COMMISSION MEETING MINUTES
August 25, 2020

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Attachments (7)

Chair Elofson called the virtual meeting to order and Ms. Cascio read the roll call of HRSD Commissioners.

Name	Title	Present for Item Nos.
Elofson, Frederick N.	Commission Chair	1-22
Lynch, Maurice P.	Commission Vice-Chair	1-22
Glenn, Michael E.	Commissioner	1-22
Lakdawala, Vishnu K.	Commissioner	1-22
Levenston, Jr., Willie	Commissioner	1-22
Rodriguez, Stephen C.	Commissioner	1-22
Taraski, Elizabeth	Commissioner	1-22
Ward, Molly Joseph	Commissioner	Absent

1. AWARDS AND RECOGNITION

Action: No action required.

Brief: Chair Elofson presented the following service awards:

a. Mr. Reggie Morgan marked his 35th year of service on July 24, 2020. Reggie was hired in May 1985 as a part-time Summer Helper at the Chesapeake-Elizabeth Treatment Plant and became a full-time Sewage Treatment Plant Operator Helper in July of that year. In 1988 he became a courier for the Central Environmental Lab (CEL), has been promoted five times since then, and currently serves as the CEL Quality Assurance Manager where he has responsibilities related to accreditation and implementation of the Quality Assurance Program. Reggie earned his Bachelor of Science degree in Biology from Old Dominion University. In 2009, he received the WEF Laboratory Analyst Excellence Award presented by the VWEA/AWWA lab practices committee. Reggie has completed method development in multiple sections of the CEL for new technologies and instrumentation. He also serves as a mentor to many new employees. His professional activities include judging and coordinating the laboratory event for VWEA and WEF Operations Challenge events, serving as the CEL Safety Officer and representing Water Quality on the HRSD Safety Team.

b. Ms. Lisa Ann Mathews marked her 20th year of service with HRSD on August 7, 2020. Lisa was hired in August 2000 as an Account Representative in the Customer Care Center and became the Payroll Coordinator in August 2002. She was re-classified as the Payroll Technician in July 2008 and was promoted to Business Analyst in March 2017.

Lisa is currently seeking a bachelor's degree in Management Information Systems at St. Leo University. Lisa holds a Fundamental Payroll Certification and continues to act as a resource to assist payroll with unusual issues. Lisa's extensive knowledge of payroll systems allowed her to participate in the Enterprise Resource Planning (ERP) payroll implementation. More recently Lisa has used her skills as the Procurement Business Analyst to participate in Project EVO, which integrated ERP with the project management application. Lisa currently holds the role of Procurement Coordinator for the Oracle Special Interest Group and is a member of the HRSD United Way team (5+ years). She also serves on the Board of Directors for the Virginia Beach baseball Pony League.

Attachment: None

Public Comment: None

2. CONSENT AGENDA

Action: Approve the items listed in the Consent Agenda.

Moved: Maurice Lynch
Seconded: Michael Glenn
Roll call vote: **Ayes: 7** **Nays: 0**

Brief:

a. Approval of minutes from previous meeting.

b. Contract Awards – Research Studies

1. Advancing Ammonia-Based Aeration and Ammonia Versus NOx Control (ABAC/AVN): Applying Model-Predictive Controllers and Machine Learning Techniques Research Study and Scholarship — $75,000

2. Carbon-Based Pilot Testing and Soil Aquifer Treatment Research Study — $257,295

3. Practice to Enhance Internal Fermentation of Side-stream Mixed Liquor for Biological Phosphorus Removal Research Study — $60,000

c. Contract Awards (>$200,000)

1. Hach Controllers, Sensors and Probes Service Contract — $517,843

d. Task Orders

1. Virginia Initiative Plant (VIP) Influent Force Main (SF-227) Condition Assessment — $281,270

e. Sole Source

1. Wyss Flex-A-Tube Aeration Tank Diffuser Membranes

Item(s) Removed for Discussion: None

Attachment #1: Consent Agenda

Public Comment: None

3. **SUBORDINATE TRUST AGREEMENT**
EXCLUSION OF CERTAIN LOCALITY IMPROVEMENTS FROM CALCULATION OF OPERATING EXPENSES RESOLUTION

Actions: Adopt the resolution authorizing the exclusion of Locality Improvements from the calculation of Operating Expenses for purposes of the Subordinate Trust Agreement.

Moved: Willie Levenston
Seconded: Maurice Lynch
Roll call vote: **Ayes: 7** **Nays: 0**

Briefing: When staff prepares the Fiscal Year 2020 (FY-2020) Comprehensive Annual Financial Report (CAFR), there is work being performed on four locality improvement projects with an estimated total project cost of $29,302,000. A portion of this amount was expended in FY-2020 and needs to be excluded from Operating Expenses as defined in the Subordinate Trust Agreement. The remaining amount is expected to be expended annually up to FY-2024. By excluding these projects from Operating Expenses, staff can calculate the Debt Service Coverage Ratio on an adjusted basis as opposed to GAAP basis to ensure our subordinate debt covenants are met.

These projects improved the integrity of the regional wastewater system by rehabilitating aging infrastructure to reduce inflow and infiltration.

An excerpt from the Subordinate Trust agreement is provided below:

> *"Operating Expenses shall also exclude expenses for improvements that will not be owned by the District but which will, in the reasonable determination of the Commission, as evidenced by a resolution thereof, maintain or improve the integrity of the Wastewater System."*

The attached resolution was prepared by bond counsel.

Attachment #2: Resolution

Public Comment: None

4. **ATLANTIC TREATMENT PLANT THERMAL HYDROLYSIS PROCESS (THP) AND ATLANTIC TREATMENT PLANT FATS, OILS AND GREASE (FOG) RECEIVING STATION**
ADDITIONAL APPROPRIATION

Action: Appropriate additional funding in the amount of $2,777,902 ($2,526,773 for AT013500 and $251,129 for AT012910).

Moved: Michael Glenn
Seconded: Willie Levenston
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: AT013500

Budget	$60,666,815
Previous Expenditures and Encumbrances	($59,725,261)
Available Balance	$941,554
Proposed Change Order to Crowder	($3,243,327)
Proposed Contingency	($225,000)
Project Shortage/Requested Additional Funding	($2,526,773)
Revised Total Project Authorized Funding	$63,193,588

CIP Project: AT012910

Budget	$6,597,517
Previous Expenditures and Encumbrances	($6,463,276)
Available Balance	$134,241
Proposed Change Order to Crowder	($360,370)
Proposed Contingency	($25,000)
Project Shortage/Requested Additional Funding	($251,129)
Revised Total Project Authorized Funding	$6,848,646

Project Description: The purpose of implementing the THP and FOG Receiving Station at the Atlantic Treatment Plant is to improve cake dewaterability and produce a Class A biosolids product by processing through the Cambi THP System, which will provide the following:

- Flexibility – prepare for FOG and Biosolids Receiving
- Expandability – increased load
- Economy – resource efficiency, use existing infrastructure
- Integrate seamlessly into plant
- Odor neutrality

Funding Description: These two CIP projects are related and are being constructed by Crowder Construction Company (Crowder). The original CIP project estimate did not anticipate installing a new Dystor cover for Digester No. 5, installing a third solids screen, an overhaul of the plant drain pump station, and some other additional scope items that were requested by HRSD. A change order proposal for the additional work was prepared by Crowder and reviewed and recommended for approval by HDR. This request includes a $250,000 contingency to accommodate any additional unforeseen conditions.

Schedule: Project Completion May 2021

Attachment: None

Public Comment: None

5. **MATHEWS NURSING HOME LINE VACUUM SEWER MAIN ADDITIONAL APPROPRIATION**

Action: Appropriate additional funding in the amount of $60,242.

Moved: Maurice Lynch
Seconded: Elizabeth Taraski
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: MP012900

Budget	$1,365,928
Previous Expenditures and Encumbrances	($1,315,736)
Available Balance	$50,192
Proposed Contract to Contractor	($100,434)
Proposed Contingency	$10,000
Project Shortage/Requested Additional Funding	($60,242)
Revised Total Project Authorized Funding	$1,426,170

Project Description: This project involves the replacement of approximately 2,800 linear feet of existing 4-inch vacuum trunk line in Mathews, Virginia with a new 8-inch vacuum line to connect into a previously installed expansion of 6-inch vacuum sewer, along with associated diversion valves and two new buffer tanks to serve a nursing home and the courthouse area.

Funding Description: This project has reached substantial completion but requires additional funding due to additional work added to resolve field changes and unforeseen conditions. The negotiated cost of this work is $100,433 and exceeds the balance available for the CIP by $50,242. The original CIP project estimate did not anticipate crossing under two unknown and unmarked concrete storm culverts, which accounted for $79,546 of the $100,433 change order. A contingency amount is included for any additional work required through the warranty period.

Analysis of Cost: The contract change amount of $100,434 compares well to the Engineer's estimate and the effort needed to complete the work.

Schedule: Project Completion August 2020

Attachment: None

Public Comment: None

6. **SHARON ROAD GRAVITY SEWER IMPROVEMENTS**
INITIAL APPROPRIATION

Action: Appropriate total project funding in the amount of $400,000.

Moved: Michael Glenn
Seconded: Maurice Lynch
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: MP015000

Project Description: This project consists of expanding the gravity collection system including approximately 800 linear feet of gravity sewer pipe to connect to the existing Commerce Lane Pump Station service area in King William County. This project will eliminate the need for and permanently abandon the Sharon Road Pump Station which is currently in need of rehabilitation and is located on a school property.

Funding Description: Negotiations for the PER phase services are in progress and will be under $200,000; therefore, no Commission action will be required.

Analysis of Cost: The estimated total project cost is $400,000 and is based on an AACE Class 5 cost estimate completed by HRSD. The estimated project cost consists of construction costs of $286,000 combined with an engineering services estimate of $65,000 and a 14 percent contingency allowance of $49,000. Engineering Services, including preliminary engineering, design and construction phase services will be provided by Rummel, Klepper and Kahl through the existing Professional Services Agreement for Interceptor Systems Projects.

Schedule:

PER	September 2020
Design	December 2021
Bid	April 2021
Construction	June 2021
Project Completion	January 2022

Attachment: None

Public Comment: None

7. **SMALL COMMUNITIES REHABILITATION PHASE IV**
INITIAL APPROPRIATION

Action: Appropriate total project funding in the amount of $816,260.

Moved: Maurice Lynch
Seconded: Willie Levenston
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: MP014700

Project Description: This project consists of the rehabilitation or replacement of approximately 2,500 linear feet of small diameter gravity sewer main, associated laterals and manholes within the Towns of Urbanna and West Point. This project is necessary to correct multiple defects within these line segments, identified by CCTV condition assessments, that could lead to premature failure.

Funding Description: Negotiations for the PER phase services are in progress and will be under $200,000; therefore, no Commission action will be required.

Analysis of Cost: The estimated total project cost is $816,260 and is based on an AACE Class 5 cost estimate completed by HRSD. The estimated project cost consists of construction costs of $614,550 combined with an engineering services estimate of $90,000 and a 16 percent contingency allowance of $111,710. Engineering Services, including preliminary engineering, design and construction phase services will be provided by Rummel, Klepper and Kahl through the existing Professional Services Agreement for Interceptor Systems Projects.

Schedule:

PER	September 2020
Design	December 2020
Bid	June 2021
Construction	September 2021
Project Completion	May 2022

Attachment: None

Public Comment: None

8. **SOUTH NORFOLK AREA GRAVITY SEWER IMPROVEMENTS NEW CIP, INITIAL APPROPRIATION AND CONTRACT AWARD (>$200,000)**

Actions:

a. Appropriate total project funding in the amount of $11,371,000.

b. Reduce scope and appropriation of the existing project AT013100 to $805,000 to only include work on a segment of the HRSD gravity system that runs under and immediately adjacent to I-264 and is in critical condition. AT013100 will be Phase 1 of the South Norfolk Area Gravity Sewer Project.

c. Approve new project AT013110 which covers the remainder of the scope with an appropriated budget of $10,566,000. AT013110 will be Phase 2 of the South Norfolk Area Gravity Sewer Project.

d. Award a contract to Brown and Caldwell in the amount of $355,776 divided between the two projects as follows: $139,875 (AT013100, Phase 1) and $215,901 (AT013110, Phase 2).

Moved: Stephen Rodriguez
Seconded: Michael Glenn
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: AT013100 / AT013110

Type of Procurement: Competitive Negotiation

Proposers	Technical Points	Recommended Selection Ranking
Brown and Caldwell	87	1
Kimley-Horn and Associates, Inc.	83	2
Clark Nexsen, Inc.	70	3

Contract Description: This contract is for preliminary engineering, design and construction services for manhole and pipeline rehabilitation and replacement in the South Norfolk Area of Chesapeake. A Public Notice was issued on May 24, 2020. Eleven firms submitted proposals on June 30, 2020 and all firms were determined to be responsive and deemed fully qualified, responsible and suitable to the requirements in the Request for Proposals. Three firms were short listed, interviewed and technically ranked. The proposal submitted by Brown and Caldwell was ranked by technical points to be highest qualified.

Project Description: These projects will rehabilitate and/or replace gravity sewer segments and manholes in the South Norfolk area. Condition assessment activities indicate that these

assets present a material risk of failure due to Inflow/Infiltration and physical condition defects. This work is listed in Phase Two of the U.S. EPA Consent Decree Rehabilitation Action Plan and must be complete by May 5, 2025. Project AT013100 (Phase I) encompasses the gravity pipeline that runs under I-264 and presents a high consequence of failure. Due to the poor condition of the pipeline, this portion of the project will be expedited with a plan to complete the work from study through substantial completion by the end of calendar year 2020. Project AT013110 (Phase 2) includes the remainder of the gravity sewer assets within the South Norfolk Area that must be addressed prior to the EPA 2025 deadline but have a lower likelihood and consequence of failure as compared to the Phase 1 work.

Funding Description: The total project cost estimate of $11,371,000 includes approximately $955,776 in pre-construction phase engineering related services, $7,811,250 in construction phase costs, and $2,603,974 of project contingency. The budget level estimate was determined by taking the linear footage of pipeline work required and the number of manholes that need to be addressed and utilizing recent project bid information to determine construction cost. An assumption was made that the primary method of addressing these assets is through rehabilitation with some locations requiring replacement based on available condition assessment data. Rates from HRSD's Sewer Repair On-call contract were used to estimate bypass operations. Standard percentages for Construction Administration/Inspection were used. The contingency value will be reduced as we learn more about these assets, some of which will require additional CCTV data.

Analysis of Cost: The engineering fee proposal was based upon hourly rates to complete the preliminary engineering effort for this project and to expedite the rehabilitation effort of a segment of the gravity sewer that extends under the interstate due to a high consequence of failure. The proposal is in agreement with similar efforts from other firms.

Schedule:

PER (Phase 1 & 2)	September 2020
Design (Phase 1)	October 2020
Construction (Phase 1)	November 2020
Completion (Phase 1)	January 2021
Design (Phase 2)	February 2021
Bid (Phase 2)	July 2022
Construction (Phase 2)	November 2022
Overall Project Completion	November 2023

Discussion Summary: Staff clarified the location of the project is in several areas of Norfolk, Chesapeake and Portsmouth with the Phase 1 work occurring at the I-264/I-464 entrance to the Downtown Tunnel.

Attachment: None

Public Comment: None

9. **TREATMENT PLANT SOLIDS HANDLING REPLACEMENT PHASE II INITIAL APPROPRIATION AND TASK ORDER (>$200,000)**

Actions:

a. Appropriate total project funding in the amount of $5,972,000.

b. Approve a task order with HDR Engineering, Inc. in the amount of $663,839.

Moved: Maurice Lynch
Seconded: Willie Levenston
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: GN016700

Contract Status:	Amount
Original Contract with HDR	$0
Total Value of Previous Task Orders	$0
Requested Task Order	$663,839
Revised Contract Value	$663,839
Engineering Services as % of Construction	15.2%

Project Description: This project will install a second and third centrifuge at the James River Treatment Plant (JRTP). The purpose of these centrifuges is to improve the reliability of aging dewatering equipment. One of the existing centrifuges removed from JRTP will be overhauled and reinstalled at the Atlantic Treatment Plant as a pre-dewatering centrifuge.

Task Order Description: This task order will provide preliminary and final design services for the replacement of two existing centrifuges at JRTP which will include modifications to the centrate, odor control, electrical and controls and the installation of one of the salvaged centrifuges at Atlantic Plant. HDR will also assist with the sole source procurement of centrifuges and controls and provide bid phase assistance.

Analysis of Cost: The cost for this task order is based on a detailed scope of work and hourly rates negotiated in the General Engineering Services annual services contract. The design fee is 15.2% of the estimated construction cost which is reasonable when compared to other similar projects.

Funding Description: The total project cost estimate of $5,972,000 includes approximately $612,640 in pre-construction phase engineering related services, approximately $4,857,360 in construction phase costs, and $502,000 of project contingency and is based on a Class 5 CIP-prioritization level cost estimate prepared by HRSD.

Schedule:		
	Design	August 2020
	Bid	July 2021
	Construction	October 2021
	Project Completion	October 2022

Attachment: None

Public Comment: None

10. **WEST POINT PUMP STATION #4 (THOMPSON AVENUE) REHABILITATION INITIAL APPROPRIATION**

Action: Appropriate total project funding in the amount of $890,400.

Moved: Maurice Lynch
Seconded: Willie Levenston
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: MP015100

Project Description: This project consists of improvements to the existing pump station located on Thompson Avenue in the Town of West Point. Work includes a new influent manhole and rehabilitation of the pump station to include new wetwell, pumps, controls and metering as well as site beautification. This project will replace pump station controls and associated appurtenances that are beyond the end of their useful life and to eliminate surcharging conditions in the upstream collection system.

Funding Description: Negotiations for the PER phase services are in progress and will be under $200,000; therefore, no Commission action will be required.

Analysis of Cost: The estimated total project cost is $890,400 and is based on an AACE Class 5 cost estimate completed by HRSD. The estimated project cost consists of construction costs of $666,400 combined with an engineering services estimate of $105,000 and a 15 percent contingency allowance of $119,000. Engineering services, including preliminary engineering, design and construction phase services will be provided by Rummel, Klepper and Kahl using HRSD's existing Professional Services Agreement for Interceptor Systems Projects.

Schedule:		
	PER	September 2020
	Design	January 2021
	Bid	July 2021
	Construction	October 2021
	Project Completion	July 2022

Attachment: None

Public Comment: None

11. **SWIFT RECHARGE AND MONITORING WELL SERVICES PROGRAM CONTRACT AWARD (>$200,000)**

Action: Award a contract for the SWIFT Recharge and Monitoring Well Services Program to Earth Data Incorporated.

Moved: Stephen Rodriguez
Seconded: Michael Glenn
Roll call vote: **Ayes:** 7 **Nays:** 0

Type of Procurement: Competitive Negotiation

Proposers	Technical Points	Recommended Selection Ranking
Earth Data Inc.	85	1
CDM Smith Inc.	83	2

Contract Description: This contract is for professional services including planning services, design services, pre-construction services, contract administration services, field engineering services, inspection services, and testing services for the all five SWIFT recharge well capital projects. Therefore, the contract for these professional services is expected to be active for the duration of the SWIFT Full-Scale Implementation Program.

A Public Notice was issued on April 5, 2020. Five firms submitted proposals on May 7, 2020 and all firms were determined to be responsive and deemed fully qualified, responsible and suitable to the requirements in the Request for Proposals. Two firms were short listed, interviewed and technical ranked. The proposal submitted by Earth Data Incorporated was ranked by technical points to be highest qualified. Earth Data Incorporated is a field-oriented hydrogeological and environmental consulting services firm and is a small business headquartered in Maryland.

Analysis of Cost: The professional services contract contains a proposed rate structure for various Earth Data staff classifications. The negotiated rates for the first year of this contract are directly comparable to the rates charged by HRSD's General Engineering Services firms. The Earth Data team includes three sub-consultant firms, HDR, Kimley-Horn, and ASRus, which will provide specialty support to the team. It is intended that professional services required for each phase of all capital projects associated with this work will be negotiated separately and be subject to the terms and rates within this contract.

Attachment: None

Public Comment: None

12. **SWIFT JAMES RIVER RECHARGE WELLS**
INITIAL APPROPRIATION

Action: Appropriate total project funding in the amount of $32,445,599.

Moved: Stephen Rodriguez
Seconded: Maurice Lynch
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: GN016361

Project Description: James River Recharge Wells project will provide for the construction of recharge wells and monitoring wells; services for the development, logging, testing, and conditioning of wells associated with SWIFT at the James River Treatment Plant.

Funding Description: The estimated project cost is $32,445,599. The estimated project cost is based on construction cost estimate of $27,849,251 combined with an engineering services estimate of $1,362,348 and a 11 percent contingency allowance of $3,234,000. Engineering services will be provided by the Earth Data Incorporated team under the SWIFT Recharge and Monitoring Well Services Program contract. Preliminary engineering, design, and construction phase services will be negotiated separately and be subject to the terms and rates within the contract. The initial task order will be less than $200,000 and is currently under negotiation.

Schedule:

PER	September 2020
Design	October 2020
Bid	March 2021
Construction	October 2021
Project Completion	July 2025

Attachment: None

Public Comment: None

13. **BOAT HARBOR TREATMENT PLANT PUMP STATION CONVERSION ALTERNATIVE PROJECT DELIVERY**

Action: Approve the Design-Build project delivery method for the Boat Harbor Treatment Plant Pump Station Conversion project.

Moved: Michael Glenn
Seconded: Stephen Rodriguez
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: BH015700

Brief: The project will convert the Boat Harbor Treatment Plant to a pumping station, including equalization and headworks facilities (screening and grit removal), while remaining in operation for wastewater treatment during conversion. The new infrastructure will be designed to meet HRSD's Integrated Plan requirements, resiliency standards, and consideration of remote operation.

As a result of the commitments in the Integrated Plan to prioritize implementation of the SWIFT initiative, it is critical for HRSD to implement the SWIFT Full-Scale Implementation Program projects in an expeditious manner to maintain the proposed financial plan and regulatory deadline. This project will convey wastewater collected in the Boat Harbor service area to the Nansemond Treatment Plant. The consolidated flow will be highly treated and directed to the SWIFT treatment facilities that will be designed to treat the combined average daily flow from both Boat Harbor and Nansemond.

Per HRSD's Procurement Policy, the competitive sealed bid process is the preferred method of construction procurement that reflects the Design–Bid–Build project delivery method. However, this project delivery method will not meet the critical schedule requirements for implementing this project at Boat Harbor.

Due to several factors, including schedule constraints and regulatory deadlines, financial risk, and project complexity, an alternative delivery approach utilizing a two-step Design-Build procurement is recommended for the delivery of the Boat Harbor Treatment Plant Pump Station Conversion project.

The Design-Build delivery method will minimize project and schedule risks by:

- requiring only one procurement;
- overlapping the design phase and construction phase of the project;
- minimizing risk of delays associated with changes;
- limit risk with another project to be constructed concurrently (BH015710);
- promoting collaboration to optimize the best construction sequence and schedule;
- providing HRSD with earlier cost certainty; and

- providing HRSD will the opportunity to select the best value team, considering qualifications, technical approach, and cost.

Schedule:		
	Preliminary design begins	September 2020
	Preliminary design approval and begin RFQ/RFP process	April 2021
	Selection of Design-Build firm / establish CCL	December 2021
	Detailed design development/Stipulated Fixed Final Price	August 2022
	Construction Completion	December 2025

Staff provided a briefing that included an overview of the Boat Harbor Treatment Plant facility and layout; requirements for the full-scale implementation of SWIFT; current challenges at the treatment plant; transition from treatment plant to pump station and related Capital Improvement Program projects; use of alternative project delivery to meet project schedules; a proposed staffing plan; and next steps.

Discussion Summary: Staff explained that they are working closely with TCC and area businesses and are adjusting the pipeline project alignment to comply with planned future development. HRSD staffing will be reduced by 32 employees when the plant is closed. Employees at the Boat Harbor Treatment Plant were offered three contract options similar to those offered for the Chesapeake-Elizabeth Treatment Plant closure plan. Currently, employee contracts are in place for the Chesapeake-Elizabeth Treatment Plant and Senior Management staff.

Attachment #3: Presentation

Public Comment: None

14. **BOAT HARBOR TREATMENT PLANT TRANSMISSION FORCE MAIN SECTION 1 (SUBAQUEOUS)**
ALTERNATIVE PROJECT DELIVERY

Action: Approve the Design-Build project delivery method for the Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous) project.

Moved: Vishnu Lakdawala
Seconded: Willie Levenston
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: BH015710

Brief: This project consists of design and construction of the subaqueous section of a transmission force main, which crosses the James River, to convey wastewater collected in the Boat Harbor service area to the Nansemond Treatment Plant. It is anticipated that construction will require the use of horizontal directional drilling method to cross the shipping channel and open-cut excavation installation of the remaining force main.

As a result of the commitments in the Integrated Plan to prioritize implementation of the SWIFT initiative, it is critical for HRSD to implement the SWIFT Full-Scale Implementation Program projects in an expeditious manner to maintain the proposed financial plan and regulatory deadline. This project will convey wastewater collected in the Boat Harbor service area across the James River to the Nansemond Treatment Plant. The consolidated flow will be highly treated and directed to the SWIFT treatment facilities that will be designed to treat the combined average daily flow from both Boat Harbor and Nansemond.

Per HRSD's Procurement Policy, the competitive sealed bid process is the preferred method of construction procurement that reflects the Design–Bid–Build project delivery method. However, this project delivery method will not meet the critical schedule requirements for implementing this transmission force main project.

This project is a complex project due to the horizontal directional drill length, required permits and stakeholder coordination, and aspects associated with working on the James River, including time of year restrictions and coordinating with water vessel traffic. Additional factors including schedule constraints, regulatory deadlines, and financial risk are mitigated by utilizing a two-step quality based alternative delivery approach to select the best qualified team for the delivery of the Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous).

The Design-Build delivery method will minimize project and schedule risks by:

- requiring only one procurement;
- overlapping the design phase and construction phase of the project;
- minimizing risk of delays associated with changes;

- limit risk with another project to be constructed concurrently (BH015700);
- promoting collaboration to optimize the best construction sequence and schedule;
- providing HRSD with earlier cost certainty;
- providing HRSD will the opportunity to select the best value team, considering qualifications, technical approach, and cost; and
- facilitating the permitting and other stakeholder coordination efforts that are expected to be significant in addition to encouraging collaboration between HRSD, regulatory agencies, the designer, and the construction contractor.

Schedule:		
	Preliminary design begins	October 2020
	Preliminary design approval and begin RFQ/RFP process	May 2021
	Selection of Design-Build firm / establish CCL	January 2022
	Detailed design development/Stipulated Fixed Final Price	September 2022
	Construction Completion	June 2025

Attachment: None

Public Comment: None

15. **NANSEMOND TREATMENT PLANT ADVANCED NUTRIENT REDUCTION IMPROVEMENTS PHASE II**
ALTERNATIVE PROJECT DELIVERY

Action: Approve the Design-Build project delivery method for the Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Phase II project.

Moved: Michael Glenn
Seconded: Vishnu Lakdawala
Roll call vote: **Ayes:** 7 **Nays:** 0

CIP Project: NP013820

Brief: This project is for the design and construction of improvements to the Nansemond Treatment Plant to support reliable treatment of raw, screened wastewater from the Boat Harbor Treatment Plant service area and raw influent from the Nansemond Treatment Plant service area. A Capacity Study determined that nutrient removal and hydraulic upgrades would be required to treat both flows and loads to meet the targeted effluent concentrations. The scope includes equalization of primary effluent and upgrades to preliminary and secondary treatment, disinfection facilities, odor control system, effluent pump station and drain pump station.

This project will be delivered concurrently with multiple capital projects, comprising of the design and construction of Boat Harbor Treatment Plant to pump station conversion and transmission force main sections, required to facilitate the treatment of wastewater from both Boat Harbor and Nansemond service areas at Nansemond by the end of 2025. Subsequently, SWIFT facilities will be designed and construction at Nansemond to capture and treat the combined average daily flow.

Per HRSD's Procurement Policy, the competitive sealed bid process is the preferred method of construction procurement that reflects the Design–Bid–Build project delivery method. However, this project delivery method will not meet the critical schedule requirements for implementing this wastewater treatment upgrade project at Nansemond.

Due to several factors, including schedule constraints related to the coordination of multiple dependent capital projects, financial risk, and project complexity, an alternative delivery approach utilizing a two-step Design-Build procurement is recommended for the delivery of this project.

The competitive best-value Design-Build delivery method provides HRSD with the following benefits by:

- providing faster delivery for the Nansemond project by overlapping the design and construction phases;
- encouraging greater collaboration and allow for later design modifications without adversely impacting the overall schedule or cost as compared to the competitive sealed bid process;
- allowing the designer and contractor to optimize construction sequencing to reduce costs;
- providing HRSD with earlier pricing and cost certainty; and
- providing HRSD with the opportunity to select a high-quality construction and engineering team versus being limited to the “lowest qualified bidder” in a competitive sealed bid environment for a very complex project.

Schedule: Preliminary design begins September 2020

Preliminary design approval and begin RFQ/RFP process	April 2021
Selection of Design-Build firm / establish CCL	December 2021
Detailed design development/Stipulated Fixed Final Price	November 2022
Construction Completion	November 2025

Attachment: None

Public Comment: None

16. **EASEMENT CONVEYANCE**
17386 WARWICK BOULEVARD, NEWPORT NEWS, VIRGINIA

Action: Approve the conveyance of two permanent easements (225 square feet and 2,275 square feet) located at 17386 Warwick Boulevard in Newport News, Virginia to Virginia Natural Gas in accordance with the terms and conditions of the draft Deed of Easement and authorize the General Manager to execute same, substantially as presented, together with such changes, modifications and deletions as the General Manager may deem necessary.

Moved: Vishnu Lakdawala
Seconded: Willie Levenston
Roll call vote: **Ayes:** 7 **Nays:** 0

Project Description: Virginia Natural Gas has requested two permanent easements (15'x15' and 100' x 5') in connection with the installation of a regulator station to be placed on the southern portion of HRSD-owned property located at 17386 Warwick Boulevard in Newport News, Virginia. Virginia Natural Gas will also run inlet and outlet piping to and from the proposed regulator station. This parcel was acquired in 1974 and was once designated as a planned Pressure Reducing Station (PRS) site. The PRS was demolished in 2018 and there are no future plans for this parcel. This parcel currently contains an HRSD active force main.

HRSD staff evaluated this request and has determined that the easements and planned Virginia Natural Gas construction will not interfere with current HRSD infrastructure. Virginia Natural Gas has also agreed to provide additional plans before commencement of construction.

The draft Deed of Easement will be finalized by HRSD staff and legal counsel prior to execution. A Plat and a Facilities Orientation Map are provided for clarification purposes.

Attachment #4: Deed of Easement, Plat and Facilities Orientation Map

executed deed added 03/05/2021 (JLC)

Public Comment: None

17. NUTRIENT COMPLIANCE PLAN UPDATE

Action: No action required.

Brief: The 2020 update for the HRSD Nutrient Exchange submission is due to the Virginia Nutrient Credit Exchange Association by September 1. The Exchange is a voluntary body of more than 100 regulated municipal wastewater treatment plants and industrial facilities discharging nitrogen and phosphorus into the Chesapeake Bay watershed. The purpose of the Exchange is to coordinate and facilitate nutrient credit trading among its members with the goal of improving water quality in the Chesapeake Bay watershed efficiently and cost-effectively.

As set forth by regulation, the Exchange must submit a five-year compliance plan schedule to the Department of Environmental Quality each February on behalf of all members of the Exchange. In order to provide time for compilation and review, the Exchange requires that all members submit their individual plans to the Exchange several months prior to the annual February deadline. The annual update adds a new fifth year (2025), for nitrogen and phosphorus, to the rolling five-year compliance plan period.

The HRSD Nutrient Compliance plan for 2025 is consistent with the 2024 plan year with minor changes in flow estimates. The highlights of the plan are noted below.

- Lower James River Basin (Army Base, Boat Harbor, James River, Nansemond, VIP and Williamsburg Treatment Plants): The plan includes nutrient removal at each facility with the exception of Boat Harbor. The projected nutrient loadings from HRSD's James River Basin facilities are anticipated to meet the nutrient allocations through 2025.

- York River Basin (King William, West Point and York River Plants): Both King William and York River employ nutrient removal. The nutrient reductions at these facilities are sufficient to meet HRSD's nutrient allocations through 2025.

- Rappahannock River Basin (Urbanna Treatment Plant): The plan continues to require HRSD to purchase nutrient credits through the Exchange to meet its allocation. The cost to upgrade this facility for nutrient removal far exceeds the cost of credit purchase. The Urbanna Treatment Plant will be eliminated as part of the Small Communities-Middlesex Strategy.

The Exchange uses the information provided by the annual updates to ensure that the plans in each basin are sufficient to meet the load allocations of nitrogen and phosphorus. HRSD successfully met the nutrient allocations in the James and York River basins for 2019 and anticipates continued compliance with the nutrient allocations in these basins through 2025.

Sufficient credits are expected to be available in the Rappahannock River Basin to address the nutrient obligations for the Urbanna Treatment Plant. The updated submission for 2021 – 2025 demonstrates a plan of continued compliance with HRSD James River and York River allocations.

In addition to a discussion on the Exchange submission, a presentation was provided outlining HRSD's historical and projected compliance with each of its permitted nutrient allocations. Future projections will include an evaluation of the HRSD's capacity to assist with locality compliance with Chesapeake Bay Total Maximum Daily Load (TMDL) nutrient and sediment stormwater reduction requirements.

Discussion Summary: Staff explained the phosphorus levels normally increase in the summer months. The spike in February was caused by the temporary closure of tanks to make needed upgrades at the Nansemond Treatment Plant.

Attachment #5: Presentation

Public Comment: None

18. UNFINISHED BUSINESS

a. COVID-19 WASTEWATER SURVEILLANCE STUDY UPDATE

Staff presented the latest data and status of the COVID-19 surveillance work including monitoring of HRSD facilities from July 21 through August 11; general observations; publication on HRSD approach and methodology; expansion of local collaborations to fully utilize wastewater data; regional viral load; normalized viral load at HRSD facilities; and a spatial look at the last four weeks. Moving forward staff will continue weekly monitoring at the nine major treatment plants, will continue to provide data to the Centers for Disease Control (CDC) supporting national collaboration of wastewater surveillance efforts; will continue to provide current data to the Virginia Department of Health (VDH) for review; and will maximize data usage with the UVA epidemiological model and the Hampton Roads Wastewater Epidemiology Working Group.

Staff discussed how the data are trending downward but pointed out that we are still seeing significantly higher virus loading than we did through June. The data shows trends approximately seven days ahead of clinically confirmed cases. Staff is hoping new collaborations with VDH will help define early predictors. VDH is spearheading larger efforts in obtaining more support in using these methods. They are in frequent contact with CDC to include Virginia in their national surveillance network. They have also referred more Virginia localities to HRSD and other Virginia groups who are performing wastewater monitoring. Support is increasing for the wastewater epidemiology concept with the collaboration of an international wastewater epidemiology group who discusses methods, how they can be used and prediction models that use these methods. This collaborative team has increased in size from less than 100 participants to more than 650 participants.

Attachment #6: Presentation

b. OPTION TO PURCHASE REAL PROPERTY AGREEMENT LAMBERTS POINT – 4301 POWHATAN AVENUE, NORFOLK, VA

At the March 27, 2018 meeting, the Commission approved terms and conditions of the Option to Purchase real property from the City of Norfolk. This parcel is needed to accommodate the construction of SWIFT facilities adjacent to the Virginia Initiative Plant. Mr. Henifin explained an addendum to the agreement will be executed to allow the purchase to be completed prior to the originally agreed upon January 1, 2023 date. The golf course will continue to lease the space until December 31, 2022.

19. NEW BUSINESS

Mr. Henifin informed the Commission, a contractor's truck disposing material at the Regional Residuals Facility at the Nansemond Treatment Plant caught fire early this morning. No injuries or damage to HRSD facilities were sustained.

20. COMMISSIONER COMMENTS

Responding to Commissioner Rodriguez's question about delinquency, staff said the balances owed that are greater than 90-days old continue to increase, but the increase is lower than previous months. The month over month increase at the end of July was $578,000 compared to an increase of $760,000 the previous month. The number of customers impacted by COVID-19 is estimated to be 18,000 - 22,000 (3.8 percent to 4.6 percent of total customers). The average amount owed is $313 for customers that have balances due greater than 90 days). HRSD has requested federal funding to establish a grant fund to assist ratepayers facing economic hardship due to COVID-19 who have be unable to pay their wastewater utility fees.

Chair Elofson congratulated Mr. Bernas on his recent appointment to the Virginia Board of Accountancy (VBOA). The VBOA, established in 1910, regulates certified public accountants in Virginia through a program of examination, licensure for individuals and firms, consumer protection with enforcement, continuing professional education audits, and peer review oversight.

21. PUBLIC COMMENTS NOT RELATED TO AGENDA – NONE

22. **INFORMATIONAL ITEMS**

Action: No action required.

Brief: The items listed below were presented for information.

a. Management Reports

b. Strategic Planning Metrics Summary

c. Effluent Summary

d. Air Summary

Attachment #7: Informational Items

Public Comment: None

Next Commission Meeting Date: September 22, 2020

Meeting Adjourned: 11:11 a.m.

SUBMITTED:

Jennifer L. Cascio

Secretary

APPROVED:

Frederick N. Elofson

Chair

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #1

AGENDA ITEM 2. CONSENT AGENDA

CONSENT AGENDA ITEM 2.b.1. – August 25, 2020

Subject: Advancing Ammonia-Based Aeration and Ammonia Versus NOx Control (ABAC/AVN): Applying Model-Predictive Controllers and Machine Learning Techniques Research Study and Scholarship
Multi-Year Contract Award

Recommended Action: Award a contract to Laval University in the estimated amount of $25,000 for year one with two annual renewal options and an estimated cumulative value in the amount of $75,000.

Contract Description: This contract is an agreement to conduct research and provide a scholarship to study control strategies for energy- and chemical-efficient nitrogen removal in wastewater treatment in accordance with the attached proposal.

There are gaps in applying traditional FeedBack (FB) Proportional-Integral (PI) controllers in Advancing Ammonia-Based Aeration (ABAC) and Ammonia Versus NOx (AVN) Control applications when there are delays that are in the form of long dead times. In other words, when the action on the Manipulated Variable (MV) results in a slow response on the Process Variable (PV). The benefits of FB PI controllers for fast loops are undeniable, especially when significant influent loading fluctuations are not a factor. However, for a relatively plug flow biological process where there are highly variable influent loadings impacting the PV, the application of an FB PI loop is non-ideal at best. This is due to the natural delays between a disturbance reaching the head of the plug flow reactor and measurement of that disturbance by the sensor at the end of the tank.

Perhaps more advanced solutions are not absolutely needed to meet effluent ammonia (NHx) objectives. However, a case can likely be made that they are needed to meet NHx objectives and minimize a plant's operating cost and carbon footprint at the same time. Operating cost and carbon emissions savings may come in the form of increased simultaneous nitrification-denitrification (SND), reduced supplemental carbon for denitrification, reduced alkalinity demand for nitrification, and reduced aeration energy. These are all benefits of ABAC AVN controllers and are ideally enhanced as the controller becomes more advanced. A Model Predictive Controller (MPC) is one example of an advanced controller that can potentially offer this superior control performance. This project will advance ABAC and AVN control with Advanced FeedForward (FF) MPCs. Going even further, if such controllers can provide for more consistent NHx at the end of the AT compared to the baseline FB PI Controllers, there's a possibility it eliminates the need for a major capital investment in the form of an equalization tank, putting both operation and capital costs on the table. The objective of this research is to determine how best to realize these potential benefits of Advanced FF ABAC/AVN controllers that include a system model. The models that will make up the proposed controllers include a mechanistic model and data-driven &

hybrid models based on Artificial Neural Networks (ANNs). Other concepts will be explored that include quantifying the benefits of coupling Solids Retention Time (SRT) and air flow distribution controllers with Advanced FF ABAC Controllers and determining the impacts of low-DO adaptation of nitrifiers on ABAC. It should be noted, while the various controllers tested for this research may be structurally different, they will all in some way control aeration. Aeration controllers are the focus because unlike other FF controllers that might only be effective during a slug load, an aeration controller can offer additional protection from NHx peaks and at the same time, potentially reduce/minimize operation costs year-round.

SCHOLARSHIP AGREEMENT
WITH ADDITIONAL FINANCIAL SUPPORT

BETWEEN: **Université Laval**, a private corporation duly incorporated under the provisions of an act of the National Assembly, sanctioned on December 8, 1970 (S.Q. 1970, c. 78), having its head office in Québec, Province of Québec, herein represented by Line Lapointe, Associate Dean, Research, Faculty of Sciences and Engineering, and who declares to be duly authorized to act as representative of the University;

(Hereinafter referred to as the "University");

AND: **Hampton Roads Sanitation District,** a corporation duly incorporated, having its head office at 1434 Air Rail Avenue, Virginia Beach, Virginia, 23455 herein represented by **Mr Charles B. Bott**, who declares that he is duly authorized to act as representative for the purpose;

(Hereinafter referred to as the "Organization");

AND: **Gamze Kirim**, a post-graduate student at the Ph.D. level, registered in the Water Engineering program of the University;

(Hereinafter referred to as the "Student");

(Hereinafter referred to individually as the "Party" or collectively as the "Parties").

WHEREAS the University has a mission of contributing to the development of society through the education of competent, responsible persons capable of promoting change and through the advancement and dissemination of knowledge, in a dynamic environment conducive to research and creation;

WHEREAS the Organization accepts to grant a scholarship in a total amount of twenty five thousand US dollars (US$25,000) and applicable taxes to the Student to allow him to participate in the Research Project defined in the Appendix;

WHEREAS the Student accepts to participate in the Research Project under the supervision of Peter Vanrolleghem (hereinafter designated as the "Research Director") and Charles Bott, employee of the Organization (hereinafter designated as the "Co-Supervisor");

WHEREAS the University, the Research Director and the Co-Supervisor shall oversee and advise the Student in the performance of the Research Project;

IN CONSIDERATION of the conditions, commitments and agreements set forth herein, the Parties agree to the following:

Article 1 – DEFINITIONS

In this Agreement, including the Appendix hereto, except as otherwise specified, the following expressions shall have the meanings assigned hereafter. The singular shall include the plural and the masculine shall include the feminine and vice versa.

"Confidential Information" means any information disclosed in any verbal, written or electronic form and, namely including in connection with each Party, information concerning customers and suppliers, details of agreements, conventions, commitments, offers, options, proposed contracts and contracts, banking data, financial data, sales data, relations with existing and future customers, sales operations, services, marketing data and methods, plans, research results, production formulae and methods, technologies, inventions, improvements and upgrading, and intellectual property rights. The Parties agree that this list is neither exhaustive nor restrictive.

"**Intellectual Property Right(s)"** means all registered and/or unregistered intellectual property rights including all rights relating to patents, copyrights, industrial designs, printed circuits, printed circuits, new plant varieties, inventions (whether or not they may be patentable), discoveries, commercial secrets, know-how, domain names, trademarks, brand names and all other rights recognized under law or the ordinary rules of law as applied above, including all applications for the protection of an invention.

"Research Project" means the scientific work to be completed by the Student as defined and more fully described in the Appendix to this Agreement.

"Results" means all results, data, discoveries and information, which may or may not be covered by Intellectual Property Rights, which result from the performance of Research Project.

Article 2 – OBJECT

In compliance with the terms and conditions of the present Agreement, the Organization grants a scholarship to the Student, as described hereinafter, to allow him to participate in the performance of the Research Project, in accordance with the terms and the calendar set forth in the Appendix.

Article 3 – EFFECTIVE DATE AND DURATION

The present Agreement shall be effective on January 1st 2020 and shall end on December 31st 2020 unless it is terminated before that pursuant to Article 12.

Article 4 – RIGHTS AND OBLIGATIONS OF THE ORGANIZATION

4.1 The Organization shall pay to the University a total amount of fifteen thousand US dollars (US$15,000) as a scholarship to be disbursed to the Student at a rate of five thousand US dollars (US$5,000) per session, for a maximum of three (3) sessions, in compliance with the following terms and conditions:

- US$5,000 on signature of the agreement
- US$5,000 on July 1st 2020
- US$5,000 on September 1st 2020

except if other payment modalities are fixed, which would prevail.

4.2 The Organization shall also pay to the University for support to the Research Project described in the Appendix, a total amount of ten thousand US dollars (US$10,000) including 15% of incidental research expenses payable at a rate of four thousand US dollars (US$10,000) the first session, and three thousand US dollars (US$3,000) the second and third session according to the following conditions:

- US$4,000 on signature of the agreement
- US$3,000 on July 1st 2020
- US$3,000 on September 1st 2020

4.3 The Organization shall comply with the rules and requirements of the Student's study program, which shall be given to it by the University.

4.4 The Organization shall not require that the Student perform activities, which do not concern the Research Project during or following his studies. If the Student considers that an activity requested by the Organization is not directly related to the Research Project, he shall notify his Research Director who shall determine the link with the Research Project. If there is no link, the Student shall not be obliged to perform said activity. Moreover, the Organization shall not require the Student to sign any other agreement that would control, delay, limit, or interfere in his decision to accept an employment opportunity offered by any other organization or enterprise operating in the same sector of activity as the Organization, during or after his studies.

4.5 However, payment required by the Organization will be in proportion to the sessions completed by the Student. The financial contribution by the Organization is equivalent to US$8,333 per session, and therefore the Organization may be reimbursed for any amount pay in excess.

Article 5 – OBLIGATIONS OF THE STUDENT, THE UNIVERSITY AND THE RESEARCH DIRECTOR

5.1 Upon receipt of funds, the University will pay a total amount of fifteen thousand US dollars (US$15,000) to be disbursed as a scholarship for the Student and an amount of ten thousand US dollars (US$10,000) for the expenses for supporting the Research Project, in accordance with the terms described in the Appendix. The amount paid to the Student will be fifteen thousand US dollars (US$15,000) per year, for a maximum of one (1) year.

5.2 The Student shall comply with the policies and regulations of the University, and specifically of the *Faculté des études supérieures et postdoctorales*, as they relate to his program of studies. The Student shall submit progress reports in accordance with the terms described in the Appendix.

5.3 The Student shall observe the employment conditions established by the Organization concerning working hours, statutory holidays and vacations, and shall furthermore respect all existing regulations, including the ones concerning health and safety. The Student shall report to the Co-Supervisor designated by the Organization.

5.4 The Research Director shall act as advisor to the Student and shall monitor his progress in order to ensure the performance of the Research Project in accordance with the conditions and schedule set forth in the Appendix.

5.5 In all scientific publications that mention the Research Project, the Student shall give credit to the Organization for its financial contribution.

5.6 The University shall promptly notify the Organization if the Student ceases to be a full-time student.

Article 6 – INTELLECTUAL PROPERTY

6.1 The University and the Organization shall each remain owner of the Intellectual Property Rights they respectively held prior to the beginning of the Research Project.

6.2 The Student is and shall remain owner of all copyrights to his essay, master's thesis or doctoral dissertation, as the case may be, that uses the Results in whole or in part.

6.3 The Organization and the Student hereby acknowledge that the University is and shall remain exclusive owner of the Results, and without restricting the scope of the preceding, of all Intellectual Property Rights resulting from the Research Project, except for any Student copyrights pursuant to Article 6.2 hereof. The Organization and the Student shall not contest, either directly or indirectly, in whole or in part, and shall not register for their benefit, any Intellectual Property Right resulting from the Research Project.

6.4 The Organization and the Student shall collaborate with the University and shall sign any and all documents required for the application and maintenance of Intellectual Property Rights. Without limiting the above, the time limit granted to the University to file an application for patent protection shall not be more than six (6) months from the date of the disclosure of the Results to the University.

6.5 The University grants to the Organization a non-exclusive, royalty-free and perpetual right to use the Results for the purposes and within the strict limits of its internal activities in research and development excluding any commercial activities.

Article 7 – CONFIDENTIALITY

7.1 It is agreed that the Parties may be called upon to exchange Confidential Information as required to ensure the performance of the Research Project. Subject to what is provided in Article 8 – below regarding the publication of Results, the Parties shall take all reasonable and necessary precautions, considering the nature of this information, to preserve the

confidentiality of all Confidential Information received and to prevent any inappropriate disclosure thereof.

7.2 Each Party shall handle and use this Confidential Information with the same care as if it were its own confidential information, to avoid unauthorized use, disclosure, publication or dissemination of said Confidential Information.

7.3 Each Party shall limit disclosure of Confidential Information to their employees, administrators, directors, students, agents or representatives who have a specific need to know for the purposes of the Research Project. These persons shall be notified of the confidential nature of the Confidential Information and of the fact that they are bound to maintain its confidentiality.

7.4 The Organization acknowledges that the disclosure of the Results may be prejudicial to their value and may limit their protection, so it shall maintain the confidentiality of the Results until they become of public knowledge pursuant to Article 7.5, that proper measures for their protection have been adopted or until the University authorizes its disclosure.

7.5 No Party shall have any obligation of confidentiality concerning information that:

a) was already lawfully in its possession before it was disclosed to it, as shown by valid material evidence thereof;

b) is or becomes public knowledge through no fault or action of the Party;

c) is legally received by the Party from a third party who has no obligation of confidentiality;

d) is independently developed by the Party without using the Confidential Information delivered under the terms and conditions of this Agreement, as shown by valid material evidence thereof;

e) Is disclosed following a court order or in accordance with the requirements of a particular legislative provision provided that, the disclosing Party is contacted by the receiving Party prior to the disclosure of the disclosing Party's Confidential Information in order to permit the disclosing Party the opportunity to contest such disclosure or obtain an appropriate protective order or

f) disclosure is authorized in writing by the Party providing the Confidential Information.

Article 8 – PUBLICATION OF RESULTS

8.1 The Organization acknowledges and accepts that the University has a role of education, training and research. In respect thereof, and insofar as adequate protection measures have been taken, the University may use the Results for teaching, research and publication purposes in the normal course of the dissemination of knowledge, including the publication of essays, masters' theses or doctoral dissertations.

8.2 The University acknowledges that the disclosure of some technical information could be prejudicial to the commercial value of the product, process or Results. The University, shall therefore inform the Organization of any proposed disclosure concerning the Project by forwarding a copy of the text (or texts) prior to any publication or dissemination. If the Organization does not contest the proposed disclosure in writing within thirty (30) days following receipt of the text (or texts), the University may then disclose the information. If the Organization does object to the disclosure, it shall set forth in writing the reasons for the objection, and the Parties shall, in a collaborative effort, protect the Results and/or ensure that the disclosure of the Results shall not cause them to lose their commercial value. In case the Parties cannot agree external experts shall be consulted, including patent specialists, and the Parties shall share payment of all professional fees as the case may be. The maximum delay, regarding the publication, will be of six (6) months from the date the Organization receives the proposed disclosure.

8.3 In any event, the Organization acknowledges that it shall not delay the procedure for the evaluation of an essay, thesis or dissertation, and that any publication delay it may demand shall not delay or interfere with the delivery of a diploma to a graduate student.

Article 9 – PUBLICITY

9.1 The Organization shall not publicize the University's participation or that of a staff member of the University in any public announcement, publicity, application for financing or information it would like to make public unless it has received prior written authorization from the University.

9.2 Each Party shall insure that any public announcement or publicity does not insinuate that a Party supports a product, a process or any practice whatsoever.

9.3 Notwithstanding the above, the Parties acknowledge and agree that each Party may render public certain details of the Research Project, that is, the names of the Parties, the name of the Research Director, as well as the name, budget and duration of the Research Project.

Article 10 – LIABILITY AND INDEMNIFICATION

10.1 The Organization shall indemnify the University and hold it, its administrators, officers, employees, students or representatives harmless for any legal action, expense, or claim, including judicial and extra-judicial costs related to any such legal action or claim for damage that may result from the performance of the work specified in this Agreement for i) activities under the control of the Organization, or ii) for use of the Results by the Organization, or iii) for any damage resulting from the manufacture or sale of a product or the delivery of a service resulting from the exploitation of the Results by the Organization, except if the aforementioned damage is caused by the negligence of the University or by the fault of a third party who is not under the control of the Organization.

10.2 The University shall not be held liable for any damage sustained by the Organization, its representatives, employees, or any other person in the performance of this Research Project or as a result of the use by the Organization of the Results or the manufacture or sale of a product or of the delivery of a service resulting from the exploitation of the Results.

10.3 The University shall indemnify the Organization and hold it, its administrators, officers, employees, or representatives harmless for any legal action, expense, or claim, including judicial and extra-judicial costs related to any such legal action or claim for damage that may result from the performance of the work specified in this Agreement for i) activities under the control of the University, or ii) for use of the Results by the Organization, , except if the aforementioned damage is caused by the negligence of the Organization or by the fault of a third party who is not under the control of the University.

10.4 The Organization shall not be held liable for any damage sustained by the University, its representatives, employees, students or any other person in the performance of this Research Project or as a result of the use by the University of the Results.

Article 11 – ASSIGNMENT

The Organization shall not in any way whatsoever, assign, transfer, or otherwise dispose of its rights or obligations under this Agreement without the prior written consent of the University, which is subject to the University's entire discretion.

Article 12 – TERMINATION

12.1 The University or the Student may terminate this Agreement by giving a prior written notice of termination of thirty (30) days to the Organization if the Research Project is being conducted by the Organization in such a way as to cause prejudice to the University or to the Student or if the Student is unable to attain the objectives of the Research Project.

12.2 The Organization may, at any time, terminate the present Agreement by giving a written notice of thirty (30) days to the University. The Organization may not require reimbursement of any amounts previously paid in whole or in part. Even though the Organization terminates this Agreement, it shall make full payment of all amounts owing during the session in which its prior notice is received.

Article 13 – SURVIVAL

13.1 Notwithstanding the end or the termination of this Agreement, the Parties shall continue to be bound by the provisions of Article 6 – Intellectual Property, Article 9 – Publicity and Article 10 – Liability and Indemnification of this Agreement.

13.2 Notwithstanding the end or the termination of this Agreement, the Parties shall continue to be bound by the provisions of Article 7 – Confidentiality, for a maximum of two (2) years after the end of this Agreement.

Article 14 – NOTICES

14.1 Any notice or communication hereunder shall be in writing and sent to the recipient by registered mail, by e-mail, or be delivered by hand, using the contact information below:

FOR THE UNIVERSITY: Line Lapointe
Associate Dean, Research

Faculty of Sciences and Engineering
Université Laval
Pavillon Alexandre-Vachon
145 avenue de la Médecine, room 1036-F
Québec (Québec) G1V 0A6
E-mail: vice-doyenne.recherche @fsg.ulaval.ca
Telephone: (418) 656-7368

FOR THE ORGANIZATION: **Kenneth Stealing**
Procurement Specialist
Hampton Roads Sanitation District Procurement Division
1434 Air Rail Avenue
Virginia Beach, Virginia, 23455-3002
E-Mail: kstealing@hrsd.com
Phone: 757- 460-7310
FAX: 757-460-7824

FOR THE STUDENT: **Gamze Kirim**
Ph.D. student
Faculty of Sciences and Engineering
Université Laval
Pavillon Adrien-Pouliot
165 avenue de la Médecine, room PLT-2957
Québec (Québec) G1V 0A6
E-mail: gamze.kirim.1@ulaval.ca
Telephone: (418) 808-7118

14.2 Unless otherwise stated in this Agreement, a notice sent by e-mail is deemed to have been received on the business day following its transmission. If a notice is delivered by registered mail or by hand, it is deemed to be received when it is delivered to the relevant address. Change of address notices are also covered by this article.

Article 15 – INDEPENDENCE

The present Agreement shall not constitute an agency, partnership, joint operation, or temporary association between the Parties.

Article 16 – PARTIAL INVALIDITY

If a competent tribunal rules that one or more of the provisions of the present Agreement is invalid, in whole or in part, only that portion of the Agreement declared invalid shall be unenforceable, and the remaining valid provisions and the remainder of this Agreement shall fully applied.

Article 17 – APPLICABLE LAWS

The Parties agree that the present Agreement shall be governed and interpreted exclusively pursuant to the laws in force in the Province of Québec, Canada.

Article 18 – DISPUTE SETTLEMENT

In the first case, the Parties will try to reach, in good faith, out-of-court settlement regarding any dispute arising out of this Agreement. If no settlement is reach after a period of sixty (60) days, a procedure for an injunction under the present Agreement may be brought before the competent courts in the judicial district of Québec, Province of Québec, Canada, to the exclusion of any other district likely to have jurisdiction.

Article 19 – COMPLETE AGREEMENT AND AMENDMENTS

The present Agreement and its Appendix shall constitute the entire Agreement binding the Parties and replacing all previous oral and written communications, representations and agreements arising from the Research Project. Moreover, any addition or amendment to the present Agreement shall be made in writing, and shall be signed by all Parties.

Article 20 – WAIVER

The failure of either of the Parties to exercise one or more of its rights under this Agreement on any particular occasion, as set forth in the Agreement, shall not be interpreted as a waiver of its rights, and shall not affect either the Agreement or any of the Parties' rights hereunder.

Article 21 – FORCE MAJEURE

The Parties agree that neither one of them shall be held liable for any default in performance or delay caused by force majeure, which is defined as an outside, unforeseeable, irresistible event. Examples of force majeure include, but are not limited to natural disasters, fires, labour unrest, and the imposition of regulations or ordinances by government authorities.

Article 22 – TIME LIMIT

If the Agreement does not specify the completion time limit applicable for the performance of one or more obligations contained herein, the Parties agree that the time limit for performance shall be thirty (30) days.

Article 23 – SUCCESSORS AND LEGAL REPRESENTATIVES

The present Agreement is binding on and of benefit to all Parties and binds their respective successors, assignees, heirs and legal representatives.

Article 24 – COUNTERPARTS

This Agreement may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. The Parties acknowledge and agree that the exchange of electronic signatures will have the same legal validity as if the parties exchanged original signatures in hard copy form.

Article 25 – INTERVENTION

The Research Director having read the present Agreement and having accepted its terms and conditions insofar as they are applicable to him, hereby intervenes in the present Agreement. He acknowledges that he is bound thereby and that he shall take whatever steps are required to ensure that all members of his team at the University are informed of their obligations hereunder.

Article 26 – LANGUAGE

The Parties have expressly agreed that this Agreement be drawn up in English only. *Les Parties aux présentes ont expressément requis que la présente entente soit rédigée en anglais.*

IN WITNESS WHEREOF, the Parties have signed this Agreement.

The University	**The Organization**
UNIVERSITÉ LAVAL	HRSD
Line Lapointe Associate Dean, Research Faculty of Sciences and Engineering Date:	Kenneth Stealing Procurement Specialist Hampton Roads Sanitation District Procurement Date:
The Student	**The Intervening Party**
Gamze Kirim Ph.D. student Date:	Peter Vanrolleghem Research Director Date:

APPENDIX

RESEARCH PROJECT

Control Strategies for Energy-Efficient Shortcut Nitrogen Removal in Wastewater Treatment – Short Project Description & Planning for 2020

Water resource recovery facilities (WRRFs) of the future should be energy self-sufficient or even net-positive energy suppliers. One way to achieve this is through the application of shortcut nitrogen (N) removal processes for mainstream wastewater treatment. Such processes reduce the overall energy consumption of WRRFs, mainly attributed to aeration, as well as chemical consumption. To achieve shortcut nitrogen (N) removal, different aeration strategies have been proposed for the biological nitrogen removal process.

Within this PhD project such novel aeration strategies are being investigated to maximize the N-removal with minimal aeration cost while keeping the reactor effluent ammonia (NH_4-N) and oxidized nitrogen (NO_X-N) concentrations approximately equal, i.e. Ammonia vs NOx – AvN control. An additional goal is to achieve N-removal in the aerated tanks through simultaneous nitrification & denitrification (SND) while maintaining favorable effluent for the deammonification process. Significant effort have already been made for successful application of SND for N-removal in deammonification processes (Regmi et. al., 2014; Han et. al, 2016; Le et. al., 2019). However, mainstream application is still challenged because the controllable SND mechanisms are not yet well understood. Moreover, wastewater characteristics, temperature, NO_2-N availability are constantly varying.

In this PhD study, intermittent and continuous AvN control strategies will be applied on the pil*EAU*te pilot-scale WRRF. It is planned to determine the optimal applicable aerobic fraction for the intermittent AvN aeration strategy, and how high the AvN setpoint can be increased for capacity increment. For the continuous AVN strategy, the minimal applicable sludge retention time (SRT) will be investigated for further optimization of N-removal. For both strategies, it is planned to monitor the SND performance continuously and determine the ammonia and nitrite oxidation rates for different operational changes (AvN set-point increase or SRT reduction). The effect of operational changes on the oxygen affinity constants is also going to be studied using respirometric analysis. Changes in the oxygen half-saturation constants are important to understand in order to DO set-point/AF would be more favorable to accomplish SND and also less calibration efforts for modelling works. There are studies in literature investigating the effect of low DO concentration on the oxygen affinity constants (Guisasola et. al., 2005; Liu & Wang, 2013; Keene et. al, 2017), but none of these authors investigated the effect of intentional SRT reduction.

Finally, both control strategies will be modelled in the WEST simulation software in order to further optimize the system, as well as to perform additional scenario analysis. For example, the model will allow us to investigate the effect of dynamic loading and wastewater characteristics on the system performance with the scenario analysis.

Deliverables

- Organization of a workshop at the WRRmod2020 Conference, August, Switzerland – 'Mainstream Shortcut Nitrogen Removal Modelling: From research to full-scale implementation, do we have what we need?'
- Panel discussion at WEFTEC2020 Conference, October, New Orleans – 'AOB and NOB oxygen affinity constants in low DO activated sludge : Experimental tracking under sludge age variations'
- Publishing the project outputs in a scientific journal.

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CONSENT AGENDA ITEM 2.b.2. – August 25, 2020

Subject: Carbon-Based Pilot Testing and Soil Aquifer Treatment Research Study Contract Award (>$200,000)

Recommended Action: Award a contract to Virginia Polytechnic Institute and State University (Virginia Tech) in the estimated amount of $257,295.

Contract Description: As part of the Sustainable Water Initiative for Tomorrow (SWIFT), HRSD is conducting a study of advanced treatment technologies to allow managed aquifer recharge of highly treated water. This contract will continue the Carbon-Based Pilot Testing and Soil Aquifer Treatment Study collaboration between Virginia Tech and HRSD. This study will continue work associated with emerging contaminant removal by ozone biofiltration, soil column studies to assess the benefit of soil aquifer treatment, and evaluation of recharge data at the SWIFT Research Center considering the transport of SWIFT Water in the aquifer and the potential for soil aquifer treatment. Other aspects involve continued evaluation of the removal and attenuation of antibiotic resistance genes and optimization of 1,4-dioxane removal through biofiltration.

Virginia Tech has been a key collaborator with HRSD over the past four years in research aimed at understanding and optimizing ozone-biologically activated carbon /granular activated carbon (O3-BAC/GAC). The US Bureau of Reclamation (Bureau) has selected Virginia Tech-HRSD team to advance ongoing SWIFT research in a manner that has national benefits in terms of ensuring water security. Additionally, the Water Research Foundation has selected the Virginia Tech team, partnered with HRSD and others in the water industry, for three projects: Project 4813, 4961, and 5052. These three WRF projects collectively will move forward assessment of the state of the science of next-generation DNA sequencing tools for the purpose of assessment of microbial communities in water, wastewater, and reuse water systems in general, and pathogens and antibiotic resistance in particular.

Continued Virginia Tech HRSD SWIFT Collaboration: AOP-BAC/GAC Pilot/Demo, Soil Aquifer Treatment, and 1,4-Dioxane Studies

Virginia Tech Team: PI: Amy Pruden; Co-PI: Mark Widdowson; Collaborator: John Novak

Virginia Tech has been a key collaborator with HRSD over the past four years in research aimed at understanding and optimizing ozone-biologically activated carbon /granular activated carbon (O_3-BAC/GAC) treatment, which is the central water reuse treatment technology for the Sustainable Water Initiative for Tomorrow (SWIFT) initiative. Recently we were notified that the US Bureau of Reclamation (Bureau) has selected our Virginia Tech-HRSD team to advance ongoing SWIFT research in a manner that has national benefits in terms of ensuring water security. Additionally, the Water Research Foundation has selected the Virginia Tech team, partnered with HRSD and others in the water industry, for three projects: Project 4813, 4961, and 5052. These three WRF projects collectively will move forward assessment of the state of the science of next-generation DNA sequencing tools for the purpose of assessment of microbial communities in water, wastewater, and reuse water systems in general, and pathogens and antibiotic resistance in particular. At this time, Virginia Tech is requesting support for three projects, described below, providing leverage and cost-share for the Bureau and WRF proposals, while also advancing knowledge needed to effectively and safely advance water reuse in Virginia.

Project 1: Enhance and assess ability of AOP-BAC/GAC to achieve additional removal of TOC and contaminants of emerging concern (CECs) using next generation DNA sequencing

A. *Modify the AOP-BAC/GAC process to optimize TOC removal*

TOC removal in biofilters depends on upstream ozone/AOP dose, temperature, nutrient concentration, and empty bed contact time (EBCT). The capacity of BAC for TOC removal can be maximized by optimizing these parameters and accessed utilizing biodegradable dissolved organic carbon analysis (BDOC). BDOC analysis effectively sub-categorizes the DOC profile into biodegradable and non-biodegradable portions and provides a means to assess the percentage of biodegradable carbon the biofilters are capable of removing, relative to the total amount of biodegradable carbon available. Over the course of the year, various parameters will be modified in working towards optimizing the SWIFT process for TOC removal. These will be investigated in parallel with the other research objectives described in this proposal

B. *Profile microbial communities and functional genes potentially catalyzing CEC degradation in AOP-BAC/GAC process*

Previous characterizations of AOP-BAC/GAC performance has largely been done by monitoring reductions in contaminant and nutrient concentrations or bulk, low resolution assessments for total microbial activity or metabolism. However, little work has been done to characterize or establish a fundamental understanding of primary degradation pathways utilized within biological filtration processes for the removal of contaminants or key nutrients. This is especially important when beginning to assess carbon-based, advanced treatment trains for the removal of chemical CECs (such as industrial contaminants and pharmaceuticals and trace organic carbon (TrOC)) that are necessary to meet current and future water reuse regulations. Beyond carbon reduction, microbial communities active within BAC treatments involved in

stabilizing nitrogen in the finished water are also of interest. This includes canonical nitrification pathways, comammox (i.e., complete nitrification by converting ammonia into nitrite and then nitrate), or anammox (organisms that have the ability to anaerobically covert nitrite and ammonium into nitrogen gas and water), or currently unidentified organisms with similarly unique metabolic functions. Additionally, heterotrophic bacteria also provide more general nitrogen and phosphorus assimilation via anabolism pathways. All of which combine to provide the intended contaminant removal and nutrient attenuation targeted during biological filtration. However, these complex microbial dynamics -and their impact on treatment performance- are potentially influenced by upstream stress conditions, chemical additions (Liu et al., 2001), operational conditions (Basu et al., 2016), supplemental nutrient sources (Dhawan et al., 2017), and general changes in substrate makeup and water quality parameters present in the influent. These variable conditions coupled with the complexity of bacterial relationships and a previously lack of effective, high resolution analytical techniques have largely left these processes and interactions unknown.

Shot-gun metagenomic DNA sequencing will be utilized to assess the responses of the microbial communities to various SWIFT operational conditions and water quality parameters on functional gene profiles (e.g., monooxygenase enzymes) and microbial community structure. DNA will be extracted using a FastDNA Spin Kit and sequenced using an Illumina NovoSeq. Special attention will be applied in the data analysis towards profiling the taxonomic composition of the microbial communities as well as functional genes putatively involved in CEC biodegradation.

C. *Evaluate the impact of direct filtration on the fate of ARGs in biofiltration*

There is growing awareness of the need to ensure that water reuse processes do not contribute to the spread of antibiotic resistance. In addition to chemical CECs, antibiotic resistance genes (ARGs) have been identified as microbial CECs and it is particularly important to assess their fate through treatment processes that employ biologically-based treatment. Previous research, conducted by our team, on ozone/BAC/GAC treatment trains have determined that the biofilters do alter the resistome (i.e., total ARGs carried across a microbial community) and can lead to the selection and proliferation of certain specific ARGs. Additionally, turbidity, among other water quality data like iron and manganese, was strongly, positivity correlated with ARGs corresponding to resistance to certain classes of antibiotics, highlighting the potential importance of turbidity-controlling treatment processes, such as coagulation–flocculation–sedimentation, on resistome development. Since the particle loading associated with high turbidity had a measurable effect on ARG profiles, the impact of removing the sedimentation process and moving toward direct filtration is worthy of consideration. Our most recent results are encouraging in that, although the relative proportions of individual ARG classes may shift with each step in the SWIFT process, the absolute numbers of ARGs are substantially diminished and comparable to conventional water sources.

Shotgun metagenomic DNA sequencing and qPCR will be applied towards profiling ARGs through the SWIFT process. The data will be assessed to identify optimal conditions for reduction of CECs and ARGs.

Project 2: Identifying and accounting for treatment performed in the aquifer.

Project 2 will involve identifying and accounting for treatment performed in the aquifer after recharge. The work will focus on TOC, CEC, and DBP removal through soil aquifer treatment (SAT) columns over different travel times and under different redox conditions. Soil column work was recently completed to evaluate contaminant removal for short-medium travel times (3-days, 1-month) at high influent dissolved oxygen concentrations (above saturation due to ozonation). This work demonstrated good removal of TOC, bromate, NDMA, and a number of trace organics over short travel times. Research proposed here will focus on longer travel times (6-months) as well as changing redox conditions, which are representative of changes or stoppages in operation. Changing redox conditions (from aerobic to nitrate reducing) will be achieved by stripping dissolved oxygen prior to introduction into the columns. TOC, CECs, DBPs, and metals will be monitored in the influent and effluent of the columns before, during, and after this change in influent dissolved oxygen. The SAT columns will be fed finished SWIFT Water from the 1 MGD demonstration facility, spiked as needed with DBPs and CECs of interest.

The influent and effluent of the soil columns will be monitored for TOC, DBPs, metals, and CECs to quantify removal of contaminants. Advanced methods for characterizing the effluent organic matter of the columns may be employed, e.g. size-exclusion chromatography, fluorescence spectrophotometry. These analyses will allow for a more in-depth comparison of soil column effluent to wastewater effluent and native groundwater. DNA sequencing analysis will be performed on the effluent of the columns to characterize the microbial community and potentially identify specific organisms responsible for contaminant degradation. Use of a smart tracer, e.g. resazurin, may also be used to identify/quantify microbial activity through different redox conditions.

Project 3: Enhancing 1,4-dioxane removal in the SWIFT process

1,4-Dioxane is a trace contaminant of some chemicals used in cosmetics, detergents, and shampoos. There are growing concerns regarding the health effects of 1,4-dioxane as a CEC, and correspondingly regulations and guidelines (such as those emplaced by California) are becoming more stringent. Here we hypothesize that 1,4-dioxane removal can be enhanced in in the BAC filters through addition of a suitable co-substrate. Co-substrates, such as tetrahydrofuran (THF), propane, and butane have shown promise for improving the biodegradation of 1,4-dioxane in groundwater and landfill leachates through biostimulation of bacteria carrying monooxygenase enzymes, which are key in the biodegradation pathway of 1,4-dioxane. A pilot study conducted by our team has shown promising results, particularly with the addition of THF. This work was led by Ramola Vaidya as part of her PhD research, but requires additional validation for publication. Here we will seek to demonstrate that 1,4-dioxane biodegradation can also be stimulated by propane and butane. We will further seek to optimize the doses and demonstrate removal via biodegradation versus sorption. DNA sequencing will be carried out to help identify the organisms involved in 1,4-dioxane degradation and to determine the impact of the co-substrates on monooxygenase capabilities amongst the various members of the microbial community.

Approach

Three students will be involved in this research, one working on each of the three projects.

Project 1: Dr. Amy Pruden will supervise the student in Blacksburg as he/she leads Project 1. The student will also be devoted substantially to data analysis and preparation of manuscripts for publication related to profiling microbial community composition through the various stages of AOP-BAC/GAC treatment, monitoring TOC and BDOC, conducting qPCR of key functional gene markers (e.g., markers of nitrification, CEC removal, and antibiotic resistance), and carrying out metagenomics to gain functional insight into the AOP-BAC/GAC process, including functional gene markers involved in CEC degradation, ARGs, and pathogen gene markers.

Project 2: The second student (TBD) in Blacksburg will work under the guidance of Mark Widdowson and carry out experiments evaluating soil aquifer treatment (SAT) through column testing experiments simulating monitored aquifer recharge at the HRSD facilities. Soil column results at Nansemond will be compared to those when the columns were operational at the York River plant. Injection wells at Nansemond will regularly be monitored. Modeling of the fate of CECs, pathogens, organic carbon, disinfection byproducts, and nitrogen species will be carried out for the column and aquifer system.

Project 3:

The third project will primarily be carried out by a student at HRSD (TBD) under the direct guidance of Charles Bott and Amy Pruden. The student will assist with Project 1 and also will complete bench- and pilot-scale studies aimed at examining the potential of co-substrates to enhance CEC removal. The bench-scale studies are currently underway, focused on 1,4-dioxane as a model CEC. THF will be further tested as a model co-substrate, as it is expected to be the most likely to stimulate 1,4-dioxane removal because of similarity in chemical structure. However, due to its toxicity and impracticality for real-world application as a co-substrate, simpler compounds, like glucose and propane will also be investigated. The removal of 1,4 dioxane will be monitored in both the columns to determine the effectiveness of co-metabolism.

Budget Justification

One year of funding is requested to support the three graduate students and faculty mentors to carry out the proposed research objectives. The proposed funding will also serve as cost share to the US Bureau of Reclamation, and also leverage three Water Research Foundation projects that have recently been selected for funding (PI-Pruden): WRF Project 4813- *Critical Evaluation and Assessment of Health and Environmental Risks from Antibiotic Resistance in Reuse and Wastewater* and WRF Project 4961 - *The Use of Next Generation Sequencing (NGS) Technologies and Metagenomics Approaches to Evaluate Water and Wastewater Quality Monitoring and Treatment Technologies* and WRF Project 5052 - *Standardizing Methods with QA/QC Standards for Investigating the Occurrence and Removal of Antibiotic Resistant Bacteria/Antibiotic Resistance Genes (ARB/ARGs) in Surface Water, Wastewater, and Recycled Water*. The associated letters of commitment to the Bureau is attached, while cost-share commitments to the three WRF projects will have already been met by prior to the start of this project. Due to the synergy with the proposed effort, we do anticipate that there may still be in-kind contribution on the part of HRSD to the WRF projects, and this will be documented with the sponsor accordingly, if that is the case.

Salary:

PI (Pruden): $27,120 (1.00 months of AY and 0.45 months of SUM salary) to lead project effort

Co-PI (Widdowson): Currently on 12-month appointment as Department Head, so no additional salary requested at this time.

Lab Manager (Prussin): $1,369 (0.21 CY salary)

GRA: $79,407 (Three 100% GRAs for 12.0 months CY each)

Fringe Benefits: $14,733

Travel: $5,000 (To support multiple trips by Widdowson, Bullard, Pruden and Blair from Blacksburg to HRSD)

Materials and Supplies: $8,500 (Chemicals, culturing media, gases, glassware, experimental materials)

Tuition: $47,706

Contractual: DNA sequencing $14,000 (sequencing of up to 72 samples)

Contractual: PCPP analysis $8,000

Indirect Costs (25%): $51,460

TOTAL COSTS: $257,295

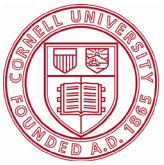
CONSENT AGENDA ITEM 2.b.3. – August 25, 2020

Subject: Practice to Enhance Internal Fermentation of Side-stream Mixed Liquor for Biological Phosphorus Removal
Research Study Multi-Year Contract Award

Recommended Action: Award a contract to Cornell University in the estimated amount of $30,000 for year one with one year of annual renewal options and an estimated cumulative value in the amount of $60,000.

Contract Description: This contract is an agreement to work with Cornell University to identify and study Phosphorus Accumulating Organisms (PAOs) and Glycogen Accumulating Organisms (GAOs) that may play a role in side-stream mixed liquor fermentation for biological phosphorus removal in accordance with the attached proposal.

Project Description: The multi-year study will be performed over a two-year period depending on HRSD's short- and long-term goals with this research project. This research project is in conjunction with the Water Research Foundation (WRF)'s project involving the phosphorus and nitrogen removal pilot taking place at Chesapeake-Elizabeth Plant and soon to be moved to Virginia Initiative Plant. York River and Williamsburg Treatment Plants are also involved in the WRF study. Maintaining reliable biological phosphorus removal is a challenge at many of the HRSD facilities however gaining information on reliable biological phosphorus removal would result in cost savings by not having to utilize metal salts for chemical phosphorus removal. HRSD is interested in working with Cornell University as a leverage to this ongoing WRF. Cornell University possesses unique understanding, technology, and resources that would greatly benefit HRSD's part in the WRF project.



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A RESEARCH PROPOSAL SUBMITTED TO HAMPTON ROADS SANITATION DISTRICT

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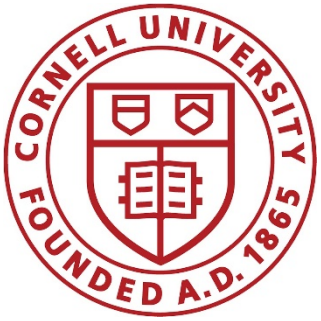

OVERALL GOAL

The overall goal of this proposed study is to leverage the recently awarded WRF project: “Practice to Enhance Internal Fermentation of Side-stream Secondary Sludge and Mixed Liquor Suspended Solids for Biological Phosphorus Removal” to identify the new PAOs that may play a role in the S2EBPR Process integrated with A-B stage Nitrite-Shunt/Deammonification process that is being piloted at HRSD to enable simultaneous N and P removal.

SPECIFIC OBJECTIVES

Objective: Leverage the WRF project resources and expertise for fundamental assessment and modeling of the RAS-fermentation based S2EBPR combined with mainstream nitrite-shunt N-removal being piloted at HRSD.

HRSD is one of the participants of the recent WRF award: “Practice to Enhance Internal Fermentation of Side-stream Secondary Sludge and Mixed Liquor Suspended Solids for Biological Phosphorus Removal”. As one of the participating agency that has keen interested in above-mentioned technology, HRSD will work with the team to achieve the objective to identify the new PAOs that may play a role in the S2EBPR Process integrated with A-B stage Nitrite-Shunt/Deammonification process that is being piloted at HRSD to enable simultaneous N and P removal.

The team led by Dr. April Gu at Cornell University will work with the team at HRSD pilot plan to systematically evaluate the performance, mechanism and microbial ecology for the HRSD pilot plant process. The Cornell team will provide complementary analytical approaches and technologies including flow cytometry, FACS-sorting-sequencing, single cell Raman Spectroscopy, molecular quantification of known key agent organisms (PAOs and GAOs), combined amplicon and metagenomics analysis of the microbial ecology and agent-based modeling. These techniques will allow us to possibly identify new PAOs and determine community dynamics at a cellular-level, thus enhancing our fundamental understanding of biochemical pathways relevant to EBPR.

TIMELINE

The proposed project is expected to be carried over a three-year period for the WERF project, and a two-year period for the HRSD-specific objectives, depending on the HRSD’s short-term and long-term goals.

Project start date = September 1, 2020

PROPOSED BUDGET

The requested funds from HRSD is $30k to support a part-time graduate student and related equipment, materials and consumables. Detailed budget is as following:

Funding source	Funds amount	Description
HRSD	$11,011	Stipend to partially support one part-time graduate student
HRSD	$3687	Student Tuition
HRSD	$708	Student health insurance
HRSD	$5500	**Indirect cost of 25% as requested by HRSD**
HRSD	$6594	Research supply, sequencing fee, consumables, small equipment
HRSD	$2500	Travel to support student/PI to attend conferences
Total	$30,000	Total proposed cost

Resource: Steve de Mik

CONSENT AGENDA ITEM 2.c.1. – August 25, 2020

Subject: Hach Controllers, Sensors and Probes Service Contract
Contract Award (>$200,000)

Recommended Action: Award a contract to Hach Company in the amount of $167,538 for year one with two annual renewal options and an estimated cumulative value in the amount of $517,843.

Type of Procurement: Sole Source

All parts and services were previously approved as a sole source with Hach Company in April of 2015.

HRSD Estimate: $167,538

Contract Description: This contract is an agreement for services of Hach controllers, sensors and probes used throughout HRSD. Services include instrument preventative maintenance, calibration, technical support, emergency field repair, operator training, parts, labor and travel costs.

Analysis of Cost: Costs are considered fair and reasonable based on Hach's previous service contract.

CONSENT AGENDA ITEM 2.d.1 – August 25, 2020

Subject: Virginia Initiative Plant (VIP) Influent Force Main (SF-227) Condition Assessment
Task Order (>$200,000)

Recommended Action: Approve a task order with Tidewater Utility Construction, Inc. in the amount of $281,270.

Contract Status:	**Amount**
Original Contract with Tidewater Utility Construction, Inc.	$0
Total Value of Previous Task Orders	$450,769
Requested Task Order	$281,270
Total Value of All Task Orders	$732,039
Revised Contract Value	$732,039
Engineering Services as % of Construction	N/A

Project Description: This project provides for condition assessment of HRSD's force mains to identify any areas of concern that need to be addressed and to better understand the remaining useful life of these systems. Force main condition assessments have been prioritized based on risk, which considers the consequences if the force main fails and the likelihood of that force main failing based on its characteristics and environmental conditions.

Task Order Description: This task order will provide for the condition assessment of force main SF-227, also known as the Virginia Initiative Plant Influent Force Main, which runs through Norfolk from our Elizabeth River Crossing at the Midtown Tunnel to VIP.

Analysis of Cost: The cost for this task order is based on unit prices included in the bid for the contract that is being utilized for this work.

Resource: Steve de Mik

CONSENT AGENDA ITEM 2.e.1. – August 25, 2020

Subject: Wyss Flex-A-Tube Aeration Tank Diffuser Membranes
Sole Source (>$10,000)

Recommended Actions: Approve the use of Wyss Flex-A-Tube Aeration Tank Diffuser Membranes by the Parkson Corporation at the Williamsburg Treatment Plant.

Sole Source Justification:

- ☒ Compatibility with existing equipment or systems is required
- ☐ Support of a special program in which the product or service has unique characteristics essential to the needs of the program
- ☐ Product or service is covered by a patent or copyright
- ☒ Product or service is part of standardization program to minimize training for maintenance and operation, and parts inventory

Details: Product includes the purchase of Wyss Flex-A-Tube aeration tank diffuser membranes. Williamsburg Treatment Plant has tried other membranes in the past but had issues with the membranes tearing during installation and with their overall durability. A previous competitive solicitation was issued with the required membrane specifications and only one bid from Parkson Corporation was received that could meet the specifications.

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #2

AGENDA ITEM 3. SUBORDINATE TRUST AGREEMENT – EXCLUSION OF CERTAIN LOCALITY IMPROVEMENTS FROM CALCULATION OF OPERATING EXPENSES RESOLUTION

Hampton Roads Sanitation District
Resolution of
August 25, 2020

HAMPTON ROADS SANITATION DISTRICT COMMISSION

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RESOLUTION
EXCLUDING CERTAIN LOCALITY IMPROVEMENTS FROM CALCULATION OF OPERATING EXPENSES FOR PURPOSES OF THE DISTRICT'S SUBORDINATE TRUST AGREEMENT

Adopted August 25, 2020

RESOLUTION

RESOLUTION EXCLUDING CERTAIN LOCALITY IMPROVEMENTS FROM CALCULATION OF OPERATING EXPENSES FOR PURPOSES OF THE DISTRICT'S SUBORDINATE TRUST AGREEMENT

WHEREAS, the Hampton Roads Sanitation District (the "District") was duly created under and pursuant to Chapter 407 of the Acts of Assembly of Virginia of 1940, and the Hampton Roads Sanitation District Commission (the "Commission"), created by said Chapter 407, is the governing body of the District; and

WHEREAS, by virtue of Chapter 66 of the Acts of Assembly of Virginia of 1960, as amended (the "Act"), the Commission is authorized and empowered:

(a) to construct, improve, extend, enlarge, reconstruct, maintain, equip, repair and operate a wastewater treatment system or systems, either within or without or partly within and partly without the corporate limits of the District;

(b) to issue, at one time or from time to time, revenue bonds, notes or other obligations of the District payable solely from the special funds provided under the authority of the Act and pledged for their payment, for the purpose of paying the cost of a wastewater treatment system or systems and extensions and additions thereto, and providing funds for any other authorized purpose of the Commission, and

(c) to fix, revise, charge and collect rates, fees and other charges for the use of, and for the services and facilities furnished or to be furnished by, any such wastewater treatment system; and

WHEREAS, as provided by the Act, the District is constituted a political subdivision of the Commonwealth of Virginia and established as a governmental instrumentality to provide for the public health and welfare; and

WHEREAS, the Commission has previously authorized the execution and delivery of a Trust Agreement, dated as of March 1, 2008 (as the same may be supplemented and further supplemented and amended from time to time, the "Senior Trust Agreement"), between the District and The Bank of New York, as Trustee (The Bank of New York Mellon Trust Company, N.A., as successor in interest to The Bank of New York, the "Senior Trustee"), to secure the payment of Senior Obligations (as defined in the Senior Trust Agreement) of the District, such Senior Obligations being payable from the Net Revenues (as defined in the Senior Trust Agreement) of the District; and

WHEREAS, the Senior Trust Agreement permits the issuance of Subordinated Indebtedness (as defined in the Senior Trust Agreement), the payment on which will be, in all cases, subordinate and junior in right of payment to the prior payment in full of the Senior Obligations; and

WHEREAS, to secure the payment of and provide for the issuance of such Subordinated Indebtedness, the Commission authorized the execution and delivery of a Trust Agreement, dated as of October 1, 2011, as amended and restated as of March 1, 2016, as further amended (as so amended, the "Trust Agreement"), between the District and The Bank of New York Mellon, as Trustee (in such capacity, the "Trustee"), to provide for the issuance of Subordinate Indebtedness (as defined in the Trust Agreement);

WHEREAS, the Commission has previously issued several series of Subordinated Indebtedness in accordance with the Trust Agreement;

WHEREAS, in connection with certain covenants and agreements of the Commission contained in the Trust Agreement, the term "Operating Expenses" excludes for the purpose of such term, "expenses for improvements that will not be owned by the District but which will, in the reasonable determination of the Commission, as evidenced by a resolution thereof, maintain or improve the integrity of the Wastewater System;"

WHEREAS, attached as Exhibit A to this Resolution is a list of certain improvements to assets not owned by the District but instead by localities in the District's service area (the "Locality Improvements"); and

WHEREAS, information has been presented to the Commission at this meeting to the effect that notwithstanding that such Locality Improvements will not be owned by the District, each such Locality Improvement will maintain or improve the integrity of the Wastewater System;

Now, Therefore, the HAMPTON ROADS SANITATION DISTRICT COMMISSION DOES HEREBY RESOLVE, as follows:

Section 1. Definitions. Capitalized words and terms used in this Resolution and not defined herein shall have the same meanings in this Resolution as such words and terms are given in the Trust Agreement.

Section 2. Exclusion of Locality Improvements from Calculation of Operating Expenses for Purposes of Trust Agreement. Based on the information presented to the Commission at this meeting, the Commission hereby determines that each of the Locality Improvements described in Exhibit A to this Resolution will maintain or improve the integrity of the Wastewater System and shall, accordingly, be excluded from the calculation of "Operating Expenses" for the purposes of the Trust Agreement.

Section 3. No Effect on Calculation of Operating Expenses for Other Purposes. Notwithstanding the Commission's determination to exclude the Locality Improvements from the calculation of "Operating Expenses" for purposes of the Trust Agreement, this Resolution shall not, in and of itself, affect the calculation of operating expenses by the District for any other purpose, including, but not limited to, the calculation of "Operating Expenses" for purposes of the Senior Trust Agreement or the presentation of financial information in the District's audited financial statements.

Section 4. Further Actions. The Chairman of the Commission, Vice Chairman of the Commission, the General Manager of the District and the Director of Finance of the District (each, a "Delegate"), any of whom may act, are each authorized and directed (without limitation except as may be expressly set forth herein) to take such action and to execute and deliver any such documents, certificates, undertakings, agreements or other instruments as they, with the advice of counsel, may deem necessary or appropriate to effectuate the actions contemplated by this Resolution.

Section 5. Delegates' Certificate. Each Delegate may execute a Certificate or Certificates evidencing the determinations made or other actions carried out pursuant to the authority granted in this Resolution, and any such Certificate shall be conclusive evidence of the actions or determinations as stated therein.

Section 6. Cumulative Effect. This Resolution shall not be interpreted to rescind or effect any prior resolution of the Commission with respect to locality improvements identified in such prior resolution; and all such prior resolutions and this Resolution shall be deemed to be cumulative in effect.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

RESOLUTION
EXCLUDING CERTAIN LOCALITY IMPROVEMENTS FROM CALCULATION OF OPERATING EXPENSES FOR PURPOSES OF THE DISTRICT'S SUBORDINATE TRUST AGREEMENT

Section 7. Effective Date. This Resolution shall take effect immediately upon its passage, but with effect relating back to the date of the incurrence of any expense relating to the Locality Improvements.

[END OF RESOLUTION]

Adopted by the Hampton Roads Sanitation District Commission on August 25, 2020.

Frederick N. Elofson, Chair

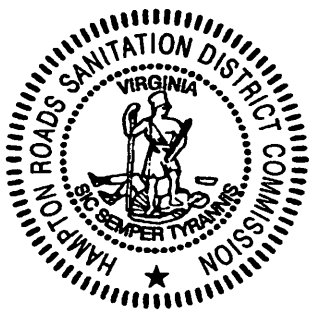


EXHIBIT A

LOCALITY IMPROVEMENTS

CE011830: Little Creek Pump Station Modifications

Project Description: There are five pumping stations associated with Little Creek Amphibious Base. HRSD will be responsible for upgrading one station to meet future system pressures. Two other stations are being upgraded by the Navy to meet the future system pressures and the remaining two stations were determined to be adequate for the future conditions.

Project Justification: The project is needed to ensure that Little Creek's sewer pumping stations can meet HRSD pressure policy when flow is diverted in support of the Chesapeake-Elizabeth plant closure.

Approximate Project Cost: $590,000

CE011835: Virginia Beach City Pump Station Upgrades, Phase V

Project Description: This project is to complete upgrades on City of Virginia Beach Pump Stations that cannot meet the new pressure policy post-2021. Pump Stations 309 (Lake Front Village) and 310 (Lake Shores West) are included in this effort. This project must be substantially complete by June 2021. The City of Virginia Beach will administer design and construction with reimbursement from HRSD for the required upgrades. All betterments to the stations will be paid for by the City.

Project Justification: The project is needed to ensure that the Virginia Beach pump stations can meet HRSD pressure policy when flow is diverted in support of the Chesapeake-Elizabeth plant closure.

Approximate Project Cost: $1,923,000

VP018301: VIP Service Area I-I Reduction Phase I (PORTS)

Project Description: PORT-01 Comprehensive I/I Reduction Plan; PORT-02 General I/I Reduction Plan. A detailed project description can be found in Appendix S of the Regional Wet Weather Management Plan (RWWMP) Framework.

Project Justification: As part of HRSD's Integrated Plan, a program of High Priority RWWMP Projects (HPP) will be constructed through 2030. These projects were selected based on their ability to provide the greatest environmental and human health benefits. Further, this $200+ million investment will significantly reduce sanitary sewer overflow (SSO) volume at the 5-year level of service by 47 percent.

Approximate Project Cost: $15,583,000

VP018303: VIP Service Area I-I Reduction Phase III (PORTS)

Project Description: PORT-04 General I/I Reduction Plan; PORT-04-LOP65-1 Data-Driven I/I Reduction Plan; PORT-04-LOP65-2 Data-Driven I/I Reduction Plan; PORT-04-LOP65-3 Data-Driven I/I Reduction Plan. A detailed project description can be found in Appendix S of the Regional Wet Weather Management Plan (RWWMP) Framework.

Project Justification: As part of HRSD's Integrated Plan, a program of High Priority RWWMP Projects (HPP) will be constructed through 2030. These projects were selected based on their ability to provide the greatest environmental and human health benefits. Further, this $200+ million investment will significantly reduce sanitary sewer overflow (SSO) volume at the 5-year level of service by 47 percent.

Approximate Project Cost: $11,206,000

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #3

AGENDA ITEM 12. BOAT HARBOR TREATMENT PLANT PUMP STATION CONVERSION PRESENTATION

HRSD

Cleaning wastewater every day for a better Bay.

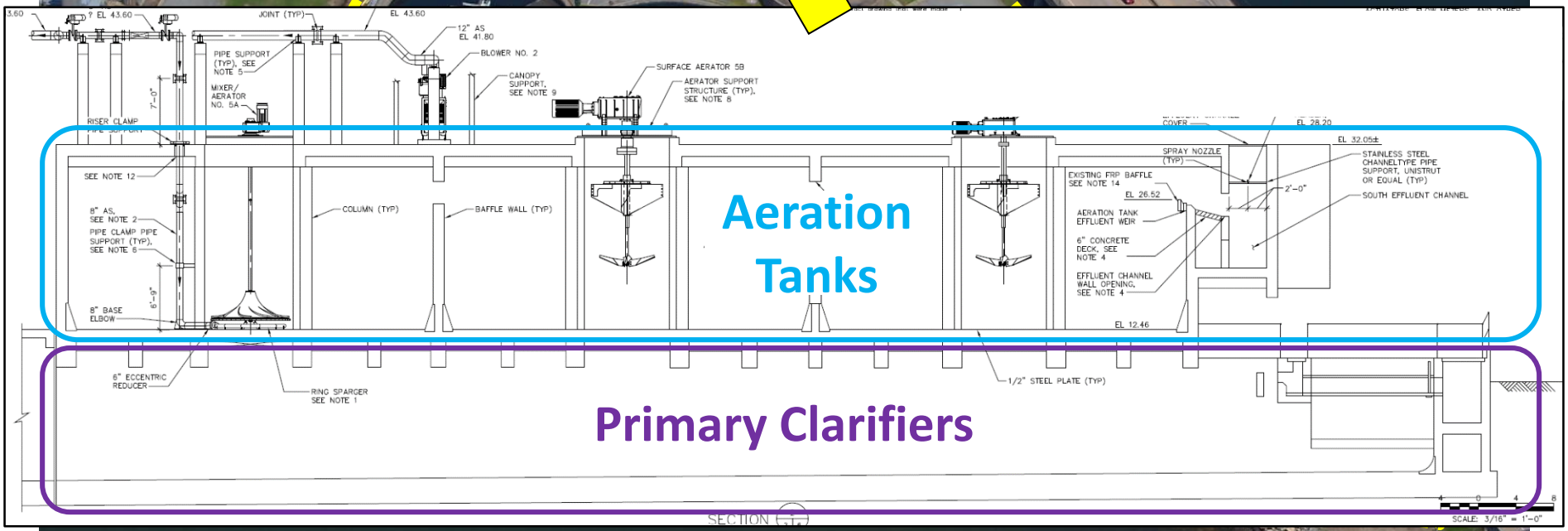
Boat Harbor Treatment Plant
SWIFT Full Scale Implementation Program

Commission
August 25, 2020

Boat Harbor Treatment Plant

- Terminal Ave in Newport News
- James River discharge
- 1946 - Original construction
- 1976 - Multiple hearth incinerator
- 1982 - Secondary treatment
- Permitted capacity 25 MGD


I-664
Small Boat Harbor
James River


Aeration Tanks
Primary Clarifiers


Preliminary Treatment
Influent
Incinerator
Primary Clarifiers
Aeration Tanks
Secondary Clarifiers
Admin Building
Chlorine Contact Tanks
James River

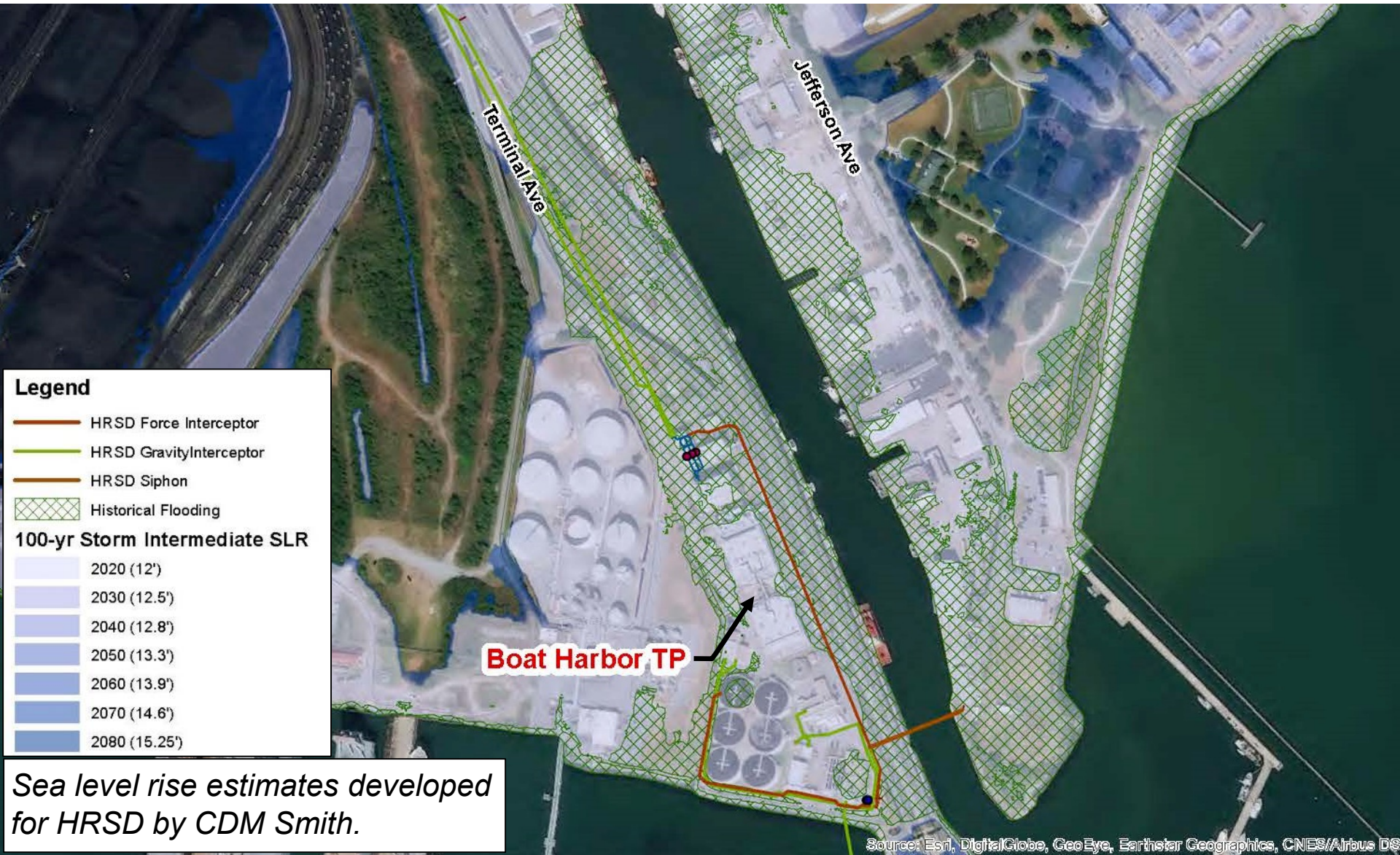
Requirements for SWIFT full scale implementation

- Improve secondary treatment to reliably meet SWIFT influent water quality targets
- Construct advanced water treatment facilities
- Install recharge wells with 1000 ft spacing

Challenges at Boat Harbor

- Not designed to meet low nutrient targets
- Physically constrained
  - limits any future expansion
  - capital and operational costs increase w/ remote SWIFT
- Relatively more expensive to operate and maintain
- Susceptible to flooding and sea level rise

Boat Harbor site is susceptible to flooding

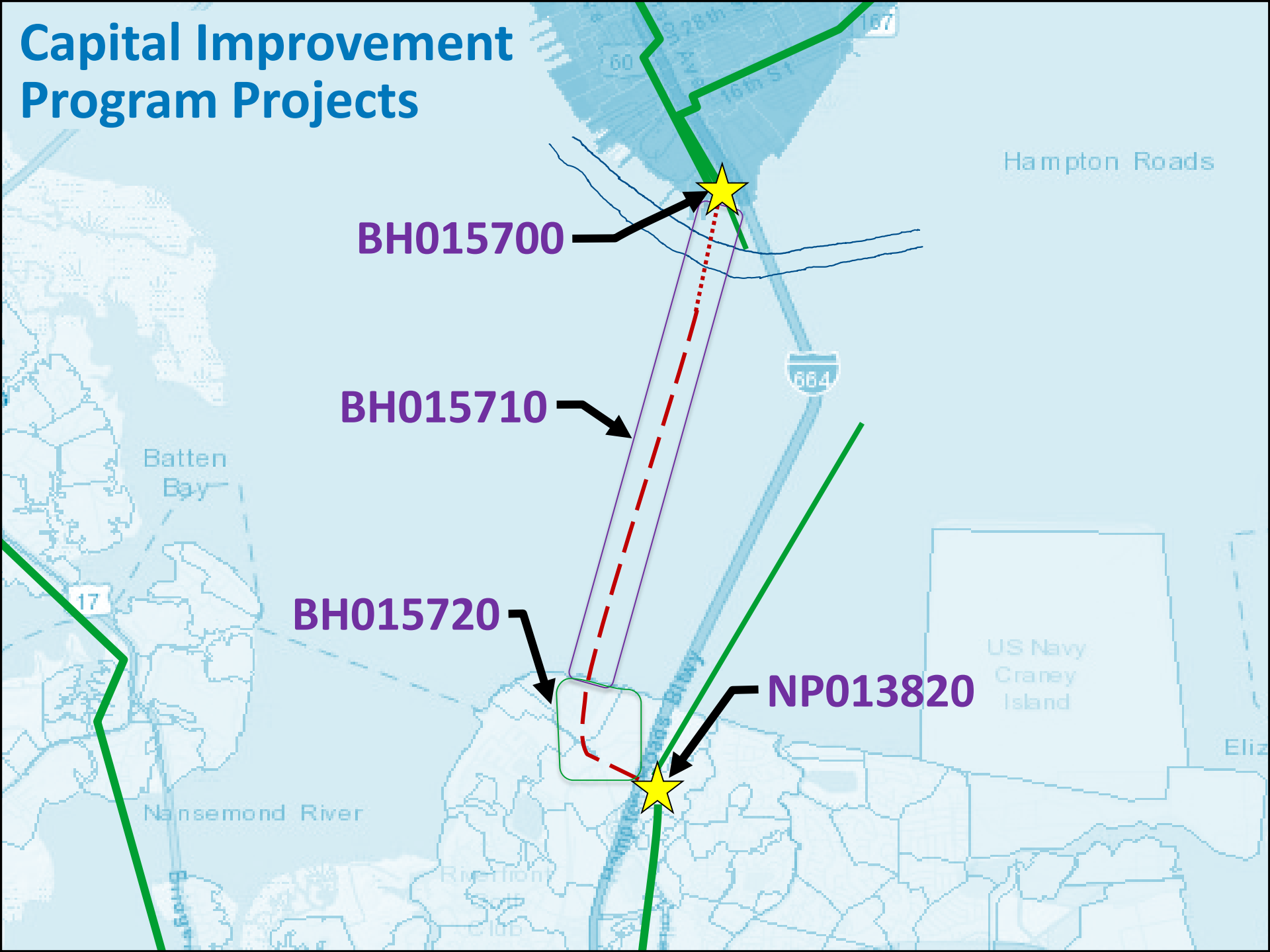


Sea level rise estimates developed for HRSD by CDM Smith.

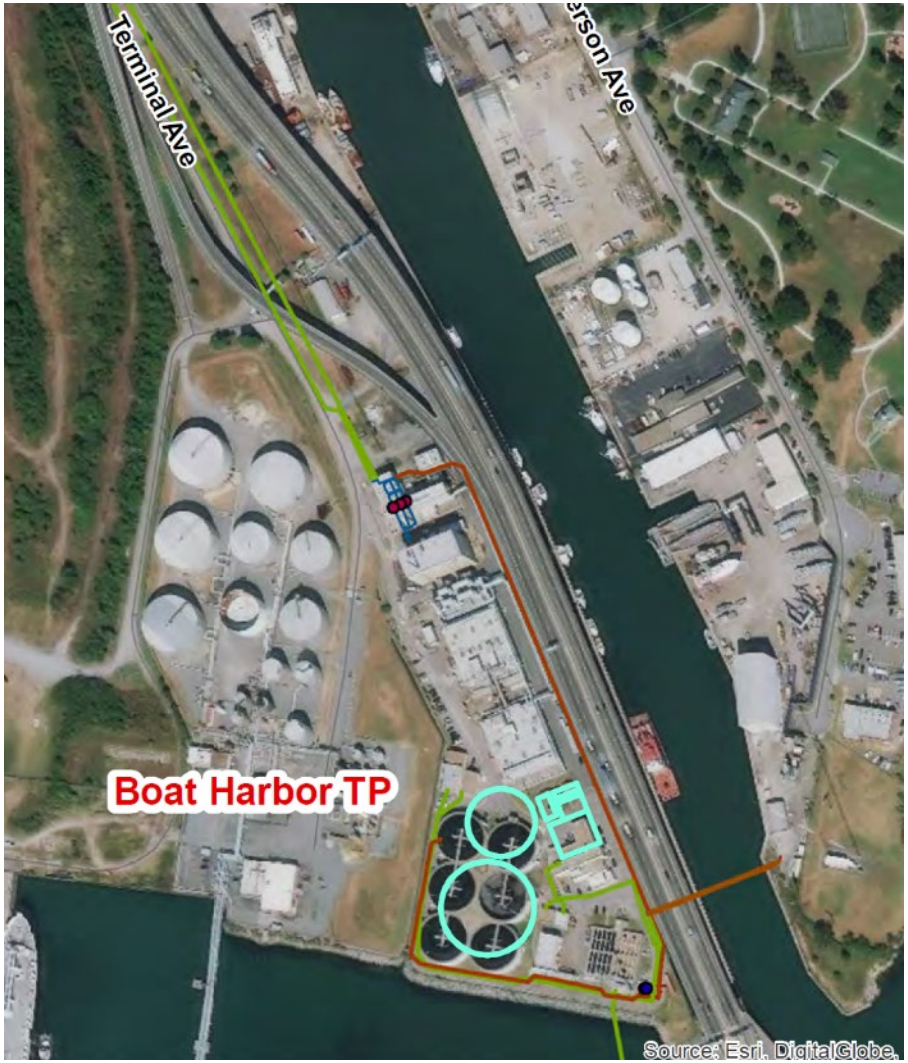
Transition from Treatment Plant to Pump Station

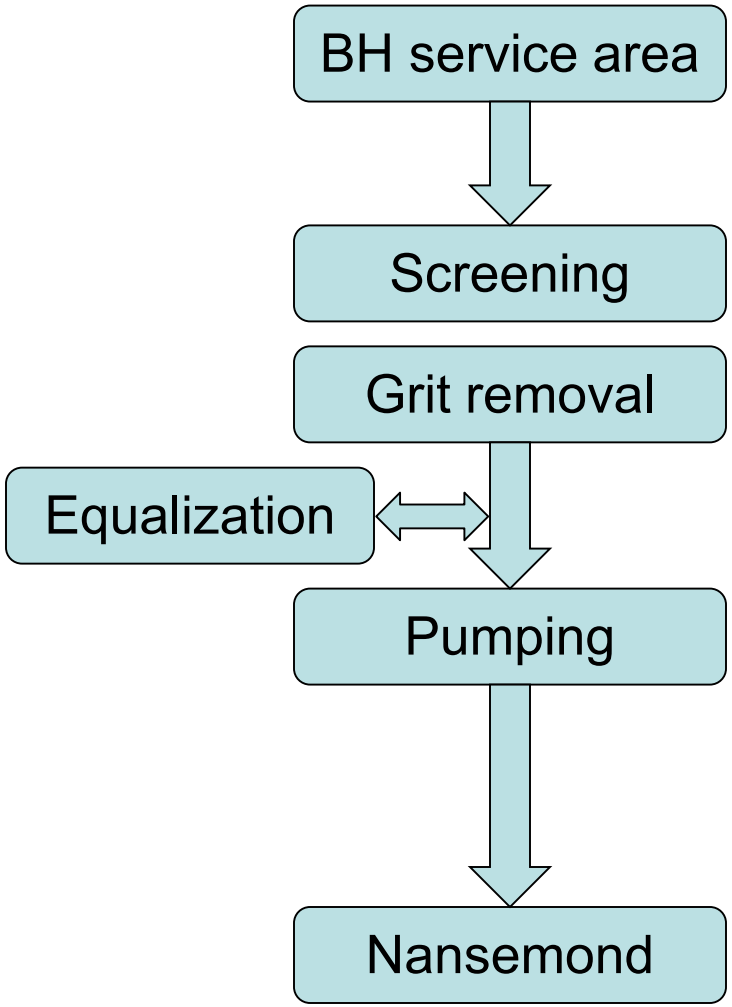
- Continue to collect BH service area
- Determine pump capacity + equalization to meet requirements of Integrated Plan and current service
- Evaluated pumping wastewater “north” to York River
- Confirmed feasibility of pumping “south” to Nansemond
- Consider potential alternative site(s)

Capital Improvement Program Projects

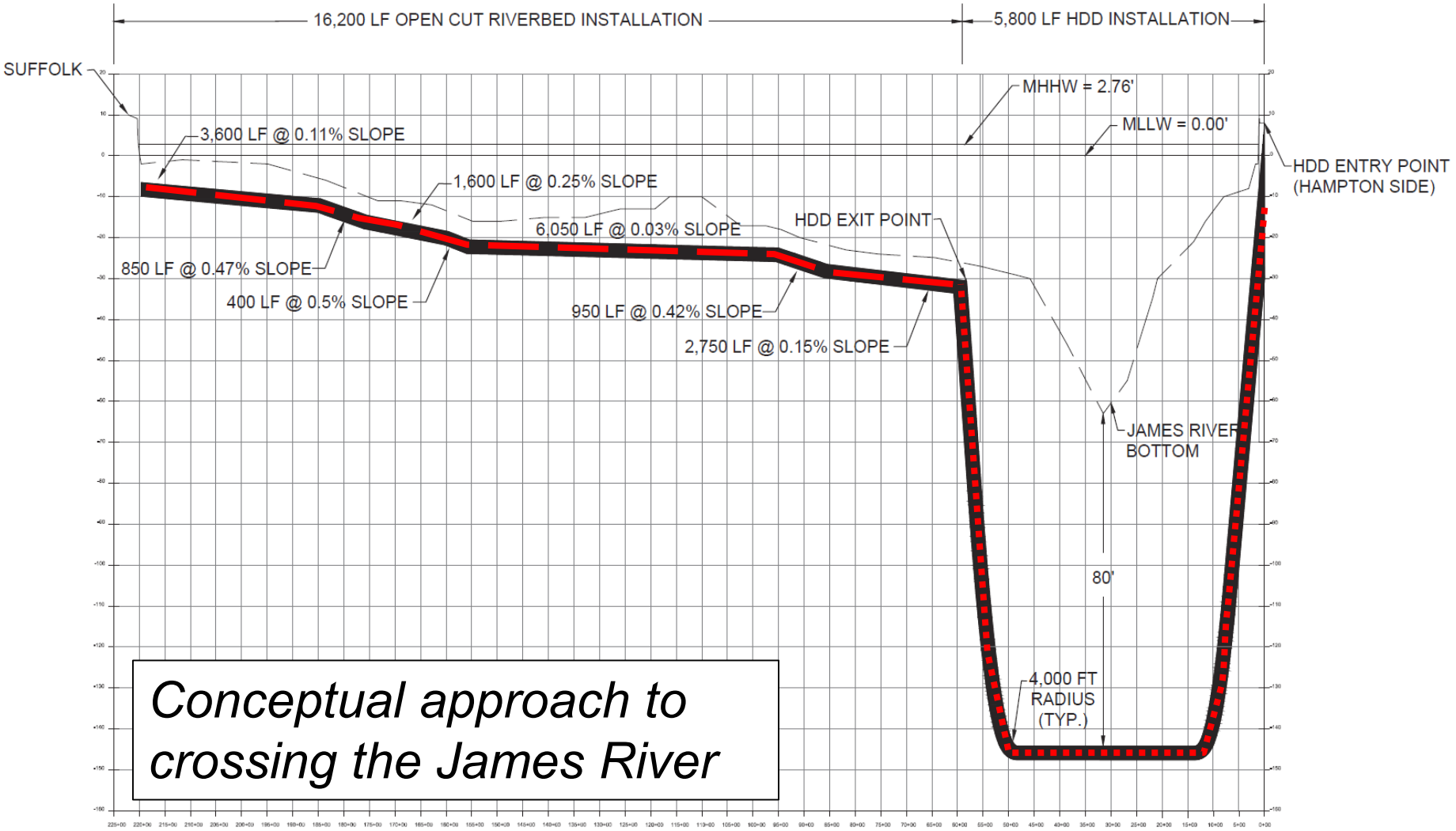


BH015700
BH Treatment Plant to Pump Station Conversion





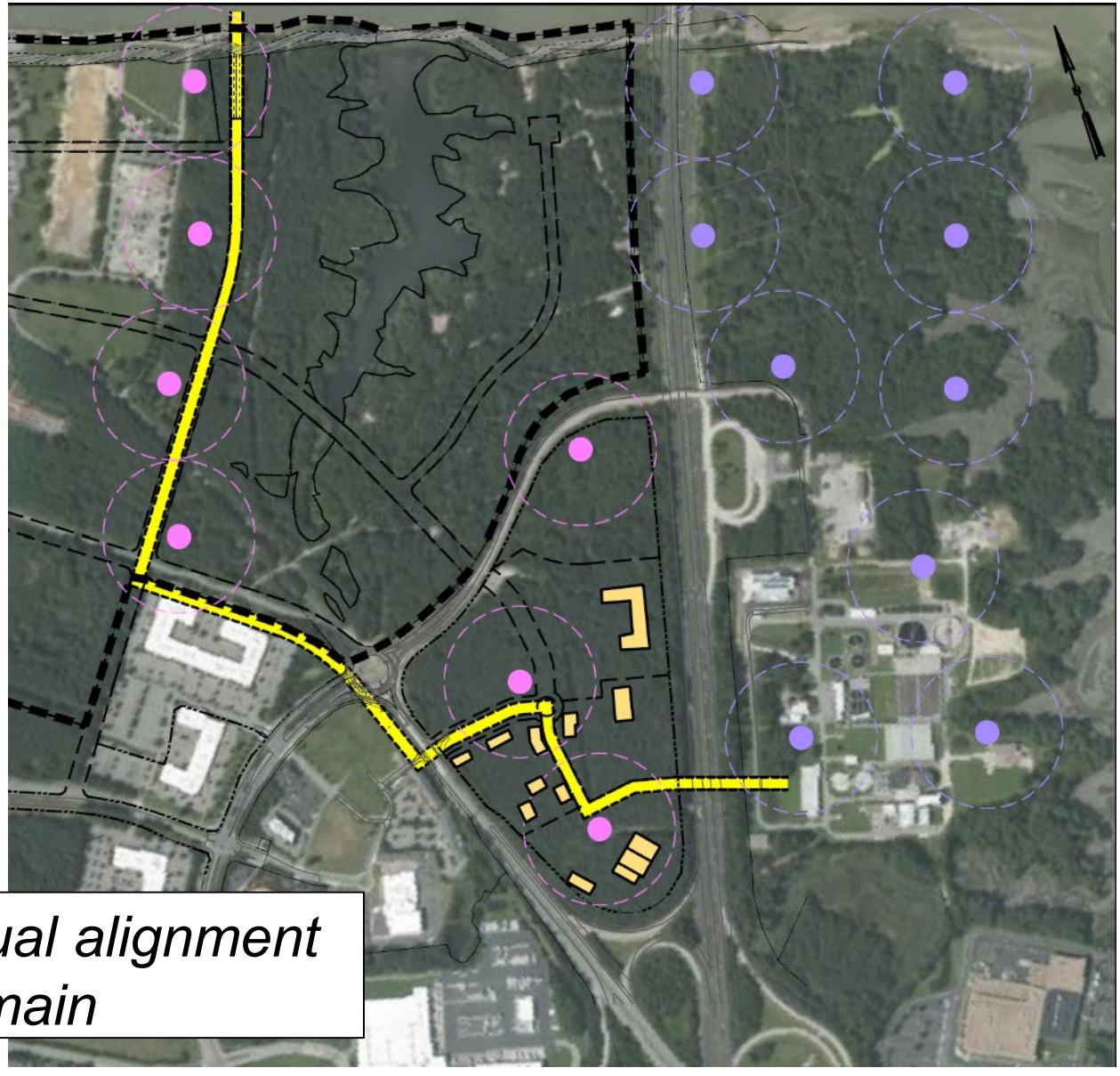
BH015710
BH Transmission Force Main Section 1



Conceptual approach to crossing the James River

BH015720

BH Transmission Force Main Section 2

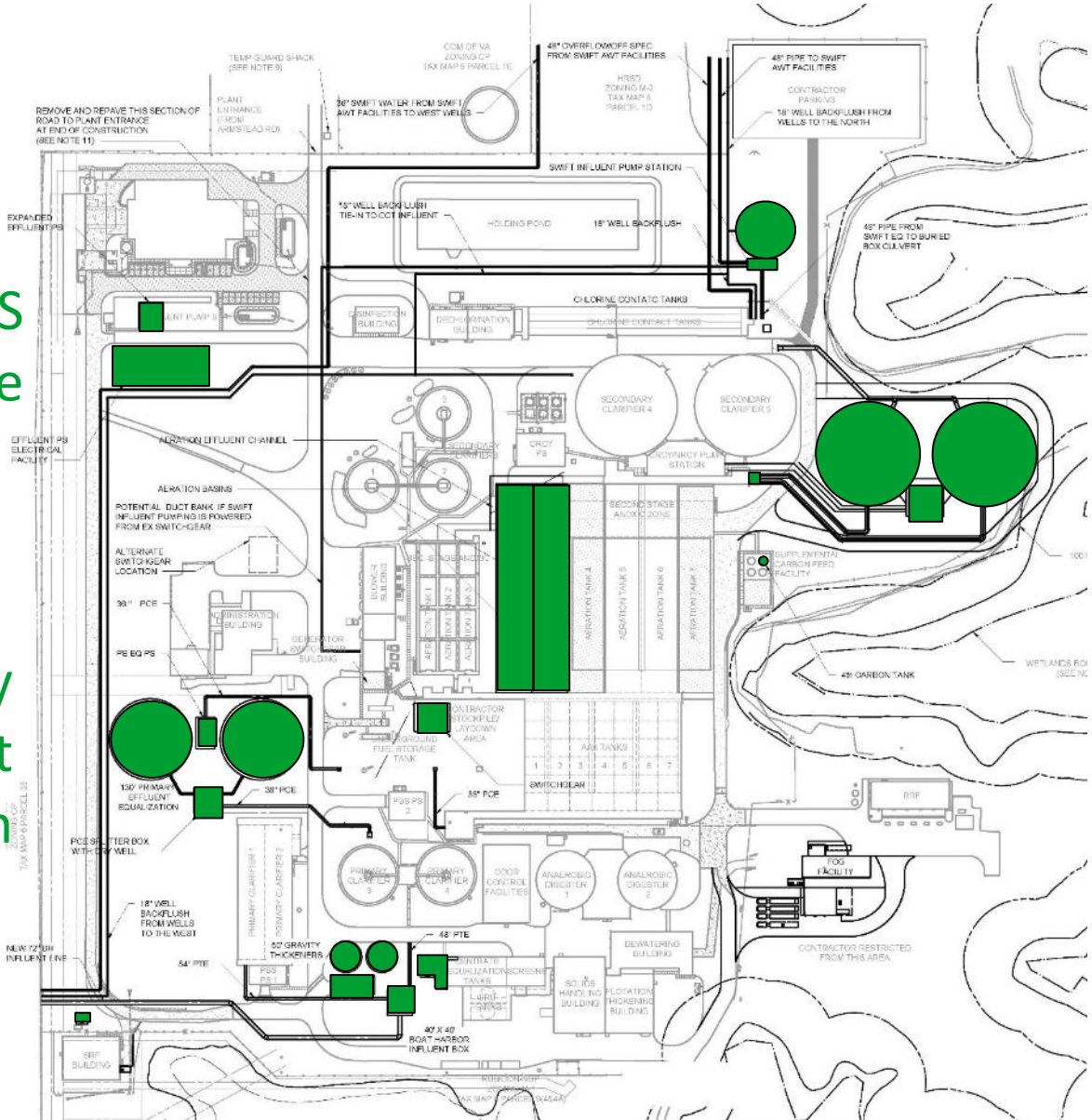


Conceptual alignment of force main

NP013820 – Nansemond Advanced Nutrient Reduction Improvements Phase 2

Effluent PS upgrade

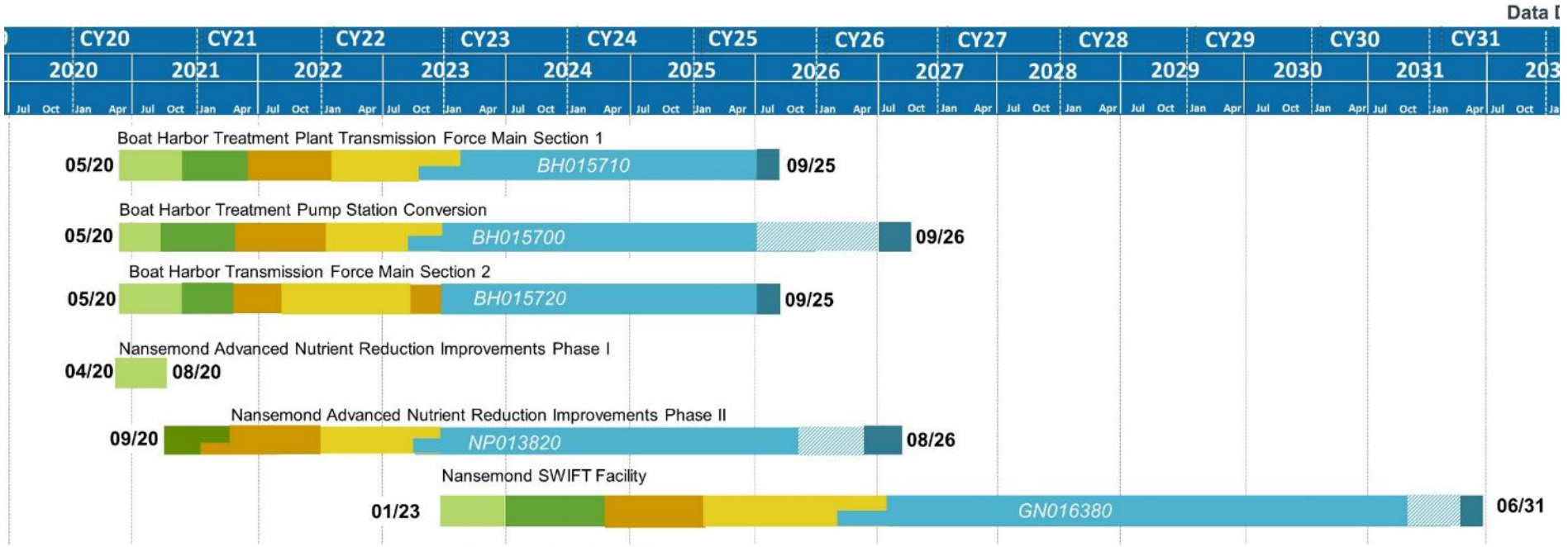
Primary Effluent Equalization



Secondary Clarifiers

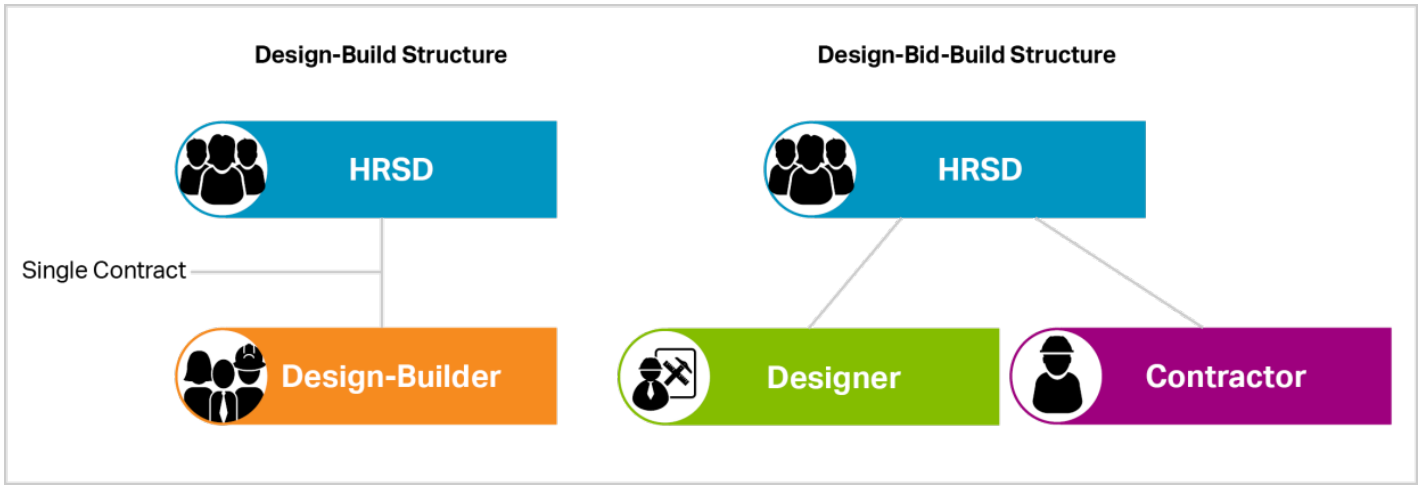
Aeration Tanks

BH to Nansemond projects complete by end of 2025

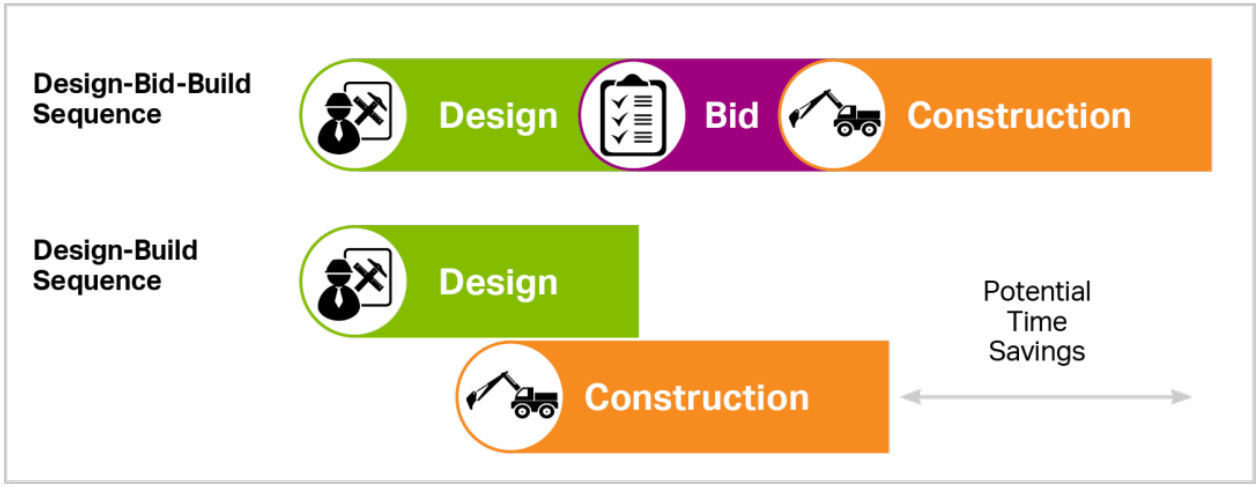


Requested use of alternative delivery to meet project schedules

Contract with a single point of responsibility



Overlap final design and early construction work



Transition of Boat Harbor TP to PS

- General Manager is recommending closure of BHTP no later than January 1, 2026 (Closure Date)
- Imperative that plant run effectively and meets permit requirements until closure
- Goal is to reduce staffing complement upon Closure

	FY 21 Budget		
	Operations Department	Boat Harbor	%
Salaries	$ 35,856,970	$ 1,802,330	5%
Fringe Benefits	15,788,890	821,683	5%
Total Salaries and Benefits	$ 51,645,860	$ 2,624,013	5%
# Full-Time Staff	526	32	6%

BH Employee Options

- Employees offered three contract options
  - **Option 1** – Commitment to remain at BH until Closure Date then separate from HRSD
  - **Option 2** – Commitment to remain at BH until Closure Date then transfer to another work center
  - **Option 3** – Continue working at BH without a commitment to remain until Closure Date then transfer to another work center
- Contracts become effective January 1, 2021
- All normal HR policies remain in force
- Contact incentive structure similar to CE closure contracts

Contracts Summary

Contract Option	1	2	3
EE Remain at BH until Closure	✓	✓	
EE Separate from HRSD at Closure	✓		
EE Transfer to another work center upon Closure in pre-defined “matched” position		✓	
EE Transfer to another work center upon Closure without pre-defined “matched” position			✓
EE restricted from pursuing other career opportunities outside of BH work center	✓	✓	
EE 10% raise	✓		
EE 25% bonus upon Closure	✓	✓	

Non-BH Employee (NBHE) Contract Option Summary

- For those BH employees who elected Option 2
  - HRSD will seek similar “matched” positions (i.e. Plant Operator for Plant Operator) at another work center to sign a Contract Option #1
  - In event there are more applications than matched positions available, HRSD will conduct fair and reasonable selection process
  - Upon Closure, Option 2 BH employees will transfer to their pre-defined work center

Contract Termination

- Employee decisions are final
- If employee breaches contract
  - Must repay incentives already received
  - Not entitled to the bonus incentive after Closure Date
- If termination is because of death or disability
  - Does not have to repay incentives already received
  - Not entitled to the bonus incentive after Closure Date

Next Steps

- August 3 – met with BH employees
- September 1 – BH contracts must be signed and turned in
- September - November – matched employee selection process
- December 1 - BH employees electing Option 2 notified of their matched position future work assignment
  - 10 calendar days to confirm election or elect an Option 1 or 3 contract
- Contracts effective January 1, 2021

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #4

AGENDA ITEM 16. EASEMENT CONVEYANCE
17386 WARWICK BOULEVARD, NEWPORT NEWS

- DEED OF EASEMENT
- PLAT
- LOCATION MAP

CLR210004022

Easement for Gas Regulator Station between
Hampton Roads Sanitation District and Virginia Natural Gas, Inc.

This instrument was prepared by
and upon recording return to:
Phoenix Consulting Services, Inc
250 Ryan Ln
Covington, GA 30014
Attn: Donna Coody

GPIN: 022000201

EASEMENT FOR GAS REGULATOR STATION

CITY/COUNTY OF NEWPORT NEWS

COMMONWEALTH OF VIRGINIA

THIS EASEMENT is made and executed this 1st day of Feb. 2021 by and between **HAMPTON ROADS SANITATION DISTRICT,** a political subdivision of the Commonwealth of Virginia, (**"Grantor"**) and Virginia Natural Gas, Inc., a Virginia public service corporation (**"Grantee"**).

FOR THE SUM OF TEN DOLLARS ($10.00), and other valuable considerations, the amount of which is hereby acknowledged, Grantor hereby grants and conveys unto Grantee the right to construct, install, maintain, inspect, operate, repair, replace, change or remove a gas regulator station or stations, including, without limitation, regulators, heaters, pipe line gate valve or valves with any bypasses, crossovers, scraper traps, gas main or mains and other appurtenances and equipment used in connection therewith or incidental hereto, or any part thereof, lying within the following described property of Grantor, which Grantor warrants to be the owner of the fee simple title:

Land lying in GPIN(S) 022000201, City/County of Newport News, Virginia, as more specifically described in the attached plat entitled "PLAT TO ACCOMPANY EASEMENT AGREEMENT WITH HAMPTON ROADS SANITATION DISTRICT, CITY OF NEWPORT NEWS", ("Property")

TOGETHER WITH free right of ingress and egress on the portion of the Property identified on Exhibit "A" as "Access Easement" to and from Warwick Boulevard, US Route No. 60, from the edge of the pavement in a perpendicular direction to the said granted easement to and from said gas main or mains, gas regulator station or stations and appurtenances, as shown on Exhibit "A", attached hereto and made a part hereof, provided that in event of an emergency Grantee shall have the right to ingress and egress across all of the Property to and from the gas mains, gas regulator station or stations and appurtenances.

TO HAVE AND TO HOLD SAID rights perpetually unto Grantee, its successors or assigns. The rights herein granted may be assigned in whole or in part to any entity which succeeds to the right, title and interest of Grantee.

The terms, conditions and provisions of this Indenture shall extend to and be binding upon the heirs, executors, administrators, personal representatives, successors and assigns of the parties hereto.

NOTICE TO LANDOWNER: You are conveying rights to a public service corporation. A public service corporation may have the right to obtain some or all of these rights through exercise of eminent domain. To the extent that any of the rights being conveyed are not subject to eminent domain, you have the right to choose not to convey these rights and you could not be compelled to do so. You have the right to negotiate compensation for any rights that you are voluntarily conveying.

IN WITNESS WHEREOF, the Hampton Roads Sanitation District (HRSD) Commission has caused the Easement to be signed on its behalf by its General Manager.

HAMPTON ROADS SANITATION DISTRICT

By: Ayanna R. Williams

Signature: Ayanna R Williams

Title: Real Estate Manager

City/County of Newport News

Commonwealth of Virginia

The foregoing instrument was acknowledged before me this 1st day of February, 2021, by Ayanna Williams the Real Estate Manager, on behalf of Hampton Roads Sanitation District, the Grantor of foregoing instrument.

Notary Public:

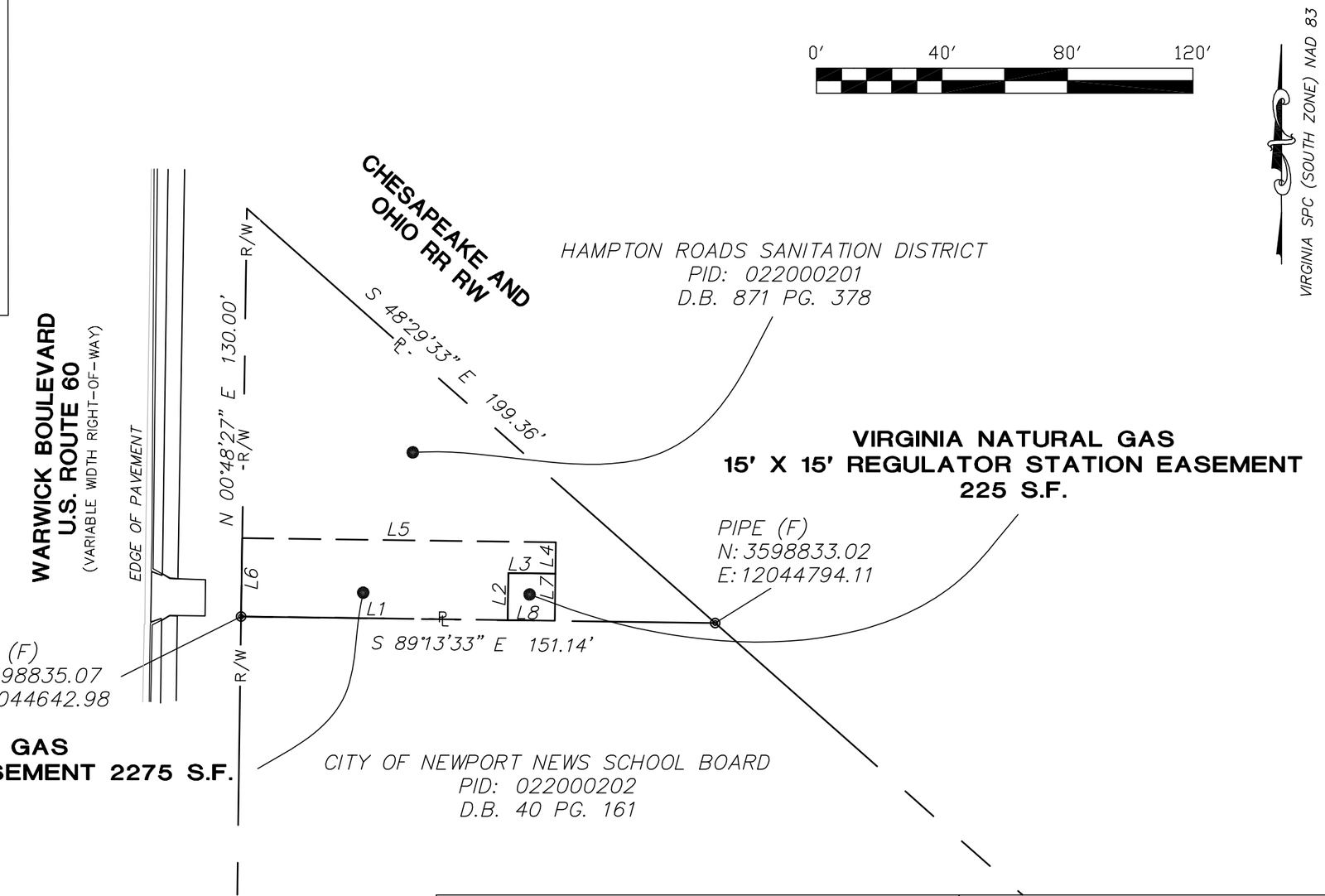
KRYSTENA LYNN WILSON
NOTARY PUBLIC
REG. #7690553
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES DECEMBER 31, 2024

Signature

Krystena Wilson
Print Name

My Commission Expires: Dec 31, 2024
[Notary Seal]

LINE	BEARING	DISTANCE
L1	N 89°13'57" W	84.99'
L2	S 00°46'27" W	15.00'
L3	S 89°13'33" E	15.00'
L4	S 00°46'27" W	10.00'
L5	S 89°13'33" E	100.00'
L6	S 00°45'32" W	25.01'
L7	N 00°46'27" E	15.00'
L8	S 89°13'33" E	15.00'



SCALE: 1" = 40'

Coastal Consultants, P.C.
ENGINEERS ~ SURVEYORS ~ DESIGNERS
3523 West Hundred Road
Chester, Virginia 23831
Phone:(804) 751-9097

V:\2019\VNG-19-0036 Cedar Hill Plat, Newport News\VNG-19-0036 Plat revised location.dwg 06/25/2020 09:21 AM

SURVEY NOTES:

1. THIS PLAT WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT AND THEREFORE MAY NOT SHOW ALL EASEMENTS OR PROPERTY REFERENCES THAT AFFECT THIS PROPERTY.
2. MERIDIAN IS BASED ON VIRGINIA STATE PLANE COORDINATE SYSTEM OF 1983 (SOUTH ZONE) NAD 83 (1993) BASED ON GPS OBSERVATIONS BY COASTAL CONSULTANTS. COORDINATE VALUES ARE SHOWN IN U.S. SURVEY FEET.
3. THIS PLAT DOES NOT CONSTITUTE A BOUNDARY SURVEY.

COMMONWEALTH OF VIRGINIA
EDWARD LUCAS HYMAN
Lic. No. 3300
LAND SURVEYOR

Virginia Natural Gas

PLAT TO ACCOMPANY EASEMENT
AGREEMENT WITH
HAMPTON ROADS SANITATION DISTRICT

CITY	STATE
NEWPORT NEWS	VIRGINIA

PREPARED BY COASTAL CONSULTANTS, P.C.
DRAWN BY ELH
CHECKED BY ELH

SCALE	DATE	
1"=40'	06/24/2020	SHEET 1 OF 1

INSTRUMENT 210004022
RECORDED IN THE CLERK'S OFFICE OF
NEWPORT NEWS CIRCUIT COURT ON
FEBRUARY 25, 2021 AT 02:22 PM
ANGELA F. REASON, CLERK
RECORDED BY: MMV

Jones, Blechman, Woltz & Kelly, P.C.
701 Town Center Drive
Suite 800
Post Office Box 12888
Newport News, Virginia 23612-2888

HRSD / #00 / 11711.917

Newport News
Where Great Things Are Happening

GIS Viewer

17386 Warwick Boulevard

Show search results for 02200…

0.2mi

-76.582 37.190 Degrees


07/11/2018

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #5

AGENDA ITEM 17. NUTRIENT COMPLIANCE PLAN UPDATE PRESENTATION

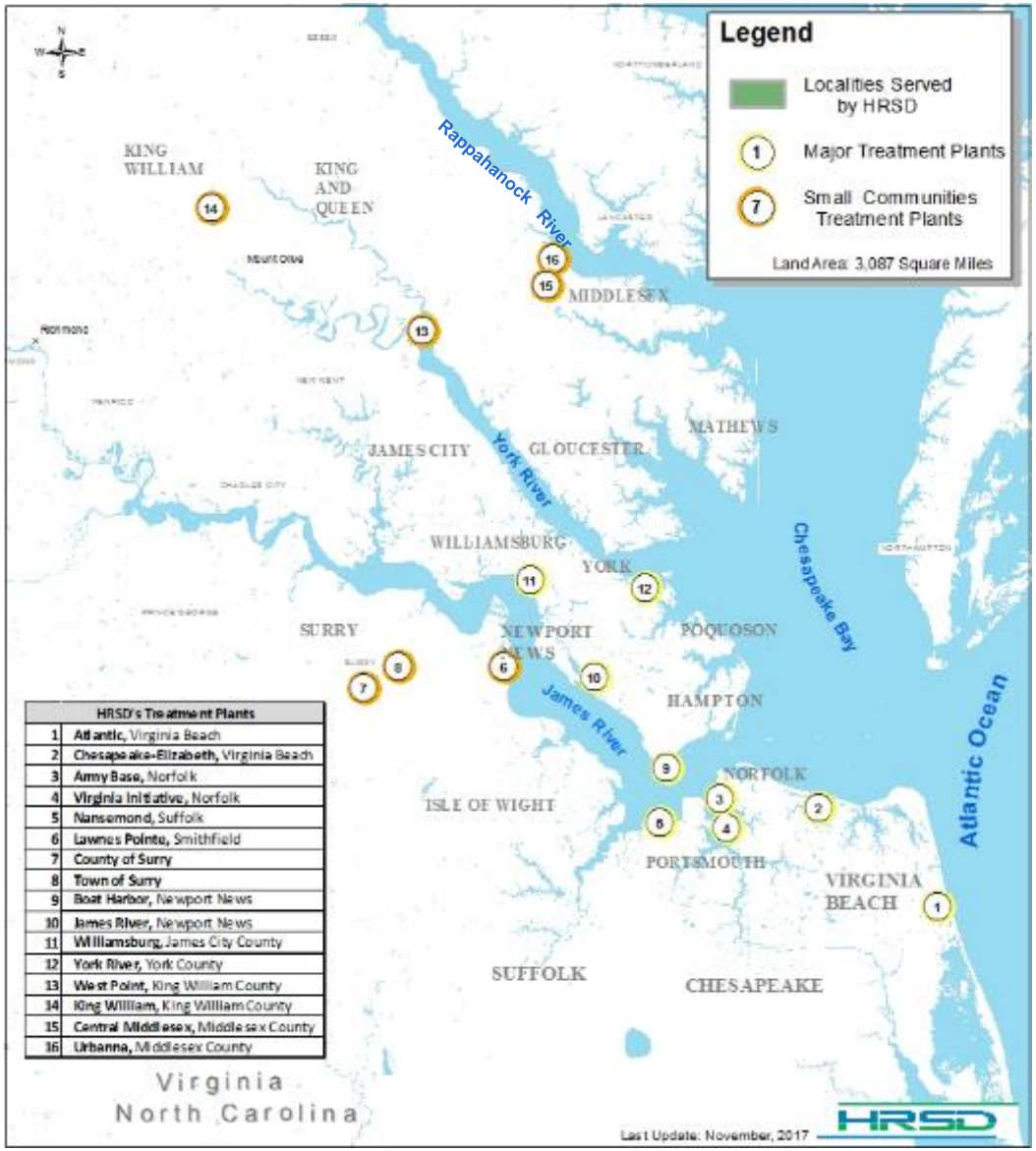
HRSD

Cleaning wastewater every day for a better Bay.

Nutrient Compliance Plan Update
Commission Briefing

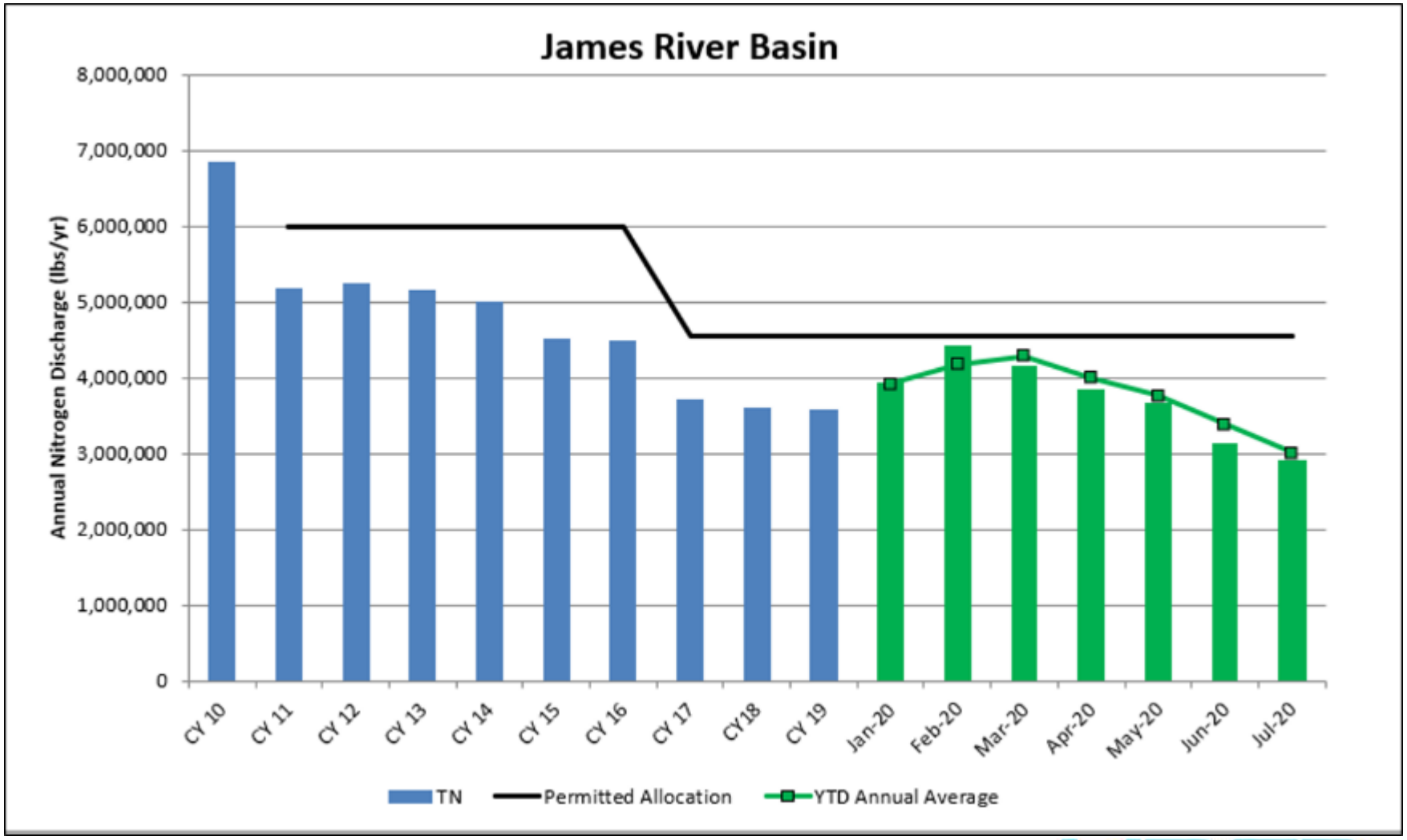
August 25, 2020

HRSD-River Basin Map

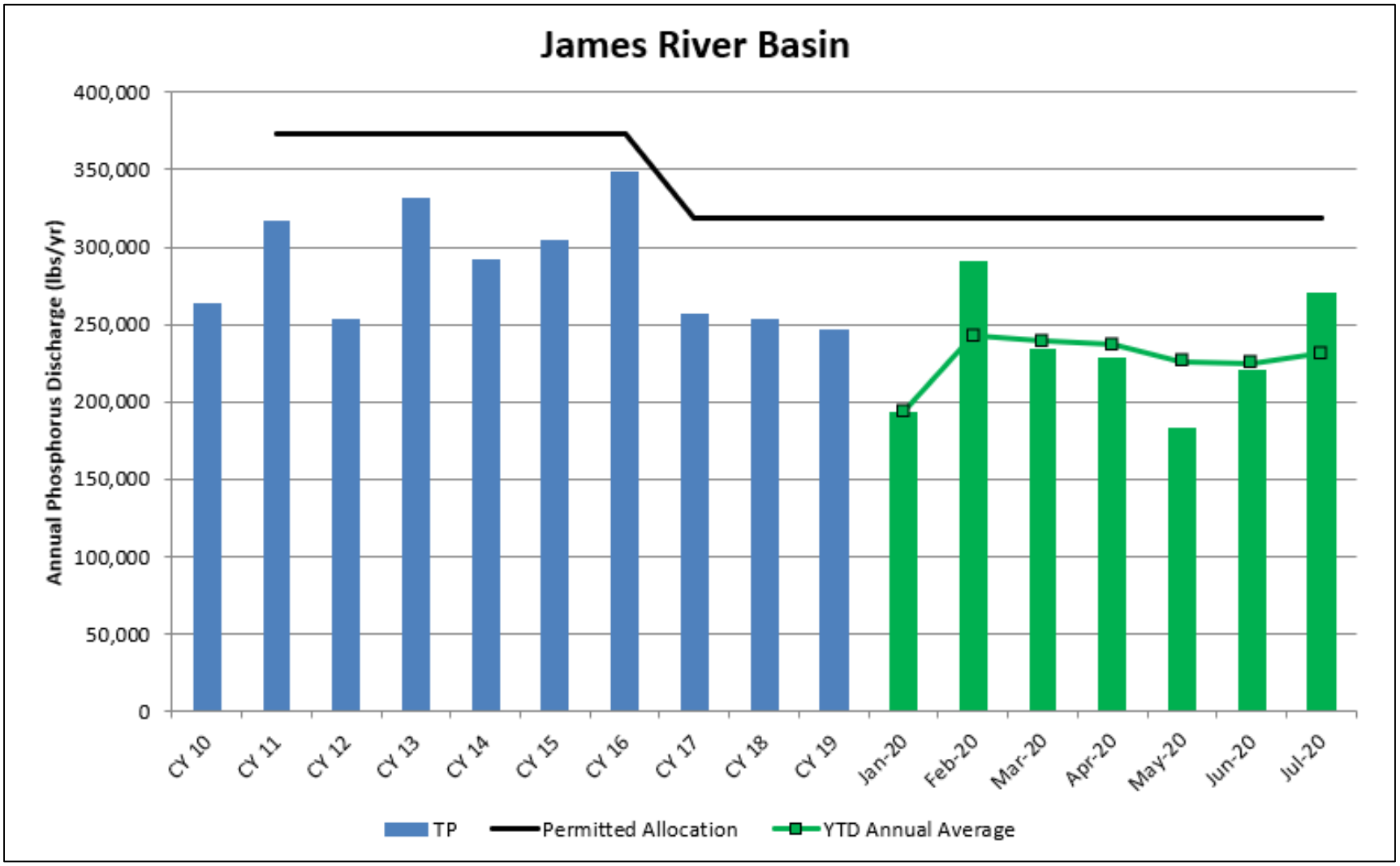


HRSD's Treatment Plants	
1	**Atlantic,** Virginia Beach
2	**Chesapeake-Elizabeth,** Virginia Beach
3	**Army Base,** Norfolk
4	**Virginia Initiative,** Norfolk
5	**Nansemond,** Suffolk
6	**Lawnes Pointe,** Smithfield
7	**County of Surry**
8	**Town of Surry**
9	**Boat Harbor,** Newport News
10	**James River,** Newport News
11	**Williamsburg,** James City County
12	**York River,** York County
13	**West Point,** King William County
14	**King William,** King William County
15	**Central Middlesex,** Middlesex County
16	**Urbanna,** Middlesex County

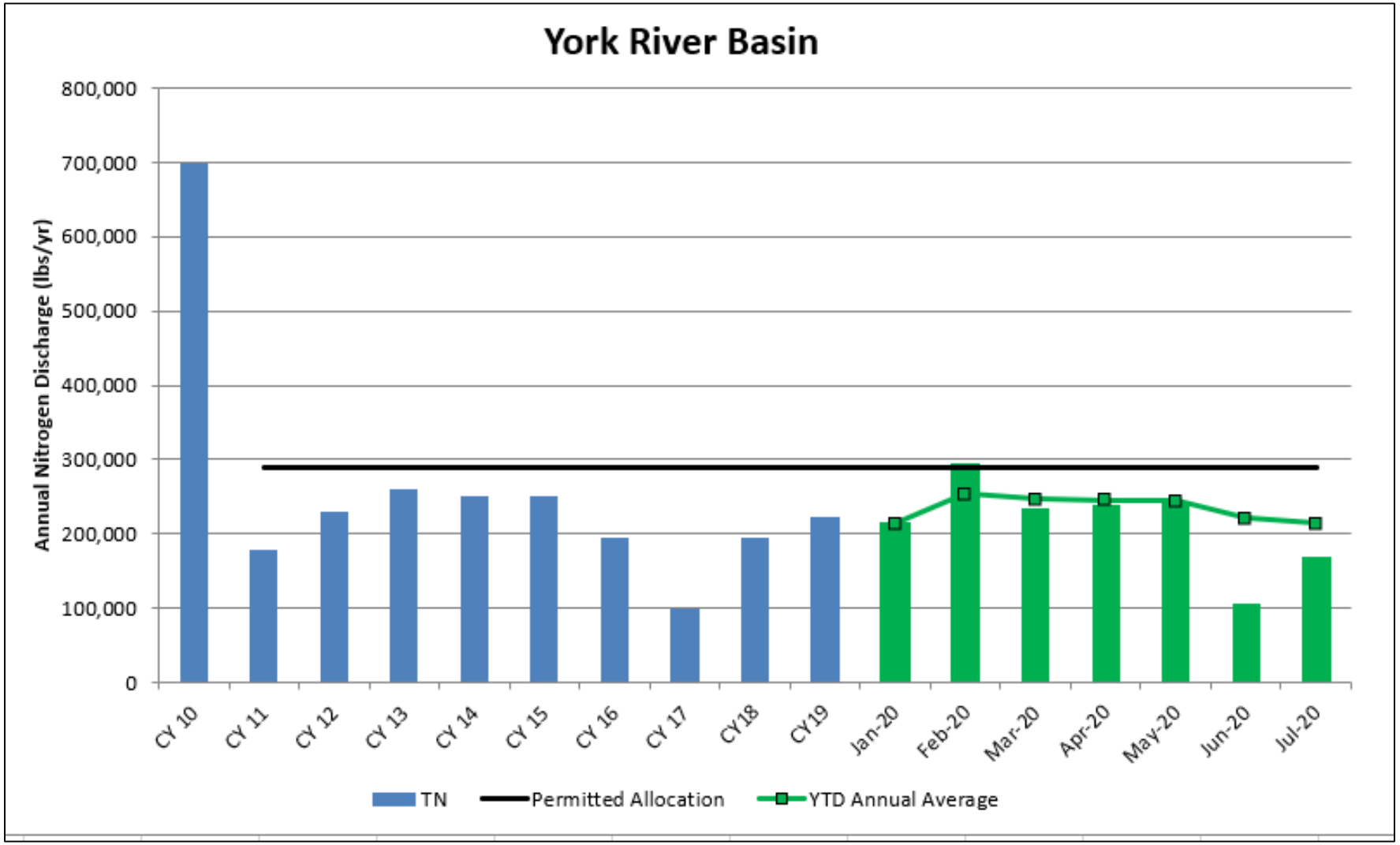
James River Basin: Annual Nitrogen Discharge



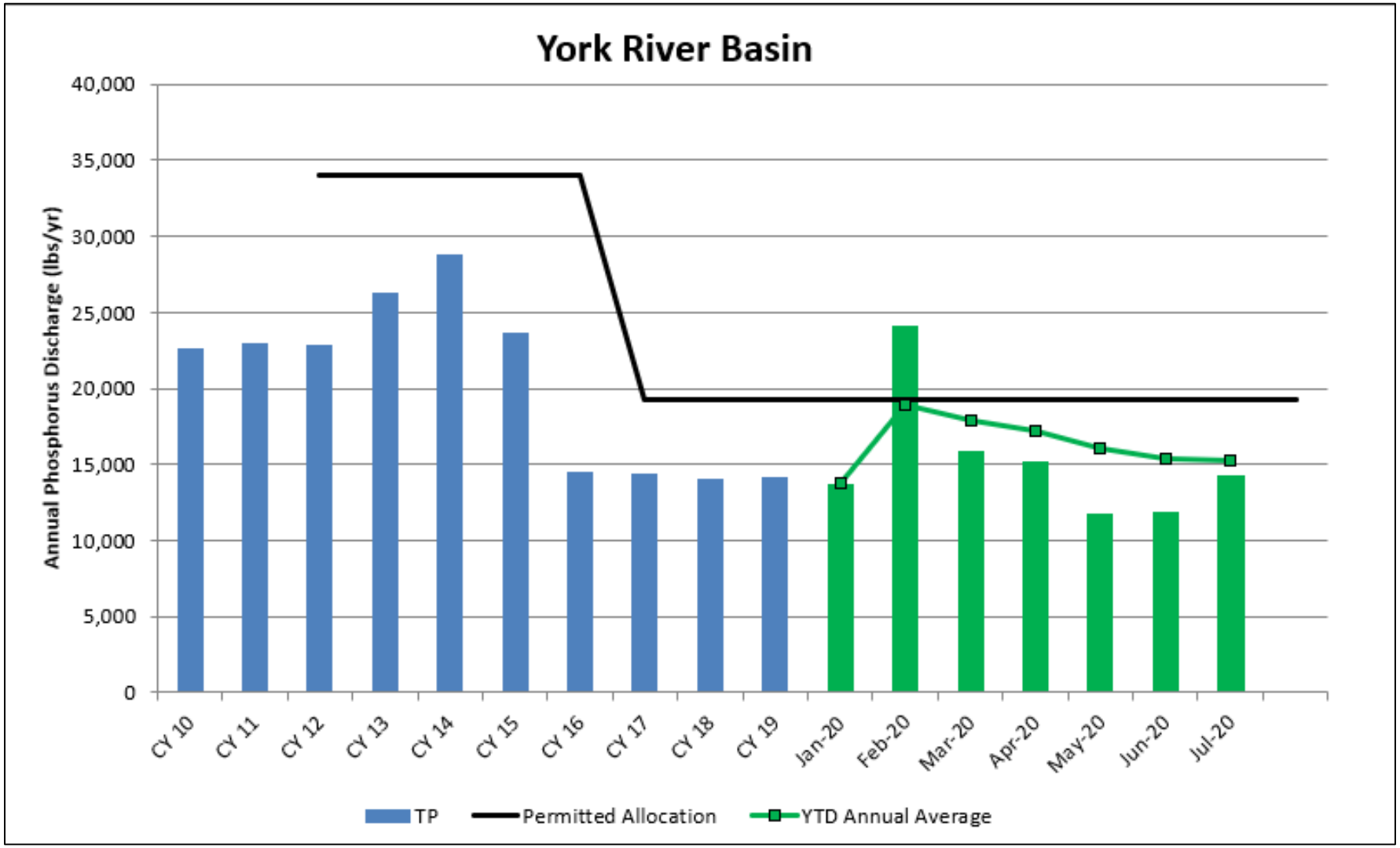
James River Basin: Annual Phosphorus Discharge



York River Basin: Annual Nitrogen Discharge



York River Basin: Annual Phosphorus Discharge



Rappahannock River Basin: 2019 Discharge

- Total Nitrogen

  2,720 lbs discharged

  -1,218 lbs permitted

  1,502 lbs credit needed

  3,431 lbs credit purchased

  $3.82/lb

  $13,145

- Total Phosphorus

  827 lbs discharged

  -87 lbs permitted

  740 lbs credit needed

  740 lbs credit purchased

  (728@$5.76/lb + 12@$8.64)

  $4,297

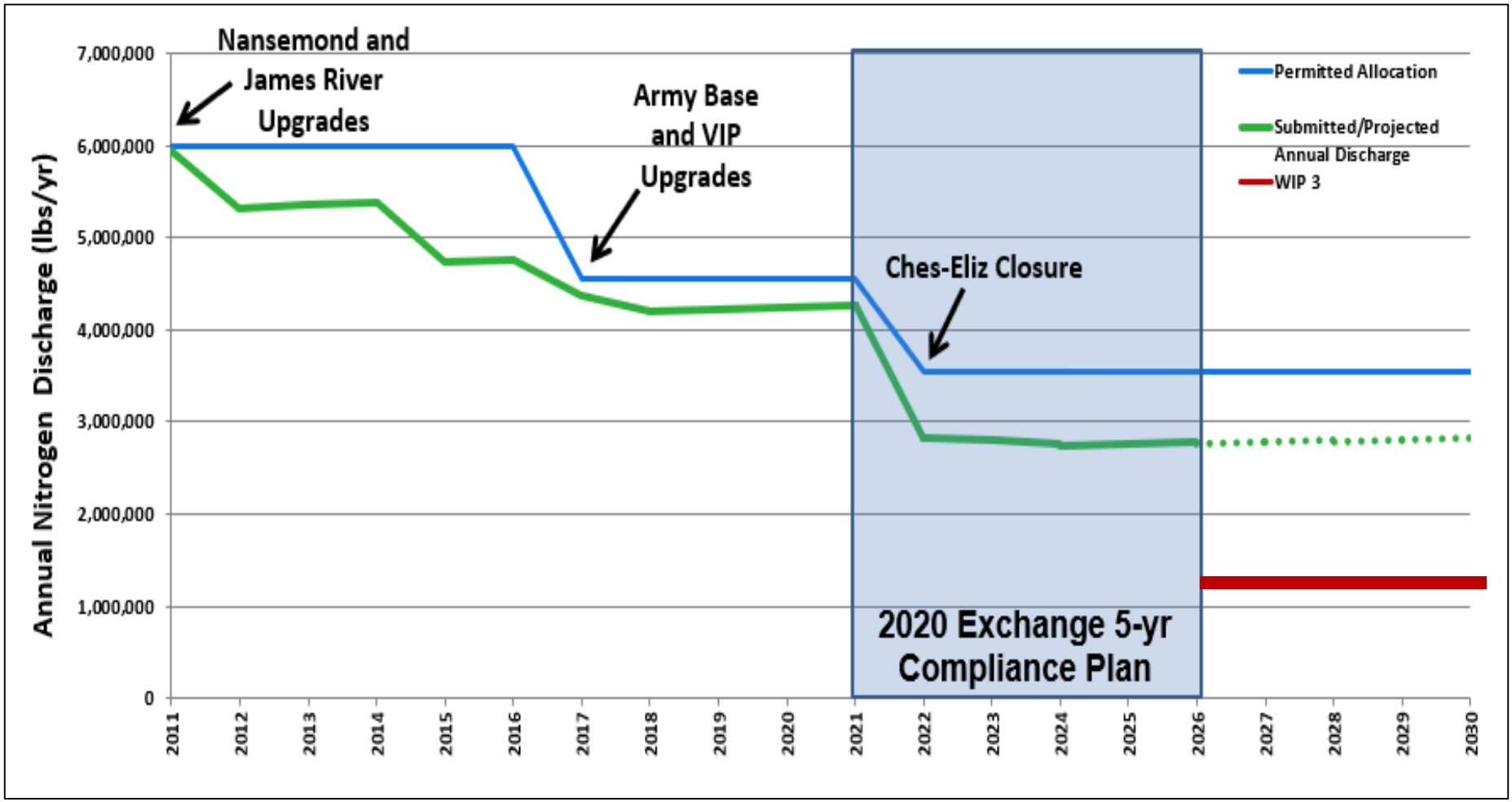
Nitrogen – 5 yr: James River Basin

	2021	2022	2023	2024	2025
Army Base: Flow (MGD)	10.43 MGD	10.22 MGD	10.24 MGD	10.39 MGD	10.42 MGD
Proj Conc (mg/L)	4.5 mg/L	4.5 mg/L	4.5 mg/L	4.5 mg/L	4.5 mg/L
Proj Mass (lbs/yr)	142,927 lbs/yr	140,033 lbs/yr	140,274 lbs/yr	142,434 lbs/yr	142,839 lbs/yr
Boat Harbor: Flow (MGD)	14.74 MGD	14.87 MGD	14.78 MGD	14.71 MGD	14.73 MGD
Proj Conc (mg/L)	26.0 mg/L	29.0 mg/L	29.0 mg/L	29.0 mg/L	29.0 mg/L
Proj Mass (lbs/yr)	1,167,414 lbs/yr	1,313,407 lbs/yr	1,305,253 lbs/yr	1,299,566 lbs/yr	1,300,639 lbs/yr
Ches-Eliz: Flow (MGD)	18.13 MGD	0.00 MGD	0.00 MGD	0.00 MGD	0.00 MGD
Proj Conc (mg/L)	26.5 mg/L	0.0 mg/L	0.0 mg/L	0.0 mg/L	0.0 mg/L
Proj Mass (lbs/yr)	1,463,063 lbs/yr	0 lbs/yr	0 lbs/yr	0 lbs/yr	0 lbs/yr
James River: Flow (MGD)	13.16 MGD	13.21 MGD	13.19 MGD	13.16 MGD	13.18 MGD
Proj Conc (mg/L)	9.0 mg/L	9.0 mg/L	9.0 mg/L	9.0 mg/L	9.0 mg/L
Proj Mass (lbs/yr)	360,580 lbs/yr	362,100 lbs/yr	361,496 lbs/yr	360,693 lbs/yr	361,377 lbs/yr
Lawnes Point: Flow (MGD)	0.00 MGD	0.00 MGD	0.00 MGD	0.00 MGD	0.00 MGD
Proj Conc (mg/L)	0.0 mg/L	0.0 mg/L	0.0 mg/L	0.0 mg/L	0.0 mg/L
Proj Mass (lbs/yr)	0 lbs/yr	0 lbs/yr	0 lbs/yr	0 lbs/yr	0 lbs/yr
Nansemond: Flow (MGD)	18.46 MGD	19.37 MGD	19.45 MGD	18.48 MGD	18.67 MGD
Proj Conc (mg/L)	7.5 mg/L	5.0 mg/L	5.0 mg/L	5.0 mg/L	5.0 mg/L
Proj Mass (lbs/yr)	421,584 lbs/yr	294,975 lbs/yr	296,245 lbs/yr	281,371 lbs/yr	284,378 lbs/yr
VIP: Flow (MGD)	30.95 MGD	31.53 MGD	30.80 MGD	29.97 MGD	30.07 MGD
Proj Conc (mg/L)	4.5 mg/L	4.5 mg/L	4.5 mg/L	4.5 mg/L	4.5 mg/L
Proj Mass (lbs/yr)	424,199 lbs/yr	432,080 lbs/yr	422,161 lbs/yr	410,793 lbs/yr	412,100 lbs/yr
Williamsburg: Flow (MGD)	9.29 MGD	9.10 MGD	8.95 MGD	8.79 MGD	8.88 MGD
Proj Conc (mg/L)	10.0 mg/L	10.0 mg/L	10.0 mg/L	10.0 mg/L	10.0 mg/L
Proj Mass (lbs/yr)	282,921 lbs/yr	277,068 lbs/yr	272,659 lbs/yr	267,743 lbs/yr	270,597 lbs/yr
Expected Discharge (lbs/yr)	**4,262,687 lbs/yr**	**2,819,663 lbs/yr**	**2,798,088 lbs/yr**	**2,762,600 lbs/yr**	**2,771,930 lbs/yr**
Permitted Wasteload Allocation (lbs/yr)	**4,553,500 lbs/yr**	**3,553,500 lbs/yr**	**3,553,500 lbs/yr**	**3,553,500 lbs/yr**	**3,553,478 lbs/yr**
Total Flow (MGD)	**115.2 MGD**	**98.3 MGD**	**97.4 MGD**	**95.5 MGD**	**96.0 MGD**
Safety Factor	**6.4%**	**20.7%**	**21.3%**	**22.3%**	**22.0%**

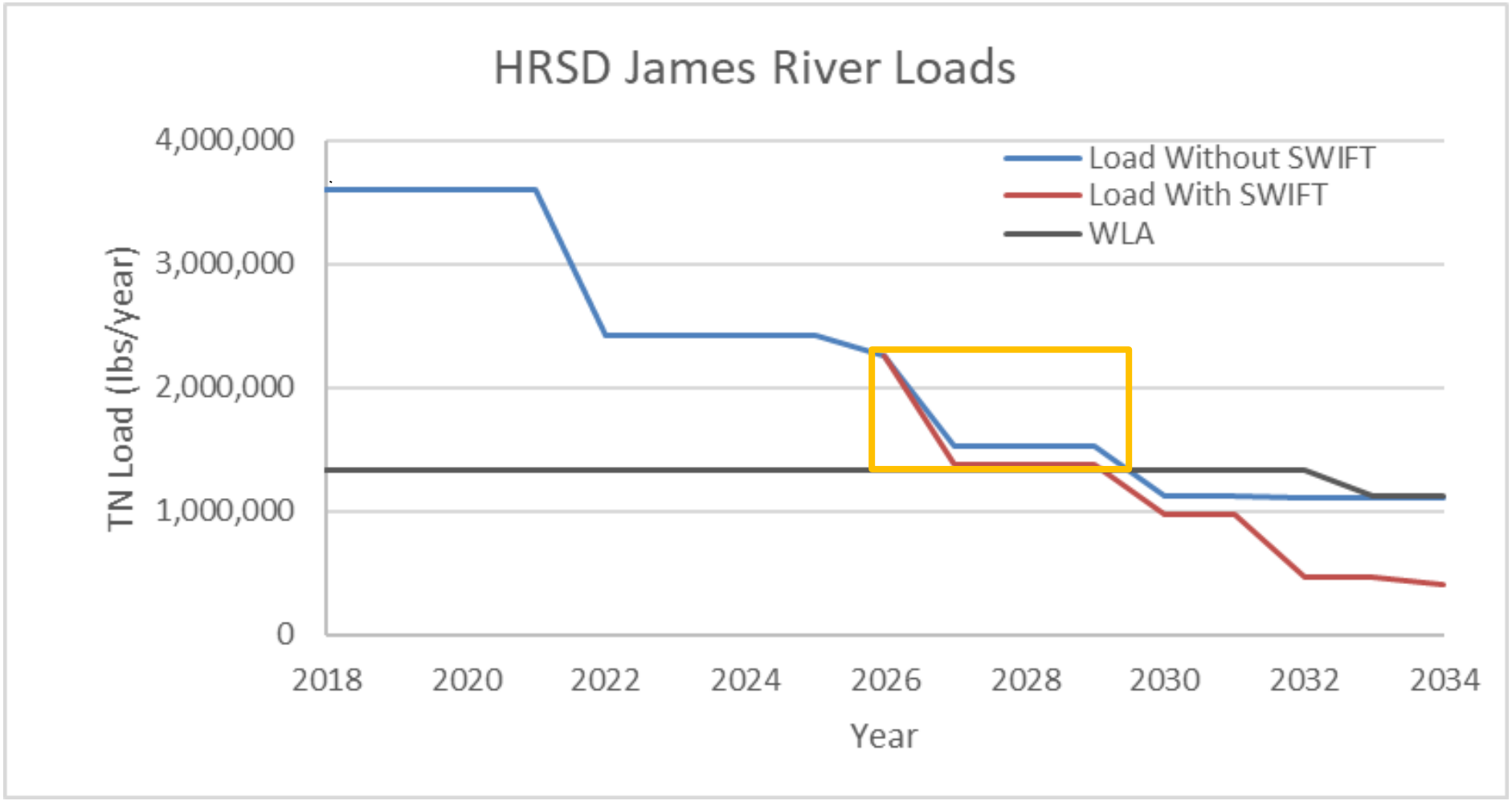
Phosphorus – 5 yr: James River Basin

	2021	2022	2023	2024	2025
Army Base: Flow (MGD)	10.43	10.22	10.24	10.39	10.42
Proj Conc (mg/L)	0.8	0.8	0.8	0.8	0.8
Proj Mass (lbs/yr)	25,409	24,895	24,938	25,322	25,394
Boat Harbor: Flow (MGD)	14.74	14.87	14.78	14.71	14.73
Proj Conc (mg/L)	0.8	0.8	0.8	0.8	0.8
Proj Mass (lbs/yr)	35,920	36,232	36,007	35,850	35,880
Ches-Eliz: Flow (MGD)	18.13	0.00	0.00	0.00	0.00
Proj Conc (mg/L)	0.9	0.0	0.0	0.0	0.0
Proj Mass (lbs/yr)	49,689	0	0	0	0
James River: Flow (MGD)	13.16	13.21	13.19	13.16	13.18
Proj Conc (mg/L)	0.8	0.8	0.8	0.8	0.8
Proj Mass (lbs/yr)	32,052	32,187	32,133	32,062	32,122
Lawnes Point: Flow (MGD)	0.00	0.00	0.00	0.00	0.00
Proj Conc (mg/L)	0.0	0.0	0.0	0.0	0.0
Proj Mass (lbs/yr)	0	0	0	0	0
Nansemond: Flow (MGD)	18.46	19.37	19.45	18.48	18.67
Proj Conc (mg/L)	1.2	1.2	1.2	1.2	1.2
Proj Mass (lbs/yr)	67,453	70,794	71,099	67,529	68,251
VIP: Flow (MGD)	30.95	31.53	30.80	29.97	30.07
Proj Conc (mg/L)	0.8	0.8	0.8	0.8	0.8
Proj Mass (lbs/yr)	75,413	76,814	75,051	73,030	73,262
Williamsburg: Flow (MGD)	9.29	9.10	8.95	8.79	8.88
Proj Conc (mg/L)	0.8	0.8	0.8	0.8	0.8
Proj Mass (lbs/yr)	22,634	22,165	21,813	21,419	21,648
Expected Discharge (lbs/yr)	308,570 lbs/yr	263,087 lbs/yr	261,040 lbs/yr	255,212 lbs/yr	256,556 lbs/yr
Permitted Wasteload Allocation (lbs/yr)	318,434 lbs/yr	318,434 lbs/yr	318,434 lbs/yr	318,434 lbs/yr	318,434 lbs/yr
Total Flow (MGD)	115.2 MGD	98.3 MGD	97.4 MGD	95.5 MGD	96.0 MGD
Safety Factor	3.1%	17.4%	18.0%	19.9%	19.4%

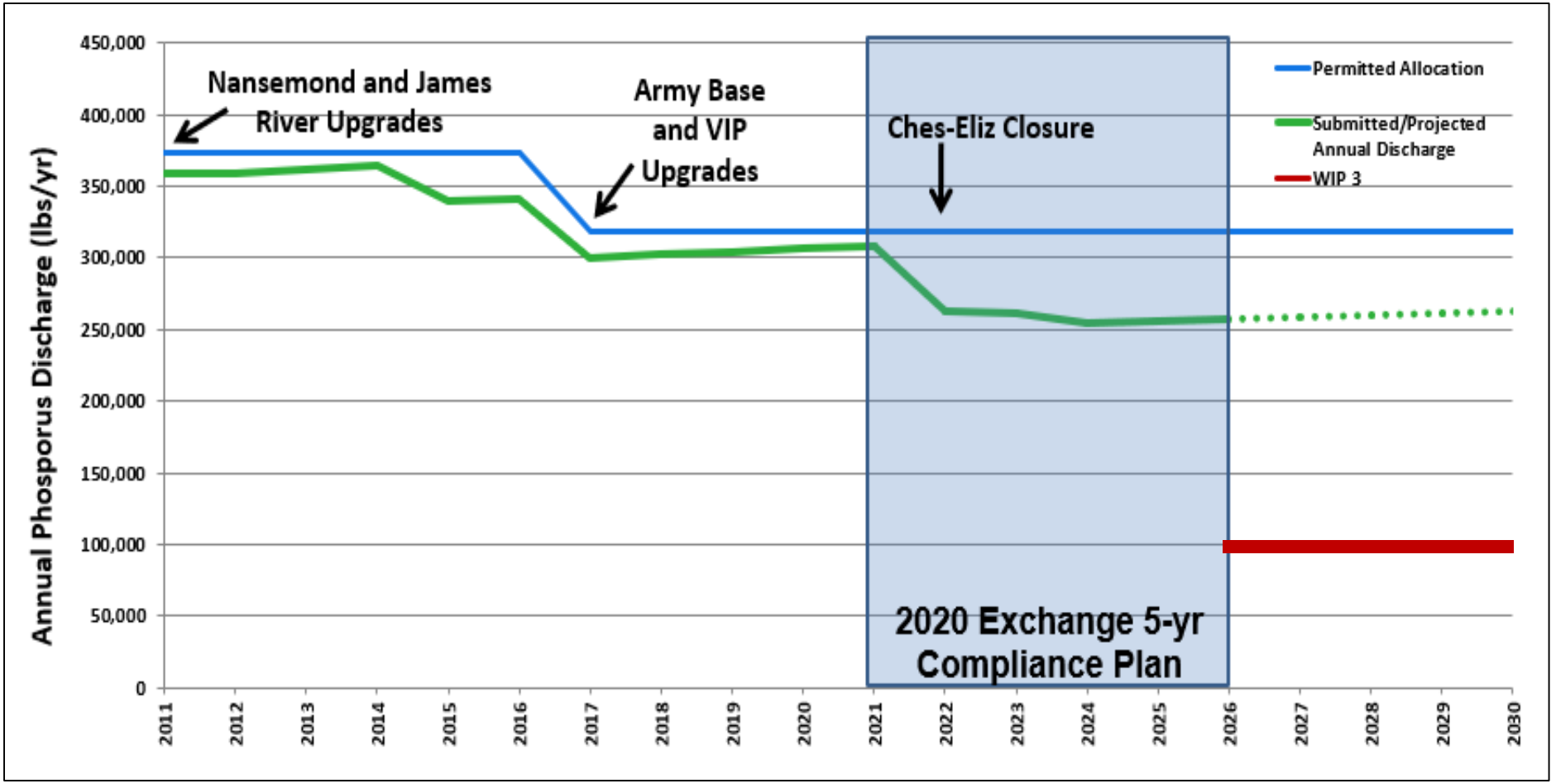
James River Basin Nitrogen Reduction Strategy



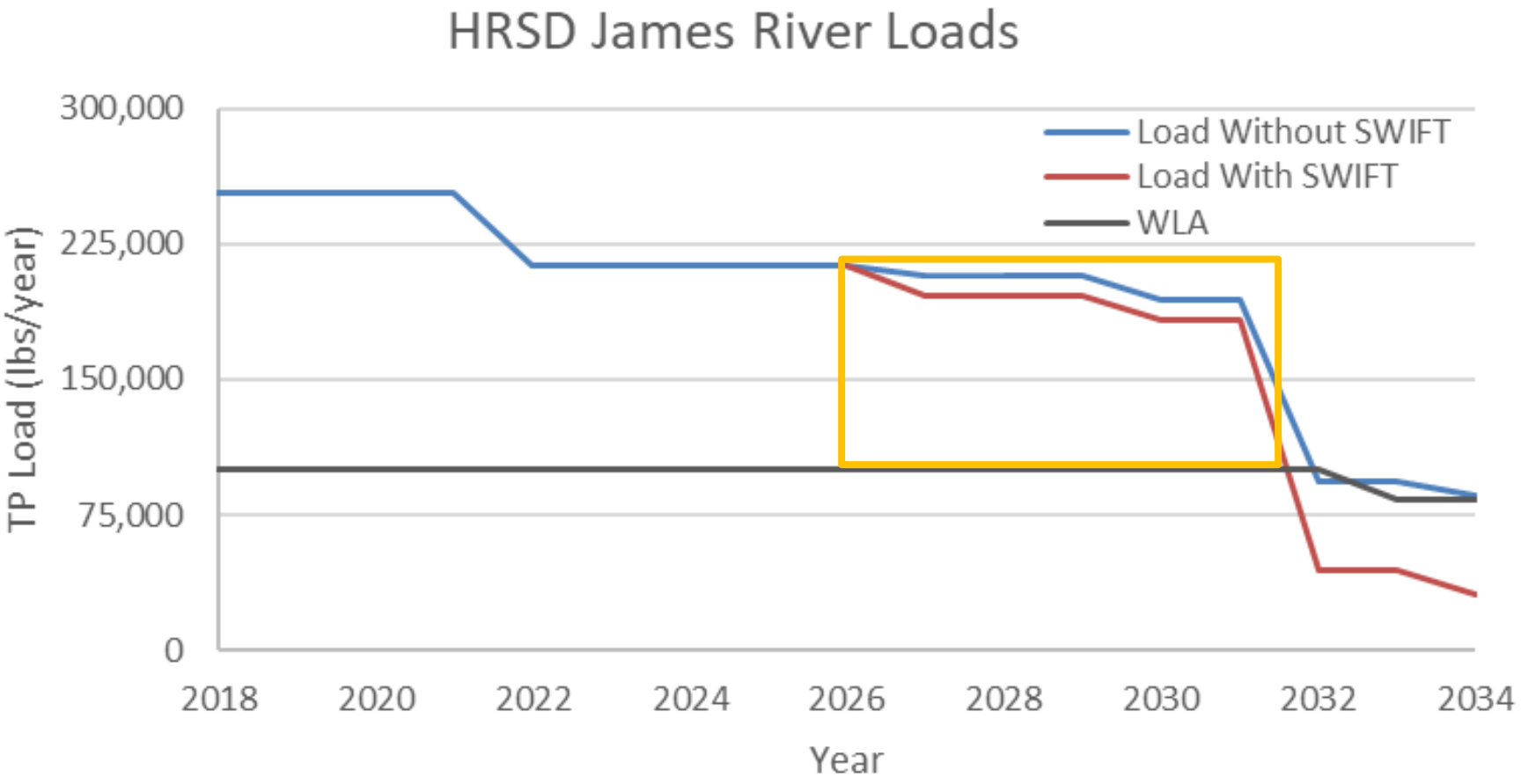
James River Basin Nitrogen WIP 3 Impact



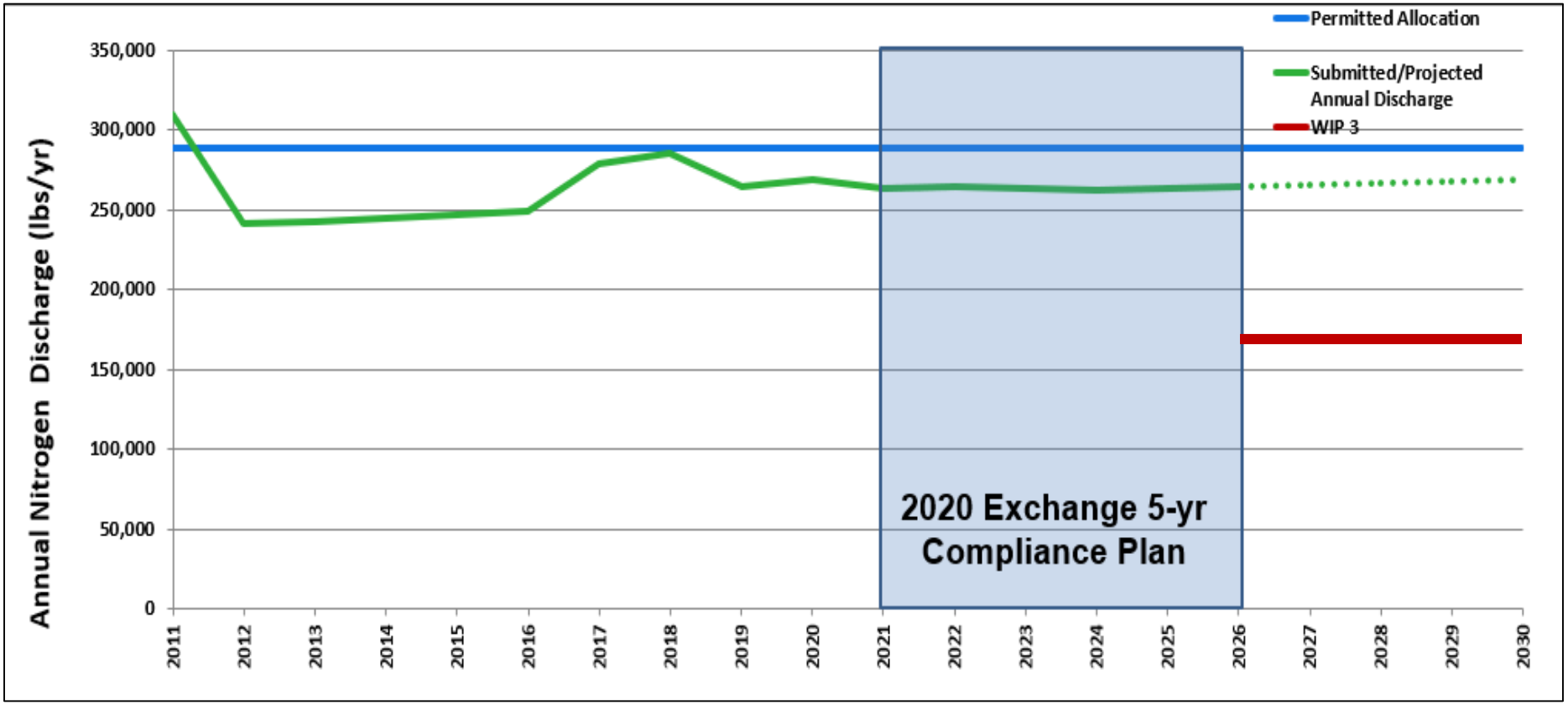
James River Basin Phosphorus Reduction Strategy



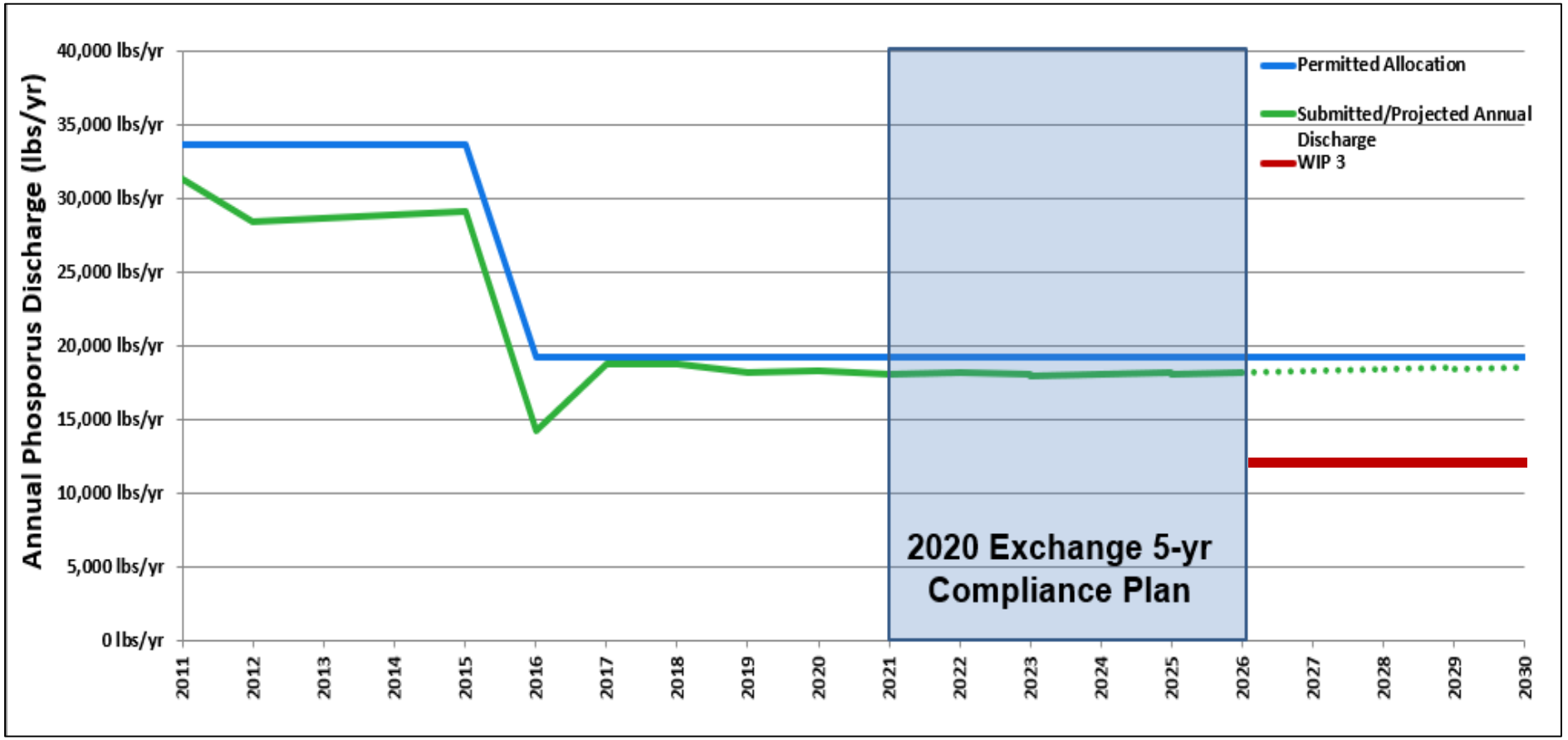
James River Basin Phosphorus WIP 3 Impact



York River Basin Nitrogen Reduction Strategy



York River Basin Phosphorus Reduction Strategy



Code of Virginia 62.1-44.19:21.2

- Nutrient and sediment credit generation and transfer; public body.
- Amended July 1, 2020.
- *C. Any publicly owned treatment works that is permitted under the Watershed General Virginia Pollutant Discharge Elimination System (VPDES) Permit pursuant to § 62.1-44.19:14 and is constructing or expanding the treatment works, wastewater collection system, or other facility used for public wastewater utility operations may, as an alternative to acquiring and using certain perpetual nutrient credits pursuant to subsection B of § 62.1-44.19:21, permanently retire a portion of its wasteload allocation if (i) notice is given by such applicant to the Department, (ii) a ratio of 10 pounds of nitrogen allocation for each pound of phosphorous allocation retired is also permanently retired and applied toward the land-disturbing project, and (iii) the general permit registration list is modified to reflect the permanent retirement of the wasteload allocation. Except for a water reclamation and reuse project at a treatment works, no more than 10 pounds per year of phosphorous allocation may be applied toward a single project's postconstruction phosphorus control requirement.*

*C. **Any publicly owned treatment works that** is permitted under the Watershed General Virginia Pollutant Discharge Elimination System (VPDES) Permit pursuant to § 62.1-44.19:14 and **is constructing or expanding the treatment works, wastewater collection system, or other facility used for public wastewater utility operations may**, as an alternative to acquiring and using certain perpetual nutrient credits pursuant to subsection B of § 62.1-44.19:21, **permanently retire a portion of its wasteload allocation***

62.1-44.19:21.2 C

- *if (i) notice is given by such applicant to the Department, (ii)* ***a ratio of 10 pounds of nitrogen allocation for each pound of phosphorous allocation retired is also permanently retired*** *and applied toward the land-disturbing project, and (iii)* ***the general permit registration list is modified to reflect the permanent retirement of the wasteload allocation****.*

- ***Except for a water reclamation and reuse project at a treatment works, no more than 10 pounds per year of phosphorous allocation may be applied toward a single project's postconstruction phosphorus control requirement.***

Providence Road Offline Storage Facility

- Approached summer 2019 re: need for offsite credits for land disturbance associated with PROLSF
  - Land disturbance of 7.5 acres
    - Increase of impervious acreage by 2.2 acres
  - Total TP load reduction required: 4.79 lb/yr
  - TP reduction provided with on-site controls: 2.59 lb/yr
  - Off-site credit needed: 2.19 lb/yr TP
  - Corresponding TN credit: 21.9 lb/yr (10:1 ratio)
- Approximate credit costs from off-site nutrient credit bank (e.g. Cranston Mill Pond, James City County): $15,000 per pound

Providence Road Offline Storage Facility - BMPs

- Consultant had already maximized on-site BMPs to control TP
  - Rainwater harvesting received runoff reduction credit of 44%
  - Two bioretention areas
  - Wet swale
  - Green roof for portion of tank and pump station
    - Not used in calculation because unsure of implementation

Surry Hydraulic Improvements – Surry County

- DEQ-PRO required offset of minimal land disturbance – 0.45 acres
  - Required offsite TP credit of 0.04 lb/yr
    - Corresponding TN credit of 0.40 lb/yr
  - DEQ-PRO requested that HRSD's James River WLA be reduced by 1 lb each TP and TN
  - 0.96 lb TP and 0.60 lb TN held in reserve for other construction projects
- Team will need to track available credits

Guiding Principles

HRSD's mission is to protect public health and the waters of Hampton Roads by treating wastewater effectively. Protecting water quality at the local level as well as the regional level requires effective environmental stewardship. To protect water quality at the local (project site) level, HRSD generated nutrient credits should only be utilized after reasonable on-site best management practices and water quality protective measures have been exhausted. In such cases, it is more economical to utilize HRSD wastewater treatment-generated credits as opposed to purchasing offsets from nutrient credit banks.

Retire WLA

4. **TRANSFER OF ALLOCATION TO OR FROM ANOTHER FACILITY**

If the owner or operator listed above proposes the exchange of an allocation for total nitrogen or total phosphorus with other permitted facilities, list all affected facilities, the VPDES permit numbers assigned to these facilities, the delivered pounds of total nitrogen or total phosphorus proposed for exchange and the calendar years for which the exchange will be in effect.

Facility	VPDES#	N/P	Delivered pounds	Acquired/transferred?	Calendar years?
HRSD James R Agg.	VAN040090	TN, 100 lbs, Internal transfer to provide off-site credit for HRSD land disturbance activities, Perpetual - Beginning 2020			
HRSD James R Agg.	VAN040090	TP, 10 lbs, Internal transfer to provide off-site credit for HRSD land disturbance activities, Perpetual - Beginning 2020			

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #6

AGENDA ITEM 18. COVID-19 WASTEWATER SURVEILLANCE STUDY UPDATE

HRSD

Cleaning wastewater every day for a better Bay.

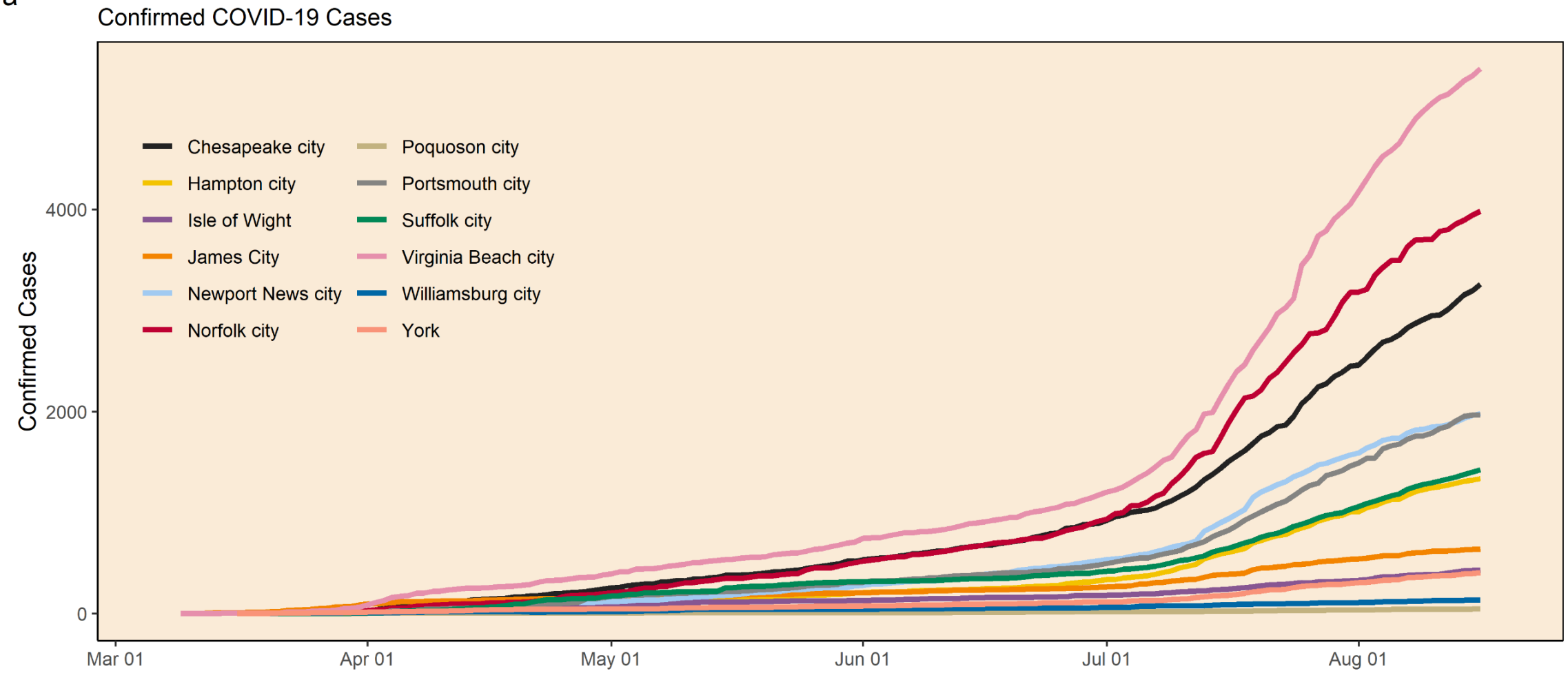
COVID-19 Surveillance: Research Update

August 25, 2020

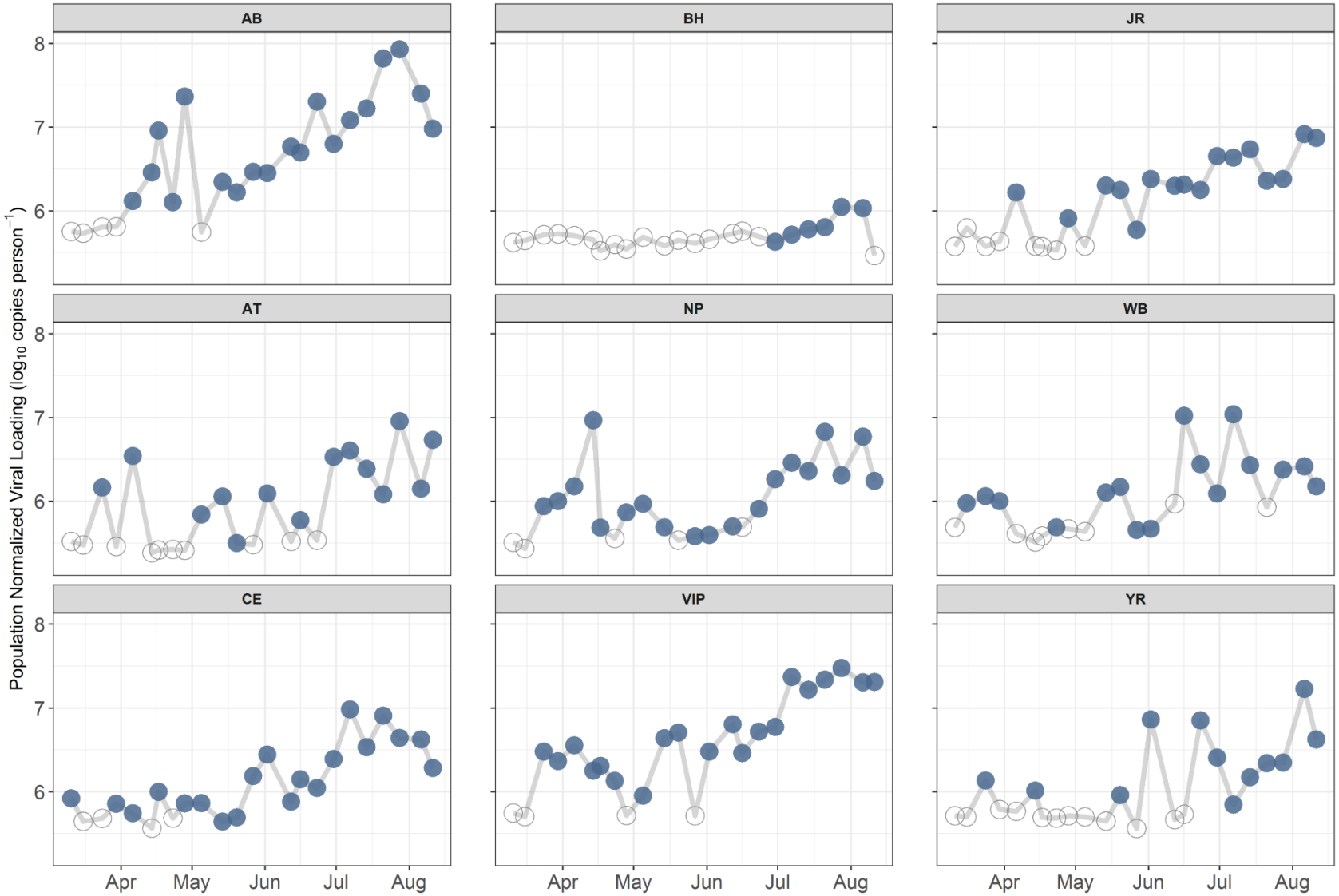
- Weekly samples have continued since the last update (7/28)
- New data presented here: 7/21 – 8/11
- General observations
  - Declining community prevalence from peak
- Published HRSD approach
  - *COVID-19 surveillance in Southeastern Virginia using wastewater-based epidemiology*
- Expanding local collaborations to fully utilize wastewater data

COVID-19 Cases in Hampton Roads

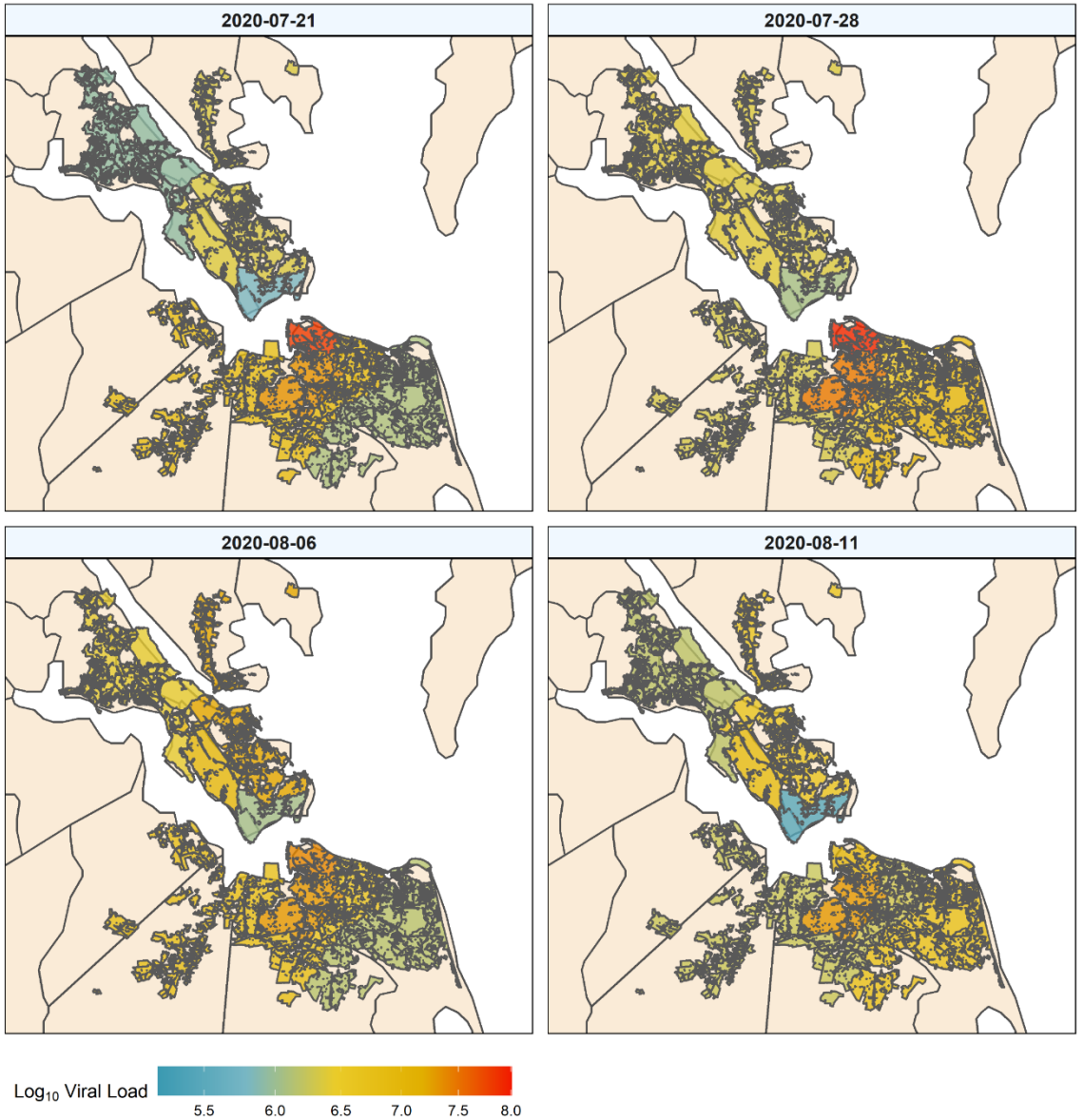
a



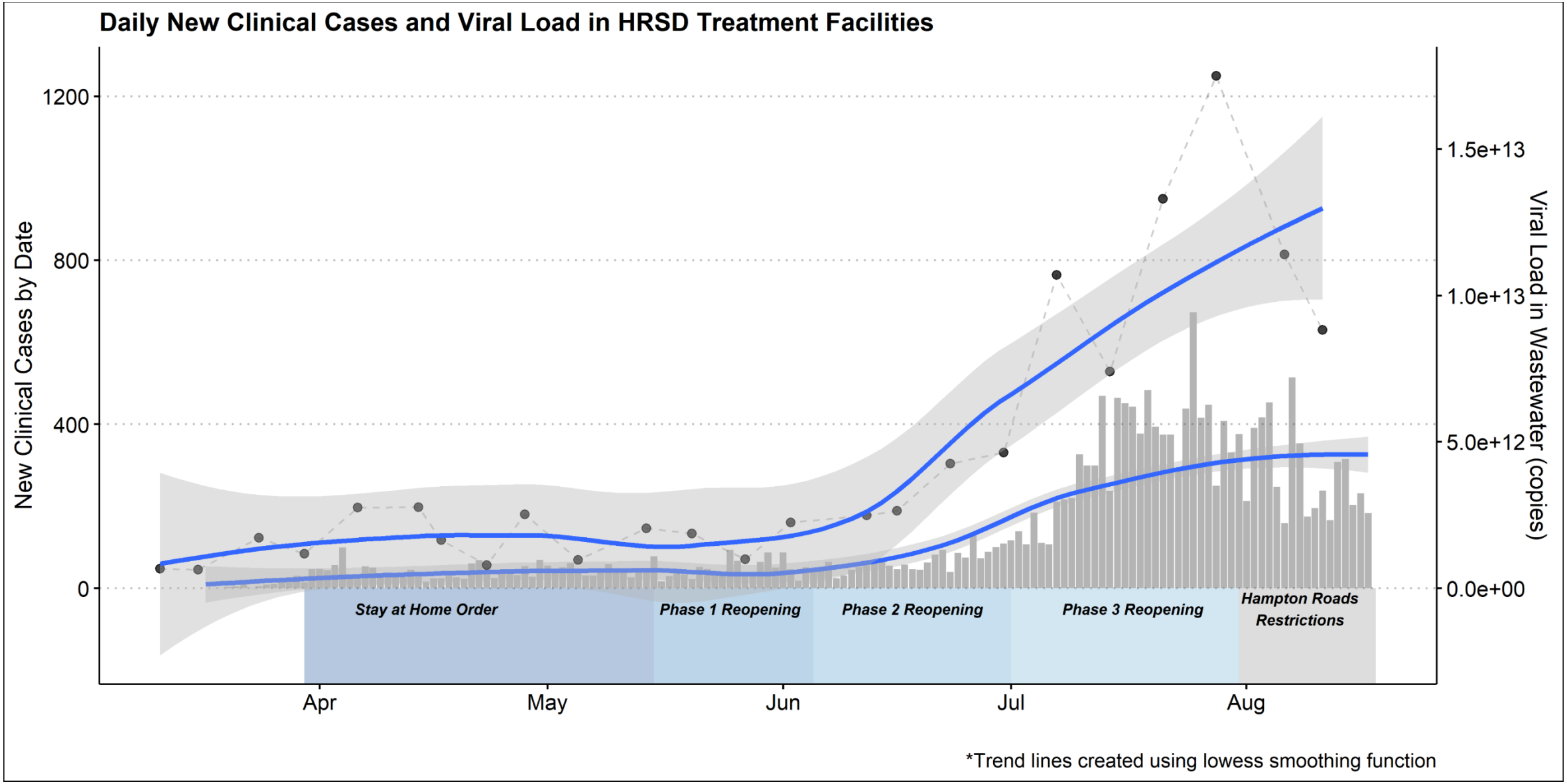
Normalized Viral Load at HRSD Facilities



A Spatial Look at the Last 4 Weeks



Regional Viral Load



Moving Forward

- Continue weekly monitoring of 9 major facilities
- Continue to provide data to CDC supporting national coordinated wastewater effort
- Provided most current data to VDH for review
- Maximizing data usage:
  - UVA epidemiological model
  - Hampton Roads wastewater epi working group

HRSD COMMISSION MEETING MINUTES
August 25, 2020

ATTACHMENT #7

AGENDA ITEM 22. INFORMATIONAL ITEMS

a. Management Reports
   (1) General Manager
   (2) Communications
   (3) Engineering
   (4) Finance
   (5) Information Technology
   (6) Operations
   (7) Talent Management
   (8) Water Quality
   (9) Report of Internal Audit Activities

b. Strategic Planning Metrics Summary

c. Effluent Summary

d. Air Summary

August 16, 2020

Re: General Manager's Report

Dear Commissioners:

July was a blur. I took significant leave to spend time with my father as he entered hospice care at the beginning of the month. There are several factors that made that possible without any lapse in HRSD leadership:

- We have a great team. From the Senior Leadership team all the way through the first line supervisors, we have great people that need no micromanagement. They are highly capable and know what needs to be done and they do it.
- You have given me great support and trust that I will do what needs to be done. Without your support I would never have been able to focus so much time on family.
- HRSD is an adaptable and resilient organization. COVID-19 has reminded us of this with our sizeable shift and transition to a virtual work environment with no loss of service or performance, proving location is not a factor for many of our jobs. As a result, I was able to participate in many internal and external meetings while spending time with family in Delaware.

Finance is investigating the disconnect between the low water consumption for the month and the wastewater revenues meeting budgeted expectations. We should have details for you at the August meeting.

Finance has been working hard to close the Water Infrastructure Finance and Innovation Act (WIFIA) loan. This is a huge deal, and Jay and his team are working hard to get it closed before potential election market disruptions. The amount of work cannot be overstated and the potential payoff for HRSD is tremendous in the form of tens of millions in finance cost savings.

Equally demanding has been the effort to permit the first full-scale SWIFT facility at the James River Treatment Plant. This work has been led by Jamie Mitchell who has done an incredible job coordinating and resolving comments from many sources.

We have so many great people doing so many great things. We are very fortunate!

The highlights of July's activities are detailed in the attached monthly reports.

A. **Treatment Compliance and System Operations:** All plants met permit with only a minor spill in the interceptor system. Other highlights for the month are included in the attached monthly reports.

B. **Internal Communications:** I participated in the following meetings/activities (all virtual unless otherwise noted) with HRSD personnel:

1. Multiple meetings focused on the Newport News property acquisition to support expansion of the James River Treatment Plant for SWIFT
2. A meeting to discuss architectural elements of the various pressure reducing stations (PRS) being upgraded to support the Chesapeake-Elizabeth Treatment Plant closure
3. A meeting to review the final plan for the Leadership and Management Academy (LAMA) offering from the Organizational Development & Training (OD&T) Division
4. A meeting to review the issue with the effluent meters from the Navy
5. A meeting to review the upcoming United Way campaign
6. A meeting to review the potential for CARES Act funding
7. Weekly meetings of all HRSD leaders (everyone with direct reports) via Zoom to provide information and guidance on HRSD COVID-19 response
8. A meeting to discuss potential options to serve Surry Nuclear Plant with the new Surry Force Main
9. A design review for the new Willard Avenue pump station in Hampton

C. **External Communications:** I participated in the following meetings/activities (all virtual unless otherwise noted):

1. Two Regulatory Advisory Panel meetings with the Department of Environmental Quality (DEQ) regarding the proposed change to the nutrient regulations
2. Two meetings of the small group tasked with reviewing assumptions and alternatives for Virginia to meet the Chesapeake Bay Total Maximum Daily Load (TMDL) Watershed Implementation Planning (WIP) 3 obligations
3. Two meetings to discuss regional funding options for the Elizabeth River Project and more generally resilience and stormwater
4. A meeting to plan a presentation for the ESRI Water Conference
5. Hosted the monthly meeting of the US Water Alliance's One Water Council
6. Multiple meetings planning a workshop for Water Environment Federation (WEF) Technical Conference (WEFTEC)

7. Participated in a WEF recorded interview as a member of an industry leaders' panel

D. **Consent Decree Update:**

Department of Justice (DOJ), US Environmental Protection Agency (EPA), and DEQ accepted the final changes in the proposed fifth amendment to the Consent Decree and requested my signature which was provided. Agency signatures are currently being added with the expectation the final will be lodged with the US Eastern District court within 30 days. An optimistic timeline has the final order signed off in late October.

The meeting next week will be another fully electronic meeting using Skype as we have done for the past three meetings. The Governor has extended the declared state of emergency indefinitely and as such, we will continue to meet in this fashion until that executive order is lifted.

Thanks again for your support in these personally challenging times. I will be working remotely from my mom's house on occasion over the next few months as we get her affairs in order. I will be taking leave as necessary but should be able to keep up with most meetings and obligations remotely.

The leadership and support you provide are the keys to our success as an organization. Thanks for your continued dedicated service to HRSD, the Hampton Roads region, the Commonwealth and the environment. **I look forward to seeing you (virtually) on Tuesday, August 25, 2020**.

Respectfully submitted,

Ted Henifin, P.E.
General Manager

TO: General Manager

FROM: Director of Communications

SUBJECT: Monthly Report for July 2020

DATE: August 4, 2020

A. Publicity and Promotion

HRSD and or/SWIFT were mentioned or featured in10 news stories and editorials on topics that included:

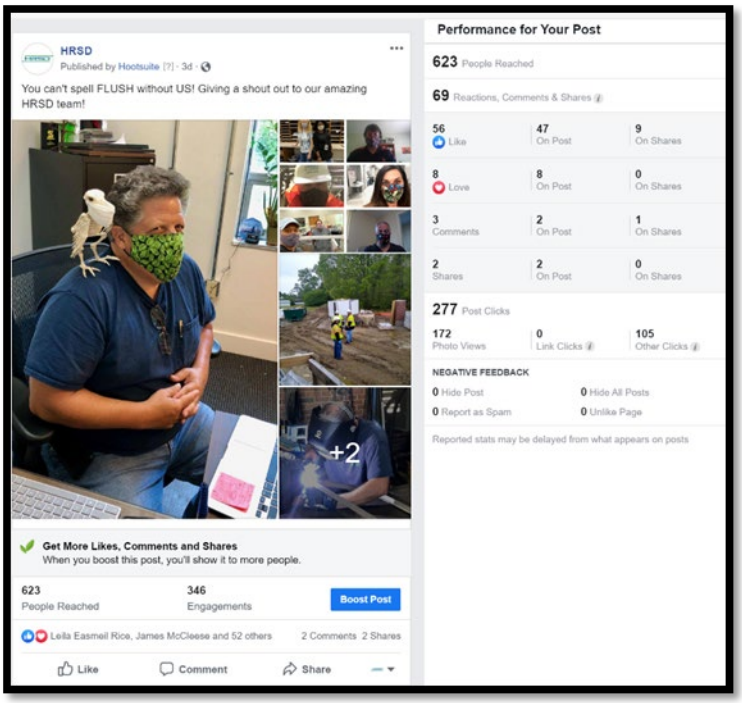
1. HRSD receives $1 billion Water Infrastructure and Innovation Fund Act (WIFIA) funding
2. Wastewater testing for COVID-19 markers
3. Capital Improvement projects in the Mathews and Middlesex counties
4. Recent awards earned (American Society of Civil Engineers Infrastructure Gamechanger award and Foodbank of Southeastern Virginia's Hunger Heroes award)

B. Social Media and Online Engagement

1. Metrics

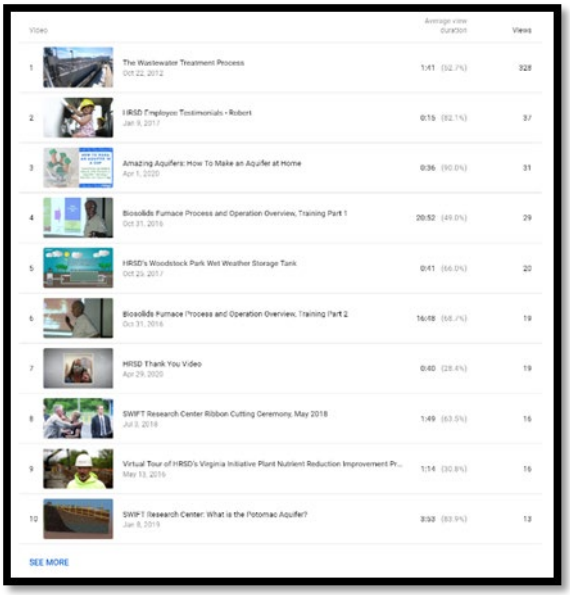
Social Media Metrics June 2020				
METRIC	**FACEBOOK**	**LINKEDIN**	**TWITTER**	**YOUTUBE**
Number of Posts ***number of published posts**	27 +1	3 +2	23 +3	2:47 average view duration
Number of Followers/Likes ***total number of fans**	1,334 +20	4,983 +38	463 +11	186 +1
Engagement ***sum of reactions comments and shares**	503 +60	100 +97	30 +6	425 unique viewers +74
Traffic ***total clicks on links posted**	5 +5	157 +116	17 +5	4.4% click through -.5%

2. Top posts on Facebook, Twitter and YouTube



Top Facebook post

Top Tweet



Top videos

3. Impressions and Visits

a. Facebook: 16,412 page impressions, 12,707 post impressions reaching 11,079 users and Facebook engagement of 503 (420 reactions, 45 shares and 38 comments).

b. Twitter: 7,262 tweet impressions; 135 profile visits and 13 mentions

c. HRSD.com/SWIFTVA.com: 971 page visits

d. LinkedIn Impressions: 3,259 page impressions and 2,965 post impressions

e. YouTube: 625 views

f. Next Door unique impressions: 476 post impressions

g. Blog Posts: 3

(1) The Pump Out Life
(2) How to conserve water, even in the summer
(3) Help protect your local waterways! Stop littering COVID-19 PPE in storm drains and the wastewater system

h. Construction Project Page Visits – 1,125 total visits (not including direct visits from home page, broken down as follows:

(1) 722 visits to individual pages
(2) 403 to the status page

B. News Releases, Advisories, Advertisements, Project Notices, Community Meetings and Project Websites

1. News Releases/Traffic Advisories/Construction Notices: 10 (six construction notices, one traffic advisory, two project notices and one news releases)

2. Advertisements: 0

3. Project Notices: 9 (via door hanging/door knocking reaching approximately 1,226 residents)

4. Project/Community Meetings: 0

5. New Project Web Pages /Videos: 1 project page

- Willard Avenue Pump Station Replacement

C. Special Projects and Highlights

Director participated in biweekly Hampton Roads Planning District Commission (HRPDC) Regional Public Information subcommittee calls, providing HRSD updates to participating localities and regional partners.

Director and staff participated in several meetings with SWIFT program management to develop and conceptualize a SWIFT Research Center virtual tour platform.

Staff attended the HRPDC askHRGreen FOG meeting.

Staff participated in the Virginia Water Environment Association (VWEA) Communications Committee Conference Call and the VWEA Widget meetings. Staff participated in meetings a Water Awareness Meeting and a Value of Water Meeting.

D. Internal Communications

1. Director participated in the following internal meetings and events:

    a. Weekly Leadership and COVID-19 meetings
    b. Meeting with Water Quality to discuss employee recruitment strategies
    c. Biweekly status calls with Information Technology Department (IT) for phase two web updates
    d. United Way campaign update meeting
    e. Meeting with Sustainable Environment Advocacy Group (SEA) team members to review oyster education brochure
    f. Project outreach strategy and plan development meetings for several North Shore projects underway
    g. Discharge Monitoring Report (DMR), SWIFT Quality Steering Team (QST) and QST meetings
    h. Architectural and landscape review meetings
    i. SWIFT Community Commitment Steering Committee meetings

2. Director conducted biweekly communications department status meetings and one-on-one weekly staff check-in meetings.

E. Metrics

1. Educational and Outreach Activities: one activity developed and shared on social media:

    a. “Invisible Infrastructure GIS Activity” reaching 601 people; 42 clicks, and 22 reactions, comments, and shares

2. Number of Community Partners: 1

    a. askHRGreen

3. Additional Activities Coordinated by Communications Department: 0

4. Monthly Metrics Summary

Item #	Strategic Planning Measure	Unit	JULY 2020
M-1.4a	Total Training Hours per Full Time Employee (3) - Current Month	Hours / #FTE	3.67
M-1.4b	Total Training Hours per Full Time Employee (3) - Cumulative Fiscal Year-to-Date	Hours / #FTE	3.67
M-5.2	Educational and Outreach Events	Number	1
M-5.3	Number of Community Partners	Number	1

5. Annual Metrics Summary

Item #	Strategic Planning Measure	Unit	FY-2020
M-5.1	Name Recognition (Survey Results)	Percentage	*

*Will be reported upon completion of survey (October)

Respectfully,

Leila Rice, APR
Director of Communications

TO: General Manager

FROM: Director of Engineering

SUBJECT: Engineering Monthly Report for July 2020

DATE: August 14, 2020

A. General

1. Capital Improvement Program (CIP) spending for the final month of Fiscal Year (FY) 2020 was below planned spending target. End-of-Year spending was also below the targeted amount for FY 2020.

   CIP Spending ($M):

	Current Period	FYTD
Actual	8.87	158.31*
Plan	28.00	215.00

   *Note: This final spend total for FY 2020 is still under audit and will be confirmed in the coming month.

2. The Engineering Department continues to work through challenges related to the COVID-19 pandemic. Staff members continue to work primarily from home, with limited administrative support at both office locations. Coordination meetings are conducted using virtual meeting platforms such as Skype, Zoom and MS Teams. Project-related matters are addressed at the project job sites or remotely. Consultants have been able to proceed with both design and contract administrative support efforts with limited impacts. Contractors have seen a few delays related to equipment delivery and a few staff members have tested positive for COVID-19. We continue to see strong interest in our CIP projects from both the design professionals and the construction contractors in our region. We continue to adjust to the changing conditions and plan to have Engineering Department staff work from home for the foreseeable future.

B. Asset Management Division

1. Staff recently completed Phase 1 of the Asset Management Plan (AMP) Dashboard using the Power Business Intelligence (Power BI) platform. This phase included creation of the key performance indicators and the establishment of the database connections with the various enterprise software systems that store the relevant data. Phase 2 will start in August and will include developing the remaining AMP dashboards such as the

Replacement Planning Model, Asset Inventory and Condition Assessment Plan, and the Life Cycle Management Plan. These dashboards are powerful visual methods to review critical data in a single view and to be able to drill-down as needed when concerns are observed.

2. Staff hosted a virtual training for Operations Department employees on corrosion modes and methods for repair. The training was given by CorrPro and focused on concerns for the wastewater industry and methods to mitigate corrosion. Corrosion continues to be a major concern to HRSD, with over 300 corrosion related work-orders in the past six years.

C. North Shore, South Shore and SWIFT Design & Construction Divisions

1. The Williamsburg Treatment Plant Generator and Switchgear project is nearing completion. The contractor continues work on the building structure, conduits, relays and interior equipment installation. Factory acceptance testing of the new switchgear occurred in July. The work is progressing on schedule with an expected completion of June 2021.

2. HRSD and the City of Norfolk are finalizing an agreement to transfer the City-owned Pump Station No. 27. This transfer is proposed to occur once replacement of the pump station is complete. A Cost Sharing Agreement is under review to facilitate this transfer and allow HRSD to add certain features to the replacement project to meet our future needs. The design will be managed by the City of Norfolk while the construction will be managed by HRSD. The design of the replacement pump station is underway and the agreement will be presented to the Commission for approval once the necessary terms and conditions are accepted by both parties.

3. Design-Build Team selection continues for the James River SWIFT and Nutrient Reduction Improvements project. Technical proposals were recently received and will be reviewed with the selection team over the coming month. This process will continue through the final selection step which will occur later this year.

D. Planning & Analysis Division

1. The Planning & Analysis Division is coordinating the Climate Change Study that will be addressing impacts to HRSD infrastructure. The team has completed a pilot study of a few of HRSD assets to determine how this study will be implemented at a larger scale and the likely benefits. The pilot study focused on a few of HRSD's pump stations. This pilot study will also

assist HRSD in determining the cost to consider all of HRSD assets as part of the larger study. A review of the pilot study is planned for August.

2. Staff recently conducted a meeting with representatives of the Middle Peninsula members of HRSD. This meeting focused on HRSD's Development and Service Area Expansion process. A review of current projects and upcoming development on the Middle Peninsula was also discussed. HRSD's work to create a hydraulic model of the proposed interceptor system serving the Middle Peninsula was highlighted as a new tool to benefit both HRSD and the Middle Peninsula communities.

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 4

   a. 07/06/2020 – Participated as an instructor for the Pump Station Training Program as part of the Virginia Water Environment Association (VWEA) annual training initiative.

   b. 07/08/2020 – Participated as a panelist for the Design-Build Institute of America (DBIA) National Awards Jury.

   c. 07/15/2020 – Participated as a panelist on the City of Virginia Beach Department of Public Utilities Engineer Selection process.

   d. 07/22/2020 – Participated as a panelist with students from George Mason University as part of the VWEA Student Outreach Committee to discuss resume and interview best practices.

2. Number of Community Partners: 4

   a. VWEA

   b. DBIA

   c. City of Virginia Beach – Department of Public Utilities

   d. George Mason University

3. Number of Research Partners: 1

   a. Virginia Tech Sustainable Water Infrastructure Management Center

4. Monthly Metrics Summary:

Item #	Strategic Planning Measure	Unit	July 2020
M-1.4a	Total Training Hours per Full Time Employee (44) - Current Month	Hours / #FTE	0.76
M-1.4b	Total Training Hours per Full Time Employee (44) - Cumulative Fiscal Year-to-Date	Hours / #FTE	0.76
M-5.2	Educational and Outreach Events	Number	4
M-5.3	Number of Community Partners	Number	4
M-5.4	Number of Research Partners	Number	1

Bruce W. Husselbee, P.E.

Bruce W. Husselbee, P.E.

TO: General Manager

FROM: Director of Finance

SUBJECT: Monthly Report for July 2020

DATE: Aug 12, 2020

A. General

1. The balances owed that are greater than 90-days old continue to increase, but the increase is lower than previous months. The month over month increase at the end of July was $578,000 compared to an increase of $760,000 the previous month. The number of customers impacted by COVID-19 is estimated to be 18,000-22,000 (3.8 percent to 4.6 percent of total customers). The average amount owed is $313 for customers that have balances due greater than 90 days.

2. The July water consumption was significantly lower than expected, even with the dry month. Dry summer months typically have higher water consumption due to irrigation and pool filling. The low water consumption correlates with the lower treatment flows seen in July. Tourism may be a factor. Even though the region is “leading the nation in hotel occupancy recovery,” per Tiffany Russell, Virginia Beach Visitors Bureau Vice President, July’s occupancy rate was 73 percent, down 14 percent. Interestingly, wastewater revenues came in higher than budget but in-line with the previous year. Staff is looking into this anomaly. Fees are lower than budget due to the water shut-off moratorium. Interest Income is in-line with our significantly lower budgeted amount as the Federal Reserve keeps short-term rates low. Facility Charges are consistent with the prior year as housing remains resilient amid the pandemic. In fact, the median sales price for residential units hit a 20-year high in May. The Hampton Roads Planning District Commission believes this is partially due to folks moving from crowded cities to suburban areas due to telecommuting and record low mortgage rates.

3. Personnel expenses are higher than budget due to three pay periods in July. All other expenses are below budget, typical for July and generally consistent with the prior year since many purchases are using funds encumbered in FY 2020. Major repairs and capital assets expenses are significantly lower than budget at this time, since many purchases in July related to prior year encumbrances.

4. As part of the revised Financial Policy, staff updated the monthly report to show the new term Adjusted Days Cash on Hand (ADCOH), which was previously called Net Unassigned Cash. To meet our policy objective for liquidity, $14 million was transferred from the General Reserve to PAYGO to reduce the ADCOH to 365 days. The total Transfer to CIP this month was $22.3 million, which includes the monthly $7.9 million PAYGO transfer.

5. The Quarterly investment summary for HRSD's Operating Cash Strategies and Retiree Health Trust (OPEB) is attached. The OPEB bounced back significantly from the March 31 low and returned 13.5 percent for the quarter. Please keep in mind that the economy is still fragile with double-digit unemployment and stock valuations that are historically elevated. The risk for a pull-back is high.

6. On July 15, I was elected to the National Association of Clean Water Agencies (NACWA) board representing Region 3 (Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia). NACWA is the nation's recognized leader in legislative, regulatory and legal advocacy on the full spectrum of clean water issues, as well as a top technical resource for water management, sustainability and ecosystem protection interests.

7. On July 31, Governor Northam appointed me to the Virginia Board of Accountancy (VBOA). The VBOA, established in 1910, regulates certified public accountants in Virginia through a program of examination, licensure for individuals and firms, consumer protection with enforcement, continuing professional education audits, and peer review oversight.

B. Interim Financial Report

1. Operating Budget for the Period Ended July 31, 2020

	Amended Budget	Current YTD	Current YTD as % of Budget (8% Budget to Date)	Prior YTD as % of Prior Year Budget
Operating Revenues				
Wastewater	$ 312,218,000	$ 28,290,134	9%	9%
Surcharge	1,522,000	146,447	10%	9%
Indirect Discharge	3,200,000	248,886	8%	10%
Fees	3,020,000	156,591	5%	8%
Municipal Assistance	700,000	109,159	16%	11%
Miscellaneous	1,165,000	26,935	2%	3%
Total Operating Revenue	321,825,000	28,978,152	9%	9%
Non Operating Revenues				
Facility Charge	6,160,000	786,625	13%	14%
Interest Income	1,510,000	128,106	8%	8%
Build America Bond Subsidy	2,292,000	-	0%	0%
Other	610,000	35,197	6%	12%
Total Non Operating Revenue	10,572,000	949,928	9%	9%
Total Revenues	332,397,000	29,928,080	9%	9%
Transfers from Reserves	14,385,444	14,385,444	100%	-
Total Revenues and Transfers	$ 346,782,444	$ 44,313,524	13%	9%
Operating Expenses				
Personal Services	$ 60,952,502	$ 6,856,165	11%	8%
Fringe Benefits	24,930,766	2,199,778	9%	8%
Materials & Supplies	9,067,856	359,543	4%	3%
Transportation	1,578,011	52,286	3%	6%
Utilities	12,954,307	686,508	5%	3%
Chemical Purchases	10,288,858	517,035	5%	4%
Contractual Services	41,821,666	2,513,094	6%	7%
Major Repairs	10,075,960	333,711	3%	3%
Capital Assets	600,000	9,168	2%	0%
Miscellaneous Expense	3,506,140	172,374	5%	5%
Total Operating Expenses	175,776,066	13,699,662	8%	7%
Debt Service and Transfers				
Debt Service	61,407,822	7,823,001	13%	14%
Transfer to CIP	109,338,556	22,298,203	20%	8%
Transfer to Risk management	260,000	21,667	8%	8%
Total Debt Service and Transfers	171,006,378	30,142,871	18%	10%
Total Expenses and Transfers	$ 346,782,444	$ 43,842,533	13%	8%

2. Notes to Interim Financial Report

The Interim Financial Report summarizes the results of HRSD's operations on a basis of accounting that differs from generally accepted accounting principles. Revenues are recorded on an accrual basis, whereby they are recognized when billed; expenses are generally recorded on a cash basis. No provision is made for non-cash items such as depreciation and bad debt expense.

This interim report does not reflect financial activity for capital projects contained in HRSD's Capital Improvement Program (CIP).

Transfers represent certain budgetary policy designations as follows:

a. Transfer to CIP: represents current period's cash and investments that are designated to partially fund HRSD's capital improvement program.

b. Transfers to Reserves: represents the current period's cash and investments that have been set aside to meet HRSD's cash and investments policy objectives.

3. Reserves and Capital Resources (Cash and Investments Activity) for the Period Ended July 31, 2020

HRSD - RESERVE AND CAPITAL ACTIVITY July 31, 2020

	General Reserve				Capital	
	General	Debt Service	Risk Mgmt Reserve	Reserve	Paygo	Debt Proceeds
	Unrestricted	Restricted	Unrestricted	Unrestricted	Unrestricted	Restricted
Beginning - July 1, 2020	**$ 198,475,837**	**$ 28,553,343**	**$ 3,759,535**	**$ 15,266,324**	**$ 22,209,680**	**$ -**
Current Year Sources of Funds						
Current Receipts	27,446,722					
Capital Grants						
VRA Draws					3,575,740	
Bond Proceeds (includes interest)						
Days Cash on Hand Transfer In					14,385,444	
Transfers In			21,667		7,912,759	
Sources of Funds	27,446,722	-	21,667	-	25,873,943	-
Total Funds Available	**$ 225,922,559**	**$ 28,553,343**	**$ 3,781,202**	**$ 15,266,324**	**$ 48,083,623**	**$ -**
Current Year Uses of Funds						
Cash Disbursements	27,826,623				22,534,809	
Days Cash on Hand Transfer Out	14,385,444					
Transfers Out	7,934,426					
Uses of Funds	50,146,493	-	-	-	22,534,809	-
End of Period - July 31, 2020	**$ 175,776,066**	**$ 28,553,343**	**$ 3,781,202**	**$ 15,266,324**	**$ 25,548,814**	**$ -**
Unrestricted Funds	**$ 220,372,406**					

4. Capital Improvements Budget and Activity Summary for Active Projects for the Period Ended July 31, 2020

HRSD - PROJECT ANALYSIS July 31, 2020

Classification/ Treatment Service Area	Appropriate Funds	Expenditures prior to 7/1/2020	Expenditures Year to Date FY2021	Total Project Expenditures	Encumbrances	Available Funds
Administration	31,687,240	15,327,215	-	15,327,215	11,157,986	5,202,039
Army Base	154,434,000	123,095,232	-	123,095,232	2,368,191	28,970,577
Atlantic	96,018,654	74,722,063	-	74,722,063	2,426,808	18,869,783
Boat Harbor	103,062,848	35,359,734	-	35,359,734	17,251,875	50,451,239
Ches-Eliz	164,257,309	67,770,653	-	67,770,653	55,686,170	40,800,487
James River	262,016,867	38,156,333	31,558	38,187,891	5,324,697	218,504,279
Middle Peninsula	57,098,124	10,293,475	3,978	10,297,453	6,092,083	40,708,587
Nansemond	72,099,196	23,271,078	2,013	23,273,091	15,814,389	33,011,716
Surry	45,747,598	10,884,833	78,080	10,962,913	28,201,233	6,583,452
VIP	240,511,455	131,404,585	-	131,404,585	3,909,639	105,197,232
Williamsburg	33,778,489	17,333,393	-	17,333,393	14,199,689	2,245,407
York River	54,884,843	25,835,486	23,290	25,858,776	1,638,535	27,387,532
General	591,158,275	145,160,891	-	145,160,891	39,801,218	406,196,166
	1,906,754,898	718,614,971	138,919	718,753,890	203,872,513	984,128,496

5. Debt Management Overview

HRSD - Debt Outstanding ($000's) July 31, 2020

	Principal Jun 2020	Principal Payments	Principal Draws	Principal Jul 2020	Interest Payments
Fixed Rate					
Senior	$ 214,212	$ (6,080)	$ -	$ 208,132	$ (1,687)
Subordinate	547,745	(44)	3,576	551,277	(8)
Variable Rate					
Subordinate	50,000	-	-	50,000	(4)
Line of Credit					
Total	$ 811,957	$ (6,124)	$ 3,576	$ 809,409	$ (1,699)

HRSD- Series 2016VR Bond Analysis July 31, 2020

	SIFMA Index	HRSD	Spread to SIFMA
Maximum	4.71%	4.95%	0.24%
Average	0.56%	0.56%	0.00%
Minimum	0.01%	0.01%	0.00%
As of 07/31/20	0.16%	0.20%	0.04%

* Since October 20, 2011 HRSD has averaged 56 basis points on Variable Rate Debt

6. Financial Performance Metrics for the Period Ended July 31, 2020

HRSD - UNRESTRICTED CASH July 31, 2020

Can be used for any purpose since it is not earmarked for a specific use and is extremely liquid

			Days Cash on Hand	Days Cash on Hand
Total Unrestricted Cash	**$**	**220,372,406**		**458**
Risk Management Reserve	$	(3,781,202)	(8)	450
Reserve	$	(15,266,324)	(32)	418
Capital (PAYGO only)	$	(25,548,814)	(53)	365
Adjusted Days on Cash	**$**	**175,776,066**		**365**

Risk Management Reserve as a % of Projected Claims Cost is 25% YTD compared to 25% Policy Minimum
Adjusted Days Cash on Hand Policy Minimum is 270-365 days.

HRSD - SOURCES OF FUNDS July 31, 2020

Primary Source	Beginning Market Value July 1, 2020	YTD Contributions	YTD Withdrawals	YTD Income Earned	Ending Market Value July 31, 2020	Allocation of Funds	Credit Quality	Current Mo Avg Yield
BAML Corp Disbursement Account	7,339,242	52,185,581	48,448,465	2,280	11,078,638	6.5%	N/A	0.55%
VIP Stable NAV Liquidity Pool	178,660,390	-	20,000,000	47,401	158,707,791	93.5%	AAAm	0.33%
Total Primary Source	**$ 185,999,632**	**$ 52,185,581**	**$ 68,448,465**	**$ 49,681**	**$ 169,786,429**	100.0%		

VIP Stable NAV Liquidity Pool out performed Va Local Government Investment Pool (the market benchmark) by 0.01% in the month of July.

Secondary Source	Beginning Market Value July 1, 2020	YTD Contributions	YTD Withdrawals	YTD Income Earned & Realized G/L	Ending Market Value July 31, 2020	Ending Cost	LTD Mkt Adj	Yield to Maturity at Market
VIP 1-3 Year High Quality Bond Fund	64,899,667	-	1,063	88,527	64,975,063	62,824,003	2,151,060	0.22%
Total Secondary Source	**$ 64,899,667**	**$ -**	**$ 1,063**	**$ 88,527**	**$ 64,975,063**	**$ 62,824,003**	**$ 2,151,060**	

VIP 1-3 Year High Quality Bond Fund out performed ICE BofA ML 1-3 yr AAA-AA Corp/Gov Index (the market benchmark) by 0.07% in the month of July.

	Total	Fund Alloc
Total Primary Source	**$ 169,786,429**	**72.3%**
Total Secondary Source	**$ 64,975,063**	**27.7%**
TOTAL SOURCES	**$ 234,761,492**	**100.0%**

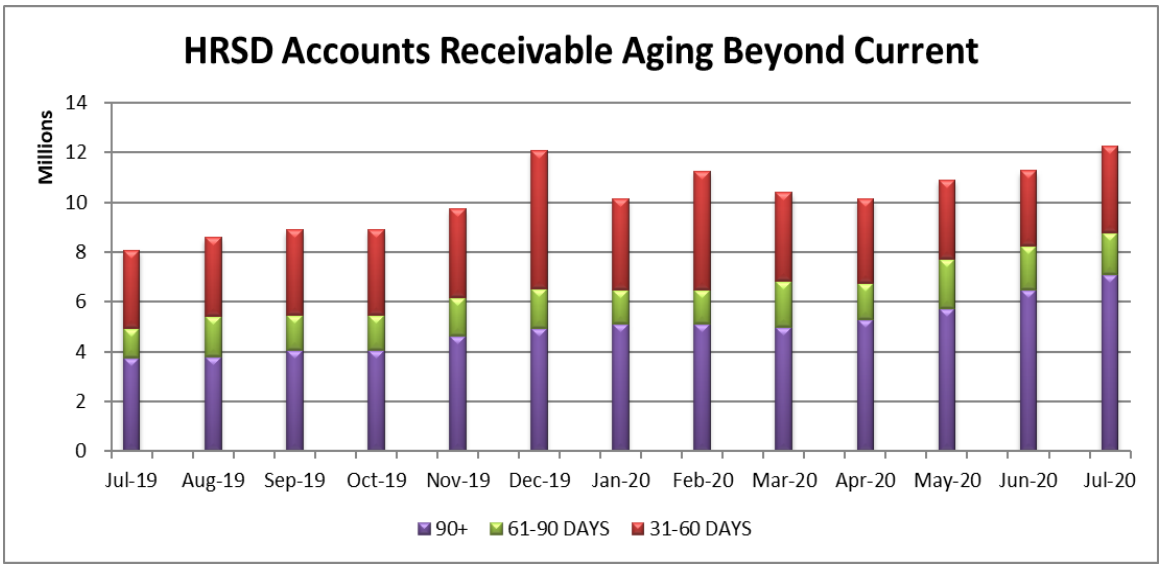
7. Summary of Billed Consumption

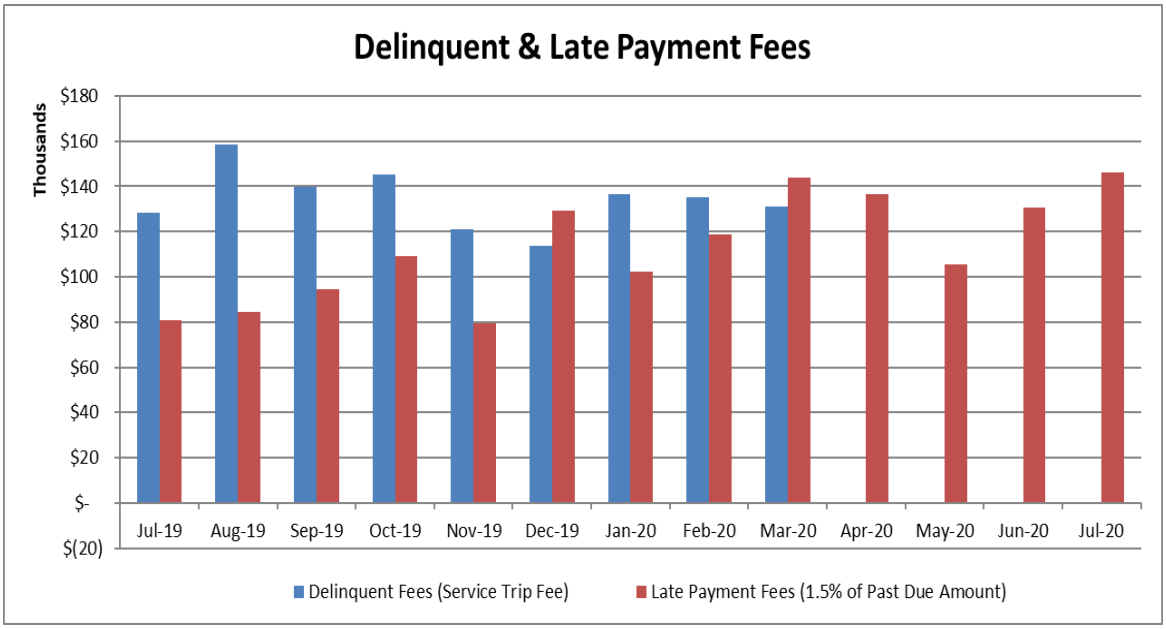
Summary of Billed Consumption (,000s ccf)

Month	*FY2021 Cumulative Budget Estimate*	*FY2021 Cumulative Actual*	% Difference *From Budget*	*Cumulative FY2020 Actual*	% Difference *From FY2020*	*Cumulative 3 Year Average*	*From 3 Year Average*
July	5,086	4,751	-6.6%	5,114	-7.1%	5,045	-5.8%
Aug	10,047	-	N/A	9,944	N/A	10,026	N/A
Sept	14,477	-	N/A	14,354	N/A	14,389	N/A
Oct	18,951	-	N/A	18,952	N/A	18,966	N/A
Nov	22,937	-	N/A	23,092	N/A	23,160	N/A
Dec	27,268	-	N/A	27,518	N/A	27,383	N/A
Jan	31,818	-	N/A	32,101	N/A	31,920	N/A
Feb	36,287	-	N/A	36,005	N/A	36,236	N/A
March	39,495	-	N/A	40,108	N/A	40,223	N/A
Apr	43,441	-	N/A	44,246	N/A	44,387	N/A
May	47,762	-	N/A	48,397	N/A	48,604	N/A
June	52,222	-	N/A	52,535	N/A	52,869	N/A

C. Customer Care Center

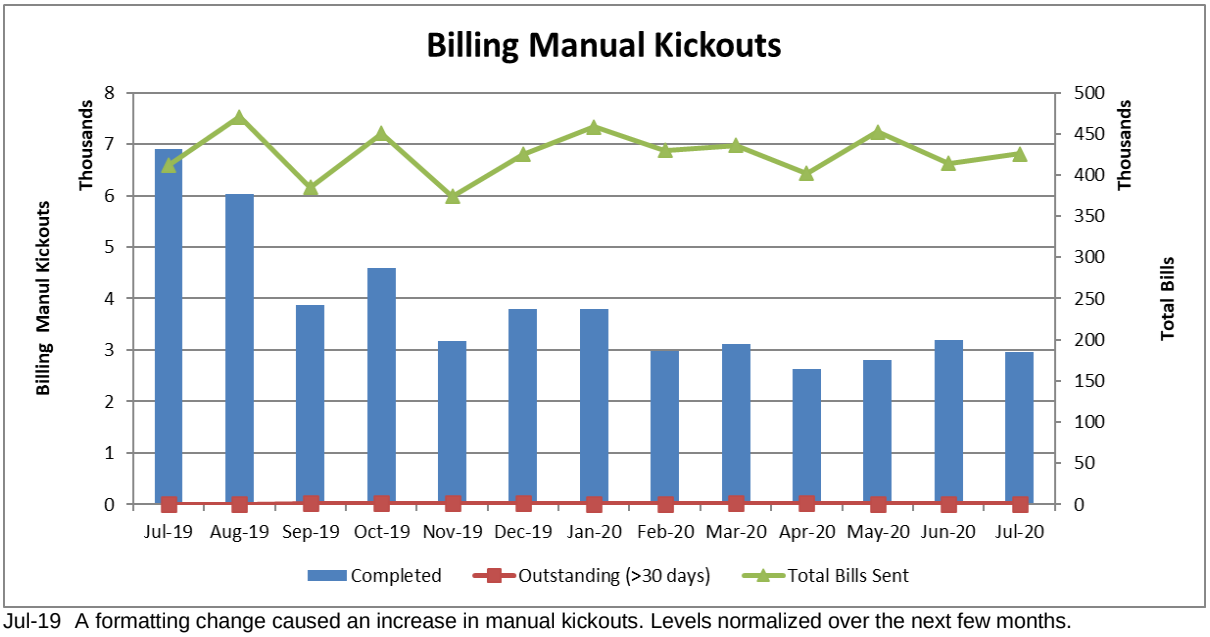
1. Accounts Receivable Overview



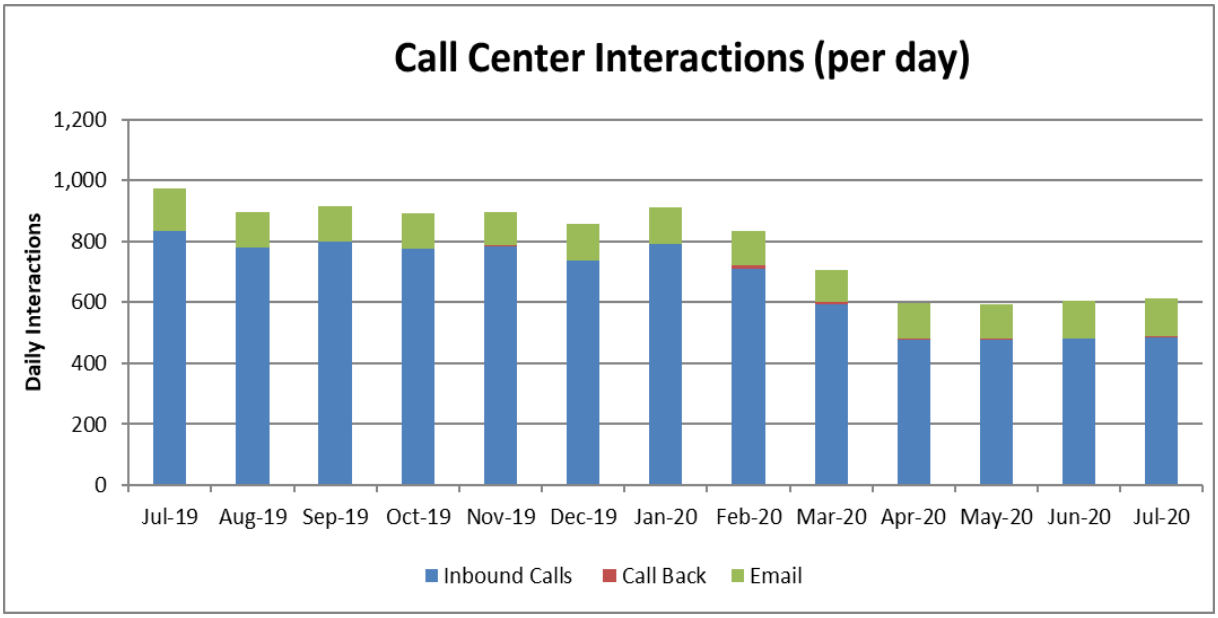


Apr-Jul 20 Field Activity was suspended late March in response to COVID-19

2. Customer Care Center Statistics



Jul-19 A formatting change caused an increase in manual kickouts. Levels normalized over the next few months.



Customer Interaction Statistics	Feb	Mar	Apr	May	Jun	Jul
Calls Answered within 3 minutes	86%	90%	97%	95%	97%	97%
Average Wait Time (seconds)	0:68	0:51	0:22	0:28	0:18	0:26
Calls Abandoned	6%	5%	3%	4%	3%	3%

D. Procurement Statistics

ProCard Fraud	External Fraud Transactions *	Comments
July	0	
Total	**0**	

*__External Fraud:__ Fraud from outside HRSD (i.e.: a lost or stolen card, phishing, or identity theft)

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0

2. Community Partners: 0

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	July 2020
M-1.4a	Training During Work Hours Per Full Time Employee (102) – Current Month	Hours / #FTE	0.25
M-1.4b	Total Training During Work Hours Per Full Time Employee (102) – Cumulative Fiscal Year-to-Date	Hours / #FTE	0.25
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0
	Wastewater Revenue	Percentage of budgeted	113%
	General Reserves	Percentage of Operating Budget less Depreciation	116%
	Liquidity	Days Cash on Hand	458 Days
	Accounts Receivable (HRSD)	Dollars	$27,018,175
	Aging Accounts Receivable	Percentage of receivables greater than 90 days	24%

4. Annual Metrics

Item #	Strategic Planning Measure	Unit	FY-2020
M-2.4	Infrastructure Investment	Percentage of Total Cost of Infrastructure	*
M-4.3	Labor Cost/MGD	Personal Services + Fringe Benefits/365/5-Year Average Daily Flow	*
M-4.4	Affordability	6.5 CCF Monthly Charge/Median Household Income[1]	*
M-4.5	Operating Cost/MGD	Total Operating Expense /365/5-Year Average Daily Flow	*
	Billed Flow	Percentage of Total Treated	*
	Senior Debt Coverage	Cash Reserves/ Senior Annual Debt Service	*
	Total Debt Coverage		*

* These metrics will be reported upon completion of the annual financial statements.

Respectfully,

Jay A. Bernas

Jay A. Bernas, P.E.
Director of Finance

Attachment: HRSD's Operating Cash Strategies and Retiree Health Trust (OPEB)

[1] Median Household Income is based on the American Community Survey (US Census) for Hampton Roads

Hampton Roads Sanitation District
Quarterly Performance Report
For the Quarter Ending June 30, 2020

Total Portfolio Summary

Operating Strategies	June 30, 2020	March 31, 2020
Primary Source	$ 185,999,632	$ 191,732,856
Secondary Source	64,899,667	64,497,362
	$ 250,899,299	**$ 256,230,218**

Primary Source Summary

The Primary Source Portfolio consists of BAML Corp Disbursement Account $7.3m and VaCo/VML VIP Stable NAV Liquidity Pool $178.7m. BAML Corp Disbursement Account returned 0.55% for the quarter ending June 30, 2020. VIP LIQ Pool Fund 30 Day Avg Net Yield was 0.42% as of June 30, 2020, which was equal the benchmark, LGIP 30 Day Avg Net Yield, performance. VaCo/VML VIP Stable NAV Liquidity Pool's weighted average credit rating was A-1 for the quarter.

Secondary Source Summary

The Secondary Source Portfolio consists of VaCo/VML VIP 1-3 Year High Quality Bond Fund. The VIP 1-3 Yield to Maturity at Market was 0.31% as of June 30, 2020, which out performed the benchmark, ICE BofA ML 1-3 Yr AAA-AA Corp/Gov Index, by 0.11%. The weighted average credit rating for VaCo/VML VIP 1-3 Year High Quality Bond Fund's portfolio was AA for the quarter.

Retirement Health Plan Trust	June 30, 2020	March 31, 2020
Investment Assets	56,825,603	49,846,627
Liquidity Assets	86,808	31,705
Combined Assets	**$ 56,912,411**	**$ 49,878,332**

Retiree Health Plan Trust Summary

The Retiree Health Plan Trust portfolio (“Total Fund - Combined Assets”) returned 13.5% for the quarter ended June 30, 2020, which was above the 12.96% return of the Blended Benchmark. The one-year trailing return for the portfolio was -0.04% compared to the Blended Benchmark return of -0.9%. Since its inception date of September 1, 2009, the portfolio trailing annual return of 7.91% was ahead of the Benchmark return of 7.66%. As of June 30, 2020, the weighted average credit quality of fixed income holdings for the portfolio was AA.

TO: General Manager

FROM: Director of Information Technology

SUBJECT: Information Technology Department Report for July 2020

DATE: August 12, 2020

A. General

1. Work continues on the HRSD website to provide a user friendly and legally compliant method of conducting online open house and informational meetings. Following several security updates, the “online meetings and events tool” is scheduled to go-live in August.

2. Staff continues working with the SharePoint governance team to perform recommended data preparations for the upgrade to SharePoint Online. Expected go-live date is planned for December 2020.

3. The critical systems backup, restoration, and data protection software and firmware were upgraded to the latest versions.

4. The Senior Systems Analysts participated in the third and final phase of the core switch upgrade project, ensuring all systems and documentation were in good order and performing as expected.

5. System engineers worked with Microsoft in assessing the current network environment and various ways to mitigate risk and augment systems security.

6. User acceptance testing is ongoing for the Customer Care and Billing platform upgrade. Testing and acceptance has been delayed due to the COVID-19 impact on resource availability and staff scheduling with our jurisdiction business partners. Mock data conversions of the accounts database are being done every two weeks, and the go-live is scheduled for October.

B. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0

2. Number of Community Partners: 0

3. Metrics Summary:

Item #	Strategic Planning Measure	Unit	July 2020
M-1.4a	Training During Work Hours Per Full-Time Employee (50) – Current Month	Total Training Hours / # FTE	0.38
M-1.4b	Total Training During Work Hours Per Full-Time Employee (50) – Cumulative Fiscal Year-to-Date	Total Training Hours / # FTE	0.38
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0

Respectfully,
Don Corrado

TO: General Manager

FROM: Director of Operations

SUBJECT: Operations Report for July 2020

DATE: August 10, 2020

A. Interceptor Systems

1. North Shore (NS) Interceptor Systems

On July 22, a Sanitary Sewer Overflow (SSO) of 200 gallons occurred in Newport News due to a circumferential crack on a 12-inch asbestos cement force main. Staff repaired the force main using a full circle repair clamp.

2. South Shore (SS) Interceptor Systems

a. On July 23, staff received a complaint about odors near the Pughsville Pressure Reducing Station (PRS) on Pughsville Road in Suffolk. Staff inspected and found the pump packing in the station leaking. Staff replaced the packing. On July 29, staff received another complaint about odors near the Pughsville PRS. Staff inspected the area but could not detect any odors.

b. There were six interceptor complaints reported this month. Two issues were associated with the City of Chesapeake. On July 6, staff replaced valve packing in a leaking valve on Windsor Boulevard in Windsor. On July 27 and July 31, staff received a call from the City of Suffolk Department of Utilities about city decreased pumping capacity caused by HRSD force main pressures. Staff operated air vents on the Holland Road force main. On July 27, staff received a call from a resident about overgrown vegetation on a small piece of property near the Terminal Avenue PRS in Norfolk. Staff immediately cleared the vegetation.

B. Major Treatment Plant Operations

1. Atlantic Treatment Plant (ATP)

There were two scrubber air exceptions from Odor Control Station C on July 12 and 14. Both exceptions occurred when staff transferred a large

quantity of solids from Digesters #1 and #2 to the digested solids storage tank. This transfer was needed to make room in the digesters as part of the start-up efforts of the Thermal Hydrolysis Project.

2. Boat Harbor Treatment Plant (BHTP)

Installation of the new switchgear and controls for the plant generators is complete. Testing took place from July 22 to July 30. Numerous tests were run to ensure the reliability of the new system, including the remote shutdown feature for catastrophic response planning.

3. Chesapeake-Elizabeth Treatment Plant (CETP)

On July 18, a septage driver disconnected his discharge hose from the septage receiving station to clear a clog, resulting in a 1,200 gallon raw sewage spill. Staff recovered 600 gallons; the remainder entered a storm drain leading to the Chesapeake Bay and was not recovered.

4. James River Treatment Plant (JRTP)

Four odor scrubber deviations occurred when a hypochlorite feed line became blocked.

5. Nansemond Treatment Plant (NTP)

a. There were two reportable incidents this month. One occurred when staff analyzed the Final Effluent (FNE) pH levels outside the required 15 minutes holding time. The staff member responsible was retrained on the sample standard operating procedure. The second incident occurred when a contractor who installed an air conditioning system in the Sodium Hypochlorite building tied the non-potable cooling water to a stormwater drain. This system ran for approximately six days before staff discovered the error. The unit was secured until the discharge line can be replumbed to a plant drain that leads to the head of the plant.

b. SWIFT Research Center (SWIFT RC)

(1) The total volume of recharged SWIFT water into the Potomac aquifer for the month of July was 7.5 MG.

(2) Recharge operations were interrupted on July 11 when the backflush pump failed. Staff attempted to repair the pump but

were unsuccessful. A contractor was unable to repair the pump until July 28, 2020.

(3) In the last two weeks of the month, there were high total organic compounds (TOC) in the influent waster to the SWIFT RC. To ensure the ability to meet the monthly average of 4 mg/L, the flow split setpoint on the granular activated carbon (GAC) vessels was changed gradually from a 70/30 split to 50/50 split.

(4) Injectivity at the well continues to improve while using a higher free chlorine residual at the well, confirming that most of the clogging issues might be due to biological fouling. Staff is considering the implementation of a periodic chlorine shock procedure, where a higher hypo concentration at a specific pH will be injected temporarily followed by a backflush.

6. Virginia Initiative Plant (VIP)

Staff installed one rebuilt raw water influent (RWI) pump motor. All four influent pumps are now available for service.

7. Williamsburg Treatment Plant (WBTP)

A power outage caused odor scrubber stations A and D to be offline for more than one hour due to problems with an electrical breaker that continued to trip while on the emergency generator.

11. Incinerator Operations Events Summary

Total Hydrocarbon (THC) monthly averages (not to exceed 100 ppm) were met by all five multiple hearth incinerator plants. Certified THC valid data capture (percent) for the month exceeded 77% for all five facilities. There were two deviations from the required minimum operating parameters and five minor (<60 minute) non-reportable bypass events.

D. Small Communities (SC)

1. Middle Peninsula Small Communities Treatment and Collections

a. Urbanna Treatment Plant (UBTP)

On July 14 at 02:26 a.m., a joint on a PVC adapter on the discharge side of the RAS/WAS pump broke. A low flow alarm alerted staff to

the problem. Staff shut off the pump and isolated the line to stop the spill; 4,620 gallons of RAS/WAS were released and soaked into the ground. Staff installed new piping and reinforced the new joint. Lime was applied to the affected area.

b. King William Treatment Plant (KWTP)

Several Carbonaceous Biochemical Oxygen Demand (cBOD) and BOD samples did not meet QA/QC method requirements for the Central Environmental Laboratory (CEL) and were deemed invalid in June. Staff consistently collects additional samples where possible, and the required frequency of valid cBOD/BOD sample analysis was met at all facilities except for the King William facility.

2. Small Communities – Surry Systems

Several high E. Coli samples were taken at the town plant in July. Sussex Service Authority (SSA) is performing twice weekly cleanings on the UV system and contact chamber to help address the elevated E. Coli values. The rotating biological contactor (RBC) #2 appears to have a bad bearing and one of the drum filters has developed large holes. Staff has arranged to begin repairs as soon as possible.

3. Small Communities – Lawnes Point

Staff is updating the O&M Manual to systematically drain the ponds' stormwater. This should avoid time-intensive and costly future treatment at this facility.

E. Energy Management (EM)

1. Staff is working with a solar provider to install a 100-kilowatt (kW), roof-mounted solar array on the NS Operations Building. This is the first installation in the first year of a five-year program to install solar arrays on selected HRSD properties.

2. The switchgear project at Williamsburg Treatment Plant (WBTP), which includes medium voltage (MV) switchgear, a diesel generator, three substations and interconnecting underground raceways is progressing well. The switchgear was factory tested and set on housekeeping pads in the new building. The new diesel generator (DG) was also installed in the new building in an adjacent room. The utility current transformer (CT) cabinet and the utility transformer are scheduled for installation in August.

F. Electrical & Instrumentation (E&I)

1. Staff completed the installation of Dissolved Oxygen (DO) probes on the aeration tanks at the CETP to enhance BIO P operations at the plant.

2. Staff built and installed a Nitrite (NO_2), Nitrate (NO_3), Ammonia (NH_4), and Phosphate (PO_4) at NTP. These analyzers will be installed at the end of the aeration tanks to improve plant performance. Analyzer construction is nearing completion and conduit work for analyzer installation is underway.

3. Staff worked with VIP staff to start up the RWI 600 horsepower (HP) motor #2 after repairs were made. All wiring and program changes have been implemented and the repaired motor operated satisfactorily. Inspection and repairs have been ongoing for all four RWI motors and controllers, after RWI #1 & #3 motors failed unexpectantly.

G. Water Technology and Research

The startup of the thermal hydrolysis process (THP) at the ATP is progressing well. After a bit of an upset in digester #1, characterized by high volatile fatty acids and decreased gas methane content, things are back on track now. As of the end of July, all solids are now being processed through the THP system, and the conventional mesophilic digesters and acid phase digester will be removed from service. There are a few outstanding equipment and instrument issues, but the primary activity remains the optimization of pre-dewatering centrifuges.

H. MOM reporting numbers

MOM Reporting #	Measure Name	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
2.7	# of PS Annual PMs Performed (NS)	4											
2.7	# of PS Annual PMs Performed (SS)	5											
2.7	# of Backup Generator PMs Performed (Target is 4.6)	7											
2.8	# of FM Air Release Valve PMs Performed (NS)	114											
2.8	# of FM Air Release Valve PMs Performed (SS)	220											
2.9	# of Linear Feet of Gravity Clean (NS) (Target is 2,417 for HRSD)	9,394											
2.9	# of Linear Feet of Gravity Clean (SS) (Target is 2,417 for HRSD)	10,686											
2.9	# of Linear Feet of Gravity CCTV Inspection (HRSD Target 3,300 LF)	0											

I. Strategic Measurement Data

1. Education and Outreach Events: 1

   a. 07/29/2020 - Shawn Heselton participated on the City of Virginia Beach Public Utilities Utility Operations Supervisor interview panel.

2. Community Partners: 3

   a. Chesapeake Bay Foundation – oyster cage maintenance at BHTP for oyster gardening program
   b. United Way
   c. Department of Energy (DOE) Jefferson Lab

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	July 2020
M-1.4a	Training During Work Hours per Full Time Employee (FTE) (526) – Current Month	Hours / FTE	2.80
M-1.4b	Total Training During Work Hours per FTE (526) – Cumulative Year-to-Date	Hours / FTE	2.80
M-2.3a	Planned Maintenance Total Maintenance Hours	Total Recorded Maintenance Labor Hours	32,032.75
M-2.3b	Planned Maintenance – Preventive and Condition Based	% of Total Maintenance Hours	56.65%
M-2.3c	Planned Maintenance - Corrective Maintenance	% of Total Maintenance Hours	17.87%
M-2.3d	Planned Maintenance - Projects	% of Total Maintenance Hours	25.48%
M- 4.1a	Energy Use: Treatment *reported for June 2020	kWh/MG	2,565

Item #	Strategic Planning Measure	Unit	July 2020
M-4.1b	Energy Use: Pump Stations *reported for June 2020	kWh/MG	159
M-4.1c	Energy Use: Office Building *reported for June 2020	kWh/MG	111
M-5.2	Educational and Outreach Events	Number	3
M-5.3	Number of Community Partners	Number	3

4. Annual Metrics

Item #	**Strategic Planning Measure**	**Unit**	**FY-2020**
M-2.3a	Planned Maintenance Total Maintenance Hours	Total Recorded Maintenance Labor Hours(average)	29,679.57
M-2.3b	Planned Maintenance – Preventive and Condition Based	% of Total Maintenance Hours (average)	59.45%
M-2.3c	Planned Maintenance-Corrective Maintenance	% of Total Maintenance Hours (average)	18.86%
M-2.3d	Planned Maintenance-Projects	% of Total Maintenance Hours (average)	25.11%
M-3.6	Alternate Energy	Total KWH	*
M- 4.1a	Energy Use: Treatment	kWh/MG	2,408
M-4.1b	Energy Use: Pump Stations	kWh/MG	174
M-4.1c	Energy Use: Office Building	kWh/MG	102

*Will be reported next month.

Respectfully submitted,
Steve de Mik
Director of Operations

TO: General Manager

FROM: Director of Talent Management (TM)

SUBJECT: Monthly Report for July 2020

DATE: August 12, 2020

A. Talent Management Executive Summary

1. Recruitment

a. Summary

New Recruitment Campaigns	4
Job Offers Accepted – Internal Selections	12
Job Offers Accepted – External Selections	8
Average Days to Fill Position	61

b. Staff continued working with the Organization Development consultant to finalize Interview Training to be delivered virtually, beginning in late August.

2. The following was performed in response to the COVID-19 pandemic:

a. Continued addressing suspected employee COVID-19 cases and potential close contact exposures based on Virginia Department of Health (VDH) guidelines. In July, 30 employees were quarantined due to direct exposure (external), household exposure or due to COVID-19 symptoms. One employee had a confirmed positive test. Eight employees were quarantined as a result of personal travel. To date, there have been no work-related cases.

b. Human Resources (HR) and Safety staff met with the Chief of Asset Management throughout the month to develop HRSD's Infectious Disease Response Plan based on Virginia Occupation Safety and Health Administration's (VOSHA's) *Emergency Standard: Infectious Disease Prevention: SARS-CoV-2 Virus That Causes COVID-19.*

c. Updated *Employee Return to Work Following Personal Travel* policy and worked with senior leadership to update the *Alternative Work Arrangement* policy to incorporate changes to telework

d. The medical provider extended enhanced COVID-19 related coverage through October, reducing cost share for services related to the diagnosis and treatment of COVID-19.

e. Updated the Safety Notice on Face Masks

f. Work continued with Quality Facilitator teams to convert instructor-led training to a virtual environment

3. An HR Business Partner began developing training based on changes to Equal Employment Opportunity policy changes.

4. Wellness Program Participation

Participation Activities	Unit	July 2020	Year to Date (March 2020– February 2021)
Biometric Screenings	Number	3	69
Preventive Health Exams	Number	3	100
Preventive Health Assessments	Number	16	79
Online Health Improvement Programs	Number	8	47
Online Health Tracking	Number	213	537
Challenges	Number	0	190
Fit-Bit Promotion	Number	4	40

5. The Wellness Specialist presented the annual Wellness Program review to the HRSD Quality Steering Team (QST), including health and participation trends and programming.

6. The HR Business Analyst worked with Information Technology (IT) staff and the Managed Services consultant to configure the Enterprise Resource Program (ERP) Learning Management online course capability including licensing requirements. These changes will allow online training to be conducted within ERP to streamline training record administration.

7. HR and Organizational Development & Training (OD&T) staff participated in Succession Planning Audit review meetings with internal auditors and provided information and feedback for conducting a succession planning survey.

8. The Quality Leadership Team finalized HRSD's Leadership and Management Academy (LAMA) to be delivered on a monthly basis. Training dates were scheduled and potential participants identified.

9. A virtual *Leadership and Ethics Workshop* utilizing the *Canvas* Learning Management System was held. Participants provided positive feedback on the virtual learning environment and workshop contents.

10. 2020 Apprenticeship Graduation Celebration Boxes were created, assembled and sent to 20 graduating apprentices in recognition of their accomplishments. The graduates will participate in a combined ceremony with 2021 graduates. In addition, a full-page ad was placed in *Inside Business* to commemorate the Apprentices' accomplishments.

11. Safety Recognition Program

    a. Twenty-three work centers received full recognition for no OSHA recordable or lost time injuries and no preventable automotive or property damage incidents.
    b. Nine work centers received partial recognition for a reduced number of injuries and incidents.

12. Shawn Maxfield, Pretreatment and Pollution Prevention (P3) Specialist, was selected for the Industrial Hygienist position.

13. Mishaps and Work-Related Injuries Status to Date (OSHA Recordable)

	2019	**2020**
Mishaps	37	18
Lost Time Mishaps	6	1
Numbers subject to change pending HR review of each case.		

14. Safety Division Monthly Activities

Safety Training Classes	14
Work Center Safety Inspections	11
Reported Accident Investigations	6
Construction Site Safety Evaluations	40
Contractor Safety Briefings	9
Hot Work Permits Issued	35
Confined Space Permits Issued/Reviewed	176
Industrial Hygiene Monitoring Events	1

B. Monthly Strategic Planning Metrics Summary

1. Education and Outreach Events: (1)

   a. Recorded Safety Training classes as an instructor for Virginia Tech's Wastewater Short School.

2. Community Partners: (1)

   a. Virginia Tech

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	July 2020
M-1.1a	Employee Turnover Rate (Total)	Percentage	0.87
M-1.1b	Employee Turnover - Service Retirements	Percentage	0.43
M-1.4a	Total Training Hours Per Full Time Employee (17) – June	Total Training Hours/ FTE	1.47
M-1.4b	Total Training During Work Hours Per Full Time Employee (17) – Cumulative Fiscal Year-to-Date	Hours / FTE	1.47
M-5.2	Educational and Outreach Events	Number	1
M-5.3	Community Partners	Number	1

Respectfully submitted,
Paula A. Hogg
Director of Talent Management

TO: General Manager

FROM: Director of Water Quality (WQ)

SUBJECT: Monthly Report for July 2020

DATE: August 12, 2020

A. General

1. Pretreatment and Pollution Prevention division staff assessed no civil penalties this month.

2. Virginia Department of Environmental Quality (DEQ) is developing a measured approach to address the potential for per- and polyfluoroalkyl substances (PFAS) being released into the environment. The Department's strategy is to address this issue with short and long-term goals. Initially, DEQ wants to identify potential "hot spots" in surface waters and ground water resulting from wastewater discharges and air deposition. The approach here will be to conduct surveys of historic and current uses of these compounds. HRSD will be expected to implement these surveys within its industrial discharger population. DEQ anticipates requiring the development of a monitoring plan for potential sources. Virginia Association of Municipal Wastewater Agencies (VAMWA) has formed a work group to watch this process closely; HRSD Water Quality staff will be directly involved in the activities of this work group.

3. Virginia DEQ has begun studying the need and requirements for a state promulgated water quality standard for turbidity based on a request by the State Water Control Board. A stakeholder advisory group has been formed to discuss this question. This is an informal group without regulatory process standing and is only serving to help DEQ determine a need for this standard. DEQ has not yet issued a notice of intended regulatory action. DEQ is concerned that, given EPA does not have the science to support development of reliable criteria, the state does not have the resources to develop its own criteria which would likely need to be site-specific. The WQ department will monitor the activities of this group and DEQ regarding this topic and will engage if a regulatory process takes place.

B. Quality Improvement and Strategic Activities

1. The Sustainability Environment Advocacy (SEA) Group reported the following activities for the month of July:
   a. The SEA Group held its annual planning meeting to establish Fiscal Year 2021 goals.
   b. Trash Collector Design Challenge: the Virginia Marine Resources Commission responded to the submitted Tidewater Joint Permit Application and notified HRSD that the Army Corps of Engineers will review the application and provide the permit. Once the permit is received the team will proceed in construction and installation.

2. The WQ Communication Team continues monitoring and measuring inter-divisional communication issues within the WQ Department.

C. Municipal Assistance

HRSD provided sampling and analytical services to the City of Chesapeake, Northumberland County, and Westmoreland County to support monitoring required for their respective Virginia Pollution Discharge Elimination System (VPDES) permits.

D. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0

2. Community Partners: 3
   a. American Red Cross
   b. City of Newport News
   c. Hampton Roads Planning District Commission

3. Odor Complaints: 2

   a. July 14 - An odor complaint was received by HRSD's Customer Care center. The Technical Services Division (TSD) investigated on July 15. A resident at 134 Lorna Doone Drive, Yorktown, VA observed odors from the nearby York County Pinehurst pump station. This station exhibited a slight odor at the time of investigation; this observation and the nature of the original complaint were referred to the County.

   b. July 28 - A neighbor of HRSD's Pughesville Road pressure reducing station reported an odor complaint to South Shore Operations. Operations and TSD responded with no odors observed at the time of investigation and no readily apparent source of odors identified. Operations let the neighbor know that HRSD would respond as quickly

as possible to any odors observed and reported to allow HRSD the best chance to identify the source and take corrective action where possible. No further complaints have been received.

4. Monthly Metrics

Item #	Strategic Planning Measure	Unit	July 2020
M-1.4a	Training During Work Hours Per Full Time Employee (118) (Current Month)	Total Hours / # FTE	3.95
M-1.4b	Total Training During Work Hours Per Full Time Employee (118) (Cumulative Fiscal Year-to-Date)	Total Hours / # FTE	3.95
M-2.5	North Shore/South Shore Capacity Related Overflows	# within Level of Service	0
M-3.1	Permit Compliance	# of Exceedances: # of Permitted Parameters	0:5,073
M-3.2	Odor Complaints	#	2
M-3.4	Pollutant Removal	Total Pounds Removed	15,493,122
M-3.5	Pollutant Discharge	% Pounds Discharged/ Pounds Permitted	14%
M-5.2	Educational and Outreach Events	#	0
M-5.3	Community Partners	#	3
	Average Daily Flow	Total MGD for all Treatment Plants	129.17
	Pretreatment Related System Issues	#	0

5. Annual Metrics

Item #	Strategic Planning Measure	Unit	FY-2020
M-3.3	Carbon Footprint	Tons per MG	*
M-4.2	R & D Budget	Percentage of Total Revenue	*%
M-5.4	Value of Research	Number	*
M-5.5	Number of Research Partners	Number	*
	Rolling 5 Year Average Daily Flow	MGD	149.84
	Rainfall reported at Norfolk International Airport	Inches	48.49”

*These metrics will be reported upon closeout of fiscal year financials.

Respectfully submitted,
James Plott, PhD
Director of Water Quality

Hampton Roads Sanitation District
Internal Audit Status
July 31, 2020

The following Internal Audit Status document has been prepared by SC&H for the HRSD Commission. Below is a summary of projects in process, upcoming audits, and the status of current management action plan (MAP) monitoring.

I. *Projects in Process*

SWIFT Program Management Plan

- **Tasks Completed (July 2020)**
  - Finalized draft of risk and control matrix
  - Met with SWIFT leadership to discuss identified risks and process considerations

- **Upcoming Tasks (August 2020)**
  - Continue to meet with SWIFT leadership to discuss and validate identified process considerations
  - Draft Report

Fleet Services

- **Tasks Completed (July 2020)**
  - Validated process workflows with Fleet Management
  - Validated preliminary process gaps with Fleet Management
  - Drafted Fieldwork Audit Program
  - Issued initial Fieldwork documentation request

- **Upcoming Tasks (August 2020)**
  - Receive fieldwork documentation and execute audit program
  - Begin Drafting Report

Succession Planning

- **Tasks Completed (July 2020)**
  - Drafted and presented Fieldwork Audit Program
  - Researched Succession Planning best practices
  - Completed retirement data analytics
  - Discussed and revised draft survey questionnaire with Talent Management

- **Upcoming Tasks (August 2020)**
  - Finalize survey with Talent Management
  - Issue survey to HRSD Leadership
  - Review results of survey and conduct department interviews (if applicable)
  - Draft Report

Business Continuity and Disaster Recovery (Audit Fieldwork Complete/ Management Response in Process)

- HRSD management has communicated its continued progress to develop a plan to address the recommendations included in the BC/DR report. SC&H will continue to work with HRSD process owners and management to finalize the audit report, incorporating management action plans. A specific completion date has not been identified at this time.

II. Upcoming Projects (FY2020)

All planned upcoming projects have been initiated and are now in progress.

III. Management Action Plan (MAP) Monitoring

SC&H is performing on-going MAP monitoring for internal audits previously conducted for HRSD. SC&H begins MAP follow-up approximately one year following the completion of each audit and will assess bi-annually.

For each recommendation noted in an audit report, SC&H gains an understanding of the steps performed to address the action plan and obtains evidence to confirm implementation, when available.

The following describes the current project monitoring status. This listing does not include audits which were determined by HRSD Management and the Commission to include confidential or sensitive information.

			Recommendations		
Audit	**Report Date**	**Next Follow-up**	**Closed**	**Open**	**Total**
D&C: CIP Project Management	5/11/16	September 2020	11	2	13
Biosolids Recycling	10/8/16	Pending Permit	7	1	8
HR Benefits	11/22/16	Closed	15	0	15
Inventory	4/20/17	Closed	5	0	5
Procurement/ ProCard	8/23/17	August 2020	8	3	11
Engineering Procurement	4/20/18	In process	4	4	8
Corporate Governance: Ethics Function	3/21/18	August 2020	3	2	5
Treatment Plant Operations	10/15/18	In process	0	9	9
Customer Care Division*	7/26/19	August 2020	0	4	4
Safety Division*	9/12/19	September 2020	0	3	3
Permitting*	2/4/20	August 2020	0	2	2
Payroll*	3/27/20	November 2020	0	3	3
Pollution Source Control*	6/2/20	February 2021	0	8	8
		Totals	53	41	94

*SC&H has not yet performed formal follow-up procedures for the implementation status of these MAPs. Actual status may vary within the associated process areas and will be updated upon follow-up.

Annual Metrics

Item	Strategic Planning Measure	Unit	Target	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19	FY-20
M-1.1a	Employee Turnover Rate (Total)	Percentage	< 8%	5.63%	4.09%	6.64%	7.62%	8.22%	9.97%	6.75%	6.66%	9.99%	6.63%	6.78%
M-1.1b	Employee Turnover Rate within Probationary Period		0%		2.22%	8.16%	14.58%	9.68%	0.66%	0.13%	0.90%	1.01%	2.10%	3.08%
M-1.2	Internal Employee Promotion Eligible	Percentage	100%		59%	80%	70%	71%	64%	69%	68%	85%	85%	63%
M-1.3	Average Time to Fill a Position	Calendar Days	< 30		70	60	52	43.76	51	56	67	67	66	60
M-1.4	Training Hours per Employee - cumulative fiscal year-to-date	Hours	> 40		30.0	43.8	37.5	35.9	42.8	49.0	48.4	41.1	40.9	39.3
M-1.5a	Safety OSHA 300 Incidence Rate Total Cases	# per 100 Employees	< 3.5	6.57	6.15	5.8	11.2	5.07	3.87	7	5.5	5.7	4.1	4.8
M-1.5b	Safety OSHA 300 Incidence Rate Cases with Days Away	# per 100 Employees	< 1.1	0.74	1.13	1.33	0.96	1.4	0.82	1.9	1	1.1	0.8	1.34
M-1.5c	Safety OSHA 300 Incidence Rate Cases with Restriction, etc.	# per 100 Employees	< 0.8	3.72	4.27	2.55	4.5	2	1.76	3.6	2.8	2.8	1.8	1.6
M-2.1	CIP Delivery - Budget	Percentage			113%	96%	124%	149%	160%	151%	156%	160%	170%	170%
M-2.2	CIP Delivery - Schedule	Percentage			169%	169%	161%	150%	190%	172%	173%	167%	159%	159%
M-2.3a	Total Maintenance Hours	Total Available Mtc Labor Hours Monthly Avg			16,495	22,347	27,615	30,863	35,431	34,168	28,786	28,372	31,887	29,596
M-2.3b	Planned Maintenance	Percentage of Total Mtc Hours Monthly Avg			20%	27%	70%	73%	48%	41%	43%	44%	59%	59%
M-2.3c	Corrective Maintenance	Percentage of Total Mtc Hours Monthly Avg			63%	51%	12%	10%	18%	25%	25%	24%	18%	19%
M-2.3d	Projects	Percentage of Total Mtc Hours Monthly Avg			18%	22%	20%	18%	32%	34%	32%	32%	27%	25%
M-2.4	Infrastructure Investment	Percentage of Total Cost of Infrastructure	2%		8.18%	6%	6%	4%	7%	7%	5%	5%	4	*
M-3.3	Carbon Footprint	Tons per MG Annual Total			1.61	1.57	1.47	1.46	1.44	1.45	1.58	1.66	1.58	*
M-3.6	Alternate Energy (Incl. Green Energy as of FY19)	Total KWH			0	0	0	5,911,289	6,123,399	6,555,096	6,052,142	5,862,256	47,375,940	*
M-4.1a	Energy Use: Treatment	kWh/MG Monthly Avg			2,473	2,571	2,229	2,189	2,176	2,205	2,294	2,395	2,277	2408
M-4.1b	Energy Use: Pump Stations	kWh/MG Monthly Avg			197	173	152	159	168	163	173	170	181	174
M-4.1c	Energy Use: Office Buildings	kWh/MG Monthly Avg			84	77	102	96	104	97	104	104	95	102
M-4.2	R&D Budget	Percentage of Total Revenue	> 0.5%		1.0%	1.4%	1.0%	1.3%	1.0%	0.8%	1.3%	1.4%	1.8%	*
M-4.3	Total Labor Cost/MGD	Personal Services + Fringe Benefits/365/5-Year Average Daily Flow		$1,028	$1,095	$1,174	$1,232	$1,249	$1,279	$1,246	$1,285	$1,423	$1,348	*
M-4.4	Affordability	8 CCF Monthly Charge/ Median Household Income	< 0.5%		0.48%	0.48%	0.41%	0.43%	0.53%	0.55%	0.59%	0.60%	0.64%	*
M-4.5	Total Operating Cost/MGD	Total Operating Expense/ 365/5-Year Average Daily Flow		$2,741	$2,970	$3,262	$3,316	$3,305	$3,526	$3,434	$3,592	$3,959	$3,823	*
M-5.1	Name Recognition	Percentage (Survey Result)	100%	67%	71%	N/A	62%	N/A	60%	N/A	N/A	53%	N/A	*
M-5.4	Value of Research	Percentage - Total Value/HRSD Investment			129%	235%	177%	149%	181%	178%	143%	114%	117%	*
M-5.5	Number of Research Partners	Annual Total Number			42	36	31	33	28	35	15	20	26	*
	Rolling 5 Year Average Daily Flow	MGD		157.8	155.3	152	154.36	155.2	151.51	153.09	154.24	152.8	152.23	149.84
	Rainfall	Annual Total Inches		66.9	44.21	56.21	46.65	46.52	51.95	54.14	66.66	49.24	53.1	48.49
	Billed Flow	Annual Percentage of Total Treated		71.9%	82.6%	78%	71%	73%	74%	72%	73%	76%	72%	*
	Senior Debt Coverage	Net Revenue/Senior Annual Debt Service	> 1.5	2.51%	2.30%	2.07%	1.88%	1.72%	1.90%	2.56%	3.10%	3.59%	4.84%	*
	Total Debt Coverage	Net Revenue/Total Annual Debt	>1.4	1.67%	1.67%	1.46%	1.45%	1.32%	1.46%	1.77%	1.93%	2.03%	2.62%	*

*to be reported

Monthly Updated Metrics

Item	Strategic Planning Measure	Unit	Target	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	FY-16	FY-17	FY-18	FY-19	FY-20	FY-20 Jun-20	FY-21 Jul-20
	Average Daily Flow	MGD at the Plants	< 249		136	146.5	158.7	156.3	153.5	155.8	153.5	145.8	152.7	141.5	141.4	129.2
	Industrial Waste Related System Issues	Number	0		3	6	6	6	2	4	7	4	7	1	0	0
	Wastewater Revenue	Percentage of budgeted	100%		97%	96%	98%	107%	102%	104%	103%	103%	104%	104%	99%	113%
	General Reserves	Percentage of Operating and Improvement Budget	75% - 100%		72%	82%	84%	92%	94%	95%	104%	112%	117%	119%	126%	116%
	Accounts Receivable (HRSD)	Dollars (Monthly Avg)			$17,013,784	$17,359,488	$18,795,475	$20,524,316	$20,758,439	$22,444,273	$22,572,788	$22,243,447	$23,900,803	$27,335,100	$27,018,175	$27,018,175
	Aging Accounts Receivable	Percentage of receivables greater than 90 days			21%	20%	18%	19%	21%	20%	18%	18%	17%	18%	24%	24%
M-2.5	Capacity Related Overflows	Number within Level of Service	0		25	1	30	5	11	16	6	10	5	2	0	0
M-3.1	Permit Compliance	# of Exceedances to # of Permitted Parameters	0		12:55,045	1:51995	2:52491	1:52491	2:52491	2:52,491	9:53236	9:58338	2:60879	9:60879	9:60879	0:5073
M-3.2	Odor Complaints	Number	0		6	2	7	11	5	9	7	6	9	15	1	2
M-3.4	Pollutant Removal (total)	Total Pounds Removed			178,163,629	171,247,526	176,102,248	185,677,185	180,168,546	193,247,790	189,765,922	190,536,910	187,612,572	182,759,003	182,759,003	15,493,122
M-3.5	Pollutant Discharge (% of permitted)	Pounds Discharged/Pounds Removed	< 40%		25%	22%	25%	22%	22%	20%	22%	17%	17%	17%	19%	14%
M-5.2	Educational and Outreach Events	Number			302	184	238	322	334	443	502	432	367	256	5	7
M-5.3	Number of Community Partners	Number			280	289	286	297	321	354	345	381	293	230	10	13

EFFLUENT SUMMARY FOR JULY 2020

PLANT	FLOW mgd	% of Design	BOD mg/l	TSS mg/l	FC #/UBl	ENTERO #/UBl	TP mg/l	TP CY Avg	TN mg/l	TN CY Avg	TKN mg/l	NH3 mg/l	CONTACT TANK EX
ARMY BASE	9.67	54%	0	2.3	1	<1	1.3	0.83	3.0	3.6	NA	NA	9
ATLANTIC	25.38	47%	10	9.0	11	2	NA	NA	NA	NA	NA	NA	13
BOAT HARBOR	10.72	43%	5	4.0	2	<1	0.29	0.45	10	19	NA	NA	8
CENT. MIDDLESEX	0.012	49%	<2	<1.0	1	1	NA	NA	NA	NA	<0.50	0.030	NA
CHES-ELIZ	16.71	70%	12	8.7	14	6	1.0	1.2	33	33	NA	NA	6
JAMES RIVER	10.83	54%	4	1.6	1	1	0.19	0.38	8.3	8.9	NA	NA	1
KING WILLIAM	0.060	60%	<2	<1.0	NA	2	0.060	0.036	0.80	1.5	0.56	NA	NA
NANSEMOND	15.04	50%	4	3.4	2	2	1.0	0.78	3.3	3.8	NA	NA	8
SURRY, COUNTY	0.067	103%	4	<1.0	NA	NA	NA	NA	NA	NA	NA	<QL	0
SURRY, TOWN	0.031	51%	9	9.8	NA	>190	NA	NA	NA	NA	2.2	0.14	NA
URBANNA	0.061	61%	4	15	7	4	7.6	4.7	33	19	NA	0.090	NA
VIP	22.70	57%	0	1.2	2	1	1.5	0.54	3.9	3.1	NA	NA	4
WEST POINT	0.321	53%	23	15	18	12	3.6	2.6	19	17	NA	NA	0
WILLIAMSBURG	7.32	33%	2	2.0	7	6	0.78	0.58	1.6	2.6	NA	NA	9
YORK RIVER	10.26	68%	2	0.99	1	4	0.34	0.28	4.7	4.6	NA	NA	2
	129.17												

	% of Capacity
North Shore	47%
South Shore	54%
Small Communities	55%

Tributary Summary

	Annual Total Nitrogen			Annual Total Phosphorus		
	Discharged YTD	Operational Projection CY20		Discharged YTD	Operational Projection CY20	
Tributaries	%	Lbs	%	%	Lbs	%
James River	47%	3,797,081	83%	43%	274,045	86%
York River	43%	233,489	81%	45%	15,602	81%
Rappahannock	129%	NA	NA	441%	NA	NA

Permit Exceedances:Total Possible Exceedances, FY20 to Date: 0:5,073

Pounds of Pollutants Removed in FY20 to Date: 15,493,122

Pollutant Lbs Discharged/Permitted Discharge FY20 to Date: 14%

Rainfall (inch)

	North Shore (PHF)	South Shore (ORF)	Small Communities (FYJ)
Month	4.99"	2.20"	4.64"
Normal for Month	5.83"	6.17"	5.43"
Year to Date Total	31.63"	22.52"	28.52"
Normal for YTD	28.83"	27.72"	28.65"

AIR EMISSIONS SUMMARY FOR JULY 2020

	No. of Permit Deviations below 129 SSI Rule Minimum Operating Parameters								Part 503e Limits		
MHI PLANT	Temp 12 hr ave (F)	Venturi(s) PD 12 hr ave (in. WC)	Precooler Flow 12 hr ave (GPM)	Spray Flow 12 hr ave (GPM)	Venturi Flow 12 hr ave (GPM)	Tray/PBs Flow 12 hr ave (GPM)	Scrubber pH 3 hr ave	Any Bypass Stack Use	THC Mo. Ave (PPM)	THC DC (%)	BZ Temp Daily Ave Days >Max
ARMY BASE	0	0	0	0	0	0	1	1	33	100	0
BOAT HARBOR	0	1	0	n/a	0	0	0	3	14	77	0
CHES-ELIZ	0	0	0	0	0	0	0	0	23	87	0
VIP	0	0	0	n/a	0	0	0	0	23	98	0
WILLIAMSBURG	0	0	0	n/a	0	0	0	1	27	82	0

ALL OPERATIONS

DEQ Reportable Air Incidents:	0
DEQ Request for Corrective Action:	0
DEQ Warning Letter:	0
DEQ Notice of Violation:	0
Other Air Permit Deviations:	0
Odor Complaints Received:	2
HRSD Odor Scrubber H2S Exceptions:	8