WATER CAPITAL IMPROVEMENTS PLAN

PARKER COUNTY
SPECIAL UTILITY DISTRICT

JANUARY 2022

This document is issued for interim review by Joshua L. Berryhill, P.E., Texas PE# 100323 on January 17, 2022 and is not intended for construction, bidding, or permitting purposes.

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I. INTRODUCTION

The Water Capital Improvement Plan (CIP) for Parker County Special Utilities District (District) identifies the capital projects that are expected within the next ten years to account for the anticipated growth within the District's service area. The goal of this document is to provide an outline for implementing CIP projects and an overall strategy for expansion of the water system. The CIP is based on a population growth rate that is based on the population projections from the Texas Water Development Board 2021 Regional Water Plan along with information from Bock ISD estimated enrollment and information on upcoming developments. Based on the reviewed sources, a growth rate of 3.11% was utilized for planning purposes.

II. EXISTING SYSTM ANALYSIS

a. Existing System

The existing system includes an existing surface Water Treatment Plant (WTP) with an "on paper" capacity of 1.00 million gallons per day (mgd). The WTP is located near Dennis, TX on the north side bank of the Brazos River. See Figure 1 for the Existing Distribution System. The District holds a Certificate of Convenience and Necessity (CCN No. 12313) for water service that is valid for Parker County and the areas immediately surrounding the District. Wholesale water contracts have also been established with Mineral Wells, TX to receive treated water from Mineral Wells to meet peak demands.

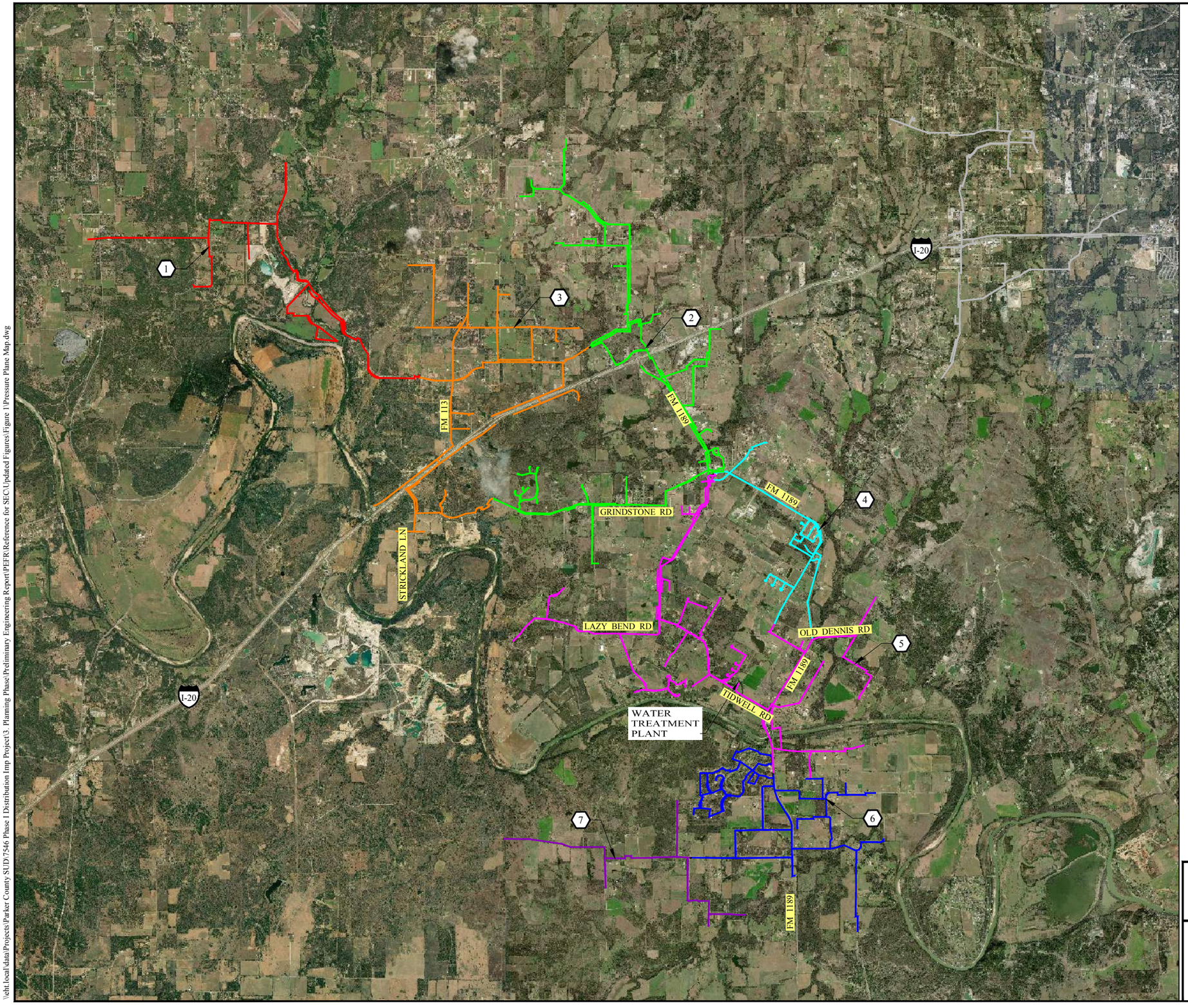
Historic water consumption data for January 2015 through November 2021 was obtained from the District. The data set consisted of total daily water usage in the service area. For each calendar year, an average of the daily usage data was used to determine the average annual daily use. Similarly, the maximum use over the calendar year was extracted to identify the peak annual daily use. The historical and peak usages are listed in Table 1.

Table 1: Historical Water Consumption

Year	Average Annual Daily Usage (mgd)	Peak Annual Daily Usage (mgd)	Max Peak Daily Usage (mgd)
2015	0.31	0.42	0.64
2016	0.36	0.50	0.80
2017	0.43	0.62	0.90
2018	0.50	0.68	1.21
2019	0.48	0.66	1.03
2020*	0.38	0.47	0.68
2021**	0.28	0.52	0.98

[a] Includes wholesale purchase data through March 31, 2020. Includes WTP production data for all of 2020.
**Only includes WTP production data. Wholesale Purchase Data is pending.

As shown in Table 1, the trend is an increase in water usage in the service area. The historic average annual daily usage ranged from 0.31 to 0.50 mgd, while the peak annual demand varied from approximately 0.42 to 0.68 mgd. The peak water daily water usages were developed from the max value of the individual months and were averaged over the entire year.



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SCALE IN FEET

NOTES INDICATED BY NUMBER IN (#):

1. MINERAL WELLS PRESSURE PLANE
2. JACK WRIGHT PRESSURE PLANE
3. BENNETT ROAD PRESSURE PLANE
4. BROCK PUMP STATION PRESSURE PLANE
5. WATER TREATMENT PLANT PRESSURE PLANE
6. SUGAR TREE PRESSURE PLANE
7. DENNIS PRESSURE PLANE

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7956 PROJECT NO.

01/13/2022 DATE

FIGURE 1

EXISTING DISTRIBUTION SYSTEM
PARKER COUNTY TEXAS

B.W. DESIGNED BY:
SMB DRAWN BY:
CHECKED BY:

1 OF 1

\\eht-local\data\Projects\Parker County SUD\7546 Phase I Distribution Imp Project\3. Planning Phase\Preliminary Engineering Report\PEFR Reference for SECUpdated Figures\Figure 1\Pressure Plane Map.dwg

The historic water consumption data from January 2017 through March 2020 was reviewed for usage by water source. Table 2 shows the average annual daily usage and peak annual daily usage from the WTP and the purchased water from Mineral Wells. The average annual daily usage purchased from Mineral Wells ranged from 0.14 to 0.21 mgd, while the peak annual daily usage ranged from 0.21 to 0.31 mgd. The average annual daily usage from the WTP ranged from 0.19 to 0.31 mgd, while the peak annual daily usage ranged from 0.25 to 0.49 mgd.

Table 2: Historical Water Sources

	2017		2018		2019		2020		2021	
	Average Annual Daily Usage [mgd]	Peak Annual Daily Usage [mgd]	Average Annual Daily Usage [mgd]	Peak Annual Daily Usage [mgd]	Average Annual Daily Usage [mgd]	Peak Annual Daily Usage [mgd]	Average Annual Daily Usage [mgd]	Peak Annual Daily Usage [mgd]	Average Annual Daily Usage [mgd]	Peak Annual Daily Usage [mgd]
Mineral Wells	0.14	0.22	0.21	0.31	0.17	0.25	0.15*	0.21*	***	***
Water Treatment Plant	0.29	0.49	0.28	0.43	0.31	0.45	0.30	0.43	0.28**	0.52**

[a] Through March 31, 2020
** Through November 30, 2021
*** Wholesale Purchase Data is pending

III. LAND USE ASSUMPTIONS AND GROWTH PROJECTIONS

Given that the largest industry in the District's service area is currently based on development of Brock Independent School District (ISD), the District has coordinated with Brock ISD and the City of Brock in identifying projected growth trends, land use assumptions in the community, and anticipated key growth areas for the near future. For this reason, land use assumptions within the District's service area are based on coordination with Brock ISD's 2020 Demographic Update (Refer to Appendix A), as well as coordination with developers in the area that have provided feedback to the District on anticipated new developments since the implementation of the District's moratorium in July 2018.

The District is expected to see continued growth. Population data for 2020 was derived from the most recent census from the Texas Water Development Board (TWDB) Region C population for 201,491 residents as shown in Table 2. As shown in Population Projections in Table 3, the TWDB 2021 Regional Water Plan shows water planning projections for an average of approximately 2.45% for 2030 – 2070.

Table 3: Population Projections for Parker County

	2020*	2030	2040	2050	2060	2070
Parker County	201,491	260,194	276,979	360,125	472,097	593,000
Percent Growth		2.91%	0.65%	3.00%	3.11%	2.56%

*Population data recorded from TWDB Region C

The TWDB shows a decline in the percent growth in 2040 to 0.65%. No supporting data was found for the reduced growth rate. Table 4 shows the population projections utilizing an interpolated growth

rate of 2.96% for 2040; this value is more in line with the growth percentages of the surrounding years. The approximate average population projection using the interpolated value is 2.91% for 2030 – 2070.

Table 4: Modified Population Projections for Parker County

	2020*	2030	2040	2050	2060	2070
Parker County	201,491	260,194	337,081	438,206	574,488	721,557
Percent Growth		2.91%	**2.96%**	3.00%	3.11%	2.56%

*Population data recorded from TWDB Region C

Region C currently does not record the rural population data for the customers supplied by the Parker County SUD, the current connections must be determined based on the growth factor from the County's population due to the lack of information. The County's growth factor will be overly conservative as this is based on larger city's (i.e. Weatherford and Aledo) in the county that have shown drastic population growth over the years.

Brock Independent School District (ISD) presented a Fall 2020 Demographic Update. This presentation included historic and forecasted enrollment. Table 5 contains the historic enrollment, and Table 6 contains forecast enrollment values from the Brock ISD presentation. The average historic percentage growth is approximately 7.17%. The approximate average growth projection is 5.62%.

Table 5: Brock ISD Historic Enrollment

Academic Year	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Enrollment	1,337	1,373	1,527	1,643	1,760
		2.69%	11.22%	7.60%	7.12%

Table 6: Brock ISD Enrollment Projections

Academic Year	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031
Enrollment	1,760	1,885	2,013	2,163	2,294	2,403	2,523	2,665	2,793	2,895	2,997
	7.12%	7.10%	6.79%	7.45%	6.06%	4.75%	4.99%	5.63%	4.80%	3.65%	3.52%

As of 2021, the District has reported that there are 1,926 active connections and 301 approved proposed connections. These connections were used in conjunction with a 3.11% growth rate to determine the active connection counts in Table 7.

Table 7: Active District Water Connection Projections

	2020*	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
Connections	2,227	2,596	3,025	3,526	4,109	4,789	5,581	6,505	7,581	8,836	10,298

* 2020 connection count includes active and approved Phase 1 connection.
Projection assumes a 3.11% growth rate.

There are three large developments that the District anticipates coming online by 2025. These are Canyon West with approximately 400 connections, Lazy Bend Estates with approximately 50 connections, and Horseshoe Bend with approximately 400 connections. The District also anticipates that the Greenwood Area will require service before 2025. Greenwood currently contains 136

connections. Table 8 shows the connections projections with the additional 850 connections from the developments included in 2025 and the 136 connections for Greenwood in 2021.

Table 8: Active District Water Connection Projections with Development Additions

	2020*	2025**	2030	2035	2040	2045	2050	2055	2060	2065	2070
Connections	2,227	3,604	4,060	4,591	5,210	5,931	6,772	7,752	8,894	10,226	11,777

* 2020 connection count includes active and approved Phase 1 connection.
** 2025 connection count includes 850 connections for the Canyon West, Lazy Bend Estates, and Horseshoe Bend developments. 136 connections for Greenwood are included in 2021 connections.
Projection assumes a 3.11% growth rate.

However, based on the entire connections anticipated to be able to be served following completion of the proposed 10-year CIP projects, on October 18th, 2021, NewGen Strategies & Solutions presented the connection projections shown in Table 9. The projections use an average growth rate of approximately 14.51%. While this growth rate is significantly higher than the projections presented in the previous tables, Table 9 reflects the anticipated impact of bringing the Greenwood, Lazy Bend, and Horseshoe Bend developments into the District's water system within the next 10 years (which is anticipated either due to declining groundwater availability/quality in the District's Greenwood system, or due to regionalization needs pushed by the Texas Commission on Environmental Quality [TCEQ] and/or Public Utilities Commission [PUC] regarding other nearby water systems or developments that are in ongoing severe noncompliance for adequate water supply). Further, these projections account for the total number of connections that could be served by the District following completion of the anticipated treatment and distribution improvements discussed later in this report.

Table 9: District Water Connection Projections with Anticipated System Additions

	2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Connections	1,958	2,239	2,561	2,931	3,356	3,843	4,403	5,046	5,783	6,630
Percent Growth		14.35%	14.38%	14.45%	14.50%	14.51%	14.57%	14.60%	14.61%	14.65%

Note: Growth rate includes addition of previously unserved areas for surface water – Greenwood, Lazy Bend, Horseshoe Bend, etc.

The District has also discussed Santo SUD as a potential wholesale customer. Santo currently purchases water from Mineral Wells at a limited capacity of 510 gpm. As the growth in the area continues, Santo will need to purchase the additional water required. A growth rate of 2.8% was utilized for the usage projections based on the TWDB Region G population projections.

Table 10: Projected Additional Water Usage for Santo SUD

	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
Projected Water Usage [gpm]	334	451	519	597	686	789	908	1044	1201	1381	1588
Additional Flow Needed (gpm)	0	0	9	87	176	279	398	534	691	871	1078
Additional Flow Needed (MGD)	0	0	0.01	0.13	0.25	0.40	0.57	0.77	1.00	1.25	1.55

Historic water usage data for 2001 to 2020 was also obtained from the District. For each calendar year the average usage per residential connection was calculated. Table 11 shows the average residential usage in gallons per connection per day (gpcd). The approximate historic average usage is 252 gpcd, which is 0.175 gallons per minute (gpm) per connection. The historic maximum usage is approximately 525 gpcd (0.36 gpm per connection).

Table 11: Average Historical Usage

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Average Usage (gpcd)	310	297	283	274	265	260	210	272	264	244
	2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Average Usage (gpcd)	279	249	235	237	201	217	239	228	223	248

The TCEQ's Title 30 TAC Chapter 290 for Public Drinking Water requires a minimum surface WTP capacity of 0.6 gpm per connection (864 gpcd) as the standard capacity requirement (SCR). The maximum monthly usage of 525 gpcd is approximately 61% of the required usage. An Alternative Capacity Requirement maybe be requested. TCEQ requires a minimum safety factor of 1.15 when calculating an ACR. With this safety factor, the District could apply for 70% of the minimum requirement, which is 0.419 gpm per connection (603 gpcd). The TCEQ requires that the validity of an ACR be re-evaluated on an annual basis by the District and the engineer. Table 12 shows the projected water capacities utilizing the SCR and ACR values.

Table 12: Projected Capacity Needs for Parker County SUD

	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
WTP Capacity Needs Utilizing SCR [mgd]	1.92	3.11	3.61	4.10	4.75	5.52	6.42	7.47	8.68	10.08	11.73
WTP Capacity Needs Utilizing Potential ACR [mgd]	1.34	2.17	2.55	2.90	3.39	3.98	4.66	5.45	6.37	7.42	8.66

Projection assumes a 3.11% growth rate.
SCR equals 0.6 gpm per connection.
ACR value utilized is 0.419 gpm per connection.
Capacity includes active and approved Phase 1 connection, the Greenwood Area, Canyon West, Lazy Bend Estates, and Horseshoe Bend developments, and Santo additional capacity

Per the TCEQ Title 30 TAC Chapter 291.93(3), when a retail public utility has reached 85% capacity, a plan is required to show how the public utility will provide for any increased capacity. Table 13 shows the total WTP capacity needs assuming the ACR values from Table 12 are 85% of the capacity.

Table 13: Projected Capacity Needs for Parker County SUD Utilizing TCEQ 85% Rule

	2020	2025	2030	2035	2040	2045	2050	2055	2060	2065	2070
WTP Capacity Needs Utilizing Potential ACR and 85% Rule [mgd]	1.58	2.56	3.00	3.41	3.99	4.68	5.48	6.41	7.49	8.73	10.18

The population and connection projections were used as the design parameter for determining the CIP projects. A design condition of 4.0 mgd was utilized for the 10-year water treatment requirements. With a treatment capacity of 4.0 mgd and an ACR value of 0.419 gpm per connection (603 gpcd), the District can serve approximately 6,630 connections.

To account for the additional capacity requirements to be added in the 10-year planning period, the following outline for strategic expansion of the water system. This outline is shown as a prioritized list of goals for the Water CIP

Goals for Strategic Growth of the Water System:

1. Provide additional treatment capacity at the existing WTP (Plant #1) and construct a second

treatment plant (Plant #2). Based on the areas of anticipated new growth, the District intends to construct at least one additional regional plant northwest of the District's system along the Brazos River. However, the District may also elect to construct a third plant to better balance treatment vs distribution costs.

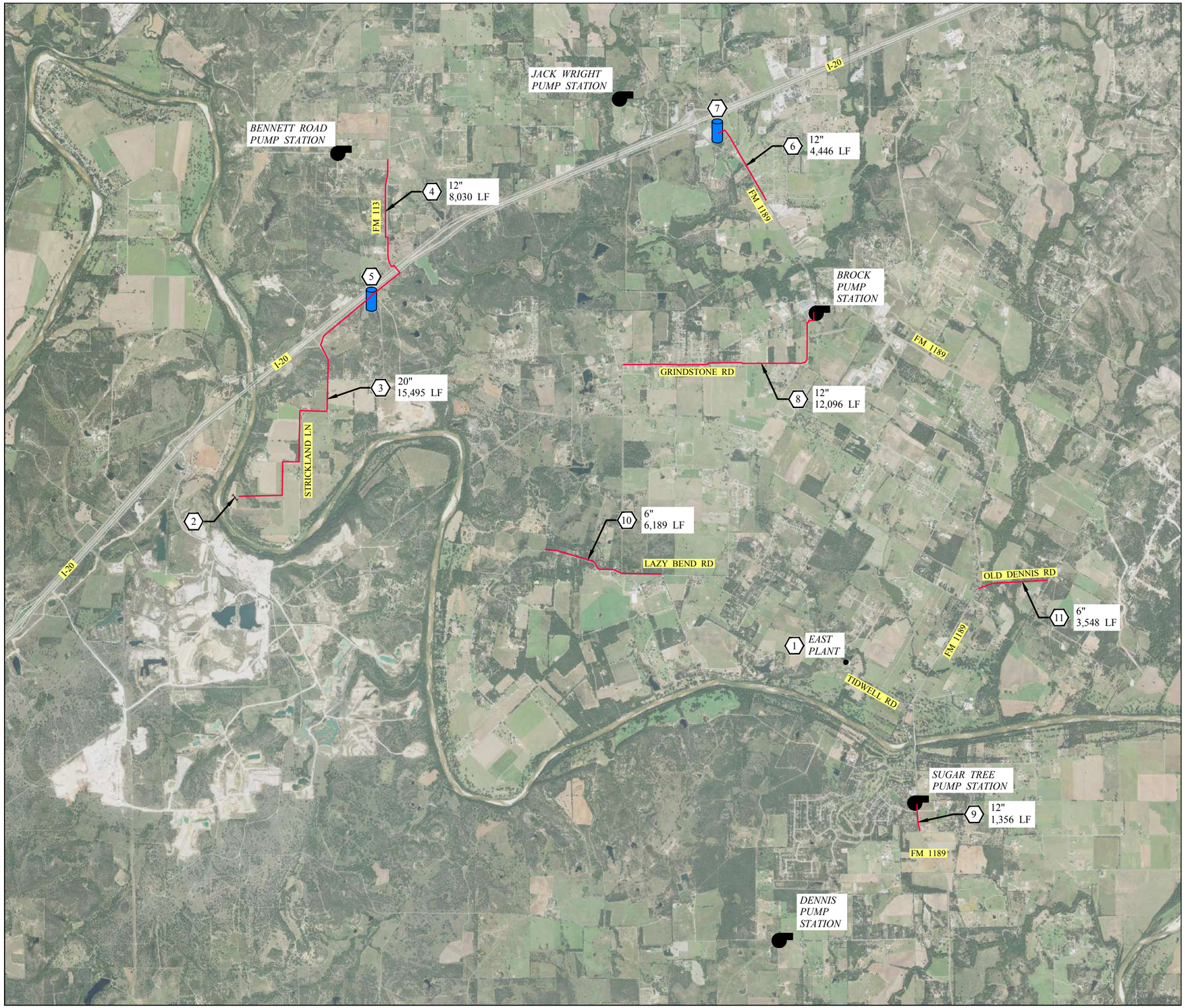
2. Upgrade the distribution system to account for the additional WTP capacity and to account for the need to transition from pressure storage to elevated storage when the District reaches over 2,500 connections in accordance with TCEQ Title 30 TAC Chapter 290.45(b)(2)(G).
3. Additional elevated storage to accommodate the line pressure requirements.
4. Improvements to existing pump stations with a goal of eliminating distribution pump stations over time to the minimum number needed to support the topographic elevation challenges in parts of the District's distribution system.

These goals address the anticipated system demands brought about by the anticipated growth in the system over the planning period. The District's main limiting factors are its current treatment capacity and its distribution system capacity. In multiple locations, the distribution system is nearing the connection limits based on the capacity for which it can provide. These limitations will be lessened through the Phase I WTP and Phase I distribution projects, but only until growth in new connections reaches the Phase I limits, which will be in just a few years.

IV. PROPOSED WATER CIP PROJECTS

The District has selected a group of capital projects to achieve the goals for strategic growth of the system (Refer to Appendix B for a copy of the August 2021 Water Master Plan presentation). Figure 2 shows each of the Water CIP Projects related to the existing system. Table 14 outlines each project, along with the purpose of the project, estimated project cost, and the estimated timeframe for when the project will be needed within the planning period.

The sum total estimated cost for the Water CIP Projects listed in Table 14 equal approximately - $82,533,372 (Refer to Appendix C for additional detail on the projected project costs). This is the estimated capital expenditure expected for the CIP projects within this planning period.



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NOTES INDICATED BY NUMBER IN (#):

1. WTP #1 IMPROVEMENTS - 2.0 MGD
2. NEW WTP #2 - 1 MGD
3. WEST TRANSMISSION LINE (20-INCH)
4. NORTH DISTRIBUTION IMPROVEMENT, ALONG FM 113 (12-INCH)
5. WEST EST (MINIMUM 500,000 GALLON)
6. NORTH TRANSMISSION EXTENSION (12-INCH)
7. NORTHEST EST (MINIMUM 500,000 GALLON)
8. NORTH DISTRIBUTION IMPROVEMENT ALONG GRINDSTONE (DEVELOPER DRIVEN)
9. SOUTH TRANSMISSION LINE (PARTIAL PROJECT)(12-INCH)
10. LAZY BEND ROAD WATER LINE
11. OLD DENNIS ROAD WATER LINE

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FIGURE 2

CIP PROJECTS
PARKER COUNTY, TEXAS

7956	PROJECT NO.
01/17/2022	DATE
B.W.	DESIGNED BY:
D.A.B.	DRAWN BY:
	CHECKED BY:
1 OF 1	

P:\Projects\Parker County SUD\7956 2021 Water Master Plan\10. CAD\4. REPORTS\4. CIP\7956 - CIP REPORT.dwg

Table 14: Water CIP Project Descriptions

WTP #1 Improvements – 2.0 MGD *Estimated Cost:* *$25,385,097* *Purpose:* *Provide Additional Capacity at WTP* *Timeframe:* *Needed Now*	New WTP #2 – 2.0 MGD *Estimated Cost:* *$33,590,000* *Purpose:* *Provide Additional Treatment Capacity to New Coverage Areas* *Timeframe:* *Future Growth*
West Transmission Line (20-inch) *Estimated Cost:* *$5,888,008* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*	North Distribution Improvement, Along FM 113 (12-inch) *Estimated Cost:* *$2,300,964* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*
West EST (Minimum 500,000 gallon) *Estimated Cost:* *$4,537,139* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*	North Transmission Extension (12-inch) *Estimated Cost:* *$1,493,918* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*
North EST (Minimum 500,000 gallon) *Estimated Cost:* *$4,537,139* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*	North Distribution Improvement, Along Grindstone, Developer Driven *Estimated Cost:* *$2,938,520* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*
South Transmission Line (Partial Project) (12-inch) *Estimated Cost:* *$788,306* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*	Lazy Bend Rd WL *Estimated Cost:* *$600,036* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*
Old Dennis Rd WL *Estimated Cost:* *$474,245* *Purpose:* *Distribution Capacity for current/future growth* *Timeframe:* *Future Growth*	

**Estimated costs shown are from 2022 cost estimates with a 3% inflation factor year over year until estimated construction date*

V. CONCLUSION

The District's Water Capital Improvements Plan represents a summary of the known water infrastructure needed over the next ten (10) years. systems, along with the corresponding total cost of improvements. These projects were identified to facilitate strategic system improvements to accommodate anticipated future growth, resolve existing system issues, and maintain adequate service to customers. The estimated CIP project costs equal approximately $82,533,372. This Plan provides an outline for implementation of capital projects to account for and serve future growth. However, as current needs change or new needs are recognized, these strategies should be reexamined for viability.

The provision for adequate water service is a major importance to the health and success of the community. The Water Capital Improvement Plan addresses the system needs providing a plan to maintain reliable service to current costumers while accommodating future growth.

APPENDIX A

Brock ISD Demographic Update Fall 2020

Brock Independent School District

Demographic Update
Fall 2020

TEMPLETON DEMOGRAPHICS

hanleywood | metrostudy

Annual Enrollment Change

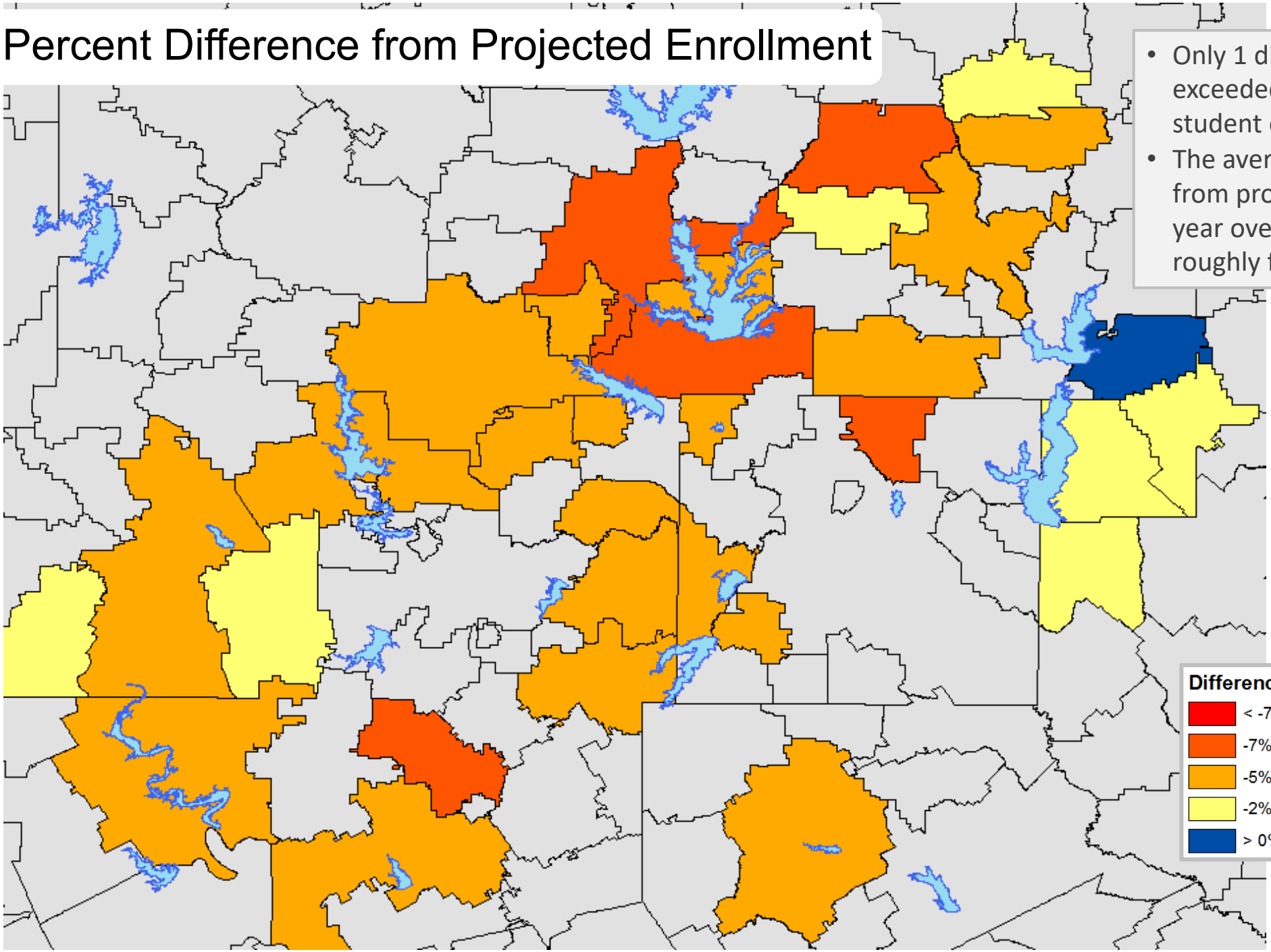
Year (OCT)	EE	PK	K	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	Total	Total Growth	Total %
2016/17	7	26	110	93	99	86	113	91	107	98	114	98	96	104	95	1,337		
2017/18	7	29	97	106	97	103	96	121	101	109	104	115	99	90	99	1,373	36	2.7%
2018/19	8	26	124	117	124	116	109	112	130	111	115	120	113	105	97	1,527	154	11.2%
2019/20	8	26	122	126	125	140	124	123	123	143	117	128	121	114	103	1,643	116	7.6%
2020/21	0	34	140	144	156	131	130	132	129	144	146	129	118	116	111	1,760	117	7.1%

Yellow Box = largest grade per year
Green Box = second largest grade per year

	K	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	ELEM	INTER	MID	HIGH
Prev 3 yr avg	1.137	1.134	1.159	1.124	1.019	1.120	1.074	1.123	1.043	1.123	0.971	1.009	1.011	1.138	1.069	1.080	1.029
2017/18	0.882	0.964	1.043	1.040	1.116	1.071	1.110	1.019	1.061	1.009	1.010	0.938	0.952	0.982	1.094	1.063	0.977
2018/19	1.278	1.206	1.170	1.196	1.058	1.167	1.074	1.099	1.055	1.154	0.983	1.061	1.078	1.213	1.112	1.076	1.069
2019/20	0.984	1.016	1.068	1.129	1.069	1.128	1.098	1.100	1.054	1.113	1.008	1.009	0.981	1.049	1.099	1.084	1.028
2020/21	1.148	1.180	1.238	1.048	0.929	1.065	1.049	1.171	1.021	1.103	0.922	0.959	0.974	1.153	0.997	1.080	0.989

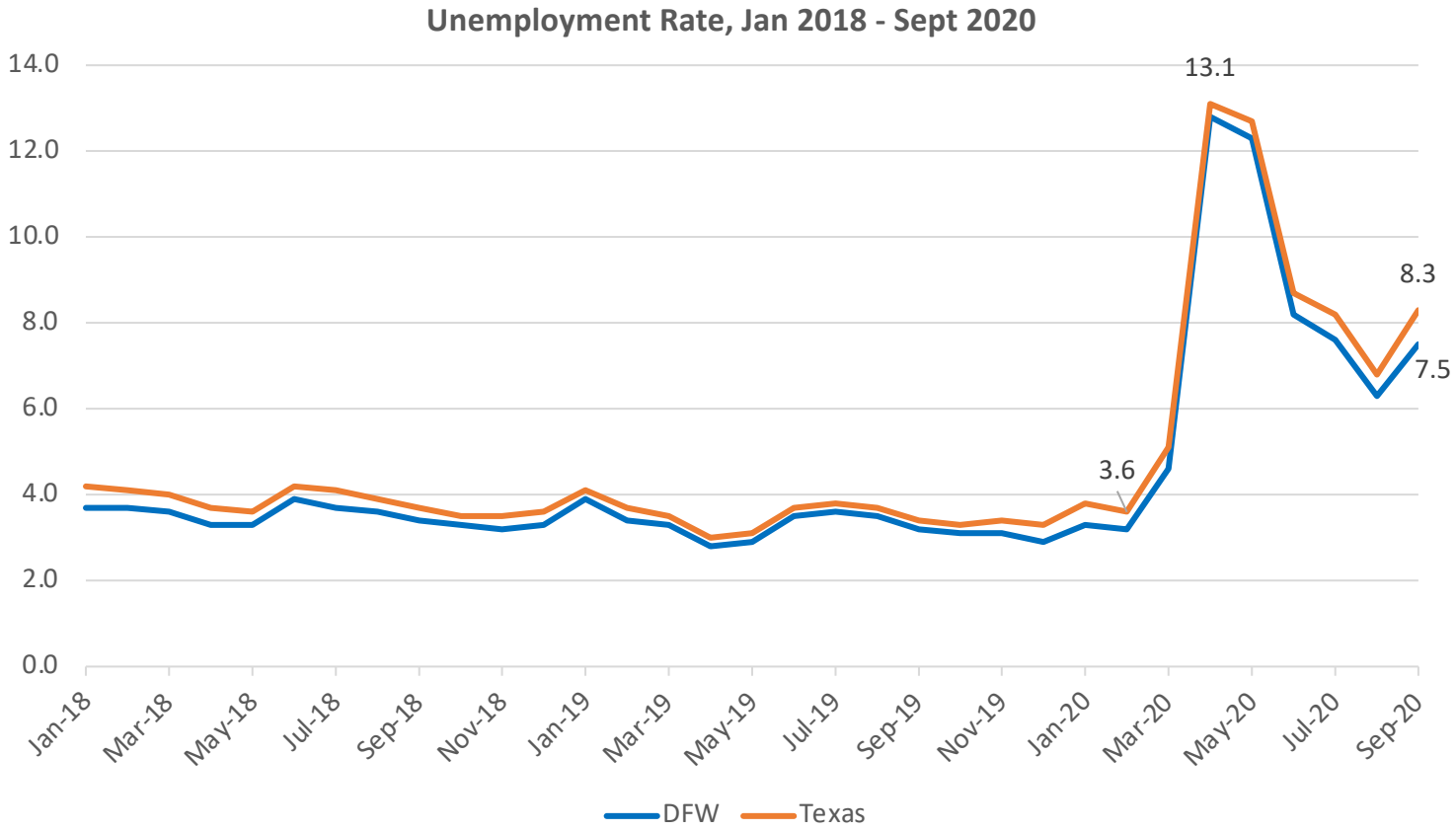
- Brock ISD added 117 students this fall for a 7.1% growth rate
- BISD had lower than usual cohorts in 4th, 5th, 8th, and 10th grades
- The district had higher cohorts in 2nd and 7th grades

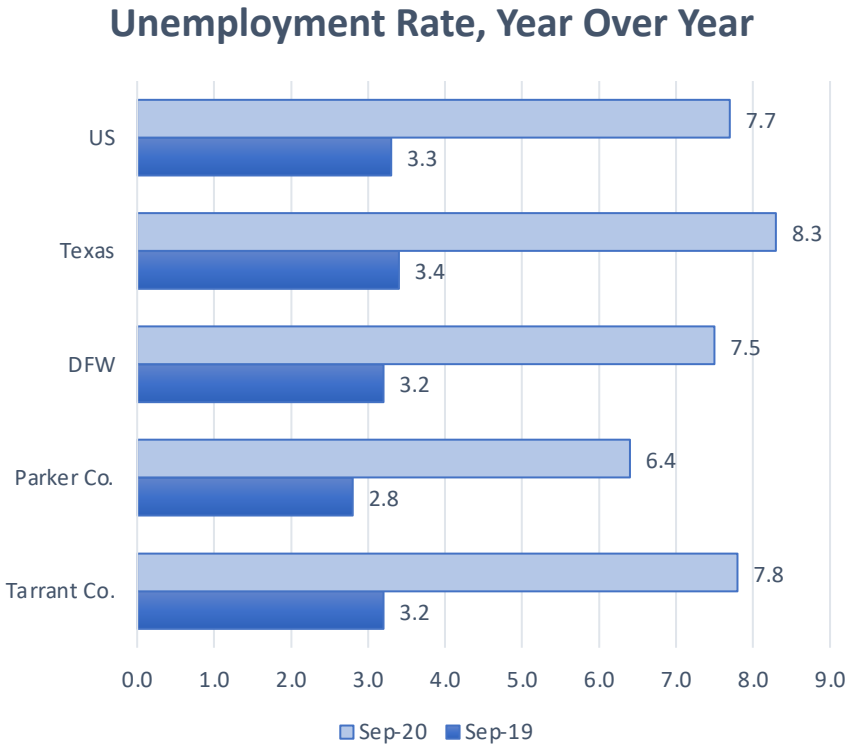
Percent Difference from Projected Enrollment



- Only 1 district in DFW has exceeded their forecasted student enrollment in 2020/21
- The average district is down 3% from projected enrollment, and year over year enrollment is roughly flat

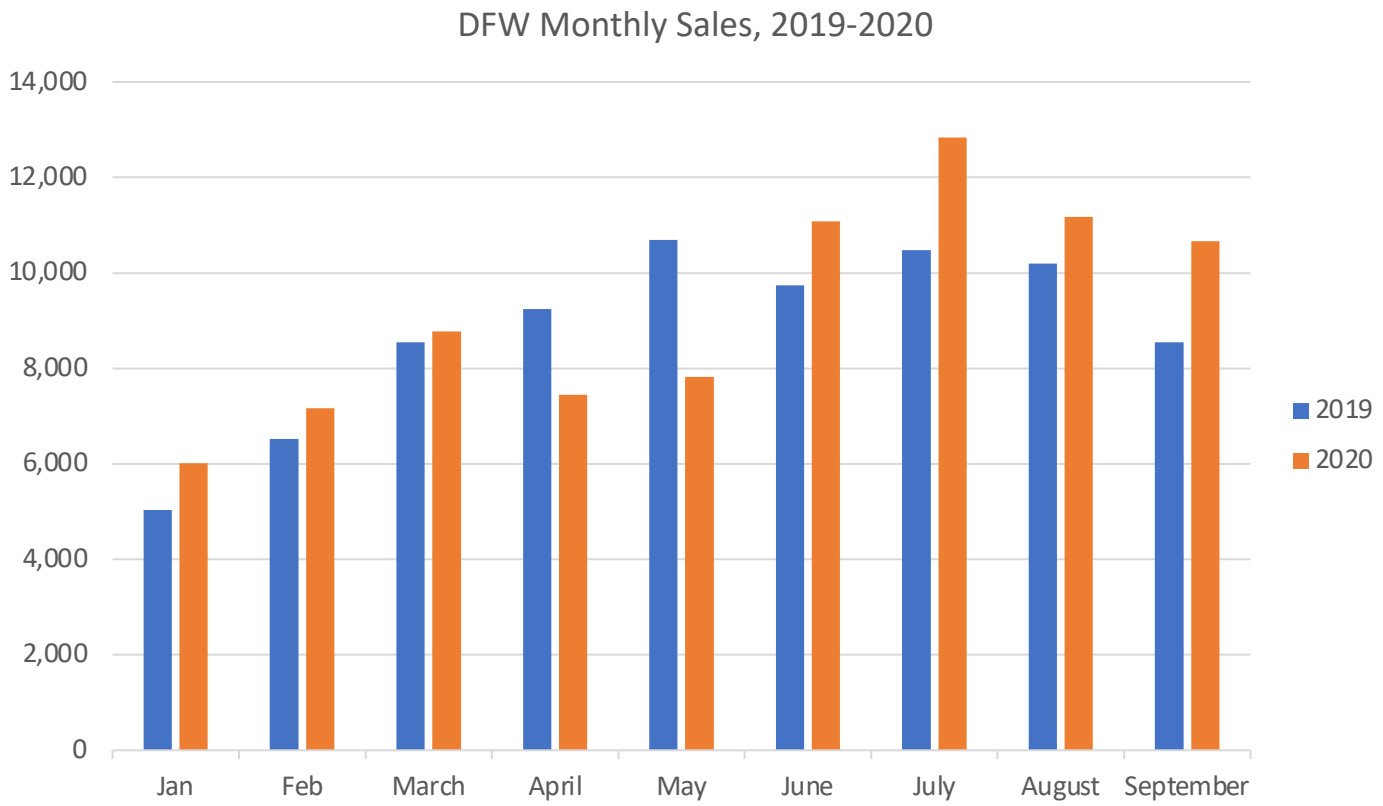
DFW MSA Economic Conditions

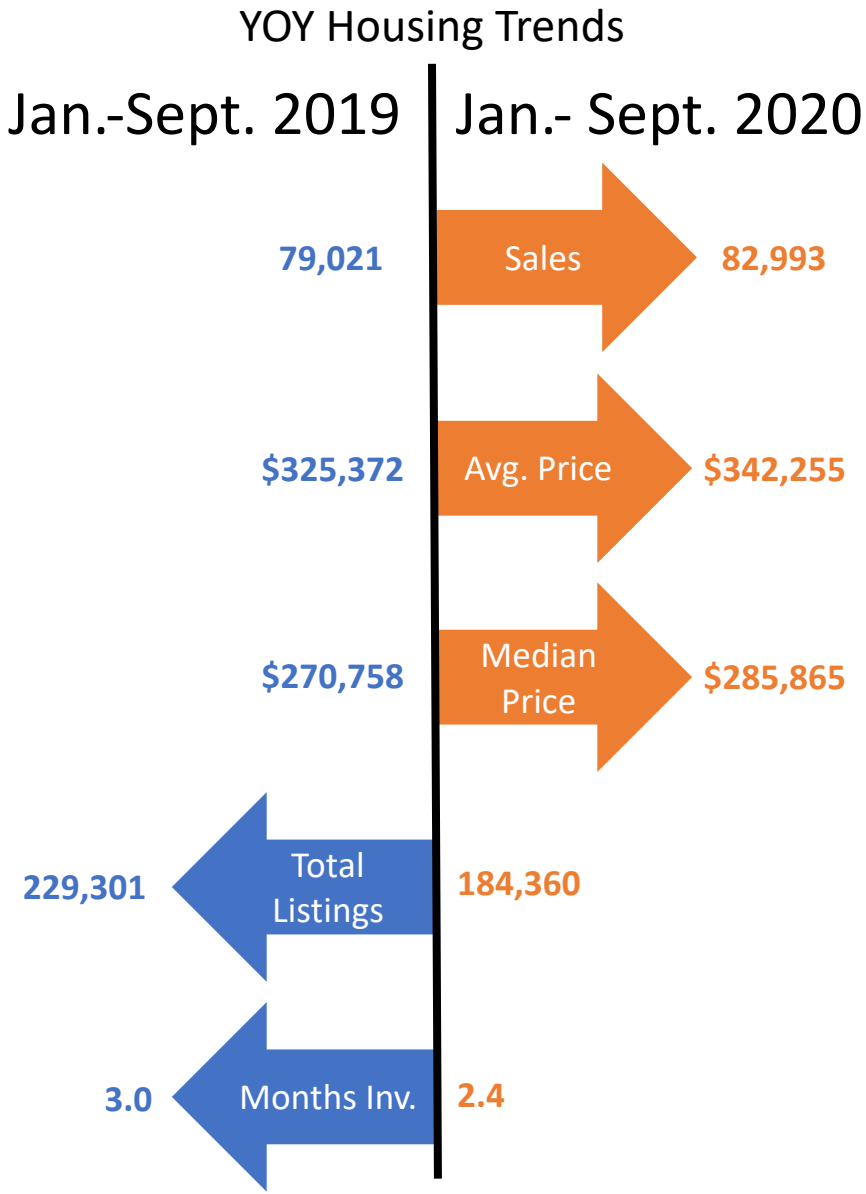




- Texas' and DFW's unemployment rates peaked in May, began dropping in June, and have begun to trend back up in August and September
- The Parker County unemployment rate has been among the lowest in DFW in 2020
- Roughly 56% of the DFW job losses in May 2020 have been recovered

COVID and the Housing Market: What Impact?





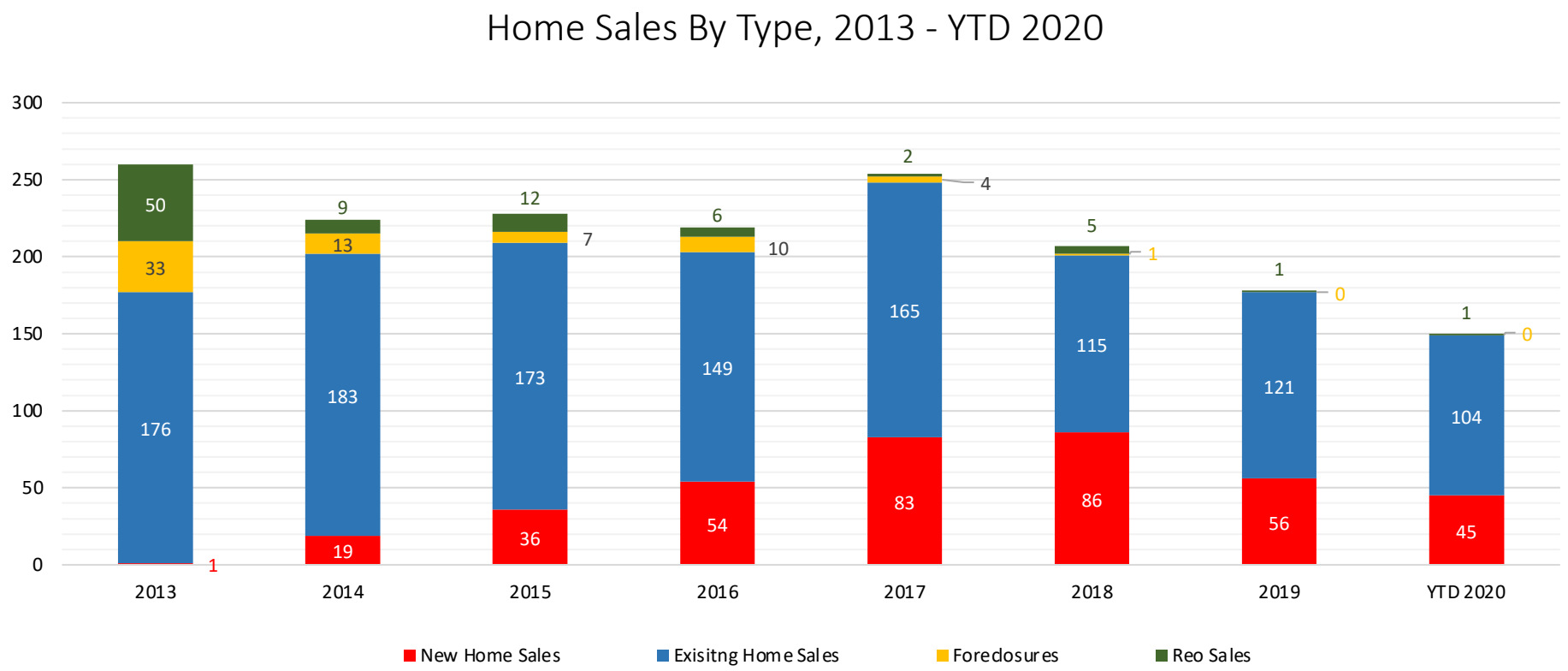
- Median home prices remains near record highs across the state
- Home inventory remained extremely tight as sales dropped in April, but by June, new home inventory rose above 2019 levels and has continued to surpass 2019 levels in DFW
- In the month of September, total monthly home sales continued to surpass 2019 levels in DFW (+26%)
- Historically low interest rates and pent up demand have resulted in a fast recovery for the housing market

COVID and the DFW New Home Market

	2Q20	% YOY
Annual Starts	38,262	15.0%
Quarter Starts	10,684	22.9%
Annual Closings	36,776	12.4%
Quarter Closings	9,607	6.1%
Housing Inventory	22,841	6.1%
VDL Inventory	58,248	1.9%

Brock ISD Housing Market Analysis

Home Sales by Transaction Type, 2013 – 2020

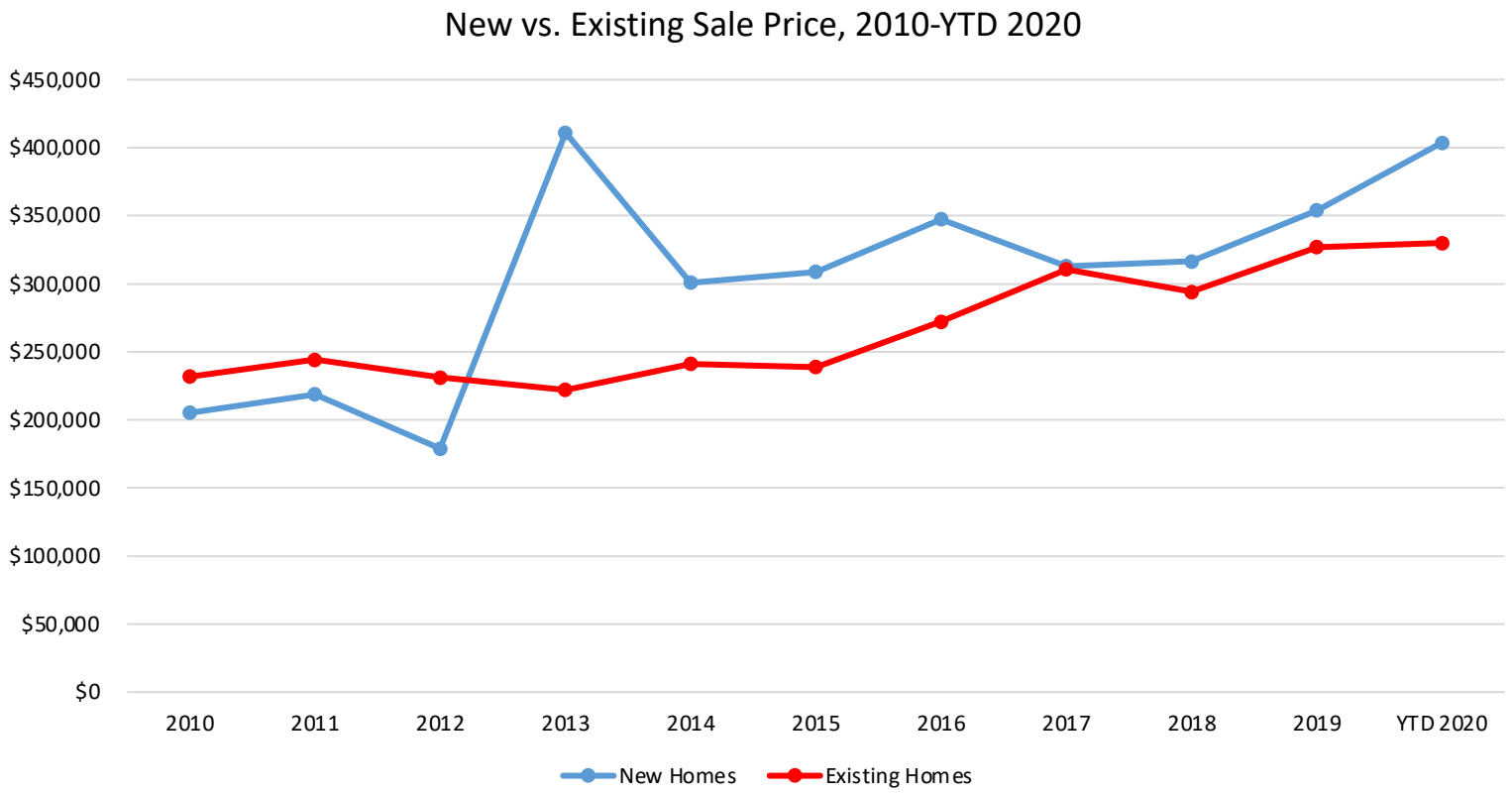


- The number of new home sales through September in BISD are on track to exceed 2019 totals
- The number of distressed property sales has decreased in the last eight years

Sources: Metrostudy & County Deed Transactions

Brock ISD Housing Market

Average New vs. Existing Home Sale Price, 2010 – YTD 2020

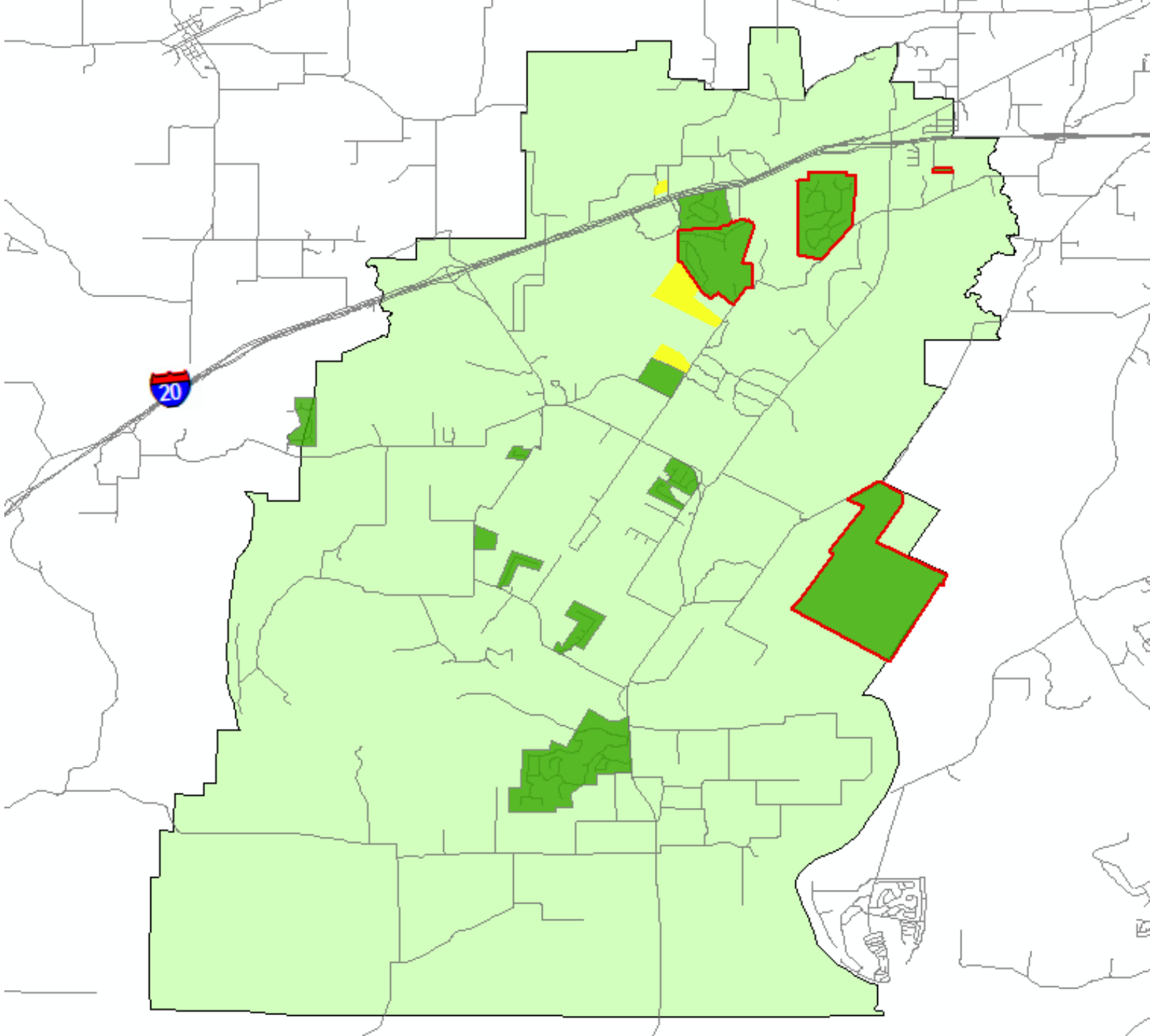


	New Homes	Existing Homes
2010	$205,282	$231,922
2011	$218,743	$244,107
2012	$178,950	$231,145
2013	$411,000	$221,982
2014	$300,868	$241,156
2015	$308,750	$238,741
2016	$347,369	$272,080
2017	$312,899	$310,719
2018	$316,413	$294,001
2019	$353,986	$326,864
YTD 2020	$403,601	$330,000

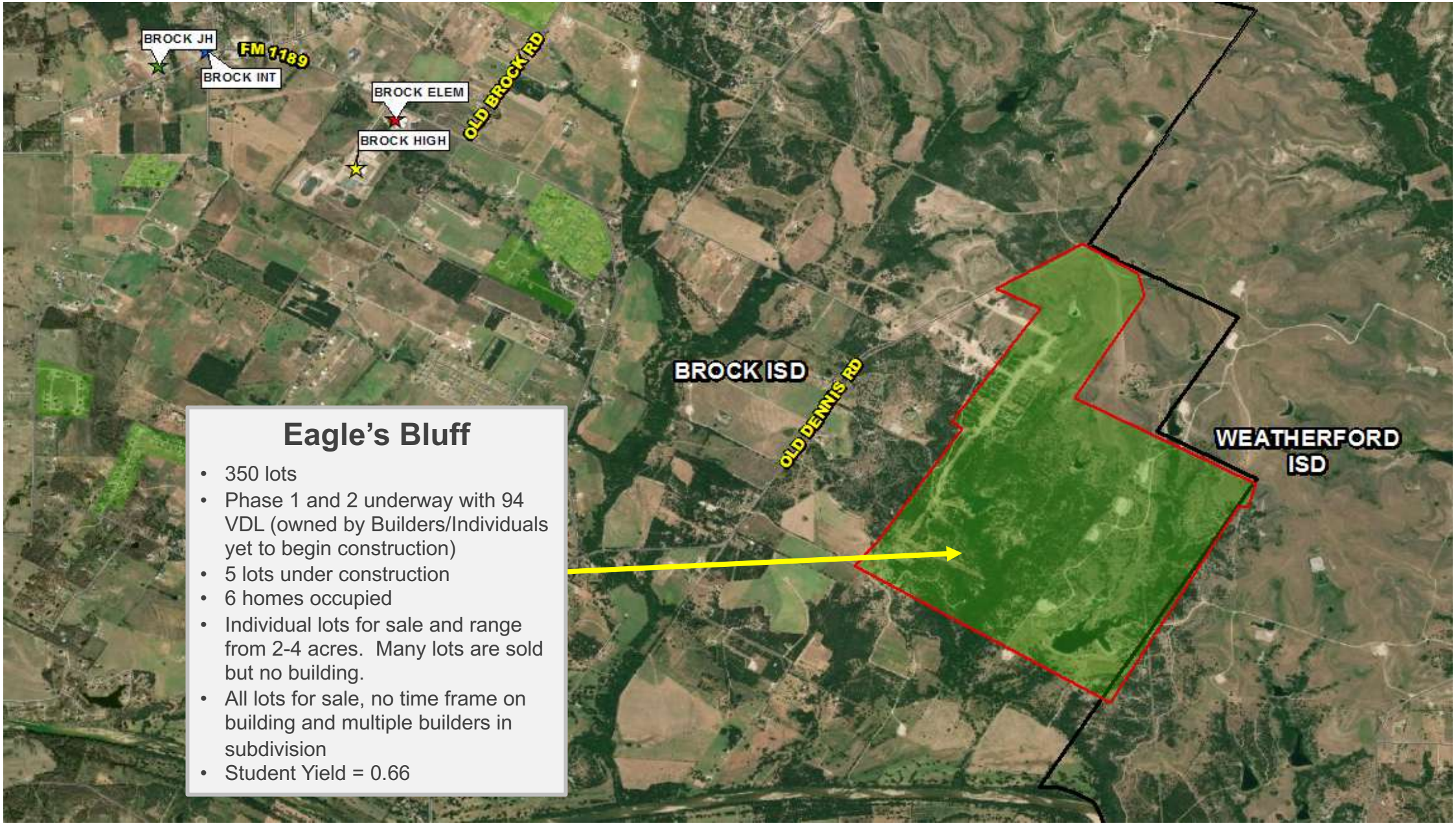
- Since 2010, the average new home price in Brock ISD has increased nearly 97%, an increase of over $198,319
- The average existing home price within the district has increased by 42%, a rise of nearly $98,078 in the last ten years

District Housing Overview

- Brock ISD has 4 active subdivision with 191 lots
- BISD has roughly 368 future homes planned with more developments in discussions
- Of the future homes planned, 2 subdivisions are active



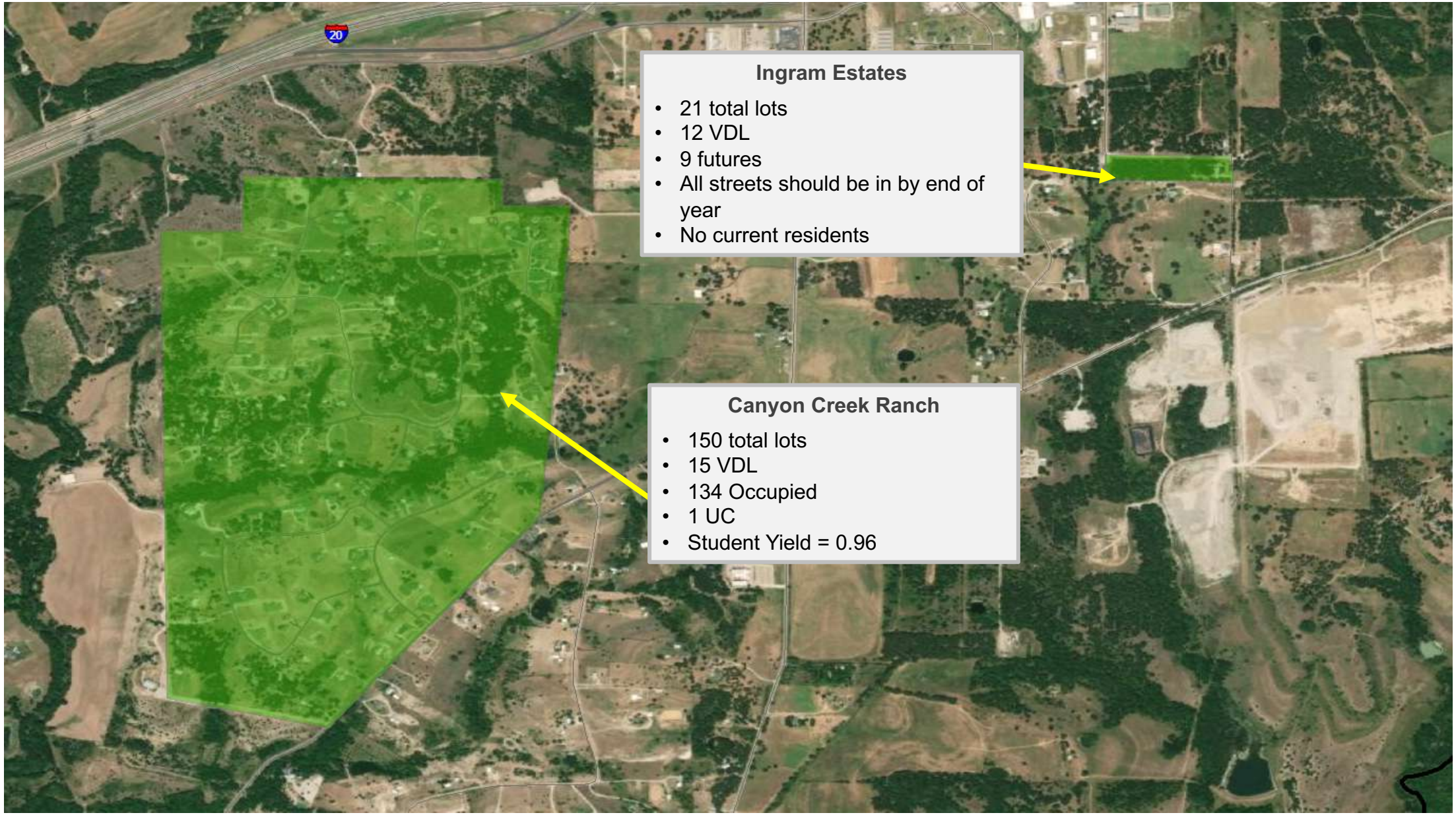
Residential Activity



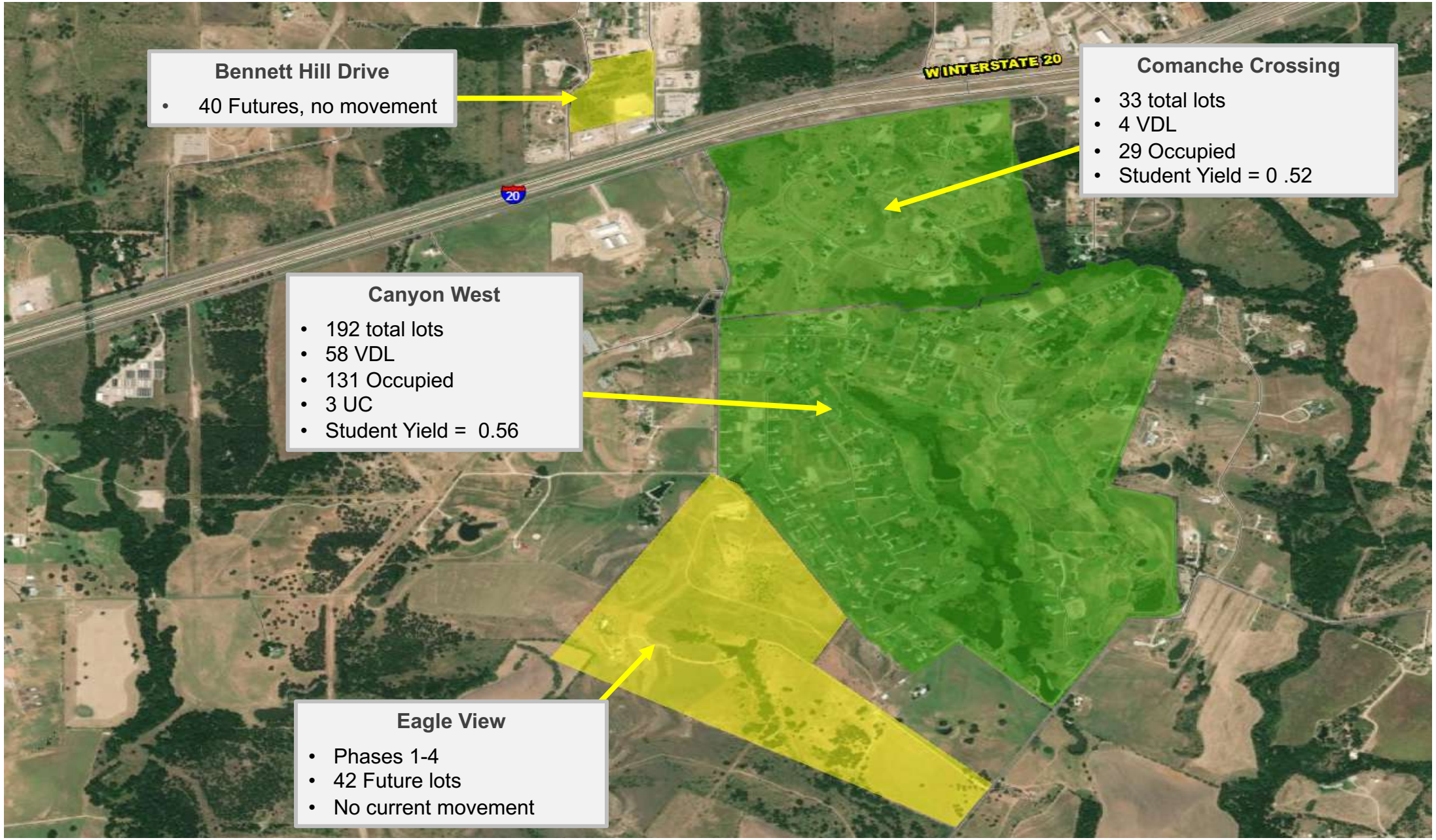
Eagle's Bluff

- 350 lots
- Phase 1 and 2 underway with 94 VDL (owned by Builders/Individuals yet to begin construction)
- 5 lots under construction
- 6 homes occupied
- Individual lots for sale and range from 2-4 acres. Many lots are sold but no building.
- All lots for sale, no time frame on building and multiple builders in subdivision
- Student Yield = 0.66

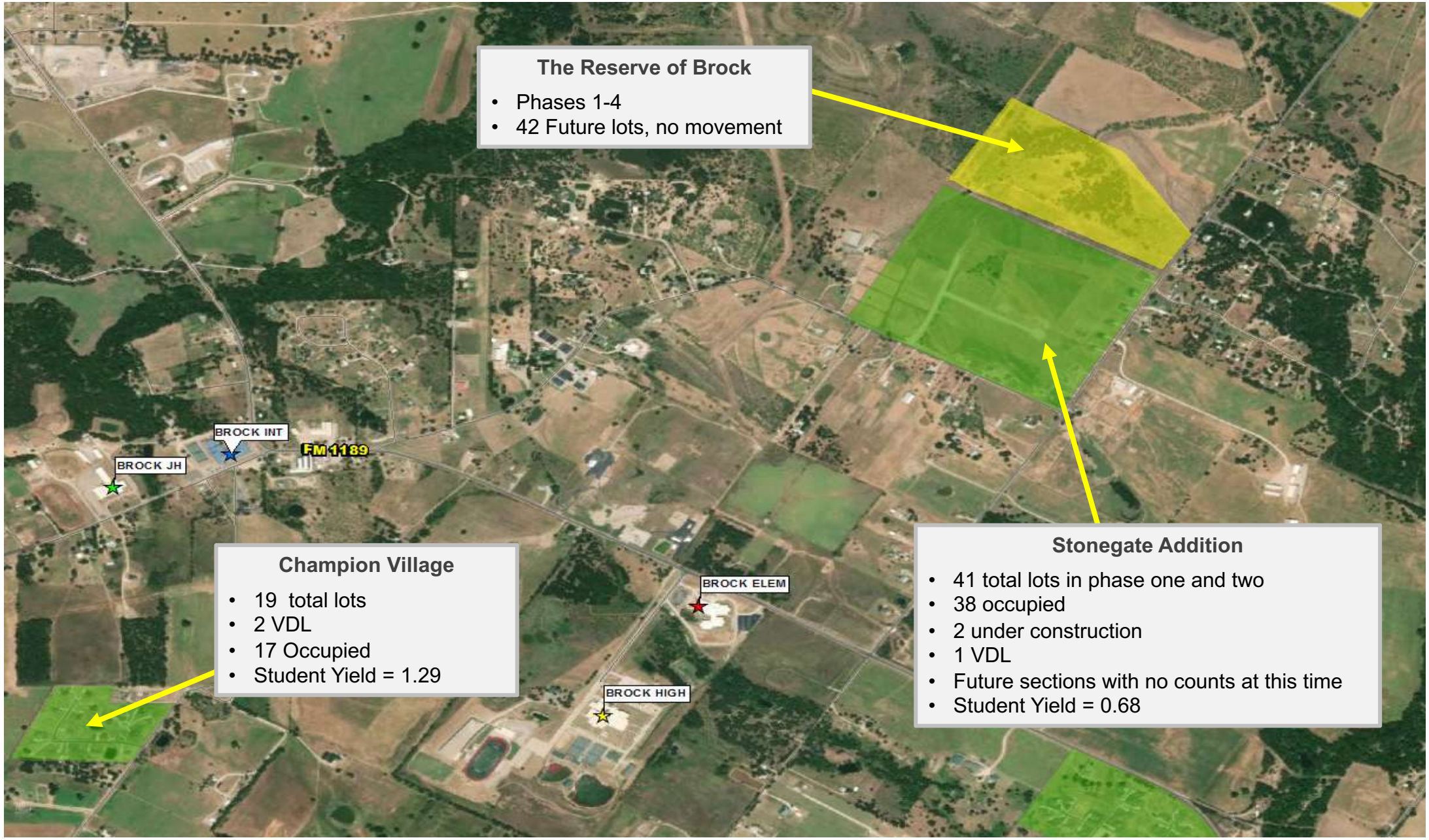
Residential Activity



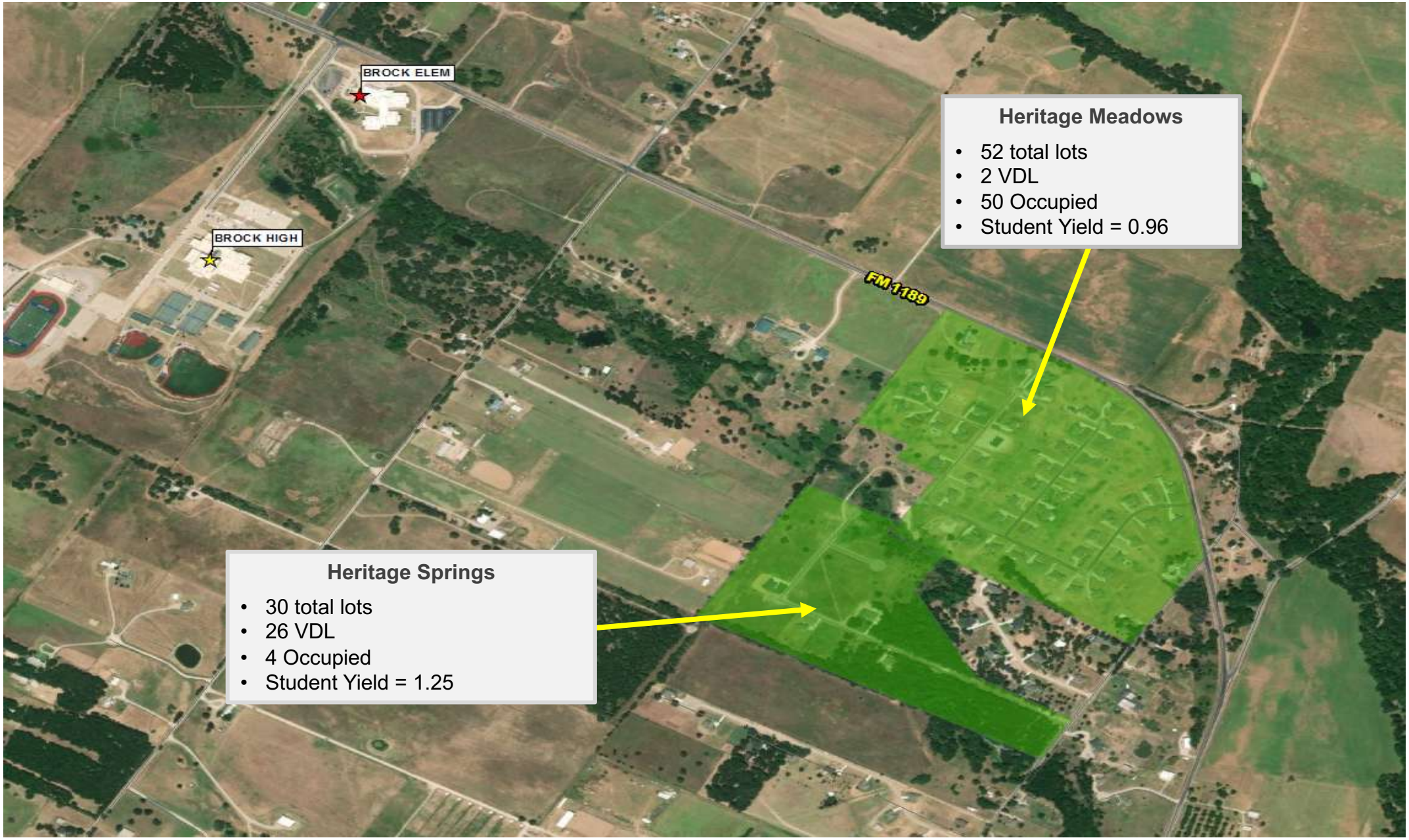
Residential Activity



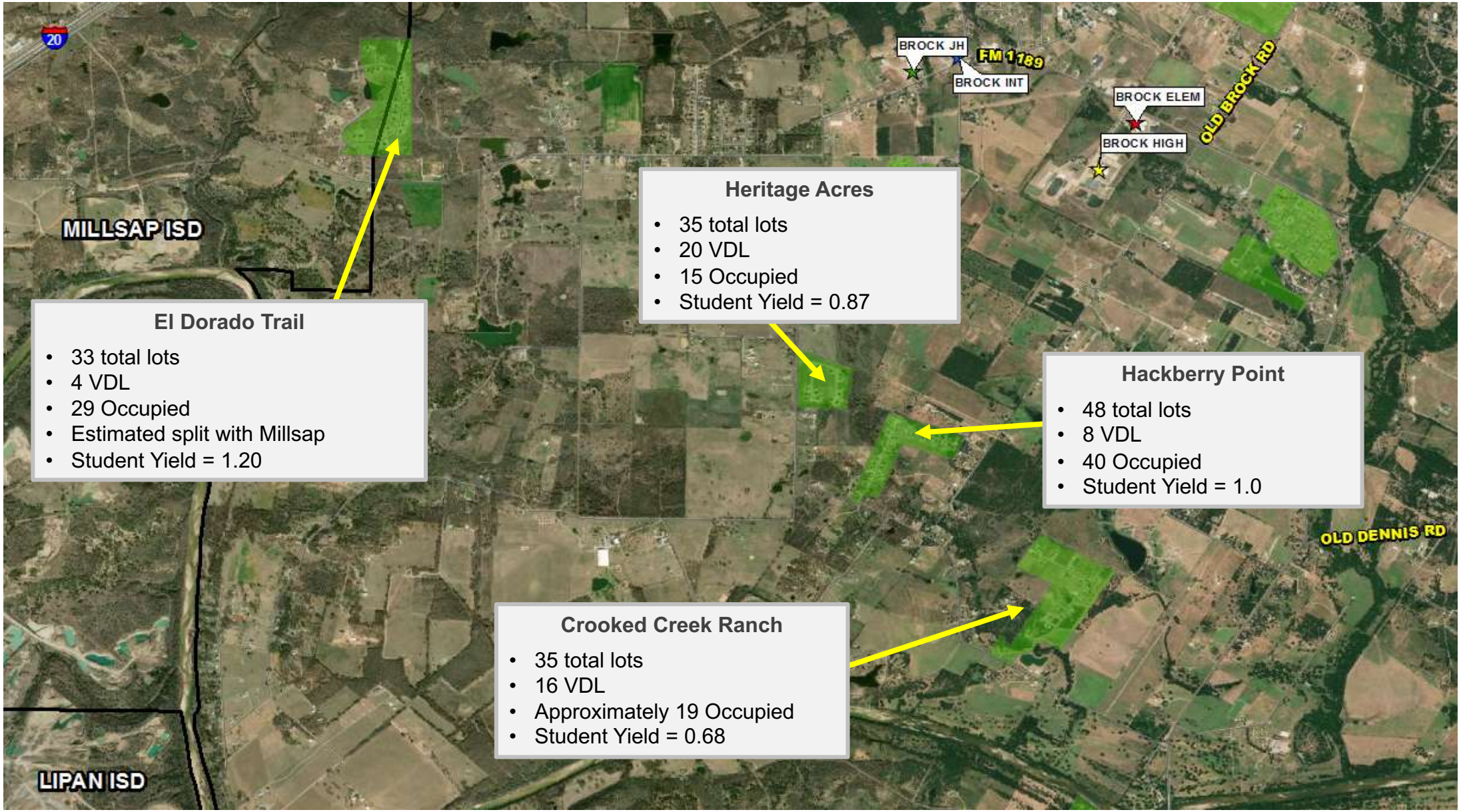
Residential Activity



Residential Activity



Residential Activity



El Dorado Trail

- 33 total lots
- 4 VDL
- 29 Occupied
- Estimated split with Millsap
- Student Yield = 1.20

Heritage Acres

- 35 total lots
- 20 VDL
- 15 Occupied
- Student Yield = 0.87

Hackberry Point

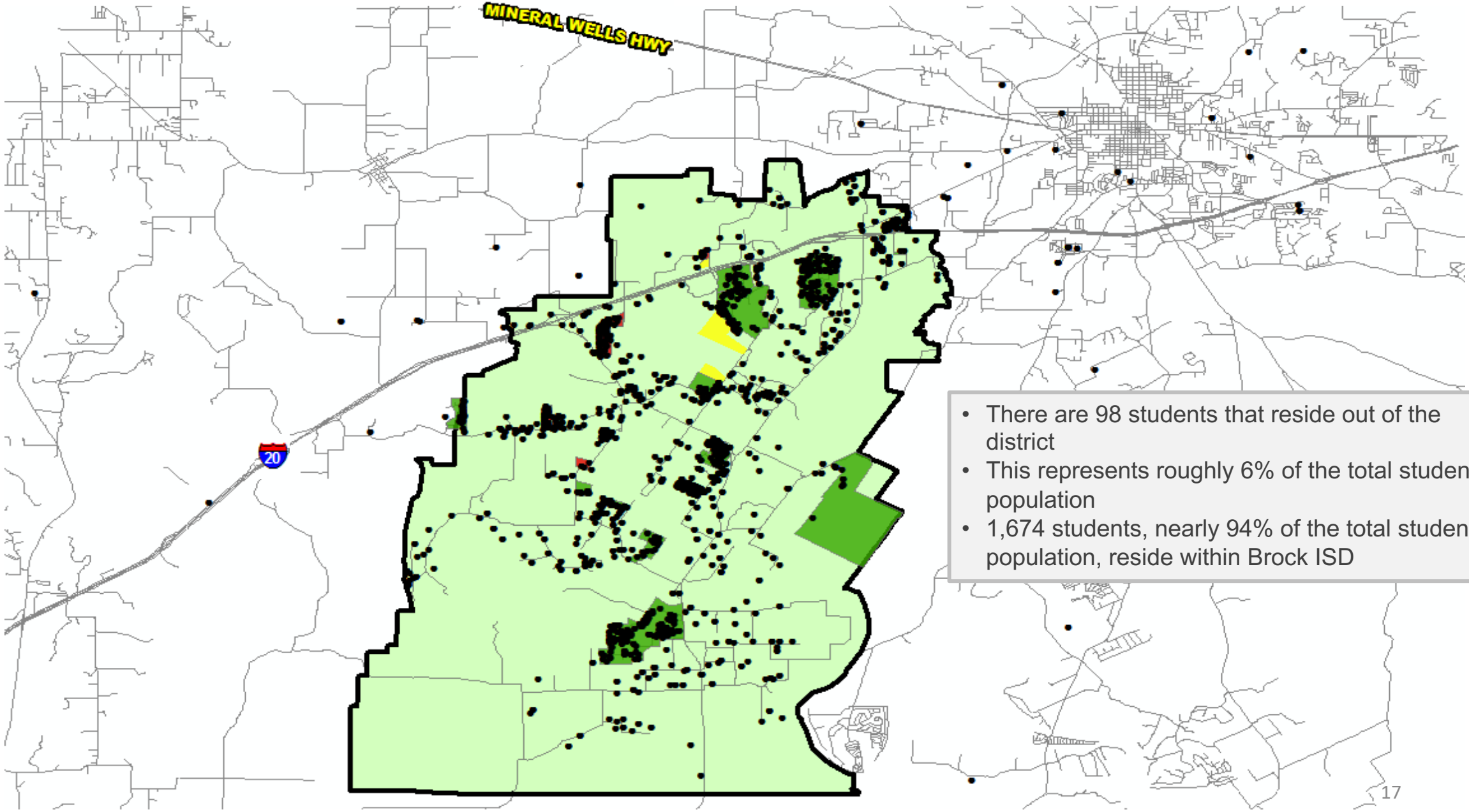
- 48 total lots
- 8 VDL
- 40 Occupied
- Student Yield = 1.0

Crooked Creek Ranch

- 35 total lots
- 16 VDL
- Approximately 19 Occupied
- Student Yield = 0.68

Residential Activity

Student Distribution



- There are 98 students that reside out of the district
- This represents roughly 6% of the total student population
- 1,674 students, nearly 94% of the total student population, reside within Brock ISD

TEA Transfer Report

Transfers in From	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	5 Yr Change
Aledo ISD	5	5	5	6	3	3	-2
Millsap ISD	27	22	18	15	14	3	-24
Weatherford ISD	78	60	43	33	23	22	-56
Total Transfers In	**134**	**111**	**78**	**54**	**42**	**40**	**-94**

Transfers Out To	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	5 Yr Change
Aledo ISD	7	6	7	5	3	3	-4
Lipan ISD	3	3	3	3	3	11	8
Millsap ISD	6	8	8	6	3	3	-3
Weatherford ISD	33	36	36	40	36	29	-4
Total Transfers Out	**59**	**60**	**59**	**67**	**75**	**74**	**15**

** Totals include additional districts per TEA rounding rules*

Ten Year Forecast by Grade Level

Year (OCT)	EE	PK	K	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	Total	Total Growth	Total %
2016/17	7	26	110	93	99	86	113	91	107	98	114	98	96	104	95	1,337		
2017/18	7	29	97	106	97	103	96	121	101	109	104	115	99	90	99	1,373	36	2.7%
2018/19	8	26	124	117	124	116	109	112	130	111	115	120	113	105	97	1,527	154	11.2%
2019/20	8	26	122	126	125	140	124	123	123	143	117	128	121	114	103	1,643	116	7.6%
2020/21	0	34	140	144	156	131	130	132	129	144	146	129	118	116	111	1,760	117	7.1%
2021/22	0	34	137	144	156	175	138	143	143	142	153	164	125	118	113	1,885	125	7.1%
2022/23	0	34	139	143	156	167	186	153	159	157	149	166	166	125	113	2,013	128	6.8%
2023/24	0	34	145	153	155	168	178	206	170	179	165	162	161	166	121	2,163	150	7.5%
2024/25	0	34	154	155	160	161	175	197	218	188	189	181	160	161	161	2,294	131	6.1%
2025/26	0	34	158	166	163	176	165	189	215	238	198	206	179	160	156	2,403	109	4.8%
2026/27	0	34	156	167	183	171	184	181	206	238	250	217	202	179	155	2,523	120	5.0%
2027/28	0	34	172	168	180	195	177	201	196	227	251	275	214	202	173	2,665	142	5.6%
2028/29	0	34	179	182	181	193	202	193	219	216	239	275	271	214	195	2,793	128	4.8%
2029/30	0	34	175	191	193	192	200	221	209	242	227	262	271	271	207	2,895	102	3.7%
2030/31	0	34	182	187	205	206	199	219	240	230	255	249	258	271	262	2,997	102	3.5%

Yellow box = largest grade per year
Green box = second largest grade per year

Ten Year Forecast by Campus before Bond Improvements

			Fall	ENROLLMENT PROJECTIONS									
CAMPUS	Capacity	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
BROCK ELEMENTARY SCHOOL	450	407	474	471	472	487	503	521	540	554	576	593	608
ELEMENTARY TOTALS		407	474	471	472	487	503	521	540	554	576	593	608
Elementary Absolute Change		8	67	-3	1	15	16	18	19	14	22	17	15
Elementary Percent Change		2.01%	16.46%	-0.63%	0.21%	3.18%	3.29%	3.58%	3.65%	2.59%	3.97%	2.95%	2.53%
BROCK INTERMEDIATE SCHOOL	550	510	522	599	665	722	751	745	742	769	807	822	864
INTERMEDIATE TOTALS		510	522	599	665	722	751	745	742	769	807	822	864
Intermediate Absolute Change		43	12	77	66	57	29	-6	-3	27	38	15	42
Intermediate Percent Change		9.21%	2.35%	14.75%	11.02%	8.57%	4.02%	-0.80%	-0.40%	3.64%	4.94%	1.86%	5.11%
BROCK MIDDLE SCHOOL	350	260	290	295	306	344	377	436	488	478	455	469	485
MIDDLE SCHOOL TOTALS		260	290	295	306	344	377	436	488	478	455	469	485
Middle School Absolute Change		34	30	5	11	38	33	59	52	-10	-23	14	16
Middle School Percent Change		15.04%	11.54%	1.72%	3.73%	12.42%	9.59%	15.65%	11.93%	-2.05%	-4.81%	3.08%	3.41%
BROCK HIGH SCHOOL	550	466	474	520	570	610	663	701	753	864	955	1,011	1,040
HIGH SCHOOL TOTALS		466	474	520	570	610	663	701	753	864	955	1,011	1,040
High School Absolute Change		31	8	46	50	40	53	38	52	111	91	56	29
High School Percent Change		7.13%	1.72%	9.70%	9.62%	7.02%	8.69%	5.73%	7.42%	14.74%	10.53%	5.86%	2.87%
DISTRICT TOTALS		1,643	1,760	1,885	2,013	2,163	2,294	2,403	2,523	2,665	2,793	2,895	2,997
District Absolute Change		116	117	125	128	150	131	109	120	142	128	102	102
District Percent Change		7.60%	7.12%	7.10%	6.79%	7.45%	6.06%	4.75%	4.99%	5.63%	4.80%	3.65%	3.52%

Yellow box = over capacity

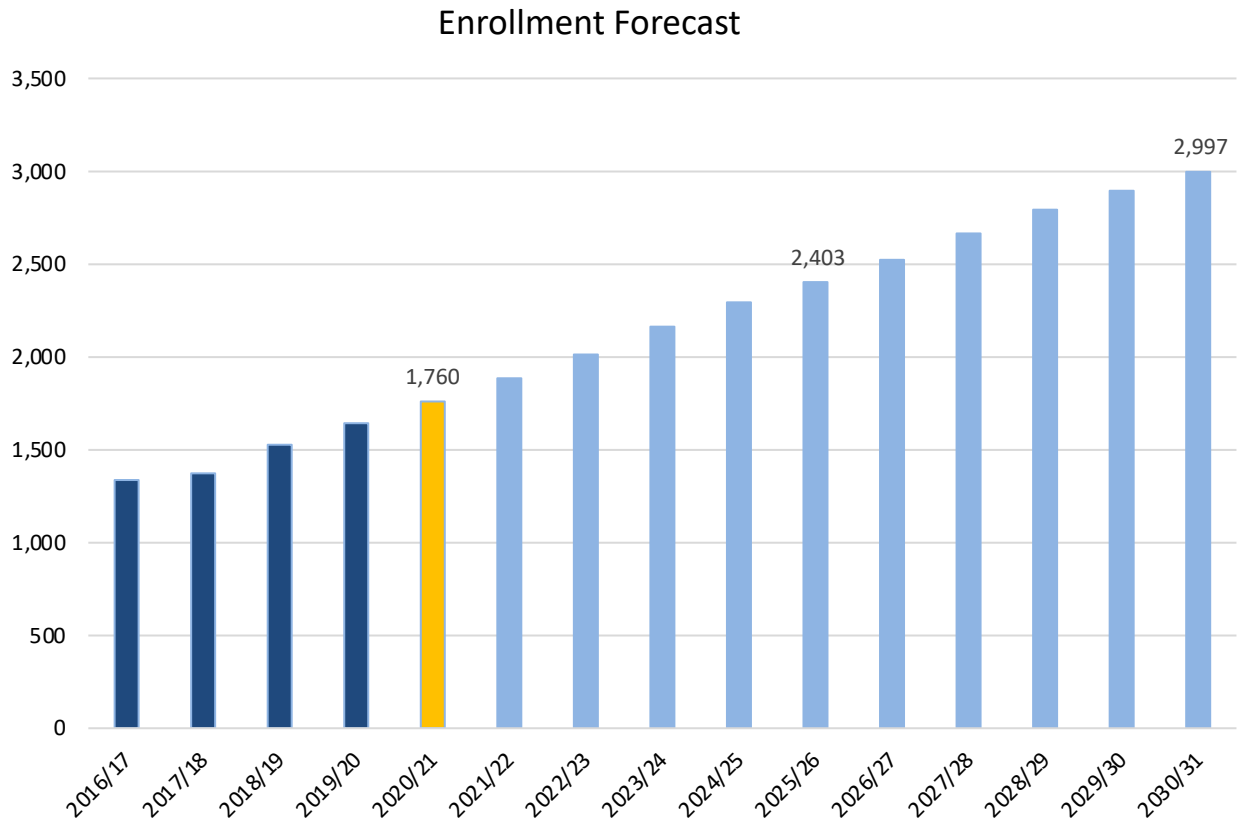
Ten Year Forecast by Campus with Bond Improvements

			Fall	ENROLLMENT PROJECTIONS									
CAMPUS	Capacity	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
BROCK ELEMENTARY SCHOOL	525[P]	407	474	471	472	487	503	521	540	554	576	593	608
ELEMENTARY TOTALS		407	474	471	472	487	503	521	540	554	576	593	608
Elementary Absolute Change		8	67	-3	1	15	16	18	19	14	22	17	15
Elementary Percent Change		2.01%	16.46%	-0.63%	0.21%	3.18%	3.29%	3.58%	3.65%	2.59%	3.97%	2.95%	2.53%
BROCK INTERMEDIATE SCHOOL	550	510	522	456	506	552	533	530	536	573	588	613	624
INTERMEDIATE TOTALS		510	522	456	506	552	533	530	536	573	588	613	624
Intermediate Absolute Change		43	12	-66	50	46	-19	-3	6	37	15	25	11
Intermediate Percent Change		9.21%	2.35%	-12.64%	10.96%	9.09%	-3.44%	-0.56%	1.13%	6.90%	2.62%	4.25%	1.79%
BROCK MIDDLE SCHOOL	650	260	290	438	465	514	595	651	694	674	674	678	725
MIDDLE SCHOOL TOTALS		260	290	438	465	514	595	651	694	674	674	678	725
Middle School Absolute Change		34	30	148	27	49	81	56	43	-20	0	4	47
Middle School Percent Change		15.04%	11.54%	51.03%	6.16%	10.54%	15.76%	9.41%	6.61%	-2.88%	0.00%	0.59%	6.93%
BROCK HIGH SCHOOL	800	466	474	520	570	610	663	701	753	864	955	1,011	1,040
HIGH SCHOOL TOTALS		466	474	520	570	610	663	701	753	864	955	1,011	1,040
High School Absolute Change		31	8	46	50	40	53	38	52	111	91	56	29
High School Percent Change		7.13%	1.72%	9.70%	9.62%	7.02%	8.69%	5.73%	7.42%	14.74%	10.53%	5.86%	2.87%
DISTRICT TOTALS		1,643	1,760	1,885	2,013	2,163	2,294	2,403	2,523	2,665	2,793	2,895	2,997
District Absolute Change		116	117	125	128	150	131	109	120	142	128	102	102
District Percent Change		7.60%	7.12%	7.10%	6.79%	7.45%	6.06%	4.75%	4.99%	5.63%	4.80%	3.65%	3.52%

Green box = over permanent building capacity
Yellow box = over total capacity
P = capacity includes the use of portable buildings

- Capacity has been added to the middle school and high school
- Grade configuration changes:
  - Intermediate = 3-5
  - Middle School = 6-8

Key Takeaways



- Brock ISD will continue to experience enrollment growth due to a strong housing market
- BISD has over 300 future lots in the planning stages, with groundwork underway on two subdivisions in the district
- BISD is expected to enroll more than 2,400 students by 2025-26 and more than 2,900 students by 2030-31

APPENDIX B

Parker County - Water Master Plan Discussion Presentation
August 2021

PARKER COUNTY
SPECIAL UTILITY DISTRICT

Water Master Plan Discussion

Enprotec / Hibbs & Todd

Presentation Topics

- Meeting Objectives
- Existing System Analysis
  - Existing Treatment / Supply
  - Existing Distribution
- Future Infrastructure Analysis
  - Updated Service Connection Projections
  - Capacity needs over the next 20 years
  - Supply Options
  - Storage Options
  - Transmission/Distribution Options
  - Cost Analysis
  - Recommendations and Proposed CIP Projects

Enprotec / Hibbs & Todd

Parker County Special Utility District

Meeting Objectives

- Discuss rational for:
  - Updated connection projections
  - Treatment, storage, and distribution options

Enprotec / Hibbs & Todd

Parker County Special Utility District

Existing System – Water Plant Analysis

Process	"On Paper" Capacity (MGD)	"Actual" Capacity (MGD)	Compliant with TCEQ Requirements?
Intake PS	1.4	1.7	No
Raw Water Transfer Pumps	1.1	1.2	Yes
Pretreatment	-	-	-
MF System	1.2	2.8	Yes
RO System	0.8	0.6	No
Disinfection System	1.0	1.0	Yes
Clearwell	0.5 MG	0.5 MG	Yes
High Service Pumps	1.7	1.2	Yes
Pressure Tank Storage	20,000 gal	30,000 gal	Yes

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Parker County Special Utility District

Evaluation of System Performance

Good

- Water quality meets current state criteria

Bad

- Location of intake pump results in pump clogging, a simplex pump station does not meet TCEQ criteria
- Internal recycling results in significant buildup of manganese in WTP
- Lack of chemical pretreatment limits reduction of organics and manganese in the raw water
- Lack of physical pretreatment limits performance of the existing MF system, further impacting the RO system as well
- Significant biofouling of the MF and RO reduces operating time, and current system demands prevent necessary cleaning of membranes to maximize production
- Lack of proper HVAC in building is resulting in equipment overheating and shutdown
- Cannot pump beyond capacity of a single high service pump
- Air entrainment negatively affecting accuracy of onsite flow meters

Capacity Requirement Evaluation

TCEQ CH 290 requires a minimum of 0.6 gpm per connection

0.6 gpm per day = 864 gpcd

Historic maximum monthly usage = 525 gpcd

$$\frac{525}{864}\ gpcd = 0.61 = 61\%\ (1.15) = 70\%$$

TCEQ requires a safety factor of 1.15 when calculating an ACR.

$$70\% * 0.6\ gpm = 0.419\ gpm\ per\ connection$$

TCEQ requires that the validity of an ACR be re-evaluated on an annual basis by the district and the engineer.

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Capacity Requirement Evaluation

- Number of Surface Water Connections = 2,227
  - 1,926 active plus 301 connections from Phase 1

Using Standard TCEQ Requirements

Total Required Supply (gpm)	Total Required Supply (MGD)
1,333	1.92

Percent Capacity of Supply = 137%

(counting 0.4 MGD MW contract)

After Phase 1 completed (2.4 MGD) = 77%

** Note that Standard TCEQ Requirements are for 0.6 gpm per connection*

Using Alternative Capacity Requirements

Total Required Supply (gpm)	Total Required Supply (MGD)
881	1.34

Percent Capacity of Supply = 91%

(counting 0.4 MGD MW contract)

After Phase 1 completed (2.4 MGD) = 54%

** Note that the potential Alternate Capacity Requirement is 0.419 gpm per connection*

TCEQ requires start of planning for expansion when the public utility has reached 85% of its capacity (§291.93(3)).

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Existing Distribution System

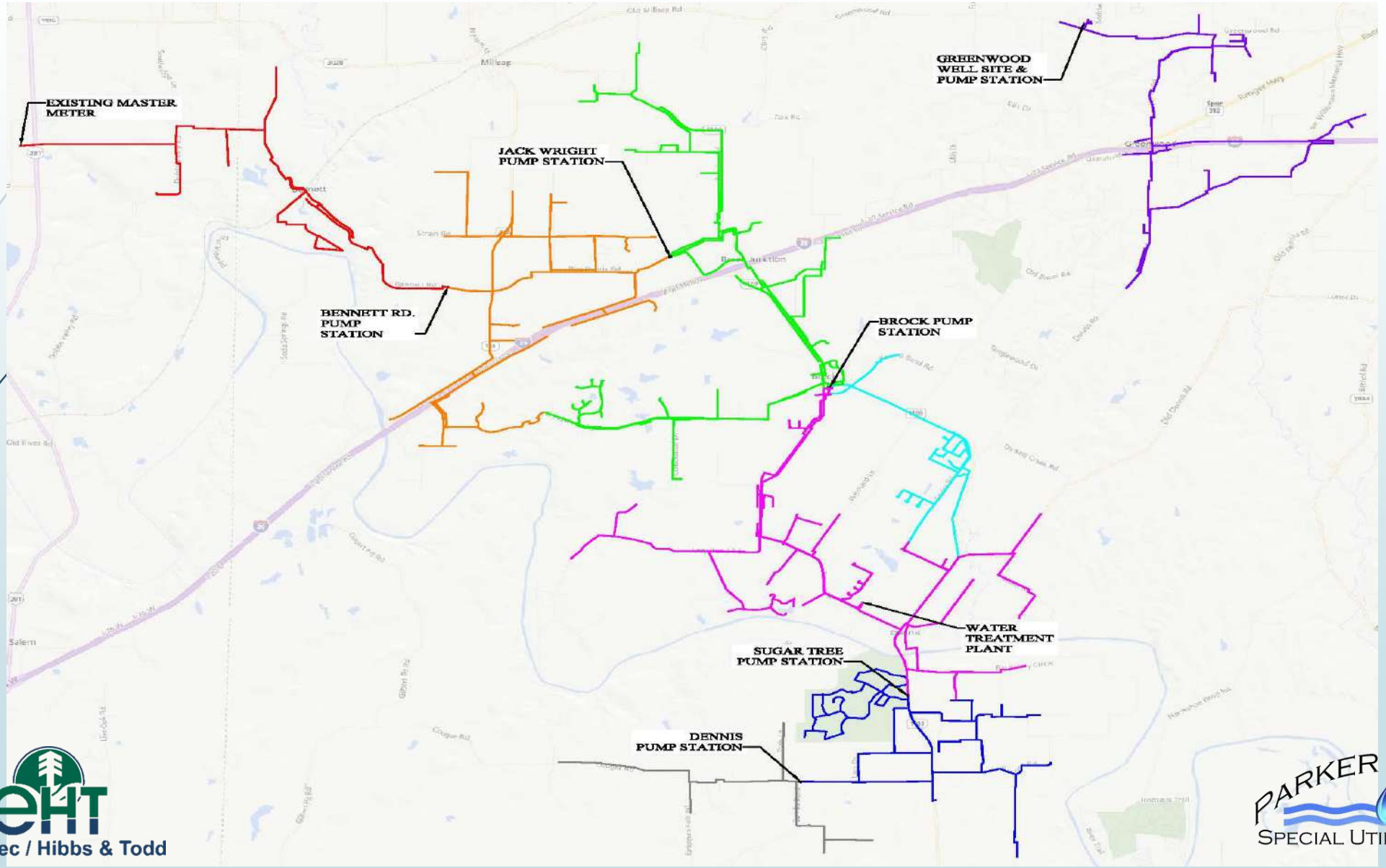
- Water line locations were obtained from the Overall Water System Map dated May 2018
- Pump Station site information was developed based on site visits and from information obtained from Staff

Line Size (diameter)	Approximate Length (miles)
2-inch	33
3-inch	42
4-inch	19
6-inch	43
8-inch	19

Site Name	Storage Capacity (gallons)	Total Pumping Capacity (gpm)	Pressure Tank Capacity (gallons)
Bennett PS	200,000	1,230	8,000
Brock PS	200,000	800	8,000
Dennis PS	20,000	180	2,600
Greenwood PS	96,000	500	20,000
Jack Wright PS	150,000	800	6,000
Sugartree PS	200,000	700	8,000

Existing Distribution System

Pressure Plane Map: Maximum Day Demand Scenario



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Existing System Analysis: Max Day Demand

- TCEQ Capacity

Site Name	# of Connections Served	Required Storage Capacity (gallons)	Actual Storage Capacity (gallons)	Required Pumping Capacity (gpm)	Actual Pumping Capacity (gpm)	Required Pressure Tank Capacity (gallons)	Actual Pressure Tank Capacity (gallons)
Bennett PS	289	57,800	200,000	806	1,230	5,780	8,000
Brock PS	70	14,000	200,000	140	800	1,400	8,000
Dennis PS	49	9,800	20,000	98	180	980	2,600
Greenwood PS	143	28,600	96,000	286	500	2,860	20,000
Jack Wright PS	308	61,600	150,000	659	800	6,160	6,000Note
Sugartree PS	359	71,800	200,000	747	700	7,180	8,000

Note: Jack Wright Pump Station can be redirected to transfer capacity to other pump station sites, and therefore is technically not under capacity.

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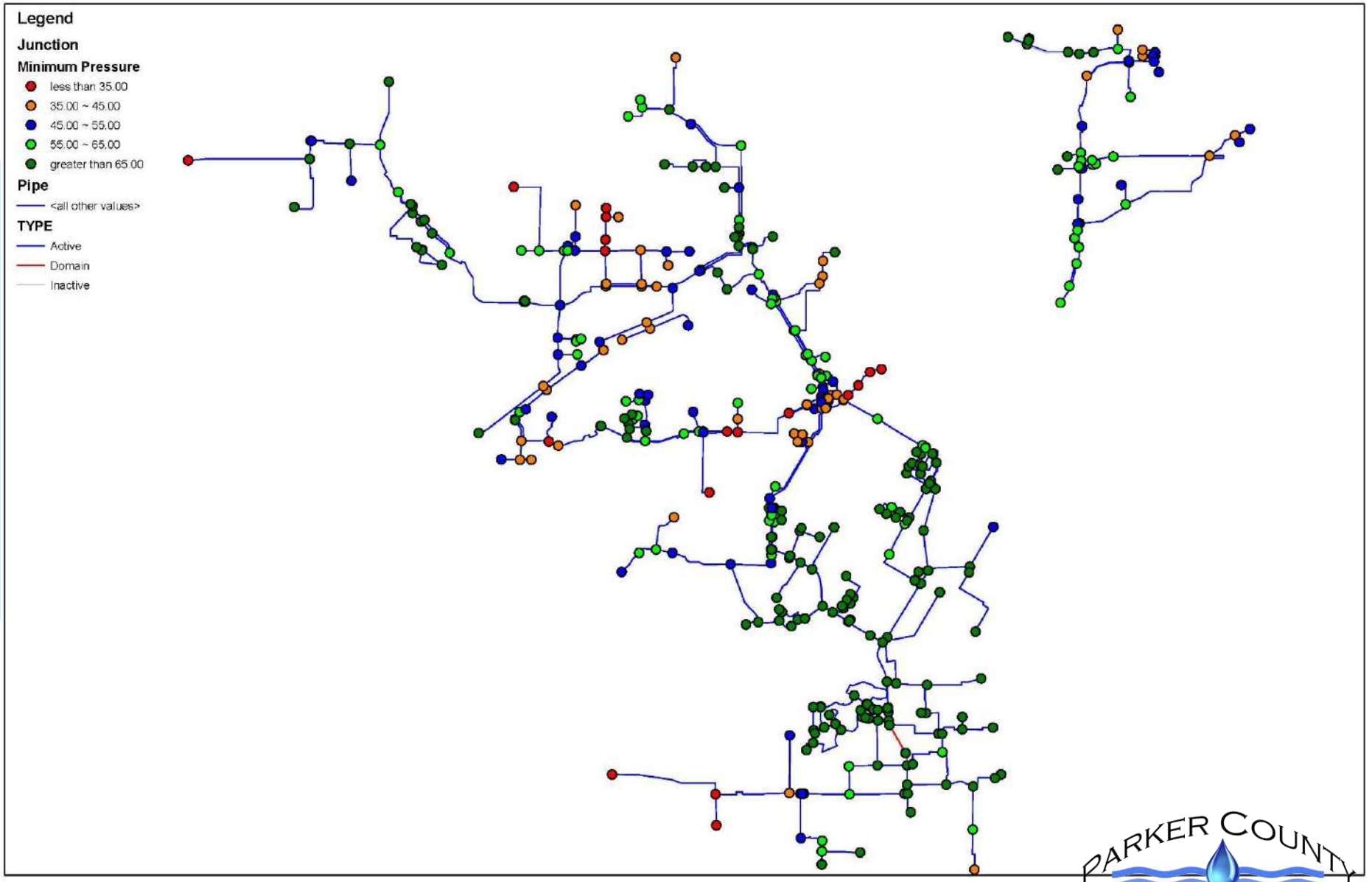
Parker County Special Utility District

Model Results: Min Pressure/Max Daily Demand

Portions of the system drop below 35 psi during max day demand scenario

These are mostly due to demands on small diameter lines during the lower setting of the pressure tank operation



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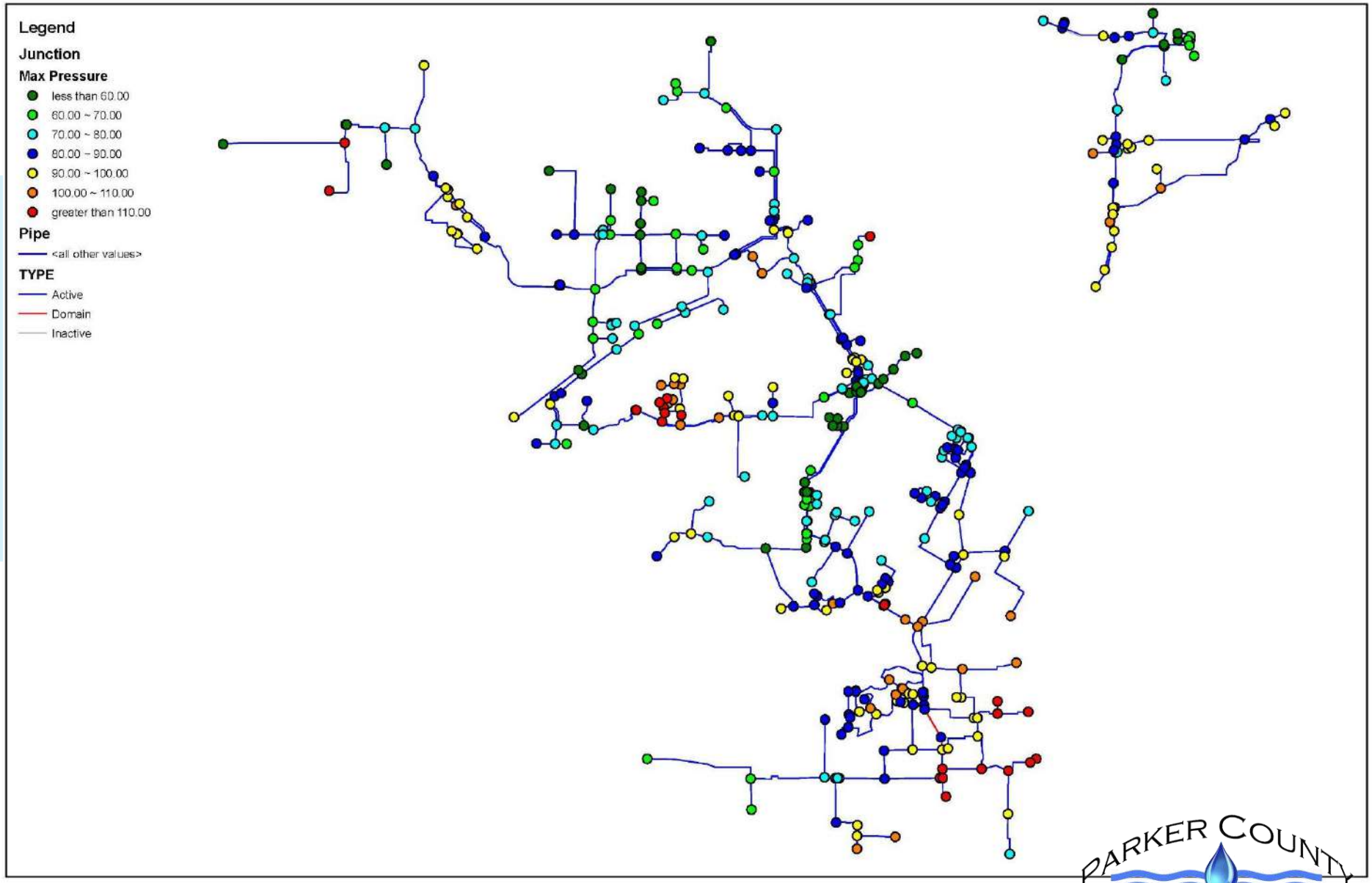
Model Results: Max Pressure/Avg Daily Demand

High pressures rise above 110 psi during average day demand scenario

High pressures occur around the lower elevation areas of the system, due to the wide variation in elevation



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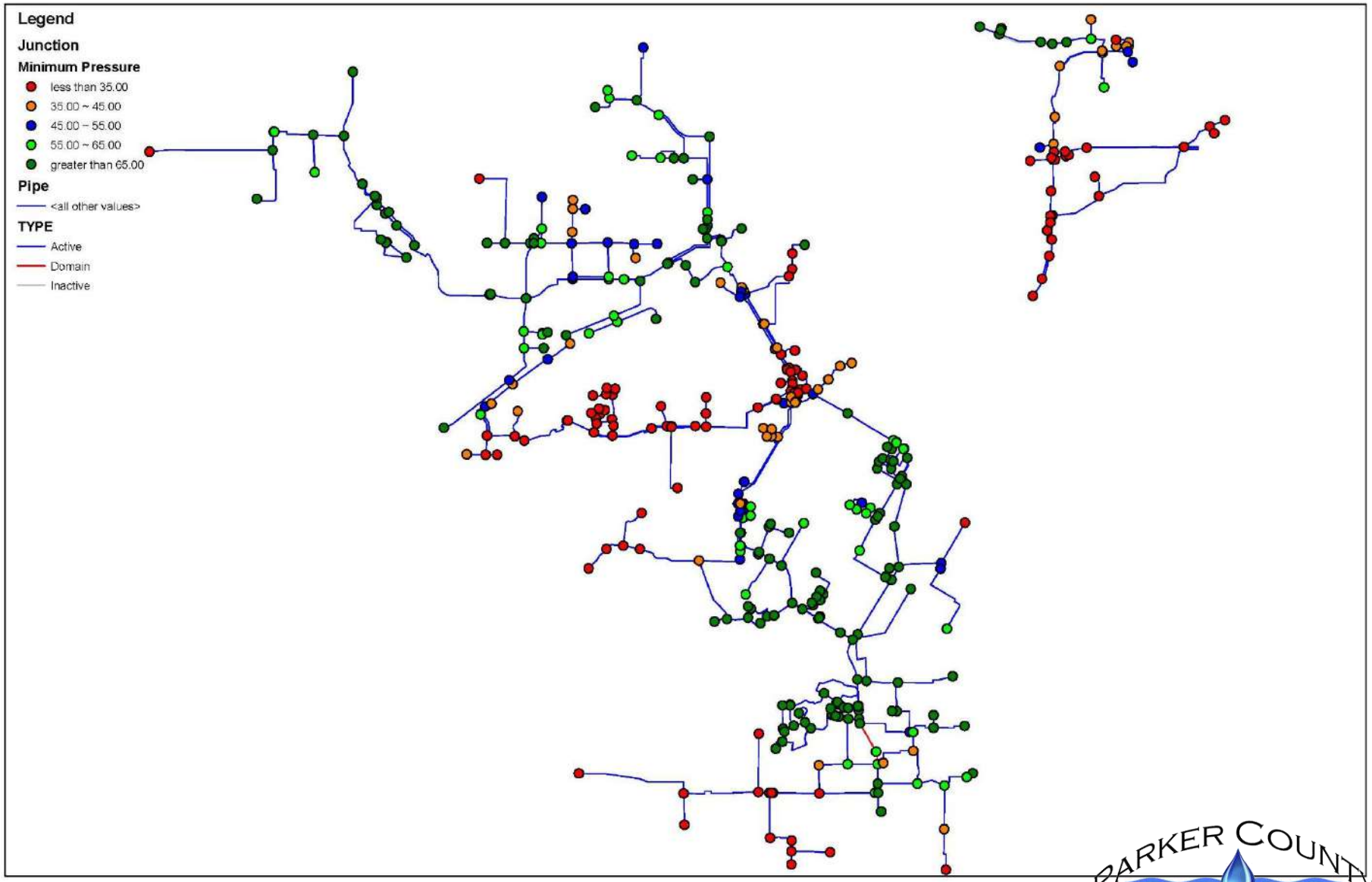
Model Results: Min Pressure/TCEQ Demand

Portions of the system fall below 35 psi during TCEQ demand (1.5 gpm/connection)

These areas see pressure issues due to their distance from a given pump station providing pressure maintenance, as pressure drops through friction loss in the distribution system under high demand scenarios



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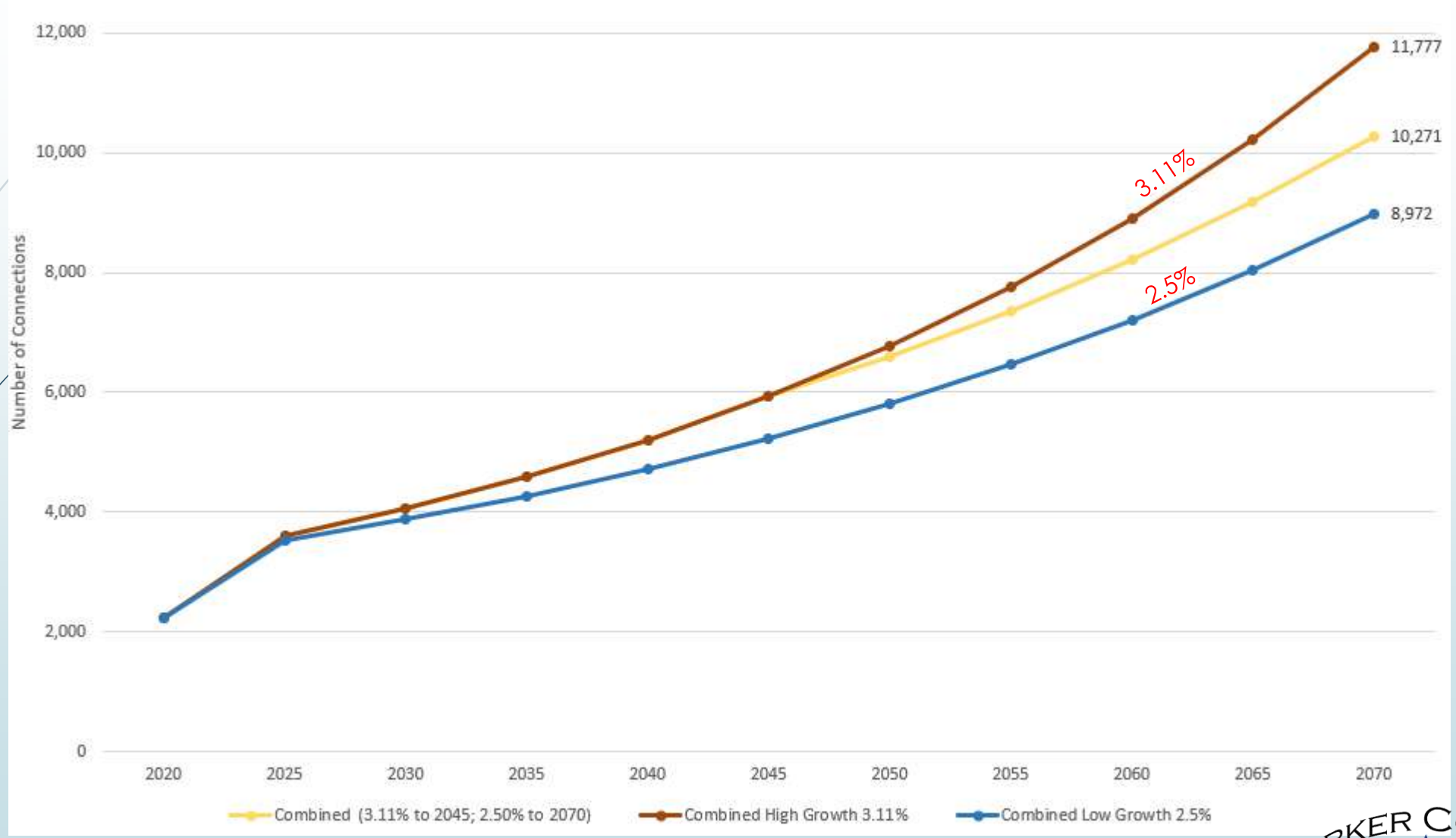
Service Connection Projections



Note 1: Projection includes the addition of the following in 2025: Canyon West, Lazy Bend Estates, Horseshoe Bend, and Greenwood area.

Enprotec / Hibbs & Todd

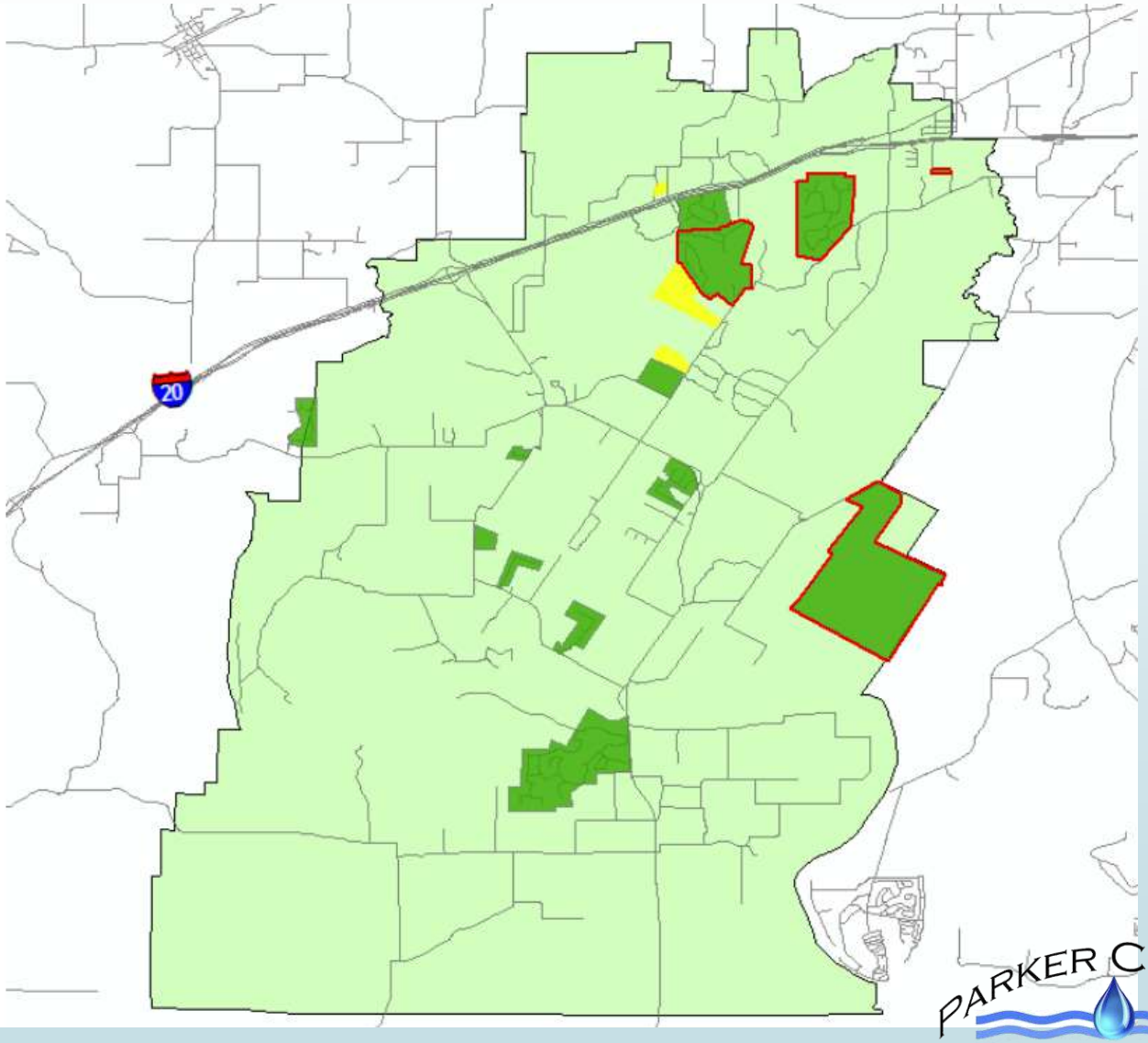
Parker County Special Utility District

Connection Projections – Brock ISD Info

Information from the Brock ISD Fall 2020 Report Presentation

District Housing Overview

- Brock ISD has 4 active subdivision with 191 lots
- BISD has roughly 368 future homes planned with more developments in discussions
- Of the future homes planned, 2 subdivisions are active



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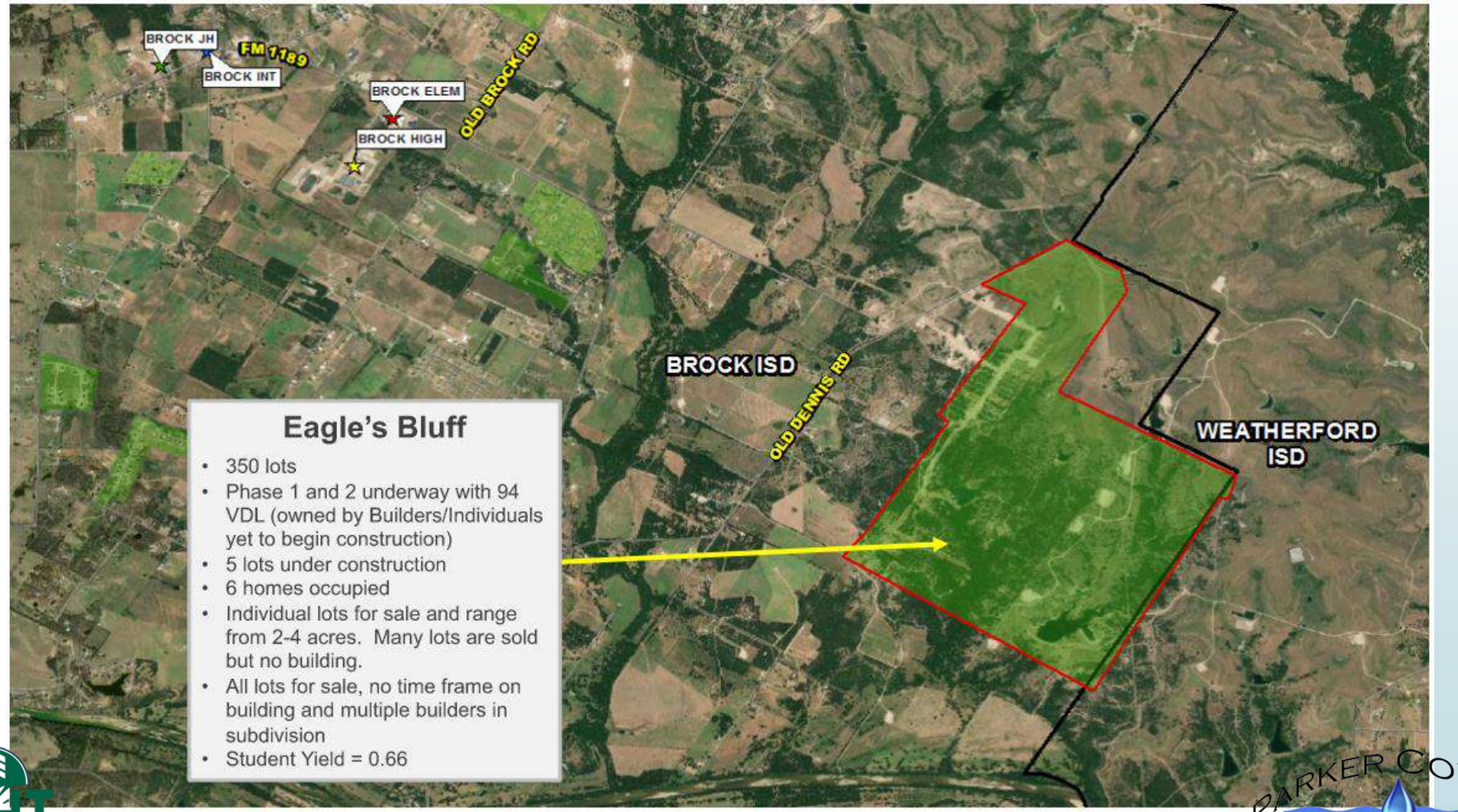
Connection Projections – Brock ISD Info

Information from the Brock ISD Fall 2020 Report Presentation

Residential Activity



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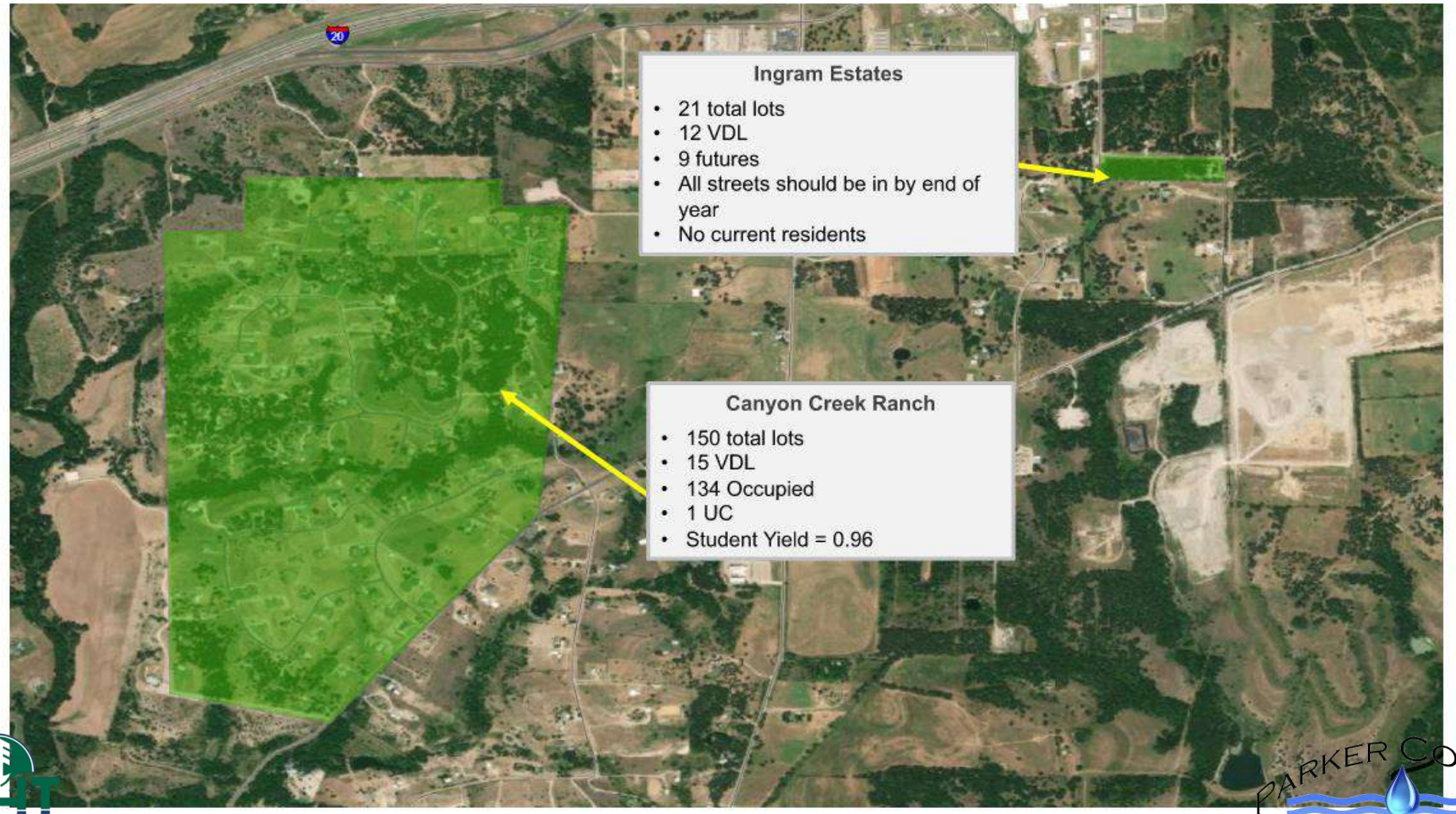

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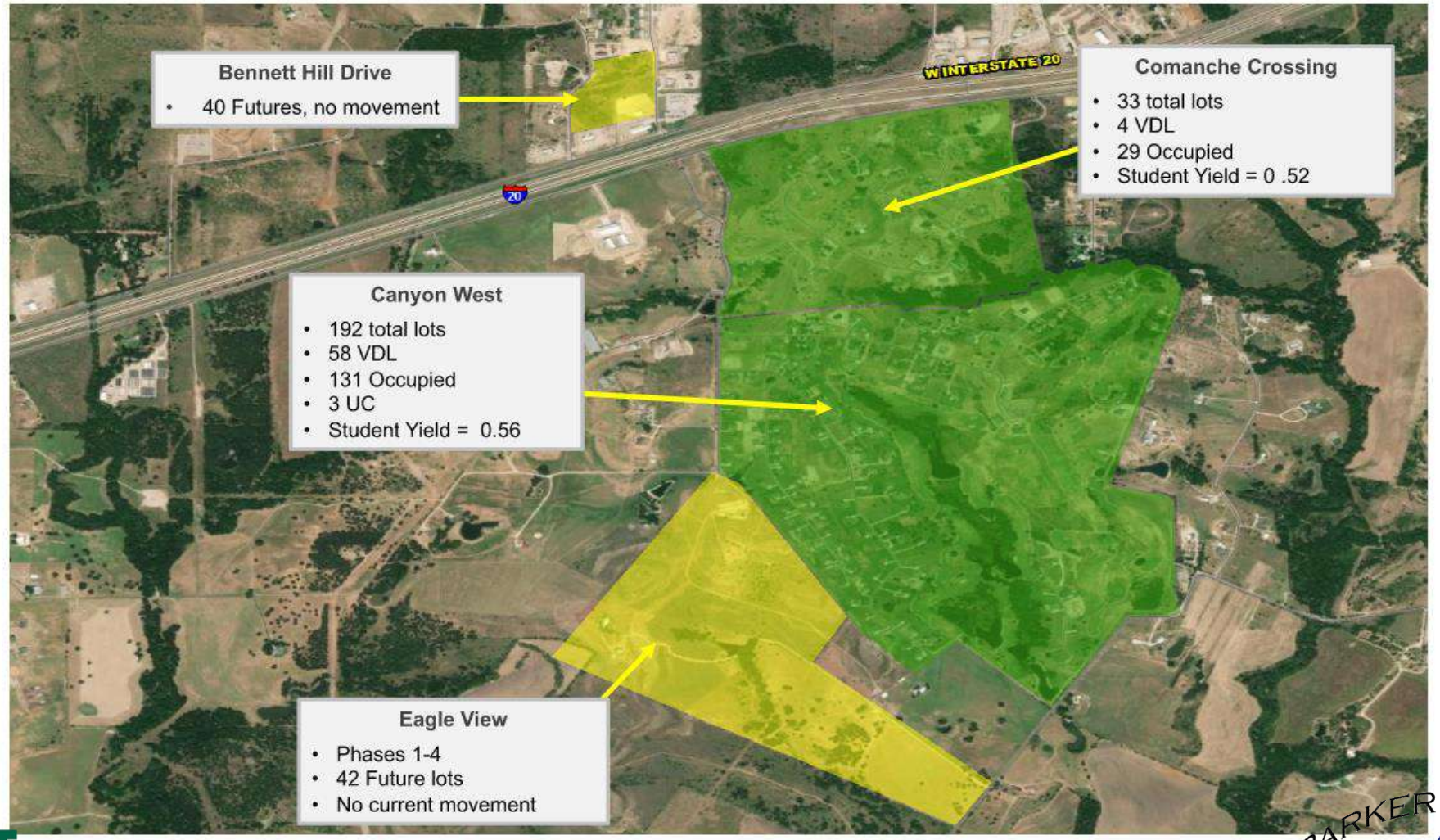

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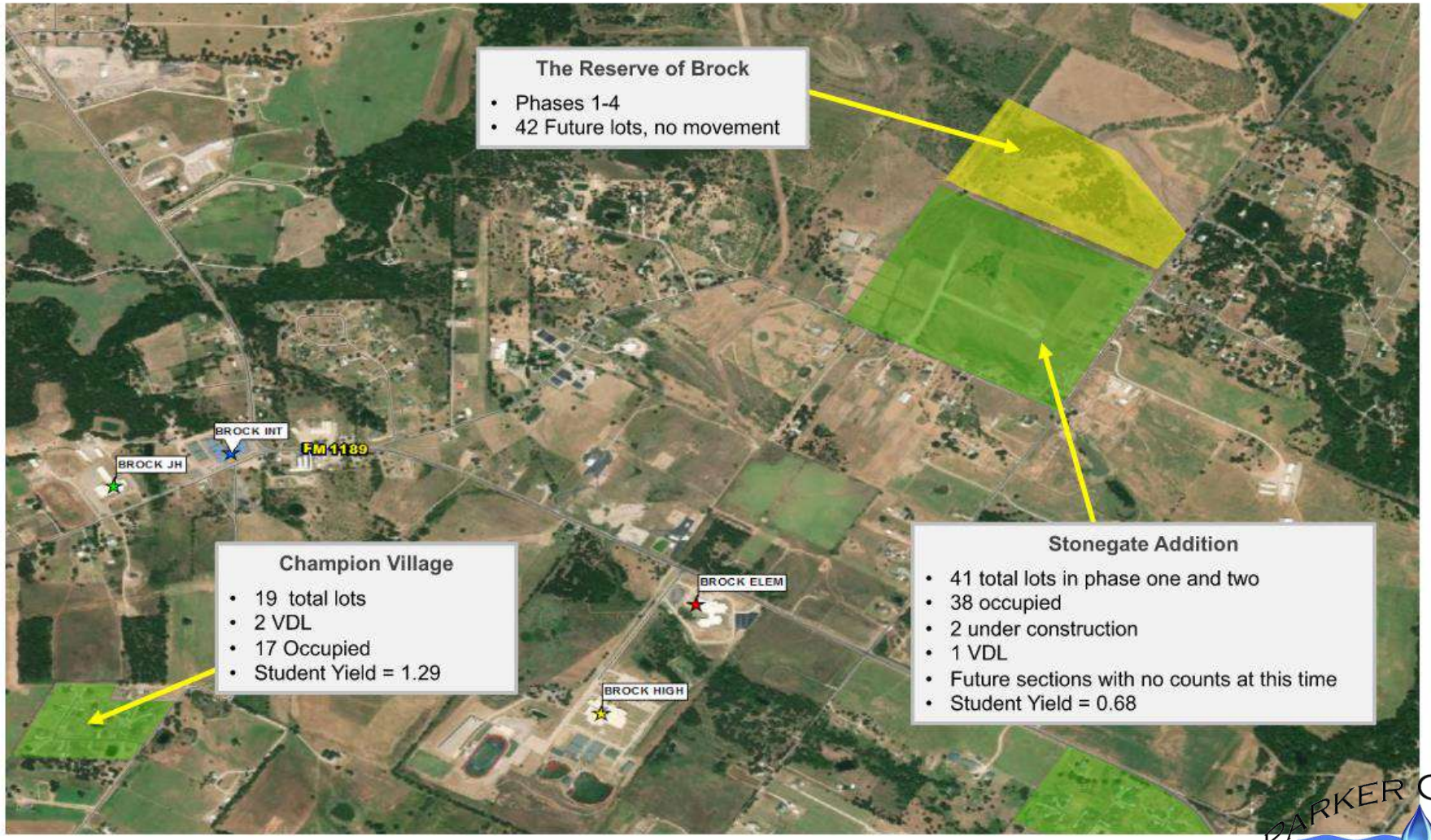

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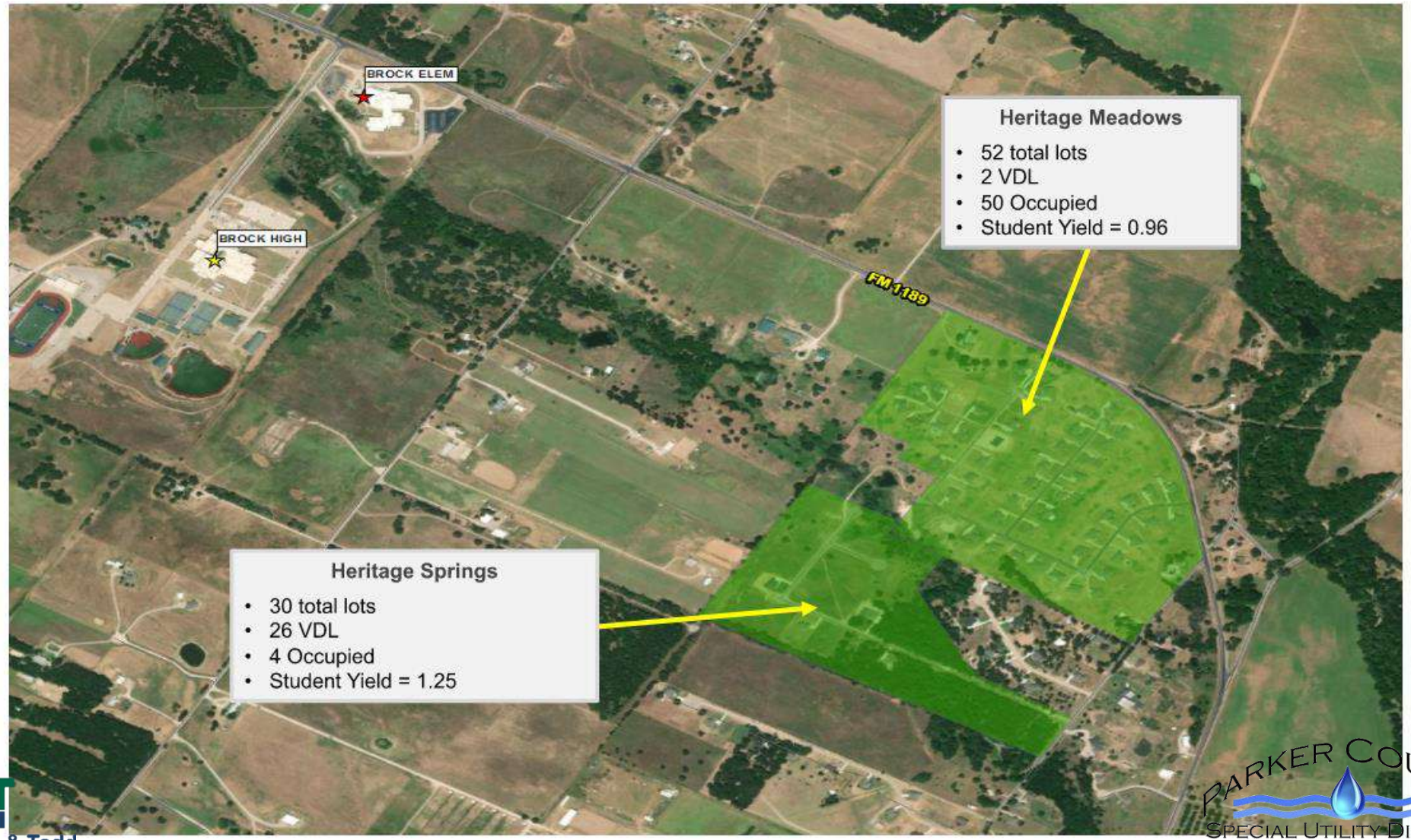

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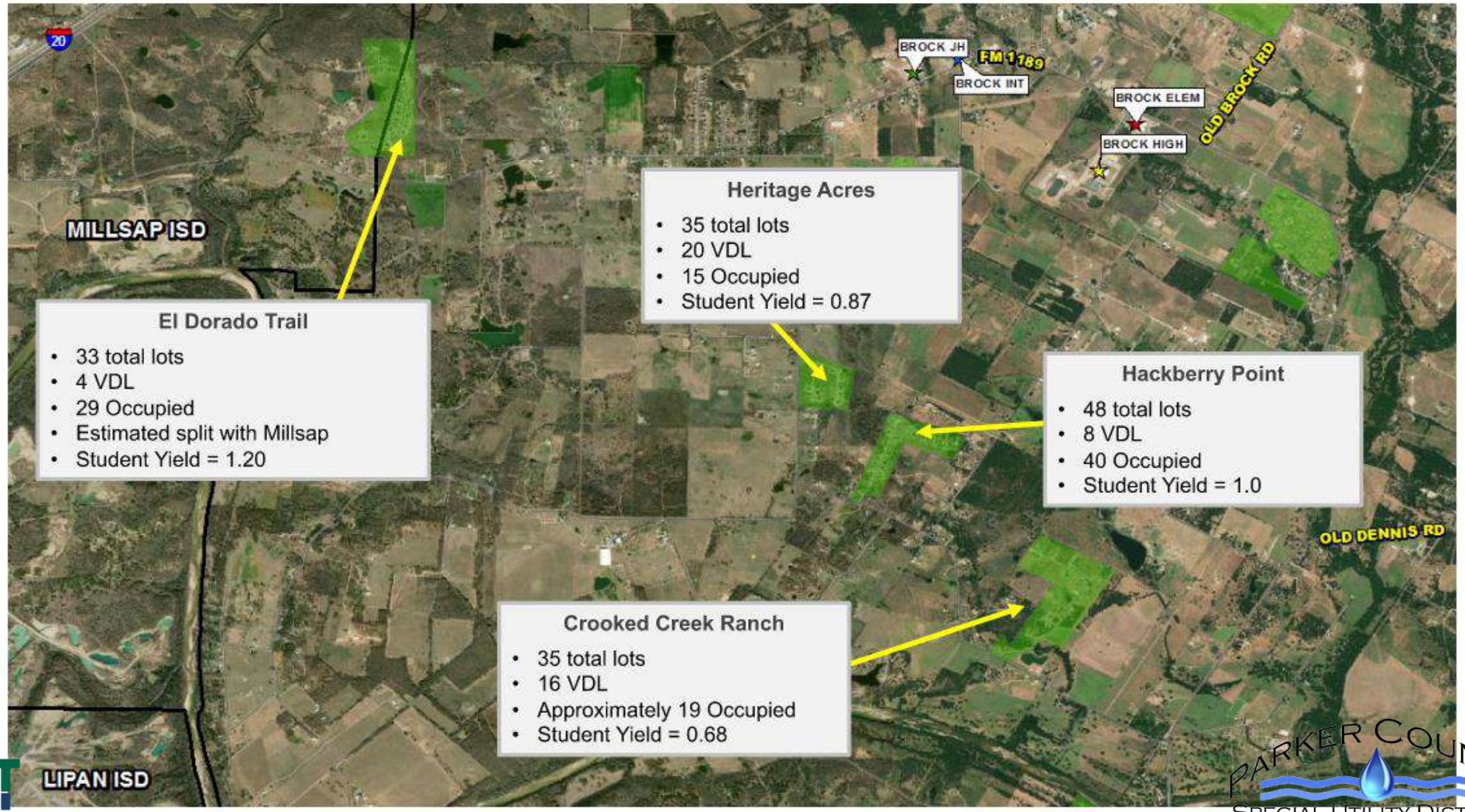

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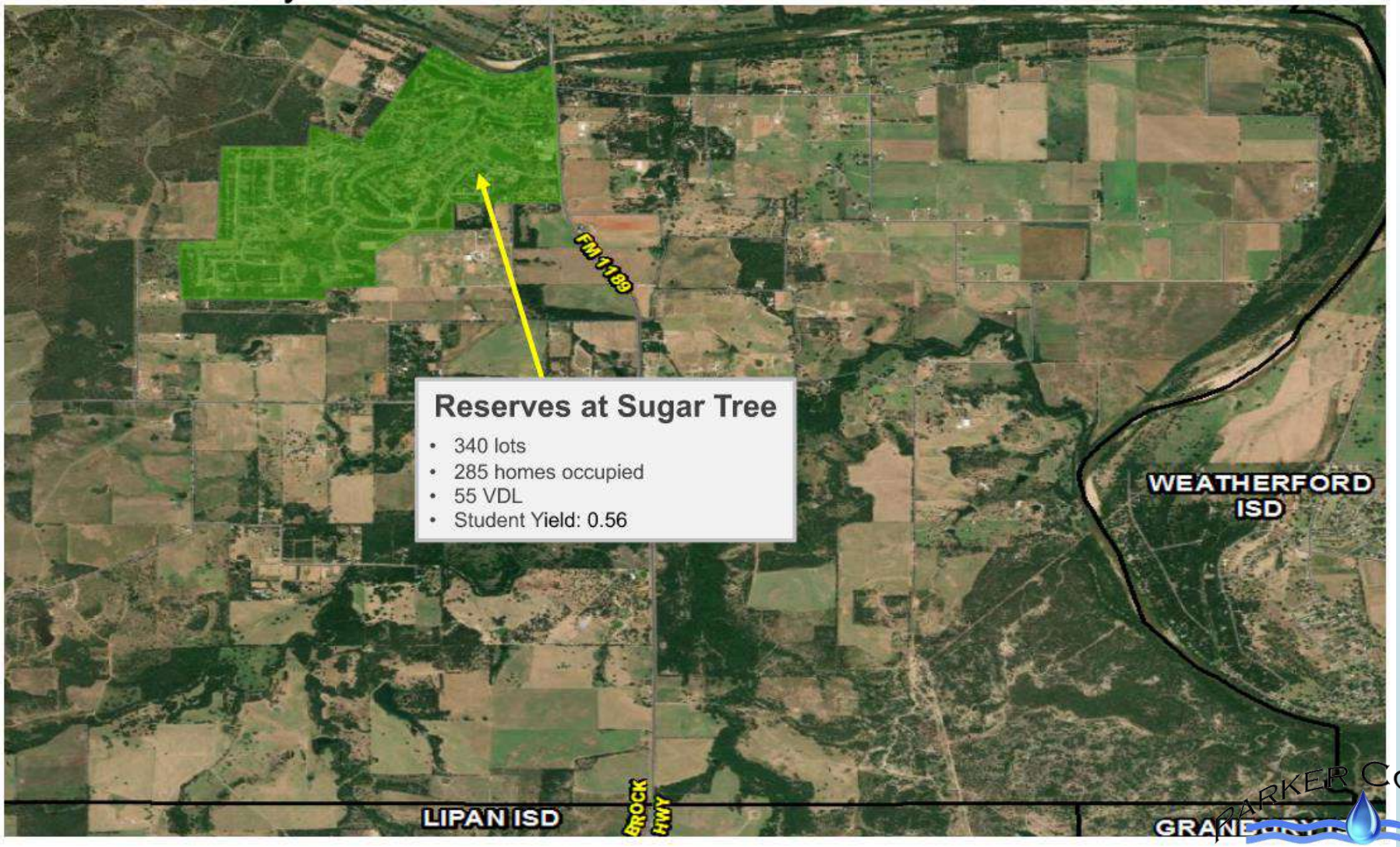

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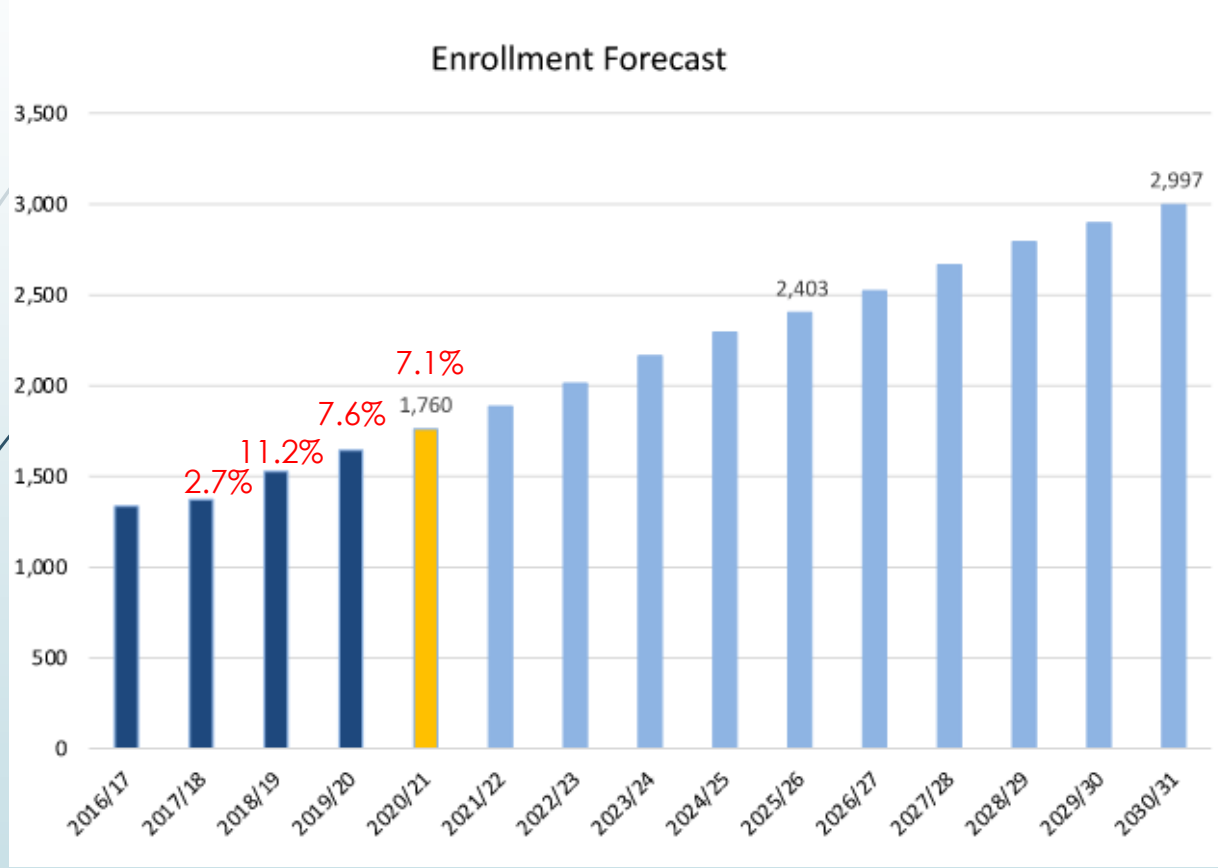

- Brock ISD will continue to experience enrollment growth due to a strong housing market
- BISD has over 300 future lots in the planning stages, with groundwork underway on two subdivisions in the district
- BISD is expected to enroll more than 2,400 students by 2025-26 and more than 2,900 students by 2030-31

Annual Growth Rate shown in red above applicable school year.

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Capacity Needs – Potential Water Rights

Based on a review of the average historical water usage (2001 – 2020)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Average usage (gpcd)	310	297	283	274	265	260	210	272	264	244	279	249	235	237	201	217	239	228	223	248

Historical Average Usage = 252 gpcd = 0.175 gpm per connection

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Capacity Needs

	Santo Wholesale (MGD)	TCEQ Required SCR (MGD)	Potential ACR (MGD)	Potential Water Rights Needed	
	Growth Rate 2.80%	Growth 3.11%; 0.6 gpm per connection	Growth 3.11%; 0.419 gpm per connection	Growth 3.11%; 0.175 gpm per connection	Year Usage (acre-feet per year)
2020	0.00	1.92	1.34	0.56	629
2025	0.00	3.11 note 2	2.17	0.91	1,017
2030	0.10	3.61	2.55	1.02	1,146
2035	0.13	4.10	2.90	1.16	1,296
2040	0.25	4.75	3.39	1.31	1,471
2045	0.40	5.52	3.98	1.49	1,674
2050	0.57	6.42	4.66	1.71	1,912
2055	0.77	7.47	5.45	1.95	2,188
2060	1.00	8.68	6.37	2.24	2,511
2065	1.25	10.08	7.42	2.58	2,886
2070	1.55	11.73	8.66	2.97	3,324

Notes:
1. Projected additional capacity for Santo was included in the TECQ and ACR required quantities as well as the potential water right needs.
2. The SCR value in 2025 is 130% of the supply after completion of Phase 1. The ACR is 90.4%.

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Service Supply Options

- Water Conservation
- Alternative Capacity Requirement (ACR) – may bridge the capacity gap
- Expand Plant (Build Second Plant)
- Develop wells (short term solution)
- Increase Mineral Wells Capacity (involves upgrading piping and pump station)

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Treatment Options

- Option 1: Maintain all treatment at the existing Plant #1
- Option 2: Construct a second treatment plant

Phase	Target Year	Plant	New Plant Capacity	Comment
I	2020	#1	2.0 MGD	
II	2030	#1	4.0 MGD	Either two 1.0 MGD expansions or one 2.0 MGD expansion
Alt II A	2030	#1	3.0 MGD	Dependent on acquiring a new plant property and garnering developer/Santo buy-in
		#2	1.0 MGD	
Alt II B	2030	#1	2.0 MGD	Alternate Split
		#2	2.0 MGD	
III	2040	#1 & #2	5.0 MGD total	
IV	2050	#1 & #2	6.5 MGD total	
V	2060	#1 & #2	8.5 MGD total	
VI	2070	#1 & #2	11.0 MGD total	

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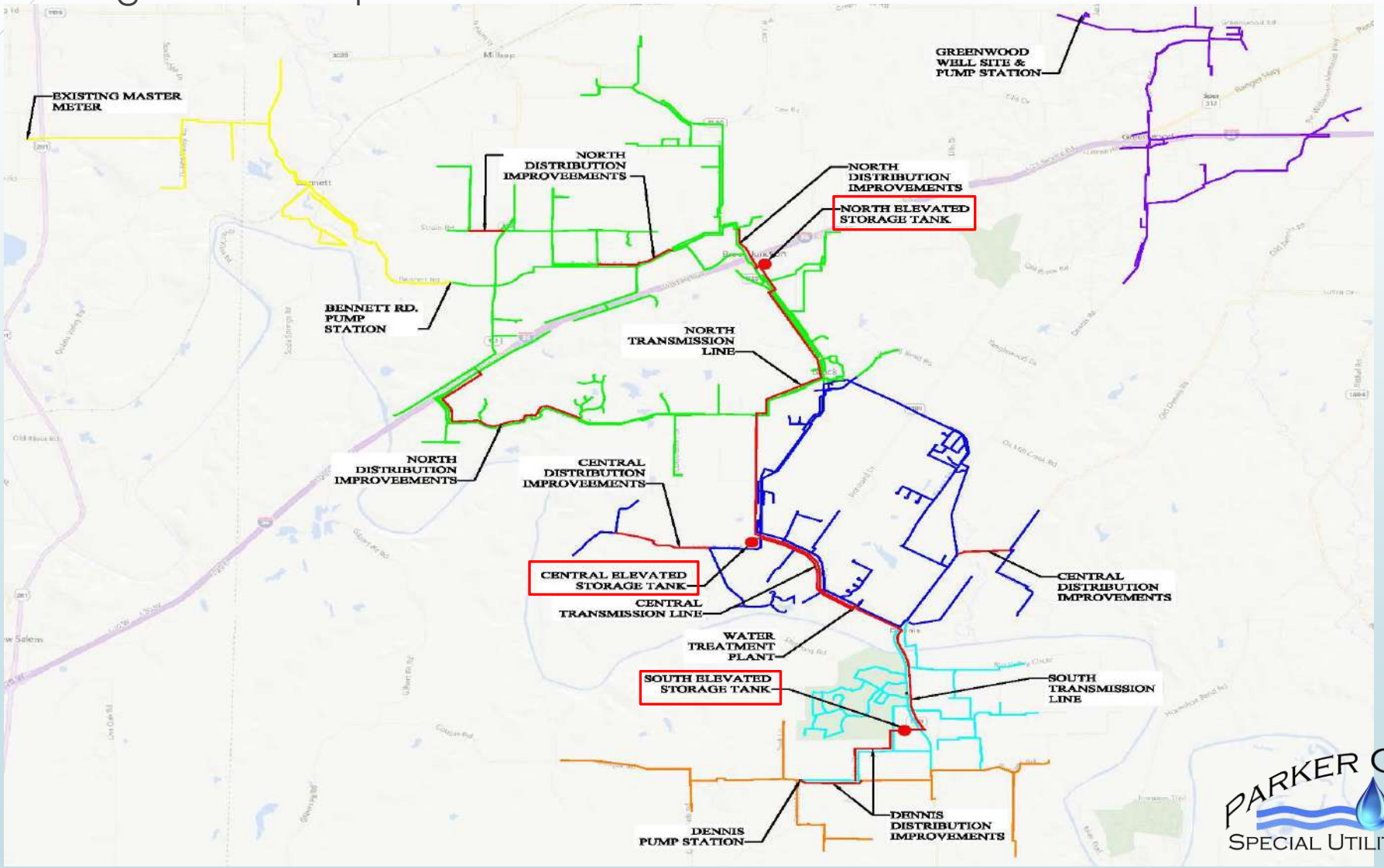
Previous Distribution Master Plan

- 3 Elevated Storage Tanks: North, Central, & South
- Might need to split the North to NW & NE



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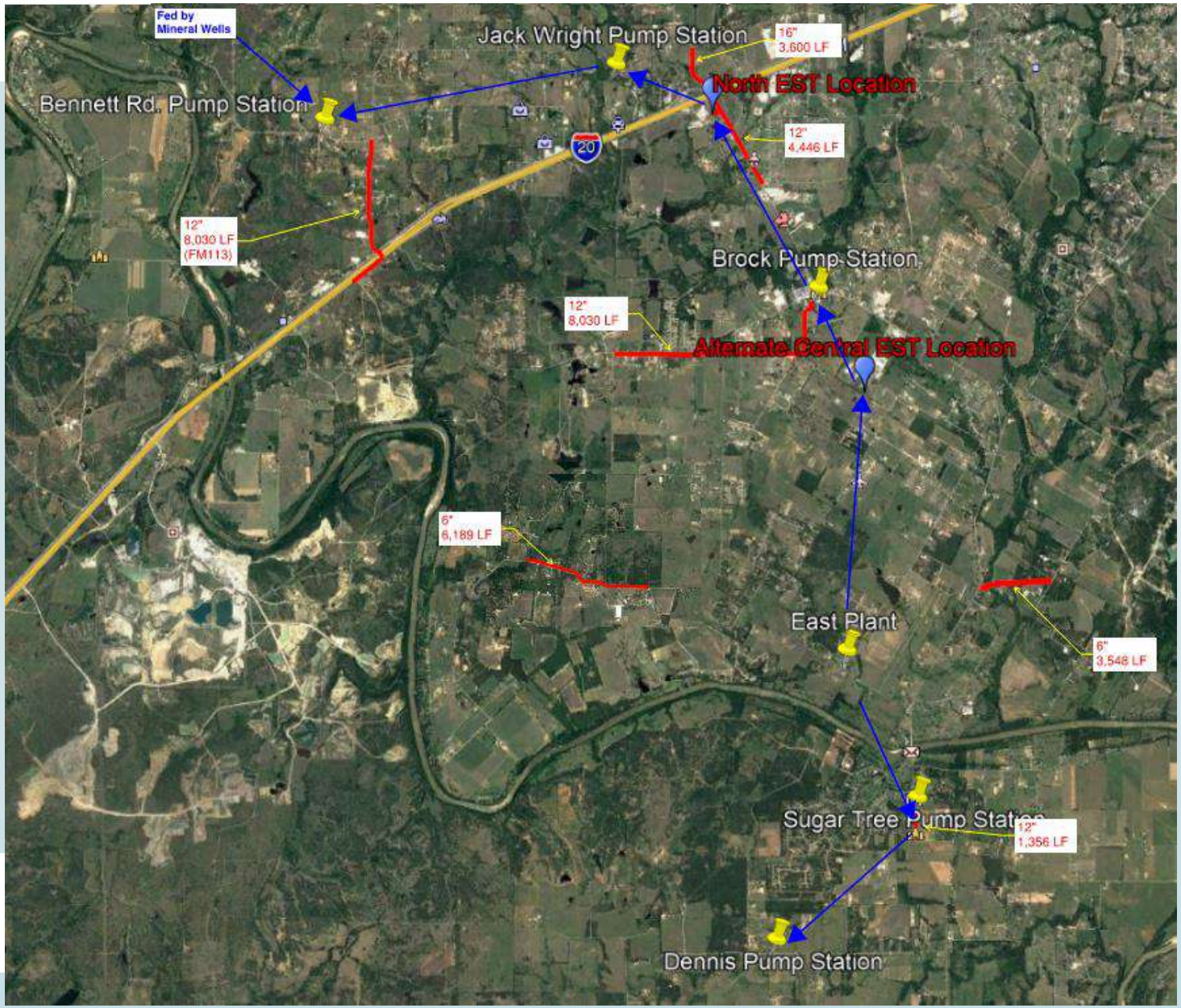
2030 – Option 1: Existing Plant to 4 MGD

Planning Period Improvements

- Northeast EST (Minimum 500,000 gallon)
- North Transmission Extension (12-inch)
- North Transmission Extension Continued (16-inch)
- Brock PS Improvements (Should be done as apart of the current project (7546))
- North Distribution Improvement, Along Grindstone, Developer Driven.
- North Distribution Improvement, Along FM 113, Developer Driven.
- South Transmission Line (Partial Project)(12-inch)
- A few distribution improvements previously identified due to number of connections
  - Lazy Bend Rd WL
  - Old Dennis Rd WL
- Jack Wright Pump Station Improvements – Potential Improvements at JW to make sure pressure settings and pumps can match that of Bennett since they will work together. Likely minor improvements.



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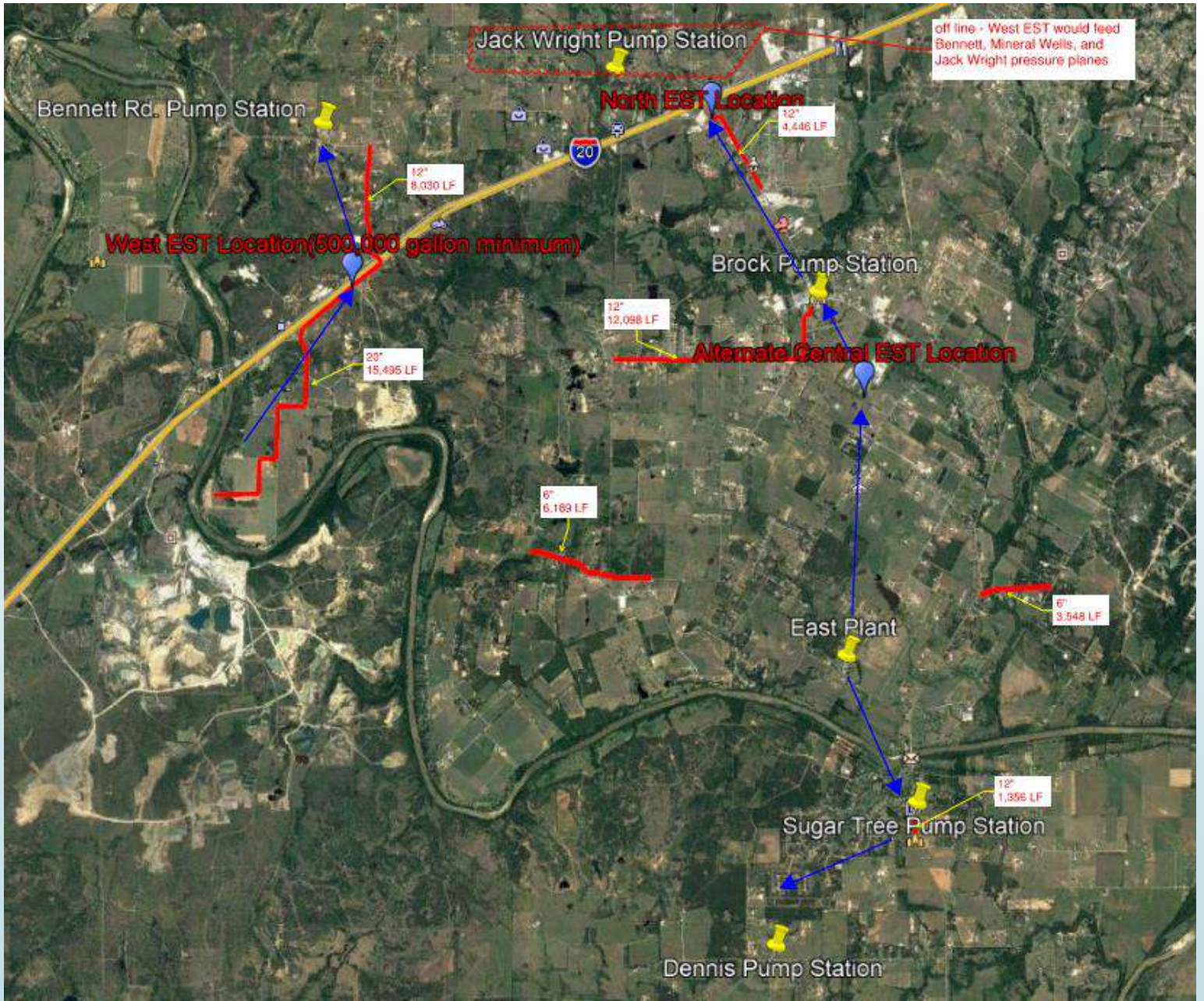
2030 – Option 2: South to 3 MGD; West 1 MGD

Planning Period Improvements

- Build new West WTP – 1 MGD
- West Transmission Line (20-inch)
- North Distribution Improvement, Along FM 113, Now required to serve into Bennett pressure plane.(12-inch)
- West EST (Minimum 500,000 gallon)
- North Transmission Extension (12-inch)
- Northeast EST (Minimum 500,000 gallon)
- Brock PS Improvements (Should be done as apart of the current project (7546))
- North Distribution Improvement, Along Grindstone, Developer Driven.
- South Transmission Line (Partial Project)(12-inch)
- A few distribution improvements previously identified due to number of connections
  - Lazy Bend Rd WL
  - Old Dennis Rd WL



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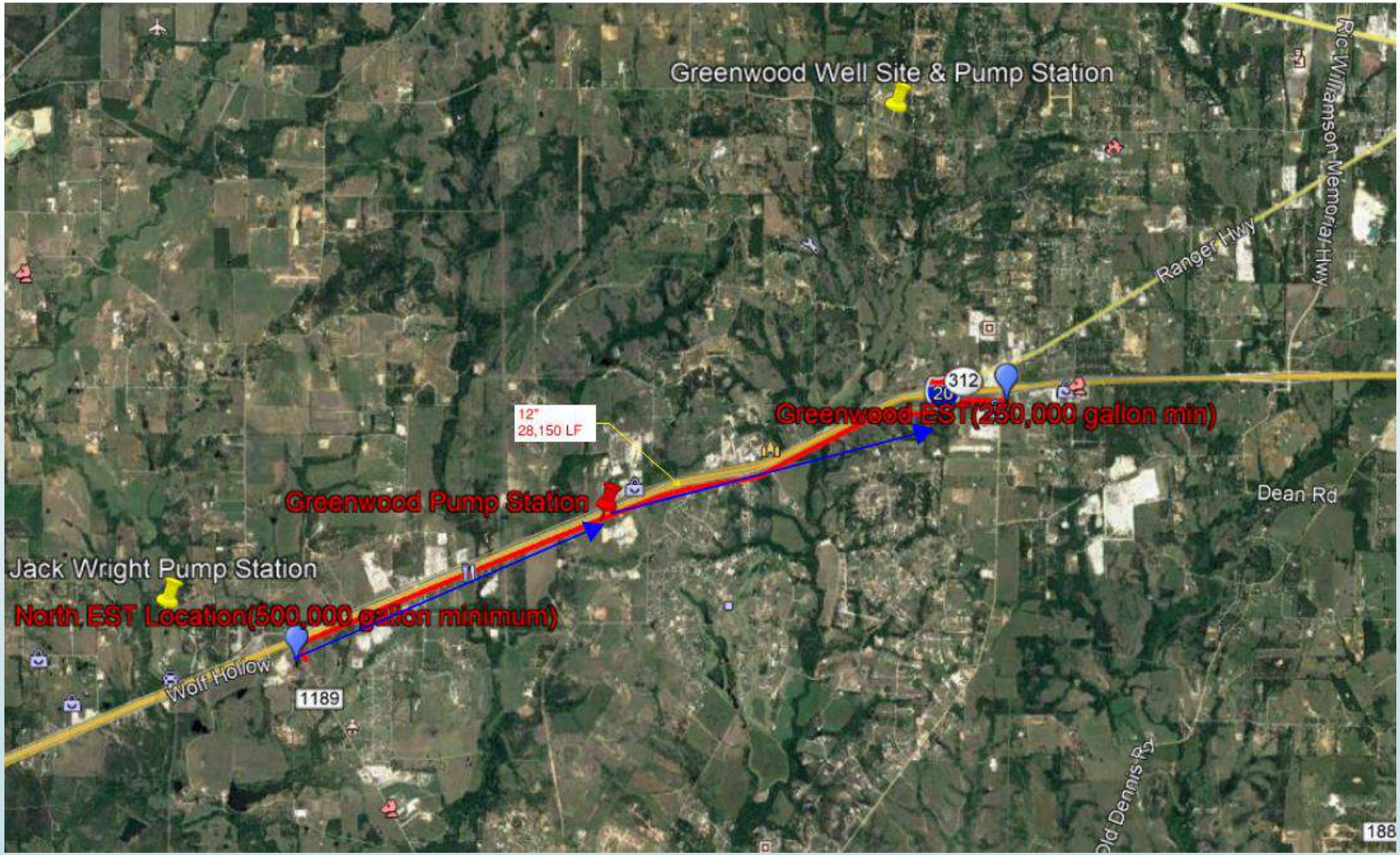
PARKER COUNTY SPECIAL UTILITY DISTRICT

2030 - Greenwood/Canyon West

- Project Improvements
  - I-20 Waterline (12-inch)
  - New Greenwood Pump Station along I-20. (Including site acquisition, GST, fill valve, and pumps.
  - New Greenwood EST (Minimum 250,000 gallon)

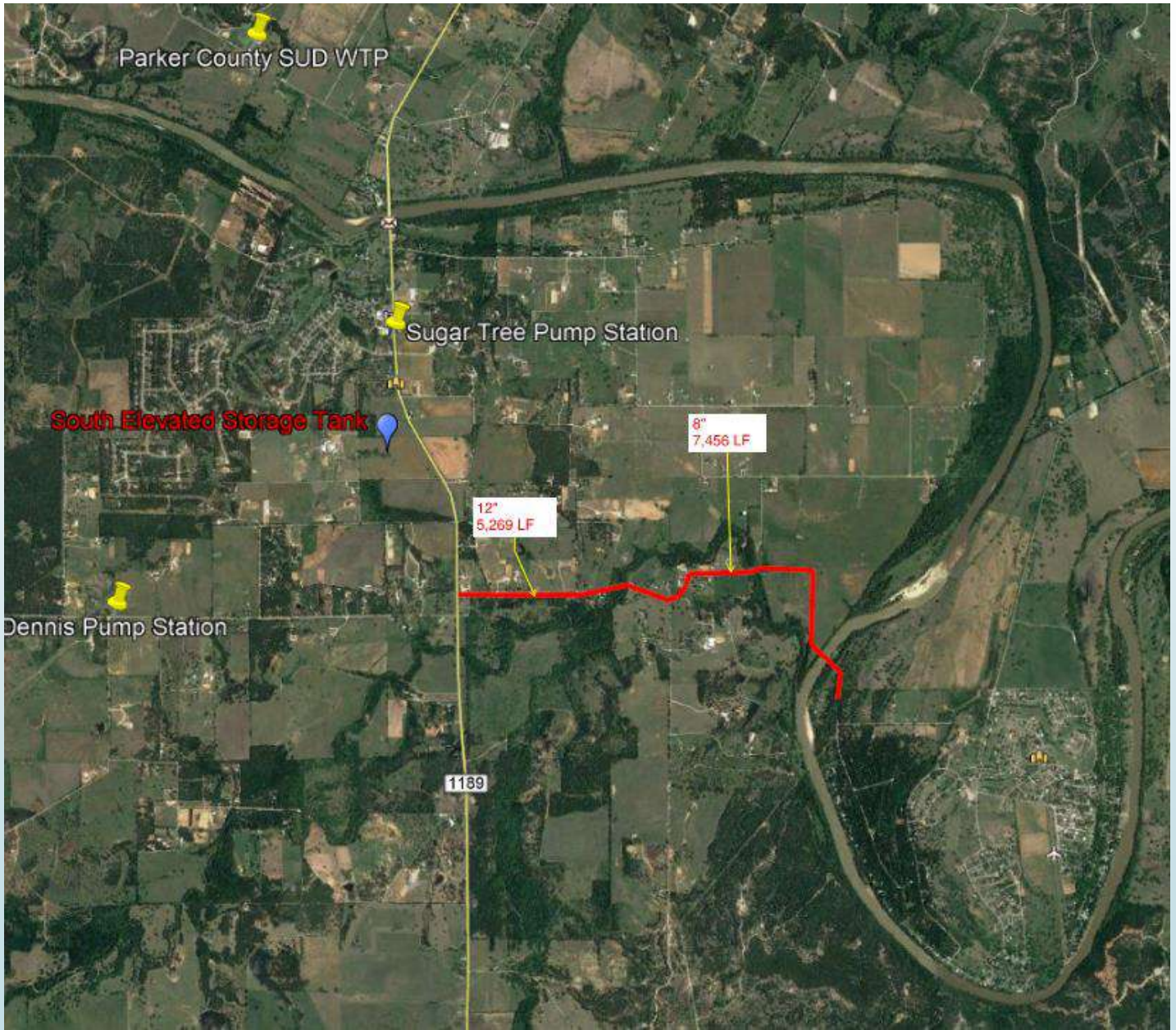


2030 - Horseshoe Bend

Project Improvements

- Horseshoe Bend Waterline (12-inch and 8-inch)

Note: Area cannot be served without the completion of the South improvements



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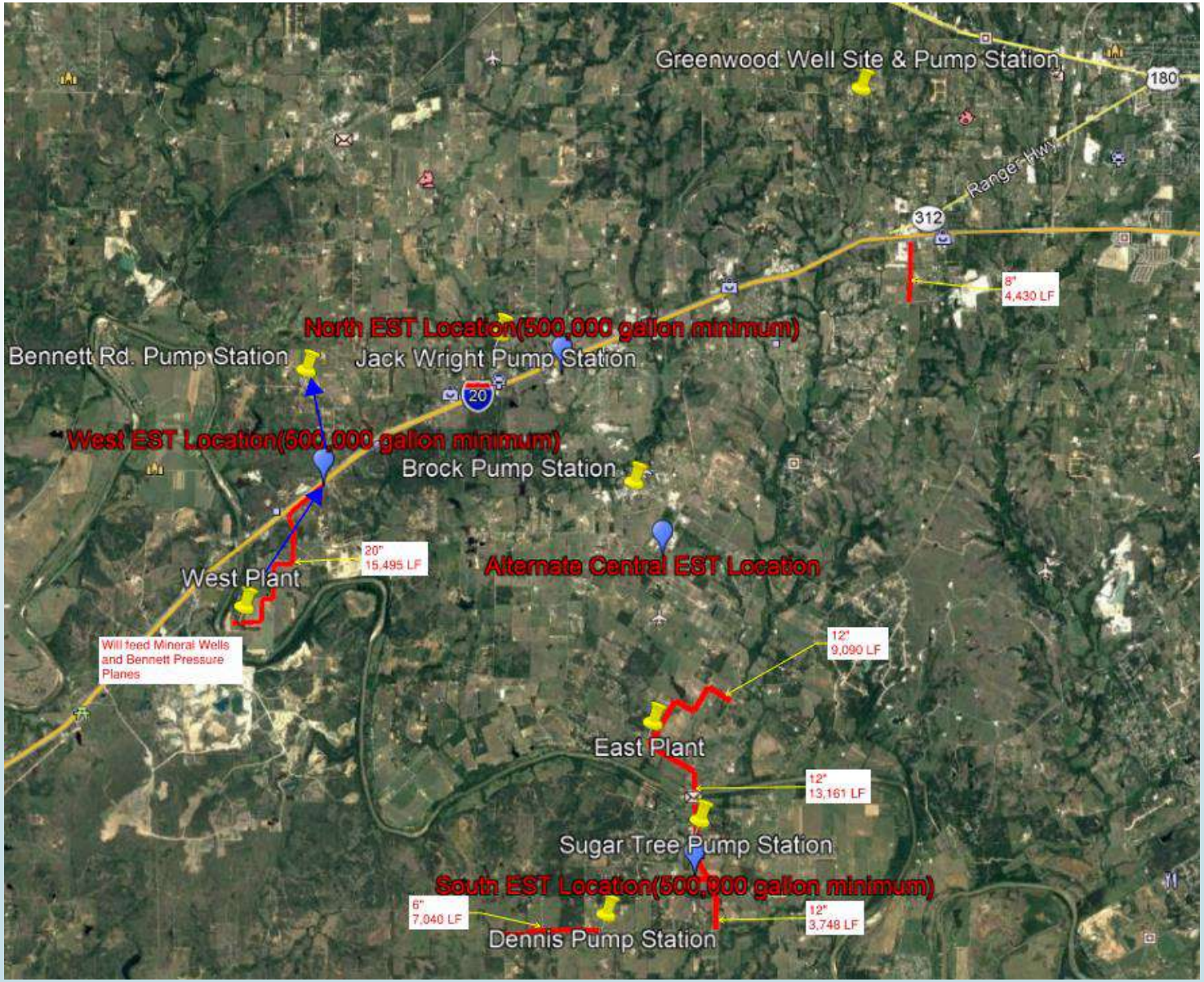
2040 – Option 1: (Build up from 2030 -1) South @ 4MGD; New West @1 MGD

Planning Period Improvements –

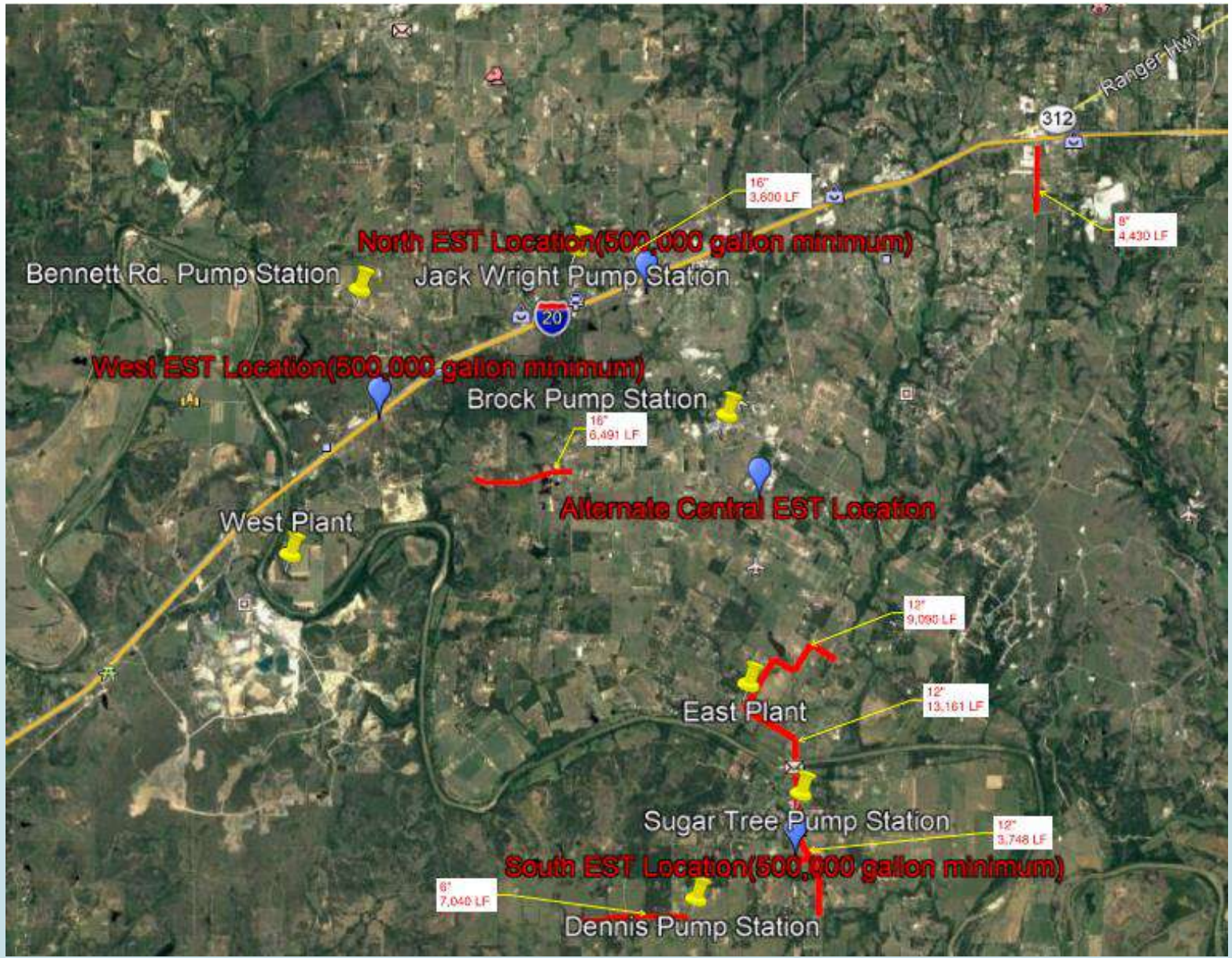
- **Build new West WTP – 1 MGD**
- West Transmission Line (20-inch)
- West EST (Minimum 500,000 gallons)
- South Transmission Line (Remainder from 2030 project) (12-inch)
- Central Looping Line (12-inch)
- South EST (Minimum 500,000 gallon)
- South Rural Waterline (12-inch)
- Dennis Waterline Extension (Minimum 6-inch)
- Greenwood Waterline Improvements 1 (Dennis Rd)(8-inch)



2040 – Option 2: (Build up from 2030 -2) South to 4MGD; West @ 1 MGD

Planning Period Improvements –

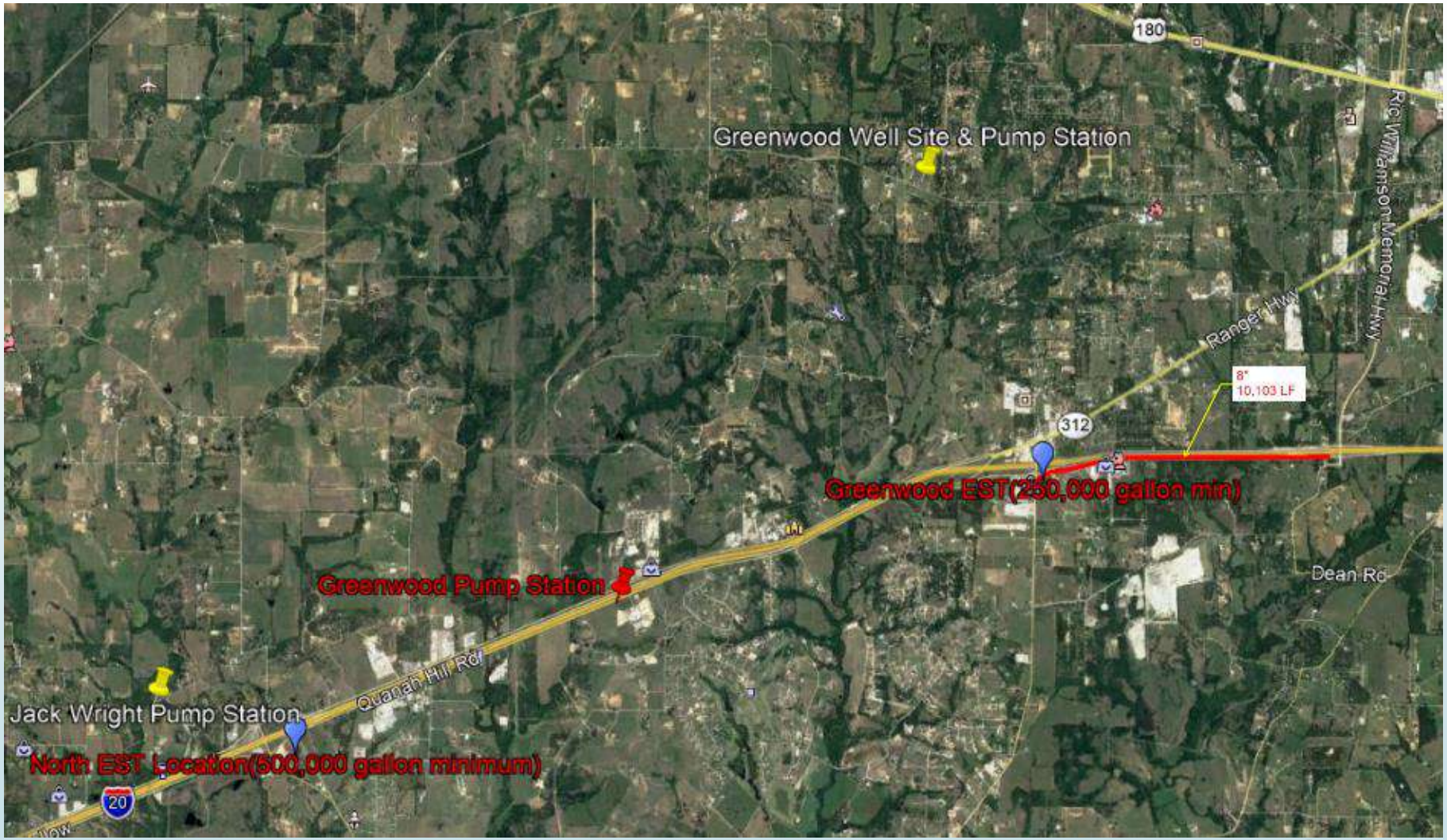
- Expand South plant from 3 MGD to 4 MGD
- South Transmission Line (Remainder from 2030 project) (12-inch)
- Central Looping Line (12-inch)
- South EST (Minimum 500,000 gallon)
- South Rural Waterline (12-inch)
- North Transmission Extension Continued (16-inch)
- Dennis Waterline Extension (Minimum 6-inch)
- Greenwood Waterline Improvements 1 (Dennis Rd)(8-inch)



2050 - Option 1(South to 5 MGD; West to 1.5 MGD)

Planning Period Improvements

- Expand South plant from 4 MGD to 5 MGD
- Expand West plant from 1 MGD to 1.5 MGD
- Likely improvements would consist of upsizing of smaller distribution lines. No major projects identified in this layout due to operation of system.
- Greenwood Waterline Improvements 2 (Interstate 20)(8-inch)



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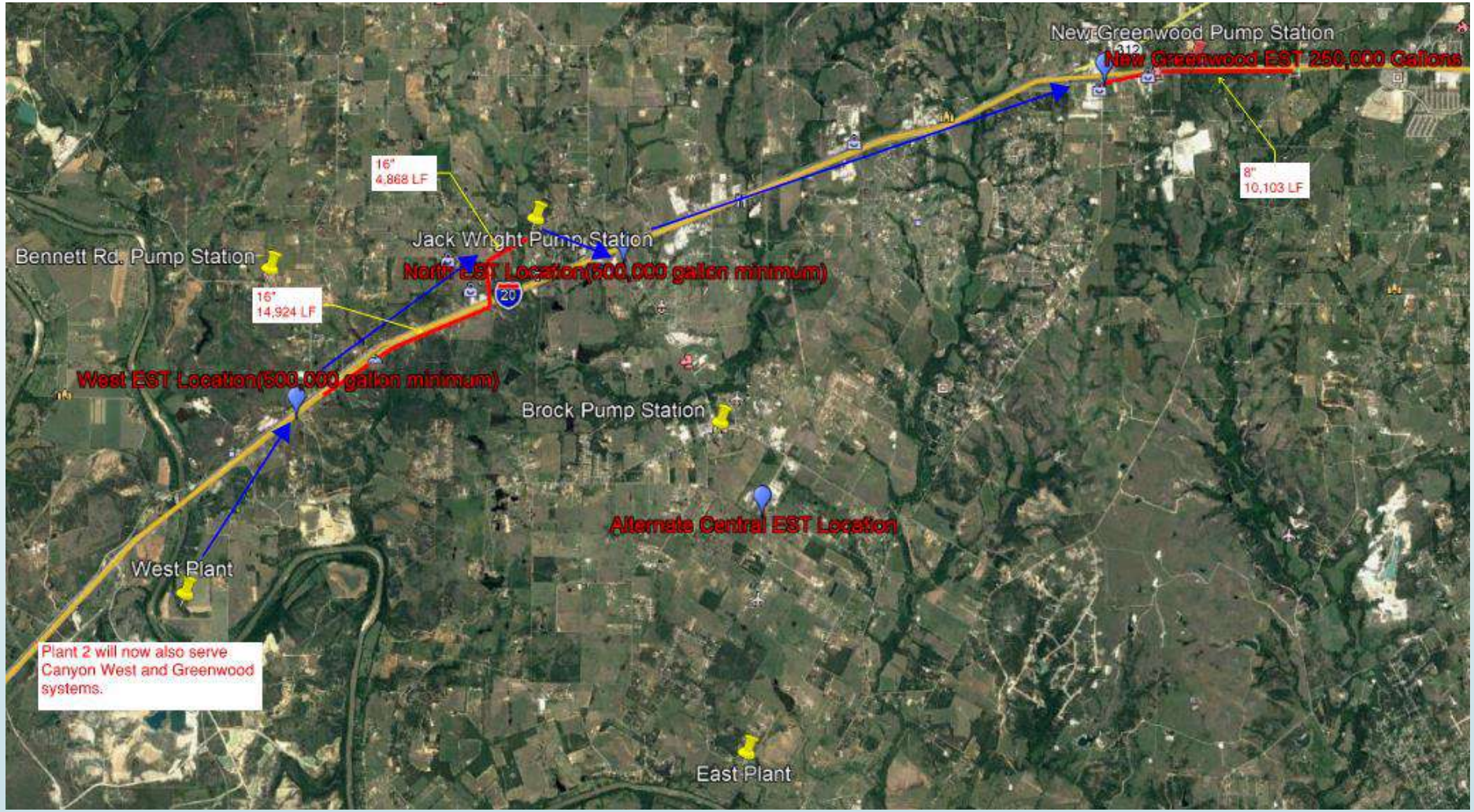
2050 - Option 2(South 4 MGD; West 3 MGD)

Planning Period Improvements

- Expand the West plant from 1 MGD to 3 MGD
- West Supply Line (16-inch)
- West Supply Line Extension (16-inch)
- Jack Wright Pump Station Improvements
- Greenwood Waterline Improvements 2 (Interstate 20)(8-inch)



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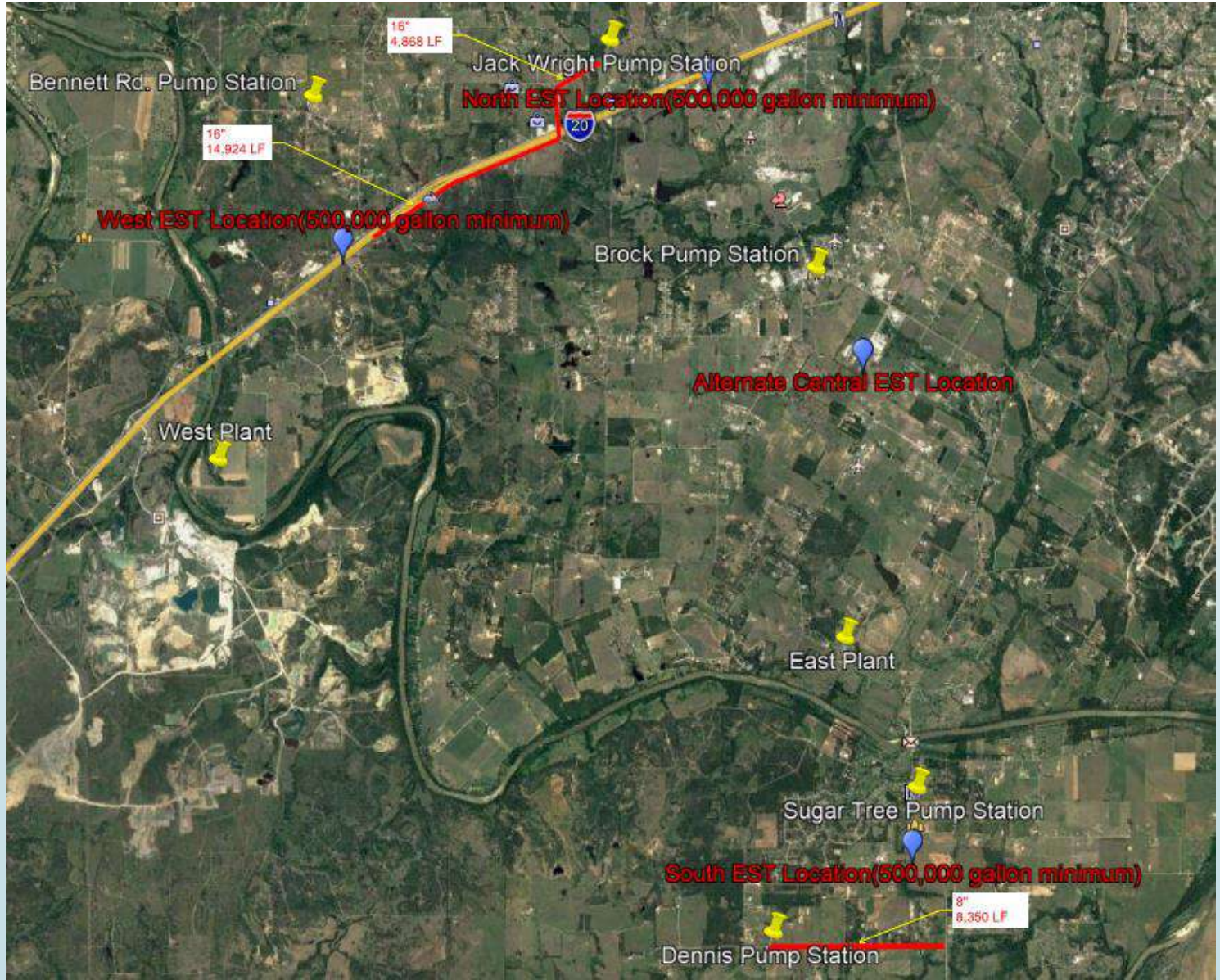
2060 - Option 1 (Build up from 2050 Opt. 1) South 5 MGD; West 3.5 MGD

Planning Period Improvements

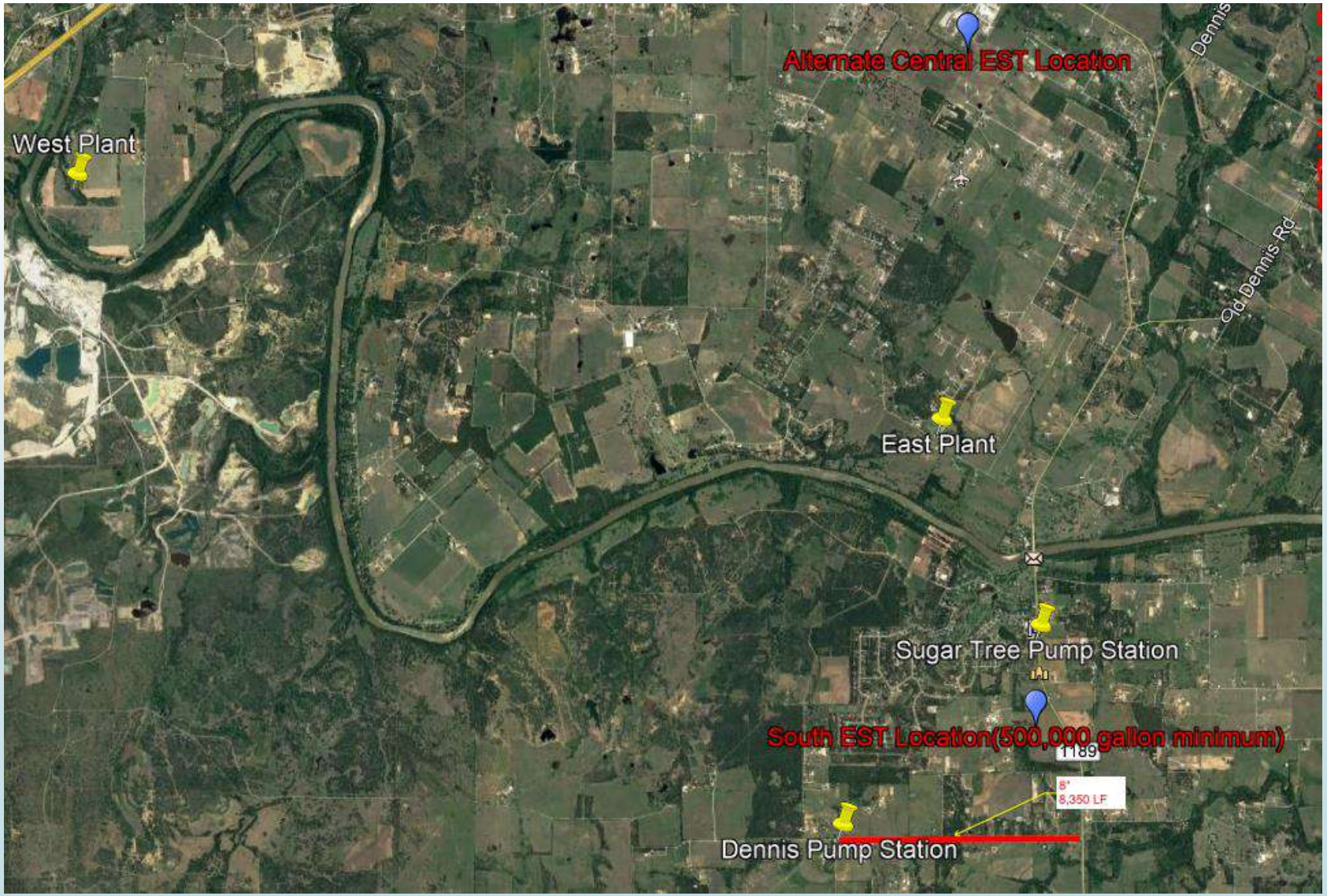
- West Supply Line (16-inch)
- West Supply Line Extension (16-inch)
- Jack Wright Pump Station Improvements
- Dennis Supply Line Extension (8-inch)



2060 - Option 2(Build up from 2050 Opt. 2) South 4 MGD; West 4.5 MGD

Planning Period Improvements

- Dennis Supply Line Extension (8-inch)



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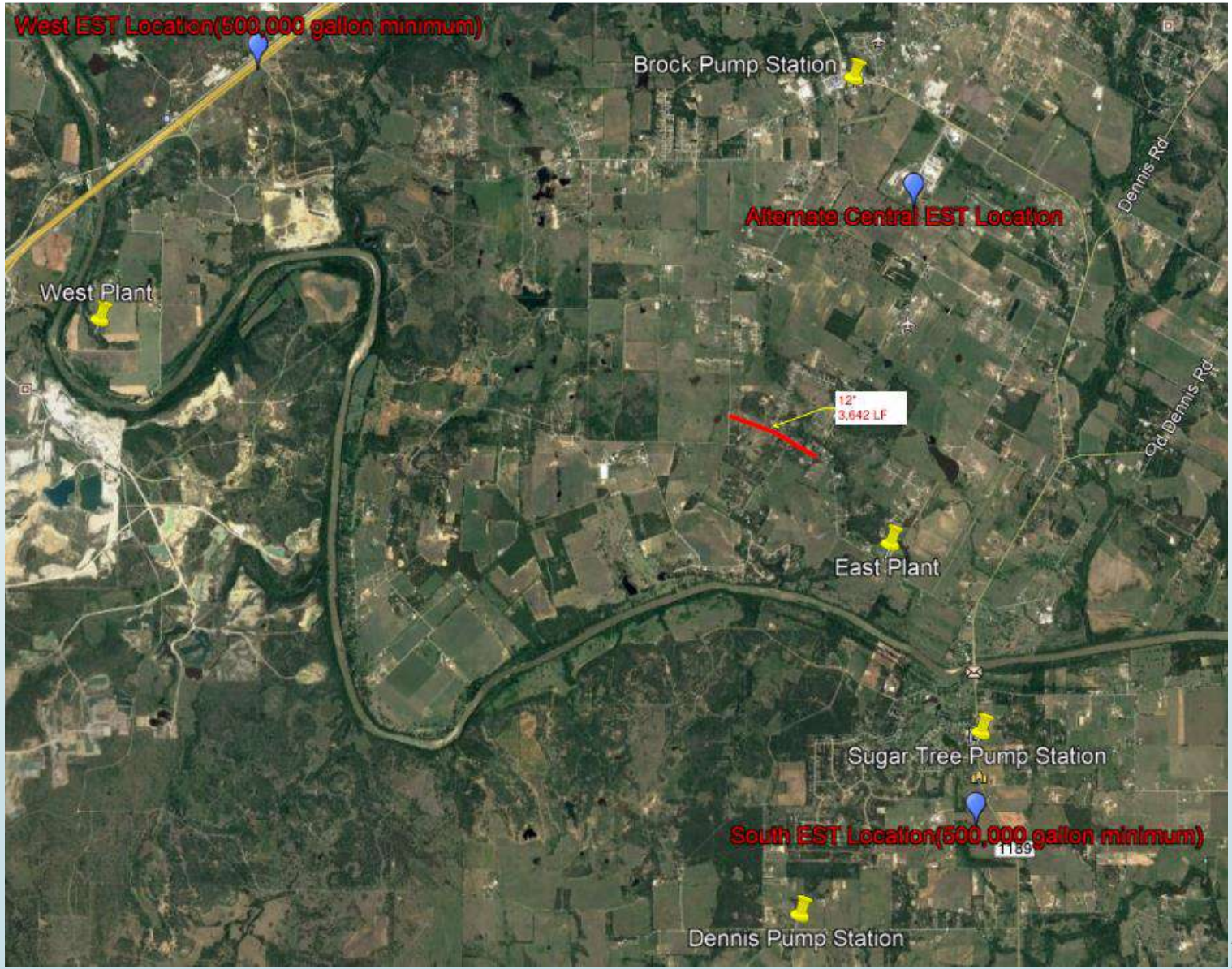
2070 – 11 MGD Combined

Planning Period Improvements

- Central Distribution Improvements, Developer Driven (12-inch)



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Parker County Special Utility District

Distribution Improvement OPCCs

Phase	Total	
2030 Option 1	$	15,953,274
2030 Option 2	$	23,558,275
Serve Horseshoe Bend	$	3,228,006
Serve Greenwood	$	10,823,086
2040 Option 1	$	23,345,469
2040 Option 2	$	14,778,338
2050 Option 1	$	2,628,295
2050 Option 2	$	9,571,794
2060 Option 1	$	9,150,877
2060 Option 2	$	2,207,378
2070	$	1,852,645

Estimates are for Distribution only; they do not include plant construction / expansions

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Treatment Option OPCCs

Scenario	Total Supply Increase (MGD)	Cost	Cost per Gallon
WTP 1 - 0 to 1 MGD	1.0	$13,000,000	$13.00
WTP 1 - 1 to 2 MGD	1.0	$12,385,097	$12.39
WTP 1 - 2 to 3 MGD	1.0	$18,359,500	$18.36
WTP 1 - 2 to 4 MGD	2.0	$26,731,000	$13.37
WTP 1 - 3 to 4 MGD	1.0	$15,679,500	$15.68
WTP 1 - 4 to 5 MGD	1.0	$15,779,000	$15.78
WTP 2 - 0 to 1 MGD	1.0	$28,289,000	$28.29
WTP 2 - 0 to 2 MGD	2.0	$33,590,000	$16.80
WTP 2 - 1 to 2 MGD	1.0	$10,573,000	$10.57
WTP 2 - 2 to 3 MGD	1.0	$17,809,000	$17.81
WTP 2 - 3 to 4 MGD	1.0	$16,586,000	$16.59
WTP 2 - 4 to 5 MGD	1.0	$19,622,000	$19.62

Total Cost to get WTP 1 to 2 MGD:	$25,385,097
Total Cost to get WTP 2 to 2 MGD:	$33,590,000
Total Cost to get WTP 1 to 3 MGD:	$43,744,597
Total Cost to get WTP 2 to 3 MGD:	$51,399,000
Total Cost to get WTP 1 to 4 MGD:	$59,424,097
Total Cost to get WTP 2 to 4 MGD:	$73,257,000
Total Cost to get WTP 1 to 5 MGD:	$75,203,097
Total Cost to get WTP 2 to 5 MGD:	$92,879,000

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Cost Evaluation – 10-yr and 20-yr

	2030 Option 1		2030 Option 2		2040 Option 1		2040 Option 2	
South Plant*	4 MGD	$46,424,100	3 MGD	$30,744,600	4 MGD	$0	4 MGD	$15,679,500
West Plant	0 MGD	$0	1 MGD	$28,289,000	1 MGD	$28,289,000	1 MGD	$0
Distribution Improvements**		$15,953,300		$23,558,300		$23,345,500		$14,778,300
Total		**$62,377,400**		**$82,591,900**		**$51,634,500**		**$30,457,800**

Option 1 (2030 + 2040) = $114,011,900
Option 2 (2030 + 2040) = $113,049,700

***South plant costs include current Phase I construction costs ($12,385,097) for impact fee analysis**

****Current distribution costs do not include service to Greenwood or Horseshoe Bend**

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Recommendations for Capital Improvements Plan

- 2030 Option 2
  - Expand existing (South) plant to 3 MGD
  - Construct a new (West) 1 MGD plant
  - Complete Option 2 distribution improvements
    - 20-inch West transmission line along I-20
    - 12-inch North distribution line to serve Bennett pressure plane
    - 500,000 gallon West EST
    - 12-inch North transmission line extension
    - 500,000 gallon North EST
    - North distribution improvements along Grindstone
    - 12-inch South transmission line
    - Water line along Lazy Bend Road
    - Water line along Old Dennis Road
    - Improvements at Existing WTP High Service PS
    - Allowances for pressure reducing valves (PRV)

- **10-year CIP cost - $82,591,900**

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Basis for Impact Fee Analysis

- 2030 Option 2
  - **10-year CIP cost - $82,591,900**
  - Current connections (per TCEQ) – 1,770
  - Connections that can be served by 4 MGD WTP Capacity (with ACR) – 6,630
  - Projected 10-yr increase in connections – 4,860
  - **Approximate cost per connection - $16,994**
    - **This cost per connection does not currently account for financing costs**

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Path Forward

- Coordination with Rate Study Company to evaluate current water rates and impact fee analysis
- Presentation at September board meeting on proposed changes to water rates and impact fees
  - Discuss proposed revisions to impact fee as well as discussion on rationale for site-specific development fees
- Potential implementation of new rate structures for October 2021

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Acronyms

- ACR – Alternative Capacity Requirement
- GPD – Gallons Per Day
- GPCD – Gallons Per Connection Per Day
- MGD – Million Gallons Per Day
- SCR – Standard Capacity Requirements
- TWDB – Texas Water Development Board

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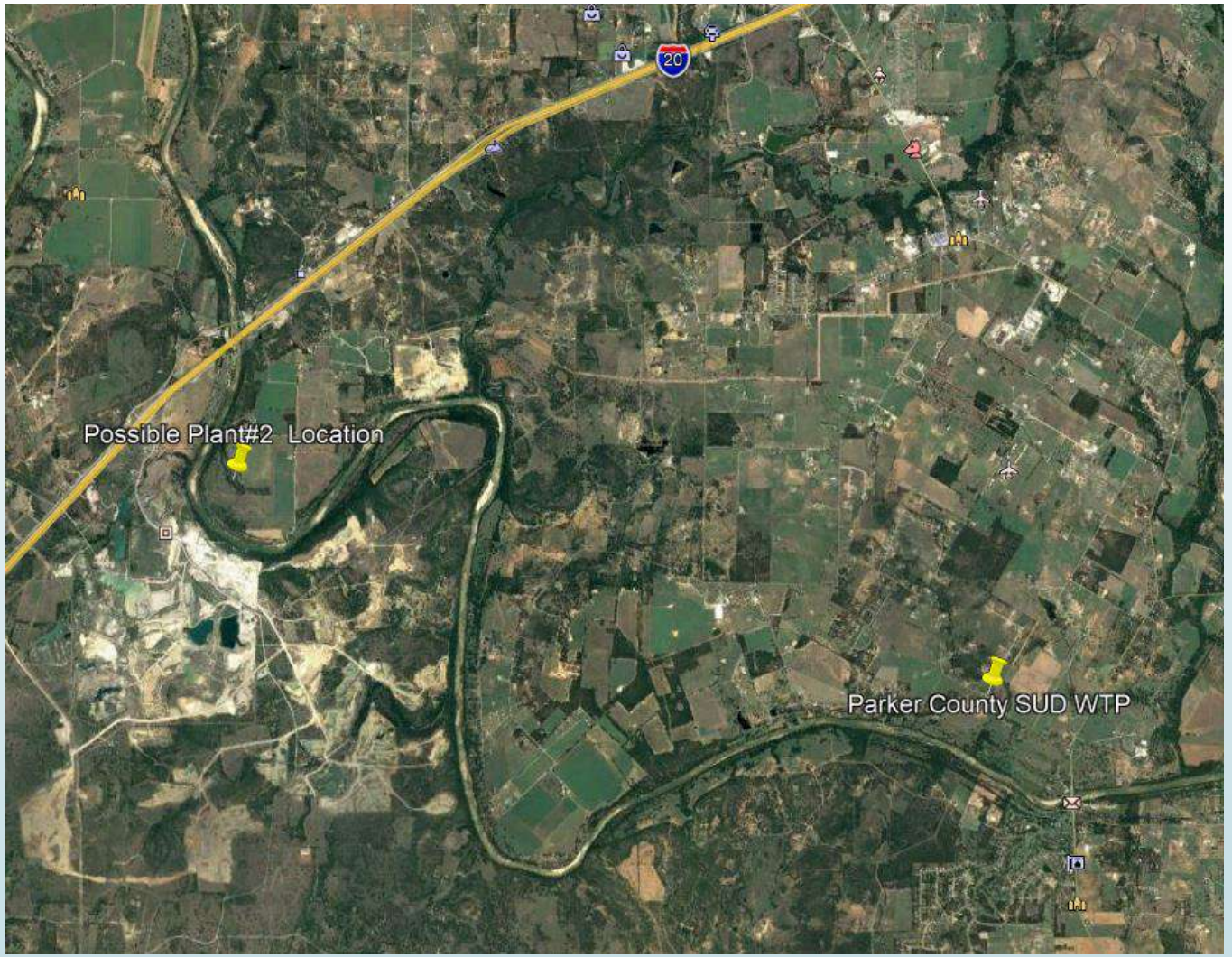
Treatment Plant Locations



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APPENDIX C
Detailed Project Costs Estimates for 10-yr CIP Projects

Preliminary Cost Projection
WTP #2 - 2 MGD

COMPONENT		PROJECTED COST
Construction Costs		
Phase II Construction Cost		$22,792,000
Inflation - 3 yrs	9%	$2,051,000
Subtotal Construction		**$24,843,000**
American Iron and steel (request waiver)	5%	**$1,243,000**
Non-construction Costs		
Engineering Basic Services - PAD		$ 1,960,000
Water Conservation Plan		$5,000
Application		$20,000
Environmental (EID)		$50,000
Project Management		$30,000
Surveying		$40,000
Regulatory Compliance and Permitting		$50,000
Geotechnical Services	0.75%	$20,000
Subtotal, PAD Services		*$2,175,000*
Engineering Basic Services - Bidding / Construction		$652,000
Construction Inspection		$384,000
Testing	0.75%	$80,000
O&M Manual and Startup Training		$50,000
Legal & Fiscal - Construction and Engineering	4.00%	$250,000
Contingency - Construction and Engineering	15.00%	$3,913,000
Subtotal, Construction Services		*$1,416,000*
Subtotal Non-Construction		**$3,591,000**
TOTAL PROJECT COST		**$33,590,000**

Preliminary Cost Projection
Distribution System Non-Construction Costs

Phase	Non-Construction Description	Fee/Cost	% of Const.
10-Year CIP Plans			
	Survey	$ 325,869.98	2.00%
	Engineering Basic Services	$ 1,303,479.94	8.00%
	Geotechnical	$ 40,733.75	0.25%
	Construction Inspection	$ 499,200.00	3.06%
	Materials Testing	$ 81,467.50	0.50%
	Record Drawings	$ 25,000.00	0.15%
	Land Acquisition	$ 1,629,349.92	10.00%
	Land Acquisition Support	$ 162,934.99	1.00%
	Application	$ 20,000.00	0.12%
	Environmental/Support	$ 50,000.00	0.31%
	Project Management	$ 30,000.00	0.18%
	Legal and Fiscal	$ 325,869.98	2.00%
	Loan Origination Fee	$ 325,869.98	2.00%
	Total	**$ 4,819,776.04**	**29.58%**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - West Transmission Line Continued - 0.6 gpm/connection pumping					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 220,000.00	$ 220,000.00
2	20" PVC water line	15,317	LF	$ 172.50	$ 2,642,182.50
3	Gravel Drive Replace	95	LF	$ 22.50	$ 2,137.50
4	Asphalt Drive Replace	38	LF	$ 37.50	$ 1,425.00
5	Fire Hydrant Assembly	16	EA	$ 6,750.00	$ 108,000.00
6	36" Steel Casing Pipe by Boring, Jacking, or Tunneling 20" Carrier Pipe	178	LF	$ 975.00	$ 173,550.00
7	Combination Air Valve Assembly	6	EA	$ 8,500.00	$ 51,000.00
8	Hydrostatic Testing and Water System Disinfection	1	LS	$ 20,000.00	$ 20,000.00
9	Furnish and Install Connection to Existing Water Line	2	EA	$ 7,500.00	$ 15,000.00
10	Furnish and Install 20" Gate Valve	2	EA	$ 27,000.00	$ 54,000.00
11	Furnish and Install 12" Gate Valve	3	EA	$ 4,500.00	$ 13,500.00
12	Service Reconnection	11	EA	$ 1,000.00	$ 11,000.00
13	ROW Preparation	1	LS	$ 80,000.00	$ 80,000.00
14	SWPPP	1	LS	$ 25,500.00	$ 25,500.00
15	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$3,422,295.00**
1	Contingencies (15%)	1	LS	$ 513,000.00	$ 513,000.00
2	American Iron and Steel (4%)	1	LS	$ 137,000.00	$ 137,000.00
				Total	**$4,072,295.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - North Distribution Improvement FM 113 - 0.6 gpm/connection pumping					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 220,000.00	$ 220,000.00
2	12" PVC water line	7,749	LF	$ 90.00	$ 697,410.00
3	Gravel Drive Replace	192	LF	$ 22.50	$ 4,320.00
6	Fire Hydrant Assembly	8	EA	$ 6,750.00	$ 54,000.00
7	24" Steel Casing Pipe by Boring, Jacking, or Tunneling 12" Carrier Pipe	281	LF	$ 675.00	$ 189,675.00
9	Combination Air Valve Assembly	3	EA	$ 8,500.00	$ 25,500.00
10	Hydrostatic Testing and Water System Disinfection	1	LS	$ 20,000.00	$ 20,000.00
11	Furnish and Install Connection to Existing Water Line	2	EA	$ 7,500.00	$ 15,000.00
12	Furnish and Install 12" Gate Valve	4	EA	$ 4,500.00	$ 18,000.00
13	Furnish and Install 8" Gate Valve	1	EA	$ 3,500.00	$ 3,500.00
14	Furnish and Install 6" Gate Valve	1	EA	$ 2,500.00	$ 2,500.00
15	Service Reconnection	17	EA	$ 1,000.00	$ 17,000.00
16	ROW Preparation	1	LS	$ 40,000.00	$ 40,000.00
17	SWPPP	1	LS	$ 25,500.00	$ 25,500.00
18	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$1,337,405.00**
1	Contingencies (15%)	1	LS	$ 201,000.00	$ 201,000.00
2	American Iron and Steel (4%)	1	LS	$ 53,000.00	$ 53,000.00
				Total	**$1,591,405.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - West Elevated Storage Tank - 200 gallons/connection					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 92,000.00	$ 92,000.00
2	500,000 Gallon Elevated Storage Tank	1	LS	$ 2,400,000.00	$ 2,400,000.00
3	Electrical/Control Improvements	1	LS	$ 45,000.00	$ 45,000.00
4	Site Piping/Valves	1	LS	$ 25,000.00	$ 25,000.00
5	Site Work	1	LS	$ 75,000.00	$ 75,000.00
				Sub-Total	**$2,637,000.00**
1	Contingencies (15%)	1	LS	$ 396,000.00	$ 396,000.00
2	American Iron and Steel (4%)	1	LS	$ 105,000.00	$ 105,000.00
				Total	**$3,138,000.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - North Transmission Line - 0.6 gpm/connection pumping					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 220,000.00	$ 220,000.00
2	12" PVC water line	4,253	LF	$ 90.00	$ 382,770.00
3	Gravel Drive Replace	217	LF	$ 22.50	$ 4,889.70
5	Concrete Drive Replace	19	LF	$ 75.00	$ 1,399.50
6	Fire Hydrant Assembly	5	EA	$ 6,750.00	$ 31,897.50
7	24" Steel Casing Pipe by Boring, Jacking, or Tunneling 12" Carrier Pipe	45	LF	$ 675.00	$ 30,375.00
8	Slick Bore, 12" PVC Water Line	148	LF	$ 300.00	$ 44,400.00
9	Combination Air Valve Assembly	2	EA	$ 8,500.00	$ 17,000.00
10	Hydrostatic Testing and Water System Disinfection	1	LS	$ 20,000.00	$ 20,000.00
11	Furnish and Install Connection to Existing Water Line	2	EA	$ 7,500.00	$ 15,000.00
12	Furnish and Install 12" Gate Valve	4	EA	$ 4,500.00	$ 18,000.00
15	Service Reconnection	12	EA	$ 1,000.00	$ 12,000.00
16	ROW Preparation	1	LS	$ 40,000.00	$ 40,000.00
17	SWPPP	1	LS	$ 25,500.00	$ 25,500.00
18	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$868,231.70**
1	Contingencies (15%)	1	LS	$ 130,000.00	$ 130,000.00
2	American Iron and Steel (4%)	1	LS	$ 35,000.00	$ 35,000.00
				Total	**$1,033,231.70**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - North Elevated Storage Tank - 200 gallons/connection					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 92,000.00	$ 92,000.00
2	500,000 Gallon Elevated Storage Tank	1	LS	$ 2,400,000.00	$ 2,400,000.00
3	Electrical/Control Improvements	1	LS	$ 45,000.00	$ 45,000.00
4	Site Piping/Valves	1	LS	$ 25,000.00	$ 25,000.00
5	Site Work	1	LS	$ 75,000.00	$ 75,000.00
				Sub-Total	**$2,637,000.00**
1	Contingencies (15%)	1	LS	$ 396,000.00	$ 396,000.00
2	American Iron and Steel (4%)	1	LS	$ 105,000.00	$ 105,000.00
				Total	**$3,138,000.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - North Distribution Line, Along Grindstone - 0.6 gpm/connection pumping					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 220,000.00	$ 220,000.00
2	12" PVC water line	11,736	LF	$ 90.00	$ 1,056,240.00
3	Gravel Drive Replace	334	LF	$ 22.50	$ 7,515.00
4	Asphalt Drive Replace	40	LF	$ 37.50	$ 1,500.00
6	Fire Hydrant Assembly	8	EA	$ 6,750.00	$ 54,000.00
7	24" Steel Casing Pipe by Boring, Jacking, or Tunneling 12" Carrier Pipe	120	LF	$ 675.00	$ 81,000.00
8	Slick Bore, 12" PVC Water Line	242	LF	$ 300.00	$ 72,600.00
9	Combination Air Valve Assembly	6	EA	$ 8,500.00	$ 51,000.00
10	Hydrostatic Testing and Water System Disinfection	1	LS	$ 20,000.00	$ 20,000.00
11	Furnish and Install Connection to Existing Water Line	2	EA	$ 7,500.00	$ 15,000.00
12	Furnish and Install 12" Gate Valve	5	EA	$ 4,500.00	$ 22,500.00
14	Furnish and Install 6" Gate Valve	5	EA	$ 2,500.00	$ 12,500.00
15	Service Reconnection	24	EA	$ 1,000.00	$ 24,000.00
16	ROW Preparation	1	LS	$ 40,000.00	$ 40,000.00
17	SWPPP	1	LS	$ 25,500.00	$ 25,500.00
18	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$1,708,355.00**
1	Contingencies (15%)	1	LS	$ 256,000.00	$ 256,000.00
2	American Iron and Steel (4%)	1	LS	$ 68,000.00	$ 68,000.00
				Total	**$2,032,355.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - South Transmission Line (partial) - 0.6 gpm/connection pumping					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance	1	LS	$ 220,000.00	$ 220,000.00
2	12" PVC water line	1,356	LF	$ 90.00	$ 122,040.00
3	Gravel Drive Replace	41	LF	$ 22.50	$ 922.50
6	Fire Hydrant Assembly	1	EA	$ 6,750.00	$ 6,750.00
9	Combination Air Valve Assembly	1	EA	$ 8,500.00	$ 8,500.00
10	Hydrostatic Testing and Water System Disinfection	1	LS	$ 20,000.00	$ 20,000.00
11	Furnish and Install Connection to Existing Water Line	2	EA	$ 7,500.00	$ 15,000.00
12	Furnish and Install 12" Gate Valve	2	EA	$ 4,500.00	$ 9,000.00
13	Furnish and Install 8" Gate Valve	1	EA	$ 3,500.00	$ 3,500.00
15	Service Reconnection	2	EA	$ 1,000.00	$ 2,000.00
16	ROW Preparation	1	LS	$ 20,000.00	$ 20,000.00
17	SWPPP	1	LS	$ 25,500.00	$ 25,500.00
18	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$458,212.50**
1	Contingencies (15%)	1	LS	$ 69,000.00	$ 69,000.00
2	American Iron and Steel (4%)	1	LS	$ 18,000.00	$ 18,000.00
				Total	**$545,212.50**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - Lazy Bend Road Water Line					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance (5%)	1	LS	$ 13,000.00	$ 13,000.00
2	6" PVC water line	6,189	LF	$ 45.00	$ 278,505.00
3	Gravel Drive Replace	133	LF	$ 45.00	$ 5,985.00
6	Fire Hydrant Assembly	6	EA	$ 25.00	$ 150.00
9	Combination Air Valve Assembly	2	EA	$ 200.00	$ 400.00
10	Hydrostatic Testing and Water System Disinfection	1	LS	$ 3,000.00	$ 3,000.00
11	Furnish and Install Connection to Existing Water Line	2	EA	$ 6,000.00	$ 12,000.00
12	Furnish and Install 6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
13	Furnish and Install 2" Gate Valve	2	EA	$ 1,500.00	$ 3,000.00
14	Service Reconnection	12	EA	$ 1,000.00	$ 12,000.00
15	ROW Preparation	1	LS	$ 5,150.00	$ 5,150.00
16	SWPPP	1	LS	$ 5,000.00	$ 5,000.00
17	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$349,000.00**
1	Contingencies (15%)	1	LS	$ 52,000.00	$ 52,000.00
2	American Iron and Steel (4%)	1	LS	$ 14,000.00	$ 14,000.00
				Total	**$415,000.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.

Parker County SUD Water Distribution System Improvements					
Preliminary Opinion of Probable Project Cost					
Construction - Old Dennis Road Water Line					
Item No	**Description**	**Quantity**	**Unit**	**Unit Price**	**Total**
1	Mobilization, Bonding, Insurance (5%)	1	LS	$ 13,000.00	$ 13,000.00
2	6" PVC water line	3,298	LF	$ 45.00	$ 148,410.00
3	Gravel Drive Replace	95	LF	$ 45.00	$ 4,275.00
6	Fire Hydrant Assembly	4	EA	$ 25.00	$ 100.00
7	12" Steel Casing Pipe by Boring, Jacking, or Tunneling 6" Carrier Pipe	250	LF	$ 250.00	$ 62,500.00
9	Combination Air Valve Assembly	2	EA	$ 200.00	$ 400.00
10	Hydrostatic Testing and Water System Disinfection	1	LS	$ 3,000.00	$ 3,000.00
11	Furnish and Install Connection to Existing Water Line	2	EA	$ 6,000.00	$ 12,000.00
12	Furnish and Install 6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
13	Furnish and Install 2" Gate Valve	2	EA	$ 1,500.00	$ 3,000.00
14	Service Reconnection	4	EA	$ 1,000.00	$ 4,000.00
15	ROW Preparation	1	LS	$ 10,000.00	$ 10,000.00
16	SWPPP	1	LS	$ 5,000.00	$ 5,000.00
17	Trench Safety	1	LS	$ 5,000.00	$ 5,000.00
				Sub-Total	**$276,000.00**
1	Contingencies (15%)	1	LS	$ 41,000.00	$ 41,000.00
2	American Iron and Steel (4%)	1	LS	$ 11,000.00	$ 11,000.00
				Total	**$328,000.00**

Note: Costs shown above are based on the limited site information available at the time of estimate, and may change based on actual site conditions as observed during design phase.