Regional Study for Integration

Society of American Military Engineers
Infrastructure Forum 2025

February 28, 2025

NORTH TEXAS MUNICIPAL WATER DISTRICT

trwd Tarrant Regional Water District

City of Dallas
Dallas Water Uti

NTMWD – By the Numbers

WATER SERVICES	WASTEWATER SERVICES	SOLID WASTE SERVICES
20 MAJOR RAW AND TREATED WATER PUMP STATIONS	13 WASTEWATER TREATMENT PLANTS	3 TRANSFER STATIONS PERMITTED TO PROCESS UP TO 4,100 TONS OF SOLID WASTE PER DAY
7 WATER TREATMENT PLANTS 946 MILLION GALLONS/DAY (MGD) CAPACITY	237+ MILES OF LARGE-DIAMETER WASTEWATER PIPELINES	
695+ MILES OF WATER TRANSMISSION LINES	163+ MGD WASTEWATER TREATMENT CAPACITY	AROUND 1 MILLION TONS OF SOLID WASTE DISPOSED EACH YEAR

Why Our Region is So Popular

The North Texas Municipal Water District provides treated water to **2.3 million people** in **13 Member Cities**, along with 36 other Direct Customers in one of the fastest-growing parts of the United States.

Growth is expected to continue, driven by factors that include:

- Job opportunities
- High quality of life in the region
- Business-friendly policies
- Multiple universities and research hubs
- Access to transportation for moving goods

Member Cities

Allen
Farmersville
Frisco
Forney
Garland
McKinney
Mesquite
Plano
Princeton
Richardson
Rockwall
Royse City
Wylie

Other Direct Customers

(36 in these 10 counties)

Collin
Denton
Dallas
Fannin
Grayson
Hunt
Hopkins
Kaufman
Rains
Van Zandt

Population Changes in Just Four Years

Population Served by NTMWD

2020
2 Million

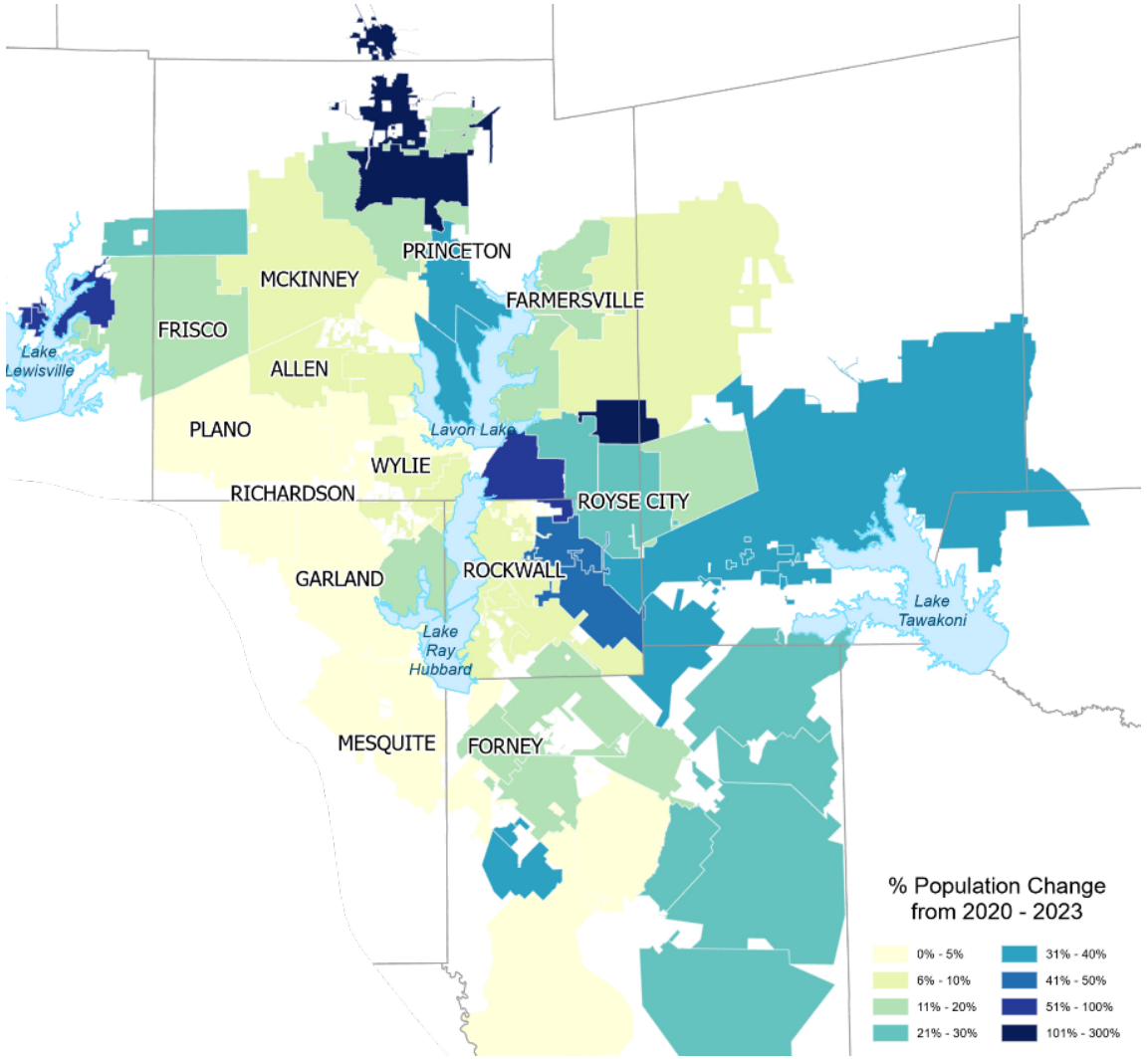
2024
2.3 Million

Top 10 Fastest-Growing U.S. Counties (People Added), 2023

2. Collin County (+36,364)
6. Denton County (+29,943)

Top 10 Fastest-Growing U.S. Counties (%), 2023

1. Kaufman County (+7.6%)
2. Rockwall County (+6.5%)



Source: U.S. Census Bureau

Where Our Water Comes From Now

Existing Sources

- Lavon Lake
- Bois d'Arc Lake
- Lake Texoma
- Lake Tawakoni
- Jim Chapman Lake
- Water Reuse, including East Fork Reuse Project

Our water treatment plants that produce potable water can handle **up to 946 Million Gallons Per Day:**

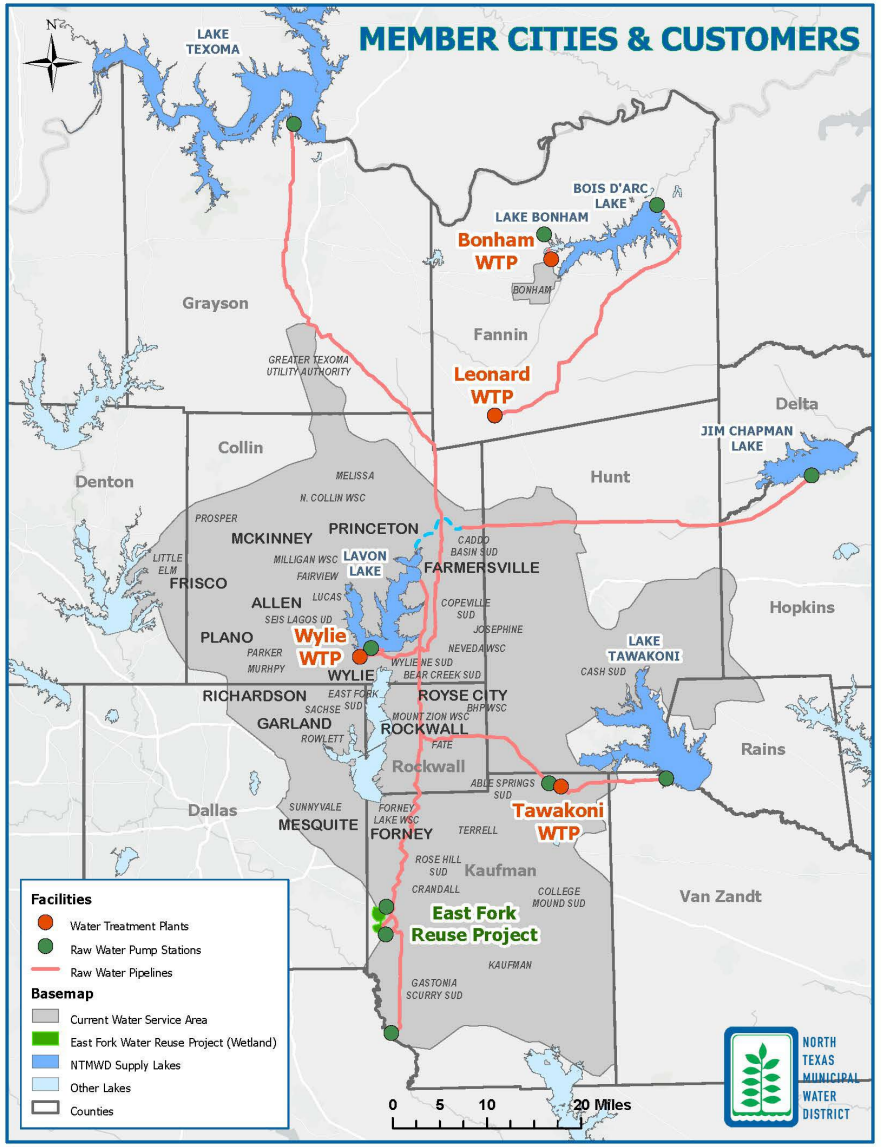
Wylie WTP

- Wylie I **70 MGD**
- Wylie II **280 MGD**
- Wylie III **280 MGD**
- Wylie IV **210 MGD**

Leonard WTP **70 MGD**

Bonham WTP **6 MGD**

Tawakoni WTP **30 MGD**



Future Needs

2024

RELIABLE SUPPLIES OF

400+MILLION

GALLONS PER DAY (MGD)

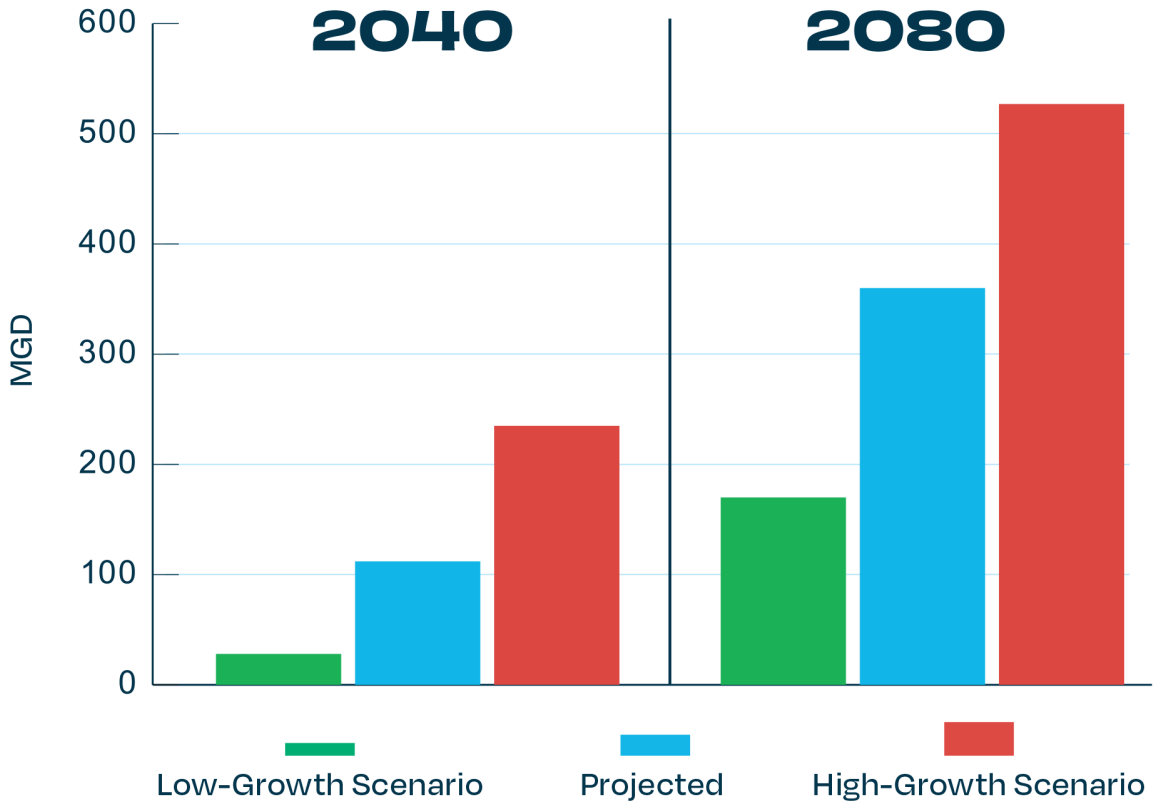
2080

PROJECTED NEED OF

800+MILLION

GALLONS PER DAY (MGD)

Additional Needs (with 10% for uncertainty)



Water Management Strategies LRWSP 2024

Near Term Potential Strategies

A. Fresh Groundwater Site A

B. Fresh Groundwater Site B

C. Additional Wetland with Indirect Reuse

D. Indirect Reuse with Advanced Treatment

E. Direct Potable Reuse

F. Additional Lavon (Raw Water Pump Station #4)

G. Additional Texoma with Desalination

H. Additional Texoma Blending with New Fresh Water Sources at Tawakoni WTP

I. Lake O' the Pines

**Supplies in orange are potential joint strategies

Medium to Long Term Potential Strategies

A. Wylie WTP ASR

B. Leonard WTP ASR

C. Additional Texoma Blending with New Fresh Water Sources at Leonard WTP

D. Toledo Bend (Joint with Partners)

E. Toledo Bend (NTMWD Alone)

F. Wright Patman Reallocation

G. Lake Columbia

H. George Parkhouse I (South)

I. George Parkhouse II (North)

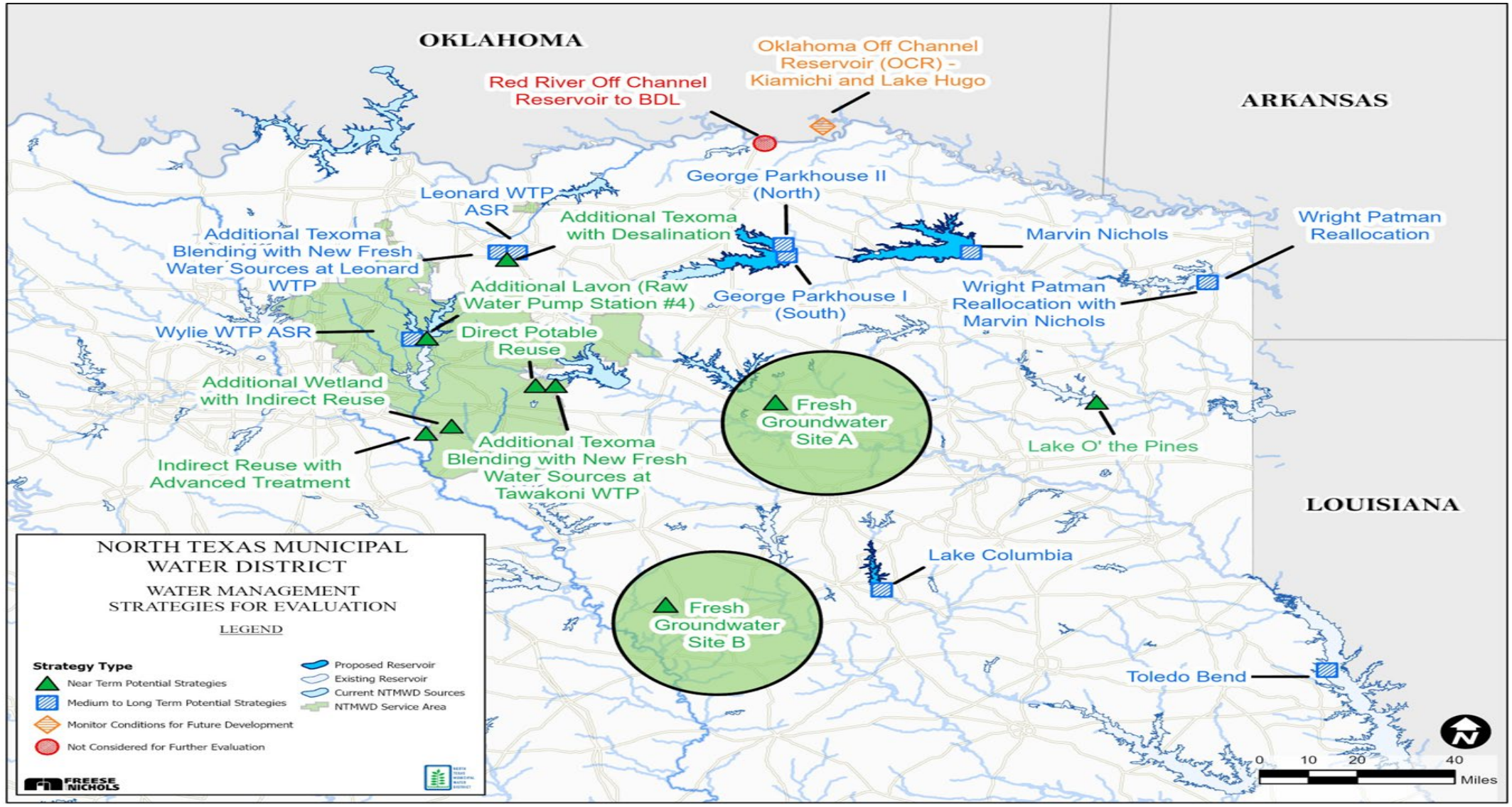
J. Marvin Nichols (Joint with Partners)

K. Wright Patman Reallocation with Marvin Nichols (Joint with Partners)

Monitor Conditions for Future Development

L. Oklahoma Off Channel Reservoir (OCR) - Kiamichi and Lake Hugo*

Water Management Strategies

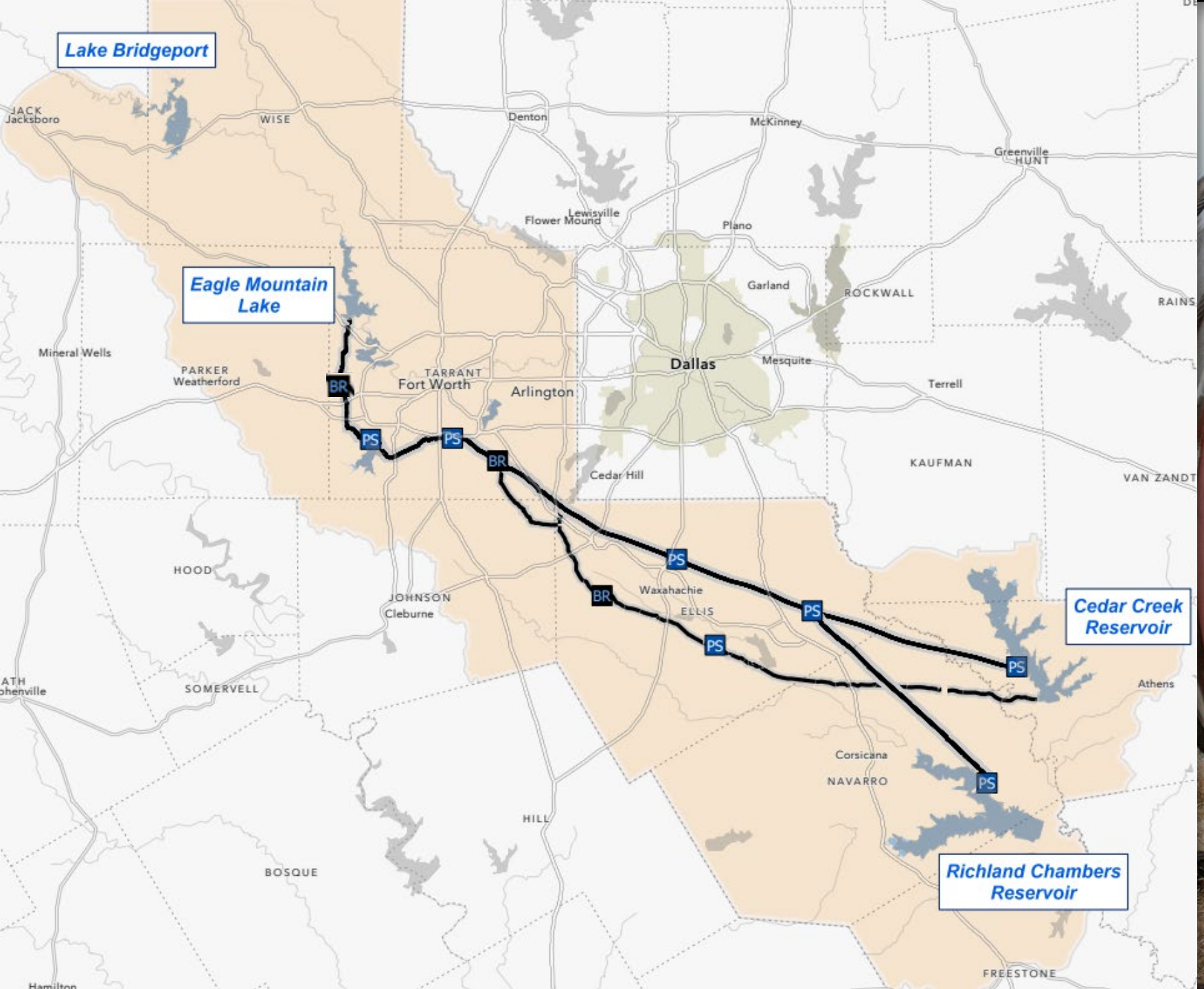


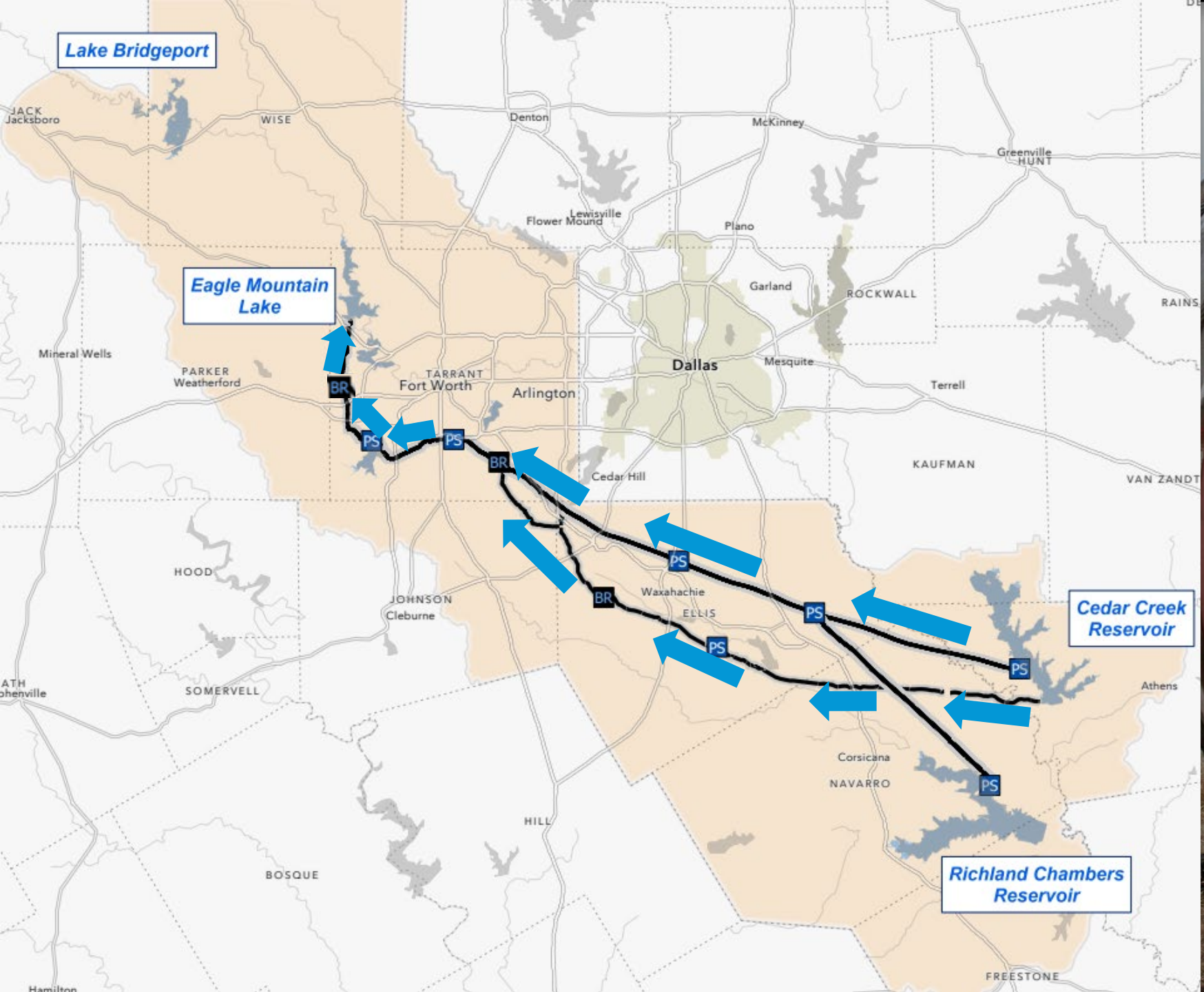
trwd Tarrant Regional Water District

Water Supply

Flood Protection

Recreation


Lake Bridgeport
Eagle Mountain Lake
Cedar Creek Reservoir
Richland Chambers Reservoir
JACK
Jacksboro
WISE
Denton
McKinney
Greenville
HUNT
Flower Mound
Lewisville
Plano
Garland
ROCKWALL
RAINS
Mineral Wells
PARKER
Weatherford
TARRANT
Fort Worth
Arlington
Dallas
Mesquite
Terrell
KAUFMAN
VAN ZANDT
Cedar Hill
HOOD
JOHNSON
Cleburne
Waxahachie
ELLIS
Athens
SOMERVELL
Corsicana
NAVARRO
HILL
BOSQUE
FREESTONE
BR
PS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NAVARRO
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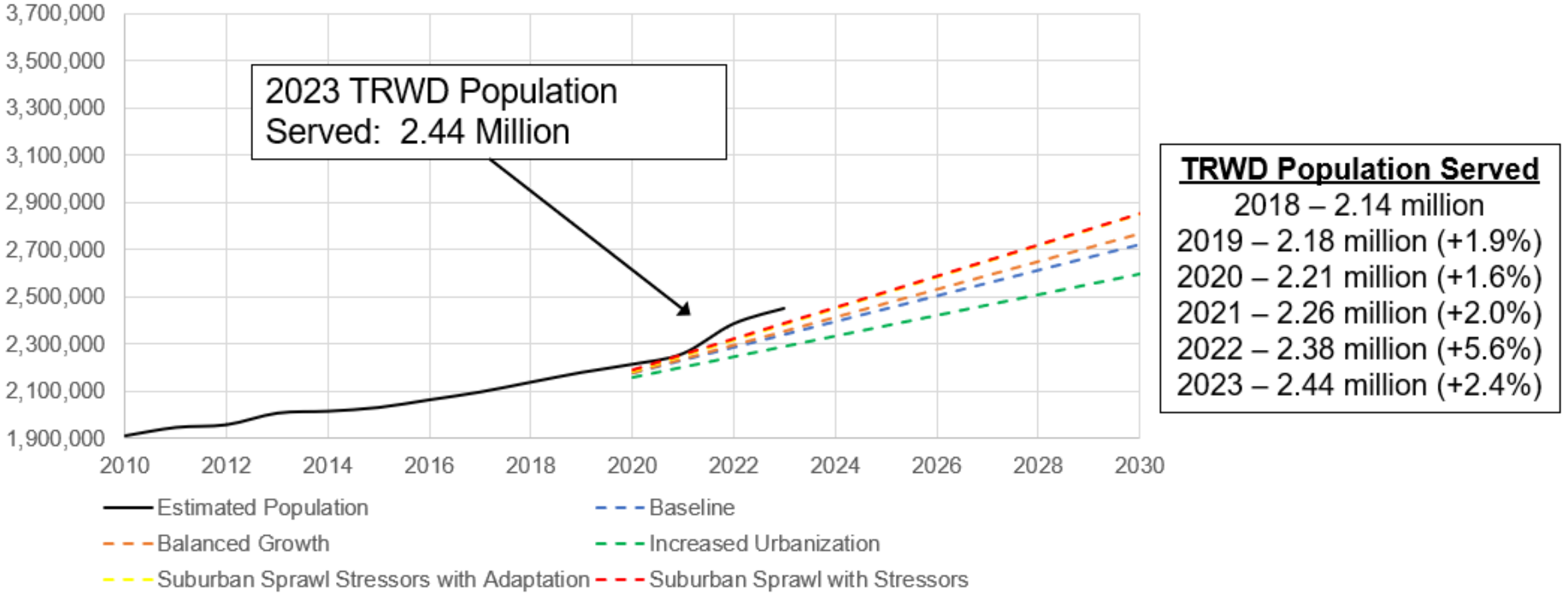
FREESTONE

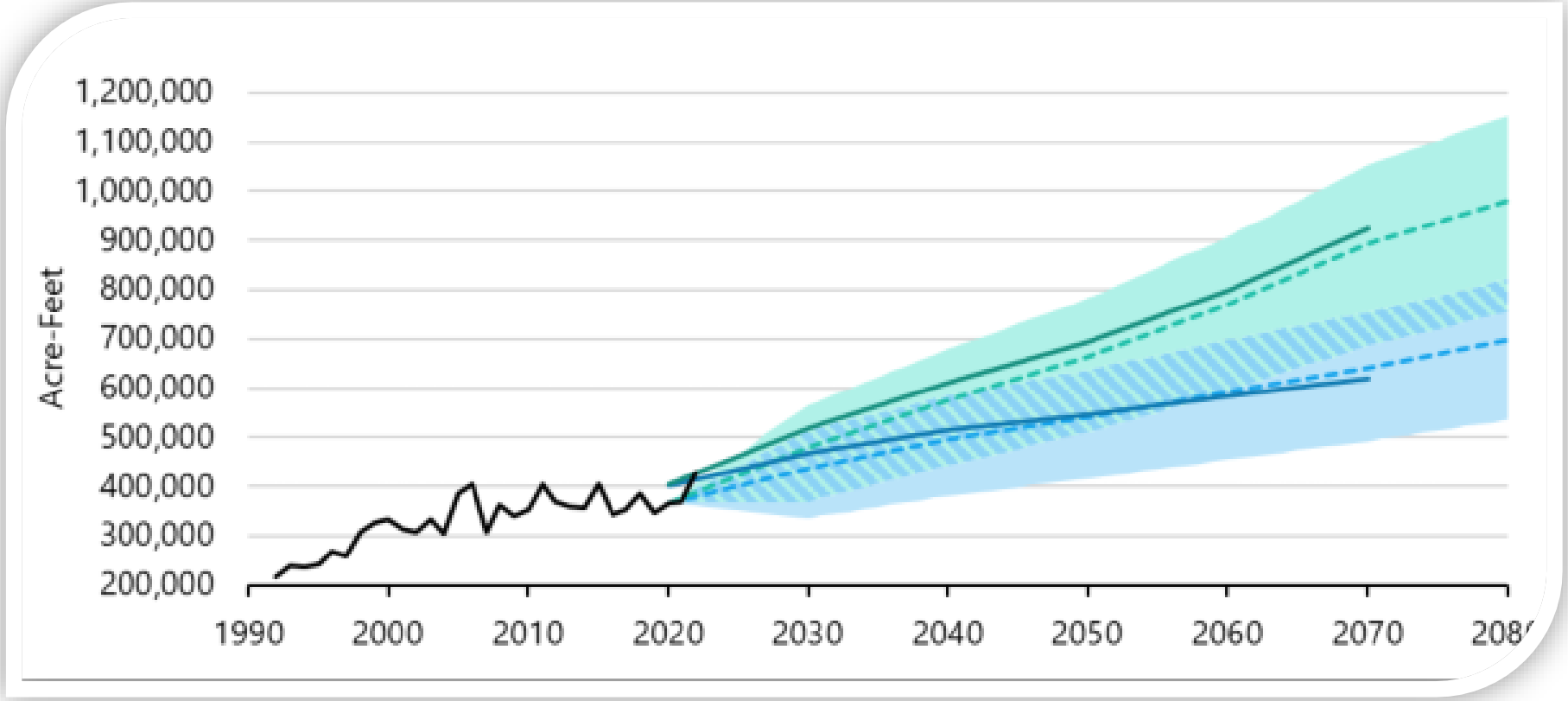
Projected Population Growth vs Actuals



TRWD Population Served

2018 – 2.14 million
2019 – 2.18 million (+1.9%)
2020 – 2.21 million (+1.6%)
2021 – 2.26 million (+2.0%)
2022 – 2.38 million (+5.6%)
2023 – 2.44 million (+2.4%)

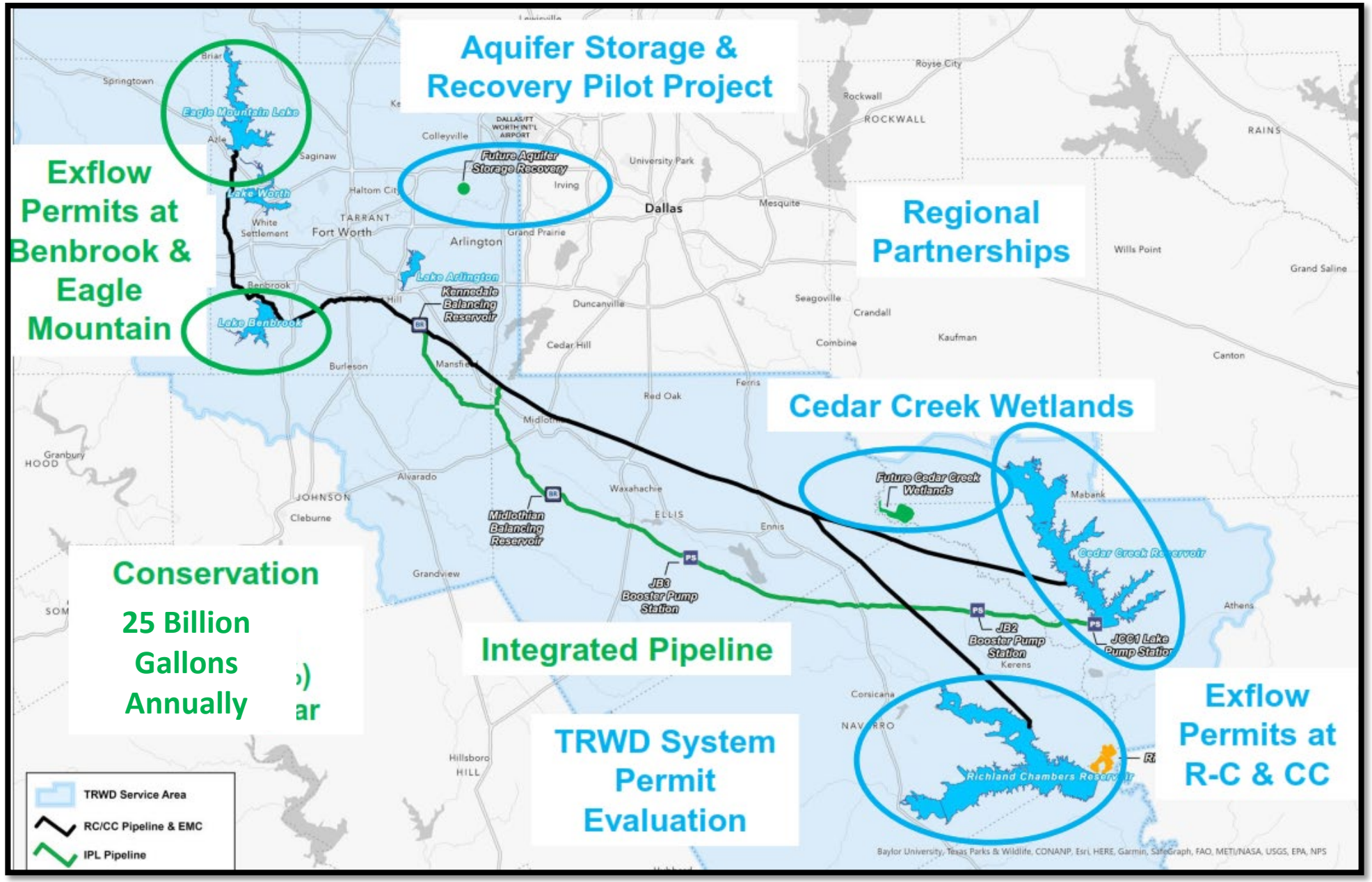
Integrated Water Supply Plan (IWSP)



Suite of Future Water Supply Options

- Conservation
- System Optimization
- Wetlands/ Reuse
- Regional Partnerships
- Groundwater
- Purchase from Existing Reservoirs
- New Reservoirs

Recent and Current Water Supply Projects



IWSP Foundation…. What's most important to us?

Setting Objectives & Evaluation Criteria

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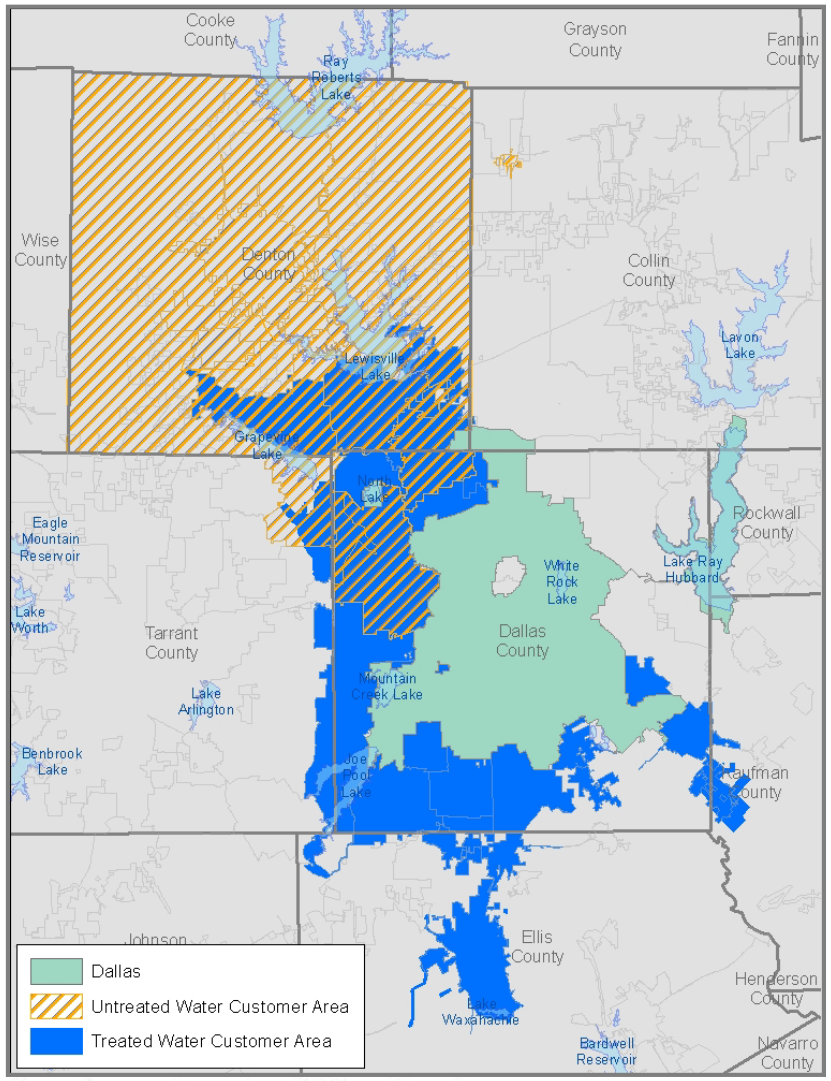
February 28, 2025
Dallas College – Cedar Valley Campus

Denis Qualls, P.E., BC. WRE
Superintendent, Planning
Dallas Water Utilities
City of Dallas

Dallas Water Utilities Overview



- Established by City Charter in 1881
- Operates under Dallas City Codes: 49, 51 and 19
- Regional provider of water, wastewater, stormwater and flood control services
- Fiscal Year 2023 net capital water and wastewater assets of $6.09B
- Funded from wholesale and retail water and wastewater revenues and stormwater fees (receives no tax dollars)
- Approximately 1,600 employees
- Combined operating and capital budgets of $1.23B

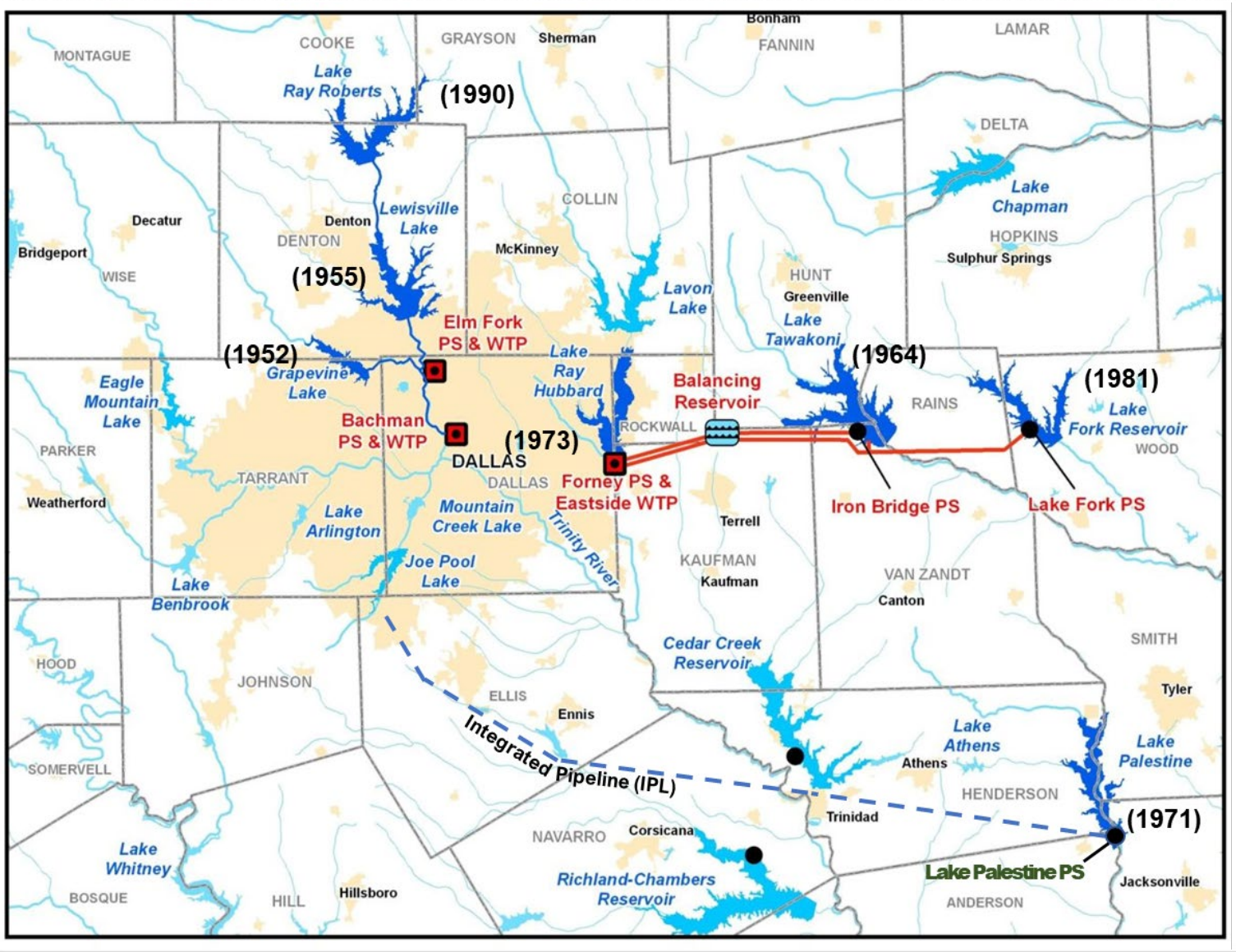
Fiscal Year 2024-25 Budgets

Budget	DWU	SDM	Total
Operations	$826.8 M	$85.9 M	$912.7 M
Capital	$328.2 M	$47.5 M	$375.7 M
2024 Bond		$1.8 M	$1.8 M
Total	$1,155.0 M	$135.2 M	$1,290.2 M

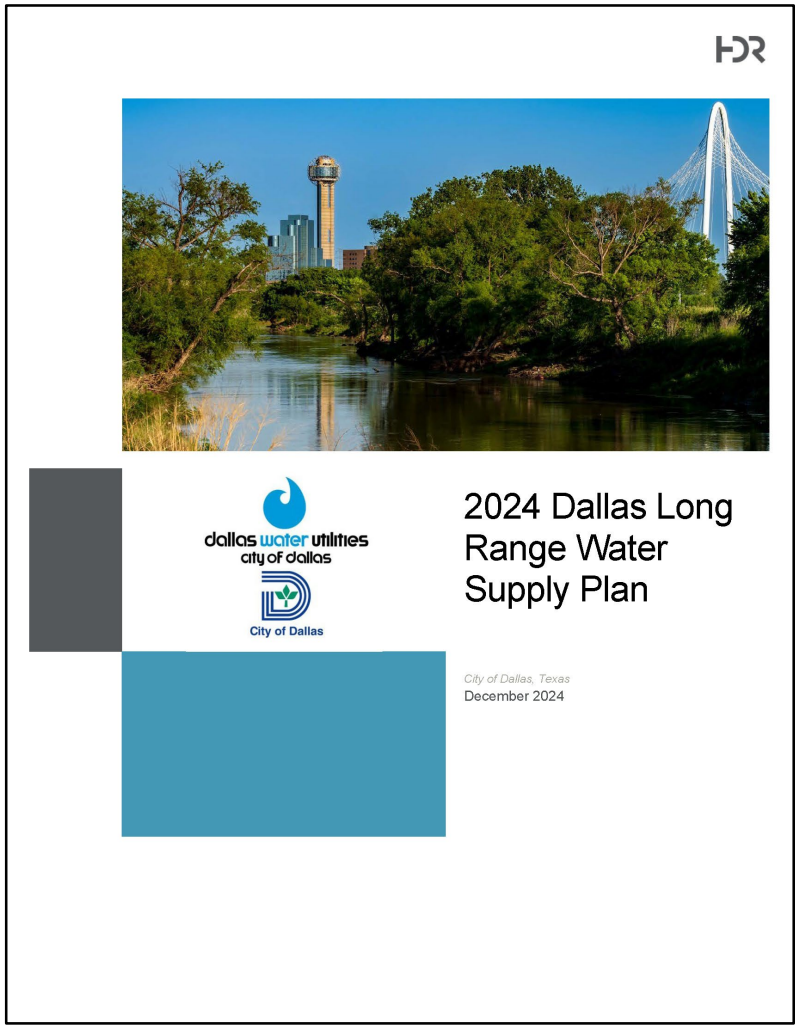
City of Dallas One Water

	ASSETS	CUSTOMERS	INFRASTRUCTURE NEEDS
	**WATER** • 7 reservoirs, (6 connected, 1 currently being connected) • 5,076 miles of water mains • 3 water treatment plants (900 MGD capacity) • 29 pump stations, 10 elevated and 13 ground storage tanks	**2.6 million treated water customers** • 1.3 million – Retail (City of Dallas) • 1.3 million – Wholesale • 23 wholesale treated water • 4 wholesale untreated water	**$7.75 billion** • $2.12B - Pipelines • $5.63B - Facilities & Existing Raw Water Infrastructure **New Water Supply Needs** • $5.06 billion
	**WASTEWATER** • 2 wastewater treatment plants (280 MGD capacity) • 4,081 miles of wastewater main • 15 wastewater lift stations	**313,320+ retail customer accounts** • 11 wholesale wastewater	**$3.55 billion** • $2.05B - Pipelines • $1.5B - Facilities
	**STORMWATER** • 8 major storm water pump stations (5.7 BGD capacity) • 1,885 miles of storm sewers • 30 miles of levees • 34,800 acres of floodplain	**300,000 storm water accounts** • 265,979 Residential • 29,470 Commercial	**$3.43 billion** $1.66B – Flood Management $1.66B – Storm Drainage $106.5M – Erosion Control

Dallas' Regional Water Supply System



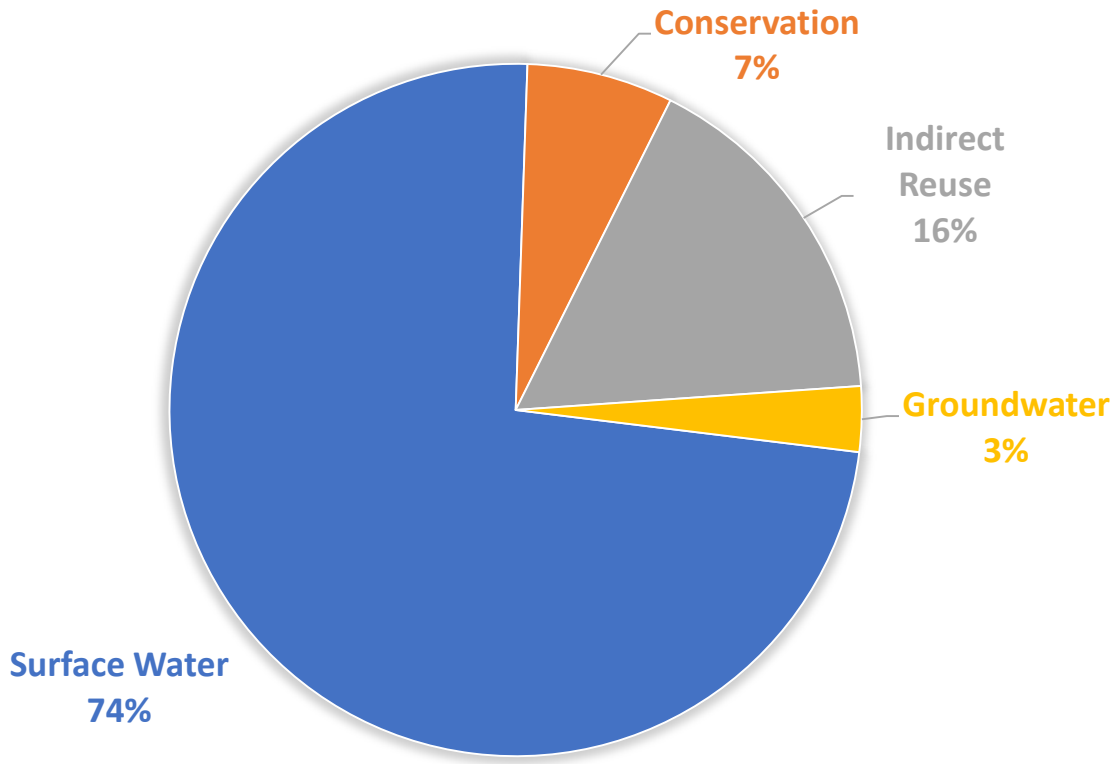
Long Range Water Supply Plan



- The current era of long-range water supply planning was in response to the drought of the 1950's
- The 1959 Plan was updated in 1975, 1989, 2000, 2005, 2014, and 2024
- Long Range Water Supply Plans (LRWSP) on average are updated every ten years
- The 2024 LRWSP update evaluated:
  - Changes in population and demand projections
  - Changed conditions associated with current water supplies and recommended and alternate water management strategies
- 2024 LRWSP Recommended Strategies, Alternate Strategies and Infrastructure Recommendations approved by Council (December 11, 2024)
  - Adopted strategies in Plan designed to meet demands to the year 2080
  - Completion of the Integrated Pipeline Project to connect Lake Palestine extends Dallas' water supply through the year 2060

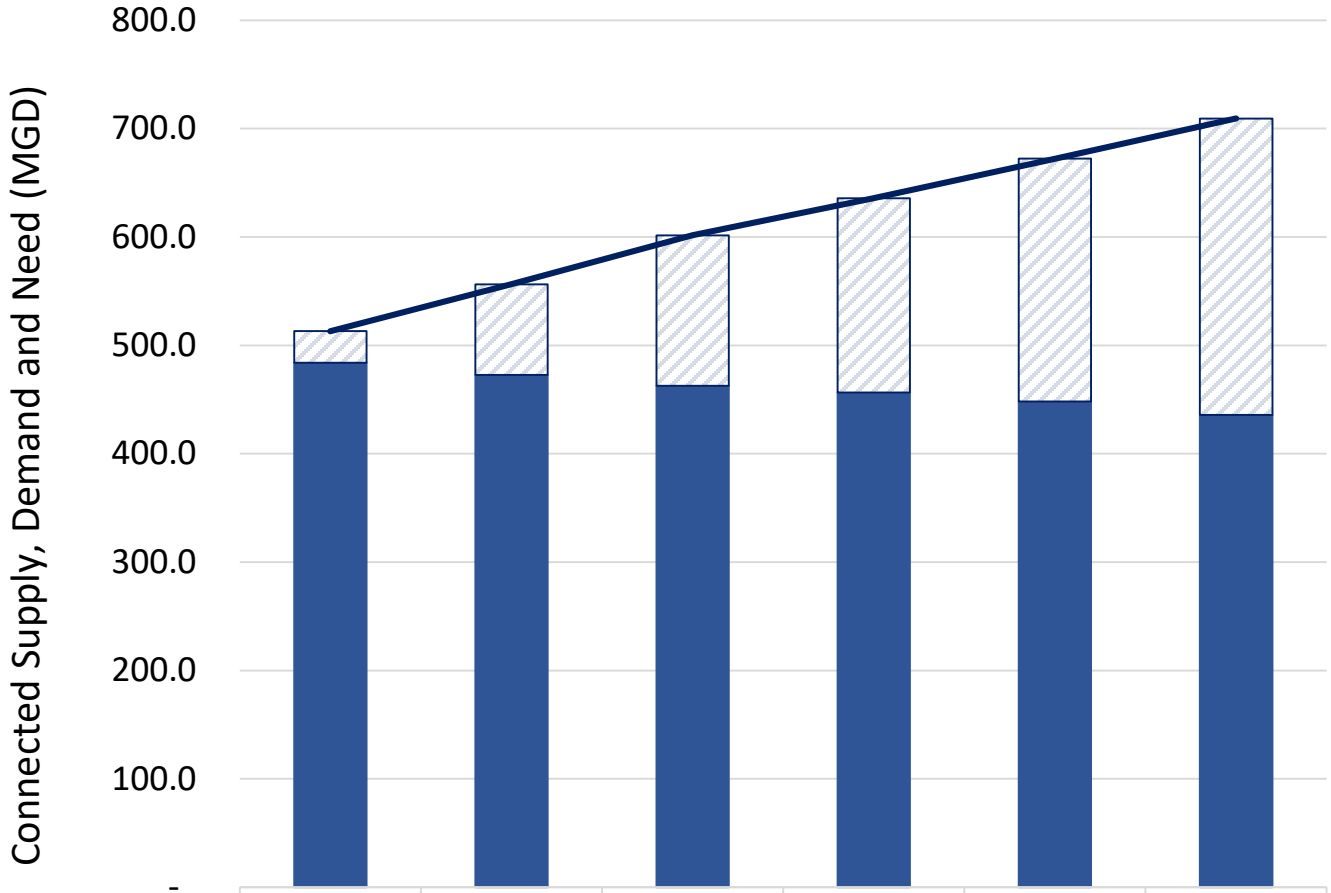
2024 Long Range Water Supply Plan

- System average day water demands reduced by 6.3% or approximately 45.5 million gallons per day (MGD), due to conservation and leak detection programs
- Connected firm yield reduced over time due to sedimentation and increased evaporation from higher temperatures
- Projected supply deficit beginning in 2040, if new supply is not connected
- 2024 LRWSP Recommended Strategies to meet 2080 DWU system demands consist of:
  - 13% additional conservation
  - 33% indirect reuse
  - 23% connection to existing water supplies
  - 25% new surface water
  - 6% groundwater



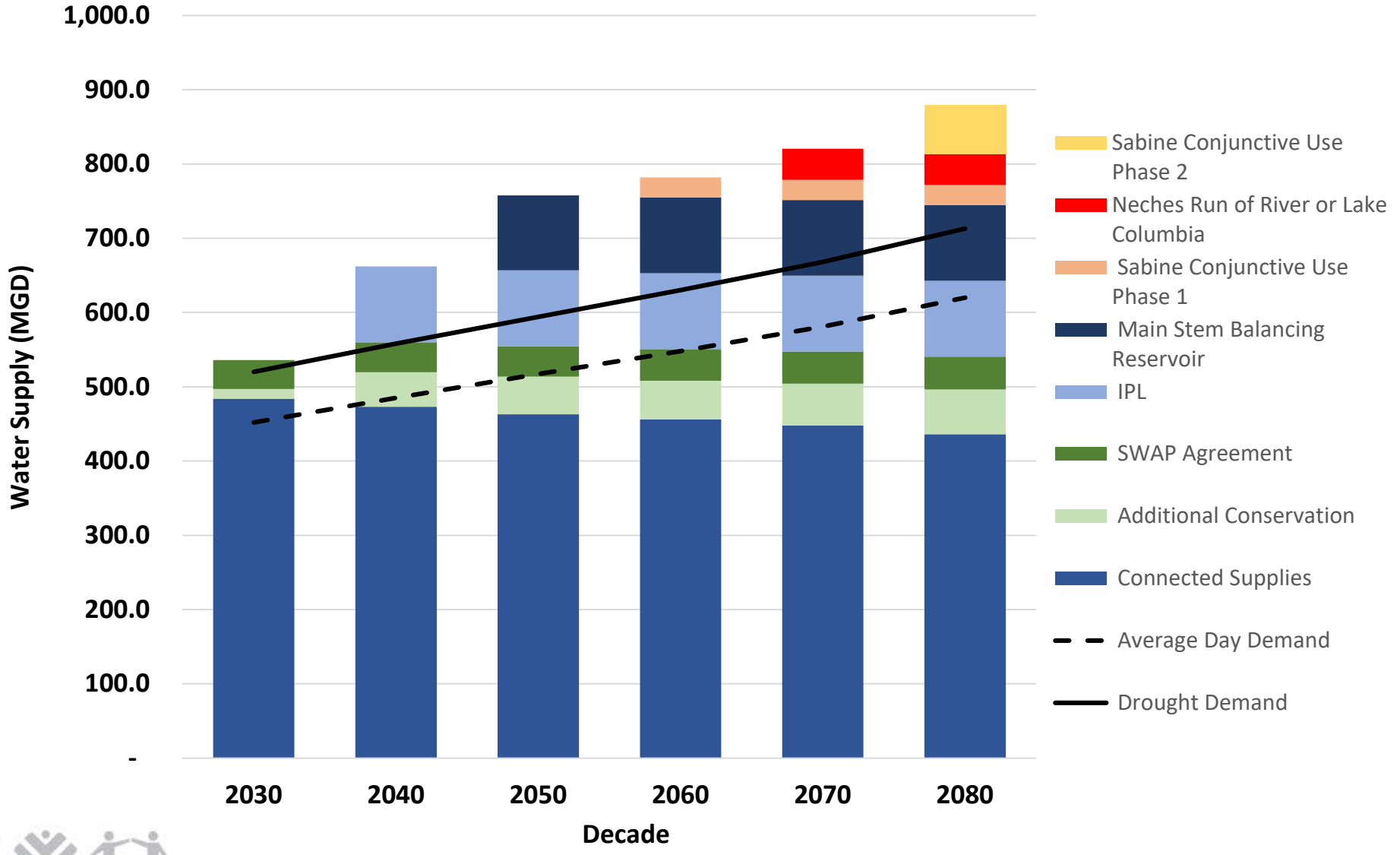
2080 Water Supply Portfolio
(Including Existing Supplies and Recommended Strategies)

2024 LRWSP: Water Supply Needs



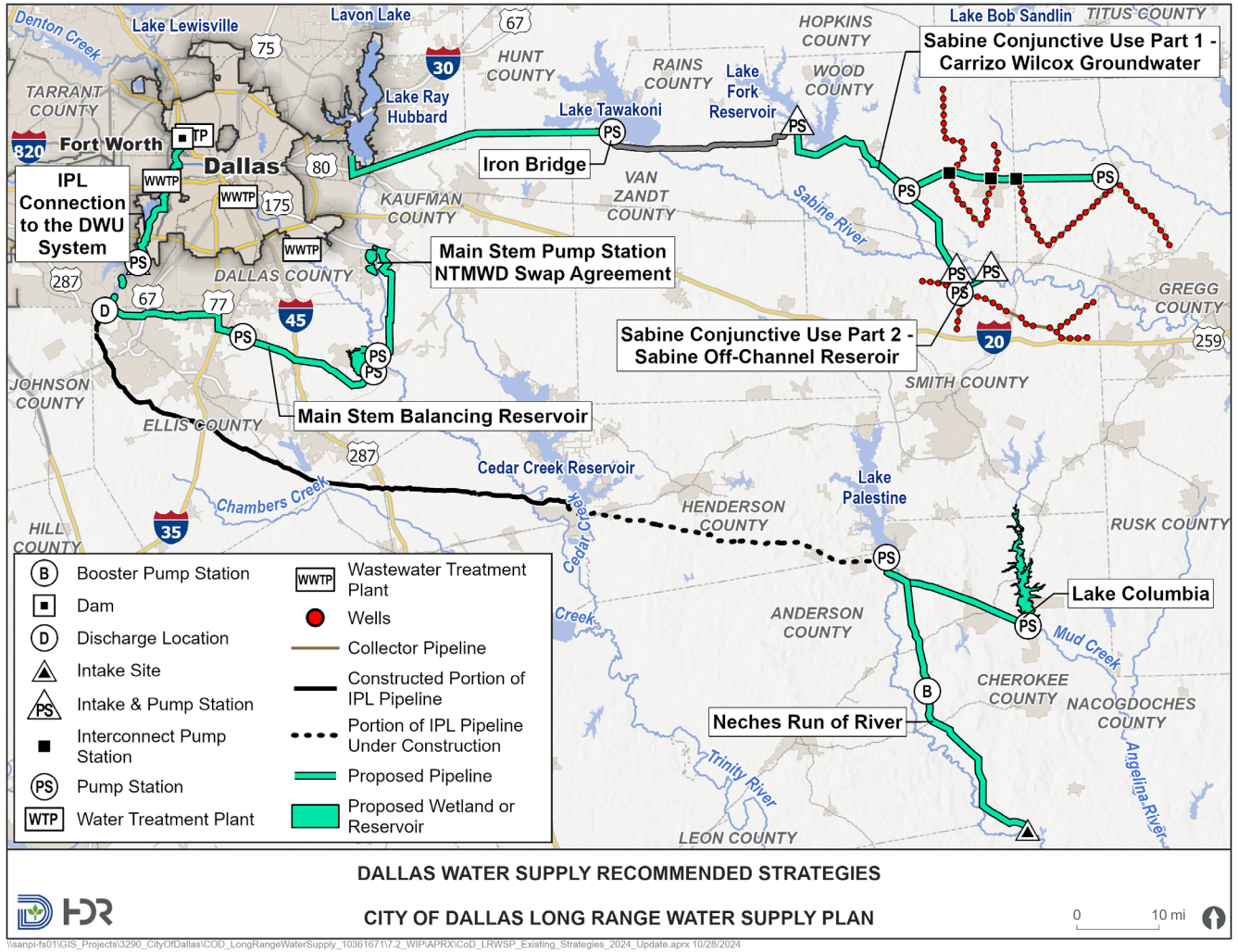
	2030	2040	2050	2060	2070	2080
Need	29.00	83.60	139.00	179.50	223.90	273.50
Supply	484.1	472.8	462.6	456.4	448.4	435.8
Demand	513.1	556.4	601.6	635.9	672.3	709.3

2024 LRWSP: Needs Met with New Supplies



2024 LRWSP: Recommended Strategies

Recommended Strategies	MGD	Decade
Additional Conservation	60.5	2030-2080
Main Stem Pump Station – NTMWD Swap Agreement (Reuse supply in Lake Ray Hubbard)	44.2	2030
IPL Connection to the DWU System	102.0	2040
Main Stem Balancing Reservoir	102.0	2050
Sabine Conjunctive Use Part 1 – Carrizo Wilcox GW	27.0	2060
Neches Run-of-River or Lake Columbia	48.0	2070
Sabine Conjunctive Use Part 2 – Off Channel Reservoir	66.0	2080

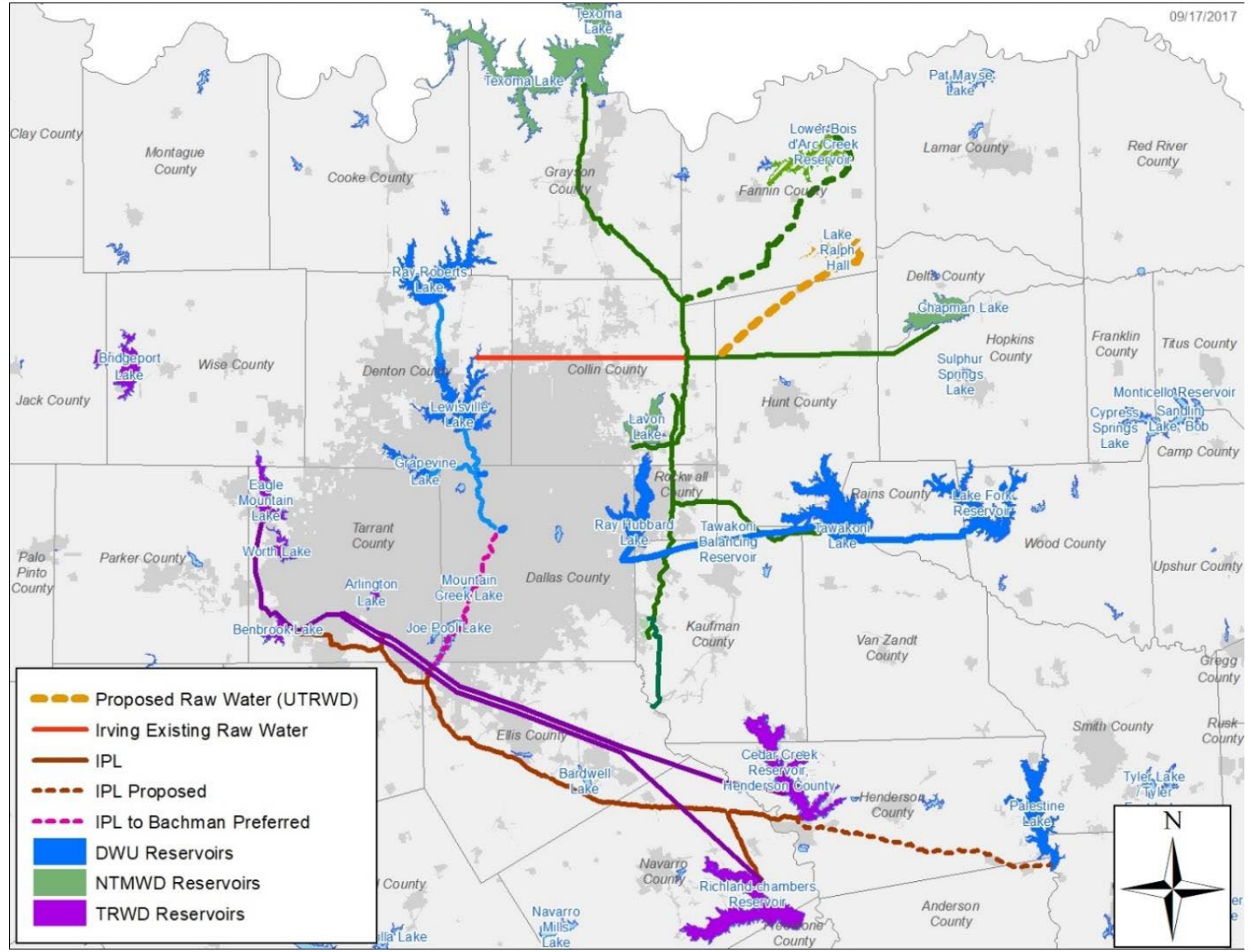


2024 LRWSP: Alternate Supply Recommendations

Alternate Strategies	Yield (MGD)
Sulphur Basin Project – High Yield	71.2
Sulphur Basin Project – Low Yield	62.8
Interstate – Little River – Millwood Lake	268
Toledo Bend Reservoir (SRA TX)	89
Interstate – Toledo Bend Reservoir (SRA LA)	179
Red River Off Channel Reservoir	82
Interstate – Kiamichi River	268
Lake Texoma Desalination	130

Regional Optimization

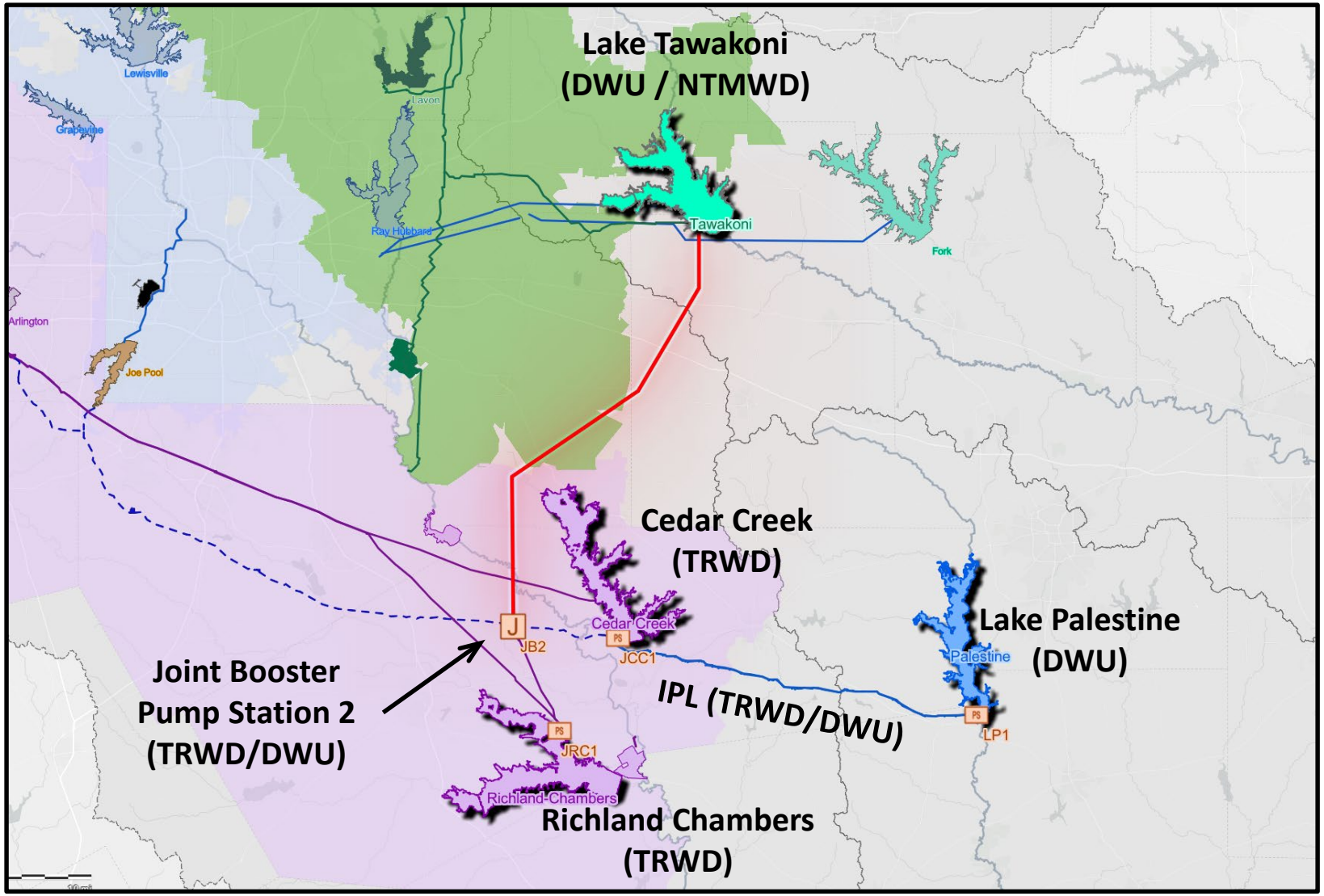
Existing Infrastructure



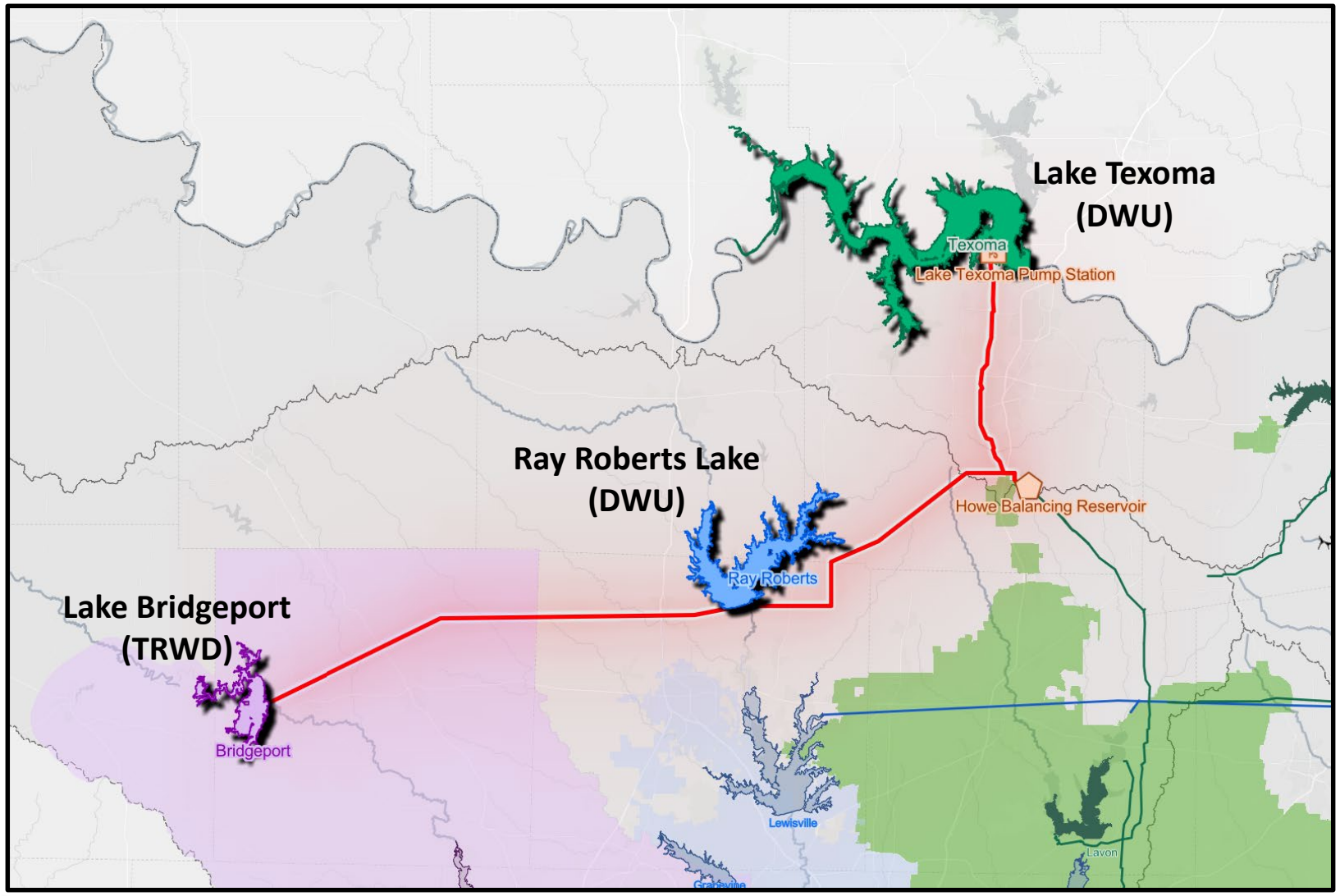
Scope or Work

- Data Gathering and Initial Analysis
- Evaluation Approach and Metrics
- Strategy Evaluation
- Business Case Analysis
- Hydrology and model updates
  - Trinity River Basin
  - Neches River Basin
  - Red River Basin
  - Sabine River Basin
  - Sulphur River Basin

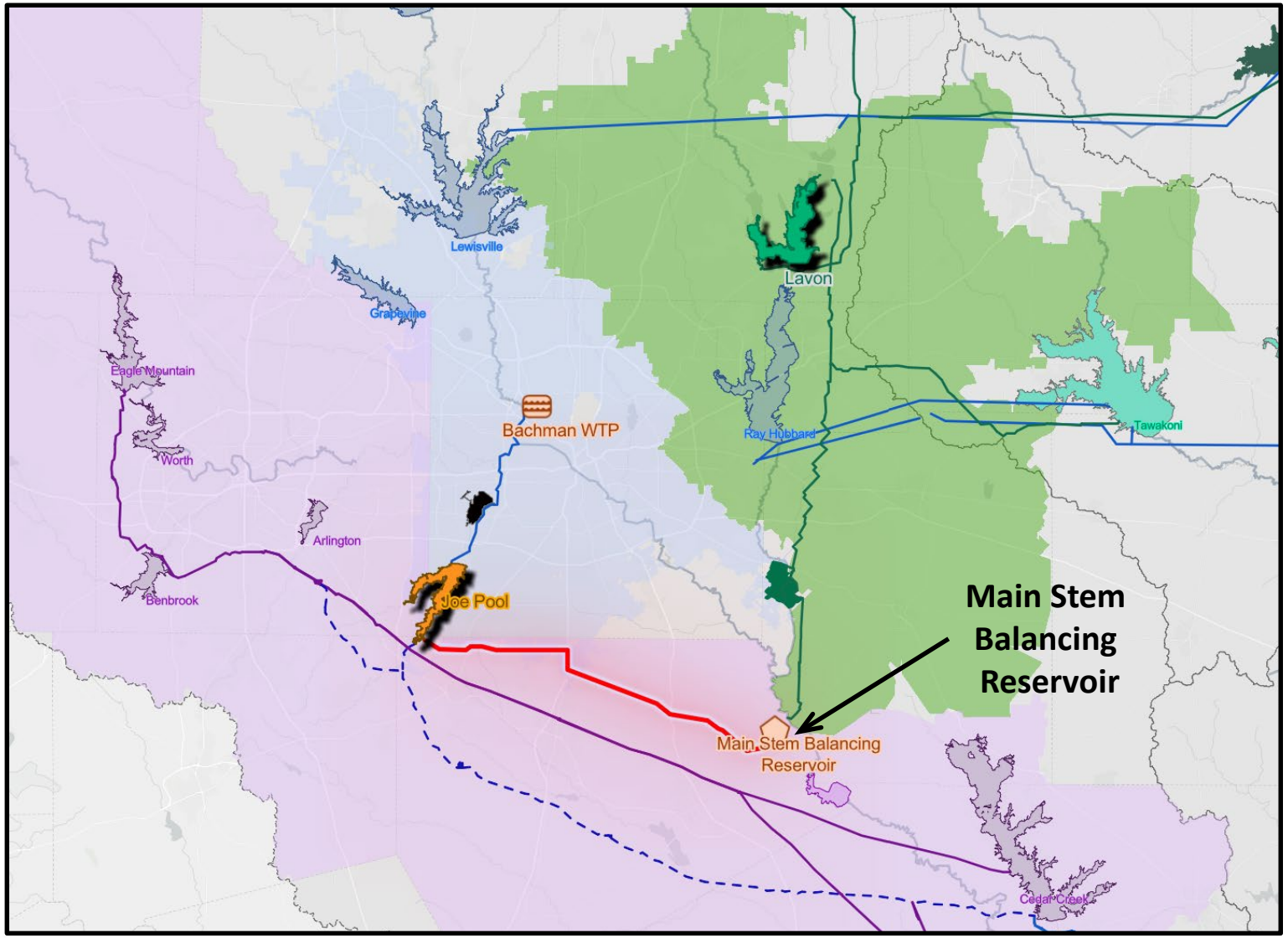
Strategy 1 – Connect NTMWD Tawakoni WTP to IPL at Joint Booster Pump Station 2



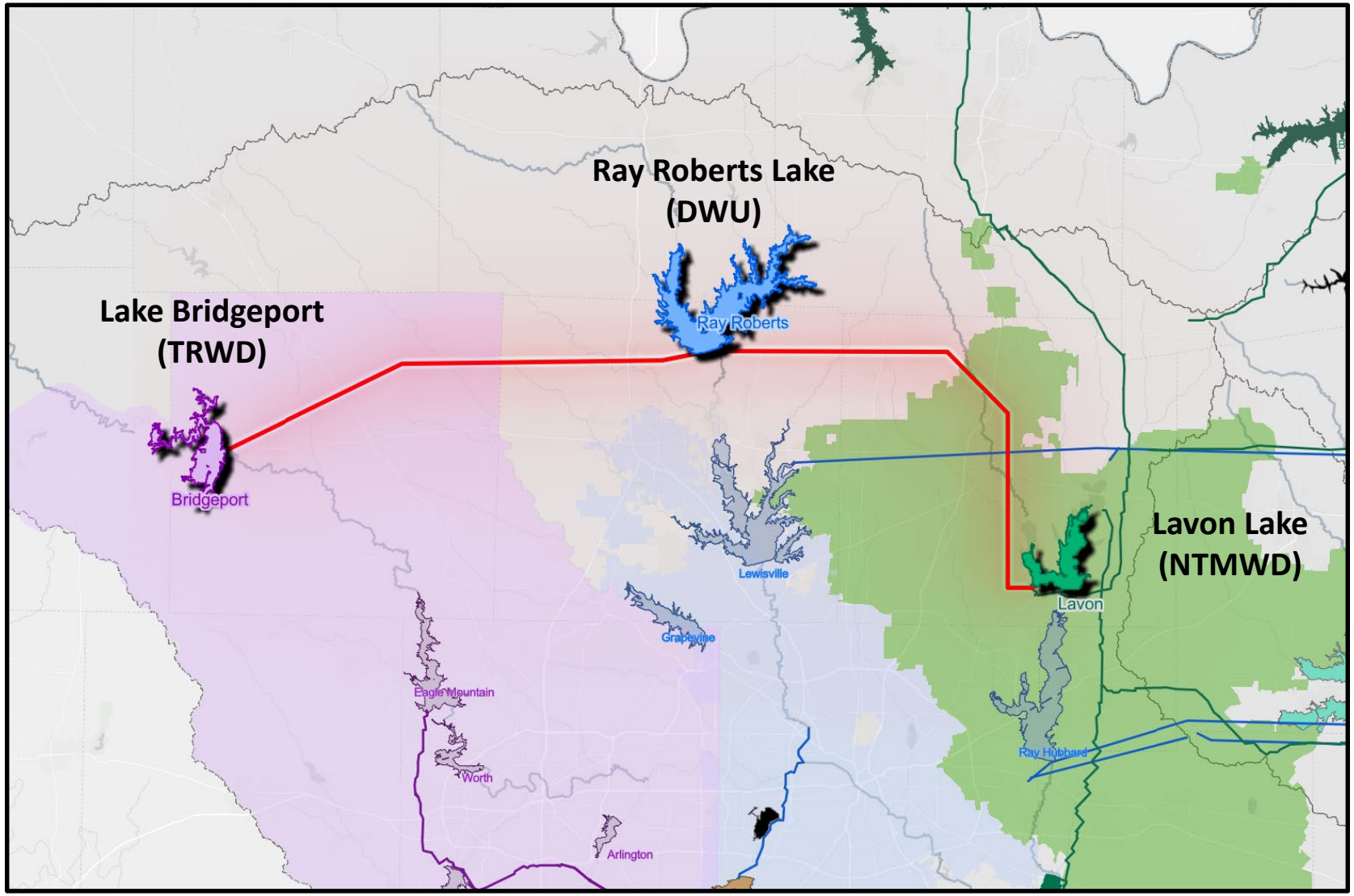
Strategy 2 – Texoma to Ray Roberts to Bridgeport



Strategy 3 – Main Stem Balancing Reservoir Joint Storage of Return Flows



Strategy 4 – Lavon to Ray Roberts to Bridgeport



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