

# Project Summary

Project Number: **53-120**  
 Project Title: **Automated Meter Reading Equipment and Software**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2008 Project Status: Funded  
 Start Date: 7/1/2019 Region:  
 Est. Completion Date: 6/30/2025

## Description:

This project will replace the current meter reading equipment with new automated meter reading equipment and software that will be used to record customer meter readings and initiate billing. This project will involve new technologies that require retrofitting the current water meters.

## Justification:

The current equipment requires bi-monthly, manual reading of over 64,000 meters through antiquated hardware and means. Replacement is needed to ensure Public Utilities maintains the capability to generate timely and accurate customer invoices. This project will allow for remote control of water meters and better detection of water leaks. It will also improve productivity since meter readers will not have to manually read meters. The automated system will also allow for monthly billing so that billing and customer payments are smaller and more manageable.

## Comments:

For the FY 2020-24 CIP, the project plan was updated to add \$2,000,000 for FY 2020 and \$2,000,000 for FY 2024 requirements. The testing of three different systems is ongoing, including a small system roll out in the City's municipal complex area.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	2,000,000	2,000,000	0
2021	4,000,000	4,000,000	0
2022	4,000,000	4,000,000	0
2023	4,000,000	4,000,000	0
2024	2,000,000	2,000,000	0
	<b>16,000,000</b>	<b>16,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	1,399,624	2,000,000	14,000,000		<b>17,399,624</b>
<b>Total Revenue</b>		<b>1,399,624</b>	<b>2,000,000</b>	<b>14,000,000</b>		<b>17,399,624</b>
<b>Expense</b>						
	Equipment	1,399,624	2,000,000	14,000,000		<b>17,399,624</b>
<b>Total Expense</b>		<b>1,399,624</b>	<b>2,000,000</b>	<b>14,000,000</b>		<b>17,399,624</b>
<b>Obligated to Date:</b>						<b>65,663</b>
						<b>0.38 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

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Project Number: **19-220**  
 Project Title: **Cavalier Elevated and Ground Storage Tanks Rehabilitation**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation** Budget Year: **2020**  
 Year Identified: **2018**  
 Start Date: **7/1/2021** Project Status: **Funded**  
 Est. Completion Date: **6/30/2022** Region:

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## Description:

This project will provide for painting and rehabilitation of the Cavalier elevated and ground storage tanks. Project work will include interior and exterior painting of the 0.1 million gallon ground storage tank and the 1.0 million gallon elevated storage tank at the Cavalier Industrial Park. This project may also include minor structural modifications to the storage tanks, as needed.

## Justification:

The paint systems of steel water storage tanks have a variable life expectancy of 15-20 years. Maintenance of the coating system is important for structural and aesthetic purposes to maximize the life expectancy of the asset, which will be accomplished by this project.

## Comments:

The Cavalier Elevated Tank was placed in service in 1998. Although the existing 3-coat paint system continues to provide protection to the underlying steel structure, the tanks need to be recoated to prevent structural damage.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022	1,595,000	1,595,000	0
	<b>1,595,000</b>	<b>1,595,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities			1,595,000		<b>1,595,000</b>
<b>Total Revenue</b>				<b>1,595,000</b>		<b>1,595,000</b>
<b>Expense</b>						
	Design & Engineering			395,000		<b>395,000</b>
	Construction			1,200,000		<b>1,200,000</b>
<b>Total Expense</b>				<b>1,595,000</b>		<b>1,595,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>43-120</b>		
Project Title:	<b>Centerville Turnpike Loop 3</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Addition or Expansion	Budget Year:	2020
Year Identified:	2008	Project Status:	Funded
Start Date:	7/1/2017	Region:	
Est. Completion Date:	12/30/2020		

## Description:

This project will install approximately 7,700 linear ft. of 16" water main from Mount Pleasant Road north to Elbow Road, crossing the Chesapeake and Albemarle Canal.

## Justification:

This project is needed to provide an essential loop between the water mains south of the Chesapeake and Albemarle Canal to the water lines on Butts Station and Elbow Roads. This loop will provide a second transmission line to the City's Greenbrier area, which will significantly increase system reliability and fire protection to the area around Butts Station and Elbow Roads. Installation of the new water main will result in a nominal increase to the annual operation and maintenance costs.

## Comments:

For the FY 2020-24 CIP, the project plan and costs were updated. Accordingly, the project budget was reduced to \$3,854,000 for FY 2020. This project will include approx. 700 linear ft. of horizontal directional drilling underneath the canal. Additional design details will be determined during the full project design.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	3,854,000	3,854,000	0
	<b>3,854,000</b>	<b>3,854,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	4,075,000	3,854,000			<b>7,929,000</b>
<b>Total Revenue</b>		<b>4,075,000</b>	<b>3,854,000</b>			<b>7,929,000</b>
<b>Expense</b>						
	Design & Engineering	500,000				<b>500,000</b>
	Construction	3,575,000	3,854,000			<b>7,429,000</b>
<b>Total Expense</b>		<b>4,075,000</b>	<b>3,854,000</b>			<b>7,929,000</b>
<b>Obligated to Date:</b>						<b>1,194,596</b>
						<b>15.07 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2022	5,000	0.0

# Project Summary

Project Number:	<b>20-230</b>		
Project Title:	<b>Chesapeake Connector Water Pipeline</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Addition or Expansion	Budget Year:	2020
Year Identified:	2019	Project Status:	Funded
Start Date:	7/1/2020	Region:	
Est. Completion Date:	7/30/2023		

## Description:

This project will provide for the construction of a pipeline to convey water from Norfolk's Western Branch Reservoir pumping station to Chesapeake's Red Top water tank.

## Justification:

The pipeline is required to convey the City of Chesapeake's one sixth share of raw water from Lake Gaston (ten million gallons per day) to the Lake Gaston Water Treatment Plant.

## Comments:

This project is part of existing Settlement Agreement dated October 16, 1997 between the cities of Virginia Beach, Norfolk, Suffolk, and Chesapeake. Per part of the agreement, each city will contribute a specified share of the total project cost. The City of Norfolk will construct the pipeline, and then the City of Virginia Beach, City of Suffolk, and City of Chesapeake will each pay the agreed upon share of the project cost once the project is complete.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2021			0
2022	2,000,000	2,000,000	0
	<b>2,000,000</b>	<b>2,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities			2,000,000		<b>2,000,000</b>
<b>Total Revenue</b>				<b>2,000,000</b>		<b>2,000,000</b>
<b>Expense</b>						
	Design & Engineering			655,000		<b>655,000</b>
	Construction			165,000		<b>165,000</b>
	Other			1,180,000		<b>1,180,000</b>
<b>Total Expense</b>				<b>2,000,000</b>		<b>2,000,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2024	7,000	0.1

# Project Summary

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Project Number: **20-140**  
 Project Title: **Deep Creek Pump Station Upgrade**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation**      Budget Year: **2020**  
 Year Identified: **2010**  
 Start Date: **6/1/2011**      Project Status: **Funded**  
 Est. Completion Date: **6/30/2026**      Region:

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## Description:

This project will install new pumps and will upgrade telemetry, controls, and equipment.

## Justification:

The Deep Creek Pump Station was placed in service in 1987. Equipment upgrades and replacements are required to provide optimum reliability.

## Comments:

On September 13, 2016, City Council approved an FY 2017 Capital Budget amendment that appropriated lapsed funding and transferred \$39,500 in cash funding from this project to the Unserved Areas project. (See also City Council Agenda Item CM-21).

Design was completed in FY 2013. Construction will begin in future years. This project will also need additional funding in future years.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2021			0
	0	0	0

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	192,627			1,878,123	<b>2,070,750</b>
<b>Total Revenue</b>		<b>192,627</b>			<b>1,878,123</b>	<b>2,070,750</b>
<b>Expense</b>						
	Design & Engineering	192,627				<b>192,627</b>
	Construction				1,110,836	<b>1,110,836</b>
	Equipment				767,287	<b>767,287</b>
<b>Total Expense</b>		<b>192,627</b>			<b>1,878,123</b>	<b>2,070,750</b>
<b>Obligated to Date:</b>						<b>192,627</b>
						<b>9.30 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **37-240**  
 Project Title: **Fentress NALF Water Transmission Main**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2020  
 Start Date: 7/1/2019      Project Status: Funded  
 Est. Completion Date: 7/30/2024      Region:

## Description:

This project will provide for the installation of a water transmission main on Mount Pleasant Road to serve Naval Auxiliary Landing Field-Fentress (NALF-Fentress) and the area residents impacted by groundwater contamination with Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) from Aqueous Film-Forming Foams (AFFF) used in firefighting at NALF-Fentress.

## Justification:

In 2016, the Navy discovered PFAS in on-base and some off-base drinking water wells near NALF-Fentress. The Navy provided short-term and mid-term solutions to the residents, while evaluating long-term alternatives. The selected long-term solution is to extend City water along Mount Pleasant Road from Stratford Terrace to NALF--Fentress, providing City water to the base and those residents with drinking water wells that exceed the EPA's Lifetime Health Advisory (LHA) level of 70 parts per trillion (ppt). The Navy will pay the cost of installing the water line and connections to those residences and businesses whose drinking water exceeds the LHA.

This project will allow the City's Public Utilities Dept. to develop the response to the Navy's requests for information, perform the easement acquisition, design, and construction work required to install the water line on Mount Pleasant Road to NALF- Fentress. Although the water line project costs are being reimbursed by the Navy, it is necessary for the City to create the project to properly manage the execution.

## Comments:

On June 25, 2019, City Council approved an amendment to the FY 2020-24 CIP that added this as a new project and appropriated \$3 million for FY 2020 to complete preliminary engineering and design with initial easement identification. A very preliminary total project cost estimate is \$13 million (includes design, easement acquisition, and construction), but this estimate will be revised when the Navy's RFP is fully evaluated and preliminary engineering tasks are completed. See also City Council Agenda Item CM-4(F).

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	3,000,000	3,000,000	0
	<b>3,000,000</b>	<b>3,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Grant		3,000,000		10,000,000	<b>13,000,000</b>
<b>Total Revenue</b>			<b>3,000,000</b>		<b>10,000,000</b>	<b>13,000,000</b>
<b>Expense</b>						
	Design & Engineering		3,000,000			<b>3,000,000</b>
	Construction				9,000,000	<b>9,000,000</b>
	Land Acquisition				1,000,000	<b>1,000,000</b>
<b>Total Expense</b>			<b>3,000,000</b>		<b>10,000,000</b>	<b>13,000,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **16-170**  
 Project Title: **Gravity Sewer Renewal: Bainbridge Blvd. Basin (HRSD Project Area)**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2013 Project Status: Funded  
 Start Date: 7/1/2021 Region:  
 Est. Completion Date: 7/30/2026

## Description:

This project will repair and/or replace City sewer facilities in the area of the Hampton Roads Sanitation District (HRSD) projects in the Bainbridge Boulevard basin.

## Justification:

The nature of the HRSD projects will require adjustment, relocation, repair or replacement of the City's sewer facilities.

## Comments:

It is anticipated that this project will need to be funded in future years. HRSD has identified several projects along Bainbridge Boulevard, all of which are in the pre-design stage. Once HRSD identifies specific improvement areas for these projects, the City's Public Utilities Dept. will coordinate the relocation, repair, and replacement of Chesapeake sewer facilities with HRSD. The HRSD projects include:

- 1) Washington District Pump Station Area Sanitary Sewer Improvements (HRSD # AT013000)
- 2) South Norfolk Area Gravity Sewer Improvements (HRSD # AT013100)
- 3) Pump Station Replacements for Park Avenue (HRSD # VP018000) & Ferebee Avenue (HRSD # VP014010)
- 4) Sanitary Sewer Project 1950 12" Force Main, and 18" and 24" Gravity Sewer Replacement (HRSD # VP014020)

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022			0
2023			0
	0	0	0

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities				5,000,000	5,000,000
<b>Total Revenue</b>						<b>5,000,000</b>
<b>Expense</b>						
	Construction				5,000,000	5,000,000
<b>Total Expense</b>						<b>5,000,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

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Project Number:	<b>21-230</b>		
Project Title:	<b>Great Bridge Force Main Redundancy Study</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Study	Budget Year:	2020
Year Identified:	2019	Project Status:	Funded
Start Date:	7/1/2022	Region:	
Est. Completion Date:	6/30/2024		

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## Description:

This project will provide for a study to evaluate the need for a second sewer connection in Great Bridge to the Hampton Roads Sanitation District (HRSD) sewer lines. The options that will be investigated include a redundancy connection to HRSD along Cedar Road, or along Hanbury Road, or other locations to evaluate whether the existing pump stations can handle pressures at those points and evaluate whether HRSD's system can handle the City's flow at those points.

## Justification:

This study is needed to determine a viable second connection to HRSD lines in order to prevent a series of pump stations from being down and requiring pumping and hauling of wastewater if there is only one force main connection to HRSD.

## Comments:

Currently when HRSD restricts the City's wastewater from coming into their system in Great Bridge, it requires pumping and hauling of sewage from multiple City pump stations due to the City's current system structure.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2023	300,000	300,000	0
	<b>300,000</b>	<b>300,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities			300,000		<b>300,000</b>
<b>Total Revenue</b>				<b>300,000</b>		<b>300,000</b>
<b>Expense</b>						
	Design & Engineering			300,000		<b>300,000</b>
<b>Total Expense</b>				<b>300,000</b>		<b>300,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **22-230**  
 Project Title: **Lake Gaston Pipeline - Capital Cost Sharing with Virginia Beach**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation**      Budget Year: **2020**  
 Year Identified: **2019**  
 Start Date: **7/1/2018**      Project Status: **Funded**  
 Est. Completion Date: **7/30/2024**      Region:

**Description:**

This project will provide for the City of Chesapeake's share of capital improvements to the Lake Gaston Pipeline per the contract with the City of Virginia Beach.

**Justification:**

An ongoing program of capital improvements is necessary to ensure the long-term reliability of the of the Lake Gaston water supply to Hampton Roads. The City of Chesapeake is a one-sixth owner of the City of Virginia Beach's Lake Gaston Pipeline project. Under contractual obligation, the City of Chesapeake will fund its proportional share of both the capital and operating costs required to maintain the pipeline.

**Comments:**

For the FY 2020-24 CIP, the project plan was updated and costs were revised. Phased capital improvements to the Lake Gaston Pipeline are established by the City of Virginia Beach, and include improvements to the raw water intake structure at Lake Gaston, pressure reducing facilities, stream crossings, and the pipeline itself.

**Project Forecast**

Year	Total Expense	Total Revenue	Difference
2020	340,000	340,000	0
2021	340,000	340,000	0
2022	350,000	350,000	0
2023	350,000	350,000	0
2024	350,000	350,000	0
	<b>1,730,000</b>	<b>1,730,000</b>	<b>0</b>

**Project Details 2020**

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	205,000	340,000	1,390,000		<b>1,935,000</b>
<b>Total Revenue</b>		<b>205,000</b>	<b>340,000</b>	<b>1,390,000</b>		<b>1,935,000</b>
<b>Expense</b>						
	Construction	205,000	340,000	1,390,000		<b>1,935,000</b>
<b>Total Expense</b>		<b>205,000</b>	<b>340,000</b>	<b>1,390,000</b>		<b>1,935,000</b>
<b>Obligated to Date:</b>						<b>136,248</b>
						<b>7.04 %</b>

**Related Projects**

**Operating Budget Impact**

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **21-130**  
 Project Title: **Lake Gaston WTP - Membrane Replacement - Phase II**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2009 Project Status: Funded  
 Start Date: 7/2/2012 Region:  
 Est. Completion Date: 7/30/2024

## Description:

This project will provide for the replacement of membranes used in the Lake Gaston Water Treatment Plant.

## Justification:

This project serves as a funding source for ultra-filtration membrane elements at the Lake Gaston Water Treatment Plant.

## Comments:

The installation of replacement modules for a complete membrane change-out for the Lake Gaston Water Treatment Plant was completed in FY 2014. The full-scale plant evaluation of aluminum chlorohydrate began in FY 2015. Performance remains very good, allowing the anticipated replacement work and funding to be moved back again to FY 2024 from FY 2022.

On September 13, 2016, City Council approved an FY 2017 Capital Budget amendment that transferred \$32,481 in cash funding from this project to the Unserved Areas project, which reduced prior funding from \$1,757,385 to \$1,725,904. (See City Council Agenda Item CM-21).

On April 28, 2015, Council approved closing the Phase I project # 52-120, and transferring \$13,384.73 to this project for Phase II.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020			0
2022			0
2024	2,200,000	2,200,000	0
	<b>2,200,000</b>	<b>2,200,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	1,725,904		2,200,000		<b>3,925,904</b>
<b>Total Revenue</b>		<b>1,725,904</b>		<b>2,200,000</b>		<b>3,925,904</b>
<b>Expense</b>						
	Equipment	1,725,904		2,200,000		<b>3,925,904</b>
<b>Total Expense</b>		<b>1,725,904</b>		<b>2,200,000</b>		<b>3,925,904</b>
<b>Obligated to Date:</b>						<b>1,725,904</b>
						<b>43.96 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **37-200**  
 Project Title: **Lake Gaston WTP - Miscellaneous Modifications**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation** Budget Year: **2020**  
 Year Identified: **2015**  
 Start Date: **7/1/2015** Project Status: **Funded**  
 Est. Completion Date: **7/30/2026** Region:

## Description:

This project will provide for the ongoing needs to replace and rehabilitate aging equipment in order to safely and effectively operate the water treatment plant.

## Justification:

This project addresses the life-cycle needs of the water treatment plant equipment with the goal of minimizing downtime and ensuring a continuous supply of high quality drinking water. The need for equipment replacement is driven not only by normal wear and tear, it also occurs when replacement parts become unavailable or when support is no longer provided (e.g., proprietary software systems). Additionally, the project includes installation of an enclosure over the membrane system, a second centrifuge, a third manganese contractor, and converting the tank deposition mode of operation for the membrane system.

## Comments:

The Lake Gaston Water Treatment Plant was placed in service in 2006. Since startup, operational methods and equipment have been refined, upgraded or replaced to maximize reliability and produce the highest possible water quality at the lowest cost.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	500,000	500,000	0
2022			0
2023	500,000	500,000	0
2024	2,700,000	2,700,000	0
	<b>3,700,000</b>	<b>3,700,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	3,370,000	500,000	3,200,000	2,000,000	<b>9,070,000</b>
	<b>Total Revenue</b>	<b>3,370,000</b>	<b>500,000</b>	<b>3,200,000</b>	<b>2,000,000</b>	<b>9,070,000</b>
<b>Expense</b>						
	Design & Engineering	325,000	50,000	200,000		<b>575,000</b>
	Construction	1,275,000	225,000	2,775,000	2,000,000	<b>6,275,000</b>
	Equipment	1,770,000	225,000	225,000		<b>2,220,000</b>
	<b>Total Expense</b>	<b>3,370,000</b>	<b>500,000</b>	<b>3,200,000</b>	<b>2,000,000</b>	<b>9,070,000</b>
					<b>Obligated to Date:</b>	<b>2,756,616</b>
						<b>30.39 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

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Project Number: **38-200**  
 Project Title: **Lake Gaston WTP - Strategic Treatment and Facility Development Plan**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Study Budget Year: 2020  
 Year Identified: 2016 Project Status: Funded  
 Start Date: 7/2/2015 Region:  
 Est. Completion Date: 7/30/2028

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## Description:

This project involves the evaluation and development of treatment processes which can be utilized at the Lake Gaston Water Treatment Plant to improve plant reliability by reducing reliance on a single treatment technology (ultra-filtration membranes). The project will also identify the timing of required plant modifications to meet future demand resulting from the expiration of the Portsmouth bulk water purchase contract, the availability of raw water from the Lake Gaston Pipeline, growth, and to meet demands when Portsmouth and Norfolk water are not available.

## Justification:

Water can be produced at the Lake Gaston Water Treatment Plant at a lower cost than buying bulk finished water from Portsmouth and Norfolk. It is necessary to initiate engineering design of modifications to the treatment plant to provide a reliable supply of drinking water for the customers currently receiving water purchased from Portsmouth and Norfolk.

## Comments:

The City entered into a contract with Portsmouth in May 1996 to extend the term of an existing bulk water purchase through December 2026. A preliminary design report is required to apply for necessary federal and state permits.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022			0
2023			0
2024			0
	<b>0</b>	<b>0</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	1,000,000			16,000,000	<b>17,000,000</b>
<b>Total Revenue</b>		<b>1,000,000</b>			<b>16,000,000</b>	<b>17,000,000</b>
<b>Expense</b>						
	Design & Engineering	1,000,000			4,000,000	<b>5,000,000</b>
	Construction				12,000,000	<b>12,000,000</b>
<b>Total Expense</b>		<b>1,000,000</b>			<b>16,000,000</b>	<b>17,000,000</b>
<b>Obligated to Date:</b>						<b>819,764</b>
						<b>4.82 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

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Project Number: **28-200**  
 Project Title: **Norfolk Highlands Elevated Tank Rehabilitation**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation**      Budget Year: **2020**  
 Year Identified: **2016**  
 Start Date: **7/1/2018**      Project Status: **Funded**  
 Est. Completion Date: **6/30/2024**      Region:

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## Description:

This project will provide for rehabilitation of the Norfolk Highlands elevated water tank, which will include painting the interior and exterior surfaces, making minor structural repairs, installing a mixing system, upgrading safety devices, and installing water quality monitoring equipment. It is also necessary to increase the height of the tank to make better use of its available storage volume.

## Justification:

Routine painting of a steel water storage tank is necessary to maximize the useful life of the structure. In addition to periodic blasting and painting, it has been determined that the height of the Norfolk Highlands elevated tank needs to be increased to allow better use of its storage capacity.

## Comments:

The Norfolk Highlands elevated water tank is a 0.25 million gallon reservoir that provides water storage for the Norfolk Highlands and Indian River areas of Chesapeake. The tank is an important part of the water resource infrastructure in the area of the City served with bulk water purchased from the City of Norfolk.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022			0
2023	1,500,000	1,500,000	0
2024			0
	<b>1,500,000</b>	<b>1,500,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities			1,500,000		<b>1,500,000</b>
<b>Total Revenue</b>				<b>1,500,000</b>		<b>1,500,000</b>
<b>Expense</b>						
	Design & Engineering			165,000		<b>165,000</b>
	Construction			1,335,000		<b>1,335,000</b>
<b>Total Expense</b>				<b>1,500,000</b>		<b>1,500,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>23-230</b>		
Project Title:	<b>Northwest River Lakes &amp; Pump Station</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	New Facility	Budget Year:	2020
Year Identified:	2019	Project Status:	Funded
Start Date:	7/1/2018	Region:	
Est. Completion Date:	7/30/2028		

## Description:

This project will provide the construction of a floating raw water pump station and associated piping on the borrow pits in the vicinity of the Northwest River (NWR) Raw Water Intake Structure. This project will also evaluate the feasibility of placing a riverbank filtration system at the NWR Water Treatment Plant. The study will determine whether available technology is suitable for conditions existing at Northwest River.

## Justification:

The cost to treat water from the Northwest River increases when salt and organic levels are high. A temporary, alternate supply of raw water will allow the Northwest River Water Treatment Plant to be operated at a lower cost during challenging conditions in the Northwest River with a higher degree of operational flexibility.

## Comments:

For the FY 2020-24 CIP, the project plan was updated. The reverse osmosis system at the Northwest River Water Treatment Plant provides a proven means to effectively treat a challenging raw water source. Although highly effective, the operational cost of a reverse osmosis system exceeds the cost of some water treatment technologies. Surface water impoundments that originated as borrow pits can provide a temporary, redundant raw water supply.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	1,000,000	1,000,000	0
2021	1,000,000	1,000,000	0
2023	1,000,000	1,000,000	0
	<b>3,000,000</b>	<b>3,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	1,000,000	1,000,000	2,000,000	3,700,000	<b>7,700,000</b>
<b>Total Revenue</b>		<b>1,000,000</b>	<b>1,000,000</b>	<b>2,000,000</b>	<b>3,700,000</b>	<b>7,700,000</b>
<b>Expense</b>						
	Design & Engineering	700,000				<b>700,000</b>
	Construction			300,000	3,700,000	<b>4,000,000</b>
	Land Acquisition	300,000				<b>300,000</b>
	Other		1,000,000	1,700,000		<b>2,700,000</b>
<b>Total Expense</b>		<b>1,000,000</b>	<b>1,000,000</b>	<b>2,000,000</b>	<b>3,700,000</b>	<b>7,700,000</b>
<b>Obligated to Date:</b>						<b>434,510</b>
						<b>5.64 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>19-130</b>		
Project Title:	<b>Northwest River WTP - Miscellaneous Modifications</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Renovation or Rehabilitation	Budget Year:	2020
Year Identified:	2009	Project Status:	Funded
Start Date:	2/2/2008	Region:	
Est. Completion Date:	6/30/2024		

## Description:

This project will provide for the replacement or rehabilitation of aging equipment to safely and effectively operate the water treatment plant.

## Justification:

This project addresses the life-cycle needs of the water treatment plant equipment with the goal of minimizing downtime and ensuring a continuous supply of high quality drinking water. The need for equipment replacement occurs due to normal wear and tear, and it also occurs when replacement parts become unavailable or when support is no longer provided for software systems or equipment.

## Comments:

For the FY 2020-24 CIP, the project plan was updated and funding was added for FY 2024 requirements.

On March 13, 2018, City Council approved an FY 2018 Capital Budget amendment that transferred \$1,680,000 previously appropriated utilities funding (cash and revenue bonds) from this project to the "NW River Water Treatment Plant Ground Storage Tank Replacement" project # 29-200 so the tank could be replaced during FY 2018.

On July 12, 2016, City Council approved a change of funding source for \$734,740 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

The Northwest River Water Treatment Plant was placed in service in 1980. Since then, operating methods and equipment have been refined, upgraded, or replaced to maximize reliability and produce the highest water quality possible at the lowest cost. The next phase of the project will focus on repairs and improvements relating to the reverse osmosis membrane systems. These systems were placed into operation in 1999 and treat both groundwater and surface water. The systems now need an overhaul and the critical structures and supporting equipment need repairs. The operation of the membranes requires the use of corrosive solutions which take a toll on the membrane equipment. The goal of this project is to repair and replace this equipment.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	500,000	500,000	0
2021			0
2022	500,000	500,000	0
2023	3,200,000	3,200,000	0
2024	2,000,000	2,000,000	0
	<b>6,200,000</b>	<b>6,200,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	3,997,555				<b>3,997,555</b>
	Cash - Utilities	2,997,445	500,000	5,700,000		<b>9,197,445</b>
	<b>Total Revenue</b>	<b>6,995,000</b>	<b>500,000</b>	<b>5,700,000</b>		<b>13,195,000</b>
<b>Expense</b>						
	Design & Engineering	125,000		200,000		<b>325,000</b>
	Construction	5,370,000		5,500,000		<b>10,870,000</b>

# Project Summary

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Equipment	1,500,000	500,000		<b>2,000,000</b>
<b>Total Expense</b>	<b>6,995,000</b>	<b>500,000</b>	<b>5,700,000</b>	<b>13,195,000</b>

**Obligated to Date:** 6,489,712  
49.18 %

## Related Projects

### Operating Budget Impact

<u>Budget Year</u>	<u>Exp (Rev)</u>	<u>FTE Impact</u>
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# Project Summary

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Project Number: **20-220**  
 Project Title: **Northwest River WTP - Switchgear Replacement**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation** Budget Year: **2020**  
 Year Identified: **2018**  
 Start Date: **7/1/2021** Project Status: **Funded**  
 Est. Completion Date: **6/30/2023** Region:

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## Description:

This project will provide for replacement of the electrical switchgear and motor control centers at the Northwest River Water Treatment Plant.

## Justification:

Major components of the existing switchgear are either no longer supported or are difficult to locate. To avoid potentially serious impacts to plant operations, it is necessary to replace the legacy system with modern equipment that is fully supported.

## Comments:

The existing electrical switchgear at the Northwest River Water Treatment Plant is the original from 1979. It has provided a long service life and is currently functioning as designed. The equipment underwent major preventive maintenance in 2017. The total project cost was also revised down to reflect the most current estimates.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022	5,982,000	5,982,000	0
	<b>5,982,000</b>	<b>5,982,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund			5,982,000		<b>5,982,000</b>
<b>Total Revenue</b>				<b>5,982,000</b>		<b>5,982,000</b>
<b>Expense</b>						
	Design & Engineering			375,000		<b>375,000</b>
	Construction			5,607,000		<b>5,607,000</b>
<b>Total Expense</b>				<b>5,982,000</b>		<b>5,982,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>65-230</b>		
Project Title:	<b>Philmont Ave Septic System Disconnection</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	New Facility	Budget Year:	2020
Year Identified:	2019	Project Status:	Funded
Start Date:	1/11/2019	Region:	
Est. Completion Date:	7/30/2020		

## Description:

This project will disconnect the existing septic system along Philmont Avenue, and replace it with the City's modern sanitary sewer system. The sanitary sewer discharge from the current system will be directed by gravity flow to a pump station that will be connected to a second sanitary system in the neighboring area. Thirty-nine (39) residential homes will be connected to the gravity lines. This project will be jointly managed by Public Utilities and Stormwater (with Public Utilities leading coordination) because the new system will generate water quality improvements.

## Justification:

As a part of the City's Stormwater Total Maximum Daily Load (TMDL) Action Plan for water quality, this septic system disconnection plan will help the City meet a requirement of our MS4 Permit. The Indian River and the Elizabeth River are impaired waters with a TMDL for bacteria, and the Elizabeth River is impaired with nitrogen. Public Works supports the implementation of this project because it will remove drain-field discharge from the contributing pollutants to the Elizabeth River. At 9.9 pounds of nitrogen per household per year, approximately 386.1 pounds of nitrogen will be credited towards the City's requirements in our action plan.

## Comments:

On December 11, 2018, City Council approved an FY 2019 Capital Budget amendment that added this as a new project and transferred \$1,325,000 to fund it from two city-wide capital projects. Public Utilities provided 49% of the funding (\$650,000) from project # 33-120 "Sewer Renewal: SSES Implementation-Phase II". Stormwater provided 51% of the funding (\$675,000) from project # 05-140 "Stormwater Quality Program/VPDES Permit Compliance".

Some of the existing septic systems have been failing to function as originally designed for years. Modern ways of handling sewer discharge also have higher standards than those implemented with septic tank drain-fields. By redirecting the sewage effluent to a system that leads to the HRSD treatment plant, the City will be able to reduce the nitrogen and bacteria levels currently going to the Elizabeth River via the Indian River.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	650,000				<b>650,000</b>
	Cash - Stormwater	675,000				<b>675,000</b>
<b>Total Revenue</b>		<b>1,325,000</b>				<b>1,325,000</b>
<b>Expense</b>						
	Design & Engineering	223,000				<b>223,000</b>
	Construction	1,100,000				<b>1,100,000</b>
	Other	2,000				<b>2,000</b>
<b>Total Expense</b>		<b>1,325,000</b>				<b>1,325,000</b>

Obligated to Date: 0  
0.00 %

## Related Projects

## Operating Budget Impact

# Project Summary

Project Number:	<b>39-120</b>		
Project Title:	<b>Red Top Raw Water Transmission Main</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Addition or Expansion	Budget Year:	2020
Year Identified:	2008	Project Status:	Funded
Start Date:	2/2/2009	Region:	
Est. Completion Date:	12/30/2021		

## Description:

This project will provide for installation of approximately nine miles of 36" raw water pipeline and transmission facilities from Red Top in Suffolk to the Lake Gaston Water Treatment Plant.

## Justification:

The Lake Gaston treatment plant currently treats water provided from excess capacity drawn from Norfolk's raw water resources. The new pipeline and transmission facilities will ensure that the City is able to draw its one-sixth allocation from the Lake Gaston under terms of a contract with the City of Virginia Beach.

## Comments:

This project is 80% complete. For the FY 2020-24 CIP, the engineer's estimate for the remaining pipeline phases was updated with recent construction prices, which indicated a budget shortfall of \$2.7 million. The additional funding was programmed for FY 2021 to complete this project. Cost estimates were previously revised in FY 2017, and \$7 million was added to start the next phase design and construction (\$3.5 million in FY 2018 and FY 2019). Most of the increase has been due to inflation that has occurred since the original estimates from the 1990s.

On March 13, 2018, City Council approved an FY 2018 Capital Budget Amendment that transferred \$1,675,394 (revenue bonds) to project # 39-120 "Red Top Raw Water Transmission Main" from the recently completed project # 17-140 "Red Top Tank and Raw Water Pump Station".

On July 12, 2016, City Council approved a change of funding source for \$9,830,224 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2021	2,717,000	2,717,000	0
	<b>2,717,000</b>	<b>2,717,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	8,675,394		2,717,000		<b>11,392,394</b>
	Cash - Utilities	15,575,000				<b>15,575,000</b>
	<b>Total Revenue</b>	<b>24,250,394</b>		<b>2,717,000</b>		<b>26,967,394</b>
<b>Expense</b>						
	Design & Engineering	2,875,394				<b>2,875,394</b>
	Construction	21,375,000		2,717,000		<b>24,092,000</b>
	<b>Total Expense</b>	<b>24,250,394</b>		<b>2,717,000</b>		<b>26,967,394</b>
					<b>Obligated to Date:</b>	<b>15,005,811</b>
						<b>55.64 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>24-230</b>		
Project Title:	<b>Replacement of Lead Service Lines</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2019	Project Status:	Funded
Start Date:	7/1/2018	Region:	
Est. Completion Date:	7/30/2033		

## Description:

This project will replace water service lines and associated fittings which contain levels of lead and copper above the Environmental Protection Agency (EPA) established action levels. It is anticipated that the City of Chesapeake will have to remove the service lines that were installed prior to 1950.

## Justification:

The Environmental Protection Agency (EPA) published a white paper in October 2016 on Lead and Copper Rule (LCR) Revisions. Both the EPA and the Centers for Disease Control and Prevention state that no amount of lead in water is safe and that lead exposure can result in serious, adverse health effects. Most recently in January 2018, The EPA Office of Drinking Water solicited input from state and local government officials on potential revisions to key areas of the Lead and Copper Rule. Public Utilities has estimated that approximately 1,000 lead service lines exist within the City, not including any appurtenances that may contain traces of lead or copper.

## Comments:

Recent national events centered on lead in drinking water have eroded public trust in drinking water safety. In response, the United States Environmental Protection Agency (USEPA) is working on upcoming Lead and Copper Rule Long-Term Revisions (LCR LTR). The proposed revisions have the potential to cause significant impacts to community water systems throughout the United States, requiring additional actions associated with optimal corrosion control treatment, lead service line replacement, public education, and localized household-level responses (USEPA and NDWAC, 2016; Hazen & Sawyer, Horizons, 2017). Water sampling has been conducted in those areas of the City where service lines were installed prior to 1950. Public Utilities has been working on a Sampling Plan to identify and track those locations in the City that have older water systems.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2023	500,000	500,000	0
2024	500,000	500,000	0
	<b>1,000,000</b>	<b>1,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	100,000		1,000,000	4,500,000	<b>5,600,000</b>
<b>Total Revenue</b>		<b>100,000</b>		<b>1,000,000</b>	<b>4,500,000</b>	<b>5,600,000</b>
<b>Expense</b>						
	Design & Engineering			500,000		<b>500,000</b>
	Construction	100,000		500,000	4,400,000	<b>5,000,000</b>
	Other				100,000	<b>100,000</b>
<b>Total Expense</b>		<b>100,000</b>		<b>1,000,000</b>	<b>4,500,000</b>	<b>5,600,000</b>
					<b>Obligated to Date:</b>	<b>100,000</b>
						<b>1.79 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **35-200**  
 Project Title: **Sewer Pump Station Safety Improvements**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation** Budget Year: **2020**  
 Year Identified: **2016**  
 Start Date: **7/1/2015** Project Status: **Funded**  
 Est. Completion Date: **6/30/2024** Region:

## Description:

This project will replace structural components at pump stations that have deteriorated and pose safety risks to maintenance personnel. The components will include fixed ladders, platforms, and various hardware that are subjected to corrosive environments. There are 274 pump stations throughout the City.

## Justification:

This project is needed to replace structural components that have deteriorated at the City's sewer pump stations in order to ensure safe and effective operations. Since there are 274 pump stations throughout the City, this project will address the needs annually by a phased approach.

## Comments:

This project will replace fixed ladders, platforms, and various hardware that are subjected to corrosive environments. This project was first funded in the FY 2016-20 CIP with annual investments of \$500,000 to continue ongoing repairs and maintenance of the City's sewer pump stations. For the FY 2019-21 CIP, funding was removed for FY 2019 and FY 2020 because the current appropriation was sufficient to complete repairs through FY 2020. The annual investments will resume for FY 2021 - FY 2024. Two contractors have been contracted to complete the improvements. Safety Improvements currently underway or planned include Pump Stations #33, #201, #86, #25, #37, #197, #14, #79, #54, #158, and #227.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020			0
2021	500,000	500,000	0
2022	500,000	500,000	0
2023	500,000	500,000	0
2024	500,000	500,000	0
	<b>2,000,000</b>	<b>2,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	1,500,000		2,000,000		<b>3,500,000</b>
<b>Total Revenue</b>		<b>1,500,000</b>		<b>2,000,000</b>		<b>3,500,000</b>
<b>Expense</b>						
	Design & Engineering	150,000				<b>150,000</b>
	Construction	1,350,000		2,000,000		<b>3,350,000</b>
<b>Total Expense</b>		<b>1,500,000</b>		<b>2,000,000</b>		<b>3,500,000</b>
<b>Obligated to Date:</b>						<b>1,267,040</b>
						<b>36.20 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>21-220</b>		
Project Title:	<b>Sewer Pump Station: Replacement and Rehabilitation</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Renovation or Rehabilitation	Budget Year:	2020
Year Identified:	2018	Project Status:	Funded
Start Date:	7/1/2021	Region:	
Est. Completion Date:	7/30/2026		

## Description:

This project will provide for critical repairs, replacement, and rehabilitation of pump stations to ensure efficient and effective sewer system operations. Funding will address deferred maintenance of critical and aged pump stations throughout the City. This project will be the main project, and sub-projects will be identified for specific pump station repair projects within the scope of this main project.

## Justification:

These improvements are necessary to minimize sewer overflows, which can be caused by insufficient pressure head to discharge into the Hampton Roads Sanitation District (HRSD) System, insufficient wet well capacity, and aged pumps. This will ensure continued compliance with the Regional Consent Order with Virginia Dept. of Environmental Quality/HRSD, which requires localities to reduce sanitary sewer overflows.

## Comments:

In the FY 2020-24 CIP, funding was added for FY 2024 requirements. Project plans include rehabilitation/ replacement work on pump stations #126, #213, #41, #9, #114, #38 and #184.

This project was initially approved in the FY 2018-22 CIP, with the initial year of funding starting in FY 2022 to complete rehabilitation/ replacement work on pump stations #60 and #61. In the FY 2019-23 CIP, additional funding was added for FY 2023 to continue replacements.

As of FY 2019, the City had 273 active pump stations. The average lifespan of a wastewater pump station is 50 years. The average cost to rehab or replace a pump station is approx. \$1.5 million each. Assuming \$3 million in annual project funding would continue each year, the timeline to rehab or replace all of the City's pump stations is estimated to be over 100 years.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022			0
2023	2,700,000	2,700,000	0
2024	3,000,000	3,000,000	0
	<b>5,700,000</b>	<b>5,700,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities			5,700,000		5,700,000
<b>Total Revenue</b>				<b>5,700,000</b>		<b>5,700,000</b>
<b>Expense</b>						
	Construction			4,500,000		4,500,000
	Other			1,200,000		1,200,000
<b>Total Expense</b>				<b>5,700,000</b>		<b>5,700,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>05-180</b>		
Project Title:	<b>Sewer Renewal: Additional Consent Order Capital Requirement</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Renovation or Rehabilitation	Budget Year:	2020
Year Identified:	2014	Project Status:	Funded
Start Date:	7/1/2015	Region:	
Est. Completion Date:	7/30/2029		

## Description:

This project will fund various sanitary sewer projects required to comply with the regional Consent Order issued by the Virginia Dept. of Environmental Quality (VDEQ) that will be performed in designated sewer basins based on the priority approved by VDEQ in the Rehabilitation Plan. Project work will include rehabilitating gravity sewer systems, force main systems, and pump stations; cleaning wet-wells, TV inspections, washing mainlines, valve operations, and other improvements that will help reduce or eliminate sanitary sewer overflows.

## Justification:

Sewer improvements are necessary in order to comply with the regional Consent Order. Specific projects are identified based on TV inspection and sewer maintenance records indicating excessive repairs. Public Utilities has currently identified over \$200 million in projects that are needed to replace or rehab dilapidated sewer lines throughout the City.

This project ensures the City maintains compliance with the regional Consent Order, which requires localities to reduce sanitary sewer overflows (SSOs). The City contains approx. 960 miles of gravity sewer and 105 miles of sanitary sewer force main. A large majority of these lines were installed before 1970 and are failing, which results in cave-ins, SSOs, blockages, and disruptions in service. This project will complete about 30 - 40 small scale sewer rehab projects annually by using IDIQ (Indefinite Delivery/Indefinite Quantity) contractor.

The next five sub-projects of this project planned for future design and construction will include: Edgewood Avenue Upgrade \$1.7M; Walden Street Upgrade \$1.6M; 600-700 Block Lafayette Ave. Upgrade \$1.3M; 1400 Block Salton Drive Upgrade \$1.2M; and Station House Road Upgrade \$1.3M. The South Norfolk borough also needs extensive sewer rehabilitation work, and some streets may be substituted from the above plan pending pipe conditions/ failures. Additional large scale projects have also been identified and will continue indefinitely, which will require continued annual funding from this project for the foreseeable future.

## Comments:

For the FY 2020-24 CIP, the project plan was updated, funding was added for FY 2024 requirements, and future needs were revised.

On June 12, 2018, City Council approved an FY 2018 Capital Budget amendment that transferred \$1.4 million from this project to complete project # 51-129 "Unserved Areas: Battlewood Meadows". See also City Council Agenda Item CM-9(B).

In the FY 2018-22 CIP, Public Utilities combined three related capital projects into this one capital project, which serves as a master project to provide greater project management efficiency and flexibility for the required Consent Order improvements. The projects combined included: # 13-160 "Sewer Management Operations & Maintenance", # 31-210 "Sanitary Force Main: Volvo Parkway", and # 31-170 "Sewer Replacement: Orville Ave. Alleyway". These projects were closed and unspent appropriations were transferred to the main project # 05-180 "Sewer Renewal: Additional Consent Order Capital Requirement". Funding was added for FY 2022 requirements.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	2,000,000	2,000,000	0
2021	5,000,000	5,000,000	0
2022	5,500,000	5,500,000	0
2023	8,000,000	8,000,000	0
2024	6,000,000	6,000,000	0
	<b>26,500,000</b>	<b>26,500,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
Revenue	Revenue Bonds - Utility Fund	8,500,000	2,000,000	24,500,000	299,250,000	<b>334,250,000</b>

# Project Summary

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Cash - Utilities	2,861,609				<b>2,861,609</b>
<b>Total Revenue</b>	<b>11,361,609</b>	<b>2,000,000</b>	<b>24,500,000</b>	<b>299,250,000</b>	<b>337,111,609</b>
<b>Expense</b>					
Construction	11,361,609	2,000,000	24,500,000	299,250,000	<b>337,111,609</b>
<b>Total Expense</b>	<b>11,361,609</b>	<b>2,000,000</b>	<b>24,500,000</b>	<b>299,250,000</b>	<b>337,111,609</b>
				<b>Obligated to Date:</b>	<b>6,017,294</b>
					<b>1.78 %</b>

## Related Projects

### Operating Budget Impact

<u>Budget Year</u>	<u>Exp (Rev)</u>	<u>FTE Impact</u>
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# Project Summary

Project Number: **33-170**  
 Project Title: **Sewer Renewal: Raleigh Place (Pump Station #7 Basin)**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2014 Project Status: Funded  
 Start Date: 7/1/2019 Region:  
 Est. Completion Date: 6/30/2024

## Description:

This project will provide for renewal or replacement of approx. 8,000 linear ft. of gravity sanitary sewer main (between 8" to 12") and appurtenances in the Raleigh Place Subdivision in the City's South Norfolk area, from Rosemont Avenue to the intersection of Burrow Avenue and Bainbridge Boulevard. (Pump Station #7 basin).

## Justification:

TV inspection and excessive maintenance indicates severe deterioration requiring replacement. This is one of 99 Pump Station areas investigated by Greeley & Hansen as part of Wastewater Reliability Assessment Program. The report ranked Pump Station #7 basin as priorities 108, 133, 144, 191, and 221.

## Comments:

This project's scheduled was pushed back to align with the priority ranking in the engineer's report. This project is now planned to start in FY 2020 and end in FY 2021. Funding and project work remain phased over two years, with design in year one and construction in year two.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	600,000	600,000	0
2021	3,800,000	3,800,000	0
2023			0
	<b>4,400,000</b>	<b>4,400,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities		600,000	3,800,000		4,400,000
<b>Total Revenue</b>			<b>600,000</b>	<b>3,800,000</b>		<b>4,400,000</b>
<b>Expense</b>						
	Design & Engineering		600,000			600,000
	Construction			3,800,000		3,800,000
<b>Total Expense</b>			<b>600,000</b>	<b>3,800,000</b>		<b>4,400,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **31-240**  
 Project Title: **South Central Water Transmission Main & Loop - Phase I**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2020  
 Start Date: 7/1/2019      Project Status: Funded  
 Est. Completion Date: 7/30/2025      Region:

## Description:

This project will provide for the construction of a water transmission main to extend the current line and to create a loop in the South Central area of Chesapeake. The project work will start at the casing on Dominion Boulevard at West Road, will extend the current line by adding a 36 inch water main south along West Road to Chesapeake Regional Airport, and will create a loop with the existing water mains at Number 10 Lane and Drumcastle Lane.

## Justification:

This water main extension and loop will provide additional reliability to the water distribution system. The loop will improve system hydraulics, reliability, and fire protection. Future phases of this project will continue the line eastward to the existing distribution system along Battlefield Boulevard near the Northwest River Water Treatment Plant.

## Comments:

This project is part of the Water Master Plan. The installation of a new water main will result in a nominal increase to the annual operation and maintenance costs. The project may be able to utilize Pro Rata to recover capital cost.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	2,000,000	2,000,000	0
2021	15,607,000	15,607,000	0
	<b>17,607,000</b>	<b>17,607,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund		2,000,000	15,607,000		<b>17,607,000</b>
<b>Total Revenue</b>			<b>2,000,000</b>	<b>15,607,000</b>		<b>17,607,000</b>
<b>Expense</b>						
	Design & Engineering		2,000,000			<b>2,000,000</b>
	Construction			15,607,000		<b>15,607,000</b>
<b>Total Expense</b>			<b>2,000,000</b>	<b>15,607,000</b>		<b>17,607,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **23-240**  
 Project Title: **Supervisory Control and Data Acquisition (SCADA) Upgrade**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: System Acquisition or Upgrade      Budget Year: 2020  
 Year Identified: 2020  
 Start Date: 7/1/2021      Project Status: Funded  
 Est. Completion Date: 7/30/2024      Region:

## Description:

This project will provide for an upgraded Supervisory Control and Data Acquisition (SCADA) telemetry system to monitor operational conditions of 275 Pump Stations throughout the City of Chesapeake. The project will allow local maintenance personnel the ability to troubleshoot the software and configure the SCADA network as the City expands.

## Justification:

This upgrade is necessary to minimize sewer overflows by alerting Pump Station maintenance personnel of adverse conditions caused by equipment failures, weather conditions and power outages. Having the ability to repair and reconfigure software will allow the City to quickly update for residential growth and rapidly respond to alarm conditions at wastewater pump stations. This project allows the City to maintain compliance with the VDEQ/HRSD Regional Consent Order that requires localities to reduce sanitary sewer overflows.

## Comments:

The current SCADA telemetry system supports 275 wastewater pump stations throughout the City. The Public Utilities Dept.'s Engineering and Maintenance divisions use telemetry data to determine the efficiency of equipment as it serves the wastewater needs for each community. Hardware and software components of the current system are outdated, proprietary, and inherently slow due to network sharing with critical City services. Technical support for the current system is through a single vendor and proprietary software access. Support response times are lengthy and network modifications can only be accomplished by the vendor personnel. Inability to repair and configure the SCADA system effectively reduces the ability of maintenance personnel to respond to alarm conditions.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2022	1,500,000	1,500,000	0
2023	1,500,000	1,500,000	0
2024	1,500,000	1,500,000	0
	<b>4,500,000</b>	<b>4,500,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities			4,500,000	3,000,000	<b>7,500,000</b>
<b>Total Revenue</b>				<b>4,500,000</b>	<b>3,000,000</b>	<b>7,500,000</b>
<b>Expense</b>						
	Design & Engineering			500,000		<b>500,000</b>
	Construction			2,000,000	500,000	<b>2,500,000</b>
	Equipment			1,500,000	2,500,000	<b>4,000,000</b>
	Software			500,000		<b>500,000</b>
<b>Total Expense</b>				<b>4,500,000</b>	<b>3,000,000</b>	<b>7,500,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>25-200</b>		
Project Title:	<b>Unserved Areas/Cost Participation-Ph. II: Cedar Rd. Sewer Extension</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Addition or Expansion	Budget Year:	2020
Year Identified:	2016	Project Status:	Funded
Start Date:	7/1/2015	Region:	
Est. Completion Date:	6/30/2022		

## Description:

This project will provide for the installation of City water and/or sanitary sewer services to areas that are not currently served. This project will specifically include the extension of the existing sewer mains along Cedar Road in two different locations: (1) the Grassfield corridor will extend the existing main southwest from 2076 Cedar Road to 2128 Cedar Road, and (2) the Shillelagh corridor will extend the existing main northeast from 1904 Cedar Road to 1929 Cedar Road. It will serve a total of 13 fronting lots.

## Justification:

Numerous pockets of developed areas exist that historically relied on private water, sewer, or septic systems. Unserved areas generally were developed when the City was more rural, and public water and sewer services were not available. Since then, adjacent areas have been developed with municipal water and sewage services. This project provides funding to construct the public infrastructure needed in older neighborhoods with failing water/sewer systems. It does not cover the cost of connecting residences to the public systems.

## Comments:

On June 25, 2019, City Council approved an amendment to the FY 2020-24 CIP that added a new sub-project # 25-202 "Unserved Areas/Cost Participation-Ph. II: Willow Lakes Utility" under this main project # 25-200 "Unserved Areas/Cost Participation-Ph. II" in order to provide City water and sewer services to the Willow Lakes area along the border of Lake Shore Drive. See also City Council Agenda Item CM-4(E).

For the FY 2020-24 CIP, this main project plan was updated and \$231,000 was added for FY 2020 for the Cedar Road Sewer Extension, which has met all eligibility requirements in the City's Cost Participation Policy and will be handled under this project to extend the existing sewer mains along Cedar Road in two different locations (the Grassfield and Shillelagh corridors).

On September 13, 2016, City Council approved an FY 2017 Capital Budget amendment that changed the funding source for \$1,398,200 of this project's budget from debt to cash and transferred that funding from this project to the other Unserved Areas project. (See also City Council Agenda Item CM-21).

This project is funded by the enterprise fund balance with expectation of replenishment from assessments and surcharges paid by new customers over 25 years. Future additional project work may include Peek Trail. When larger areas meet the criteria for an unserved area project, the project work will be added as sub-projects under this main project.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	1,629,200	1,629,200	0
	<b>1,629,200</b>	<b>1,629,200</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	250,000				<b>250,000</b>
	Cash - Utilities		1,629,200			<b>1,629,200</b>
<b>Total Revenue</b>		<b>250,000</b>	<b>1,629,200</b>			<b>1,879,200</b>
<b>Expense</b>						
	Design & Engineering	164,900	80,000			<b>244,900</b>
	Construction	85,100	1,549,200			<b>1,634,300</b>
<b>Total Expense</b>		<b>250,000</b>	<b>1,629,200</b>			<b>1,879,200</b>
					<b>Obligated to Date:</b>	<b>170,764</b>
						<b>9.09 %</b>

# Project Summary

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## Related Projects

## Operating Budget Impact

<u>Budget Year</u>	<u>Exp (Rev)</u>	<u>FTE Impact</u>
2021	(2,000)	0.0

# Project Summary

Project Number: **25-202**  
 Project Title: **Unservd Areas/Cost Participation-Ph. II: Willow Lakes Utility**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2020  
 Start Date: 7/1/2019      Project Status: Funded  
 Est. Completion Date: 7/30/2025      Region:

## Description:

This sub-project will provide for the design and construction needed to provide City water and sewer services to the Willow Lakes area. It will serve the lots that border Lake Shore Drive. This is a sub-project of the main "Unservd Areas/Cost Participation-Ph. II" project # 25-200.

## Justification:

The Willow Lakes area is not currently served by City water and sewer, and has been designated as an unserved area in the Cost Participation Policy since 2001. The residents of this area have completed the Cost Participation petition process, with over 75% of the owners signing a petition and 50% plus one of the connection fees being paid.

## Comments:

On June 25, 2019, City Council approved an FY 2020-24 CIP amendment that added this as a new sub-project (under main project # 25-200 "Unservd Areas/Cost Participation-Ph. II") with \$3.1 million in funding for FY 2020. Funding was provided by transferring \$1.0 million from other completed Unservd Area projects # 51-128 (\$781,204) and # 51-129 (\$218,796), and by appropriating \$2.1 million from available utilities cash (fund balance). See also City Council Agenda Item CM-4(E).

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	3,100,000	3,100,000	0
	<b>3,100,000</b>	<b>3,100,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund		218,796			218,796
	Cash - Utilities		2,881,204			2,881,204
<b>Total Revenue</b>			<b>3,100,000</b>			<b>3,100,000</b>
<b>Expense</b>						
	Construction		3,100,000			3,100,000
<b>Total Expense</b>			<b>3,100,000</b>			<b>3,100,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

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Project Number: **52-230**  
 Project Title: **Water Franchise Acquisition & System Renewals**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: System Acquisition or Upgrade      Budget Year: 2020  
 Year Identified: 2019      Project Status: Funded  
 Start Date: 7/1/2018      Region:  
 Est. Completion Date: 6/30/2023

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## Description:

This project will provide for the acquisition of a water franchise and system renewals.

## Comments:

On June 12, 2018, City Council approved an amendment to the FY 2019-23 CIP that added this as a new project for FY 2019. The City is negotiating with a private water provider for the acquisition of its franchise and anticipate an offer in the near future. The estimated cost to acquire the franchise and bring the system to appropriate standards is \$6 million. The franchise acquisition would likely follow conclusion of negotiations and the system improvements would take several years.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	6,000,000				6,000,000
<b>Total Revenue</b>		<b>6,000,000</b>				<b>6,000,000</b>
<b>Expense</b>						
	Construction	6,000,000				6,000,000
<b>Total Expense</b>		<b>6,000,000</b>				<b>6,000,000</b>
<b>Obligated to Date:</b>						<b>2,553,442</b>
						<b>42.56 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number: **24-200**  
 Project Title: **Water Renewal: Buchanan St. Area**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2016 Project Status: Funded  
 Start Date: 7/2/2016 Region:  
 Est. Completion Date: 6/30/2022

## Description:

This project will replace approx. 7,700 linear ft. of existing antiquated and undersized water main on Buchanan Street with a minimum 8" water main. This project will also include water renewals on Bainbridge Boulevard (north of Porter Street to the City line), Grady Street, Stewart Street (north of Poindexter Street), Butt Street, D Street, and part of Decatur Street to restore fire protection in this area.

## Justification:

Water main improvements are needed to improve the water distribution system on Buchanan Street and restore functional service to existing customers. Fire flows in the area are unreliable and below standard. Customers experience poor pressure and discoloration issues. Water mains in this area were installed in the 1930's and 1940's, and are unlined cast iron resulting in severe issues within the pipes. The Fire Marshall's Office has voiced concerns over fire flow for nearby highly-concentrated residential areas. Replacing only the galvanized 2" water mains would not restore the fire protection in the area to adequate flows.

## Comments:

For the FY 2019-23 CIP, the project scope was expanded and additional funding was provided in FY 2019 and FY 2020. The original project scope intended to replace the water main on Buchanan Street only. However, beginning in FY 2019, it was determined the scope needed to be expanded to include additional streets where water mains have progressively deteriorated over the years resulting in reduced fire flows to the area.

Fire flows in the area are below standard and are unreliable. Customers experience poor pressure and discoloration issues. Design was completed for the initial project scope for Buchanan Street only, which revealed renewing this limited area was not sufficient to improve fire flow to the overall area. The expanded scope included water renewals needed along other nearby streets, which will ensure fire flows in the area are improved.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	1,050,000	1,050,000	0
	<b>1,050,000</b>	<b>1,050,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	2,256,870	1,050,000			<b>3,306,870</b>
<b>Total Revenue</b>		<b>2,256,870</b>	<b>1,050,000</b>			<b>3,306,870</b>
<b>Expense</b>						
	Design & Engineering	500,000				<b>500,000</b>
	Construction	1,756,870	1,050,000			<b>2,806,870</b>
<b>Total Expense</b>		<b>2,256,870</b>	<b>1,050,000</b>			<b>3,306,870</b>
<b>Obligated to Date:</b>						<b>408,210</b>
						<b>12.34 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>14-160</b>		
Project Title:	<b>Water Renewals: Waterline Upgrades - Phase II</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2012	Project Status:	Funded
Start Date:	7/1/2014	Region:	
Est. Completion Date:	7/30/2028		

## Description:

This project will provide for engineering design, construction, and inspection for the renewal of existing water mains throughout the City. These areas could be merged with the Sanitary Sewer Evaluation Survey (SSES) sewer improvements for efficiency and cost savings. When practical, water and sewer improvements will be constructed together.

## Justification:

These improvements are necessary to replace water mains and appurtenances to provide fire protection and increase flows and pressures creating reliable flow patterns in the system to meet peak demands.

In the FY 2020-24 CIP, funding was added for FY 2024 requirements and future project costs were revised. This project will include various sub-projects to replace areas of damaged/ leaking water mains, and to improve system hydraulics and fire protection by renovating water lines in various areas throughout the City. The next sub-projects planned to be completed by this project include: North Indian River water line renewals \$3M; Blanche Court and Willowood Court galvanized pipe replacements \$600,000; Elizabeth River Park Industrial Area water line and service main renewals \$2.3M; 1100-1300 Block of Edgewood Avenue water line replacement in conjunction with the sewer Consent Order project \$1.2M; 3100-3200 block Walden Street water line replacement in conjunction with sewer Consent Order project \$950,000. Additional future projects to repair over 55,000 linear feet of water lines were identified in the 2012 CE Maguire Study (totaling approx. \$28.3M in FY 2019 dollars), but have not yet been completed. Finally, an additional 33,000+ linear feet of water main replacement needs were identified by internal reviews (totaling approx. \$17M in FY 2019 dollars), further justifying the necessity for continued annual funding to this project.

## Comments:

To maximize efficiency, some of the waterline replacements that will be completed by this project will be completed at the same time as the work for the "Sewer System Redesign/Construction: Albemarle Drive" project # 22-220.

The City of Chesapeake has approx. 950 miles of water mains, much of which were installed before 1970 with some as old as 1920. Due to age, inferior materials, and soil conditions many older lines have deteriorated, which causes leaks and main breaks.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020			0
2021			0
2022			0
2023	2,000,000	2,000,000	0
2024	2,000,000	2,000,000	0
	<b>4,000,000</b>	<b>4,000,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	750,000				<b>750,000</b>
	Cash - Utilities	2,500,000		4,000,000	57,270,000	<b>63,770,000</b>
	<b>Total Revenue</b>	<b>3,250,000</b>		<b>4,000,000</b>	<b>57,270,000</b>	<b>64,520,000</b>

# Project Summary

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## Expense

Construction	3,250,000	4,000,000	57,270,000	<b>64,520,000</b>
<b>Total Expense</b>	<b>3,250,000</b>	<b>4,000,000</b>	<b>57,270,000</b>	<b>64,520,000</b>

**Obligated to Date:** 283,261  
0.44 %

## Related Projects

### Operating Budget Impact

<u>Budget Year</u>	<u>Exp (Rev)</u>	<u>FTE Impact</u>
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# Project Summary

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Project Number:	<b>32-200</b>		
Project Title:	<b>Water Residuals Disposal</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Study	Budget Year:	2020
Year Identified:	2016	Project Status:	Funded
Start Date:	7/1/2018	Region:	
Est. Completion Date:	6/30/2021		

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## Description:

This project will provide for a long-term solution for the disposal of residuals (byproducts) resulting from water treatment.

## Justification:

The existing residuals disposal site, adjacent to the Northwest River Water Treatment Plant, has a finite lifespan. It is necessary to identify and plan for a new disposal site to allow continued operation of the treatment plants and comply with regulatory requirements. Residuals currently disposed of in trenches at the disposal site, but there is a limited amount of space available for future trenches. A long-term solution is required.

## Comments:

Residuals include organic matter and minerals removed from raw water during the treatment process. The FY 2019 funding provided for the evaluation only. Future plans will need to address the cost of the study's recommendations.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities		320,000			320,000
<b>Total Revenue</b>			<b>320,000</b>			<b>320,000</b>
<b>Expense</b>						
	Design & Engineering		320,000			320,000
<b>Total Expense</b>			<b>320,000</b>			<b>320,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

Project Number:	<b>33-210</b>		
Project Title:	<b>Water System Planning and Upgrades</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Renovation or Rehabilitation	Budget Year:	2020
Year Identified:	2017	Project Status:	Funded
Start Date:	7/1/2017	Region:	
Est. Completion Date:	6/30/2026		

## Description:

This project will provide for master planning and upgrades for the City of Chesapeake's water distribution system, which will include hydraulic studies for determining system upgrades, extension of the existing water mains to unserved areas within and/or beyond the Public Utilities franchise area, and the addition of new water mains to form an interconnected looped water system.

## Justification:

The existing water distribution system requires ongoing repairs and renewals as well as the addition of new water lines in order to meet the constant demand of water supply. The master water planning will determine the existing conditions of the water distribution system and establish citywide water projects that will result in a more reliable and enhanced water system. There will be a nominal change to annual operation and maintenance costs. The impact on operating costs will be calculated as each project is defined and proposed for approval.

## Comments:

The current system still contains some dead end mains in various locations that limit the capability to provide water services to citizens in case of a water main break or failure. There are also many unserved areas requiring extension of existing water mains through the Cost Participation Program.

The FY 2020-24 CIP added funding needed for FY 2024. This project was initially funded in the FY 2017-21 CIP with \$400,000 budgeted for FY 2017 plus future investments of \$250,000 per year. The FY 2018-22 CIP included funding for FY 2022, and the FY 2019-23 CIP included funding for FY 2023. The need for future funding is still anticipated.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020			0
2021	250,000	250,000	0
2022	250,000	250,000	0
2023	400,000	400,000	0
	<b>900,000</b>	<b>900,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	900,000		900,000	400,000	<b>2,200,000</b>
	<b>Total Revenue</b>	<b>900,000</b>		<b>900,000</b>	<b>400,000</b>	<b>2,200,000</b>
<b>Expense</b>						
	Construction	250,000		900,000	400,000	<b>1,550,000</b>
	Other	650,000				<b>650,000</b>
	<b>Total Expense</b>	<b>900,000</b>		<b>900,000</b>	<b>400,000</b>	<b>2,200,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

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Project Number: **33-200**  
 Project Title: **Western Branch Elevated Tank Rehabilitation**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation** Budget Year: **2020**  
 Year Identified: **2016**  
 Start Date: **7/1/2017** Project Status: **Funded**  
 Est. Completion Date: **6/30/2020** Region:

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## Description:

This project will provide for rehabilitation of the Western Branch Elevated Tank, which will include re-coating interior and exterior surfaces, repairing the tank floor, installing a mixing system, upgrading safety devices, and installing water quality monitoring equipment.

## Justification:

The paint coating on elevated water storage tanks fades with age and eventually exposes the underlying steel to corrosion. Periodic re-coating and repair extends the useful life of the tank.

## Comments:

Each tank located in the water distribution system is inspected at five year intervals. During the inspections, tank condition is documented and improvements are recommended. Tanks are placed in a priority sequence for rehabilitation to ensure that the water quality is maintained throughout the distribution system.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2020	1,200,000	1,200,000	0
	<b>1,200,000</b>	<b>1,200,000</b>	<b>0</b>

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities		1,200,000			1,200,000
<b>Total Revenue</b>			<b>1,200,000</b>			<b>1,200,000</b>
<b>Expense</b>						
	Design & Engineering		120,000			120,000
	Construction		1,080,000			1,080,000
<b>Total Expense</b>			<b>1,200,000</b>			<b>1,200,000</b>
<b>Obligated to Date:</b>						<b>0</b>
						<b>0.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **21-140**  
 Project Title: **Battlefield to Centerville Water Main - Phase I**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2010  
 Start Date: 7/5/2009      Project Status: Fully Funded  
 Est. Completion Date: 12/30/2019      Region:

## Description:

This project will improve the City's water distribution system, reliability, and fire protection via a transmission main on Etheridge Manor Boulevard from Battlefield Boulevard to Jule Drive.

Phase I will consist of 2,685 linear ft. of HDD 30" HDPE pipe and 3,276 linear ft. of 24" DIP water main. When combined with other transmission mains installed on Centerville Turnpike, this main will provide significantly increased reliability and fire protection to the southeast section of Greenbrier (north of the Chesapeake and Albemarle Canal near Butts Station and Elbow Roads).

## Justification:

This is the first phase of a project that will improve system hydraulics, reliability, and fire protection in this area of the city.

## Comments:

Design has been completed. Construction is underway.

On April 28, 2015, council appropriated \$8,455,689 from Public Utilities fund balance to fund construction to complete Phase I (\$4,755,689) and Phase II (\$3,700,000). See also project # 22-140 for Phase II. The installation of the new water main will result in a nominal increase to annual operating costs. This project is located in the City's Pleasant Grove Borough.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	5,205,689				5,205,689
<b>Total Revenue</b>		<b>5,205,689</b>				<b>5,205,689</b>
<b>Expense</b>						
	Design & Engineering	1,100,000				1,100,000
	Construction	4,105,689				4,105,689
<b>Total Expense</b>		<b>5,205,689</b>				<b>5,205,689</b>
<b>Obligated to Date:</b>						<b>5,027,475</b>
						<b>96.58 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2020	3,800	0.0

# Project Summary

# Fully Funded

Project Number: **22-140**  
 Project Title: **Battlefield to Centerville Water Main - Phase II**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2010  
 Start Date: 7/6/2009      Project Status: Fully Funded  
 Est. Completion Date: 12/30/2019      Region:

## Description:

This project will improve the City's water distribution system, reliability, and fire protection by the installation of a transmission main in the Etheridge Manor Boulevard corridor from Jule Drive to Centerville Turnpike.

Phase II will consist of 7,600 linear ft. of 24" DIP Water Main. When combined with other transmission mains installed on Centerville Turnpike, this main will provide significantly increased reliability and fire protection to the southeast section of Greenbrier (north of the Chesapeake and Albemarle Canal near Butts Station and Elbow Roads).

## Justification:

This is the second phase of a project that will improve system hydraulics, reliability and fire protection in this area of the city. The new 24" water main will connect to an existing 16" water main located at the intersection of Etheridge Manor Boulevard and Centerville Turnpike and terminating at the intersection of Etheridge Manor Boulevard and Jule Drive.

## Comments:

Design has been completed. Construction is underway.

On July 12, 2016, City Council approved a change of funding source for \$3,500 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

On April 28, 2015, Council appropriated \$8,455,689 from Public Utilities fund balance to fund construction to complete Phase I (\$4,755,689) and Phase II (\$3,700,000). See also project # 21-140 for Phase I. The installation of the new water main will result in a nominal increase to annual operating costs. This project is located within the Pleasant Grove Borough.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	460,500				460,500
	Cash - Utilities	3,703,500				3,703,500
<b>Total Revenue</b>		<b>4,164,000</b>				<b>4,164,000</b>
<b>Expense</b>						
	Design & Engineering	664,000				664,000
	Construction	3,500,000				3,500,000
<b>Total Expense</b>		<b>4,164,000</b>				<b>4,164,000</b>
					<b>Obligated to Date:</b>	<b>3,591,541</b>
						<b>86.25 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2020	4,800	0.0

# Project Summary

# Fully Funded

Project Number: **20-170**  
Project Title: **Crestwood Sewer - Phase II (Pump Station #931)**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: Replacement Budget Year: 2020  
Year Identified: 2013 Project Status: Fully Funded  
Start Date: 7/1/2014 Region:  
Est. Completion Date: 6/30/2020

## Description:

This project will renew or replace 6,700 ft. of 8" gravity sewer main and appurtenances for mains flowing to Lincoln Street. This will include Carver Street and alleys between the following streets: Dunn/Outlaw, Bainbridge/Tuskegee, Tuskegee/Ray, Ray/Pile, Pile/Durham, and Durham/Laura.

## Justification:

TV inspection and excessive maintenance indicates severe deterioration requiring replacement.

## Comments:

On July 12, 2016, City Council approved a change of funding source for project expenses incurred through June 15, 2016 from future revenue bonds to cash in the amount of \$224,158.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	2,831,535				2,831,535
<b>Total Revenue</b>		<b>2,831,535</b>				<b>2,831,535</b>
<b>Expense</b>						
	Construction	2,831,535				2,831,535
<b>Total Expense</b>		<b>2,831,535</b>				<b>2,831,535</b>
<b>Obligated to Date:</b>						<b>1,640,390</b>
						<b>57.93 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **21-170**  
 Project Title: **Crestwood Sewer - Phase III (Pump Station #12)**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2013 Project Status: Fully Funded  
 Start Date: 7/2/2015 Region:  
 Est. Completion Date: 6/30/2020

### Description:

This project will replace approximately 3,360 linear ft. of 8" gravity sewer main and appurtenances along Booker Street, the alleyway north of Carver Street, and the alleyways on both sides of Charles Street to the interstate.

### Justification:

TV inspection and excessive maintenance indicates severe deterioration requiring replacement.

### Comments:

On July 12, 2016, City Council approved a change of funding source for project expenses incurred through June 15, 2016 from future revenue bonds to cash in the amount of \$149,438.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	1,600,364				1,600,364
<b>Total Revenue</b>		<b>1,600,364</b>				<b>1,600,364</b>
<b>Expense</b>						
	Construction	1,600,364				1,600,364
<b>Total Expense</b>		<b>1,600,364</b>				<b>1,600,364</b>
<b>Obligated to Date:</b>						<b>966,656</b>
						<b>60.40 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **34-120**  
Project Title: **Customer Service & Billing Software**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: Replacement Budget Year: 2020  
Year Identified: 2008 Project Status: Fully Funded  
Start Date: 7/2/2007 Region:  
Est. Completion Date: 6/30/2020

## Description:

This project will provide for the replacement of Customer Service and Billing Software system used by Public Utilities.

## Justification:

The current system is based upon aging mainframe architecture that limits the support of the application technically and functionally.

## Comments:

This project is being completed in phases. The 1st phase of the CIS software was implemented in spring 2013. The 2nd phase is in progress and includes developing several custom modifications and testing.

On July 12, 2016, City Council approved a change of funding source for \$213,803 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	4,186,197				4,186,197
	Cash - Utilities	213,803				213,803
	Fund Balance - Utilities	1,500,000				1,500,000
<b>Total Revenue</b>		<b>5,900,000</b>				<b>5,900,000</b>
<b>Expense</b>						
	Other	5,900,000				5,900,000
<b>Total Expense</b>		<b>5,900,000</b>				<b>5,900,000</b>
					<b>Obligated to Date:</b>	<b>5,051,119</b>
						<b>85.61 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **34-200**  
Project Title: **Force Main Replacement: Dominion Blvd. and I-64**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: Replacement Budget Year: 2020  
Year Identified: 2016 Project Status: Fully Funded  
Start Date: 7/1/2015 Region:  
Est. Completion Date: 12/30/2020

## Description:

This project will renew and replace 4,926 linear ft. of 4" and 12" force main between Pump Stations #110 and #142. This project may also need to include directional drilling under Interstate 64 and Interstate 464.

## Justification:

The existing force main is operating, but will likely require continued repairs due to corrosive nature of soils. Recent failures of the force main have caused several sewer spills. Because the existing main is 17 feet below grade, repairs are extremely expensive. Replacement of the existing force main will improve reliability, prevent future sewer spills, and avoid costly repairs.

## Comments:

The preliminary engineering report has been completed. The duration of the design and easement acquisition phase is estimated to be one year (ending in FY 2020). The construction stage is also expected to be one year (ending in FY 2021).

This project was initiated in the FY 2015-19 CIP. In the FY 2018-22 CIP, a portion of this project's construction funding was moved to FY 2018 in order to accelerate project # 42-170 "Sewer Renewal: Westwood Ave. and Redstart Ave." in South Norfolk.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	5,238,700				5,238,700
<b>Total Revenue</b>		<b>5,238,700</b>				<b>5,238,700</b>
<b>Expense</b>						
	Design & Engineering	683,000				683,000
	Construction	4,555,700				4,555,700
<b>Total Expense</b>		<b>5,238,700</b>				<b>5,238,700</b>
<b>Obligated to Date:</b>						<b>489,558</b>
						<b>9.35 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2020	5,500	0.0



# Project Summary

# Fully Funded

Project Number: **29-050**  
 Project Title: **Jolliff Rd. Waterline - Phase II**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement      Budget Year: 2020  
 Year Identified: 2001      Project Status: Fully Funded  
 Start Date: 1/2/1999      Region:  
 Est. Completion Date: 7/30/2020

### Description:

This project will provide for the installation of a 12" and a 16" water main, which will improve system hydraulics and fire protection in this area of Western Branch. (Lowes Shopping Center).

### Justification:

This purpose of this project is to improve the City's water distribution system, reliability, and fire protection in this area of the City. A 16" water main has been extended approximately 3,100 feet starting from the existing 20" water main at Jolliff Road and Old Jolliff Road along Jolliff Road to Portsmouth Boulevard. Then a 12" water main continues approximately 3,000 feet on Jolliff Road to Jolliff Court.

### Comments:

This project has been completed. Awaiting documented information to reimburse costs.

Footnote: Project work was performed by developer of the Lowes Shopping Center on Portsmouth Boulevard. The developer never presented appropriate invoices and documentation to be reimbursed. City attorney recommends that the project continues open until matter is resolved.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Fund Balance - Utilities	653,800				653,800
<b>Total Revenue</b>		<b>653,800</b>				<b>653,800</b>
<b>Expense</b>						
	Other	653,800				653,800
<b>Total Expense</b>		<b>653,800</b>				<b>653,800</b>
<b>Obligated to Date:</b>						<b>19</b>
						<b>0.00 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **28-170**  
Project Title: **Manhole Rehabilitation**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: **Renovation or Rehabilitation** Budget Year: **2020**  
Year Identified: **2013** Project Status: **Fully Funded**  
Start Date: **7/1/2013** Region:  
Est. Completion Date: **6/30/2020**

## Description:

This project will provide funding for manhole rehabilitation projects.

## Justification:

This project is needed to rehabilitate sanitary sewer manholes not currently identified that may be the cause of leaks, cave-ins, or other operational issues.

## Comments:

Completed work replaced a manhole on Willow Avenue and on Mooney Road. Other manhole repairs are being identified and are currently underway. Project funding will be used to rehabilitate additional manholes throughout the City.

On July 12, 2016, City Council approved a change of funding source for \$149,845 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	772,155				772,155
	Cash - Utilities	149,845				149,845
<b>Total Revenue</b>		<b>922,000</b>				<b>922,000</b>
<b>Expense</b>						
	Construction	922,000				922,000
<b>Total Expense</b>		<b>922,000</b>				<b>922,000</b>
					<b>Obligated to Date:</b>	<b>752,143</b>
						<b>81.58 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **40-130**  
 Project Title: **Murray Dr. and Whittamore Rd. Water Project**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2009  
 Start Date: 7/1/2009      Project Status: Fully Funded  
 Est. Completion Date: 6/30/2020      Region:

### Description:

This project will provide design services and construction for water for neighborhoods in the vicinity of the Battlefield Golf Club. (Funded by Dominion Power). This project will consist of installation of a 16" water main along Centerville Turnpike from Etheridge Manor Boulevard to the existing 16" City water main near Albemarle Acres. Also, 8" and 10" water mains will be extended on Murray Drive and Whittamore Road.

### Justification:

Due to concerns of the quality of the water from the wells in the vicinity of Battlefield Golf Club, this project will review all possible alternatives and recommend the most efficient method to provide potable water to the existing residences and businesses in this vicinity.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Fund Balance - Utilities	6,000,000				6,000,000
<b>Total Revenue</b>		<b>6,000,000</b>				<b>6,000,000</b>
<b>Expense</b>						
	Design & Engineering	750,000				750,000
	Construction	4,650,000				4,650,000
	Land Acquisition	100,000				100,000
	Other	500,000				500,000
<b>Total Expense</b>		<b>6,000,000</b>				<b>6,000,000</b>
<b>Obligated to Date:</b>						<b>4,563,077</b>
						<b>76.05 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **30-200**  
Project Title: **Northwest River WTP - Replace Bulk Chemical Storage Tanks**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: Replacement Budget Year: 2020  
Year Identified: 2016 Project Status: Fully Funded  
Start Date: 7/1/2015 Region:  
Est. Completion Date: 12/30/2019

## Description:

This project will provide for the removal, disposal, and replacement of chemical storage tanks at the Northwest River Water Treatment Plant.

## Justification:

The existing chemical storage tanks are approaching the end of their typical lifespan and are showing signs of deterioration. In order to ensure employee safety and regulatory compliance, the tanks must be replaced.

## Comments:

This project went out to bid in FY 2019.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	300,000				300,000
	Cash - Utilities	900,000				900,000
<b>Total Revenue</b>		<b>1,200,000</b>				<b>1,200,000</b>
<b>Expense</b>						
	Design & Engineering	300,000				300,000
	Construction	900,000				900,000
<b>Total Expense</b>		<b>1,200,000</b>				<b>1,200,000</b>
					<b>Obligated to Date:</b>	<b>1,199,532</b>
						<b>99.96 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **29-200**  
 Project Title: **Northwest River WTP - Replace Ground Storage Tank**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2016 Project Status: Fully Funded  
 Start Date: 7/1/2020 Region:  
 Est. Completion Date: 6/30/2023

## Description:

This project will provide for the replacement of one of the existing two-million gallon water storage tanks.

## Justification:

The existing water storage tank was constructed in 1979, and is currently out of service because the domed roof is sagging and not weather tight. A second storage tank is still in good condition, but does not have the capacity to allow optimal operations of the water treatment plant. Since the sagging dome had the potential to collapse, the demolition of this tank was accelerated and occurred in FY 2017 ahead of the construction of the new tank. This project will cover the replacement of the tank. (Location: Southern Chesapeake Borough).

## Comments:

The project is in the procurement process and will be constructed through the design-build method.

On March 13, 2018, City Council approved an amendment to the FY 2018 Capital Budget to transfer \$1,680,000 of previously appropriated utilities funding (cash and revenue bonds) from the NW River Water Treatment Plant Miscellaneous Modifications capital project # 19-130 to the NW River Water Treatment Plant Ground Storage Tank Replacement capital project #29-200 in order to complete the tank replacement during FY 2018. Since the tank replacement was initially planned to be funded in FY 2021, the FY 2021 funding for project # 29-200 was removed. The future funding needs for project # 19-130 has been requested in the FY 2020-24 CIP capital budget cycle.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
2021			0
2022			0
	0	0	0

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	680,000				680,000
	Cash - Utilities	1,000,000				1,000,000
	<b>Total Revenue</b>	<b>1,680,000</b>				<b>1,680,000</b>
<b>Expense</b>						
	Design & Engineering	50,000				50,000
	Construction	1,630,000				1,630,000
	<b>Total Expense</b>	<b>1,680,000</b>				<b>1,680,000</b>
					<b>Obligated to Date:</b>	0
						0.00 %

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number:	<b>05-190</b>		
Project Title:	<b>Oak Grove Elevated Tank Standpipe Replacement</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2015	Project Status:	Fully Funded
Start Date:	7/1/2014	Region:	
Est. Completion Date:	12/30/2019		

## Description:

This project will replace the main water pipe (standpipe) that runs from the bottom of the Oak Grove elevated water storage tank to the "bowl" at the top of the tank.

## Justification:

The standpipe allows the tank to fill and empty. It was identified as needing replacement after a certified inspection identified multiple leaks and pin holes. The leaks are addressed by temporary repairs pending replacement of the standpipe.

## Comments:

On July 10, 2018, City Council approved an amendment that transferred \$190,000 of utilities revenue bond funding from project # 54-120 "NW River Water Treatment Plant 30" Raw Water Main" to project # 05-190 "Oak Grove Elevated Tank Standpipe Replacement" in order to complete this project because the lowest bid exceeded the project budget.

When the tank was painted in 2009, the standpipe was observed to have deteriorated to the point that replacement was recommended. The standpipe was not in danger of imminent failure, but a sooner replacement was recommended to schedule the work with the least impact on the system with regard to seasonal demand. The project was delayed multiple times to achieve the most cost effective contract. Project work is underway.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	190,000				190,000
	Fund Balance - Utilities	200,000				200,000
<b>Total Revenue</b>		<b>390,000</b>				<b>390,000</b>
<b>Expense</b>						
	Equipment	390,000				390,000
<b>Total Expense</b>		<b>390,000</b>				<b>390,000</b>
					<b>Obligated to Date:</b>	<b>344,934</b>
						<b>88.44 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **30-210**  
Project Title: **Public Utilities - CIS Upgrade**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: System Acquisition or Upgrade Budget Year: 2020  
Year Identified: 2017 Project Status: Fully Funded  
Start Date: 7/1/2017 Region:  
Est. Completion Date: 7/30/2020

## Description:

This project provides periodic upgrades to the Public Utility CIS billing system, which was originally implemented in October 2013. This system functions with primary integrations with the City's financial system, the Treasurer, and the Hampton Roads Sanitation District (HRSD).

## Justification:

The Customer Information System (CIS) is a necessity for the City and a vital tool for the Public Utilities Dept. to manage and bill all water and sewer accounts for residential, commercial, fire, irrigation, and back flow devices. Planned upgrades include the SQL Server in FY 2019, the Customer System Management (CSM) Module in FY 2020, and the product core with customizations in FY 2020.

## Comments:

The most recent system upgrade occurred in FY 2018.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	100,000				100,000
<b>Total Revenue</b>		<b>100,000</b>				<b>100,000</b>
<b>Expense</b>						
	Software	100,000				100,000
<b>Total Expense</b>		<b>100,000</b>				<b>100,000</b>
<b>Obligated to Date:</b>						<b>21,174</b>
						<b>21.17 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2021	10,000	0.0

# Project Summary

# Fully Funded

Project Number:	<b>27-120</b>		
Project Title:	<b>Sanitary Sewer Evaluation Study</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Study	Budget Year:	2020
Year Identified:	2008		
Start Date:	7/1/2007	Project Status:	Fully Funded
Est. Completion Date:	7/30/2023	Region:	

### Description:

This project will provide for the completion of a Sanitary Sewer Evaluation Study (SSES).

### Justification:

This study and associated activities are required by the proposed Consent Order from Virginia Dept. of Environmental Quality (DEQ).

### Comments:

Per the Consent Order, ongoing studies of the sewer systems and pump stations are underway.

On July 12, 2016, City Council approved a change of funding source for project expenses incurred through June 15, 2016 from future revenue bonds to cash in the amount of \$834,874.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	7,655,606				7,655,606
	Cash - Utilities	834,874				834,874
	Fund Balance - Utilities	169,599				169,599
	<b>Total Revenue</b>	<b>8,660,079</b>				<b>8,660,079</b>
<b>Expense</b>						
	Design & Engineering	6,404,708				6,404,708
	Construction	655,371				655,371
	Other	1,600,000				1,600,000
	<b>Total Expense</b>	<b>8,660,079</b>				<b>8,660,079</b>
					<b>Obligated to Date:</b>	<b>7,266,267</b>
						<b>83.91 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **35-170**  
 Project Title: **Sewer Improvements: Gravity Sewer System at Indian River Service Area - Phase I (Pump Station #3)**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2013 Project Status: Fully Funded  
 Start Date: 7/1/2013 Region:  
 Est. Completion Date: 12/30/2021

## Description:

This project will provide for improvements to the existing gravity sewer system in the City's Indian River area, including improvements to Pump Station 3. This project will replace the all of the existing antiquated gravity sewer and will install approx. 15,026 ft. of new gravity sewer within the service area of Pump Station 3, and will include new sewer within the Indian River Estates subdivision and adjacent parcels.

## Justification:

The Sanitary Sewer Evaluation Study (SSES) required by the Virginia Dept. of Environmental Quality (DEQ) revealed deficiencies in the sewer system in the Indian River area. The DEQ Consent Order requires the City to remediate deficiencies identified in the study. The study and City maintenance logs indicated severe deterioration that required replacement. The existing gravity sewer is composed of antiquated clay pipe that has deteriorated over time.

## Comments:

Design is 90% complete, and project work will proceed after the water system purchase. Improvements to that water system will be included in this project. (Location: Washington Borough).

This project will completely replace the existing gravity sewer system, including manholes and service laterals within the Indian River Estates subdivision. Previous funding of \$4.67 million was appropriated to this project, and additional funding of \$1.6 million was added for FY 2018 because the City will be expected to provide entire new roads to replace existing sub-standard roads within this subdivision.

On July 12, 2016, City Council approved a change of funding source for \$201,481 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	1,798,519				1,798,519
	Cash - Utilities	4,474,459				4,474,459
<b>Total Revenue</b>		<b>6,272,978</b>				<b>6,272,978</b>
<b>Expense</b>						
	Construction	6,272,978				6,272,978
<b>Total Expense</b>		<b>6,272,978</b>				<b>6,272,978</b>
<b>Obligated to Date:</b>						<b>680,479</b>
						<b>10.85 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2023	4,800	0.0







# Project Summary

# Fully Funded

Project Number: **32-120**  
 Project Title: **Sewer Renewal: SSES Implementation - Phase I**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2008 Project Status: Fully Funded  
 Start Date: 7/2/2010 Region:  
 Est. Completion Date: 12/30/2019

## Description:

This project will consist of sewer renewal projects in two distinct service areas: Indian River and Rosemont Avenue. Plans will replace deficient sanitary sewer components identified as critical in the Sewer System Evaluation Survey (SSES). Phase I will improve the gravity sewer system for the Indian River service area with the improvements at Pump Station #3 located within the Indian River Estates subdivision. The existing sanitary sewer mains from Pump Station #7 north to Rosemont Avenue will also be replaced with this project.

## Justification:

Closed circuit television (CCTV) inspection and excessive maintenance indicated severe deterioration requiring replacement.

## Comments:

On July 12, 2016, City Council approved a change of funding source for \$353,745 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

Rosemont Avenue Water and Sewer Renewal project work will replace 1,300 linear ft. of storm drain; and will replace and relocate 1,800 linear ft. of failing sanitary sewer; 500 linear ft. of sanitary force main; and 1,500 linear ft. of undersized water main. (Location: South Norfolk Borough). TV inspection and excessive maintenance indicated severe deterioration for this area. Public Utilities is leading the management of the design and construction phases, but coordinating work with Public Works. Project work is underway.

The Indian River Estates Pump Station #3 project work has been completed. (Location: Washington Borough).

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	1,633,044				1,633,044
	Cash - Utilities	2,882,992				2,882,992
<b>Total Revenue</b>		<b>4,516,036</b>				<b>4,516,036</b>
<b>Expense</b>						
	Design & Engineering	200,000				200,000
	Construction	4,316,036				4,316,036
<b>Total Expense</b>		<b>4,516,036</b>				<b>4,516,036</b>
					<b>Obligated to Date:</b>	<b>3,408,282</b>
						<b>75.47 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number:	<b>33-120</b>		
Project Title:	<b>Sewer Renewal: SSES Implementation - Phase II (Indian River Area Study/PS #107 Upgrade)</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2008	Project Status:	Fully Funded
Start Date:	7/1/2011	Region:	
Est. Completion Date:	7/30/2021		

## Description:

This project will implement the second phase of improvements necessary to address deficiencies identified in the Sewer System Evaluation Survey (SSES). Phase II will provide for an engineering assessment and recommendations for improving the existing Force Mains and Pump Station in the City's Indian River area. (See also project # 27-120 "Sewer System Evaluation Survey (SSES)" and project # 32-120 for details of Phase I). Based on the preliminary Engineering Study, this project will provide for the overhaul and complete replacement of the existing City pumping station #107 located on Providence Road, the replacement of 930 ft. of the existing force main, and installation of a gravity sewer line. (Location: Washington Borough).

## Justification:

Due to the poor condition of Pump Station #107, a complete overhaul of the pump station, related force main, and gravity sewer is necessary. This project will prevent sanitary sewer overflows by improving the capability of the City's sewer pump station force main systems.

## Comments:

Project is underway. On December 11, 2018, City Council approved an FY 2019 Capital Budget amendment that added project # 65-230 "Philmont Ave Septic System Disconnection" and transferred \$1,325,000 to fund it from two city-wide capital projects. Public Utilities provided 49% of the funding (\$650,000) from project # 33-120 "Sewer Renewal: SSES Implementation-Phase II". Stormwater provided 51% of the funding (\$675,000) from project # 05-140 "Stormwater Quality Program/VPDES Permit Compliance".

On March 13, 2018, City Council approved an FY 2018 Capital Budget Amendment that transferred \$1 million to project # 33-120 "Sewer Renewal: SSES Implementation - Phase II" from four recently completed capital projects (\$61,256 from project # 12-160; \$156,304 from # 27-200; \$41,246 from # 29-170; and \$741,194 from # 54-120). The transferred funding included Utilities cash and revenue bonds.

A preliminary engineering report was completed to study the Indian River Area needs. The report recommended rebuilding Pump Station #107, extending the 10" force main by 930 ft. upstream of PS #107, and improving the gravity sewer. In the FY 2018-22 CIP, \$1.6 million was added to FY 2018 to address the work outlined in the report.

On July 12, 2016, City Council approved a change of funding source for \$126,200 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	3,539,982				3,539,982
	Cash - Utilities	1,339,755				1,339,755
<b>Total Revenue</b>		<b>4,879,737</b>				<b>4,879,737</b>
<b>Expense</b>						
	Design & Engineering	202,000				202,000
	Construction	4,677,737				4,677,737
<b>Total Expense</b>		<b>4,879,737</b>				<b>4,879,737</b>

**Obligated to Date: 685,573**  
14.05 %

# Project Summary

Fully Funded

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## Related Projects

### Operating Budget Impact

<u>Budget Year</u>	<u>Exp (Rev)</u>	<u>FTE Impact</u>
2022	11,500	0.0

# Project Summary

# Fully Funded

Project Number:	42-170		
Project Title:	Sewer Renewal: Westwood Ave. and Redstart Ave.		
Asset Type:			
Department:	Public Utilities Capital Projects		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2013	Project Status:	Fully Funded
Start Date:	7/1/2016	Region:	
Est. Completion Date:	12/30/2020		

## Description:

This project consists of the renewal and/or replacement of 5,000 linear ft. of gravity sewer mains and appurtenances along Westwood Avenue, Redstart Avenue, and Virginia Avenue, and up to the connection point at Bainbridge Boulevard to the existing 18" Hampton Roads Sanitation District (HRSD) sewer main. To maximize efficiency, this project will be completed at the same time as the sewer improvements to Virginia Avenue (which will be completed by the "Sewer Renewal: Additional Consent Order Capital Requirement" project # 05-180).

## Justification:

The existing sewer mains are comprised of vitrified clay and truss pipes with poor slopes that contain significant structural defects, which is causing operation disruptions and preventing the system from functioning properly.

## Comments:

Project work began in FY 2017 and is underway. For the FY 2020-24 CIP, the project scope was revised and approx. 3,000 linear ft. of additional gravity sewer main work on Virginia Avenue was added to the initially defined project limits.

This project was on the 2008 and 2012 CIP lists. However, the South Norfolk Civic League indicated concerns with sewer. In response, the City advanced this project's funding to FY 2017 from FY 2018. Funding for the "Force Main Replacement: Dominion/I-64 (from PS 110 to 142)" project # 34-200 was pushed back to allow this project to move up.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
------	---------------	---------------	------------

## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	1,106,000				1,106,000
<b>Total Revenue</b>		<b>1,106,000</b>				<b>1,106,000</b>
<b>Expense</b>						
	Construction	1,106,000				1,106,000
<b>Total Expense</b>		<b>1,106,000</b>				<b>1,106,000</b>
<b>Obligated to Date:</b>						<b>1,106,000</b>
						<b>100.00 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2022	(1,800)	0.0

# Project Summary

# Fully Funded

Project Number: **22-220**  
 Project Title: **Sewer System Redesign/Construction: Albemarle Dr.**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: **Renovation or Rehabilitation**      Budget Year: **2020**  
 Year Identified: **2018**  
 Start Date: **7/1/2017**      Project Status: **Fully Funded**  
 Est. Completion Date: **12/30/2019**      Region:

## Description:

This project will provide for redesign and construction of a new main sewer gravity system on Albemarle Drive, and will include a new grinder system to effectively deal with the specialized waste stream from the Jail and Juvenile Services.

## Justification:

This project is needed because the sewer vault in front of the Jail requires frequent cleaning to remove plastic/paper wrappers and other trash from the waste stream of the Jail/Juvenile Services (which is typical for correctional facilities). This is very labor-intensive and costly. The main sewer system along Albemarle Drive also has grade problems and needs to be redesigned to meet current requirements. The planned improvements for this project will address these needs.

## Comments:

The Jail and Juvenile Services facilities impose special requirements on the main sewer system, which processes a very high volume and considerable amount of trash in the waste stream. The system was recently modified out by Albemarle Drive to resolve a grade problem. The existing grinder and grate system is not considered adequate, and the gravity system needs to be resigned for the anticipated load. Although this will require an additional part-time staff member (0.5 FTE), it is anticipated that this project will reduce other operating expenses for a net cost reduction overall.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	700,000				<b>700,000</b>
<b>Total Revenue</b>		<b>700,000</b>				<b>700,000</b>
<b>Expense</b>						
	Design & Engineering	100,000				<b>100,000</b>
	Construction	600,000				<b>600,000</b>
<b>Total Expense</b>		<b>700,000</b>				<b>700,000</b>
<b>Obligated to Date:</b>						<b>21,971</b>
						<b>3.14 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
2021	(24,000)	0.5

# Project Summary

# Fully Funded

Project Number:	<b>45-120</b>		
Project Title:	<b>South Norfolk Improvements</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2008	Project Status:	Fully Funded
Start Date:	7/1/2008	Region:	
Est. Completion Date:	6/30/2020		

## Description:

This project will install new water mains and replace substandard water mains and appurtenances at various locations in South Norfolk.

## Justification:

This project will improve the City's water supply and reliability considering recent and upcoming growth in South Norfolk. The project consists of improvements to the City's water distribution system to allow transfer of demand to the Northwest River/ Lake Gaston supply. A master plan will be developed from hydraulic modeling of the City's system using the DHI Mike Urban software. Specific improvements will be designed and constructed in phases and will include upgrades to existing mains and new water main loops and interconnections in the South Norfolk and Washington Boroughs, which are presently supplied by Norfolk water.

## Comments:

Poindexter Streetscape Phase II-Additional Work: Sewer renewal along Decatur Street has been completed. Sewer renewal and water service line replacement along Chesapeake Avenue has begun. The water main on Lincoln Street is being renewed through Crestwood Sewer-Phase I.

On July 12, 2016, City Council approved a change of funding source for \$98,362 in project expenses incurred through June 15, 2016 from future revenue bonds to cash.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund	2,751,638				2,751,638
	Cash - Utilities	98,362				98,362
<b>Total Revenue</b>		<b>2,850,000</b>				<b>2,850,000</b>
<b>Expense</b>						
	Design & Engineering	2,850,000				2,850,000
<b>Total Expense</b>		<b>2,850,000</b>				<b>2,850,000</b>
					<b>Obligated to Date:</b>	<b>1,372,062</b>
						<b>48.14 %</b>

## Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **32-210**  
Project Title: **Water & Sewer Pump Station Telemetry Installation and Upgrade**  
Asset Type:  
Department: **Public Utilities Capital Projects**  
Project Type: System Acquisition or Upgrade Budget Year: 2020  
Year Identified: 2017 Project Status: Fully Funded  
Start Date: 7/1/2016 Region:  
Est. Completion Date: 12/30/2019

## Description:

This project will provide for the installation of wireless telemetry in finished water pump stations, and the upgrade of existing telemetry in sewer pump stations from analog to digital.

## Justification:

Monitoring the status of water and sewer pump stations with digital technology increases operational data reliability and automation.

## Project Forecast

Year	Total Expense	Total Revenue	Difference
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## Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	400,000				400,000
<b>Total Revenue</b>		<b>400,000</b>				<b>400,000</b>
<b>Expense</b>						
	Equipment	400,000				400,000
<b>Total Expense</b>		<b>400,000</b>				<b>400,000</b>
<b>Obligated to Date:</b>						<b>399,948</b>
						<b>99.99 %</b>

## Related Projects

## Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **26-200**  
 Project Title: **Water Control Laboratory - Upgrade HVAC**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement      Budget Year: 2020  
 Year Identified: 2016      Project Status: Fully Funded  
 Start Date: 7/1/2015      Region:  
 Est. Completion Date: 12/30/2019

**Description:**

Upgrade and replace components of the HVAC and boiler system for the Water Quality Laboratory.

**Justification:**

Climate control is required for the stability of analytical instrumentation in the Water Quality Laboratory. The laboratory experiences unacceptable temperature variations and excessive humidity. The conditions are potentially damaging to analytical equipment and detrimental to the accuracy of water quality test results.

**Comments:**

**Project Forecast**

Year	Total Expense	Total Revenue	Difference
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**Project Details 2020**

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities	480,000				<b>480,000</b>
<b>Total Revenue</b>		<b>480,000</b>				<b>480,000</b>
<b>Expense</b>						
	Design & Engineering	100,000				<b>100,000</b>
	Construction	60,000				<b>60,000</b>
	Equipment	320,000				<b>320,000</b>
<b>Total Expense</b>		<b>480,000</b>				<b>480,000</b>
<b>Obligated to Date:</b>						<b>478,996</b>
						<b>99.79 %</b>

**Related Projects**

**Operating Budget Impact**

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **31-200**  
 Project Title: **Water Production Security System Upgrades**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Equipment Budget Year: 2020  
 Year Identified: 2016 Project Status: Fully Funded  
 Start Date: 7/1/2017 Region:  
 Est. Completion Date: 12/30/2019

### Description:

This project will upgrade the water treatment plant security systems based on evaluation of existing conditions.

### Justification:

Water treatment facilities are deemed as critical infrastructure by the Environmental Protection Agency and the Dept. of Homeland Security. In a recent audit, security upgrades were identified that will offer greater surveillance and protection to the City's water treatment sites. This project will implement those upgrades.

### Comments:

Prior to this project, the security coverage of water production facilities was limited. Sites that were found to need security improvements will be provided with surveillance equipment and existing equipment will be upgraded. The surveillance system for one of the treatment plants has been upgraded under this project, and the other plant is currently installing new equipment. Additionally, upgraded access control measures are currently being installed.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
2022			0
	0	0	0

### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Cash - Utilities		400,000			400,000
<b>Total Revenue</b>			<b>400,000</b>			<b>400,000</b>
<b>Expense</b>						
	Design & Engineering		400,000			400,000
<b>Total Expense</b>			<b>400,000</b>			<b>400,000</b>
<b>Obligated to Date:</b>						<b>366,040</b>
						<b>91.51 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **71-120**  
 Project Title: **Water Renewals: Waterline Upgrades - Phase I**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Replacement Budget Year: 2020  
 Year Identified: 2008 Project Status: Fully Funded  
 Start Date: 7/1/2009 Region:  
 Est. Completion Date: 7/30/2021

### Description:

This project will provide for replacement of water mains and appurtenances with adequate sizes and proper materials at various locations throughout the City.

### Justification:

These improvements are necessary to provide fire protection and increase flows and pressures creating reliable flow patterns in the system to meet peak demands.

### Comments:

To maximize efficiency, parts of this project will be completed at the same time as other Public Utilities capital projects. Some of the water line upgrades planned for this project will be completed at the same time as the "Crestwood Sewer - Phase II" project # 20-170, "Crestwood Sewer - Phase III" project # 21-170, and "Partridge/Cloverdale Area Drainage Improvements" project # 75-120.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Fund Balance - Utilities	2,030,558				<b>2,030,558</b>
<b>Total Revenue</b>		<b>2,030,558</b>				<b>2,030,558</b>
<b>Expense</b>						
	Construction	2,030,558				<b>2,030,558</b>
<b>Total Expense</b>		<b>2,030,558</b>				<b>2,030,558</b>
<b>Obligated to Date:</b>						<b>1,971,043</b>
						<b>97.07 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number:	<b>24-120</b>		
Project Title:	<b>Water System Renewal - Phase I</b>		
Asset Type:			
Department:	<b>Public Utilities Capital Projects</b>		
Project Type:	Replacement	Budget Year:	2020
Year Identified:	2008		
Start Date:	7/1/2009	Project Status:	Fully Funded
Est. Completion Date:	12/30/2019	Region:	

### Description:

This project will provide for replacement of small water lines and antiquated appurtenances not currently identified that may occur as the result of problems experienced with leaks or other operational issues.

### Justification:

This project is needed to provide funding for small capital replacement of water lines which will include replacing the offset at creek crossing along Deep Creek Boulevard; replacing fire hydrants; upgrading six large meter vaults; replacing 2" galvanized water lines on Port Chambers Court, Collins Court and Vallejo Place; and transferring service from 6" water main to 12" water main on Stewart Street (from Park Avenue to Jefferson Street).

### Comments:

The project has replaced the water main along Herrington Lane and completed curb and gutter work at Battlefield Boulevard and Oak Grove. Additional planned project work will replace fire hydrants and water lines on Port Chambers Court, Collins Court, and Vallejo Place. See also project # 21-150 for Phase II.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Fund Balance - Utilities	893,000				<b>893,000</b>
<b>Total Revenue</b>		<b>893,000</b>				<b>893,000</b>
<b>Expense</b>						
	Construction	893,000				<b>893,000</b>
<b>Total Expense</b>		<b>893,000</b>				<b>893,000</b>
<b>Obligated to Date:</b>						<b>787,156</b>
						<b>88.15 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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# Project Summary

# Fully Funded

Project Number: **47-120**  
 Project Title: **Western Branch Interconnect to Lake Gaston WTP**  
 Asset Type:  
 Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion      Budget Year: 2020  
 Year Identified: 2008  
 Start Date: 7/1/2008      Project Status: Fully Funded  
 Est. Completion Date: 7/30/2022      Region:

### Description:

This project will install water mains along Jolliff Road, which will bridge the gap between the existing mains and crossing I-664. This project will also connect the water mains of the Western Branch plant to the Cavalier Industrial Park and Deep Creek area of the City.

### Justification:

This project will improve system hydraulics and reliability, and will offer the flexibility to use either the Portsmouth or Chesapeake systems to serve Western Branch. This connection will also allow the Western Branch Elevated Water Tank and the Cavalier Elevated Water Tank to be able to support either system if either tank was offline.

### Comments:

This project will be completed in phases. Phase I has been completed and installed over 1,800 ft. of 16 inch water main along Jolliff Road and underneath Interstate 664 to Jolliff Middle School. Phase II is underway and will replace the 16 inch water main underneath Goose Creek and may also include additional water main improvements in Western Branch.

### Project Forecast

Year	Total Expense	Total Revenue	Difference
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### Project Details 2020

Account	Description	Prior Years	2020	2021 - 24	Future Years	Total Amount
<b>Revenue</b>						
	Revenue Bonds - Utility Fund		5,220,500			5,220,500
	Fund Balance - Utilities		3,077,500			3,077,500
<b>Total Revenue</b>			<b>8,298,000</b>			<b>8,298,000</b>
<b>Expense</b>						
	Construction		8,298,000			8,298,000
<b>Total Expense</b>			<b>8,298,000</b>			<b>8,298,000</b>
					<b>Obligated to Date:</b>	<b>2,298,009</b>
						<b>27.69 %</b>

### Related Projects

### Operating Budget Impact

Budget Year	Exp (Rev)	FTE Impact
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