City of Alexandria, Virginia

Sanitary Sewer Master Plan Update

April 10, 2012

City Council Work Session

Tonight's Agenda

- Draft Master Plan Overview
- Infrastructure Needs
- Combined Sewer System Permit
- CIP Overview
- Funding Strategies
- Next Steps

Sewer Master Plan Objectives

- Understand How Systems Work
- Analyze Impacts of Growth
- Incorporate Regulatory Requirements
- Evaluate Infrastructure Improvements and Costs
- Identify Funding Strategies for Large Scale Projects

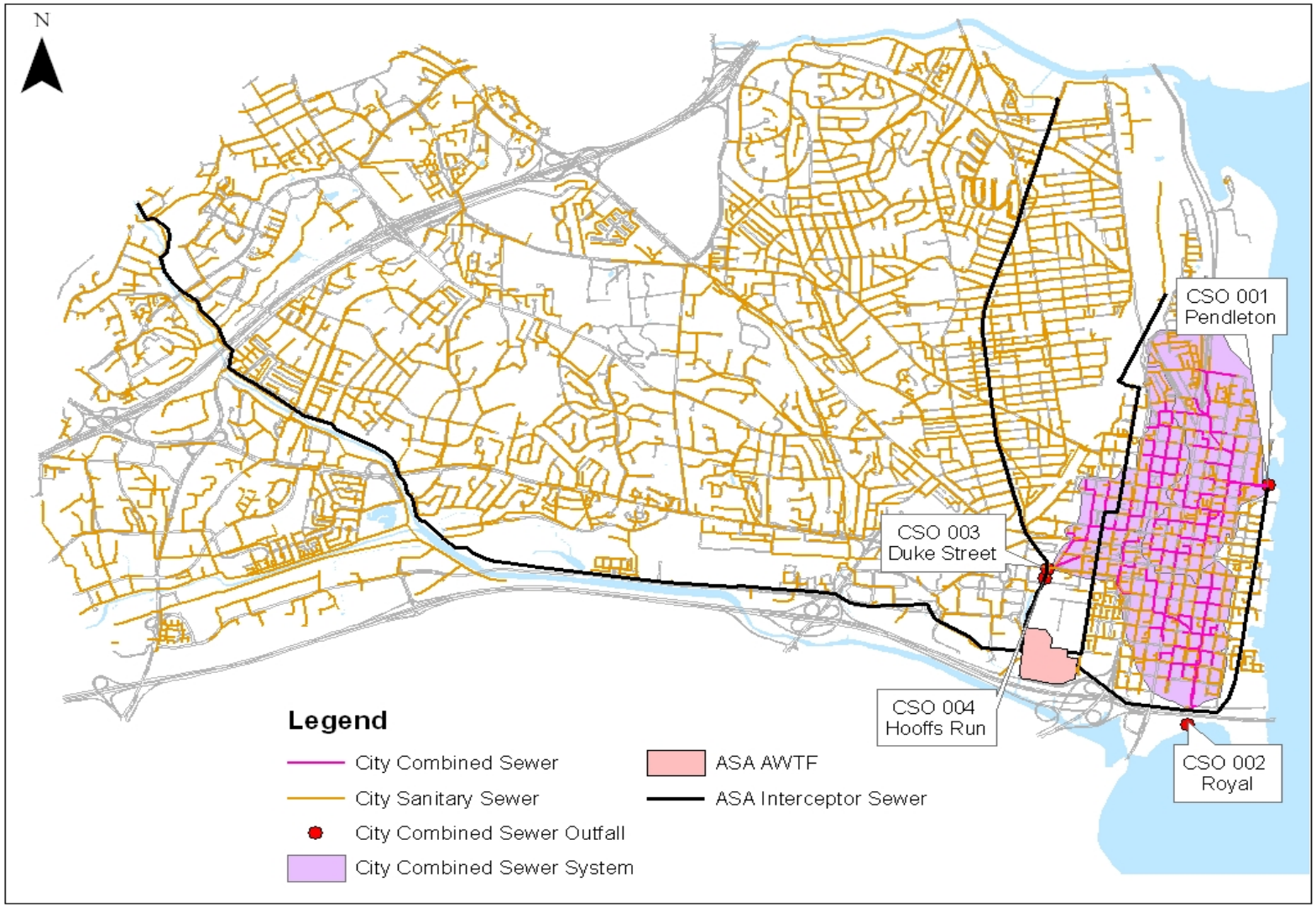
Public Outreach and Schedule

- Presentations to:
  - NVBIA September 2011
  - Environmental Policy Commission October 2011
  - ASA Board October 2011
- Schedule for completion:
  - Final draft for community review and comment in Spring/Summer/Fall 2012
  - Adopt as supplement to City's Master Plan Fall 2012
  - Amend in a future year for CSS permit requirements and implementation plan

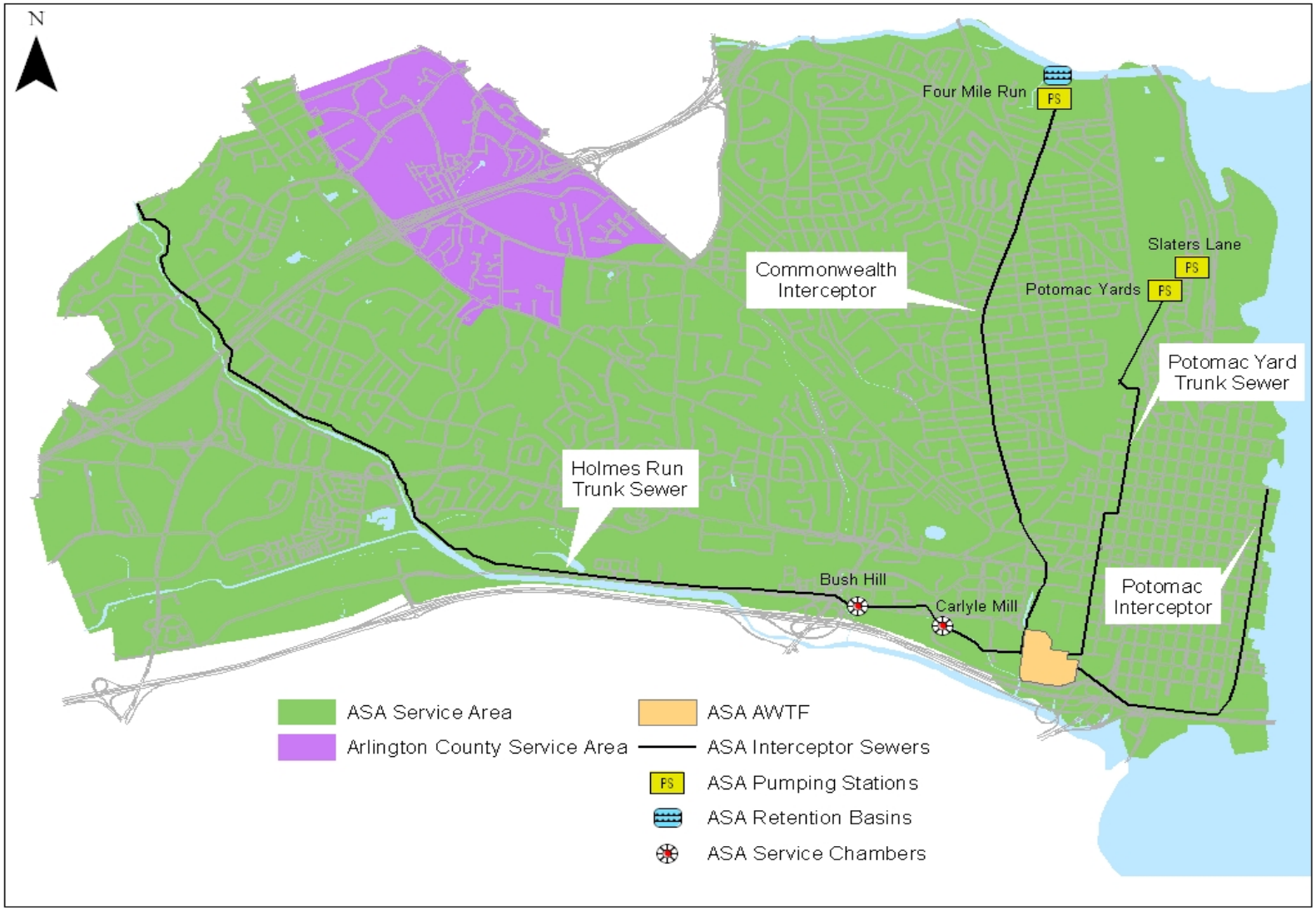
Sanitary Sewer System Components

- City Owned Collection System
- ASA Interceptor Sewers and Pump Stations
- Treatment Facilities
  - ASA Advanced Wastewater Treatment Facility (AWTF)
  - Arlington County Water Pollution Control Plant (WPCP)

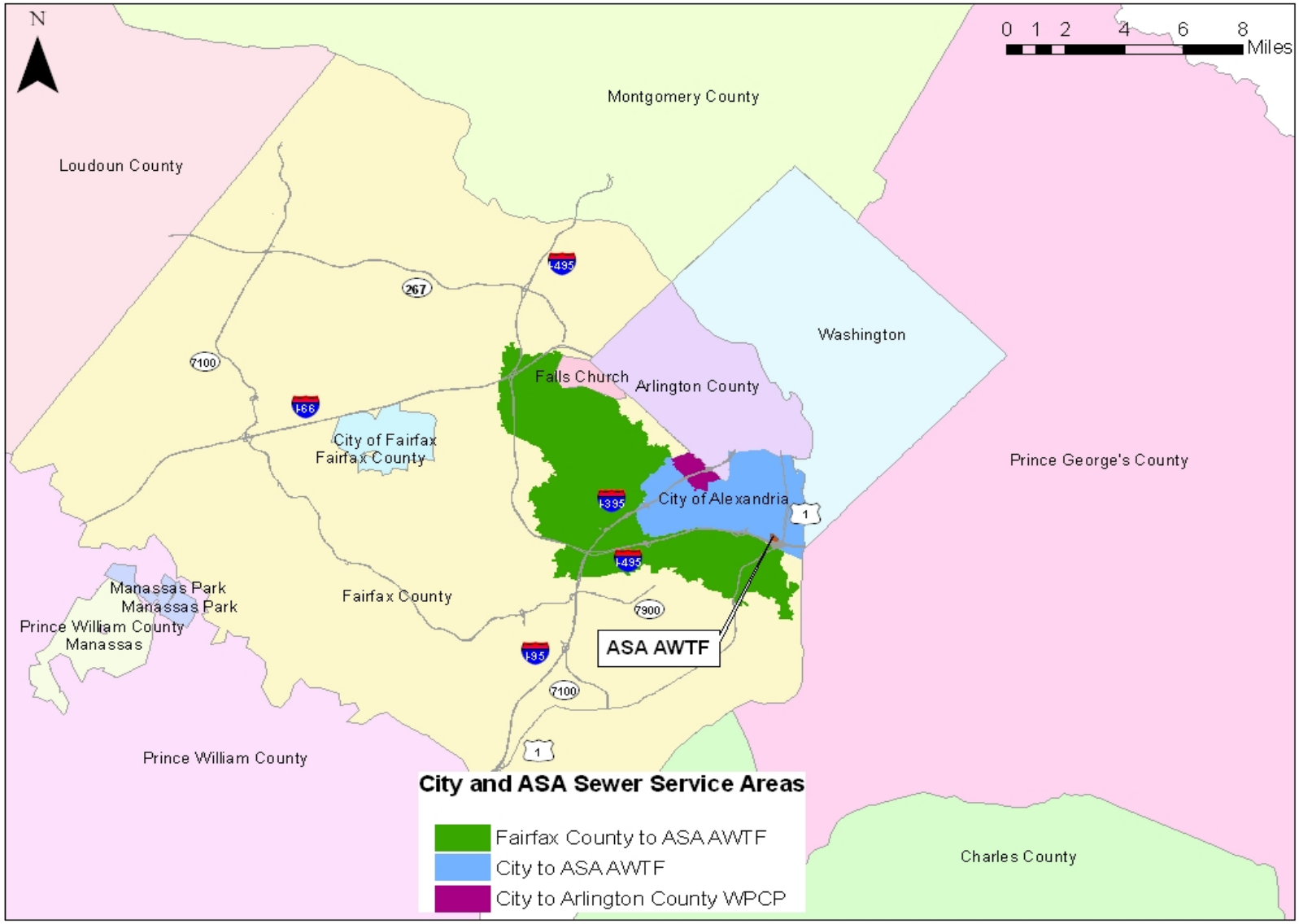
City-Owned Collection System



ASA-Owned Collection System



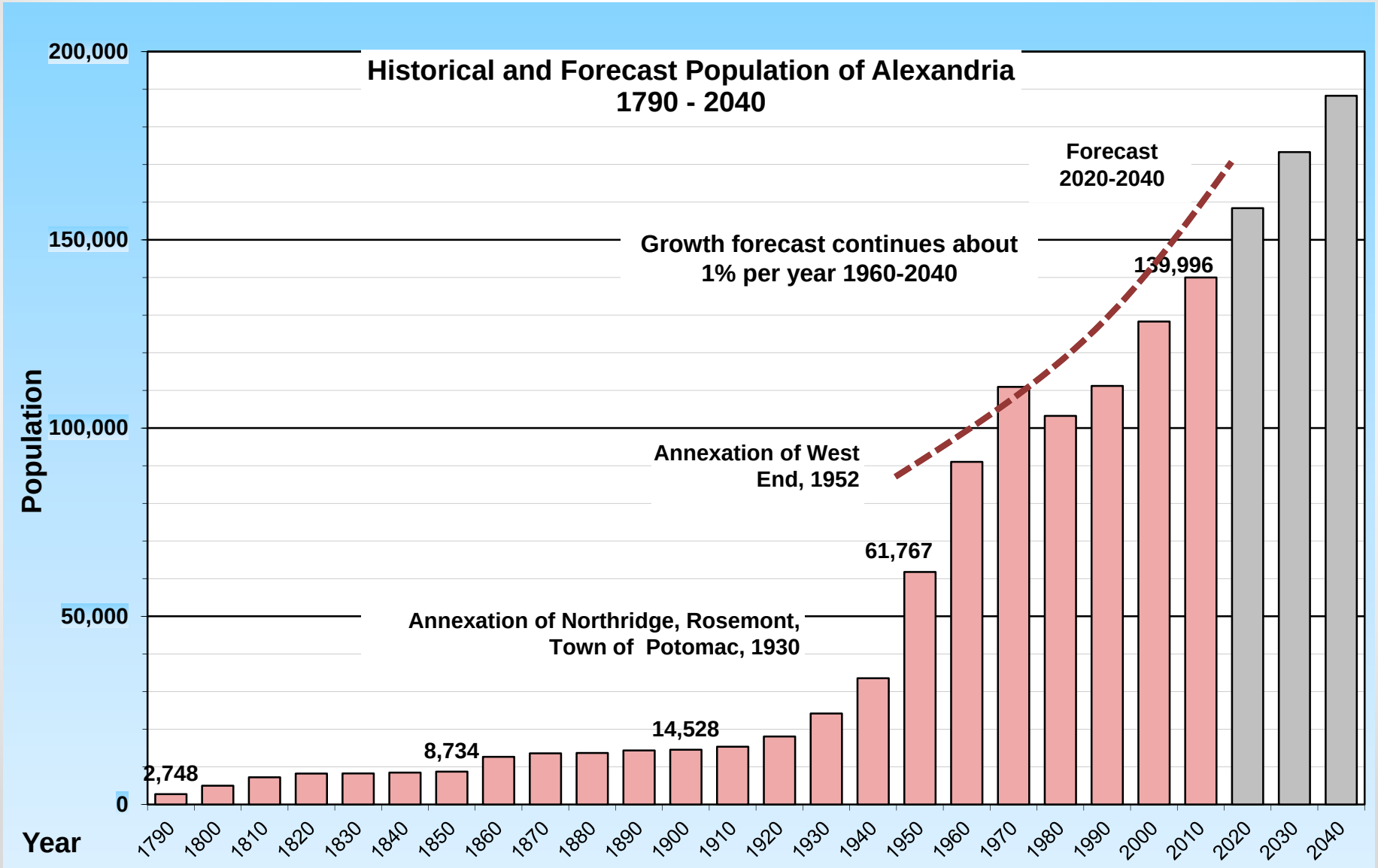
ASA Service Area



Sanitary Sewer Master Plan Considerations

- Growth
- Regulatory Considerations
- Wet Weather Impact

Growth Forecasts



Growth Impacts on Treatment Capacity

	Total Average Annual Wastewater Flow (mgd)					
	Existing	2015	2030	2040	Build-out	City Allocation
ASA Service Area	16.30	16.51	18.95	20.44	25.82	21.60
Arlington Service Area	1.40	1.60	1.67	1.67	2.42	3.00

Regulatory Considerations

- ASA AWTF
  - Chesapeake Bay TMDL
    - Nutrient load caps for nitrogen, phosphorous, and sediment
    - Impacts wastewater treatment plant costs
- City of Alexandria
  - Hunting Creek TMDL
    - Bacteria reductions at CSS outfalls 002, 003 and 004
  - Waste load nutrient allocations (phosphorous and nitrogen)
  - Increased attention by Federal and State governments regarding wet weather overflows

Wet Weather Capacity

- Extreme wet weather events can lead to increased I/I in the Sanitary Sewers, surcharged Interceptors, SSOs and sewer back-ups
- SSOs caused by extreme wet weather may discharge into Hooff's Run and Four Mile Run
- ASA Interceptor model predicts SSO volume and sewer back-up potential due to extreme wet weather

Summary of Needs

- Growth Related Needs
  - Collection System
  - Interceptor/Trunk Sewer System
  - Treatment Capacity
- Existing System Needs
  - Inflow & Infiltration Remediation
  - Wet Weather Management
  - Combined Sewer System

Growth Related Needs

- Collection System Improvements
  - To be constructed with associated development
- Holmes Run Trunk Sewer
  - Surcharging in upper reaches under evaluation
  - Future Beauregard, Landmark, Fairfax County growth
- Additional Treatment Capacity
  - 4 mgd +/- needed at ASA post 2040
  - Nutrient load allocation increase

Additional ASA Treatment Capacity

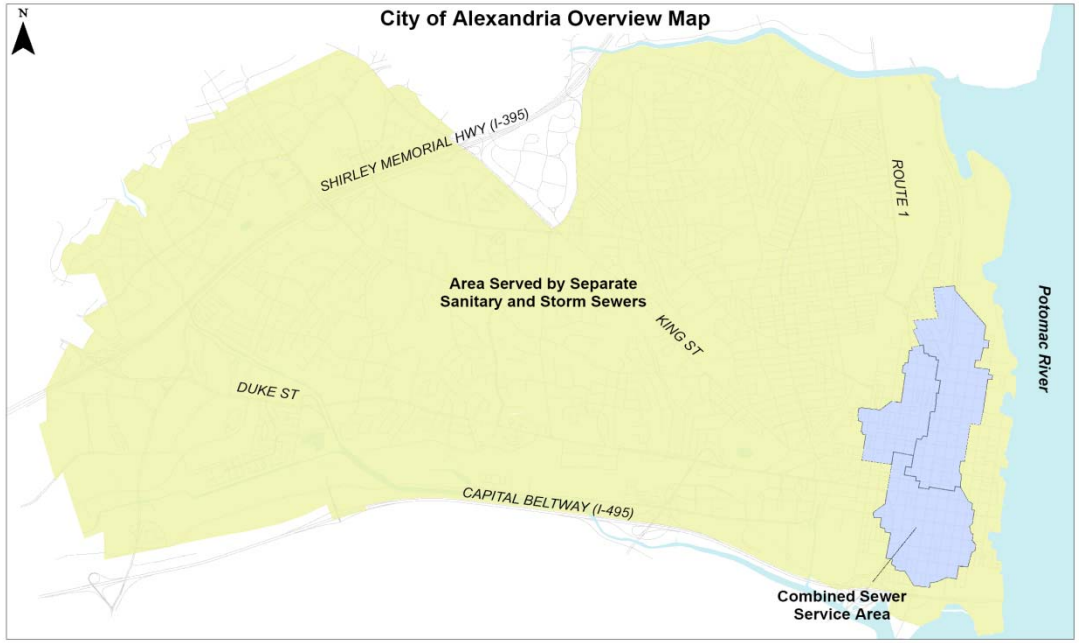
- 4 mgd assumes water conservation measures
- $35.2m to expand ASA capacity
  - Included in FY 2013 – FY 2022 CIP
  - Additional nutrient loading requirements, $, timing TBD
- Alternative would be to purchase existing ASA capacity from Fairfax County
  - Continuing discussions with the County
  - $56m current asking price (2011 dollars)
  - Includes additional nutrient loading

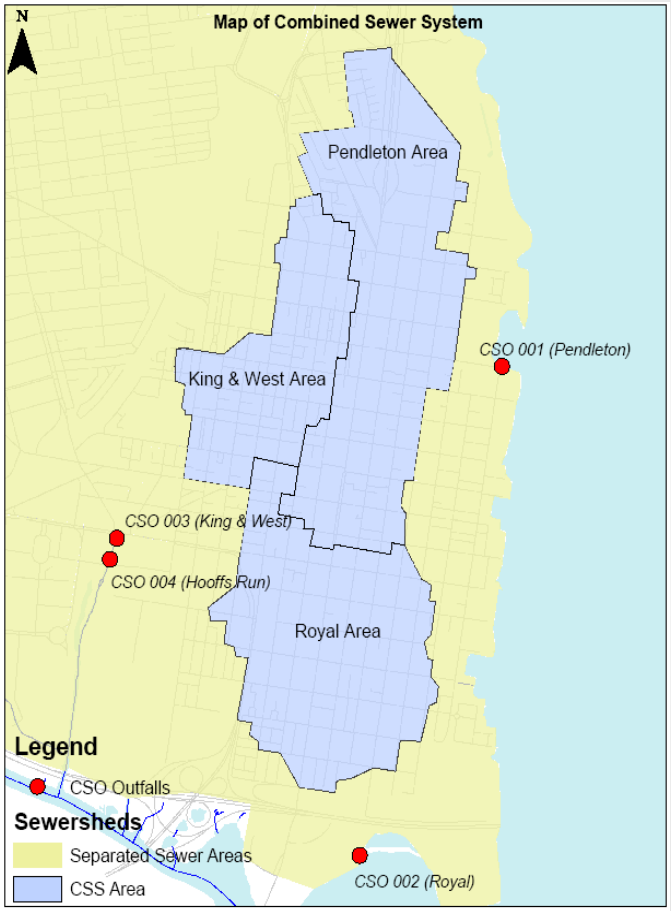
Existing System Needs

- Holmes Run I&I
  - $19.9m to complete (FY 2013 to FY 2017)
- Wet Weather Management Facility
  - Cost sharing with Fairfax TBD (assume 50/50)
  - $31.5m budgeted FY 2014 – FY 2018
  - Alternative design proposed by ASA under evaluation, possible cost savings
  - CSO discussions with DEQ may amend plan

Existing System Needs

Combined Sewer System





<u>FACTS</u>

- VDEQ permit No. VA0087068, Currently up for renewal
- Three CSS Areas: King/West Streets, Pendleton Street, Royal Street (Four Outfalls) ~ 540 acres

Combined Sewer System

- CSO Permit in renewal process and discussions with VDEQ ongoing
- Permit when reissued must be consistent with TMDLs and waste load allocations
- Hunting Creek Bacteria TMDL requirements (reduction in overflows):
  - Outfall 002 (Royal St.): 80%
  - Outfall 003 (King & West) 99%
  - Outfall 004 (Duke St.) 99%

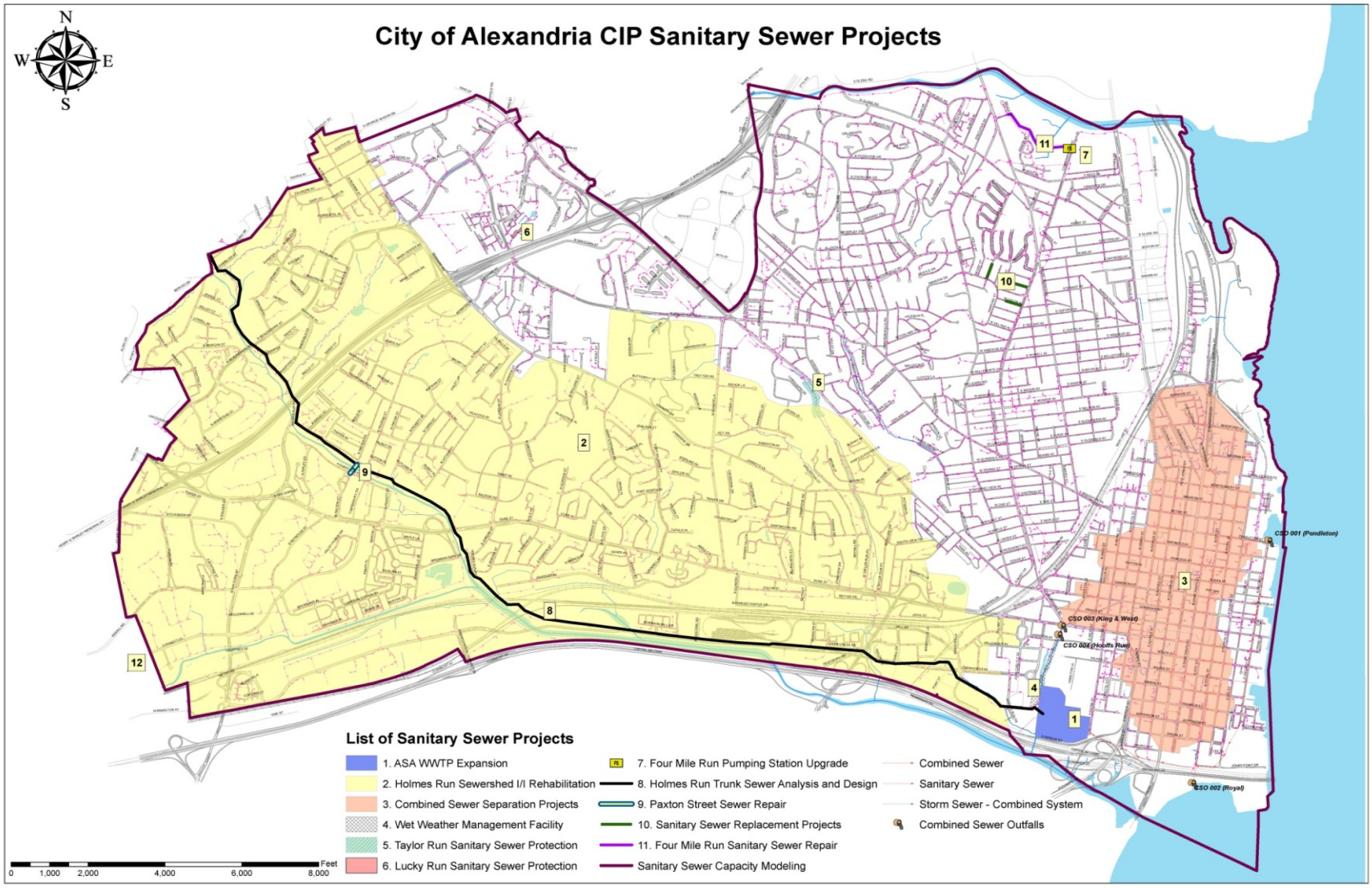
Combined Sewer System Permit

- Consider suite of practices for incorporation into permit
  - Capital Improvements
  - Green Infrastructure
  - Area Reduction Plan
  - Continued Assessment
  - Alternatives Analysis

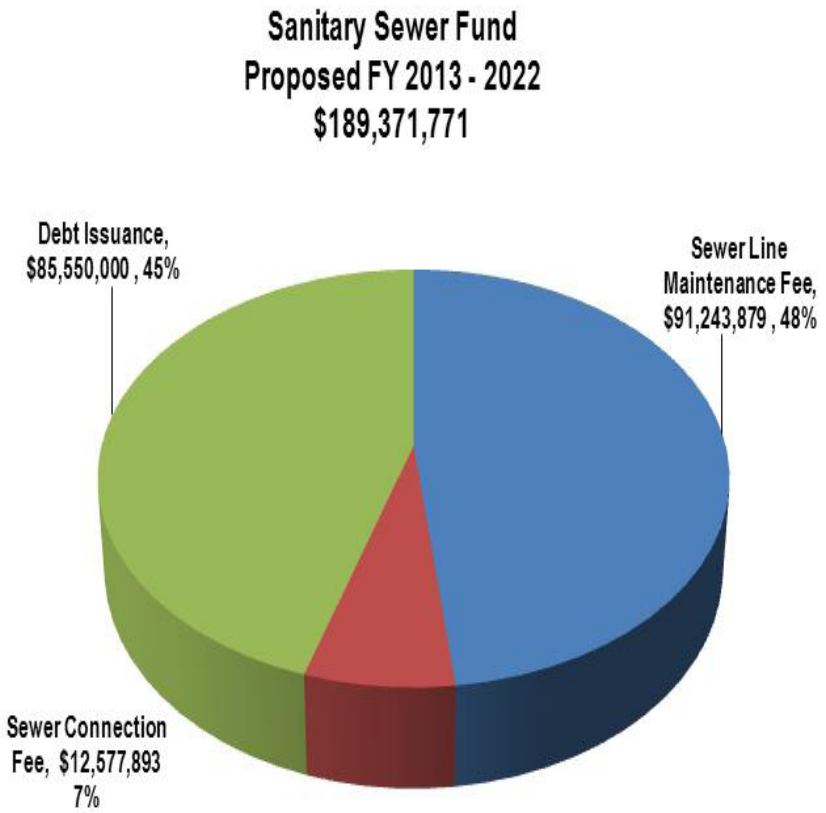
- Public Engagement
  - City will continue to update EPC as a regular agenda item in EPC meetings
  - Develop a community outreach and education effort
  - Potential creation of new advisory body

- Potential additional requirements not in proposed FY 2013 CIP or in sanitary sewer rate increase calculations

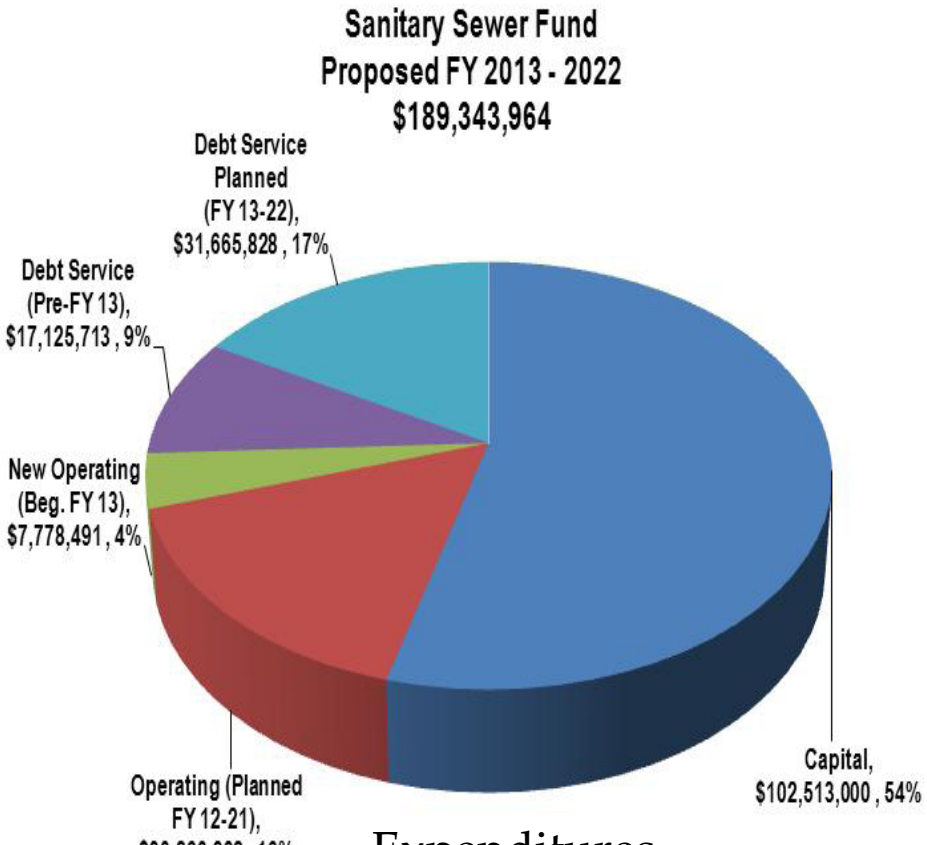
FY2013 – FY2022 City CIP Overview



Proposed FY 2013 City CIP Revenue and Expenditure Overview



Revenues



Expenditures

FY 2013 – FY 2022 Significant New Funding

- New projects added:
  - ASA Capacity Expansion = +$35.2m
  - Wet Weather Management Facility = +$31.5M
- Additional funding:
  - Holmes Run Sewershed Infiltration and Inflow = +$7.7m
- Total New Funding = +$74.4m

Potential Long-Term Funding Strategies

- Maintenance Fee Rate
- Connection Fee Rate
- Fee-backed Bonds
- Storm Sewer Tax Rate

Proposed FY 2013 – Sewer Maintenance (User) Fee

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
Beginning FY Rate	$1.25	$1.25	$1.25	$1.38	$1.38	$1.47	$1.77	$2.05	$2.05	$2.27
Proposed % Increase	0.0%	0.0%	10.0%	0.0%	7.0%	20.0%	16.0%	0.0%	12.0%	0.0%
New Rate	$1.25	$1.25	$1.38	$1.38	$1.47	$1.77	$2.05	$2.05	$2.27	$2.27

- FY 2013 User Fee Comparison (per 1000 gallons):
  - ASA/Alexandria = $7.61 (City = $1.25, ASA = $6.36)
  - Arlington County = $8.51
  - Fairfax County = $7.03
  - Prince William County = $6.55 residential, $7.15 commercial
  - WSSC = $3.27 to $8.30, based on usage

Other Funding Strategies – Sewer Connection Fee Model

- Model assumptions:
  - Growth related needs funded by the connection fee
  - Existing system needs funded by the maintenance fee
- Modeling effort ongoing
- Single-family vs multi-family connection fee analysis
- Credit for teardowns to be explored

Sewer Connection Fee Discussion for Multi-Family

Jurisdiction	Single-Family Connection Fee	Multi-Family Connection Fee	Ratio of MF to SF
City of Alexandria	$8,175	$4,087	50%
Prince William County	$10,300	$8,240	80%
Fairfax County	$7,750	$6,200	80%
WSSC	$3,500 (unimproved area), $10,750 (improved area)	$3,500 (unimproved area), $10,750 (improved area)	100%
Arlington County	$110/DFU	$110/DFU	varies

- Ratio of multi-family to single-family water usage = 0.87
  (Source: 2010 Washington Metro Area Water Supply Reliability Study)

Funding Strategies

- Current funding plan does not yet include:
  - Holmes Run Trunk Sewer capacity capital costs
  - Combined Sewer System permit change capital and operating costs

Public Outreach and Schedule

- Presentations to:
  - NVBIA September 2011
  - Environmental Policy Commission October 2011
  - ASA Board October 2011
- Schedule for completion:
  - Final draft for community review and comment in Spring/Summer/Fall 2012
  - Adopt as supplement to City's Master Plan Fall 2012
  - Amend in a future year for CSS permit requirements and implementation plan

Summary & Next Steps

- Public outreach
- Continue evaluation of Holmes Run Trunk Sewer
- Continue CSS permit negotiation
- Continue study of wet weather management facility
- Continue rate/fee studies and provide recommendations
- Master Plan adoption

City of Alexandria, Virginia

Thank You

Questions and Answers

FY 2013 – FY 2022

Sanitary Sewer Module Funding Sources		FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total FY13-FY22
Sewer Line Maintenance Fee		$6,500,000	$6,548,750	$7,257,652	$7,312,085	$7,366,925	$9,277,721	$10,842,873	$10,924,195	$12,436,922	$12,530,199	**$90,997,323**
Sewer Connection Fee		1,000,000	1,050,000	1,102,500	1,157,625	1,215,506	1,276,282	1,340,096	1,407,100	1,477,455	1,551,328	**12,577,893**
New Debt Issuance		4,850,000	3,530,000	3,750,000	0	0	0	0	0	0	0	**12,130,000**
New Debt Issuance (with New Projects)		0	3,375,000	1,125,000	3,850,000	17,150,000	13,700,000	0	11,070,000	11,400,000	11,750,000	**73,420,000**
Reprogrammed Prior Year Funding		246,556	0	0	0	0	0	0	0	0	0	**246,556**
Fund Balance Carryover		0	33,043	1,539	323,900	521,766	126,279	159,455	150,270	9,626	475,262	**0**
Total Funding Sources		**$12,596,556**	**$14,536,793**	**$13,236,691**	**$12,643,609**	**$26,254,198**	**$24,380,282**	**$12,342,423**	**$23,551,565**	**$25,324,004**	**$26,306,790**	**$189,371,771**

Category/Project	*Unallocated (12/2011)*	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total FY13-FY22
Category 1												
Mitigation of Combined Sewer Overflows	*$1,581,690*	$319,000	$335,000	$335,000	$350,000	$350,000	$350,000	$350,000	$350,000	$350,000	$350,000	**$3,439,000**
Reconstructions & Exts. of Sanitary Sewers	*2,373,918*	469,000	0	775,000	320,000	435,000	540,000	660,000	760,000	760,000	845,000	**5,564,000**
Sanitary Sewer Capacity Studies	*149,877*	0	0	0	0	0	0	0	0	0	0	**0**
Sewer Separation Projects	*600,000*	500,000	120,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000	**5,420,000**
Subtotal Category 1	*4,705,485*	1,288,000	455,000	1,710,000	1,270,000	1,385,000	1,490,000	1,610,000	1,710,000	1,710,000	1,795,000	**14,423,000**
Category 2												
Commonwealth Service Chamber	*370,000*	0	0	0	0	0	0	0	0	0	0	**0**
Holmes Run Trunk Sewer	*6,037,000*	0	0	0	0	0	0	0	0	0	0	**0**
Four Mile Run Sanitary Sewer Repair	*130,000*	1,500,000	0	0	0	0	0	0	0	0	0	**1,500,000**
ASA Wastewater Treatment Plant Expansion	*0*	500,000	500,000	0	0	0	0	0	11,070,000	11,400,000	11,750,000	**35,220,000**
Holmes Run Sewershed Infiltration & Inflow	*4,960,000*	4,360,000	4,200,000	3,600,000	3,850,000	3,850,000	0	0	0	0	0	**19,860,000**
Subtotal Category 2	*11,497,000*	6,360,000	4,700,000	3,600,000	3,850,000	3,850,000	0	0	11,070,000	11,400,000	11,750,000	**56,580,000**
Category 3												
[1]Reclaimed Water System via WTE Plant	*0*	0	0	0	0	0	0	0	0	0	0	**0**
Wet Weather Management Facility	*0*	0	3,375,000	1,125,000	0	13,300,000	13,700,000	0	0	0	0	**31,500,000**
Sanitary Sewer Master Plan	*0*	0	0	0	0	0	0	0	0	0	10,000	**10,000**
Subtotal Category 3	*0*	0	3,375,000	1,125,000	0	13,300,000	13,700,000	0	0	0	10,000	**31,510,000**
Subtotal Capital Expenditures	***$16,202,485***	**$7,648,000**	**$8,530,000**	**$6,435,000**	**$5,120,000**	**$18,535,000**	**$15,190,000**	**$1,610,000**	**$12,780,000**	**$13,110,000**	**$13,555,000**	**$102,513,000**

[1] Project balance of $146,566 and unallocated balance of $100,000 proposed to be reprogrammed in FY 2013, and project closed out.

Changes from Proposed FY 2013 to FY 2012 Approved

FY 2013 - 2022 PROPOSED CIP: CHANGES FROM FY 2013 PROPOSED TO FY 2012 APPROVED

Sanitary Sewer Module Funding Sources		FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total FY13-FY22
Sewer Line Maintenance Fee		($200,000)	($151,250)	$557,652	$612,085	$666,925	$2,577,721	$4,142,873	$4,224,195	$5,736,922	$12,530,199	$30,697,323
Sewer Connection Fee		0	0	0	0	0	0	0	0	0	1,551,328	1,551,328
New Debt Issuance		0	0	0	0	0	0	0	0	0	0	0
Reprogrammed Prior Year Funding		246,556	0	0	0	0	0	0	0	0	0	246,556
Fund Balance Carryover		0	(59,982)	14,795	(60,440)	128,376	(235,330)	(255,643)	(402,148)	(762,756)	475,262	0
Total Funding Sources		**$46,556**	**($211,232)**	**$572,447**	**$551,645**	**$795,301**	**$2,342,392**	**$3,887,230**	**$3,822,047**	**$4,974,167**	**$14,556,790**	**$32,495,207**

Category/Project	*Unallocated (12/2011)*	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total FY13-FY22
Category 1												
Mitigation of Combined Sewer Overflows	*$1,581,690*	$0	$0	$0	$0	$0	$0	$0	$0	$0	$350,000	$350,000
Reconstructions & Exts. of Sanitary Sewers	*2,373,918*	(431,000)	(980,000)	(225,000)	(680,000)	(565,000)	(460,000)	(340,000)	(240,000)	(240,000)	845,000	(3,316,000)
Sanitary Sewer Capacity Studies	*149,877*	0	0	0	0	0	0	0	0	0	0	0
Sewer Separation Projects	*600,000*	(100,000)	(480,000)	0	0	0	0	0	0	0	600,000	20,000
Subtotal Category 1	*4,705,485*	(531,000)	(1,460,000)	(225,000)	(680,000)	(565,000)	(460,000)	(340,000)	(240,000)	(240,000)	1,795,000	(2,946,000)
Category 2												
Commonwealth Service Chamber	*370,000*	0	0	0	0	0	0	0	0	0	0	0
Holmes Run Trunk Sewer	*6,037,000*	0	0	0	0	0	0	0	0	0	0	0
Four Mile Run Sanitary Sewer Repair	*130,000*	0	0	0	0	0	0	0	0	0	0	0
ASA Wastewater Treatment Plant Expansion	*0*	500,000	500,000	0	0	0	0	0	11,070,000	11,400,000	11,750,000	35,220,000
Holmes Run Sewershed Infiltration & Inflow	*4,960,000*	0	0	0	3,850,000	3,850,000	0	0	0	0	0	7,700,000
Subtotal Category 2	*11,497,000*	500,000	500,000	0	3,850,000	3,850,000	0	0	11,070,000	11,400,000	11,750,000	42,920,000
Category 3												
[1]Reclaimed Water System via WTE Plant	*0*	0	0	0	0	0	0	0	0	0	0	0
Wet Weather Management Facility	*0*	0	3,375,000	1,125,000	0	13,300,000	13,700,000	0	0	0	0	31,500,000
Sanitary Sewer Master Plan	*0*	0	0	0	0	0	0	0	0	(10,000)	10,000	0
Subtotal Category 3	*0*	0	3,375,000	1,125,000	0	13,300,000	13,700,000	0	0	(10,000)	10,000	31,500,000
Subtotal Capital Expenditures	***$16,202,485***	**($31,000)**	**$2,415,000**	**$900,000**	**$3,170,000**	**$16,585,000**	**$13,240,000**	**($340,000)**	**$10,830,000**	**$11,150,000**	**$13,555,000**	**$71,474,000**

[1] Project balance of $146,566 and unallocated balance of $100,000 proposed to be reprogrammed in FY 2013, and project closed out.

FY 2013 - 2022 PROPOSED CIP: CHANGES FROM FY 2013 PROPOSED TO FY 2012 APPROVED

Sanitary Sewer Module Operating Costs		FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022	Total FY13-FY22
Personnel		$0	$8,987	$18,468	$28,464	$38,996	$50,086	$61,757	$74,032	$86,936	$2,345,210	$2,712,937
Added Operating Support - Staff time directly charged		$439,851	$453,047	$466,638	$480,637	$495,056	$509,908	$525,205	$540,961	$557,190	$573,906	$5,042,399
[2]Non-Personnel		0	254,119	4,221	8,675	13,371	18,319	23,528	29,010	34,777	1,069,591	1,455,611
Additional Operating - Wet Weather Facility		0	0	0	0	0	0	654,000	673,620	693,829	714,643	2,736,092
Debt Service - prior debt issuance		580,030	727,928	868,043	963,145	933,837	904,530	875,223	854,342	841,520	1,513,098	9,061,696
Debt Service - planned future debt issuance		(882,343)	(710,107)	(499,484)	(377,653)	114,370	1,575,192	2,489,665	2,652,837	3,586,439	6,507,534	14,456,450
Total Operating Expenditures		**$137,538**	**$733,973**	**$857,887**	**$1,103,269**	**$1,595,631**	**$3,058,035**	**$4,629,378**	**$4,824,803**	**$5,800,690**	**$12,723,982**	**$35,465,185**
Total Sanitary Sewer Expenditures		**$106,538**	**$3,148,973**	**$1,757,887**	**$4,273,269**	**$18,180,631**	**$16,298,035**	**$4,289,378**	**$15,654,803**	**$16,950,690**	**$26,278,982**	**$106,939,185**

[2] Includes $250,000 for an Asset Management System in FY 2014