

odessa

ODESSA
WATER
TREATMENT
PLANT



WATER MASTER PLAN

PREPARED FOR:

The right place in Texas



PREPARED BY:

Kimley»»Horn

CITY OF ODESSA

2018 WATER SYSTEM MASTER PLAN

APRIL 2019



Prepared by:

Kimley»»Horn

Kimley-Horn and Associates, Inc.

TBPE No. 928
801 Cherry Street, Unit 11
Suite 1300
Fort Worth, TX 76132
(817) 335-6511



Table of Contents

1.	Executive Summary	4
1.1	5-Year Capital Improvements Plan Summary.....	5
1.2	10-Year Capital Improvements Plan Summary	5
1.3	25-Year Capital Improvements Plan Summary	5
2.	Introduction	7
2.1	Description of Study Area	7
2.2	Objective and Scope of Study.....	7
2.3	Water System Definitions	7
3.	Data Collection and Land Use.....	8
3.1	Data Collection	8
3.1	Existing Land Use	8
3.2	Ultimate Land Use.....	9
4.	Water Demand Projections	11
4.1	Land Use Demand	11
4.2	Projected Water Demand	12
4.3	Projected Connections	15
5.	Methodology	16
5.1	Water System Modeling Methodology	16
6.	Design Criteria	16
6.1	Contracted Water	17
6.2	High Service & Booster Pumping Facilities.....	17
6.3	Ground Storage	17
6.4	Elevated Storage	17
6.5	Transmission System	18
7.	Texas Commission on Environmental Quality (TCEQ) Design Criteria	18

Table of Contents

8.	Existing Infrastructure.....	19
8.1	Contracted Water Supply	19
8.2	Wholesale Water Supply	19
8.3	Pressure Planes.....	20
8.4	Pumping Facilities.....	20
8.5	Elevated Storage Facilities	21
8.6	Distribution System	22
9.	Future Infrastructure Analysis and Recommendations.....	23
9.1	Water Supply.....	23
9.2	Pressure Planes.....	23
9.3	Pumping Facilities.....	24
9.4	Elevated Storage	27
9.5	Pressure Vessel Storage	30
9.6	Total Storage.....	31
9.7	Transmission Lines	34
10.	Capital Improvements Plan	34
10.1	5-Year Capital Improvements Plan Projects.....	35
10.2	10-Year Capital Improvements Plan Projects	37
10.3	25-Year Capital Improvements Plan Projects	38
11.	Rehabilitation Plan	47
12.	Water and Wastewater Pro Forma	48
13.	Appendices.....	49
	Appendix A – Boundary Map	49
	Appendix B – Existing Land Use Map.....	49
	Appendix C – Ultimate Land Use Map	49
	Appendix D – 25-Year Projected Growth Map.....	49

Table of Contents

Appendix E – Project Description Sheets and Opinions of Probable Construction Costs ..	49
Appendix F – Water and Wastewater Pro Forma	49
Appendix G – Existing Infrastructure.....	49
Appendix H - Capital Improvement Plan.....	49
Appendix I - Water Rehabilitation Plan.....	49

1. Executive Summary

This Water System Master Plan presents analyses, findings, and recommendations for implementing a plan to meet Odessa's infrastructure needs over the next 25 years. The basis for the anticipated infrastructure improvements is to continue to provide exceptional service to Odessa's existing customers and to meet the demand for new service from the growing population. The growing population is being driven by the expansion of the oil and gas field market in the counties surrounding Odessa.

Population and growth projections were based on meetings with Odessa staff. Historical water usage data from the last five years was also provided by Odessa. Kimley-Horn projected water demand (average day, maximum day, and peak hour) values for the next 25-years.

The water system was analyzed using WaterCAD™ modeling software. Fire flow tests were performed by Kimley-Horn with the assistance of Odessa staff. These tests were used to calibrate the water system model to reflect actual system conditions within Odessa. The calibrated model enabled Kimley-Horn to evaluate if the existing water system met the Design Criteria outlined in Section VI – Design Criteria.

The Odessa system currently operates in two pressure planes. The plan is to add two additional pressure planes to the system in the 25-year planning period. The typical operating pressure range for the system is from 35 psi to 80 psi, with a maximum of 100 psi in isolated areas.

Elements of the water system, including supply, pumping, ground storage, elevated storage, and the piping were evaluated against established design criteria. Based on this evaluation and current growth projections, Kimley-Horn recommends the following infrastructure improvements, summarized below in Table 1, Table 2, and Table 3, over the next 25 years. In addition to the opinion of probable construction costs for each project, a cost with a market scarcity adjustment factor is provided. The market scarcity adjustment factor is to account for inflated construction prices in the Permian Basin due to the lack of contractor availability. To account for this inflation, each project cost has a separate cost projection which includes an inflation factor of 1.5. The projects are divided into three major phases: 5-Year, 10-Year, and 25-Year.



1.1 5-Year Capital Improvements Plan Summary

Table 1 – 5-Year Capital Improvements Plan Summary

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
1	NW Loop 338 24-Inch Water Line Phase 1	\$ 2,861,000.00	\$ 4,291,500.00
2	W 22nd Street 24-Inch Water Line	\$ 982,000.00	\$ 1,473,000.00
3	NW Loop 338 24-Inch Water Line Phase 2	\$ 2,578,000.00	\$ 3,867,000.00
4	Southwest Pump Station & 16-Inch Water Line	\$ 3,909,000.00	\$ 5,863,500.00
5	Southwest Pressure Plane 16-Inch Water Line	\$ 1,691,000.00	\$ 2,536,500.00
6	W 2nd Street 12-Inch Water Line	\$ 470,000.00	\$ 705,000.00
7	Evans Boulevard / E 87th Street 16-Inch Water Line	\$ 374,000.00	\$ 561,000.00
8	56th Street 18-Inch Water Line	\$ 2,306,000.00	\$ 3,459,000.00
9	N John Ben Shepperd 24-Inch Water Line	\$ 2,293,000.00	\$ 3,439,500.00
10	Yukon Pump Station Improvements Phase 1	\$ 473,000.00	\$ 709,500.00
11	E 100th Street 24-Inch Water Line	\$ 4,507,000.00	\$ 6,760,500.00
12	Northeast 2.0 MG Elevated Storage Tank	\$ 6,102,000.00	\$ 9,153,000.00
5-Year Projects Sub-Total:		\$ 28,546,000.00	\$ 42,819,000.00

1.2 10-Year Capital Improvements Plan Summary

Table 2 – 10-Year Capital Improvements Plan Summary

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
13	W 87th Street & Loop 338 12-Inch Water Line	\$ 3,096,000.00	\$ 4,644,000.00
14	Highway 191 12-Inch Water Line Phase 1	\$ 2,182,000.00	\$ 3,273,000.00
15	W County Road 122 12-Inch Water Line	\$ 2,611,000.00	\$ 3,916,500.00
16	Dorado Drive 12-Inch Water Line	\$ 299,000.00	\$ 448,500.00
17	W Murphy Street 12-Inch Water Line	\$ 555,000.00	\$ 832,500.00
18	Southwest Pressure Plane 12-Inch Water Line	\$ 2,592,000.00	\$ 3,888,000.00
19	SW Loop 338 16-Inch Water Line Phase 1	\$ 821,000.00	\$ 1,231,500.00
20	Interstate 20 12-Inch Water Line	\$ 970,000.00	\$ 1,455,000.00
10-Year Projects Sub-Total:		\$ 13,126,000.00	\$ 19,689,000.00

1.3 25-Year Capital Improvements Plan Summary

Table 3 – 25-Year Capital Improvements Plan Summary

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
21	E Yukon Road 24-Inch Water Line	\$ 4,103,000	\$ 6,154,500.00
22	N Faudree Road 24-Inch Water Line	\$ 1,430,000	\$ 2,145,000.00
23	E 87th 24-Inch Water Line	\$ 1,233,000	\$ 1,849,500.00
24	E 87th 16-Inch Water Line	\$ 1,485,000	\$ 2,227,500.00
25	Yukon Pump Station Improvements Phase 2	\$ 4,172,000	\$ 6,258,000.00
26	NE Loop 338 12-Inch Water Line	\$ 9,683,000	\$ 14,524,500.00
27	NW Loop 338 12-Inch Water Line	\$ 7,465,000	\$ 11,197,500.00
28	N Highway 385 12-Inch Water Line	\$ 555,000	\$ 832,500.00
29	N County Road West 12-Inch Water Line	\$ 2,354,000	\$ 3,531,000.00



30	N CR West to NW Loop 338 12-Inch Water Line	\$ 512,000	\$ 768,000.00
31	FM 554 to Willow Lane 12-Inch Water Line	\$ 2,734,000	\$ 4,101,000.00
32	E 87th 12-Inch Water Line Phase 1	\$ 1,591,000	\$ 2,386,500.00
33	W Yukon Road / NW Loop 338 12 / 16-Inch Water	\$ 3,978,000	\$ 5,967,000.00
34	NE Loop 338 12-Inch Water Line Phase 1	\$ 1,051,000	\$ 1,576,500.00
35	N John Ben Shepperd 12-Inch Water Line	\$ 1,639,000	\$ 2,458,500.00
36	Highway 191 12-Inch Water Line Phase 2	\$ 1,431,000	\$ 2,146,500.00
37	E Yukon Road 18-Inch Water Line	\$ 1,712,000	\$ 2,568,000.00
38	N Willow Lane 12-Inch Water Line	\$ 1,770,000	\$ 2,655,000.00
39	E 87th 12-Inch Water Line Phase 2	\$ 675,000	\$ 1,012,500.00
40	County Road West Extension 12-Inch Water Line	\$ 3,612,000	\$ 5,418,000.00
41	Project #41 12-Inch Water Line	\$ 1,352,000	\$ 2,028,000.00
42	Project #42 12-Inch Water Line	\$ 216,000	\$ 324,000.00
43	N Faudree Road Upper 12-Inch Water Line	\$ 717,000	\$ 1,075,500.00
44	S County Road 1302 12-Inch Water Line	\$ 1,371,000	\$ 2,056,500.00
45	FM 554 12-Inch Water Line	\$ 2,583,000	\$ 3,874,500.00
46	NW Loop 338 12-Inch Water Line	\$ 2,583,000	\$ 3,874,500.00
47	W Highway 302 12-Inch Water Line	\$ 1,904,000	\$ 2,856,000.00
48	SW Loop 338 16-Inch Water Line Phase 2	\$ 3,999,000	\$ 5,998,500.00
49	SE Loop 338 16-Inch Water Line Phase 1	\$ 5,048,000	\$ 7,572,000.00
50	SE Loop 338 16-Inch Water Line Phase 2	\$ 5,361,000	\$ 8,041,500.00
51	SE Loop 338 12-Inch Water Line	\$ 1,149,000	\$ 1,723,500.00
52	S Faudree Road 12-Inch Water Line	\$ 2,019,000	\$ 3,028,500.00
53	County Road 1300 12-Inch Water Line	\$ 2,472,000	\$ 3,708,000.00
54	S County Road West 12-Inch Water Line	\$ 2,300,000	\$ 3,450,000.00
55	S John Ben Shepperd Parkway 12-Inch Water Line	\$ 951,000	\$ 1,426,500.00
56	S FM 3503 12-Inch Water Line	\$ 2,004,000	\$ 3,006,000.00
57	S Dixie Boulevard 12-Inch Water Line	\$ 723,000	\$ 1,084,500.00
58	S Highway 385 to S Dixie Boulevard 12-Inch Water	\$ 1,533,000	\$ 2,299,500.00
59	S Dixie Boulevard to S FM 3503 12-Inch Water Line	\$ 1,004,000	\$ 1,506,000.00
60	W Bell Street 12-Inch Water Line	\$ 2,132,000	\$ 3,198,000.00
61	S Holloman Avenue/ Angel TR 12-Inch Water Line	\$ 2,807,000	\$ 4,210,500.00
62	N Highway 385 24-Inch Water Line	\$ 4,469,000	\$ 6,703,500.00
63	NE Loop 338 12-Inch Water Line Phase 2	\$ 933,000	\$ 1,399,500.00
64	W Murphy Street 16-Inch Water Line	\$ 7,366,000	\$ 11,049,000.00
65	N Faudree Road Lower 12-Inch Water Line	\$ 437,000	\$ 655,500.00
66	Redondo 12-Inch Water Line	\$ 1,692,000	\$ 2,538,000.00
67	42nd Street 12-Inch Water Line	\$ 3,022,000	\$ 4,533,000.00
68	Southwest Pump Station Phase 2	\$ 1,732,000	\$ 2,598,000.00
	25-Year Projects Sub-Total:	\$ 117,064,000.00	\$ 175,596,000.00

2. Introduction

The City of Odessa is located within Ector County except for a small portion in Midland County. Odessa is served by Interstate 20, Loop 338, State Highway 385, and State Highway 191. The City of Odessa is a major City in the west Texas area and serves as a hub for the oil and gas fields of the Permian Basin. With the continued expansion of the oil and gas industries, the projected Odessa service area has an opportunity for tremendous additional growth. The expansion of and the rehabilitation of the existing water system will be necessary to serve the expanding population and industry.

2.1 Description of Study Area

The scope of this study is through the 25-year planning period, year 2043. Kimley-Horn worked with City staff to determine the 25-year growth boundary, in which all development within the 25-year planning period is anticipated to occur. The boundary was used as the limits for this study. The study area is approximately 83,900 acres (approximately 131 square miles) and includes approximately 30,530 acres (approximately 47.7 square miles) within Odessa's current city limits. Odessa's projected build-out CCN boundary is equivalent to Odessa's 5-mile ETJ line and is equal to 121,500 acres (approximately 189.8 square miles). See Appendix A – Boundary Map for an illustration of Odessa's existing and proposed service areas.

2.2 Objective and Scope of Study

The goal of this study is to develop a strategic plan that allows for Odessa to continue to provide exceptional service to its existing clients, exceed state requirements, and to allow for the expansion of new developments and industries fueled by the oil and gas markets. The scope of the study was to analyze the existing system for deficiencies and to make recommendations to serve the projected population through the 25-year planning period.

2.3 Water System Definitions

The following terms are used throughout this report. The definitions and acronyms may provide the reader a better understanding of the subtle difference between several of these terms.

Average Day Demand (ADD) - Annual water consumption divided by the number of days in a year. The average daily water demand a given water system experiences over a one-day period.

Capital Improvements Plan (CIP) - Recommended improvements to the water distribution system based on population and water demand projections for future conditions.

Demand (Consumption) - Volume of water used for a given time period, typically measured in units of Million Gallons Per Day (MGD) or Gallons Per Minute (gpm).

Diurnal Curve – Typically a graph depicting water demand over a 24-hour period with water demand plotted on the y-axis and time plotted on the x-axis.

ETJ - Extra Territorial Jurisdiction

Firm Pumping Capacity - The total pumping capacity that a pump station (by pressure plane) can deliver with the largest pump out of service.

GPD - Gallons Per Day

Maximum Day Demand (MDD) - Water consumption, in volume of water, used on the highest consumption day in a year.

MGD - Million Gallons per Day

Peak Hour Demand (PHD) - The maximum one-hour water demand given in units of volume per day that a given distribution system experienced or would experience during a particular year or other time period.

Peaking Factor - The factor applied to the maximum day demand to determine peak hour and minimum hour demand during maximum day demand conditions.

Pressure Plane (Pressure Zone) - A network of water pipes having a common pressure range; each plane may be separated from the other planes by closed valves, pressure-regulating valves, pump stations, and storage facilities.

PSI - pounds per square inch (U.S. customary units for pressure)

TCEQ - Texas Commission on Environmental Quality.

Total Pumping Capacity - The total pumping capacity that a pump station can deliver.

Transmission System (Piping) - Transmission piping typically consists of 12-inch diameter and larger piping, and have minimum service connections if possible and function primarily as the vehicle to move larger quantities of water throughout the water system. The distribution piping consists of 10-inch diameter and smaller piping.

3. Data Collection and Land Use

3.1 Data Collection

Evaluation of the existing system required collection of physical attributes of the existing water system and collection of historical customer demands. Odessa staff provided the distribution piping network in electronic format, pump station information, storage tank information, and general water system operating procedures. Odessa staff also provided historical operating information from the City's Supervisory Control and Data Acquisition (SCADA) system and historical customer water usage from Odessa's AMI (advanced metering infrastructure) billing system. The AMI system provided hourly flow readings for each meter connection in Odessa. The AMI system had been fully implemented in Odessa for the 2016 calendar year. Therefore, 2016 was used as the basis for establishing historical water usage. Utilizing the data from the AMI system and the existing land use, discussed in the following section, water usage magnitude and patterns for different land uses could be established. Fire hydrant flow tests were conducted by the Kimley-Horn team and Odessa staff. Odessa already had an existing hydraulic water model of the Odessa water system; this model was provided to Kimley-Horn as the starting point for analysis.

3.1 Existing Land Use

Kimley-Horn utilized land use information available from the Ector County Appraisal District as the starting point for the existing land use map. The Ector County Appraisal District maintains a database of parcels within Ector County, categorized by land use type. Kimley-Horn worked with Odessa staff to verify and ensure the accuracy of the existing land use data. The majority of the developed service area is single-family



residential. The average residential lot is between 0.20 and 0.25 acres. Commercial developments sit along the major thoroughfares and intersections, especially along Interstate 20, Business Interstate 20, Andrews Highway, and Highway 191. The commercial developments are a mix of businesses providing services to local citizens and businesses supporting oil field operations. There are significant tracts of vacant land within the Odessa projected service area, especially on the northeast side of town that are anticipated to be developed quickly. The existing land use was an important part of understanding the water use and distribution throughout Odessa. Refer to Appendix B – Existing Land Use Map for an illustration of the existing land use. Table 4 summarizes the existing connections to Odessa’s system by land use type.

Table 4 – Existing Land Use Summary

Land Use Type	Acreage (ac)	% of Total
Single Family	5,951	38.4%
Manufactured Housing	124	0.8%
Manufactured Housing / Storage	166	1.1%
Medium Density Residential	185	1.2%
High Density Residential	426	2.7%
Commercial	4,676	30.1%
Industrial	639	4.1%
Public / Semi-Public	1,125	7.3%
University / Campus	649	4.2%
Airport	973	6.3%
Parks and Open Space	185	1.2%
Golf Course	411	2.6%
Total:	15,510	

3.2 Ultimate Land Use

Kimley-Horn worked with Odessa staff to develop the ultimate land use plan. Refer to Appendix C – Ultimate Land Use Map for the ultimate land use plan. The ultimate land use plan supplemented the existing land use plan. The majority of the vacant land in the projected service area is anticipated to develop as residential neighborhoods and it is anticipated that commercial developments will continue to line major thoroughfares. Oil and gas infrastructure is a notable feature of Odessa’s projected service area. Furthermore, a notable feature of the existing land use configuration is the integration of oil infrastructure, residencies, and businesses. Therefore, the ultimate land use plan includes a moderate category for each land use type. This assumes that areas with some level of existing oil infrastructure will see development equating to roughly 50% of non-oil related development. For water use, this would equate to 50% of water



use for a tract of the same size and development type with no oil infrastructure. There are some parcels of land with oil infrastructure so dense that they have been categorized as undevelopable. Table 5 summarizes the breakout of the anticipated land use in Odessa’s ultimate projected service area.

Table 5 – Ultimate Land Use Summary

Land Use Type	Acreage (ac)	% of Total
Low Density Residential	39,409	32.4%
Residential - Moderate Oil Activity	20,564	16.9%
Medium Density Residential	1,356	1.1%
High Density Residential	1,065	0.9%
Mixed Use Residential	1,273	1.1%
Mixed Use Non-Residential	296	0.2%
Commercial	20,013	16.5%
Commercial - Moderate Oil Activity	5,752	4.7%
Industrial	5,934	4.9%
Industrial - Moderate Oil Activity	1,152	0.9%
Downtown	252	0.2%
Public/Semi Public	879	0.7%
University/Campus	491	0.4%
Airport	941	0.8%
Parks/Open Space	3,785	3.1%
Golf Course	797	0.7%
Undevelopable/High Oil Activity	1,565	1.3%
Right-of-Way	15,976	13.2%
Total:	121,500	

4. Water Demand Projections

Kimley-Horn worked with Odessa staff to divide Odessa into separate growth areas by percentage through the 25-year planning period. The growth rates are anticipated to be applicable through the entire 25-year planning period. See Appendix D – 25-Year Projected Growth Map for an illustration of the growth areas. Due to the availability of land with relatively few gas or oil drilling pads, City staff anticipate the majority of growth in the 25-year planning period to occur on the northeast side of the City. The modern west Texas area has always been tied to the growth or the decline of the oil market. As the oil market rebounds, appetite for growth in west Texas and Odessa swell. Projecting water demand growth in Odessa is equivalent to projecting the oil markets. Therefore, Kimley-Horn recommends periodically revisiting the growth projections and the water demands in the system to verify that they are comparable to the projected demands, discussed further below. Growth or water demands varying significantly could change the order of recommended capital improvement projects.

Water demand projections can be made using population, number of meter connections, or land use as the basis for projection. Water demands are projected into the future by determining the historical water usage per capita, per connection, or per acre of a land use type and then tying the growth of the water demand projections to the growth of one of these categories. For this report, the land use method was selected as the ideal way to project future water demands.

4.1 Land Use Demand

Land use projections were used to project future water demands. The AMI billing system provided hourly flow readings for each day in 2016 for each connection in Odessa. Each connection was correlated with its corresponding land use type. With the known land use type and acreage of the corresponding parcel, a water demand loading factor could be calculated for each parcel by land use type. A maximum day water demand loading factor was created for each land use type to be used for projecting future water demand to undeveloped parcels. Table 6 lists the maximum day water demand loading factors for each land use type. As discussed in the Ultimate Land Use section, moderate loading factors have been established for land that has some level of existing oil infrastructure. It should be noted that July 22, the maximum day of water usage in 2016, was used as the basis for establishing the maximum day water demand loading. Other days during the summer of 2016 were also used as a comparison to ensure that the factors were established were reasonable and representative of the water usage in Odessa. The factors in Table 6 represent the maximum day water demand, not average day water demand. It should also be noted that the existing water model was loaded with the actual water demand information available for each connection. See Section V - Methodology for a discussion of modeling methodology.

Table 6 – Maximum Day Water Loading Factors

Land Use Type	Maximum Day Demand Loading Factors Gal / Acre/ Day
Low Density Residential	2,190
Residential - Moderate Oil Activity	1,095
Medium Density Residential	2,690
High Density Residential	2,670
Mixed Use Residential	2,090
Mixed Use Non-Residential	1,530
Commercial	650
Commercial - Moderate Oil Activity	325
Industrial	260
Industrial - Moderate Oil Activity	130
Downtown	3,950
Public/Semi Public	600
University/Campus	470
Airport	150
Parks/Open Space	70
Golf Course	820
Undevelopable/High Oil Activity	0
Right-of-Way	0

4.2 Projected Water Demand

Refer to the introductory paragraph of Section IV - Water Demand Projections for a discussion on the growth rates and components used to develop the projected average day demand. Figure 1 shows the total projected demand for Odessa over the next 25 years and Table 7 summarizes the projected demand for Odessa by pressure plane. The ratio for the greatest historical maximum day demand to the average day demand was determined to be 1.73:1. Using the AMI data, a diurnal curve was created for each land use type. Figure 2 shows the system wide diurnal curve. The calculated diurnal curve for each land use type was applied to undeveloped parcels in the model. The peaking factor used for peak hour demand on the maximum day of demand was determined to be 1.5:1. Due to the potential for tremendous growth based



on the oil market, Kimley-Horn recommends updating these water demand projections annually, verifying no significant changes.

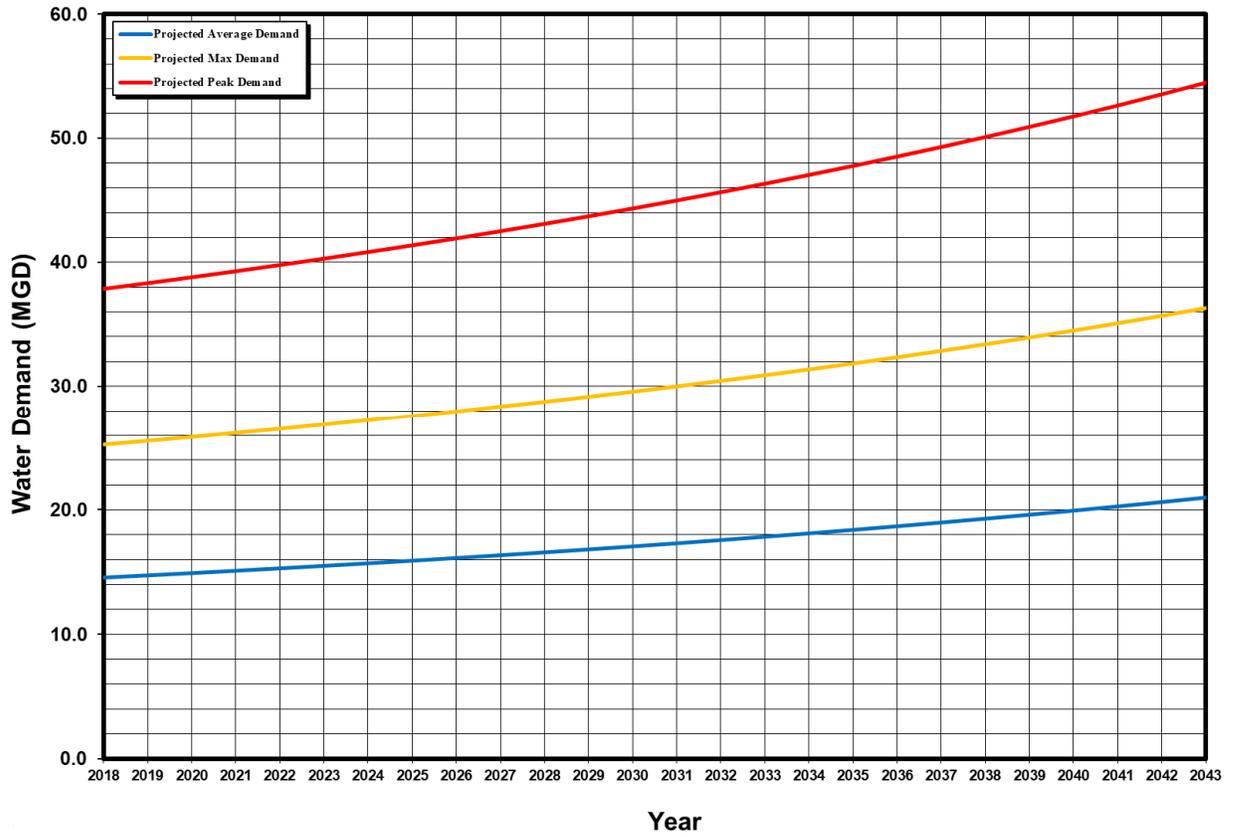


Figure 1 – Projected Water Demand



Table 7 – Projected Water Demand Summary

Pressure Plane	Average Day Demand (MGD)	Maximum Day Demand (MGD)	Peak Hour Demand (MGD)
2018			
Upper	1.19	2.06	3.08
Lower	13.37	23.16	34.74
Southeast	0.00	0.00	0.01
Southwest	0.02	0.03	0.04
Total:	14.58	25.25	37.88
2023			
Upper	1.65	2.85	4.27
Lower	13.75	23.82	35.74
Southeast	0.02	0.03	0.04
Southwest	0.10	0.18	0.26
Total:	15.52	26.88	40.32
2028			
Upper	2.19	3.80	5.70
Lower	14.18	24.57	36.86
Southeast	0.03	0.05	0.08
Southwest	0.19	0.33	0.49
Total:	16.60	28.75	43.13
2038			
Upper	3.63	6.29	9.44
Lower	15.23	26.38	39.57
Southeast	0.06	0.11	0.16
Southwest	0.37	0.64	0.96
Total:	19.29	33.42	50.13
2043			
Upper	4.57	7.92	11.88
Lower	15.87	27.49	41.23
Southeast	0.08	0.13	0.20
Southwest	0.46	0.80	1.20
Total:	20.98	36.35	54.52

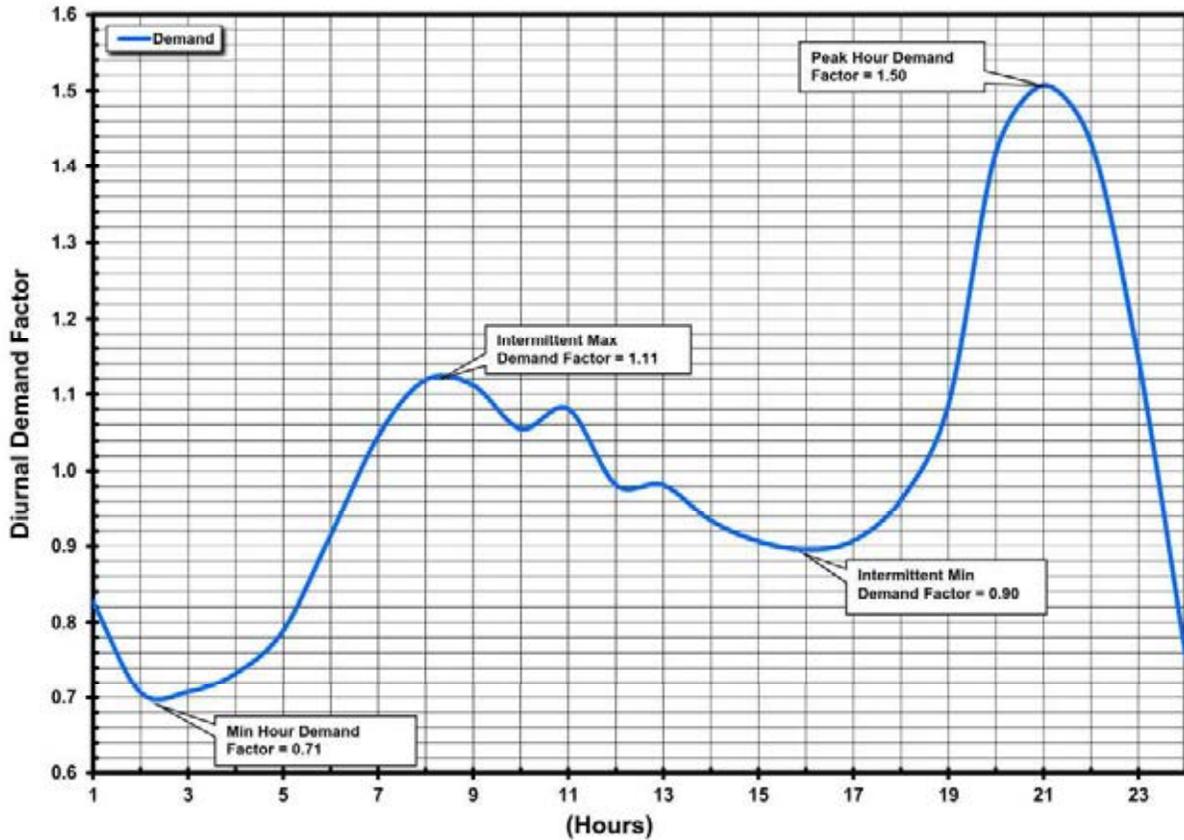


Figure 2 – System Diurnal Curve

4.3 Projected Connections

The number of connections that are served by a water system is not only an important data point for operation of this system, it also determines TCEQ requirements for system infrastructure, notably pumping facilities and ground and elevated storage tank facilities. The Odessa system currently serves approximately 35,638 connections, not including connections in Ector County Utility District. As noted previously, projecting the number of connections and the timeline of the development of those connections can be difficult. Projecting connections followed a similar methodology, detailed in the introductory paragraph of Section IV- Water Demand Projections. Refer to Table 8 for the projected number of connections within the Odessa service area. Because an unexpected increase in the number of connections could push Odessa out of compliance with TCEQ, Kimley-Horn recommends updating these connection projections annually and verifying no significant adjustments to the projected number of connections.

Table 8 – Projected Connections

Year	2018	2023	2028	2033	2038	2043
Number of Connections	35,638	37,871	40,431	43,383	46,802	50,783

5. Methodology

5.1 Water System Modeling Methodology

To evaluate the existing water system, a hydraulic model was created representing the overall system. The hydraulic analysis relied on a computer program (WaterCAD™) that solved a large set of simultaneous non-linear equations representing hydraulic and geometric characteristics of the pipe network. Information required included pipe data, node data, storage data, and pump data. Pipe data was obtained from Odessa's current water model and Geographic Information System (GIS). Pipe data consisted primarily of pipe length, location, and diameter. Node data consisted of ground elevation and demand, with elevations determined from local topographic data and flow demands from the AMI meter records. Pump data was modeled by each pump's characteristic performance curve. Storage data was modeled by each facility's water surface elevation and tank diameter.

To verify the capability of the hydraulic model to reasonably represent actual system conditions, the model was based on a calibrated system. Model calibration was accomplished using static and residual pressure recordings from fire flow tests taken to verify that the model reflected actual system conditions.

To evaluate the performance of the network, several computational runs were made with varied combinations of demand levels, pump combinations, water levels in the tanks, pipe diameters, adding and removing pipes, etc. A knowledge of the existing system, design and performance criteria, future performance objectives, and hydraulic principles allowed the choice of a limited number of configurations for computational analysis.

To determine the need for additional pressure planes and network piping, computer analysis projections for maximum day, fire flow, and peak hour conditions were used. By applying basic hydraulic principles, pipes were located within the network to establish desirable operating characteristics within the system. After adding any required improvements to the model, replenishment capabilities were checked for the elevated storage tanks. Using the model, the added pipes, storage, and pumps were checked to verify that they could maintain suitable pressure and volume requirements for the maximum day demand condition. If necessary criteria were not met, the system was repeatedly adjusted and re-analyzed until satisfactory results were obtained.

6. Design Criteria

The following criteria were established by Kimley-Horn and Odessa as minimum standards from which to evaluate current and future water system components. These criteria could change over time based on demand patterns and regulatory mandates.

6.1 Contracted Water

Odessa contracts with the Colorado River Municipal Water District (CRMWD) for raw water. It is recommended that Odessa maintain a contracted amount with CRMWD equal to the projected maximum day water use. Odessa supplies treated water to Ector County Utility District (ECUD). It is recommended that Odessa maintain a contracted amount with ECUD equal to the projected maximum day water use.

6.2 High Service & Booster Pumping Facilities

Pumping capacities must provide the max day demand required by the water system or the suggested capacities, established by the TCEQ, whichever is higher. See further below for TCEQ requirements.

6.3 Ground Storage

Ground storage serves two functions:

- Equalization for differing feed rates between the water supply and pumping to the system.
- Emergency capacity in the event of temporary loss of water supply.

Generally, ground storage facilities are located at water supply points or at each pump station within the water distribution system. Although ground and elevated storage facilities perform separate functions within the system, both are aimed at decreasing the impact of demand fluctuations. Their capacities are established based on knowledge of how demand varies seasonally and daily. Due to inaccuracies in estimating growth, occasional extremes in usage exceed design values; ground storage must provide sufficient capacity to supply any differences.

6.4 Elevated Storage

Elevated storage serves three purposes:

- Functionally, elevated storage equalizes the pumping rate to compensate for daily variations in demand and to maintain a fairly constant pumping rate (usually referred to as operational storage), or a pumping rate that conforms to the requirements of the local electrical rate structure.
- Provides pressure maintenance and protection against surges created by instantaneous demand, such as fire flow and main breaks, and instantaneous change in supply, such as pumps turning on and off.
- Maintains a reserve capacity for fire protection and pressure maintenance in case of power failure to one or more pump stations. Sufficient storage should be maintained to provide four (4) hours of fire flow demand during a loss of power to the pump station and water treatment plant.

Elevated storage is evaluated separately for each pressure plane. Excess storage on any given pressure plane may only be credited on a lower elevation plane. The design criteria set for Odessa consisted of three levels. Level 1: Adequate operational (equalization) storage established by determining the required volume to equalize the daily functions in flow during the maximum day demand; Level 2: The reserve volume equal to 1,500 gpm for four (4) hours required for fire protection; Level 3: Emergency storage equal

to 20% of the combined equalization and fire storage volume. Because elevated storage is approximately four times more expensive than ground storage, an economical balance between elevated storage and pumping should be sought.

6.5 Transmission System

The function of the transmission system is to transfer water across the water system and fill the elevated storage tanks. There are three conditions for which the transmission system is evaluated:

- Peak hour demand - This is the maximum demand that the system experiences. It is the condition under which the lowest operational pressures are experienced.
- Tank filling (minimum hour demand) - This is the period during which the elevated tanks are replenished. This is the period of lowest demand during the peak day. It normally occurs after midnight and is the condition under which the highest operational pressures are experienced.
- Fire flow demand - During the maximum day demand, the local transmission lines are tested to ensure that fire protection requirements are met. Pressures are allowed to fall below normal operating pressures but should not drop below 20 psi at any point in the system.

The transmission system should be sized to maintain a minimum pressure of 40 psi during normal operating conditions and a minimum pressure of 20 psi during extreme operating conditions. In an urban-type water system, operating pressures of 40-45 psi normally result in customer complaints. For most water systems, pressures above 80 psi are undesirable and should be avoided if possible. The transmission system should also be sized to limit maximum velocity in the pipe to seven (7) feet per second. The maximum pressure in extreme conditions should be limited to 120 psi because high operating pressures will result in increased system maintenance and increased operational cost.

7. Texas Commission on Environmental Quality (TCEQ) Design Criteria

Chapter 290 of the Texas Administrative Code, Public Drinking Water, mandates the minimum requirements for water systems operating in the State of Texas.

The minimum requirements are as follows:

- Total Storage - Equal to 200 gallons per connection.
- Elevated Storage - Equal to 100 gallons per connection.
- Pressure - Minimum pressure under normal conditions should exceed 35 psi while pressure during extreme events may not drop below 20 psi.
- Treatment Plant – Capacity to meet maximum day demand.
- Pumping – Total capacity of 2.0 gpm per connection or a total capacity of at least 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service at each pressure plane, whichever is less.



Table 9 summarizes the system design criteria.

Table 9 – Design Criteria Summary

	Odessa Criteria	TCEQ Criteria
Contracted Water Supply	Overall Capacity to meet Max Day Demand	Overall Capacity to meet Max Day Demand
High Service & Booster Pumping Facilities	Max Day Demand	Total capacity of at least 2.0 gpm per connection or 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service at each pressure plane, whichever is less.
Ground Storage	N/A	N/A
Elevated Storage	Level 1: Equalization Storage during Max Day Demand Level 2: 1,500 gpm for 4 hours for Fire Protection Level 3: 20% of combined total for Level 1 and Level 2	Equal to 100 gallons per connection
Total Storage	N/A	Equal to 200 gallons per connection
Transmission System	Normal conditions = minimum 40 psi Extreme conditions = minimum 20 psi	Normal conditions = minimum 35 psi Extreme conditions = minimum 20 psi

8. Existing Infrastructure

Odessa receives water from CMRWD at the Golder Water Treatment plant and Pump Station. The Golder Water Treatment Plant, rated at 55 MGD, is the City’s only source for water treatment. The existing water distribution system is comprised of two pressure planes, four ground storage tanks, two high service pump stations, and three elevated storage tanks. The City maintains approximately 903 miles of water lines, ranging in size from 1-inch to 48-inch. Odessa supplies water to one wholesale customer, the Ector County Utility District. Below is a discussion of Odessa’s facilities and recommendations.

8.1 Contracted Water Supply

Odessa contracts with the CRMWD for raw water. Odessa receives water from CRMWD via a 33-inch and a 27-inch water line at the Golder Water Treatment Plant and Pump Station located at West 42nd Street and North Golder Avenue.

8.2 Wholesale Water Supply

Odessa supplies water to the Ector County Utility District (ECUD). Odessa and ECUD first entered into a wholesale contract in 1976 and have subsequently renewed the contract several times since the original

agreement. The current wholesale agreement is set to expire in 2019. The primary supply feed from Odessa to ECUD is an 18-inch line that enters the ECUD system at a wholesale meter at West 42nd Street and State Highway 302. There is an emergency 12-inch feeder that enters the ECUD system near West 10th Street and West Loop 338. Refer to Appendix G – Existing Infrastructure for the location of the existing supply lines and delivery points.

8.3 Pressure Planes

Odessa operates two pressure planes, the Lower Pressure Plane and the Upper Pressure Plane. The majority of the City is within the Lower Pressure Plane. The Lower Pressure Plane has two elevated storage tanks, Dawn and Oakwood, with overflow elevations of 3,078'. The Upper Pressure Plane has one elevated storage tank, Rainbow, with an overflow of elevation of 3,132'. Refer to Appendix G – Existing Infrastructure for Odessa's existing pressure plane boundaries.

8.4 Pumping Facilities

Odessa maintains two pumping facilities, the Golder Pump Station, located at West 42nd Street and North Golder Avenue, and the Yukon High Service Pump Station, located east of the intersection of Andrews Highway and East Yukon Road. The Golder Pump Station supplies treated water from the Water Treatment Plant to the Lower Pressure Plane and to the Yukon Pump Station. The Yukon Pump Station supplies water to the Upper Pressure Plane. Tables 10 and 11 summarize Odessa's pumping and ground storage facilities.

Table 10 – Pump Station Facilities Summary

Pump #	Capacity (MGD)	Capacity (gpm)	Head (ft)	Purpose
Golder Pump Station				
1	-	-	-	Transfer between clear wells
2	11.52	8,000	165	Distribution
3	18.50	12,850	165	Distribution
4	18.00	12,500	165	Distribution
5	8.86	6,150	150	Distribution
6	10.15	7,050	150	Distribution
7	15.55	10,800	165	Distribution
8	18.43	12,800	165	Distribution
Total:	101.01	70,150		
Yukon Pump Station				
1	2.30	1,600	195	Distribution
2	2.30	1,600	180	Distribution
3	2.30	1,600	195	Distribution
Total:	6.90	4,800		

Table 11 – Ground Storage Facilities

Location	Name	Capacity (MG)	Diameter (ft)	Head Range (ft)
Golder	Clearwell #1	4.4	-	17.75
Golder	Clearwell #2	3.9	190	17.75
Golder	Clearwell #3	3.9	190	17.75
Sub-Total		12.2		
Yukon	-	2.0	110	30
Sub-Total		2.0		
Total:		14.2		

8.5 Elevated Storage Facilities

Odessa operates three elevated storage tanks. The Dawn and Oakwood elevated storage tanks serve the Lower Pressure Plane and the Rainbow tank serves the Upper Pressure Plane. Table 12 summarizes Odessa’s elevated storage tank facilities.



Table 12 – Elevated Storage Facilities

Name	Capacity (MG)	Overflow Elevation (ft)	Head Range (ft)	Diameter (ft)
Lower Pressure Plane				
Dawn	2.0	3,078	35	-
Oakwood	3.0	3,078	45	106
Sub-Total:	5.0			
Upper Pressure Plane				
Rainbow	1.0	3,132	40	-
Sub-Total:	1.0			
Total:	6.0			

8.6 Distribution System

The existing water distribution system consists of pipe sizes ranging from 1-inch to 48-inches in diameter. Most of the system consists of distribution mains, 6-inch and 8-inch diameter pipes. Odessa has a well gridded existing water system. With Golder Pump Station located downtown, the existing system is efficient at moving water across the City to developments outside the core of the City. As Odessa continues to expand, the focus will be on installing transmission lines from the core of the City to serve developments further away. Additionally, as the existing network continues to age, rehabilitation and replacement of existing lines will be a priority. Pipes smaller than 6-inches are not recommended due to their inability to provide adequate fire flow capacity. Systematically replacing smaller diameter pipe and increasing internal looping of the distribution system will be advantageous to increasing the robustness of the water system. Table 13 summarizes Odessa’s water main linear footage.

Table 13 – Water Line Summary

Pipe Size	Linear Footage (LF)
Unclassified	38,570
2-inch	8,350
4-inch	265,870
6-inch	1,585,460
8-inch	997,190
10-inch	39,800
12-inch	441,180
14-inch	33,200
16-inch	67,720



18-inch	148,720
20-inch	28,150
24-inch	65,650
30-inch	30,950
36-inch	270
48-inch	130
Total:	3,751,210

9. Future Infrastructure Analysis and Recommendations

9.1 Water Supply

Odessa will continue to be reliant upon the CRMWD for raw water for the foreseeable future. According to TCEQ criteria, Odessa is required to have a water supply able to meet the projected maximum day demand for the system. Kimley-Horn recommends procuring a contract that guarantees a pressure and maximum flow equal to the projected maximum demand during the contract window. Table 14 lists the projected maximum day demand for the next 25-years.

Table 14 – Projected Max Day Demand

Year	2018	2023	2028	2033	2038	2043
Maximum Water Use (MGD)	25.25	26.88	28.75	30.91	33.42	36.35

9.2 Pressure Planes

As discussed in the criteria section of this report, 40 psi is the minimum pressure recommended by Kimley-Horn and 35 psi is the minimum pressure allowed by TCEQ. Additionally, pressures above 80 psi are typically considered undesirable. Due to the range of topography, 3,055’ to 2,835’, that the projected service boundary spans, limiting the pressure range from 40 psi to 80 psi would result in an excessive number of pressure planes. Odessa staff expressed a desire to limit the number pressure planes and infrastructure and plan for the use of localized pressure reducing valves on neighborhoods or individual residences for high pressures. For the purposes of this report, a maximum of 100 psi, above the recommended criteria, was established as the maximum desirable pressure during normal operating conditions.

Two additional pressure planes are anticipated to be developed as a part of the 25-year planning period, the Southwest Pressure Plane and the Southeast Pressure Plane. The locations and extents of the pressure planes are available on Appendix H – Capital Improvement Plan. The Southwest Pressure Plane is anticipated to be implemented in the 5-year planning period and serve west of the City along I-20. The

Southwest Pressure Plane will be served by the Southwest Pump station and will be fed from the Lower Pressure Plane. The Southeast Pressure Plane is anticipated to be implemented in the 25-year planning period and serve the southeast side of the City along Loop 338. The Southeast Pressure Plane will be hydraulically lower than the Lower Pressure Plane and will be served directly from the Lower Pressure Plane with pressure reducing valves.

9.3 Pumping Facilities

TCEQ requires a firm pumping capacity of 2.0 gpm per connection in each pressure plane or a firm pumping capacity of at least 1,000 gpm and the ability to meet peak hourly demands in each pressure plane, whichever is less. If 200 gallons per connection of elevated storage is provided then the required pumping capacity drops to 0.6 gpm per connection.

Lower Pressure Plane

The Lower Pressure Plane has excess pumping capacity at the Golder Pump Station and does not have adequate elevated storage tank capacity to qualify for the 0.6 gpm per connection requirement. Pumping required for the Lower Pressure Plane has been sized to meet the peak hourly demand for customers supplied directly by the pump station (Lower Pressure Plane, Southeast Pressure Plane) plus the max day demand for any pressure plane served with ground storage and a pump station (Upper Pressure Plane, Southwest Pressure Plane, and ECUD). No improvements are recommended to the Golder Pump Station within the 25-year planning period. Table 15 and Figure 3 summarize the pumping requirements and infrastructure for the Lower Pressure Plane.

Table 15 – Lower Pressure Plane Pumping Requirements and Infrastructure

Year	Pumping Requirements (Peak Hour) (gpm)	Firm Pumping Capacity (gpm)
2018	27,400	57,300
2023	28,900	57,300
2028	30,500	57,300
2038	34,700	57,300
2043	37,300	57,300

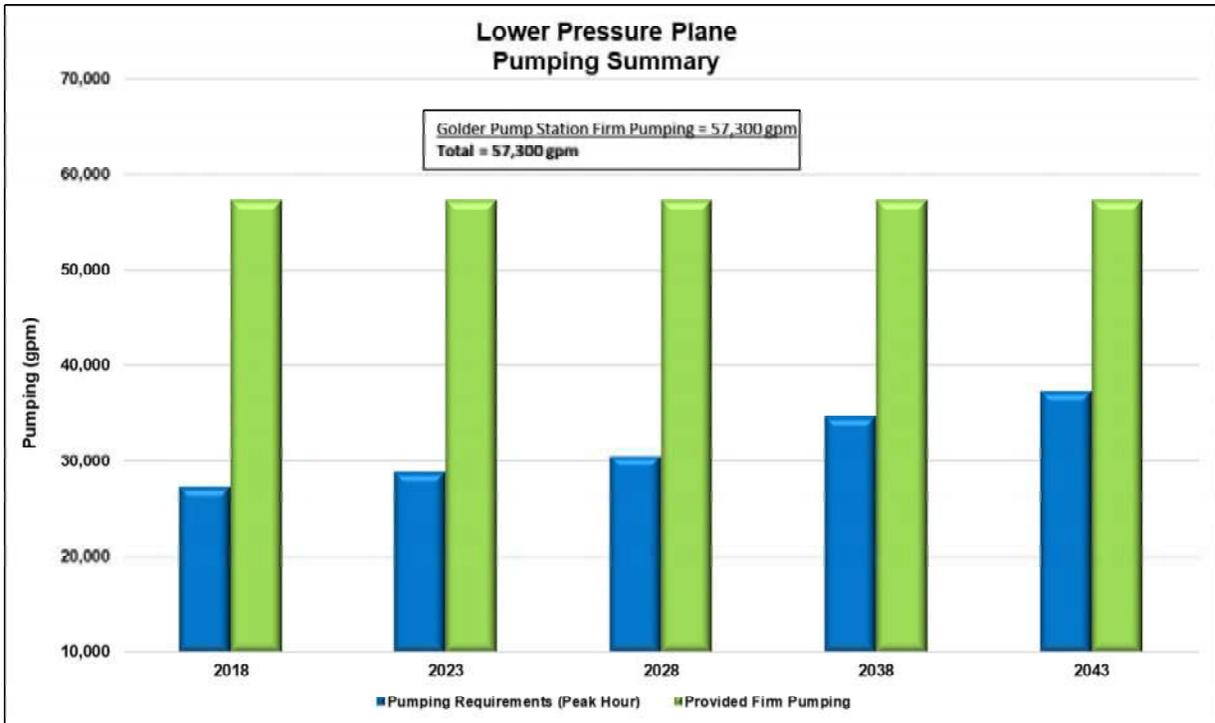


Figure 3 – Lower Pressure Plane Pumping Summary

Upper Pressure Plane

The Upper Pressure Plane is anticipated to provide at least 200 gallons of elevated storage per connection and will therefore qualify for the 0.6 gpm per connection pumping requirement. The Yukon Pump Station is recommended to have a pump installed in the fourth empty slot in the 5-year planning period and to have one of the three remaining pumps upgraded in the 25-year planning period. The recommended pump discharge flow rate, 3,800 gpm, is the largest pump size available for the existing piping configuration and layout of the Yukon pump station. Table 16 and Figure 4 summarize the pumping requirements and infrastructure for the Upper Pressure Plane.

Table 16 – Yukon Pump Station Summary

Year	Required Pumping (0.6 gpm / connection) (gpm)	Firm Pumping (gpm)	Pump #1 (gpm)	Pump #2 (gpm)	Pump #3 (gpm)	Pump #4 (gpm)
2018	1,700	3,200	1,600	1,600	1,600	-
2023	2,400	4,800	1,600	1,600	1,600	3,800
2028	3,200	4,800	1,600	1,600	1,600	3,800
2038	5,200	7,000	3,800	1,600	1,600	3,800
2043	6,500	7,000	3,800	1,600	1,600	3,800

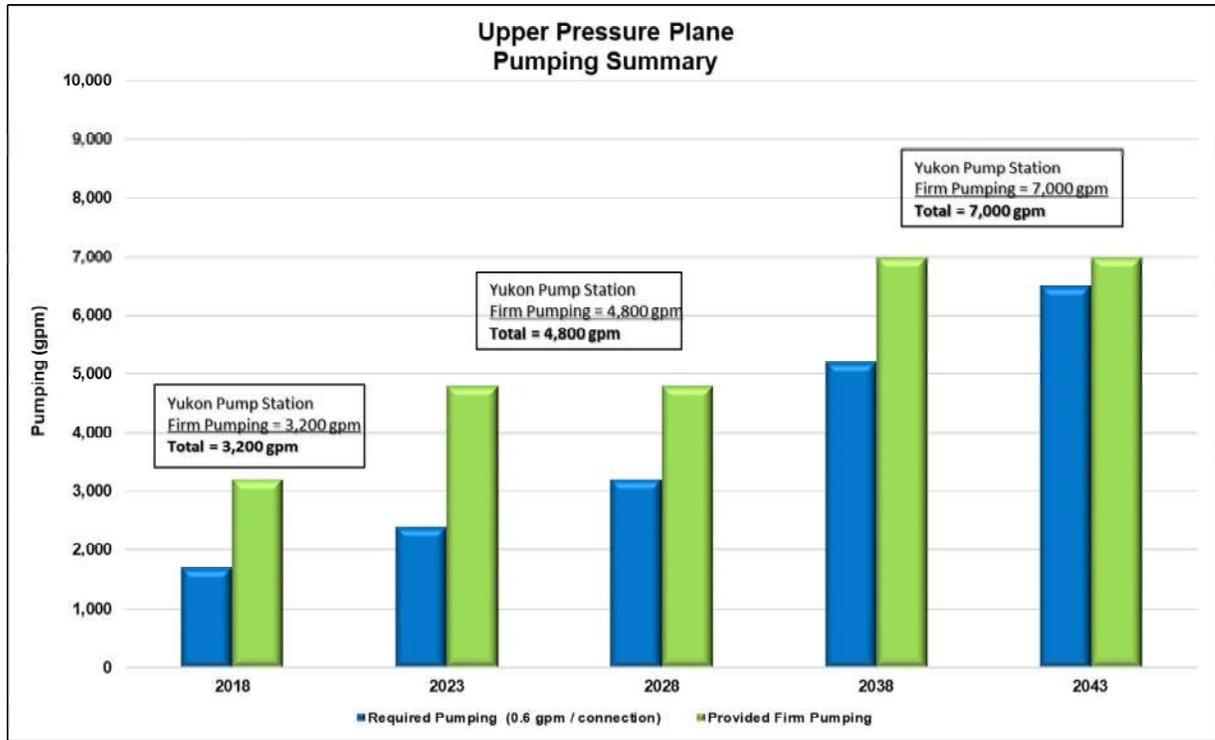


Figure 4 – Upper Pressure Plane Pumping Summary

Southwest Pressure Plane

The Southwest Pressure Plan is anticipated to utilize a pressure vessel for pressure maintenance and will therefore be required to provide pumping at a rate of 2.0 gpm per connection. Additionally, the Southwest Pump Station must provide the required 1,500 gpm of fire flow. The Southwest Pump Station is anticipated to be constructed in the 5-year planning window to allow for the implementation of the Southwest Pressure Plane. The pump station is recommended to be sized to meet the needs through the 25-year planning window but also should be constructed to allow for pumps to be removed and replaced with larger pumps as the pressure plane continues to develop. Table 17 and Figure 5 summarize the pumping requirements and infrastructure for the Southwest Pressure Plane.

Table 17 – Southwest Pump Station Pump Infrastructure

Year	Required Pumping (2.0 gpm / connection) (gpm)	Firm Pumping (gpm)	Pump #1 (gpm)	Pump #2 (gpm)	Pump #3 (gpm)
2018	100	1,500	1,000	1,000	500
2023	600	1,500	1,000	1,000	500
2028	1,000	1,500	1,000	1,000	500
2038	1,900	3,000	1,500	1,500	1,500
2043	2,300	3,000	1,500	1,500	1,500

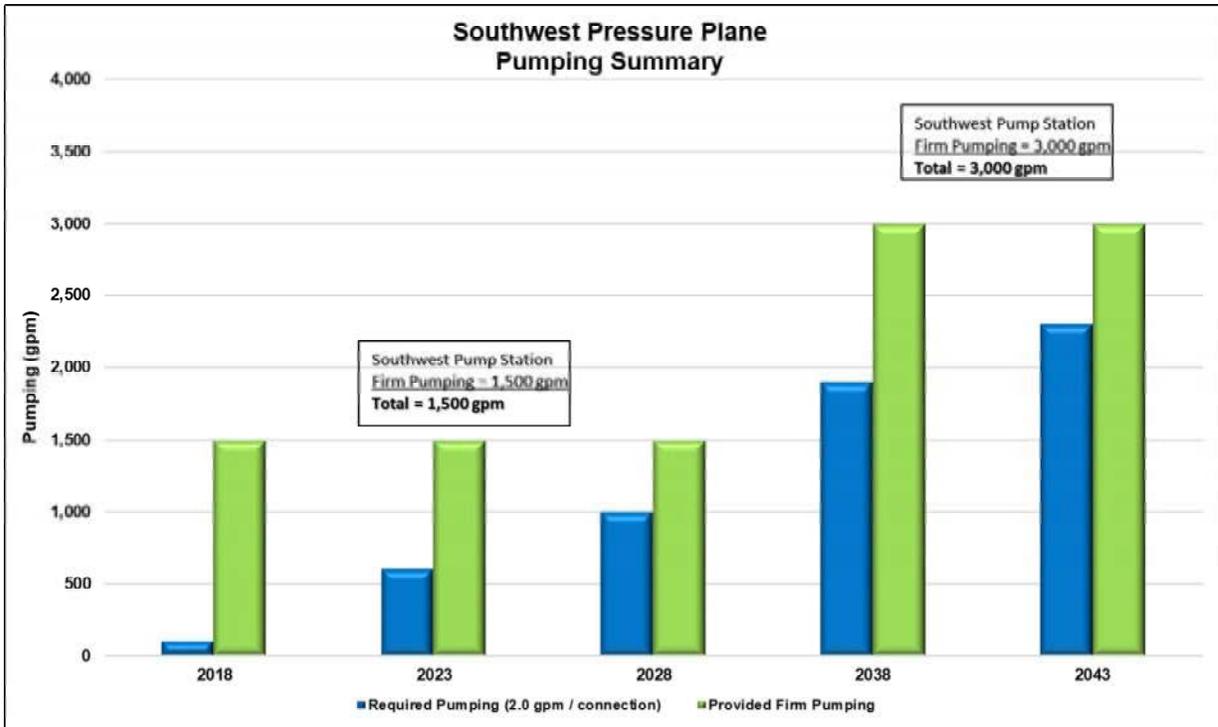


Figure 5 – Southwest Pressure Plane Pumping Summary

9.4 Elevated Storage

TCEQ requires 100 gallons per connection for elevated storage. If 200 gallons per connection of elevated storage is provided then the firm pumping requirement drops to 0.6 gpm per connection.

Lower Pressure Plane

No additional elevated storage improvements are recommended for the Lower Pressure Plane through the 25-year planning period. The Southeast pressure plane is hydraulically lower than the Lower Pressure Plane and is therefore accounted in the requirements for the Lower Pressure Plane. Table 18 and Figure 6 summarize the elevated storage requirements and infrastructure for the Lower Pressure Plane.

Table 18 – Lower Pressure Plane Elevated Storage Summary

Lower Pressure Plane					
Year	Projected Number of Connections	TCEQ Required Storage (100 gal / connection) (MG)	Operational Required Storage (MG)	Provided Storage (MG)	Provided Infrastructure
2018	32,774	3.28	2.50	5.00	Dawn 2 MG Oakwood 3 MG
2023	33,727	3.37	2.56	5.00	Dawn 2 MG Oakwood 3 MG
2028	34,792	3.48	2.62	5.00	Dawn 2 MG Oakwood 3 MG
2038	37,353	3.74	2.78	5.00	Dawn 2 MG Oakwood 3 MG
2043	38,908	3.89	2.87	5.00	Dawn 2 MG Oakwood 3 MG

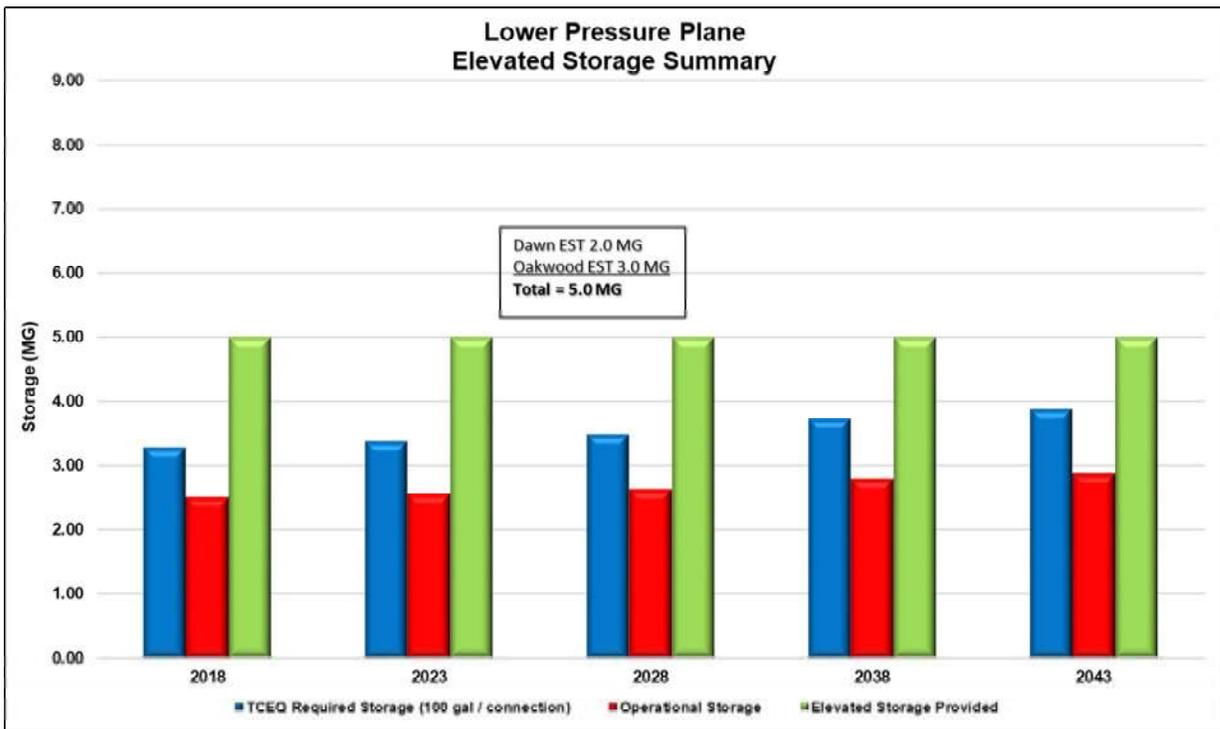


Figure 6 – Lower Pressure Plane Elevated Storage Summary

Upper Pressure Plane

A 2.0 million-gallon elevated storage is recommended for the Upper Pressure Plane within the 10-year planning period. The additional elevated storage will allow the Upper Pressure Plane to provide 200 gallons of elevated storage per connection and continue to qualify for the reduced pumping requirement. The 2.0 million-gallon elevated storage will also hydraulically serve the northeastern part of the Upper Pressure Plane. Table 19 and Figure 7 summarize the elevated storage requirements and infrastructure for the Upper Pressure Plane.

Table 19 – Upper Pressure Plane Elevated Storage Summary

Upper Pressure Plane					
Year	Projected Number of Connections	TCEQ Required Storage (200 gal / connection) (MG)	Operational Required Storage (MG)	Provided Storage (MG)	Provided Infrastructure
2018	2,822	0.56	0.60	1.00	Rainbow 1.0 MG
2023	3,893	0.78	0.67	1.00	Rainbow 1.0 MG
2028	5,173	1.03	0.75	3.00	Rainbow 1.0 MG Northeast 2.0 MG
2038	6,703	1.71	0.95	3.00	Rainbow 1.0 MG Northeast 2.0 MG
2043	10,729	2.15	1.09	3.00	Rainbow 1.0 MG Northeast 2.0 MG

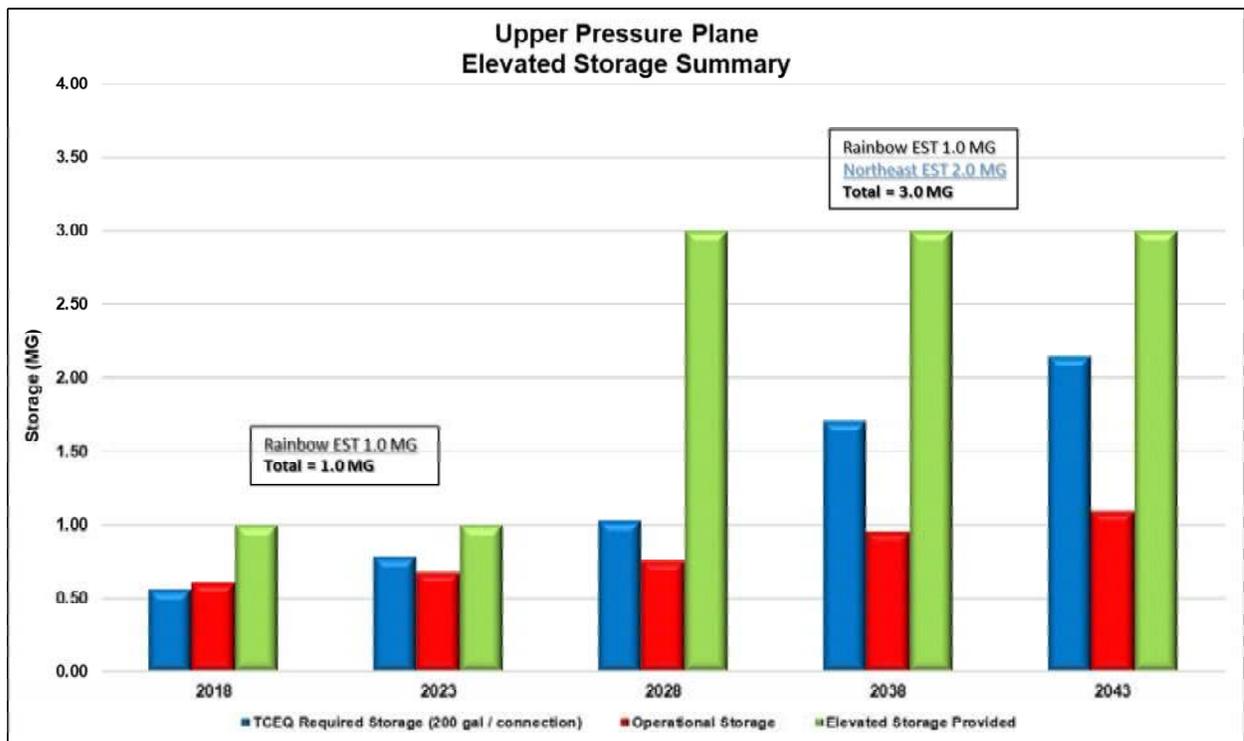


Figure 7– Upper Pressure Plane Elevated Storage Summary

9.5 Pressure Vessel Storage

The Southwest Pressure Plane is recommended to utilize pressure vessel storage for pressure maintenance. TCEQ requires 20 gallons per connection of pressure vessel storage up to 2,500 connections. Table 20 and Figure 8 summarize the required and provided pressure vessel storage through year 2043.

Table 20 – Southwest Required Pressure Vessel Storage

Year	Projected Number of Connections	TCEQ Required Storage (20 gallons / connection) (Gal)	Storage Provided (Gal)
2018	41	828	10,000
2023	251	5,028	10,000
2028	467	9,335	10,000
2038	914	18,277	25,000
2043	1,146	22,918	25,000

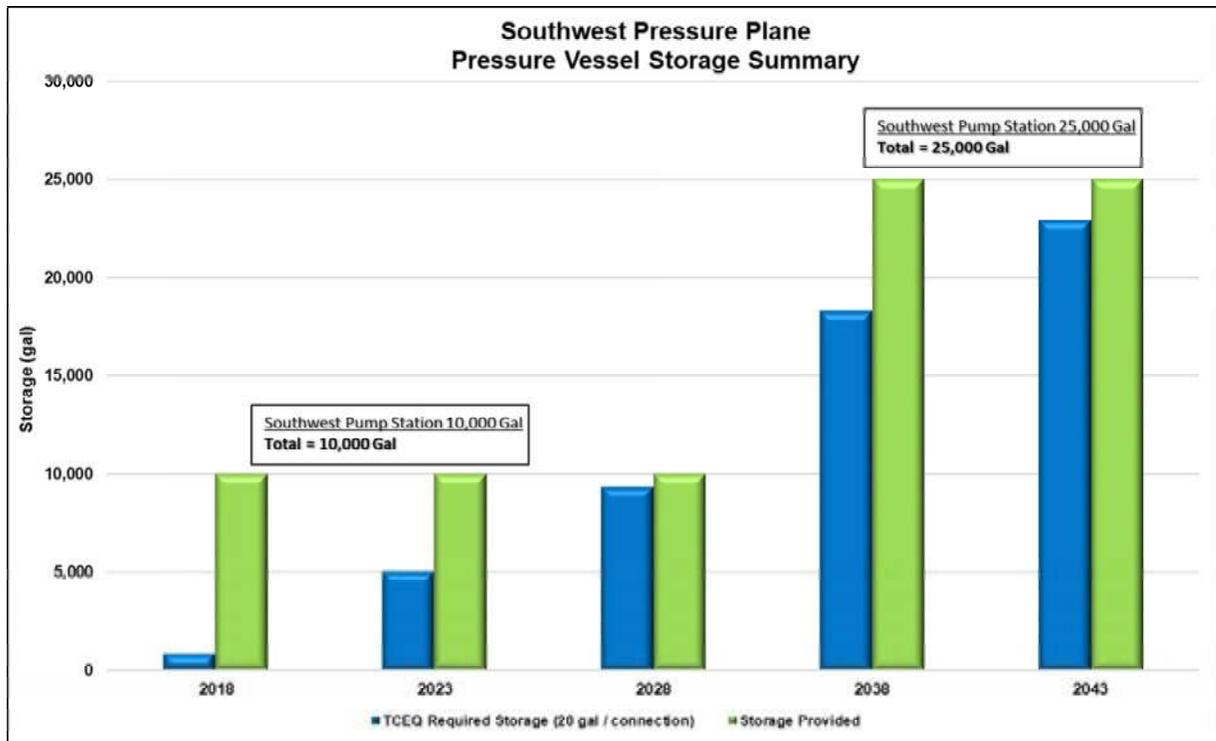


Figure 8 – Southwest Pressure Plane Pressure Vessel Storage Summary

9.6 Total Storage

TCEQ does not have specific requirements for ground storage, only that 200 gallons per connection of total storage must be supplied. Ground storage is extremely important for providing emergency storage and provides a buffer between demand of the system and treated water.

Lower Pressure Plane

No storage improvements are recommended in the Lower Pressure Plane in the 25-year planning period. The Southeast pressure plane is hydraulically lower than the Lower Pressure Plane and is therefore accounted in the requirements for the Lower Pressure Plane. Table 21 and Figure 9 summarize the total storage requirements for the Lower Pressure Plane.

Table 21 – Lower Pressure Plane Total Storage

Year	Projected Number of Connections	TCEQ Required Storage (200 gallons / connection) (MG)	Total Provided Storage (MG)
2018	32,774	6.55	17.20
2023	33,727	6.75	17.20
2028	34,792	6.96	17.20
2038	37,353	7.47	17.20
2043	38,908	7.78	17.20

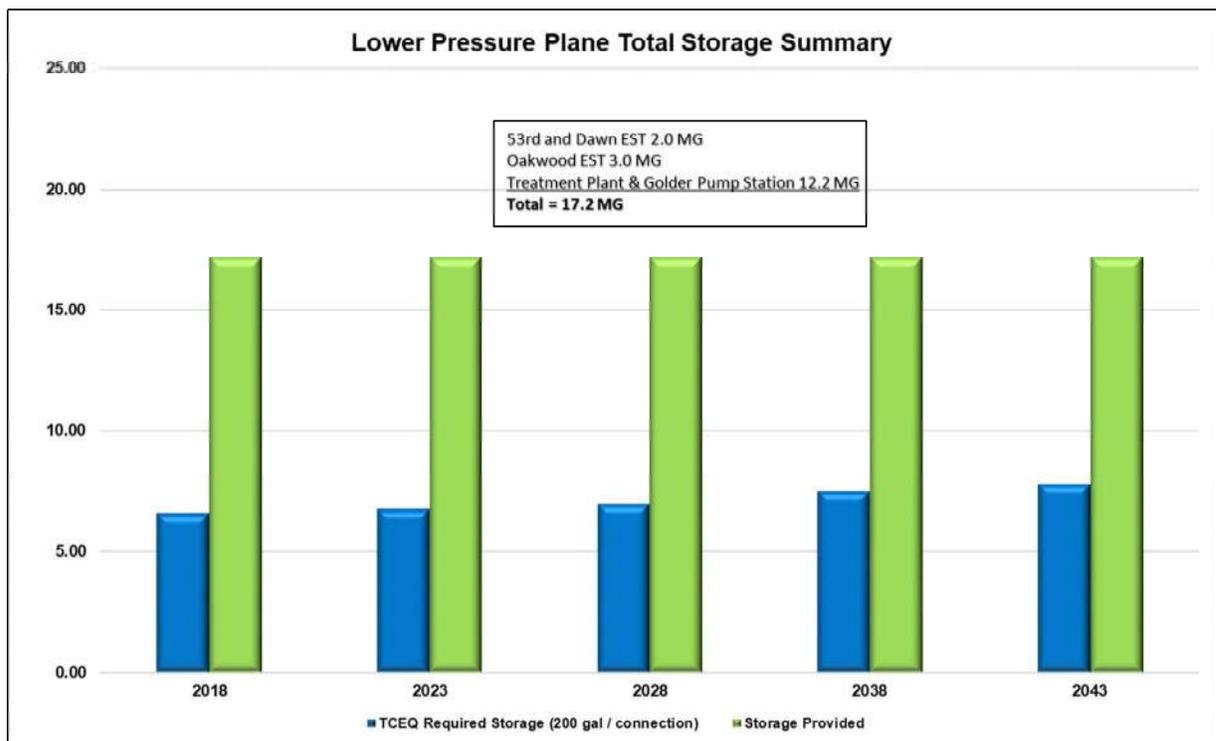


Figure 9 – Lower Pressure Plane Total Storage Summary

Upper Pressure Plane

A 2.0 million-gallon elevated storage is recommended for the Upper Pressure Plane within the 10-year planning period. A 2.0 million-gallon ground storage tank is recommended to be installed at the Yukon Pump Station in the 25-year planning period. Table 22 and Figure 10 summarize the storage requirements for the Upper Pressure Plane.

Table 22 – Upper Pressure Plane Total Storage

Year	Projected Number of Connections	TCEQ Required Storage (200 gallons / connection) (MG)	Total Provided Storage (MG)
2018	2,822	0.56	3.00
2023	3,893	0.78	3.00
2028	5,173	1.03	5.00
2038	6,703	1.71	7.00
2043	10,729	2.15	7.00

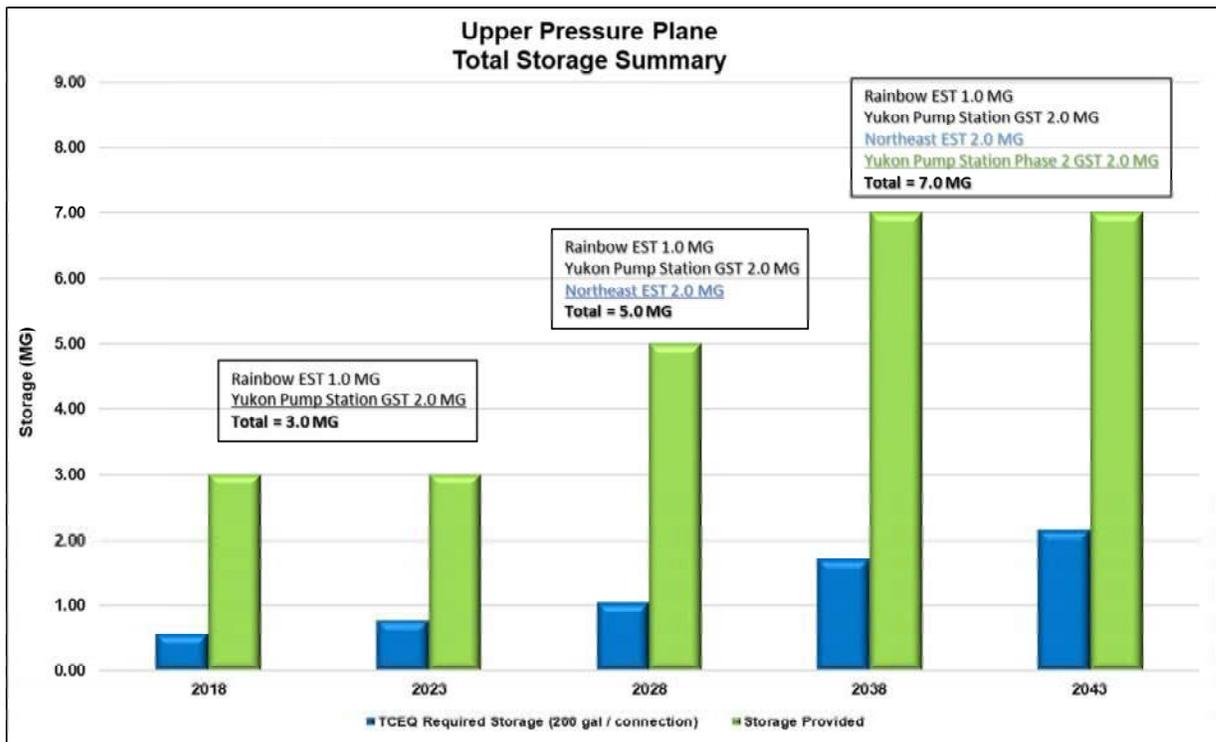


Figure 10 – Upper Pressure Plane Total Storage Summary

Southwest Pressure Plane

A 0.15 million-gallon ground storage tank is recommended to be installed in the 5-year planning period and an additional 0.15 million-gallon ground storage tank is recommended to be installed in the 25-year planning period. Table 23 and Figure 11 summarize the storage requirements for the Southwest Pressure Plane.

Table 23 – Southwest Pressure Plane Total Storage

Year	Projected Number of Connections	TCEQ Required Storage (200 gallons / connection) (MG)	Total Provided Storage (MG)
2018	41	0.01	0.15
2023	251	0.05	0.15
2028	467	0.09	0.15
2038	914	0.18	0.30
2043	1,146	0.23	0.30

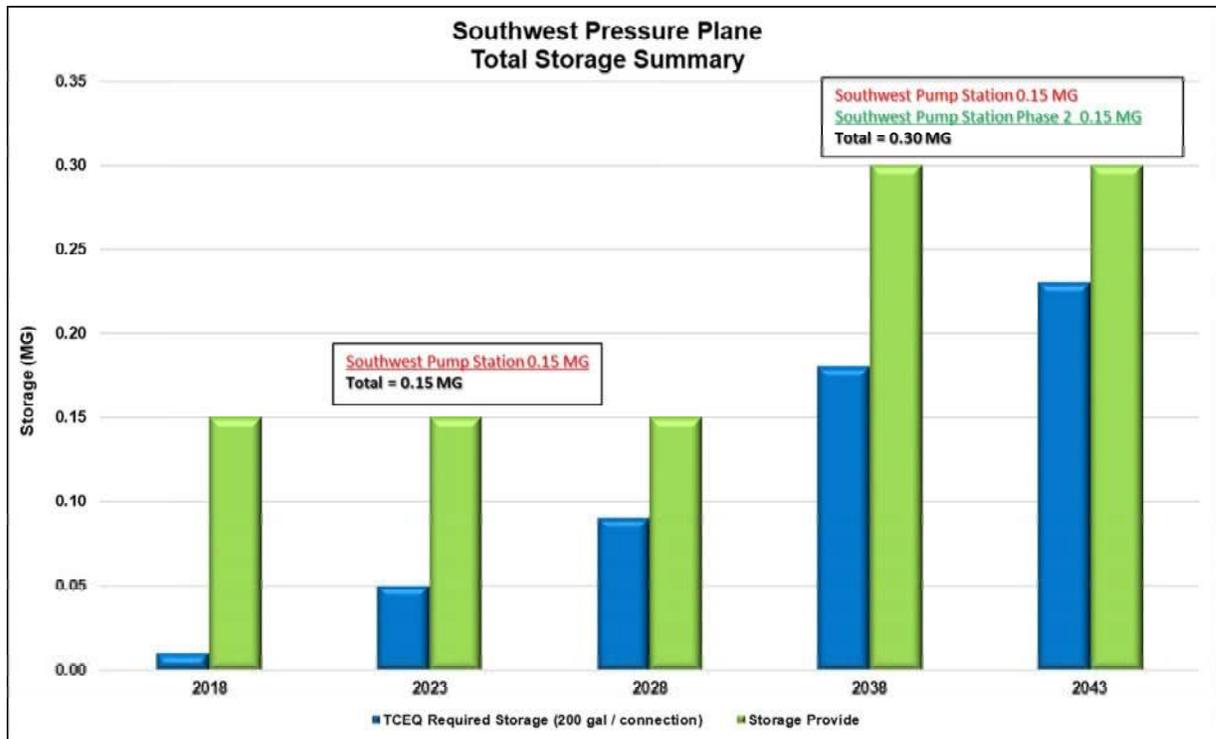


Figure 11 – Southwest Pressure Plane Total Storage Summary



9.7 Transmission Lines

The transmission lines proposed in the Capital Improvements Plan were divided into three sections: 5-Year, 10-Year, and 25-Year. All the projects generally followed the existing major thoroughfare grid system or proposed roads from the master thoroughfare plan. The transmission lines ranged in size from 12-inch in diameter to 24-inch in diameter. Table 24 shows the breakdown of linear footage of proposed pipe by diameter.

Table 24 – Proposed Transmission Line Summary

Phase	12-inch Diameter (LF)	16-inch Diameter (LF)	18-inch Diameter (LF)	24-inch Diameter (LF)
5-Year	19,000	15,500	9,300	23,500
10-Year	65,100	3,600	-	32,100
25-Year	428,900	120,000	8,300	42,000

Kimley-Horn worked with Odessa to identify existing distribution lines with a history of main breaks as candidates for rehabilitation or replacement. See Appendix I – Water Rehabilitation Plan for the location of the mains recommended for replacement.

10. Capital Improvements Plan

From the Master Planning process, a recommended list of Capital improvements has been developed. The Capital Improvements Plan was divided into three sections: 5-Year, 10-Year, and 25-Year. Projects in the 25-Year planning period may need to be accelerated or deferred depending on the growth rate experienced and appetite for development in certain areas of the City. All improvements are shown in Appendix H – Capital Improvement Plan. Individual project summary sheets and costs have been included in Appendix E – Project Description Sheets and Opinions of Probable Construction Costs. The following opinion of probable costs for each capital project assumes no design completed, based on 2018 dollars, no inflation increases, and does not include any property acquisitions, unless specifically noted. The financial impacts of the proposed Capital Improvement Plan have been detailed in Appendix F – Pro Forma Financial Statement.



10.1 5-Year Capital Improvements Plan Projects

Table 25 – 5-Year Capital Improvements Plan Summary

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
1	NW Loop 338 24-Inch Water Line Phase 1	\$ 2,861,000.00	\$ 4,291,500.00
2	W 22nd Street 24-Inch Water Line	\$ 982,000.00	\$ 1,473,000.00
3	NW Loop 338 24-Inch Water Line Phase 2	\$ 2,578,000.00	\$ 3,867,000.00
4	Southwest Pump Station & 16-Inch Water Line	\$ 3,909,000.00	\$ 5,863,500.00
5	Southwest Pressure Plane 16-Inch Water Line	\$ 1,691,000.00	\$ 2,536,500.00
6	W 2nd Street 12-Inch Water Line	\$ 470,000.00	\$ 705,000.00
7	Evans Boulevard / E 87th Street 16-Inch Water Line	\$ 374,000.00	\$ 561,000.00
8	56th Street 18-Inch Water Line	\$ 2,306,000.00	\$ 3,459,000.00
9	N John Ben Shepperd 24-Inch Water Line	\$ 2,293,000.00	\$ 3,439,500.00
10	Yukon Pump Station Improvements Phase 1	\$ 473,000.00	\$ 709,500.00
11	E 100th Street 24-Inch Water Line	\$ 4,507,000.00	\$ 6,760,500.00
12	Northeast 2.0 MG Elevated Storage Tank	\$ 6,102,000.00	\$ 9,153,000.00
5-Year Projects Sub-Total:		\$ 28,546,000.00	\$ 42,819,000.00

#1 – NW Loop 338 24-Inch Water Line Phase 1

PRESSURE PLANE: Lower

PROJECT COST: \$2,861,000

NOTES: This project consists of approximately 11,220 LF of 24-inch water transmission line along NW Loop 338 from W 42nd Street to the proposed ECUD Wholesale Meter at W 16th Street. The project includes a bore under NW Loop 338.

#2 – W 22nd Street 24-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$982,000

NOTES: This project consists of approximately 2,480 LF of 24-inch water line along W 22nd Street from Conover Avenue to a connection to the proposed 30-inch water line along NW Loop 338. The project includes a bore under NW Loop 338.

#3 – NW Loop 338 24-Inch Water Line Phase 2

PRESSURE PLANE: Lower

PROJECT COST: \$2,578,000

NOTES: This project consists of approximately 9,820 LF of 24-inch water line along NW Loop 338 Street from the proposed ECUD Wholesale Meter to W Highway 80. The project includes a bore under NW Loop 338 and under W Highway 80.

#4 – Southwest Pump Station & 16-Inch Water Line

PRESSURE PLANE: Southwest
PROJECT COST: 3,909,000
NOTES: This project consists of approximately 3,830 LF of 16-inch water line along W Highway 80 from SW Loop 338, a 50,000 gallon ground storage tank, a 5,000 gallon hydropneumatic tank, and pump station. The project includes a bore under SW Loop 338.

#5 – Southwest Pressure Plane 16-Inch Water Line

PRESSURE PLANE: Southwest
PROJECT COST: \$1,691,000
NOTES: This project consists of approximately 10,190 LF of 16-inch water line along W Highway 80 / I-20 from the proposed South West Pump Station extending west into the South West Pressure Plane.

#6 – W 2nd Street 12-Inch Water Line

PRESSURE PLANE: Lower
PROJECT COST: \$470,000
NOTES: This project consists of approximately 3,330 LF of 12-inch water line along W 2nd Street from Monahans Draw to NW Loop 338.

#7 – Evans Boulevard / E 87th Street 16-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$374,000
NOTES: This project consists of approximately 1,500 LF of 16-inch water line along Evans Boulevard from Pine Leaf Place to E 87th Street and then along E 87th Street from Hunter Miller Way to Dawn Avenue.

#8 – 56th Street 18-Inch Water Line

PRESSURE PLANE: Lower
PROJECT COST: \$2,306,000
NOTES: This project consists of approximately 9,300 LF of 18-inch water line along E 56th Street from NE Loop 338 to N Faudree Road.

#9 – N John Ben Shepperd 24-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$2,293,000
NOTES: This project consists of approximately 11,220 LF of 24-inch water line along future N John Ben Shepperd from Yukon Road to the proposed North East Elevated Storage Tank.

#10 – Yukon Pump Station Improvements Phase 1

PRESSURE PLANE: Upper
PROJECT COST: \$473,000
NOTES: This project consists of the addition of one 3,800 GPM pump and electrical improvements to the existing Yukon Pump Station.

City of Odessa, TX

#11 – E 100th Street 24-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$4,507,000
NOTES: This project consists of approximately 20,860 LF of 24-inch water line along future E 100th Street from the proposed North East Elevated Storage Tank to Evans Boulevard.

#12 – Northeast 2.0 MG Elevated Storage Tank

PRESSURE PLANE: Upper
PROJECT COST: \$6,102,000
NOTES: This project consists of a new 2 MG elevated storage tank at a site located just north of the intersection of Road #1 and Road "D".

10.2 10-Year Capital Improvements Plan Projects

Table 26 – 10-Year Capital Improvements Plan Summary

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
13	W 87th Street & Loop 338 12-Inch Water Line	\$ 3,096,000.00	\$ 4,644,000.00
14	Highway 191 12-Inch Water Line Phase 1	\$ 2,182,000.00	\$ 3,273,000.00
15	W County Road 122 12-Inch Water Line	\$ 2,611,000.00	\$ 3,916,500.00
16	Dorado Drive 12-Inch Water Line	\$ 299,000.00	\$ 448,500.00
17	W Murphy Street 12-Inch Water Line	\$ 555,000.00	\$ 832,500.00
18	Southwest Pressure Plane 12-Inch Water Line	\$ 2,592,000.00	\$ 3,888,000.00
19	SW Loop 338 16-Inch Water Line Phase 1	\$ 821,000.00	\$ 1,231,500.00
20	Interstate 20 12-Inch Water Line	\$ 970,000.00	\$ 1,455,000.00
	10-Year Projects Sub-Total:	\$ 13,126,000.00	\$ 19,689,000.00

#13 – W 87th Street & Loop 338 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$3,096,000
NOTES: This project consists of approximately 5,670 LF of 12-inch water line along W 87th Street from N County Road West to NW Loop 338 and approximately 10,020 LF of 12-inch water line along NW Loop 338 from E 87th Street to Steven Road.

#14 – Highway 191 12-Inch Water Line Phase 1

PRESSURE PLANE: Lower
PROJECT COST: \$2,182,000
NOTES: This project consists of approximately 14,160 LF of 12-inch water line along Highway 191 from N Faudree Road to Willow Lane, then continues southeast towards the future Dorado Elevated Storage Tank location. The project includes a bore under Highway 191.

City of Odessa, TX

#15 – W County Road 122 12-Inch Water Line

PRESSURE PLANE: Lower
 PROJECT COST: \$2,611,000
 NOTES: This project consists of approximately 16,680 LF of 12-inch water line along W County Road 122 from San Pedro Drive to just west of S County Road 1297, then continues north towards the future Dorado Elevated Storage Tank location.

#16 – Dorado Drive 12-Inch Water Line

PRESSURE PLANE: Lower
 PROJECT COST: \$299,000
 NOTES: This project consists of approximately 2,260 LF of 12-inch water line East of San Antonio Street.

#17 – W Murphy Street 12-Inch Water Line

PRESSURE PLANE: Lower
 PROJECT COST: \$555,000
 NOTES: This project consists of approximately 2,680 LF of 12-inch water line along W Murphy St from County Road 1135 to SW Loop 338.

#18 – Southwest Pressure Plane 12-Inch Water Line

PRESSURE PLANE: Southwest
 PROJECT COST: \$2,592,000
 NOTES: This project consists of approximately 22,310 LF of 12-inch water line extending from the proposed South West Pump Station and the proposed 16-inch water line along I-20, looping the South West Pressure Plane.

#19 – SW Loop 338 16-Inch Water Line Phase 1

PRESSURE PLANE: Lower
 PROJECT COST: \$821,000
 NOTES: This project consists of approximately 3,640 LF of 16-inch water line along SW Loop 338 from W Murphy Street to I-20. The project includes a bore under I-20.

#20 – Interstate 20 12-Inch Water Line

PRESSURE PLANE: Lower
 PROJECT COST: \$970,000
 NOTES: This project consists of approximately 6,970 LF of 12-inch water line along I-20 from Loop 338 to S County Road W.

10.3 25-Year Capital Improvements Plan Projects

Table 27 – 25-Year Capital Improvements Plan Summary

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
21	E Yukon Road 24-Inch Water Line	\$ 4,103,000	\$ 6,154,500.00
22	N Faudree Road 24-Inch Water Line	\$ 1,430,000	\$ 2,145,000.00
23	E 87th 24-Inch Water Line	\$ 1,233,000	\$ 1,849,500.00
24	E 87th 16-Inch Water Line	\$ 1,485,000	\$ 2,227,500.00

25	Yukon Pump Station Improvements Phase 2	\$ 4,172,000	\$ 6,258,000.00
26	NE Loop 338 12-Inch Water Line	\$ 9,683,000	\$ 14,524,500.00
27	NW Loop 338 12-Inch Water Line	\$ 7,465,000	\$ 11,197,500.00
28	N Highway 385 12-Inch Water Line	\$ 555,000	\$ 832,500.00
29	N County Road West 12-Inch Water Line	\$ 2,354,000	\$ 3,531,000.00
30	N CR West to NW Loop 338 12-Inch Water Line	\$ 512,000	\$ 768,000.00
31	FM 554 to Willow Lane 12-Inch Water Line	\$ 2,734,000	\$ 4,101,000.00
32	E 87th 12-Inch Water Line Phase 1	\$ 1,591,000	\$ 2,386,500.00
33	W Yukon Road / NW Loop 338 12 / 16-Inch Water	\$ 3,978,000	\$ 5,967,000.00
34	NE Loop 338 12-Inch Water Line Phase 1	\$ 1,051,000	\$ 1,576,500.00
35	N John Ben Shepperd 12-Inch Water Line	\$ 1,639,000	\$ 2,458,500.00
36	Highway 191 12-Inch Water Line Phase 2	\$ 1,431,000	\$ 2,146,500.00
37	E Yukon Road 18-Inch Water Line	\$ 1,712,000	\$ 2,568,000.00
38	N Willow Lane 12-Inch Water Line	\$ 1,770,000	\$ 2,655,000.00
39	E 87th 12-Inch Water Line Phase 2	\$ 675,000	\$ 1,012,500.00
40	County Road West Extension 12-Inch Water Line	\$ 3,612,000	\$ 5,418,000.00
41	Project #41 12-Inch Water Line	\$ 1,352,000	\$ 2,028,000.00
42	Project #42 12-Inch Water Line	\$ 216,000	\$ 324,000.00
43	N Faudree Road Upper 12-Inch Water Line	\$ 717,000	\$ 1,075,500.00
44	S County Road 1302 12-Inch Water Line	\$ 1,371,000	\$ 2,056,500.00
45	FM 554 12-Inch Water Line	\$ 2,583,000	\$ 3,874,500.00
46	NW Loop 338 12-Inch Water Line	\$ 2,583,000	\$ 3,874,500.00
47	W Highway 302 12-Inch Water Line	\$ 1,904,000	\$ 2,856,000.00
48	SW Loop 338 16-Inch Water Line Phase 2	\$ 3,999,000	\$ 5,998,500.00
49	SE Loop 338 16-Inch Water Line Phase 1	\$ 5,048,000	\$ 7,572,000.00
50	SE Loop 338 16-Inch Water Line Phase 2	\$ 5,361,000	\$ 8,041,500.00
51	SE Loop 338 12-Inch Water Line	\$ 1,149,000	\$ 1,723,500.00
52	S Faudree Road 12-Inch Water Line	\$ 2,019,000	\$ 3,028,500.00
53	County Road 1300 12-Inch Water Line	\$ 2,472,000	\$ 3,708,000.00
54	S County Road West 12-Inch Water Line	\$ 2,300,000	\$ 3,450,000.00
55	S John Ben Shepperd Parkway 12-Inch Water Line	\$ 951,000	\$ 1,426,500.00
56	S FM 3503 12-Inch Water Line	\$ 2,004,000	\$ 3,006,000.00
57	S Dixie Boulevard 12-Inch Water Line	\$ 723,000	\$ 1,084,500.00
58	S Highway 385 to S Dixie Boulevard 12-Inch Water	\$ 1,533,000	\$ 2,299,500.00
59	S Dixie Boulevard to S FM 3503 12-Inch Water Line	\$ 1,004,000	\$ 1,506,000.00
60	W Bell Street 12-Inch Water Line	\$ 2,132,000	\$ 3,198,000.00
61	S Holloman Avenue/ Angel TR 12-Inch Water Line	\$ 2,807,000	\$ 4,210,500.00
62	N Highway 385 24-Inch Water Line	\$ 4,469,000	\$ 6,703,500.00
63	NE Loop 338 12-Inch Water Line Phase 2	\$ 933,000	\$ 1,399,500.00
64	W Murphy Street 16-Inch Water Line	\$ 7,366,000	\$ 11,049,000.00
65	N Faudree Road Lower 12-Inch Water Line	\$ 437,000	\$ 655,500.00
66	Redondo 12-Inch Water Line	\$ 1,692,000	\$ 2,538,000.00
67	42nd Street 12-Inch Water Line	\$ 3,022,000	\$ 4,533,000.00
68	Southwest Pump Station Phase 2	\$ 1,732,000	\$ 2,598,000.00
	25-Year Projects Sub-Total:	\$ 117,064,000.00	\$ 175,596,000.00

City of Odessa, TX

#21 – E Yukon Road 24-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$4,103,000
NOTES: This project consists of approximately 14,370 LF of 24-inch water line along E Yukon Road, connecting to the Yukon Pump Station and extending east to NE Loop 338.

#22 – N Faudree Road 24-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,430,000
NOTES: This project consists of approximately 6,460 LF of 24-inch water line along N Faudree Road, connecting to the existing 18" water line along N Faudree Road and extending north to future E 87th Street.

#23 – E 87th 24-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,233,000
NOTES: This project consists of approximately 5,830 LF of 24-inch water line along future E 87th Street, connecting to Project No. 22 along N Faudree Road and extending west to connect to Project No. 11.

#24 – E 87th 16-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,485,000
NOTES: This project consists of approximately 9,910 LF of 16-inch water line along future E 87th Street, connecting to Project No. 22 along N Faudree Road and extending east.

#25 – Yukon Pump Station Improvements Phase 2

PRESSURE PLANE: Upper
PROJECT COST: \$4,172,000
NOTES: This project consists of adding an additional 2 MG ground storage tank and an additional firm pumping capacity of 11 MGD to the existing Yukon Pump Station.

#26 – NE Loop 338 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$9,683,000
NOTES: This project consists of approximately 50,040 LF of 12-inch water line along the western side of NE Loop 338 from E Yukon Road to Highway 385.

#27 – NW Loop 338 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$7,465,000
NOTES: This project consists of approximately 32,940 LF of 12-inch water line along the eastern side of NW Loop 338 from Highway 385 to W 87th Street, connecting to Project No. 8. The project includes a bore under Highway 385.

City of Odessa, TX

#28 – N Highway 385 12-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$555,000

NOTES: This project consists of approximately 2,680 LF of 12-inch water line along the eastern side of N Highway 385 from N County Road West to Loop 338, connecting to Project No. 26.

#29 – N County Road West 12-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$2,354,000

NOTES: This project consists of approximately 11,180 LF of 12-inch water line along N County Road West from W 87th Street to just east of Highway 385, connecting to the existing 12-inch water line along Highway 385. This project includes a bore under Highway 385.

#30 – N CR West to NW Loop 338 12-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$512,000

NOTES: This project consists of approximately 4,170 LF of 12-inch water line located in between NW Loop 338 and N County Road West, connecting Project No. 27 and Project No. 29.

#31 – FM 554 to Willow Lane 12-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$2,734,000

NOTES: This project consists of approximately 23,150 LF of 12-inch water line from FM 554 to Willow Lane.

#32 – E 87th 12-Inch Water Line Phase 1

PRESSURE PLANE: Upper

PROJECT COST: \$1,591,000

NOTES: This project consists of approximately 12,000 LF of 12-inch water line along future E 87th Street from just west of Loop 338 to Ben Shepperd Parkway, connecting to Project No.11.

#33 – W Yukon Road / NW Loop 338 12 / 16-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$3,978,000

NOTES: This project consists of approximately 7,990 LF of 12-inch water line along Loop 338 from Steven Road to W Yukon Road and 12,460 LF of 16-inch water line along W Yukon Road from Loop 338 to Andrews Hwy.

City of Odessa, TX

#34 – NE Loop 338 12-Inch Water Line Phase 1

PRESSURE PLANE: Upper
PROJECT COST: \$1,051,000
NOTES: This project consists of approximately 5,150 LF of 12-inch water line along Loop 338 from Yukon Street and connecting to Project No. 63 east of Ben Shepperd Parkway.

#35 – N John Ben Shepperd 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,639,000
NOTES: This project consists of approximately 9,140 LF of 12-inch water line along N John Ben Shepperd Parkway from the existing 18-inch water line on Yukon Road to south of Loop 338, connecting to the existing 24-inch water line.

#36 – Highway 191 12-Inch Water Line Phase 2

PRESSURE PLANE: Lower
PROJECT COST: \$1,431,000
NOTES: This project consists of approximately 6,530 LF of 12-inch water line along TX-191, connecting to Project No.44 in the north and Project No. 14 in the south.

#37 – E Yukon Road 18-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,712,000
NOTES: This project consists of approximately 8,340 LF of 18-inch water line along Yukon Road beginning at Highway 191 and connecting to the existing 18-inch water line west on Yukon Road.

#38 – N Willow Lane 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,770,000
NOTES: This project consists of approximately 14,840 LF of 12-inch water line along Willow Lane from the future County Road W Extension to just north of Highway 191.

#39 – E 87th 12-Inch Water Line Phase 2

PRESSURE PLANE: Upper
PROJECT COST: \$675,000
NOTES: This project consists of approximately 5,620 LF of 12-inch water line along future E 87th Street, connecting Project No. 40 to Project No. 38 along Willow Lane.

#40 – County Road West Extension 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$3,612,000
NOTES: This project consists of approximately 31,090 LF of 12-inch water line along the future County Road W Extension and then turns south, connecting to Project No. 44.



#41 – Project #41 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,352,000
NOTES: This project consists of approximately 11,370 LF of 12-inch water line running south from the future County Road W Extension to connect to Project No. 31.

#42 – Project #42 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$216,000
NOTES: This project consists of approximately 1,570 LF of 12-inch water line North of TX-191 and East of Faudree Road, connecting Project Nos. 31 and 37.

#43 – N Faudree Road Upper 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$717,000
NOTES: This project consists of approximately 6,000 LF of 12-inch water line along Faudree Road from the future County Road W Extension to the future E 87th Street, connecting Project Nos. 40 and 23.

#44 – S County Road 1302 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,371,000
NOTES: This project consists of approximately 8,380 LF of 12-inch water line along S County Road 1302 from Project No. 40 to Project No. 38.

#45 – FM 554 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$2,583,000
NOTES: This project consists of approximately 12,330 LF of 12-inch water line along FM 554 from future County Road W Extension to Loop 338.

#46 – NW Loop 338 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$2,583,000
NOTES: This project consists of approximately 11,580 LF of 12-inch water line along Loop 338, connecting to Project No. 33 in the north and Project Nos. 47 and 46 in the south.

#47 – W Highway 302 12-Inch Water Line

PRESSURE PLANE: Upper
PROJECT COST: \$1,904,000
NOTES: This project consists of approximately 16,500 LF of 12-inch water line. It connects to Project No. 66 and then runs southeast along W Highway 302.

#48 – SW Loop 338 16-Inch Water Line Phase 2

PRESSURE PLANE: Lower

PROJECT COST: \$3,999,000

NOTES: This project consists of approximately 17,900 LF of 16-inch water line along Loop 338, connecting to Project No. 20 in the north and Project No. 49 in the southeast direction.

#49 – SE Loop 338 16-Inch Water Line Phase 1

PRESSURE PLANE: Lower/Southeast

PROJECT COST: \$5,048,000

NOTES: This project consists of approximately 21,660 LF of 16-inch water line along Loop 338, connecting to Project No. 48 in the west and Project No. 50 in the east direction.

#50 – SE Loop 338 16-Inch Water Line Phase 2

PRESSURE PLANE: Lower/Southeast

PROJECT COST: \$5,361,000

NOTES: This project consists of approximately 23,820 LF of 16-inch water line along Loop 338, connecting to Project No. 51 in the north and Project No. 49 in the south.

#51 – SE Loop 338 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$1,149,000

NOTES: This project consists of approximately 5,800 LF of 12-inch water line along Loop 338, connecting to the existing 12-inch water line in the north and to Project No. 50 in the south.

#52 – S Faudree Road 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$2,019,000

NOTES: This project consists of approximately 17,450 LF of 12-inch water line along S Faudree Road, connecting to Project No. 51 in the west.

#53 – County Road 1300 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$2,472,000

NOTES: This project consists of approximately 11,180 LF of 12-inch water line along County Road 1300, connecting to Project No. 15 in the north and to the existing 12-inch water line in the southwest.

#54 – S County Road West 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$2,300,000

NOTES: This project consists of approximately 11,680 LF of 12-inch water line along S County Road West, connecting to the existing 18-inch water line along Highway 385.

#55 – S John Ben Shepperd Parkway 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$951,000

NOTES: This project consists of approximately 4,570 LF of 12-inch water line connecting to the existing 12-inch water line in the north and to Project No. 56 in the south.

#56 – S FM 3503 12-Inch Water Line

PRESSURE PLANE: Southeast

PROJECT COST: \$2,004,000

NOTES: This project consists of approximately 10,180 LF of 12-inch water line along FM 3503 from Hammett Road to Loop 338.

#57 – S Dixie Boulevard 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$723,000

NOTES: This project consists of approximately 5,950 LF of 12-inch water line along Dixie Boulevard, connecting to the existing 12-inch water line in the north and to Project No. 49 in the south.

#58 – S Highway 385 to S Dixie Boulevard 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$1,533,000

NOTES: This project consists of approximately 8,770 LF of 12-inch water line from Highway 385 to Dixie Boulevard.

#59 – S Dixie Boulevard to S FM 3503 12-Inch Water Line

PRESSURE PLANE: Lower/Southeast

PROJECT COST: \$1,004,000

NOTES: This project consists of approximately 8,200 LF of 12-inch water line from Dixie Boulevard to FM 3503, connecting to the existing 12-inch water line in the west and to Project No. 56 in the east.

#60 – W Bell Street 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$2,132,000

NOTES: This project consists of approximately 16,370 LF of 12-inch water line along Bell Street, connecting to Project No. 18 in the west and to the existing 18-inch water line in the east.

#61 – S Holloman Avenue/ Angel TR 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$2,807,000

NOTES: This project consists of approximately 14,830 LF of 12-inch water line along S Holloman Avenue and then along Angel Trail, connecting to the existing 18-inch water line.

#62 – N Highway 385 24-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$4,469,000

NOTES: This project consists of approximately 15,350 LF of 24-inch water line along Highway 385 from Cottonwood Road to Loop 338.

#63 – NE Loop 338 12-Inch Water Line Phase 2

PRESSURE PLANE: Lower

PROJECT COST: \$933,000

NOTES: This project consists of approximately 4,470 LF of 12-inch water line along Loop 338, connecting to Project No. 34 and to the existing 18-inch water line along 56th Street.

#64 – W Murphy Street 16-Inch Water Line

PRESSURE PLANE: Southwest

PROJECT COST: \$7,366,000

NOTES: This project consists of approximately 33,740 LF of 16-inch water line along Murphy Street, connecting to Project No. 18.

#65 – N Faudree Road Lower 12-Inch Water Line

PRESSURE PLANE: Lower

PROJECT COST: \$437,000

NOTES: This project consists of approximately 2,030 LF of 12-inch water line along N Faudree Road from Dorado Drive to San Machell Drive.

#66 – Redondo 12-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$1,692,000

NOTES: This project consists of approximately 8,230 LF of 12-inch water line along Redondo Street from Highway 302 to 42nd Street. It connects Project No. 47 to Project No. 67.

#67 – 42nd Street 12-Inch Water Line

PRESSURE PLANE: Upper

PROJECT COST: \$3,022,000

NOTES: This project consists of approximately 15,570 LF of 12-inch water line along 42nd Street.

#68 – Southwest Pump Station Phase 2

PRESSURE PLANE: Southwest

PROJECT COST: \$1,732,000

NOTES: This project consists of upgrading the Southwest Pump Station with an additional 0.15 million-gallon ground storage tank, additional 15,000-gallon pressure tank, and removing and replacing the existing pumps with three 1,500 gpm pumps.



11. REHABILITATION PLAN

From the Master Planning process, a recommended list of distribution line replacement projects has been developed. These improvements were created to replace water lines with a history of line breaks and leaks over a 20-year period. The rehabilitation projects were created by grouping water lines based on location and pipe size. All improvements are shown in Appendix I – Water Rehabilitation Plan. The project costs are summarized in Table 28. The following opinion of probable costs for each capital project assumes no design completed, based on 2018 dollars, no inflation increases, and does not include any property acquisitions, unless specifically noted.

Table 28 – Rehabilitation Plan Cost Summary

Project No.	Project Name	LF of Pipe Replacement	Project Cost	Market Scarcity Adjustment (1.5x)
1	E 56th Street 12-Inch Water Line	6,280	\$ 1,400,000.00	\$ 2,100,000.00
2	N. Dixie Blvd. & E. 52nd Area Water Lines	6,480	\$ 1,300,000.00	\$ 1,950,000.00
3	E. 52nd Street 8" Water Line	3,830	\$ 800,000.00	\$ 1,200,000.00
4	Clover Ave. & E. 49th St. Water Lines	2,720	\$ 500,000.00	\$ 750,000.00
5	Locust Ave. 8" Water Line	1,770	\$ 400,000.00	\$ 600,000.00
6	E. 35th St. Area Water Lines	7,030	\$ 1,300,000.00	\$ 1,950,000.00
7	Eastover Dr. & E. 31st St. Water Lines	7,470	\$ 1,500,000.00	\$ 2,250,000.00
8	Walnut Ave. & E. 17th St. Water Lines	6,770	\$ 1,400,000.00	\$ 2,100,000.00
9	E. University Blvd. Water Lines	7,630	\$ 1,600,000.00	\$ 2,400,000.00
10	W. 23rd St. & Golder Ave. Water Lines	8,430	\$ 1,500,000.00	\$ 2,250,000.00
11	Beaty Ave. & W. 22nd St. Water Lines	7,660	\$ 1,400,000.00	\$ 2,100,000.00
12	N. County Road West Water Lines	6,420	\$ 1,200,000.00	\$ 1,800,000.00
13	Whitaker Ave. & W. 19th St. Water Lines	9,290	\$ 1,600,000.00	\$ 2,400,000.00
14	W. 15th St. & Graham Ave. Water Lines	2,200	\$ 400,000.00	\$ 600,000.00
15	W. 14th St. 6" Water Line	2,490	\$ 600,000.00	\$ 900,000.00
16	W. 13th St. & N. County Road West 14" Water Line	3,340	\$ 1,100,000.00	\$ 1,650,000.00
17	N. Lincoln Ave. 6" Water Line	2,650	\$ 500,000.00	\$ 750,000.00
18	Harless Ave. and W. 11th St. Water Lines	1,490	\$ 300,000.00	\$ 450,000.00
19	Vine Ave. 8" Water Line	1,900	\$ 400,000.00	\$ 600,000.00
20	N. Belmont Ave. & W. Murphy St. Water	3,590	\$ 700,000.00	\$ 1,050,000.00
21	Drury Ln. & W. Ada St. Water Lines	4,789	\$ 900,000.00	\$ 1,350,000.00
22	W. 3rd St. Water Lines	2,220	\$ 500,000.00	\$ 750,000.00
23	Roxanna Ave. 6" Water Line	1,060	\$ 300,000.00	\$ 450,000.00
24	N. Dixie Blvd. & E. 2nd St. Water Lines	2,680	\$ 600,000.00	\$ 900,000.00
25	Santa Rosa Ave. 8" Water Line	2,500	\$ 500,000.00	\$ 750,000.00
26	N Dixie Boulevard 12-Inch Water Line	1,580	\$ 400,000.00	\$ 600,000.00
Rehabilitation Plan Projects Total:			\$ 23,100,000.00	\$ 34,650,000.00



12. WATER AND WASTEWATER PRO FORMA

The Water and Wastewater Pro Forma included in this Masterplan provides a high-level overview. This analysis started with the FY 2019 Budget and used industry standards for inflating operational and capital costs at the category level in each department. The projects included in both the water and sewer master plans were used to project potential debt issuances. Project funding was assumed to be 100% debt for this review. Debt financing costs assumed 30-year bonds with 3.43% interest, which is the Moody's AA Long Maturity rate as published in Mergent's Municipal & Government News Report as of January 2019. The Pro Forma is intended to give decision makers and the general reader a sense of total revenue increases that may be required to complete the Masterplan projects and continue to operate within targeted financial metrics. This should not be relied upon for annual utility rate increases or future customer cost projections. The City is currently undergoing a formal Cost of Service and Rate Design Study that will better define rate adjustments needed in the next five years. The Water and Wastewater Pro Forma is available in Appendix F – Water and Wastewater Pro Forma.



13. APPENDICES

Appendix A – Boundary Map

Appendix B – Existing Land Use Map

Appendix C – Ultimate Land Use Map

Appendix D – 25-Year Projected Growth Map

Appendix E – Project Description Sheets and Opinions of Probable Construction Costs

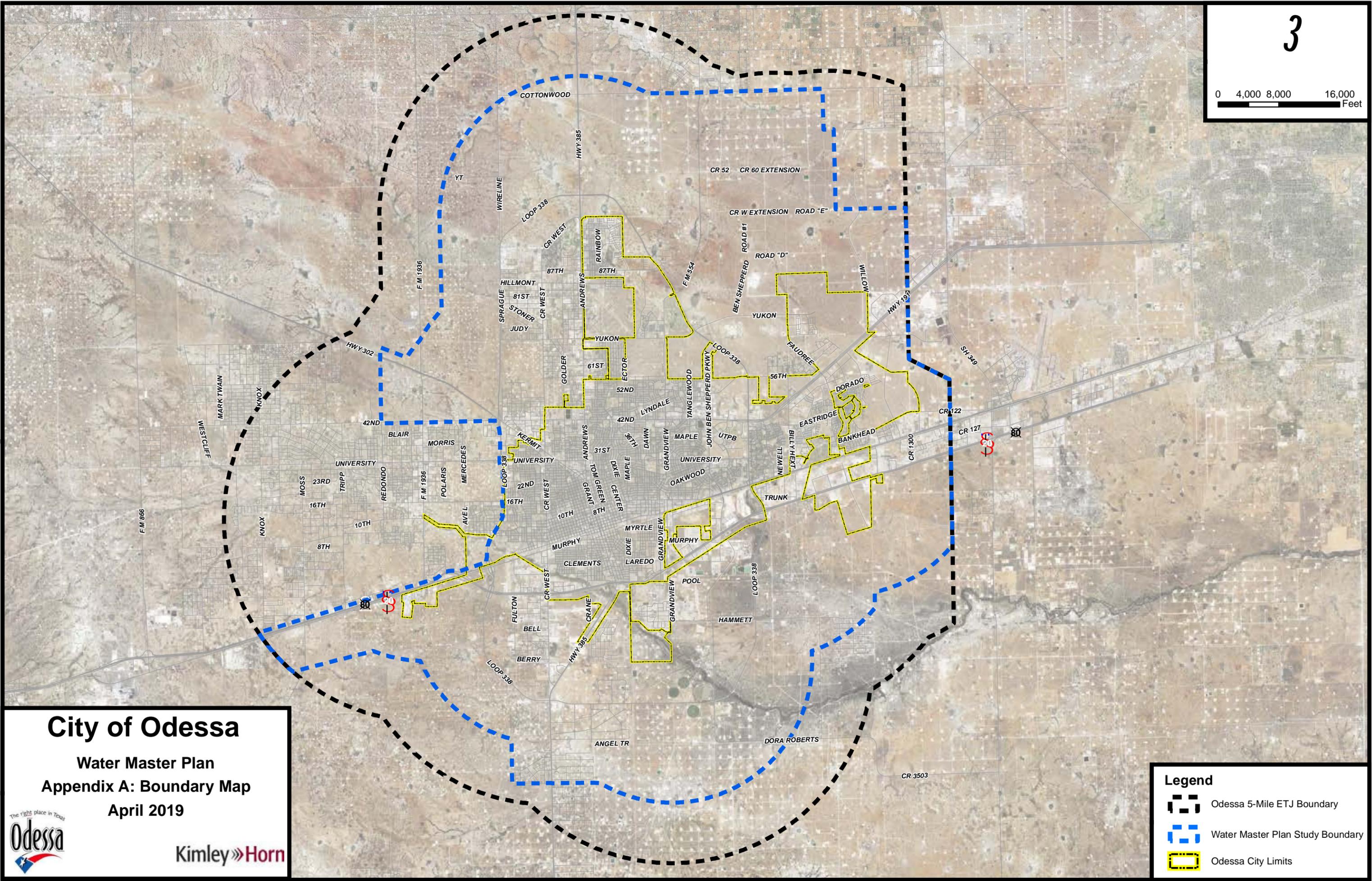
Appendix F – Water and Wastewater Pro Forma

Appendix G – Existing Infrastructure

Appendix H - Capital Improvement Plan

Appendix I - Water Rehabilitation Plan

Appendix A – Boundary Map



City of Odessa

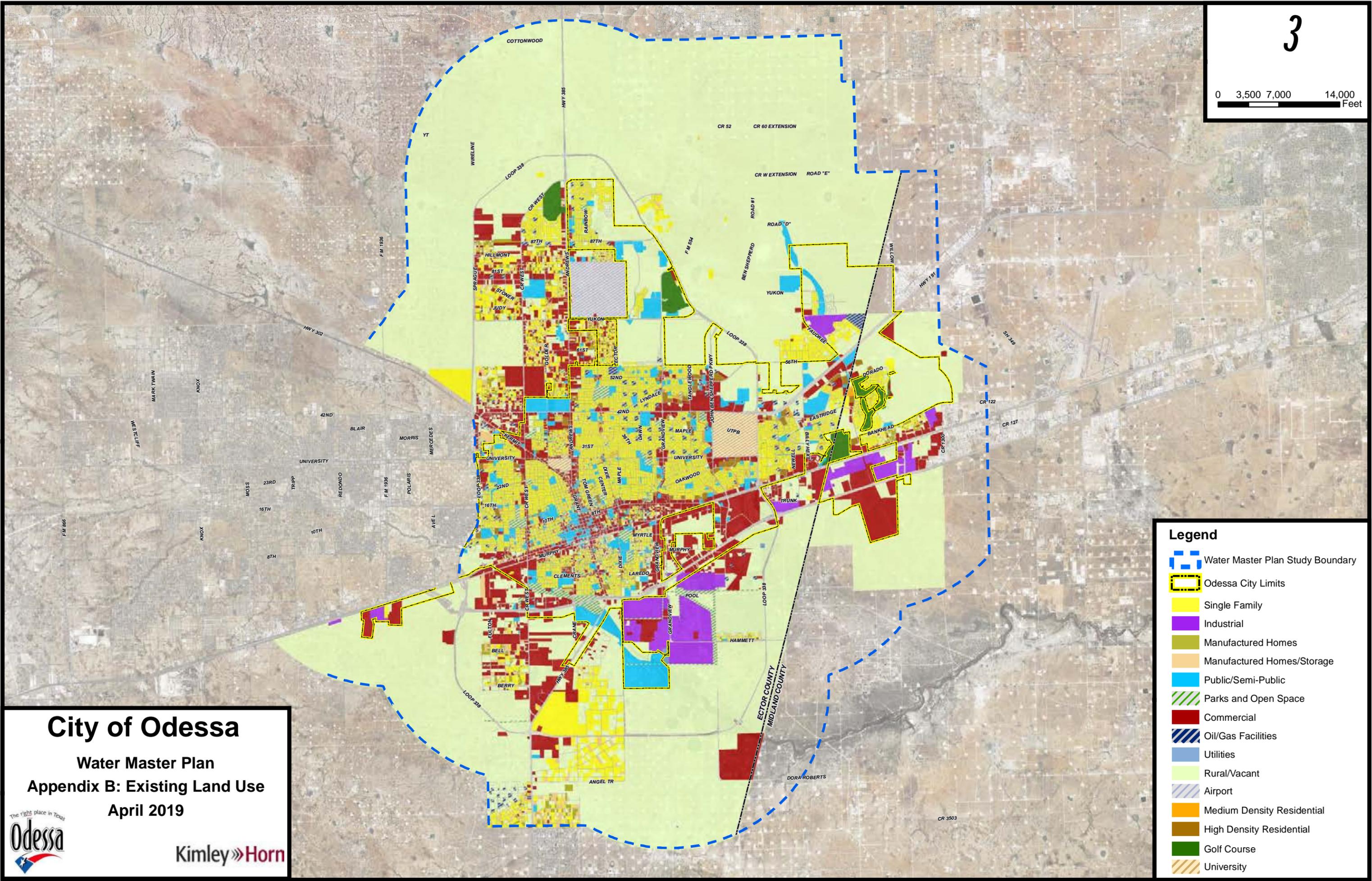
Water Master Plan
Appendix A: Boundary Map
April 2019



Legend

-  Odessa 5-Mile ETJ Boundary
-  Water Master Plan Study Boundary
-  Odessa City Limits

Appendix B – Existing Land Use Map

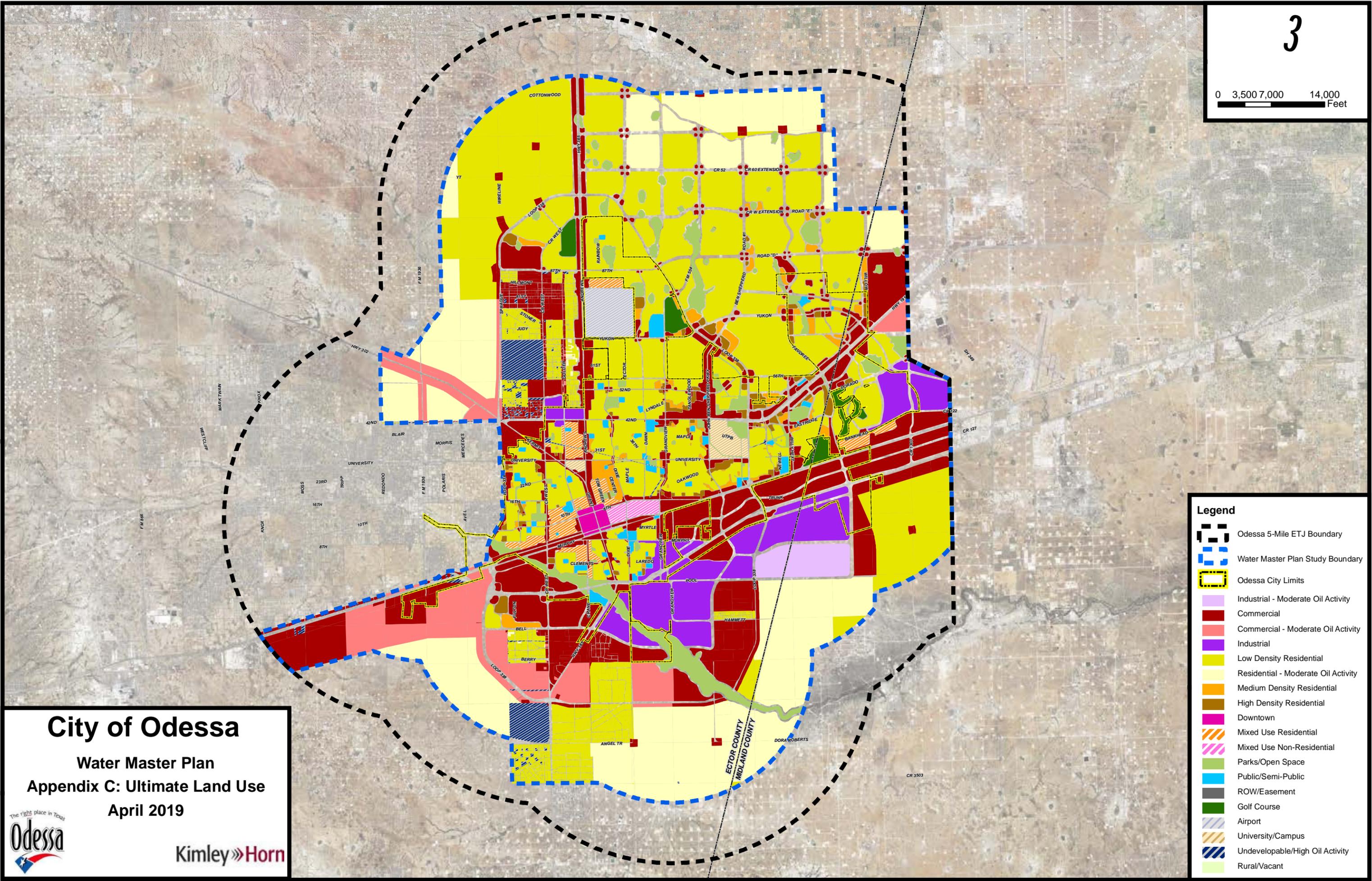


Legend

- Water Master Plan Study Boundary
- Odessa City Limits
- Single Family
- Industrial
- Manufactured Homes
- Manufactured Homes/Storage
- Public/Semi-Public
- Parks and Open Space
- Commercial
- Oil/Gas Facilities
- Utilities
- Rural/Vacant
- Airport
- Medium Density Residential
- High Density Residential
- Golf Course
- University

City of Odessa
 Water Master Plan
 Appendix B: Existing Land Use
 April 2019

Appendix C – Ultimate Land Use Map



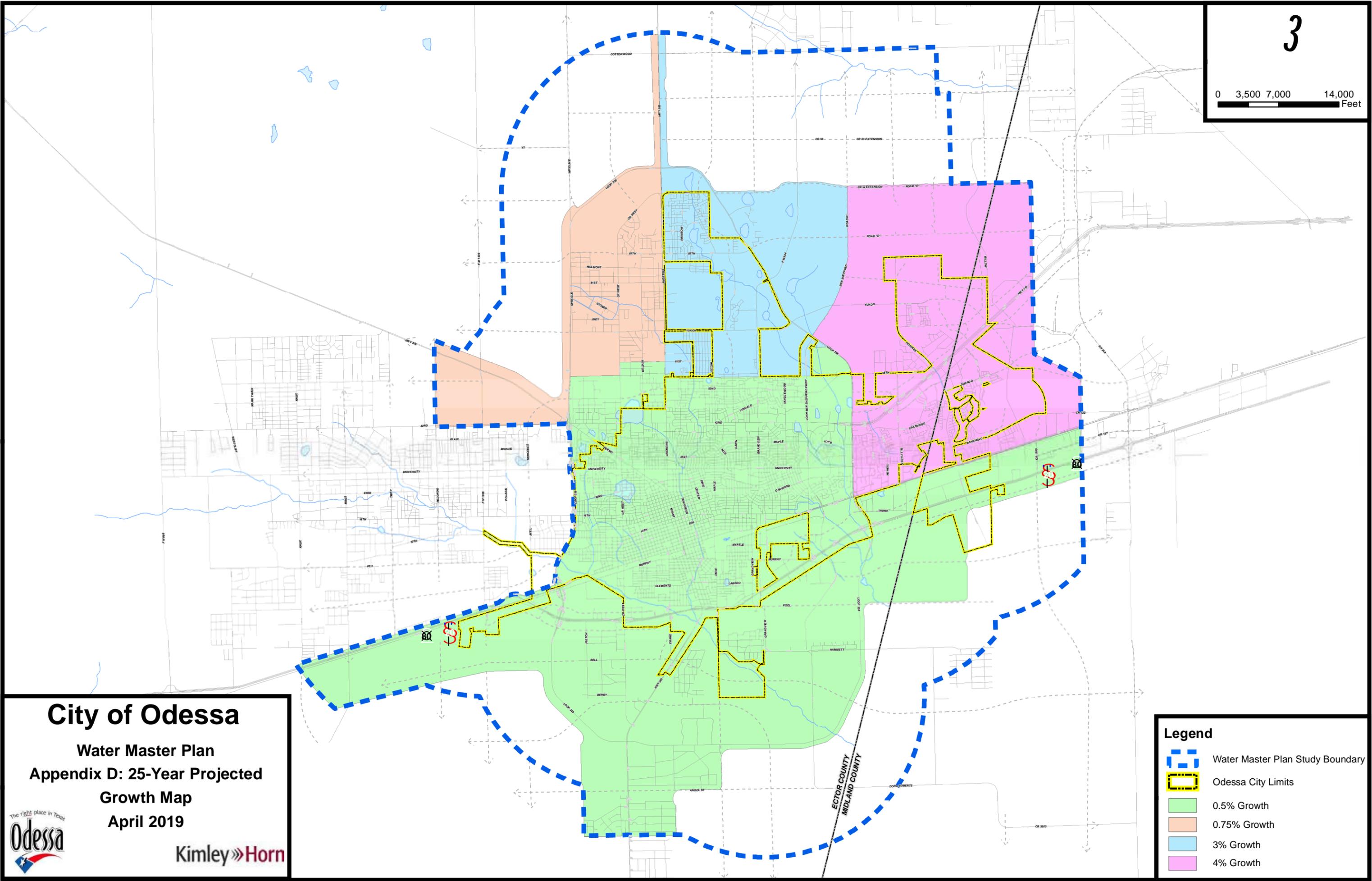
- Legend**
- Odessa 5-Mile ETJ Boundary
 - Water Master Plan Study Boundary
 - Odessa City Limits
 - Industrial - Moderate Oil Activity
 - Commercial
 - Commercial - Moderate Oil Activity
 - Industrial
 - Low Density Residential
 - Residential - Moderate Oil Activity
 - Medium Density Residential
 - High Density Residential
 - Downtown
 - Mixed Use Residential
 - Mixed Use Non-Residential
 - Parks/Open Space
 - Public/Semi-Public
 - ROW/Easement
 - Golf Course
 - Airport
 - University/Campus
 - Undevelopable/High Oil Activity
 - Rural/Vacant

City of Odessa

Water Master Plan
 Appendix C: Ultimate Land Use
 April 2019



Appendix D – 25-Year Projected Growth Map



City of Odessa

Water Master Plan
Appendix D: 25-Year Projected
Growth Map
April 2019



Legend

- Water Master Plan Study Boundary
- Odessa City Limits
- 0.5% Growth
- 0.75% Growth
- 3% Growth
- 4% Growth

**Appendix E – Project Description Sheets and Opinions of Probable
Construction Costs**

Client:	City of Odessa	Date:	4/24/2019
Project:	Water System Master Plan	Prepared By:	AWS
KHA No.:	063685005	Checked By:	JRA

Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
5-Year Projects			
1	NW Loop 338 24-Inch Water Line Phase 1	\$ 2,861,000.00	\$ 4,291,500.00
2	W 22nd Street 24-Inch Water Line	\$ 982,000.00	\$ 1,473,000.00
3	NW Loop 338 24-Inch Water Line Phase 2	\$ 2,578,000.00	\$ 3,867,000.00
4	Southwest Pump Station & 16-Inch Water Line	\$ 3,909,000.00	\$ 5,863,500.00
5	Southwest Pressure Plane 16-Inch Water Line	\$ 1,691,000.00	\$ 2,536,500.00
6	W 2nd Street 12-Inch Water Line	\$ 470,000.00	\$ 705,000.00
7	Evans Boulevard / E 87th Street 16-Inch Water Line	\$ 374,000.00	\$ 561,000.00
8	56th Street 18-Inch Water Line	\$ 2,306,000.00	\$ 3,459,000.00
9	N John Ben Shepperd 24-Inch Water Line	\$ 2,293,000.00	\$ 3,439,500.00
10	Yukon Pump Station Improvements Phase 1	\$ 473,000.00	\$ 709,500.00
5-Year Projects Sub-Total:		\$ 17,937,000.00	\$ 26,905,500.00
10-Year Projects			
11	E 100th Street 24-Inch Water Line	\$ 4,507,000.00	\$ 6,760,500.00
12	Northeast 2.0 MG Elevated Storage Tank	\$ 6,102,000.00	\$ 9,153,000.00
13	W 87th Street & Loop 338 12-Inch Water Line	\$ 3,096,000.00	\$ 4,644,000.00
14	Highway 191 12-Inch Water Line Phase 1	\$ 2,182,000.00	\$ 3,273,000.00
15	W County Road 122 12-Inch Water Line	\$ 2,611,000.00	\$ 3,916,500.00
16	Dorado Drive 12-Inch Water Line	\$ 299,000.00	\$ 448,500.00
17	W Murphy Street 12-Inch Water Line	\$ 555,000.00	\$ 832,500.00
18	Southwest Pressure Plane 12-Inch Water Line	\$ 2,592,000.00	\$ 3,888,000.00
19	SW Loop 338 16-Inch Water Line Phase 1	\$ 821,000.00	\$ 1,231,500.00
20	Interstate 20 12-Inch Water Line	\$ 970,000.00	\$ 1,455,000.00
10-Year Projects Sub-Total:		\$ 23,735,000.00	\$ 35,602,500.00
25-Year Projects			
21	E Yukon Road 24-Inch Water Line	\$ 4,103,000	\$ 6,154,500.00
22	N Faudree Road 24-Inch Water Line	\$ 1,430,000	\$ 2,145,000.00
23	E 87th 24-Inch Water Line	\$ 1,233,000	\$ 1,849,500.00
24	E 87th 16-Inch Water Line	\$ 1,485,000	\$ 2,227,500.00
25	Yukon Pump Station Improvements Phase 2	\$ 4,172,000	\$ 6,258,000.00
26	NE Loop 338 12-Inch Water Line	\$ 9,683,000	\$ 14,524,500.00
27	NW Loop 338 12-Inch Water Line	\$ 7,465,000	\$ 11,197,500.00
28	N Highway 385 12-Inch Water Line	\$ 555,000	\$ 832,500.00
29	N County Road West 12-Inch Water Line	\$ 2,354,000	\$ 3,531,000.00
30	N CR West to NW Loop 338 12-Inch Water Line	\$ 512,000	\$ 768,000.00
31	FM 554 to Willow Lane 12-Inch Water Line	\$ 2,734,000	\$ 4,101,000.00
32	E 87th 12-Inch Water Line Phase 1	\$ 1,591,000	\$ 2,386,500.00
33	W Yukon Road / NW Loop 338 12 / 16-Inch Water Line	\$ 3,978,000	\$ 5,967,000.00
34	NE Loop 338 12-Inch Water Line Phase 1	\$ 1,051,000	\$ 1,576,500.00
35	N John Ben Shepperd 12-Inch Water Line	\$ 1,639,000	\$ 2,458,500.00
36	Highway 191 12-Inch Water Line Phase 2	\$ 1,431,000	\$ 2,146,500.00
37	E Yukon Road 18-Inch Water Line	\$ 1,712,000	\$ 2,568,000.00
38	N Willow Lane 12-Inch Water Line	\$ 1,770,000	\$ 2,655,000.00
39	E 87th 12-Inch Water Line Phase 2	\$ 675,000	\$ 1,012,500.00
40	County Road West Extension 12-Inch Water Line	\$ 3,612,000	\$ 5,418,000.00
41	Project #41 12-Inch Water Line	\$ 1,352,000	\$ 2,028,000.00
42	Project #42 12-Inch Water Line	\$ 216,000	\$ 324,000.00
43	N Faudree Road Upper 12-Inch Water Line	\$ 717,000	\$ 1,075,500.00
44	S County Road 1302 12-Inch Water Line	\$ 1,371,000	\$ 2,056,500.00
45	FM 554 12-Inch Water Line	\$ 2,583,000	\$ 3,874,500.00

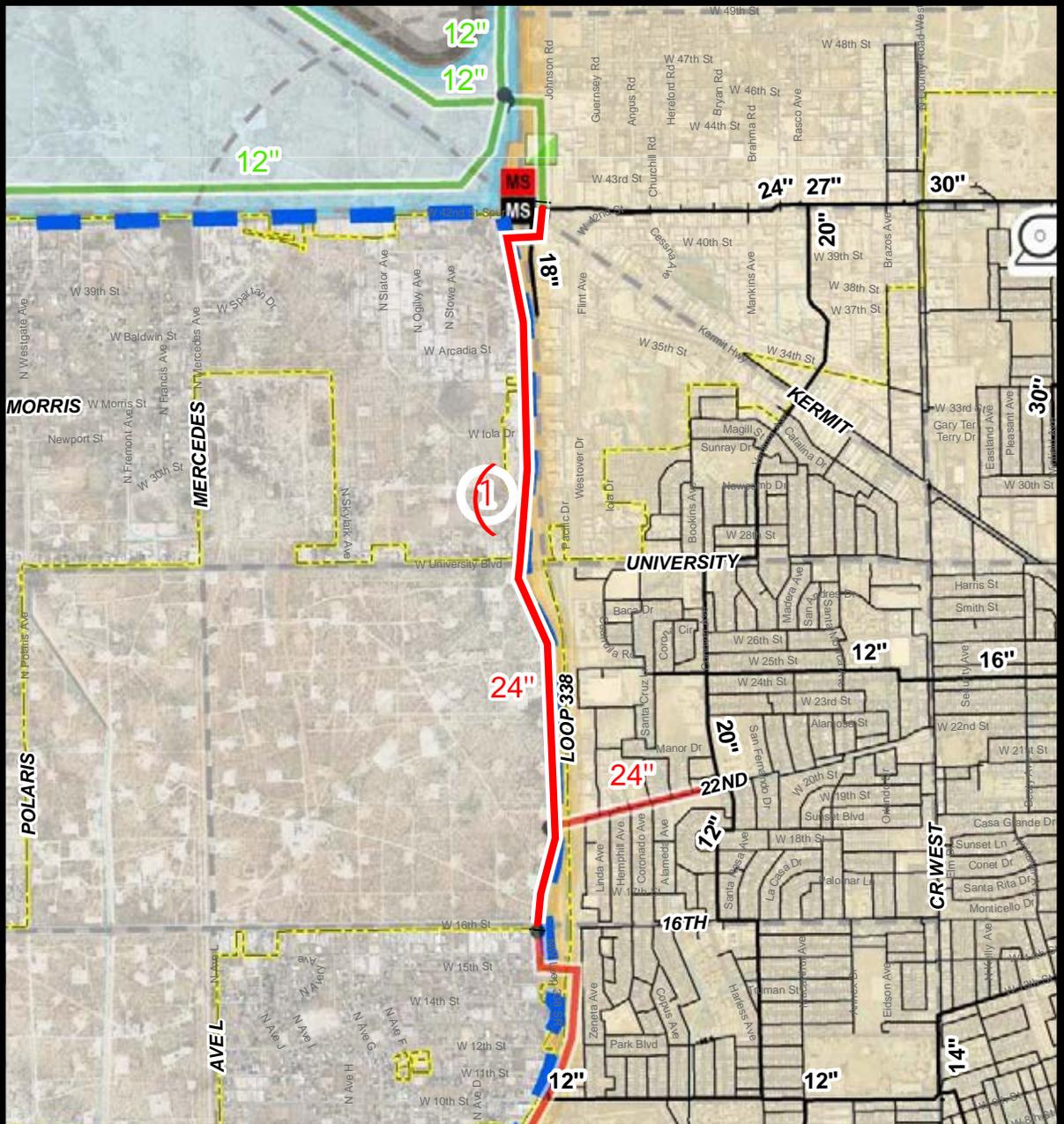
Project No.	Project Name	Project Cost	Market Scarcity Adjustment (1.5x)
46	NW Loop 338 12-Inch Water Line	\$ 2,583,000	\$ 3,874,500.00
47	W Highway 302 12-Inch Water Line	\$ 1,904,000	\$ 2,856,000.00
48	SW Loop 338 16-Inch Water Line Phase 2	\$ 3,999,000	\$ 5,998,500.00
49	SE Loop 338 16-Inch Water Line Phase 1	\$ 5,048,000	\$ 7,572,000.00
50	SE Loop 338 16-Inch Water Line Phase 2	\$ 5,361,000	\$ 8,041,500.00
51	SE Loop 338 12-Inch Water Line	\$ 1,149,000	\$ 1,723,500.00
52	S Faudree Road 12-Inch Water Line	\$ 2,019,000	\$ 3,028,500.00
53	County Road 1300 12-Inch Water Line	\$ 2,472,000	\$ 3,708,000.00
54	S County Road West 12-Inch Water Line	\$ 2,300,000	\$ 3,450,000.00
55	S John Ben Shepperd Parkway 12-Inch Water Line	\$ 951,000	\$ 1,426,500.00
56	S FM 3503 12-Inch Water Line	\$ 2,004,000	\$ 3,006,000.00
57	S Dixie Boulevard 12-Inch Water Line	\$ 723,000	\$ 1,084,500.00
58	S Highway 385 to S Dixie Boulevard 12-Inch Water Line	\$ 1,533,000	\$ 2,299,500.00
59	S Dixie Boulevard to S FM 3503 12-Inch Water Line	\$ 1,004,000	\$ 1,506,000.00
60	W Bell Street 12-Inch Water Line	\$ 2,132,000	\$ 3,198,000.00
61	S Holloman Avenue/ Angel TR 12-Inch Water Line	\$ 2,807,000	\$ 4,210,500.00
62	N Highway 385 24-Inch Water Line	\$ 4,469,000	\$ 6,703,500.00
63	NE Loop 338 12-Inch Water Line Phase 2	\$ 933,000	\$ 1,399,500.00
64	W Murphy Street 16-Inch Water Line	\$ 7,366,000	\$ 11,049,000.00
65	N Faudree Road Lower 12-Inch Water Line	\$ 437,000	\$ 655,500.00
66	Redondo 12-Inch Water Line	\$ 1,692,000	\$ 2,538,000.00
67	42nd Street 12-Inch Water Line	\$ 3,022,000	\$ 4,533,000.00
68	Southwest Pump Station Phase 2	\$ 1,732,000	\$ 2,598,000.00
25-Year Projects Sub-Total:		\$ 117,064,000.00	\$ 175,596,000.00
Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed		
<input type="checkbox"/>	Preliminary Design		
<input type="checkbox"/>	Final Design		
<p>The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.</p>			



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 5-Year

Project Description: This project consists of approximately 11,220 LF of 24-inch water transmission line along NW Loop 338 from W 42nd Street to the proposed ECUD Wholesale Meter at W 16th Street. The project includes a bore under NW Loop 338.

Recommendation Comments: Provides a redundant feed to the future ECUD Wholesale Meter and will provide water to the future Southwest Pressure Plane and the south side of the Lower Pressure Plane. No distribution lines or service connections should connect to this main.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,861,000

Project Name: NW Loop 338 24-Inch Water Line Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 1. NW Loop 338 24-Inch Water Line Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$59,000.00	\$59,000
2	Traffic Control	1	LS	\$40,000.00	\$40,000
3	Erosion Control	1	LS	\$20,000.00	\$20,000
4	24" Water Pipe	11,220	LF	\$120.00	\$1,347,000
5	42" Bore with Steel Casing	400	LF	\$700.00	\$280,000
6	Water Line Trench Safety	11,220	LF	\$1.50	\$17,000
7	24" AWWA Gate Valve	8	EA	\$20,000.00	\$170,000
8	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	11	TON	\$5,000.00	\$57,000
11	Asphalt Pavement Repair	1,000	SY	\$60.00	\$60,000
12	Allowance	1	LS	\$42,000.00	\$42,000

Basis for Cost Projection:			
		Subtotal:	\$2,119,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$423,975
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$318,025
<input type="checkbox"/>	Final Design	Total:	\$2,861,000

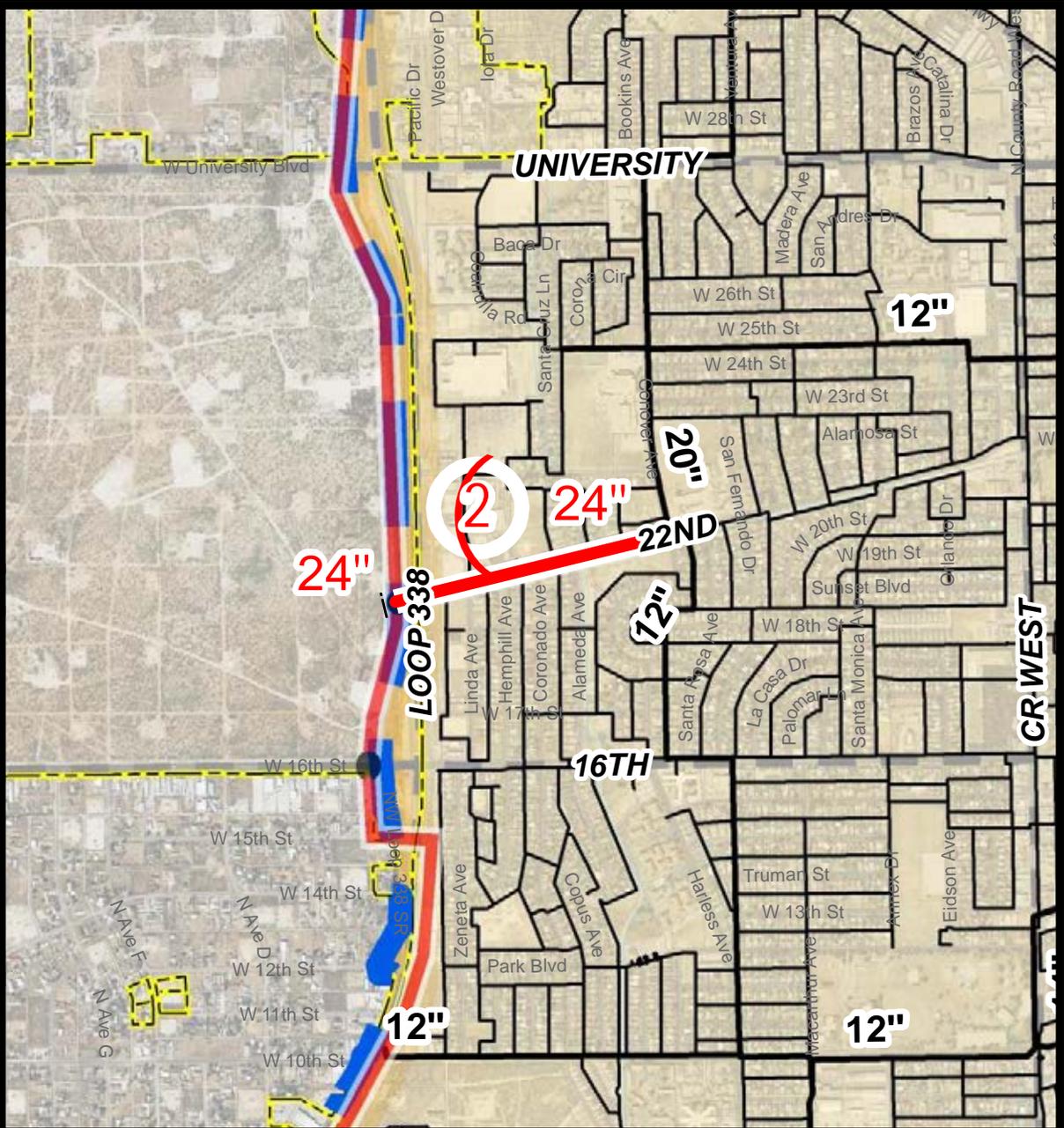
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 5-Year

Project Description: This project consists of approximately 2,480 LF of 24-inch water line along W 22nd Street from Conover Avenue to a connection to the proposed 30-inch water line along NW Loop 338. The project includes a bore under NW Loop 338.

Recommendation Comments: Provides an interconnection between transmission lines in the core of the City to Project #1. No distribution lines or service connections should connect to this main.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$982,000

Project Name: W 22nd Street 24-Inch Water Line

Client:	City of Odessa	Date:	4/24/2019
Project:	Water System Master Plan	Prepared By:	AWS
KHA No.:	063685005	Checked By:	JRA

Title: 2. W 22nd Street 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$21,000.00	\$21,000
2	Traffic Control	1	LS	\$14,000.00	\$14,000
3	Erosion Control	1	LS	\$7,000.00	\$7,000
4	24" Water Pipe	2,480	LF	\$120.00	\$298,000
5	42" Bore with Steel Casing	200	LF	\$700.00	\$140,000
6	Water Line Trench Safety	2,480	LF	\$1.50	\$4,000
7	24" AWWA Gate Valve	3	EA	\$20,000.00	\$60,000
8	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	2	TON	\$5,000.00	\$13,000
11	Asphalt Pavement Repair	2,300	SY	\$60.00	\$138,000
12	Allowance	1	LS	\$15,000.00	\$15,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$727,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$145,675
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$109,325
		Total:	\$982,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 3. NW Loop 338 24-Inch Water Line Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$53,000.00	\$53,000
2	Traffic Control	1	LS	\$36,000.00	\$36,000
3	Erosion Control	1	LS	\$18,000.00	\$18,000
4	24" Water Pipe	9,820	LF	\$120.00	\$1,179,000
5	42" Bore with Steel Casing	400	LF	\$700.00	\$280,000
6	Water Line Trench Safety	9,820	LF	\$1.50	\$15,000
7	24" AWWA Gate Valve	8	EA	\$20,000.00	\$159,000
8	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	10	TON	\$5,000.00	\$50,000
11	Asphalt Pavement Repair	900	SY	\$60.00	\$54,000
12	Allowance	1	LS	\$38,000.00	\$38,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$1,909,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$382,225
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$286,775
		Total:	\$2,578,000

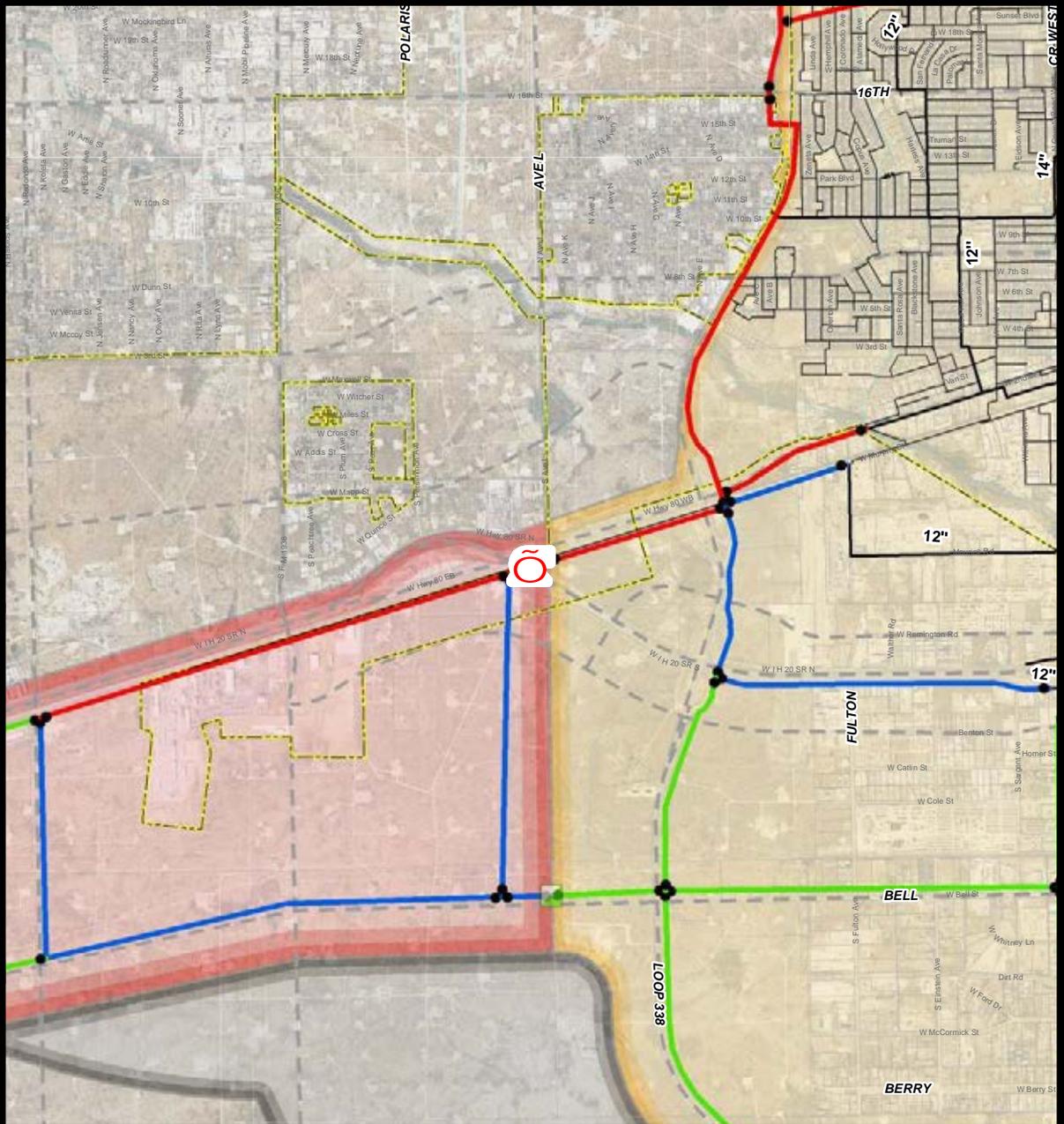
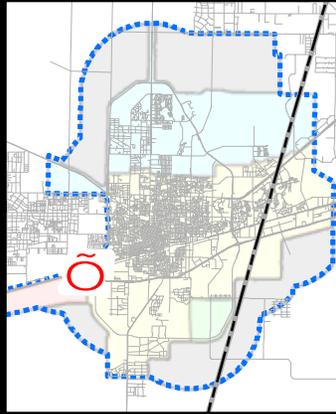
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 5-Year

Project Description: This project consists of approximately 3,830 LF of 16-inch water line along W Highway 80 from SW Loop 338, a 50,000 gallon ground storage tank, a 5,000 gallon hydropneumatic tank, and pump station. The project includes a bore under SW Loop 338.

Recommendation Comments: Provides water to the future Southwest Pressure Plane Pump Station.

Pressure Plane: South West Pressure Plane

Capital Cost: \$3,909,000

Project Name: Southwest Pump Station & 16-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 4. Southwest Pump Station & 16-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$100,000.00	\$100,000
2	Traffic Control	1	LS	\$52,000.00	\$52,000
3	Erosion Control	1	LS	\$30,000.00	\$30,000
<i>Waterline</i>					
4	16" Water Pipe	3,830	LF	\$85.00	\$326,000
5	36" Bore with Steel Casing	300	LF	\$600.00	\$180,000
6	Water Line Trench Safety	3,830	LF	\$1.50	\$6,000
7	16" AWWA Gate Valve	6	EA	\$10,000.00	\$56,000
8	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	4	TON	\$5,000.00	\$20,000
11	Asphalt Pavement Repair	3,500	SY	\$60.00	\$210,000
<i>Pump Station</i>					
12	Site Grading	1	LS	\$15,000.00	\$15,000
13	8' Security Fence	1,000	LF	\$50.00	\$50,000
14	Landscaping	1	LS	\$500.00	\$500
15	Concrete Drive	25	CY	\$650.00	\$16,250
16	16" Tank Supply Line	50	LF	\$150.00	\$7,500
17	16" Outlet Piping to Suction Line	150	LF	\$150.00	\$22,500
18	16" Discharge Piping	150	LF	\$150.00	\$22,500
19	8" Tank Drain Line	100	LF	\$80.00	\$8,000
20	Trench Safety for all Yard Piping	450	LF	\$1.50	\$675
21	Discharge Meter Vault	1	EA	\$45,000.00	\$45,000
22	8" Gate Valve	1	EA	\$3,500.00	\$3,500
23	16" Gate Valve and Vault	6	EA	\$15,000.00	\$90,000
24	1,000 gpm Pump and 150 HP Motor	2	EA	\$100,000.00	\$200,000
25	500 gpm Pump and 50 HP Motor	1	EA	\$75,000.00	\$75,000
26	Air Release Valve	6	EA	\$10,000.00	\$60,000
27	16" Flow Control Valve	3	EA	\$50,000.00	\$150,000
28	Electrical/SCADA/Power	1	LS	\$250,000.00	\$250,000
29	Building	2,000	SF	\$150.00	\$300,000
30	Property (1 acre)	1	LS	\$50,000.00	\$50,000
31	150,000 gal Ground Storage Tank	1	EA	\$400,000.00	\$400,000
32	10,000 gal Hydropneumatic Tank	1	EA	\$75,000.00	\$75,000
33	Allowance	1	LS	\$57,000.00	\$57,000

Basis for Cost Projection:		Subtotal:	\$2,895,425
<input checked="" type="checkbox"/> No Design Completed		Conting. (%,+/-) 20	\$579,173
<input type="checkbox"/> Preliminary Design		Professional Services (%,+/-) 15	\$434,402
<input type="checkbox"/> Final Design		Total:	\$3,909,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 5. Southwest Pressure Plane 16-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$35,000.00	\$35,000
2	Traffic Control	1	LS	\$24,000.00	\$24,000
3	Erosion Control	1	LS	\$12,000.00	\$12,000
4	16" Water Pipe	10,190	LF	\$85.00	\$867,000
5	Water Line Trench Safety	10,190	LF	\$1.50	\$16,000
6	16" AWWA Gate Valve	8	EA	\$10,000.00	\$81,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	10	TON	\$5,000.00	\$51,000
10	Asphalt Pavement Repair	1,900	SY	\$60.00	\$114,000
11	Allowance	1	LS	\$25,000.00	\$25,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,252,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$250,800
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$188,200
		Total:	\$1,691,000

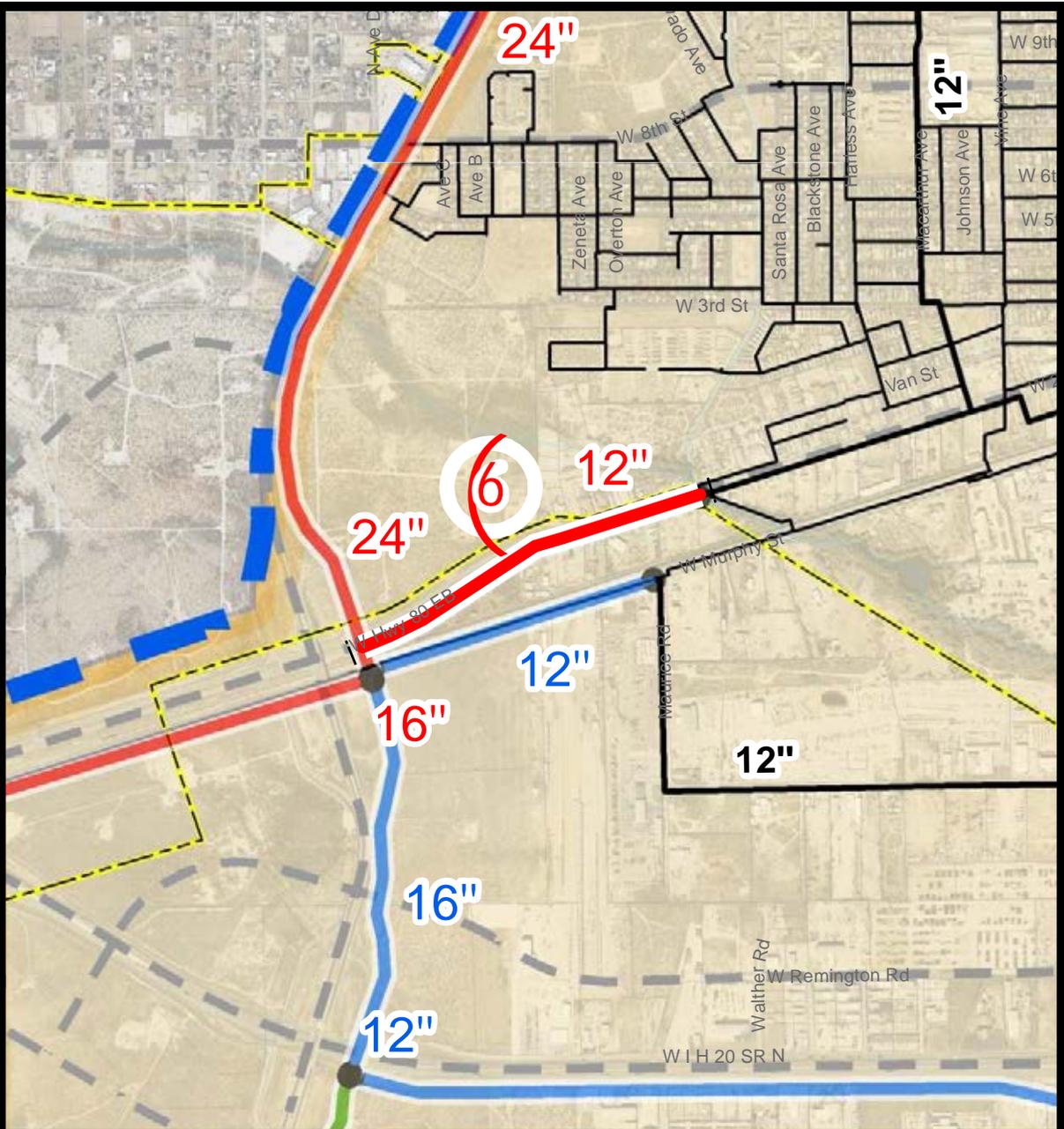
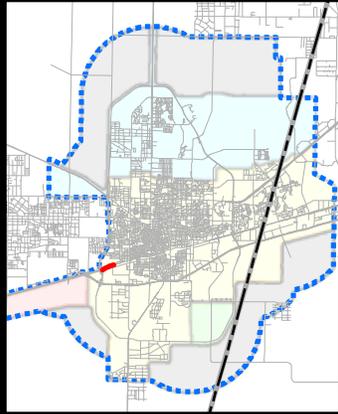
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

- 5-Year Water Line
- 10-Year Water Line
- 25-Year Water Line
- Beyond 25-Year Planning Period Water Line
- Existing Water Line
- Upper Pressure Plane
- South East Pressure Plane
- Lower Pressure Plane
- South West Pressure Plane
- Beyond 25-Year Planning Period
- Water Master Plan Study Boundary



Kimley»Horn
 April 2019

Phase: 5-Year

Project Description: This project consists of approximately 3,330 LF of 12-inch water line along W 2nd Street from Monahans Draw to NW Loop 338.

Recommendation Comments: Provides an connection between transmission lines in the core of the City to Project #3 and Project #4.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$470,000

Project Name: W 2nd Street 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 6. W 2nd Street 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$10,000.00	\$10,000
2	Traffic Control	1	LS	\$7,000.00	\$7,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	12" Water Pipe	3,330	LF	\$70.00	\$234,000
5	Water Line Trench Safety	3,330	LF	\$1.50	\$5,000
6	12" AWWA Gate Valve	3	EA	\$3,000.00	\$11,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$17,000
10	Asphalt Pavement Repair	600	SY	\$60.00	\$36,000
11	Allowance	1	LS	\$7,000.00	\$7,000

Basis for Cost Projection:			
		Subtotal:	\$348,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$69,700
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$52,300
<input type="checkbox"/>	Final Design	Total:	\$470,000

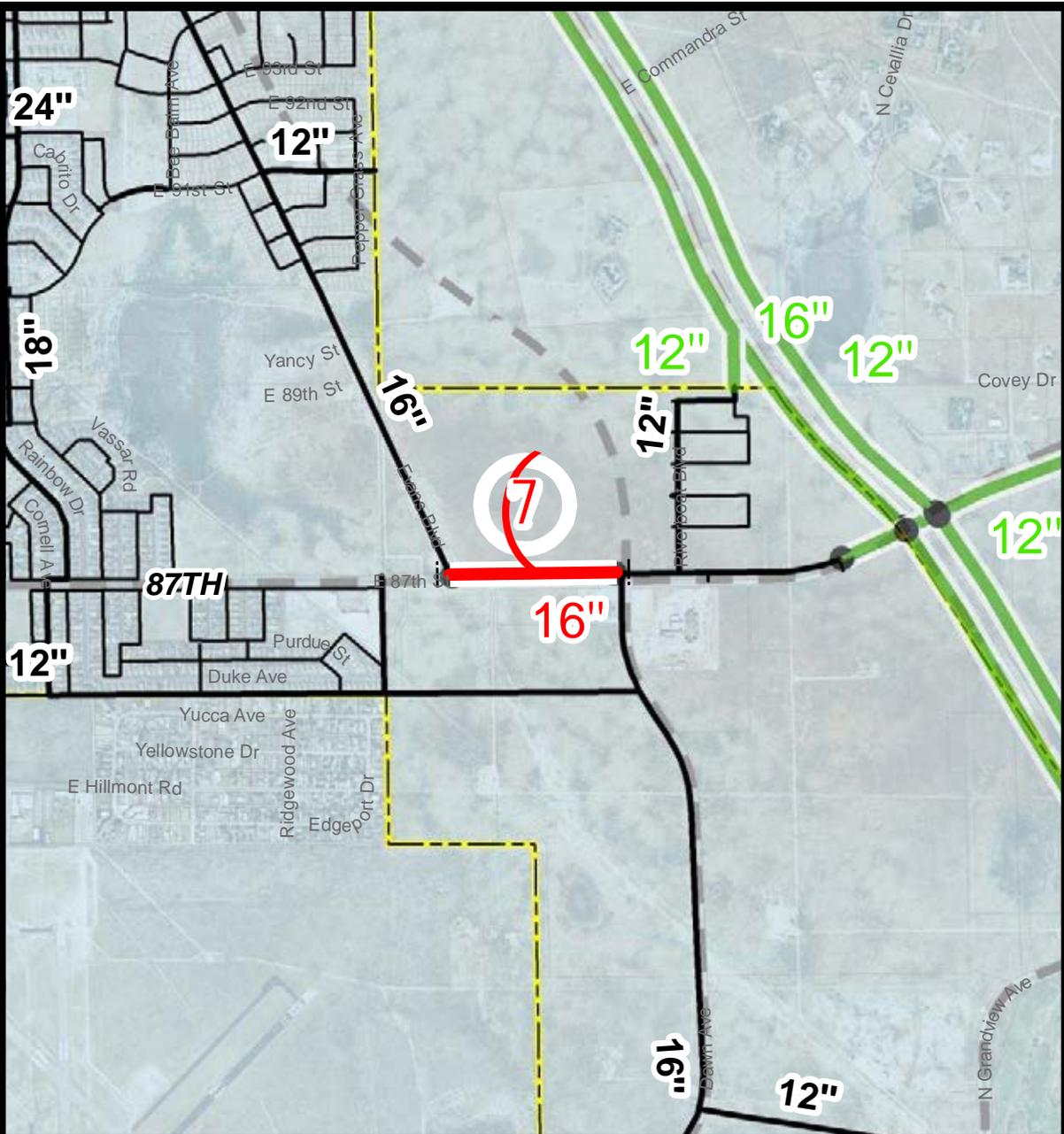
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

- 5-Year Water Line
- 10-Year Water Line
- 25-Year Water Line
- Beyond 25-Year Planning Period Water Line
- Existing Water Line
- Upper Pressure Plane
- South East Pressure Plane
- Lower Pressure Plane
- South West Pressure Plane
- Beyond 25-Year Planning Period
- Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 5-Year

Project Description: This project consists of approximately 1,500 LF of 16-inch water line along Evans Boulevard from Pine Leaf Place to E 87th Street and then along E 87th Street from Hunter Miller Way to Dawn Avenue.

Recommendation Comments: Provides additional transmission between the Rainbow elevated storage tank and the future Northeast elevated storage tank. This project will help to keep the elevated storage tanks hydraulically balanced.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$374,000

Project Name: Evans Boulevard / E 87th Street 16-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 7. Evans Boulevard / E 87th Street 16-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$8,000.00	\$8,000
2	Traffic Control	1	LS	\$6,000.00	\$6,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	16" Water Pipe	1,500	LF	\$85.00	\$128,000
5	Water Line Trench Safety	1,500	LF	\$1.50	\$3,000
6	16" AWWA Gate Valve	5	EA	\$10,000.00	\$46,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$8,000
10	Asphalt Pavement Repair	700	SY	\$60.00	\$42,000
11	Allowance	1	LS	\$6,000.00	\$6,000

Basis for Cost Projection:			
		Subtotal:	\$277,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$55,425
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$41,575
<input type="checkbox"/>	Final Design	Total:	\$374,000

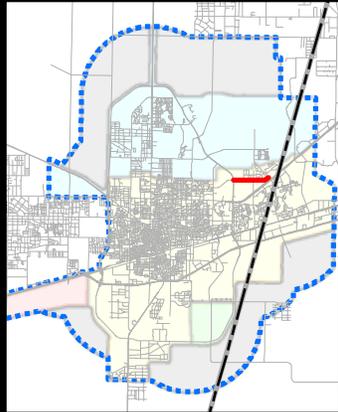
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 5-Year

Project Description: This project consists of approximately 9,300 LF of 18-inch water line along E 56th Street from NE Loop 338 to N Faudree Road.

Recommendation Comments: Provides additional transmission from the core of the City to the eastern portion of the Lower Pressure Plane.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,306,000

Project Name: 56th Street 18-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 8. 56th Street 18-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$48,000.00	\$48,000
2	Traffic Control	1	LS	\$32,000.00	\$32,000
3	Erosion Control	1	LS	\$16,000.00	\$16,000
4	18" Water Pipe	9,300	LF	\$100.00	\$930,000
5	Water Line Trench Safety	9,300	LF	\$1.50	\$14,000
6	18" AWWA Gate Valve	6	EA	\$12,500.00	\$72,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	9	TON	\$5,000.00	\$47,000
10	Asphalt Pavement Repair	8,300	SY	\$60.00	\$498,000
11	Allowance	1	LS	\$34,000.00	\$34,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,708,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$341,700
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$256,300
		Total:	\$2,306,000

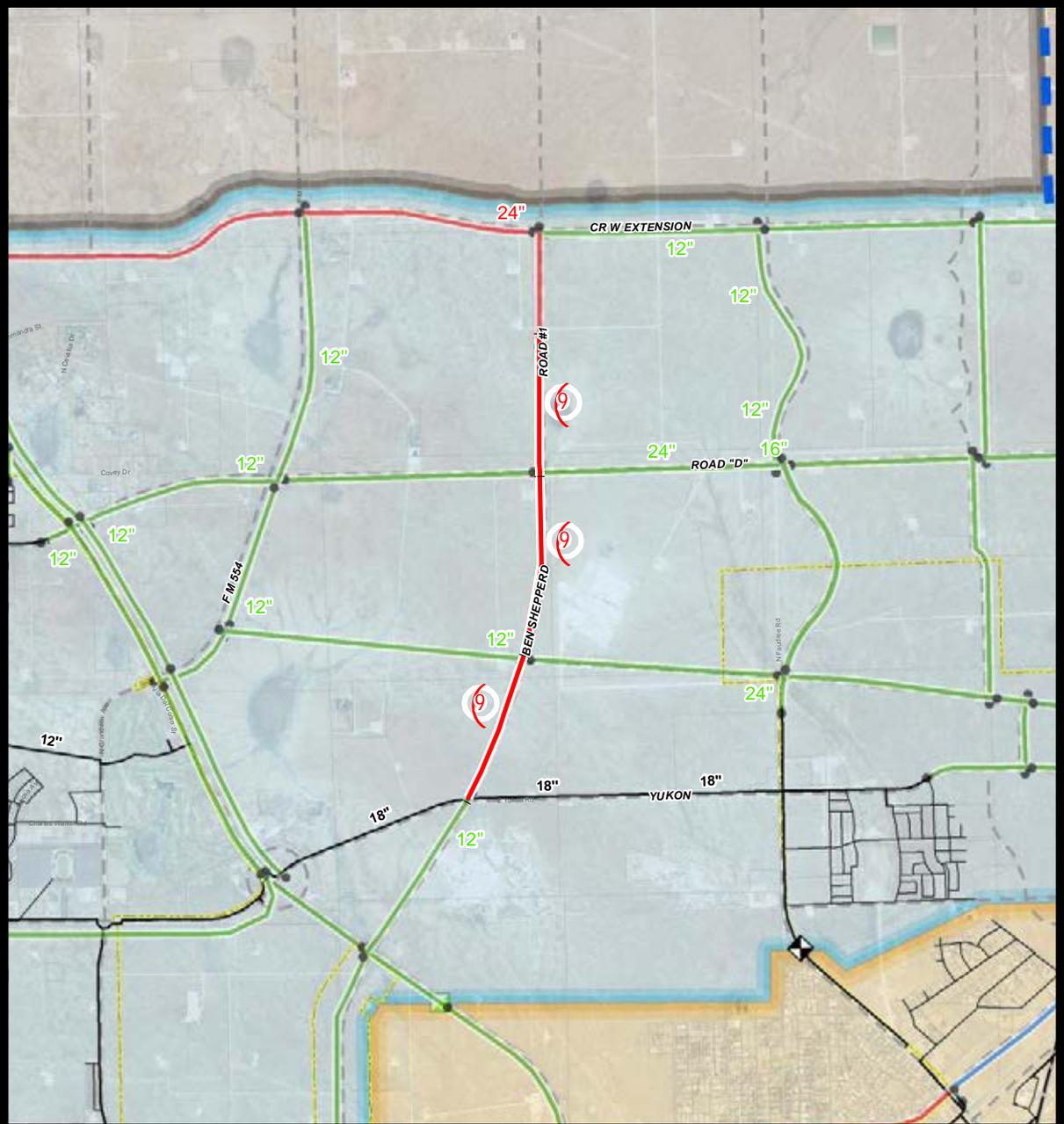
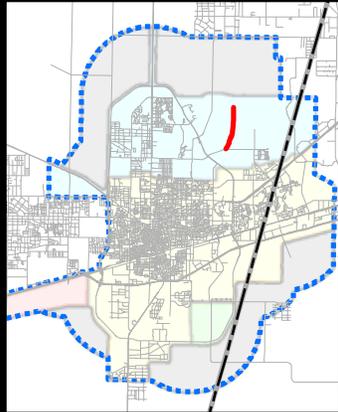
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 5-Year

Project Description: This project consists of approximately 11,220 LF of 24-inch water line along future N John Ben Shepperd from Yukon Road to the proposed North East Elevated Storage Tank.

Recommendation Comments: Provides transmission from the Yukon Pump Station to the Northeast elevated storage tank.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$2,293,000

Project Name: N John Ben Shepperd 24-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 9. N John Ben Shepperd 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$48,000.00	\$48,000
2	Traffic Control	1	LS	\$32,000.00	\$32,000
3	Erosion Control	1	LS	\$16,000.00	\$16,000
4	24" Water Pipe	11,220	LF	\$120.00	\$1,347,000
5	Water Line Trench Safety	11,220	LF	\$1.50	\$17,000
6	24" AWWA Gate Valve	6	EA	\$20,000.00	\$130,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	11	TON	\$5,000.00	\$57,000
10	Allowance	1	LS	\$34,000.00	\$34,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,698,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$339,950
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$255,050
		Total:	\$2,293,000

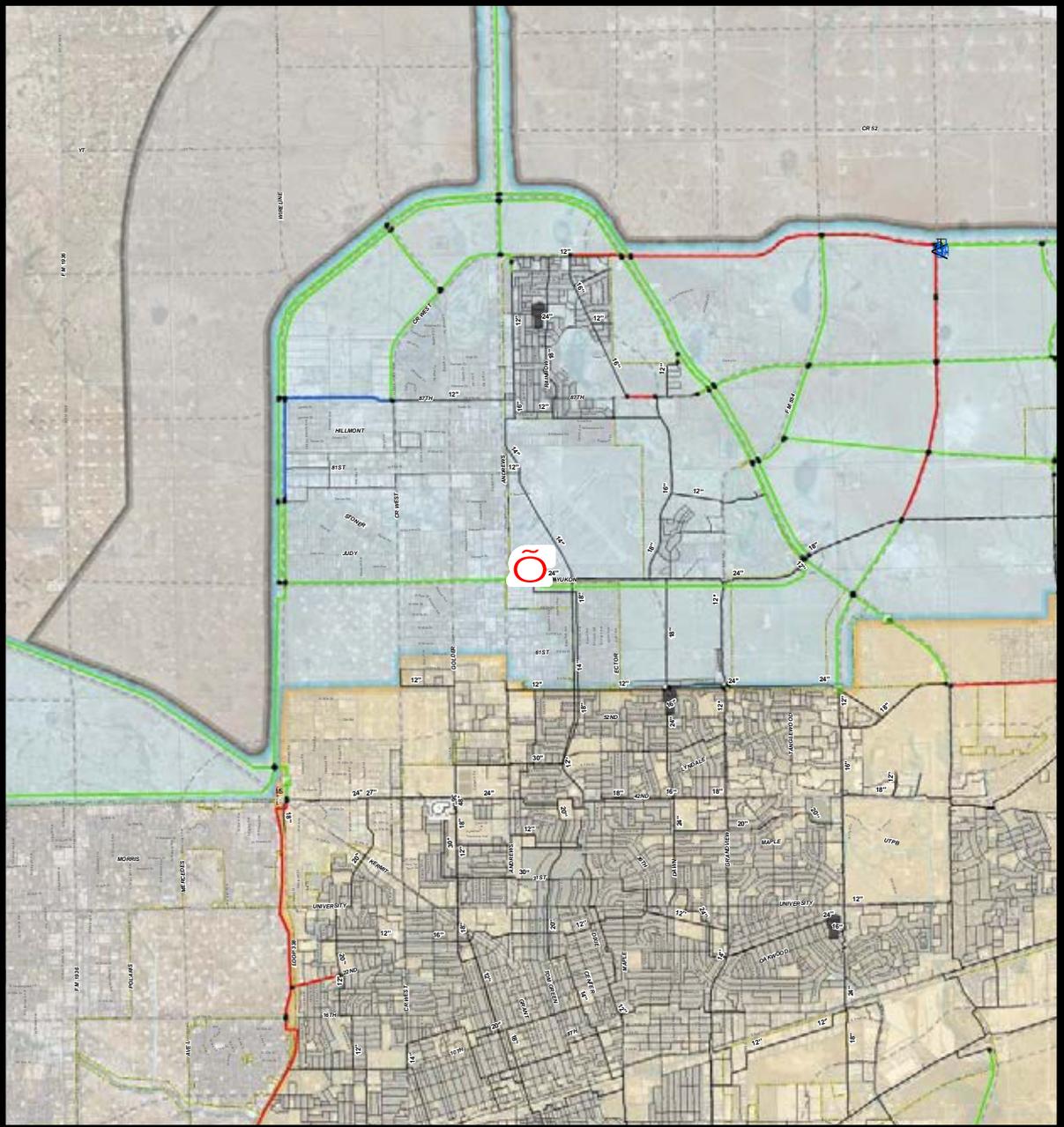
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 8,250 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 5-Year

Project Description: This project consists of the addition of one 3,800 GPM pump and electrical improvements to the existing Yukon Pump Station.

Recommendation Comments: Provides additional pumping capacity to the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$473,000

Project Name: Yukon Pump Station Improvements Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 10. Yukon Pump Station Improvements Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$25,000.00	\$25,000
2	3,800 gpm Pump and 250 HP Motor	1	EA	\$250,000.00	\$250,000
3	Electrical Upgrades	1	EA	\$75,000.00	\$75,000
Basis for Cost Projection:		Subtotal:			\$350,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-) 20			\$70,250
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-) 15			\$52,750
<input type="checkbox"/>	Final Design	Total:			\$473,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client:	City of Odessa	Date:	4/24/2019
Project:	Water System Master Plan	Prepared By:	AWS
KHA No.:	063685005	Checked By:	JRA

Title: 11. E 100th Street 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$93,000.00	\$93,000
2	Traffic Control	1	LS	\$62,000.00	\$62,000
3	Erosion Control	1	LS	\$31,000.00	\$31,000
4	24" Water Pipe	20,860	LF	\$120.00	\$2,504,000
5	42" Bore with Steel Casing	200	LF	\$700.00	\$140,000
6	Water Line Trench Safety	20,860	LF	\$1.50	\$32,000
7	24" AWWA Gate Valve	13	EA	\$20,000.00	\$267,000
8	Connect to Existing Water Line	5	EA	\$5,000.00	\$25,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	21	TON	\$5,000.00	\$105,000
11	Asphalt Pavement Repair	100	SY	\$60.00	\$6,000
12	Allowance	1	LS	\$66,000.00	\$66,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$3,338,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$667,950
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$501,050
		Total:	\$4,507,000

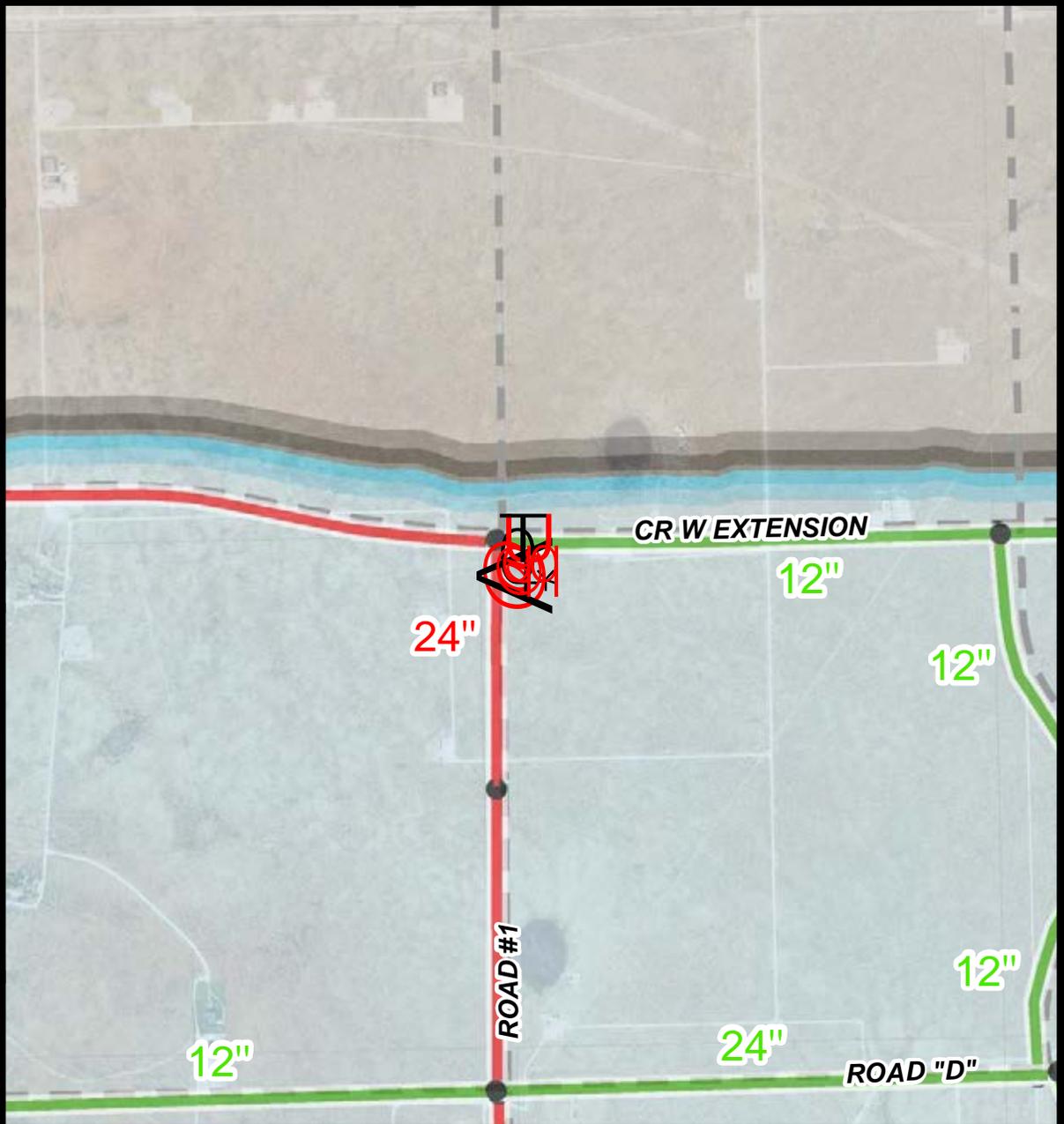
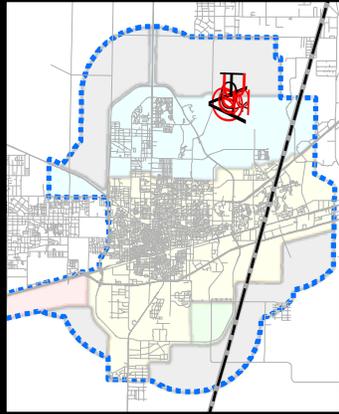
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,750 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 5-Year

Project Description: This project consists of a new 2 MG elevated storage tank at a site located just north of the intersection of Road #1 and Road "D".

Recommendation Comments: Provides additional elevated storage to the Upper Pressure Plane. Additional elevated storage will allow the Upper Pressure Plane to continue to qualify for the 0.6 gpm per connection pumping requirement. Additionally, the Northeast elevated storage tank will provided elevated storage in the eastern portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$6,102,000

Project Name: Northeast 2.0 MG Elevated Storage Tank

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 12. Northeast 2.0 MG Elevated Storage Tank

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$126,000.00	\$126,000
2	Traffic Control	1	LS	\$84,000.00	\$84,000
3	Erosion Control	1	LS	\$42,000.00	\$42,000
4	2.0 MG Composite Elevated Storage Tank	1	LS	\$4,000,000.00	\$4,000,000
5	24" On Site Piping	300	LF	\$120.00	\$36,000
6	Concrete Sidewalk	150	SY	\$30.00	\$5,000
7	Driveway	150	SY	\$50.00	\$8,000
8	Site Grading	1	LS	\$20,000.00	\$20,000
9	8' Security Fence	600	LF	\$50.00	\$30,000
10	Landscaping	1	LS	\$10,000.00	\$10,000
11	Recirculation System	1	LS	\$20,000.00	\$20,000
12	Site Acquisition (2 acres)	1	LS	\$50,000.00	\$50,000
13	Allowance	1	LS	\$89,000.00	\$89,000

Basis for Cost Projection:				
		Subtotal:		\$4,520,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20	\$904,000
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15	\$678,000
<input type="checkbox"/>	Final Design	Total:		\$6,102,000

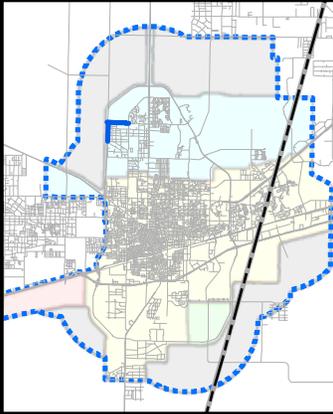
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



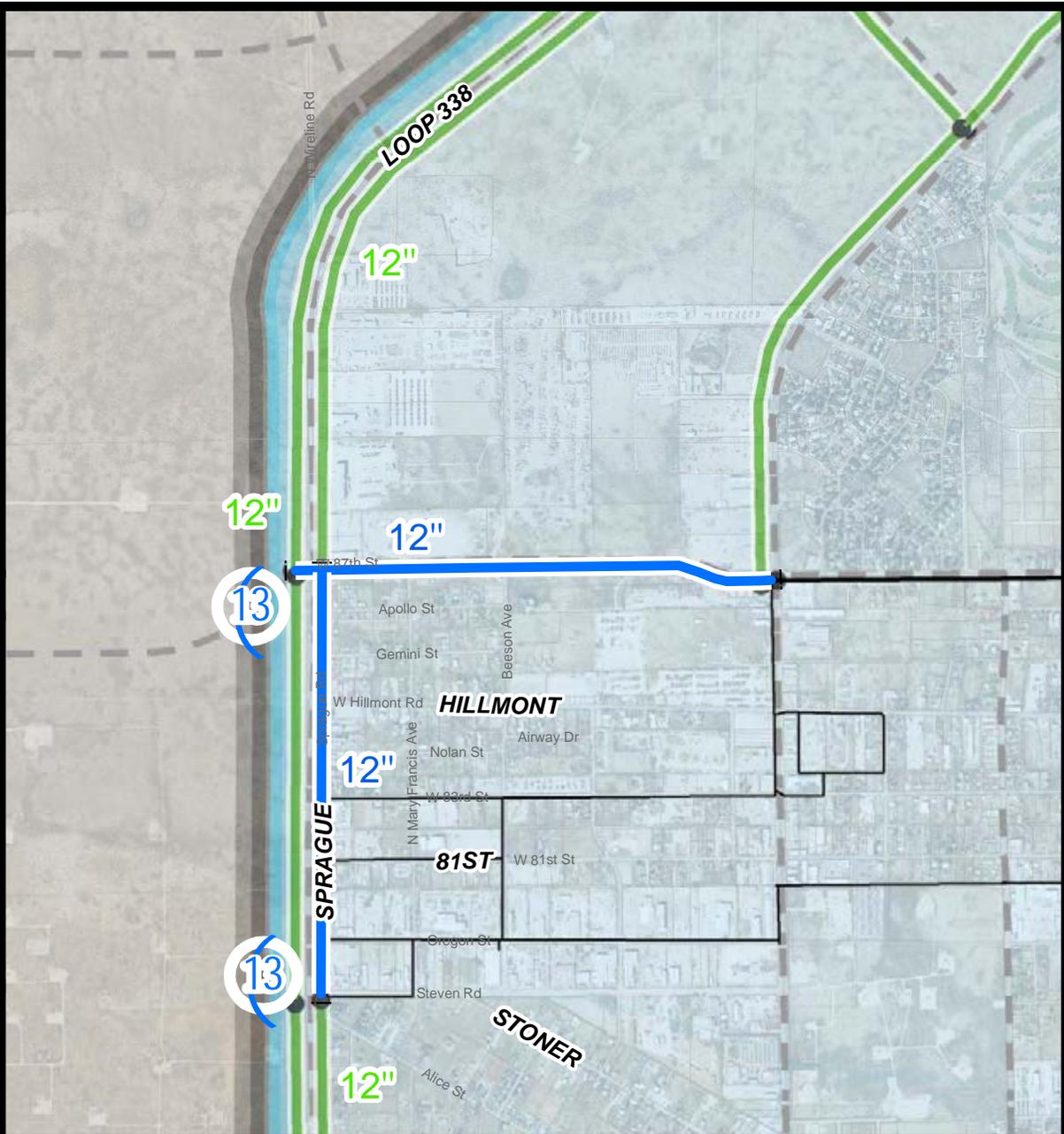
1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 10-Year

Project Description: This project consists of approximately 5,670 LF of 12-inch water line along W 87th Street from N County Road West to NW Loop 338 and approximately 10,020 LF of 12-inch water line along NW Loop 338 from E 87th Street to Steven Road.

Recommendation Comments: Provides additional transmission to alleviate fire flow deficiencies in the neighborhood located east of 81st and Loop 338.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$3,096,000

Project Name: W 87th Street & Loop 338 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 13. W 87th Street & Loop 338 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$64,000.00	\$64,000
2	Traffic Control	1	LS	\$43,000.00	\$43,000
3	Erosion Control	1	LS	\$22,000.00	\$22,000
4	12" Water Pipe	15,680	LF	\$70.00	\$1,098,000
5	Water Line Trench Safety	15,680	LF	\$1.50	\$24,000
6	12" AWWA Gate Valve	10	EA	\$3,000.00	\$31,000
7	Connect to Existing Water Line	8	EA	\$5,000.00	\$40,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	16	TON	\$5,000.00	\$79,000
10	Asphalt Pavement Repair	14,000	SY	\$60.00	\$840,000
11	Allowance	1	LS	\$45,000.00	\$45,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$2,293,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$458,825
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$344,175
		Total:	\$3,096,000

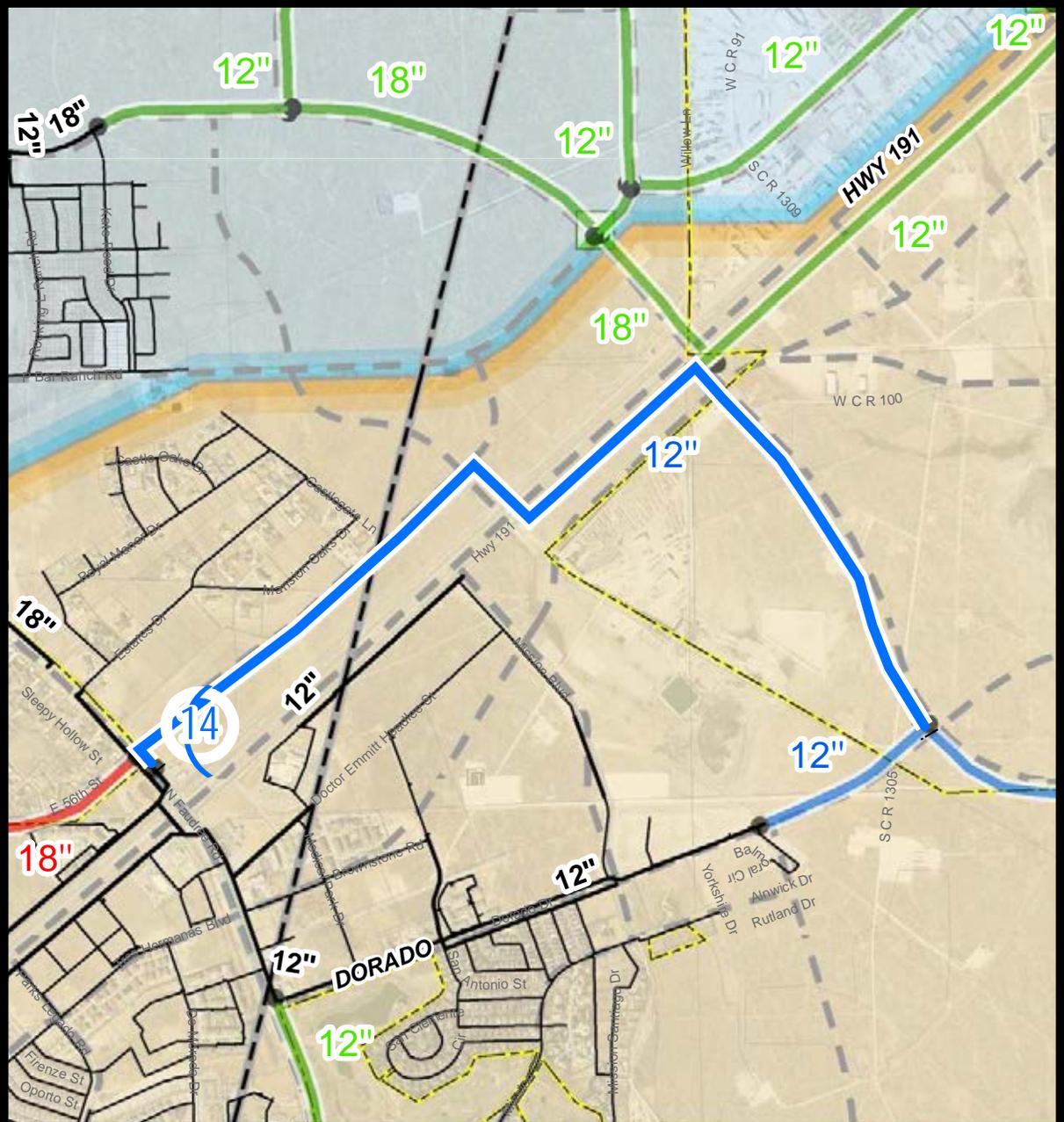
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
 April 2019

Phase: 10-Year

Project Description: This project consists of approximately 14,160 LF of 12-inch water line along Highway 191 from N Faudree Road to Willow Lane, then continues southeast towards the future Dorado Elevated Storage Tank location. The project includes a bore under Highway 191.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,182,000

Project Name: Highway 191 12-Inch Water Line Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 14. Highway 191 12-Inch Water Line Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$45,000.00	\$45,000
2	Traffic Control	1	LS	\$30,000.00	\$30,000
3	Erosion Control	1	LS	\$15,000.00	\$15,000
4	12" Water Pipe	14,160	LF	\$70.00	\$992,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	14,160	LF	\$1.50	\$22,000
7	12" AWWA Gate Valve	10	EA	\$3,000.00	\$30,000
8	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	14	TON	\$5,000.00	\$71,000
11	Asphalt Pavement Repair	4,200	SY	\$60.00	\$252,000
12	Allowance	1	LS	\$32,000.00	\$32,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$2,182,000
		Subtotal:	\$1,616,000

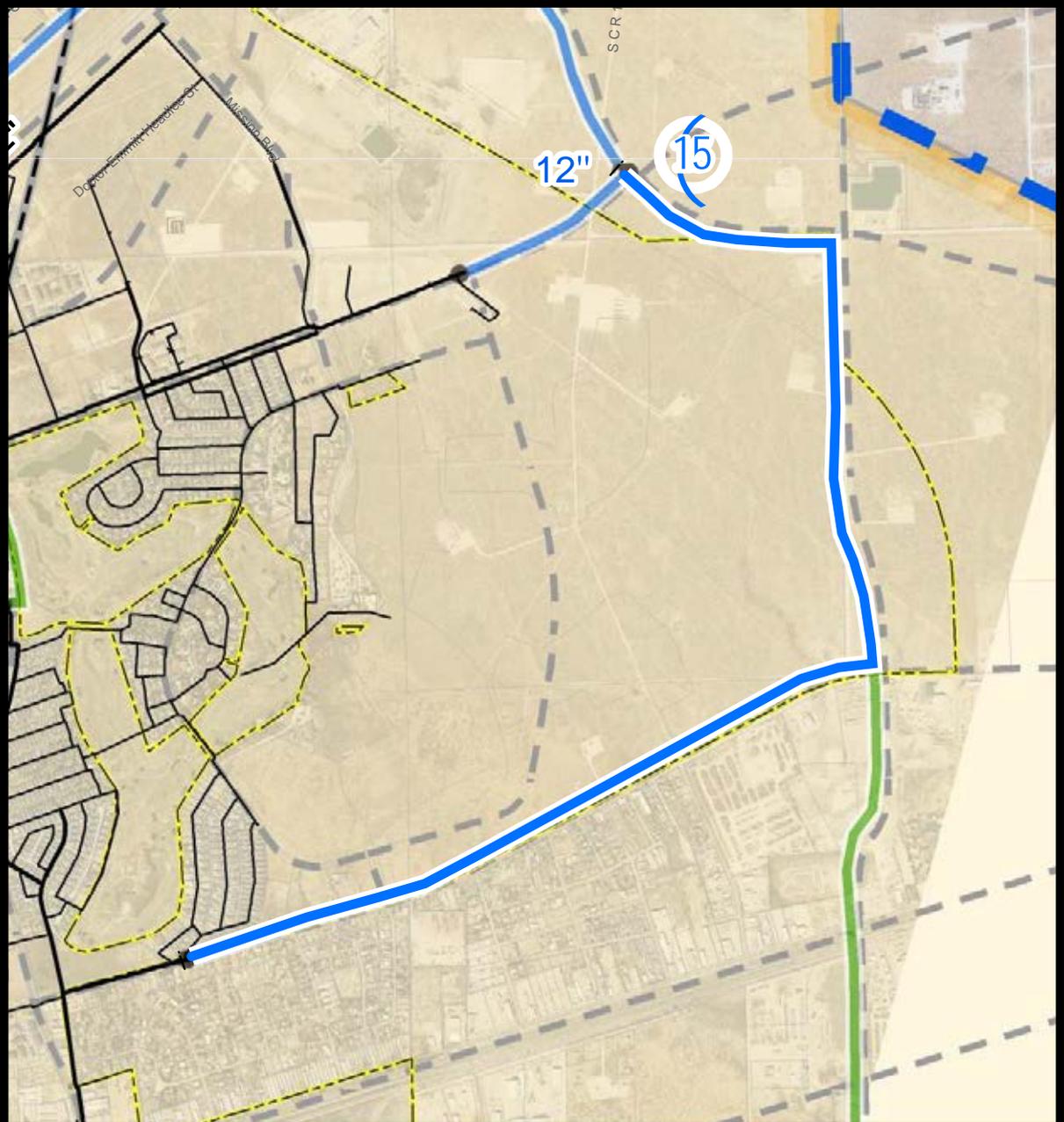
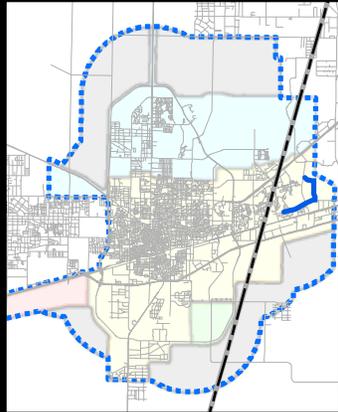
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 10-Year

Project Description: This project consists of approximately 16,680 LF of 12-inch water line along W County Road 122 from San Pedro Drive to just west of S County Road 1297, then continues north towards the future Dorado Elevated Storage Tank location.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,611,000

Project Name: W County Road 122 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 15. W County Road 122 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$54,000.00	\$54,000
2	Traffic Control	1	LS	\$36,000.00	\$36,000
3	Erosion Control	1	LS	\$18,000.00	\$18,000
4	12" Water Pipe	16,680	LF	\$70.00	\$1,168,000
5	Water Line Trench Safety	16,680	LF	\$1.50	\$26,000
6	12" AWWA Gate Valve	11	EA	\$3,000.00	\$33,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	17	TON	\$5,000.00	\$84,000
10	Asphalt Pavement Repair	7,500	SY	\$60.00	\$450,000
11	Allowance	1	LS	\$38,000.00	\$38,000

Basis for Cost Projection:			
		Subtotal:	\$1,934,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$386,850
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$290,150
<input type="checkbox"/>	Final Design	Total:	\$2,611,000

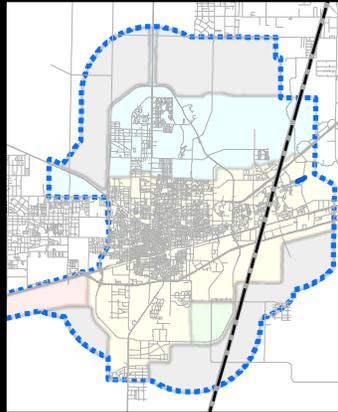
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



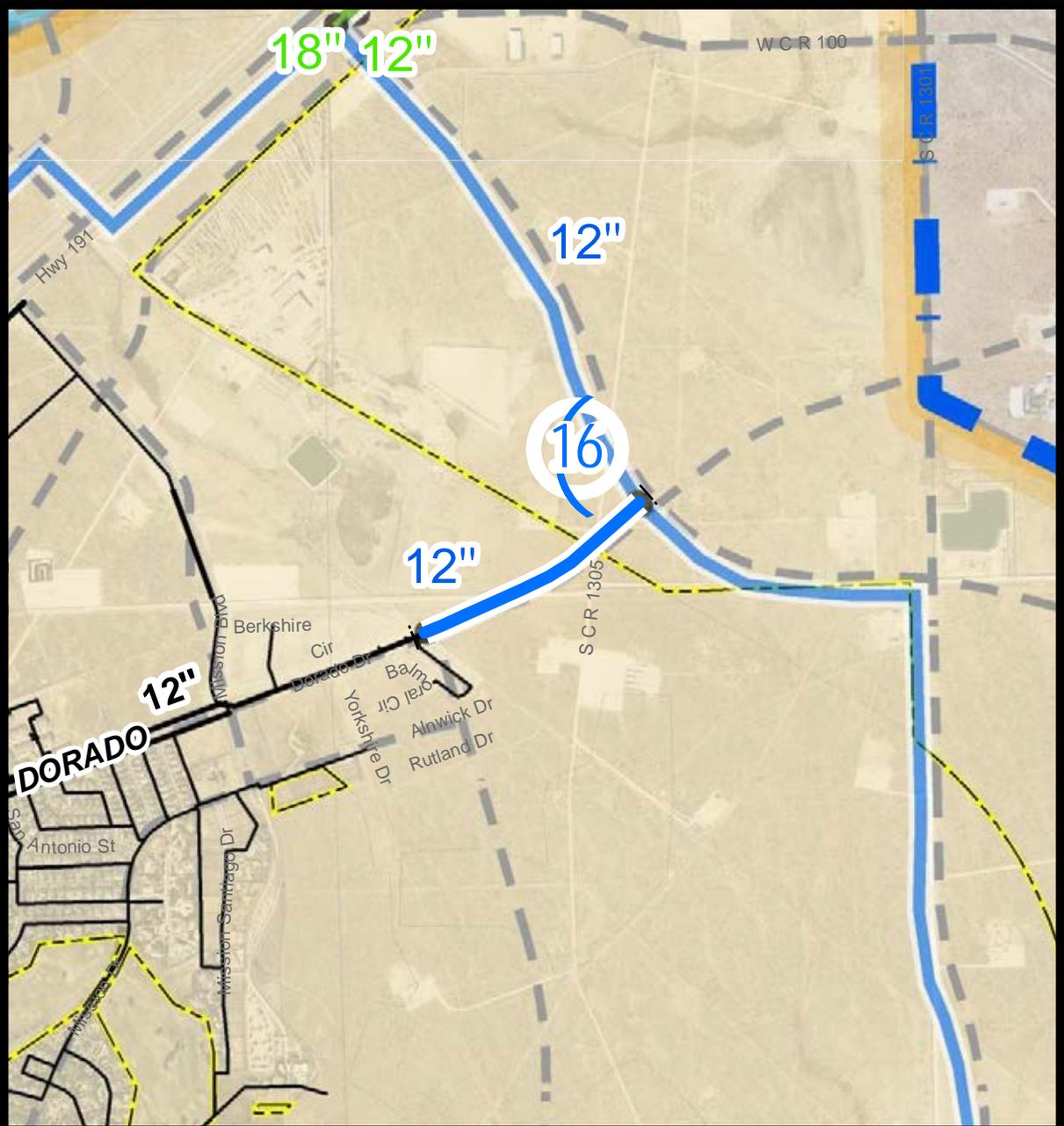
1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 10-Year

Project Description: This project consists of approximately 2,260 LF of 12-inch water line East of San Antonio Street.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$299,000

Project Name: Dorado Drive 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 16. Dorado Drive 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$7,000.00	\$7,000
2	Traffic Control	1	LS	\$5,000.00	\$5,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	12" Water Pipe	2,260	LF	\$70.00	\$159,000
5	Water Line Trench Safety	2,260	LF	\$1.50	\$4,000
6	12" AWWA Gate Valve	3	EA	\$3,000.00	\$9,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$12,000
10	Allowance	1	LS	\$5,000.00	\$5,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$221,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$44,525
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$33,475
	Total:	\$299,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



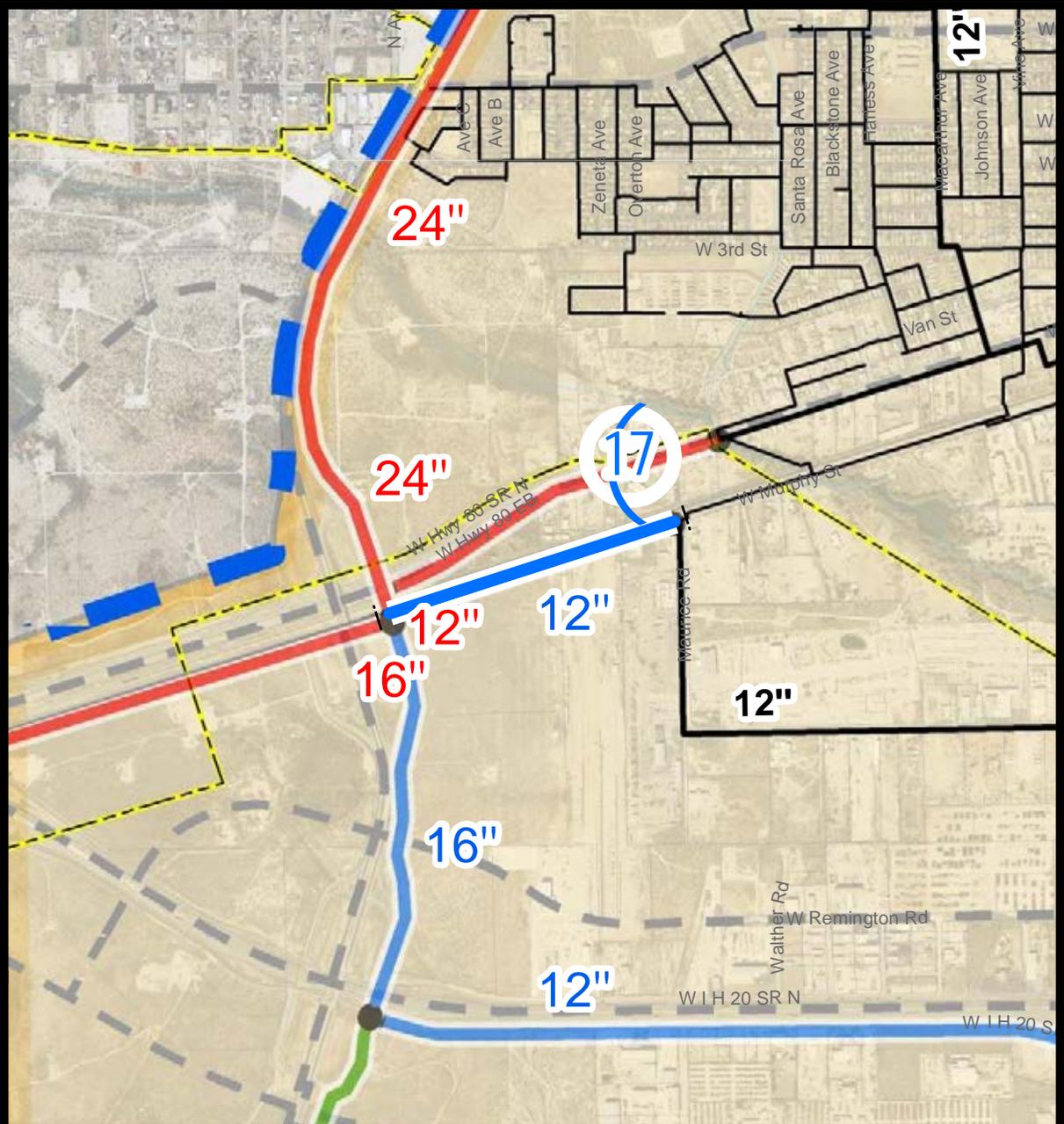
1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
 April 2019



Phase: 10-Year

Project Description: This project consists of approximately 2,680 LF of 12-inch water line along W Murphy St from County Road 1135 to SW Loop 338.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$555,000

Project Name: W Murphy Street 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 17. W Murphy Street 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$12,000.00	\$12,000
2	Traffic Control	1	LS	\$8,000.00	\$8,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	12" Water Pipe	2,680	LF	\$70.00	\$188,000
5	Water Line Trench Safety	2,680	LF	\$1.50	\$5,000
6	12" AWWA Gate Valve	3	EA	\$3,000.00	\$10,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$14,000
10	Asphalt Pavement Repair	2,400	SY	\$60.00	\$144,000
11	Allowance	1	LS	\$9,000.00	\$9,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$411,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$82,275
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$61,725
		Total:	\$555,000

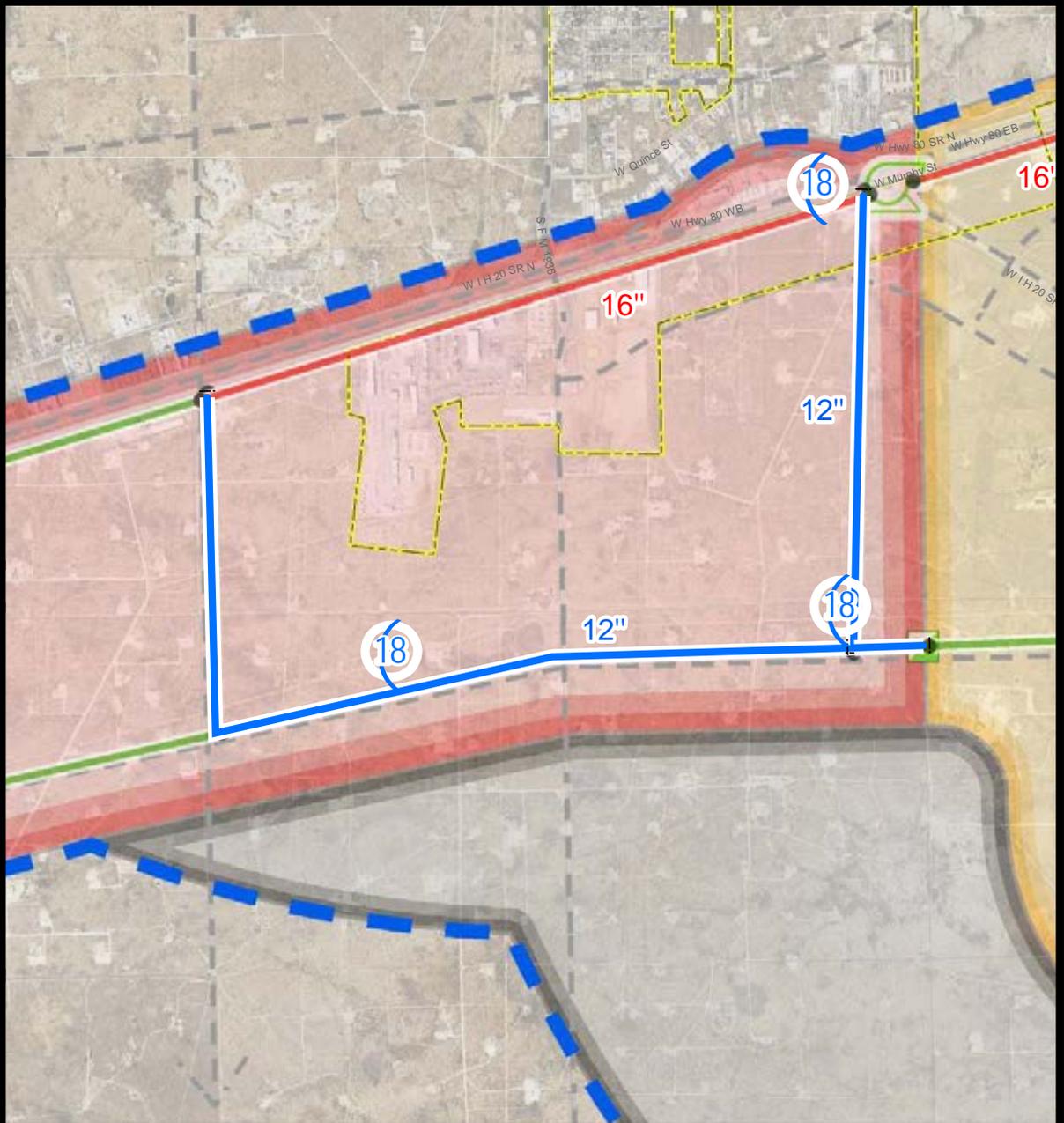
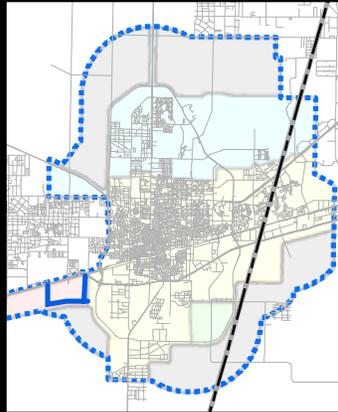
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 10-Year

Project Description: This project consists of approximately 22,310 LF of 12-inch water line extending from the proposed South West Pump Station and the proposed 16-inch water line along I-20, looping the South West Pressure Plane.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: South West Pressure Plane

Capital Cost: \$2,592,000

Project Name: Southwest Pressure Plane 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 18. Southwest Pressure Plane 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$54,000.00	\$54,000
2	Traffic Control	1	LS	\$36,000.00	\$36,000
3	Erosion Control	1	LS	\$18,000.00	\$18,000
4	12" Water Pipe	22,310	LF	\$70.00	\$1,562,000
5	Water Line Trench Safety	22,310	LF	\$1.50	\$34,000
6	12" AWWA Gate Valve	13	EA	\$3,000.00	\$39,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	22	TON	\$5,000.00	\$112,000
10	Allowance	1	LS	\$38,000.00	\$38,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$1,920,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$384,000
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$288,000
		Total:	\$2,592,000

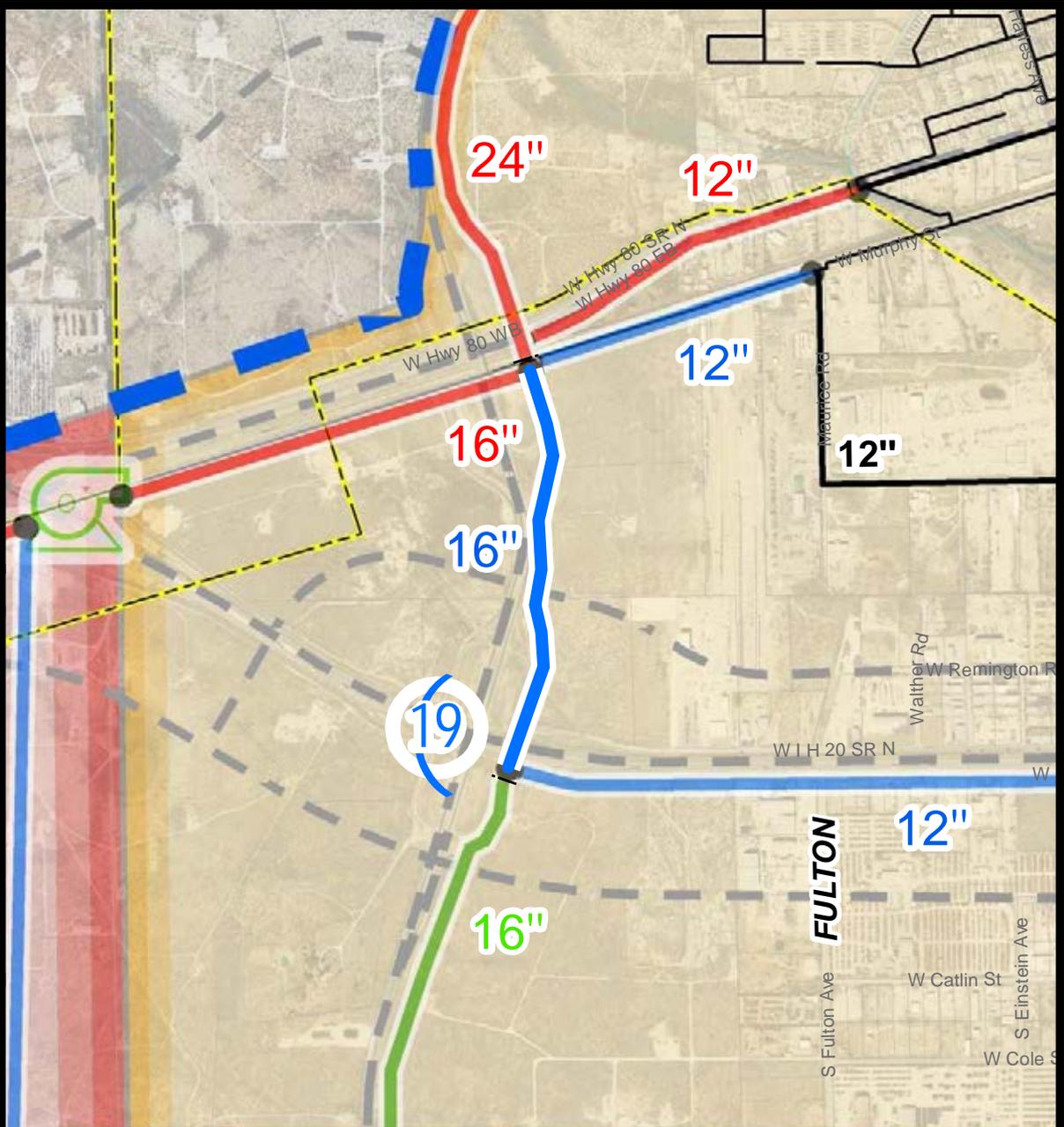
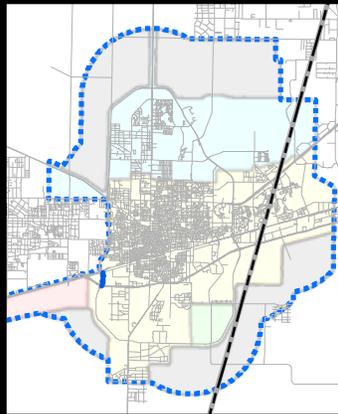
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 10-Year

Project Description: This project consists of approximately 3,640 LF of 16-inch water line along SW Loop 338 from W Murphy Street to I-20. The project includes a bore under I-20.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$821,000

Project Name: SW Loop 338 16-Inch Water Line Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 19. SW Loop 338 16-Inch Water Line Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$17,000.00	\$17,000
2	Traffic Control	1	LS	\$12,000.00	\$12,000
3	Erosion Control	1	LS	\$6,000.00	\$6,000
4	16" Water Pipe	3,640	LF	\$85.00	\$310,000
5	36" Bore with Steel Casing	200	LF	\$600.00	\$120,000
6	Water Line Trench Safety	3,640	LF	\$1.50	\$6,000
7	16" AWWA Gate Valve	3	EA	\$10,000.00	\$35,000
8	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	4	TON	\$5,000.00	\$19,000
11	Asphalt Pavement Repair	900	SY	\$60.00	\$54,000
12	Allowance	1	LS	\$12,000.00	\$12,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$821,000

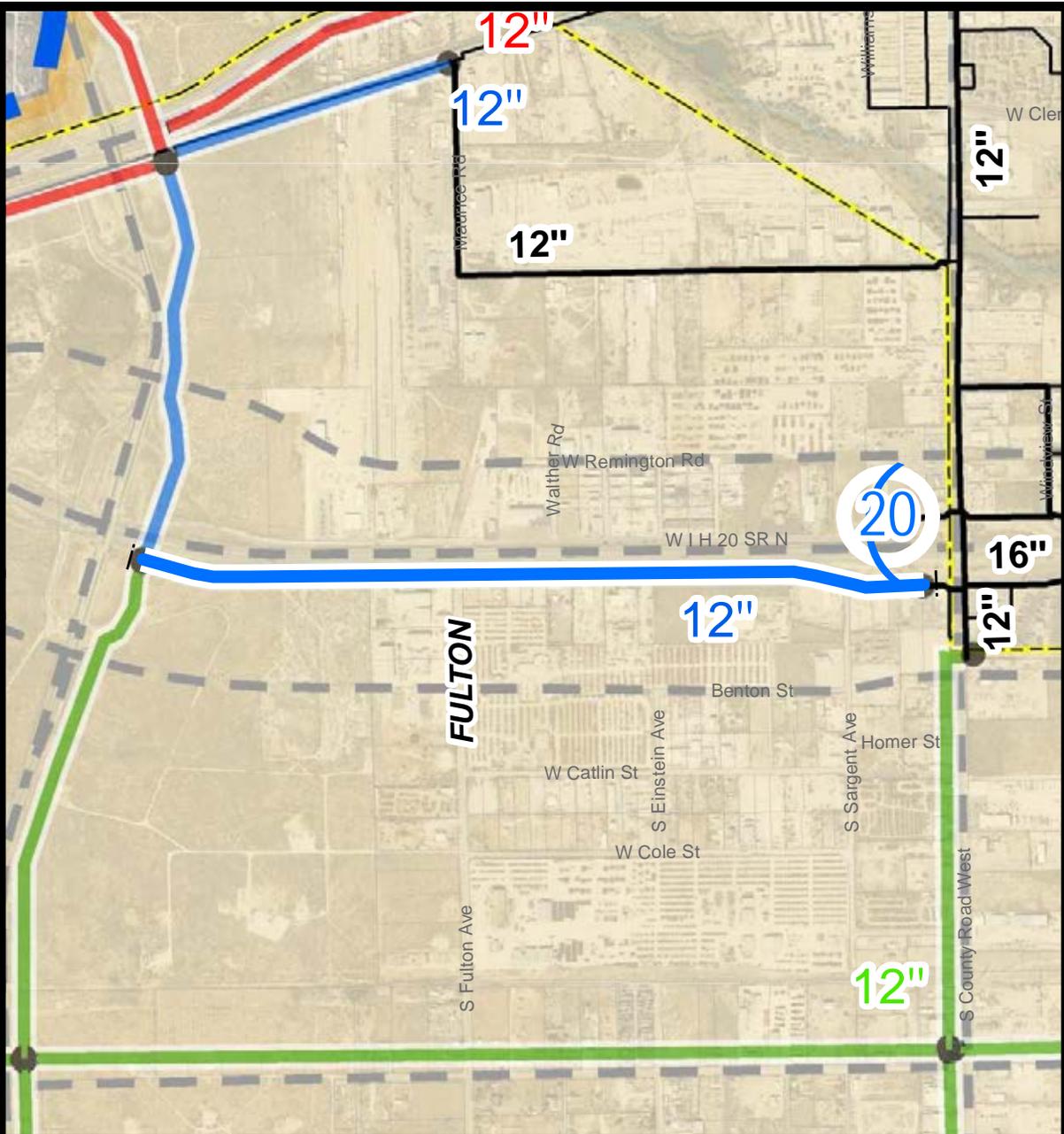
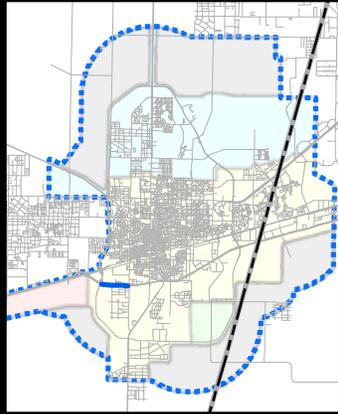
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 10-Year

Project Description: This project consists of approximately 6,970 LF of 12-inch water line along I-20 from Loop 338 to S County Road W.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$970,000

Project Name: Interstate 20 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 20. Interstate 20 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$20,000.00	\$20,000
2	Traffic Control	1	LS	\$14,000.00	\$14,000
3	Erosion Control	1	LS	\$7,000.00	\$7,000
4	12" Water Pipe	6,970	LF	\$70.00	\$488,000
5	Water Line Trench Safety	6,970	LF	\$1.50	\$11,000
6	12" AWWA Gate Valve	5	EA	\$3,000.00	\$15,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	7	TON	\$5,000.00	\$35,000
10	Asphalt Pavement Repair	1,600	SY	\$60.00	\$96,000
11	Allowance	1	LS	\$15,000.00	\$15,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$718,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$143,950
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$108,050
		Total:	\$970,000

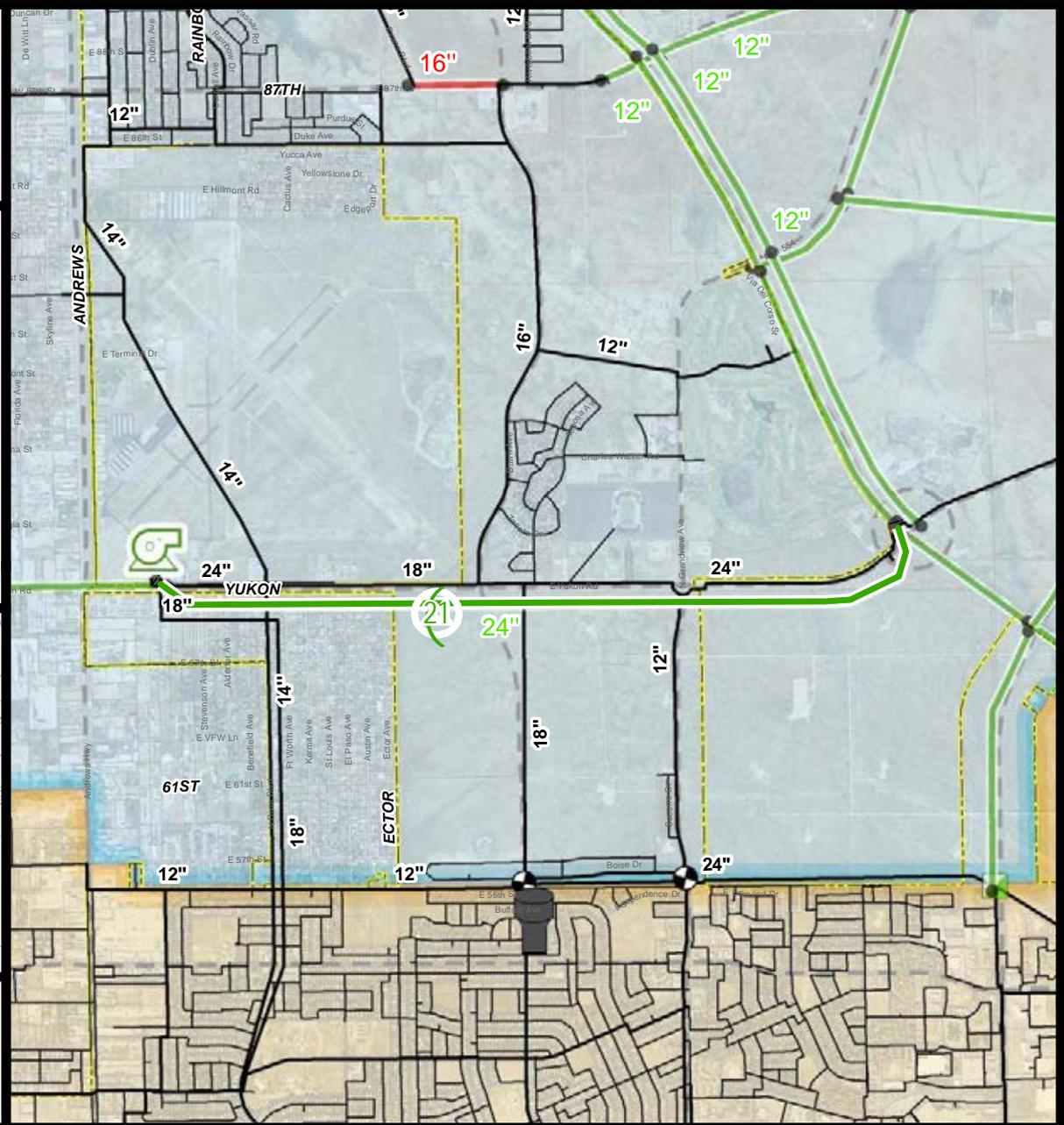
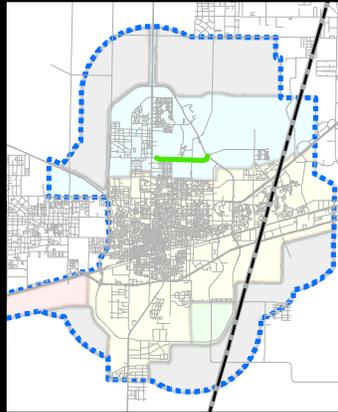
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 14,370 LF of 24-inch water line along E Yukon Road, connecting to the Yukon Pump Station and extending east to NE Loop 338.

Recommendation Comments: Provides additional transmission capacity from the Yukon pump station to the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$4,103,000

Project Name: E Yukon Road 24-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 21. E Yukon Road 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$85,000.00	\$85,000
2	Traffic Control	1	LS	\$57,000.00	\$57,000
3	Erosion Control	1	LS	\$29,000.00	\$29,000
4	24" Water Pipe	14,360	LF	\$120.00	\$1,724,000
5	Water Line Trench Safety	14,360	LF	\$1.50	\$22,000
6	24" AWWA Gate Valve	10	EA	\$20,000.00	\$195,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	14	TON	\$5,000.00	\$72,000
10	Asphalt Pavement Repair	12,800	SY	\$60.00	\$768,000
11	Allowance	1	LS	\$60,000.00	\$60,000

Basis for Cost Projection:			
		Subtotal:	\$3,039,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$607,975
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$456,025
<input type="checkbox"/>	Final Design	Total:	\$4,103,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



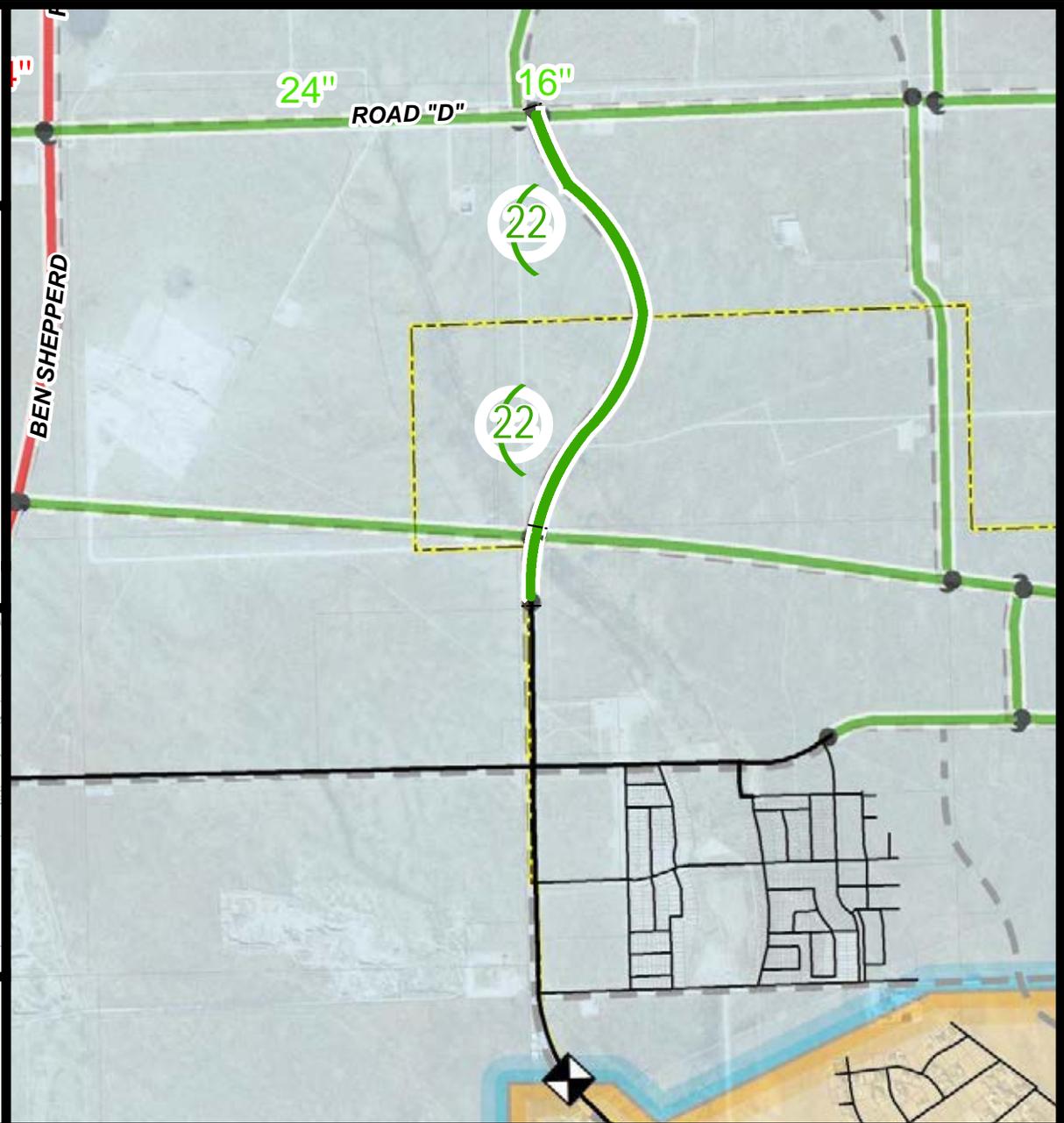
1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 25-Year

Project Description: This project consists of approximately 6,460 LF of 24-inch water line along N Faudree Road, connecting to the existing 18" water line along N Faudree Road and extending north to future E 87th Street.

Recommendation Comments: Provides additional transmission capacity from Project #23 and the Northeast elevated storage tank to the eastern portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,430,000

Project Name: N Faudree Road 24-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 22. N Faudree Road 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$30,000.00	\$30,000
2	Traffic Control	1	LS	\$20,000.00	\$20,000
3	Erosion Control	1	LS	\$10,000.00	\$10,000
4	24" Water Pipe	6,460	LF	\$120.00	\$776,000
5	Water Line Trench Safety	6,460	LF	\$1.50	\$10,000
6	24" AWWA Gate Valve	7	EA	\$20,000.00	\$132,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$33,000
10	Allowance	1	LS	\$21,000.00	\$21,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,059,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$211,975
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$159,025
		Total:	\$1,430,000

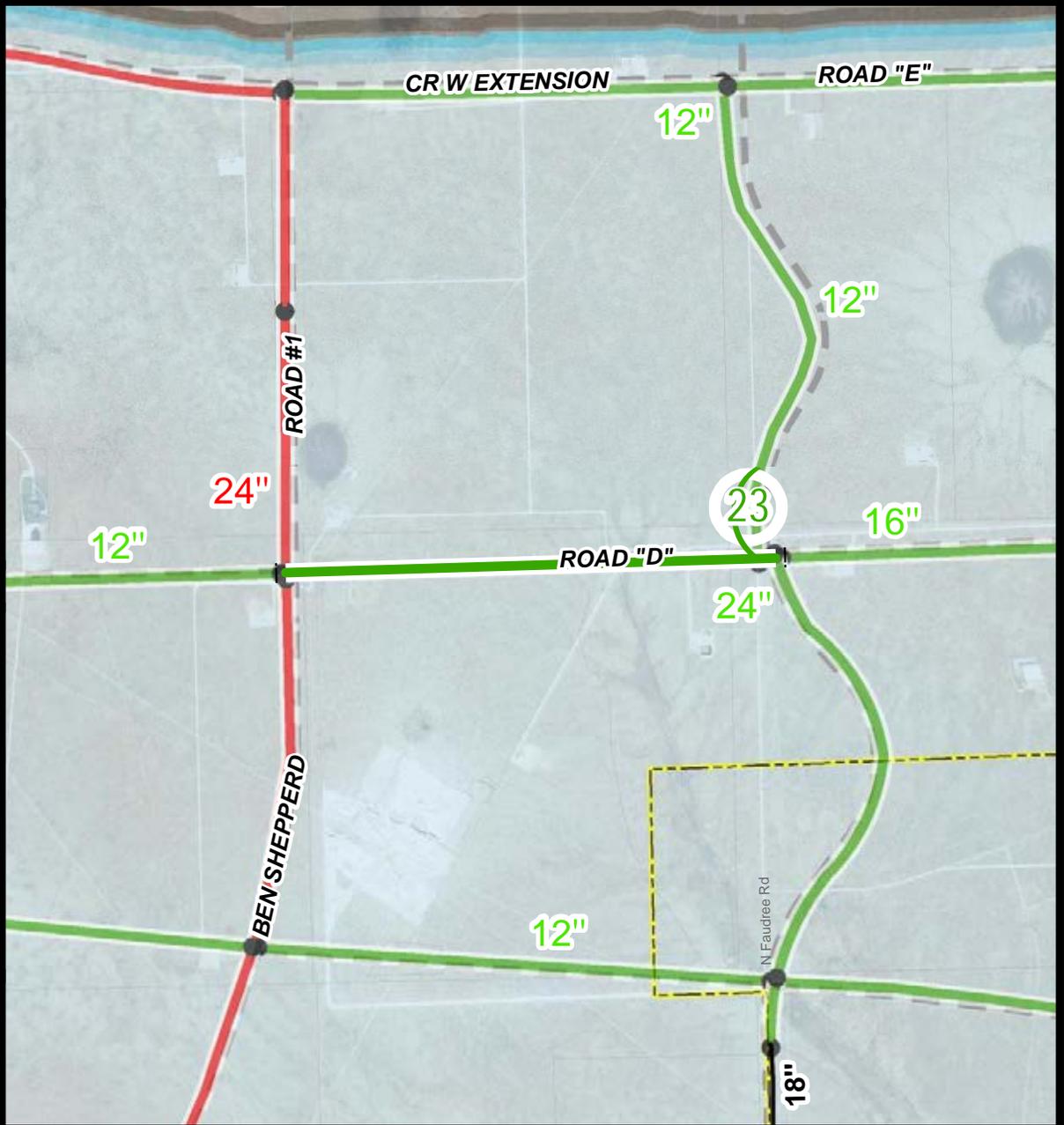
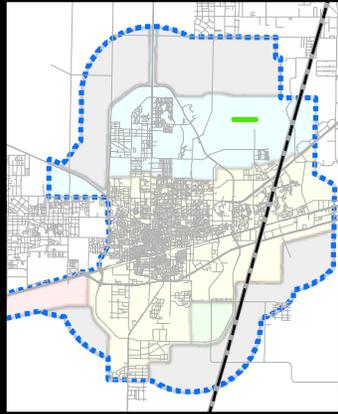
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 5,830 LF of 24-inch water line along future E 87th Street, connecting to Project No. 22 along N Faudree Road and extending west to connect to Project No. 11.

Recommendation Comments: Provides additional transmission capacity from Project #11 and the Northeast elevated storage tank to the eastern portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,233,000

Project Name: E 87th 24-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 23. E 87th 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$26,000.00	\$26,000
2	Traffic Control	1	LS	\$17,000.00	\$17,000
3	Erosion Control	1	LS	\$9,000.00	\$9,000
4	24" Water Pipe	5,830	LF	\$120.00	\$700,000
5	Water Line Trench Safety	5,830	LF	\$1.50	\$9,000
6	24" AWWA Gate Valve	4	EA	\$20,000.00	\$87,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$30,000
10	Allowance	1	LS	\$18,000.00	\$18,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$913,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$182,825
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$137,175
	Total:	\$1,233,000

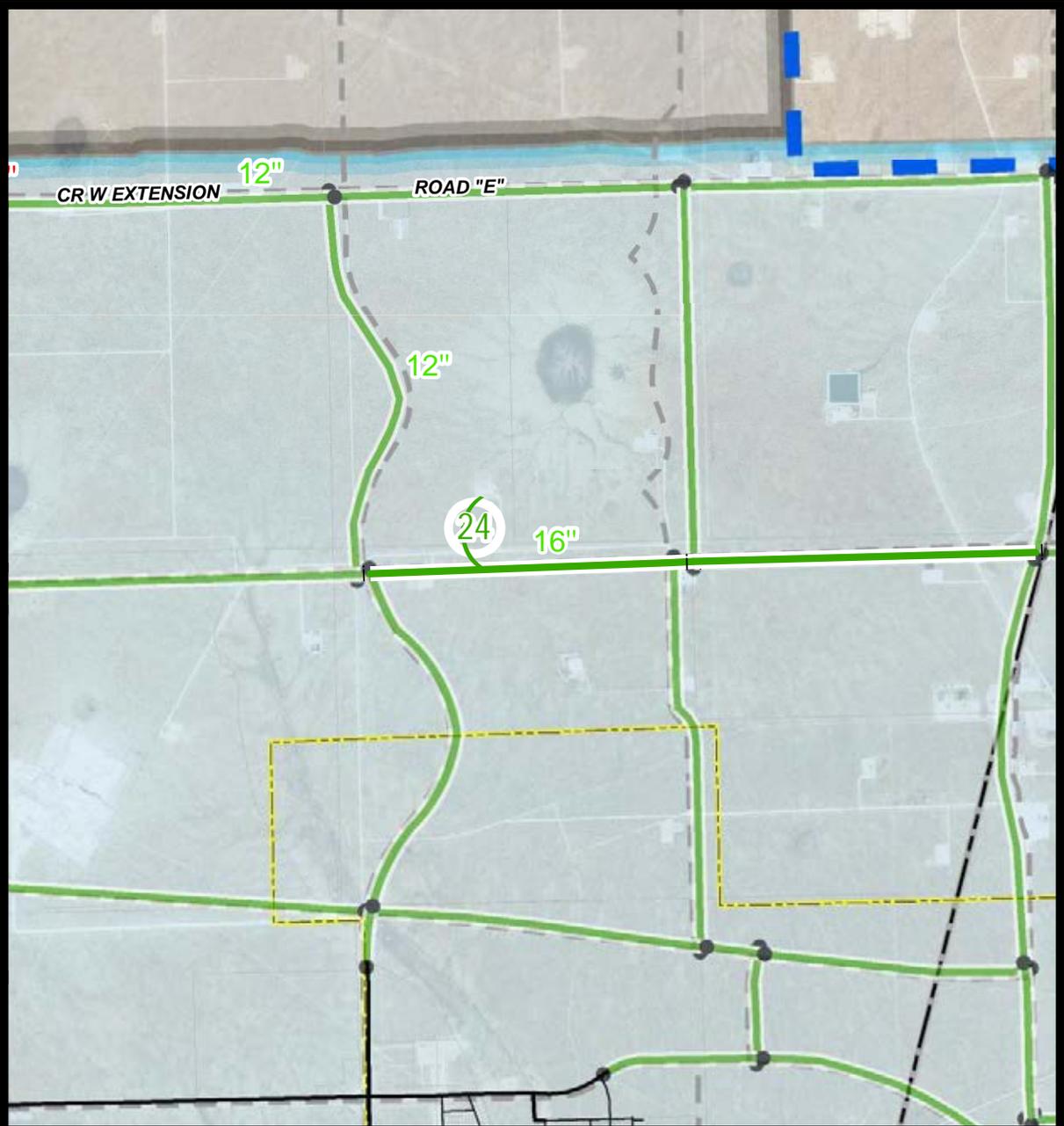
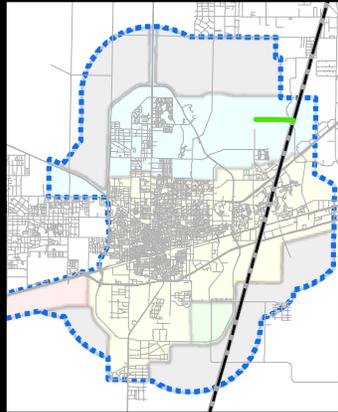
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 9,910 LF of 16-inch water line along future E 87th Street, connecting to Project No. 22 along N Faudree Road and extending east.

Recommendation Comments: Provides additional transmission capacity from Project #23 and the Northeast elevated storage tank to the eastern portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,485,000

Project Name: E 87th 16-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 24. E 87th 16-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$31,000.00	\$31,000
2	Traffic Control	1	LS	\$21,000.00	\$21,000
3	Erosion Control	1	LS	\$11,000.00	\$11,000
4	16" Water Pipe	9,910	LF	\$85.00	\$843,000
5	Water Line Trench Safety	9,910	LF	\$1.50	\$15,000
6	16" AWWA Gate Valve	8	EA	\$10,000.00	\$80,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	10	TON	\$5,000.00	\$50,000
10	Allowance	1	LS	\$22,000.00	\$22,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$1,100,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$220,000
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$165,000
	Total:	\$1,485,000

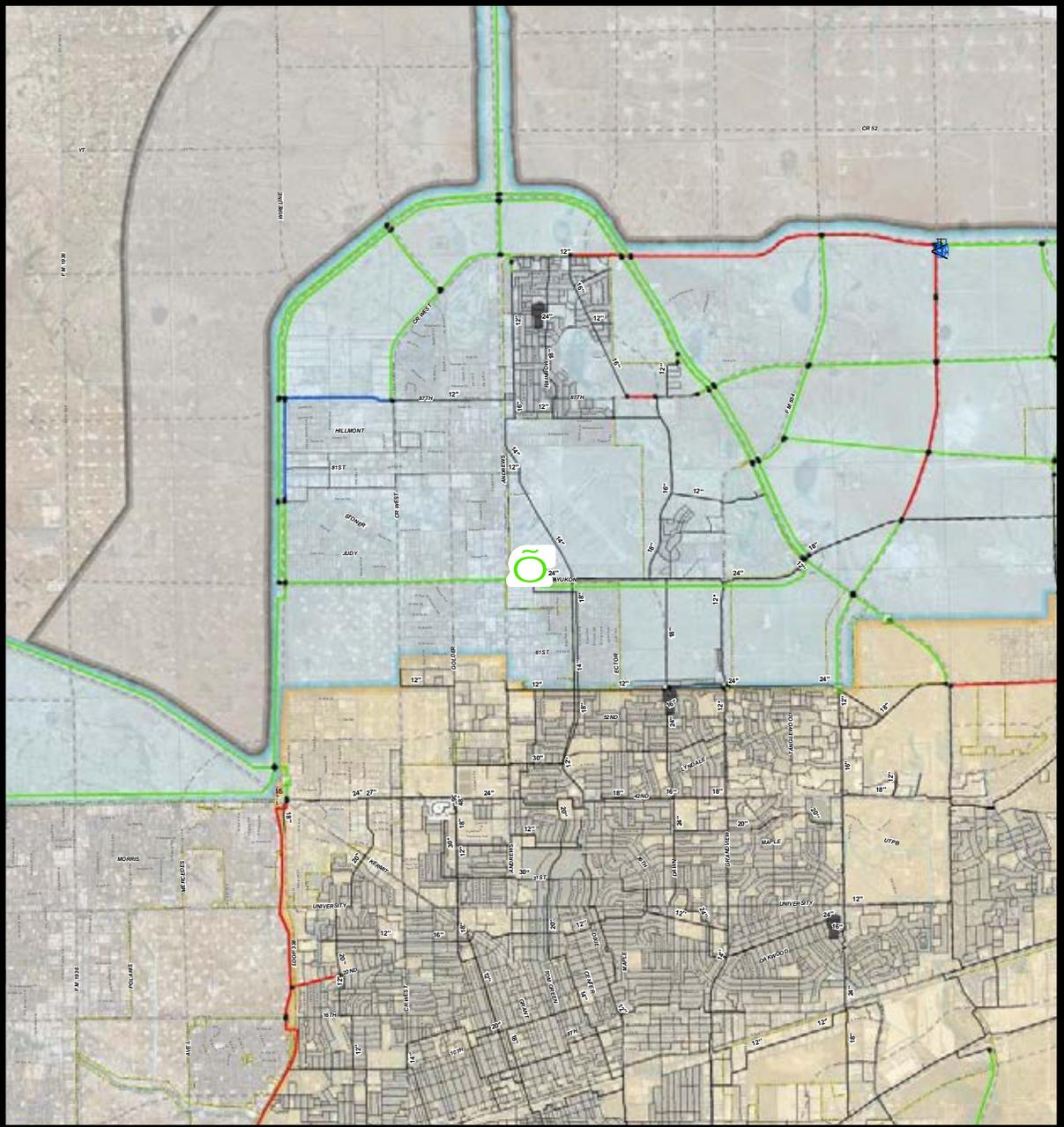
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 8,250 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of adding an additional 2 MG ground storage tank and an additional firm pumping capacity of 5 MGD to the existing Yukon Pump Station.

Recommendation Comments: Provides additional pumping capacity to the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$4,172,000

Project Name: Yukon Pump Station Improvements Phase 2

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 25. Yukon Pump Station Improvements Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$100,000.00	\$100,000
2	Site Grading	1	LS	\$50,000.00	\$50,000
3	8' Security Fence	500	LF	\$50.00	\$25,000
4	Concrete Drive	25	CY	\$650.00	\$16,250
5	24" Tank Supply Line	100	LF	\$175.00	\$17,500
6	24" Outlet Piping to Suction Line	100	LF	\$175.00	\$17,500
7	8" Tank Drain Line	50	LF	\$80.00	\$4,000
8	Trench Safety for all Yard Piping	250	LF	\$2.00	\$500
9	8" Gate Valve	1	EA	\$3,500.00	\$3,500
10	24" Gate Valve and Vault	2	EA	\$25,000.00	\$50,000
11	2 MG Ground Storage Tank	1	EA	\$2,000,000.00	\$2,000,000
12	Excavation	2,000	CY	\$10.00	\$20,000
13	Select Backfill	1,000	CY	\$10.00	\$10,000
14	3,800 gpm pump and 250 hp motor	1	EA	\$175,000.00	\$175,000
15	Air Release Valve	4	EA	\$10,000.00	\$40,000
16	16" Flow Control Valve	4	EA	\$50,000.00	\$200,000
17	Electrical/SCADA/Power	1	LS	\$250,000.00	\$250,000
18	Property (1 acres)	1	LS	\$50,000.00	\$50,000
19	Allowance	1	LS	\$61,000.00	\$61,000

Basis for Cost Projection:	Subtotal:	
<input checked="" type="checkbox"/> No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/> Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/> Final Design	Total:	\$4,172,000

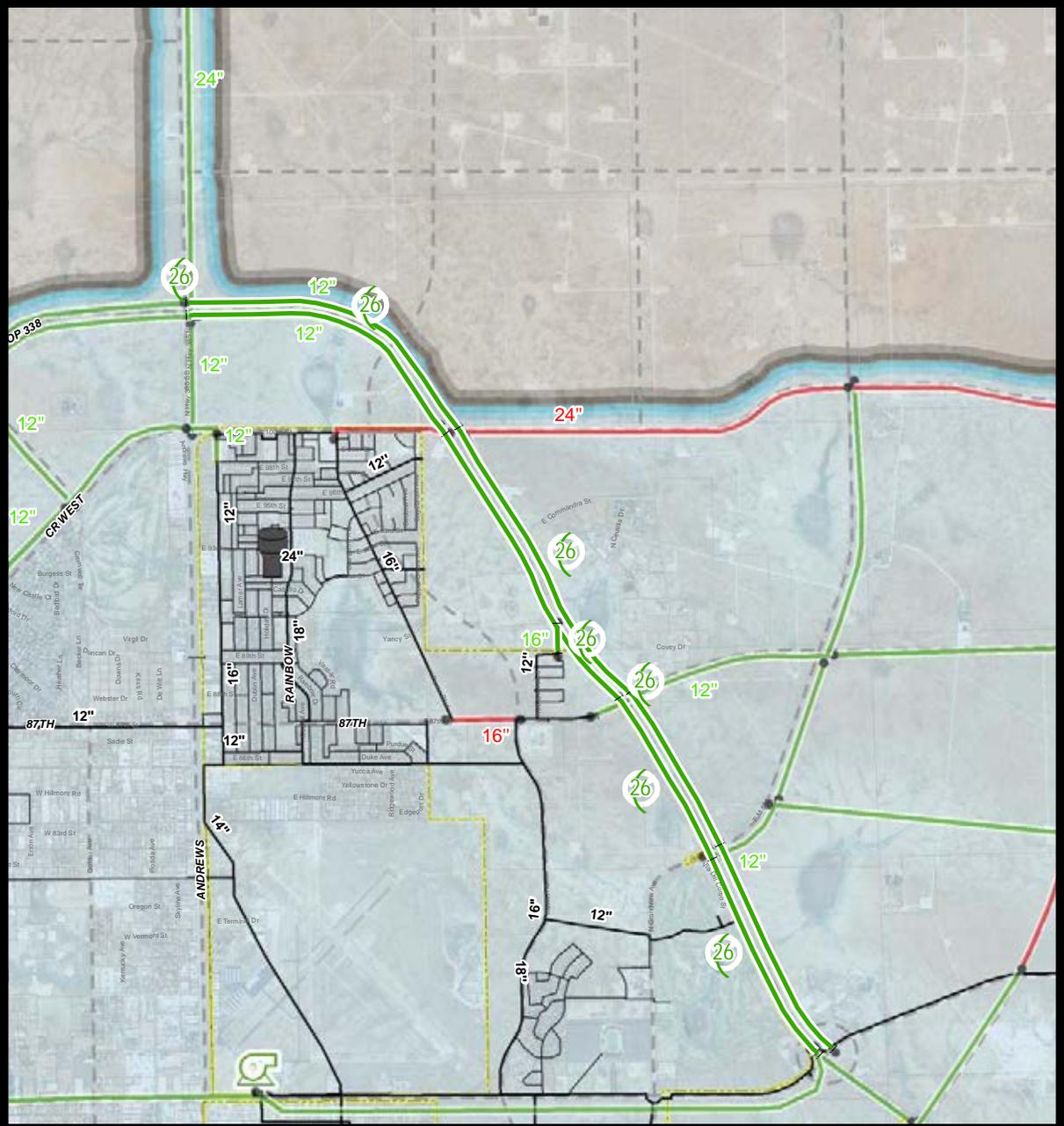
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,000 feet

Legend

- 5-Year Water Line
- 10-Year Water Line
- 25-Year Water Line
- Beyond 25-Year Planning Period Water Line
- Existing Water Line
- Upper Pressure Plane
- South East Pressure Plane
- Lower Pressure Plane
- South West Pressure Plane
- Beyond 25-Year Planning Period
- Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 49,560 LF of 12-inch water line and 495 LF of 16-inch water line along the western side of NE Loop 338 from E Yukon Road to Highway 385.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$9,683,000

Project Name: NE Loop 338 16-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 26. NE Loop 338 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$199,000.00	\$199,000
2	Traffic Control	1	LS	\$133,000.00	\$133,000
3	Erosion Control	1	LS	\$67,000.00	\$67,000
4	12" Water Pipe	50,040	LF	\$70.00	\$3,503,000
5	Water Line Trench Safety	50,040	LF	\$1.50	\$76,000
6	12" AWWA Gate Valve	28	EA	\$3,000.00	\$85,000
7	Connect to Existing Water Line	8	EA	\$5,000.00	\$40,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	50	TON	\$5,000.00	\$251,000
10	Asphalt Pavement Repair	44,500	SY	\$60.00	\$2,670,000
11	Allowance	1	LS	\$141,000.00	\$141,000

Basis for Cost Projection:			
		Subtotal:	\$7,172,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$9,683,000

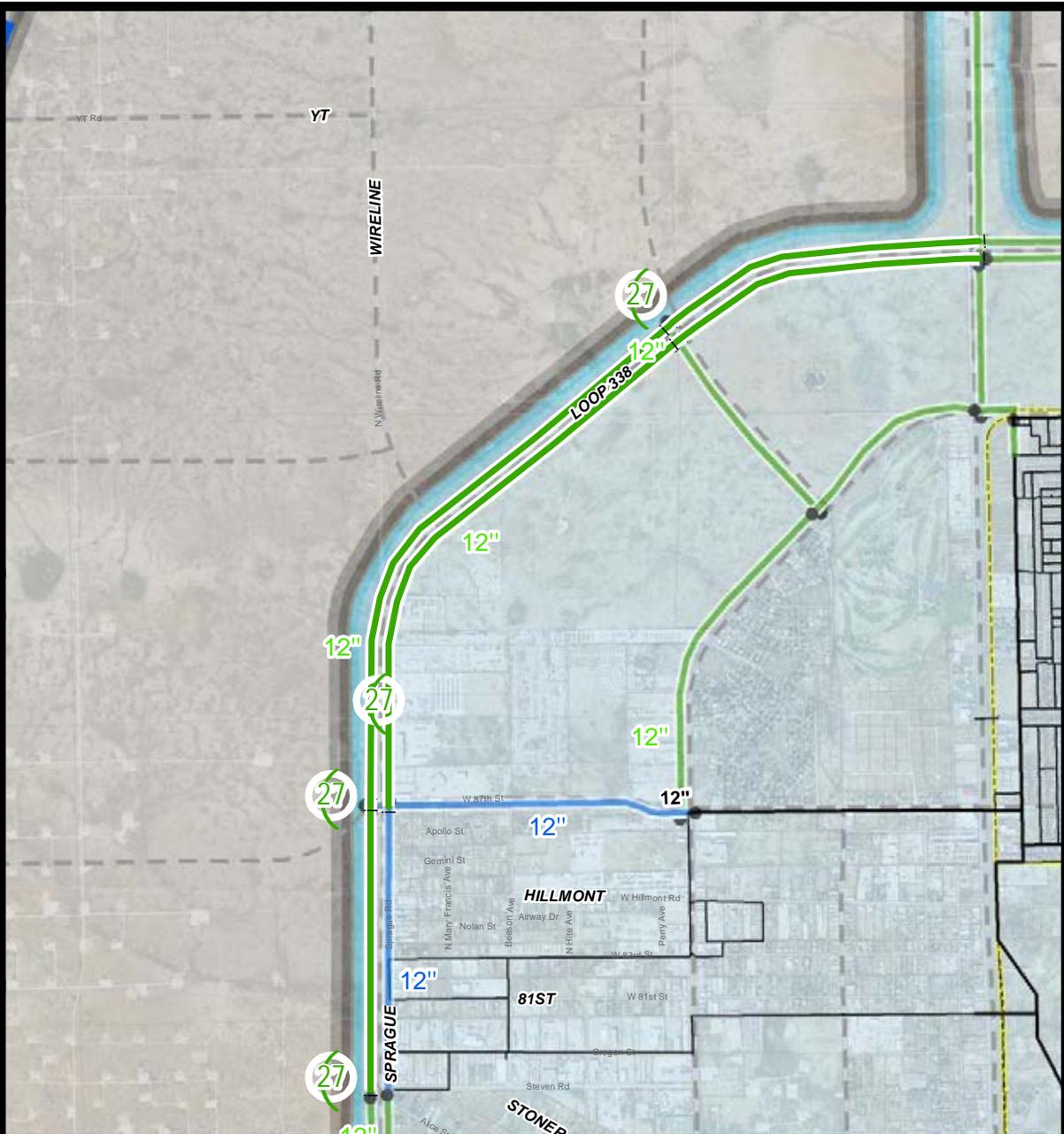
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 37,975 LF of 12-inch water line along the eastern side of NW Loop 338 from Highway 385 to W 87th Street, connecting to Project No. 8. The project includes a bore under Highway 385.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$7,465,000

Project Name: NW Loop 338 12-Inch Water Line

Client:	City of Odessa	Date:	4/24/2019
Project:	Water System Master Plan	Prepared By:	AWS
KHA No.:	063685005	Checked By:	JRA

Title: 27. NW Loop 338 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$154,000.00	\$154,000
2	Traffic Control	1	LS	\$103,000.00	\$103,000
3	Erosion Control	1	LS	\$52,000.00	\$52,000
4	12" Water Pipe	37,975	LF	\$70.00	\$2,659,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	37,975	LF	\$1.50	\$57,000
7	12" AWWA Gate Valve	18	EA	\$3,000.00	\$55,000
8	Connect to Existing Water Line	3	EA	\$5,000.00	\$15,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	38	TON	\$5,000.00	\$190,000
11	Asphalt Pavement Repair	33,800	SY	\$60.00	\$2,028,000
12	Allowance	1	LS	\$109,000.00	\$109,000

Basis for Cost Projection:				
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:		\$5,529,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)		20
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)		15
		Total:		\$7,465,000

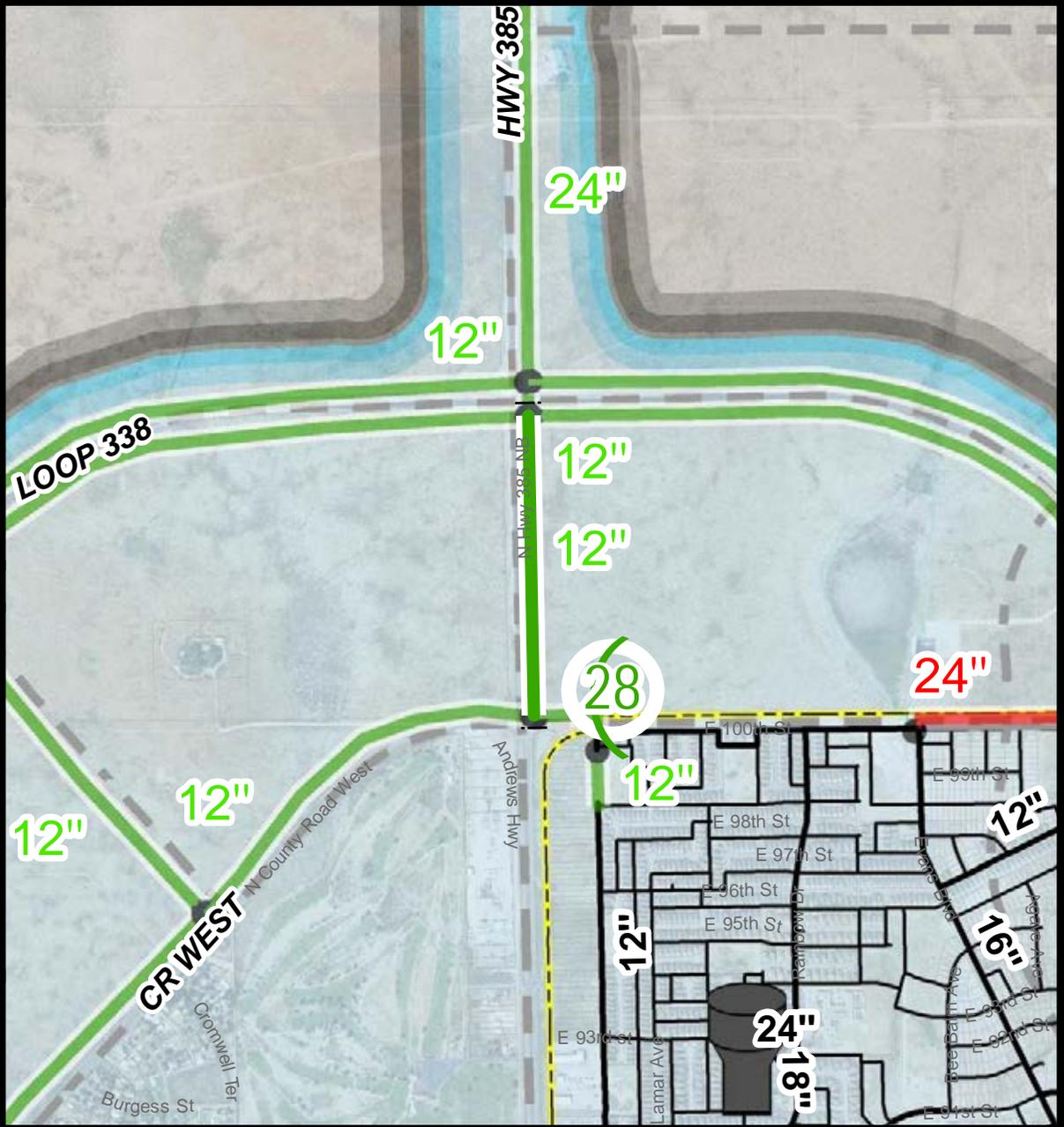
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
 April 2019

Phase: 25-Year

Project Description: This project consists of approximately 2,680 LF of 12-inch water line along the eastern side of N Highway 385 from N County Road West to Loop 338, connecting to Project No. 26.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$555,000

Project Name: N Highway 385 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 28. N Highway 385 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$12,000.00	\$12,000
2	Traffic Control	1	LS	\$8,000.00	\$8,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	12" Water Pipe	2,680	LF	\$70.00	\$188,000
5	Water Line Trench Safety	2,680	LF	\$1.50	\$5,000
6	12" AWWA Gate Valve	3	EA	\$3,000.00	\$10,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$14,000
10	Asphalt Pavement Repair	2,400	SY	\$60.00	\$144,000
11	Allowance	1	LS	\$9,000.00	\$9,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$411,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$82,275
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$61,725
		Total:	\$555,000

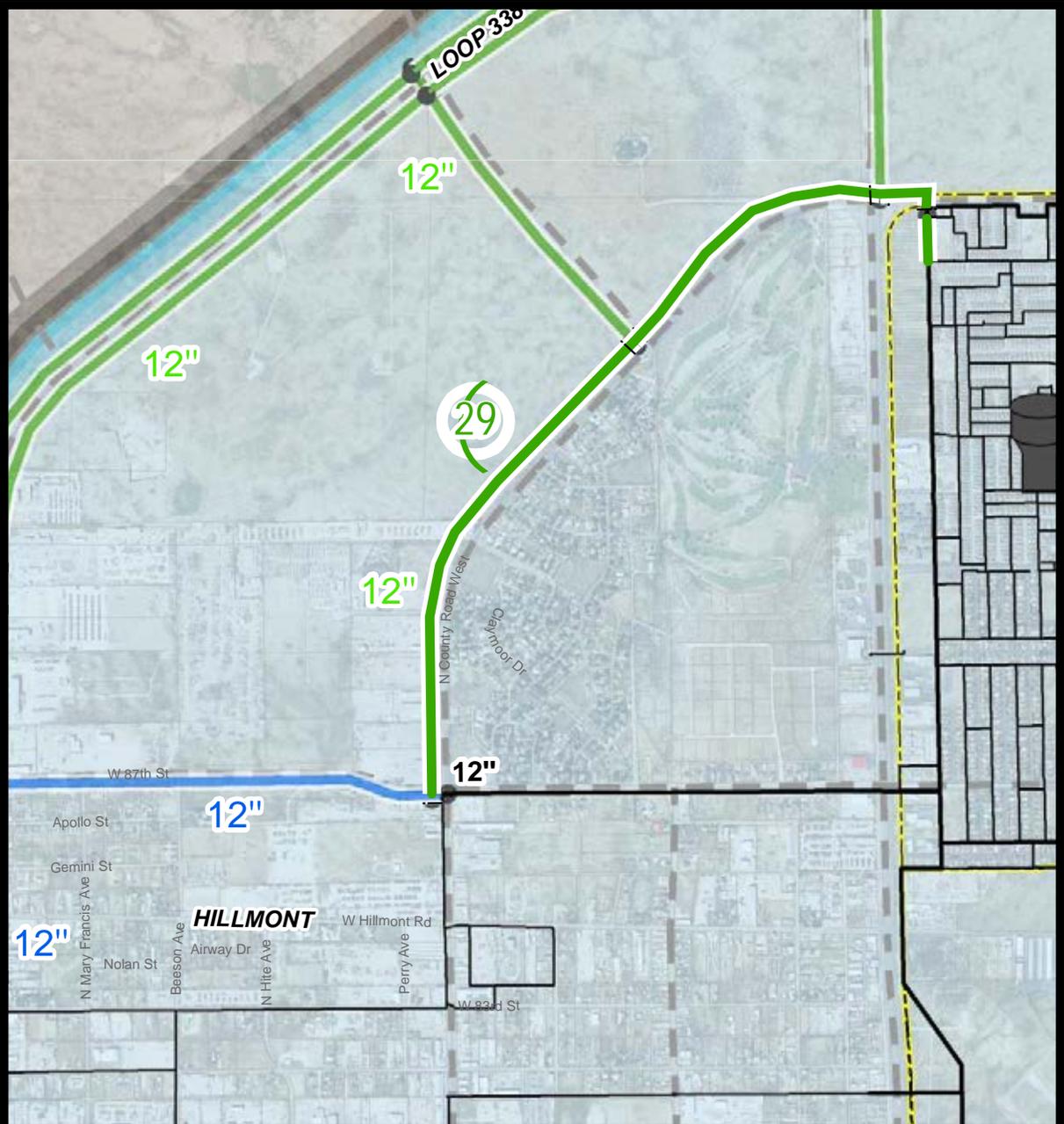
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 11,180 LF of 12-inch water line along N County Road West from W 87th Street to just east of Highway 385, connecting to the existing 12-inch water line along Highway 385. This project includes a bore under Highway 385.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$2,354,000

Project Name: N County Road West 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 29. N County Road West 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$49,000.00	\$49,000
2	Traffic Control	1	LS	\$33,000.00	\$33,000
3	Erosion Control	1	LS	\$17,000.00	\$17,000
4	12" Water Pipe	11,180	LF	\$70.00	\$783,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	11,180	LF	\$1.50	\$17,000
7	12" AWWA Gate Valve	8	EA	\$3,000.00	\$26,000
8	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	11	TON	\$5,000.00	\$56,000
11	Asphalt Pavement Repair	10,000	SY	\$60.00	\$600,000
12	Allowance	1	LS	\$35,000.00	\$35,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$2,354,000
		Subtotal:	\$1,743,000

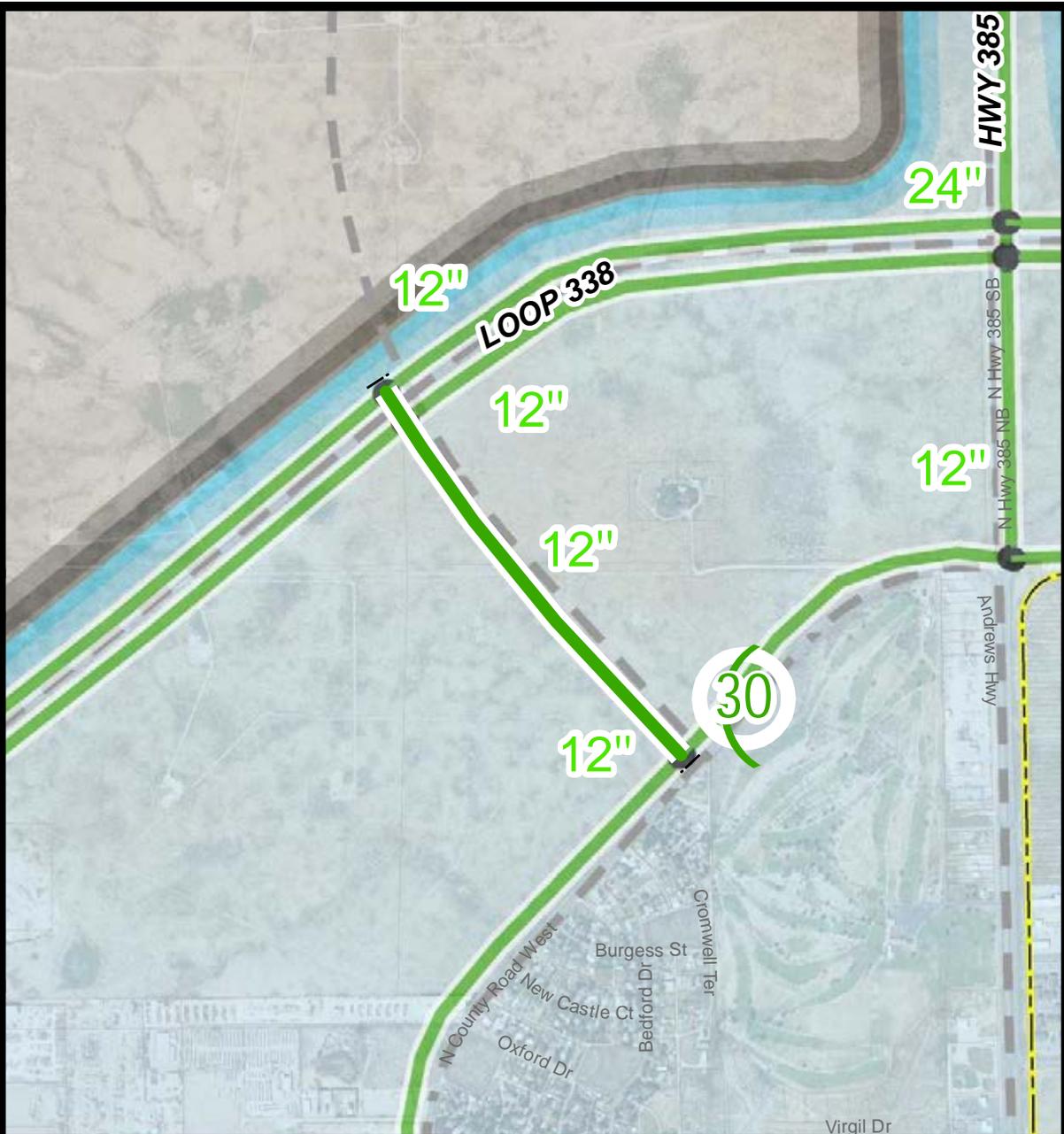
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 4,170 LF of 12-inch water line located in between NW Loop 338 and N County Road West, connecting Project No. 27 and Project No. 29.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$512,000

Project Name: N CR West to NW Loop 338 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 30. N CR West to NW Loop 338 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$11,000.00	\$11,000
2	Traffic Control	1	LS	\$7,000.00	\$7,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	12" Water Pipe	4,160	LF	\$70.00	\$292,000
5	Water Line Trench Safety	4,160	LF	\$1.50	\$7,000
6	12" AWWA Gate Valve	4	EA	\$3,000.00	\$12,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	4	TON	\$5,000.00	\$21,000
10	Allowance	1	LS	\$8,000.00	\$8,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$379,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$75,975
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$57,025
	Total:	\$512,000

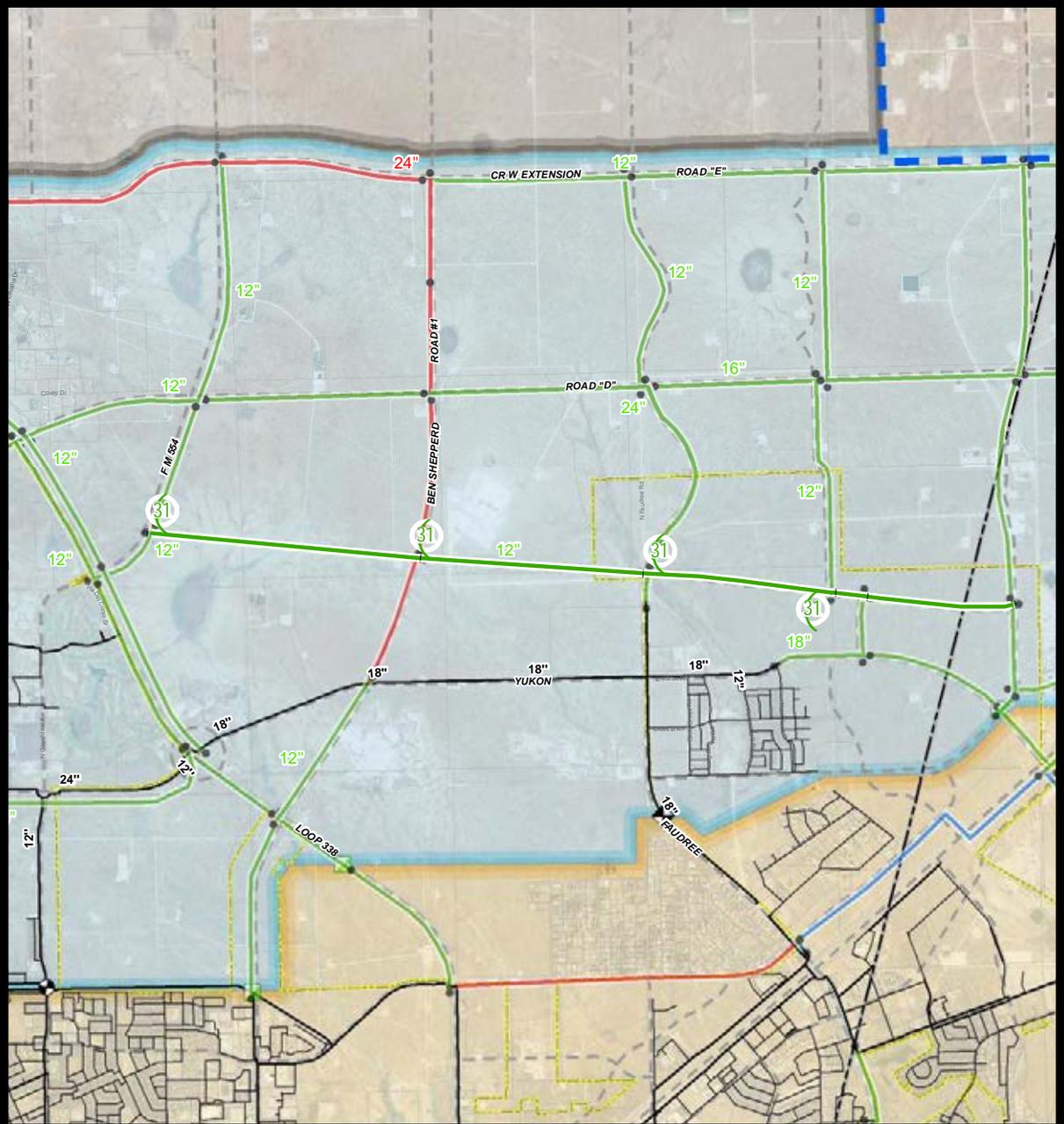
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 23,150 LF of 12-inch water line from FM 554 to Willow Lane.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$2,734,000

Project Name: FM 554 to Willow Lane 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 31. FM 554 to Willow Lane 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$57,000.00	\$57,000
2	Traffic Control	1	LS	\$38,000.00	\$38,000
3	Erosion Control	1	LS	\$19,000.00	\$19,000
4	12" Water Pipe	23,150	LF	\$70.00	\$1,621,000
5	Water Line Trench Safety	23,150	LF	\$1.50	\$35,000
6	12" AWWA Gate Valve	17	EA	\$3,000.00	\$52,000
7	Connect to Existing Water Line	8	EA	\$5,000.00	\$40,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	23	TON	\$5,000.00	\$116,000
10	Allowance	1	LS	\$40,000.00	\$40,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$2,025,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$405,125
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$303,875
		Total:	\$2,734,000

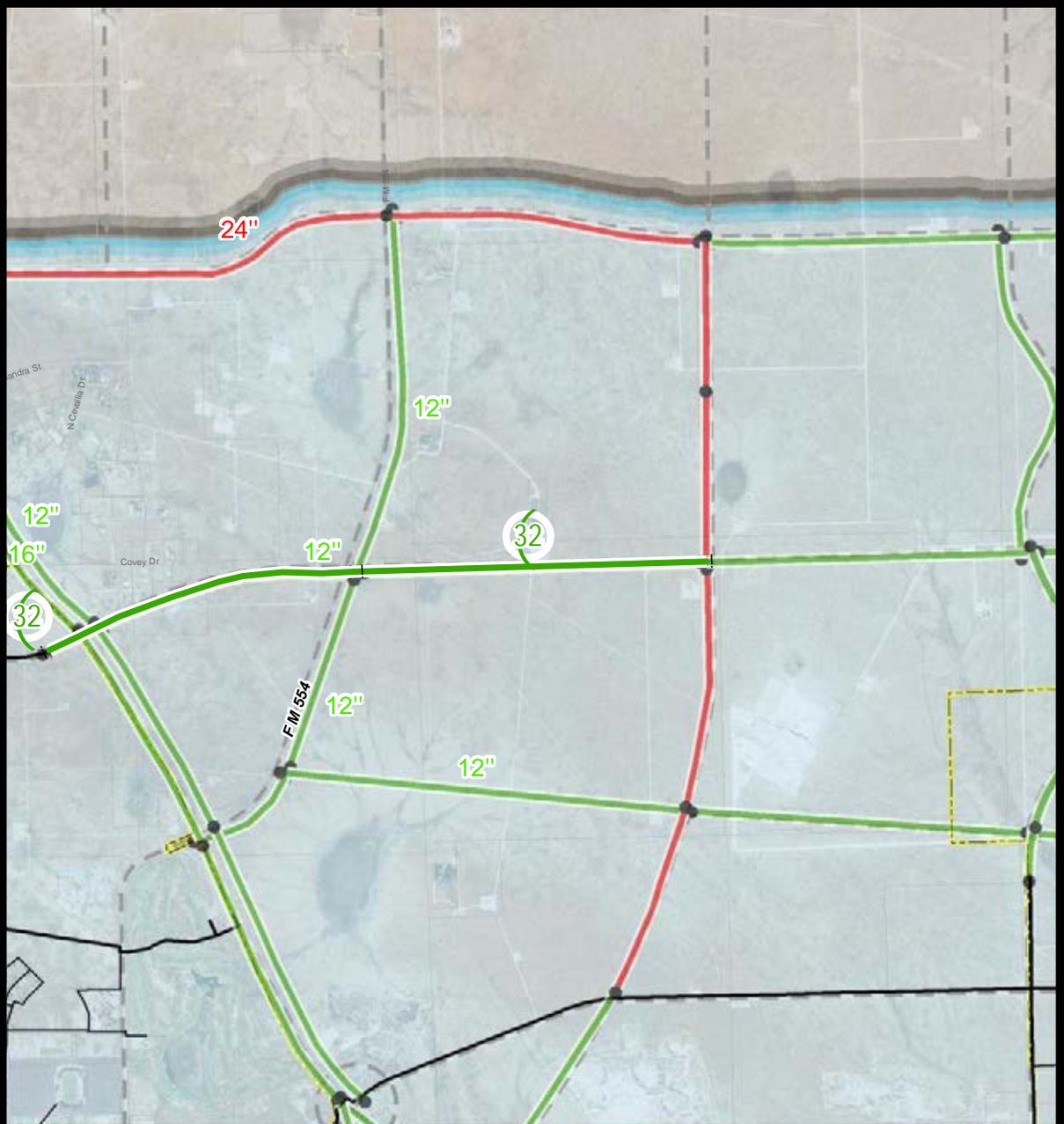
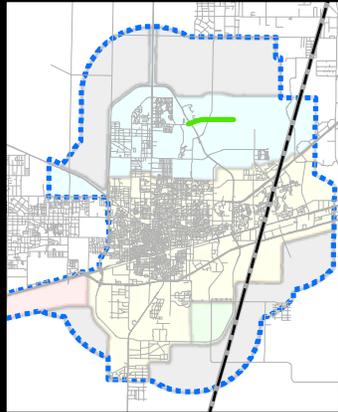
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 12,000 LF of 12-inch water line along future E 87th Street from just west of Loop 338 to Ben Shepperd Parkway, connecting to Project No.11.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,591,000

Project Name: E 87th 12-Inch Water Line Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 32. E 87th 12-Inch Water Line Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$33,000.00	\$33,000
2	Traffic Control	1	LS	\$22,000.00	\$22,000
3	Erosion Control	1	LS	\$11,000.00	\$11,000
4	12" Water Pipe	11,990	LF	\$70.00	\$840,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	11,990	LF	\$1.50	\$18,000
7	12" AWWA Gate Valve	11	EA	\$3,000.00	\$33,000
8	Connect to Existing Water Line	6	EA	\$5,000.00	\$30,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	12	TON	\$5,000.00	\$60,000
11	Allowance	1	LS	\$24,000.00	\$24,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,178,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$235,950
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$177,050
		Total:	\$1,591,000

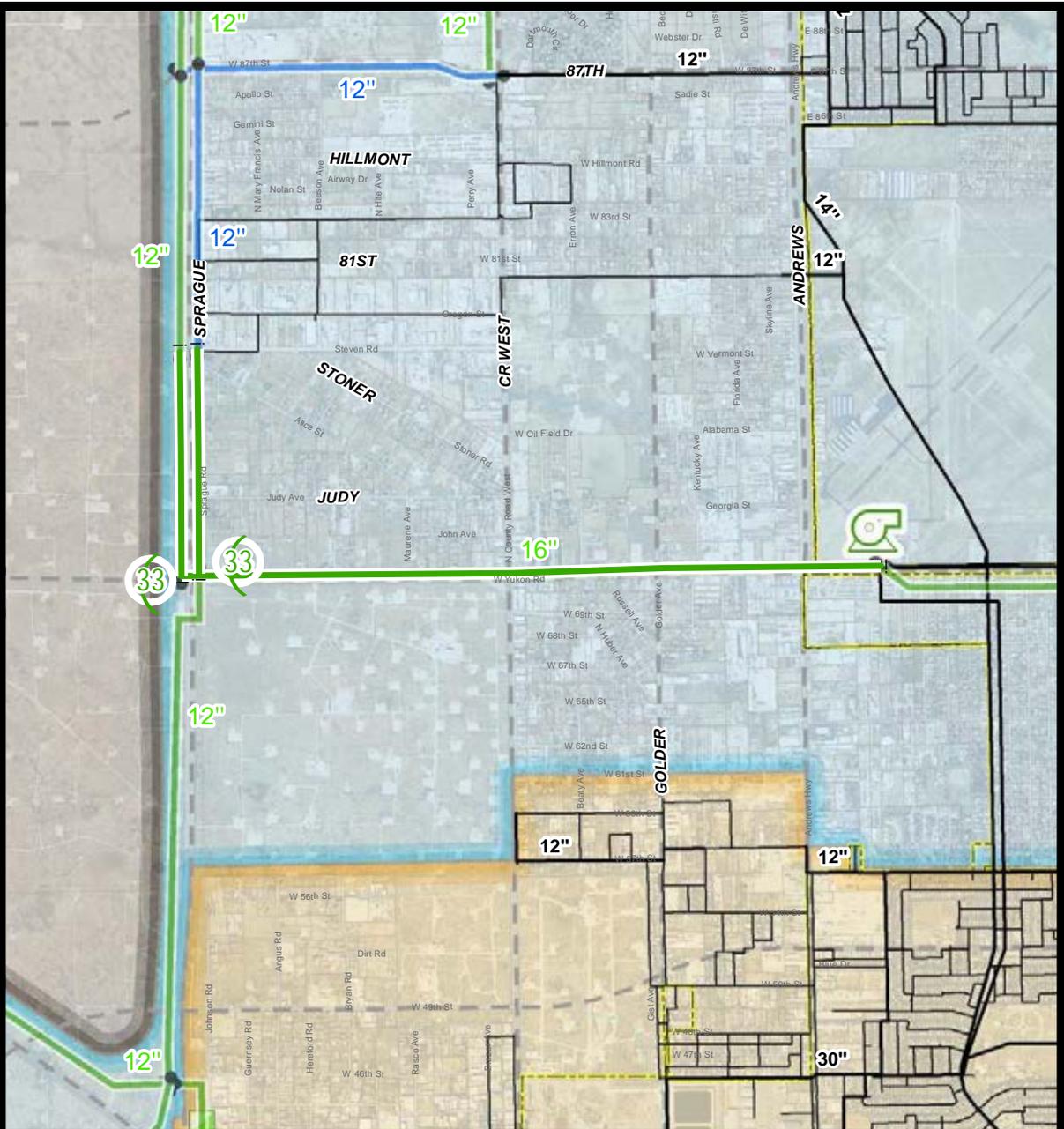
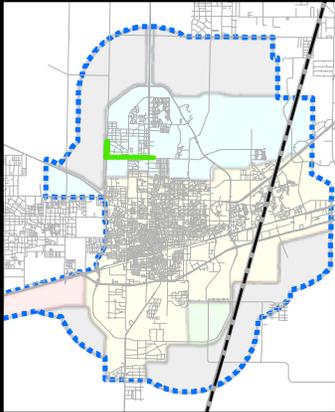
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 7,990 LF of 12-inch water line along Loop 338 from Steven Road to W Yukon Road and 12,460 LF of 16-inch water line along W Yukon Road from Loop 338 to Andrews Hwy.

Recommendation Comments: Provides additional transmission capacity from the Yukon pump station to the western portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$3,978,000

Project Name: W Yukon Road/ NW Loop 338 12 / 16-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 33. W Yukon Road / NW Loop 338 12 / 16-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$82,000.00	\$82,000
2	Traffic Control	1	LS	\$55,000.00	\$55,000
3	Erosion Control	1	LS	\$28,000.00	\$28,000
4	12" Water Pipe	7,990	LF	\$70.00	\$560,000
5	16" Water Pipe	12,460	LF	\$85.00	\$1,060,000
6	Water Line Trench Safety	20,450	LF	\$1.50	\$31,000
7	12" AWWA Gate Valve	3	EA	\$3,000.00	\$10,000
8	16" AWWA Gate Valve	9	EA	\$10,000.00	\$90,000
9	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
10	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
11	Ductile Iron Fittings	12	TON	\$5,000.00	\$63,000
12	Asphalt Pavement Repair	14,700	SY	\$60.00	\$882,000
13	Allowance	1	LS	\$58,000.00	\$58,000
Basis for Cost Projection:		Subtotal:			\$2,946,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)			20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)			15
<input type="checkbox"/>	Final Design	Total:			\$3,978,000

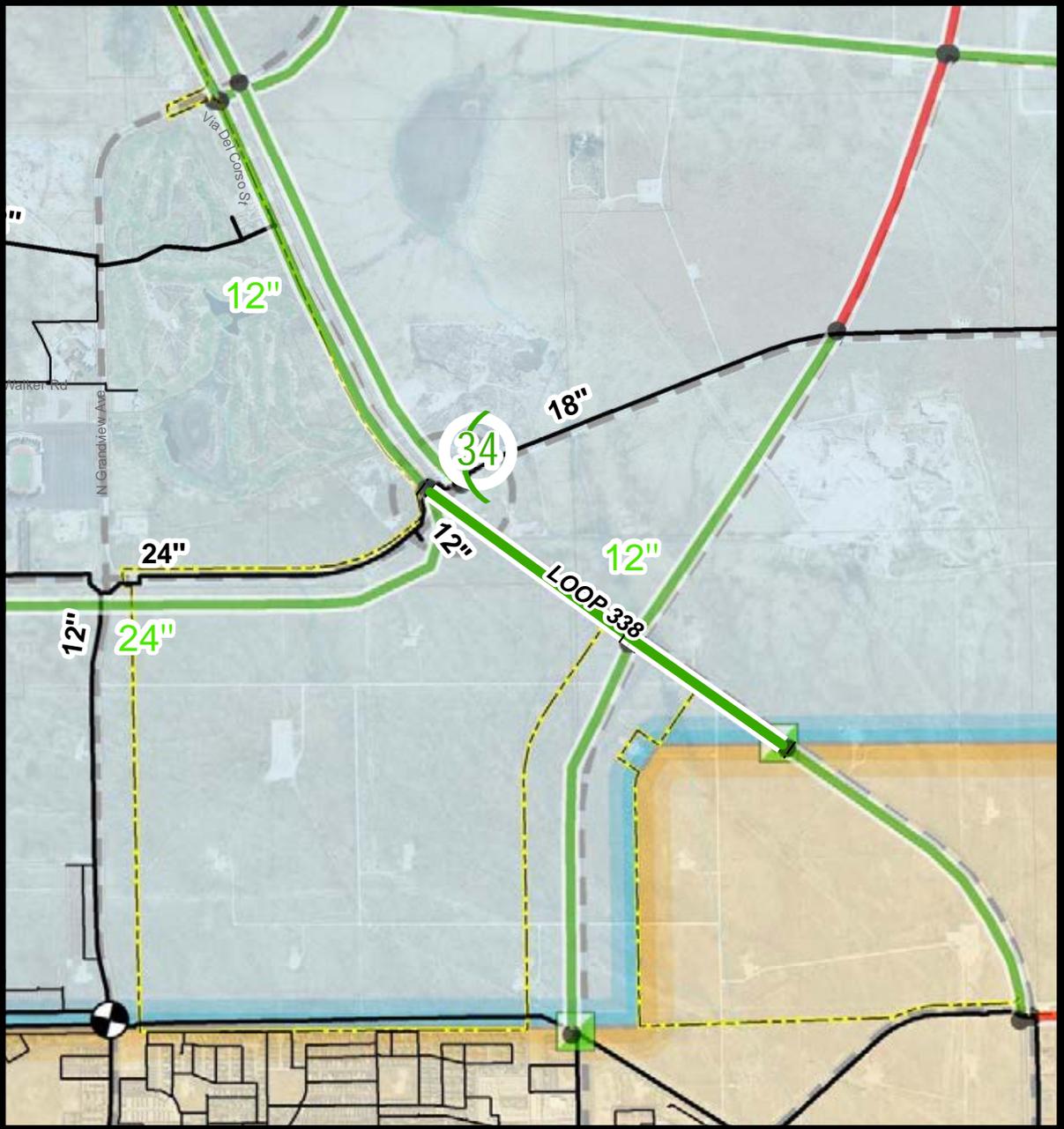
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 5,150 LF of 12-inch water line along Loop 338 from Yukon Street and connecting to Project No. 63 east of Ben Shepperd Parkway.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,051,000

Project Name: NE Loop 338 12-Inch Water Line Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 34. NE Loop 338 12-Inch Water Line Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$22,000.00	\$22,000
2	Traffic Control	1	LS	\$15,000.00	\$15,000
3	Erosion Control	1	LS	\$8,000.00	\$8,000
4	12" Water Pipe	5,150	LF	\$70.00	\$361,000
5	Water Line Trench Safety	5,150	LF	\$1.50	\$8,000
6	12" AWWA Gate Valve	6	EA	\$3,000.00	\$19,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	5	TON	\$5,000.00	\$26,000
10	Asphalt Pavement Repair	4,600	SY	\$60.00	\$276,000
11	Allowance	1	LS	\$16,000.00	\$16,000

Basis for Cost Projection:				
		Subtotal:		\$778,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20	\$155,950
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15	\$117,050
<input type="checkbox"/>	Final Design	Total:		\$1,051,000

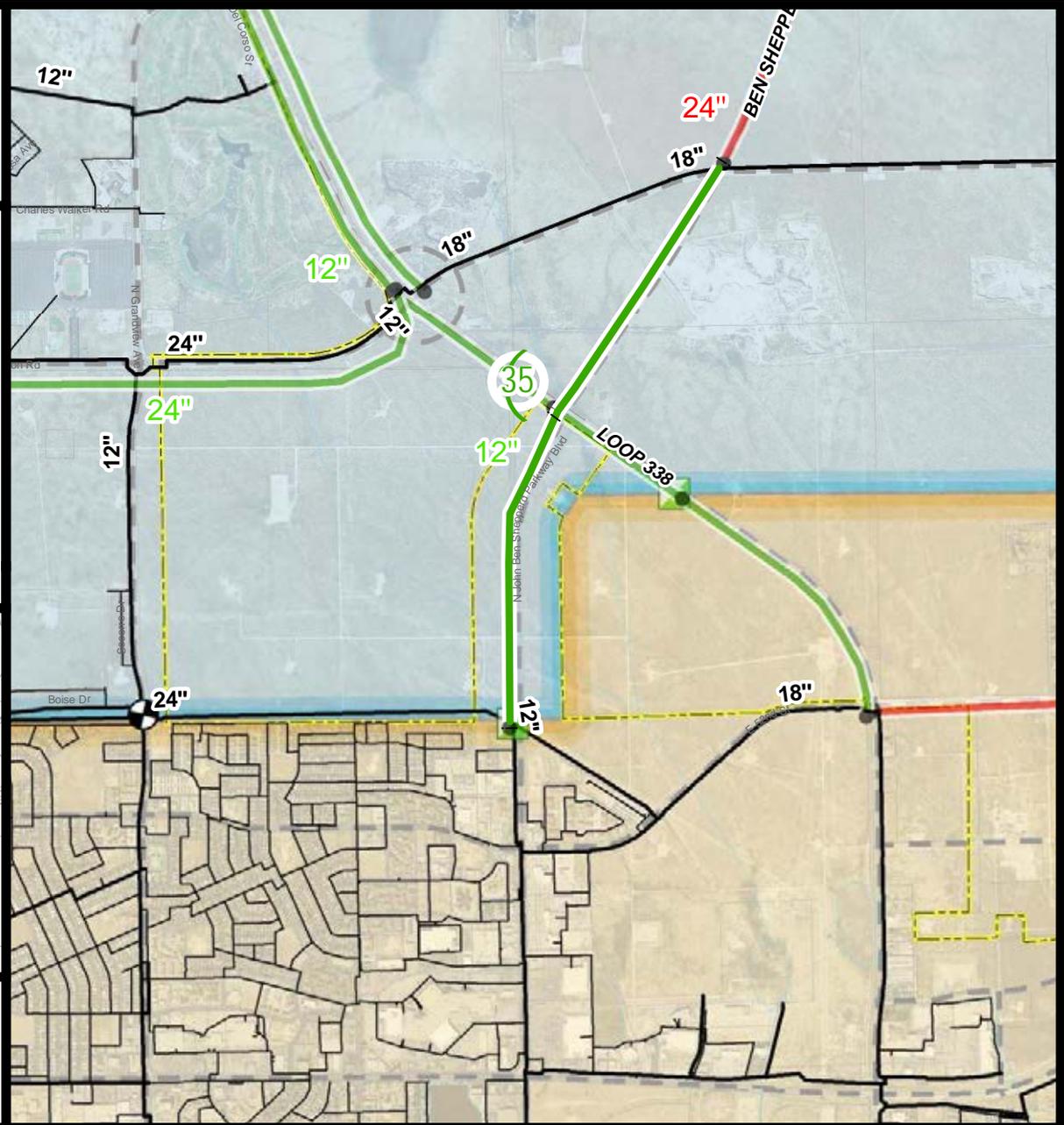
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 9,140 LF of 12-inch water line along N John Ben Shepperd Parkway from the existing 18-inch water line on Yukon Road to south of Loop 338, connecting to the existing 24-inch water line.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,639,000

Project Name: N John Ben Shepperd 12-Inch Water Line

Client: City of Odessa Date: 4/24/2019
 Project: Water System Master Plan Prepared By: AWS
 KHA No.: 063685005 Checked By: JRA

Title: 35. N John Ben Shepperd 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost	
1	Mobilization	1	LS	\$34,000.00	\$34,000	
2	Traffic Control	1	LS	\$23,000.00	\$23,000	
3	Erosion Control	1	LS	\$12,000.00	\$12,000	
4	12" Water Pipe	9,140	LF	\$70.00	\$640,000	
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000	
6	Water Line Trench Safety	9,140	LF	\$1.50	\$14,000	
7	12" AWWA Gate Valve	8	EA	\$3,000.00	\$23,000	
8	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000	
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000	
10	Ductile Iron Fittings	9	TON	\$5,000.00	\$46,000	
11	Flow Control Valve	1	EA	\$25,000.00	\$25,000	
12	Asphalt Pavement Repair	4,100	SY	\$60.00	\$246,000	
13	Allowance	1	LS	\$24,000.00	\$24,000	
Basis for Cost Projection:		Subtotal:			\$1,214,000	
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)			20	\$242,850
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)			15	\$182,150
<input type="checkbox"/>	Final Design	Total:				\$1,639,000

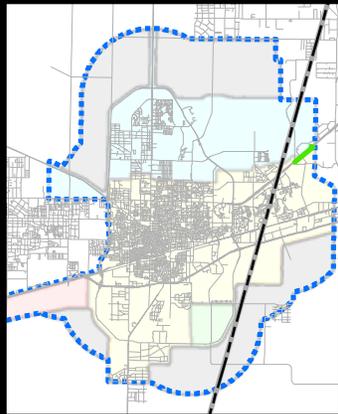
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



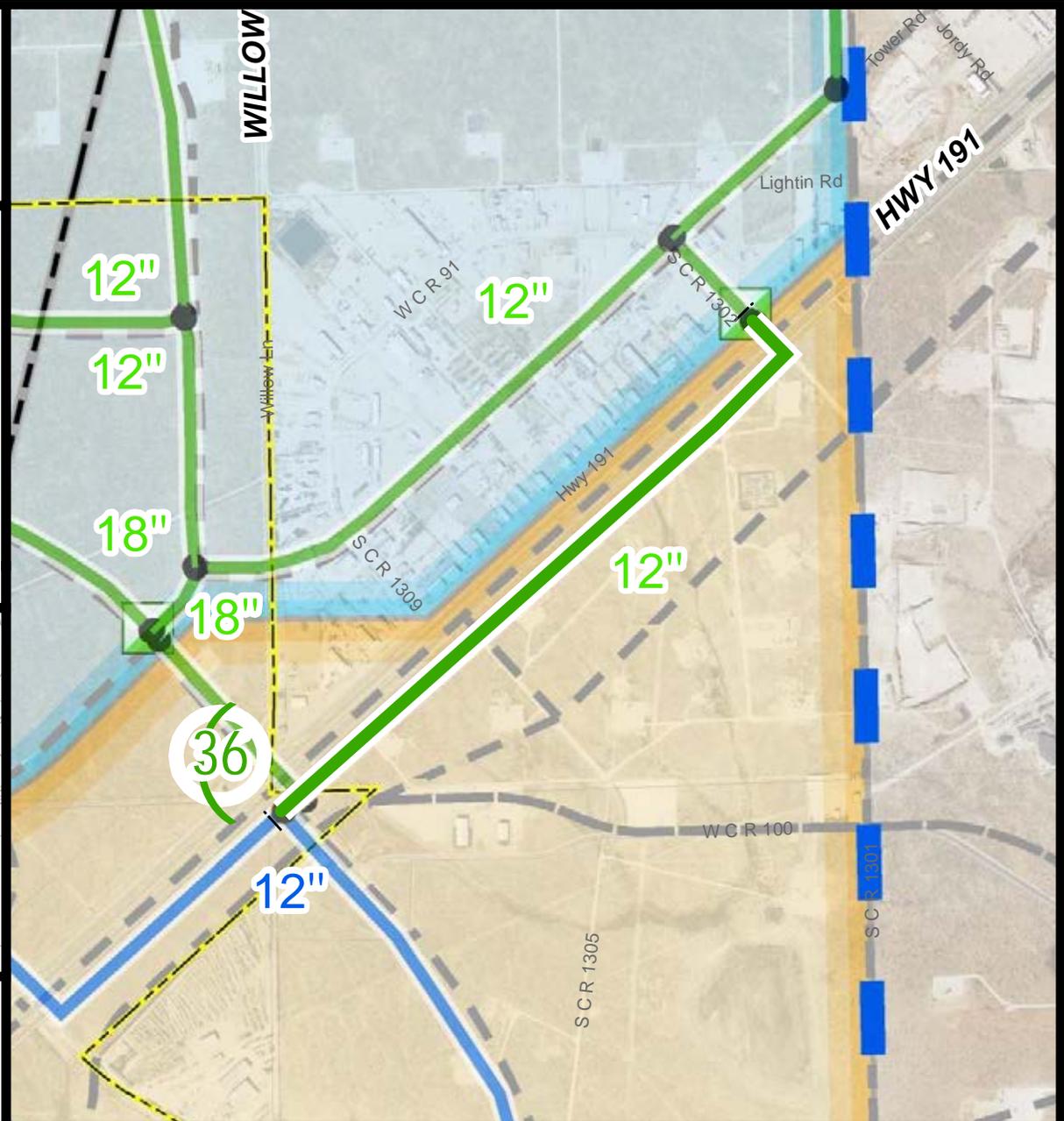
1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 25-Year

Project Description: This project consists of approximately 6,530 LF of 12-inch water line along TX-191, connecting to Project No.44 in the north and Project No. 14 in the south.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$1,431,000

Project Name: Highway 191 12-Inch Water Line Phase 2

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 36. Highway 191 12-Inch Water Line Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$30,000.00	\$30,000
2	Traffic Control	1	LS	\$20,000.00	\$20,000
3	Erosion Control	1	LS	\$10,000.00	\$10,000
4	12" Water Pipe	6,520	LF	\$70.00	\$457,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	6,520	LF	\$1.50	\$10,000
7	12" AWWA Gate Valve	5	EA	\$3,000.00	\$14,000
8	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	7	TON	\$5,000.00	\$33,000
11	Asphalt Pavement Repair	5,800	SY	\$60.00	\$348,000
12	Allowance	1	LS	\$21,000.00	\$21,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,060,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$212,000
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$159,000
		Total:	\$1,431,000

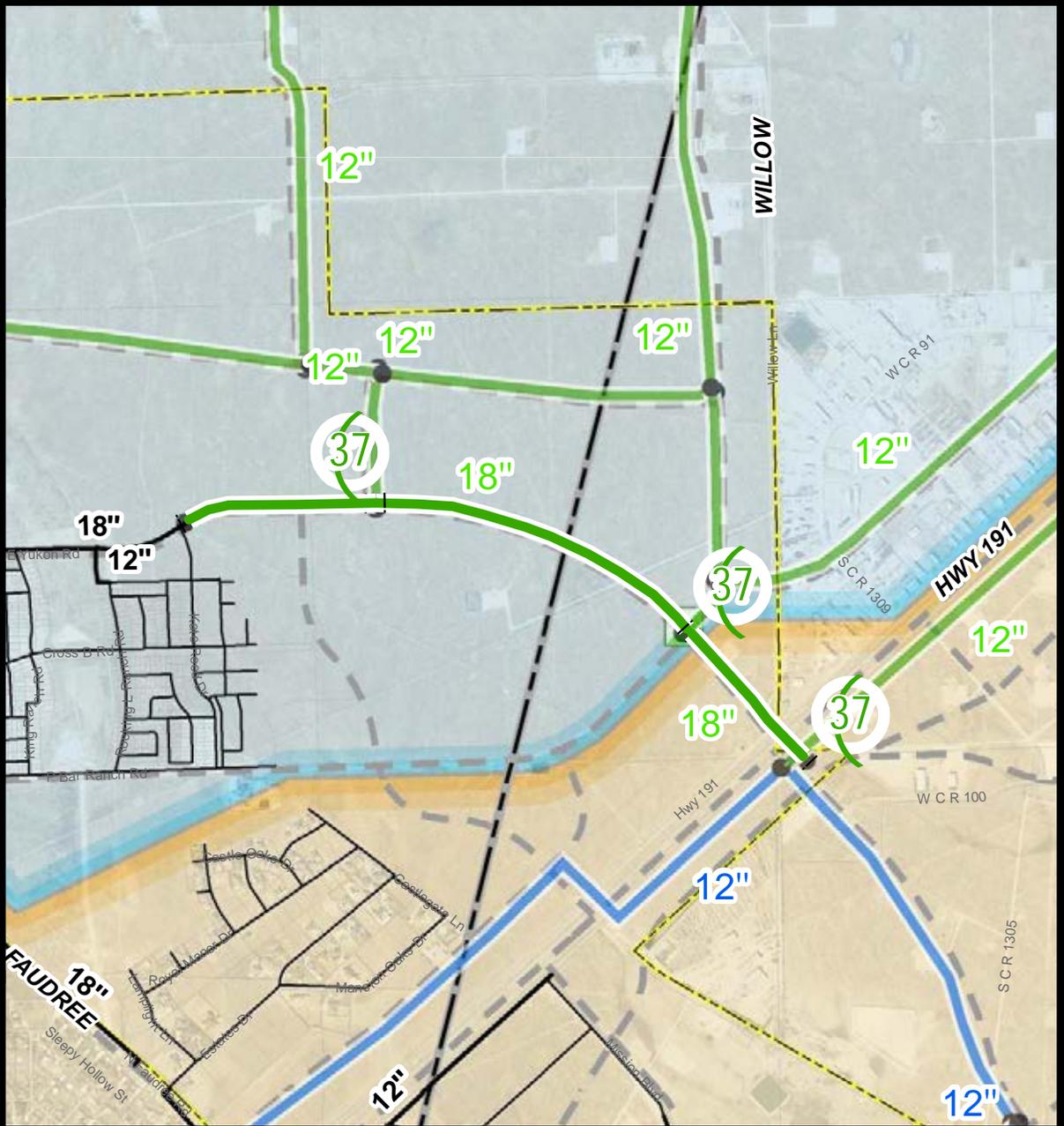
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 8,340 LF of 18-inch water line along Yukon Road beginning at Highway 191 and connecting to the existing 18-inch water line west on Yukon Road.

Recommendation Comments: Provides additional transmission capacity from the Yukon pump station to the eastern portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,712,000

Project Name: E Yukon Road 18-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 37. E Yukon Road 18-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$36,000.00	\$36,000
2	Traffic Control	1	LS	\$24,000.00	\$24,000
3	Erosion Control	1	LS	\$12,000.00	\$12,000
4	18" Water Pipe	8,340	LF	\$100.00	\$834,000
5	36" Bore with Steel Casing	200	LF	\$600.00	\$120,000
6	Water Line Trench Safety	8,340	LF	\$1.50	\$13,000
7	18" AWWA Gate Valve	8	EA	\$12,500.00	\$105,000
8	Connect to Existing Water Line	5	EA	\$5,000.00	\$25,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	8	TON	\$5,000.00	\$42,000
11	Flow Control Valve	1	EA	\$25,000.00	\$25,000
12	Allowance	1	LS	\$25,000.00	\$25,000

Basis for Cost Projection:			
		Subtotal:	\$1,268,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$253,700
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$190,300
<input type="checkbox"/>	Final Design	Total:	\$1,712,000

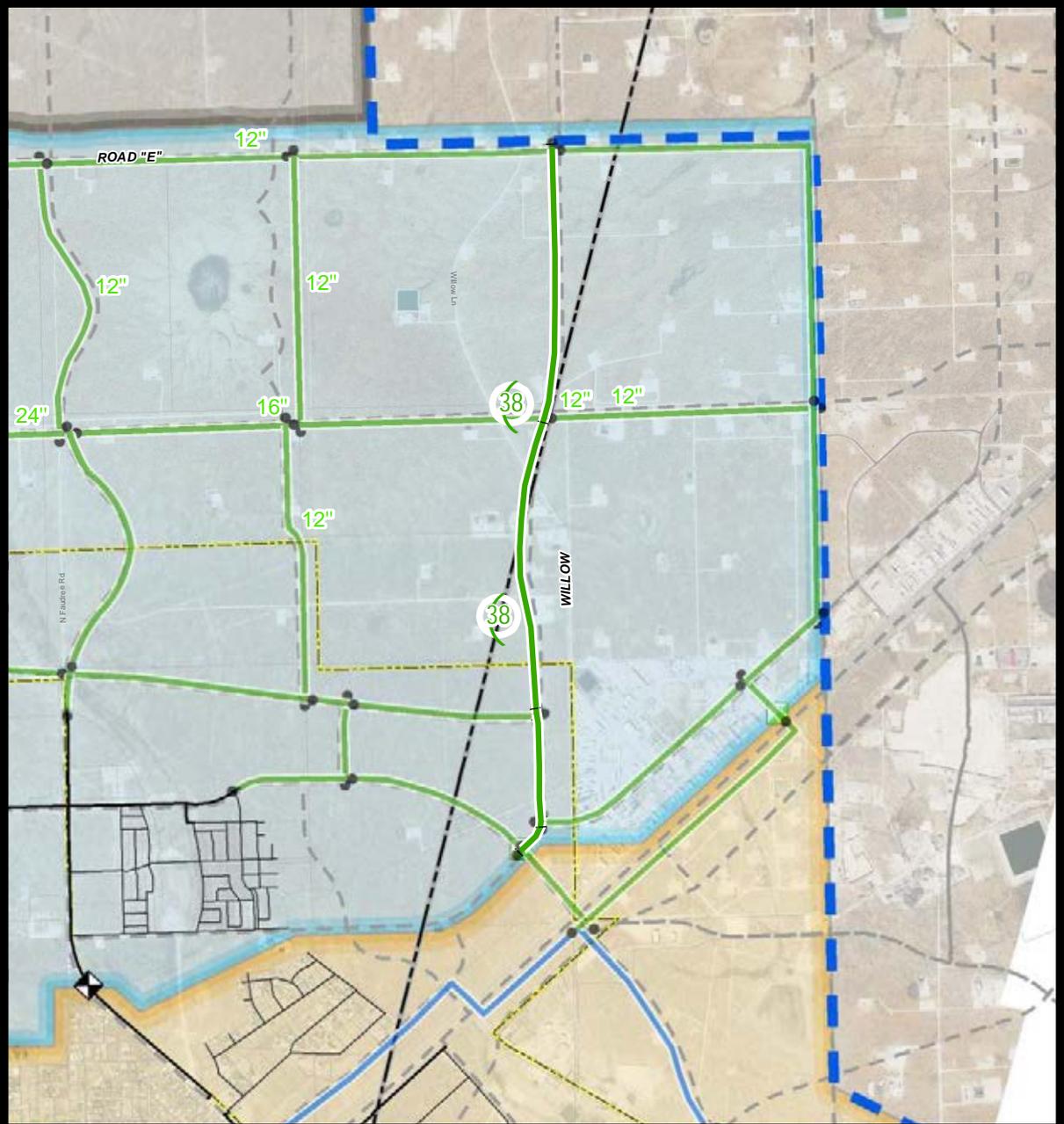
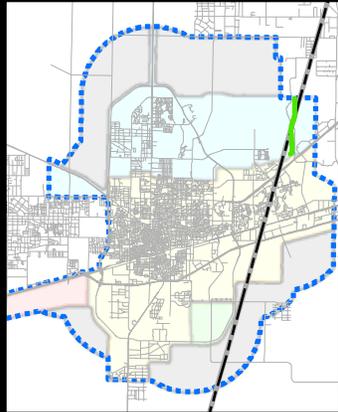
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 14,840 LF of 12-inch water line along Willow Lane from the future County Road W Extension to just north of Highway 191.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,770,000

Project Name: N Willow Lane 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 38. N Willow Lane 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$37,000.00	\$37,000
2	Traffic Control	1	LS	\$25,000.00	\$25,000
3	Erosion Control	1	LS	\$13,000.00	\$13,000
4	12" Water Pipe	14,840	LF	\$70.00	\$1,039,000
5	Water Line Trench Safety	14,840	LF	\$1.50	\$23,000
6	12" AWWA Gate Valve	12	EA	\$3,000.00	\$36,000
7	Connect to Existing Water Line	6	EA	\$5,000.00	\$30,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	15	TON	\$5,000.00	\$75,000
10	Allowance	1	LS	\$26,000.00	\$26,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$1,311,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$262,275
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$196,725
	Total:	\$1,770,000

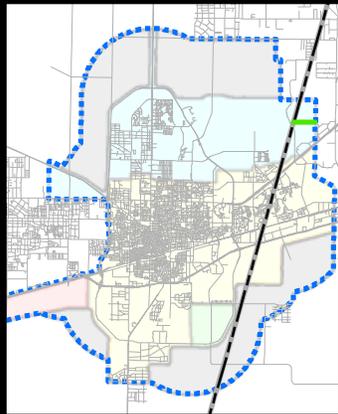
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
 April 2019

Phase: 25-Year

Project Description: This project consists of approximately 5,620 LF of 12-inch water line along future E 87th Street, connecting Project No. 40 to Project No. 38 along Willow Lane.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$675,000

Project Name: E 87th 12-Inch Water Line Phase 2

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 39. E 87th 12-Inch Water Line Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$14,000.00	\$14,000
2	Traffic Control	1	LS	\$10,000.00	\$10,000
3	Erosion Control	1	LS	\$5,000.00	\$5,000
4	12" Water Pipe	5,610	LF	\$70.00	\$393,000
5	Water Line Trench Safety	5,610	LF	\$1.50	\$9,000
6	12" AWWA Gate Valve	4	EA	\$3,000.00	\$13,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$29,000
10	Allowance	1	LS	\$10,000.00	\$10,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$500,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$100,000
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$75,000
	Total:	\$675,000

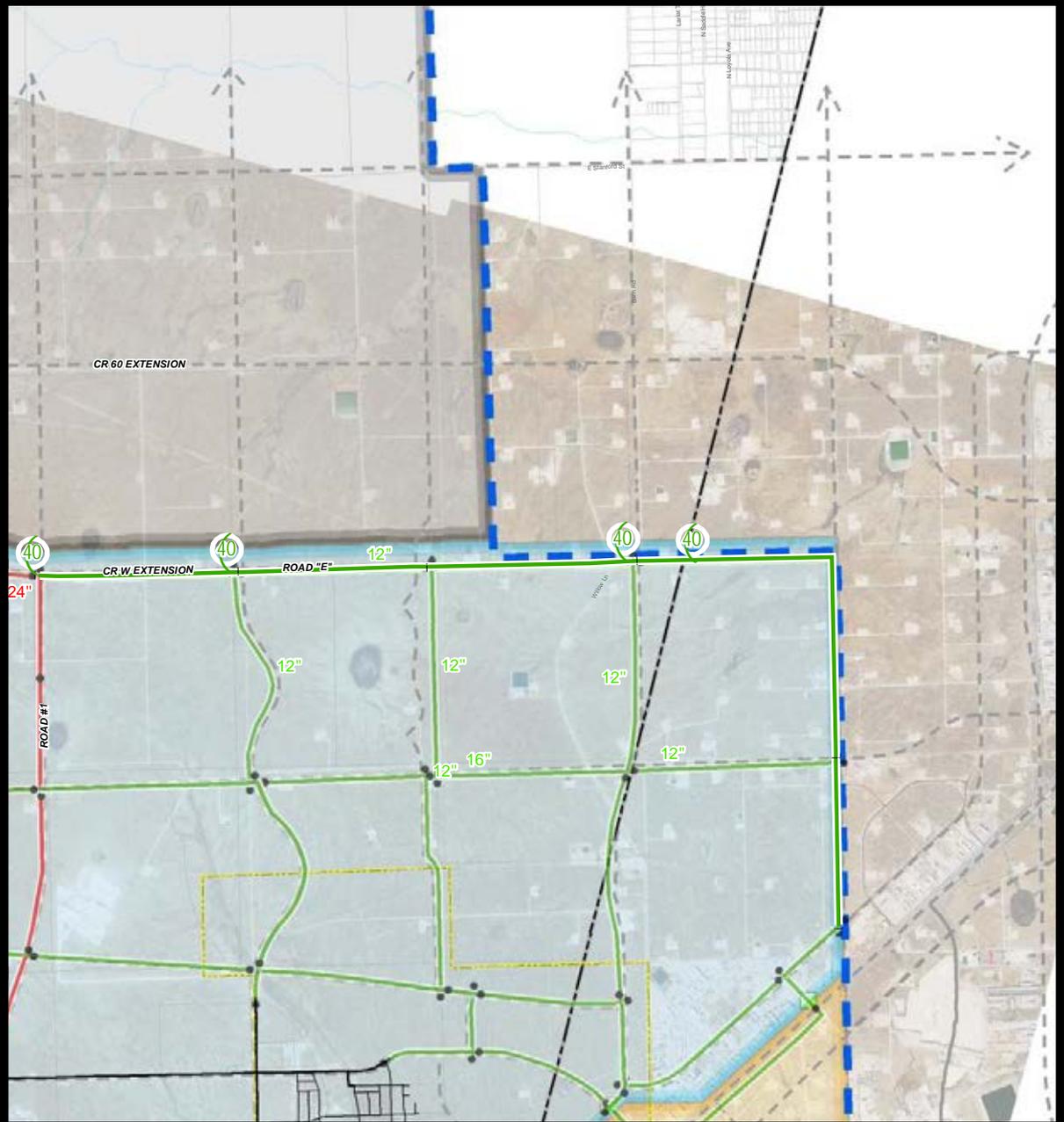
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 31,090 LF of 12-inch water line along the future County Road W Extension and then turns south, connecting to Project No. 44.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$3,612,000

Project Name: County Road West Extension 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 40. County Road West Extension 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$75,000.00	\$75,000
2	Traffic Control	1	LS	\$50,000.00	\$50,000
3	Erosion Control	1	LS	\$25,000.00	\$25,000
4	12" Water Pipe	31,080	LF	\$70.00	\$2,176,000
5	Water Line Trench Safety	31,080	LF	\$1.50	\$47,000
6	12" AWWA Gate Valve	18	EA	\$3,000.00	\$56,000
7	Connect to Existing Water Line	6	EA	\$5,000.00	\$30,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	31	TON	\$5,000.00	\$156,000
10	Allowance	1	LS	\$53,000.00	\$53,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$2,675,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$535,375
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$401,625
		Total:	\$3,612,000

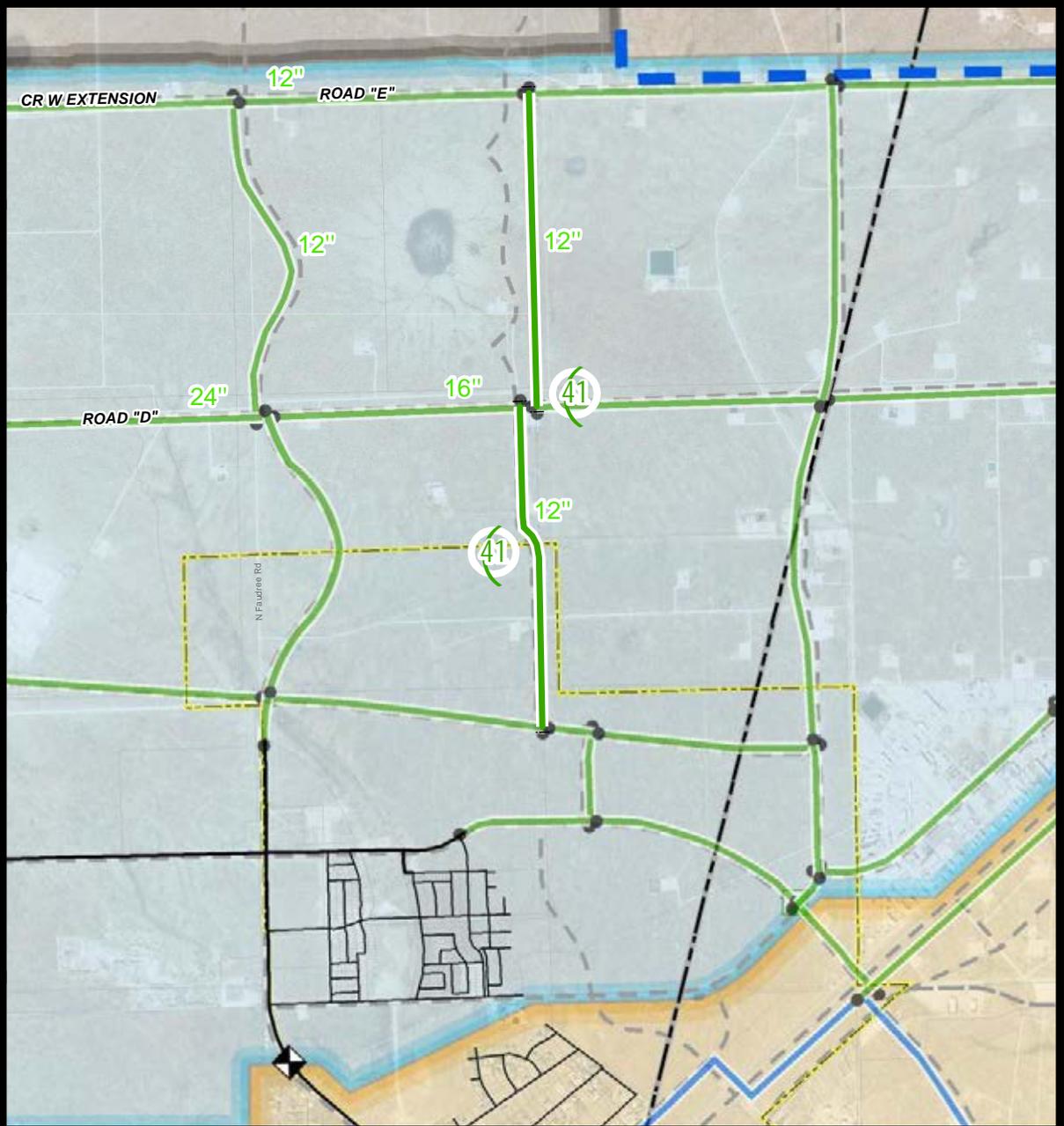
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 11,370 LF of 12-inch water line running south from the future County Road W Extension to connect to Project No. 31.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,352,000

Project Name: Project #41 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 41. Project #41 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$28,000.00	\$28,000
2	Traffic Control	1	LS	\$19,000.00	\$19,000
3	Erosion Control	1	LS	\$10,000.00	\$10,000
4	12" Water Pipe	11,370	LF	\$70.00	\$796,000
5	Water Line Trench Safety	11,370	LF	\$1.50	\$18,000
6	12" AWWA Gate Valve	9	EA	\$3,000.00	\$26,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	11	TON	\$5,000.00	\$57,000
10	Allowance	1	LS	\$20,000.00	\$20,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$1,001,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$200,525
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$150,475
Total:			\$1,352,000

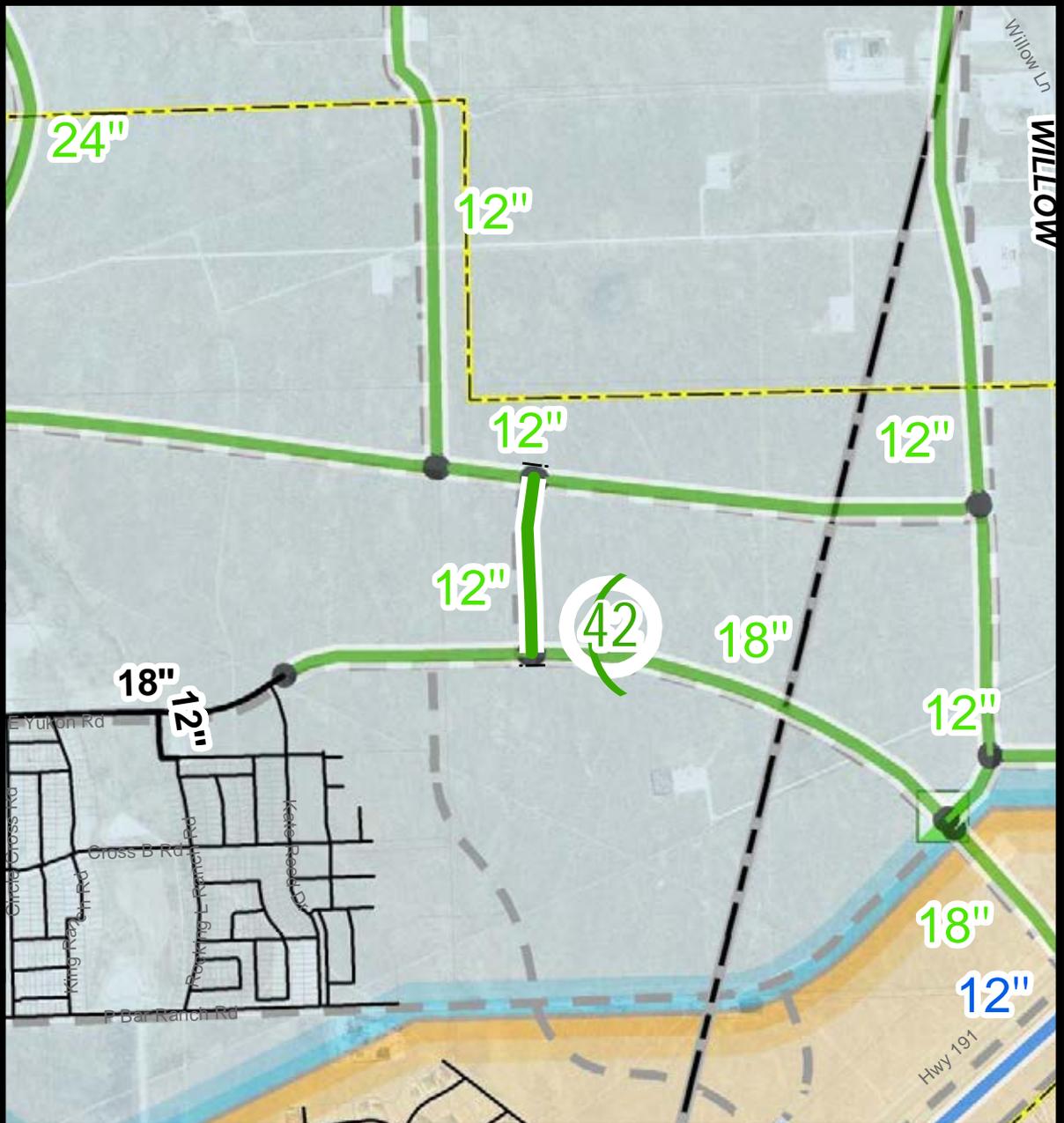
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
 April 2019

Phase: 25-Year

Project Description: This project consists of approximately 1,570 LF of 12-inch water line North of TX-191 and East of Faudree Road, connecting Project Nos. 31 and 37.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$216,000

Project Name: Project #42 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 42. Project #42 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$5,000.00	\$5,000
2	Traffic Control	1	LS	\$3,000.00	\$3,000
3	Erosion Control	1	LS	\$2,000.00	\$2,000
4	12" Water Pipe	1,560	LF	\$70.00	\$110,000
5	Water Line Trench Safety	1,560	LF	\$1.50	\$3,000
6	12" AWWA Gate Valve	3	EA	\$3,000.00	\$8,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$8,000
10	Allowance	1	LS	\$4,000.00	\$4,000

Basis for Cost Projection:			
		Subtotal:	\$160,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$32,000
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$24,000
<input type="checkbox"/>	Final Design	Total:	\$216,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



CR W EXTENSION

ROAD "E"

12"

12"

ROAD "D"

43

16"

24"

12"

Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 6,000 LF of 12-inch water line along Faudree Road from the future County Road W Extension to the future E 87th Street, connecting Project Nos. 40 and 23.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$717,000

Project Name: N Faudree Road Upper 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 43. N Faudree Road Upper 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$15,000.00	\$15,000
2	Traffic Control	1	LS	\$10,000.00	\$10,000
3	Erosion Control	1	LS	\$5,000.00	\$5,000
4	12" Water Pipe	6,000	LF	\$70.00	\$420,000
5	Water Line Trench Safety	6,000	LF	\$1.50	\$9,000
6	12" AWWA Gate Valve	4	EA	\$3,000.00	\$14,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$30,000
10	Allowance	1	LS	\$11,000.00	\$11,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$531,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$106,275
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$79,725
	Total:	\$717,000

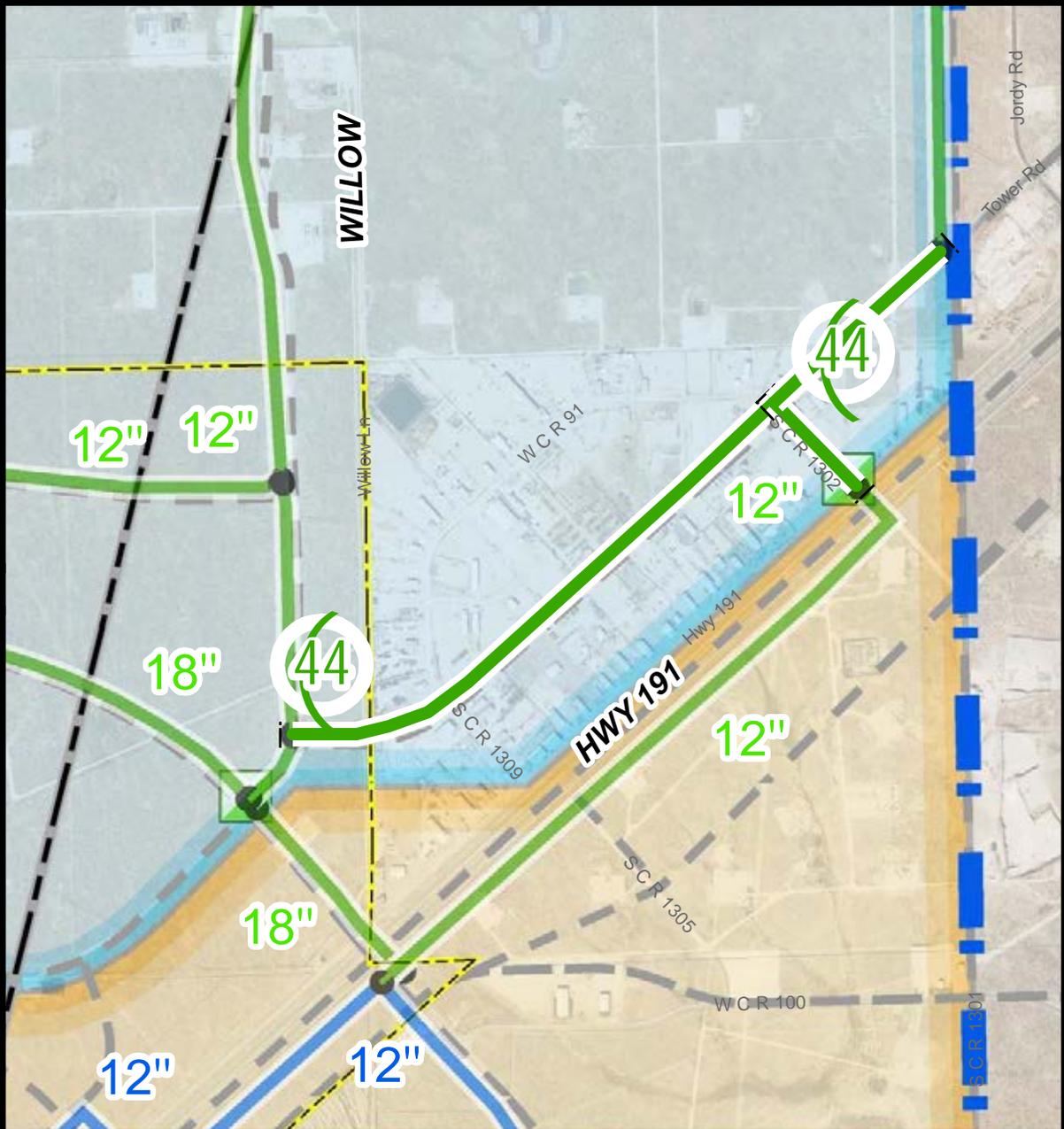
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 8,380 LF of 12-inch water line along S County Road 1302 from Project No. 40 to Project No. 38.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,371,000

Project Name: S County Road 1302 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 44. S County Road 1302 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$29,000.00	\$29,000
2	Traffic Control	1	LS	\$19,000.00	\$19,000
3	Erosion Control	1	LS	\$10,000.00	\$10,000
4	12" Water Pipe	8,380	LF	\$70.00	\$587,000
5	Water Line Trench Safety	8,380	LF	\$1.50	\$13,000
6	12" AWWA Gate Valve	6	EA	\$3,000.00	\$20,000
7	Connect to Existing Water Line	3	EA	\$5,000.00	\$15,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	8	TON	\$5,000.00	\$42,000
10	Flow Control Valve	1	EA	\$25,000.00	\$25,000
11	Asphalt Pavement Repair	3,800	SY	\$60.00	\$228,000
12	Allowance	1	LS	\$20,000.00	\$20,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$1,015,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$203,375
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$152,625
		Total:	\$1,371,000

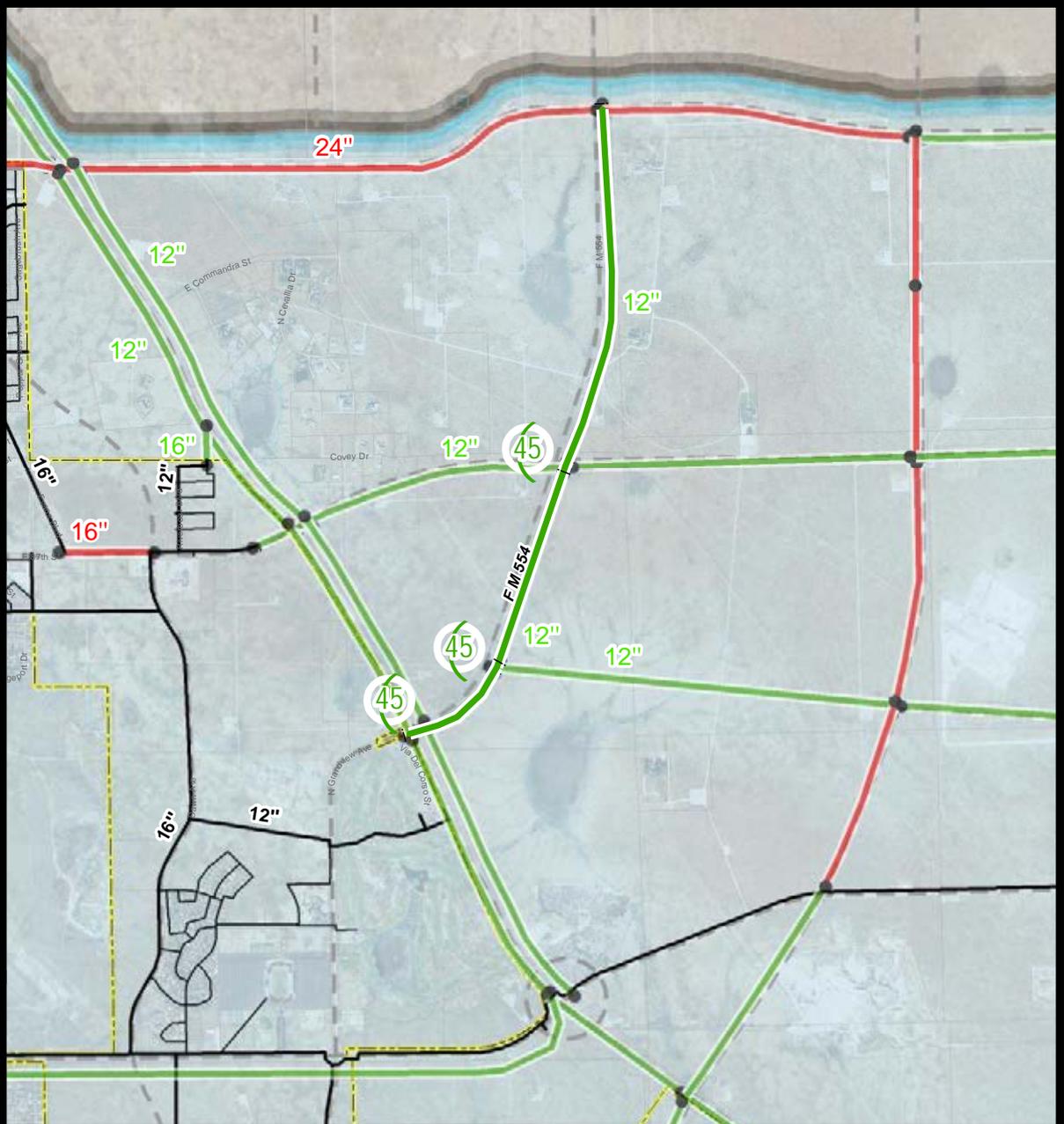
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 12,330 LF of 12-inch water line along FM 554 from future County Road W Extension to Loop 338.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$2,583,000

Project Name: FM 554 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 45. FM 554 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$54,000.00	\$54,000
2	Traffic Control	1	LS	\$36,000.00	\$36,000
3	Erosion Control	1	LS	\$18,000.00	\$18,000
4	12" Water Pipe	12,330	LF	\$70.00	\$864,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	12,330	LF	\$1.50	\$19,000
7	12" AWWA Gate Valve	10	EA	\$3,000.00	\$30,000
8	Connect to Existing Water Line	5	EA	\$5,000.00	\$25,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	12	TON	\$5,000.00	\$62,000
11	Asphalt Pavement Repair	11,000	SY	\$60.00	\$660,000
12	Allowance	1	LS	\$38,000.00	\$38,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$1,913,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$382,825
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$287,175
		Total:	\$2,583,000

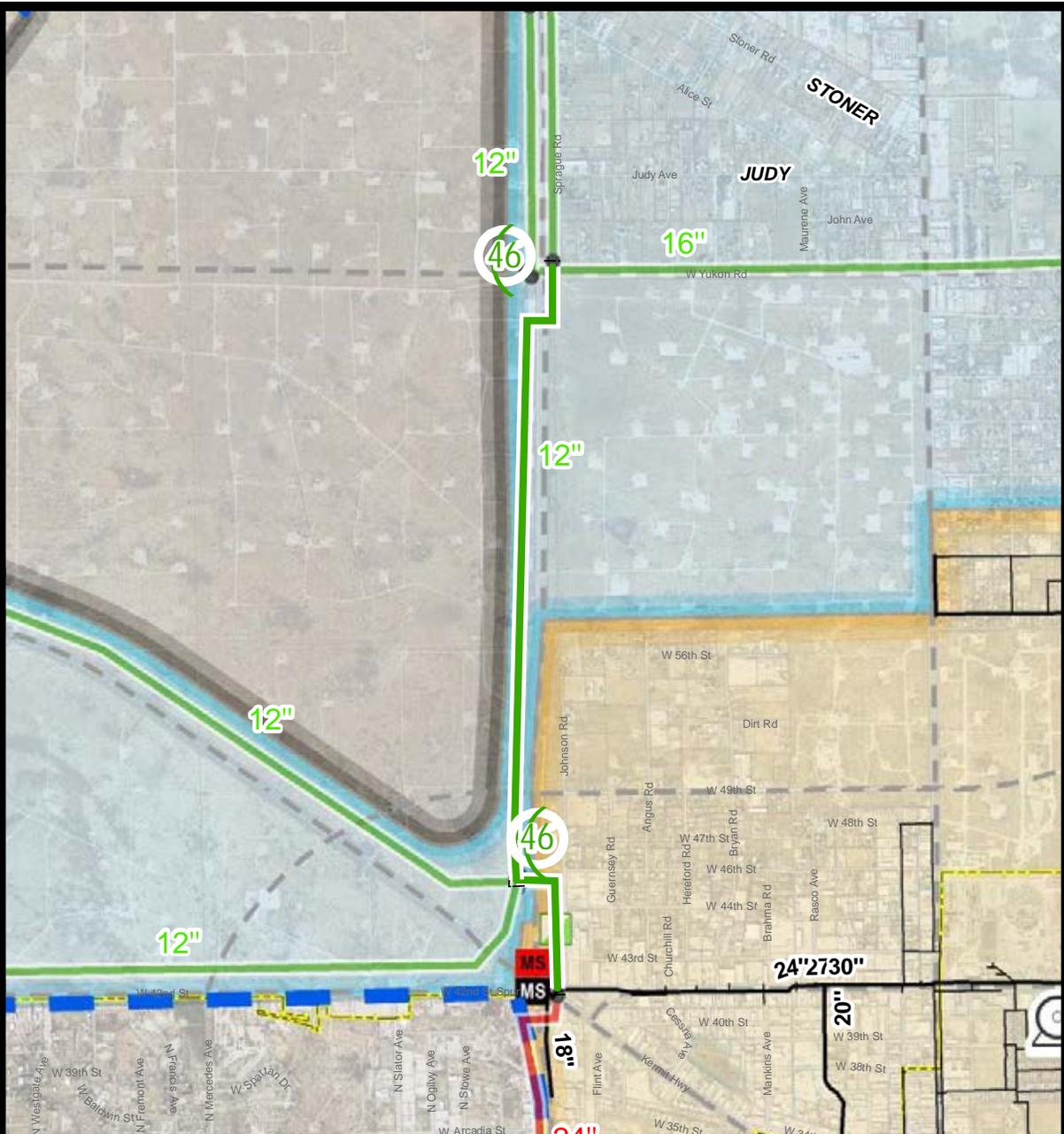
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 11,580 LF of 12-inch water line along Loop 338, connecting to Project No. 33 in the north and Project Nos. 47 and 46 in the south.

Recommendation Comments: Provides additional transmission capacity from the Yukon pump station to the western portion of the Upper Pressure Plane.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$2,583,000

Project Name: NW Loop 338 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 46. NW Loop 338 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$54,000.00	\$54,000
2	Traffic Control	1	LS	\$36,000.00	\$36,000
3	Erosion Control	1	LS	\$18,000.00	\$18,000
4	12" Water Pipe	11,580	LF	\$70.00	\$811,000
5	24" Bore with Steel Casing	400	LF	\$500.00	\$200,000
6	Water Line Trench Safety	11,580	LF	\$1.50	\$18,000
7	12" AWWA Gate Valve	7	EA	\$3,000.00	\$20,000
8	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	12	TON	\$5,000.00	\$58,000
11	Flow Control Valve	1	EA	\$25,000.00	\$25,000
12	Asphalt Pavement Repair	10,300	SY	\$60.00	\$618,000
13	Allowance	1	LS	\$38,000.00	\$38,000

Basis for Cost Projection:			
		Subtotal:	\$1,913,000
<input checked="" type="checkbox"/> No Design Completed		Conting. (%,+/-)	20 \$382,825
<input type="checkbox"/> Preliminary Design		Professional Services (%,+/-)	15 \$287,175
<input type="checkbox"/> Final Design		Total:	\$2,583,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



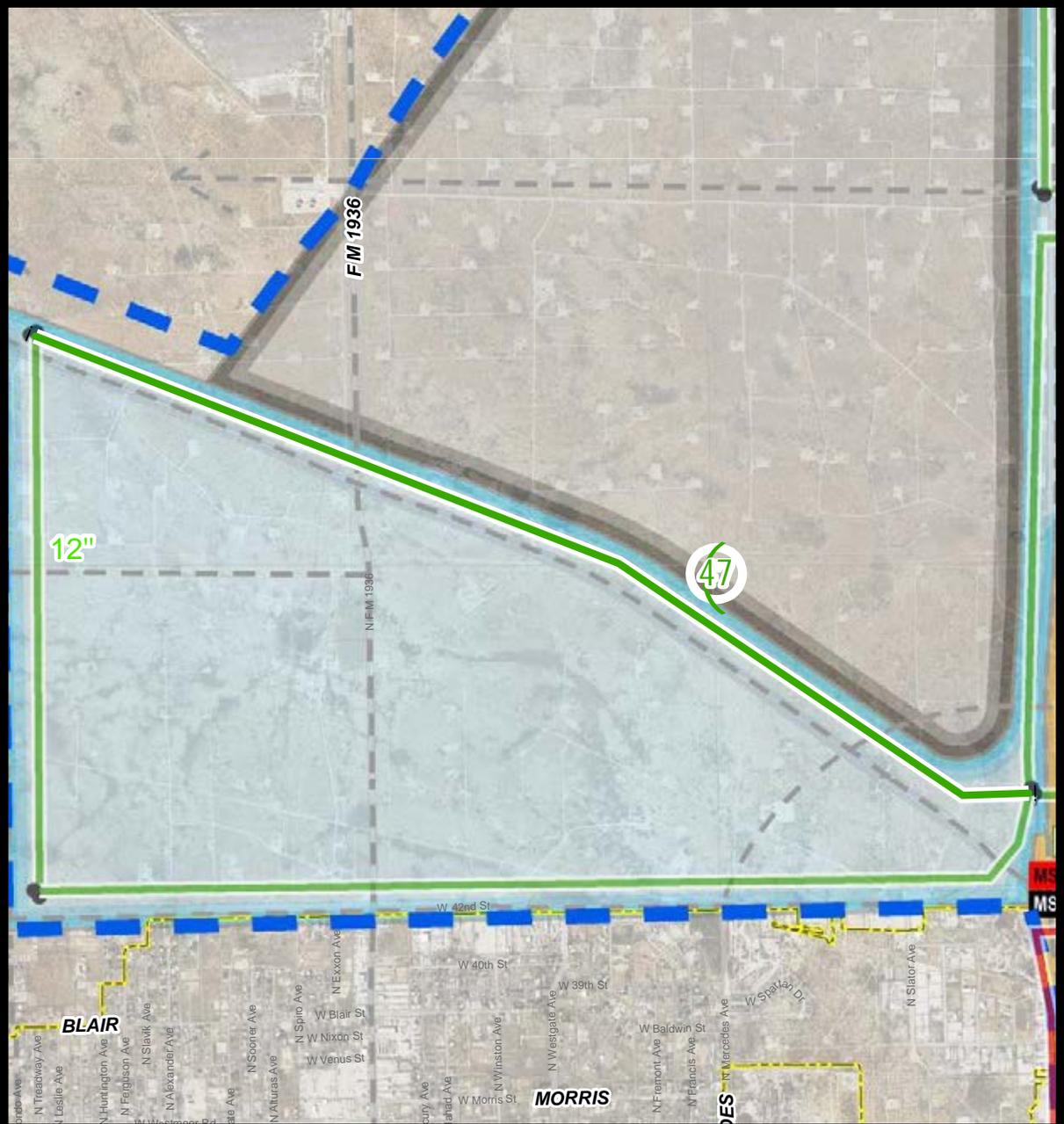
1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 25-Year

Project Description: This project consists of approximately 16,500 LF of 12-inch water line. It connects to Project No. 66 and then runs southeast along W Highway 302.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,904,000

Project Name: W Highway 302 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 47. W Highway 302 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$40,000.00	\$40,000
2	Traffic Control	1	LS	\$27,000.00	\$27,000
3	Erosion Control	1	LS	\$14,000.00	\$14,000
4	12" Water Pipe	16,540	LF	\$70.00	\$1,158,000
5	Water Line Trench Safety	16,540	LF	\$1.50	\$25,000
6	12" AWWA Gate Valve	8	EA	\$3,000.00	\$23,000
7	Connect to Existing Water Line	1	EA	\$5,000.00	\$5,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	17	TON	\$5,000.00	\$83,000
10	Allowance	1	LS	\$28,000.00	\$28,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$1,410,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$282,250
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$211,750
	Total:	\$1,904,000

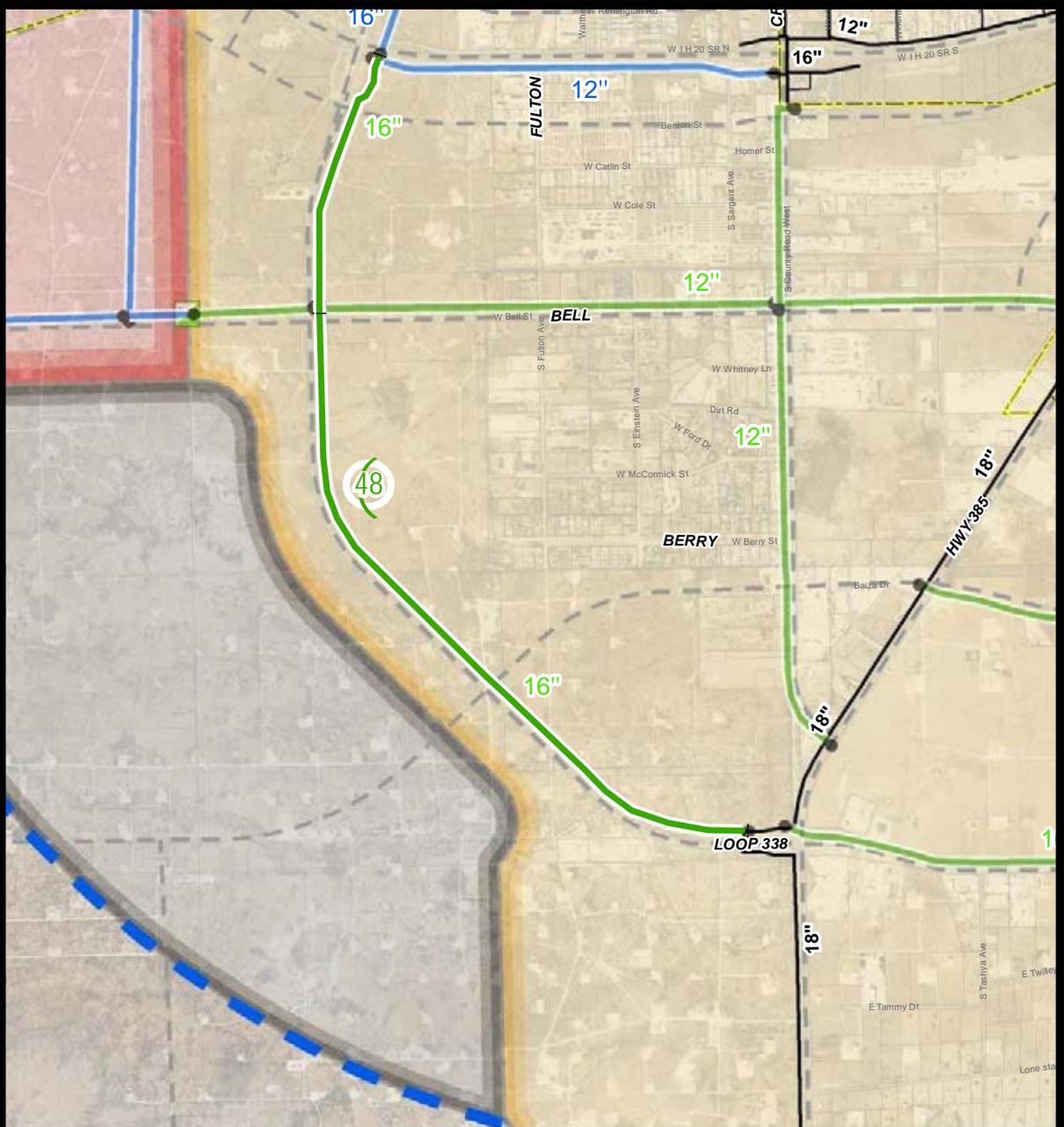
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 17,900 LF of 16-inch water line along Loop 338, connecting to Project No. 20 in the north and Project No. 49 in the southeast direction.

Recommendation Comments: Provides additional transmission capacity to the southern portion of the Lower Pressure Plane.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$3,999,000

Project Name: SW Loop 338 16-Inch water Line Phase 2

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 48. SW Loop 338 16-Inch Water Line Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$83,000.00	\$83,000
2	Traffic Control	1	LS	\$55,000.00	\$55,000
3	Erosion Control	1	LS	\$28,000.00	\$28,000
4	16" Water Pipe	17,890	LF	\$85.00	\$1,521,000
5	Water Line Trench Safety	17,890	LF	\$1.50	\$27,000
6	16" AWWA Gate Valve	11	EA	\$10,000.00	\$112,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	18	TON	\$5,000.00	\$90,000
10	Asphalt Pavement Repair	16,000	SY	\$60.00	\$960,000
11	Allowance	1	LS	\$59,000.00	\$59,000

Basis for Cost Projection:			
		Subtotal:	\$2,962,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$3,999,000

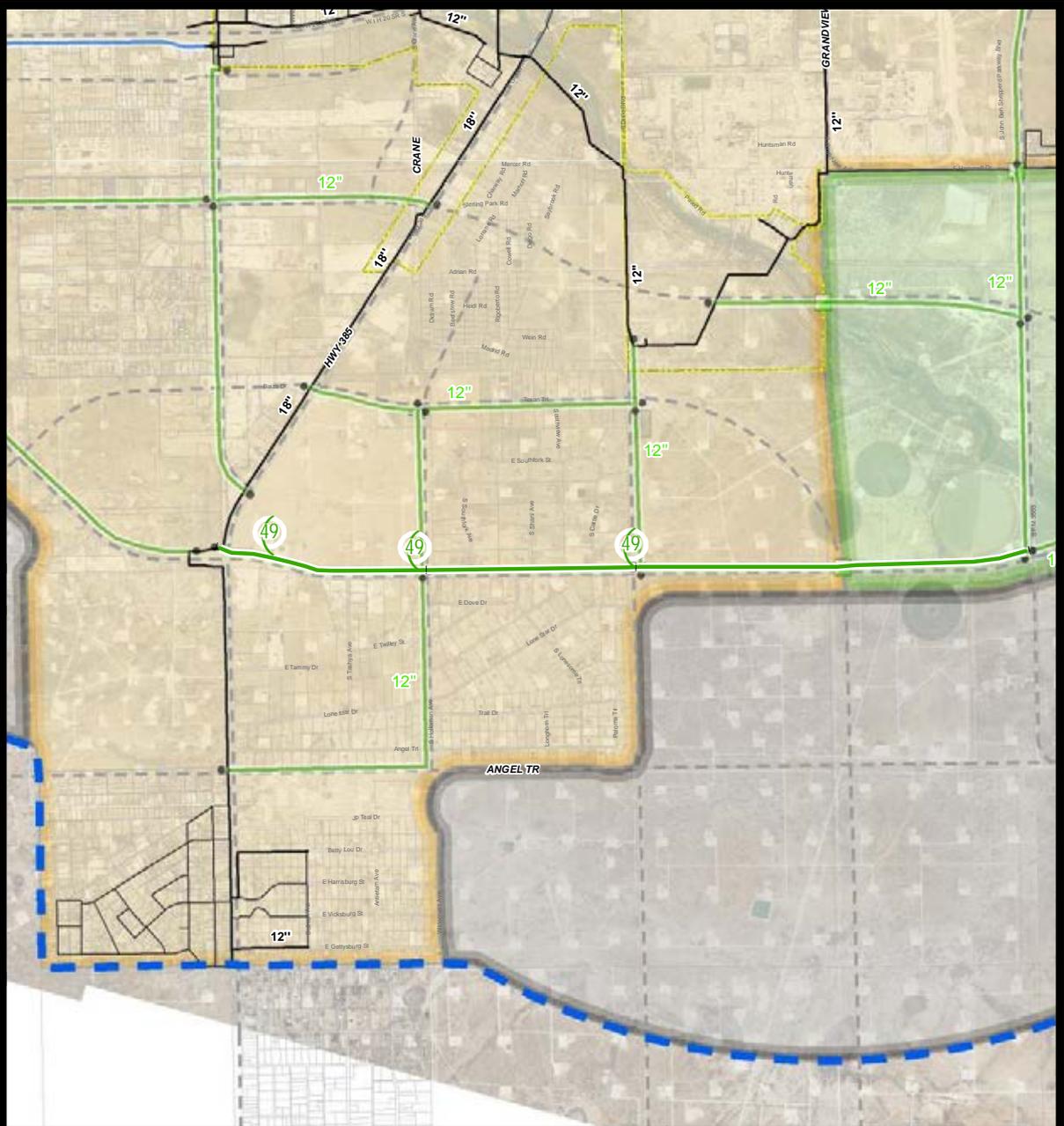
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 21,660 LF of 16-inch water line along Loop 338, connecting to Project No. 48 in the west and Project No. 50 in the east direction.

Recommendation Comments: Provides additional transmission capacity to the southern portion of the Lower Pressure Plane and the Southeast Pressure Plane.

Pressure Plane: Lower / South East Pressure Plane

Capital Cost: \$5,048,000

Project Name: SE Loop 338 16-Inch Water Line Phase 1

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 49. SE Loop 338 16-Inch Water Line Phase 1

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost	
1	Mobilization	1	LS	\$104,000.00	\$104,000	
2	Traffic Control	1	LS	\$70,000.00	\$70,000	
3	Erosion Control	1	LS	\$35,000.00	\$35,000	
4	16" Water Pipe	21,660	LF	\$85.00	\$1,842,000	
5	36" Bore with Steel Casing	200	LF	\$600.00	\$120,000	
6	Water Line Trench Safety	21,660	LF	\$1.50	\$33,000	
7	16" AWWA Gate Valve	14	EA	\$10,000.00	\$137,000	
8	Connect to Existing Water Line	5	EA	\$5,000.00	\$25,000	
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000	
10	Ductile Iron Fittings	22	TON	\$5,000.00	\$109,000	
11	Flow Control Valve	1	EA	\$25,000.00	\$25,000	
12	Asphalt Pavement Repair	19,300	SY	\$60.00	\$1,158,000	
13	Allowance	1	LS	\$74,000.00	\$74,000	
Basis for Cost Projection:		Subtotal:			\$3,739,000	
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)			20	\$747,975
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)			15	\$561,025
<input type="checkbox"/>	Final Design	Total:				\$5,048,000

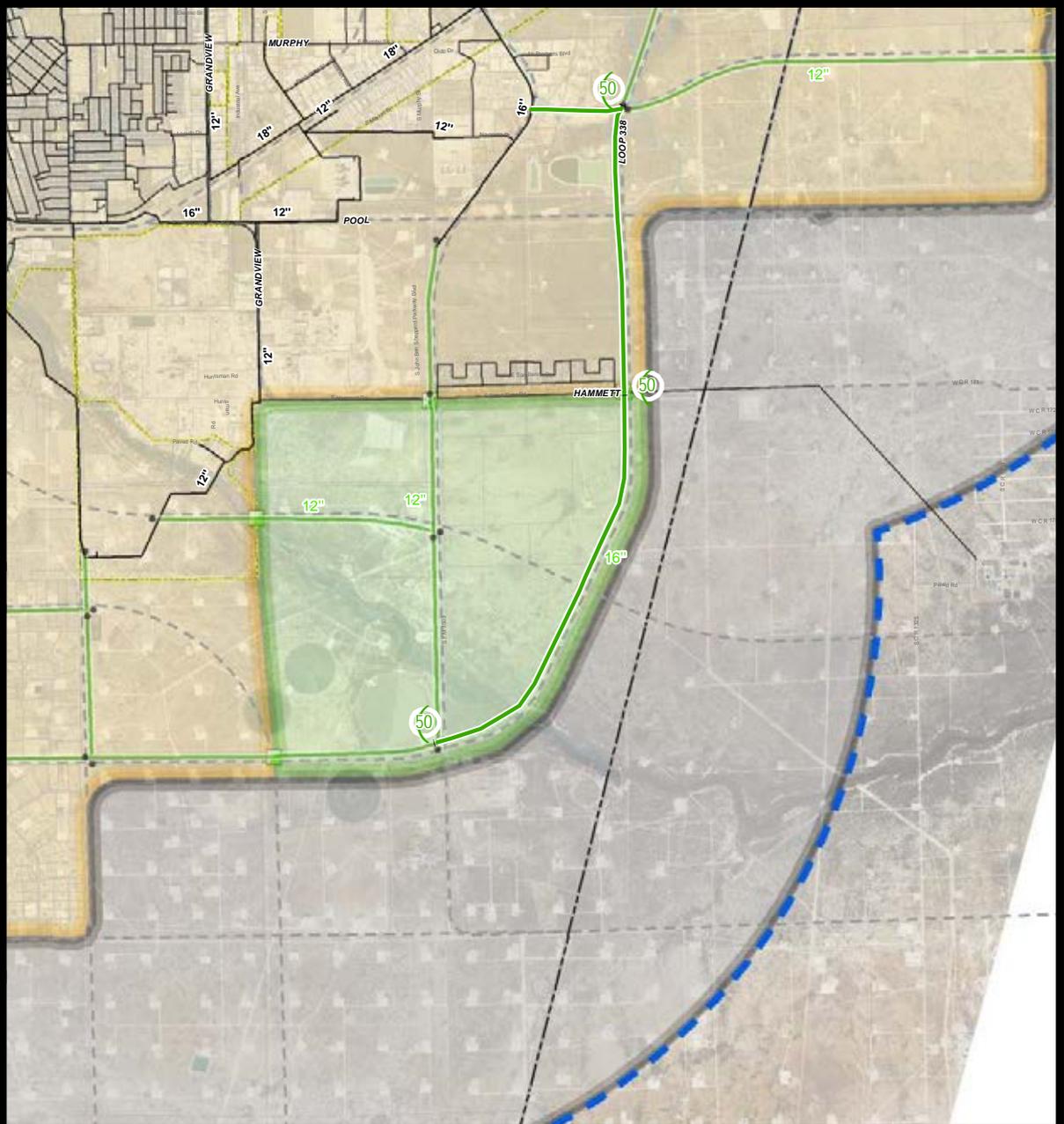
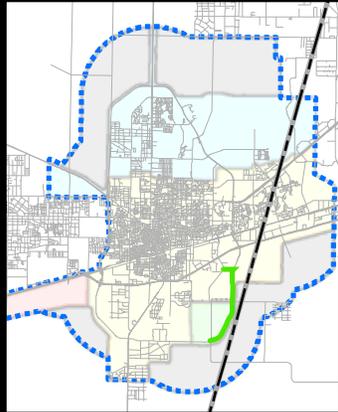
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 5,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 23,820 LF of 16-inch water line along Loop 338, connecting to Project No. 51 in the north and Project No. 49 in the south.

Recommendation Comments: Provides additional transmission capacity to the southern portion of the Lower Pressure Plane and the Southeast Pressure Plane.

Pressure Plane: Lower / South East Pressure Plane

Capital Cost: \$5,361,000

Project Name: SE Loop 338 16-Inch Water Line Phase 2

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 50. SE Loop 338 16-Inch Water Line Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$111,000.00	\$111,000
2	Traffic Control	1	LS	\$74,000.00	\$74,000
3	Erosion Control	1	LS	\$37,000.00	\$37,000
4	16" Water Pipe	23,820	LF	\$85.00	\$2,025,000
5	Water Line Trench Safety	23,820	LF	\$1.50	\$36,000
6	16" AWWA Gate Valve	16	EA	\$10,000.00	\$156,000
7	Connect to Existing Water Line	6	EA	\$5,000.00	\$30,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	24	TON	\$5,000.00	\$120,000
10	Flow Control Valve	1	EA	\$25,000.00	\$25,000
11	Asphalt Pavement Repair	21,200	SY	\$60.00	\$1,272,000
12	Allowance	1	LS	\$78,000.00	\$78,000

Basis for Cost Projection:			
		Subtotal:	\$3,971,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$5,361,000

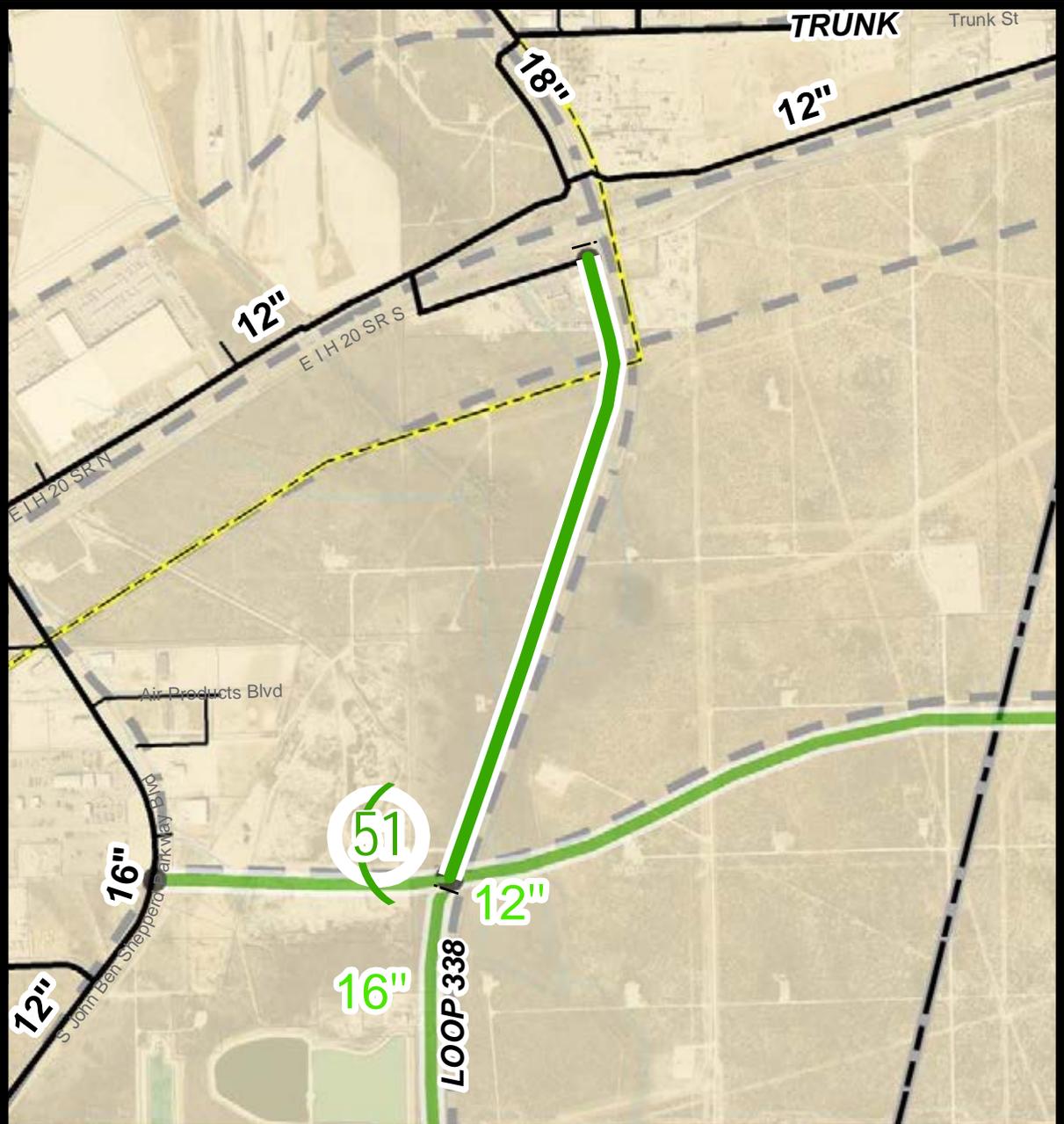
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 5,800 LF of 12-inch water line along Loop 338, connecting to the existing 12-inch water line in the north and to Project No. 50 in the south.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$1,149,000

Project Name: SE Loop 338 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 51. SE Loop 338 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$24,000.00	\$24,000
2	Traffic Control	1	LS	\$16,000.00	\$16,000
3	Erosion Control	1	LS	\$8,000.00	\$8,000
4	12" Water Pipe	5,790	LF	\$70.00	\$406,000
5	Water Line Trench Safety	5,790	LF	\$1.50	\$9,000
6	12" AWWA Gate Valve	4	EA	\$3,000.00	\$13,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$29,000
10	Asphalt Pavement Repair	5,200	SY	\$60.00	\$312,000
11	Allowance	1	LS	\$17,000.00	\$17,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$851,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$170,275
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$127,725
		Total:	\$1,149,000

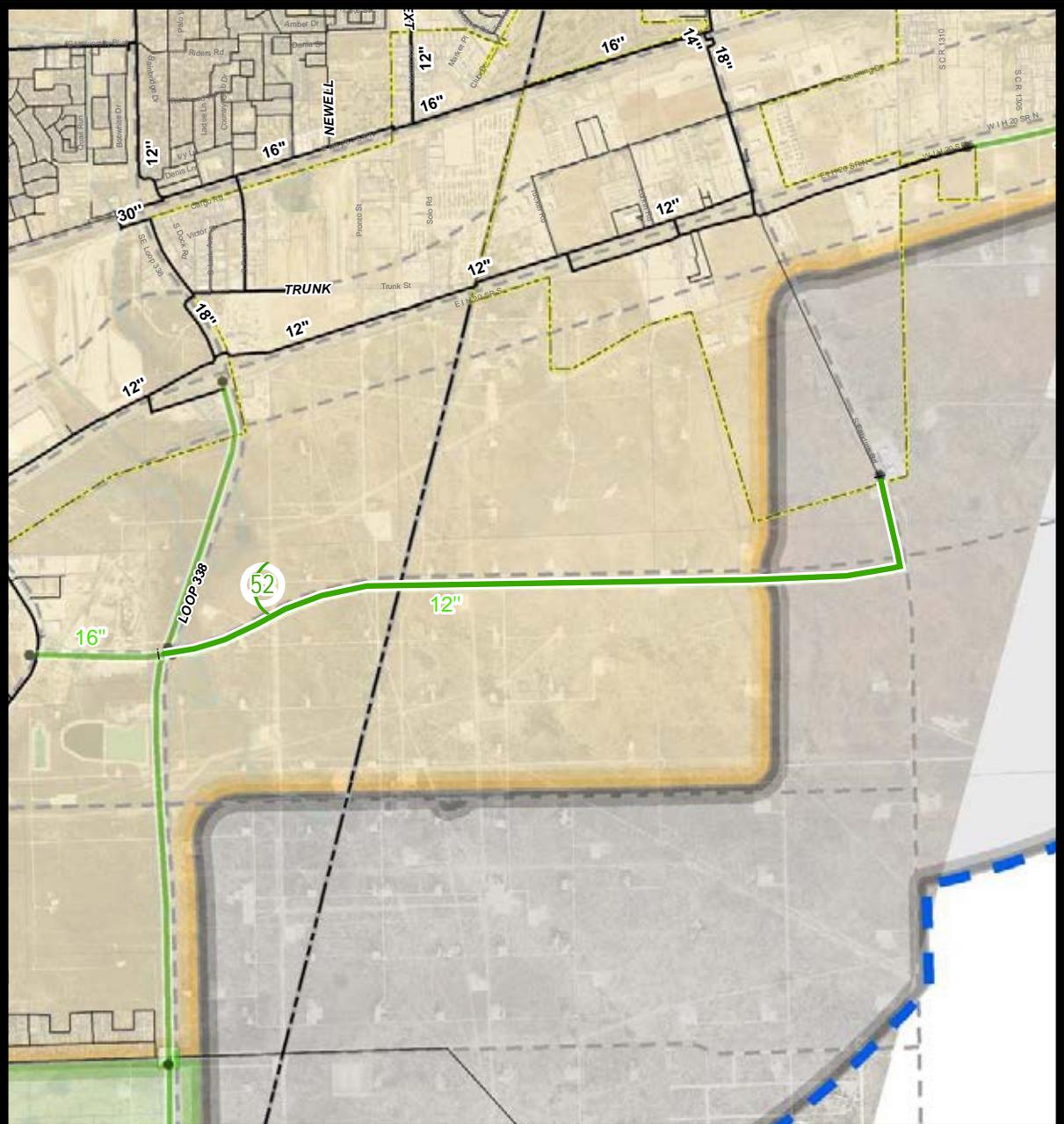
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 17,450 LF of 12-inch water line along S Faudree Road, connecting to Project No. 51 in the west.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,019,000

Project Name: S Faudree Road 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 52. S Faudree Road 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$42,000.00	\$42,000
2	Traffic Control	1	LS	\$28,000.00	\$28,000
3	Erosion Control	1	LS	\$14,000.00	\$14,000
4	12" Water Pipe	17,450	LF	\$70.00	\$1,222,000
5	Water Line Trench Safety	17,450	LF	\$1.50	\$27,000
6	12" AWWA Gate Valve	9	EA	\$3,000.00	\$27,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	17	TON	\$5,000.00	\$88,000
10	Allowance	1	LS	\$30,000.00	\$30,000

Basis for Cost Projection:				
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:		\$1,495,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)		20
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)		15
		Total:		\$2,019,000

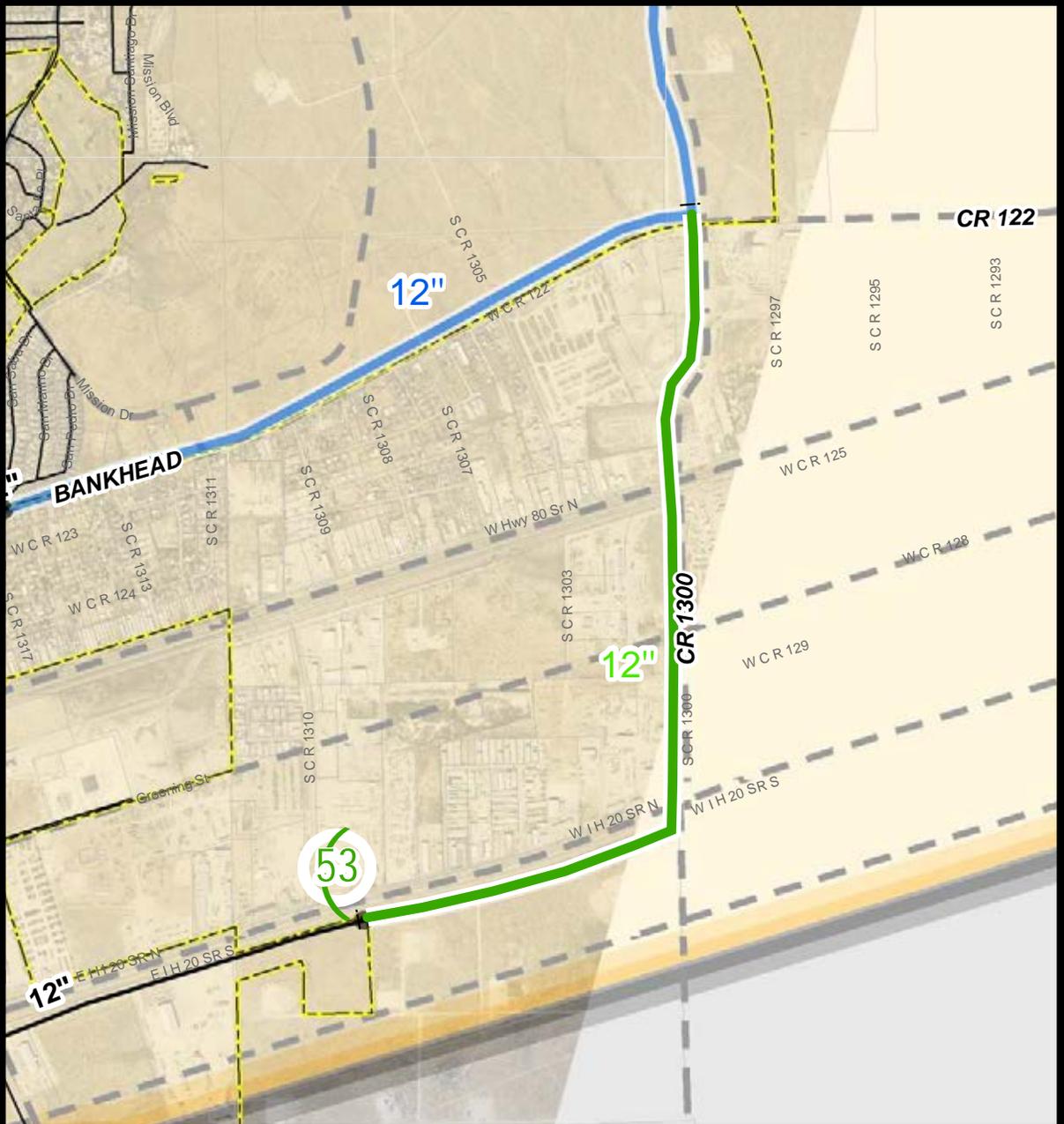
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 11,180 LF of 12-inch water line along County Road 1300, connecting to Project No. 15 in the north and to the existing 12-inch water line in the southwest.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,472,000

Project Name: County Road 1300 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 53. County Road 1300 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$51,000.00	\$51,000
2	Traffic Control	1	LS	\$34,000.00	\$34,000
3	Erosion Control	1	LS	\$17,000.00	\$17,000
4	12" Water Pipe	11,180	LF	\$70.00	\$783,000
5	24" Bore with Steel Casing	400	LF	\$500.00	\$200,000
6	Water Line Trench Safety	11,180	LF	\$1.50	\$17,000
7	12" AWWA Gate Valve	6	EA	\$3,000.00	\$20,000
8	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	11	TON	\$5,000.00	\$56,000
11	Asphalt Pavement Repair	10,000	SY	\$60.00	\$600,000
12	Allowance	1	LS	\$36,000.00	\$36,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$1,831,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$366,275
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$274,725
		Total:	\$2,472,000

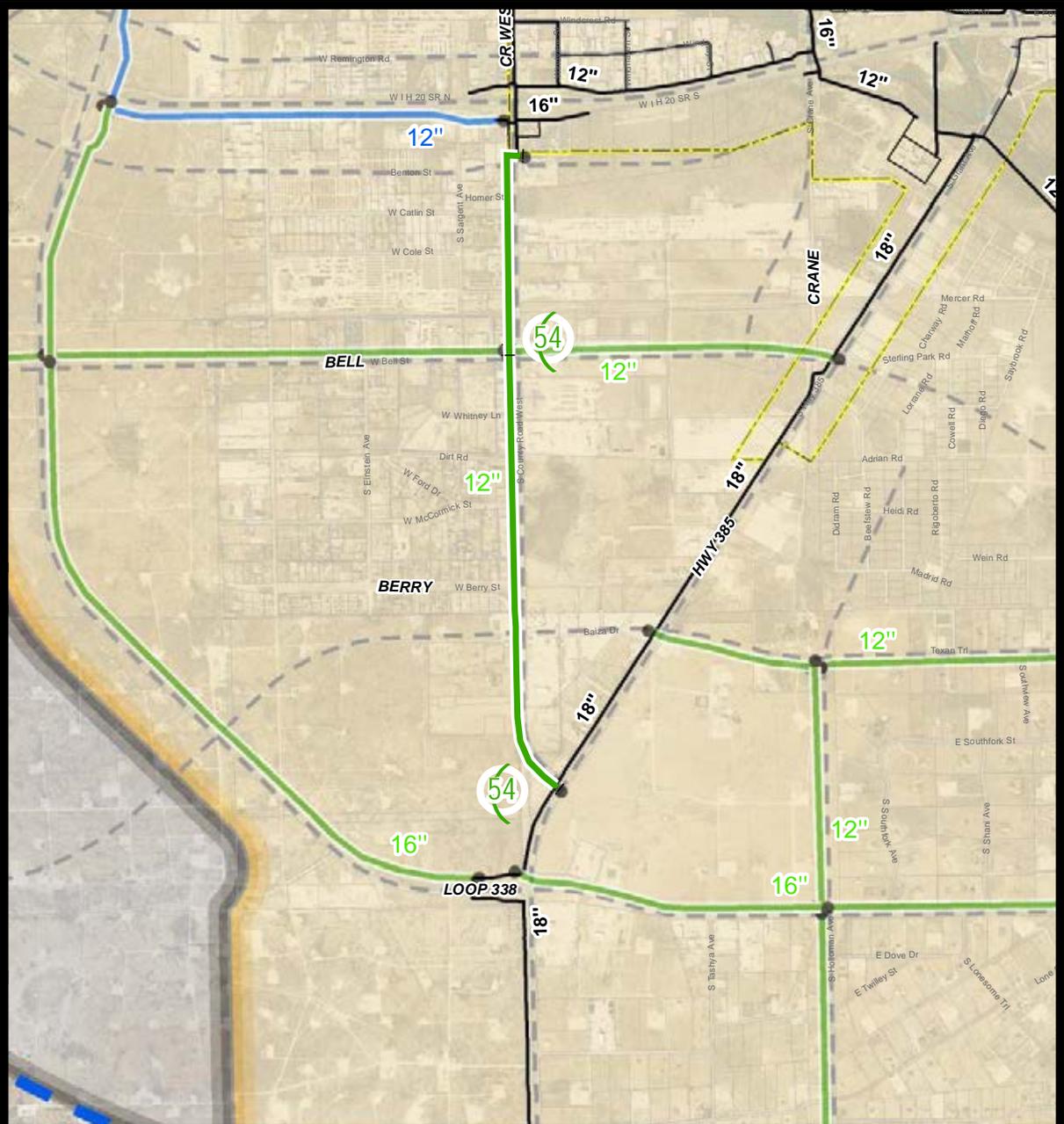
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 11,680 LF of 12-inch water line along S County Road West, connecting to the existing 18-inch water line along Highway 385.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,300,000

Project Name: S County Road West 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 54. S County Road West 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$48,000.00	\$48,000
2	Traffic Control	1	LS	\$32,000.00	\$32,000
3	Erosion Control	1	LS	\$16,000.00	\$16,000
4	12" Water Pipe	11,680	LF	\$70.00	\$818,000
5	Water Line Trench Safety	11,680	LF	\$1.50	\$18,000
6	12" AWWA Gate Valve	9	EA	\$3,000.00	\$27,000
7	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	12	TON	\$5,000.00	\$59,000
10	Asphalt Pavement Repair	10,400	SY	\$60.00	\$624,000
11	Allowance	1	LS	\$34,000.00	\$34,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,703,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$341,075
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$255,925
		Total:	\$2,300,000

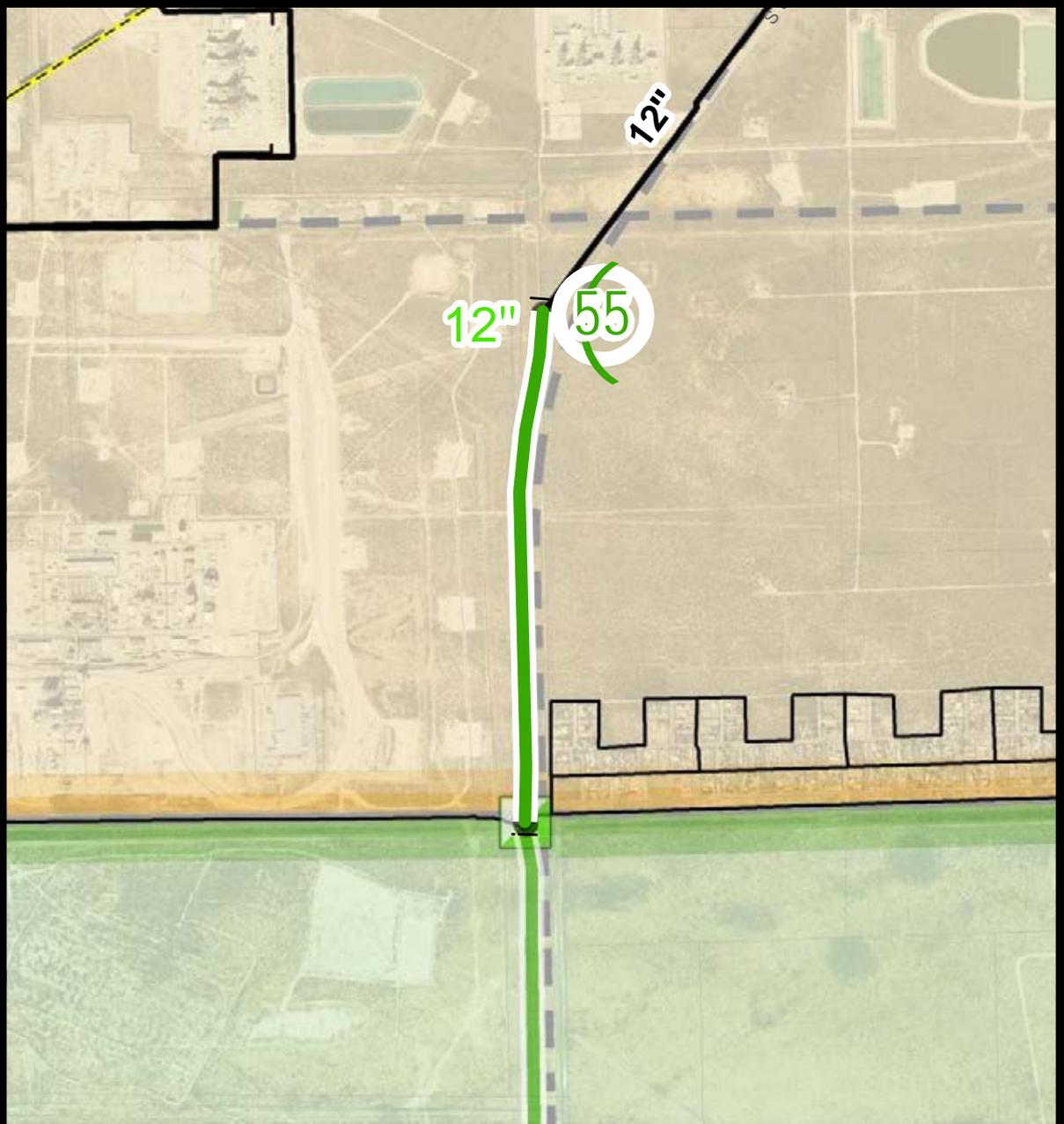
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 4,570 LF of 12-inch water line connecting to the existing 12-inch water line in the north and to Project No. 56 in the south.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$951,000

Project Name: S John Ben Sheppard Parkway 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 55. S John Ben Shepperd Parkway 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$20,000.00	\$20,000
2	Traffic Control	1	LS	\$13,000.00	\$13,000
3	Erosion Control	1	LS	\$7,000.00	\$7,000
4	12" Water Pipe	4,570	LF	\$70.00	\$320,000
5	Water Line Trench Safety	4,570	LF	\$1.50	\$7,000
6	12" AWWA Gate Valve	4	EA	\$3,000.00	\$12,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	5	TON	\$5,000.00	\$23,000
10	Flow Control Valve	1	EA	\$25,000.00	\$25,000
11	Asphalt Pavement Repair	4,100	SY	\$60.00	\$246,000
12	Allowance	1	LS	\$14,000.00	\$14,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$951,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 10,180 LF of 12-inch water line along FM 3503 from Hammett Road to Loop 338.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: South East Pressure Plane

Capital Cost: \$2,004,000

Project Name: S FM 3503 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 56. S FM 3503 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$42,000.00	\$42,000
2	Traffic Control	1	LS	\$28,000.00	\$28,000
3	Erosion Control	1	LS	\$14,000.00	\$14,000
4	12" Water Pipe	10,180	LF	\$70.00	\$713,000
5	Water Line Trench Safety	10,180	LF	\$1.50	\$16,000
6	12" AWWA Gate Valve	7	EA	\$3,000.00	\$22,000
7	Connect to Existing Water Line	3	EA	\$5,000.00	\$15,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	10	TON	\$5,000.00	\$51,000
10	Asphalt Pavement Repair	9,100	SY	\$60.00	\$546,000
11	Allowance	1	LS	\$30,000.00	\$30,000

Basis for Cost Projection:			
		Subtotal:	\$1,484,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$297,100
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$222,900
<input type="checkbox"/>	Final Design	Total:	\$2,004,000

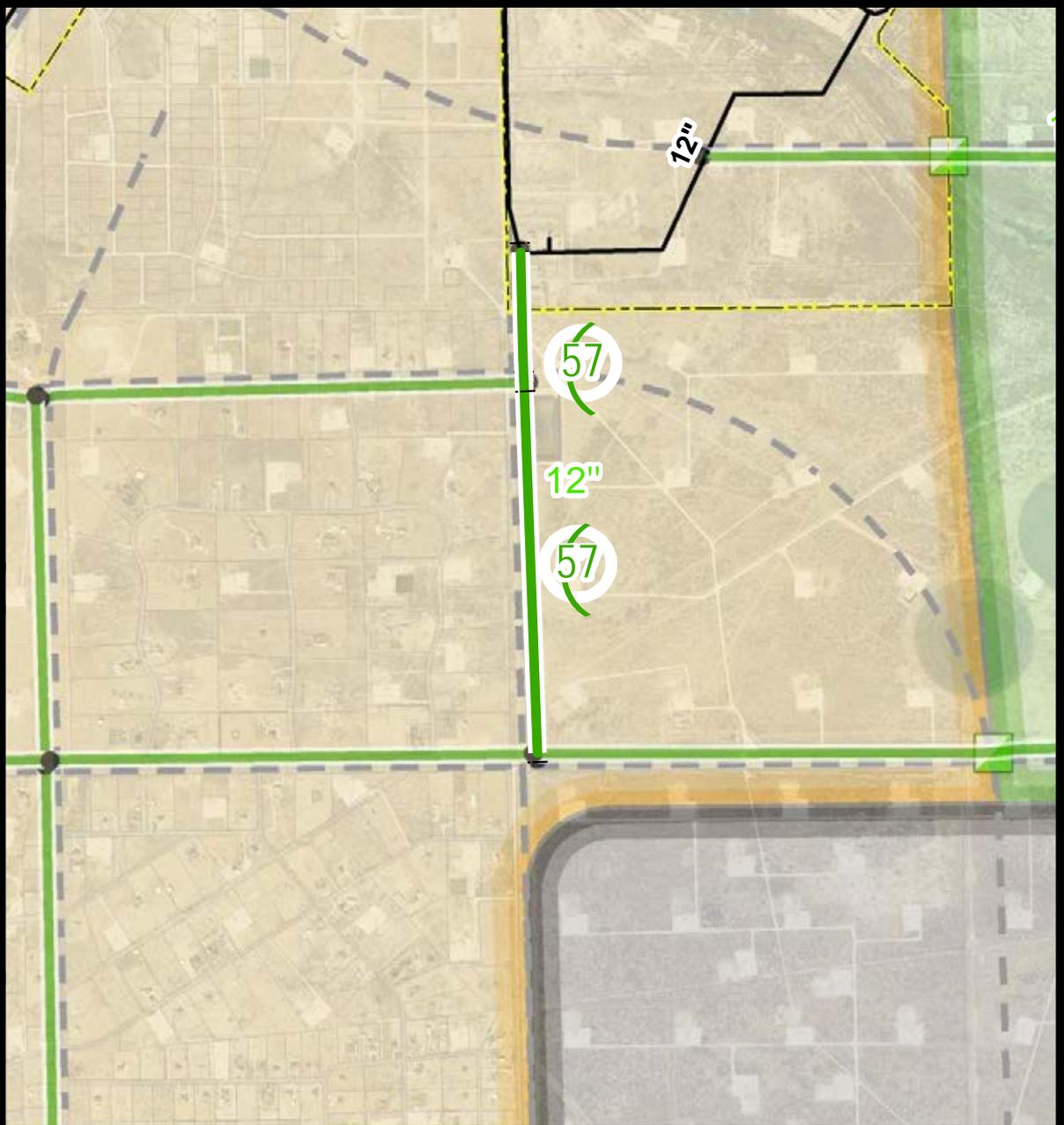
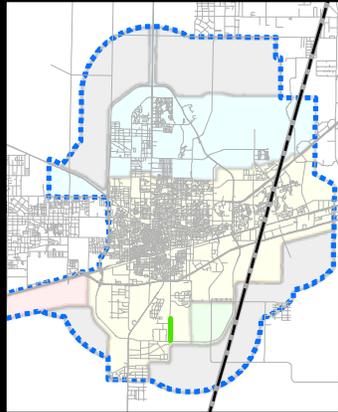
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 5,950 LF of 12-inch water line along Dixie Boulevard, connecting to the existing 12-inch water line in the north and to Project No. 49 in the south.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$723,000

Project Name: S Dixie Boulevard 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 57. S Dixie Boulevard 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$15,000.00	\$15,000
2	Traffic Control	1	LS	\$10,000.00	\$10,000
3	Erosion Control	1	LS	\$5,000.00	\$5,000
4	12" Water Pipe	5,940	LF	\$70.00	\$416,000
5	Water Line Trench Safety	5,940	LF	\$1.50	\$9,000
6	12" AWWA Gate Valve	5	EA	\$3,000.00	\$17,000
7	Connect to Existing Water Line	3	EA	\$5,000.00	\$15,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$30,000
10	Allowance	1	LS	\$11,000.00	\$11,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$535,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$107,375
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$80,625
		Total:	\$723,000

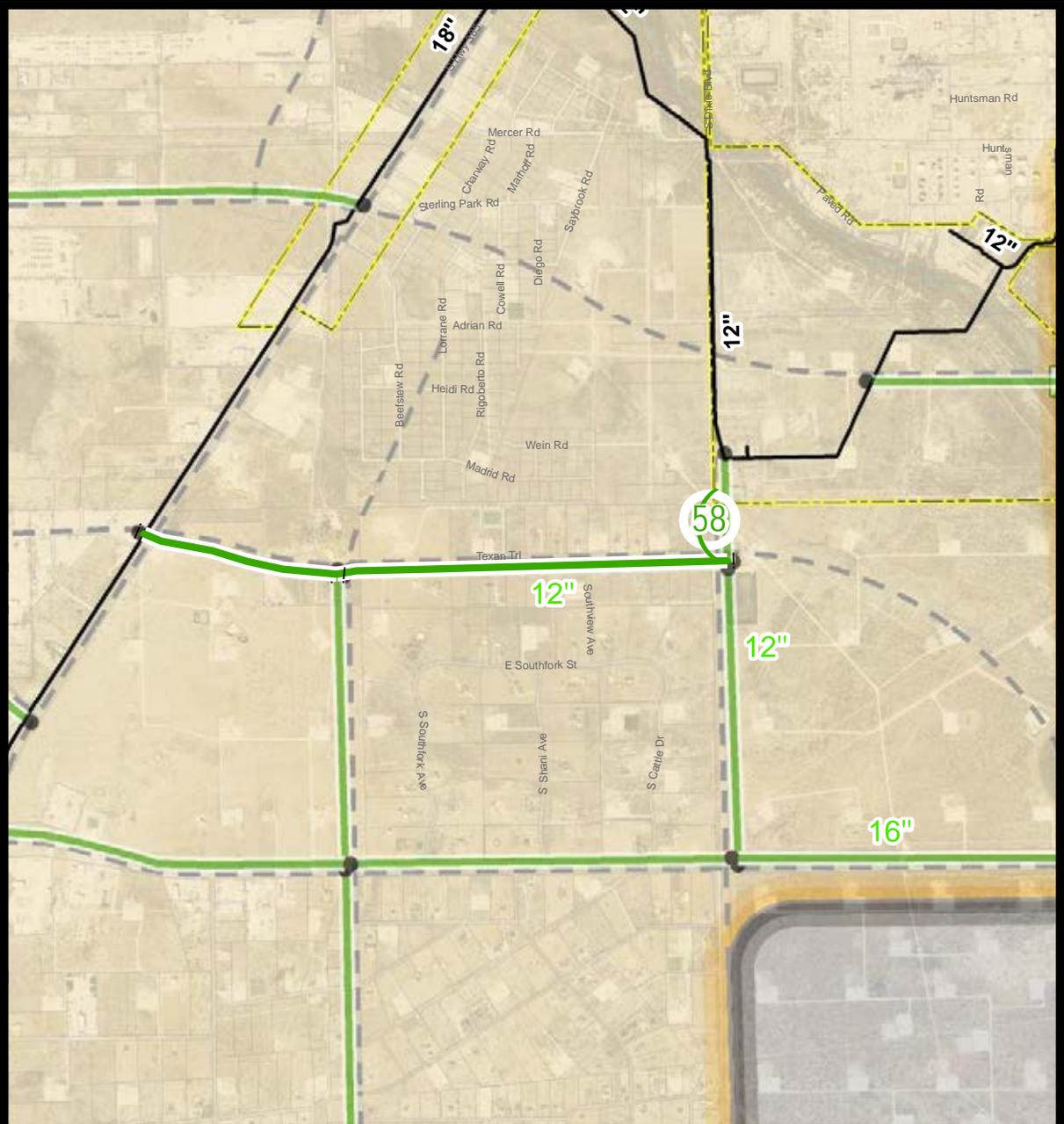
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 8,770 LF of 12-inch water line from Highway 385 to Dixie Boulevard.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$1,533,000

Project Name: S Highway 385 to S Dixie Boulevard 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 58. S Highway 385 to S Dixie Boulevard 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$32,000.00	\$32,000
2	Traffic Control	1	LS	\$21,000.00	\$21,000
3	Erosion Control	1	LS	\$11,000.00	\$11,000
4	12" Water Pipe	8,770	LF	\$70.00	\$614,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	8,770	LF	\$1.50	\$14,000
7	12" AWWA Gate Valve	7	EA	\$3,000.00	\$20,000
8	Connect to Existing Water Line	3	EA	\$5,000.00	\$15,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	9	TON	\$5,000.00	\$44,000
11	Asphalt Pavement Repair	3,900	SY	\$60.00	\$234,000
12	Allowance	1	LS	\$23,000.00	\$23,000

Basis for Cost Projection:			
		Subtotal:	\$1,135,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$227,375
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$170,625
<input type="checkbox"/>	Final Design	Total:	\$1,533,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



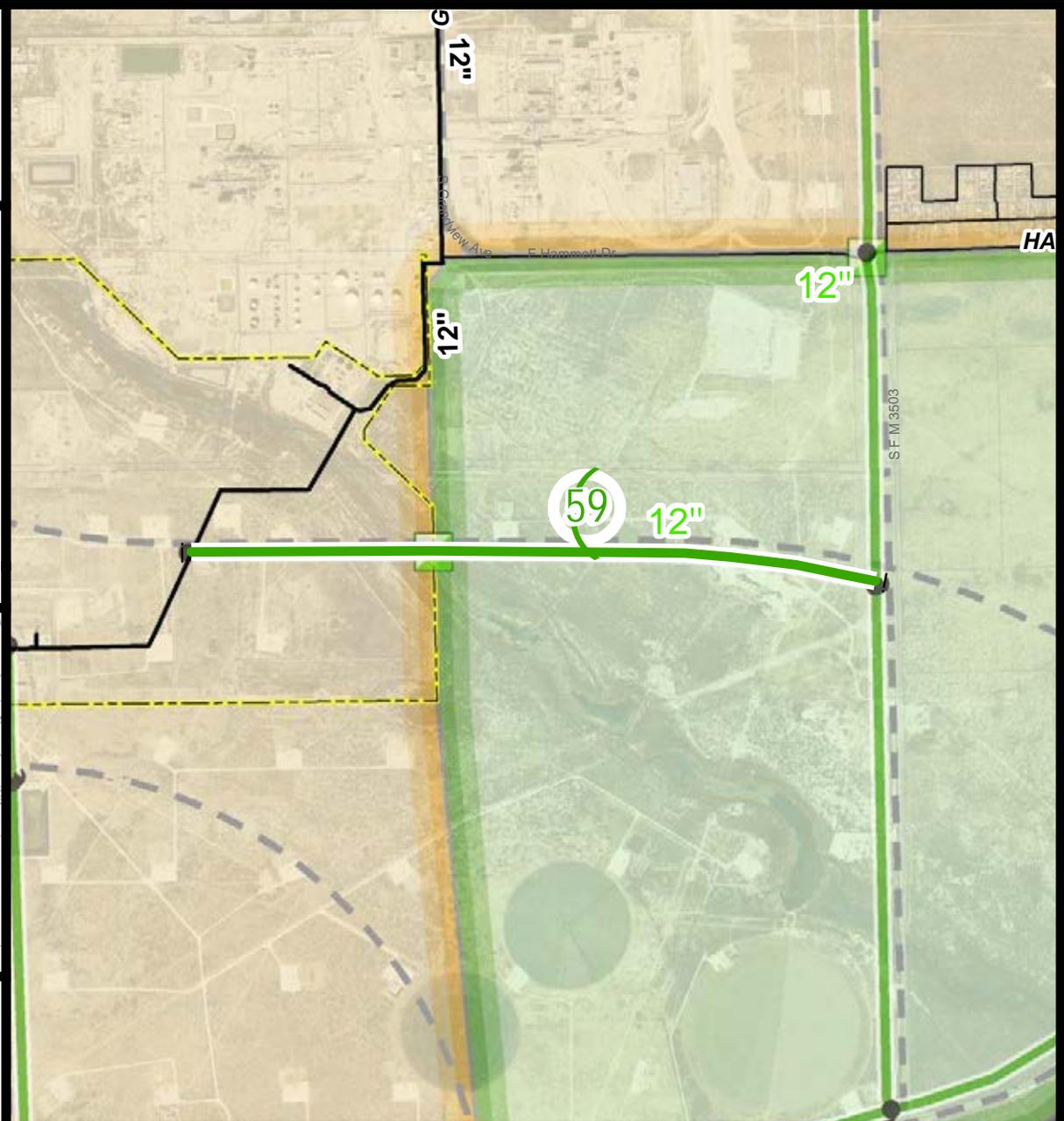
1 inch = 2,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 25-Year

Project Description: This project consists of approximately 8,200 LF of 12-inch water line from Dixie Boulevard to FM 3503, connecting to the existing 12-inch water line in the west and to Project No. 56 in the east.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower / South East Pressure Plane

Capital Cost: \$1,004,000

Project Name: S Dixie Boulevard to S FM 3503 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 59. S Dixie Boulevard to S FM 3503 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$21,000.00	\$21,000
2	Traffic Control	1	LS	\$14,000.00	\$14,000
3	Erosion Control	1	LS	\$7,000.00	\$7,000
4	12" Water Pipe	8,200	LF	\$70.00	\$574,000
5	Water Line Trench Safety	8,200	LF	\$1.50	\$13,000
6	12" AWWA Gate Valve	5	EA	\$3,000.00	\$16,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	8	TON	\$5,000.00	\$41,000
10	Flow Control Valve	1	EA	\$25,000.00	\$25,000
11	Allowance	1	LS	\$15,000.00	\$15,000

Basis for Cost Projection:			
		Subtotal:	\$743,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$149,075
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$111,925
<input type="checkbox"/>	Final Design	Total:	\$1,004,000

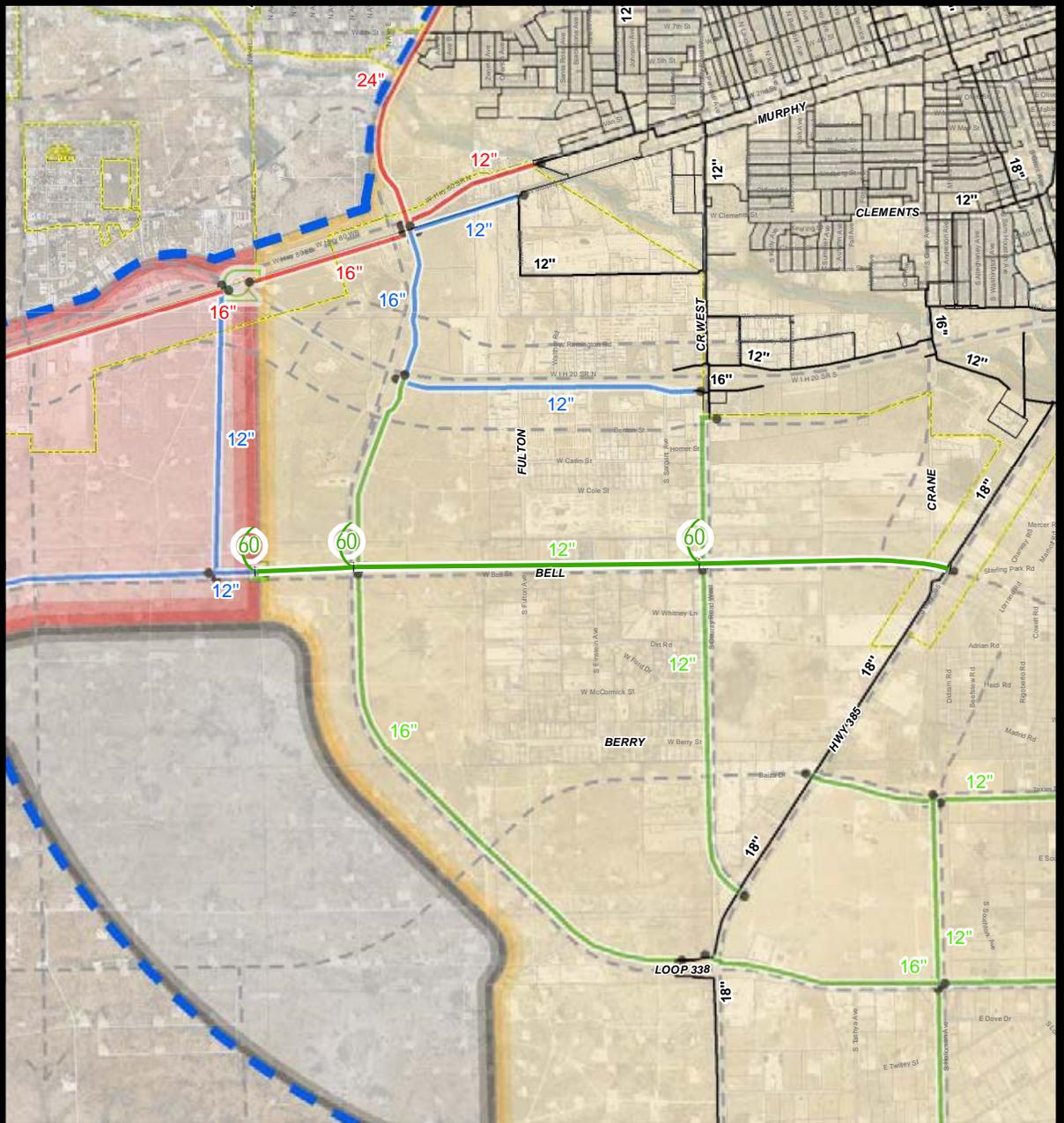
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 4,000 feet

Legend

- 5-Year Water Line
- 10-Year Water Line
- 25-Year Water Line
- Beyond 25-Year Planning Period Water Line
- Existing Water Line
- Upper Pressure Plane
- South East Pressure Plane
- Lower Pressure Plane
- South West Pressure Plane
- Beyond 25-Year Planning Period
- Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 16,370 LF of 12-inch water line along Bell Street, connecting to Project No. 18 in the west and to the existing 18-inch water line in the east.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,132,000

Project Name: W Bell Street 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 60. W Bell Street 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$44,000.00	\$44,000
2	Traffic Control	1	LS	\$30,000.00	\$30,000
3	Erosion Control	1	LS	\$15,000.00	\$15,000
4	12" Water Pipe	16,370	LF	\$70.00	\$1,146,000
5	24" Bore with Steel Casing	200	LF	\$500.00	\$100,000
6	Water Line Trench Safety	16,370	LF	\$1.50	\$25,000
7	12" AWWA Gate Valve	13	EA	\$3,000.00	\$38,000
8	Connect to Existing Water Line	6	EA	\$5,000.00	\$30,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	16	TON	\$5,000.00	\$82,000
11	Flow Control Valve	1	EA	\$25,000.00	\$25,000
12	Asphalt Pavement Repair	100	SY	\$60.00	\$6,000
13	Allowance	1	LS	\$31,000.00	\$31,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$1,579,000
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$315,975
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$237,025
	Total:	\$2,132,000

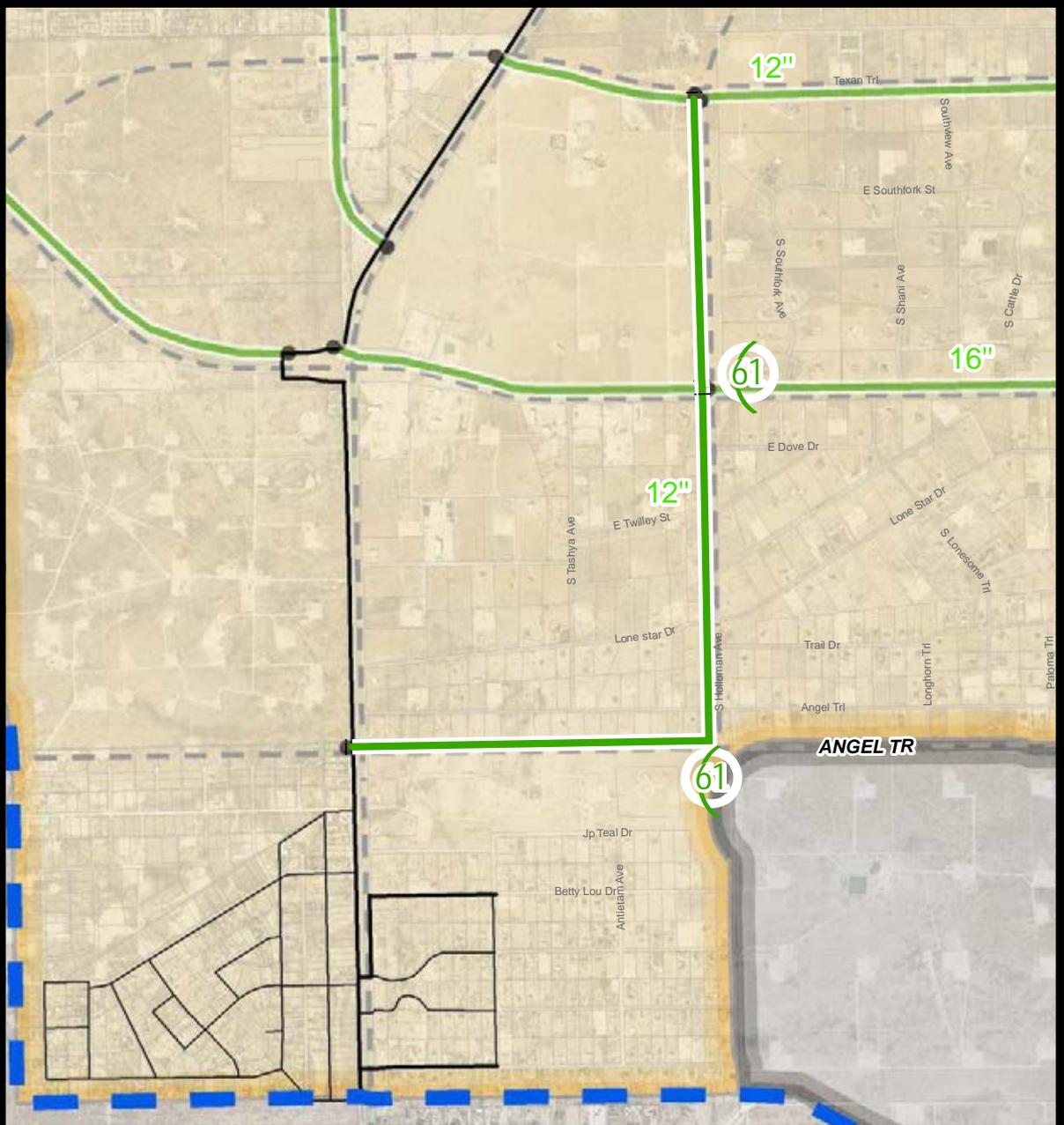
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 14,830 LF of 12-inch water line along S Holloman Avenue and then along Angel Trail, connecting to the existing 18-inch water line.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$2,807,000

Project Name: S Holloman Avenue/ Angel TR 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 61. S Holloman Avenue/ Angel TR 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$58,000.00	\$58,000
2	Traffic Control	1	LS	\$39,000.00	\$39,000
3	Erosion Control	1	LS	\$20,000.00	\$20,000
4	12" Water Pipe	14,820	LF	\$70.00	\$1,038,000
5	24" Bore with Steel Casing	400	LF	\$500.00	\$200,000
6	Water Line Trench Safety	14,820	LF	\$1.50	\$23,000
7	12" AWWA Gate Valve	10	EA	\$3,000.00	\$30,000
8	Connect to Existing Water Line	4	EA	\$5,000.00	\$20,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	15	TON	\$5,000.00	\$75,000
11	Asphalt Pavement Repair	8,800	SY	\$60.00	\$528,000
12	Allowance	1	LS	\$41,000.00	\$41,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$2,079,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$415,975
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$312,025
		Total:	\$2,807,000

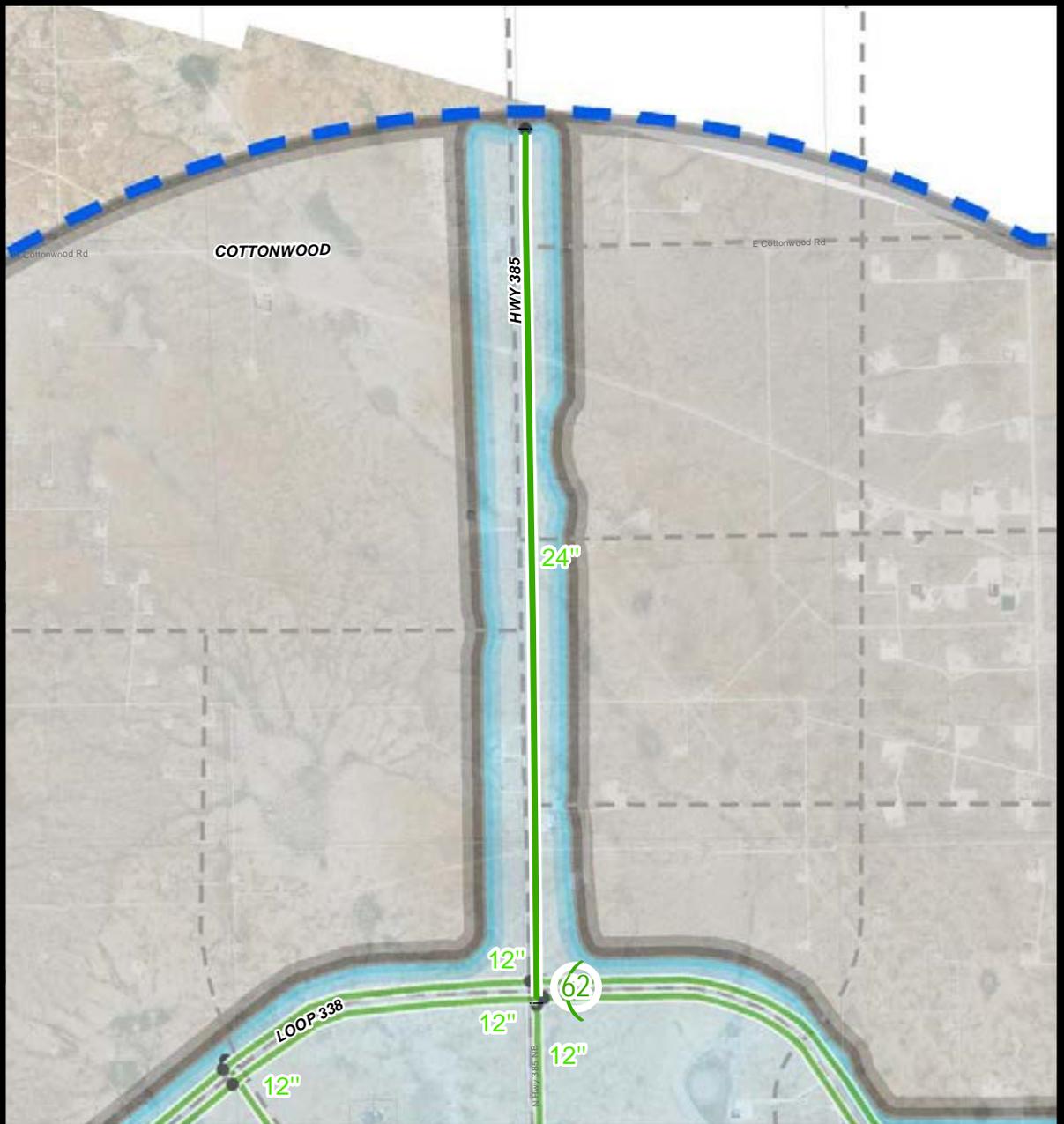
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,000 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 15,350 LF of 24-inch water line along Highway 385 from Cottonwood Road to Loop 338.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area. Project could provide transmission to any potential expansions of the water system to the north.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$4,469,000

Project Name: N Highway 385 24-Inch Water Line

Client:	City of Odessa	Date:	4/24/2019
Project:	Water System Master Plan	Prepared By:	AWS
KHA No.:	063685005	Checked By:	JRA

Title: 62. N Highway 385 24-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$92,000.00	\$92,000
2	Traffic Control	1	LS	\$62,000.00	\$62,000
3	Erosion Control	1	LS	\$31,000.00	\$31,000
4	24" Water Pipe	15,350	LF	\$120.00	\$1,842,000
5	42" Bore with Steel Casing	200	LF	\$700.00	\$140,000
6	Water Line Trench Safety	15,350	LF	\$1.50	\$24,000
7	24" AWWA Gate Valve	7	EA	\$20,000.00	\$143,000
8	Connect to Existing Water Line	1	EA	\$5,000.00	\$5,000
9	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
10	Ductile Iron Fittings	15	TON	\$5,000.00	\$77,000
11	Asphalt Pavement Repair	13,700	SY	\$60.00	\$822,000
12	Allowance	1	LS	\$65,000.00	\$65,000

Basis for Cost Projection:				
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:		\$3,310,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)		20 \$662,250
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)		15 \$496,750
		Total:		\$4,469,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



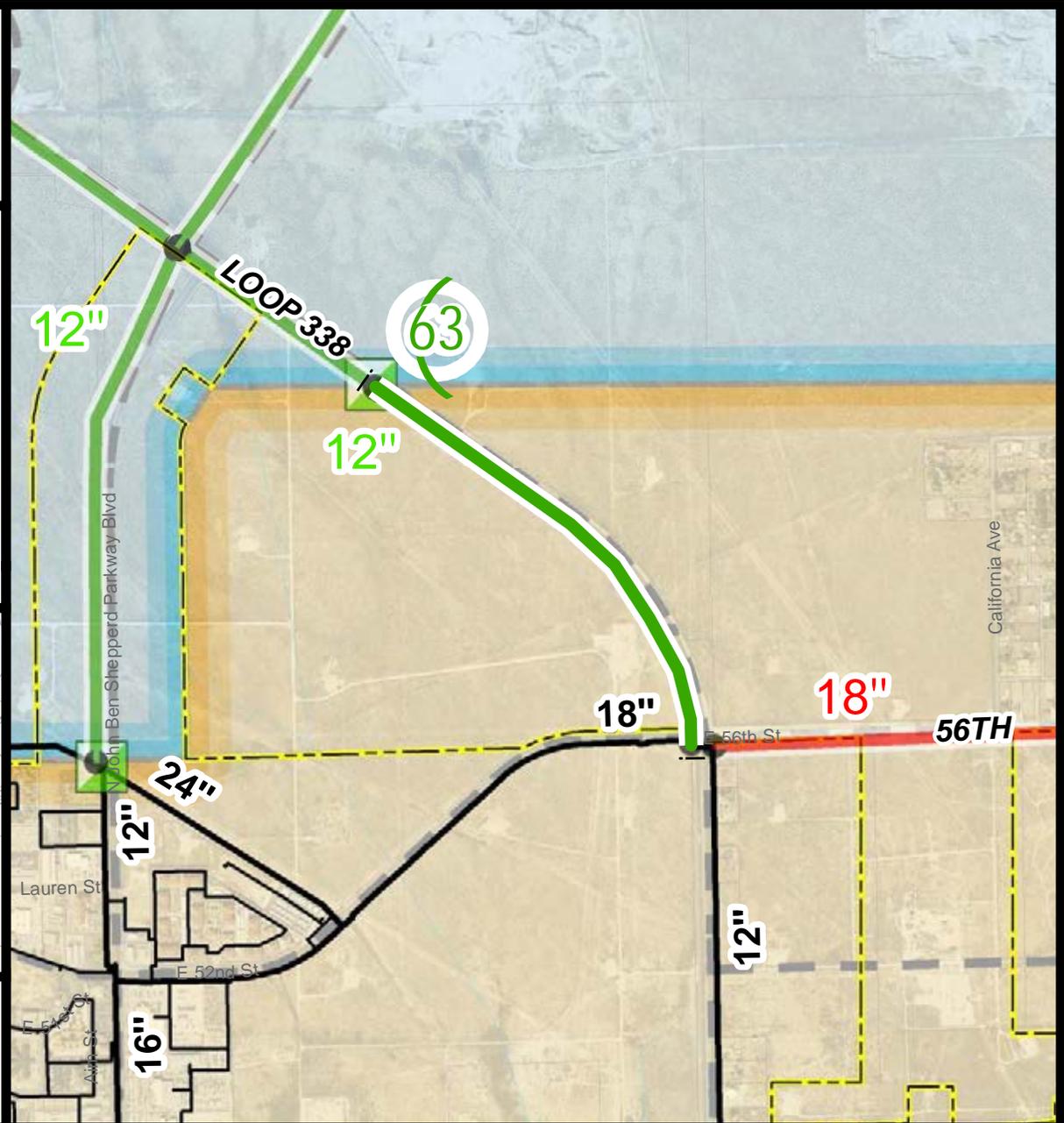
1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019



Phase: 25-Year

Project Description: This project consists of approximately 4,470 LF of 12-inch water line along Loop 338, connecting to Project No. 34 and to the existing 18-inch water line along 56th Street.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$933,000

Project Name: NE Loop 338 12-Inch Water Line Phase 2

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 63. NE Loop 338 12-Inch Water Line Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$20,000.00	\$20,000
2	Traffic Control	1	LS	\$13,000.00	\$13,000
3	Erosion Control	1	LS	\$7,000.00	\$7,000
4	12" Water Pipe	4,460	LF	\$70.00	\$313,000
5	Water Line Trench Safety	4,460	LF	\$1.50	\$7,000
6	12" AWWA Gate Valve	4	EA	\$3,000.00	\$12,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	4	TON	\$5,000.00	\$23,000
10	Flow Control Valve	1	EA	\$25,000.00	\$25,000
11	Asphalt Pavement Repair	4,000	SY	\$60.00	\$240,000
12	Allowance	1	LS	\$14,000.00	\$14,000

Basis for Cost Projection:				
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:		\$691,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20	\$138,275
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15	\$103,725
		Total:		\$933,000

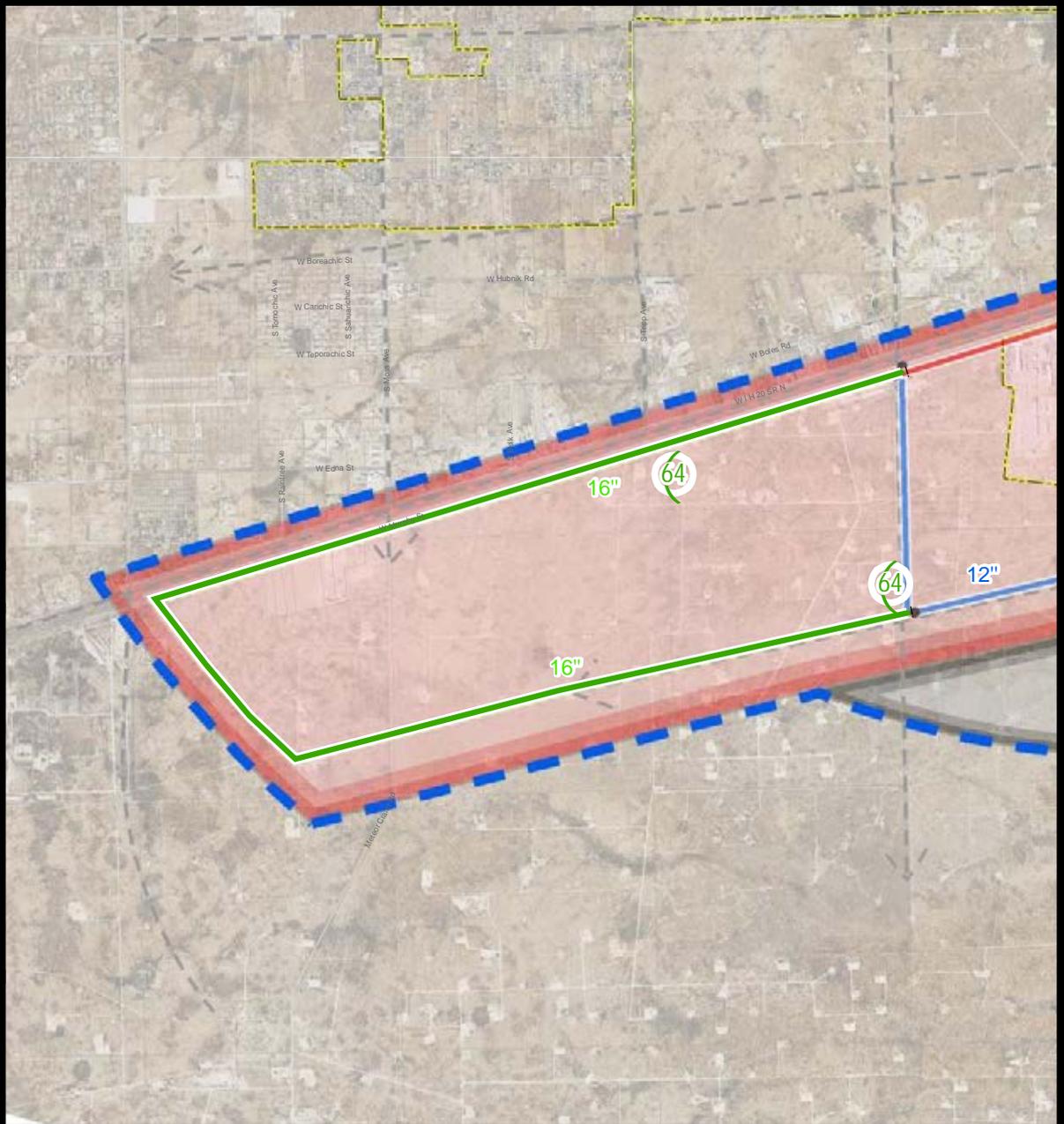
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 3,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn

April 2019

Phase: 25-Year

Project Description: This project consists of approximately 33,740 LF of 16-inch water line along Murphy Street, connecting to Project No. 18.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: South West Pressure Plane

Capital Cost: \$7,366,000

Project Name: W Murphy Street 16-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 64. W Murphy Street 16-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$152,000.00	\$152,000
2	Traffic Control	1	LS	\$101,000.00	\$101,000
3	Erosion Control	1	LS	\$51,000.00	\$51,000
4	16" Water Pipe	33,730	LF	\$85.00	\$2,868,000
5	Water Line Trench Safety	33,730	LF	\$1.50	\$51,000
6	16" AWWA Gate Valve	15	EA	\$10,000.00	\$145,000
7	Connect to Existing Water Line	1	EA	\$5,000.00	\$5,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	34	TON	\$5,000.00	\$169,000
10	Asphalt Pavement Repair	30,000	SY	\$60.00	\$1,800,000
11	Allowance	1	LS	\$107,000.00	\$107,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$5,456,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$1,091,400
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$818,600
		Total:	\$7,366,000

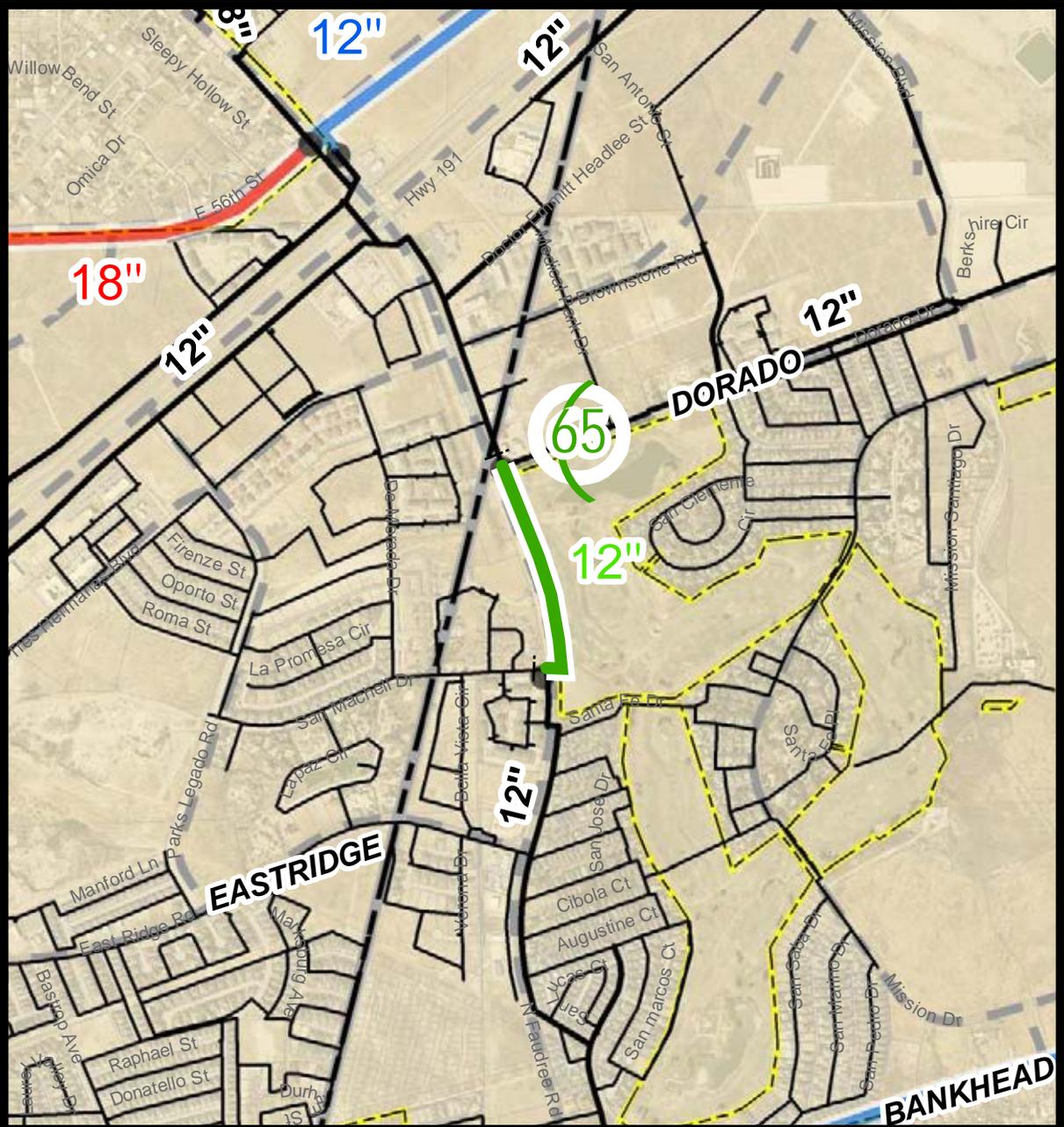
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 1,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 2,030 LF of 12-inch water line along N Faudree Road from Dorado Drive to San Machell Drive.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Lower Pressure Plane

Capital Cost: \$437,000

Project Name: N Faudree Road Lower 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 65. N Faudree Road Lower 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$9,000.00	\$9,000
2	Traffic Control	1	LS	\$6,000.00	\$6,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	12" Water Pipe	2,030	LF	\$70.00	\$143,000
5	Water Line Trench Safety	2,030	LF	\$1.50	\$4,000
6	12" AWWA Gate Valve	3	EA	\$3,000.00	\$9,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$11,000
10	Asphalt Pavement Repair	1,900	SY	\$60.00	\$114,000
11	Allowance	1	LS	\$7,000.00	\$7,000

Basis for Cost Projection:			
		Subtotal:	\$323,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$437,000

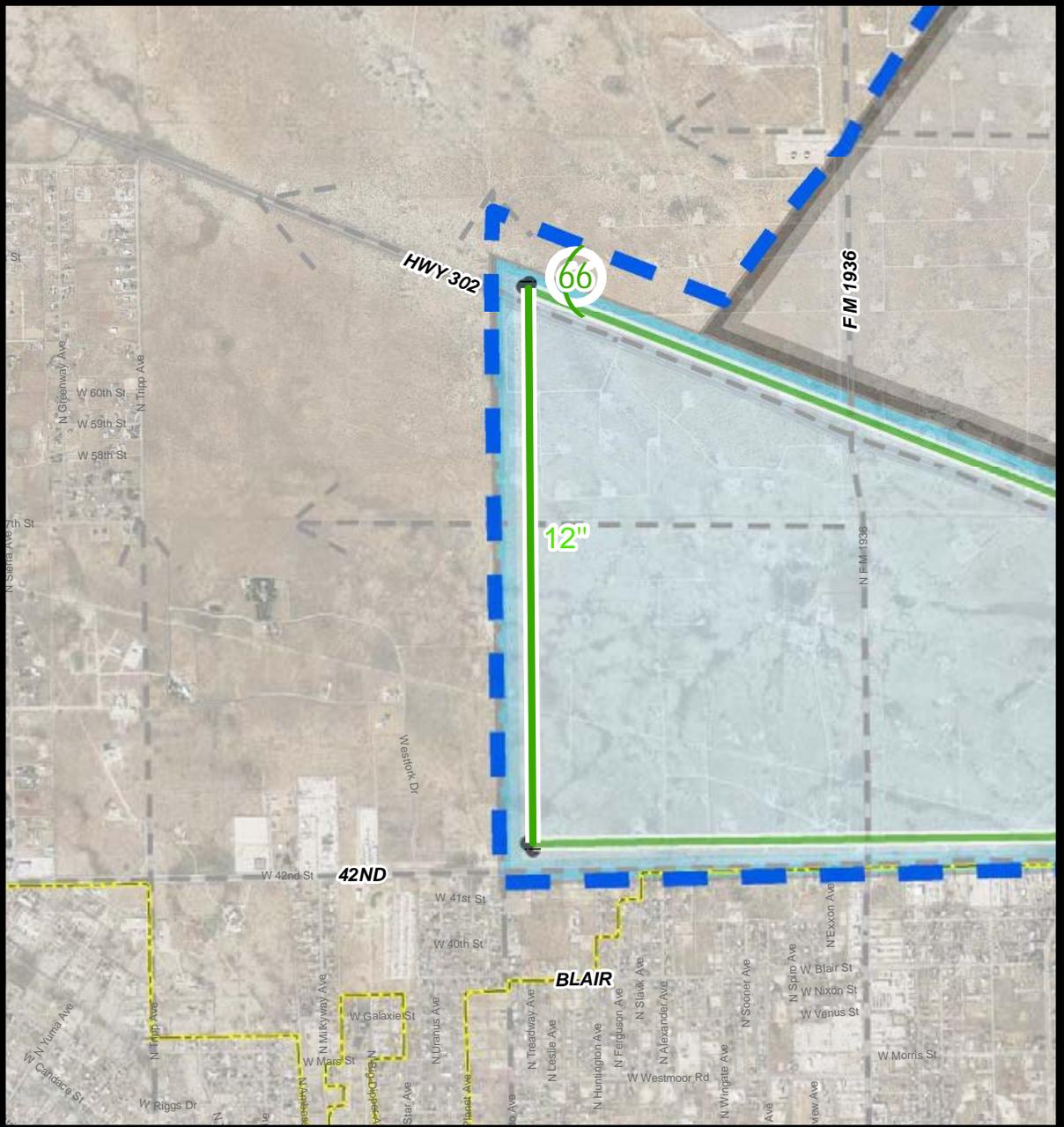
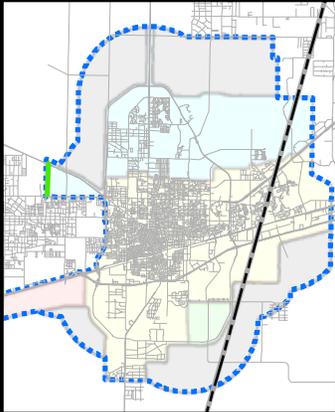
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 8,230 LF of 12-inch water line along Redondo Street from Highway 302 to 42nd Street. It connects Project No. 47 to Project No. 67.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$1,692,000

Project Name: Redondo 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 66. Redondo 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$35,000.00	\$35,000
2	Traffic Control	1	LS	\$24,000.00	\$24,000
3	Erosion Control	1	LS	\$12,000.00	\$12,000
4	12" Water Pipe	8,620	LF	\$70.00	\$604,000
5	Water Line Trench Safety	8,620	LF	\$1.50	\$13,000
6	12" AWWA Gate Valve	5	EA	\$3,000.00	\$17,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	9	TON	\$5,000.00	\$44,000
10	Asphalt Pavement Repair	7,700	SY	\$60.00	\$462,000
11	Allowance	1	LS	\$25,000.00	\$25,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$1,253,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$250,825
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$188,175
		Total:	\$1,692,000

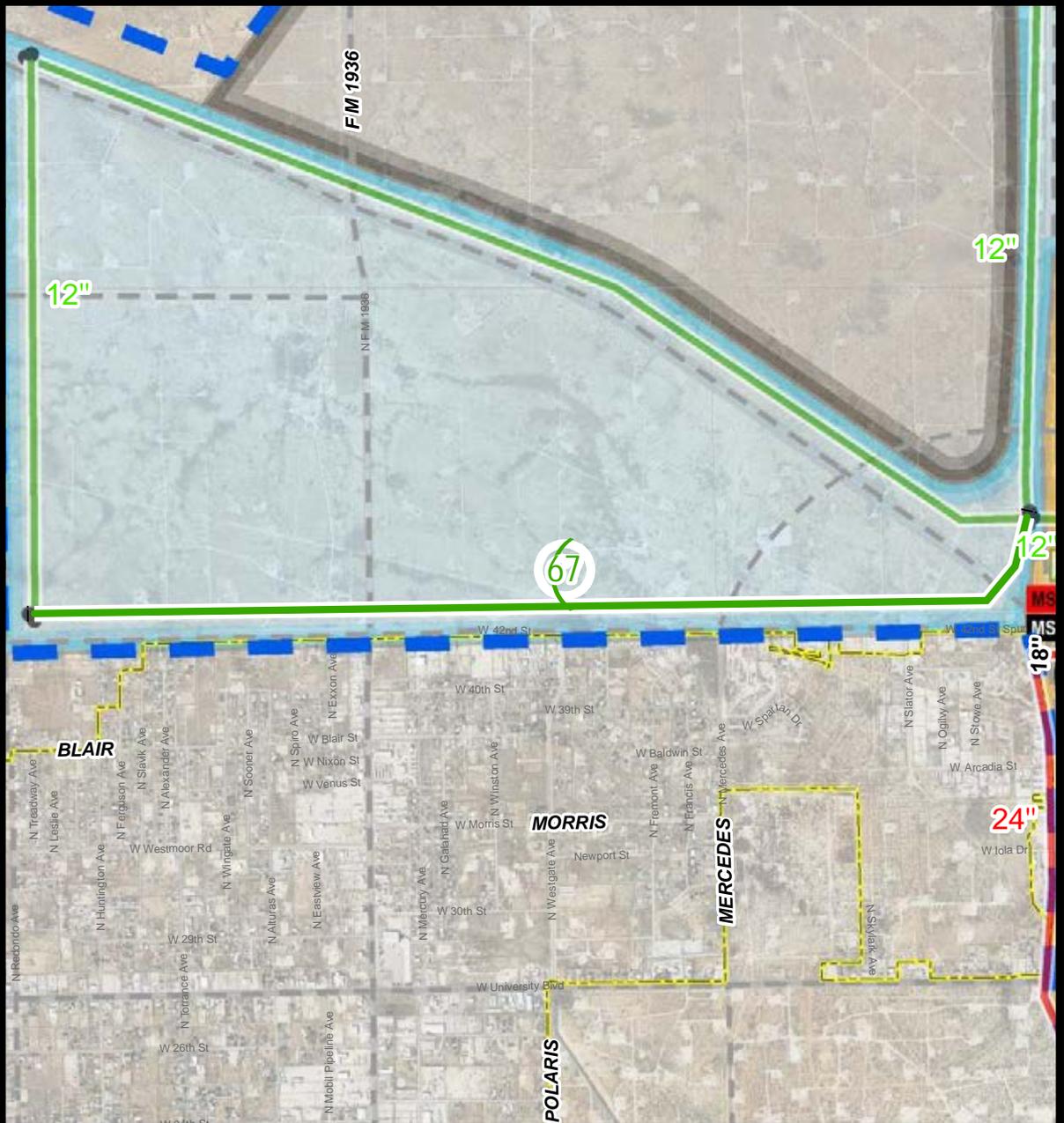
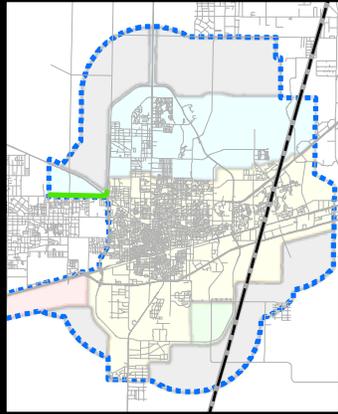
The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.



1 inch = 2,500 feet

Legend

-  5-Year Water Line
-  10-Year Water Line
-  25-Year Water Line
-  Beyond 25-Year Planning Period Water Line
-  Existing Water Line
-  Upper Pressure Plane
-  South East Pressure Plane
-  Lower Pressure Plane
-  South West Pressure Plane
-  Beyond 25-Year Planning Period
-  Water Master Plan Study Boundary



Kimley»Horn
April 2019

Phase: 25-Year

Project Description: This project consists of approximately 15,570 LF of 12-inch water line along 42nd Street.

Recommendation Comments: Provides local transmission, fire protection, looping, and redundancy to the future developments. Project will be driven by development in the area.

Pressure Plane: Upper Pressure Plane

Capital Cost: \$3,022,000

Project Name: 42nd Street 12-Inch Water Line

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 67. 42nd Street 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$63,000.00	\$63,000
2	Traffic Control	1	LS	\$42,000.00	\$42,000
3	Erosion Control	1	LS	\$21,000.00	\$21,000
4	12" Water Pipe	15,560	LF	\$70.00	\$1,090,000
5	Water Line Trench Safety	15,560	LF	\$1.50	\$24,000
6	12" AWWA Gate Valve	8	EA	\$3,000.00	\$25,000
7	Connect to Existing Water Line	2	EA	\$5,000.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	16	TON	\$5,000.00	\$78,000
10	Asphalt Pavement Repair	13,900	SY	\$60.00	\$834,000
11	Allowance	1	LS	\$44,000.00	\$44,000

Basis for Cost Projection:			
		Subtotal:	\$2,238,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$447,950
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$336,050
<input type="checkbox"/>	Final Design	Total:	\$3,022,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 68. Southwest Pump Station Phase 2

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$25,000.00	\$25,000
2	Traffic Control	1	LS	\$5,000.00	\$5,000
3	Erosion Control	1	LS	\$30,000.00	\$30,000
<i>Pump Station</i>					
4	Site Grading	1	LS	\$15,000.00	\$15,000
5	Landscaping	1	LS	\$500.00	\$500
6	Concrete Drive	25	CY	\$650.00	\$16,250
7	16" Tank Supply Line	50	LF	\$150.00	\$7,500
8	16" Outlet Piping to Suction Line	150	LF	\$150.00	\$22,500
9	16" Discharge Piping	150	LF	\$150.00	\$22,500
10	8" Tank Drain Line	100	LF	\$80.00	\$8,000
11	Trench Safety for all Yard Piping	450	LF	\$1.50	\$675
12	8" Gate Valve	1	EA	\$3,500.00	\$3,500
13	16" Gate Valve and Vault	2	EA	\$15,000.00	\$30,000
14	1,500 gpm Pump and 150 HP Motor	3	EA	\$150,000.00	\$450,000
15	Air Release Valve	2	EA	\$10,000.00	\$20,000
16	16" Flow Control Valve	1	EA	\$50,000.00	\$50,000
17	Electrical/SCADA/Power	1	LS	\$50,000.00	\$50,000
18	150,000 gal Ground Storage Tank	1	EA	\$400,000.00	\$400,000
19	15,000 gal Hydropneumatic Tank	1	EA	\$100,000.00	\$100,000
20	Allowance	1	LS	\$26,000.00	\$26,000

Basis for Cost Projection:		
<input checked="" type="checkbox"/> No Design Completed	Subtotal:	\$1,282,425
<input type="checkbox"/> Preliminary Design	Conting. (%,+/-) 20	\$256,848
<input type="checkbox"/> Final Design	Professional Services (%,+/-) 15	\$192,727
Total:		\$1,732,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa
 Project: Water System Master Plan - Water Rehab
 KHA No.: 063685005

Date: 4/24/2019
 Prepared By: AWS
 Checked By: JRA

Item No.	Item Description	Item Cost	Market Scarcity Adjustment (1.5x)
1	E 56th Street 12-Inch Water Line	\$1,400,000	\$2,100,000
2	N. Dixie Blvd. & E. 52nd Area Water Lines	\$1,300,000	\$1,950,000
3	E. 52nd Street 8" Water Line	\$800,000	\$1,200,000
4	Clover Ave. & E. 49th St. Water Lines	\$500,000	\$750,000
5	Locust Ave. 8" Water Line	\$400,000	\$600,000
6	E. 35th St. Area Water Lines	\$1,300,000	\$1,950,000
7	Eastover Dr. & E. 31st St. Water Lines	\$1,500,000	\$2,250,000
8	Walnut Ave. & E. 17th St. Water Lines	\$1,400,000	\$2,100,000
9	E. University Blvd. Water Lines	\$1,600,000	\$2,400,000
10	W. 23rd St. & Golder Ave. Water Lines	\$1,500,000	\$2,250,000
11	Beaty Ave. & W. 22nd St. Water Lines	\$1,400,000	\$2,100,000
12	N. County Road West Water Lines	\$1,200,000	\$1,800,000
13	Whitaker Ave. & W. 19th St. Water Lines	\$1,600,000	\$2,400,000
14	W. 15th St. & Graham Ave. Water Lines	\$400,000	\$600,000
15	W. 14th St. 6" Water Line	\$600,000	\$900,000
16	W. 13th St. & N. County Road West 14" Water Line	\$1,100,000	\$1,650,000
17	N. Lincoln Ave. 6" Water Line	\$500,000	\$750,000
18	Harless Ave. and W. 11th St. Water Lines	\$300,000	\$450,000
19	Vine Ave. 8" Water Line	\$400,000	\$600,000
20	N. Belmont Ave. & W. Murphy St. Water Lines	\$700,000	\$1,050,000
21	Drury Ln. & W. Ada St. Water Lines	\$900,000	\$1,350,000
22	W. 3rd St. Water Lines	\$500,000	\$750,000
23	Roxanna Ave. 6" Water Line	\$300,000	\$450,000
24	N. Dixie Blvd. & E. 2nd St. Water Lines	\$600,000	\$900,000
25	Santa Rosa Ave. 8" Water Line	\$500,000	\$750,000
26	N Dixie Boulevard 12-Inch Water Line	\$400,000	\$600,000
Projects Total:		\$23,100,000	\$34,650,000

Basis for Cost Projection:

- No Design Completed
- Preliminary Design
- Final Design

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 1. E 56th Street 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$27,000.00	\$27,000
2	Traffic Control	1	LS	\$18,000.00	\$18,000
3	Erosion Control	1	LS	\$9,000.00	\$9,000
4	12" Water Pipe	6,280	LF	\$70.00	\$440,000
5	Water Line Trench Safety	6,280	LF	\$1.50	\$10,000
6	12" AWWA Gate Valve	11	EA	\$3,000.00	\$33,000
7	Connect to Existing Water Line	7	EA	\$2,500.00	\$18,000
8	Fire Hydrant Assembly	7	EA	\$3,500.00	\$25,000
9	Ductile Iron Fittings	6	TON	\$5,000.00	\$32,000
10	Asphalt Pavement Repair	5,600	SY	\$60.00	\$336,000
11	Allowance	1	LS	\$19,000.00	\$19,000

Basis for Cost Projection:				
		Subtotal:		\$967,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20	\$193,675
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15	\$145,325
<input type="checkbox"/>	Final Design	Total:		\$1,400,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 2. N. Dixie Blvd. & E. 52nd Area Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$26,000.00	\$26,000
2	Traffic Control	1	LS	\$18,000.00	\$18,000
3	Erosion Control	1	LS	\$9,000.00	\$9,000
4	6" Water Pipe	4,270	LF	\$45.00	\$193,000
5	8" Water Pipe	480	LF	\$55.00	\$27,000
6	12" Water Pipe	1,730	LF	\$70.00	\$122,000
7	Water Line Trench Safety	6,480	LF	\$1.50	\$10,000
8	6" AWWA Gate Valve	21	EA	\$1,500.00	\$32,000
9	8" AWWA Gate Valve	6	EA	\$2,000.00	\$12,000
10	12" AWWA Gate Valve	10	EA	\$3,000.00	\$30,000
11	Connect to Existing Water Line	8	EA	\$2,500.00	\$20,000
12	Fire Hydrant Assembly	10	EA	\$3,500.00	\$35,000
13	Ductile Iron Fittings	6	TON	\$5,000.00	\$33,000
14	Asphalt Pavement Repair	5,800	SY	\$60.00	\$348,000
15	Allowance	1	LS	\$19,000.00	\$19,000

Basis for Cost Projection:		
<input type="checkbox"/> No Design Completed	Subtotal:	\$934,000
<input checked="" type="checkbox"/> Preliminary Design	Conting. (%,+/-)	20 \$186,850
<input type="checkbox"/> Final Design	Professional Services (%,+/-)	15 \$140,150
	Total:	\$1,300,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 3. E. 52nd Street 8" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$16,000.00	\$16,000
2	Traffic Control	1	LS	\$11,000.00	\$11,000
3	Erosion Control	1	LS	\$6,000.00	\$6,000
4	8" Water Pipe	3,830	LF	\$55.00	\$211,000
5	Water Line Trench Safety	3,830	LF	\$1.50	\$6,000
6	8" AWWA Gate Valve	10	EA	\$2,000.00	\$20,000
7	Connect to Existing Water Line	10	EA	\$2,500.00	\$25,000
8	Fire Hydrant Assembly	4	EA	\$3,500.00	\$14,000
9	Ductile Iron Fittings	4	TON	\$5,000.00	\$20,000
10	Asphalt Pavement Repair	3,500	SY	\$60.00	\$210,000
11	Allowance	1	LS	\$11,000.00	\$11,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$550,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$110,250
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$82,750
		Total:	\$800,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 4. Clover Ave. & E. 49th St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$10,000.00	\$10,000
2	Traffic Control	1	LS	\$7,000.00	\$7,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	6" Water Pipe	2,720	LF	\$45.00	\$123,000
5	Water Line Trench Safety	2,720	LF	\$1.50	\$5,000
6	6" AWWA Gate Valve	5	EA	\$1,500.00	\$8,000
7	Connect to Existing Water Line	4	EA	\$2,500.00	\$10,000
8	Fire Hydrant Assembly	3	EA	\$3,500.00	\$11,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$14,000
10	Asphalt Pavement Repair	2,500	SY	\$60.00	\$150,000
11	Allowance	1	LS	\$7,000.00	\$7,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$349,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$70,225
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$52,775
		Total:	\$500,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 5. Locust Ave. 8" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$8,000.00	\$8,000
2	Traffic Control	1	LS	\$5,000.00	\$5,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	8" Water Pipe	1,770	LF	\$55.00	\$98,000
5	Water Line Trench Safety	1,770	LF	\$1.50	\$3,000
6	8" AWWA Gate Valve	7	EA	\$2,000.00	\$14,000
7	Connect to Existing Water Line	5	EA	\$2,500.00	\$13,000
8	Fire Hydrant Assembly	3	EA	\$3,500.00	\$11,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$9,000
10	Asphalt Pavement Repair	1,600	SY	\$60.00	\$96,000
11	Allowance	1	LS	\$6,000.00	\$6,000

Basis for Cost Projection:			
		Subtotal:	\$266,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$53,650
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$40,350
<input type="checkbox"/>	Final Design	Total:	\$400,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 6. E. 35th St. Area Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$26,000.00	\$26,000
2	Traffic Control	1	LS	\$18,000.00	\$18,000
3	Erosion Control	1	LS	\$9,000.00	\$9,000
4	6" Water Pipe	6,430	LF	\$45.00	\$290,000
5	8" Water Pipe	600	LF	\$55.00	\$33,000
6	Water Line Trench Safety	7,030	LF	\$1.50	\$11,000
7	6" AWWA Gate Valve	15	EA	\$1,500.00	\$23,000
8	8" AWWA Gate Valve	4	EA	\$2,000.00	\$8,000
9	Connect to Existing Water Line	12	EA	\$2,500.00	\$30,000
10	Fire Hydrant Assembly	13	EA	\$3,500.00	\$46,000
11	Ductile Iron Fittings	7	TON	\$5,000.00	\$36,000
12	Asphalt Pavement Repair	6,300	SY	\$60.00	\$378,000
13	Allowance	1	LS	\$19,000.00	\$19,000

Basis for Cost Projection:			
		Subtotal:	\$927,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$185,675
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$139,325
<input type="checkbox"/>	Final Design	Total:	\$1,300,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 7. Eastover Dr. & E. 31st St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$29,000.00	\$29,000
2	Traffic Control	1	LS	\$20,000.00	\$20,000
3	Erosion Control	1	LS	\$10,000.00	\$10,000
4	6" Water Pipe	5,770	LF	\$45.00	\$260,000
5	8" Water Pipe	1,700	LF	\$55.00	\$94,000
6	Water Line Trench Safety	7,470	LF	\$1.50	\$12,000
7	6" AWWA Gate Valve	18	EA	\$1,500.00	\$27,000
8	8" AWWA Gate Valve	12	EA	\$2,000.00	\$24,000
9	Connect to Existing Water Line	25	EA	\$2,500.00	\$63,000
10	Fire Hydrant Assembly	12	EA	\$3,500.00	\$41,000
11	Ductile Iron Fittings	7	TON	\$5,000.00	\$38,000
12	Asphalt Pavement Repair	6,700	SY	\$60.00	\$402,000
13	Allowance	1	LS	\$21,000.00	\$21,000

Basis for Cost Projection:				
		Subtotal:		\$1,041,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20	\$208,525
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15	\$156,475
<input type="checkbox"/>	Final Design	Total:		\$1,500,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa Date: 4/24/2019
 Project: Water System Master Plan - Water Rehab Prepared By: AWS
 KHA No.: 063685005 Checked By: JRA

Title: 8. Walnut Ave. & E. 17th St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost	
1	Mobilization	1	LS	\$29,000.00	\$29,000	
2	Traffic Control	1	LS	\$20,000.00	\$20,000	
3	Erosion Control	1	LS	\$10,000.00	\$10,000	
4	6" Water Pipe	2,370	LF	\$45.00	\$107,000	
5	12" Water Pipe	4,400	LF	\$70.00	\$308,000	
6	Water Line Trench Safety	6,770	LF	\$1.50	\$11,000	
7	6" AWWA Gate Valve	11	EA	\$1,500.00	\$17,000	
8	12" AWWA Gate Valve	16	EA	\$3,000.00	\$48,000	
9	Connect to Existing Water Line	16	EA	\$2,500.00	\$40,000	
10	Fire Hydrant Assembly	6	EA	\$3,500.00	\$21,000	
11	Ductile Iron Fittings	7	TON	\$5,000.00	\$34,000	
12	Asphalt Pavement Repair	6,100	SY	\$60.00	\$366,000	
13	Allowance	1	LS	\$21,000.00	\$21,000	
Basis for Cost Projection:		Subtotal:			\$1,032,000	
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)			20	\$206,800
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)			15	\$155,200
<input type="checkbox"/>	Final Design	Total:			\$1,400,000	

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 9. E. University Blvd. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$32,000.00	\$32,000
2	Traffic Control	1	LS	\$21,000.00	\$21,000
3	Erosion Control	1	LS	\$11,000.00	\$11,000
4	8" Water Pipe	7,630	LF	\$55.00	\$420,000
5	Water Line Trench Safety	7,630	LF	\$1.50	\$12,000
6	8" AWWA Gate Valve	32	EA	\$2,000.00	\$64,000
7	Connect to Existing Water Line	28	EA	\$2,500.00	\$70,000
8	Fire Hydrant Assembly	10	EA	\$3,500.00	\$35,000
9	Ductile Iron Fittings	8	TON	\$5,000.00	\$39,000
10	Asphalt Pavement Repair	6,800	SY	\$60.00	\$408,000
11	Allowance	1	LS	\$23,000.00	\$23,000

Basis for Cost Projection:			
		Subtotal:	\$1,135,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$227,375
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$170,625
<input type="checkbox"/>	Final Design	Total:	\$1,600,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 10. W. 23rd St. & Golder Ave. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$31,000.00	\$31,000
2	Traffic Control	1	LS	\$21,000.00	\$21,000
3	Erosion Control	1	LS	\$11,000.00	\$11,000
4	6" Water Pipe	8,430	LF	\$45.00	\$380,000
5	Water Line Trench Safety	8,430	LF	\$1.50	\$13,000
6	6" AWWA Gate Valve	30	EA	\$1,500.00	\$45,000
7	Connect to Existing Water Line	10	EA	\$2,500.00	\$25,000
8	Fire Hydrant Assembly	17	EA	\$3,500.00	\$60,000
9	Ductile Iron Fittings	8	TON	\$5,000.00	\$43,000
10	Asphalt Pavement Repair	7,500	SY	\$60.00	\$450,000
11	Allowance	1	LS	\$22,000.00	\$22,000

Basis for Cost Projection:			
		Subtotal:	\$1,101,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$220,525
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$165,475
<input type="checkbox"/>	Final Design	Total:	\$1,500,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 11. Beaty Ave. & W. 22nd St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost	
1	Mobilization	1	LS	\$23,000.00	\$23,000	
2	Traffic Control	1	LS	\$15,000.00	\$15,000	
3	Erosion Control	1	LS	\$8,000.00	\$8,000	
4	6" Water Pipe	4,920	LF	\$45.00	\$222,000	
5	8" Water Pipe	2,740	LF	\$55.00	\$151,000	
6	Water Line Trench Safety	7,660	LF	\$1.50	\$12,000	
7	6" AWWA Gate Valve	23	EA	\$1,500.00	\$35,000	
8	8" AWWA Gate Valve	4	EA	\$2,000.00	\$8,000	
9	Connect to Existing Water Line	23	EA	\$2,500.00	\$58,000	
10	Fire Hydrant Assembly	8	EA	\$3,500.00	\$28,000	
11	Ductile Iron Fittings	8	TON	\$5,000.00	\$39,000	
12	Asphalt Pavement Repair	6,900	SY	\$60.00	\$414,000	
13	Allowance	1	LS	\$21,000.00	\$21,000	
Basis for Cost Projection:		Subtotal:			\$1,034,000	
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)			20	\$206,850
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)			15	\$155,150
<input type="checkbox"/>	Final Design	Total:				\$1,400,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa Date: 4/24/2019
 Project: Water System Master Plan - Water Rehab Prepared By: AWS
 KHA No.: 063685005 Checked By: JRA

Title: 12. N. County Road West Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$22,000.00	\$22,000
2	Traffic Control	1	LS	\$15,000.00	\$15,000
3	Erosion Control	1	LS	\$8,000.00	\$8,000
4	6" Water Pipe	2,270	LF	\$45.00	\$103,000
5	8" Water Pipe	4,150	LF	\$55.00	\$229,000
6	Water Line Trench Safety	6,420	LF	\$1.50	\$10,000
7	6" AWWA Gate Valve	11	EA	\$1,500.00	\$17,000
8	8" AWWA Gate Valve	12	EA	\$2,000.00	\$24,000
9	Connect to Existing Water Line	10	EA	\$2,500.00	\$25,000
10	Fire Hydrant Assembly	6	EA	\$3,500.00	\$21,000
11	Ductile Iron Fittings	6	TON	\$5,000.00	\$33,000
12	Asphalt Pavement Repair	5,800	SY	\$60.00	\$348,000
13	Allowance	1	LS	\$18,000.00	\$18,000

Basis for Cost Projection:		Subtotal:		
<input checked="" type="checkbox"/>	No Design Completed			\$873,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20	\$174,825
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15	\$131,175
		Total:		\$1,200,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 13. Whitaker Ave. & W. 19th St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$32,000.00	\$32,000
2	Traffic Control	1	LS	\$22,000.00	\$22,000
3	Erosion Control	1	LS	\$11,000.00	\$11,000
4	6" Water Pipe	9,290	LF	\$45.00	\$419,000
5	Water Line Trench Safety	9,290	LF	\$1.50	\$14,000
6	6" AWWA Gate Valve	22	EA	\$1,500.00	\$33,000
7	Connect to Existing Water Line	8	EA	\$2,500.00	\$20,000
8	Fire Hydrant Assembly	7	EA	\$3,500.00	\$25,000
9	Ductile Iron Fittings	9	TON	\$5,000.00	\$47,000
10	Asphalt Pavement Repair	8,300	SY	\$60.00	\$498,000
11	Allowance	1	LS	\$23,000.00	\$23,000

Basis for Cost Projection:			
		Subtotal:	\$1,144,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$229,100
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$171,900
<input type="checkbox"/>	Final Design	Total:	\$1,600,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 14. W. 15th St. & Graham Ave. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$9,000.00	\$9,000
2	Traffic Control	1	LS	\$6,000.00	\$6,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	6" Water Pipe	2,200	LF	\$45.00	\$99,000
5	Water Line Trench Safety	2,200	LF	\$1.50	\$4,000
6	6" AWWA Gate Valve	8	EA	\$1,500.00	\$12,000
7	Connect to Existing Water Line	4	EA	\$2,500.00	\$10,000
8	Fire Hydrant Assembly	3	EA	\$3,500.00	\$11,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$11,000
10	Asphalt Pavement Repair	2,000	SY	\$60.00	\$120,000
11	Allowance	1	LS	\$6,000.00	\$6,000

Basis for Cost Projection:			
<input checked="" type="checkbox"/>	No Design Completed	Subtotal:	\$291,000
<input type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$58,275
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$43,725
		Total:	\$400,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 15. W. 14th St. 6" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$11,000.00	\$11,000
2	Traffic Control	1	LS	\$8,000.00	\$8,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	6" Water Pipe	2,490	LF	\$45.00	\$113,000
5	Water Line Trench Safety	2,490	LF	\$1.50	\$4,000
6	6" AWWA Gate Valve	20	EA	\$1,500.00	\$30,000
7	Connect to Existing Water Line	15	EA	\$2,500.00	\$38,000
8	Fire Hydrant Assembly	6	EA	\$3,500.00	\$21,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$13,000
10	Asphalt Pavement Repair	2,300	SY	\$60.00	\$138,000
11	Allowance	1	LS	\$8,000.00	\$8,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$388,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$77,700
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$58,300
		Total:	\$600,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 16. W. 13th St. & N. County Road West 14" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$23,000.00	\$23,000
2	Traffic Control	1	LS	\$15,000.00	\$15,000
3	Erosion Control	1	LS	\$8,000.00	\$8,000
4	14" Water Pipe	3,340	LF	\$95.00	\$318,000
5	Water Line Trench Safety	3,340	LF	\$1.50	\$6,000
6	14" AWWA Gate Valve	20	EA	\$8,000.00	\$160,000
7	Connect to Existing Water Line	15	EA	\$2,500.00	\$38,000
8	Fire Hydrant Assembly	6	EA	\$3,500.00	\$21,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$17,000
10	Asphalt Pavement Repair	3,000	SY	\$60.00	\$180,000
11	Allowance	1	LS	\$16,000.00	\$16,000

Basis for Cost Projection:			
		Subtotal:	\$802,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$160,550
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$120,450
<input type="checkbox"/>	Final Design	Total:	\$1,100,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 17. N. Lincoln Ave. 6" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$10,000.00	\$10,000
2	Traffic Control	1	LS	\$7,000.00	\$7,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	6" Water Pipe	2,650	LF	\$45.00	\$120,000
5	Water Line Trench Safety	2,650	LF	\$1.50	\$4,000
6	6" AWWA Gate Valve	8	EA	\$1,500.00	\$12,000
7	Connect to Existing Water Line	10	EA	\$2,500.00	\$25,000
8	Fire Hydrant Assembly	4	EA	\$3,500.00	\$14,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$14,000
10	Asphalt Pavement Repair	2,400	SY	\$60.00	\$144,000
11	Allowance	1	LS	\$8,000.00	\$8,000

Basis for Cost Projection:			
		Subtotal:	\$362,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15
<input type="checkbox"/>	Final Design	Total:	\$500,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 18. Harless Ave. and W. 11th St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$6,000.00	\$6,000
2	Traffic Control	1	LS	\$4,000.00	\$4,000
3	Erosion Control	1	LS	\$2,000.00	\$2,000
4	6" Water Pipe	1,490	LF	\$45.00	\$68,000
5	Water Line Trench Safety	1,490	LF	\$1.50	\$3,000
6	6" AWWA Gate Valve	8	EA	\$1,500.00	\$12,000
7	Connect to Existing Water Line	6	EA	\$2,500.00	\$15,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	1	TON	\$5,000.00	\$8,000
10	Asphalt Pavement Repair	1,400	SY	\$60.00	\$84,000
11	Allowance	1	LS	\$5,000.00	\$5,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$214,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$42,850
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$32,150
		Total:	\$300,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 19. Vine Ave. 8" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$9,000.00	\$9,000
2	Traffic Control	1	LS	\$6,000.00	\$6,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	8" Water Pipe	1,900	LF	\$55.00	\$105,000
5	Water Line Trench Safety	1,900	LF	\$1.50	\$3,000
6	8" AWWA Gate Valve	11	EA	\$2,000.00	\$22,000
7	Connect to Existing Water Line	7	EA	\$2,500.00	\$18,000
8	Fire Hydrant Assembly	3	EA	\$3,500.00	\$11,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$10,000
10	Asphalt Pavement Repair	1,700	SY	\$60.00	\$102,000
11	Allowance	1	LS	\$6,000.00	\$6,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$295,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15
		Total:	\$400,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa Date: 4/24/2019
 Project: Water System Master Plan - Water Rehab Prepared By: AWS
 KHA No.: 063685005 Checked By: JRA

Title: 20. N. Belmont Ave. & W. Murphy St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost	
1	Mobilization	1	LS	\$10,000.00	\$10,000	
2	Traffic Control	1	LS	\$7,000.00	\$7,000	
3	Erosion Control	1	LS	\$4,000.00	\$4,000	
4	6" Water Pipe	3,170	LF	\$45.00	\$143,000	
5	8" Water Pipe	420	LF	\$55.00	\$24,000	
6	Water Line Trench Safety	3,590	LF	\$1.50	\$6,000	
7	6" AWWA Gate Valve	16	EA	\$1,500.00	\$24,000	
8	8" AWWA Gate Valve	2	EA	\$2,000.00	\$4,000	
9	Connect to Existing Water Line	12	EA	\$2,500.00	\$30,000	
10	Fire Hydrant Assembly	8	EA	\$3,500.00	\$28,000	
11	Ductile Iron Fittings	4	TON	\$5,000.00	\$18,000	
12	Asphalt Pavement Repair	3,200	SY	\$60.00	\$192,000	
13	Allowance	1	LS	\$10,000.00	\$10,000	
Basis for Cost Projection:		Subtotal:			\$500,000	
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)			20	\$100,000
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)			15	\$75,000
<input type="checkbox"/>	Final Design	Total:				\$700,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa Date: 4/24/2019
 Project: Water System Master Plan - Water Rehab Prepared By: AWS
 KHA No.: 063685005 Checked By: JRA

Title: 21. Drury Ln. & W. Ada St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$12,000.00	\$12,000
2	Traffic Control	1	LS	\$8,000.00	\$8,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
2	6" Water Pipe	3,019	LF	\$45.00	\$136,000
3	8" Water Pipe	1,770	LF	\$55.00	\$98,000
4	Water Line Trench Safety	4,789	LF	\$1.50	\$8,000
3	6" AWWA Gate Valve	15	EA	\$1,500.00	\$23,000
4	8" AWWA Gate Valve	8	EA	\$2,000.00	\$16,000
5	Connect to Existing Water Line	14	EA	\$2,500.00	\$35,000
4	Fire Hydrant Assembly	6	EA	\$3,500.00	\$21,000
5	Ductile Iron Fittings	5	TON	\$5,000.00	\$24,000
6	Asphalt Pavement Repair	4,300	SY	\$60.00	\$258,000
7	Allowance	1	LS	\$13,000.00	\$13,000

Basis for Cost Projection:		Subtotal:		
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20	\$131,400
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15	\$98,600
<input type="checkbox"/>	Final Design	Total:		\$900,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 22. W. 3rd St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$9,000.00	\$9,000
2	Traffic Control	1	LS	\$6,000.00	\$6,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	6" Water Pipe	1,860	LF	\$45.00	\$84,000
5	8" Water Pipe	360	LF	\$55.00	\$20,000
6	Water Line Trench Safety	2,220	LF	\$1.50	\$4,000
7	6" AWWA Gate Valve	14	EA	\$1,500.00	\$21,000
8	8" AWWA Gate Valve	2	EA	\$2,000.00	\$4,000
9	Connect to Existing Water Line	8	EA	\$2,500.00	\$20,000
10	Fire Hydrant Assembly	4	EA	\$3,500.00	\$14,000
11	Ductile Iron Fittings	2	TON	\$5,000.00	\$12,000
12	Asphalt Pavement Repair	2,000	SY	\$60.00	\$120,000
13	Allowance	1	LS	\$7,000.00	\$7,000

Basis for Cost Projection:			
		Subtotal:	\$324,000
<input checked="" type="checkbox"/> No Design Completed		Conting. (%,+/-)	20 \$65,100
<input type="checkbox"/> Preliminary Design		Professional Services (%,+/-)	15 \$48,900
<input type="checkbox"/> Final Design		Total:	\$500,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 23. Roxanna Ave. 6" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$5,000.00	\$5,000
2	Traffic Control	1	LS	\$4,000.00	\$4,000
3	Erosion Control	1	LS	\$2,000.00	\$2,000
4	6" Water Pipe	1,060	LF	\$45.00	\$48,000
5	Water Line Trench Safety	1,060	LF	\$1.50	\$2,000
6	6" AWWA Gate Valve	8	EA	\$1,500.00	\$12,000
7	Connect to Existing Water Line	6	EA	\$2,500.00	\$15,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$8,000
9	Ductile Iron Fittings	1	TON	\$5,000.00	\$6,000
10	Asphalt Pavement Repair	1,000	SY	\$60.00	\$60,000
11	Allowance	1	LS	\$4,000.00	\$4,000

Basis for Cost Projection:			
		Subtotal:	\$166,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$33,650
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$25,350
<input type="checkbox"/>	Final Design	Total:	\$300,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 24. N. Dixie Blvd. & E. 2nd St. Water Lines

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$12,000.00	\$12,000
2	Traffic Control	1	LS	\$8,000.00	\$8,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	6" Water Pipe	480	LF	\$45.00	\$22,000
5	8" Water Pipe	1,260	LF	\$55.00	\$70,000
6	12" Water Pipe	1,060	LF	\$70.00	\$75,000
7	Water Line Trench Safety	2,680	LF	\$1.50	\$5,000
8	6" AWWA Gate Valve	2	EA	\$1,500.00	\$3,000
9	8" AWWA Gate Valve	4	EA	\$2,000.00	\$8,000
10	12" AWWA Gate Valve	4	EA	\$3,000.00	\$12,000
9	Connect to Existing Water Line	5	EA	\$2,500.00	\$13,000
10	Fire Hydrant Assembly	5	EA	\$3,500.00	\$18,000
11	Ductile Iron Fittings	3	TON	\$5,000.00	\$14,000
12	Asphalt Pavement Repair	2,400	SY	\$60.00	\$144,000
13	Allowance	1	LS	\$9,000.00	\$9,000

Basis for Cost Projection:	Subtotal:	\$417,000
<input checked="" type="checkbox"/> No Design Completed	Conting. (%,+/-) 20	\$83,425
<input type="checkbox"/> Preliminary Design	Professional Services (%,+/-) 15	\$62,575
<input type="checkbox"/> Final Design	Total:	\$600,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 25. Santa Rosa Ave. 8" Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$11,000.00	\$11,000
2	Traffic Control	1	LS	\$7,000.00	\$7,000
3	Erosion Control	1	LS	\$4,000.00	\$4,000
4	8" Water Pipe	2,500	LF	\$55.00	\$138,000
5	Water Line Trench Safety	2,500	LF	\$1.50	\$4,000
6	8" AWWA Gate Valve	8	EA	\$2,000.00	\$16,000
7	Connect to Existing Water Line	8	EA	\$2,500.00	\$20,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	3	TON	\$5,000.00	\$13,000
10	Asphalt Pavement Repair	2,300	SY	\$60.00	\$138,000
11	Allowance	1	LS	\$8,000.00	\$8,000

Basis for Cost Projection:			
<input type="checkbox"/>	No Design Completed	Subtotal:	\$366,000
<input checked="" type="checkbox"/>	Preliminary Design	Conting. (%,+/-)	20 \$73,650
<input type="checkbox"/>	Final Design	Professional Services (%,+/-)	15 \$55,350
		Total:	\$500,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Client: City of Odessa	Date: 4/24/2019
Project: Water System Master Plan - Water Rehab	Prepared By: AWS
KHA No.: 063685005	Checked By: JRA

Title: 26. N Dixie Boulevard 12-Inch Water Line

Item No.	Item Description	Quantity	Unit	Unit Price	Item Cost
1	Mobilization	1	LS	\$8,000.00	\$8,000
2	Traffic Control	1	LS	\$5,000.00	\$5,000
3	Erosion Control	1	LS	\$3,000.00	\$3,000
4	12" Water Pipe	1,580	LF	\$70.00	\$111,000
5	Water Line Trench Safety	1,580	LF	\$1.50	\$3,000
6	12" AWWA Gate Valve	6	EA	\$3,000.00	\$18,000
7	Connect to Existing Water Line	4	EA	\$2,500.00	\$10,000
8	Fire Hydrant Assembly	2	EA	\$3,500.00	\$7,000
9	Ductile Iron Fittings	2	TON	\$5,000.00	\$8,000
10	Asphalt Pavement Repair	1,500	SY	\$60.00	\$90,000
11	Allowance	1	LS	\$6,000.00	\$6,000

Basis for Cost Projection:			
		Subtotal:	\$269,000
<input checked="" type="checkbox"/>	No Design Completed	Conting. (%,+/-)	20 \$54,225
<input type="checkbox"/>	Preliminary Design	Professional Services (%,+/-)	15 \$40,775
<input type="checkbox"/>	Final Design	Total:	\$400,000

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs.

Appendix F – Water and Wastewater Pro Forma

City of Odessa, TX
 Financial Forecasting Total Pro Forma Model
 Water and Sewer Fund - Includes Water Master Plan and Sewer Master Plan

	Total Budget 2019	Total Projected 2020	Total Projected 2021	Total Projected 2022	Total Projected 2023
Percent Revenue Increase		7.4%	3.9%	4.8%	4.7%
Average Residential 3/4" Monthly Bill	\$ 56.57	\$ 60.73	\$ 63.07	\$ 66.08	\$ 69.22
<i>Assumed Usage - 5,000 Gallons</i>					
<i>Includes energy surcharge of \$0.1133 per 1,000 gallons</i>					
	<i>Inc/(Dec) \$ Yr Over Yr</i>	4.16	2.34	3.01	3.14
Revenues					
Rate Revenues	\$ 49,100,393	\$ 52,208,750	\$ 54,743,214	\$ 57,354,977	\$ 60,076,734
Non-Rate Revenues	11,407,430	11,410,682	11,413,974	11,417,306	11,420,678
Total Revenues	\$ 60,507,823	\$ 63,619,433	\$ 66,157,188	\$ 68,772,283	\$ 71,497,412
Expenses					
Billing and Collection	\$ 3,039,128	\$ 3,143,101	\$ 3,250,734	\$ 3,362,161	\$ 3,477,517
Utility Administration	1,324,150	1,371,420	1,420,411	1,471,187	1,523,813
Water Distribution	2,539,418	2,627,167	2,718,033	2,812,128	2,909,570
Water Treatment Plant	2,971,894	3,061,516	3,153,933	3,249,235	3,347,515
Bob Derrington Water Reclamation Plant	3,724,256	3,841,728	3,963,038	4,088,315	4,217,696
Wastewater Collection	1,718,401	1,776,380	1,836,366	1,898,430	1,962,647
Laboratory Services	1,420,057	1,469,978	1,521,691	1,575,261	1,630,756
Utility GIS	287,883	298,381	309,268	320,559	332,268
Repair and Replacement	947,829	972,919	998,673	1,025,109	1,052,245
Non-Departmental Expenditures	18,162,388	18,387,389	18,618,384	18,855,531	19,098,996
Participation in Line Extensions	200,000	206,197	212,587	219,174	225,966
Water Purchase Expenditures	17,361,119	17,820,686	18,292,418	18,776,637	19,273,674
Gulf Coast Expenditures	250,000	256,618	263,411	270,383	277,541
Debt Service	6,561,300	7,606,306	8,705,888	9,839,611	11,036,016
Total Expenses	\$ 60,507,823	\$ 62,839,786	\$ 65,264,835	\$ 67,763,723	\$ 70,366,220
Excess (deficiency) of revenues	\$ -	\$ 779,646	\$ 892,354	\$ 1,008,560	\$ 1,131,192
Fund Balance					
Beginning Fund Balance	25,711,295	25,711,295	26,490,941	27,383,295	28,391,855
Ending Fund Balance	\$ 25,711,295	\$ 26,490,941	\$ 27,383,295	\$ 28,391,855	\$ 29,523,047
<i>Inc/(Dec) Year over Year</i>	\$ -	\$ 779,646	\$ 892,354	\$ 1,008,560	\$ 1,131,192
Daily Operating Expense	\$ 165,775	\$ 172,164	\$ 178,808	\$ 185,654	\$ 192,784
Days Cash on Hand	155	154	153	153	153
<i>90 Days Operating Target</i>	90	90	90	90	90
Debt Service Coverage					
Operating Revenues	\$ 60,507,823	\$ 63,619,433	\$ 66,157,188	\$ 68,772,283	\$ 71,497,412
Operating Expenses	\$ 53,946,523	\$ 55,233,480	\$ 56,558,947	\$ 57,924,112	\$ 59,330,205
Net Revenues Available for Debt Service	\$ 6,561,300	\$ 8,385,952	\$ 9,598,242	\$ 10,848,171	\$ 12,167,207
Annual Debt Service	\$ 6,561,300	\$ 7,606,306	\$ 8,705,888	\$ 9,839,611	\$ 11,036,016
Debt Coverage Ratio	1.00	1.10	1.10	1.10	1.10
<i>Target Debt Coverage Ratio</i>	1.10	1.10	1.10	1.10	1.10

Notes:

\$9.7M Pioneer Contract Recognized in Non-Rate Revenues and Non-Departmental Expenditures.

Actual rate increases may vary. The City is currently undergoing a Cost of Service Study to determine actual rate increases.

City of Odessa, TX
 Financial Forecasting Total Pro Forma Model
 Water and Sewer Fund - Includes Water Master Plan and Sewer Master Plan

	Total Projected 2024	Total Projected 2025	Total Projected 2026	Total Projected 2027	Total Projected 2028
Percent Revenue Increase	4.7%	3.8%	3.8%	3.7%	0.0%
Average Residential 3/4" Monthly Bill	\$ 72.46	\$ 75.20	\$ 78.02	\$ 80.94	\$ 80.94
<i>Assumed Usage - 5,000 Gallons</i>	3.25	2.73	2.82	2.92	-
<i>Includes energy surcharge of \$0.1133 per 1,000 gallons</i>					
Revenues					
Rate Revenues	\$ 62,894,563	\$ 65,267,362	\$ 67,718,457	\$ 70,255,668	\$ 70,255,668
Non-Rate Revenues	11,424,092	11,427,547	11,431,044	11,434,583	11,438,166
Total Revenues	\$ 74,318,654	\$ 76,694,908	\$ 79,149,501	\$ 81,690,251	\$ 81,693,834
Expenses					
Billing and Collection	\$ 3,596,945	\$ 3,720,593	\$ 3,848,611	\$ 3,981,159	\$ 4,118,401
Utility Administration	1,578,359	1,634,895	1,693,495	1,754,236	1,817,196
Water Distribution	3,010,481	3,114,985	3,223,216	3,335,307	3,451,401
Water Treatment Plant	3,448,870	3,553,398	3,661,204	3,772,393	3,887,076
Bob Derrington Water Reclamation Plant	4,351,317	4,489,324	4,631,864	4,779,092	4,931,167
Wastewater Collection	2,029,091	2,097,843	2,168,983	2,242,598	2,318,775
Laboratory Services	1,688,246	1,747,805	1,809,508	1,873,433	1,939,662
Utility GIS	344,412	357,007	370,070	383,618	397,669
Repair and Replacement	1,080,099	1,108,690	1,138,038	1,168,163	1,199,086
Non-Departmental Expenditures	19,348,948	19,605,559	19,869,007	20,139,476	20,417,153
Participation in Line Extensions	232,968	240,187	247,630	255,303	263,214
Water Purchase Expenditures	19,783,869	20,307,568	20,845,131	21,396,923	21,963,322
Gulf Coast Expenditures	284,888	292,429	300,170	308,116	316,272
Debt Service	12,281,326	13,083,561	13,916,167	14,784,974	9,133,869
Total Expenses	\$ 73,059,818	\$ 75,353,844	\$ 77,723,094	\$ 80,174,791	\$ 76,154,262
Excess (deficiency) of revenues	\$ 1,258,836	\$ 1,341,065	\$ 1,426,407	\$ 1,515,460	\$ 5,539,572
Fund Balance					
Beginning Fund Balance	29,523,047	30,781,883	32,122,948	33,549,355	35,064,814
Ending Fund Balance	\$ 30,781,883	\$ 32,122,948	\$ 33,549,355	\$ 35,064,814	\$ 40,604,387
<i>Inc/(Dec) Year over Year</i>	<i>\$ 1,258,836</i>	<i>\$ 1,341,065</i>	<i>\$ 1,426,407</i>	<i>\$ 1,515,460</i>	<i>\$ 5,539,572</i>
Daily Operating Expense	\$ 200,164	\$ 206,449	\$ 212,940	\$ 219,657	\$ 208,642
Days Cash on Hand	154	156	158	160	195
<i>90 Days Operating Target</i>	<i>90</i>	<i>90</i>	<i>90</i>	<i>90</i>	<i>90</i>
Debt Service Coverage					
Operating Revenues	\$ 74,318,654	\$ 76,694,908	\$ 79,149,501	\$ 81,690,251	\$ 81,693,834
Operating Expenses	\$ 60,778,492	\$ 62,270,283	\$ 63,806,927	\$ 65,389,817	\$ 67,020,393
Net Revenues Available for Debt Service	\$ 13,540,162	\$ 14,424,626	\$ 15,342,574	\$ 16,300,434	\$ 14,673,441
Annual Debt Service	\$ 12,281,326	\$ 13,083,561	\$ 13,916,167	\$ 14,784,974	\$ 9,133,869
Debt Coverage Ratio	1.10	1.10	1.10	1.10	1.61
<i>Target Debt Coverage Ratio</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>

Notes:

\$9.7M Pioneer Contract Recognized in Non-Rate Revenues and Non-Departmental Expenditures.

Actual rate increases may vary. The City is currently undergoing a Cost of Service Study to determine actual rate increases.

City of Odessa, TX
 Financial Forecasting Total Pro Forma Model
 Water and Sewer Fund - Includes Water Master Plan and Sewer Master Plan

	Total Projected 2029	Total Projected 2030	Total Projected 2031	Total Projected 2032	Total Projected 2033
Percent Revenue Increase	0.0%	3.8%	6.5%	6.3%	6.1%
Average Residential 3/4" Monthly Bill	\$ 80.94	\$ 84.01	\$ 89.44	\$ 95.03	\$ 100.80
<i>Assumed Usage - 5,000 Gallons</i>	-	3.07	5.43	5.59	5.76
<i>Includes energy surcharge of \$0.1133 per 1,000 gallons</i>					
Revenues					
Rate Revenues	\$ 70,255,668	\$ 72,920,461	\$ 77,630,304	\$ 82,484,347	\$ 87,487,052
Non-Rate Revenues	11,441,793	11,445,232	11,448,711	11,452,229	11,455,787
Total Revenues	\$ 81,697,461	\$ 84,365,693	\$ 89,079,015	\$ 93,936,576	\$ 98,942,839
Expenses					
Billing and Collection	\$ 4,260,507	\$ 4,405,492	\$ 4,555,534	\$ 4,710,813	\$ 4,871,517
Utility Administration	1,882,459	1,949,013	2,017,960	2,089,386	2,163,383
Water Distribution	3,571,642	3,694,292	3,821,253	3,952,680	4,088,734
Water Treatment Plant	4,005,365	4,126,386	4,251,176	4,379,857	4,512,555
Bob Derrington Water Reclamation Plant	5,088,255	5,248,801	5,414,576	5,585,753	5,762,515
Wastewater Collection	2,397,605	2,478,156	2,561,475	2,647,657	2,736,803
Laboratory Services	2,008,279	2,078,312	2,150,830	2,225,923	2,303,683
Utility GIS	412,243	427,095	442,489	458,445	474,985
Repair and Replacement	1,230,827	1,263,408	1,296,852	1,331,181	1,366,419
Non-Departmental Expenditures	20,702,229	20,994,827	21,295,221	21,603,617	21,920,232
Participation in Line Extensions	271,371	279,780	288,449	297,388	306,603
Water Purchase Expenditures	22,544,714	23,141,496	23,754,075	24,382,870	25,028,310
Gulf Coast Expenditures	324,644	333,237	342,059	351,113	360,407
Debt Service	10,082,173	12,648,887	15,317,068	18,067,929	20,904,031
Total Expenses	\$ 78,782,312	\$ 83,069,182	\$ 87,509,016	\$ 92,084,614	\$ 96,800,176
Excess (deficiency) of revenues	\$ 2,915,149	\$ 1,296,511	\$ 1,569,999	\$ 1,851,963	\$ 2,142,663
Fund Balance					
Beginning Fund Balance	40,604,387	43,519,535	44,816,046	46,386,046	48,238,008
Ending Fund Balance	\$ 43,519,535	\$ 44,816,046	\$ 46,386,046	\$ 48,238,008	\$ 50,380,672
<i>Inc/(Dec) Year over Year</i>	<i>\$ 2,915,149</i>	<i>\$ 1,296,511</i>	<i>\$ 1,569,999</i>	<i>\$ 1,851,963</i>	<i>\$ 2,142,663</i>
Daily Operating Expense	\$ 215,842	\$ 227,587	\$ 239,751	\$ 252,287	\$ 265,206
Days Cash on Hand	202	197	193	191	190
<i>90 Days Operating Target</i>	<i>90</i>	<i>90</i>	<i>90</i>	<i>90</i>	<i>90</i>
Debt Service Coverage					
Operating Revenues	\$ 81,697,461	\$ 84,365,693	\$ 89,079,015	\$ 93,936,576	\$ 98,942,839
Operating Expenses	\$ 68,700,138	\$ 70,420,295	\$ 72,191,947	\$ 74,016,685	\$ 75,896,145
Net Revenues Available for Debt Service	\$ 12,997,322	\$ 13,945,398	\$ 16,887,068	\$ 19,919,891	\$ 23,046,694
Annual Debt Service	\$ 10,082,173	\$ 12,648,887	\$ 15,317,068	\$ 18,067,929	\$ 20,904,031
Debt Coverage Ratio	1.29	1.10	1.10	1.10	1.10
<i>Target Debt Coverage Ratio</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>

Notes:

\$9.7M Pioneer Contract Recognized in Non-Rate Revenues and Non-Departmental Expenditures.

Actual rate increases may vary. The City is currently undergoing a Cost of Service Study to determine actual rate increases.

City of Odessa, TX
 Financial Forecasting Total Pro Forma Model
 Water and Sewer Fund - Includes Water Master Plan and Sewer Master Plan

	Total Projected 2034	Total Projected 2035	Total Projected 2036	Total Projected 2037	Total Projected 2038
Percent Revenue Increase	5.9%	5.7%	5.6%	5.5%	5.3%
Average Residential 3/4" Monthly Bill	\$ 106.74	\$ 112.86	\$ 119.17	\$ 125.67	\$ 132.38
<i>Assumed Usage - 5,000 Gallons</i>	5.94	6.12	6.31	6.50	6.70
<i>Includes energy surcharge of \$0.1133 per 1,000 gallons</i>					
Revenues					
Rate Revenues	\$ 92,643,021	\$ 97,957,000	\$ 103,433,885	\$ 109,078,723	\$ 114,896,723
Non-Rate Revenues	11,459,386	11,463,027	11,466,708	11,470,432	11,474,198
Total Revenues	\$ 104,102,407	\$ 109,420,026	\$ 114,900,593	\$ 120,549,155	\$ 126,370,921
Expenses					
Billing and Collection	\$ 5,037,838	\$ 5,209,976	\$ 5,388,140	\$ 5,572,544	\$ 5,763,411
Utility Administration	2,240,042	2,319,462	2,401,743	2,486,990	2,575,311
Water Distribution	4,229,578	4,375,387	4,526,338	4,682,615	4,844,410
Water Treatment Plant	4,649,400	4,790,523	4,936,065	5,086,167	5,240,977
Bob Derrington Water Reclamation Plant	5,945,049	6,133,550	6,328,218	6,529,261	6,736,894
Wastewater Collection	2,829,018	2,924,408	3,023,084	3,125,164	3,230,765
Laboratory Services	2,384,207	2,467,594	2,553,948	2,643,376	2,735,988
Utility GIS	492,129	509,900	528,321	547,415	567,209
Repair and Replacement	1,402,589	1,439,717	1,477,828	1,516,948	1,557,103
Non-Departmental Expenditures	22,245,282	22,578,996	22,921,602	23,273,340	23,634,454
Participation in Line Extensions	316,104	325,899	335,998	346,409	357,143
Water Purchase Expenditures	25,690,835	26,370,898	27,068,963	27,785,507	28,521,018
Gulf Coast Expenditures	369,948	379,741	389,793	400,111	410,702
Debt Service	23,828,016	26,842,608	29,950,614	33,154,928	36,458,535
Total Expenses	\$ 101,660,036	\$ 106,668,659	\$ 111,830,655	\$ 117,150,775	\$ 122,633,921
Excess (deficiency) of revenues	\$ 2,442,372	\$ 2,751,367	\$ 3,069,938	\$ 3,398,380	\$ 3,737,000
Fund Balance					
Beginning Fund Balance	50,380,672	52,823,043	55,574,411	58,644,348	62,042,729
Ending Fund Balance	\$ 52,823,043	\$ 55,574,411	\$ 58,644,348	\$ 62,042,729	\$ 65,779,728
<i>Inc./Dec) Year over Year</i>	<i>\$ 2,442,372</i>	<i>\$ 2,751,367</i>	<i>\$ 3,069,938</i>	<i>\$ 3,398,380</i>	<i>\$ 3,737,000</i>
Daily Operating Expense	\$ 278,521	\$ 292,243	\$ 306,385	\$ 320,961	\$ 335,983
Days Cash on Hand	190	190	191	193	196
<i>90 Days Operating Target</i>	<i>90</i>	<i>90</i>	<i>90</i>	<i>90</i>	<i>90</i>
Debt Service Coverage					
Operating Revenues	\$ 104,102,407	\$ 109,420,026	\$ 114,900,593	\$ 120,549,155	\$ 126,370,921
Operating Expenses	\$ 77,832,019	\$ 79,826,051	\$ 81,880,041	\$ 83,995,847	\$ 86,175,386
Net Revenues Available for Debt Service	\$ 26,270,388	\$ 29,593,975	\$ 33,020,551	\$ 36,553,308	\$ 40,195,535
Annual Debt Service	\$ 23,828,016	\$ 26,842,608	\$ 29,950,614	\$ 33,154,928	\$ 36,458,535
Debt Coverage Ratio	1.10	1.10	1.10	1.10	1.10
<i>Target Debt Coverage Ratio</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>

Notes:

\$9.7M Pioneer Contract Recognized in Non-Rate Revenues and Non-Departmental Expenditures.

Actual rate increases may vary. The City is currently undergoing a Cost of Service Study to determine actual rate increases.

City of Odessa, TX
 Financial Forecasting Total Pro Forma Model
 Water and Sewer Fund - Includes Water Master Plan and Sewer Master Plan

	Total Projected 2039	Total Projected 2040	Total Projected 2041	Total Projected 2042	Total Projected 2043
Percent Revenue Increase	5.2%	5.1%	5.0%	4.9%	4.8%
Average Residential 3/4" Monthly Bill	\$ 139.28	\$ 146.39	\$ 153.70	\$ 161.24	\$ 169.02
<i>Assumed Usage - 5,000 Gallons</i>	6.91	7.10	7.32	7.54	7.77
<i>Includes energy surcharge of \$0.1133 per 1,000 gallons</i>					
Revenues					
Rate Revenues	\$ 120,893,253	\$ 127,056,173	\$ 133,407,535	\$ 139,953,155	\$ 146,699,031
Non-Rate Revenues	11,478,007	11,481,547	11,485,125	11,488,740	11,492,393
Total Revenues	\$ 132,371,260	\$ 138,537,720	\$ 144,892,660	\$ 151,441,895	\$ 158,191,423
Expenses					
Billing and Collection	\$ 5,960,972	\$ 6,161,690	\$ 6,369,307	\$ 6,584,065	\$ 6,806,212
Utility Administration	2,666,817	2,759,711	2,855,884	2,955,454	3,058,542
Water Distribution	5,011,922	5,182,051	5,358,068	5,540,180	5,728,602
Water Treatment Plant	5,400,647	5,563,597	5,731,598	5,904,809	6,083,399
Bob Derrington Water Reclamation Plant	6,951,340	7,169,814	7,395,344	7,628,163	7,868,512
Wastewater Collection	3,340,012	3,451,240	3,566,241	3,685,145	3,808,086
Laboratory Services	2,831,899	2,929,375	3,030,255	3,134,659	3,242,710
Utility GIS	587,728	608,536	630,090	652,415	675,539
Repair and Replacement	1,598,321	1,640,630	1,684,059	1,728,638	1,774,397
Non-Departmental Expenditures	24,005,193	24,385,681	24,776,306	25,177,339	25,589,058
Participation in Line Extensions	368,210	379,620	391,384	403,512	416,015
Water Purchase Expenditures	29,275,999	30,050,965	30,846,446	31,662,983	32,501,135
Gulf Coast Expenditures	421,574	432,734	444,189	455,947	468,016
Debt Service	39,864,512	43,376,031	46,996,362	50,728,877	54,577,053
Total Expenses	\$ 128,285,147	\$ 134,091,677	\$ 140,075,533	\$ 146,242,185	\$ 152,597,275
Excess (deficiency) of revenues	\$ 4,086,112	\$ 4,446,043	\$ 4,817,127	\$ 5,199,710	\$ 5,594,148
Fund Balance					
Beginning Fund Balance	65,779,728	69,865,841	74,311,884	79,129,011	84,328,721
Ending Fund Balance	\$ 69,865,841	\$ 74,311,884	\$ 79,129,011	\$ 84,328,721	\$ 89,922,869
<i>Inc/(Dec) Year over Year</i>	\$ 4,086,112	\$ 4,446,043	\$ 4,817,127	\$ 5,199,710	\$ 5,594,148
Daily Operating Expense	\$ 351,466	\$ 367,374	\$ 383,769	\$ 400,664	\$ 418,075
Days Cash on Hand	199	202	206	210	215
<i>90 Days Operating Target</i>	90	90	90	90	90
Debt Service Coverage					
Operating Revenues	\$ 132,371,260	\$ 138,537,720	\$ 144,892,660	\$ 151,441,895	\$ 158,191,423
Operating Expenses	\$ 88,420,635	\$ 90,715,646	\$ 93,079,171	\$ 95,513,308	\$ 98,020,222
Net Revenues Available for Debt Service	\$ 43,950,624	\$ 47,822,074	\$ 51,813,489	\$ 55,928,587	\$ 60,171,201
Annual Debt Service	\$ 39,864,512	\$ 43,376,031	\$ 46,996,362	\$ 50,728,877	\$ 54,577,053
Debt Coverage Ratio	1.10	1.10	1.10	1.10	1.10
<i>Target Debt Coverage Ratio</i>	1.10	1.10	1.10	1.10	1.10

Notes:

\$9.7M Pioneer Contract Recognized in Non-Rate Revenues and Non-Departmental Expenditures.

Actual rate increases may vary. The City is currently undergoing a Cost of Service Study to determine actual rate increases.

Introduction

NewGen Strategies and Solution, LLC (NewGen) has compiled the following information regarding a variety of funding opportunities and resources the City may consider as it determines the best approach to funding major capital needs. Much of the information provided below has been gathered from other sources including the “Certified Government Finance Officer Study Guide for Debt Administration”, TWICC.org, and TWDB.Texas.gov. We have only touched upon the surface of these options, but more detail is available from each source directly. You can also reach out to NewGen for any other specific questions, and we will be glad to assist the City or discuss options with the City’s Financial Advisor.

Types of Funding Options

Bonds

Bonds are a form of long-term debt (typically 20 years or longer) a City uses for major capital infrastructure. Debt is often used because cash funding major projects is cost-prohibitive for current rate payers. Instead, debt payments that will be spread out over many years reduce the annual cash required from rates. Another often cited benefit of spreading payments out over time is that both the current and future residents benefit and also pay over the useful life of the asset. This concept is referred to as intergenerational equity. The three most common types of bonds issued by City’s are detailed below.

Bonds with a Tax Pledge

General Obligation (GO) bonds and Certificates of Obligation (CO) are two forms of municipal debt secured by an unconditional credit guarantee. Both GO bonds and CO bonds are backed by the full faith and credit of the City; thus, the institution possesses the power to levy a property tax in order to meet the financial obligations of the debt. The primary difference between GO’s and CO’s is procedural, involving the methods of approval. GO bonds require general voter approval through an election, while CO bonds do not require voter approval. Instead of pre-approval through a bond election, CO’s require a Notice of Intent, which must be approved by City Council and a period of time for the general public to review and potentially petition against the CO prior to committing the City to additional debt. If, during this public notice period, five percent (5%) or more of the registered voters petition the CO, the issuance would be subject to a public vote. After the public notice period has expired without the protest of sufficient petitioners, the City Council may take action to approve the sale of bonds.

In our experience, GO’s are typically used for Roads, Facilities, Parks and other “quality of life” and quality of place” decisions. In the case of public safety and other legal requirements, such as providing continuous and adequate water and wastewater, City’s more often rely on CO’s. When funding enterprise fund activities, it is also common to see a pledge of user-fee or dedicated enterprise fund revenues in addition to taxing authority. For example, a water utility could pledge water revenues as well as the tax-backing of the City as security for its bonds. This pledge or revenues is usually referred to as self-supporting debt and City’s rarely assess any additional property taxes to support these bond payments. Even though City’s do not regularly use taxes for self-supporting debt, the fact that the City has pledged its ability to tax lowers risk to bond holders. In exchange for reduced risk, CO’s usually have lower interest costs than revenue-only bonds.

Bonds without a Tax Pledge

Revenue bonds, unlike GO and CO bonds, are secured by a pledge of only system user revenues. As such revenue bonds are not backed by the taxing power of the governing entity. Generally, interest rates for revenue bonds sell anywhere from 0.05% - 0.25% higher than GOs and COs. As additional security on revenue bonds, many bond pledge agreements require annual revenues to exceed the cost to operate and cost of annual debt. This "debt service coverage" (DSC) is usually anywhere from 1.1 to 1.25 of the issuances and any related debt. DSC may have other stipulations and may be required by certain bond covenant language to be calculated differently.

In two simplified examples below, DSC is calculated as total revenues minus the cost of operations over the annual debt payments. In these examples, only the annual revenue changes. The major takeaway from this is that a higher debt service coverage requirement will cause annual rate or user fee revenues to exceed annual cash needs.

Breakeven System Revenues Not Meeting 1.10 DSC Coverage Requirement

Utility Expenses		
Operations and Maintenance (O&M)	\$	1,000,000
Debt Payments (P&I)		1,000,000
Total Utility Expenses	\$	2,000,000
Total Revenues	\$	2,000,000
Less O&M Expenses		- 1,000,000
Revenues Available for DSC	\$	1,000,000
<u>Debt Service Coverage</u>		1.00
		<i>(1,000,000/1,000,000) = 1.00</i>

Revenues Available Meeting 1.10 DSC Coverage Requirement

Utility Expenses		
Operations and Maintenance (O&M)	\$	1,000,000
Debt Payments (P&I)		1,000,000
Total Utility Expenses	\$	2,000,000
Total Revenues	\$	2,100,000
Less O&M Expenses		- 1,000,000
Revenues Available for DSC	\$	1,100,000
<u>Debt Service Coverage</u>		1.10
		<i>(1,100,000/1,000,000) = 1.10</i>

Impact Fees

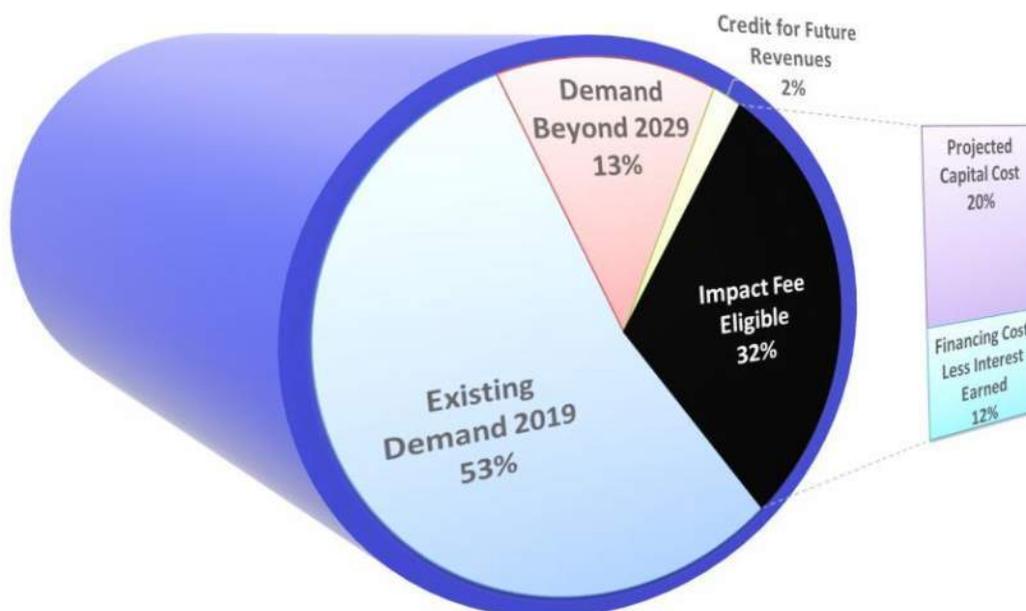
Impact fees are growing increasingly common around the State of Texas, and this fee is frequently espoused by communities under the principle that "growth should pay for growth." Impact fees are a

state-approved mechanism that allows municipalities to recover part of infrastructure costs specifically associated with future development. Impact fees are governed by Chapter 395 of the Texas Local Government Code (LGC). LGC §395.001 defines impact fees as, “a charge or assessment imposed by a political subdivision against new development in order to generate revenue for funding or recouping the costs of capital improvements or facility expansions necessitated by and attributable to the new development.” Impact fees cannot be used for the following purposes:

- Capital Improvement Projects NOT Identified in the Impact Fee CIP
- Operations and Maintenance Costs
- Improvements Associated with Existing Deficiencies
- Administrative and Operational Costs of the City
- Non-Impact Fee CIP Debt Service

Impact fees can be imposed on areas of the Extraterritorial Jurisdiction (ETJ) for Water and Wastewater Utilities. School districts are exempt from impact fees unless the School Board consents by entering into contractual agreement. The LGC statute spells out specific steps for adopting impact fees. To summarize the major steps, a City must have Land Use Assumptions and an Impact Fee-specific CIP not to exceed a period of ten years sealed by an engineer. By design, impact fees were not designed to recover 100% of the costs to construct new capital. In fact, Chapter 395 requires a plan for awarding either a credit for the portion of utility service revenues generated by new connections during the program’s ten-year period that are used for payment of improvements that are included in the Impact Fee CIP. As an alternative, a credit equal to 50% of the total cost may be used.

As the diagram depicting a cutaway of a pipe illustrates, impact fees can only be based on growth demands within the ten-year period (Projected Capital and Financing Cost within the black pie area). For many major infrastructure improvements, the line size will support existing customers, customers in the next ten years and also future growth expected after the ten-year period. The engineer completing the Land Use Assumptions will make this determination for each project in the Impact Fee CIP, which will serve as the basis for costs eligible in the impact fee determination.



Impact fees are used as an effective tool to help fund capital improvement plans, while effectively accommodating growth. To shift part of the burden of funding capital costs from existing ratepayers, impact fees provide a means of fulfilling cash funding or debt service. Impact fees require some administration effort through segregated accounting, participation of a committee (often the Planning and Zoning Committee serves this role) and periodic review and updates. Residential impact fees are most often paid by the development community and are included in the price of a new home, which is often between 2 to 4 percent (2%-4%) of the total home price.

Other Funding Options

There are a number of other sources for potential revenues to offset utility capital costs. While the Bonds and Impact Fees are the primary tools used around Texas, we have provided a quick list of other options for a City or partnering organizations to help fund needed utility infrastructure.

- Type B Economic Development Corporation (EDC)
- Municipal Development District (MDD)
- Public Improvement District (PID) Assessments
- Tax Increment Reinvestment Zone (TIRZ or sometime TIF)
- Regional Cooperation for Cost Sharing

State Funding Programs

There are many funding programs available to utilities to help meet certain quality and affordability standards. Many of these programs are federally funded (or have federal matching dollars) and are administered by state organizations. Most common in Texas are funding options coordinated through the Texas Water Development Board (TWDB), which is the focus of our state funding summary below. TWDB maintains a wide array of resources to assist with the financing of supply, infrastructure, and development projects for water and wastewater. Since the Board began its work in 1957, more than 5,909 financial engagements and \$27.6 billion of funds have been disbursed. The TWDB finances water and wastewater projects through affordable loans and grant programs throughout the entire state.

Application Process

The application (form TWDB-0148) required for the loan and grant resources can be accessed online. The application uses an extensive review of the applicant, including finance, legal, engineering, environmental, planning, and water conservation. There are no application fees; however, an origination fee may be assessed upon loan closing depending on the program selected. To provide more accessible assistance during the application process, the TWDB provides a project implementation staff. Projects listed on the Statewide Intended Use Plans receive priority funding consideration. The staff is organized into six regional teams, including a manager who will serve as the primary contact during the application process. Most programs fall into one of two major categories as outlined below.

General Obligation Loan Programs

Texas Water Development Fund – Water & Wastewater

The Water Development Fund (DFund) supports water and wastewater projects through a state-funded loan program. The DFund, however, does not receive any federal subsidies and does not offer grants. The borrowing rate is contingent on current market conditions and is aligned closely with TWDB's cost to borrow.

Economically Distressed Area Program – Water & Wastewater

The Economically Distressed Area Program (EDAP) supports projects that assist economically distressed areas where water or sewer facilities are not available or if respective systems do not adhere to the state's requirements. Initially funded by GO bonds, the EDAP supports water and wastewater projects in the form of grants and loans. Eligibility is determined through an application and ranking process.

General Obligation Loan Program Costs

<i>Types of Funds</i>	<i>Terms</i>	<i>Market Rate</i>	<i>TWDB Rate</i>	<i>Variance</i>
<i>Development Fund (Tax Exempt)</i>	20	3.63%	3.37%	0.26%
<i>Development Fund (Tax Exempt)</i>	30	4.09%	3.91%	0.18%
<i>Development Fund (Taxable)</i>	20	4.62%	3.81%	0.81%
<i>EDAP (Tax Exempt)</i>	20	3.63%	N/A	N/A
<i>Agricultural Loans (Taxable)</i>	7	3.86%	2.56%	1.30%
<i>Rural Water Assistance Fund)</i>	40	N/A	4.42%	N/A

Source: Texas Water Development Board – Interest Rates.

The rates listed above are updated as of March 1, 2019.

Loan origination fees range between 1.75% to 2.25% of principal depending on program specifics.

State Revolving Fund Programs

State Water Implementation Fund for Texas – Water

The State Water Implementation Fund for Texas (SWIFT) assists communities to generate and improve water supplies at affordable costs and offers an extensive list of loans, terms, and deferment options to support a variety of initiatives encompassed within the State Water Plan.

Clean Water State Revolving Fund - Wastewater

The Clean Water State Revolving Fund (CWSRF) is a financial assistance program that provides low-cost financing for a wide array of wastewater infrastructure projects. Within the CWSRF, the Environmental Protection Agency (EPA) delivers grant funds to state-level CWSRF loan programs, including Puerto Rico.

Drinking Water State Revolving Fund - Water

The Drinking Water State Revolving Fund (DWSRF) aids states and water systems to successfully accomplish the objectives of the Safe Drinking Water Act (SDWA). As funding is adequately distributed by Congress for the DWSRF, the EPA then provides grants to each state as determined by the results of the Drinking Water Infrastructure Needs Survey and Assessment.

State Revolving Fund Program Costs

<i>Types of Funds</i>	<i>Terms</i>	<i>Market Rate</i>	<i>TWDB Rate</i>	<i>Variance</i>
<i>Clean Water SRF Non-Equivalency (AA)</i>	20	2.79%	1.49%	1.30%
<i>Clean Water SRF Equivalency (AA)</i>	20	2.79%	1.14%	1.65%

<i>Drinking Water SRF (AA)</i>	20	2.79%	1.44%	1.35%
<i>Clean Water SRF Non-Equivalency (AA)</i>	30	3.04%	1.74%	1.30%
<i>Clean Water SRF Equivalency (AA)</i>	30	3.04%	1.39%	1.65%
<i>Drinking Water SRF (AA)</i>	30	3.04%	1.69%	1.35%

Source: Texas Water Development Board – Interest Rates.

The rates listed above are updated as of March 1, 2019.

Loan origination fees range between 1.75% to 2.25% of principal depending on program specifics.

TWDB Loan Conditions Matrix – Extracted from TWDB Resource Guides

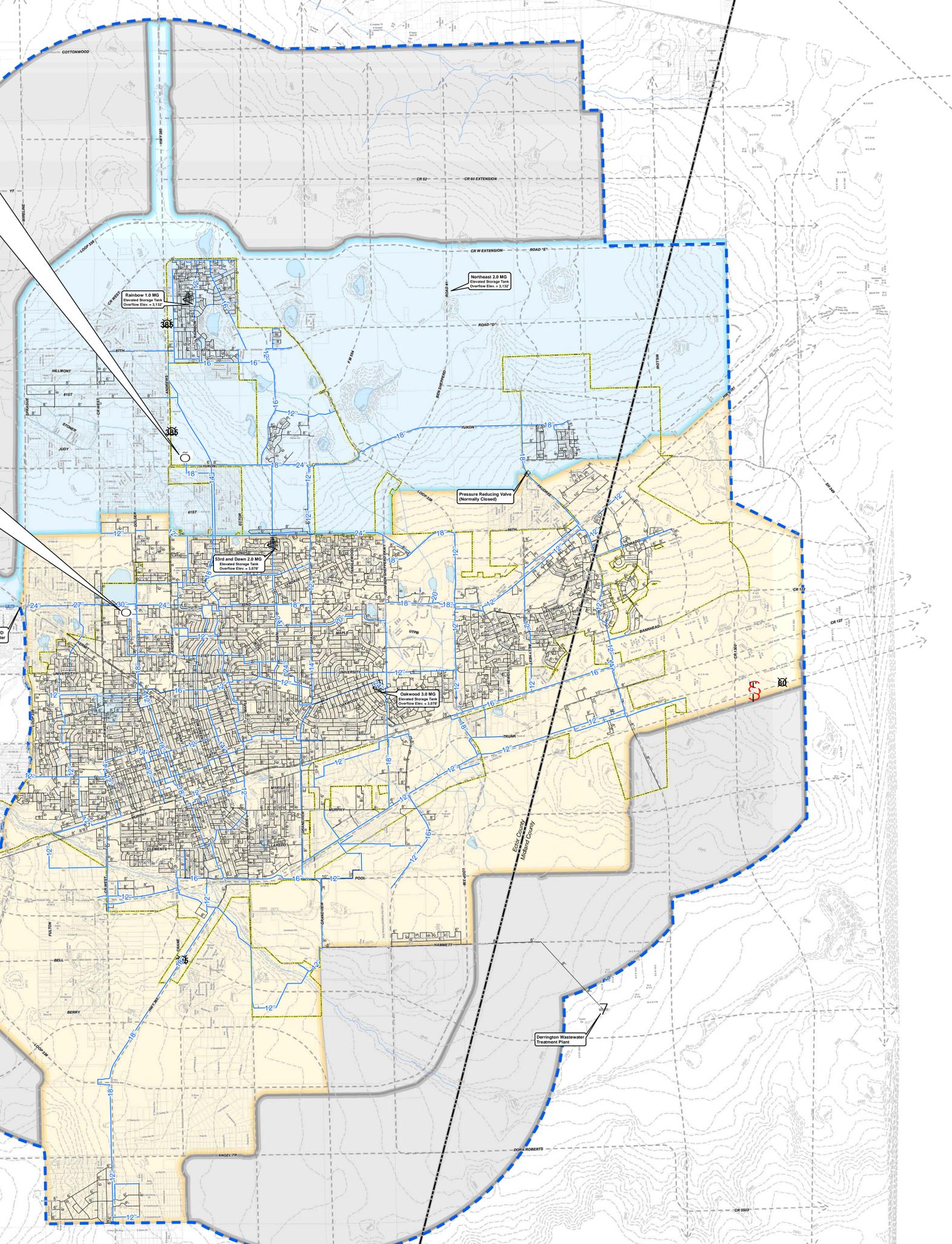
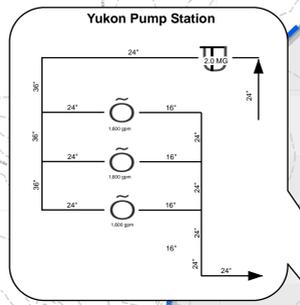
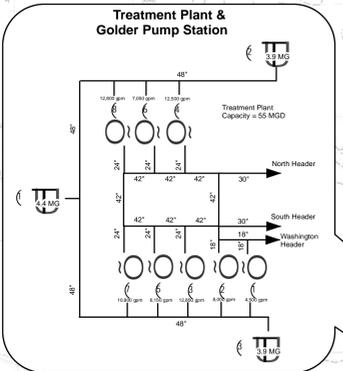
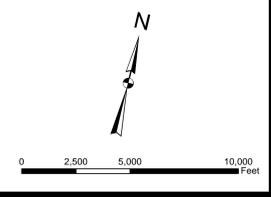
<http://www.twdb.texas.gov>

Conditions of Financial Assistance				
Financial Assistance Programs:	Eligible Applicants	Security Instruments:	Typical Pledges Include:	Length of Loans:
State Water Implementation Fund for Texas (SWIFT) - Water	- Political Subdivisions - Water Supply Corporations	- Bonds - Loan Agreement - Master Agreement	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- 20 to 30 years - 34 years for Board Participation
Clear Water State Revolving Fund (CWSRF) Wastewater	- Political Subdivisions - Private Entities (Nonpoint Source Projects Only)	- Bonds - Loan Agreement	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- 20 to 30 years
Drinking Water State Revolving Fund (DWSRF) - Water	- Political Subdivisions - Water Supply Corporations - Investor Owned Utilities	- Bonds - Loan Agreement	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- 20 to 30 years
Economically Distressed Areas Program (EDAP) - Water & Wastewater	- Entities with Adopted Model Subdivision Rules - Political Subdivisions - Water Supply Corporations	- Bonds - Loan Agreement	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- 20 years
Rural Water Assistance Fund (RWAFF) - Water & Wastewater	- Political Subdivisions - Water Supply Corporations	- Bonds - Loan Agreement	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- 20 to 40 years
State Participation Program - Water & Wastewater	- Political Subdivisions - Water Supply Corporations - Project must be included in adopted State Water Plan /	- Master Agreement (includes responsibilities, duties and liabilities of each party, and provisions for a defined source)	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- up to 34 years
Texas Water Development Fund (DFUND) - Water, Wastewater, & Flood Control	- Political Subdivisions (including non-profits) - Water Supply Corporations	- Bonds - Loan Agreement	- System Revenue - Contract Revenue - Ad Valorem Tax - Tax and Revenue Pledge	- varies

Sources

1. Financial Assistance. (n.d.). Retrieved March 7, 2019, from <http://www.twdb.texas.gov/financial/index.asp>
2. Resources - Funding. (n.d.). Retrieved March 7, 2019, from <http://www.twicc.org/resources/funding.asp>
3. London, B., & Hughes, J. (2017). Certified Government Finance Officer Program Study Guide for Debt Administration. Retrieved March 7, 2019.

Appendix G – Existing Infrastructure

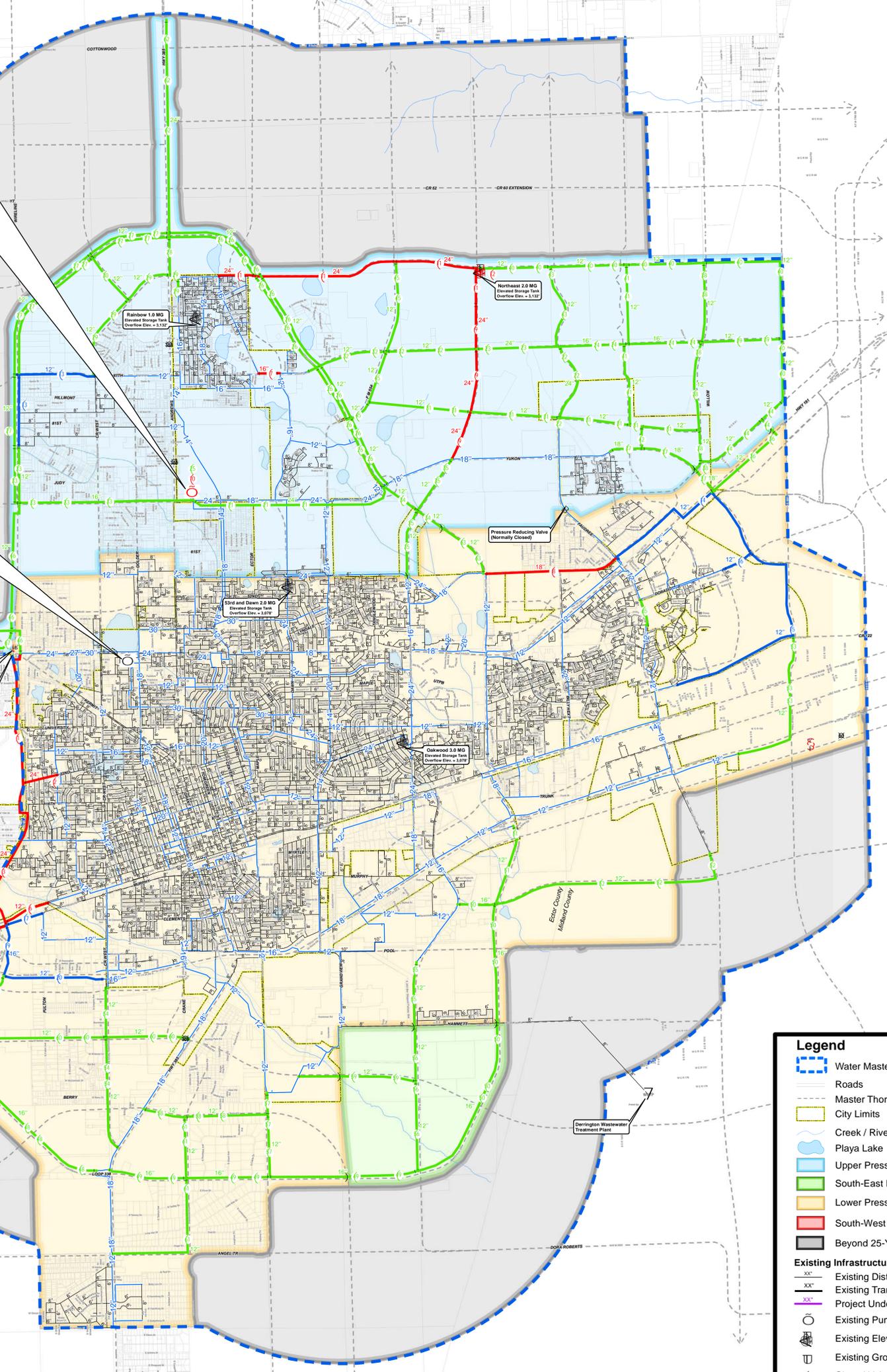
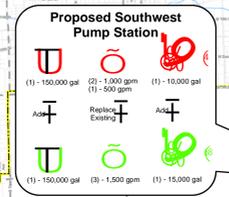
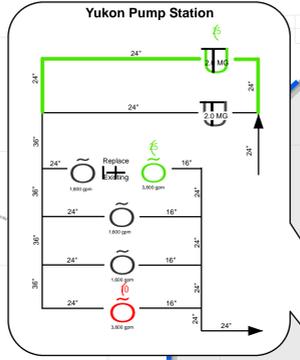
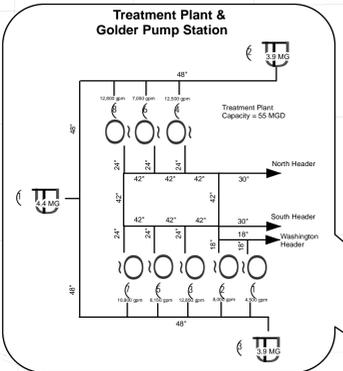
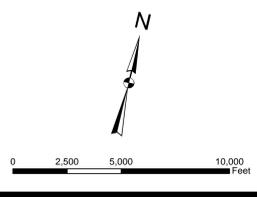


- Legend**
- Water Master Plan Study Boundary
 - Roads
 - Master Thoroughfare Plan
 - City Limits
 - Creek / River
 - Playa Lake
 - Upper Pressure Plane
 - Lower Pressure Plane
- Existing Infrastructure**
- Existing Distribution Main
 - Existing Transmission Main
 - Project Under Design & Construction
 - Existing Pump Station
 - Existing Elevated Storage Tank
 - Existing Ground Storage Tank
 - (Closed Valve - Pressure Plane Boundary
 - B Pressure Reducing Valve
 - t Existing ECUD Wholesale Meter Location

City of Odessa
 Water Master Plan
 Appendix G: Existing Water Infrastructure
 April 2019

Kimley»Horn

Appendix H - Capital Improvement Plan



- 5-Year Projects**
- #1 NW Loop 338 24-Inch Water Line Phase 1
 - #2 W 22nd Street 24-Inch Water Line
 - #3 NW Loop 338 24-Inch Water Line Phase 2
 - #4 Southwest Pump Station & 16-Inch Water Line
 - #5 Southwest Pressure Plane 16-Inch Water Line
 - #6 W 2nd Street 12-Inch Water Line
 - #7 Evans Boulevard / E 87th Street 16-Inch Water Line
 - #8 56th Street 18-Inch Water Line
 - #9 N John Ben Shepperd 24-Inch Water Line
 - #10 Yukon Pump Station Improvements Phase 1
 - #11 E 100th Street 24-Inch Water Line
 - #12 Northeast 2.0 MG Elevated Storage Tank
- 10-Year Projects**
- #13 W 87th Street & Loop 338 12-Inch Water Line
 - #14 Highway 191 12-Inch Water Line Phase 1
 - #15 W County Road 122 12-Inch Water Line
 - #16 Dorado Drive 12-Inch Water Line
 - #17 W Murphy Street 12-Inch Water Line
 - #18 Southwest Pressure Plane 12-Inch Water Line
 - #19 SW Loop 338 16-Inch Water Line Phase 1
 - #20 Interstate 20 12-Inch Water Line
- 25-Year Projects**
- #21 E Yukon Road 24-Inch Water Line
 - #22 N Faudree Road 24-Inch Water Line
 - #23 E 87th 24-Inch Water Line
 - #24 E 87th 16-Inch Water Line
 - #25 Yukon Pump Station Improvements Phase 2
 - #26 NE Loop 338 12-Inch Water Line
 - #27 NW Loop 338 12-Inch Water Line
 - #28 N Highway 385 12-Inch Water Line
 - #29 N County Road West 12-Inch Water Line
 - #30 N CR West to NW Loop 338 12-Inch Water Line
 - #31 FM 554 to Willow Lane 12-Inch Water Line
 - #32 E 87th 12-Inch Water Line Phase 1
 - #33 W Yukon Road / NW Loop 338 12 / 16-Inch Water Line
 - #34 NE Loop 338 12-Inch Water Line Phase 1
 - #35 N John Ben Shepperd 12-Inch Water Line
 - #36 Highway 191 12-Inch Water Line Phase 2
 - #37 E Yukon Road 18-Inch Water Line
 - #38 N Willow Lane 12-Inch Water Line
 - #39 E 87th 12-Inch Water Line Phase 2
 - #40 County Road West Extension 12-Inch Water Line
 - #41 Project #41 12-Inch Water Line
 - #42 Project #42 12-Inch Water Line
 - #43 N Faudree Road Upper 12-Inch Water Line
 - #44 S County Road 1302 12-Inch Water Line
 - #45 FM 554 12-Inch Water Line
 - #46 NW Loop 338 12-Inch Water Line
 - #47 W Highway 302 12-Inch Water Line
 - #48 SW Loop 338 16-Inch Water Line Phase 2
 - #49 SE Loop 338 16-Inch Water Line Phase 1
 - #50 SE Loop 338 16-Inch Water Line Phase 2
 - #51 SE Loop 338 12-Inch Water Line
 - #52 S Faudree Road 12-Inch Water Line
 - #53 County Road 1300 12-Inch Water Line
 - #54 S County Road West 12-Inch Water Line
 - #55 S John Ben Shepperd Parkway 12-Inch Water Line
 - #56 S FM 3503 12-Inch Water Line
 - #57 S Dixie Boulevard 12-Inch Water Line
 - #58 S Highway 385 to S Dixie Boulevard 12-Inch Water Line
 - #59 S Dixie Boulevard to S FM 3503 12-Inch Water Line
 - #60 W Bell Street 12-Inch Water Line
 - #61 S Holloman Avenue/ Angel TR 12-Inch Water Line
 - #62 N Highway 385 24-Inch Water Line
 - #63 NE Loop 338 12-Inch Water Line Phase 2
 - #64 W Murphy Street 16-Inch Water Line
 - #65 N Faudree Road Lower 12-Inch Water Line
 - #66 Redondo 12-Inch Water Line
 - #67 42nd Street 12-Inch Water Line
 - #68 Southwest Pump Station Phase 2

Legend

- Water Master Plan Study Boundary
- Roads
- Master Thoroughfare Plan
- City Limits
- Creek / River
- Playa Lake
- Upper Pressure Plane
- South-East Pressure Plane
- Lower Pressure Plane
- South-West Pressure Plane
- Beyond 25-Year Planning Period

Existing Infrastructure

- Existing Distribution Main
- Existing Transmission Main
- Project Under Design & Construction
- Existing Pump Station
- Existing Elevated Storage Tank
- Existing Ground Storage Tank
- Closed Valve - Pressure Plane Boundary
- Pressure Reducing Valve
- Existing ECUD Wholesale Meter Location

5 Year Projects

- Proposed Water Lines
- Proposed Pump Station
- Proposed Ground Storage Tank
- Proposed Pressure Tank
- ECUD Wholesale Meter Location

10 Year Projects

- Proposed Water Lines
- Proposed Elevated Storage Tank

25 Year Projects

- Proposed Water Lines
- Proposed Pump Station
- Proposed Ground Storage Tank
- Emergency Interconnect / PRV

Appendix I – Water Rehabilitation Map

53rd and Dawn 2.0 MG
Elevated Storage Tank
Overflow Elev. = 3,078'

- Proposed Rehabilitation Projects**
- #1 E 56th Street 12-Inch Water Line
 - #2 N Dixie Blvd. & E 52nd Area Water Lines
 - #3 E 52nd Street 8" Water Line
 - #4 Clover Ave. & E 49th St. Water Lines
 - #5 Locust Ave. 8" Water Line
 - #6 E 35th St. Area Water Lines
 - #7 Eastover Dr. & E 31st St. Water Lines
 - #8 Walnut Ave. & E 17th St. Water Lines
 - #9 E University Blvd. Water Lines
 - #10 W 23rd St. & Golden Ave. Water Lines
 - #11 Beaty Ave. & W 22nd St. Water Lines
 - #12 N. County Road West Water Lines
 - #13 Whitaker Ave. & W 19th St. Water Lines
 - #14 W 15th St. & Graham Ave. Water Lines
 - #15 W 14th St. 6" Water Line
 - #16 W 13th St. & N. County Road West 14" Water Line
 - #17 N. Lincoln Ave. 6" Water Line
 - #18 Hartless Ave. and W. 11th St. Water Lines
 - #19 Vine Ave. 8" Water Line
 - #20 N. Belmont Ave. & W. Murphy St. Water Lines
 - #21 Drury Ln. & W. Ada St. Water Lines
 - #22 W. 3rd St. Water Lines
 - #23 Roxanna Ave. 6" Water Line
 - #24 N. Dixie Blvd. & E. 2nd St. Water Lines
 - #25 Santa Rosa Ave. 8" Water Line
 - #26 N Dixie Boulevard 12-Inch Water Line

Oakwood 3.0 MG
Elevated Storage Tank
Overflow Elev. = 3,078'

Future ECUD
Wholesale Meter

Existing ECUD
Wholesale Meter

Treatment Plant &
Golder Pump Station

Legend

- Water Master Plan Study Boundary
 - Odessa City Limits
 - Roads
 - Master Thoroughfare Plan
 - Creek / River
 - Playa Lake
 - Existing Infrastructure**
 - Existing Distribution Main
 - Existing Transmission Main
 - Project Under Design & Construction
 - Existing Pump Station
 - Existing Elevated Storage Tank
 - Closed Valve - Pressure Plane Boundary
 - Future ECUD Wholesale Meter Location
 - Existing ECUD Wholesale Meter Location
- Rehab Projects**
- Project No. 1
 - Project No. 2
 - Project No. 3
 - Project No. 4
 - Project No. 5
 - Project No. 6
 - Project No. 7
 - Project No. 8
 - Project No. 9
 - Project No. 10
 - Project No. 11
 - Project No. 12
 - Project No. 13
 - Project No. 14
 - Project No. 15
 - Project No. 16
 - Project No. 17
 - Project No. 18
 - Project No. 19
 - Project No. 20
 - Project No. 21
 - Project No. 22
 - Project No. 23
 - Project No. 24
 - Project No. 25
 - Project No. 26

City of Odessa
Water Master Plan
Appendix I: Water Rehabilitation
Plan
 April 2019

