

Various Capital Investment Plan Appropriation Requests

City Council Finance Committee

Mayor Katjana Ballantyne

Richard E. Raiche, PE, PMP, MCPPO

Director of Infrastructure & Asset Management

20 October 2022



Outline

- Sewer Enterprise recurring CIP
 - Agenda item 20, ID # 22-1664 – Sewer system evaluation
 - Agenda item 18, ID # 22-1662 – Sewer system rehabilitation
- Water Enterprise recurring CIP
 - Agenda item 19, ID # 22-1663 – Water main rehabilitation
 - Agenda item 21, ID # 22-1665 – Lead water service replacement

FY2023 Sewer Capital Investment Plan Bond Requests

City Council Finance Committee

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Director of Infrastructure & Asset Management

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ID # 22-1664 – Requesting authorization to borrow \$1,730,000 in a bond, and to appropriate the same amount for the annual recurring FY23 Sewer System Evaluation and Infiltration/Inflow Assessment.

Annual SSES & I/I Program

Agenda Item 20

FY19 / Greater DSQ condition assessment results

- 6.8 miles inspected (4% of system)
 - 2.2 miles require heavy cleaning (33% of inspected)
 - 123 cubic yards debris estimated (approx. 10 truck loads)
 - 18 locations require dig-and-replace spot repairs
 - 7 locations require trenchless spot repairs
 - 0.8 miles require full trenchless structural rehabilitation (12% of inspected)
 - 1.1 miles require trenchless lining to eliminate I/I (16% of inspected)



FY20 / Ward 2 Condition assessment results

- 24.7 miles inspected (14.5% of system)
 - 8 miles heavy cleaning (33% of inspected)
 - 280 tons of debris removed (24 truckloads)
 - 45 pipes require full-length dig replacement / 110 spot repairs
 - 4 miles require trenchless rehabilitation / 36 spot repairs (16% of inspected)
 - 5.3 miles could not access
 - Percentages similar to Greater DSQ area
- Note: Covid-19 skipped FY21 Request (completed FY20 work)

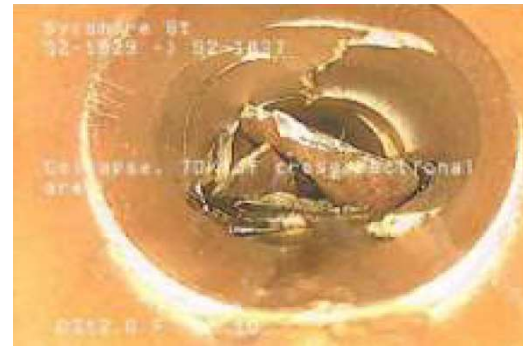


FY22 / Lower Broadway assessment results

Ongoing Project

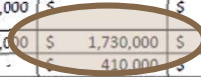
Complete Through 9/30/22 | At Project's Completion (Estimated)

- 16.0 miles inspected (44% of project) | 36.4 miles (21% of *system*)
 - 58 tons of debris removed | 132 tons
 - 0.9 miles require full-length dig replacement (6% of inspected) | 2.1 miles
 - 2.4 miles require trenchless rehab. & 28 spot repairs (15% of inspected) | 5.5 miles & 64 spot repairs
 - 38,000 gal. per day of infiltration from 2300 observed defects | 86,000 gpd / 5200 defects
 - Field observations and findings similar to Greater DSQ and Ward 2



May 2022 Water & Sewer CIP

Sewer Enterprise Fund	CIP Category	Funding Source	Planning Estimate Only	Year Added to the CIP	Approved by City Council	Total (FY22-FY32)	FY22	FY23	FY24	FY25	FY26	FY27
Somerville Ave. Utility & Streetscape Improvements - Sewer	USQ DIF	Sewer Enterprise		2016	✓	\$ 13,418,373	\$ 7,709,187	\$ 5,709,187	\$ -	\$ -	\$ -	\$ -
Poplar St. Stormwater Pump Station	USQ DIF	Sewer Enterprise		2016	OPM; CM@R	\$ 82,541,445	\$ 1,650,817	\$ 24,555,003	\$ 48,347,323	\$ 7,795,631	\$ 192,671	\$ -
Spring Hill Sewer Separation: Project Area 1- Sewer	USQ DIF	Sewer Enterprise		2017	✓	\$ 11,318,094	\$ 2,555,699	\$ 4,381,198	\$ 4,381,198		\$ -	\$ -
Nunziato Stormwater Storage	USQ DIF	Sewer Enterprise	✓	2016	Design only	\$ 12,500,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sewer Improvements	Recurring	Sewer Enterprise		2016	✓ (FY22)	\$ 58,407,441	\$ 4,050,000	\$ 4,390,000	\$ 4,569,990	\$ 4,757,360	\$ 4,952,411	\$ 5,366,834
Sewer Vehicles ¹	Recurring	Sewer Enterprise	n/a	2018	✓ (FY19)	\$ 1,760,000	\$ 520,000	\$ 40,000	\$ 400,000	\$ 100,000	\$ 100,000	\$ 100,000
Manhole Sealing	Underway	Sewer Enterprise / MWRA I/I Phase 9		2019	✓	\$ 333,963	\$ 333,963		\$ -	\$ -	\$ -	\$ -
Somerville Marginal Interceptor Rehabilitation	Underway	Sewer Enterprise		2017	✓	\$ 4,400,000	\$ 4,400,000	\$ -	\$ -	\$ -	\$ -	\$ -
SSES & I/I Assessment	Recurring	Sewer Enterprise		2019	✓	\$ 10,737,000	\$ 1,600,000	\$ 1,730,000	\$ 1,800,000	\$ 610,000	\$ 630,000	\$ 660,000
Willow to Grove Sewer Replacement	Recommended	Sewer Enterprise	✓	2019	✓	\$ 3,440,000	\$ -	\$ 410,000	\$ 1,640,000	\$ 1,390,000	\$ -	\$ -
Flint St. Sewer Replacement	Recommended	Sewer Enterprise	✓	2019	✓	\$ 3,380,000	\$ -	\$ 210,000	\$ 1,550,000	\$ 1,620,000	\$ -	\$ -
Sewer Separation Project 1	Recommended	Sewer Enterprise / MWRA / I/I	✓	2019		\$ 29,000,000	\$ -	\$ 1,000,000	\$ 1,500,000	\$ 1,000,000	\$ 8,500,000	\$ 8,500,000
Sewer Separation Project 2	Recommended	Sewer Enterprise / MWRA / I/I	✓	2019		\$ 45,000,000	\$ -	\$ 2,000,000	\$ 2,500,000	\$ 13,500,000	\$ 13,500,000	\$ 13,500,000
Sewer Separation Project 3	Recommended	Sewer Enterprise / MWRA / I/I	✓	2019		\$ 34,000,000	\$ -	\$ -	\$ -	\$ -	\$ 1,500,000	\$ 1,900,000
Sewer Separation Project 4	Recommended	Sewer Enterprise / MWRA / I/I	✓	2021		\$ 74,000,000	\$ -	\$ -	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000
Sewer Separation Project 5	Recommended	Sewer Enterprise / MWRA / I/I	✓	2021		\$ 45,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,000,000
Sewer Separation Project 6	Recommended	Sewer Enterprise / MWRA / I/I	✓	2022		\$ 6,000,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Spring Hill Sewer Separation: Highland Avenue - Sewer	USQ DIF	Sewer Enterprise	✓	2021		\$ 8,166,272	\$ 150,000	\$ 346,272	\$ 2,556,667	\$ 2,556,667	\$ 2,556,667	\$ -
Spring Hill Sewer Separation: Project Area 2B- Sewer	USQ DIF	Sewer Enterprise	✓	2021		\$ 14,359,400	\$ -	\$ -	\$ -	\$ 765,050	\$ 3,707,550	\$ 6,591,200
Boynton Yards - Pump Station	Boynton DIF	Sewer Enterprise	✓	2021		\$ 47,547,854	\$ 1,632,763	\$ 1,698,073	\$ 14,164,857	\$ 14,731,452	\$ 15,320,710	
Clarendon Hill	Recommended	MassWorks		2021	✓	\$ 4,580,612	\$ 780,612	\$ 2,400,000	\$ 1,400,000		\$ -	\$ -
New Washington Street Sewer Realignment	Recommended	Sewer Enterprise	✓	2021		\$ 500,000	\$ 20,000	\$ 250,000	\$ 230,000	\$ -	\$ -	\$ -
Total						\$ 510,390,455	\$ 25,403,040	\$ 49,119,732	\$ 86,540,035	\$ 50,326,159	\$ 52,460,009	\$ 40,118,034

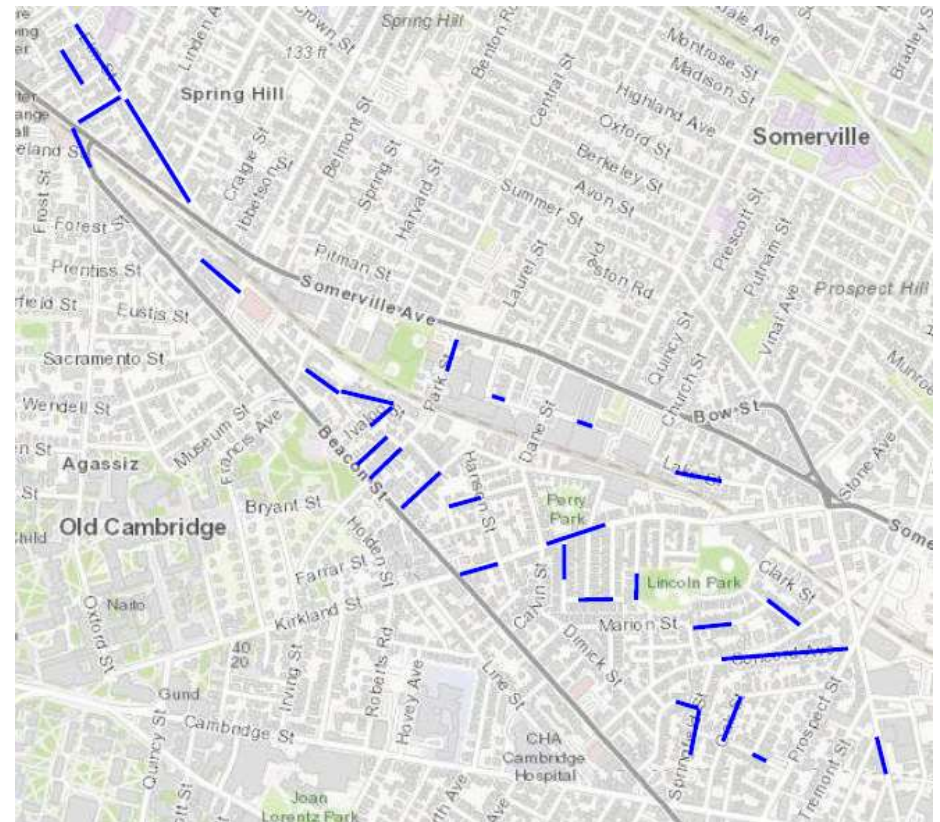


ID # 22-1662 – Requesting authorization to borrow \$4,390,000 in a bond, and to appropriate the same amount for the recurring FY23 Sewer Improvements program.

Recurring project to repair sewer defects identified by SSES
Agenda Item 18

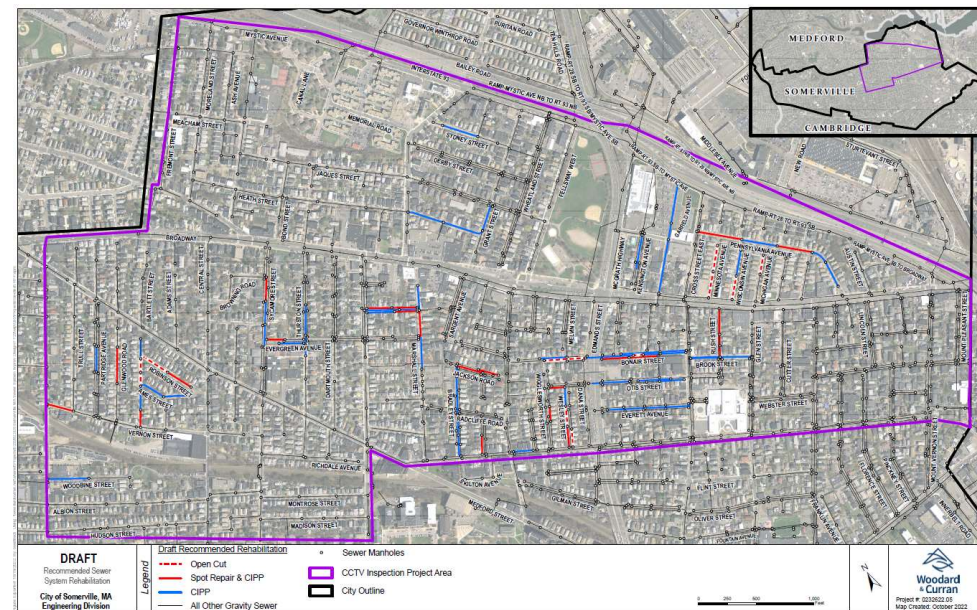
FY22 Update

- Ward 2 Sewer Rehab
 - 14 point-repairs completed; 3 point-repairs remaining.
 - 182 LF of 10-inch and 215 LF of 8-inch gravity sewer pipe replaced; 50 LF of gravity sewer replacement remaining.
 - 150 LF of water main relocated
 - 6,250 LF of cured-in-place sewer pipe lining; early November through January 2023



FY23 Intended Use

- Winter Hill and East Somerville Sewer Rehabilitation
- Target infiltration removal and highest severity structural defects
- Planned Scope of Work:
 - Trenchless Rehabilitation: 10,000 LF
 - Full-Length Dig Replacement: 3,000 LF
- Design complete early 2023
- Bidding Spring 2023



May 2022 Water & Sewer CIP

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FY2023 Water Capital Investment Plan Bond Requests

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ID # 22-1663 – Requesting authorization to borrow \$7,110,000 in a bond, and to appropriate the same amount for the recurring FY23 Water Main Rehabilitation program.

Annual Water System Improvement Program
Agenda Item 19

FY21 Work completed

- Holland and Broadway Water Main Rehabilitations
 - 1,653 LF cleaned and lined
 - 695 LF completed on Holland Street
 - 958 LF completed on Broadway
 - 64 water gate valves were replaced
 - 28 valves replaced on Holland Street water main
 - 36 valves replaced on Broadway
 - 3 Lead service replacements completed
- Note: FY22 used for Spring Hill Sewer Separation area

FY2023 Intended Use

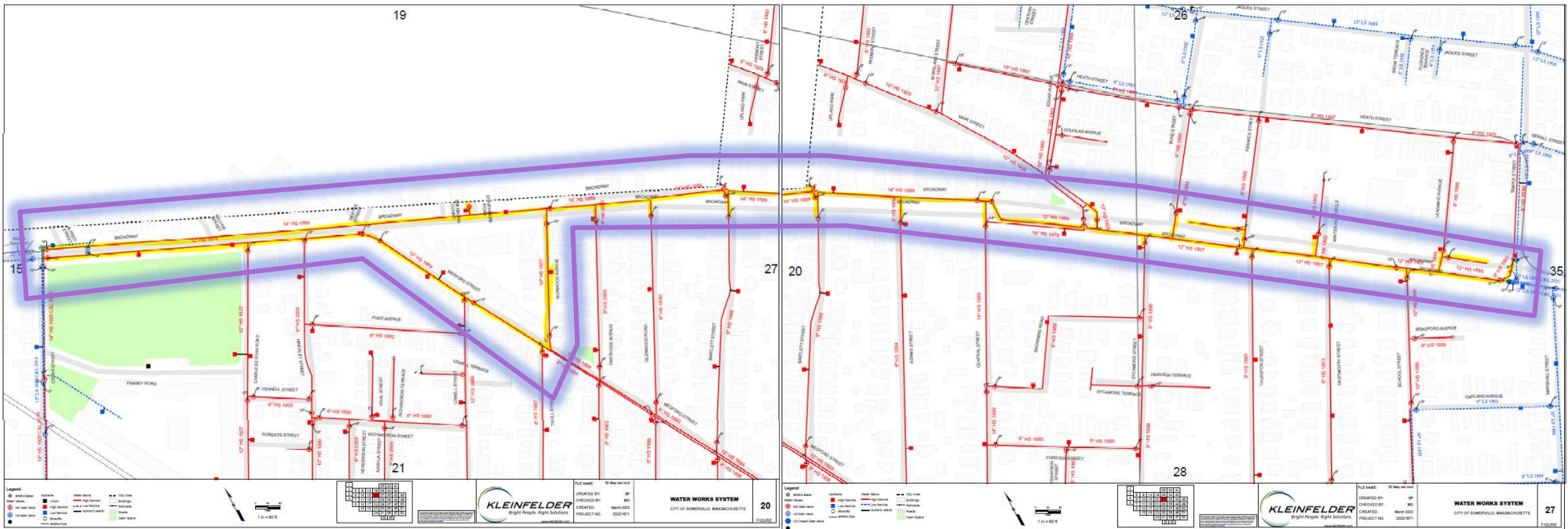
- **Central Broadway**

- High likelihood and consequence of failure based on 2020 risk-based plan.
- Connects to primary source of water (MWRA) for this area of the City.
- Remove debris accumulation (tuberculation) and install cementitious liner to protect existing pipe.
- Planned Scope:
 - 2,800 LF of 14-inch water main,
 - 4,050 LF of 12-inch water main and
 - 450 LF of 10-inch water main.



FY2023 Intended Use

- Central Broadway – Planned Limit of Work



March 2019 Water & Sewer CIP

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Somerville Ave. Utility & Streetscape Improvements - Water	USQ DIF	Water Enterprise		2016	✓	\$ 1,380,939	\$ 690,470	\$ 690,470	\$ -	\$ -	\$ -
Water Improvements	Recurring	Water Enterprise / MWRA LWSAP	n/a	2016		\$ 74,280,000	\$ -	\$ 7,110,000	\$ 7,310,000	\$ 7,600,000	\$ 7,900,000
Lead Line Replacement Program	Recurring	Water Enterprise / MWRA LLP		2017	✓ (FY22)	\$ 17,822,222	\$ 1,910,000	\$ 1,477,738	\$ 1,507,292	\$ 1,537,438	\$ 1,567,582
Water Vehicles ¹	Recurring	Water Enterprise	n/a	2018	✓ (FY20)	\$ 1,500,000	\$ 150,000	\$ 290,000	\$ 260,000	\$ 100,000	\$ -
Pitman St. - Water Improvements	Recommended	Water Enterprise	✓	2019		\$ 1,065,000	\$ -	\$ 45,000	\$ 1,020,000	\$ -	\$ -
Water Meter Replacement	Recommended	Water Enterprise	✓	2019		\$ 3,500,000	\$ 3,500,000	\$ -	\$ -	\$ -	\$ -
Spring Hill Sewer Separation - Project Area 1 Water Line Improvements	USQ DIF	Water Enterprise		2021	✓	\$ 9,415,818	\$ 2,126,152	\$ 3,644,833	\$ 3,644,833	\$ -	\$ -
Spring Hill Sewer Separation - Highland Ave Water Line Improvements	USQ DIF	Water Enterprise	✓	2021		\$ 4,083,136	\$ 75,000	\$ 173,136	\$ 1,278,333	\$ 1,278,333	\$ 1,278,333
Spring Hill Sewer Separation - Project Area 2B Water Line Improvements	USQ DIF	Water Enterprise	✓	2021		\$ 5,221,600	\$ -	\$ -	\$ -	\$ 278,200	\$ -
Boynton Yards - Infrastructure	Boynton DIF	Water Enterprise; In-Kind Contributions	✓	2022		\$ 8,071,858	\$ 743,490	\$ 1,725,758	\$ 1,794,788	\$ 1,866,580	\$ 1,938,320
Total						\$ 126,340,574	\$ 9,195,112	\$ 15,156,934	\$ 16,815,246	\$ 12,660,551	\$ 14,176,633

ID # 22-1665 – Requesting authorization to borrow \$1,477,738 in a bond, and to appropriate the same amount for participation in the FY23 MWRA Lead Line Replacement Program.

Annual Water System Improvement Program
Agenda Item 21

Lead water service replacement program

- Entering third year of construction
- 194 services replaced to date
- 30 services confirmed non-lead containing
- 100 service replacements planned for Phase 3
- Brochures mailed and information available at:
 - <https://www.somervillema.gov/departments/programs/lead-service-line-replacement-program>



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