



Water and Sanitary Sewer Infrastructure Plans Update

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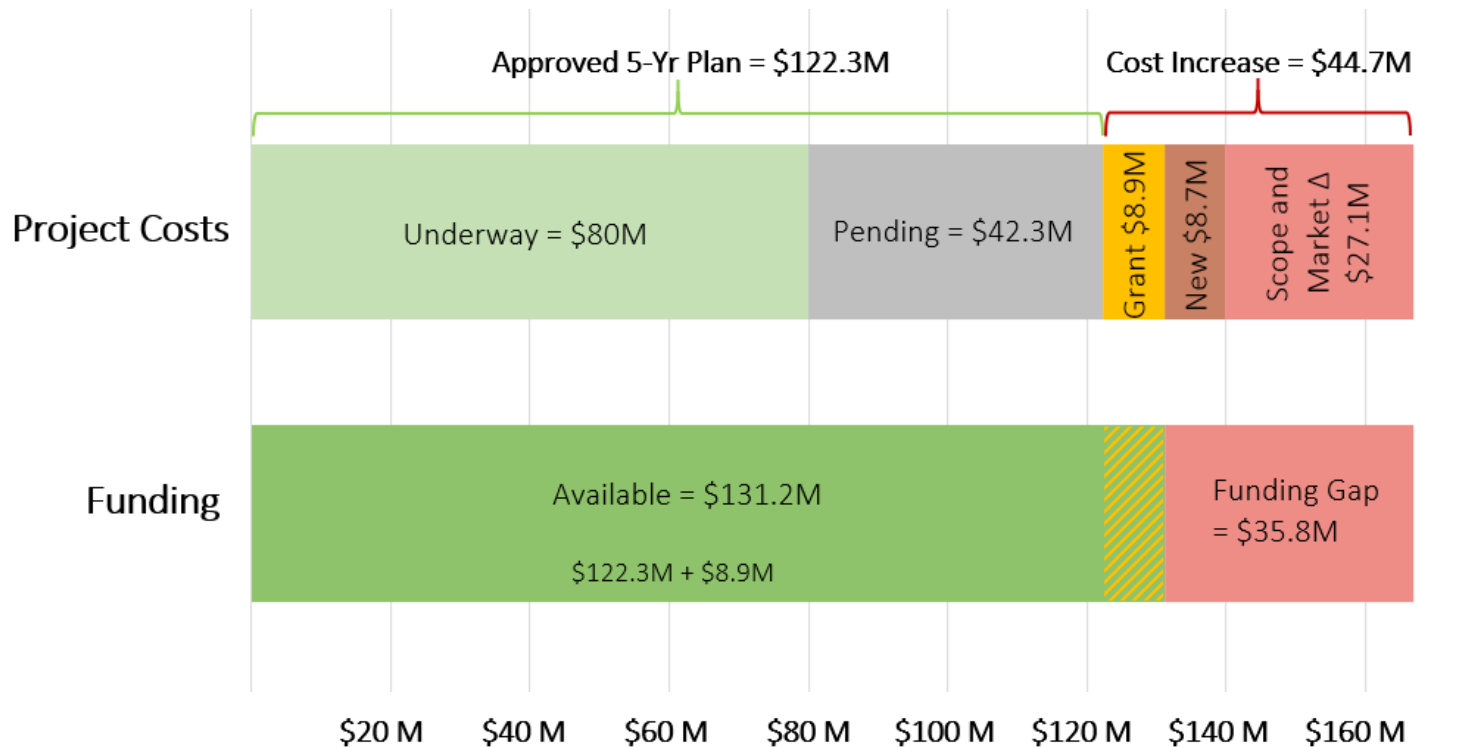
Land Use and Sustainability Committee

June 1, 2022

- 1 Update to Water and Sewer 5-year Plan
- 2 5-year Critical Needs Cost Increase
- 3 Fast-Tracked and Newly Identified Needs
- 4 5-year Plan Funding Needs
- 5 2025 – 2027 Water and Sewer Needs
- 6 25- year Water and Sewer Needs

Update to the Approved 5-Year Plan and Funding Needs Summary

Water and Sewer Needs for 5-Yr Plan (2020-2024) = \$167 M



5-year Critical Needs Plan (2020-2024) \$44.7 M Cost Increase

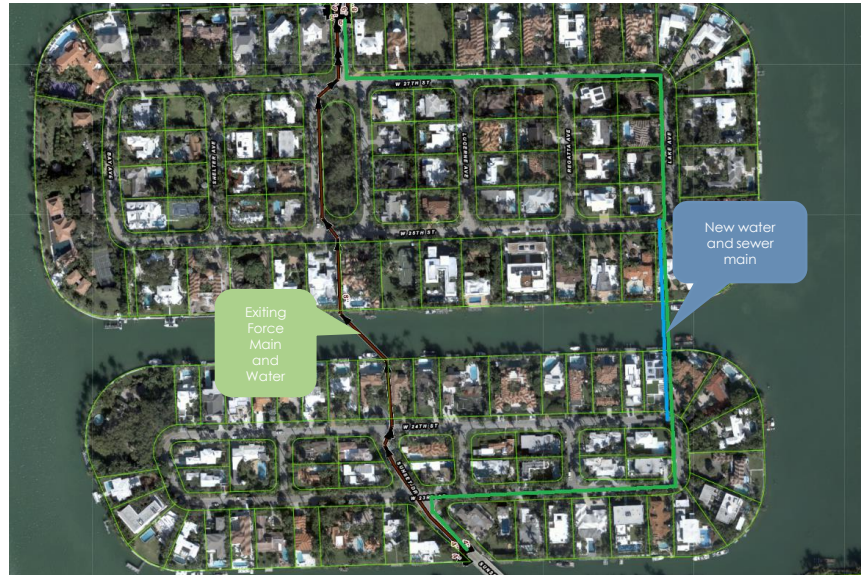
Project Title	2020-2024 Master Plan Estimate	Cost Increase includes \$8.9M Grant	Total Needs 2020-2024
Water & Wastewater Mains and Rehab	\$ 71,300,000	\$ 25,840,000	\$ 97,140,000
Water Pump Stations Improvements	\$ 10,300,000	\$ 4,500,000	\$ 14,800,000
Wastewater Stations Rehabilitation	\$ 16,310,000	\$ 5,700,000	\$ 22,010,000
Valve Assessment and Replacement Program	\$ 2,780,000	\$ -	\$ 2,780,000
SCADA and PLC Systems (W&S ONLY)	\$ 1,630,000	\$ -	\$ 1,630,000
Wastewater Manhole Rehabilitation	\$ 7,960,000	\$ -	\$ 7,960,000
Water Meter Replacement Program	\$ 11,100,000	\$ -	\$ 11,100,000
Sewer Pump Station Odor Control	\$ 850,000	\$ -	\$ 850,000
New Project Needs		\$ 8,700,000	\$ 8,700,000
Total	\$ 122,230,000	\$ 44,740,000	\$ 166,970,000

5-year Critical Needs Plan (2020-2024) \$44.7 M Cost Increase

2020-2024 Project w/ Cost Adjustments	Justification	Total	Cost Increase/Grant	Total Cost
Venetian Causeway WM and FM aerial replacement	Construction method change – hung from bridge vs directional drills, due to bridge load restrictions	\$ 5,200,000	\$ 20,000,000	\$ 25,200,000
Sunset Isles FM Replacement	Alignment adjustments due to constructability issues	\$ 500,000	\$ 1,200,000	\$ 1,700,000
PS No. 18 Force Main Replacement (LaGorce)	Increased market costs	\$ 600,000	\$ 100,000	\$ 700,000
PS No. 5 force main replacement (Palm Isle)	Scope change to HDD due to the recently completed neighborhood. Not inclusive of sub-aqueous segment.	\$ 400,000	\$ 300,000	\$ 700,000
Pump Station No. 14 (Sunset Isle 3) FM replacement	Increased market costs	\$ 900,000	\$ 100,000	\$ 1,000,000
W-2 Booster PS (75th Street and Dickens Ave)	Matching funds for additional scope due to grant \$900K. Delta for pump station by-pass.	\$ 1,200,000	\$ 2,100,000	\$ 3,300,000
Rehabilitation of WM aerial crossing on MacArthur Bridge	Costs based on bids - Includes replacement of segments of pipe that are damaged beyond repairs.	\$ 2,300,000	\$ 2,700,000	\$ 5,000,000
FFP Phase I - Fire Flow Projects 1, 2 and 13 (Flamingo)	Based on 90% Engineer's Estimate	\$ 1,500,000	\$ 700,000	\$ 2,200,000
FFP Phase II - Fire Flow Projects 3, 4, 6, 8, 10, 11, 12 and 15 (Flamingo)	Based on 90% Engineer's Estimate	\$ 1,200,000	\$ 800,000	\$ 2,000,000
Pump Station No. 1 (Flamingo)	Cost Increase to address Grant requirements	\$ 3,100,000	\$ 700,000	\$ 3,800,000
Pump Station No. 28 (Bayshore)	Cost Increase to address Grant requirements	\$ 11,100,000	\$ 5,000,000	\$ 16,100,000
Booster Pump Station Belle Isle (Venetian Isles)	Cost Increase to address Grant requirements	\$ 4,700,000	\$ 2,400,000	\$ 7,100,000
		\$ 32,700,000	\$ 36,100,000	\$ 68,800,000



Venetian Water and Sewer Mains – \$20 M Additional Cost



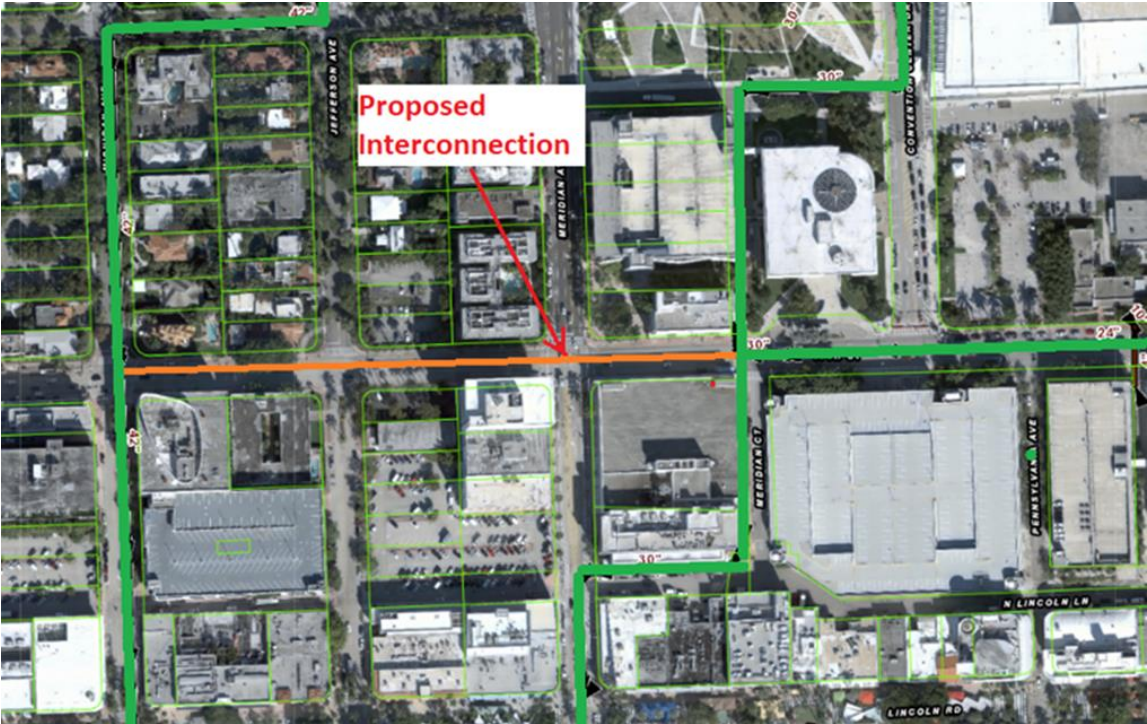
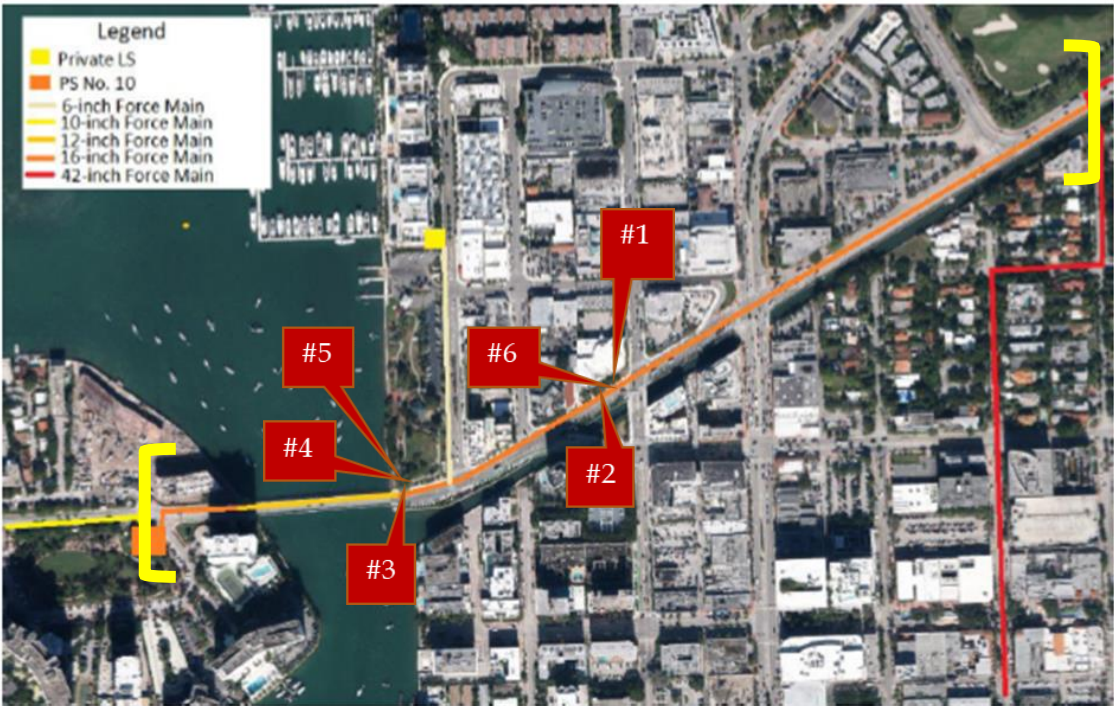
Sunset Isles \$1.2 M Additional Cost to the City



MacArthur – Cost Increase of up to \$2.7M

New Project Needs – Fast-tracked and Newly Identified

New Project Needs	Justification	Cost
Emergency Dade Blvd Force Main Replacement	Expedited due to multiple emergencies along this corridor in the past 3 years.	\$ 3,000,000.00
PS 31 Gravity Pipe Replacement and Station Rehab	Non-anticipated necessary repairs to the pump station due to pipe collapse.	\$ 1,300,000.00
Force Main Interconnection @ 17th Street	Provides the ability to by-pass flows from one main to the other between PS 28 and PS 1. Allows for system redundancy and reduces PW response time to emergencies.	\$ 2,500,000.00
New Odor Control Infrastructure PS 31, 29 and 23	Enhances Quality of Life for residents and visitors. Has been very effective at other locations.	\$ 1,900,000.00
TOTAL:		\$ 8,700,000.00



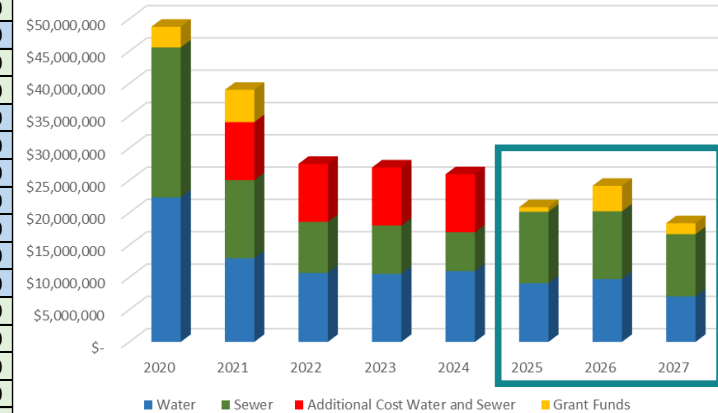
2025-2027 Capital Needs Water and Sewer

Capital Project	Begin Date	Total	Grant Recipient	Total Est. Cost
Gravity Main Replacement Priority 2 (Flamingo and Entertainment District)	2025	\$ 2,340,000		\$ 2,340,000
Aerial Crossing Along Pine Tree Drive between LaGorce Circle NS North Bay Rd -Work is Completed	2025	\$ 60,000		\$ 60,000
Aerial Crossing Along 71st Street between Bonita Drive and Bay Drive - Rehab	2025	\$ 60,000		\$ 60,000
Pump Station 2 R&R	2025	\$ 1,400,000		\$ 1,400,000
Pump Station 18 R&R - Pending Electrical Improvements	2025	\$ 1,070,000		\$ 1,070,000
Force Main PoF/CoF- Priority 1	2025	\$ 6,130,000		\$ 6,130,000
Water Mains Pot/Cof Priority 1	2025	\$ 9,450,000		\$ 9,450,000
Gravity Main Replacement Priority 2 (LaGorce Island and Tatum Waterway and Easement between Harding Ave and Collins)	2026	\$ 2,410,000		\$ 2,410,000
PS 29 Renewal and Replacement	2026	\$ 8,070,000	\$ 2,200,000	\$ 10,270,000
Normandy Isle Booster	2026	\$ 1,840,000	\$ 550,000	\$ 2,390,000
Terminal Isle Booster (Generator Component is part of the 5-year Critical) - shared with S-30	2026	\$ 2,810,000	\$ 800,000	\$ 3,610,000
Water Main Aerial Crossing Along Alton Rd between Chase Ave and West 34th Street	2026	\$ 90,000		\$ 90,000
Water Main Aerial Crossing Along Biarritz Drive	2026	\$ 90,000		\$ 90,000
Water Main Aerial Crossing Along Wayne Ave	2026	\$ 60,000		\$ 60,000
Water Main Aerial Crossing between west 48th Street and Lake View	2026	\$ 250,000		\$ 250,000
Water Main PoF/CoF	2026	\$ 4,580,000		\$ 4,580,000
Gravity Main I/I Reduction - Priority 2	2027	\$ 1,570,000		\$ 1,570,000
Gravity Main Replacement - Priority 2	2027	\$ 2,480,000		\$ 2,480,000
PS 14 R&R - Sunset 2	2027	\$ 1,150,000		\$ 1,150,000
PS 15 R&R - Pine Tree and 51st	2027	\$ 1,270,000		\$ 1,270,000
PS 27 R&R - Collins Ave	2027	\$ 3,160,000		\$ 3,160,000
25th Street Booster Rehab	2027	\$ 3,270,000	\$ 1,200,000	\$ 4,470,000
41st Street Booster Rehab	2027	\$ 3,780,000	\$ 900,000	\$ 4,680,000
Total Required Work 2025-2027		\$ 57,390,000	\$ 5,650,000	\$ 63,040,000

Total Funding Gap 2020 to 2027 = \$93.2 M = \$35.8 M + \$57.4 M

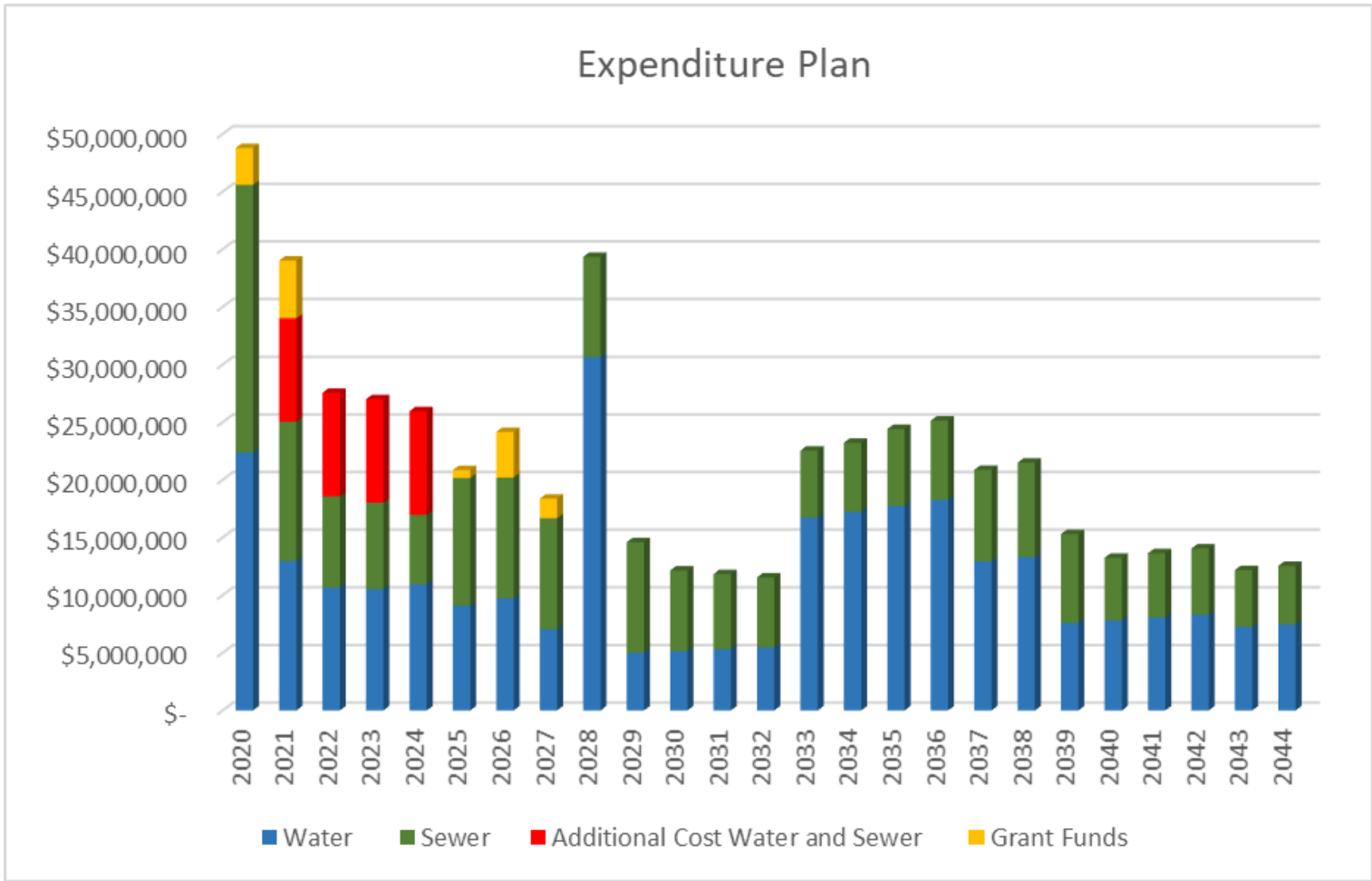
2020-2024 2025-2027

Expenditure Plan through 2027



Costs based on 2019 Master Plan Prices with 3% inflation per year. Costs may change once scope is further defined.

Updated 25-Year Water and Sewer Master Plan - \$538 M Total



\$ 488 M Master Plan
+ \$ 35.8 M Additional request through 2024
+ \$ 8.9 M Grant Funds through 2024
+ \$ 5.7 M Grant Funds 2025-2027

MIAMIBEACH
RISING
ABOVE

QUESTIONS?

Water System Critical Needs 2020-2024

Project Name	Location	Begin Date	Total
W-2 Booster Station Rehabilitation	75th Street and Dickens Ave	2020	\$ 1,200,000.00
Fire Hydrant Density Evaluation	City Wide	2020	\$ 150,000.00
Replacement of WM aerial crossings Venetian Isles	Venetian Isles	2020	\$ 4,420,000.00
Rehabilitation of WM aerial crossings on MacArthur	MacArthur Bridge	2020	\$ 2,271,478.00
Water Main PoF/CoF Priority 1	41st St., Collins Ave, Dade Blvd, others TBD	2020	\$ 25,127,797.70
Fire Flow Project 1	10th Street between Lenox Ave and Washington Ave.	2020	\$ 520,000.00
Fire Flow Project 3	Meridian Ave and 13th Street	2020	\$ 250,000.00
Fire Flow Project 5	Locations vary.	2020	\$ 150,000.00
Meter Replacement	City Wide	2020	\$ 11,104,893.40
Surge and Water Hammer Analysis	City Wide	2020	\$ 200,000.00
Installation of additional pressure monitoring devices.	City Wide	2020	\$ 100,000.00
Installation of additional Blow Off valves.	City Wide	2020	\$ 50,000.00
Development of a Distribution System flushing plan.	City Wide	2020	\$ 200,000.00
Valve Assessment and Replacement Program	City Wide	2020	\$ 1,081,815.00
SCADA Water	City Wide	2020	\$ 406,312.50
Fire Flow Project 7	Locations vary	2021	\$ 72,100.00
Fire Flow Project 13	Michigan and 7th Ave	2021	\$ 484,100.00
Fire Flow Project 16	Alton Rd. and Michigan Ave	2021	\$ 638,600.00
Fire Flow Project 17	Terminal Island	2021	\$ 175,100.00
Construction of New Booster Station	North Beach	2021	\$ 5,592,900.00
Aerial Crossing Water Main Replacement	41st Street between Meridian Ave and Chase Ave	2021	\$ 72,100.00
Aerial Crossing Water Main Replacement	41st Street between Pine Tree Dr and Indian Creek	2021	\$ 206,000.00
Aerial Crossing Water Main Replacement	71st Street and Bonita Dr.	2021	\$ 185,400.00
Water Main on MacArthur Causeway	MacArthur Causeway	2022	\$ 4,105,683.00
Belle Isle Booster Station Rehabilitation	Belle Isle	2022	\$ 4,710,396.00
Fire Flow Project 2	West Ave and Flamingo	2022	\$ 456,187.00
Fire Flow Project 4	Euclid and 14th Pl	2022	\$ 169,744.00
Fire Flow Project 15	Euclid and 14th Street	2022	\$ 307,661.00
Fire Flow Project 6	Collins Park	2023	\$ 98,345.43
Fire Flow Project 8	Meridian and 15th Street	2023	\$ 131,127.24
Fire Flow Project 10	20th Street and Collins Ave	2023	\$ 87,418.16
Fire Flow Project 11	18th Street and Collins Ave	2023	\$ 109,272.70
Fire Flow Project 12	Collins and 17th Street	2024	\$ 87,418.16
Fire Flow Project 9	N. Bay Rd between 41st and 43rd St	2024	\$ 821,621.43
Fire Flow Project 14	North Beach, Varies	2024	\$ 855,386.70
Total Water			\$ 66,598,857.41



8-inch Water Main under bridge,
41st Street between Chase and Meridian
Ave.

Sewer System Critical Needs 2020-2024

Design
Construction
Complete
Funded

Project Name	Location	Begin Date	Total
Gravity Main Replacement - Priority 1	Basin 18, La Gorce Island, others TBD	2020	\$ 4,916,259.76
Gravity Mains I/I Reduction - Priority 1 (1/2)	04 (Hibiscus), 05 (Palm), 02 (Star), others TBD	2020	\$ 2,256,357.00
Gravity Siphon inspection and capacity evaluation	City Wide	2020	\$ 30,000.00
Venetian Way aerial crossing replacement in kind	Venetian Causeway	2020	\$ 770,000.00
Valve assessment and replacement	City Wide	2020	\$ 1,699,995.00
Pump Station No. 2 force main replacement	Star Island to 10th Street and West Ave.	2020	\$ 2,550,000.00
Force Mains PoF/CoF Priority 1	Terminal to Star Island, Normandy Isles, other TBD	2020	\$ 9,813,027.17
Pump Station No. 18 force main replacement	La Gorce	2020	\$ 550,000.00
Odor Control System	PS 11, 15 and 28 completed	2020	\$ 850,600.00
SCADA Sewer	City Wide	2020	\$ 1,218,937.50
Manhole inspection and rehabilitation	City Wide	2020	\$ 7,963,703.72
Pump Station 6, 7 and 8 rerouting	Belle Isle	2021	\$ 1,194,800.00
Aerial crossing Pine Tree Drive 51st Street to 47th St.	Pine Tree Drive	2021	\$ 700,400.00
Pump Station No. 28 Rehabilitation	28th Street and Pine Tree	2021	\$ 11,103,400.00
Pump Station No. 1 Rehabilitation	11th Street	2022	\$ 3,140,264.00
Pump Station No. 30, well lining, and electrical upgrades	Terminal Island	2022	\$ 2,068,755.00
Pump Station No. 4 force main replacement	Between Palm and Hibiscus Island	2022	\$ 477,405.00
Pump Stations No. 5 force main replacement	Palm Island	2022	\$ 413,751.00
Pump Station No. 14 force main replacement	Sunset Island 3	2022	\$ 901,765.00
Pump Station No. 23 force main replacement	75th Street and Dickens Ave	2022	\$ 53,045.00
Pump Station No. 27 force main replacement	Collins Ave and 52nd Street	2022	\$ 53,045.00
Gravity Mains I/I Reduction - Priority 1 (2/2)	City Wide	2023	\$ 3,643,452.32
Total Estimated Sewer			\$ 56,368,962.47



Pump Station No. 28 –
Project Currently in Design