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WATER/WASTEWATER MAINTENANCE STRATEGIES OVERVIEW

CITY COUNCIL BRIEFING: JUNE 5, 2023



Water Maintenance & Capital Strategies

- Guiding Principles
 - Comply with all federal, state and local regulations
 - Efficiently and effectively manage, operate and maintain all parts of the distribution system
 - Maintain “Superior” water system rating from Texas Commission on Environmental Quality
 - Provide adequate capacity to deliver water during peak demand while transporting water through the distribution system as expeditiously as possible to ensure water quality
 - Strategic capital planning for the future demands of system
 - Continue to closely partner with NTMWD on water related projects



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WATER MAINTENANCE & CAPITAL STRATEGIES

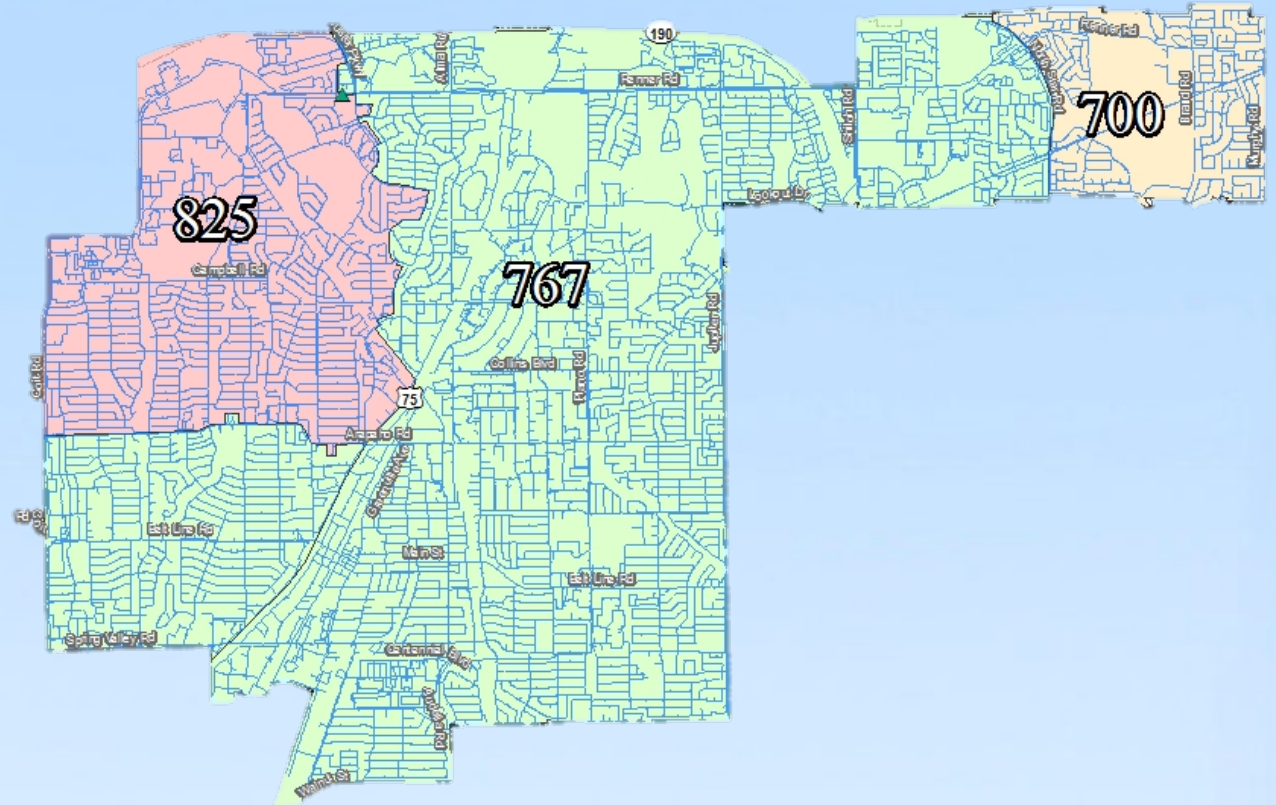


Water Maintenance & Capital Strategies

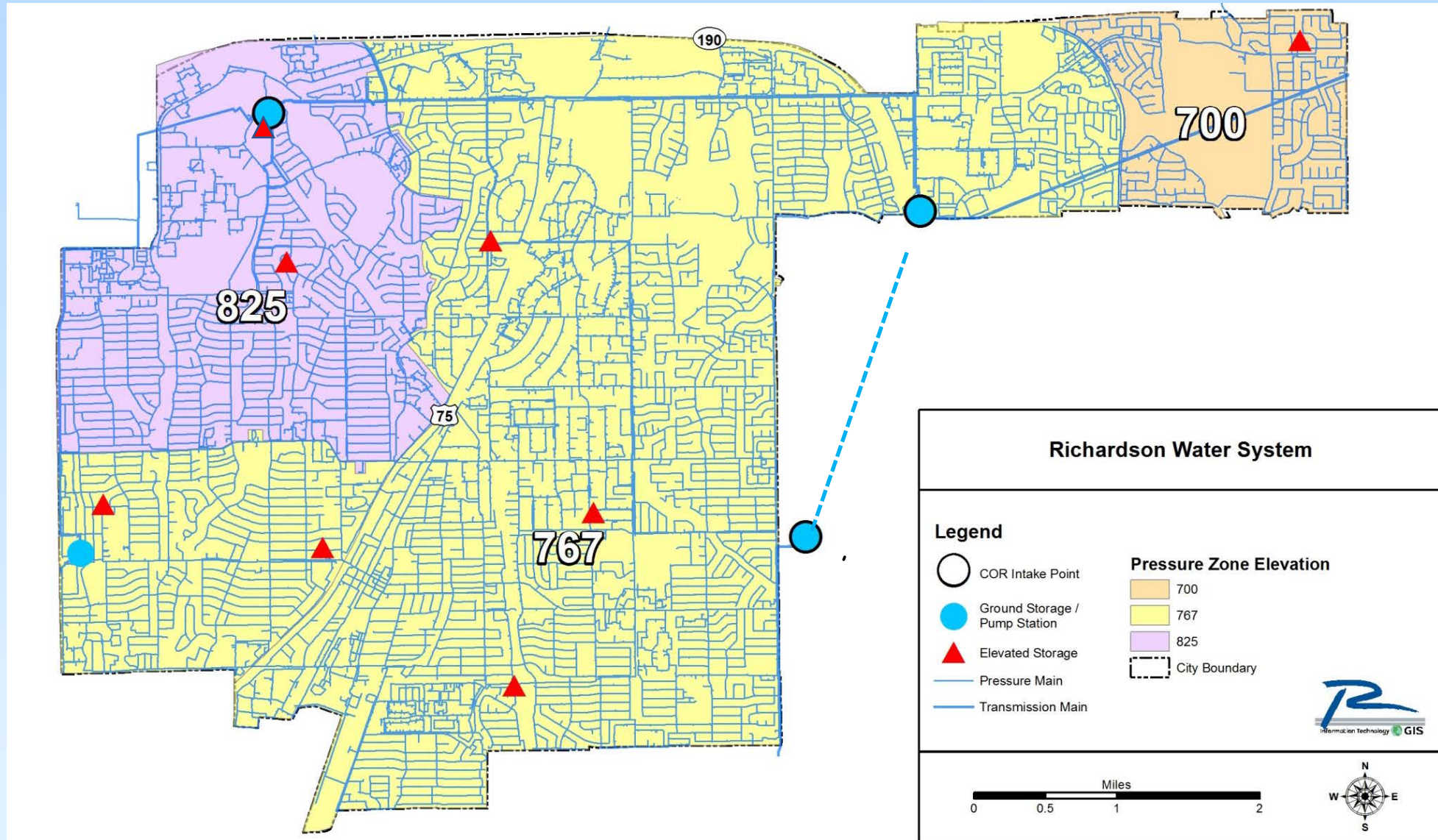
- Water System Overview
- Maintenance Plan Overview
- 2022/23 Funding & Maintenance Plan Update
- 2023/24 Funding & Proposed Maintenance Plan
- 825 Pressure Zone Improvements

Water System Overview

- 580 Miles of Water Main
- 15,000 Valves
- 4,800 Hydrants
- 37,000 Service Connections
- 5 Pump Stations
- 15 Water Storage Facilities
- 60 Million Gallons Per Day
- 5,000 Calls for Service



Water System Overview



Water Maintenance Plan Overview

- Mainline Repair and Replacement
- Valve Replacement
- Meter Operations
- Fire Hydrant Maintenance
- Water Facilities

Mainline Repair and Replacement

Water Main Repair

- 24-hour response
- 4-hour repair time
- 264 main line repairs

Water Main Replacement

- Maintenance History
- Age/Material Type
- Infrastructure Considerations



Valve Replacement

Small Valve Replacement

- 14,700 valves 12" or smaller

Large Valve Replacement

- 300 valves 14" and larger
- Critical Infrastructure

Large Valve Inventory

- Inventory of 14" -36"
- Scheduled Projects
- Emergency Response



Meter Operations

Water Meter Replacement

- All meters 5/8"-2" will be replaced with radio read by end FY 22/23

Water Meter Testing

- Meters 3"-10" tested annually



Fire Hydrant Maintenance

Hydrant Assessment Program

- 4,800 Total Hydrants
- All hydrant assessments were completed in FY 21/22
- Maintenance needs identified through the assessment

Hydrant Priority

- Hydrant Availability/Access
- Action Needed – Repair/Replace



Water Facilities

Pump Stations

- 5 pump stations
- Pump/Motor Testing
- Electrical Thermal Imaging

Ground Storage

- 7 ground storage tanks located across 5 pump stations

Elevated Storage

- 8 elevated storage tanks
- Annual visual inspection
- Dry engineered inspection on a 3-5 year cycle



Utility Fund Operations – Maintenance Plan

Programs	FY 20/21 (Actual)	FY21/22 (Actual)	FY22/23 (Projected)
Water Facilities (Elevated/Ground Storage/Pump)	\$287,000	\$365,000	\$409,000
Water Main Repair	\$567,000	\$568,000	\$675,000
Hydrant Repair/Replacement	\$364,000	\$400,000	\$315,000
Water Valve Maintenance	\$27,000	\$25,000	\$29,000
Water Meter Maintenance	\$176,000	\$150,000	\$150,000
Total	\$1,421,000	\$1,508,000	\$1,578,000

Chart does not include personnel costs

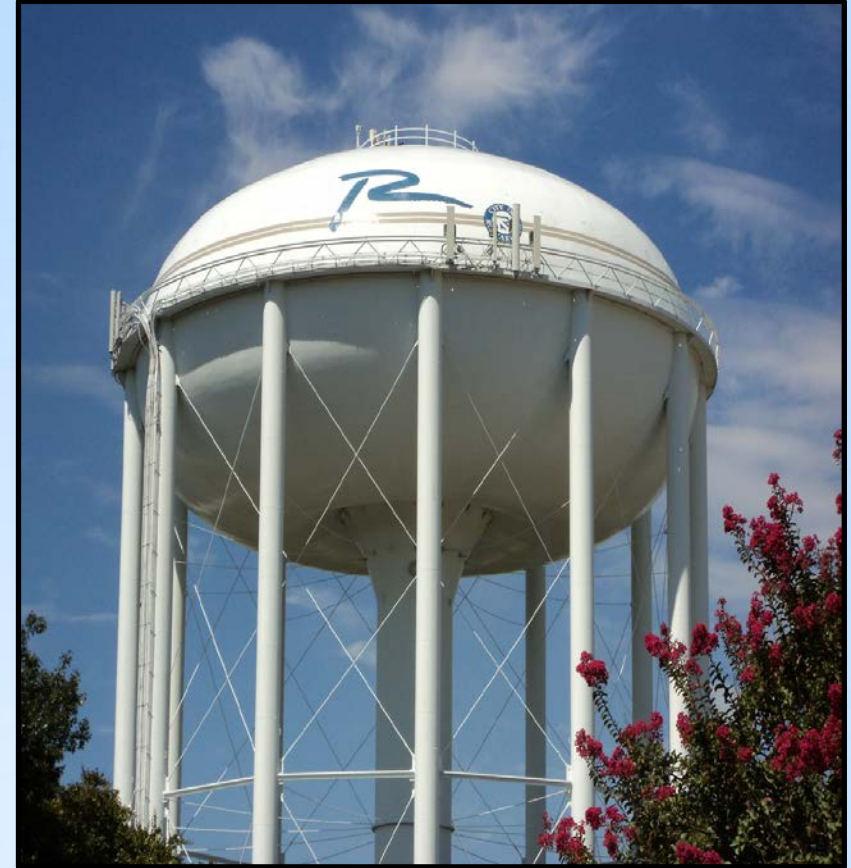
FY22/23 Maintenance Plan Update

Water Facilities Maintenance

- Eastside Pump Station Pump rebuild (Completed)
- Shiloh Pump Station Control Valve/Actuator replacement (Completed)
- Northside Pump Station Check Valve replacements (Completed)
- Northside Pump Station Pump rebuilds (Completed)
- Northside Pump Station Motor replacement (Completed)
- Westside Pump Station Pump rebuild (Completed)
- Westside Pump Station Flow Meter replacement (Completed)
- Westside Interconnect Vault rehab (In Progress)

Hydrant Maintenance

- Hydrant Replacements (30 complete)
- Hydrant Repairs (161 complete)



Utility Fund Operations – Maintenance Plan FY 23/24

Programs	FY 20/21 (Actual)	FY21/22 (Actual)	FY22/23 (Projected)	FY23/24 (Proposed)
Water Facilities (Elevated/Ground Storage/Pump)	\$287,000	\$365,000	\$409,000	\$339,000
Water Main Repair	\$567,000	\$568,000	\$675,000	\$741,000
Hydrant Repair/Replacement	\$364,000	\$400,000	\$315,000	\$315,000
Water Valve Maintenance	\$27,000	\$25,000	\$29,000	\$29,000
Water Meter Maintenance	\$176,000	\$150,000	\$150,000	\$150,000
Total	\$1,421,000	\$1,508,000	\$1,578,000	\$1,574,000

Chart does not include personnel costs

FY23/24 Proposed Maintenance Plan

Water Facilities Maintenance

- Shiloh Pump Station Pump Packing Conversion
- Northside Pump Station Pump Isolation Valve replacements
- Northstar North Bypass Valve replacement
- Renner Tower Control Valve Vault rehab
- Eastside Sump Vault rehab

Hydrant Maintenance

- Goal of 800 hydrants tested and serviced
- Repair/replacement of identified hydrants





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WATER CAPITAL PROJECTS STRATEGIES



Utility Fund Debt Capital Plan - Water

Programs	FY 20/21 (Actual)	FY 21/22 (Actual)	FY 22/23 (Projected)
Water Main New/Replacement*	\$3,823,000	\$1,125,000*	\$1,200,000*
Large Valve Replacement	\$250,000	\$250,000	\$300,000
Meter Replacement	\$1,255,000	\$2,825,000	\$1,125,000
Water Facilities/Towers*	\$5,200,000	\$2,500,000*	\$0*
Total CO - Water	\$10,528,000	\$6,700,000	\$2,625,000

*Excludes utility fund debt programmed for the 825 Pressure Zone Improvement Project

FY22/23 Capital Plan Update

Water Main Replacement

- 6 water main replacements (In Progress/Complete)

Valve Replacement Program

- Dogwood/ Belt Line (To be Completed Summer 2023)
- Campbell at Floyd (Design)

Meter Replacement Program

- Complete meter change outs of all 5/8" to 2" (In Progress)
- 11 Data Collectors for automatic meter reading (In Progress)

Water Facilities

- Northside Pump Station Generator replacement & Automatic Transfer Switch install (Completed)
- Eastside Pump Station New Generator & Automatic Generator Switch install (Completed)
- Eastside Pump Station Pump addition (Completed)



Utility Fund Debt Capital Plan – Water FY 23/24

Programs	FY 20/21 (Actual)	FY 21/22 (Actual)	FY 22/23 (Projected)	FY 23/24 (Proposed)
Water Main New/Replacement*	\$3,823,000	\$1,125,000*	\$1,200,000*	\$1,200,000*
Large Valve Replacement	\$250,000	\$250,000	\$300,000	\$300,000
Meter Replacement	\$1,255,000	\$2,825,000	\$1,125,000	\$500,000
Water Facilities/Towers*	\$5,200,000	\$2,500,000*	\$0*	\$0*
Total CO - Water	\$10,528,000	\$6,700,000	\$2,625,000	\$2,000,000

*Excludes utility fund debt programmed for the 825 Pressure Zone Improvement Project

2023/24 Proposed Capital Plan

Water Main Replacement

- 2001-2025 Portsmouth Drive
- 1213-1254 Dalhart Drive

Valve Replacement Program

- Renner at Wyndham (Design/Construction)

Meter Replacement Program

- Replacement of 3" and larger compound/turbine meters to ultrasonic meters





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825 PRESSURE ZONE IMPROVEMENTS



Project Summary

Project Purpose

- Improve 825 Pressure Zone ability to deliver to expected development demands

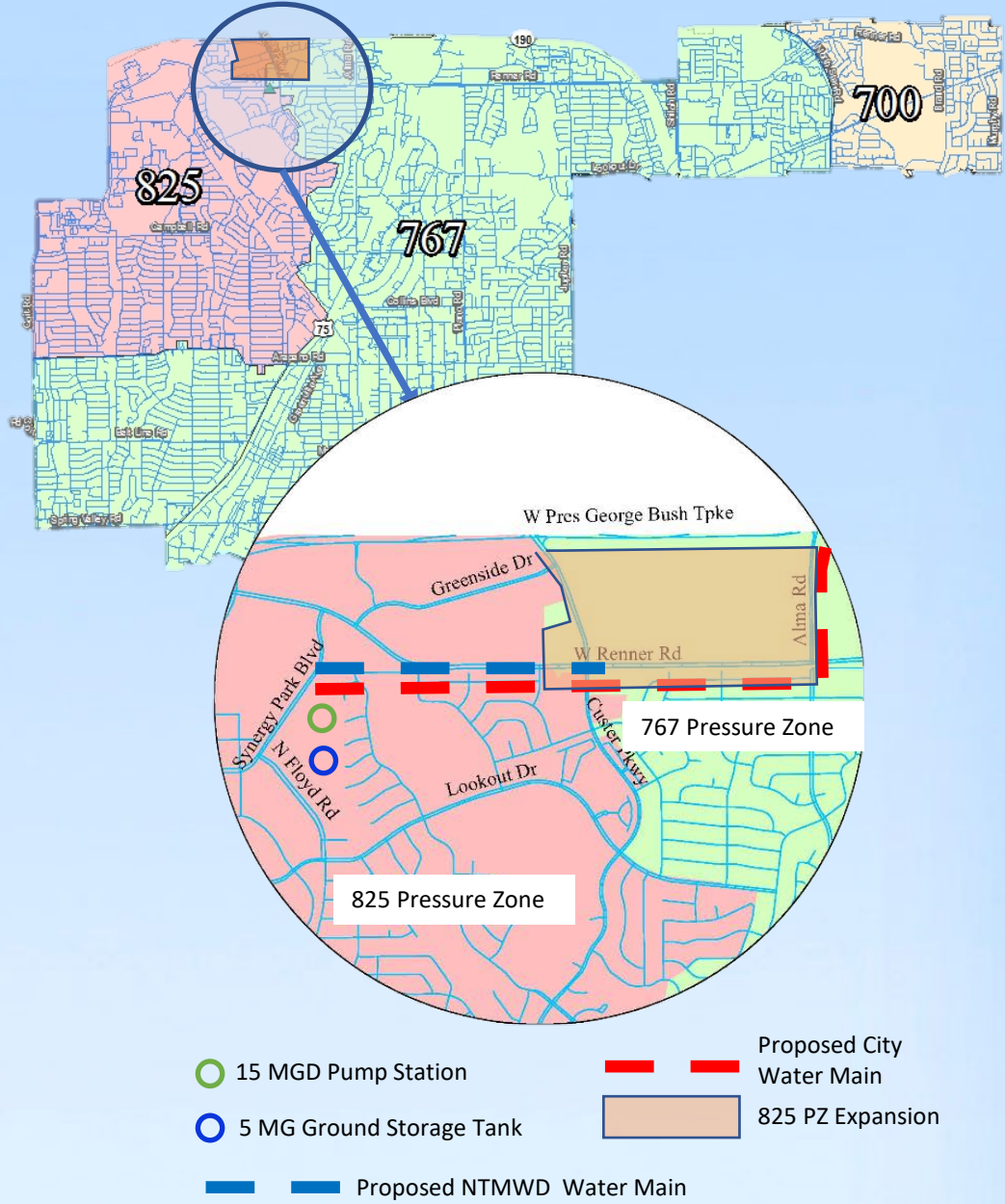
Project Elements

- 15 Million Gallons Per day (MGD) Northside Pump station II (NSPS) Expansion
- 5 Million Gallon (MG) Ground Storage Tank
- Water Transmission Line from Northside Pump Station to Alma Rd
- North Texas Municipal Water District Meter Station and Waterline from Northside Pump Station to Custer Rd

Project Status

- Work is being completed under Construction Manager-At-Risk Contract with Archer Western
- Final Completion Spring/Summer 2025*

*Generator tentative delivery and installation Fall 2025



Resident Impact Reduction Strategies

- Enhanced screening options with dense shrubs that will grow to 20 feet in height
- Additional shade trees will be added around trail to replace those removed for new facilities
- Parking lot and playground will remain open throughout construction except for temporary closure to erect Ground Storage Tank wall panels only, due to safety concerns (anticipate minimal closure)
- Walking path will be temporarily rerouted around staging areas to maintain use and match existing width
- City will provide 10 foot screening fence for most impacted properties adjacent to pump station and ground storage tank

Original Building and Screening



CITY OF RICHARDSON
NORTHSIDE PUMP STATION NO. 11 AND GROUND STORAGE TANK
RENDERING VIEW 4 - ORIGINAL DESIGN
(LOOKING SOUTHWEST FROM ALLEY)



*THIS IS A CONCEPTUAL RENDERING AND FOR REFERENCE ONLY.

Revised Building and Enhanced Screening



CITY OF RICHARDSON
NORTHSIDE PUMP STATION NO. 11 AND GROUND STORAGE TANK
RENDERING VIEW 4
(LOOKING SOUTHWEST FROM ALLEY)



*THIS IS A CONCEPTUAL RENDERING AND FOR REFERENCE ONLY.

825 Pressure Zone Improvements Funding Strategy

Programs	TOTAL
Water CO Debt Issuance (Water Main and Water Facilities)	\$ 32,859,150
American Rescue Plan Act (ARPA) Funding	\$ 9,820,000
Water Fund Reserves	\$ 17,000,000
Revenue from Land/Easement Sales	\$ 1,320,850
Other CO Debt Issuance - Pavement Repair for Waterline Replacement	\$ 1,000,000
Total	\$ 62,000,000*

*Total amount is an estimate pending results of fourth bid package expected late-June



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WASTEWATER MAINTENANCE & CAPITAL STRATEGIES



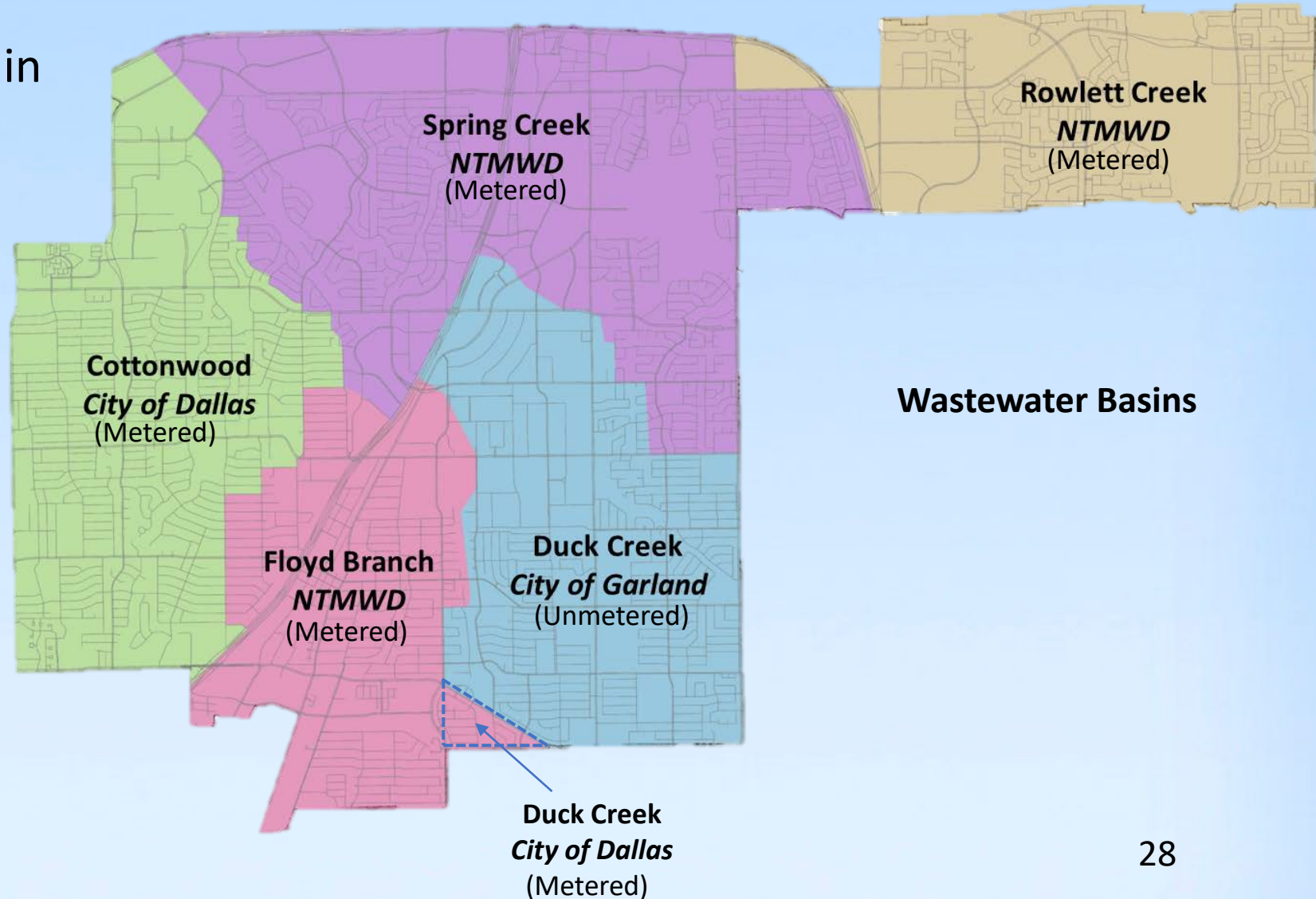
Wastewater Collection System Maintenance & Capital Strategies

- **Guiding Principles**

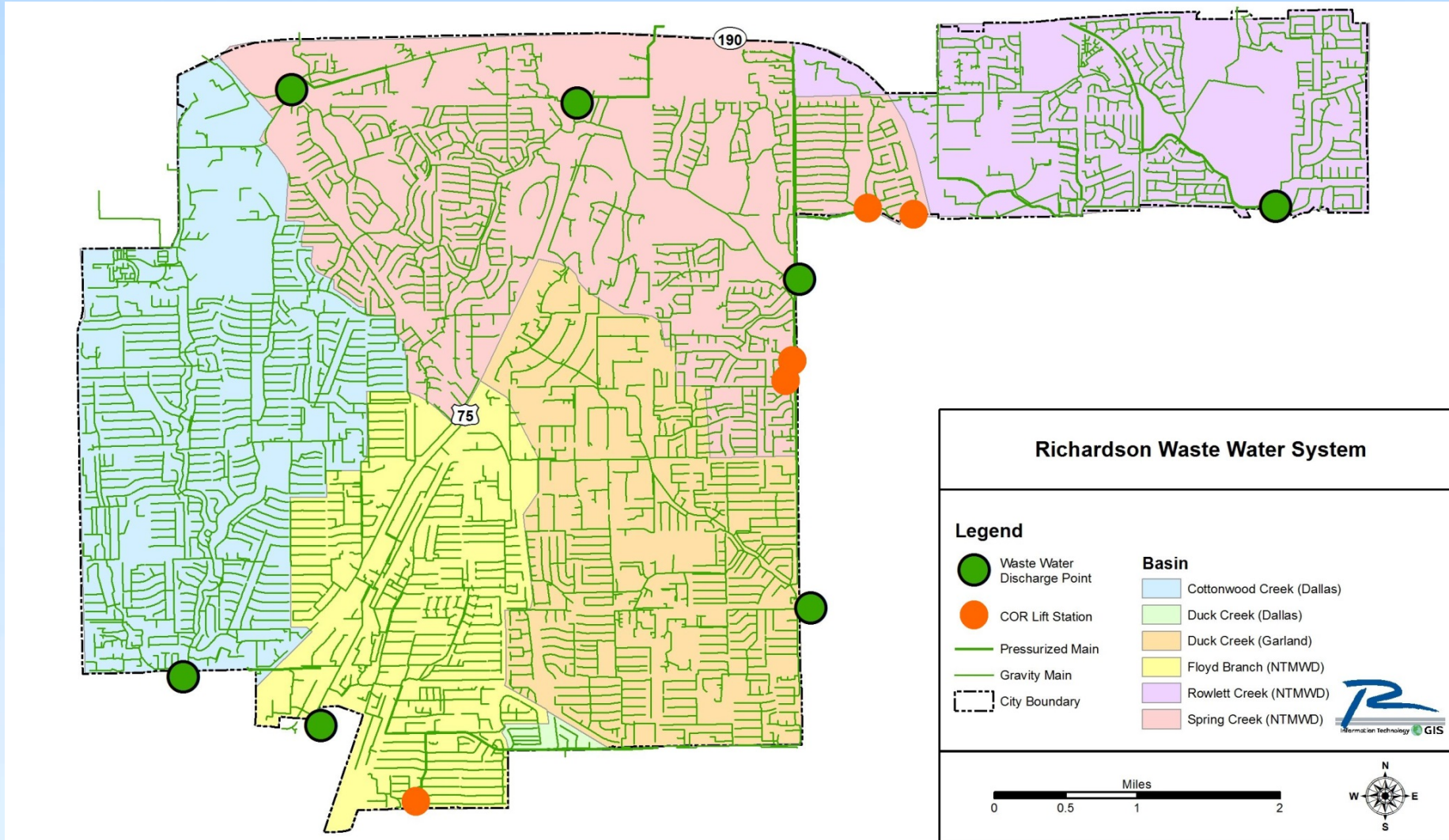
- Comply with all federal, state and local regulations
- Efficiently and effectively manage, operate and maintain all parts of the wastewater collection system
- Provide adequate capacity to convey peak flows
- Minimize the frequency of sanitary sewer overflows
- Mitigate the impact of sanitary sewer overflows
- Continue Capacity, Management, Operations and Maintenance (CMOM) Initiatives
- Closely partner with NTMWD, City of Dallas and City of Garland on regional wastewater initiatives and programs

Wastewater System Highlights

- 430 Miles of Wastewater Main
- 5,430 Manholes
- 2,200 Mainline Cleanouts
- 5 Lift Stations
- 10 Wastewater Pumps
- 1,710 Calls for Service



Wastewater System Overview



CMOM Program

Capacity

- Flow Monitoring
- Population Projections
- System Model

Management

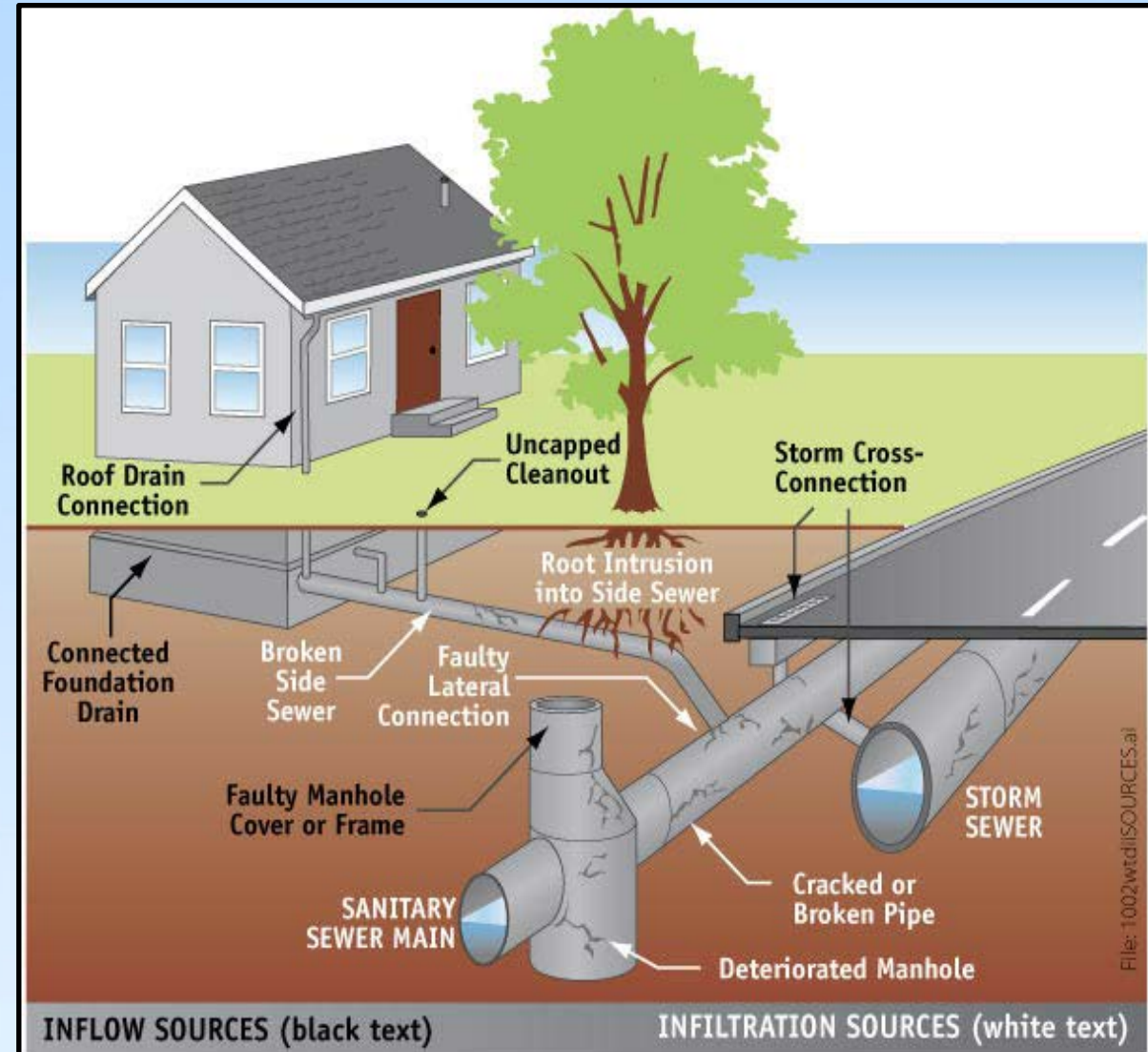
- Training
- Customer Service
- Documentation
- Budget Allocation

Operations

- Safety
- GIS Mapping
- Fats/Oils/Grease

Maintenance

- Condition Assessment
- Rehabilitation
- Equipment



Sewer Fund Operations – Maintenance Plan

Programs	FY 20/21 (Actual)	FY 21/22 (Actual)	FY 22/23 (Projected)
*Program Management- Equipment and Design	\$748,889	\$516,892	\$637,645
Condition Assessment	\$2,426,624	\$1,875,100	\$836,000
Rehabilitation	\$379,541	\$902,719	\$1,978,000
*Sewer Operations	\$859,000	\$904,000	\$1,044,635
Total	\$4,414,054	\$4,198,711	\$4,496,280

*Includes personnel

FY22/23 Maintenance Plan Update

MAINTENANCE ACTIVITIES

- Duck Creek Basin Manhole Rehab (Completed)
- Cottonwood Basin Manhole Rehab (Phase 1 - Completed) (Phase 2 – Construction Start Summer 2023)
- FY23 Pipe Rehab (Construction Start Summer 2023)
- FY24 Pipe Rehab (Design)
- Spring Creek (Prairie Creek Sub-basin) MH Rehab (Design)
- Rainbow Dr Sewer Main Repair (Construction)

PROJECT PRIORITIZATION

- Master Plan Update
 - Completed March 2023
- Updating Risk Analysis

DATA COLLECTION

- Rowlett Creek Basin Condition Assessment
 - Smoke Testing (Starts June)
 - Half Basin Only
- Sewer Main and Manhole Inspections
 - Project Related
 - Recently Rehabbed
- Collaborating with NTMWD on Long Term Planning Efforts

Sewer Fund Operations – Maintenance Plan FY23/24

Programs	FY 20/21 (Actual)	FY 21/22 (Actual)	FY22/23 (Projected)	FY23/24 (Proposed)
*Program Management- Equipment and Design	\$748,889	\$516,892	\$637,645	\$646,633
Condition Assessment	\$2,426,624	\$1,875,100	\$836,000	\$836,000
Rehabilitation	\$379,541	\$902,719	\$1,978,000	\$1,978,000
*Sewer Operations	\$859,000	\$904,000	\$1,044,635	\$1,068,396
Total	\$4,414,054	\$4,198,711	\$4,496,280	\$4,529,029

*Includes personnel

FY23/24 Proposed Maintenance Plan

MAINTENANCE ACTIVITIES

- FY24 Pipe Rehab (Construction)
- Spring Creek (Prairie Creek Sub-Basin) MH Rehab (Construction)
- FY25 Pipe Rehab (Design)
- Spring Creek MH Rehab (Design)

PROJECT PRIORITIZATION

- Annual update of risk based analysis to prioritize rehab projects and inspection needs

DATA COLLECTION

- Rowlett Creek Basin Condition Assessment
 - Smoke Testing – Completing Second Half
 - Infiltration/Inflow Analysis and Recommendations Report
- Sewer Main and Manhole Inspections
 - Risk Based Inspection Schedule Citywide



**CMOM Program –
Capital Improvement
Projects**

Utility Fund Debt Capital Plan - Sewer

Programs	FY 20/21 (Actual)	FY 21/22 (Actual)	FY 22/23 (Projected)
Wastewater Main Replacement	\$800,000	\$0*	\$3,300,000*
Manhole/Lift Station Replacement	\$600,000	\$600,000	\$1,000,000
Total CO Issuance - Sewer	\$1,400,000	\$600,000	\$4,300,000

*Greenville Sewer Phase I funds removed and planned for FY25/FY26 when project can be constructed; funds diverted to 825 Pressure Zone Improvement project

FY22/23 Capital Improvement Plan Update

Gravity Mains

- Greenville Phase I (WWTP to Centennial): Design
- Sewer Replacement in 2021 Bond Alleys (6 Alley Segments): Design
- Cottonwood Creek Trunk Main: Study
- Sewer between Villanova and Syracuse: Design

Manholes (MH)

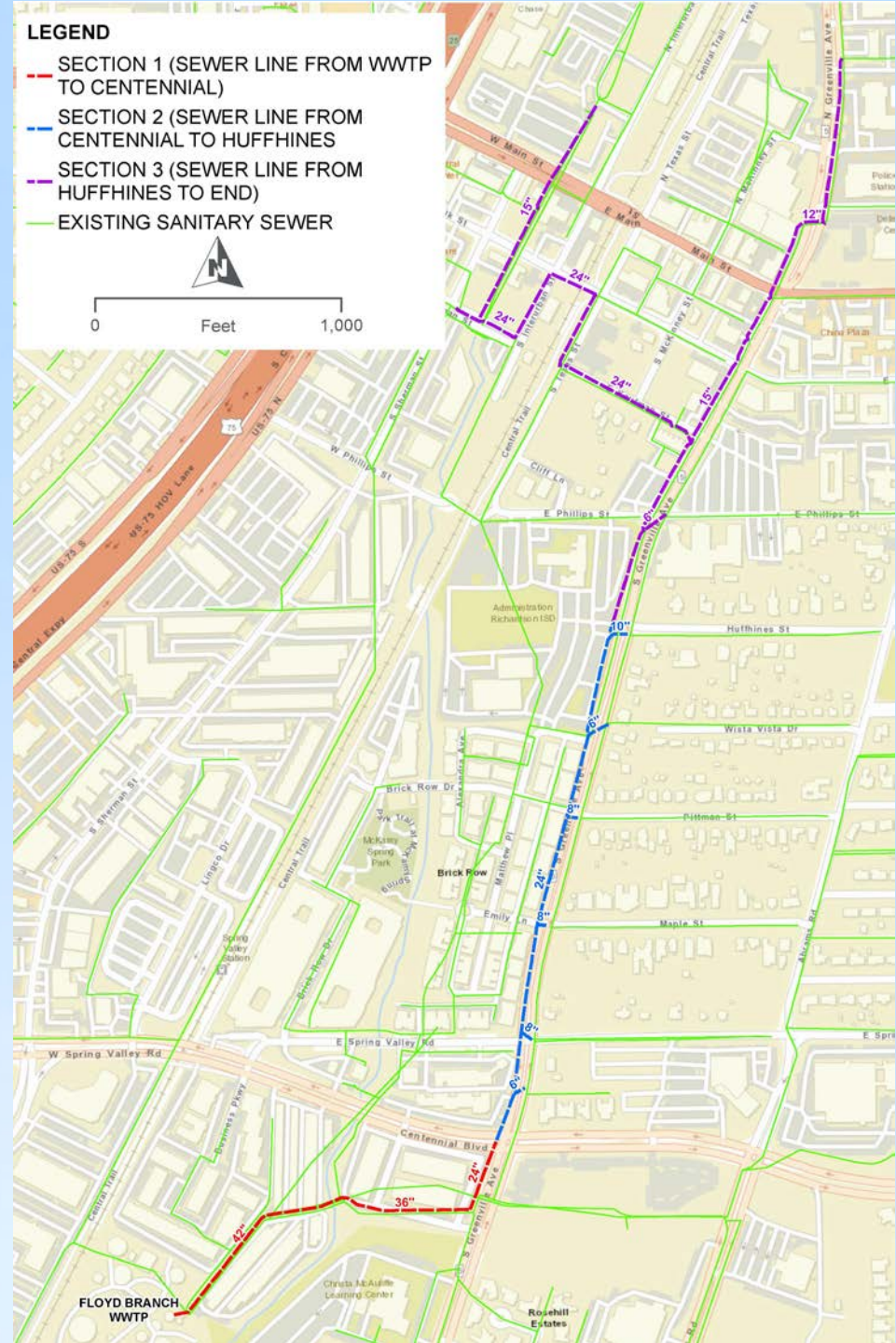
- Floyd Branch MH Replacement, Priority 1: Start Construction Summer 2023
- Canyon Creek Golf MH; Campbell/Plano MH; Sherman Rd MH: Start Construction Summer 2023

Sewer Improvements – Other Fund Sources

- North Glenville Drive: Construction
- West Prairie Creek: Construction
- McKinney Street Reconstruction: Construction
- Custer Rd (Arapaho to Campbell): Construction
- Custer Rd (Campbell to Renner): Design
- Sewer Replacement in 2021 Bond Alleys (11 Alley Segments): Design

Greenville Avenue Sewer

- Construction Funding was allocated for Section 1 of this project in FY23 Work Plan presented last year.
- NTMWD is designing Peak Flow Capacity Improvements at the Floyd Branch Wastewater Treatment Plant (WWTP) with construction scheduled for FY25/FY26
- NTMWD agreed to lower intake elevation into Floyd Branch WWTP as part of their Peak Flow Capacity Improvements
- City has adjusted Greenville Ave Sewer Phase I schedule so that it can take advantage of lower elevation in order to eliminate an aerial crossing through Floyd Branch that would be a long-term maintenance issue
- Debt originally sold in FY22/FY23 for Greenville is helping meet accelerated 825 Pressure Zone Improvement project timeline. Utility CO Debt Issuance for Greenville Sewer is now planned for FY25/FY26 when project can be constructed



Utility Fund Debt Capital Plan - Sewer

Programs	FY 20/21 (Actual)	FY 21/22 (Actual)	FY22/23 (Projected)	FY23/24 (Proposed)
Wastewater Main Replacement	\$800,000	\$0*	\$3,300,000*	\$3,600,000
Manhole/Lift Station Replacement	\$600,000	\$600,000	\$1,000,000	\$700,000
Total CO Issuance - Sewer	\$1,400,000	\$600,000	\$4,300,000	\$4,300,000

*Greenville Sewer Phase I funds removed and planned for FY25/FY26 when project can be constructed; funds diverted to 825 Pressure Zone Improvement project

FY23/24 Proposed Capital Improvement Plan

Gravity Mains

- Greenville Phase II (Centennial to Huffhines): Design
- Canyon Valley/Canyon Brook: Construction
- Cottonwood Creek Trunk Main: Design
- Sewer between Villanova and Syracuse: Construction
- Richland Park (Wentworth to Sheffield): Construction
- Sewer Replacement in 2021 Bond Alleys (6 Alley Segments): Design/Construction

Manholes

- Evaluate Replacement Options

Sewer Improvements – Other Fund Sources

- North Glenville Drive: Construction
- West Prairie Creek: Construction
- Custer Rd (Campbell to Renner): Construction
- Sewer Replacement in 2021 Bond Alleys (11 Alley Segments): Design/Construction



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