THE CITY OF

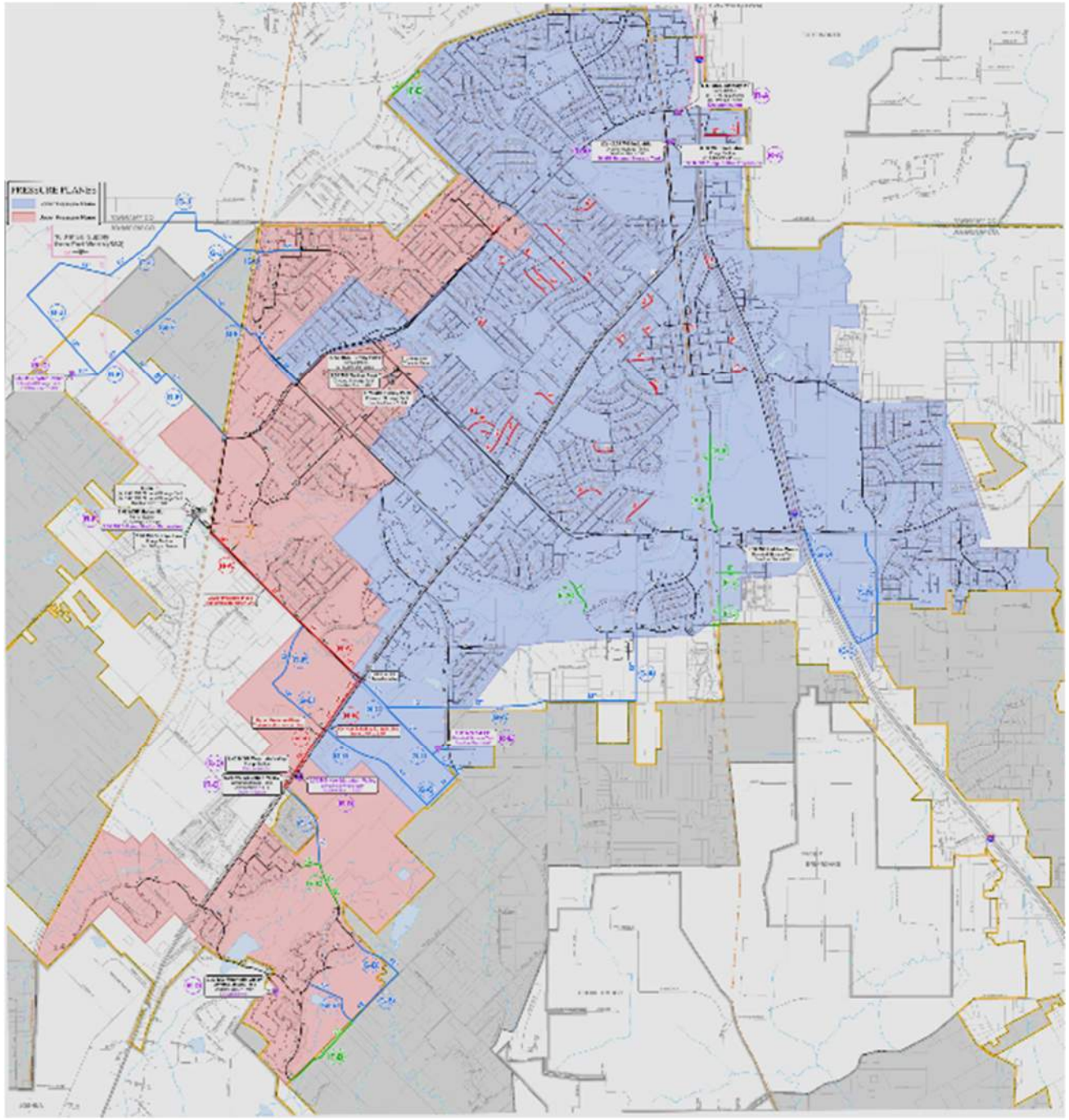
BURLESON

TEXAS

Assessment of Water Supply Strategies

Burleson City Council

June 2, 2025

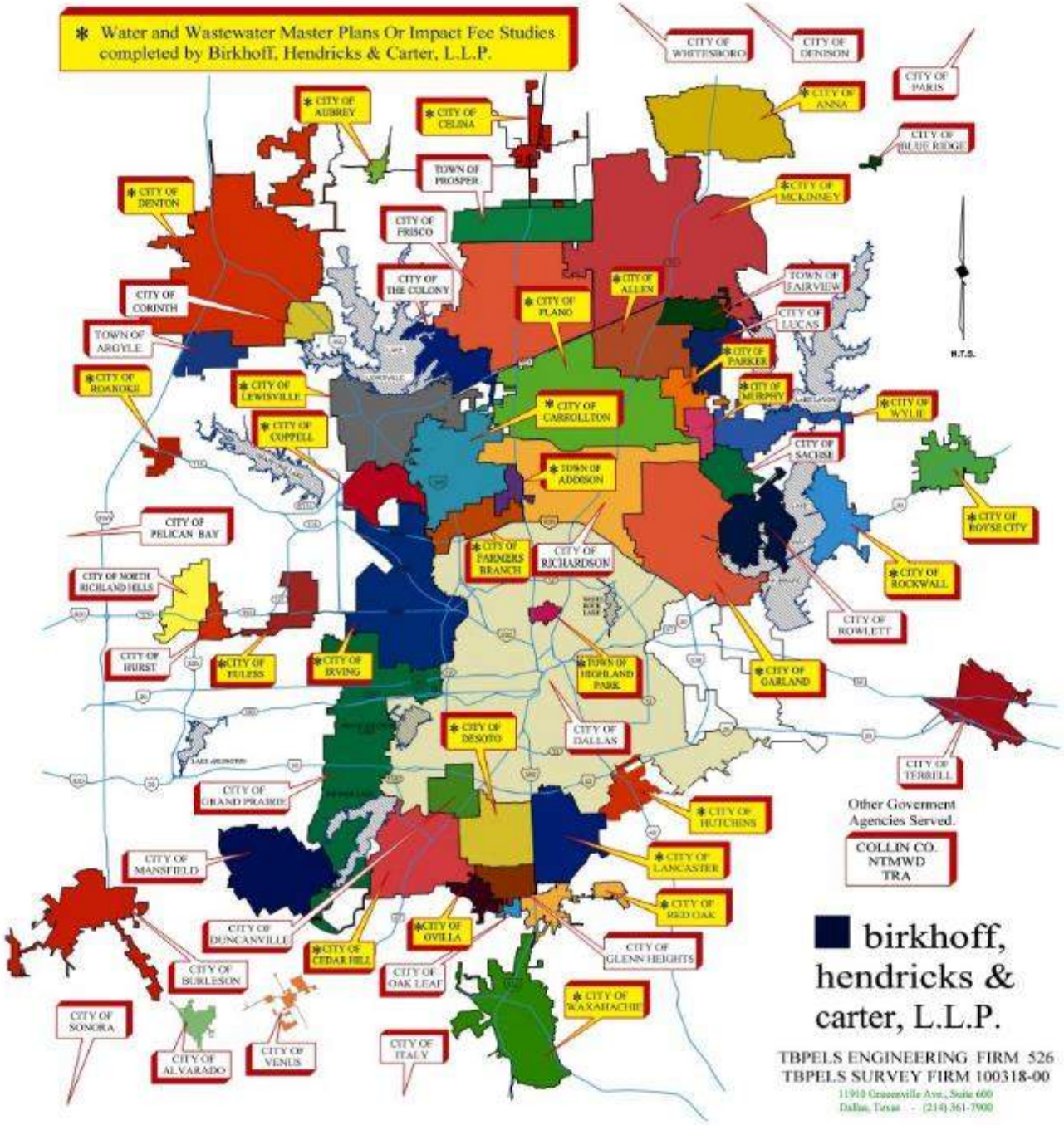


Prepared By:

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

BHC Firm Introduction

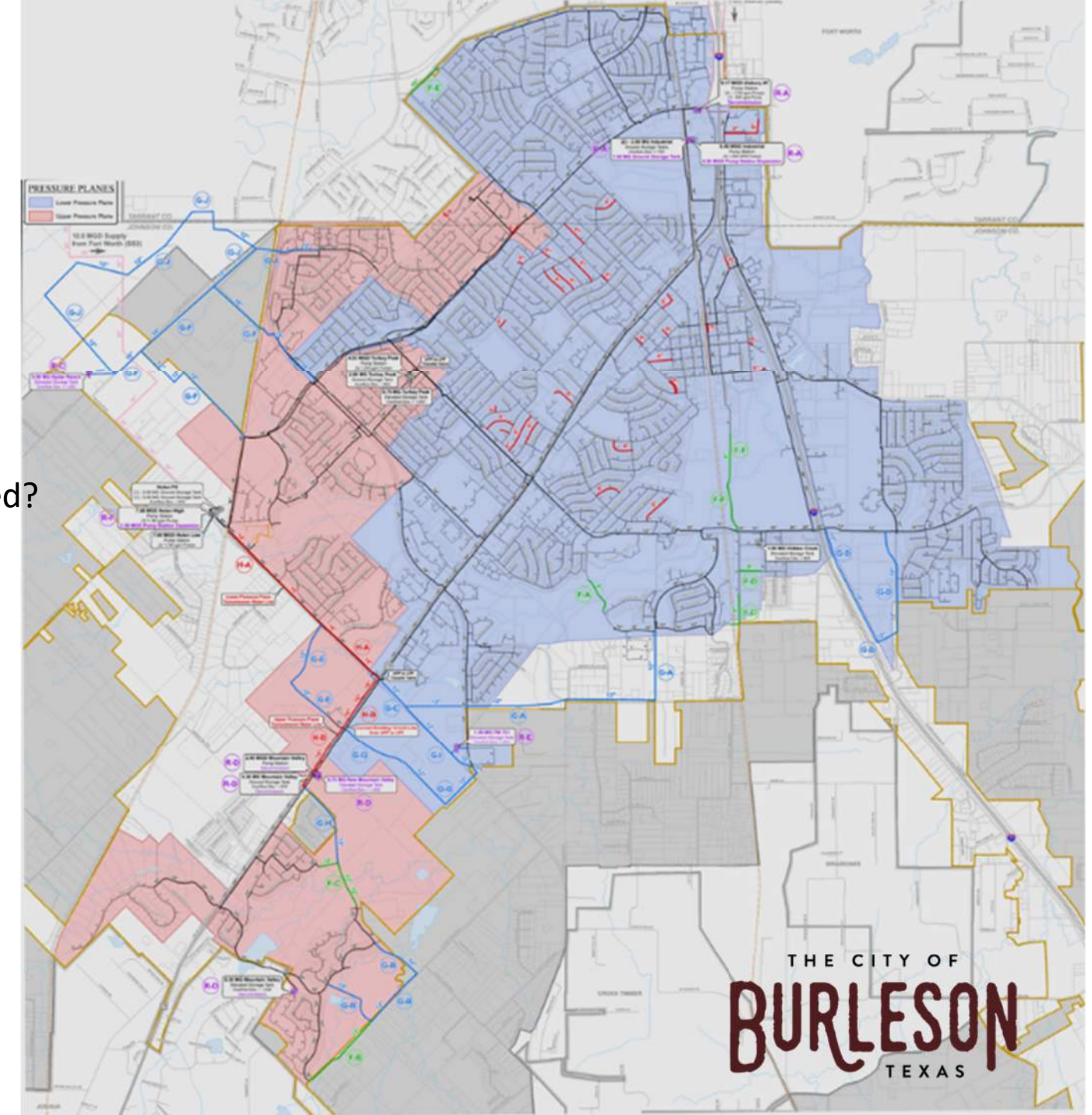
Who are our Clients?



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Project Background and Scope

1. Why are we here?
2. How your Water System Works
3. Why is an Alternate Water Supply Needed?
4. How Much Alternate Supply is Needed?
5. Where From?
6. Best Apparent Source
7. At What Cost?
8. Next Steps

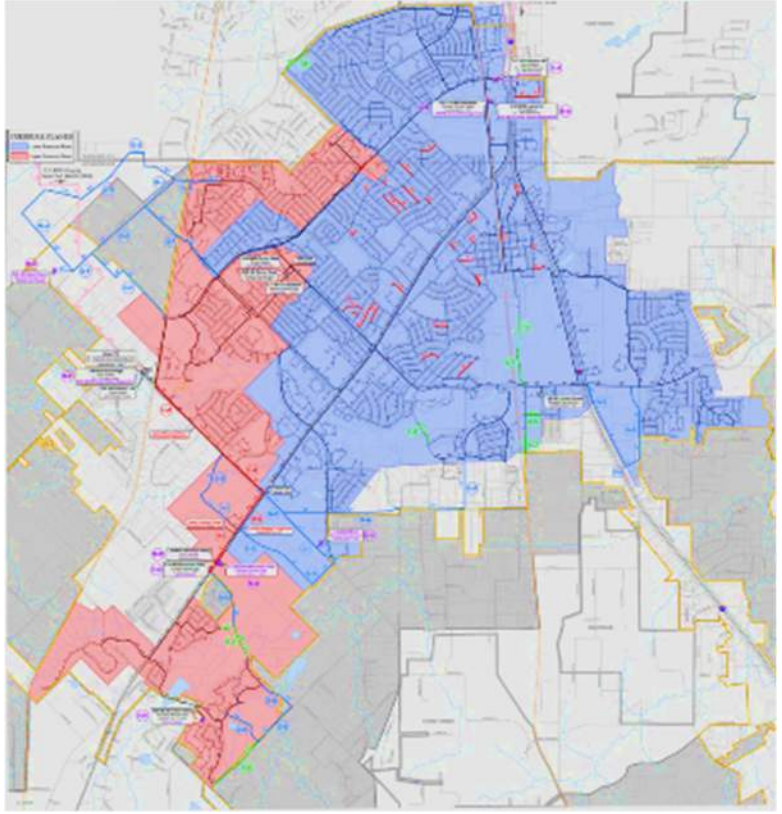


BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Project Background and Scope

1. Why are we here?

Currently, the City of Burleson receives treated drinking water supply from the City of Fort Worth. If practicable and feasible, supplemental water supply sources can work to enhance the resiliency of the City of Burleson's treated water supply in the event of an emergency or other disruption to the usual water supply source; and position the City to be able to diversify its water supply sources on a normal daily operating basis.



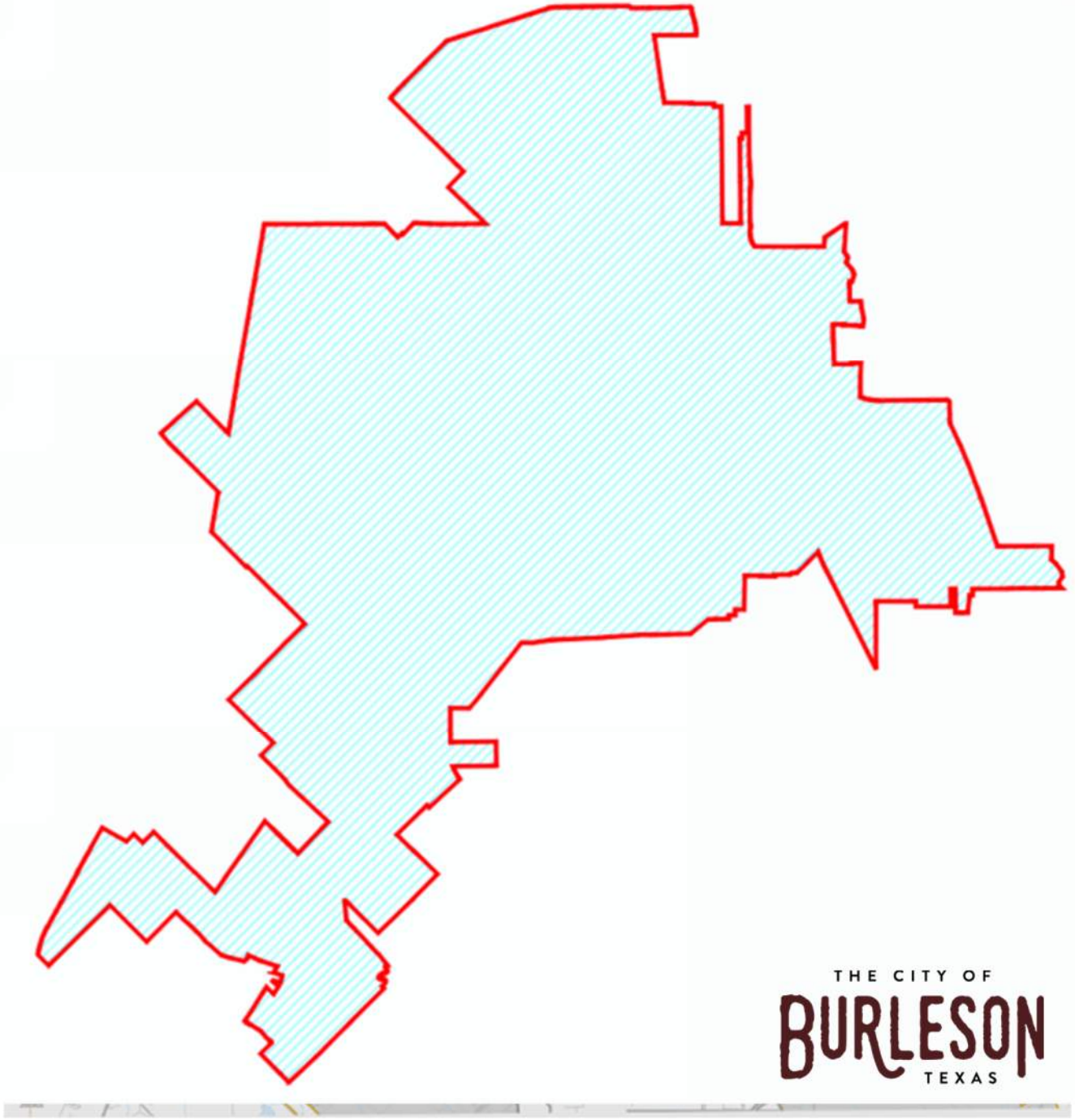
This study assesses the City of Burleson's existing and future treated water supply requirements; reviews the City's current water supply sources and limitations; and evaluates and reports on the practical and economic feasibility of securing and developing supplemental water supplies from various sources.

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

Water Distribution System Overview

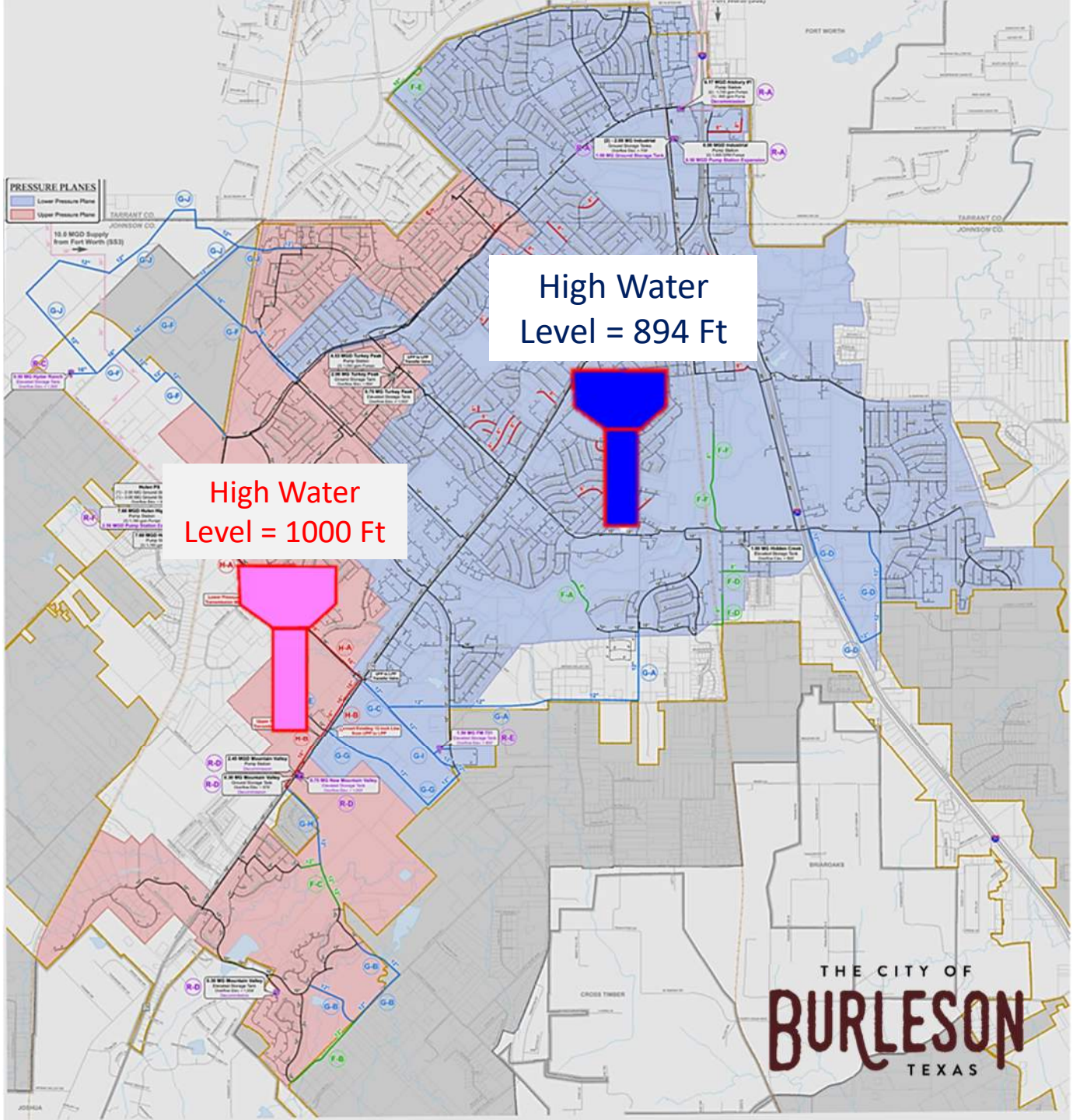
1. **Service Area Boundary**
   - Water Certificate of Convenience and Necessity (CCN)



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Water Distribution System Overview

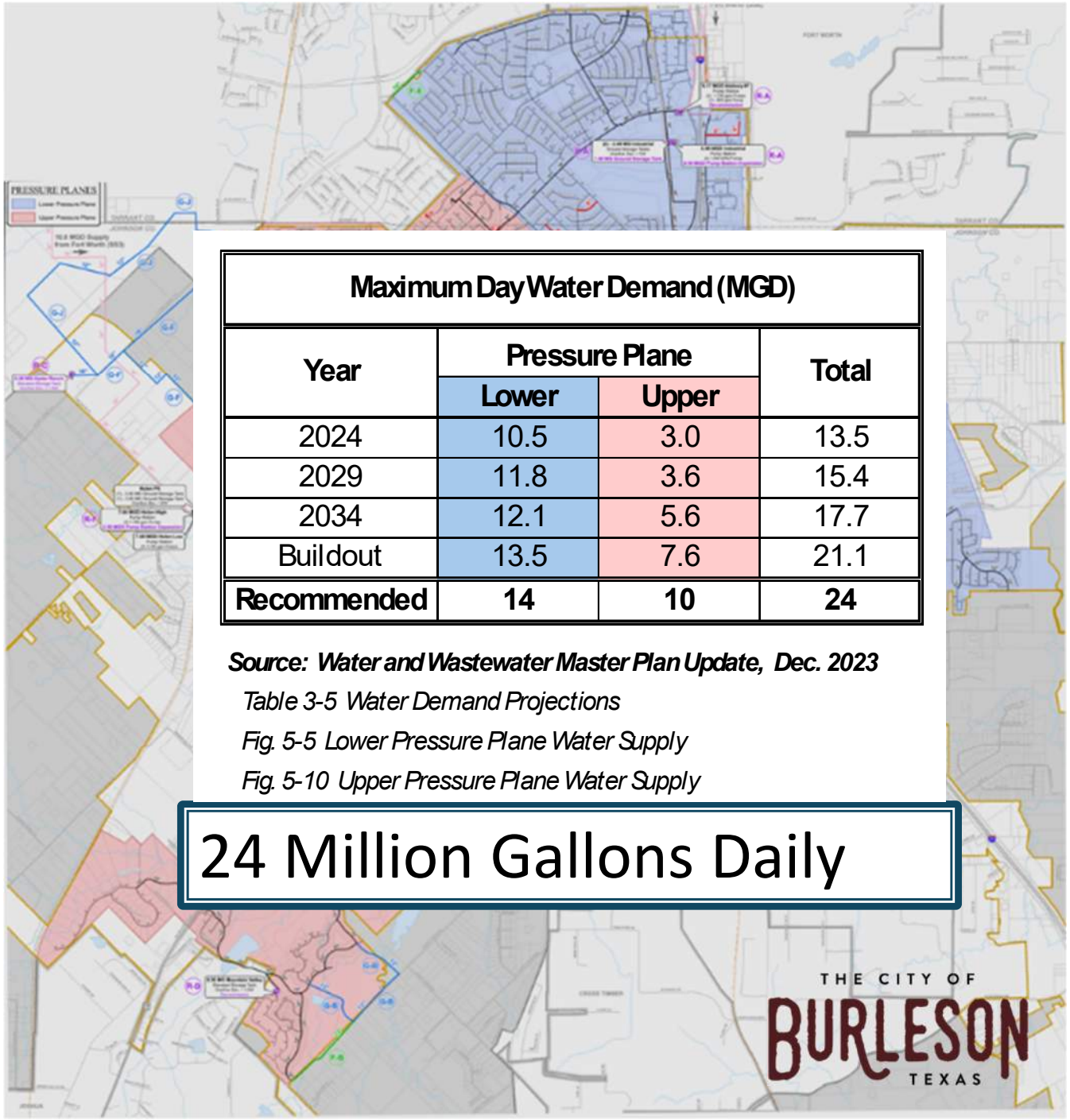
1. Service Area Boundary
2. **Pressure Planes**
   - Lower (894)
   - Upper (1,000')



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Water Distribution System Overview

1. Service Area Boundary
2. Pressure Planes
   - Lower (894’)
   - Upper (1,000’)
3. **Build-out Maximum Day Demand**



Maximum Day Water Demand (MGD)			
Year	Pressure Plane		Total
	Lower	Upper	
2024	10.5	3.0	13.5
2029	11.8	3.6	15.4
2034	12.1	5.6	17.7
Buildout	13.5	7.6	21.1
Recommended	**14**	**10**	**24**

Source: Water and Wastewater Master Plan Update, Dec. 2023

Table 3-5 Water Demand Projections

Fig. 5-5 Lower Pressure Plane Water Supply

Fig. 5-10 Upper Pressure Plane Water Supply

24 Million Gallons Daily

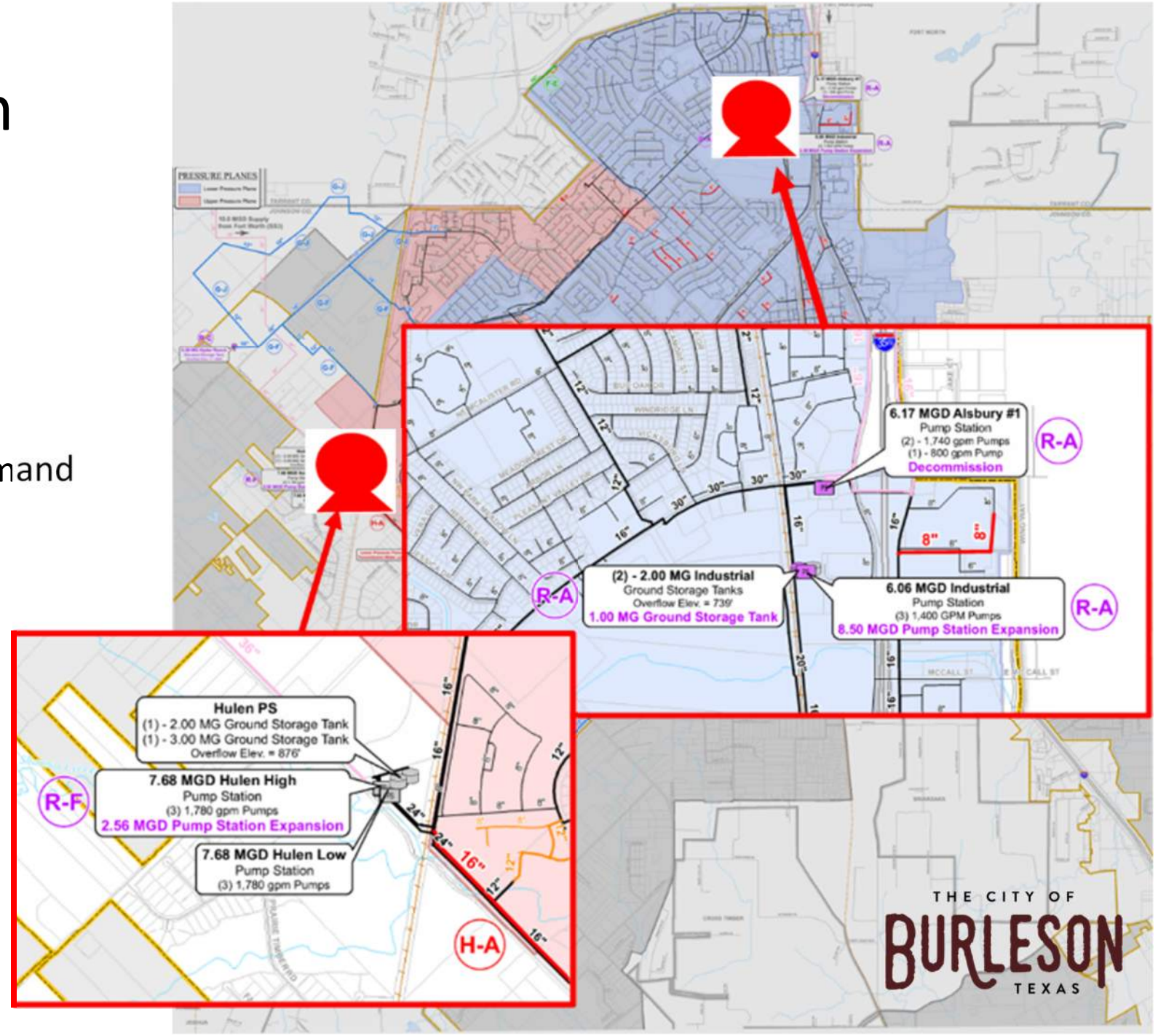
THE CITY OF BURLESON TEXAS

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Water Distribution System Overview

1. Service Area Boundary
2. Pressure Planes
   - Lower (894’)
   - Upper (1,000’)
3. Build-out Maximum Day Demand

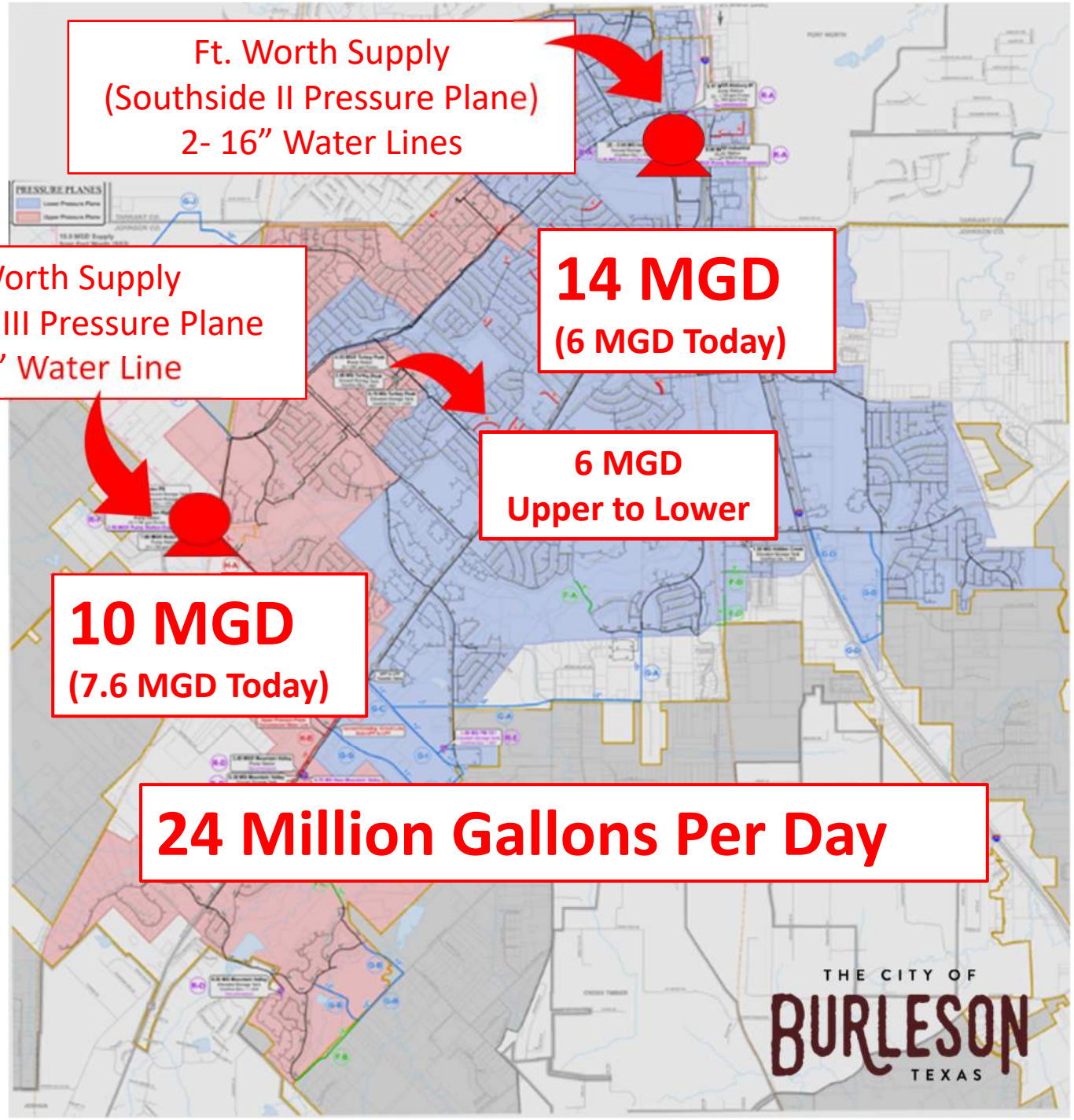
4. **Existing Delivery Points**
   - Industrial Pump Station
   - ~~Alsbury Pump Station~~
   - Hulen Pump Station



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Water Distribution System Overview

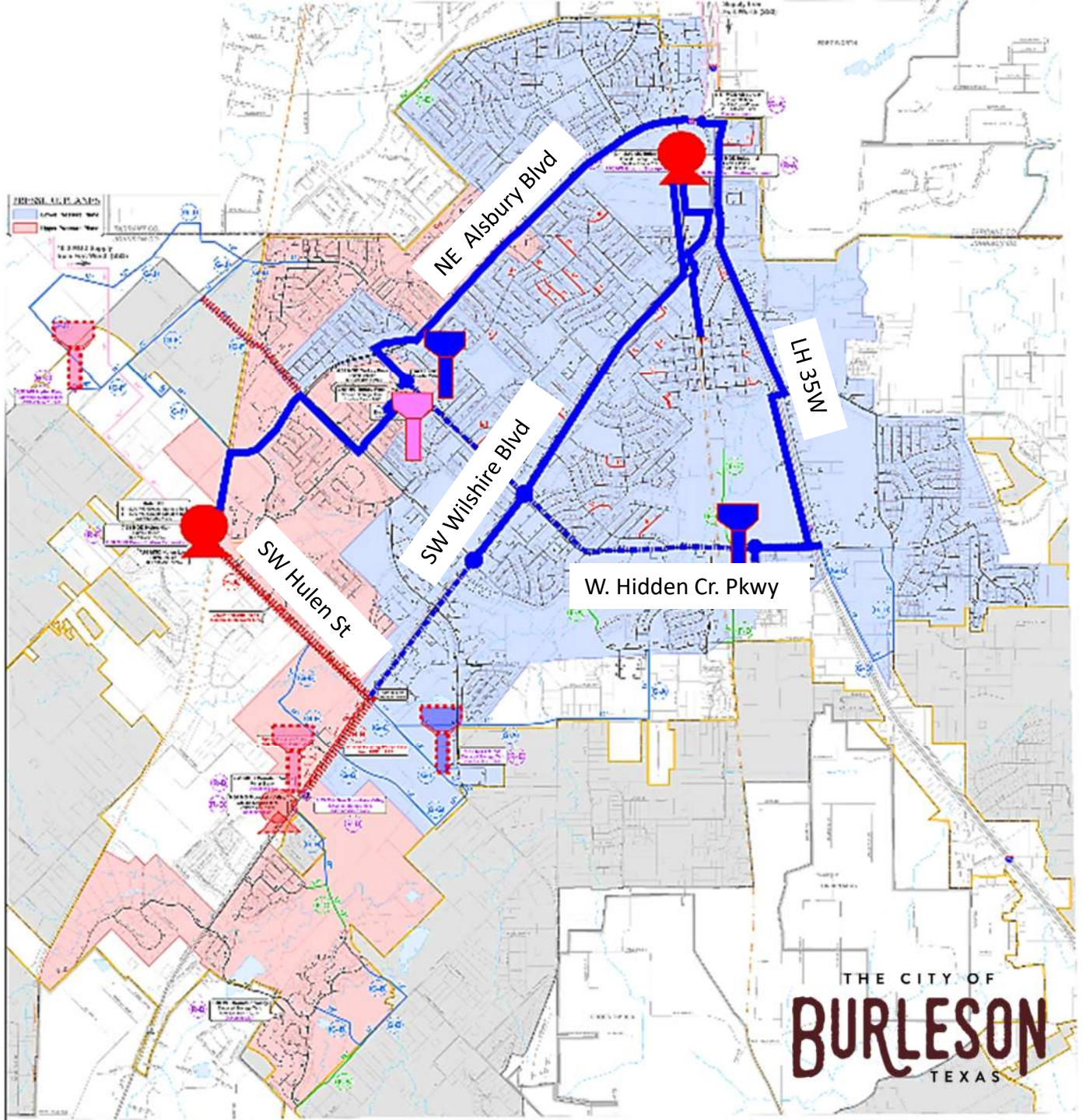
1. Service Area Boundary
2. Pressure Planes
   - Lower (894’)
   - Upper (1,000’)
3. Build-out Maximum Day Demand
4. Existing Delivery Points
   - Industrial Pump Station
   - Hulen Pump Station
5. **Ultimate Delivery Volumes**



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Water Distribution System Overview

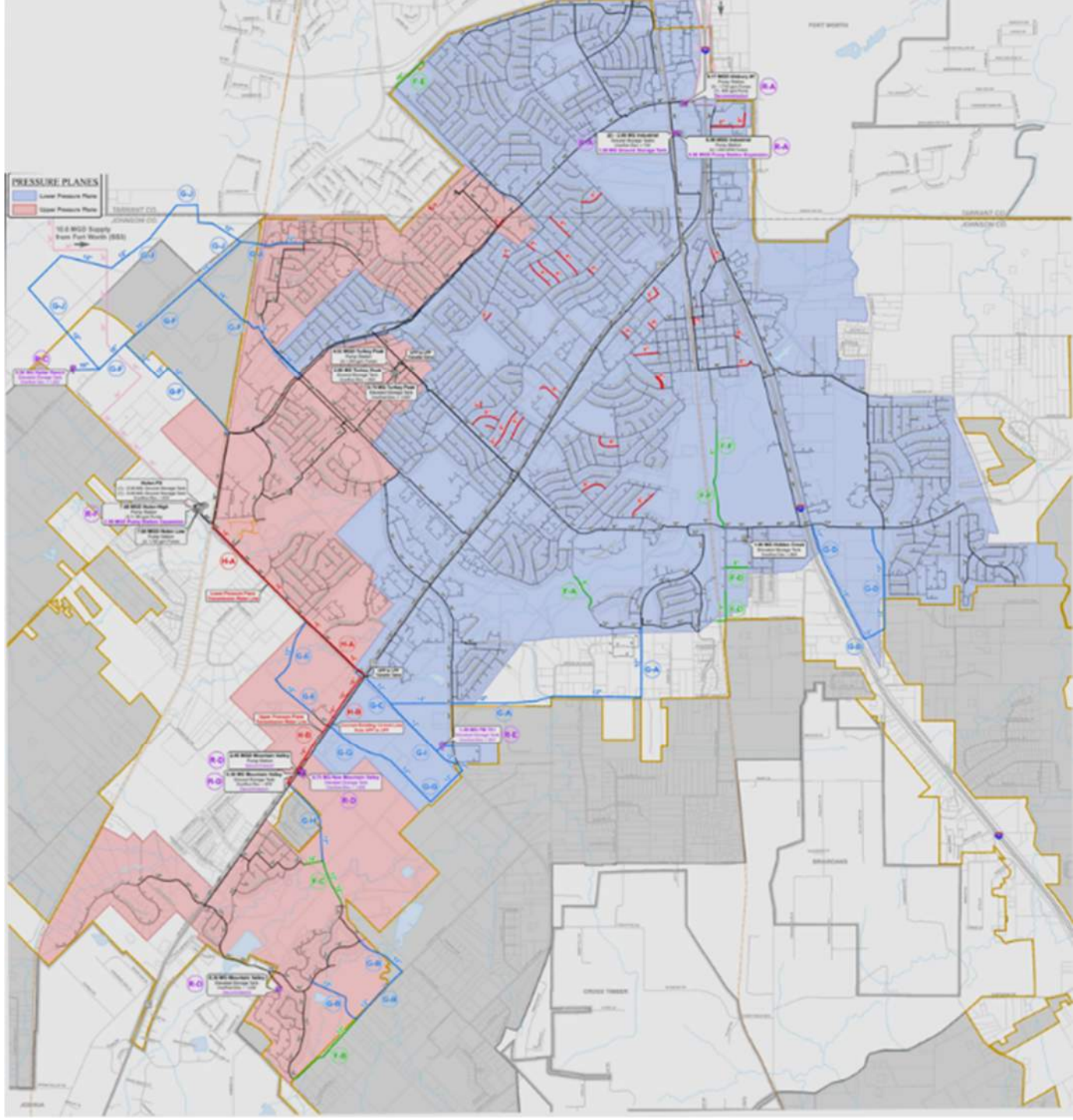
1. Service Area Boundary
2. Pressure Plans
   - Lower (894’)
   - Upper (1,000’)
3. Build-out Maximum Day Demand
4. Existing Delivery Points
   - Industrial Pump Station
   - Hulen Pump Station
5. Ultimate Delivery Volumes
6. **Major Transmission Mains**



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

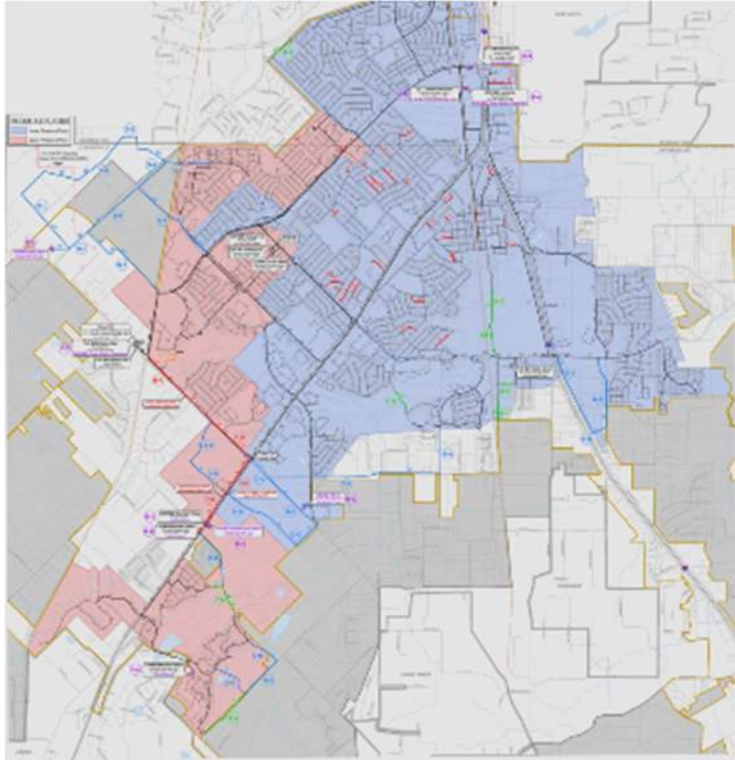
Why an Alternate Source of Treated Water Supply?

1. System Resiliency and Risk Reduction
2. Options and Flexibility to Serve Growth (Additional Source for future changes in Land Use or Development Types)
3. Possibly off-set Peak Day Restrictions
4. System Operational Flexibility



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

How Much Alternate Supply is Needed?



1. ~~**Enough to Completely Replacement of Ft. Worth Supply (24 MGD)?**~~
   - ~~Not Economically or Contractually Feasible~~
2. ~~**Enough to Serve Max Day Demand to Buildout (24 MGD)?**~~
   - ~~No New Supply from Ft. Worth:~~
     - ~~13.6 MGD today to 24.0 MGD at Buildout – **10 MGD**~~
3. **Enough to "Peak Shave" high summertime Demands?**
   - 12 MGD Ave. Day to 24 Max Day = **12 MGD**
4. **Enough to Provide "Emergency Supply" Only?**
   - Average Day Demand ÷ 2 = **6.0 MGD**

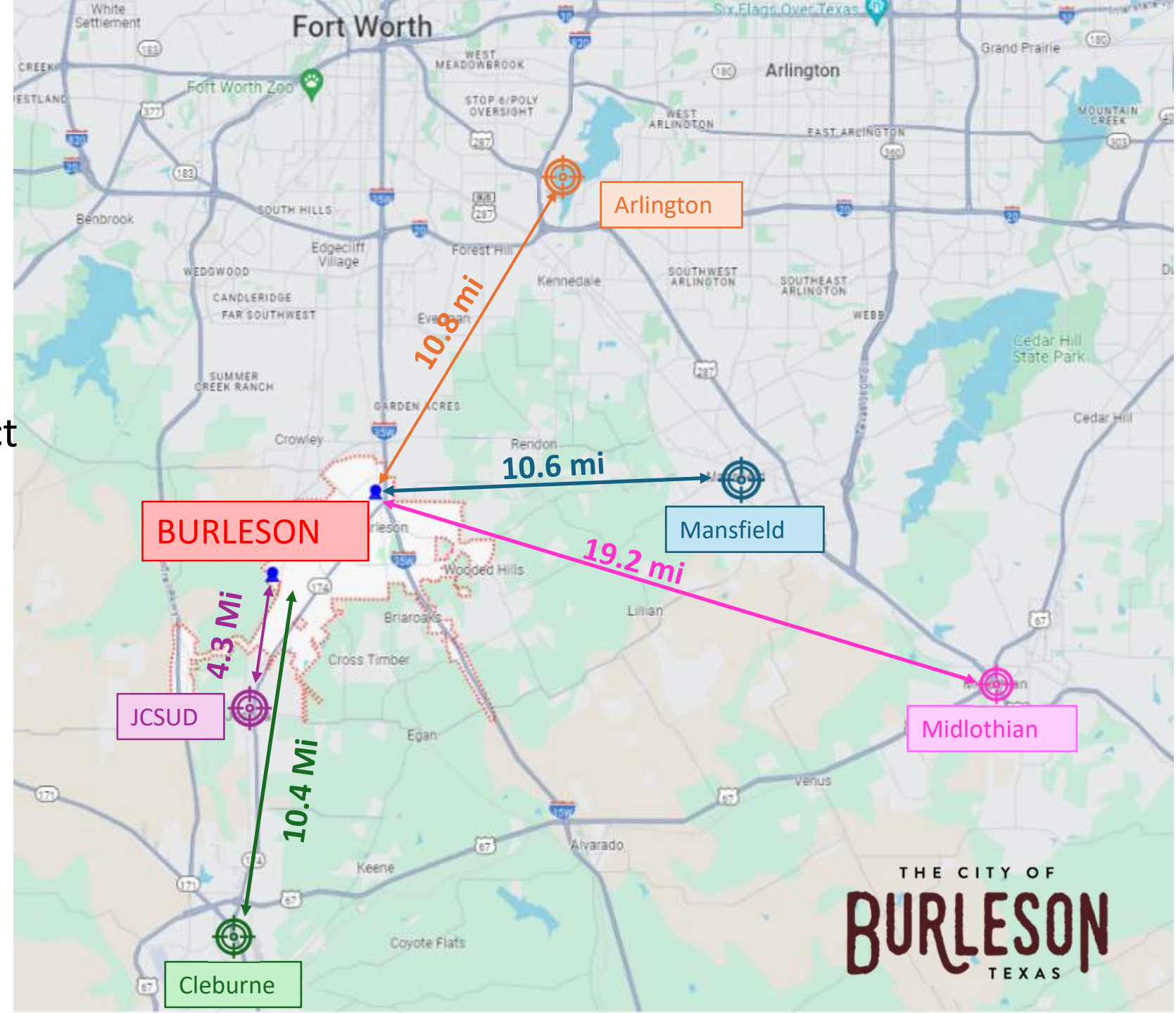
BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

FROM WHERE?

Treated Water Sources

1. Johnson County Special Utility District
2. City Midlothian
3. City of Cleburne
4. City of Mansfield
5. City of Arlington



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

FROM WHERE?

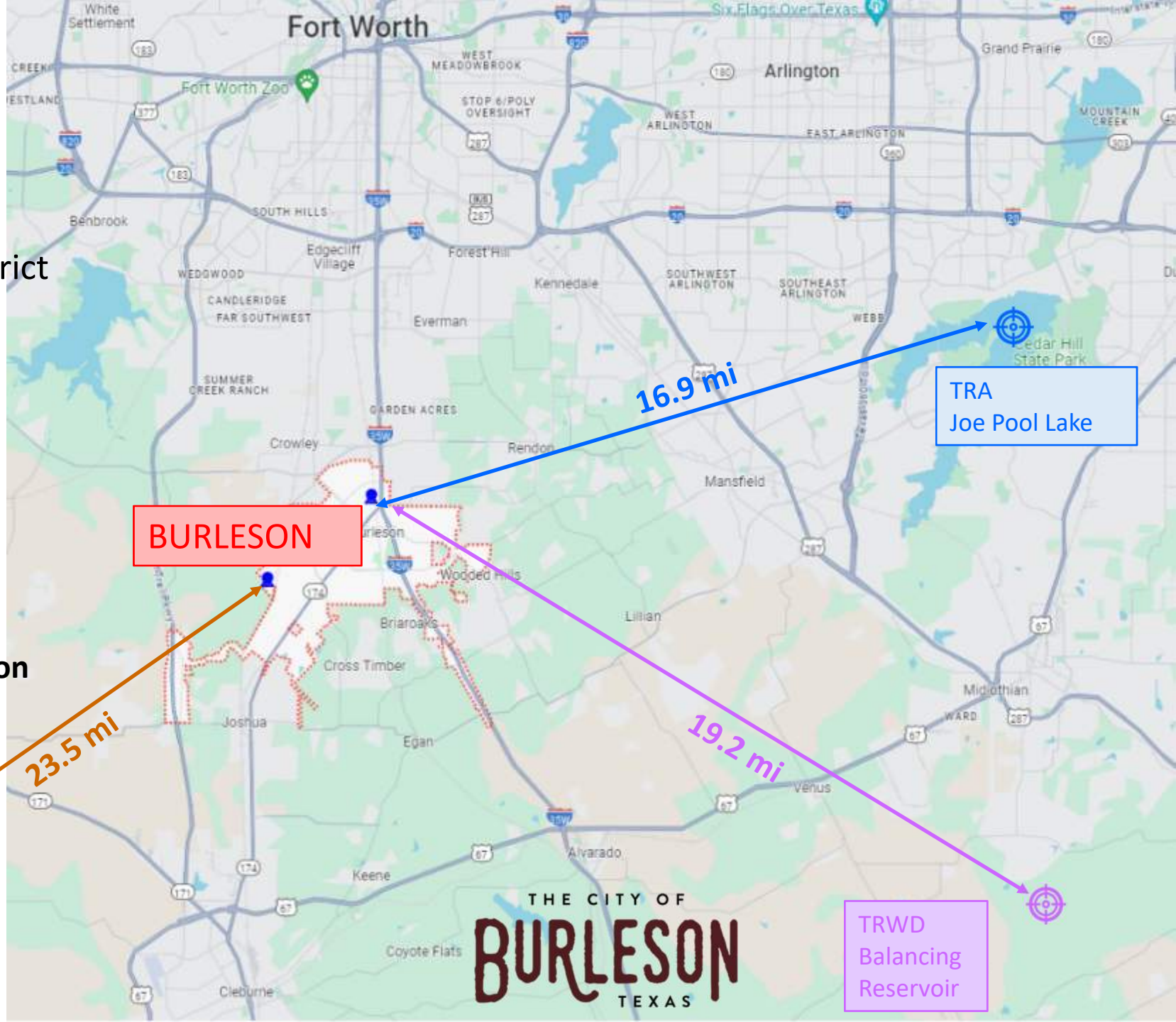
Raw Water Sources

1. Tarrant Regional Water District
2. Trinity River Authority
3. Brazos River Authority

Cost Considerations:

Water Treatment Plant Cost:

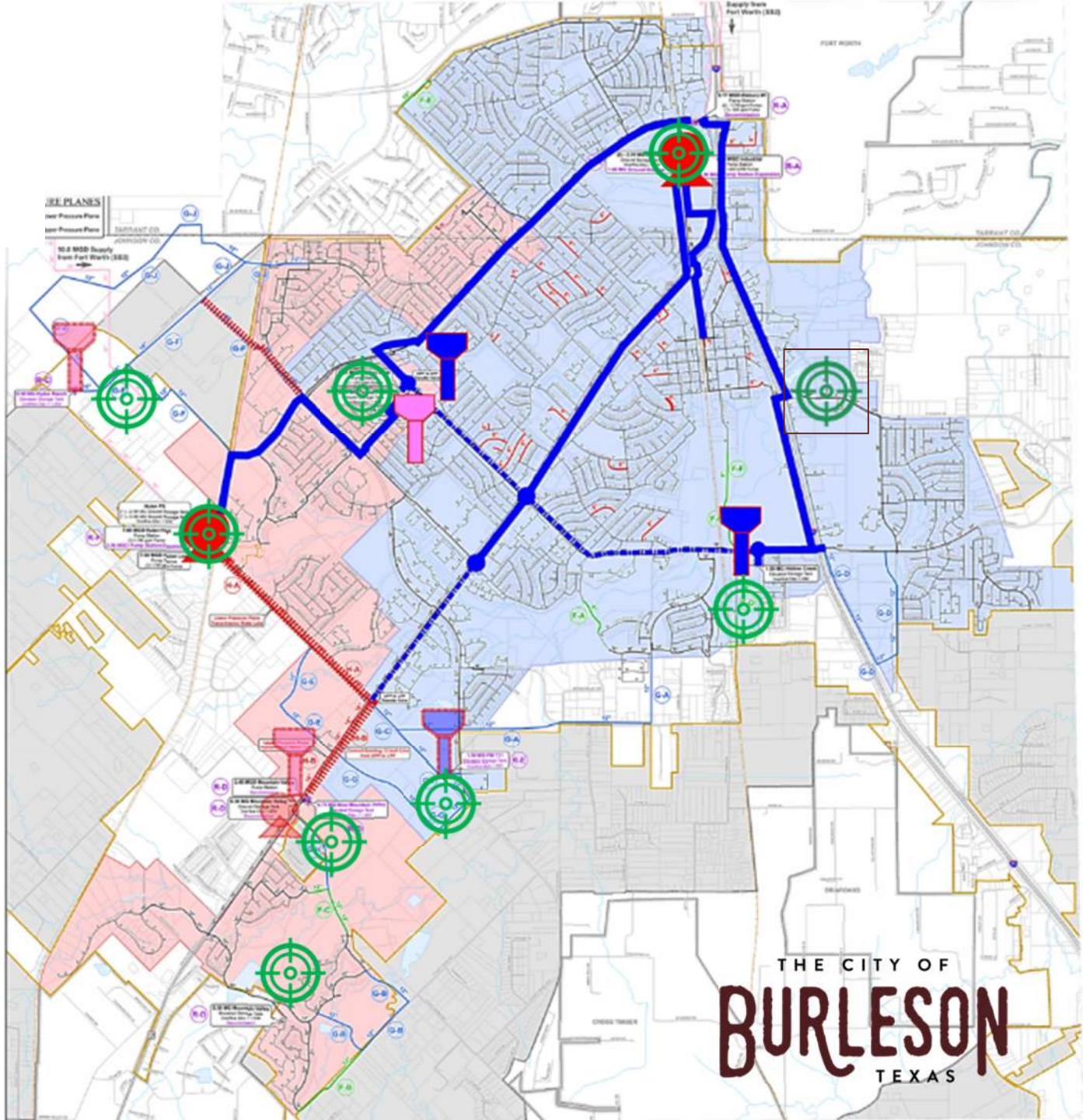
- $15-$20 per gallon
- 6 MGD = **$90 - $120 Million**



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

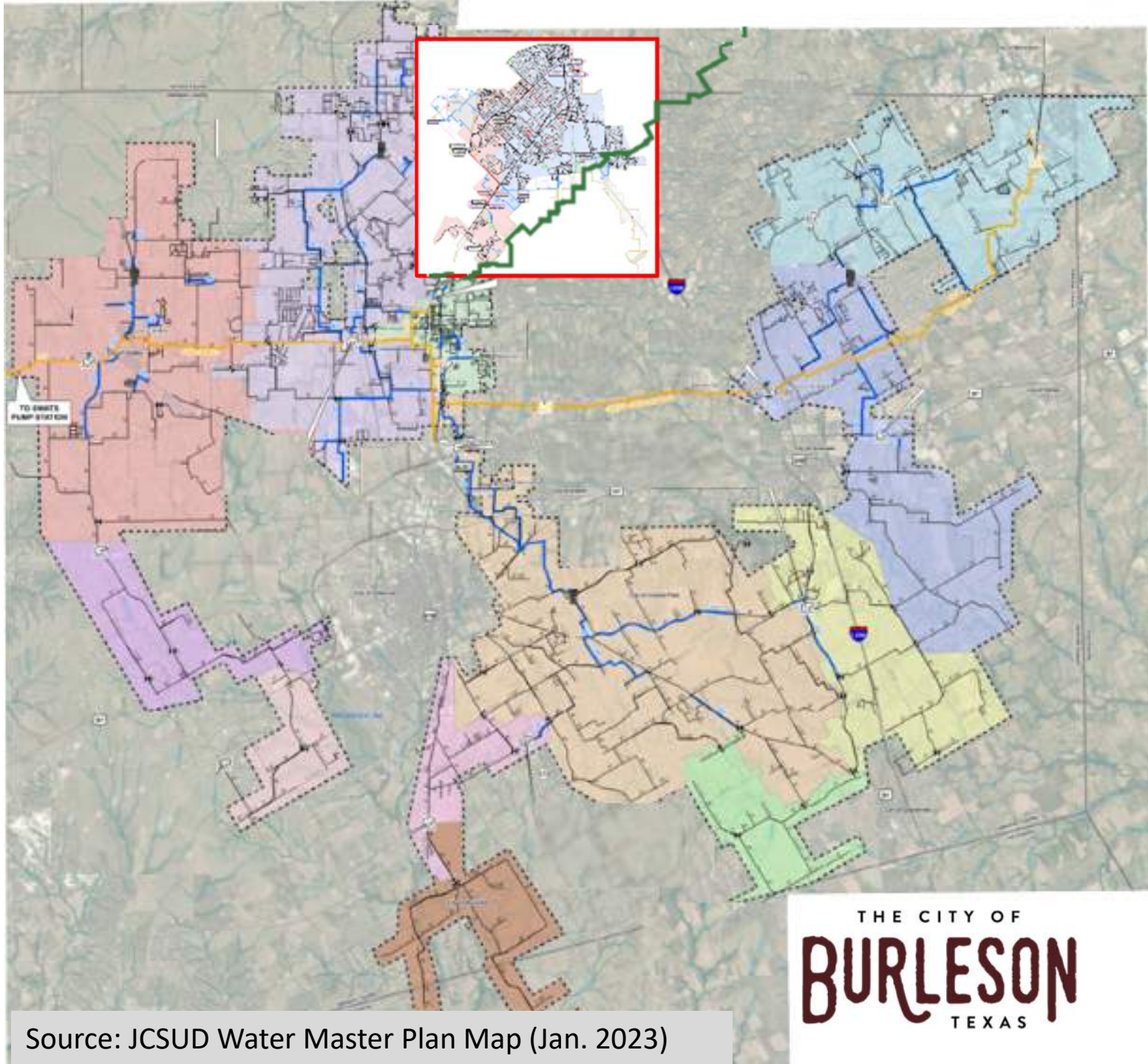
FROM WHERE?
Ground Water Sources

1. **Practical Limitations of Reliable Source**
   a. Expected Source at 2,000-foot depth
   b. Expected High TDS (Secondary Treatment)
   c. Water Quality and Blending with Surface Water
   d. Expected Low Volumes
      i. 500 gpm (0.70 mgd) per water well
      ii. Nine (9) wells required to achieve goal of ½ of the average day demand (6.0 mgd)
2. **Prairielands Ground Water Conservation District**
3. **Cost Considerations**
   a. $5 - $6 Millon each (no treatment) = **$45 - $54 Million**
   b. $12-$13 Million each (with treatment) = **over $100 Million**



APPARENT BEST OPTION

Johnson County Special Utility District (JCSUD)



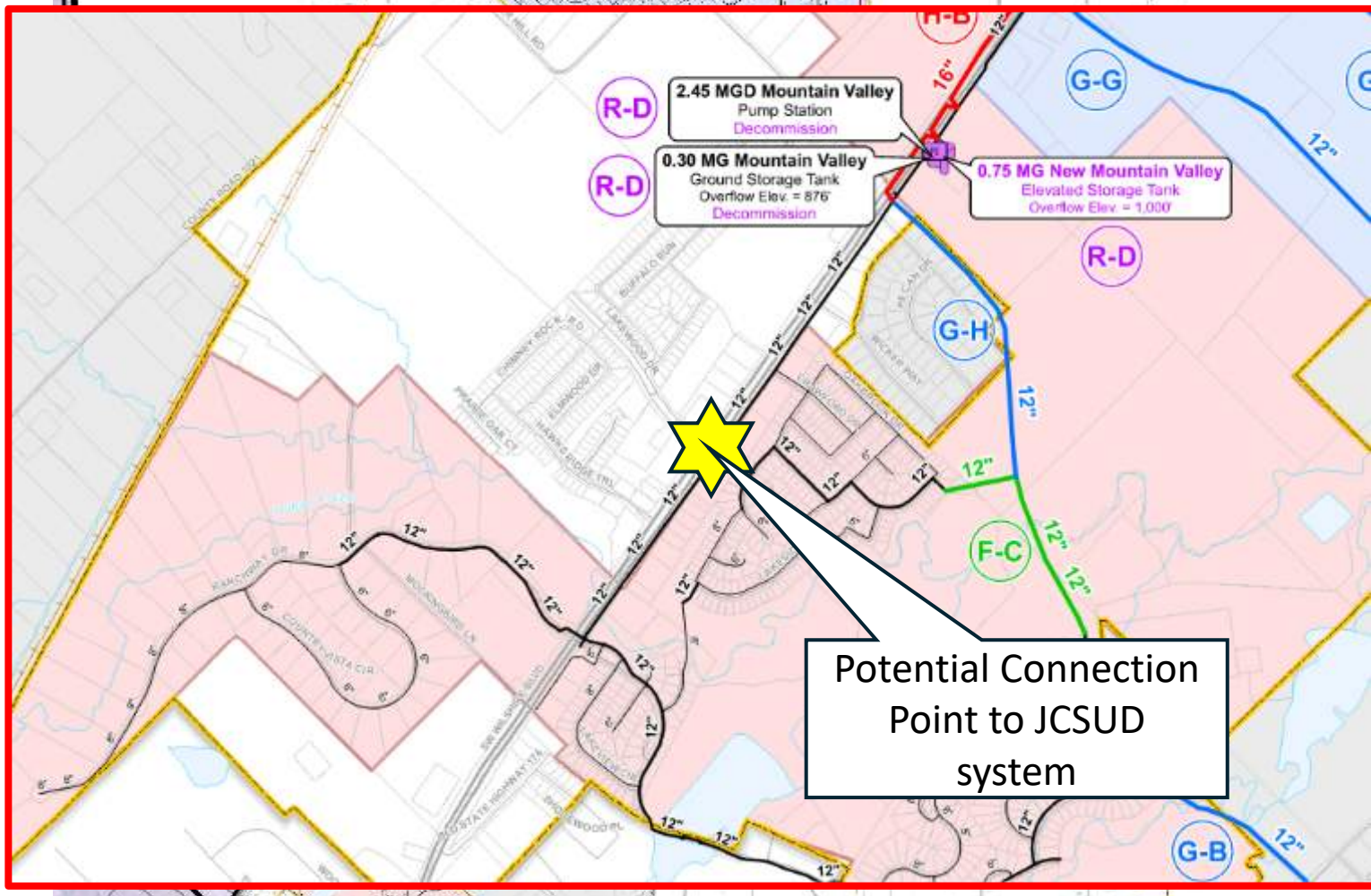
Source: JCSUD Water Master Plan Map (Jan. 2023)

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

APPARENT BEST OPTION

IMMEDIATE Connection to JCSUD Pressure Plane No. 8 at or near Mountain Valley Pump Station

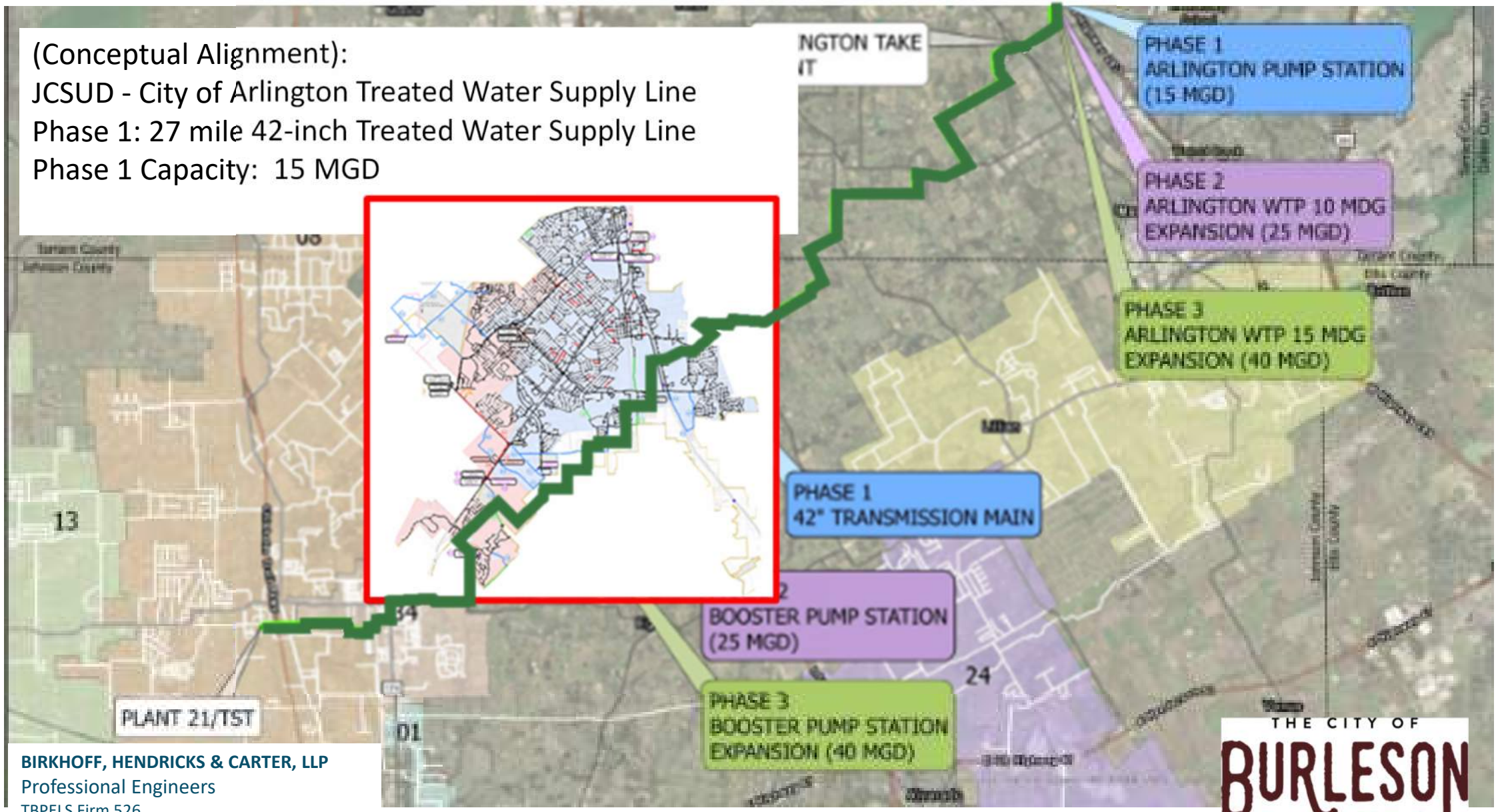
OR…



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

APPARENT BEST OPTION



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

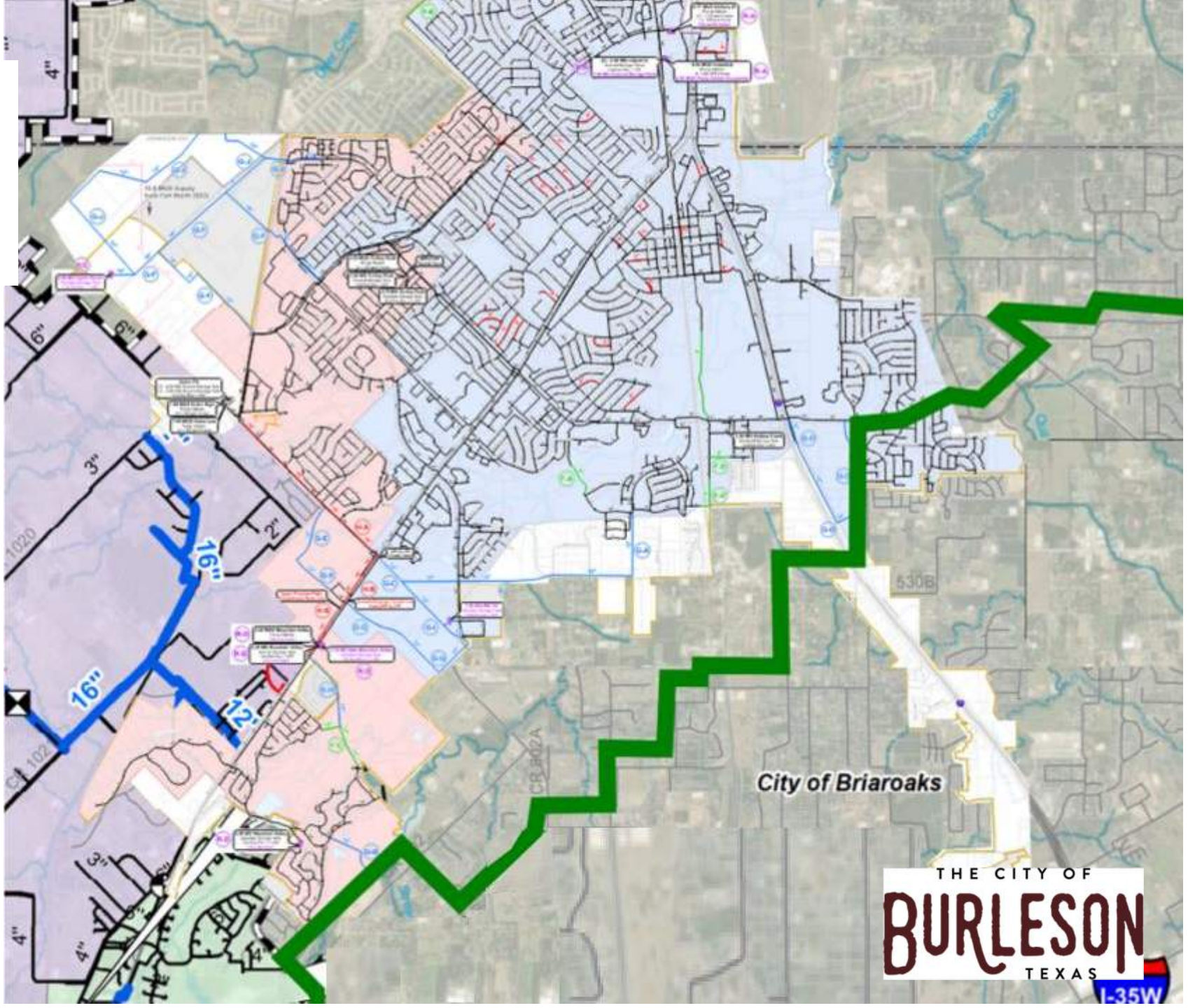
Source: JCSUD, *Pipeline Route Studies Presentation,* April 2025

APPARENT BEST OPTION

JCSUD – City of Arlington Treated Water Supply Line

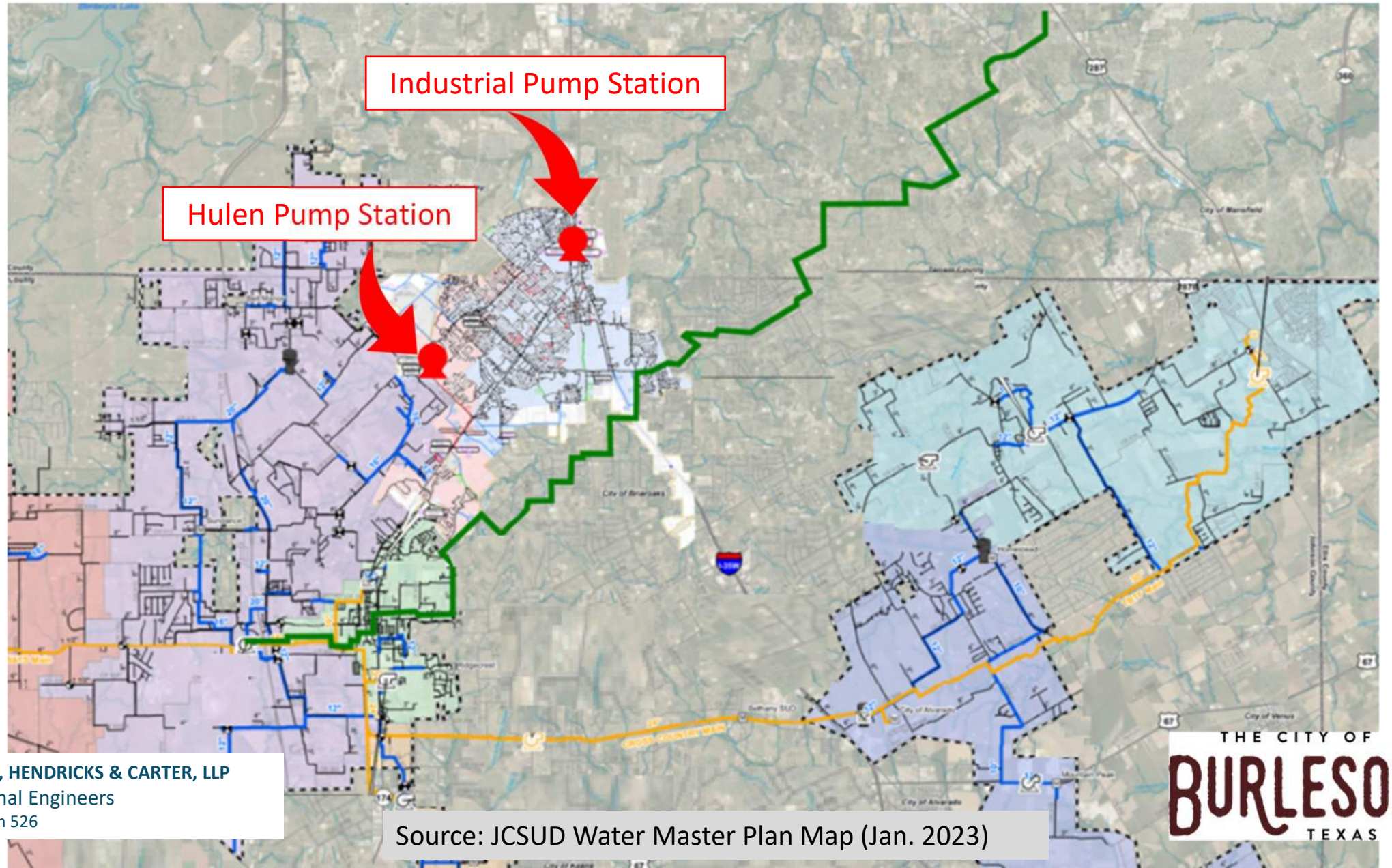
Phase 1: 27 mile 42-inch Treated Water Supply Line

Phase 1 Capacity: 15 MGD



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

APPARENT BEST OPTION



Source: JCSUD Water Master Plan Map (Jan. 2023)

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

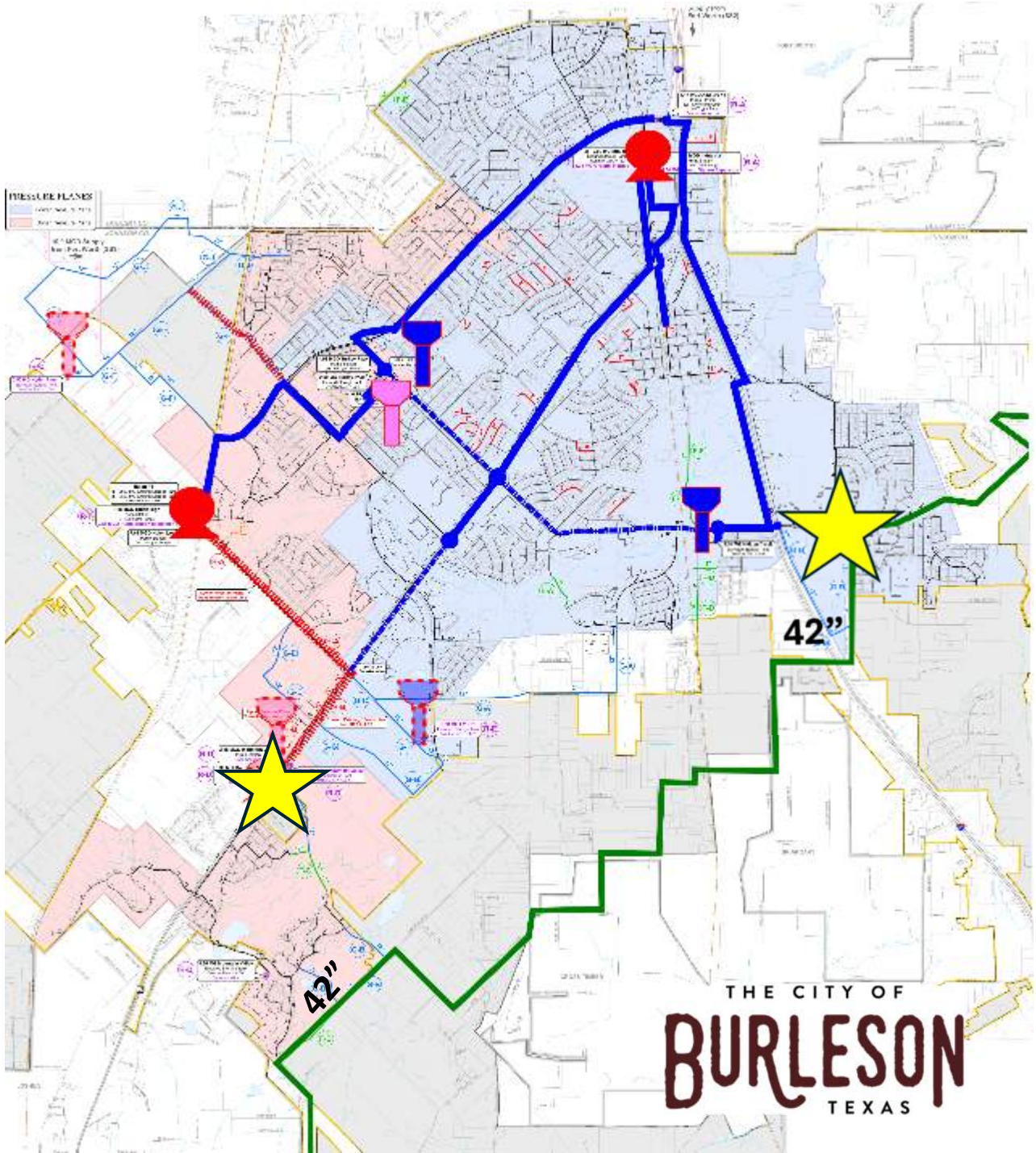
THE CITY OF BURLESON TEXAS

APPARENT BEST OPTION

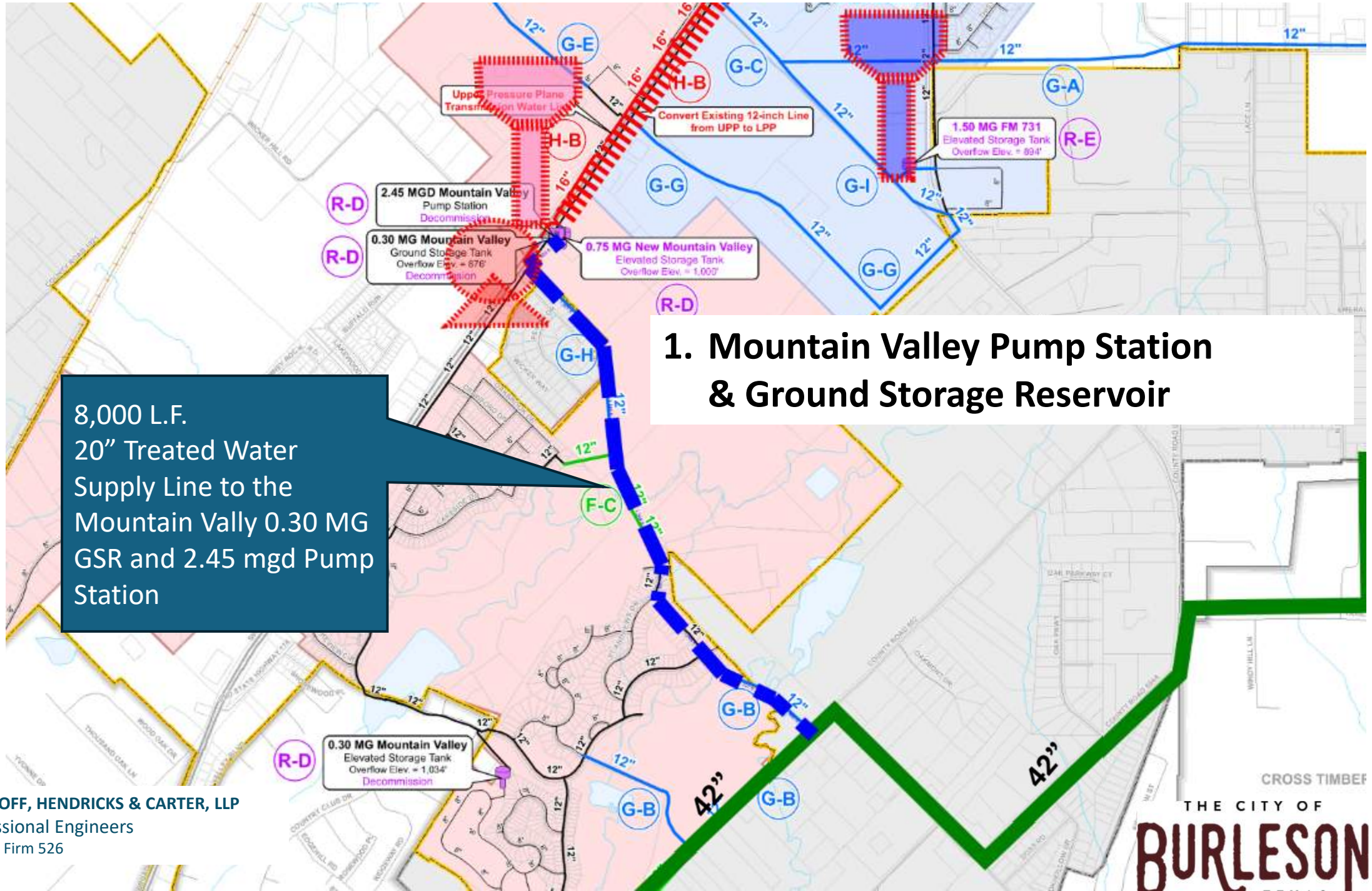
Potential Connection/Delivery Points

- Air Gap and Ground Storage Tank Necessary
- High Service Pump Station Necessary

1. Mountain Valley Pump Station and GSR
2. Hidden Creek Parkway at S. Hurst Rd.

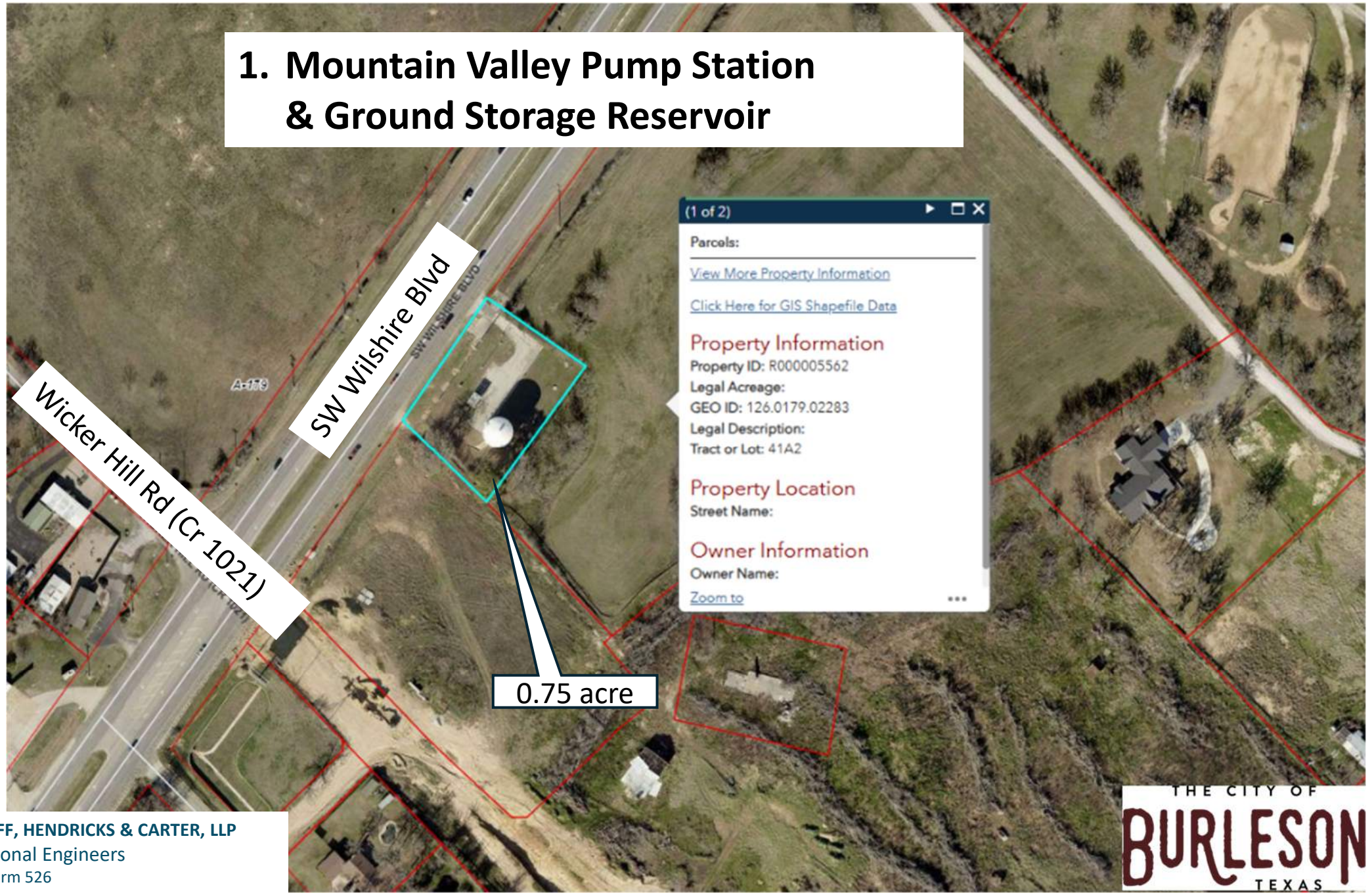


BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

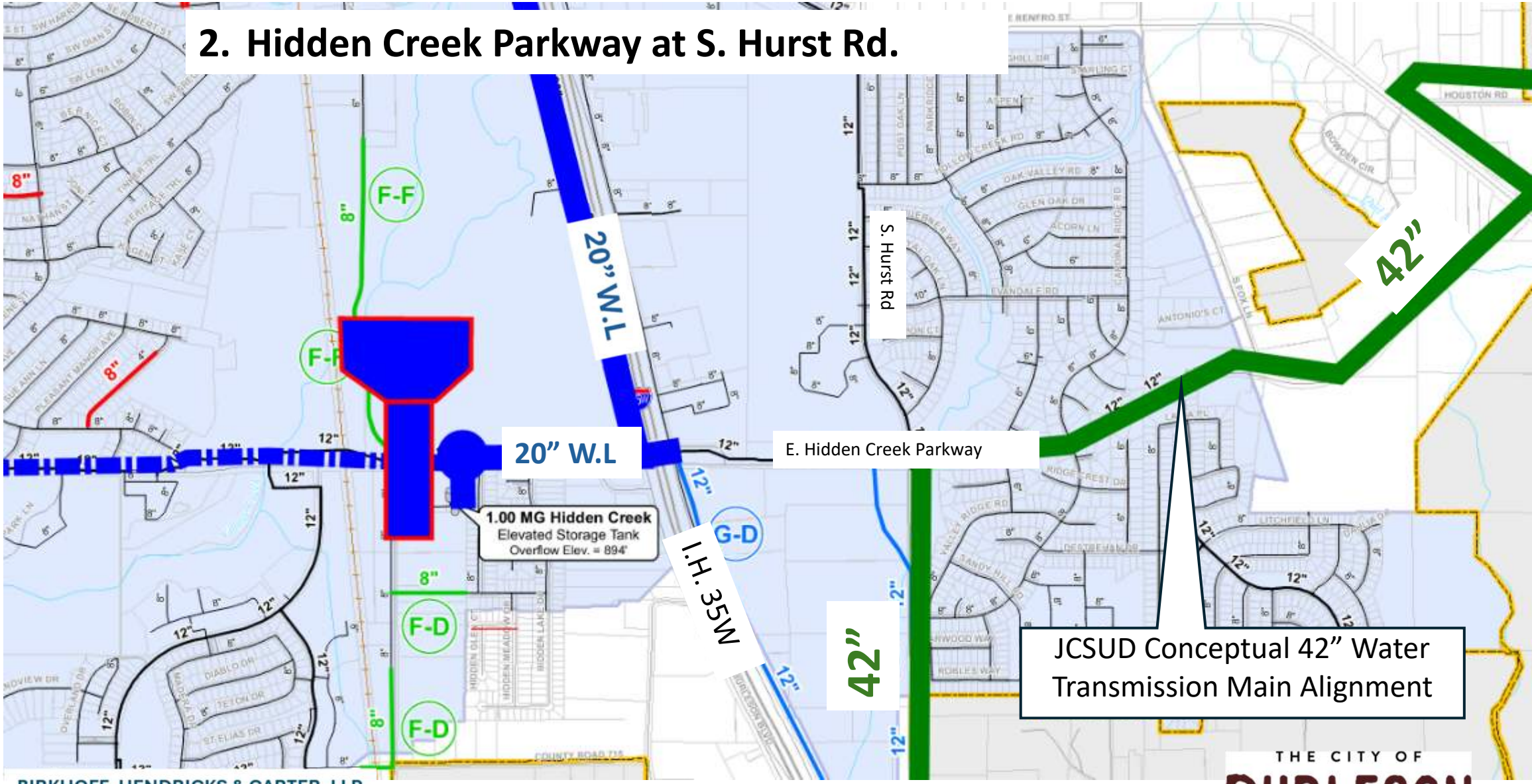
1. Mountain Valley Pump Station & Ground Storage Reservoir



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

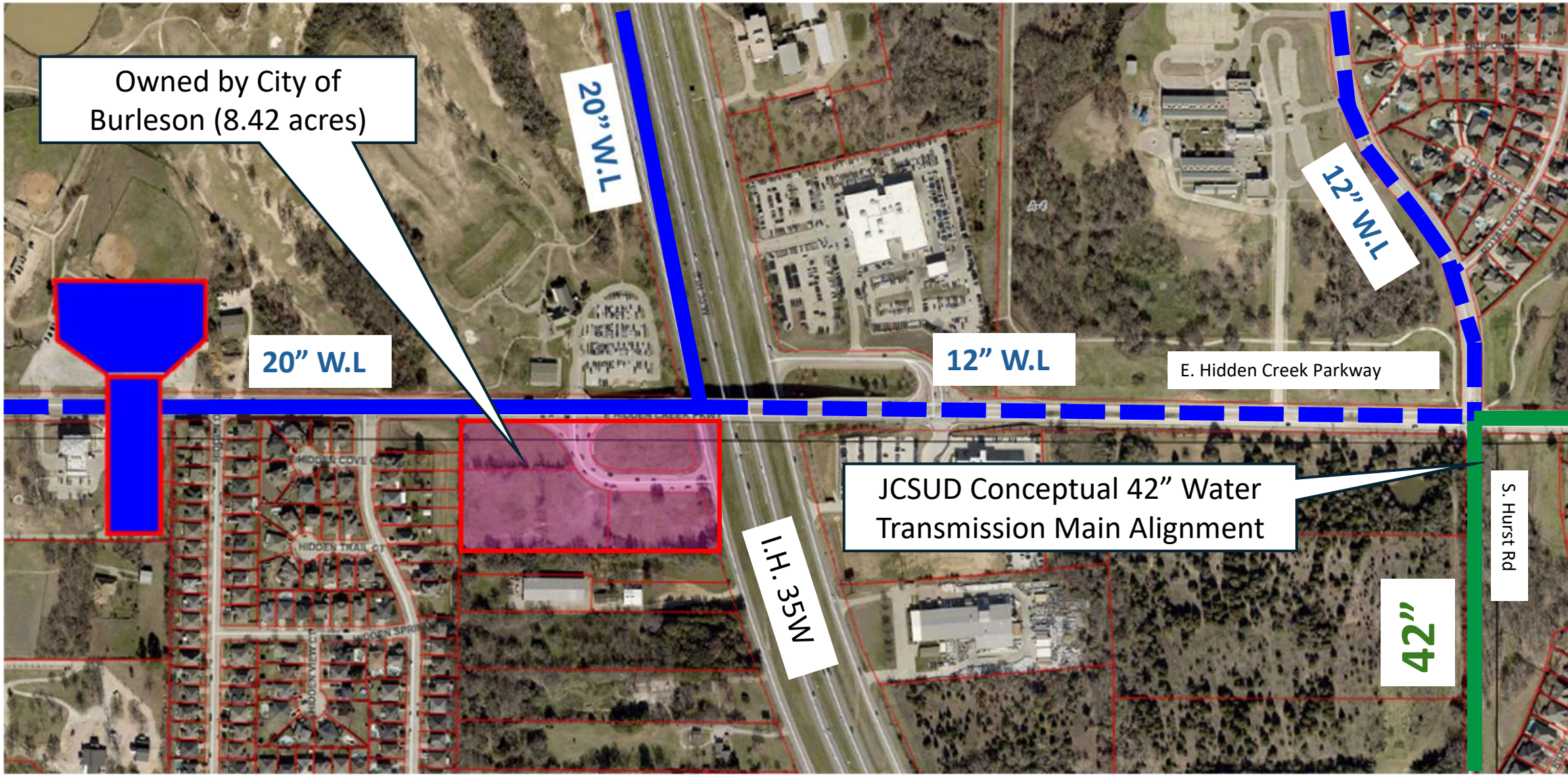
THE CITY OF BURLESON TEXAS

2. Hidden Creek Parkway at S. Hurst Rd.



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

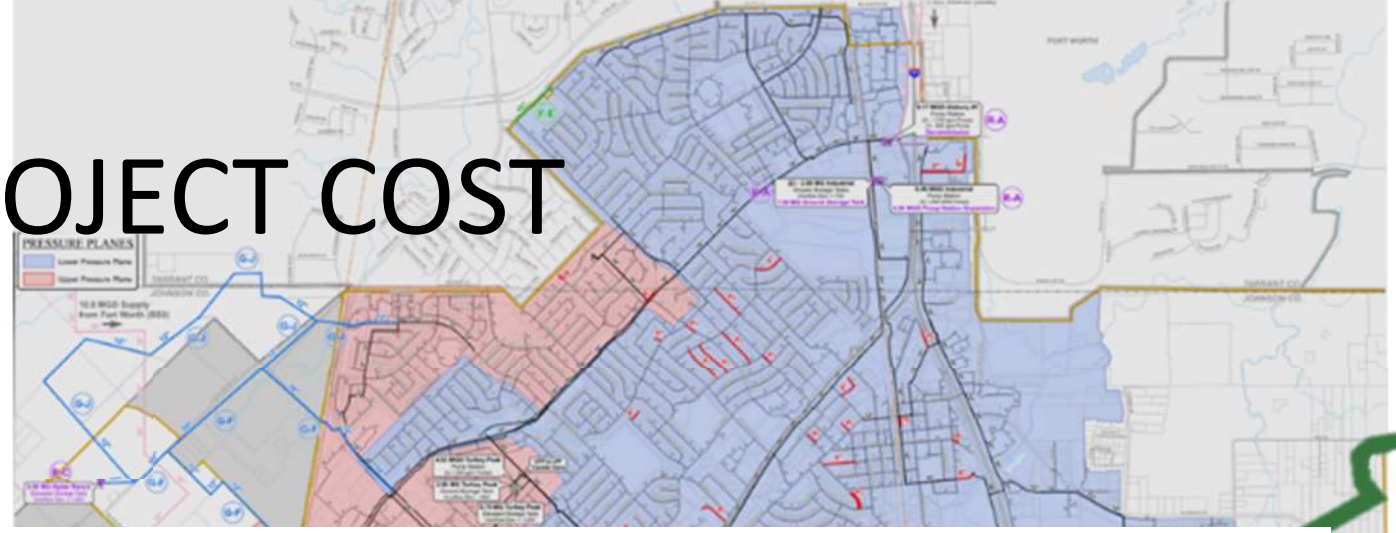
THE CITY OF BURLESON TEXAS



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

CONCEPTUAL PROJECT COST



JCSUD Estimates:

Phase	Description	JCSUD	Arlington	Total
1	42" Transmission Main & Pump Station	$112 M	$30 M	$142 M
2	25 MGD Treatment Plant Upgrade		$167 M	$167 M
3	40 MGD Treatment Plant Upgrade		$50 M	$50 M
Project Total:		**$112 M**	**$247 M**	**$359 M**

Source: JCSUD, *Pipeline Route Studies Presentation,* April 2025

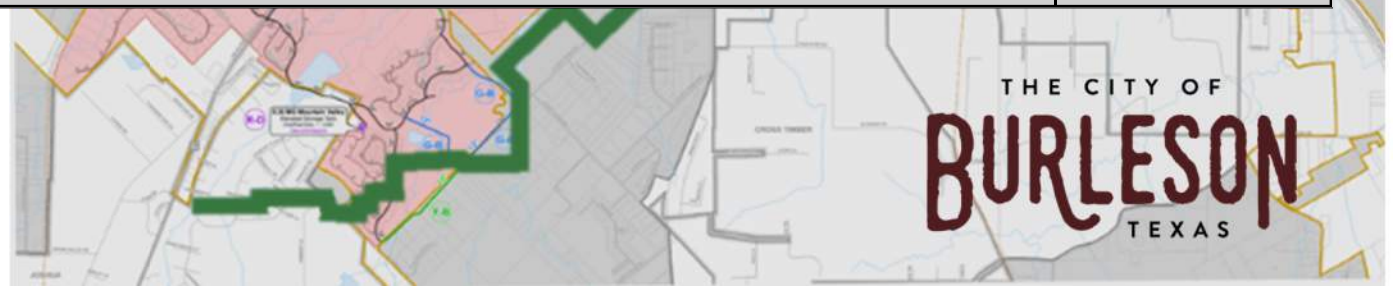
BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

CONCEPTUAL PROJECT COST

Phase	Description	Total	Total Capacity (MGD)	Burleson Capacity		
				MGD	%	$
1	42" Transmission Main & Pump Station	$142 M	15	2	13.3%	$18.9 M
2	25 MGD Treatment Plant Upgrade	$167 M	25	4	16.0%	$26.7 M
3	40 MGD Treatmen				15.0%	$7.5 M
					ubtotal:	**$53.2 M**

USE $65 to $70M

City of Burleson Conceptual Internal Infrastructure Cost:	
2 EACH - 3 MGD Pump Station with 0.5 MG Ground Storage Reservoir, OR	$3.9 M
1 EACH -6 MGD Pump Station with 1.0 MG Ground Storage Reservoir	$7.6 M
City of Burleson Internal Cost Subtotal - USE:	**$8.0 M**
Project Total:	**$61.2 M**



THE CITY OF BURLESON TEXAS

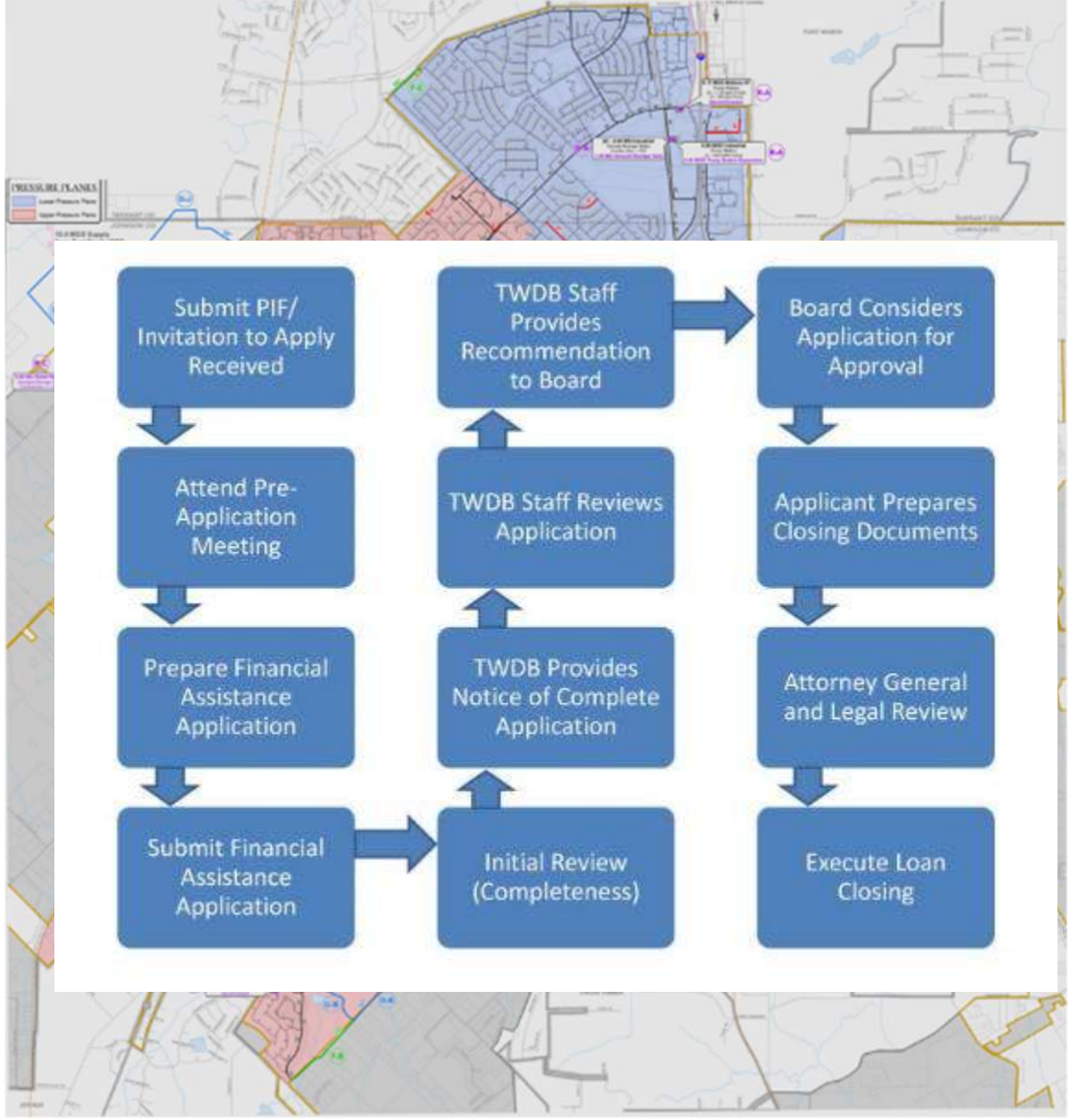
BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Potential Funding Source

1. **Texas Water Development Board – Region C and Region G Planning Group**
   a) 2021 Regional Water Plan
   b) 6th Planning Cycle (2026 Regional Water Plan)
2. **Process to Get Funded (Time-sensitive)**

(Applications open in January and close in March)

a) Submit Projection Information Form (PIF)
b) Submit Financial Assistance Application
c) If approved, receive Financial Assistance Commitment
d) Close on funding



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

COST COMPARISION SUMMARY

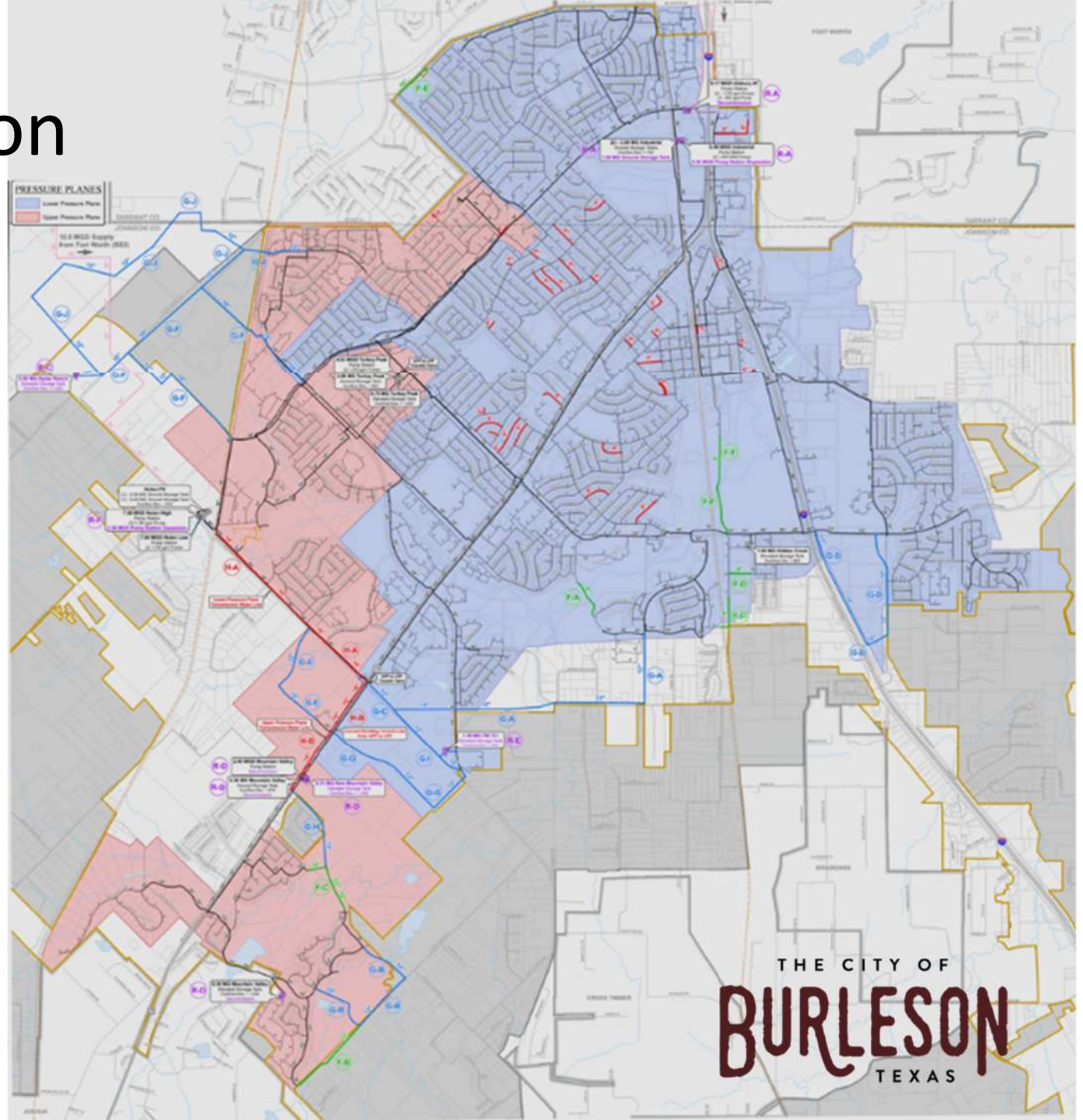
	Conceptual Cost (Million $)		
	Treated Water Supply	Raw Water Supply	Groundwater Supply
Participation in JCSUD Treated Water Supply System	$53.2		
Supply Water Lines		$52.8	
Raw Water Intake and Pump Station		$20.0	
Water Treatment Plant(s)		$60.0	$63.0
Groundwater Wells (9 each)			$27.0
Ground Storage and High Service Pump Station	$8.0	$8.0	$18.0
Internal Water Transmission Mains	$3.2	$5.0	
Annual Water Cost (Treated, Raw or Ground)	$2.6	$1.5	$0.2
Annual Operation and Maintenance Cost			
Total:	**$66.9**	**$147.3**	**$108.2**

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

Review and Discussion

1. How Much Water Supply from Alternate Sources?
2. Ft. Worth Water Supply Contract Terms and Conditions
3. Consider Stranded Investment in Ft. Worth Supply Lines and Facilities



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

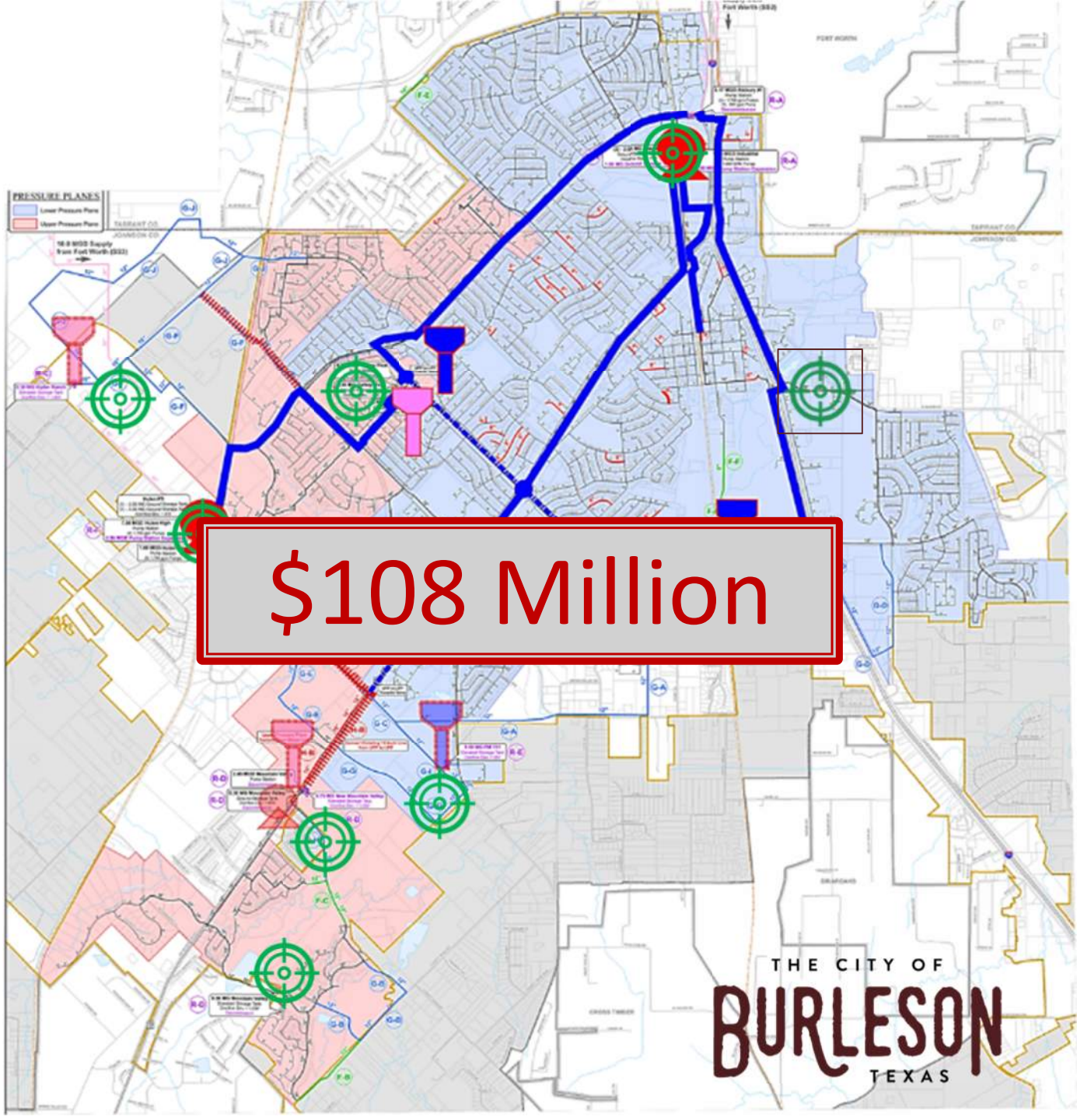
COUNCIL FEEDBACK SOUGHT

Groundwater Sources

1. **Practical Limitations of Reliable Source**
2. **Prairielands Ground Water Conservation District**
3. **Cost Considerations**

NEXT STEPS:

1. Conduct Hydrological Ground Water Study and Report that verifies:
   a) Predicted Supply
   b) Treatment Requirements
   c) Depth and Cost of Wells
2. Meet with Prairielands Groundwater Conservation District to discuss this approach, District Regulations and Fees



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

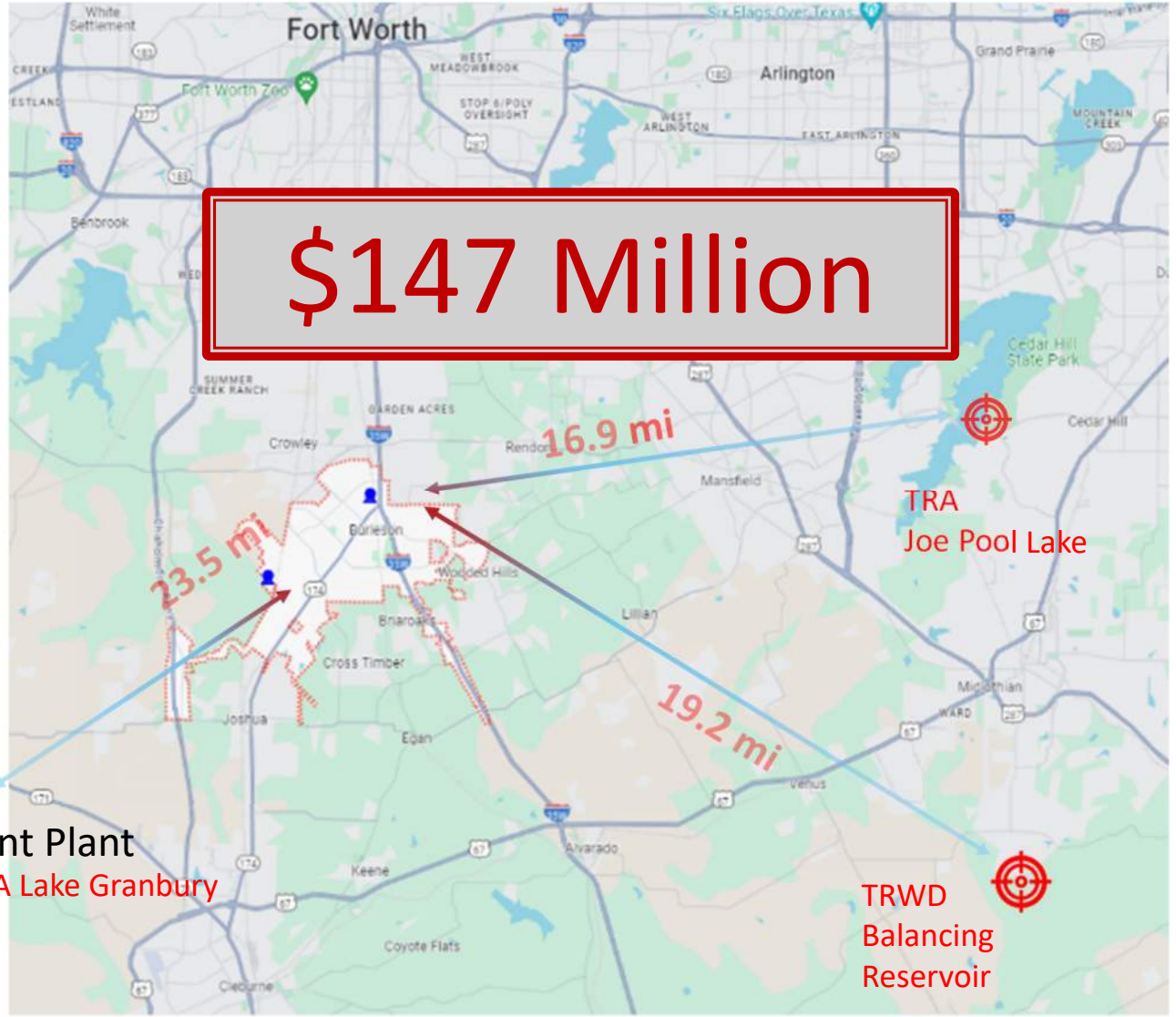
COUNCIL FEEDBACK SOUGHT

Raw Water Sources

1. Tarrant Regional Water District
2. Trinity River Authority
3. Brazos River Authority

NEXT STEPS:

1. Meet with each entity to evaluate:
   a) Availability of RAW Water Supply
   b) Treatment Requirements
2. Determine Point of Delivery and Water Treatment Plant (WTP)
3. Prepare Capital Cost Estimates
   a) Raw Water Pump Intake and Pump Stations
   b) Raw Water Transmission Main
   c) Treatment Plant
4. Estimate Annual Operation and Maintenance of WTP



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF BURLESON TEXAS

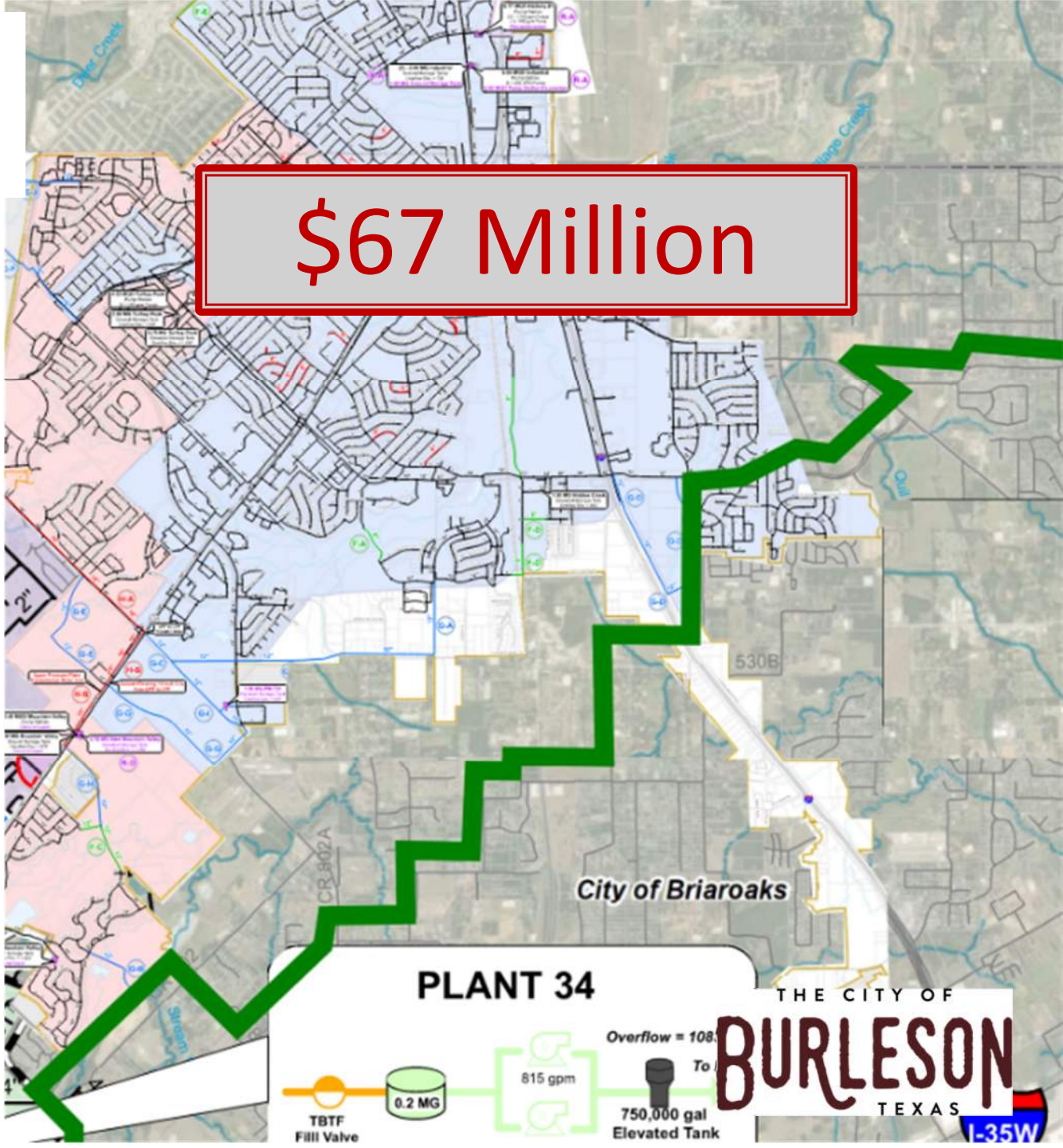
COUNCIL FEEDBACK SOUGHT

Treated Water Sources

1. Johnson County Special Utility District
2. ~~City Midlothian~~
3. ~~City of Cleburne~~
4. ~~City of Mansfield~~
5. City of Arlington??

NEXT STEPS:

1. Continue Discussions with JCSUD
   a) Available Supply
   b) Schedule
   c) Capital Cost Participation
   d) Treated Water Rates
2. Determine Point of Delivery
3. Prepare Capital Cost Estimates
4. Evaluate Funding Mechanisms

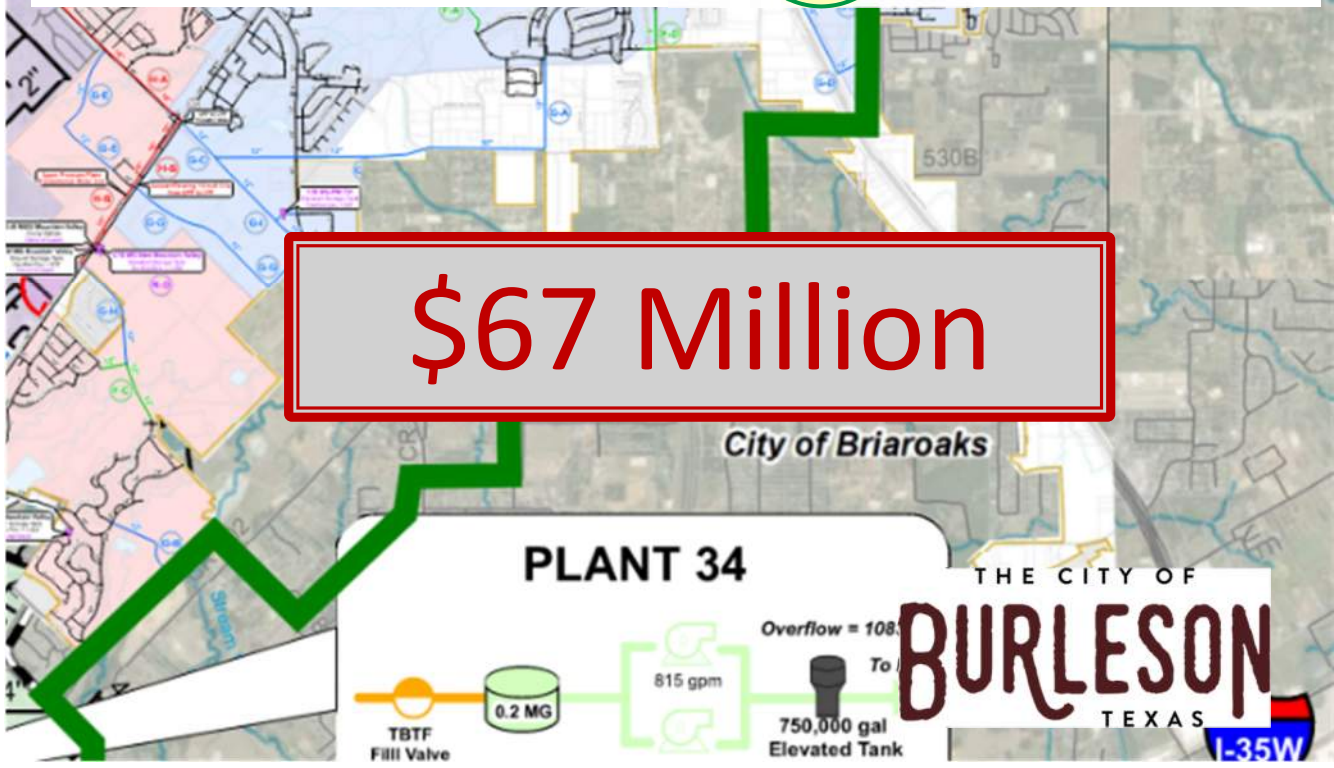


BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

Infrastructure & Development Committee Recommendation

- Abandon efforts related to groundwater (due to reliability) and raw water (cost prohibitive)
- Keep dialogue open with JCSUD anticipating capacity in the Arlington – JCSUD 42” Pipeline, but no commitment of funds at this time
- Assess impact of a $67m supply project on our water rates for customers
- Further define our risk

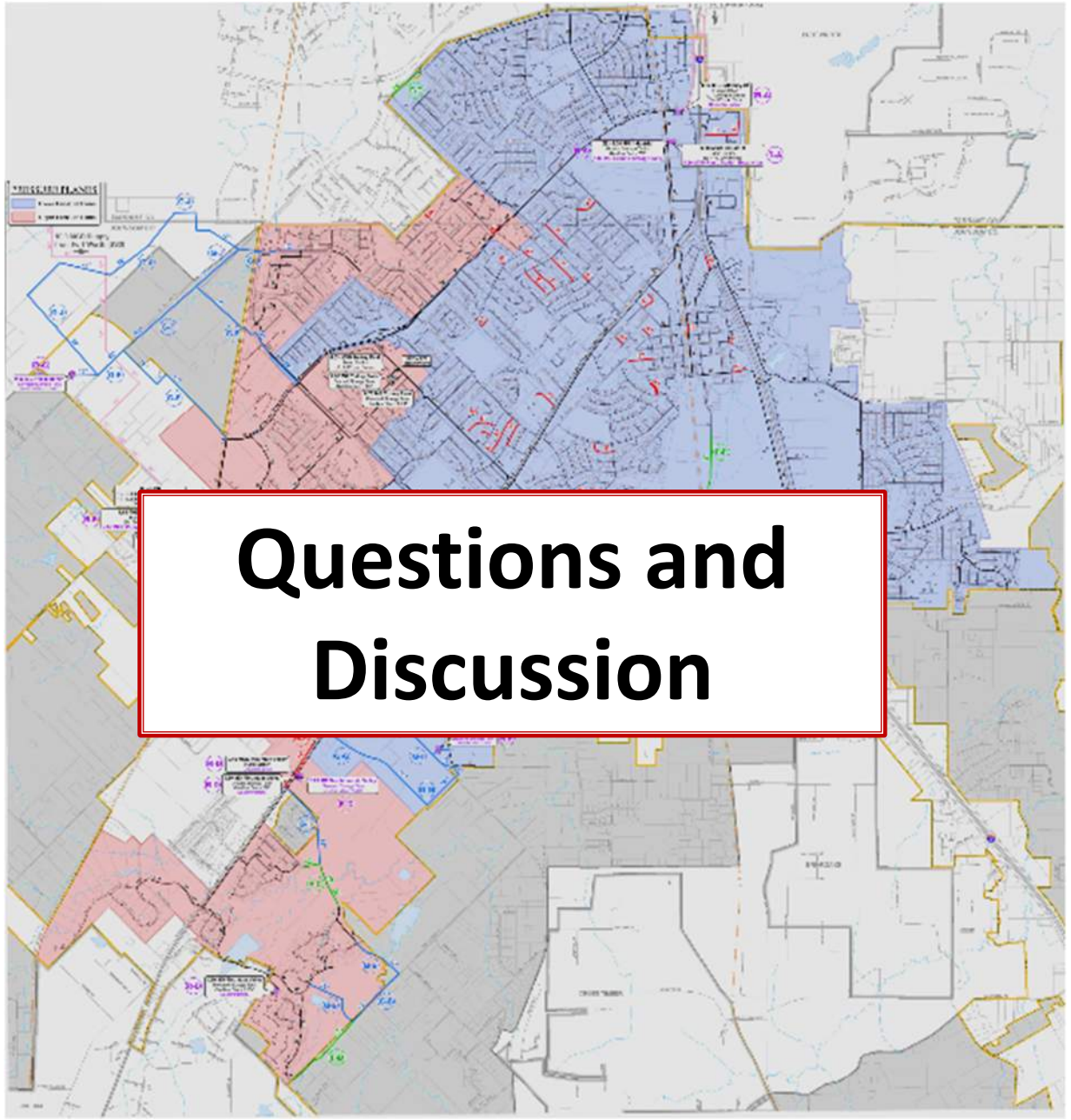
	Conceptual Cost (Million $)		
	Treated Water Supply	Raw Water Supply	Groundwater Supply
Participation in JCSUD Treated Water Supply System	$53.2		
Supply Water Lines		$52.8	
Raw Water Intake and Pump Station		$20.0	
Water Treatment Plant(s)		$60.0	$63.0
Groundwater Wells (9 each)			$27.0
Ground Storage and High Service Pump Station	$8.0	$8.0	$18.0
Internal Water Transmission Mains	$3.2	$5.0	
Annual Water Cost (Treated, Raw or Ground)	$2.6	$1.5	$0.2
Annual Operation and Maintenance Cost			
Total:	**$66.9**	**$147.3**	**$108.2**



BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526

THE CITY OF
BURLESON
TEXAS

Assessment of Water Supply Strategies



Questions and Discussion

Prepared and Presented By:

BIRKHOFF, HENDRICKS & CARTER, LLP
Professional Engineers
TBPELS Firm 526