

QUARTERLY REPORT
JANUARY 1 – MARCH 31, 2023



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

May 30, 2023

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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, 2023, through March 31, 2023, the associated post-storm synopses reports, claims of force majeure, and undisputed stipulated penalties.

During the reporting period, there were a total of ten (10) 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 three (3) 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 one (1) Unusual Discharges that was non potable water or final effluent.

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 three (3) SSO from the HRSD SS System during the 3-month reporting period. HRSD will pay undisputed stipulated penalties in the amount of \$10,000 for one (1) SSO.

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. The calculated stipulated penalties are shown in Table 1.

<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

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 in the amount of \$2,550 for six (6) 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. The calculated stipulated penalties are shown in Table 2.

<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

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

There was one (1) Post-Storm Synopses Reports for the 3-month reporting period.

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2023

Table 1. Detailed Listing of HRSD SSOs

(January 1, 2023 to March 31, 2023)

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
1/11/2023 4:30:00 PM	Near the Intersection of Shore Drive and Indian Hill Road	Lynnhaven -Great Neck Interceptor FM	Lynnhaven River	Virginia Beach	Infrastructure	The City of Virginia Beach Department of Public Utilities reported a sewer overflow along a 20-in asbestos cement force main near the intersection of Shore Drive and Indian Hill Road. HRSD staff arrived onsite and observed an approximate flow rate of 0.5 gpm through the pavement.	33 hour(s) 45 minute(s)	After arriving onsite, HRSD staff determined the source of the overflow was likely associated with the HRSD force main. A sump was then temporarily installed to pump the sewage to a nearby gravity sewer system while staff mobilized equipment and materials to the site. The release was initially contained at 9:30PM on 1/11/2023. Staff excavated near the source of the observed overflow. The leak was traced to a partially failed coupling. A contractor was then mobilized to the site to perform the repair. HRSD staff isolated the impacted section of force main and coordinated pump and haul for the impacted locality pump stations. Prior to fully isolating the force main, the contractor prematurely removed the partially failed coupling. This resulted in the release of an additional 190,500 gallons of sewage. Approximately 75,250 gallons of this was recovered by pumping it to the nearby gravity sewer system. After the overflow stopped, the contractor installed a full circle clamp and encased it in a corrosion inhibiting mastic wrap. The excavation was backfilled, and the road surface restored. Debris was removed from the impacted areas, the road surfaces were pressure washed, and pervious surfaces were treated with lime.	190,650	115,400	SSORS#2023-T-106214	\$10,000

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2023

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(January 1, 2023 to March 31, 2023)

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
3/10/2023 5:05:00 PM	Near 116 Reservation Road	Sanitary Sewer Southern System Route 168 (SF-180)	Intracoastal Waterway	Chesapeake	Damage By Others	A failure occurred on a 20-in cast iron pipe force main. This force main is a water crossing between the Great Bridge Bridge and Great Bridge Locks. The failure was caused by an apparent anchor strike from a third party vessel. HRSD was notified at 5:05PM with subsequent data review indicating system pressure dropped at approximately 1:15PM.	3 hour(s) 10 minute(s)	HRSD staff isolated the crossing using main line valves and put a diversion in place.	2,500,000	2,500,000	SSORS#2023-T-106246	Force Majeure. A dredge spud punctured the pipeline.
3/28/2023 9:54:00 AM	Near the intersection of Bainbridge Boulevard and Virginia Avenue	Bainbridge Boulevard Interceptor FM	Storm drain to Southern Branch of Elizabeth River via Gilligan Creek	Chesapeake	Damage By Others	A contractor struck a 12-in cast iron force main with a horizontal directional drilling machine.	6 hour(s) 36 minute(s)	HRSD staff repaired the force main by installing a full circle clamp. The force main was isolated by pumping and hauling from an upstream pump station. Once the repair was completed, the road surface was restored and the impacted areas were cleaned and treated. Information gathered from the locality staff and the HDD contractor indicated the spill may have started as early as March 9, 2023. However, no spill was witnessed by them or HRSD prior to March 28, 2023, therefore there is no way of knowing whether sewage was released prior to our observation.	450	450	SSORS#2023-T-106253	Force Majeure. A contractor struck pipeline with a horizontal directional drill.

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2023

Table 2. Detailed Listing of HRSD Treatment Plant Unusual Discharges
(January 1, 2023 to March 31, 2023)

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
1/25/2023 11:45	York River	A hose flange on the Centrate transfer pump discharge line disconnected causing the containment to over flow	45	Once discovered, plant personnel turned off the pump, began the cleanup/recovery effort and reconnected/re-enforced the disconnected flange. E&I staff re-purposed a float in the containment to automatically turn off the transfer pump if the level of the containment activates the float. The float will also activate a DCS alarm.	700	400	Centrifuge Centrate	50 gal to creek and 350 gal to ground	\$750
2/6/2023 9:58	James River	A contractor was digging with an excavator and broke the bisulfite feed line to the final effluent, between the bisulfite and hypo buildings. The bisulfite feed line was feeding bisulfite at approximately 3.3 gph with NPW carry water at a flow of 50 gpm, the line was secured within ten minutes, the flow from the broken line went into the ground and was unable to be recovered. The backup line was put into service within this ten minute time frame. The residual taken from a FNE sample at 10:07 read 0.05 mg/l.	10	Secured broken feed line and switched to back up feed line	500	500	NPW w/ trace bisulfite	ground	\$750
2/11/2023 2:00	Atlantic	Contact Tank #3 leaking from side wall at expansion joint with approximately 0.5 gpm estimated flow.	300	Plugged leak and reduced leak to a very slow dribble. Secured tank from service and drained #3 contact tank. This tank will remain out of service until repairs to the expansion joint can be completed.	150	150	Final Effluent (FNE)	ground	FNE
2/13/2023 5:30	James River	During a high flow event caused by rainfall one of our IFAS tanks wasn't feeding enough defoamant. During this time a filamentous foam from the biological process breached the tank and some made it onto the ground. When it was discovered the foam had already stopped overflowing the tank but the	5	An email detailing the proper chemical dosing has been sent to all of the operators.	400	10	Aeration foam	ground	\$100

QUARTERLY REPORT JANUARY 1 – MARCH 31, 2023

Table 2. Detailed Listing of HRSD Treatment Plant Unusual Discharges

(January 1, 2023 to March 31, 2023)

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
		operator increased the defoamant dosage to match the other tanks. The foam was pumped from the ground area and lime was applied.							
3/15/2023 8:45	James River	A doghouse manhole that was installed for plant construction overflowed with foam. A sprayer was put in at the time these were installed to control foam, however, the sprayer had been turned off to this manhole by persons unknown.	5	Immediately turned spray water back on with additional spray to knock foam down, some defoamer was added for expedited reduction. Foam was cleaned up and area of spill was neutralized with lime. Communicated with contractor contact and plant staff to ensure spray water is left on.	500	50	Aeration foam	ground	\$100
3/22/2023 11:00	Nansemond	Primary clarifier#1 leaked from wall joint at approximately 20 gallons per hour. At approximately 1400 on 3/22/23 leak was reduced to a drip and the release ceased at 15:10.	250	Wall joint packed with foam to stop leak. Began pumping out tank at 1420pm on 3/22/23.	65	65	Primary Clarifier	ground	\$100
3/29/2023 14:30	Nansemond	During a power outage at SWIFT the drain pump station pumps stopped. Once power was restored they failed to turn back on. Once the drain pump station was completely full it started overflowing. Because of the grading, all spilled water went into the grass area on the back of the SWIFT building into a trough.	6	After the Operator logged back into DCS they observed that both drain pumps were not running and restarted both of the pumps from the DCS station. Immediately after, the operator went outside and noticed the drain pump station had over filled and spilled. We then were able to recover the water captured in the trough using a Godwin pump, pumping the captured water back to the drain pump station. There was 200gal of ozonated water that we could not capture on the concrete ground leading to the trough.	1500	200	Ozonated Effluent Water	ground	\$750

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

Appendix A. Post-Storm Synopses Reports

There was one (1) qualifying event this quarter.

Appendix B. Definitions

“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.

Hampton Roads Sanitation District

Post-Storm Report



1/25/2023 – 1/26/2023

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.

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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 25th through January 26th, there was an approximate 7-hour rainfall event that resulted in 7 sites on the South Shore and 0 sites on the North Shore that met a 1 to 5-year rainfall recurrence interval throughout the HRSD rain gauge network. A warm front moving in from the southeast brought winds and rain in the afternoon with the rain increasing into the evening. Rain dissipated early the following day. North Shore sites averaged around .82 inches and South Shore sites averaged around 1.38 inches. There was minimal impact on groundwater levels compared to January 2022. See Appendix C for the Historical Shallow Well comparison. This report will be for South 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: 94.93%
- Aggregate pressure meter validity: 99.03%

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 weather-related SSO occurs.

January 25th – January 26th, 2023 – Post-Storm Rain Event Synopsis

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

HRSD Treatment Plant Data 1/25/2023 – 1/26/2023

South Shore				
Treatment Plant	Date of Peak Hourly Flow	Peak Hourly Flow (MGD)	Peak Hour	TPSA Total Rainfall Avg (in)
Army Base	1/25/2023	15.95	22:00	1.05
	1/26/2023	12.31	21:00	0.06
Atlantic	1/25/2023	106.20	22:00	1.99
	1/26/2023	80.04	00:00	0.05
Nansemond	1/25/2023	32.72	22:00	1.15
	1/26/2023	24.40	00:00	0.08
VIP	1/25/2023	59.03	23:00	1.26
	1/26/2023	52.37	00:00	0.06

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	2- to 5-year (6hr)	CHES
Chesapeake PS 243	DNQ	CHES
Chesapeake PS 254	DNQ	CHES
Courthouse PRS	1-year (6hr)	VAB
Elbow Rd	DNQ	CHES
John B. Dey MLV-AT side	Invalid	VAB
Kempsville PRS	1- to 2-year (6hr)	VAB
Lagomar IFM at Atlantic TP	DNQ	VAB
Laskin Rd PRS	DNQ	VAB
Pine Tree PRS	1-year (6hr)	VAB
Shipps Corner PRS	1-year (6hr)	VAB

January 25th – January 26th, 2023 – Post-Storm Rain Event Synopsis

Ches-Liz Treatment Plant Service Area¹

Ches-Liz Weather	Disconnected	VAB
Dozier's Corner PS	DNQ	CHES
Independence PRS	1-year (6hr)	VAB
Northampton Blvd at Wesleyan Dr	DNQ	NORF
Providence PRS	1-year (6hr)	VAB
Shore Dr @ Jack Frost	DNQ	CHES

Nansemond Treatment Plant Service Area¹

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	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	DNQ	IOW
Suffolk PS	DNQ	SUFF
Suffolk PS 81	DNQ	SUFF
Suffolk PS 87	DNQ	SUFF
Windsor Duke St PS	DNQ	IOW
Windsor PCV	Disconnected	SUFF
Hill Point Rectifier	Disconnected	SUFF

VIP Treatment Plant Service Area¹

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)
1/25/2023	32 mph	25 mph	12 mph	SW	1.32
1/26/2023	28 mph	21 mph	11 mph	SW	0.07

Tide:

- Sewells Point Tide Station:
 - Storm Surge: An approximate .78 foot storm surge was observed.

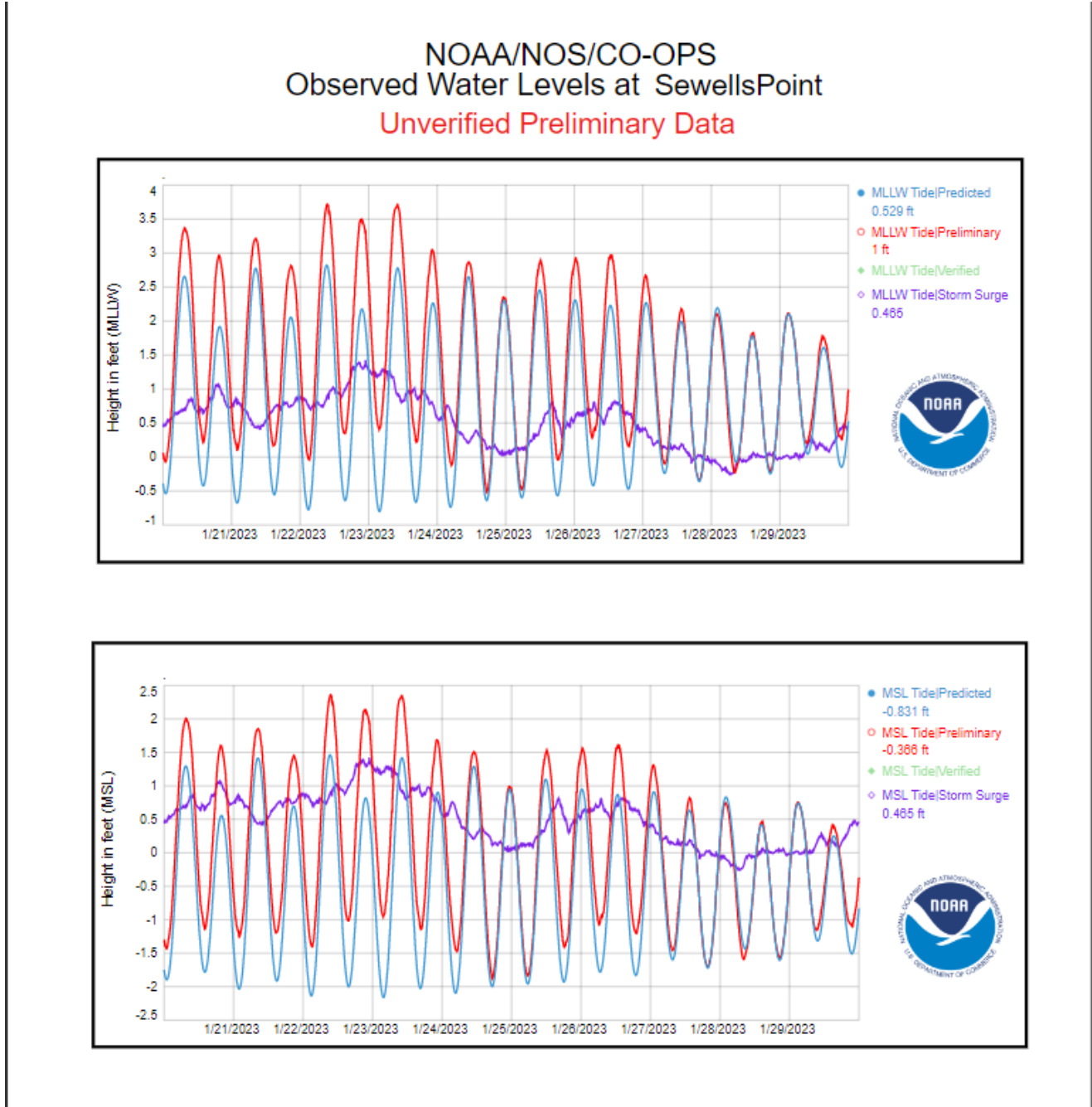


Figure 3. Preliminary data obtained from NOAA and a connection with Open Weather

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

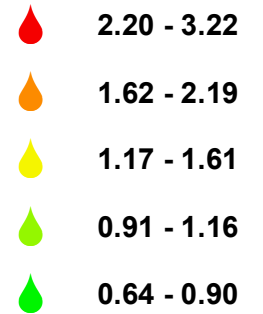
South Shore - East

January 25-26, 2023

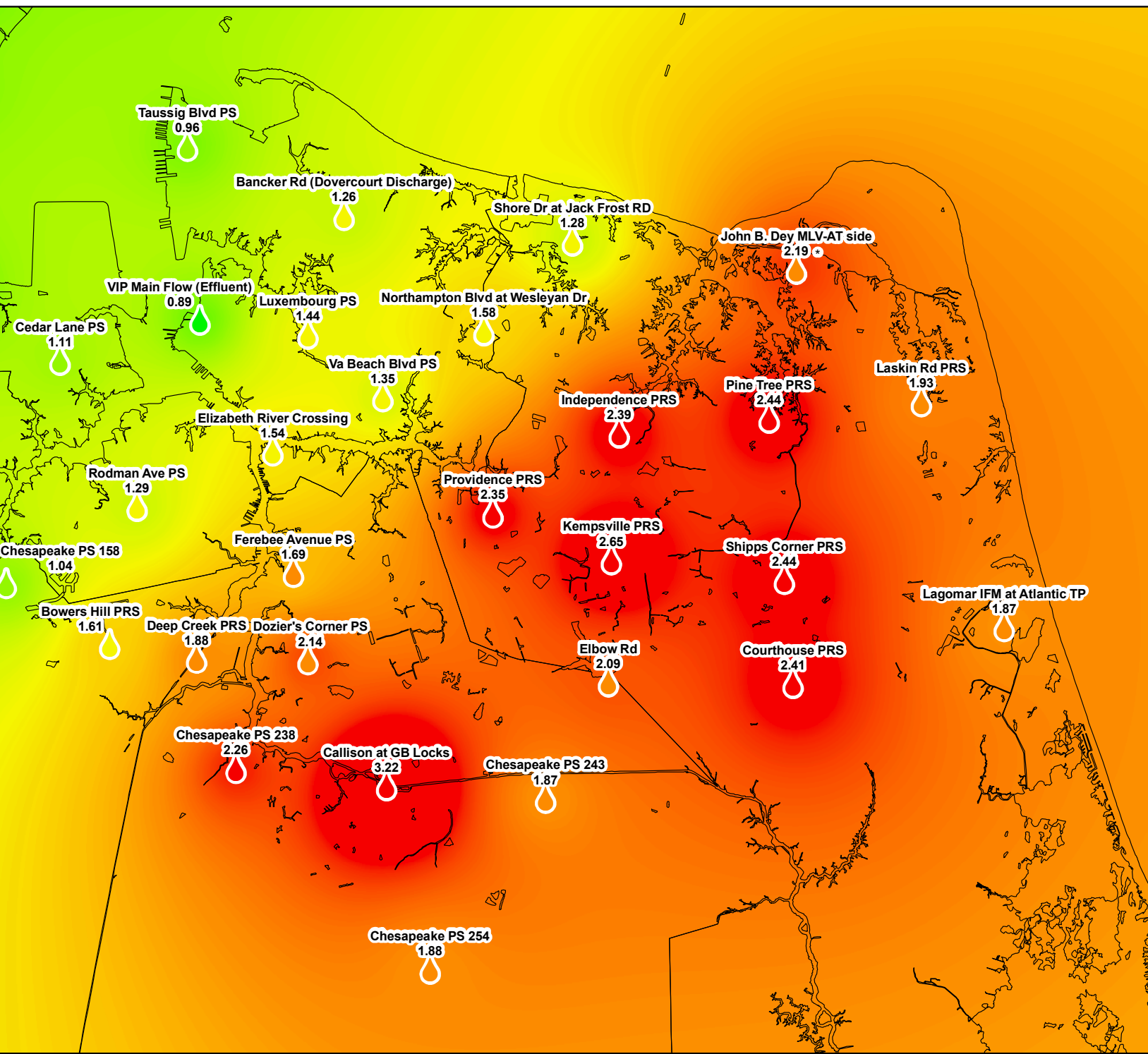
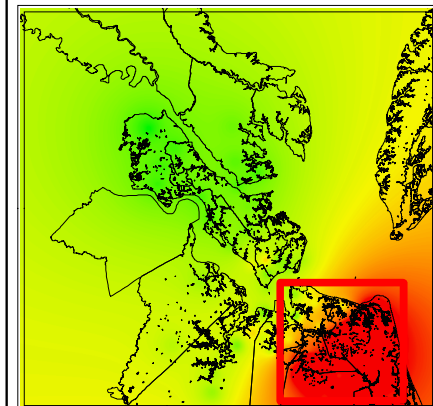
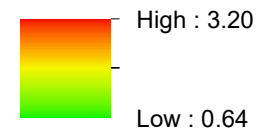
Rainfall Analysis

Total Rainfall

Rain Gauges (in):



Value

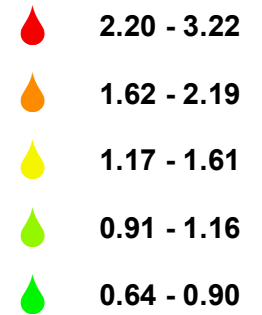


*Note: Rain Gauge was invalid for event and an average of surrounding sites was used.

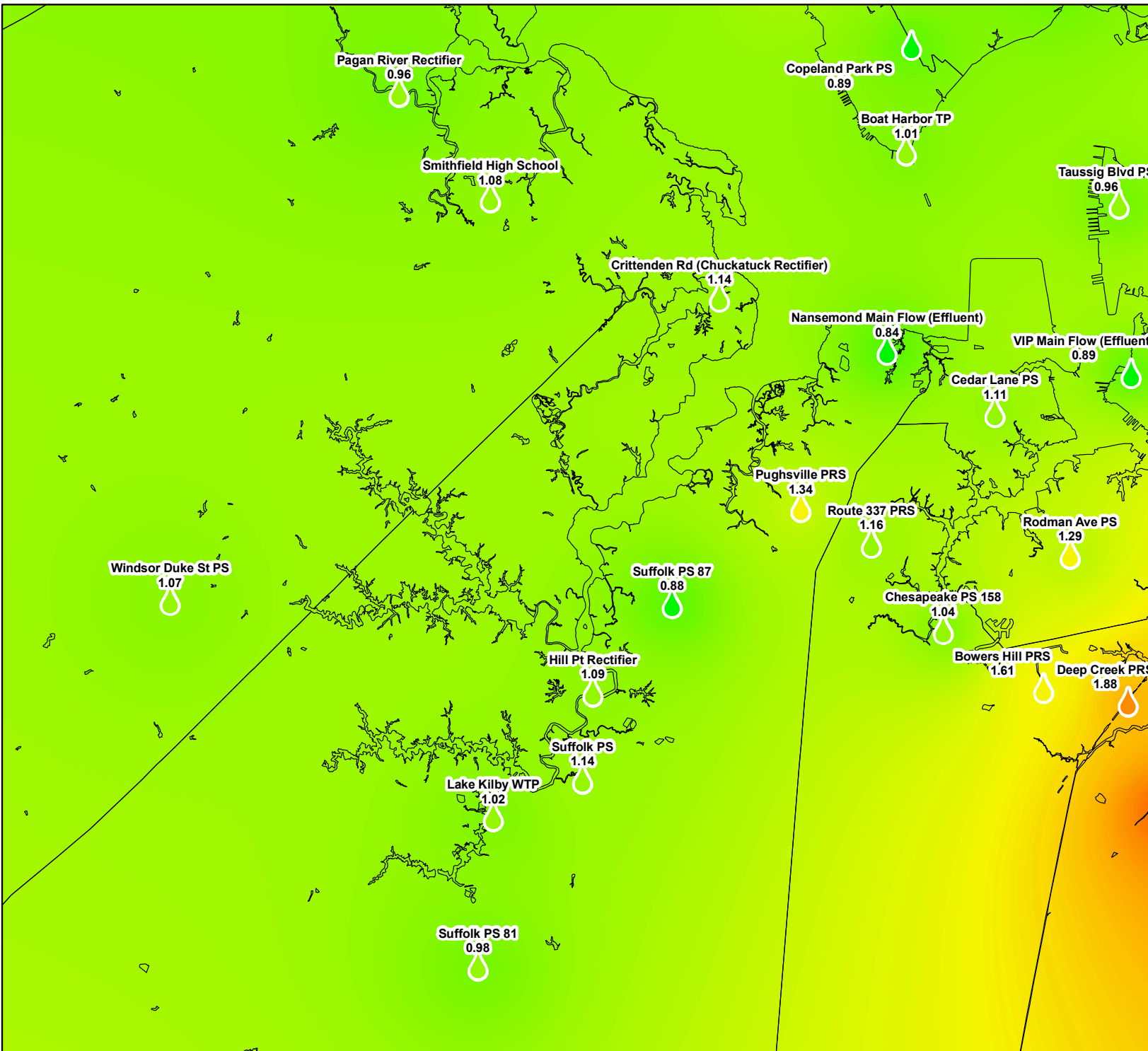
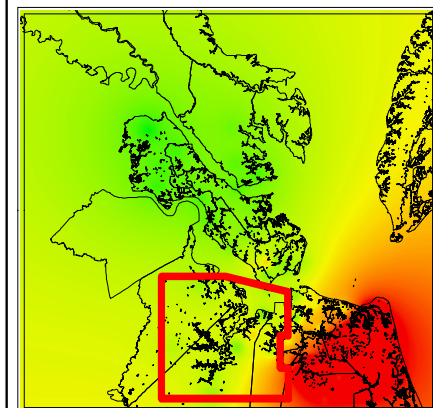
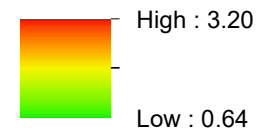
South Shore - West

January 25-26, 2023 Rainfall Analysis Total Rainfall

Rain Gauges (in):



Value

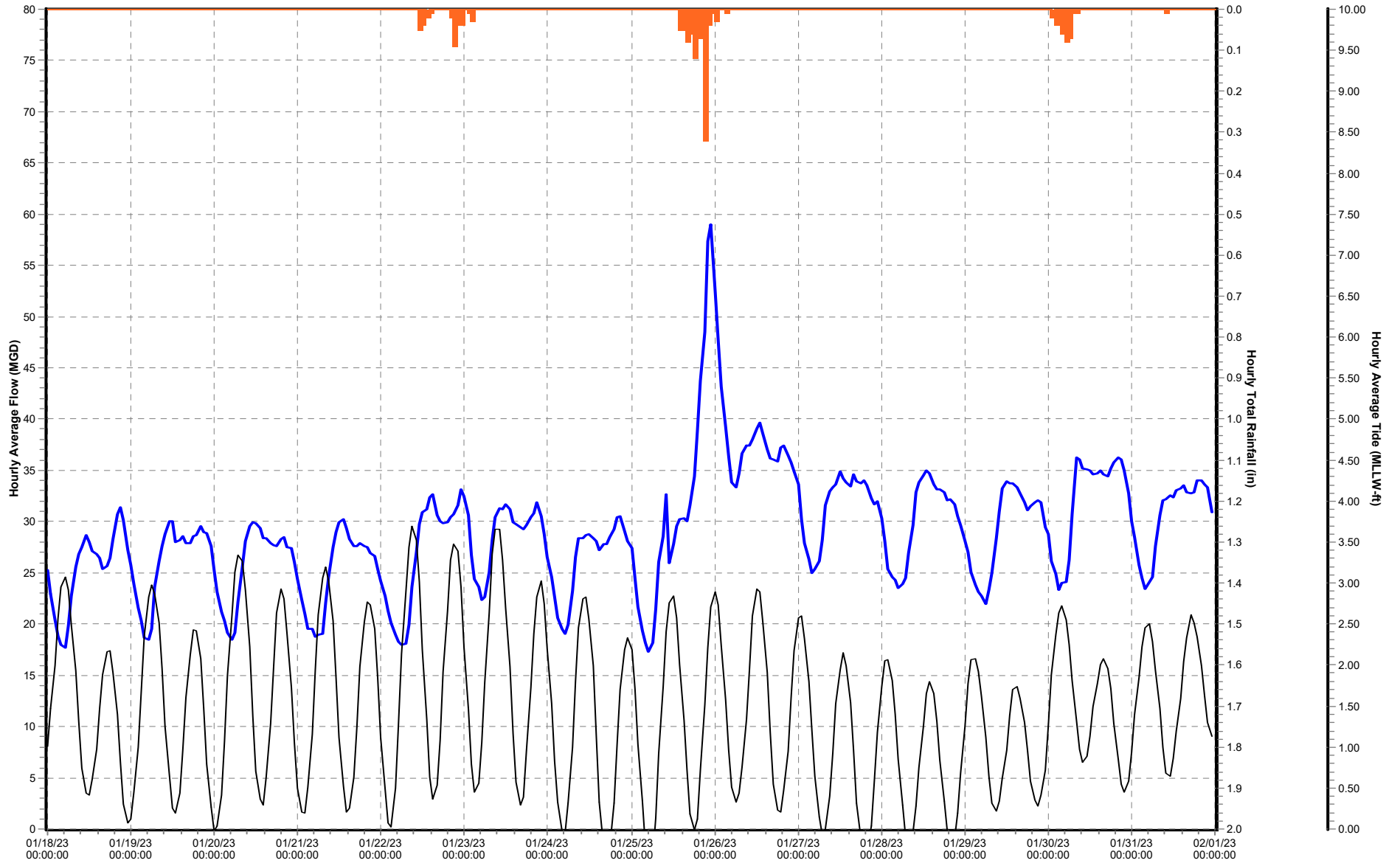


*Note: Rain Gauge was invalid for event and an average of surrounding sites was used.

Appendix B

HRSD Treatment Plant Flows

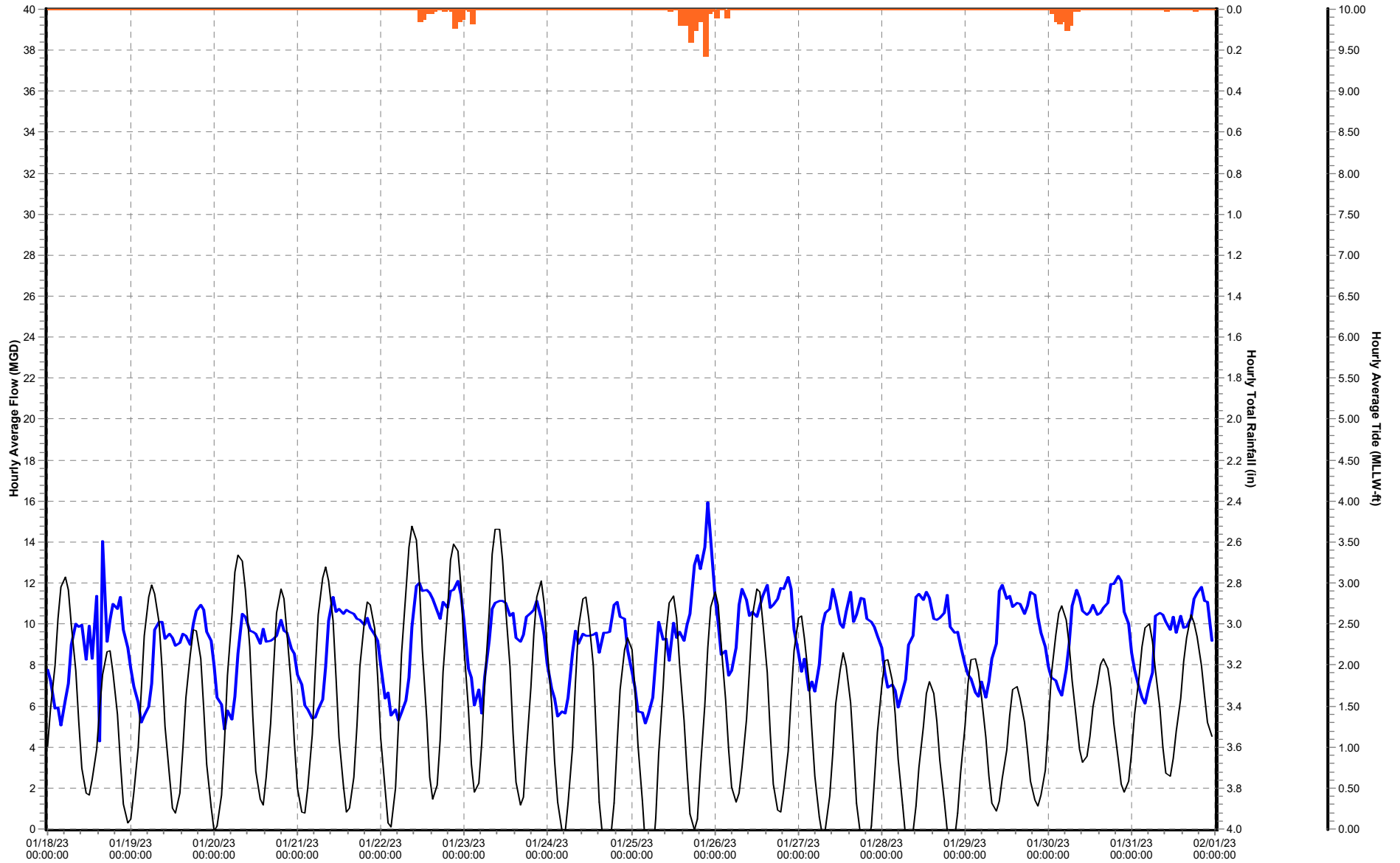
VIP Treatment Plant
MMPS-003 (01/18/23 to 02/01/23)



Army Base Treatment Plant

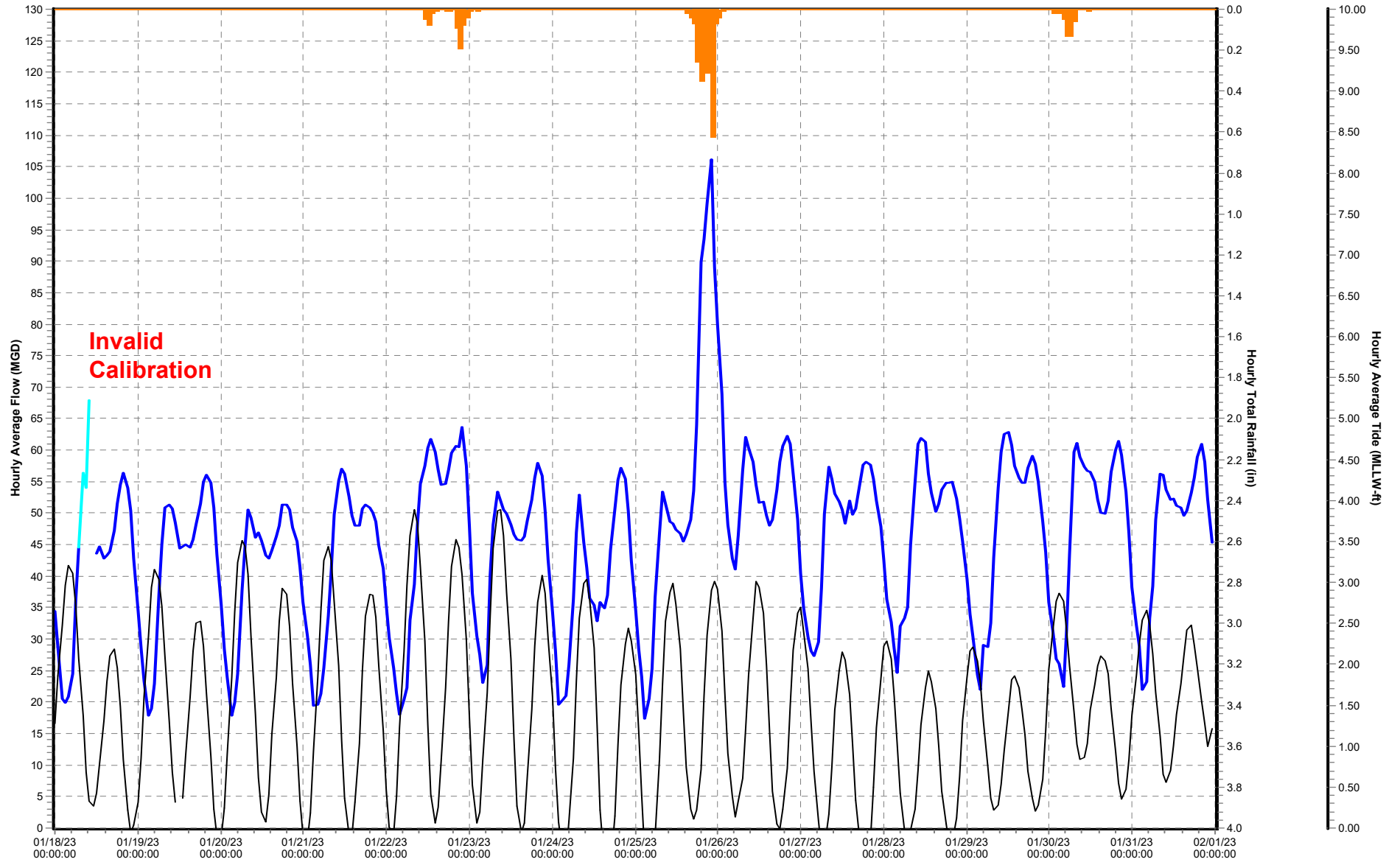
MMPS-035 (01/18/23 to 02/01/23)

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



Atlantic Treatment Plant
MMPS-071 (01/18/23 to 02/01/23)

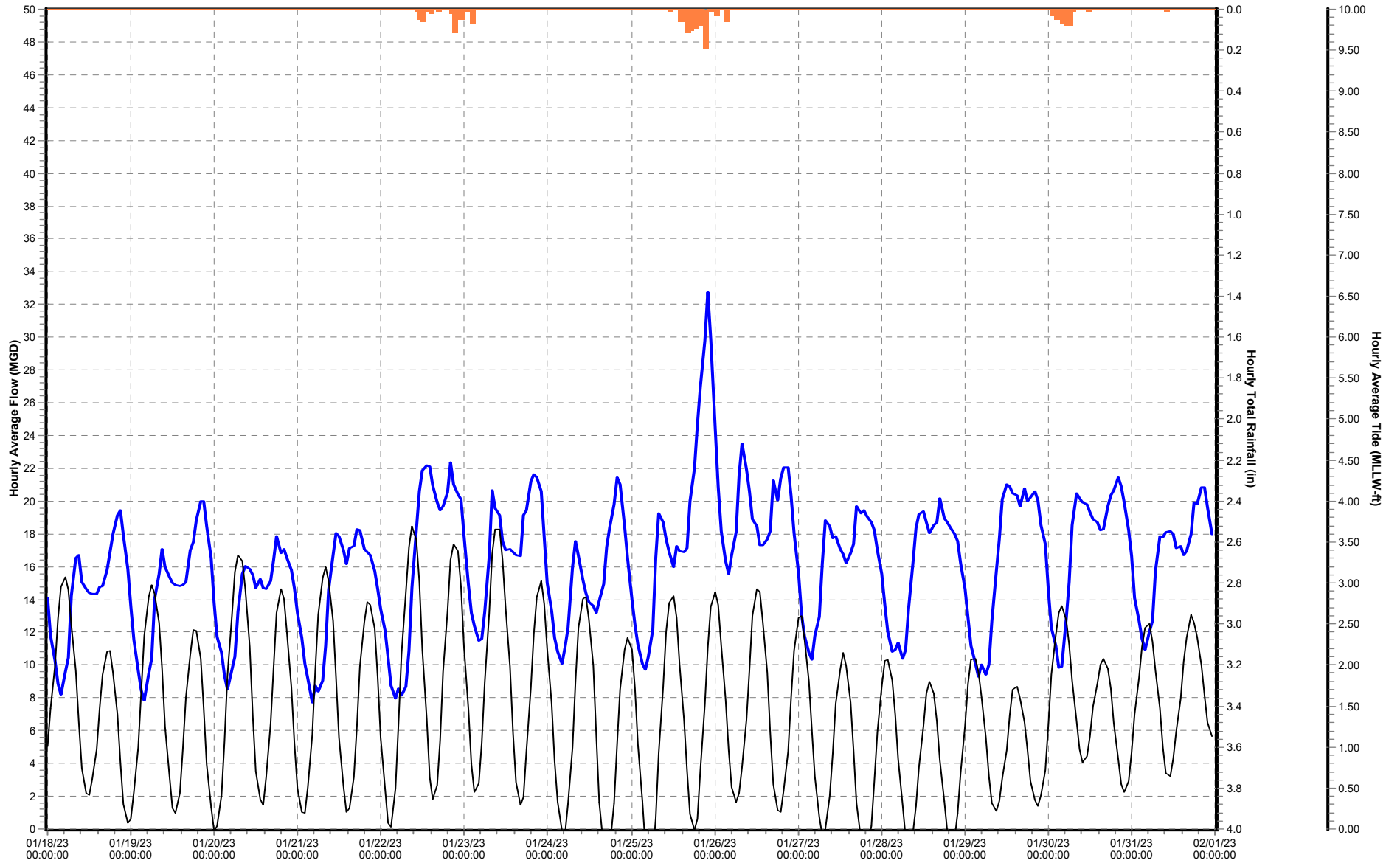
Flow_Effluent (MGD) MMPS-185: Lagomar IFM at Atlantic TP Rain Gauge CBBT Tide - MLLW Preliminary (ft)



Nansemond Treatment Plant

MMPS-202 (01/18/23 to 02/01/23)

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



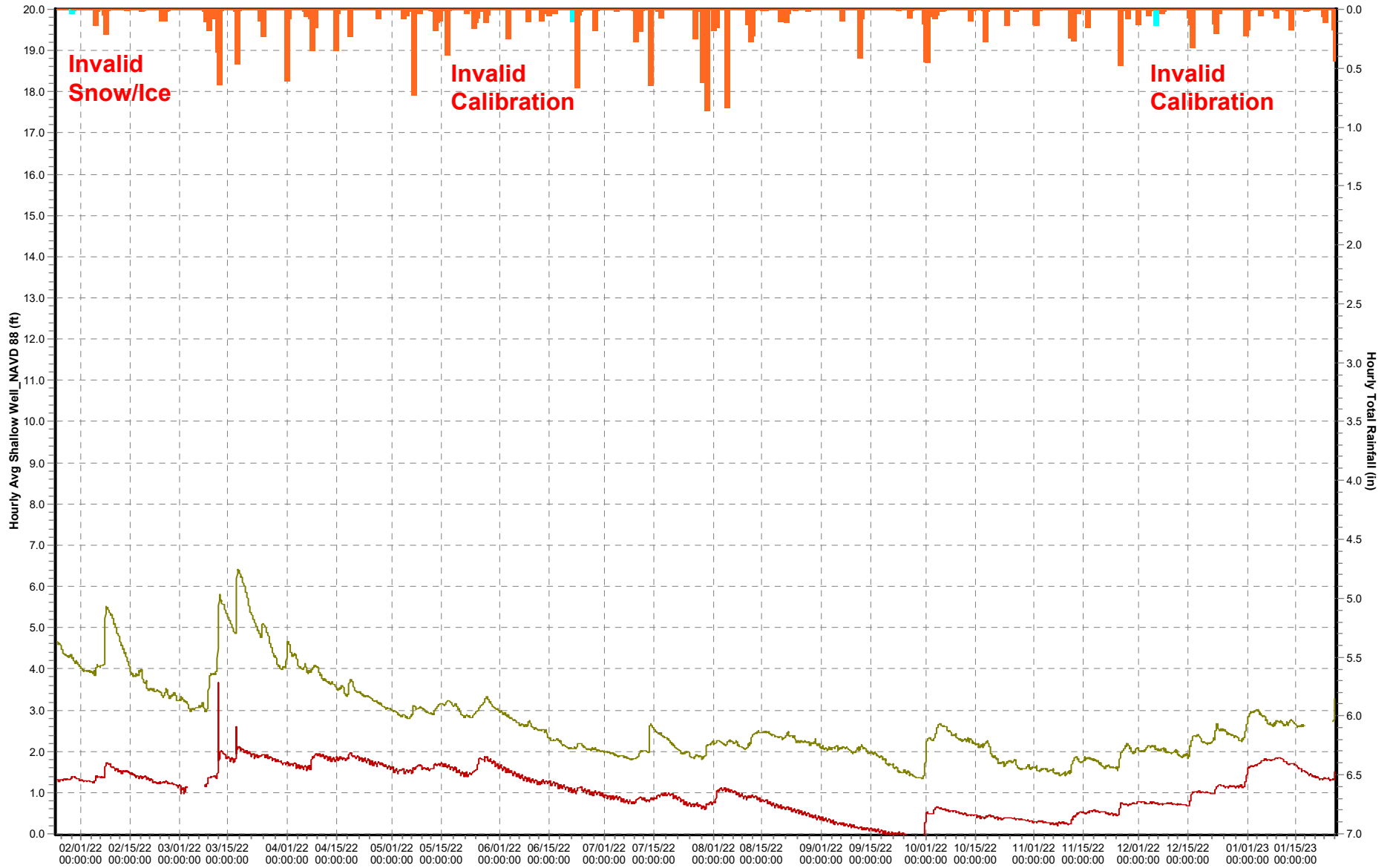
Appendix C

Shallow Well Analysis

1 Year

South Shore Shallow Well Graphs

01/25/22 to 01/26/23



5 Day

South Shore Shallow Well Graphs

01/23/23 to 01/28/23

