

# 53-120: Automated Meter Reading Equipment and Software

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2008  
 Start Date: 7/1/2019  
 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
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>14,000,000</b>	<b>14,000,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	3,399,624	4,000,000	10,000,000		17,399,624
<b>Total Revenue</b>	<b>3,399,624</b>	<b>4,000,000</b>	<b>10,000,000</b>		<b>17,399,624</b>
<b>Expense</b>					
Equipment	3,399,624	4,000,000	10,000,000		17,399,624
<b>Total Expense</b>	<b>3,399,624</b>	<b>4,000,000</b>	<b>10,000,000</b>		<b>17,399,624</b>

# 19-220: Cavalier Elevated and Ground Storage Tanks Rehabilitation

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2018  
 Start Date: 7/1/2021  
 Est. Completion Date: 11/30/2025

## 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

## 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			0
2025	1,595,000	1,595,000	0
	<b>1,595,000</b>	<b>1,595,000</b>	<b>0</b>

## Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities			1,595,000		1,595,000
<b>Total Revenue</b>			<b>1,595,000</b>		<b>1,595,000</b>
<b>Expense</b>					
Design & Engineering			200,000		200,000
Construction			1,395,000		1,395,000
<b>Total Expense</b>			<b>1,595,000</b>		<b>1,595,000</b>

# 20-230: Chesapeake Connector Water Pipeline

Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion  
 Year Identified: 2019  
 Start Date: 7/1/2020  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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 2021:**

	Prior Years	2021	2022 - 25	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>

**Operating Budget Impact:**

Year	Exp (Rev)	FTE Impact
2024	7,000	0.1
2025	7,000	0.1

# 20-140: Deep Creek Pump Station Upgrade

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2010  
 Start Date: 6/1/2011  
 Est. Completion Date: 6/30/2026

**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 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities		192,627		1,878,123	2,070,750
<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			192,627
Construction				1,110,836	1,110,836
Equipment				767,287	767,287
<b>Total Expense</b>		<b>192,627</b>		<b>1,878,123</b>	<b>2,070,750</b>

# 37-240: Fentress NALF Water Transmission Main

Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion  
 Year Identified: 2020  
 Start Date: 7/1/2019  
 Est. Completion Date: 7/30/2024

**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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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
2021	10,000,000	10,000,000	0
	<b>10,000,000</b>	<b>10,000,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Grant	3,000,000	10,000,000			13,000,000
<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				3,000,000
Construction		9,000,000			9,000,000
Land Acquisition		1,000,000			1,000,000
<b>Total Expense</b>	<b>3,000,000</b>	<b>10,000,000</b>			<b>13,000,000</b>

# 16-170: Gravity Sewer Renewal: Bainbridge Blvd. Basin (HRSD Project Area)

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2013  
 Start Date: 7/1/2021  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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 2021:**

	Prior Years	2021	2022 - 25	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>5,000,000</b>
<b>Expense</b>					
Construction				5,000,000	5,000,000
<b>Total Expense</b>				<b>5,000,000</b>	<b>5,000,000</b>

# 21-230: Great Bridge Force Main Redundancy Study

Department: **Public Utilities Capital Projects**  
 Project Type: Study  
 Year Identified: 2019  
 Start Date: 7/1/2022  
 Est. Completion Date: 6/30/2024

**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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities			300,000		300,000
<b>Total Revenue</b>			<b>300,000</b>		<b>300,000</b>
<b>Expense</b>					
Design & Engineering			300,000		300,000
<b>Total Expense</b>			<b>300,000</b>		<b>300,000</b>

## 22-230: Lake Gaston Pipeline - Capital Cost Sharing with Virginia Beach

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2019  
 Start Date: 7/1/2018  
 Est. Completion Date: 7/30/2024

### 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
2021	340,000	340,000	0
2022	340,000	340,000	0
2023	350,000	350,000	0
2024	350,000	350,000	0
2025	375,000	375,000	0
	<b>1,755,000</b>	<b>1,755,000</b>	<b>0</b>

### Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	545,000	340,000	1,415,000		<b>2,300,000</b>
<b>Total Revenue</b>	<b>545,000</b>	<b>340,000</b>	<b>1,415,000</b>		<b>2,300,000</b>
<b>Expense</b>					
Construction	545,000				<b>545,000</b>
Equipment		340,000	1,415,000		<b>1,755,000</b>
<b>Total Expense</b>	<b>545,000</b>	<b>340,000</b>	<b>1,415,000</b>		<b>2,300,000</b>



# 21-130: Lake Gaston WTP - Membrane Replacement - Phase II

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2009  
 Start Date: 7/2/2012  
 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
2022	2,200,000	2,200,000	0
2024			0
	<b>2,200,000</b>	<b>2,200,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	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>

# 37-200: Lake Gaston WTP - Miscellaneous Modifications

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2015  
 Start Date: 7/1/2015  
 Est. Completion Date: 7/30/2026

**Description:**

This project will provide for the ongoing need 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, but it also occurs when replacement parts become unavailable or when support is no longer provided (e.g., proprietary software systems). Additionally, the project includes the 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
2023	500,000	500,000	0
2024	2,700,000	2,700,000	0
2025	1,000,000	1,000,000	0
	<b>4,200,000</b>	<b>4,200,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	3,870,000		4,200,000	5,000,000	13,070,000
<b>Total Revenue</b>	<b>3,870,000</b>		<b>4,200,000</b>	<b>5,000,000</b>	<b>13,070,000</b>
<b>Expense</b>					
Design & Engineering	375,000		200,000		575,000
Construction	1,500,000		2,975,000	1,000,000	5,475,000
Equipment	1,995,000		1,025,000	4,000,000	7,020,000
<b>Total Expense</b>	<b>3,870,000</b>		<b>4,200,000</b>	<b>5,000,000</b>	<b>13,070,000</b>

# 38-200: Lake Gaston WTP - Strategic Treatment and Facility Development Plan

Department: **Public Utilities Capital Projects**  
 Project Type: Study  
 Year Identified: 2016  
 Start Date: 7/2/2015  
 Est. Completion Date: 7/30/2028

## Description:

This project involves the evaluation and development of treatment processes that 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 water from Portsmouth and Norfolk 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 the 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
	0	0	0

## Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund		880,192		16,000,000	16,880,192
Cash - Utilities		119,808			119,808
<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	5,000,000
Construction				12,000,000	12,000,000
<b>Total Expense</b>		<b>1,000,000</b>		<b>16,000,000</b>	<b>17,000,000</b>

# 28-200: Norfolk Highlands Elevated Tank Rehabilitation

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2016  
 Start Date: 7/1/2018  
 Est. Completion Date: 6/30/2024

**Description:**

This project will provide for the 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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
2023			0
	0	0	0

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities				1,500,000	1,500,000
<b>Total Revenue</b>				<b>1,500,000</b>	<b>1,500,000</b>
<b>Expense</b>					
Design & Engineering				200,000	200,000
Construction				1,300,000	1,300,000
<b>Total Expense</b>				<b>1,500,000</b>	<b>1,500,000</b>

## 23-230: Northwest River Lakes & Pump Station

Department: **Public Utilities Capital Projects**  
 Project Type: New Facility  
 Year Identified: 2019  
 Start Date: 7/1/2018  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

### 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
2021			0
2023	1,000,000	1,000,000	0
2025	1,000,000	1,000,000	0
	<b>2,000,000</b>	<b>2,000,000</b>	<b>0</b>

### Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities		2,000,000	2,000,000	3,700,000	<b>7,700,000</b>
<b>Total Revenue</b>		<b>2,000,000</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			1,300,000	2,700,000	<b>4,000,000</b>
Land Acquisition		300,000			<b>300,000</b>
Other		1,000,000	700,000	1,000,000	<b>2,700,000</b>
<b>Total Expense</b>		<b>2,000,000</b>	<b>2,000,000</b>	<b>3,700,000</b>	<b>7,700,000</b>

# 19-130: Northwest River WTP - Miscellaneous Modifications

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2009  
 Start Date: 2/2/2008  
 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:

The Northwest River Water Treatment Plant was placed in service in 1980. Since then, operating methods and equipment have changed to maximize reliability and produce quality water at an affordable cost. This project focuses on improvements to the reverse osmosis membrane systems placed into operation in 1999 and which treat groundwater and surface water. The systems, housing structures, and supporting equipment require overhaul and major repairs. The operation of the membranes requires the use of corrosive solutions that deteriorate the membrane equipment. The project includes repair and replacement of equipment as needed. 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 due to obsolescence (unavailability of replacement parts and discontinuance of supplier support for software systems and equipment).

## Comments:

In July of 2016 City Council amended this project to change the source of funding for \$734,740 in appropriations from revenue bonds to cash. In March of 2018 City Council transferred \$1,680,000 in available appropriations from this project to the Northwest River Water Treatment Plant Ground Storage Tank Replacement project (CIP 29-200).

## Project Forecast:

Year	Total Expense	Total Revenue	Difference
2021	500,000	500,000	0
2022	1,000,000	1,000,000	0
2023	2,095,000	2,095,000	0
2024	4,700,000	4,700,000	0
2025	1,000,000	1,000,000	0
	<b>9,295,000</b>	<b>9,295,000</b>	<b>0</b>

## Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund	2,673,401				<b>2,673,401</b>
Cash - Utilities	4,821,598	500,000	8,795,000	1,360,000	<b>15,476,598</b>
<b>Total Revenue</b>	<b>7,494,999</b>	<b>500,000</b>	<b>8,795,000</b>	<b>1,360,000</b>	<b>18,149,999</b>
<b>Expense</b>					
Design & Engineering	125,000	500,000	375,000		<b>1,000,000</b>
Construction	5,370,000		4,630,000		<b>10,000,000</b>
Equipment	2,000,000		3,790,000	1,360,000	<b>7,150,000</b>
<b>Total Expense</b>	<b>7,495,000</b>	<b>500,000</b>	<b>8,795,000</b>	<b>1,360,000</b>	<b>18,150,000</b>

# 20-220: Northwest River WTP - Switchgear Replacement

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2018  
 Start Date: 7/1/2021  
 Est. Completion Date: 6/30/2023

**Description:**

This project will provide for the 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 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 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund			5,982,000		5,982,000
<b>Total Revenue</b>			<b>5,982,000</b>		<b>5,982,000</b>
<b>Expense</b>					
Design & Engineering			375,000		375,000
Construction			5,607,000		5,607,000
<b>Total Expense</b>			<b>5,982,000</b>		<b>5,982,000</b>

# 47-250: Oak Grove Elevated Tank Rehabilitation

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2021  
 Start Date: 7/1/2024  
 Est. Completion Date: 11/30/2025

**Description:**

This project will provide for the painting and rehabilitation of the Oak Grove elevated water storage tank. Project work will include exterior and interior coating of the 1.0 million gallon potable water storage tank. This project will also include any structural modification and repairs which are needed.

**Justification:**

The coating 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 with this project.

**Comments:**

The Oak Grove Tank was previously coated in 2010. The tank will need to be recoated at an appropriate interval to provide protection to the underlying steel structure. The Oak Grove Tank is displaying signs that the coating will need to be replaced at the 15-year mark.

**Project Forecast:**

Year	Total Expense	Total Revenue	Difference
2025	1,500,000	1,500,000	0
	<b>1,500,000</b>	<b>1,500,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities			1,500,000		1,500,000
<b>Total Revenue</b>			<b>1,500,000</b>		<b>1,500,000</b>
<b>Expense</b>					
Design & Engineering			200,000		200,000
Construction			1,300,000		1,300,000
<b>Total Expense</b>			<b>1,500,000</b>		<b>1,500,000</b>



# 48-250: Pump Stations: Replace Electric Control Panels

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2021  
 Start Date: 7/1/2024  
 Est. Completion Date: 12/1/2038

**Description:**

This project will replace three or more electric control panels per year inside designated pump stations.

**Justification:**

To keep in compliance with VDEQ/HRSD Regional Consent Order and prevent SSOs, it is necessary to replace at least three electric control panels each year at wastewater pump stations. We estimate that 25% of the City's 274 pump stations (69 stations) contain control panels that are outdated, not compatible with new technologies, and are subject to a corrosive environment. Corrosive environments reduce conductivity at the contact point between current-carrying components, increasing the resistance that may result in overheating and/or power outages. FY 2017 costs for electrical control panels ranged from \$84,000 to \$147,000 per station. FY 2019 costs for electrical control panel replacements were approximately \$100,000 each as the stations were less complex. Panel replacements at larger, more complex stations were estimated to cost of \$150,000 each in FY 2017 dollars; adjusted for inflation such estimates rise to \$187,000 by FY 2025

**Comments:**

Electric control panels (ECP) monitor current conditions of the pump station including pump status, number of pump starts, pump run time, pump capacity, operating trends, pump station inflow, outflow and overflow. All of the control panels are connected to a telemetry unit which informs our supervisory control and data acquisition (SCADA) system if there is a pump failure and/or high water levels in the wet wells which may cause a sanitary sewer overflow (SSO).

**Project Forecast:**

Year	Total Expense	Total Revenue	Difference
2025	500,000	500,000	0
	<b>500,000</b>	<b>500,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities			500,000	6,400,000	<b>6,900,000</b>
<b>Total Revenue</b>			<b>500,000</b>	<b>6,400,000</b>	<b>6,900,000</b>
<b>Expense</b>					
Design & Engineering			500,000	250,000	<b>750,000</b>
Construction				6,150,000	<b>6,150,000</b>
<b>Total Expense</b>			<b>500,000</b>	<b>6,400,000</b>	<b>6,900,000</b>

# 39-120: Red Top Raw Water Transmission Main

Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion  
 Year Identified: 2008  
 Start Date: 2/2/2009  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

## 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. Costs were updated in 2019 based on engineering estimates and current construction prices for the remaining pipeline phases. This added \$2.7 million to the project cost; additional funding was programmed for FY 2021. Cost estimates were previously revised in FY 2017, and \$7 million was added to start the next phase design and construction during FY's 2018 and 2019. Most of the increase has been due to inflation that has occurred since the original estimates from the 1990's.

March 13, 2018 - City Council transferred \$1,675,394 (revenue bonds) from the recently completed project for Red Top Tank and Raw Water Pump Station (17-140).  
 July 12, 2016 - City Council change of funding source for \$9.8 million from debt 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 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund	7,179,127	2,717,000			<b>9,896,127</b>
Cash - Utilities	17,071,267				<b>17,071,267</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>

## 24-230: Replacement of Lead Service Lines

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2019  
 Start Date: 7/1/2018  
 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
2025	500,000	500,000	0
	<b>1,500,000</b>	<b>1,500,000</b>	<b>0</b>

### Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	100,000		1,500,000	5,020,000	<b>6,620,000</b>
<b>Total Revenue</b>	<b>100,000</b>		<b>1,500,000</b>	<b>5,020,000</b>	<b>6,620,000</b>
<b>Expense</b>					
Design & Engineering			500,000		<b>500,000</b>
Construction	100,000		940,000	4,960,000	<b>6,000,000</b>
Land Acquisition			60,000	60,000	<b>120,000</b>
<b>Total Expense</b>	<b>100,000</b>		<b>1,500,000</b>	<b>5,020,000</b>	<b>6,620,000</b>

# 78-250: Sewer Lines: West Road Force Main

Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion  
 Year Identified: 2019  
 Start Date: 12/1/2019  
 Est. Completion Date: 6/30/2025

**Description:**

This project will construct approximately 3.6 miles of 12-inch sanitary force main in conjunction with the South Central Water Transmission project (#31-240). The project is added in order to install both water and sewer lines in a "one dig" project that minimizes disruption to West Road. The project installs the main from the entrance to the Chesapeake Municipal Airport to HRSD's interceptor at West and Cedar Roads. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**Justification:**

The project will divert sanitary flows from the Airport industrial area out of the Northwest River Watershed Protection District. Pump station connections to be made as appropriate for the Dominion Boulevard Corridor. Design & construction cost to be recouped through utility pro-rata reimbursements from subsequent developers. Simultaneous engineering design and construction of the mains will result in significant cost savings for the project.

**Comments:**

This is a new project proposed parallel to the South Central Water Transmission Main to convey wastewater in a portion of the Dominion Boulevard Corridor.

On November 26, 2019, City Council approved transfer of \$2,500,000 in FY 20 to cover project design costs.

**Project Forecast:**

Year	Total Expense	Total Revenue	Difference
2023	7,500,000	7,500,000	0
	<b>7,500,000</b>	<b>7,500,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund	2,500,000		7,500,000		10,000,000
<b>Total Revenue</b>	<b>2,500,000</b>		<b>7,500,000</b>		<b>10,000,000</b>
<b>Expense</b>					
Design & Engineering	250,000				250,000
Construction	2,250,000		7,500,000		9,750,000
<b>Total Expense</b>	<b>2,500,000</b>		<b>7,500,000</b>		<b>10,000,000</b>

# 35-200: Sewer Pump Station Safety Improvements

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2016  
 Start Date: 7/1/2015  
 Est. Completion Date: 6/30/2024

**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 FY 2016 with annual investments of \$500,000 to continue ongoing repairs and maintenance of the City's sewer pump stations. Funding was removed for FY 2019 and FY 2020 since existing appropriations were sufficient to complete repairs through FY 2020. The annual investments resumed in FY 2021. Two contractors have been contracted to complete the improvements. Work is currently underway or planned for Pump Stations #33, #201, #86, #25, #37, #197, #14, #79, #54, #158, and #227.

**Project Forecast:**

Year	Total Expense	Total Revenue	Difference
2021	500,000	500,000	0
2022	500,000	500,000	0
2023	500,000	500,000	0
2024	500,000	500,000	0
2025	500,000	500,000	0
	<b>2,500,000</b>	<b>2,500,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	1,500,000	500,000	2,000,000	650,000	<b>4,650,000</b>
<b>Total Revenue</b>	<b>1,500,000</b>	<b>500,000</b>	<b>2,000,000</b>	<b>650,000</b>	<b>4,650,000</b>
<b>Expense</b>					
Design & Engineering	150,000				<b>150,000</b>
Construction	1,350,000	500,000	2,000,000	650,000	<b>4,500,000</b>
<b>Total Expense</b>	<b>1,500,000</b>	<b>500,000</b>	<b>2,000,000</b>	<b>650,000</b>	<b>4,650,000</b>

# 21-220: Sewer Pump Station: Replacement and Rehabilitation

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2018  
 Start Date: 7/1/2021  
 Est. Completion Date: 6/30/2050

**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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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, funding was added for FY 2024 requirements. Project plans include rehabilitation and/or replacement work on pump stations #126, #213, #41, #9, #114, #38 and #184.

Project approved in the FY 2018, with the initial funding in FY 2022 for pump stations #60 and #61. In FY 2019, 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. Assuming \$3 million in annual project funding each year, the timeline to rehab or replace all of the City's pump stations is over 100 years.

**Project Forecast:**

Year	Total Expense	Total Revenue	Difference
2023	2,700,000	2,700,000	0
2024	3,000,000	3,000,000	0
2025	3,000,000	3,000,000	0
	<b>8,700,000</b>	<b>8,700,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities			8,700,000	262,700,000	<b>271,400,000</b>
<b>Total Revenue</b>			<b>8,700,000</b>	<b>262,700,000</b>	<b>271,400,000</b>
<b>Expense</b>					
Design & Engineering			1,300,000	40,100,000	<b>41,400,000</b>
Construction			7,400,000	222,600,000	<b>230,000,000</b>
<b>Total Expense</b>			<b>8,700,000</b>	<b>262,700,000</b>	<b>271,400,000</b>

# 05-180: Sewer Renewal: Additional Consent Order Capital Requirement

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2014  
 Start Date: 7/1/2015  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

## 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 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:

In FY 2018, CIP 31-210 "Sanitary Sewer Force Main at Volvo Parkway" and CIP 31-170 "Sewer Replacement at Orville Ave. Alleyway" were combined with this project. In June of 2018 City Council transferred \$1.4 million of appropriations from this project to CIP 51-129 "Unserved Areas: Battlewood Meadows".

In January of 2019 City Council approved a change of funding source to cash for expenses paid prior to June 30, 2018. On February 25, 2020, City Council approved a change of funding source from revenue bonds to cash for \$1.48 million in projects including the Decatur Street and Edgewood Avenue upgrades.

The next five sub-projects of this project planned for future design and construction are Edgewood Avenue Upgrade \$1.7 million, Walden Street Upgrade \$1.6 million, 600-700 Block Lafayette Ave. Upgrade \$1.3 million, 1400 Block Salton Drive Upgrade \$1.2 million, and Station House Road Upgrade \$1.3 million.

## Project Forecast:

Year	Total Expense	Total Revenue	Difference
2021	1,000,000	1,000,000	0
2022	3,000,000	3,000,000	0
2023	4,500,000	4,500,000	0
2024	7,000,000	7,000,000	0
2025	3,500,000	3,500,000	0
	<b>19,000,000</b>	<b>19,000,000</b>	<b>0</b>

## Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund	8,944,841	1,000,000	18,000,000	301,888,391	<b>329,833,232</b>
Cash - Utilities	4,416,768				<b>4,416,768</b>
<b>Total Revenue</b>	<b>13,361,609</b>	<b>1,000,000</b>	<b>18,000,000</b>	<b>301,888,391</b>	<b>334,250,000</b>
City of Chesapeake, Virginia					
Page 219					
FY 2021-2025 Approved CIP					
<b>Expense</b>					
Design & Engineering		1,000,000	4,000,000	46,300,000	<b>51,300,000</b>

Construction	13,361,609		13,000,000	255,588,391	<b>281,950,000</b>
Land Acquisition			1,000,000		<b>1,000,000</b>
<b>Total Expense</b>	<b>13,361,609</b>	<b>1,000,000</b>	<b>18,000,000</b>	<b>301,888,391</b>	<b>334,250,000</b>



# 33-170: Sewer Renewal: Raleigh Place (Pump Station #7 Basin)

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2014  
 Start Date: 7/1/2019  
 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). This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**Justification:**

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

**Comments:**

This project's schedule 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
2021	3,800,000	3,800,000	0
2023			0
	<b>3,800,000</b>	<b>3,800,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	600,000	3,800,000			<b>4,400,000</b>
<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				<b>600,000</b>
Construction		3,800,000			<b>3,800,000</b>
<b>Total Expense</b>	<b>600,000</b>	<b>3,800,000</b>			<b>4,400,000</b>

# 31-240: South Central Water Transmission Main & Loop - Phase I

Department: **Public Utilities Capital Projects**  
 Project Type: Addition or Expansion  
 Year Identified: 2020  
 Start Date: 7/1/2019  
 Est. Completion Date: 7/30/2025

**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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**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 in the annual operation and maintenance costs. The project may be able to utilize Pro Rata to recover capital costs.

**Project Forecast:**

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

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund	2,000,000	15,607,000			17,607,000
<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				2,000,000
Construction		15,607,000			15,607,000
<b>Total Expense</b>	<b>2,000,000</b>	<b>15,607,000</b>			<b>17,607,000</b>

# 23-240: Supervisory Control and Data Acquisition (SCADA) Upgrade

Department: **Public Utilities Capital Projects**  
 Project Type: System Acquisition or Upgrade  
 Year Identified: 2020  
 Start Date: 7/1/2021  
 Est. Completion Date: 6/30/2026

### 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 Engineering and Maintenance Divisions use telemetry data to monitor the efficiency of wastewater equipment throughout the 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
2025	1,500,000	1,500,000	0
	<b>6,000,000</b>	<b>6,000,000</b>	<b>0</b>

### Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities			6,000,000	1,500,000	7,500,000
<b>Total Revenue</b>			<b>6,000,000</b>	<b>1,500,000</b>	<b>7,500,000</b>
<b>Expense</b>					
Design & Engineering			500,000		500,000
Construction			2,000,000	500,000	2,500,000
Equipment			3,000,000	1,000,000	4,000,000
Software			500,000		500,000
<b>Total Expense</b>			<b>6,000,000</b>	<b>1,500,000</b>	<b>7,500,000</b>

# 14-160: Water Renewals: Waterline Upgrades - Phase II

Department: **Public Utilities Capital Projects**  
 Project Type: Replacement  
 Year Identified: 2012  
 Start Date: 7/1/2014  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

**Justification:**

Chesapeake has approximately 950 miles of water mains, much of which were installed before 1970 and some dating to the 1920s. Due to age, inferior materials, and soil conditions many older lines have deteriorated, which causes leaks and main breaks. Improvements are necessary to ensure adequate fire protection, improve flows and pressures, and ensure reliability to meet peak demands.

**Comments:**

In FY 2020, funding was added for FY 2024 requirements and future project costs were revised. Upcoming plans include:

- North Indian River water line renewals for \$3 million,
- Blanche Court and Willowood Court galvanized pipe replacements \$600,000,
- Elizabeth River Park Industrial Area water line and service main renewals \$2.3 million,
- Edgewood Avenue water line replacement \$1.2 million, and
- Walden Street (3100-3200 block) water line replacement \$950,000.

Future projects to repair over 55,000 linear feet of water lines were identified in the 2012 CE Maguire Study (totaling approx. \$28.3 million). An additional 33,000 linear feet of water main replacements were identified by internal reviews (totaling approx. \$17 million). Estimates are in 2019 dollars with; annual funding for this project will extend beyond FY 2025.

**Project Forecast:**

Year	Total Expense	Total Revenue	Difference
2022			0
2023	2,000,000	2,000,000	0
2024	2,000,000	2,000,000	0
2025	2,000,000	2,000,000	0
	<b>6,000,000</b>	<b>6,000,000</b>	<b>0</b>

**Project Details 2021:**

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Revenue Bonds - Utility Fund	750,000				<b>750,000</b>
Cash - Utilities	2,500,000		6,000,000	74,250,000	<b>82,750,000</b>
<b>Total Revenue</b>	<b>3,250,000</b>		<b>6,000,000</b>	<b>74,250,000</b>	<b>83,500,000</b>
<b>Expense</b>					
Design & Engineering			1,425,000	11,575,000	<b>13,000,000</b>
Construction	3,250,000		4,500,000	62,250,000	<b>70,000,000</b>
Land Acquisition			75,000	425,000	<b>500,000</b>
<b>Total Expense</b>	<b>3,250,000</b>		<b>6,000,000</b>	<b>74,250,000</b>	<b>83,500,000</b>

# 33-210: Water System Planning and Upgrades

Department: **Public Utilities Capital Projects**  
 Project Type: Renovation or Rehabilitation  
 Year Identified: 2017  
 Start Date: 7/1/2017  
 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. This project may require acquisition of real property (fee simple or easement), both permanent to protect the City's utility system, and temporary to facilitate construction.

## 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 water system contains dead end water mains in several locations that limit reliability during water main breaks or failures. There are also areas that do not have municipal water service and which are eligible for service under the Cost Participation Program.

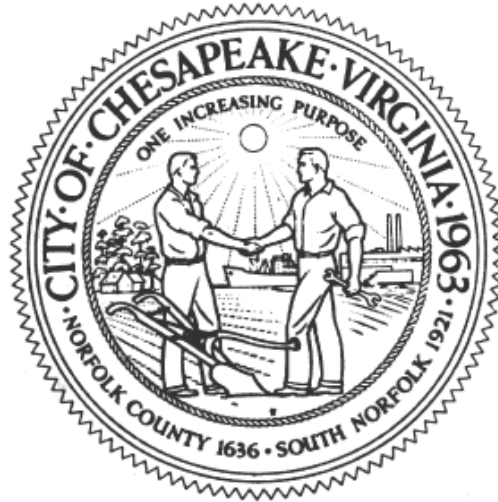
- Project was initially funded in the FY 2017 with \$400,000 budgeted followed by annual investments of \$250,000 in FY's 2018 and 2019.
- No funding added to FY 2020 as sufficient funds were already available.

## Project Forecast:

Year	Total Expense	Total Revenue	Difference
2021	250,000	250,000	0
2022	250,000	250,000	0
2023	400,000	400,000	0
2025	400,000	400,000	0
	<b>1,300,000</b>	<b>1,300,000</b>	<b>0</b>

## Project Details 2021:

	Prior Years	2021	2022 - 25	Future Years	Total Amount
<b>Revenue</b>					
Cash - Utilities	900,000	250,000	1,050,000		<b>2,200,000</b>
<b>Total Revenue</b>	<b>900,000</b>	<b>250,000</b>	<b>1,050,000</b>		<b>2,200,000</b>
<b>Expense</b>					
Construction	250,000	250,000	1,050,000		<b>1,550,000</b>
Other	650,000				<b>650,000</b>
<b>Total Expense</b>	<b>900,000</b>	<b>250,000</b>	<b>1,050,000</b>		<b>2,200,000</b>



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