CITY OF WILDWOOD

2024 UTILITY MASTER PLAN

October 14, 2024

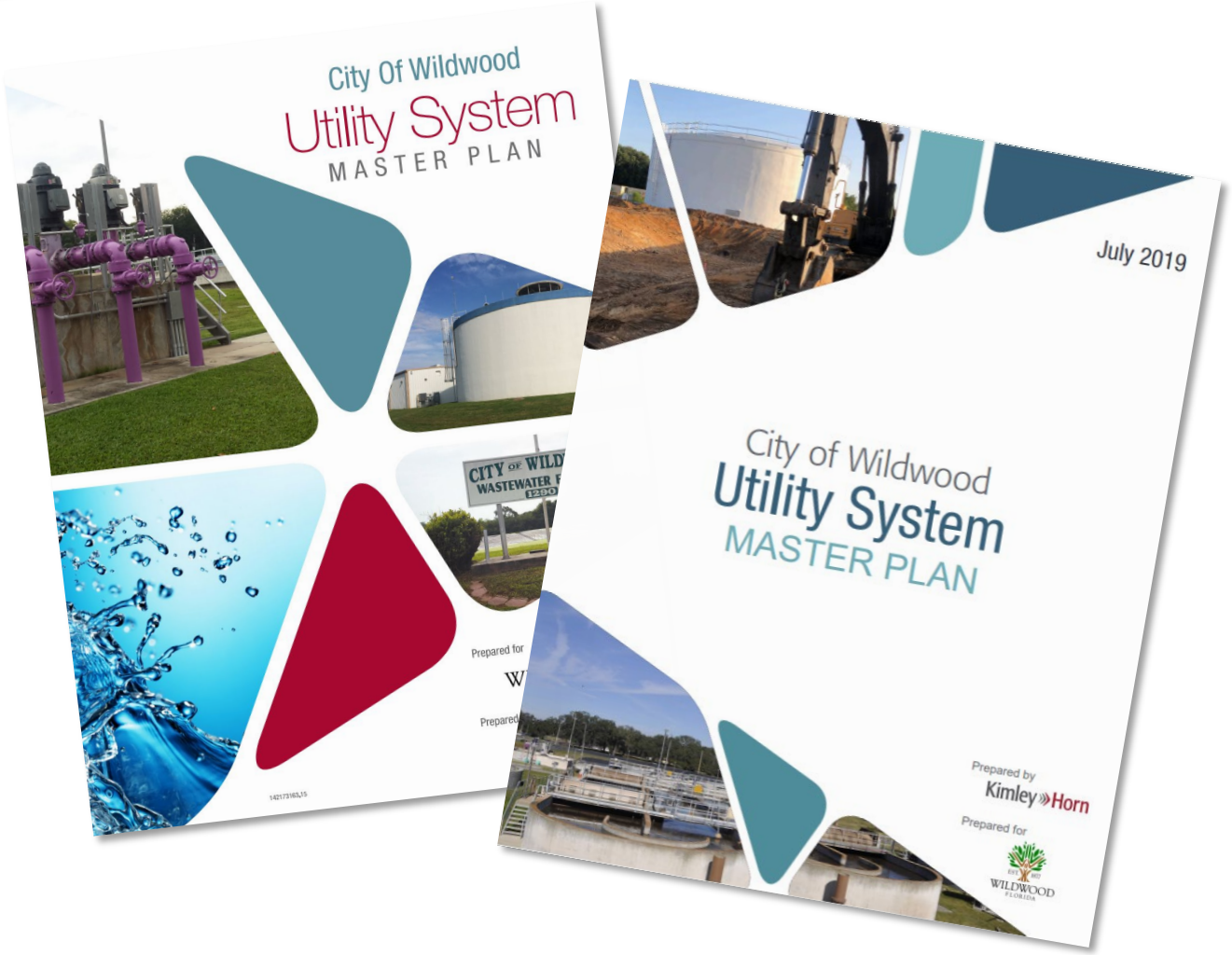
Kimley»Horn

Overview

- Goals and Objectives
- Review of Existing Service Area
- Demand Projections
- Water System
- Wastewater System
- Reclaim System
- Capital Improvement Projects

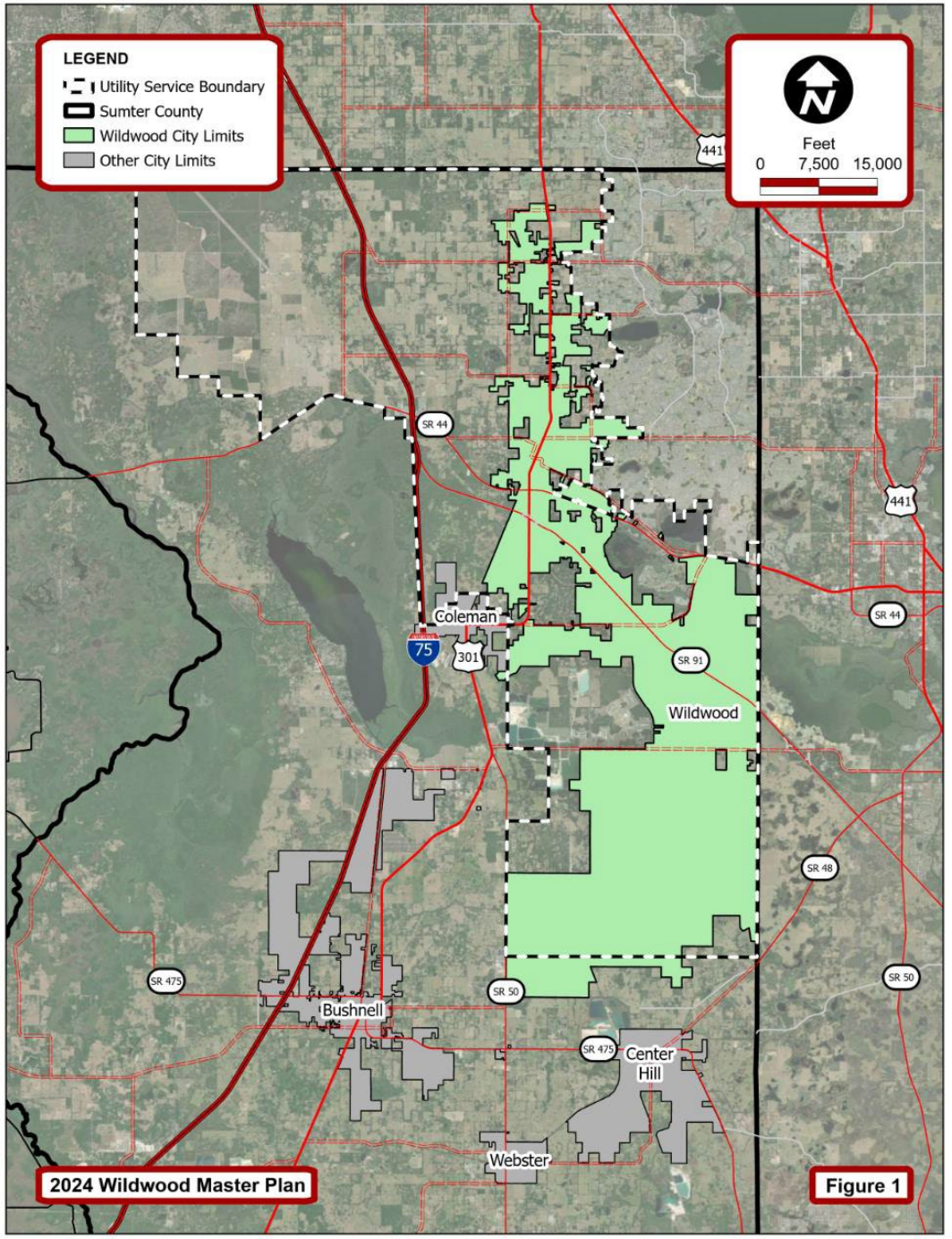
Goals and Objectives

- Identify existing system capacity and deficiencies
- Develop system demand projections
  - 2025
  - 2030
  - 2035
  - 2040
  - Build Out (2050)
- Identify the required Utility system improvements to meet the future demand projections
- Develop a Capital Improvement Program for required system improvements



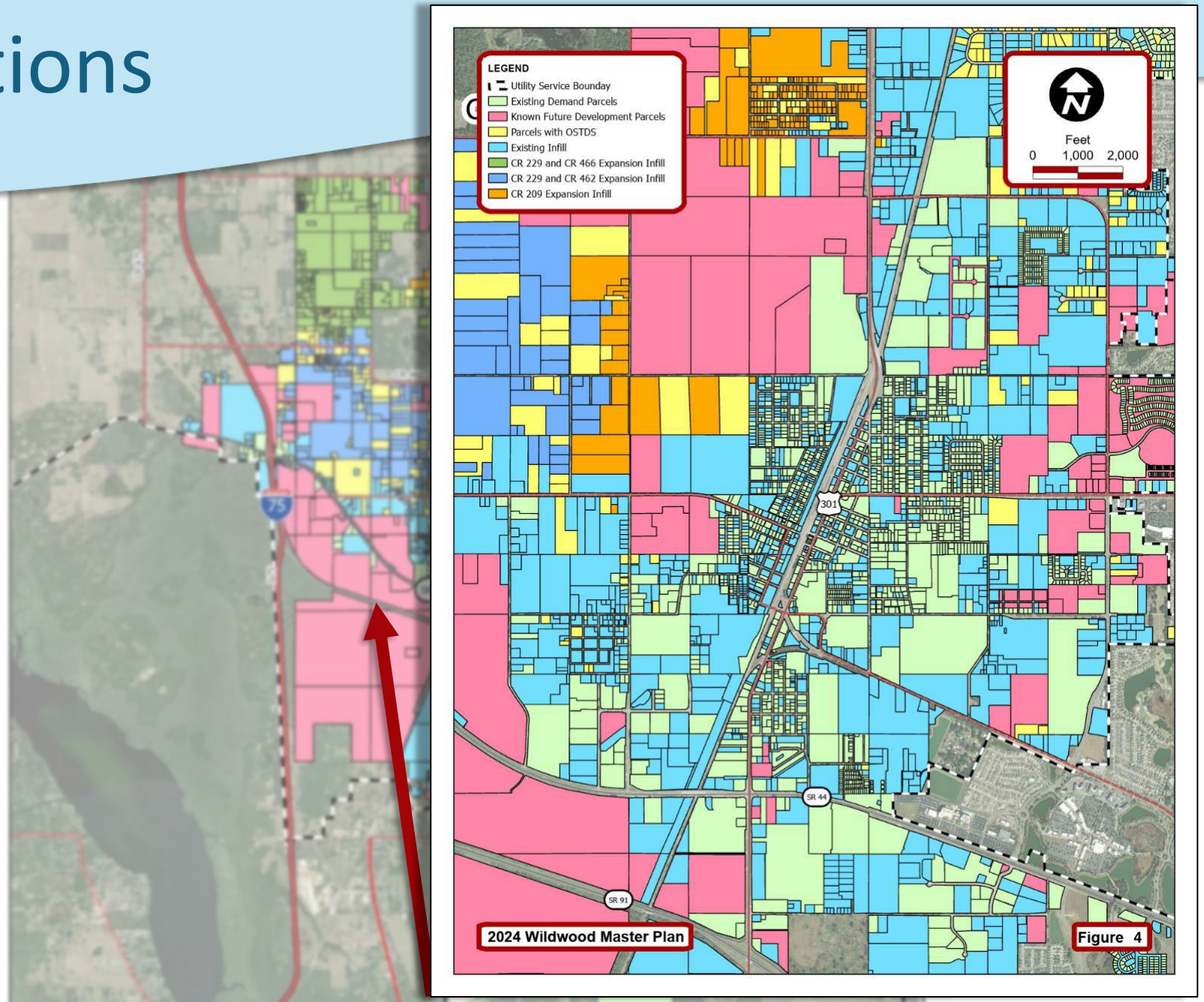
Utility Service Area

- Existing Utility Service Area Covers greater than 50 square miles.
- Existing water and sewer infrastructure spans over 15 miles.
- Serves over 21,000 people and 7,466 service connections (June 2024)

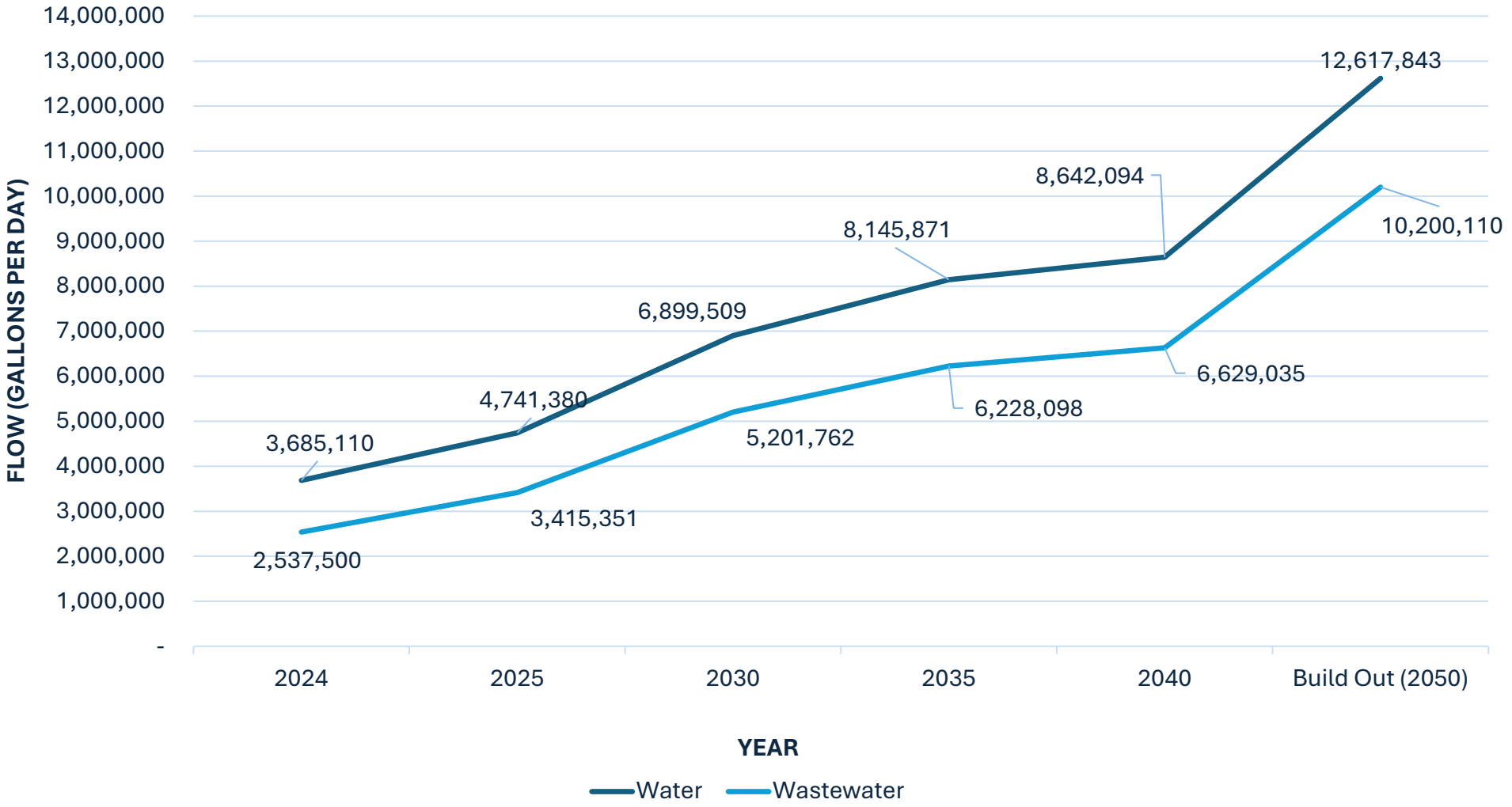


Demand Projections

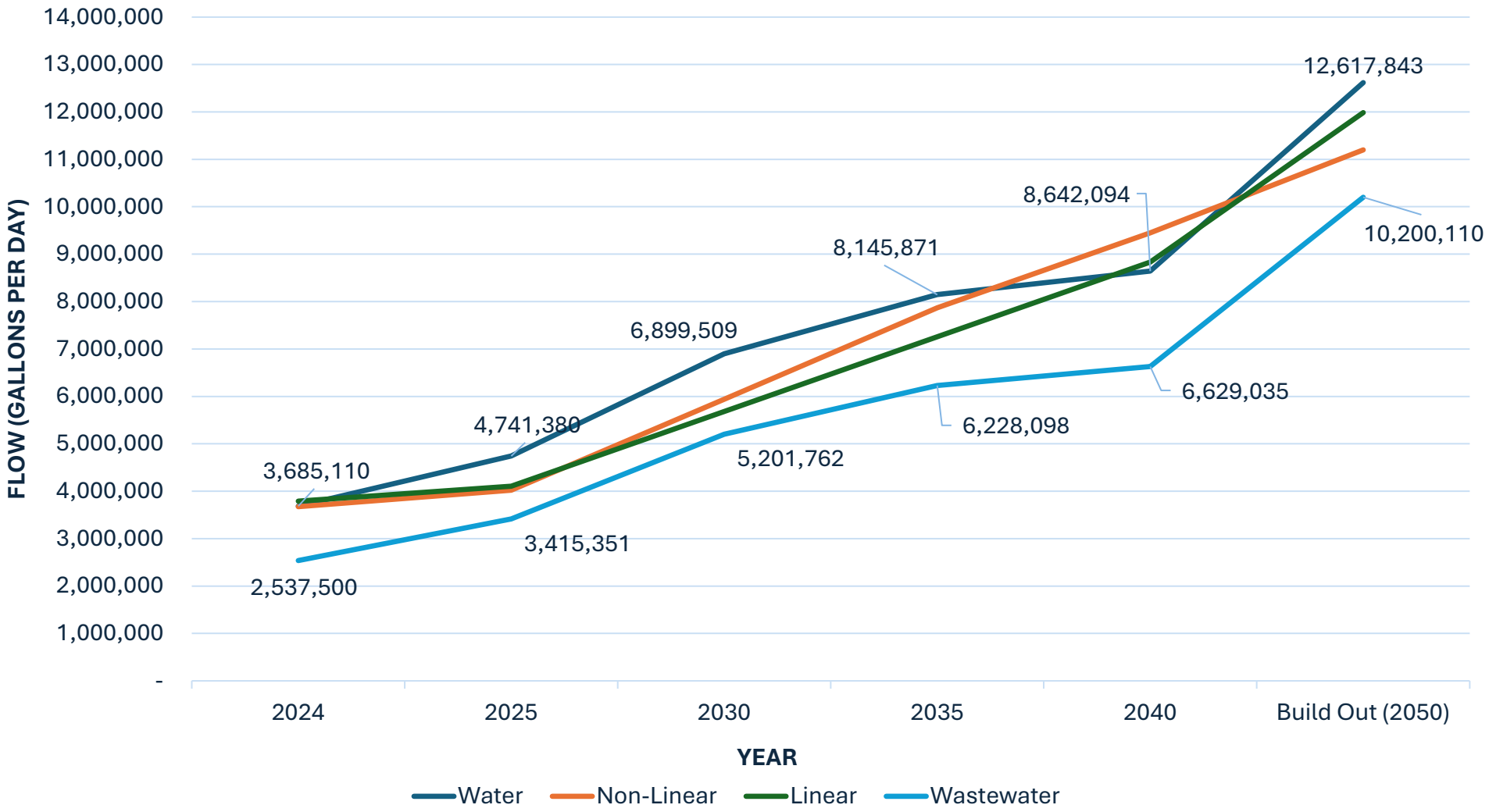
- How do we develop the projections?
- Existing Water Billing Data
- Known Future Developments
- SWFWMD B.E.B.R. Population Projections
- Infill Demands



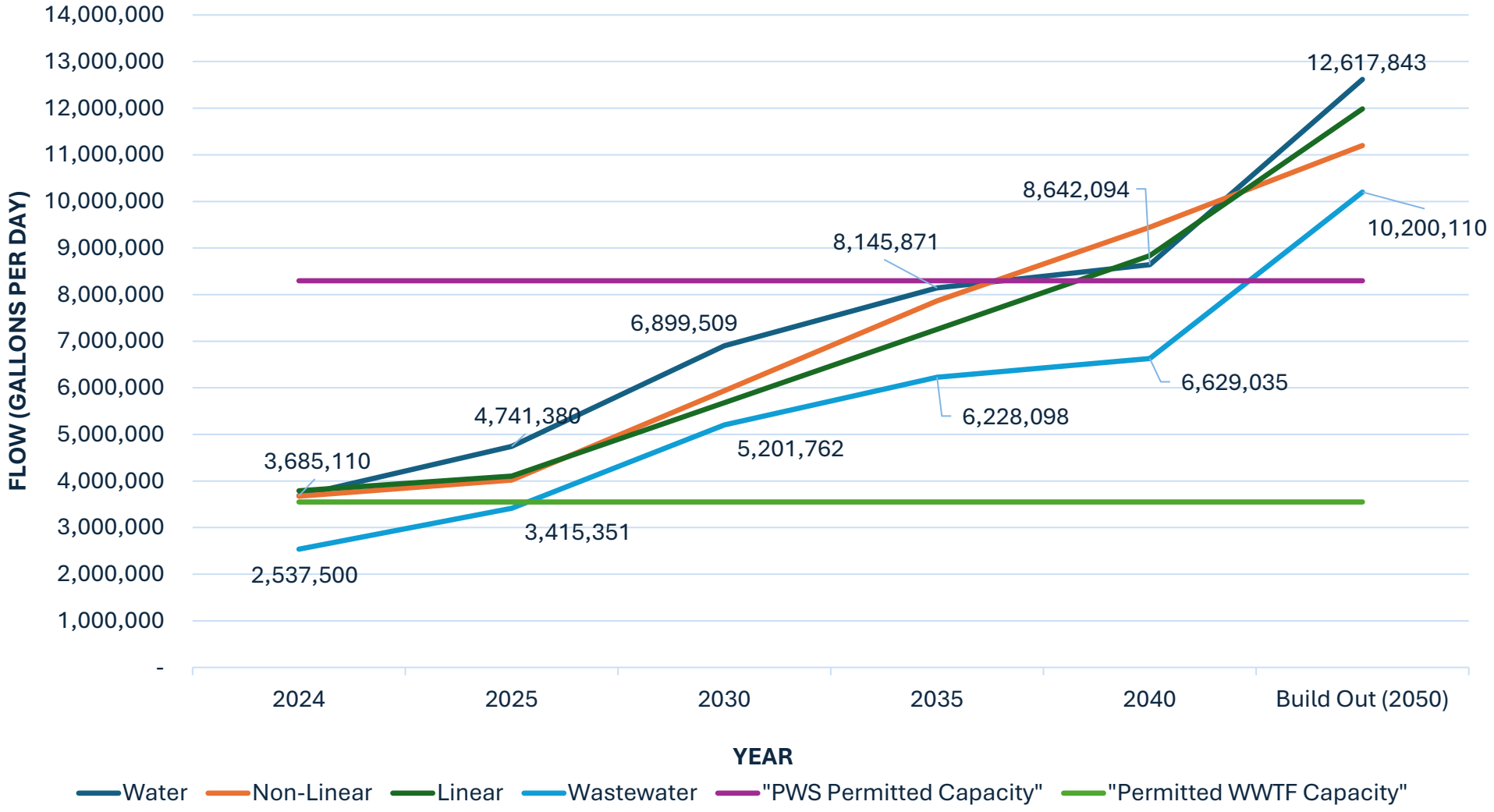
Demand Projections



Demand Projections

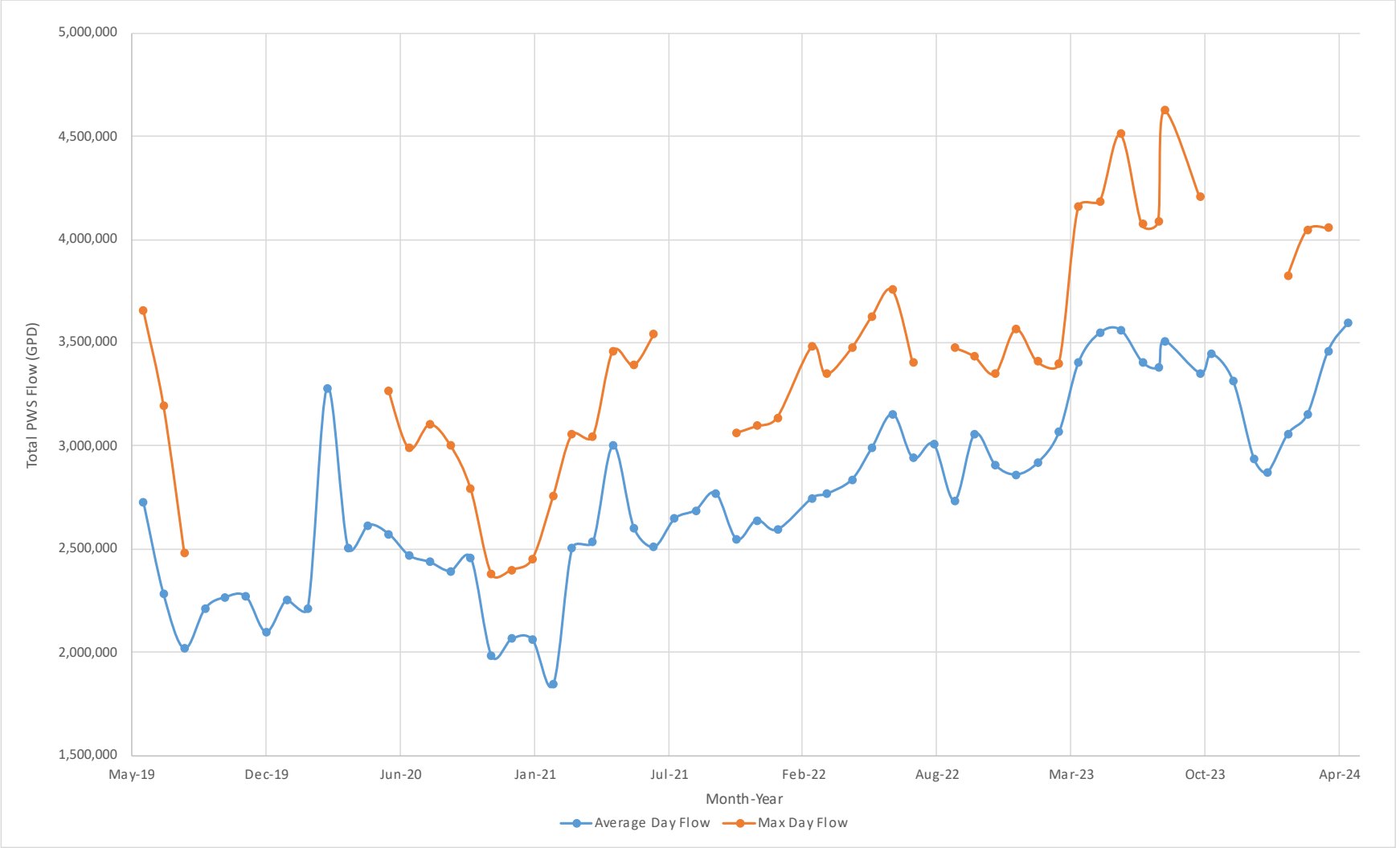


Demand Projections



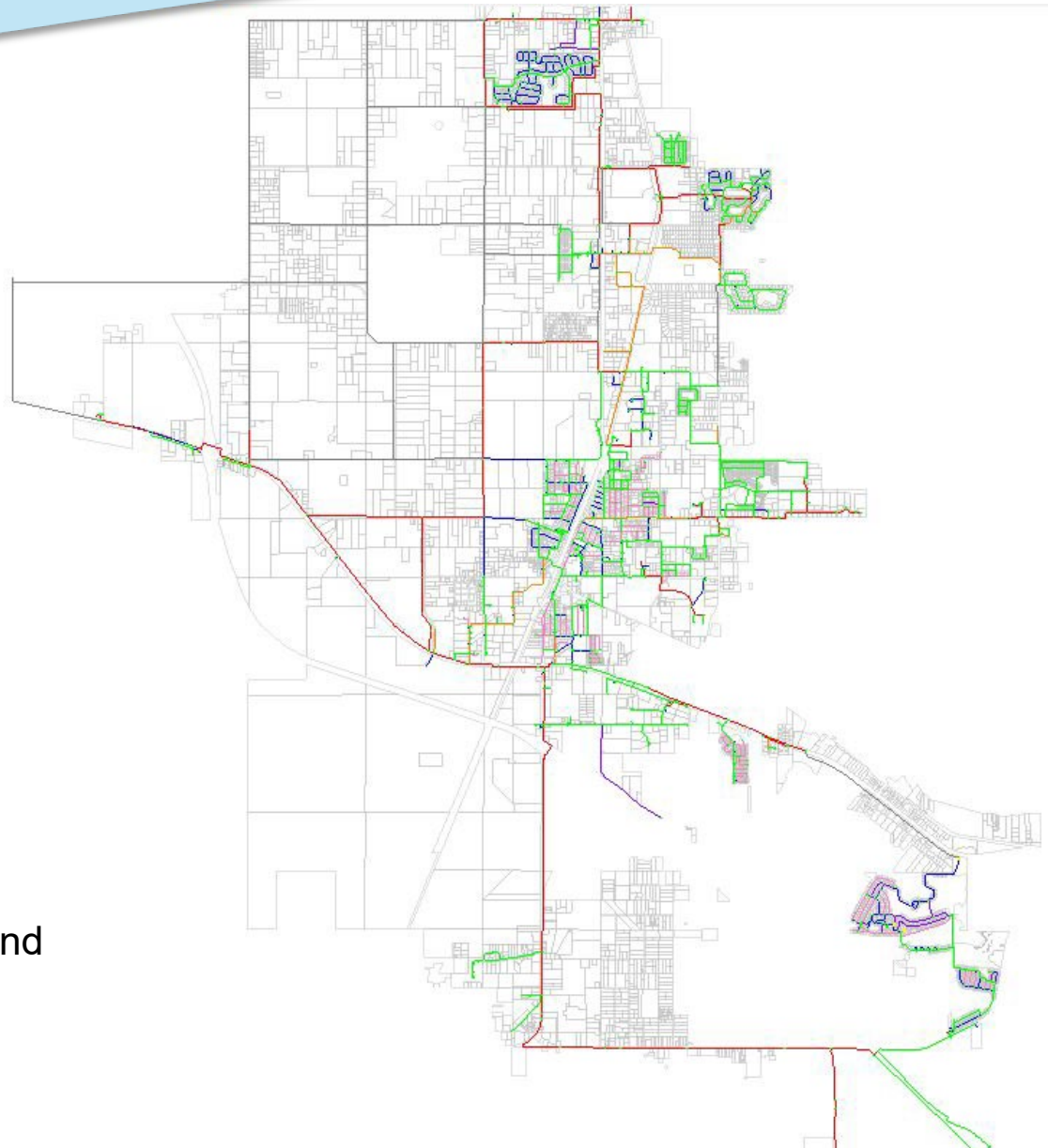
Existing Water System

- Serves > 21,000 people and 7,466 service connections (June 2024)
- 7 Water Treatment Plants and 2 Elevated Storage Tanks
- ~960,000 lf of water main (2” to 24”)
- FDEP Permitted Capacity of 8.297 MGD Max Day
- Summary of Flows (June 2023 – May 2024)
- Average Day: 3.289 MGD
- Max Day: 4.624 MGD



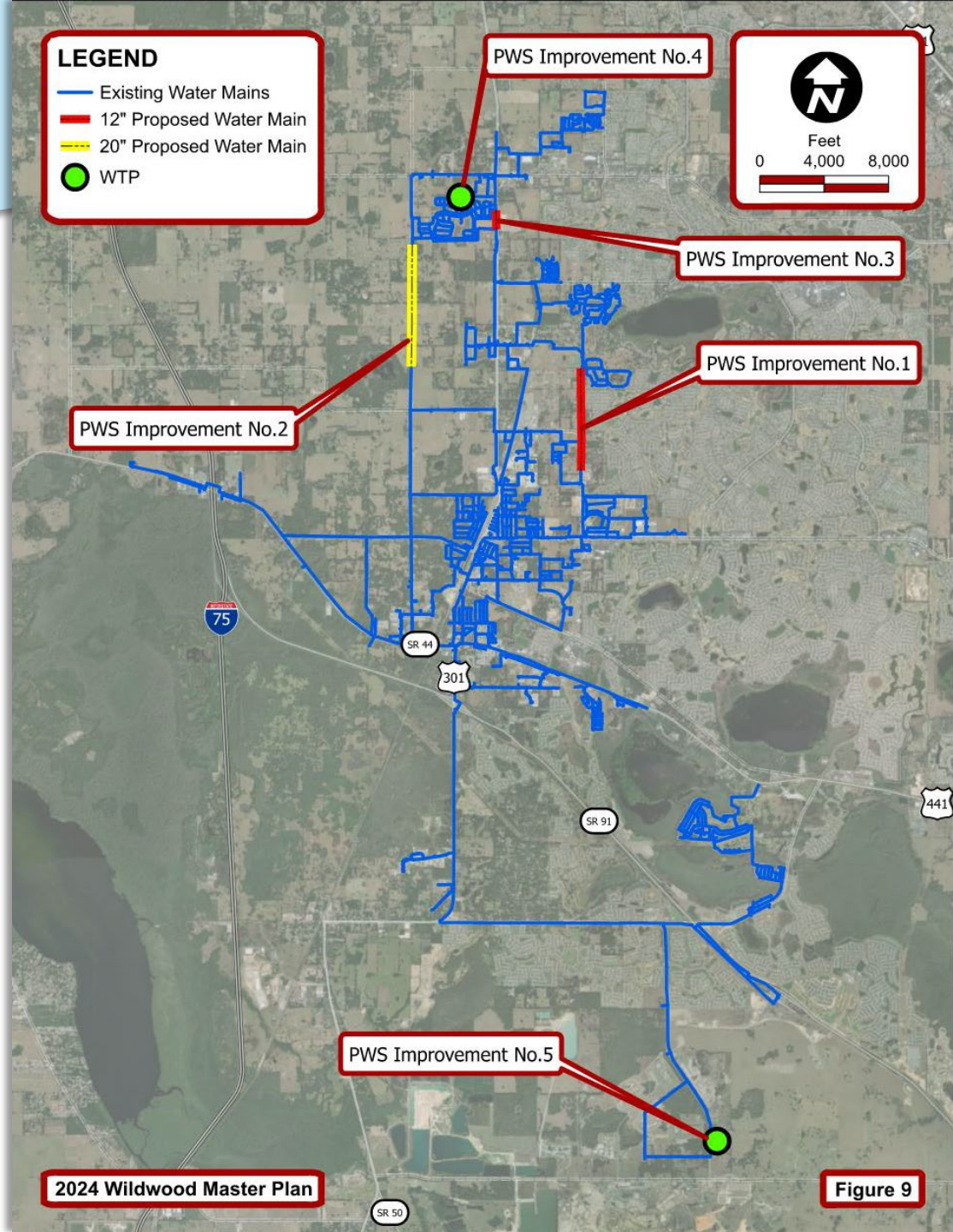
Water System Modeling

- Update and Calibrate Water System Model
- Spatially input existing water billing data
- Identify Existing System Deficiencies
  - Min. System Pressure w/Max Day + Fire Flow Demand: 20 psi
  - Min. System Pressure w/Peak Hour Demand: 20 psi
  - Maximum System Pressure: 90 psi
  - Typical Network Operating Pressure Range: 45-70 psi
  - Fire Flow Demand: 1,000 gpm (minimum)
- Evaluate system pressures and flows and WTP capacities during various scenarios:
  - Average Day
  - Max Day + Fire Flow
  - Peak Hour Flow
- Spatially Input Projected Demands for 2025, 2030, 2035, 2040, and Build Out (2050)
- Analyze future scenarios and alternatives



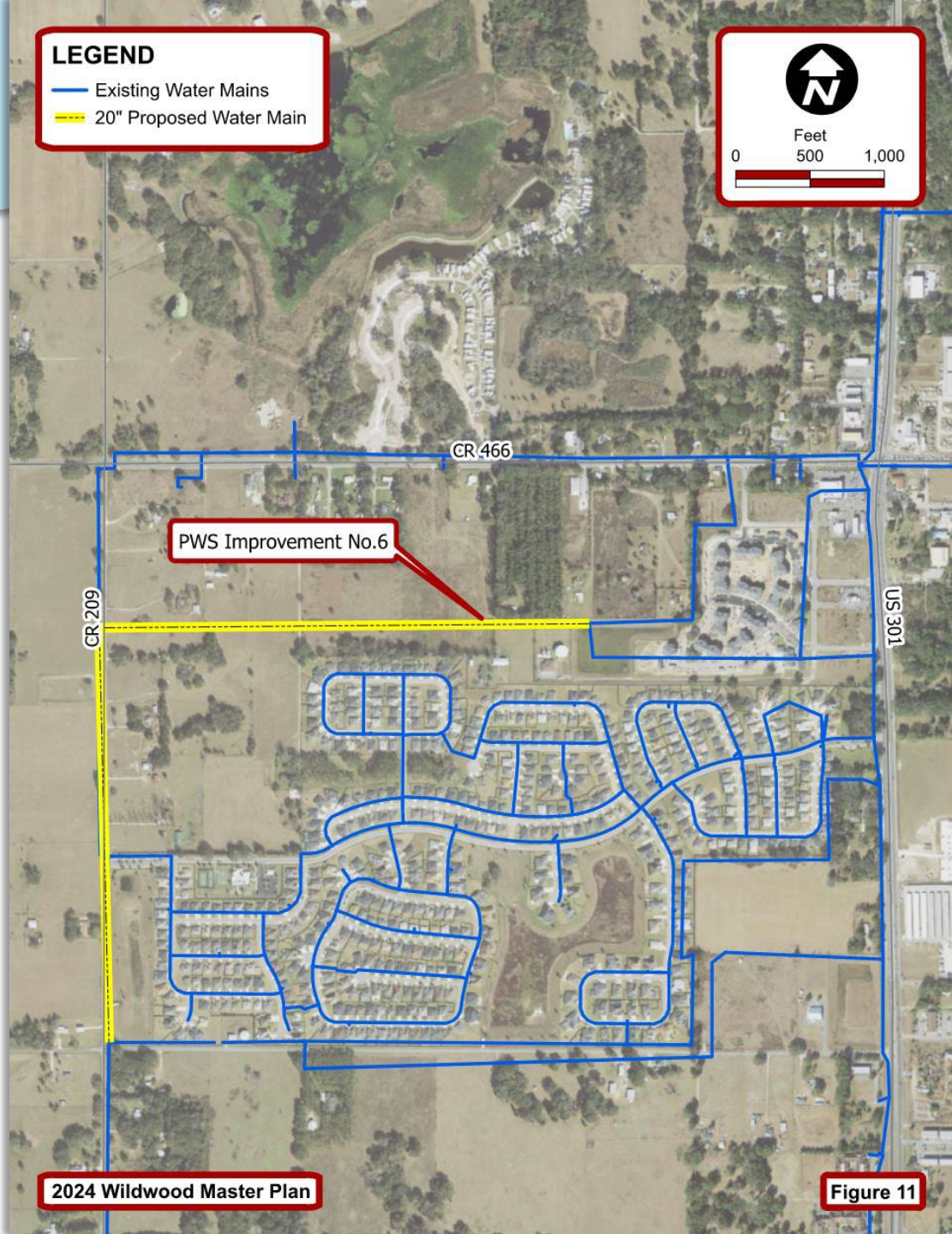
Water System CIP (2030)

- **PWS Improvement No.1:**
  CR 121 12-inch Water Main Extension
- **PWS Improvement No.2:**
  CR 209 Phase 3 20-inch Water Main Extension
- **PWS Improvement No.3:**
  Oxford Oaks Interconnect
- **PWS Improvement No.4:**
  Oxford WTP Phase 2 Expansion
- **PWS Improvement No.5:**
  CR 501 WTP – High Service Pump Upgrades



Water System CIP (2035)

- **PWS Improvement No.6:**
  Oxford WTP 20-inch Water Main Extension

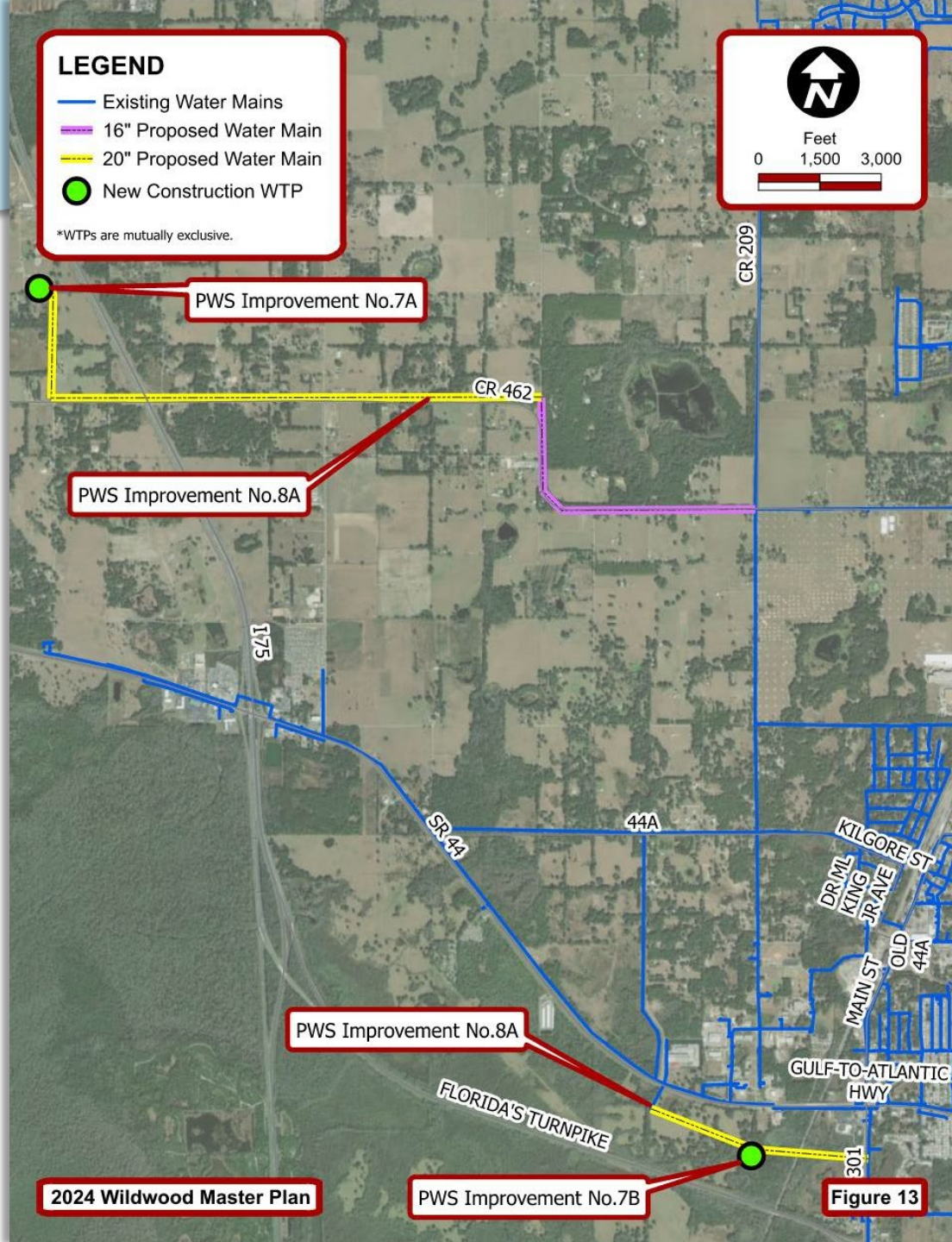


Water System CIP (2040)

- **PWS Improvement No.7A**: Champagne Farms WTP
- **PWS Improvement No.8A:** Champagne Farms WTP 20 and 16-inch water main extension

  - OR -

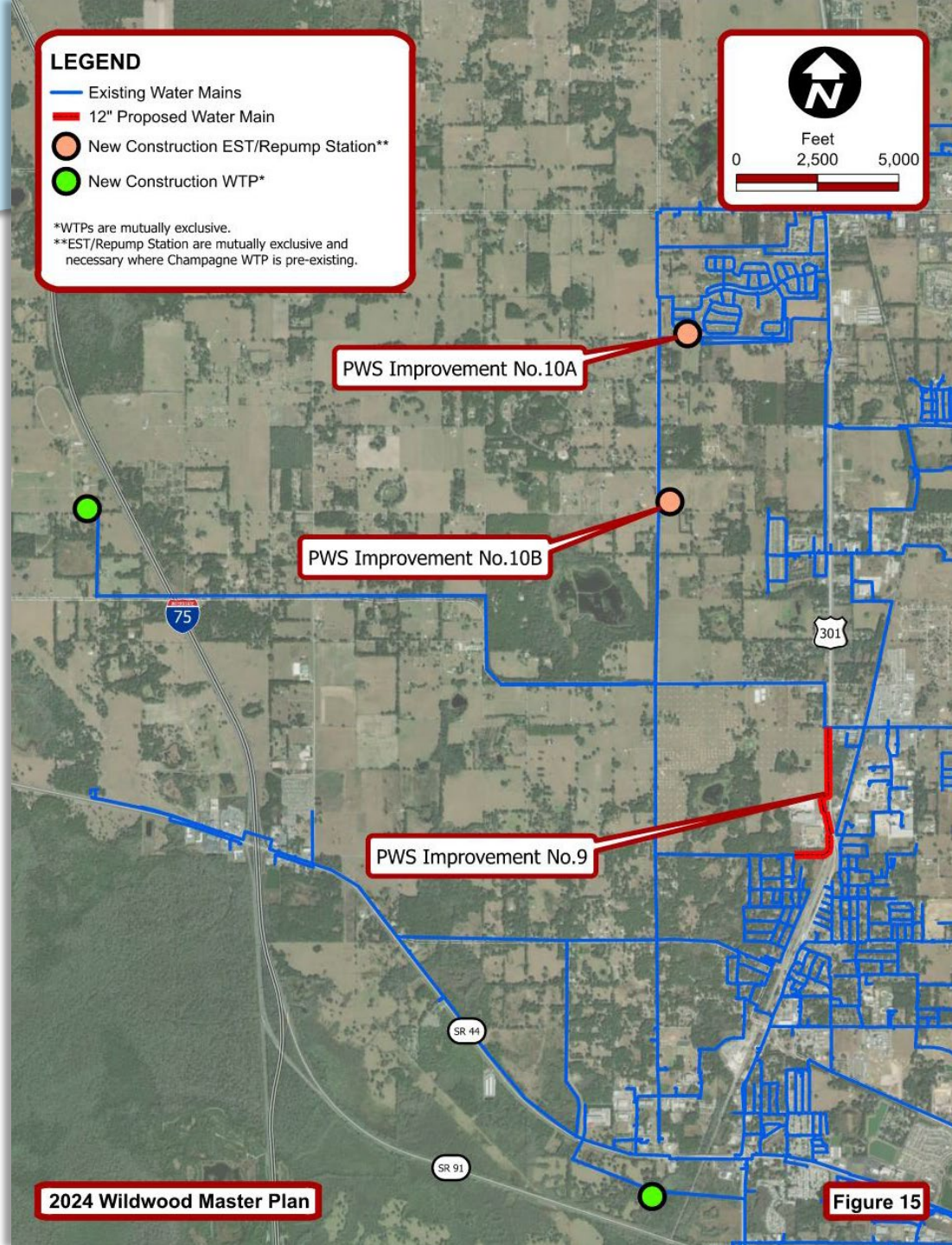
- **PWS Improvement No.7B**: Monarch Ranch WTP
- **PWS Improvement No.8B**: Monarch Ranch WTP 20 and 12-inch water main extension



Water System CIP (Build Out 2050)

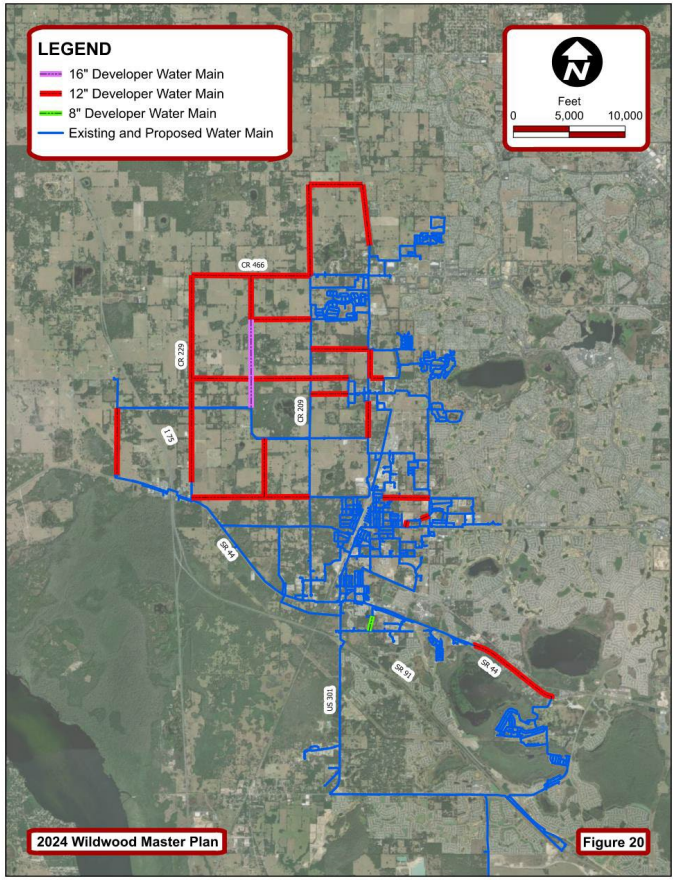
- **PWS Improvement No.9:**
  Upsize US 301 Water main from 8-inch to 12-inch
- **PWS Improvement No.10A:**
  CR 214 Pump Station Rehabilitation

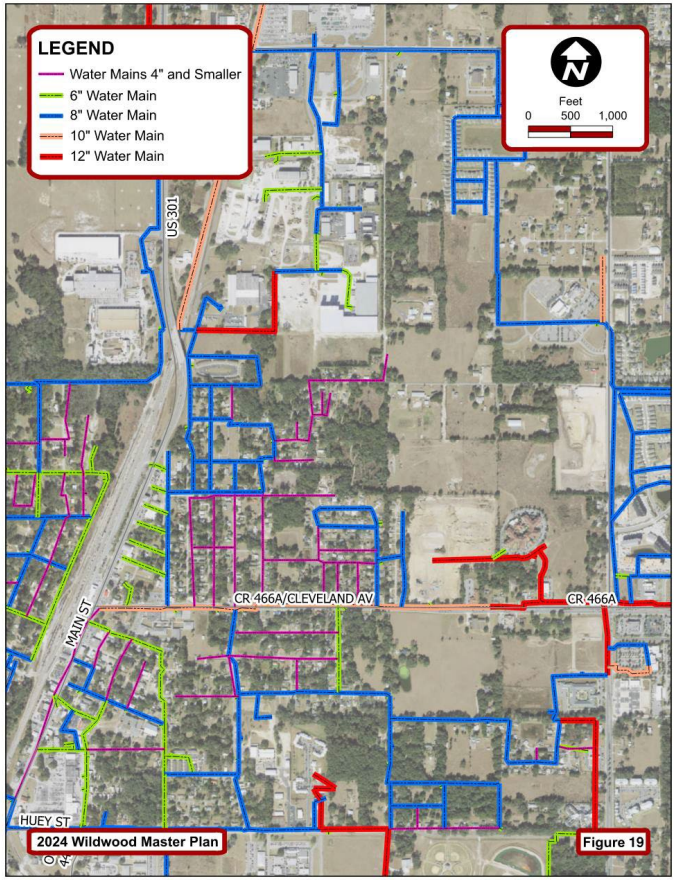
  - OR -
- **PWS Improvement No.10B:**
  CR 209/CR 222 Elevated Storage Tank



Water System CIP
(miscellaneous)

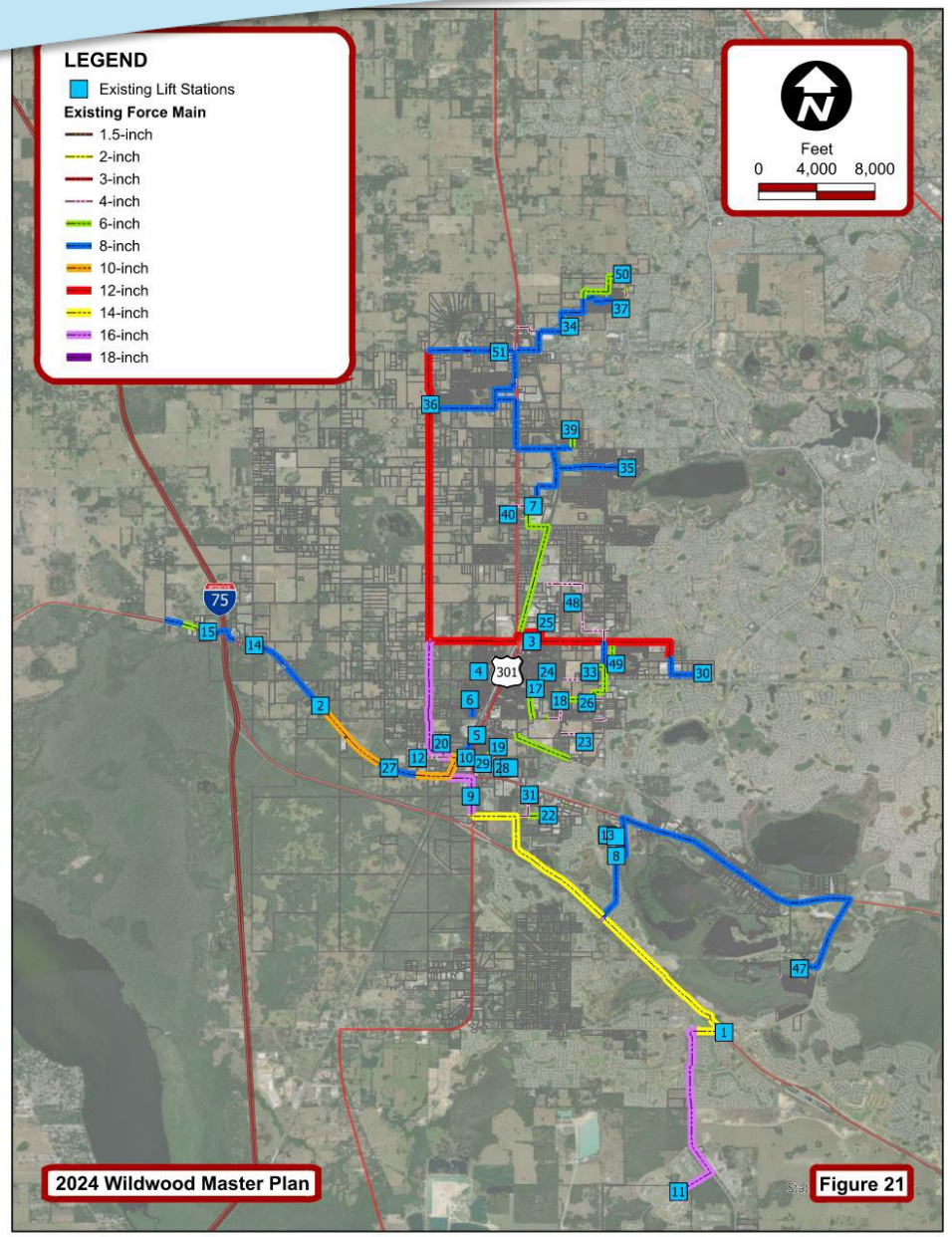
- Developer Driven Water Mains
- Annual Water Main Improvements





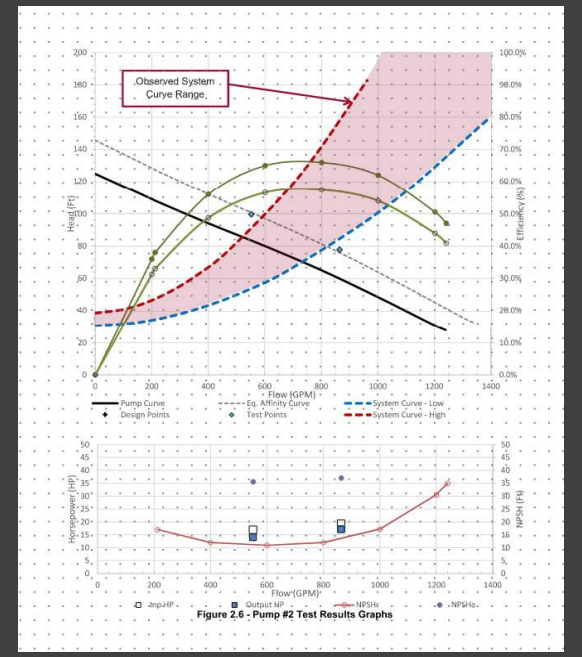
Existing Wastewater System

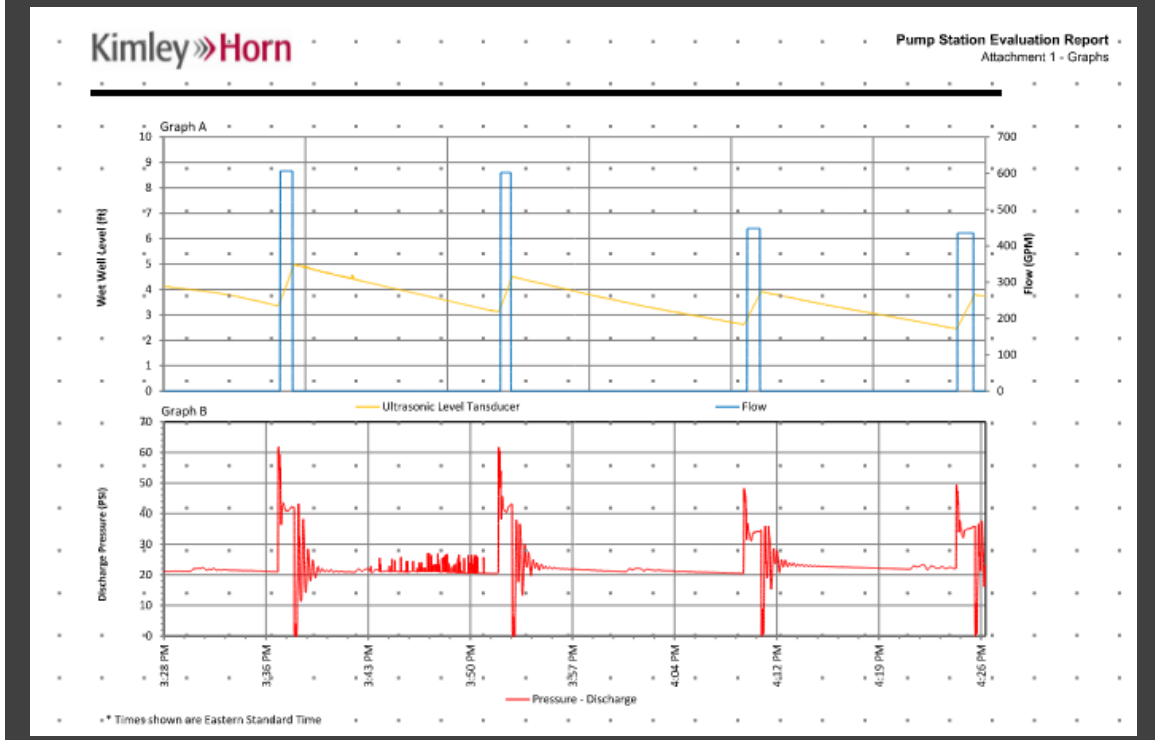
- Consists of:
  - 2 Wastewater Treatment Plants
  - 53 Lift Stations
  - Over 1,200 Manholes
  - 4,500 lf of Gravity Sewer and Force Main
- City WWTF FDEP Permitted Capacity of 3.55 MGD 3-Month Rolling Average
- CCC WWTF FDEP Permitted Capacity of 0.200 MGD Annual Average Day Flow
- Summary of Flows for the City WWTF (June 2023 – May 2024)
  - Average Day: 2.23 MGD
  - Max Day: 4.474 MGD



Wastewater Modeling

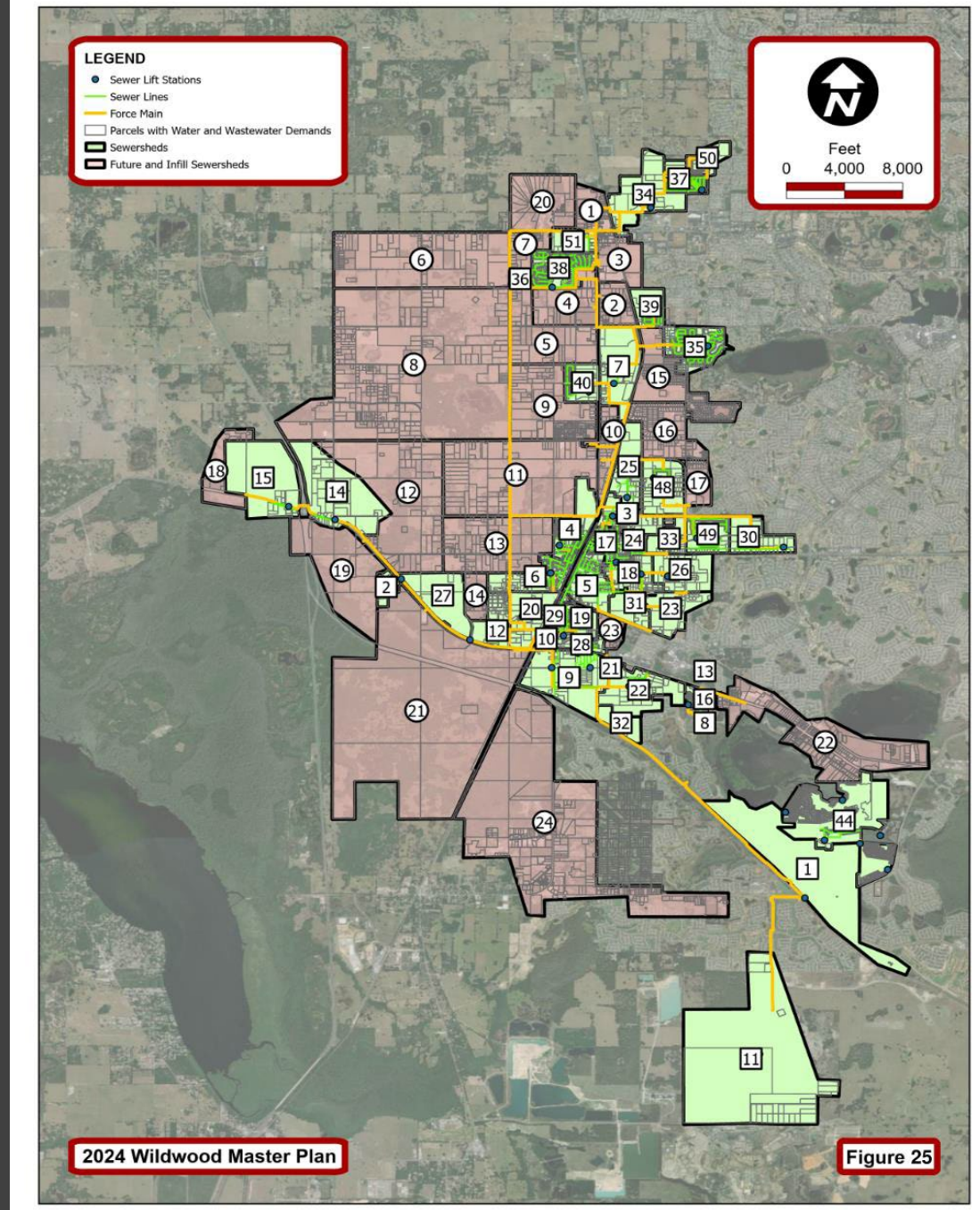
- Kimley-Horn and City Staff performed 20 field lift station tests and evaluations
- Update wastewater system model inputs (pump curves, pipe sizes, existing flows)
- Calibrate wastewater system model based on field testing



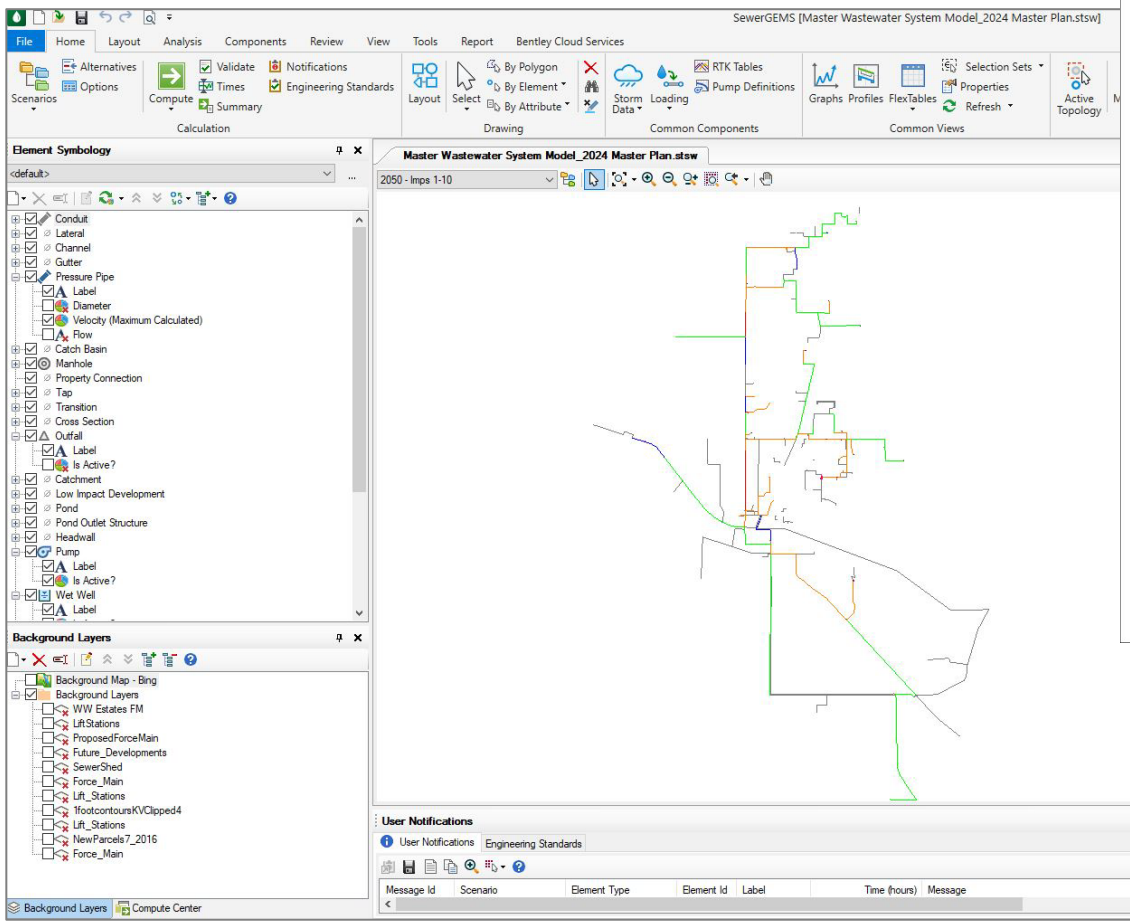


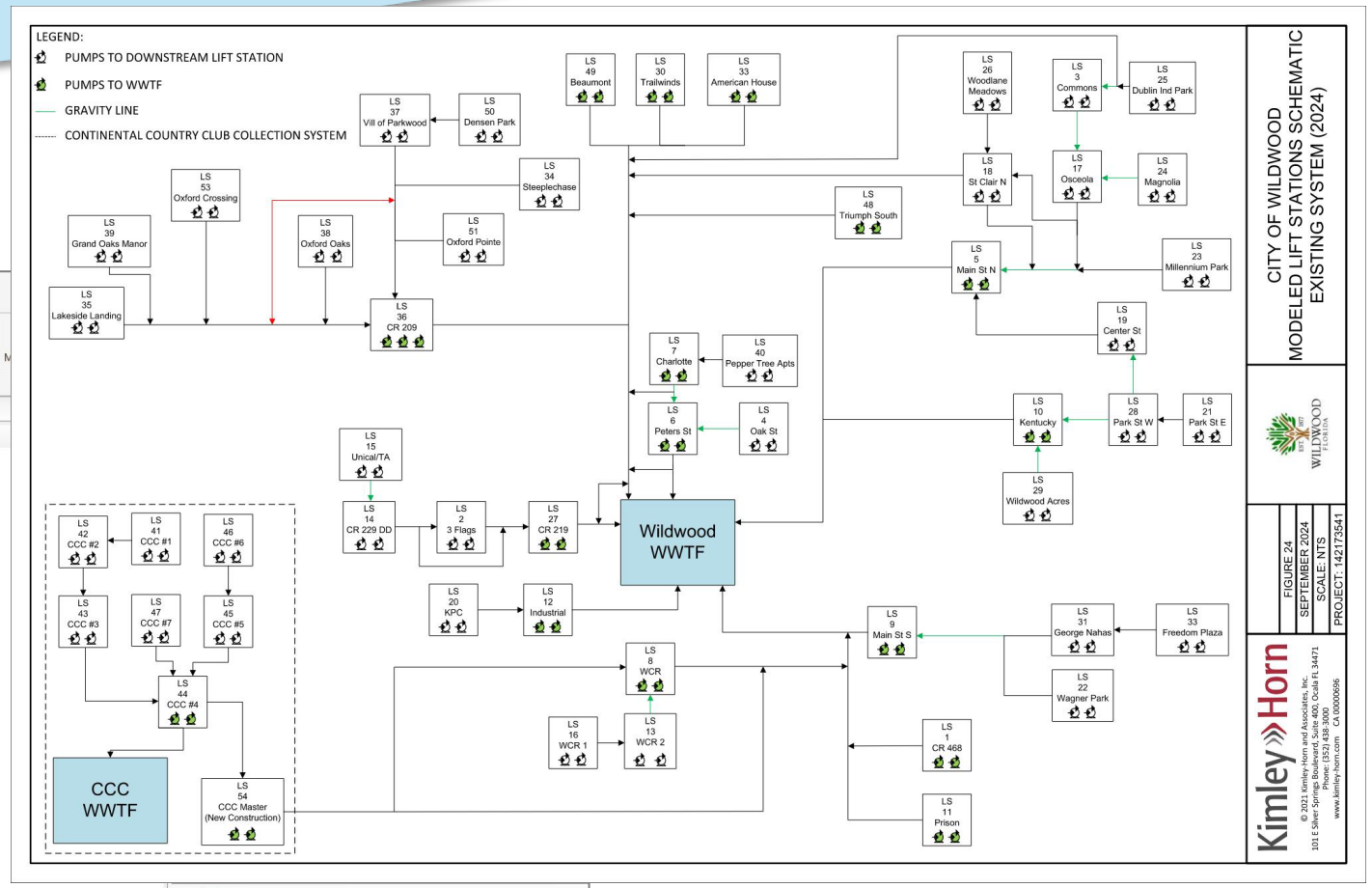
Wastewater Modeling

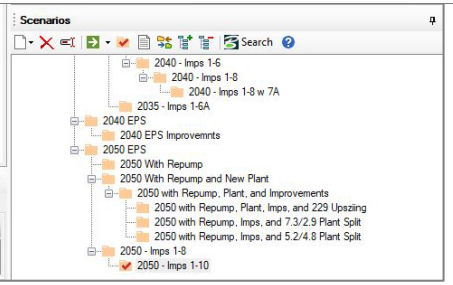
- Identify Existing System Deficiencies by Evaluating System based on Hydraulic Standards
  - Min. force main design velocity: 2 fps
  - Max. force main design velocity: 9 fps
  - Max. force main pressure: 82.5 psig
  - Evaluate Pump Stations to meet Peak Hour loadings while meeting “Firm Capacity”
- Spatially Input Projected Demands for 2025, 2030, 2035, 2040, and Build Out (2050)
- Analyze future scenarios and alternatives



Wastewater Modeling

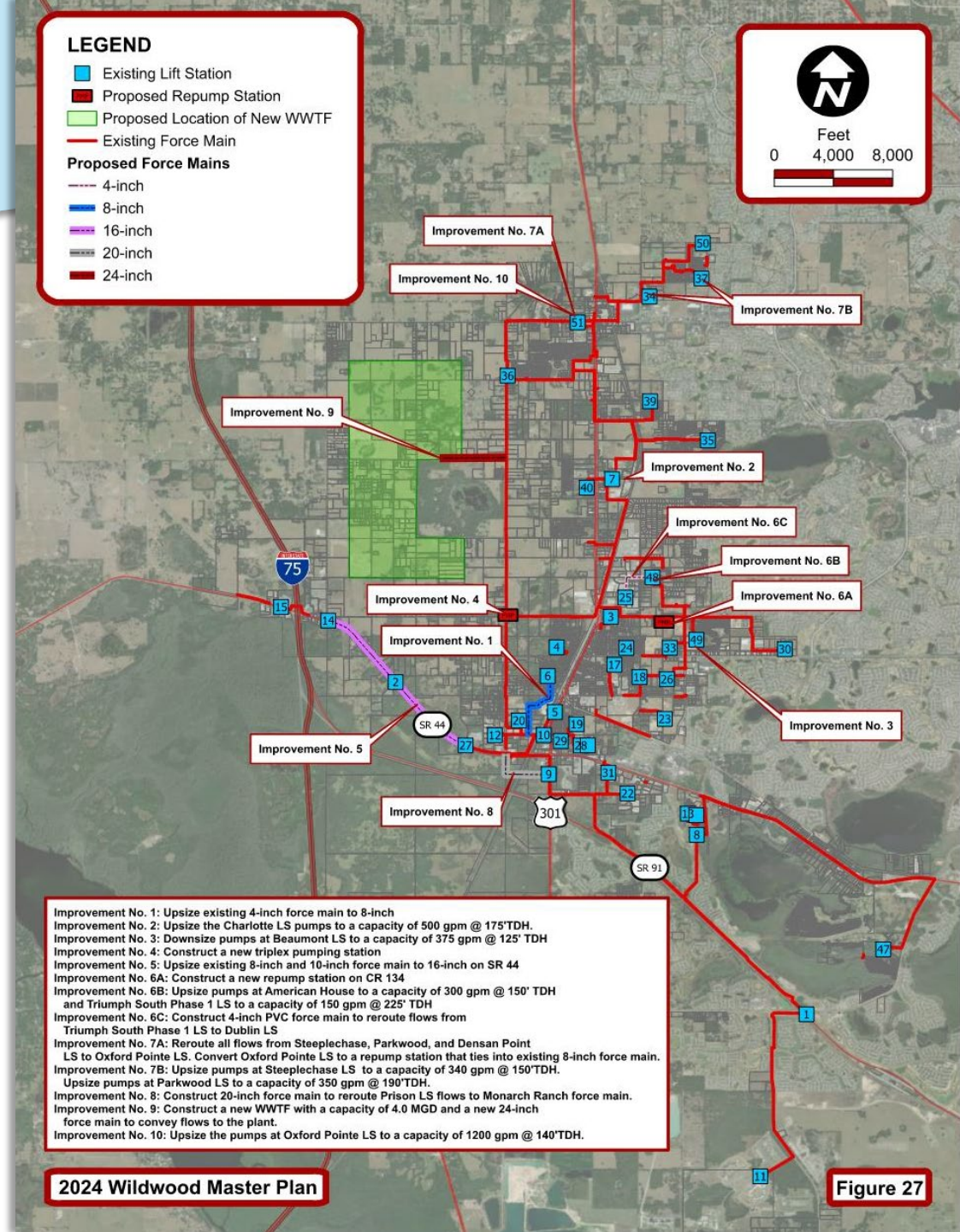






Wastewater CIP (2025)

- **WW Improvement No.1:**
  Peter Street Force Main Upgrades
- **WW Improvement No.2:**
  Charlotte Lift Station Pump Upgrades
- **WW Improvement No.3:**
  Beaumont Lift Station Modifications
  (Reduce Flow from Beaumont):
  - Install New Pumps
  - Install New Pump Impellers
  - Install VFDs on existing Pumps
- **WW Improvement No.4:**
  Trailwinds and CR 209 Repump/Booster Station

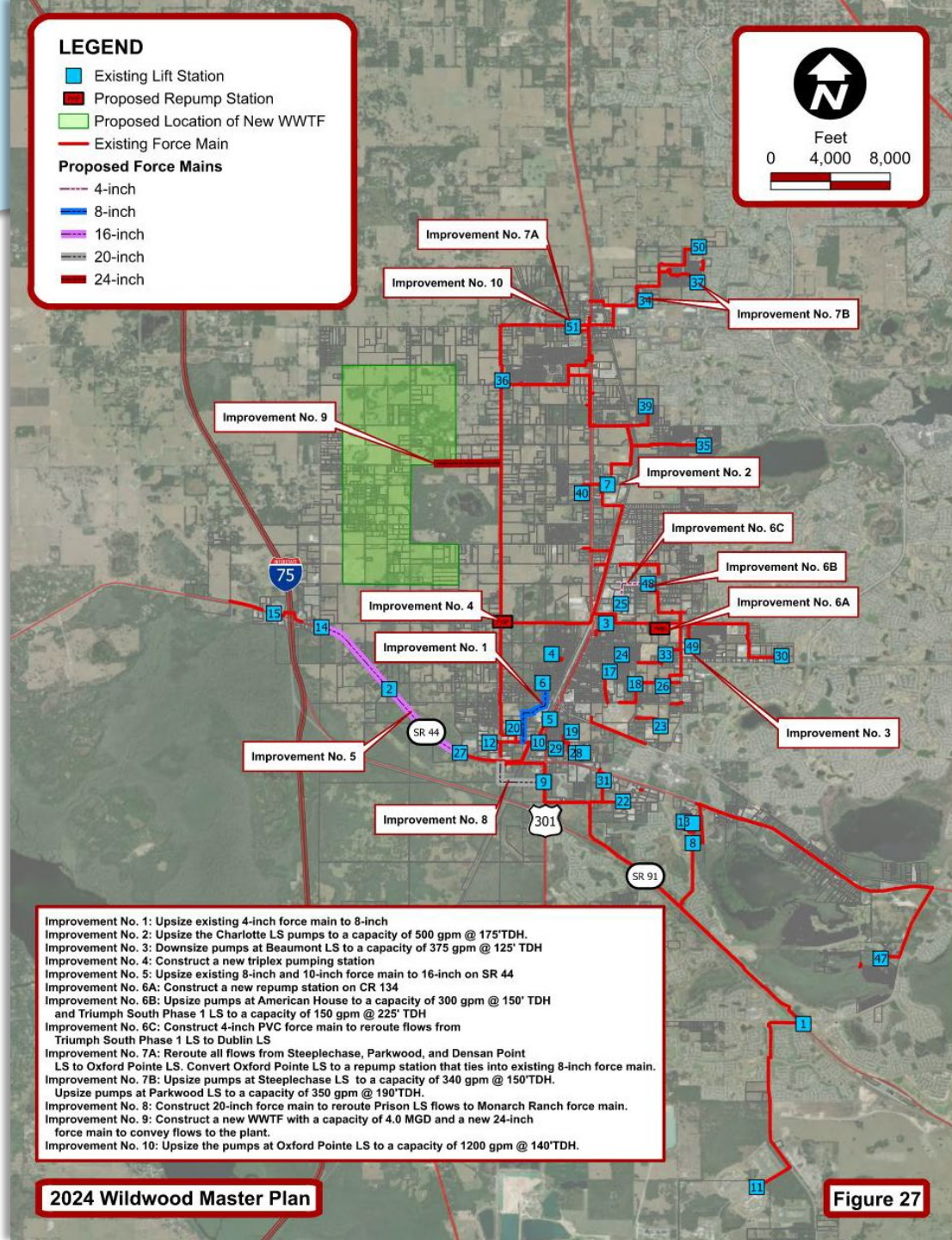


Wastewater CIP (2030)

- **WW Improvement No.5:**
  CR 229 Lift Station Upgrades and Force Main replacement
- **WW Improvement No.6A:**
  Trail Winds Force Main Repump/Booster Station (CR 134)

  - OR -
- **WW Improvement No.6B:**
  Upsize American House and Triumph South Lift Station Pumps

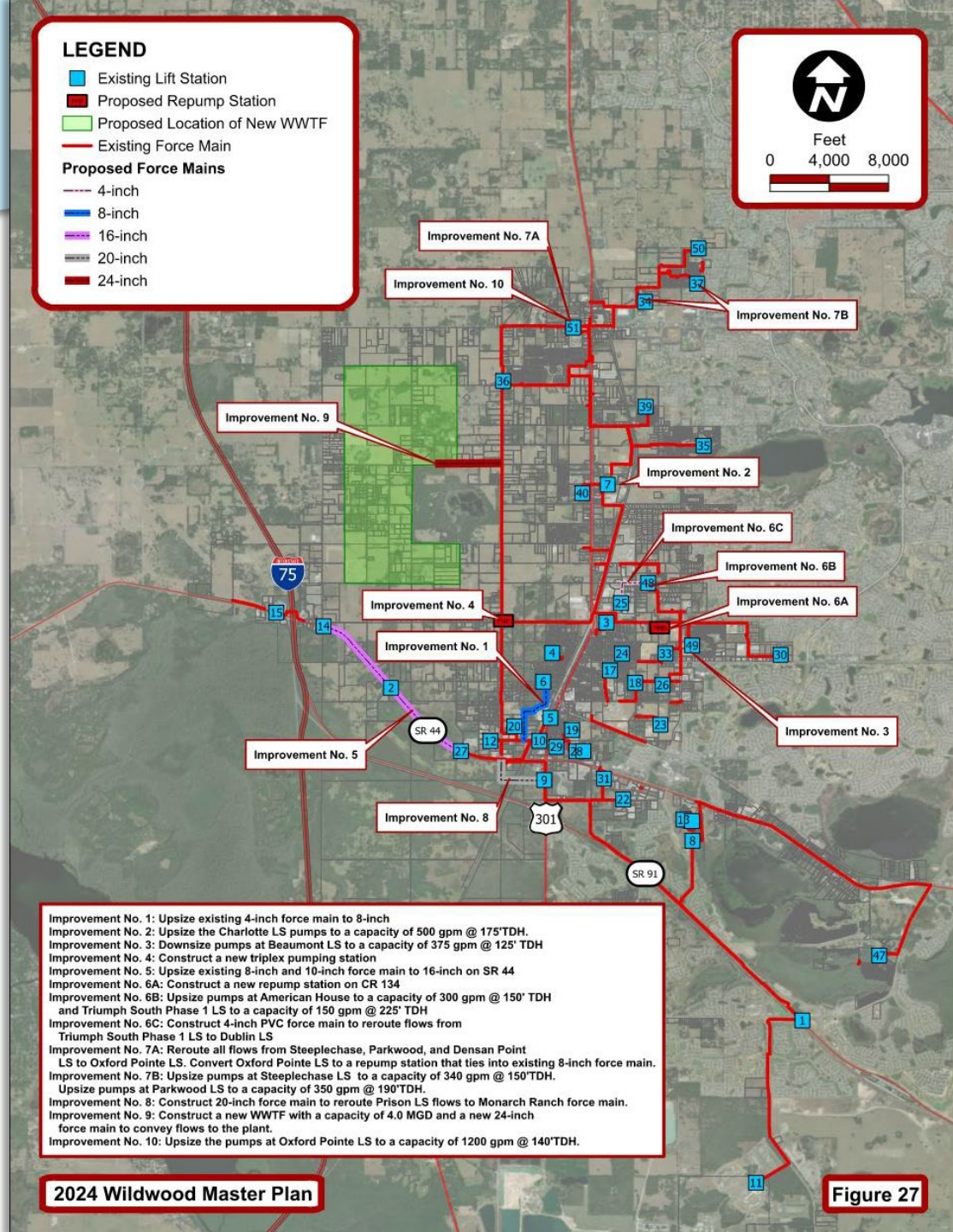
  - OR -
- **WW Improvement No.6C:**
  Reroute Triumph South to Dublin Lift Station



Wastewater CIP (2035)

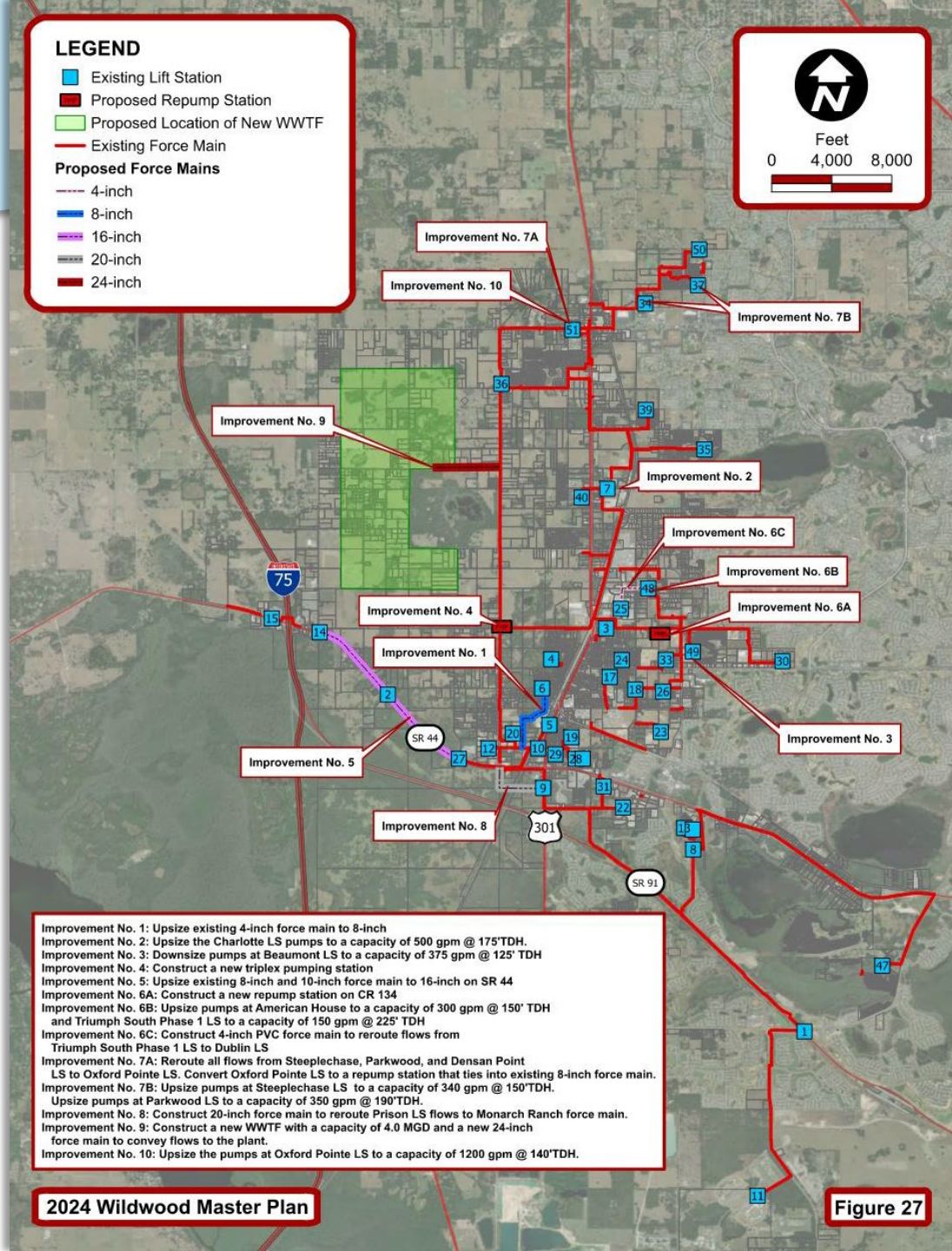
- **WW Improvement No.7:**
  Expand City's WWTF to 8.00 MGD AADF
- **WW Improvement No.8A:**
  Convert Oxford Point Lift Station to a repump station

  - OR -
- **WW Improvement No.8B:**
  Upsize Parkwood and Steeplechase Lift Station pumps



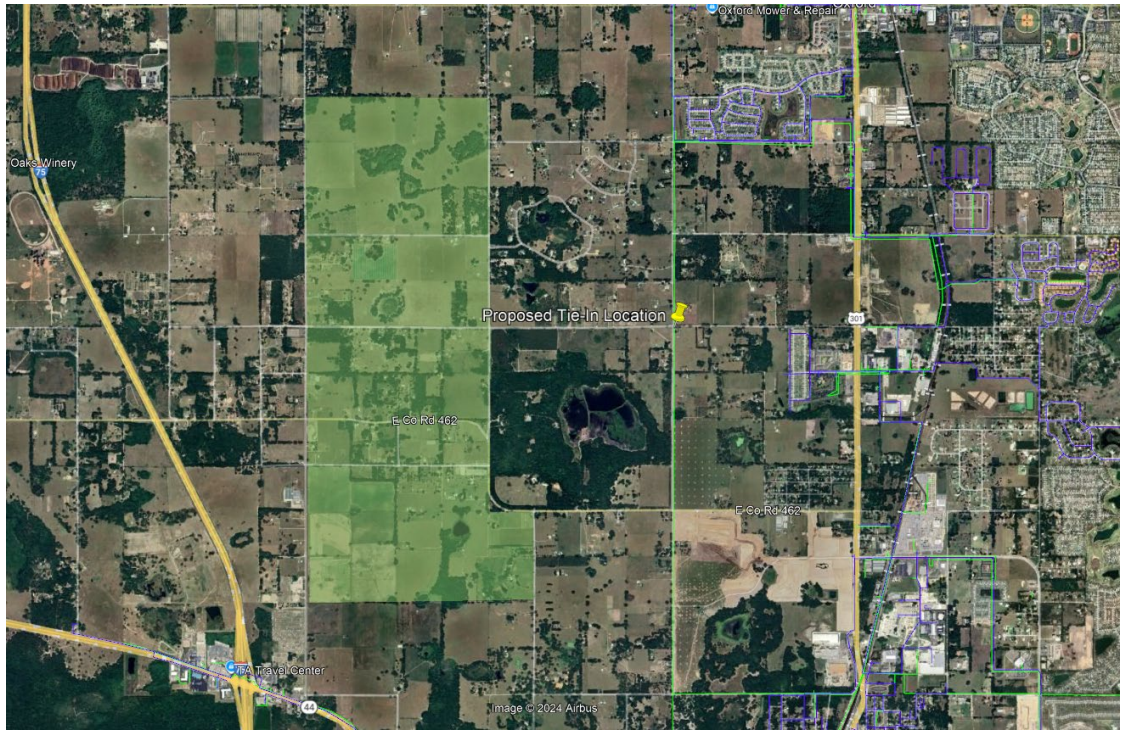
Wastewater CIP (2040)

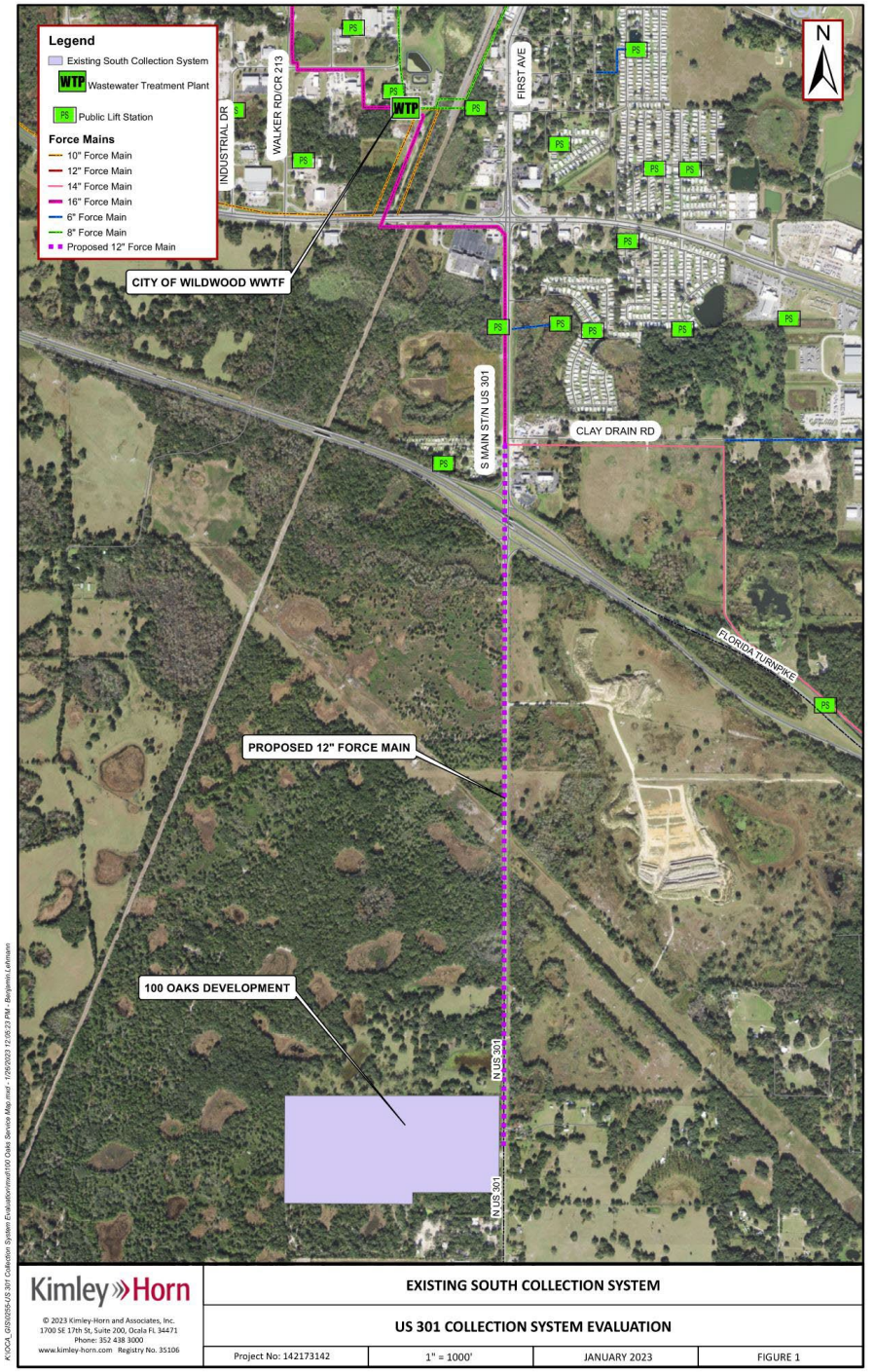
- **WW Improvement No.9:**
  Monarch Ranch Force Main and reroute of Prison Force Main



Wastewater CIP (Build Out 2050)

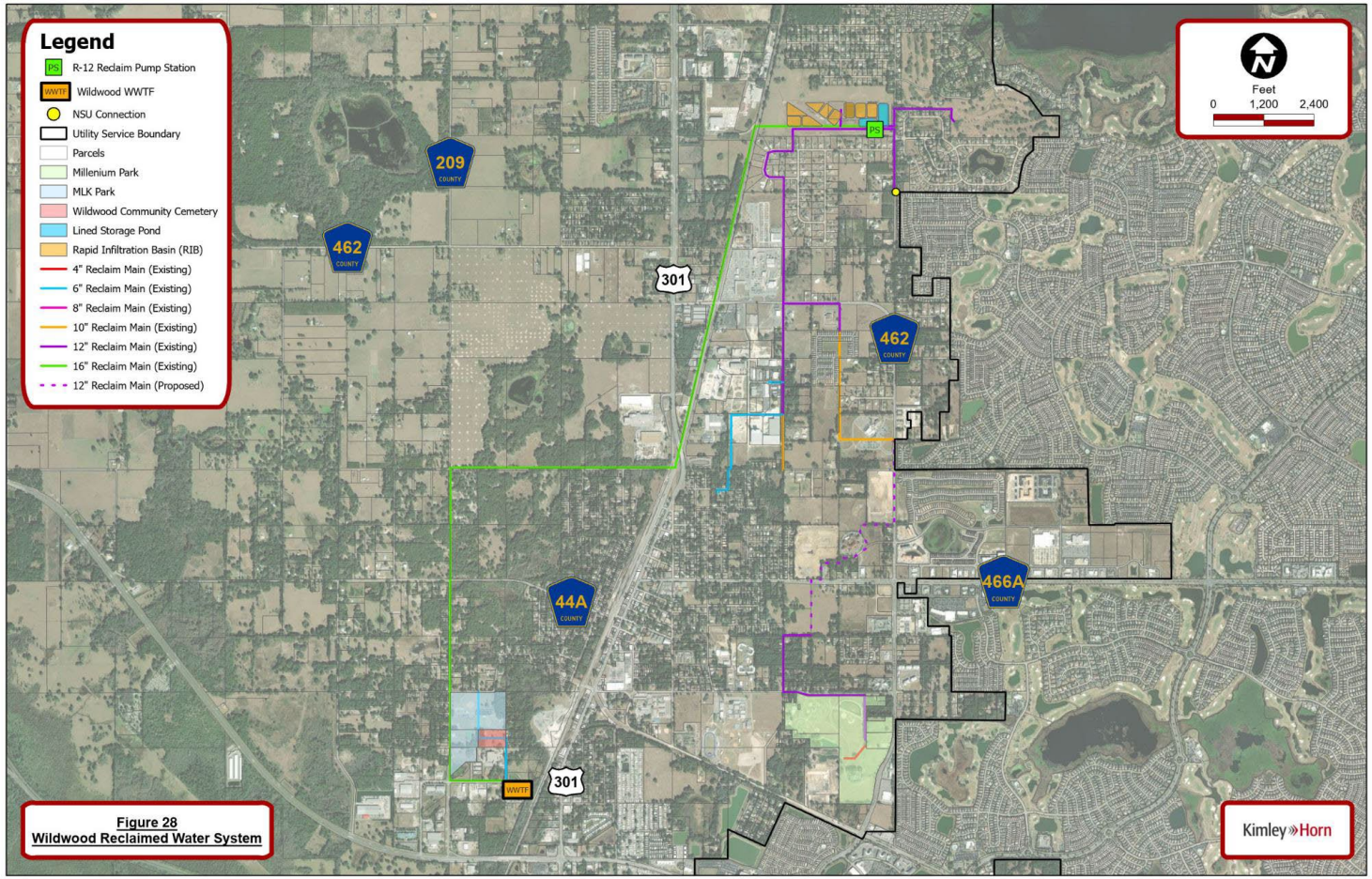
- **WW Improvement No.10:**
  North Wastewater Treatment Facility (4.00 MGD Capacity)
- **Developer Driven Improvement:**
  - US 301/100 Hundred Oaks Force Main





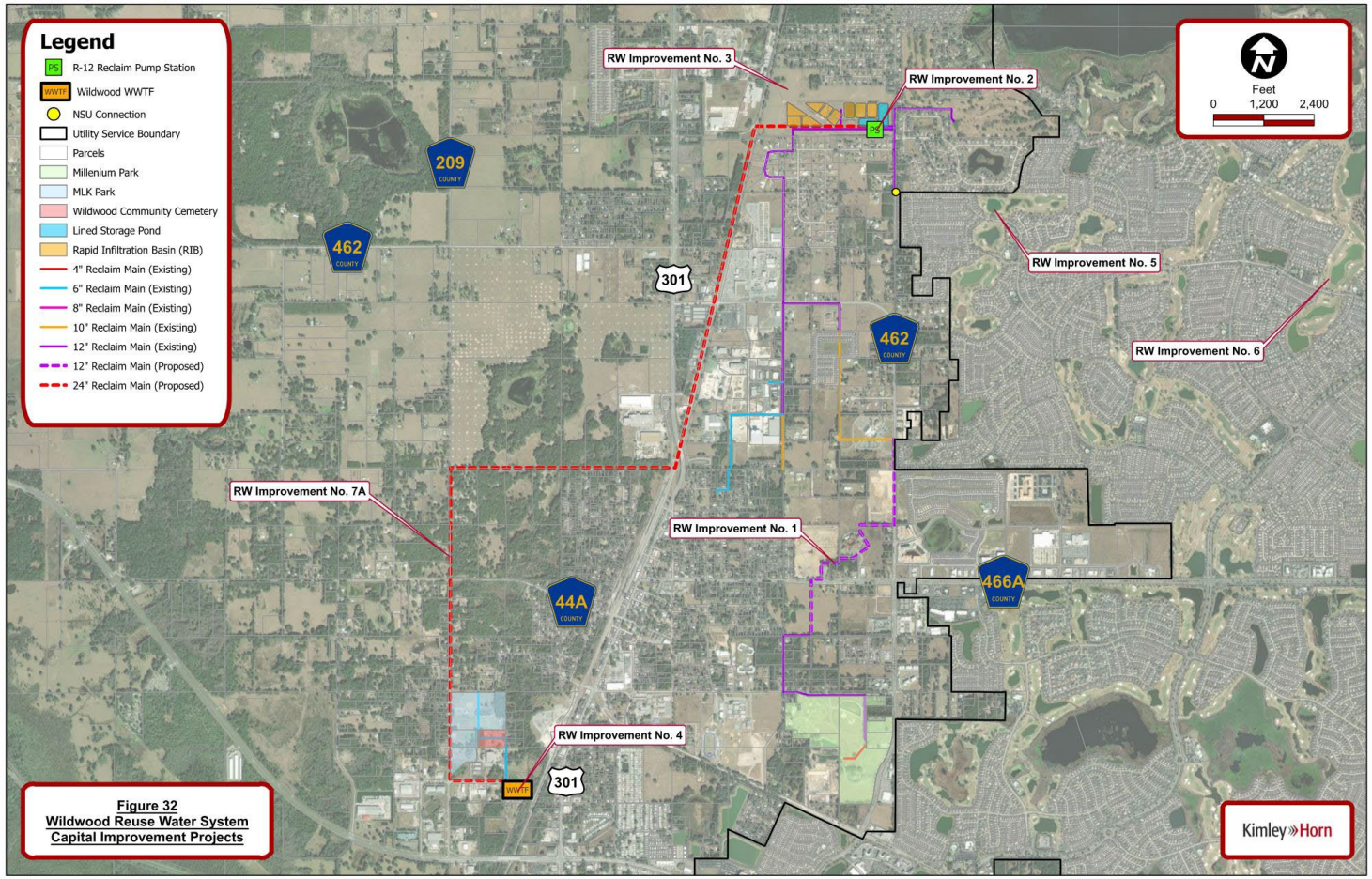
Existing Reuse System

- 2 reuse/effluent disposal methods:
  - R-001: Public Access Reuse with a capacity of 3.30 MGD
  - R-001: Rapid Infiltration Basins (RIBs) with a capacity of 1.06 MGD
    - Total Capacity of 4.36 MGD AADF
- Summary of Flows for 2023
  - R-001: 1.74 MGD (99% goes to NSU)
  - R-002: 0.10 MGD
  - Total: 1.84 MGD



Reuse System Modeling

- Update and Calibrate Reuse System Hydraulic Model
- Spatially input existing reuse water billing data
- Identify Existing System Deficiencies
  - Hydraulic Capacity of System
  - Existing Storage and Storage Requirements
  - Ability to meet system demands and pressure requirements
- Balance projected required Effluent Flows for 2025, 2030, 2035, 2040, and Build Out (2050)
- Analyze future scenarios and alternatives



Effluent Disposal Evaluation

- Evaluate feasibility cost of alternative disposal options to meet future effluent requirements:

Table 59: Wastewater Projection and Proposed WRF Capacity		
Month/Year	**Projected WWTF Flows (MGD)**	**Plant Capacity**
2025	3.42	3.55 MGD (Existing)
2030	5.20	5.50 MGD (Phase 1)
2035	6.23	8.00 MGD (Phase 2)
2040	6.63	
Build Out	10.20	8.00 MGD (Existing Facility) 4.00 MGD Future Facility)

- Spray Fields
- Rapid Infiltration Basins (RIBs)
- RIBs with Constructed Wetland
- Managed Aquifer Recharge Well (AR)
- Deep Injection Well

Reuse System CIP

2025

- Millennium Park Extension – *In progress*
- R-12 Pump Station Upgrades – *Design Complete*

2030

- Expand Existing RIB site and capacity from 1.06 MGD to 4.70 MGD (Including piping improvements)
- Effluent Pump Upgrades with a “Firm” Capacity of 5.50 MGD
- Construct a 2.00-million-gallon Storage Tank/Lined Storage Pond.

2025

- Increase Effluent Disposal Capacity to NSU by constructing two new disposal locations
  - VWCA 8/10
  - VWCA 3/6
- Upsize Effluent main from City WWTF to RIB site from 16-inch to 24-inch
- Identify alternative effluent disposal sites and methodologies to expand City WWTF to 8.00 MGD and future WWTF for a total capacity of 12.00 MGD by Build Out.

Capital Improvement Plan Summary

Kimley»Horn

CITY OF WILDWOOD
2024 UTILITY SYSTEM MASTER PLAN
CAPITAL IMPROVEMENT PROGRAM

WILDWOOD FLORIDA

WATER DISTRIBUTION					
Project No.	**Project**	**Amount**	**Time Frame**	**Capacity Increase**	**System Expansion**
PWS Improvement No. 1	CR 121 Water Main Interconnect - 6,500 LF of 12-Inch WM	$ 1,580,000	2030	N	Y
PWS Improvement No. 2	CR 209 Water Main Phase 3 Extension - 9,000 LF of 20-Inch WM	$ 5,220,000	2030	N	Y
PWS Improvement No. 3	Oxford Oaks Interconnect - 1,200 LF of 12-Inch WM	$ 290,000	2030	N	Y
PWS Improvement No. 6	Oxford WTP Water Main Extension - 6,200 LF of 20-Inch WM	$ 3,810,000	2035	N	Y
PWS Improvement No. 8A	Champagne WTP Extension - 12,000 LF of 20-Inch WM, 6,300 LF of 16-Inch WM	$ 11,580,000	2040	N	Y
PWS Improvement No. 8B	Monarch Ranch WTP Extension - 5,300 LF of 20-Inch WM	$ 3,080,000	2040	N	Y
PWS Improvement No. 9	US 301 Water Main Upsize - Removal of 5,000 LF of 8-Inch WM and installation of 5,000 LF of 12-Inch WM	$ 1,400,000	Build Out	N	Y
PWS Improvement No. 12	Annual Watermain Replacement Program	$200,000/Year	Build Out	N	Y
WATER TREATMENT, PUMPING, AND STORAGE					
Project No.	**Project**	**Amount**	**Time Frame**	**Capacity Increase**	**System Expansion**
PWS Improvement No. 4	Oxford WTP Phase 2 Expansion to 6.62 MGD MDD	$ 3,630,000	2030	Y	N
PWS Improvement No. 5	CR 501 Expansion - High Service Pump and Electrical Upgrades	$ 3,040,000	2030	Y	N
PWS Improvement No. 7A	Champagne WTP - Design, permitting, and construction of a new advanced WTP with permitted max day capacity of 6.71 MGD.	$ 117,770,000	2040	Y	N
PWS Improvement No. 7B	Monarch WTP - - Design, permitting, and construction of a new advanced WTP with permitted max day capacity of 6.71 MGD.	$ 126,490,000	2040	Y	N
PWS Improvement No. 10A	CR 214 Repump Station Rehabilitation - Recommissioning of the CR 214 Repump Station	$ 2,100,000	Build Out	Y	N
PWS Improvement No. 10B	CR 209/CR 222 EST - Construction of a 0.5 MG EST	$ 1,820,000	Build Out	Y	N

Capital Improvement Plan Summary

Kimley»Horn

CITY OF WILDWOOD
2024 UTILITY SYSTEM MASTER PLAN
CAPITAL IMPROVEMENT PROGRAM

WILDWOOD FLORIDA

WASTEWATER COLLECTION					
Project No.	**Project**	**Amount**	**Time Frame**	**Capacity Increase**	**System Expansion**
WW Improvement No. 1	Peter Street Force Main Replacement	$ 1,230,000.00	2025	N	N
WW Improvement No. 2	Charlotte Lift Station Pump Replacement	$ 290,000.00	2025	N	N
WW Improvement No. 3A	Replace Pumps at Beaumont Lift Station	$ 290,000.00	2025	N	N
WW Improvement No. 3B	Replace Pump Impellers at Beaumont Lift Station	$ 12,000.00	2025	N	N
WW Improvement No. 3C	Install VFDs for the Pumps at Beaumont Lift Station	$ 90,000.00	2025	N	N
WW Improvement No. 4	Trailwinds and CR 209 Booster/Repump Station	$ 3,130,000.00	2025	N	N
WW Improvement No. 5	Upsize CR 229 Lift Station and Force Main	$ 3,650,000.00	2030	N	N
WW Improvement No. 6A	Repump Station for Trailwinds Forcemain on CR 134	$ 2,460,000.00	2030	N	N
WW Improvement No. 6B	Upsize American House and Triumph South 1 pumps	$ 580,000.00	2030	N	N
WW Improvement No. 6C	Reroute Triumph South 1 to Dublin Lift Station	$ 340,000.00	2030	N	N
WW Improvement No. 7A	Convert Oxford Pointe Lift Station into repump station	$ 370,000.00	2035	N	N
WW Improvement No. 7B	Upsize Steeplechase and Parkwood pumps	$ 580,000.00	2035	N	N
WW Improvement No. 8	Upsize and reroute the Prison force main through Monarch Ranch	$ 1,420,000.00	2040	N	Y
WW Improvement No. 10	Upsize Oxford Pointe Pumps	$ 290,000.00	2050	N	N
WASTEWATER TREATMENT					
Project No.	**Project**	**Amount**	**Budget Year**	**Capacity Increase**	**System Expansion**
WW Improvement No. 9	Additional WWTF in NW Wildwood	$ 203,000,000	2050	Y	N

Capital Improvement Plan Summary

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CITY OF WILDWOOD
2024 UTILITY SYSTEM MASTER PLAN
CAPITAL IMPROVEMENT PROGRAM

WILDWOOD FLORIDA

REUSE WATER AND EFFLUENT DISPOSAL					
Project No.	**Project**	**Amount**	**Budget Year**	**Capacity Increase**	**System Expansion**
RCW Improvement No. 1	Construct: Complete Remaining Phases of the Millennium Park Reuse Extension	$ 1,510,000	2025	N	Y
RCW Improvement No. 2	Construct: R-12 Reuse Pump Station	$ 4,390,000	2025	N	N
RCW Improvement No. 2A	Construct: Phase 2 of R-12 Reuse Pump Station	$ 520,000	2025	Y	N
RCW Improvement No. 3	Design and Construct: Expand and Rerate the Rapid Infiltration Basin capacity from 1.06 MGD to 4.70 MGD	$ 4,650,000	2025	Y	N
RCW Improvement No. 4	Design and Construct: New Effluent Transfer Pump Station with a firm pumping capacity of 5.50 MGD and a 2.00 MG Prestressed Ground Storage Tank at the City's WWTF.	$ 4,980,000	2026	Y	N
RCW Improvement No. 5	Design and Construct: VWCA 8/10 Connection Point	$ 460,000	2030	Y	N
RCW Improvement No. 6	Design and Construct: VWCA 3/6 Connection Point	$ 460,000	2030	Y	N
RCW Improvement No. 7A	Design and Construct: Replace approximatly 24,000 LF of existing 16-inch effluent main with 24-inch PVC DR-18 effluent main.	$ 17,400,000	2035	Y	N
RCW Improvement No. 7B	Find an alternative effluent disposal site and design and construct the necessary improvements to meet the effluent disposal requirements for Phase II (8.00 MGD) of the City's WWTF Expansion.	N/A	2035	Y	N
	DENOTES THAT PROJECT IS COMPLETE OR IN PROGRESS				
	DENOTES THAT PROJECT IS DEVELOPER DRIVEN				