

# City of Warrensburg

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## Sewer Utility Rate Study

February 13, 2023





# Background

- City engaged Raftelis to undertake a sewer utility rate study
- Regulatory requirements are driving approximately \$20.3 million in capital expenditures at the City's two sewer treatment plants for SBR (Sequencing Batch Reactors) and associated upgrades
- Sewer utility currently generates approximately \$5.5 million in annual revenue to fund operations and maintenance and capital for the utility.

# Missouri Department of Natural Resources (DNR) and City Relationship Overview

- The City is required to apply for, and actively follow the National Pollutant Discharge Elimination System (NPDES) Permit
- The Permit gives DNR the authorization to inspect and monitor our plants, and apply any necessary enforcement to the City, among the many things they look for are:
  - › Flows,
  - › Capacity,
  - › Quality of effluent

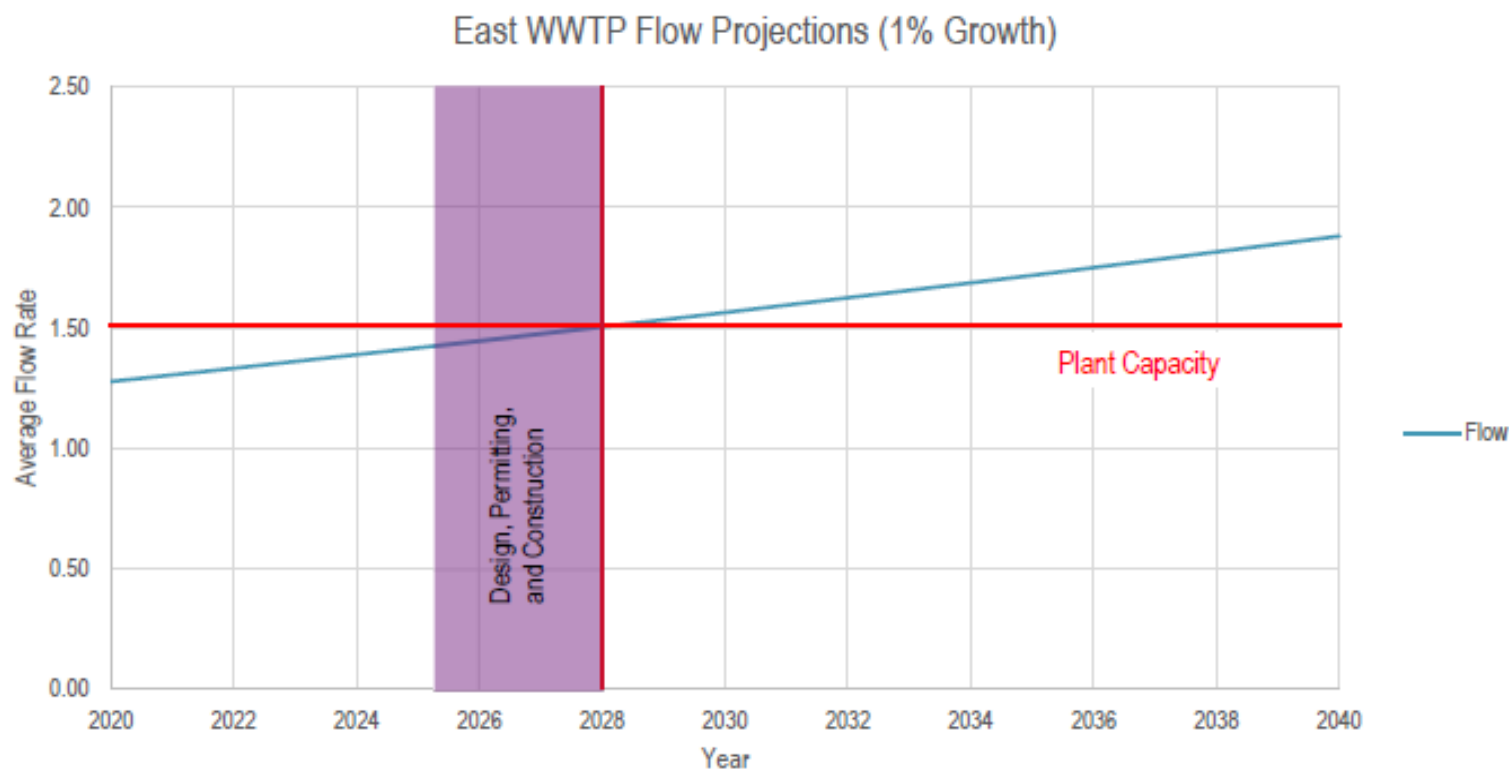
East	2019				2020					2021					2022				
	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Capacity	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Capacity	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Capacity
January	0.36	2.18	1.26	38.94	0.25	2.51	1.32	40.98		0.31	2.27	1.19	37.00		0.09	0.80	0.81	25.24	
February	0.34	2.74	1.39	38.94	0.15	1.22	1.08	31.38	0.80	0.02	0.07	1.03	28.75	0.74	0.12	0.47	0.98	27.48	0.60
March	0.45	3.16	1.31	40.74	0.56	6.12	1.65	51.30	0.90	0.57	7.36	1.87	58.02	0.91	0.48	4.30	1.32	40.99	0.69
April	0.89	5.34	1.06	31.76	0.30	3.56	1.20	36.06	0.88	0.49	5.39	1.32	39.72	0.90	0.29	4.37	1.22	36.49	0.72
May	0.46	7.35	2.29	71.09	0.52	6.18	1.28	0.00	0.87	0.49	6.36	1.63	50.64	0.94	0.45	5.87	1.32	40.83	0.75
June	0.47	4.25	1.10	32.89	0.38	2.27	1.01	30.23	0.84	0.77	8.45	1.32	39.70	0.93	0.33	2.62	1.02	30.51	0.74
July	1.34	10.73	1.40	43.38	1.70	15.28	1.26	38.99	0.84	0.26	1.85	1.09	33.77	0.90	0.40	3.62	0.78	24.28	0.71
August	0.53	3.72	0.98	30.45	0.58	4.64	1.18	36.68	0.83	0.45	2.71	0.83	25.63	0.86	0.45	3.56	0.87	26.97	0.69
September	0.39	2.75	0.87	26.20	0.78	4.65	0.98	29.38	0.81	0.49	1.97	0.81	24.42	0.82	0.11	0.68	0.78	23.44	0.67
October	0.24	2.85	0.84	26.19	0.24	1.71	0.81	25.01	0.79	0.42	6.36	0.99	30.59	0.81	0.43	2.55	0.77	23.82	0.66
November	0.20	1.83	0.81	24.33	0.40	3.22	0.80	26.67	0.76	0.15	0.89	0.78	23.37	0.78	0.65	4.52	0.91	27.28	0.66
December	0.48	2.88	0.94	29.13	0.23	0.91	0.89	24.79	0.75	0.28	1.11	0.74	22.94	0.76	0.24	0.73	0.78	24.19	0.65
<b>Total</b>	0.51		1.19	434.03	0.51		1.12	371.47		0.39		1.13	414.55		0.34		0.963	351.517	
Capacity used			0.792				0.748					0.756					0.642		
Remaining capacity			0.208				0.252					0.244					0.358		
Remaining gallons			311,728				377,841					365,930					536,599		

West	2019				2020					2021					2022				
	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Capacity	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Capacity	Avg Rain "	Total Rain "	Avg EFF MGD	Total Eff MGM	Capacity
January	1.52	2.18	1.52	47.19	0.52	3.64	1.53	47.47		0.63	3.78	1.32	41.06		0.26	0.77	1.19	36.83	
February	1.64	2.74	1.64	45.82	0.21	1.50	1.38	39.99	0.97	0.50	1.00	1.25	35.06	0.86	0.20	0.39	1.29	36.02	0.82
March	1.70	3.16	1.70	52.77	0.74	8.13	1.79	55.35	1.04	1.03	8.20	1.83	56.71	0.98	0.80	6.40	1.62	50.12	0.91
April	1.37	5.34	1.37	41.17	0.50	4.98	1.46	43.67	1.03	0.79	6.34	1.58	47.50	1.00	0.42	4.67	1.35	40.62	0.91
May	2.65	7.35	2.65	82.07	0.73	8.06	1.43	44.23	1.01	0.61	8.59	1.79	55.56	1.04	0.57	7.44	1.35	41.93	0.91
June	1.08	4.25	1.08	32.33	0.84	3.34	1.16	28.80	0.97	1.22	11.02	1.39	41.66	1.02	0.57	3.43	1.09	32.78	0.88
July	1.49	10.73	1.49	46.18	2.93	23.44	1.29	39.92	0.95	0.43	2.98	1.28	39.69	0.99	0.73	5.13	1.00	30.86	0.85
August	1.37	3.72	1.37	42.58	1.07	5.33	1.44	44.74	0.96	0.37	1.83	1.02	31.71	0.96	0.85	5.97	0.97	30.11	0.82
September	1.14	2.75	1.14	34.10	0.84	4.19	1.41	42.16	0.95	0.79	3.14	0.99	29.79	0.92	0.19	0.57	0.91	27.43	0.80
October	1.08	2.85	1.08	33.39	0.29	2.06	1.14	35.38	0.93	0.63	7.57	1.18	36.56	0.91	0.71	3.54	0.99	30.60	0.78
November	1.15	1.83	1.15	34.52	0.72	2.87	1.17	35.16	0.92	0.64	1.27	1.11	33.25	0.89	0.94	7.53	1.23	36.90	0.79
December	1.19	2.88	1.19	36.79	0.43	1.70	0.97	29.97		1.14	3.41	1.08	33.40	0.88	0.27	1.08	1.26	18.88	0.78
<b>Total</b>	1.45		1.45	528.91	0.82		1.35	486.83		0.73		1.32	481.96		0.54		1.187	413.098	
Capacity used			0.965				0.897					0.879					0.792		
Remaining capacity			0.035				0.103					0.121					0.208		
Remaining gallons			52,268				154,177					181,049					312,660		

# Population Projection and Timeline

Population Projections Based upon 1.0% Growth

Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Estimated Population	20,623	20,830	21,040	21,251	21,465	21,681	21,898	22,119	22,341	22,565	22,792	23,961	25,189
Estimated Average Total Flow from City, MGD	2.73	2.75	2.78	2.81	2.84	2.87	2.90	2.92	2.95	2.98	3.01	3.17	3.33
Estimated Average Flow to West Plant, MGD	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Estimated Average Flow to East Plant, MGD	1.28	1.30	1.33	1.36	1.39	1.42	1.45	1.47	1.50	1.53	1.56	1.72	1.88
Estimated Average CBOD to West Plant, PPD	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660
Estimated Average CBOD to East Plant, PPD	2,130	2,176	2,222	2,269	2,316	2,363	2,412	2,460	2,509	2,559	2,609	2,866	3,137

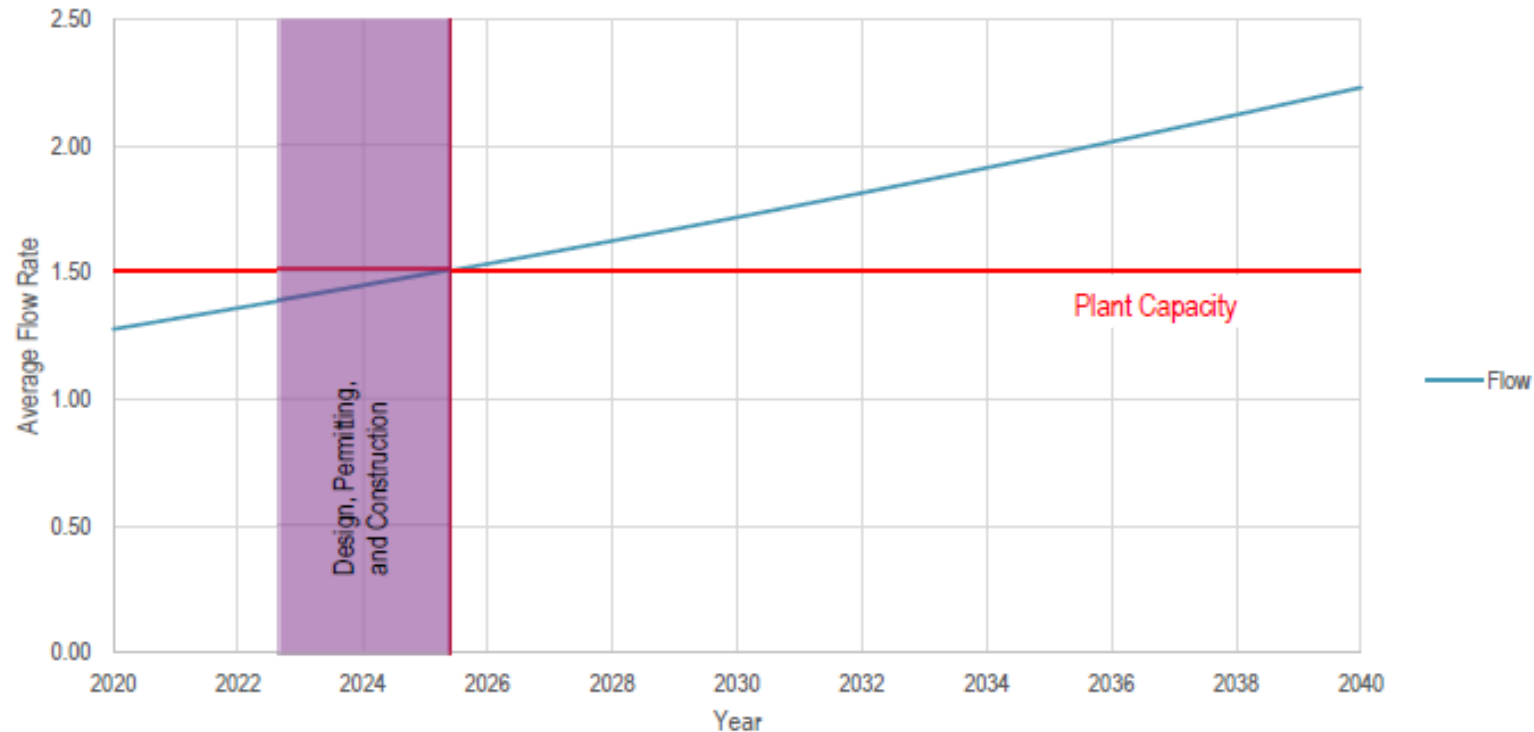


# Population Projection and Timeline

Population Projections Based upon 1.5% Growth

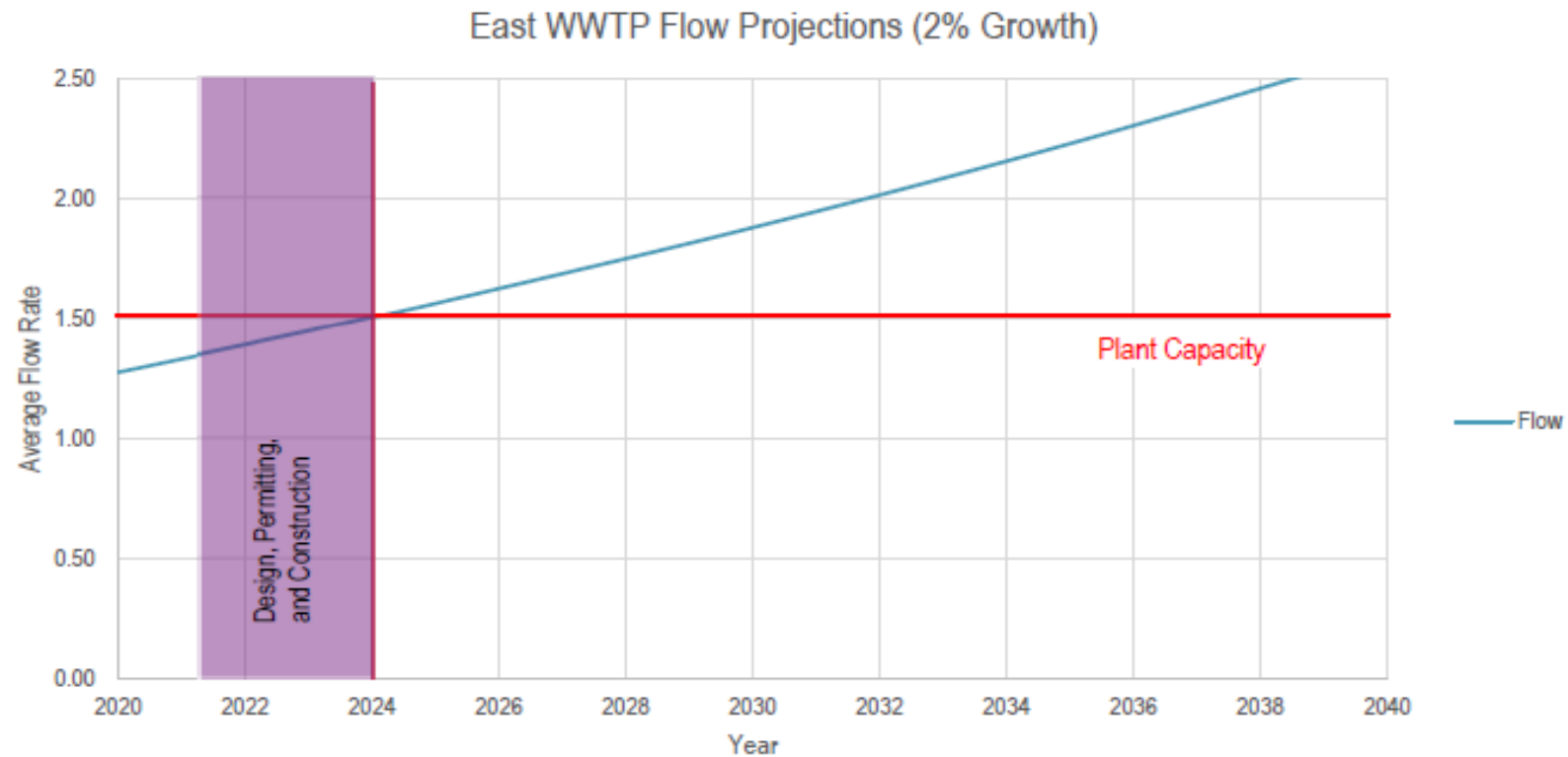
Year	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Estimated Population	20,623	20,935	21,251	21,572	21,898	22,229	22,565	22,906	23,253	23,604	23,961	25,827	27,838
Estimated Average Total Flow from City, MGD	2.73	2.77	2.81	2.85	2.90	2.94	2.98	3.03	3.07	3.12	3.17	3.42	3.68
Estimated Average Flow to West Plant, MGD	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Estimated Average Flow to East Plant, MGD	1.28	1.32	1.36	1.40	1.45	1.49	1.53	1.58	1.62	1.67	1.72	1.97	2.23
Estimated Average CBOD to West Plant, PPD	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660
Estimated Average CBOD to East Plant, PPD	2,130	2,199	2,269	2,340	2,412	2,485	2,559	2,634	2,710	2,788	2,866	3,278	3,722

East WWTP Flow Projections (1.5% Growth)



# Population Projection and Timeline

Population Projections Based upon 2.0% Growth									
Year	2020	2021	2022	2023	2024	2025	2030	2035	2040
Estimated Population	20,623	21,040	21,465	21,898	22,341	22,792	25,189	27,838	30,766
Estimated Average Total Flow from City, MGD	2.73	2.78	2.84	2.90	2.95	3.01	3.33	3.68	4.07
Estimated Average Flow to West Plant, MGD	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
Estimated Average Flow to East Plant, MGD	1.28	1.33	1.39	1.45	1.50	1.56	1.88	2.23	2.62
Estimated Average CBOD to West Plant, PPD	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660	2,660
Estimated Average CBOD to East Plant, PPD	2,130	2,222	2,316	2,412	2,509	2,609	3,137	3,722	4,368





# Projections and Timelines

## 1% Annual Growth

- › • Plant Capacity Achieved – 2028
- › • Start Improvement with West Plant concurrently(1) – 2025

## 1.5% Annual Growth

- › • Plant Capacity Achieved – 2025
- › • Start Improvement(1) – 2022

## 2% Annual Growth

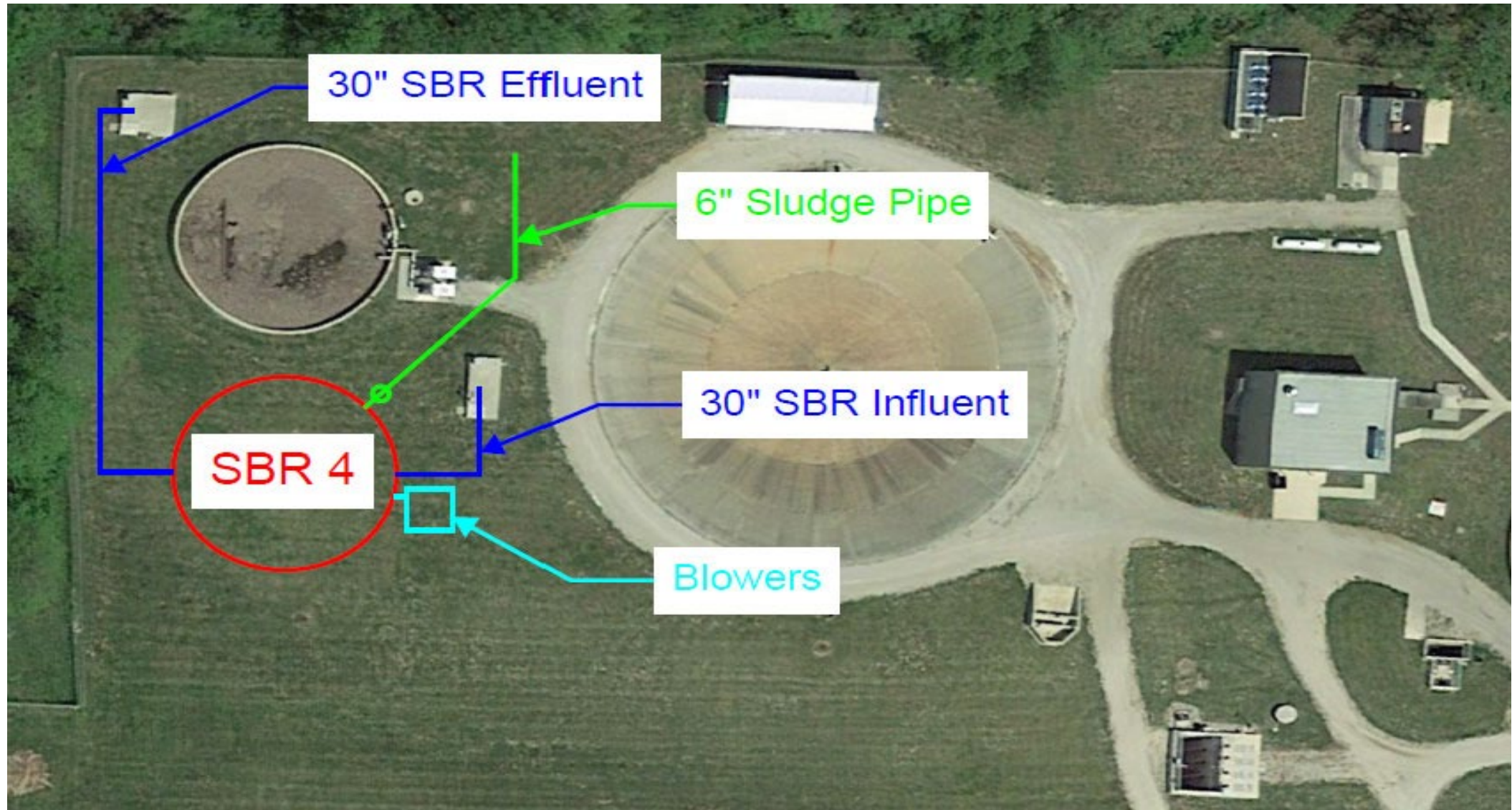
- › • Plant Capacity Achieved – 2024
- › • Start Improvement(1) – 2021

## Summary

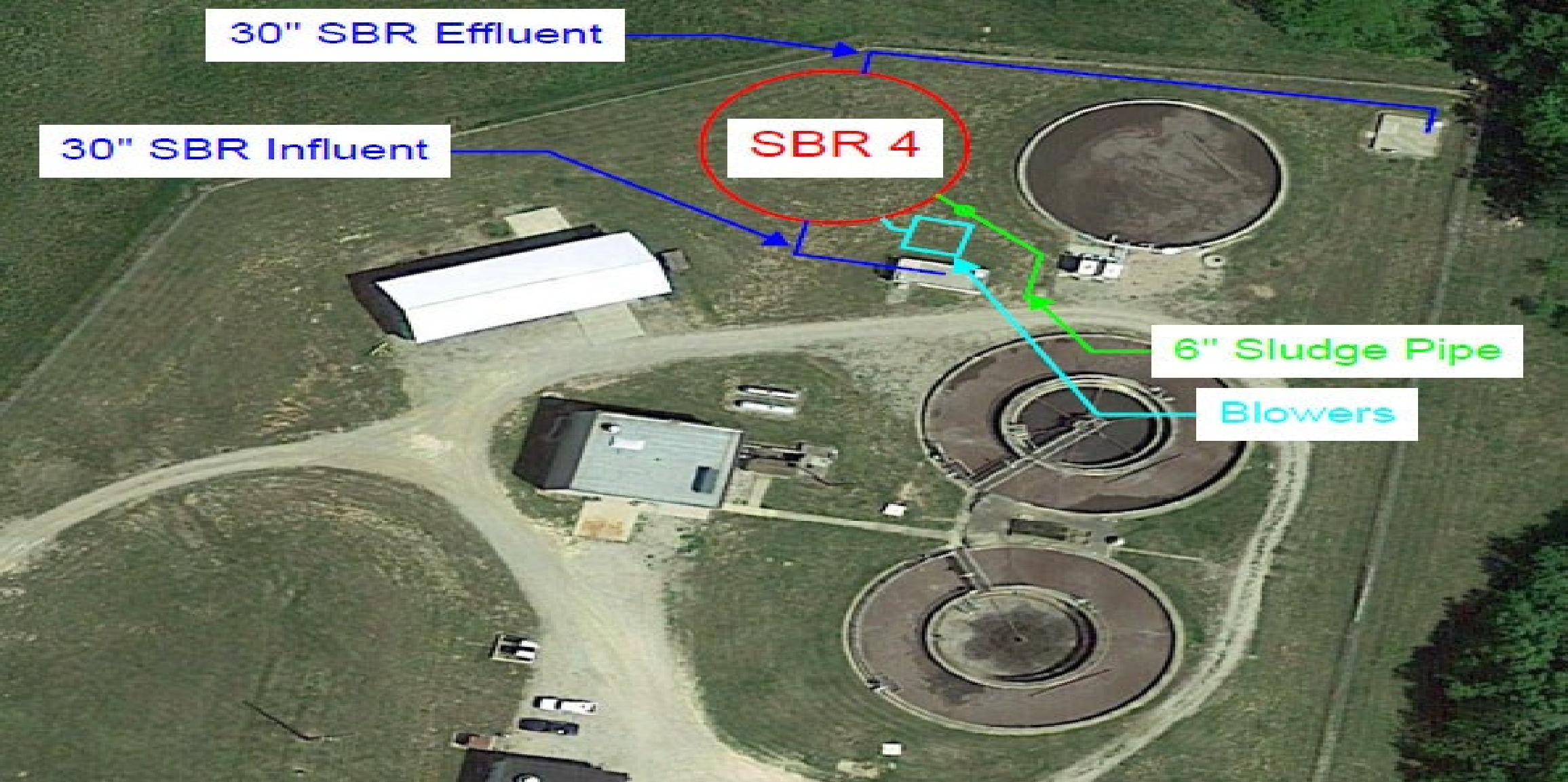
- (1) Assume 3 years for design, permitting, and construction.



# West Plant SBR



# East Plant SBR



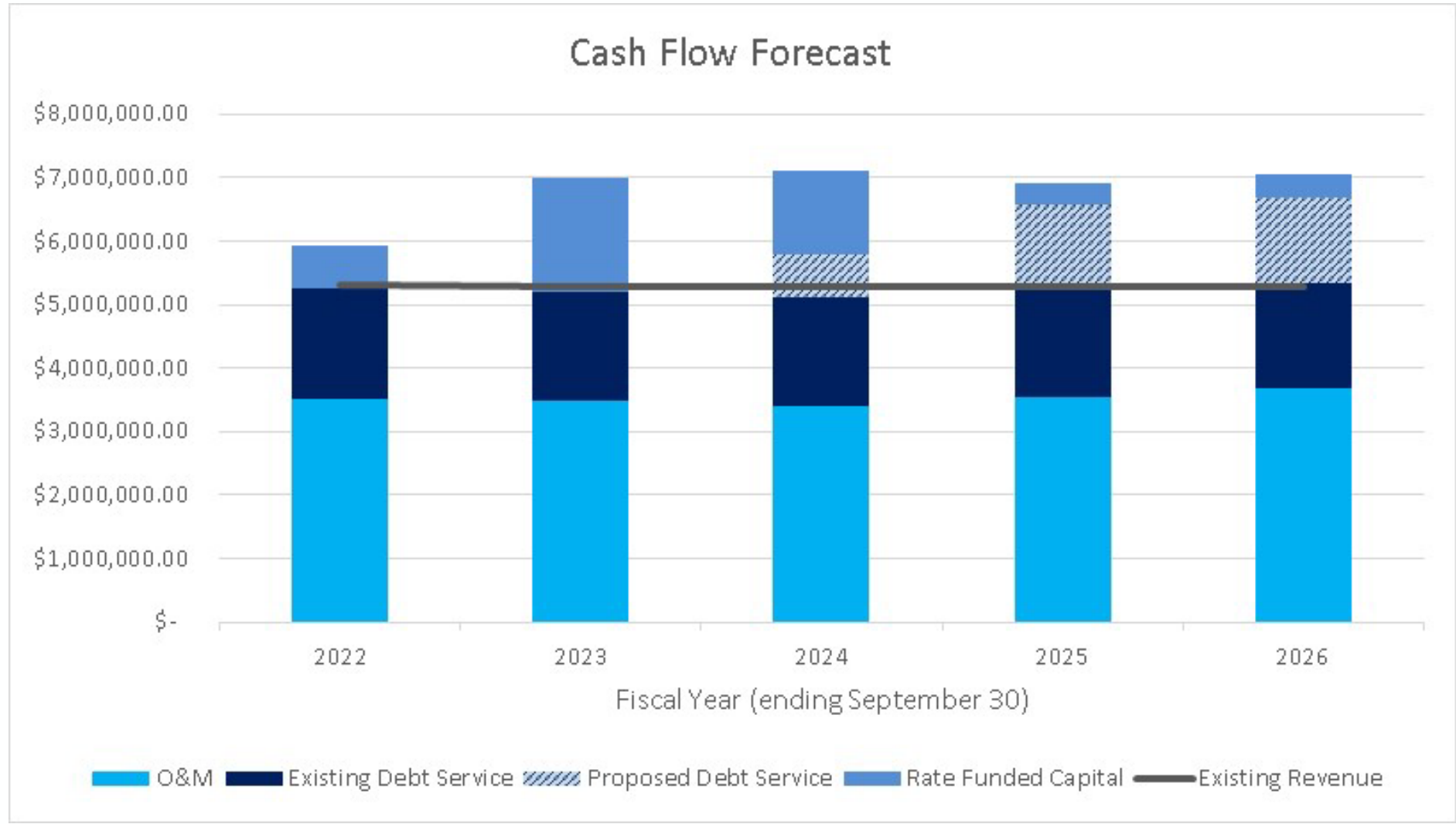


# Current Sewer Rates

- Residential - \$13.00 per month base charge
  - › \$2.72 for first 2 ccf (approximately 1,500 gallons)
  - › \$6.53 for each ccf over 2 ccf (1 ccf = 100 cubic feet = 748 gallons)
  - › Established residential customers billed based on 'winter average' of usage from January, February, and March
- Commercial - \$13.00 per month base charge for meters less than 1", \$65 for 1" to 4" meter, and \$156 for meters greater than 4"
  - › \$5.73 for each ccf of metered water (1 ccf = 100 cubic feet = 748 gallons)



# Financial Plan with Existing Rates



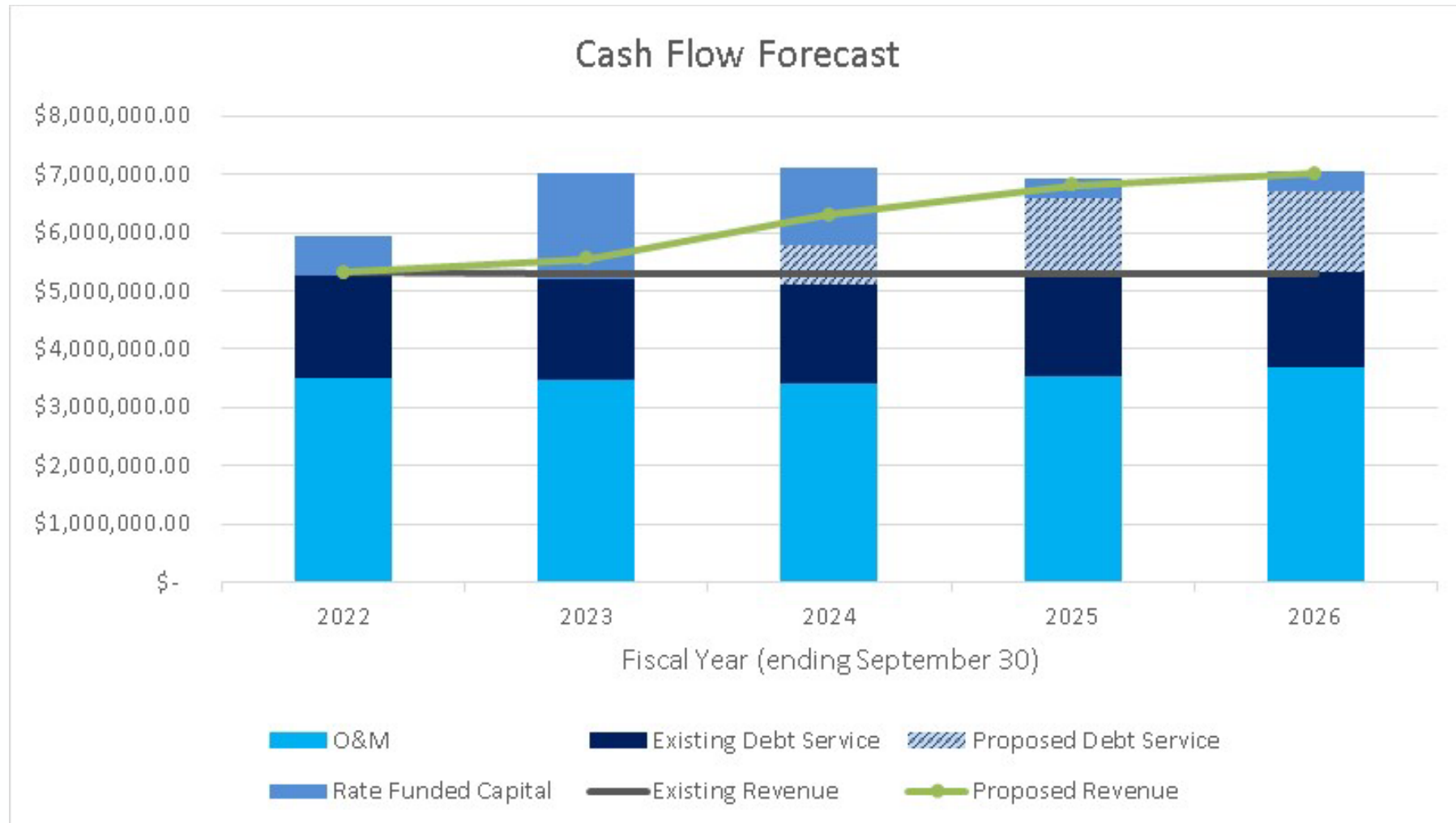
# Proposed Rate Adjustments

- Working with City Staff we developed two rate adjustment plans for the Council to consider, both result in a 28% increase in revenue for the sewer utility by FY 2025.
- Future increases are projected at inflationary levels of 3.0% annually.

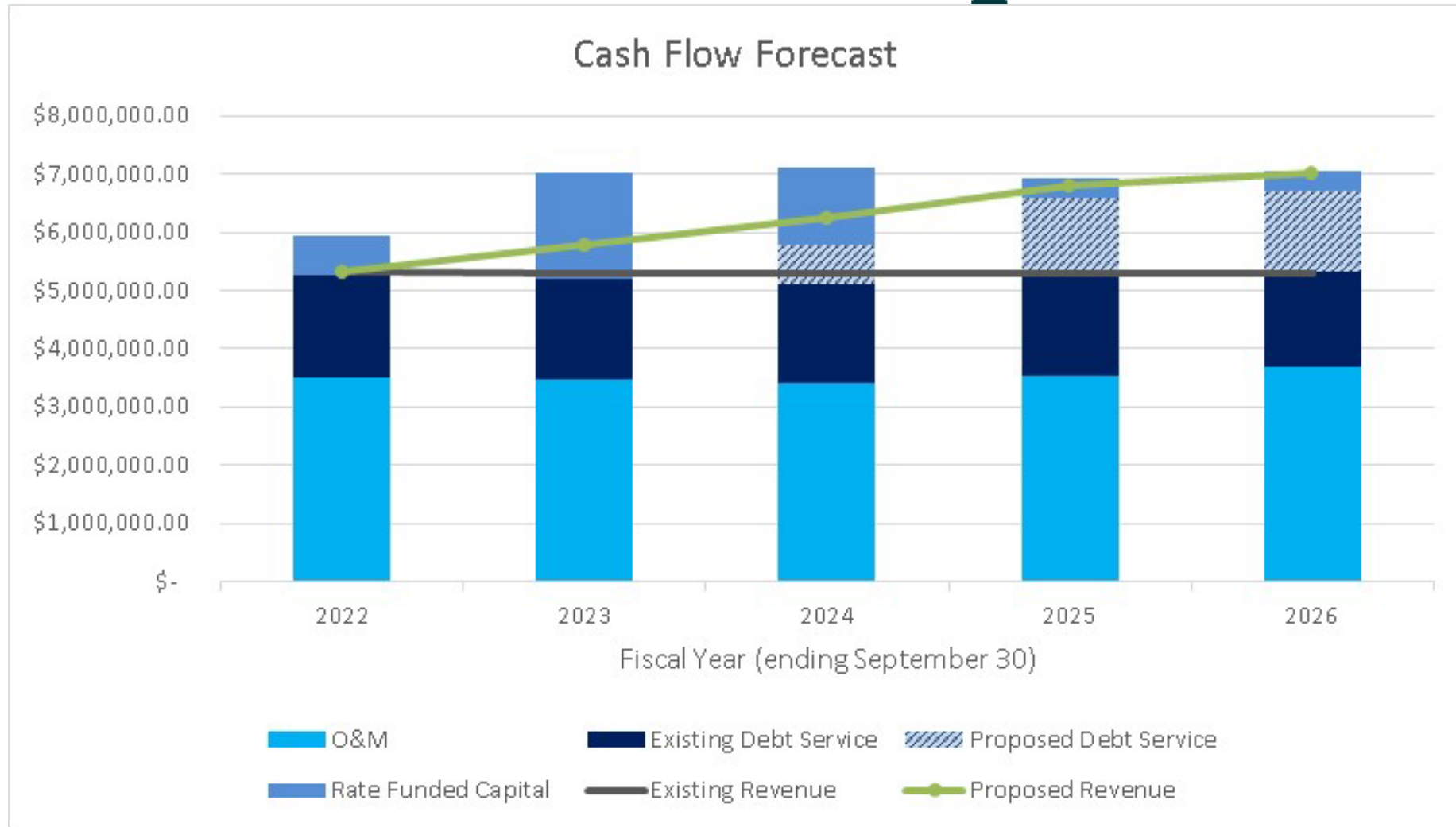
	FY 2023 (April 1, 2023)	FY 2024 (October 1, 2023)	FY 2025 (October 1, 2024)	FY 2026 (October 1, 2025)
Option A	9.0%	9.0%	8.0%	3.0%
Option B	17.5%	0.0%	9.0%	3.0%



# Financial Plan with Option A



# Financial Plan with Option B



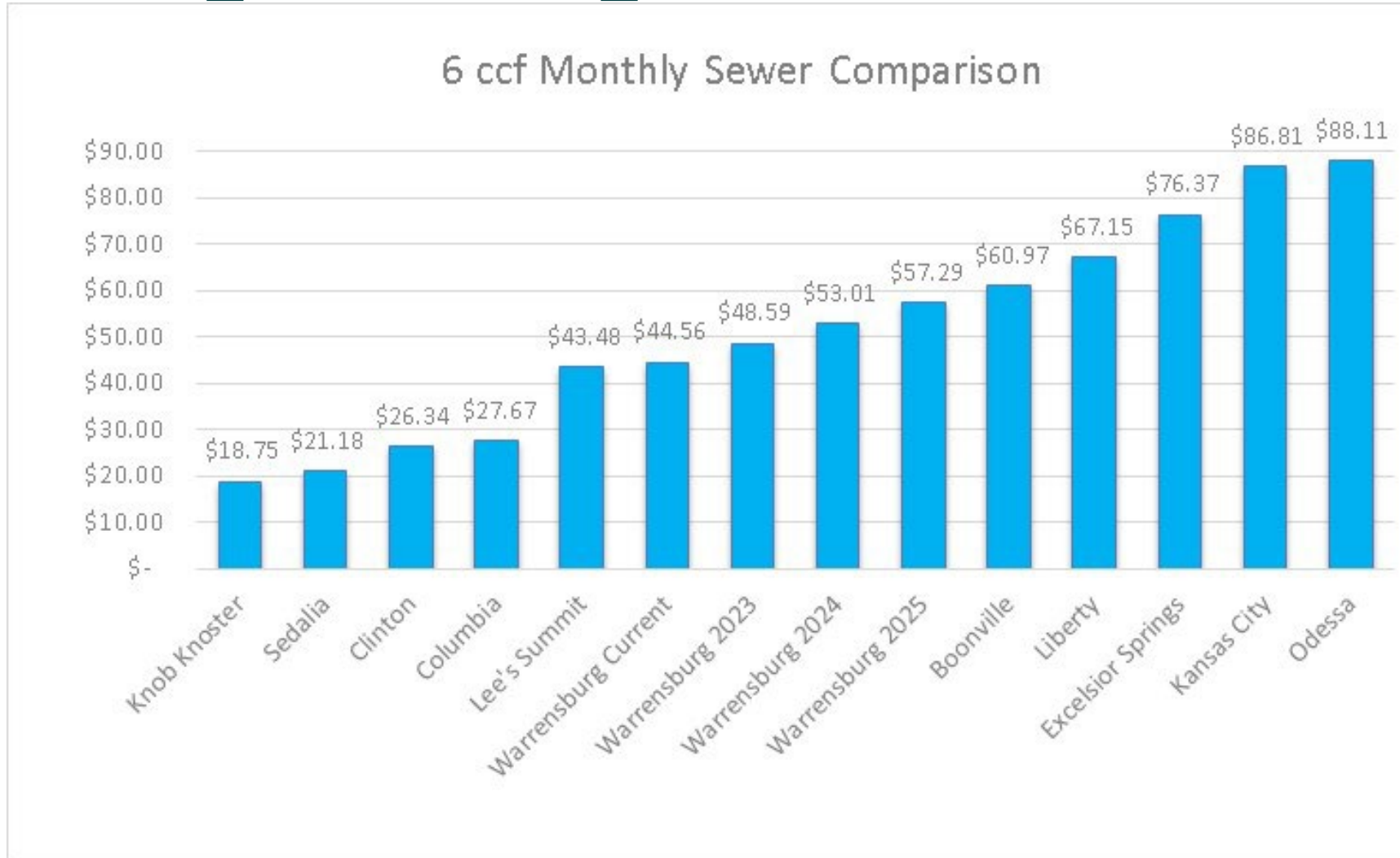


# Proposed Financial Plan

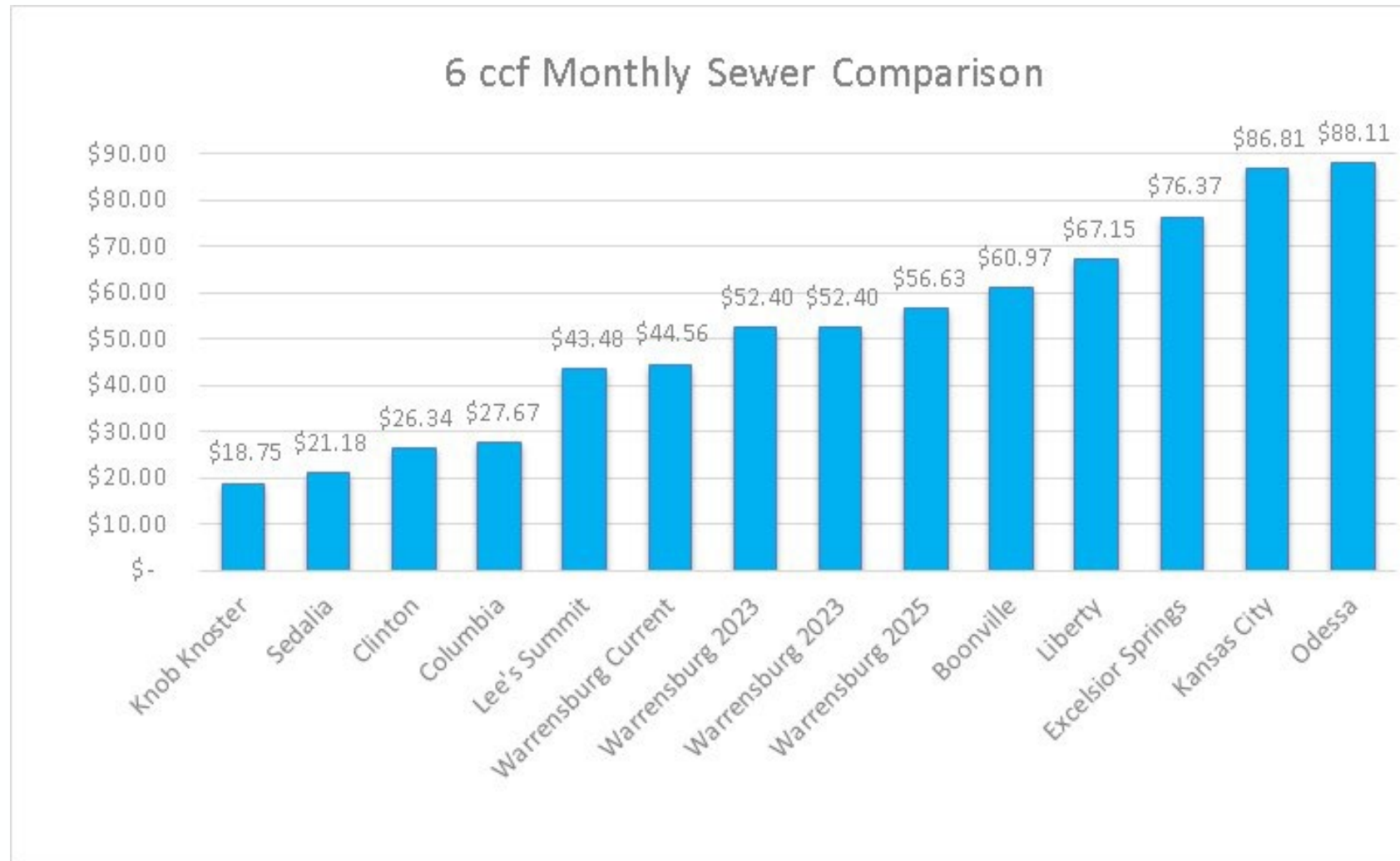
- Proposal will require voter approval for approximately \$20.3 million in borrowing to pay for SBRs and associated upgrades.
- Proposed rates assume that Missouri Department of Natural Resources State Revolving Fund loans will be used.



# Bill Impacts Option A



# Bill Impacts Option B



# Thank you!

**Contact:**  
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