



ARAPAHOE COUNTY
PUBLIC WORKS & DEVELOPMENT

WATKINS/BENNETT
AREA VISION STUDY



Watkins/Bennett Area Vision Study

EXISTING CONDITIONS REPORT

DRAFT October 27, 2020

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1. INTRODUCTION

The I-70 corridor in eastern Arapahoe County was identified in the 2018 Arapahoe County Comprehensive Plan as having the greatest potential to accommodate future urban growth. That potential was analyzed in conjunction with the preparation of the 2018 Comprehensive Plan update and was summarized in Appendix C. This report presents updated demographic and other information to provide an updated analysis of the amount of growth that can be anticipated and the factors that may support or constrain growth in the area between Watkins and Bennett along I-70.

This Existing Conditions Report is a summary of present conditions in the Watkins/Bennett Area Vision Study (WBAVS) study area together with an analysis of these conditions. This collected information provides insights into the local conditions that help identify issues and opportunities that will be addressed when assessing the potential for growth and developing a vision for the future of the area.

Study area information contained in this report includes:

- Zoning and land use
- Demographic and housing characteristics
- Employment
- Infrastructure: roads, water supply and wastewater treatment
- Public facilities such as schools and libraries
- Natural features
- Natural resources
- Plans for the area prepared by the Town of Bennett and the City of Aurora

The report concludes with a summary of findings.

Regional Context

Growth and future land uses in the study area will be impacted by what is planned in the surrounding region. The mountains to the west present a physical constraint to growth in that direction. To the south, Highlands Ranch in Douglas County is essentially built out, but there are other developments in the Chatfield, Lone Tree, and Parker areas with potential to absorb growth, although water may be a limiting factor in the Chatfield area. Most of the available raw land for development is located to the north and east of the metro area. To the north there are efforts to preserve lands currently under agricultural production and there are limitations on the number of residential building permits that can be issued annually by a few jurisdictions. These factors place the study area in the likely path of future growth.

The City of Aurora and Adams County have indicated in their planning documents that significant growth in industrial/warehouse/office development is planned around the Colorado Air and Space Port (formerly Front Range Airport) in Adams County. The City of Aurora and the Town of Bennett have included the study area in their plans for future growth, with industrial, commercial and residential land uses occurring south of I-70. Several major developments are planned or partially underway in the region which will bring new residents and businesses to the area. It is important to assess the magnitude of those developments and their potential impacts.

Colorado Air and Space Port

The Colorado Air and Space Port is located in Adams County to the north of I-70 approximately three miles north of Arapahoe County.

Owned by Adams County, Colorado Air and Space Port is the ninth busiest general aviation airport in Colorado and third in the number of based aircraft, trailing only Centennial and Rocky Mountain Metropolitan. Activity at the airport consists primarily of general aviation.

In late 2018, the Colorado Air and Space Port was issued a license to operate a horizontal launch commercial spaceport facility. Under this application, FAA-licensed Reusable Launch Vehicles or “Spaceplanes” would take-off and land from the existing airport runways. The launch vehicles would provide access to space for scientific research, education, and space tourism in the short-term; and point-to-point, high speed, sub-orbital transportation to other international spaceports in the future, reducing flight times to global destination to a few hours. The Space Port property contains hundreds of acres to accommodate uses involved in or related to commercial space transportation, research and development. Long term the Air and Space Port is seen as a space-driven economic engine for the aerospace industry, global logistics providers, educators and space tourism.

Due to the Airport’s proximity to I-70, Arapahoe County south of I-70 may be impacted by employment opportunities generated by the Air and Space Port, mainly due to increased demand for residential development. There may also be increased demand for office and R&D space.

Denver International Airport

Denver International Airport (DIA) is located in the City and County of

Denver, approximately 14 miles from the study area. At 54 square miles, DIA is one of the largest airports in the world. Noise contours associated with DIA just barely extend into Arapahoe County; its noise influence area is generally north of the County line. Denver and surrounding jurisdictions have created a vision for an “airport city”, or aerotropolis, surrounding the airport. Aerotropolis is a concept for developing more than 9,000 acres within the airport’s property boundaries that is not already dedicated to future runways, taxiways or for other operational purposes, as well as land surrounding airport property. Containing commercial, employment, lodging and residential uses, it is estimated to generate 12,700 direct and indirect construction jobs, 18,500 on-airport and 55,500 off-airport jobs, 18 to 32 million square feet of additional commercial development, 75,000 housing units and 210,000 new residents.

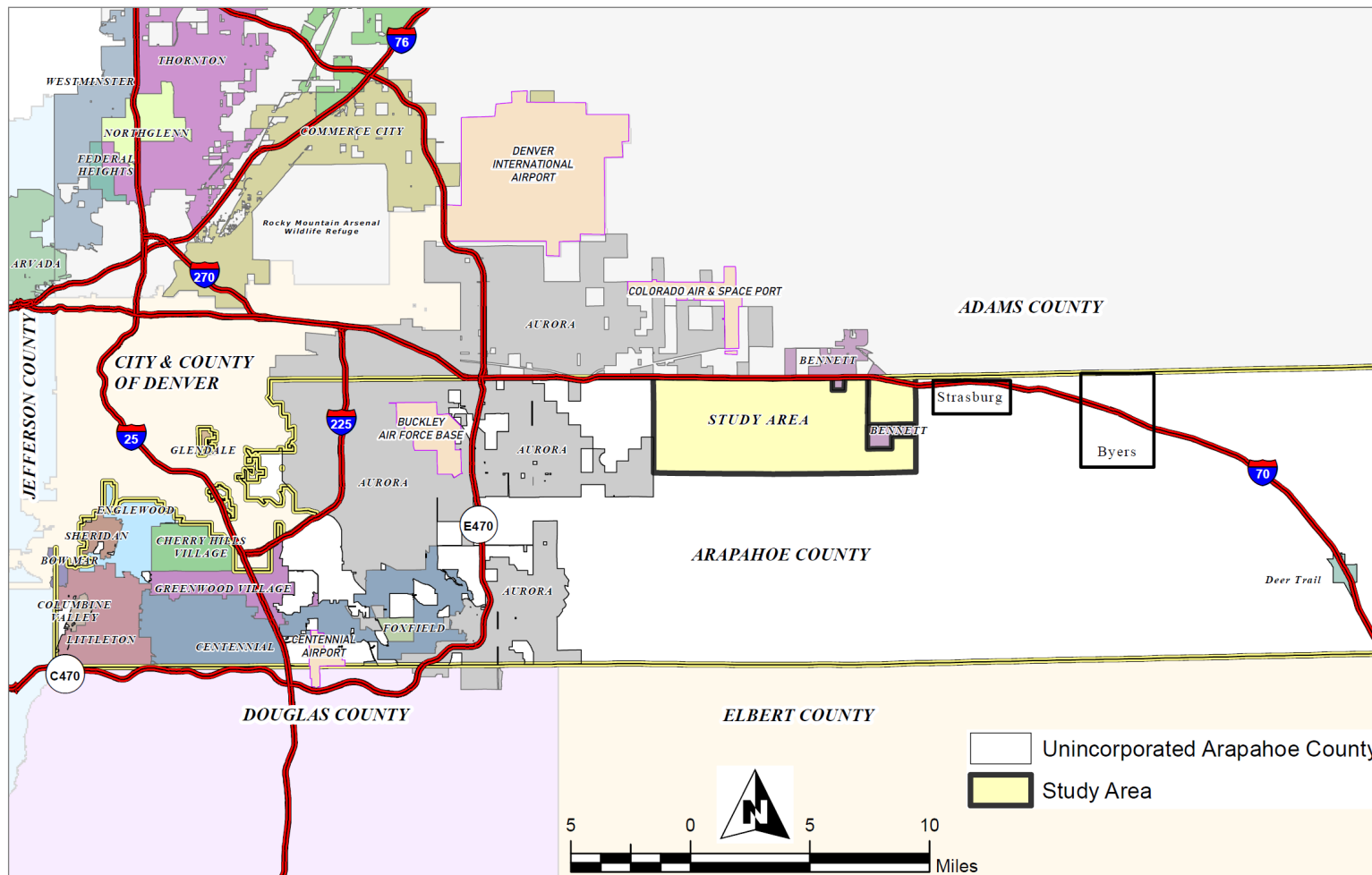
Within the Aerotropolis area is the Gaylord Rockies Resort and Convention Center, located southwest of Denver International Airport. Located on 85 acres in the City of Aurora near E-470 and 64th Avenue, the 1.9-million-square-foot Gaylord Rockies has 1,500 rooms and over 485,000 square feet of meeting and convention space. Each year, the facility is expected to attract more than 450,000 visitors and is expected to create more than 2,500 permanent jobs. The resort opened in 2018.

With the number of jobs anticipated in the airport environs, impacts to Arapahoe County are likely to be increased demand for residential development and the corresponding support retail and commercial development. The E-470 and I-70 corridors are likely locations for this increased demand, including the study area.

Transport

The Transport project is located in the City of Aurora in Adams County, southwest and southeast of the Colorado Air and Space Port terminal. Totalling 6,500 acres, Transport is a planned multi-modal transportation hub, mixed use industrial and entertainment development. Uses planned for Transport include an aviation park, a rail-served distribution and industrial park, and motor-plex with supporting retail and light industrial uses.

Employment in the project will be substantial and impacts to Arapahoe County are likely to be an increased demand for residential development and the corresponding support retail and commercial development in the study area.



Map 1. Study Area Location

2. STUDY AREA

Tiers and the Comprehensive Plan

The concept of planning area tiers was first introduced in an amendment to the Arapahoe County Comprehensive Plan in 2012. Tiers 1 and 2 were identified based on the study area of the I-70 Corridor Economic Assessment prepared for the I-70 Regional Economic Advancement Partnership (REAP) in 2011. The study area for that assessment was a four-mile wide corridor to either side of I-70 in Arapahoe and Adams Counties. The eastern boundary of Tier 1 ended at the western boundary of the Strasburg Subarea planning area boundary. Tier 2 extended along the remainder of I-70 through the county. The remainder of the county, except for the Urban Service Area, was designated as Tier 3. A Planning Reserve was also established in the 2012 amendment and included the Sky Ranch and Prosper PUDs in addition to a one-mile wide corridor to the south of I-70 from the eastern boundary of the Prosper PUD to Bennett.

Tier 1 was modified in the 2018 Comprehensive Plan to exclude the Sky Ranch and Prosper Planned Unit Developments (PUDs) because they were included in the Urban Area. The Urban Service Area was renamed Urban Area in the 2018 Comprehensive Plan. The Urban Area is situated immediately west of the study area and is defined as that area with existing or planned infrastructure which will accommodate development at an urban scale. Urban development includes industrial, commercial/retail, or residential uses with an overall density of at least four units per acre.

The study area for this report is the modified Tier 1 configuration from the 2018 Comprehensive Plan. The study area extends four miles south of I-70 from Imboden Road on the west to Yulle Mile Road (CR 145) on

the east. The study area encompasses approximately 42 square miles or about 27,000 acres as shown on Map 2. Excluded from the study area are areas annexed to the Town of Bennett, totaling 1,120 acres or 1.75 square miles.

Urban Reserve

Included within the study area is the Urban Reserve, an approximately 19-square mile area directly south of I-70, extending the length of the study area and varying in width from one to two miles north to south. The Urban Reserve planning area was introduced in the 2018 Comprehensive Plan, replacing and expanding the Planning Reserve established in the 2012 Comprehensive Plan amendment. The Urban Reserve is envisioned as the area which could accommodate more urban levels of residential development (one acre or smaller lots) as well as commercial and industrial uses. Within the Urban Reserve, future land uses were not identified and a primary recommended action of the Comprehensive Plan was to undertake this Watkins/Bennett Area Vision Study.

3. ZONING AND EXISTING LAND USE

The vast majority of the study area is zoned Agricultural-1 (A-1). This zoning allows a minimum lot size of 19 acres and permits single-family dwellings on this acreage. The existing zone districts in the area are illustrated on Map 3.

Dispersed areas within the study area are zoned Rural Residential-A (RR-A, formerly Agriculture-2, A-2) with a minimum lot size of 9 acres and Rural Residential-B (RR-B, formerly Residential-Agricultural, R-A) with a minimum lot size of 2.41 acres. No areas within the study area are zoned Rural Residential-C (RR-C, formerly Residential-Estate, R-E) which has a minimum lot size of 1.61 acres.

Box Elder Creek Ranches and Watkins Farm are RR-B zoned subdivisions with lot sizes of 5.0 acres and 2.41 acres, respectively. Several 19-acre subdivisions have been approved in the study area and numerous 35- and 40-acre parcels have been created. The A-2, R-A and R-E zone districts were re-named in the Land Development Code update approved in 2019. There are some small commercial zoned parcels (Regional Commercial (B-5)) in the northern part of the study area. The minimum required lot sizes for the zone districts are shown in Table 1.

Map 4 illustrates lot sizes in the study area. Lots ranging in size from less than five acres to 35 acres are located in subdivisions approved by the County. Lots 35 to 40 acres in size were created without County review and occupy a total land area approximately double that of the less than 35 acre lots. Aside from these residential areas, the remaining land in the study area is undeveloped or used for agriculture. The predominant agricultural activity is growing non-irrigated crops.

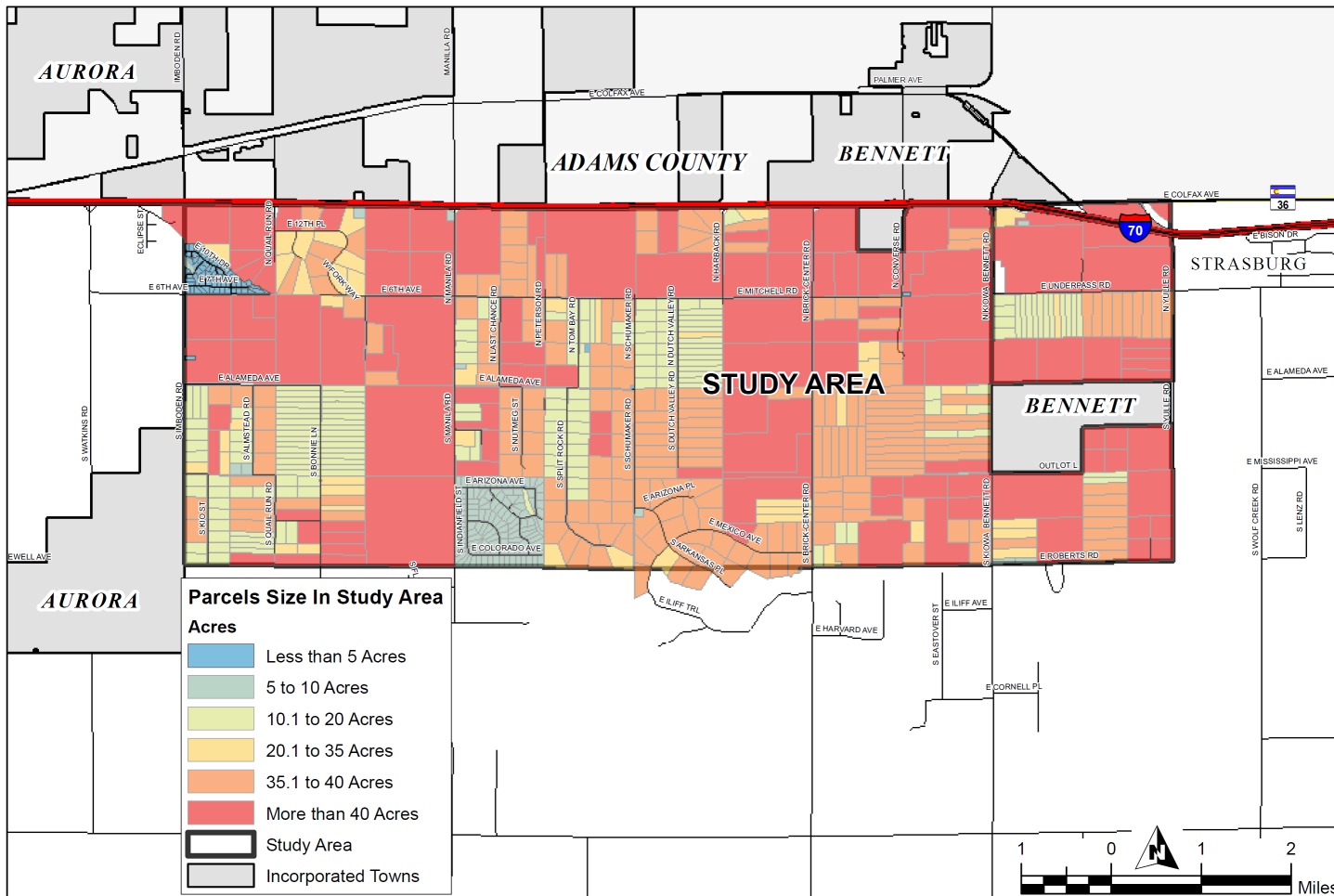
A very small proportion of the land is irrigated for agriculture. There currently are no mineral extraction operations (sand and gravel extraction or quarries) located in the study area.

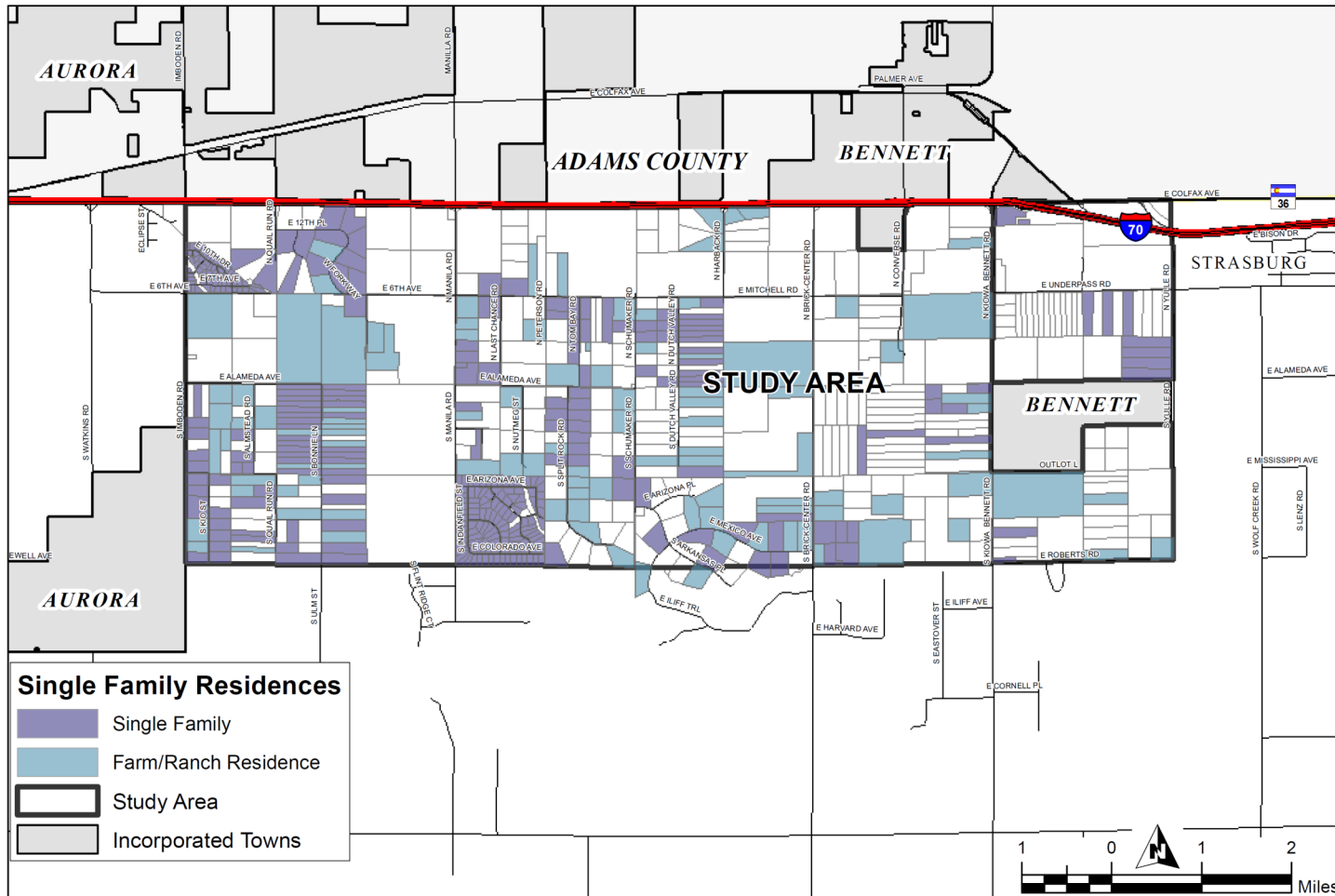
Under State planning enabling legislation for counties, the definition of subdivision expressly excludes the division of land into parcels 35 acres or larger, and as a result, counties are not authorized to review and approve such divisions of land. The A-1 zoning combined with the state definition of subdivision have resulted in the creation of several subdivisions of large lots and areas with 35- and 40-acre parcels. Map 4 illustrates the lots and parcels on which are located single-family residences, excluding farm or ranching residences.

Map 5 illustrates that there are approximately 16 square miles of existing residential development within the study area, in both single-family residences and farm and ranch residences. A comparison of Maps 4 and 5 reveals that there are relatively few parcels or lots which have been platted and are available for additional residential development. Assuming these residential neighborhoods do not redevelop in the future, there are approximately 24 square miles (15,360 acres) of primarily agricultural or undeveloped land in the study area available to accommodate future growth.

Table 1. Zone Districts and Lot Sizes

Zone District	A-E Agricultural Estate	A-1 Agricultural- 1	RR-A Rural Residential A	RR-B Rural Residential B	B-5 Regional Commercial
Minimum Lot Size	35 ac	19 ac	9 ac	2.41 ac	varies

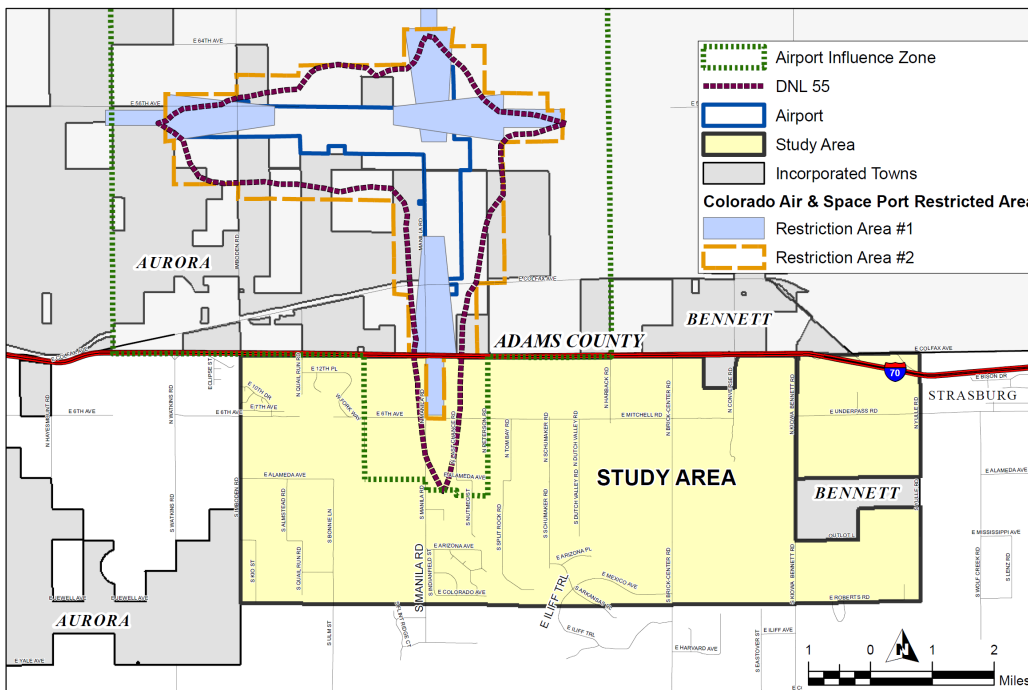




Map 5. Lots and Parcels with Single-Family Residences

Areas impacted by Colorado Air and Space Port (formerly Front Range Airport) include the 55 DNL (acronym for Day-Night Level, an average of the sound level) and the Airport Restriction Areas #1 #2 to the east of Manilla Road and between I-70 and 6th Avenue. This restriction area encompass approximately 1.5 square miles south side of I-70. Specific regulations for the airport influence area are identified in the County's Land Development Code (Map 6).

The potential area of change in the study area encompassing 24 square miles and accounts for the Town of Bennett annexations (1.75 sq. mi.), the North Kiowa Creek Open Space (0.5 sq. mi.), and zoning limitations related to operations at Colorado Air and Space Port (1.5 sq. mi.). The presence of floodplains, sensitive areas, wildlife habitats, and other constraints will reduce the amount of available land for development, but those constraints have not been quantified in this report.



Map 6. Colorado Air and Space Port Restriction Areas

Summary of Airport Influence Area Regulations

Restriction Area #1

Limited commercial and industrial structures are permitted which do not conflict with the operational and safety needs of the Space Port. In general, the structures must be in compliance with Federal Aviation Regulation Part 77, must meet criteria for noise level reduction, not be a land use focused on gathering places for a large number of people (e.g., movie theatre, shopping center, bowling alley, etc.), and must not create dust or other emissions that could cause obstructions to aircraft navigation.

Restriction Area #2

In this area, the construction of residences is prohibited except that existing residences may be occupied and new homes may be built on lots platted prior to the adoption of the Airport Influence Area Overlay District.

4. DEMOGRAPHICS

Information included in this section is from the American Community Survey conducted by the Census Bureau in 2013 and 2018 and supplemented by data available through Community Analyst™, from 2017 and 2019. Though a little dated for some characteristics, the data are believed to be reflective of current conditions in the study area.

Population Characteristics

Population and Age

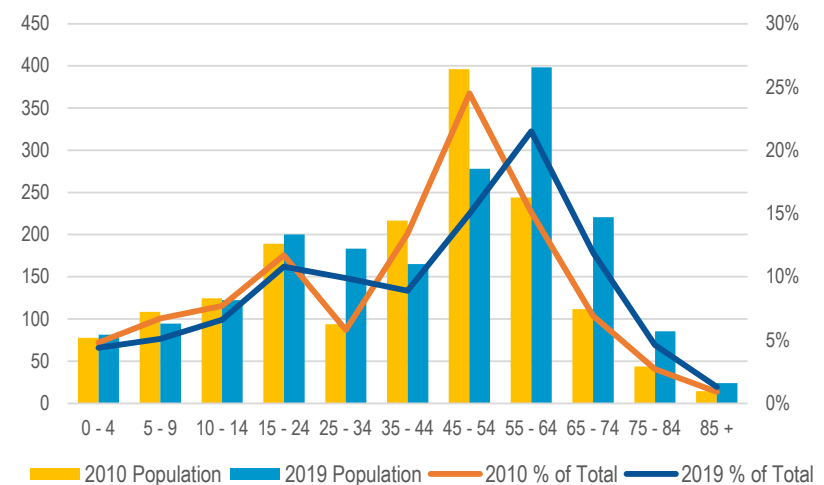
The study area had a population of 1,620 in 2010 and in 2019 this figure increased to 1,853, an increase of 14 percent.

The study area's median age in 2010 was 45.0 and this increased to 48.4 in 2019. The County's median ages in these years were 35.7 and 36.9, respectively. The median age in the study area is 11.5 years higher than the median age of the countywide population.

Chart 1 shows the trends in the study area's population by age over the last nine years. In 2010, nearly 40 percent of the study area population was in the 45- to 64-year-old age groups, with another 10 percent 65 and older. These percentages remained nearly the same in 2019 for the same age groups (45- to 64-year-old groups were 37 percent) but the percentage aged 65 and older increased to 18 percent.

In terms of the total population, the younger age groups (under 24) remained relatively unchanged from 2010 to 2019, but the 55 to 64 age group increased by 63 percent. The 65 to 74 and the 25 to 34 age groups experienced nearly a doubling of population, while the 35 to 44

Chart 1. Study Area Population by Age



Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018

age group declined by 45 percent, and the 45 to 54 age group declined by 30 percent.

Population by sex had not changed in the nine years since 2010 as shown in the population pyramid in Chart 2.

Although the number of males and females increased, the percentage of total population remained the same at 49 percent for males and 51 percent for females. The number of males and females within certain

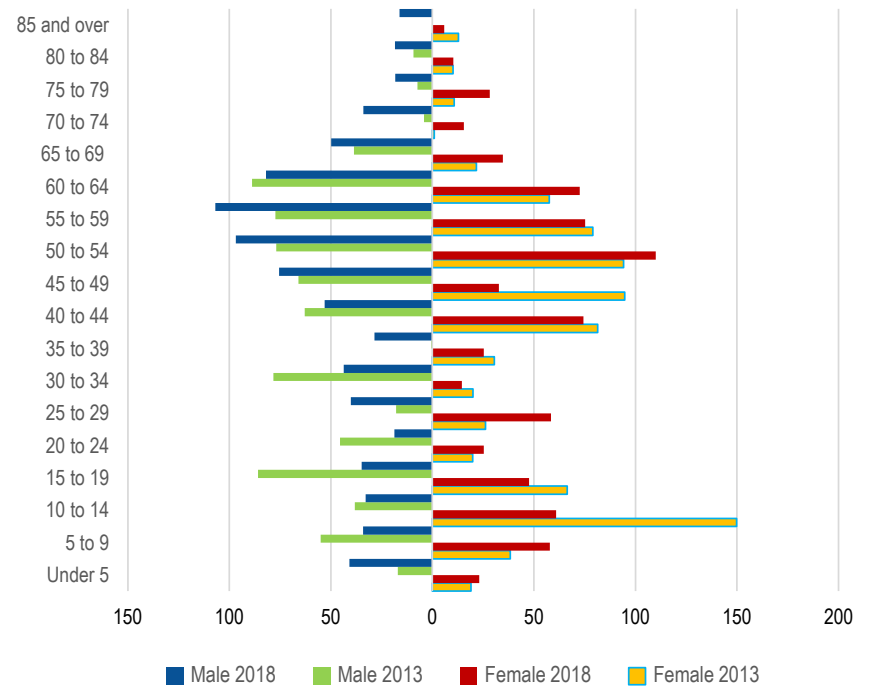
age groups did change, however. The most populous age groups for both males and females were those from 40 to 64 years of age, making up 50 percent and 47 percent of the male and female populations, respectively. Fifty percent of both the male and female population were 50 years old or older.

The population pyramid presented in Chart 2 illustrates that the population of the study area is aging and not being replaced with younger generations. It also illustrates that many long-term residents appear to be aging in place.

Households

As the population has grown there has been a corresponding increase in the number of households, nearly doubling from 349 households in 2000 to 653 households in 2019. While the number of households increased since 2000, the average household size decreased from 2.91 in 2000 to 2.84 persons per household in 2010, but remained stable from 2010 to 2019. Chart 3 illustrates these trends.

Chart 2. Study Area Population by Age and Sex



Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018

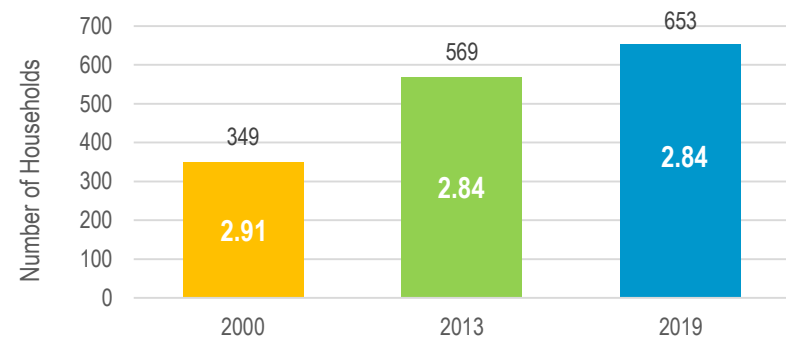
The entire population of the study area resided in households; no residents of group quarters were reported in 2018. Of the total number of households in the study area, 90 percent were family households and 58 percent had a male householder. Nearly 30 percent of the 2018 households had a person aged 65 or over present, and of those households, 60 percent of those aged 65 or over were householders. Those living in family households included the householder and spouse and about one in six households had a parent-in-law or other relative present.

Households without persons under 18 years of age comprised 70 percent of the households and two-thirds of those households consisted of married couples. In 2018 there were 74 single-person households, with 12 of those being females living alone. This is in sharp contrast to 2013 when females living alone accounted for 40 out of the 77 single-person households.

The composition of households changed dramatically between 2013 and 2018. Nearly three-fourths (73 percent) of the households in 2013 were headed by males. This percentage dropped to 58 percent just five years later. If this trend continues, householders could be evenly split between males and females in the near future. Note that the figures include male or female householders with others present in the household (spouse, children, etc.).

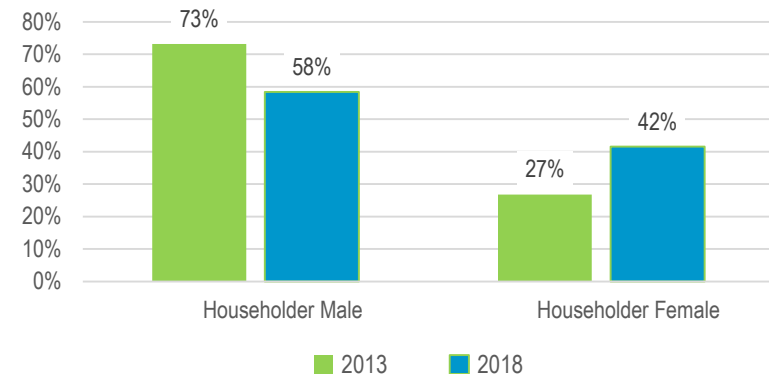
The increase in female householders is likely a result of how households chose to respond to the survey. Marital status data presented in Chart 5 seem to indicate a different trend. In 2013, out of the total female population aged 16 and older, 248 out of 626 females

Chart 3. Household Size



Source: Community Analyst, 2019

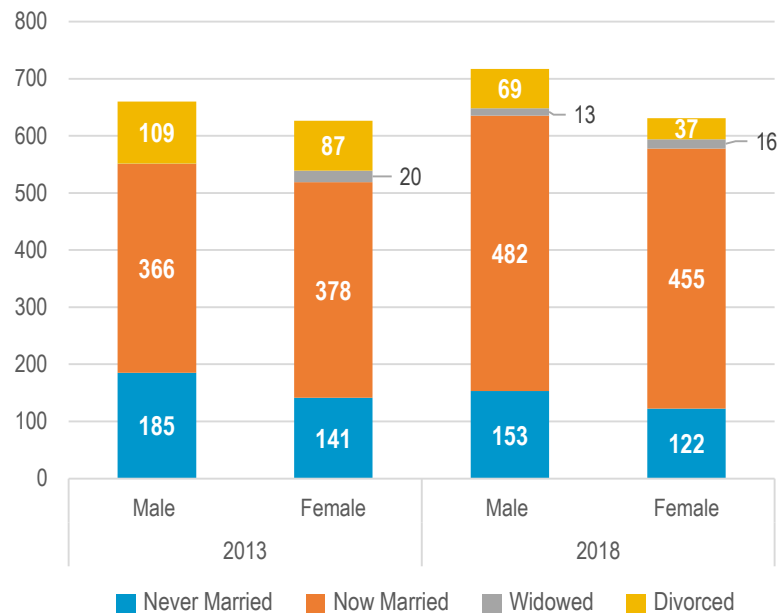
Chart 4. Head of Household



Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018

(40 percent) were never married, divorced or widowed. In 2018, the percentage of females who were never married, widowed or divorced decreased to 28 percent. Presumably many of these females were householders, indicating the number of female householders should have decreased.

Chart 5. Marital Status



Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018

Males that were never married, widowed, or divorced totaled 235 in 2018, or 33 percent of the male population 16 and older. The number of males never married, widowed, or divorced in 2013 was 294, or 45 percent of the male population.

It is interesting to note that the total population aged 16 and over increased by 62 from 2013 to 2018, with the number of married individuals increasing by 195. The total number of never married and divorced individuals decreased by 50 and 91, respectively, from 2013 to 2018. These data indicate either that never married individuals were married during the period, moved out of the study area, or were deceased. In any case, they were supplanted by married persons.

Table 1. Population by Race and Ethnicity

	Study Area			County	
	2013	2018	2018	2018	2018
Total	1604	1598*		585,333	
White alone	1395	1305	81.68%	369,435	63.12%
Black or African American alone	8	25	1.58%	56,891	9.72%
American Indian and Alaska Native	3	11	0.66%	1,997	0.34%
Asian alone	39	0	0.02%	29,340	5.01%
Native Hawaiian and Other Pacific	0	0	0.00%	1,178	0.20%
Some other race alone	0	0	0.00%	1,295	0.22%
Two or more races	53	50	3.15%	17,356	2.97%
Hispanic	106	206	12.91%	107,841	18.42%
*The apparent decrease in population between 2013 and 2018 is due to the re-configuration of Tier 1, removing areas west of this study area.					
Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018					

Race and Ethnicity

The population of the study area in 2018 was predominantly White at 82 percent, compared to 63 percent countywide. With respect to ethnicity, the Hispanic population comprised nearly 13 percent of the study area population compared to 18 percent of the total county population. The percentages of the total population of other races remained relatively stable or increased slightly since 2013. Table 1 identifies the racial and ethnic makeup of the study area population.

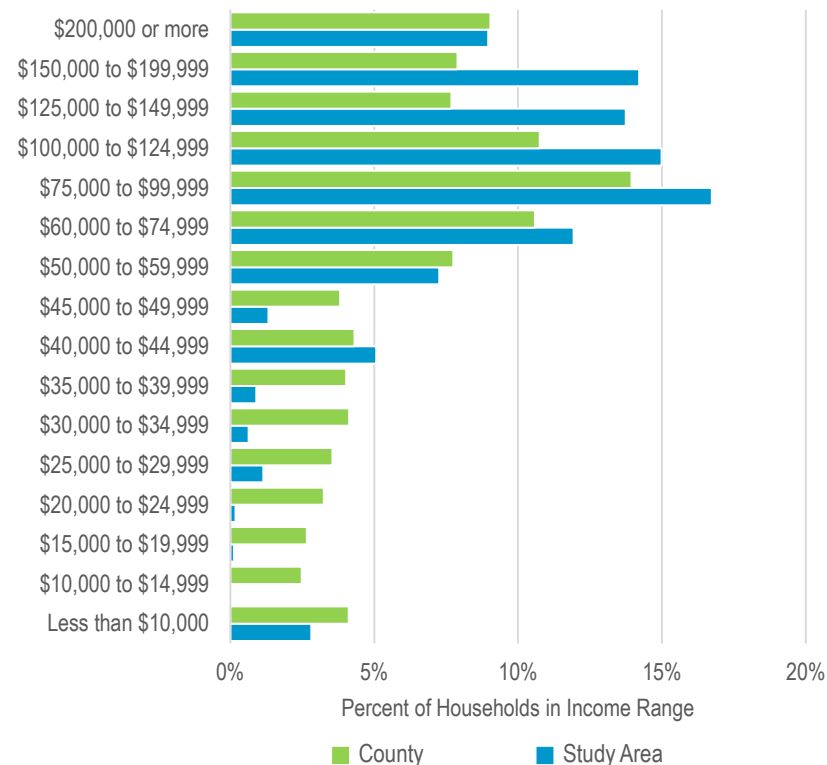
Income

Household income in the study area exceeded the countywide percentages of households in all the income brackets over \$60,000, as shown in Chart 6. Over 80 percent of the households in the study area had an income of \$60,000 or more in 2018, compared to 52 percent of the countywide households. In the study area, 51.9 percent of the households had an income of \$100,000 or more, while countywide 35 percent of households had this level of income.

The median household income in the study area in 2018 was \$103,126, an increase of \$24,000 or 30 percent since 2013. By comparison, the countywide median household income in 2018 was \$74,043, up nearly \$13,000 or 20 percent from 2013. The median household income for the study area in 2018 was approximately \$29,000 higher than for the rest of the county.

In 2018 it was reported that 1.3 percent of all study area households had incomes below the poverty level, which was defined as an income of \$25,465 for a family of four. All of the households were married couples without children. This is a significant change from 2013 when

Chart 6. Household Income (2018)



Source: American Community Survey, U.S. Bureau of the Census 2018

6.1 percent of the households reported incomes below the poverty level and most of those households were married couples with children aged 5 to 18. Countywide in 2018, 6.3 percent of all households had incomes below the poverty level.

Education

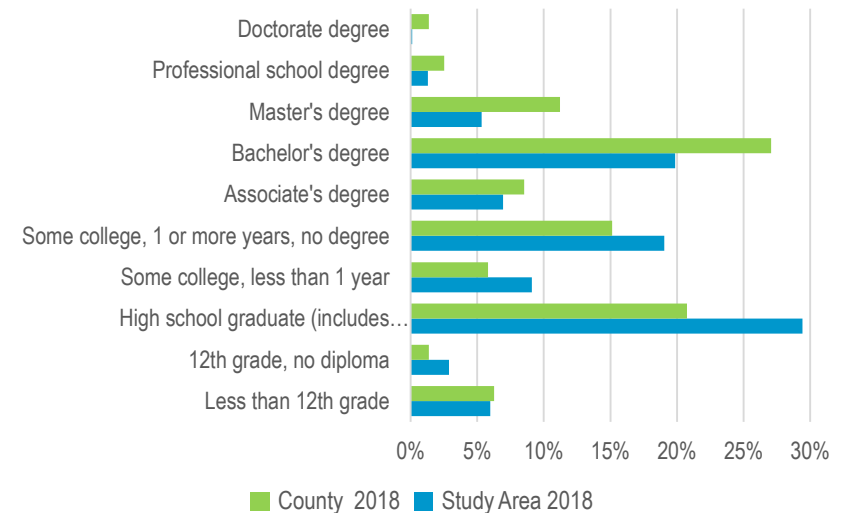
The level of education attained by the population 15 years old and older is shown in Chart 7. Over 90 percent of the population of the study area was a high school graduate in 2018, the same as the countywide percentage. This percentage had decreased slightly from 94 percent in 2013. Approximately 27 percent of the population was college graduates in 2018, including those with master's and doctorate degrees, up about 2 percent from 2013. In comparison, the countywide percentage in 2018 for college graduates was 42 percent. On average, the population of the study area had a lower level of educational attainment than the remainder of the county.

The number of persons in the study area with less than 12 years of education and 12th grade with no diploma increased two and one-half times between 2013 and 2018 to comprise 6.0 percent of the population. Males accounted for 62 percent of the individuals without a high school diploma.

Housing Characteristics

The total number of dwelling units in the study area in 2018 was 568, with 562 occupied. The vacancy rate in 2018 of 0.3 percent in the study area was very low compared to an overall vacancy rate of 4.4 percent countywide. Over 93 percent of the dwelling units in the study area were owner-occupied, which was much higher than the countywide figure of 63.1 percent. Table 2 shows historic occupancy figures for the study area as well as the 2018 figures for the county.

Chart 7. Educational Attainment (2018)



Source: American Community Survey, U.S. Bureau of the Census 2018

Table 2. Housing Occupancy - Ownership and Rental

	Study Area			County
	2010	2013	2018	2018
Occupied Units				
Owner occupied	91.6%	93.1%	93.4%	63.1%
Renter occupied	4.4%	6.6%	6.6%	36.9%
Vacant	4.0%	0.2%	0.3%	4.4%

Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018.

Chart 8 illustrates the percentages of housing units by value for the study area and the county as a whole.

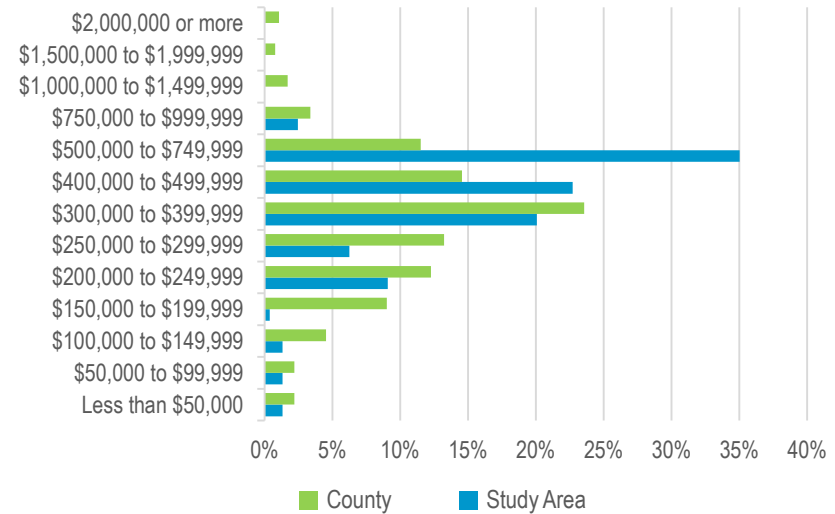
Housing values have increased in the study area in the period from 2013 to 2018, as would be expected with a tight regional housing market, inflation, and biennial reassessments. In 2013, 70 percent of the housing units in the study area were valued between \$200,000 and \$399,999 with a median value of \$311,000. Five years later, over three-fourths of the units were valued between \$300,000 and \$749,999 with a median value of \$445,000. Approximately 2.5 percent of the housing units were valued at more than \$750,000.

Countywide, the median housing value in 2018 was \$328,000, with three-fourths of the units valued between \$200,000 and \$749,000. Seven percent (or approximately 10,500 units) of countywide housing units were valued at greater than \$750,000.

Chart 9 shows the year in which housing units were built. The most units built were recorded in the years from 2000 to 2009, with 45.5 percent of the units built during that decade.

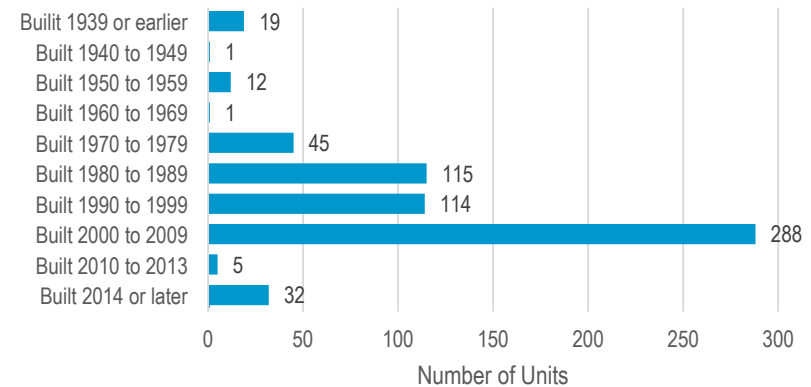
Slightly over half (51.5 percent) of the housing stock in the study area was built since 2000, meaning nearly half of the housing units were over 20 years old in 2019.

Chart 8. Household Value (2018)



Source: American Community Survey, U.S. Bureau of the Census, 2018

Chart 9. Year Housing Units were Built



Source: American Community Survey, U.S. Bureau of the Census, 2018

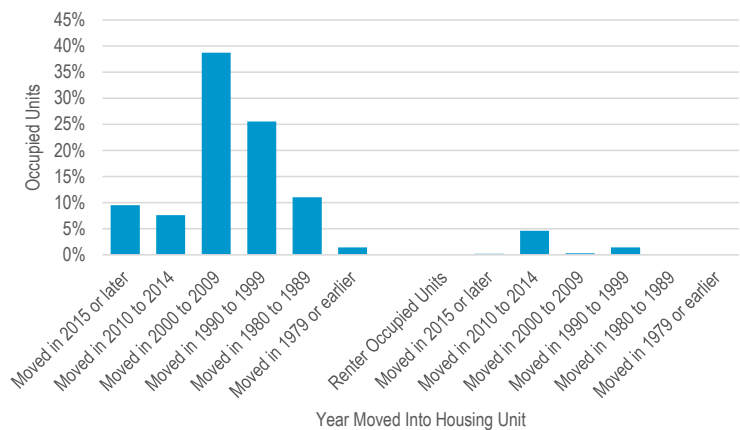
The Census Bureau collects information on when a housing unit was occupied by the current resident. This information provides an indication of whether there is significant turnover in the occupancy of the housing stock in an area. Chart 10 shows the year an occupied unit was occupied as a percentage of the total occupied units.

Nearly two-thirds of the residents of owner-occupied units moved in between 1990 and 2009. This corresponds to two of the years in which the most number of units were built. This information indicates that a majority of the residents of the study area are long-term residents. Three-fourths of the residents have lived in the study area for more than 10 years, 38 percent for more than 30 years.

Recent Building Activity

Table 3 summarizes building permit activity in the eastern portion of the County from 2010 to 2019. Over the past ten years, a total of 37 building permits for single-family residences have been issued in the study area; an average of 3.7 per year. Nearly three-fourths of these permits were issued in the last five years. The study area accounted for 15.4 percent of the permits issued in the eastern portion of the county during this period, and 1.4 percent of residential permits countywide. These figures do not include permits for mobile homes because it is not known if permits were issued for new or replacement units.

Chart 10. Year Moved into Residential Unit



Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018

Table 3. Annual New Residential Unit Permits 2010-2019

Year	Study Area	Tier 2	Tier 3
2010	0	4	7
2011	3	1	2
2012	1	3	4
2013	1	12	4
2014	2	12	3
2015	3	24	6
2016	9	27	5
2017	9	17	19
2018	4	16	14
2019	5	9	14
Total	37	125	78

Source: Arapahoe County Building Services Division Annual Reports, 2010-2019

Employment

Table 4 identifies the number of residents in the labor force in 2013 and 2018 in the study area and in the county in 2018. Of the population 16 and older in the study area, 69 percent were estimated to be in the labor force, with the same percentage in the civilian labor force, and with all but 1.6 percent of them employed. The labor force percentage was slightly higher countywide (71.4 percent), but the unemployment rate was at 3.1 percent. The percentage of people not in the labor force in the study area (31.2 percent) was slightly higher than for the county (28.6 percent). This is likely a result of the relatively higher percentage of older persons in the study area.

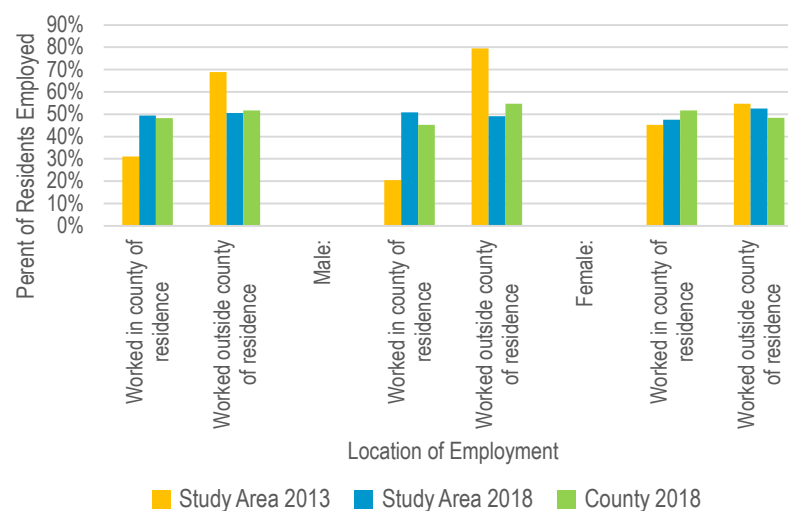
Chart 11 shows that 31 percent of the employed residents of the study area worked in Arapahoe County in 2013, but this increased to nearly 50 percent in 2018. Almost 80 percent of males worked outside the county in 2013, but this decreased to just under 50 percent in 2018. Slightly more females worked outside the county (53 percent) than worked in the county (48 percent) in 2018. Countywide in 2018, just over half (52 percent) of the employed work force worked outside Arapahoe County.

Table 4. Labor Force

	Study Area			County	
Population	2013	2018	2018 %	2018	2018 %
Total (16 and over)	1277	1335	-	500,149	-
In labor force	925	919	68.8%	357,039	71.4%
Civilian labor force	925	919	68.8%	355,395	71.4%
Employed	856	898	67.3%	339,873	68.0%
Unemployed	69	21	1.6%	15,522	3.1%
Armed Forces	0	0	0.0%	1,644	0.3%
Not in labor force	353	416	31.2%	143,110	28.6%

Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018.

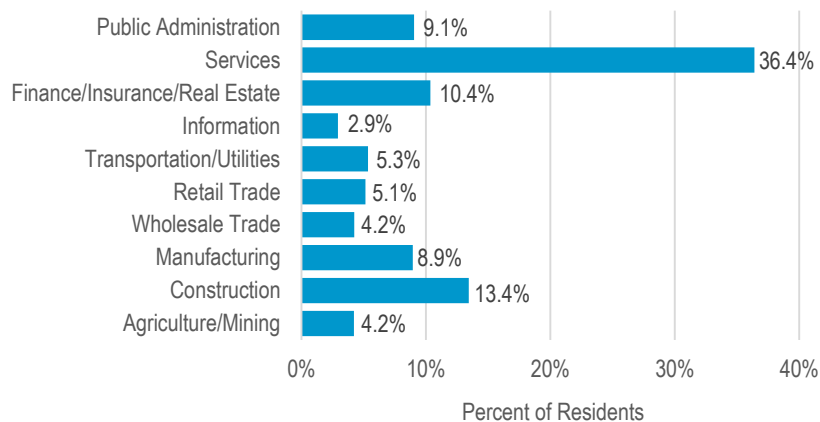
Chart 11. Place of Employment



Source: American Community Survey, U.S. Bureau of the Census, 2013 and 2018

Employment by business sector provides an indication of the types of jobs held by the study area residents. Chart 12 indicates the percentage of residents employed in the various economic sectors in 2019. Over one-third of the residents were employed in the services sector, followed by 13.4 percent in construction and 10.4 percent in finance/insurance and real estate.

Chart 12. Residents Employed by Business Sector



Source: *Community Analyst, 2019*

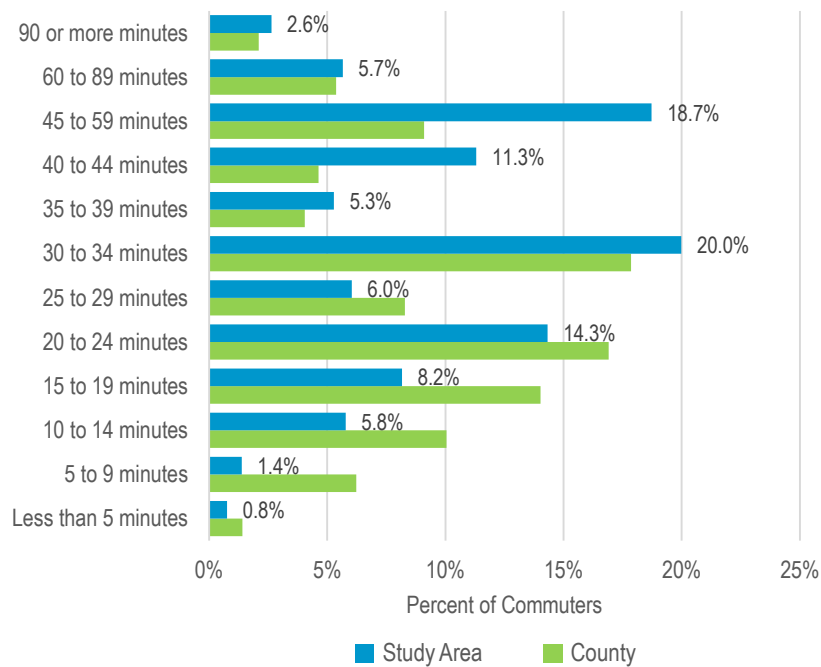
Available data do not indicate the number of residents of the study area that are employed within the study area. However, travel time to work provides some insight into how many residents are likely to be working within the study area. Chart 13 shows the travel time to work in 2018 by the percentage of the total number of residents who were employed.

Assuming that travel times from residences to places of employment in the study area do not exceed 20 minutes, the data in Chart 13 would suggest that about one in six residents (16 percent) of the study area also work in the study area. If the travel time is assumed to be less than 25 minutes, the number of residents who might work in the study area nearly doubles to about one in three (30 percent).

Generally following countywide percentages, most residents (86 percent) of the study area travelled to work in 2018 by car, truck or van and 80 percent of those residents drove alone, while 6.0 percent carpooled. Residents who worked at home accounted for 11.3 percent of the employed labor force, which was higher than the countywide percentage of 7.0 percent.

A summary of the number of businesses and associated employees within the study area in 2019 is shown in Table 5. As might be expected, services, agriculture and mining, and construction were the three sectors with the largest number of businesses. Combined, these three sectors accounted for nearly three-fourths (73 percent) of the businesses located in the study area. Together these sectors employed 454 out of the 663 estimated employees, or 68 percent. One wholesale trade establishment had 123 employees, nearly 20 percent of the total.

Chart 13. Travel Time to Work



Source: American Community Survey, U.S. Census Bureau, 2018

Table 5. Businesses and Employees in Study Area

Sector (SIC Code)	Businesses		Employees	
	Number	Percent	Number	Percent
Agriculture and Mining	12	21.8%	264	39.8%
Construction	11	20.0%	115	17.3%
Manufacturing	2	3.6%	40	6.0%
Transportation	1	1.8%	2	0.3%
Communication	0	0.0%	0	0.0%
Utility	2	3.6%	10	1.5%
Wholesale Trade	1	1.8%	123	18.6%
Retail Trade	3	5.5%	24	3.6%
Home Improvement	1	1.8%	13	2.0%
Food & Beverage Stores	1	1.8%	8	1.2%
Motor Vehicle and Parts Dealers	1	1.8%	3	0.5%
Finance, Insurance & Real Estate	1	1.8%	2	1.3%
Insurance Carriers & Agents	1	1.8%	2	1.3%
Services	17	30.9%	75	11.3%
Motion Pictures & Amusements	5	9.1%	14	2.1%
Health Services	1	1.8%	3	0.5%
Other Services	10	18.2%	58	8.7%
Government	0	0.0%	0	0.0%
Unclassified Establishments	5	9.1%	8	1.2%
Totals	55		663	

Source: Community Analyst, 2019

5. LAND OWNERSHIP

The ownership of land is one of many factors to consider in future land use planning. Where large parcels are available under one ownership, developers are more likely to purchase and assemble land for possible development. The presence of numerous small parcels under different ownerships makes land assemblage a time-consuming undertaking.

Map 8 shows the ownership of major parcels in the study area. Most of the major parcels lie within the Urban Reserve. For this analysis, major ownerships were defined as those 150 acres or more in size.

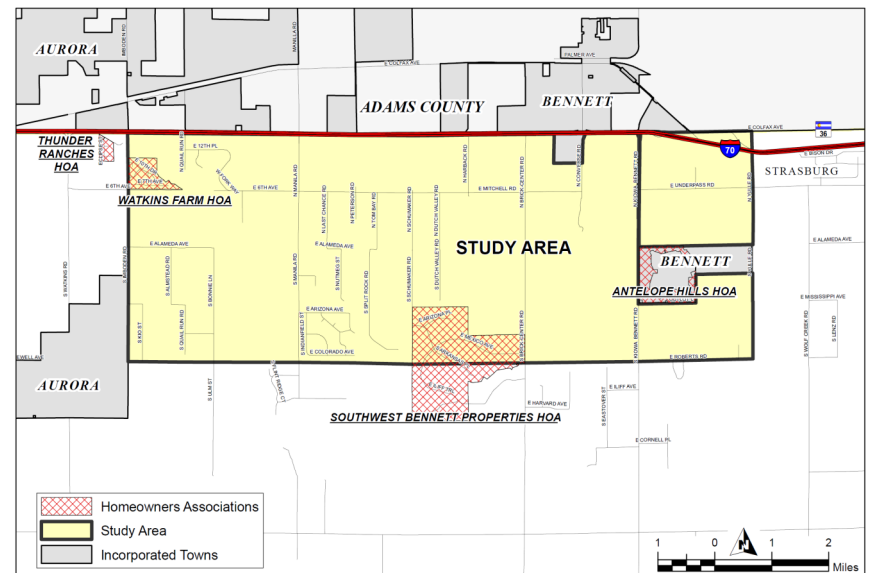
These major ownerships total 7,904 acres, or approximately 12.4 square miles. Not surprisingly, several major parcels along I-70 are owned by land management companies, limited liability companies or partnerships, and family trusts. These ownerships most likely have been established for the purpose of undertaking future development or holding the land for sale for future development. Most of these ownerships are at existing or proposed interchanges on I-70. The Prosper development company owns an additional 633 acres east of the Prosper community, most of which lies southwest of a proposed interchange two miles east of the existing Manila Road interchange.

Unlike other areas in Arapahoe County, there are no State Land Board owned parcels in the study area. The County owns the 265-acre North Kiowa Creek Open Space located between Converse and Kiowa-Bennett Roads and straddling Kiowa Creek.

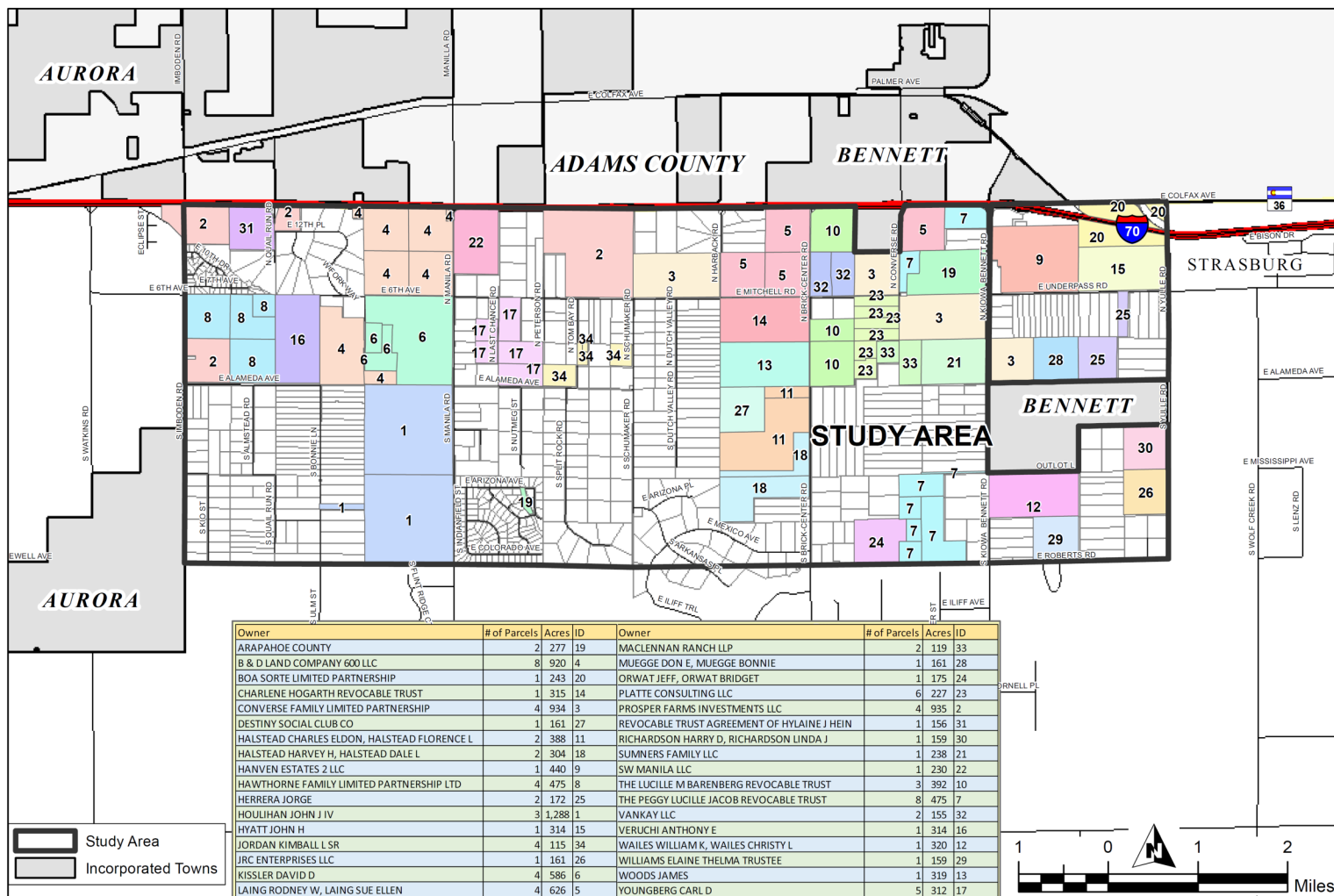
Homeowners Associations (HOA)

There are four homeowner associations within and adjacent to the study area. These are shown in Map 7 and are:

- Watkins Farm HOA;
- Thunder Ranches HOA;
- South Bennett Properties HOA; and
- Antelope Hills HOA.



Map 7. Homeowners Associations



Map 8. Major Landowners

6. INFRASTRUCTURE

Road Network

The road network in the study area consists of I-70, a small portion of US 36, Watkins Road, Brick Center Road, Kiowa-Bennett Road, a discontinuous 6th Avenue (in places named Mitchell Road and Underpass Road), discontinuous segments of Alameda Avenue, paved and gravel County roads and numerous private roads within rural residential subdivisions. The existing road network is shown on Map 9 and recent traffic volumes on roads in and adjacent to the study area are shown on Map 11.

Interstate 70

Interstate 70 is the backbone of the roadway network and provides the most convenient east-west route adjacent to the study area. Full interchanges are located at Watkins Road (CR 97), Manilla Road (CR 113), and Converse Road in Bennett (CR 133). The I-70/US 36 (Colfax Avenue) interchange is a partial interchange limiting movements from westbound US 36 to westbound I-70 and eastbound I-70 to eastbound US 36. Approximately 24,000 vehicles passed daily on the interstate in the vicinity of Kiowa Bennett Road.

Quincy Avenue and Watkins Road

Quincy Avenue, an important east-west road serving eastern Arapahoe County, lies three miles south of the study area. Watkins Road is a major north-south connection linking I-70 and Quincy Avenue, and is one mile west of the study area. Traffic volumes varied from 3,750 close to I-70 and decreased to 2,323 closer to Quincy Avenue.

The north-south roads that traverse the study area are Brick Center

Road and Kiowa-Bennett Road. Brick Center Road had relatively low traffic volumes, in the range of 460 vehicles a day in the study area. Kiowa-Bennett Road functions as a major through road and had traffic volumes of 1,824 south of the I-70 intersections. Manilla Road extends three miles south of I-70, then changes to a private road to past the southern boundary of the study area. The traffic volumes reflected this change in location, with a higher traffic volume of 1,800 vehicles per day south of I-70, decreasing to 800 vehicles per day south of Alameda Avenue.

Local Roads

The rural residential neighborhoods in the study area typically have internal roads providing access to individual lots, and these internal roads connect to County roads. In nearly every instance, these internal roads do not connect to the internal roads in adjacent neighborhoods, resulting in a somewhat unconnected local road system. Some of these internal roads are private (not County maintained) and were established without County oversight because the land divisions were exempt from the County's subdivision regulations.

This disjointed road network may be a hindrance to accommodating urban development throughout the study area. Especially lacking are opportunities to establish east-west connections. Within the study area, there are no continuous east-west routes other than I-70. E. 6th Avenue (CR 6, Mitchell Road, and Underpass Road) has the potential to provide an east-west connection if current missing segments are constructed and gravel segments are paved. However, establishing additional east-west routes is hindered by the existing pattern of rural residential uses.

2035 Transportation Plan

The County's *2035 Transportation Plan* identifies the following planned east-west roadways in and adjacent to the study area (Map 10):

- E. 6th Avenue is proposed as a two-lane arterial extending east from Powhatan Road to Kiowa-Bennett Road. An important link in this east-west arterial is being provided in the Prosper and Sky Ranch developments. Traffic studies for these developments indicate E. 6th Avenue will be a four-lane arterial (with turn lanes) west of Imboden Road. Four lanes will be needed east of Imboden if urban development occurs in this portion of the study area.
- E. Jewell Avenue is proposed as a four-lane arterial east of Monaghan Road to Watkins Road. It is currently a gravel road from Aurora east to Watkins Road.
- E. Quincy Avenue, located three miles to the south of the study area, is proposed as a six-lane arterial from E-470 east to Watkins Road, and a two-lane arterial east of Watkins Road. E. Quincy is currently two lanes east of Gun Club Road and is a gravel road east of Kiowa-Bennett Road.
- At the east end of the study area, E. Roberts Road is proposed as a collector between S. Kiowa-Bennett Road and S. Vanderhoof Court.
- Just to the west of the study area, E. Yale Avenue is a proposed collector between Watkins Road and Monaghan Road.
- Additional east-west routes are not proposed due to anticipated low levels of projected traffic, disjointed road segments, dispersed existing rural, large lot development.

The I-70, E. 6th Avenue, and Quincy Avenue east-west connections are supplemented by the following proposed north-south road network:

- Watkins Road (CR 97), six lanes from I-70 to Quincy. It is currently a two-lane, paved road.
- Manila Road (CR 113), four lanes from I-70 to County Line Road. Manila is currently a paved, two-lane road for three miles south of I-70. South of that point to County Line Road, right-of-way will need to be acquired to construct a four-lane arterial.
- Brick-Center Road (CR 129), two lanes from 6th Avenue to County Line Road. Currently, it is a paved two-lane road for about 3.5 miles south of I-70 and gravel south to County Line Road.
- SH 79, Kiowa-Bennett Road (CR 137), two lanes from I-70 to County Line Road. Kiowa-Bennett is currently a two-lane paved road, but shoulder improvements are proposed along its entire length. The County Transportation Plan recommends a connection from Kiowa-Bennett Road to Converse Road to connect to the full interchange on I-70 at that location. A half interchange would replace the existing partial I-70/Kiowa-Bennett interchange. A Planning and Environmental Linkage (PEL) Study completed in 2013 analyzed alternative alignments for SH 79 and Kiowa-Bennett Road to address truck traffic and safety concerns in the Town of Bennett and recommended construction of a full interchange where Kiowa-Bennett Road now crosses under I-70.
- Wolf Creek Road (CR 149,) located just outside of the study area) is proposed as a two-lane arterial from E. 6th Avenue to County Line Road. It currently is a two-lane paved road from E. 6th Avenue to Quincy.

The *2035 Transportation Plan* (adopted in 2010) is currently being updated in 2020 and 2021. The update will need to reflect the approved land uses for the Sky Ranch and Prosper developments which were not finalized or approved at the time the current plan was prepared. The land use recommendations of the Lowry Subarea Plan also need to be considered.

The improvements recommended in the *2035 Transportation Plan* are based on the household and employment forecasts used to establish travel demand. The forecasts used in the *Transportation Plan* are different than the forecasts used for the study area. The higher forecasts used in the *Transportation Plan* result in travel demand and roadway improvements that should adequately accommodate the growth projected in the study area, with the exception of E. 6th Avenue west of Imboden Road. Within the approved Sky Ranch and Prosper developments, E. 6th Avenue is planned to be a four-lane arterial with turn lanes. If urban development (minimum of four dwelling units per acre) is to be accommodated in the Urban Reserve, E. 6th Avenue will need to be a minimum of four lanes (plus turn lanes) from Imboden Road east to Kiowa-Bennett Road. In the remainder of the study area outside the Urban Reserve, a grid system of arterial or collector roads spaced every mile is not needed to accommodate existing and future rural residential development and the lower levels of traffic it generates.

In the southern half of the study area, the existing road network lacks the spacing, continuity and capacity to effectively meet the mobility needs of future urban development. A network with several north-south and east-west connections provides alternative routes to and

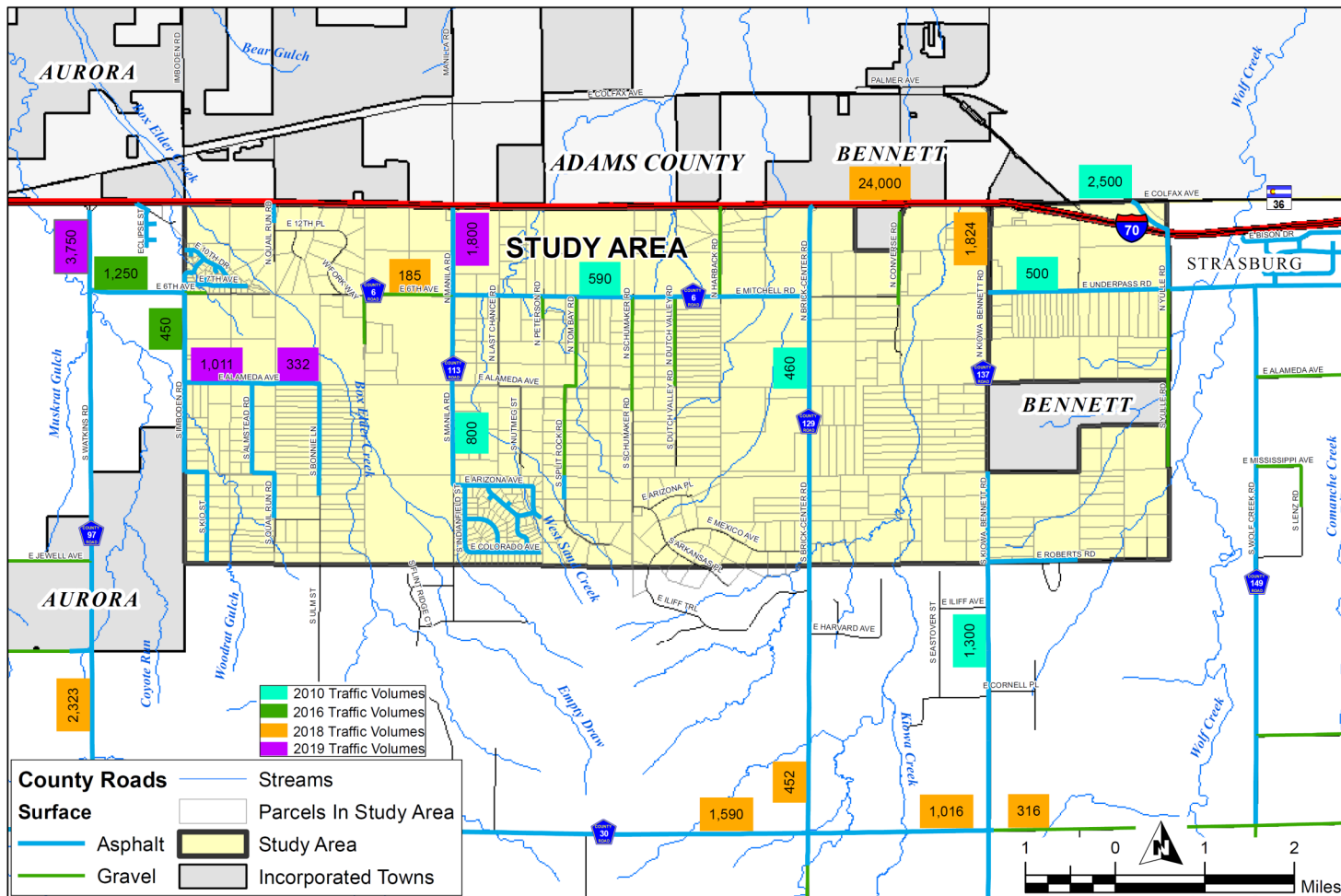
from traffic generators and disperses traffic, thereby lessening congestion and travel delays. The ability to provide this level of road infrastructure is more easily accomplished in the Urban Reserve subarea of the study area. Relying on one or two roads to meet projected urban levels of travel demand will result in congestion, resulting in demand for road widening. The proposed network in the *2035 Transportation Plan* should accommodate future development within the Urban Reserve subarea with the changes noted in this section.

The recommended improvements will require substantial investment by the County with assistance from the private sector as development occurs, including the acquisition of right-of-way. The rural road impact fee enacted in 2017 will be used in the study area to help fund the construction of the following improvements:

- Construction of the new two-lane segment of E. 6th Avenue between Imboden Road and Manila Road; and
- New pavement and two lanes for E. 6th Avenue between Manilla Road and Kiowa-Bennett Road.

The widening of Watkins Road from two to six lanes south of Mississippi will also be aided by the impact fee.

The impact fee will only cover a portion of the total construction costs and additional sources of funding will need to be secured to fund the recommended improvements.



Map 11. Traffic Volumes

Bicycle/Pedestrian Facilities

There is a demand in the study area for multi-modal alternatives to auto travel for commuting and recreation. Currently, there is disconnected bicycle/pedestrian infrastructure with future plans to connect into a multi-county system. The County's *Bicycle and Pedestrian Master Plan* (adopted in 2017) identified potential rural multi-modal corridors, and recommended enhancements needed at key points within the network and a phased plan for implementing the improvements and recommendations. The *Bicycle and Pedestrian Master Plan* provides a basis for future decision-making and coordination with transportation and residential/commercial development projects, as well as park and open space land acquisition, development planning, and prioritization.

The Plan identifies part of the existing bicycle network within the study area on Manilla and Kiowa-Bennett Roads. Conceptual bicycle connections and corridors are identified in the Plan, as shown in Map 12, but the exact location of the bicycle infrastructure and whether this would be bike lanes, shoulder bikeways, sidepaths, or trails is to be determined through a separate planning and design process.



Legend



Future Trail Corridors will require further project-level evaluation to identify alignment, which could be along a drainageway, roadway, or a combination. The alignment of these future corridors will be established in close coordination with property owners in the area.

Map 12. Proposed On-Street Bike and Trail Network

Water and Sanitation

There are no water and sanitation providers currently operating within the study area. Adjacent to the study area, the Town of Bennett, the Sky Ranch Metropolitan Districts, and the Prosper Metropolitan Districts provide water and sanitary sewer infrastructure. Residential and agricultural uses are served by individual wells and onsite waste treatment systems.

Town of Bennett

Water

The Town owns and operates two water systems. The North Water System (NWS) serves the Town north of I-70, and the South Water System (SWS) serves the Antelope Hills development south of I-70. The NWS infrastructure includes seven groundwater wells, three booster pumping stations, four storage tanks, and a distribution system. The SWS consists of four groundwater wells, a common booster pump station, a single storage tank, and a distribution system.

The Town's water supply comes from four Denver Basin aquifers underlying the Town: the Denver aquifer, the Upper Arapahoe aquifer, the Lower Arapahoe aquifer, and the Laramie-Fox Hills aquifer. Each of these sources is withdrawn through the Town's well system. Considering all aquifers, the Town has a total of 2,989.27 acre-feet of water rights. The Town operates a total of eleven active wells, seven in the NWS and four in the SWS. The current installed well pumping capacity in the NWS is 681 gallons per minute (gpm), with a firm pumping capacity of 496 gpm. Construction of a new well is included in the Town's 2020 budget. In the SWS, one well is out of service, and

the installed capacity of the three remaining SWS wells is 280 gpm, with a firm capacity of 180 gpm.

Due to the high quality of the Town's existing groundwater wells, the only required treatment is chlorination (to prevent the growth of pathogens in the system). In the future, as new wells or alternative water supply sources are brought on-line, the water quality of these wells/sources will be tested and additional treatment may be required to meet State of Colorado Primary Drinking Water Regulations.

The NWS has four storage tanks that provide a total storage volume of 1.195 million gallons. The SWS has a single storage tank with a volume of 355,000 gallons.

The Town appears to have sufficient water to serve areas included in the Area of Planning Interest in its Comprehensive Plan, but does not appear to have excess water to serve areas outside of that area at this time.

Wastewater

The Town has two wastewater systems. The North Wastewater System (NWWS) serves the Town north of I-70, and the South Wastewater System (SWWS) serves the Antelope Hills development south of I-70. The NWWS is a centralized wastewater collection system and an advanced water resource recovery facility (WRRF). The South Wastewater System (SWWS) is comprised of privately-owned on-site wastewater treatment systems (OWTS) more commonly known as septic systems.

In early 2019, the Town finished construction and commissioned a new water resource recovery facility (WRRF) located on the north end of Town. The WRRF is permitted by the Colorado Department of Public Health and Environment (CDPHE) for a hydraulic design capacity 0.4 million gallons per day (MGD) and an organic loading capacity of 1,130 pounds per day of biochemical oxygen demand (BOD5). The facility discharges to an unnamed tributary of Sand Creek. The new WRRF replaced the Town's aerated lagoon facility with an advanced treatment process designed to remove solids, organic pollutants, pathogens, and total nitrogen to very low levels. An expansion of the WRRF to 1.2 MGD is planned in 2020 according to the Town's Capital Asset and Improvement Master Plan (CAIMP), but this expansion is not in the Town's 2020 budget. The expansion to 1.2 MGD would not serve all of the growth projected in the Comprehensive Plan.

Due to the high quality of effluent produced by the new WRRF, treated effluent can be permitted by CDPHE to be used by the Town for irrigation and for construction needs. In recognition that reclaimed water use will preserve the Town's potable water supplies, the Town is currently implementing a reuse project to convert the old wastewater treatment ponds to become reclaimed water storage reservoirs, along with an on-site pumping and water delivery station.

Prosper Metropolitan Districts

The Prosper Metropolitan Districts were formed to provide services to the 5,111-acre Prosper development to the west of the study area. The District plans to construct a central water system for the development, supplied by groundwater (limited to 1,305 acre-feet per year) and renewable sources consisting of surface water, reclaimed wastewater

and lawn irrigation return flow. Non-groundwater sources are planned to meet 85 percent of the estimated annual demand of 5,220 acre-feet. Groundwater will be obtained from the Upper and Lower Arapahoe aquifer and the Laramie-Fox Hills aquifer.

The Prosper Metropolitan District also will provide wastewater treatment for the development. A central wastewater collection and treatment system is proposed. The treatment plant at buildout will service 11,850 single family equivalents (SFEs) with a capacity of 2.98 million gallons per day (MGD). Phase I of the plant is anticipated to serve the development up to 2025, with a capacity of .265 MGD serving 988 SFEs (single family equivalent), or a population of 3,162.

Sky Ranch Metropolitan Districts

The Sky Ranch Metropolitan Districts were established to provide infrastructure improvements at Sky Ranch and the Hills at Sky Ranch, including water and sanitation facilities. Water and wastewater service is being supplied through an Intergovernmental Agreement (IGA) with the Rangeview Metropolitan District, which generally encompasses the Lowry Range property. At buildout, the District anticipates meeting Sky Ranch water demands using 30 percent groundwater, 33 percent surface water and 37 percent reclaimed water. Rangeview has sufficient water resources to supply Sky Ranch at buildout, with an estimated surplus of 60,000 SFEs, or 24,000 acre-feet per year (AFY).

Water demand is projected to be 2,445 AFY at buildout, or 5.68 mgd. Sources of water are wells located on the Sky Ranch property and the Lowry property which pump groundwater from Denver Basin aquifers, primarily the Arapahoe aquifer. The District has a total of 25,586 AFY of

groundwater decreed, with 10,165 AFY not-nontributary which requires augmentation. Six additional wells are anticipated to meet demand at buildout. The District has also participated in the regional WISE project, which provides a renewable surface water supply at an average of 500 AFY. Because this supply can be intermittent, the District anticipates constructing two water storage reservoirs on the Lowry property to store this water which comes from Denver and Aurora sources. The WISE water also may be used to recharge the groundwater wells. The District also holds 2,695 AFY of surface water rights to Box Elder Creek and Coal Creek and when sufficient water is present, will be able to divert this water to the Lowry reservoirs. A water treatment plant for the system eventually will be built on the Lowry property down gradient from one of the reservoirs.

The Sky Ranch wastewater reclamation facility will provide for the reuse of all treated effluent, with no discharge to surface water. The initial phase of the facility will have a 400,000 gpd capacity which is one-quarter of the 1.6 MGD capacity required at buildout. Expansion will be undertaken as development warrants. The wastewater will be conveyed to the reclaimed water system to meet non-potable demands and any additional reclaimed water will be stored in the reservoir used to capture and store local surface water and also in reclaimed water ponds located within the development.

On-Site Wastewater Treatment Systems

Existing residences within the study area use individual wells and on-site waste treatment systems (OWTS) to supply water and sanitary sewage disposal. Tri-County Health Department does not have a regulatory minimum lot size requirement for the use of on-site waste

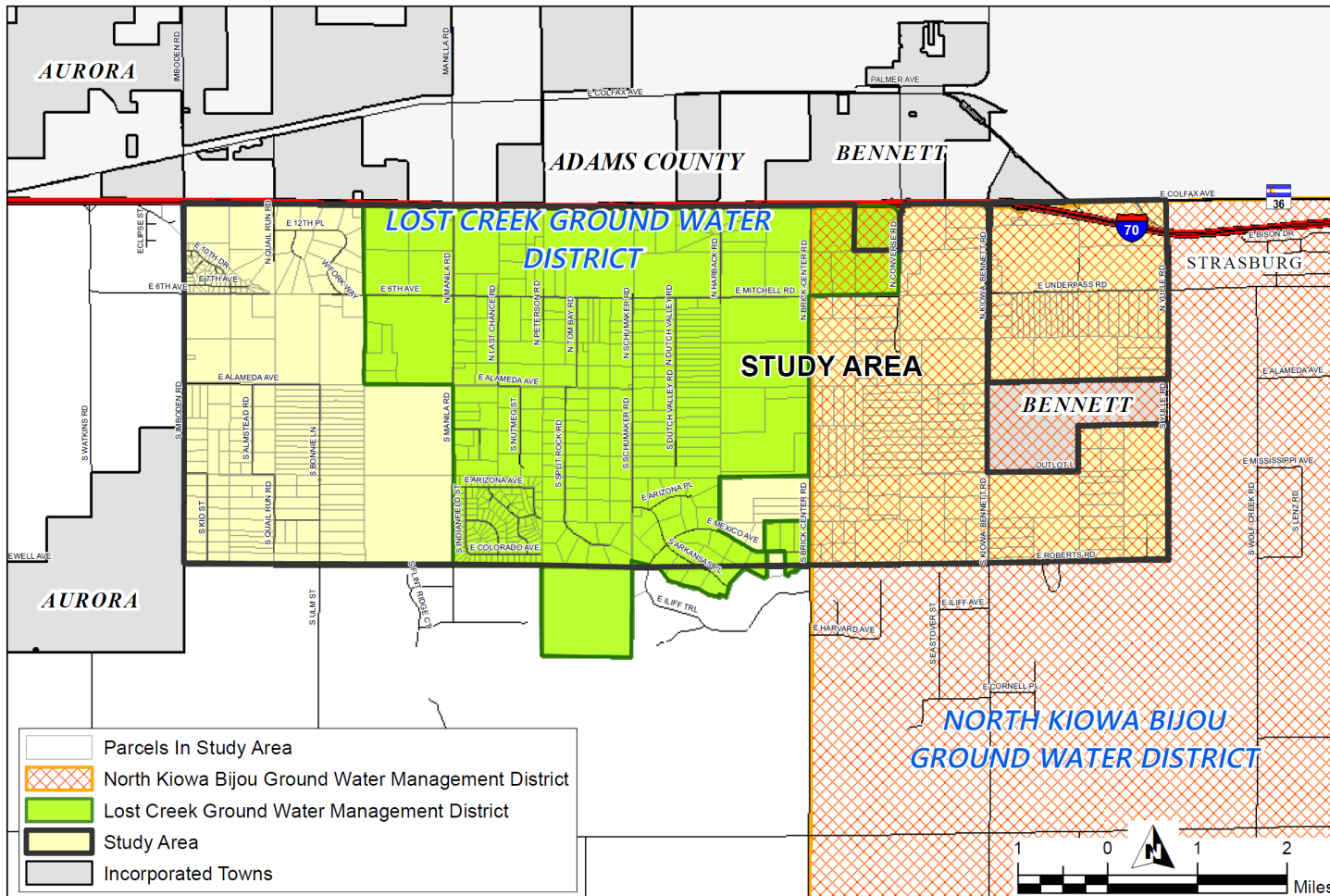
treatment systems (OWTS). The County has not adopted minimum lot size requirements for the use of OWTS. Tri-County generally recommends that lots using an OWTS have a minimum of one acre for lots supplied by central water and 2.5 acres for lots with wells.

Lost Creek Ground Water Management District

The Lost Creek Groundwater Management District was created to manage groundwater resources within the District. The Colorado Ground Water Commission, with assistance from the Division of Water Resources (DWR), is responsible for adjudicating groundwater rights and issuing well permits in Designated Groundwater Basins in eastern Colorado. Designated Basins are areas on the eastern plains with very little surface water. One of those designated basins is Lost Creek. The Lost Creek Ground Water Management District is a local district with authority to administer the well permits issued by the Commission. The District largely lies north of Arapahoe County but extends into the study area

The District is not a water provider, but works to preserve the quality and quantity of groundwater within its boundaries. In Arapahoe County, 18.3 square miles of the District extend between roughly Manilla Road and Brick-Center Road and north into Adams County. The portion of the District in Arapahoe County is shown on Map 13 along with the boundary of the study area.

In 2013, the District enacted rules that restrict the number and capacity of wells and the aquifers from which water can be withdrawn. No small capacity wells (for serving residential uses) are permitted to withdraw water from the Lost Creek alluvial aquifer or the Denver aquifer.



Map 13. Lost Creek and North Kiowa-Bijou Ground Water Management Districts

New wells are restricted to withdrawing from the Arapahoe and Laramie-Fox Hills aquifers, under the following conditions:

- The rate of withdrawal shall not exceed 15 gallons per minute.
- For wells located in an a subdivision approved prior to the effective date of the rule, but not yet permitted, withdrawal shall be limited to the Subdivision Water letter issued by the State Engineer for which a finding of no injury has been made. In no event what withdrawal exceed 15 gallons per minute or one acre foot per year.
- For wells proposed for use in one or more single family residences, for which no Subdivision Water Supply letter has been issued by the State Engineer, withdrawals are limited to the lesser of:
 - a. The amount available had the applicant sought and received a determination of water rights according to state statute, assuming a 300-year aquifer life, or
 - b. 0.4 acre feet per residence.No more than one well permit may be issued per parcel. A single well may serve up to two residences.
- Wells proposed for stock watering purposes are limited to withdrawals not exceeding 15 gallons per minute or one acre-foot per year. No more than one well permit shall be issued for each 160 acres owned by the applicant.
- Wells for commercial use shall not exceed a withdrawal rate of 15 gallons per minute and one acre-foot per year.
- All wells must be fitted with an approved flow meter. Well owners are to report the annually amount of water withdrawn. An annual fee will be charged to offset the cost of inspection, meter reading and enforcement.

All other wells are subject to rules adopted in 2008 in which well permits should not be issued if the new well would excessively lower the water table, shorten the economic life of the aquifer, or result in withdrawing the groundwater supply at a rate in excess of anticipated future recharge. Wells in the bedrock aquifers are not allowed to produce greater than 50 gallons per minute closer than 3,000 feet from any other well in the same aquifer without a variance from the District.

The small capacity well pumping rate restriction is well within typical water usage rates for single family homes, especially if outdoor watering does not occur. However, the restriction of wells being only in the lower aquifers means that wells will be more expensive to drill and operate for homeowners. The same will be true for small commercial establishments.

North Kiowa-Bijou Groundwater Management District

The North Kiowa-Bijou Ground Water Management District covers the eastern part of the study area and like the Lost Creek District, imposes some additional restrictions on well users. These restrictions and requirements affect wells in alluvial aquifers and also replacement wells. The District is partially located in Arapahoe County and extends between Brick-Center Road and County Road 249 (about 3 miles east of Deer Trail) and from the Adams County line to the Elbert County line.

7. PUBLIC FACILITIES AND SERVICES

Fire Protection and EMS

Fire protection and emergency medical service in the study area is provided primarily by Bennett-Watkins Fire Rescue with the far eastern area served by the Strasburg Fire District.

Bennett-Watkins Fire Rescue

Bennett-Watkins Fire Rescue currently provides All-Hazard response to a service area covering approximately 325 square miles in Arapahoe and Adams Counties. The Fire Rescue district operates out of two fully staffed stations, an administrative building, and a fleet maintenance facility with a total of approximately 70 personnel comprised of reserve members and career staff. Station 91 is located in the Town of Bennett; Station 92 is located at U.S. 36 (Colfax Avenue) just east of Imboden Road. Station 94, a reserve station, is located at Arapahoe County's Eastern Service Center at E. Quincy Avenue and Brick-Center Road and is not typically staffed.

The District operates one aerial apparatus, two engines, two tenders, two medic units, three brush trucks and one hazmat unit, in addition to command vehicles. The District has a 2020 budget of \$5.7 million with projected expenses of \$4.4 million. The mill levy of 13.062 mills is projected to generate property tax revenue in 2020 of \$3.7 million, accounting for 90 percent of the District's revenue. Voters of the District passed a mill levy increase in 2018.

The public water supply system in Bennett is adequate for firefighting purposes. Recent changes and improvements in the Town of Bennett's water supply system have greatly improved the available water supply.

Cisterns for rural firefighting water supplies are located at the Watkins Farm subdivision, Raleigh House of Hope, Watkins Square Center and St. Isadore Catholic Church. Orica and Apogee at Quincy Avenue allow the district to access their private fire hydrant water systems as needed. Outside of Bennett and these other sources, the district has to shuttle water to a fire location using the tender apparatus. Antelope Hills (the part of Bennett in Arapahoe County) has water and fire hydrants as part of the Bennett water system.

The two stations located closest to the study area are staffed with career personnel at all times. In 2008, the district signed a mutual aid agreement with Sable Altura Fire Protection District, Strasburg Fire Protection District, Byers Fire Protection District, Deer Trail Fire Protection District and Buckley Air Force Base (called the I-70 auto aid agreement). They are also part of the metro Denver mutual aid agreement.

Bennett-Watkins Fire Rescue works closely with the County to enforce the provisions of the district's adopted fire code for the unincorporated part of the county within their jurisdiction. In instances of conflict between Arapahoe County standards and the district's adopted fire code, the County's standards take precedence. The district is concerned about the poor maintenance of public and private unpaved roads because of the impact on its vehicles and access limitations.

The Insurance Services Office (ISO) provides a rating for the fire protection provided in a community. Information is collected about district fire protection efforts and ISO assigns a Public Protection Classification (PPC®) number from 1 to 10. Class 1 generally represents superior property fire protection and Class 10 indicates that the area's

Map 14 shows the ISO ratings in the area served by Bennett-Watkins Fire Rescue.



Strasburg Fire District

The Strasburg Fire District serves the extreme eastern portion of the study area and maintains two stations, one in Strasburg and one in central Adams County. The District operates with one engine, one quint, one rescue unit, three ambulances, one brush engine, two brush trucks one water tender and one command vehicle. The District also has a helipad, located at Section 5, T4S, R62W in Arapahoe County.

Water supply is best in the Adams County portion of Strasburg. There are two water districts that serve this area of Strasburg – Strasburg Water and Sanitation and the East Adams County Metropolitan District.

For the Strasburg Water and Sanitation District, the water pressure is best, exceeding 500 gpm, near the water tower located north of I-70. The water district is attempting to make improvements as funding allows, but old infrastructure means pressures are often low away from the tower. For the East Adams County Metropolitan District there is substantially more water available, with some hydrants flowing in excess of 1,200 gpm. Between the water tower and the two water district's normal water supply, the fire district believes they have the capacity to fight a typical fire.

The District does not have any fire hydrants or water storage facilities in Arapahoe County. The District would need to haul water and use portable ponds to fight a fire south of Strasburg. Ideally, the District would like to see hydrants at 500-foot intervals consistent with National Fire Protection Association (NFPA) standards.

The lack of road maintenance in Arapahoe County is a concern because

of the wear and tear on the District's vehicles. The District is a participant in the I-70 Mutual Aid Agreement, and also has mutual aid agreements with SE Weld to the north of I-70 and the Rattlesnake and North Central districts in Elbert County.

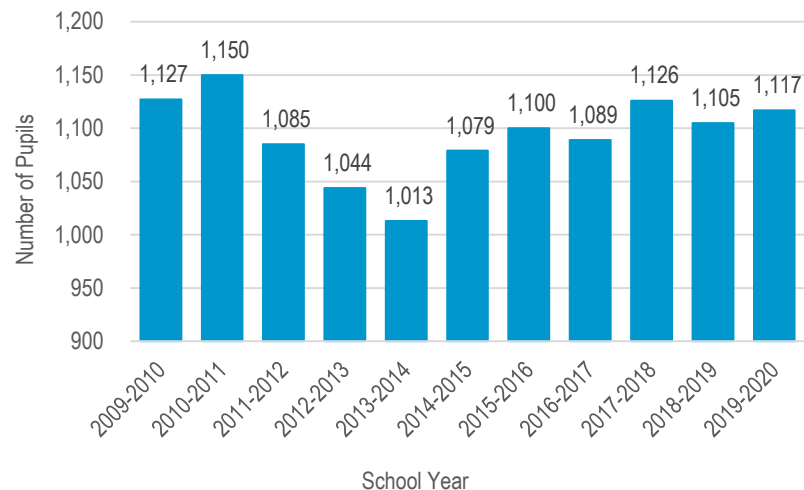
Schools

The primary school district serving the study area is the Bennett School District 29-J which serves areas in both Arapahoe and Adams Counties. Currently the District provides an elementary, middle and high school, all located in the Town of Bennett. Total school enrollment has fluctuated over the past decade, but has risen overall by about 100 students since the 2013-2014 school year, as shown in Chart 14.

The Bennett School District has prepared an update to its Long Range Facilities Master Plan. The Plan analyzes past enrollment trends with projections for future enrollment. Between 2008 and 2018, total enrollment averaged about 1,300 students. Enrollment remains concentrated at the elementary level, but secondary enrollment is increasing in share. According to the master plan, the School District expects this trend to continue until local births or in-migration of young children increase.

Several major residential projects are approved in the District, including a portion of the Sky Ranch development and Prosper development in Arapahoe County. Due to the magnitude of potential development and the student enrollment implications, the Plan concludes that multiple schools will be needed at all levels. The Plan stops short of recommending a specific number of schools with specific capacities and locations, but rather recommends that the District monitor

Chart 14. School Enrollment, Bennett School District



development and prepare to acquire future school sites. An important recommended next step is to update the District's education specifications and determine what education offerings will/should be provided, and establish what level of student enrollment is required to economically support those programs, especially at the high school level. Co-location of different levels of schools should also be analyzed.

School sites have been set aside in Sky Ranch and Prosper in order to mitigate potential impacts to the District from increases in enrollment. Although sites will be dedicated for schools, the dedications do not address construction, staffing, maintenance and operational costs involved in serving additional students.

Parks, Recreation and Open Space

Park and recreation facilities in the study area are provided primarily by Arapahoe County and special districts. To date, the County has purchased the 265-acre Kiowa Creek North Open Space located at the northwest corner of E. Underpass Road and Kiowa-Bennett Road. This parcel includes some of the Kiowa Creek floodplain. The Kiowa Creek North Open Space is an undeveloped park that will be developed for public access in the future. This park is at the far eastern end of the study area and was planned to provide passive use recreation for users in this rural part of the county and for Bennett.

The Strasburg Metro Park and Recreation District lies just east of the eastern boundary of the study area. The District operates a community center.

The Sky Ranch Metropolitan Districts are authorized to provide park and recreation services and facilities as are the Prosper Metropolitan Districts, but within the confines of the proposed developments. No facilities yet exist within these districts. These two metro districts were established to develop, maintain and manage parks and recreation facilities and programs for these two developments just outside the study area.

The County does not have the funds or resources to create and maintain parks to meet the scale and demands of these and other potentially large scale residential developments, especially to accommodate active parks and recreation. The County can only use Open Space sales tax revenue for passive recreation, not active recreation such as ballfields or tennis courts.

Future parks and recreation facilities in the study area could be provided in a number of ways: 1) creating additional or approve expansion of existing metropolitan or parks and recreation districts, 2) based on direction in the Comprehensive Plan and Open Space Master Plan, County Commissioners could prioritize funding for maintenance and create passive use open spaces, or 3) to provide active recreation facilities, expand the Arapahoe County Recreation District and increase the mill levy.

Libraries

The study area is located in the Arapahoe Library District which serves the unincorporated eastern portion of the county in addition to unincorporated and incorporated areas of western Arapahoe County. There are no libraries located in the study area. The nearest libraries are located in Byers and in Centennial on Smoky Hill Road.

The Rangeview Library District serves the residents of Adams County and operates a branch library in the Town of Bennett.



Kelter Library in Byers

8. NATURAL FEATURES & RESOURCES

Natural features and resources affect land use patterns by presenting hazards that should be avoided, features that should be preserved, or which contain resources available for extraction. The information which follows is taken from information prepared by the United States Geological Survey, the Colorado Natural Heritage Program, and the Eastern Arapahoe County Greenprint Analysis maps prepared by the Trust for Public Land. The information is reproduced to show the locations of these features in the study area on the maps which follow this section.

Sand and probable aggregate mineral deposits are shown along Box Elder Creek and Kiowa Creek. None of these deposits has been proposed for extraction (Map 15).

The USGS undertook an inventory of probable natural resources in the 1970s and produced a map identifying these resources. The map identified no **oil and natural gas deposits** in the study area. This map was produced prior to fracking practices becoming commonplace, with previously uneconomically recoverable deposits becoming economical due to fracking. Several oil and gas wells have been approved and are in operation within the study area as shown on the oil/gas well map (Map 11).

There is one **solar installation** near E. 6th Avenue (Underpass/Mitchell Road) and Brick/Center Road. It encompasses 80 acres.

Much of the lower-elevation and level land received a high rating for

non-irrigated agricultural use and prime farm land if irrigated. Dry land agriculture is occurring where rural residential development has not occurred and there are scattered areas of irrigated agriculture (Map 16).

Floodplains are identified along Box Elder Creek, Kiowa Creek and Wolf Creek (Map 17). A Master Drainage Plan was prepared for Kiowa Creek in 2016 to more accurately determine the extent of the floodplain. The Wolf Creek Master Drainage Plan is underway in 2020 and will identify the 100-year floodplain and analyze flood-prone areas, drainage problems, stream stabilization and roadway crossing structures. The Master Drainage Plan will be used to provide guidance for future construction as development occurs.

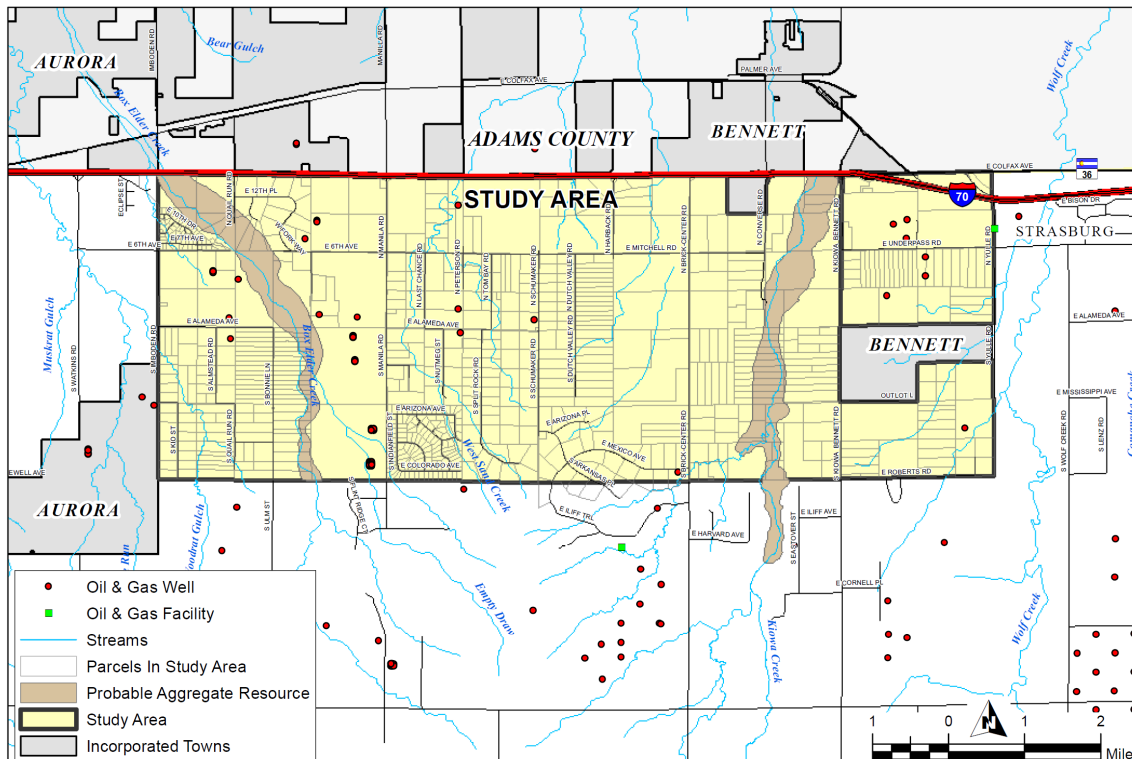
Areas of high to moderate visibility are identified between Watkins Road and Box Elder Creek, between Box Elder Creek and Kiowa Creek west of Brick-Center Road (CR 129), and on the eastern edge of the study area between Kiowa Creek and Wolf Creek (Map 18).

No **historic or archaeological sites** were identified in the study area.

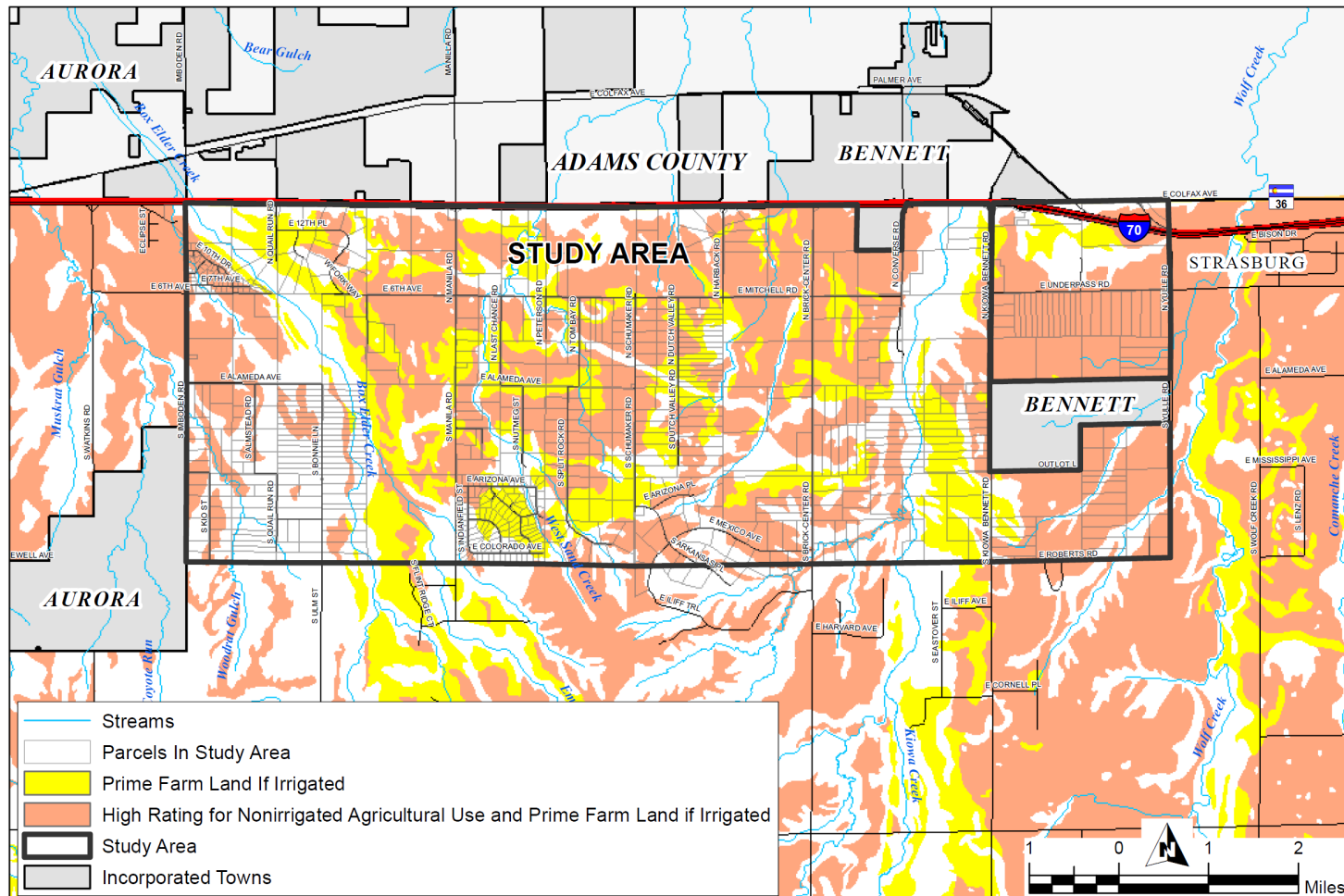
Sensitive development areas are identified by the Colorado Natural Heritage Program and consist of tallgrass, midgrass and shortgrass prairie ecosystems. In the study area these are located in the southeast corner of the study area north of E. Jewell Avenue, along Kiowa Creek, and in a broad area south of E. Alameda Avenue between Schumaker Road and Brick-Center Road (Map 19).

overlapping wildlife habitats are extensive in the study area,

(Map 20).

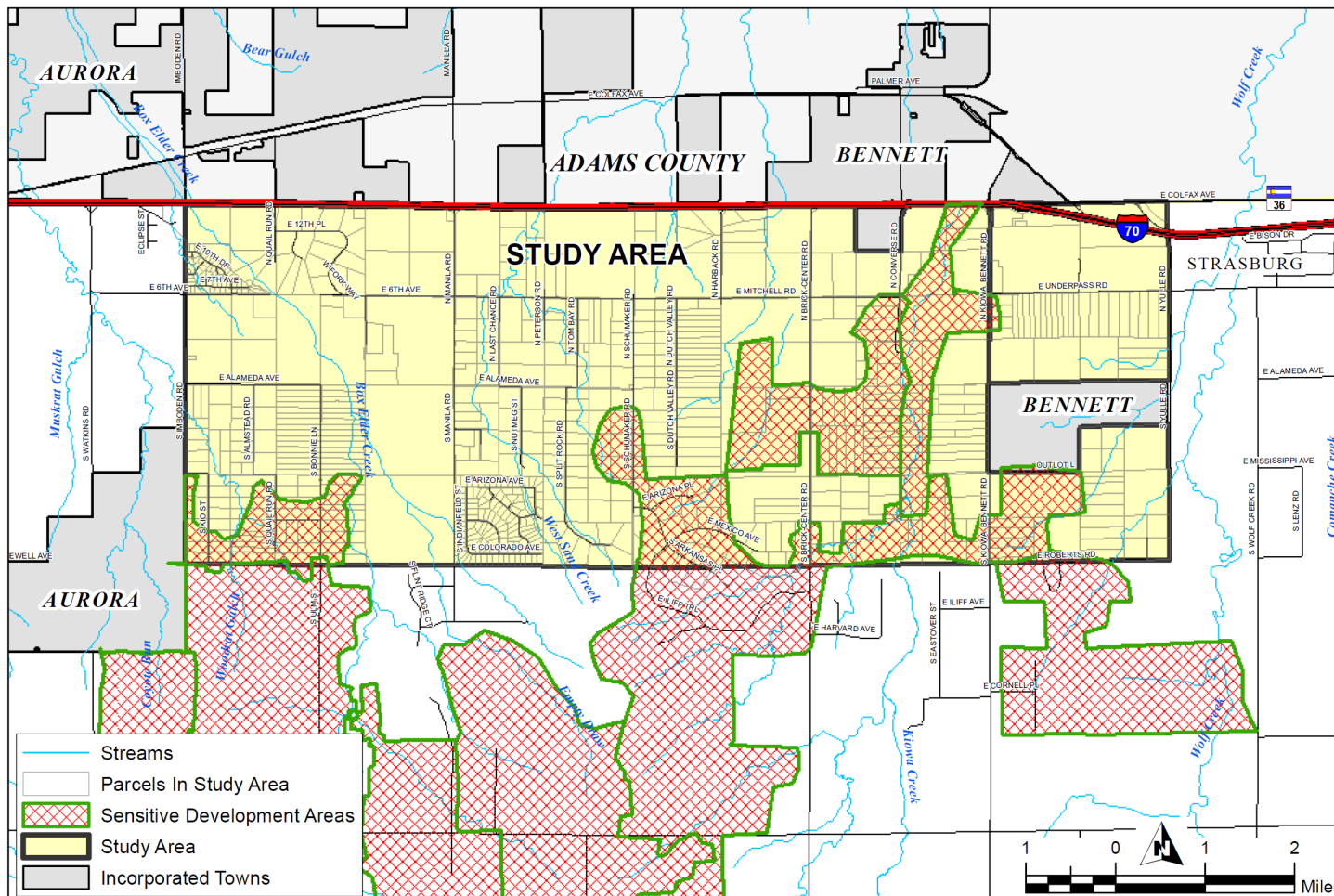


Map 15. Mineral Resources



Map 16. Prime Farmland





9. OTHER JURISDICTION PLANS

Town of Bennett

The 2015 *Town of Bennett Comprehensive Plan* includes a preferred land use scenario map (Map 21). Much of the land suitable for future urban development in the study area lies within Bennett's "Area of Planning Influence" which is described as a potential growth area within the I-70 Corridor that includes the community of Watkins, Colorado Air and Space Port (formerly Front Range Airport), and an undeveloped portion of northeast Aurora north of I-70.

The Area of Planning Interest is further categorized into four planning tiers (not to be confused with the Tiers identified in the *Arapahoe County Comprehensive Plan*) as shown on Map 22 on the following page.

- Tier One: Stable Urban
This includes that portion of the existing incorporated Town of Bennett north of I-70 and the Antelope Springs subdivision in Arapahoe County.
- Tier Two: Developing Urban Areas
These are areas where development is either contiguous to Tier One or where stand-alone neighborhood and employment centers are contemplated. Developing Urban areas are characterized by direct access to I-70 and proposed arterial roadways and transit, and the potential for targeted delivery of infrastructure and urban services.
- Tier Three: Rural/ Rural Preservation
The bulk of the Area of Planning Interest, this tier includes existing rural residential neighborhoods, large lot development, very low density cluster development, and large agricultural land holdings

that desire to remain rural or rural in character. This is the designation for most of the land in the study area south of I-70.

- Tier Four: Environmental
These are the designated one-hundred year floodplains. Environmental areas represent significant value to current and future residents in terms of open space, trail systems, passive recreation, flood control, water quality, and water supply.

Bennett's planning area is estimated to grow by 6,454 housing units and 2,568 new jobs. This projected growth in housing units and employment creates the demand for a total of 1,382 acres (2.1 square miles), or 1,149 acres for housing, 43 acres of office, 71 acres of retail, and 118 acres of industrial land. The total acreage equals 2.2 square miles. The Area of Planning Interest encompasses about 24.5 square miles.

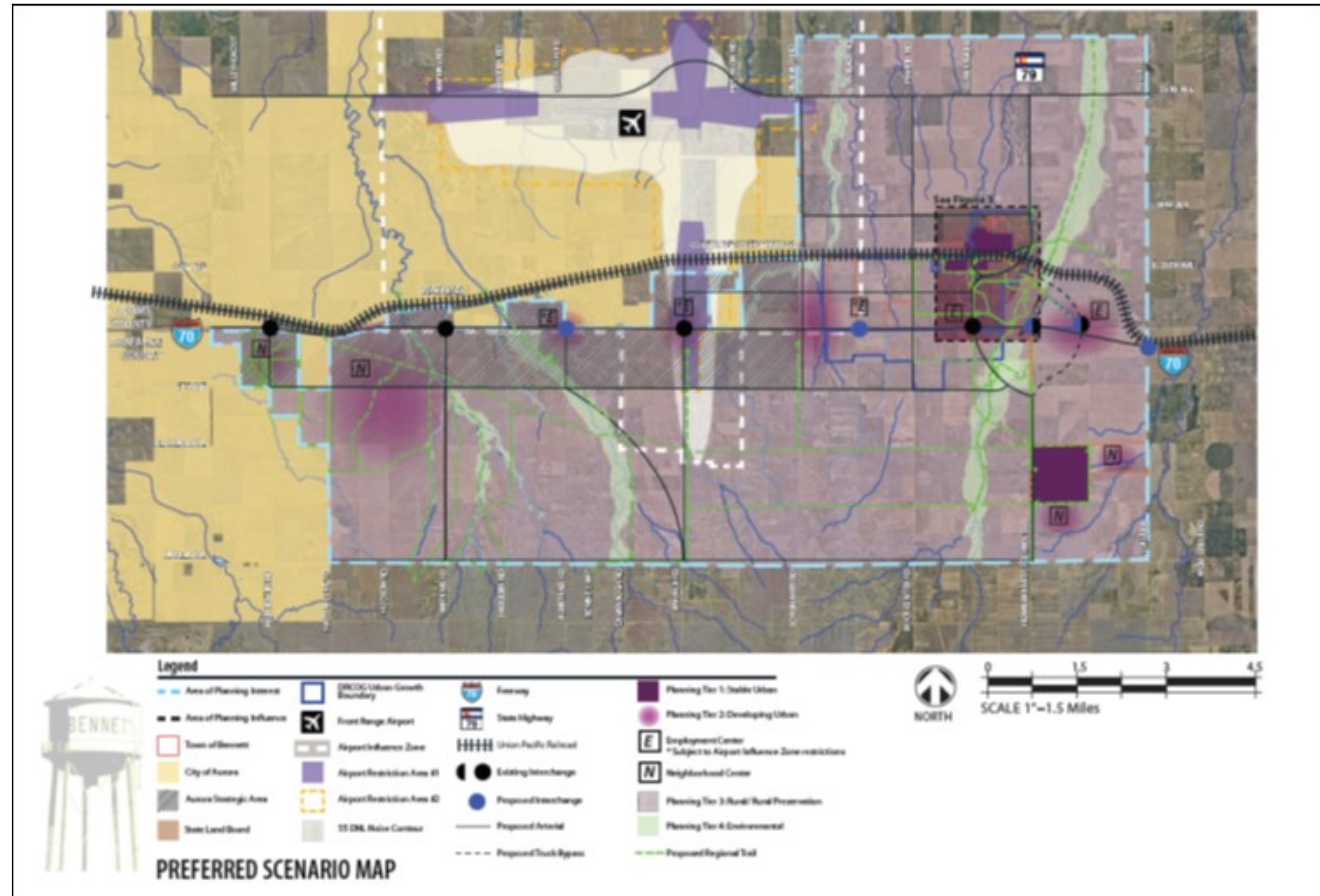
The Bennett *Comprehensive Plan* also identifies five annexation priority areas which are outlined on Map 22. The study area is shown with an orange outline. These priority areas are intended to provide guidance, not an obligation, for future annexation by the Town of Bennett. According to the Town's *Comprehensive Plan*, in general, the Town's top priority is to annex areas contiguous to Town boundaries and within the I-70 corridor. Additional considerations include:

- Colorado annexation statutes limit the extension of a municipal boundary to no more than three miles within any one year. In general, Annexation Priority Areas 1 and 2 correspond to the three-mile annexation boundaries;
- The timing of annexation into Priority Areas 2 and 3 will be

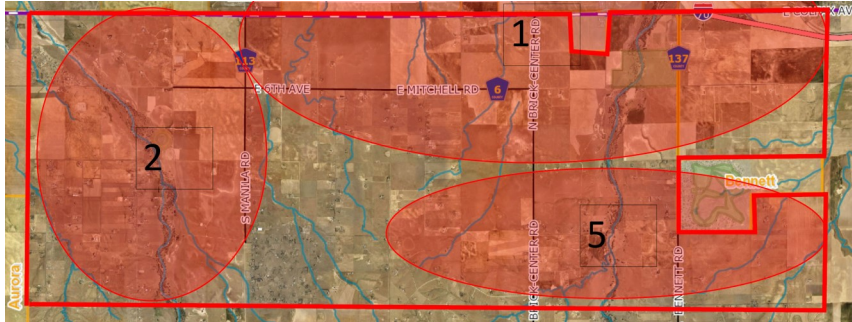
dependent on the introduction of a renewable water supply into Bennett's Area of Planning Interest. Conversely, capacity in the Town's water supply may provide opportunity for annexation of potential industrial development in Area 4 and residential development in Annexation Priority Area 5; and

- The City of Aurora is located immediately adjacent to Bennett's Area of Planning Interest. The area identified as the Aurora Strategic Area was not re-designated in the *2018 Aurora Comprehensive Plan* update. (See below for a description of the City of Aurora's Comprehensive Plan for this area.)

Although the Annexation Priority Map indicates areas along and south of I-70 may be considered for annexation, the Town's Capital Asset Inventory Master Plan



Map 21. Town of Bennett Preferred Scenario Map



Map 22. Town of Bennett Annexation Priority Areas in Study Area

(CAIMP) does not include any infrastructure improvements south of I-70 in Arapahoe County. However, the CAIMP does include the following interchange projects on I-70 in the longer term (2040):

- Design of the I-70/Harback Road interchange.
- Replacement of the bridge at the I-70/Converse Road interchange.
- Construction of a full interchange at I-70/ Kiowa-Bennett Road. (There is only the eastbound I-70 off-ramp to Kiowa-Bennett Road currently.)
- Construction of a full interchange at I-70/Yulle Mile Road.

City of Aurora

In 2016, the City of Aurora undertook the “East Aurora Annexation Study” to determine the feasibility of annexing areas to the east of Aurora in Arapahoe County. The study area was proposed as the revised planning area and annexation area to be used in the City’s Comprehensive Plan update and was called the “East Aurora Annexation Area,” or EAAA. The EAAA was generally bounded by E. Quincy Avenue on the south, Hayesmount Road on the west, E. 6th Avenue on the north, Cavanaugh Road on the east (excluding the cluster of rural residential development bounded by Cavanaugh, E. Jewell, Imboden and E. Alameda) and an additional section of land east of Cavanaugh Road between E. Alameda Avenue and E. 6th Avenue. The Aurora City Council adopted the ordinance revising the planning/annexation area boundary after a failed first vote.

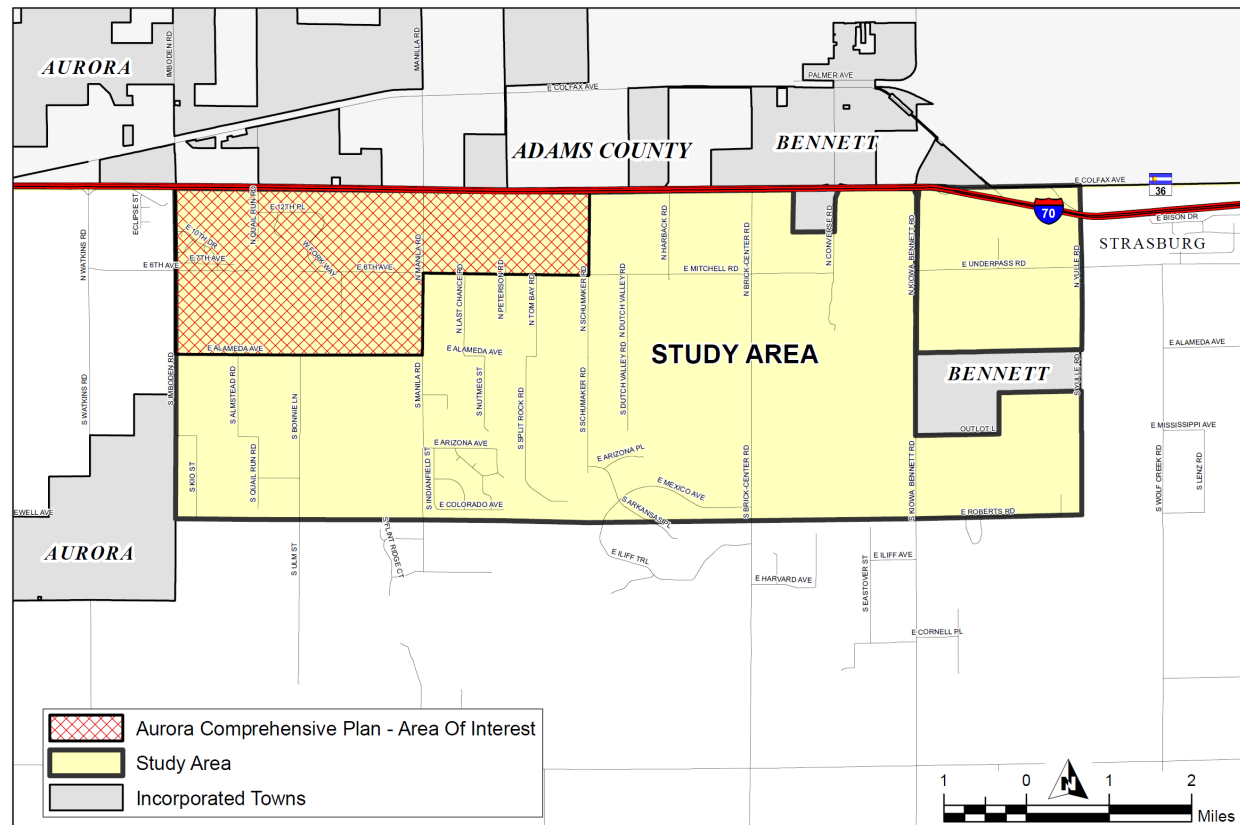
Major findings of the EAAA study were:

- Based on market trends in Aurora over the past 15 years, a large amount of planned development and remaining development capacity in eastern Aurora already within the incorporated city limits will likely affect the timing of development in the EAAA. In total, the developing portions of Aurora lying in the path of development but still west of the EAAA contain nearly 57,000 housing units of development capacity. Assuming that eastern Aurora continues to build out at the average pace observed over the past 15 years (approximately 1,000 units per year), it could take over 50 years to absorb all of the current development capacity in known approved projects.

- At full buildout, the EAAA would have an annual net fiscal impact of -\$15.1 million per year to the Aurora General Fund or -\$294 per housing unit. With a negative net fiscal impact, the City would be unable to maintain the same level of services to new customers in the proposed project or to existing residents as it does currently. Under Aurora's fiscal structure, the impact of development in the EAAA would likely have a net cost to the City.

The *2018 Aurora Comprehensive Plan* does not directly address annexation, but the Placetypes Plan map (Map 19) indicates desired placetypes for current unincorporated areas. The boundary of the map is the same as the EAAA study area and includes Sky Ranch, Prosper and a one-mile wide strip of land south of I-70 to Schumaker Road. The study area is shown on the Placetype Plan, Map 23.

Desired placetypes are emerging neighborhoods, except for a one-half



mile strip of industry hub along I-70 between the Quail Run Mile and Schumaker Road interchanges and commercial hubs at the Watkins, Quail Run Mile, and Manila interchanges.

The emerging neighborhood placetype includes as primary uses single-family detached, single-family attached, and multi-family residential development. Supporting uses are restaurants, retail, office, institutional, parks/open space, and community garden uses.

The industry hub placetype includes light industrial/business parks and heavy industrial uses as primary uses. Supporting uses are restaurants, commercial retail, commercial service, and office uses.

Primary uses in the commercial hub placetype include restaurants, retail, and service uses. Supporting uses are single-family detached and attached residential uses, multi-family uses, office, and institutional uses.

Future plans for the area north of I-70 in Adams County will have an impact on future land uses in the study area. Aurora's Comprehensive Plan includes an area to the west, south and east of the Colorado Air and Space Port. The Plan shows the entire area as an industry hub.

Adams County

The *Adams County Comprehensive Plan* adopted in 2012 includes recommended land uses in the I-70 corridor. In areas not annexed by Aurora, the land one to one and half miles north of I-70 is shown as mixed-use employment. Primary uses within this category include

offices, light manufacturing, distribution, indoor warehousing, airport and technology-related uses, and clean industry. Secondary uses are supporting retail and community facilities.

An area of urban residential is shown northwest of and adjacent to the Town of Bennett. Primary uses include single and multi-family housing. Secondary uses are compatible uses such as neighborhood schools, community facilities, parks, open space, and limited commercial development.

The remainder of the area north of the study area is designated agriculture. Primary uses are agricultural production. Secondary uses include open space, and other nonurban uses incidental to agriculture.

Adams County is undertaking an update to their Comprehensive Plan and a subarea planning effort for the area surrounding the Colorado Air and Space Port is currently underway.

10. SUMMARY OF FINDINGS

The study area is in the path of continued eastern expansion of the Denver metro area. There are approximately 24 square miles of undeveloped land in the study area for future development, although this figure will be reduced by restricting development in floodplains, airport restricted areas, and other sensitive areas. The floodplains also provide wildlife habitat and are possible sources of sand and aggregate mineral resources. Box Elder and Kiowa Creeks are the primary drainageways in the study area, with Wolf Creek lying just outside the eastern boundary. Areas of moderate to high visibility may also lend themselves to preservation, further reducing the amount of developable land. There remain some sensitive development areas within the study area, and while not precluding development, will need to be considered in any development plans, whether urban or rural.

Of the 42.25 square miles in the study area, approximately 16.5 square miles are already committed to large lot residential development or open space, leaving approximately 26 square miles of undeveloped land. Continued large lot development, with or without County approval, could consume all of the remaining 26 square miles, thereby reducing the land available to accommodate future urban growth.

Existing A-1 zoned subdivisions and 40-acre parcels could accommodate additional rural residential units (through subdivision of 40-acre parcels or by building new units where currently one owner owns two 19-acre lots), thereby reducing some of the demand for rural residential acreage. These acreages also could be sold and assembled by a developer for urban density development, but land assemblage would be a tedious and expensive process. Given the age of current residents and housing, this is a potential outcome in the longer term.

In the short term, the rural residential land use pattern is likely to remain.

Sky Ranch and Prosper to the west of the study area can accommodate a significant portion of the expected growth in eastern unincorporated Arapahoe County. Even if these projects build out to only 75 percent, only another 0.6 square mile would be needed to accommodate projected growth. The issue facing the County is one of determining future land uses in the remaining 26 square miles, mostly in the northern half of the study area and mostly in the Urban Reserve.

About 40 percent of the study area (19 square miles) could accommodate urban development, principally along I-70, including areas around and between the existing interchanges at Manilla Road and Converse Road (in Bennett) and the proposed new interchange for Kiowa-Bennett Road (in Bennett).

Future land uses in adjacent jurisdictions will have a dramatic impact on the amount of land consumed for development in the study area and subsequently how much land is available for development beyond the time horizon of this analysis or if growth exceeds the forecasts in this analysis. Market conditions and the development of employment-generating uses, such as the nearby Transport project in the Adams County portion of Aurora and plans for the Colorado Air and Space Port (formerly Front Range Airport), may increase demand for housing at urban densities in the study area beyond the projections used in this visioning effort.

Although there are several large parcels under single ownership, there

are multiple ownerships. Undeveloped parcels are concentrated within one to two miles south of I-70 and ownership acreages are relatively large. Assemblage of parcels to create large-scale urban projects (like another Prosper) may be difficult, but smaller urban density projects could potentially develop if infrastructure can be provided.

Urban development will be faced with the costs and challenges of providing infrastructure needed to serve urban development, specifically access to an adequate road network, a reliable water supply, and adequate wastewater treatment.

The existing and proposed road network is not sufficient to adequately serve urban densities, except in the northern half of the study area which is the Urban Reserve. Providing an adequate network to serve urban densities with suitable access and minimal impacts to the existing rural residential areas will be difficult and costly, especially considering improvements and right-of-way acquisition would be needed adjacent to existing rural developments.

The Town of Bennett and City of Aurora have included all or a portion of the study area in their Comprehensive Plans. The recommended land uses in the two plans are not consistent.

No districts currently provide water or wastewater treatment in the area. There may be water potentially available through the Rangeview Metro District or perhaps through annexation by the City of Aurora. The Town of Bennett's Southern Water System does not appear to have an adequate supply to serve the area currently and unless the Northern Water System is expanded south of I-70 and includes

additional storage and wells or other sources of water, there appears to be insufficient water available from the Town of Bennett to accommodate any growth south of I-70. Even with the recent expansion of the Town's water recovery and reuse facility, it currently does not have the capacity to serve areas south of I-70 and the Town's CAIMP does not include any improvements beyond the expansion to 1.2 MGD.

While Aurora may be in a position to serve these areas, existing infrastructure is located some distance away and development would be several years in the future. If not served by Aurora or Bennett, future urban growth could be served either by existing districts expanding their service areas and capabilities to serve, or by new districts. Rangeview Metropolitan District may be able to provide water under this scenario.

Because land assemblage may be difficult, it is likely numerous smaller districts would be proposed to provide infrastructure for future urban development unless existing districts expand their capacities to provide services, or if the areas are annexed by Bennett or Aurora. Additional districts are not encouraged in the County's 2018 Comprehensive Plan. Expansion of existing districts or annexation are the preferred alternatives to creating new districts to provide services to future urban development.

Subdivisions containing 19-acre lots at a minimum are currently allowed under the A-1 zoning of much of the study area. Rezoning to RR-A, RR-B and RR-C (9.0, 2.41 and 1.61-acre minimum lot sizes, respectively) would allow more units on less acreage. While consuming

less land, these zone districts allow the use of individual wells and OWTS. Continued large lot residential development, with or without rezonings, will result in the proliferation of individual wells and OWTS that raise health and groundwater supply concerns, both in terms of quantity and quality.

The unknowns in the study area are numerous, but there are three conclusions that can be made with a high degree of certainty:

- The study area will continue to experience growth in the future;
- Both Aurora and Bennett may annex some of the area in the future, but their visions for the area are not the same; and
- The County does not currently have a vision for the appropriate and desirable land uses in the Urban Reserve and this is needed to provide guidance for future development, land use decisions, and infrastructure investment decisions that are respectful and in alignment with existing land uses.

The County is embarking on the visioning effort for the study area because of the need to develop a coordinated vision for the future of this area.



