

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project Title	Appropriated	FY 2010	Un-Appropriated Subsequent Years				5 Year	CIP
	To Date	Adopted	FY 2011	FY 2012	FY 2013	FY 2014	Total	Total
Downtown Master Utility Replacement Program	9,850,000	7,050,000	3,500,000	3,750,000	4,000,000	4,250,000	22,550,000	32,400,000
Infrastructure Improvements	34,569,501	2,700,000	7,000,000	7,500,000	8,000,000	8,500,000	33,700,000	68,269,501
Lake Cahoon Raw Water Pump Station and Pipeline	-	800,000	8,000,000	-	-	-	8,800,000	8,800,000
Lake Kilby Replacement Filters 1-10	300,000	300,000	500,000	14,500,000	14,500,000	14,500,000	44,300,000	44,600,000
Low Pressure Transmission Mains	1,250,000	-	200,000	3,000,000	4,000,000	4,000,000	11,200,000	12,450,000
Meter Replacement Program	1,991,000	508,000	526,000	500,000	500,000	500,000	2,534,000	4,525,000
Miscellaneous Water Work	1,547,616	138,000	142,000	147,000	150,000	153,000	730,000	2,277,616
Replacement of Water Plant Equipment	6,628,214	1,515,700	1,644,500	1,340,000	1,400,000	1,450,000	7,350,200	13,978,414
Water Main Replacement	1,217,001	429,319	523,720	187,000	200,000	215,000	1,555,039	2,772,040
Water Plant Residuals Management and Disposal	6,133,500	-	2,000,000	2,000,000	2,000,000	2,000,000	8,000,000	14,133,500
Total Project Cost	63,486,832	13,441,019	24,036,220	32,924,000	34,750,000	35,568,000	140,719,239	204,206,071
Debt Funding								
Public Utilities General Obligation Bonds	62,738,232	12,929,000	23,343,500	32,924,000	34,750,000	35,568,000	139,514,500	202,252,732
Other Funding								
Other - Federal Funding	626,800	-	-	-	-	-	-	626,800
Other - Local Funding	1,800	-	-	-	-	-	-	1,800
Sale of Timber	120,000	-	-	-	-	-	-	120,000
Other Funding Funding	748,600	-	-	-	-	-	-	748,600
Transfers								
Transfer from Public Utilities Fund	-	512,019	692,720	-	-	-	1,204,739	1,204,739
Total Funding	63,486,832	13,441,019	24,036,220	32,924,000	34,750,000	35,568,000	140,719,239	204,206,071

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 21907 **Title: Downtown Master Utility Replacement Program** **Status: Adopted**

Comprehensive Plan Information **Project Location**

CIE Project: N/A Plan Reference: CC Vision - Neighborhood District:
LOS/Concurrency: N/A Project Need: N/A Location: Downtown Portsmouth

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
32,400,000	9,850,000	7,050,000	3,500,000	3,750,000	4,000,000	4,250,000	0

Description and Scope

The Downtown Area contains some of Portsmouth oldest water and wastewater system components. Replacement of aged and inadequate water distribution and wastewater collection and conveyance systems in the Downtown Area are required to support the redevelopment of this critical area as envisioned by the Downtown Strategic Plan prepared by Urban Design Associates. Expected limits of the area are the Elizabeth River on the east, Crawford Parkway on the north, Chestnut Street/Fort Lane on the west, and I-264 on the south.

Rationale

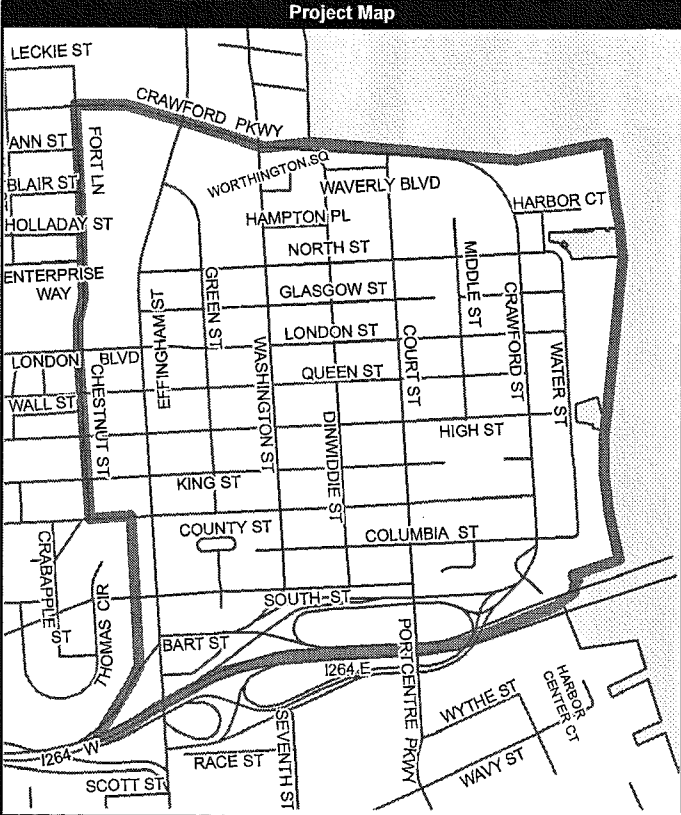
The average age of these water and wastewater components is 100 years, well beyond their useful life. In order to adequately support the proposed redevelopment, replacement of these components is critical.

Funding Strategy

Phasing of this project will be tied to the redevelopment phases outlined in the Downtown Strategic Plan. The first phase will be to prepare construction documents for the entire phased project followed by a multi-year construction implementation program.

Operating Budget Impacts

This project will reduce the possibility of major water and sewer system failures in the Downtown area, decreasing maintenance requirements as more piping is replaced.



Schedule of Activities

Project Activities	From - To	Amount
Design	07/06 - 06/12	2,965,000
Construction	07/06 - 06/13	29,435,000
Total Budgetary Cost Estimate:		32,400,000
Means of Financing		
Funding Source		Amount
Public Utilities General Obligation Bonds		32,400,000
Total Programmed Funding:		32,400,000
Future Funding Requirements:		0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 20007 **Title: Infrastructure Improvements** **Status: Adopted**

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference: CC Vision - Neighborhood** **District:**
LOS/Concurrency: N/A **Project Need: N/A** **Location: Citywide**

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
68,269,501	34,569,501	2,700,000	7,000,000	7,500,000	8,000,000	8,500,000	0

Description and Scope

The Department of Public Utilities has developed an aggressive program for replacing or rehabilitating the water and sewer infrastructure throughout the City, one neighborhood at a time. This work is based upon the age and condition of the neighborhood's water and sewer infrastructure.

Rationale

- Approximately 63% of Portsmouth's neighborhood water and sewer infrastructure is past its useful life. The age and condition of the water mains pose potential water quality problems and real problems with pressure, flow and leakage. The age and condition of the sewer lines pose potential leakage and cave-in problems, which can impede sewage flow and cause backups.
- The Master Infrastructure Rehabilitation Plan, the Strategic Financial Plan and the Asset Replacement Valuation Study of the Department of Public Utilities all support this project.

Funding Strategy

- This is an on-going project that will continue until all water mains that are past their useful life are replaced.
- Work will continue with Engineering Department improvements in the Brighton/South Portsmouth and Simonsdale Neighborhoods while planning and construction will commence in the Ebony Heights Neighborhoods.

Operating Budget Impacts

This project will reduce the possibility of major water and sewer system failures, decreasing maintenance requirements as more piping is replaced. Debt service and rates will increase to support this program.

Project Map

Schedule of Activities

**VARIOUS
LOCATIONS
CITYWIDE**

Project Activities	From - To	Amount
Project Management	07/04 - 06/05	30,169,501
Design	07/06 - 06/12	3,810,000
Construction	07/06 - 06/12	34,290,000

Total Budgetary Cost Estimate: 68,269,501

Means of Financing

Funding Source	Amount
Other - Federal Funding	626,800
Other - Local Funding	1,800
Public Utilities General Obligation Bonds	67,640,901

Total Programmed Funding: 68,269,501
Future Funding Requirements: 0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: New0006 **Title:** Lake Cahoon Raw Water Pump Station and Pipeline **Status:** Adopted

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference:** CC Vision – Neighborhood
LOS/Concurrency: N/A **Project Need:** N/A

District:
Location: Lake Cahoon Reservoir

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
8,800,000	0	800,000	8,000,000	0	0	0	0

Description and Scope

The Department of Public Utilities operates a system of four reservoirs. The Department maintains raw water intakes on two of the four reservoirs. This project would provide a raw water intake with a connection to the Lake Kilby Plant from a third reservoir, Lake Cahoon. Lake Cahoon contains 53% of the combined reservoir's supply capacity.

Rationale

- Construction of an intake on Lake Cahoon would provide a transmission source on the northern sub-basin of Portsmouth's reservoir system, thereby increasing protection against contamination events. Additionally water could be blended for both sub-basins feeding the terminal reservoir allowing for water quality adjustments.
- Construction of a separate access to the largest reservoir system sub-basin provides additional reliability that does not currently exist.

Funding Strategy

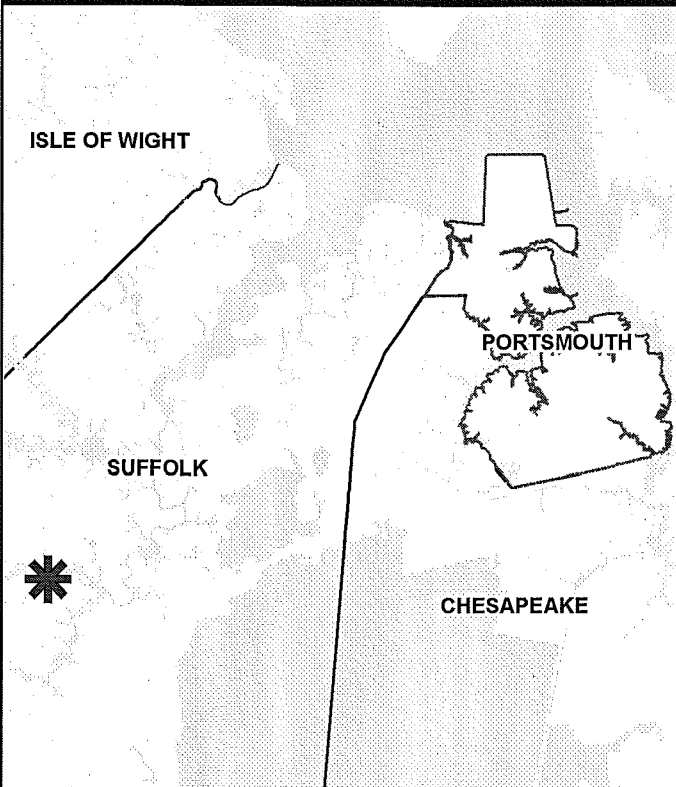
Design of the facilities is expected in FY 09, with construction to follow in FY 10.

Operating Budget Impacts

Once completed, this project will have minimal impact on the operating budget.

Project Map

Schedule of Activities



Project Activities	From - To	Amount
Design	07/09 - 06/10	800,000
Construction	07/10 - 06/12	8,000,000
Total Budgetary Cost Estimate:		8,800,000

Means of Financing

Funding Source	Amount
Public Utilities General Obligation Bonds	8,800,000
Total Programmed Funding:	8,800,000
Future Funding Requirements:	0

**City of Portsmouth
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**Capital Improvements
Water**

Project: 23007 **Title:** Lake Kilby Replacement Filters 1-10 **Status:** Adopted

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference:** CC Vision – Neighborhood
LOS/Concurrency: N/A **Project Need:** N/A

District:
Location: Lake Kilby Water Treatment Facility

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
44,600,000	300,000	300,000	500,000	14,500,000	14,500,000	14,500,000	0

Description and Scope

The Department of Public Utilities operates the Lake Kilby Water Treatment Facility. This project provides for the replacement of filters 1 through 10 at the treatment facility with conventional media filters or with membrane technology.

Rationale

- Filters 1-4 were constructed in 1947 and filters 5-10 were constructed in 1968. The concrete filter boxes for some of these filters were constructed without reinforcing steel (post World War II constraint) and are now deteriorating. Additionally, the southwest corner of the filter building was not pile supported and has settled significantly. These filters have outlived or are nearing the end of their useful lives.
- To insure the continued integrity, capacity and operation of the Lake Kilby Treatment Facility it is important that these filters be replaced with either new conventional media filters or with the use of membrane technology.
- Project Source document: Lake Kilby Water Facility Master Plan 2001 Update, page 6-5, Table 6-3

Funding Strategy

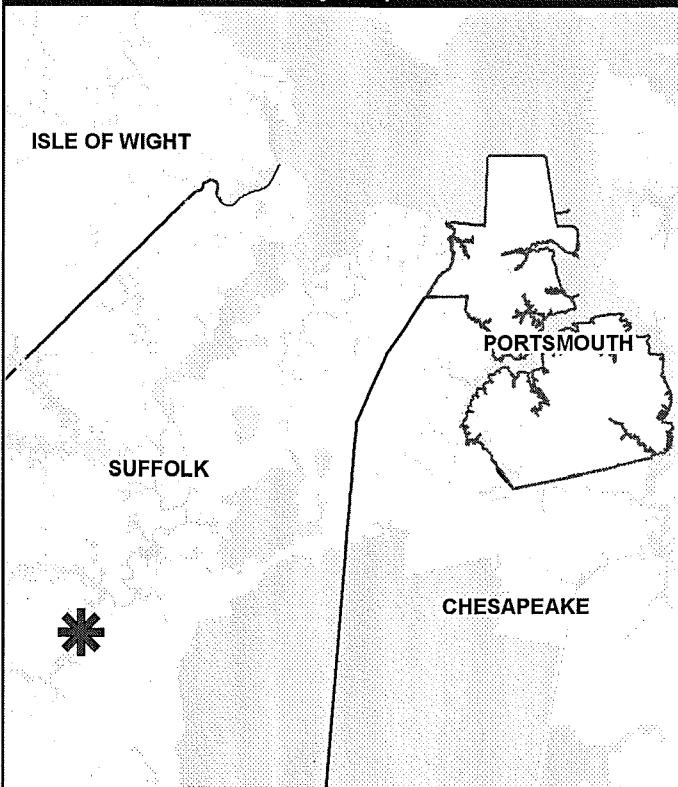
It is anticipated that the evaluation of alternatives and engineering will be completed during the next five years and that construction will commence. Evaluation and study will determine the multiphasing of this project and its cost.

Operating Budget Impacts

Once completed, this project will have minimal impact on the operating budget.

Project Map

Schedule of Activities



Project Activities	From - To	Amount
Project Management	07/04 - 06/05	150,000
Design	07/10 - 06/13	5,045,000
Construction	07/10 - 06/13	39,405,000
Total Budgetary Cost Estimate:		44,600,000
Means of Financing		
Funding Source	Amount	
Public Utilities General Obligation Bonds	44,600,000	
Total Programmed Funding:		44,600,000
Future Funding Requirements:		0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 22007 **Title: Low Pressure Transmission Mains** **Status: Adopted**

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference: CC Vision – Neighborhood**
LOS/Concurrency: N/A **Project Need: N/A**

District:
Location: Portsmouth and Suffolk

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
12,450,000	1,250,000	0	200,000	3,000,000	4,000,000	4,000,000	0

Description and Scope

•The Department of Public Utilities operates three low pressure transmission mains that convey water from the Lake Kilby Water Treatment Plant in Suffolk, 23 miles into Portsmouth. These mains were constructed in 1888, 1906 and 1950. This project provides for a plan to evaluate the remaining life of these mains and address the best way to rehabilitate or replace them in a phased, affordable manner. Total replacement may cost in excess of \$60 million dollars.

Rationale

These three pipelines have been in service between 53 and 116 years and are an important part of Portsmouth's water transmission system. They exhibit leaking joints and other signs of deterioration. This project is necessary to protect the water transmission capability of Portsmouth's water supply and to provide safe and reliable service.

Funding Strategy

The only portions of this project to be performed during the next five years are an evaluation of the mains, the completion of a phased plan for their replacement or rehabilitation and the construction of the first phase. Total replacement may cost in excess of \$60 million dollars.

Operating Budget Impacts

Once completed, this major project will reduce annual maintenance requirements, will increase system reliability and will reduce lost or unaccounted for water.

Project Map

Schedule of Activities

**MAP NOT
APPLICABLE**

Project Activities	From - To	Amount
Design	07/11 - 06/12	200,000
Construction	07/12 - 06/13	12,250,000
Total Budgetary Cost Estimate:		12,450,000
Means of Financing		
Funding Source	Amount	
Public Utilities General Obligation Bonds	12,450,000	
Total Programmed Funding:		12,450,000
Future Funding Requirements:		0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 20407 **Title:** Meter Replacement Program **Status:** Adopted

Comprehensive Plan Information		Project Location
CIE Project: N/A LOS/Concurrency: N/A	Plan Reference: CC Vision – Neighborhood Project Need: N/A	District: Location: Citywide

Programmed Funding							
Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
4,525,000	1,991,000	508,000	526,000	500,000	500,000	500,000	0

Description and Scope

The Department of Public Utilities is responsible for the reading, operation and maintenance of over 31,000 water meters. This project provides for the systematic replacement of the water meters using economically justified age and accuracy criteria.

Rationale

National studies indicate that residential and commercial water meters decrease in accuracy over time (especially in recording lower range flows to the point that replacement is economically justified due to loss of revenue. This project envisions contract replacement of 5,000 residential meters per year for the next 6 years.

Funding Strategy

This project will be multiphased over 6 years upon evaluation of firms to conduct this work.

Operating Budget Impacts

This project will reduce the annual maintenance requirements and increase revenues due to accurate metering of water consumption.

Project Map	Schedule of Activities		
	Project Activities	From - To	Amount
MAP NOT APPLICABLE	Project Management	07/04 - 06/05	1,500,000
	Design	07/06 - 06/13	302,500
	Construction	07/06 - 06/12	2,722,500
	Total Budgetary Cost Estimate:		4,525,000
	Means of Financing		
	Funding Source	Amount	
	Public Utilities General Obligation Bonds	4,525,000	
	Total Programmed Funding:		4,525,000
	Future Funding Requirements:		0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 20707 **Title: Miscellaneous Water Work** **Status: Adopted**

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference: GC Vision – Neighborhood** **District:**
LOS/Concurrency: N/A **Project Need: N/A** **Location: Citywide**

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
2,277,616	1,547,616	138,000	142,000	147,000	150,000	153,000	0

Description and Scope

The Department of Public Utilities is responsible for the operation & maintenance of approximately 546 miles of water mains; over 2,500 fire hydrants; 12,000 valves; four elevated tanks; two water booster-pumping stations and other components compromising the water system. This project provides for routine replacement and/or rehabilitation of the water system components that are not included in the Neighborhood Replacement Program. The work will be performed with in-house and contractor forces.

Rationale

Replacement, repair or rehabilitation is dictated by deterioration due to age and the failure of the components.

Funding Strategy

This is an ongoing project due to the age and the condition of the water system.

Operating Budget Impacts

Project will reduce the annual maintenance budget (leak repairs, component failures) and will improve water quality.

Project Map

Schedule of Activities

**VARIOUS
LOCATIONS
CITYWIDE**

Project Activities	From - To	Amount
Project Management	07/04 - 06/05	1,413,616
Construction	07/06 - 06/12	864,000
Total Budgetary Cost Estimate:		2,277,616

Means of Financing

Funding Source	Amount
Public Utilities General Obligation Bonds	2,157,616
Sale of Timber	120,000
Total Programmed Funding:	2,277,616
Future Funding Requirements:	0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 20207 **Title:** Replacement of Water Plant Equipment **Status:** Adopted

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference:** GC Vision – Neighborhood
LOS/Concurrency: N/A **Project Need:** N/A

District:
Location: Lake Kilby Water Treatment Facility

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
13,978,414	6,628,214	1,515,700	1,644,500	1,340,000	1,400,000	1,450,000	0

Description and Scope

The Department of Public Utilities is responsible for the operation & maintenance of a 32 million per day capacity water treatment plant and associated raw water pumping stations. This project provides for the addition, replacement, rehabilitation or life-extension overhaul of pumps, electrical & control systems, valves, HVAC systems, roofs, emergency generators, chemical storage and feed systems, security systems and other major equipment items.

Rationale

- Two of the Portsmouth finished water vertical turbine pumps require replacement with variable speed drive pumps and the other vertical turbine pumps require major overhaul after 24 years of use.
- Additionally, chemical storage and feed equipment and other major end items require rehabilitation, replacement or overhaul to continue the safe, reliable operation of the water treatment plant to meet state and federal regulations. Finally, funds are required to further enhance the security systems at the plant and connected facilities.

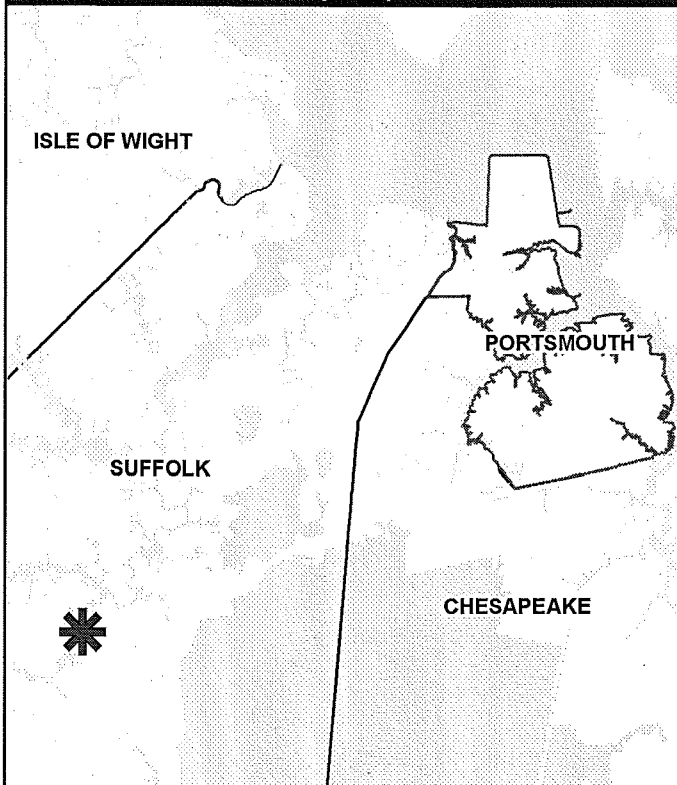
Funding Strategy

This is an ongoing project that will continue throughout the life of the water plant.

Operating Budget Impacts

Project will reduce the annual maintenance requirements and provide for reliable operations.

Project Map



Schedule of Activities

Project Activities	From - To	Amount
Project Management	07/04 - 06/05	6,436,914
Design	07/06 - 06/12	754,150
Construction	07/06 - 06/12	6,787,350
Total Budgetary Cost Estimate:		13,978,414

Means of Financing

Funding Source	Amount
Public Utilities General Obligation Bonds	13,369,714
Transfer from Public Utilities Fund	608,700
Total Programmed Funding:	13,978,414
Future Funding Requirements:	0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 21607 **Title: Water Main Replacement** **Status: Adopted**

Comprehensive Plan Information

Project Location

CIE Project: N/A **Plan Reference: CC Vision – Neighborhood** **District:**
LOS/Concurrency: N/A **Project Need: N/A** **Location: Citywide**

Programmed Funding

Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
2,772,040	1,217,001	429,319	523,720	187,000	200,000	215,000	0

Description and Scope

The Department of Public Utilities is responsible for the operation & maintenance of approximately 546 miles of water mains; approximately 50 miles of which are constructed from 2" diameter galvanized pipe which is beyond its useful life and is deteriorated. This project provides for replacement of the 2" pipe with high density polyethylene pipe and also replaces the water service lines connected with the 2" main. Work will be performed with in-house and contractor forces.

Rationale

Replacement is dictated due to the age of the material; internal & external corrosion of the pipe (with resultant leaks; discolored water and reduced flow and pressure); and the potential for water quality problems.

Funding Strategy

This is an ongoing project and will continue until all the 2" galvanized pipe throughout the City is replaced.

Operating Budget Impacts

Project will reduce the annual maintenance budget (leak repairs and resultant pavement and sidewalk repairs) and will improve water quality.

Project Map

Schedule of Activities

**VARIOUS
LOCATIONS
CITYWIDE**

Project Activities	From - To	Amount
Project Management		1,046,001
Construction	07/06 - 06/12	1,726,039
Total Budgetary Cost Estimate:		2,772,040

Means of Financing

Funding Source	Amount
Public Utilities General Obligation Bonds	2,176,001
Transfer from Public Utilities Fund	596,039
Total Programmed Funding:	2,772,040
Future Funding Requirements:	0

**City of Portsmouth
Fiscal Year 2010-2011 Adopted Budget**

**Capital Improvements
Water**

Project: 20107 **Title: Water Plant Residuals Management and Disposal** **Status: Adopted**

Comprehensive Plan Information		Project Location
CIE Project: N/A LOS/Concurrency: N/A	Plan Reference: CC Vision - Neighborhood Project Need: N/A	District: Location: Lake Kilby Water Treatment Facility

Programmed Funding							
Programmed Funding	Appropriated To Date	Budgeted FY 2010	Non-Appropriated Programmed CIP Funding				Future Funding
			FY 2011	FY 2012	FY 2013	FY 2014	
14,133,500	6,133,500	0	2,000,000	2,000,000	2,000,000	2,000,000	0

Description and Scope

The Department of Public Utilities operates the lake Kilby Water Treatment Plant. The treatment process removes naturally occurring organic and inorganic particles suspended in the water. These particles are known as residuals. Currently the residuals removed in the treatment process are placed in a lagoon. Over its 24 year life the lagoon has accumulated residuals to the extent that it needs to be cleaned out over a period of time. This multi-year project provides for the restoration of the capacity of the lagoon by removing residuals by dewatering and disposal in approved landfills.

Rationale

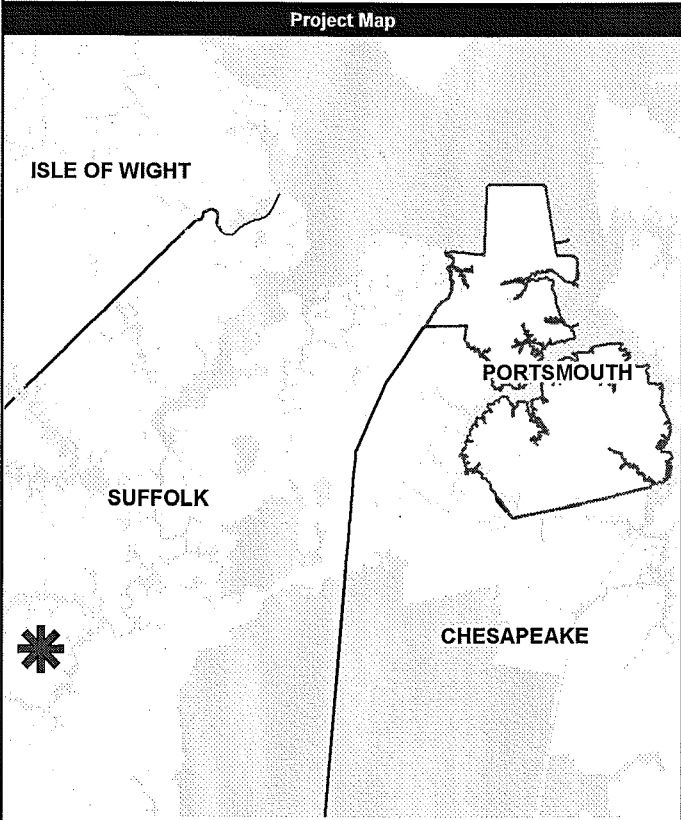
- The present residuals lagoon has limited storage capacity remaining.
- Continued filling of the lagoon will lead to degradation of its effluent and environmental permit violations.
- New treatment processes have increased the amount of residuals produced.
- Restoration of the capacity of the lagoon will require dewatering, removal and off-site disposal of the residuals.
- Future construction of a land application project may be considered; however, that is outside the timeframe of this 5 year CIP.

Funding Strategy

This is an on-going project that will continue as long as the City owns the residual lagoon.

Operating Budget Impacts

Over the past 24 years residuals have been disposed of in a man-made lagoon at little cost. This lagoon is almost full. This project will fund disposal projects to both restore and maintain the capacity of the lagoon. Once the capacity is restored, a project to maintain capacity will be required approximately every two years.



Schedule of Activities		
Project Activities	From - To	Amount
Project Management	07/04 - 06/05	4,433,500
Design	07/08 - 06/11	970,000
Construction	07/08 - 06/11	8,730,000
Total Budgetary Cost Estimate:		14,133,500
Means of Financing		
Funding Source	Amount	
Public Utilities General Obligation Bonds	14,133,500	
Total Programmed Funding:		14,133,500
Future Funding Requirements:		0