

QUARTERLY REPORT
JANUARY 1 – MARCH 31, 2022



Hampton Roads Sanitation District
1434 Air Rail Avenue
Virginia Beach, VA 23455

June 17, 2022

TABLE OF CONTENTS

1. INTRODUCTION AND PURPOSE.....	1-1
2. CLAIM OF FORCE MAJEURE.....	2-1
2.1 Sanitary Sewer Overflow.....	2-1
2.1.1. Basis of Claim	2-1
2.2 Unusual Discharges (Sanitary Sewer Discharge, Prohibited Bypasses, Unauthorized Discharge).....	2-1
3. UNDISPUTED STIPULATED PENALTIES	3-1
3.1 Sanitary Sewer Overflow	3-1
3.1.1. Basis of Undisputed Stipulated Penalties	3-1
3.2 Unusual Discharges (Sanitary Sewer Discharge, Prohibited Bypasses, Unauthorized Discharge)	3-1
3.2.1 Basis of Undisputed Stipulated Penalties	3-1
4. POST-STORM SYNOPSES REPORTS.....	4-1
APPENDIX A. POST-STORM SYNOPSES REPORTS	A-1
APPENDIX B. DEFINITIONS	B-1

List of Tables

Table 1. Detailed Listing of HRSD SSO.....	4-2
Table 2. Detailed Listing of HRSD Treatment Plant Unusual Discharges	4-3

1. INTRODUCTION AND PURPOSE

On September 26, 2007, the Hampton Roads Sanitation District (HRSD) entered into a Special Order by Consent (SOC) with the Virginia Department of Environmental Quality (DEQ) and thirteen (13) area Localities for the purpose of resolving certain alleged violations of environmental laws and regulations related to Sanitary Sewer Overflows (SSOs). On February 23, 2010, HRSD entered into an Amended Consent Decree (“Consent Decree”) with the United States of America and the Commonwealth of Virginia for the purpose of fulfilling the objectives of the Clean Water Act and the Virginia State Water Control Law. This Consent Decree has been modified five times by agreement of all parties in 2011, 2013, 2014, 2017, and 2022. In December 2014, the SOC was eliminated by DEQ and HRSD is no longer under state enforcement. On February 8, 2022, the Fifth Amendment to the Consent Decree was entered.

The Fifth Amendment to the Consent Decree requires:

“HRSD will submit quarterly SSO reports to VADEQ and EPA, in which HRSD will identify all SSOs, SSDs, Prohibited Bypasses, or unauthorized discharges from the HRSD SS System or the HRSD STPs. HRSD will identify those SSOs, SSDs, Prohibited Bypasses, or unauthorized discharges for which it asserts a claim of force majeure. If HRSD asserts a force majeure claim, it shall document the basis for such claim in the quarterly SSO reports. It will pay the associated undisputed stipulated penalties for all SSOs, SSDs, Prohibited Bypasses, or unauthorized discharges for which it did not assert a claim of force majeure within 90 days of the close of each calendar quarter. In addition, HRSD will submit all of HRSD’s post-storm synopses reports for rain events during the quarterly reporting period to VADEQ and EPA as part of the quarterly reports for rain events that satisfy HRSD’s current criteria for publishing a post-storm analysis, i.e.: (a.) one or more rain gauge sites meet a two-year or greater rainfall recurrence interval and at least 50% of sites in any treatment plant service area receive one inch of rainfall or greater; (b.) a rain gauge meets a five-year or greater rainfall recurrence interval; or (c.) a weather-related SSO occurs.”

This quarterly report is submitted pursuant to Section XVII.D of the Consent Decree. HRSD has prepared this quarterly report in accordance with the above requirements to apprise the EPA (representing the United States of America) and the DEQ (representing the Commonwealth of Virginia) of steps taken toward meeting the obligations of the Consent Decree. Specifically, this quarterly report summarizes all Sanitary Sewer Overflows (SSOs), Sanitary Sewer Discharges (SSDs), Prohibited Bypasses, or unauthorized discharges from the HRSD Sanitary Sewer System or the HRSD Sewage Treatment Plants from January 1, 2022, through March 31, 2022, the associated post-storm synopses reports, claims of force majeure, and undisputed stipulated penalties.

During the reporting period, there were a total of nine (9) SSOs, SSDs, Prohibited Bypasses, and unauthorized discharges from the HRSD SS System or the HRSD STPs. These are summarized in Tables 1 & 2.

2. CLAIM OF FORCE MAJEURE

2.1 Sanitary Sewer Overflow

There were two (2) SSOs from the HRSD SS System during the 3-month reporting period. HRSD asserts a force majeure claim for two (2) of the SSOs.

2.1.1 Basis of Claim

A description of the circumstances supporting a claim of force majeure is included in Table 1.

2.2 Unusual Discharges (Sanitary Sewer Discharge, Prohibited Bypasses, Unauthorized Discharge)

There were seven (7) unusual discharges from the HRSD SS System or the HRSD STPs during the 3-month reporting period. HRSD asserts a force majeure claim for five (5) Unusual Discharges.

2.2.1 Basis of Claim

A description of the circumstances supporting a claim of force majeure is included in Table 2.

3. UNDISPUTED STIPULATED PENALTIES

3.1 Sanitary Sewer Overflow

There were two (2) SSOs from the HRSD SS System during the 3-month reporting period. HRSD will pay undisputed stipulated penalties for zero (0) SSOs.

3.1.1 Basis of Undisputed Stipulated Penalties

Calculation of undisputed stipulated penalties is outlined in Section XX “Stipulated Penalties” paragraph 110 of the Consent Decree.

<u>Volume of the SSD or Prohibited Bypass</u>	<u>Penalty from the date of entry</u>
Less than 100 gallons	\$ 100
100 to 2,499 gallons	\$ 750
2,500 to 9,999 gallons	\$ 1,250
10,000 to 99,999 gallons	\$ 4,700
100,000 to 999,999 gallons	\$ 10,000
1,000,000 gallons or greater	\$ 15,000

The calculated stipulated penalties are shown in Table 1.

3.2 Unusual Discharges (Sanitary Sewer Discharge, Prohibited Bypasses, Unauthorized Discharge)

There were seven (7) unusual discharges from the HRSD SS System or the HRSD STPs during the 3-month reporting period. HRSD will pay undisputed stipulated penalties for two (2) Unusual Discharges.

3.2.1 Basis of Undisputed Stipulated Penalties

Calculation of undisputed stipulated penalties is outlined in Section XX “Stipulated Penalties” paragraph 110 of the Consent Decree.

<u>Volume of the SSD or Prohibited Bypass</u>	<u>Penalty from the date of entry</u>
Less than 100 gallons	\$ 100
100 to 2,499 gallons	\$ 750
2,500 to 9,999 gallons	\$ 1,250
10,000 to 99,999 gallons	\$ 4,700
100,000 to 999,999 gallons	\$ 10,000
1,000,000 gallons or greater	\$ 15,000

The calculated stipulated penalties are shown in Table 2.

4. POST-STORM SYNOPSES REPORTS

Post-Storm Synopses Reports are generated when:

- One or more rain gauge sites meets a two year or greater rainfall recurrence interval and 50% of sites receive one inch or greater rainfall
- A rain gauge meets a five-year or greater rainfall recurrence interval or
- A capacity related wet weather SSO occurs

Post-Storm Synopses Reports are attached for the 3-month reporting period.

Table 1. Detailed Listing of HRSD SSOs
(January 1, 2022, to March 31, 2022)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled In Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO	Discharge Quantity (gallons)**	Amount Reaching State Waters (gallons)**	DEQ IR	Force Majeure Rationale or Stipulated Penalty
1/5/2022 5:00 AM	3612 Robin Hood Road	SF-069-16017	Lafayette River via Wayne's Creek	Norfolk	Infrastructure	Sewage was observed leaking through the pavement.	1 hour(s) 30 minute(s)	Staff saw cut and removed pavement and created a small excavation to capture and retain the sewage. Vactor was onsite by 6:30am and sewage leak to waterway was stopped. Leak was caused by a failed coupling, likely installed during original construction of pipeline in 1953. Fitting and a section of pipe was replaced. -----January 5, 2022, 12:56 PM-----	150	150	SSORS#2022-T-106080	Condition could not be determined through assessment methods. Failure occurred on buried coupling with no method of evaluating. In addition, the VIP016500 CIP is currently in design to replace section of pipe. FM asserted.
1/30/2022 10:10 AM	858 Jamestown Crescent	SF-042-112778	Storm pipe leading to Lafayette River	Norfolk	Infrastructure	Sewage leaking up through grass/soil near pump station	1 hour(s) 25 minute(s)	Staff turned off the HRSD pump station and closed nearby valve to isolate the leak. Leak was caused by a circumferential crack in the pipe, which was repaired with a full circle clamp. -----February 2, 2022, 02:53 PM-----	300	300	SSORS#2022-T-106090	Condition could not be determined through assessment methods. Crack occurred on buried pipe with no method of evaluating. FM asserted.

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2022

Table 2. Detailed Listing of HRSD Treatment Plant Unusual Discharges
(January 1, 2022 to March 31, 2022)

Date	Location	Description/Cause	Duration of Event (minutes)	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Force Majeure Rationale or Stipulated Penalty
1/4/2022	Williamsburg	At approximately 0720 a Maintenance Operator was passing by the south side of the Dewatering building and observed water coming up out of the asphalt. The water was traveling to the nearby storm drain resulting in an offsite discharge.	10	The Non-Potable Water (NPW) line was isolated and all unit processes that use NPW were shutdown. Contractors excavated the NPW line and located a circumferential crack. The damaged section of line was repaired,	3216	3216	Non-Potable Water (NPW)	Grove Creek	Failure occurred on buried line with no method of evaluating. NPW (non-potable water) is fully treated and chlorinated final effluent.
1/8/2022	Williamsburg	At approximately 1410 a Plant Operator was performing his rounds on the north side of the #2 Intermediate Clarifier and observed water coming out of a NPW line next to the tank where the 2" ball valve failed. The water was traveling to the nearby storm drain resulting in an offsite discharge.	105	The NPW line was isolated for the intermediate process and capped.	41100	41100	Non-Potable Water (NPW)	James River	Valve failure could not be anticipated. NPW (non-potable water) is fully treated and chlorinated final effluent.
1/31/2022	Nansemond	PVC NPW line on secondary clarifier broke and started spraying NPW into the air and some reached the ground.	150	Relief operator shut NPW valve at 0630am 01/31/2022	100	100	Non-Potable Water (NPW)	ground	Pipe failure could not be anticipated. NPW (non-potable water) is fully treated and chlorinated final effluent.
2/2/2022	Nansemond	A Non-Potable Water (NPW) line was isolated to repair a cracked valve. When repressurized, the NPW line leaked upline of the repair. The NPW line was secured and repaired	120	Secured the NPW line and recovered 1,000gal of spilled NPW.	6000	5000	Non-Potable Water (NPW)	ground	Pipe failure could not be anticipated. NPW (non-potable water) is fully treated and chlorinated final effluent.
2/4/2022	Atlantic	Due to flight failure, the operator on duty was taking Primary Clarifier #6 offline, and closed the influent gates to the clarifier, but mistaken left the gate open at the distribution box. This caused a buildup of wastewater in the influent channel leading to the clarifier, which eventually overflowed up through the channel covers and down the sides of the channel to ground by OCS D and the blower/electric building.	30	After the overflow was detected, the distribution box gate was adjusted and secured to stop the overflow. Drain covers were placed over storm drains. Residual solids on the ground are being allowed to dry, so they can be manually removed to the storage pad. We were able to excavate roughly one third of the dried solids.	1000	800	Primary Clarifying Influent (PCI)	ground	\$750

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2022

Table 2. Detailed Listing of HRSD Treatment Plant Unusual Discharges
(January 1, 2022 to March 31, 2022)

Date	Location	Description/Cause	Duration of Event (minutes)	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Force Majeure Rationale or Stipulated Penalty
3/10/2022	Army Base	ABTP received word from Chris Carlough, P3 via email at 11:39 on 03-09-22 that an estimated 1,500 gallons of AFFF was released into the sanitary sewer. We monitored headworks and process tanks throughout the day and did not see any issues until C. Raleigh was notified by ABTP TPE on 03-09-22 at 15:28 of foam starting on the aeration tanks. On 03-10-22 at 07:40 foam was observed blowing off the secondaries onto the ground.	410	On 03-09-22 Dissolved oxygen levels on the aeration tanks were lowered from 2.25mg/l to 2.0mg/l to contain foam. On 03-10-22 as flows came up and foam became worse, dissolved oxygen levels were lowered again from 2.0mg/l to 1.5mg/l to help keep foam in the tanks. On 03-10-22 at 07:40 foam was observed on the ground. Dissolved oxygen levels were lowered again to 1.0mg/l to help with foam and all maintenance staff started spraying foam down with Non-Potable Water on the aeration tanks. Action was taken with defoaming agents throughout the day to minimize foam release. Plant inspection at 14:30 on 3-10-22 foam was under control. Wind was no longer blowing foam off the tanks onto the ground.	3	3	Foam from AFFF	Ground	The US Navy had an electrical glitch that allowed the illegal release of AFFF to the sanitary sewer system and resulted in foam generation in the wastewater treatment process and a de minimis volume of foam blowing out of the secondary clarifiers.
3/14/2022	Nansemond	SWIFT went offline at 8:45AM for Dominion Power to relocate utility power feed. Once power was restored the SWIFT operator started the influent pumps and floc-sed process. Flow was going to off-spec after floc-sed to allow for chemical stabilization when the operator was made aware by the SWIFT maintenance operator of the drain pump station overflowing. The operator found the drain pump station pumps not in operation.	5	Once the SWIFT operator noticed the drain pump station pumps not running, he noticed they were in manual (most likely caused from the power outage) and returned them to automatic control. At this time the pumps started and pumped the level still and stopped the overflow.	200	200	Floc-Sed Effluent	Ground	\$750

Note: NPW (non-potable water) is fully treated and chlorinated final effluent.

APPENDIX A. POST-STORM SYNOPSES REPORTS

Hampton Roads Sanitation District

Post-Storm Report



January 2-3, 2022

DISCLAIMER:

About the information on this HRSD server

This report is intended to provide the HRSD regional community summary information about the HRSD system during select wet weather events/anomalies. The attached report contains a selection of *official* Interceptor and Treatment data, as well as other environmental and meteorological data provided through other services. In an effort to enhance the HRSD system, the attached products have been made accessible on this server and care must be taken when using such products as they are intended for informational and not operational, legal, or other purposes.

This report is located on an HRSD server and is intended to be available 24 hours a day, seven days a week. However, timely availability and/or delivery of data and products from this server through the Internet is subject to numerous potential constraints and is, therefore, not guaranteed. Official HRSD dissemination of information is available only through a written response to a formal written request for data from the user.

Limitations on Use of HRSD Data and Products

The information on HRSD servers are in the public domain, unless specifically annotated otherwise, and may be used by any user so long as you do not 1) claim it as your own (e.g. by claiming copyright for HRSD information, 2) use it in a manner that implies an endorsement or affiliation with HRSD, or 3) modify it in content and then present it as official HRSD material or in a misleading manner. You also cannot present information of your own in a way that makes it appear to be official HRSD information.

Before using information obtained from this server special attention should be given to the date & time of the data and products being displayed. HRSD makes best efforts to provide accurate date & time data but given the sheer volume of data we manage, there may be errors and you should not rely absolutely on any such data.

The user assumes the entire risk related to its use of these data. HRSD is providing these data 'as is,' and HRSD disclaims any and all warranties, whether express or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose. In no event will HRSD be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of this server or the information contained herein.

These data are part of HRSD's governmental function and HRSD reserves all rights and immunities relating to these data and the terms and manner in which it is made available.

Summary

From January 2nd through January 3rd, there was an approximate 24-hour rainfall event that resulted in 9 sites on the North Shore and 5 sites on the South Shore that met a 1 to 5-year rainfall recurrence interval throughout the HRSD rain gauge network. This weather system was brought on by a large cold front that moved into Hampton Roads followed by an area of low pressure that resulted in widespread showers with pockets of heavy downpours. Our area saw heavy winds with gusts up to 50 mph recorded, as well as moderate to major flooding. By the afternoon, more cold air wrapped in on the backside of the low pressure turning the rain into a wintry mix for the afternoon. North Shore sites averaged around 2.42 inches of rain while South Shore sites averaged around 1.92 inches. There was minimal impact on groundwater levels compared to Jan 2021, however, we saw an increase in groundwater compared to the last 3 months. See Appendix C for the Historical Shallow Well comparison. This post-storm analysis is the first one to be written since taking the Chesapeake-Elizabeth plant off-line.

No HRSD interceptor weather-related overflow(s) were reported.

One Locality interceptor weather-related overflow(s) were reported.

HRSD flow and pressure meters met data reliability requirements per the MOM program. For all pressure meters in the aggregate and all pressure-side flow meters in the aggregate for each treatment plant service area listed below, at least 90% reliable data was achieved, based on the duration of system response to this rainfall event. The data reliability for the gravity flow meters is not included in this synopsis.

- Duration of system response: See Table Below
- Aggregate flow meter validity: 96.51%
- Aggregate pressure meter validity: 99.37%

Currently, rainfall recurrence intervals are only analyzed for a maximum of 96-hours. Rainfall analysis begins after 0.1 inches of rain has occurred. A 72-hour dry period of less than 0.1 inches of rain is typically used to signify two separate events. However, if a site returns to “dry weather” conditions prior to the next rainfall that occurs within 72 hours of the previous event, it is also considered for separate analysis. See Appendix A for the Rainfall Total System Maps.

The current criteria for publishing a post-storm analysis are the following:

- One or more rain gauge sites meet a two-year or greater RRI (rainfall recurrence interval) and at least 50% of sites in any treatment plant service area receive one inch of rainfall or greater,
- A rain gauge site meets a five-year or greater RRI, or
- A capacity-related wet weather SSO occurs.

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

Sanitary Sewer Overflows:

<i>Localities</i>		
Location	Jurisdiction	Start Date
1090 Holland Rd	Suffolk	1/3/22

HRSD Treatment Plant Wet Weather Response 1/2/22 – 1/3/22

North Shore	
Boat Harbor	2 day(s) 13 hour(s) 20 minute(s)*
James River	2 day(s) 13 hour(s) 0 minute(s)*
Williamsburg	2 day(s) 11 hour(s) 14 minute(s)*
York River	2 day(s) 12 hour(s) 22 minute(s)*
South Shore	
Army Base	2 day(s) 13 hour(s) 22 minute(s)*
Atlantic	2 day(s) 12 hour(s) 0 minute(s)*
Chesapeake-Elizabeth	**
Nansemond	2 day(s) 13 hour(s) 56 minute(s)*
Virginia Initiative Plant	2 day(s) 12 hour(s) 30 minute(s)*

* WWResponse cut short by next rainfall event

**CE Treatment Plant was taken offline 12/15/2021

Treatment Plant Data: (Data obtained from Telog Database)
See Appendix C for HRSD Treatment Plant Flows

HRSD Treatment Plant Data 1/2/22 – 1/3/22

North Shore					
Treatment Plant	Date of Peak Hourly Flow	Peak Hourly Flow (MGD)	Peak Hour	Total Rainfall (in)	Rain Gauge
Boat Harbor	1/2/22	20.74	23:00	0.80	BHTP
	1/3/22	41.73	13:00	1.87	
James River	1/2/22	19.05	22:00	0.77	JRTP
	1/3/22	32.09	07:00	1.58	
Williamsburg	1/2/22	12.39	12:00	0.35	WBTP
	1/2/22	26.83	10:00	1.58	
York River	1/2/22	16.06	22:00	0.29	YRTP
	1/2/22	26.76	12:00	1.89	

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

South Shore					
Treatment Plant	Date of Peak Hourly Flow	Peak Hourly Flow (MGD)	Peak Hour	Total Rainfall (in)	Rain Gauge
Army Base	1/2/22	10.23	13:00	0.59	Taussig Blvd PS
	1/3/22	19.20	12:00	2.59	
Atlantic	1/2/22	55.90	13:00	0.11	Lagomar IFM @ AT
	1/3/22	71.83	17:00	1.53	
Chesapeake-Elizabeth	1/2/22	*	*	0.21	CETP
	1/3/22	*	*	1.60	
Nansemond	1/2/22	20.59	13:00	0.28	NATP
	1/3/22	32.25	12:00	2.31	
Virginia Initiative	1/2/22	24.72	12:00	0.17	VIP TP
	1/3/22	57.68	11:00	1.51	

*CE Treatment Plant was taken offline 12/15/2021

North Shore

Weather:

Rainfall (HRSD Rainfall Gauges): *Recurrence intervals based on NOAA Atlas 14*

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
<i>Boat Harbor Treatment Plant Service Area¹</i>		
Bayshore PS	2-year (12hr)	HAMP
Bridge Street Tide Gate	1- to 2-year (24hr)	HAMP
Boat Harbor	DNQ	NEWP
Copeland Park PS	2-year (12hr)	NEWP
Hampton PS 159	1-year (12hr)	HAMP
<i>James River Treatment Plant Service Area¹</i>		
Hilton School PS	1-year (12hr)	NEWP
James River Main Flow (Influent)	DNQ	NEWP
Lee Hall PRS	DNQ	NEWP
Lucas Creek PS	DNQ	NEWP
Morrison PS	2-year (12hr)	NEWP
<i>Williamsburg Treatment Plant Service Area¹</i>		
Ford's Colony	DNQ	JCSA
Fort Eustis PS	DNQ	NEWP
Greensprings PS	DNQ	JCA
Solarex	DNQ	JCSA
Williamsburg Main Flow (Effluent)	DNQ	JCSA
Williamsburg PS	DNQ	WILL
York Skimino Hills PS	DNQ	YORK
<i>York River Treatment Plant Service Area¹</i>		
Big Bethel PRS	2-year (12hr)	HAMP
Freeman PS	2-year (12hr)	HAMP

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
Gloucester Court House	DNQ	GLOU
Guinea Rd at Maryus Rd	DNQ	GLOU
Ordinary PCV	DNQ	GLOU
Poquoson PS 6	1-year (12hr)	POQ
Wolf Trappe PCV	DNQ	YORK
York Kiln Creek 1 PS	DNQ	YORK
York PS 15	DNQ	YORK
York River Main Flow (Influent)	DNQ	YORK
York River Crossing (York River Rectifier)	DNQ	GLOU

Note:

1. Typical treatment plant service area.

Newport News-Williamsburg International (PHF)

- Wind and Rainfall (daily total):

Date	Gust (max)	Sustained (max)	Sustained (avg)	Direction	Rainfall (in)
01/02/22	32 mph	21 mph	9 mph	SW	0.52
01/03/22	45 mph	28 mph	16 mph	NNE	1.77

Rainfall from ncei.noaa.gov

Tide:

- Yorktown USCG Training Center:
 - Storm Surge: An approximate 3.9-foot storm surge was observed.

UNVERIFIED DATA

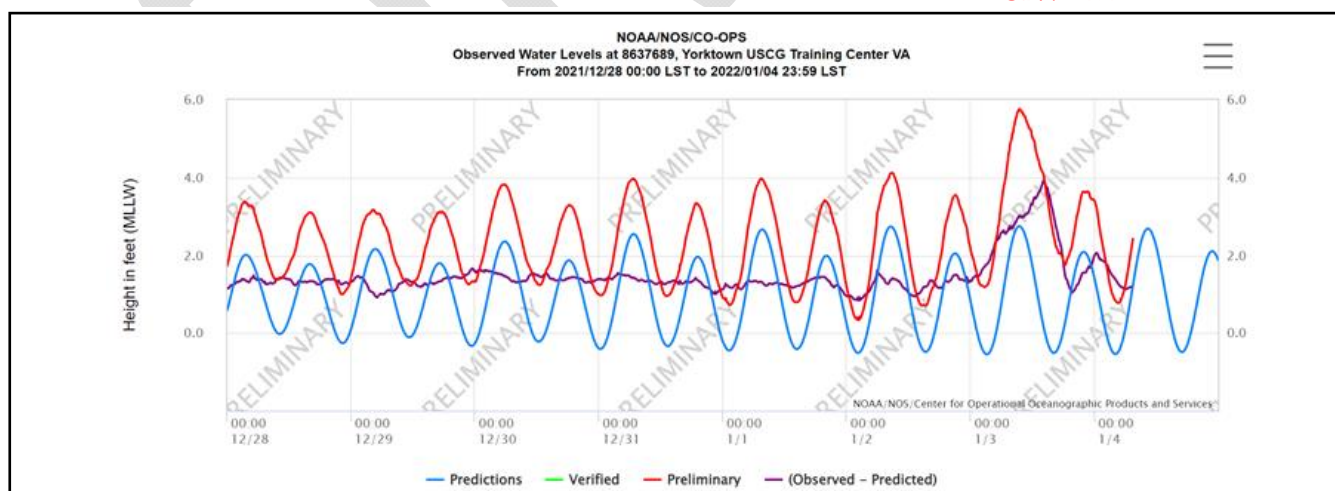


Figure 1. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

UNVERIFIED DATA

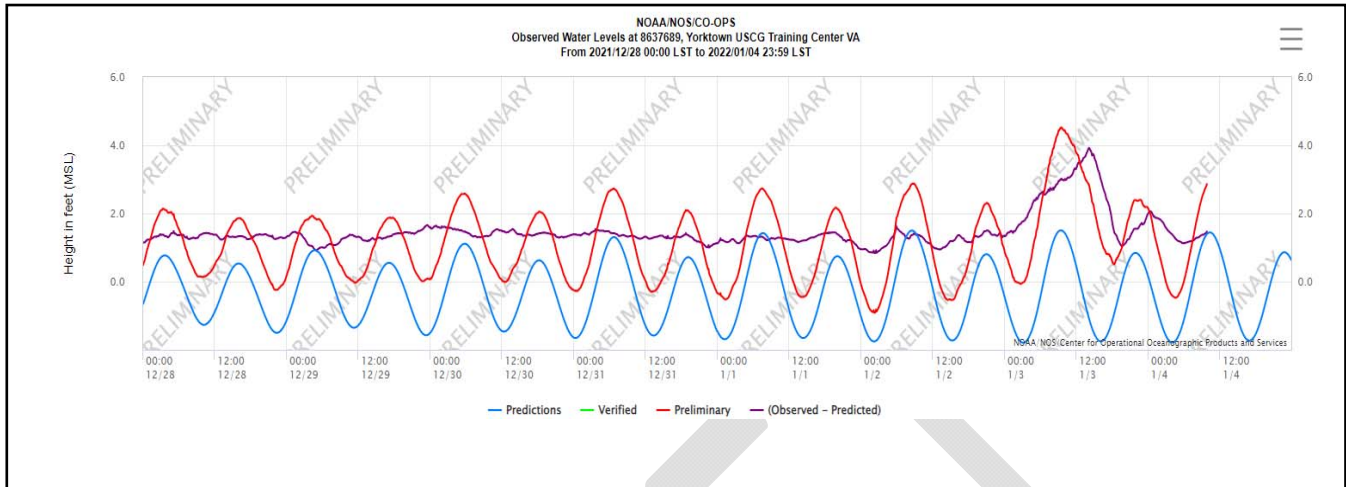


Figure 2. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

- Sewells Point Tide Station:
 - Storm Surge: An approximate 4.4 foot storm surge was observed.

UNVERIFIED DATA

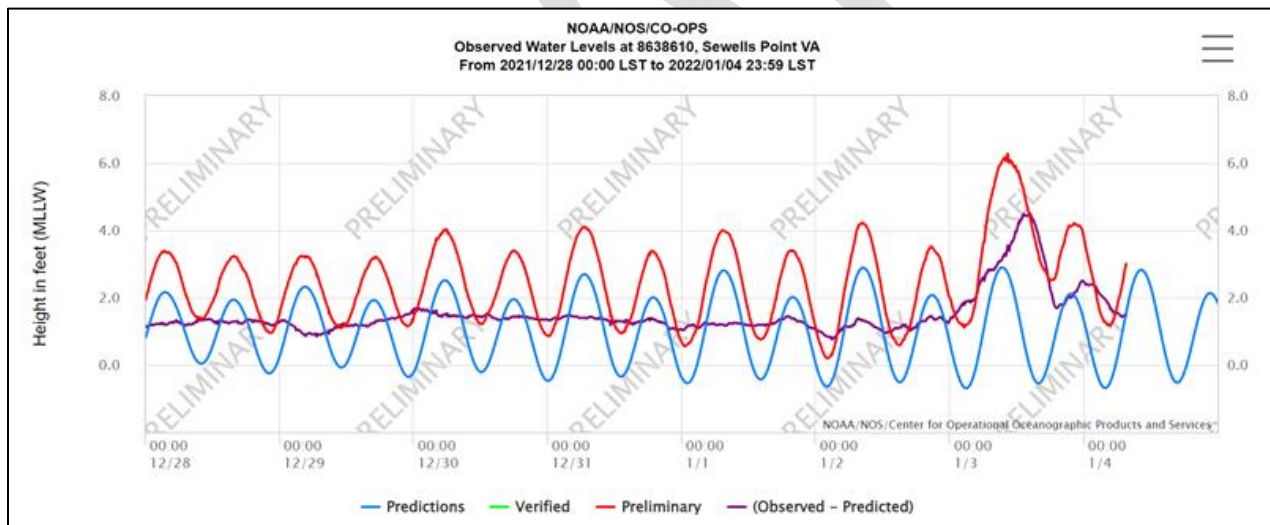


Figure 3. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

UNVERIFIED DATA

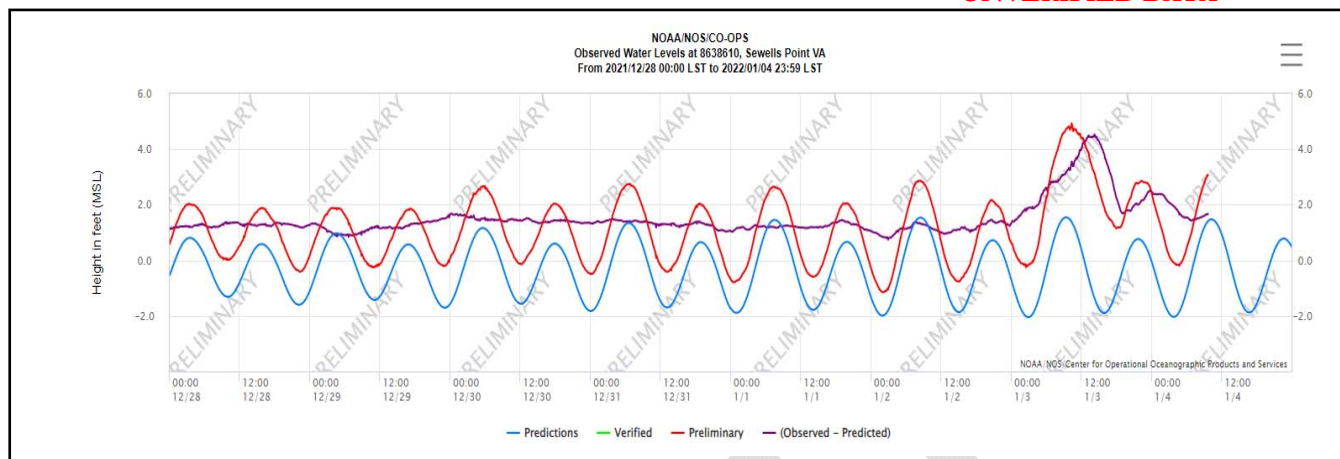


Figure 4. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

South Shore

Weather:

Rainfall (HRSD Rainfall Gauges): *Recurrence intervals based on NOAA Atlas 14*

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
<i>Army Base Treatment Plant Service Area¹</i>		
Bancker Rd (Dovercourt Discharge)	DNQ	NORF
Taussig Blvd PS	1-year (12hr)	NORF
<i>Atlantic Treatment Plant Service Area¹</i>		
Callison at GB Locks	DNQ	CHES
Chesapeake PS 243	DNQ	CHES
Chesapeake PS 254	DNQ	CHES
Courthouse PRS	DNQ	VAB
Elbow Rd	DNQ	CHES
John B. Dey MLV-AT side	DNQ	VAB
Kempsville PRS	DNQ	VAB
Lagomar IFM at Atlantic TP	DNQ	VAB
Laskin Rd PRS	DNQ	VAB
Pine Tree PRS	DNQ	VAB
Shippo Corner PRS	DNQ	VAB

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
<i>Nansemond Treatment Plant Service Area¹</i>		
Bowers Hill PRS	DNQ	CHES
Cedar Lane PS	1-year (12hr)	PORT
Chesapeake PS 158	DNQ	CHES
Chesapeake PS 238	DNQ	CHES
Crittenden Rd_Chuckatuck Rectifier	1-year (12hr)	SUFF
Deep Creek PRS	DNQ	CHES
Lake Kilby WTP	DNQ	SUFF
Nansemond Main Flow (Effluent)	DNQ	SUFF
Pagan River Rectifier	DNQ	IOW
Pughsville PS	DNQ	SUFF
Route 337 PRS	DNQ	CHES
Smithfield High School	2- to 5-year (12hr)	IOW
Suffolk PS	DNQ	SUFF
Suffolk PS 81	DNQ	SUFF
Suffolk PS 87	DNQ	SUFF
Windsor Duke St PS	DNQ	IOW
Windsor PCV	1-year (12hr)	SUFF
<i>VIP Treatment Plant Service Area¹</i>		
Elizabeth River Crossing_Eastern Branch	DNQ	NORF
Ferebee Avenue PS	DNQ	CHES
Luxembourg Avenue PS	DNQ	NORF
Rodman Ave PS	DNQ	PORT
Va Beach Blvd PS	DNQ	NORF
VIP Main Flow (Effluent)	DNQ	NORF

Note:

1. Typical treatment plant service area.

*Duration represents the minimum amount of time it took to reach the specified RRI.

Norfolk International Airport (ORF)

o Wind and Rainfall (daily total):

Date	Gust (max)	Sustained (max)	Sustained (avg)	Direction	Rainfall (in)
1/2/22	37 mph	23 mph	12 mph	SW	0.24
1/3/22	51 mph	38 mph	24 mph	N	1.68

Rainfall from ncei.noaa.gov

January 2nd – 3rd, 2022 – Post-Storm Rain Event Synopsis

Tide:

- Sewells Point Tide Station:
 - Storm Surge: An approximate 3.9-foot storm surge was observed.

UNVERIFIED DATA

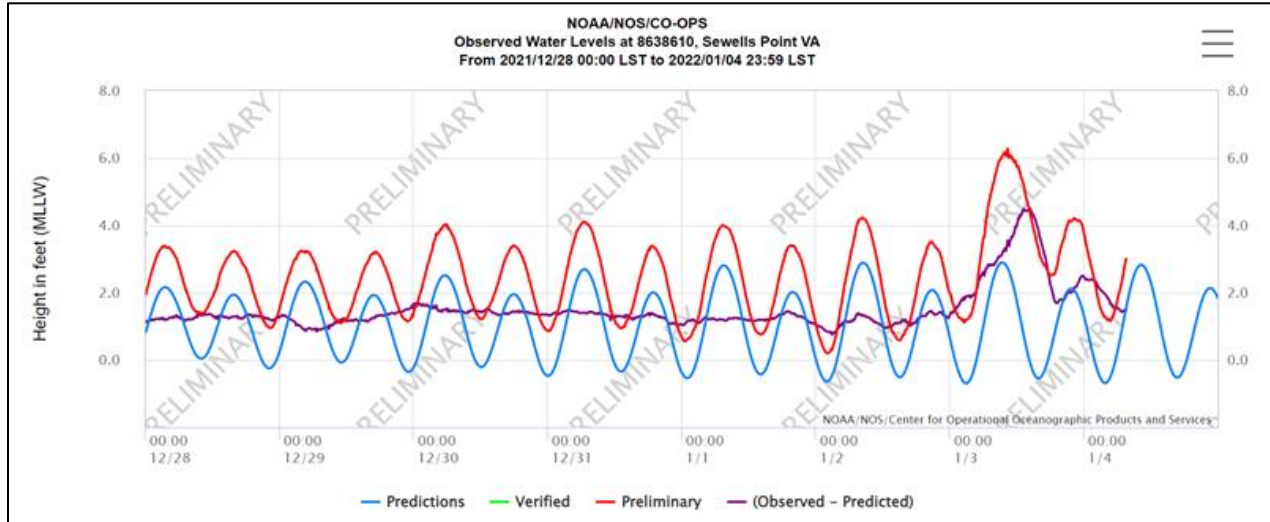


Figure 5. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

UNVERIFIED DATA

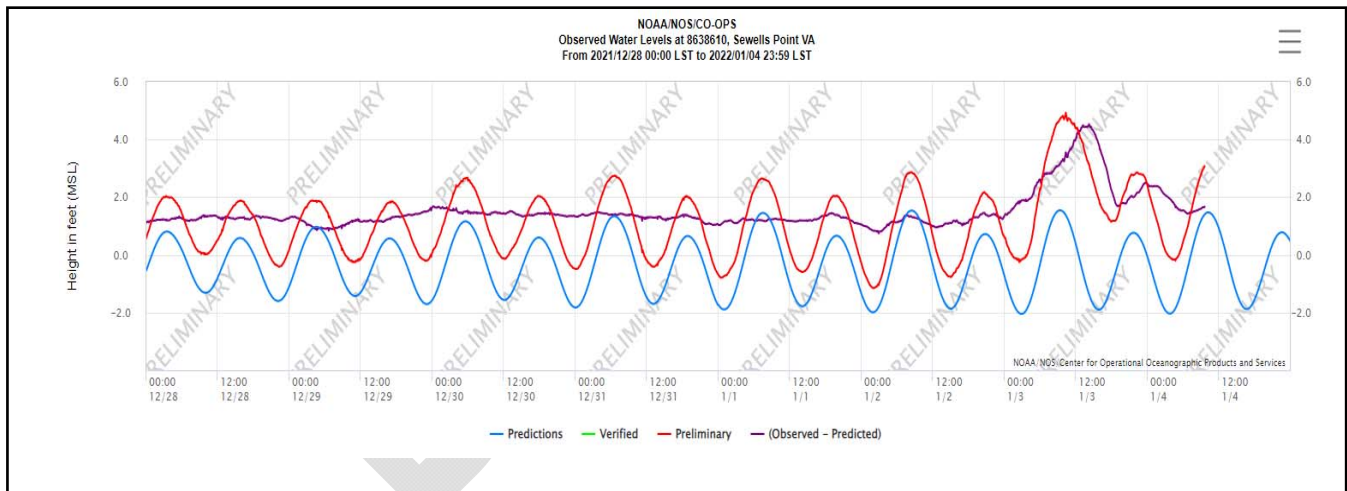


Figure 6. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

Shallow Well Analysis:

Shallow wells are located at/or near HRSD Pump Stations to measure groundwater levels. The water column is measured using a pressure transducer located near the bottom of the well. The installed sensor measures gauge pressure in inches of water. The Shallow Well_NAVD88 measurement referenced in Appendix D refers to the elevation (referenced as NAVD 88) of the sensor plus the gauge measurement in feet.

DRAFT

Appendix A

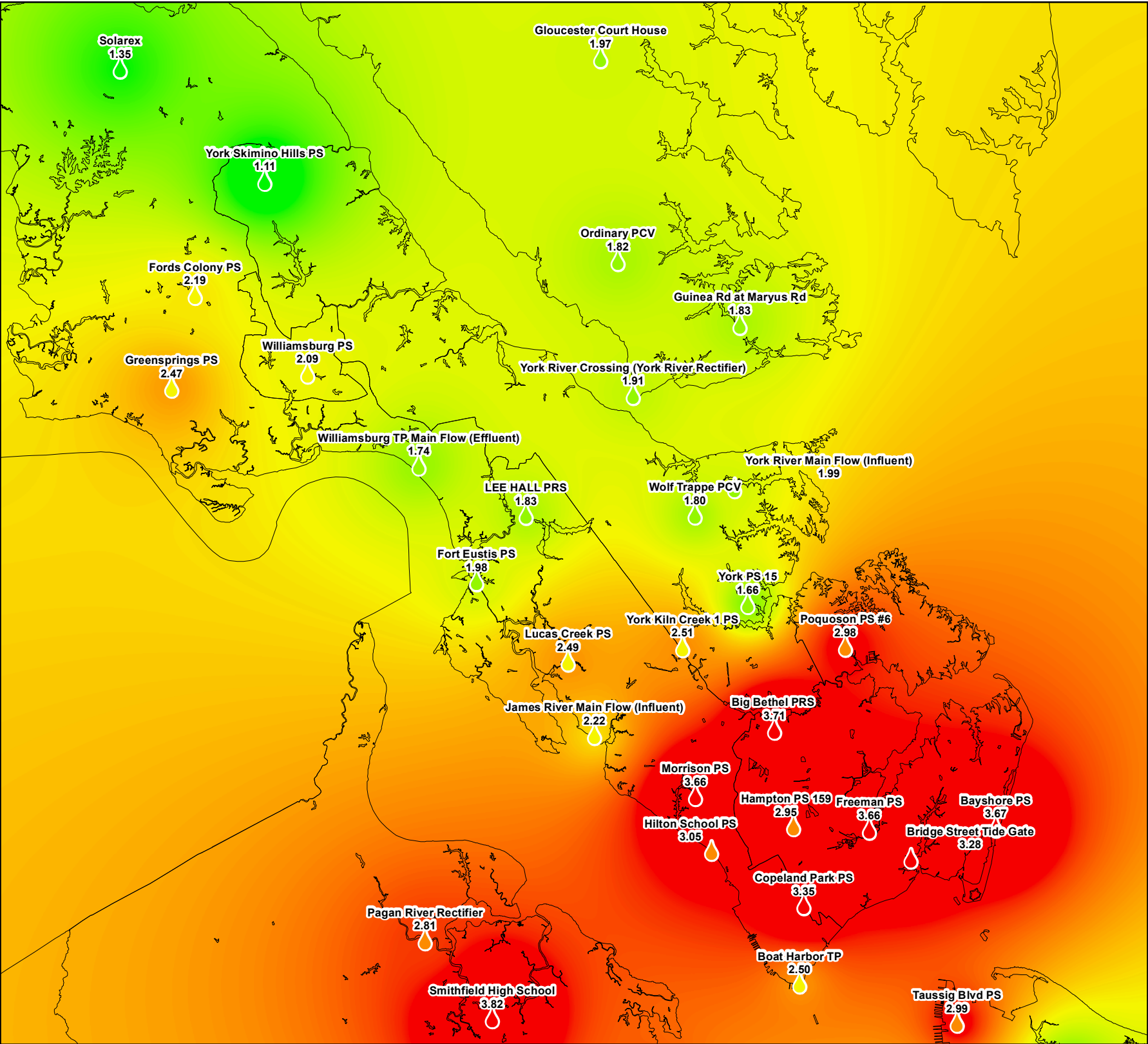
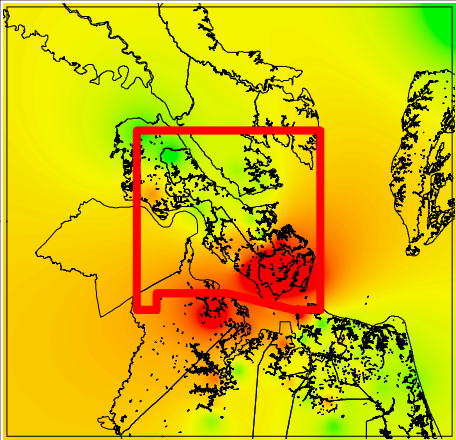
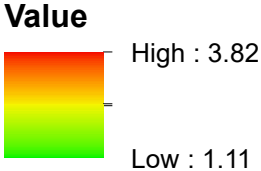
HRSD Rain Gauge Network
Rainfall Totals

North Shore

January 2-3, 2022 Rainfall Analysis Total Rainfall

Rain Gauges (in):

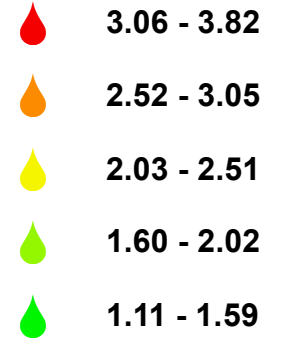
- 3.06 - 3.82
- 2.52 - 3.05
- 2.03 - 2.51
- 1.60 - 2.02
- 1.11 - 1.59



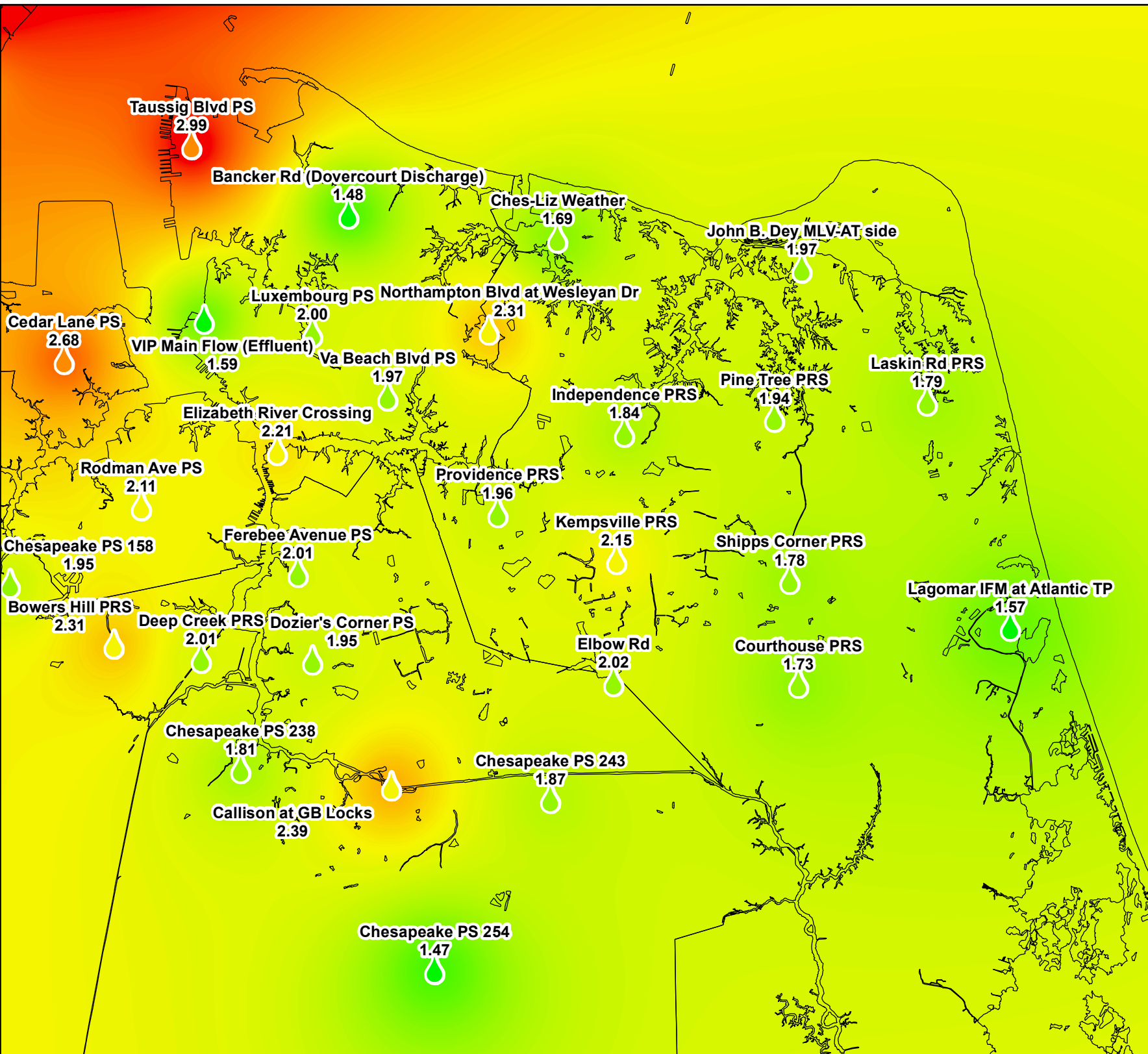
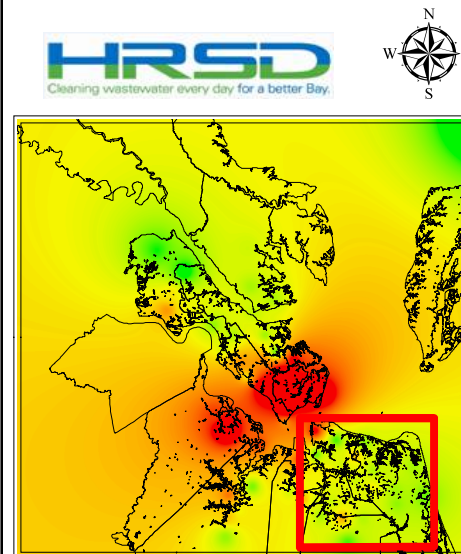
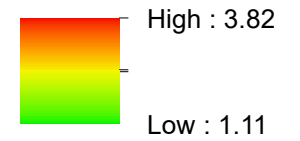
South Shore - East

January 2-3, 2022 Rainfall Analysis Total Rainfall

Rain Gauges (in):



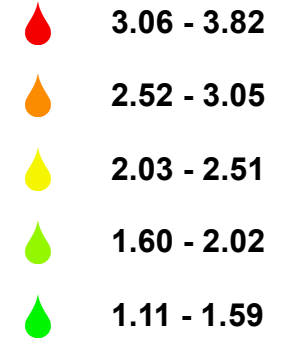
Value



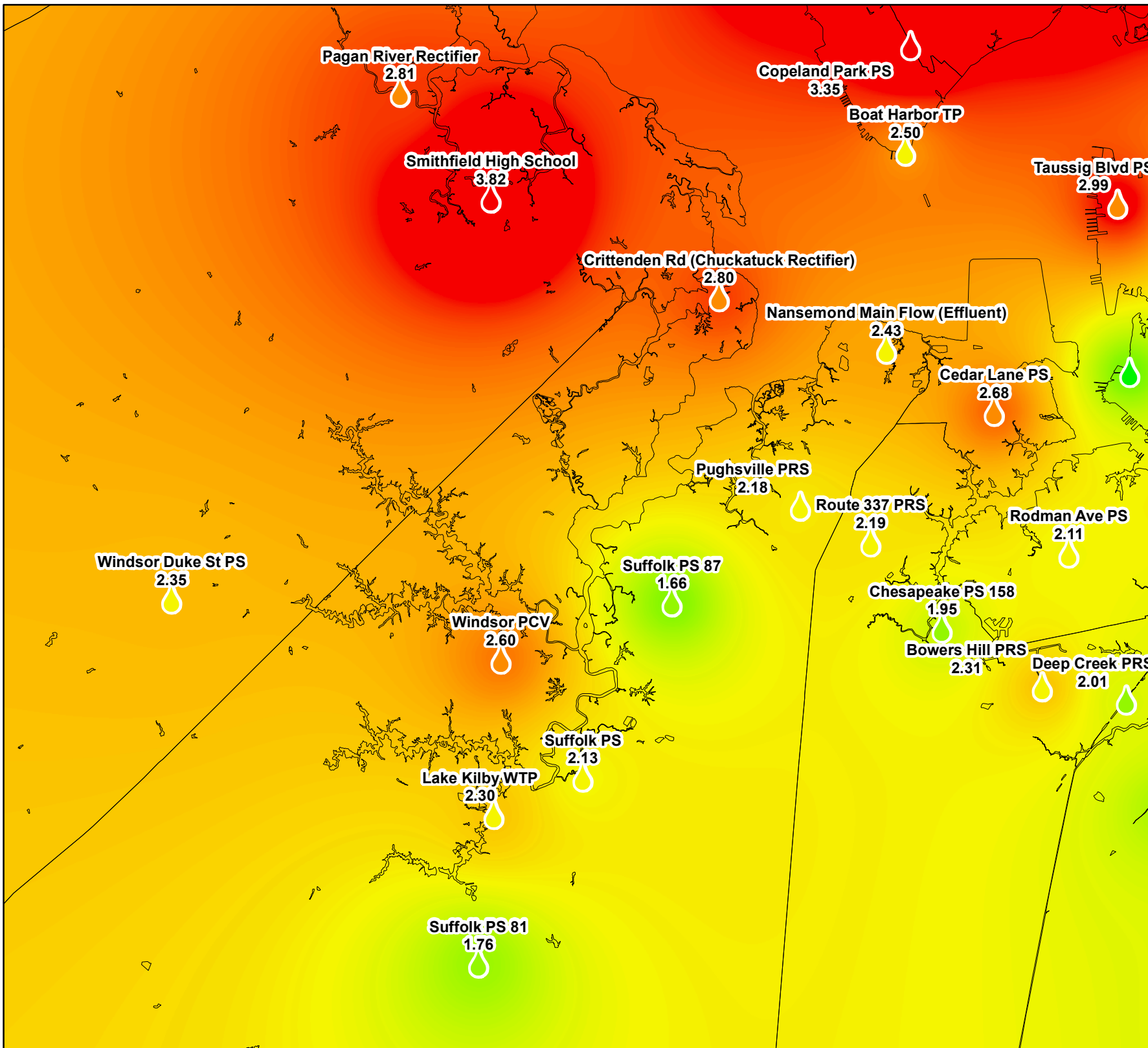
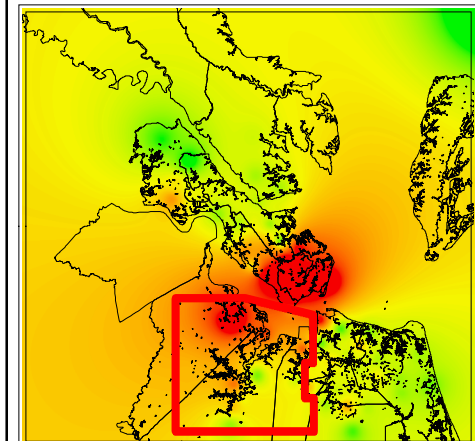
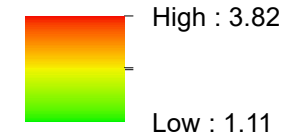
South Shore - West

January 2-3, 2022 Rainfall Analysis Total Rainfall

Rain Gauges (in):



Value



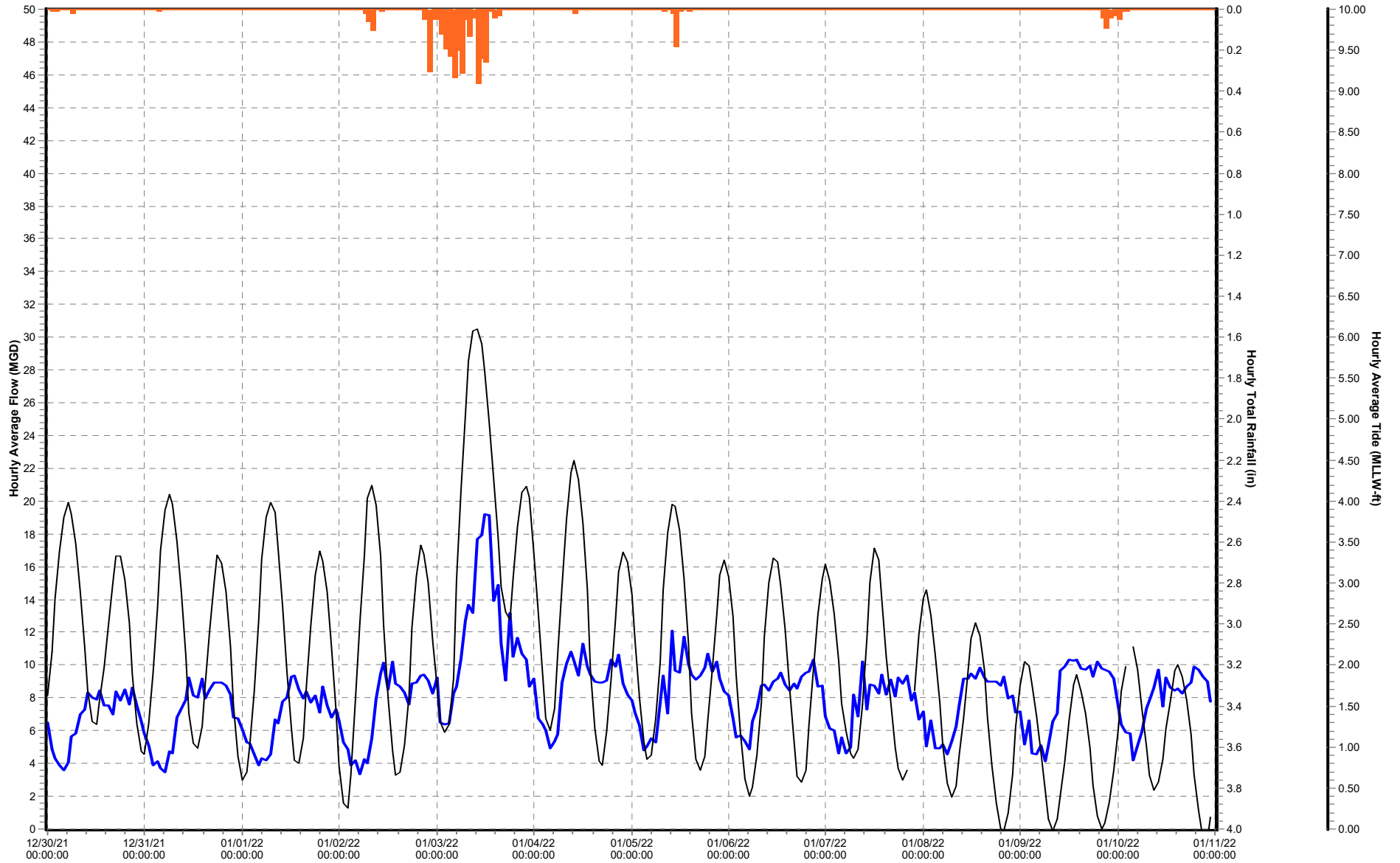
Appendix B

HRSD Treatment Plant Flows

Army Base Treatment Plant

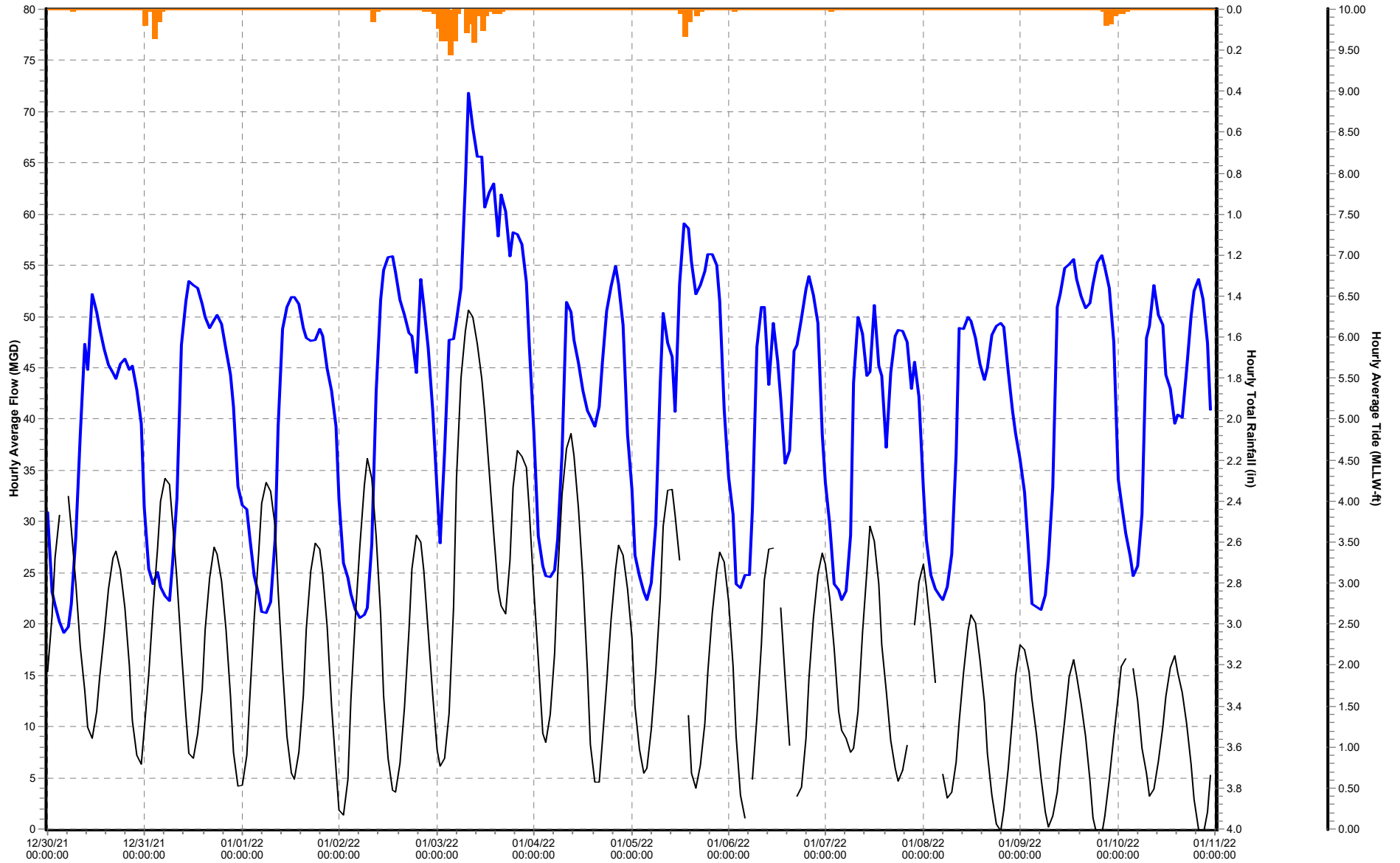
MMPS-035 (12/30/21 to 01/11/22)

MMPS-035.Flow_Effluent (MGD) MMPS-175: Taussig Blvd PS Rain Gauge SewellsPt Tide - MLLW Preliminary (ft)



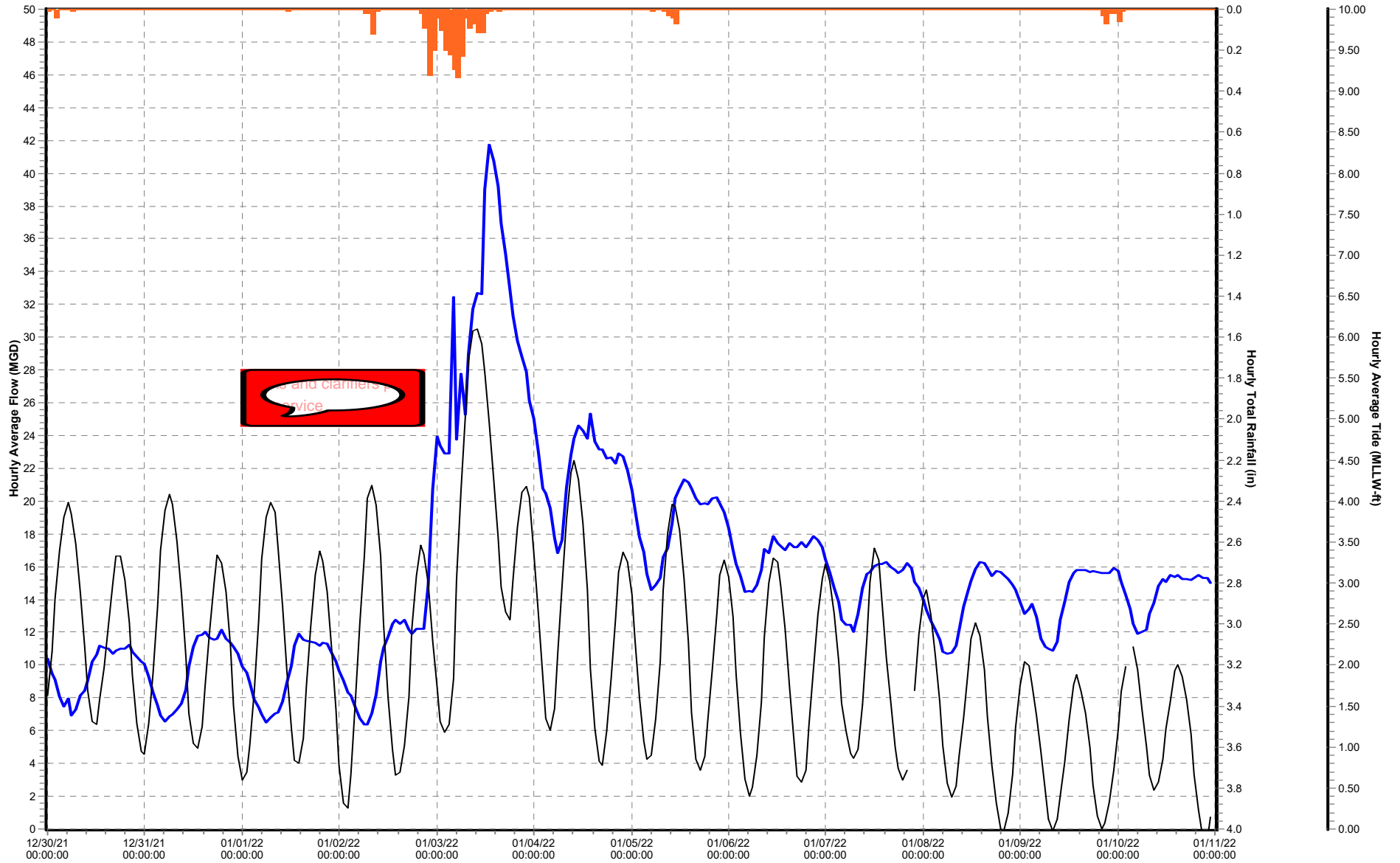
Atlantic Treatment Plant
MMPS-071 (12/30/21 to 01/11/22)

Flow_Effluent (MGD) MMPS-185: Lagomar IFM at Atlantic TP Rain Gauge CBBT Tide - MLLW Preliminary (ft)



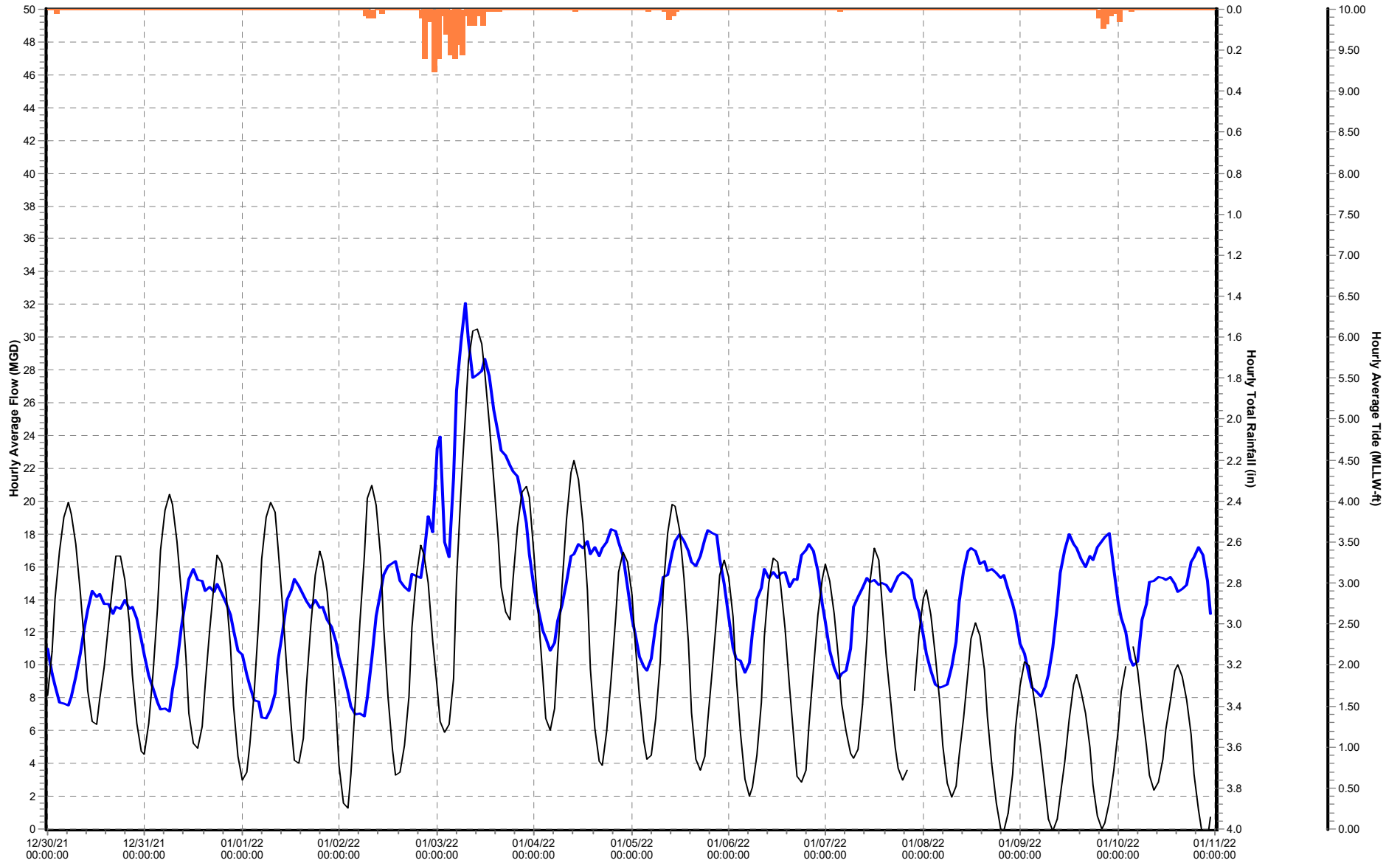
Boat Harbor Treatment Plant

MMPS-075 (12/30/21 to 01/11/22)



James River Treatment Plant

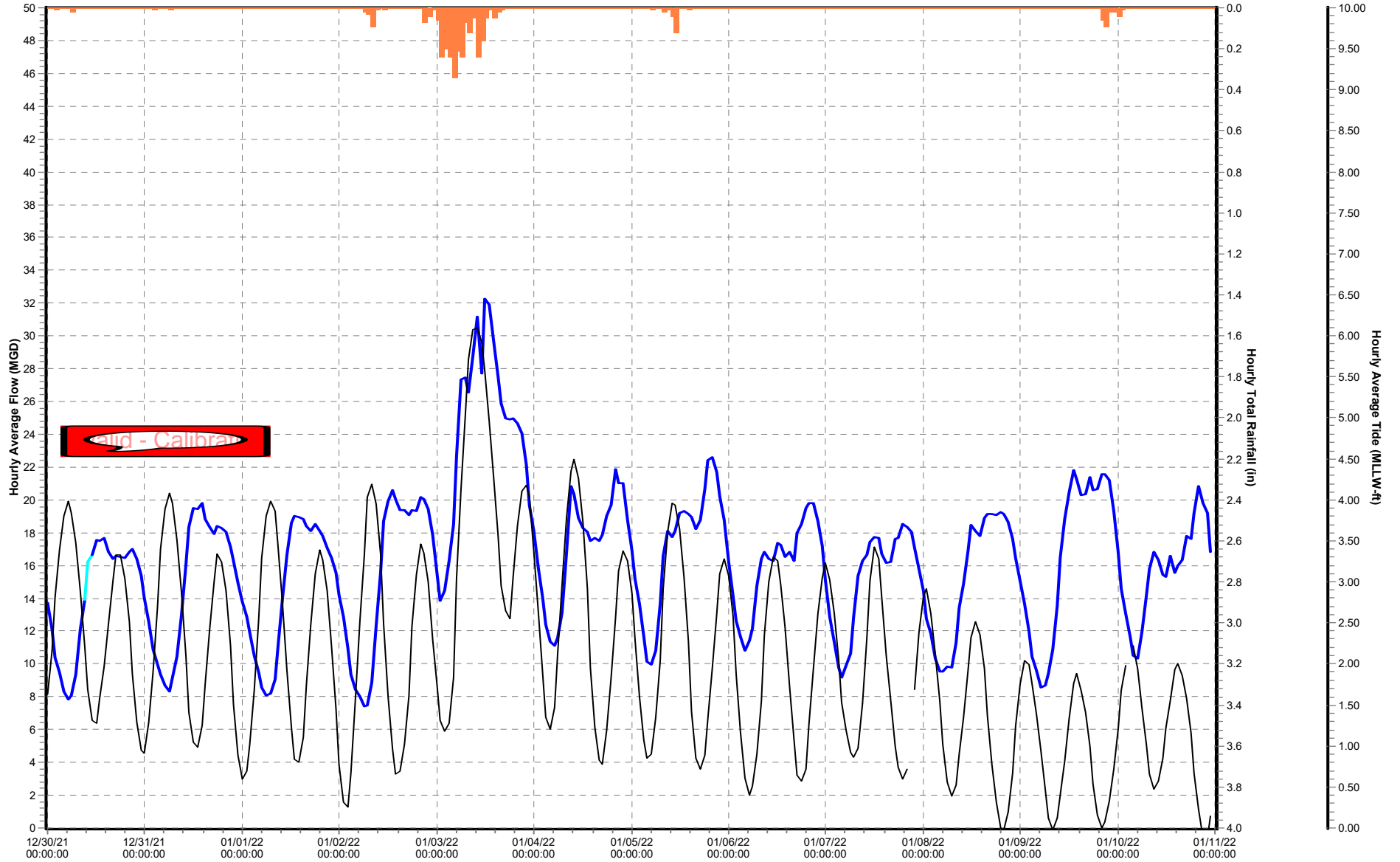
MMPS-184 (12/30/21 to 01/11/22)



Nansemond Treatment Plant

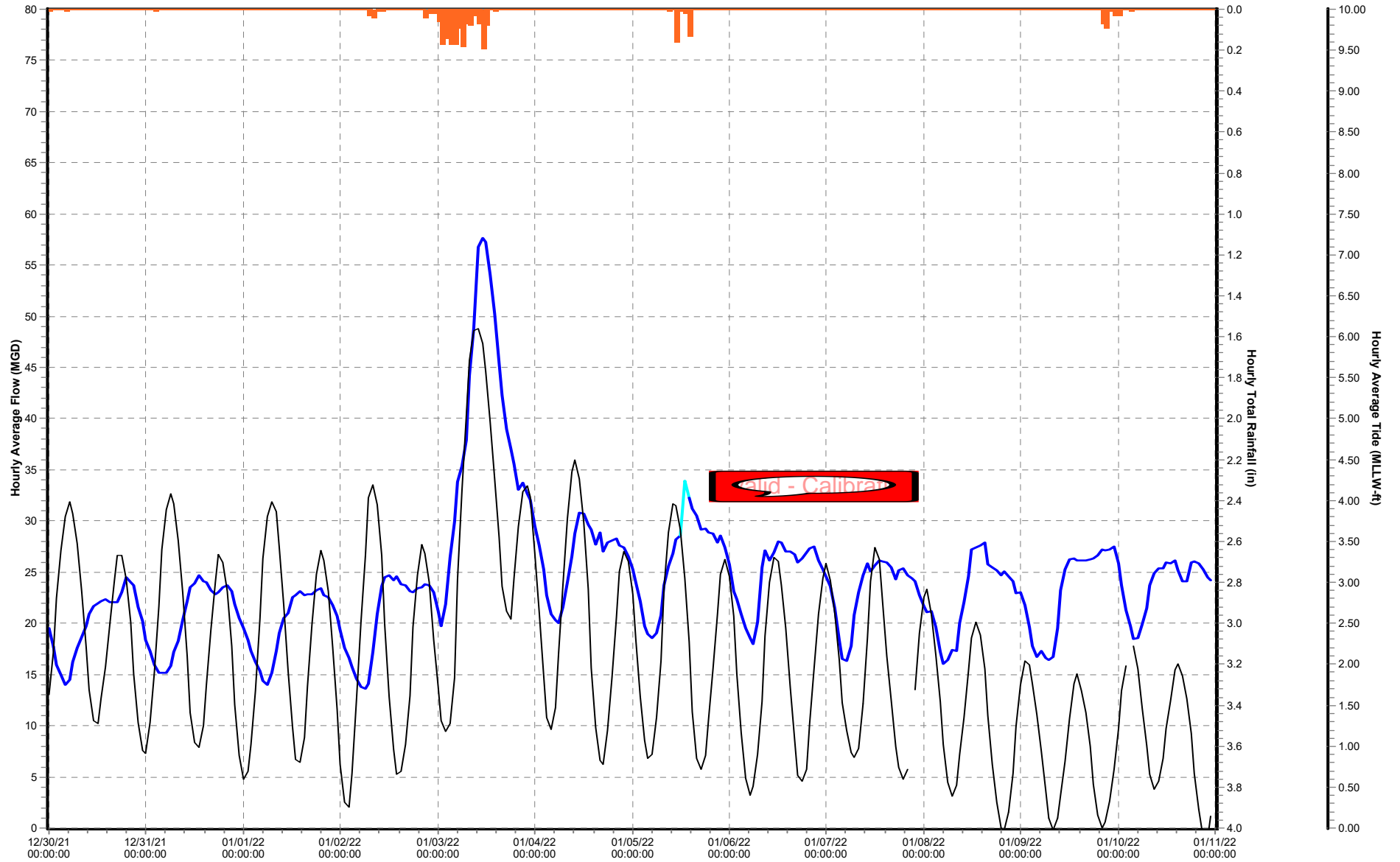
MMPS-202 (12/30/21 to 01/11/22)

Flow_Effluent (MGD) MMPS-202: Nansemond Main Flow_Effluent Rain Gauge SewellsPt Tide - MLLW Preliminary (ft)



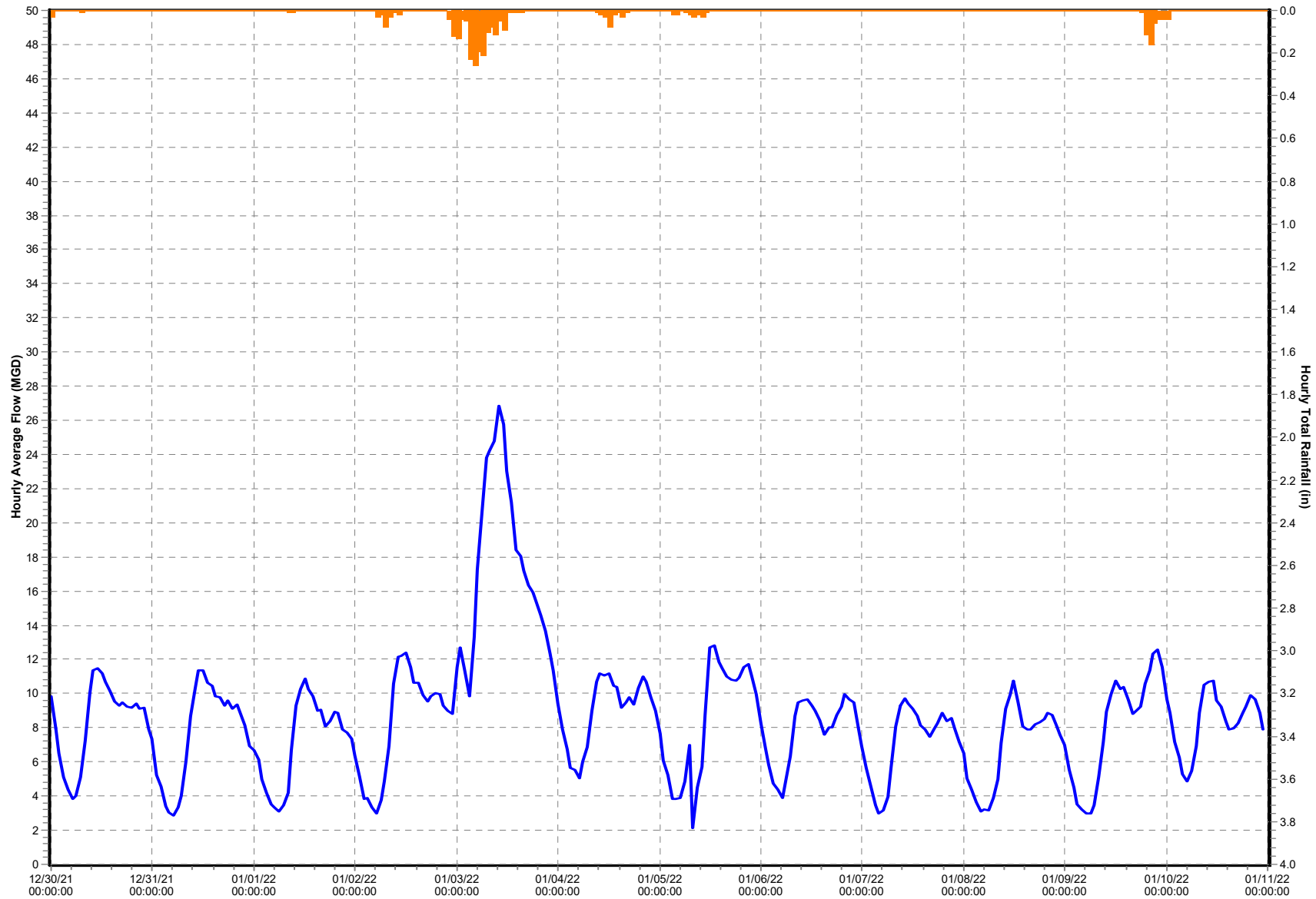
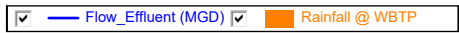
VIP Treatment Plant
MMPS-003 (12/30/21 to 01/11/22)

Flow_Effluent (MGD) MMPS-003: VIP Treatment Plant Rain Gauge SewellsPt Tide - MLLW Preliminary



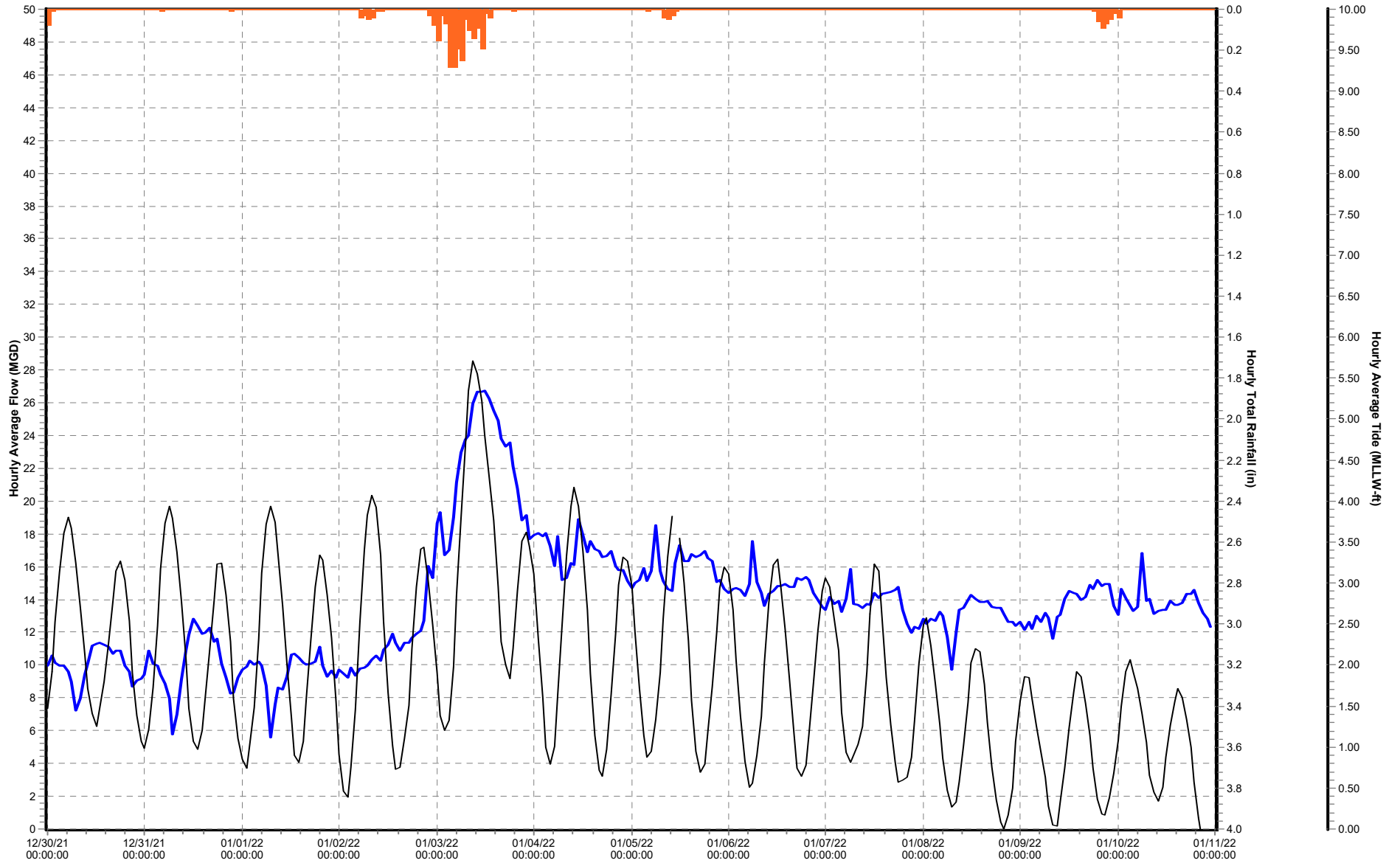
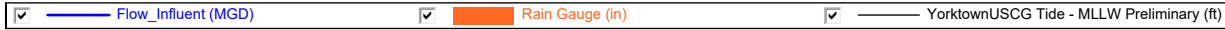
Williamsburg Treatment Plant

MMPS-222 (12/30/21 to 01/11/22)



York River Treatment Plant

MMPS-235 (12/30/21 to 01/11/22)



Appendix C

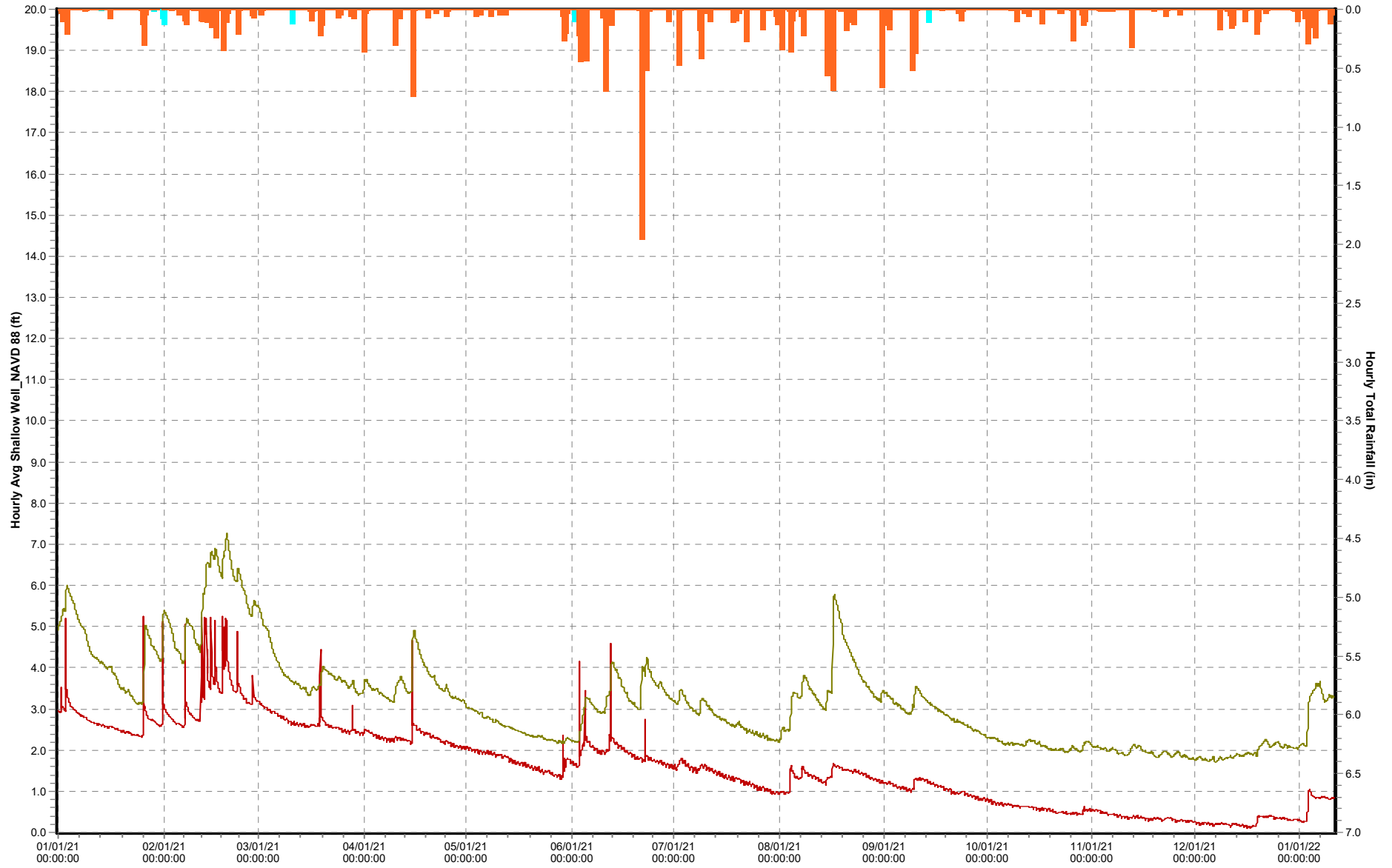
Shallow Well Analysis

1-year

South Shore Shallow Well Graphs

01/01/21 to 01/11/22

MMPS-155.Shallow Well_NAVD 88 (ft) Camden Ave PS.Shallow Well_NAVD 88 (ft) Rodman Ave PS. Rain Gauge (in)

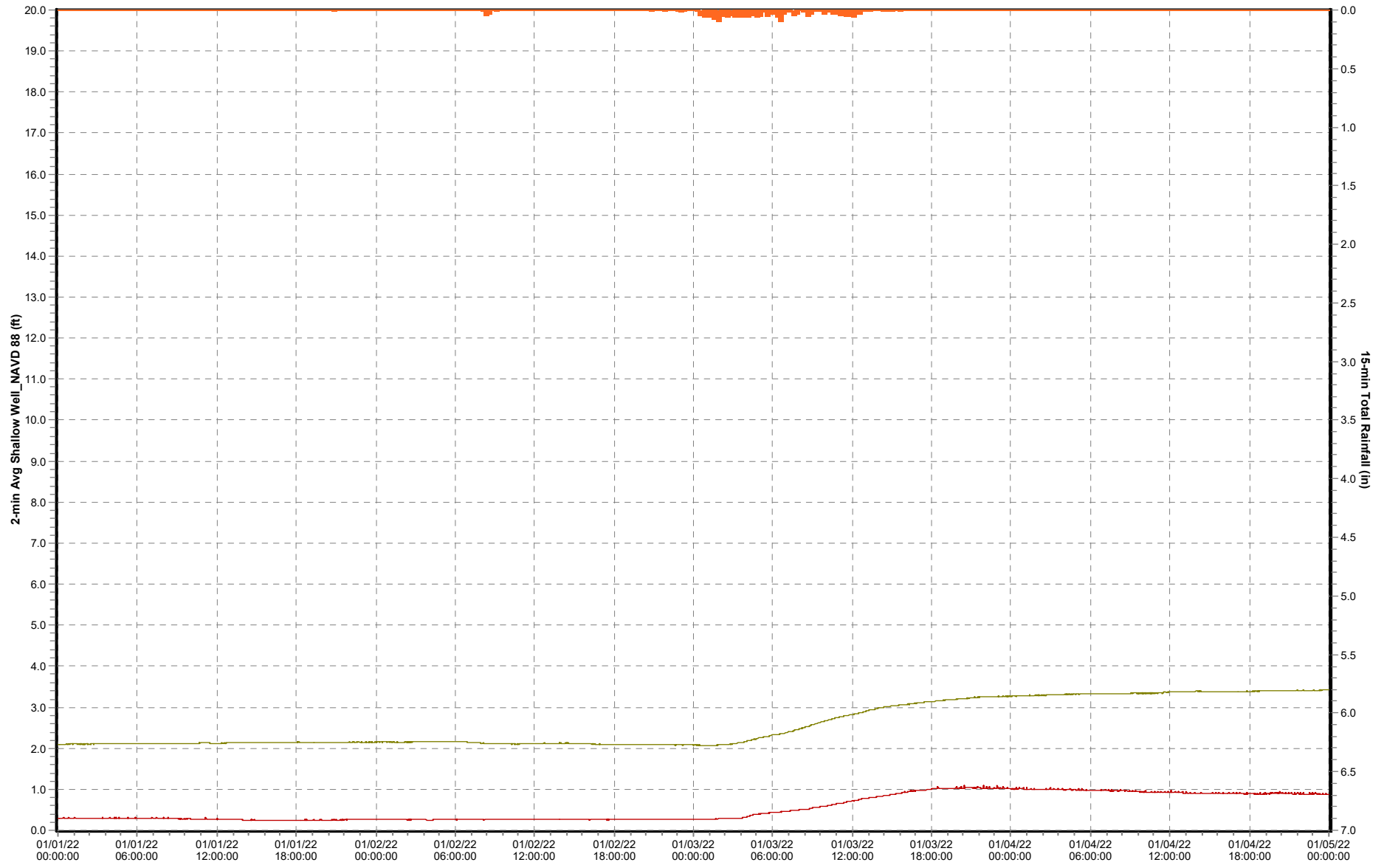


5-Day

South Shore Shallow Well Graphs

01/01/22 to 01/05/22

North Shore Rd PS. Rain Gauge (ft) Camden Ave PS. Shallow Well_NAVD 88 (ft) Rodman Ave PS. Rain Gauge (in)

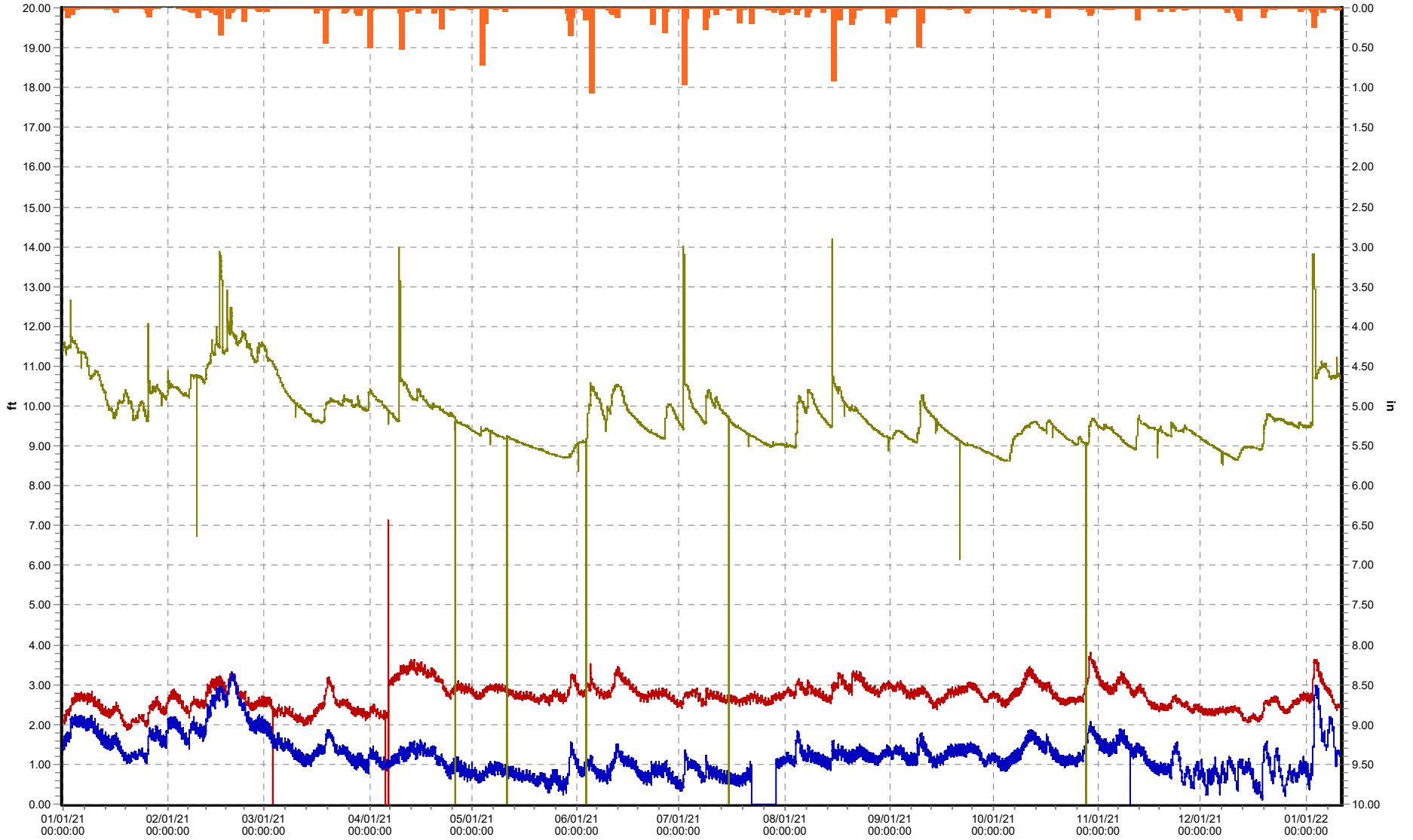


1-year

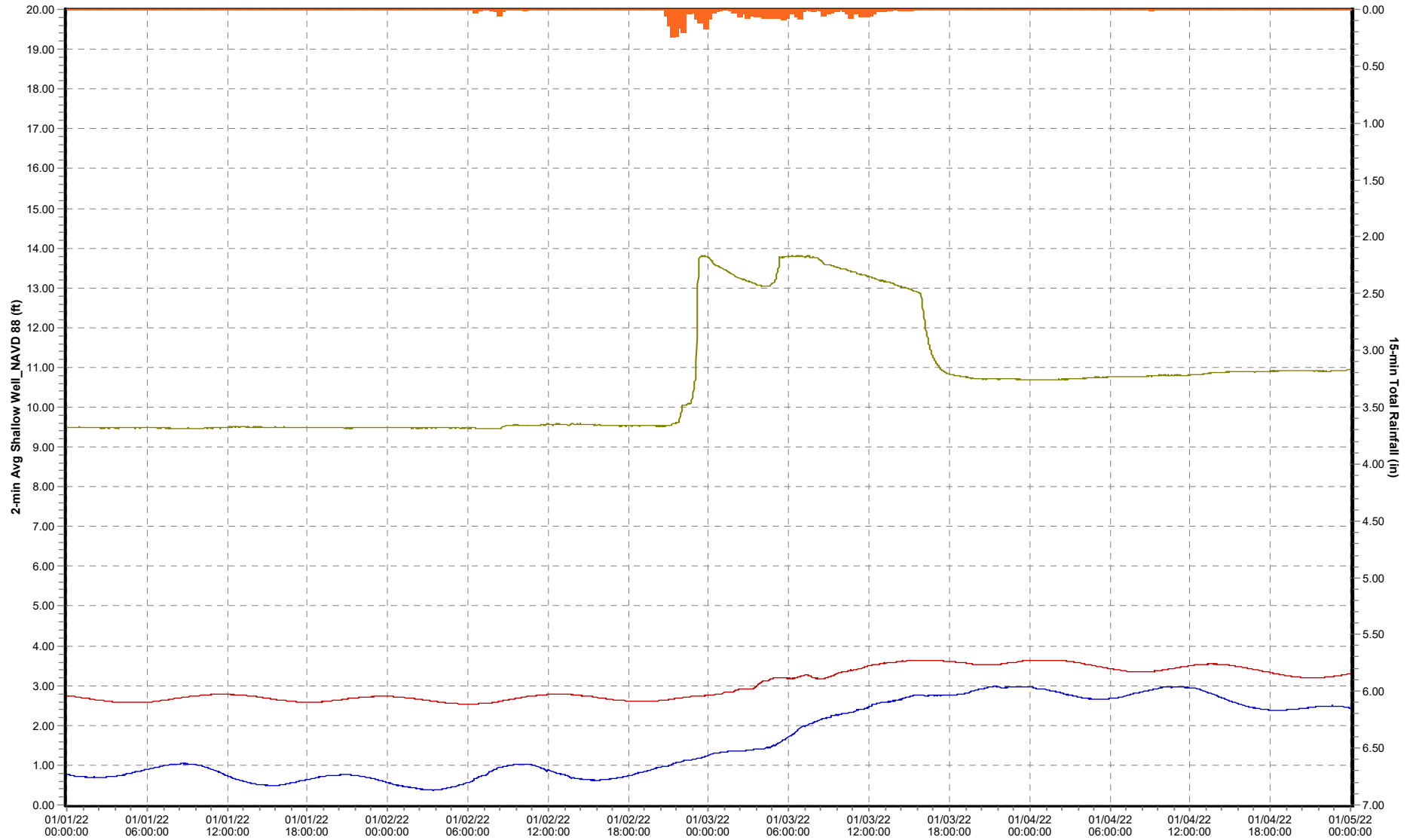
North Shore Shallow Well Graphs

01/01/21 to 01/11/22

- MMPS - 148 Lucas Creek PS Shallow Well NAVD88
- MMPS - 180 Willard Ave PS Shallow Well NAVD88
- MMPS - 011 Copeland Park PS Shallow Well NAVD88
- MMPS - 116 Bayshore PS Rain Guage (in)



5 - Day
North Shore Shallow Well Graphs
01/01/22 to 01/05/22



Hampton Roads Sanitation District

Post-Storm Report



January 16th, 2022

DISCLAIMER:

About the information on this HRSD server

This report is intended to provide the HRSD regional community summary information about the HRSD system during select wet weather events/anomalies. The attached report contains a selection of *official* Interceptor and Treatment data, as well as other environmental and meteorological data provided through other services. In an effort to enhance the HRSD system, the attached products have been made accessible on this server and care must be taken when using such products as they are intended for informational and not operational, legal, or other purposes.

This report is located on an HRSD server and is intended to be available 24 hours a day, seven days a week. However, timely availability and/or delivery of data and products from this server through the Internet is subject to numerous potential constraints and is, therefore, not guaranteed. Official HRSD dissemination of information is available only through a written response to a formal written request for data from the user.

Limitations on Use of HRSD Data and Products

The information on HRSD servers are in the public domain, unless specifically annotated otherwise, and may be used by any user so long as you do not 1) claim it as your own (e.g. by claiming copyright for HRSD information, 2) use it in a manner that implies an endorsement or affiliation with HRSD, or 3) modify it in content and then present it as official HRSD material or in a misleading manner. You also cannot present information of your own in a way that makes it appear to be official HRSD information.

Before using information obtained from this server special attention should be given to the date & time of the data and products being displayed. HRSD makes best efforts to provide accurate date & time data but given the sheer volume of data we manage, there may be errors and you should not rely absolutely on any such data.

The user assumes the entire risk related to its use of these data. HRSD is providing these data 'as is,' and HRSD disclaims any and all warranties, whether express or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose. In no event will HRSD be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of this server or the information contained herein.

These data are part of HRSD's governmental function and HRSD reserves all rights and immunities relating to these data and the terms and manner in which it is made available.

Summary

On January 16th, there was an approximate 9-hour rainfall event that resulted in 0 sites on the North Shore and 3 sites on the South Shore that met a 1-year rainfall recurrence interval throughout the HRSD rain gauge network. Hampton Roads saw rain and strong winds most of the day with the rain increasing in intensity during the late afternoon and evening. North Shore sites averaged around 1.61 inches of rain while South Shore sites averaged around 1.64 inches. We saw mild to moderate flooding in our area Sunday night with high tide around 8:20 that evening. There was minimal impact on groundwater levels compared to Jan 2021, however, we saw a significant increase in groundwater in the short term. See Appendix C for the Historical Shallow Well comparison.

No HRSD interceptor weather-related overflow(s) were reported.

One Locality interceptor weather-related overflow(s) were reported.

HRSD flow and pressure meters met data reliability requirements per the MOM program. For all pressure meters in the aggregate and all pressure-side flow meters in the aggregate for each treatment plant service area listed below, at least 90% reliable data was achieved, based on the duration of system response to this rainfall event. The data reliability for the gravity flow meters is not included in this synopsis.

- Duration of system response: See Table Below
- Aggregate flow meter validity: 95.58%
- Aggregate pressure meter validity: 99.59%

Currently, rainfall recurrence intervals are only analyzed for a maximum of 96-hours. Rainfall analysis begins after 0.1 inches of rain has occurred. A 72-hour dry period of less than 0.1 inches of rain is typically used to signify two separate events. However, if a site returns to “dry weather” conditions prior to the next rainfall that occurs within 72 hours of the previous event, it is also considered for separate analysis. See Appendix A for the Rainfall Total System Maps.

The current criteria for publishing a post-storm analysis are the following:

- One or more rain gauge sites meet a two-year or greater RRI (rainfall recurrence interval) and at least 50% of sites in any treatment plant service area receive one inch of rainfall or greater,
- A rain gauge site meets a five-year or greater RRI, or
- A capacity-related wet weather SSO occurs.

January 16th, 2022 – Post-Storm Rain Event Synopsis

Sanitary Sewer Overflows:

<i>Localities</i>		
Location	Jurisdiction	Start Date
Western Ave	Suffolk	1/16/22

HRSD Treatment Plant Wet Weather Response 1/16/22

South Shore	
Army Base	4 day(s) 1 hour(s) 0 minute(s)*
Atlantic	3 day(s) 20 hour(s) 26 minute(s)
Nansemond	4 day(s) 1 hour(s) 30 minute(s)*
Virginia Initiative Plant	4 day(s) 2 hour(s) 0 minute(s)*

* WWResponse cut short by next rainfall event

Treatment Plant Data: (Data obtained from Telog Database)
See Appendix B for HRSD Treatment Plant Flows

HRSD Treatment Plant Data 1/16/22

South Shore				
Treatment Plant	Date of Peak Hourly Flow	Peak Hourly Flow (MGD)	Peak Hour	TPSA Total Rainfall Avg (in)
Army Base	1/16/22	26.31	21:00	1.69
Atlantic	1/16/22	97.32	21:00	1.85
Nansemond	1/16/22	36.32	22:00	1.72
Virginia Initiative	1/2/22	62.10	21:00	1.80

January 16th, 2022 – Post-Storm Rain Event Synopsis

South Shore

Weather:

Rainfall (HRSD Rainfall Gauges): *Recurrence intervals based on NOAA Atlas 14*

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
<i>Army Base Treatment Plant Service Area¹</i>		
Bancker Rd (Dovercourt Discharge)	DNQ	NORF
Taussig Blvd PS	DNQ	NORF
<i>Atlantic Treatment Plant Service Area¹</i>		
Callison at GB Locks	1-year (3hr)	CHES
Chesapeake PS 243	DNQ	CHES
Chesapeake PS 254	DNQ	CHES
Courthouse PRS	DNQ	VAB
Elbow Rd	DNQ	CHES
John B. Dey MLV-AT side	DNQ	VAB
Kempsville PRS	DNQ	VAB
Lagomar IFM at Atlantic TP	DNQ	VAB
Laskin Rd PRS	DNQ	VAB
Pine Tree PRS	DNQ	VAB
Shipp's Corner PRS	DNQ	VAB
<i>Nansemond Treatment Plant Service Area¹</i>		
Bowers Hill PRS	DNQ	CHES
Cedar Lane PS	DNQ	PORT
Chesapeake PS 158	DNQ	CHES
Chesapeake PS 238	DNQ	CHES
Crittenden Rd_Chuckatuck Rectifier	DNQ	SUFF
Deep Creek PRS	1-year (2hr)	CHES
Lake Kilby WTP	DNQ	SUFF
Nansemond Main Flow (Effluent)	DNQ	SUFF
Pagan River Rectifier	DNQ	IOW
Pughsville PS	DNQ	SUFF
Route 337 PRS	DNQ	CHES
Smithfield High School	DNQ	IOW
Suffolk PS	DNQ	SUFF
Suffolk PS 81	DNQ	SUFF
Suffolk PS 87	DNQ	SUFF
Windsor Duke St PS	DNQ	IOW
Windsor PCV	DNQ	SUFF
<i>VIP Treatment Plant Service Area¹</i>		
Elizabeth River Crossing_Eastern Branch	DNQ	NORF
Ferebee Avenue PS	DNQ	CHES
Luxembourg Avenue PS	DNQ	NORF
Rodman Ave PS	DNQ	PORT
Va Beach Blvd PS	1-year (3hr)	NORF
VIP Main Flow (Effluent)	DNQ	NORF

Note: 1. Typical treatment plant service area.

*Duration represents the minimum amount of time it took to reach the specified RRI.

January 16th, 2022 – Post-Storm Rain Event Synopsis

Norfolk International Airport (ORF)

- Wind and Rainfall (daily total):

Date	Gust (max)	Sustained (max)	Sustained (avg)	Direction	Rainfall (in)
1/16/22	32 mph	18 mph	8 mph	ENE	1.97

Rainfall from ncei.noaa.gov

Tide:

- Sewells Point Tide Station:
 - Storm Surge: An approximate 2.85-foot storm surge was observed.

UNVERIFIED DATA

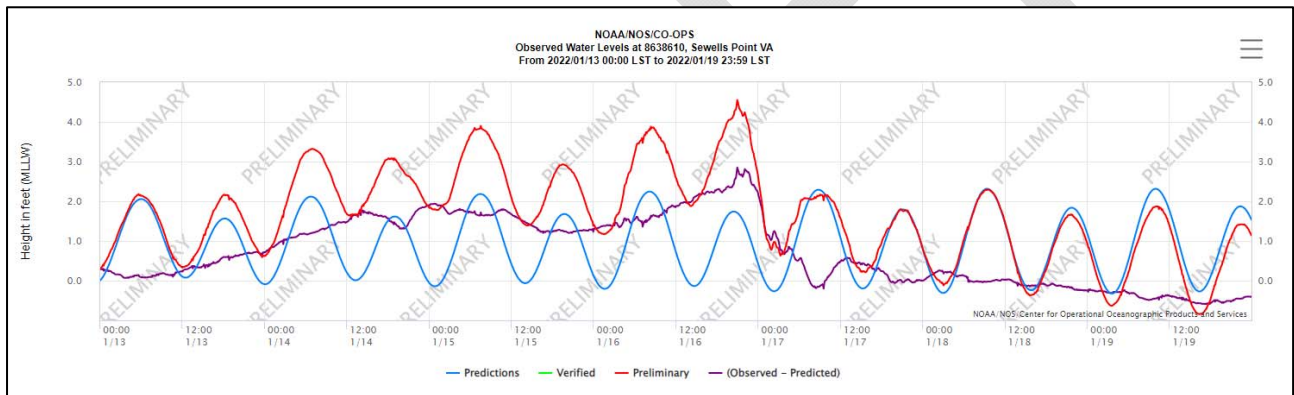


Figure 5. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

UNVERIFIED DATA

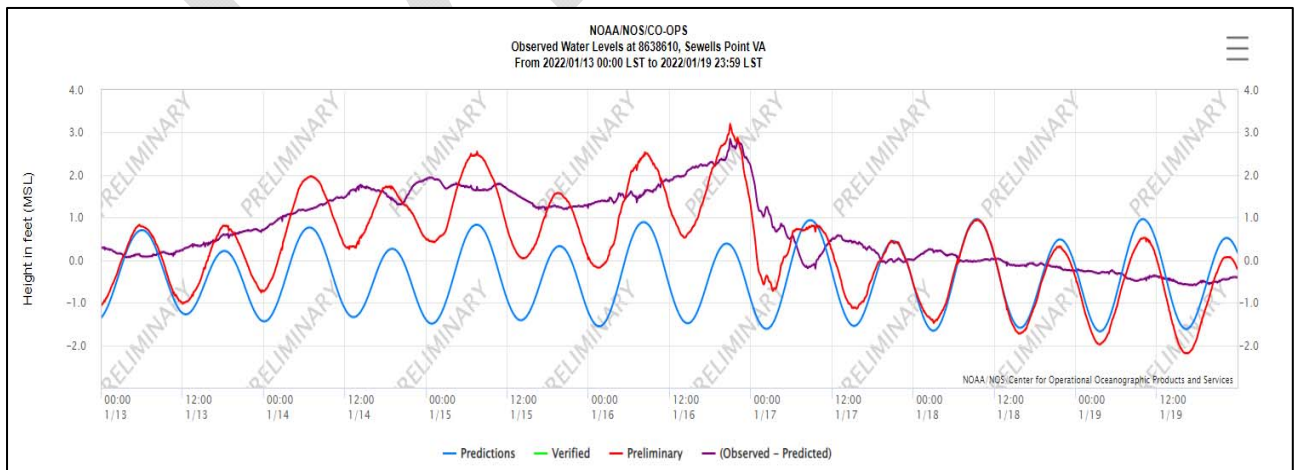


Figure 6. Preliminary data obtained from <http://tidesandcurrents.noaa.gov>

Shallow Well Analysis:

Shallow wells are located at/or near HRSD Pump Stations to measure groundwater levels. The water column is measured using a pressure transducer located near the bottom of the well. The installed sensor measures gauge pressure in inches of water. The Shallow Well_NAVD88 measurement referenced in Appendix C refers to the elevation (referenced as NAVD 88) of the sensor plus the gauge measurement in feet.

DRAFT

Appendix A

HRSD Rain Gauge Network
Rainfall Totals

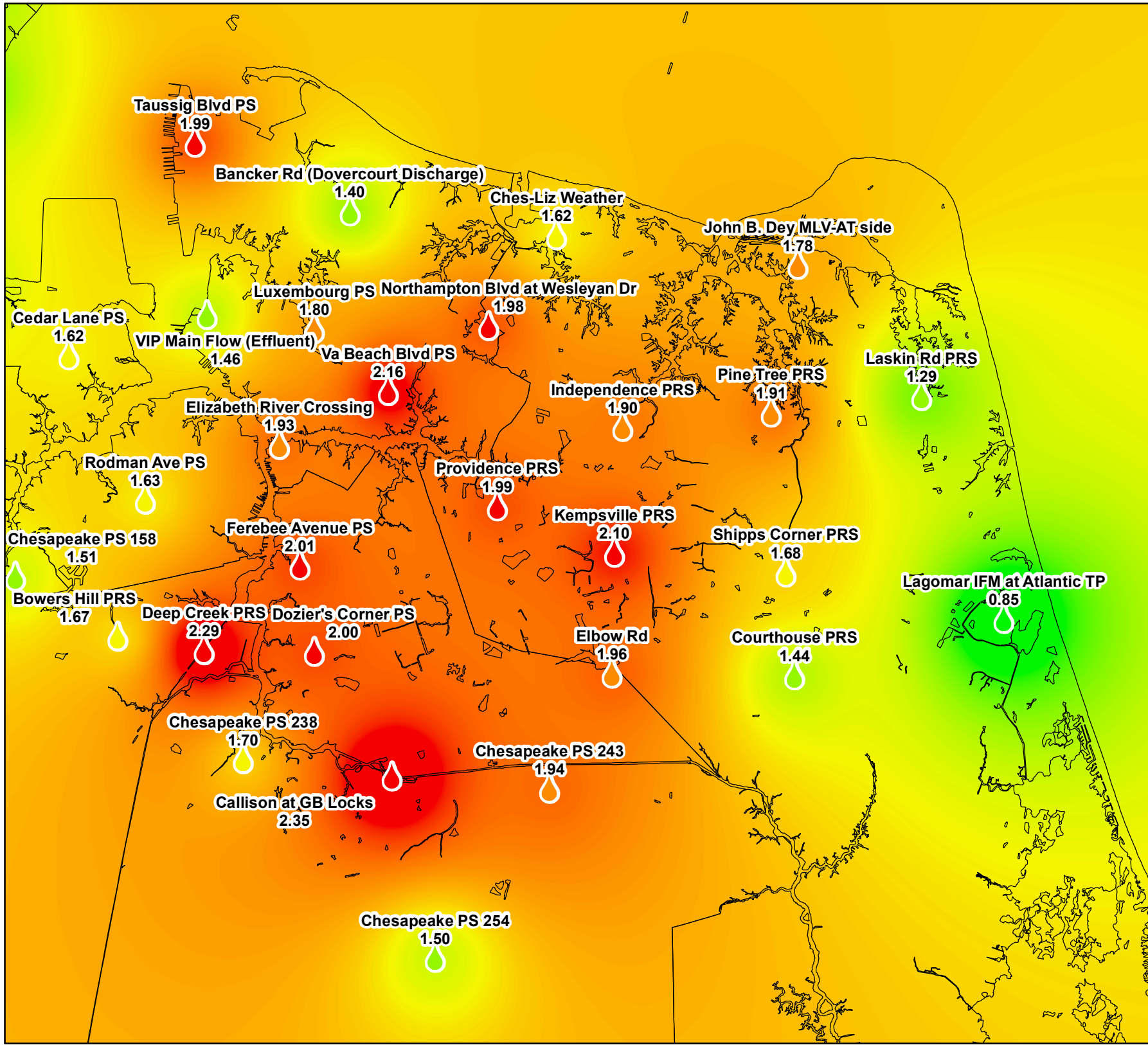
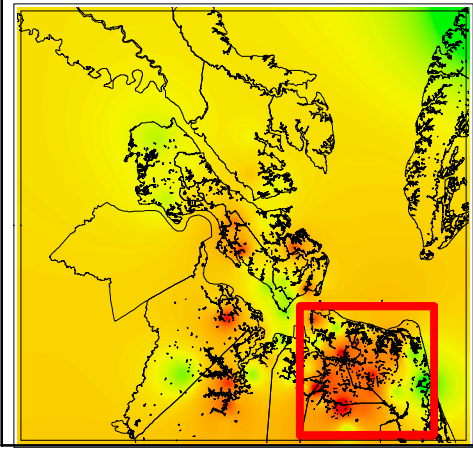
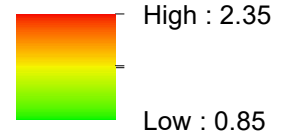
South Shore - East

January 16, 2022 Rainfall Analysis Total Rainfall

Rain Gauges (in):

- 1.97 - 2.35
- 1.77 - 1.96
- 1.52 - 1.76
- 0.86 - 1.51
- 0.00 - 0.85

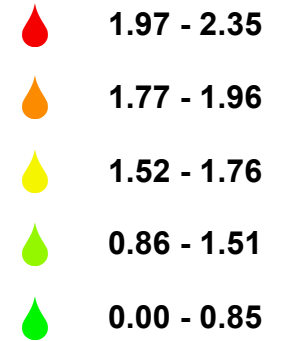
Value



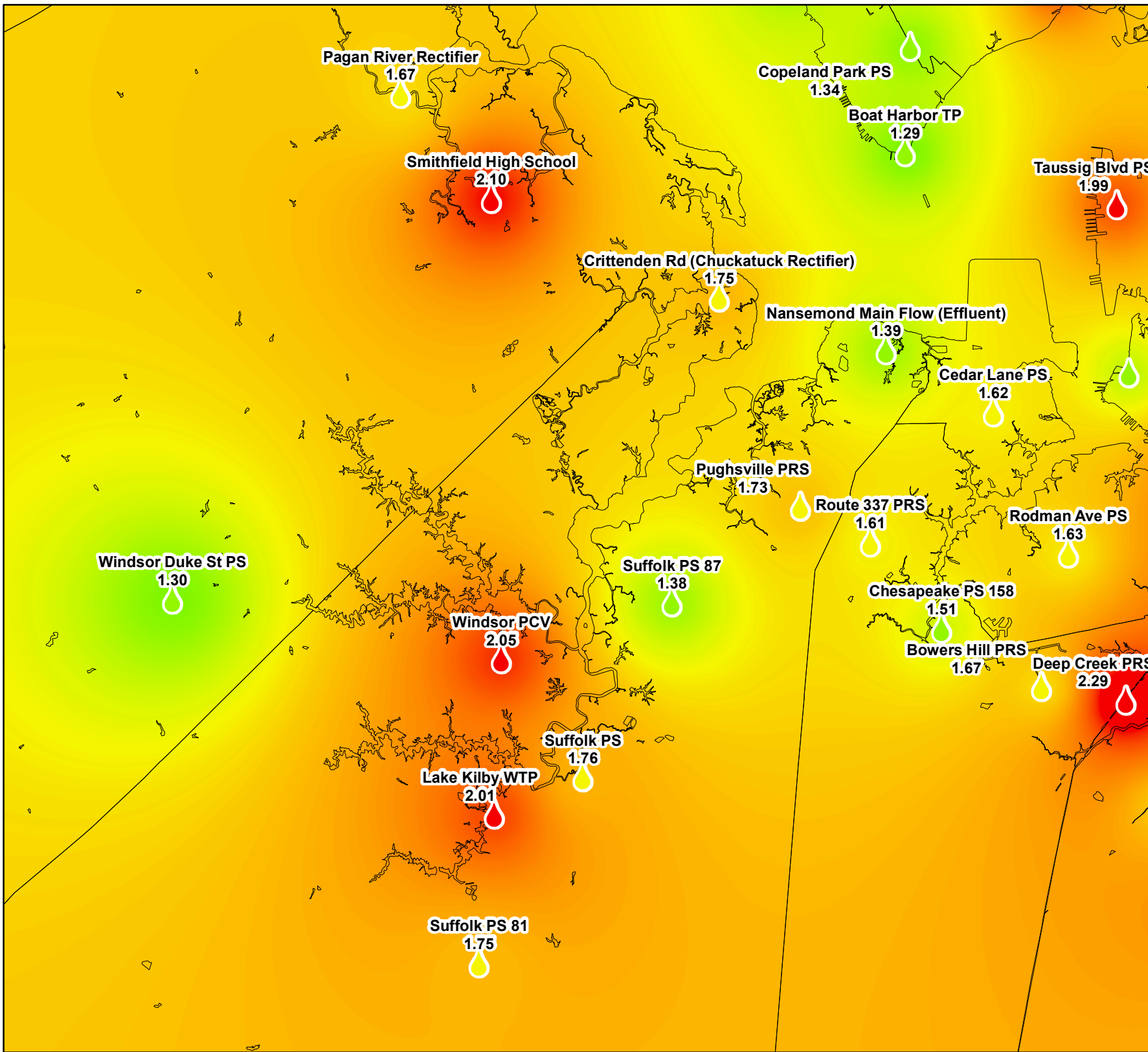
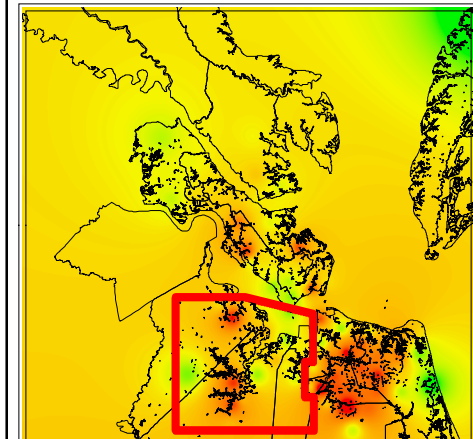
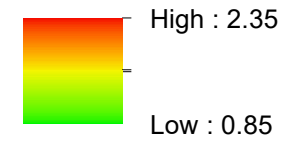
South Shore - West

January 16, 2022 Rainfall Analysis Total Rainfall

Rain Gauges (in):



Value



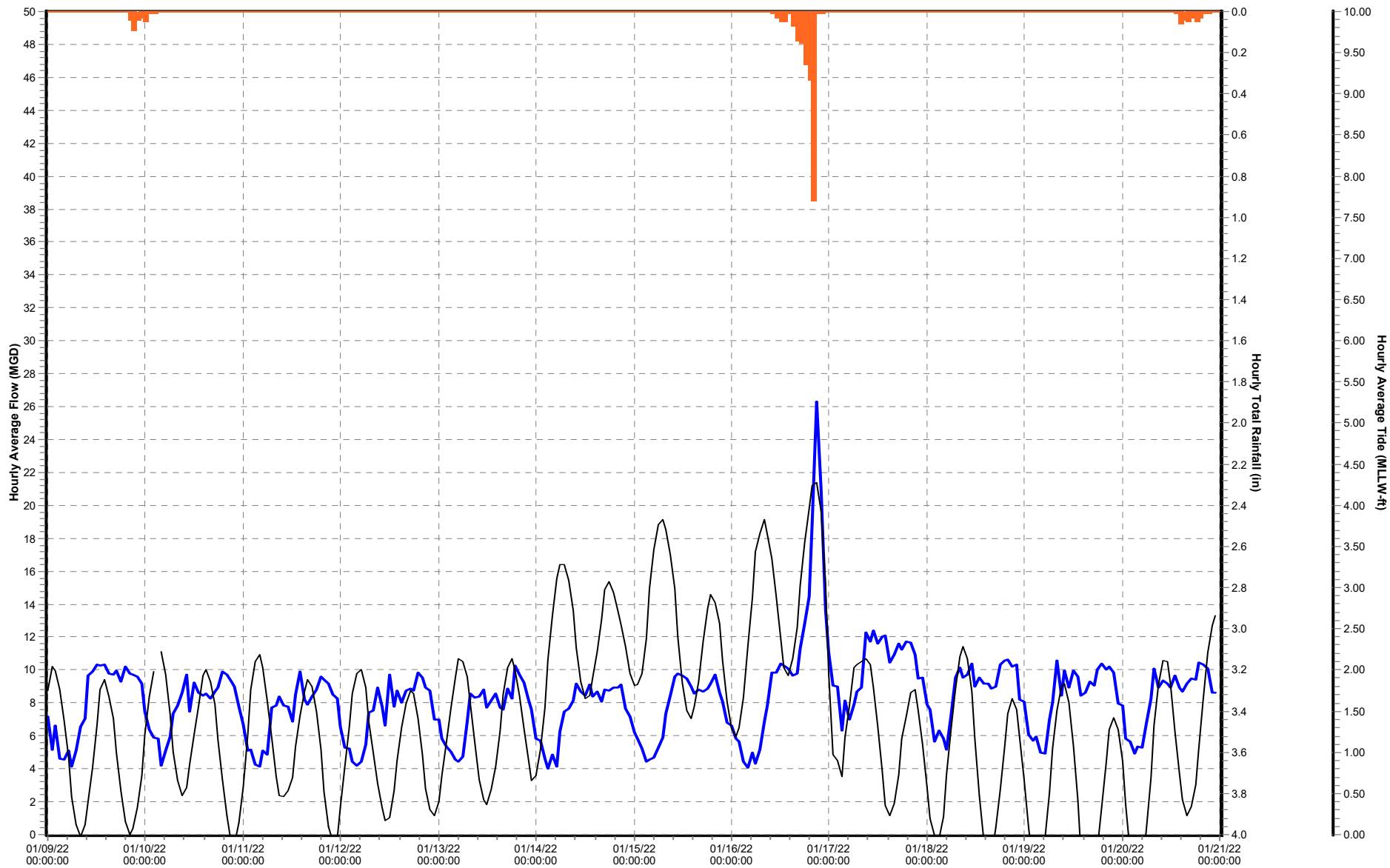
Appendix B

HRSD Treatment Plant Flows

Army Base Treatment Plant

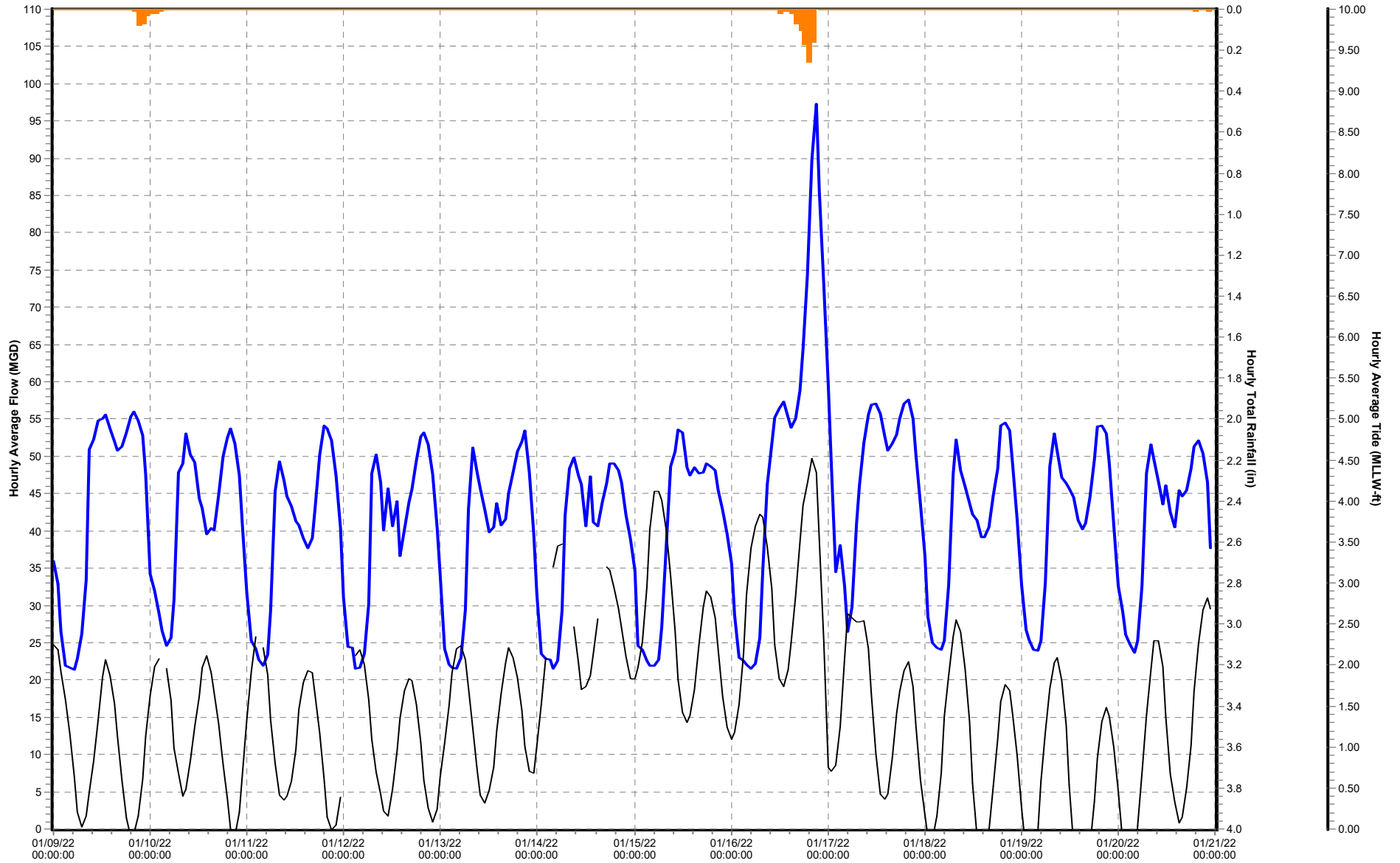
MMPS-035 (01/09/22 to 01/21/22)

MMPS-035.Flow_Effluent (MGD) MMPS-175: Taussig Blvd PS Rain Gauge SewellsPt Tide - MLLW Preliminary (ft)



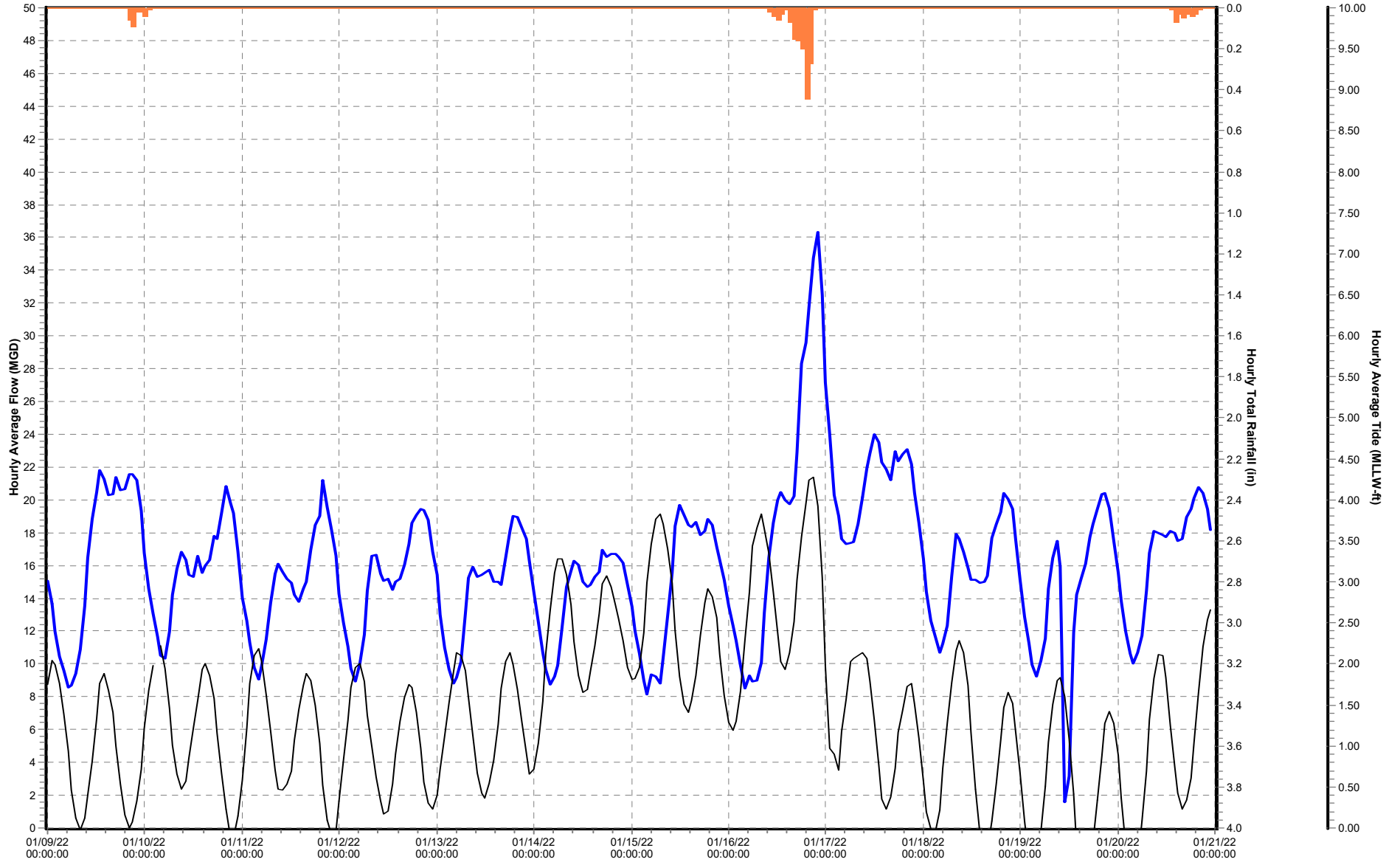
Atlantic Treatment Plant
MMPS-071 (01/09/22 to 01/21/22)

Flow_Effluent (MGD) MMPS-185: Lagomar IFM at Atlantic TP Rain Gauge CBBT Tide - MLLW Preliminary (ft)



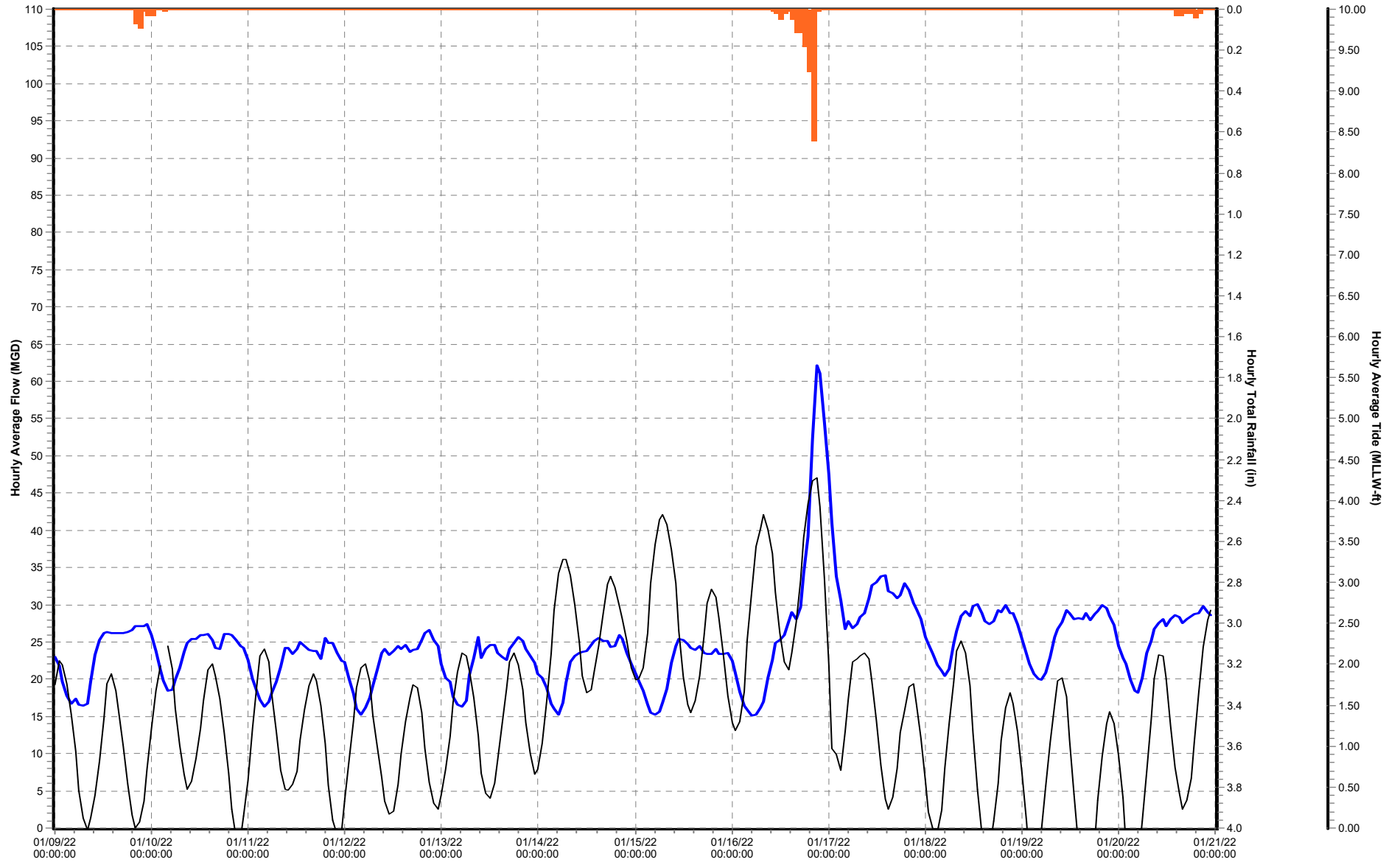
Nansemond Treatment Plant

MMPS-202 (01/09/22 to 01/21/22)



VIP Treatment Plant
MMPS-003 (01/09/22 to 01/21/22)

Flow_Effluent (MGD) MMPS-003: VIP Treatment Plant Rain Gauge SewellsPt Tide - MLLW Preliminary

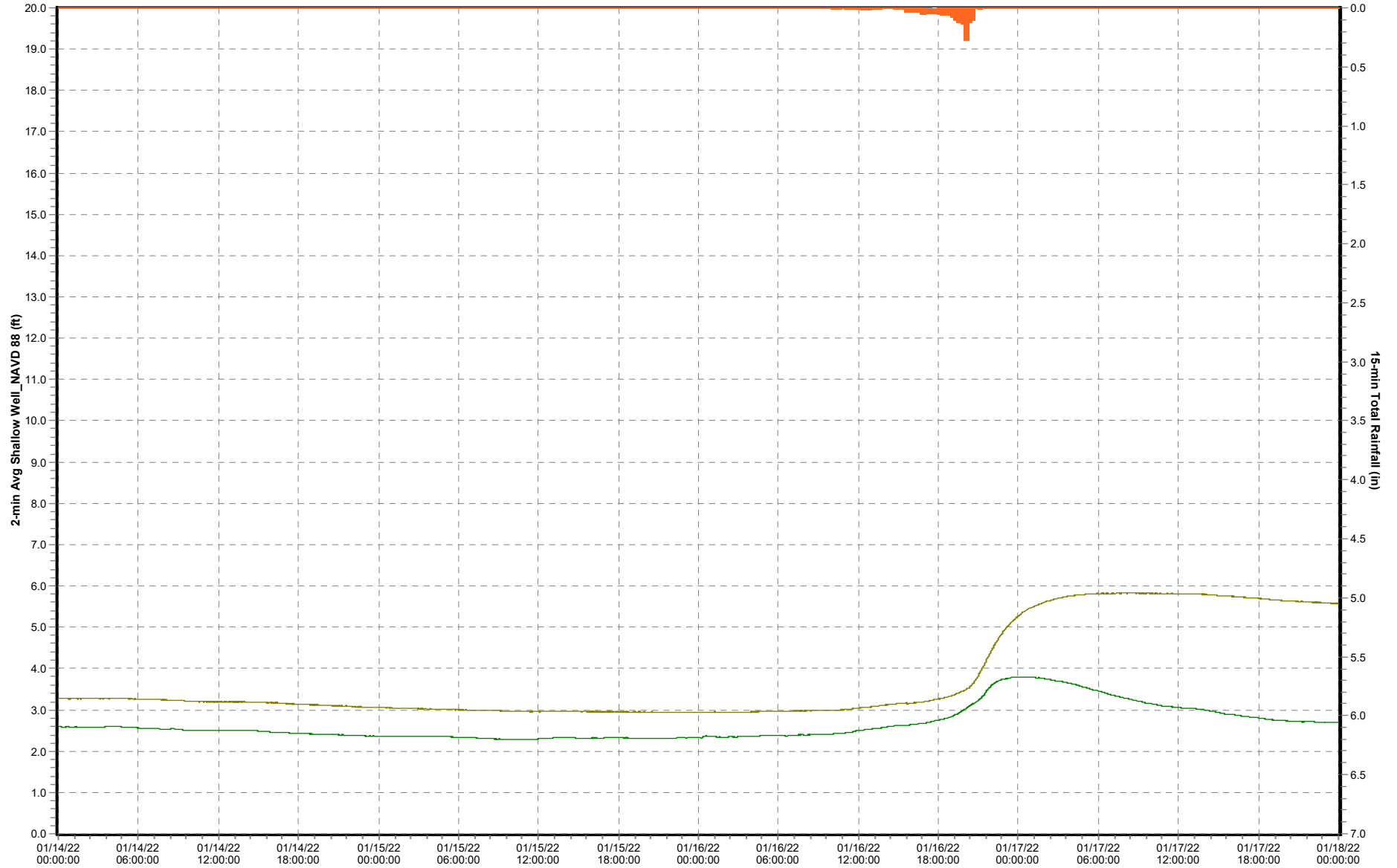


Appendix C

Shallow Well Analysis

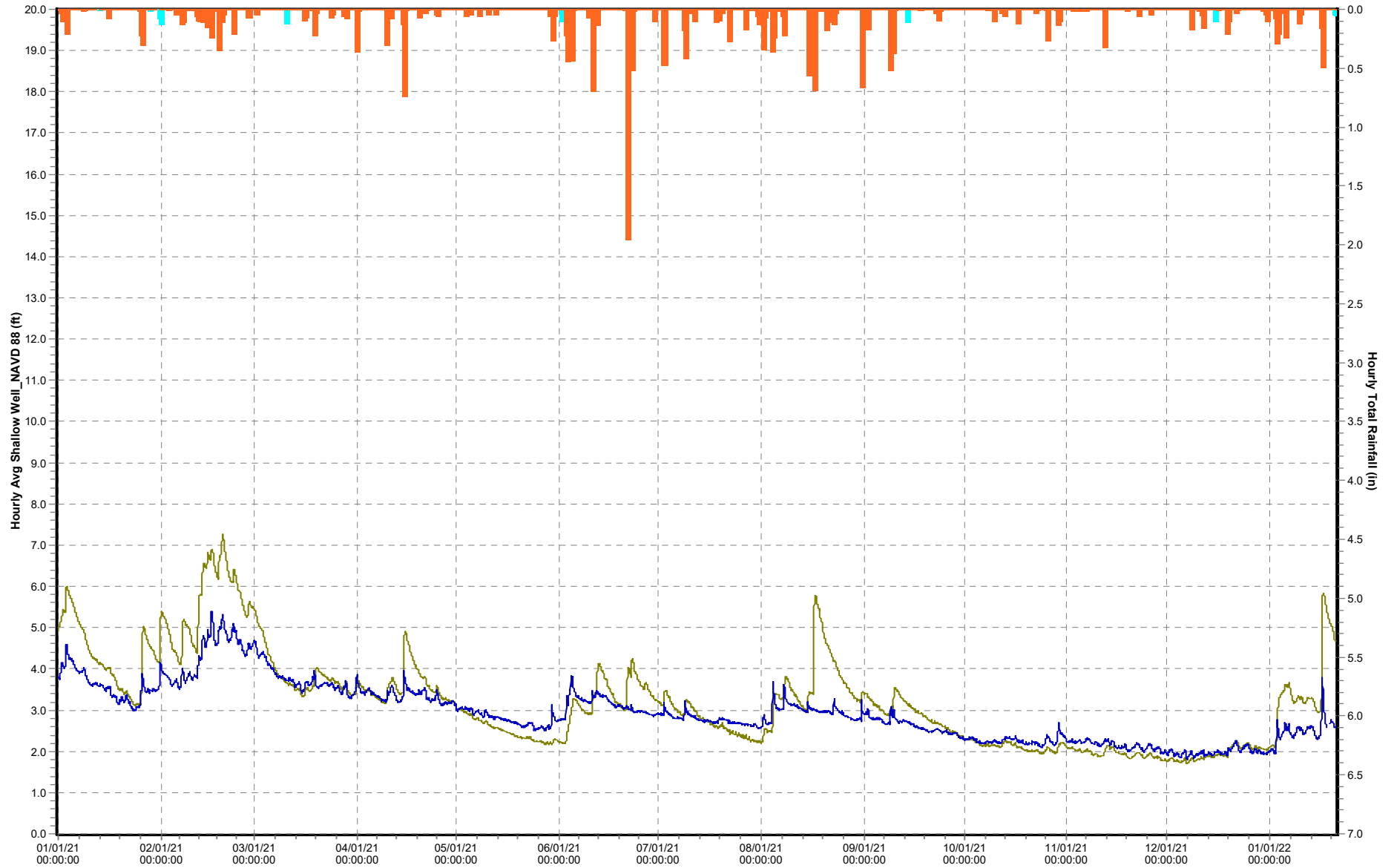
5-day
South Shore Shallow Well Graphs
01/14/22 to 01/18/22

Camden Ave PS.Shallow Well_NAVD 88 (ft) Newtown Rd PS.Shallow Well_NAVD 88 (ft) Rodman Ave PS. Rain Gauge (in)



1-year
South Shore Shallow Well Graphs
01/01/21 to 01/21/22

Camden Ave PS.Shallow Well_NAVD 88 (ft) Newtown Rd PS.Shallow Well_NAVD 88 (ft) Rodman Ave PS. Rain Gauge (in)



Hampton Roads Sanitation District

Post-Storm Report



March 24, 2022

DISCLAIMER:

About the information on this HRSD server

This report is intended to provide the HRSD regional community summary information about the HRSD system during select wet weather events/anomalies. The attached report contains a selection of *official* Interceptor and Treatment data, as well as other environmental and meteorological data provided through other services. In an effort to enhance the HRSD system, the attached products have been made accessible on this server and care must be taken when using such products as they are intended for informational and not operational, legal, or other purposes.

This report is located on an HRSD server and is intended to be available 24 hours a day, seven days a week. However, timely availability and/or delivery of data and products from this server through the Internet is subject to numerous potential constraints and is, therefore, not guaranteed. Official HRSD dissemination of information is available only through a written response to a formal written request for data from the user.

Limitations on Use of HRSD Data and Products

The information on HRSD servers are in the public domain, unless specifically annotated otherwise, and may be used by any user so long as you do not 1) claim it as your own (e.g. by claiming copyright for HRSD information, 2) use it in a manner that implies an endorsement or affiliation with HRSD, or 3) modify it in content and then present it as official HRSD material or in a misleading manner. You also cannot present information of your own in a way that makes it appear to be official HRSD information.

Before using information obtained from this server special attention should be given to the date & time of the data and products being displayed. HRSD makes best efforts to provide accurate date & time data but given the sheer volume of data we manage, there may be errors and you should not rely absolutely on any such data.

The user assumes the entire risk related to its use of these data. HRSD is providing these data 'as is,' and HRSD disclaims any and all warranties, whether express or implied, including (without limitation) any implied warranties of merchantability or fitness for a particular purpose. In no event will HRSD be liable to you or to any third party for any direct, indirect, incidental, consequential, special or exemplary damages or lost profit resulting from any use or misuse of this server or the information contained herein.

These data are part of HRSD's governmental function and HRSD reserves all rights and immunities relating to these data and the terms and manner in which it is made available.

Summary

On March 24th, there was an approximate 15-hour rainfall event that resulted in 9 sites on the North Shore that met a 1 to 25-year rainfall recurrence interval throughout the HRSD rain gauge network. Humid air followed by a cold front allowed for widespread rain showers and some pockets of heavy thunderstorms to form over Hampton Roads. Hampton Roads was under a flood watch for the majority of the day. North Shore sites averaged around 1.74 inches of rain while South Shore sites averaged around 0.37 inches. Isolated downpours occurred around YRTP Service area as well as parts of JRTP Service area with rainfall exceeding 4 inches in a couple hours. There was minimal impact on groundwater levels compared to July 2018. See Appendix C for the Historical Shallow Well comparison. This report will be for North Shore only.

No HRSD interceptor weather-related overflow(s) were reported.

HRSD flow and pressure meters met data reliability requirements per the MOM program. For all pressure meters in the aggregate and all pressure-side flow meters in the aggregate for each treatment plant service area listed below, at least 90% reliable data was achieved, based on the duration of system response to this rainfall event. The data reliability for the gravity flow meters is not included in this synopsis.

- Duration of system response: See Table Below
- Aggregate flow meter validity: 96.89%
- Aggregate pressure meter validity: 99.98%

Currently, rainfall recurrence intervals are only analyzed for a maximum of 96-hours. Rainfall analysis begins after 0.1 inches of rain has occurred. A 72-hour dry period of less than 0.1 inches of rain is typically used to signify two separate events. However, if a site returns to “dry weather” conditions prior to the next rainfall that occurs within 72 hours of the previous event, it is also considered for separate analysis. See Appendix A for the Rainfall Total System Maps.

The current criteria for publishing a post-storm analysis are the following:

- One or more rain gauge sites meet a two-year or greater RRI (rainfall recurrence interval) and at least 50% of sites in any treatment plant service area receive one inch of rainfall or greater,
- A rain gauge site meets a five-year or greater RRI, or
- A capacity-related wet weather SSO occurs.

Treatment Plant Data: (Data obtained from Telog Database)
See Appendix B for HRSD Treatment Plant Flows

HRSD Treatment Plant Data 3/24/2022

North Shore				
Treatment Plant	Date of Peak Hourly Flow	Peak Hourly Flow (MGD)	Peak Hour	TPSA Total Rainfall Avg (in)
Boat Harbor	3/24/2022	20.99	13:00	0.56
James River	3/24/2022	39.64	12:00	2.13
Williamsburg	3/24/2022	23.24	10:00	1.39
York River	3/24/2022	23.29	12:00	2.42

North Shore

Weather:

Rainfall (HRSD Rainfall Gauges): *Recurrence intervals based on NOAA Atlas 14*

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
<i>Boat Harbor Treatment Plant Service Area¹</i>		
Bayshore PS	DNQ	HAMP
Bridge Street Tide Gate	DNQ	HAMP
Boat Harbor	DNQ	NEWP
Copeland Park PS	DNQ	NEWP
Hampton PS 159	DNQ	HAMP
<i>James River Treatment Plant Service Area¹</i>		
Hilton School PS	DNQ	NEWP
James River Main Flow (Influent)	DNQ	NEWP
Lee Hall PRS	2-year (3hr)	NEWP
Lucas Creek PS	5- to 10-year (1hr)	NEWP
Morrison PS	DNQ	NEWP
<i>Williamsburg Treatment Plant Service Area¹</i>		
Ford's Colony	DNQ	JCSA
Fort Eustis PS	1- to 2-year (3hr)	NEWP
Greensprings PS	DNQ	JCA
Solarex	DNQ	JCSA
Williamsburg Main Flow (Effluent)	DNQ	JCSA
Williamsburg PS	DNQ	WILL
York Skimino Hills PS	DNQ	YORK

March 24th, 2022 – Post-Storm Rain Event Synopsis

Rain Gauge Site	Peak Rainfall RI (Duration)	Jurisdiction
<i>York River Treatment Plant Service Area¹</i>		
Big Bethel PRS	DNQ	HAMP
Freeman PS	DNQ	HAMP
Gloucester Court House	DNQ	GLOU
Guinea Rd at Maryus Rd	5-year (3hr)	GLOU
Ordinary PCV	DNQ	GLOU
Poquoson PS 6	DNQ	POQ
Wolf Trappe PCV	10- to 25-year (6hr)	YORK
York Kiln Creek 1 PS	1-year (6hr)	YORK
York PS 15	1- to 2-year (6hr)	YORK
York River Main Flow (Influent)	10-year (6hr)	YORK
York River Crossing (York River Rectifier)	2-year (3hr)	GLOU

Note:

1. Typical treatment plant service area.

Newport News-Williamsburg International (PHF)

o Wind and Rainfall (daily total):

Date	Gust (max)	Sustained (max)	Sustained (avg)	Direction	Rainfall (in)
3/24/2022	25 mph	12 mph	5 mph	S	3.30

Tide:

- Yorktown USCG Training Center:
 - Storm Surge: An approximate 0.5-foot storm surge was observed.

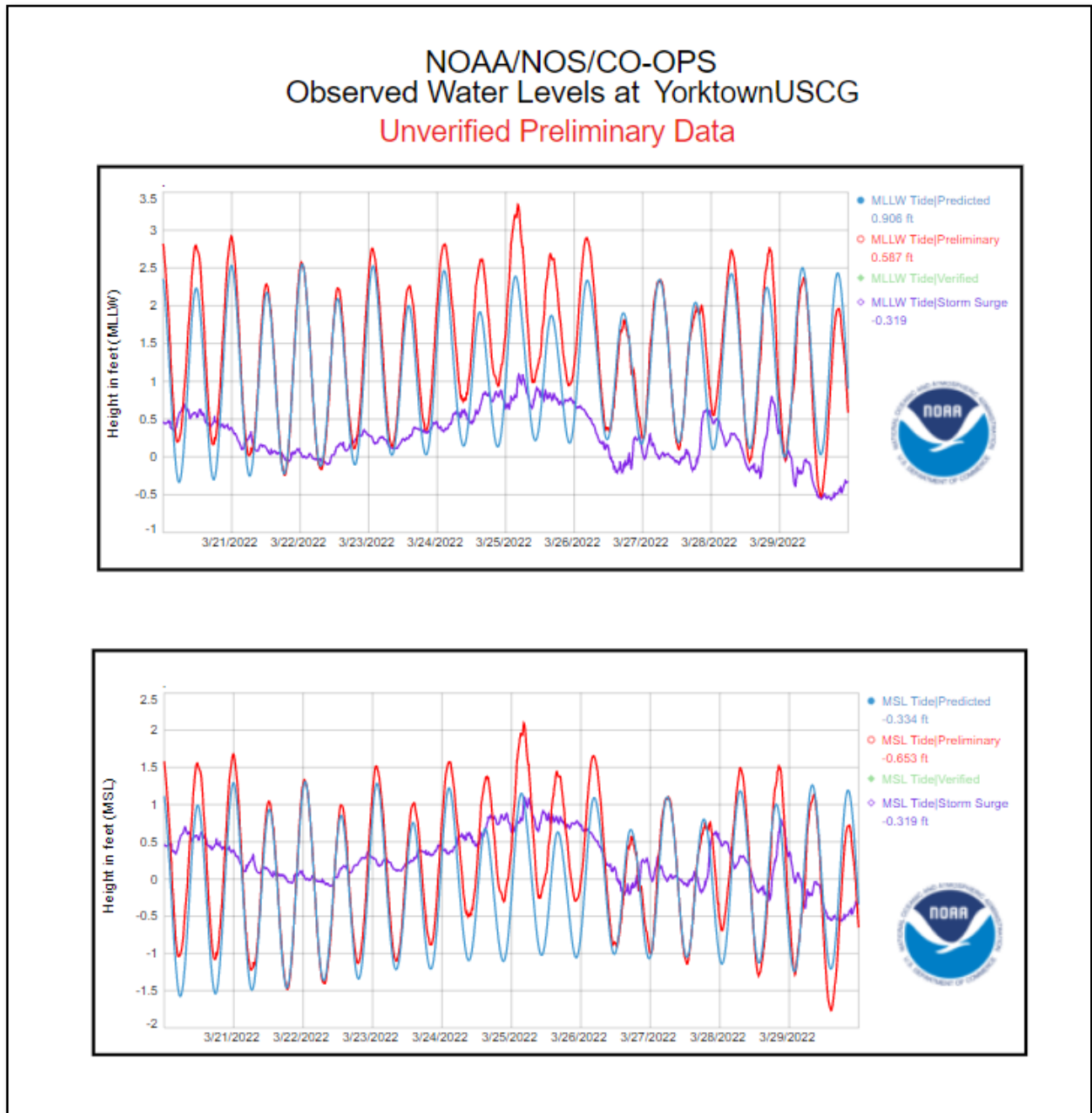


Figure 1. Preliminary data obtained from NOAA and a connection with Open Weather

- Sewells Point Tide Station:
 - Storm Surge: An approximate 0.5 foot storm surge was observed.

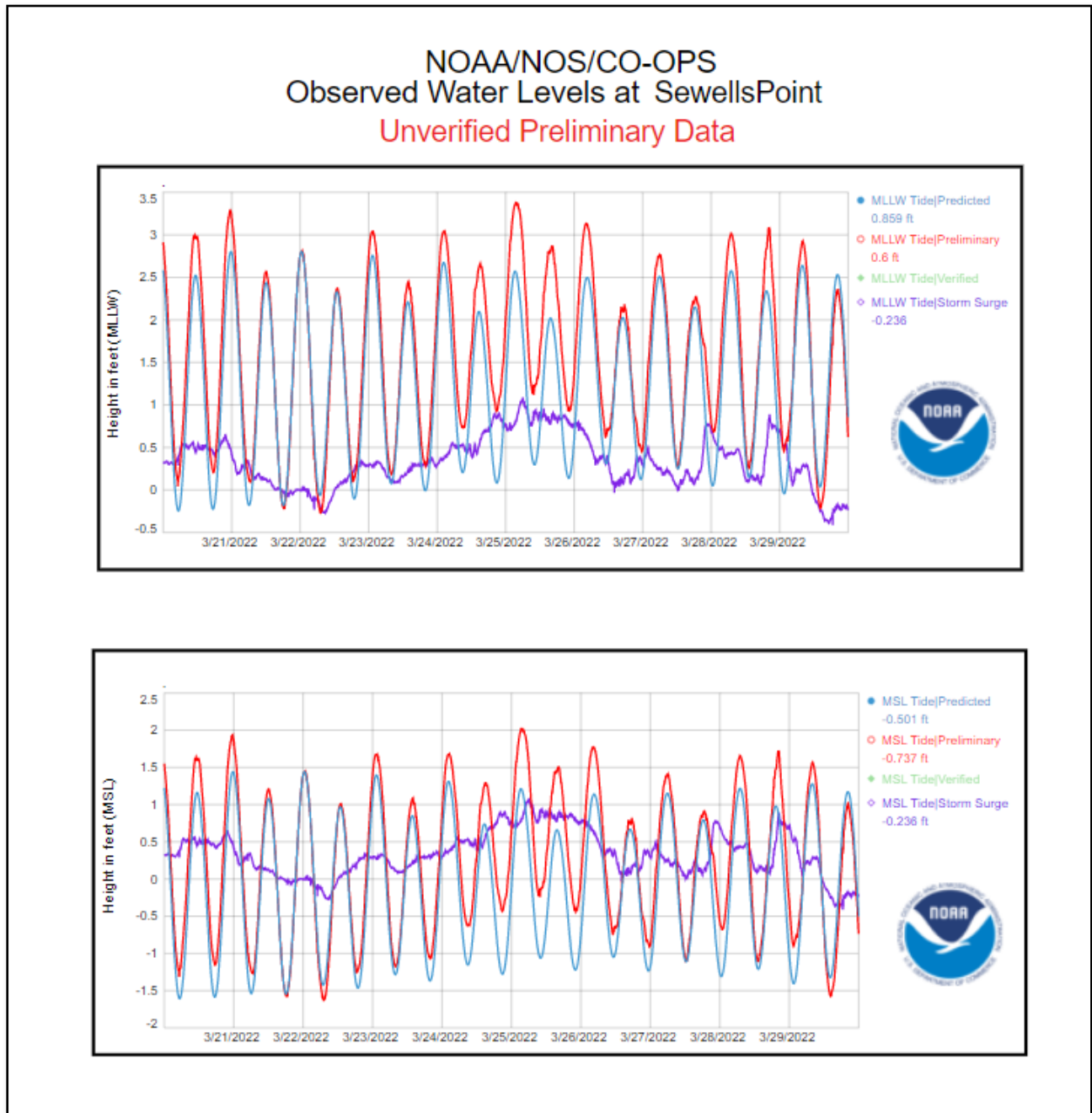


Figure 2. Preliminary data obtained from NOAA and a connection with Open Weather

Shallow Well Analysis:

Shallow wells are located at/or near HRSD Pump Stations to measure groundwater levels. The water column is measured using a pressure transducer located near the bottom of the well. The installed sensor measures gauge pressure in inches of water. The Shallow Well_NAVD88 measurement referenced in Appendix C refers to the elevation (referenced as NAVD 88) of the sensor plus the gauge measurement in feet.

DRAFT

Appendix A

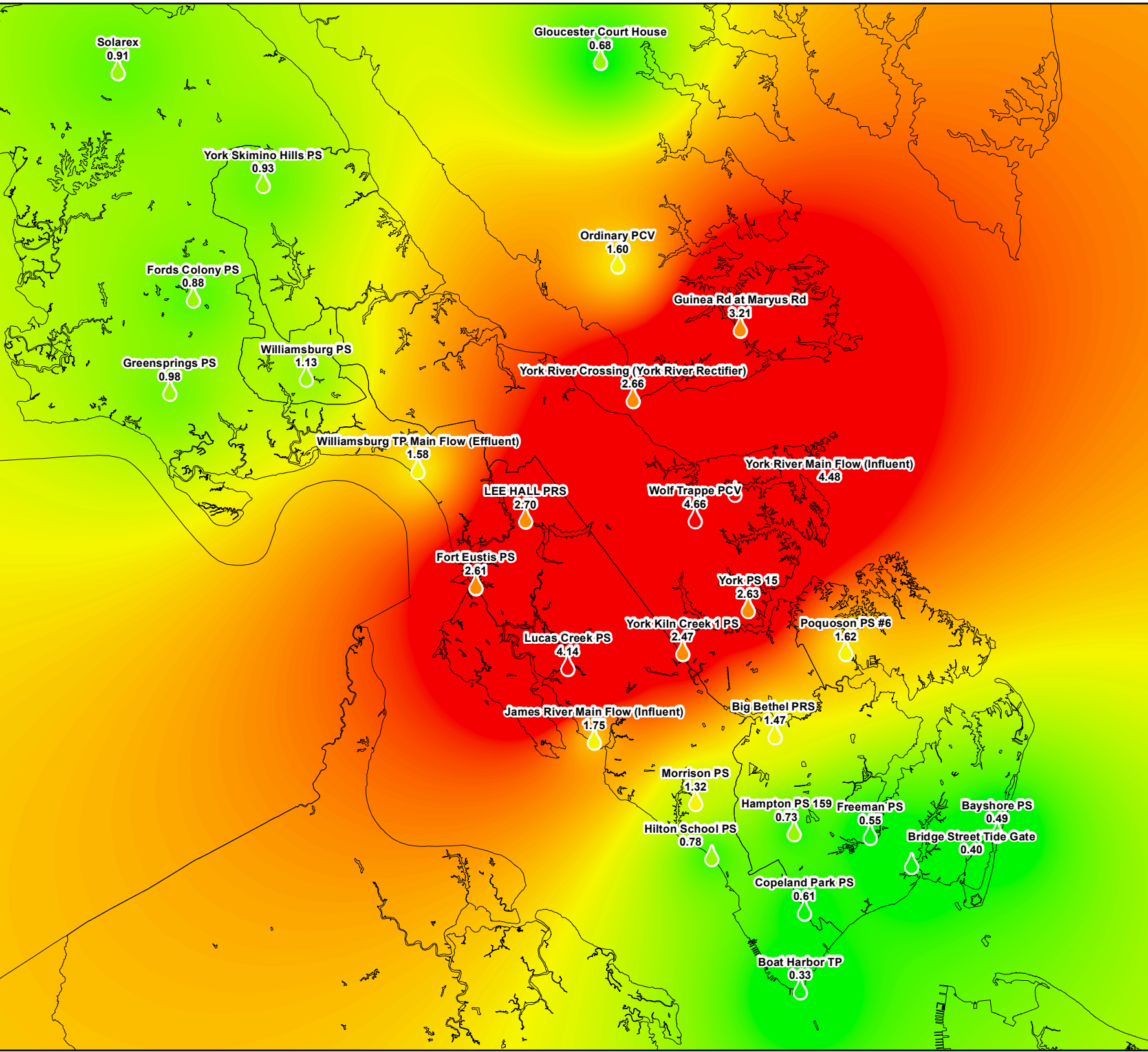
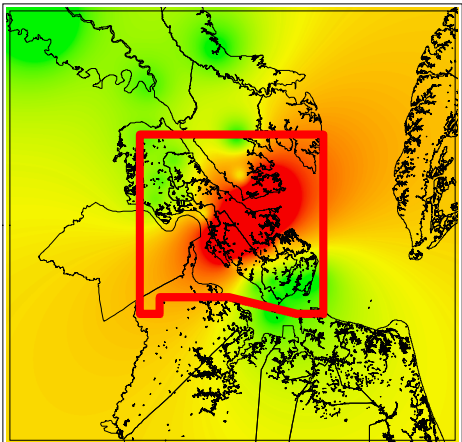
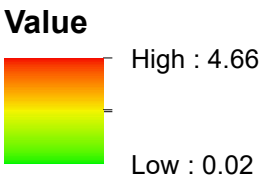
HRSD Rain Gauge Network
Rainfall Totals

North Shore

March 24, 2022 Rainfall Analysis Total Rainfall

Rain Gauges (in):

- 3.22 - 4.66
- 1.76 - 3.21
- 1.14 - 1.75
- 0.62 - 1.13
- 0.02 - 0.61

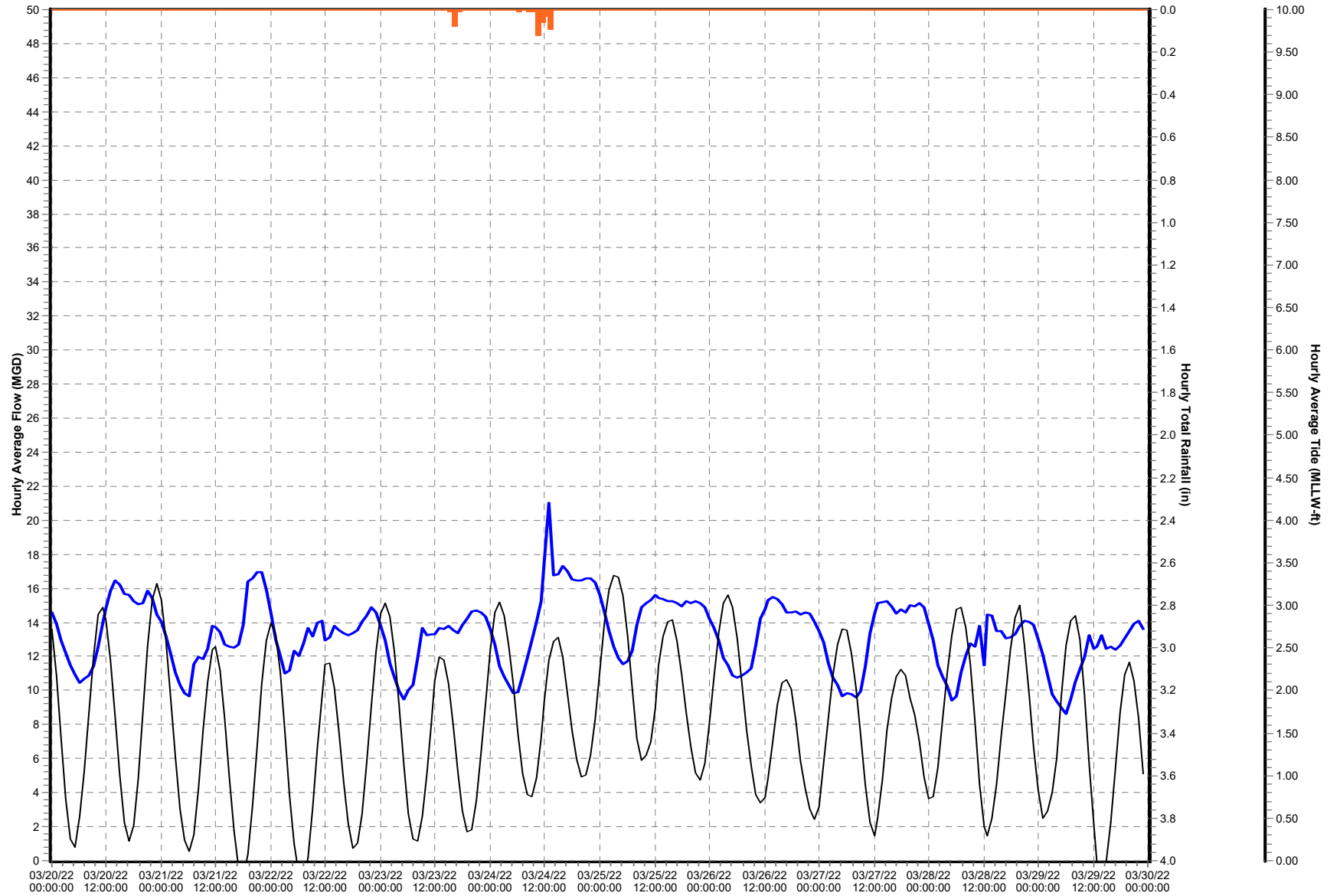


Appendix B

HRSD Treatment Plant Flows

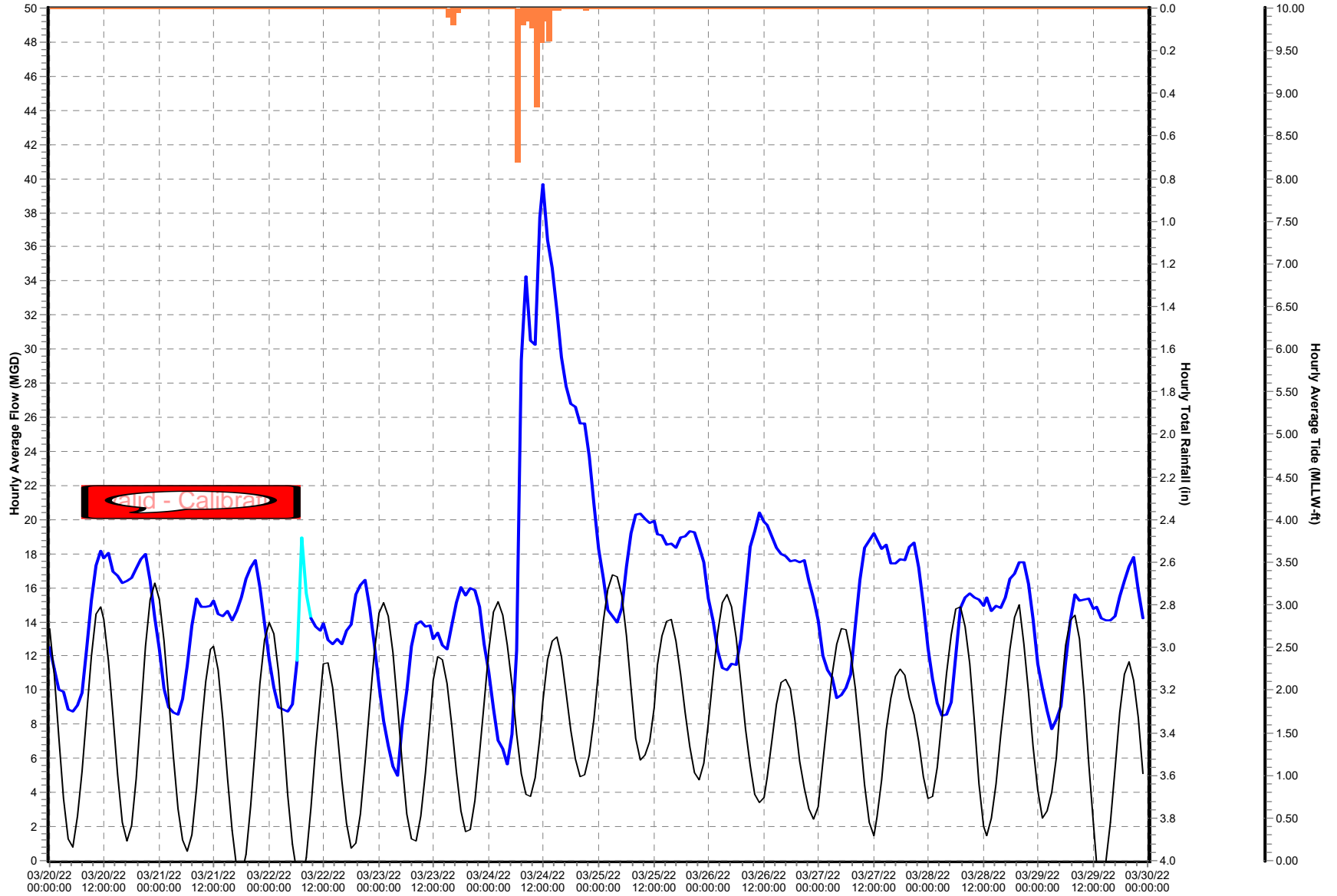
Boat Harbor Treatment Plant

MMPS-075 (03/20/22 to 03/30/22)



James River Treatment Plant
MMPS-184 (03/20/22 to 03/30/22)

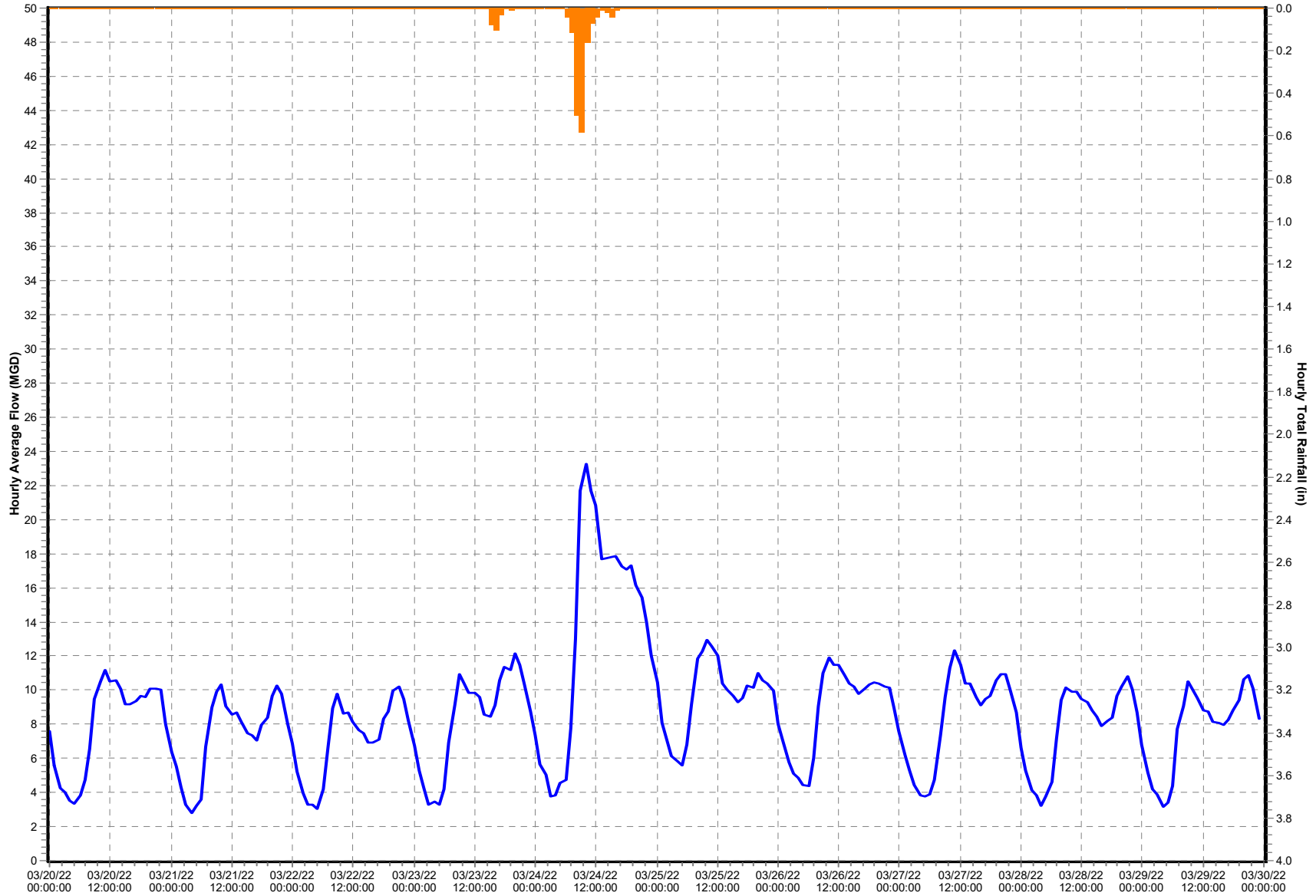
Flow_Influent (MGD) Rainfall @ JRTP SewellsPt Tide - MLLW Preliminary (ft)



Williamsburg Treatment Plant

MMPS-222 (03/20/22 to 03/30/22)

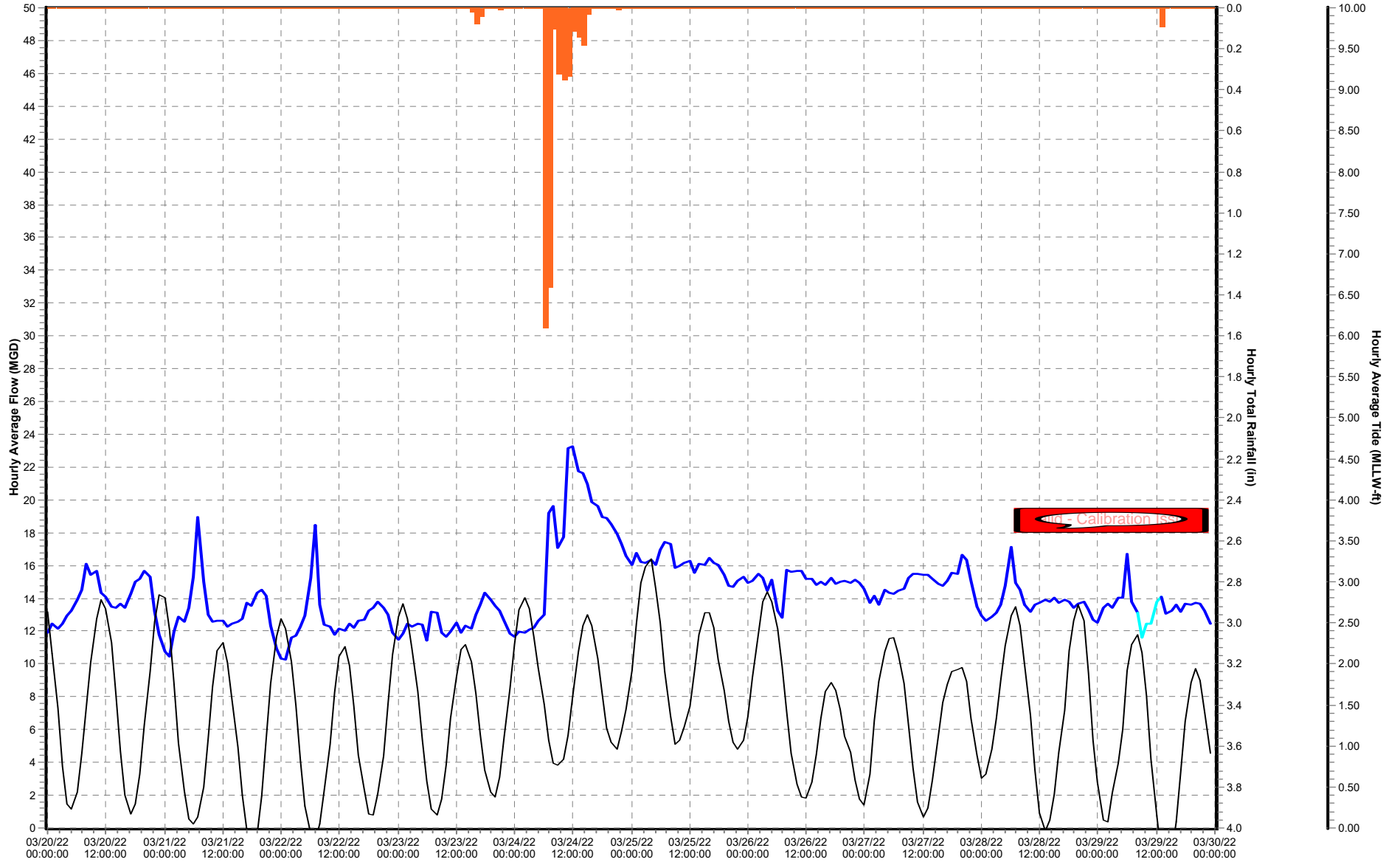
Flow_Effluent (MGD) Rainfall @ WBTP



York River Treatment Plant

MMPS-235 (03/20/22 to 03/30/22)

Flow_Influent (MGD) Rain Gauge (in) YorktownUSCG Tide - MLLW Preliminary (ft)



Appendix C

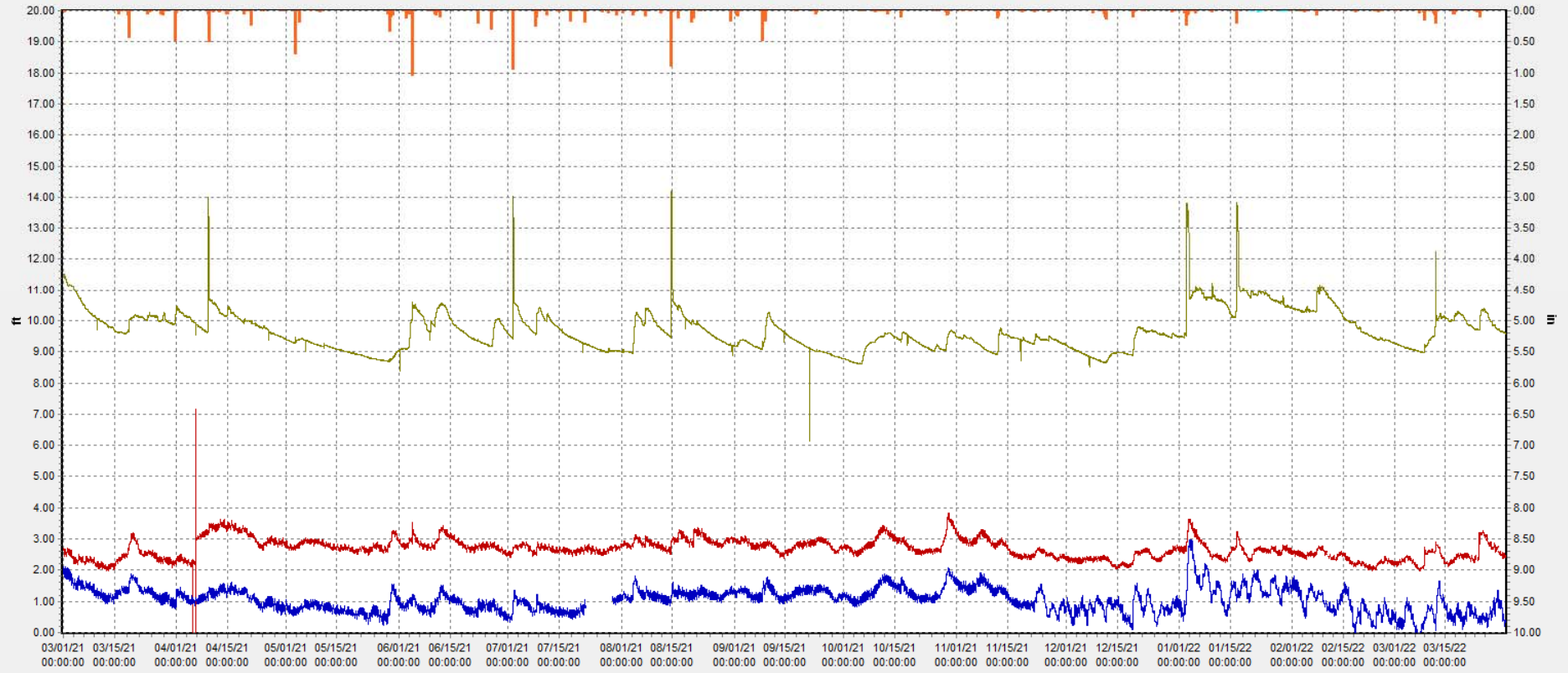
Shallow Well Analysis

1-year

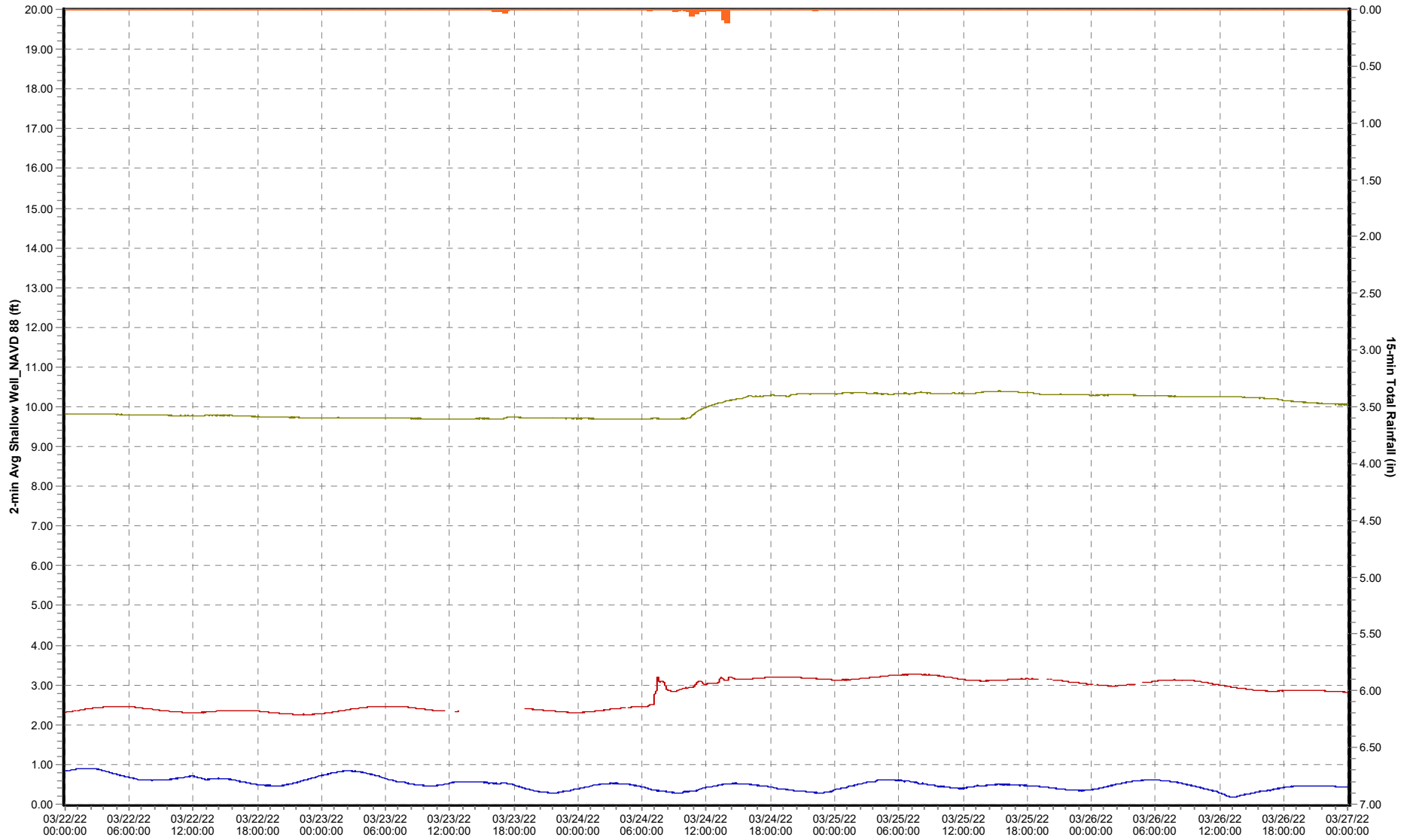
HRSD NP - Lucas Creek PS

MMPS-148 (03/01/21 to 03/31/22)

MMPS - 148 Lucas Creek PS Shallow Well NAVD88 MMPS - 180 Willard Ave PS Shallow Well NAVD88 MMPS - 011 Copeland Park PS Shallow Well NAVD88 MMPS - 116 Bayshore PS Rain Guage (in)



5-day
North Shore Shallow Well Graphs
03/22/22 to 03/27/22



APPENDIX B. DEFINITIONS

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2022

“Bypass” shall mean the intentional diversion of waste streams from any portion of a treatment facility, as defined by 40 C.F.R. § 122.41(m).

“HRSD SS System” or “HRSD Sanitary Sewer System” shall mean the wastewater collection and transmission systems, including all pipes, Force Mains, Gravity Sewer Lines, lift stations, Pumping Stations, Pressure Reducing Stations, manholes, and any other appurtenances thereto, which are owned or operated by HRSD as of the Effective Date of this Consent Decree, and which serve the Localities. It does not include the portions of the sewer system that serves the Middle Peninsula communities within King William County, King and Queen County, Middlesex County, and Mathews County.

“Non-potable water (NPW)” is fully treated and chlorinated final effluent.

“Prohibited Bypass” shall mean a Bypass within the meaning of 40 C.F.R § 122.41(m)(4).

“Sanitary Sewer Overflow” or “SSO” shall mean an overflow, spill, diversion, or release of wastewater from or caused by the Regional SS System. This term shall include: (i) discharges to waters of the State or United States from the Regional SS System and (ii) any release of wastewater from the Regional SS System to public or private property that does not reach waters of the United States or the State, including Building/Private Property Backups.

“Sanitary Sewer Discharge” or “SSD” shall mean any discharge to waters of the State or the United States from the HRSD SS System through a point source not authorized in any Permit.