



COMMISSION MEETING MINUTES
September 30, 2019

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Attachments (9)



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Name	Title	Present for Item Nos.
Elofson, Frederick N.	Commission Chair	1-21
Lynch, Maurice P.	Commission Vice-Chair	1-21
Glenn, Michael E.	Commissioner	1-21
Lakdawala, Vishnu K.	Commissioner	Absent
Levenston, Jr., Willie	Commissioner	1-21
Rodriguez, Stephen C.	Commissioner	1-21
Taraski, Elizabeth	Commissioner	1-21
Ward, Molly Joseph	Commissioner	Absent

1. **AWARDS AND RECOGNITION**

Brief:

a. National Association of Clean Water Agencies (NACWA) Awards

Chair Elofson presented the National Association of Clean Water Agencies (NACWA) awards announced during the annual summer conference.

NACWA's Peak Performance Awards recognize member facilities for outstanding compliance with their National Pollutant Discharge Elimination System (NPDES) permits. *Silver Awards* recognize facilities that have received no more than five permit violations per calendar year. *Gold Awards* honor those who have achieved perfect permit compliance for an entire calendar year, while *Platinum Awards* recognize 100 percent compliance for at least five consecutive years. The following treatment plants were recognized for outstanding compliance during calendar year 2018, a remarkable accomplishment:

Award	Plant
Silver	Central Middlesex Treatment
Silver	King William Treatment Plant
Silver	Urbanna Treatment Plant
Silver	West Point Treatment Plant
Gold	Army Base Treatment Plant
Gold	Atlantic Treatment Plant
Gold	Chesapeake-Elizabeth Treatment Plant



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Award	Plant
Gold	Lawnes Point Treatment Plant
Gold	Surry County Treatment Plant
Platinum 5	James River Treatment Plant
Platinum 11	York River Treatment Plant
Platinum 17	Boat Harbor Treatment Plant
Platinum 17	Nansemond Treatment Plant
Platinum 23	Virginia Initiative Plant
Platinum 24	Williamsburg Treatment Plant

b. Promotion Announcement

Mr. Henifin introduced Mr. Mike Martin who was recently promoted to Chief of the Pretreatment and Pollution Prevention (P3) Division within the Water Quality Department. Mike holds a bachelor's degree in Fisheries Science with a minor in Environmental Science from North Carolina State University in Raleigh, NC. He began his career with HRSD in 2001 and has worked in both the Technical Services and the P3 Divisions most of his career. He was in the position of P3 Manager for 12 years prior to this promotion, overseeing the North Shore Field Office. Mike did serve in one position outside of Water Quality when from 2014 through 2015 he stepped out of his role as P3 Manager to serve as the Organizational Change Manager for the Enterprise Resource Planning (ERP) Project.

c. Other Awards

(1) William D. Hatfield Award

Mr. Matt Williamson, Williamsburg Treatment Plant Superintendent, was recognized by the Virginia Water Environment Association (VWEA) with the *Water Environment Federation William D. Hatfield Award* at a ceremony on September 10. The WEF Hatfield Award is presented to operators of wastewater treatment plants for outstanding performance and professionalism.

The award was established in honor of **Dr. William D. Hatfield**, Superintendent of the Decatur, Illinois Sanitary District, who was President of the Central States Sewage Works Association in 1944-1945 and served as President of the Federation in 1958-1959.



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WEF Member Associations select their recipient for the Hatfield Award following the WEF general criteria indicated below:

- Member of the Water Environment Federation
- Documentation of a successful system of reports from the operator to his or her superiors that fulfill the information requirements and provide the operator with a forum for suggestions for improvements.
- Use of a good public relations program.
- The nominee should have contributed to the dissemination of information concerning advancements in the field

The Williamsburg Treatment Plant, which Matt has managed since 1987, was honored this year for 24 consecutive years of perfect permit compliance.

Matt, who celebrated 39 years of service with HRSD this month, was hired as a plant operator at the Army Base Treatment Plant in 1980, then transferred to the Chesapeake-Elizabeth Treatment plant in 1985, was promoted to Chief Operator at the Williamsburg Treatment Plant in 1987, and then promoted again in 2015 to his current position. Matt has a BS in Environmental Sciences with a Biology emphasis from Pittsburg State University and is a graduate of HRSD's Apprentice Program. During his time with HRSD, Matt was recognized for his work in closing the oxygen generation facility at Army Base Treatment Plant and operating and closing the Fort Eustis Treatment Plant while connections were made to HRSD.

(2) WaterReuse

The SWIFT Research Center was recognized by the WaterReuse Association at their 2019 WaterReuse Symposium with the Transformational Innovation Award. This award recognizes technological advances, research breakthroughs, and/or innovative practices that advance the adoption, implementation and/or public acceptance of recycled water. Awardees can be pilot or full-scale projects, or research for which follow-on demonstration projects are planned.



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d. Bond Closing

Mr. Jay Bernas, Director of Finance, informed the Commission of a recent bond closing. HRSD was able to save ratepayers approximately \$30 million net present value savings by refinancing and cash defeasing a portion of the outstanding debt. The team was able to pull this deal together in less than four weeks, which condensed a process that typically takes two to three months. Also, we locked our spread to the 30-year US Treasury at 1.98 percent, which is 0.08 percent higher than the all-time low. A few weeks after our deal, the 30-year US Treasury spiked to 2.37 percent, which would have reduced our savings by about \$8-\$9 million.

Attachment: None

Public Comment: None



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2. **CONSENT AGENDA**

Action: Approve the items listed in the Consent Agenda.

Moved: Maurice Lynch **Ayes:** 6
Seconded: Willie Levenston **Nays:** 0

Brief:

- a. Approval of minutes from previous meeting.
- b. Contract Awards
 - 1. [Army Base Treatment Plant Improvements - Phase III](#) \$201,302
- c. Task Orders
 - 1. [Oceana Offline Storage Facility](#) \$1,596,700
 - 2. [Willard Avenue Pump Station Replacement](#) \$536,026

Item(s) Removed for Discussion: None

Attachment #1: [Consent Agenda](#)

Public Comment: None



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3. **SWIFT EXTENSOMETER**

Action: No action required.

Brief: HRSD partnered with the United States Geological Survey (USGS) to install and operate an extensometer at the Nansemond Treatment Plant to monitor the potential land subsidence impact of SWIFT. Mr. Kurt McCoy, a supervisory hydrologist with USGS, [briefed](#) the Commission on the data collected to date.

Discussion Summary: Mr. McCoy explained land subsidence and aquifer system deformation in the coastal plain of Virginia, historical ground movement in the region, relative sea-level rise, groundwater levels of the Potomac Aquifer, the Southeastern Virginia Subsidence Monitoring Network and the impact of data from the SWIFT Research Center.

Attachment #2: [Presentation](#)

Public Comment: None



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4. **CAPACITY ASSURANCE AND CONNECTION POLICY
SERVICE AREA EXPANSION POLICY
FACILITY TRANSFER POLICY**

Action: Adopt policies.

Moved: Maurice Lynch
Seconded: Willie Levenston

Ayes: 6
Nays: 0

Brief: HRSD ensures conveyance and treatment capacity for wastewater flows within the HRSD Service Area. In order for HRSD and localities to plan for the infrastructure needed to accommodate future wastewater flows within the HRSD territory, HRSD must track the flow associated with new connections and coordinate with localities when they desire to expand the HRSD Service Area. The Capacity Assurance and Connection Policy and the Service Area Expansion Policy establish procedures and provide guidance to ensure needed information is submitted and to facilitate the planning of needed conveyance and treatment infrastructure. In certain circumstances, it may be in the best interest of HRSD, localities, private owners, and the Commonwealth to transfer ownership of sanitary sewer facilities. The Facility Transfer Policy establishes procedures and provides guidance for the transfer of sanitary sewer facilities. Key points of the policies include:

[Capacity Assurance Policy:](#)

- clarifies when new flows to the regional interceptor system must be approved
- clarifies acceptable locations and methods for connecting to the Regional Interceptor System

[Service Area Expansion Policy:](#)

- clarifies the process for localities to expand the HRSD service area within their boundaries; (localities control development)
- clarifies when HRSD will extend the regional interceptor system at HRSD cost

[Facility Transfer Policy:](#)

- clarifies criteria for transferring individual facilities and entire sewer systems
- clarifies real property and easement requirements for transferring facilities
- clarifies that HRSD will charge users for services rendered

Discussion Summary: The principles of these policies have been applied to recent expansion requests and have no additional impact on those localities.

Attachment #3: [Policies](#)

Public Comment: None



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5. **BETHEL-POQUOSON FORCE MAIN PART III REPLACEMENT AGREEMENT**

Action: Approve the terms and conditions of the agreement between the Virginia Department of Transportation and HRSD for the relocation of the HRSD force main located on Wythe Creek Road 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:	Willie Levenston	Ayes:	6
Seconded:	Michael Glenn	Nays:	0

CIP Project: YR011900

Project Description: The proposed work will be constructed as part of a Virginia Department of Transportation (VDOT) roadway improvements project. Portions of the existing pipeline will be relocated at VDOT project expense and some portions will be relocated at HRSD expense. This project will replace approximately 3,520 linear feet of existing 20-inch pre-stressed concrete cylinder pipe (PCCP) along the eastern edge of Wythe Creek Road. VDOT will replace approximately 1,734 feet of pipe at project cost and HRSD will be responsible for replacement of 1,686 feet of pipe at HRSD cost.

Funding Description: The total estimated cost for replacement of the force main is \$1,741,790. VDOT's portion of the replacement cost is estimated at \$1,148,450 and HRSD's portion is estimated at \$593,340. HRSD's portion includes a ten percent construction oversight paid to VDOT by HRSD.

Agreement Description: The [attached agreement](#) between HRSD and VDOT provides for the engineering and construction of the relocated force main. The agreement assigns costs to the responsible parties. The agreement has been reviewed by HRSD legal counsel.

Analysis of Cost: The estimated cost for this project is based on a Class 1 Estimate developed by HRSD's engineering consultant.

Attachment #4: [Agreement](#)

Public Comment: None



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7. **MANHOLE REHABILITATION/REPLACEMENT PHASE 1 AND NORTH SHORE SIPHON CHAMBER REHABILITATION PHASE 1
ADDITIONAL APPROPRIATION, CONTRACT AWARD (>\$200,000), TASK ORDER (>\$200,000)**

Actions:

- a. **Appropriate additional funding in the amount of \$8,019,969.**
- b. **Award a contract to Shaw Construction Corporation (Shaw) in the amount of \$7,260,921.**
- c. **Approve a task order with Brown and Caldwell in the amount of \$626,796.**

Moved: Willie Levenston
Seconded: Michael Glenn

Ayes: 6
Nays: 0

CIP Project: GN0121300

Budget	\$2,834,000
Previous Expenditures and Encumbrances	(\$969,660)
Available Balance	\$1,864,340
Proposed Task Order to Brown and Caldwell	(\$626,796)
Proposed Contract Award to Shaw Construction Corp.	(\$7,260,921)
Estimated Cost of Remaining Work	(\$1,155,000)
Proposed Contingency	(\$841,592)
Project Shortage/Requested Additional Funding	(\$8,019,969)
Revised Total Project Authorized Funding	\$10,853,969

Type of Procurement: Competitive Bid

Bidder	Bid Amount	Revised Amount
Shaw Construction Corp.	\$7,556,964	\$7,260,921
Bridgeman Civil Inc.	\$7,692,000	0

HRSD/Engineer Estimate: \$4,478,523 \$5,576,498



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Contract Status:	Amount
Original Contract with Brown and Caldwell	\$328,280
Total Value of Previous Task Orders	\$222,976
Requested Task Order	\$626,796
Total Value of All Task Orders	\$849,772
Revised Contract Value	\$1,178,052
Engineering Services as % of Construction	16%

Contract Description: In accordance with HRSD’s competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised July 09, 2019 and two bids were received on August 08, 2019. The apparent low bid of \$7,556,964 was submitted by Shaw Construction Corporation. Because of the disparity between the received bid and the Engineer’s estimate, Brown and Caldwell was authorized to negotiate with Shaw to determine the reasons for the difference and arrive at a fair and equitable price. Brown and Caldwell evaluated and negotiated the bid and recommends award to Shaw Construction Corporation in the amount of \$7,260,921.

Project Description: The work consists of pipe rehabilitation, new manhole installation, and rehabilitation of thirty-four manholes and four siphon chambers. There are two manholes and two siphon chambers located in the City of Hampton; four manholes, one siphon chamber, and one pipe to be rehabilitated in the City of Newport News; twenty-eight manholes in the City of Norfolk; one siphon chamber in the City of Suffolk; and one manhole in the County of York. This project includes rehabilitation of numerous manholes and several siphon chambers identified as having material risk of failure or significant inflow and infiltration discovered during condition assessment activities. A large portion of the manholes to be rehabilitated are being completed under a separate cooperative contract where unit prices are already established.

Funding Description and Analysis of Cost: The total cost estimate for this project is approximately \$10,853,969. The estimate includes \$1,019,756 in engineering costs, \$8,992,621 in construction costs, and a 10 percent construction contingency of \$841,592. The apparent low bid of \$7,556,964 as submitted by Shaw was \$3,078,440 above the Engineers estimate. Because of the difference between the received bid and the Engineer’s estimate, Brown and Caldwell was authorized to negotiate with Shaw Construction Corporation to determine the reasons for the difference and arrive at a fair and equitable bid price. Shaw revised their price to \$7,260,921 based on these negotiations. Brown and Caldwell reviewed their estimate and revised it to \$5,576,498 based on discussions with Shaw. This is the second time this project has been bid and both resulted in minimal bidders and differences between the engineer’s estimate and the bid results. Re-bidding this project a third time would result in a two month delay and a low probability of attracting additional bidders. There is a time concern with rebidding since this is a Rehabilitation Action Plan Phase 1 project and the work must be completed by May 2021.



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Task Order Description and Analysis of Cost: This task order will provide construction administration and construction inspection services for Manhole Rehabilitation/Replacement Phase 1 and North Shore Siphon Chamber Rehabilitation Phase 1. The construction administration and construction inspection services for the project were negotiated and a fee of \$626,796 was considered to be appropriate for the scope of work. With an apparent low bid of \$7,260,921 for construction, the engineering fee to construction cost ratio is approximately 8.6 percent, which is within range of similar HRSD projects.

Schedule: Construction October 2019
 Project Completion April 2021

Attachment: None

Public Comment: None



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8. SHIPPS CORNER INTERIM PRESSURE REDUCING STATION (PRS)
ADDITIONAL APPROPRIATION

Action: Appropriate additional funding in the amount of \$67,921.

Moved: Willie Levenston **Ayes:** 6
Seconded: Elizabeth Taraski **Nays:** 0

CIP Project: AT011510

Budget	\$3,650,000
Previous Expenditures and Encumbrances	(\$3,606,738)
Available Balance	\$43,262
Proposed Task Order to Bridgeman Civil Inc.	(\$85,000)
Proposed Amendment to Hazen and Sawyer	(\$16,183)
Proposed Contingency	(\$10,000)
Project Shortage/Requested Additional Funding	(\$67,921)
Revised Total Project Authorized Funding	\$3,717,921

Project Description: This work effort is associated with final wrap up of the renovations to the Shipp's Corner PRS and involves dismantling and removing the existing above grade bypass pumps, piping, valves, fittings, and appurtenances that were originally installed prior to the current work ongoing at the Shipp's Corner PRS. These removed materials will be transported and delivered to South Shore Operations for storage and repurposing. This work will be started upon the contractor vacating the Shipp's Corner PRS site upon completion of all of the remaining work for the rehabilitation of this facility. The work effort of dismantling, removing, and transporting the bypass pumping system will be performed by Bridgeman Civil Inc. approximately 15 calendar days from receiving Notice to Proceed from HRSD to commence work. Hazen and Sawyer will oversee the work to be performed by Bridgeman Civil Inc.

Funding Description and Analysis of Cost: HRSD staff had originally intended to perform the removal of the existing bypass pumping system and therefore, the original CIP project estimate did not anticipate nor budget costs for the described work. The negotiated work for Bridgeman Civil Inc. related to perform the described work is in the amount of \$85,000 under their current on-call unit price contract with HRSD. The negotiated work for Hazen and Sawyer to oversee the construction activities and close out this work effort under their Condition Assessment Services contract with HRSD is \$16,183. This request includes a \$10,000 contingency to accommodate any additional unforeseen conditions. The combination of the removal of the bypass pumping system and new contingency funds exceed the balance available for this CIP project.

Schedule: Construction October 2019
Project Completion December 2019

Attachment: None
Public Comment: None



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9. **SMALL COMMUNITIES MOBILE DEWATERING FACILITIES INSTALLATION
ADDITIONAL APPROPRIATION, CONTRACT AWARD (>\$200,000)**

Actions:

- a. **Appropriate additional funding in the amount of \$750,478.**
- b. **Award a contract to J. Sanders Construction Company in the amount of \$1,045,011.**

Moved: Maurice Lynch **Ayes:** 6
Seconded: Michael Glenn **Nays:** 0

CIP Project: MP013100

Budget	\$1,205,000
Previous Expenditures and Encumbrances	(\$166,034)
Available Balance	\$1,038,966
Task Order to Jacobs	(\$150,433)
Proposed Contract Award to J. Sanders	(\$1,045,011)
Estimated Cost of Mobile Dewatering Equipment	(\$489,500)
Proposed Contingency	(\$104,500)
Project Shortage/Requested Additional Funding	(\$750,478)
Revised Total Project Authorized Funding	\$1,955,478

Type of Procurement: Competitive Bid

Bidder	Bid Amount
J. Sanders Construction Company	\$1,045,011

HRSD/Engineer Estimate: \$676,000

Contract Description: In accordance with HRSD’s competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised July 25, 2019 and one bid was received on August 22, 2019. The design engineer, Jacobs, evaluated the bids and recommends award to the lowest responsive and responsible bidder J. Sanders Construction Company in the amount of \$1,045,011.

Project Description: This project prepares three Small Communities Treatment Plant facilities for the use of a HRSD supplied mobile screw press for dewatering of the solids at each plant. The work includes the installation of concrete pads, paving, pumps, piping, and electrical equipment at each facility for quick connection and disconnection of the mobile dewatering unit.



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Funding Description and Analysis of Cost: The total cost estimate for this project is \$1,954,478. The estimate includes \$315,467 in engineering costs, \$1,534,511 in construction costs including the estimated cost of the screw press, and a 10 percent construction contingency of \$104,500. The apparent low bid of \$1,045,011 as submitted by J. Sanders Construction Company was reviewed by the Engineer and it was determined that the cost differences between the engineers estimate and the bid were a result of under estimating the mobilization/demobilization, additional labor costs due to hand digging for installation of utilities, and overhead and profit due to the small project size. The project consists of three geographically separated sites instead of one large site which also impacts the cost. Based on incorporation of these items, the revised engineer's estimate is \$1,062,000. The revised engineer's estimate more accurately reflects the value of the proposed work and supports the validity of the bid received. The additional appropriation of \$750,478 is requested to execute the construction phase.

Schedule: Construction October 2019
 Project Completion November 2020

Discussion Summary: The mobile dewatering unit will cycle between locations as needed. The existing drying beds will no longer be needed minimizing odor issues.

Attachment: None

Public Comment: None



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Project Description: This project will convey flow from the Surry County and Town of Surry Treatment Plants to the existing HRSD force main in the Town of Smithfield. It will construct approximately 125,000 linear feet of force main ranging in size from four to 10-inch diameter, an equalization tank, three new pump stations, and rehabilitation of one existing pump station including electrical, instrumentation, controls, and generators. In addition, the closure and demolition of both the Surry County and Town of Surry Treatment Plants are included in the project.

Funding Description and Analysis of Cost: After review of the costs to send flow from the Town of Surry Plant to the Surry County Plant and the cost to upgrade the Surry County Plant, it was determined that the better option would be to send the flow from both plants to the existing HRSD force main in Smithfield. A revised Construction Cost Limit (CCL) was requested from the design-builder to construct facilities to convey flow to the Smithfield force main. The CCL provided was \$33,997,000. An alternate was provided in the amount of \$703,120 to provide right of way assistance. These costs were reviewed with the design-build team and the HRSD Quality Steering Team (QST). It was determined to proceed with a total CCL of \$34,700,120. The design-build team was requested to provide a 60 percent design of the force main to Smithfield. At completion of the 60 percent design the design builder will provide a Fixed Price for the revised scope of work.

The negotiated amount for this CCL is \$34,700,120 and exceeds the balance available for this CIP project. The additional appropriation of \$29,353,726 is requested to execute the design-build project.

Change Order Descriptions: Change Order No. 1A provides authorization for the force main from the Surry County Marina to the Town of Surry, the force main from the Town of Surry Plant to the intersection of Route 31 and Route 10, easement acquisition, engineering, and management costs. Change Order No. 1A provides a Fixed Price for this work that was part of the original agreement. This portion of the project was included in the Fixed Price approved by the Commission at the June 25, 2019 meeting; however, that change order was not executed due to the revisions to scope.

Change Order 2 will provide \$2,713,169 to develop 60 percent design plans and specifications for the force main and pump stations to send the flow from both Surry plants to the HRSD Smithfield force main. The Fixed Price for that work will be negotiated based on the approved 60 percent design when the design is complete.

The revised project scope will provide the best long-term solution for the original goal of removing the Town of Surry Treatment Plant from service in accordance with the Department of Environmental Quality (DEQ) Consent Order requirement.

The attached [CIP Location Map](#) is provided for clarification.



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<u>Schedule:</u>	Design	February 2019
	Construction	October 2019
	Project Completion	March 2022

Discussion Summary: The flow will be conveyed to the Nansemond Treatment Plant, which has adequate capacity for the small volume to be conveyed and treated.. Isle of Wight County and Surry are both interested in additional sewer options, which will provide options to address failing septic systems and to support any new development. The communities control land use and future connections to this pipeline will require approval of the local government and will need to be in accordance with their Comprehensive Plan.

Attachment #6: [Location Map](#)

Public Comment: None



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11. **SURRY WATER AND SEWER INFRASTRUCTURE IMPROVEMENTS – PHASE 1
NEW CIP AND INITIAL APPROPRIATION**

Actions:

- a. **Approve a new Capital Improvement Project (CIP) for the Surry Water and Sewer Infrastructure Improvements – Phase 1.**
- b. **Appropriate total project funding in the amount of \$2,412,922.**

<u>Moved:</u>	Willie Levenston	<u>Ayes:</u>	6
<u>Seconded:</u>	Maurice Lynch	<u>Nays:</u>	0

CIP Project: SU010300

Project Description: This project will include the rehabilitation of three Surry Pump Stations (PS-06, PS-07, and PS-08), provide for point repairs, and provide condition assessment for approximately 23,500 linear feet of the Surry gravity sewer system. The project will also replace approximately 211 water meters in the Town of Surry and 151 water meters in the Town of Dendron.

The current collection and conveyance system is aging and recent flow monitoring activities has shown high amounts of inflow and infiltration coming into the system resulting in multiple sanitary sewer overflows. This project will initiate the process of upgrading the existing collection and conveyance system to current HRSD standards. The existing water meters are outdated and in questionable condition. To ensure accurate billing, HRSD will install new meters with automated reading features.

Funding Description: The total cost for this project is estimated at \$2,412,922 based on a Class 5 cost estimate and a 20 percent construction contingency included in the requested appropriation. The Town of Surry Pump Station and Discharge Force Main (CIP SU010000) will be closed out and Surry Water and Sewer Infrastructure Improvements Phase 1 (CIP SU010300) will take its place. This change is proposed since a significant scope change is needed to deliver the project as it is now defined. This new project was not included in the approved CIP and approval is needed to move forward.

<u>Schedule:</u>	PrePlanning	October 2019
	PER	November 2019
	Design	June 2020
	Pre-Construction	September 2020
	Construction	November 2020
	Project Completion	July 2021

Attachment: None

Public Comment: None



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12. VIRGINIA BEACH BOULEVARD FORCE MAIN PHASE VI
ADDITIONAL APPROPRIATION, CONTRACT AWARD (>\$200,000),
TASK ORDER (>\$200,000) AND EASEMENT ACQUISITION

Actions:

- a. Appropriate additional funding in the amount of \$11,950,000.
- b. Award a contract to Bridgeman Civil, Inc. in the amount of \$22,274,865.
- c. Approve a task order with Kimley-Horn and Associates, Inc. in the amount of \$995,612.
- d. Approve the purchase of a 7,014 square foot easement in accordance with the terms and conditions of the Agreement and forthcoming Deed of Easement with CKC Properties, LLC (Landowner) for \$47,500 and authorize the General Manager to execute the same, substantially as presented, together with such changes, modifications, and deletions as the General Manager may deem necessary.
- e. Approve the purchase of an 8,836 square foot easement in accordance with the terms and conditions of the Agreement and forthcoming Deed of Easement with Susan Browney Dillon Living Trust (Landowner) for \$49,500 and authorize the General Manager to execute the same, substantially as presented, together with such changes, modifications, and deletions as the General Manager may deem necessary.

Moved: Michael Glenn
Seconded: Elizabeth Taraski

Ayes: 6
Nays: 0

CIP Project: CE011823

Budget	\$15,913,000
Previous Expenditures and Encumbrances	(\$1,679,564)
Available Balance	\$14,233,436
Proposed Contract Award to Bridgeman Civil, Inc.	(\$22,274,865)
Proposed Task Order to Kimley-Horn	(\$995,612)
Proposed Contingency	(\$2,912,959)
Project Shortage/Requested Additional Funding	(\$11,950,000)
Revised Total Project Authorized Funding	\$27,863,000



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Type of Procurement: Competitive Bid

Bidder	Bid Amount
Bridgeman Civil, Inc.	\$22,274,865
Tidewater Utility Construction, Inc.	\$24,571,280
S.J. Lewis Construction, Inc.	\$26,430,000
Garney Companies, Inc.	\$26,456,964

Engineer Estimate: \$24,813,803

Contract Status:	Amount
Original Contract with Kimley-Horn	\$191,200
Total Value of Previous Task Orders	\$1,259,387
Requested Task Order	\$995,612
Total Value of All Task Orders	\$2,254,999
Revised Contract Value	\$2,446,199
Engineering Services as % of Construction	11%

Contract Description: In accordance with HRSD's competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on August 4, 2019, and four bids were received on September 5, 2019. The design engineer, Kimley-Horn and Associates, Inc., evaluated the bids and recommends award to the lowest responsive and responsible bidder, Bridgeman Civil, Inc. in the amount of \$22,274,865.

Project Description: This project will upgrade the existing 24-inch reinforced concrete pipe to a 42-inch pipe from North Lynnhaven Road to North Great Neck Road. The new pipeline alignment falls primarily within the Virginia Beach Boulevard right-of-way from North Lynnhaven Road to Eureka Avenue, travels through the Southern Boulevard right-of-way until it crosses London Bridge Creek and will connect back into the existing force main at Great Neck Road by way of Parker Lane. As a result, the total length of the new pipeline will be approximately 9,500 linear feet. This project must be substantially complete by June 2021. The project is needed to provide reliable capacity and maintain HRSD pressure policy when flow is diverted in support of the Chesapeake-Elizabeth Treatment Plant closure and for the eventual Regional Wet Weather Management Plan.

Task Order Description and Analysis of Cost: This task order will provide contract administration and construction inspection services for this project. A meeting was held to discuss the project and scope of services. A fee of \$995,612 was negotiated to provide the required oversight for the project, which is planned to take approximately two years to complete. The cost of the task order is based upon an estimation of hours and rates to complete the work. The hours and rates are in line with past efforts on large force main projects.



COMMISSION MEETING MINUTES
September 30, 2019

Agreement Description: The attached [Purchase Agreements](#) and [Deed of Easements](#) have been reviewed by HRSD staff and legal counsel. [Acquisition plats](#) and the CIP [Location Map](#) are provided for clarification. This easement acquisition was previously presented to the Commission to determine public need and condemnation proceedings, but the owner and HRSD staff have reached an agreement, which both parties consider fair.

Funding Description: The original CIP project estimate did not anticipate the amount of work that would need to be completed in the roadway (vs. the median), the quantity and final cost of all easements, the number of trenchless installations (including several micro-tunneling operations), the primarily night-time work hours, and the approximate 10 percent increase in material cost related to the current construction climate. This request includes a \$2,912,959 (approximately 10 percent) contingency to accommodate any additional unforeseen conditions and compensate property owners for the easements.

<u>Schedule:</u>	Bid	September 2019
	Construction	November 2019
	Project Completion	December 2021

Attachment #7: [Agreements, Plats and Location Map](#)

Public Comment: None



COMMISSION MEETING MINUTES
September 30, 2019

13. **WILLIAMSBURG TREATMENT PLANT ADMINISTRATION BUILDING RENOVATION
INITIAL APPROPRIATION**

Action: Appropriate total project funding in the amount of \$1,319,600.

Moved: Maurice Lynch **Ayes:** 6
Seconded: Willie Levenston **Nays:** 0

CIP Project: WB012900

Project Description: The project is to renovate the existing 1960 era Administration Building at the Williamsburg Treatment Plant. The renovations will include the replacement of all bathroom fixtures and showers, more office space for plant staff, refurbish the existing conference room, and create additional workshop space. A new operations control room will be provided in the administration building. The administration building is rated for a Hurricane Category 2 and the existing operations control room in the incinerator building has to be evacuated during tropical storm force winds.

Funding Description: The total cost for this project is estimated to be \$1,319,600. The estimated project cost is based on a construction cost estimate of \$997,100 combined with an engineering services estimate of \$122,500 and an approximate twenty percent contingency allowance of \$200,000. Engineering services will be provided by Guernsey Tingle Architects, PC including preliminary engineering, design, and construction phase services.

Schedule:	Pre-Planning	October 2019
	PER	November 2019
	Design	March 2020
	Bid	September 2020
	Construction	January 2021
	Project Completion	October 2021

Attachment: None

Public Comment: None



COMMISSION MEETING MINUTES
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14. **WILLIAMSBURG TREATMENT PLANT GENERATOR AND SWITCHGEAR REPLACEMENT
ADDITIONAL APPROPRIATION, CONTRACT AWARD (>\$200,000) AND TASK ORDER (>\$200,000)**

Actions:

- a. **Appropriate additional funding in the amount of \$12,242,922.**
- b. **Award a contract to MEB General Contractors, Inc. (MEB) in the amount of \$13,992,672.**
- c. **Approve a task order with HDR Engineering, Inc. (HDR) in the amount of \$1,406,797.**

<u>Moved:</u>	Willie Levenston	<u>Ayes:</u>	6
<u>Seconded:</u>	Elizabeth Taraski	<u>Nays:</u>	0

CIP Project: WB012400

Budget	\$4,760,460
Previous Expenditures and Encumbrances	(\$904,279)
Available Balance	\$3,856,181
Proposed Contract Award to MEB	(\$13,992,672)
Proposed Task Order to HDR	(\$1,406,797)
Proposed Contingency	(\$699,634)
Project Shortage/Requested Additional Funding	(\$12,242,922)
Revised Total Project Authorized Funding	\$17,003,382

Type of Procurement: Competitive Bid

Bidder	Bid Amount
MEB General Contractors, Inc.	\$13,992,672
Clark Construction Group LLC	\$15,022,522
Crowder Construction Company	\$16,458,000
W.M. Schlosser Inc.	\$16,833,000
Bridgeman Civil Inc.	\$16,970,922

Engineer Estimate: \$17,434,077



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Contract Status:	Amount
Original Contract with HDR	\$74,681
Total Value of Previous Task Orders	\$828,240
Requested Task Order	\$1,406,797
Total Value of All Task Orders	\$2,235,037
Revised Contract Value	\$2,309,718
Engineering Services as % of Construction	16.5%

Contract Description: In accordance with HRSD’s competitive sealed bidding procedures, the Engineering Department advertised and solicited bids directly from potential bidders. The project was advertised on July 28, 2019, and five bids were received on September, 5, 2019. The design engineer, HDR, evaluated the bids and recommends award to the lowest responsive and responsible bidder, MEB General Contractors, Inc., in the amount of \$13,992,672.

Project Description: This project includes the replacement of the main switchgear, generator, generator switchgear, controls, and appurtenances at the Williamsburg Treatment Plant. The replacement of the generator and switchgear requires the construction of a new building to house the equipment.

Task Order Description: This task order will provide construction phase services for the project. A fee of \$1,406,797 was negotiated with HDR and was based upon anticipated construction administration and inspection hours required for this effort. This cost for construction phase services is approximately 10 percent of the total construction cost. This is a complex electrical project requiring power shutdowns and coordination with Dominion Energy and warrants the proposed level of effort.

Funding Description and Analysis of Cost: The revised total project cost is \$17,003,382. This amount is based on construction costs of \$13,992,672, engineering services costs of \$2,309,718 and an approximate five percent contingency of \$699,634. The contingency amount is to accommodate any potential unforeseen conditions. The total project budget was updated in the FY 2020 CIP to \$17,598,155. The additional appropriation of \$12,242,921 is requested to execute the construction phase.

Schedule: Construction November 2019
Project Completion October 2021

Attachment: None

Public Comment: None



COMMISSION MEETING MINUTES
September 30, 2019

15. **UNFINISHED BUSINESS**

- a. Water Quality Services Building Update – Mr. Henifin discussed the upcoming construction of the new Water Quality Services Building, which will have a short-term impact on employee parking. Reserved customer parking for payments will not be affected. Construction is anticipated to begin in November and be substantially complete in two years.
- b. Virginia Watershed Implementation Plan (WIP III) Update – Mr. Henifin and Commissioner Ward recently met with the Secretary of Natural Resources to discuss concerns with the Plan. In the attached [letter](#), we have received assurances from the Secretary of Natural Resources that the WIP III “should not be viewed as the end of a process” and that the “Commonwealth is fully open to alternative approaches that achieve our goals.” The Secretary further assured us that “the Commonwealth fully intends to allow utilization of nutrient trading for both the wastewater sector and regulated urban sector” providing us some needed protection to our existing trading agreements with our Hampton Roads’ localities with Municipal Separate Storm Sewer System (MS4) permits. We expect to see work on the regulations in the next few months. The Virginia Association of Municipal Wastewater Agencies (VAMWA) has filed an appeal to the WIP.
- c. Johnson et al. v City of Suffolk and HRSD (Oystermen) Litigation – Mr. Henifin informed the Commission the Court has ruled in HRSD’s favor and has dismissed the suit. The litigants can file an appeal to the Virginia Supreme Court until early November.

Attachment #8: [Letter](#)

16. **NEW BUSINESS – None**

17. **COMMISSIONER COMMENTS**

Commissioners Elofson, Levenston, Lynch and Rodriguez shared their experiences at the recent Water Environment Federation Technical Exhibition and Conference (WEFTEC). They said it was a fascinating learning experience which reinforced that HRSD employees are very knowledgeable, capable and are highly regarded in the community and wastewater treatment field. The Commissioners are very proud of HRSD employees and the job they do.

Commissioner Lynch commented on the future workforce discussions at WEFTEC and the fact that HRSD’s Apprenticeship Program is unique. In addition to training for the operating staff, HRSD utilizes the Water Environment Federation (WEF) Water Leadership Institute as well as the Water and Wastewater Leadership Center for management staff.



COMMISSION MEETING MINUTES
September 30, 2019

18. PUBLIC COMMENTS NOT RELATED TO AGENDA – None

19. 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 #9: [Informational Items](#)

Public Comment: None

20. CLOSED MEETING

Action: Motion to go into Closed Meeting for discussion with legal counsel and staff regarding acquisition of real property for a public purpose of publicly held real property in the City of Chesapeake [Specific Exemption: Va. Code §2.2-3711.A3]

Moved:	Stephen Rodriguez	Ayes:	6
Seconded:	Willie Levenston	Nays:	0

Brief: Discussion or consideration of the acquisition of real property for a public purpose of publicly held real property, where discussion in an open meeting would adversely affect the bargaining position or negotiating strategy of the public body.

Roll call vote to return to Open Session: Ayes: 6 Nays: 0

- Elizabeth Taraski
- Willie Levenston
- Steve Rodriguez
- Mike Glenn
- Maurice Lynch
- Rick Elofson



COMMISSION MEETING MINUTES
September 30, 2019

21. **RECONVENED MEETING**

Action: No action required.

Attachment: None

Public Comment: None

22. **ANNOUNCEMENTS**

- The Virginiaforever Bridge Builder Celebration will be held on October 10 in Richmond.
- The Finance Committee will meet on October 15 in Virginia Beach from 9:30 am until 11:30 am to review the Comprehensive Annual Financial Report. All Commissioners are invited to attend.

Next Commission Meeting Date: October 22, 2019 at the HRSD North Shore Operations Center, 2389 G. Avenue, Newport News, VA 23602

Meeting Adjourned: 10:52 a.m.

SUBMITTED:

Jennifer L. Cascio

Jennifer L. Cascio
Secretary

APPROVED:

Maurice P. Lynch

Maurice P. Lynch, PhD
Vice-Chair

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #1

AGENDA ITEM 2. – CONSENT AGENDA

CONSENT AGENDA ITEM 2.b.1. – September 30, 2019

Subject: Army Base Treatment Plant Improvements - Phase III
Contract Award (>\$200,000)

Recommended Action: Award a contract to Bridgeman Civil, Inc. (formerly T.A. Sheets General Contractors, Inc.) in the amount of \$201,302.

CIP Project: AB010100

Budget	\$124,521,000
Previous Expenditures and Encumbrances	(\$123,098,778)
Available Balance	\$1,422,222

Type of Procurement: Competitive Bid

Bidder	Bid Amount
T.A. Sheets General Contractors, Inc. dba Bridgeman Civil, Inc.	\$201,302

HRSD/Engineer Estimate: \$500,000

Contract Description: This contract is to replace the concrete columns of the Primary Clarifier Tanks two through four at the Army Base Treatment Plant. In accordance with HRSD's competitive sealed bidding procedures, the Procurement Division advertised and solicited bids directly from potential bidders on June 26, 2019. One bid was received on July 25, 2019 and evaluated based upon the requirements for the invitation for bid. Bridgeman Civil, Inc. is the apparent low bidder with a bid amount of \$201,302.

Project Description: This project will provide for biological nutrient removal (BNR) to meet recently adopted regulatory requirements. The treatment process will be designed to meet an annual average of 5.0 mg/L total nitrogen concentration and a 1.0 mg/L total phosphorus concentration in the effluent discharge. Improvements to existing facilities will also be needed to address the BNR process upgrades including the installation of a distributed control system, grit removal improvements and generator/switchgear upgrades. A number of other site improvements will also be needed on this relatively small and fully utilized site. The improvement project will also include a number of existing CIP projects already scheduled to move ahead. These projects include: Aeration Tank Influent Pipe Replacement, Primary Clarifier Influent Pipe Replacement and Foreign Biosolids Facility Improvements.

Analysis of Cost: Costs were compared to past similar projects and were determined to be fair and reasonable.

CONSENT AGENDA ITEM 2.c.1. – September 30, 2019

Subject: Oceana Offline Storage Facility
Task Order (>\$200,000)

Recommended Action: Approve a task order with Kimley-Horn and Associates, Inc. in the amount of \$1,596,700.

CIP Project: CE011840

Budget	\$16,900,000
Previous Expenditures and Encumbrances:	\$447,405
Available Balance:	\$16,452,595

Contract Status:	Amount
Original Contract with Kimley-Horn and Associates	\$50,000
Total Value of Previous Task Orders	\$383,500
Requested Task Order	\$1,596,700
Total Value of All Task Orders	\$1,980,200
Revised Contract Value	\$2,030,200
Engineering Services as % of Construction	11.5%

Project Description: This project will design and construct a three million gallon storage tank, approximately 1,900 linear feet of 42-inch HDPE (including 860 linear foot micro-tunnel installation within 54-inch casing), 1,220 linear feet of 36-inch ductile iron force main, a discharge pump station, and odor control units. The tank will be used during wet weather conditions to shave off peak flow from the HRSD interceptor force main system in order to maintain system pressures along the Virginia Beach Boulevard, Laskin Road, and Great Neck Road corridors at acceptable levels and to minimize the risk of SSO events.

Task Order Description and Analysis of Cost: This task order will provide engineering services for the design and bid phase of this project. The cost of this task order is based on hourly rates and labor hours that are consistent with similar past projects.

Schedule:	Design	October 2019
	Bid	April 2020
	Construction	September 2020
	Project Completion	December 2021

CONSENT AGENDA ITEM 2.c.2. – September 30, 2019

Subject: Willard Avenue Pump Station Replacement
Task Order (>\$200,000)

Recommended Action: Approve a task order with Rummel, Klepper & Kahl (RK&K) in the amount of \$536,026.

CIP Project: BH013020

Budget	\$10,000,000
Previous Expenditures and Encumbrances	(\$561,508)
Available Balance	<u>\$9,438,492</u>

Contract Status:	Amount
Original Contract with RK&K	\$102,410
Total Value of Previous Task Orders	\$0
Requested Task Order	\$536,026
Total Value of All Task Orders	\$536,026
Revised Contract Value	\$638,436
Engineering Services as % of Construction	8%

Project Description: This project includes the replacement of the existing Willard Avenue Pump Station with a new pump station. The location of the new pump station is within the vicinity of the existing station. Additionally, yard piping, new discharge force main, gravity sewer improvements, and associated appurtenances will be included as part of this project. The new pump station will address system conditional and capacity issues.

Task Order Description: This task order will provide design and preconstruction phase services to construct a new pump station, install new gravity sewer pipe, manholes, force main, and demolition of the existing pump station.

Analysis of Cost: The cost for this task order was negotiated between RK&K and HRSD. The task order consists of \$499,624 for design, \$13,390 for preconstruction phase services and \$23,013 for additional services. A current construction cost estimate for this project is \$8,500,000 and the ratio of engineering services to construction cost is approximately eight percent, which is consistent with similar past projects.

Schedule:	Design	October	2019
	Bid	June	2020
	Construction	September	2020
	Closeout	December	2021

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #2

AGENDA ITEM 3. – SWIFT EXTENSOMETER PRESENTATION

Land Subsidence and Aquifer System Deformation in the Coastal Plain of Virginia



Kurt J. McCoy
U.S. Geological Survey
Hydrologist

kjmccoy@usgs.gov
804-261-2656

HRSD Commission Meeting
September 30, 2019

Which Direction Does the Ground Move?

Sinking Atlantic Coastline Meets Rapidly Rising Seas

The U.S. East Coast is sinking, worsening floods from sea level rise

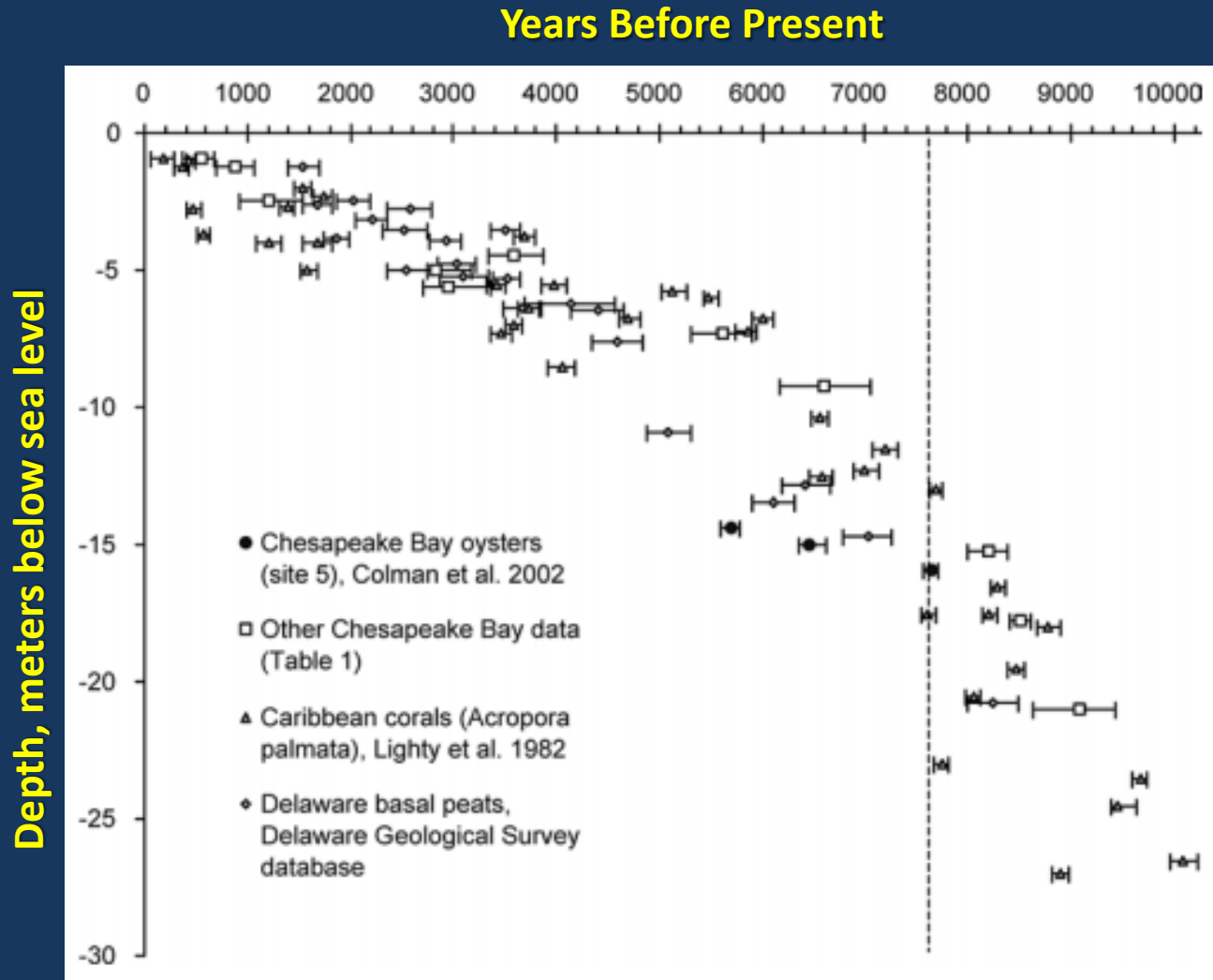
<https://www.scientificamerican.com/article/sinking-atlantic-coastline-meets-rapidly-rising-seas/>

- 1. How do scientists understand problem?**
- 2. How are we attempting to measure it to support resiliency?**

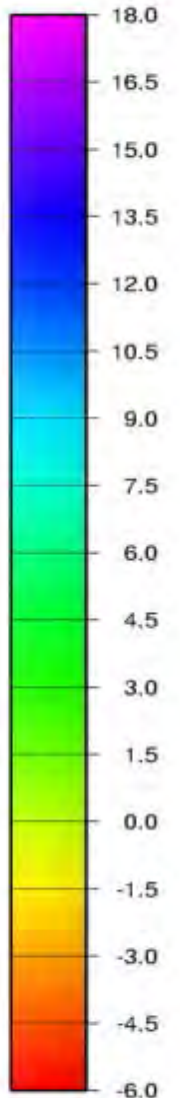
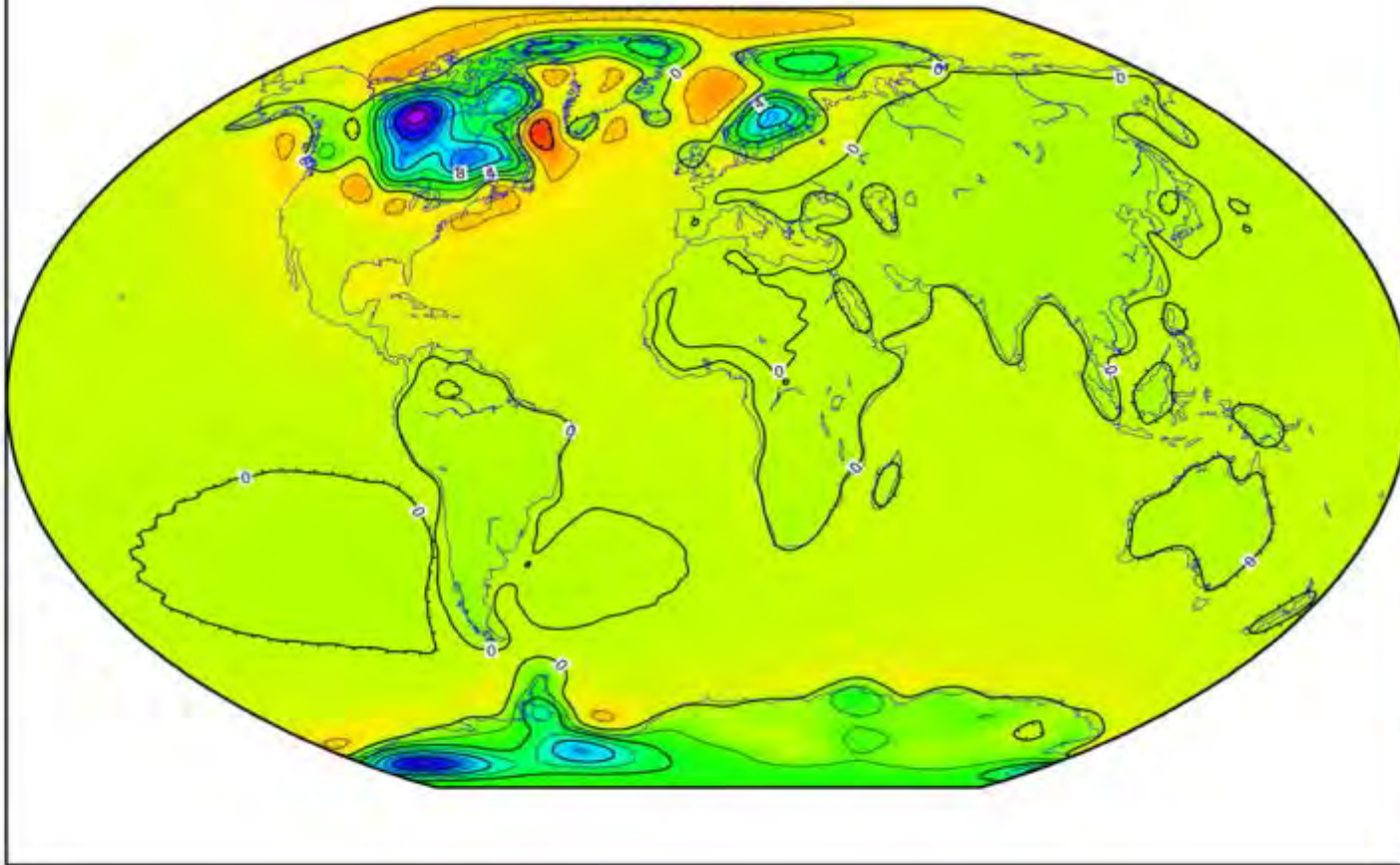
Which Direction Does the Ground Move?

Shoreline Migration

- Oyster response to glacial cycles
- >8000 years
- Land Sink or Sea Level Rise?



vertical crustal motions in mm per year via GIA theory



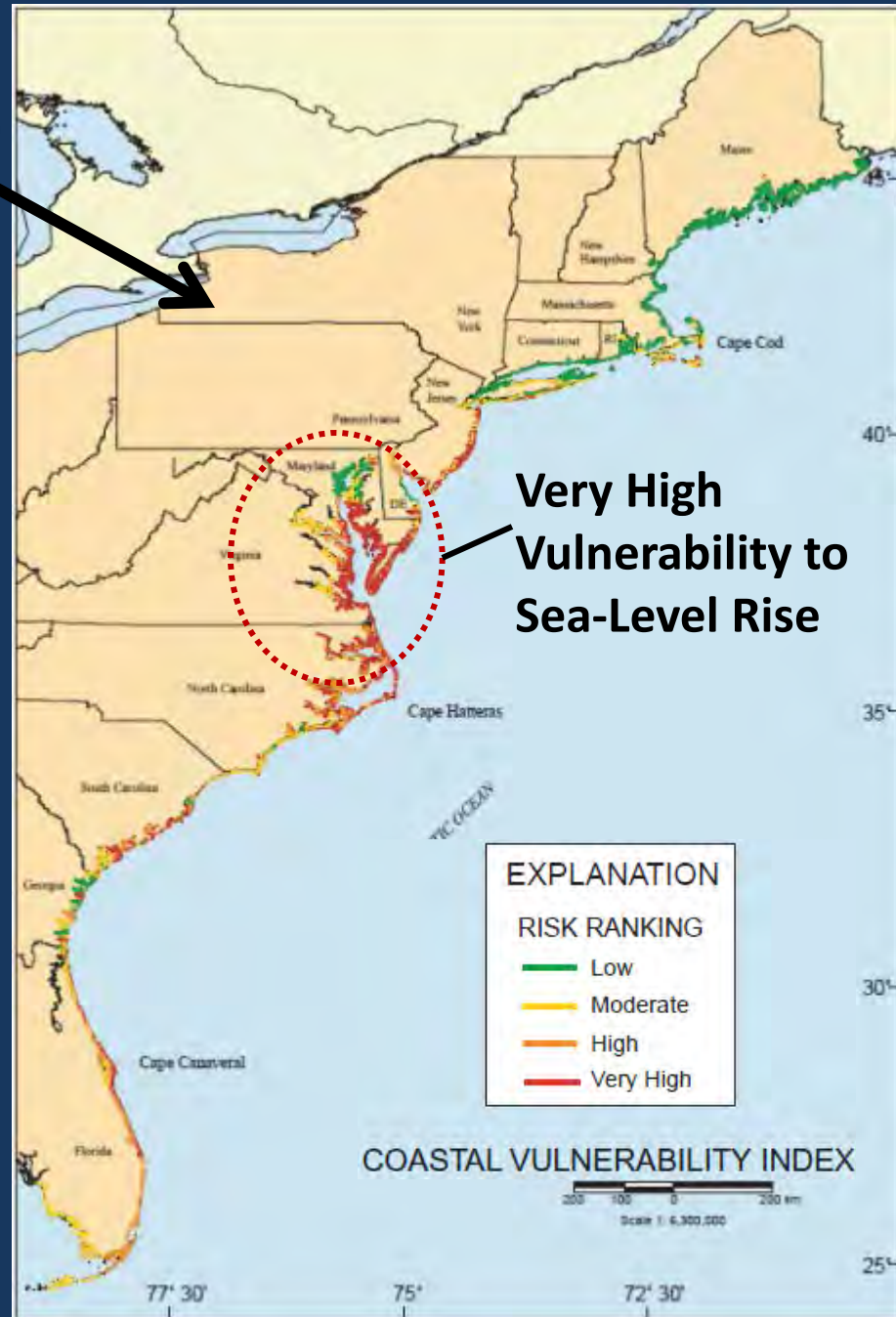
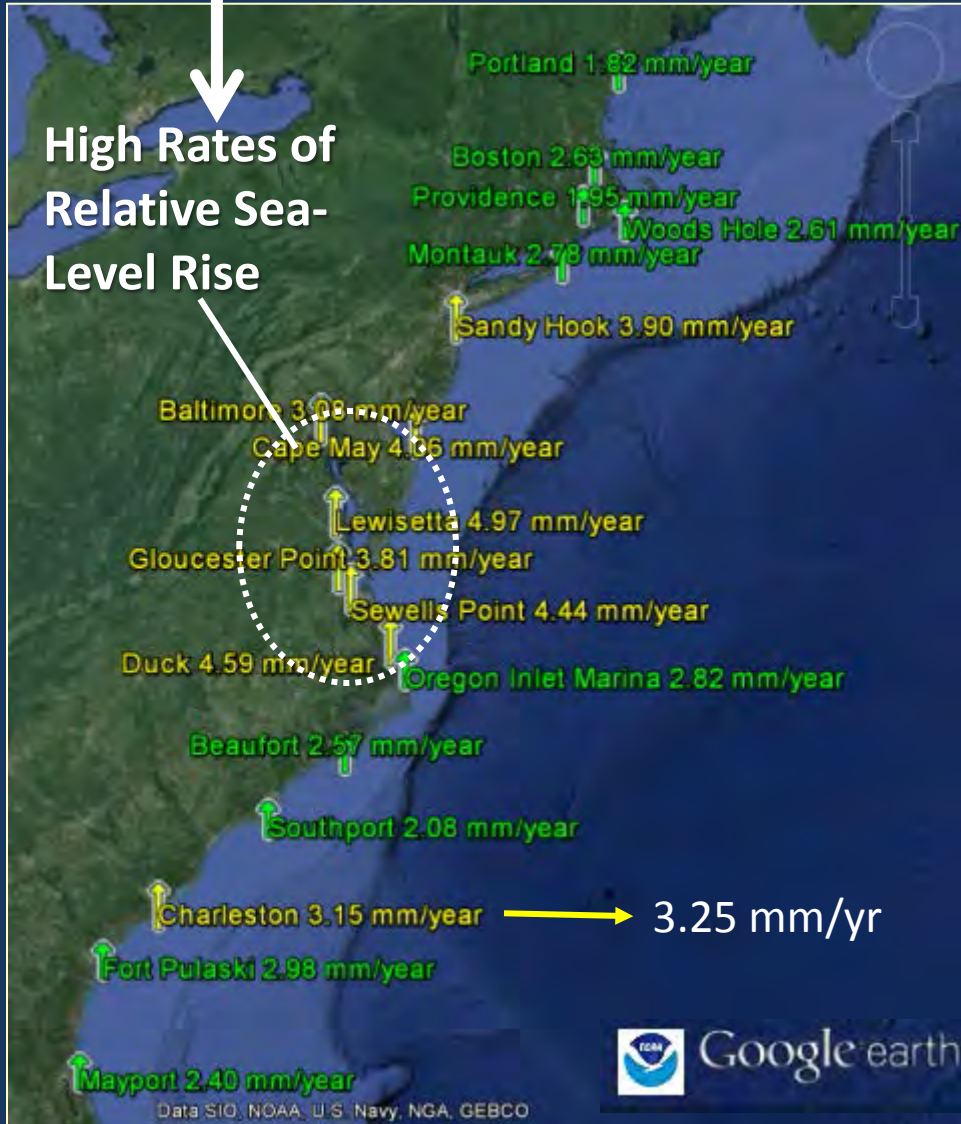
Virginia – Glacial isostasy \sim -3 to -4 mm/yr

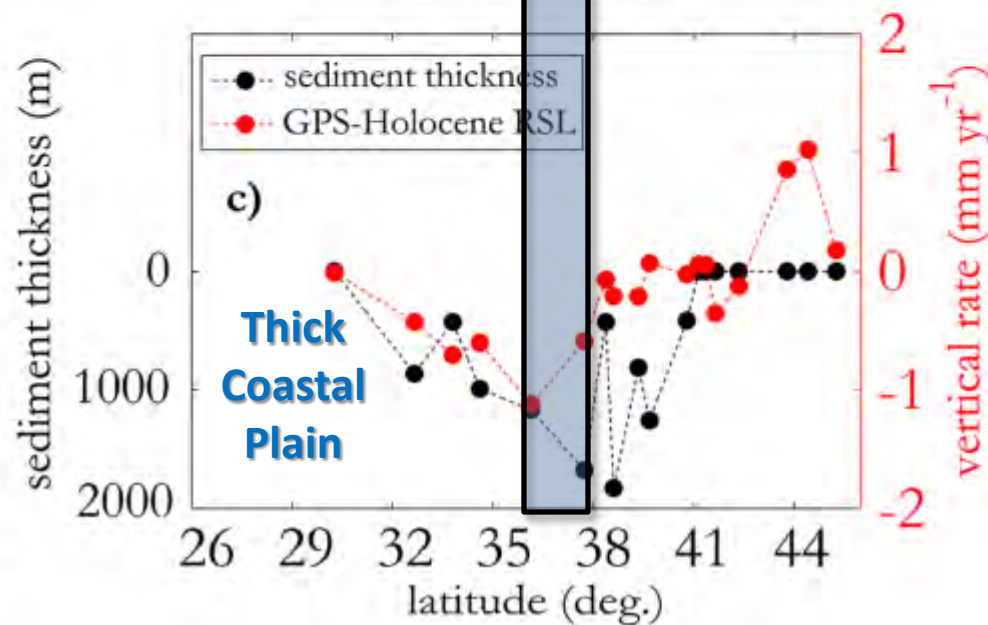
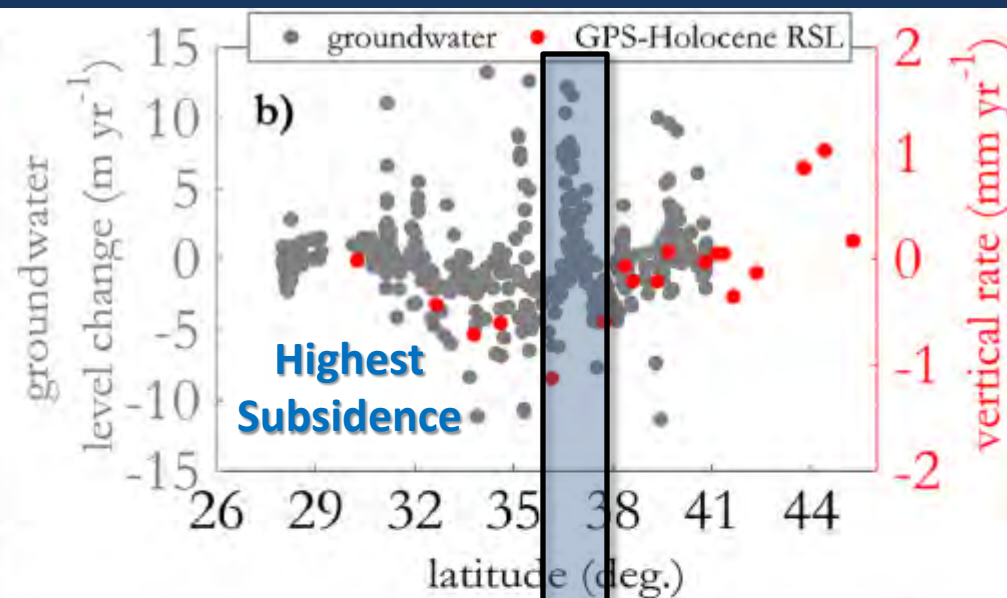
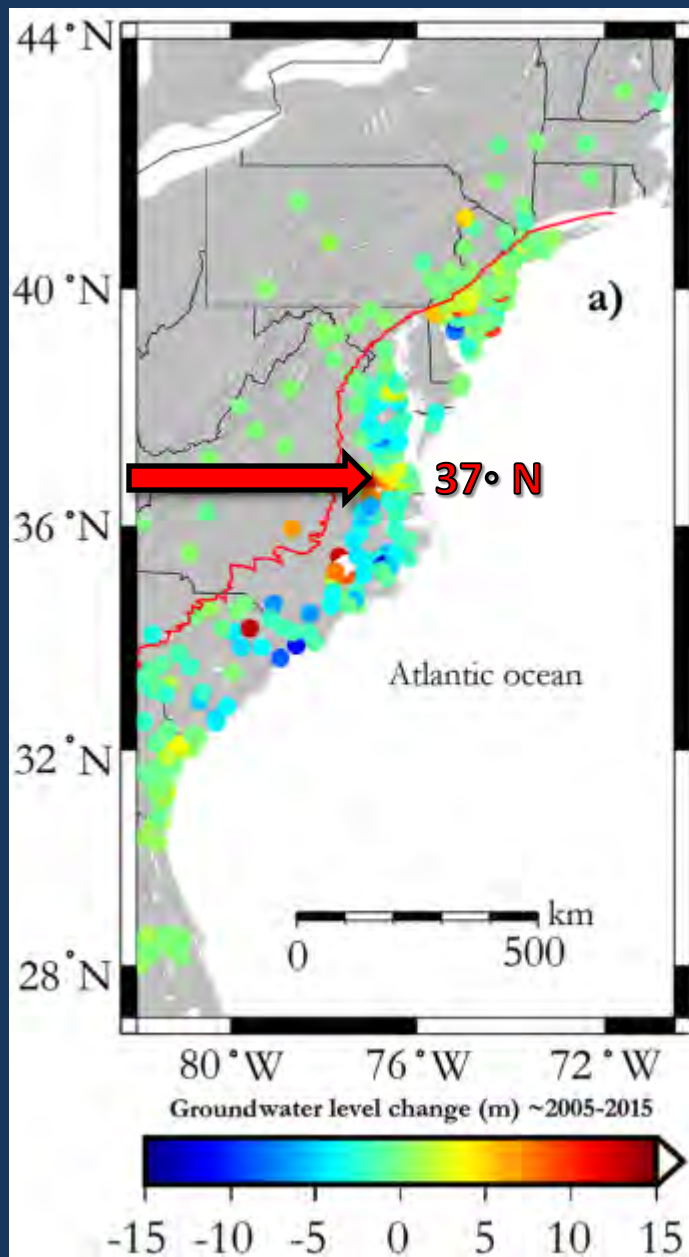
Relative Sea-Level Rise

The Problem

High Rates of Relative Sea-Level Rise

Why it is Important?



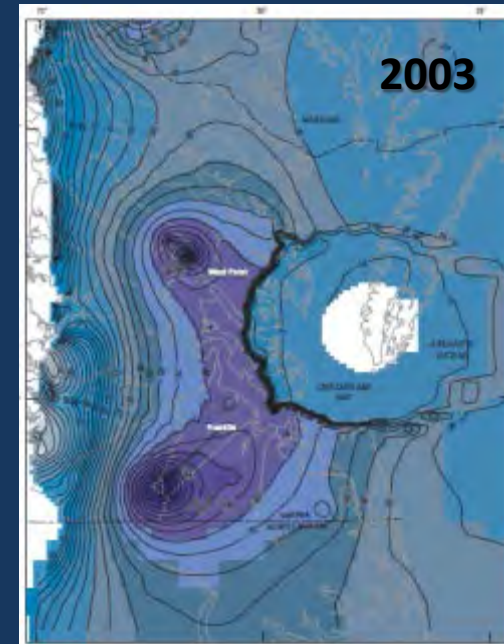


Groundwater Levels Potomac Aquifer 2003

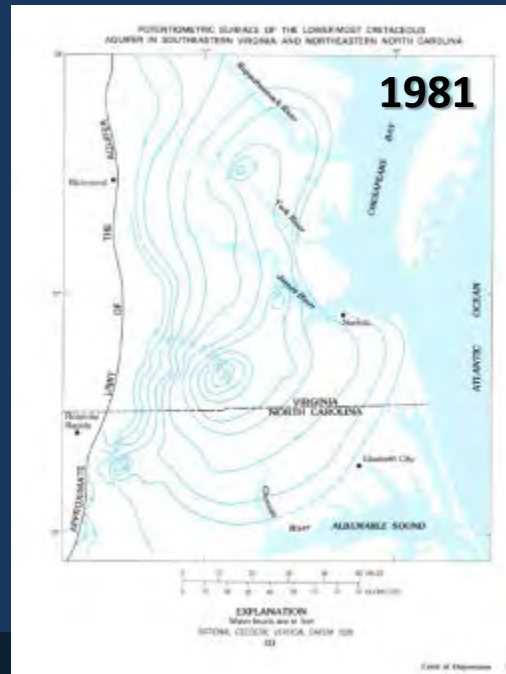
- Groundwater levels below sea level over most of Coastal Plain
- Industrial pumping centers with large cones of depression
- 10s Mgal/d



*Cederstrom (1945)
VGS Bull 63*



*Heywood and Pope (2009)
USGS SIR 2009-5039*



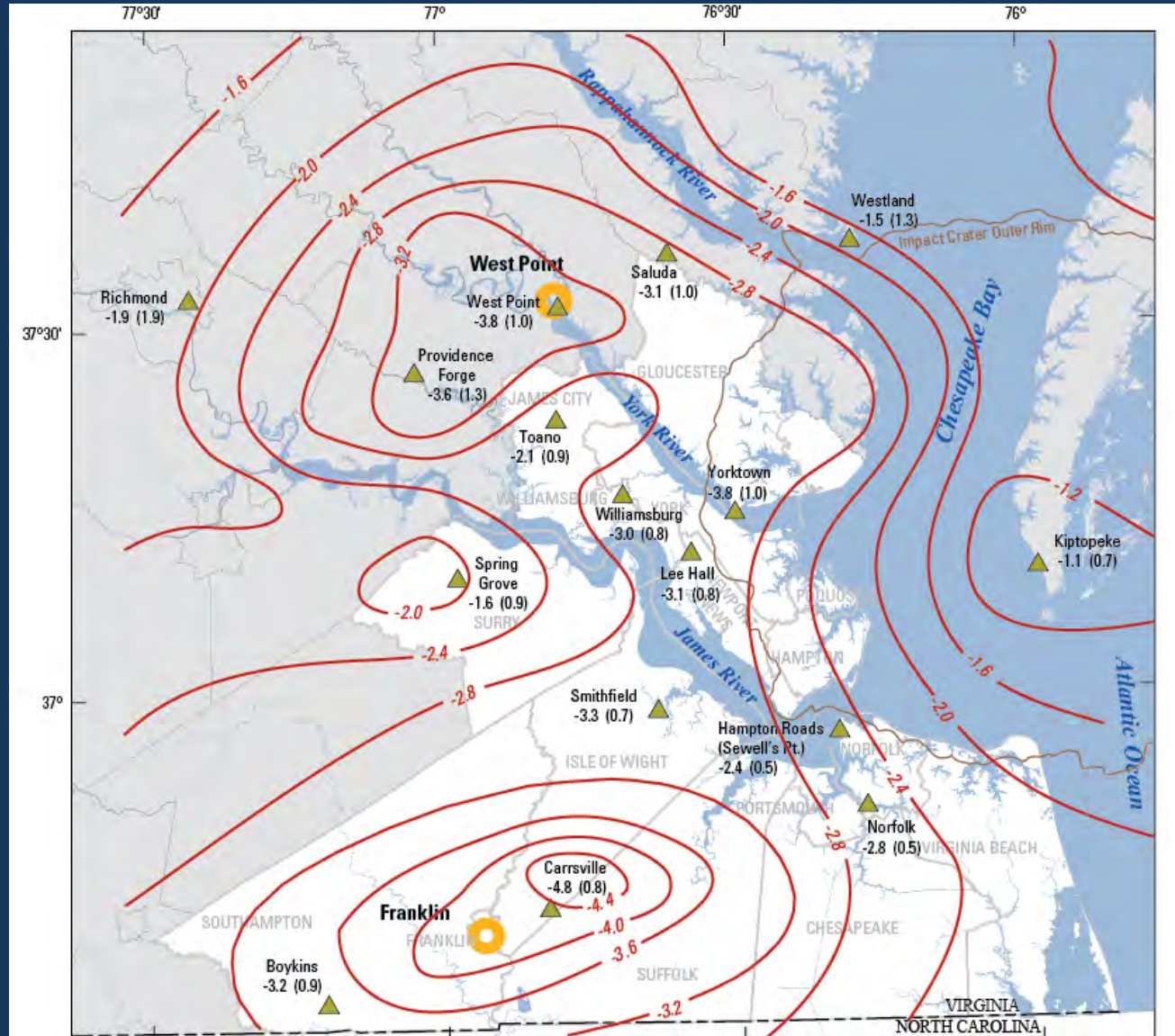
*Heath (1983)
USGS WSP 2220*

Land Subsidence

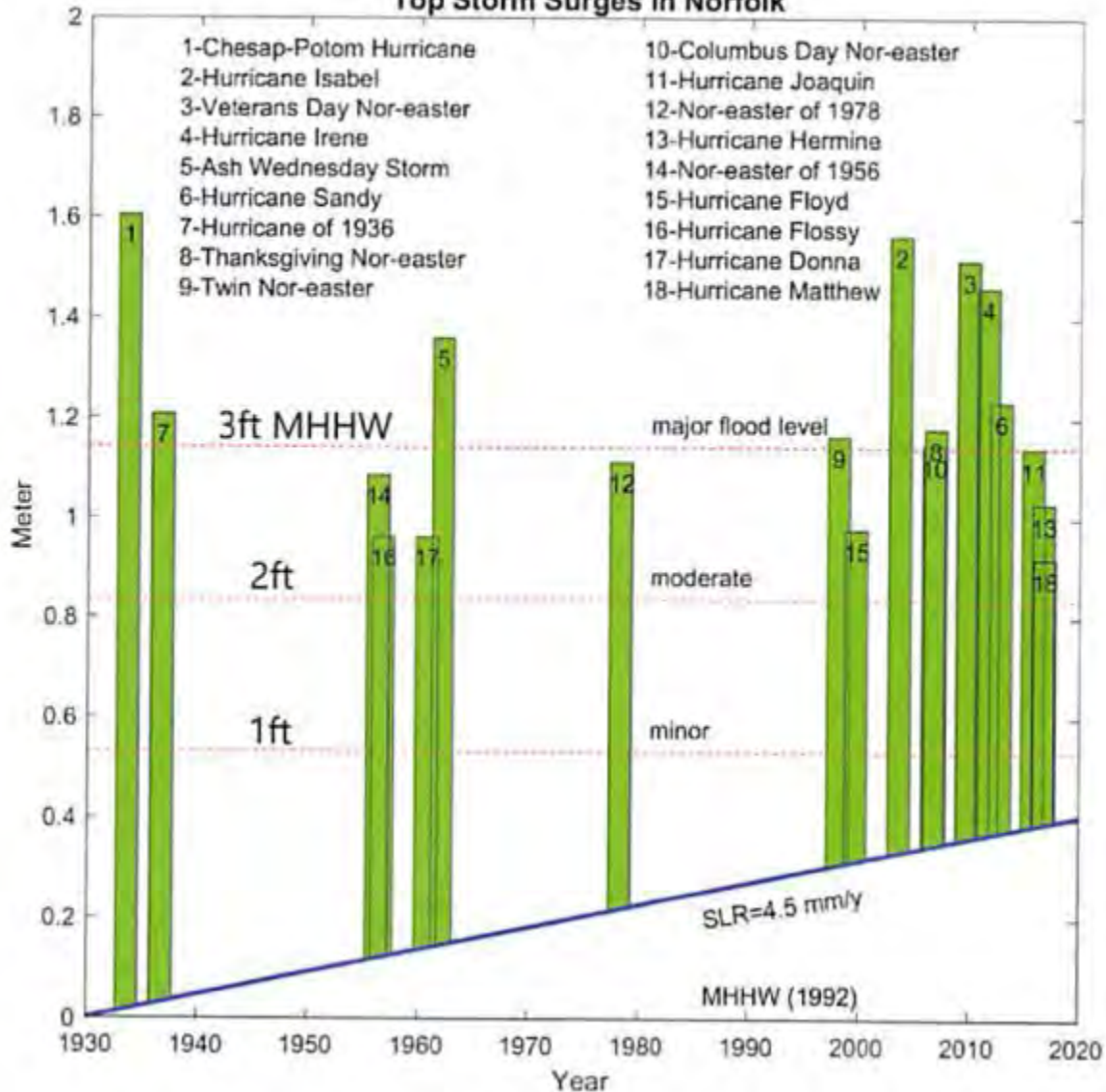
1940-1970 (mm/yr)

Published by
National Geodetic Survey

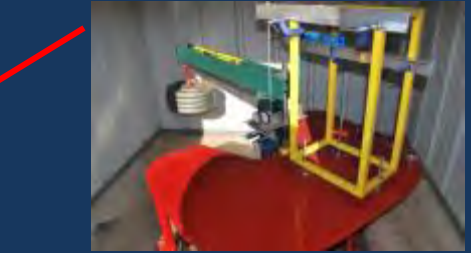
Holdahl and Morrison, 1974



Top Storm Surges in Norfolk



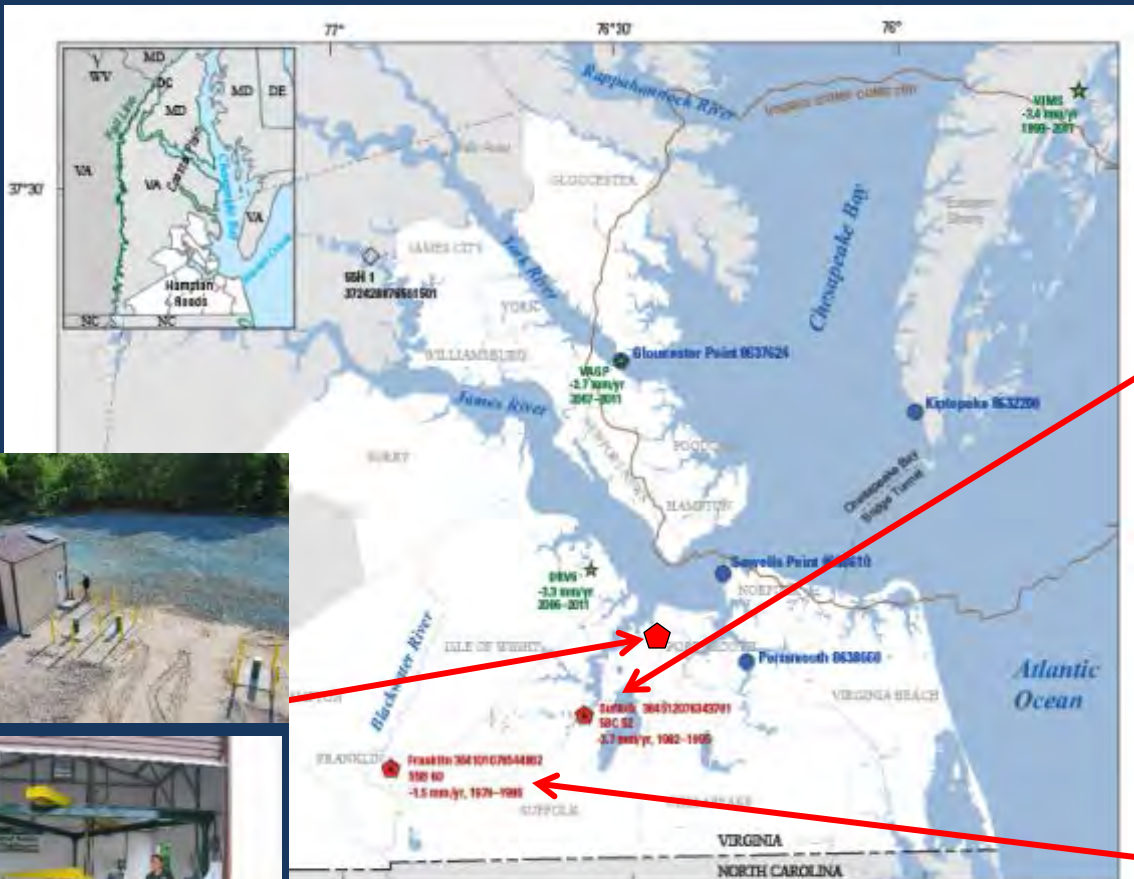
Southeastern Virginia Subsidence Monitoring Network



Suffolk
364512076343701 58C 52



Franklin
364101076544802 55B 60



Department of Game and Inland Fisheries data
 using Standard (FPS) 4502
 0 10 20 MILES
 0 10 20 KILOMETERS

EXPLANATION

- National Oceanic and Atmospheric Administration tidal station, location, and identification number (Zorvas, 2009)
- ★ Continuously Operating Reference Station (CORS), name, and rate of subsidence for years indicated (National Geodetic Survey, 2013)
- ◇ U.S. Geological Survey (USGS) groundwater monitoring well, local name, and identification number
- USGS extensometer station, location, number, local name, and rate of subsidence for years indicated (Pope and Barbey, 2004)



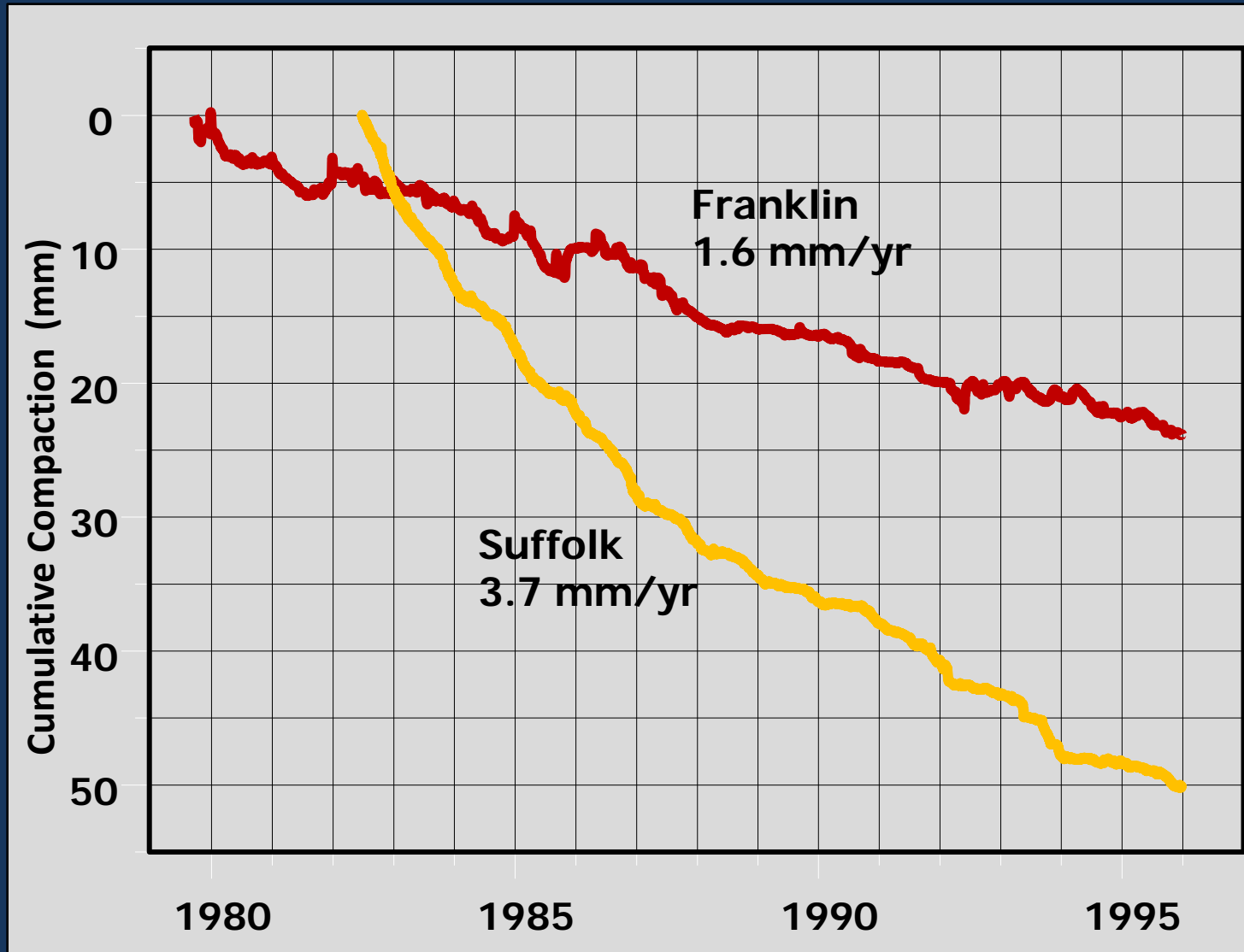
HRSD Nansemond
365336076251606 59D 39

Compaction data



Pumping Induced Aquifer Compaction

1979-1995 Extensometer Records



Spatially variable controls on Subsidence:

- Compressibility
- Sediment thickness
- Water levels

Which Direction Does the Ground Move?

Aquifer Compaction

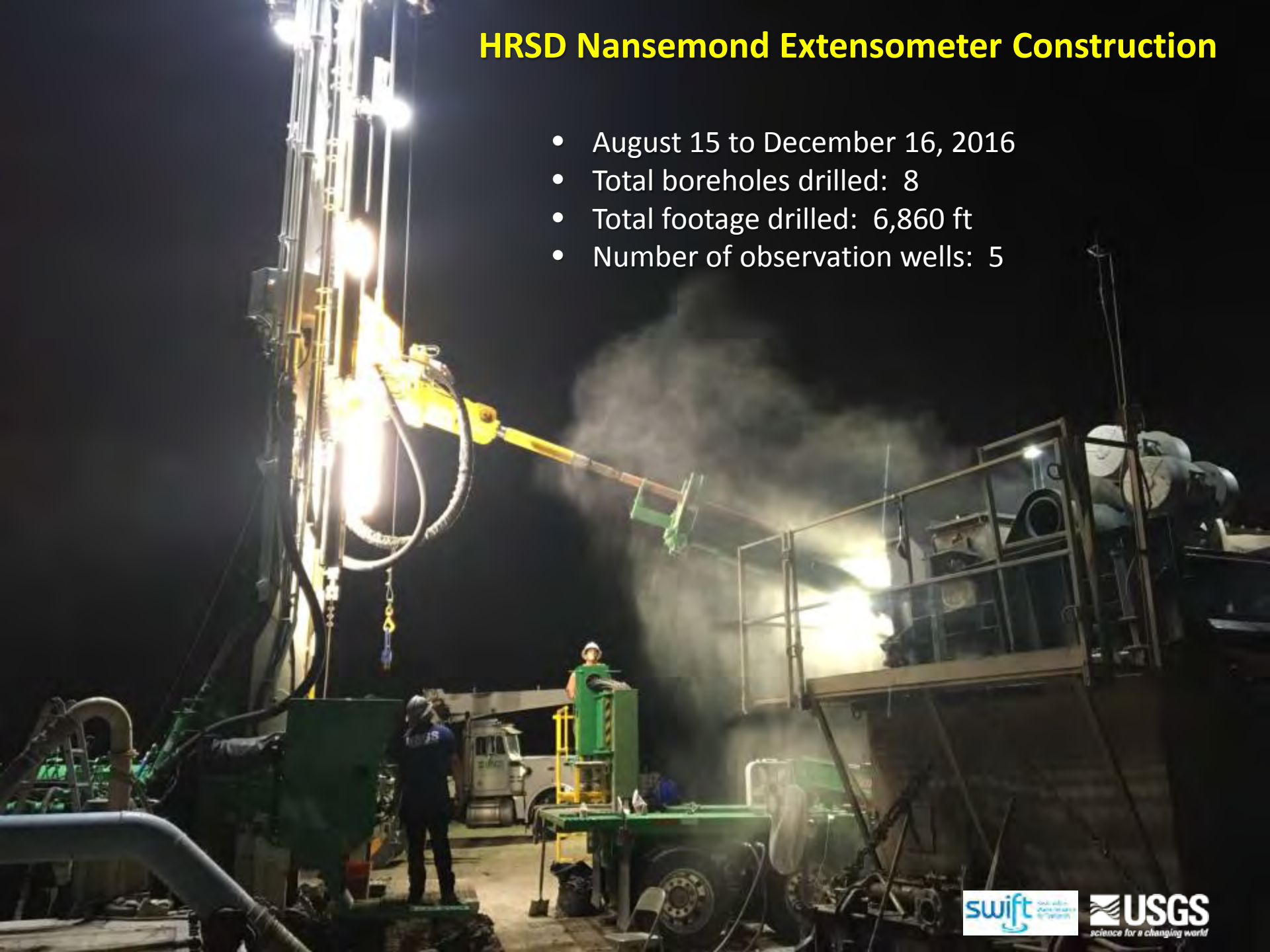
1. Elastic – “stretchy” or recoverable
2. Inelastic – unrecoverable

Which Direction Does the Ground Move?

Monitoring impact of HRSD SWIFT Injection...

HRSD Nansemond Extensometer Construction

- August 15 to December 16, 2016
- Total boreholes drilled: 8
- Total footage drilled: 6,860 ft
- Number of observation wells: 5



HRSD Nansemond SWIFT Demonstration

Site Layout



Site map view

HRSD Nansemond-Extensometer Research Station



North Vault

59D34

Lower Potomac

59D35

Middle Potomac

South Vault

59D36

Upper Potomac

59D37

Piney Point

59D38

Extensometer (Abd)

59D39
Extensometer

59D40
Surficial

HRSD Nansemond-Extensometer Research Station Components



Extensometer layout

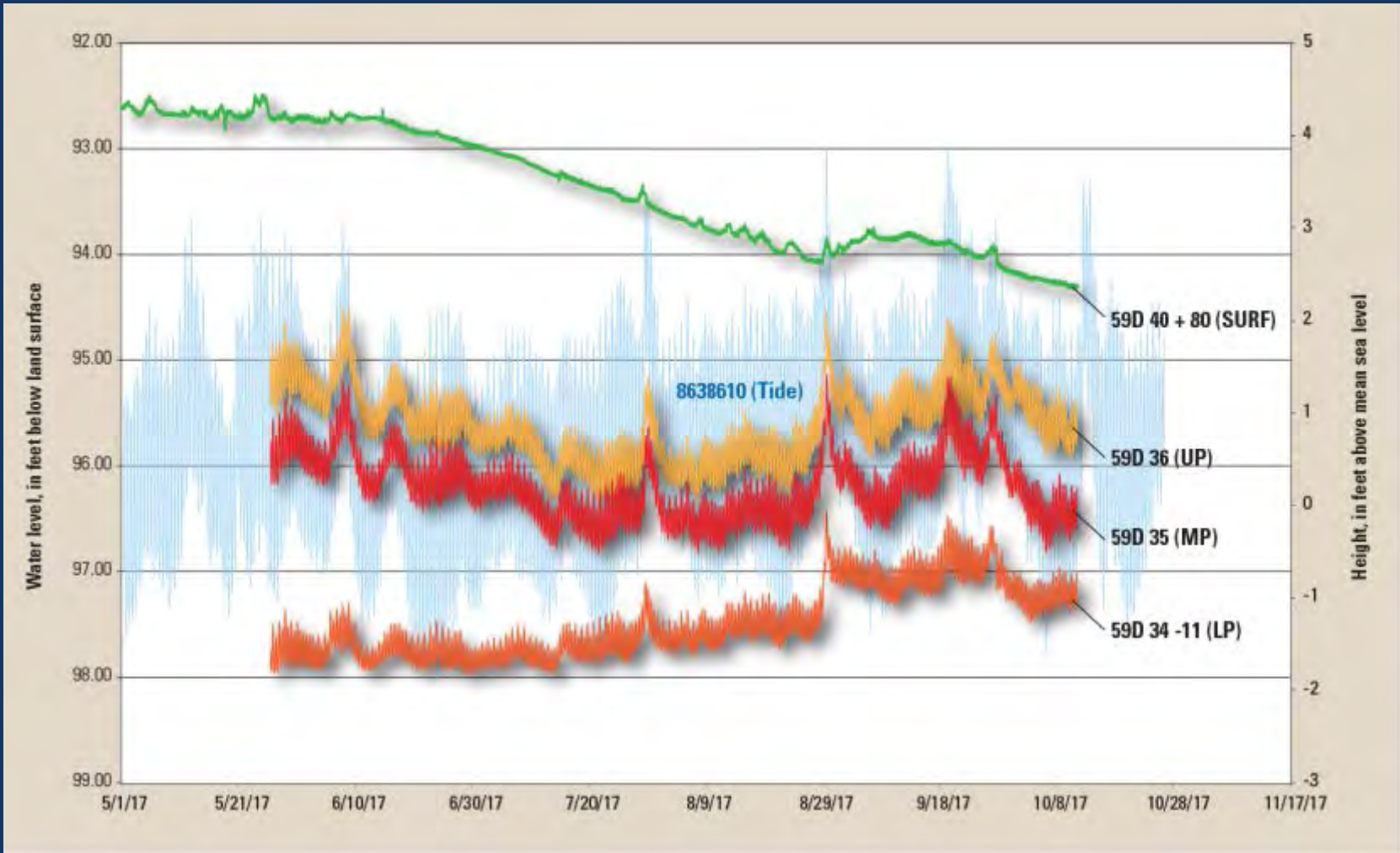
HRSD Nansemond-Data Analysis

Factors affecting measurements of land-surface movement:

- temperature,
- barometric,
- tidal(ocean and Earth), and
- aquifer system deformation (water levels)

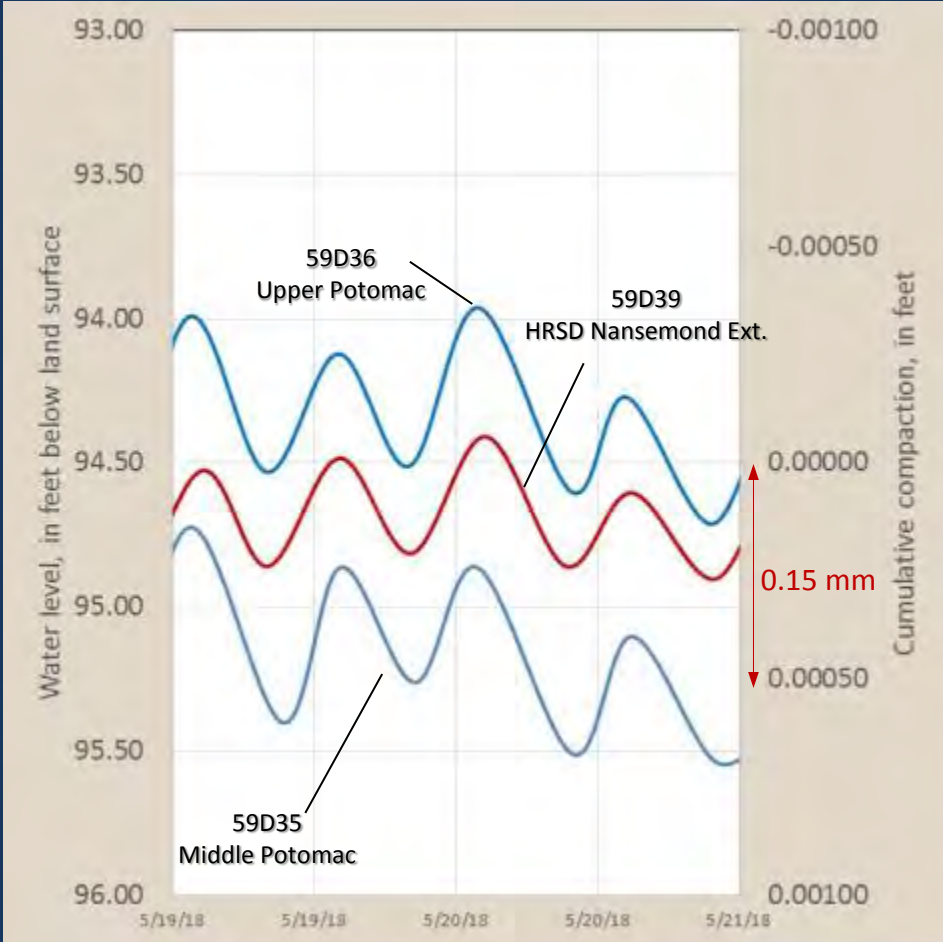
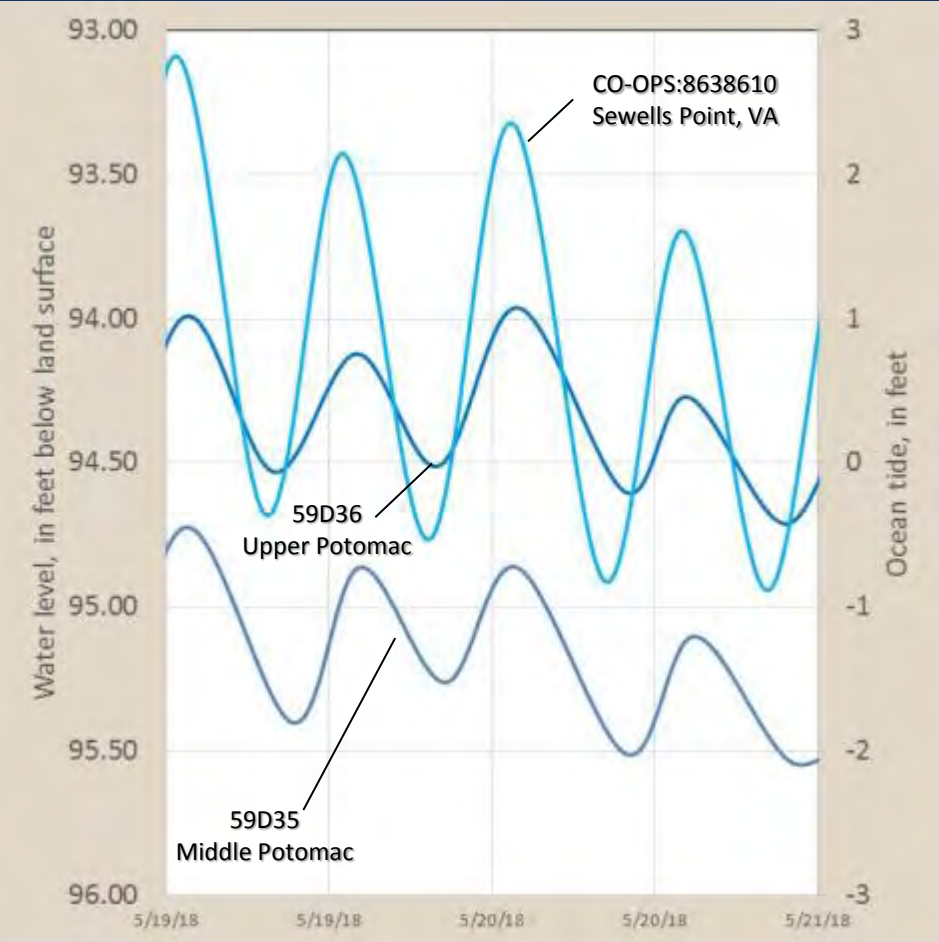
HRSD Nansemond Extensometer Monitoring

Water levels and Tides



Ocean tidal loading effects

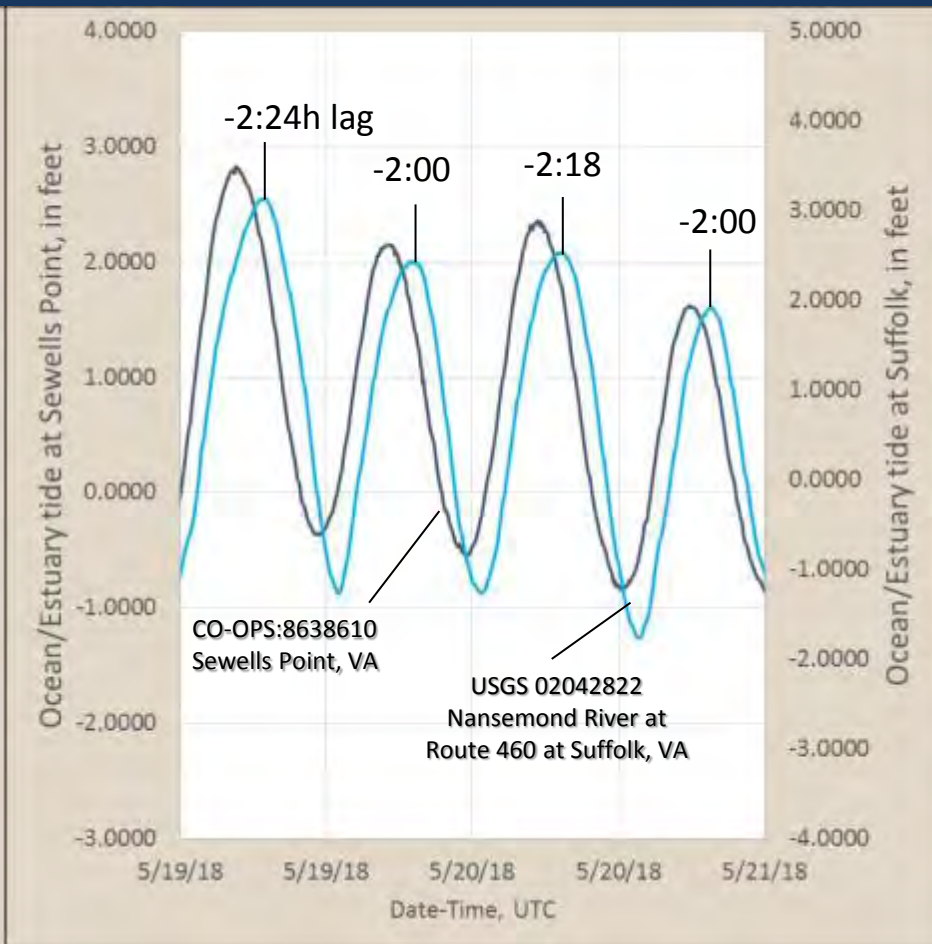
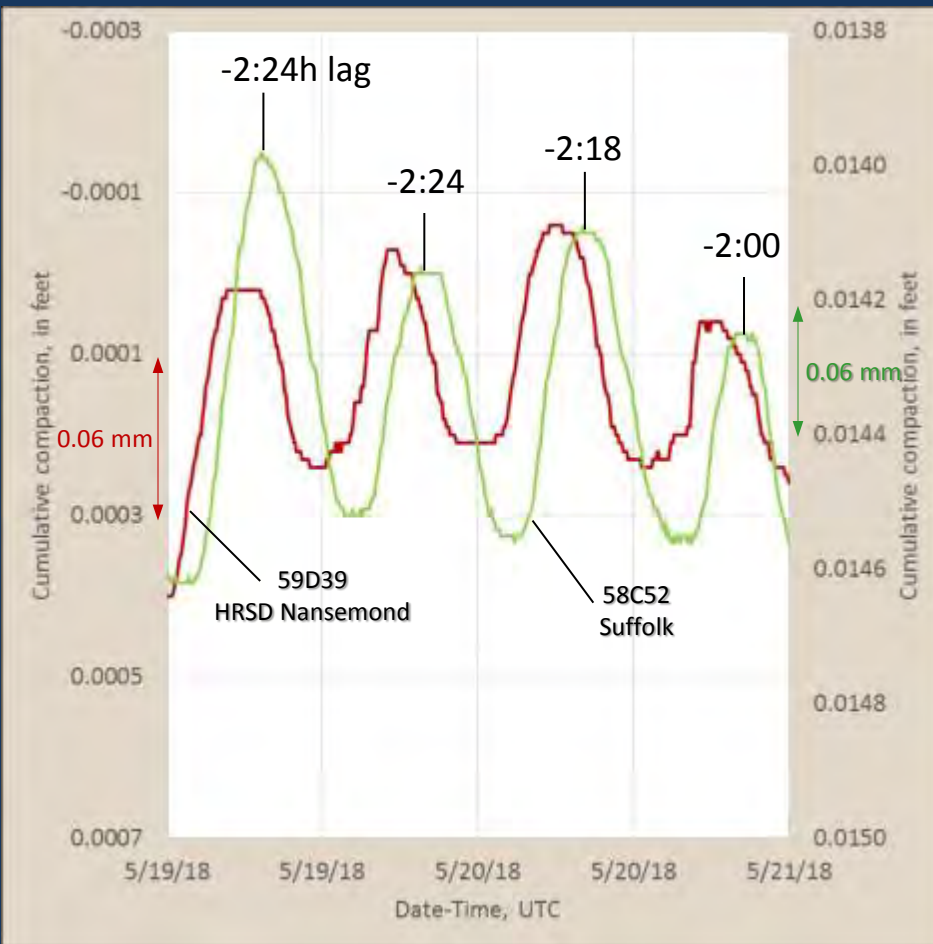
HRSD Nansemond-Ocean Tidal Loading, Water Levels, and Compaction



Tidal loading effects

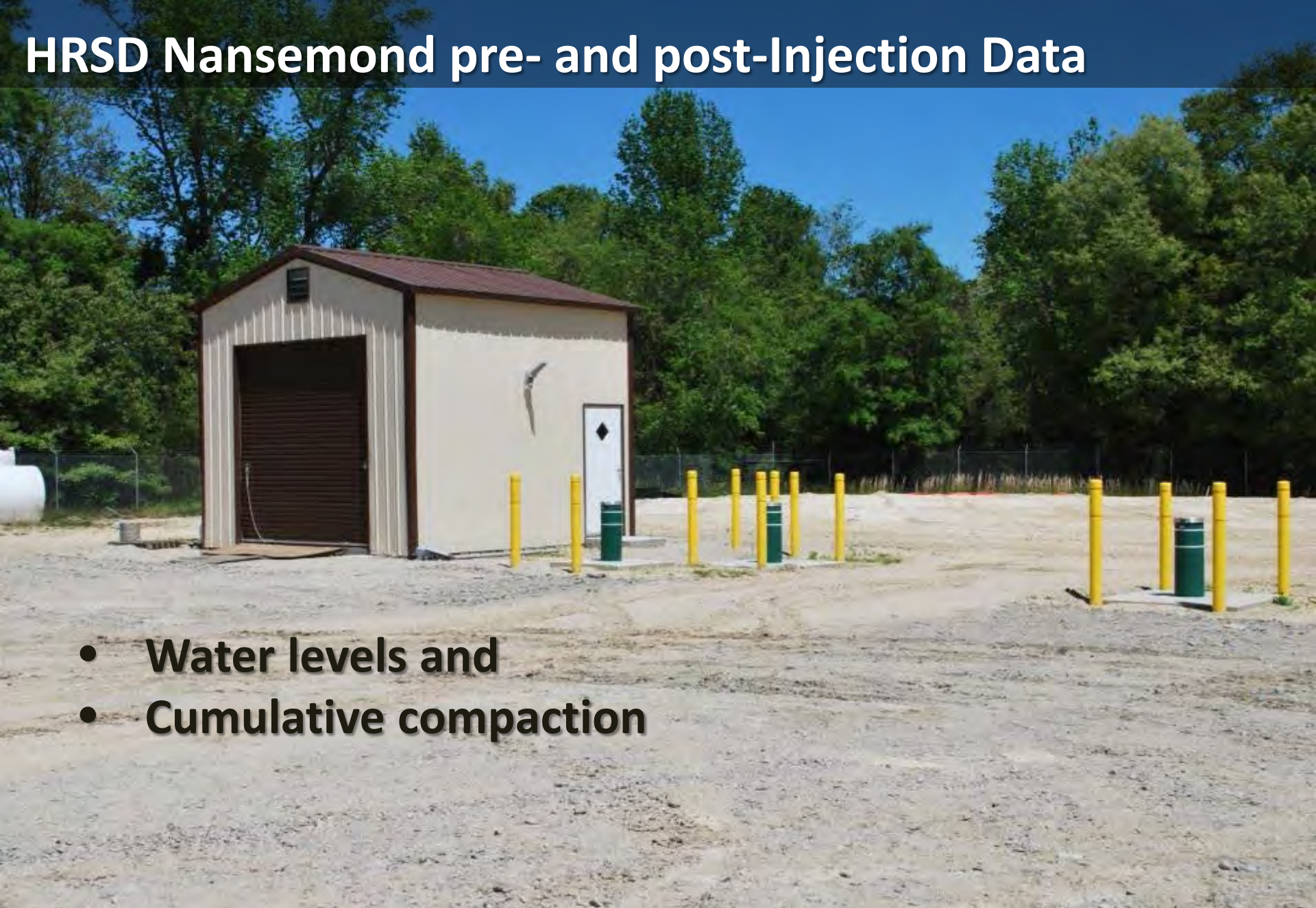


HRSD Nansemond-Ocean Tidal Loading



Tidal loading effects

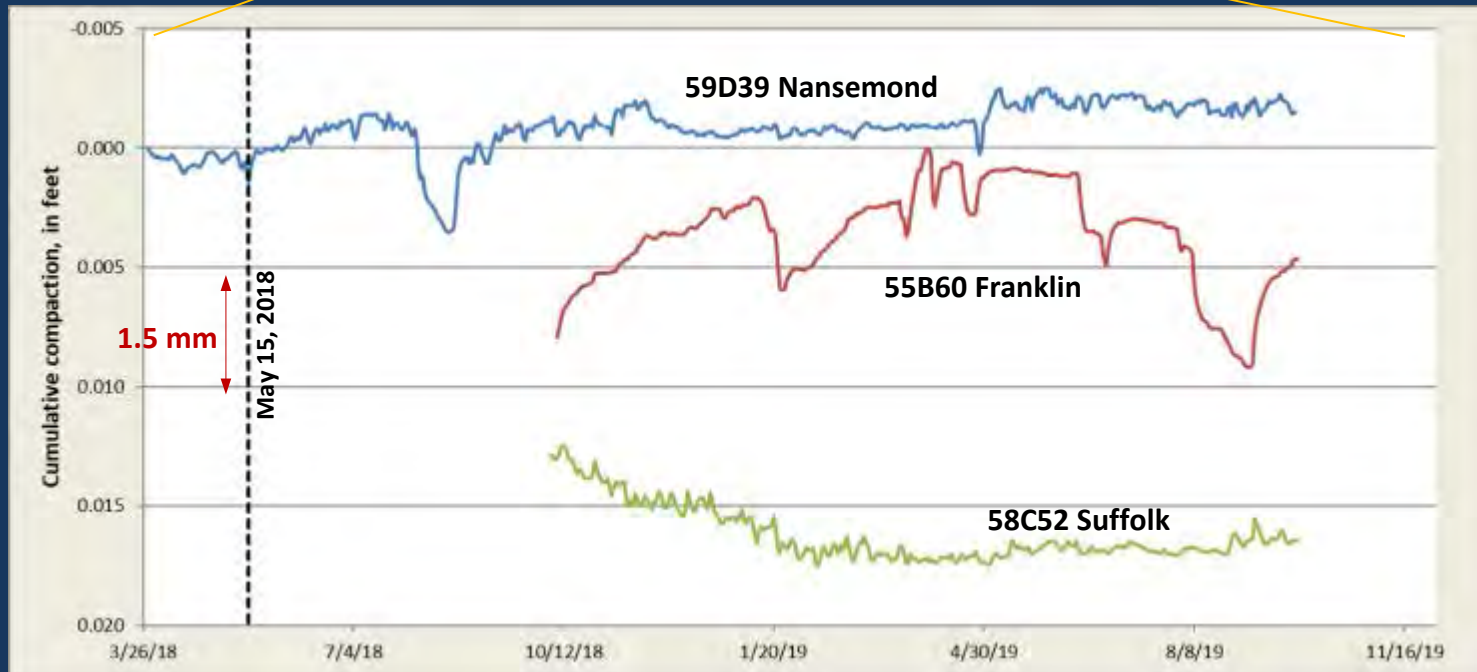
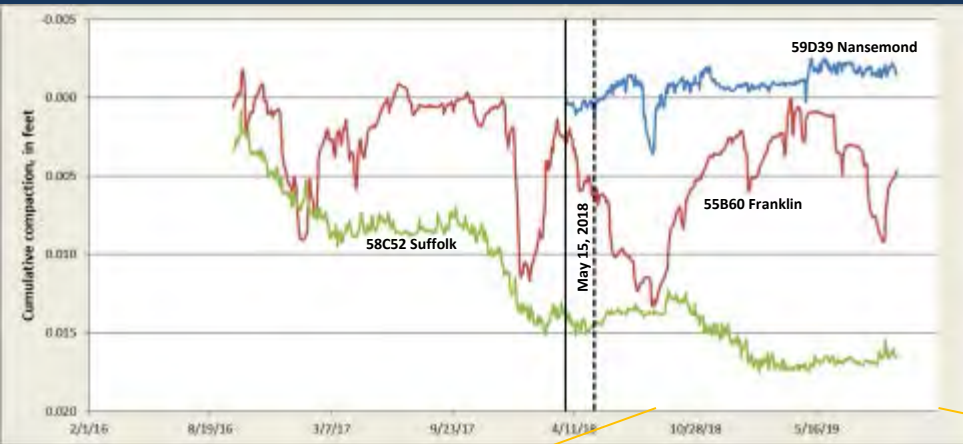
HRSD Nansemond pre- and post-Injection Data



- **Water levels and**
- **Cumulative compaction**

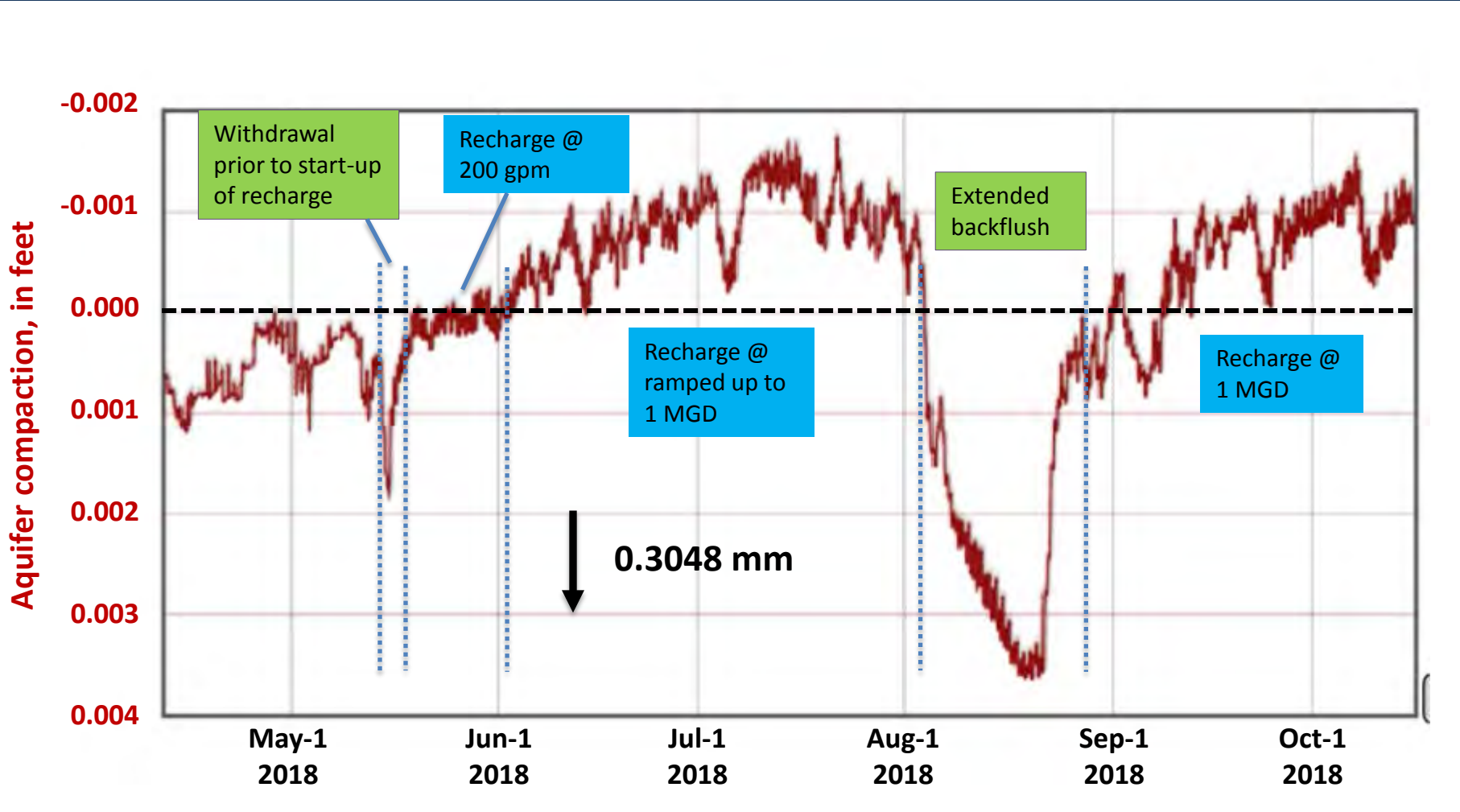
Daily Mean Cumulative Compaction- Southeastern Virginia

Borehole extensometer data

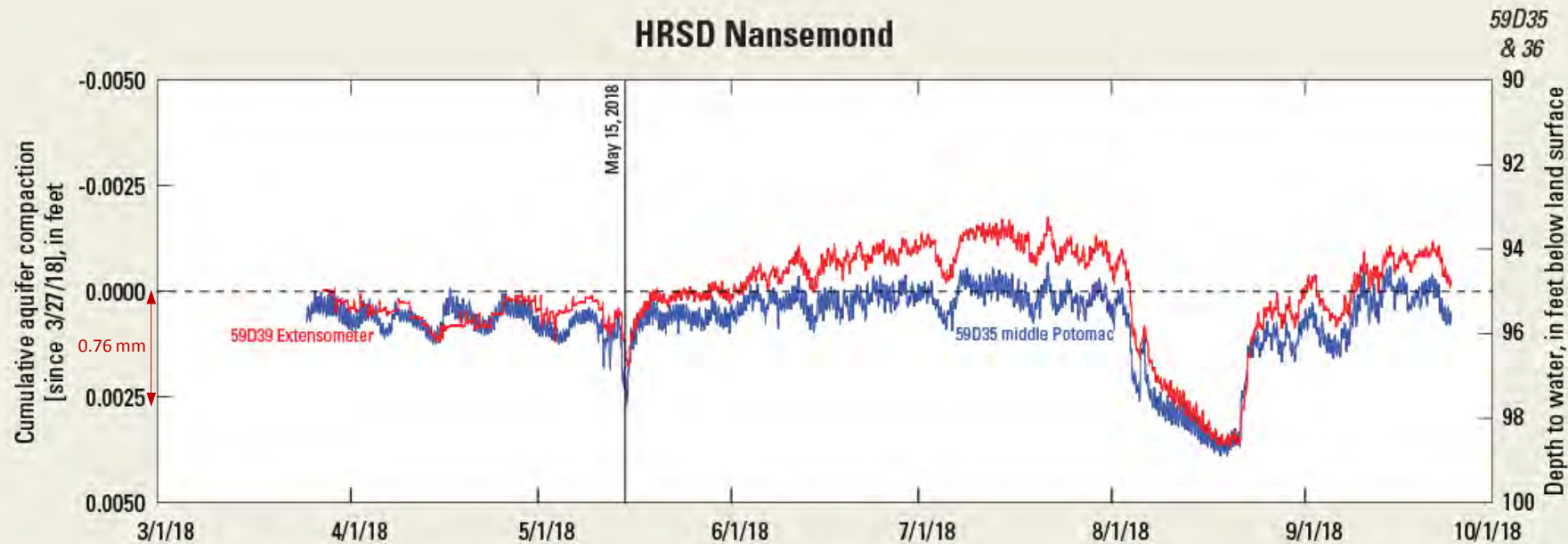


Daily Mean Compaction data

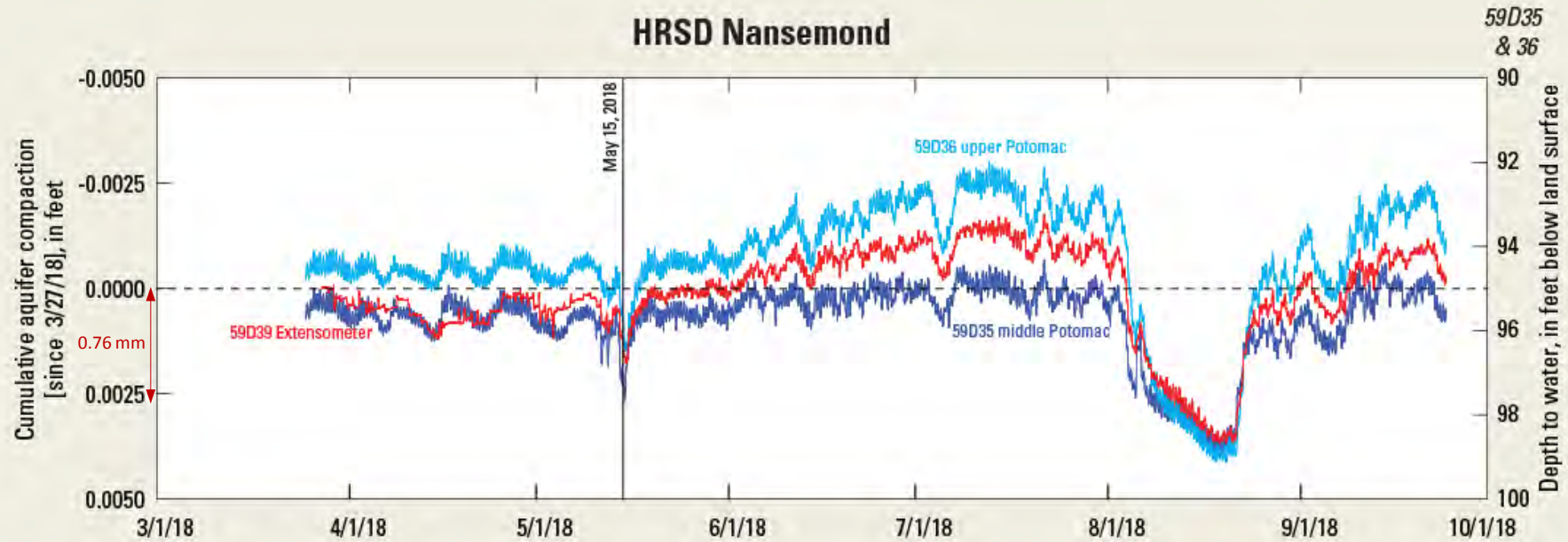
HRSD Nansemond-Compaction Record



HRSD Nansemond-Compaction Record



HRSD Nansemond-Compaction Record



Land-Surface Deformation Data

Monitoring Land-Surface Deformation in the Virginia Coastal Plain

USGS Nansemond, Virginia Research Station

Overview Results Multimedia Partners

Land-surface deformation in eastern Virginia is being monitored to evaluate effects of groundwater pumping and wastewater injection on land-surface movement and relative sea-level rise

Status - Active

Contacts

David L. Nelms

<https://www.usgs.gov/centers/va-wv-water/science/monitoring-land-surface-deformation-virginia-coastal-plain>

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #3

AGENDA ITEM 4. – CAPACITY ASSURANCE AND CONNECTION; SERVICE AREA EXPANSION; AND FACILITY TRANSFER POLICIES

1.0 Purpose and Need

The Capacity Assurance and Connection Policy supports the sizing and planning of the regional interceptor system and establishes the process for connecting to the regional interceptor system.

2.0 Definitions

Collection System. A network of pipes, manholes, and pumping stations to convey sewage from individual properties to the regional interceptor system. Sewer service laterals on private property are not included.

Flow Acceptance. The process for reviewing and approving proposed connections, or modifications to existing connections, to the sanitary sewer system.

HRSD Service Area. The area of sewer service that is defined through coordination with the localities that HRSD serves. The existing Service Area boundaries can be found on the HRSD website.

HRSD Territory. All territory lying within the boundaries of the counties and cities included in the District, including all territory lying within the boundaries of any town in a county unless otherwise specified.

Metro Area. Area encompassing the following localities: Cities of Virginia Beach, Norfolk, Chesapeake, Suffolk, Portsmouth, Hampton, Newport News, and Williamsburg; the Counties of Isle of Wight, Gloucester, and James City; and the Town of Smithfield.

Localities. Cities, Counties, and Towns within the HRSD Service Area.

Regional Interceptor System. A network of gravity and/or force main pipes owned and operated by HRSD which convey sanitary sewer flow received from locality or HRSD pump stations to the HRSD treatment works.

Regional Treatment Works. Wastewater treatment facilities, with physical, chemical, and biological processes to treat sewage and discharge treated water, which are owned and operated by HRSD.

Sanitary Sewer System. The collection system, the regional interceptor system and the associated treatment works. Sewer service laterals on private property are not included.

Small Communities. Localities including but not limited to: the Counties of King William, King and Queen, Middlesex, Surry, and Mathews; the Towns located within these Counties; and the Lawnes Point development.

Terminal Pump Station. Any pump station that connects to; (1) the regional interceptor system or; (2) to a collection system force main that ties into the regional interceptor system.

3.0 Guiding Principles

HRSD is responsible for ensuring there is adequate capacity in the regional interceptor system and treatment works to support current and future development activity within the HRSD Service Area. HRSD is also responsible for protecting infrastructure and treatment processes from non-domestic wastewaters.

Local governments are responsible for defining sewer collection service areas within their communities and for constructing collection systems to convey sanitary waste from individual properties to the HRSD regional interceptor system. Direct and effective communication and collaboration with the localities regarding development planning, land use, population estimates and other factors that have the potential to impact the regional wastewater infrastructure is required for HRSD to plan the regional interceptor and treatment systems.

In order to ensure adequate capacity, HRSD tracks new connections to the sanitary sewer system via the Flow Acceptance process. The tracking of connections enables HRSD to anticipate and plan for future capacity upgrades.

HRSD force mains are typically sized to accommodate a minimum velocity of 2 feet per second for an average peak hour dry weather flow and to accommodate a maximum peak hour velocity of 8 feet per second.

4.0 Procedures

4.1 Capacity Review

New sanitary sewer service requests shall be submitted through HRSD's Development Services Review Process. A Flow Acceptance Letter and HRSD plan approval are required for:

- A. Projects, regardless of size, that include a direct connection to the HRSD interceptor system via an existing valve, a new tap, new sewer service line, or through a gravity manhole.

- B. Projects that include a direct connection to a locality force main that is connected to an HRSD interceptor.
- C. Projects requiring regulatory approval (as defined in Commonwealth of Virginia Sewage Collection and Treatment Regulations).
- D. Connections within the Small Communities service areas, regardless of size and without exception, including single family residential homes.

HRSD capacity will be determined by average and peak hour flows as calculated in accordance with the HRSD Regional Sewage Flow Projection Data table.

Projects requiring HRSD facility expansion will be conditionally accepted until HRSD facility expansion is completed. Facility expansion requires a minimum of two-year notice prior to the projected need for service.

4.2 Connections to the Regional Interceptor System

Requests for connections to the HRSD system shall be made with adequate detail for HRSD evaluation and approval. At a minimum, requests must include a signed Flow Acceptance Certificate Request Form from the locality, plans and detailed drawings, the Industrial Waste Permit (if applicable) and other information in accordance with HRSD's current procedures.

Connections to the HRSD interceptor/collection system must be inspected and approved by HRSD prior to being placed in service.

4.2.1 Terminal Pump Station Connections

Any new pump station connecting to the HRSD interceptor system must be sized to accommodate both the dry weather and peak flow as defined in the HRSD Regional Sewage Flow Projection Data table. Pump station upgrades or replacements shall use the existing flows and system hydrology for sizing.

HRSD shall provide the associated pressure range for all direct connections to the interceptor force main system per the Hydraulic Grade Line (HGL) – System Operating Pressure Policy.

Connections shall typically only be approved at existing branch locations that were planned for and provided during construction of the interceptor line. New taps shall only be considered when existing conditions make it impractical to use an existing tap.



The Locality shall own an isolation valve immediately upstream of the dedicated HRSD valve at all pressure pipe connections.

4.2.2 Connections to HRSD Gravity Line

Gravity line connections shall only be permitted at existing manholes for non-Small Communities projects. Connections by constructing new manholes on the gravity line at locations other than existing manholes will be considered upon review of the submitted plans. At no time shall connections to existing pump station wet wells be permitted.

4.2.3 Individual Connections to HRSD Force Main

New connections to an HRSD force main for service to a single residential unit or a single commercial parcel will typically not be permitted. However, in the Small Communities service area, single connections may be allowed per the HRSD Sanitary Sewer Guidelines. Requests for connections shall be submitted to HRSD for evaluation in consultation with the Locality.

4.3 Connections to the Locality System

In the Metro Area, a flow acceptance request by the Locality is not required when the project average daily flow (ADF) is less than 40,000 gallons per day, it is a gravity connection to an existing Locality sanitary sewer collection system, and it is domestic wastewater.

4.4 Service Area Expansion

Localities expanding sewer service areas beyond the existing HRSD Service Area shall submit a Service Area Expansion Request per the HRSD Service Area Expansion Policy.

COMMISSION ADOPTED POLICY
Capacity Assurance and Connection



Adopted: September 30, 2019

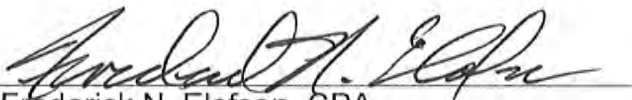
Revised: N/A

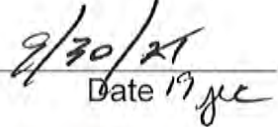
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5.0 Responsibility and Authority

The Planning and Analysis Division of the Engineering Department shall review and approve all connection requests. Approval will not be unreasonably withheld. Appeal of denied connection requests shall be through the General Manager with final decision authority at the Commission.

The Planning and Analysis Division of the Engineering Department shall be responsible for regular reviews and recommended updates to this policy.

Approved: 
Frederick N. Elofson, CPA
Commission Chair


Date *19* *ye*

Attest: 
Jennifer L. Cascio
Commission Secretary


Date



1.0 Purpose and Need

This policy establishes the procedures and guidelines to submit, review, and approve service area expansion requests. Localities request sewer service area expansions to facilitate development or provide sewer service to previously unserved areas.

2.0 Definitions

Comprehensive Plan. A plan that shows the locality's long-range recommendations for the general development of the territory as required by Code of Virginia section 15.2-2223.

HRSD Service Area. The area of sewer service that is defined through coordination with the localities that HRSD serves. The existing Service Area boundaries can be found on the HRSD website.

HRSD Territory. All territory lying within the boundaries of the counties and cities included in the District, including all territory lying within the boundaries of any town in a county unless otherwise specified.

Localities. Cities, Counties, and Towns within the HRSD Service Area.

Metro Area. Area encompassing the following localities: Cities of Virginia Beach, Norfolk, Chesapeake, Suffolk, Portsmouth, Hampton, Newport News, and Williamsburg; the Counties of Isle of Wight, Gloucester, and James City; and the Town of Smithfield.

Private Sewer System. A private sewer is any infrastructure that conveys sanitary sewage, is located on private property, and is operated and maintained by the private owner.

Public Collection System. Any facility that conveys sanitary sewage that is owned and operated by either a locality or HRSD.

Regional Interceptor System. A network of gravity and/or force main pipes owned and operated by HRSD which convey sanitary sewage received from locality or HRSD pump stations to the HRSD treatment works.

Regional Treatment Works. Wastewater treatment facilities, with physical, chemical, and biological processes to treat sewage and discharge treated water, which are owned and operated by HRSD.

Small Communities. Localities including but not limited to: the Counties of King William, King and Queen, Middlesex, Surry, and Mathews; the Towns located within these Counties; and the Lawnes Point development.

Terminal Pump Station. Any pump station that connects to; (1) the regional interceptor system or; (2) to a collection system force main that ties into the regional interceptor system.

3.0 Guiding Principles

Localities control zoning and development. Localities are responsible for developing and maintaining their respective sanitary sewer master plan or similar plan which defines their sewer service areas in alignment with their Comprehensive Plan. HRSD partners with the Localities to strategically plan the Regional Interceptor System and Treatment Works. HRSD is committed to building the appropriate regional wastewater infrastructure at the appropriate time, in a manner that balances social, environmental and economic issues, and is integrated with the localities' planning and land use zoning.

HRSD will ensure capacity of the regional interceptor system and treatment works for locality sewer service areas located within the HRSD Service Area. The HRSD Service Area is the area generally within two miles of existing HRSD infrastructure. Localities shall be responsible for all sewer infrastructure required to connect to the regional interceptor system. HRSD will review all sanitary sewer service area expansion requests and update the HRSD Service Area map when expansions are approved.

4.0 Procedures

4.1 Request

To expand sewer service, localities shall submit a formal service area expansion request to HRSD for review and approval. All requests must be accompanied by proper documentation to include but not limited to the following:

- A. Service area expansion request executed and signed by the Locality's authorized representative.
- B. A map with a defined service area boundary. The map shall identify infrastructure required to convey the flow from the new service area to the point of entry into the regional interceptor system.



- C. Sanitary sewer flow projections for the expanded service area shall be based on HRSD's Regional Sewage Flow Projection Data policy or based on best engineering practices at the time of the service area expansion request.
- D. If the service area included in the expansion request is not contiguous to existing sewerage areas and such expansion would require regional interceptor facilities, the Locality shall be responsible to confirm with HRSD and submit in writing whether these gap areas should be included or not in the overall alignment and sizing of local and/or regional interceptor force mains.

It is the Locality's responsibility to coordinate with HRSD to identify the need of service area expansion at least two years prior to when actual development will occur in order to allow HRSD to plan and program necessary regional interceptor system and treatment works improvements.

4.2 Review

HRSD shall review and evaluate each request. The schedule for approval of requests shall be based on an evaluation of the conveyance and treatment works capacity as well as the criteria herein. Expansions requiring Regional Interceptor System or Treatment Works expansion may be granted conditional approval.

4.3 Obligations

HRSD and the Localities have separate responsibilities and obligations depending on where the proposed expansion is located.

The Locality shall make available public water supply to the service area considered for sewer service expansion.

4.3.1 Requests within 2 miles of the Regional Interceptor System

Metro Area:

- A. HRSD shall provide conveyance and treatment works capacity.
- B. The Locality shall provide the infrastructure necessary to reach the Regional Interceptor System.

Small Communities:

- A. HRSD shall provide conveyance and treatment works capacity.
- B. The Locality shall provide the infrastructure necessary to reach the Regional Interceptor System.
- C. Once complete, all facilities shall be conveyed to HRSD.

4.3.2 Requests greater than 2 miles from the Regional Interceptor System

Metro Area:

- A. HRSD will review the existing conveyance and treatment works facilities for capacity.
 - i. If capacity improvements are necessary, HRSD will plan for and program funds to provide the needed improvements.
 - ii. HRSD and the locality shall develop a specific cost sharing agreement unique to the request and approved by each governing body.

Small Communities:

- A. HRSD will review the existing conveyance and treatment works facilities for capacity. If capacity improvements are necessary, HRSD will plan for and program funds to provide the needed improvements.
- B. HRSD will extend the Regional Interceptor System to within 2 miles of the requested service area expansion.
- C. The Locality shall provide the infrastructure necessary to reach the extended Regional Interceptor System.
- D. Once complete, all facilities shall be conveyed to HRSD.

4.4 Approval

Upon HRSD Commission approval of a service area expansion request, HRSD will send a Service Area Expansion Authorization letter, signed by the General Manager. The HRSD Service Area map will be updated upon Commission approval.

COMMISSION ADOPTED POLICY
Service Area Expansion Policy



Adopted: September 30, 2019

Revised: N/A

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5.0 Responsibility and Authority

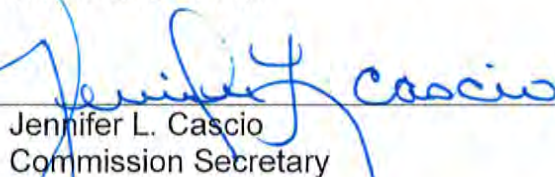
The Planning and Analysis Division of the Engineering Department shall be responsible to enforce this Policy as it relates to collection, conveyance, and treatment works facilities which it owns and operates to ensure there is adequate capacity available to meet current and future development in the Localities within its territory.

The Planning and Analysis Division of the Engineering Department shall be responsible for regular reviews and recommended updates to this policy.

Approved:


Frederick N. Elofson, CPA
Commission Chair


Date


Jennifer L. Cascio
Commission Secretary


Date



1.0 Purpose and Need

This policy establishes the requirements for transfer of sanitary sewer facilities. In certain circumstances, it may be in the best interest of HRSD, localities, private owners, and the Commonwealth to transfer ownership of sanitary sewer facilities.

2.0 Definitions

Collection System. A network of pipes, manholes, and pumping stations to convey sewage from individual properties to the regional interceptor system. Sewer service laterals on private property are not included.

Facility. One or more sanitary sewer assets but not a complete system.

Facility Transfer Agreement. Contract signed by HRSD and entity that describes the terms and conditions of the facility transfer.

HRSD Service Area. The area of sewer service that is defined through coordination with the localities that HRSD serves. The existing Service Area boundaries can be found on the HRSD website.

HRSD Territory. All territory lying within the boundaries of the counties and cities included in the District, including all territory lying within the boundaries of any town in a county unless otherwise specified.

Localities. Cities, Counties, and Towns located with the HRSD Service Area.

Regional Interceptor System. A network of gravity and/or force main pipes owned and operated by HRSD which convey sanitary sewer flow received from locality or HRSD pump stations to the HRSD treatment works.

Sanitary Sewer Asset. Any individual element of the sanitary sewer or treatment system. Sewer service laterals on private property are not considered to be a sanitary sewer asset.

Sanitary Sewer System. The collection system, the regional interceptor system, and the associated treatment works. Sewer service laterals on private property are not included.

Sewer Service Agreement. Contract signed by HRSD and entity that describes the terms and conditions required for HRSD to own and operate a sanitary sewer system.



Terminal Pump Station. Any pump station that connects to; (1) the regional interceptor system or; (2) to a collection system force main that ties into the regional interceptor system.

3.0 Guiding Principles

HRSD is responsible for ensuring adequate sewage treatment and conveyance capacity exists to meet the current and future sanitary sewer needs within the HRSD service area, and for operating and maintaining the sanitary sewer system, to protect public health and the environment.

To ensure protection of public health and the environment, it may be in the best interest of HRSD, localities, private owners, and the Commonwealth for HRSD to accept transfer of ownership and operation of government or private entity owned sanitary sewer facilities.

Likewise, on occasion it may be in the best interest of HRSD, localities, private owners, and the Commonwealth for HRSD to transfer ownership and operation of HRSD owned sanitary sewer facilities.

Generally, transfer of sanitary sewer facilities will be at the request of the owner of the facilities.

Ownership of sanitary sewer facilities entails assuming the long term liability of operating, maintaining, upgrading, and replacing the facilities. As such, HRSD shall not provide compensation to facility owners upon facility transfer.

4.0 Procedures

4.1 Transfer of Facilities to HRSD

Owners of sanitary sewer facilities desiring to transfer ownership of facilities to HRSD shall submit a request in writing signed by an authorized official.

4.1.1 Requirements

- A. Comply with the criteria described herein.
- B. Execute Sewer Service Agreement or Facility Transfer Agreement.

4.1.2 General Criteria

Facilities to be transferred to HRSD must meet the following criteria:

- A. Any piping, manholes, and associated sanitary sewer appurtenances shall be within a transferrable easement or within the public right of way.
- B. Pump stations, treatment works and other structures associated with the sanitary sewer system shall be on a dedicated parcel deeded to HRSD without lien or any other legal or physical encumbrances. All parcels shall be contiguous with an improved public right of way or with a dedicated ingress/egress easement. Where possible, additional land for buffer and future expansion shall be transferred to HRSD with the facility.

4.1.3 Real Property and Easement Criteria

Transfer of facilities will include the conveyance of all the real property associated with the facilities. The transfer will be by a general warranty fee simple deed in a format acceptable to HRSD's attorney.

Title to facilities shall be marketable and free and clear of any lien or encumbrance which, in the judgment of HRSD, has a materially adverse effect upon the right of HRSD to use such lands or property in the performance of the functions of HRSD or would preclude HRSD from obtaining owners title insurance on the facilities at market rates.

Conveyance of pipeline or similar infrastructure shall include assignment or grant of a perpetual easement to HRSD with defined rights for the maintenance and replacement of the infrastructure.

4.1.4 Transfer of Entire Sanitary Sewer Systems

- A. Government owned, existing systems: Existing sanitary sewer systems owned by a locality within the HRSD service area may be conveyed on a case-by-case basis with an approved Sewer Service Agreement. Facilities may be transferred "as-is." Facilities must be debt free. HRSD shall not compensate a locality for facilities transferred. All facilities shall meet the criteria herein prior to transfer of operational responsibilities.
- B. Privately owned, existing systems: Existing sewer systems owned by a private entity within the HRSD service area may be conveyed on a case-by-case basis with an approved Sewer Service Agreement. Facilities must be debt free. HRSD shall not compensate a private entity for facilities

transferred. All facilities shall meet the criteria herein prior to transfer of operational responsibilities.

4.1.5 Transfer of New Facilities

In addition to meeting the criteria herein, all new sanitary sewer system assets constructed on behalf of a public or private entity to be transferred to HRSD shall also meet the following criteria:

- A. The facilities shall be constructed according to HRSD's Design and Construction Standards and HRSD Sanitary Sewer Guidelines.
- B. All new facilities shall be warranted for one year from the date of transfer.

4.1.6 Transfer of Portions of Existing Sanitary Sewer Systems

In addition to meeting the criteria herein, public or private entities may request that HRSD assume ownership of portions of existing sanitary sewer facilities when the following criteria are met.

- A. Requests will be reviewed on a case by case basis by HRSD for operation and ownership transfer.
- B. Facilities will be transferred at no cost to HRSD with an approved Facility Transfer Agreement.
- C. Facilities proposed to be transferred to HRSD shall undergo a condition assessment review process by HRSD that may include record review and physical inspection. Facilities to be transferred to HRSD must be in good condition and have received adequate maintenance and repair. In cases where facilities are in need of repair or replacement, a cost sharing agreement will be negotiated and executed before HRSD assumes ownership.
- D. Pump station transfers shall include the first gravity manhole upstream of the station and the connecting gravity pipe.
- E. Pump station transfers shall include the force main, and all appurtenances from the station to the HRSD point of connection to the HRSD interceptor.



4.1.7 Collection Rates

HRSD will charge all connected users for services rendered in accordance with current rates and policies.

- A. Entire Collection System – HRSD will charge customers served by the transferred facilities the rates published in the HRSD Rate Schedule.
- B. Partial Collection System – HRSD will work with the public or private entity to recover costs for the operation and maintenance of the transferred facilities.

4.2 Transfer of HRSD Facilities

In certain circumstances, it may be in the best interest of HRSD, localities, private owners, and the Commonwealth for HRSD to transfer ownership of HRSD owned sanitary sewer facilities. These instances will be evaluated and negotiated on a case by case basis.

5.0 Responsibility and Authority

The Planning and Analysis Division of the Engineering Department and the Operations Department shall review and approve all facility transfers prior to recommending Commission consideration. All facility transfers must be presented to the Commission for approval.

The Planning and Analysis Division of the Engineering Department shall be responsible for regular reviews and updates to this policy.

This policy supersedes any previous policy or portion of policy related to transfer of facilities.

Approved:  9/30/19
Frederick N. Elofson, CPA
Commission Chair Date

Attest:  9/30/19
Jennifer L. Cascio
Commission Secretary Date

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #4

AGENDA ITEM 5. – BETHEL-POQUOSON FORCE MAIN PHASE III REPLACEMENT
AGREEMENT

AGREEMENT
between
HAMPTON ROADS SANITATION DISTRICT
and
COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION
for
ADJUSTMENT OF SANITARY SEWER FACILITIES

THIS AGREEMENT, made and entered into as of the 5TH day of November 2019, by and between the HAMPTON ROADS SANITATION DISTRICT (hereinafter called UTILITY), and the COMMONWEALTH OF VIRGINIA, DEPARTMENT OF TRANSPORTATION, (hereinafter called the STATE), acting by its Commissioner:

WITNESSETH

WHEREAS, the STATE is proposing to construct a section of highway designated as, Rte 172, Wythe Creek Road, Projects: 0172-114-220, C-501, C-501, (UPC#97715) and 0172-147-V05, C-501, (UPC#13427) which will necessitate changes in the UTILITY'S sanitary sewer facilities: and,

WHEREAS, the STATE and UTILITY wish to agree upon the terms and conditions under which the necessary changes will be made as hereinafter set forth:

NOW THEREFORE, for and in consideration of the premises and of the mutual covenants herein contained, the parties hereto agree as follows:

SECTION I

(a) It will be to the best interest of the STATE and the UTILITY to have the adjustment of these sanitary sewer facilities included in the highway contract to be adjusted by the highway contractor.

(b) The STATE through its highway contractor, will relocate and adjust the UTILITY'S sanitary sewer facilities in accordance with attached plans and the STATE'S Road and Bridge Specifications; said plans being identified as Twenty (20) one-half size plans sheets numbered 26(1) through 26(24) of the STATE'S construction plans for Projects: 0172-114-220, C-501, (UPC#97715) and 0172-147-V05, C-501, (UPC#13427) as attached.

SECTION II

(a) It has been determined that the project (UPC# 97715) is responsible for bearing 68% of the cost of the sanitary sewer adjustments indicated in SECTION I (b).

(b) It has been determined that the UTILITY (UPC# 97715) is responsible for bearing 32% of the cost of the sanitary sewer adjustments indicated in SECTION I (b). This percentage accounts for betterment of existing sanitary sewer facilities. The UTILITY will reimburse the STATE for these items included in the highway contract. Reimbursement will be based on the unit prices in the highway contract, awarded by the STATE, plus the applicable construction engineering cost. The terms of reimbursement to the STATE will be in accordance with the attached Appendix A.

(c) It has been determined that the project (UPC# 13427) is responsible for bearing 100% of the cost of the sanitary sewer adjustments indicated in SECTION I (b).

(d) It has been determined that the UTILITY (UPC# 13427) is responsible for bearing 0% of the cost of the sanitary sewer adjustments indicated in SECTION I (b). This percentage accounts for betterment of existing sanitary sewer facilities. The UTILITY will reimburse the STATE for these items included in the highway contract. Reimbursement will be based on the unit prices in the highway contract, awarded by the STATE, plus the applicable construction engineering cost. The terms of reimbursement to the STATE will be in accordance with the attached Appendix A.

SECTION III

(a) The UTILITY agrees that it will relinquish its existing right of way, which are within the limits of the proposed STATE and or MUNICIPALITY right of way for this project. The STATE and or MUNICIPALITY will, upon application by the UTILITY, issue and continue in effect a permit to the UTILITY for the construction, maintenance and operation of the sanitary sewer facilities indicated in SECTION I (b).

(b) The sanitary sewer facilities of the UTILITY erected under such a permit shall be and remain the property of the UTILITY, no charge shall at any time be made for the use of the STATE and or MUNICIPALITY right of way occupied by the UTILITY, or for the privilege of constructing, maintaining and operating said sanitary sewer facilities. Any construction or maintenance operations to be performed by the UTILITY within the STATE and or MUNICIPALITY right of way must have prior approval of the STATE and or MUNICIPALITY. When emergency conditions require immediate maintenance operations by the UTILITY, such operations may be performed by the UTILITY without advance notice to the STATE and or MUNICIPALITY. The UTILITY will, to the best of its ability, perform all operations within the STATE and or MUNICIPALITY right of way in a manner which will reduce to a minimum, interference to the flow of traffic and disturbance of the roadway, and which will provide a maximum of safety to traffic and to the UTILITY's forces.

(c) In the event the MUNICIPALITY should request at any time hereafter the facilities which were adjusted onto street right of way at project expense be again adjusted when they are on MUNICIPALITY right of way, the MUNICIPALITY will pay the UTILITY the applicable costs incurred by the UTILITY, including the cost of securing any necessary easements.

(d) In the event the MUNICIPALITY should request at any time hereafter the facilities which were not adjusted, hereunder, but which the UTILITY'S right of way were relinquished, be adjusted, the MUNICIPALITY will pay the UTILITY the applicable costs incurred by the UTILITY, including the cost of securing any necessary easements.

SECTION IV

(a) The UTILITY will perform certain incidental work in conjunction with the utility work included in the highway contract, such as operation of all valves and will also inspect the utility relocation work with its own forces, reporting through the Transportation Area Construction Engineer, and upon completion will certify to the STATE that the work included in the highway contract was performed in a satisfactory manner. The total estimated cost of this incidental and inspection work is \$185,358.00, as outlined in the attached letter dated September 13, 2019, from Mr. Andy Landrum, Vice President, Whitman, Requardt & Associates, and will be borne as indicated in Section II of this agreement. The UTILITY hereby agrees to submit bills for actual costs incurred and to keep accurate records in accordance with the Code of Federal Regulations Title 23, Chapter 1, Part 645 and any revisions or supplements thereto, in effect as of the date of this agreement. All costs, records and accounts are subject to audit by authorized representatives of the STATE and/or Federal Highway Administration. During the progress of construction and for a period of three years from the date of final payment has been received by the UTILITY, the records pertaining to the adjustment and accounting, therefore will be available for inspection by authorized representatives of the STATE and Federal Highway Administration.

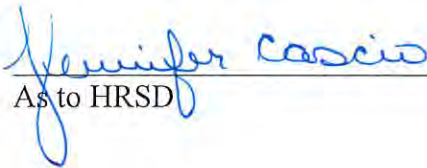
(b) The UTILITY agrees that the existing facilities, which are to be abandoned, will become the property of the STATE'S highway contractor with exceptions as noted in the attached plans. Any salvage value derived there from will accrue to the STATE'S highway contractor.

In WITNESS WHEREOF, each party has caused this agreement to be executed in triplicate in its name and on its behalf by its duly authorized officer as of the day and year first written.

IN WITNESS WHEREOF, each party hereto has caused this Agreement between HRSD and the Department of Transportation for Adjustment of Sanitary Sewer Facilities (designated as HRSD Project _____ # _____, and VDOT Route 172, Wythe Creek Road, and Projects: 0172-114-220, C-501, UPC#97715 and 0172-147-V05, C-501, UPC#13427) to be executed in duplicate in its name and on its behalf by its duly authorized officer or agenda as of the day first written.

In the presence of:

HAMPTON ROADS SANITATION DISTRICT

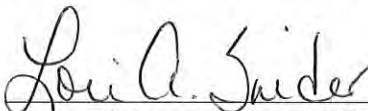

As to HRSD

By: 
Edward G. Henifin, General Manager

In the presence of:

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF TRANSPORTATION


As to the Commonwealth

By: 
State Right of Way & Utilities Director

Appendix A

This Appendix A is a part of the agreement for utility adjustment work for Project 0172-114-220, C-501, UPC#97715 dated November 5th, 2019, between the HAMPTON ROADS SANITATION DISTRICT and the COMMONWEALTH OF VIRGINIA DEPARTMENT OF TRANSPORTATION.

The parties further agree that the cost of utility betterment work will be paid by the UTILITY to the STATE based on the actual cost plus a percentage for construction oversight. The actual cost shall be determined by:

- The pro-rated percentage of 32% representing the UTILITY'S portion of overall utility adjustment applied to the unit bid prices received for the contract award by the State plus 10% for construction oversight. The estimated betterment portion is \$539,400.00 and construction oversight is \$53,940.00 for a total of \$593,340.00.

Payment by UTILITY to the STATE shall be promptly made in accordance with the following schedule:

- Lump Sum payment of the estimated cost in the amount described above with reconciliation between estimated and actual cost upon completion of the project. Payment shall be due within 30 days upon execution of this agreement by all parties.

Whenever the UTILITY'S payment is backed on unit bid process a final cost will be determined based upon the actual quantities of each unit paid to the contractor by the State. The STATE will provide the UTILITY with the final unit quantities and final cost with its Final bill to the Utility. The cost of construction oversight will be applied as described above.

In the event the betterment work requires a construction change order during the life of the contract this reimbursement and payment plan shall be adjusted to reflect the change in costs.



September 13, 2019

Mr. Jeremiah Burford
Project Manager
Hampton Roads Sanitation District
2389 G Avenue
Newport News, VA 23602

Re: Proposal for Professional Engineering Services for CA/CI Services for
HRSD Bethel-Poquoson Force Main Part III Replacement (VDOT Reimbursable)

Dear Mr. Burford:

Whitman, Requardt and Associates, LLP (WR&A) is pleased to submit our proposal for construction administration and inspection phase services for the *Bethel-Poquoson Force Main Part III Replacement* project. This proposal forms the basis for an Amendment to our Professional Services Agreement for Interceptor System Projects, dated July 1, 2013.

PROJECT DESCRIPTION

The *Bethel-Poquoson Force Main Part III Replacement* project replaces a portion of the existing HRSD 20" Interceptor Force Main to accommodate VDOT's roadway modifications and improvements to Route 172 - Wythe Creek Road. Adjustments are required in two locations, as follows:

- City of Hampton **UPC 97715, Project: 0172-114-220, C-501**: Replace approximately 4,310 LF of 20" PCCP force main with new 20" DIP force main and associated fittings.
- City of Poquoson **UPC 13427, Project: 0172-147-V05, C-501**: Replace approximately 100 LF of 20" PCCP force main with new 20" DIP force main and associated fittings.

Work includes abandoning the existing 20" force main in place using flowable fill or removing portions of the abandoned line as required to accommodate new installations.

SCOPE OF SERVICES

Following is a summary of the scope of work for construction phase services for this project in accordance with our Agreement with HRSD.

A. Contract Administration Services:

1. Whitman, Requardt & Associates, LLP (hereinafter referred to as the FIRM) shall provide general project management and technical consultation during construction in accordance with HRSD's *Design and Construction Standards, Section 17 - Expectations for Construction Administration and Construction Inspection*. A copy of the requirements for construction administration services is attached, including our estimate of the level of effort required to provide HRSD with the level of services delineated in Section 17.
2. The FIRM shall provide to HRSD three (3) complete sets of fully conformed full sized paper record drawings; five (5) 11" x 17" paper copies; one (1) complete set of digital AutoCAD drawings (.dwg) using AutoCAD 2015, or later version as approved by HRSD; and one (1) complete set of

digital PDF files uploaded to Unifier per HRSD requirements prior to the preconstruction conference. In addition, preliminary and final record drawings (.dwg and PDF) reflecting accurate as-built conditions will be uploaded to Unifier at substantial completion (Preliminary) and within sixty (60) days after completion of construction (Final).

B. Field Engineering and Inspection Services:

1. The FIRM shall provide resident inspection and supporting staff during construction in accordance with HRSD and VDOT requirements. WRA anticipates up to 1200 hours of resident inspection time for the estimated 6-month duration of the project.

C. Startup and Testing Services:

1. The FIRM shall provide startup and testing services as required to check out piping and equipment prior to and during HRSD startup of the sewage conveyance facilities.

D. Post-Startup and Certification Services:

1. The FIRM shall provide follow-up engineering and inspection services as required to satisfy and complete all outstanding work and punch list items.
2. The FIRM shall provide to HRSD a written letter of certification upon completion of construction in accordance with Section 9 VAC 25-790- 180.C.1 of the Virginia Sewage Collection and Treatment Regulations.
3. The FIRM shall provide to HRSD a written letter of certification upon completion of the project that all work has been successfully completed in compliance with the design concept and that the project meets the design specifications and performance standards with any exceptions noted and explained.

SCHEDULE

Replacement of the 20-inch HRSD force main will be constructed "In Plan" under VDOT's Wythe Creek Road improvement contract. Work will be performed in accordance with VDOT's schedule for construction for the project. VDOT's currently plans for advertisement for construction around the end of this year (2019), with construction starting in Spring 2020. The force main replacement is estimated to take about 6 months, depending on the contractor's sequence of construction.

Additional Work

Additional work is considered work not listed in our Scope of Services described above. If a work effort is recognized as being outside the Contract Scope of Services, an amendment to this proposal will be prepared and submitted for the HRSD's approval prior to performing additional work.

COMPENSATION

Compensation for Construction Administration services including Start Up and Testing services and Post Start Up and Certification services will be paid on a lump sum not to exceed basis as shown in the summary table below. Field Engineering and Inspection Services will be provided on a reimbursable basis as shown below. Total Compensation for Construction Phase services shall not exceed **\$185,358.00** without prior written consent by HRSD as indicated below.



In accordance with your request, we have divided our fees between In Plan and Betterment improvements for the portion of the project in Hampton and the portion of the project in Poquoson as summarized below.

Construction Administration and Inspection Summary	IN PLAN Hampton	BETTERMENT HAMPTON	IN PLAN POQUOSON	TOTALS
Construction Admin	\$ 36,944.81	\$ 17,385.79	\$ 4,089.40	\$58,420.00
Start Up and Testing	\$ 2,596.00	\$ 1,221.65	\$ 287.35	\$4,105.00
Post Start Up and Certification	\$ 2,596.00	\$ 1,221.65	\$ 287.35	\$4,105.00
Total Construction Administration	\$ 42,136.81	\$ 19,829.09	\$ 4,664.10	\$66,630.00
Field Engineering/Inspection:	\$ 75,083.59	\$ 35,333.45	\$ 8,310.96	\$118,728.00
Total:				\$185,358.00

Further details of the breakdown of the costs between In Plan and Betterment and Hampton and Poquoson is attached.

Additional Services:

Upon HRSD's written authorization, Additional Services will be performed in accordance with HRSD policies and requirements and provisions outlined in the existing Agreement. Sub contract costs paid as Additional Services will be invoiced at cost plus 5%.

Item	Estimated Costs
Subgrade compaction/soil testing	\$1,000.00
Concrete testing	\$1,000.00
Additional investigations	\$1,000.00
Subtotal Additional Services	\$3,000.00
5% Markup	\$ 150.00
Additional Services Allowance	\$3,150.00

We look forward to working with you to complete the Bethel-Poquoson Force Main Part III Replacement project. Please call if there are any questions.

Very truly yours,



Andy Landrum
Vice President


Enclosures



Bethel-Poquoson Force Main Part III Replacement (VDOT Reimbursable)								REVISION	0.001			
MANHOUR ESTIMATE AND PROPOSAL								DATE BY	9/10/2019 alanlum			
TASK	PROJECT DESCRIPTION:	Project Manager	Senior Project Engineer	Project Engineer	Civil Designer / CADD	Construction Manager	WR&A TOTAL HOURS	WR&A EXPENSES	Subcontractor hours	Subcontractor Payroll	Subcontractor Expenses	Line Item Totals
CLIENT: Hampton Roads Sanitation District												
PROJECT DESCRIPTION: Construction Phase Services Per HRSD Design and Construction Standards - Section 17												
Construction Admin												
1	Page 17-3 -Pre-construction	8	14	12	24		58	T \$100				\$6,364
2	Page 17-4 to 17-3 - General Procedures	42	110	204	56		412	- \$200				\$45,475
3	Page 17-8 - Tie-in, Shutdown & Diversion Procedures	4	8	16			28	- \$100				\$3,344
4	Page 17-9 - Line Stop Procedures	2	8	16			26	- \$100				\$2,988
5	Page 17-9 Trenchless Crossing Procedures						0	T				\$0
6	Page 17-10 Damage Assessment & Claims						0	T				\$0
7	Page 17-10 Training						0	T				\$0
8	Page 17-11 Record Keeping						0	R \$250				\$250
9	Page 17-11 Staffing						0	-				\$0
10	Page 17-12 Verification						0	-				\$0
							0	T				\$0
PHASE A SUBTOTALS =		56	140	248	80	0	524	0	750	Subcontractor Total		\$0
PHASE A SUB-TOTAL DOLLARS =		\$9,970	\$17,661	\$23,601	\$6,438	\$0	\$57,670			Profit on Sub		5.0%
			468	0	\$47,700	0				WR&A Total		\$58,420
										PHASE A TOTAL		\$58,420
Start Up and Testing & Post Startup and Certification												
1	Start Up and Testing	4	8	24			36	- \$100				\$4,105
2	Post Startup and Certification	4	8	24			36	- \$100				\$4,105
PHASE K SUBTOTALS =		8	16	48	0	0	72	\$200		Subcontractor Total		\$0
PHASE K SUB-TOTAL DOLLARS =		\$1,424	\$2,019	\$1,568	\$0	\$0	\$8,011			Profit on Sub		0.0%
			64	0	\$8,508	0				WR&A Total		\$8,211
										PHASE K TOTAL		\$8,210
Construction Inspection												
1	Full Time Onsite Inspection (~45 hrs/week x 28 weeks)					1200	1200	\$0 \$600				\$0
PHASE B SUBTOTALS =		0	0	0	0	1200	1200	\$0		Subcontractor Total		\$0
PHASE B SUB-TOTAL DOLLARS =		\$0	\$0	\$0	\$0	\$118,728	\$118,728			Profit on Sub		5.0%
										WR&A Total		\$118,728
										PHASE B TOTAL		\$118,728
TOTAL CONSTRUCTION PHASE										\$185,358		

	Project Manager	Senior Project Engineer	Project Engineer	Civil Designer / CADD	Construction Manager	
Bare Labor Cost rates for year	2019	\$69.02	\$49.47	\$37.32	\$31.56	\$38.80
Contract Rates - LOADED LABOR AT A FACTOR OF:	2.55	\$178.04	\$126.15	\$95.17	\$80.48	\$99.94

WR&A EXPENSES	
T = Travel	
R = Reproduction	



Whitman, Reardon and Associates, LLP



In Plan vs Betterment Costs – Hampton and Poquoson:

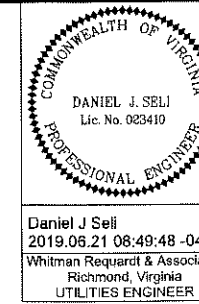
In Plan and Betterment costs for portions of the improvements in Poquoson and Hampton is summarized below. Our construction cost estimate for the entire project is \$1,818,600.00 – of which \$130,750.00 (7%) is for work in Poquoson and \$1,687,850.00 (93%) is for work in Hampton. Based on our final cost estimates, force main improvements in Poquoson is 100% “In Plan” work. Work in Hampton is 68% “In Plan” and 32% “Betterment”.

With this division of estimated construction cost and “In Plan” vs. “Betterment” responsibilities, our estimated breakdown of our fees for each is summarized in the following table:

	WRA CA/CI Fees	Hampton (93%) UPC 97715	Poquoson 7%) (UPC 13427)	Hampton IN PLAN (68%)
Construction Admin	\$ 58,420.00	\$ 54,330.60	\$ 4,089.40	\$ 36,944.81
Start Up and Testing	\$ 4,105.00	\$ 3,817.65	\$ 287.35	\$ 2,596.00
Post Start Up and Certification	\$ 4,105.00	\$ 3,817.65	\$ 287.35	\$ 2,596.00
Total CA	\$ 66,630.00	\$ 61,965.90	\$ 4,664.10	\$ 42,136.81
Field Engineering/Inspection:	\$ 118,728.00	\$ 110,417.04	\$ 8,310.96	\$ 75,083.59



PROJECT MANAGER: *Kenny Wynne*, (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: *R. Dean Milton*, LS (757) 925-2660 (Hampton Roads District)
DESIGN BY: *Whitman Requardt and Associates, LLP* (757) 599-5101
SUBSURFACE UTILITY BY, DATE: *Howard A. Spence*, LS (Hampton Roads District)



REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501 0172-147-V05, C-501	26(2)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Daniel J Selj
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Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

MEASUREMENT AND PAYMENT FOR NON-STANDARD PAY ITEMS

VDOT PROJECT 0172-114-220, C-501 (CITY OF HAMPTON)																
SUMMARY OF SANITARY SEWER PAY ITEMS																
SHEET NO.	4" SANITARY SEWER FORCE MAIN	6" SANITARY SEWER FORCE MAIN	8" SANITARY SEWER FORCE MAIN	20" SANITARY SEWER FORCE MAIN	20" BEND (45°) FORCE MAIN	20" BEND (90°) FORCE MAIN	20" BRANCH (20"x 8" TEE) FORCE MAIN	20" PLUG OR CAP FORCE MAIN	8" GATE VALVE & BOX FORCE MAIN	20" PLUG VALVE & BOX FORCE MAIN	20" LINE STOP FORCE MAIN	20" SOLID SLEEVE FORCE MAIN	2" AIR RELEASE VALVE & BOX FORCE MAIN	FLOW METER VAULT FORCE MAIN	ADJUST EXIST. VALVE BOX FORCE MAIN	SHEET NO.
	L.F.	L.F.	L.F.	L.F.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	EA.	L.S.	EA.	
3	-	-	-	100	2	-	-	1	-	1	1	1	-	-	-	3
4	-	-	-	700	-	-	-	-	-	-	-	-	1	-	-	4
5	-	-	-	710	4	2	-	-	-	-	-	-	1	-	-	5
6	41	44	20	700	-	-	2	-	4	2	-	-	2	-	-	6
7	-	-	-	719	4	-	-	-	-	-	-	-	1	-	-	7
8	-	-	-	491	2	-	-	1	-	-	-	1	-	1	3	8
TOTAL	41	44	20	3,420	12	2	2	2	4	3	*1	*2	5	*1	3	TOTAL

* DENOTES NON-STANDARD PAY ITEM.

20" LINE STOP FORCE MAIN

SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER EACH (EA.), COMPLETE IN-PLACE, AND IN ACCORDANCE WITH THE PLANS, DETAILS AND SPECIAL PROVISIONS. THE PRICE SHALL INCLUDE EXCAVATION, BACKFILL WITH SUITABLE MATERIAL, COMPACTION, DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL, PROVIDING AND INSTALLING THE LINE STOP CONCRETE SUPPORT AND REACTION BLOCKS, 20" X 14" TAPPING SADDLE, 14" WEDGE VALVE, 14" COMPLETION PLUG, ALL OTHER LINE STOP APPURTENANCES, AND FURNISHING ALL TOOLS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. THIS ALSO INCLUDES ANY TEST HOLES OR EXPLORATORY EXCAVATIONS TO DETERMINE PIPE OUTSIDE DIAMETER, ROUNDNESS, AND OTHER PERTINENT DATA TO SIZE AND INSTALL THE TAPPING SADDLE AND LINE STOP.

FLOW METER VAULT FORCE MAIN

SHALL BE MEASURED AND PAID FOR AT THE LUMP SUM (L.S.) CONTRACT PRICE, COMPLETE IN-PLACE, AND IN ACCORDANCE WITH THE PLANS, DETAILS, AND SPECIAL PROVISIONS. THE PRICE SHALL INCLUDE EXCAVATION, BACKFILL WITH SUITABLE MATERIAL, COMPACTION, DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL, PROVIDING AND INSTALLING THE CONCRETE METER VAULT, 20" X 4" DIP TEE, 4" M.J. X FLG. GATE VALVE, PIPE SUPPORTS AND HOUSE KEEPING PADS, LADDERS, HATCHES, PIPE CORES AND SLEEVES, AND FURNISHING ALL TOOLS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. THE PRICE SHALL ALSO INCLUDE RELOCATING THE EXISTING ELECTRICAL CABINET AND CONTENTS AND REINSTALLING AT THE NEW VAULT.

20" CONCRETE PIPE ADAPTOR FORCE MAIN

SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER EACH (EA.), COMPLETE IN-PLACE, AND IN ACCORDANCE WITH THE PLANS, DETAILS, AND SPECIAL PROVISIONS. THE PRICE SHALL INCLUDE EXCAVATION, BACKFILL WITH SUITABLE MATERIAL, COMPACTION, DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL, PROVIDING AND INSTALLING THE CONCRETE PIPE ADAPTOR, AND FURNISHING ALL TOOLS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. THIS ALSO INCLUDES ANY TEST HOLES OR EXPLORATORY EXCAVATIONS TO DETERMINE EXISTING BELL TYPE, OUTSIDE DIAMETER, ROUNDNESS, AND OTHER PERTINENT DATA TO SIZE AND INSTALL THE CONCRETE PIPE ADAPTOR.

20" SOLID SLEEVE FORCE MAIN

SHALL BE MEASURED AND PAID FOR AT THE CONTRACT UNIT PRICE PER EACH (EA.), COMPLETE IN-PLACE, AND IN ACCORDANCE WITH THE PLANS, DETAILS AND SPECIAL PROVISIONS. THE PRICE SHALL INCLUDE EXCAVATION, BACKFILL WITH SUITABLE MATERIAL, COMPACTION, DISPOSAL OF SURPLUS OR UNSUITABLE MATERIAL, PROVIDING AND INSTALLING THE MECHANICAL JOINT SOLID SLEEVE AND RESTRAINT FITTINGS, AND FURNISHING ALL TOOLS, LABOR, EQUIPMENT AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION. THIS ALSO INCLUDES ANY TEST HOLES OR EXPLORATORY EXCAVATIONS TO DETERMINE EXISTING BELL TYPE, OUTSIDE DIAMETER, ROUNDNESS, AND OTHER PERTINENT DATA TO SIZE AND INSTALL THE SOLID SLEEVE.

VDOT PROJECT 0172-147-V05, C-501 (CITY OF POQUOSON)								
SUMMARY OF SANITARY SEWER PAY ITEMS								
SHEET NO.	20" OFFSET EXIST. PIPE FORCE MAIN	20" BEND (22.5°) FORCE MAIN	20" LINE STOP FORCE MAIN	20" CONCRETE PIPE ADAPTOR FORCE MAIN	20" SOLID SLEEVE FORCE MAIN	ADJUST EXIST. AIR VENT BOX FORCE MAIN	ADJUST EXIST. VALVE BOX FORCE MAIN	SHEET NO.
	L.F.	EA.	EA.	EA.	EA.	EA.	EA.	
11	100	4	1	2	2	-	4	11
13	-	-	-	-	-	1	-	13
15	-	-	-	-	-	1	-	15
16	-	-	-	-	-	-	1	16
17	-	-	-	-	-	-	2	17
TOTAL	100	4	*1	*2	*2	2	7	TOTAL

* DENOTES NON-STANDARD PAY ITEM.

PROJECT MANAGER: Kenny Wynne, (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: R. Dean Minnix, LS (757) 925-2660 (Hampton Roads District)
 DESIGN BY: Whitman, Raquardt and Associates, LLP, (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: Howard A. Spence, LS (Hampton Roads District)

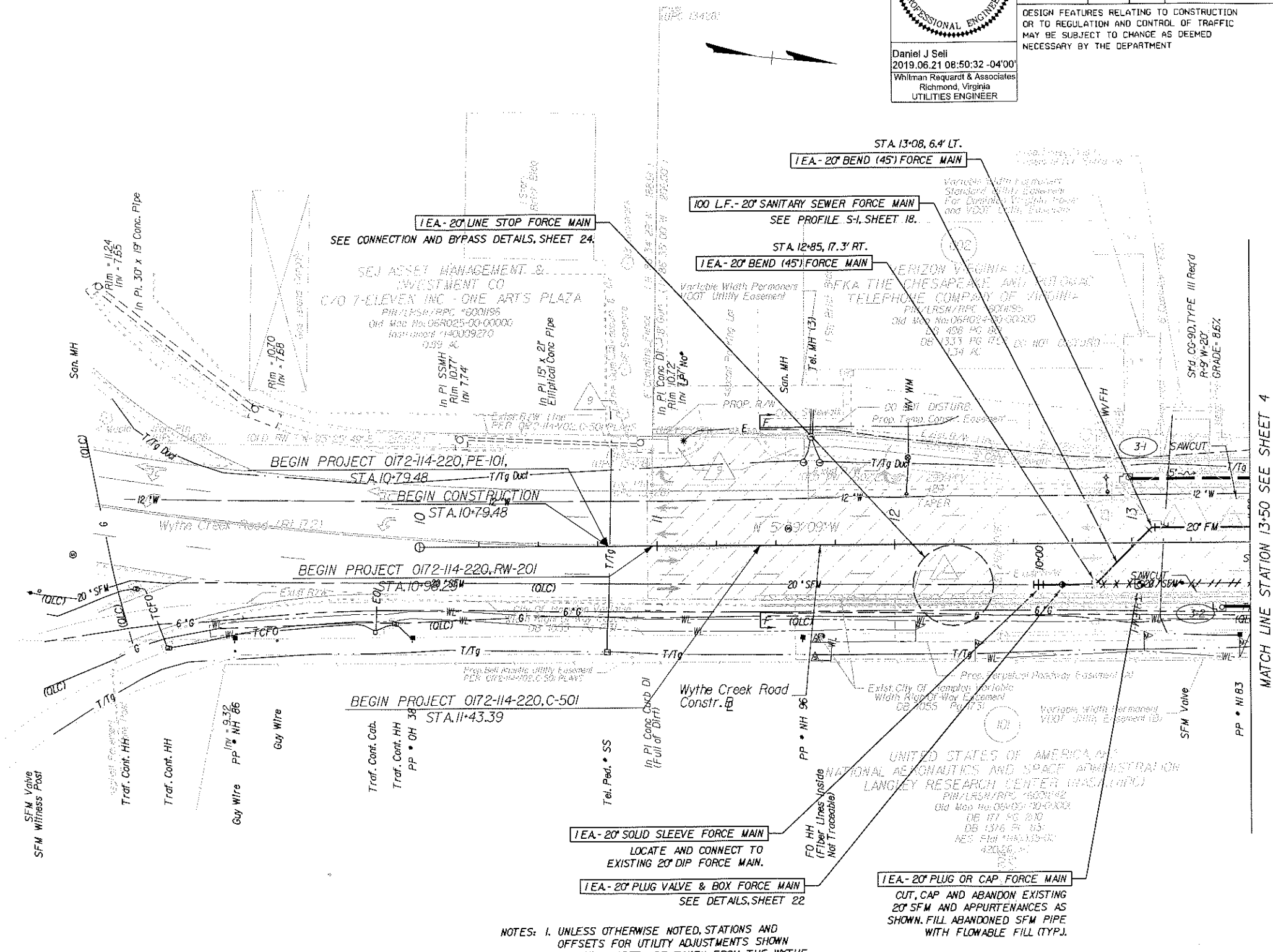
COMMONWEALTH OF VIRGINIA
 DANIEL J. SELI
 Lic. No. 023410
 PROFESSIONAL ENGINEER
 Daniel J. Seli
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 Whitman Raquardt & Associates
 Richmond, Virginia
 UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501	26(3)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

UTILITY OWNER INFORMATION

- | | |
|---|---|
| <p>Water:
 City of Newport News
 700 Town Center Drive
 Newport News, Virginia 23606
 Contact: Theresa Barko
 Telephone: 757-234-4892</p> | <p>Electric:
 Dominion Virginia Power
 902 G Street
 Hampton, Virginia 23661
 Contact: Justie Lankford
 Telephone: 757-928-2066</p> |
| <p>Sanitary Sewer:
 City of Poquoson
 500 City Hall Avenue
 Poquoson, Virginia 23662
 Contact: Bob Spawthley
 Telephone: 757-868-3590</p> | <p>Communication & Fiber:
 Cox Communications
 4600 Kilgrove Avenue
 Hampton, Virginia 23666
 Contact: Kelly Nadeau
 Telephone: 757-369-6408</p> |
| <p>Sanitary Sewer:
 Hampton Roads Sanitation District (HRSD)
 1435 Air Rail Avenue
 Virginia Beach, Virginia 23455
 Contact: Hollie Hampton
 Telephone: 757-833-1722</p> | <p>Telephone & Fiber:
 Verizon
 11600 Grove Park Court
 Malatonia, Virginia 23518
 Contact: Dean Rasmussen
 Telephone: 434-942-8192</p> |
| <p>Gas:
 Virginia Natural Gas
 P.O. Box 4569, Dept. 6250
 Atlanta, Georgia 30302-4569
 Contact: Selena Parks
 Telephone: 866-399-9778</p> | <p>Traffic:
 City of Hampton
 22 Lincoln Street
 Hampton, Virginia 23669
 Contact: Mark Swartz
 Telephone: 757-262-9679</p> |



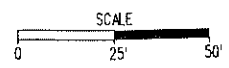
NOTES: 1. UNLESS OTHERWISE NOTED, STATIONS AND OFFSETS FOR UTILITY ADJUSTMENTS SHOWN ON THIS SHEET ARE TAKEN FROM THE WYTHE CREEK ROAD CONSTRUCTION BASELINE.

LEGEND

- | | | | |
|----------------------------------|--|---|--|
| — Denotes Saw Cut | △ (with 6) S'd. CG-6 Req'd. | △ (with 12) S'd. CG-12 Req'd. | ▨ (with X) Denotes Demolition of Pavement |
| △ (with 2) S'd. Rad. CG-2 Req'd. | △ (with 4) 4' Conc. Sidewalk Req'd. | △ (with 12) S'd. CG-12 Req'd. (Type A) | ▨ (with .) Denotes New Pavement |
| △ (with 2) S'd. Rad. CG-2 Req'd. | △ (with 12) S'd. CG-12 Req'd. (Type B) | ▨ (with /) Denotes Proposed 1.5" & Variable Depth Overlay | |
| △ (with 9D) S'd. CG-9D Req'd. | | | |
| | | | — [C] — Denotes Construction Limits In Cuts |
| | | | — [F] — Denotes Construction Limits In Fills |

REFERENCES
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

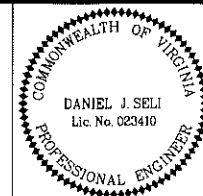
Wythe Creek Road Profile	3A
Drainage Descr.	3B
Typical Section	2A
Entrance Profiles	15C1
Maint. of Traffic	11C3, 1B, 33A



PROJECT	SHEET NO.
0172-114-220	26(3)

MATCH LINE STATION 13+50 SEE SHEET 4

PROJECT MANAGER: Kenny Wynne (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: R. Dean Minnix, LS (757) 925-2660 (Hampton Roads District)
 DESIGN BY: Whitman, Requardt and Associates, LLP (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: Howard A. Spence, LS (Hampton Roads District)

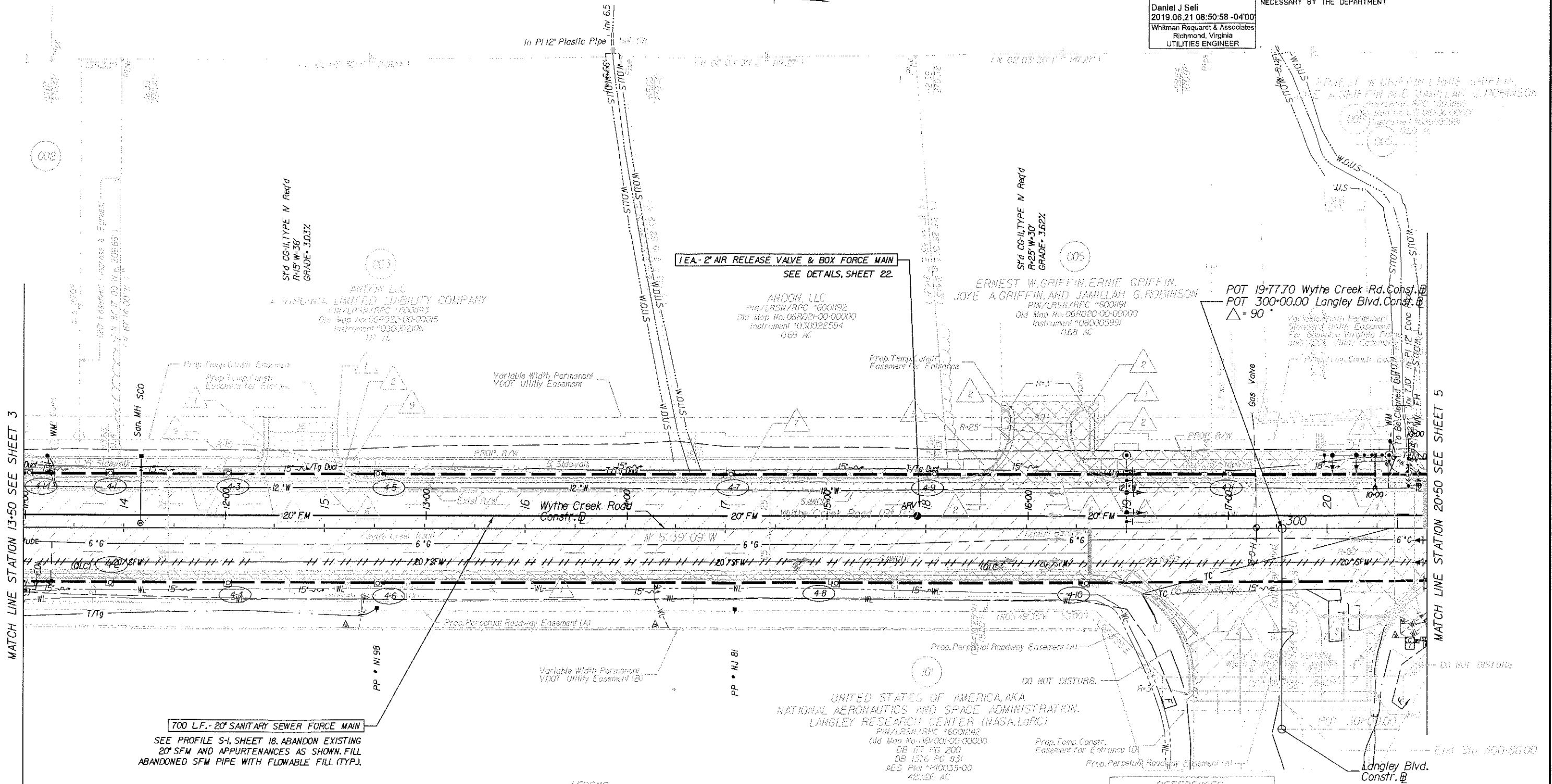


REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501	26(4)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Daniel J. Seil
 2019.06.21 08:50:58 -04'00'
 Whitman Requardt & Associates
 Richmond, Virginia
 UTILITIES ENGINEER

SEE SHEET 3 FOR UTILITY OWNER INFORMATION



700 L.F. - 20\"/>

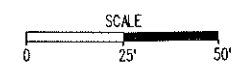
1 EA - 2\"/>

LEGEND

- Denotes Saw Cut
- ▲ S'd. CG-6 Req'd.
- ▲ S'd. Rad. CG-6 Req'd.
- ▲ S'd. CG-2 Req'd.
- ▲ S'd. Rad. CG-2 Req'd.
- ▲ S'd. CG-9D Req'd.
- ▲ S'd. CG-II Req'd.
- ▲ 4' Conc. Sidewalk Req'd.
- ▲ S'd. CG-12 Req'd. (Type A)
- ▲ S'd. CG-12 Req'd. (Type B)
- Denotes Demolition of Pavement
- Denotes New Pavement
- Denotes Proposed 1.5' & Variable Depth Overlay
- C --- Denotes Construction Limits In Cuts
- E --- Denotes Construction Limits In Fills

REFERENCES
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Wythe Creek Road Profile	4A
Drainage Descr.	3B
Typical Section	2A
Langley Blvd. Profile	4A(1)
Entrance Profiles	15A(1)
Maint. of Traffic	11A, 12, 3A

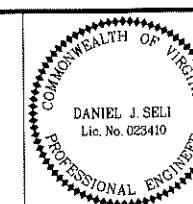


MATCH LINE STATION 20+50 SEE SHEET 5

MATCH LINE STATION 13+50 SEE SHEET 3

PROJECT MANAGER: Kenny Wynne (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: R. Dean Minnix, LS (757) 925-2660 (Hampton Roads District)
 DESIGN BY: Whitman, Reardon & Associates, LLP (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: Howard, A. Spence, LS (Hampton Roads District)

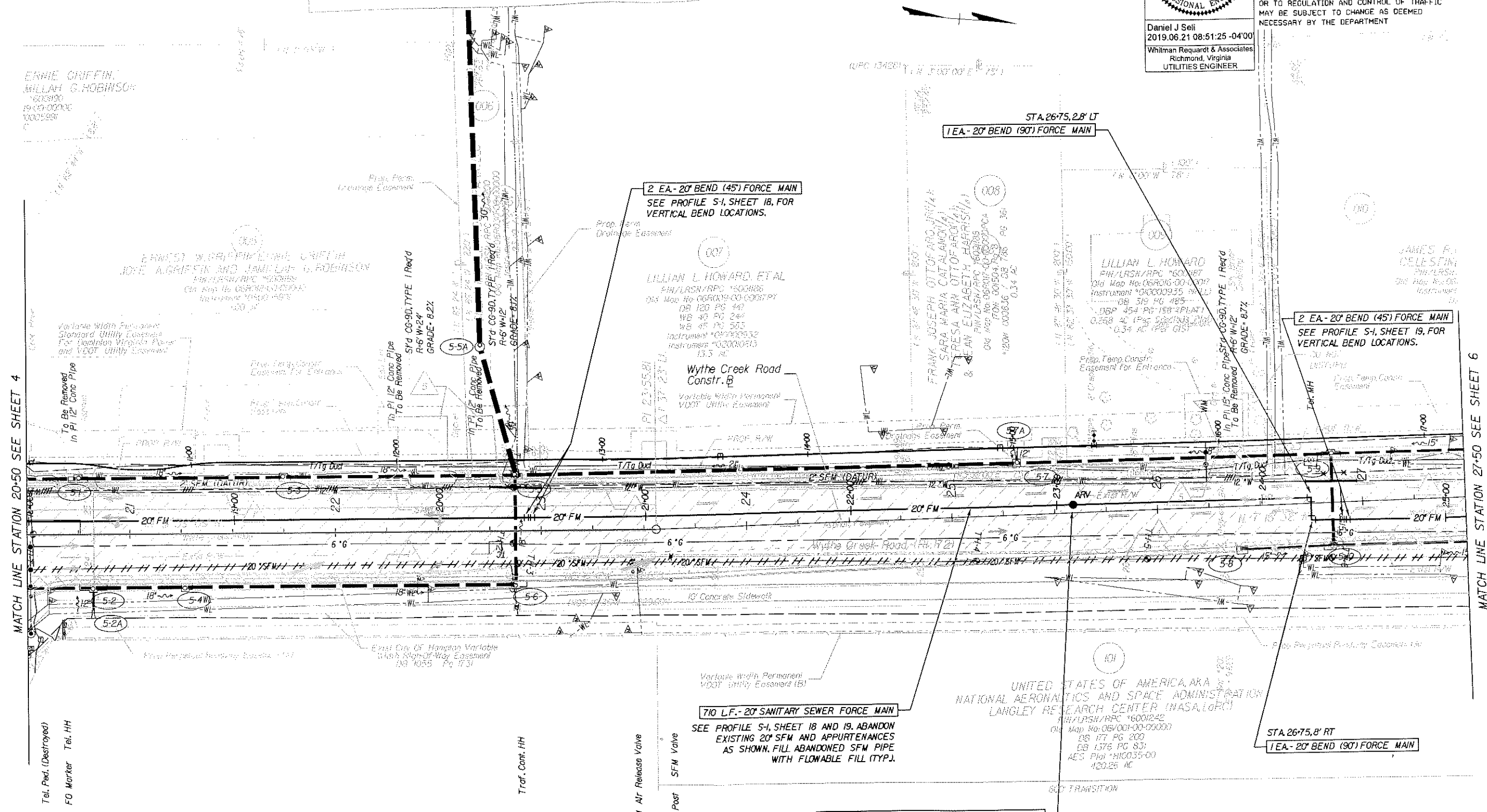
SEE SHEET 3 FOR UTILITY OWNER INFORMATION



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Whitman Reardon & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	PROJECT	SHEET NO
	VA.	172	0172-114-220, C-501	26(5)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

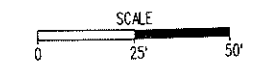


LEGEND

- Denotes Saw Cut
- ▲ SFd.CG-6 Req'd.
- ▲ SFd.Rad.CG-6 Req'd.
- ▲ SFd.CG-2 Req'd.
- ▲ SFd.Rad.CG-2 Req'd.
- ▲ SFd.CG-9D Req'd.
- ▲ SFd.CG-11 Req'd.
- ▲ 4 Conc. Sidewalk Req'd.
- ▲ SFd.CG-12 Req'd. (Type A)
- ▲ SFd.CG-12 Req'd. (Type B)
- Denotes Demolition of Pavement
- Denotes Slow Pavement
- Denotes Proposed 15' & Variable Depth Overlay
- [C] --- Denotes Construction Limits In Cuts
- [F] --- Denotes Construction Limits In Fills

REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Wytthe Creek Rd. Profile	5A
Drainage Descr.	3B
Typical Section	2B
Entrance Profiles	(RFD)
Maint. of Traffic (M5, 20, 35)	



PROJECT	0172-114-220
SHEET NO.	26(5)

PROJECT MANAGER: *Kenny Wynne* (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: *R. Dean Minnix, LS* (757) 925-2660 (Hampton Roads District)
DESIGN BY: *Whitman, Requardt & Associates, LLP* (757) 599-5101
SUBSURFACE UTILITY BY, DATE: *Howard A. Spence, LS* (Hampton Roads District)

COMMONWEALTH OF VIRGINIA
DANIEL J. SELI
Lic. No. 023410
PROFESSIONAL ENGINEER

Daniel J Seli
2019.06.21 08:51:53 -04'00'
Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501	26(6)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

SEE SHEET 3 FOR UTILITY OWNER INFORMATION

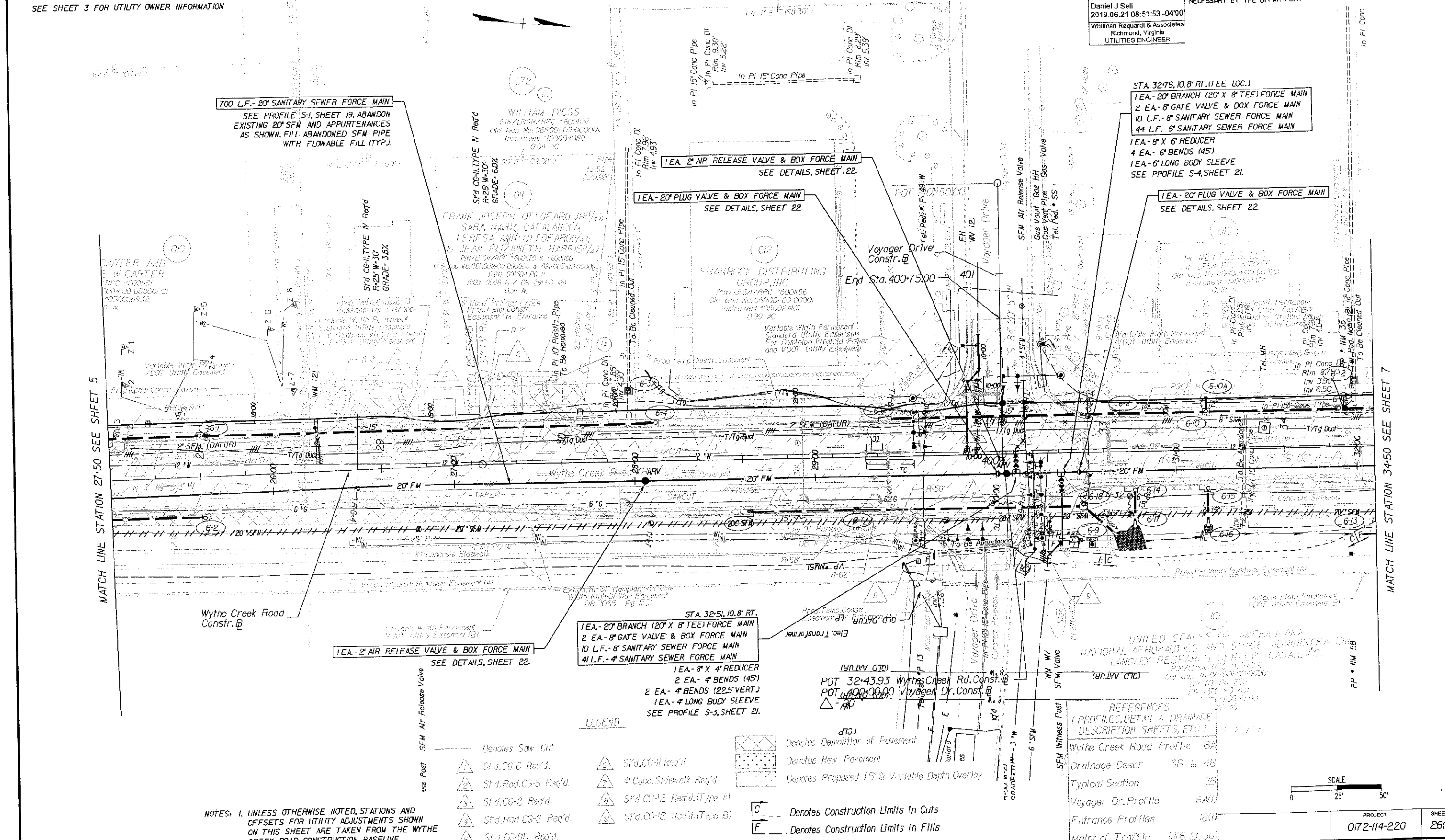
700 L.F. - 20" SANITARY SEWER FORCE MAIN
SEE PROFILE S-1, SHEET 19. ABANDON EXISTING 20" SFM AND APPURTENANCES AS SHOWN. FILL ABANDONED SFM PIPE WITH FLOWABLE FILL (TYP.).

STA 32+76.10.8' RT. (TEE LOC.)
1 EA - 20" BRANCH (20" X 8" TEE) FORCE MAIN
2 EA - 8" GATE VALVE & BOX FORCE MAIN
10 L.F. - 8" SANITARY SEWER FORCE MAIN
44 L.F. - 6" SANITARY SEWER FORCE MAIN
1 EA - 8" X 6" REDUCER
4 EA - 6" BENDS (45°)
1 EA - 6" LONG BODY SLEEVE
SEE PROFILE S-4, SHEET 21.

1 EA - 2" AIR RELEASE VALVE & BOX FORCE MAIN
SEE DETAILS, SHEET 22

1 EA - 20" PLUG VALVE & BOX FORCE MAIN
SEE DETAILS, SHEET 22

1 EA - 20" PLUG VALVE & BOX FORCE MAIN
SEE DETAILS, SHEET 22

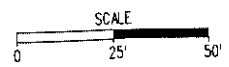


NOTES: 1. UNLESS OTHERWISE NOTED, STATIONS AND OFFSETS FOR UTILITY ADJUSTMENTS SHOWN ON THIS SHEET ARE TAKEN FROM THE WYTHE CREEK ROAD CONSTRUCTION BASELINE.

- LEGEND
- Denotes Saw Cut
 - Denotes Demolition of Pavement
 - Denotes New Pavement
 - Denotes Proposed 1.5' & Variable Depth Overlay
 - Denotes Construction Limits In Cuts
 - Denotes Construction Limits In Fills
- 1 Sfd. CG-6 Req'd.
 - 2 Sfd. Rad. CG-6 Req'd.
 - 3 Sfd. CG-2 Req'd.
 - 4 Sfd. Rad. CG-2 Req'd.
 - 5 Sfd. CG-9D Req'd.
 - 6 Sfd. CG-11 Req'd.
 - 7 4" Conc. Sidewalk Req'd.
 - 8 Sfd. CG-12 Req'd. (Type A)
 - 9 Sfd. CG-12 Req'd. (Type B)

REFERENCES

(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Wythe Creek Road Profile	6A
Drainage Descr.	3B & 4B
Typical Section	2B
Voyager Dr. Profile	6A(1)
Entrance Profiles	18(1)
Maint. of Traffic	11(6), 21, 30



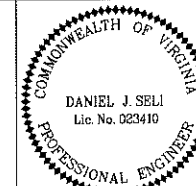
PROJECT	0172-114-220	SHEET NO.	26(6)
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MATCH LINE STATION 27+50 SEE SHEET 5

MATCH LINE STATION 34+50 SEE SHEET 7

PROJECT MANAGER: *Kenny Wayne* (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: *R. Dean Minix, LS* (757) 925-2660 (Hampton Roads District)
 DESIGN BY: *Whitman, Requardt and Associates, LLP* (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: *Howard A. Spence, LS* (Hampton Roads District)

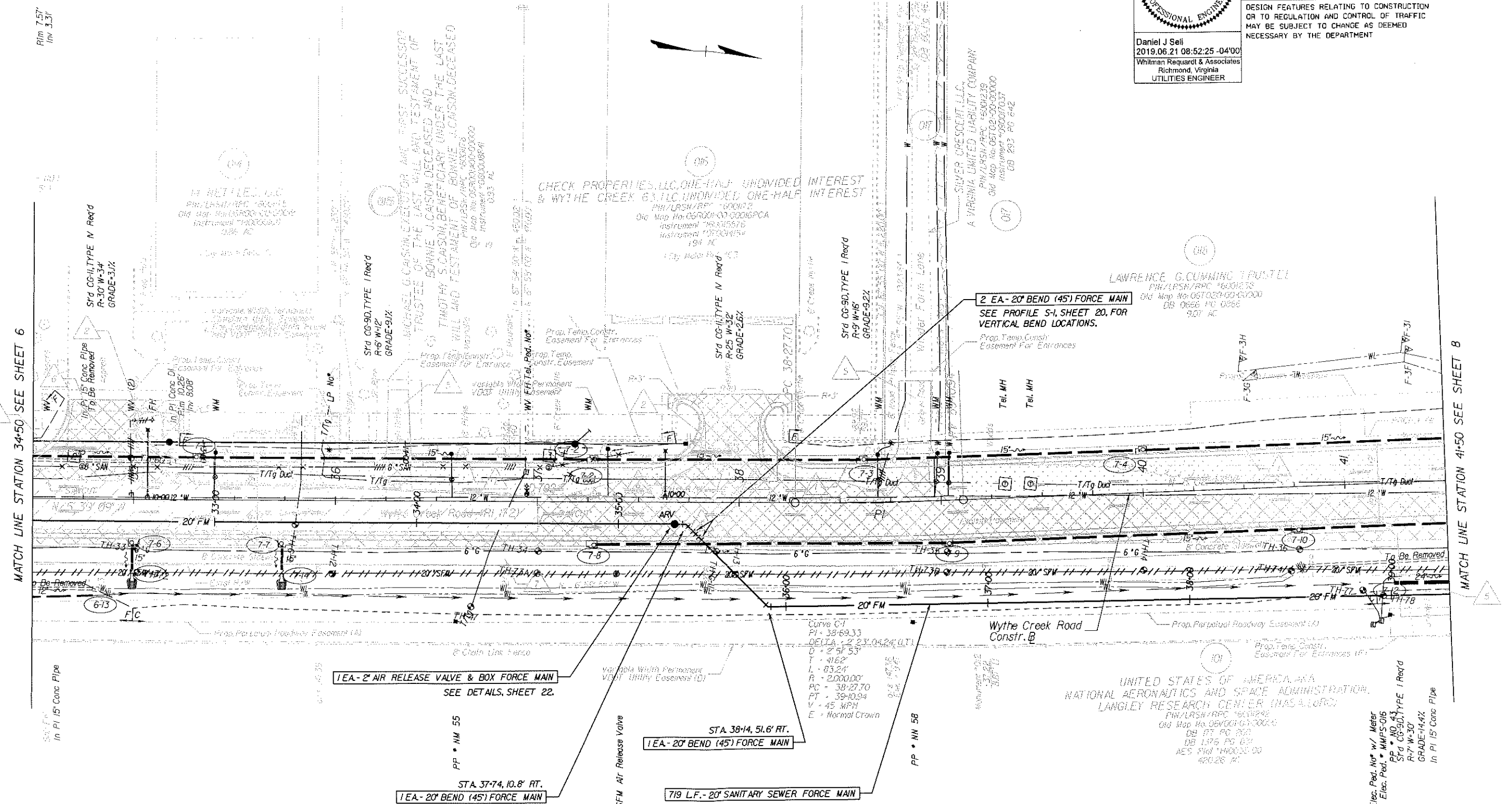
SEE SHEET 3 FOR UTILITY OWNER INFORMATION



Daniel J. Selj
2019.06.21 08:52:25 -04'00'
Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501	26(7)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



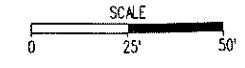
LEGEND

- Denotes Saw Cut
- ▲ Sfd. CG-6 Req'd.
- ▲ Sfd. Rad. CG-6 Req'd.
- ▲ Sfd. CG-2 Req'd.
- ▲ Sfd. Rad. CG-2 Req'd.
- ▲ Sfd. CG-9D Req'd.
- ▲ Sfd. CG-11 Req'd.
- ▲ 4" Conc. Slabwall Pipe
- ▲ Sfd. CG-12 Req'd. (Type A)
- ▲ Sfd. CG-12 Req'd. (Type B)
- Denotes Demolition of Pavement
- Denotes New Pavement
- Denotes Proposed 1.5' & Variable Depth Overlay
- Denotes Construction Limits In Cuts
- Denotes Construction Limits In Fills

REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Wythe Creek Road Profile	7A
Drainage Descr.	4B
Typical Section	2B
Entrance Profiles	1B(1)
Maint. of Traffic	1A(7), 22, 37

NOTES: 1. UNLESS OTHERWISE NOTED, STATIONS AND OFFSETS FOR UTILITY ADJUSTMENTS SHOWN ON THIS SHEET ARE TAKEN FROM THE WYTHE CREEK ROAD CONSTRUCTION BASELINE.



PROJECT	SHEET NO.
0172-114-220	26(7)

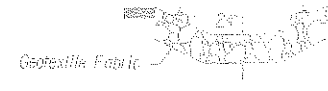
PROJECT MANAGER: Kerry Wythe (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: R. Dean Minix, LS (757) 925-2660 (Hampton Roads District)
DESIGN BY: Whitman Requardt and Associates, LLP (757) 599-5101
SUBSURFACE UTILITY BY, DATE: Howard A. Spence, LS (Hampton Roads District)

COMMONWEALTH OF VIRGINIA
DANIEL J. SELL
Lic. No. 023410
PROFESSIONAL ENGINEER
Daniel J Sell
2019.06.21 08:52:49 -04'00
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Richmond, Virginia
UTILITIES ENGINEER

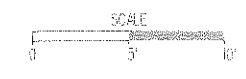
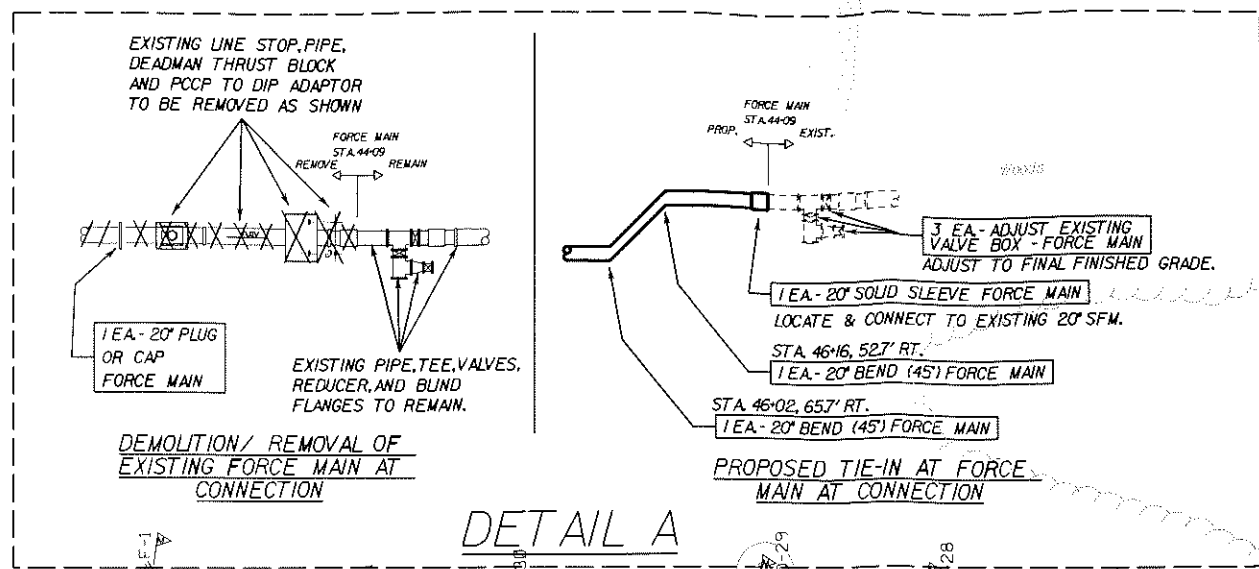
REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	172		0172-114-220,C-501	26(8)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

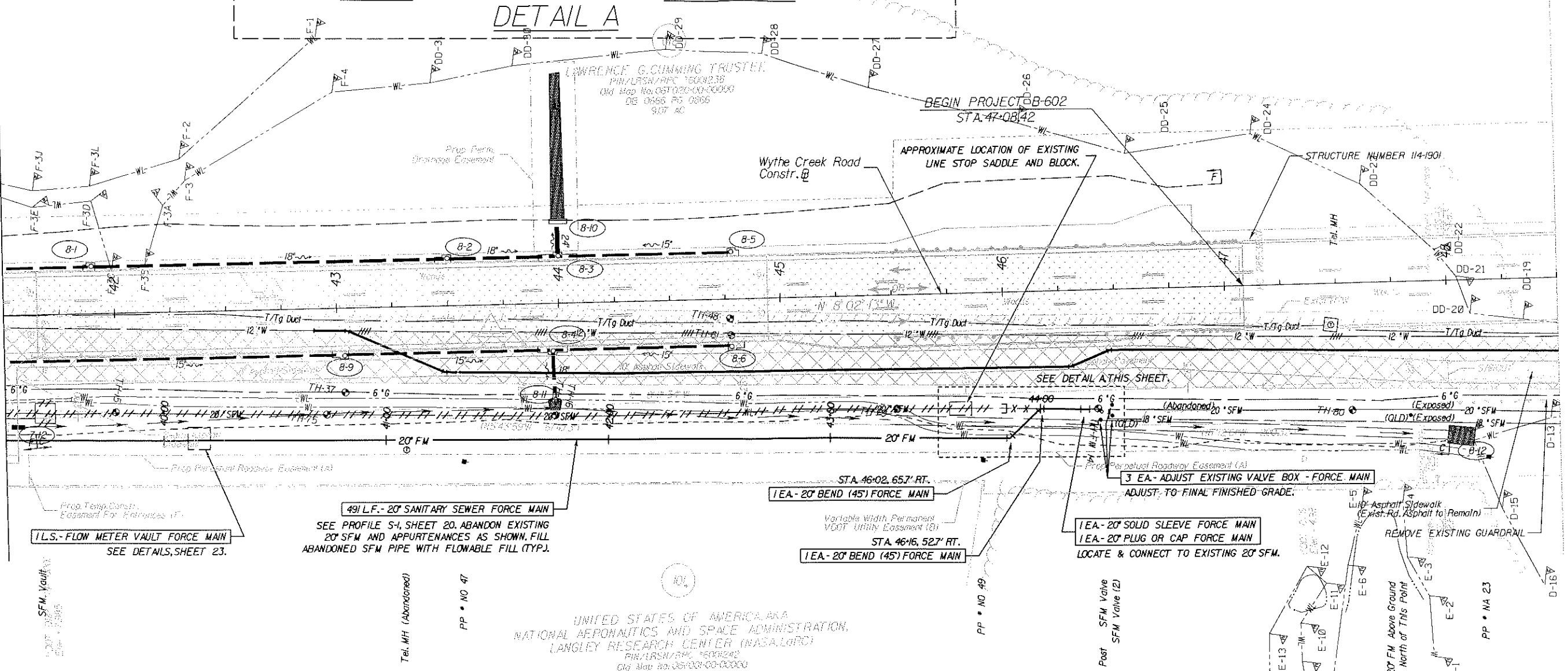
Prop. Placement of Protective Low Wall
Outfall Structure #16 - Section A &
Spd. E-1



SEE SHEET 3 FOR UTILITY OWNER INFORMATION



MATCH LINE STATION 4+50 SEE SHEET 7



UNITED STATES OF AMERICA, AKA
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION,
LANGLEY RESEARCH CENTER (NASA/LARC)
PH: 757/860-2400
Old Map No. 061031-00-00000
DB 177 PG. 200
DB 1376 PG. 134
AES Plan: 1100035-00
4/20/20 AC

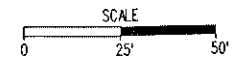
LEGEND

- Denotes Saw Cut
- ▲ SP'd. CG-6 Req'd.
- ▲ SP'd. Rad. CG-6 Req'd.
- ▲ SP'd. CG-2 Req'd.
- ▲ SP'd. Rad. CG-2 Req'd.
- ▲ SP'd. CG-9D Req'd.
- ▲ SP'd. CG-11 Req'd.
- ▲ # Conc. Sidewalk Req'd.
- ▲ SP'd. CG-12 Req'd. (Type A)
- ▲ SP'd. CG-12 Req'd. (Type B)
- ▨ Denotes Denatification of Pavement
- ▨ Denotes New Pavement
- ▨ Denotes Proposed 1.5' & Variable Depth Overlay
- C --- Denotes Construction Limits In Cuts
- F --- Denotes Construction Limits In Fills

REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

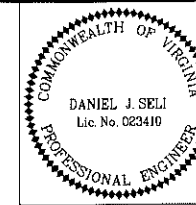
Wythe Creek Road Profile	BA
Drainage Descr.	4B, 5B
Typical Section	2B
Entrance Profiles	1801
Maint. of Traffic	110B, 23, 3B

NOTES: 1. UNLESS OTHERWISE NOTED, STATIONS AND OFFSETS FOR UTILITY ADJUSTMENTS SHOWN ON THIS SHEET ARE TAKEN FROM THE WYTHE CREEK ROAD CONSTRUCTION BASELINE.



PROJECT MANAGER: Kenny Wynne (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: P. Dean Miral, LS (757) 925-2660 (Hampton Roads District)
DESIGN BY: Whitman, Requardt and Associates, LLP (757) 599-5101
SUBSURFACE UTILITY BY, DATE: Howard A. Spence, LS (Hampton Roads District)

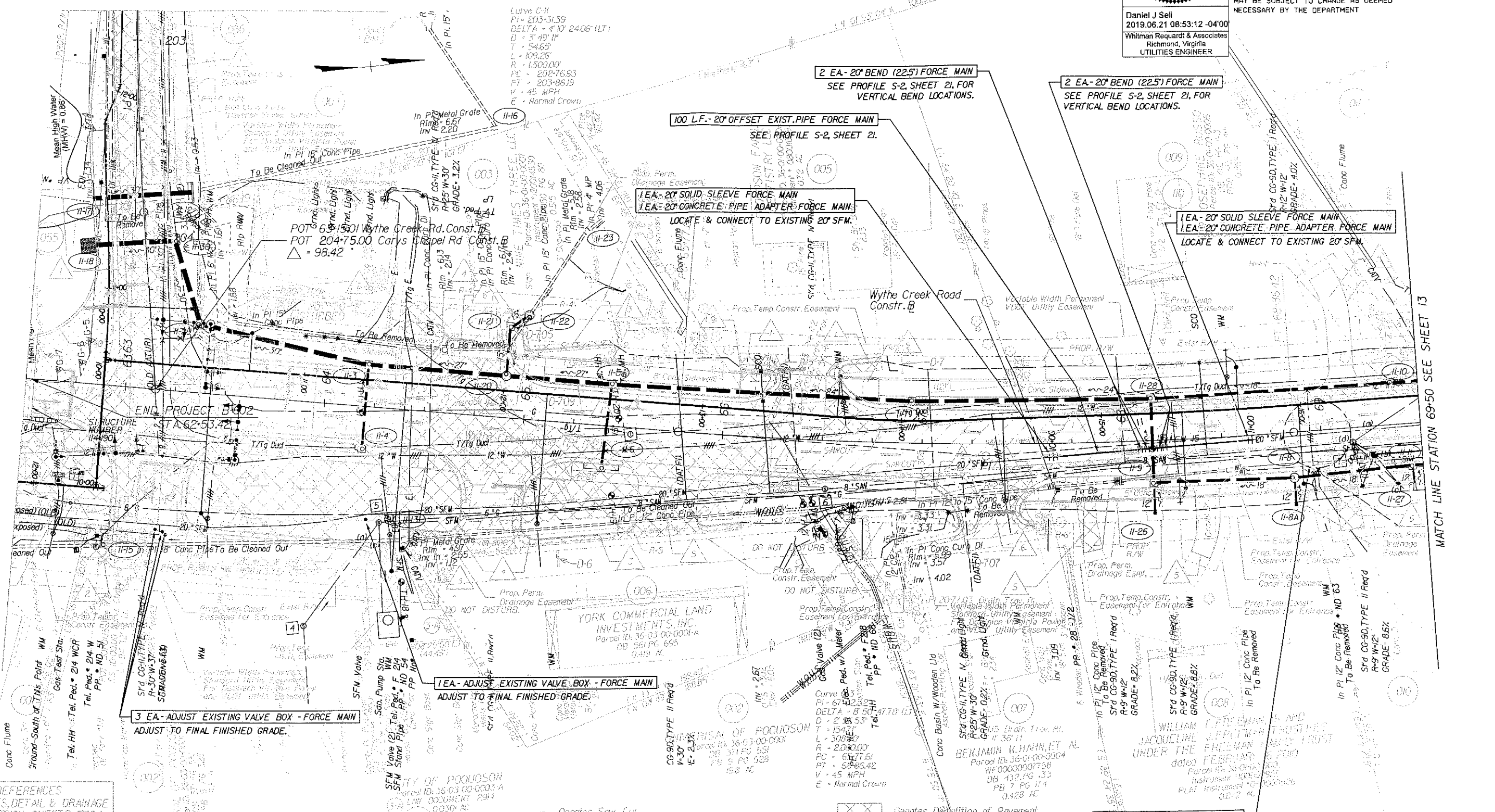
SEE SHEET 3 FOR UTILITY OWNER INFORMATION



Daniel J. Seil
2019.06.21 08:53:12 -0400
Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	172		0172-147-V05, C-501	26(11)

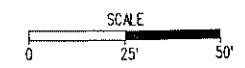
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



REFERENCES (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)	
Wythe Creek Rd. Profile	11A
Carys Chapel Rd. Profile	12A
Drainage Descr.	5B, 5B'
Typical Section	2B
Entrance Profiles	18(1), 18(2)
Maint. of Traffic	11(1), 26, 41

NOTES: 1. UNLESS OTHERWISE NOTED, STATIONS AND OFFSETS FOR UTILITY ADJUSTMENTS SHOWN ON THIS SHEET ARE TAKEN FROM THE WYTHE CREEK ROAD CONSTRUCTION BASELINE.

- Denotes Saw Cut
- ① SF'd. CG-6 Req'd.
- ② SF'd. Rad. CG-6 Req'd.
- ③ SF'd. CG-2 Req'd.
- ④ SF'd. Rad. CG-2 Req'd.
- ⑤ SF'd. CG-9D Req'd.
- ⑥ SF'd. CG-11 Req'd.
- ⑦ # Conc. Sidewalk Req'd.
- ⑧ SF'd. CG-12 Req'd. (Type A)
- ⑨ SF'd. CG-12 Req'd. (Type B)
- ⊠ Denotes Denial of Pavement
- ⊞ Denotes New Pavement
- ▨ Denotes Proposed 1.5' & Variable Depth Overlay
- C — Denotes Construction Limits In Cuts
- F — Denotes Construction Limits In Fills



PROJECT MANAGER: Kenny Wyne (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: R. Dean Minix, LS (757) 925-2660 (Hampton Roads District)
DESIGN BY: Whitman, Requardt and Associates, LLP (757) 599-5101
SUBSURFACE UTILITY BY, DATE: Howard A. Spence, LS (Hampton Roads District)

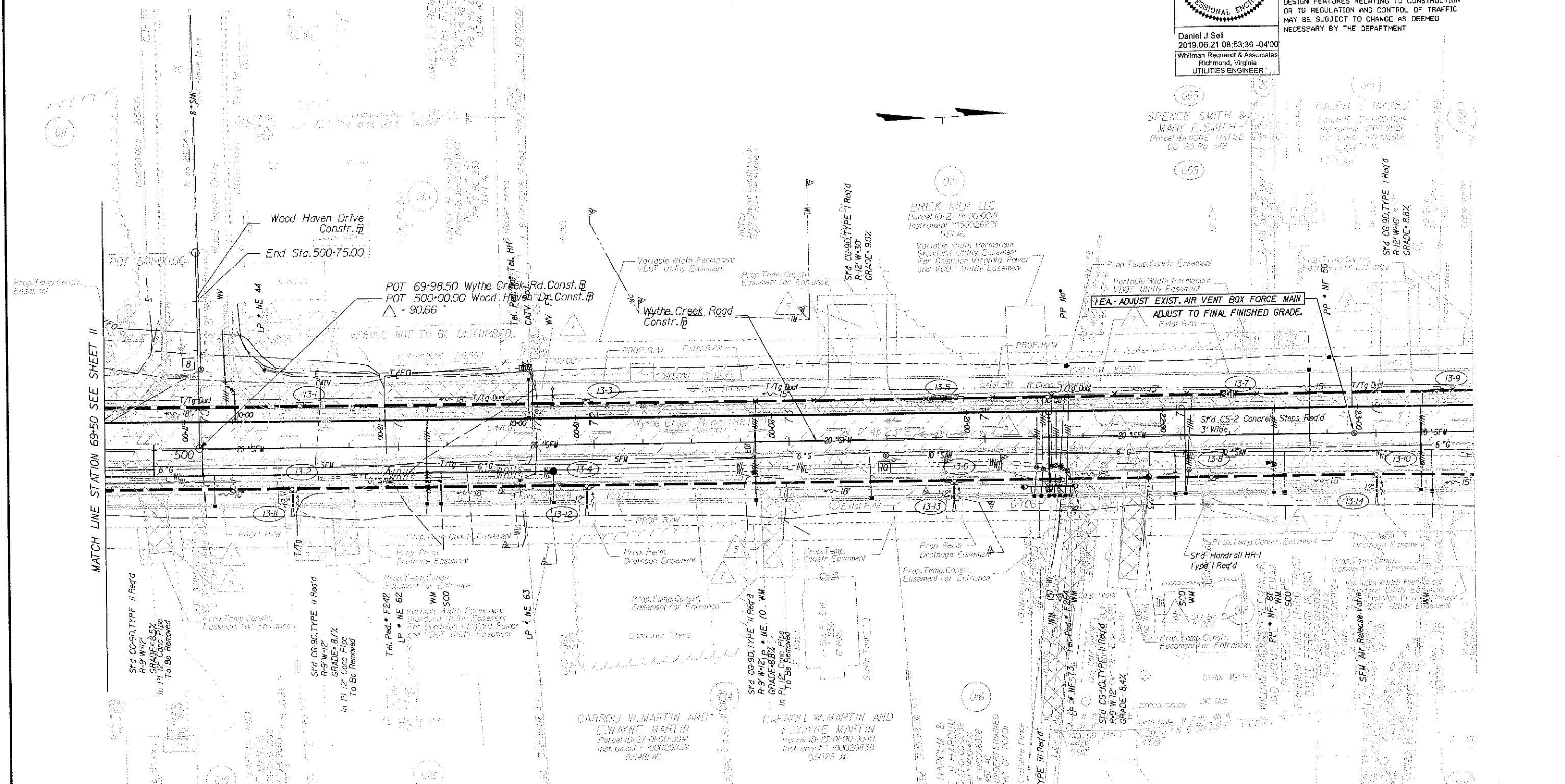
COMMONWEALTH OF VIRGINIA
DANIEL J. SELI
Lic. No. 023410
PROFESSIONAL ENGINEER

Daniel J Seli
2019.06.21 08:53:36 -04'00
Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-147-V05.C-501	26(13)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

SEE SHEET 3 FOR UTILITY OWNER INFORMATION



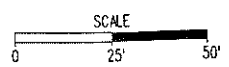
MATCH LINE STATION 69+50 SEE SHEET II

LEGEND

	Denotes Saw Cut		Denotes New Pavement
	Srd.CG-6 Req'd.		Denotes Demolition of Paved
	Srd.Rad.CG-6 Req'd.		Denotes Proposed 1.5' & Variable Depth Overlay
	Srd.CG-2 Req'd.		Denotes Construction Limits In Cuts
	Srd.Rad.CG-2 Req'd.		Denotes Construction Limits In Fills
	Srd.CG-9D Req'd.		
	Srd.CG-II Req'd.		
	4" Conc. Sidewalk Req'd.		
	Srd.CG-12 Req'd.(Type A)		
	Srd.CG-12 Req'd.(Type B)		

REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

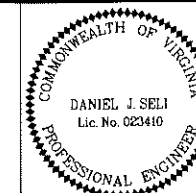
Constr. Layout	13(1)
Wythe Creek Rd. Profile	13(A)
Drainage Descr.	6(B)
Typical Section	2(B)
Wood Haven Dr. Profile	13(A1)
Entrance Profiles	18(2)
Maint. of Traffic	18(1), 20, 43



PROJECT	0172-147-V05	SHEET NO.	26(13)
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PROJECT MANAGER: *Kenny Wynne* (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: *R. Dean Minix, LS* (757) 925-2660 (Hampton Roads District)
DESIGN BY: *Whitman, Reardon and Associates, LLP* (757) 599-5101
SUBSURFACE UTILITY BY, DATE: *Howard, A. Spence, LS* (Hampton Roads District)

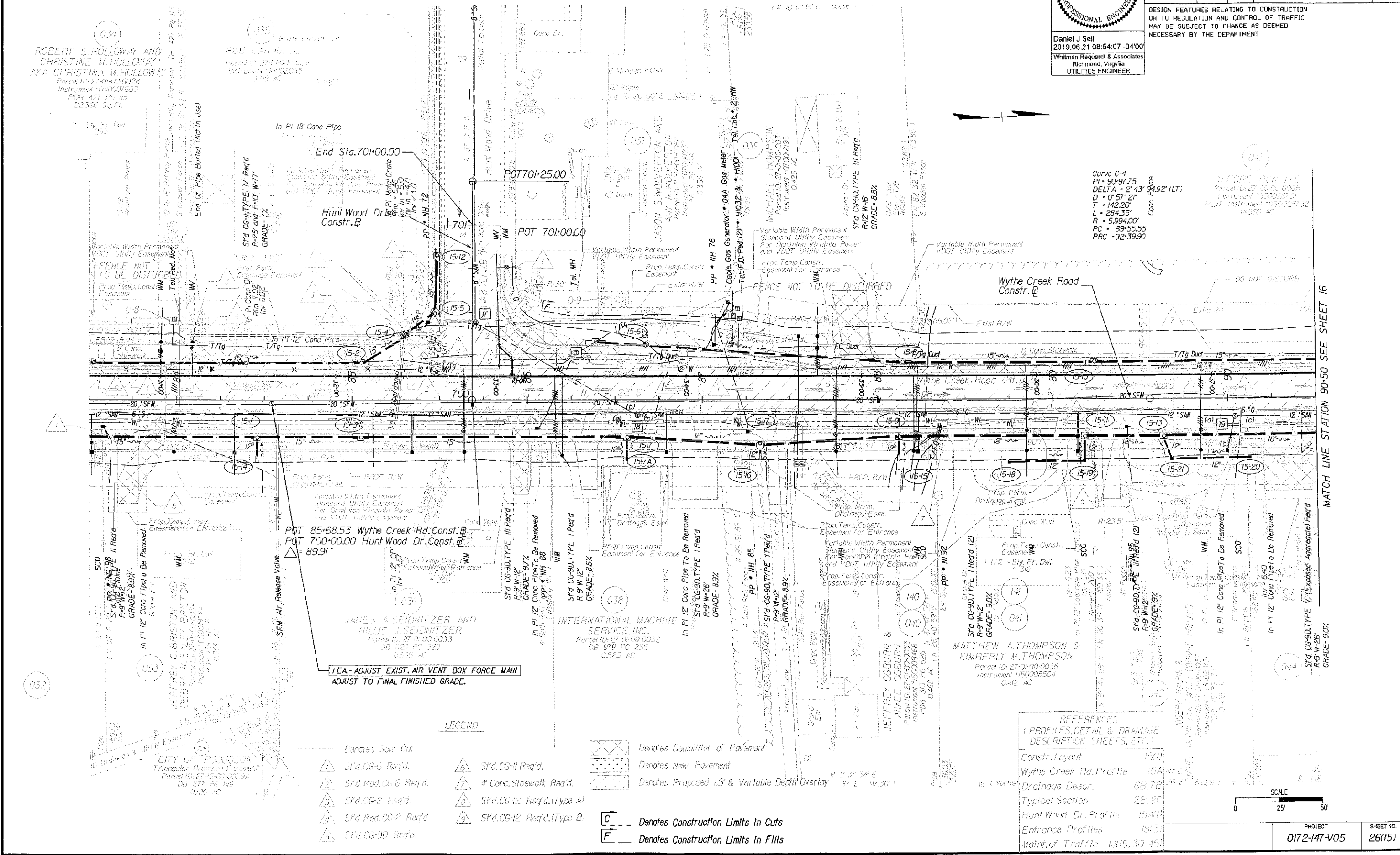
SEE SHEET 3 FOR UTILITY OWNER INFORMATION



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2019.06.21 08:54:07 -0400
Whitman Reardon & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-147-V05,C-501	26(15)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



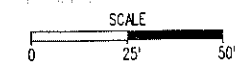
Curve C-4
PI = 90.97.75
DELTA = 2° 43' 24.92" (LT)
D = 0' 57' 2"
T = 142.20'
L = 284.35'
R = 5,994.00'
PC = 89.55.55
PTC = 92.39.90

LEGEND

	Denotes Saw Cut		Std. CG-II Reqd.		Std. CG-II Reqd.
	Std. Prod. CG-6 Reqd.				
	Std. CG-2 Reqd.		Std. CG-12 Reqd. (Type A)		Std. CG-12 Reqd. (Type B)
	Std. Rod. CG-2 Reqd.		Std. CG-90 Reqd.		
	Std. CG-90 Reqd.				
	Denotes Construction Limits in Cuts		Denotes Construction Limits in Fills		

REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Constr. Layout	15(1)
Wythe Creek Rd. Profile	15(A)
Drainage Descr.	6B, 7B
Typical Section	2B, 2C
Hunt Wood Dr. Profile	15(M)
Entrance Profiles	14(3)
Maint. of Traffic	13(5), 30(5)



MATCH LINE STATION 90+50 SEE SHEET 16

PROJECT MANAGER: *Kenny Wynne* (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: *R. Dean Minola, LS* (757) 925-2660 (Hampton Roads District)
 DESIGN BY: *Whitman Requardt and Associates, LLP* (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: *Howard A. Spence, LS* (Hampton Roads District)

LEGEND

- Denotes Saw Cut
- ▲ SFD CG-6 Req'd.
- ▲ SFD Rod CG-6 Req'd.
- ▲ SFD CG-2 Req'd.
- ▲ SFD Rod CG-2 Req'd.
- ▲ SFD CG-9D Req'd.
- ▲ SFD CG-11 Req'd.
- ▲ 4" Conc. Stormwater Req'd.
- ▲ SFD 12-12 Req'd (Type 2)
- ▲ SFD 16-12 Req'd (Type 3)
- Denotes Discontinuity of Pavement
- Denotes New Pavement
- Denotes Proposed 1.5' & Variable Depth Overlay
- C — Denotes Construction Limits In Cuts
- F — Denotes Construction Limits In Fills

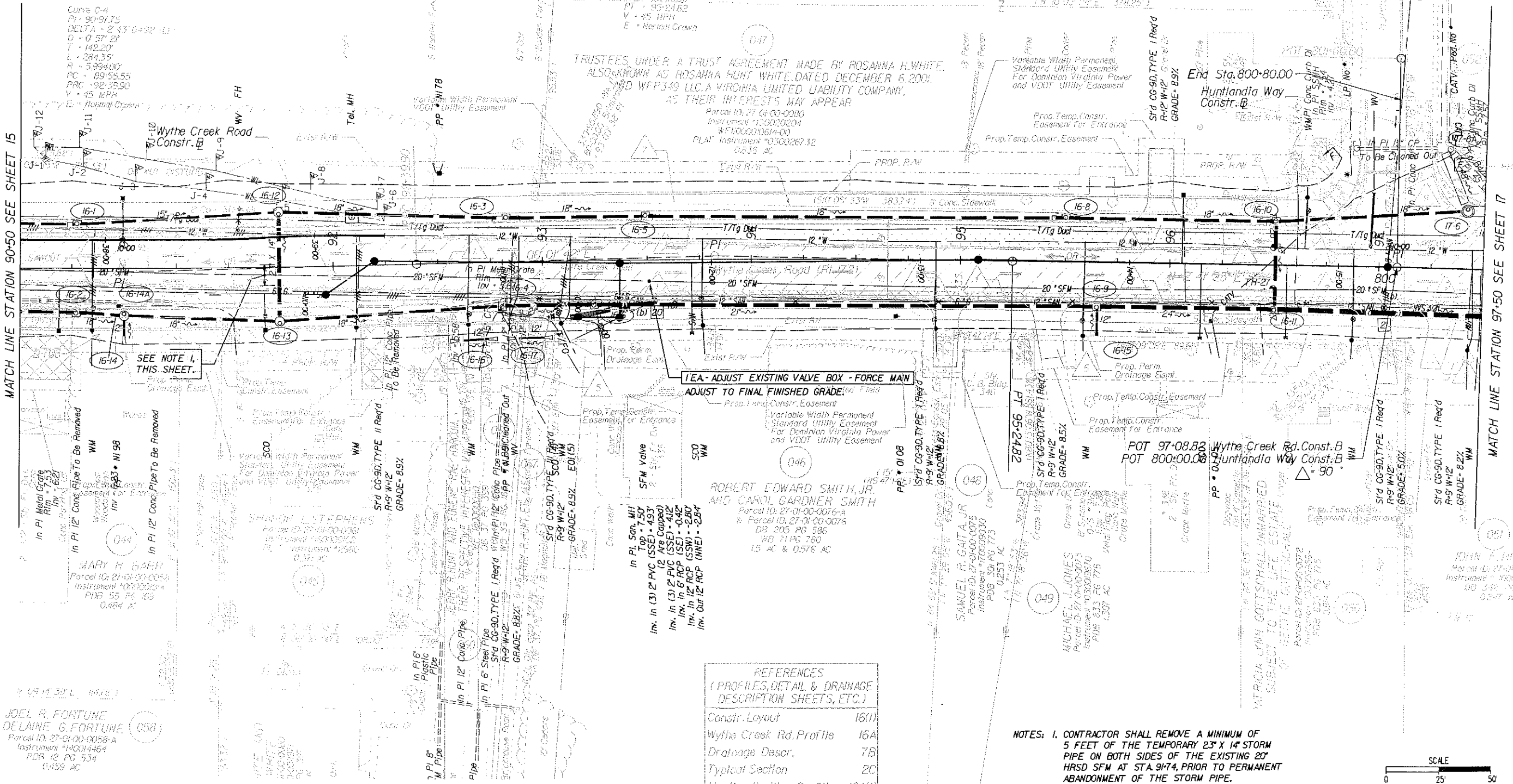
SEE SHEET 3 FOR UTILITY OWNER INFORMATION

COMMONWEALTH OF VIRGINIA
 DANIEL J. SEIL
 Lic. No. 023410
 PROFESSIONAL ENGINEER

Daniel J. Seil
 2019.06.21 08:54:36 -04'00'
 Whitman Requardt & Associates
 Richmond, Virginia
 UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	172		0172-147-V05,C-501	26(16)

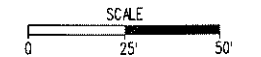
DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT.



REFERENCES
 (PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Constr. Layout	16(1)
Wytthe Creek Rd. Profile	16A
Drainage Descr.	7B
Typical Section	2C
Huntlandia Way Profile	16A(1)
Entrances Profiles	16(4)
Maint. of Traffic	1U(16,31,46)

NOTES: 1. CONTRACTOR SHALL REMOVE A MINIMUM OF 5 FEET OF THE TEMPORARY 23" X 14" STORM PIPE ON BOTH SIDES OF THE EXISTING 20" HRSD SFM AT STA. 9+74, PRIOR TO PERMANENT ABANDONMENT OF THE STORM PIPE.

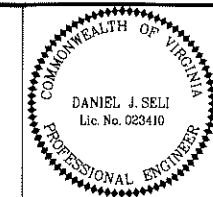


PROJECT MANAGER: Kenny Wyne (757) 494-5479 (Hampton Roads District)
SURVEYED BY, DATE: R. Dean Minix, LS (757) 925-2660 (Hampton Roads District)
DESIGN BY: Whitman Requardt and Associates, LLP (757) 599-5101
SUBSURFACE UTILITY BY, DATE: Howard & Spence, LS (Hampton Roads District)

SEE SHEET 3 FOR UTILITY OWNER INFORMATION

LEGEND

- Denotes Saw Cut
 - △ Sfd. CG-6 Req'd.
 - △ Sfd. CG-11 Req'd.
 - △ Sfd. Road CG-6 Req'd.
 - △ # Conc. Sidewalk Req'd.
 - △ Sfd. CG-2 Req'd.
 - △ Sfd. CG-12 Req'd. (Type A)
 - △ Sfd. Road CG-2 Req'd.
 - △ Sfd. CG-2 Req'd. (Type B)
 - △ Sfd. CG-9D Req'd.
 - △ Sfd. CG-11 Req'd.
 - △ # Conc. Sidewalk Req'd.
 - △ Sfd. CG-12 Req'd. (Type A)
 - △ Sfd. CG-2 Req'd. (Type B)
 - △ Sfd. CG-9D Req'd.
- Denotes Demolition of Pavement
 - Denotes New Pavement
 - Denotes Proposed 1.5' Variable Depth Overlay
- Denotes Construction Limits In Cuts
 - Denotes Construction Limits In Fills

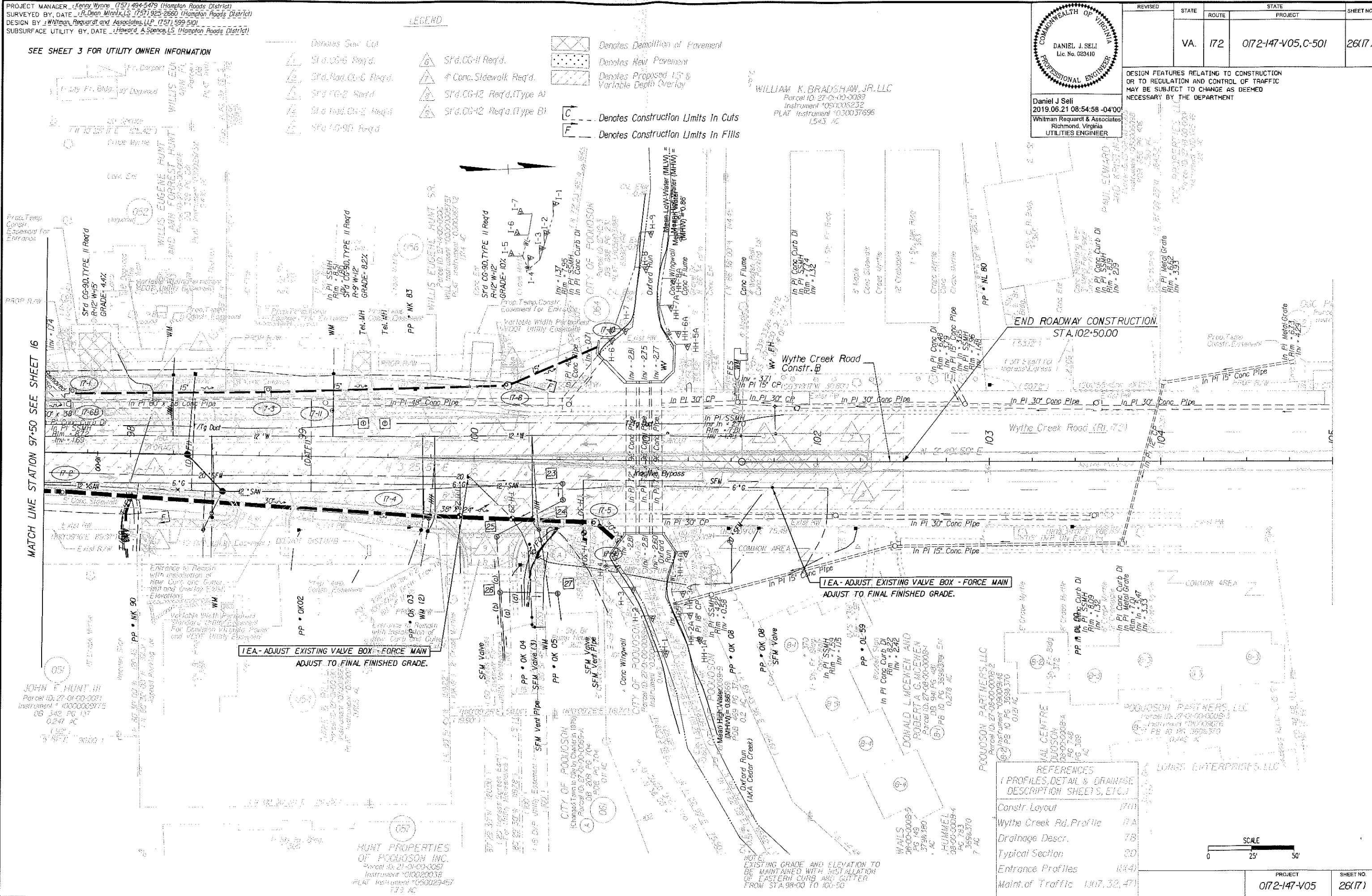


REVISED	STATE	ROUTE	STATE	PROJECT	SHEET NO.
	VA.	172		0172-147-V05,C-501	26(17)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

Daniel J Sell
2019.06.21 08:54:58 -04'00'
Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

WILLIAM K. BRADSHAW, JR., LLC
Parcel ID: 27-01-00-0089
Instrument: 0501005232
PLAT Instrument: 030037696
1543 AC



MATCH LINE STATION 97+50 SEE SHEET 16

END ROADWAY CONSTRUCTION
STA. 102+50.00

JOHN F. HUNT, III
Parcel ID: 27-01-00-0071
Instrument: 0300000775
08-34-2 PG 137
0.247 AC

HUNT PROPERTIES
OF POQUOSON INC.
Parcel ID: 27-01-00-3057
Instrument: 010020038
PLAT Instrument: 030029457
172 AC

CITY OF POQUOSON
(Incorporated by Charter in 1976)
Parcel ID: 27-01-00-0055A
08-20-9 PG 704
0.14 AC

NOTE:
EXISTING GRADE AND ELEVATION TO BE MAINTAINED WITH INSTALLATION OF EASTERN CURB AND GUTTER FROM STA. 98+00 TO 100+50

POQUOSON PARTNERS, LLC
Parcel ID: 27-01-00-0008-2
08-20-9 PG 370
0.121 AC

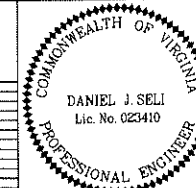
REFERENCES
(PROFILES, DETAIL & DRAINAGE DESCRIPTION SHEETS, ETC.)

Constr. Layout	(17)
Wyllie Creek Rd. Profile	7A
Drainage Descr.	7B
Typical Section	2D
Entrance Profiles	(18-4)
Maint. of Traffic	(107, 32, 47)



PROJECT	SHEET NO.
0172-147-V05	26(17)

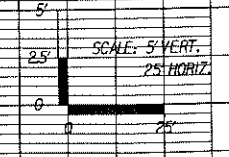
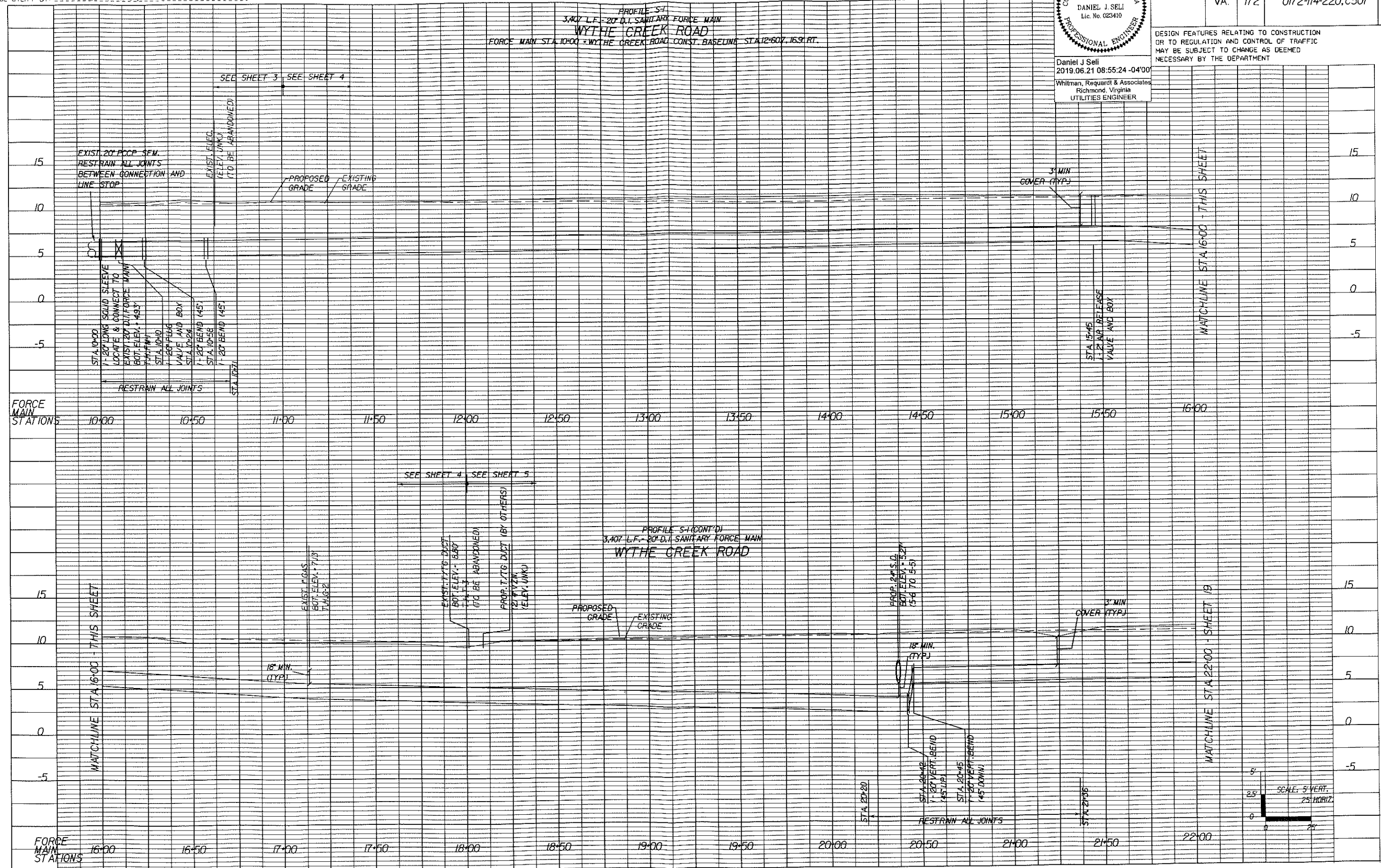
PROJECT MANAGER: *Kenny W. Wynn, P.E.*, (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: *P. Dean, M. Lantz, L.S.*, (757) 925-2660 (Hampton Roads District)
 DESIGN BY: *Whitman, Requardt and Associates, LLP*, (757) 599-5101
 SUBSURFACE UTILITY BY: *Howard, & Spence, L.S.* (Hampton Roads District)



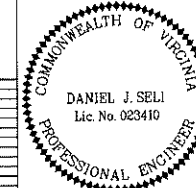
Daniel J Seli
2019.06.21 08:55:24 -04'00'
Whitman, Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C501	26(18)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



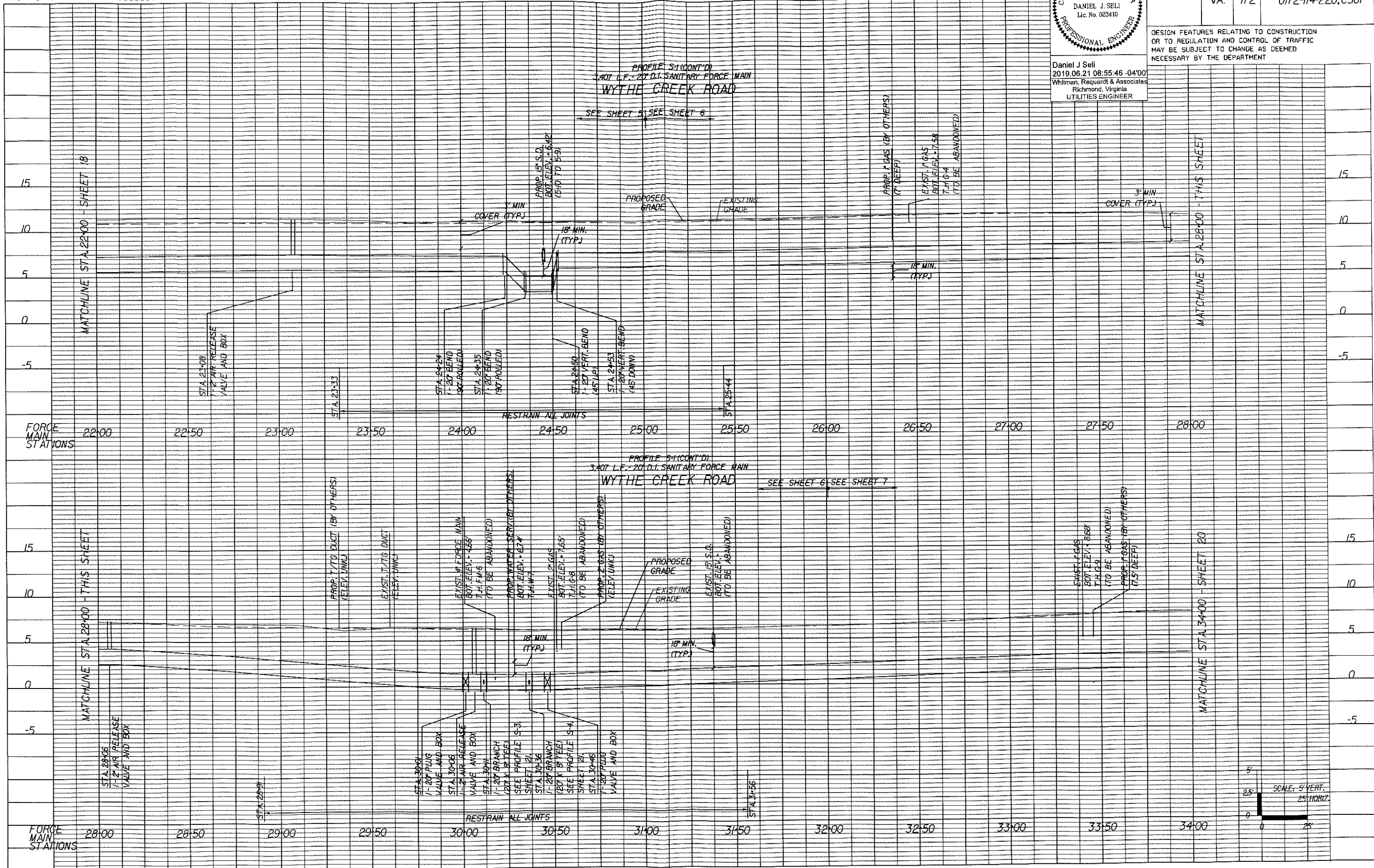
PROJECT MANAGER: Kathy Wythe, P.E., (757) 494-5479 (Hampton Roads District)
 SURVEYED BY: DATE: Ft. Dean, Milton, L.S. (757) 925-2660 (Hampton Roads District)
 DESIGN BY: Whitman, Reardon & Associates, LLP, (757) 599-5101
 SUBSURFACE UTILITY BY: Howard, A. Spence, L.S. (Hampton Roads District)



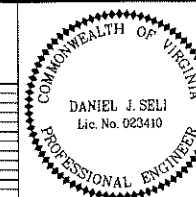
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C501	26(19)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



PROJECT MANAGER: Kenny Wynne, P.E., (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: B. Dean, M. Park, L.S., (757) 925-2660 (Hampton Roads District)
 DESIGN BY: Whitman, Requardt and Associates, LLP, (757) 589-5101
 SUBSURFACE UTILITY BY: Howard A. Science, L.S. (Hampton Roads District)

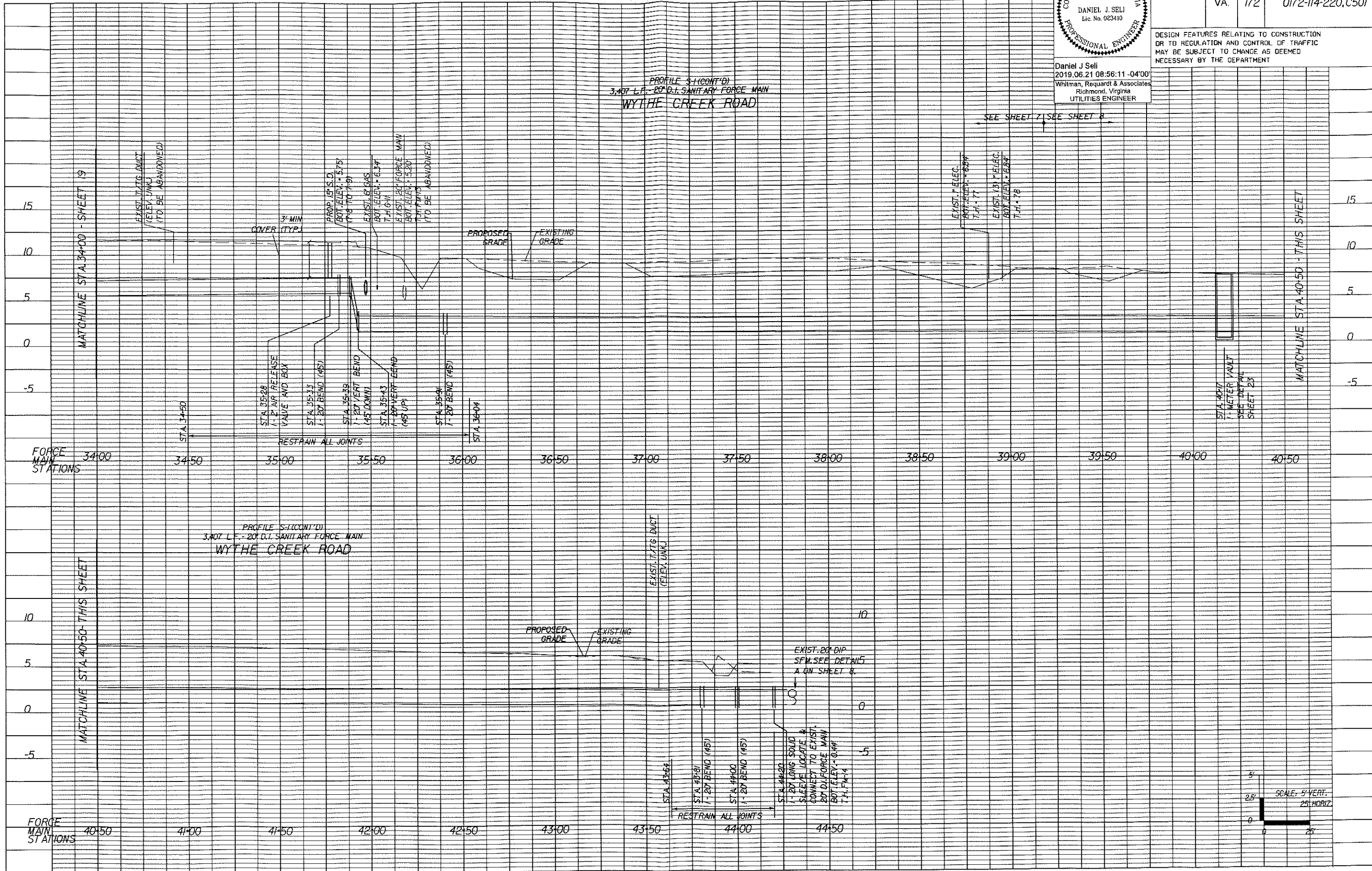


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 Richmond, Virginia
 UTILITIES ENGINEER

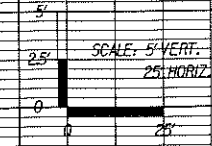
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C501	26(20)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

PROFILE S-1 (CONT'D)
 3,407 L.F. - 20" D.I. SANITARY FORCE MAIN
 WYTHE CREEK ROAD



PROFILE S-1 (CONT'D)
 3,407 L.F. - 20" D.I. SANITARY FORCE MAIN
 WYTHE CREEK ROAD



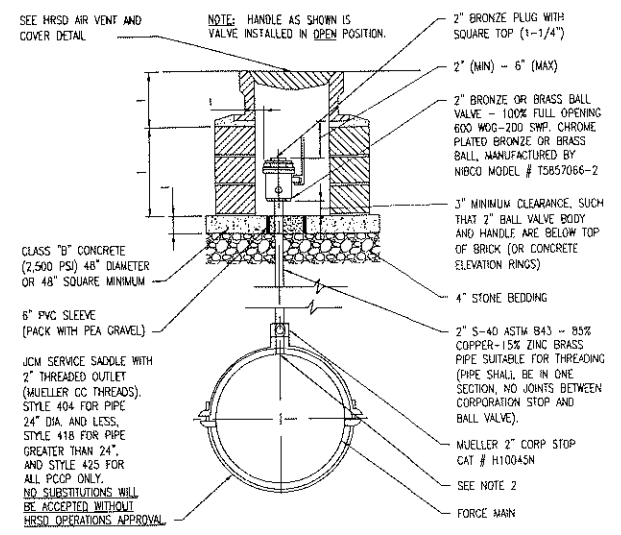
PROJECT MANAGER: Kerry Wynter (757) 494-5479 (Hampton Roads District)
SURVEYED BY: DATE: R. Dean Minola, LS (757) 925-2660 (Hampton Roads District)
DESIGN BY: Whitman Requardt and Associates, LLP (757) 599-5100
SUBSURFACE UTILITY BY: DATE: Howard A. Spence, LS (Hampton Roads District)

COMMONWEALTH OF VIRGINIA
DANIEL J. SEIJ
Lic. No. 023410
PROFESSIONAL ENGINEER

Daniel J. Seij
2019.06.21 08:56:54 -04'00'
Whitman Requardt & Associates
Richmond, Virginia
UTILITIES ENGINEER

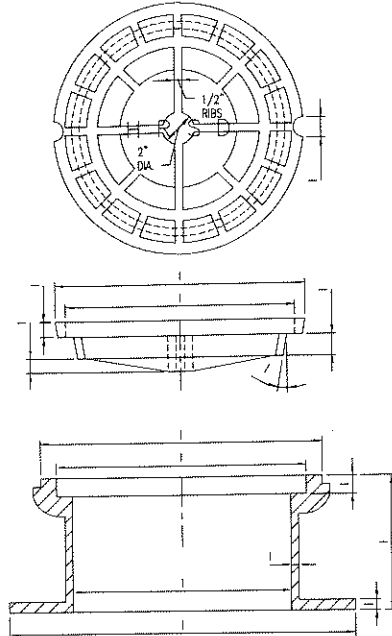
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501 0172-147-V05, C-501	26(22)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



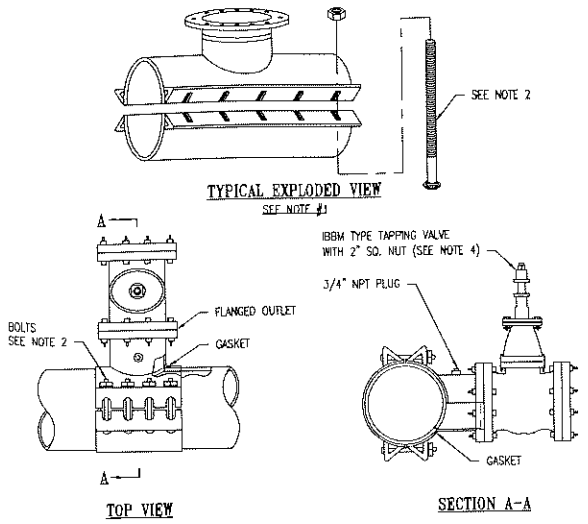
- NOTES:**
- CONSTRUCT AIR VENT USING REQUIRED NUMBER OF COURSES OF HARD SOUND COMMON BRICK Laid ON EDGE OR CONCRETE ELEVATION RINGS AS MANUFACTURED BY NANSERMOND PRE-CAST CONCRETE CO., INC. MODEL AV-ER-CH AND AV-B5.
 - 2" TAP FOR AIR VENT SHALL BE STANDARD SADDLE TAP.
 - SERVICE SADDLE COATING SHALL BE FUSION BONDED EPOXY. SADDLE STRAPS AND HARDWARE SHALL BE STAINLESS STEEL. STAINLESS STEEL SHALL BE MINIMUM 304.
 - JACK UP RINGS BETWEEN THE FRAME AND COVER NOT ACCEPTABLE.
 - PARGE BRICK WORK OR CONCRETE ELEVATION RINGS WITH GROUT INSIDE AND OUT, CONTINUE ONTO CASTING.

STANDARD DESIGN DETAIL - AIR VENT
NOT TO SCALE



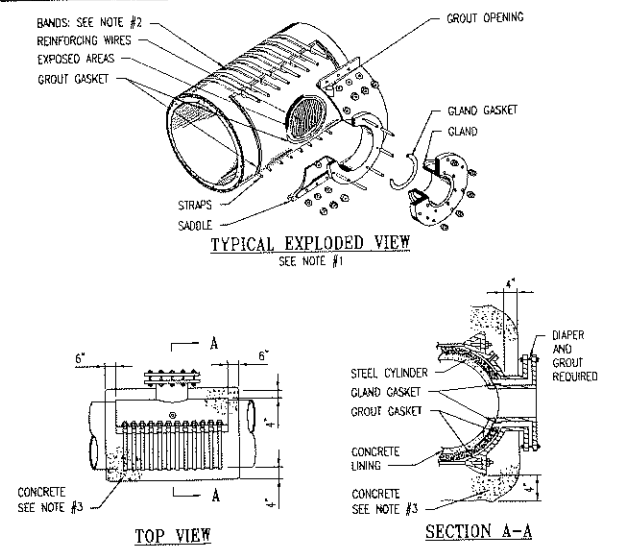
- NOTES:**
- MACHINE ALL SEATING SURFACES ON BOTH COVER AND FRAME.
 - TOLERANCE TO BE ± 0.125 " FOR ALL DIMENSIONS.
 - CASTING TO BE SHOT BLASTED.
 - CASTING TO BE ASTM A-48 CLASS 30.
 - MINIMUM WEIGHTS:
FRAME - 114 LBS.
COVER - 50 LBS.
 - JACK UP RINGS NOT ACCEPTABLE.

STANDARD DESIGN DETAIL - AIR VENT FRAME & COVER
NOT TO SCALE



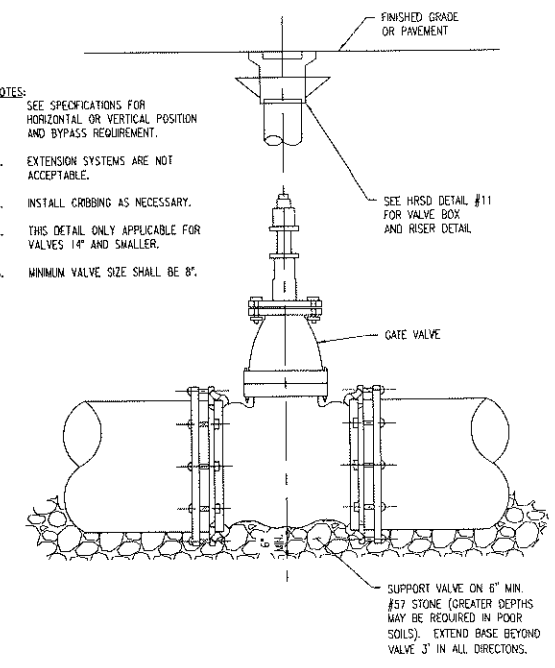
- NOTES:**
- FULL BACK SADDLES ONLY, EXCEPT IN ACCORDANCE WITH PIPE MANUFACTURER'S RECOMMENDATIONS FOR SP-5 AND SP-12 (SEE H.R.S.D. STANDARD DESIGN DETAIL 13 - TAPPING SADDLE FOR CONCRETE CYLINDER PIPE).
 - THE NUMBER, SPACING, SIZE AND INSTALLATION OF BOLTS SHALL BE IN ACCORDANCE WITH SADDLE MANUFACTURER'S RECOMMENDATIONS.
 - CONTRACTOR SHALL SUPPLY TO H.R.S.D. SYSTEMS ENGINEER THREE (3) CLEAR COPIES OF TAPPING SADDLE MANUFACTURER'S CATALOG CUT AND INSTALLATION INSTRUCTIONS 14 DAYS PRIOR TO INSTALLATION OF SADDLE.
 - TAPPING VALVE TO MEET ANSI/AWWA STANDARDS C500 AND C509.
 - ALL BOLTS, NUTS AND WASHER SHALL BE STAINLESS STEEL.
 - SADDLE COATING SHALL BE FUSION BONDED EPOXY.
 - TAPPING SADDLE MANUFACTURER SHALL BE SMITH-BLAIR STYLE 622 OR H.R.S.D. APPROVED EQUAL.

STANDARD DESIGN DETAIL - TAPPING SADDLE FOR CAST IRON PIPE, DUCTILE IRON, RC, & PVC PIPE
NOT TO SCALE

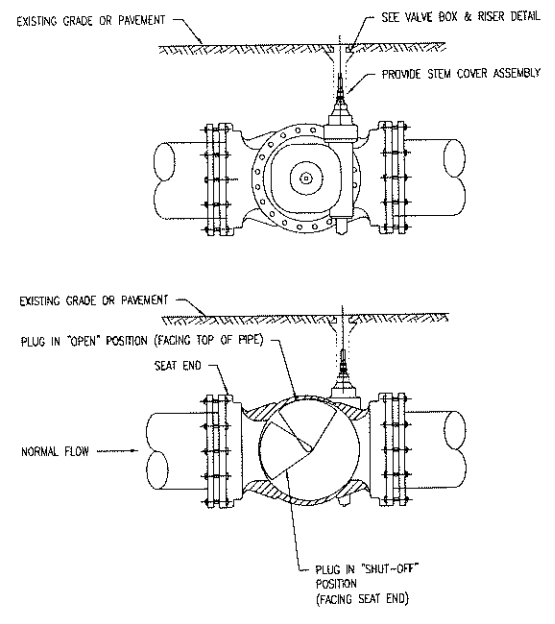


- NOTES:**
- BANDED TAPPING SADDLES ONLY ACCEPTED ON SP-5 AND SP-12 PIPE PER PIPE MANUFACTURER'S RECOMMENDATIONS. (SEE STANDARD DESIGN DETAIL #12 - STANDARD TAPPING SADDLE FOR ALL OTHER TYPES OF PIPE.)
 - THE NUMBER, SPACING, SIZE AND INSTALLATION OF BANDS SHALL BE IN ACCORDANCE WITH SADDLE MANUFACTURER'S RECOMMENDATIONS.
 - ALL TAPPING SADDLES SHALL RECEIVE 4" 3000 P.S.I. CONCRETE COVER WITH 6"x6" GAUGE WELDED WIRE REINFORCEMENT.
 - CONTRACTOR SHALL SUPPLY TO HAMPTON ROADS SANITATION DISTRICT SYSTEMS ENGINEER THREE (3) CLEAR COPIES OF TAPPING SADDLE MANUFACTURER'S CATALOG CUT AND INSTALLATION INSTRUCTIONS 14 DAYS PRIOR TO INSTALLATION OF SADDLE.
 - TAPPING SADDLE MANUFACTURER SHALL BE SMITH-BLAIR STYLE 625 OR JCM STYLE 415.

STANDARD DESIGN DETAIL - TAPPING SADDLE FOR CONCRETE CYLINDER PIPE
NOT TO SCALE

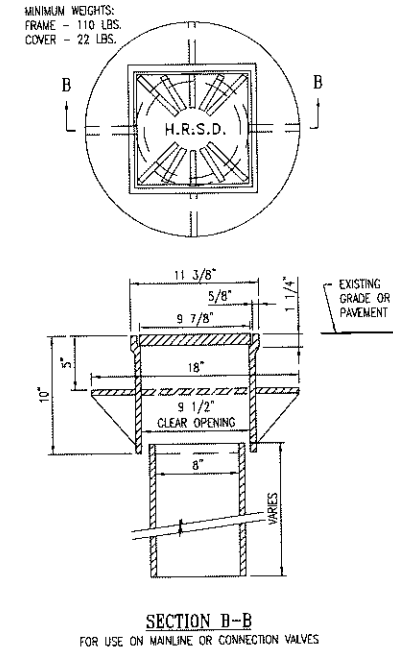


STANDARD DESIGN DETAIL - VERTICAL GATE VALVE
NOT TO SCALE



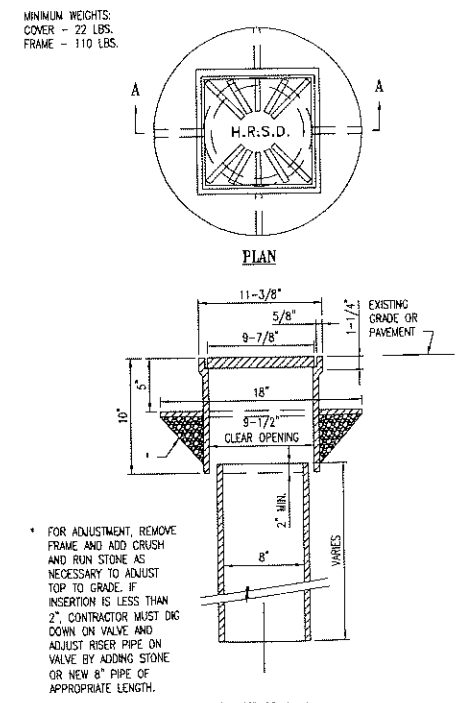
- NOTES:**
- EXTENSION STEMS ARE NOT ACCEPTABLE.
 - PLUG VALVE SHALL BE INSTALLED AS SHOWN WITH RESPECT TO THE DIRECTION OF NORMAL FLOW AS DEPICTED ON THE DRAWINGS.
 - CONTRACTOR SHALL PROVIDE 12-INCHES OF NO. 57 STONE UNDERCUT EXCAVATION WRAPPED WITH GEOTEXTILE FABRIC BENEATH THE VALVE AT NO ADDITIONAL COST TO THE PROJECT.

STANDARD DESIGN DETAIL - ECCENTRIC PLUG VALVE
NOT TO SCALE



- NOTES:**
- RISER TO BE 8" C900 PVC OR 8" SCH. 80 PVC (ONE PIECE).
 - TOLERANCE TO BE ± 0.125 " FOR ALL DIMENSIONS.
 - CASTING TO BE SHOT BLASTED.
 - CASTING TO BE ASTM A-48 CLASS 30.
 - JACK UP RINGS ARE NOT ACCEPTABLE.

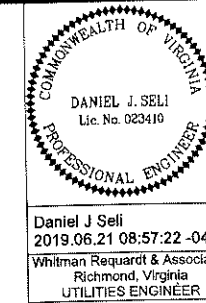
STANDARD DESIGN DETAIL - VALVE BOX & RISER
NOT TO SCALE



- NOTES:**
- FOR ADJUSTMENT, REMOVE FRAME AND ADD CRUSH AND RUN STONE AS NECESSARY TO ADJUST TOP TO GRADE. IF INSERTION IS LESS THAN 2", CONTRACTOR MUST DIG DOWN ON VALVE AND ADJUST RISER PIPE ON VALVE BY ADDING STONE OR NEW 8" PIPE OF APPROPRIATE LENGTH.

STANDARD DESIGN DETAIL - VALVE RISER ADJUSTMENT
NOT TO SCALE

PROJECT MANAGER: *Kenny Wyne* (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: *R. Dean Miranix, LS* (757) 925-2660 (Hampton Roads District)
 DESIGN BY: *Whitman, Requaardt and Associates, LLP* (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: *Howard A. Science, LS* (Hampton Roads District)



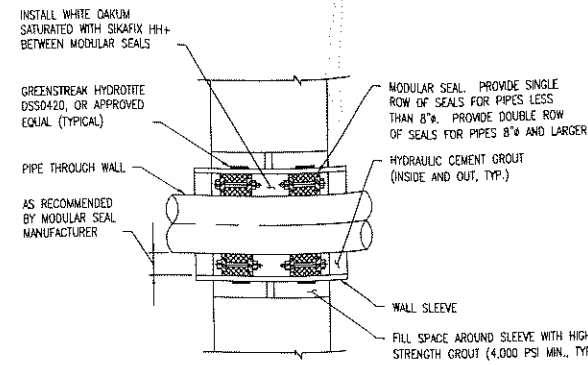
REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501 0172-147-V05, C-501	26(23)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

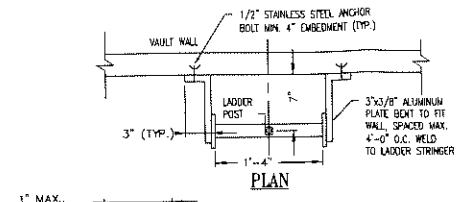
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MANUFACTURER	FILLER/SURFACER	PRIMER COAT	FINISH COAT
CARBOLINE	CARBOLGUARD 501	CARBOLGUARD 60	CARBOLGUARD 890
ICI PAINTS DEVICE HIGH PERFORMANCE COATINGS	TRU-GLAZE WB 4015	DEVVAN 223/224HS	DEVVAN 223/224HS OR 774 GLOSS
PPG	AQUAPON 97-885	PIT-GUARD 97-145	PIT-GUARD 97-145
THEMEC	SERIES 130	SERIES N69	SERIES N69
SHERWIN WILLIAMS	KEM CAT-COAT HS B42W400/V401	MACROPOXY 646 B67-600 SERIES	MACROPOXY 648 B67-600 SERIES
SAUERREISEN	EPOXY FILLER NO. 209	CONOWELD NO. 501	CONOGLAZE NO. 201

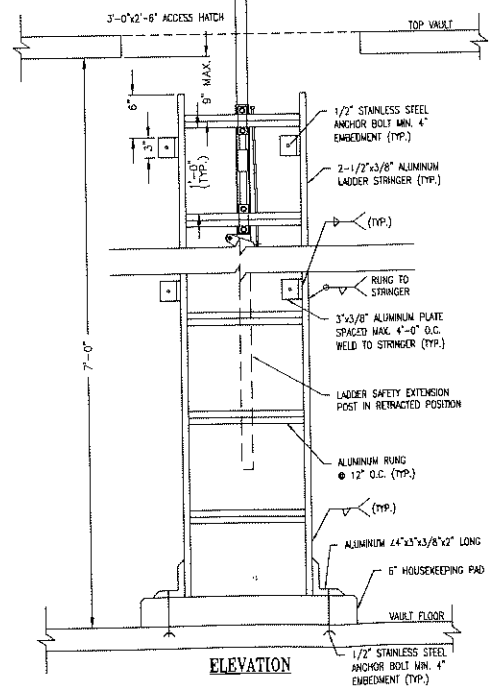
EXTERIOR OF VAULT TO BE COATED. ALL COATINGS TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.



E PIPE SLEEVE MODULAR SEAL
 NOT TO SCALE

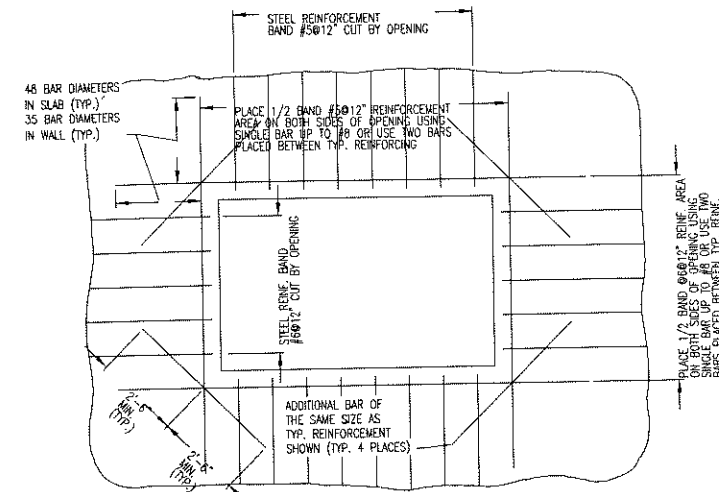


ALUMINUM RUNG DETAIL

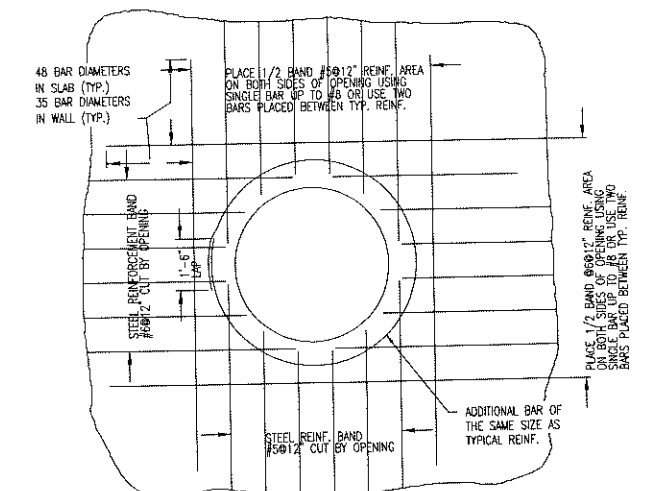


B VAULT LADDER DETAILS
 NOT TO SCALE

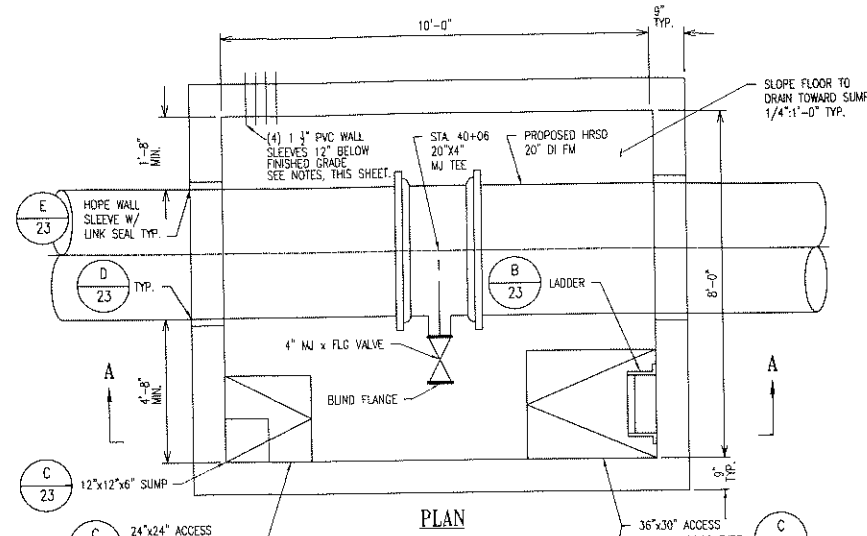
- NOTES:
1. RING SHALL BE SOLID.
 2. WHERE ALUMINUM CONTACTS CONCRETE, COAT ALUMINUM WITH AN EPOXY COATING SYSTEM.
 3. ACCESS OPENING SHALL BE 3'-0\"/>



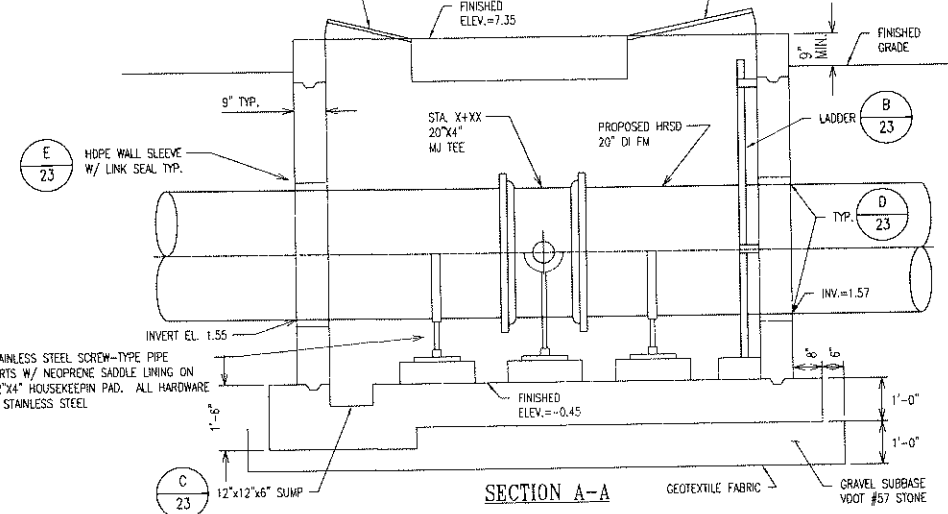
C TYPICAL ADDITIONAL REINFORCEMENT AT RECTANGULAR OPENINGS
 NOT TO SCALE



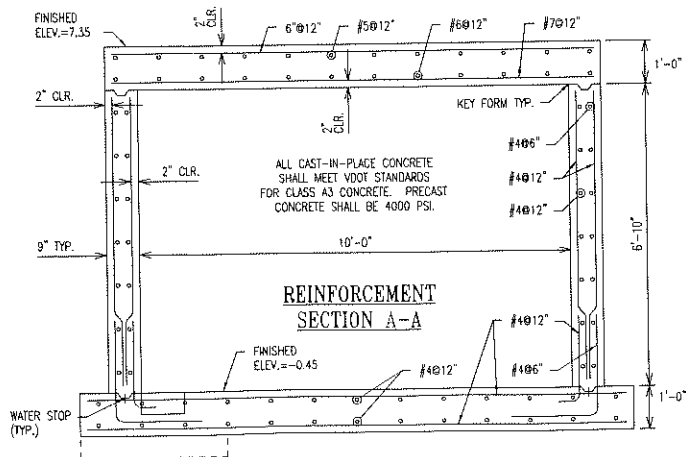
D TYPICAL ADDITIONAL REINFORCEMENT AT CIRCULAR OPENINGS
 NOT TO SCALE



PLAN



SECTION A-A



REINFORCEMENT SECTION A-A

A METER VAULT
 NOT TO SCALE

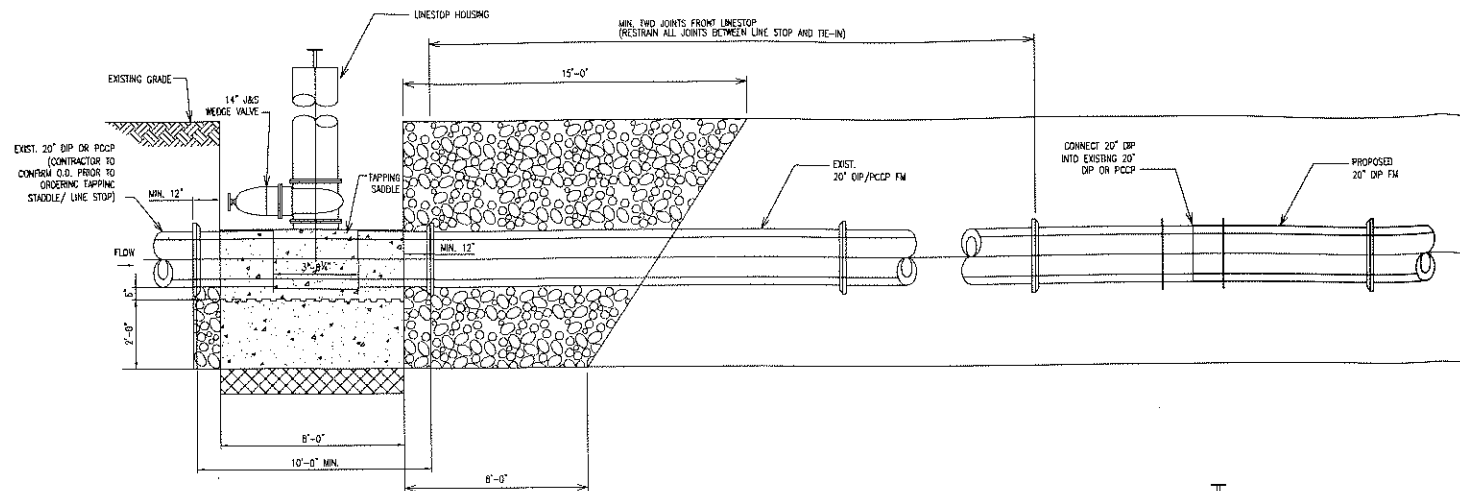
- WALL SLEEVE NOTES:
1. SUMP PUMP CIRCUIT
 2. 12VDC RECEPTACLE CIRCUIT
 3. 12VDC LIGHT SUITABLE FOR A CONFINED SPACE
 4. SPARE

PROJECT MANAGER: Kenny Wynne (757) 494-5479 (Hampton Roads District)
 SURVEYED BY, DATE: R. Dean Minix, LS (757) 925-2660 (Hampton Roads District)
 DESIGN BY: Whitman Requardt and Associates, L.P. (757) 599-5101
 SUBSURFACE UTILITY BY, DATE: Howard A. Spence, LS (Hampton Roads District)

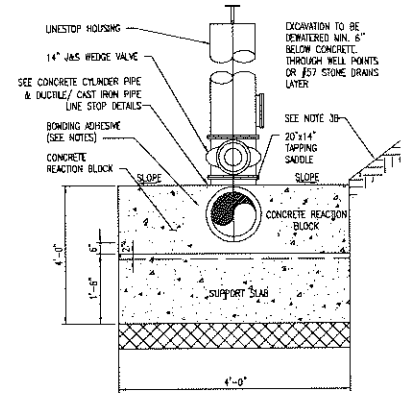
Daniel J Seli
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 UTILITIES ENGINEER

REVISED	STATE	ROUTE	PROJECT	SHEET NO.
	VA.	172	0172-114-220, C-501 0172-147-V05, C-501	26(24)

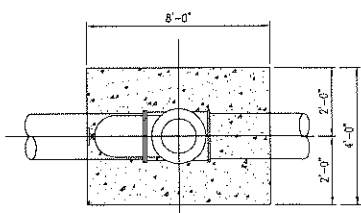
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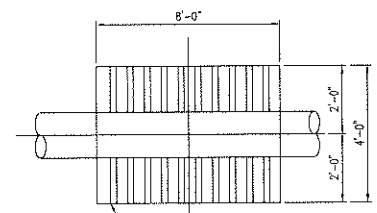
LINESTOP PROFILE



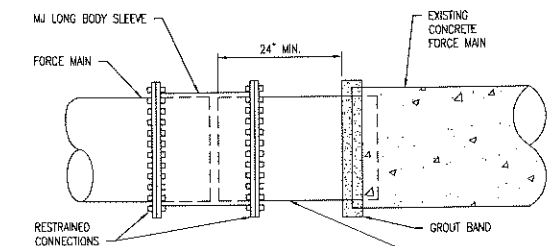
LINESTOP HOUSING SIDE VIEW



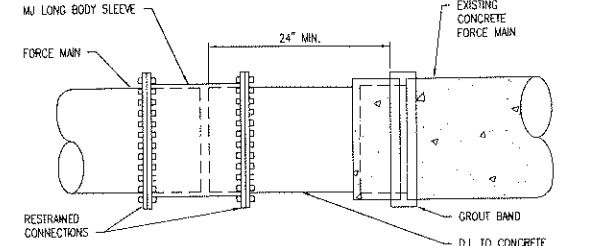
LINESTOP ASSEMBLY - TOP VIEW



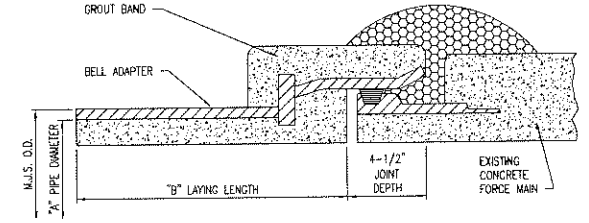
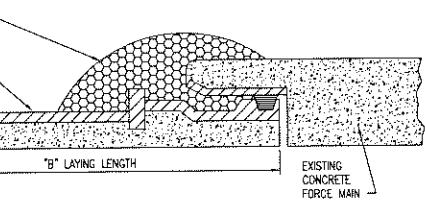
TOP VIEW OF SUPPORT BASE



STANDARD DESIGN DETAIL - D.I. M.J. SPIGOT TO CONCRETE TRANSITION ADAPTER (MALE)
NOT TO SCALE

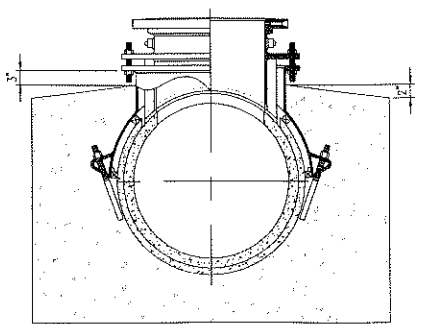


STANDARD DESIGN DETAIL - D.I. M.J. SPIGOT TO CONCRETE TRANSITION ADAPTER (FEMALE)
NOT TO SCALE

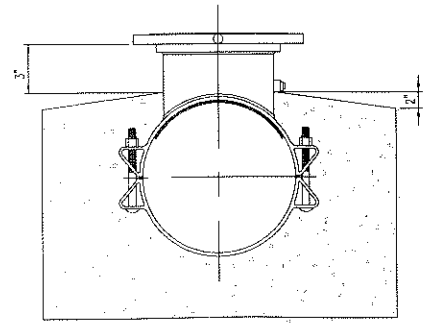


- NOTES:**
- CONTRACTOR SHALL USE A LINESTOP WITH A TAPPING SADDLE AND A 1" TAPPING PORT. CONTRACTOR SHALL VERIFY OUTSIDE DIAMETER OF EXISTING PCCP/ DIP HOST PIPE PRIOR TO ORDERING SADDLE.
 - EXCAVATE TO THE FULL WIDTH & DEPTH REQUIRED FOR THE CONCRETE SUPPORT SLAB.
 - EXCAVATION SUBGRADE SHALL BE PREPARED BY LOCATING SOFT AND LOOSE AREAS, REPLACED USING SUITABLE MATERIAL, AND DENSIFIED AND COMPACTED THOROUGHLY WITH MECHANICAL TAMPERS.
 - PROVIDE TEMPORARY SUPPORT OF EXISTING PIPE OUTSIDE OF THE CONCRETE SUPPORT SLAB AND REACTION BLOCK FORMWORK. NO OTHER EXCAVATIONS ARE PERMITTED WITHIN 15 FEET OF THE BLOCK FORMWORK UNTIL COMPLETION OF THE CONCRETE WORK.
 - INSTALL 6" OF WELL COMPACTED VDOT #51 STONE BEHIND THE SUPPORT SLAB AS SHOWN IN THE DETAIL. PROVIDE GEOTEXTILE FABRIC AS MAY BE DIRECTED BY THE ENGINEER.
 - USE SLOOP #10 HIGH EARLY STRENGTH CONCRETE FOR BOTH SUPPORT SLAB AND REACTION BLOCK.
 - INSTALL SUPPORT SLAB ALLOW A MINIMUM OF 3 DAYS BEFORE INSTALLING/POURING THE REACTION BLOCK.
 - EXCEPT AT TAPPING SADDLE LOCATIONS, THOROUGHLY CLEAN AND PREPARE THE ENTIRE SURFACE OF THE EXISTING 20" PIPE TO PROVIDE A PROPER BOND OF ROLLER APPLIED ADHESIVE. PROVIDE SRA SKASAB 32 H-HIGH ADHESIVE PER MANUFACTURER'S SPECIFICATIONS AND APPLICATION PROCEDURES.
 - APPLICATION OF THE ADHESIVE SHALL BE IN COMPLIANCE WITH MANUFACTURER'S APPLICATION PROCEDURES FOR INSTALLATION OF ADHESIVE BETWEEN "HARD" CONCRETE TO "HET".
 - ALLOW A MINIMUM OF 3 DAYS FOR CONCRETE TO HARDEN PRIOR TO CONSTRUCTION OF THE CONTROLLED BACKFILL FOR PASSIVE RESISTANCE, AND PRIOR TO INSTALLATION OF LINESTOP EQUIPMENT AND INSTALLATION OF LINE STOP.
 - ON THE THRUST SIDE OF THE BLOCK, CONSTRUCT CONTROLLED BACKFILL, AS SHOWN IN THE DETAILS. EXCAVATE FOR THE FULL WIDTH OF THE BLOCK, AND FOR A DISTANCE OF 8 FEET FROM THE FACE OF BLOCK AT BOTTOM-OF-BLOCK SUBGRADE ELEVATION, THEN SLOPE UPWARD TO A DISTANCE OF 15 FEET FROM THE BLOCK AT THE GROUND SURFACE. TRENCH SIDES OF THE CONTROLLED BACKFILL MAY BE SLOPED OR SUPPORTED.
 - ON THE NON-THRUST SIDE OF THE BLOCK, TRENCH SIDES ARE TO BE VERTICAL.
 - AS BEFORE, EXCAVATION SUBGRADE SHALL BE PREPARED BY LOCATING SOFT AND LOOSE AREAS, REPLACED USING SUITABLE MATERIAL, AND DENSIFIED AND COMPACTED THOROUGHLY WITH MECHANICAL TAMPERS.
 - BACKFILL MATERIAL SHALL BE DENSE GRADED AGGREGATE MEETING THE REQUIREMENTS OF VDOT NO 21A (CRUSHED AGGREGATE) AS DEFINED IN VIRGINIA DEPARTMENT OF TRANSPORTATION, ROAD AND BRIDGE SPECIFICATIONS, DATE 2016, AND ROAD AND BRIDGE STANDARDS, DATED 2016, WITH LATEST INCORPORATED REVISIONS.
 - BACKFILL UP TO SURFACE SUBGRADE, COMPACT IN 6-INCH LIFTS TO 95% OF MAXIMUM DRY DENSITY AND MOISTURE CONTENT WITHIN 3% OF OPTIMUM, ACCORDING TO AASHTO T29.

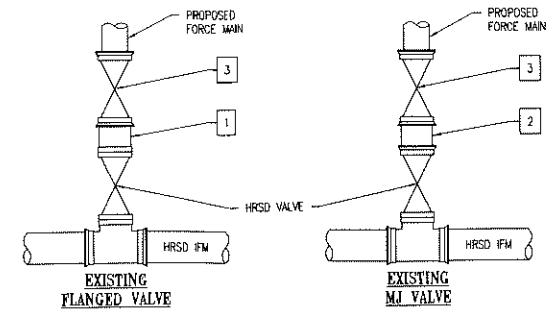
LINESTOP ON 20" FORCE MAIN
NOT TO SCALE



CONCRETE CYLINDER PIPE LINE STOP DETAIL
NOT TO SCALE



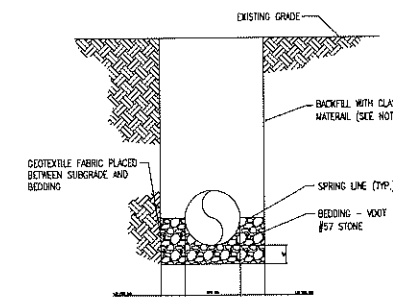
DUCTILE/CAST IRON PIPE LINE STOP DETAIL
NOT TO SCALE



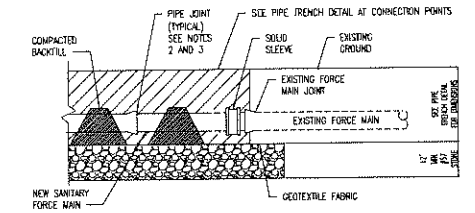
CONNECTION TO EXISTING HRSD VALVE
NO POTENTIAL FOR ADDITIONAL DEVELOPMENT

- NOTES:**
- FL X PE NIPPLE WITH MEGA-LUG.
 - PE X PE NIPPLES WITH MEGA-LUGS. THE USE OF FOSTER ADAPTERS WILL BE CONSIDERED ON A CASE-BY-CASE BASIS BY HRSD.
 - JURISDICTION VALVE
 - A. JURISDICTION VALVE TO BE SAME SIZE AS EXISTING HRSD VALVE.
 - B. ECCENTRIC REDUCERS TO BE INSTALLED AS NEEDED AFTER JURISDICTION VALVE.
 - C. HRSD PIPELINES THAT HAVE CORROSION PROTECTION IN PLACE WILL REQUIRE AN ISOLATION COUPLING. CONTACT THE HRSD ENGINEER FOR DETAILS.

STANDARD DESIGN DETAIL - CONNECTION TO EXISTING HRSD VALVE
NOT TO SCALE



PIPE TRENCH DETAIL
NOT TO SCALE



CONNECTION BACKFILL PRIOR TO SYSTEM STARTUP OF FORCE MAIN
NOT TO SCALE

- NOTES:**
- BACKFILL AND COMPACT AROUND ALL NEW FORCE MAIN BETWEEN JOINTS AS PER DETAIL.
 - ALL JOINTS NOT PREVIOUSLY TESTED WILL BE VISUALLY INSPECTED AND MUST BE LEFT EXPOSED UNTIL FINAL APPROVAL IS GIVEN BY THE ENGINEER FOLLOWING PRESSURE BEING RESTORED TO THE PIPE.
 - PROVIDE SUFFICIENT ROOM FOR INSPECTION OF JOINT (6" MINIMUM BELOW JOINT) PRIOR TO FINAL BACKFILL.
 - CONTRACTOR IS RESPONSIBLE FOR PROVIDING ADEQUATE SUPPORT AND RESTRAINT FOR EXPOSED PIPING PRIOR TO AND DURING STARTUP, TESTING AND FINAL BACKFILL.

- NOTES:**
- CONCRETE BLOCK, FOOTER, AND CONCRETE RELATED ITEMS SHALL BE DESIGNED BY ENGINEER.
 - THIS DETAIL IS TO PROVIDE THE CONTRACTOR THE PROPER DIMENSIONS FOR CONSTRUCTING THE TOP OF THE CONCRETE BLOCK.
 - CONTRACTOR SHALL NOT ENCASE FLANGE BOLTS IN CONCRETE.

- NOTES:**
- CONCRETE BLOCK, FOOTER, AND CONCRETE RELATED ITEMS SHALL BE DESIGNED BY ENGINEER.
 - THIS DETAIL IS TO PROVIDE THE CONTRACTOR THE PROPER DIMENSIONS FOR CONSTRUCTING THE TOP OF THE CONCRETE BLOCK.
 - CONTRACTOR SHALL NOT ENCASE FLANGE BOLTS IN CONCRETE.

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #5

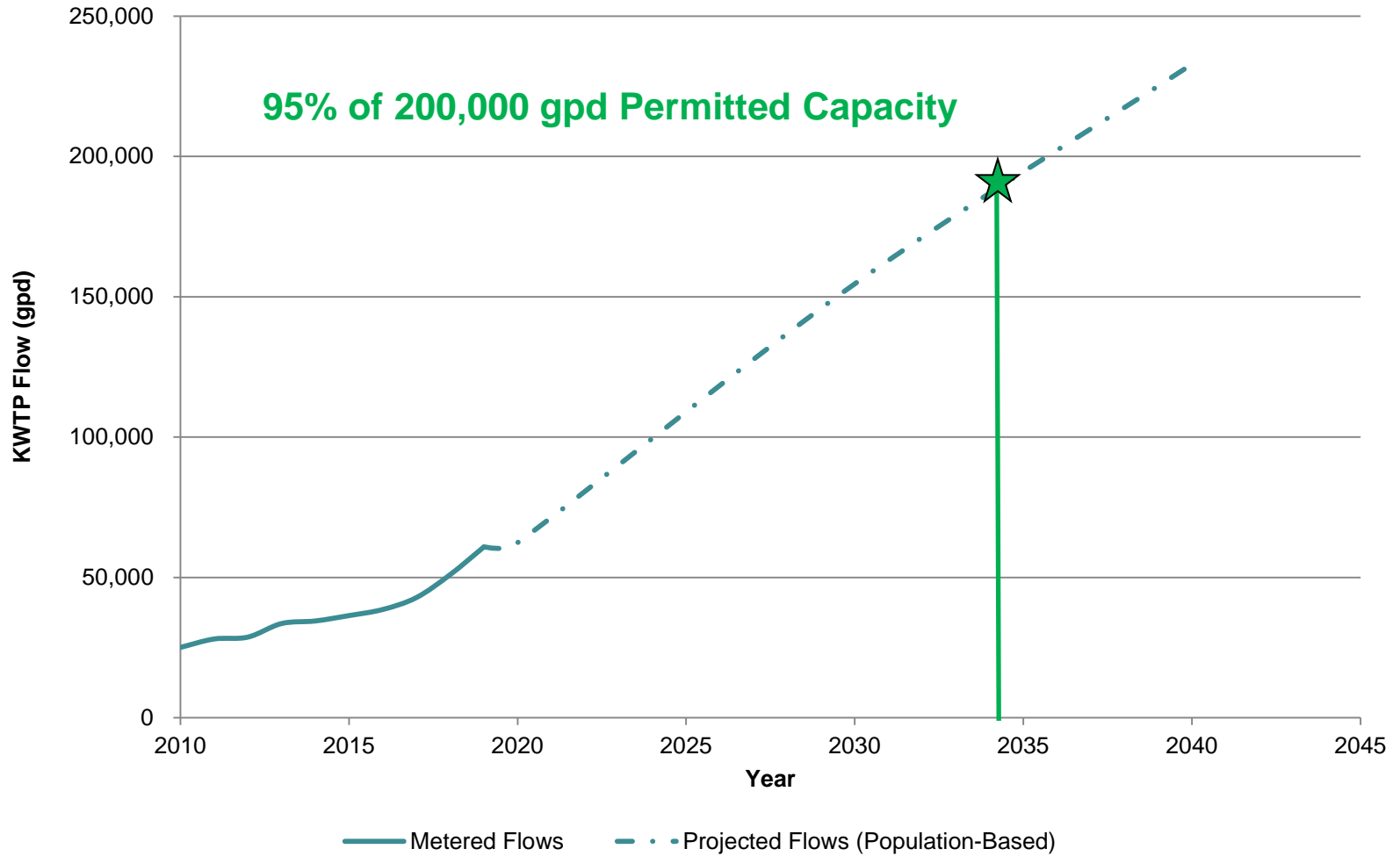
AGENDA ITEM 6. – KING WILLIAM TRANSMISSION FORCE MAIN PHASE I STUDY
PRESENTATION



King William Transmission Force
Main Phase I Study
(MP014000)

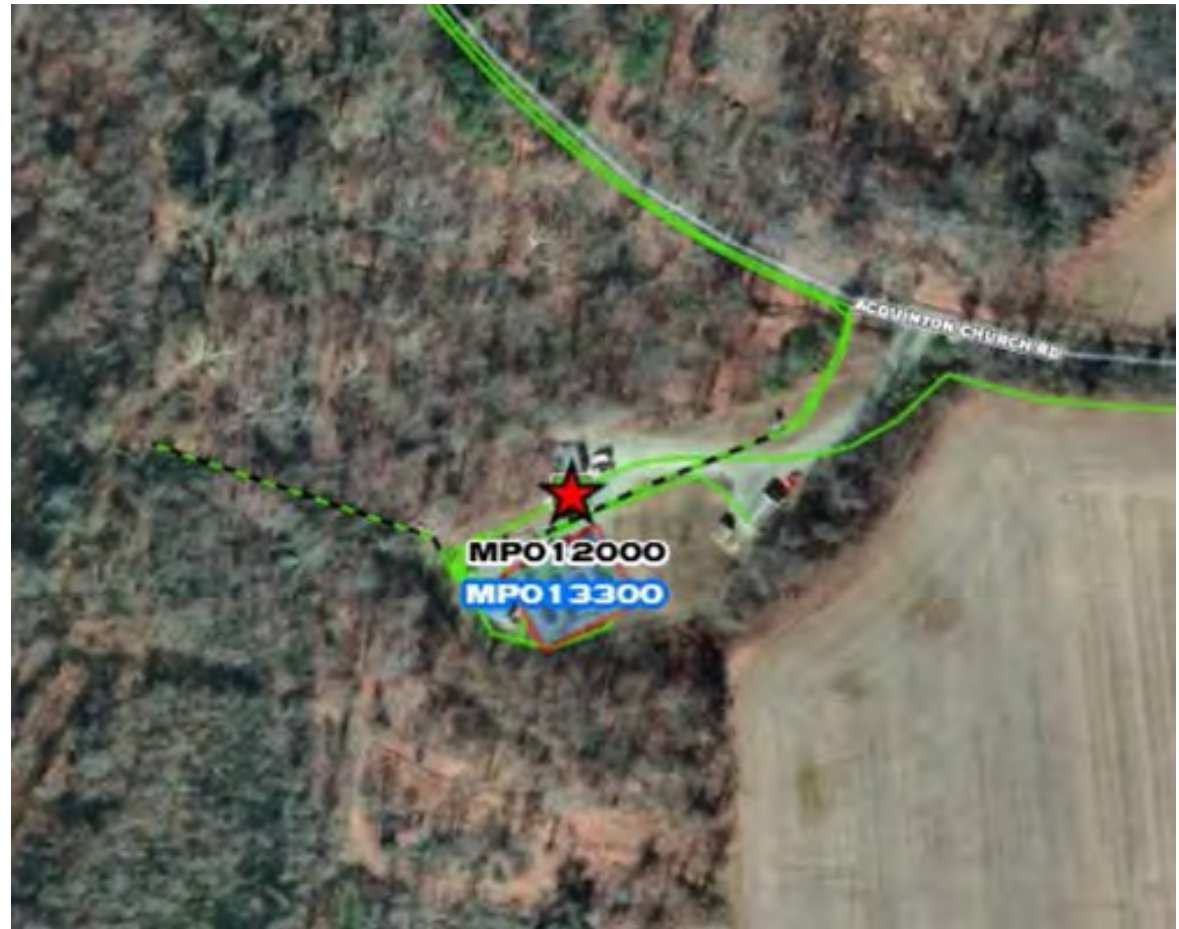
September 30, 2019

King William (KW) County Flow Projections



King William Treatment Plant (KWTP) Expansion (CIP MP013300)

- Increase capacity from 100,000 gpd to 200,000 gpd
- Provisions to facilitate expansion to 300,000 gpd
- Planned to start January 2020

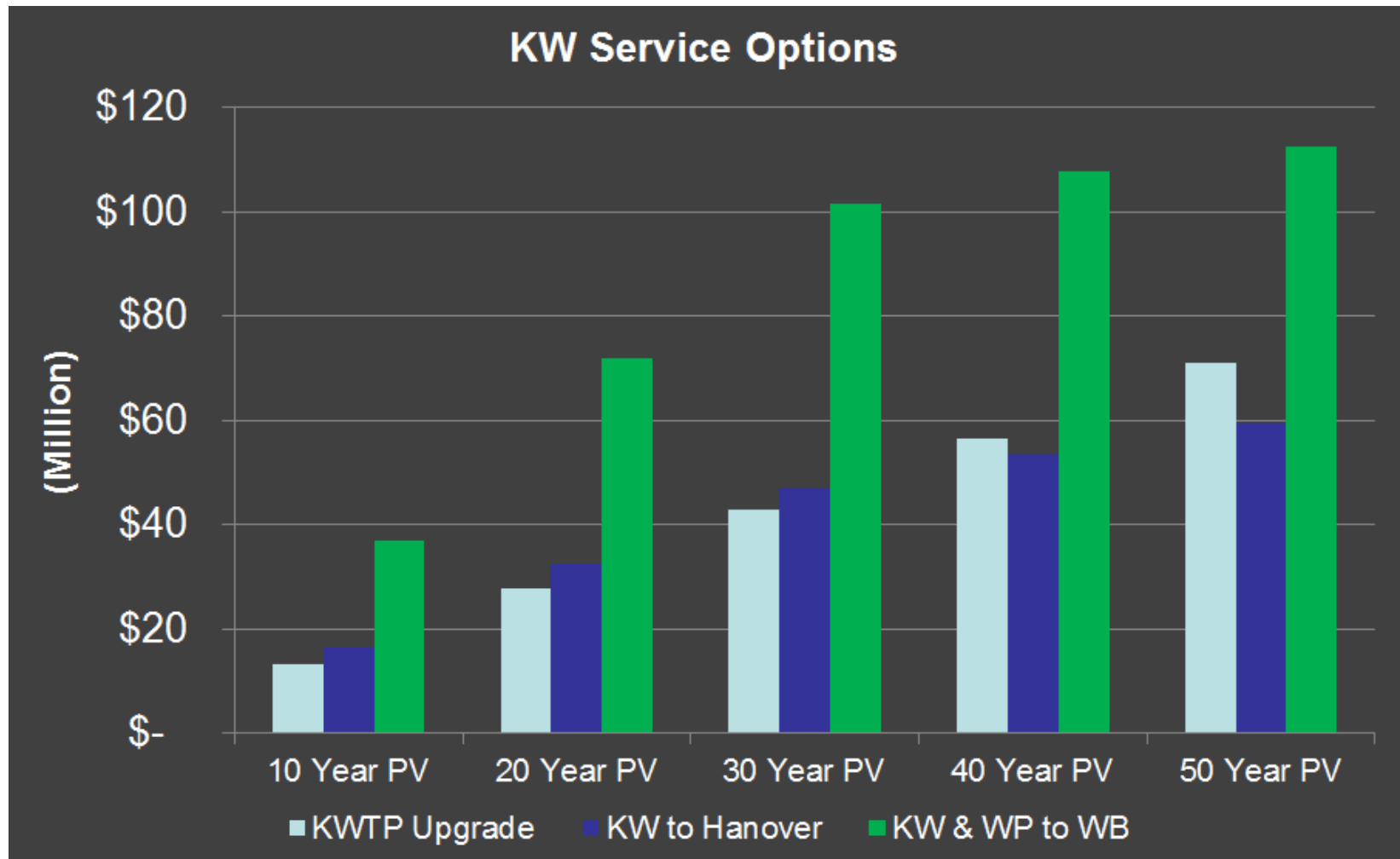


- Option #1 – KWTP Upgrade (CIP MP013300)
 - Upgrade plant capacity to 200,000 gpd
 - Provisions to expand to 300,000 gpd
- Option #2 – KWTP Diversion to Hanover County TP
 - Construct/Operate a 13-mile Transmission Force Main from King William County to Hanover County
 - Abandon the existing KWTP
- Option #3 – KWTP & West Point Treatment Plant (WPTP) Diversion to Williamsburg Treatment Plant (WBTP)
 - Construct/Operate a 38-mile Transmission Force Main from King William County to the North Shore Interceptor System
 - Abandon both the existing KWTP and WPTP

Financial Assumptions

- General:
 - 2% Discount Rate
- Hanover:
 - Capacity Fee: \$889,784 per 100,000 gpd
 - Treatment Rate: \$1.59 per 1,000 gpd
 - Annual Rate Increase of 2.5%
- HRSD:
 - Annual Expense Inflation: 3%
 - \$1,000,000 plant investment every 10 years
(for KWTP Upgrade Option Only)

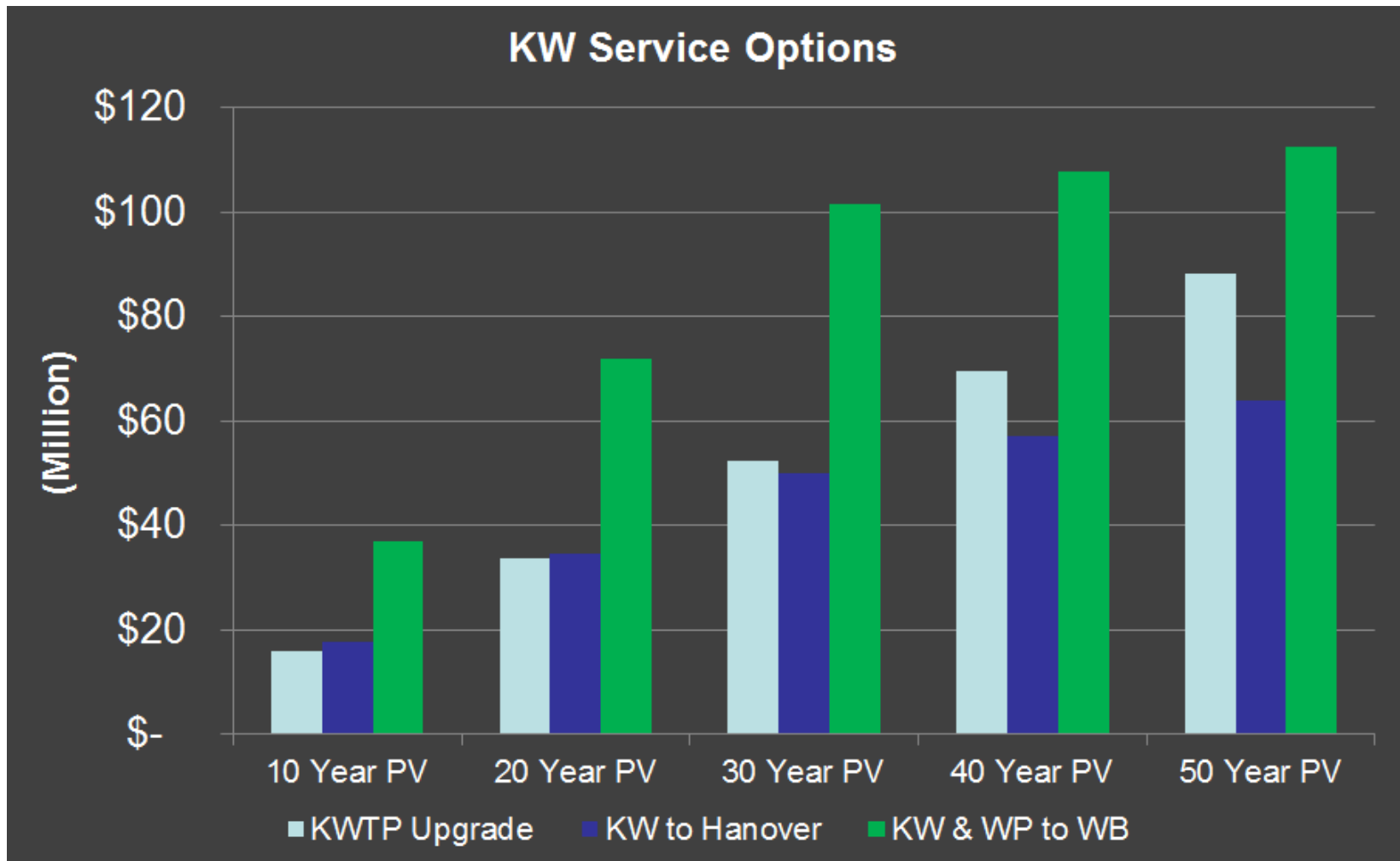
Present Value (PV) Analysis for 200,000 gpd Capacity



KW Service Options – 200,000 gpd

	Total Capital (\$M)	Net Annual O&M (\$k)
Option 1 (KWTP Upgrade)	8.4	894
Option 2 (KW to Hanover)	27.8	396
Option 3 (KW & WPTP to WBTP)	76.4	281

PV Analysis for 300,000 gpd Capacity

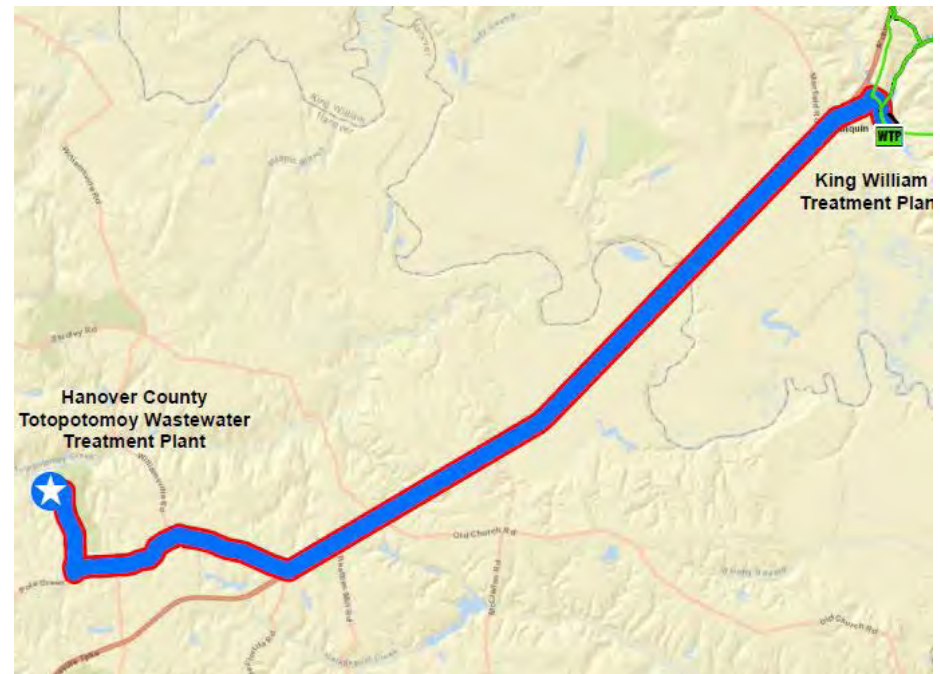


KW Service Options – 300,000 gpd

	Total Capital (\$M)	Net Annual O&M (\$k)
Option 1 (KWTP Upgrade)	8.4	1,162
Option 2 (KW to Hanover)	28.7	455
Option 3 (KW & WPTP to WBTP)	76.4	281

King William Transmission Force Main Phase I Study (New CIP MP014000)

- Alignment Study of a 13 mile force main
 - Force main alignment
 - Identify easement needs
 - Identify impacts on public right-of-ways and the travelling public
 - Identify impacts to private properties in Hanover
 - Identify historical resources and/or environmentally sensitive areas
 - Refine cost estimate
- Force main system to convey wastewater from King William County to Hanover County's Totopotomoy WWTP
- Project would include pump station upgrades, two new force main interim booster stations and the force main



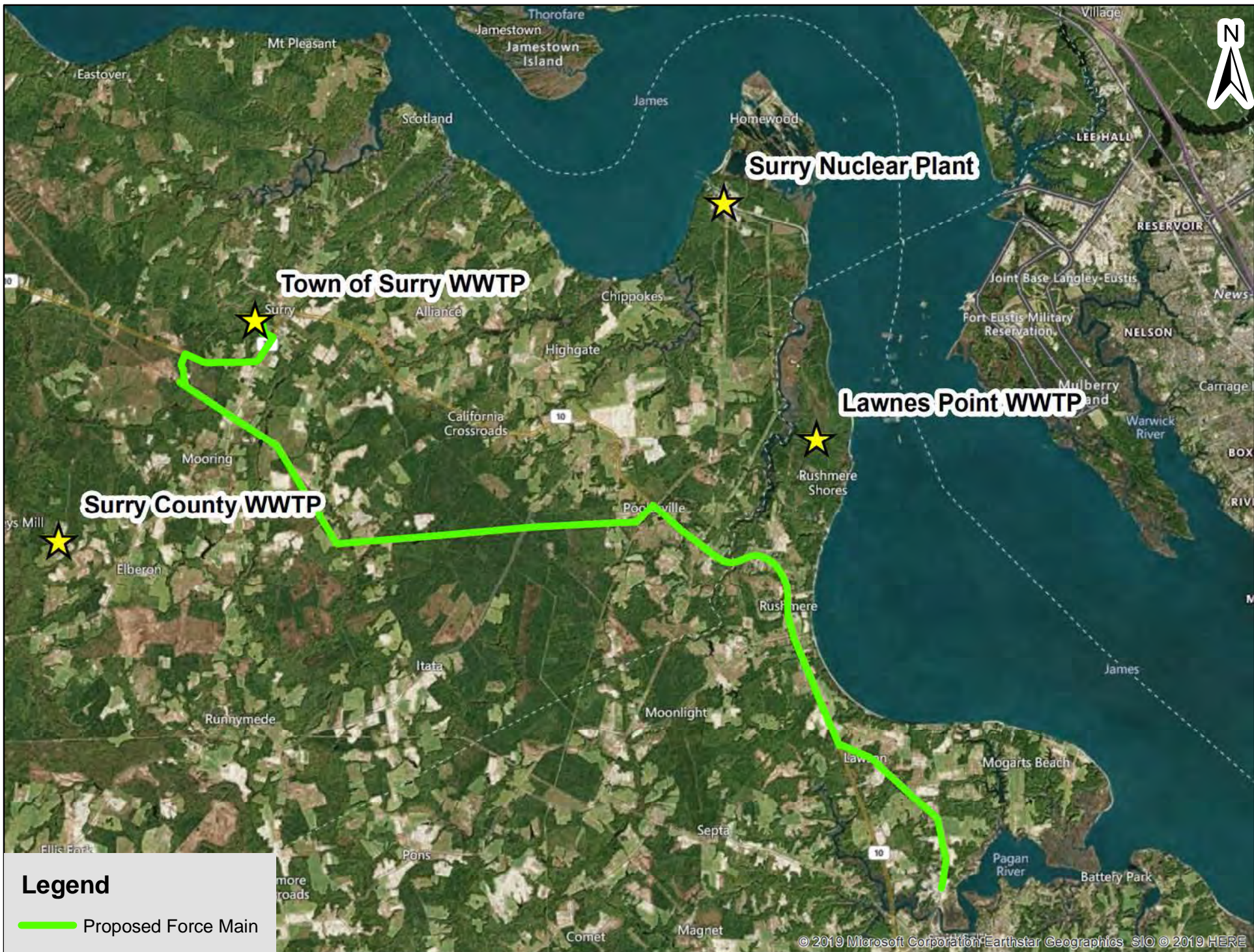
Recommendation and Questions

- Approve new CIP for the King William Transmission Force Main Phase I Study (MP01400)
- Appropriate total project funding in the amount of \$175,000


HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #6

AGENDA ITEM 10. – SURRY HYDRAULIC IMPROVEMENTS AND INTERCEPTOR
FORCE MAIN LOCATION MAP



Legend

 Proposed Force Main

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #7

AGENDA ITEM 12. – VIRGINIA BEACH BOULEVARD FORCE MAIN PHASE VI
EASEMENT AGREEMENTS, PLATS AND LOCATION MAPS

TAX PARCEL NO.: 1497-74-4485-0000
KPCTA FILE:
PROJECT: Virginia Beach Boulevard Force Main Phase VI
ROUTE/STREET: 2533 Virginia Beach Boulevard
CITY/COUNTY: Virginia Beach, VA 23452

PURCHASE AGREEMENT

THIS PURCHASE AGREEMENT, made this 1st day of July 2019, by and among **HAMPTON ROADS SANITATION DISTRICT** (“HRSD”), a political subdivision of the Commonwealth of Virginia, located at 1434 Air Rail Avenue, Virginia Beach, Virginia 23455 (the “Buyer”), and **CKC PROPERTIES, L.L.C.**, a Virginia limited liability company, whose mailing address 2533 Virginia Beach Boulevard, Virginia Beach, VA 23452 (“Seller”). Collectively, Buyer and Seller shall be referred to as the “Parties.”

WITNESSETH: That for and in consideration of one dollar and other valuable consideration, receipt of which is hereby acknowledged, Landowner agrees to convey to HRSD permanent easements over, across and through the following described property of the Landowner, by deed of easement, properly executed, acknowledged, and delivered.

The land and improvements subject to this Purchase Agreement for a Permanent Utility Easement (hereinafter referred to as "the Property") are described as follows:

Being as shown on attached plat prepared by Rouse-Sirine Associates, Ltd., entitled “PLAT SHOWING 30’ HRSD PERMANENT UTILITY EASEMENT TO BE ACQUIRED FROM CKC PROPERTIES, L.L.C. BY HAMPTON ROADS SANITATION DISTRICT” and dated January 29, 2019 and containing 0.161 acre (7,014 square feet), more or less land for the proposed HRSD permanent easement; and conveyed to CKC Properties, L.L.C., a Virginia limited liability company by Deed dated April 16, 2001, from Joseph H. Watson, Jr. and Gail Z. Watson, recorded in Deed Book 4397, Page 771, and as more particularly shown on plat entitled “Subdivision of Plat of Lindy Investment Corp., Virginia Beach, Virginia” dated on January 12, 2004 by MSA, P.C. as Instrument No. 20060829001317280 in the Clerk’s office for the Circuit Court for the City of Virginia Beach, Virginia.

Together with all and singular the buildings and improvements, tenements, hereditaments, rights, privileges and appurtenances thereunto belonging or in anywise appertaining (the “Property”), a copy of which plat is attached hereto and made a part hereof.

The total consideration for the conveyance provided for herein is as follows:

CONSIDERATION: FORTY-SEVEN THOUSAND FIVE HUNDRED AND 00/100 DOLLARS (\$47,500.00) in full for the easements described hereinbefore and for all damages, if any.

The consideration hereinabove mentioned represents the value of all estates or interests in such land, and the damages to remaining lands of the Landowner which may result by reason of the use to which HRSD will put the land to be conveyed. The Landowner agrees to accept his legal proportionate share of such total consideration for his interest and right in the said land.

The Landowner hereby covenants and agrees for himself, his heirs and assigns and successors, that the consideration herein mentioned shall be in lieu of any and all claims to compensation and damages by reason of the location, construction and maintenance of the project by HRSD, including such drainage facilities as may be necessary.

In the event the Landowner is unable to convey clear title to the above easement to HRSD as herein provided, and HRSD should elect to institute condemnation proceedings for the purpose of acquiring such easements, it is agreed by the Landowner that this instrument may be introduced in such proceedings as evidence of the value of land and damages, if any, to the remaining property of the Landowner.

The Landowner by execution of this instrument acknowledges that the plans for the aforesaid project as they affect the subject property have been fully explained to the undersigned.

HRSD or its contractor will restore Landowner's land and Parcel affected as a result of construction of the project as closely as is reasonably possible to its pre-construction condition (or better) upon completion of the Project including replacing with acceptable landscaping.

HRSD or its contractor hereby agrees that it will perform all such measures in a manner causing as little inconvenience and disruption to the Landowner, and Landowner's invitees, licensees and occupants as is reasonably possible.

HRSD or its contractor will access the defined easement areas by use of the City of Virginia Beach's Right of Way extending from Southern Boulevard and behind Lynnrive Drive or from the waterway adjacent to the property. No entry from the easement may be obtained from the entrance located on Virginia Beach Boulevard.

RIGHT TO ENTER: The HRSD, or its agents, may exercise the right to enter upon so much of the parcel or Land needed for such purposes as may be necessary for the construction of this project without further notice to the Landowner.

ETHICS IN PUBLIC CONTRACTING: By executing this Agreement, the undersigned Landowner or its representative, and the representative of HRSD, certify that the prices agreed to in this Agreement were arrived at without collusion or fraud and that they have not offered or received any payment, kickbacks or other inducement from any other party to this Agreement or its agent or employee in connection with this Agreement, and that they have not conferred on any public

employee having responsibility for this procurement transaction any payment, loan, subscription, advance, deposit of money, services or anything of more than nominal value, present or promised unless disclosed in this Agreement.

Landowner acknowledges that HRSD has relied upon these covenants, representations and warranties in purchasing the above easement.

Settlement shall be within ninety (90) days, or as soon thereafter, allowing a reasonable time to correct any title defects reported by the title examiner and preparation and signing of the necessary documents to enable the HRSD to take proper title.

THE COVENANTS, AGREEMENTS, REPRESENTATIONS, WARRANTIES OF THE LANDOWNER CONTAINED IN THESE PARAGRAPHS SHALL SURVIVE THE CLOSING AND DELIVERY OF THE DEED OF EASEMENT ACROSS THE SUBJECT LAND.

WITNESS the following signatures and seals:

BUYER:

HAMPTON ROADS SANITATION DISTRICT (HRSD)

By: *EMH* Date: 8/2/2019

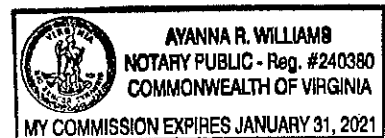
Name: Edward G. Henifin, P.E.
Title: General Manager
Contact Address: 1434 Air Rail Avenue, Virginia Beach, Virginia 23455

COMMONWEALTH OF VIRGINIA
City/County of Virginia Beach, to-wit:

The foregoing instrument was acknowledged before me this 2nd day of Aug., 2019, by Edward G. Henifin, P.E., General Manager, Hampton Roads Sanitation District.

Ayanna R. Williams
Notary Public

Notary Public Registration No. 240380
My commission expires: 1/31/21



SELLER(S):

CKC PROPERTIES, L.L.C. A Virginia Limited Liability Company

BY: *Merald A. Cox*
(Signature)

ITS: *MEMBER*
(Title)

COMMONWEALTH OF VIRGINIA

City/County of *Virginia Beach* to-wit:

The foregoing instrument was acknowledged before me this *1st* day of *July*, 2019, by *Merald A. Cox* (Name), *Member* (Title), CKC PROPERTIES, L.L.C., A Virginia Limited Liability Company.

Claudia M. Jensen
Notary Public

Notary Public Registration No. *230850*

My commission expires: *12/31/2023*

PROJECT PARCEL NO. 004

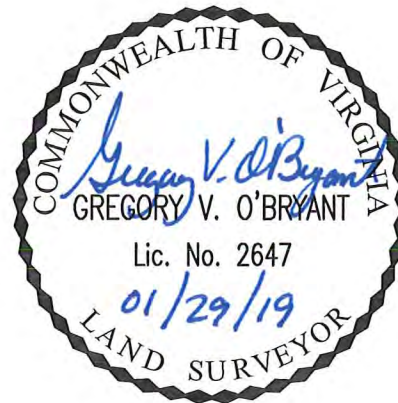
PROPERTY OF: CKC PROPERTIES, L.L.C.
 PROPERTY ADDRESS: 2533 VIRGINIA BEACH BOULEVARD
 OWNER ADDRESS: 2533 VIRGINIA BEACH BOULEVARD
 VIRGINIA BEACH, VA. 23452-7635
 GPIN #: 1497-74-4485

NOTES:

1. MERIDIAN SOURCE WAS BASED ON VIRGINIA STATE PLANE COORDINATES SYSTEM, SOUTH ZONE (NAD83(HARN)). COORDINATE VALUES ARE SHOWN IN U.S. SURVEY FEET.
2. 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.
3. THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY SURVEY. PARCEL AREAS SHOWN ARE APPROXIMATE AND BASED ON PLATS AND DEEDS OF RECORD, OR CITY TAX RECORDS AND ARE APPROXIMATE IN NATURE.

AREA TABLE					
TOTAL PARCEL AREA		30' HRSD PERMANENT UTILITY EASEMENT		RESIDUAL PARCEL AREA	
SQ. FT.	ACRES	SQ. FT.	ACRES	SQ. FT.	ACRES
161,779±	3.714 ±	7,014	0.161	154,765 ±	3.553 ±

PLAT SHOWING
30' HRSD PERMANENT UTILITY EASEMENT
 TO BE ACQUIRED FROM
CKC PROPERTIES, L.L.C.
 BY
HAMPTON ROADS SANITATION DISTRICT
 VIRGINIA BEACH, VIRGINIA
 DATE : AUGUST 22, 2018



ROUSE-SIRINE ASSOCIATES, LTD.
 LAND SURVEYORS, MAPPING CONSULTANTS & S.U.E. QUALITY LEVELS "A-D"
www.rouse-sirine.com
 333 OFFICE SQUARE LANE 1311 JAMESTOWN ROAD
 VIRGINIA BEACH, VIRGINIA 23462 SUITE 103
 TEL.(757)490-2300 WILLIAMSBURG, VIRGINIA 23185
 FAX:(757)499-9136 TEL.(757)903-4695

1	REVISED EASEMENT LOCATION 01/29/2019	2	
---	---	---	--

LOT 40
 NOW OR FORMERLY
MAJORIE ANN WILLMAN ESTATE
 (INST. #20171201001029570)
 (M.B. 29, P. 72)
 GPIN: 1497-74-2207

PARCEL B

(004)
 PROPERTY OF
CKC PROPERTIES, L.L.C.
 (D.B. 4397, P. 771)
 (INST. #20060829001317280)(PLAT)
 GPIN: 1497-74-4485

300' DRAINAGE EASEMENT
 (D.B. 2147, P.761)(D.B. 2242, P.619)

EUREKA AVE.
 (50' RIGHT-OF-WAY)

N: 3,474,209.800
 E: 12,197,259.841

770' ± **24' ROAD**
 (UNIMPROVED)(M.B. 29, P.72)

NOW OR FORMERLY
CITY OF VIRGINIA BEACH, VIRGINIA
 (INST. #20101027001141760)
 (INST. #201009240010075700)(PLAT)
 GPIN: 1467-13-1924

20' PUBLIC DRAINAGE EASEMENT
 (D.B. 2740, P.1604)
 30' HRSD PERMANENT
 UTILITY EASEMENT
 AREA = 7,014 S.F. / 0.161 ACRE

PLAT SHOWING
30' HRSD PERMANENT UTILITY EASEMENT
 TO BE ACQUIRED FROM
CKC PROPERTIES, L.L.C.

BY
HAMPTON ROADS SANITATION DISTRICT
 VIRGINIA BEACH, VIRGINIA

SCALE: 1"=50'

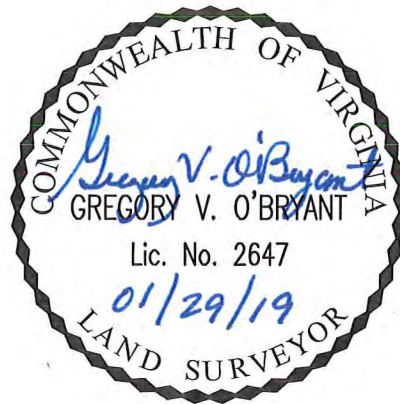
DATE : AUGUST 22, 2018

LINE TABLE		
L1	S89°33'37"W	38.08'
L2	N00°19'02"W	23.84'
L3	N10°56'17"E	2.66'

LEGEND



30' HRSD PERMANENT UTILITY
 EASEMENT TO BE ACQUIRED



ROUSE-SIRINE ASSOCIATES, LTD.

LAND SURVEYORS, MAPPING CONSULTANTS & S.U.E. QUALITY LEVELS "A-D"

www.rouse-sirine.com

333 OFFICE SQUARE LANE 1311 JAMESTOWN ROAD
 VIRGINIA BEACH, VIRGINIA 23462 SUITE 103
 TEL.(757)490-2300 WILLIAMSBURG, VIRGINIA 23185
 FAX:(757)499-9136 TEL.(757)903-4695

0 25 50 100 150 FEET

GRAPHIC SCALE

SHEET 2 OF 2

REVISED EASEMENT LOCATION	
1	2
01/29/2019	

20191001000830500 1/5
City of Virginia Beach
10/01/2019
10:35:49 AM ESMT
Tina E. Sinnen, Clerk

This Instrument prepared by
Kellam, Pickrell, Cox & Anderson, P.C.
Tax Exempt--Sections 58.1-811(A)(3)
Code of Virginia

DEED OF EASEMENT

This Deed of Easement, Made this 10 day of SEPTEMBER, 2019, by and between **CKC PROPERTIES, L.L.C.**, a Virginia limited liability company, (hereinafter called **GRANTOR**), and the **HAMPTON ROADS SANITATION DISTRICT**, a political subdivision of the Commonwealth of Virginia, (hereinafter called **HRSD** or **GRANTEE**), whose mailing address is Hampton Roads Sanitation District, Post Office Box 5911, Virginia Beach, Virginia 23471-0911.

WITNESSETH:

That for the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, **GRANTOR** does hereby grant and convey unto **GRANTEE**, its successors and assigns, the perpetual right, privilege, and Easement hereafter described, for the purpose of laying, erecting, constructing, operating, and maintaining underground wastewater and/or water reuse force mains and/or gravity mains together with above and/or below ground equipment, accessories, and appurtenances thereto, (hereinafter called "Facilities"), on the lands of the **GRANTOR**, said Easement (the "Easement", whether one or more) being further described as follows:

ALL THAT permanent utility easement labeled "30' HRSD Permanent Utility Easement", containing 0.161 acres (7,014 S.F.) and as more particularly shown on a plat entitled "Plat Showing 30' HRSD Permanent Utility Easement to be Acquired from CKC Properties, LLC by Hampton Roads Sanitation District, Virginia Beach, Virginia dated August 22, 2018 and revised January 29, 2019, prepared by Rouse-Sirine Associates, Ltd., a copy of said plat is attached hereto and made a part hereof.

This Easement is subject to the following conditions and provisions:

A. The Facilities existing or constructed on or under the Easement and all replacements, substitutions, additions, repairs and improvements thereto, shall remain the property of **GRANTEE**. **GRANTEE** shall have the right to inspect, rebuild, remove, repair, improve, and make such changes, alterations, additions to or extensions of its Facilities within the boundaries of said Easement as are consistent with the purpose expressed herein. All construction, maintenance, equipment and Facilities shall comply with all applicable laws, ordinances, codes and regulations.

TAX PARCEL NO.: 1497-74-4485-0000
Insured by: Unknown
Consideration: \$47,500.00

KELLAM, PICKRELL,
COX & ANDERSON
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

2019 OCT -1 AM 9:40

TINA E. SINNEN, CLERK

B. Any disturbance of the premises by the **GRANTEE** or its contractor will be restored by the **GRANTEE** as nearly as practicable. This includes paving, fences, backfilling of trenches, grass, reseeding, replacing or replanting landscaping, and removal of trash and debris and removal of any equipment, accessories or appurtenances not consistent with the construction, maintenance or operation of the Facilities. Landscaping will be replaced with immature trees, shrubs, and ground cover. **GRANTEE** shall maintain the Easement and the Facilities in such repair as not to endanger or otherwise limit the enjoyment and use of adjacent properties.

C. **GRANTEE** shall have the right to trim, cut and remove trees, shrubbery or other obstructions which interfere with or threaten the efficient and safe operation, construction and maintenance of said Facilities. All trees and limbs cut by **GRANTEE** shall remain the property of **GRANTOR** if **GRANTOR**, in writing prior to removal, requests that they be left on the premises; otherwise all brush, branches, and other debris resulting from any cutting, trimming, or clearing of said right of way shall be removed from lands of **GRANTOR** for disposal.

D. **GRANTEE** shall have the right of ingress, egress and regress to, from and over the Easement and the right to use the adjoining land of **GRANTOR** where necessary, provided, however, that its right to use the adjoining lands shall be exercised only during periods of actual construction and/or maintenance. **GRANTEE** shall exercise such right in such manner as shall not occasion injury and inconvenience to **GRANTOR**. **GRANTEE** shall, at **GRANTEE'S** election, either pay for or repair any injury to any of **GRANTOR'S** land, crops, structures, roads, fences and other improvements caused by **GRANTEE**, its employees, agents or contractors.

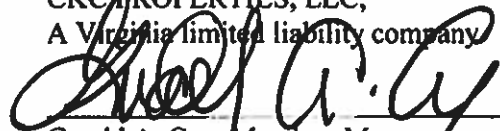
E. **GRANTEE** or its contractor will access the defined easement areas by use of the City of Virginia Beach's Right of Way extending from Southern Boulevard and behind Lynnrivier Drive or from the waterway adjacent to the property. No entry from the easement may be obtained from the entrance located on Virginia Beach Boulevard.

F. **GRANTOR**, its successors and assigns, may use said Easement for any purpose not inconsistent with the rights hereby granted, provided such use does not interfere with the safe and efficient use, construction, operation or maintenance of the Easement and/or Facilities. **GRANTOR** shall not place any permanent improvements within the Easement without written permission of **GRANTEE**, or its successors, including but not limited to houses, buildings, pools, sheds, signs, or similar permanent structures. Subject to the foregoing, **GRANTOR** may install fences, driveways, pavement and landscaping (trees and shrubs shall be varieties that will not exceed 20 feet tall at maturity).

G. **GRANTEE** covenants and agrees that it will be responsible for any claims of injury to any persons or property resulting from its sole negligence in the installation, operation, maintenance, replacement, repair, removal or use of any of the Facilities and/or the Easement, or which result from **GRANTEE'S** exercise of any of the rights herein granted. Any contractor performing work for **GRANTEE** in the Easement shall be required to furnish a certificate of insurance satisfactory to **GRANTEE**.

WITNESS the following signatures and seals:

CKC PROPERTIES, LLC,
A Virginia limited liability company


Gerald A. Cox, Member, Manager

STATE OF VIRGINIA
CITY OF Virginia Beach, to-wit:

The foregoing instrument was acknowledged before me this 10th day of September, 2019 by Gerald A. Cox, Member of CKC PROPERTIES, L.L.C., a Virginia limited liability company.


Notary Public

My commission expires: 12/31/2023 Registration No.: 230850

HRSD\DEEDS\CKC Properties LLC TO HRSD DOF



PROJECT PARCEL NO. 004

PROPERTY OF: CKC PROPERTIES, L.L.C.
 PROPERTY ADDRESS: 2533 VIRGINIA BEACH BOULEVARD
 OWNER ADDRESS: 2533 VIRGINIA BEACH BOULEVARD
 VIRGINIA BEACH, VA. 23452-7635
 GPIN #: 1497-74-4485

AREA TABLE			
TOTAL	30' HRSD PERMANENT	RESIDUAL	
PARCEL AREA	UTILITY EASEMENT	PARCEL AREA	
SQ. FT. ACRES	SQ. FT. ACRES	SQ. FT. ACRES	
161,778±	7,014	0.161	154,765 ± 3.553 ±

NOTES:

1. MERIDIAN SOURCE WAS BASED ON VIRGINIA STATE PLANE COORDINATES SYSTEM, SOUTH ZONE (NAD83(HARN)). COORDINATE VALUES ARE SHOWN IN U.S. SURVEY FEET.
2. 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.
3. THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY SURVEY. PARCEL AREAS SHOWN ARE APPROXIMATE AND BASED ON PLATS AND DEEDS OF RECORD, OR CITY TAX RECORDS AND ARE APPROXIMATE IN NATURE.

PLAT SHOWING
30' HRSD PERMANENT UTILITY EASEMENT
 TO BE ACQUIRED FROM
CKC PROPERTIES, L.L.C.
 BY

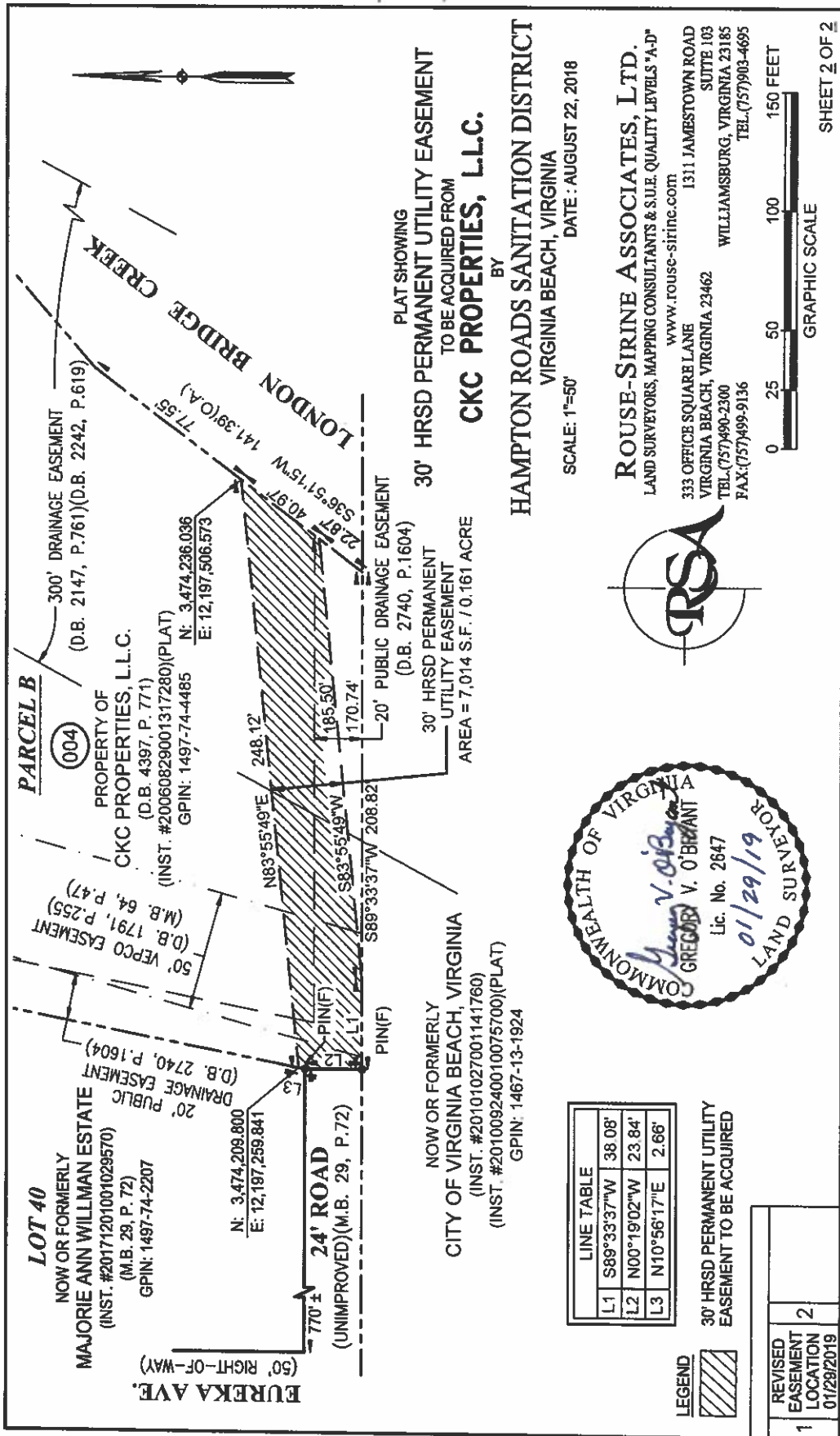
HAMPTON ROADS SANITATION DISTRICT
 VIRGINIA BEACH, VIRGINIA
 DATE : AUGUST 22, 2018



ROUSE-SIRINE ASSOCIATES, LTD.
 LAND SURVEYORS, MAPPING CONSULTANTS & S.U.E. QUALITY LEVELS "A-D"
 www.rouse-sirine.com
 1311 JAMESTOWN ROAD
 SUITE 103
 VIRGINIA BEACH, VIRGINIA 23462
 TEL:(757)490-2300
 FAX:(757)499-9136
 WILLIAMSBURG, VIRGINIA 23185
 TEL:(757)903-4695



REVISED	
EASEMENT	2
LOCATION	
01/29/2019	



1	REVISED EASEMENT LOCATION	2
	01/29/2019	

GPIN#: 1497-26-9301-0000

TAX PARCEL NO.: 1497-26-9301-0000
KPCTA FILE:
PROJECT: Virginia Beach Boulevard Force Main Phase VI
ROUTE/STREET: 2924 N Lynnhaven Road
CITY/COUNTY: Virginia Beach, VA 23452

PURCHASE AGREEMENT

THIS CONTRACT FOR PURCHASE AND SALE, made this 27th day of September 2019, by and among **HAMPTON ROADS SANITATION DISTRICT** ("HRSD"), a political subdivision of the Commonwealth of Virginia, located at 1434 Air Rail Avenue, Virginia Beach, Virginia 23455 (the "Buyer"), and **Susan Browney Dillon Living Trust**, whose mailing address is 1409 Duck Run Court, Virginia Beach, VA 23455 ("Seller"). Collectively, Buyer and Seller shall be referred to as the "Parties."

WITNESSETH: That for and in consideration of one dollar and other valuable consideration, receipt of which is hereby acknowledged, Landowner agrees to convey to HRSD permanent and temporary easements over, across and through the following described property of the Landowner, by deed of easement, properly executed, acknowledged, and delivered.

The land and improvements subject to this Purchase Agreement for a Permanent Utility Easement and a Temporary Construction Easement (hereinafter referred to as "the Property") are described as follows:

Being as shown on attached plat prepared by Rouse-Sirine Associates, Ltd., entitled "PLAT SHOWING 40' & VARIABLE WIDTH HRSD PERMANENT UTILITY EASEMENT TO BE ACQUIRED FROM SUSAN BROWNEY DILLON LIVING TRUST BY HAMPTON ROADS SANITATION DISTRICT" and dated June 6, 2019 and containing 0.203 acre (8,836 square feet), more or less land for the proposed HRSD permanent easement; and conveyed in Susan Browney Dillon, Trustee under the Susan Browney Dillon Living Trust dated January 11, 2017, pursuant to Deed from Susan Browney Dillon, a/k/a Susan H. Browney, which was recorded as Instrument No. 20170119000049280 (Parcel Two) on January 11, 2017 in the Clerk's office for the Circuit Court for the City of Virginia Beach, Virginia.

Together with all and singular the buildings and improvements, tenements, hereditaments, rights, privileges and appurtenances thereunto belonging or in anywise appertaining (the "Property"), a copy of which plat is attached hereto and made a part hereof.

The total consideration for the conveyance provided for herein is as follows:

CONSIDERATION: FORTY-NINE THOUSAND FIVE HUNDRED AND 00/100 DOLLARS (\$49,500.00) in full for the easements described hereinbefore and for all damages, if any.

The consideration hereinabove mentioned represents the value of all estates or interests in such land, and the damages to remaining lands of the Landowner which may result by reason of the use to which HRSD will put the land to be conveyed. The Landowner agrees to accept his legal proportionate share of such total consideration for his interest and right in the said land.

The Landowner hereby covenants and agrees for himself, his heirs and assigns and successors, that the consideration herein mentioned shall be in lieu of any and all claims to compensation and damages by reason of the location, construction and maintenance of the project by HRSD, including such drainage facilities as may be necessary.

In the event the Landowner is unable to convey clear title to the above easement to HRSD as herein provided, and HRSD should elect to institute condemnation proceedings for the purpose of acquiring such easements, it is agreed by the Landowner that this instrument may be introduced in such proceedings as evidence of the value of land and damages, if any, to the remaining property of the Landowner.

The Landowner by execution of this instrument acknowledges that the plans for the aforesaid project as they affect the subject property have been fully explained to the undersigned.

HRSD or its contractor will restore Landowner's land and Parcel affected as a result of construction of the project as closely as is reasonably possible to its pre-construction condition (or better) upon completion of the Project including replacing with acceptable landscaping.

HRSD or its contractor hereby agrees that it will perform all such measures in a manner causing as little inconvenience and disruption to the Landowner, and Landowner's invitees, licensees and occupants as is reasonably possible.

RIGHT TO ENTER: The HRSD, or its agents, may exercise the right to enter upon so much of the parcel or Land needed for such purposes as may be necessary for the construction of this project without further notice to the Landowner.

ETHICS IN PUBLIC CONTRACTING: By executing this Agreement, the undersigned Landowner or its representative, and the representative of HRSD, certify that the prices agreed to in this Agreement were arrived at without collusion or fraud and that they have not offered or received any payment, kickbacks or other inducement from any other party to this Agreement or its agent or employee in connection with this Agreement, and that they have not conferred on any public employee having responsibility for this procurement transaction any payment, loan, subscription,

advance, deposit of money, services or anything of more than nominal value, present or promised unless disclosed in this Agreement.

Landowner acknowledges that HRSD has relied upon these covenants, representations and warranties in purchasing the above easement.

Settlement shall be within ninety (90) days, or as soon thereafter, allowing a reasonable time to correct any title defects reported by the title examiner and preparation and signing of the necessary documents to enable the HRSD to take proper title.

THE COVENANTS, AGREEMENTS, REPRESENTATIONS, WARRANTIES OF THE LANDOWNER CONTAINED IN THESE PARAGRAPHS SHALL SURVIVE THE CLOSING AND DELIVERY OF THE DEED OF EASEMENT ACROSS THE SUBJECT LAND.

WITNESS the following signatures and seals:

BUYER:

HAMPTON ROADS SANITATION DISTRICT (HRSD)

By: *EMBM* Date: *09/27/2019*
am

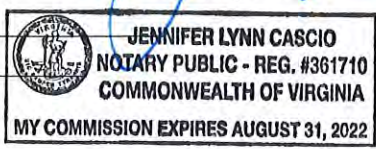
Name: Edward G. Henifin, P.E.
Title: General Manager
Contact Address: 1434 Air Rail Avenue, Virginia Beach, Virginia 23455

COMMONWEALTH OF VIRGINIA
City/County of Virginia Beach, to-wit:

The foregoing instrument was acknowledged before me this *27th* day of *September* 2019, by Edward G. Henifin, P.E., General Manager, Hampton Roads Sanitation District.

Jennifer Lynn Cascio
Notary Public

Notary Public Registration No. _____
My commission expires: _____



SELLER(S): Susan Browney Dillon
SUSAN BRAWNEY DILLION LIVING TRUST

BY: *Susan Browney Dillon*
(Signature)

ITS: _____
(Title)

COMMONWEALTH OF VIRGINIA
City/County of _____ to-wit:

The foregoing instrument was acknowledged before me this 17th day of September, 2019, by
Susan Browney Dillon (Name), _____ (Title),
SUSAN BROWNEY DILLION LIVING TRUST.


Karen Christine Russo-Scarano
Notary Public

Notary Public Registration No. _____
My commission expires: _____

KAREN CHRISTINE RUSSO-SCARANO
NOTARY PUBLIC - REG. #7837081
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES: APRIL 30, 2023



This Instrument prepared by
Kellam, Pickrell, Cox & Anderson, P.C.
Grantee Tax Exempt--Sections 58.1-811(A)(3)
Code of Virginia


20191220001088390 1/4
City of Virginia Beach
12/20/2019
11:00:45 AM ESMT
Tina E. Sinnen, Clerk

DEED OF EASEMENT

This **Deed of Easement**, Made this 19th day of December, 2019, by and between **SUSAN BROWNEY DILLON, TRUSTEE UNDER THE SUSAN BROWNEY DILLON LIVING TRUST DATED JANUARY 11, 2017**, hereinafter called **GRANTOR**), and the **HAMPTON ROADS SANITATION DISTRICT**, a political subdivision of the Commonwealth of Virginia, (hereinafter called **HRSD** or **GRANTEE**), whose mailing address is Hampton Roads Sanitation District, Post Office Box 5911, Virginia Beach, Virginia 23471-0911.

WITNESSETH:

That for the sum of Ten Dollars (\$10.00) and other good and valuable consideration, the receipt of which is hereby acknowledged, **GRANTOR** does hereby grant and convey unto **GRANTEE**, its successors and assigns, the perpetual right, privilege, and Easement hereafter described, for the purpose of laying, erecting, constructing, operating, and maintaining underground wastewater and/or water reuse force mains and/or gravity mains together with above and/or below ground equipment, accessories, and appurtenances thereto, (hereinafter called "Facilities"), on the lands of the **GRANTOR**, said Easement (the "Easement", whether one or more) being further described as follows:

ALL THAT permanent utility easement labeled "Variable Width HRSD Permanent Utility Easement", containing 0.203 acres (8,836 S.F.) and as more particularly shown on a plat entitled "Plat Showing Variable Width HRSD Permanent Utility Easement to be Acquired from Susan Browney Dillon, Trustee by Hampton Roads Sanitation District, Virginia Beach, Virginia dated August 22, 2018, and revised June 4, 2019, prepared by Rouse-Sirine Associates, Ltd., a copy of said plat is attached hereto and made a part hereof.

This Easement is subject to the following conditions and provisions:

A. The Facilities existing or constructed on or under the Easement and all replacements, substitutions, additions, repairs and improvements thereto, shall remain the property of **GRANTEE**. **GRANTEE** shall have the right to inspect, rebuild, remove, repair, improve, and make such changes, alterations, additions to or extensions of its Facilities within the

TAX PARCEL NO.: 1497-26-9301-0000
Insured by: Unknown
Consideration: \$49,500.00


2019 DEC 20 AM 9: 20


KELLAM, PICKRELL,
COX & ANDERSON
PROFESSIONAL CORPORATION
ATTORNEYS AT LAW

boundaries of said Easement as are consistent with the purpose expressed herein. All construction, maintenance, equipment and Facilities shall comply with all applicable laws, ordinances, codes and regulations.

B. Any disturbance of the premises by the **GRANTEE** or its contractor will be restored by the **GRANTEE** as nearly as practicable. This includes paving, fences, backfilling of trenches, grass, reseeding, replacing or replanting landscaping, and removal of trash and debris and removal of any equipment, accessories or appurtenances not consistent with the construction, maintenance or operation of the Facilities. Landscaping will be replaced with immature trees, shrubs, and ground cover. **GRANTEE** shall maintain the Easement and the Facilities in such repair as not to endanger or otherwise limit the enjoyment and use of adjacent properties.

C. **GRANTEE** shall have the right to trim, cut and remove trees, shrubbery or other obstructions which interfere with or threaten the efficient and safe operation, construction and maintenance of said Facilities. All trees and limbs cut by **GRANTEE** shall remain the property of **GRANTOR** if **GRANTOR**, in writing prior to removal, requests that they be left on the premises; otherwise all brush, branches, and other debris resulting from any cutting, trimming, or clearing of said right of way shall be removed from lands of **GRANTOR** for disposal.

D. **GRANTEE** shall have the right of ingress, egress and regress to, from and over the Easement and the right to use the adjoining land of **GRANTOR** where necessary, provided, however, that its right to use the adjoining lands shall be exercised only during periods of actual construction and/or maintenance. **GRANTEE** shall exercise such right in such manner as shall not occasion injury and inconvenience to **GRANTOR**. **GRANTEE** shall, at **GRANTEE'S** election, either pay for or repair any injury to any of **GRANTOR'S** land, crops, structures, roads, fences and other improvements caused by **GRANTEE**, its employees, agents or contractors.

E. **GRANTOR**, its successors and assigns, may use said Easement for any purpose not inconsistent with the rights hereby granted, provided such use does not interfere with the safe and efficient use, construction, operation or maintenance of the Easement and/or Facilities. **GRANTOR** shall not place any permanent improvements within the Easement without written permission of **GRANTEE**, or its successors, including but not limited to houses, buildings, pools, sheds, signs, or similar permanent structures. Subject to the foregoing, **GRANTOR** may install fences, driveways, pavement and landscaping (trees and shrubs shall be varieties that will not exceed 20 feet tall at maturity).

F. **GRANTEE** covenants and agrees that it will be responsible for any claims of injury to any persons or property resulting from its sole negligence in the installation, operation, maintenance, replacement, repair, removal or use of any of the Facilities and/or the Easement, or which result from **GRANTEE'S** exercise of any of the rights herein granted. Any contractor performing work for **GRANTEE** in the Easement shall be required to furnish a certificate of insurance satisfactory to **GRANTEE**.

WITNESS the following signatures and seals:

Susan Browney Dillon Trustee

Susan Browney Dillon, Trustee under the
Susan Browney Dillon Living Trust dated
January 11, 2017

COMMONWEALTH OF VIRGINIA
CITY OF NORFOLK, to-wit:

The foregoing instrument was acknowledged before me this 19th day of December,
2019 by Susan Browney Dillon, Trustee.

Stephanie A Pedroni

Notary Public

My commission expires: 11/30/21

Registration No.: 215436

HRSD\DEEDS\SUSAN BROWNEY DILLON TRUSTEE TO HRSD DOE

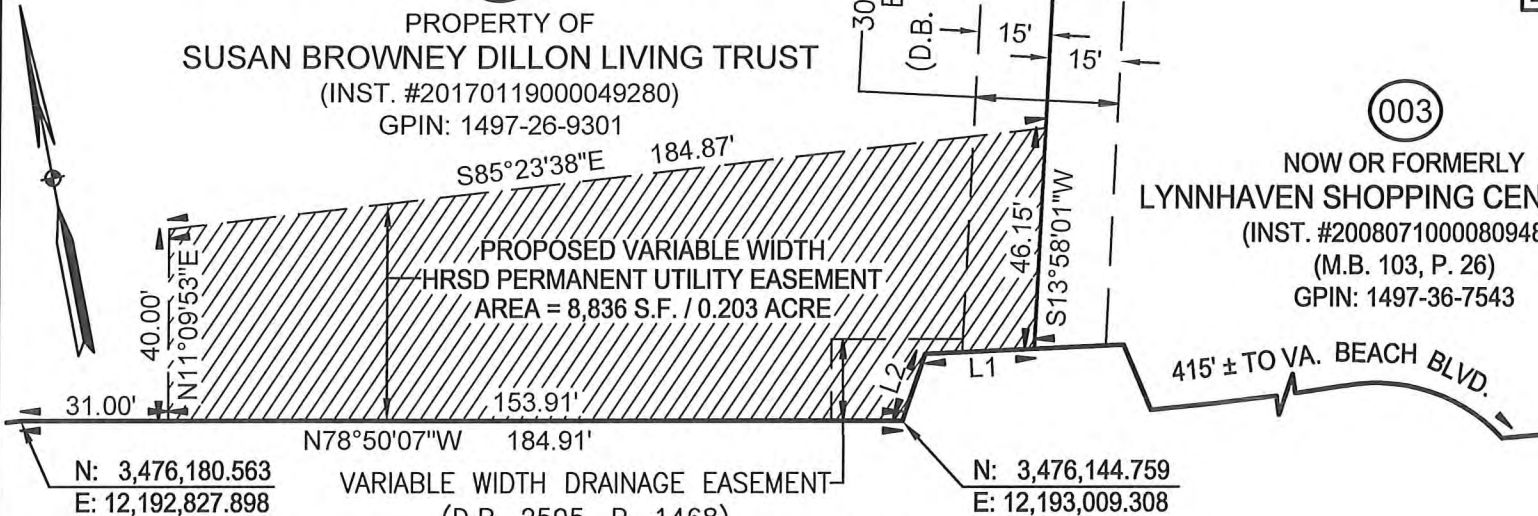


PROJECT PARCEL NO. 002

PROPERTY OF: SUSAN BROWNEY DILLON LIVING TRUST
 PROPERTY ADDRESS: 2924 N. LYNNHAVEN ROAD
 OWNER ADDRESS: 1409 DUCK RUN CT.
 VIRGINIA BEACH, VA 23455
 GPIN #: 1497-26-9301

002

PROPERTY OF
 SUSAN BROWNEY DILLON LIVING TRUST
 (INST. #20170119000049280)
 GPIN: 1497-26-9301



LINE TABLE

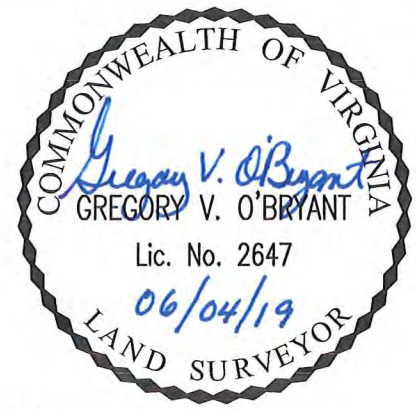
L1	N81°21'29\"W	22.81'
L2	S29°44'00\"W	14.79'

AREA TABLE

TOTAL PARCEL AREA		VARIABLE WIDTH HRSD PERMANENT UTILITY EASEMENT		RESIDUAL PARCEL AREA	
SQ. FT.	ACRES	SQ. FT.	ACRES	SQ. FT.	ACRES
208,478 ±	4.786 ±	8,836	0.203	199,642 ±	4.583 ±

003

NOW OR FORMERLY
 LYNNHAVEN SHOPPING CENTER, LLC
 (INST. #20080710000809480)
 (M.B. 103, P. 26)
 GPIN: 1497-36-7543



PLAT SHOWING
 VARIABLE WIDTH HRSD
 PERMANENT UTILITY EASEMENT
 TO BE ACQUIRED FROM

SUSAN BROWNEY DILLON, TRUSTEE

BY
HAMPTON ROADS SANITATION DISTRICT
 VIRGINIA BEACH, VIRGINIA

SCALE: 1"=40' DATE: AUGUST 22, 2018

ROUSE-SIRINE ASSOCIATES, LTD.
 LAND SURVEYORS, MAPPING CONSULTANTS & S.U.E. QUALITY LEVELS "A-D"
 www.rouse-sirine.com

333 OFFICE SQUARE LANE 1311 JAMESTOWN ROAD
 VIRGINIA BEACH, VIRGINIA 23462 SUITE 103
 TEL.(757)490-2300 WILLIAMSBURG, VIRGINIA 23185
 FAX:(757)499-9136 TEL.(757)903-4695



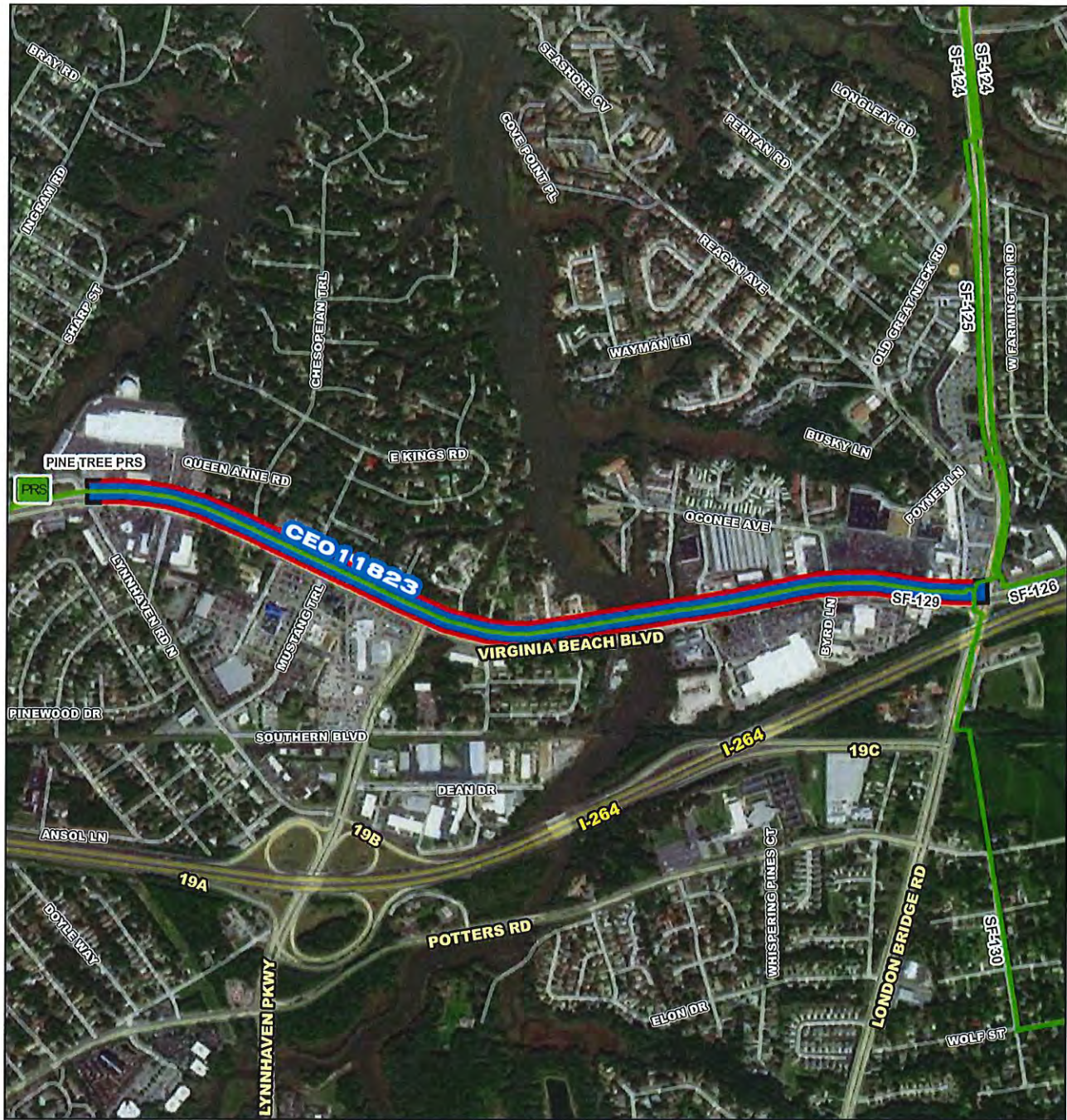
N. LYNNHAVEN ROAD
 (VARIABLE WIDTH RIGHT-OF-WAY)
 (INST. #200403250047576-PLAT)(M.B. 14, P. 49)

LEGEND
 VARIABLE WIDTH HRSD PERMANENT UTILITY EASEMENT TO BE ACQUIRED

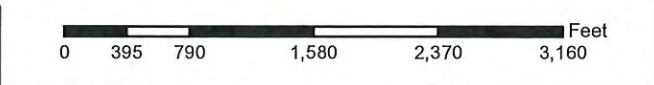
NOTES:

- MERIDIAN SOURCE WAS BASED ON VIRGINIA STATE PLANE COORDINATES SYSTEM, SOUTH ZONE (NAD83(HARN)). COORDINATE VALUES ARE SHOWN IN U.S. SURVEY FEET.
- 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.
- THIS SURVEY DOES NOT CONSTITUTE A BOUNDARY SURVEY. PARCEL AREAS SHOWN ARE APPROXIMATE AND BASED ON PLATS AND DEEDS OF RECORD, OR CITY TAX RECORDS AND ARE APPROXIMATE IN NATURE.

06/04/19		
1	EASEMENT REVISED	2



- CE011823**
- Project Interceptor Line
 - Project Interceptor Point
 - Project Pump Station Point
 - Project Area
- Legend**
- CIP Interceptor Point
 - CIP Pump Station Point
 - CIP Interceptor Line
 - CIP Abandonment
 - CIP Project Area
 - HRSD Interceptor Force Main
 - HRSD Interceptor Gravity Main
 - HRSD Treatment Plant
 - HRSD Pressure Reducing Station
 - HRSD Pump Station



CE01 1823

**Virginia Beach Boulevard Force
Main Phase VI**



HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #8

AGENDA ITEM 15 – UNFINISHED BUSINESS: VIRGINIA WATERSHED
IMPLEMENTATION PLAN (WIP III) LETTER



COMMONWEALTH of VIRGINIA

Office of the Governor

Matthew J. Strickler
Secretary of Natural Resources

September 11, 2019

Ted Henifin, General Manager
Hampton Roads Sanitation District
P. O. Box 5911
Virginia Beach, VA 23471

Re: Virginia's Phase III Watershed Implementation Plan for the Chesapeake Bay TMDL

Dear Mr. Henifin:

Thank you for taking time recently to discuss the Commonwealth's Phase III Watershed Implementation Plan (WIP) for the Chesapeake Bay TMDL and your and Commissioner Ward's concerns about potential impacts on the work of Hampton Roads Sanitation District (HRSD) to achieve significant water quality improvements in Hampton Roads and beyond. This letter responds to concerns expressed during our meeting and in your letter of September 5, 2019.

The Phase III WIP should not be viewed as the end of a process but as the continuation of a collaborative, transparent effort to put in place measures to meet our pollution reduction goals. While the WIP is certainly our central guidance document for Bay cleanup efforts, the process did not set in stone the actions the Commonwealth will take in the coming years. It is my view that pursuing an adaptive management approach will allow us to employ alternative measures determined to be more effective, to learn from our successes and failures, to utilize innovation, and to incorporate new science. The Commonwealth is fully open to alternative approaches that achieve our goals, particularly alternative approaches that can be advanced more quickly and at lower costs while providing the public and the Environmental Protection Agency reasonable assurance that our goals will be met.

Regarding WIP Initiative #52 (*Require additional nutrient reductions from wastewater treatment plants*), I have requested the Department of Environmental Quality (DEQ) to initiate a regulatory process by issuing a Notice of Intended Regulatory Action (NOIRA) for the Water Quality Management Planning Regulation (9VAC25-720). I believe my instructions to DEQ as described below should address your needs. The NOIRA must:

- Identify the process and timeline for regulatory action, assuring broad public awareness of opportunities for participation and comment;
- Seek requests and recommendations for broad stakeholder participation in a regulatory advisory panel (RAP);
- Request initial comments and concerns for early consideration by DEQ and the RAP;

- Request recommendations for specific wastewater facilities that should be provided special circumstances; and
- Request recommendations for alternative actions that can achieve the desired nutrient reductions.

Additionally, I have directed DEQ to take the availability of nutrient credits into consideration through the regulatory process. As noted in the Final WIP, the Commonwealth fully intends to allow utilization of nutrient trading for both the wastewater sector and regulated urban sector. We look forward to working with you and MS4 communities in Hampton Roads to ensure that we achieve pollution reduction targets quickly and cost effectively, including through nutrient credit trading.

In closing, I wish to offer that the Commonwealth remains fully supportive of HRSD's SWIFT project and continues to applaud your leadership on this cutting edge endeavor. I look forward to continued collaboration with you and HRSD's Commissioners. Please do not hesitate to contact me if you wish to discuss further.

Sincerely,



Matthew J. Strickler

cc: HRSD Commissioner Molly Ward
David Paylor, Director, Department of Environmental Quality

HRSD COMMISSION MEETING MINUTES
SEPTEMBER 30, 2019

ATTACHMENT #9

AGENDA ITEM 19. – 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](#)
 - (10) [Safety Division Internal Audit Report](#)
- b. [Strategic Planning Metrics Summary](#)
- c. [Effluent Summary](#)
- d. [Air Summary](#)



September 17, 2019

Re: General Manager's Report

Dear Commissioners:

The Virginia Watershed Implementation Plan, Phase III (WIP III) consumed significant time and energy during the month of August. HRSD had been working closely with the Virginia Association of Municipal Wastewater Agencies (VAMWA) to develop alternatives to the actions proposed in the draft WIP III released in April 2019. We submitted comments in June and continued to meet with the Department of Environmental Quality (DEQ) up to the release of the final WIP on August 23, 2019. During those discussions, VAMWA (with HRSD's input) offered meaningful and cost-effective alternatives to the actions proposed in the draft WIP III that allowed Virginia to meet their Chesapeake Bay Total Maximum Daily Load (TMDL) obligations without further regulatory changes to the wastewater sector. In the end, WIP III was finalized without incorporating any of the alternatives put forth by VAMWA.

As written, the final WIP III proposes significant reductions in waste load allocations for nearly all publicly-owned wastewater facilities on the James and York Rivers. It imposes no reductions to industrial dischargers, along with four specific publicly-owned treatment works (POTW) - Richmond, Lynchburg, Hopewell and the Upper Occoquan Service Authority). While HRSD will ultimately be able to comply with these severely-reduced limits through implementation of SWIFT, timing remains an issue as SWIFT will not be complete until 2032 and the WIP III is focused on compliance in 2025. Additionally, science does not support the final WIP III approach, requiring further reductions on the James River. The recently completed James River Chlorophyll *a* study, a seven-year, multi-million dollar effort, approved by the State Water Control Board and the Governor, established protective Chlorophyll *a* water quality standards that are met by the current waste load allocations in the James River. Further reductions proposed by the WIP III are not necessary for James River local water quality protection, requiring the expenditure of scarce resources for unnecessary and locally unnoticeable water quality improvements.

Since release of the final WIP III, we have received assurances from the Secretary of Natural Resources that the WIP III "should not be viewed as the end of a process" and that the "Commonwealth is fully open to alternative approaches that achieve our goals."

PO Box 5911, Virginia Beach, VA 23471-0911 • 757.460.7003

Commissioners: Frederick N. Elofson, CPA, Chair • Maurice P. Lynch, PhD, Vice-Chair • Vishnu K. Lakdawala, PhD
Michael E. Glenn • Stephen C. Rodriguez • Willie Levenston, Jr. • Elizabeth A. Taraski, PhD • Molly Joseph Ward
www.hrsd.com

He has further assured us that “the Commonwealth fully intends to allow utilization of nutrient trading for both the wastewater sector and regulated urban sector” providing us some needed protection to our existing trading agreements with our Hampton Roads’ localities with Municipal Separate Storm Sewer System (MS4) permits.

As disappointed as we are in the WIP III, we are prepared to engage fully in the next steps to ensure any related regulatory actions are based in sound science (needed for local water quality and human health); do not place an unreasonable and disproportionate share of the cost of restoration of the Chesapeake Bay on HRSD ratepayers; reflect the significant investments HRSD has already made for nutrient reductions - as well as the unprecedented impact SWIFT will have on further reductions; and allow HRSD to fully honor the trading agreements that are in place with our MS4 communities that will save the region’s ratepayers more than \$1 billion in unnecessary urban stormwater retrofits.

The highlights of August’s activities are detailed in the attached monthly reports.

- A. **Treatment Compliance and System Operations:** All treatment plants met permit. The highlights for the month are included in the attached monthly reports.
- B. **Internal Communications:** I participated in the following meetings/activities with HRSD personnel:
 - 1. One new employee orientation session
 - 2. A meeting to discuss issues related to the Providence Road storage tank
 - 3. The quarterly meeting of HRSD’s facilitator leadership team
 - 4. Two length of service recognition breakfasts
 - 5. A meeting to review performance of the Coliseum Tank flow equalization project
 - 6. A meeting to discuss service to Chesapeake’s mega site
 - 7. Multiple meetings on WIP III alternatives
 - 8. Review of the Middlesex County draft service agreement
 - 9. Review of High Priority Projects, Phase 2, for inclusion in the Integrated Plan
- C. **External Communications:** I participated in the following meetings/activities:
 - 1. Meeting with the Secretary of Natural Resources and VAMWA representatives regarding WIP III
 - 2. Multiple calls with the Stormwater Taskforce of the US EPA Environmental Financial Advisory Board (EFAB)

3. A site visit to the Town of Exmore to inspect existing facilities
4. A SWIFT tour for Commissioner Ward, Norfolk Council member Andria McClellan and former Secretary of the Commonwealth Laurie Naismith
5. The quarterly call of the Value of Water steering committee
6. A tour of SWIFT and discussion of Water Research Foundation (WRF) priorities with the CEO of WRF
7. A meeting with the City Manager of Chesapeake to discuss service to a mega development site in the southern portion of the city
8. Multiple calls to plan the WEFTEC Public Official's Forum
9. Public meetings to discuss HRSD expansion to the Eastern Shore – one in Onley and one at Exmore
10. Calls with rating agencies (Fitch and S&P) to obtain ratings prior to going to market with the 2019 refunding
11. An interview with a fundraising consultant working for the Elizabeth River Project
12. A meeting with the Newport News City Manager to discuss HRSD plans for the James River Treatment Plant
13. A conference call with representatives from Riverside Health regarding their wastewater facility in Nassawadox
14. A conference call with the Water Agency Leaders Alliance

D. Consent Decree Update:

Brown and Caldwell has completed the analysis of the impact of the second phase of high priority wet weather projects. The technical memo summarizing that work has been submitted to the US EPA and Department of Justice (DOJ) for review. The analysis indicates that this second phase of projects will reduce modeled overflow volume by another 22 percent, for a total of a 69 percent reduction in the baseline five-year Sanitary Sewer Overflow (SSO) volume of modeled overflows after completion of the two phases of high priority projects at an investment of approximately \$400 million. Cost per gallon removed was approximately \$21 for the first phase (10 million gallons) of high priority projects and rises to more than \$46 with this second group (four million gallons) as the most cost-effective projects were selected in the first phase. Further reductions become much more expensive with the remaining six million gallons of modeled overflows estimated to cost more than \$218 per gallon to eliminate. As a reminder, that is a modeled five-year event, a peak flow that statistically has a 20 percent chance of occurring in any given year. On an annual average we see significantly less overflow volume throughout our system that conveys over 55 billion gallons annually. The remaining modeled overflow volume is approximately 0.011 percent of annual flow.

We anticipate a response from EPA/DOJ in the weeks ahead. With their concurrence on this approach, the next step will be revising and updating the Integrated Plan to reflect this approach and resubmitting for the agencies' approvals. We remain hopeful that the plan will be approved before the 10-year anniversary of the filing of the Consent Decree in February 2020.

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 on MONDAY, September 30, 2019 in Virginia Beach.**

Respectfully submitted,

Ted Henifin

Ted Henifin, P.E.
General Manager

TO: General Manager
FROM: Director of Communications
SUBJECT: Monthly Report for August 2019
DATE: September 10, 2019

A. Publicity and Promotion

1. [In James City County, a water crisis by 2.83 million \(gallon\) cuts](#) | August 18, 2019 | [Virginia Mercury](#)
2. [Virginia Shore regional sewer plan unveiled](#) | August 21, 2019 | [Delmarva now](#)
3. [Septic system failures continuing problem on Gwynn's Island](#) | August 21, 2019 | [Gloucester-Mathews Gazette-Journal](#)
4. [Officials meet with HR Sanitation District Reps](#) | August 22, 2019 | [Eastern Shore Post](#)
5. [Food trucks have experienced a surge in Chincoteague, but challenges persist](#) | August 22, 2019 | [Delmarva Now](#)
6. [G.I sewer extension could cost \\$4M](#) | August 28, 2019 | [Gloucester-Mathews Gazette-Journal](#)
7. [Saving the Potomac Aquifer](#) | August 30, 2019 | [Bacon's Rebellion](#)

B. Social Media and Online Engagement

1. Facebook: 49,000 page impressions; 47,000 post impressions reaching 32,000 users, and Facebook Engagement of 1,564 (957 reactions, 357 shares and 229 comments – largely from a single post made on August 8 re: 'flushable wipes')
2. Twitter: 12,500 tweet impressions; 58 profile visits and nine mentions
3. SWIFTVA.com: 409 new users/visitors and 1,156 page views; 448 total visitors with average time per session at 2:04 minutes.
4. LinkedIn Impressions: 819 page impressions and 0 post impressions
5. YouTube: 976 views
6. Blog posts: 0

7. Construction Project Page Visits: 950 total (this number does not include direct visits from home page), broken down as follows:
 - a. 397 visits to construction status page
 - b. 553 visits to individual project pages
8. Next Door unique impressions: 22,158 views and 1,956 clicks (one post)

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

1. News Releases/Traffic Advisories/Construction Notices: 8 (three construction notices, one public meeting notice, three traffic advisories)
2. Advertisements: 0
3. Project Notices: 7 (via door hanging/door knocking, USPS mailings and one-on-one visits reaching approximately 96 residents)
4. Project/Community Meetings: 0
5. New Project Web Pages/Blogs/Videos: 0

C. Special Projects and Highlights

1. Director provided tours of the SWIFT Research Center (SWIFT RC) to the publisher of Bacon's Rebellion and to Dr. and Mrs. Bill Mann.
2. Director and staff participated in the Catch the King Tide training workshop.
3. Staff met with various project managers for progress meetings, business and customer follow-up meetings and discussion of upcoming projects.

D. Internal Communications

1. Director participated in the following internal meetings and events:
 - a. Stakeholder coordination meeting with Chief of SWIFT
 - b. SWIFT Program Management Plan review meeting for Environmental Health & Safety
 - c. Community Commitment Plan development meeting with SWIFT Program Management team
 - d. Wellness Committee meeting
 - e. Review of HRSD and SWIFT branding guidelines for SharePoint updates
 - f. Strategic Carbon Footprint Reduction team meeting

- g. Attended Operations Quality Steering Team (QST) meeting with Safety Manager to discuss and review updates to Facility Tour guidelines
- h. Weekly status meetings with IT and Virginia Interactive for phase two of website updates
- i. Met with Pretreatment and Pollution Prevention (P3) Supervising Specialist to review and edit a new boater's education brochure in production
- j. Provided a tour of the SWIFT RC to IT staff
- k. New Employee Orientation meetings
- l. SWIFT QST, QST and Discharge Monitoring Report (DMR) meetings

2. Director conducted bi-weekly communications department status meetings.

E. Metrics

1. Educational and Outreach Activities: 2

- a. 08/19/19 – SWIFT Research Center tour to Crowder Construction family members and James Bacon, Publisher, Bacon's Rebellion
- b. 08/28/19 – SWIFT RC tour to Dr. and Mrs. Bill Mann, Emily Crowder

2. Number of Community Partners: 0

3. Additional Activities Coordinated by Communications Department: 0

4. Monthly Metrics Summary

Item #	Strategic Planning Measure	Unit	August 2019
M-1.4a	Total Training Hours per Full Time Employee (3) - Current Month	Hours / #FTE	1
M-1.4b	Total Training Hours per Full Time Employee (3) - Cumulative Fiscal Year-to-Date	Hours / #FTE	16.17
M-5.2	Educational and Outreach Events	Number	4
M-5.3	Number of Community Partners	Number	0

Respectfully,

Leila Rice, APR
 Director of Communications

TO: General Manager
FROM: Director of Engineering
SUBJECT: Engineering Monthly Report for August 2019
DATE: September 10, 2019

A. General

1. Capital Improvement Program (CIP) spending for the first month of Fiscal Year (FY) 2020 was lower than the planned spending target. The first month of the fiscal year is typically lower than planned due to accounting adjustments for projects associated with the previous fiscal year.

CIP Spending (\$M):

	Current Period	FYTD
Actual	4.91	4.91
Plan	12.00	12.00

2. HRSD staff participated in a day-long meeting with the City of Virginia Beach to discuss project delivery options for a number of upcoming administrative space improvement projects. This work is being expedited due to the recent tragedy at the City of Virginia Beach Main Office Complex. The meeting was facilitated by the Design-Build Institute of America (DBIA) to consider project delivery options that would allow the City of Virginia Beach to expedite these projects at an affordable price while still meeting the needs of the ultimate users of the space and.

B. Asset Management Division

1. Staff has finalized a list of Key Performance Indicators (KPIs) that will be used with each Asset Management Plan to support the decision making process. The KPI's include metrics in four areas: cost, asset reliability/performance, asset maintenance and staffing. The KPIs include 40 specific areas of interest and will be placed on the Asset Management Dashboard for easy accessibility and as a constant reminder of critical performance goals.
2. A recent change to the Emergency Management Plan involves the use of staff to conduct the post-event damage assessment efforts. Since most emergency events are not wide ranging, it was determined that Operations Department staff were best suited to handle these assessments. Engineering Department staff will be used only in the event that Operations

is overwhelmed with system repairs due to a very significant emergency event. Cost estimates and coordination with external groups will still be performed by Engineering and Finance Department staff as appropriate for the specific emergency.

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

1. Construction efforts continue for the Orcutt Avenue and Mercury Boulevard Gravity Sewer Improvements project. This project is located along both Orcutt Avenue and Mercury Boulevard in a congested section of the City of Hampton. Maintenance of traffic and continued close coordination with the residents and businesses in this area will be an important part of the success of the construction effort. Most of the construction efforts along Orcutt Avenue and a critical crossing of Mercury Boulevard have recently been completed. The next stage of the work involves the pipeline rehabilitation and replacement work along Mercury Boulevard. We are also working together with the City of Hampton to incorporate some of their sewer rehabilitation work into this project. This is one of many of the Sewer Rehabilitation Plan projects included in the U.S. EPA Consent Decree to reduce sanitary sewer overflows in the region.
2. The Atlantic Treatment Plant Thermal Hydrolysis Process and Fats, Oil & Grease (FOG) Receiving Station construction continues. Recent construction efforts include the installation of the FOG tanks, pre-engineered metal building, cooling water system and electrical switchgear. This is a difficult and lengthy construction effort although the project is proceeding on schedule. Construction is planned to continue through 2019, with start-up of the new system in early 2020 and a planned completion date of October 2020.
3. The SWIFT Program continued in August with numerous discussions regarding the wastewater treatment improvements needed at the James River Treatment Plant. Discussions have focused on the need for improvements to the biological treatment process, secondary clarifiers and outfall diffuser system. Optimizing the wastewater treatment system allows for a more efficient design for the new SWIFT facilities at this location. Site limitations, reuse of existing facilities and construction sequencing are challenges the design team is considering as the conceptual design continues. The SWIFT Project Team is proceeding with the conceptual design with a target to complete this effort by January 2020.

D. Planning & Analysis Division

1. Staff has been working with the Design-Build Teams constructing both the new Chesapeake Bay Bridge Tunnel and the Hampton Roads Bridge Tunnel projects. Coordination is needed to address potential conflicts with HRSD facilities and the need to discharge dewatering fluids to the sewer system during construction. Both projects are being delivered with a fast-track delivery approach, so timely reviews and close coordination with the Design-Build Teams are critical so that both of these important projects stay on schedule.
2. Staff has been working closely with the City of Norfolk to address needed sewer improvements in the Larchmont section of the City. This effort was undertaken since both the City and HRSD has large projects planned for this area to address concerns with sewer overflows and impacts to infrastructure caused by flooding. A number of options were under consideration including a full replacement of the existing gravity collection sewer system with a vacuum sewer system. The decision has been made to focus on improving the existing system rather than a full replacement. A final recommendation has been made which will include the construction of five (5) relocated pump stations and associated sewer to serve these new locations. A cost sharing agreement is also needed with the City of Norfolk to complete this project since both City and HRSD assets are involved. The work must be closely coordinated so that improvements can be sequenced and impacts to local neighborhoods can be minimized.

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 2
 - a. 08/24/19 - Staff participated in the United Way of South Hampton Roads Community Impact Day.
 - b. 08/26/19 – Staff facilitated a discussion with City of Virginia Beach on project delivery options in conjunction with members from the Design-Build Institute of America (DBIA).
2. Number of Community Partners: 2
 - a. United Way of South Hampton Roads
 - b. DBIA
3. Number of Research Partners: 0

4. Metrics Summary:

Item #	Strategic Planning Measure	Unit	August 2019
M-1.4a	Total Training Hours per Full Time Employee (44) - Current Month	Hours / #FTE	1.78
M-1.4b	Total Training Hours per Full Time Employee (44) - Cumulative Fiscal Year-to-Date	Hours / #FTE	5.14
M-5.2	Educational and Outreach Events	Number	2
M-5.3	Number of Community Partners	Number	2
M-5.4	Number of Research Partners	Number	0

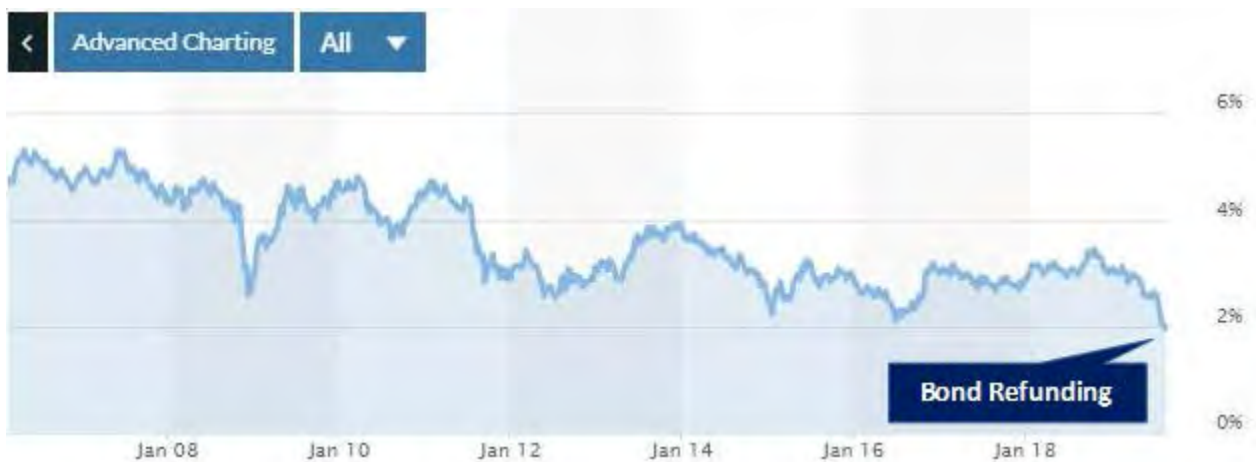
Bruce W. Husselbee, P.E.

Bruce W. Husselbee, P.E.

TO: General Manager
FROM: Director of Finance
SUBJECT: Monthly Report for August 2019
DATE: September 11, 2019

A. General

1. With the US Treasuries at historic low yields, staff accelerated the bond refunding to capture the savings. We saved ratepayers \$29.5 million net present value savings by refinancing and defeasing a portion of our outstanding debt. It represents the largest refinancing savings in HRSD's history. Our team was able to pull this deal together in less than four weeks, which condensed a process that typically takes two to three months and locked the 30-year US Treasury at 1.98 percent.



2. As part of the bond sale, HRSD informed the Ratings Agencies that we would be closing the senior lien, which would trigger a migration of our Virginia Resources Authority (VRA) senior debt down to the subordinate lien as outlined in our Master Financing Agreement with VRA. With the 2019 refunding and migration, the subordinate lien would be more than 70 percent of our outstanding debt. As a result, S&P upgraded HRSD's subordinate lien from "AA" to "AA+" to match the senior lien rating, which was the culmination of years of planning. This should reduce our cost of borrowing by 0.05 percent-0.10 percent, which will save our rate payers millions of dollars in reduced interest expense.
3. Water consumption is slightly higher than budget which is driving revenues higher than projected. Interest Income continues to be strong but with rates expected to be cut, this trend may be easing. Personal services are

slightly above budget, at 19 percent, and fringe benefit expenses are at budget, at 17 percent, consistent with last year. Since HRSD has twenty-six bi-weekly pay periods, Personal services costs are higher during months like August that have three pay periods; we anticipate that when we return to months when there are two pay periods the cumulative expense percentages will be back in line with budget. Fringe benefits aren't impacted as heavily since VRS and some other benefits are only paid twice a month regardless of the number of pay periods. All other expenses are below budget, typical for August and generally consistent with the prior year since some purchases are using funds encumbered in FY-2019. Major repairs and capital assets expenses are significantly lower than budget at this time, since many purchases in July and August are related to prior year encumbrances. The Days Cash on Hand will decline after the bond deal closes on October 2 with the \$66 million cash defeasance.

4. In August, Customer Care Staff organized a meeting with locality Customer Service leadership to discuss topics affecting the customer service groups throughout the region. The leadership group's goal is to achieve excellent business outcomes and outstanding customer experiences across all of the organizations. The group plans to meet regularly to collaborate and continue open communications.
5. Recently, two members of the accounts payable team completed training and received certifications from the Institute of Finance and Management (IOFM). Terri Black received her certification as an Accredited Payables Specialist and Anisea Burl received her certification as an Accredited Payables Manager. Their completion of this program demonstrates accomplished knowledge in all areas within accounts payable including internal controls, regulations and fraud prevention. Both Terri and Anisea are also serving as members of IOFM's Editorial Advisor Panel. Panel members are offered the opportunity to participate with fellow panelists sharing thoughts and best practices in the daily tasks of accounts payable.

B. Interim Financial Report

1. Operating Budget for the Period Ended August 31, 2019

	Amended Budget	Current YTD	Current YTD as % of Budget (17% Budget to Date)	Prior YTD as % of Prior Year Budget
Operating Revenues				
Wastewater	\$ 316,217,000	\$ 57,523,171	18%	19%
Surcharge	1,500,000	304,356	20%	19%
Indirect Discharge	2,750,000	548,219	20%	20%
Fees	2,858,000	492,066	17%	17%
Municipal Assistance	725,000	122,084	17%	13%
Miscellaneous	600,000	44,517	7%	8%
Total Operating Revenue	<u>324,650,000</u>	<u>59,034,413</u>	18%	18%
Non Operating Revenues				
Facility Charge	6,160,000	1,106,515	18%	20%
Interest Income	4,000,000	1,634,045	41%	39%
Build America Bond Subsidy	2,400,000	-	0%	0%
Other	595,000	128,918	22%	0%
Total Non Operating Revenue	<u>13,155,000</u>	<u>2,869,478</u>	22%	18%
Total Revenues	337,805,000	61,903,891	18%	18%
Transfers from Reserves	10,857,750	1,809,625	17%	17%
Total Revenues and Transfers	<u>\$ 348,662,750</u>	<u>\$ 63,713,516</u>	18%	18%
Operating Expenses				
Personal Services	\$ 57,346,225	\$ 11,144,131	19%	19%
Fringe Benefits	24,232,400	4,209,865	17%	17%
Materials & Supplies	8,838,801	842,983	10%	14%
Transportation	1,579,921	171,705	11%	12%
Utilities	12,774,299	1,412,867	11%	13%
Chemical Purchases	10,979,218	1,270,943	12%	13%
Contractual Services	46,373,753	5,061,240	11%	11%
Major Repairs	10,847,604	688,055	6%	4%
Capital Assets	458,825	1,131	0%	4%
Miscellaneous Expense	3,085,523	507,540	16%	16%
Total Operating Expenses	<u>176,516,569</u>	<u>25,310,460</u>	14%	15%
Debt Service and Transfers				
Debt Service	63,544,841	17,144,324	27%	27%
Transfer to CIP	108,341,340	18,056,890	17%	17%
Transfer to Risk management	260,000	43,334	17%	17%
Total Debt Service and Transfers	<u>172,146,181</u>	<u>35,244,548</u>	20%	21%
Total Expenses and Transfers	<u>\$ 348,662,750</u>	<u>\$ 60,555,008</u>	17%	18%

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 August 31, 2019

HRSD - RESERVE AND CAPITAL ACTIVITY

August 31, 2019

	General Reserve			Capital		
	General	Debt Service	Risk Mgmt Reserve	Reserve	Paygo	Debt Proceeds
	Unrestricted	Restricted	Unrestricted	Unrestricted	Unrestricted	Restricted
Beginning - July 1, 2019	\$ 178,937,154	\$ 28,553,343	\$ 3,499,535	\$ 15,266,324	\$ 86,279,809	\$ 14,334,553
Current Year Sources of Funds						
Current Receipts	60,367,813					
Capital Grants						
VRA Draws					5,818,666	
Bond Proceeds (includes interest)						36,364
Transfers In			43,334		18,056,890	
Sources of Funds	60,367,813	-	43,334	-	23,875,556	36,364
Total Funds Available	\$ 239,304,967	\$ 28,553,343	\$ 3,542,869	\$ 15,266,324	\$ 110,155,365	\$ 14,370,917
Current Year Uses of Funds						
Cash Disbursements	49,830,960				5,686,514	14,370,917
Transfers Out	18,100,224					
Uses of Funds	67,931,184	-	-	-	5,686,514	14,370,917
End of Period - August 31, 2019	\$ 171,373,783	\$ 28,553,343	\$ 3,542,869	\$ 15,266,324	\$ 104,468,851	\$ -
Unrestricted Funds	\$ 294,651,827					

4. Capital Improvements Budget and Activity Summary for Active Projects for the Period Ended August 31, 2019

Classification/ Treatment Service Area	Expenditures		Year to Date		Outstanding Encumbrances	Available Balance
	Budget	prior to June 30, 2019	FY2020 Expenditures	Total Expenditures		
Administration	74,586,023	43,226,275	392,159	43,618,434	2,196,719	28,770,870
Army Base	158,584,000	125,110,560	-	125,110,560	2,607,430	30,866,010
Atlantic	127,815,138	88,977,494	17,410	88,994,904	17,376,055	21,444,179
Boat Harbor	136,850,842	60,512,133	110,469	60,622,602	18,694,906	57,533,334
Ches-Eliz	175,032,583	21,557,919	2,581,440	24,139,359	64,354,119	86,539,105
James River	286,313,687	58,557,889	34,946	58,592,835	8,381,242	219,339,610
Middle Peninsula	87,389,819	10,996,758	83,489	11,080,247	7,791,626	68,517,946
Nansemond	90,309,879	42,439,857	106,738	42,546,595	5,198,993	42,564,291
Surry	13,980,950	1,905,064	100,456	2,005,520	8,071,294	3,904,136
VIP	300,368,424	259,851,080	311,595	260,162,675	1,623,827	38,581,922
Williamsburg	19,338,971	12,215,242	338,587	12,553,829	1,029,620	5,755,522
York River	51,754,404	44,185,737	112,106	44,297,843	1,092,909	6,363,652
General	678,524,433	233,165,482	720,948	233,886,430	24,454,099	420,183,904
	\$2,200,849,153	\$1,002,701,490	\$4,910,343	\$1,007,611,833	\$162,872,839	\$1,030,364,481

5. Debt Management Overview

HRSD - Debt Outstanding (\$000's)					August 31, 2019	
	Principal Jul 2019	Principal Payments	Principal Draws	Principal Aug 2019	Interest Payments	
Fixed Rate						
Senior	\$ 307,555	\$ (145)	\$ -	\$ 307,410	\$ (61)	
Subordinate	464,151	(2,850)	3,793	465,094	(5,338)	
Variable Rate						
Subordinate	50,000	-	-	50,000	(59)	
Line of Credit						
Total	\$ 821,706	\$ (2,995)	\$ 3,793	\$ 822,504	\$ (5,458)	

HRSD- Series 2016VR Bond Analysis			August 30, 2019
	SIFMA Index	HRSD	Spread to SIFMA
Maximum	2.30%	2.25%	-0.05%
Average	0.52%	0.51%	-0.01%
Minimum	0.01%	0.01%	0.00%
As of 8/30/19	1.35%	1.34%	-0.01%

* Since October 20, 2011 HRSD has averaged 51 basis points on Variable Rate Debt

6. Financial Performance Metrics for the Period Ended August 31, 2019

HRSD - UNRESTRICTED CASH

July 31, 2019

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	\$ 287,140,623			633
Risk Management Reserve	\$ (3,521,202)	(8)		625
Reserve	\$ (15,266,324)	(34)		591
Capital (PAYGO only)	\$ (94,049,110)	(207)		384
Net Unassigned Cash	\$ 174,303,987			384

Risk Management Reserve as a % of Projected Claims Cost is 25% YTD compared to 25% Policy Minimum

Days Cash on Hand Policy Minimum is 270-365 days.

HRSD - SOURCES OF FUNDS

August 31, 2019

Primary Source	Beginning	YTD	YTD	YTD	Ending	Allocation of	Credit Quality	Current
	Market Value				Market Value			
	July 1, 2019	Contributions	Withdrawals	Income Earned	August 31, 2019	Funds		Yield
BAML Corp Disbursement Account	7,755,006	84,484,006	70,818,095	14,266	21,435,183	11.2%	N/A	0.70%
VIP Stable NAV Liquidity Pool	163,658,801	10,000,000	5,000,000	656,108	169,314,909	88.8%	AAAm	2.29%
Total Primary Source	\$ 171,413,807	\$ 94,484,006	\$ 75,818,095	\$ 670,374	\$ 190,750,092	100.0%		

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

Secondary Source	Beginning	YTD	YTD	YTD	Ending	YTD	Yield to
	Market Value				Market Value		
	July 1, 2019	Contributions	Withdrawals	& Realized G/L	August 31, 2019	Ending Cost	at Market
VIP 1-3 Year High Quality Bond Fund	128,529,607	-	4,289	527,012	129,444,924	129,052,330	1.62%
Total Secondary Source	\$ 128,529,607	\$ -	\$ 4,289	\$ 527,012	\$ 129,444,924	\$ 129,052,330	\$ 392,594

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 0.01% in the month of August.

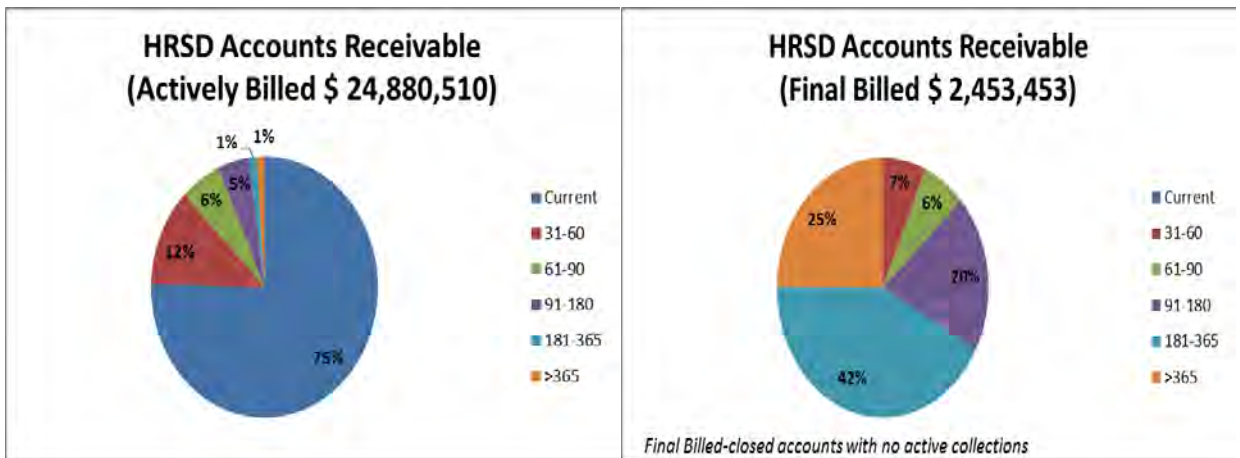
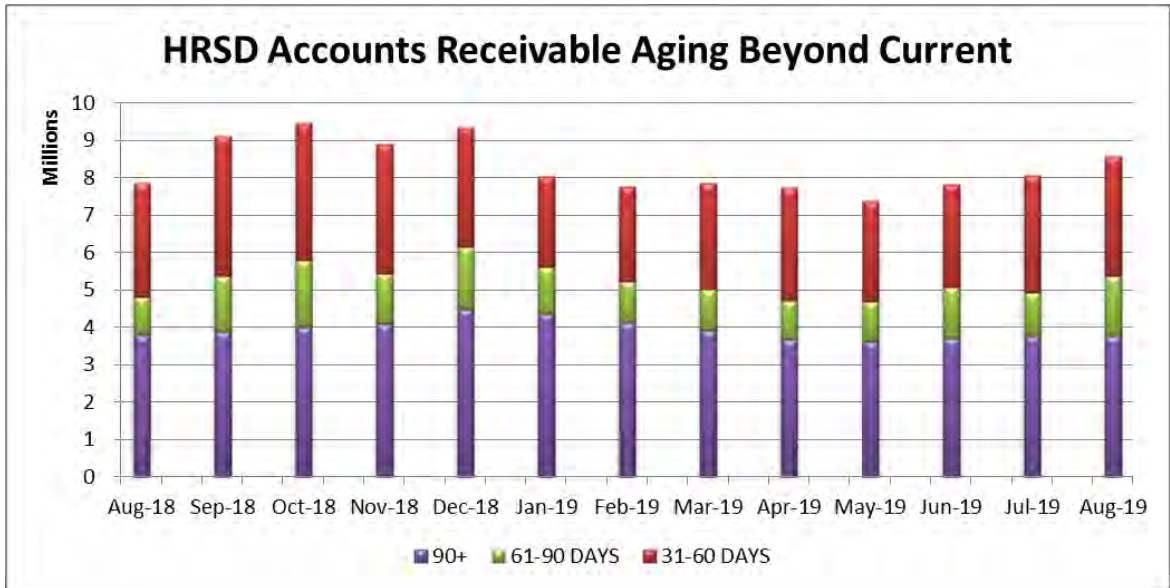
	Total	Fund Alloc
Total Primary Source	\$ 190,750,092	59.6%
Total Secondary Source	\$ 129,444,924	40.4%
TOTAL SOURCES	\$ 320,195,016	100.0%

7. Summary of Billed Consumption

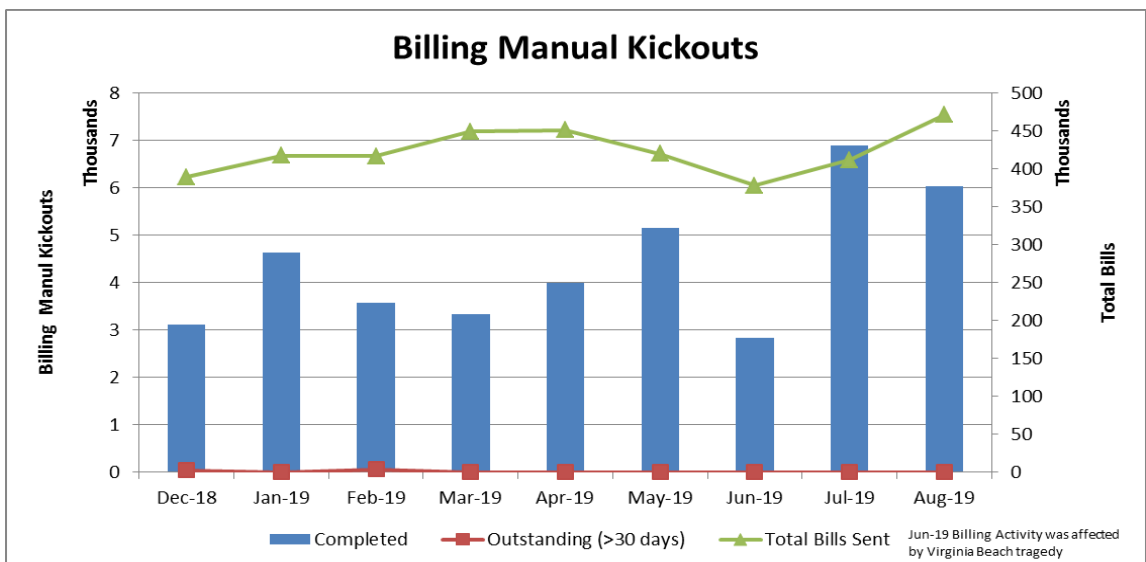
Summary of Billed Consumption (,000s ccf)							
Month	FY2020 Cumulative Budget Estimate	FY2020 Cumulative Actual	% Difference		% Difference		% Difference
			From Budget	Cumulative FY2019 Actual	From FY2019	Cumulative 3 Year Average	From 3 Year Average
July	4,845	5,135	6.0%	5,175	-0.8%	4,940	4.0%
Aug	9,649	10,009	3.7%	10,233	-2.2%	9,815	2.0%
Sept	14,488	-	N/A	14,294	N/A	14,384	N/A
Oct	18,842	-	N/A	19,087	N/A	19,036	N/A
Nov	22,952	-	N/A	23,249	N/A	23,278	N/A
Dec	27,344	-	N/A	27,376	N/A	27,532	N/A
Jan	31,535	-	N/A	32,010	N/A	32,003	N/A
Feb	36,079	-	N/A	36,551	N/A	36,443	N/A
March	40,427	-	N/A	40,187	N/A	40,480	N/A
Apr	44,149	-	N/A	44,551	N/A	44,554	N/A
May	48,421	-	N/A	48,790	N/A	48,786	N/A
June	52,985	-	N/A	53,172	N/A	53,280	N/A

C. Customer Care Center

1. Accounts Receivable Overview



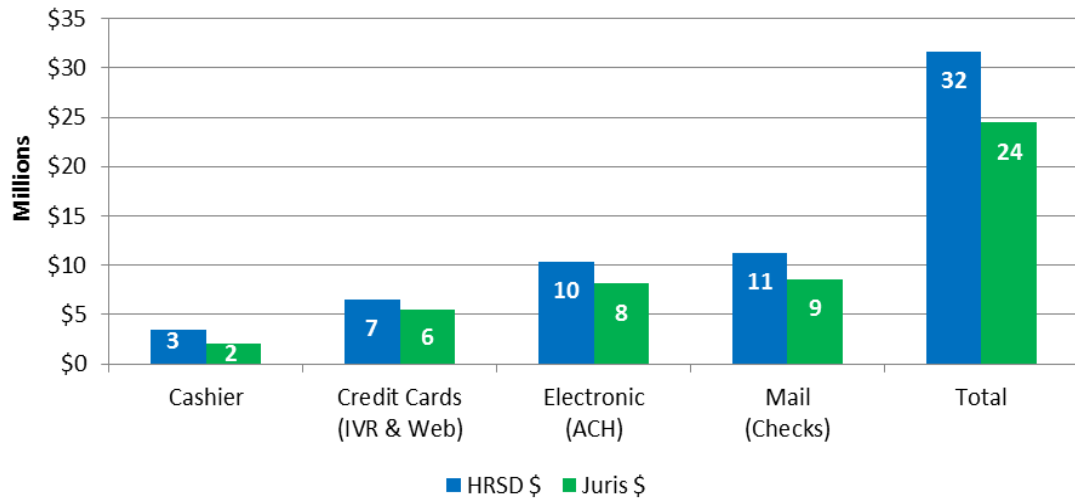
2. Customer Care Center Statistics



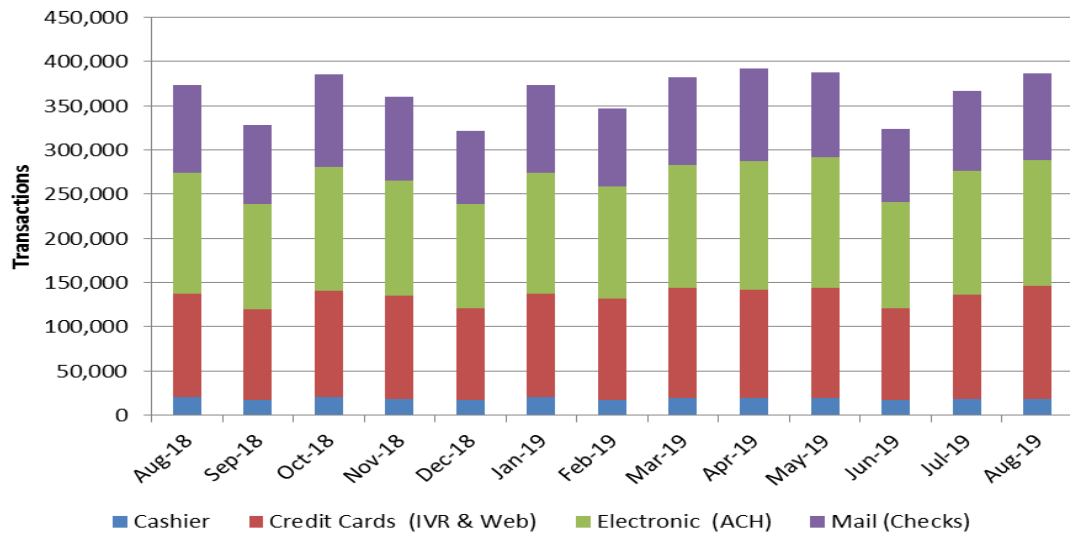
Jun-19 Billing Activity was affected by Virginia Beach tragedy.

Jul-19 A formatting change caused an increase in manual kickouts. We expect the levels to normalize in the next few months.

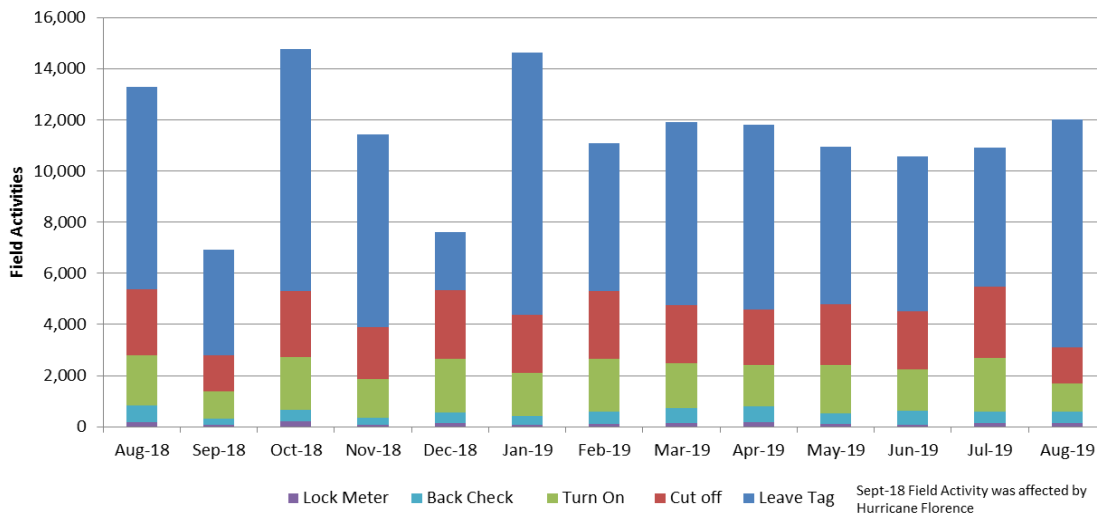
Payments Processed August 2019

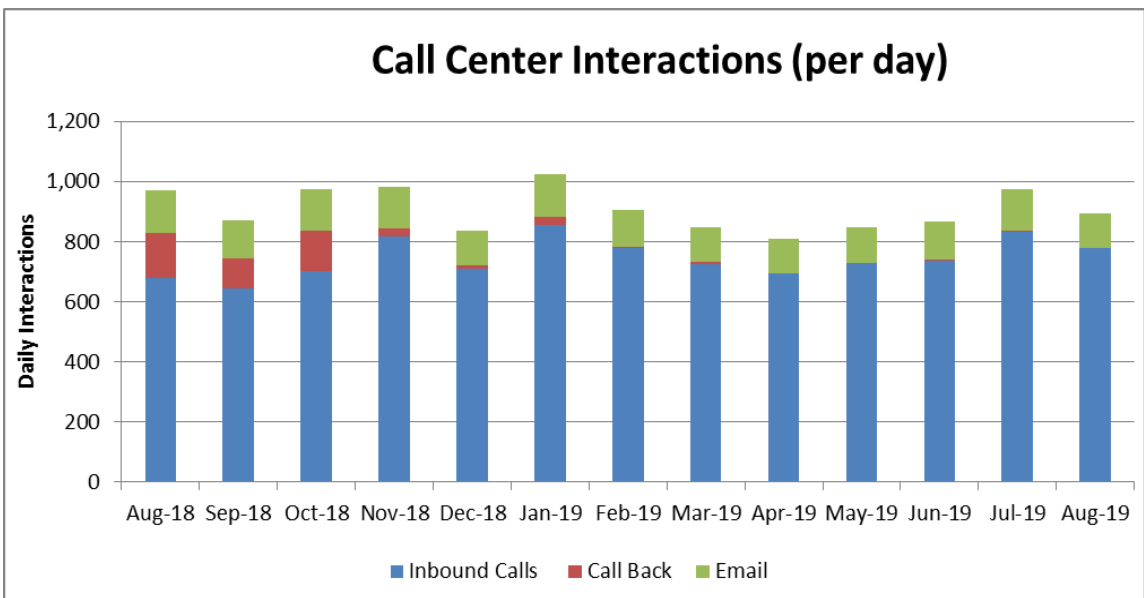
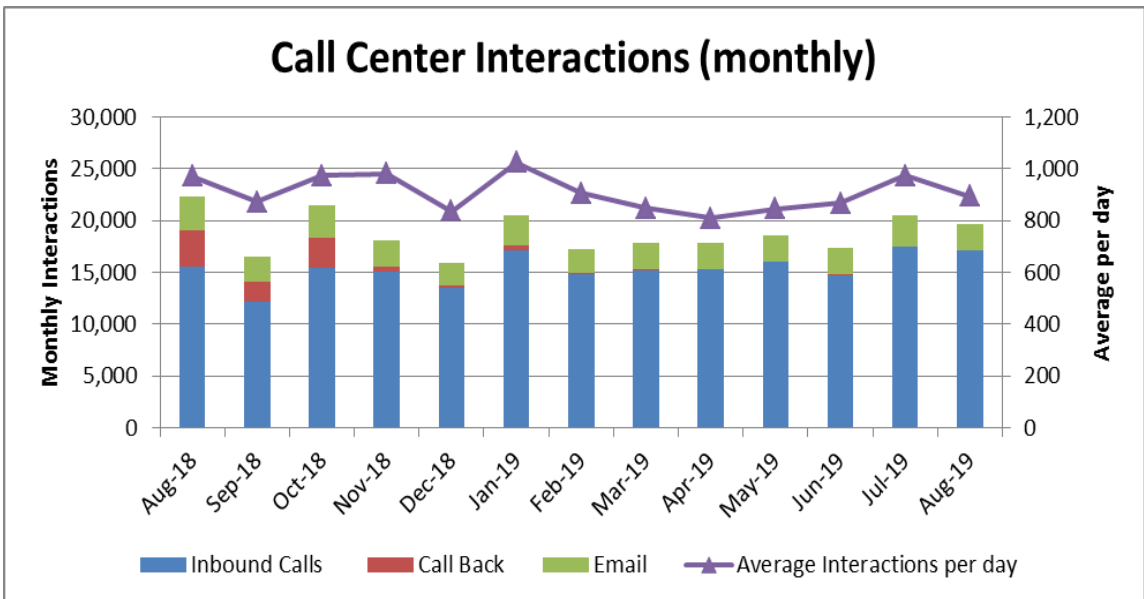
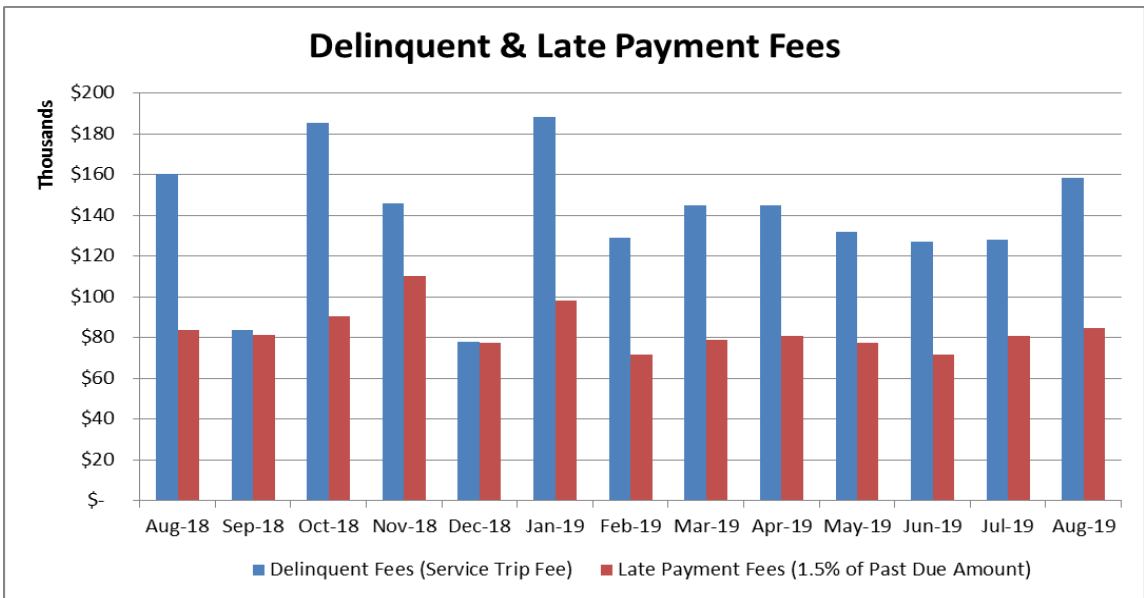


Payment Transactions



Field Activity



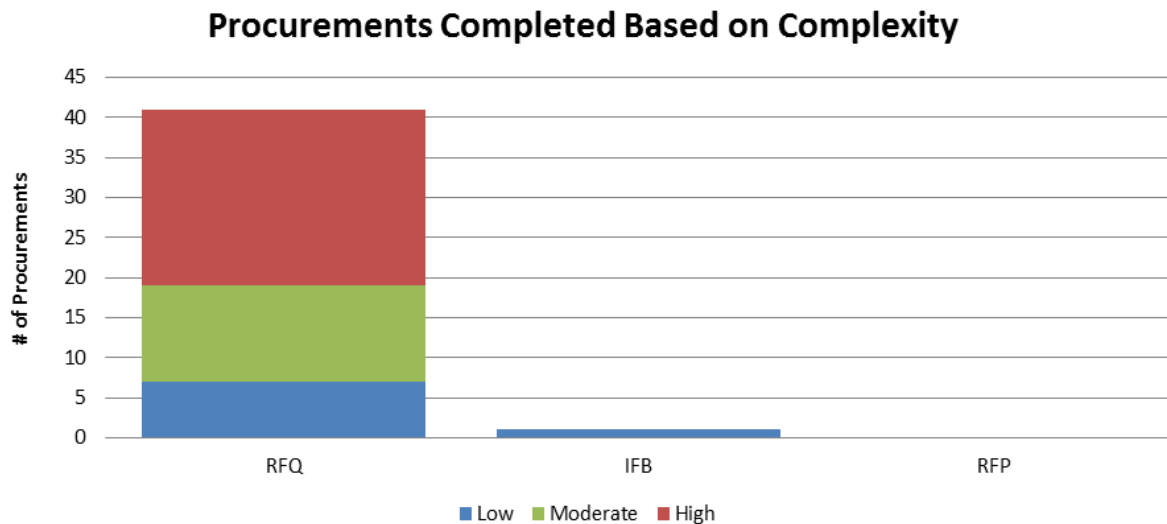
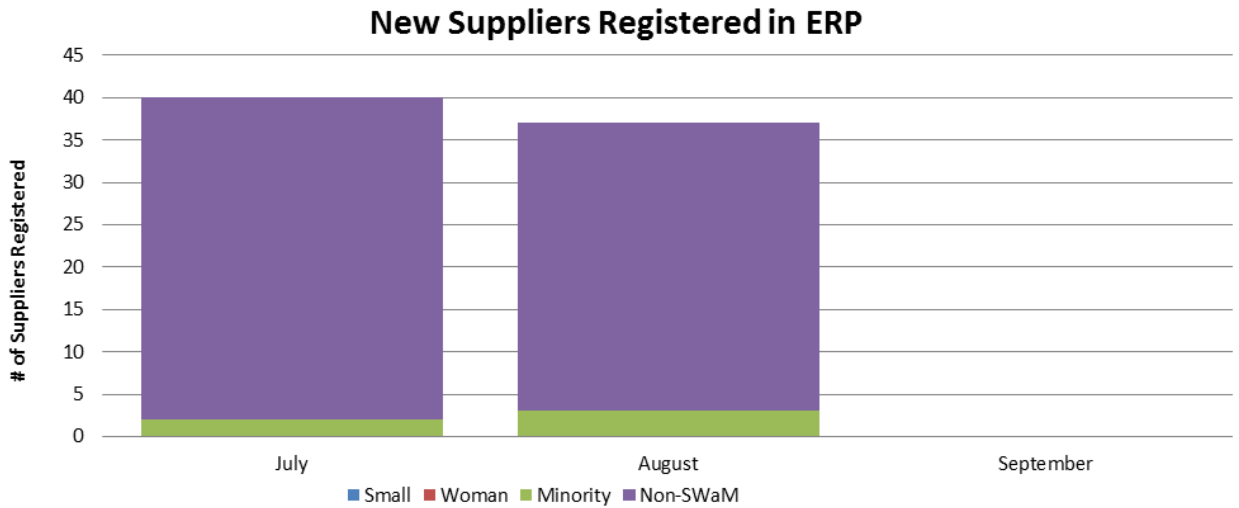


Customer Interaction Statistics	Mar	Apr	May	Jun	Jul	Aug
Calls Answered within 3 minutes	94%	96%	96%	94%	89%	94%
Average Wait Time (seconds)	0:39	0:26	0:29	0:40	0:67	0:65
Calls Abandoned	4%	3%	3%	4%	7%	5%

D. Procurement Statistics

Savings	Current Period	FYTD
Competitive Savings ¹	\$21,320	\$49,509
Negotiated Savings ²	\$2,890	\$8,506
Salvage Revenues	\$0.00	\$1,004
Corporate VISA Card - Estimated Rebate	\$21,599	\$44,523

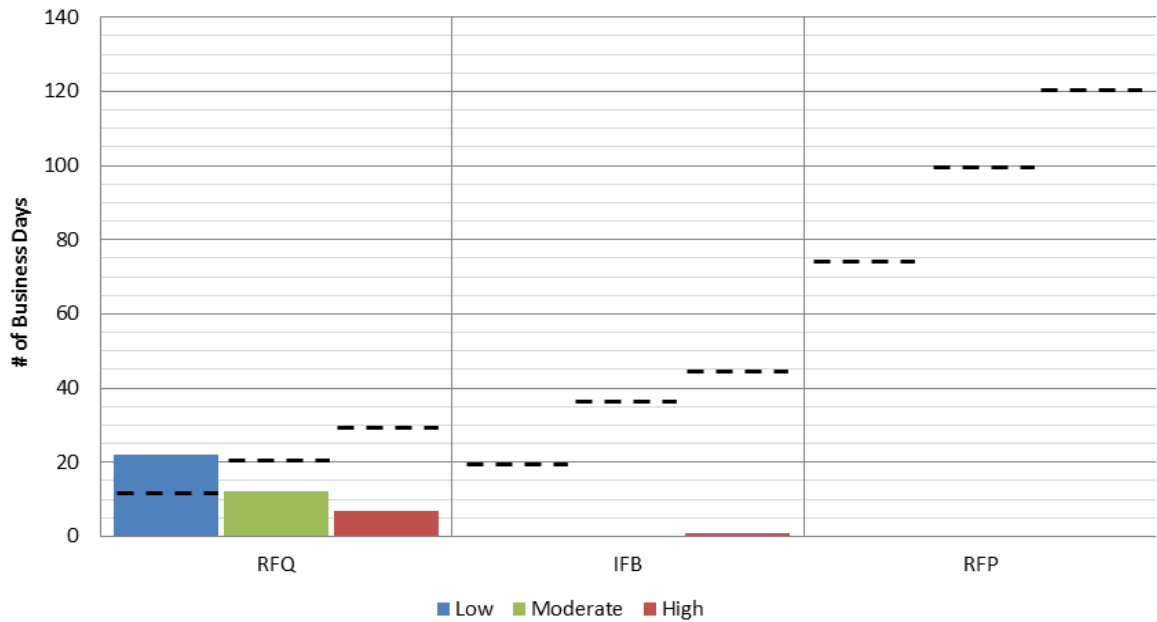
*Increase to FYTD total of \$18,822 for Competitive Savings not recorded in July monthly totals.



¹ Competitive savings are those savings obtained through the informal/formal bidding process. All bids received (except for the lowest responsive/responsible bid) added together and averaged. The average cost is subtracted from the apparent low responsive/responsible bidder.

² Negotiated savings are savings obtained during a Request for Proposal process, or if all bids received exceed the budgeted amount, or if only one bid is received.

Cycle Time per Method of Procurement and Complexity

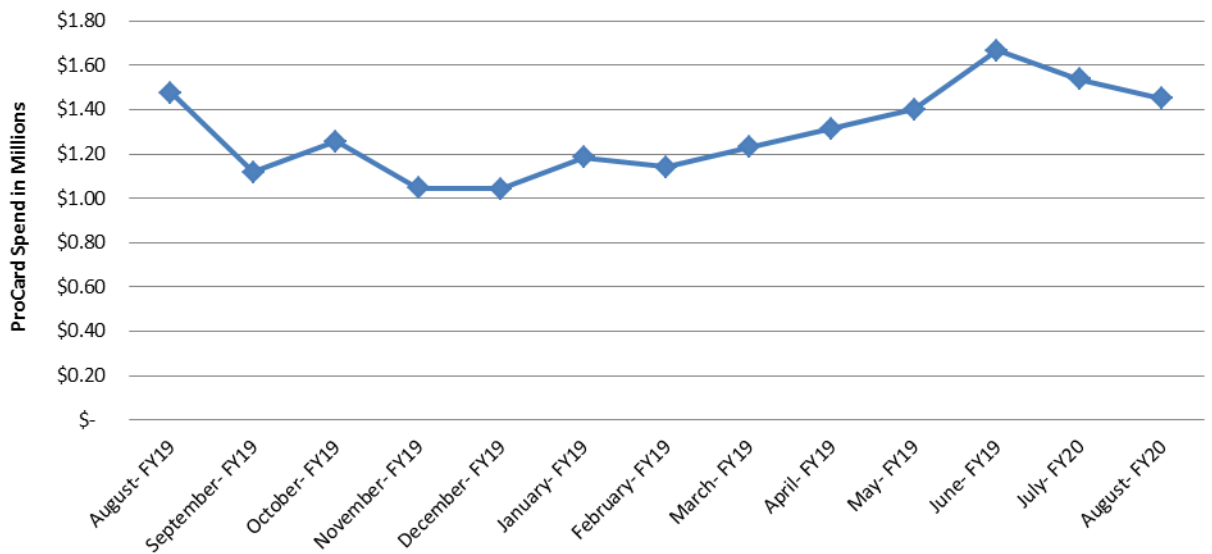


Dashed Line: Target Service Level Cycle Time

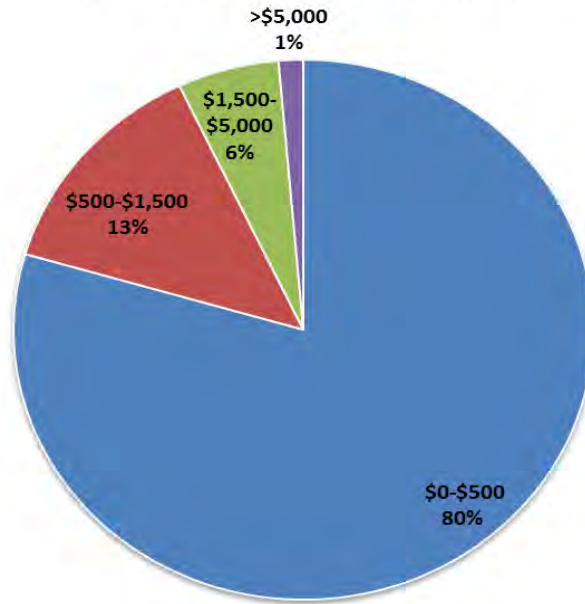
	Low	Moderate	High
RFQ	12	20	30
IFB	20	35	45
RFP	75	100	120

Low: Low technical, quick turnaround, **Moderate:** Technical, routine, **High:** Highly technical, time intensive,

ProCard Spend



ProCard Transaction Dollar Amounts



ProCard Fraud	External Fraud Transactions *	Comments
July	2	Caught by Bank Immediately
August	0	
Total	2	

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

Accidental Use, which is anything that is not purchased for use and ownership by HRSD, was at 1 transaction (0.03%) out of the 2,984 August ProCard transactions, with a total of \$10.58.

Procurement Client Training		
	Current Period	YTD
ProCard Policy and Process	5	10
Procurement Cycle	0	1
Total	5	11

E. Business Intelligence – Enterprise Resource Planning (ERP)

1. ERP Helpdesk currently has 124 open work orders in the following statuses:

Escalated	5
In progress	57
On Hold	10
Open	51
Waiting on User	1

2. ERP Helpdesk received 273 work orders in August. In August, 313 work orders were closed and 117 were closed within one hour.

3. Projects

- a. Unifier and Oracle Primavera P6 Administrative (Admin) Support

- (1) Capitol Program Analyst received 26 Unifier work requests with 96 percent resolved.
- (2) Capitol Program Analyst received seven P6 related work requests with 100 percent resolved.

- b. ERP Enhancements

Completed review of the Request for Proposal (RFP) for ERP Ad-Hoc Reporting software and the RFP has been issued. The pre-proposal conference and closing date will occur in September.

- c. Project EVO Initiative - Unifier improvement project

This project will improve HRSD's project management system, Unifier, to provide real-time visibility into budgets and schedules and empower data-driven decisions.

- (1) Oracle Primavera P6 Phase 1 implementation is live. Project Managers are still being mentored by Enstoa staff through the capability transfer initiative.
- (2) EBS/Unifier detailed design is underway. The team is working through issues that have arisen during the interface mapping.

- (3) The Data warehouse (Panoptra) has gone live. This will be the initial introduction to staff, and future phases will roll out additional reports, key performance indicators and dashboards.
 - (4) Initial work has begun on risk management and executive dashboard.
 - (5) Change management and stakeholder communication continues.
- d. Staff prepared multiple reports for Accounting staff in preparation for the year-end audit.

F. Strategic Planning Metrics Summary

- 1. Educational and Outreach Events: 0
- 2. Community Partners: 0
- 3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	August 2019
M-1.4a	Training During Work Hours Per Full Time Employee (102) – Current Month	Hours / #FTE	1.64
M-1.4b	Total Training During Work Hours Per Full Time Employee (102) – Cumulative Fiscal Year-to-Date	Hours / #FTE	2.77
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0
	Wastewater Revenue	Percentage of budgeted	106%
	General Reserves	Percentage of Operating Budget less Depreciation	113%
	Liquidity	Days Cash on Hand	609 Days
	Accounts Receivable (HRSD)	Dollars	\$27,333,963
	Aging Accounts Receivable	Percentage of receivables greater than 90 days	14%

4. Annual Metrics

Item #	Strategic Planning Measure	Unit	FY-2019
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 ³	*
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 closeout of fiscal year financials.

Respectfully,

Jay A. Bernas

Jay A. Bernas, P.E.

Director of Finance

³ Median Household Income is based on the American Community Survey (US Census) for Hampton Roads

TO: General Manager
FROM: Director of Information Technology
SUBJECT: Information Technology Department Report for August 2019
DATE: September 16, 2019

A. General

1. As part of HRSD's ongoing technology refresh, older EMC storage equipment was decommissioned and removed from the datacenter.
2. Wireless access point upgrades are complete at the South Shore Operations center, the Air Rail Avenue complex, and the Virginia Initiative Plant.
3. Several computers were infected by malware in what appears to have been a targeted attack aimed at specific HRSD employees. The virus was contained, removed, and all network users were reminded of the need for increased vigilance and awareness when using a computer, tablet, smartphone, or any electronic device capable of being compromised. Staff continues to work with its third party security consultants to further enhance cybersecurity awareness, response, and protection.
4. The Surface Pro deployment project is on schedule, with the master disk image currently being tested. This is the reference image containing all applications, files, and configuration settings that will be installed on the Surface Pros. End user training is scheduled to begin in October, concurrent with deployment of the devices.
5. VxRail upgrades are complete to the latest version of software. This upgrade will provide more reliability for the treatment plant infrastructure.
6. An upgrade to the dynamic multipoint virtual private network (DMVPN) is complete. This upgrade will assist in the continued support of remote access for users.

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	August 2019
M-1.4a	Training During Work Hours Per Full-Time Employee (50) – Current Month	Total Training Hours / # FTE	4.90
M-1.4b	Total Training During Work Hours Per Full-Time Employee (50) – Cumulative Fiscal Year-to-Date	Total Training Hours / # FTE	8.36
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 August 2019
DATE: September 9, 2019

A. Interceptor Systems

1. North Shore (NS) Interceptor Systems

- a. There was one interceptor complaint and 17 system alarms during the month. Staff resolved all issues and alarms.

There were zero (0) Miss Utility “No Show” reported for the month.
- b. Staff completed the Coliseum Pressure Reducing Station (PRS) and Off-Line Storage tank programming efforts designed to level out the diurnal flows at the York River Treatment Plant (YRTP). As a result, there were advances in reliability and effectiveness of the treatment processes.
- c. Significant time and effort was spent on the Supervisory Control and Data Acquisition (SCADA) project. Staff is developing new testing plans for the top-end software component of the project. If successful, we will assess the viability of the entire network architecture and security elements before executing the remaining portions of the work.

2. South Shore (SS) Interceptor Systems

- a. There were three Sanitary Sewer Overflows (SSOs) reported this month.
 - (1) On August 7, a rain event producing approximately two and a half inches of rain caused a manhole to overflow 13,000 gallons over two hours. After the rain subsided, the overflow ended. Staff cleaned debris and placed lime in the impacted area.
 - (2) On August 14, the City of Norfolk reported a force main break on East Little Creek Road. The twenty-inch ductile iron pipeline had external corrosion on the bottom of the pipe. The line failure leaked approximately 20,300 gallons into a storm drain

leading to Mason Creek. Staff isolated the flows and replaced approximately five feet of pipe within about 24 hours.

- (3) On August 30, a contractor working near the Pine Tree PRS in Virginia Beach struck an air vent. The failure leaked approximately 1,000 gallons into a ditch leading to the Eastern Branch of the Lynnhaven River. Staff mobilized, excavated, and closed the corporation stop.
- b. Staff spent a significant amount of time in design review and construction progress meetings associated with the Chesapeake-Elizabeth Interceptor System Diversion Improvements project. Construction continues on the PRS Reliability Upgrades at the Laskin, Pine Tree, and the Providence Road PRSs. The contractor began initial site work at the Providence Road Offline Storage Facility.
- c. Staff assisted the Nansemond Treatment Plant (NTP) by removing two yards of debris from the Regional Residual Facility (RRF). Staff also helped the plant replace a fire hydrant and aided in a cleanup effort after a hauling truck spilled material in the traffic circle outside of the plant.
- d. Staff helped the Army Base Treatment Plant (ABTP) by cleaning out an aeration tank for repairs.
- e. Staff supported the VIP Treatment Plant by removing the media out of a scrubber.
- f. Staff operated system valves to assist the City of Virginia Beach in the replacement of an air vent corporation stop.
- g. Staff operated system valves to assist the City of Norfolk in the replacement of a branch valve that isolates their pump station on Galveston Boulevard.
- h. There were five interceptor complaints reported this month. Four were city issues. A motorist in Virginia Beach reported a missing valve lid; staff, subsequently, replaced the lid.
- i. Staff responded to and resolved 23 system alarms this month.

B. Major Treatment Plant Operations

1. Army Base Treatment Plant (ABTP)

- a. Staff discovered that a contractor was using non-potable water (NPW) to clean storm water pipes. Staff halted the activity and directed the contractor to potable water, and reported a 300 gallon NPW spill.
- b. On August 1, there was a low chlorine residual event. The low residual was caused by excess vapor in the sodium hypochlorite supply piping. Staff worked diligently to vent the vapor from the piping system and returned to normal operations.
- c. Contractors replaced corroded aluminum pipe supports in the Nitrification Enhancement Facility. The supports were corroded by the addition of Sodium Hydroxide that is required to maintain compliance with our air permit. The supports were replaced with stainless steel supports.
- d. Staff completed repairs on two primary clarifiers.
- e. Staff replaced an obsolete recirculation pump on the odor control system. This is the first of four pumps that need to be replaced on the system.
- f. Contractors removed the plant bypass gate and installed a temporary isolation gate. The old gate was corroded and could not be operated.
- g. Contractors completed several sidewalk and paving projects throughout the facility.
- h. Contractors replaced sky lights at the Preliminary Treatment Facility, to allow for routine removal of the influent screening equipment.

2. Atlantic Treatment Plant (ATP)

- a. Construction of the Thermal Hydrolysis Process (THP) continues. The THP skid interconnecting piping is complete. The boiler, deaerator, water pumps and associated piping, water softener and pre-heat exchanger are now all complete. Installation of the electrical components in the pre-dewatering and digester buildings continues. Clean water testing and control valve testing is set for mid-September.

- b. Staff discovered that Emergency Generator #1 has a bad control board. The replacement part was ordered. The plant is able to run on two of the three generators if necessary.
- c. Faulty wiring caused Secondary Clarifier #4 to fail. Staff repaired and returned the clarifier to service.
- d. Secondary Clarifier #5 is out of service. Staff is investigating but believes the issue may be a problem with the clarifier's center drive.

3. Boat Harbor Treatment Plant (BHTP)

- a. Staff continues to improve the Nitrification process. Total Phosphorous removal was excellent until the last few days of the month. A king tide increased the salinity coming into the plant affecting the biological phosphorous (bio-P) removal. The average for the month, however, was close to our target levels.
- b. A contractor installed fittings on exhaust stacks to facilitate emissions testing on the emergency generators. Testing is required to receive a permit from the Virginia Department of Environmental Quality (DEQ) to allow BHTP to perform power curtailments.
- c. Contractors completed structural repairs and coatings on the # 3 secondary clarifier.

4. Chesapeake-Elizabeth Treatment Plant (CETP)

- a. Staff replaced worn out sump pumps at the drain pump station with new ones.
- b. Staff repaired and cleaned an aeration tank with substantial piping and diffuser damage and lots of sand and grit.
- c. Staff completed modifications to the bio-P baffle walls and piping in three out of eight aeration tanks.
- d. Staff replaced the media in the solids handling odor scrubber.

5. James River Treatment Plant (JRTP)

- a. There was one reportable odor event when the drive motor belt failed for more than one hour on the solids handling scrubber.

- b. Staff replaced a primary clarifier pump, rebuilt two primary clarifier pumps and repaired NPW lines.
- c. Staff continued manufacturing stainless steel plates for the walls separating the anaerobic and anoxic zone in the Integrated Fixed Film Activated Solids (IFAS) tanks. The plates will extend the height of existing walls slightly more than a foot and reduce openings at the bottom. The plates should help reduce the amount of dissolved oxygen back flowing from the anoxic zone to the anaerobic zone. Staff completed installation of plates in IFAS tank #3 and started draining and cleaning efforts in IFAS tank #5 in preparation to extend its wall height.
- d. Testing continued with the magnesium hydroxide system for removing phosphorus through the dewatered cake solids. Increased air in the carbon dioxide stripping part of the system is resulting in even better phosphorous removal. Additional adjustments to the system are planned.
- e. The centrifuge replacement contractor set the new centrifuge onto its support structure. The centrifuge hydraulic backdrive, lube oil system and air compressor were also installed.

6. Nansemond Treatment Plant (NTP)

- a. Contractors removed the last cross section baffle in the Struvite Recovery Facility Reactor #3, and removed and cleaned the build up of struvite from the baffle and inner wall of the reactor.
- b. Staff continues with efforts to install big bubble mixers in the Aeration tanks. Staff completed testing of a set of firing cylinders and will install them in aeration tank #5. These mixers will help keep solids suspended without much oxygen transfer while running at our low dissolved oxygen levels and reduce the need to have purge cycles on the aeration tanks.
- c. At the SWIFT Research Center (SWIFT RC) Staff put the second granular activated carbon (GAC) vessel in service with a flow split of 90 percent to GAC vessel #1 and 10% to GAC vessel #2. The purpose of controlling the GAC in this manner is to attempt to better simulate GAC operation at full-scale SWIFT facilities where there should be a blend of reactivated and nearly exhausted contactors in

service with flow splits needed to achieve target water quality objectives.

- d. The Specific Injectivity index reading at the SWIFT RC recharge well declined steadily this month. Staff is evaluating and updating its monitoring plan to better understand the source of the well clogging. The knowledge gained from investigating clogging issues will greatly improve full scale managed aquifer recharge operations.

7. VIP

- a. Staff removed one ferric sulfate tank from service. It was cleaned, inspected and prepared for aluminum sulfate storage.
- b. In an attempt to reduce foam accumulation on the surface of the aeration tanks, staff began operating the classifying selector pumping system to remove waste solids from the surface of the aeration tanks versus removing them from the secondary clarifiers.
- c. Staff disassembled the dewatering centrifuge #5 for inspection and overhaul.
- d. Staff faced challenges with its incineration operations this month. Staff had to shut down the furnace several times to remove the accumulation of slag. The slag buildup generally occurs because of the furnace's high operating temperatures coupled with the addition of ferric in the treatment process.
- e. There was an electronic component failure of the elevator controls in the solids handling building, and a lightning strike to the HVAC condenser unit for the administration building. The compressor for the HVAC was replaced and is back in service, but the elevator will be out of service for approximately six months.
- f. Staff rehabilitated odor control scrubber #3.
- g. Staff adjusted the scroll bearing on one screenings compactor, requiring removal and reinstallation of the compactor motor and gearbox for access. The compactors are less than one year old. Grit removal in band screens is causing premature wear. This occurs more often during high flow events.
- h. Staff reinstalled the aeration tank low-mass air flow meters.

- i. Staff discovered that a malfunctioning potentiometer (an instrument for measuring electromotive force) in the Turblex blower control package caused the blower relief valve to open intermittently, resulting in low dissolved oxygen levels. Staff replaced the potentiometer and the blower is now performing smoothly.

8. Williamsburg Treatment Plant (WBTP)

- a. Staff finished replacing the corroded aluminum walls separating the different zones of the nutrient removal process in aeration tank #1. Staff also added bubble generating mixers and a coarse bubble air diffuser for future nutrient removal testing.
- b. Effluent nitrogen levels were slightly elevated due to issues with metering primary effluent to the oxidation towers and plugging of the step feed piping across the aeration tanks. Staff identified and corrected these problems and effluent nitrogen returned to normal levels.
- c. Staff completed the installation of two sodium bisulfite tanks and related piping for the new dechlorination system.
- d. A contractor started work on the conduit support structure over the walk way between aeration tanks #3 and #4. The structure will carry power and signal cable to probes and automation equipment.
- e. The DEQ performed an inspection of the plant. Results of the inspection were good.

9. York River Treatment Plant (YRTP)

- a. The Deammonification (DEMON) system was taken off-line and preventive maintenance activities were performed. Staff also replaced the cyclone with a micro screen to improve retention of DEMON Annamox bacteria. Staff made programming changes to the distributed control system (DCS).
- b. The work to replace the bearings and races on secondary clarifier #3 continued.
- c. DEQ performed an inspection of the plant. Results of the inspection were good.

10. Incinerator Operations Events Summary

All five multiple hearth incinerator plants met the Total Hydrocarbon (THC) limits for the month. There were no deviations from the required Sewer Secondary Incineration Rule minimum operating parameters. There were five minor, less than 60-minute non-reportable bypass events.

C. Small Communities (SC)

1. Middle Peninsula Small Communities Treatment and Collections

a. West Point System

- (1) The new septic receiving station at the West Point Treatment Plant was put into service. Piping was installed for the main back flow prevention device at the front of the plant.
- (2) Design work began on the Pump Station #5 Rehabilitation project.
- (3) Staff installed a 'de-ragger' unit at Pump Station #4; this unit will monitor pump conditions to determine when to stop and back spin pumps in an effort to reduce ragging conditions at that pump station.

b. King William System

Staff changed out the GAC media this month; we are now averaging approximately three months between replacements.

c. Matthews Systems

The Mathews Vacuum System Pump Station Replacement project construction continues well. Foundation construction is nearing completion.

d. Mount Olive Treatment Plant (MOTP)

Work continues on the Telog level monitoring this month to tune in the scaling and calculations on the new storage tank. As a result of the new tank, staff was able to reduce pump and haul operations to once per week.

2. Small Communities – Surry Systems

- a. The Sussex Service Authority (SSA) continued contract operations of the Town of Surry TP and the Surry County TP.
- b. There was a pipe failure at Dendron PS A. The site was cleaned up and all was recovered. Staff repaired the pipe failure.

3. Small Communities - Lawnes Point

There were four pump and haul operations of the Lawnes Point Treatment Plant.

D. Support Systems

1. Automotive

Staff performed load bank tests at UBTP, Central Middlesex Treatment Plant, NS Road PS, Kempsville PRS, Bainbridge Blvd. PS, Beaver Dam PS, Green Springs PS, and Big Bethel PS. Staff performed monthly generator tests at the NS and SS Main Operations Complexes. All generators operated as designed and were returned to service.

2. Condition Assessment

- a. Staff conducted an internal inspection of #1 incinerator at ABTP.
- b. Staff continued the restoration work of BHTP secondary clarifiers. The #3 secondary clarifier is complete. The two secondary clarifiers are next to be rehabilitated. Staff started restoration of the #1 secondary clarifier at VIP. Staff continued working on the coating rehabilitation of the GAC pump at the SWIFT RC.

3. Facilities Maintenance

- a. Renovation of the NTP solids handling locker rooms is now complete.
- b. Staff is working on the relocation of the Chesapeake-Elizabeth Pilot to VIP.
- c. Staff fabricated a heavy-duty storage unit for NS Interceptors and completed the construction of twelve sampler barrels/bases for Pretreatment & Pollution Prevention (P3) Division.

- d. Staff rebuilt four pumps and made eight stainless steel sleeves for the draft tube mixers at ATP.

E. Energy Management

Installations of the diesel oxidation catalysts on the BHTP and NTP generators are complete. The BHTP is still awaiting approval from DEQ concerning the Title V permit. The catalysts will reduce carbon monoxide (CO) emissions and allow the generators greater operational flexibility.

F. Electrical and Instrumentation

1. Staff repaired Secondary Clarifier #4 at ATP. The failure was caused by faulty conduit wiring.
2. Staff installed Odor D heat trace control panel and umbilical cable to provide for dry hydrogen sulfide (H₂S) sampling at ATP.
3. Contractors installed 550 feet of conduit for control and power wiring for three centrifuge drop chutes and two secondary clarifier EIM valve actuators at ABTP.
4. Staff upgraded the #4 Alum tank level transmitter at CETP. The Milltronics ultrasonic level transmitter was replaced with a Foxboro Pressure Transmitter. The new transmitter will provide improved level measurement accuracy.
5. EIS Team discovered a voltage imbalance issue on the diesel generator at New Market PS during the monthly two-hour run. Staff repaired the loose wiring that caused the imbalance.
6. Staff installed generator and utility alarms for Surry PS.
7. EIS Team installed two dissolved oxygen (DO) probes in the Central Environmental Laboratory. These probes will provide more accurate control of the Sequential Batch Reactor (SBR) Lab experiments.
8. Staff responded to 14 SCADA communication failures and 39 Telog communication failures. A communication failure is defined as a total loss of communication at a site that requires staff to respond to the site location. The significant increase in Telog Communication failures was due to the August 5, 2019 upgrade to the Telog Server.

G. Water Technology and Research

HRSD hosted the new CEO of the Water Research Foundation (WRF), Dr. Peter Grevatt, for a visit to HRSD to meet with HRSD staff and to tour the SWIFT RC. Topics discussed included HRSD research activities, the SWIFT program, HRSD priorities and approaches for working with WRF, and strategic direction for WRF. One of the most significant outcomes of that meeting was to encourage WRF to focus on funding actual research activities and to minimize the amount of resources directed to synthesizing previous research in hopes of generating research reports and tools that may or may not be useful or innovative. We also advocated for less prescriptive Request for Proposals (RFPs) and more unsolicited program support, allowing more creativity and new ideas might be obtained from the broad research and development community.

I. Strategic Measurement Data

1. Education and Outreach Events:

- a. 08/7/19 - Provided tour of ATP to two City of Boise employees. The tour focused on THP (Thermal Hydrolysis Process) and CHP,(Combined heat and power) – David Ewing
- b. 08/7/19 - Hosted a group visiting from Boise, Idaho as part of the WRF LIFT “See It” program – Bott, Wilson, et al
- c. 08/12/19 - Hosted WRF CEO, Peter Grevatt for a visit to HRSD – Bott, Wilson, Mitchell, Pletl, Henifin
- d. 08/22/19 - Provided a tour of Army Base for 9 employees from NAVFAC department for Utilities and Energy Management, Provided a tour for 9 employees - Robert Beavers and Gene Groszek led the tour

2. Community Partners:

- a. Chesapeake Bay Foundation – (oyster cage maintenance at BHTP for oyster gardening program)
- b. Chesapeake Bay Foundation Clean the Bay Day
- c. VIMS
- d. ODU

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	August 2019
M-1.4a	Training During Work Hours per Full Time Employee (FTE) (516) – Current Month	Hours / FTE	3.07
M-1.4b	Total Training During Work Hours per FTE (516) – Cumulative Year-to-Date	Hours / FTE	4.94
M-2.3a	Planned Maintenance Total Maintenance Hours	Total Recorded Maintenance Labor Hours	29,980
M-2.3b	Planned Maintenance – Preventive and Condition Based	% of Total Maintenance Hours	56.1%

Item #	Strategic Planning Measure	Unit	August 2019
M-2.3c	Planned Maintenance - Corrective Maintenance	% of Total Maintenance Hours	14.1%
M-2.3d	Planned Maintenance - Projects	% of Total Maintenance Hours	29.8%
M- 4.1a	Energy Use: Treatment *reported for June 2019	kWh/MG	2,238
M-4.1b	Energy Use: Pump Stations *reported for June 2019	kWh/MG	186
M-4.1c	Energy Use: Office Building *reported for June 2019	kWh/MG	112
M-5.2	Educational and Outreach Events	Number	9
M-5.3	Number of Community Partners	Number	4

Respectfully submitted,
Steve de Mik
 Director of Operations

TO: General Manager
FROM: Director of Talent Management (TM)
SUBJECT: Monthly Report for August 2019
DATE: September 11, 2019

A. Human Resources (HR)

1. Recruitment Summary

New Recruitment Campaigns	15
Job Offers Accepted – Internal Selections	6
Job Offers Accepted – External Selections	7
Internal Applications	20
External Applications	136
Average Days to Fill Position	51

Eleven Hampton Roads Public Works Academy (HRPWA) cadets successfully completed summer internships. Several interns were provided opportunities to cross train at other work centers. One intern was hired into a full time position and four were hired into part time positions.

2. Enterprise Resource Planning (ERP)

- a. HRSD worked with the Managed Services consultant on updates to system setup for several benefit interfaces.
- b. Talent Management, Finance, and Information Technology (IT) staff continued working with Managed Services consultants on updates to Short Term Disability setup.
- c. The Business Analyst worked with IT staff on benefit interface updates and reporting demographic and salary details.
- d. The Business Analyst met with IT staff on Learning Management functionality and completed ERP setup to manage training classes.

3. Benefits and Compensation

- a. Staff worked with the benefit consultant on the following:
 - (1) 2019 Fiscal Year End Review of Medical, Dental and Vision Plans utilization and costs
 - (2) Retiree Medical Plan Renewal
 - (3) Savings Analysis
- b. The Compensation and Classification team evaluated positions based on Department requests.
- c. The quarterly Employee Assistance Program (EAP) meeting was held to review utilization and future needs.
- d. HR and Accounting staff met to discuss evaluation of Paid Time Off policies including options for a leave bank program.

4. Wellness

- a. Participation Activities

Year Six Participation Activities	Unit	August 2019	Year to Date (March 2019–February 2020)
Biometric Screenings	Number	5	11
Preventive Health Exams	Number	16	38
Preventive Health Assessments	Number	79	135
Coaching Calls	Number	0	0
Online Health Improvement Programs	Number	34	116
Web-MD Online Health Tracking	Number	65	482
Challenges Completed	Number	0	0
Fit-Bit Promotion	Number	7	53

- b. 104 employees attended health education presentations, *Going Green - Whole Food Plant-based Eating* held at several work centers.
- c. The Wellness Specialist began organizing a Fall Challenge.
- d. HRSD information was updated in the Optima database system.

5. Workers Compensation

Eight new cases were opened with ten cases remaining active.

6. Employee Relations

- a. Staff partnered with work center supervisors and employees to support employee relations and address HR issues:
 - (1) Participated on interview panels for Operations
 - (2) Assisted with job descriptions for Operations and Water Quality
 - (3) Continued work with Operations Quality Steering Team (QST) to evaluate shift scheduling options
 - (4) Worked on several HR policies for QST review
 - (5) Worked with Engineering, Communications and Procurement staff on updating contract language to include social media policy language
- b. HR staff met with the Training Specialist to develop Social Media Policy training in an e-learning format.

7. General

- a. A meeting was held with the Governors School of Science and Technology Mentorship Coordinator, a student mentee, and North Shore Engineering and Interceptors staff to discuss opportunities and requirements to plan a mentorship for the current school year.
- b. Staff participated in conference calls to discuss participation on an EPA webinar series, *Creating the Water Workforce of the Future*.
- c. The HR Manager began participation in the SC&H Payroll audit.
- d. Staff participated in the following HRSD activities:
 - (1) Facilitated *Your Role in Quality*
- e. Staff participated in the following training:
 - (1) Water Environment Federation/American Water Works Association (WEF/AWWA) Transformative Issues Symposium on Workforce

- (2) Hampton Roads Society of Human Resources Professionals seminar, *Thriving in Conflict*

B. Organization Development and Training (OD&T)

1. Training

- a. Fiscal Year 2021 Work Center Planning Day meetings began and will continue through October.
- b. The Training Resource Specialist began developing an e-learning module for employee Social Media Policy training.
- c. Staff worked with the International Public Management Association (IPMA) Benchmarking Committee to prepare a data presentation for the upcoming national conference.
- d. The following programs were held:
 - (1) Teams and Problem Solving
 - (2) Your Role in Quality
 - (3) Project Management 101

2. Apprenticeship Program

- a. The Learning Management System (LMS) project team continued the implementation phase. Weekly conference calls were held to begin system module set-up. Instructors began participation and were provided information on system navigation and developing course material within the system.
- b. Several members met with the SWIFT team to discuss addition of training materials to existing curricula as well as development of a quality training course for external contractors to assist with project navigation.
- c. Staff worked with WEF to discuss participation on the Operators Advisory Panel.
- d. The Training Superintendent worked with Operations to select nominees for the Department of Labor and Industry (DOLI) Outstanding Apprentice Awards.

- e. Apprenticeship Appreciation luncheons were held at the Main Office and North Shore Operations to provide recognition and networking opportunities for apprentices and instructors.
- f. The Apprenticeship Committee met to address the following:
 - (1) Evaluation of IPMA's Operators Skills test
 - (2) Merit and training increase policies in relation to Apprenticeship requirements

3. General

- a. Staff participated in the following training:
 - (1) Mentor Coach's *Individual Intensive Coaching*
 - (2) BizLibrary's ALIGN Conference
 - (3) Southeastern Virginia's Association for Talent Development's monthly meeting – The Power of Stories

C. Safety

1. Mishaps and Work Related Injuries

- a. HRSD-Wide Injury Mishap Status to Date (OSHA Recordable)

	<u>2018</u>	<u>2019</u>
Mishaps	45	24
Lost Time Mishaps	6	6
<i>Numbers subject to change pending HR review of each case.</i>		

- b. MOM Program Year Performance Measure Work-Related Injuries

August 2019 Injuries For Operations	August 2019 Injuries for Other HRSD Departments	Total Lost Time Injuries Since July 2019	Total HRSD Injuries Since July 2019
6	2	4	16

- c. Follow-up investigations were performed on eight reported work-related injuries and three auto/property incidents.

2. HRSD Safety Training

Strategic Planning Measure	Unit	August 2019
Total Safety Training Hours per Full Time Employee (847) All HRSD – August 2019	468.11 Hours / 847 FTE	0.55
Total Safety Training Hours Per Full Time Employee (847) – Cumulative July 2019	1192.45 Hours / 847 FTE	1.41

3. In addition to regularly scheduled safety training and medical monitoring, the following sessions were conducted:

- a. Five external briefings for contractors working at treatment plants and pump stations
- b. Cardio Pulmonary Resuscitation (CPR)/First Aid/ Automated External Defibrillator (AED) Training for Nansemond Treatment Plant (TP) and SWIFT-Research Center (SWIFT RC) employees
- c. Aerial Lift Safety Training for North Shore Electrical and Instrumentation employees
- d. A Fire Drill for the Water Quality Services building

4. Safety Inspections, Testing and Monitoring

- a. Weekly onsite inspections of the following construction sites:
 - (1) Army Base TP
 - (2) Atlantic TP
 - (3) Boat Harbor TP
 - (4) Laskin Road Pump Station
 - (5) Luxemburg Avenue Pump Station
 - (6) Pine Tree Pump Station
 - (7) Providence Road Pump Station
 - (8) Shipps Corner Pump Station
 - (9) Providence Road Offline Storage Facility (Woodstock Park)

- b. Quarterly safety inspections of the following work centers:
 - (1) Air Rail Avenue Complex
 - (2) Bayside Storage Area
 - (3) Central Environmental Laboratory (CEL)
 - (4) South Shore Pretreatment and Pollution Prevention (P3)
 - (5) Technical Services Division Lab
 - (6) Virginia Initiative Plant (VIP)
 - (7) York River TP

- c. Monitoring and testing for the following:
 - (1) Quarterly radiation screenings of TP incinerator ash samples
 - (2) Monthly velocity tests on CEL, TSD, SWIFT-RC and VIP lab hoods

- d. Safety walk-throughs and evaluations:
 - (1) Evaluated South Shore Interceptors lifting slings
 - (2) Evaluated safety requirements for two City of Norfolk Pump stations
 - (3) Re-surveyed several pump station dry well ventilation systems
 - (4) Inspected Main Office AEDs
 - (5) A Safety Technician evaluated trailer safety at North Shore Operations with the General Manager in relation to a previous incident.

5. Safety Programs

- a. The following was performed for the Confined Space Entry Program:
 - (1) Updated/created electronic confined space entry permits for York River TP
 - (2) Reviewed completed confined space entry permits for North and South Shore Interceptor Systems
 - (3) Conducted confined space entry procedures for Williamsburg TP electrical vaults

- b. The following was performed for the Electrical Safety Program:
 - (1) Safety staff met with Electrical and Instrumentation supervisors to discuss and finalize program updates for compliance with the 2018 National Fire Protection Association 70E standard.
 - (2) Finalized updates to the Electrical Risk Assessment form

- c. Multiple hot work permits were issued for contractors working at Luxembourg and Laskin Road pump stations.
- d. System back-up of the online Material Safety Data Sheet (MSDS) program was performed.
- e. A Safety Technician completed a Bobcat and Skid Loader safety training program.
- f. An Industrial Hygienist continued developing the new Manual Elevated Work Platform safety training.

6. General

- a. The Safety Program internal audit continued. A draft response and action plan was submitted to SC&H based on audit findings and recommendations.
- b. The Safety Manager and a Human Resources Business Partner investigated a reported workplace violence incident.
- c. The Safety Manager attended an Operations QST meeting to discuss tour guidelines and chemical delivery signage and procedures.
- d. The Safety Manager worked with the Director of Communications to finalize North Shore Operations Center and Air Rail Avenue Complex Visitor Safety Information brochures.
- e. The Safety Manager began a study to evaluate additional options for rubber steel toed work boots.
- f. Safety staff continued to update safety training rosters in ERP.
- g. The Safety Manager worked with the Director of Communications, Operations Quality Steering Team (QST) and CEL staff to update facility tour guidelines.
- h. Staff provided the following to support Design and Construction:
 - (1) Attended SWIFT Safety Design and Construction and Project Management Plan meeting
 - (2) Reviewed contractor's OSHA 300 Logs

- i. Safety and HR staff continued updates to the Request for Proposal for selection of a medical provider for employee physicals and testing.
- j. Safety staff escorted a film crew on various locations for production of a safety video.
- k. Staff participated in the following HRSD activities:
 - (1) Talent Management Commissioner briefing
- l. Staff attended the following training:
 - (1) Online Occupational Safety and Health Administration (OSHA) Construction Standards training
 - (2) Microsoft PowerPoint training

D. Monthly Strategic Planning Metrics Summary

- 1. Education and Outreach Events: (8)
 - a. 8/6-8/19 – Virginia Tech Wastewater Short School Safety Instructor
 - b. 8/8-9/19 – Moderated/presented two sessions at WEF/AWWA's Transformative Issues Symposium on Workforce on HRSD's Partnership with HRPWA's Summer Internship Program and Innovative Recruitment Methods
 - c. 08/07/19 – Hampton Roads Workforce Council's *NextGen* Opportunity Fair
 - d. 08/13/19 – Participated on an interview panel for the City of Virginia Beach Department of Public Utilities
 - e. 08/16/19 – City of Hampton Economic Development's *Get Hired* event
 - f. 08/23/19 – City of Suffolk Redevelopment and Housing Authority's *Job and Career Expo*
 - g. 08/23/19 – HRPWA Appreciation Breakfast
 - h. 08/28/19 – City of Suffolk Local Emergency Planning Commission meeting

2. Community Partners: (7)
 - a. Virginia Tech
 - b. Hampton Roads Workforce Council
 - c. City of Virginia Beach Department of Public Utilities
 - d. City of Hampton Economic Development
 - e. City of Suffolk Redevelopment and Housing Authority
 - f. HRPWA
 - g. City of Suffolk Local Emergency Planning Commission

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	August 2019
M-1.1a	Employee Turnover Rate (Total)	Percentage	2.61%
M-1.1b	Employee Turnover due to Service Retirements	Percentage	1.87%
M-1.4a	Total Training Hours Per Full Time Employee (17) – Current Month	Total Training Hours/ FTE	3.74
M-1.4b	Total Training During Work Hours Per Full Time Employee (17) – Cumulative Fiscal Year-to-Date	Hours / FTE	11.5
M-5.2	Educational and Outreach Events	Number	8
M-5.3	Community Partners	Number	7

Respectfully submitted,
Paula A. Hogg
 Director of Talent Management

TO: General Manager
FROM: Director of Water Quality (WQ)
SUBJECT: Monthly Report for August 2019
DATE: September 11, 2019

A. General

Pretreatment and Pollution Prevention (P3) division staff assessed no civil penalties this month.

B. Quality Improvement and Strategic Activities

1. The Sustainability Environment Advocacy Group (SEA) reported the following activities for the month of August:
 - a. Subcommittees have been asked to submit budget needs for FY-2020 and FY-2021 at October's monthly SEA meeting.
 - b. Oyster Restoration Program Planning in coordination with Chesapeake Bay Foundation, Elizabeth River Project, and Lynnhaven River NOW to understand what they are doing for oyster restoration and partner with these groups to fill gaps. Planning to present Oyster Restoration sign, approved by Communications, and recommended pump station locations to HRSD Quality Steering Team in October.
 - c. Ash/Biosolids Recycling – Created mini BioCritters. Testing is underway to decide the suitability for craft fairs.
 - d. Pollinators – Planning a workshop in the spring to educate HRSD on the importance of pollinators, their decline, and links to water quality protection.
 - e. Sustainable Purchasing – Developing a list of opportunities where sustainability can be addressed during the purchasing process.
 - f. 2020 Earth Day: 50th Anniversary – Drafted an HRSD Earth Day 50th Anniversary t-shirt design that will be considered by Communications.

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 New Kent County and the Upper Occoquan Service Authority (UOSA) to support monitoring required for their Virginia Pollution Discharge Elimination System (VPDES) permit.

D. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 2

- a. 08/12/19 – Central Environmental Laboratory (CEL) staff presented on behalf of HRSD and the Water Research Foundation on "PFAS – Protecting Treatment and SWIFT" at a Society of Environmental Toxicology and Chemistry Conference.
- b. 08/28/19 – CEL staff coordinated an Operations Challenge Lab event at the Tri-Association Conference for Chesapeake Water Environmental Association.

2. Community Partners: 8

- a. City of Chesapeake
- b. City of Hampton
- c. City of Newport News
- d. City of Suffolk
- e. City of Virginia Beach
- f. Virginia Department of Environmental Quality
- g. Virginia Department of Health Division of Shellfish Sanitation
- h. Hampton Roads Planning District Commission

3. Monthly Metrics

Item #	Strategic Planning Measure	Unit	August 2019
M-1.4a	Training During Work Hours Per Full Time Employee (114) (Current Month)	Total Hours / # FTE	6.27
M-1.4b	Total Training During Work Hours Per Full Time Employee (114) (Cumulative Fiscal Year-to-Date)	Total Hours / # FTE	14.14
M-2.5	North Shore/South Shore Capacity Related Overflows	# within Level of Service	1
M-3.1	Permit Compliance	# of Exceedances: # of Permitted Parameters	1:10,147
M-3.2	Odor Complaints	#	0
M-3.4	Pollutant Removal	Total Pounds Removed	33,208,441
M-3.5	Pollutant Discharge	% Pounds Discharged/ Pounds Permitted	14%
M-5.2	Educational and Outreach Events	#	2
M-5.3	Community Partners	#	8
	Average Daily Flow	Total MGD for all Treatment Plants	136.08
	Pretreatment Related System Issues	#	0

4. Annual Metrics

Item #	Strategic Planning Measure	Unit	FY-2019
M-3.3	Carbon Footprint	Tons per MG	1.58
M-4.2	R & D Budget	Percentage of Total Revenue	1.8%
M-5.4	Value of Research	Number	117%
M-5.5	Number of Research Partners	Number	26
	Rolling 5 Year Average Daily Flow	MGD	152.23
	Rainfall reported at Norfolk International Airport	Inches	53.1

Respectfully submitted,

James Plett, PhD

Director of Water Quality



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 projects, and the status of current management action plan (MAP) monitoring.

I. Projects in Process

Safety

- **Tasks Completed (August 2019)**
 - Obtained and reviewed management action plan responses
 - Finalized report

- **Upcoming Tasks (September 2019)**
 - Issue final report

Permitting

- **Tasks Completed (August 2019)**
 - Performed fieldwork testing procedures
 - Conducted on-site discussion
 - Began preparation of final report draft

- **Upcoming Tasks (September 2019)**
 - Finalize fieldwork testing procedures
 - Draft final report

Payroll/ Timekeeping

- **Tasks Completed (August 2019)**
 - Obtained and reviewed initial documentation requests
 - Performed planning walkthrough discussions
 - Documented process understanding

- **Upcoming Tasks (September 2019)**
 - Finalize planning procedures
 - Finalize objectives and develop fieldwork audit program
 - Begin fieldwork

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

- **Upcoming Tasks (Q3 2019)**
 - 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)

SC&H's next audit will pertain to the Pollution Source Control functions at HRSD and is scheduled to begin in Q4 (October) of calendar year 2019.

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.

Audit	Report Date	Next Follow-up	Recommendations		
			Closed	Open	Total
D&C: CIP Project Management	5/11/2016	February 2020	11	2	13
Biosolids Recycling	10/8/2016	Pending Permit	7	1	8
HR Benefits	11/22/2016	Closed	15	0	15
Inventory	4/20/2017	February 2020	1	4	5
Procurement/ ProCard	8/23/2017	October 2019	8	3	11
Engineering Procurement	4/20/2018	February 2020	4	4	8
Corporate Governance: Ethics Function*	3/21/18	September 2019	0	5	5
Treatment Plant Operations*	10/15/18	November 2019	0	9	9
Customer Care Division*	7/26/19	August 2020	0	4	4
Totals			46	32	78

*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.



Expertise that Works

Internal Audit

Safety Division

Hampton Roads Sanitation District

September 12, 2019

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I. Executive Summary

Background

SC&H conducted an internal audit of the Hampton Roads Sanitation District’s (HRSD) Safety Division (Division).

HRSD has established a Safety Organization framework that sets overall expectations for safe job performance at all levels of the organization. HRSD’s number one safety goal, as described in the Safety Organization Policy, is “to ensure that all operations are conducted in a safe manner to eliminate or reduce accidents, personal injuries, and/ or property damage to the fullest extent.” Further, HRSD’s Safety Organization Policy notes that HRSD seeks “to integrate hazard control into all operations including compliance with applicable standards.” Hazard control includes ensuring that appropriate training is conducted as required, appropriate personal protective equipment is provided, and appropriate safety procedures are followed and enforced throughout HRSD. These safety goals apply to all of HRSD’s approximately 830 employees, as well as any other individuals present at HRSD’s facilities and work centers.

The development and implementation of safety related programs and policies are the primary responsibility of the HRSD Safety Division. The Safety Team is a separate, collaborative group of Director-appointed staff members from throughout the HRSD organization which provides advisory support on safety policies and general direction for safety programs and informs their departments of pending safety issues.

The Safety Division is composed of five safety professionals who are tasked with conducting safety training, safety inspections, accident investigations, industrial hygiene monitoring regulatory reporting, and various other safety and compliance related responsibilities. The Division is a component of the Talent Management Department and functionally reports to the Director of Talent Management. The primary focus of this audit was the procedures performed within the Safety Division. As such, when this report refers to “Safety” as an entity or process owner, this indicates the Safety Division. The following *Figure 1* illustrates the organizational reporting structure of the HRSD Safety Organization.



Figure 1. Safety Organization Chart

Training

HRSD must provide its staff with a variety of training programs to 1) comply with Occupational Safety and Health Administration (OSHA) requirements and 2) meet HRSD's specific safety needs. Safety training programs are developed within the Safety Division by the Safety Manager and are approved by the HRSD Quality Steering Team (QST) prior to implementation. The HRSD QST is a group of management level staff from throughout HRSD who meet regularly to identify areas of improvement within the organization and review and incorporate updated practices.

Following the acceptance of a safety training program, the Safety Division administers the training to the applicable staff members. The Safety Division also develops a safety calendar on an annual basis and establishes the expected training dates for the calendar year. The safety calendar is posted to the Safety SharePoint within the HRSD intranet and is available to all HRSD staff. In addition, HRSD Supervisors and Safety Team members receive a hard copy annually.

The Safety Division schedules one or more training sessions at each work center, with follow-up training options for those who were unable to attend earlier sessions. It is the responsibility of the individual employee supervisors to identify the employees who are required to attend specific trainings and notify them of the training dates. Employees may sign-up for training sessions via HRSD's Enterprise Resource Planning (ERP) system or attend and sign-in in person. Following training sessions, the Safety Division works with employee supervisors to review sign-in information and identify employees who have not yet received training. Supervisors at individual work centers are responsible for maintaining employee sign-in sheets for in-house training and overall training history.

Inspections

In addition to training, the safety calendar includes all quarterly inspections planned for the calendar year. The Safety Division conducts four inspections at each of the nine large and small community HRSD treatment plants per year. Additionally, pump station inspections are performed every six months. These inspections include reviewing for compliance with Health and Safety Regulations, HRSD Safety Programs ensuring safety training is being adequately performed, reviewing for the existence and availability of proper documentation/ certifications, and checking for unsafe tools, equipment, and work conditions.

Following each inspection, a Safety Inspection Report is prepared which includes the discrepancies identified, recommendations for improvement or correction, programs/ documents reviewed, and discrepancies not corrected from previous inspections. This report is prepared by the member of the Safety Division who performed the inspection, then communicated throughout the Safety Division for review. The completed report is communicated to the applicable Director, Chief, Work Center Supervisor, or other HRSD staff members associated with the inspected work center. Department Directors and Work Center Supervisors from the inspected work centers are responsible for ensuring all discrepancies are corrected.

In addition to safety inspections, industrial hygiene monitoring and unsafe work condition evaluations are performed on an as-needed basis. HRSD employees may request an industrial hygiene evaluation for concerns such as the sound level of the work environment and air quality. Additionally, any employee may submit an Unsafe Work Conditions Report to the Safety Division. In each case, the Safety Division performs an inspection/ investigation of the concerns and prepares a report that is communicated to the applicable members of HRSD management whose work centers or areas of responsibility are related to the concern.

Accident Investigations and Reporting

HRSD requires that employees report all accidents to their supervisor regardless of how minor. The supervisor then prepares an Employer's First Report of Accident form and Post Accident/ Reasonable Suspicion form at the time that the accident is reported. The form is communicated to Human Resources and the Safety Division. The Safety Division performs a Follow-up Accident Investigation on all injuries requiring medical attention. The goal of this investigation is to determine preventative and corrective actions to prevent the accident from reoccurring. The investigation results in a report which should provide sufficient detail to analyze the cause and necessary corrective measures; determine if additional equipment, supervision, or training are required; determine facts related to legal liability; and publicize the hazard to HRSD employees. The completed report is communicated to applicable HRSD management whose work centers or areas of responsibility are related to the accident investigation. The Safety Division works with Human Resources to ensure accurate information is documented for workers compensation administration.

HRSD Safety Division conducts follow up accident investigations for property and vehicle damage incidents and works with Accounting Staff and law enforcement on these incidents.

Regulatory Reporting

The Safety Division is responsible for accumulating, preparing, and communicating safety related information for regulatory reporting. The following reporting functions are performed within the Safety Division and are based on the associated regulatory requirements described below.

- SARA Title III Reporting
Authorized by Title III of the Superfund Amendments and Reauthorization Act (SARA), the Emergency Planning & Community Right-to-Know Act (EPCRA) was enacted by Congress as the national legislation on community safety. This law is designed to help local communities protect public health, safety, and the environment from chemical hazards. A SARA Title III report is required to be prepared for each plant/ HRSD location that holds chemicals in quantities greater than 10,000 lbs. On an annual basis, Safety Division members visit applicable locations and meet with the Superintendents. During this meeting, Safety reviews the previous year's report and inquires about any updates to chemicals used and stored. Updates are then incorporated into the report, which is communicated throughout the Safety Division for peer review. The updated report information is then submitted through the Environmental Protection Agency's

(EPA) electronic reporting system. Following the completion of the report, the Safety Division mails hard copies of the report to applicable Local Emergency Planning Commissions (LEPC) and other stakeholders. Non-compliance with SARA Title III reporting can result in civil or criminal penalties, with the potential for fines of \$25,000 per day.

- OSHA 300 Report

OSHA Injury and Illness Recordkeeping and Reporting Requirements necessitate the submittal of the OSHA 300 Report annually. The report must include every work-related injury or illness that involves loss of consciousness, restricted work activity or job transfer, days away from work, or medical treatment beyond first aid. The OSHA 300 Report is prepared in collaboration between the HRSD Human Resources (HR) and the Safety Division. HR assigns a case number to all events, identifies the employee(s) involved, describes the case, and classifies the case (death, days away from work, restricted duty, remained at work). The Safety Manager works with HR annually to review and ensure completeness of all reportable entries in the OSHA 300 Log. Annually, the Safety Manager submits the OSHA 300 Summary Log as required by OSHA. Each February through April, HRSD must post a summary of the injuries and illnesses recorded during the previous calendar year. OSHA records must be maintained at HRSD worksites for at least five years.

- Management, Operation and Maintenance (MOM) Reporting

The HRSD Safety Division is required to complete annual Management, Operation, and Maintenance (MOM) reporting in order to satisfy the requirements of the Consent Decree. The Safety Manager provides the following data within HRSD's electronic MOM reporting system:

- Response Plan Training Sessions
- OSHA Recordable Incidents
- Lost Time Accidents
- Quarterly Work Center Safety Inspections
- Six Month Pump Center Safety Inspections

- Medical Monitoring

The Safety Division is responsible for testing and maintaining documentation for medical requirements to comply with OSHA standards. OSHA's Respiratory Protection Standard 29 CFR 1910.134 requires annual pulmonary function testing and respirator fit testing for all employees who are required to don a respirator. OSHA's Hearing Conservation Standard 29 CFR 1910.95 requires annual audiometric testing for all employees exposed to excessive noise levels above 85 decibels. The Safety Division will plan, schedule, and perform these tests for required employees. Some testing procedures are contracted to a third party and the Safety Division receives and maintains results. Medical monitoring testing includes the following:

- Annual Audiometric Testing
- Annual Respirator Fit Testing
- Annual Pulmonary Function Testing

Objectives

The following audit objectives were established based on the internal audit planning procedures:

- A. Evaluate inspections documentation to ensure complete and timely performance and that appropriate resolution/ follow-up occurs.
- B. Assess the training process to ensure that employees receive the required training in the expected intervals, monitoring is appropriately performed, and documentation of attendance is maintained.
- C. Evaluate the regulatory reporting process for SARA Title III, OSHA 300, and MOM and ensure a process is in place to provide complete and accurate figures.
- D. Assess the accident investigations process and ensure appropriate documentation is prepared and resolution/ follow-up occurs.

Scope

The internal audit was initiated in February 2019 and fieldwork procedures were completed in June 2019. The internal audit focused on the policies, procedures, and controls in place at the time of the audit. Documentation sample selections were examined for the period of May 1, 2018 through April 30, 2019.

Methodology and Approach

In order to administer the audit procedures, SC&H performed the following:

Process Walkthrough and Flowchart Creation

SC&H obtained and reviewed available Safety Division policy and procedural documentation. SC&H then met with members of the Safety Division and the Chief of Talent Management to conduct detailed process understanding discussions of their procedures. These discussions focused on process flow, required approval, inputs/ outputs, and risk and control points. Based on discussions and review of the procedural documentation, SC&H created flowchart and narrative summaries to document our understanding of each process. The processes identified and documented include:

- Inspections
- Safety Calendar Preparation
- Training
- SOP/ Training Update Process
- Reporting
 - Annual Safety Recognition Program
 - Accident Investigation and Reporting

- SARA Title III
- OSHA 300
- Consent Decree (MOM)
- Quarterly/ Monthly Inspection Reports
- Unsafe Working Conditions
- Industrial Hygiene
- Medical Monitoring

Risk Ranking and Creation of Project Plan

Following the documentation of process steps, SC&H developed a comprehensive Safety Division risk and control matrix (RCM). The RCM aligns risks with controls to analyze the control environment and ranks the risks on perceived likelihood and severity. Based on the understanding of the processes, risks, and related controls, SC&H developed an audit program to achieve the objectives described above. This program includes detailed steps to address each objective with the goal of verifying the existence of sound internal controls and identifying opportunities for improvement.

Audit Program Execution

SC&H executed the audit program by completing the following tasks:

- Attended and shadowed a Quarterly Safety Inspection at the James River Treatment Plant
- Examined a sample of Quarterly Safety Inspection Reports
- Reviewed examples of industrial hygiene testing and documented understanding
- Examined the most recent Unsafe Work Conditions report and supporting documentation
- Reviewed a sample of training attendance logs and required attendees
- Examined a sample of SARA Title III Reports
- Performed walkthrough/ observation of OSHA 300 report preparation with HR Specialist
- Reviewed a selection of MOM reporting submissions, monthly safety reports, and supporting documentation
- Walked through a selection of follow-up accident investigation reports
- Assessed the procedures for tracking and administering medical monitoring testing

Summary of Work

SC&H concludes that the Safety Division has implemented a controlled process to administer periodic inspections, training sessions, investigations, and other safety related functions that aligns with the expectations of HRSD.

However, there are improvement opportunities that can be incorporated into the Safety Division. The following section provides detailed observations and recommendations regarding two separate topics.

We appreciate the assistance and cooperation of the management and staff involved in HRSD's Safety Division. Please contact us if you have any questions or comments regarding any of the information contained in the internal audit report.

SC&H Group, Inc.



Matthew Simons, CPA, CIA, CGAP
Principal

II. Detailed Observations and Recommendations

Observation 1

Formal communication of discrepancy and corrective action resolution is not regularly provided to Safety following Quarterly Safety Inspections, Unsafe Work Conditions Investigations, and Accident Investigations.

Observation Detail

Quarterly Safety Inspections

Following the completion of a Quarterly Safety Inspection, the Safety Division provides the associated plant and Operations staff with a report that details the inspection results, including any discrepancies noted and necessary corrective actions. Each Quarterly Safety Inspection Report includes a section detailing these discrepancies and a space to document "Corrected by & Date." SC&H found that in each Quarterly Safety Inspection Report reviewed, the section noting corrections was not complete. The Safety Division noted that some plants communicate corrective actions, while others do not, and that discrepancies are revisited during the following Quarterly Safety Inspection. HRSD's Safety Inspections Standard Operating Procedures (SOP) requires that a "designated Safety Representative will document corrective actions on all discrepancies found and submit to the Safety Manager."

Further, SC&H reviewed the frequency of plant safety inspections. In one Quarterly Safety Inspection reviewed for the James River Plant, the most recent previous Quarterly Safety Inspection was performed on 11/14/18 with the following inspection occurring on 5/14/19. This results in a six month period between inspections and discrepancy follow-up, rather than three months (quarterly). Safety indicated that best efforts are made to schedule and conduct these inspections on a quarterly basis, however due to timing and resource constraints, this may not always occur. HRSD's Safety Inspections SOP requires that "The Safety Division shall conduct four inspections of HRSD facilities per year or as deemed necessary by HRSD management to provide a safe work place for all HRSD employees." Safety indicated that they intend to complete four inspections in the calendar year for this plant, as required by this policy.

Unsafe Work Conditions Investigations

SC&H reviewed an Unsafe Work Conditions report and follow-up investigation. Four actions were required based on this Unsafe Work Conditions investigation. Per discussion with Safety, the required corrective actions will be reviewed during the subsequent Quarterly Safety Inspection. SC&H reviewed the first Quarterly Safety Inspection Report that followed this investigation. Follow-up and review of the corrective actions was not noted. Per discussion with Safety, these actions were reviewed during the quarterly inspection, but specific notes and confirmation of performance from the plant staff were not included. Unsafe Work Conditions reporting procedures do not presently require a formal response for addressing corrective actions.

Follow-up Accident Investigations

SC&H examined a Follow-up Accident Investigation report and noted that corrective actions were recommended by Safety. Upon review of the three Quarterly Safety Inspection Reports following the accident investigation, no review or documentation of the associated corrective actions was noted. Safety followed up with the associated plant personnel who indicated that corrective actions are in progress and provided additional detail to fully address the recommendations. As with Unsafe Work Conditions, Follow-up Accident Investigation reporting procedures do not presently require a formal response for addressing corrective actions.

Risk

Safety discrepancies and corrective actions noted through inspections and investigations may not be implemented completely or timely. This can result in on-going safety concerns following the identification of an issue.

HRSD may be subject to increased financial liability as a result of lawsuits or regulatory fines if a documented safety concern is not sufficiently addressed in a timely manner and an individual is subsequently injured as a result.

Recommendation 1.1

Require work center staff to provide documentation and submit corrective action resolution steps to the Safety Division, as described in the Safety Inspections SOP. Update the Safety SOP to include a similar requirement for Follow-up Accident Investigations, Unsafe Work Conditions Investigations, and any other inspections and investigations determined appropriate. This will provide increased accountability to ensure safety concerns are addressed appropriately and timely.

Management's Action Plan and Implementation Date - Recommendation 1.1

Management action plans for both recommendations related to Observation 1 are collectively addressed following Recommendation 1.2.

Recommendation 1.2

Consider including a priority level for discrepancies and corrective actions, if allowable by applicable regulation/ law, and include a timeframe for completion. In general, Safety has indicated that the quarterly timeframe between safety inspections for revisiting discrepancies is appropriate. However, there may be more critical issues that are identified that should be addressed sooner. Further, in some cases, inspections scheduling may result in some plants not receiving a safety inspection within a quarter. Prioritizing corrective actions and requesting confirmation of implementation within defined timeframes will help to ensure that discrepancies are addressed in between safety inspections.

Management's Action Plan and Implementation Date - Recommendation 1.1 and 1.2

The Safety SOP requires that Supervisors respond to discrepancies that the Safety Division identifies during quarterly Safety Inspections. The SOP will be updated to require a corrective action response within seven days following receipt of the Inspection Report. For Unsafe Work Condition Investigations, the SOP will be updated to require Work Center Supervisors to submit a corrective action memo within seven days of receiving the Unsafe Work Condition Investigation Report. The memo will act as documentation on how and what was done to address the Unsafe Work Condition. For Follow-Up Accident Investigations, the SOP will be updated to require Work Center Supervisors to address short term actions to correct any unsafe work conditions needed to prevent future accidents within seven days. The Work Center Supervisor will document corrective actions for the Follow Up Accident Investigation and if the accident was deemed “preventable or non-preventable” and return the documentation to the Safety Division within seven days.

The Safety SOP will be updated to require any work conditions or safety discrepancies deemed immediately dangerous to life and health (IDLH), to be addressed immediately, preferably while the Safety Division is on the scene. Short term corrective actions are acceptable until long term solutions can be implemented. However, long term corrective actions must be taken. Any IDLH situations will be brought to the Department Director’s attention immediately by both Work Center Supervisors and the Safety Division. Long term and short term corrective actions will be documented and sent to the Safety Division.

Once corrective action items are completed for an Inspection, Accident Investigation or Unsafe Work Condition, the Work Center Supervisor will notify the Safety Division in writing. In order to manage discrepancies, documented corrective actions and responses, the Safety Division will develop a tracking system. In addition, if a required corrective action response is not received within seven days, discrepancies will be forwarded to the Department Director for response.

The tracking system will be developed and SOP updates will be made within six months.

Observation 2

Procedures and methodology for monitoring and administering employee safety training and medical monitoring may not be sufficient to ensure that employees meet the requirements.

Observation Detail

Training, certification, and medical monitoring tracking and scheduling procedures are currently performed in a manual fashion that do not incorporate the use of a specialized learning management system (LMS). Presently, when an employee is due for training or recertification, the employee or his/ her supervisor must proactively recognize the requirement, communicate in-person, via email, or post to the work center bulletin board that the employee is scheduled for a training/ recertification session, then follow-up with the employee to ensure that an alternative session is attended, if necessary. Attendance is maintained on hard copy sign-in sheets by the supervisor or may be logged into HRSD's ERP system. There is not presently a systematic process for HRSD to perform the following:

1. Track all required training, certification, and medical monitoring intervals for an individual employee
2. Identify and provide notification when an employee's training, certification, or medical monitoring has, or is about to be, expired
3. Run a report to identify all employees in need of a particular training, certification, or medical monitoring
4. Maintain attendance records in a centralized, electronic format

Training, certifications, and medical monitoring are required to be administered on a regular basis for employees based upon their job roles. These trainings and certifications are the result of OSHA or other external regulatory requirements. Individual employees may be required to comply with several training and certification standards based upon their role at HRSD. SC&H reviewed a sample of these requirements, which are provided below as an example.

1. Forklift Training: Required by OSHA Standard 29 CFR 1910.178 for employees who operate a forklift as part of their position; employees must be recertified every three years
2. HAZMAT Level III Refresher Training: Required for HRSD Interceptor and Automotive employees who have to deliver hazardous chemicals to HRSD pump stations or facilities; employees must attend an annual refresher training to maintain their certification
3. Response Training: Internal HRSD safety requirement to train employees on steps to take for fires and/ or chemical spills conducted annually.
4. CPR/ First Aid/ Bloodborne Pathogen/ AED Training: OSHA requires employees at each work center be trained in CPR and first aid; employees must attend every two years to remain current
5. Annual Pulmonary Function and Respirator Fit Testing (Medical Monitoring): OSHA 29 CFR 1910.134 requires annual pulmonary function and respirator fit testing for all employees required to don a respirator

6. Annual Audiometric Testing (Medical Monitoring): OSHA 29 CFR 1910.95 requires annual audiometric testing for all employees exposed to excessive noise levels above 85 decibels

SC&H requested and examined the attendance logs and required attendees for five training sessions occurring in 2019. The following conditions were identified based on this review:

1. Work Center Response Training: For one of 13 required attendees, we were unable to confirm training session attendance
2. Main Office Response Training: For one of 41 required attendees, we were unable to confirm training session attendance
3. Forklift Training: Required attendees were not available by individual, but were provided based on job title. For this training, required attendance lists are not prepared as this is a regular, standing training that individuals attend as needed.

Further, upon discussion, SC&H noted that the Safety Division is currently in the process of transitioning from using Microsoft Access to track medical monitoring status to using ERP. There is not presently the ability for the Safety Division to run a report of current medical monitoring status for employees. Each employee must be individually queried in both Access and ERP to identify whether they are current with their medical monitoring.

Risk

While HRSD and the Safety Division have managed to provide training to the majority of employees who require it, the following risks exist based on the current process.

As a result of the lack of a formal, centralized tracking process, HRSD staff and employees may be out of compliance with OSHA and internal policy as a result of missed training or lapsed certification. These employees and their supervisors may not realize they are out of compliance and may continue working in restricted positions that require current training. This may result in OSHA violations and/ or fines and an increased liability on behalf of HRSD if the applicable employee is injured on duty.

Additionally, operational risks exist as the manual process for monitoring training requirements and attendance appears to be more time consuming than through use of an electronic application, which may increase the administrative demands on Safety Division staff and reduce availability to perform other safety functions.

Recommendation 2.1

Explore the implementation of an electronic solution that allows for each employees' required training and medical monitoring to be associated with them in a system. This should include expiration of current status of training/ monitoring and expiration date. Reports should be periodically communicated to supervisors to ensure employees are made aware of training/ medical monitoring requirements. If employees lapse in training required to perform certain job roles, supervisors should be notified that these employees must not continue to perform those

duties until they have met the applicable training requirements.

Management's Action Plan and Implementation Date - Recommendation 2.1

The Safety Division will evaluate the Learning Management Software (LMS) currently being implemented by the Organizational Development and Training (OD&T) Division to determine if the system will meet the following requirements:

- Associates each employee's required training and medical monitoring within the system, including current status of training/ monitoring and expiration date.
- Generation of reports for supervisors to ensure employees are made aware of training/ medical monitoring requirements and if employees lapse in required training for job roles to ensure employees have met all required training to perform job duties.

If the Safety Division determines that the new LMS does not meet requirements, other solutions will be researched and evaluated. This evaluation and selection will require one year plus additional time for implementation.

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
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%
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%
M-1.2	Internal Employee Promotion Eligible	Percentage	100%		59%	80%	69.57%	71.43%	64.00%	69.00%	68.00%	85.00%	85.00%
M-1.3	Average Time to Fill a Position	Calendar Days	< 30		70	60	52	43.76	51	56	67	67	66
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
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
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
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
M-2.1	CIP Delivery - Budget	Percentage			113%	96%	124%	149%	160%	151%	156%	160%	170%
M-2.2	CIP Delivery - Schedule	Percentage			169%	169%	161%	150%	190%	172%	173%	167%	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
M-2.3b	Planned Maintenance	Percentage of Total Mtc Hours Monthly Avg			20%	27%	70%	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%
M-2.3d	Projects	Percentage of Total Mtc Hours Monthly Avg			18%	22%	20%	18%	32%	34%	32%	32%	27%
M-2.4	Infrastructure Investment	Percentage of Total Cost of Infrastructure	2%		8.18%	6%	6%	4%	7%	7%	5%	5%	*
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
M-4.1b	Energy Use: Pump Stations	kWh/MG Monthly Avg			197	173	152	159	168	163	173	170	181
M-4.1c	Energy Use: Office Buildings	kWh/MG Monthly Avg			84	77	102	96	104	97	104	104	95
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	*
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%	*
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	*
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
	Rainfall	Annual Total Inches		66.9	44.21	56.21	46.65	46.52	51.95	54.14	66.66	49.24	53.1
	Billed Flow	Annual Percentage of Total Treated		71.9%	82.6%	78%	71%	73%	74%	72%	73%	76%	*
	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%	*
	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%	*

* To be reported upon completion of the annual financial statements.

Monthly Updated Metrics														FY-20	FY-20
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	Jul-19	Aug-19
	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	133.9	136.0
	Industrial Waste Related System Issues	Number	0		3	6	6	6	2	4	7	4	7	0	0
	Wastewater Revenue	Percentage of budgeted	100%		97%	96%	98%	107%	102%	104%	103%	103%	104%	113%	106%
	General Reserves	Percentage of Operating and Improvement Budget	75% - 100%		72%	82%	84%	92%	94%	95%	104%	112%	117%	122%	113%
	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	\$26,579,053	\$27,333,963
	Aging Accounts Receivable	Percentage of receivables greater than 90 days			21%	20%	18%	19%	21%	20%	18%	18%	17%	14%	14%
M-2.5	Capacity Related Overflows	Number within Level of Service	0		25	1	30	5	11	16	6	10	5	0	1
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	1:5073	1:10147
M-3.2	Odor Complaints	Number	0		6	2	7	11	5	9	7	6	9	0	0
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	17,335,002	33,208,441
M-3.5	Pollutant Discharge (% of permitted)	Pounds Discharged/Pounds Removed	< 40%		25%	22%	25%	22%	22%	20%	22%	17%	17%	14%	14%
M-5.2	Educational and Outreach Events	Number			302	184	238	322	334	443	502	432	367	21	18
M-5.3	Number of Community Partners	Number			280	289	286	297	321	354	345	381	293	17	21

EFFLUENT SUMMARY FOR AUGUST 2019

PLANT	FLOW mgd	% of Design	BOD mg/l	TSS mg/l	FC #/UBI	ENTERO #/UBI	TP mg/l	TP CY Avg	TN mg/l	TN CY Avg	TKN mg/l	NH3 mg/l	CONTACT TANK EX
ARMY BASE	10.67	59%	1	2.4	2	1	1.0	0.49	3.1	3.7	NA	NA	15
ATLANTIC	26.83	50%	16	5.6	7	1	NA	NA	NA	NA	NA	NA	16
BOAT HARBOR	11.46	46%	5	4.2	6	<1	0.75	0.67	13	20	NA	NA	10
CENT. MIDDLESEX	0.010	40%	<2	<1.0	<1	<1	NA	NA	NA	NA	NA	NA	NA
CHES-ELIZ	14.12	59%	13	15	37	1	1.4	1.2	36	32	NA	NA	24
JAMES RIVER	10.51	53%	3	2.1	1	1	0.23	0.30	5.7	6.8	NA	NA	0
KING WILLIAM	0.058	58%	<2	<1.0	NA	<1	0.070	0.059	0.93	1.1	0.72	NA	NA
NANSEMOND	14.84	49%	3	4.0	2	1	0.58	1.0	3.7	4.4	NA	NA	1
SURRY, COUNTY	0.044	68%	1	1.4	NA	NA	NA	NA	NA	NA	NA	<QL	0
SURRY, TOWN	0.046	76%	5	6.0	NA	14	NA	NA	NA	NA	0.66	0.21	NA
URBANNA	0.057	57%	2	10	7	1	10	5.7	37	19	NA	0.07	NA
VIP	27.73	69%	1	1.9	2	1	1.1	0.88	3.1	3.7	NA	NA	4
WEST POINT	0.302	50%	30	16	10	3	3.2	2.3	17	15	NA	NA	0
WILLIAMSBURG	8.02	36%	1	2.8	2	5	0.62	0.55	4.3	3.0	NA	NA	9
YORK RIVER	11.38	76%	1	0.86	2	3	0.32	0.26	3.9	5.4	NA	NA	4
	<u>136.08</u>												

	% of Capacity
North Shore	50%
South Shore	57%
Small Communities	52%

Tributaries	Tributary Summary					
	Annual Total Nitrogen			Annual Total Phosphorus		
	Discharged	Operational		Discharged	Operational	
	YTD	Projection CY19		YTD	Projection CY19	
	%	Lbs	%	%	Lbs	%
James River	53%	3,690,044	81%	55%	272,801	86%
York River	55%	246,231	85%	48%	15,279	79%
Rappahannock	156%	NA	NA	657%	NA	NA

Permit Exceedances: Total Possible Exceedances, FY20 to Date: 1:10,147
Pounds of Pollutants Removed in FY20 to Date: 33,208,441
Pollutant Lbs Discharged/Permitted Discharge FY20 to Date: 14%

	Rainfall (inch)		
	<u>North Shore (PHF)</u>	<u>South Shore (ORF)</u>	<u>Small Communities (FYJ)</u>
Month	4.69"	7.57"	4.22"
Normal for Month	5.83"	6.11"	4.91"
Year to Date Total	34.83"	34.62"	35.42"
Normal for YTD	34.53"	33.91"	33.58"

AIR EMISSIONS SUMMARY FOR AUGUST 2019

	No. of Permit Deviations below 129 SSI Rule Minimum Operating Parameters								Part 503e Limits		
	Temp	Venturi(s) PD	Precooler Flow	Spray Flow	Venturi Flow	Tray/PBs Flow	Scrubber	Any	THC	THC	BZ Temp
	12 hr ave (F)	12 hr ave (in. WC)	12 hr ave (GPM)	12 hr ave (GPM)	12 hr ave (GPM)	12 hr ave (GPM)	pH 3 hr ave	Bypass Stack Use	Mo. Ave (PPM)	DC (%)	Daily Ave Days >Max
MHI PLANT											
ARMY BASE	0	0	0	0	0	0	0	3	28	100	0
BOAT HARBOR	0	0	0	n/a	0	0	0	1	37	100	0
CHES-ELIZ	0	0	0	0	0	0	0	1	32	99	0
VIP	0	0	0	n/a	0	0	0	0	88	96	0
WILLIAMSBURG	0	0	0	n/a	0	0	0	0	14	96	0

ALL OPERATIONS

DEQ Reportable Air Incidents:	0
DEQ Request for Corrective Action (RCA):	0
DEQ Warning Letter:	0
DEQ Notice of Violation (NOV):	0
Other Air Permit Deviations:	0
Odor Complaints Received:	0
HRSD Odor Scrubber H2S Exceptions:	4