



Cardston County

Growth Study 2011



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1.0 Introduction

1.1 Intent of Study

This growth study was conducted to investigate the development potential of Cardston County land adjacent to the Town of Cardston in order to identify the probable impact the County may have on the Town's infrastructure. In particular, the study provides an informed understanding of the County's population demographics, applicable land use policies, and the Town's water utility capacity that is required for the efficient and economical provision of water services in the area. This study is meant to act as a guide for decision-making in future joint efforts between the Town and County.

1.2 Study Area

The Study Area is approximately 12,560 hectares (31,036 acres) in size, amounting to nearly 194 quarter sections, excluding the Town of Cardston. The following analysis will describe the population demographics, existing land uses and subdivision activity that will affect future utility provision to the area. The boundary of the Study Area is shown in Map 1.




1.3 Community Background

Cardston County is located in south western Alberta and remains largely an agricultural-based economy. The County and the Town of Cardston have a strong Mormon heritage and share the region with the Kainaiwa Nation to the north of the Town and six Hutterite Colonies. The Study Area borders the Kainaiwa Nation and encompasses one Hutterite colony east of the Town.







CARDSTON COUNTY GROWTH STUDY

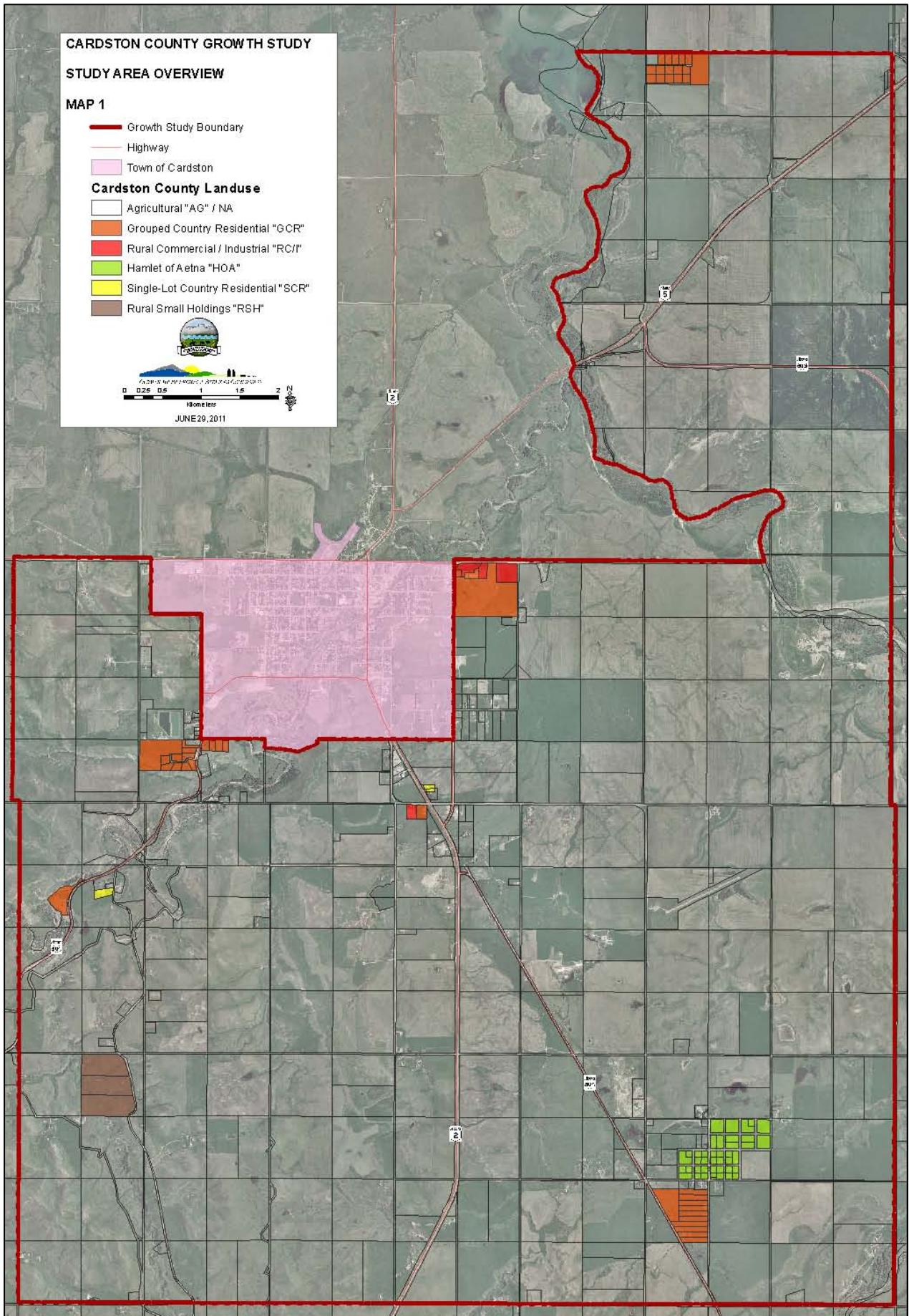
STUDY AREA OVERVIEW

MAP 1

-  Growth Study Boundary
-  Highway
-  Town of Cardston

Cardston County Landuse

-  Agricultural "AG" / NA
-  Grouped Country Residential "GCR"
-  Rural Commercial / Industrial "RCI"
-  Hamlet of Aetna "HOA"
-  Single-Lot Country Residential "SCR"
-  Rural Small Holdings "RSH"



2.0 Population and Demographics

2.1 Historic Population

The population of Cardston County peaked in 1966 at 4,905 persons and has since experienced fluctuating periods of growth and decline as shown in Table 1 (see also Chart 2). Currently, the County appears to be in a state of decline and has had a 1.4% decrease in population between 2001 and 2008. This is reflective of the current trend in rural Alberta which had a 4.5% population loss between 2001 and 2006. Population decline could be occurring for a number of reasons including the following:

- seniors require facilities and services not typically offered in a rural municipality;
- economic downturns cause workers to migrate to larger urban centers where jobs are more numerous;
- gradual shifts in Alberta's economy have emphasized value-added and knowledge based industries, while technological advancements and increased urban integration have reduced the number of rural workers required for agricultural production and the necessity of rural living, and;
- four annexations of County land to the Town of Cardston and one to the Town of Magrath have occurred since 1966 that may account for a small percentage of population loss. The annexations affecting the Study Area are summarized on Map 2.

Table 1 Cardston County Population Change

Year	Population	Change	Total % Change	Average Annual % Change
1961	4,864	-	-	
1966	4,905	41	0.8	0.17
1971	4,259	-646	-13.2	-2.63
1976	4,145	-114	-2.7	-0.54
1981	4,443	298	7.2	1.44
1986	4,419	-24	-0.5	-0.11
1991	4,490	71	1.6	0.32
1996	4,565	75	1.7	0.33
2001	4,325	-240	-5.3	-1.05
2008*	4,266	-59	-1.4	-0.27

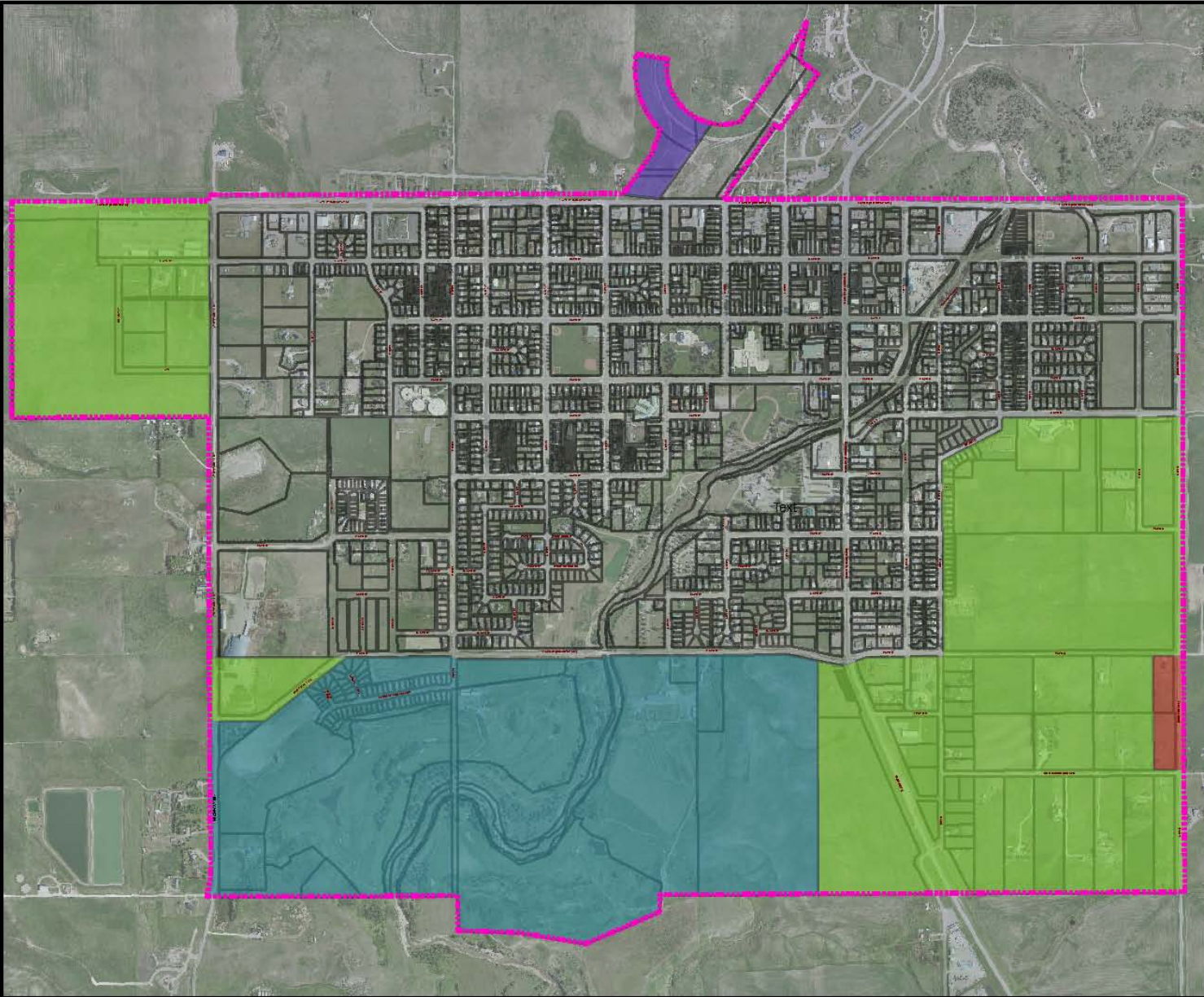
Source: Statistics Canada | * Municipal Census, 2008

**CARDSTON COUNTY
GROWTH STUDY**

**TOWN OF CARDSTON
HISTORICAL ANNEXATIONS**

MAP 2

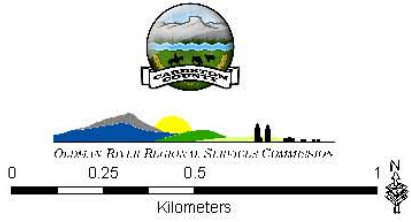
JUNE 29, 2011



----- Town of Cardston Boundary

Historical Annexations

-  1970 (14.93 Acres)
-  1977 (521.72 Acres)
-  1996 (9.81 Acres)
-  2005 (407.96 Acres)



2.2 Age Structure

Analyzing the age structure of the County is important in understanding and predicting dwelling types and densities. The age structure pyramid (Chart 1) illustrates that a majority of the population is between the ages of 45 to 54, and the ages of 10 to 19. This reflects the baby boomers and their children known as the baby boom echo.

There is a minority of residents age 30-45 and their children that would typically be under the age of 10. Traditionally these younger individuals and families locate in larger urban centers for facilities such as daycares and for more employment opportunities. The reduced number of individuals age 20-29 is typical in rural municipalities and primarily a result of the age group leaving the County to pursue their education or to find jobs in urban centers.

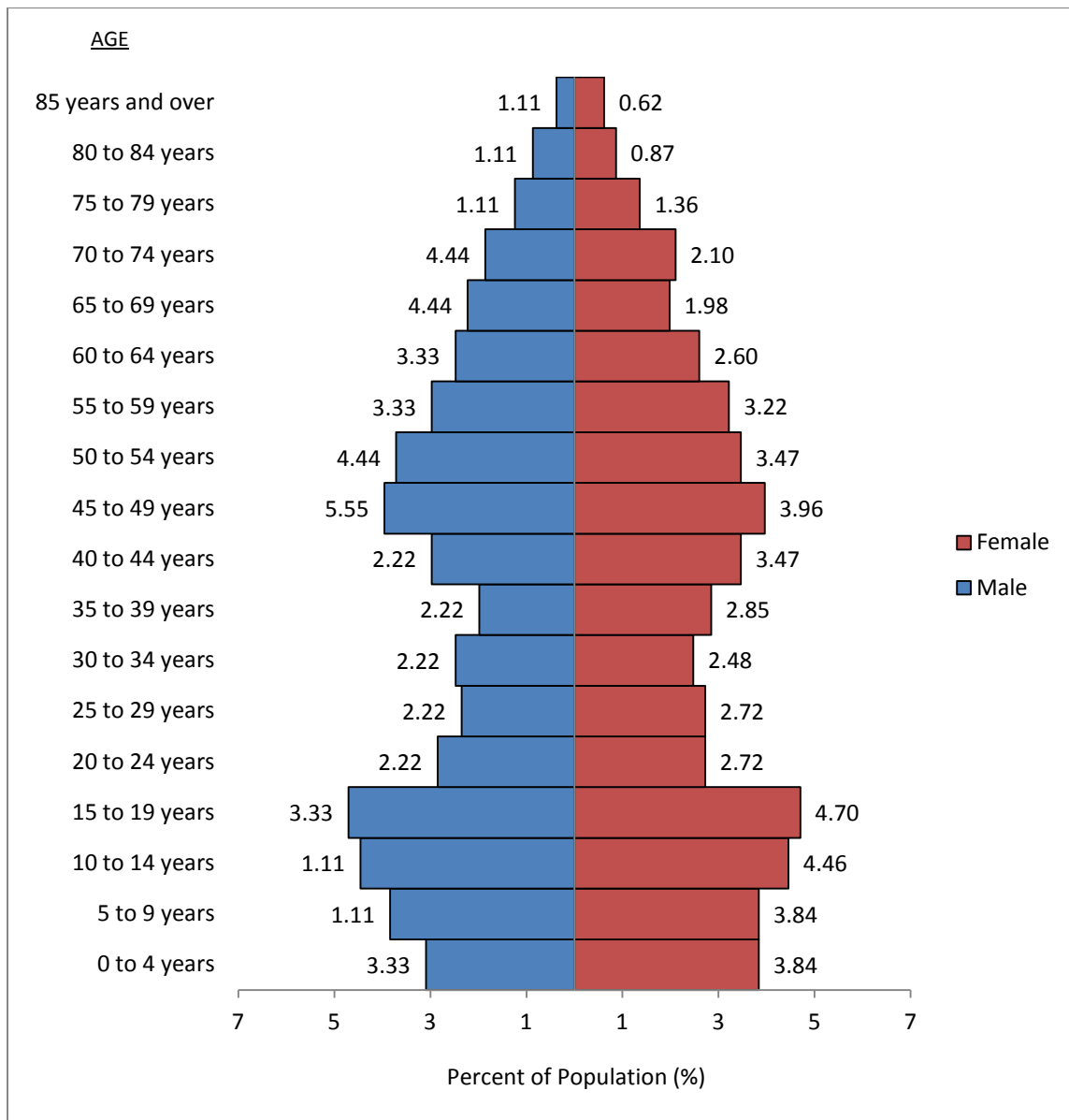


Chart 1: Cardston County 2006 Age Structure | Source: Statistics Canada

2.3 Population Projections

Population projections are mathematical calculations based on certain assumptions to aid in long-term growth management. Municipalities are better able to identify the future needs of the community by considering factors such as historical population trends, mortality rates, fertility rates, and population age structure. As numerous factors affect populations, these projections are no more than logical scenarios. To account for this uncertainty population projections commonly include 'high' and 'low' approximations.

Different calculation methods consider different population indicators. For comparison, Chart 3 displays several population projections for Cardston County based on percentage growth rates, and arithmetic and logarithmic formulas. Arithmetic projections maybe more accurate for municipalities that historically show stable, or minimal population changes, as it assumes a constant growth rate based on past data.

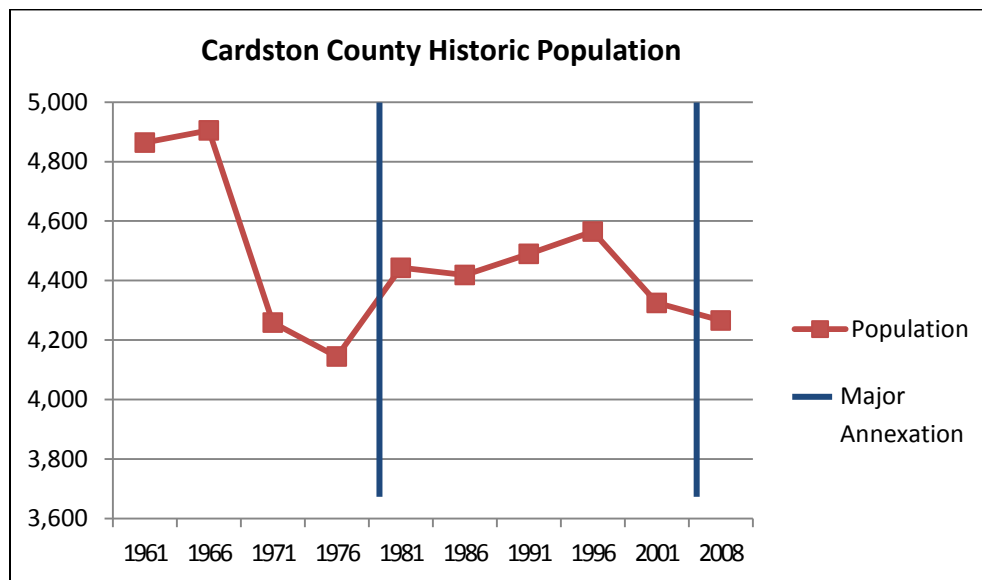


Chart 2: Cardston County Historic Population and Major Annexation | Sources: Statistics Canada, Municipal Census

Observing the slow declining trend in the historic population for Cardston County (Chart 2), it is unlikely that the growth rate assumptions are correct. However, population is likely to increase when considering unforeseeable circumstances and developments in conjunction with historical trends. Taking into account the 0.8% growth rate and the arithmetic projection, there is a possible population range in 2033 from a low of 4,000 to a high of 5,200, or a loss of 266 to a growth of 934 people from the current population of 4,266 people. Assuming the average household size remains near the present average of 2.9 persons (Statistics Canada, 2006), it is estimated that up to 322 new households will be required to accommodate population growth within the next 20 years¹.

¹ The year 2033 is 20 years from the year of this Study; however, projections are 25-27 years from available data.

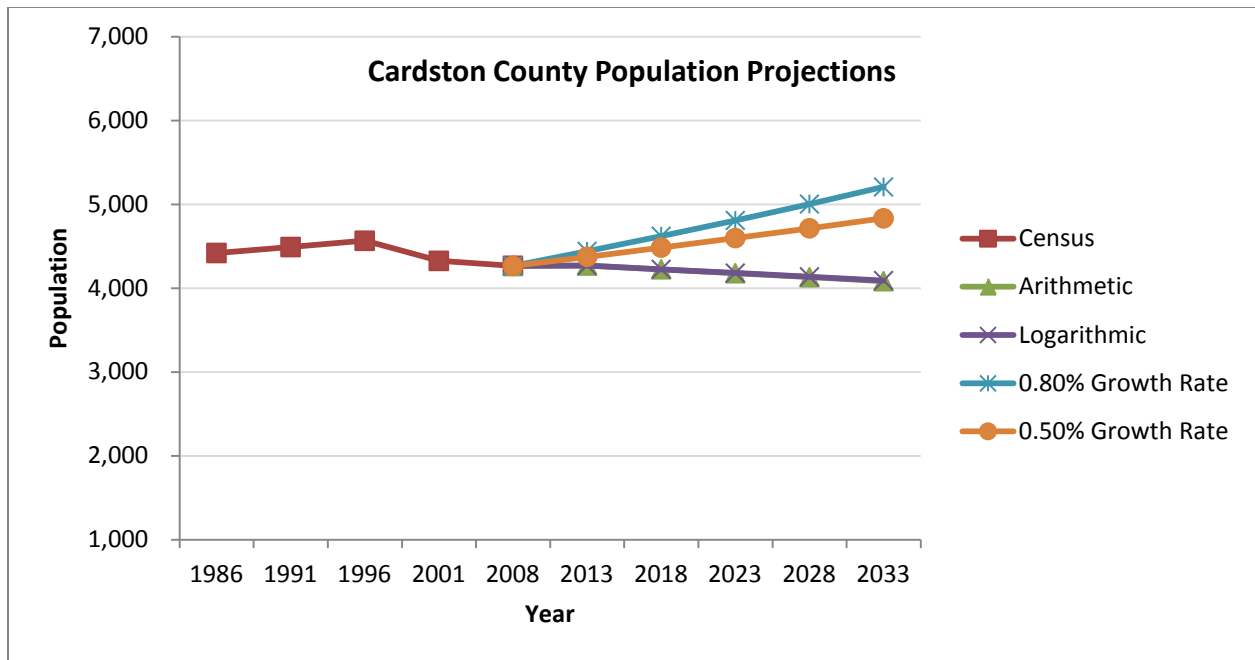


Chart 3: Cardston County Population Projections | Sources: Statistics Canada, Municipal Census

2.4 Study Area Population

Residential addressing information provided by the County was used to determine the approximate number of residential developments in the Study Area to be 164 residences. The number of residences was then multiplied by the average household size of 2.9 persons. This calculation derived an estimate of 476 people, or 11.16% of the County’s total population live in the Study Area. Assuming the Study Area would maintain a similar percentage of the County’s population, the 11.16% was applied to population projections used for the entire County. The results of these predictions, including a population prediction based on the current number of subdivided lots are demonstrated in Chart 4.

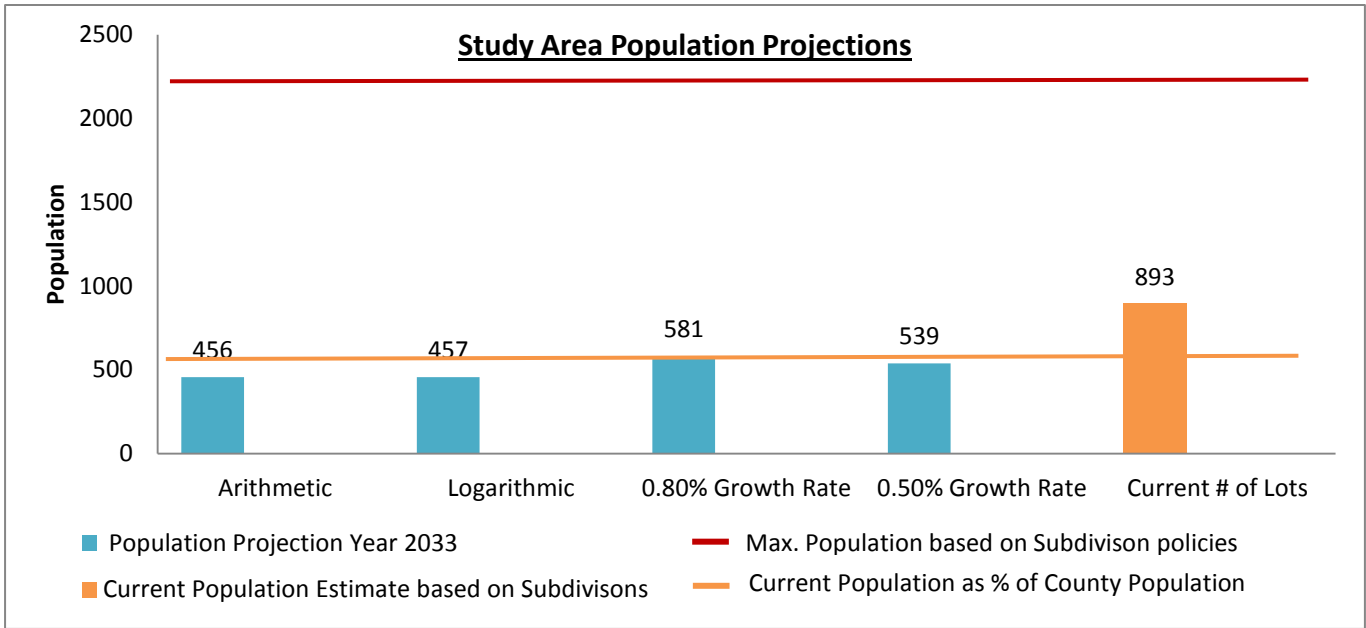


Chart 4: Study Area Population Projections based on current share of County’s population. | Sources: Statistics Canada, ORRSC

3.0 Land Use

3.1 Existing Land Use

The majority of the existing landuse in the Study Area is agricultural, and subsequently there are primarily farmsteads and country residential developments. The large section of Hutterite land to the east and the First Nation Reserve to the north will contribute to growth south and westward of the Town. A small number of commercial and industrial developments are located south and east of the Town along the highways, with an existing gravel pit just northwest of Atena. Map 3 illustrates the locations of these developments.

CARDSTON COUNTY GROWTH STUDY

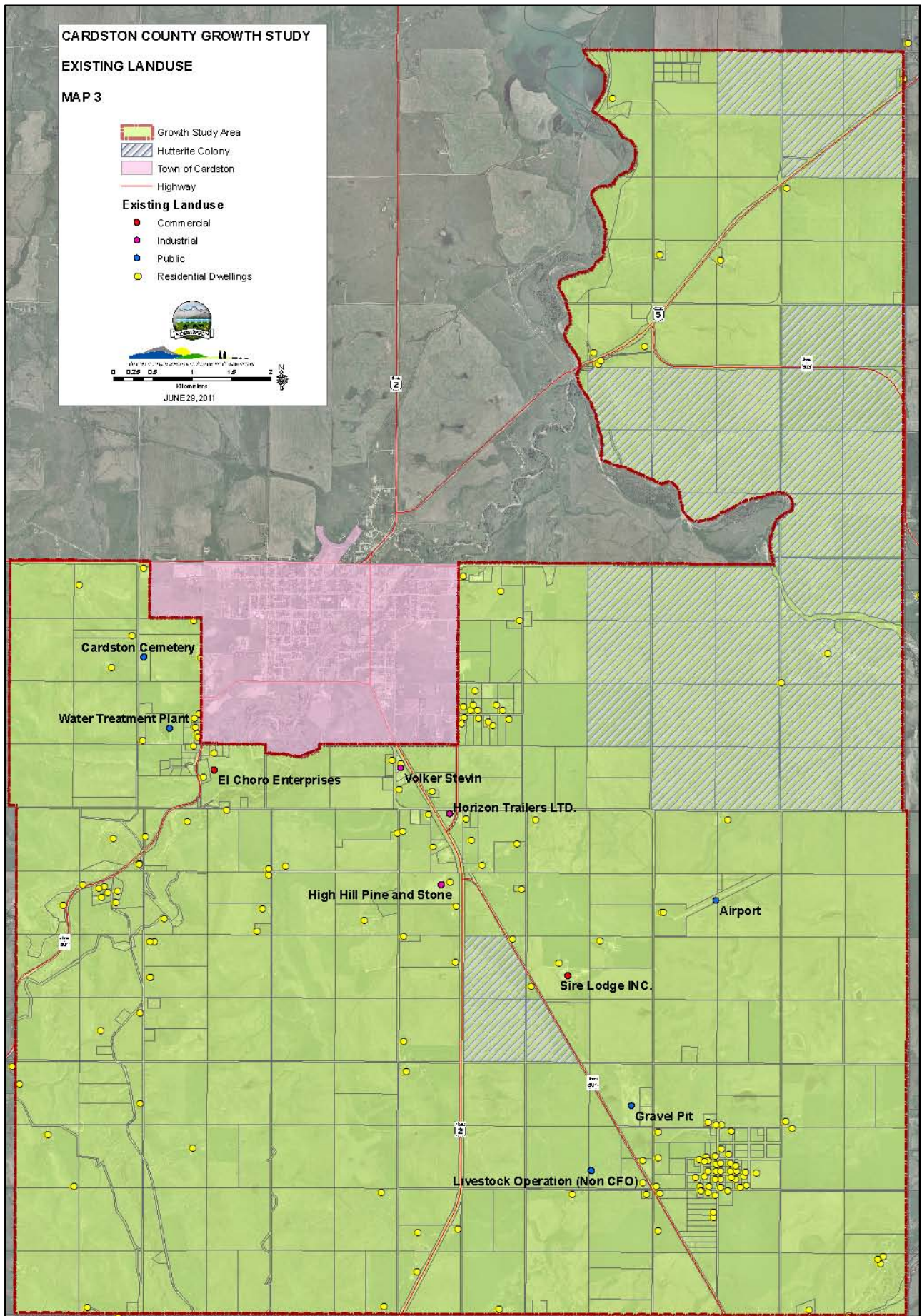
EXISTING LANDUSE

MAP 3

- Growth Study Area
- Hutterite Colony
- Town of Cardston
- Highway

Existing Landuse

- Commercial
- Industrial
- Public
- Residential Dwellings



3.2 Subdivision History

Table 2 and Chart 5 below summarize subdivision activity in the County since 1996. In total, 611 country residential lots have been created that account for 71% of the new lots. The high number of subdivisions and the predominant country residential character implies the County should be experiencing active development and a positive population projection. Reasons that the subdivisions statistics do not accurately reflect historic population changes may include the following:

- farmers subdividing farmsteads for children that already live in the area (splitting families into more dwellings, but not adding to population);
- subdivision does not reflect development and new lots have remained vacant;
- farmers subdivide land for only agricultural purposes, so new lots are not developed for residences; and,
- with advancing technology, less labourers are required for agriculture production.

It is expected that subdivision activity will decrease over the next few years as previous subdivisions are being developed. This is a typical trend as depicted in Chart 6, which shows dramatic increases followed by two to three years of relatively minimal subdivision activity.

Table 2: Cardston County Subdivision History

Year	Number of Subdivision Applications	Number and Proposed Use of Lots Approved								Total New Lots
		Res	Com	Ind	CR	Ag	Misc	Inst	Rec	
1996	7	1			3	5			na	9
1997	24	4		1	21	3	1		na	30
1998	27	1		2	15	9	1	1	na	29
1999	23	2		1	19	13			na	35
2000	19	1			21	2	1		na	25
2001	23				51	10	21	1	na	83
2002	26	3		3	28	15			na	49
2003	29	6			31	8			2	47
2004	42	23		1	62	20			1	107
2005	22				38	14				52
2006	29	4		5	43	6				58
2007	57				92	8				100
2008	42		1		95	12				108
2009	40				75	10			5	90
2010	28	3	1		17	18		1		40
Total Lots Created		48	2	13	611	153	24	3	8	862
% of Total Lots Created		6	0	2	71	18	3	0	1	

Source: ORRSC

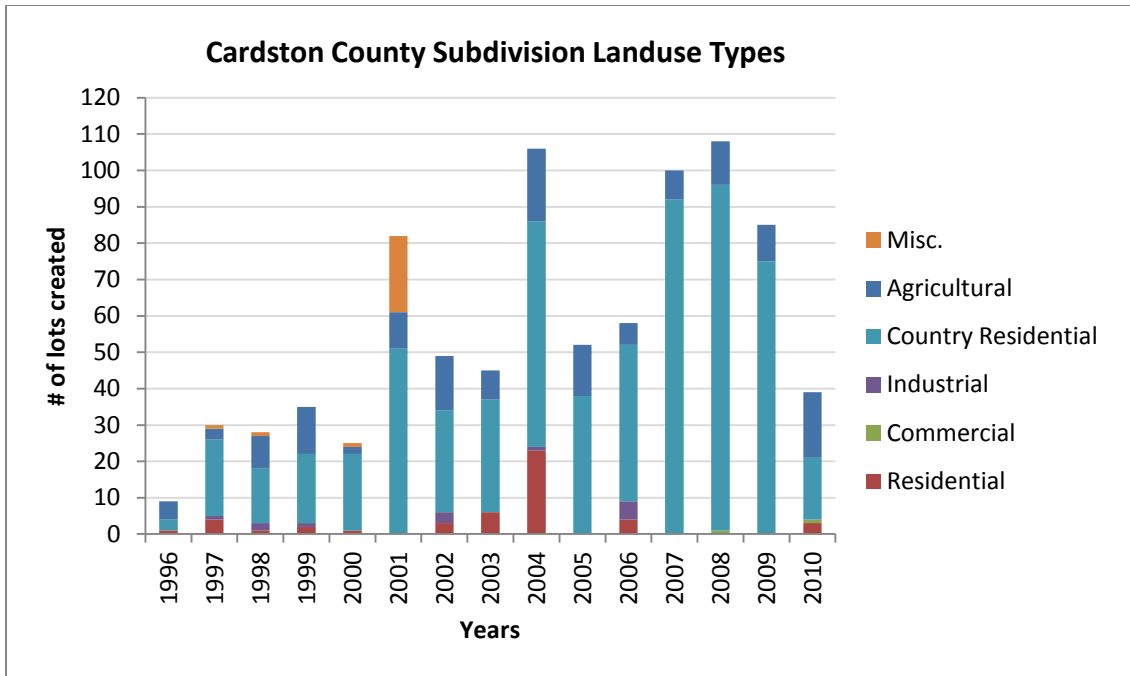


Chart 5: Cardston County Subdivision Landuse Types | Source: ORRSC

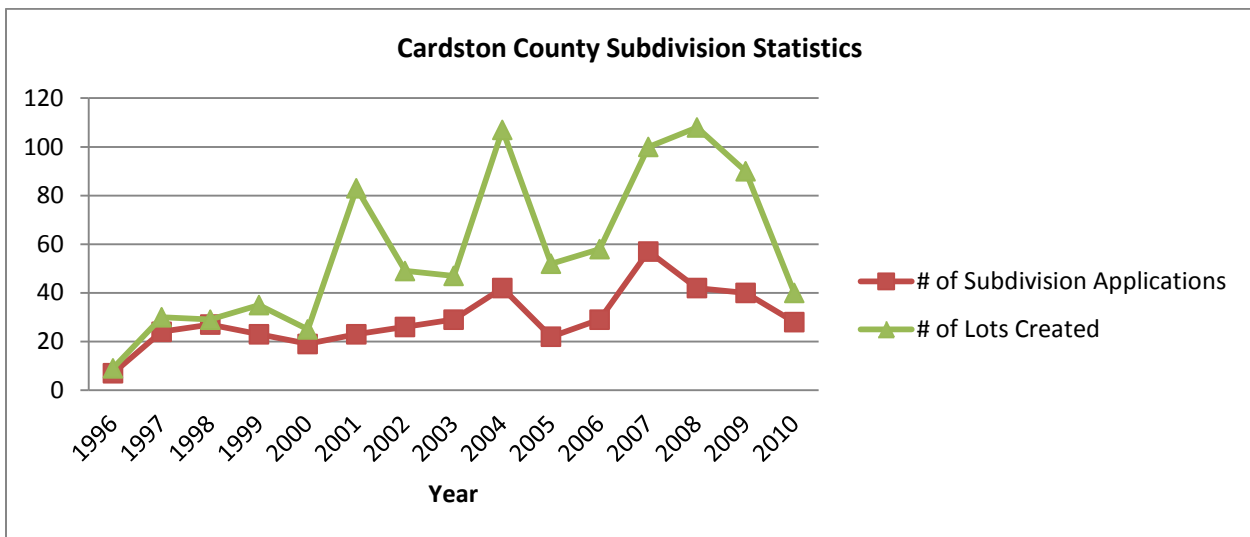


Chart 6: Cardston County Subdivision Statistics | Source: ORRSC

3.3 Subdivision Policies

The majority of land in the Study Area is designated in the Cardston County Landuse Bylaw as Agricultural-AG (Map 1). Current subdivision policies within this landuse district allow for a maximum of four subdivisions per quarter section and are designed to retain the rural character and agricultural production of the County.

The potential for the 194 quarter sections in the Study Area is to be subdivided into 776 lots. Assuming all 776 lots are occupied by the 2.9 person average, there is the potential for approximately 2,250 residents within the Study Area. Presently, there is an estimated 61 quarter sections subdivided into 308 lots. This means that the potential remains for roughly 468 lots, or a growth of 1,357 residents. This estimate was done based on the assumption that quarter sections within the Study Area with a higher number of subdivisions under other landuse districts will be balanced out with land owned by the Hutterite colony, which does not traditionally subdivide.

3.4 Housing Requirements

Using the subdivision policies to derive our 'high' population scenario, the Town should plan utility infrastructure to service up to 776 residences in the Study Area, which would be 612 new residences in addition to the estimated 164 that currently exist. Chart 4 illustrates that using subdivision policies increases the population estimate of 476 people in the Study Area to 893. Reviewing the subdivision history indicates that the Study Area will continue to see growth, but it is unlikely that it will reach this saturation of 776 residences. In addition, the highest population projection of 0.8% growth over the next 20 years only estimates there to be 200 new households and when historic population trends are considered, it's logical to assume this is a more accurate population prediction.

4.0 Utility Capacity

4.1 Water Network

The Town's existing water infrastructure includes two treated water reservoirs, two booster pump stations and a looped network of distribution pipes. There are ten water pipelines that extend from the Town boundary into the County (Map 4). These pipelines provide economical connection points to extend service into the Study Area on the east, west and south boundaries of the Town. The South Cardston Water Co-op pipeline is a 150mm PVC pipe that runs along Highway #2 (see Map 4, connection #6) extending nearly 3.5 miles south. Service lines branch out from this main pipeline and gradually decrease in diameter from 75mm PVC to 40mm PVC pipes. As illustrated in Map 5, the Highway #2 pipeline currently services about 14 developments in the County and will likely be used in conjunction with connection #8 to service the majority of development south of the Town.

4.2 Water Capacity

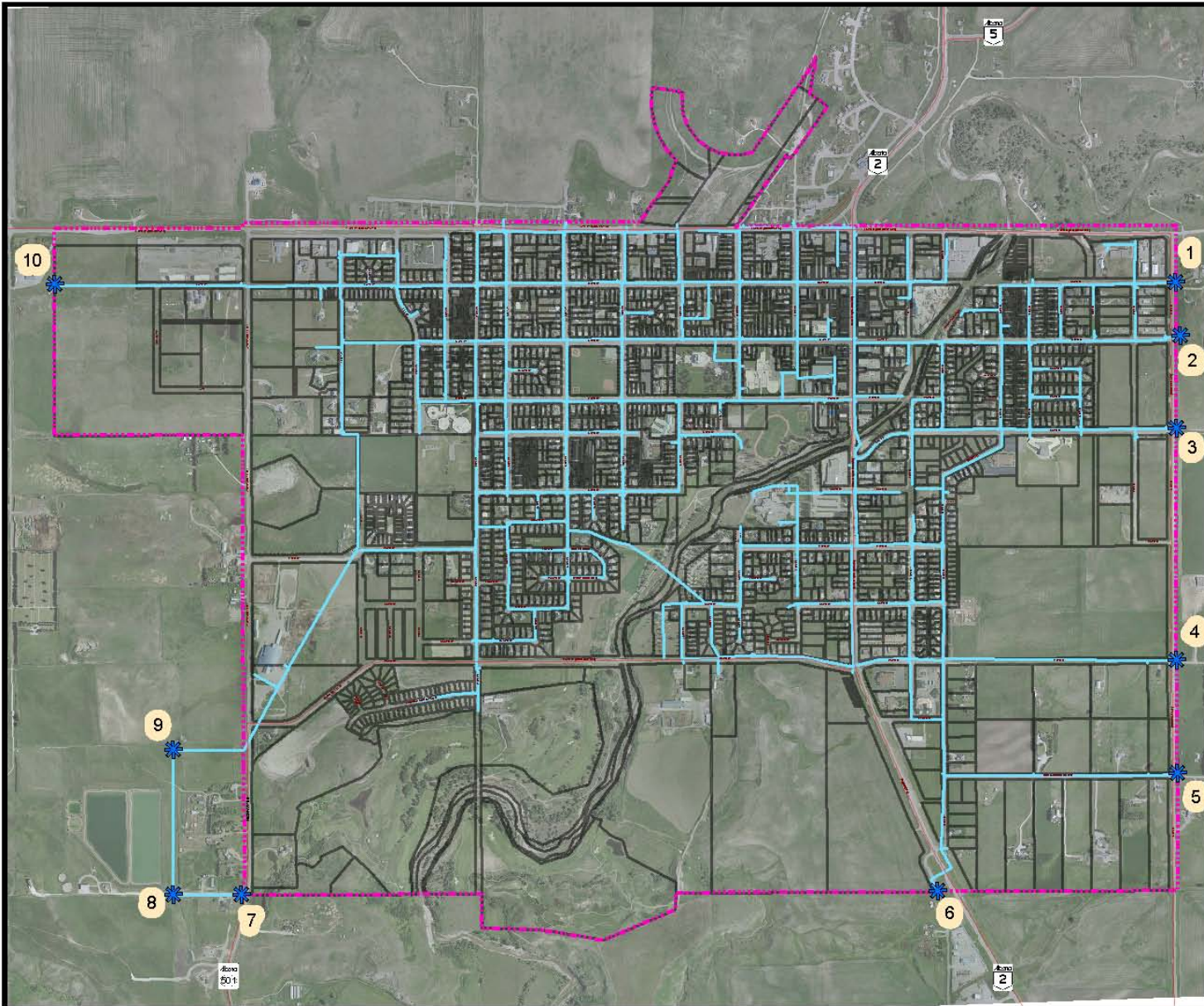
According to the Town of Cardston Infrastructure Master Plan, the water storage capacity is adequate for 6,900 people. The 2007 municipal census indicated the population of the Town was approximately 3,578 and including the 476 people in the Cardston County Study Area brings the total serviceable population to 4,054. The highest population growth projection for the Study Area would increase the population to 4,635 in 2033 and still allow the Town to grow by 2,265 residents before requiring water infrastructure, however; the intensification of commercial and industrial development in the area will impact the water demand independent of population.

**CARDSTON COUNTY
GROWTH STUDY**

**TOWN OF CARDSTON
WATER CONNECTIONS**

MAP 4

JUNE 29, 2011



-  Town of Cardston Boundary
-  Cardston Water Main
-  Highway
-  Water Connections



5.0 Summary

The County's fluctuating historic population makes it difficult to accurately predict future growth needs in the Study Area. Population projections produced a possible range of -20 to +105 people from the existing 467 residents by the year 2033. The Study Area has experienced a population decline in recent years, which is reflective of the population trend in rural Alberta; however, the high level of subdivision activity within the County is a promising indication that population will begin to increase as lots are developed.

With regards to land use, the majority of the Study Area is agricultural, meaning there is primarily farmsteads and country residential developments. Higher density residential development should be directed to take place south of the Town where it will be more economical to extend existing water infrastructure and developments will have access via Highway #2 and 501. In addition, it is expected that commercial and industrial development will continue to take place near the Town of Cardston and southwards along the highways.

According to the Town of Cardston Infrastructure Master Plan the Town's infrastructure can service 6,900 residents. With the current combined population of the Study Area and the Town being roughly 4,054, there is adequate infrastructure to extend services in the County. Consideration should be given to the Town's growth rate and incorporated with water usage data from higher intensity land uses that will put strains on the existing water infrastructure before the serviceable population reaches capacity.