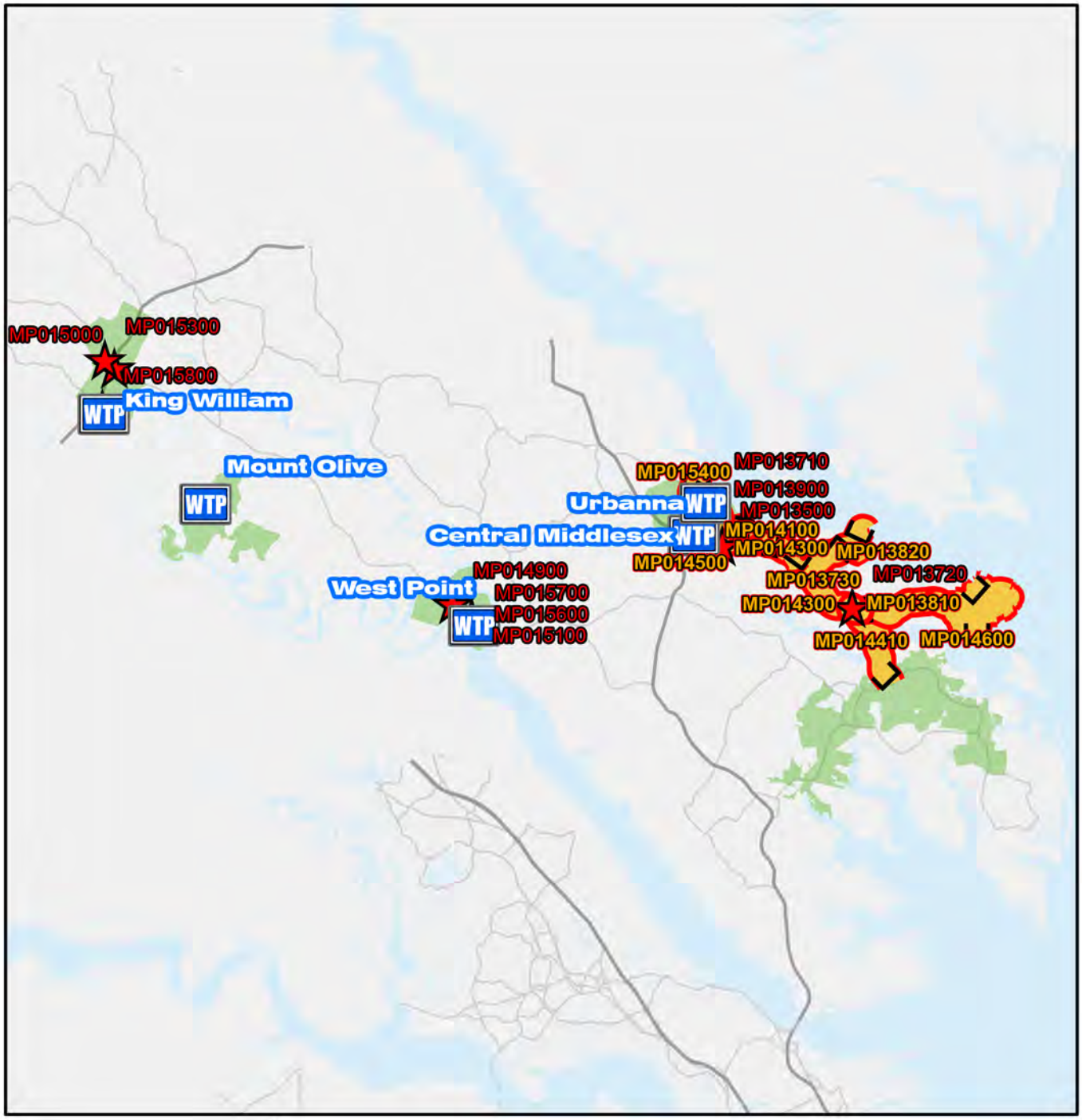
Middle Peninsula Treatment Plants

Photo Credit: J Sabo



Legend

- WTP — Middle Peninsula 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
- WTP HRSD Treatment Plant
- PRS HRSD Pressure Reducing Station
- PS HRSD Pump Station

0 10,000 20,000 40,000 60,000 80,000 Feet

Middle Peninsula Treatment Plant Service Area CIP Projects

Treatment Plant Projects

MP012000
MP013300
MP015500

HRSD

N

CIP Location

Service Area

Middle Peninsula Interceptor Systems PS Control and SCADA Upgrades/Enhancements

PR_MP011700

System: Mid-Peninsula
Type: Software and Technology

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$4,675	$2,519	$1,814	$312	$11	$11	$8	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will include: An extension of the North Shore SCADA system to include the Middle Peninsula sites; pumping station improvements at all Middle Peninsula sites; an extension of the HRSD SCADA WAN to include the Middle Peninsula; upgraded remote site telemetry communications; and construction phase services. During the preliminary design phase of the Interceptor System SCADA project, the QST looked to expand the SCADA final design to the Middle Peninsula (MP). The SCADA Preliminary Engineering Report gave the costs for expansion to the MP at $3.3 million. This CIP is for the construction portion of this project.
The design is being performed with the Interceptor Systems Pump Station Control and SCADA Upgrades and Enhancements (GN012800).

PROJECT JUSTIFICATION

There are multiple benefits to expanding the SCADA project to encompass the Middle Peninsula: Future trends for small communities appear to be decentralized/distributed wastewater treatment systems that will require SCADA for remote diagnosis and operational control; as time goes on, the cost of personnel and the cost of transportation will drive HRSD towards more supervisory control at both the treatment plants and pump stations, starting with the Mathews Transmission Force Main (TFM) pump stations; A major portion of the existing system is obsolete and needs replacement; There are Operational and Maintenance benefits to having the same SCADA system throughout the HRSD system: South Shore, North Shore, and the Middle Peninsula; The WAN microwave ring provides a reliable communication link and the existing communication lines could possibly function as a back-up; and, if the MP is added to the Consent Decree in the future, then the MP SCADA system would be upgraded to handle the reporting requirements.

FUNDING TYPE

Funding Type: Cash

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2009
PER	01/29/2009
Design Delay	03/20/2009
Design	11/27/2009
Bid Delay	05/08/2013
PreConstruction	04/01/2015
Construction	04/01/2015
Closeout	09/04/2023

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$0
Design	$35,275
PreConstruction	$0
Construction	$4,600,000
Closeout	$40,000
Est. Program Cost	**$4,675,275**
Contingency Budget	$500,000
Est. Project Costs	**$5,175,275**

MP012000

- 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

MP012000

King William Treatment Plant Improvements Phase I

HRSD

N
W E
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CIP Location

King William Treatment Plant Improvements Phase I

PR_MP012000

System: Mid-Peninsula
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$2,108	$1,918	$189	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project allows for improvements to the King William Treatment Plant (KWTP) in order to continue to provide reliable treatment and capacity per regulatory requirements. The construction contract will provide the following upgrades to the plant: pumps and piping dedicated to each treatment train providing equalized influent flow, a dedicated membrane cleaning tank to include automated remote backwash cleaning, replacement of the UV disinfection system, and new PLC (Programable Logic Controller) for process control.

PROJECT JUSTIFICATION

Both KWTP treatment trains are able to run simultaneously. The proposed upgrades will provide improved reliability and operations.
The flow coming into the KWTP is currently averaging 60,0000 gallons per day (GPD). Development is steadily increasing flows to the plant.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Ann Copeland
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/01/2014
PER	07/03/2017
Design Delay	12/01/2017
Design	10/01/2018
Bid Delay	08/17/2020
PreConstruction	08/17/2020
Construction	10/01/2021
Closeout	08/01/2022

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$91,737
PER	$62,707
Design	$412,694
PreConstruction	$27,256
Construction	$1,508,561
Closeout	$5,000
Est. Program Cost	**$2,107,954**
Contingency Budget	$508,000
Est. Project Costs	**$2,615,954**

Small Communities Collection System Rehabilitation Phase I

PR_MP013000

System: Mid-Peninsula
Type: Pipelines

Driver Category: Aging Infrastructure/Rehabilitation
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
$584	$554	$30	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will design the replacement and/or rehabilitation of sixteen (16) declared prompt repairs and multiple other observed defects in the West Point and Urbanna collection systems. Construction of the first prompt repair replacement was completed in this CIP. Construction for the remaining prompt repairs will be executed in separate CIPs. Small Communities Collection System Rehabilitation Phase II (MP013010) was completed in FY20. Small Communities Collection System Rehabilitation Phase III (MP013020) is scheduled to be completed by FY23.

PROJECT JUSTIFICATION

Through Condition Assessment work of the Small Communities System, a multitude of pipe defects that ranged from severe Infiltration & Inflow (I&I) to structural failure of existing infrastructure were identified. Workshops with HRSD staff determined that 16 of the defects met the established criteria of 'Prompt Repair' as defined in the Condition Assessment Plan utilized for assessment of the North and South Shore Interceptor Systems under the consent decree. This project will allow for replacement, repair and/or rehabilitation of each defect and their associated assets in order to fix these severe infrastructure deficiencies.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Ann Copeland
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2017
PER	12/28/2017
Design Delay	07/09/2018
Design	07/09/2018
Bid Delay	12/28/2021
PreConstruction	03/15/2018
Construction	06/25/2018
Closeout	09/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$31,334
Design	$195,797
PreConstruction	$6,025
Construction	$344,801
Closeout	$6,184
Est. Program Cost	**$584,141**
Contingency Budget	$66,250
Est. Project Costs	**$650,391**

Small Communities Collection System Rehabilitation Phase III

PR_MP013020

System: Mid-Peninsula
Type: Pipelines

Driver Category: Aging Infrastructure/Rehabilitation
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
$1,091	$8	$480	$599	$4	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will construct the replacement and/or rehabilitation of nine (9) declared prompt repairs, as identified in the PER written under MP013000. Design of this effort is being completed under MP013000. Phase III will construct the following repair locations: Camilla Drive, King William Avenue, Azalea Crescent, two areas between Ogden Street and Thompson Avenue, Thompson Avenue, two areas off of Cypress Avenue, one area on 5th Street (all in West Point), Virginia Street in Urbanna, one aerial crossing repair near Euclid Drive in West Point, and replacement of 135 LF of gravity line on 2nd St in West Point.

PROJECT JUSTIFICATION

Through Condition Assessment work of the Small Communities System, a multitude of pipe defects that ranged from severe Infiltration & Inflow (I&I) to structural failure of existing infrastructure were identified. Workshops with HRSD staff as part of prior project MP013000, determined that 16 of the defects met the established criteria of 'Prompt Repair' as defined in the Condition Assessment Plan utilized for assessment of the North and South Shore Interceptor Systems under the consent decree. This project will allow for replacement, repair and/or rehabilitation of the remainder of the identified defects and their associated assets in order to fix these severe infrastructure deficiencies, plus three additional areas in need of repair.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Ann Copeland
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2017
PER	07/02/2017
Design Delay	07/03/2017
Design	07/09/2018
Bid Delay	12/01/2022
PreConstruction	12/01/2022
Construction	03/01/2023
Closeout	12/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$0
Design	$7,281
PreConstruction	$5,100
Construction	$1,069,186
Closeout	$9,180
Est. Program Cost	**$1,090,747**
Contingency Budget	$96,130
Est. Project Costs	**$1,186,877**

MP013300

- 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

MP013300

King William Treatment Plant Improvements Phase II

HRSD

N
W E
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CIP Location

King William Treatment Plant Improvements Phase II

PR_MP013300

System: Mid-Peninsula
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$28,844	$586	$1,652	$12,659	$13,917	$31	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project is intended to increase capacity for King William from 100,000 gallons per day (GPD) Average Daily Flow (ADF) to a firm capacity of 200,000 GPD ADF. The improvements will be planned to facilitate expansion to 300,000 GPD ADF of capacity.

PROJECT JUSTIFICATION

King William Treatment Plant can currently treat 100,000 GPD ADF. Development in King William County has been accelerating in recent years. New subdivisions are planned and construction has ramped up in existing subdivisions with projected flows exceeding 150,000 GPD in addition to current flow. Buildout of approved subdivisions will require an expansion of capacity beyond 100,000 GPD ADF.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

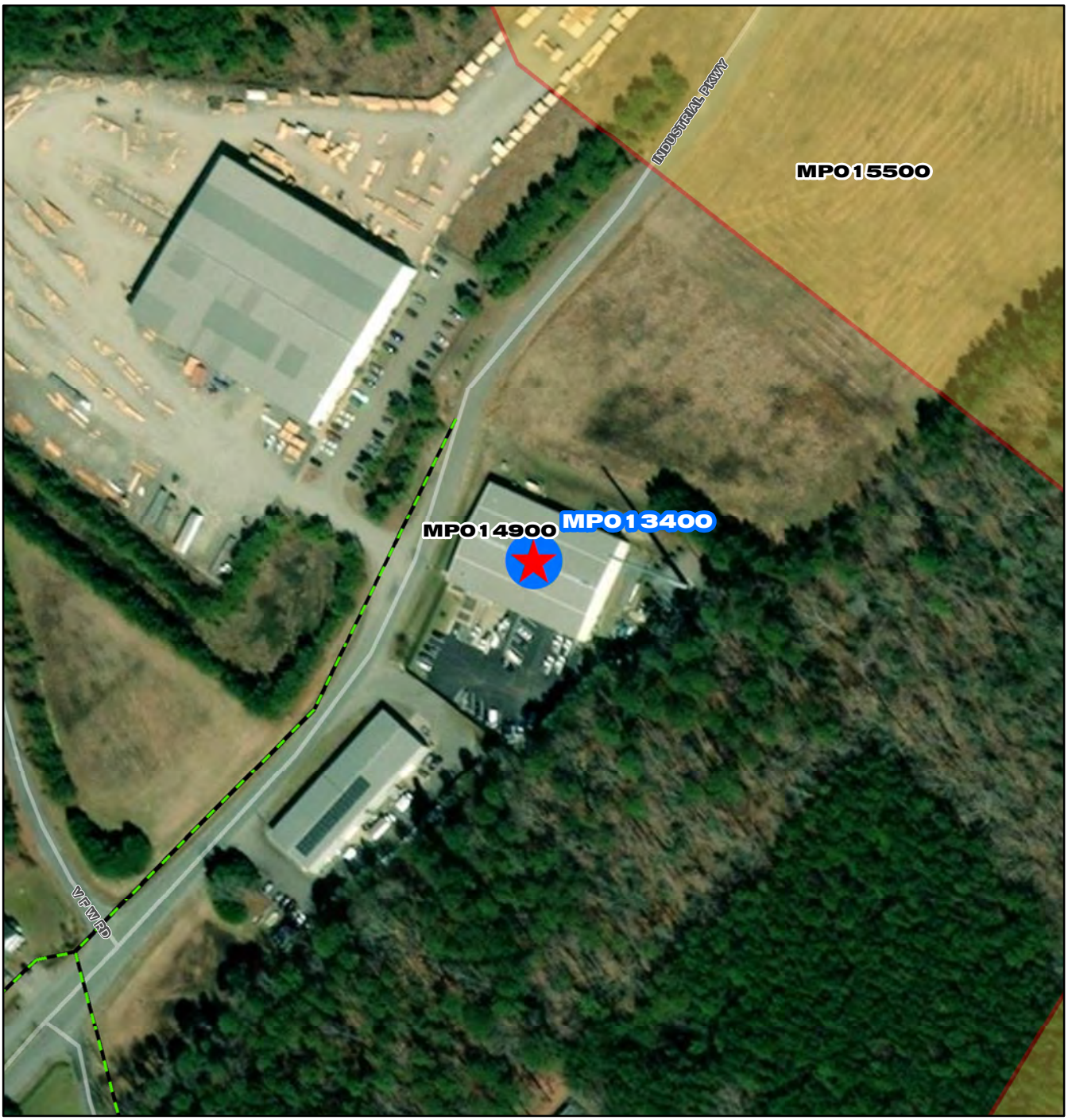
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2019
PER	08/23/2021
Design Delay	05/13/2022
Design	05/13/2022
Bid Delay	05/13/2023
PreConstruction	05/13/2023
Construction	09/01/2023
Closeout	06/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$1,494
PER	$256,467
Design	$1,967,000
PreConstruction	$25,000
Construction	$26,557,000
Closeout	$37,000
Est. Program Cost	**$28,843,961**
Contingency Budget	$5,311,400
Est. Project Costs	**$34,155,361**



MP013400

Project Interceptor Line
Project Interceptor Point
Project Pump Station Point
Project Area

Legend

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

0 55 110 220 330 440 Feet

MP013400

Small Communities Operation Center Parking and Laydown Area

N
W E
S

CIP Location

West Point

Small Communities Operation Center Parking and Laydown Area

PR_MP013400

System: Mid-Peninsula
Type: Facilities, Buildings and Capital Equipment

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$570	$396	$174	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

In 2015, HRSD purchased approximately two acres in West Point, VA behind the existing Small Communities Operations Center for future expansion. This project will allow for creation of a laydown yard, expansion for much needed additional parking, and any associated storm water requirements.

PROJECT JUSTIFICATION

The existing laydown yard does not meet the current needs of Small Communities and is difficult to access. Additionally, parking has become problematic and cumbersome within the existing parking lot. The creation of the new laydown yard and parking lot will allow for centralized and increased secure storage of piping, bulk materials, and equipment at the Small Communities Operations Center. Additionally, allowing for parking of employee vehicles in the new parking area will eliminate issues with the existing secured parking area. The laydown yard will include lighting and electrical power for equipment charging and heating.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

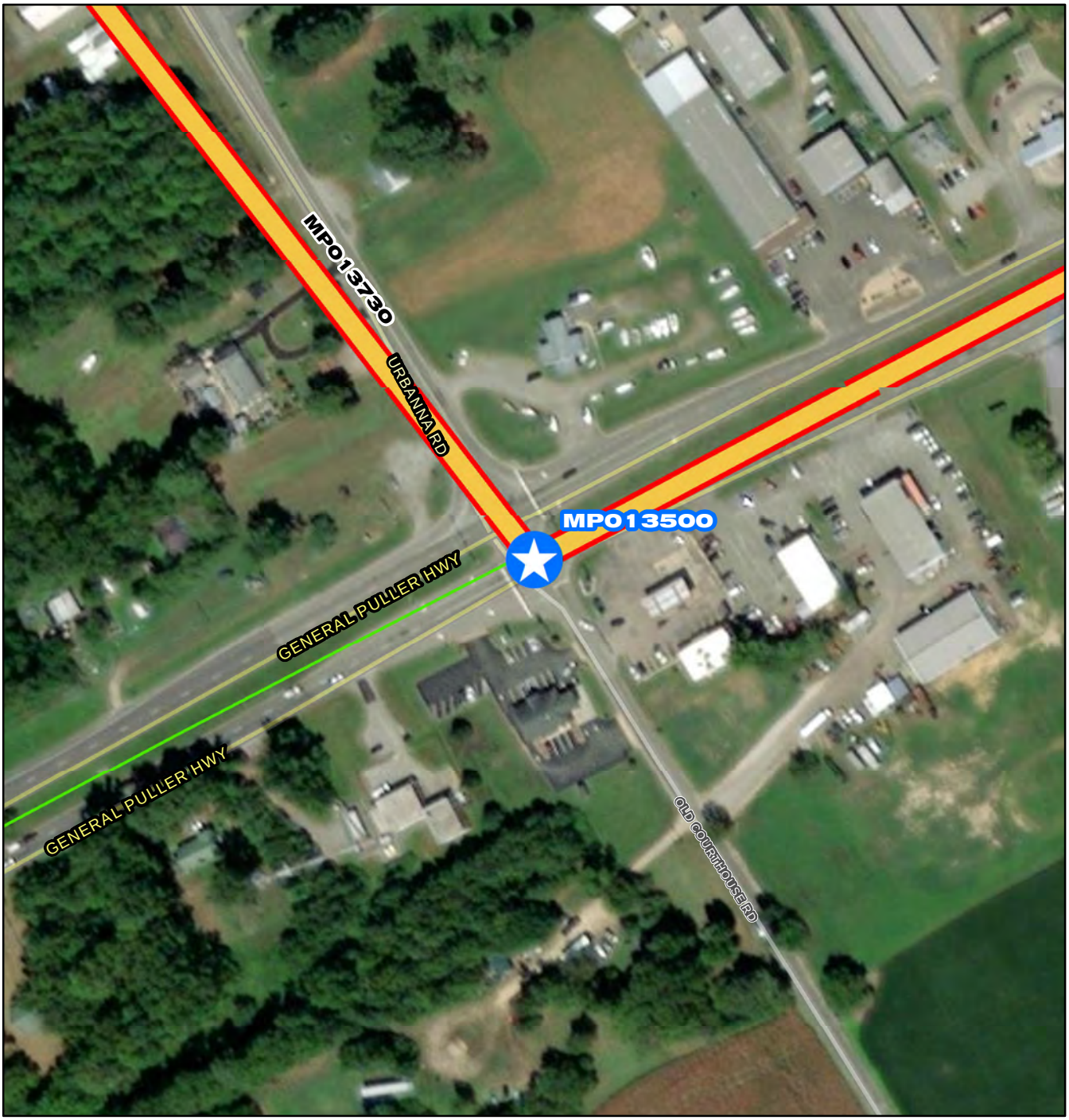
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Santino Granato
Contacts-Managing Dept: Operations

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2018
PER	02/01/2018
Design Delay	02/01/2018
Design	02/01/2018
Bid Delay	12/01/2020
PreConstruction	12/01/2020
Construction	02/01/2021
Closeout	12/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$0
Design	$45,000
PreConstruction	$0
Construction	$525,000
Closeout	$0
Est. Program Cost	**$570,000**
Contingency Budget	$25,000
Est. Project Costs	**$595,000**



MP013500

- 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

MP013500

Middlesex Collection System-Cooks Corner

HRSD

N
W E
S

CIP Location

Middlesex Collection System-Cooks Corner

PR_MP013500

System: Mid-Peninsula
Type: Pipelines

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
$2,073	$585	$1,484	$3	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project consists of a wastewater collection system to convey wastewater from the Cook's Corner service area to the planned Middlesex Interceptor System. The collection system will consist of approximately 3,200 linear feet of gravity sewer, a submersible pump station, and 1,100 linear feet of force main.

PROJECT JUSTIFICATION

Middlesex County has secured funding for the revitalization of Cook's Corner including a Vibrant Communities Initiative Grant and an Industrial Revitalization Fund Grant. The Industrial Revitalization Fund Grant was awarded in August 2018 and entails completing the revitalization in 18 months. Providing sanitary sewer service to the area is a requirement of these grants. The Memorandum of Agreement between the Hampton Roads Sanitation District and Middlesex County for Cost Sharing of Sewer System Projects outlines that HRSD will manage design and construction of collection system projects on behalf of Middlesex County. The "Project Design" section of the agreement states "All costs incurred by HRSD related to the collection system of any such project shall be reimbursed by the project funds once financing is secured by the County for construction of the collection system." The "Construction" section of the agreement states that "all costs associated with construction, inspection and administration related to the collection system portion of the project shall be included in the project cost and reimbursed to HRSD by the County."

FUNDING TYPE

Funding Type: Cash

CONTACTS

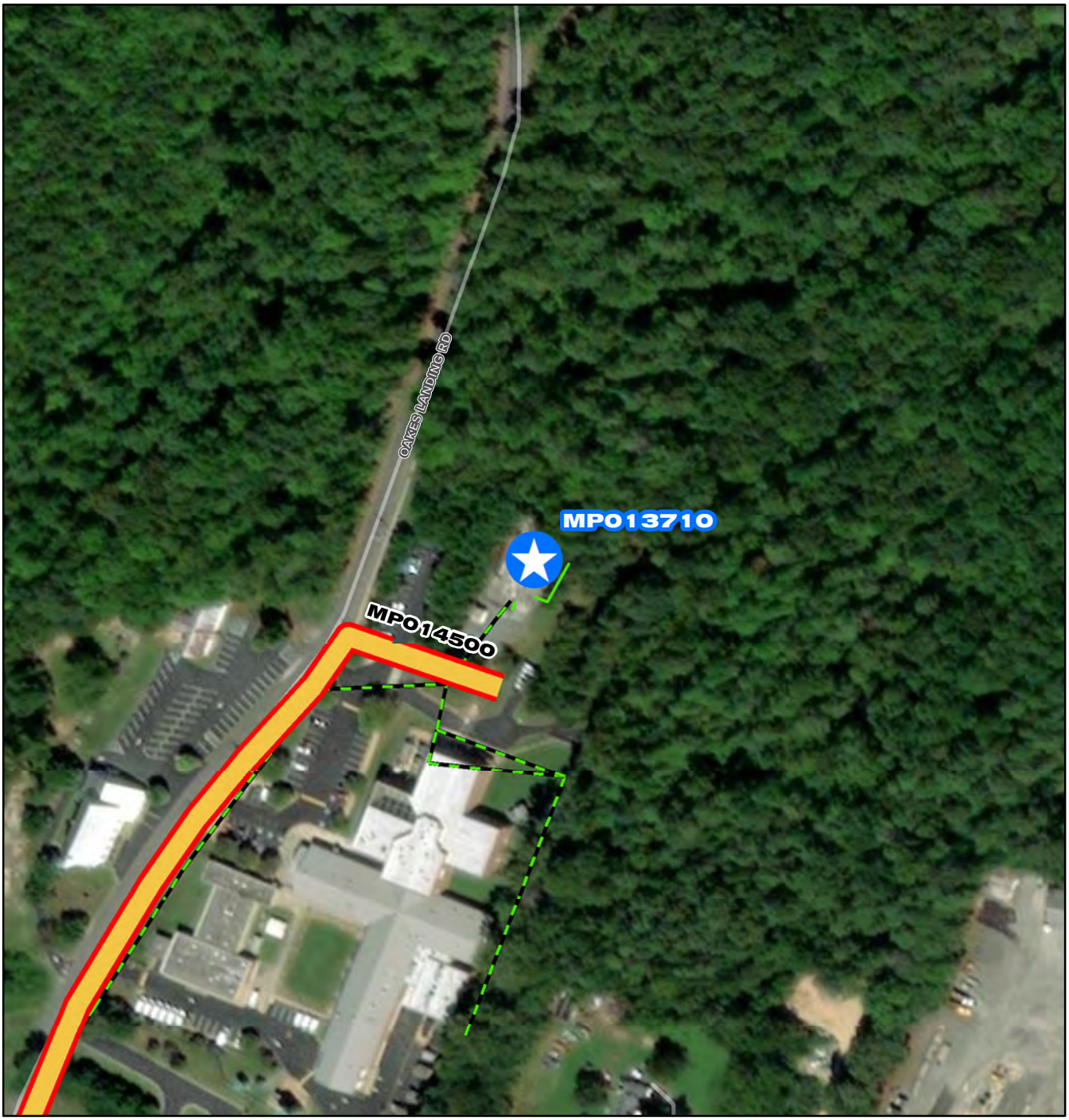
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	
PER	12/03/2018
Design Delay	12/20/2018
Design	03/01/2019
Bid Delay	02/01/2022
PreConstruction	02/01/2022
Construction	05/01/2022
Closeout	06/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$0
Design	$302,970
PreConstruction	$12,552
Construction	$1,752,400
Closeout	$5,000
Est. Program Cost	**$2,072,922**
Contingency Budget	$245,700
Est. Project Costs	**$2,318,622**



MP013710

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

MP013710

Middlesex Interceptor System Program Phase II-Saluda Pump Station

HRSD

N
W E
S

CIP Location

Middlesex Interceptor System Program Phase II-Saluda Pump Station

PR_MP013710

System: Mid-Peninsula
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
$2,095	$201	$440	$621	$621	$212	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

Middlesex Interceptor System Program Phase II-Urbanna to Mathews Transmission Force Main will be closed out after the PER phase of work has been completed and will create three new CIP projects. Two of the CIP projects will manage the reimbursement between HRSD and the County of Middlesex for the Middlesex Interceptor System Program Phase II-Middlesex Saluda Pump Station (MP013710) and for the Middlesex Interceptor System Program Phase II-Middlesex Hartfield Pump Station (MP013720). The third CIP project for the Middlesex Interceptor System Program Phase II-Transmission Force Main (MP013730) will be managed and funded by HRSD.

This project consists of the construction of a new sanitary sewer pump station in Saluda, Virginia and approximately 1,700 linear feet of 3-inch sewer force main between the proposed Central Middlesex Treatment Plant pump station and the termination point of the Middlesex Interceptor Force Main (IFM) Phase I project and the decommissioning of HRSD's existing Central Middlesex Treatment Plant. The recommended alternative is to construct the new pump station within the limits of an existing parking area adjacent to the treatment plant. After the new pump station is placed into service, the existing treatment plant will be demolished and converted to a parking lot. The scope of work generally includes the design and permitting of the new pump station, force main, new parking lot, and developing demolition/decommissioning plans for the existing treatment plant. This project will be funded through the Virginia Clean Water Revolving Loan Fund program.

PROJECT JUSTIFICATION

Middlesex County is developing sewer service areas. In order to provide wastewater treatment, HRSD must expand existing Middlesex treatment plants, install decentralized treatment systems, and/or install conveyance from these service areas to existing wastewater treatment facilities. HRSD has two minor (100,000 gallons per day (GPD) or less) wastewater treatment facilities in Middlesex County that are near capacity. In addition, the Town of Urbanna has requested HRSD to eliminate surface water discharges. Currently, HRSD must purchase nutrient credits to discharge into the Rappahannock River basin. HRSD has wastewater treatment capacity at the York River Treatment Plant (YRTP). The life cycle cost of conveying sewage to the YRTP is less than the cost of constructing and operating multiple minor wastewater treatment plants in Middlesex County. A conveyance system to the YRTP service area mitigates the risk and expense of incremental expansions to existing treatment facilities and of more stringent permitting requirements associated with future development in Middlesex County. Consequently, HRSD's strategy is to convey flows from Middlesex to the YRTP.

FUNDING TYPE

Funding Type: Cash

CONTACTS

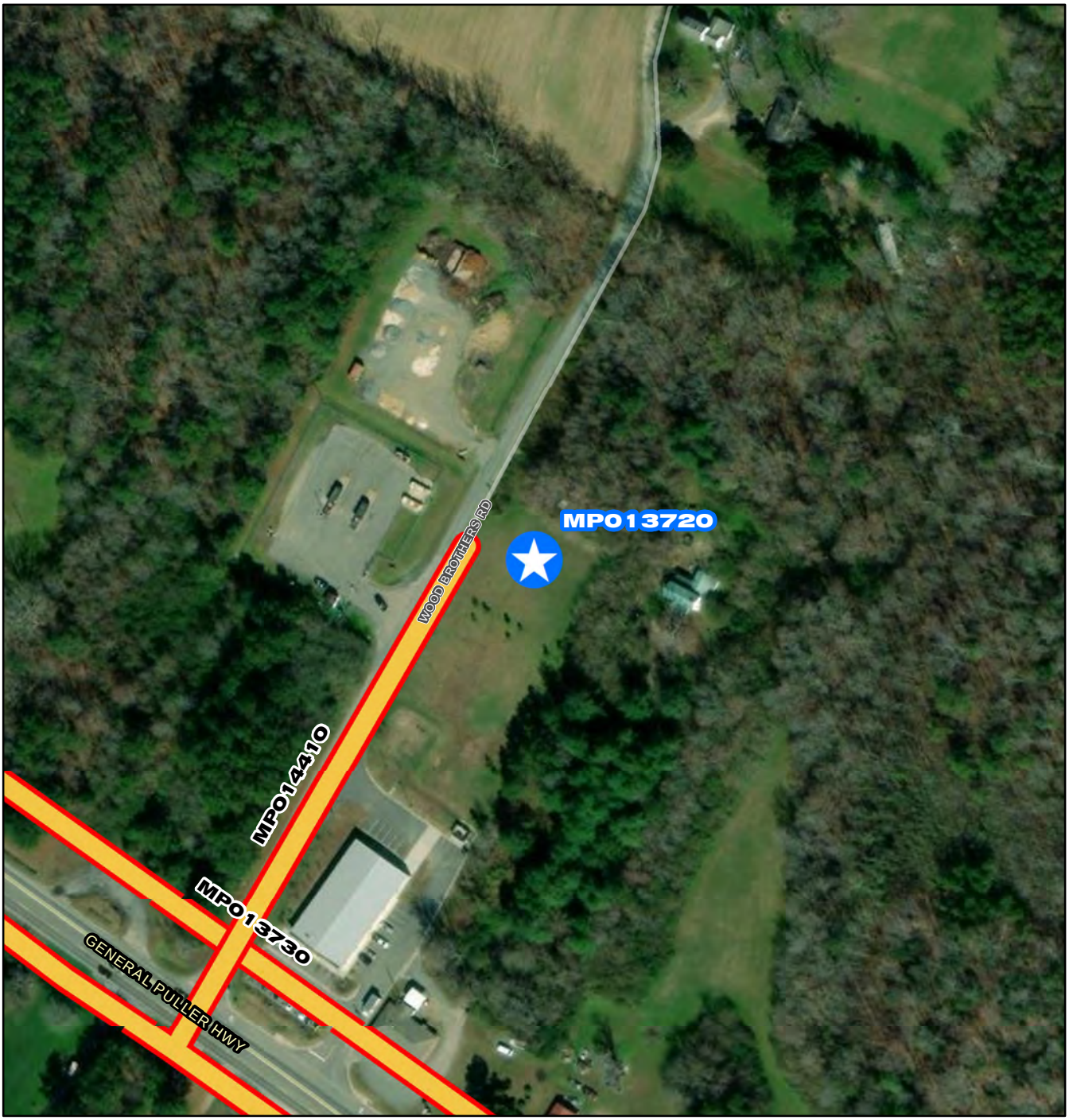
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2019
PER	03/01/2020
Design Delay	01/01/2021
Design	01/01/2021
Bid Delay	08/01/2022
PreConstruction	08/01/2022
Construction	11/01/2022
Closeout	11/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 3**
PrePlanning	$0
PER	$0
Design	$214,600
PreConstruction	$12,700
Construction	$1,862,400
Closeout	$5,000
Est. Program Cost	**$2,094,700**
Contingency Budget	$307,000
Est. Project Costs	**$2,401,700**



MP013720

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

MP013720

Middlesex Interceptor System Program Phase II-Hartfield Pump Station

HRSD

N
W E
S

CIP Location

Middlesex Interceptor System Program Phase II-Hartfield Pump Station

PR_MP013720

System: Mid-Peninsula
Type: Pipelines

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
$4,505	$385	$1,416	$2,024	$680	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

Middlesex Interceptor System Program Phase II-Urbanna to Mathews Transmission Force Main (MP013700) will be closed out after the PER phase of work has been completed and three new CIP projects are being created. Two of the CIP projects will manage the reimbursement between HRSD and the County of Middlesex for the Middlesex Interceptor System Program Phase II-Middlesex Saluda Pump Station (MP013710) and for the Middlesex Interceptor System Program Phase II-Middlesex Hartfield Pump Station (MP013720). The third CIP project for the Middlesex Interceptor System Program Phase II-Transmission Force Main (MP013730) will be managed and funded by HRSD.

This project generally consists of the construction of a new sanitary sewer pump station in the Hartfield area and approximately 1,500 linear feet of sewer force main along Wood Brothers Road to convey flow between the pump station and the Middlesex Transmission Force Main in General Puller Highway. This project will be funded through the Virginia Clean Water Revolving Loan Fund program.

PROJECT JUSTIFICATION

Middlesex County is developing sewer service areas. In order to provide wastewater treatment, HRSD must expand existing Middlesex treatment plants, install decentralized treatment systems, and/or install conveyance from these service areas to existing wastewater treatment facilities. HRSD has two minor (100,000 gallons per day (GPD) or less) wastewater treatment facilities in Middlesex County that are near capacity. In addition, the Town of Urbanna has requested HRSD to eliminate surface water discharges. Currently, HRSD must purchase nutrient credits to discharge into the Rappahannock River basin. HRSD has wastewater treatment capacity at the York River Treatment Plant (YRTP). The life cycle cost of conveying sewage to the YRTP is less than the cost of constructing and operating multiple minor wastewater treatment plants in Middlesex County. A conveyance system to the YRTP service area mitigates the risk and expense of incremental expansions to existing treatment facilities and of more stringent permitting requirements associated with future development in Middlesex County. Consequently, HRSD's strategy is to convey flows from Middlesex to the YRTP.

FUNDING TYPE

Funding Type: Cash

CONTACTS

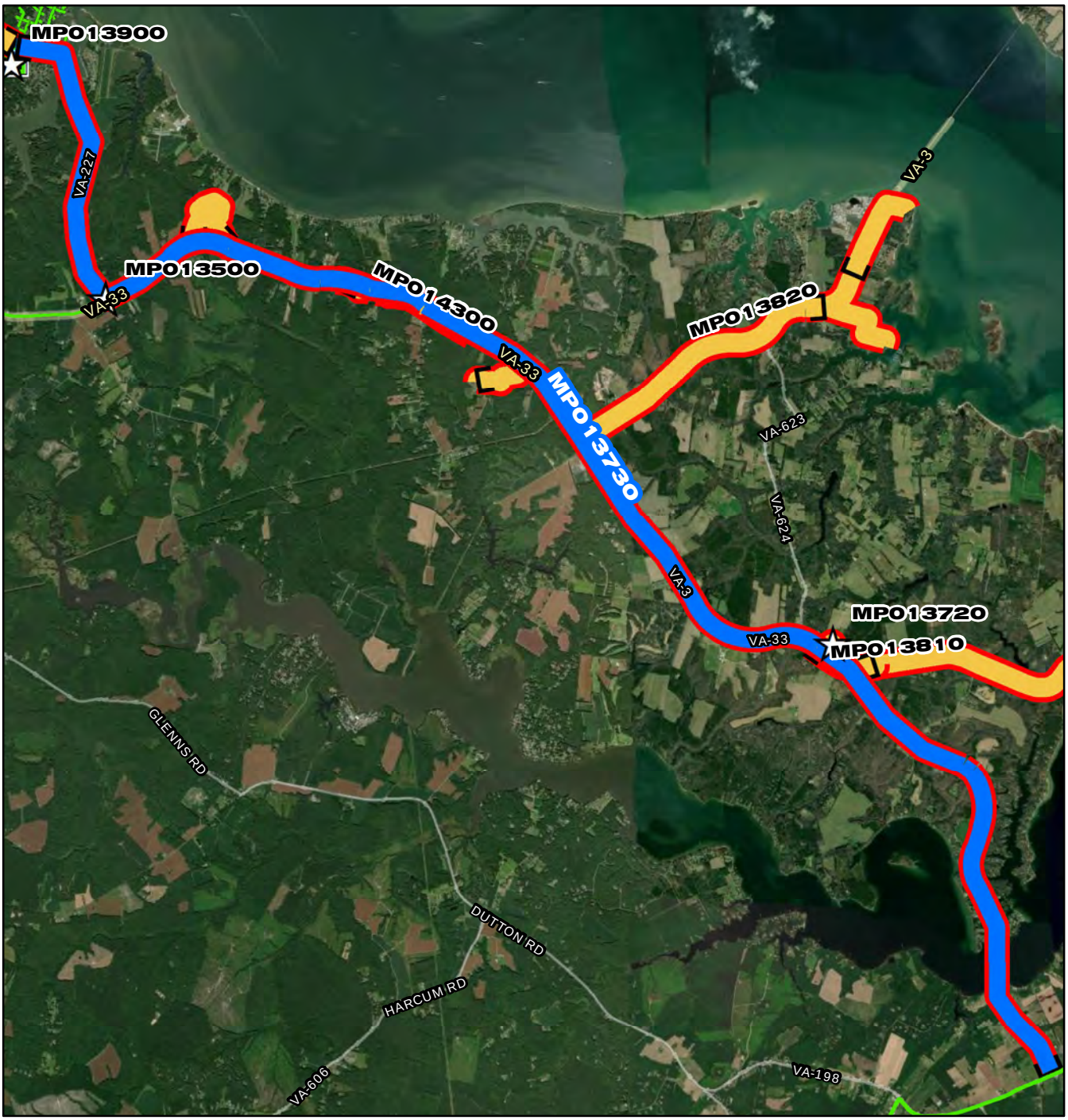
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2019
PER	01/30/2020
Design Delay	01/01/2021
Design	01/01/2021
Bid Delay	08/01/2022
PreConstruction	08/01/2022
Construction	11/01/2022
Closeout	11/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$0
Design	$446,000
PreConstruction	$6,000
Construction	$4,048,000
Closeout	$5,000
Est. Program Cost	**$4,505,000**
Contingency Budget	$711,000
Est. Project Costs	**$5,216,000**



MP013730

- 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 2,500 5,000 10,000 15,000 20,000 Feet

MP013730

Middlesex Interceptor System Program Phase II-Transmission Force Main

HRSD

N
W E
S

CIP Location

Middlesex Interceptor System Program Phase II-Transmission Force Main

PR_MP013730

System: Mid-Peninsula
Type: Pipelines

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
$28,265	$2,440	$8,805	$12,761	$4,259	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

Urbanna to Mathews Transmission Force Main (MP013700) will be closed out after the PER phase of work has been completed and three new CIP projects are being created. Two of the CIP projects will manage the reimbursement between HRSD and the County of Middlesex for the Middlesex Interceptor System Program Phase II-Middlesex Saluda Pump Station (MP013710) and for the Middlesex Interceptor System Program Phase II-Middlesex Hartfield Pump Station (MP013720). The third CIP project for the Middlesex Interceptor System Program Phase II-Transmission Force Main (MP013730) will be managed and funded by HRSD.This project includes the construction of a 3.2 miles force main from Urbanna to Cook's Corner in addition to a 13 mile force main along Route 33 in Middlesex County from Cook's Corner to the existing Mathews Force Main. This creates the backbone of the "Middlesex Force Main" solution and includes a horizontal direction drill under the Piankatank River. This interceptor system will convey wastewater from Middlesex County to the York River Treatment Plant and allow for the decommissioning of the Urbanna Treatment Plant. The system will also include the construction of a new pump station(s). This project will also involve provisions for connection of the Topping service area near the intersection of Route 33 and Route 3 and for connection of the Deltaville service area near Hartfield along General Puller Highway.

PROJECT JUSTIFICATION

Middlesex County is developing sewer service areas. In order to provide wastewater treatment, HRSD must expand existing Middlesex treatment plants, install decentralized treatment systems, and/or install conveyance from these service areas to existing wastewater treatment facilities. HRSD has two minor (100,000 gallon per day (GPD) or less) wastewater treatment facilities in Middlesex County that are near capacity. In addition, the Town of Urbanna has requested HRSD to eliminate surface water discharges. Currently, HRSD must purchase nutrient credits to discharge into the Rappahannock River basin. HRSD has wastewater treatment capacity at the York River Treatment Plant (YRTP). The life cycle cost of conveying sewage to the YRTP is less than the cost of constructing and operating multiple minor wastewater treatment plants in Middlesex County. A conveyance system to the YRTP service area mitigates the risk and expense of incremental expansions to existing treatment facilities and of more stringent permitting requirements associated with future development in Middlesex County. Consequently, HRSD's strategy is to convey flows from Middlesex to the YRTP.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

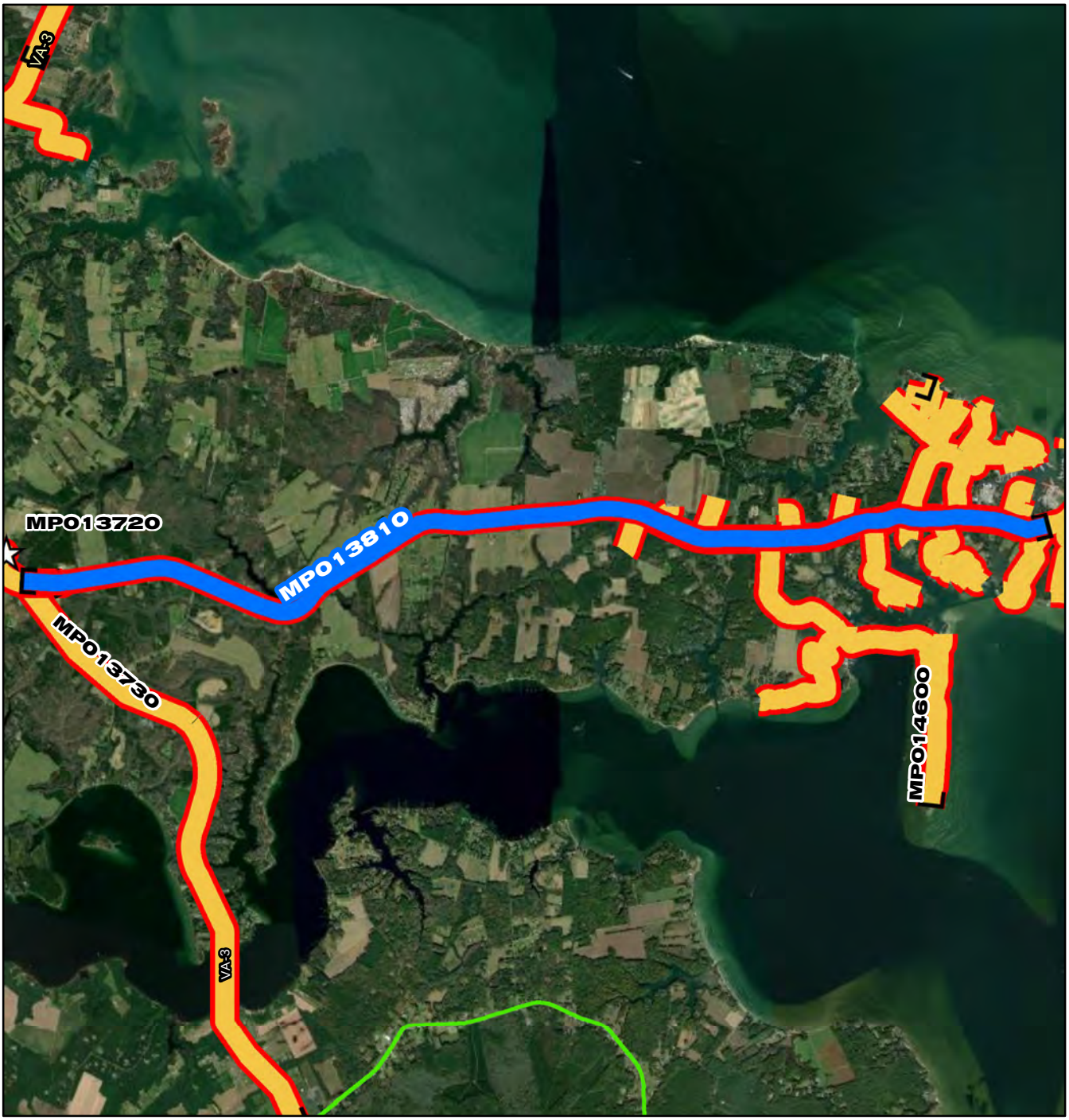
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/01/2019
PER	03/01/2020
Design Delay	01/01/2021
Design	01/01/2021
Bid Delay	08/01/2022
PreConstruction	08/01/2022
Construction	11/01/2022
Closeout	11/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 3**
PrePlanning	$0
PER	$0
Design	$2,674,379
PreConstruction	$63,200
Construction	$25,522,000
Closeout	$5,000
Est. Program Cost	**$28,264,579**
Contingency Budget	$4,485,000
Est. Project Costs	**$32,749,579**



MP013810

- 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 1,875 3,750 7,500 11,250 15,000 Feet

N
W E
S

CIP Location

MP013810

Middlesex Interceptor System Program Phase III

HRSD

Middlesex Interceptor System Program Phase III (Deltaville)

PR_MP013810

System: Mid-Peninsula
Type: Pipelines

Driver Category: Capacity Improvements
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
$2,393	$148	$182	$1,377	$686	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of approximately 20,500 linear feet (LF) of a 6-inch arterial HDPE force main interceptor to serve the Deltaville service area in Middlesex County. The HRSD funded portion of the Deltaville interceptor will be approximately 20,500 LF traversing from Twiggs Ferry Road - Stampers Bay Road intersection north to General Puller Highway and terminating at the Parsons Lane intersection. The arterial force main will be connecting to the proposed Middlesex Regional Interceptor System slated to be completed in 2024.

PROJECT JUSTIFICATION

HRSD and in coordination with Middlesex County developed a sewer master plan to design and construct a regional sewer infrastructure to collect and transmit sewer flows to the York River Treatment Plant for treatment via the existing Mathews force main interceptor system. As part of this effort, the existing Urbanna and Saluda treatment plants will be decommissioned and be replaced with new collection systems and pump stations to convey the flow to the regional force main interceptor. This project is the continuation of expanding the regional interceptor system to transmit flow from the Topping and Deltaville service areas. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction and inspection; Middlesex County shall be responsible to reimburse HRSD for the cost of the interceptors which fall within 2-mile radius from the service area limits in conformance with HRSD's Service Area Expansion Policy.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

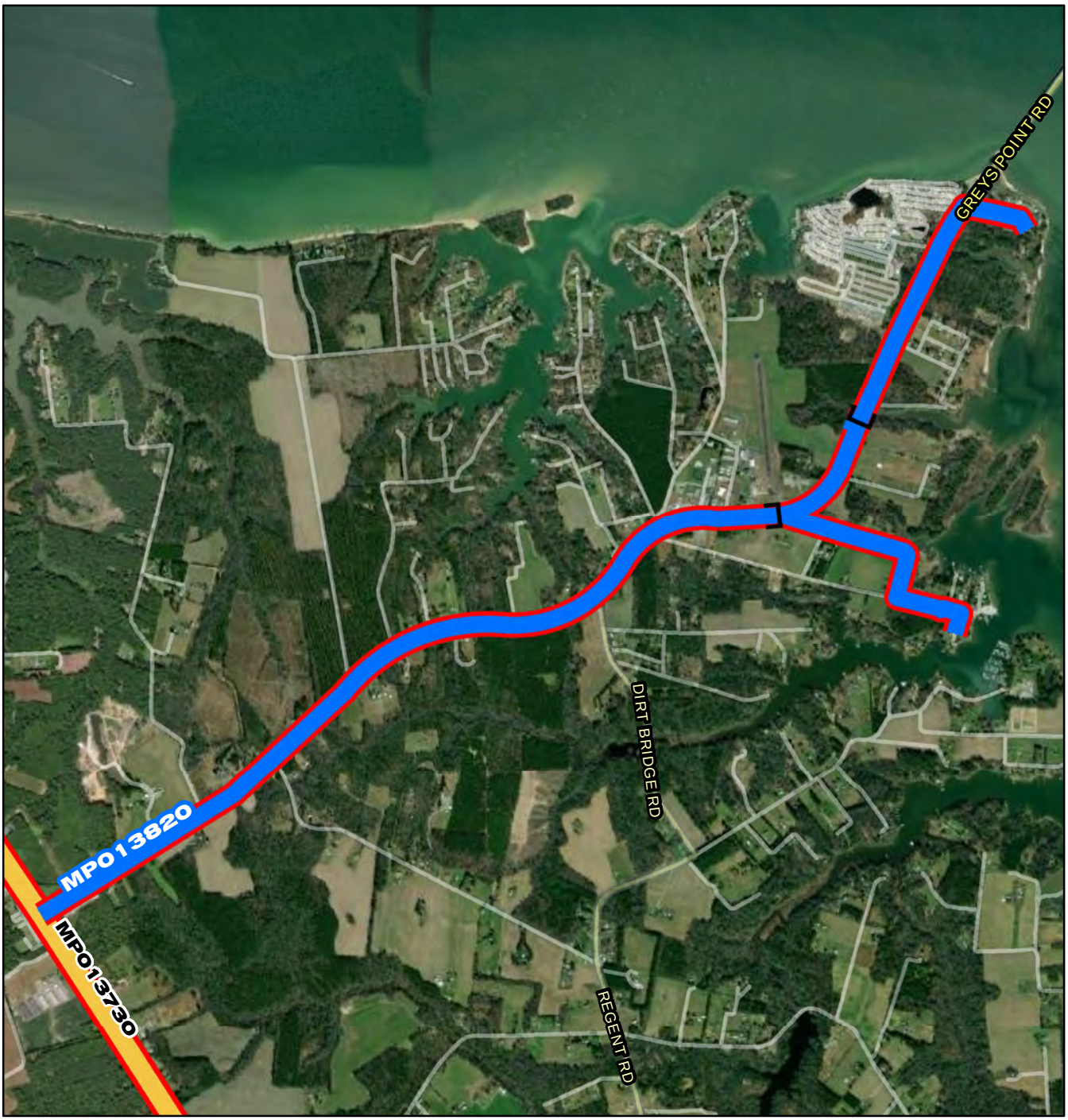
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2021
PER	10/01/2021
Design Delay	06/01/2022
Design	06/01/2022
Bid Delay	08/01/2023
PreConstruction	08/01/2023
Construction	11/01/2023
Closeout	11/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$5,000
PER	$129,045
Design	$214,538
PreConstruction	$10,000
Construction	$2,027,258
Closeout	$10,000
Est. Program Cost	**$2,395,841**
Contingency Budget	$267,344
Est. Project Costs	**$2,663,185**



MPO13820

- 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

0 800 1,600 3,200 4,800 6,400 Feet

N W E S

CIP Location

MPO13820

Middlesex Interceptor System Program Phase III (Topping)

HRSD

Middlesex Interceptor System Program Phase III (Topping)

PR_MP013820

System: Mid-Peninsula
Type: Pipelines

Driver Category: Capacity Improvements
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
$1,338	$77	$108	$1,047	$104	$1	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of approximately 12,000 linear feet (LF) of a 4-inch arterial HDPE force main interceptor to serve the Topping service area in Middlesex County. The arterial force main will be connecting to the proposed Middlesex Reginal Interceptor System slated to be completed in 2024.

PROJECT JUSTIFICATION

HRSD and in coordination with Middlesex County developed a sewer master plan to design and construct a regional sewer infrastructure to collect and transmit sewer flows to the York River Treatment Plant for treatment via the existing Mathews force main interceptor system. As part of this effort, the existing Urbanna and Saluda treatment plants will be decommissioned and be replaced with new collection systems and pump stations to convey the flow to the regional force main interceptor. This project is the continuation of expanding the regional interceptor system to transmit flow from the Topping and Deltaville service areas. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction and inspection; Middlesex County shall be responsible to reimburse HRSD for the cost of the interceptors which fall within 2-mile radius from the service area limits in conformance with HRSD's Service Area Expansion Policy.

FUNDING TYPE

Funding Type: VCWRLF

CONTACTS

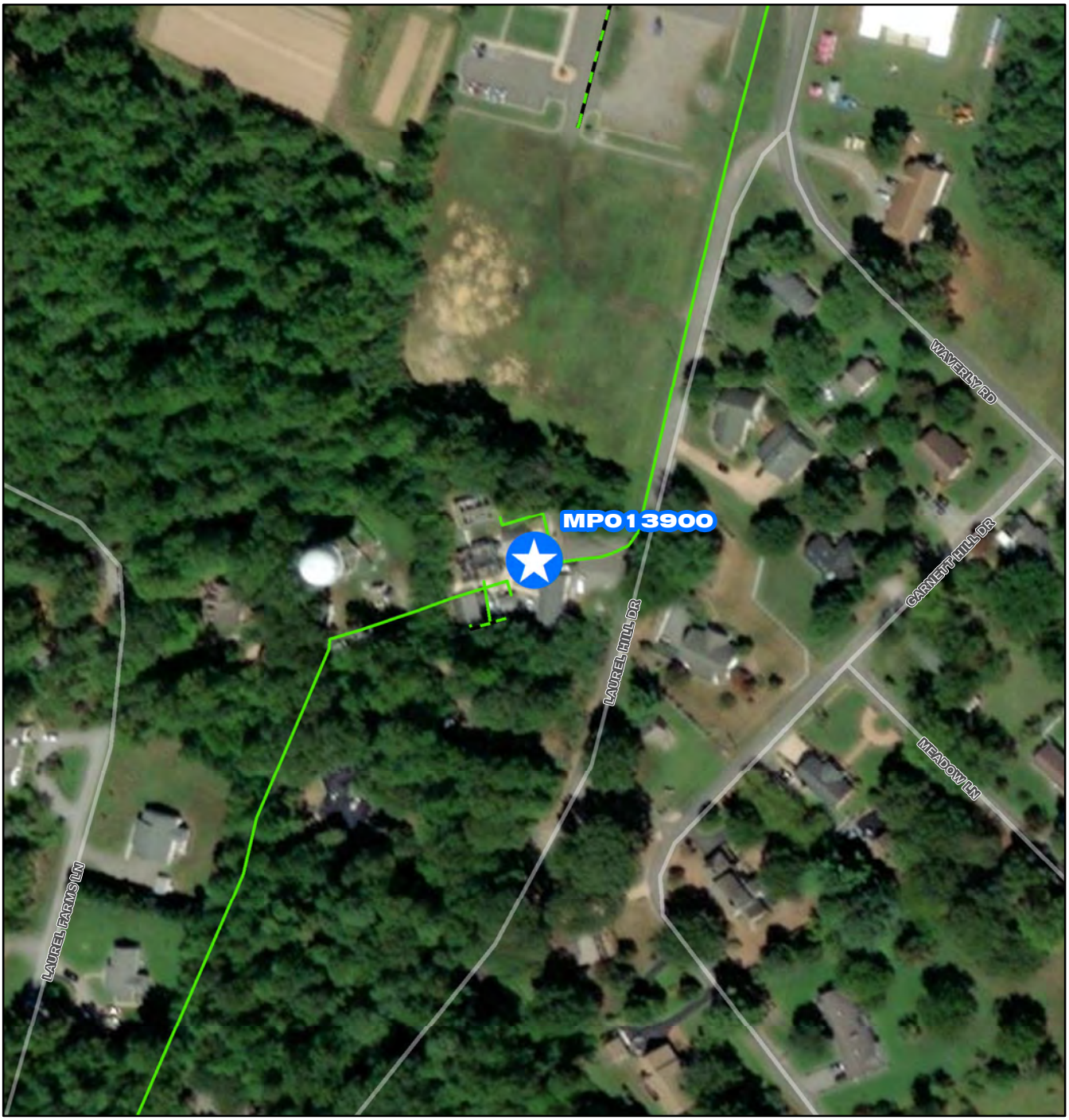
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	11/01/2021
PER	11/01/2021
Design Delay	05/01/2022
Design	05/01/2022
Bid Delay	05/01/2023
PreConstruction	05/01/2023
Construction	08/01/2023
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$56,943
Design	$122,100
PreConstruction	$10,000
Construction	$1,138,860
Closeout	$10,000
Est. Program Cost	**$1,337,903**
Contingency Budget	$145,387
Est. Project Costs	**$1,483,290**



MP013900

- 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

MP013900

Urbanna Wastewater Treatment Plant Reliability Improvements

HRSD

N
W E
S

CIP Location

Urbanna Wastewater Treatment Plant Reliability Improvements

PR_MP013900

System: Mid-Peninsula
Type: Wastewater Treatment

Driver Category: Performance Upgrades
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
$329	$80	$0	$21	$228	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project will implement the Integrated Fixed Film Activated Sludge (IFAS) process and automate dissolved oxygen (DO) control of the IFAS and downstream aeration basins.

PROJECT JUSTIFICATION

These upgrades improve reliability for the Urbanna Treatment Plant (UBTP) to accept increased higher strength loading and flow from Bethpage campground with continued treatment of the Town of Urbanna. Operations continues to see the effect increased flow, and subsequent nutrient and solids loadings, has on the UBTP in periods of peak treatment (both process and hydraulically). These interim upgrades will improve the reliability of the treatment process to handle these increased flows and subsequent loadings. A more permanent alternative is being developed for flows beyond the plant's current 100,000 gallons per day (GPD) permit.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

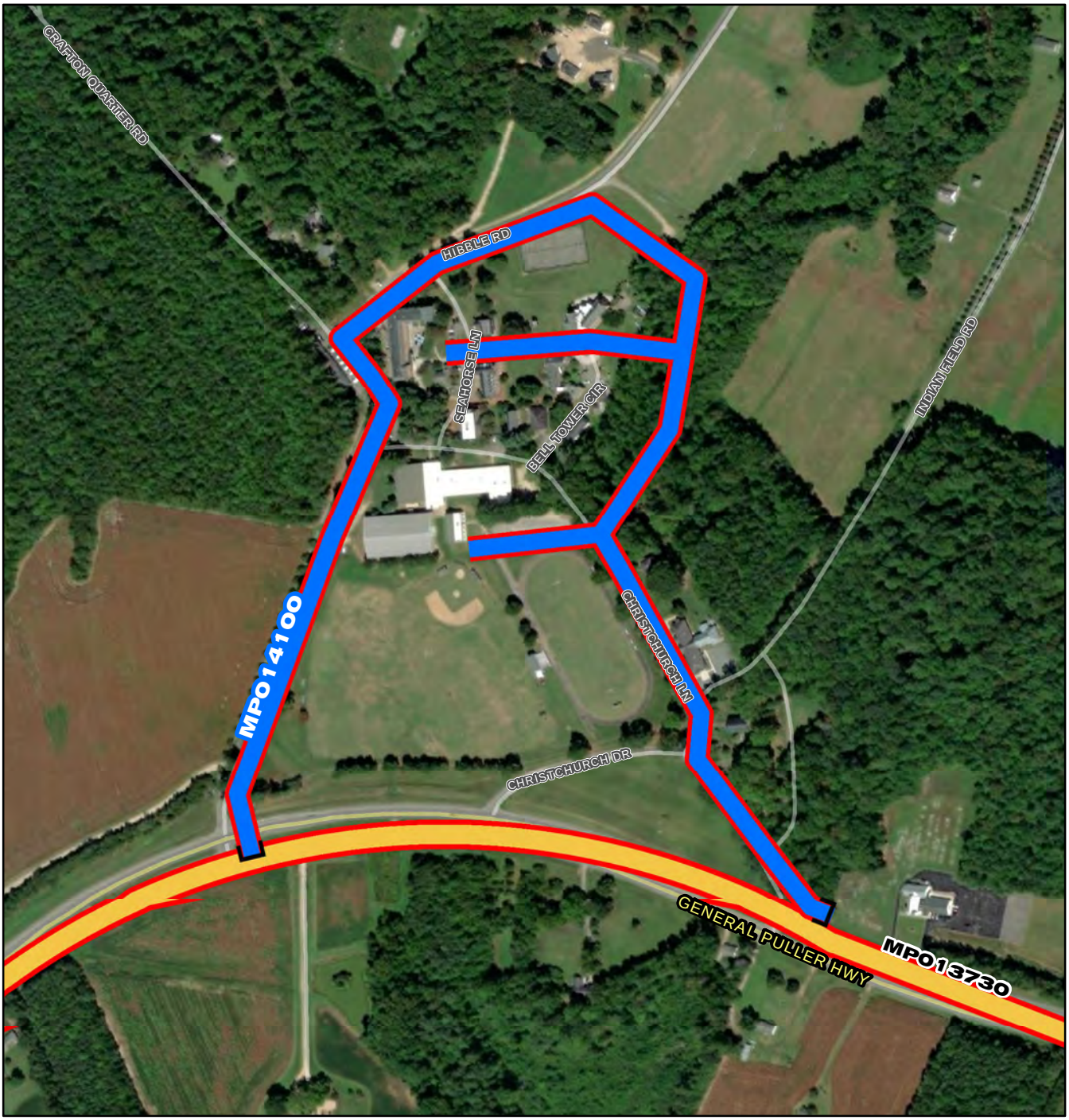
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Matt Poe
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2019
PER	07/29/2019
Design Delay	09/16/2019
Design	12/01/2020
Bid Delay	04/01/2021
PreConstruction	04/01/2024
Construction	06/01/2024
Closeout	06/01/2025

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$78,977
PreConstruction	$0
Construction	$250,000
Closeout	$0
Est. Program Cost	**$328,977**
Contingency Budget	$25,000
Est. Project Costs	**$353,977**



MPO14100

- 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

MPO14100

Middlesex Collection System- Christ's Church Service Area

N W E S

CIP Location

Middlesex Collection System-Christ's Church Service Area

PR_MP014100

System: Mid-Peninsula
Type: Pipelines

Driver Category: Performance Upgrades
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
$1,133	$0	$0	$113	$0	$699	$321	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of a gravity collection system to serve the Christ's Church service area as defined in the Middlesex County Sewer Preliminary Engineering Report (PER) (Bowman, Aug 2019). The collection system will consist of 400 linear feet (LF) of gravity sewer, a submersible pump station and 1700 LF of force main discharging into the HRSD regional force main proposed under the Middlesex Interceptor System Program Phase II-Urbanna to Mathews Transmission Force Main project (MP013700). Future system expansion to serve the remaining service area will be the responsibility of the development community and/or the Middlesex County. As such, all gravity mains constructed with this project shall be designed with adequate depth to allow for logical system expansion and to maximize coverage within the defined boundaries of the service area.

PROJECT JUSTIFICATION

Middlesex County has identified the Christ's Church service area for public sanitary sewer service. In partnership with HRSD, the PER identifies the limits of the service area and a preliminary layout of the collection system. The County has notified HRSD in 2021 that the completion of this project will be delayed further and not to coincide with the completion of the planned HRSD regional transmission force main slated for completion in July 2024. Hence, the original project schedule was revised to reflect the County's most recent project commitment. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs. Prior to commencing the design phase of this project, HRSD must receive written authorization by the Board of Supervisors.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/02/2017
PER	10/30/2017
Design Delay	12/01/2017
Design	07/01/2023
Bid Delay	07/01/2024
PreConstruction	07/01/2025
Construction	08/01/2025
Closeout	12/01/2026

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$113,400
PreConstruction	$5,400
Construction	$1,008,720
Closeout	$5,400
Est. Program Cost	**$1,132,920**
Contingency Budget	$180,360
Est. Project Costs	**$1,313,280**

Middlesex Collection System-Topping Service Area Phase I

PR_MP014200

System: Mid-Peninsula
Type: Pipelines

Driver Category: Performance Upgrades
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
$3,694	$105	$252	$2,777	$558	$2	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of three separate collection systems to serve the Topping service area as defined in the Middlesex County Sewer Preliminary Engineering Report (PER) (Bowman, Aug 2019). As part of this project, approximately 6,950 linear feet (LF) of 8-inch gravity sewer 16,300 LF of 6-inch force main, and one lift submersible pump stations will be constructed. The 6-inch force main will be connecting to the proposed HRSD regional transmission force main as identified in the Middlesex Interceptor System Program Phase II-Urbanna to Mathews Transmission Force Main project (MP013700). Future system expansion beyond what has been identified as existing development within the remaining Topping service area will be the responsibility of the development community and/or the Middlesex County. Hence, all gravity mains constructed with this project shall be designed with adequate depth to allow for logical future system expansion and to maximize coverage within the defined boundaries of the service area. Middlesex is considering a grinder pump low pressure force main system for a portion of the collection system.

PROJECT JUSTIFICATION

Middlesex County has identified the Topping service area for public sanitary sewer service. In partnership with HRSD, the PER identifies the limits of the service area and preliminary layout of three collection systems. The County has made verbal commitment to HRSD and expressed intent to have this viable service available to coincide with the completion of the planned regional HRSD force main currently scheduled for completion in July 2024. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs.

FUNDING TYPE

Funding Type: Cash

CONTACTS

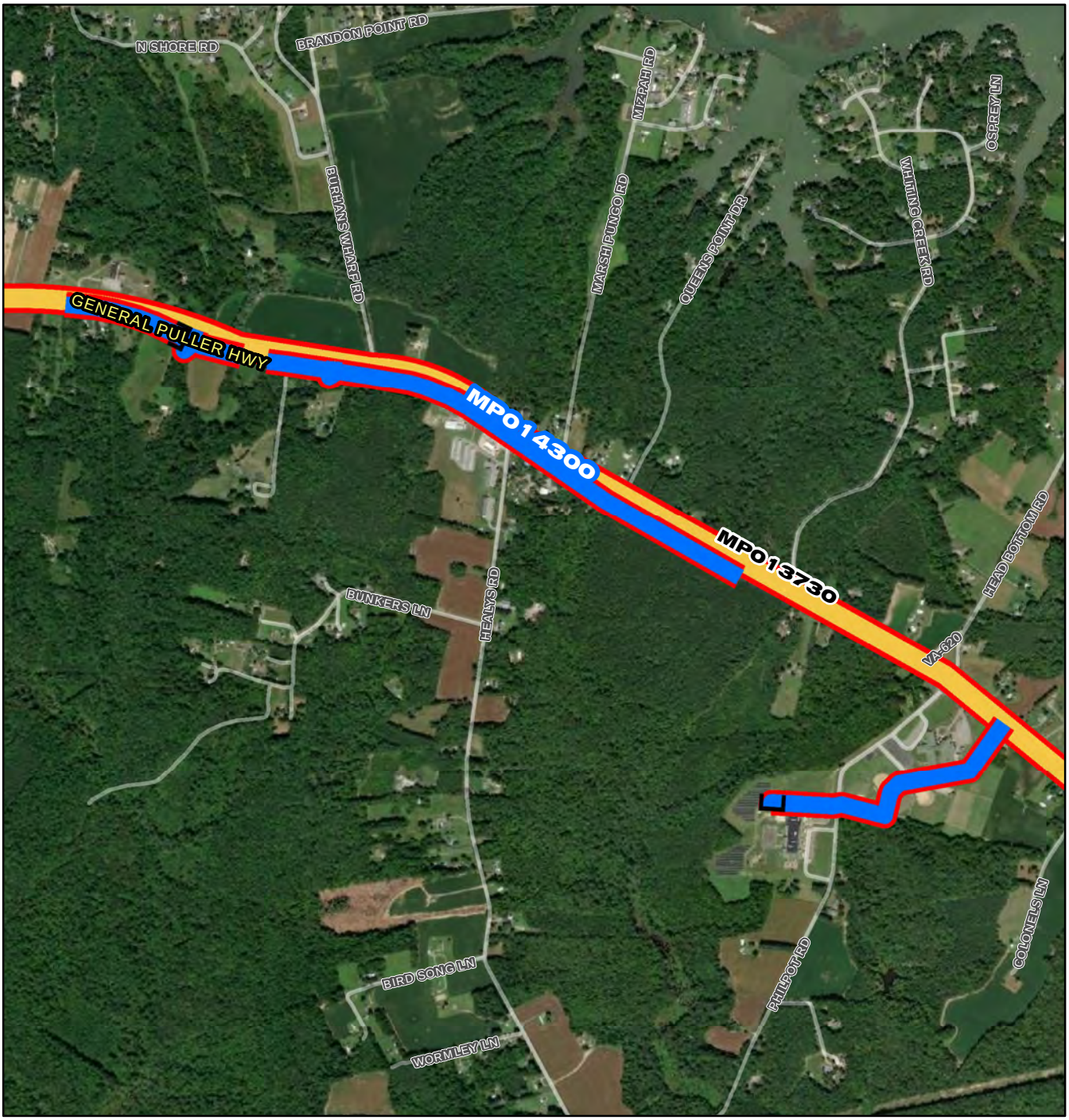
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/01/2019
PER	10/29/2019
Design Delay	12/18/2019
Design	09/01/2020
Bid Delay	07/01/2023
PreConstruction	08/01/2023
Construction	09/01/2023
Closeout	09/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$356,400
PreConstruction	$5,400
Construction	$3,326,400
Closeout	$5,400
Est. Program Cost	**$3,693,600**
Contingency Budget	$594,000
Est. Project Costs	**$4,287,600**



MP014300

- 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

0 500 1,000 2,000 3,000 4,000 Feet

MP014300

Middlesex Collection System-Locust Hill Service Area

HRSD

N
W E
S

CIP Location

Middlesex Collection System-Locust Hill Service Area

PR_MP014300

System: Mid-Peninsula
Type: Pipelines

Driver Category: Performance Upgrades
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
$3,910	$0	$375	$2,935	$600	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of three separate collection systems to serve the Locust Hill service area as defined in the Middlesex County Preliminary Engineering Report (PER) (Bowman, Aug 2019). As part of this project approximately 8,800 linear feet (LF) of 8-inch gravity sewer, 1,545 LF of 3-inch force main, 180 LF of 6-inch force main, and two terminal and one lift submersible pump stations will be constructed. The two terminal pump stations will be discharging directly into the proposed HRSD regional force main identified in the Middlesex Interceptor System Program Phase II-Urbanna to Mathews Transmission Force Main project (MP013700). Future system expansion beyond what has been identified as an existing development within the remaining Locust Hill service area will be the responsibility of the development community and/or the Middlesex County. Hence, all gravity mains constructed with this project shall be designed with adequate depth to allow for logical system expansion and to maximize coverage within the defined boundaries of the service area.

PROJECT JUSTIFICATION

Middlesex County has identified the Locust Hill service area for public sanitary sewer service. In partnership with HRSD, the PER identifies the limits of the service area and preliminary layout of three collection systems. The County has made verbal commitment to HRSD and expressed intent to have this viable service available to coincide with the completion of the planned HRSD regional transmission force main currently scheduled for completion in July 2024. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/02/2017
PER	10/30/2017
Design Delay	12/19/2017
Design	07/01/2022
Bid Delay	07/01/2023
PreConstruction	08/01/2023
Construction	09/01/2023
Closeout	09/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$374,760
PreConstruction	$16,200
Construction	$3,502,440
Closeout	$16,200
Est. Program Cost	**$3,909,600**
Contingency Budget	$626,400
Est. Project Costs	**$4,536,000**

MP014410

- 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

MP014410

Middlesex County Hartfield Sewer Collection System Phase I Improvements

HRSD

N
W E
S

CIP Location

Middlesex County Hartfield Sewer Collection System - Phase I Improvements

PR_MP014410

System: Mid-Peninsula
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$3,351	$175	$1,150	$1,865	$161	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This new project includes the design and construction of approximately 3,975 linear feet of 8-inch gravity sewer as part of Hartfield Service Area H#1 sewer improvements and as defined in the 2019 Middlesex County Sewer Preliminary Engineering Report (PER). The gravity sewer will convey flows to a proposed pump station under the Middlesex Transmission Force Main Phase II ? Urbanna to Mathews Transmission Force Main (MP013700) project. Future gravity system expansion beyond what has been identified as an existing development within the H#1 Service Area will be the responsibility of the development community and/or Middlesex County. Hence, all gravity mains constructed with this project shall be designed with adequate depth to allow for future logical system expansion and to maximize coverage within the boundaries of the H#1 Service Area. Middlesex County will reimburse HRSD for this project as described in the Sewer Extension Agreement approved by the Commission on May 26, 2020.

PROJECT JUSTIFICATION

Middlesex County has identified the Hartfield service area for public sanitary sewer service. In partnership with HRSD, the 2019 Middlesex County Sewer PER identifies the limits of the service area and preliminary layout of three collection systems. The County has made verbal commitment to HRSD and expressed intent to have this viable service available to coincide with the completion of the planned regional HRSD force main currently scheduled for completion in July 2024. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs.

FUNDING TYPE

Funding Type: Cash

CONTACTS

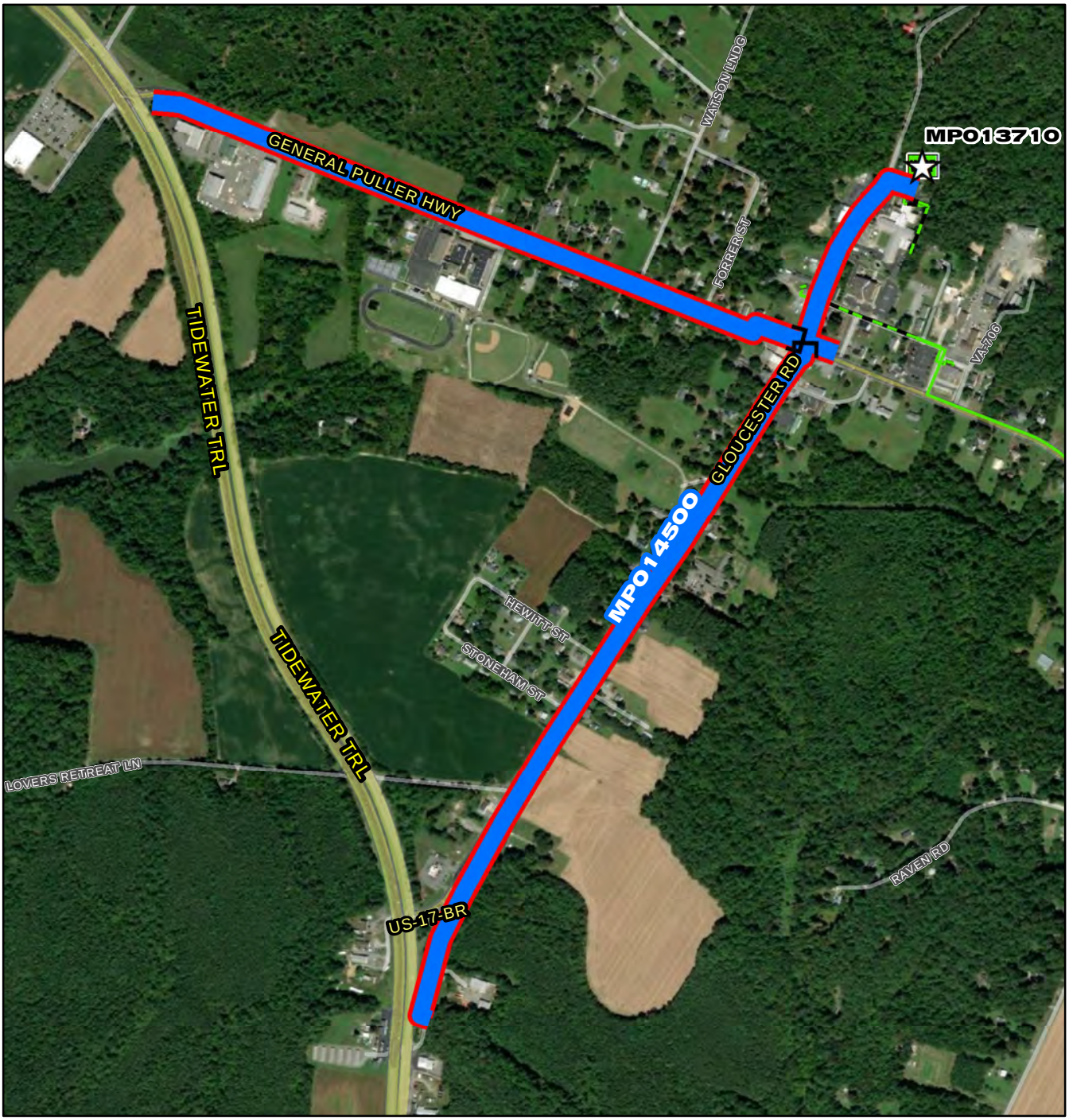
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	03/26/2019
PER	02/02/2021
Design Delay	12/02/2021
Design	12/02/2021
Bid Delay	09/01/2022
PreConstruction	09/01/2022
Construction	12/01/2022
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$31,665
Design	$197,494
PreConstruction	$7,506
Construction	$3,108,970
Closeout	$5,258
Est. Program Cost	**$3,350,893**
Contingency Budget	$350,000
Est. Project Costs	**$3,700,893**



MP014500

- 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

0 320 640 1,280 1,920 2,560 Feet

N W E S

CIP Location

MP014500

Middlesex Collection System-Saluda Service Area

HRSD

Middlesex Collection System-Saluda Service Area

PR_MP014500

System: Mid-Peninsula
Type: Pipelines

Driver Category: Performance Upgrades
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
$3,295	$0	$0	$0	$318	$0	$2,043	$935	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of two separate collection systems to serve S#2 and S#3 catchments within the Saluda service area as defined in the Middlesex County Sewer Preliminary Engineering Report (PER) (Bowman, Aug. 2019). As part of this project, approximately 7,930 linear feet (LF) of 8-inch gravity sewer, 7,240 LF of 2-inch, 3-inch and 4-inch force mains, and two lift submersible pump stations will be constructed. Sewer flow from both pump stations is proposed to be discharged into the S#1 catchment collection system. Future system expansion beyond what has been identified as an existing development within the remaining Saluda service area will be the responsibility of the development community and/or the Middlesex County. Hence, all gravity mains constructed with this project shall be designed with adequate depth to allow for logical system expansion and to maximize coverage within the defined boundaries of the service area.

PROJECT JUSTIFICATION

Middlesex County has identified the Saluda service area for public sanitary sewer service. In partnership with HRSD, the PER identifies the limits of the service area and a preliminary layout of three collection systems for catchments S#1, S#2, and S#3. On July 19, 2020, the Board of Supervisors authorized HRSD to commence design for S#1 collection system (MP014510, MP014520). The County has made verbal commitment to HRSD and expressed intent to extend this viable service beyond the existing gravity system in Saluda to coincide with the completion of the proposed HRSD regional transmission force main (MP013700) currently scheduled for completion in July 2024. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/02/2017
PER	10/30/2017
Design Delay	12/19/2017
Design	07/01/2024
Bid Delay	07/01/2025
PreConstruction	07/01/2026
Construction	08/01/2026
Closeout	12/01/2027

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$317,520
PreConstruction	$10,800
Construction	$2,955,960
Closeout	$10,800
Est. Program Cost	**$3,295,080**
Contingency Budget	$528,120
Est. Project Costs	**$3,823,200**

Middlesex County Saluda Sewer Collection System - Phase I

PR_MP014510

System: Mid-Peninsula
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$408	$62	$134	$191	$21	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This new project includes the design and construction of approximately 850 linear feet of 8-inch gravity sewer to serve the Saluda Service Area S #1 and as defined in the 2019 Middlesex County Sewer Preliminary Engineering Report (PER). The new gravity sewer will connect to the existing gravity collection system at the intersection of Oakes Landing Road and Bowden Street. Future system expansion beyond what has been identified as an existing development within the remaining Saluda Service Area S #1 will be the responsibility of the development community and/or Middlesex County. Hence, all gravity mains constructed with this project shall be designed with adequate depth to allow for logical system expansion and to maximize coverage within the defined boundaries of the S #1 Service Area. Middlesex County will reimburse HRSD for this project as described in the Sewer Extension Agreement approved by the Commission on May 26, 2020.

PROJECT JUSTIFICATION

Middlesex County has identified the Saluda service area for public sanitary sewer service. In partnership with HRSD, the 2019 Middlesex County Sewer PER identifies the limits of the service area and preliminary layout of three collection systems. The County has made verbal commitment to HRSD and expressed intent to extend this viable service beyond the existing gravity system in Saluda to coincide with the completion of the planned regional HRSD force main currently scheduled for completion in July 2024. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs.

FUNDING TYPE

Funding Type: Cash

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning	10/01/2017
PER	03/01/2021
Design Delay	12/01/2021
Design	12/01/2021
Bid Delay	09/01/2022
PreConstruction	09/01/2022
Construction	12/01/2022
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$14,641
Design	$64,457
PreConstruction	$5,800
Construction	$317,686
Closeout	$5,258
Est. Program Cost	**$407,842**
Contingency Budget	$70,000
Est. Project Costs	**$477,842**

MP014600

- 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

MP014600

Middlesex Collection System- Deltaville Service Area

HRSD

N
W E
S

CIP Location

Middlesex Collection System-Deltaville Service Area

PR_MP014600

System: Mid-Peninsula
Type: Pipelines

Driver Category: Performance Upgrades
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
$16,627	$572	$1,374	$12,194	$2,487	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of one terminal pump station and approximately 20,500 linear (LF) of 6-inch and 8-inch force main connecting to the proposed regional force main near the Stampers Bay Road and Twiggs Ferry Road intersection. The original plan to use vacuum collection systems to serve the entire Deltaville service area has been withdrawn at the request of the County due to the high cost and budget constraints. Instead, the most recent proposal by the County is to design and construct a network of low pressure force mains with an outfall at the terminal pump station. Each property will be connecting to the low-pressure force main network via a private grinder pump station and force main.

PROJECT JUSTIFICATION

Middlesex County has identified the Deltaville service area for public sanitary sewer service. The limits of the service area were defined in a coordinated master planning effort with HRSD and as described in the Bowman Preliminary Engineering Report. (2019). The County has made verbal commitment to HRSD and expressed intent to provide this viable service in Deltaville to coincide with the completion of the planned regional HRSD force main network (MP013700 and MP013800) currently scheduled for July 2024. As part of the service agreement and cost sharing agreement executed between HRSD and Middlesex County, HRSD will front the capital cost for engineering services, construction, and inspection; Middlesex County shall subsequently reimburse HRSD for these costs.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	10/02/2017
PER	10/30/2017
Design Delay	12/19/2017
Design	09/01/2018
Bid Delay	07/01/2023
PreConstruction	08/01/2023
Construction	09/01/2023
Closeout	09/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$0
Design	$1,946,000
PreConstruction	$60,000
Construction	$14,561,000
Closeout	$60,000
Est. Program Cost	**$16,627,000**
Contingency Budget	$2,911,000
Est. Project Costs	**$19,538,000**

Small Communities Rehabilitation Phase IV

PR_MP014700

System: Mid-Peninsula
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$2,489	$145	$1,712	$630	$2	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project will consist of rehabilitation or replacement of approximately 2,500 linear feet of small diameter gravity main and associated laterals and manholes within the Towns of Urbanna and West Point.

PROJECT JUSTIFICATION

CCTV condition assessment has shown multiple defects within the gravity main in Virginia Street and other select locations in West Point. These defects include materials such as PVC truss pipe and reverse flow conditions that will lead to premature failure. Virginia Street is a primary vehicular and pedestrian corridor for the Town of Urbanna and a failure would cause a major disruption. This project will primarily consist of non-intrusive trenchless rehabilitation. Small-scale point repairs and manhole installations will be utilized to minimize public disruption.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

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

PROPOSED SCHEDULE START DATE

PrePlanning	03/26/2019
PER	07/08/2020
Design Delay	04/22/2021
Design	04/22/2021
Bid Delay	04/04/2022
PreConstruction	04/04/2022
Construction	08/01/2022
Closeout	11/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$45,785
Design	$95,000
PreConstruction	$5,500
Construction	$2,333,000
Closeout	$10,000
Est. Program Cost	**$2,489,285**
Contingency Budget	$235,000
Est. Project Costs	**$2,724,285**

Small Communities Rehabilitation Phase V

PR_MP014800

System: Mid-Peninsula
Type: Pipelines

Driver Category: Risk Mitigation
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$635	$50	$116	$429	$40	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project will consist of raising approximately sixty (60) paved over or buried manholes throughout Small Communities. Replacement of frame and covers and condition assessment of these structures will occur with the work.

PROJECT JUSTIFICATION

The uncovering and raising of the buried and paved over manholes will allow operations to access these structures in order to perform assessment of our infrastructure and to ensure the collection systems are operating as designed.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

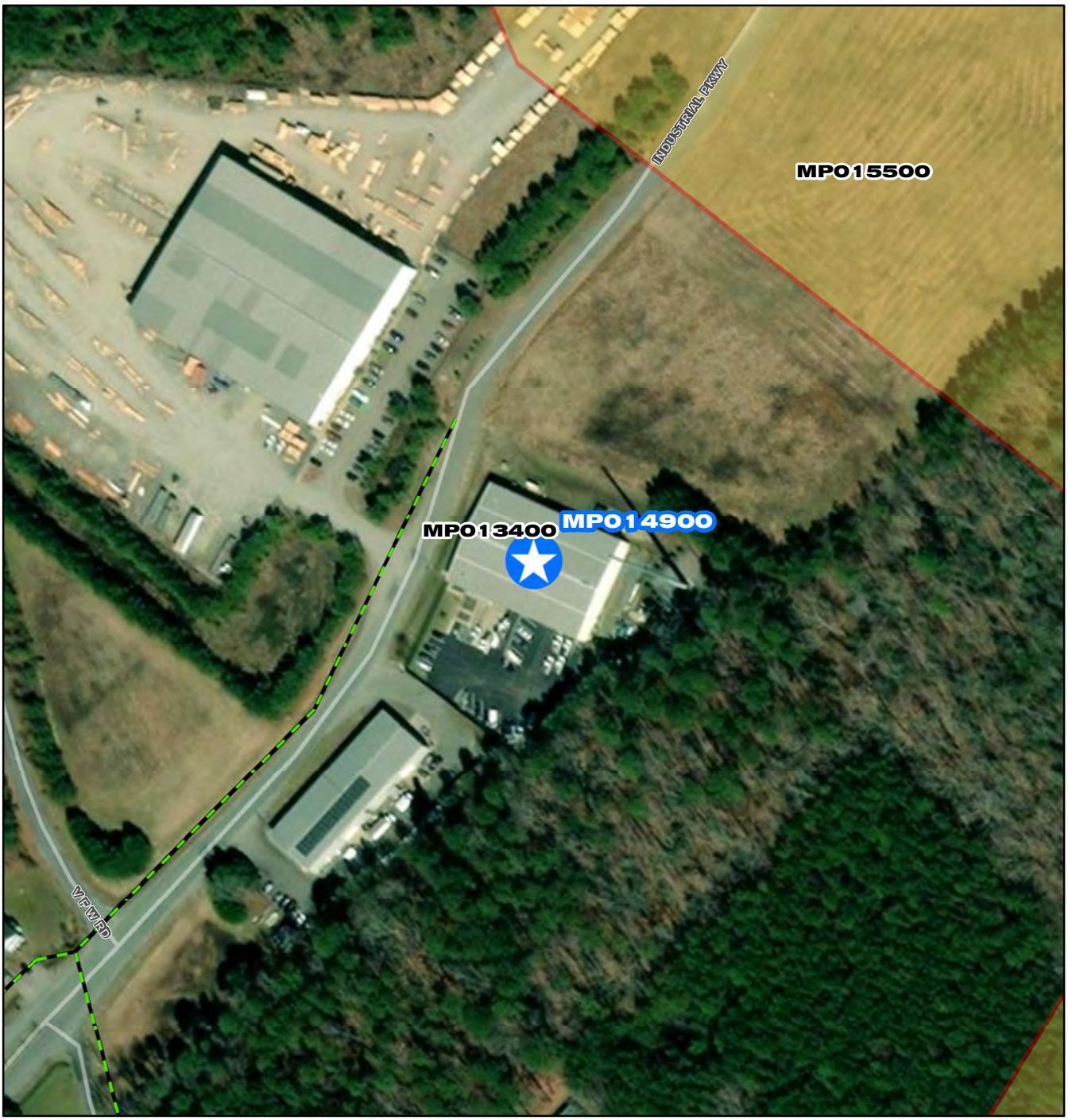
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2017
PER	07/31/2017
Design Delay	07/01/2022
Design	07/01/2022
Bid Delay	03/01/2023
PreConstruction	03/01/2023
Construction	06/01/2023
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$50,000
Design	$75,000
PreConstruction	$5,100
Construction	$500,000
Closeout	$5,100
Est. Program Cost	**$635,200**
Contingency Budget	$100,000
Est. Project Costs	**$735,200**



MP014900

- 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

MP014900

Middle Peninsula Operations Center Locker Room and Administrative Facilities

HRSD

Middle Peninsula Operations Center Locker Room and Administrative Facilities

PR_MP014900

System: Mid-Peninsula
Type: Facilities, Buildings and Capital Equipment

Driver Category: Performance Upgrades
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
$1,973	$1,968	$5	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project consists of the design and construction of a locker room, administrative areas, and HVAC improvements within the existing footprint of the Middle Peninsula Operations Center.

PROJECT JUSTIFICATION

Currently, no locker room facilities exist for Small Communities staff on the Middle Peninsula. This project will allow for locker rooms, break room, shower facilities, laundry facilities, HVAC improvements, and additional renovations. These improvements will allow Middle Peninsula Operations to provide facilities commensurate with those available at other HRSD operations work centers.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

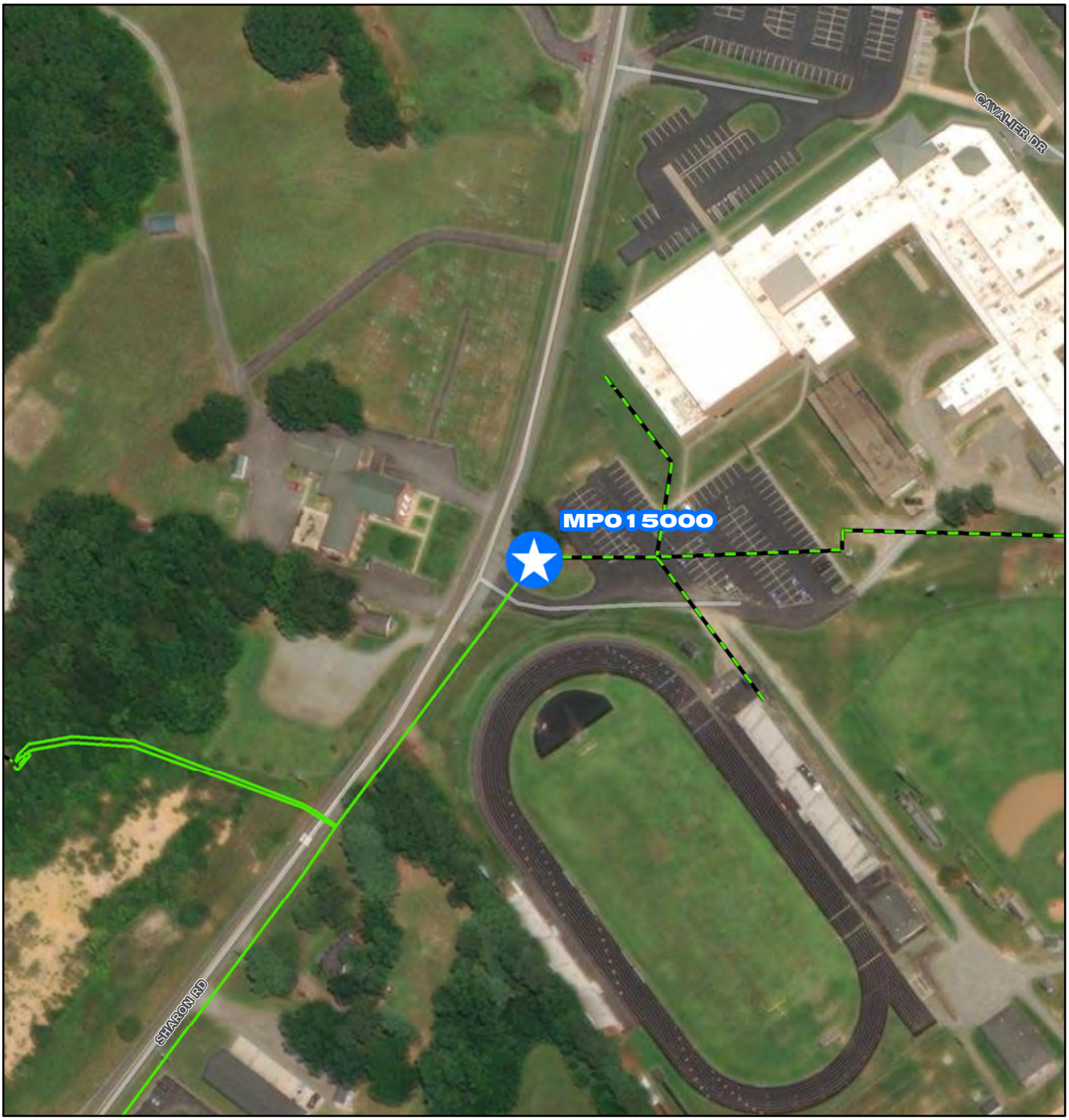
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Jeremiah Burford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	11/09/2020
PER	11/09/2020
Design Delay	11/09/2020
Design	11/09/2020
Bid Delay	06/15/2021
PreConstruction	06/15/2021
Construction	09/29/2021
Closeout	06/13/2022

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$0
Design	$121,796
PreConstruction	$1,163
Construction	$1,845,021
Closeout	$5,000
Est. Program Cost	**$1,972,980**
Contingency Budget	$185,000
Est. Project Costs	**$2,157,980**



MP015000

- 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

MP015000

Sharon Road Gravity Sewer Improvements

HRSD

N
W E
S

CIP Location

Sharon Road Gravity Sewer Improvements

PR_MP015000

System: Mid-Peninsula
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$967	$98	$488	$379	$2	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

The project will consist of expanding the gravity collection system approximately 800 linear feet to connect to the existing Commerce Lane Pump Station service area. This project will eliminate the need for and permanently abandon the Sharon Road Pump Station.

PROJECT JUSTIFICATION

The Sharon Road Pump Station is a packaged type of submersible pump station that has been in operation for 20 years and needs rehabilitation.
The station is located on school grounds with no security fence. The extension of the gravity collection system will eliminate the operational need for any pump station on school property.

FUNDING TYPE

Funding Type: Cash

CONTACTS

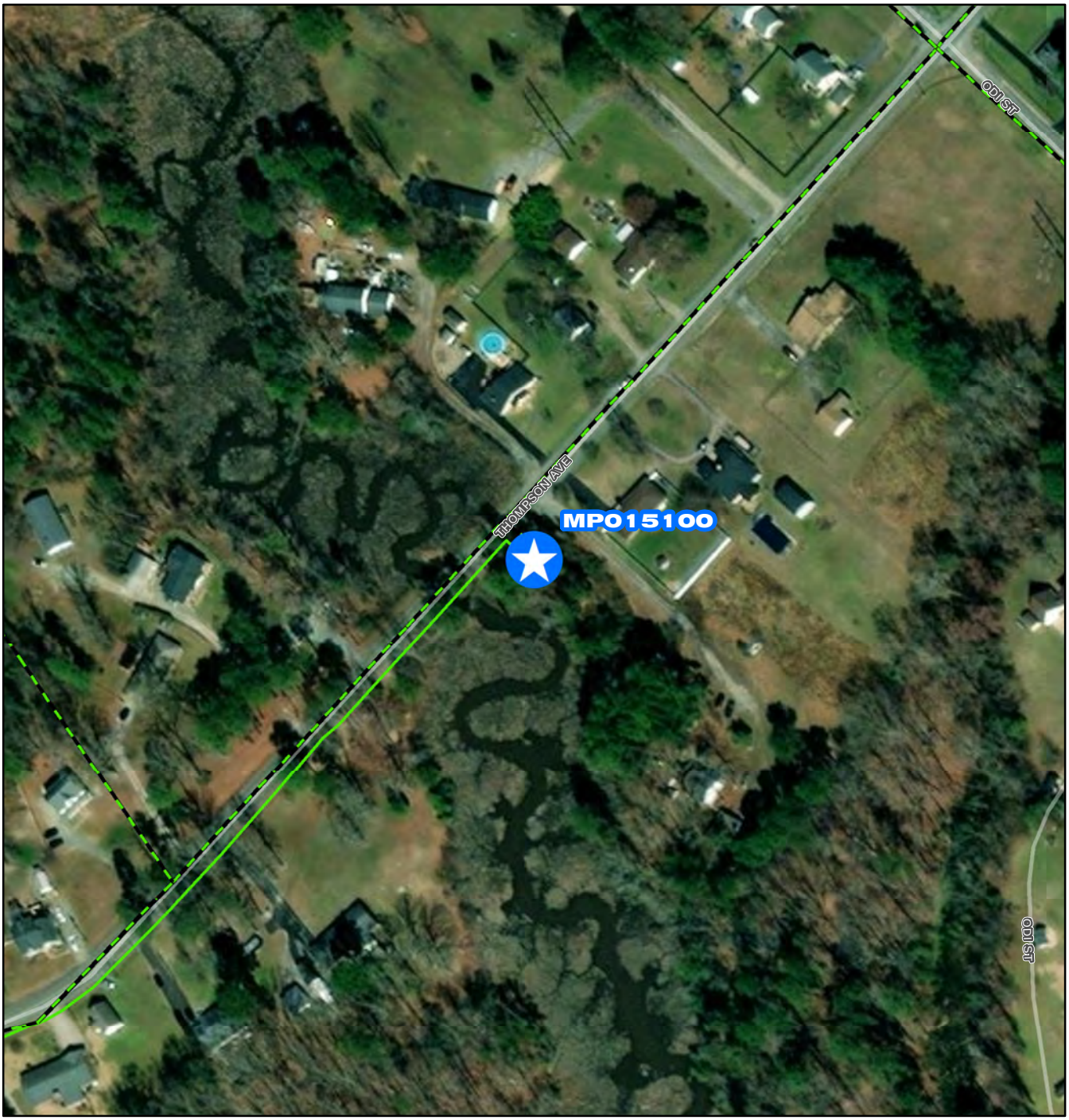
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	03/26/2019
PER	07/09/2020
Design Delay	02/08/2022
Design	02/08/2022
Bid Delay	09/13/2022
PreConstruction	09/13/2022
Construction	01/06/2023
Closeout	12/01/2023

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$26,683
Design	$100,000
PreConstruction	$10,000
Construction	$825,000
Closeout	$5,500
Est. Program Cost	**$967,183**
Contingency Budget	$85,000
Est. Project Costs	**$1,052,183**



MP015100

- 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

MP015100

West Point Pump Station 4 (Thompson Avenue) Rehabilitation

HRSD

N
W E
S

CIP Location

West Point Pump Station 4 (Thompson Avenue) Rehabilitation

PR_MP015100

System: Mid-Peninsula
Type: Pump Stations

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$1,037	$229	$521	$285	$2	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project consists of the installation of a new, large wet well, influent saddle manhole and rehabilitation of the pump station to include new pumps, controls and metering as well as site beautification.

PROJECT JUSTIFICATION

The station controls and associated appurtenances are original to the pump station as installed in the 1940's and have gone beyond the end of their useful life. The wet well was installed too shallow with the original pump station construction creating continuous surcharging conditions in the upstream collection system. This condition creates system capacity limitations and causes ragging and cavitation conditions at the pump station. This project will allow for the installation of an influent side manhole to be installed on HRSD property.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

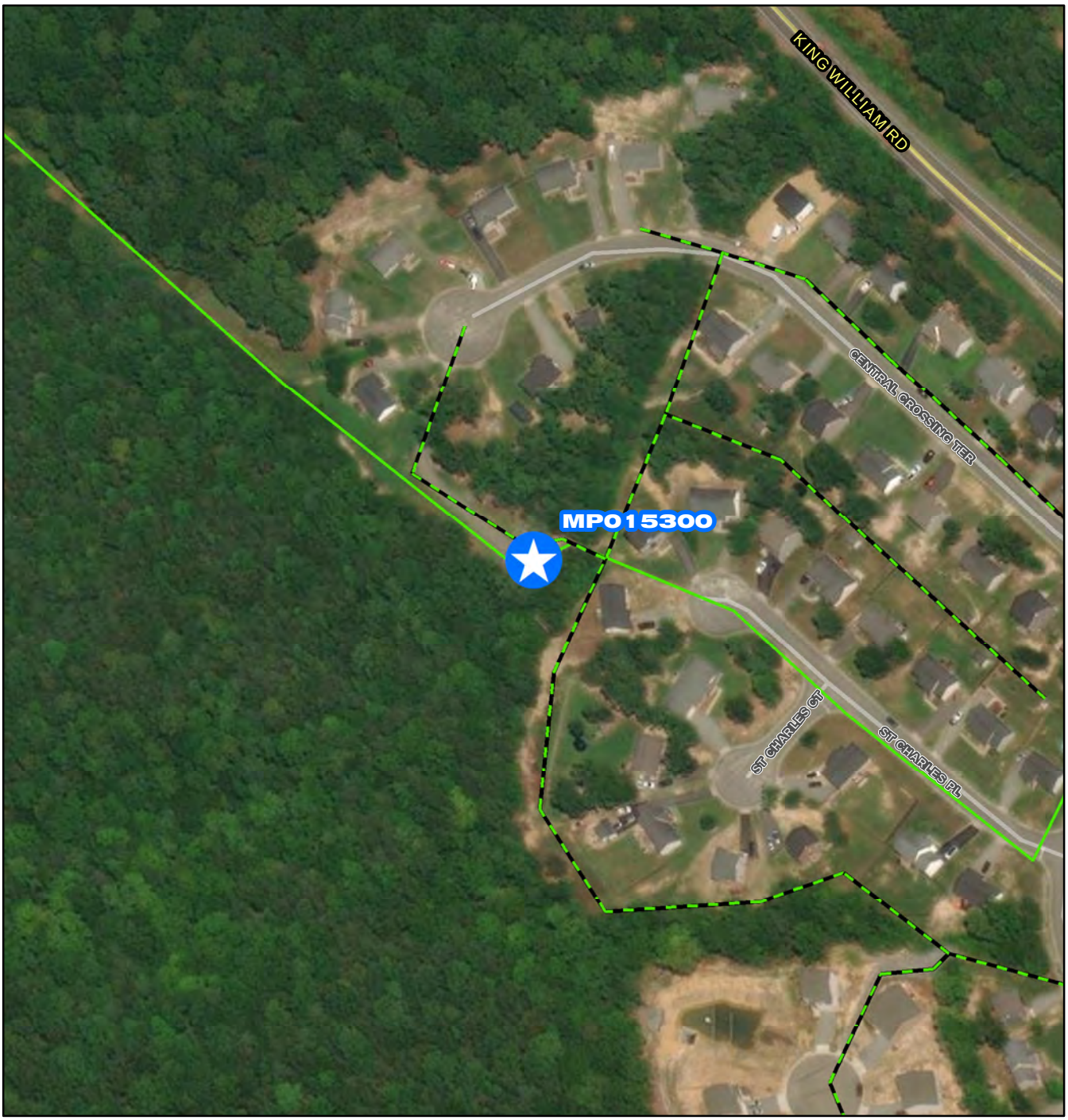
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Ted Denny
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	03/26/2019
PER	07/08/2020
Design Delay	06/18/2021
Design	07/01/2021
Bid Delay	04/01/2022
PreConstruction	04/01/2022
Construction	08/01/2022
Closeout	01/01/2024

COST ESTIMATE

Cost Estimate Class:	**Class 2**
PrePlanning	$0
PER	$71,289
Design	$147,642
PreConstruction	$13,500
Construction	$800,000
Closeout	$5,000
Est. Program Cost	**$1,037,431**
Contingency Budget	$80,000
Est. Project Costs	**$1,117,431**



MP015300

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

MP015300

King William Central Crossing Pump Station Rehabilitation

HRSD

King William Central Crossing Pump Station Rehabilitation

PR_MP015300

System: Mid-Peninsula
Type: Pump Stations

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$999	$64	$155	$716	$63	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project consists of rehabilitation of the existing Central Crossing pump station to include improvements to the pump system and controls, discharge monitoring, force main upsizing, emergency power supply, site improvements and other ancillary improvements.

PROJECT JUSTIFICATION

Failures have occurred on the pumping rail and connection system as well as the discharge force main with temporary repairs made to both. Additionally, there is no emergency power supply in cases of outages for the station and the current power rack is of timber construction and is also in need of replacement. Currently, operations has no means to isolate the discharge force main from a common pressure pipeline with multiple other pump station connections. There is no emergency bypass connection and no means of monitoring station flows and pressures. This project will correct these deficiencies and bring this facility to current HRSD standards. King William is also experiencing substantial development growth. This station currently has development projects with master site plans that would exceed the capacity of the station. This project will provide for additional station pumping capacity to allow for future development and growth.

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	07/03/2017
PER	07/31/2017
Design Delay	07/01/2022
Design	07/01/2022
Bid Delay	03/01/2023
PreConstruction	03/01/2023
Construction	06/01/2023
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$64,474
Design	$90,000
PreConstruction	$5,000
Construction	$835,550
Closeout	$4,000
Est. Program Cost	**$999,024**
Contingency Budget	$146,600
Est. Project Costs	**$1,145,624**

MP015400

- 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

0 437.5 875 1,750 2,625 3,500 Feet

N W E S

CIP Location

MP015400

Middlesex Interceptor System Program Phase IV

HRSD

Middlesex Interceptor System Program Phase IV

PR_MP015400

System: Mid-Peninsula
Type: Pipelines

Driver Category: Capacity Improvements
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
$2,729	$0	$0	$0	$114	$179	$2,431	$2	$2	$2	$0	$0

PROJECT DESCRIPTION

This project calls for the design and construction of approximately 12,000 linear feet (LF) of 4-inch and 6-inch HDPE force main interceptor to transmit sewer flows from the Kilmer Point Peninsula communities located north-west from the Town of Urbanna in Middlesex County. The transmission line will connect to the existing HRSD gravity collection system in the vicinity of Waverly Road and Virginia Street intersection. The project will include a crossing of Robinson Creek.

PROJECT JUSTIFICATION

HRSD in coordination with Middlesex County developed a sewer master plan to design and construct regional sewer infrastructure to collect and transmit sewer flows to the York River Treatment Plant (YRTP) for treatment. This project is the last phase of the regional interceptor system (MP013800) and will transmit flow from the Kilmer Point Peninsula service area.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

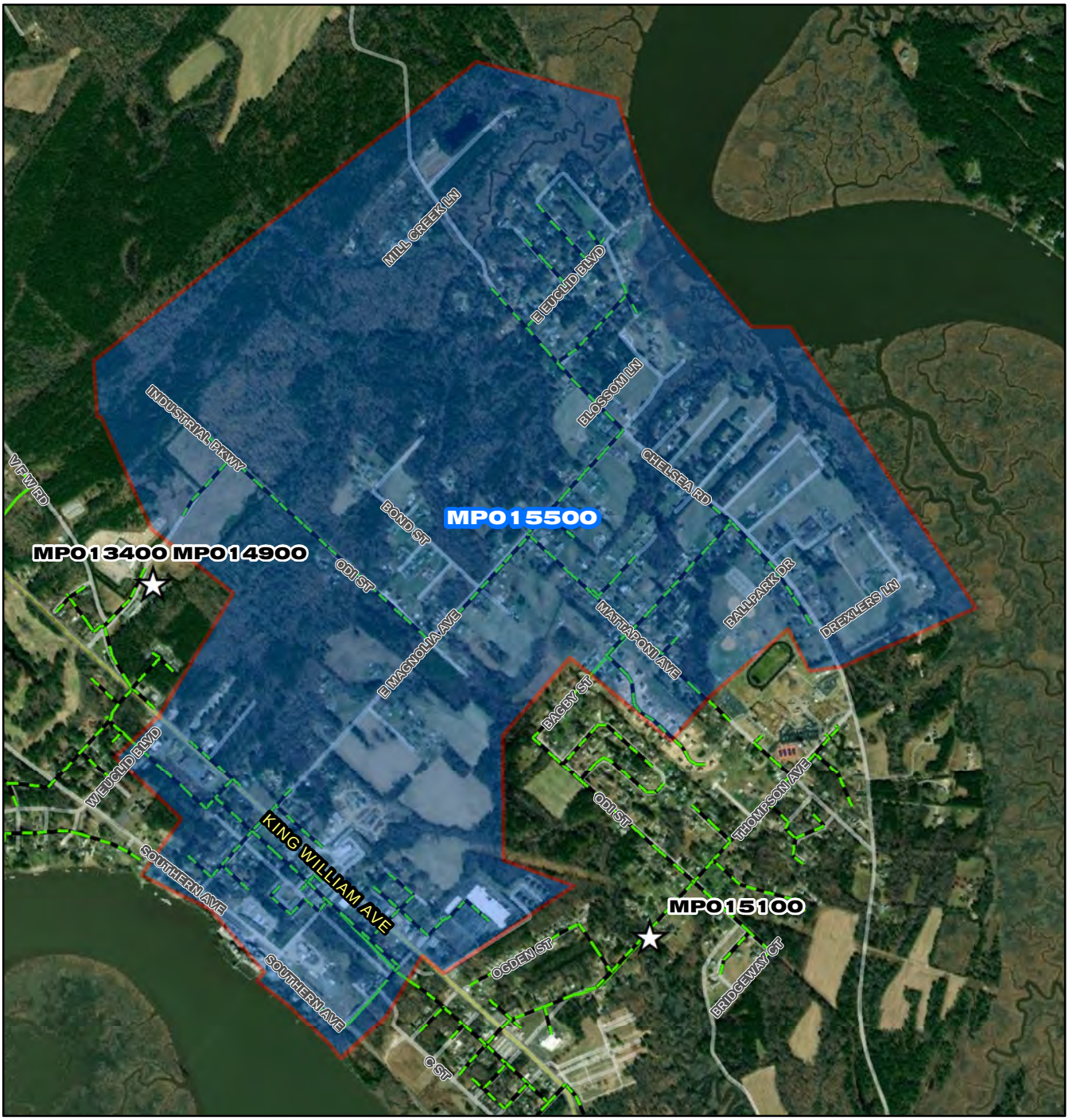
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Bambos Charalambous
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	08/01/2024
Design Delay	10/01/2024
Design	06/01/2025
Bid Delay	09/01/2025
PreConstruction	05/01/2026
Construction	07/01/2026
Closeout	04/01/2027

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$5,400
PER	$21,600
Design	$260,280
PreConstruction	$5,400
Construction	$2,431,080
Closeout	$5,400
Est. Program Cost	**$2,729,160**
Contingency Budget	$434,160
Est. Project Costs	**$3,163,320**



MP015500

- 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

0 500 1,000 2,000 3,000 4,000 Feet

N W E S

CIP Location

MP015500

Small Communities Rehabilitation Phase VI

HRSD

Small Communities Rehabilitation Phase VI

PR_MP015500

System: Mid-Peninsula
Type: Pipelines

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$1,247	$77	$181	$909	$80	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will renew approximately 5,600 linear feet (LF) of gravity pipe and twelve (12) manholes in the service areas of West Point Pump Stations (PS) 5, 8 and 9. These facilities have been identified as large contributors to inflow and infiltration (I&I). Renewal methods include internal point repairs, external point repairs, and trenchless rehabilitation. External Point repairs will consist of dig-and-replace in kind with pipe of equal size. Rehabilitation may include one or more trenchless methods to reinforce existing pipelines with an internally installed liner or other seal to prevent I&I intrusion. Manholes will be lined and rehabilitated.

PROJECT JUSTIFICATION

The West Point Treatment Plant (WPTP) experiences significant increased flows during wet weather events. Since January 2019, the effluent flow monthly average has exceeded the Permitted Design Capacity (0.6 MGD) ten times to date, with 95% of capacity being exceeded for three consecutive months occurring twice in that timeframe. Each of the consecutive occurrences requires a written letter to VDEQ outlying HRSD's plan of action to address these increased flows. This project will continue HRSD's commitment to reducing I&I into the collection system in accordance with that plan of action. Analysis of gravity flow meter data collected from the West Point system was evaluated and identified the PS 5, 8 and 9 service areas as the highest contributors to I&I levels. Hazen and Sawyer completed a Sanitary Sewer Evaluation Survey (SSES) of these areas and identified multiple areas of rehabilitation and/or replacement of the collections system. This project will address the deficiencies identified in this SSES and generate a large reduction of I&I and provide for structural repairs on at-risk infrastructure.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

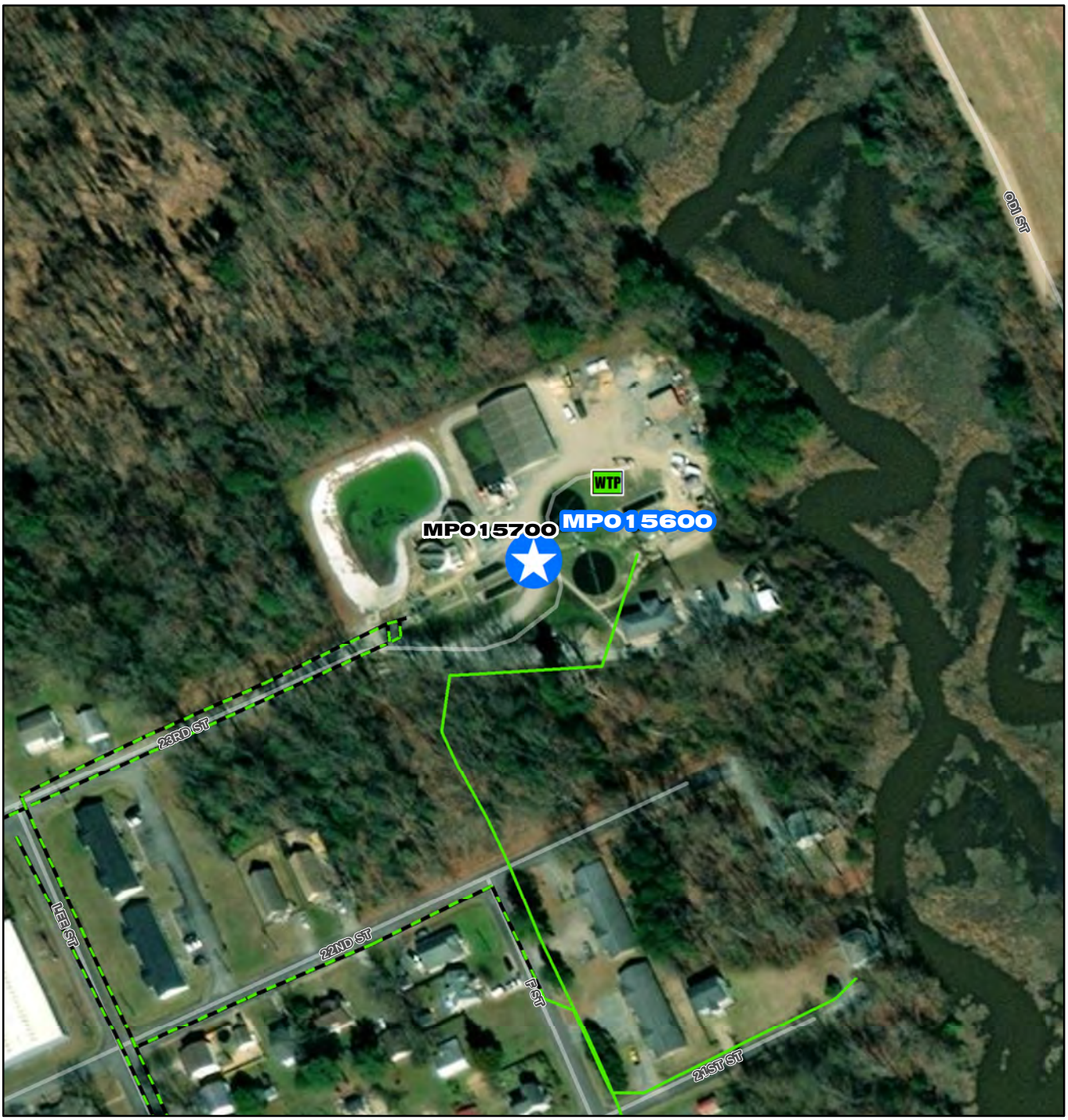
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2017
PER	07/31/2017
Design Delay	07/01/2022
Design	07/01/2022
Bid Delay	03/01/2023
PreConstruction	03/01/2023
Construction	06/01/2023
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$76,621
Design	$100,000
PreConstruction	$5,000
Construction	$1,060,200
Closeout	$5,000
Est. Program Cost	**$1,246,821**
Contingency Budget	$186,000
Est. Project Costs	**$1,432,821**



MP015600

- 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

MP015600

West Point Treatment Plant Final Effluent Pump Station Improvements

HRSD

West Point Treatment Plant Final Effluent Pump Station Improvements

PR_MP015600

System: Mid-Peninsula
Type: Pump Stations

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$730	$50	$118	$514	$47	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project consists of the rehabilitation of the existing West Point Treatment Plant Effluent Pump Station to include improvements to the pumping system and controls, discharge monitoring and access. The project will replace pump rail systems; rehabilitate and replace internal components of valve vault and emergency pump connection; install metering vault and associated components; upgrade alarms, pump controls and power panel and associated utility rack; and provide access to the station to drive up bypass pumps and equipment as necessary.

PROJECT JUSTIFICATION

The station suffered significant failure of both the mechanical and electrical systems in calendar year 2020. Emergency work was undertaken to make temporary repairs, however permanent repairs and improvements are still required to this critical piece of infrastructure to ensure continued reliability of the treatment plant process.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

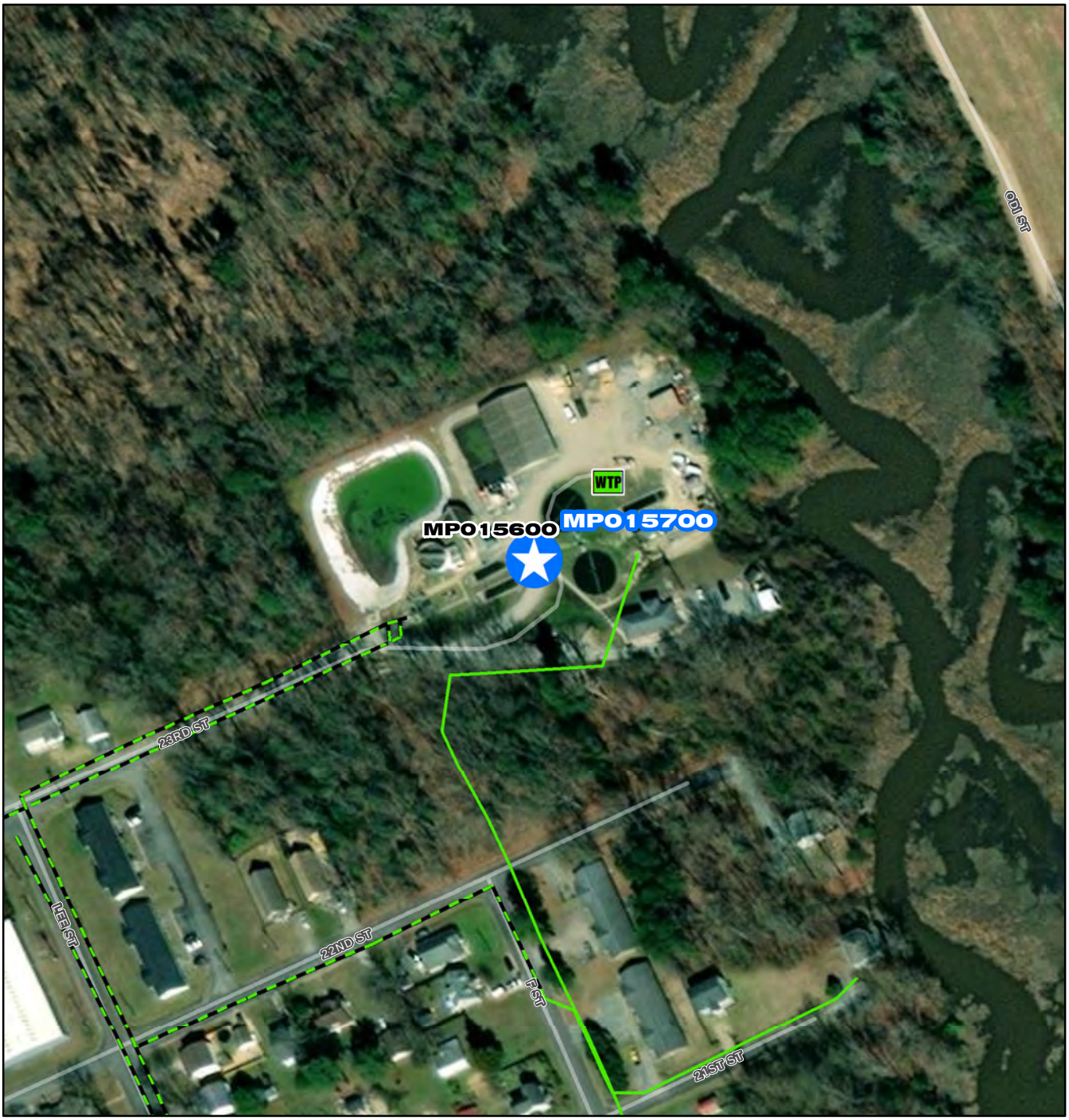
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2017
PER	07/31/2017
Design Delay	07/01/2022
Design	07/01/2022
Bid Delay	03/01/2023
PreConstruction	03/01/2023
Construction	06/01/2023
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$49,812
Design	$70,000
PreConstruction	$5,000
Construction	$600,000
Closeout	$5,000
Est. Program Cost	**$729,812**
Contingency Budget	$120,000
Est. Project Costs	**$849,812**



MP015700

- 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

MP015700

West Point Treatment Plant
Secondary Clarifier Improvements

HRSD

West Point Treatment Plant Secondary Clarifier Improvements

PR_MP015700

System: Mid-Peninsula
Type: Wastewater Treatment

Driver Category: Aging Infrastructure/Rehabilitation
Project Phase: Pre Planning
Regulatory: None

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY23	FY24	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32
$850	$60	$135	$600	$55	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project consists of the rehabilitation of the existing Secondary Clarifier System at the West Point Treatment Plant to include improvements to the waste pumping system and controls; raising the wall height on secondary clarifier #2; replacement of waste valving on both clarifiers; complete replacement of internal components; site improvements and rehabilitation of effluent weirs and skimmer wasting wells.

PROJECT JUSTIFICATION

The Secondary Clarifier system of West Point Treatment Plant has seen significant degradation since original installations in the 1950's and 1970's. Small scale improvement projects have been completed over the lifespan of the system to upgrade and repair various components. Conditional assessment of the system has shown several portions of the clarifiers are in need of repair or replacement in order to continue to treat wastewater effectively and reliably in accordance with the regulated permit. Additionally, the hydraulic profile of the plant flow creates a restriction on secondary clarifier #2, resulting in premature diversion to the plant holding pond. Raising of the clarifier wall will allow increased treatment capacity through the clarifier while drastically reducing the risk of an overflow.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

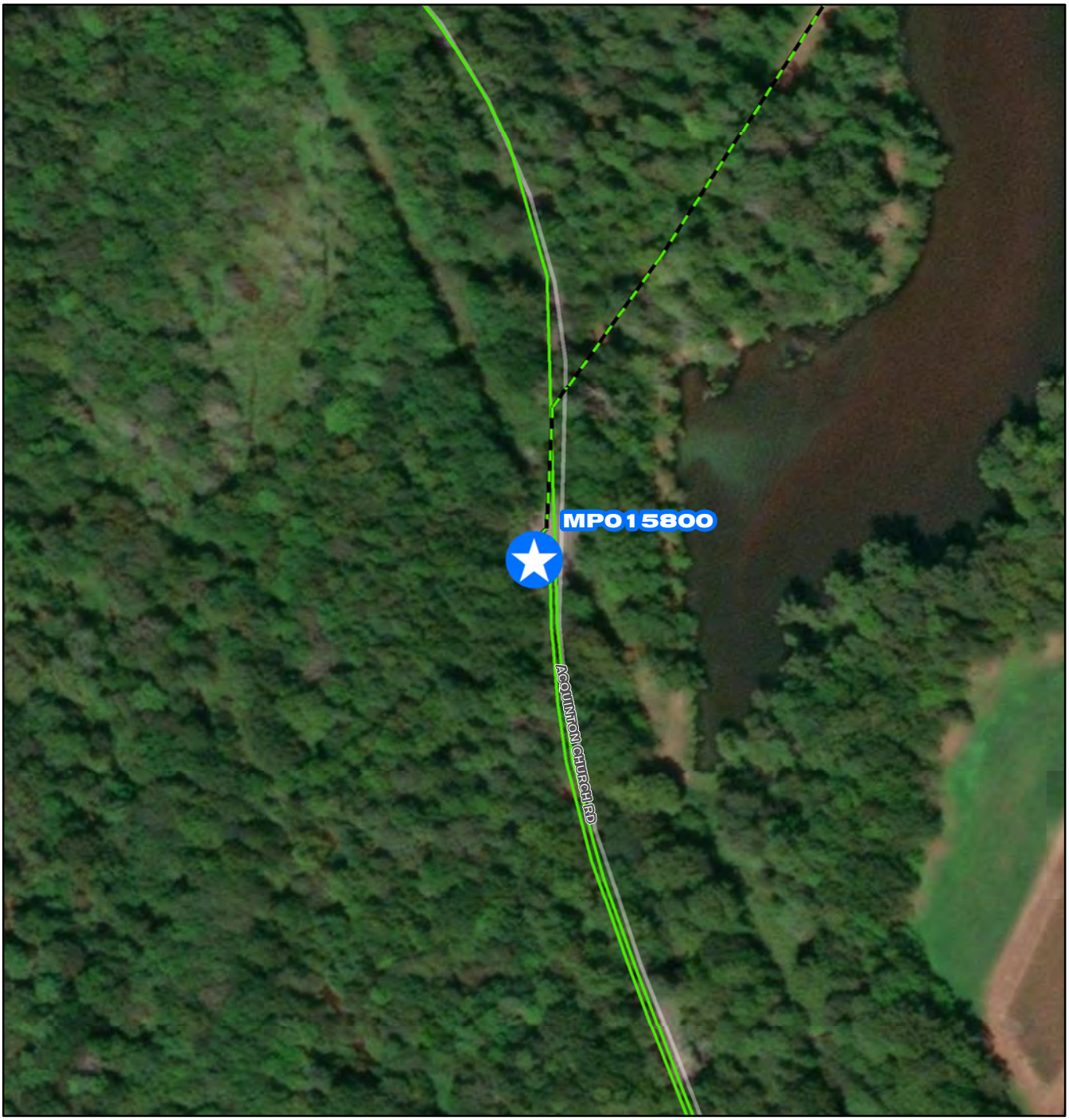
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Angela Weatherhead
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/03/2017
PER	07/31/2017
Design Delay	07/01/2022
Design	07/01/2022
Bid Delay	03/01/2023
PreConstruction	03/01/2023
Construction	06/01/2023
Closeout	08/01/2024

COST ESTIMATE

Cost Estimate Class:	
PrePlanning	$0
PER	$60,000
Design	$80,000
PreConstruction	$5,000
Construction	$700,000
Closeout	$5,000
Est. Program Cost	**$850,000**
Contingency Budget	$140,000
Est. Project Costs	**$990,000**



MP015800

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

MP015800

King William Main Pump Station Improvements

HRSD

N
W E
S

CIP Location

King William Main Pump Station Improvements

PR_MP015800

System: Mid-Peninsula
Type: Pump Stations

Driver Category: Aging Infrastructure/Rehabilitation
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
$1,439	$0	$87	$236	$1,116	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will provide improvements and/or replacement of the existing King William Main Pump Station (KWMPS) to include hydraulic capacity upgrades, a new metering vault and discharge monitoring, pre-cast power and controls building, replacement of the permanently mounted standby pump or installation of a new generator, new property acquisition and expansion of the existing site and parking area, and possibly a new valve vault.

PROJECT JUSTIFICATION

The KWMPS pumps all flow generated by King William County to the existing treatment plant. With capacity upgrades currently underway at the treatment plant, the pump station will also need to be upgraded to meet these new capacity requirements. The antiquated and outdoor existing timber structure, electrical controls and power rack, and other ancillary equipment will be replaced so that the design life of the pump station matches that of the new treatment plant. Additionally, the existing permanently mounted standby pump does not meet the capacity requirements and will either need to be upgraded or replaced with an emergency power supply in cases of outages for the station. This project will correct these deficiencies and bring this facility to current HRSD standards.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Santino Granato
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2022
PER	11/01/2022
Design Delay	07/01/2023
Design	07/01/2023
Bid Delay	03/01/2024
PreConstruction	03/01/2024
Construction	06/01/2024
Closeout	04/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$86,700
Design	$108,400
PreConstruction	$4,000
Construction	$1,235,600
Closeout	$4,000
Est. Program Cost	**$1,438,700**
Contingency Budget	$216,800
Est. Project Costs	**$1,655,500**