

Asset Management Outline

- Asset Management Background
- Linear Assets – Sanitary and Storm Assets
 - CSAP Program Statistics
 - FY23 accomplishments and improvements
 - Proposed Budget
- Vertical Assets – Plant and Pump Station Assets
 - Long Range Projects
 - Proposed Budget
 - FY23 AM accomplishments and improvements

Asset Management Background

Types of Assets



Linear Assets



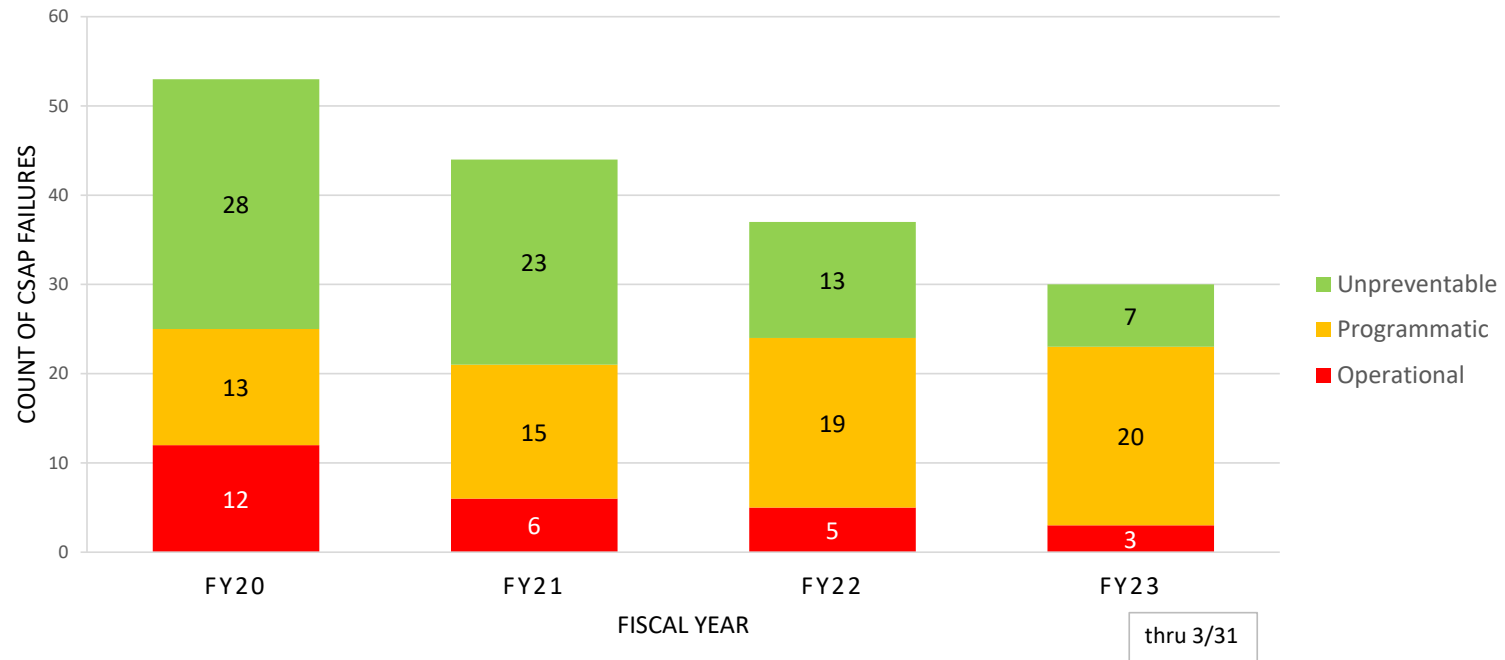
Vertical Assets



Portable Assets

C-600 Linear Assets

SANITARY COLLECTION SYSTEM CONTINUOUS SEWER ASSESSMENT PROGRAM (CSAP) ASSET FAILURES



S600 - Storm Assets

- S600 includes storm sewer asset renewal, rehabilitation and unplanned emergency repairs
- The same Asset Management strategy is applied to Storm assets as that of Sanitary and combined.

FY23 Linear Asset Management Program Accomplishments and Improvements

Continued program improvement

- Established new method for calculating Consequence of Failure (COF)
- Updated Business Risk Exposure (BRE) calculation to be the product of COF and Probability of Failure (POF) according to industry standard and EPA recommendations
- Set new assessment and maintenance frequencies to perform just-in-time maintenance
- Updated prioritization of renewal work based on BRE to assist in scheduling work when it is most cost effective and advantageous
- Updated Cost tables used in ARGON (FKA SCREAM) for budget projections
- Developed plan to reduce BRE with a more aggressive approach in the next 5 – 10 years. This should result in lower cost rehab methods in the out years

Improved COF Methodology

Pipe Attribution:

- Pipe Size
- Sewer Capacity
- Average Depth
- Number of connections

Location Information:


- Street Class
- Utilities
- Railroads
- Buildings
- Overflows

Proximi
Points
Zone of
Points
Type of
Points
Count o
Points
Locatio
Points
Locatio
Points
Number
Points
Depth
Points
DS prox
Distance
DS prox
Distance

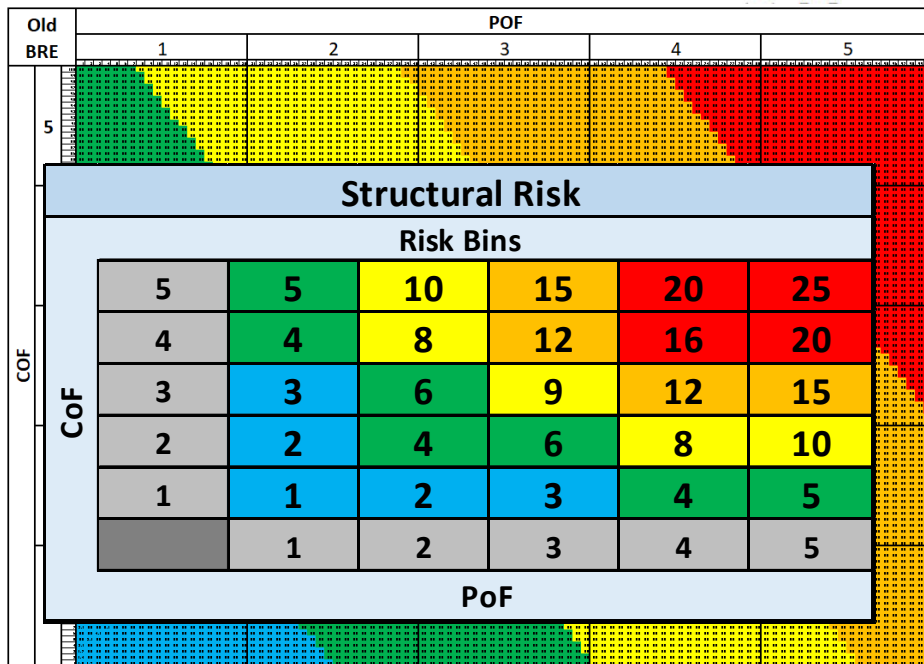
Criteria Summaries - Scores (1-5)

- **Diameter**
 - 1. (<=8") 2. (10"-12") 3. (15"-21") 4. (24"-36") 5. (>36")
- **Depth**
 - 1. (<=8') 2. (8'-15') 3. (15'-20') 4. (20'-25') 5. (>25')
- **Surface Type**
 - 1. Everything else
 - 2. Within 25'-50' of a level 7-8 hydro layer
 - 3.
 - Within 25' level 7-8 hydro layer ; Within 25'-50' level 5-6 hydro layer ; Within 25' class 7-10 Street
 - Within 25' class 5-6 Street
 - Within 40'-50' of a railroad
 - Within 10'-20' of a building
 - 4.
 - 20'-40' of a railroad
 - Within 25' of level 5-6 hydro layer
 - Within 25'-50' level 4 or lower hydro layer
 - Within 25' class 4 Street
 - Within 25' traffic count of 5,000-10,000 per day
 - Within 5'-10' of a building
 - 5.

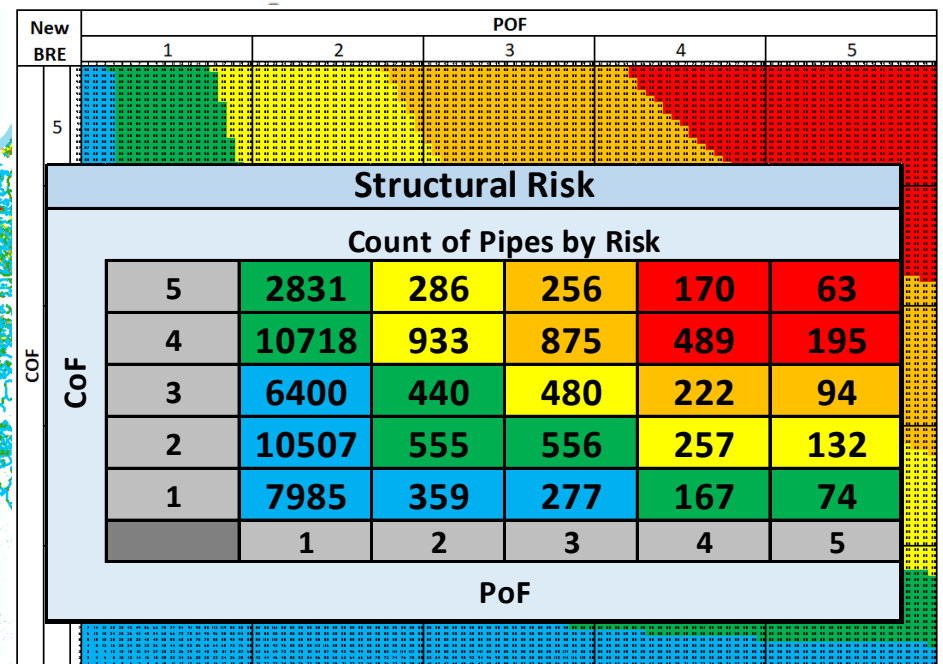
P ≤ 5'
90
LICE/



Updated Business Risk Exposure (BRE) Sanitary Sewers



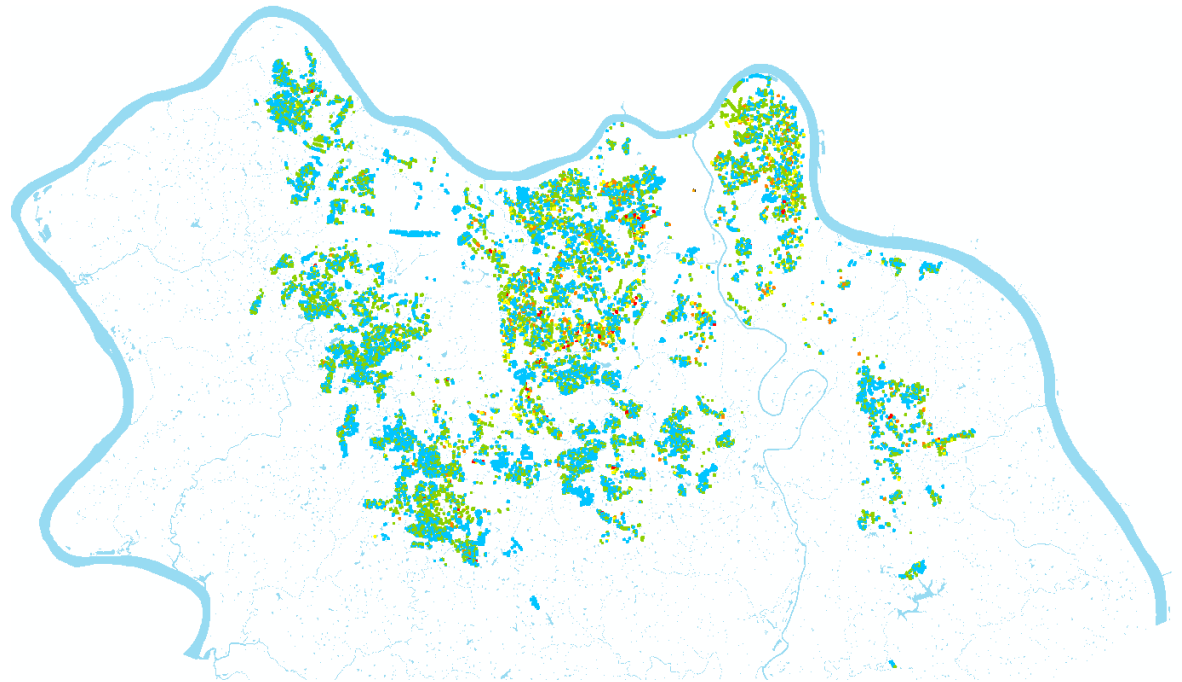
Previous BRE



Improved BRE

Updated Business Risk Exposure (BRE) Storm Sewers

Structural Risk						
Count of Pipes by Risk						
CoF	5	4	3	2	1	
	341	36	20	19	16	
	2301	197	102	157	104	
	4216	229	149	222	120	
	6935	342	188	281	111	
1	2317	109	51	94	45	
	1	2	3	4	5	
PoF						



Right timing Assessment & Rehabilitation

Structural Risk						
Risk Bins						
CoF	5	5	10	15	20	25
	4	4	8	12	16	20
	3	3	6	9	12	15
	2	2	4	6	8	10
	1	1	2	3	4	5
		1	2	3	4	5
PoF						

Structural Risk						
Assessment Frequency by Risk (year)						
CoF	5	10	4	2	1	1
	4	12	5	2	1	1
	3	18	10	3	2	2
	2	26	12	10	5	3
	1	30	26	18	12	10
		1	2	3	4	5
PoF						

Updated Costing Tables

Method	Diameter	Rehab Unit cost (\$/ft)			
		Lateral Reinstatement \$ Each	Depth: 0 to 4 ft	Depth: 5 to 10 ft	Depth: 11 to 16 ft
CIPP	6	\$125.00	\$44.50	\$44.50	\$44.50
CIPP	8	\$125.00	\$57.00	\$57.00	\$57.00
CIPP	10	\$125.00	\$66.00	\$66.00	\$66.00
CIPP	12	\$125.00	\$75.00	\$75.00	\$75.00
CIPP	15	\$125.00	\$165.00	\$165.00	\$165.00
CIPP	18	\$125.00	\$110.00	\$110.00	\$110.00
CIPP	21	\$125.00	\$90.00	\$90.00	\$90.00
CIPP	24	\$125.00	\$140.00	\$140.00	\$140.00
CIPP	27	\$350.00	\$245.00	\$245.00	\$245.00
CIPP	30	\$350.00	\$250.00	\$250.00	\$250.00
CIPP	36	\$350.00	\$390.00	\$390.00	\$390.00

Lining Costs

Method	Diameter	Repair Unit cost (\$/ft)			
		Lateral Reinstatement \$ Each	Depth: 0 to 4 ft	Depth: 5 to 10 ft	Depth: 11 to 16 ft
Trench	6	\$500.00	\$518.44	\$899.75	\$1,673.08
Trench	8	\$500.00	\$521.46	\$899.75	\$1,676.10
Trench	10	\$500.00	\$521.76	\$900.05	\$1,676.40
Trench	12	\$500.00	\$537.23	\$915.52	\$1,691.87
Trench	15	\$500.00	\$545.89	\$924.18	\$1,700.53
Trench	18	\$500.00	\$645.15	\$1,063.28	\$1,879.49
Trench	21	\$1,000.00	\$671.60	\$1,089.73	\$1,905.94
Trench	24	\$1,000.00	\$642.72	\$1,060.85	\$1,877.06
Trench	27	\$1,000.00	\$643.41	\$1,061.54	\$1,877.75
Trench	30	\$1,000.00	\$724.44	\$1,142.57	\$1,958.78
Trench	36	\$1,000.00	\$706.28	\$1,124.41	\$1,940.62

Repair Costs

Plan to reduce BRE

Structural Risk						
CoF	Renewal Costs					
	5			\$12,607,816	\$ 3,264,052	\$ 3,949,333
	4			\$13,205,278	\$ 6,671,890	\$ 2,869,549
	3			\$ 4,022,069	\$ 2,539,012	\$ 2,300,244
	2					\$ 2,765,297
	1					
	1	2	3	4	5	
PoF						

FY24 - Renew all pipes in the 5x5 bin and half of the 5x4 bin

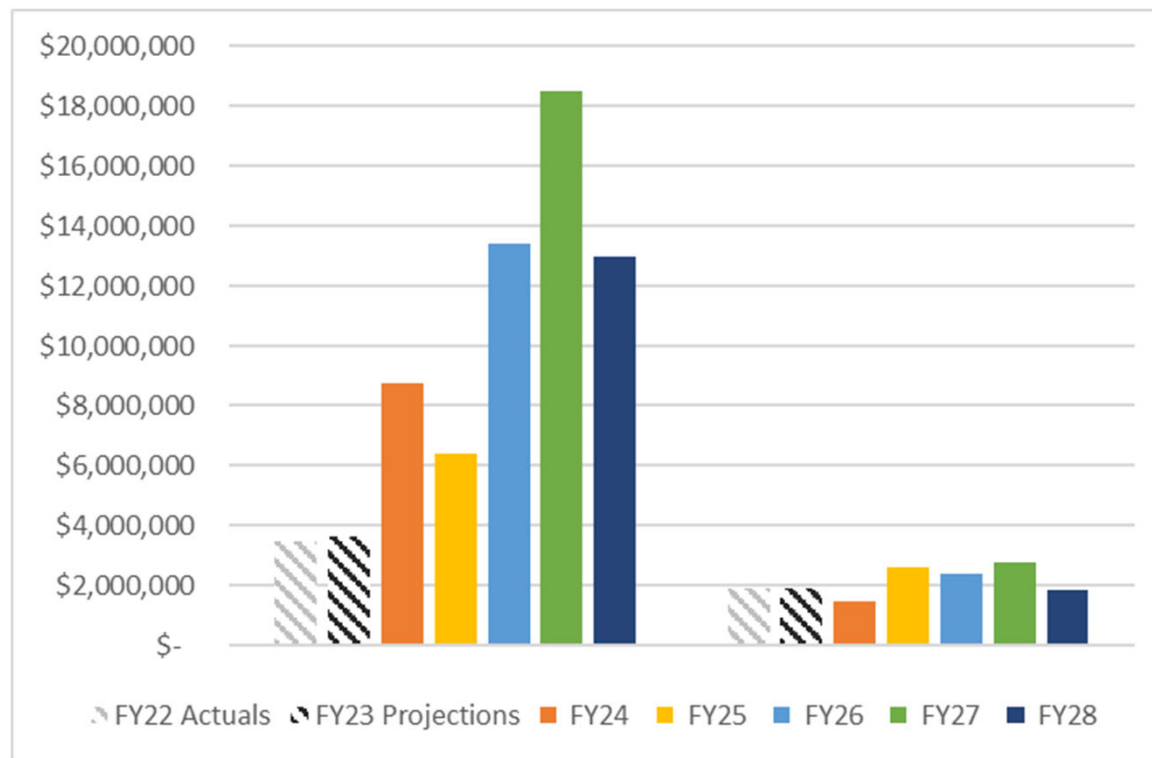
FY25 - Renew the remaining pipes in the 5x4 bin and all in the 4x5 bin

FY26 - Renew about three fourths of the pipes in the 4x4 bin

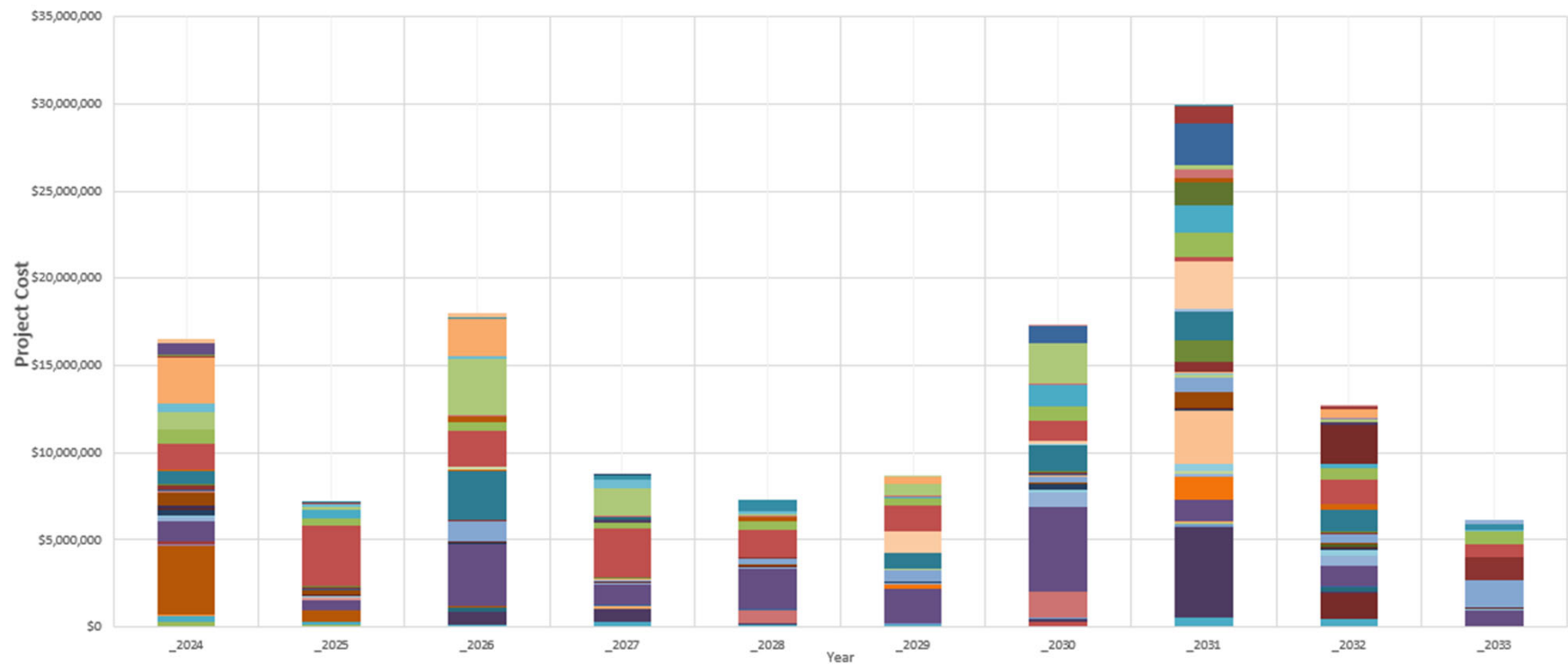
FY27 - Complete the 4x4 bin and renew half of the pipes in the 3x5 bin

FY28 - Complete the 3x5 bin and renew half of the 5x3 bin

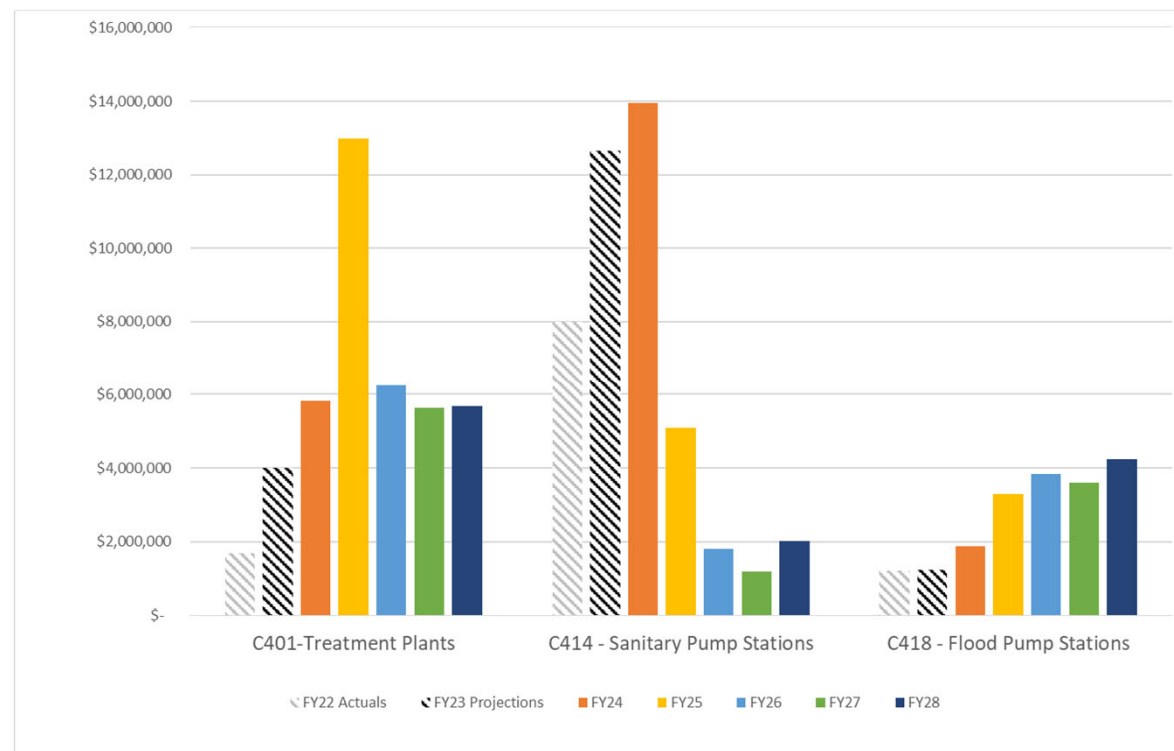
5-Year Asset Management CIP Budget for Linear Assets – C600 and S600



Vertical Assets Long Range Projects



5-Year Asset Management CIP Budget for Vertical Assets – C401, C414, C418



FY23 Vertical Asset Management Program Accomplishments and Improvements

Continued program development

- Improved project planning and scheduling
 - Implementation of Microsoft Project and project estimating sheets
 - Inclusion of more vertical assets
 - Further development of facilities asset management program
- 