FINAL REPORT

City of Gonzales

EXISTING CITY PLUS SPHERE OF INFLUENCE
WATER MASTER PLAN

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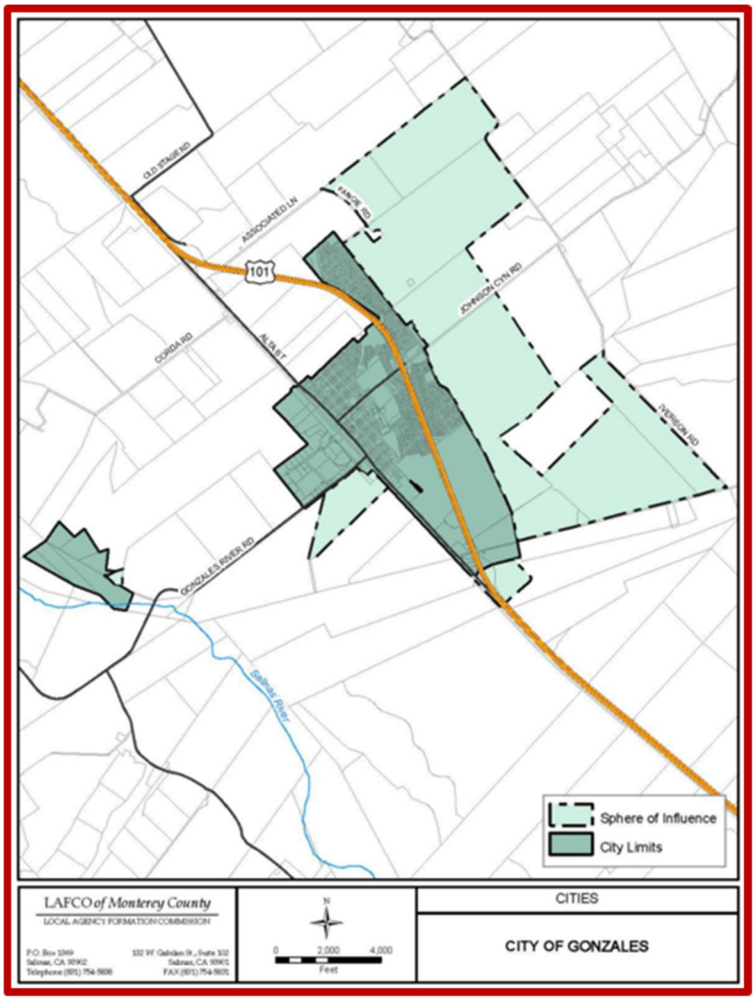
1.0 INTRODUCTION

The City of Gonzales' Existing City Plus Sphere of Influence Water Master Plan has been prepared as part of overall infrastructure studies for the City's Sphere of Influence (SOI) Area that is planned for future development. The City of Gonzales is located within Monterey County, just south of the City of Salinas as shown on Figure 1.

The City of Gonzales is nearing buildout and expansion of the City has been anticipated with the adoption of the 2010 General Plan Update and approval of the City's SOI area in 2014 by the Local Agency Formation Commission of Monterey County (LAFCO). The existing City Boundary and the SOI Area are shown on Figures 2 and 3, respectively. The area is also shown in the graphic at right, from Monterey County LAFCO.



As identified in the City's 2010 General Plan, the SOI Area includes a comprehensive land use and regulatory framework to guide the development of approximately 2,078-acres located in the eastern sector of the City. The plan area is recognized by the City of Gonzales and LAFCO as the logical direction and pattern of growth for the City.

It is anticipated that development could occur in the near future within the SOI Area. Prior to the adoption of comprehensive development plans within the SOI area, the City authorized a study of infrastructure systems and associated facilities at a high level for the City in its entirety, including its overall SOI. The infrastructure studies evaluate water, wastewater, storm drain and circulation systems. This report is the water component of that work effort.

1.1 WATER MASTER PLAN PURPOSE

The purpose of this water master plan is to provide preliminary analysis for the backbone domestic (potable) water system that will serve the existing City and the SOI Area. The information presented herein builds upon a number of water and infrastructure related studies that have been completed in draft or final form for the City, including the following:

1. City of Gonzales 2010 General Plan, prepared by Coast Plans
2. Gonzales 2010 General Plan Environmental Impact Report – Volume 1, dated July 2010, prepared by Coast Plans
3. Gonzales 2010 General Plan Environmental Impact Report – Volume 2, dated July 2010, prepared by Coast Plans
4. Memorandum of Agreement between the City of Gonzales and the County of Monterey Regarding Working Cooperatively on Common Planning, Growth and Development Issues, dated April 02, 2014
5. City of Gonzales Water System Conceptual Plan – Draft, dated September 2011, prepared by AECOM
6. Gonzales Economic Development Strategy and Action Plan, dated 2013, prepared by ADE

As part of this Water Master Plan, the following items are presented:

1. The anticipated water system demands under various scenarios, including fire flows.
2. A piping distribution network that meets the projected demands based on the current land use designations.
3. The anticipated reservoir storage capacity requirements based on the anticipated water demands.

The results and conclusions of the water modeling are based on serving the existing City and new development within the SOI Area. This study looked at the main backbone piping that would be required to serve the proposed SOI Area and the developments that are currently in the planning process. It is understood that additional in tract piping will be required within each of the development areas to serve the individual users.

1.2 EXISTING CITY AND SOI AREA LOCATION AND DESCRIPTION

1.2.1 Project Vicinity

The City of Gonzales is located in the central part of the Salinas Valley, 16 miles south of the City of Salinas and 33 miles north of King City. San Jose and San Francisco lie to the north about 70 miles and 120 miles respectively. The combination of climate, soil, terrain, and water have made the Salinas Valley one of the State's most productive agricultural regions for well over a century. The farms adjacent to the City and surrounding area continue to be major contributor to the State's economy and provide thousands of annual and seasonal jobs, as well as secondary jobs in food processing and agricultural businesses.

The most common crops grown within the region are lettuce, broccoli, asparagus, strawberries, grapes, nursery crops, and other field crops and vegetables. The City is surrounded on all sides by agricultural lands.

The entire Salinas Valley is drained by the Salinas River, which originates in the Coast Range south of King City and flows north to Monterey Bay. The river is located about two miles west of

Gonzales and is fed by creeks descending from surrounding hills and from sloughs which cross the valley. One of these sloughs bisects Gonzales, creating a natural drainageway through the city and providing some visual relief on the otherwise flat terrain. The hills to the west of the valley are taller, more dramatic, and more densely wooded than those to the east. The eastern hills are drier and more rolling, as is typical of the large ranches that dominate eastern Monterey County.

1.2.2 Pre-Development Conditions

The valley is crisscrossed by a rectangular grid of both improved and unimproved roads. U.S. Highway 101 and Union Pacific Railroad angle across this grid and provide the main transportation arteries through the valley. River Road runs from Gonzales to the western shoulder of the valley and provides scenic vistas to citrus and avocado orchards, grazing land, and vineyards on the slopes of the Sierra de Salinas, as well as expansive views across the valley. Johnson Canyon Road runs from Gonzales to the valley's eastern shoulder, with ranches and dairies located in the vicinity. East-west roads run between the two sides of the valley at quarter-mile, half mile, or one-mile intervals bisected at right angles by north-south roads running at similar intervals. The roads frame a patchwork quilt of farms ranging in size from about 20 acres to several hundred acres. A complex network of irrigation canals and furrows crosses the area, with water pumped from private and municipal wells.

The existing developed portions of the City include residential, industrial, mixed use/commercial, public, and open space/undeveloped/roadways land uses. Residential land use represents approximately one-third of all the current developed land use area within the City. Of the total residential area, approximately 88 percent is low density (single-family) residential housing. The existing land use pattern within the City is depicted on Figure 4.

1.2.3 Existing City Limits – Land Use Plan at Buildout

The proposed land use plan for the current City limits at ultimate buildout is depicted on Figure 5A. The significant land use changes planned to occur between today and ultimate buildout include an increase in low density residential acreages of 150 acres, an increase in mixed use/commercial land use of 58 acres and an increase in the industrial land use of 264 acres.

1.2.4 SOI Area Land Use Plan

The SOI Area of the City comprises an area of approximately 2,078-acres located in the eastern sector of the City. The proposed land use of the City, including the SOI Area, is depicted on Figure 5. In general, the SOI Area consists of three anticipated development areas. To the northwest is the proposed Vista Lucia development. The proposed land use for Vista Lucia is depicted on Figure 5B. In the middle portion of the SOI Area is the D'Arrigo property. The proposed land use for the D'Arrigo property is depicted on Figure 5D. To the southeast of the SOI Area is the proposed Puente Del Monte development as shown on Figure 5C.

Where available, the most current development plans were utilized as part of the analysis presented within this Master Plan. Where current information was not available, the land use included within the City's General Plan governed.

2.0 WATER STUDY PROCESS

This Plan analyzes the water system hydraulics of the existing and proposed water infrastructure necessary to serve the buildout within the existing City and the SOI Area. The methodology used for the hydraulic modeling in this Plan conforms to typically industry standards. Using the City's current design criteria and standards, a WaterCAD hydraulic model has been developed to size and location of the SOI Area's backbone water infrastructure, and identify improvements required within the existing water distribution system.

2.1 EXISTING CITY WATER SYSTEM

The City of Gonzales owns, operates and maintains a potable water distribution system to provide water service to the residents and businesses within the City boundary. Water supply is provided through three (3) existing groundwater wells: Well 4, 5 and 6. The City is currently in the process of designing new City Well 7. The wells discharge water directly into the distribution system. The City maintains three (3) existing storage tanks, one 1.0 million-gallon (MG) tank and two 3.0 MG tanks, totaling 7.0 MG of storage capacity. The tanks are located on the east side of the Iverson Road and Johnson Canyon Road intersection, east of the City and on the eastern border of the SOI Area. The ground elevation of the tanks is approximately 290-feet, and high-water level is approximately 322-feet. Control valves on the tank discharge pipeline help to regulate system pressure. The City's water distribution system consists of one pressure zone (PZ1), which currently serves customers at an elevation range of approximately 125 – 170 feet.

The City's existing backbone water system is shown on Figure 6.

2.2 EXISTING LAND USE AND WATER DEMANDS

As mentioned above, the existing land use within the City is depicted on Figure 4. Per the City's 2010 General Plan (Tables II-2 and II-3), the existing City developed area is approximately 978-acres, with 2,067 residential dwelling units and a population of approximately 9,025 persons. Under a previous contract, NCS developed a hydraulic model of the City's water distribution system. For the model development, NCS reviewed City-wide water billing records and determined the existing Average Day Demand (ADD) in the City is 685.5 gpm (987,120 gpd). Applying a 2.5 peaking factor, the estimated Maximum Day Demand (MDD) is 1,715 gpm (2,468,880 gpd). Applying a water loss factor of 10% results in an estimated existing MDD of 1,885 gpm (2.71 MGD).

2.3 EXISTING CITY IN-FILL GROWTH POTENTIAL

Within the current City developed area, excluding the SOI Area, there is approximately 175-acres of undeveloped land that can be developed as infill. The infill growth is expected to add approximately 900 dwelling units, or 3,400 persons. Based on the water demand factors discussed later in this section, the increase in the ADD is expected to grow by 267,552 gpd (186gpm), and the MDD is expected to increase by 668,881 gpd (465 gpm). Applying a water loss factor of 10%, the MDD is projected to increase to 735,769 gpd (511 gpm).

The resulting total ADD for the existing City plus infill area is estimated to be 1,254,672 gpd (871.5 gpm) and the MDD is estimated to be 3,450,349 gpd (2,396 gpm), including water loss.

2.4 PROPOSED LAND USE AND WATER DEMAND PROJECTIONS

As noted above, the SOI Area is proposed to be divided into three major development areas: Vista Lucia, Puente Del Monte and additional General Plan Expansion Area (i.e. D'Arrigo). The three development areas will be developed with a variety of land uses including residential, commercial mixed use, retail, institutional, industrial, open space, schools, and parks. The total SOI area is 2,078-acres. The amount of potentially developed land within the SOI is approximately 1,535-acres. The proposed land use areas and their corresponding unit demands are used to calculate the potable water demand.

A summary of the SOI Land Use per development area is included as Table 1.

Since the anticipated number of residential units is known for Vista Lucia and Puente Del Monte, along with other mixed uses, the anticipated water demand was calculated as follows:

I. Residential Water Demand = (No of Dwelling Units) x (3.74/DU) x (80 gallons per person per day.
II. Non-residential Water Demand = (Acres per use type) x (demand factor per use type)

Table 1
SOI Area – Land use Summary

Development Area	Residential (units)					Non-Residential (acres)						
	Low Density	Medium Density	Medium-High Density	High Density	Mixed Use	Mixed Use	Institution/ School	Commercial	Light Industrial	Heavy Industrial	Park (domestic demands)	Open Space (Reclaimed system, excluded)
Vista Lucia												
Village 1	624	525	275	278			14.0	1.3			35.0	40.7
Village 2	430	747	330	288			29.0	4.6			26.0	38.2
Subtotal: Vista Lucia	*1054*	*1272*	*605*	*566*			*43.0*	*5.9*			*61.0*	*78.9*
Puente Del Monte												
East	341	598	211	278	18	2.5	12.9		21.1		25.7	
West		597	385	170	24	3.4	13.3				25.8	
Subtotal: Puente Del Monte	*341*	*1195*	*596*	*448*	*42*	*5.9*	*26.2*		*21.1*		*51.5*	
Additional SOI												
D'Arrigo	238	239	102	102			18.0	90.0			50.0	
Franscioni										70.0		
Vosti										95.3		
WWTP Exp												
Subtotal: Additional Area	*238*	*239*	*102*	*102*			*18.0*	*90.0*		*165.3*	*50.0*	*5.5*
Total SOI Area	**1633**	**2706**	**1303**	**1116**	**42**	**5.9**	**87.2**	**95.9**	**21.1**	**165.3**	**162.5**	**84.4**

Each land use corresponds to a water demand based on unit factors. Water demand unit factors identified in the City of Gonzales – Draft Water System Conceptual Plan, September 2011 were used as a starting point for this analysis. Due to recent drought conditions, the State of California has implemented legislation to promote water conservation and reduce the per capita water demand (SB x7-7). As such, the water demand unit factors used in the 2011 Study were revised to reflect the City's currently recognized per capita consumption targets. Water demand factors were determined based upon a 80-gallon per capita day (gpcd) total water use, including both indoor and outdoor demands. A population factor of 3.74 per household was applied to each density to determine the demand factor per acre based upon land use. The water demand factors used for this Study are presented below in Table 2.

Table 2
Water Demand Factors

Land Use Category	Average Day Demand Factor(s)
Residential (all)	3.74 person/DU • 80 gpcd
Residential Mixed-Use	3.74 person/DU • 80 gpcd + 1,800.0 GPD/AC
Commercial / Retail	1,800 GPD/AC
Institutional / School	1,700 GPD/AC
Light Industrial	1,500 GPD/AC
Heavy Industrial	2,500 GPD/AC
Park (Domestic Demand)	300 GPD/AC

Applying the water demand factors identified in Table 2 to the SOI Area land use summary in Table 1 results in the projected average daily water demands by development area as identified in Table 3.

Table 3
SOI Area – Water Demand Summary (Average Day)

Development Area	Residential (gpd)					Non-Residential (gpd)						Total ADD (gpd)
	Low Density	Medium Density	Medium-High Density	High Density	Mixed Use	Mixed Use	School	Commercial	Light Industrial	Heavy Industrial	Park (Domestic Demand)	
Vista Lucia												
Village 1	186,701	157,080	82,280	83,178			23,800	2,286			10,500	545,824
Village 2	128,656	223,502	98,736	86,170			49,300	8,368			7,814	602,546
Subtotal: Vista Lucia	*315,357*	*380,582*	*181,016*	*169,347*			*73,100*	*10,654*			*18,314*	*1,148,370*
Puente Del Monte												
East	102,027	178,922	63,131	83,178	5,386	4,500	21,930		31,650		7,710	498,433
West		178,622	115,192	50,864	7,181	6,120	22,610				7,740	388,329
Subtotal: Puente Del Monte	*102,027*	*357,544*	*178,323*	*134,042*	*12,566*	*10,620*	*44,540*		*31,650*		*15,450*	*886,762*
Additional SOI												
D'Arrigo	71,210	71,509	30,518	30,518			30,600	162,000			15,000	411,355
Franscioni										175,000		175,000
Vosti										238,250		238,250
WWTP Exp												
Subtotal: Additional Area	*71,210*	*71,509*	*30,518*	*30,518*			*30,600*	*162,000*		*413,250*	*15,000*	*824,605*
Total SOI Area	**488,594**	**809,635**	**389,858**	**333,907**	**12,566**	**10,620**	**148,240**	**172,654**	**31,650**	**413,250**	**48,764**	**2,859,738**

It should be noted that future developments will be preceded by Specific Plans. Each project will prepare a Water Supply Assessment (WSA) as required by SB 610 to satisfy the California Environmental Quality Act for developments larger than 500 residential units. The WSA may identify different per capita flow factors as appropriate for the developments, using a methodology required by SB 610.

2.5 PEAKING AND WATER LOSS FACTORS

The Maximum Day Demands and the Peak Hour Demands are developed from the Average Day Demands by using peaking factors. These peaking factors are used to simulate system-operating scenarios and analyze the water distribution piping network.

Maximum Day Demands (MDD) are developed by applying the MDD peaking factor (2.5) to the Average Day Demand (ADD) estimates. The maximum day demand estimates are used to size the supply mains and to determine the required supply production rates. The 2.5 peaking factor is consistent with the Draft City of Gonzales Water System Conceptual Plan published in September of 2011.

The Peak Hour Demand (PHD) is used to size large transmissions mains, pumps, and storage reservoirs. Peak Hour Demands are developed by applying the PHD peaking factor (3.75) to the ADD, or a peaking factor of 1.5 to the MDD. Transmission mains are sized to handle instantaneous peak flows that may occur over shorter periods of time in order to maintain velocities within the City's pipe design criteria. The Draft City of Gonzales Water System Conceptual Plan, September of 2011, recommended a peaking factor of 5.0 times the ADD. However, that factor was deemed overly conservative for the sizing of facilities in an expanding system. The 3.75 peaking factor is consistent with the recommendations in the California Code of Regulations Title 22 Standards.

The average daily demand shown in Table 3 does not account for any water loss experienced within the distribution system due to leaks, breaks, fire flows, illegal connections, etc. Therefore, a water loss factor of 10% has been assumed for this Study and applied to the demand projections.

Using these peaking factors and the ADD estimates, the MDD and PHD estimates for the SOI Area were developed and presented in Table 4.

Table 4
SOI Area – Water Demand Peaking Summary

Development Area	Average Day Demand				Maximum Day Demand				Peak Hour Demand			
	ADD		ADD w/Water Loss		MDD		MDD w/Water Loss		PHD		PHD w/Water Loss	
	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)
Vista Lucia												
Village 1	545,824	379	600,407	417	1,364,561	948	1,501,017	1,042	2,046,841	1,421	2,251,525	1,564
Village 2	602,546	418	662,801	460	1,506,365	1,046	1,657,002	1,151	2,259,548	1,569	2,485,503	1,726
Subtotal Vista Lucia	*1,148,370*	*797*	*1,263,207*	*877*	*2,870,926*	*1,994*	*3,158,018*	*2,193*	*4,306,389*	*2,991*	*4,737,028*	*3,290*
Puente Del Monte												
East	498,433	346	548,277	381	1,246,083	865	1,370,691	952	1,869,125	1,298	2,056,037	1,428
West	388,329	270	427,162	297	970,823	674	1,067,905	742	1,456,235	1,011	1,601,858	1,112
Subtotal Puente Del Monte	*886,762*	*616*	*975,439*	*677*	*2,216,906*	*1,540*	*2,438,597*	*1,693*	*3,325,359*	*2,309*	*3,657,895*	*2,540*
Additional GP Expansion Area												
D'Arrigo	411,355	286	452,491	314	1,028,388	714	1,131,227	786	1,542,582	1,071	1,696,840	1,178
Franscioni	175,000	122	192,500	134	437,500	304	481,250	334	656,250	456	721,875	501
Vosti	238,250	165	262,075	182	595,625	414	655,188	455	893,438	620	982,781	682
Subtotal Additional Area	*824,605*	*573*	*907,066*	*630*	*2,061,513*	*1,432*	*2,267,664*	*1,575*	*3,092,270*	*2,147*	*3,401,496*	*2,362*
Total SOI Area	**2,859,738**	**1,986**	**3,145,712**	**2,185**	**7,149,345**	**4,965**	**7,864,279**	**5,461**	**10,724,017**	**7,447**	**11,796,419**	**8,192**

2.6 FIRE FLOW REQUIREMENTS

Water distribution systems must be sized to provide adequate fire flows at minimum residual pressures that meet or exceed flows specified by the California Fire Code (CFC) and local fire jurisdictions. The proposed distribution system for the SOI Area is sized to provide adequate fire flows at the City-prescribed residual pressures and that also meet the minimum flows required by the CFC. The fire flow requirements by land use used for this analysis are shown in Table 5 below and assume that all buildings (residential and non-residential) are to have sprinkler systems installed throughout.

Table 5
Fire Flow Requirements

Land Use	Fire Flow (gpm)	Residual Pressure (psi)	Required Duration (hrs)
Residential - Low	1,500	20	2
Residential - Multi-Family	1,500	20	2
Commercial	1,500	20	2
Industrial	3,000	20	4

3.0 WATER SERVICE CONSIDERATIONS

Proposed facilities within the SOI Area are intended to provide and maintain an acceptable level of service that meets minimum state and local requirements. The criteria used to analyze the existing water system and to determine the size and location of the proposed water system facilities are defined below.

3.1 SYSTEM CRITERIA

For the purposes of this analysis, maximum and minimum operating criteria have been established for the purposes of analyzing the hydraulic model and sizing the pipeline improvements. The minimum operating goals to be used in the planning of backbone water pipelines are listed in Table 6.

Table 6
System Planning Criteria

Scenario	Criteria
Average Day Demand Residual Pressure	Minimum = 40 psi
Maximum Day Demand plus Fire Flow Residual Pressure	Minimum = 20 psi
Peak Hour Pipe Velocity	Maximum = 8 feet/sec
MDD plus Fire Flow Pipe Velocity	Maximum = 12 feet/sec
Hazen Williams “C” Factor - Existing	120
Hazen Williams “C” Factor - Proposed	140

3.2 PRESSURE ZONES

Development of the SOI Area to the north and east will require the development of two new pressure zones in order to provide minimum service pressures. Elevations gradually increase as the topography extends to the east, resulting in the need for two (2) new pressure zones. The analysis performed herein is based upon the pressure zones defined in Table 7.

Table 7
Pressure Zones

Pressure Zone	Status	Min. Ground Elevation (feet)	Max. Ground Elevation (feet)	Min. HGL (feet)
PZ1	Existing	125	222	278
PZ2	Proposed	222	267	314
PZ3	Proposed	267	355	447

3.3 WATER SUPPLY

The City's existing water supply comes via three (3) groundwater wells, Wells 4, 5 and 6. Wells 4 and 5 are rated at 1,200-gpm, and Well 6 is rated at 1,800-gpm, for a combined capacity of 4,200-gpm. The City is currently developing Well 7, expected to have a capacity of 1,200-gpm, bringing the total capacity to 5,400-gpm.

Water supply for the SOI Area and planned City buildout will continue to be provided via groundwater wells. The City's desire is to have the combined rated capacity of the wells equal to, or exceeding, the maximum day demand.

Based on the results of the WaterCAD modeling, the existing maximum day demand is estimated at 1,885-gpm. With the construction Well 7, the surplus water supply is 3,686 gpm.

At buildout of the SOI area, the projected maximum day demand is approximately 7,885-gpm. Therefore, the City will need a minimum of an additional 2,485-gpm of well capacity to serve the existing City demand and the projected demand from the SOI area. To accommodate the additional water supply capacity needed to serve the service area, and to provide operational flexibility, two (2) wells with a rated capacity of 1,500-gpm each are proposed to serve the ultimate buildout growth. One well is proposed to be located within the Vista Lucia development area, and the other well is proposed to be located within the Puente Del Monte development area.

3.4 STORAGE

The City currently has 7.0 MG of water storage. Reservoir sizing is composed of operational storage, fire protection storage, and emergency storage. The criteria used to calculate the storage requirement for the ultimate buildout of the City, including the SOI Area and City growth area, is:

1. Operational storage = 25% of MDD.
2. Emergency storage requirement = 50% of MDD
3. Fire protection demand = largest volume of fire flow required in a pressure zone over a select period of time; 3,000-gpm for four (4) hours.

The existing City MDD is 2.71 MGD. The total storage requirements for the existing City is identified in Table 8.

Table 8
Storage Criteria – Existing City

Category	Equation	Volume (gal)	Volume (MG)
Operational	(25%) x (2.7 MGD)	678,219	0.68
Fire Protection	(3,000 gpm) x (4 hours) x (60 min/hr)	720,000	0.72
Emergency	(50%) x (2.7 MGD)	1,356,439	1.36
Total Volume – Existing City		**2,754,658**	**2.75**

Based upon existing water demand, the existing required storage is 2.75 MG, therefore there is 4.25 MG of available storage within the existing system for the initial phases of growth.

The SOI Area Maximum Day Demand (MDD) at full buildout, including water loss, is 7.86 MGD. The total MDD of the additional growth areas, within existing city limits, at ultimate buildout is projected to be 0.74 MGD. With the existing MDD, the total ultimate buildout MDD is projected to be 11.3 MGD. The total storage requirements for the SOI Area and City growth area is identified in Table 9.

Table 9
Storage Criteria – Ultimate Buildout

Category	Equation	Volume (gal)	Volume (MG)
Operational	(25%) x (11.3 MGD)	2,828,231	2.83
Fire Protection	(3,000 gpm) x (4 hours) x (60 min/hr)	720,000	0.72
Emergency	(50%) x (11.3 MGD)	5,656,462	5.66
Total Volume – City Wide at Ultimate Buildout		**9,204,693**	**9.20**

At ultimate buildout of the City and SOI Area, the City will require a minimum storage volume of 9.2 MG. As the physical storage tanks are to be designed with excess storage capacity for fluctuations in water level and demands, this proposed system will be designed with a 10% excess capacity. With existing storage capacity of 7.0 MG and a 10% reserve factor, the overall storage requirement would be 10.1 MG, or an additional 3.13 MG above current storage capacity.

A breakdown of the storage requirements per pressure zone are included in Tables 10, 11 and 12.

Table 10
Storage Criteria – Pressure Zone 1

Pressure Zone	MDD (MGD)	Operation Storage (MG)	Fire Storage (MG)	Emergency Storage (MG)	Total Storage (MG)
Existing City Zone 1	2.71	0.68	0.72	1.36	2.75
Ex. City Growth Zone 1	0.74	0.18	-	0.37	0.55
Vista Lucia Zone 1	1.83	0.46	-	0.92	1.37
Puente Del Monte Zone 1	0.91	0.23	-	0.46	0.69
Additional SOI Zone 1	2.27	0.57	-	1.13	1.70
Total Pressure Zone 1	**8.46**	**2.12**	**0.72**	**4.23**	**7.07**

Table 11
Storage Criteria – Pressure Zone 2

Pressure Zone	MDD (MGD)	Operation Storage (MG)	Fire Storage* (MG)	Emergency Storage (MG)	Total Storage (MG)
Vista Lucia Zone 2	1.33	0.33	0.18	0.66	1.18
Puente Del Monte Zone 2	0.92	0.23	-	0.46	0.69
Total Pressure Zone 2	**2.25**	**0.56**	**0.18**	**1.12**	**1.86**

*Note Fire Storage requirements are covered by the worst-case demand scenario in Zone 1

Table 12
Storage Criteria – Pressure Zone 3

Pressure Zone	MDD (MGD)	Operation Storage (MG)	Fire Storage* (MG)	Emergency Storage (MG)	Total Storage (MG)
Puente Del Monte Zone 3	0.61	0.15	0.18	0.30	0.64
Total Pressure Zone 3	**0.61**	**0.15**	**0.18**	**0.30**	**0.64**

*Note Fire Storage requirements are covered by the worst-case demand scenario in Zone 1

3.5 PIPELINES

A network of transmission and distribution lines shall be sized and aligned to provide minimum flow and pressure requirements throughout the system to meet the criteria identified in Table 6. The pipeline network should be looped to provide reliability and redundancy. A hydraulic model was developed and analyzed to determine the minimum pipeline diameters required under the ultimate buildout demand condition and fire flow condition. The hydraulic model analyzed the backbone system only. It is noted that internal pipe networks within the proposed developments ("in tract") will be required to deliver water to the customer. Pipes shall be size to meet maximum day plus fire flow conditions.

4.0 HYDRAULIC MODELING ANALYSIS

4.1 WATER SERVICE TO SOI AREA

With the SOI Area being located east of, and adjacent to, the existing City limits, expansion of the City's current water distribution will be required to meet the water demand within the SOI Area. The City will own, operate and maintain the storage, transmission and distribution system within the SOI Area.

4.2 SYSTEM DESCRIPTION

The hydraulic model was developed to represent the existing water distribution system, plus the proposed water distribution system to serve the SOI Area. The proposed water transmission system has been designed in a looped system following the major arterial and collector street alignments based on the currently available land use plans. The pipe diameters range in size from 8-inches to 18-inches for the distribution network; shared facility transmission mains include 12-inch to 18-inch pipe diameters. The system includes the three (3) existing wells, three (3) proposed wells, existing storage facilities, proposed storage facilities and booster stations. Figure 7 displays the general layout of the existing water system that was modeled. Figure 8 depicts the layout of the proposed system that was modeled.

4.3 HYDRAULIC MODELING ANALYSIS

A skeletonized hydraulic model was developed to analyze the existing and proposed water system and demand conditions. Bentley's WaterCAD Version 8i was used in this study. The computer modeling methodologies applied herein incorporate a combination of energy and mass balance iterations including the application of Bernoulli's equation with the Hazen-Williams method for determination of frictional head loss. Directional flow distribution is determined by applying the Hardy-Cross Method.

The WaterCAD software provides a module for testing fire flow and zone pressures at each node in the model. The fire flow data is sampled at each node representing the tee supplying a fire hydrant. WaterCAD tests each zone by applying the available fire flow at hydrant tee locations. Nodes are tested to verify that the available fire flow is greater than the total needed fire flow and the calculated residual pressures are above the designated minimum zone pressure. All nodes satisfying the fire flow constraints are labeled as "true" in the Fire Flow Reports in the Appendix, while nodes that fail the fire flow constraints are labeled as "false."

The results of the fire flow analysis are reviewed for the fire flow scenario that produces the worst-case scenario pressure results. The worst-case node is then individually analyzed to check for system wide constraints such as maximum pipe velocities.

Two model scenarios were developed and analyzed: Existing City and Ultimate Buildout (SOI Expansion). Under each scenario, three different demand conditions were analyzed:

1. Average Day Demands (models the system under average daily water use)
2. Maximum Day Demand (models the system under maximum daily water use)
3. Fire Flow (models the system under maximum daily water use with an additional fire flow demand)

The fire flow scenarios typically represent the most critical condition and will drive the pipeline sizing. The model scenarios were set-up as steady-state scenarios. Demands were allocated to the closest nodes and accounted for the 10% system losses.

4.4 HYDRAULIC MODELING RESULTS

A detailed model analysis specific to the SOI Area was performed to provide a comparison of infrastructure requirements needed to support the full build-out of the SOI Area and the remaining portions of undeveloped lands within the existing City boundary. The model output reports that identify the fire flow availability, residual pressures and pipeline velocities can be found in the Appendix. The backbone infrastructure required to meet the planned growth are summarized in the next section.

4.5 PROPOSED IMPROVEMENTS – PRIMARY

4.5.1 Future System (SOI Area)

Based on the currently available land use plans for the SOI Area, the backbone water system improvements required to provide service to the SOI Area includes:

- Two (2) new wells (1,500-gpm each)
- One (1) – 2.7 MG Storage Tank
- Hydropneumatic Booster Station
- Four (4) Pressure Reducing Stations
- Approximately 21,800 LF of 12” water main
- Approximately 13,900 LF of 18” transmission main

The proposed layout of the SOI Area water improvements is depicted on Figure 10. The proposed improvements include a new 1,500-gpm well will be provided in the Vista Lucia development and is proposed to boost into Zone 2. A new 1,500-gpm well will be provided in the Puente Del Monte development and is proposed to boost into Zone 2. One (1) new storage tank is proposed to be located in the southeast corner of the SOI area at the Zone 2 HGL, however the location, size and number of tanks may be adjusted as design progresses. An 18-inch transmission main will deliver water from the new Zone 2 tank to the system. Located adjacent to the tank will be a hydropneumatic booster station to boost into Zone 3. The improvements also include four (4) pressure reducing stations, two from Zone 3 to Zone 2, and two from Zone 2 to Zone 1, to assist with moving water to lower zones in emergency conditions.

4.5.2 Existing System

In order to meet the growth in the SOI Area and within the existing City boundary, some improvements are required within the existing water distribution system. A summary of the improvements required for the existing system include:

- Approximately 860 LF of 10" water main upsize
- Approximately 180 LF of 12" water main upsize
- Approximately 12,450 LF of 18" transmission main
- Well 7
- New 0.5 MG Tank adjacent to Well 6
- Hydropneumatic Booster Station adjacent to Well 6

The size and location of the existing system improvements are depicted on Figure 9. The proposed improvements include construction of Well 7 and a dedicated 18-inch water transmission main from the new Well 7 to the existing Zone 1 tanks. In order to provide storage on the west side of Highway 101, a 0.5 MG storage tank and hydropneumatic booster station is proposed to be located adjacent to Well 6.

4.6 PROPOSED IMPROVEMENTS – ALTERNATIVE

4.6.1 Future System (SOI Area)

An alternative scenario was analyzed to eliminate the Zone 3 hydropneumatic booster station and construct the storage at the Zone 3 HGL. Under this Alternative, the City would need to acquire property east of the SOI Area at the appropriate Zone 3 elevation (470-foot pad). This Alternative would eliminate the cost and operation of a hydropneumatic booster station but would add approximately 3,500 LF of 18-inch transmission main. This alternative is shown on Figure 11. Under this alternative, the difference between the Primary alternative includes:

- No Zone 3 Hydropneumatic Booster Station
- Additional 3,500 LF of 18" Transmission Main

The location, size and number of tanks in this alternative may vary with more detailed design.

4.6.2 Existing System

In the Alternative scenario, the existing system improvements remain the same as the Primary alternative.

5.0 RECYCLED WATER

With regards to provision of recycled water, the City's General Plan policy is as follows "Develop the capacity to recycle wastewater at the Gonzales Wastewater Treatment Plant and/or employ other conservation measures and best practices to meet the demand for water supply in the city."

For the five (5) wastewater treatment options discussed in Section 5 of the Wastewater Master Plan, dated June 2019, prepared by Kimley Horn, the best option for providing recycled water to the SOI area is to utilize satellite treatment. This option provides the most cost-effective opportunity to include wastewater recycling at the satellite treatment plant(s) and install recycled

water lines to serve the parks and other public landscaping in the SOI developments. Adding recycling facilities and installing recycled water from the existing wastewater treatment plant would be more expensive than the satellite option due to the location of the treatment plant approximately three (3) miles west of the SOI.

Regionalizing wastewater treatment in Soledad or Monterey One would likely make it more difficult to serve the City of Gonzales with recycled water produced from the regional recycled plant. Constructing new wastewater transmission lines to these regional facilities and recycled transmission lines back to the City would likely be more expensive than if the recycled water were produced within the City of Gonzales. In addition, the availability of recycled water from these regional treatment plants to service the City of Gonzales is unsure as there may be more local users near the source of the regional recycling plants that are more feasible that would get top priority.

6.0 PRELIMINARY COST ESTIMATES

Based upon the improvements described above, preliminary construction cost estimates have been developed based on general unit pricing. The cost estimates are rough-order construction costs only, and do not include costs for land acquisition. Contingencies have been included for engineering design (10%); CM and inspection (10%); contractor bonding, insurance and overhead (15%); general administration and legal services (15%); and contingency (30%). Costs will be escalated at 3.5% per year.

The preliminary estimated construction cost for the Primary SOI Area improvements is $20.3 M, and the estimated construction costs for the existing City system improvements is $11.5 M, for a total combined cost of approximately $31.8 M. The cost back-up data is included in the Appendix.

The preliminary estimated construction cost for the Alternative SOI Area improvements is $21.1 M and the existing City improvement costs remained the same at $11.5 M. The total combined cost for the Alternative solution is $32.6 M. This does not include possible land acquisition costs. The cost back-up data is included in the Appendix.

A summary of the preliminary cost estimates is included in Table 13.

Table 13
Preliminary Cost Estimate Comparison Summary

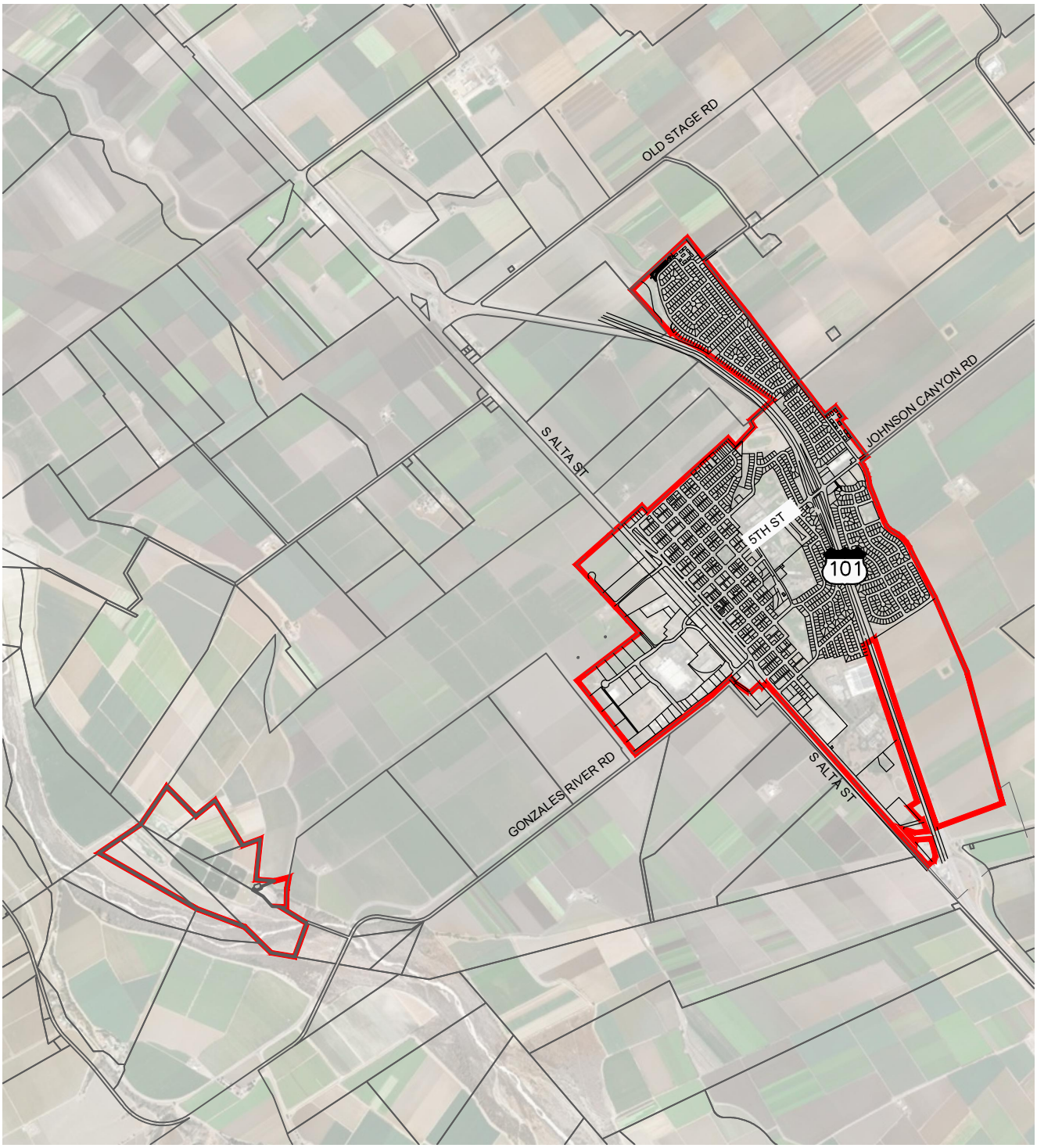
Alternative	Exist City Improvements	SOI Area Improvements	Total
Primary	$11.5 M	$20.3 M	$31.8 M
Alternative	$11.5 M	$21.1 M	$32.6 M

CITY OF GONZALES

FIGURE 1: CITY VICINITY MAP

JUNE 2019

Kimley»Horn



LEGEND:

EXISTING CITY LIMITS

GRAPHIC SCALE IN FEET
0 1500 3000 6000

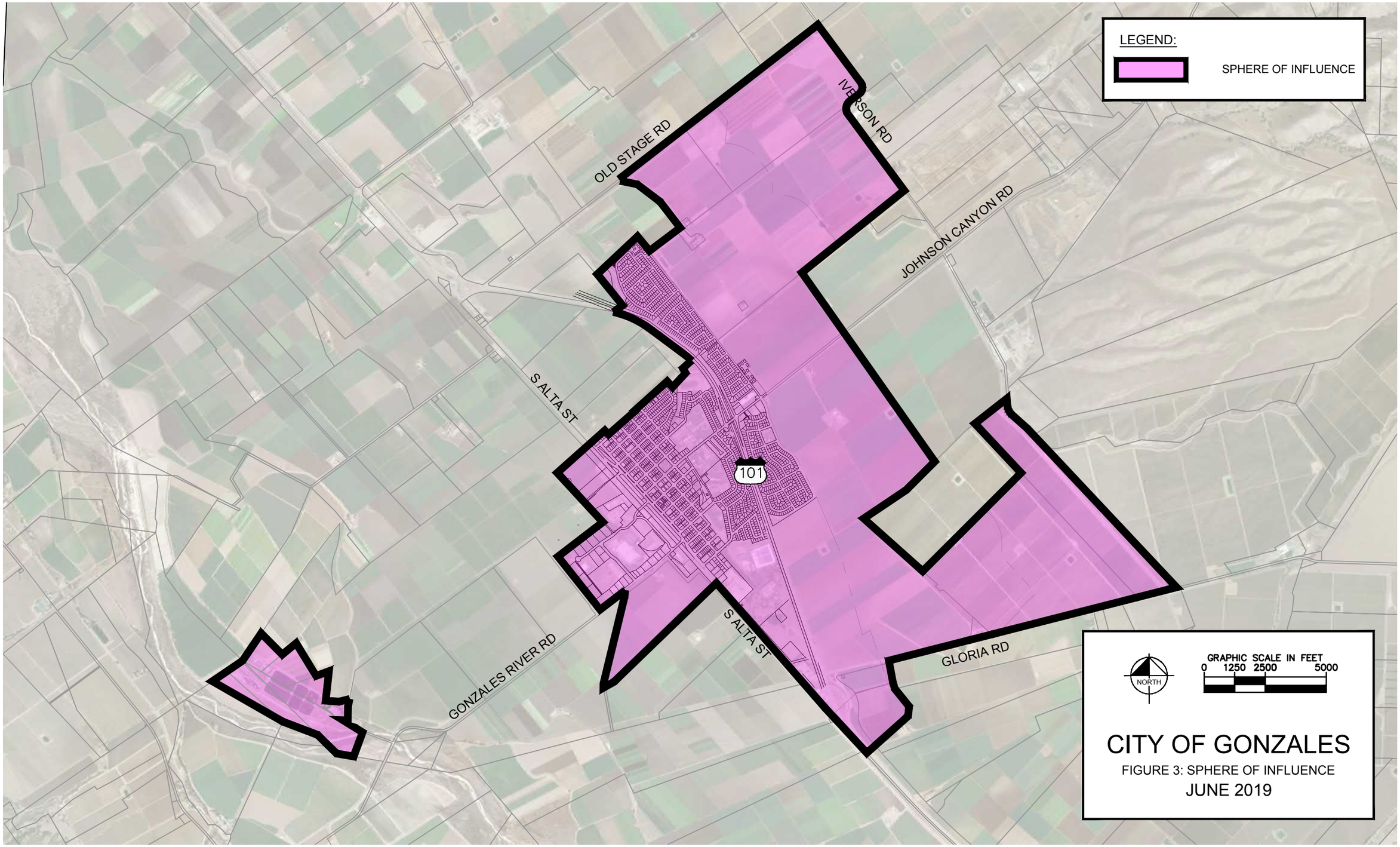
NORTH

CITY OF GONZALES

FIGURE 2: EXISTING CITY BOUNDARY

JUNE 2019

Kimley»Horn

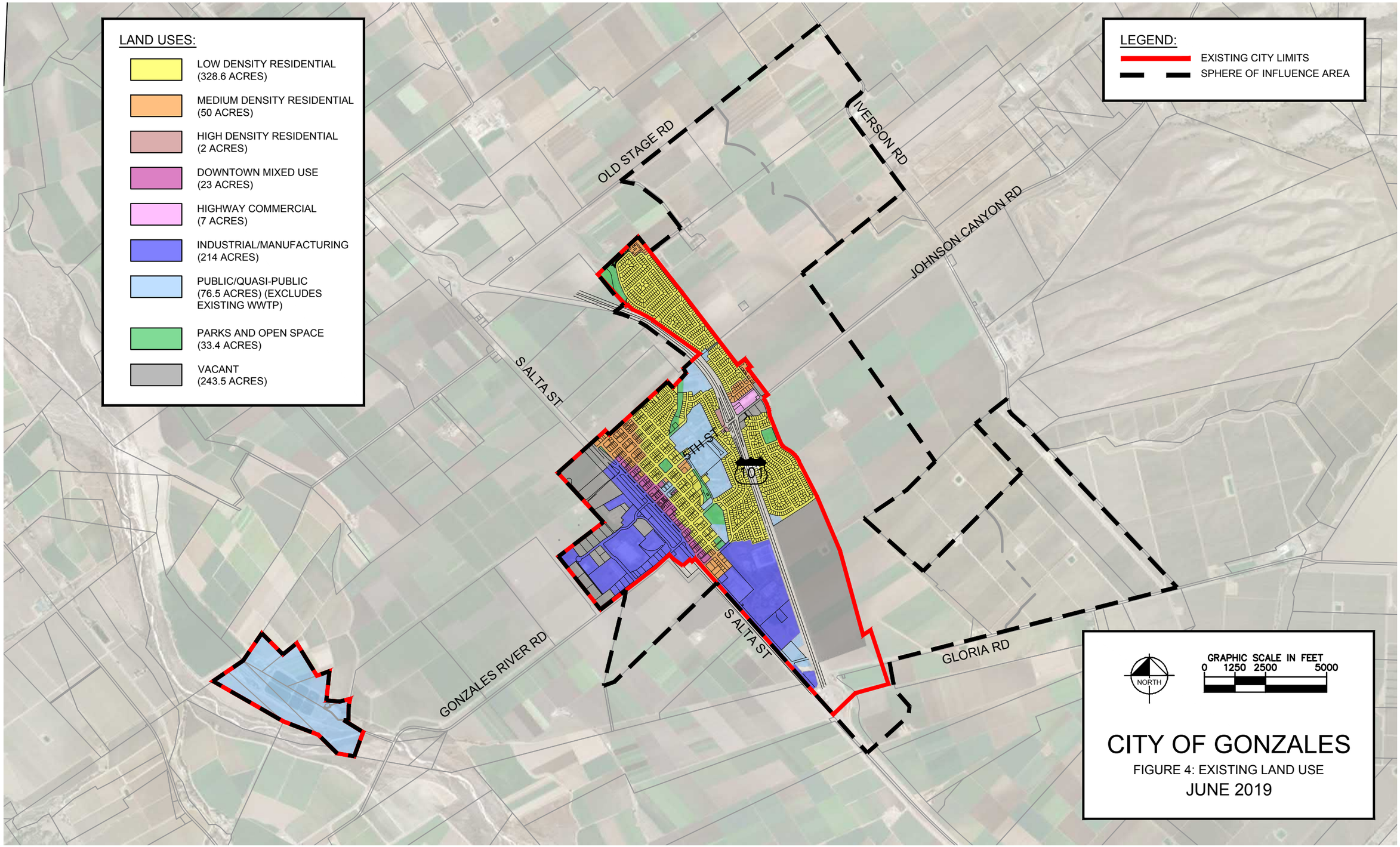


CITY OF GONZALES

FIGURE 3: SPHERE OF INFLUENCE

JUNE 2019

Kimley»Horn

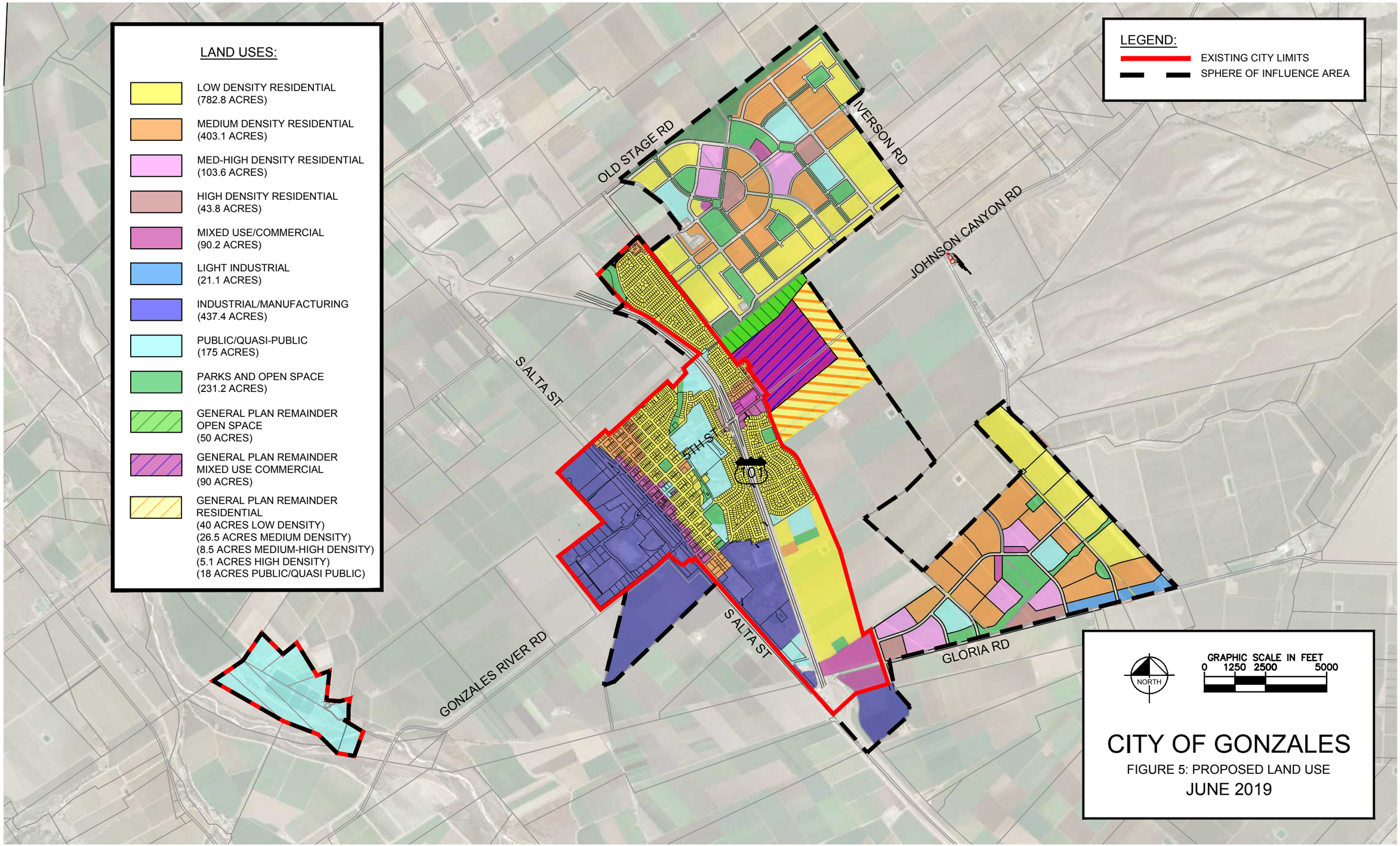


CITY OF GONZALES

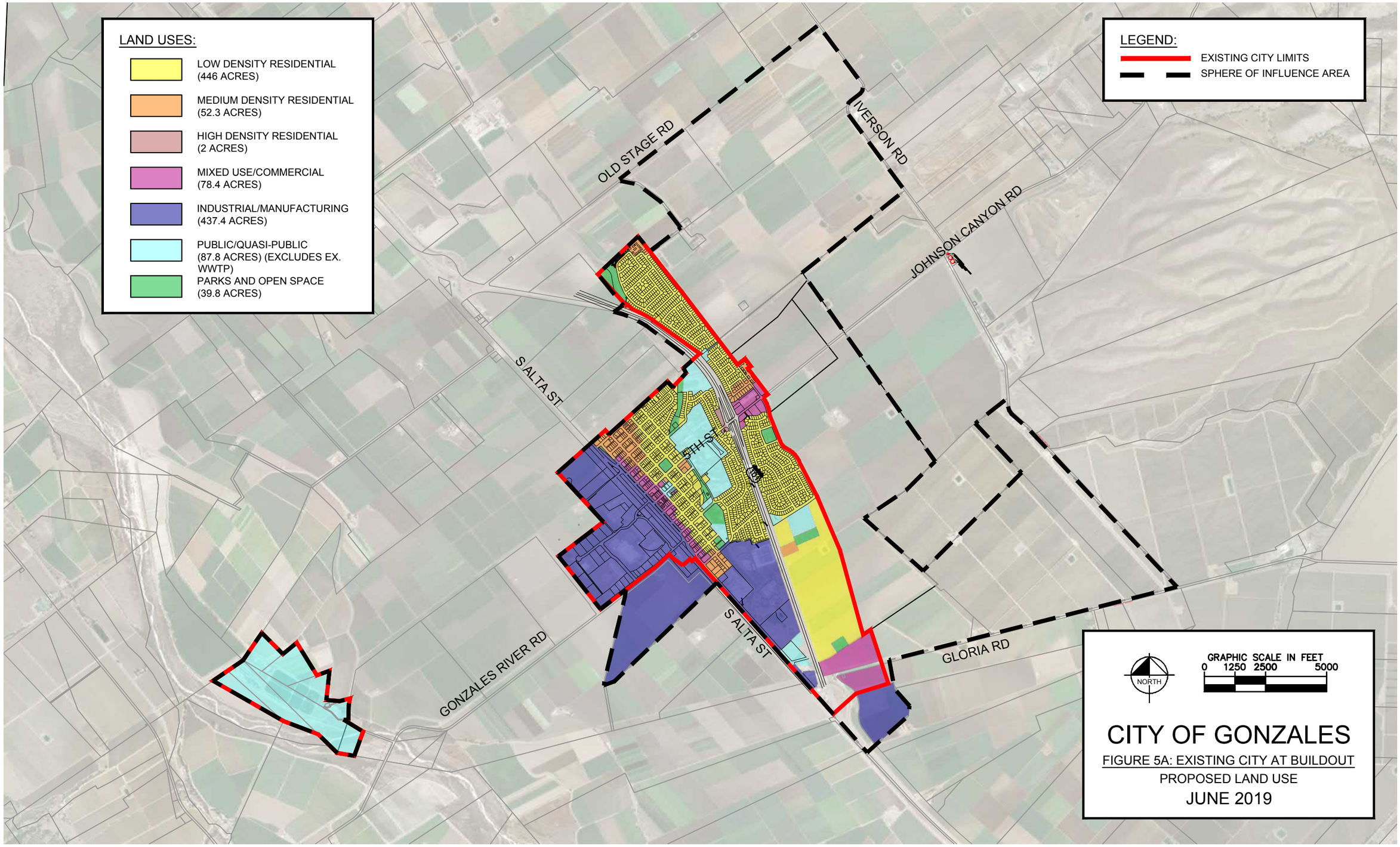
FIGURE 4: EXISTING LAND USE

JUNE 2019

Kimley»Horn


LAND USES:
LOW DENSITY RESIDENTIAL (782.8 ACRES)
MEDIUM DENSITY RESIDENTIAL (403.1 ACRES)
MED-HIGH DENSITY RESIDENTIAL (103.6 ACRES)
HIGH DENSITY RESIDENTIAL (43.8 ACRES)
MIXED USE/COMMERCIAL (90.2 ACRES)
LIGHT INDUSTRIAL (21.1 ACRES)
INDUSTRIAL/MANUFACTURING (437.4 ACRES)
PUBLIC/QUASI-PUBLIC (175 ACRES)
PARKS AND OPEN SPACE (231.2 ACRES)
GENERAL PLAN REMAINDER OPEN SPACE (50 ACRES)
GENERAL PLAN REMAINDER MIXED USE COMMERCIAL (90 ACRES)
GENERAL PLAN REMAINDER RESIDENTIAL (40 ACRES LOW DENSITY) (26.5 ACRES MEDIUM DENSITY) (8.5 ACRES MEDIUM-HIGH DENSITY) (5.1 ACRES HIGH DENSITY) (18 ACRES PUBLIC/QUASI PUBLIC)
LEGEND:
EXISTING CITY LIMITS
SPHERE OF INFLUENCE AREA
OLD STAGE RD
IVERSON RD
JOHNSON CANYON RD
S ALTA ST
5TH ST
101
S ALTA ST
GLORIA RD
GONZALES RIVER RD
NORTH
GRAPHIC SCALE IN FEET
0 1250 2500 5000
CITY OF GONZALES
FIGURE 5: PROPOSED LAND USE
JUNE 2019

Kimley»Horn



CITY OF GONZALES

FIGURE 5A: EXISTING CITY AT BUILDOUT

PROPOSED LAND USE

JUNE 2019

Kimley»Horn

LAND USES:

- LOW DENSITY RESIDENTIAL (223.4 ACRES)
- MEDIUM DENSITY RESIDENTIAL (151.3 ACRES)
- MED-HIGH DENSITY RESIDENTIAL (37.4 ACRES)
- HIGH DENSITY RESIDENTIAL (19.4 ACRES)
- MIXED USE/COMMERCIAL (5.9 ACRES)
- PUBLIC/QUASI-PUBLIC (43 ACRES)
- PARKS AND OPEN SPACE (139.9 ACRES)

LEGEND:

- EXISTING CITY LIMITS
- SPHERE OF INFLUENCE AREA

OLD STAGE RD

S ALTA ST

IVERSON RD

5TH ST

JOHNSON CANYON RD

NORTH

GRAPHIC SCALE IN FEET
0 500 1000 2000

CITY OF GONZALES

FIGURE 5B: SOI Area - VISTA LUCIA
PROPOSED LAND USE
MAY 2019

Kimley»Horn

LAND USES:

- LOW DENSITY RESIDENTIAL (113.4 ACRES)
- MEDIUM DENSITY RESIDENTIAL (119.5 ACRES)
- MED-HIGH DENSITY RESIDENTIAL (66.2 ACRES)
- HIGH DENSITY RESIDENTIAL (22.4 ACRES)
- MIXED USE/COMMERCIAL (5.9 ACRES)
- LIGHT INDUSTRIAL (21.1 ACRES)
- PUBLIC/QUASI-PUBLIC (26.2 ACRES)
- PARKS AND OPEN SPACE (51.5 ACRES)

LEGEND:

- EXISTING CITY LIMITS
- SPHERE OF INFLUENCE AREA

GLORIA RD

NORTH

GRAPHIC SCALE IN FEET
0 500 1000 2000

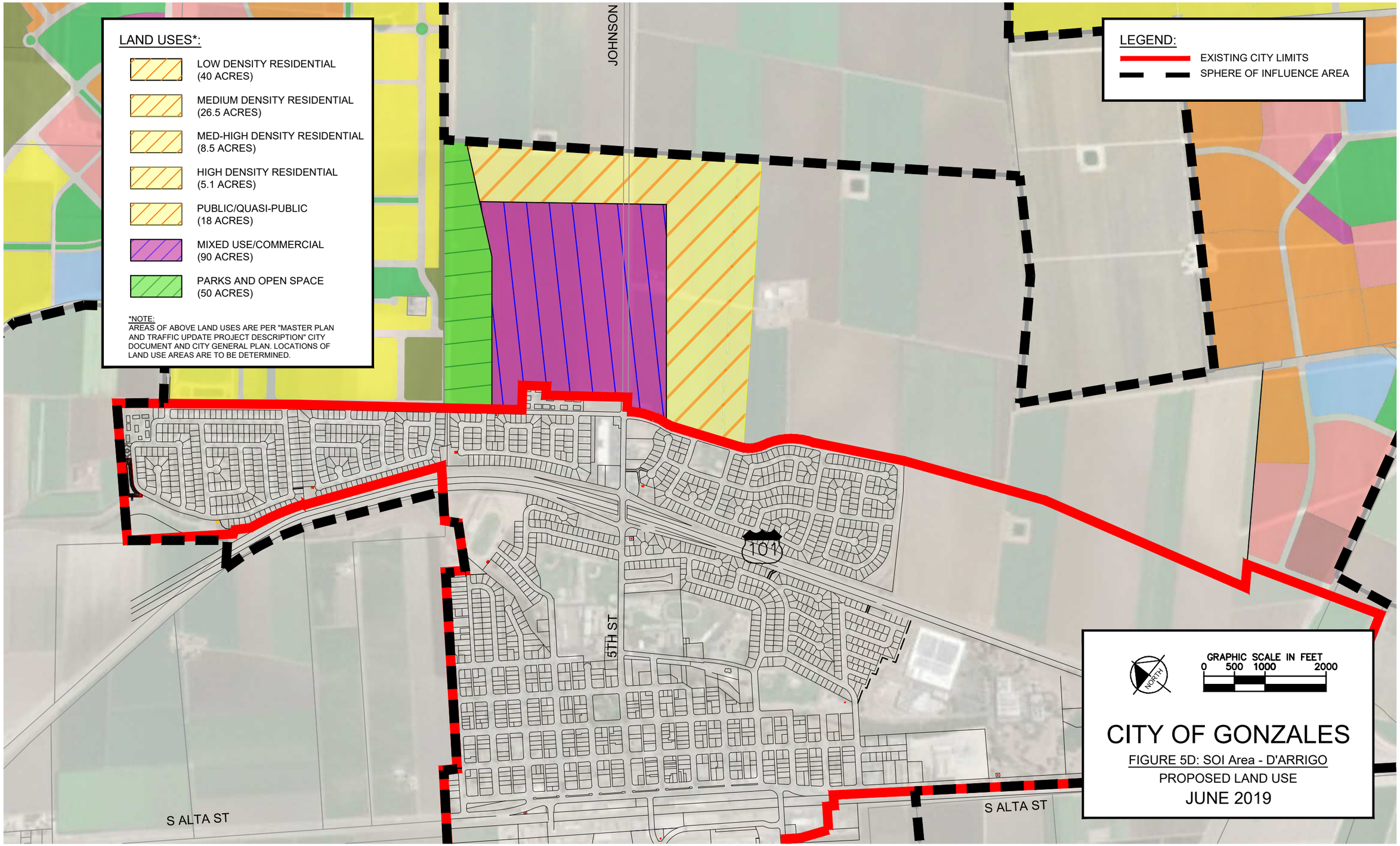
CITY OF GONZALES

FIGURE 5C: SOI Area - PUENTE DEL MONTE

PROPOSED LAND USE

JUNE 2019

Kimley»Horn



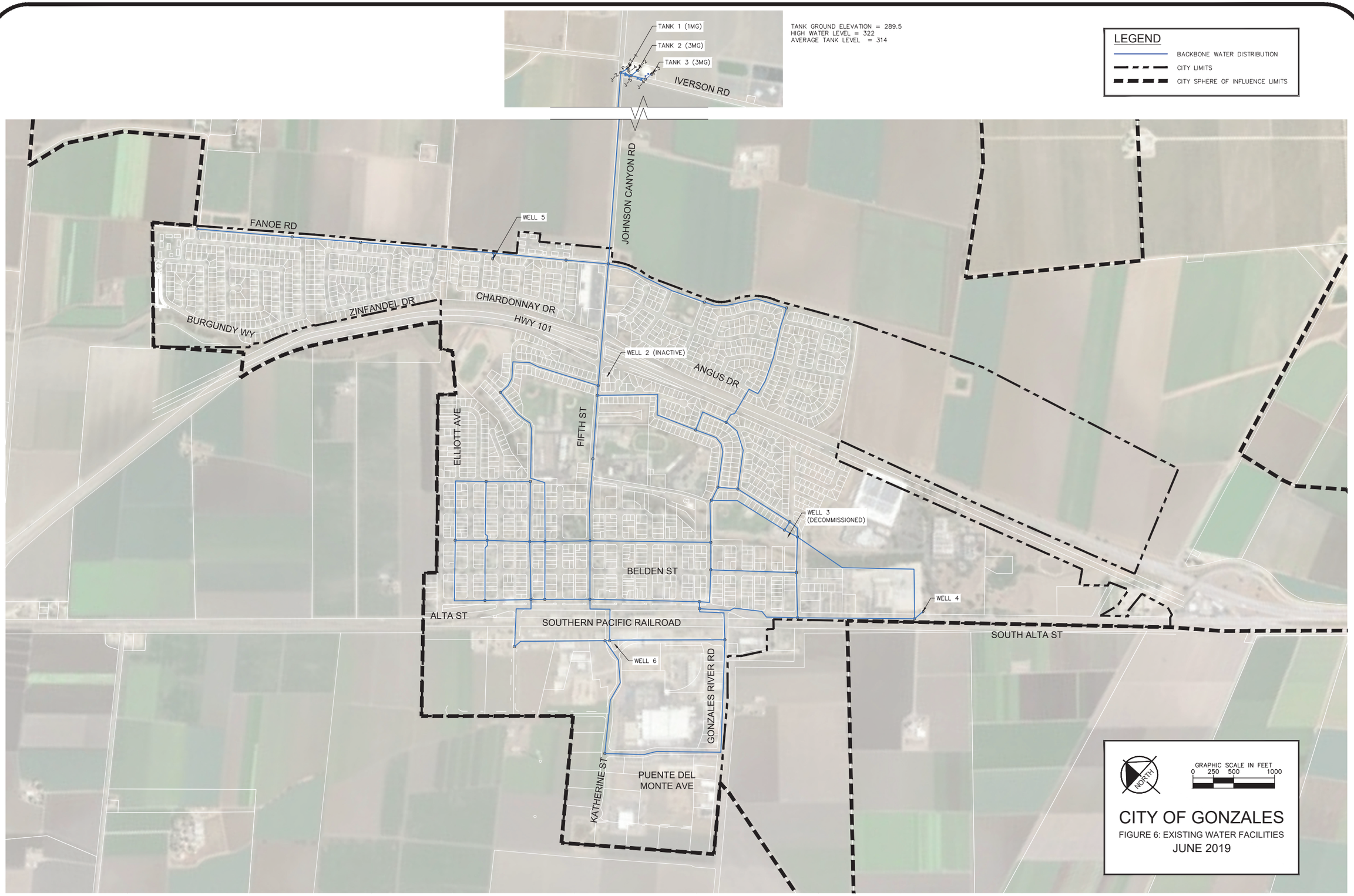
CITY OF GONZALES

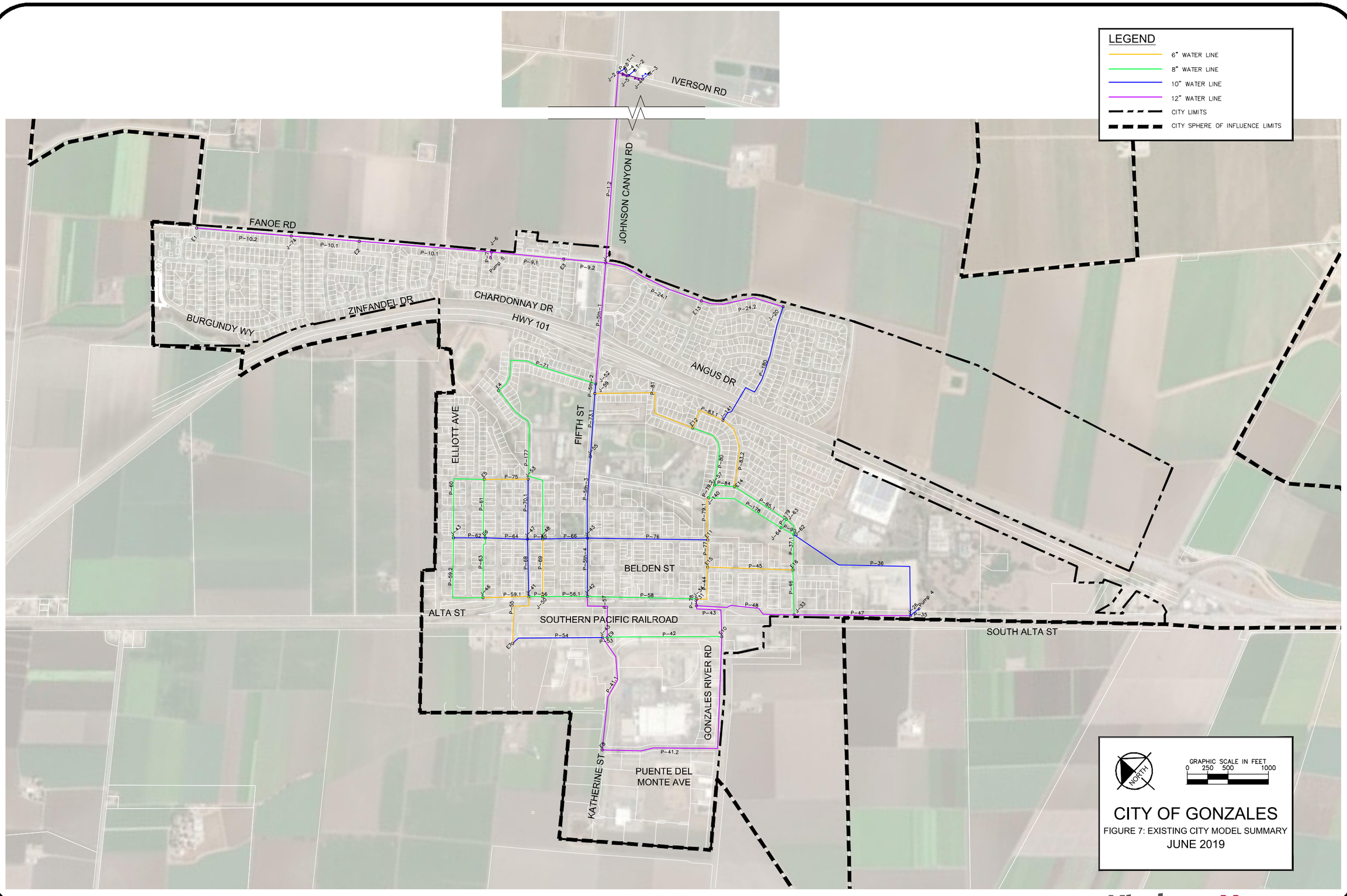
FIGURE 5D: SOI Area - D'ARRIGO

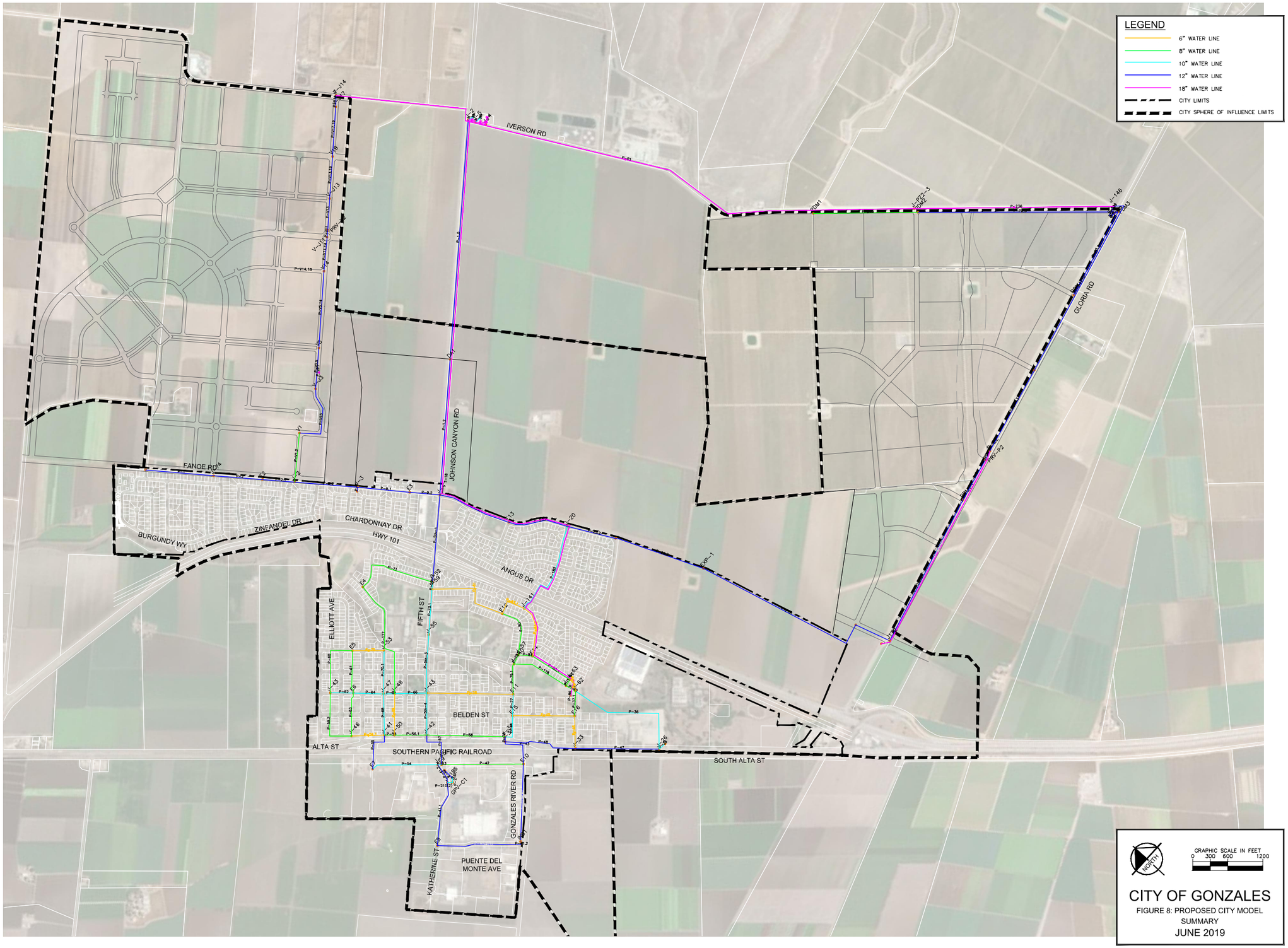
PROPOSED LAND USE

JUNE 2019

Kimley»Horn


TANK 1 (1MG)
TANK 2 (3MG)
TANK 3 (3MG)
IVERSON RD
TANK GROUND ELEVATION = 289.5
HIGH WATER LEVEL = 322
AVERAGE TANK LEVEL = 314
LEGEND
BACKBONE WATER DISTRIBUTION
CITY LIMITS
CITY SPHERE OF INFLUENCE LIMITS
JOHNSON CANYON RD
FANOE RD
WELL 5
ZINFANDEL DR
CHARDONNAY DR
BURGUNDY WY
HWY 101
WELL 2 (INACTIVE)
ANGUS DR
ELLIOTT AVE
FIFTH ST
WELL 3
(DECOMMISSIONED)
BELDEN ST
WELL 4
ALTA ST
SOUTHERN PACIFIC RAILROAD
SOUTH ALTA ST
WELL 6
GONZALES RIVER RD
KATHERINE ST
PUENTE DEL
MONTE AVE
NORTH
GRAPHIC SCALE IN FEET
0 250 500 1000
CITY OF GONZALES
FIGURE 6: EXISTING WATER FACILITIES
JUNE 2019
Kimley»Horn


LEGEND
6" WATER LINE
8" WATER LINE
10" WATER LINE
12" WATER LINE
CITY LIMITS
CITY SPHERE OF INFLUENCE LIMITS
IVERSON RD
JOHNSON CANYON RD
FANOE RD
ZINFANDEL DR
BURGUNDY WY
CHARDONNAY DR
HWY 101
ANGUS DR
ELLIOTT AVE
FIFTH ST
BELDEN ST
ALTA ST
SOUTHERN PACIFIC RAILROAD
SOUTH ALTA ST
GONZALES RIVER RD
KATHERINE ST
PUENTE DEL MONTE AVE
NORTH
GRAPHIC SCALE IN FEET
0 250 500 1000
CITY OF GONZALES
FIGURE 7: EXISTING CITY MODEL SUMMARY
JUNE 2019
Kimley»Horn



CITY OF GONZALES

FIGURE 8: PROPOSED CITY MODEL SUMMARY

JUNE 2019

Kimley»Horn

LEGEND

- NEW TRANSMISSION MAIN
- DISTRIBUTION MAIN REPLACEMENT
- PROPOSED WATER LINES
- CITY LIMITS
- CITY SPHERE OF INFLUENCE LIMITS

IVERSON RD

18" TRANSMISSION MAIN FROM WELL 7 TO EXISTING WATER STORAGE TANKS.

JOHNSON CANYON RD

FANOE RD

CHARDONNAY DR

ZINFANDEL DR

BURGUNDY WY

HWY 101

ANGUS DR

ELLIOTT AVE

FIFTH ST

BELDEN ST

ALTA ST

SOUTHERN PACIFIC RAILROAD

SOUTH ALTA ST

PUMP 6 CONNECTION EXCESSIVE VELOCITIES. ADD HYDROPNUEMATIC TANK.

FIRST STREET 6" WATER MAIN EXCESSIVE VELOCITIES DURING FIRE FLOW EVENTS. UPSIZE FIRST STREET TO 10" MAIN

GONZALES RIVER RD

NEW 0.5MG TANK. INFLOW DIRECT FROM PUMP 6. BOOSTER PUMP TO DISTRIBUTION SYSTEM

KATHERINE ST

PUENTE DEL MONTE AVE

NORTH

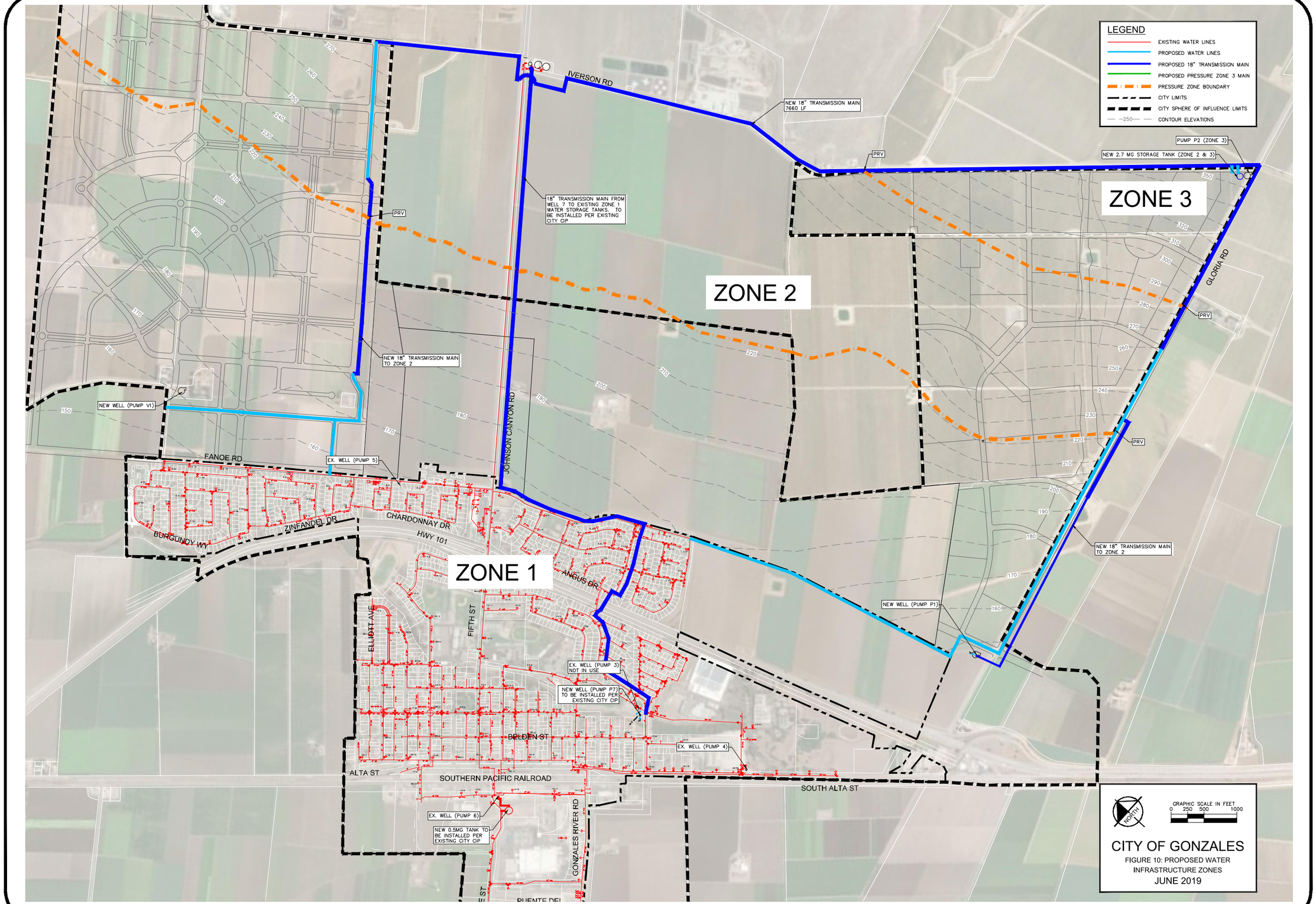
GRAPHIC SCALE IN FEET
0 250 500 1000

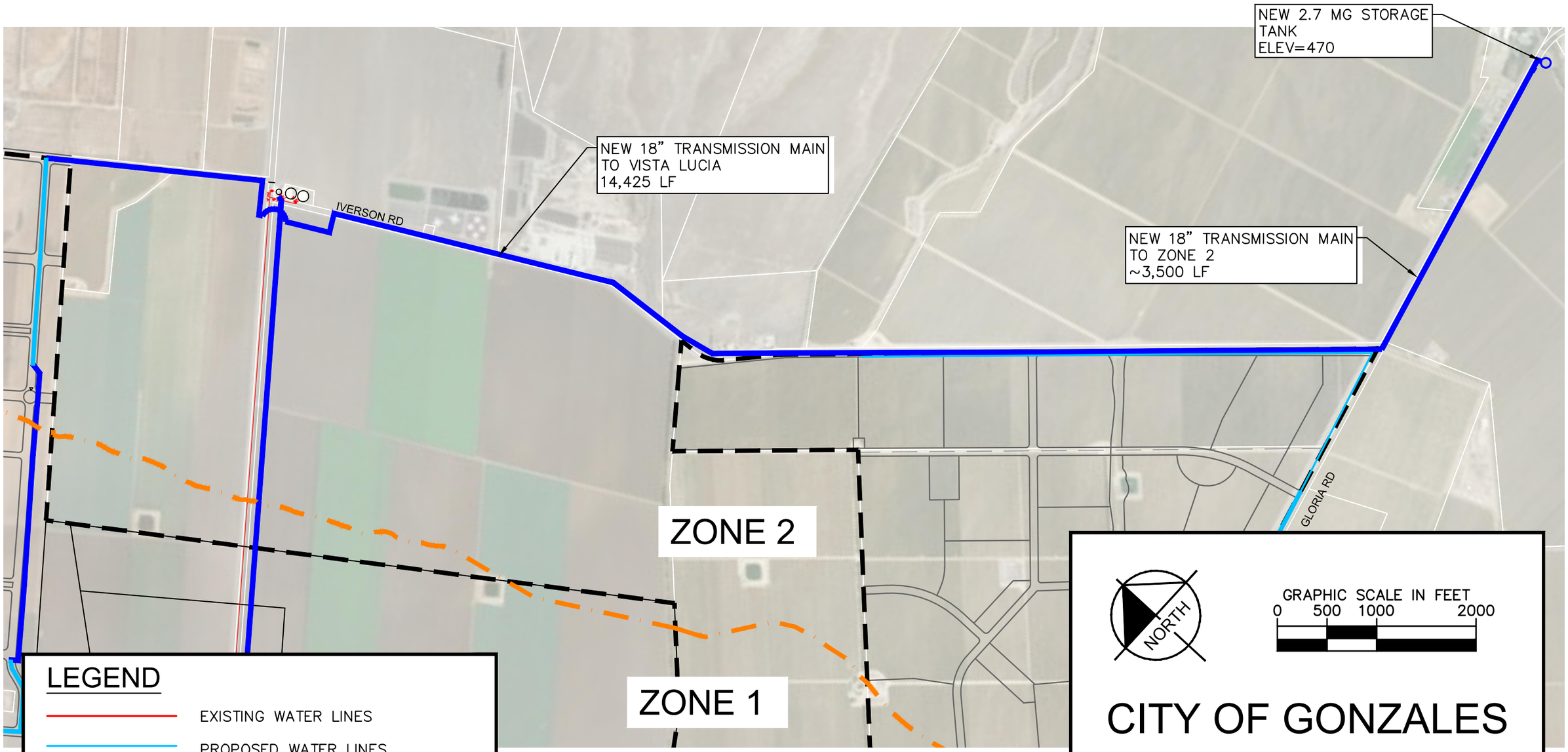
CITY OF GONZALES

FIGURE 9: EXISTING CITY WATER SYSTEM UPGRADES

JUNE 2019

Kimley»Horn


LEGEND
EXISTING WATER LINES
PROPOSED WATER LINES
PROPOSED 18" TRANSMISSION MAIN
PROPOSED PRESSURE ZONE 3 MAIN
PRESSURE ZONE BOUNDARY
CITY LIMITS
CITY SPHERE OF INFLUENCE LIMITS
CONTOUR ELEVATIONS
ZONE 1
ZONE 2
ZONE 3
IVERSON RD
NEW 18" TRANSMISSION MAIN 7660 LF
18" TRANSMISSION MAIN FROM WELL 7 TO EXISTING ZONE 1 WATER STORAGE TANKS. TO BE INSTALLED PER EXISTING CITY CIP
PRV
PUMP P2 (ZONE 3)
NEW 2.7 MG STORAGE TANK (ZONE 2 & 3)
NEW 18" TRANSMISSION MAIN TO ZONE 2
NEW WELL (PUMP V1)
EX. WELL (PUMP 5)
JOHNSON CANYON RD
FANOE RD
BURGUNDY WY
ZINFANDEL DR
CHARDONNAY DR
HWY 101
ANGUS DR
GLORIA RD
NEW WELL (PUMP P1)
EX. WELL (PUMP 3) NOT IN USE
NEW WELL (PUMP P7) TO BE INSTALLED PER EXISTING CITY CIP
EX. WELL (PUMP 4)
BOLDEN ST
ALTA ST
SOUTHERN PACIFIC RAILROAD
SOUTH ALTA ST
EX. WELL (PUMP 6)
NEW 0.5MG TANK TO BE INSTALLED PER EXISTING CITY CIP
ELLIOTT AVE
FIFTH ST
GONZALES RIVER RD
NORTH
GRAPHIC SCALE IN FEET
0 250 500 1000
CITY OF GONZALES
FIGURE 10: PROPOSED WATER INFRASTRUCTURE ZONES
JUNE 2019
Kimley»Horn



CITY OF GONZALES

FIGURE 11: PROPOSED WATER INFRASTRUCTURE ALTERNATIVE

JUNE 2019

Kimley»Horn

APPENDIX

City of Gonzales

EXISTING CITY PLUS SPHERE OF INFLUENCE

WATER MASTER PLAN

Cost Estimate Back-Up Data

June 2019

Prepared By:

Kimley»Horn

Kimley»Horn

Gonzales - Water System
Engineers Opinion of Probable Cost
Primary Design Option - June 2019

Existing City Water Line (Upgrades)				
Item	**Unit**		**Unit Price**	**Total Price**
10" PVC (under paving)	860	LF	*$200*	$172,000
12" PVC (under paving)	180	LF	*$225*	$40,500
18" DIP Transmission Main	12,450	LF	*$275*	$3,423,750
Well 6 Hydropnuematic Tank	1	EA	*$500,000*	$500,000
New 0.5MG Tank and Booster Pump	1	EA	*$750,000*	$750,000
New Well 7 and Pump	1	EA	*$1,500,000*	$1,500,000
			Existing City Hard Cost SUBTOTAL	$6,386,250
			10% Design	$638,625
			10% CM/Inspection	$638,625
			15% Contractor Profit, Bonds, Insurance Overhead	$957,938
			15% General Admin & Legal	$957,938
			Soft Cost SUBTOTAL	$3,194,000
			30% Contingency	$1,915,875
			EXISTING CITY TOTAL	$11,497,000

SOI Area Backbone Water System				
Size	**Unit**		**Unit Price**	**Total Price**
12" PVC (natural ground)	21,800	LF	*$90*	$1,962,000
18" DIP (natural ground)	13,900	LF	*$120*	$1,668,000
New Well and Pump	2	EA	*$1,500,000*	$3,000,000
Pressure Reducing Stations	4	EA	*$25,000*	$100,000
New 2.7 MG Storage Tank	1	EA	*$4,050,000*	$4,050,000
Booster Pump and Hydropnuematic Valves	1	EA	*$500,000*	$500,000
			SOI Area Hard Cost SUBTOTAL	$11,280,000
			10% Design	$1,128,000
			10% CM/Inspection	$1,128,000
			15% Contractor Profit, Bonds, Insurance Overhead	$1,692,000
			15% General Admin & Legal	$1,692,000
			Soft Cost SUBTOTAL	$5,640,000
			30% Contingency	$3,384,000
			SOI AREA TOTAL	$20,304,000
			Grand Total:	***$31,801,000***

OPINION OF PROBABLE COST DISCLAIMER

1. Because the Consultant does not control the cost of labor, materials, equipment or services furnished by others, methods of determining prices, or competitive bidding or market conditions, any opinions rendered as to costs, including but not limited to opinions as to the costs of construction and materials, shall be made on the basis of its experience and represent its judgment as an experienced and qualified professional, familiar with the industry. The Consultant cannot and does not guarantee that proposals, bids or actual costs will not vary from its opinions of cost. If the Client wishes greater assurance as to the amount of any cost, it shall employ an independent cost estimator. Consultant's services required to bring costs within any limitation established by the Client will be paid for as Additional Services.

2. Costs will be escalated by 3.5% per year.

3. Costs shown are non-prevailing wage.

Kimley»Horn

Gonzales - Water System
Engineers Opinion of Probable Cost
Alternate Design Option - June 2019

Existing City Water Line (Upgrades)				
Item	**Unit**		**Unit Price**	**Total Price**
10" PVC (under ex. paving)	860	LF	*$200*	$172,000
12" PVC (under ex. paving)	180	LF	*$225*	$40,500
18" DIP Transmission Main	12,450	LF	*$275*	$3,423,750
Well 6 Hydropnuematic Tank	1	EA	*$500,000*	$500,000
New 0.5MG Tank and Booster Pump	1	EA	*$750,000*	$750,000
New Well 7 and Pump	1	EA	*$1,500,000*	$1,500,000
			Existing City Hard Cost SUBTOTAL	$6,386,250
			10% Design	$638,625
			10% CM/Inspection	$638,625
			15% Contractor Profit, Bonds, Insurance Overhead	$957,938
			15% General Admin & Legal	$957,938
			Soft Cost SUBTOTAL	$3,194,000
			30% Contingency	$1,915,875
			EXISTING CITY TOTAL	$11,497,000
SOI Area Backbone Water System				
Size	**Unit**		**Unit Price**	**Total Price**
12" PVC (natural ground)	21,800	LF	*$90*	$1,962,000
18" DIP Transmission (natural ground)	13,900	LF	*$120*	$1,668,000
18" DIP Transmission (under ex. paving)	3,500	LF	*$275*	$962,500
New Well and Pump	2	EA	*$1,500,000*	$3,000,000
Pressure Reducing Stations	4	EA	*$25,000*	$100,000
New 2.7 MG Storage Tank	1	EA	*$4,050,000*	$4,050,000
			SOI Area Hard Cost SUBTOTAL	$11,742,500
			10% Design	$1,174,250
			10% CM/Inspection	$1,174,250
			15% Contractor Profit, Bonds, Insurance Overhead	$1,761,375
			15% General Admin & Legal	$1,761,375
			Soft Cost SUBTOTAL	$5,871,250
			30% Contingency	$3,522,750
			SOI AREA TOTAL	$21,136,500
			Grand Total:	***$32,633,000***

OPINION OF PROBABLE COST DISCLAIMER

1. Because the Consultant does not control the cost of labor, materials, equipment or services furnished by others, methods of determining prices, or competitive bidding or market conditions, any opinions rendered as to costs, including but not limited to opinions as to the costs of construction and materials, shall be made on the basis of its experience and represent its judgment as an experienced and qualified professional, familiar with the industry. The Consultant cannot and does not guarantee that proposals, bids or actual costs will not vary from its opinions of cost. If the Client wishes greater assurance as to the amount of any cost, it shall employ an independent cost estimator. Consultant's services required to bring costs within any limitation established by the Client will be paid for as Additional Services.

2. Costs will be escalated by 3.5% per year.
3. Costs shown are non-prevailing wage.