

Large Diameter Water Pipe & Large Valve Rehabilitation Program

A. Identification and Coding Information			PDF Date	October 1, 2021	Pressure Zones	
Agency Number	Project Number	Update Code	Date Revised	February 16, 2022	Drainage Basins	
W - 000161.01	113803	Change			Planning Areas	Bi-County

B. Expenditure Schedule (000's)

Cost Elements	Total	Thru FY'21	Estimate FY'22	Total 6 Years	Year 1 FY'23	Year 2 FY'24	Year 3 FY'25	Year 4 FY'26	Year 5 FY'27	Year 6 FY'28	Beyond 6 Years
Planning, Design & Supervision	65,872		7,240	58,632	7,607	9,350	9,764	10,518	10,528	10,865	
Land											
Construction	458,111		42,328	415,783	33,915	58,844	61,505	83,393	92,975	85,151	
Other	52,400		4,957	47,443	4,153	6,821	7,126	9,391	10,351	9,601	
Total	576,383		54,525	521,858	45,675	75,015	78,395	103,302	113,854	105,617	

C. Funding Schedule (000's)

WSSC Bonds	576,383		54,525	521,858	45,675	75,015	78,395	103,302	113,854	105,617	
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D. Description & Justification

DESCRIPTION

The purpose of this program is to plan, inspect, design, and rehabilitate or replace large diameter water transmission mains and large system valves that have reached the end of their useful life. Condition assessment and/or corrosion monitoring is performed on metallic pipelines, including ductile iron, cast iron, and steel, to identify lengths of pipe requiring replacement or rehabilitation and cathodic protection. The PCCP Inspection and Condition Assessment and Monitoring Program identifies individual pipe segments that require repair or replacement to assure the continued safe and reliable operation of the pipeline. The program also identifies extended lengths of pipe that require the replacement of an increased number of pipe segments in varying stages of deterioration that are most cost effectively accomplished by the replacement or rehabilitation of long segments of the pipeline or the entire pipeline. Rehabilitation or replacement of these mains provides value to the customer by minimizing the risk of failure and ensuring a safe and reliable water supply. The program includes installation of Acoustic Fiber Optic Monitoring equipment in order to accomplish these goals in PCCP mains.

*EXPENDITURES FOR LARGE DIAMETER WATER PIPE REHABILITATION ARE EXPECTED TO CONTINUE INDEFINITELY.

BENEFIT

Infrastructure Reinvestment: This project replaces existing infrastructure that has exceeded its useful life.; System Reliability: This project will improve service reliability through fewer and shorter service interruptions.; Environmental Sustainability: This project supports WSSC Water's commitment to protect the natural environment of Prince George's and Montgomery Counties.

JUSTIFICATION

WSSC Water has approximately 1,031 miles of large diameter water main ranging from 16-inches to 96-inches in diameter. This includes 335 miles of cast iron, 326 miles of ductile iron, 35 miles of steel, and 335 miles of PCCP. Internal inspection and condition assessment is performed on PCCP pipelines 36-inches and larger in diameter. Of the 335 miles of PCCP, 140 miles are 36-inch diameter and larger. The inspection program includes internal visual and sounding, sonic/ultrasonic testing, and electromagnetic testing to establish the condition of each pipe section and determine if maintenance repairs, rehabilitation, or replacement are needed.

The planning and design phase evaluates the alignment, hydraulic capacity, and project coordination, among other factors, in an effort to re-engineer these pipelines to meet today's design standards. The design effort includes the preparation of bid ready contract documents including all needed rights-of-way acquisitions and regulatory permits. The constructed system is inspected and an as-built plan is produced to serve as the renewed asset record.

In July 2013, WSSC Water's Acoustic Fiber Optic monitoring system identified breaking wires in a 54-inch diameter PCCP water transmission main in the Forestville area of Prince George's County. Upon attempting to close nearby valves to isolate the failing pipe for repair, WSSC Water crews encountered an inoperable valve with a broken gear, requiring the crew to drop back to the next available valve. This dropping-back to another valve would block one of the major water mains serving Prince George's County, significantly enlarging the shutdown area and reduce our capacity to supply water to over 100,000 residents. In order to minimize the risk associated with inoperable large valves and possible water outages, the large valve inspection and repair program was initiated to systematically inspect, exercise, repair, or replace any of the nearly 1,500 large diameter valves and vaults located throughout the system.

Utility Wide Master Plan (December 2007); 30 Year Infrastructure Plan (2007); FY'23 Water Network Asset Management Plan (May 2021).

COST CHANGE

E. Annual Operating Budget Impact (000's)		FY of Impact
Staff & Other		
Maintenance		
Debt Service	\$34,410	
Total Cost	\$34,410	
Impact on Water and Sewer Rate	\$0.07	

F. Approval and Expenditure Data (000's)

Date First in Program	FY'11
Date First Approved	FY'11
Initial Cost Estimate	
Cost Estimate Last FY	518,952
Present Cost Estimate	576,383
Approved Request Last FY	61,681
Total Expense & Encumbrances	
Approval Request Year 1	45,675

G. Status Information

Land Status	Not Applicable
Project Phase	On-Going
Percent Complete	0 %
Estimated Completion Date	On-Going

Growth	
System Improvement	100%
Environmental Regulation	
Population Served	
Capacity	

H. Map

MAP NOT AVAILABLE

Program costs reflect the latest schedule and expenditure estimates based upon the recommendations from the Buried Water Assets System Asset Management Plan.

Due to budgetary constraints, the budget for this project in FY'23 has been reduced by \$18.6 million

OTHER

The project scope has remained the same. The schedule and expenditure projections shown in Block B above are order of magnitude estimates and are expected to change based upon the results of the on-going inspections and condition assessments. Additional costs associated with PCCP inspection/condition assessment, large valve inspection/repairs, and emergency repairs are included in the Operating Budget. WSSC Water Green Bonds will be utilized to fund a portion of this project. The annual replacement work for large diameter water mains will address the following International Capital Market Association (ICMA) Green Bond Principles 2016 category: Sustainable water management.

COORDINATION

Coordinating Agencies: Local Community Civic Associations; Maryland State Highway Administration; Maryland-National Capital Park & Planning Commission; Montgomery County Department of Public Works and Transportation; Montgomery County Government;(including localities where work is to be performed); Prince George's County Government;(including localities where work is to be performed); Prince George's County Department of Permitting Inspection and Enforcement
Coordinating Projects: W - 000001.00 - Water Reconstruction Program; W - 000107.00 - Specialty Valve Vault Rehabilitation Program