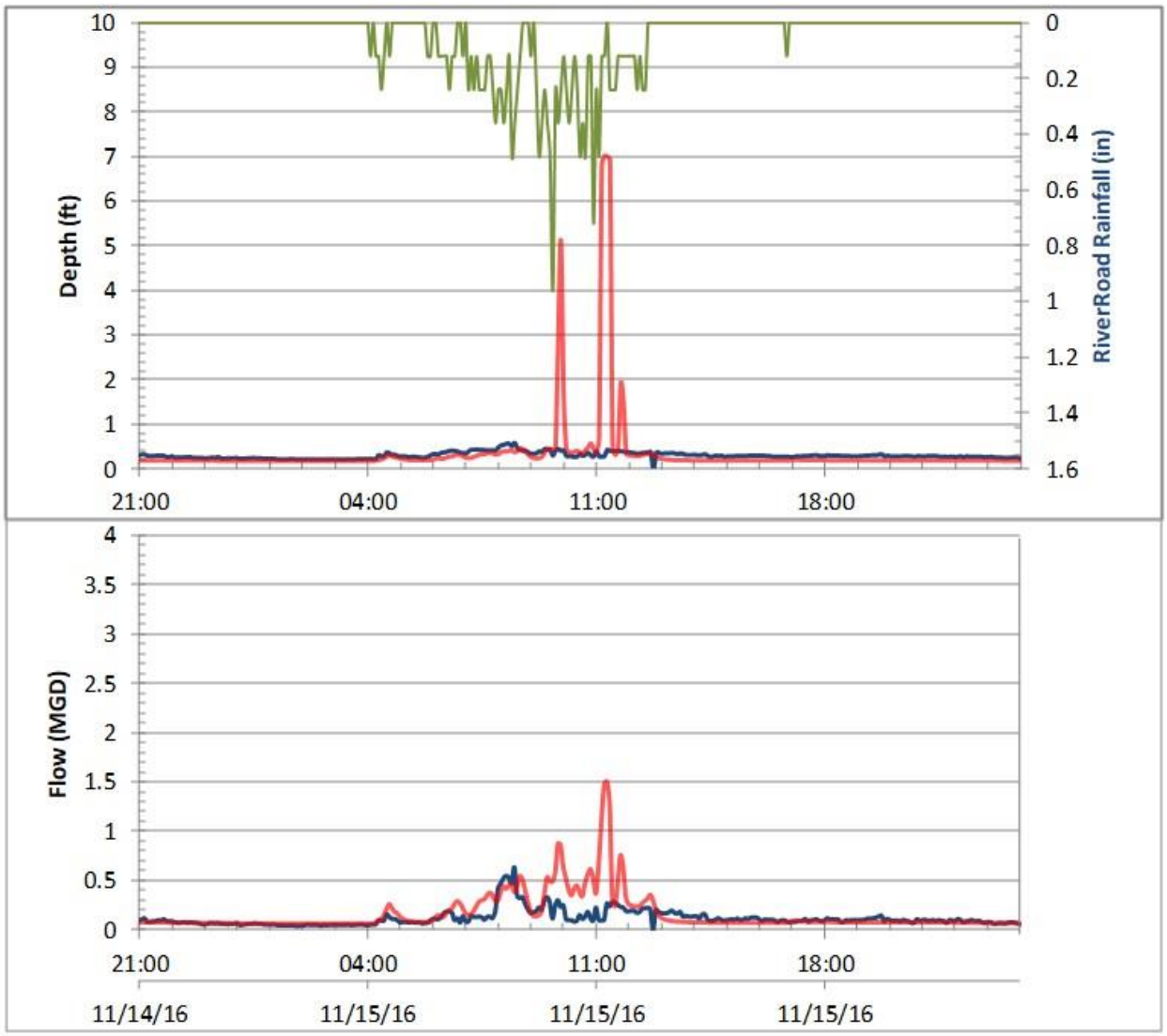
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			0.43	0.35	0.12
Model			0.33	0.31	0.10
		Difference	-0.10	-11%	-19%

UH1

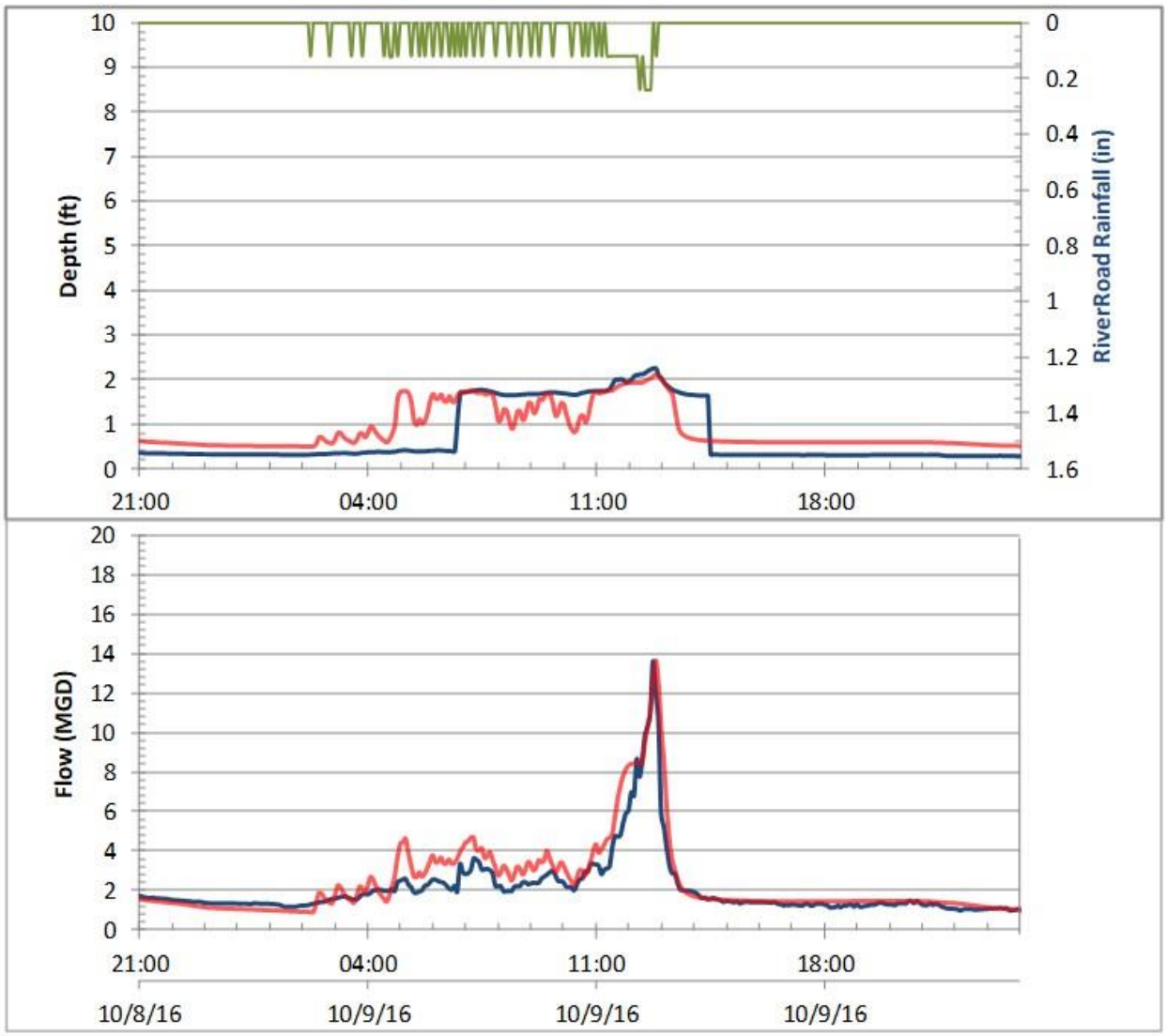
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			0.59	0.64	0.12
Model			7.02	1.51	0.17
		Difference	6.43	137%	39%

W1

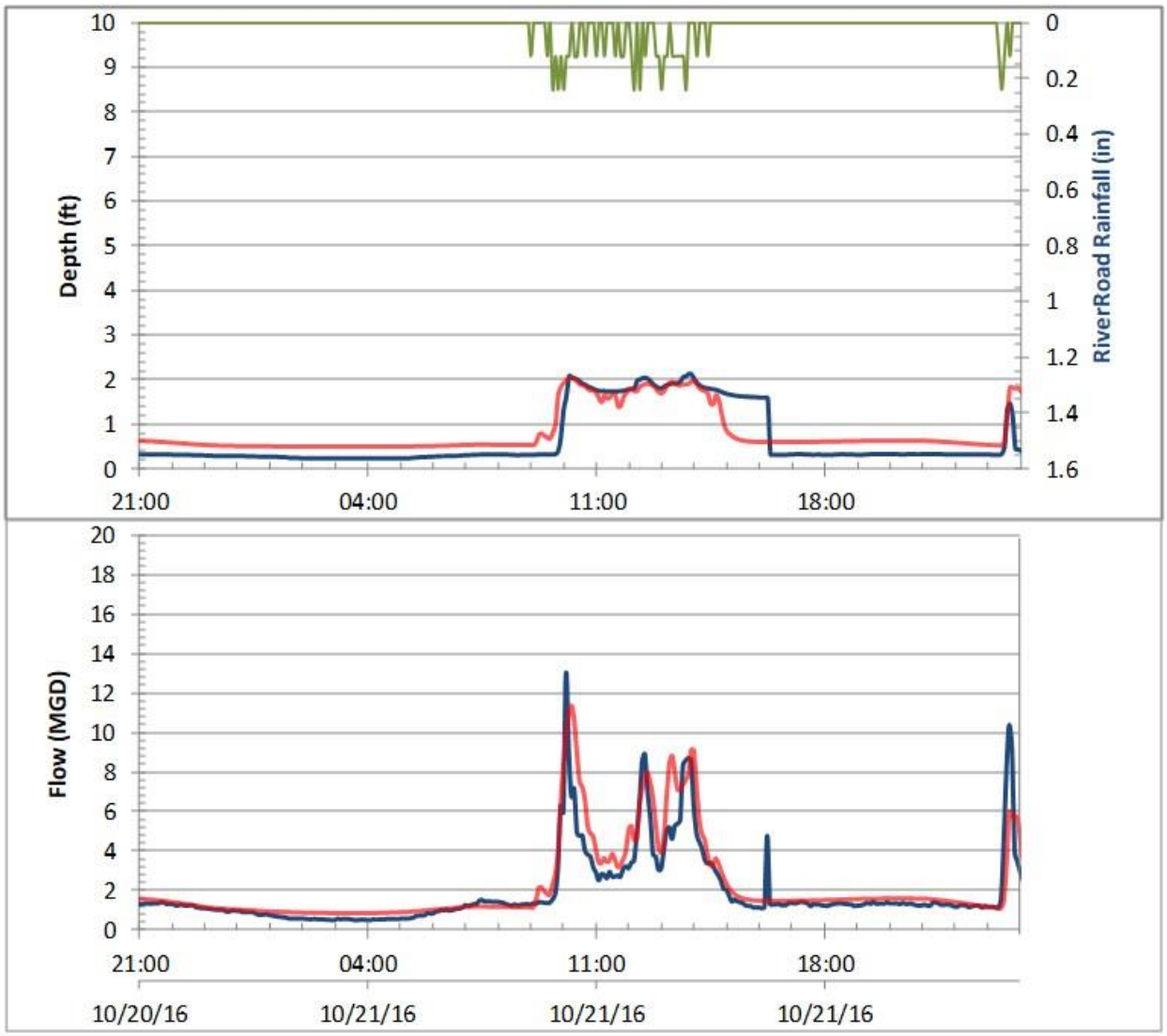
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			2.25	13.61	2.17
Model			2.12	13.65	2.57
		Difference	-0.14	0%	18%

W1

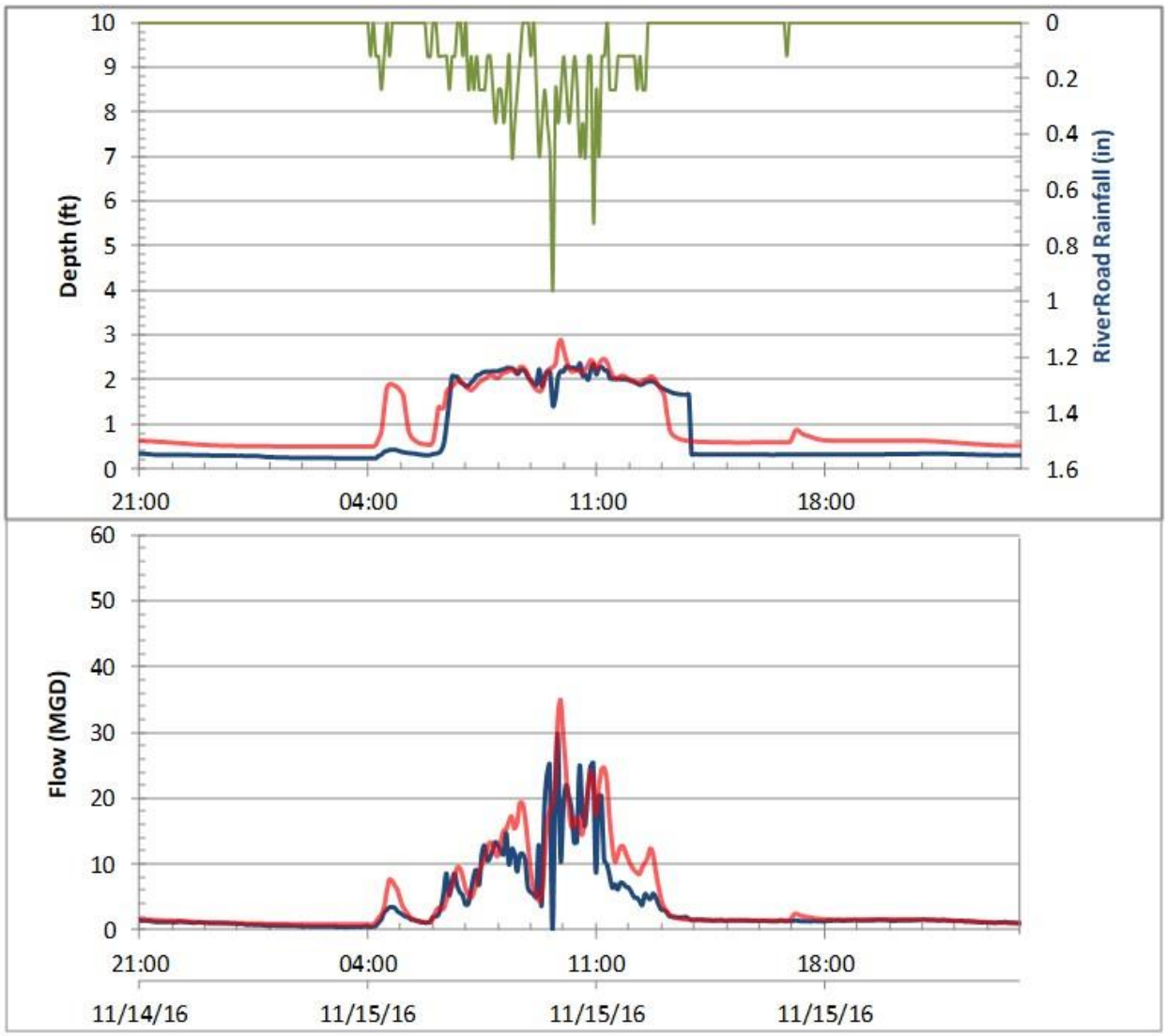
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			2.13	12.99	2.00
Model			2.04	11.36	2.34
		Difference	-0.09	-13%	17%

W1

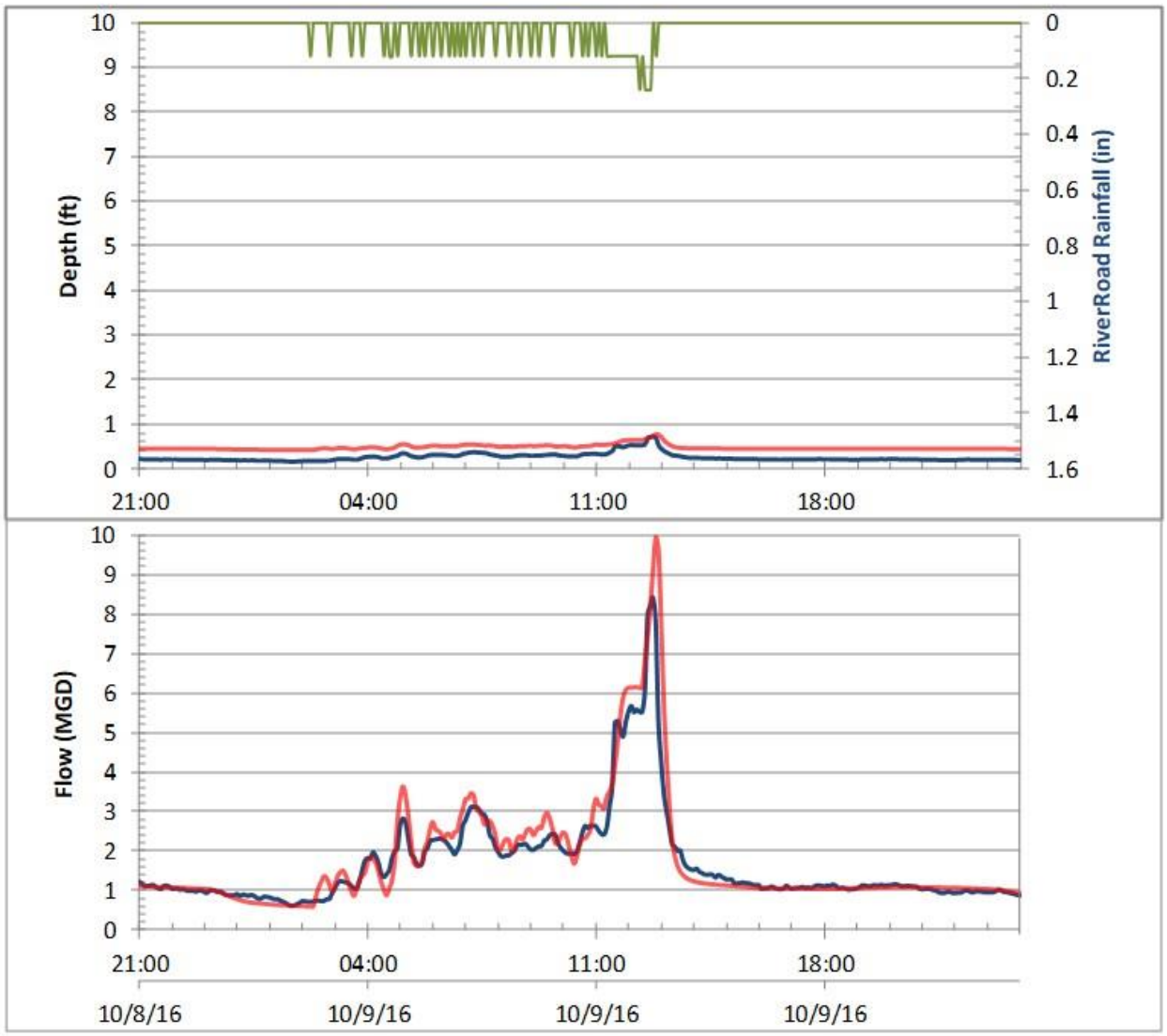
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			2.37	29.59	3.98
Model			2.89	34.98	4.94
		Difference	0.52	18%	24%

W2-A

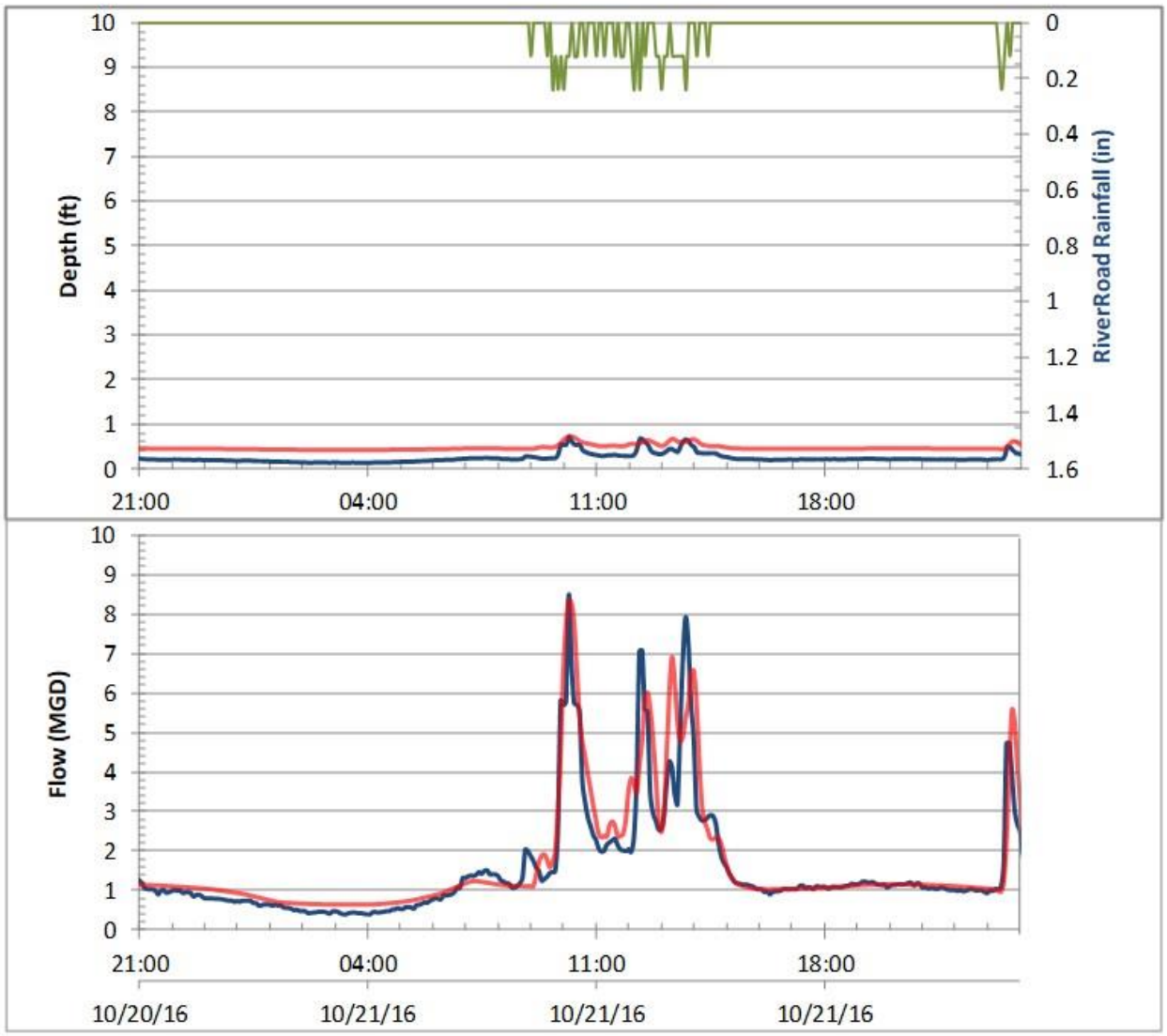
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			0.73	8.42	1.77
Model			0.77	9.95	1.88
		Difference	0.05	18%	6%

W2-A

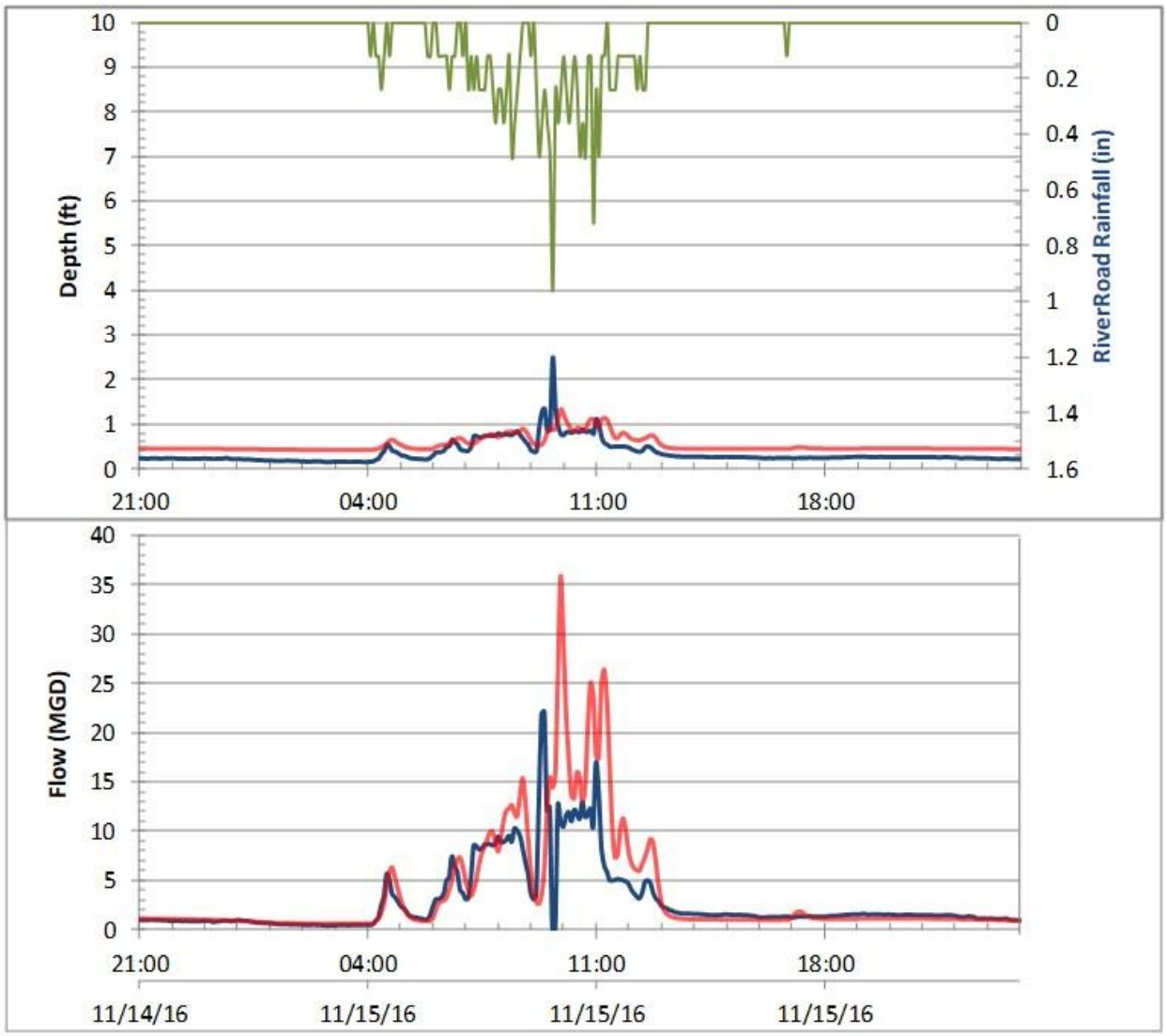
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			0.73	8.49	1.61
Model			0.73	8.35	1.76
		Difference	-0.01	-2%	10%

W2-A

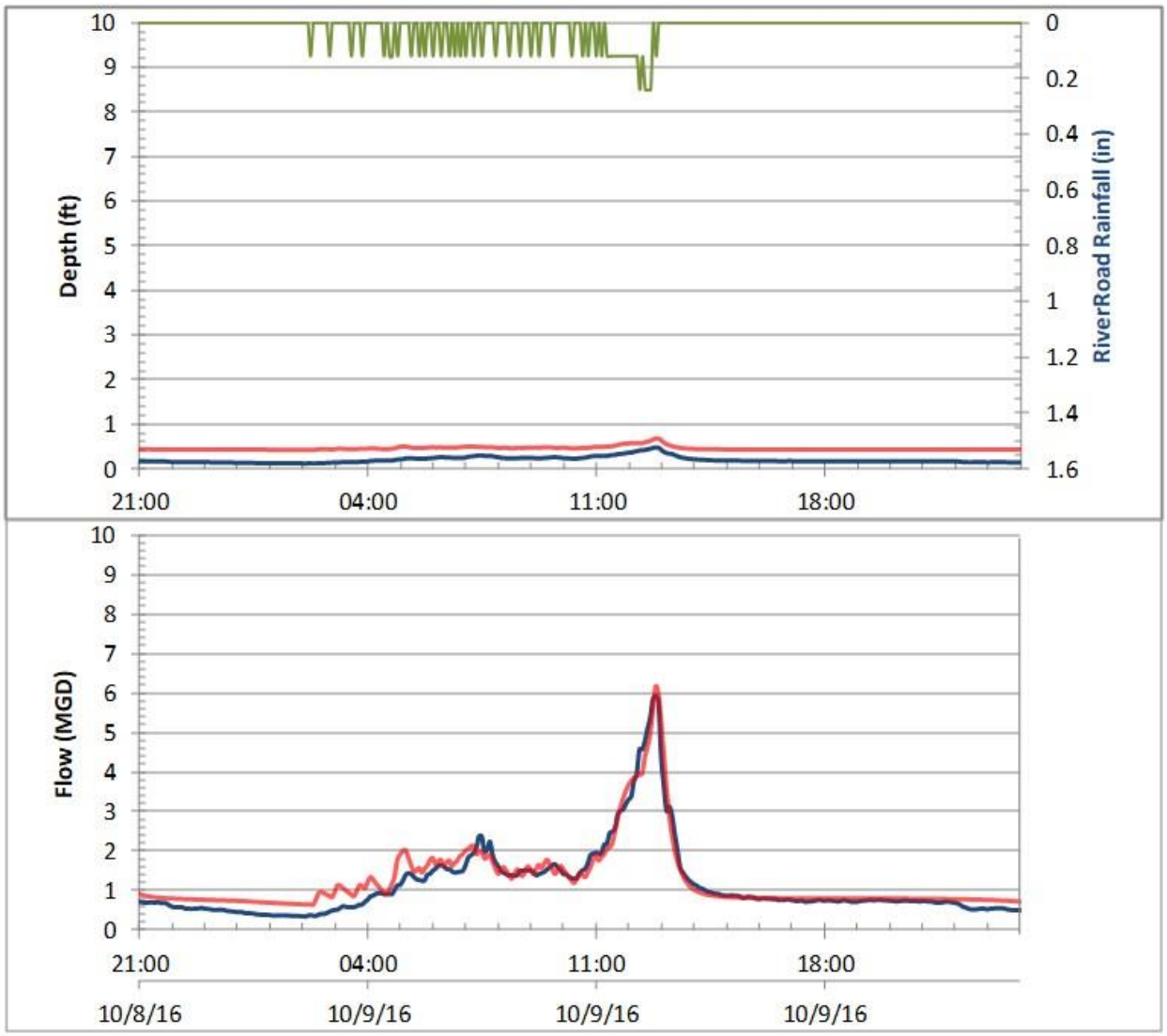
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			2.50	22.14	3.16
Model			1.34	35.79	3.99
		Difference	-1.16	62%	26%

W2-B

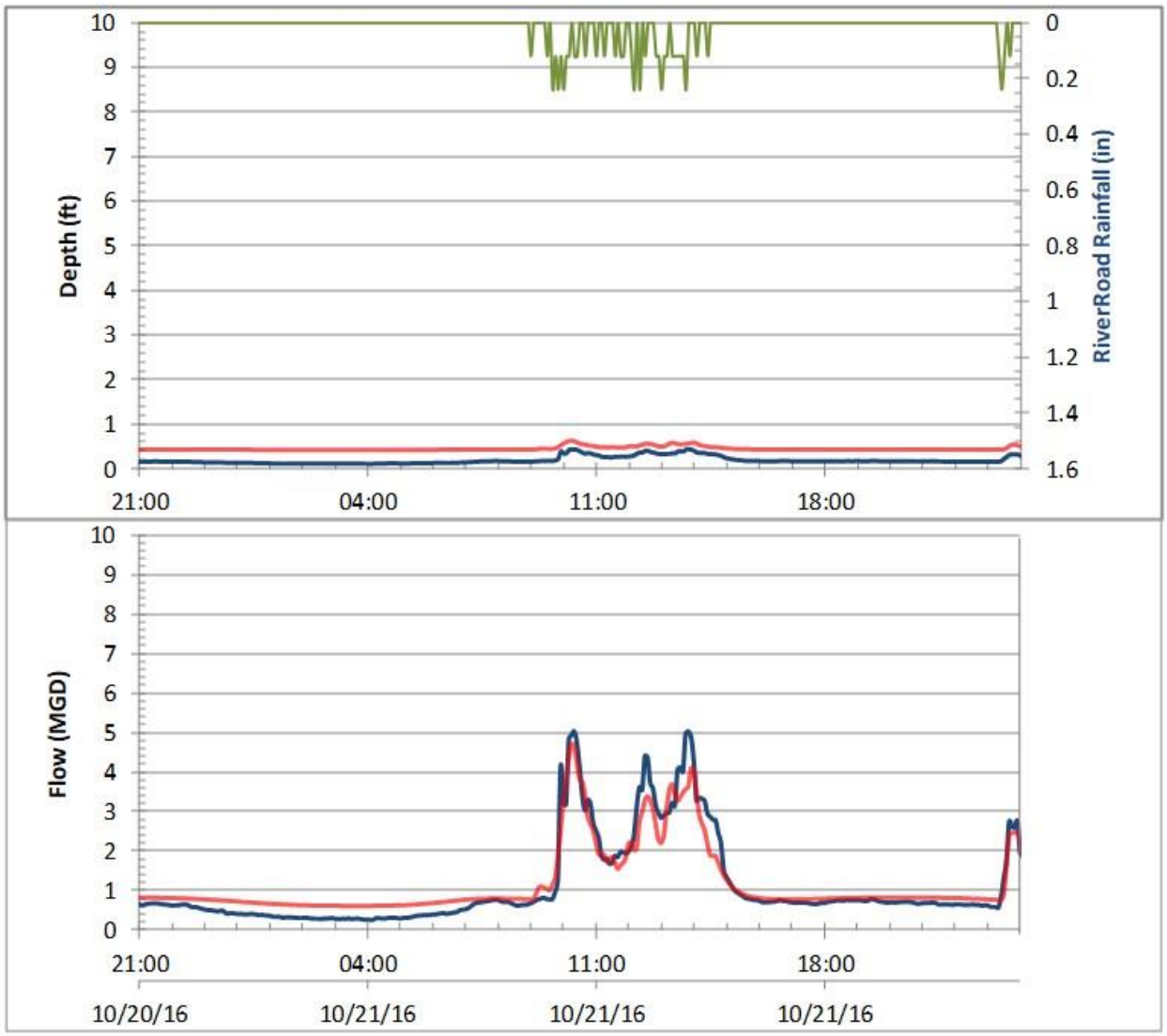
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			0.48	5.93	1.21
Model			0.69	6.18	1.32
		Difference	0.21	4%	9%

W2-B

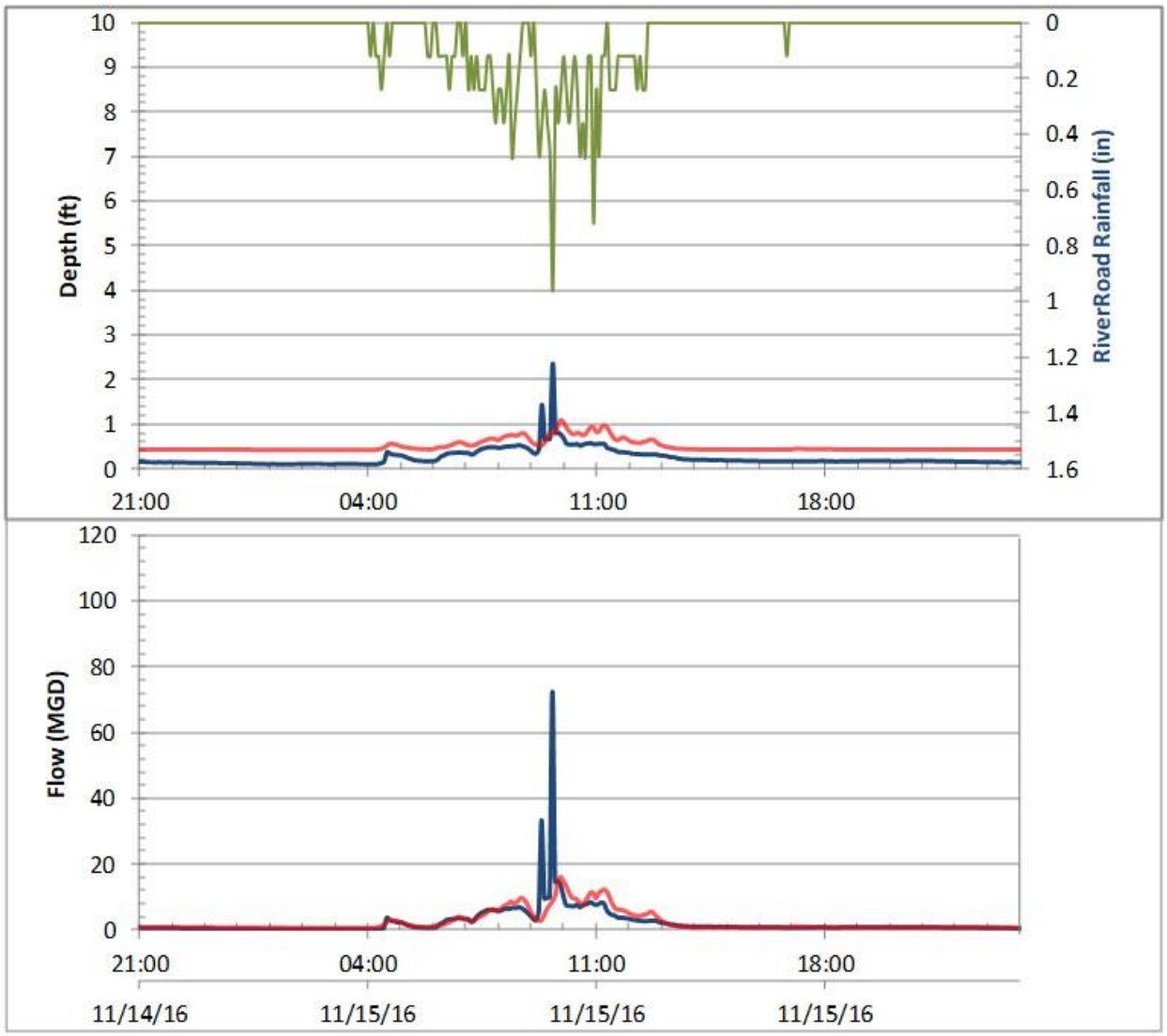
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			0.44	5.03	1.17
Model			0.63	4.71	1.22
		Difference	0.19	-6%	5%

W2-B

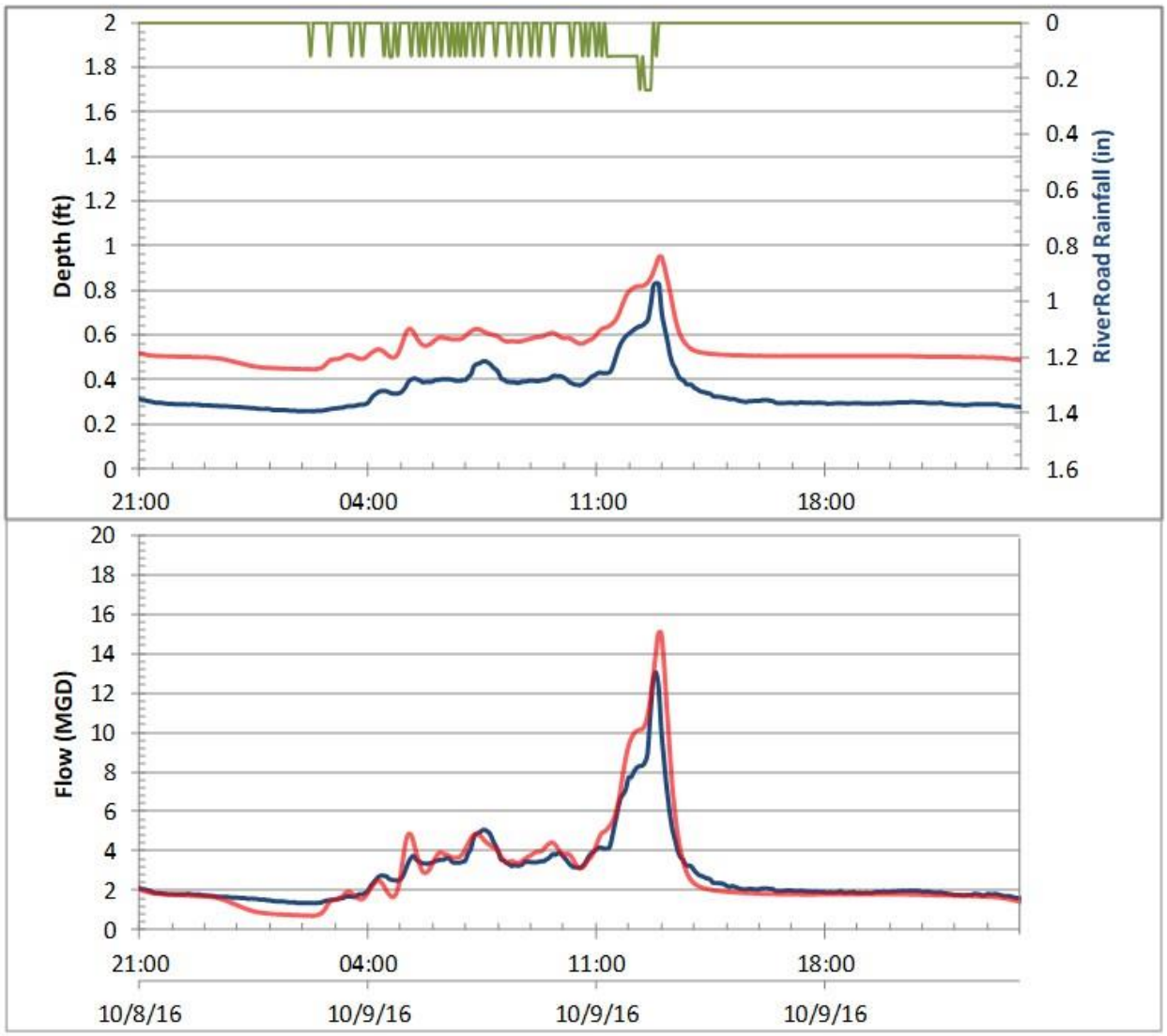
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			2.36	72.42	2.46
Model			1.09	16.13	2.56
		Difference	-1.26	-78%	4%

W3

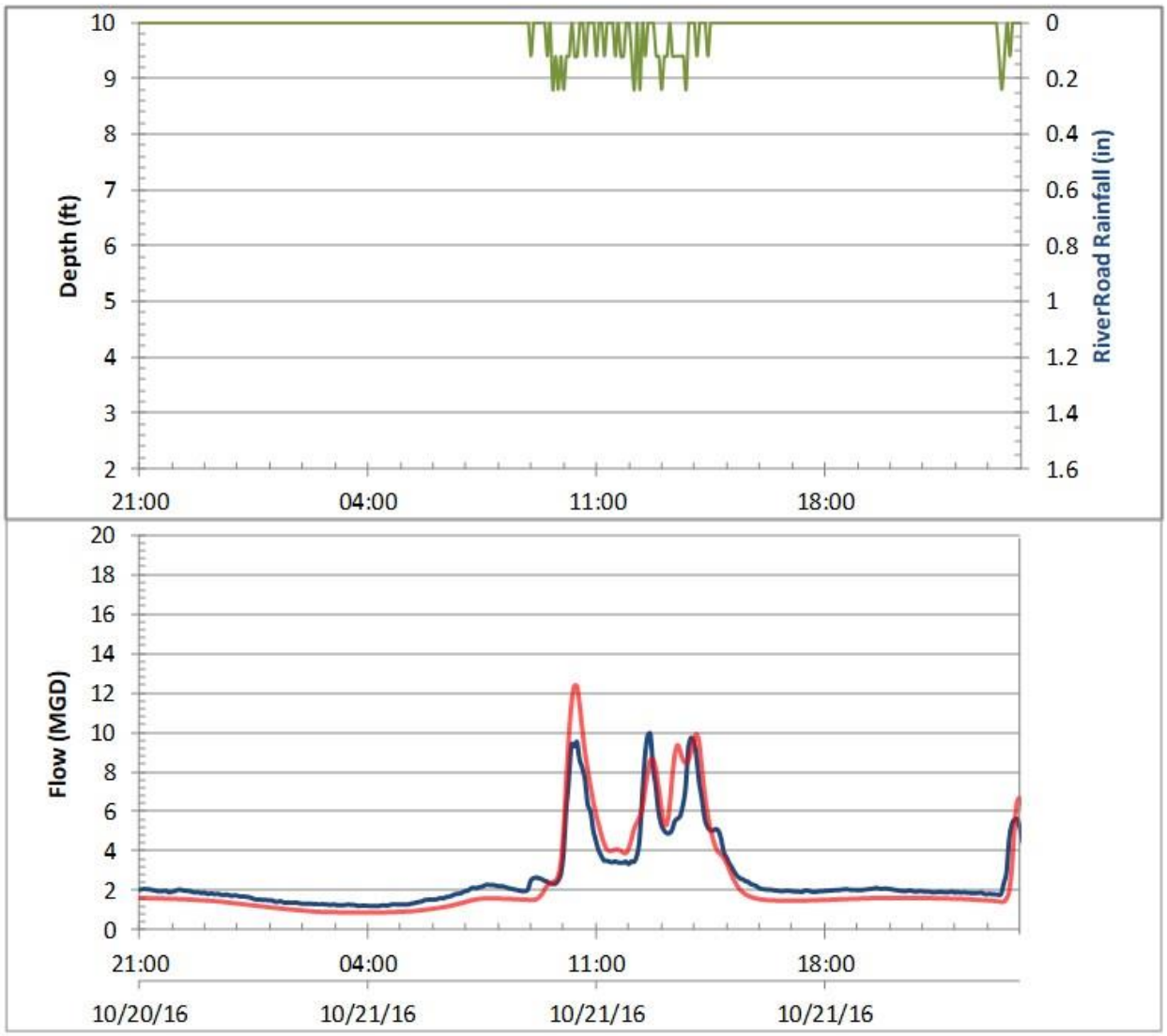
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			0.83	13.06	2.94
Model			0.95	15.06	3.00
		Difference	0.12	15%	2%

W3

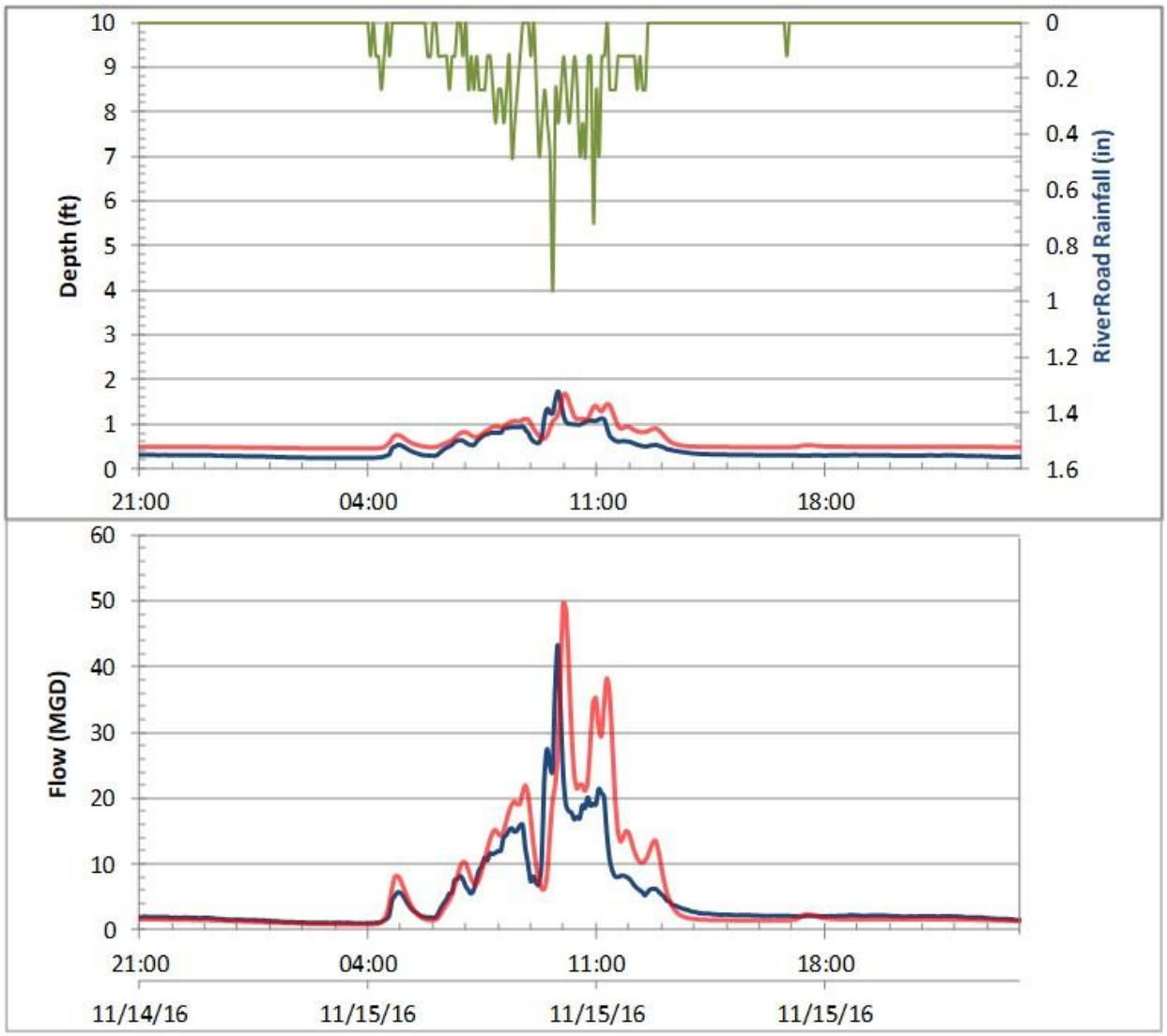
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			0.75	9.95	2.76
Model			0.87	12.36	2.62
		Difference	0.12	24%	-5%

W3

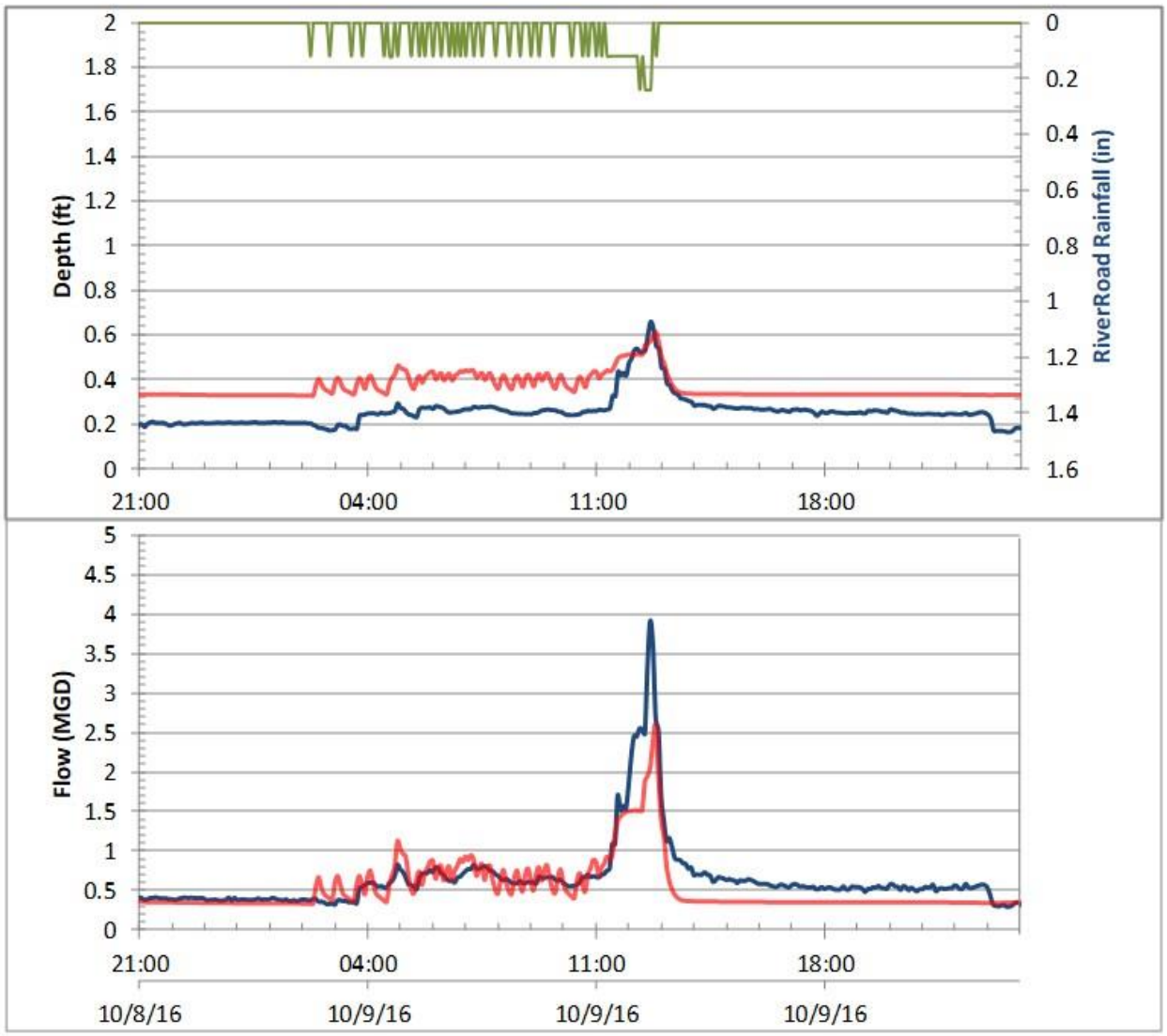
Event ID 32 Nov-14 - Nov-16



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			1.74	43.27	5.11
Model			1.68	49.58	6.19
		Difference	-0.06	15%	21%

W4

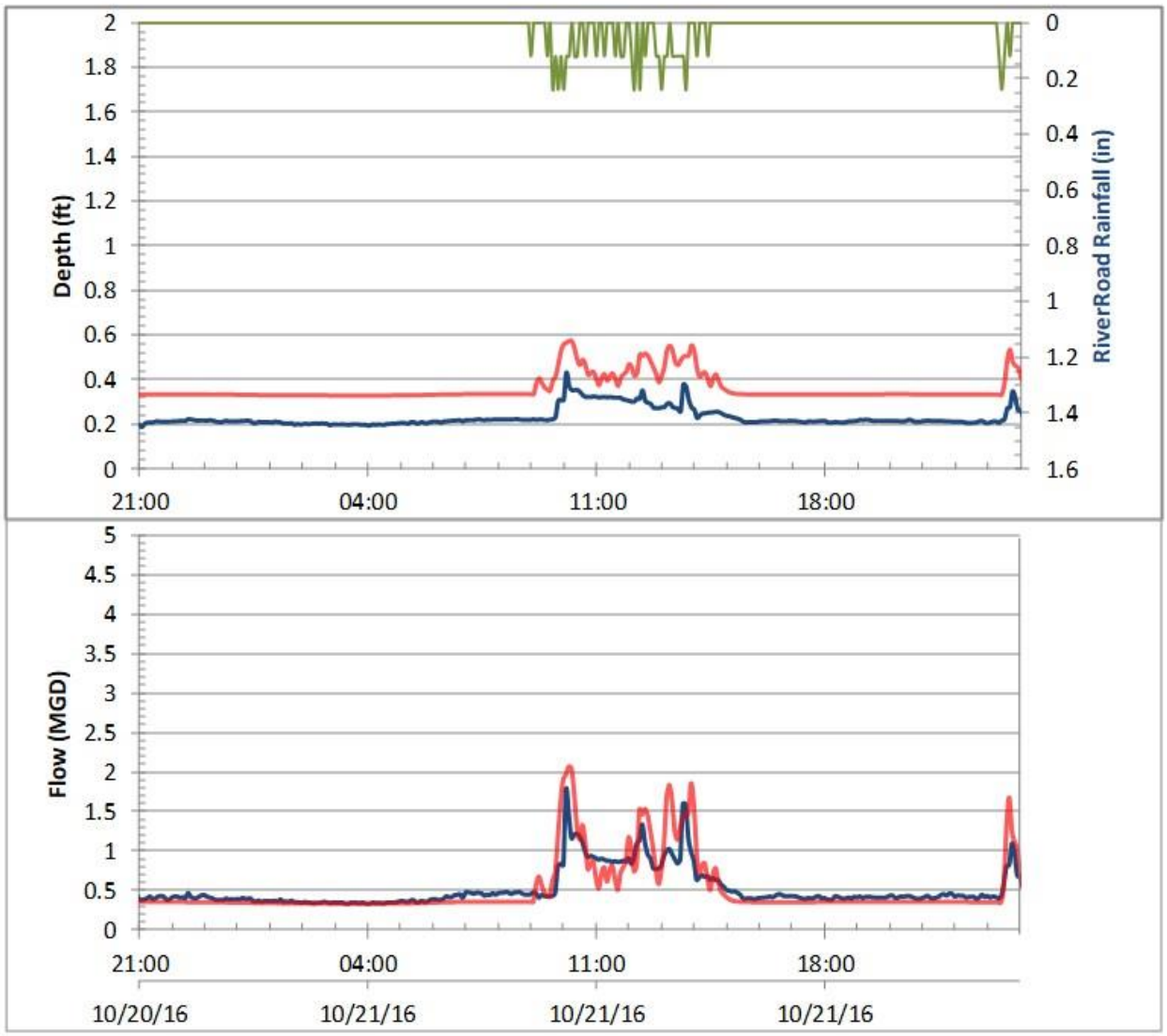
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			0.66	3.92	0.68
Model			0.61	2.59	0.56
		Difference	-0.05	-34%	-18%

W4

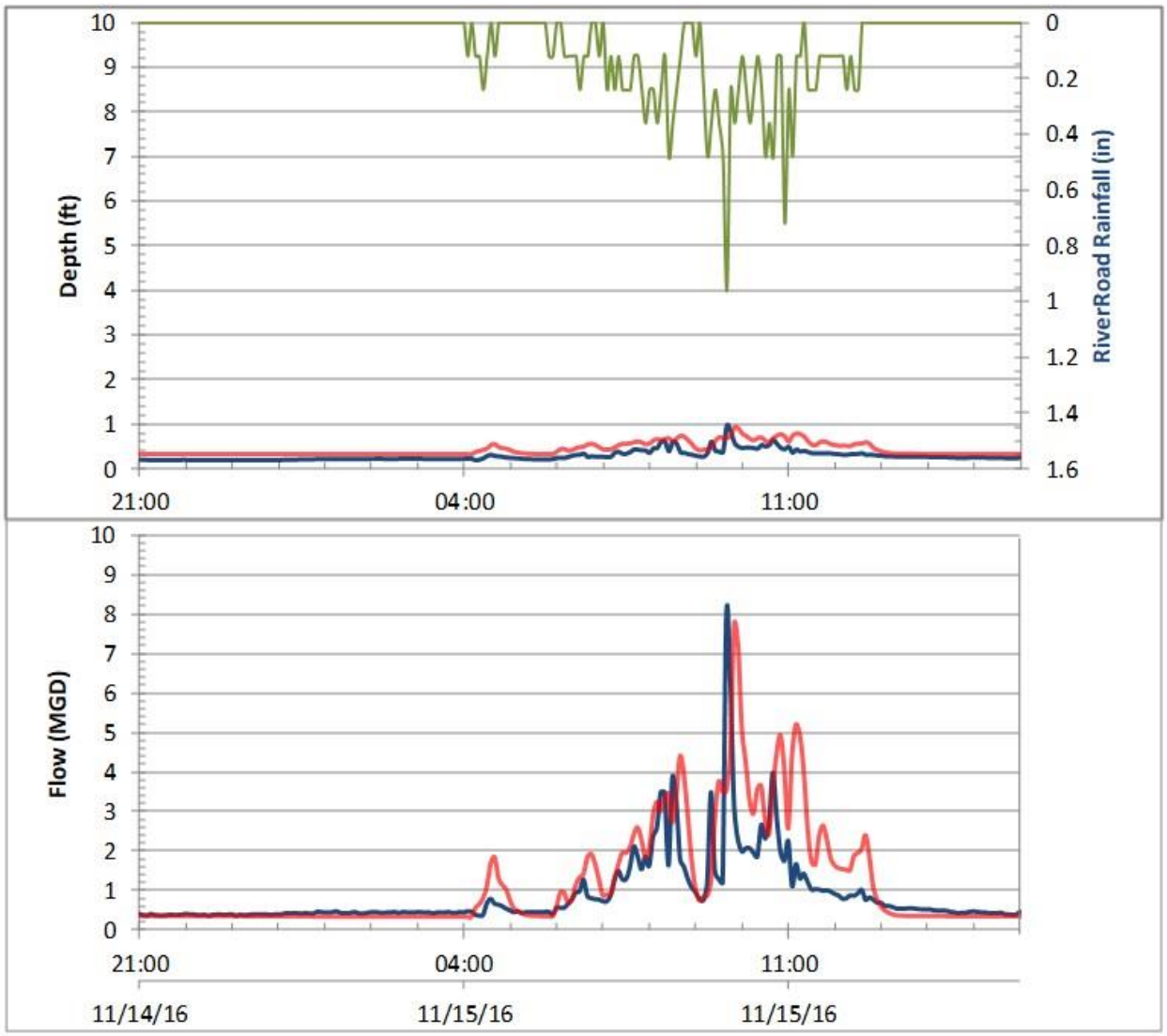
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			0.43	1.78	0.53
Model			0.57	2.07	0.54
		Difference	0.14	17%	1%

W4

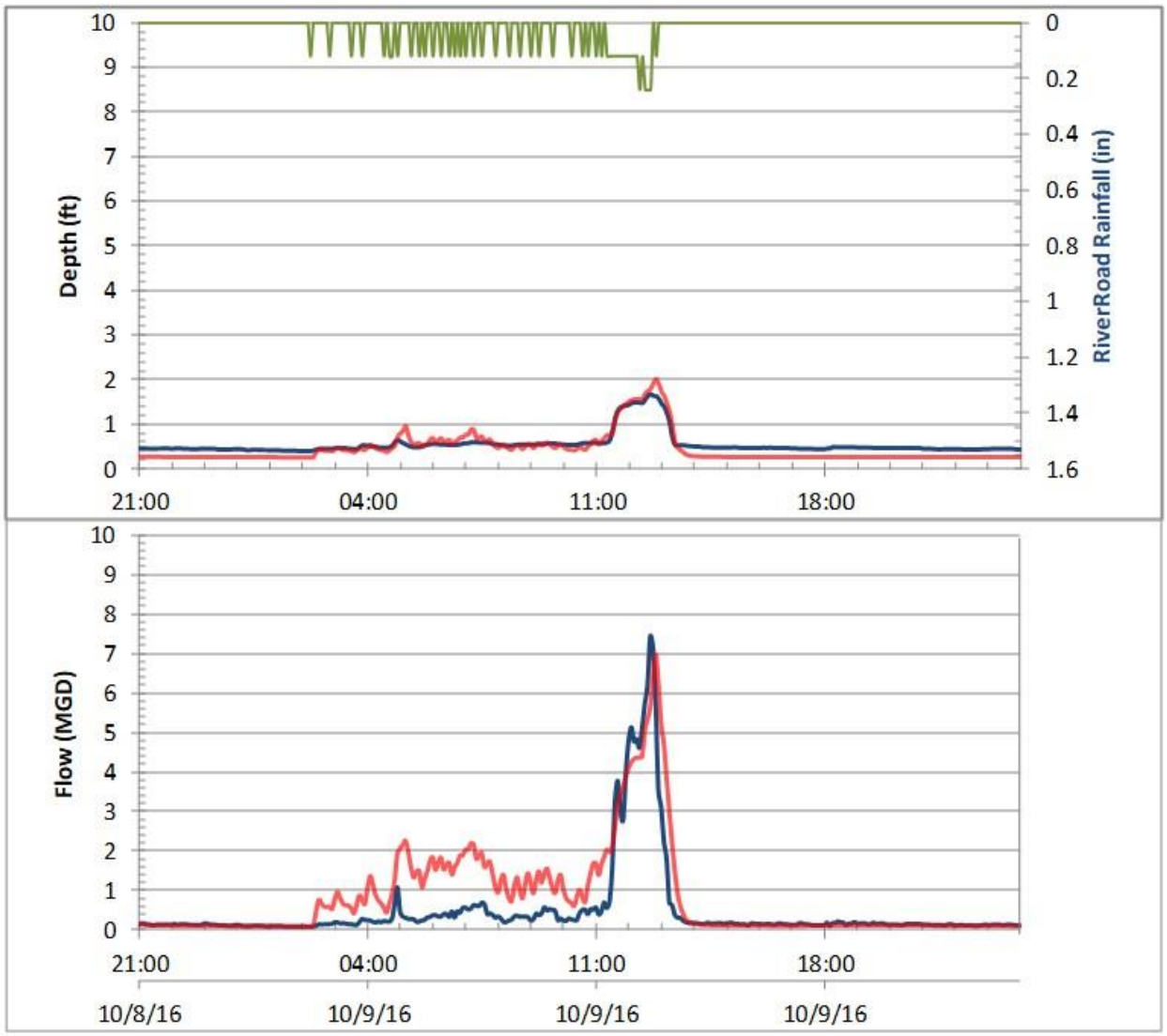
Event ID 32 Nov-14 - Nov-15



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			0.97	8.00	0.66
Model			0.93	7.74	0.89
		Difference	-0.04	-3%	36%

W5

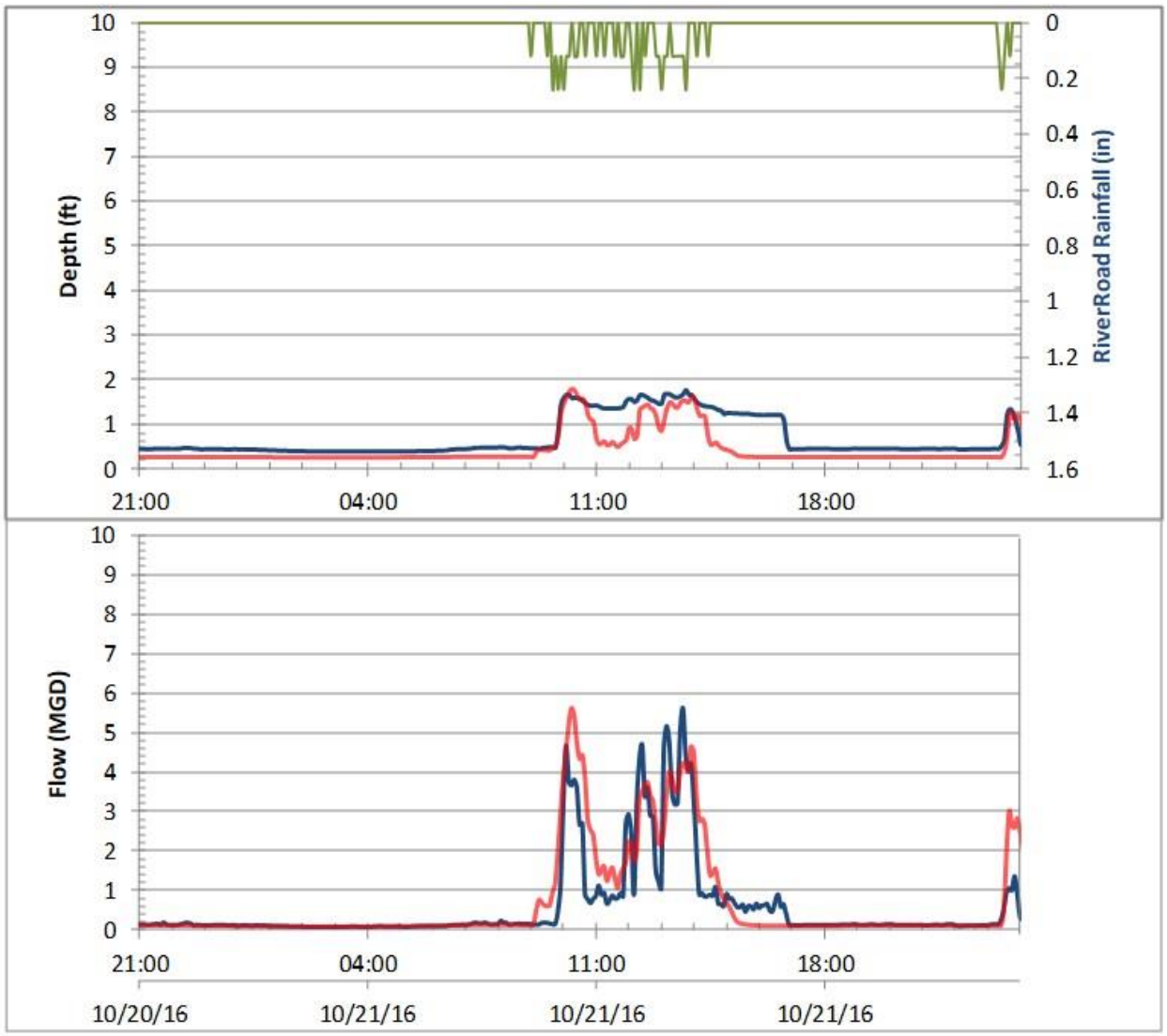
Event ID 28 Oct-08 - Oct-10



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.65	0.24			
Meter			1.68	7.44	0.53
Model			2.01	6.98	0.89
		Difference	0.34	-6%	68%

W5

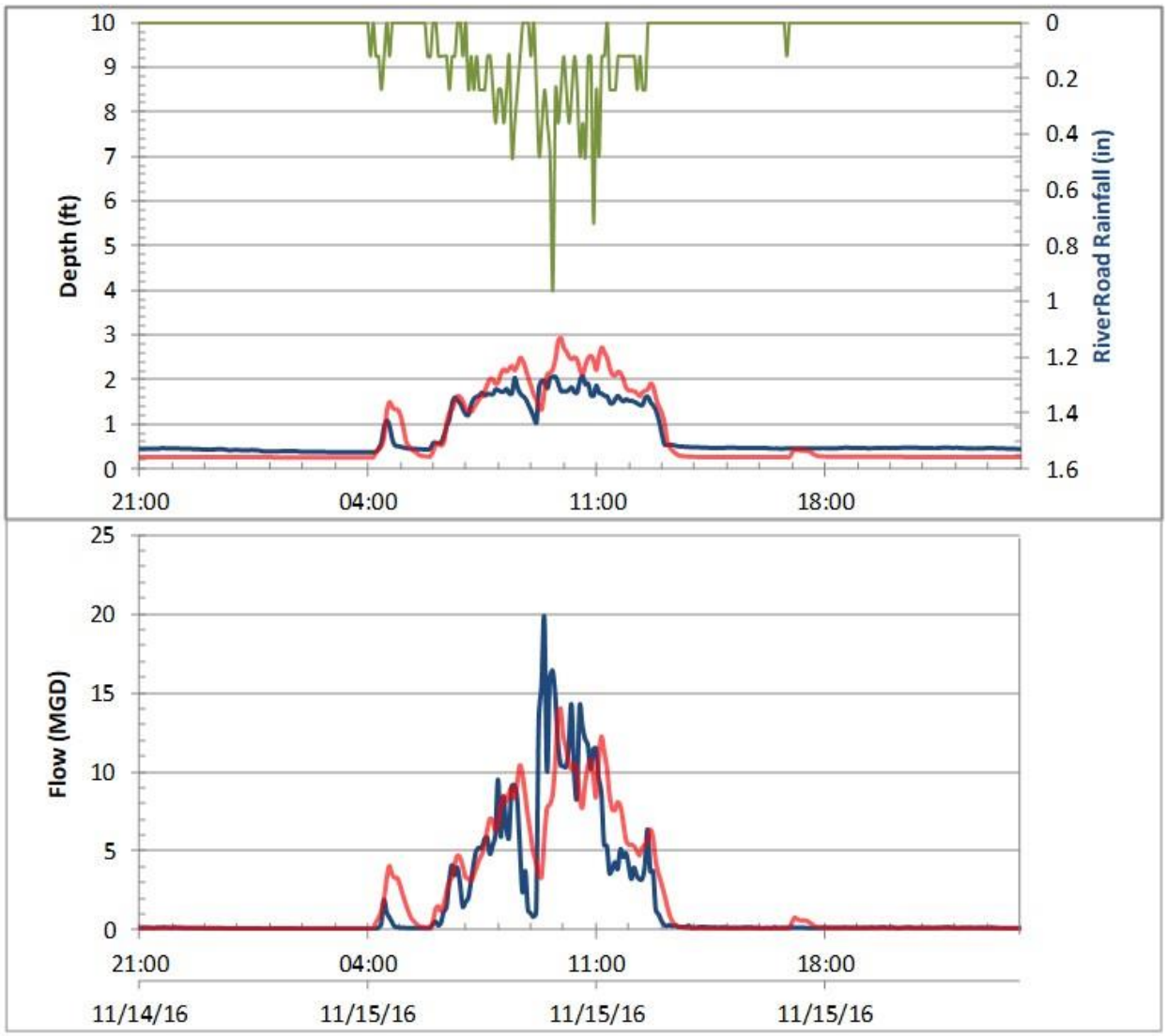
Event ID 29 Oct-20 - Oct-22



	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	0.41	0.24			
Meter			1.77	5.62	0.65
Model			1.79	5.62	0.77
		Difference	0.03	0%	20%

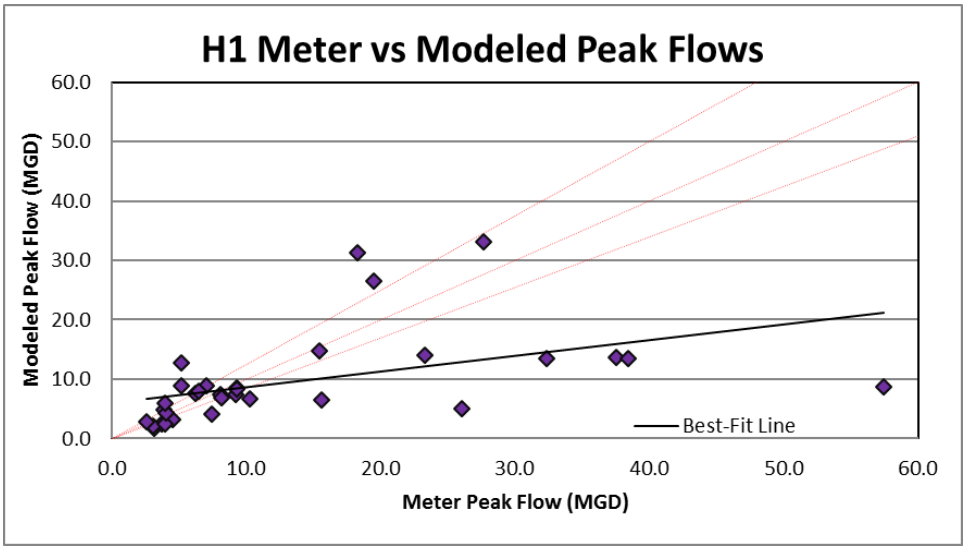
W5

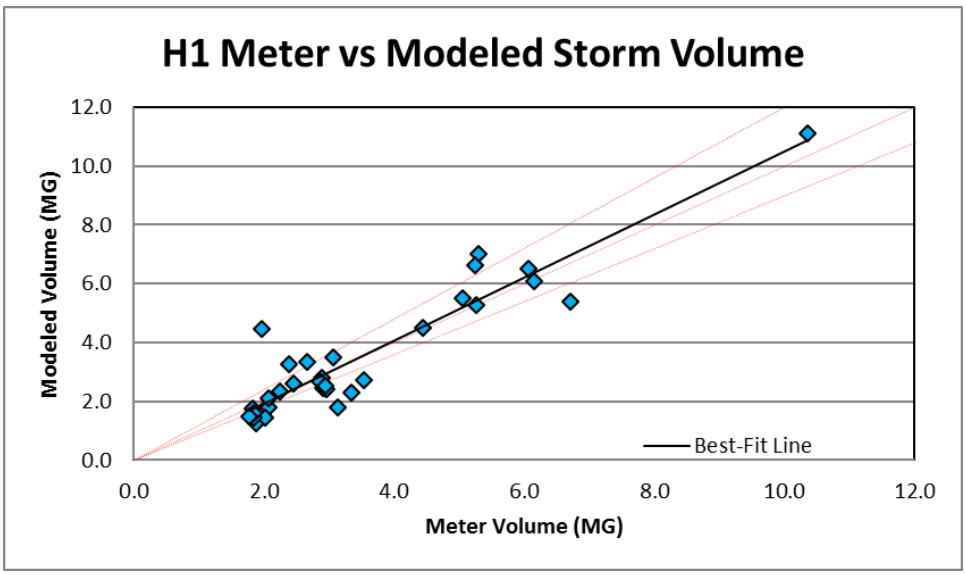
Event ID 32 Nov-14 - Nov-16

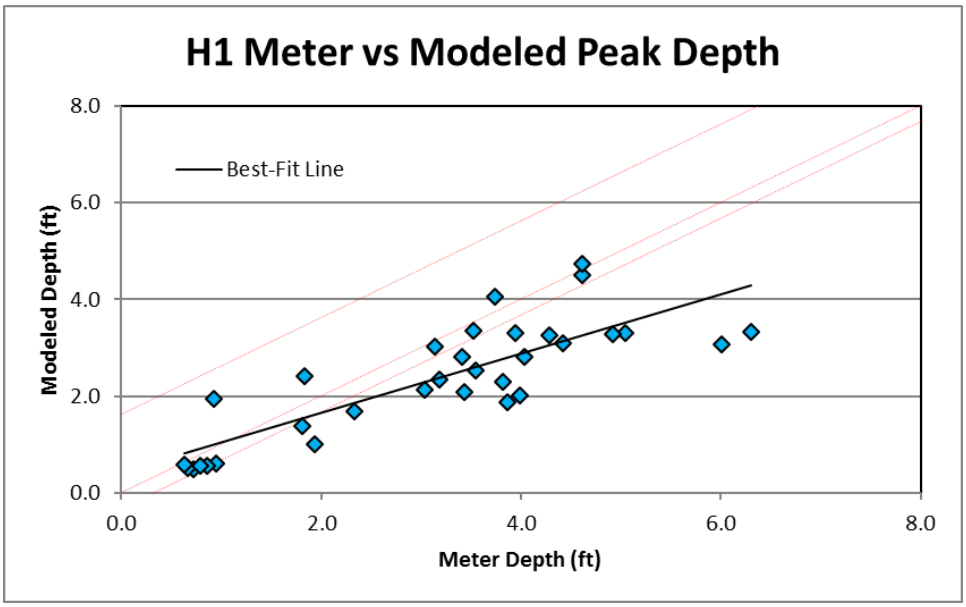


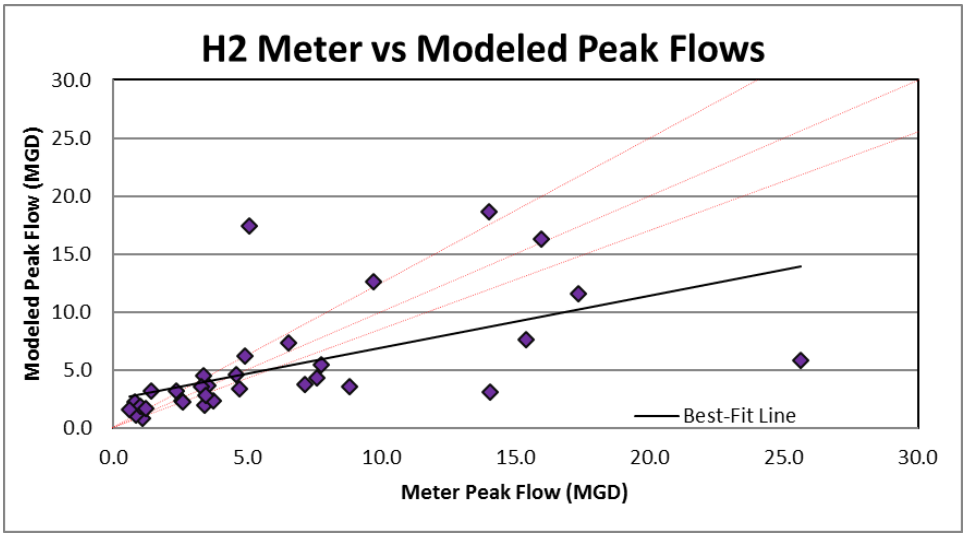
	Rainfall		Depth	Flow	
	Depth (in)	Peak (in/hr)	Max (ft)	Max (MGD)	Volume (US MG)
Rain	1.50	0.96			
Meter			2.08	19.78	1.97
Model			2.93	14.02	2.21
		Difference	0.85	-29%	12%

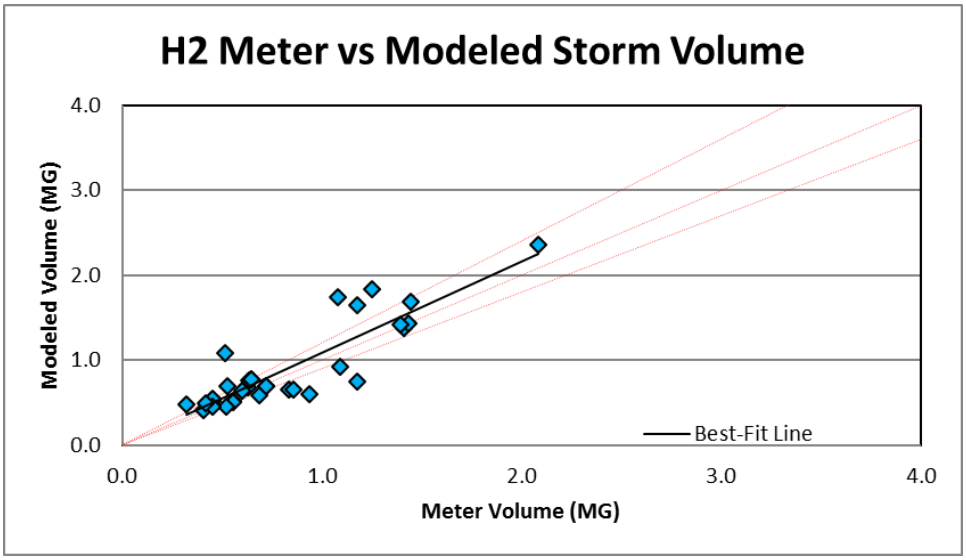
Appendix G – Validation Scatterplots

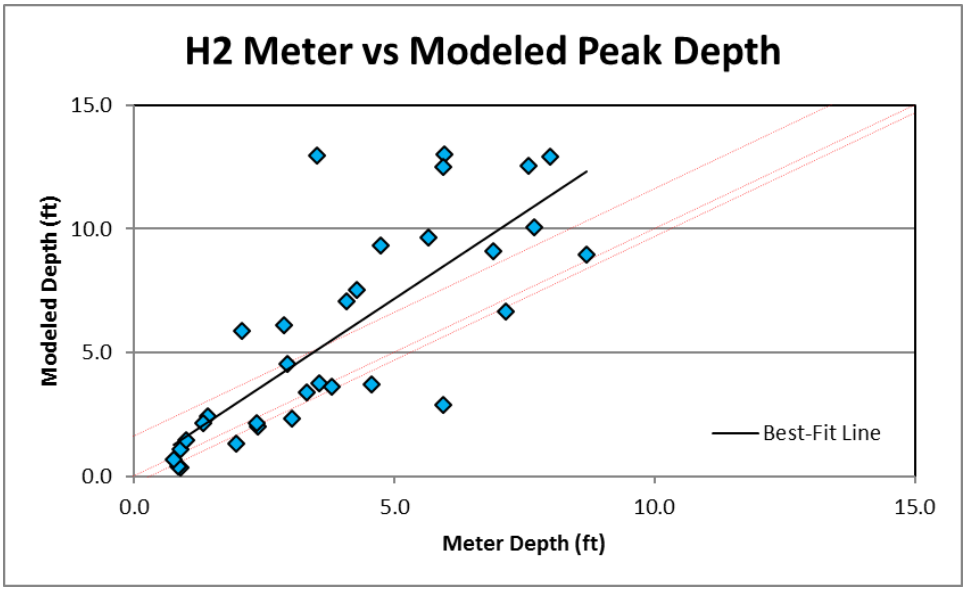

H1 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
10.0
20.0
30.0
40.0
50.0
60.0

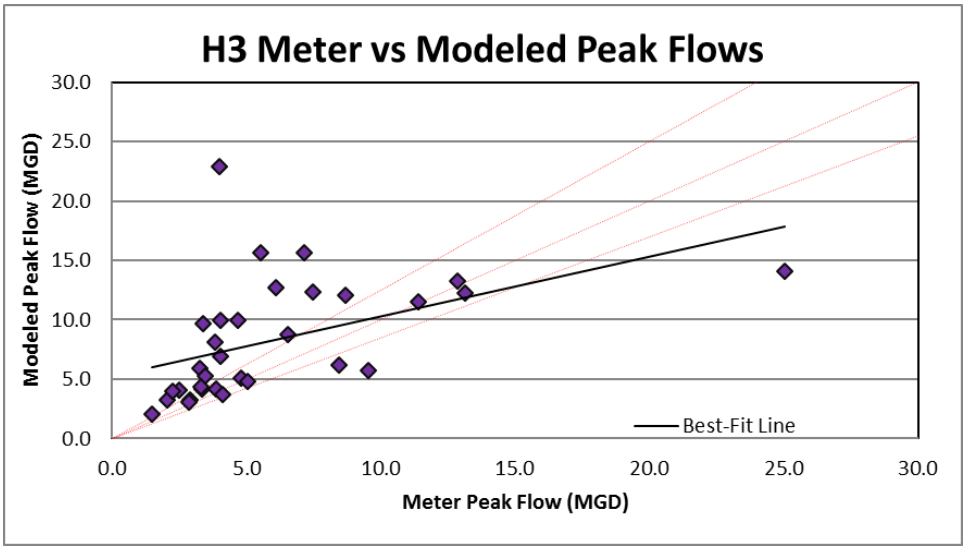

H1 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
2.0
4.0
6.0
8.0
10.0
12.0

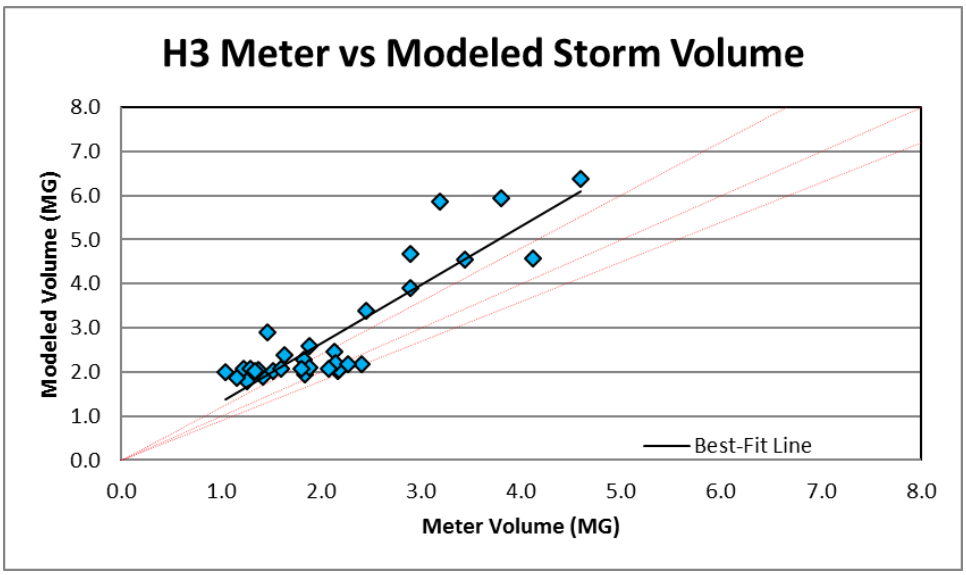

H1 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
2.0
4.0
6.0
8.0

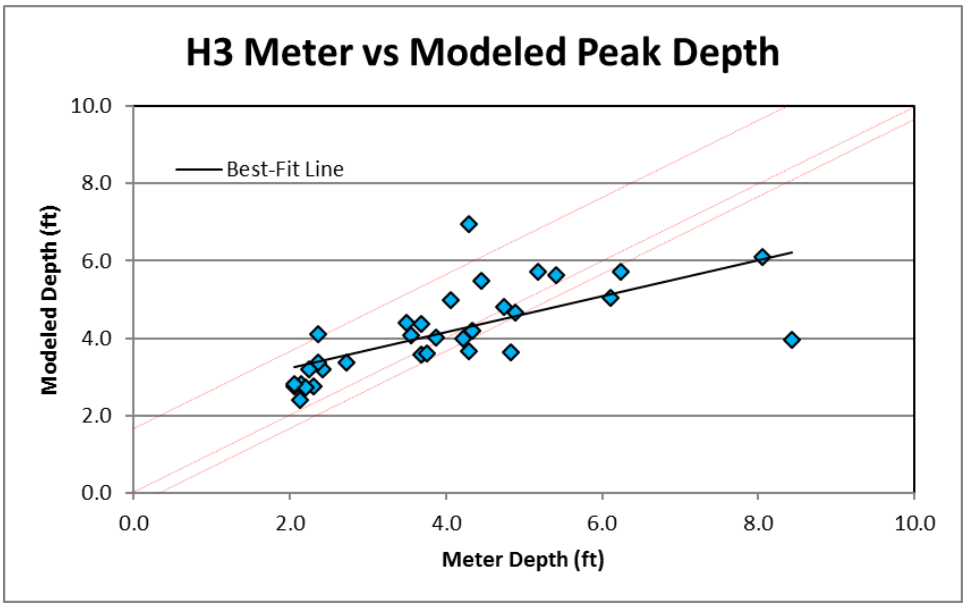

H2 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
Meter Peak Flow (MGD)
Best-Fit Line

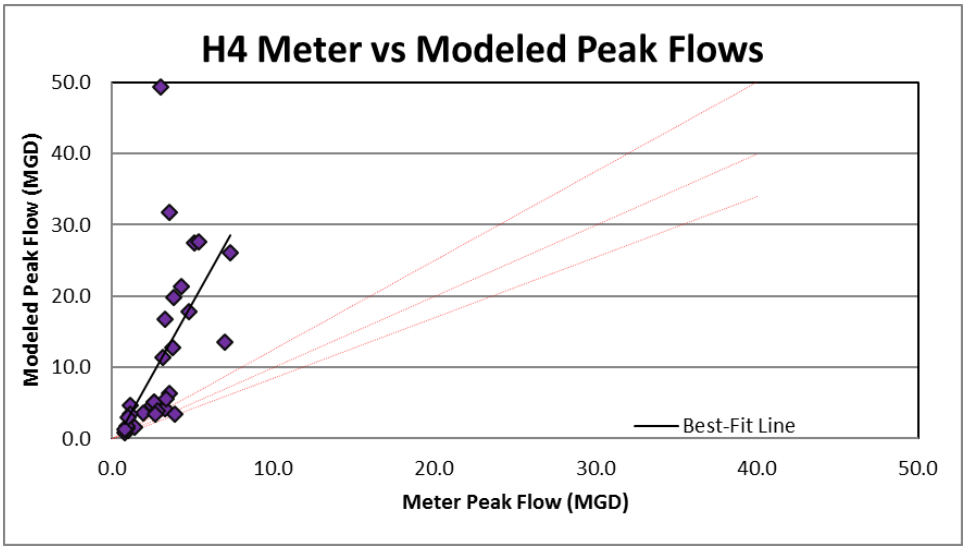

H2 Meter vs Modeled Storm Volume
Modeled Volume (MG)
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
Meter Volume (MG)
Best-Fit Line

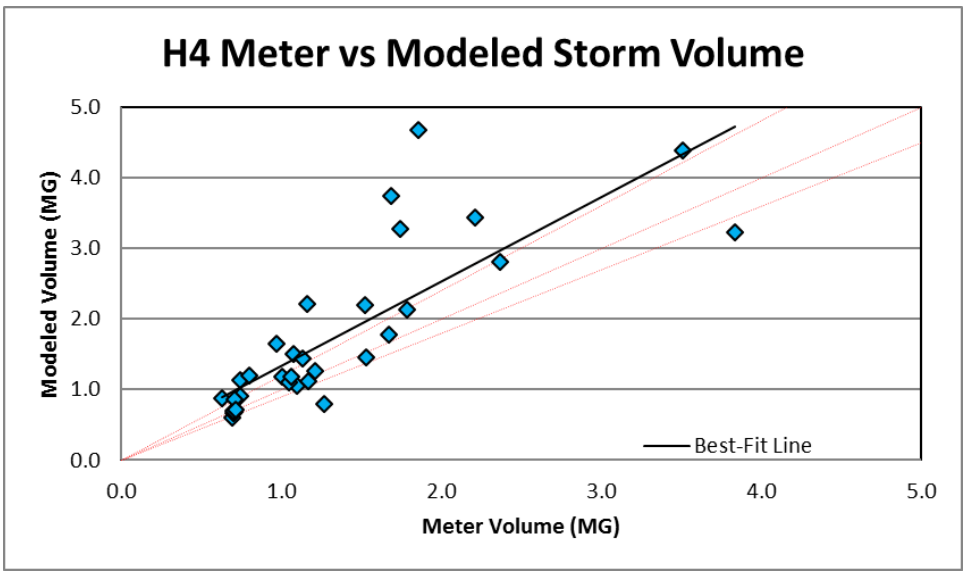

H2 Meter vs Modeled Peak Depth
Modeled Depth (ft)
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
Meter Depth (ft)
Best-Fit Line

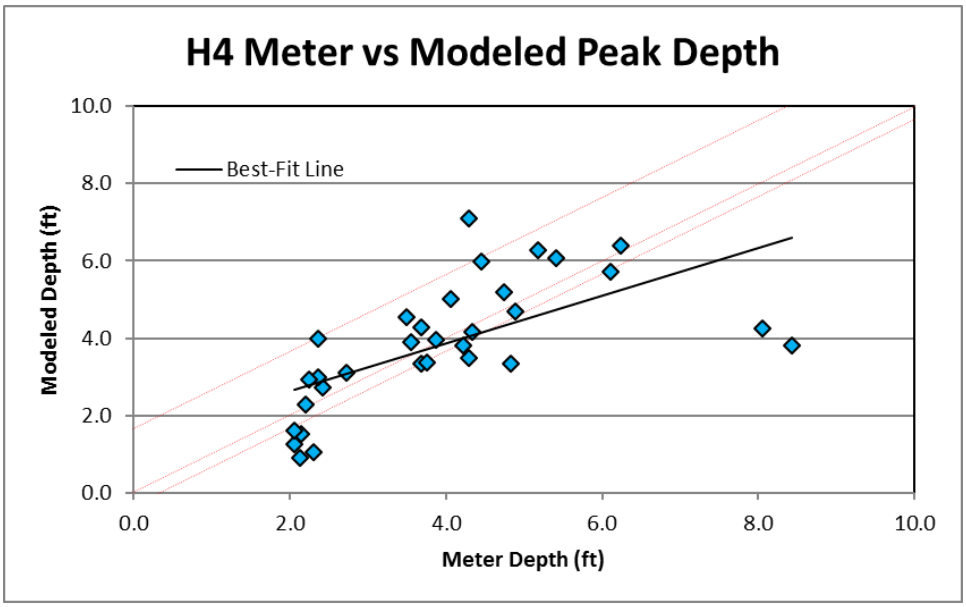

H3 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
5.0
10.0
15.0
20.0
25.0
30.0

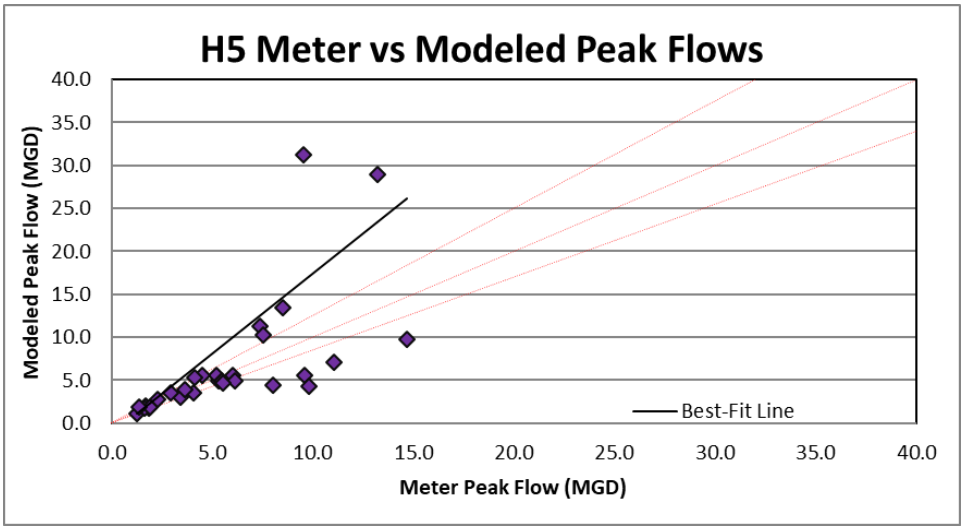

H3 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

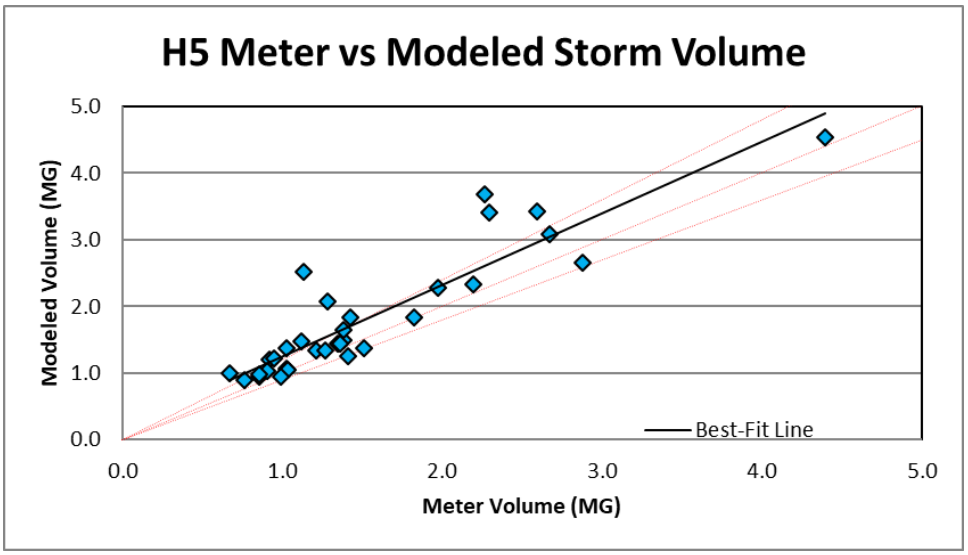

H3 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
2.0
4.0
6.0
8.0
10.0

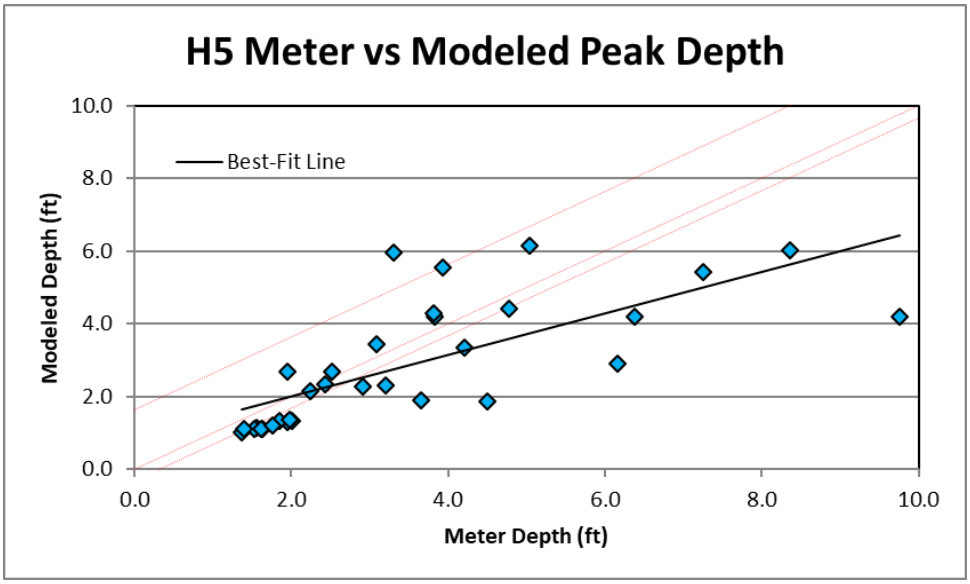

H4 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
10.0
20.0
30.0
40.0
50.0

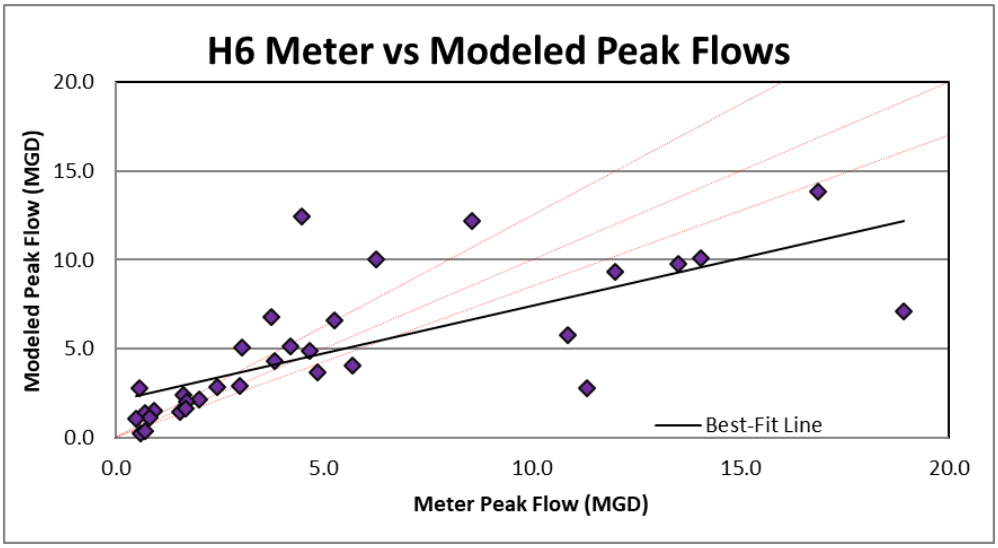

H4 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0

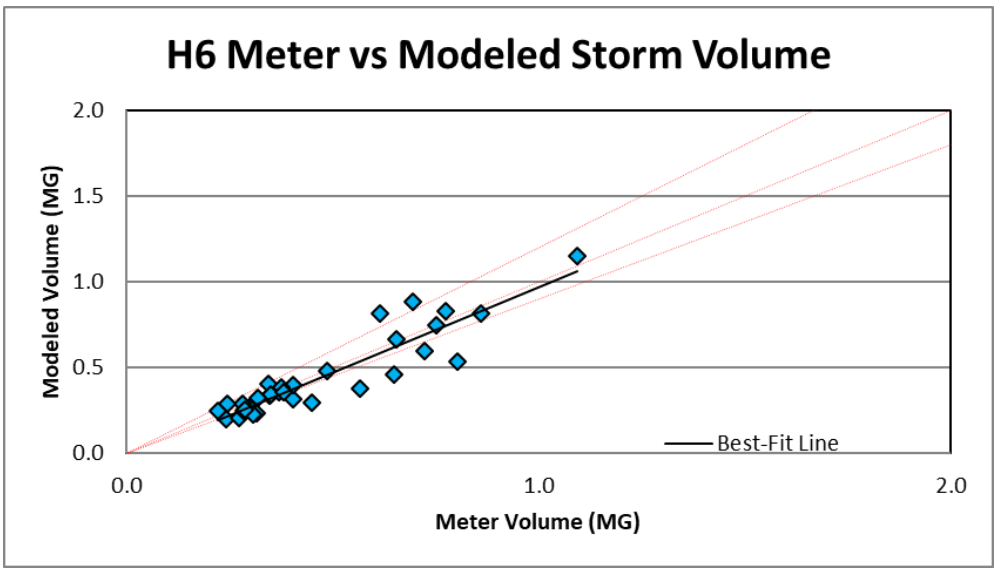

H4 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
2.0
4.0
6.0
8.0
10.0

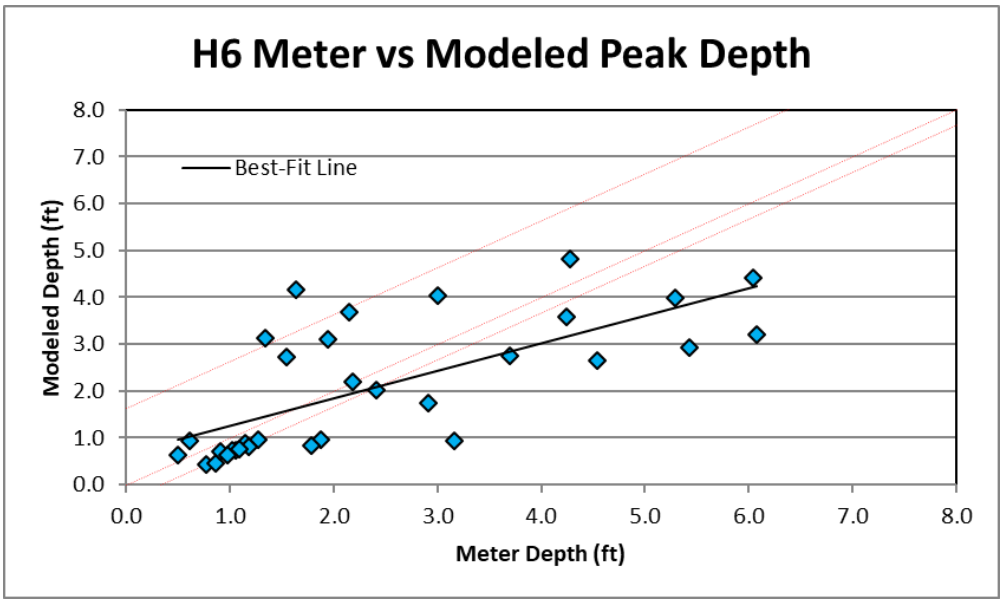

H5 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0

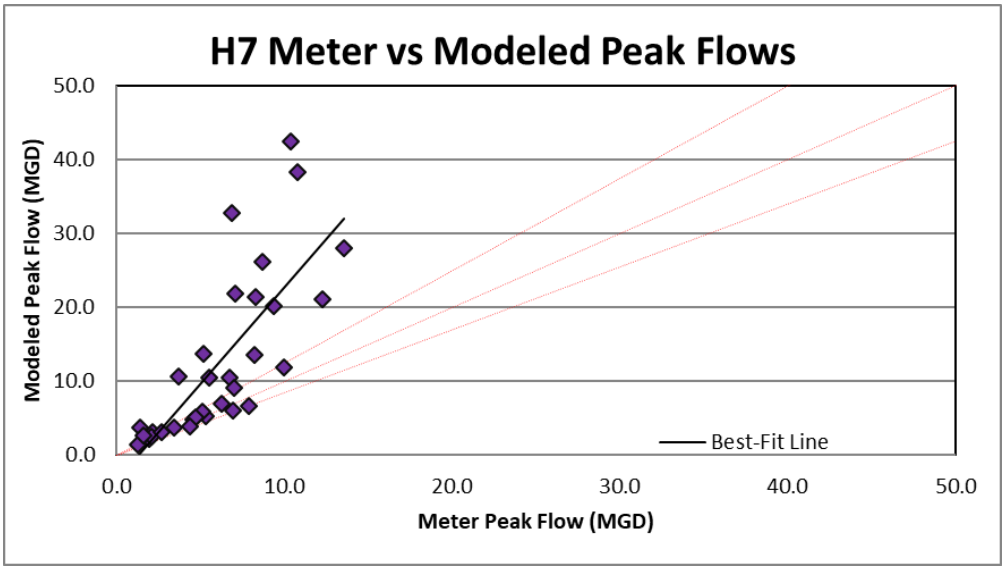

H5 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0

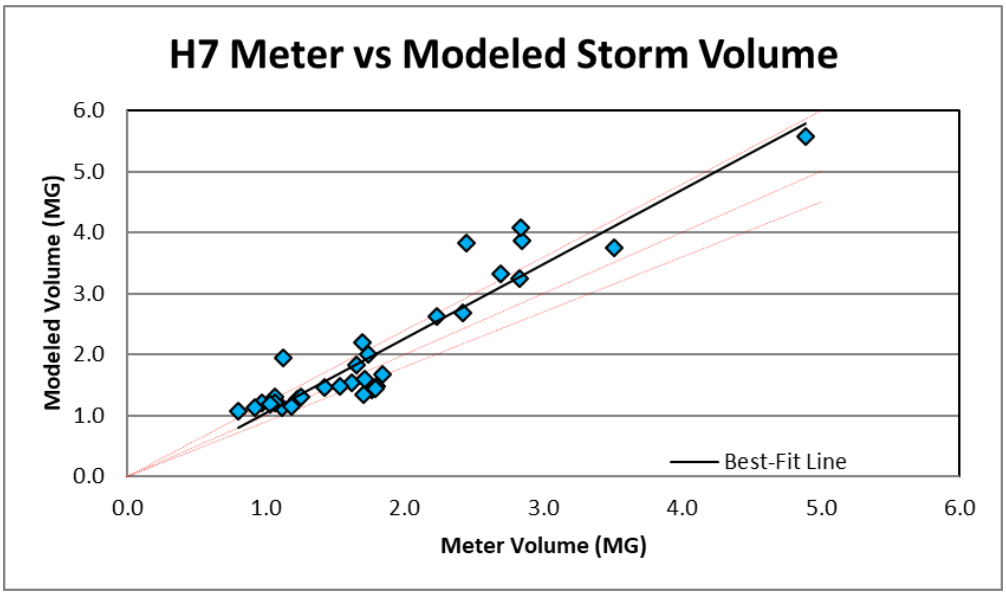

H5 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
2.0
4.0
6.0
8.0
10.0

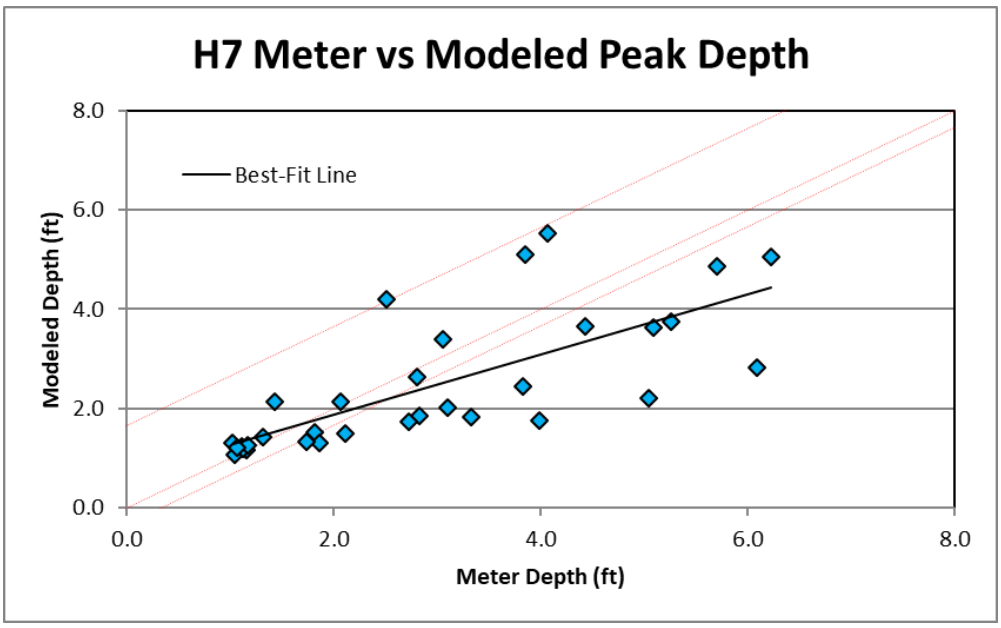

H6 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
5.0
10.0
15.0
20.0

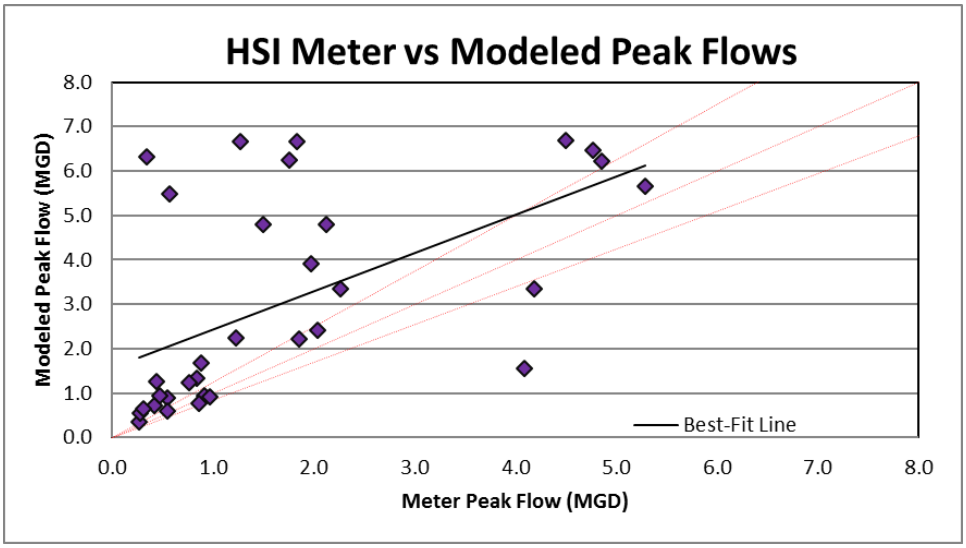

H6 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
0.5
1.0
1.5
2.0

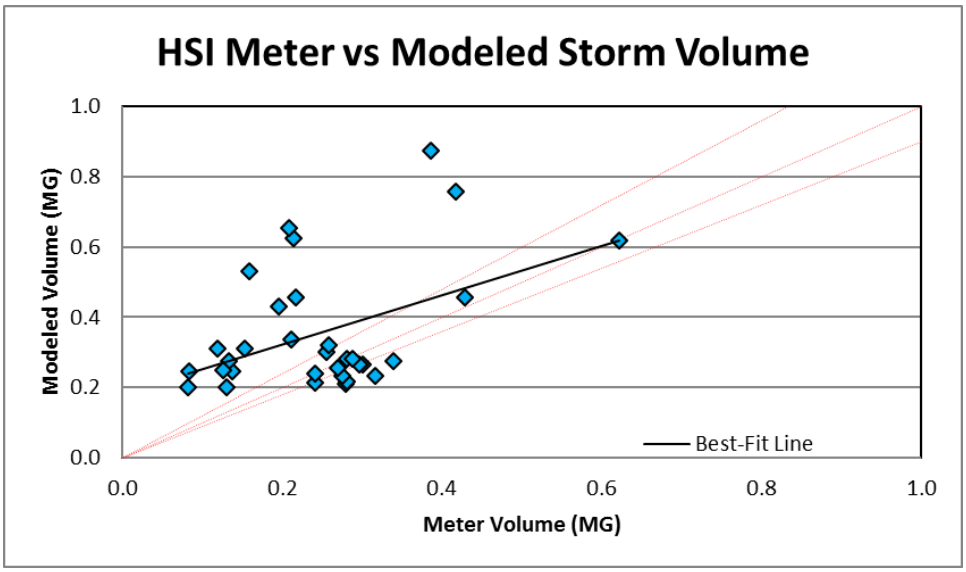

H6 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

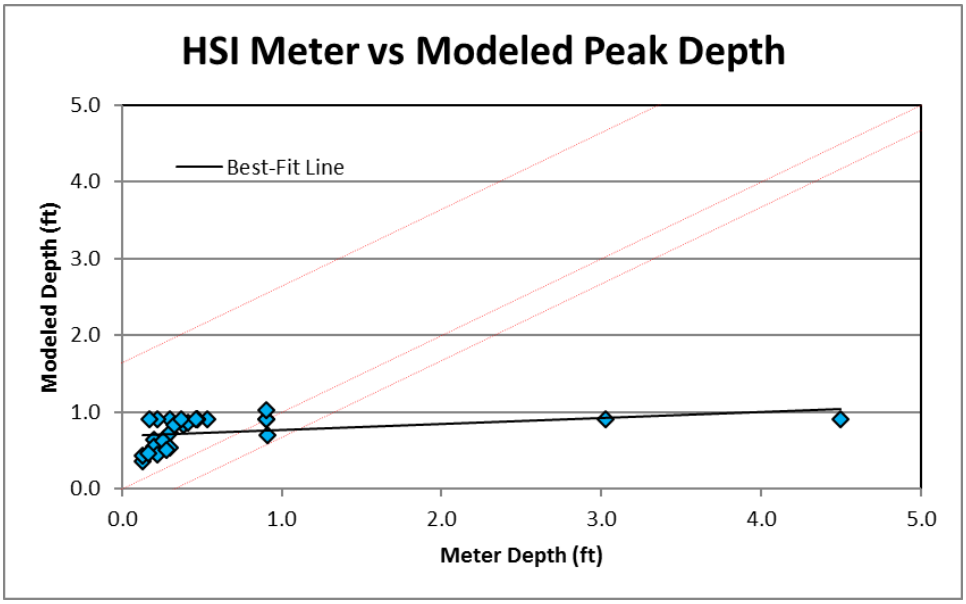

H7 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
50.0
40.0
30.0
20.0
10.0
0.0
0.0
10.0
20.0
30.0
40.0
50.0
Meter Peak Flow (MGD)
Best-Fit Line

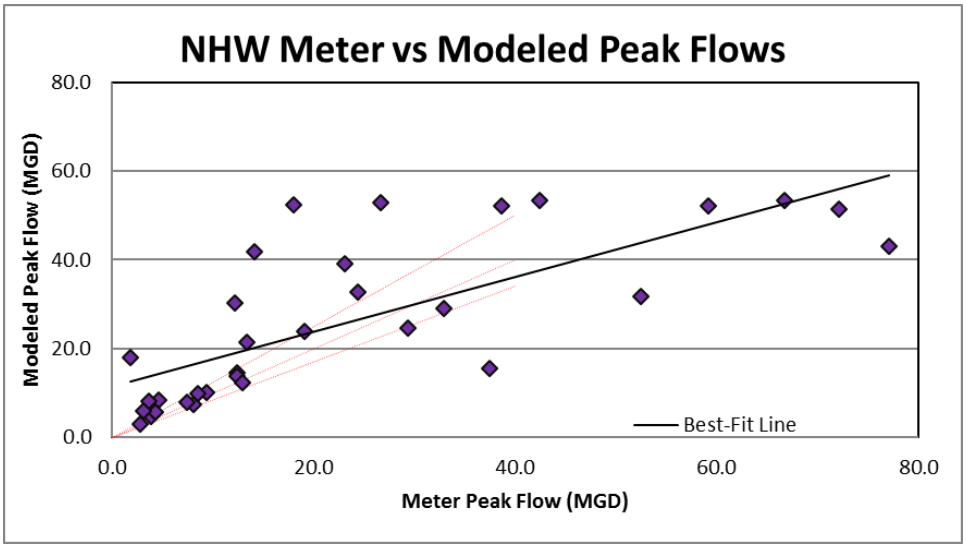

H7 Meter vs Modeled Storm Volume
Modeled Volume (MG)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
Meter Volume (MG)
Best-Fit Line

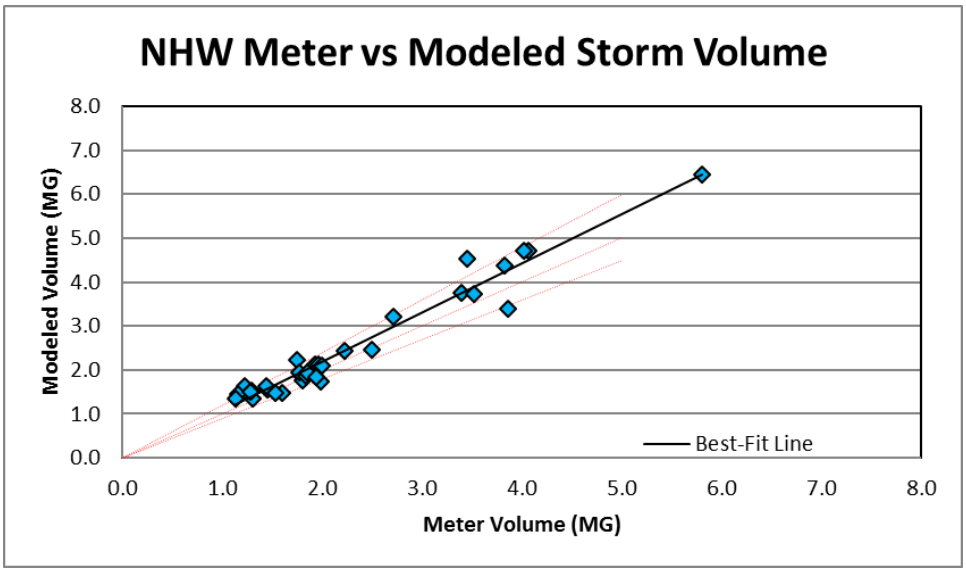

H7 Meter vs Modeled Peak Depth
Modeled Depth (ft)
8.0
6.0
4.0
2.0
0.0
0.0
2.0
4.0
6.0
8.0
Meter Depth (ft)
Best-Fit Line

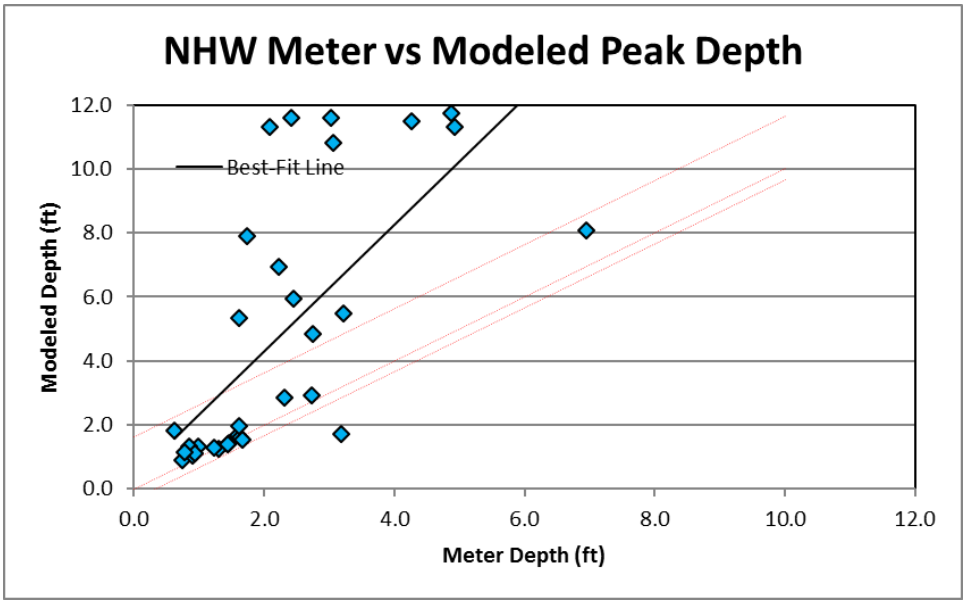

HSI Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

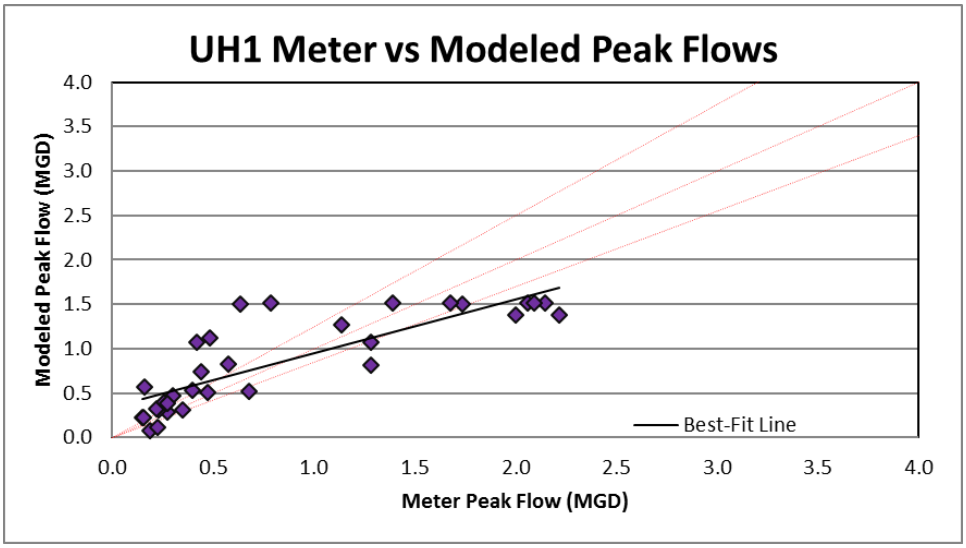

HSI Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
0.2
0.4
0.6
0.8
1.0

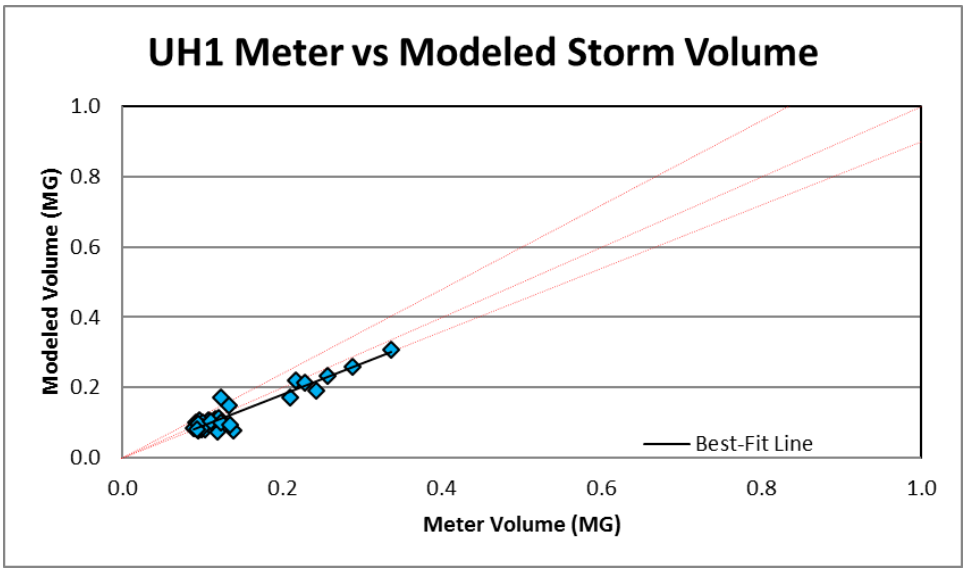

HSI Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0

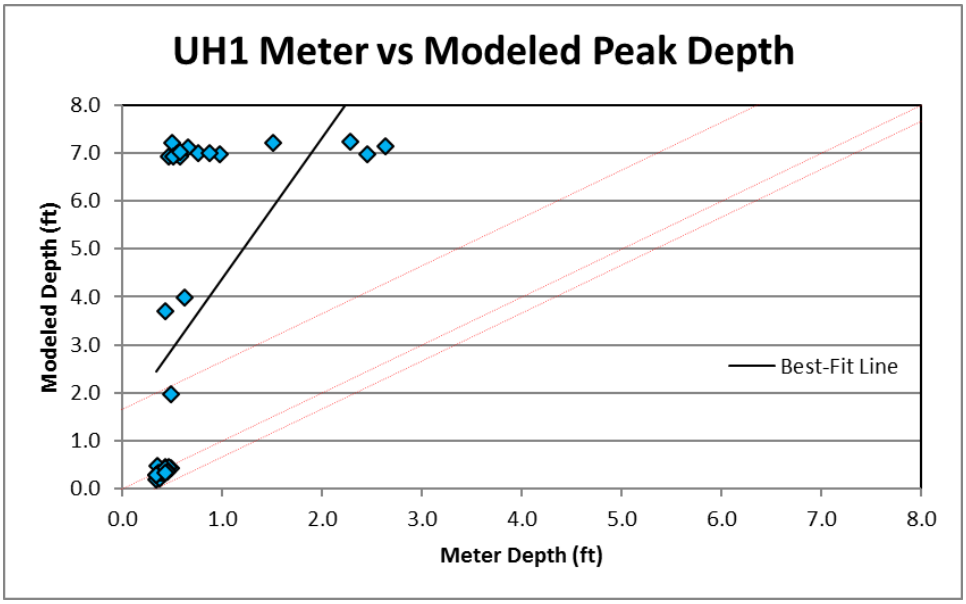

NHW Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
Meter Peak Flow (MGD)
Best-Fit Line

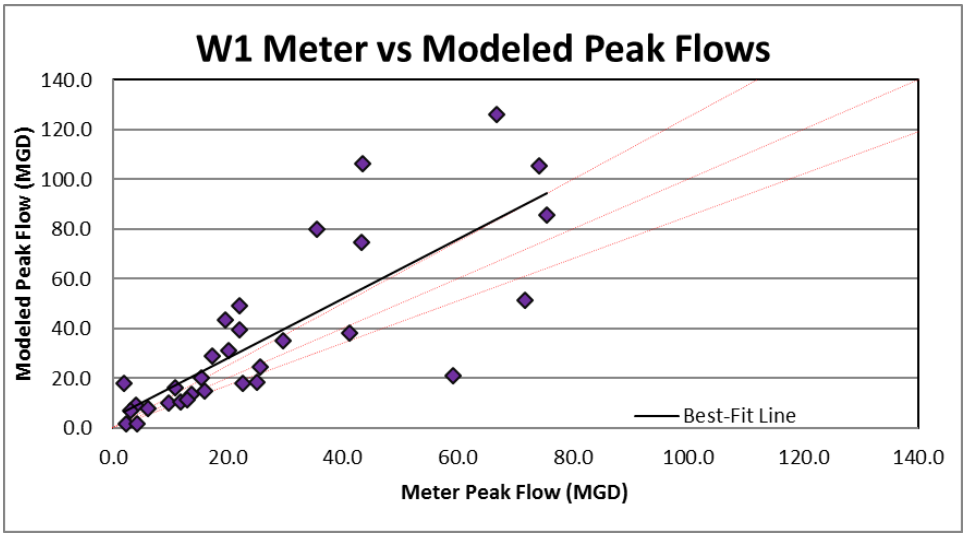

NHW Meter vs Modeled Storm Volume
Modeled Volume (MG)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Meter Volume (MG)
Best-Fit Line

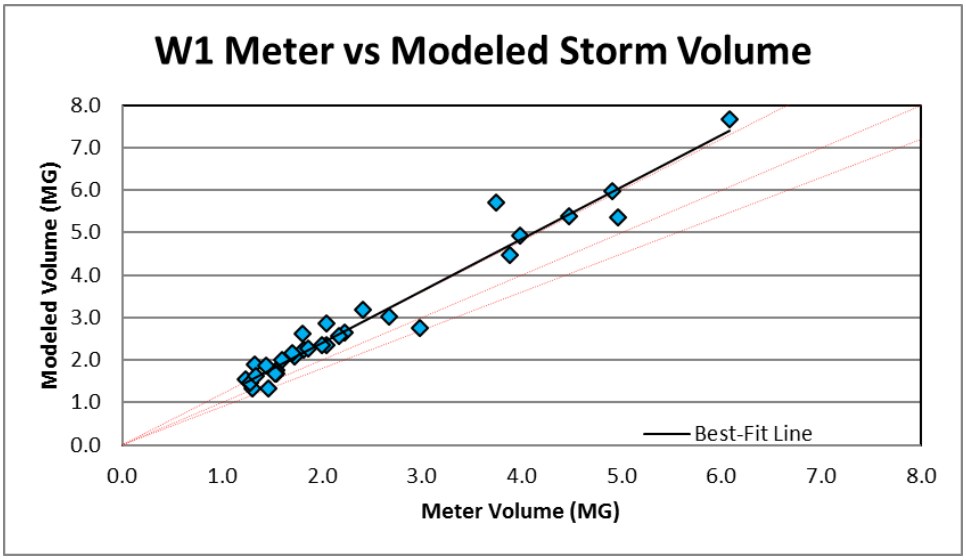

NHW Meter vs Modeled Peak Depth
Modeled Depth (ft)
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0.0
2.0
4.0
6.0
8.0
10.0
12.0
Meter Depth (ft)
Best-Fit Line

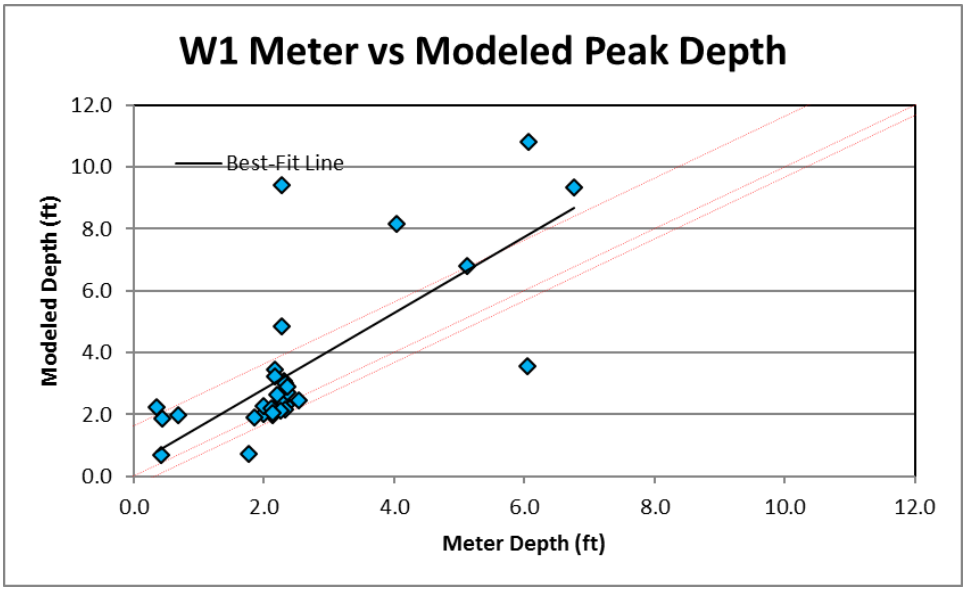

UH1 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0

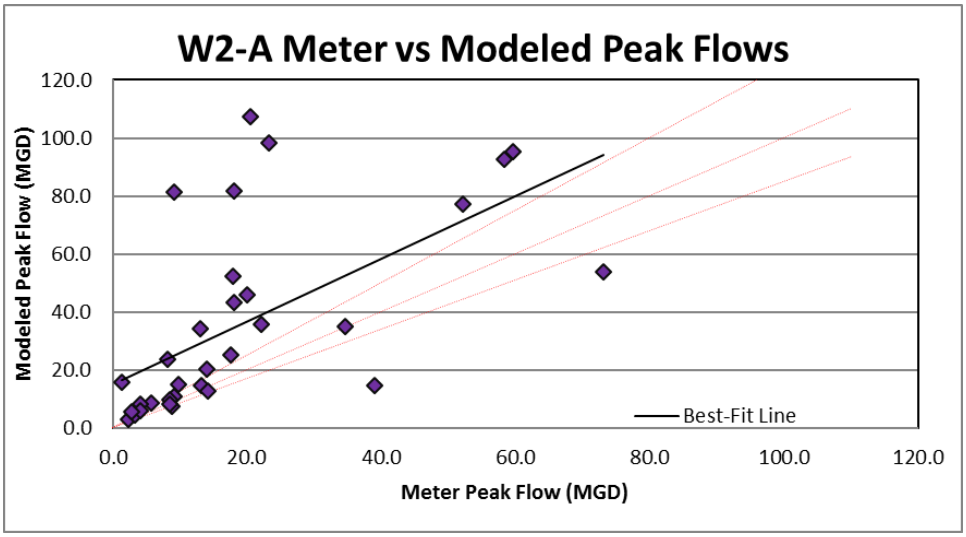

UH1 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
0.2
0.4
0.6
0.8
1.0

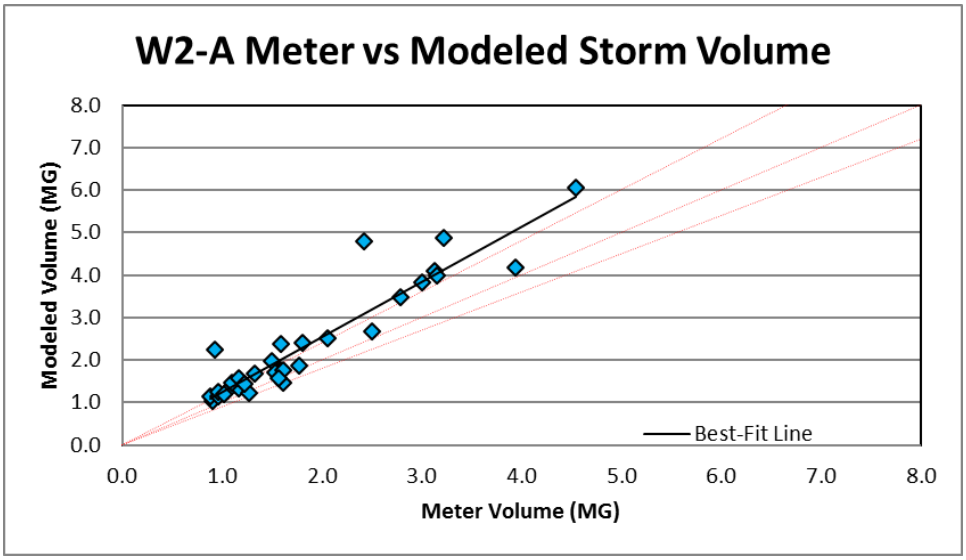

UH1 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

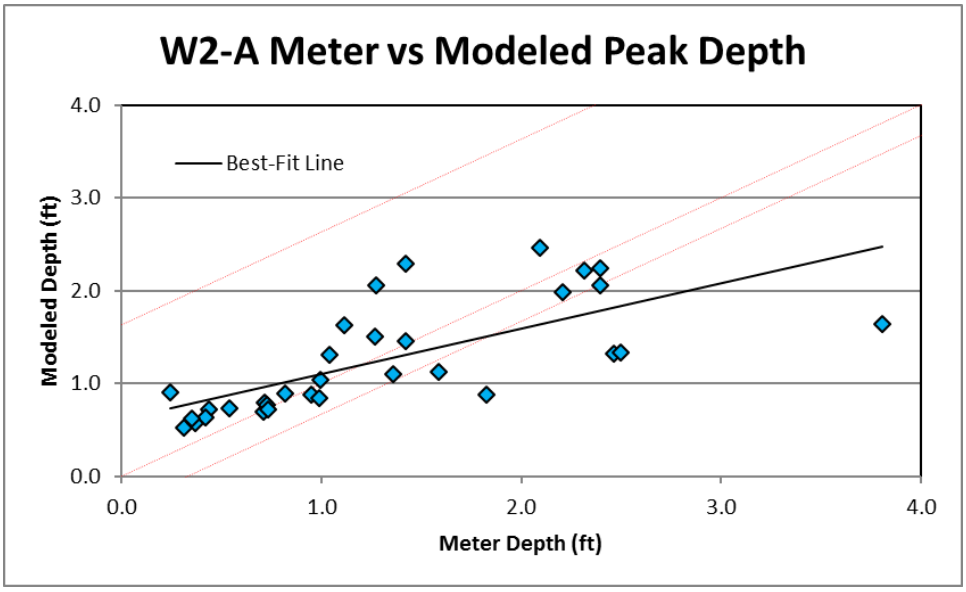

W1 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0

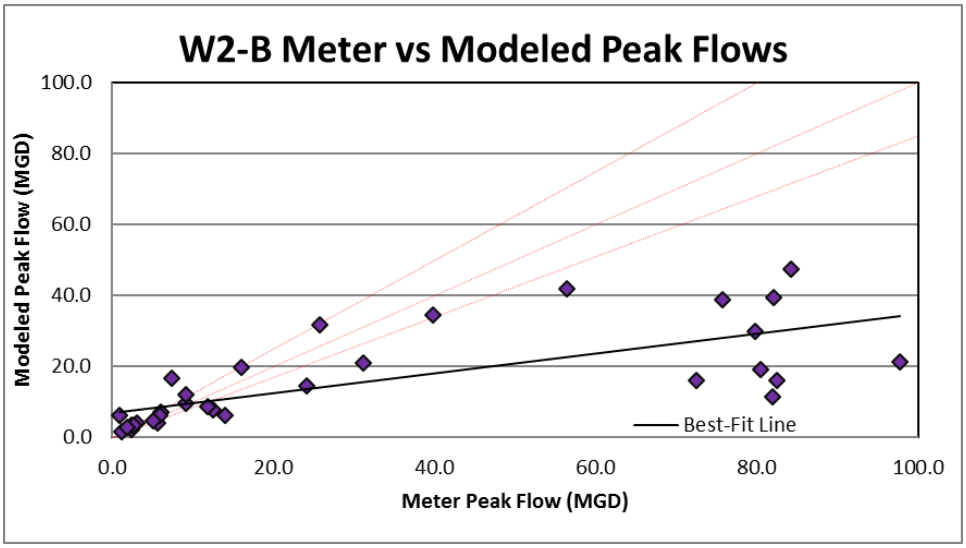

W1 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

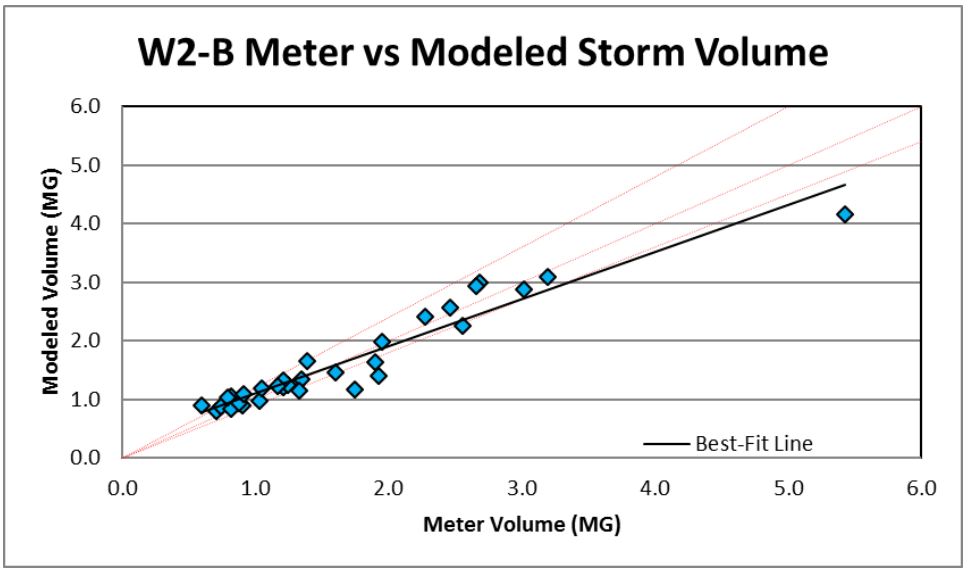

W1 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
2.0
4.0
6.0
8.0
10.0
12.0

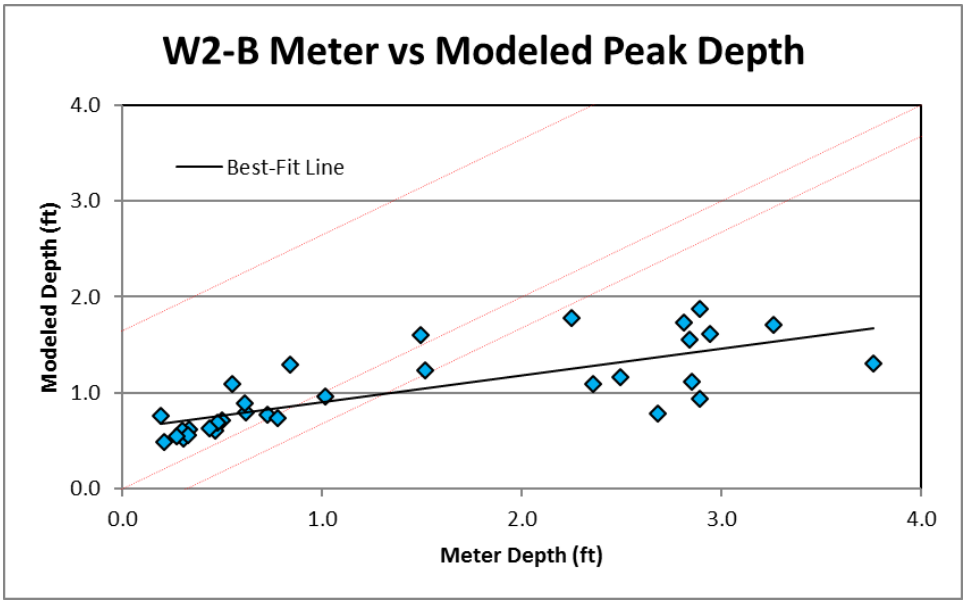

W2-A Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
120.0
100.0
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
100.0
120.0
Meter Peak Flow (MGD)
Best-Fit Line

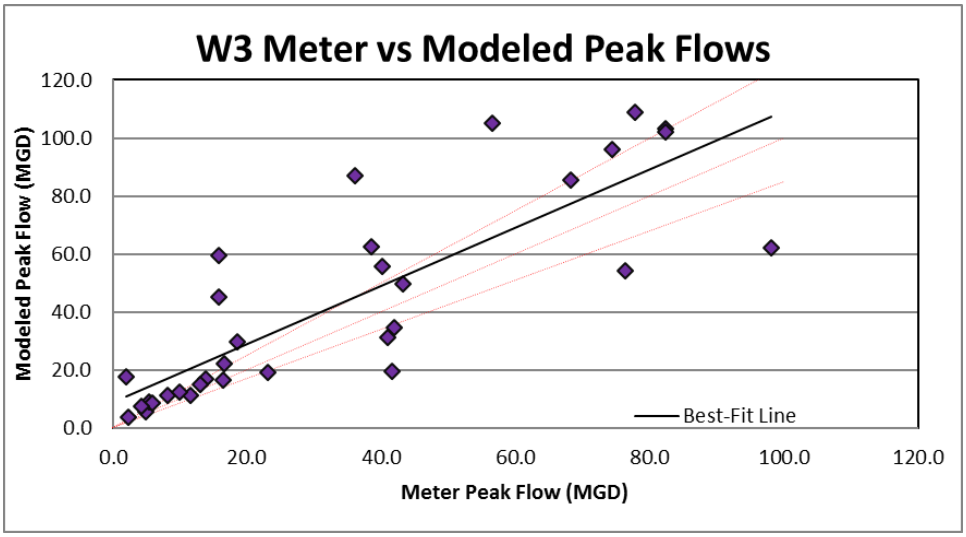

W2-A Meter vs Modeled Storm Volume
Modeled Volume (MG)
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Meter Volume (MG)
Best-Fit Line

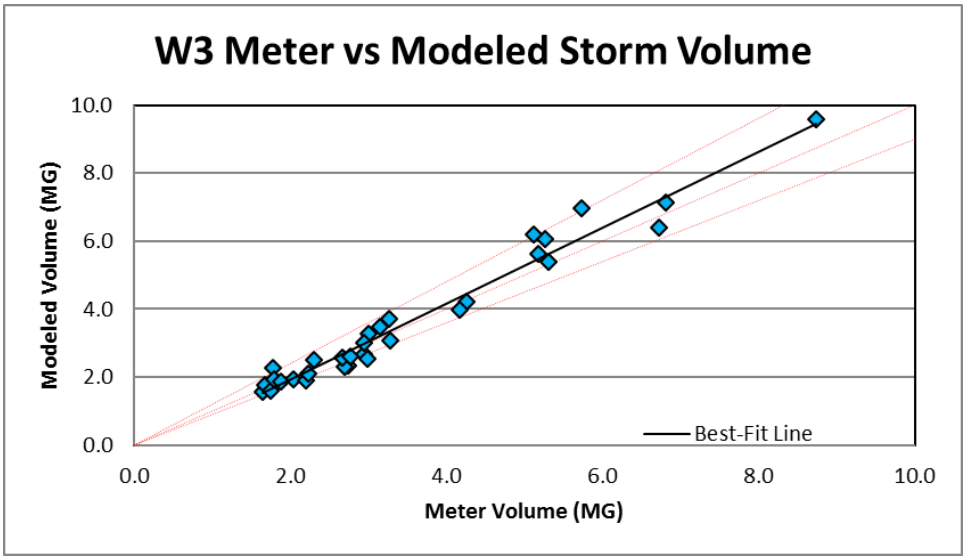

W2-A Meter vs Modeled Peak Depth
Modeled Depth (ft)
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
Meter Depth (ft)
Best-Fit Line

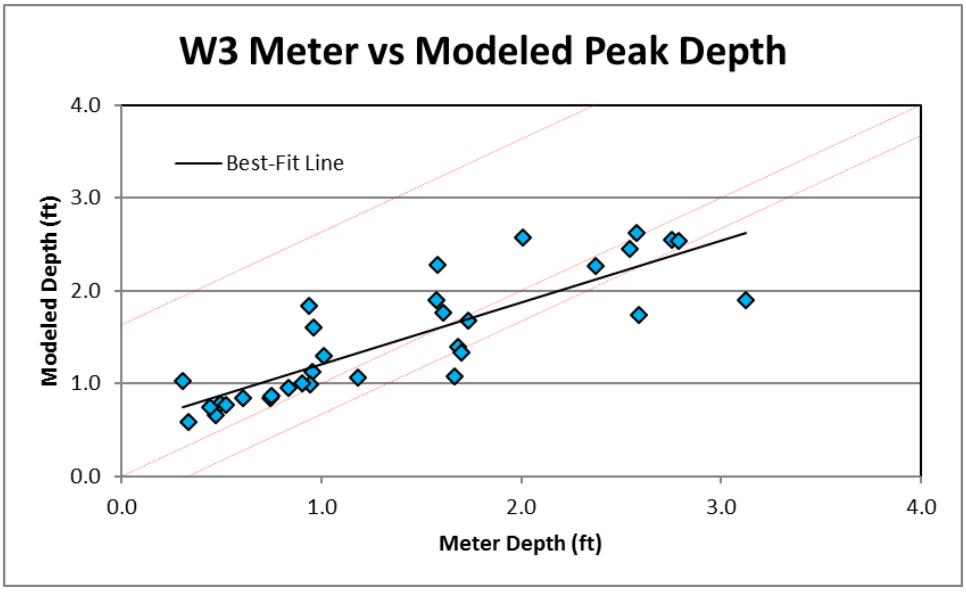

W2-B Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
100.0
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
100.0
Meter Peak Flow (MGD)
Best-Fit Line

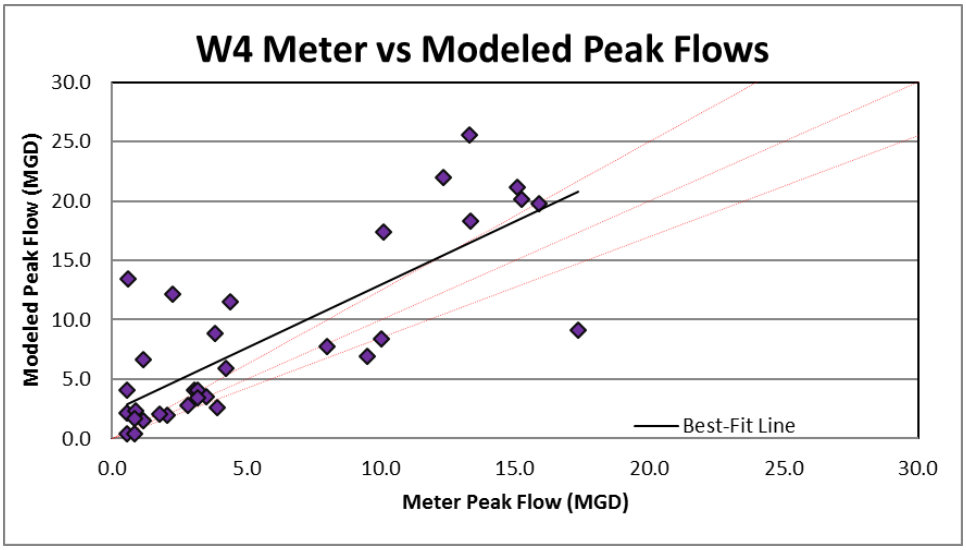

W2-B Meter vs Modeled Storm Volume
Modeled Volume (MG)
6.0
5.0
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
5.0
6.0
Meter Volume (MG)
Best-Fit Line

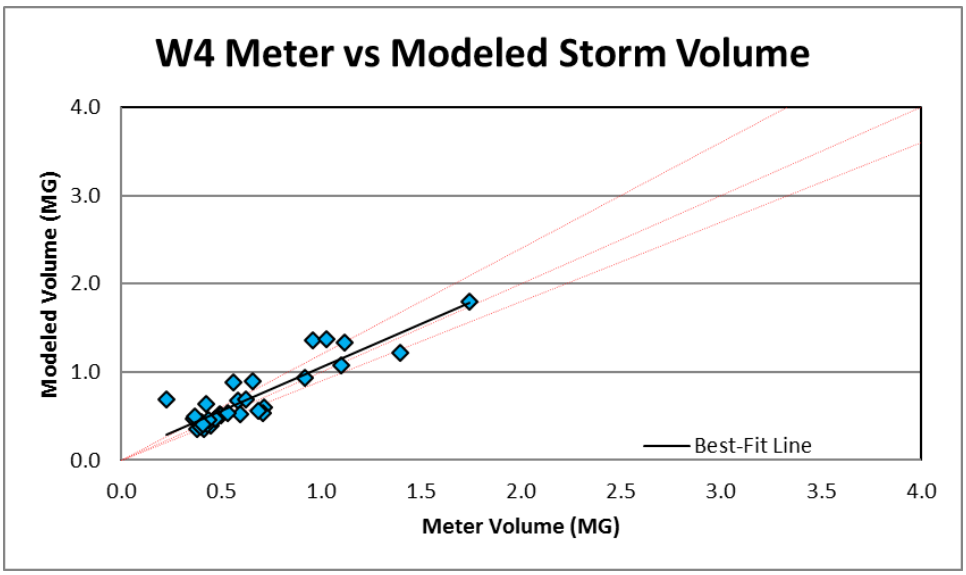

W2-B Meter vs Modeled Peak Depth
Modeled Depth (ft)
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
Meter Depth (ft)
Best-Fit Line

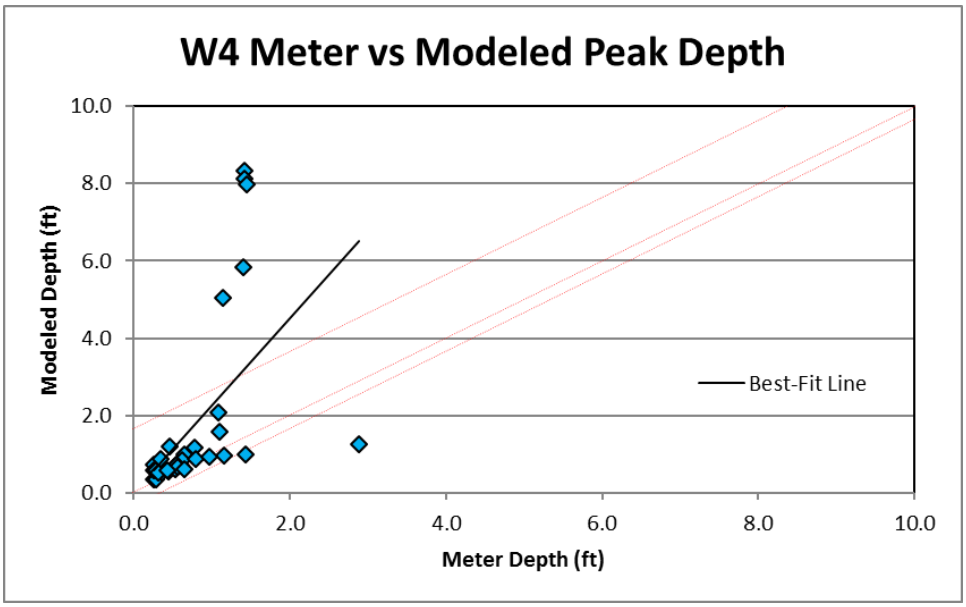

W3 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
120.0
100.0
80.0
60.0
40.0
20.0
0.0
0.0
20.0
40.0
60.0
80.0
100.0
120.0
Meter Peak Flow (MGD)
Best-Fit Line

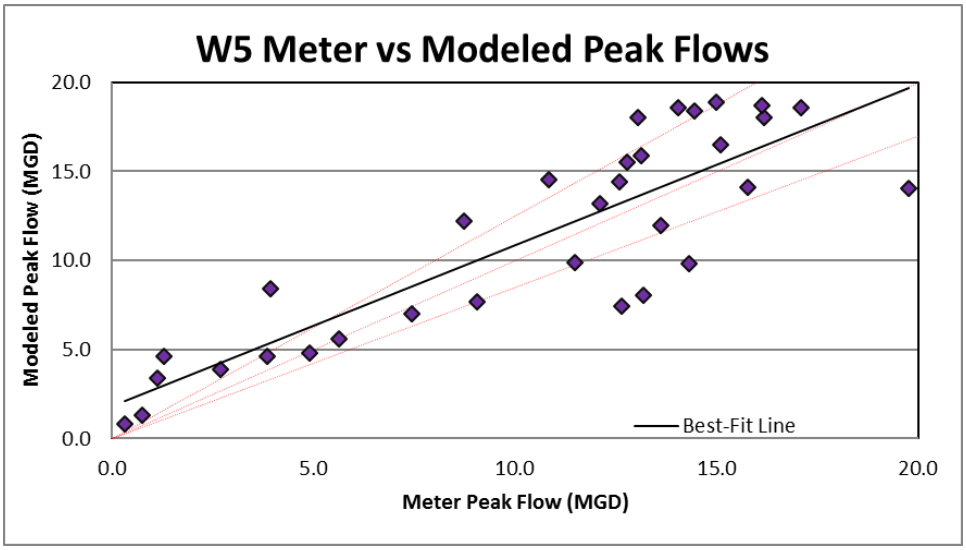

W3 Meter vs Modeled Storm Volume
Modeled Volume (MG)
10.0
8.0
6.0
4.0
2.0
0.0
0.0
2.0
4.0
6.0
8.0
10.0
Meter Volume (MG)
Best-Fit Line

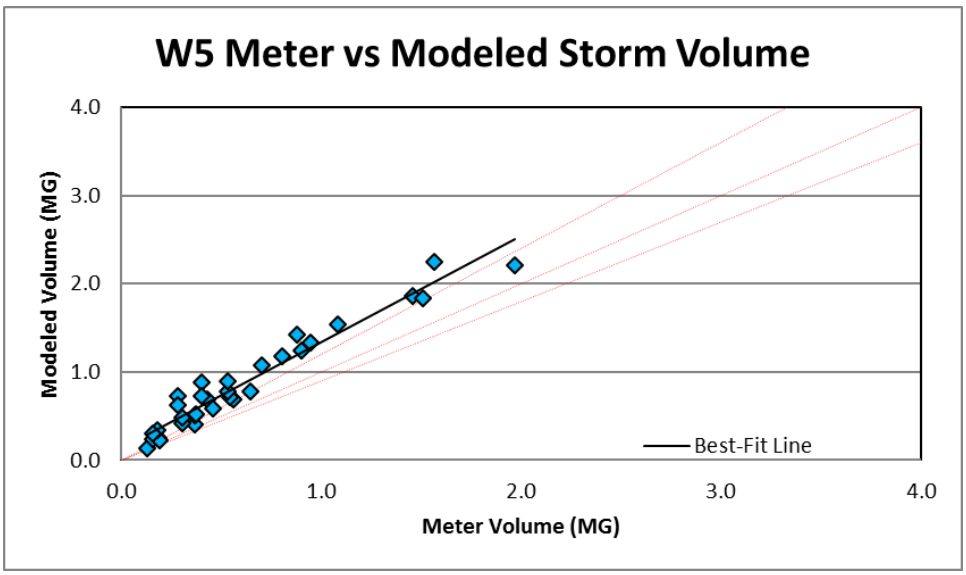

W3 Meter vs Modeled Peak Depth
Modeled Depth (ft)
4.0
3.0
2.0
1.0
0.0
0.0
1.0
2.0
3.0
4.0
Meter Depth (ft)
Best-Fit Line

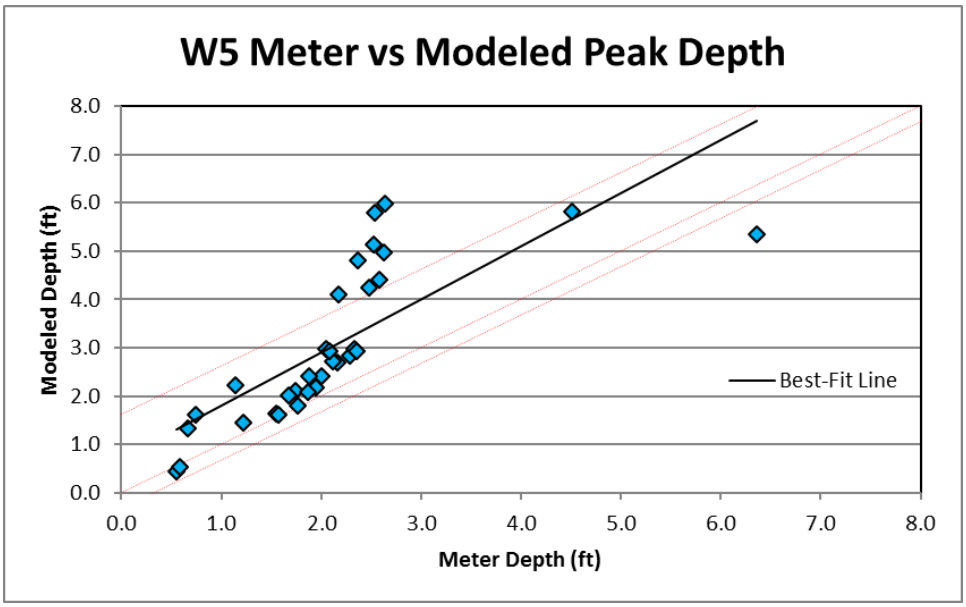

W4 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
0.0
5.0
10.0
15.0
20.0
25.0
30.0
Meter Peak Flow (MGD)
Best-Fit Line


W4 Meter vs Modeled Storm Volume
Modeled Volume (MG)
4.0
3.0
2.0
1.0
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Meter Volume (MG)
Best-Fit Line


W4 Meter vs Modeled Peak Depth
Modeled Depth (ft)
10.0
8.0
6.0
4.0
2.0
0.0
0.0
2.0
4.0
6.0
8.0
10.0
Meter Depth (ft)
Best-Fit Line


W5 Meter vs Modeled Peak Flows
Modeled Peak Flow (MGD)
Meter Peak Flow (MGD)
Best-Fit Line
0.0
5.0
10.0
15.0
20.0


W5 Meter vs Modeled Storm Volume
Modeled Volume (MG)
Meter Volume (MG)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0


W5 Meter vs Modeled Peak Depth
Modeled Depth (ft)
Meter Depth (ft)
Best-Fit Line
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0