Williamsburg Treatment Plant

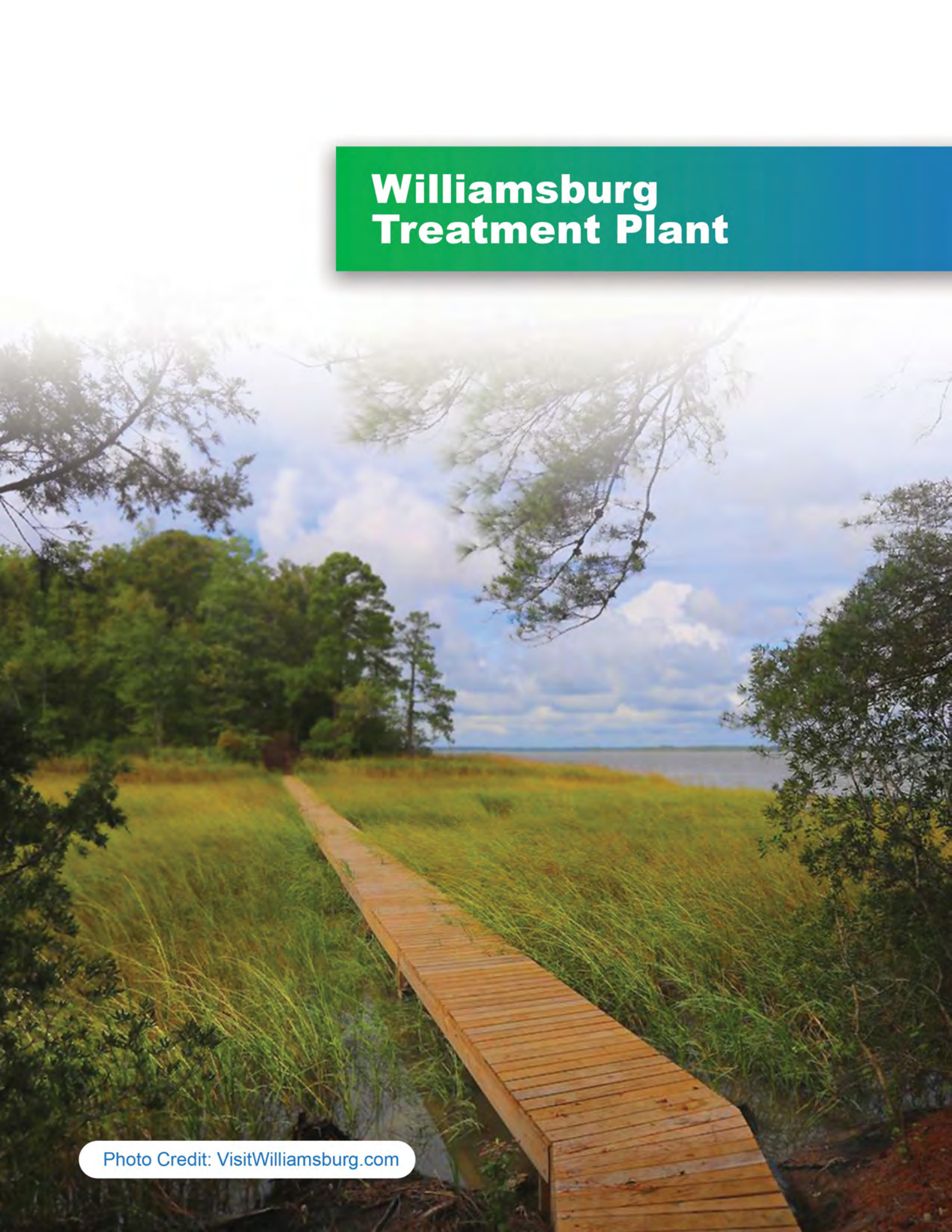
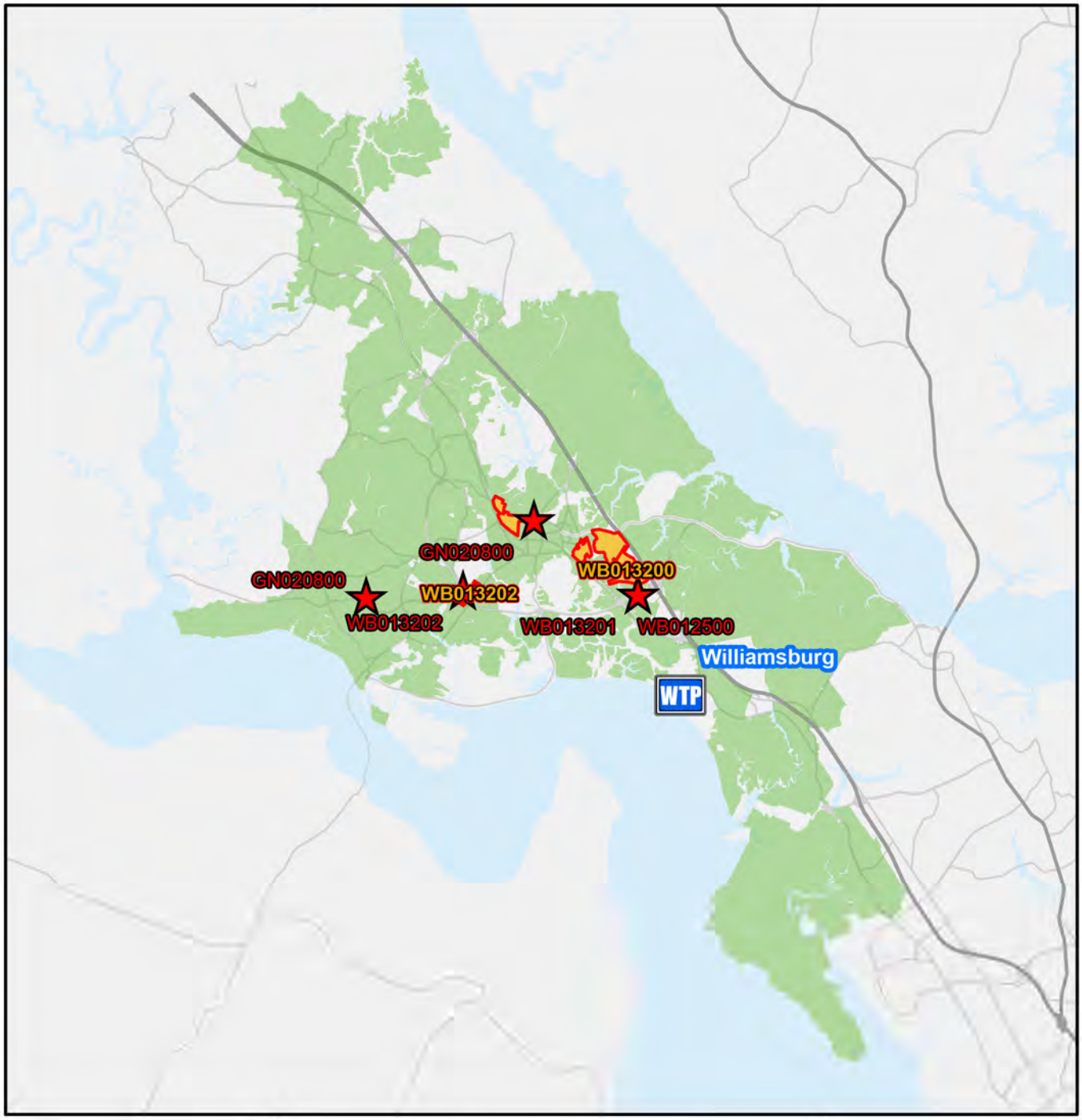


Photo Credit: VisitWilliamsburg.com



Legend

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

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

Williamsburg Treatment Plant Service Area CIP Projects

Treatment Plant Projects

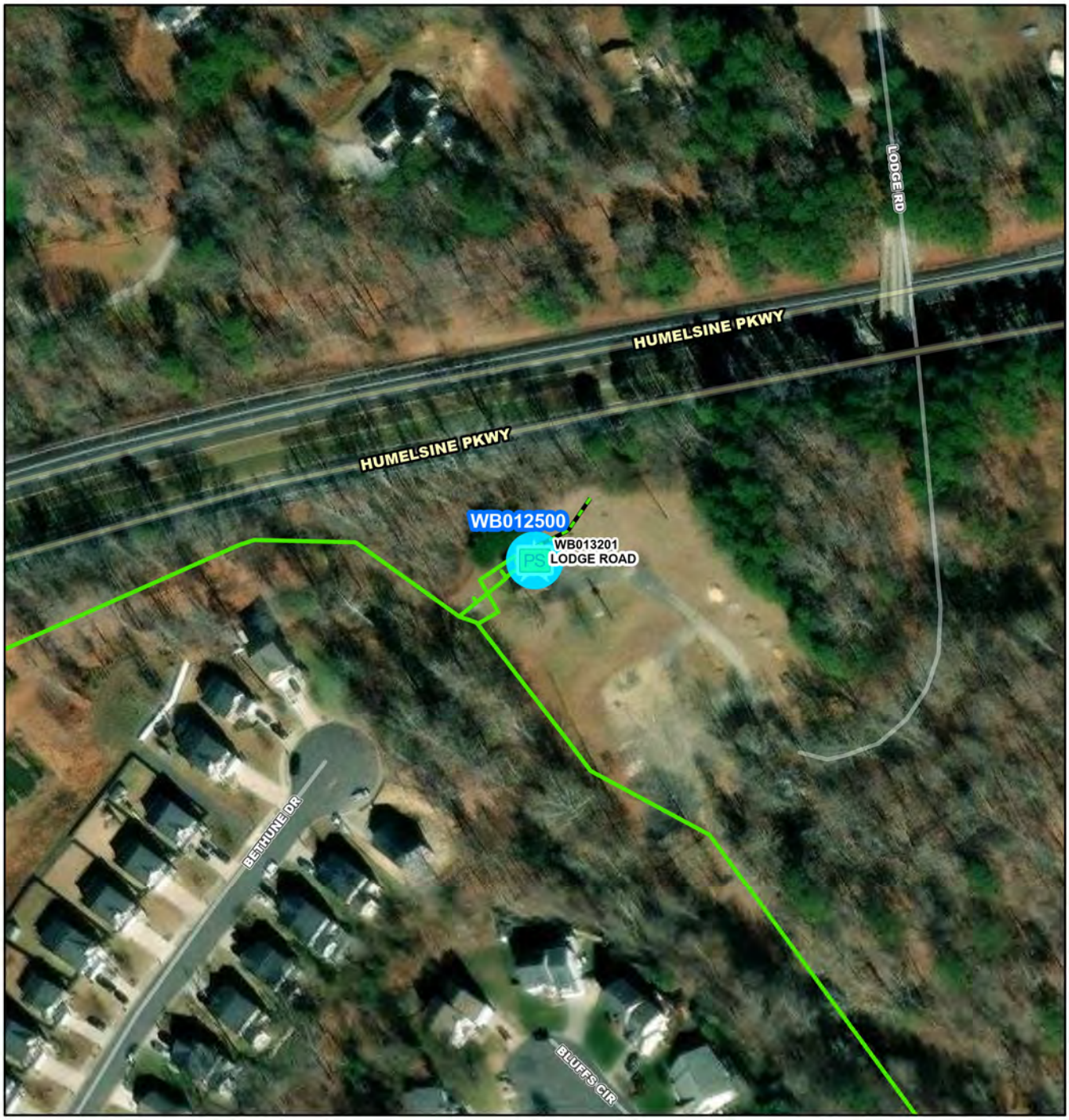
GN019800	WB013800	WB014100
WB013100	WB013810	
WB013400	WB013900	
WB013500	WB013910	
WB013600	WB014000	

HRSD

N

CIP Location

Service Area



WB012500

- 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 45 90 180 270 360 Feet

N
W E
S

CIP Location

WB012500

Lodge Road Pump Station Upgrades

HRSD

Lodge Road Pump Station Upgrades

PR_WB012500

System: Williamsburg
Type: Pump Stations

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$1,873	$0	$0	$0	$0	$49	$195	$1,015	$610	$3	$0	$0

PROJECT DESCRIPTION

The project will upgrade the existing Lodge Road Pump Station (PS) including all station pumps, controls, pipe, valves, and electrical infrastructure.

PROJECT JUSTIFICATION

This project will address needed capacity improvements within York County in an area that has current wet weather capacity challenges and newly proposed additional development flows. Lodge Road PS requires pumping upgrades to provide additional capacity. These improvements will require an electrical service upgrade and will drive replacement of the pumps, electrical equipment, generator, and controls.
Lodge Road PS receives flow from Rolling Hills PS, several York County Pump Stations, and a local collection system. During wet weather periods, the upstream collection system has experienced Sanitary Sewer Overflows (SSOs) related to pumping capacity. An interconnect was installed by North Shore Interceptors to allow Rolling Hills PS to discharge into the Lodge Road PS. The activation of the Route 199 Interim Pressure Reducing Station (PRS) along with the development projections in the service area require capacity enhancement due to increased flow and discharge pressure.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Chris Stephan
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	09/01/2027
PER	02/01/2028
Design Delay	07/01/2028
Design	09/01/2028
Bid Delay	05/01/2029
PreConstruction	05/01/2029
Construction	09/01/2029
Closeout	01/01/2031

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$48,588
Design	$192,158
PreConstruction	$6,072
Construction	$1,619,619
Closeout	$6,072
Est. Program Cost	**$1,872,509**
Contingency Budget	$404,905
Est. Project Costs	**$2,277,414**

WB013100

- 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 50 100 200 300 400 Feet

N
W E
S

CIP Location

WB013100

Williamsburg Treatment Plant Outfall Flow Control System Repairs

HRSD

Williamsburg Treatment Plant Outfall Flow Control System Repairs

PR_WB013100

System: Williamsburg
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$5,348	$1,421	$3,923	$4	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace worn out flow control and isolation valves on the outfall flow control system used to maintain water level in the chlorine contact tanks. To replace valves, the contractor will need to isolate the outfall to prevent river water from entering the flow control vault.

PROJECT JUSTIFICATION

This project will ensure proper flow control from the chlorine contact tanks to the outfall and maintain the required water level in the chlorine contact tanks by replacing worn out flow control valves. It will also replace leaking isolation valves needed to isolate flow control valves for maintenance and repair.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

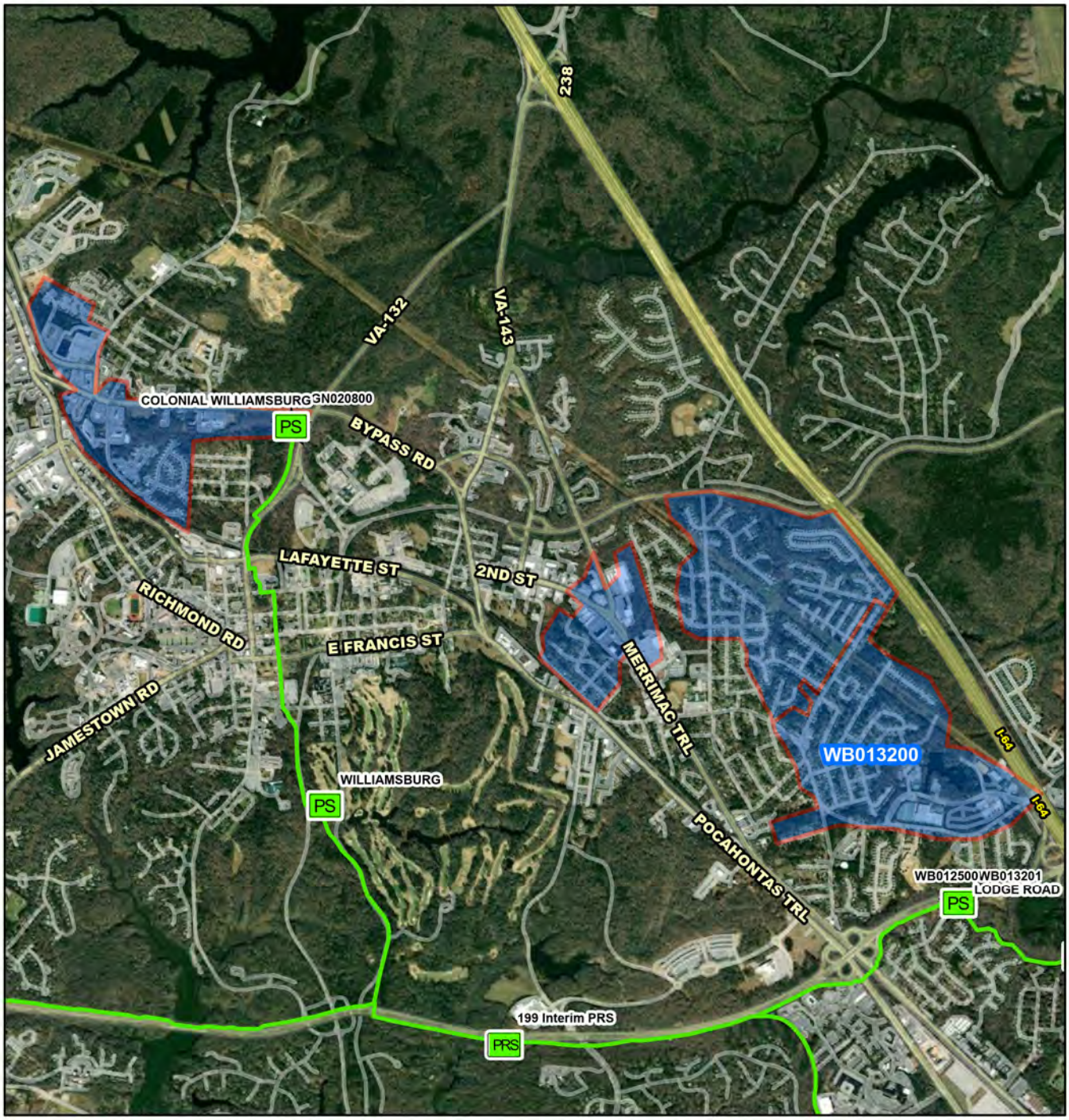
Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Ann Copeland
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2021
PER	08/01/2021
Design Delay	10/01/2021
Design	05/01/2022
Bid Delay	10/01/2023
PreConstruction	10/01/2023
Construction	04/01/2024
Closeout	05/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 1**
PrePlanning	$0
PER	$0
Design	$226,320
PreConstruction	$17,611
Construction	$5,098,655
Closeout	$5,000
Est. Program Cost	**$5,347,586**
Contingency Budget	$254,933
Est. Project Costs	**$5,602,519**



WB013200

- 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 1,000 2,000 4,000 6,000 8,000 Feet

WB013200

York County I-I Reduction

HRSD

N
W E
S

CIP Location

York County I-I Reduction

PR_WB013200

System: Williamsburg
Type: Locality and Private Property

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$31,602	$0	$1,581	$7,861	$8,864	$8,864	$4,432	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

YORK-001 Comprehensive I/I Reduction Plan; YORK-003 Data-Driven I/I Reduction Plan; YORK-006 Comprehensive I/I Reduction Plan; YORK-006 Gravity Main Improvement installing influent pipe to wet well; YORK-229-2 Comprehensive I/I Reduction Plan

PROJECT JUSTIFICATION

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

FUNDING TYPE

Funding Type: Cash

CONTACTS

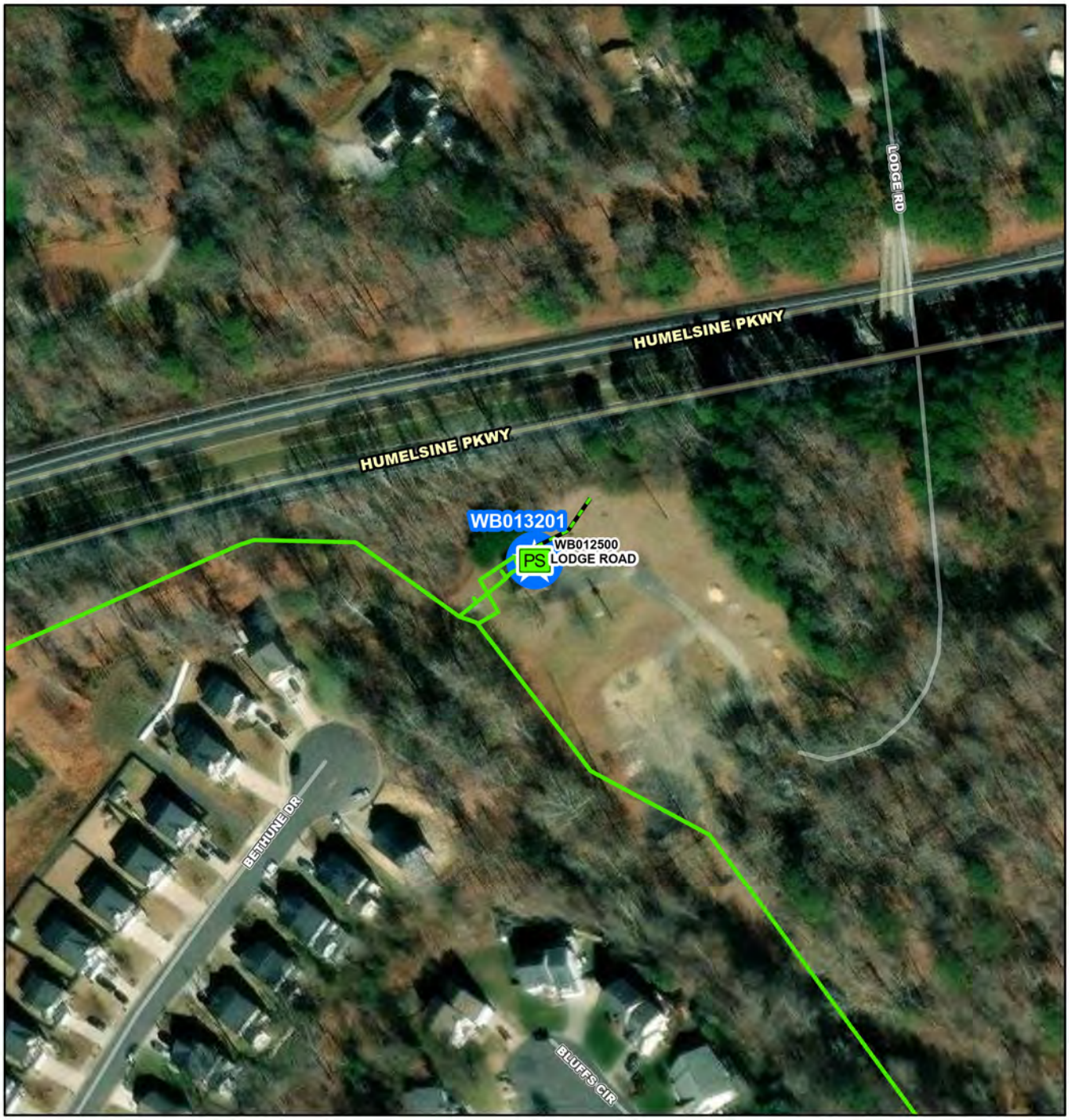
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Jeff Scarano
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	09/01/2024
Design Delay	06/01/2025
Design	06/01/2025
Bid Delay	01/01/2026
PreConstruction	01/01/2026
Construction	01/01/2026
Closeout	01/01/2029

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$10,000
PER	$1,000,000
Design	$4,000,000
PreConstruction	$0
Construction	$26,592,400
Closeout	$0
Est. Program Cost	**$31,602,400**
Contingency Budget	$7,965,600
Est. Project Costs	**$39,568,000**



WB013201

- 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 45 90 180 270 360 Feet

WB013201

Lodge Road Pump Station Extended Wet Well

HRSD

N
W E
S

CIP Location

Lodge Road Pump Station Extended Wet Well

PR_WB013201

System: Williamsburg
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	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$221	$0	$0	$9	$14	$23	$51	$83	$41	$0	$0	$0

PROJECT DESCRIPTION

Increase Lodge Road Pump Station wet well storage volume by ~0.14 MG.

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

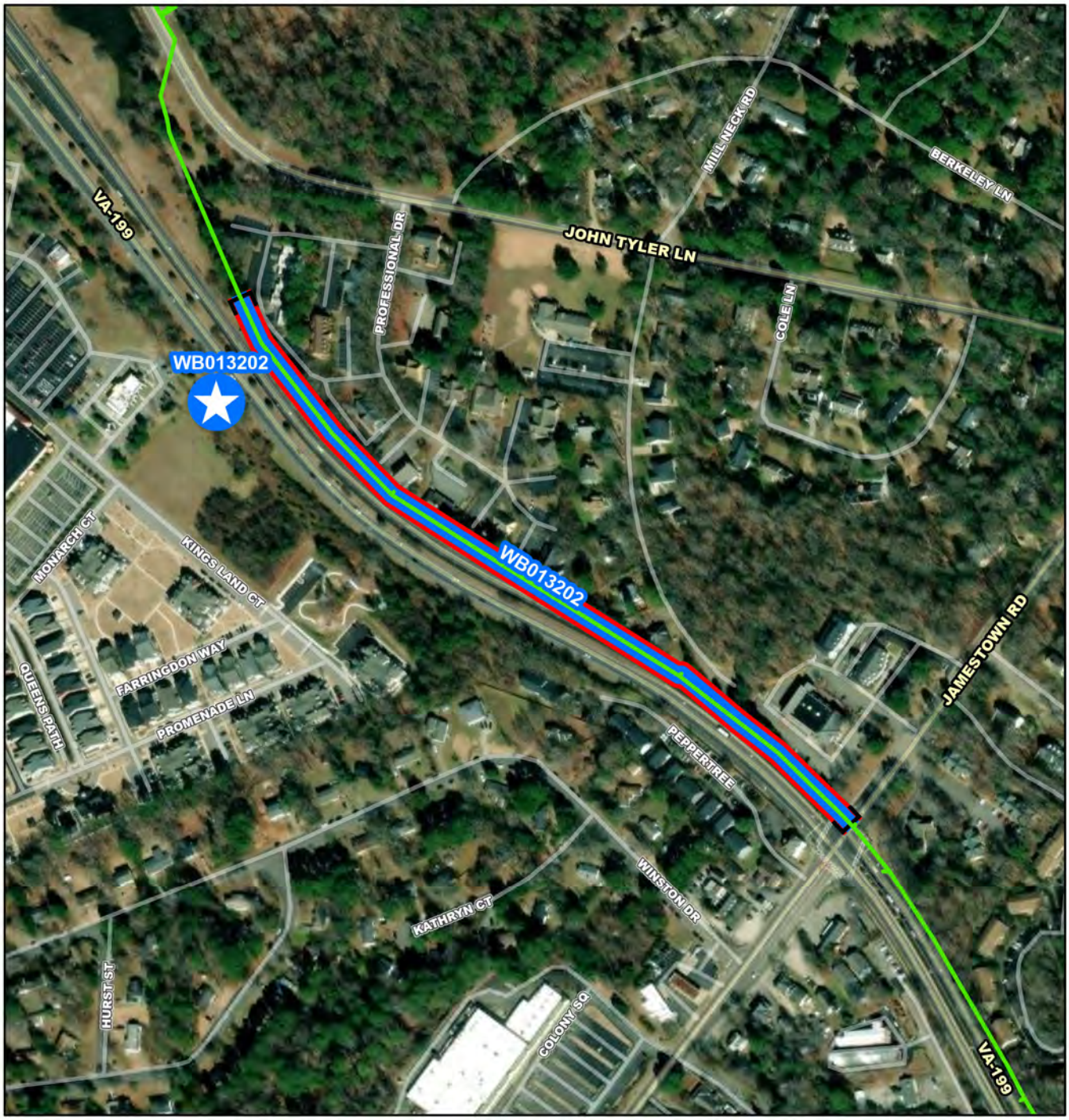
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: Jeff Layne
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	11/01/2025
PER	11/01/2026
Design Delay	11/01/2027
Design	11/01/2027
Bid Delay	11/01/2028
PreConstruction	11/01/2028
Construction	01/01/2029
Closeout	01/01/2031

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$13,800
PER	$13,800
Design	$27,600
PreConstruction	$0
Construction	$165,600
Closeout	$0
Est. Program Cost	**$220,800**
Contingency Budget	$55,200
Est. Project Costs	**$276,000**



WB013202

- 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

0 120 240 480 720 960 Feet

N
W E
S

CIP Location

WB013202

Williamsburg Crossing Pressure Reducing Station, Force Main and Storage Tank Improvements

HRSD

Williamsburg Crossing PRS, Force Main and Storage Tank Improvements

PR_WB013202

System: Williamsburg
Type: Offline Storage

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	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$7,193	$0	$0	$0	$0	$212	$423	$423	$940	$1,199	$1,199	$2,797

PROJECT DESCRIPTION

High Priority Project (HPP) Round 2 Project 1 consists of the following Regional Wet Weather Management Plan (RWWMP) Project ID and general description: WB-RWWMP-02 Williamsburg Crossing Pressure Reducing Station, Force Main and Storage Tank

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

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

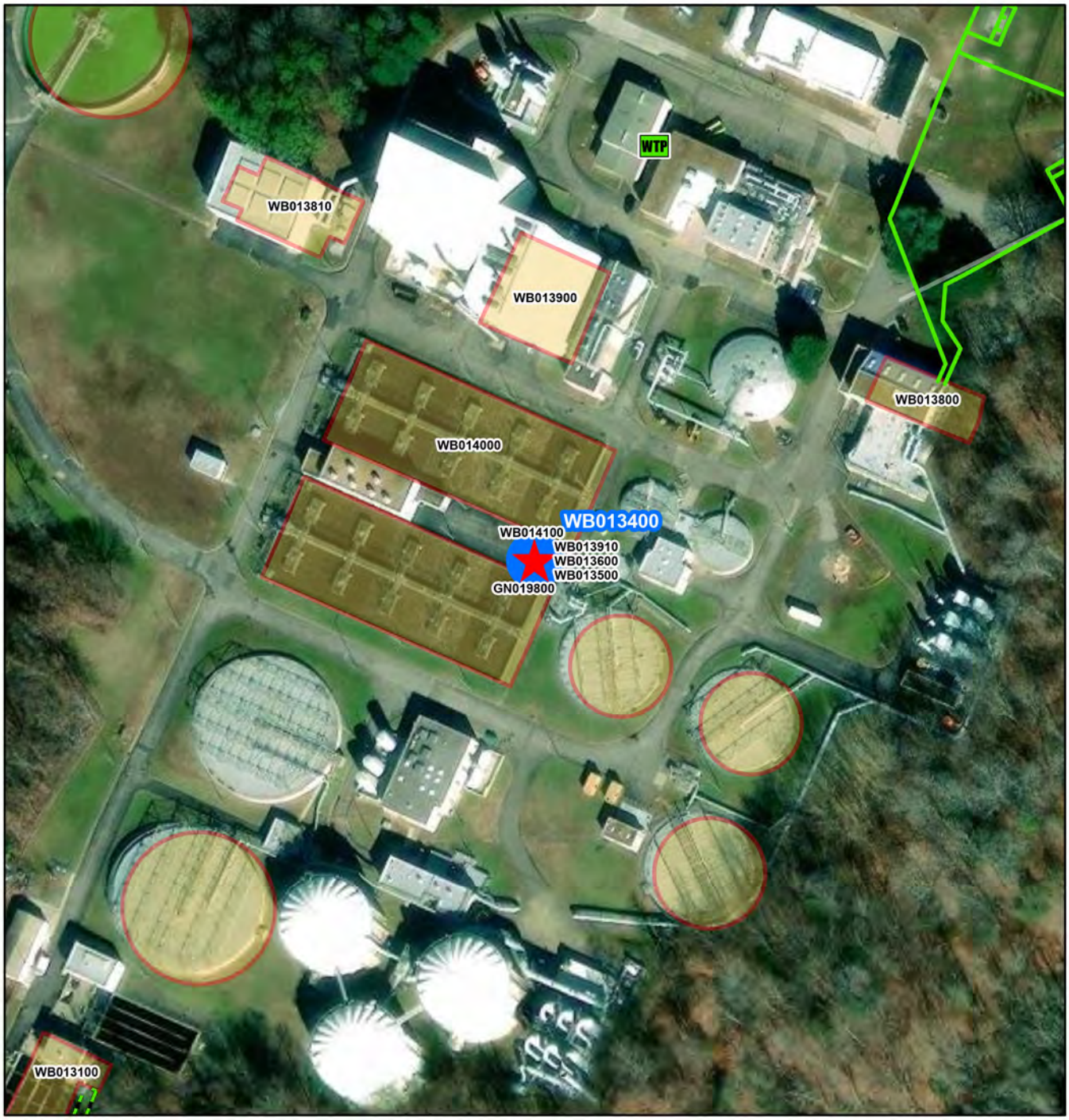
Contacts-Requesting Dept: Engineering
Contacts-Dept Contacts: John Dano
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	01/01/2028
PER	11/01/2030
Design Delay	11/01/2031
Design	11/01/2031
Bid Delay	11/01/2033
PreConstruction	11/01/2033
Construction	01/01/2034
Closeout	01/01/2037

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$1,198,800
PER	$1,198,800
Design	$2,397,600
PreConstruction	$0
Construction	$14,385,600
Closeout	$0
Est. Program Cost	**$19,180,800**
Contingency Budget	$4,795,200
Est. Project Costs	**$23,976,000**



WB013400

- 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 45 90 180 270 360 Feet

N
W E
S

CIP Location

WB013400

Williamsburg Treatment Plant Headworks Influent and Effluent Pipe Rehabilitation

HRSD

Williamsburg Treatment Plant Headworks Influent and Effluent Pipe Rehabilitation

PR_WB013400

System: Williamsburg
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$3,087	$0	$270	$1,522	$1,295	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will include work to be completed at four locations upstream from the Williamsburg Treatment Plant headworks. The first location is on Ron Springs Road, near the intersection of Ron Springs Road and Magruder Avenue. The work to be completed at this location will include removing six valves, installing six new valves, and reconfiguring the alignment of the existing piping. The second location for this project will replace a non-operational main line valve at the Williamsburg Treatment Plant control valve vault (WB1001A-3). The third location will replace a section (approximately 350 linear feet) of the 30-inch prestressed concrete pressure pipe (PCCP) force main (NF-006) between the Kingsmill control valve vault and the Williamsburg Treatment Plant headworks. The fourth location will be the addition of six (6) 36-inch plug valves, two (2) 36-inch tees, and piping for two new emergency pump connections on each influent pipes just upstream the headworks building.

PROJECT JUSTIFICATION

Location 1: This phase will facilitate system feasibility for sending flow between the Williamsburg Treatment Plant and James River Treatment Plant service areas by reconstructing the interconnect for NF-007, NF-172, and NF-192. Location 2: The mainline valve WB1001A-3, the bypass for the Williamsburg Treatment Plant control valve vault, is non-operational. If a failure occurs at the control valve, WB1001A-3 is the only valve that could be used to avoid a catastrophic situation. Location 3: The replacement of approximately 350 linear feet of 36-inch PCCP is necessary due to potential conditional issues. This pipeline was installed in the 1970s and there was a period of time when the Williamsburg Treatment Plant injected chemicals into this section of piping. The interior condition of the piping is unknown, but the entirety of the upstream pipe was replaced in 2016. Location 4: In September 2020, the York River Treatment Plant experienced a catastrophic failure on the gravity pipeline that discharges from the grit removal building to the primary clarifiers. If an emergency pump connection were present at this location, the emergency repair would have been greatly simplified, less costly, and would have reduced the amount of sewage not recovered. These new emergency connections at the Williamsburg Treatment Plant could also be used for condition assessment work at the headworks and provide cost savings for future projects.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

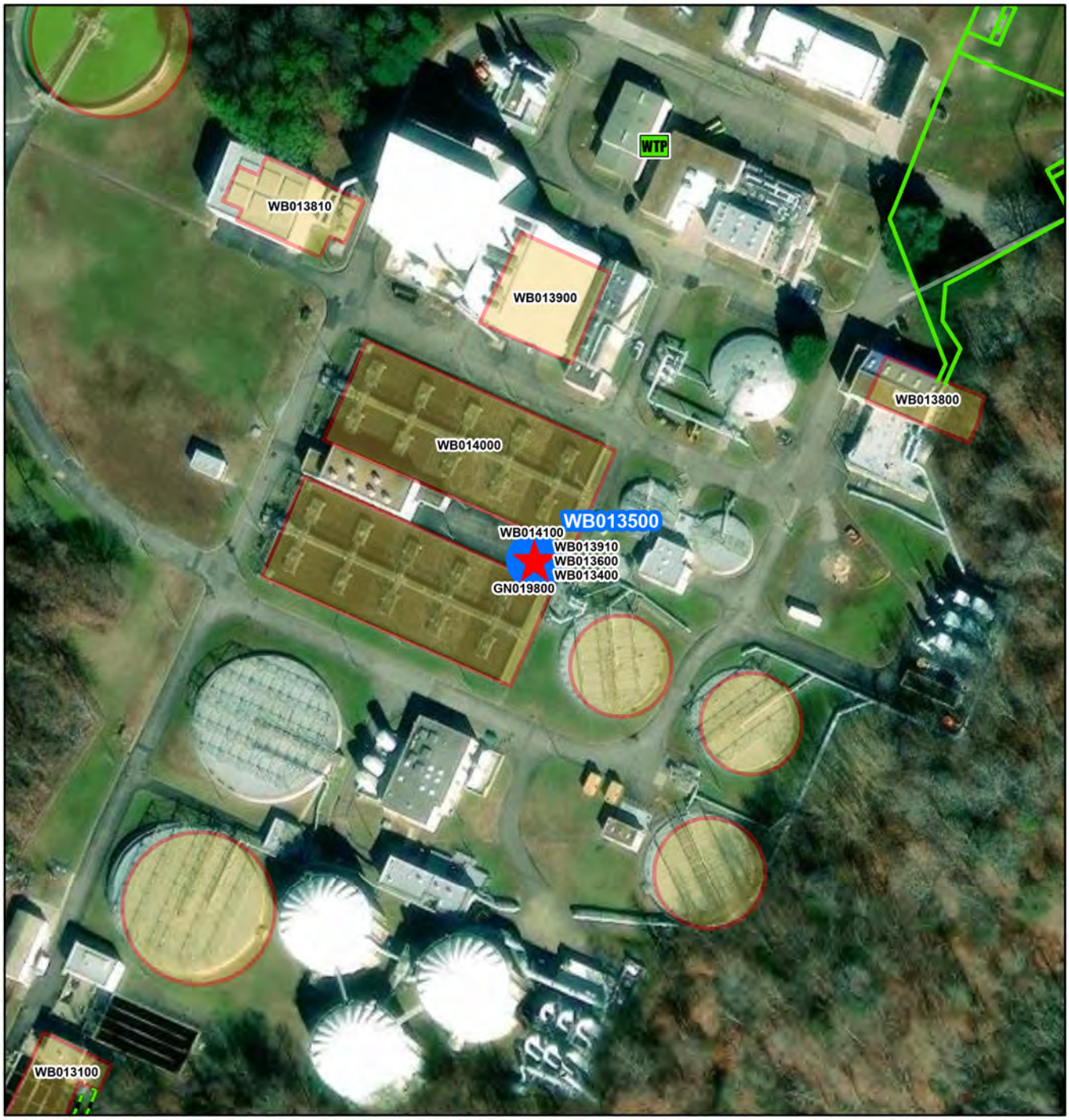
Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Michael Johnson
Contacts-Managing Dept: Operations-Interceptors

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	09/01/2024
Design Delay	03/01/2025
Design	03/01/2025
Bid Delay	12/01/2025
PreConstruction	12/01/2025
Construction	02/01/2026
Closeout	12/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$92,000
Design	$400,000
PreConstruction	$5,000
Construction	$2,590,000
Closeout	$0
Est. Program Cost	**$3,087,000**
Contingency Budget	$513,000
Est. Project Costs	**$3,600,000**



WB013500

- 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 45 90 180 270 360 Feet

WB013500

Williamsburg Treatment Plant Intermediate Clarifier Wet Weather and Phosphorus Removal System Improvements

HRSD

N
W E
S

CIP Location

WBTP Intermediate Clarifier Wet Weather & Phosphorus Removal System Improvements

PR_WB013500

System: Williamsburg
Type: Wastewater Treatment

Driver Category: Nutrient Reduction
Project Phase: Pre Planning
Regulatory: Nutrient Reduction

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$1,227	$120	$385	$721	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will recommend process modifications, cost and an implementation schedule for wet weather flow management and phosphorus removal optimization by evaluating a method to convey intermediate clarifier effluent (ICE) to the chlorine contact tanks to manage secondary clarifier solids loading during wet weather conditions. This project will also evaluate options to convey and equally split ICE to each of four aeration tanks for improved phosphorus removal.

PROJECT JUSTIFICATION

Williamsburg Treatment Plant (WBTP) is currently rated at 45 million gallons per day (MGD) peak hydraulic per original design documents. In 2016, as part of the Regional Wet Weather Management Plan evaluation work, Brown and Caldwell performed hydraulic modeling of WBTP which showed that the plant is capable of handling 55 MGD from a hydraulic standpoint. The problem with the 55 MGD condition is that process modeling demonstrated that an additional secondary clarifier would be needed to avoid significant solids washout during peak flow events. Recent very high peak flow events, which resulted from interceptor system upgrades, have demonstrated that the conclusion of the 2016 evaluation was indeed accurate. This project provides a cost-effective solution for better managing wet weather flows and secondary clarifier solids loading at WBTP and avoids the construction of an additional secondary clarifier or storage tanks in the interceptor system.
The intermediate clarifier effluent contains nitrate/nitrite, has a low chemical oxygen demand, and is high in dissolved oxygen. These wastewater characteristics degrade the performance of biological phosphorus removal when returned to its current location upstream of aeration tank anaerobic zones. Returning intermediate clarifier effluent to the first anoxic zone of each aeration tank will bypass the anaerobic zones and improve biological phosphorus removal stability. Improved biological phosphorus removal is needed to meet more stringent regulatory phosphorus removal requirements in 2028.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

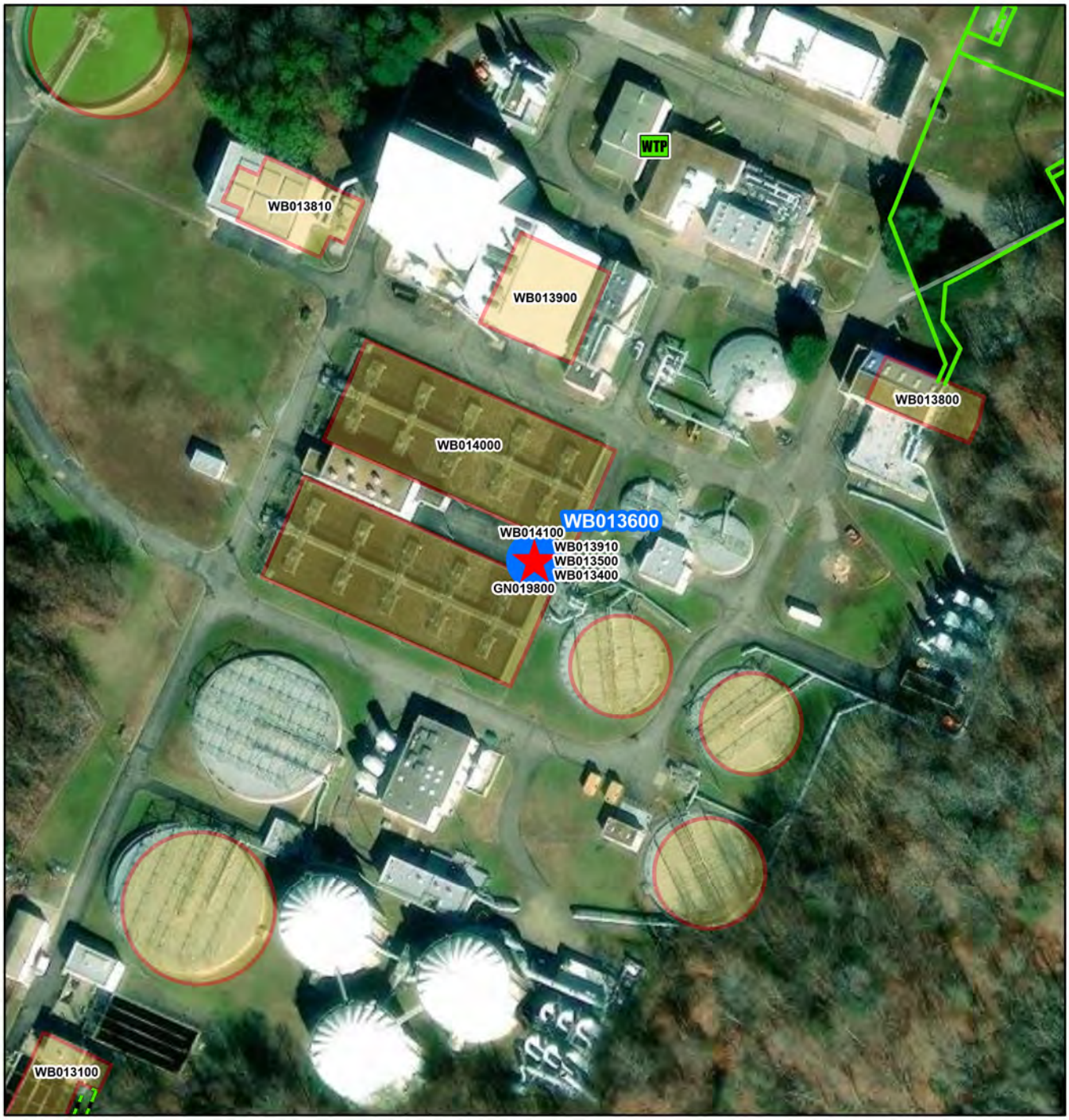
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Beatriz Patino
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	08/01/2023
PER	01/01/2025
Design Delay	09/01/2025
Design	10/01/2025
Bid Delay	04/01/2026
PreConstruction	05/01/2036
Construction	07/01/2036
Closeout	09/01/2037

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$300,000
PER	$273,550
Design	$653,100
PreConstruction	$80,850
Construction	$8,936,550
Closeout	$80,850
Est. Program Cost	**$10,324,900**
Contingency Budget	$2,000,000
Est. Project Costs	**$12,324,900**



WB013600

- 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 45 90 180 270 360 Feet

N
W E
S

CIP Location

WB013600

Williamsburg Treatment Plant Influent Loading Reduction Improvements

HRSD

Williamsburg Treatment Plant Influent Loading Reduction Improvements

PR_WB013600

System: Williamsburg
Type: Nutrient Reduction

Driver Category: Nutrient Reduction
Project Phase: Pre Planning
Regulatory: Nutrient Reduction

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$33,040	$600	$2,025	$4,232	$5,063	$7,040	$7,040	$7,040	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will recommend process modifications, costs, and an implementation schedule for a loss of brewery load scenario at the Williamsburg Treatment Plant. It will also provide recommendations addressing denitrification carbon needs for current reduced brewery load events as well as unpredictable installation of pretreatment at the brewery.

PROJECT JUSTIFICATION

Brewery load reductions are increasing in frequency, impacting nutrient removal. This study is needed to provide recommended process modifications along with costs for cost-effectively providing nutrient removal compliance in the event there is no or significantly decreased brewery load. The study is also needed to address current periodic brewery load reductions impacting nutrient removal.

FUNDING TYPE

Funding Type: Cash

CONTACTS

Contacts-Requesting Dept: Operations
Contacts-Dept Contacts: Beatriz Patino
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	08/01/2023
PER	01/10/2025
Design Delay	09/01/2025
Design	10/01/2025
Bid Delay	12/01/2026
PreConstruction	02/01/2027
Construction	04/01/2027
Closeout	05/01/2029

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$1,500,000
PER	$1,500,000
Design	$6,000,000
PreConstruction	$40,000
Construction	$24,000,000
Closeout	$0
Est. Program Cost	**$33,040,000**
Contingency Budget	$8,260,000
Est. Project Costs	**$41,300,000**

North Trunk Interceptor Force Main Part A (NF-002) Replacement

PR_WB013700

System: Williamsburg
Type: Pipelines

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$173	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$173

PROJECT DESCRIPTION

This project will replace approximately 1,200 liner feet of 24-inch ductile iron pipe. The specific section of piping to be replaced is located along Route 199 in Williamsburg, Virginia.

PROJECT JUSTIFICATION

During the Fiscal Year 2024, condition assessment work was completed on NF-002. It was discovered during this investigation that this section of NF-002 had excessive pipe wall loss due to interior and exterior corrosion. This discovery and the location of this section of the piping from station 008+00 to 020+00 are the basis for replacing the force main.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Interceptors
Contacts-Dept Contacts: Michael Johnson
Contacts-Managing Dept: Operations-Interceptors

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2033
PER	09/01/2033
Design Delay	03/01/2034
Design	03/01/2034
Bid Delay	12/01/2034
PreConstruction	12/01/2034
Construction	02/01/2035
Closeout	11/01/2035

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$84,000
Design	$200,000
PreConstruction	$5,000
Construction	$1,700,000
Closeout	$5,000
Est. Program Cost	**$1,994,000**
Contingency Budget	$400,000
Est. Project Costs	**$2,394,000**

WB013800

- 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 50 100 200 300 400 Feet

N
W E
S

CIP Location

WB013800

Williamsburg Treatment Plant Distributed Control System Improvements

HRSD

Williamsburg Treatment Plant Distributed Control System Improvements

PR_WB013800

System: Williamsburg
Type: Software and Technology

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$4,960	$0	$0	$0	$40	$475	$4,066	$379	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace and install Distributed Control System (DCS) cabinets in the headworks and odor control station, and a Remote Input and Output (RIO) control panel in the Fat, Oil, and Grease building. Scope includes acquisition of equipment, installation, and programming.

PROJECT JUSTIFICATION

DCS and RIO panels were installed in the 1980s and early 1990s and need to be upgraded to current technology standards.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-E&I
Contacts-Dept Contacts: Sherman Pressey
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	08/01/2026
PER	11/01/2026
Design Delay	05/01/2027
Design	07/01/2027
Bid Delay	04/01/2028
PreConstruction	06/01/2028
Construction	08/01/2028
Closeout	08/01/2029

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$10,000
PER	$30,000
Design	$470,000
PreConstruction	$10,000
Construction	$4,430,000
Closeout	$10,000
Est. Program Cost	**$4,960,000**
Contingency Budget	$1,232,500
Est. Project Costs	**$6,192,500**

WB013810

- 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

WB013810

Williamsburg Treatment Plant Distributed Control System Improvements (Gravity Thickener Building)

HRSD

N
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CIP Location

WBTP Distributed Control System Improvements (Gravity Thickener Building)

PR_WB013810

System: Williamsburg
Type: Software and Technology

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$571	$0	$571	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace and install the Distributed Control System (DCS) cabinet in the gravity belt thickening building. Scope includes installation and programming. The DCS control panel has already been acquired due the deteriorated condition of the equipment.

PROJECT JUSTIFICATION

DCS and RIO panels were installed in the 1980s and early 1990s and need to be upgraded to current technology standards. The gravity thickener building panel is in a deteriorated condition.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Robert Rutherford
Contacts-Managing Dept: Operations-E&I

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	07/01/2024
Design Delay	07/01/2024
Design	07/01/2024
Bid Delay	07/01/2024
PreConstruction	07/01/2024
Construction	07/01/2024
Closeout	07/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 4**
PrePlanning	$0
PER	$0
Design	$0
PreConstruction	$0
Construction	$571,322
Closeout	$0
Est. Program Cost	**$571,322**
Contingency Budget	$150,000
Est. Project Costs	**$721,322**

WB013900

- 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 50 100 200 300 400 Feet

N
W E
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CIP Location

WB013900

Williamsburg Treatment Plant Solids Handling Improvements

HRSD

Williamsburg Treatment Plant Solids Handling Improvements

PR_WB013900

System: Williamsburg
Type: Biosolids

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$23,637	$0	$8	$1,401	$2,306	$2,169	$6,219	$6,219	$5,270	$44	$0	$0

PROJECT DESCRIPTION

This project will rehabilitate both 48-year-old incinerators and address dewatering building deficiencies. To facilitate required electrical upgrades, this project will also replace motor control centers previously identified for replacement due to end of useful life. Dewatering building deficiencies that will be addressed include replacing the dewatered cake conveyor system, repairing and improving the building ventilation system, protecting centrifuge controls, and providing adequate odor control.

PROJECT JUSTIFICATION

The existing burners and controls are obsolete and finding replacement parts is difficult. The burners also require manual intervention when lighting. The new burners will be more fuel efficient, provide reliable, remote lighting from the plant's distributed control system, and have improved controls. Overhaul of the by-pass stacks and dampers and installation of the feed chute extensions will better seal the incinerators, keeping air out and resulting in less fuel usage and improved emissions control. The THC CEM system is obsolete and unreliable and is not able to meet regulatory EPA Office of Water's Part 503 Subpart E requirements for monitoring. It is being replaced in an earlier project. Dewatered cake conveyors in the dewatering building are difficult to access for maintenance and require expensive, contract rigging equipment for maintenance of screw conveyors. Failure of any of nine screw conveyors results in the shut-down of dewatering and incinerator operations. Hydrogen sulfide (H2S) gases are not adequately removed from the building resulting in the corrosion of ventilation duct and equipment and centrifuge and other controls. Employees carry H2S meters while in the building and evacuate when H2S levels are high.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

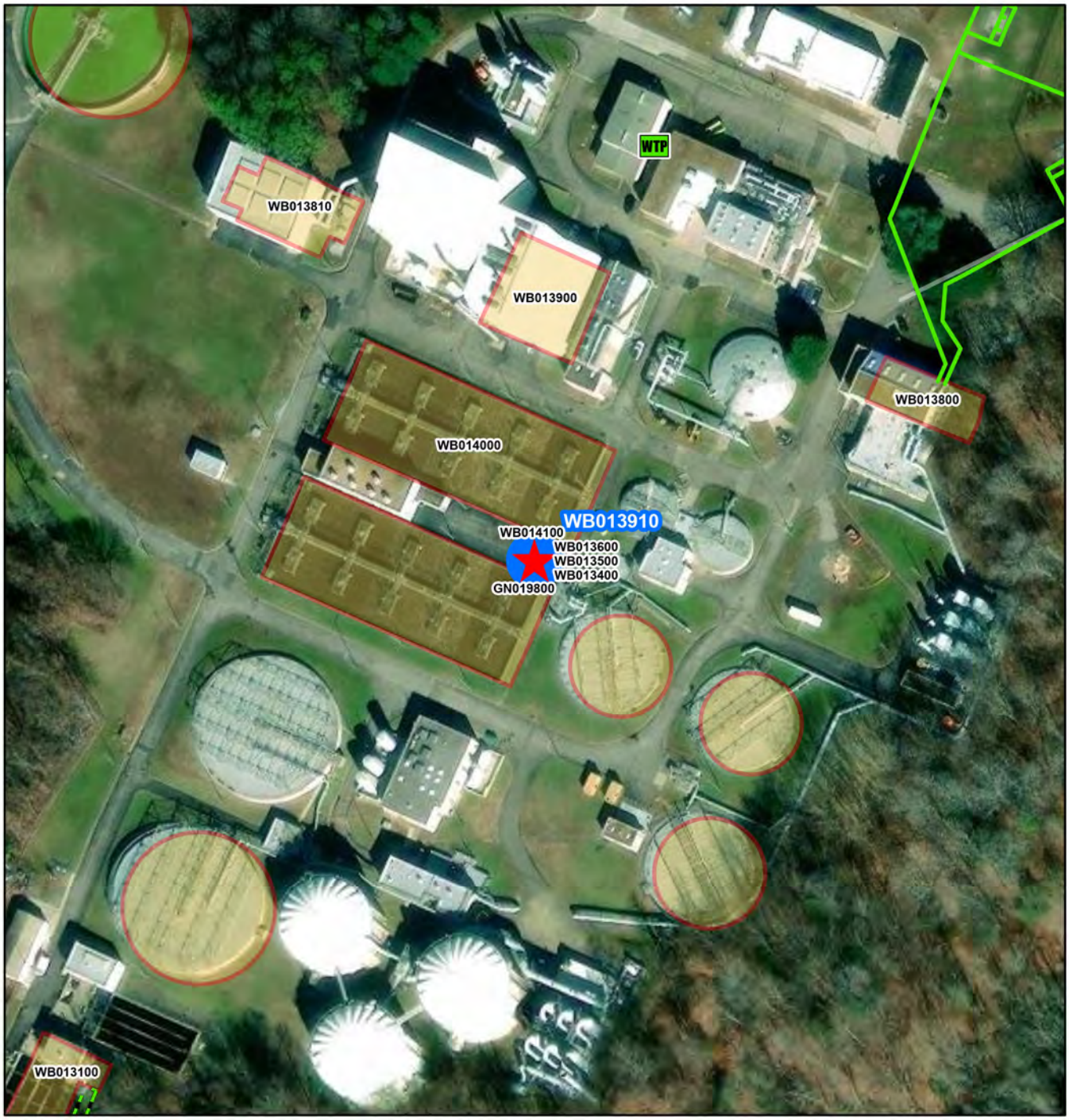
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Robert Rutherford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	02/01/2025
PER	08/01/2025
Design Delay	05/01/2026
Design	07/01/2026
Bid Delay	12/01/2027
PreConstruction	02/01/2028
Construction	05/01/2028
Closeout	05/01/2031

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$10,000
PER	$1,399,349
Design	$3,266,394
PreConstruction	$172,166
Construction	$18,657,700
Closeout	$131,484
Est. Program Cost	**$23,637,093**
Contingency Budget	$5,980,000
Est. Project Costs	**$29,617,093**



WB013910

- 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 45 90 180 270 360 Feet

WB013910

Williamsburg Treatment Plant Emissions Monitoring System

HRSD

N
W E
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CIP Location

Williamsburg Treatment Plant Emissions Monitoring System

PR_WB013910

System: Williamsburg
Type: Biosolids

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$500	$0	$500	$0	$0	$0	$0	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will replace the total hydrocarbon (THC) continuous emissions monitoring (CEM) system.

PROJECT JUSTIFICATION

The THC CEM system is obsolete and unreliable and is not able to meet regulatory EPA Office of Water's Part 503 Subpart E requirements for monitoring.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Robert Rutherford
Contacts-Managing Dept: Operations-E&I

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	07/01/2024
Design Delay	07/01/2024
Design	07/01/2024
Bid Delay	07/01/2024
PreConstruction	07/01/2024
Construction	07/01/2024
Closeout	07/01/2025

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$0
PER	$0
Design	$0
PreConstruction	$0
Construction	$500,000
Closeout	$0
Est. Program Cost	**$500,000**
Contingency Budget	$150,000
Est. Project Costs	**$650,000**

WB014000

- 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 90 180 360 540 720 Feet

WB014000

Williamsburg Treatment Plant Systems Coatings Rehabilitation

HRSD

N
W E
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CIP Location

Williamsburg Treatment Plant Systems Coatings Rehabilitation

PR_WB014000

System: Williamsburg
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$4,285	$0	$458	$1,063	$1,063	$1,063	$640	$0	$0	$0	$0	$0

PROJECT DESCRIPTION

This project will coat steel structures in primary clarifiers #1 and #3, intermediate clarifier #2, and secondary clarifier #1. Concrete will be coated in grit tank #1, primary clarifier #2, secondary clarifiers #1, #2, and #3. Coating of steel and fiberglass pipe will be performed in all four aeration tanks. Fiberglass odor control scrubbers and duct work along with steel support structures throughout the treatment plant will be coated.

PROJECT JUSTIFICATION

Coatings on steel structures has failed and is peeling off. Concrete coating in grit tank #1 is past its useful life and concrete is corroding due to high hydrogen sulfide levels. Concrete on secondary clarifiers #1, #2, and #3 requires a protective coating to prevent further erosion of concrete from wear and algae growth. The concrete coating in the bottom of primary clarifier #2 was past its useful life, spalled, and had to be removed to prevent the rake mechanism from jamming. Coatings on fiberglass scrubbers, duct work, and pipe is beyond its useful life, exposing fiberglass threads.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

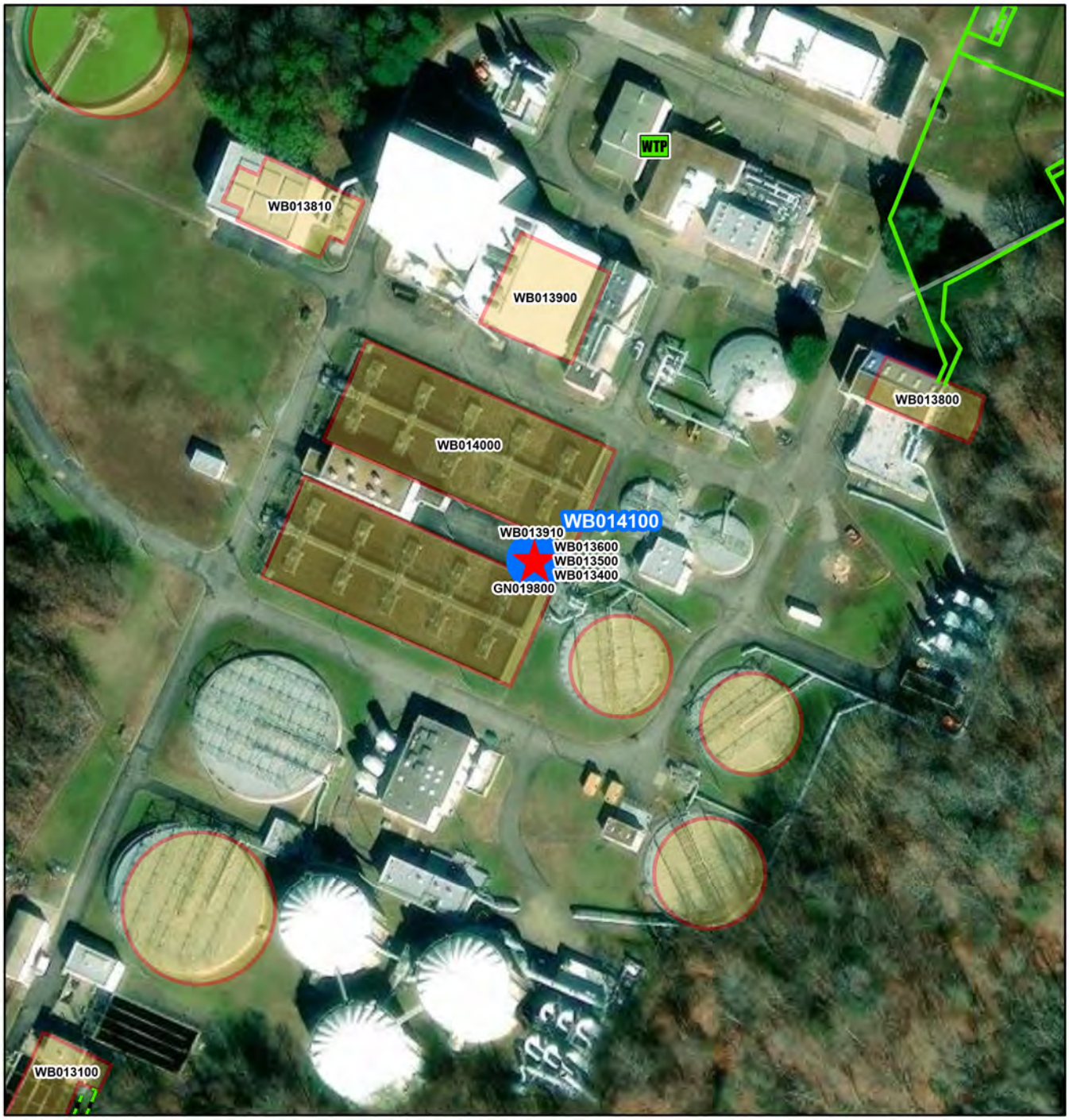
Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Ray Holmes
Contacts-Managing Dept: Operations-Treatment

PROPOSED SCHEDULE START DATE

PrePlanning	07/01/2024
PER	09/01/2024
Design Delay	09/01/2024
Design	09/01/2024
Bid Delay	09/01/2024
PreConstruction	11/01/2024
Construction	02/01/2025
Closeout	02/01/2029

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$5,000
PER	$0
Design	$0
PreConstruction	$10,000
Construction	$4,250,000
Closeout	$20,000
Est. Program Cost	**$4,285,000**
Contingency Budget	$428,500
Est. Project Costs	**$4,713,500**



WB014100

- 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 45 90 180 270 360 Feet

N W E S

CIP Location

WB014100

Williamsburg Treatment Plant FOG and Cake Receiving Improvements

HRSD

Williamsburg Treatment Plant FOG and Cake Receiving Improvements

PR_WB014100

System: Williamsburg
Type: Wastewater Treatment

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

PROGRAM CASH FLOW PROJECTION ($,000)

Prog Cost	Exp to Previous Year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
$31,330	$0	$0	$0	$8	$1,857	$3,056	$2,876	$8,244	$8,244	$6,986	$58

PROJECT DESCRIPTION

This project will construct a solids receiving facility for accepting and ultimately disposing cake solids from non-incinerator plants and provide improvements to the Fat, Oil, and Grease (FOG) system. In addition, non-potable water (NPW) piping serving solids handling will be replaced. FOG improvements will include installation of a FOG receiving and screening station, replacement of carbon steel rakes, skimmers, troughs, and support structures with corrosion resistant materials, and modification existing pipes and tanks for redundancy.

PROJECT JUSTIFICATION

The solids receiving facility will provide a solids disposal alternative for HRSD's non-incinerator plants and reduce risks associated with contracted cake solids disposal. The Williamsburg Treatment Plant receives approximately 5.2 million gallons of FOG each year, representing almost half of all FOG received at HRSD treatment plants. The existing FOG system is comprised of gravity and flotation thickeners that were no longer needed for solids thickening but were not designed to meet current demands. Improvements will provide a more effective and efficient FOG system with the capacity to meet current and projected needs. The cast iron NPW piping system has experienced numerous breaks resulting in the loss of all solids handling operations.

FUNDING TYPE

Funding Type: Revenue Bond

CONTACTS

Contacts-Requesting Dept: Operations-Treatment
Contacts-Dept Contacts: Robert Rutherford
Contacts-Managing Dept: Engineering

PROPOSED SCHEDULE START DATE

PrePlanning	02/01/2027
PER	08/01/2027
Design Delay	05/01/2028
Design	07/01/2028
Bid Delay	12/01/2029
PreConstruction	02/01/2030
Construction	05/01/2030
Closeout	05/01/2033

COST ESTIMATE

Cost Estimate Class:	**Class 5**
PrePlanning	$10,000
PER	$1,854,951
Design	$4,329,871
PreConstruction	$228,220
Construction	$24,732,300
Closeout	$174,293
Est. Program Cost	**$31,329,635**
Contingency Budget	$7,890,000
Est. Project Costs	**$39,219,635**