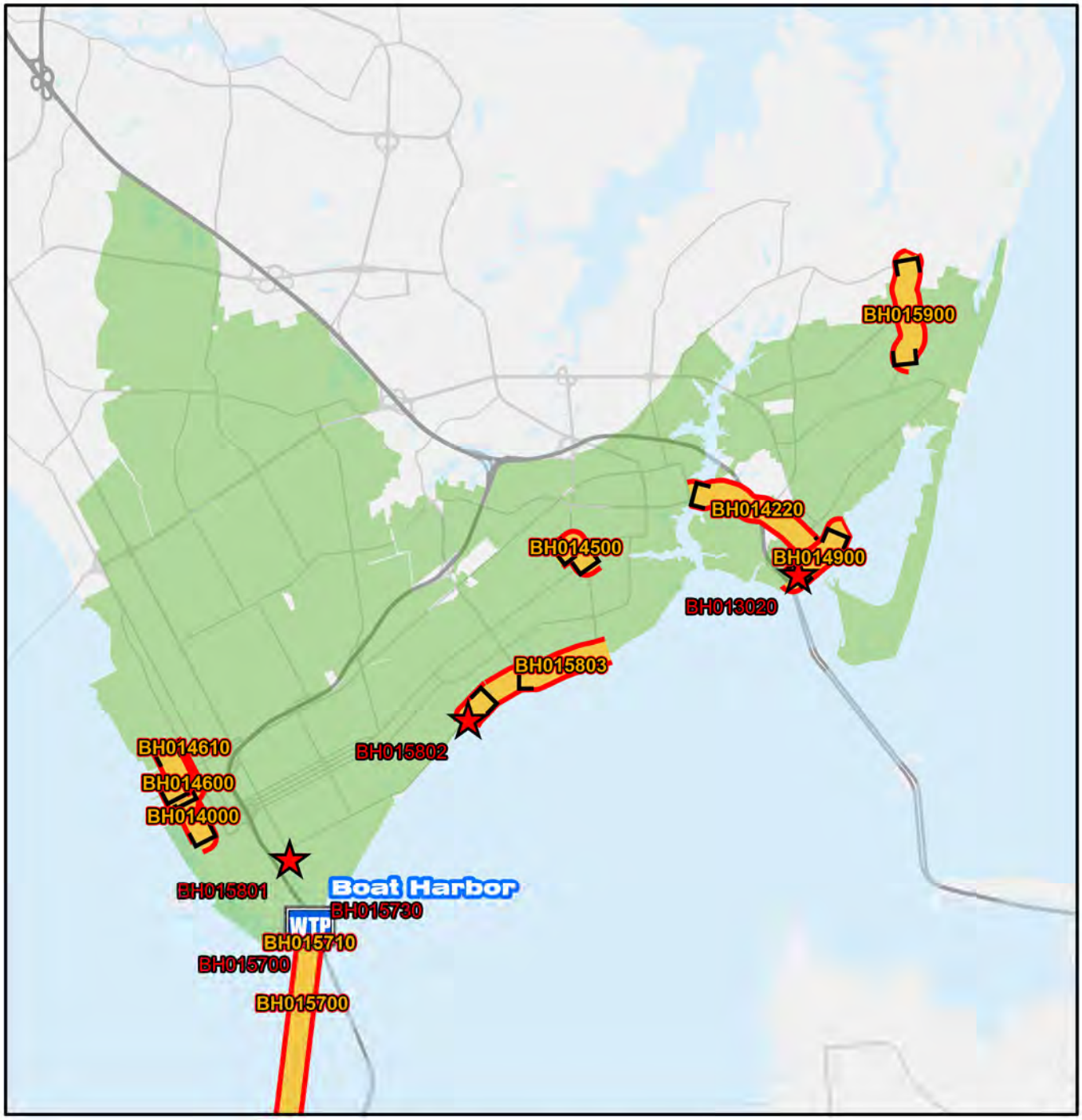
Boat Harbor Treatment Plant

Photo Credit: VDOT



Legend

- Boat Harbor 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 2,000 4,000 8,000 12,000 16,000 Feet

Boat Harbor Treatment Plant Service Area CIP Projects

Treatment Plant Projects

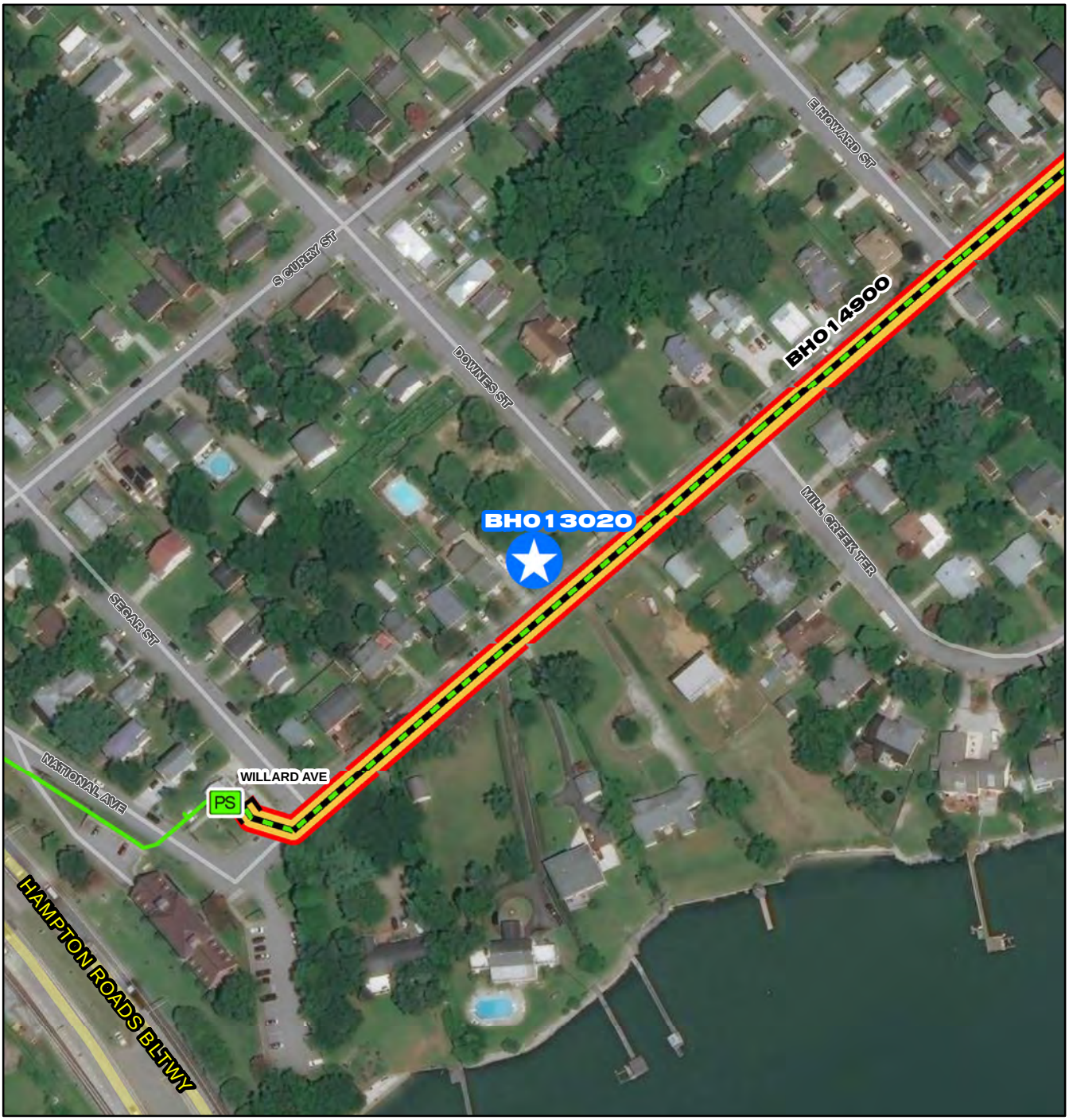
BH015700
GN016345
GN016346

HRSD

N

CIP Location

Service Area



BH01 3020

- 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

BH01 3020

Willard Avenue Pump Station Replacement

HRSD

N
W E
S

CIP Location

Willard Avenue Pump Station Replacement

PR_BH013020

System: Boat Harbor
Type: Pump Stations

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$12,544	$1,535	$4,887	$4,887	$1,235	$2	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project includes the replacement of the Willard Avenue Pump Station (PS) to address conditional issues. The proposed replacement will include a relocated pump station and new gravity and force main connections to the existing systems.

PROJECT JUSTIFICATION

This project will improve pump station capacity for the service area and reduce operation and maintenance demands. The existing Willard Avenue Pump Station is located at 219 National Avenue in Hampton, Virginia. The Station serves portions of Buckroe, Woodland and Phoebus including Fort Monroe and receives flow from multiple City Pump Stations and the HRSD Bay Shore Lane Pump Station. Flows can be diverted from the York River WWTP collection system to the Willard Avenue Pump Station through a valved connection at the HRSD Woodland Road Pump Station. The station discharges flows through a 30-inch force main to a gravity sewer manhole in downtown Hampton. A new force main is planned to realign the Hampton Trunk Sewer Extension Divisions I & J Phase II to remove the pipeline from the Hampton University campus. A new pump station will accommodate a wide range of wet weather flows as well as offer operational flexibility during dry weather periods. The following items are justification for completing this project: The existing pump station was constructed in 1944 and is nearing the end of its anticipated useful life. The existing pump station parcel is only 0.14 acres, which does not allow for any expansion and does not meet our current parcel size standards for a new pump stations site. Furthermore, building a new pump station at this location will be challenging given the close proximity to residents. HRSD will need to acquire a new parcel in the vicinity of the existing PS to build a new one. Upon completion of the new PS, the existing PS will be demolished and the parcel transferred or sold.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

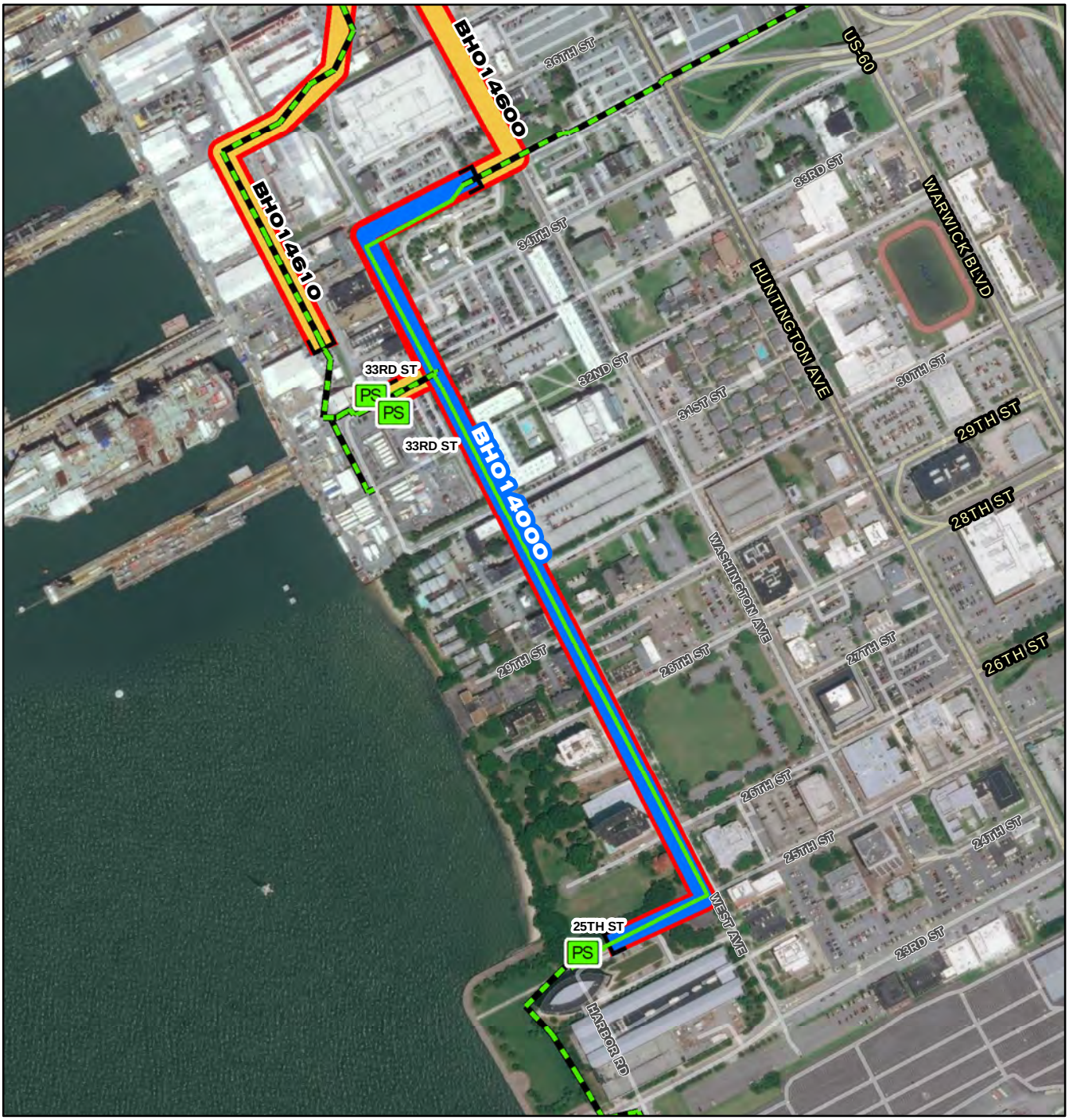
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2019
PER	05/01/2019
Design Delay	09/16/2019
Design	10/01/2019
Bid Delay	04/01/2022
PreConstruction	04/01/2022
Construction	07/01/2022
Closeout	10/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$2,030
PER	$102,410
Design	$1,400,000
PreConstruction	$25,000
Construction	$11,000,000
Closeout	$15,000
Est. Program Cost	**$12,544,440**
Contingency Budget	$550,000
Est. Project Costs	**$13,094,440**



BH014000

- 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

0 180 360 720 1,080 1,440 Feet

BH014000

West Avenue and 35th Street Interceptor Force Main Replacement

HRSD

N
W E
S

CIP Location

West Avenue and 35th Street Interceptor Force Main Replacement

PR_BH014000

System: Boat Harbor
Type: Pipelines

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$2,930	$525	$2,400	$5	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace approximately 2,600 linear feet (LF) of cast iron force main, primarily along West Avenue in the City of Newport News.

PROJECT JUSTIFICATION

North Shore Operations has experienced six breaks on this line. Two occurred in the late 1990's, one occurred in 2008, two occurred in late 2010, and the most recent break was in early 2013. The breaks have occurred due to a variety of reasons, the two in 2010 occurred due to multiple stress fractures along the crown and a circumferential crack, respectively. The most recent break (2013) was also a stress fracture that occurred between the spring line and crown of the pipe.
In addition to the poor track record that North Shore Operations has on this pipe, it should be noted that this force main is a cast iron (CI) pipe that was installed in the 1940's. CI is a brittle material that is susceptible to soil settlement and local loading that sometimes leads to localized longitudinal factures.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

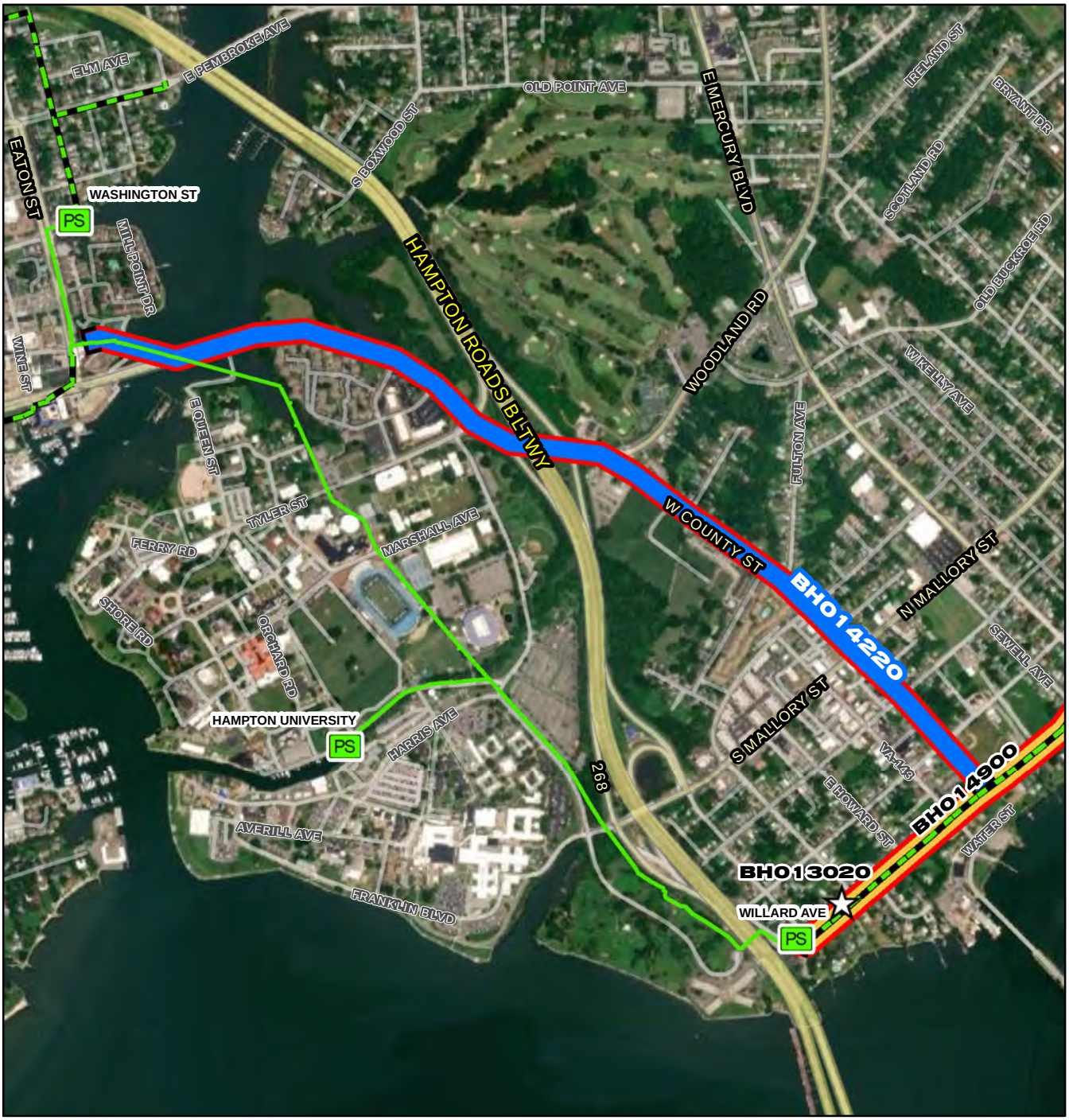
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Matt Poe
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2019
PER	04/01/2020
Design Delay	10/01/2020
Design	11/01/2020
Bid Delay	04/01/2022
PreConstruction	04/01/2022
Construction	06/01/2022
Closeout	07/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$797
PER	$93,077
Design	$226,588
PreConstruction	$5,000
Construction	$2,600,000
Closeout	$5,000
Est. Program Cost	**$2,930,462**
Contingency Budget	$500,000
Est. Project Costs	**$3,430,462**



BH014220

- 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

0 395 790 1,580 2,370 3,160 Feet

N W E S

CIP Location

BH014220

Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II

HRSD

Hampton Trunk Sewer Extension Divisions I and J Relocation Phase II

PR_BH014220

System: Boat Harbor
Type: Pipelines

Driver Category: Relocation
Project Phase: Design
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$16,987	$3,159	$6,139	$6,139	$1,548	$2	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project includes the replacement of 7,500 linear feet (LF) of 30-inch force main (FM) from the new Willard Avenue Pump Station (PS) with 6,800 LF of new 24-inch FM. The new force main will originate from the new Willard Avenue PS to the connection at E. Queen Street and Eaton Street. The location of the new Willard Avenue PS is still pending and may impact the alignment of the FM. The following ancillary work will be required as part of this project: A 600 LF extension of the 10-inch FM from City of Hampton PS 003; A 1,000 LF relocation of the 4-inch FM from the privately owned Hampton Harbor PS; Conveyance of Hampton University PS (Sta. #211) to Hampton University or the Veteran Affairs Medical Center.

PROJECT JUSTIFICATION

In combination with CIP BH014210, this project will address critical areas within the City of Hampton with significant wet weather capacity issues as identified in the Hampton Study completed by Brown and Caldwell (BC). The Hampton Study was a collaborative effort between BC, the City of Hampton and HRSD to identify, evaluate, and select the preferred alternatives to address the identified capacity issues. The existing Willard Avenue PS 30-inch discharge FM was originally installed in the 1945-46 timeframe, with a portion of the main relocated in 1956 as part of the Interstate-64 (I-64) project. Given the age of this line, the documented failure near the I-64 sound wall, limited diversion options, its depth in the vicinity of the interstate off ramp, and Hampton University's request for HRSD to abandon this pipe, replacement is necessary.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

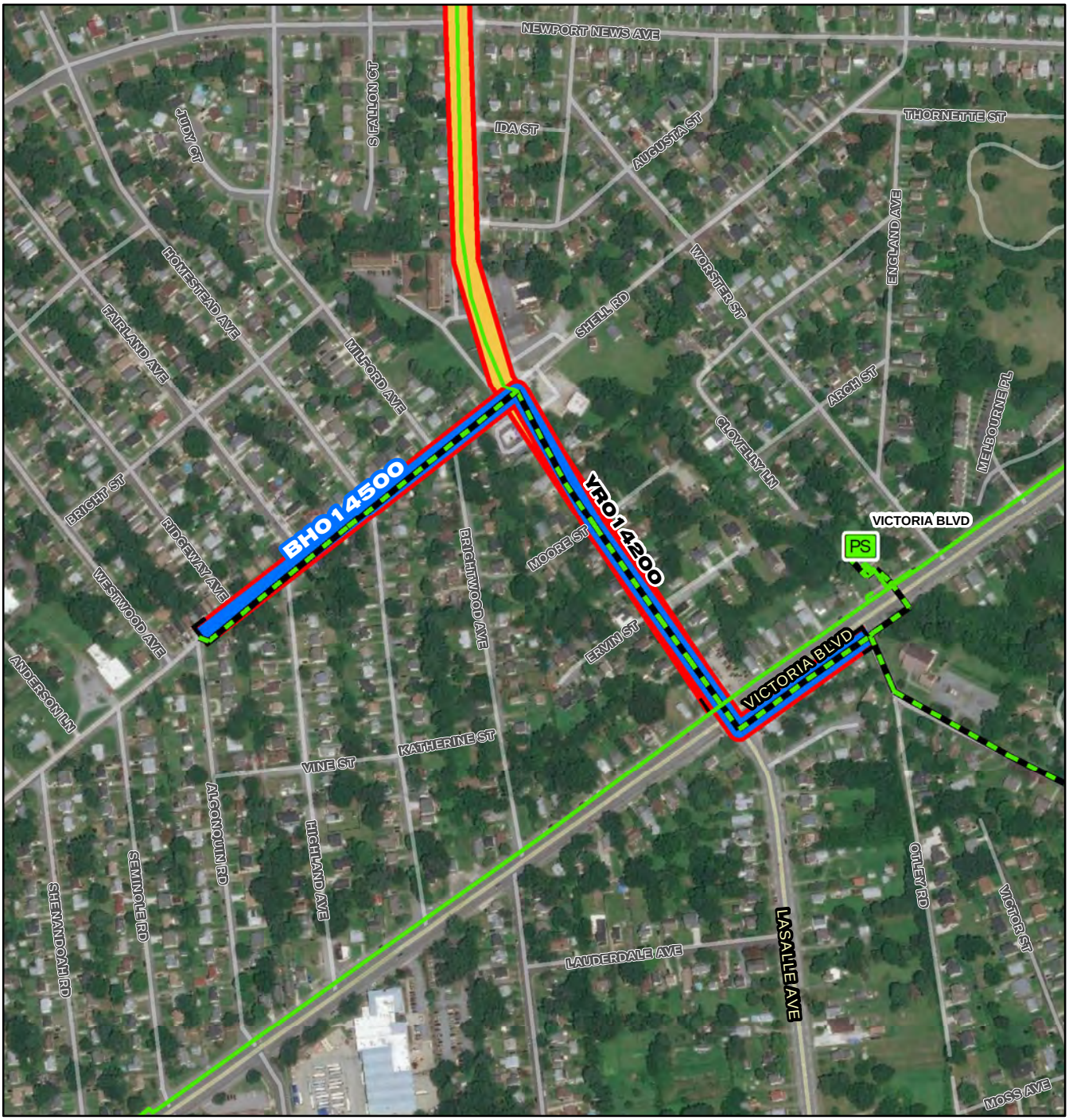
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2015
PER	01/11/2016
Design Delay	05/31/2018
Design	06/26/2018
Bid Delay	11/05/2021
PreConstruction	11/05/2021
Construction	03/01/2022
Closeout	10/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$1,462
PER	$85,020
Design	$998,533
PreConstruction	$27,500
Construction	$15,859,380
Closeout	$15,000
Est. Program Cost	**$16,986,895**
Contingency Budget	$656,911
Est. Project Costs	**$17,643,806**



BH014500

- 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

0 155 310 620 930 1,240 Feet

N W E S

BH014500

Ivy Home-Shell Road Sewer Extension Division I Replacement

HRSD

CIP Location

Ivy Home-Shell Road Sewer Extension Division I Replacement

PR_BH014500

System: Boat Harbor
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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$2,088	$119	$85	$1,724	$161	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will involve diversion of the LaSalle Avenue Sanitary Sewer Force Main (NF-085) in the City of Hampton from the current discharge manhole at the intersection of LaSalle Avenue to Shell Road to an alternative downstream manhole at the intersection of Victoria Boulevard and Ivy Home Road, and the rehabilitation or replacement of all manholes identified in the Rehabilitation Action Plan Phase 2. The diversion would significantly reduce the hydraulic grade line (HGL) in the HRSD gravity sewer and address the capacity concern identified in the regional hydraulic model. The Preliminary Engineering Report (PER) for this project found that abandonment and replacement of the existing HRSD gravity sewer was not feasible due to conflicts with storm sewers and other utilities along the replacement corridor.

PROJECT JUSTIFICATION

This project will address critical areas within the City of Hampton with significant wet weather capacity issues as identified in the Hampton Study completed by Brown and Caldwell (BC). This project should be coordinated with the Regional Wet Weather Master Plan. The Hampton Study was a collaborative effort between BC, the City of Hampton and HRSD to identify, evaluate and select the preferred alternatives to address the identified capacity issues. The gravity reroute to 001-PS was identified as the preferred alternative (Alternative 1B) for the Ivy Home Road/Chesapeake Avenue area. This alternative includes increasing the size of the main gravity pipe discharging into the Victoria Boulevard Pump Station (PS), thus, increasing sewer capacity for that service area. The increased capacity of this line, combined with the modifications rerouting flow from the Ivy Home Road sewer to the Victoria Boulevard PS, will facilitate capacity improvements to the Chesapeake Avenue gravity sewer (Alternative 2A - Pump Station and Force Main).

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

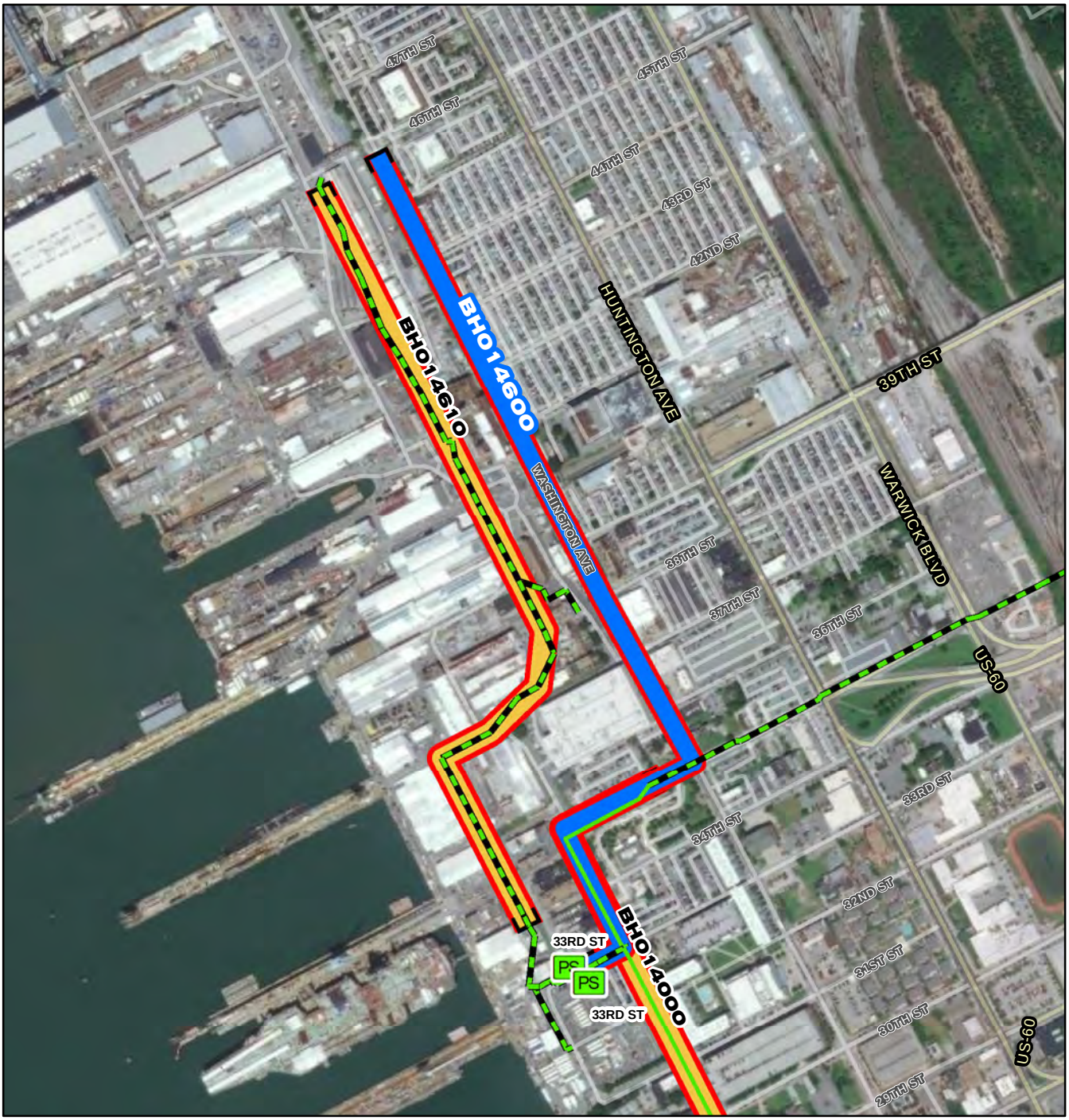
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Phil Hughes
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2014
PER	05/29/2014
Design Delay	07/20/2015
Design	05/02/2022
Bid Delay	04/14/2023
PreConstruction	04/14/2023
Construction	08/01/2023
Closeout	05/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$689
PER	$73,329
Design	$125,775
PreConstruction	$5,000
Construction	$1,878,240
Closeout	$5,000
Est. Program Cost	**$2,088,033**
Contingency Budget	$155,856
Est. Project Costs	**$2,243,889**



BH014600

- 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

0 210 420 840 1,260 1,680 Feet

BH014600

46th Street Diversion Sewer Rehabilitation Replacement

HRSD

N
W E
S

CIP Location

46th Street Diversion Sewer Rehabilitation/Replacement

PR_BH014600

System: Boat Harbor
Type: Pipelines

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$6,224	$1,692	$2,852	$1,673	$6	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will involve the rehabilitation and/or replacement of the main sanitary sewer trunk line on Newport News Shipbuilding property. The timing of these infrastructure improvements will need to be sequenced with the Newport News Shipyard (NNS) in accordance with an agreement to be drafted and executed prior to the construction phase. This project will include the installation of a new main sanitary sewer trunk line in the City right-of-way outside of NNS property, which will divert public flow from the sewer trunk line on NNS property.

PROJECT JUSTIFICATION

This project will address long standing conditional, access, encroachment, and jurisdictional issues related to the James River Diversion Sewer - 46th Street constructed in 1945 under the Federal Works Agency, Docket No. VA 44-264. Responsibility for maintenance and operation was assigned to HRSD in 1950 with an expiration of responsibilities in 1979 according to the easement granted to the United States of America by the City of Newport News and subsequently assigned to HRSD. Upon expiration of the easement in 1979, responsibility for maintenance and operation of the gravity line has been in question. Prior to a complete Condition Assessment report prepared by Whitman, Requardt and Associates (WRA) in June 2011, several studies of the existing system have been prepared by consultants hired by Newport News Shipyard, all detailing limited system capacity, numerous deficiencies and missing infrastructure related to building/storage area construction.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/02/2017
PER	01/30/2017
Design Delay	05/09/2019
Design	05/01/2019
Bid Delay	03/01/2022
PreConstruction	03/01/2022
Construction	06/01/2022
Closeout	02/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$1,626
PER	$298,022
Design	$1,100,000
PreConstruction	$17,420
Construction	$4,791,600
Closeout	$15,000
Est. Program Cost	**$6,223,668**
Contingency Budget	$250,000
Est. Project Costs	**$6,473,668**

BH014610

- 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

0 195 390 780 1,170 1,560 Feet

N W E S

CIP Location

BH014610

46th Street Diversion Sewer Rehabilitation Replacement, HII-NNS

HRSD

46th Street Diversion Sewer Rehabilitation Replacement, HII-NNS

PR_BH014610

System: Boat Harbor
Type: Pipelines

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Design
Regulatory: Rehab Plan Phase Two

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$2,560	$366	$1,463	$731	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project involves the rehabilitation and/or replacement of the main sanitary sewer trunk line on Huntington Ingalls Industries-Newport News Shipbuilding (HII-NNS) property. It will be bid out and managed by HII-NNS and will not be funded using VCWRLF. This portion of the work is being split from CIP BH014600.

PROJECT JUSTIFICATION

This project will address long standing conditional, access, encroachment and jurisdictional issues related to the James River Diversion Sewer. Splitting this portion of the work from CIP BH014600 will allow HII-NNS to bid out the project using their process and contractors and will allow BH014600 to be bid out and start construction sooner. Upon completion, this portion of the work will be owned and operated by HII-NNS.

FUNDING TYPE

Funding Type: Cash

CONTACTS

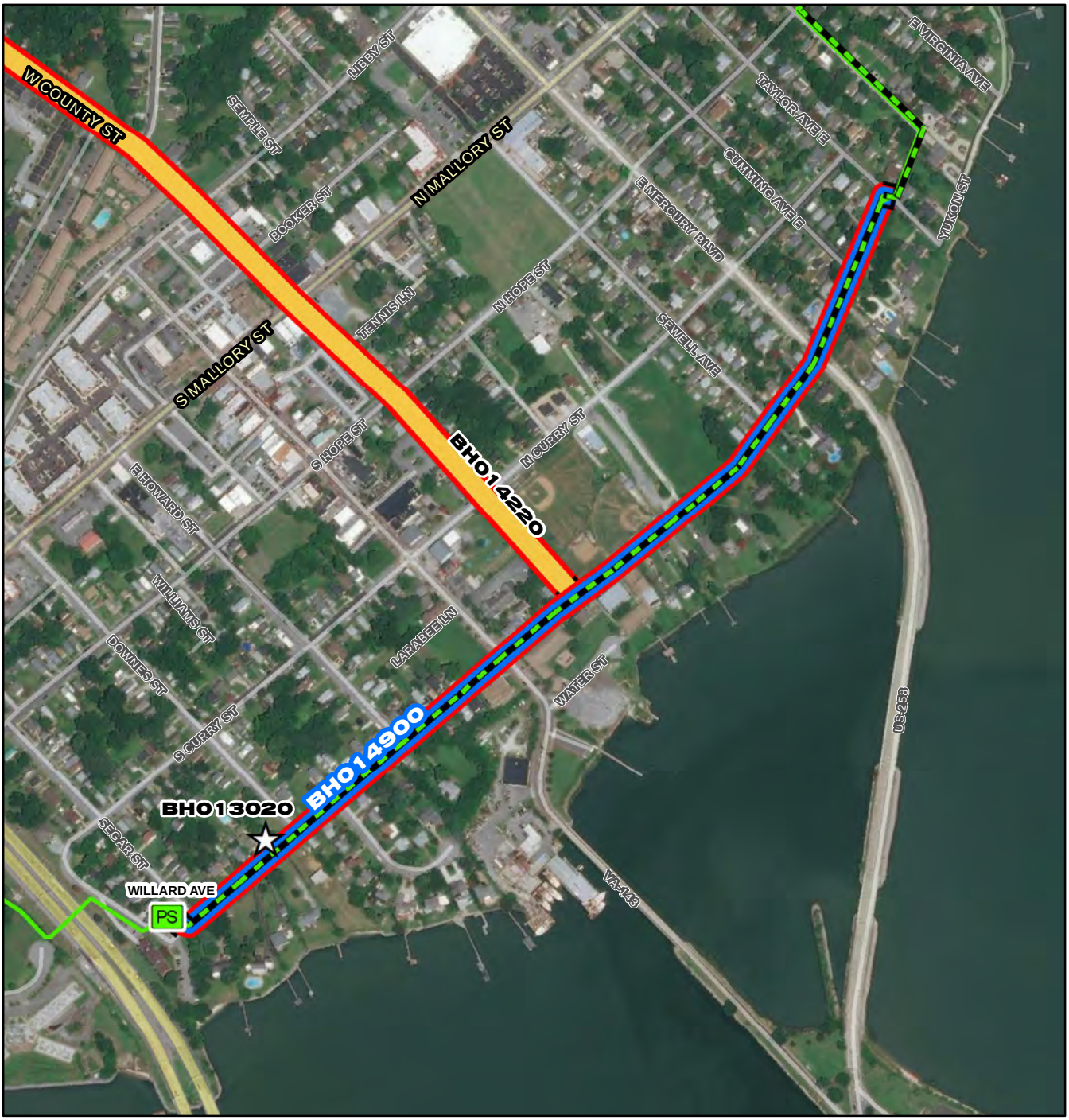
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/02/2017
PER	01/30/2017
Design Delay	05/09/2019
Design	05/13/2019
Bid Delay	03/31/2022
PreConstruction	03/31/2022
Construction	04/25/2022
Closeout	01/29/2024

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$0
Design	$0
PreConstruction	$0
Construction	$2,560,000
Closeout	$0
Est. Program Cost	**$2,560,000**
Contingency Budget	$500,000
Est. Project Costs	**$3,060,000**



BH014900

- 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

0 180 360 720 1,080 1,440 Feet

N W E S

CIP Location

BH014900

Hampton Trunk Sewer Extension
Division K Gravity Improvements

HRSD

Hampton Trunk Sewer Extension Division K Gravity Improvements

PR_BH014900

System: Boat Harbor
Type: Pipelines

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$2,481	$466	$889	$889	$236	$2	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is to rehabilitate and/or replace 3,700 linear feet of 30-inch diameter gravity pipeline with associated manholes. Project extends from MH-NG-160-25773 to NS-PS-225-1. In addition, a point repair is required between MH-NG-160-26350 and MH-NG-160-26040.

PROJECT JUSTIFICATION

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

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

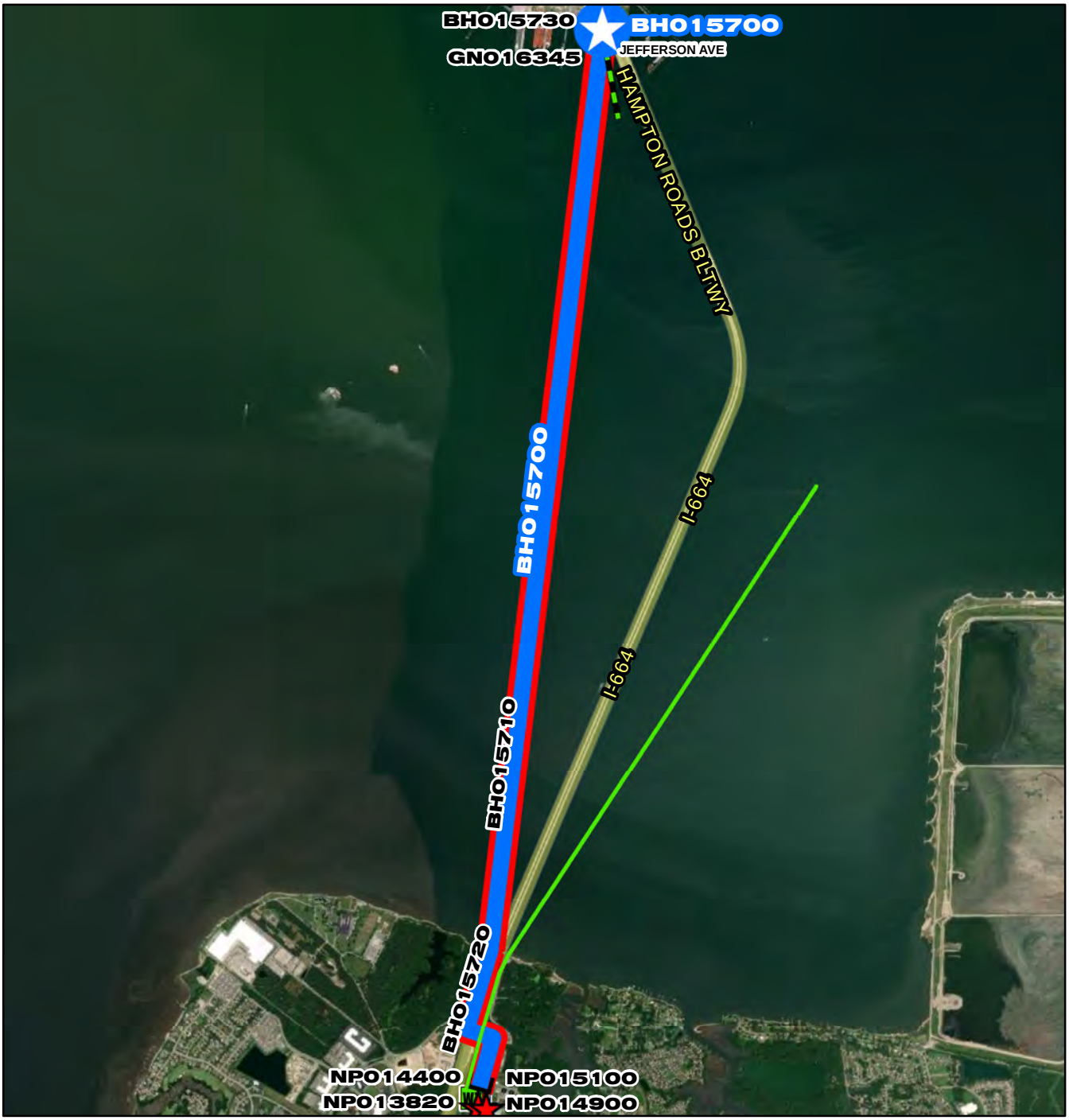
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	04/01/2019
PER	04/29/2019
Design Delay	05/01/2020
Design	05/01/2020
Bid Delay	04/01/2022
PreConstruction	04/01/2022
Construction	07/01/2022
Closeout	10/07/2024

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$106,419
Design	$350,000
PreConstruction	$10,000
Construction	$2,000,000
Closeout	$15,000
Est. Program Cost	**$2,481,419**
Contingency Budget	$200,000
Est. Project Costs	**$2,681,419**



BH015700

- 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 1,200 2,400 4,800 7,200 9,600 Feet

BH015700

Boat Harbor Treatment Plant Pump Station Conversion

HRSD

N
W E
S

CIP Location

Boat Harbor Treatment Plant Pump Station Conversion

PR_BH015700

System: Boat Harbor
Type: SWIFT

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$67,817	$8,093	$5,133	$26,750	$24,889	$2,951	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The Boat Harbor Treatment Plant will be converted to a pumping station, including equalization and headworks facilities while remaining in operation for wastewater treatment during conversion. The new infrastructure will be designed to meet HRSD's resiliency standards and consider remote operation and access in future conditions including sea level rise.

PROJECT JUSTIFICATION

The James River Waste Load Allocation (WLA) requires HRSD to continue reducing the mass of nutrients discharged from associated treatment plant outfalls. The planned reduction of nutrients is largely completed through implementation of the SWIFT program. The SWIFT master planning effort has determined that advanced water treatment and injection at Boat Harbor has significant physical limitations including site availability and resiliency to sea level rise. In addition, a financial analysis indicates there is significant long term cost savings associated with consolidating wastewater treatment and SWIFT facilities at Nansemond Treatment Plant. This project will allow HRSD to further reduce the amount of nutrients contributed to the James River basin. Upgrades to Nansemond Treatment Plant to accommodate the additional flow will be completed under a separate capital project.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2020
PER	10/27/2020
Design Delay	08/04/2021
Design	08/05/2021
Bid Delay	
PreConstruction	
Construction	11/03/2022
Closeout	12/26/2025

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$847,585
PER	$1,279,294
Design	$5,367,000
PreConstruction	$80,300
Construction	$59,630,000
Closeout	$0
Est. Program Cost	**$67,204,179**
Contingency Budget	$13,440,821
Est. Project Costs	**$80,645,000**

BH015710

- 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 1,050 2,100 4,200 6,300 8,400 Feet

BH015710

Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous)

HRSD

N
W E
S

CIP Location

Boat Harbor Treatment Plant Transmission Force Main Section 1 (Subaqueous) **PR_BH015710**

System: Boat Harbor
Type: SWIFT

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$129,542	$2,436	$8,145	$52,595	$60,390	$5,977	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project consists of the subaqueous crossing of the James River to convey flow to the Nansemond Treatment Plant. This project is anticipated to be delivered by the design-build procurement method due to the unique construction techniques required and coordination of construction schedule and permit requirements.

PROJECT JUSTIFICATION

The James River Waste Load Allocation (WLA) requires HRSD to continue reducing the mass of nutrients discharged from associated treatment plant outfalls. The planned reduction of nutrients is largely completed through implementation of the SWIFT program. The SWIFT master planning effort has determined that advanced water treatment and injection at Boat Harbor has significant physical limitations including site availability and resiliency to sea level rise. In addition, a financial analysis indicates there is significant long term cost savings associated with consolidating wastewater treatment and SWIFT facilities at Nansemond Treatment Plant. This project will allow HRSD to further reduce the amount of nutrients contributed to the James River basin. Upgrades to Nansemond Treatment Plant to accommodate the additional flow will be completed under a separate capital project.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

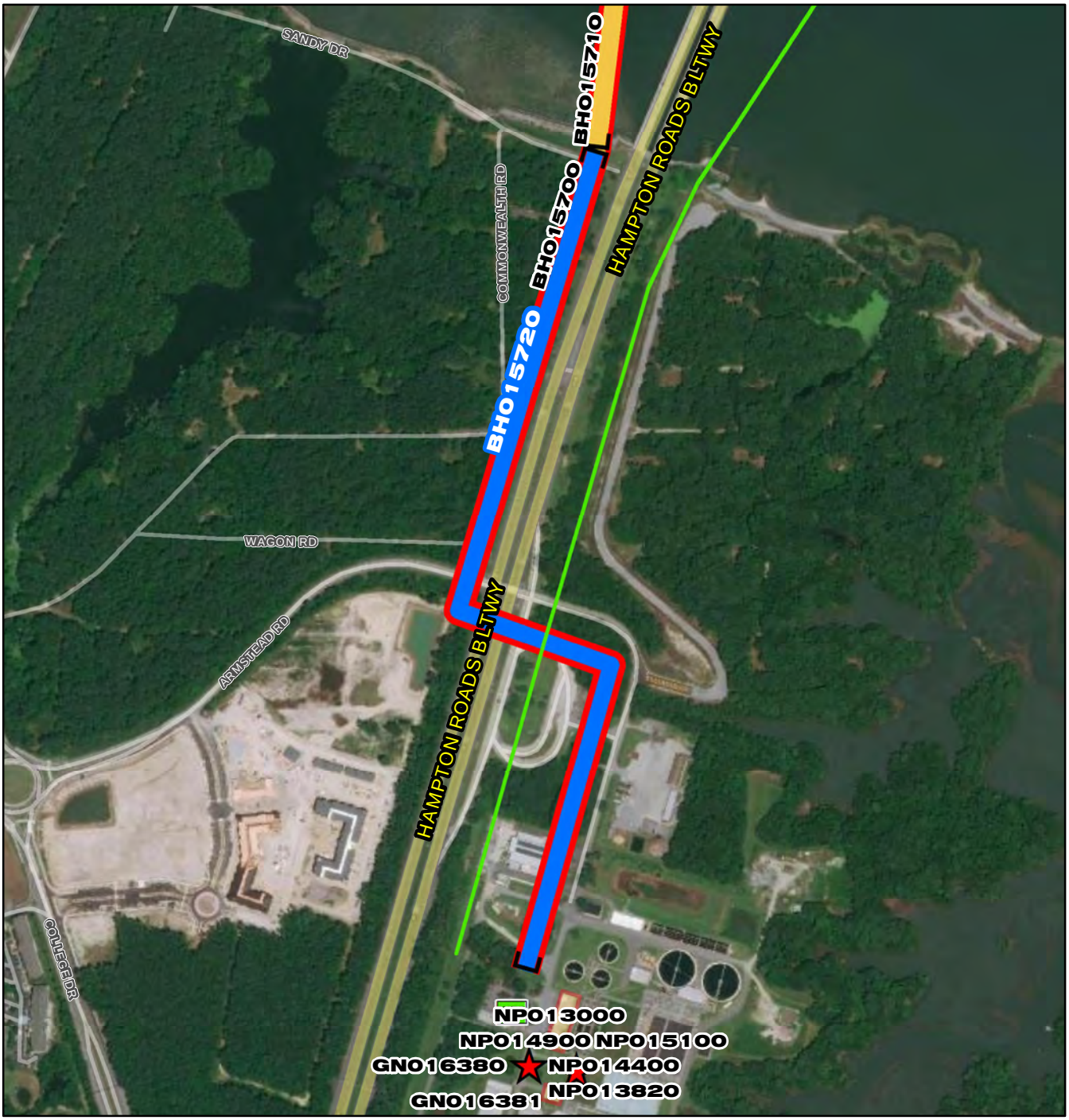
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Lauren Zuravnsky
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2020
PER	10/27/2020
Design Delay	04/13/2022
Design	04/13/2022
Bid Delay	
PreConstruction	04/01/2022
Construction	12/23/2022
Closeout	02/10/2026

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$1,789,000
Design	$7,057,821
PreConstruction	$198,000
Construction	$119,933,827
Closeout	$0
Est. Program Cost	**$128,978,648**
Contingency Budget	$25,795,730
Est. Project Costs	**$154,774,378**



BH015720

- 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

0 212.5 425 850 1,275 1,700 Feet

N W E S

CIP Location

BH015720

Boat Harbor Treatment Plant Transmission Force Main Section 2 (Land)

HRSD

Boat Harbor Treatment Plant Transmission Force Main Section 2 (Land)

PR_BH015720

System: Boat Harbor
Type: SWIFT

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$26,518	$1,694	$3,836	$8,357	$8,390	$4,241	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project consists of the on-land connection of Section 1 to the Nansemond Treatment Plant. This project is generally a standard Interceptor Force Main (IFM) utilizing open cut and a Horizontal Direction Drill (HDD) crossing of I-664. This project is anticipated to be delivered by the design-bid-build procurement method due to the standard construction methods required. HRSD desires to construct this section of the IFM soon to accommodate development of the Tidewater Community College (TCC) property.

PROJECT JUSTIFICATION

The James River Waste Load Allocation (WLA) requires HRSD to continue reducing the mass of nutrients discharged from associated treatment plant outfalls. The planned reduction of nutrients is largely completed through implementation of the SWIFT program. The SWIFT master planning effort has determined that advanced water treatment and injection at Boat Harbor has significant physical limitations including site availability and resiliency to sea level rise. In addition, a financial analysis indicates there is significant long term cost savings associated with consolidating wastewater treatment and SWIFT facilities at Nansemond Treatment Plant. This project will allow HRSD to further reduce the amount of nutrients contributed to the James River basin. Upgrades to Nansemond Treatment Plant to accommodate the additional flow will be completed under a separate capital project.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

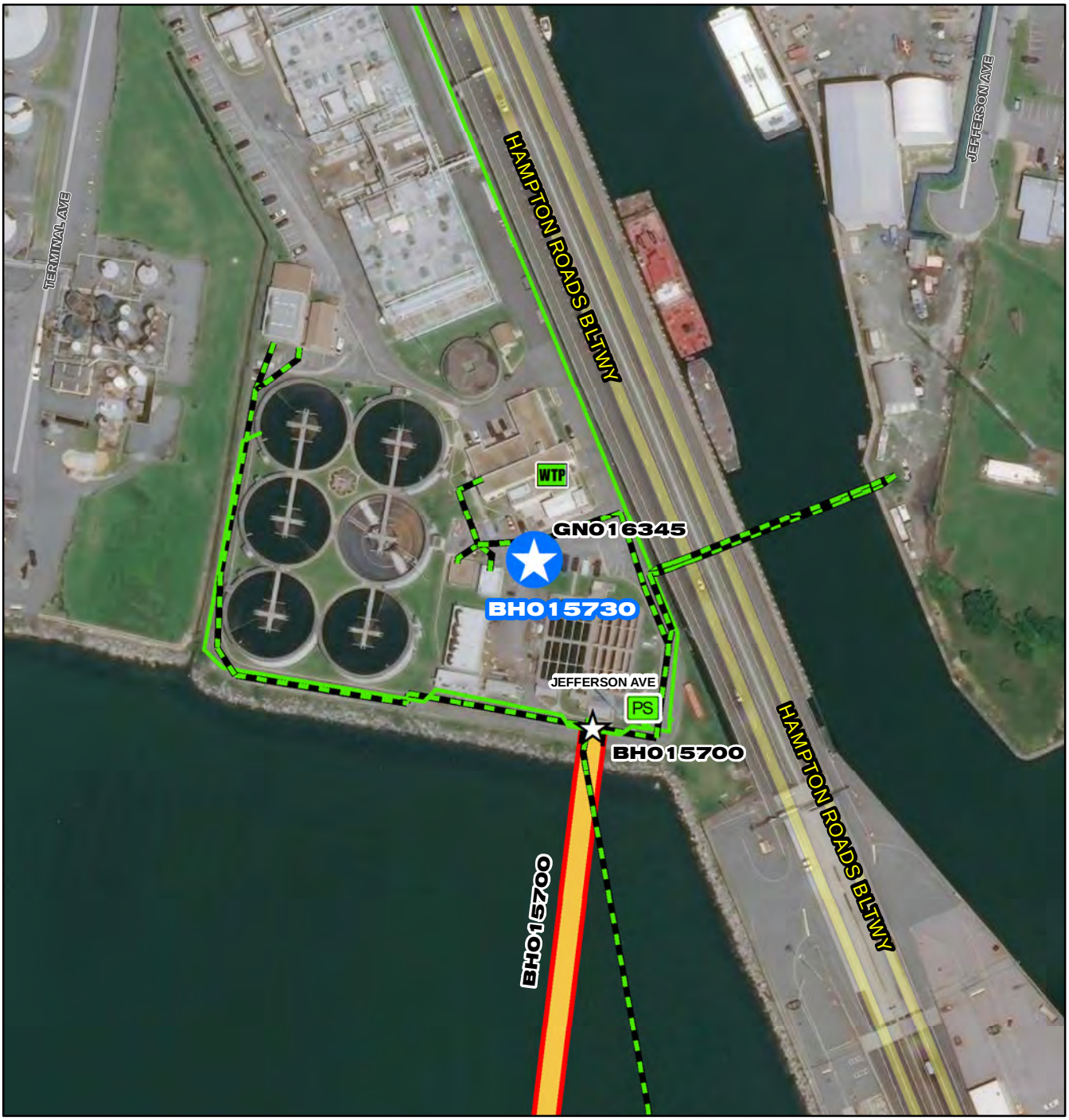
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Lauren Zuravnsky
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	05/01/2020
PER	09/30/2021
Design Delay	09/30/2021
Design	10/01/2021
Bid Delay	09/01/2022
PreConstruction	
Construction	12/21/2022
Closeout	06/28/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$1,438
PER	$486,272
Design	$1,583,626
PreConstruction	$38,284
Construction	$24,408,090
Closeout	$0
Est. Program Cost	**$26,517,710**
Contingency Budget	$5,304,290
Est. Project Costs	**$31,822,000**



BH015730

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

BH015730

Boat Harbor Treatment Plant Decommission and Demolition

HRSD

N
W E
S

CIP Location

Boat Harbor Treatment Plant Decommission and Demolition

PR_BH015730

System: Boat Harbor
Type: SWIFT

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$28,626	$0	$0	$516	$1,866	$244	$10,000	$10,000	$6,000	$0	$0	$0

PROJECT DESCRIPTION

Boat Harbor Treatment Plant will be converted to a pumping station under a separate capital project. Once wastewater collected from the Boat Harbor service area is diverted to the new Boat Harbor pump station, the treatment plant will be shut down, decommissioned, and demolished, as need for a potential future land use.

PROJECT JUSTIFICATION

Continued operation of the Boat Harbor Treatment Plant presents challenges to HRSD, including vulnerability to flooding and limited site availability for required wastewater nutrient reduction improvements and SWIFT facilities. HRSD evaluated multiple options to overcome these challenges and found diversion to the Nansemond Treatment Plant provides the most resilient and economical solution to meet HRSD's goals.

FUNDING TYPE

Funding Type: WIFIA

CONTACTS

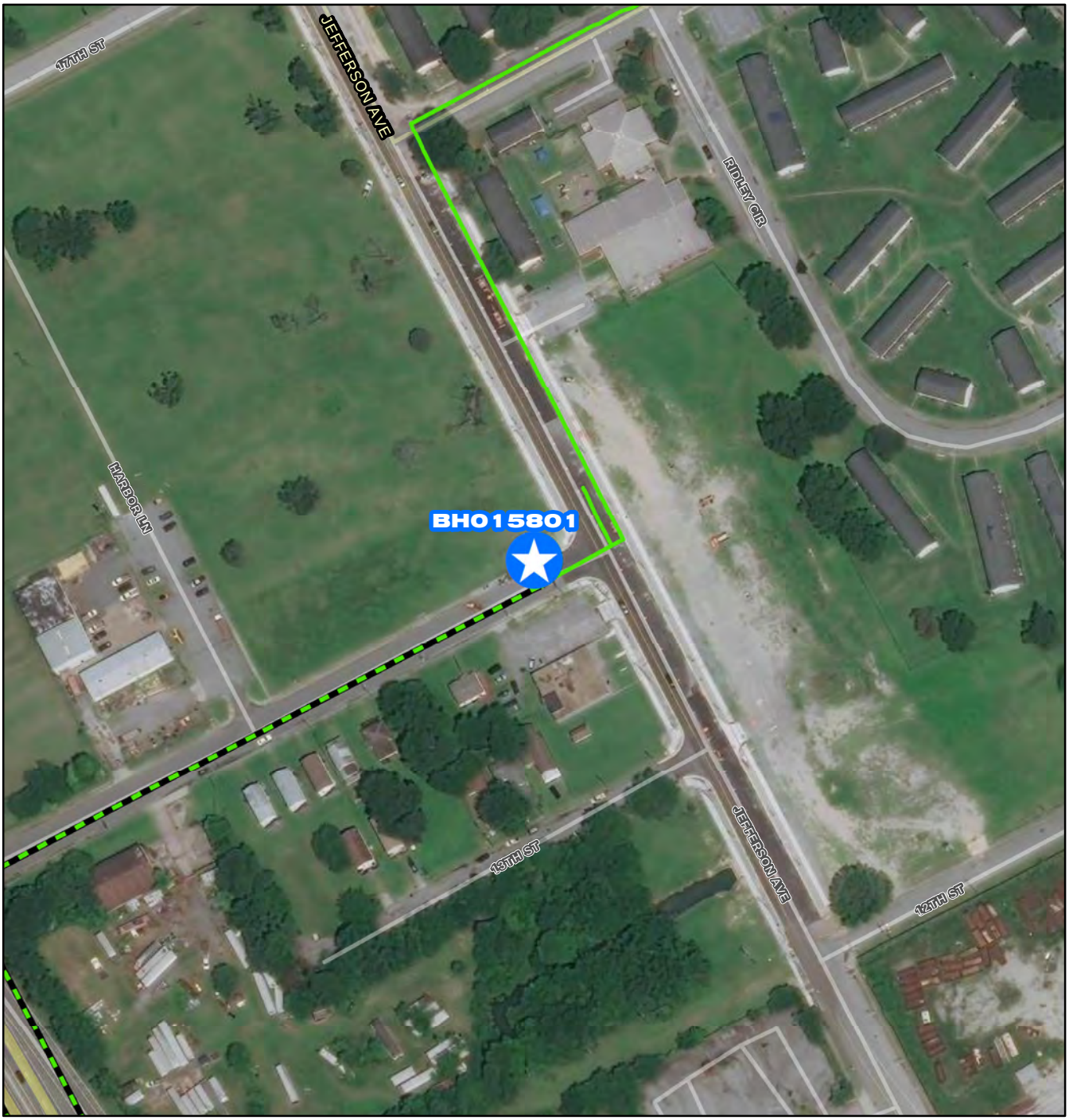
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Lauren Zuravnsky
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/02/2023
PER	10/02/2023
Design Delay	07/11/2024
Design	09/12/2024
Bid Delay	09/23/2025
PreConstruction	07/11/2024
Construction	07/03/2026
Closeout	07/15/2027

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$520,000
Design	$2,080,000
PreConstruction	$26,000
Construction	$26,000,000
Closeout	$0
Est. Program Cost	**$28,626,000**
Contingency Budget	$5,725,200
Est. Project Costs	**$34,351,200**



BH015801

- 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

N W E S

CIP Location

BH015801

14th Street Offline Storage (BH-HPP-01A)

HRSD

14th Street Offline Storage (BH-HPP-01A)

PR_BH015801

System: Boat Harbor
Type: Offline Storage

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$500	$0	$500	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will install a new 4.3 million gallon (MG) storage tank. The scope for this project will be completed in the BH015700 project.

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: Revenue Bond

CONTACTS

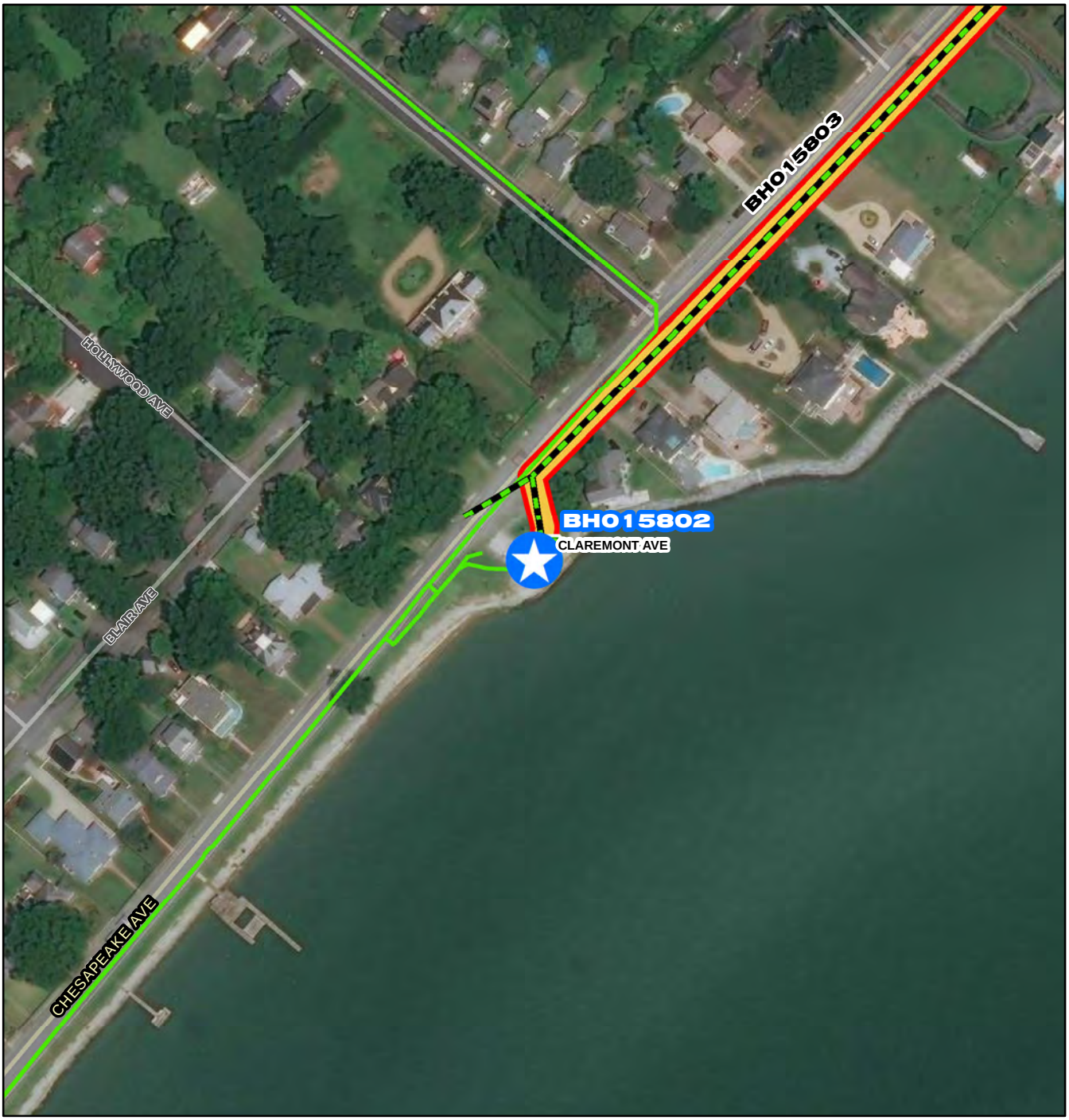
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Lauren Zuravnsky
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2022
PER	07/29/2022
Design Delay	09/19/2022
Design	05/29/2023
Bid Delay	08/29/2023
PreConstruction	05/07/2024
Construction	06/17/2024
Closeout	04/14/2025

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$500,000
Design	$0
PreConstruction	$0
Construction	$0
Closeout	$0
Est. Program Cost	**$500,000**
Contingency Budget	$0
Est. Project Costs	**$500,000**



BH015802

- 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

BH015802

Claremont Pump Station Upgrade (BH-HPP-01B)

HRSD

N
W E
S

CIP Location

Claremont Pump Station Upgrade (BH-HPP-01B)

PR_BH015802

System: Boat Harbor
Type: Pump Stations

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$12,049	$0	$0	$0	$0	$308	$986	$10,755	$0	$0	$0	$0

PROJECT DESCRIPTION

Claremont Pump Station Upgrade (NS-PS-208).

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: Revenue Bond

CONTACTS

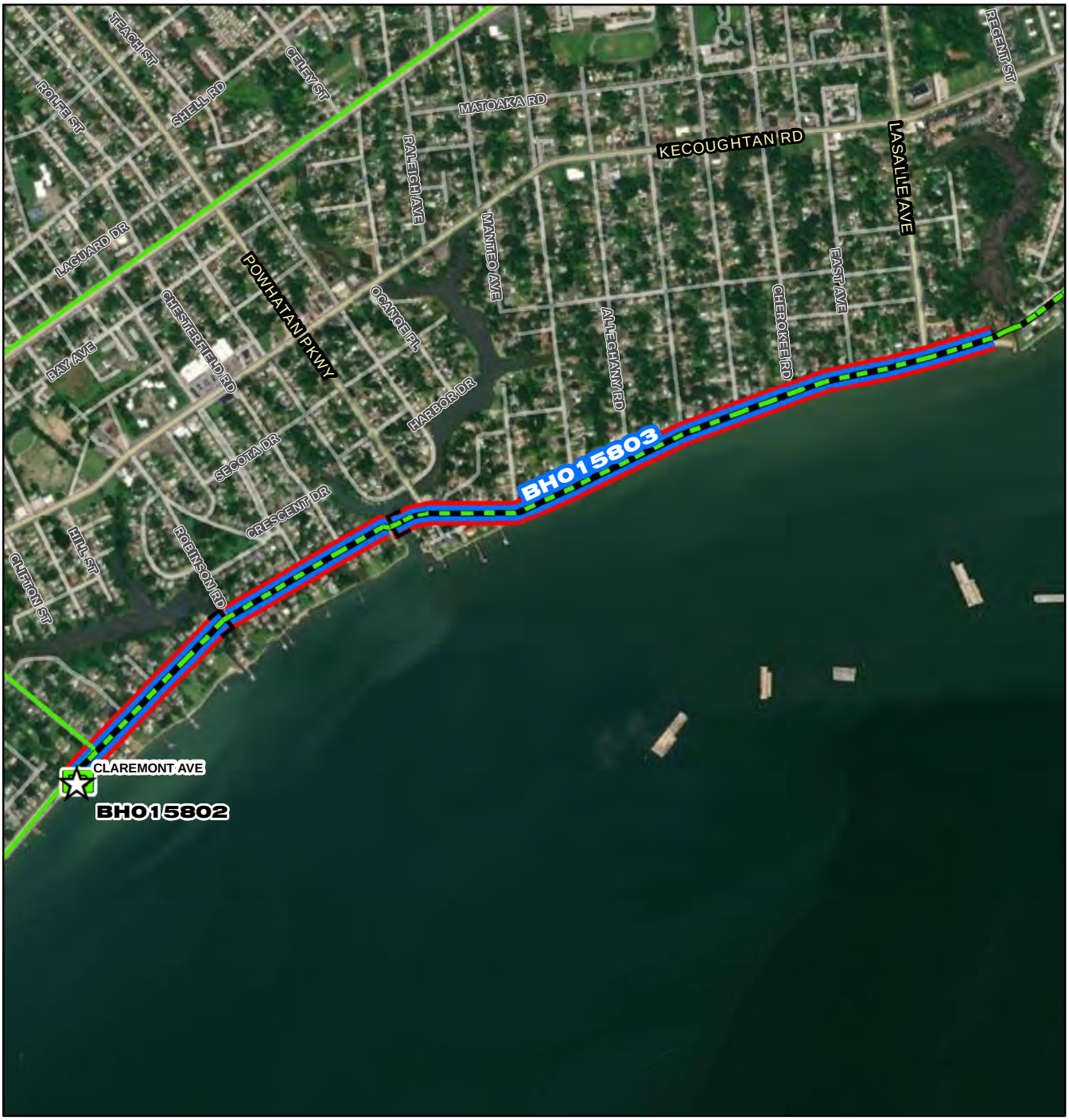
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Sam McAdoo
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/02/2025
PER	10/30/2025
Design Delay	12/19/2025
Design	08/27/2026
Bid Delay	11/27/2026
PreConstruction	08/06/2027
Construction	09/16/2027
Closeout	07/14/2028

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$308,168
Design	$986,072
PreConstruction	$184,923
Construction	$10,570,139
Closeout	$0
Est. Program Cost	**$12,049,303**
Contingency Budget	$2,642,534
Est. Project Costs	**$14,691,837**



BH015803

- 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

BH015803

Chesapeake Avenue Interceptor Improvements (BH-HPP-01C)

HRSD

Chesapeake Avenue Interceptor Improvements (BH-HPP-01C)

PR_BH015803

System: Boat Harbor
Type: Pipelines

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$16,277	$0	$0	$0	$0	$1,310	$2,115	$12,852	$0	$0	$0	$0

PROJECT DESCRIPTION

Upgrade 6,490 linear feet (LF) to 42-inch gravity main (GM); Upgrade 2,180 LF of 24-inch GM to 36-inch GM; Upgrade 70 LF of 42-inch inverted siphon along Chesapeake Avenue upstream of NS-PS-208; Upgrade 70 LF of 42-inch inverted siphon along Chesapeake Avenue upstream of NS-PS-208.

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: Revenue Bond

CONTACTS

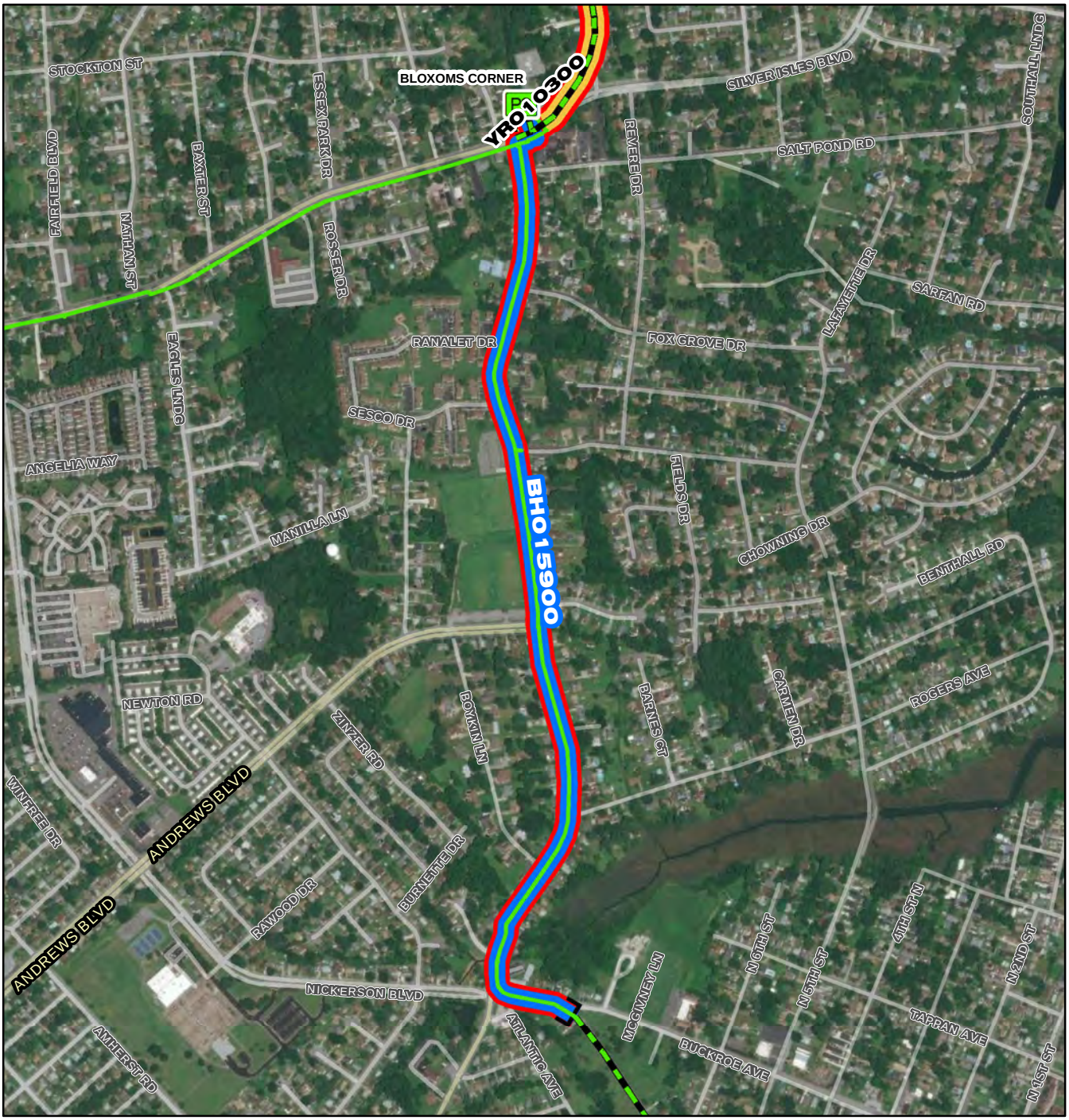
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Sam McAdoo
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2025
PER	07/29/2025
Design Delay	09/17/2025
Design	05/27/2026
Bid Delay	08/27/2026
PreConstruction	05/06/2027
Construction	06/16/2027
Closeout	04/13/2028

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$485,018
Design	$1,238,057
PreConstruction	$274,189
Construction	$14,279,826
Closeout	$0
Est. Program Cost	**$16,277,090**
Contingency Budget	$3,569,956
Est. Project Costs	**$19,847,047**



BH015900

- 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

0 310 620 1,240 1,860 2,480 Feet

N
W E
S

CIP Location

BH015900

Bloxoms Corner Force Main Replacement

HRSD

Bloxoms Corner Force Main Replacement

PR_BH015900

System: Boat Harbor
Type: Pipelines

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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$5,711	$764	$4,562	$385	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will address 6,100 linear feet of 8-inch Cast Iron Pipe from Bloxom's Corner Pump Station to the gravity discharge at MH-NG-094-1264.

PROJECT JUSTIFICATION

Disproportionate force main failure history indicates material risk of failure.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Phil Hughes
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	09/01/2019
PER	05/12/2020
Design Delay	12/11/2020
Design	12/11/2020
Bid Delay	03/12/2022
PreConstruction	03/12/2022
Construction	06/11/2022
Closeout	08/11/2023

COST ESTIMATE

Cost Estimate Class:	**Class 3**
PrePlanning	$826
PER	$61,500
Design	$312,000
PreConstruction	$9,500
Construction	$5,322,617
Closeout	$5,000
Est. Program Cost	**$5,711,443**
Contingency Budget	$682,000
Est. Project Costs	**$6,393,443**

High Priority Projects Round 2 Project 3

PR_BH016100

System: Boat Harbor
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	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

High Priority Project (HPP) Round 2 Project 3 consists of the following Regional Wet Weather Management Plan (RWWMP) Project IDs and general descriptions:
BH-RWWMP-04 58th Street Storage Tank
BH-RWWMP-07 Newmarket Creek Pump Station Upgrade
BH-RWWMP-08 Mercury Boulevard and Newmarket Gravity Main 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: Sam McAdoo
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2034
PER	08/01/2034
Design Delay	10/01/2034
Design	06/01/2035
Bid Delay	09/01/2035
PreConstruction	05/01/2036
Construction	07/01/2036
Closeout	04/01/2037

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$569,808
PER	$1,424,520
Design	$1,709,424
PreConstruction	$284,904
Construction	$24,216,840
Closeout	$284,904
Est. Program Cost	**$28,490,400**
Contingency Budget	$0
Est. Project Costs	**$28,490,400**

Inflow Reduction Program-Phase II

PR_BH016200

System: Boat Harbor
Type: Locality and Private Property

Driver Category: I&I Abatement-IP/RWWMP
Project Phase: Proposed
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$10,000	$0	$0	$250	$2,200	$2,500	$2,500	$2,550	$0	$0	$0	$0

PROJECT DESCRIPTION

This project includes the identification and reduction of points of inflow into locality and HRSD owned sanitary sewer systems within the Boat Harbor service area. Identification may include data analysis, smoke testing, flow and conductivity monitoring and other field investigations. Inflow reduction strategies may include sealing of manholes, elimination of direct connections, as well as, sealing and replacement of laterals and cleanouts. The Regional Wet Weather Management Plan (RWWMP) has identified basins in current need of inflow reductions and areas of saltwater inflow have been identified through data analysis. Areas to implement inflow reduction strategies will be targeted based on susceptibility to saltwater inflow and through further data analysis of the basins identified in RWWMP. HRSD will coordinate identification and reduction of inflow with locality partners. This project will benefit from the piloted strategies and analysis performed in Phase I.

PROJECT JUSTIFICATION

Hydrographs, flow monitoring, and conductivity monitoring indicate that rapid increases in flow occur during wet weather and high tide events. The rapid inflow of water into the system increases the risk of overflows due to limited hydraulic capacity and increases the risk of force main failures due to increased force main operating pressures. Peak flow reduction in the Boat Harbor service area is desirable to mitigate sanitary sewer overflow (SSO) risk. In addition, reduction of saltwater inflow will protect downstream SWIFT operations.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Ryan Radspinner
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	04/01/2023
PER	07/01/2023
Design Delay	01/01/2024
Design	07/01/2024
Bid Delay	01/01/2025
PreConstruction	01/01/2025
Construction	03/01/2025
Closeout	03/01/2027

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$250,000
Design	$500,000
PreConstruction	$200,000
Construction	$9,000,000
Closeout	$50,000
Est. Program Cost	**$10,000,000**
Contingency Budget	$0
Est. Project Costs	**$10,000,000**