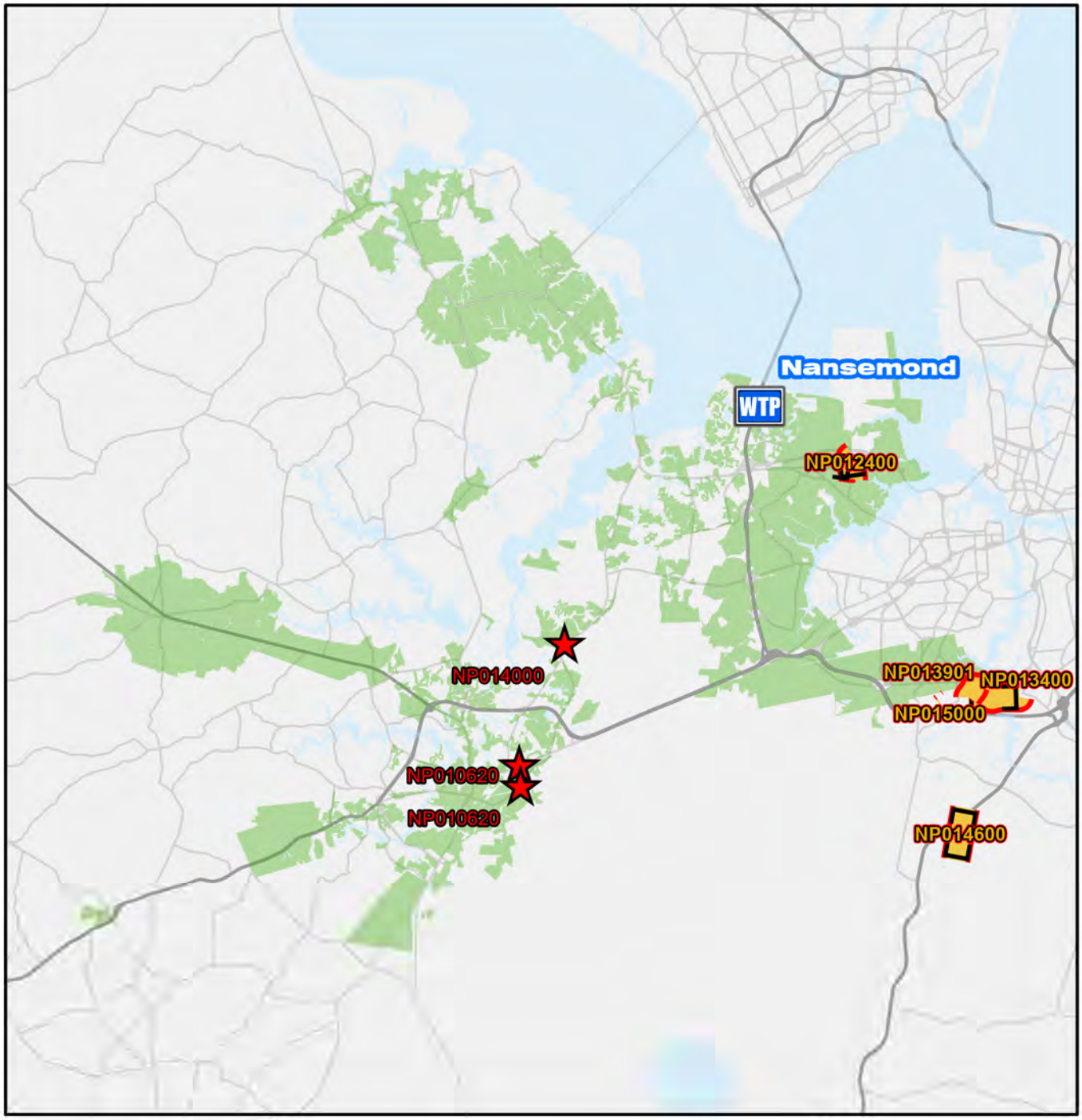
Nansemond Treatment Plant

Photo Credit: VDOT



Legend

- Nansemond Treatment Plant
- CIP Interceptor Point
- CIP Pump Station Point
- CIP Interceptor Line
- CIP Abandonment
- Treatment Plant Service Area
- HRSD Interceptor Force Main
- HRSD Interceptor Gravity Main
- HRSD Treatment Plant
- HRSD Pressure Reducing Station
- HRSD Pump Station

0 5,000 10,000 20,000 30,000 40,000 Feet

Nansemond Treatment Plant Service Area CIP Projects

Treatment Plant Projects

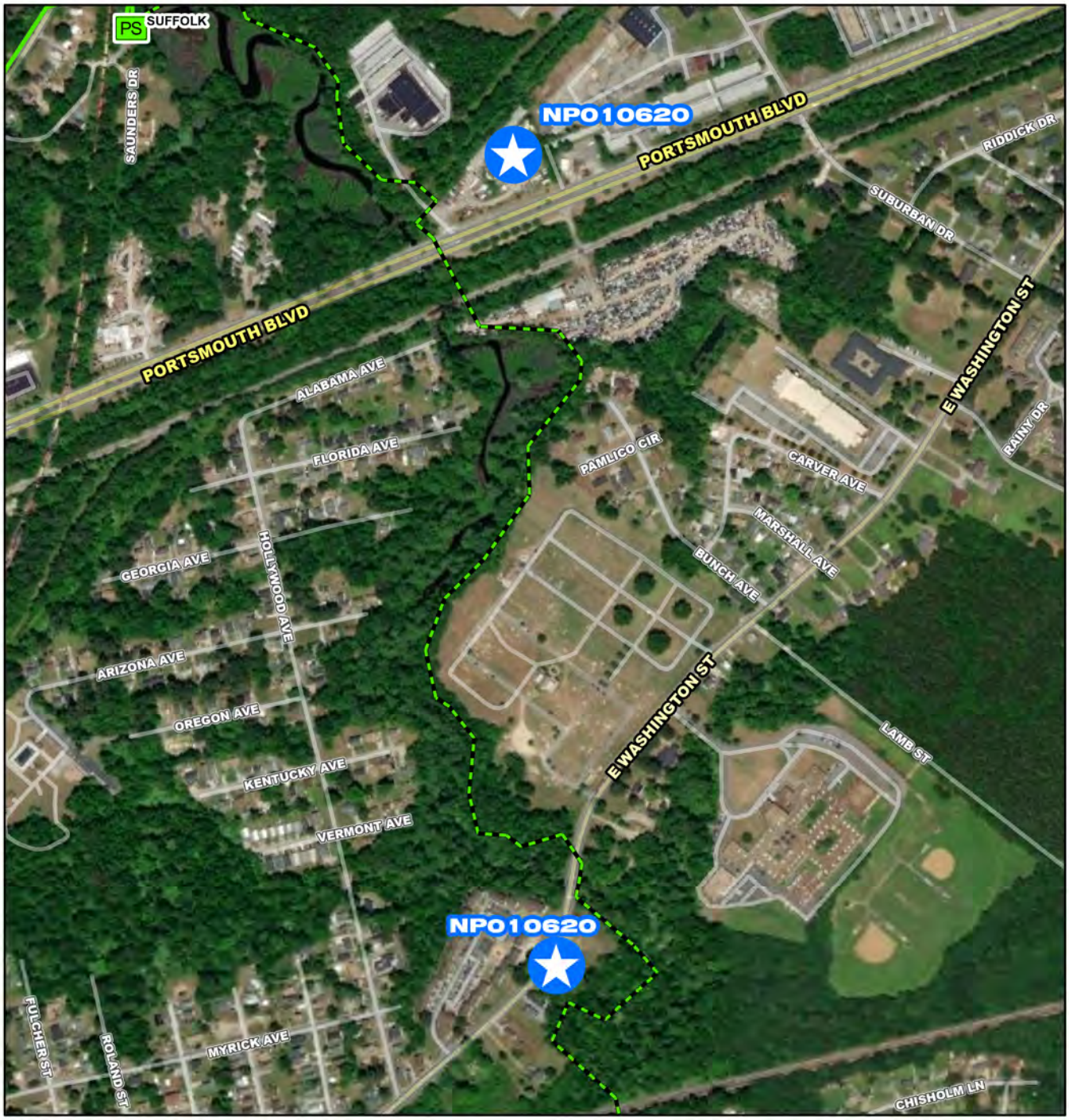
GN013300	NP013820	NP014700
GN016380	NP013901	NP014900
GN016381	NP013902	
NP013000	NP014400	
NP013700	NP014500	

HRSD

N

CIP Location

Service Area



NP010620

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 205 410 820 1,230 1,640 Feet

N W E S

CIP Location

NP010620

Suffolk Pump Station Replacement

HRSD

Suffolk Pump Station Replacement

PR_NP010620

System: Nansemond
Type: Pump Stations

Driver Category: I&I Abatement-Rehabilitation Plan
Project Phase: Design
Regulatory: Rehab Plan Phase Two

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$34,455	$3,128	$10,452	$12,526	$8,351	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is to relocate and replace the existing HRSD Suffolk Pump Station. In lieu of constructing one replacement pump station, two pump stations will be constructed. One pump station will be retained by HRSD as a replacement for the existing Suffolk Pump Station, the other pump station will be transferred to the City of Suffolk. The benefit of the two pump station scenario includes abandonment/removal of approximately 6,500 linear feet (LF) of 24-inch gravity sanitary sewer and 34 manholes along Shingle Creek. The existing Shingle Creek gravity sewer is located in wetlands with ongoing concerns for potential overflows, pipe failure and difficult access for maintenance. This project will include construction of two new pump stations, 8,000 LF of force main, 2,100 LF of gravity sanitary sewer, 12 sanitary sewer manholes, demolition of the existing Suffolk Pump Station and abandonment/removal of 6,500 LF of 24 inch gravity sewer and 34 manholes. The project includes six trenchless crossings under both CSX and Norfolk Southern Railroad tracks.

PROJECT JUSTIFICATION

This project will replace the existing Suffolk Pump Station with a station that meets the current capacity needs and provides for future expansion to meet anticipated growth. The existing pump station site does not provide the needed space for expansion, is difficult to access with large maintenance equipment/vehicles, and creates nuisance traffic to the surrounding residential neighborhood. The incoming Shingle Creek Gravity Sewer has rehabilitation needs identified in the Rehabilitation Plan. Relocation of the pump station could provide efficiencies in combining these two projects to eliminate a siphon system and creek crossing.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Tim Marsh
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	02/01/2013
PER	04/01/2013
Design Delay	06/02/2014
Design	09/03/2018
Bid Delay	06/01/2023
PreConstruction	06/01/2023
Construction	09/01/2023
Closeout	03/01/2026

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$154,150
Design	$2,949,637
PreConstruction	$20,000
Construction	$31,331,699
Closeout	$0
Est. Program Cost	**$34,455,486**
Contingency Budget	$4,699,755
Est. Project Costs	**$39,155,241**

NP012400

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 220 440 880 1,320 1,760 Feet

NP012400

Western Branch Sewer System Gravity Improvements

HRSD

N
W E
S

CIP Location

Western Branch Sewer System Gravity Improvements

PR_NP012400

System: Nansemond
Type: Pipelines

Driver Category: I&I Abatement-Rehabilitation Plan
Project Phase: PER
Regulatory: Rehab Plan Phase Two

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$4,877	$155	$184	$2,840	$1,698	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is to rehabilitate and/or replace 5600 linear feet (LF) of gravity pipeline with associated manholes. Pipe diameters range from 15 to 30-inches. Project extends from MH-SG-035-18453 to MH-SG-034-14607 and from MH-SG-033-1782 to MH-SG-035-16720.

PROJECT JUSTIFICATION

Condition assessment activities indicate that these assets present a material risk of failure due to I/I.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Nick Taschner
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	04/01/2021
PER	02/01/2022
Design Delay	01/01/2023
Design	06/01/2023
Bid Delay	06/01/2024
PreConstruction	06/01/2024
Construction	09/01/2024
Closeout	01/01/2026

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$69,388
Design	$265,000
PreConstruction	$15,000
Construction	$4,528,000
Closeout	$0
Est. Program Cost	**$4,877,388**
Contingency Budget	$490,000
Est. Project Costs	**$5,367,388**

NP013000

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 95 190 380 570 760 Feet

NP013000

Nansemond Treatment Plant Motor Control Center Replacements

HRSD

N
W E
S

CIP Location

Nansemond Treatment Plant Motor Control Center Replacements

PR_NP013000

System: Nansemond
Type: Electrical

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$3,133	$1,281	$1,169	$682	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is to replace six motor control centers (MCCs). The MCCs were installed in the early 1980s. The MCC's feed the primary pump station #1, Float Thickening Building, Primary Pump Station #2, Clarified Recycle (CRCY) Pump Station, and Nitrified Recycle (NRCY)/CRCY Pump Station.

PROJECT JUSTIFICATION

This project will replace 32 year old MCC's nearing the end of their useful life. The main breakers on the MCC's are no longer available and replacement parts are not available. The replacement of the MCC's will improve reliability to ensure critical unit processes are not adversely impacted. In addition, this project will reduce hazards to employees associated with arc flash.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

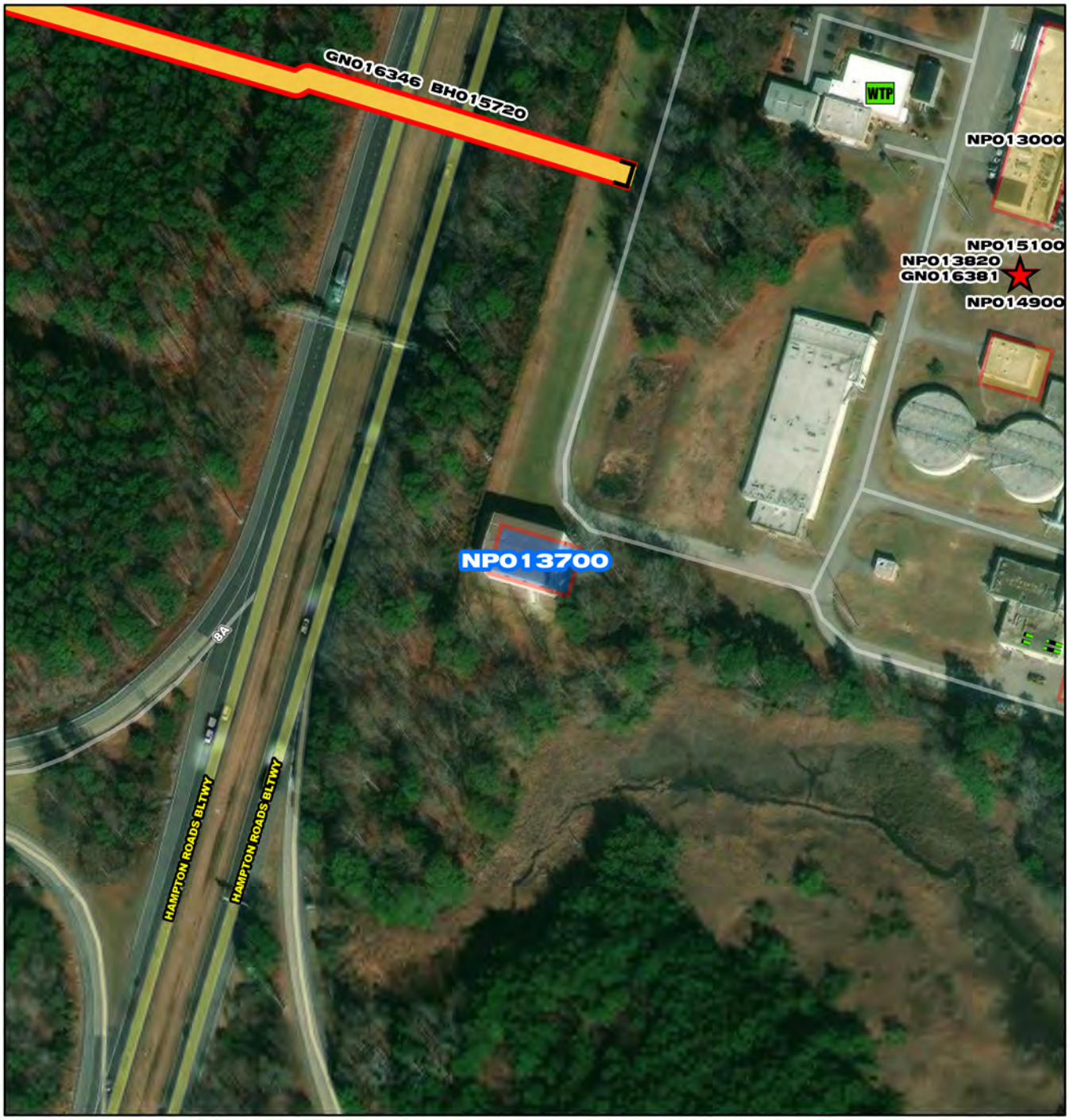
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Sherman Pressey
Contacts-Managing Dept: Operations-Support Systems

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2017
PER	05/01/2017
Design Delay	05/01/2017
Design	05/01/2017
Bid Delay	05/01/2017
PreConstruction	05/01/2017
Construction	01/01/2022
Closeout	02/01/2025

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$0
PreConstruction	$0
Construction	$3,132,851
Closeout	$0
Est. Program Cost	**$3,132,851**
Contingency Budget	$296,579
Est. Project Costs	**$3,429,430**



NP013700

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 62.5 125 250 375 500 Feet

NP013700

Nansemond Treatment Plant
Struvite Recovery Facility
Improvements

HRSD

N
W E
S

CIP Location

Nansemond Treatment Plant Struvite Recovery Facility Improvements

PR_NP013700

System: Nansemond
Type: Wastewater Treatment

Driver Category: Performance Upgrades
Project Phase: Construction
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$41,409	$15,962	$19,082	$6,363	$1	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project involves the implementation of the WASSTRIP (Waste Activated Sludge Stripping to Remove Internal Phosphorous) process and improvements to the Struvite Recovery Facility (SRF). The WASSTRIP process consists of the storage of thickened WAS in a tank for a period sufficient to allow phosphorus and magnesium release, followed by post thickening, and transfer of thickened solids to digestion. The thickening filtrate (WASSATE) will be transferred to the SRF separate from the centrate stream. This project also includes the addition of a solids removal step for centrate/WASSATE and a small equalization tank for the WASSATE. The SRF upgrade includes improvement of the chemical system and system controls, additional reactor capacity, and replacement of the struvite product drying equipment. The majority of this project is in design and will be completed as one construction project in unison with the digester improvements effort. There is a need to move forward quickly with portions of the project including new dryer equipment and a new programmable logic controller (PLC) for the SRF. This work will be considered as Phase I and will move into final design and construction without delay.

PROJECT JUSTIFICATION

This project will achieve the following improvements for Nansemond Plant: Improve biological phosphorus removal reliability and decrease effluent phosphorus concentrations, which is important for the decrease in the James River waste load allocation; Allow for treatment of all centrate flow through the SRF and overcome capacity limitations that currently require bypassing of some centrate; Provide SRF reactor redundancy to allow for maintenance activities; Improve solids dewatering performance and decrease polymer demand; Nearly double facility production of Crystal Green which increases operating revenue; Decrease the frequency of digester cleaning due to less struvite accumulation; and Decrease operational costs associated with nuisance accumulation of struvite in piping and equipment upstream of the struvite recovery facility. Phase 1 - The existing product drying equipment is limited in size and volume of product it can handle. Due to the capacity limitations, the dryer restricts the efficiency of the facility and ultimately leads to higher phosphorus concentrations in the return flow back to the main plant. The PLC currently in use is over 10 years old and should be replaced with new hardware and more up to date programming logic.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	08/01/2017
PER	08/01/2017
Design Delay	04/02/2018
Design	04/02/2018
Bid Delay	03/01/2022
PreConstruction	04/01/2022
Construction	07/01/2022
Closeout	11/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$86,879
Design	$2,338,699
PreConstruction	$14,173
Construction	$38,949,022
Closeout	$20,000
Est. Program Cost	**$41,408,773**
Contingency Budget	$1,868,762
Est. Project Costs	**$43,277,535**

NP013820

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 55 110 220 330 440 Feet

NP013820

Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Ph II

HRSD

N
W E
S

CIP Location

Nansemond Treatment Plant Advanced Nutrient Reduction Improvements Phase II

PR_NP013820

System: Nansemond
Type: SWIFT

Driver Category: Nutrient Reduction
Project Phase: Design
Regulatory: Integrated Plan-SWIFT

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$302,640	$28,181	$118,923	$131,763	$23,773	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is for the design and construction of improvements to Nansemond Treatment Plant to support reliable treatment of raw, screened wastewater from the Boat Harbor Treatment Plant service area and raw influent from the Nansemond Treatment Plant service area. A Capacity Study determined that nutrient removal and hydraulic upgrades would be required to treat both flows and loads to meet the targeted effluent concentrations. The scope includes equalization of primary effluent and upgrades to preliminary and secondary treatment, disinfection facilities, odor control system, effluent pump station and drain pump station. This effort will include all associated pumping, piping, tankage, mechanical, and electrical equipment. This estimate assumes all necessary ancillary facilities will be upgraded as required.

PROJECT JUSTIFICATION

These improvements will be required to treat the flows from the Boat Harbor Treatment Plant Service area and provide stable source water quality that meets the influent requirements of the full scale SWIFT facility at Nansemond Treatment Plant.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

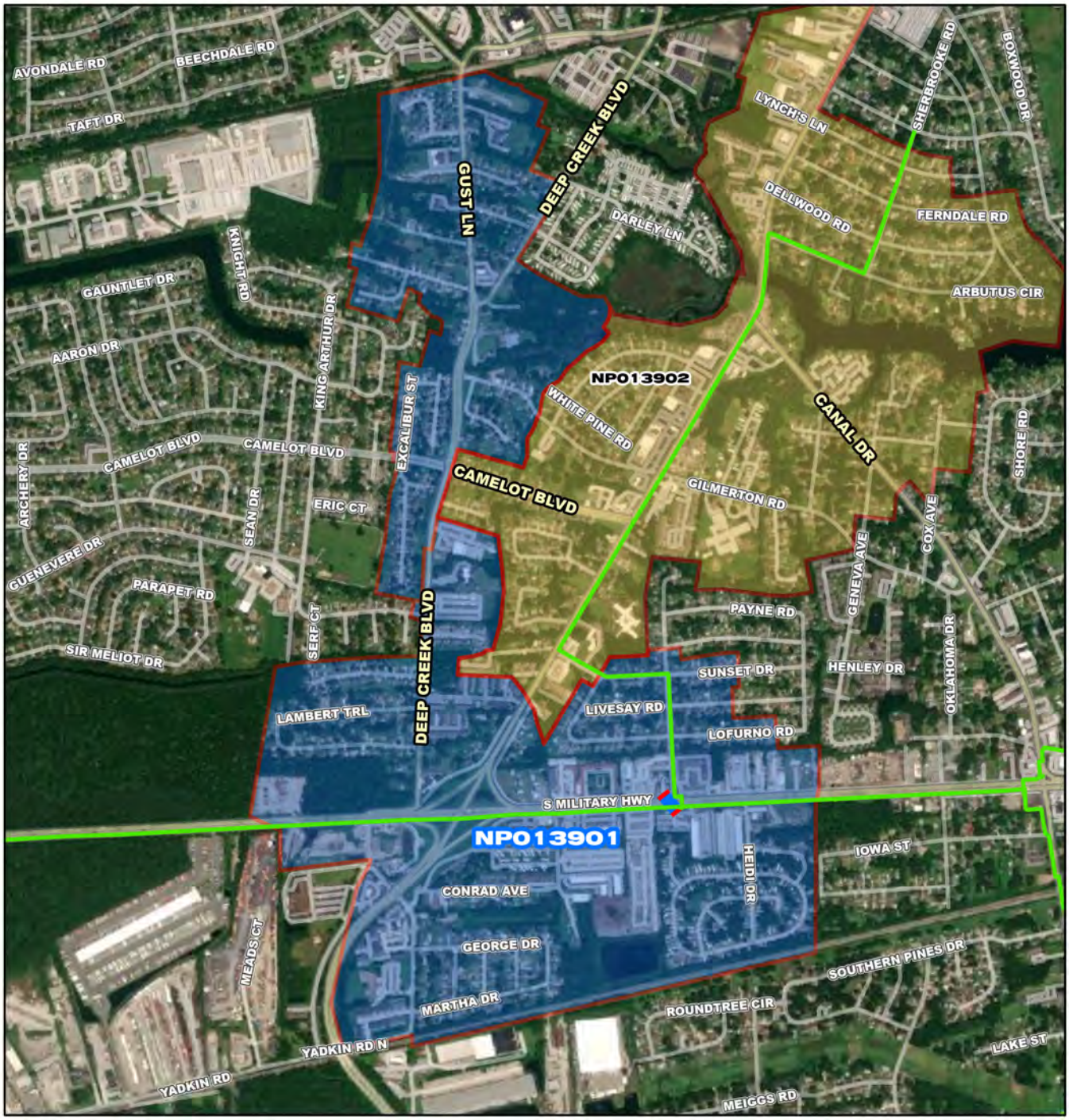
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Lauren Zuravnsky
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	04/01/2020
PER	11/01/2020
Design Delay	
Design	02/24/2022
Bid Delay	
PreConstruction	04/01/2021
Construction	03/01/2023
Closeout	01/02/2026

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$2,743,291
Design	$18,368,710
PreConstruction	$663,100
Construction	$280,865,212
Closeout	$0
Est. Program Cost	**$302,640,313**
Contingency Budget	$15,000,000
Est. Project Costs	**$317,640,313**



NP013901

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 465 930 1,860 2,790 3,720 Feet

N W E S

CIP Location

NP013901

Nansemond Service Area I-I Reduction Phase II (CHES)

HRSD

Nansemond Service Area I-I Reduction Phase II (CHES) PR_NP013901

System: Nansemond
Type: Locality and Private Property

Driver Category: I&I Abatement-IP/RWWMP
Project Phase: Proposed
Regulatory: Integrated Plan-HPP 1

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$18,144	$0	$0	$0	$0	$1,198	$1,491	$6,454	$8,983	$18	$0	$0

PROJECT DESCRIPTION

CHES-016 Comprehensive I/I Reduction Plan; CHES-227 Data-Driven I/I Reduction Plan; CHES-016 GM Improvement.

PROJECT JUSTIFICATION

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

FUNDING TYPE

Funding Type: Cash

CONTACTS

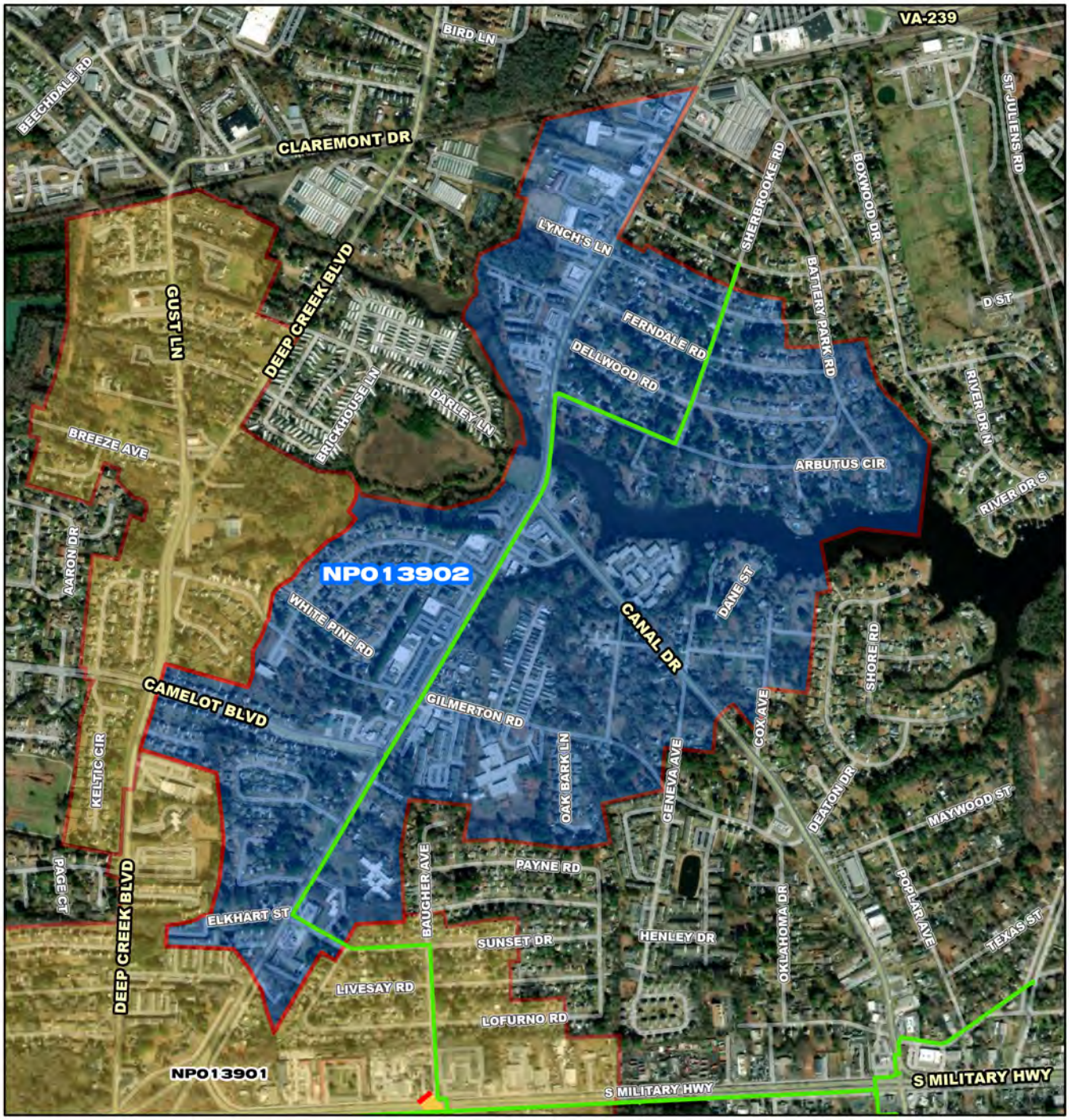
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Gene Rutledge
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2026
PER	07/01/2026
Design Delay	01/01/2028
Design	01/01/2028
Bid Delay	10/01/2028
PreConstruction	10/01/2028
Construction	01/01/2029
Closeout	04/01/2030

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$1,797,596
Design	$1,337,913
PreConstruction	$23,354
Construction	$14,962,168
Closeout	$23,354
Est. Program Cost	**$18,144,385**
Contingency Budget	$3,627,617
Est. Project Costs	**$21,772,001**



NP013902

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 370 740 1,480 2,220 2,960 Feet

N
W E
S

CIP Location

NP013902

Nansemond Service Area I-I Reduction Phase III (CHES)

HRSD

Nansemond Service Area I-I Reduction Phase III (CHES) PR_NP013902

System: Nansemond
Type: Locality and Private Property

Driver Category: I&I Abatement-IP/RWWMP
Project Phase: Proposed
Regulatory: Integrated Plan-HPP 1

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$18,057	$0	$0	$963	$1,359	$2,776	$5,175	$5,175	$2,599	$12	$0	$0

PROJECT DESCRIPTION

CHES-018 Comprehensive I/I Reduction Plan.

PROJECT JUSTIFICATION

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

FUNDING TYPE

Funding Type: Cash

CONTACTS

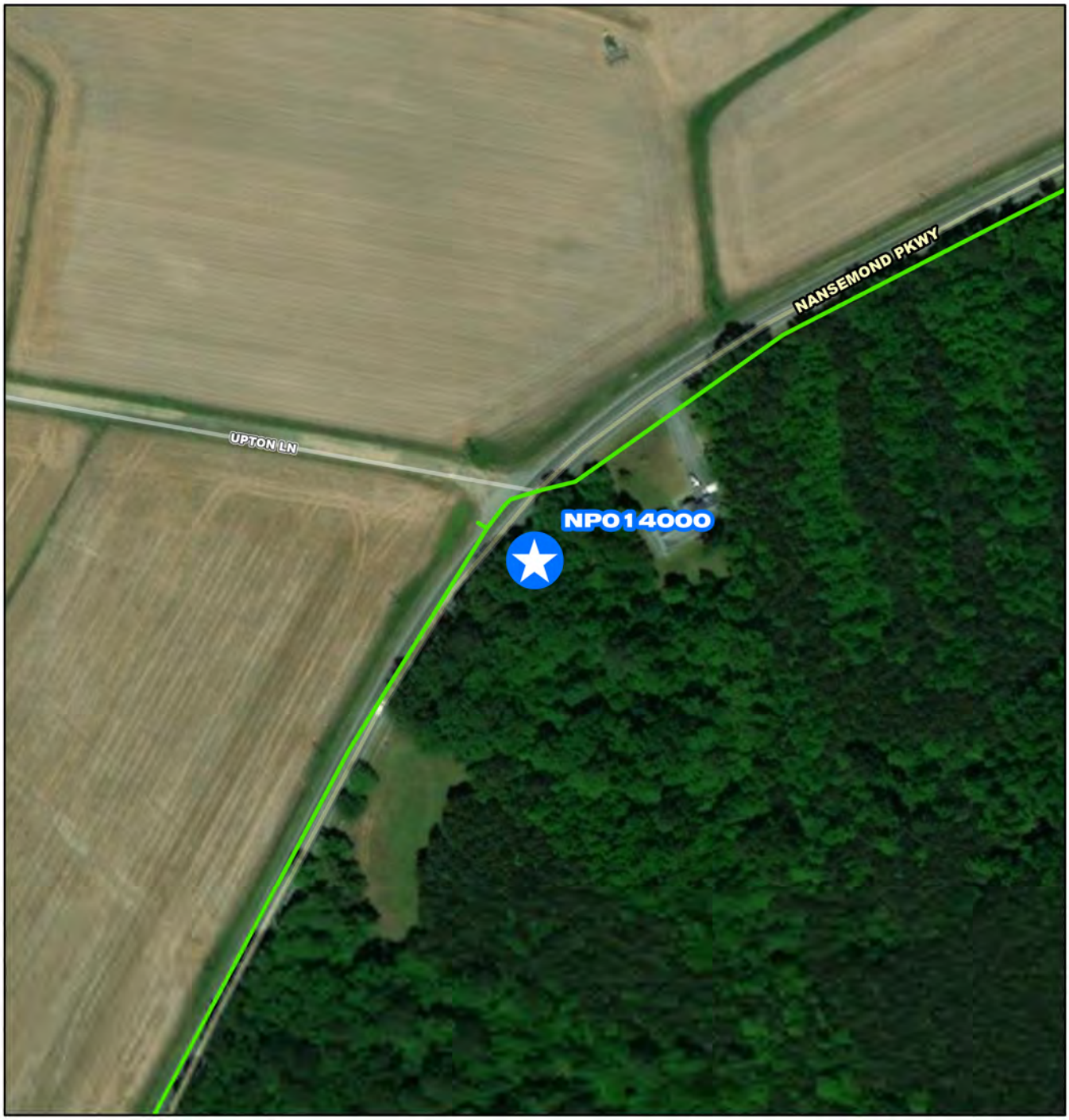
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Gene Rutledge
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	02/01/2024
PER	08/02/2024
Design Delay	02/01/2026
Design	02/01/2026
Bid Delay	11/01/2026
PreConstruction	11/01/2026
Construction	02/01/2027
Closeout	01/01/2030

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$1,575,332
Design	$1,342,604
PreConstruction	$23,354
Construction	$15,092,569
Closeout	$23,354
Est. Program Cost	**$18,057,213**
Contingency Budget	$3,669,929
Est. Project Costs	**$21,727,142**



NP014000
- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 55 110 220 330 440 Feet

NP014000

Wilroy Pressure Reducing Station and Off-line Storage Facility

HRSD

N
W E
S

CIP Location

Wilroy Pressure Reducing Station and Off-line Storage Facility

PR_NP014000

System: Nansemond
Type: Offline Storage

Driver Category: I&I Abatement-IP/RWWMP
Project Phase: PER
Regulatory: Integrated Plan-HPP 1

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$42,312	$1,348	$2,693	$8,769	$16,092	$13,410	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project will install a new pressure reducing station (PRS) and a new 3-million gallon storage tank. These facilities are required as part of the Integrated Plan and are needed to reduce the likelihood of sanitary sewer overflows (SSOs) in the Cities of Chesapeake and Suffolk.

PROJECT JUSTIFICATION

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

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Rebecca Currall
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/04/2021
PER	01/01/2022
Design Delay	04/01/2023
Design	04/01/2023
Bid Delay	10/01/2024
PreConstruction	10/01/2024
Construction	01/01/2025
Closeout	05/01/2027

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$645,000
Design	$4,069,000
PreConstruction	$50,000
Construction	$37,548,000
Closeout	$0
Est. Program Cost	**$42,312,000**
Contingency Budget	$4,227,000
Est. Project Costs	**$46,539,000**

NP014500

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 62.5 125 250 375 500 Feet

NP014500

Nansemond Treatment Plant
Regional Residuals Facility Upgrade

HRSD

N
W E
S

CIP Location

Nansemond Treatment Plant Regional Residuals Facility Upgrade

PR_NP014500

System: Nansemond
Type: Wastewater Treatment

Driver Category: Performance Upgrades
Project Phase: Design
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$2,687	$733	$1,945	$8	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will entail the installation of a new mechanical screen, pump station and Fats Oils & Grease (FOG) separator at the Nansemond Treatment Plant Regional Residuals Facility (RRF). The screen will be installed upstream of the new pump station, which will pump up to the FOG separator where concentrated FOG will be conveyed to a dumpster and the underflow will drain to the RRF's existing pump station. The existing pump station will also be upgraded to handle additional channel, bay and equipment washdown water.

PROJECT JUSTIFICATION

Regional pump station wet well cleaning produces a significant number of truckloads per month that carry primarily grease and water and are light on residuals (grit). The number is significant enough that plant staff has had to dedicate bays at the RRF strictly for grease loads and bays strictly for heavy residual (grit) loads. The heavy grease loads complicate RRF operation, plugging up drains and leading to increased manpower and a greater presence of grease in downstream processes.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	12/01/2020
PER	02/01/2021
Design Delay	04/01/2021
Design	04/01/2021
Bid Delay	02/01/2023
PreConstruction	02/01/2023
Construction	05/01/2023
Closeout	05/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 3**
PrePlanning	$42,947
PER	$0
Design	$293,299
PreConstruction	$8,448
Construction	$2,332,000
Closeout	$10,000
Est. Program Cost	**$2,686,694**
Contingency Budget	$466,400
Est. Project Costs	**$3,153,094**

NP014600

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 425 850 1,700 2,550 3,400 Feet

N W E S

CIP Location

NP014600

West Road Interceptor Force Main Extension

HRSD

West Road Interceptor Force Main Extension

PR_NP014600

System: Nansemond
Type: Pipelines

Driver Category: Capacity Improvements
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$12,133	$28	$6,025	$6,027	$53	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project involves a 1.6 mile 30-inch force main extension of the HRSD regional interceptor system down West Road in the City of Chesapeake. The force main will extend from Cedar Road to Number Ten Lane in conjunction with a City of Chesapeake water main.

PROJECT JUSTIFICATION

The City of Chesapeake's 2035 Land Use Plan includes development on the west side of the Chesapeake Regional Airport as well a property along Route 17 in the City of Chesapeake. Chesapeake's South Central Water Transmission Main & Loop - Phase I CIP will be extending a water main down West Road towards the airport and the property along Route 17 in Chesapeake. The airport site is approximately 3.6 miles away from the nearest HRSD interceptor. In addition to the airport area development, HRSD has been coordinating with Chesapeake in regards to providing sanitary sewer service for the potential development of the Williams Farm tract, due south of the airport along the North Carolina border, commonly referred to as the Coastal Commerce site. The site is approximately 11 miles away from the nearest HRSD interceptor. West Road is a narrow country road; construction will require road closure and road reconstruction. Chesapeake has offered to coordinate an HRSD force main extension as part of their water main extension project. By extending the HRSD system at this time, it will minimize public impact, provide service for the airport area, and provide a connection point for a future pipeline from the Coastal Commerce site. It also has the potential to close a wastewater treatment plant at the Chesapeake Regional Airport.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Phil Hubbard
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2020
PER	07/29/2020
Design Delay	07/29/2020
Design	07/29/2022
Bid Delay	04/03/2023
PreConstruction	05/01/2023
Construction	09/01/2023
Closeout	05/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 3**
PrePlanning	$0
PER	$0
Design	$3,311
PreConstruction	$50,000
Construction	$12,000,000
Closeout	$80,000
Est. Program Cost	**$12,133,311**
Contingency Budget	$2,500,000
Est. Project Costs	**$14,633,311**

NP014700

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 65 130 260 390 520 Feet

NP014700

Nansemond Treatment Plant Digester Capacity Upgrades

HRSD

N
W E
S

CIP Location

Nansemond Treatment Plant Digester Capacity Upgrades

PR_NP014700

System: Nansemond
Type: Wastewater Treatment

Driver Category: Capacity Improvements
Project Phase: Pre Construction
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$34,380	$11,631	$15,159	$7,584	$5	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will improve and replace peripheral equipment associated with the Nansemond Treatment Plant (NTP) anaerobic digester process in advance of receiving consolidated wastewater from the Boat Harbor Treatment Plant (BHTP) service area. The following equipment will be evaluated under this CIP for capacity and condition and required upgrades or replacements to meet projected FY2026 loading will be designed and constructed: Digester mixing pumps and piping; Centrifuge feed pumps; Process boilers; Sludge heat exchangers; Digester gas collection, metering, and waste gas burners; Deammonification, WASSTRIP downstream of dCEN, Digestion process instrumentation and controls; Digestion process electrical systems

PROJECT JUSTIFICATION

Wastewater from the BHTP service area is to be diverted and combined with existing NTP primary influent beginning in first half of FY2026. The additional loading on NTP will require capacity upgrades to the anaerobic digestion process, including the ability of the current digestion systems to treat pre-dewatered primary and waste activated solids up to a concentration of 7% total dry solids.
By providing the capability of treating thicker solids in the existing anaerobic digesters, this project alleviates the need to construct additional anaerobic digester volume, which reduces overall NTP upgrade costs and reserves limited on-site space for future needs. This project will be designed in parallel with NP013700 (Nansemond Treatment Plant Struvite Recovery Facility Equipment Upgrade) which provides pre-dewatering facilities needed to make beneficial use of the capacity enhancements provided under this project.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	
PER	12/01/2020
Design Delay	01/20/2021
Design	09/29/2021
Bid Delay	03/01/2022
PreConstruction	04/01/2022
Construction	07/01/2022
Closeout	01/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$194,603
Design	$1,684,886
PreConstruction	$48,068
Construction	$32,442,070
Closeout	$10,000
Est. Program Cost	**$34,379,627**
Contingency Budget	$1,622,104
Est. Project Costs	**$36,001,731**

High Priority Projects Round 2 Project 8

PR_NP014800

System: Nansemond
Type: Pipelines

Driver Category: I&I Abatement-IP/RWWMP
Project Phase: Proposed
Regulatory: Integrated Plan-HPP 2

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

High Priority Project (HPP) Round 2 Project 8 consists of the following Regional Wet Weather Management Plan (RWWMP) Project IDs and general descriptions:
NA-RWWMP-12 Cedar Lane Gravity Main Improvement
NA-RWWMP-14 Cedar Lane Pump Station Upgrade
NA-RWWMP-16 Western Branch Pressure Reducing Station
NA-RWWMP-18 Chesapeake Inflow and Infiltration (I&I) Reduction
NA-RWWMP-19 Chesapeake City System Improvements

PROJECT JUSTIFICATION

As part of the RWWMP submitted to the DEQ and EPA, HRSD developed an approach to recognize the highest-priority system improvements with the greatest relative environmental benefit. The result being the identification of High-Priority Projects (HPPs). The initial HPPs (Round 1) were identified in the RWWMP, submitted to EPA in September of 2017, and are scheduled to be constructed between plan approval and 2030. Further review of RWWMP projects was conducted in 2019 to find beneficial solutions to implement as a second set of HPPs (identified as Round 2). A prioritization methodology was used to identify improvements to minimize sanitary sewer overflow (SSO) volume.

Rounds 1 and 2 of High-Priority Projects were scheduled with consecutive 10-year implementation periods starting with Round 1 being completed between plan approval and 2030. Prior to commencement, HRSD will review the Round 2 projects to confirm that they are still expected to meet the desired result and confirm this in a check in with the EPA/DEQ. To modify the list of specific Round 2 HPP projects, HRSD will show that the revised set of projects will attain a minimum of the same percent reduction, or better.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: John Dano
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2033
PER	08/01/2033
Design Delay	10/01/2033
Design	06/01/2034
Bid Delay	09/01/2034
PreConstruction	05/02/2035
Construction	07/01/2035
Closeout	04/02/2036

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$644,522
PER	$1,611,306
Design	$1,933,567
PreConstruction	$322,261
Construction	$27,392,202
Closeout	$322,261
Est. Program Cost	**$32,226,120**
Contingency Budget	$0
Est. Project Costs	**$32,226,120**

NP014900

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 55 110 220 330 440 Feet

NP014900

Nansemond Treatment Plant Interceptors Storage Yard

HRSD

N
W E
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CIP Location

Nansemond Treatment Plant Interceptors Storage Yard

PR_NP014900

System: Nansemond
Type: Facilities, Buildings and Capital Equipment

Driver Category: Relocation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$2,021	$1,347	$674	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will construct a new pipe storage yard to service both North Shore and South Shore Interceptors. The new pipe storage yard will be located at the Nansemond Treatment Plant in Suffolk. This project will also provide funding to cover the Procurement of the large diameter pipe.

PROJECT JUSTIFICATION

North Shore Interceptors will need to relocate pipes, fitting, valves, and pumps from their existing location at 2401 G Avenue to a new location once the HRSD property is sold or leased. A temporary pipe storage area at the James River Treatment Plant also needs to be relocated due to upcoming SWIFT Upgrades. By constructing one large pipe storage yard, the assets at both locations can be relocated. South Shore Interceptors is also limited on space for large diameter pipe, fittings, and valves and will use the proposed pipe yard for storage of their larger assets. This combined facility will increase inventory efficiency, decrease/consolidate inventory on-hand and be jointly maintained by Interceptor Operations.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

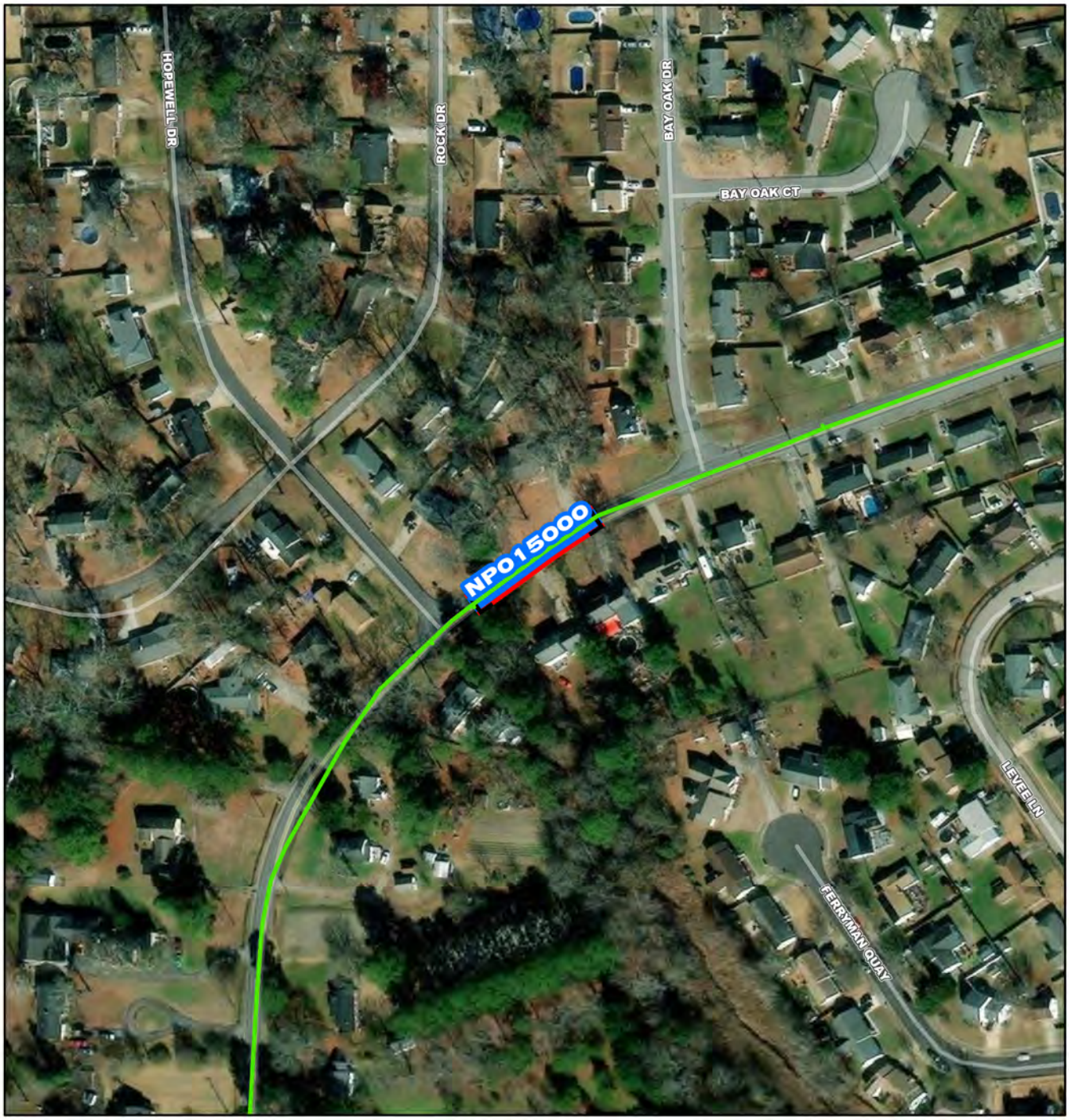
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Virginia Opp
Contacts-Managing Dept: Operations-Interceptors

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2022
PER	07/01/2022
Design Delay	07/01/2022
Design	07/01/2022
Bid Delay	11/01/2022
PreConstruction	11/01/2022
Construction	03/02/2023
Closeout	09/02/2023

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$0
PreConstruction	$0
Construction	$2,021,000
Closeout	$0
Est. Program Cost	**$2,021,000**
Contingency Budget	$200,000
Est. Project Costs	**$2,221,000**



NP015000
- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 65 130 260 390 520 Feet

NP015000

Shell Road Interceptor Force Main (SF-144) Segmental Replacement

HRSD

N
W E
S

CIP Location

Shell Road Interceptor Force Main (SF-144) Segmental Replacement

PR_NP015000

System: Nansemond
Type: Pipelines

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$787	$0	$0	$55	$183	$435	$114	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will address approximately 200 feet of pipe on the 24-inch ductile iron Shell Road Interceptor Force Main (SF-244) along Shell Road in Chesapeake, VA.

PROJECT JUSTIFICATION

This project will address interceptor force main identified during FY 2022 condition assessment to have extensive pipe wall loss resulting from interior and exterior corrosion. The section of force main is directly downstream from two City of Chesapeake pump station connections and is centered on an existing air release valve (NA3096-1). The referenced section of force main has one documented failure in 1996 due to exterior corrosion (pin hole leak) which was repaired with a full circle repair clamp. There has also been three (3) additional upstream interceptor failures on Shell Road in 1997, 1998, and 2010 due to interior corrosion resulting in extensive emergency pipe replacement.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Gene Rutledge
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2023
PER	10/01/2023
Design Delay	09/01/2024
Design	09/01/2024
Bid Delay	12/01/2025
PreConstruction	12/01/2025
Construction	03/01/2026
Closeout	10/01/2027

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$0
Design	$82,680
PreConstruction	$10,335
Construction	$689,000
Closeout	$5,300
Est. Program Cost	**$787,315**
Contingency Budget	$0
Est. Project Costs	**$787,315**

NP015100

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 55 110 220 330 440 Feet

NP015100

Nansemond Treatment Plant Administration Building Replacement

HRSD

N
W E
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CIP Location

Nansemond Treatment Plant Administration Building Replacement

PR_NP015100

System: Nansemond
Type: Facilities, Buildings and Capital Equipment

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$9,145	$0	$0	$322	$1,036	$7,787	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The purpose of this project is to replace the current outdated administration building with a new facility which will consolidate all administrative, shop, locker and staff facilities into one facility, while accounting for additional spacing needs, such as an appropriate lab space.

PROJECT JUSTIFICATION

The Nansemond Plant staff is currently located in two separate buildings on site, as well as, Electrical and Instrumentation (E&I) and Condition Assessment staff. HRSD recently approved an internal hauling operation and the future staffing will be based out of the Nansemond Plant.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Christel Dyer
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	07/29/2024
Design Delay	09/18/2024
Design	05/30/2025
Bid Delay	08/31/2025
PreConstruction	05/11/2026
Construction	06/21/2026
Closeout	04/20/2027

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$33,920
Design	$432,480
PreConstruction	$26,500
Construction	$8,651,720
Closeout	$0
Est. Program Cost	**$9,144,620**
Contingency Budget	$1,828,924
Est. Project Costs	**$10,973,544**

Nansemond Treatment Plant Solids Drying Feasibility and Site Study

PR_NP015400

System: Nansemond
Type: Biosolids

Driver Category: Risk Mitigation
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$300	$0	$188	$113	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is to perform an initial feasibility study for a biosolids processing facility at Nansemond Treatment Plant after closure of BHTP and startup for NTP SWIFT facilities. The product of such a facility would be suitable for distribution and marketing as a Class A/EQ biosolids derived fertilizer product or capable of further thermal processing such as combustion or pyrolysis. The feasibility study will identify suitable technologies to meet HRSDs capacity and risk-management goals as well as inform HRSD on the benefits and costs of various delivery approaches and timelines.

PROJECT JUSTIFICATION

Upon closure of BHTP and startup of NTP SWIFT facilities, NTP will produce approximately double the amount of residual biosolids as it does presently in CY2023. Wastewater biosolids are under increased scrutiny for trace constituent content. The increased solids production from NTP presents a risk to HRSD should our current biosolids management strategies become excessively costly, unreliable, or unavailable due these market pressures. The implementation of a large technically complex biosolids management facility will require advanced planning in order to effectively manage capital resources, make well-informed technology and logistical decisions, and take advantage of potential beneficial partnerships in the construction and use of such a facility. As such, this feasibility study is scheduled to commence in substantially in advance of the expected implementation timeline.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Christopher Wilson
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	09/01/2023
PER	
Design Delay	
Design	
Bid Delay	
PreConstruction	
Construction	
Closeout	

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$300,000
PER	$0
Design	$0
PreConstruction	$0
Construction	$0
Closeout	$0
Est. Program Cost	**$300,000**
Contingency Budget	$0
Est. Project Costs	**$300,000**

NP015500

- 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 362.5 725 1,450 2,175 2,900 Feet

NP015500

Town of Dendron Discharge Force Main Replacement

HRSD

N
W E
S

CIP Location

Town of Dendron Discharge Force Main Replacement

PR_NP015500

System: Nansemond
Type: Pipelines

Driver Category: Capacity Improvements
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33
$2,066	$0	$150	$1,135	$781	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace 6,300 linear feet of 3-inch PVC force main of PS-01 Dendron B in Surry, VA. The force mains current alignment is adjacent to Rolfe Highway and discharges into a gravity system located between Liberty Street and First Church Street. This project will upsize the existing pipeline from 3 inches to 4 or 6 inches.

PROJECT JUSTIFICATION

The Town of Dendron Sanitary Sewer pipeline was constructed by the Town of Surry in 2007 and turned over to HRSD. Due to the sizing of the force main PS-01 Dendron B has had 11 overflows since 2020. This is due to the pump station not being able to overcome the friction losses in the pipeline during rain events. This proposed project will upsize the existing force main to 4 or 6 inches.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2023
PER	07/01/2023
Design Delay	
Design	02/01/2024
Bid Delay	
PreConstruction	09/01/2024
Construction	12/01/2024
Closeout	12/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$52,000
Design	$137,000
PreConstruction	$10,000
Construction	$1,862,000
Closeout	$5,000
Est. Program Cost	**$2,066,000**
Contingency Budget	$341,000
Est. Project Costs	**$2,407,000**