



# Understanding Wyoming's Land Resources: Land-Use Patterns and Development Trends

WYOMING OPEN SPACES INITIATIVE

## AUTHORS

Jeffrey D. Hamerlinck

Scott N. Lieske

William J. Gribb

## COOPERATORS

William D. Ruckelshaus Institute

Department of Agricultural and  
Applied Economics

Department of Geography

Wyoming Natural Diversity  
Database

Wyoming Geographic  
Information Science Center

University of Wyoming  
Extension

For more information  
307.766.5080

[www.uwyo.edu/haub/  
ruckelshaus-institute](http://www.uwyo.edu/haub/ruckelshaus-institute)

UW Extension Publication  
**B-1244**  
December 2013



## Understanding Wyoming's Land Resources: Land-Use Patterns and Development Trends

---

By Jeffrey D. Hamerlinck<sup>1,3</sup>, Scott N. Lieske<sup>2,3</sup>, William J. Gribb<sup>1</sup>

<sup>1</sup> *University of Wyoming Department of Geography*

<sup>2</sup> *University of Wyoming Department of Agricultural & Applied Economics*

<sup>3</sup> *University of Wyoming Geographic Information Science Center (WyGIS)*

*Issued in furtherance of extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Glen Whipple, director; University of Wyoming Extension, University of Wyoming, Laramie, Wyoming 82071.*

*Persons seeking admission, employment, or access to programs of the University of Wyoming shall be considered without regard to race, color, religion, sex, national origin, disability, age, political belief, veteran status, sexual orientation, and marital or familial status. Persons with disabilities who require alternative means for communication or program information (Braille, large print, audiotape, etc.) should contact their local UW Extension office. To file a complaint, write to the UW Employment Practices/Affirmative Action Office, University of Wyoming, Department 3434, 1000 E. University Avenue, Laramie, WY 82071.*



Research indicates Mountain West communities that create an intentional future through careful planning experience greater economic and social wellbeing.

Source: Travis 2007

This publication provides an introduction to Wyoming's land resources and the concept of land use, including land ownership patterns, land-use activities and functions, and the drivers behind recent land-use patterns and development trends. This is intended to be the first in a series of articles on land use and community planning in Wyoming.

The goal for the series is to provide background information to support citizen participation in local planning processes. Research indicates Mountain West communities that create an intentional future through careful planning experience greater economic and social wellbeing, and communities that engage in planning attract businesses and jobs and generally find themselves able to invest in and improve the community's quality of life (Travis 2007).

## CONSIDERING LAND RESOURCES IN WYOMING

Wyoming is the 10th largest state in the United States and has a land area of approximately 97,800 square miles, or 62.6 million acres (WDEA 2010a). Wyoming's land resources have always had a significant impact on the state's cultural identity, politics, economics, and overall development. As such, it is important to recognize the varying ways that land can be considered and utilized.

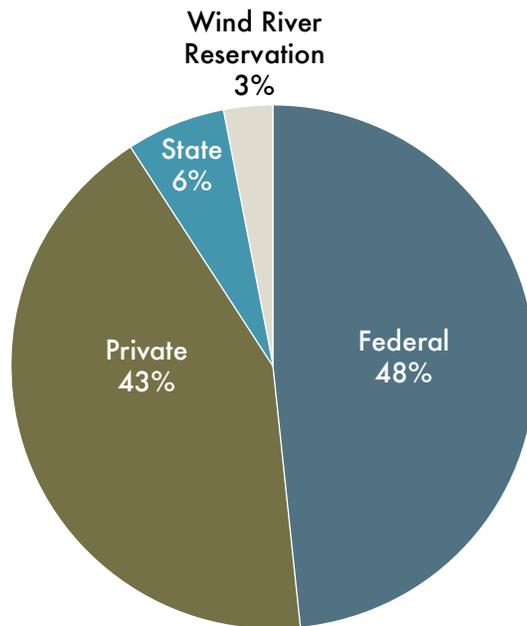
Land as *physical material* represents the soil, minerals, fossil fuels, vegetation, and other natural resources that can be utilized for economic and other purposes. Alternatively, land can be considered *real property* (or real estate) divided into units (i.e., parcels) of ownership and use by individuals, groups, corporations, and governments. Land can also serve as an *object of capital value* to be owned and used to maximize economic return. Examples of land as an object of capital value are lands held for speculation, natural resource development, and industrial, agricultural, commercial, and residential

## Figure 1. Land ownership in Wyoming

(62.6 million acres total)

Wyoming's 48 percent of federally owned land is well above the national average of 28 percent.

**Source:** Wyoming Division of Economic Analysis 2010a



development. Land in this sense is commonly associated with the concept of *property rights* and is sometimes described as a “bundle of rights and obligations” defined and protected by the legal framework of jurisdiction in which the land is created. Finally, land can be identified for the *sense of place* it provides, representing some cultural, historic, or aesthetic value that the landscape provides (Platt 2004).

### WYOMING STATEWIDE LAND OWNERSHIP PATTERNS

Land resources can vary greatly across space in terms of ownership, access, suitability for various uses, and level of settlement. Like many western states, a significant portion of Wyoming is land under either federal or state ownership (**Figure 1**). While its percentage of federal land holdings is less than some of its western neighbors, Wyoming's 48 percent of federally owned land is well above the national average of 28 percent.

Federal lands are administered by any one of a number of land management agencies, whereas private lands are under the jurisdiction of a local government, either a county or municipality. State lands in Wyoming are administered by the Board of Land Commissioners. Private citizens may lease federal or state lands, but they must use the land in a way that is consistent with the objectives of the government land manager.

The percentage of federal lands in Wyoming increases markedly as one travels from east to west (**Figure 2, pages 4-5**). These public lands provide for multiple-use activities, including timber harvest, grazing, mining, and recreation, and are managed primarily by the U.S. Bureau of Land Management, U.S. Forest Service, and National Park Service.

In the mid-1800s the federal government gave land titles to railroad companies to support construction of the transcontinental railroad. The result is a checkerboard pattern across southern Wyoming where every other section (640 acres each), for a width of 20 miles along each side of the railroad, is an alternating pattern of public and private lands (**Figure 2**). Today, most of the checkerboard area is used for grazing and some is used for mineral extraction.

The Wind River Reservation comprises approximately 1.8 million acres in Fremont and Hot Springs Counties. The Wind River Reservation is land held in trust for the Eastern Shoshone and Northern Arapaho tribal groups by the federal government under a number of ownership categories. The reservation is managed by the joint tribal councils.

For the most part, public lands are outside the influence of county and municipal governments. Most development on public lands is limited to resource extraction and recreation infrastructure. In Wyoming and the West, public lands represent one of the few considerable legal constraints on land-use change outside of municipalities (Travis 2007).

### WYOMING LAND-USE PATTERNS

Characterizing statewide land-use patterns across space and time can be challenging due to differing (and changing) definitions of land-use categories (e.g., urban versus rural), methods of measurement employed (e.g., census versus mapping), and lack of information on land quality or suitability (e.g., prime versus non-prime cropland). **Figure 3, page 6** provides one general snapshot of land use in Wyoming.

**Table 1. Typical activity-based land-use classifications**

Land Use	Definition	Typical Metric
Agriculture	Areas for cultivation of plants and animals for food production and other uses	Area
Residential	Areas where people live	Housing density, e.g., dwelling units per acre; max lot coverage percentage
Commercial	Areas for commerce and financial transactions	Floor area ratio; max lot coverage percentage
Industrial	Areas for manufacturing and resource extraction	Floor area ratio; max lot coverage percentage
Mixed-Use	Combined residential and economic uses	Density, floor area ratio; max lot coverage percentage
Transportation and Utilities	Areas such as road, rail, and utility corridors and power plants	Area
Parks and Recreation	Areas providing open space and recreational opportunities	Area and distance

The municipalities of Wyoming cover just 77 of the 97,800 square miles in the state.

Source: U.S. Census Bureau 2012

## LOCAL LAND USE IN WYOMING

When considering local land use at the city and county level, one common differentiation is between areas within municipal boundaries (i.e., incorporated) and areas outside municipal boundaries (i.e., unincorporated). In addition, terms like “urban” and “rural” are often used to describe lifestyles as well as distinguish between people living within versus outside of town.

Theobald (2003) provides a definition that allows mapping of urban and rural population densities in Wyoming. Rural densities are areas that contain fewer than 1,000 people per square mile, while urban densities are areas with greater than 1,000 people per square mile. **Figure 2** presents population densities by census blocks for areas with a population density greater than 5 people per square mile. As can be seen in the map, most rural populations (5 to 1,000 people per square mile) are located close to cities and towns.

While many people think of Wyoming as a rural state, the majority of the population (69 percent) lives within incorporated cities and towns (**Figure 2**). According to the 2010 U.S. Census, the state’s 99 towns and cities range in population from 4 (Lost Springs Town in Converse County) to 59,466 (Cheyenne).

In terms of land area, the municipalities of Wyoming cover just 77 of the 97,800 square miles in the state (U.S. Census Bureau 2012).

### Characterizing Local Land Use by Activity

“Land use” at the local level typically refers to the activity taking place on a specific piece of property or aggregation of properties. Land use at the local level operates at the scale of parcels and buildings and is often viewed in terms of types of activity. Typical activity-based examples of land use are agricultural, residential, commercial, industrial, mixed-use, transportation and utilities, public-use, parks and recreation, and areas in transition (i.e., vacant).

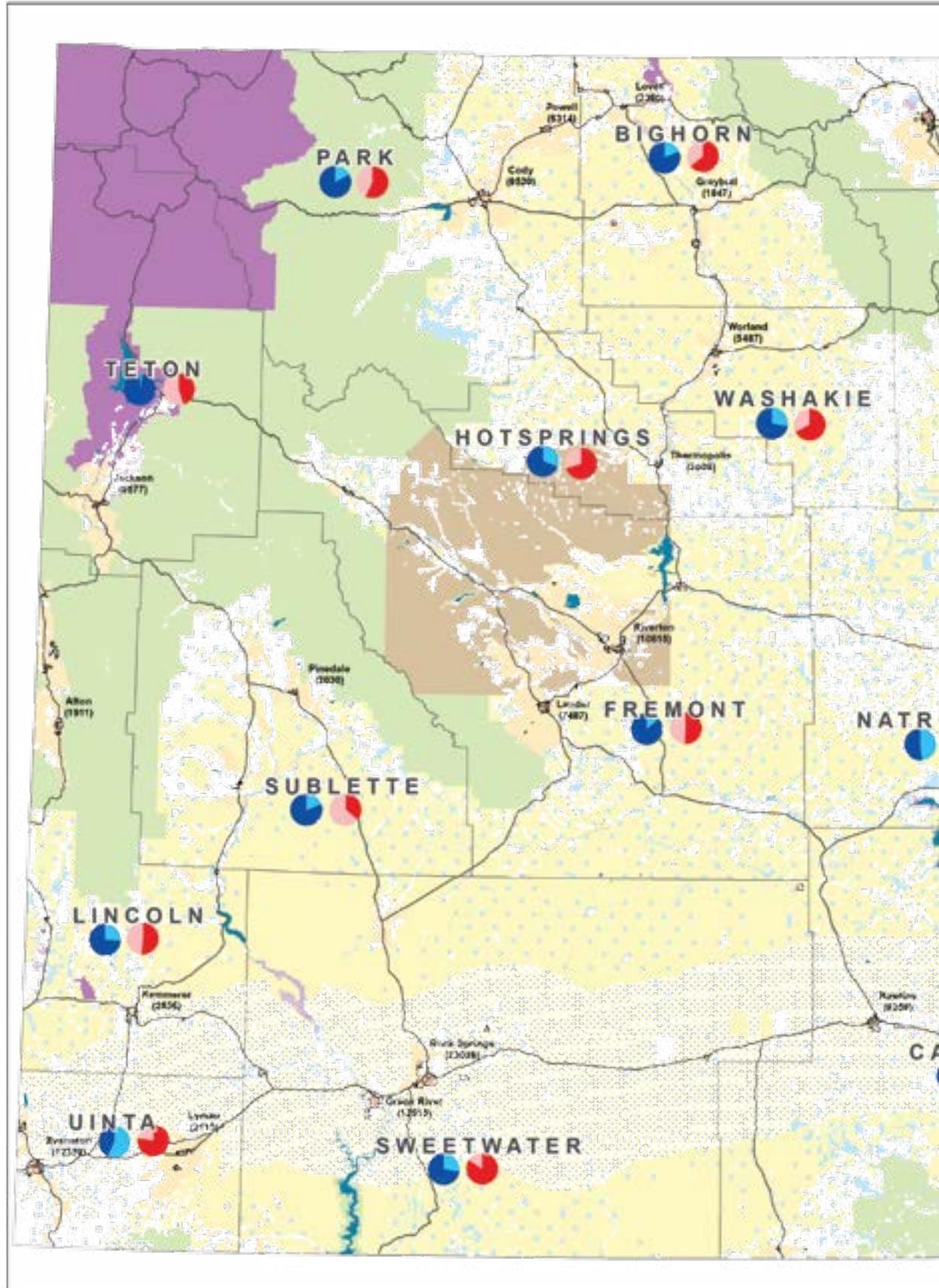
Included in **Table 1** are definitions of land-use designations and metrics that are commonly used to measure and reference these designations. Oftentimes, these or similar values are codified in zoning or other development regulations. Such designations can influence both economic valuation of a particular place and citizens’ perceptions of quality of life in their community.

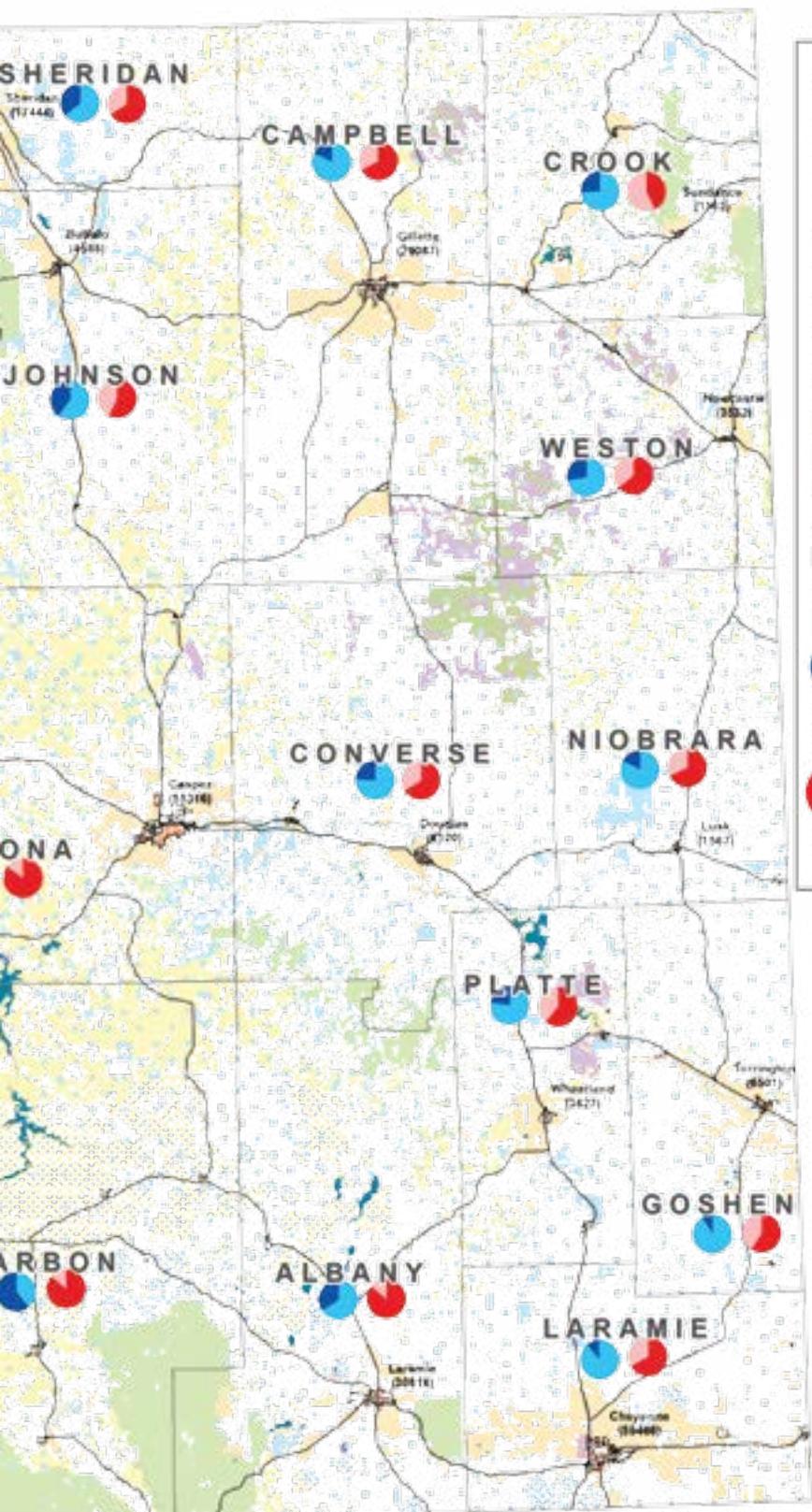
Residential land use, for example, may be further divided into single family, multi-family, and manufactured housing (mobile homes). Land-use plans will often specify a range of desired

**Figure 2.**  
**Wyoming land ownership and population density patterns**

While many people think of Wyoming as a rural state, the majority of the population (69 percent) lives within incorporated cities and towns.

*Source: Cartography by Wyoming Geographic Information Science Center (2011); figure updated and modified from earlier work by Jim Oakleaf and David Cook*





**Land Management**

- State Lands
- US Forest Service
- Bureau of Indian Affairs
- National Park Service
- Bureau of Land Management
- National Grasslands
- Other Federal
- Private

**People per Square Mile<sup>1</sup>**

- 5 - 1000 Rural Density
- 1001 - 12499 Urban Density
- 12500+

**Population**

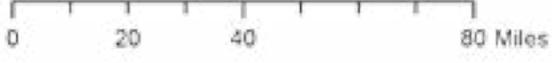
- Municipal Boundaries (2010 population)<sup>1</sup>
- County Boundaries
- Major Roads
- Rivers, Lakes and Reservoirs

**Land Ownership**

- Percent Private Land<sup>2</sup>
- Percent Public Land<sup>2</sup>

**Population Distribution**

- Population in Municipal Boundaries<sup>1</sup>
- Population Outside Municipal Boundaries<sup>1</sup>



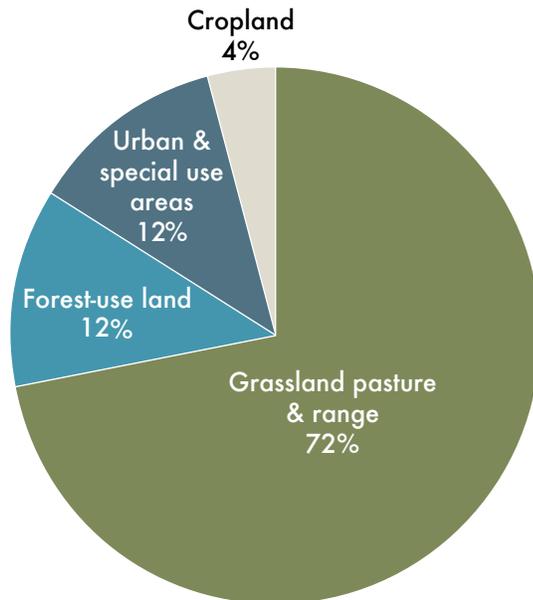
<sup>1</sup> Census 2010.  
<sup>2</sup> Equality State Almanac 2009.

© Wyoming Geographic Information Science Center 2011

### Figure 3. Land use in Wyoming

62.2 million acres total; water bodies excluded.

**Source:** Nickerson et al. 2011, U.S. Census Bureau 2012, U.S. Department of Agriculture 2009



Note: In terms of area occupied, the primary land uses in the state are associated with agricultural production. Urban and special use areas include incorporated cities and towns, rural residential uses, and industrial and commercial sites in rural areas. Calculated values for croplands are low due to a relatively narrow definition of the category. Urban area values reflect a bias toward a higher density definition of urban, resulting in a small percentage for Wyoming. Land-use categorizations derived from U.S. Census Bureau and U.S. Department of Agriculture data.

residential densities for a particular residential use. For example, a single-family residential use designation in a land-use plan may specify four to seven dwelling units per acre. Lot coverage percentage is also employed, which specifies the maximum percentage of a lot that can be constructed upon (as defined by the total horizontal area footprint of all structures on a parcel; Burrows 1989).

Examples of commercial entities include banks, restaurants, grocery stores, and other types of retail establishments. Industrial land use generally encompasses manufacturing activity, but may also include areas with high spillover effects in terms of noise, emissions, or traffic that would be undesirable to locate near residential areas. Other types of industrial land uses include areas of extraction, refining, and/or processing of natural resources.

In addition to maximum lot coverage percentage, commercial and industrial land uses are sometimes measured in terms of floor area ratio (FAR). The ratio specifies how much square footage can be built on a parcel, or how tall a

building can be. A FAR is used as a measure of the intensity of the site being developed. The ratio is generated by dividing the building area by the parcel area, being sure to use the same units (Friedman et al. 2008).

Mixed-use development encourages interaction between land uses as well as economic development and diversity. Mixed-use developments typically combine retail, residential, office, entertainment, and/or public space. An example of a traditional mixed use is a corner store in a neighborhood with apartments above the store. In downtown areas that have buildings with multiple stories, the mixed use could have retail on the first floor, offices on the second floor, and residential space on the upper floors. Measurement indices for this type of land use can be maximum lot coverage percentage, FAR, or dwelling units per acre.

As a land-use activity, transportation and utilities are often grouped together. Examples of land uses for transportation and utilities are interstate highways, railroads, power lines, and power plants. Transportation land uses are often discussed in terms of the area of the development. For example, a new interchange may encompass 20 acres of land. Even with their typically narrow, linear form, such corridors can occupy a surprisingly large amount of area. It is also important to note that transportation infrastructure often determines the location of future development. This can be seen in both industrial areas around rail yards in cities and in residential development located near highways in suburban and transitioning rural areas.

Parks and recreation lands are areas that provide recreational opportunities and open space. Examples include state parks, city parks, small neighborhood parks, greenbelts, sports fields, and golf courses. Parks and recreation lands may be characterized in terms of area (e.g., acres), distance (e.g., miles of trail), resources per capita (e.g., number of acres per 1,000 people), or distance to resources (e.g., percentage of population living within a certain distance of a public park).

**Figure 4** is an example of local land-use activity classifications portrayed in map form. In this case, existing land use is shown for the City of Laramie, categorized according to ten land-use activity classifications. The map was developed as one component of the city's 2007 comprehensive planning process, in part to assist in guiding locations for future growth (LCDD 2007).

### DRIVERS OF LAND-USE PATTERNS AND CHANGE

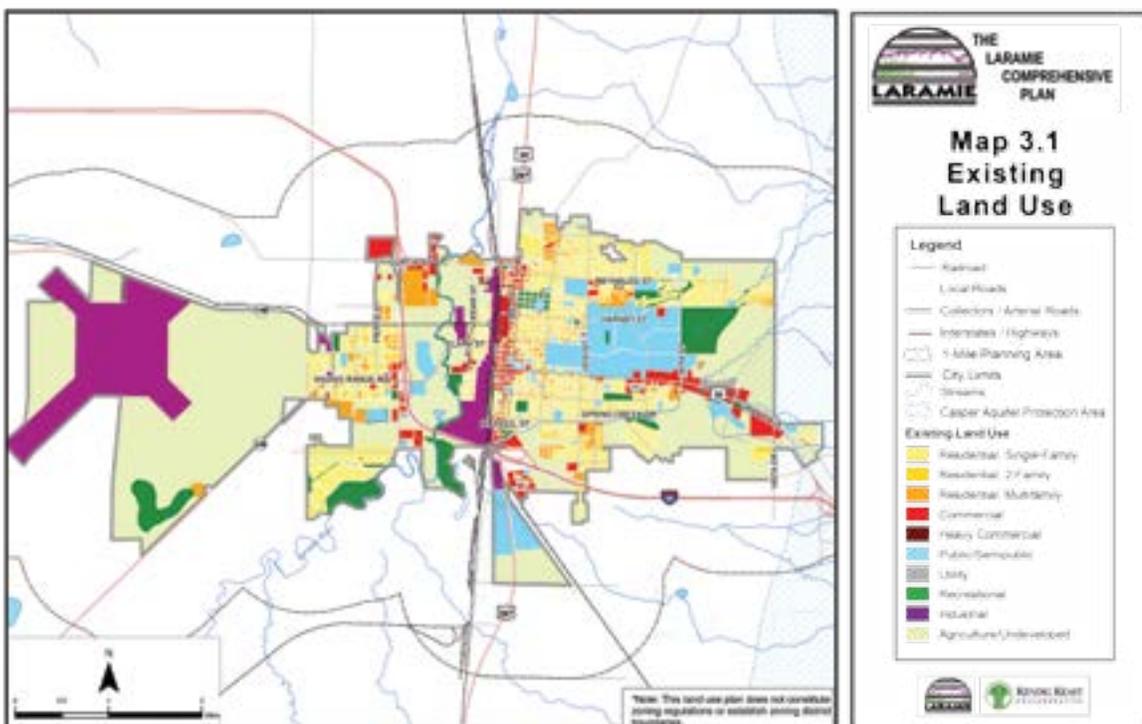
A wide range of economic, cultural, and environmental drivers combine to influence land use in Wyoming. Some of these drivers are national or regional in origin, while others operate predominantly at the state and local level. Economic drivers may be policy-based or the result of market activities, while cultural and environmental drivers are closely tied to Wyoming's western image, reflecting values placed on both the aesthetics of its landscapes and abundant natural resources.

Public land policy—concerning oil, gas, and mineral extraction, forestry, grazing, water, and wildlife—heavily influences land-use activities on both public and private lands. Federal land

ownership and government mineral rights provide the mechanism by which government policy can dictate land use in major parts of Wyoming. Since the early 2000s, there has been a growing federal policy campaign to increase domestic energy production. This includes extractive industries (coal, oil, and gas) as well as alternative energy production such as wind and solar. Such development can create unique land-use challenges when surface and mineral ownership differ, a situation known as a split estate.

In another example, recent decreases in national forest timber production are the result of shifts in both policy and the market. National forest land use policies continue to shift gradually from timber production to ecosystem service functions. Also, in the last decade housing markets across the United States have slowed and the demands for timber for construction have decreased. Over time, the impacts of these trends have been dramatic for the small communities near national forests in Wyoming. Lumber mills in these towns have closed and wood processing has decreased to the lowest levels in decades as timber production has shifted elsewhere.

Modifications to the landscape—whether perceived as positive, negative, or neutral—are often tied to the economic function supported by a particular use of the land.



**Figure 4. Laramie, Wyoming, land use, 2007**

This map was created as part of the city's comprehensive planning process and, in part, to assist in guiding locations for future growth.

**Source:** Laramie Community Development Department 2007

The scenic open spaces and working agricultural landscapes of Wyoming not only serve as important wildlife habitat but also attract visitors and new residents from near and far. The natural amenities of Wyoming are a major factor for some people to settle in the state, and they embrace these resources as part of their quality of life. Recreational opportunities such as hiking and camping in the summer and skiing and snowmobiling in the winter draw visitors year round.

Policies and preferences that lead to economic expansion result in employment opportunities and population growth. Population growth continues to be one of the major shaping forces on land use across the United States. The Mountain West is the fastest growing region in the country and is shifting increasingly to a service-oriented economy driven by natural amenities, information technology, and tourism (Travis 2007). According to the 2010 Census, Wyoming's population increased by 14.7 percent between 2000 and 2010 (Taylor and Lanning 2012).

Increasing population drives land-use activities and change in four major ways: increasing demand for housing, altering employment patterns, affecting transportation connections between housing and employment, and adding to necessary community services. The construction of new housing is generally the first noticeable change in land use experienced by communities with a growing population. Population growth is directly linked to employment growth. While some employment opportunities within extractive industries are located in remote locations,

many mines and refineries are found in relative close proximity to cities and towns, resulting in corresponding increases in service sector employment in those locales.

The national dominance of automobile transportation in the second half of the twentieth century led to increased distances between housing, employment, and service centers, and lower population densities with more dispersed land-use patterns. This change has been characterized by Riebsame and Robb (1997) as the ongoing transformation of the West to look like the rest of the United States, from open range to “cookie cutter” subdivisions, sprawling commercial development, and the same social and economic problems that exist in the rest of the country. While the impacts of these decades-long trends have been less significant in Wyoming than in more populated states like Colorado, expanded vehicle-based transportation access has allowed residential development to move into rural areas surrounding Wyoming municipalities, often in a manner lacking both the necessary infrastructure and community services and property tax revenue to develop them (Coupal et al. 2002).

## LAND-USE FUNCTIONS AND THEIR IMPACTS

Land-use activities are varied in their extent and impacts. Modifications to the landscape—whether perceived as positive, negative, or neutral—are often tied to the economic function supported by a particular use of the land. Here we highlight four major land-use functions that have increased in intensity over the last 20 years: two with very visible impacts on the landscape, and two with less visible yet significant impacts on the existing built environment. All are influenced to some degree by the economic, cultural, and environmental drivers described in the previous section.

### *1. Natural Resource Development*

The construction of infrastructure and associated buildings and the environmental adjustments





needed to accommodate new natural resource development are the primary landscape impacts for this sector. Resource development requires use of land resources—which are often open space—and an integrated infrastructure to move equipment, materials, people, and goods to markets. Energy development is the largest natural resource development industry in Wyoming. Wyoming supplies coal, oil, natural gas, and wind power to the rest of the United States and several foreign countries, and energy development accounted for more than 30 percent of Wyoming’s gross state product in 2011 (WDEA 2011).

## **II. Rural Residential Development**

Residential development in Wyoming occurs in both urban and rural locations. Between 2000 and 2010, Wyoming’s population grew by approximately 70,000 people, which represents a 14 percent increase to the overall state population. The number of residential units in Wyoming increased at roughly the same rate

(17 percent) to almost 262,000 units statewide (U.S. Census Bureau 2012). As people move into Wyoming for employment or other amenities, they often select rural locations for their homes. To accommodate the new residents and the expanding demands of the existing population, services supporting businesses and government agencies are also necessarily increasing in small towns and urban areas (Coupal et al. 2002).

In general, residential patterns in Wyoming follow national trends. Most residential areas are in cities and towns characterized by low density and dispersed development. However, the pressures to create suburbs and generate sprawl are not as dominant in Wyoming as in some states. In rural areas, homes are generally on larger lots (1 to 40 acres) and require extensions of roads and driveways, changing the rural landscape by dissecting open lands and converting lands from agricultural uses to support home construction (Hulme et al. 2009). In this way, residential development,

In rural areas, homes are generally on larger lots (1 to 40 acres) and require extensions of roads and driveways, changing the rural landscape by dissecting open lands and converting lands from agricultural uses to support home construction.

**Source:** *Hulme et al. 2009*



like resource extraction, can be threatening to Wyoming's agricultural and ranching legacy.

### ***III. Large Retail Chain Development***

Commercial development generally needs to be accessible to markets and major roads. Highways and busy intersections provide access to customers. Historically, the best locations for businesses were major downtown intersections. Today, commercial and industrial development generally takes place adjacent to transportation routes. As communities expand along busy roads and develop truck bypasses, new busy intersections are created and multiple concentrations of commercial and industrial development are located throughout communities.

As state population growth increases, new businesses and types of services are moving to Wyoming towns and cities. The expansion of large retail chains in Wyoming has increased

significantly since the mid-1990s. The small, local downtown retail sector of the Wyoming economy is shifting to large national retailers with large buildings and parking lots, changing the traditional "townscape" (Beaumont and Tucker 2002). Local retailers are giving way to "big box" discount stores, changing the small town shopping experience to one more similar to those found in any large metropolitan area. The consequence is a change to the character of many downtowns and the proliferation of so-called "strip-development" commercial centers along major transportation routes on the fringes of communities (McMahon 2011).

Recently, and partially in response to retail-centered sprawl, a business and residential "Main Street" revitalization effort has begun in many of Wyoming's downtowns. This trend is based on traditional community design techniques emphasizing mixed use, walkability, and local

culture. Efforts to keep a viable downtown still rely on accessibility, but have expanded to include promotion of unique retail opportunities, as well as alternative modes of transportation, including public transportation, and pedestrian and bicycle-friendly routes (WRDC 2010).

#### **IV. Tourism and Outdoor Recreation**

The tourism industry in Wyoming accounts for 14 percent of overall employment in the state (WDEA 2011) and \$2.5 billion in annual sales and services (Dean Runyan Associates 2012). The land-use functions associated with tourism vary from outdoor recreation facilities to commercial establishments in population centers, all resulting in different development footprints on the land. The services of hotels, restaurants, and specialty stores are generally found in cities and towns. These are often gateway communities for activity centers, for example, ski resorts and national parks. Tourism services tend to be located along transportation corridors that are easy to access for the traveling visitor. These same services are also enjoyed by local residents, mainly for places to eat and housing for guests. Local artisans benefit from tourism, as they can sell their work at gift shops or galleries. Finally, hunting, fishing and off-road vehicle opportunities are enjoyed by both local residents and visitors, with forests supporting these activities through various stages of infrastructure development.

### **VISUAL CASE STUDIES IN LAND-USE PATTERNS**

The land-use drivers and land-use functions described above have real impacts on the land and on people's daily lives. To tie these concepts to recognizable changes, we present two case studies that visually portray the footprint of land-use change across the landscape.

#### **Case # 1: Laramie County**

In Wyoming, as in much of the Mountain West, there are many examples of land conversion (e.g., agricultural and rangelands to residential uses), especially in those counties experiencing the greatest population increases.

As an example, here we look more closely at the City of Cheyenne and Laramie County in the southeastern part of the state.

Between 1980 and 2010, the City of Cheyenne's population grew more than 25 percent, from 47,283 to 59,466, while the overall population of Laramie County (including the City of Cheyenne) grew 34 percent, from 68,649 to 91,738 over the same time period (U.S. Census Bureau 2012). Since the mid-1990s, growth in Cheyenne and Laramie County has increasingly been influenced by the expanding northern edge of Colorado's Front Range urban corridor. While some of this growth has been accommodated by infill and annexation by the city, a comparable amount has been supported by conversion of agriculturally designated lands to low-density rural residential use. Further, according to the most recent comprehensive plan for the Cheyenne area, a 2 percent annual population growth rate could require up to a 125 square mile expansion of the Cheyenne urbanized area by 2030 (Cheyenne Metropolitan Planning Organization 2006).

Landsat Thematic Mapper satellite data allow both visual and quantitative assessment of these types of land-use changes. As portrayed in **Figure 5**, comparative imagery from 1985 and 2011 shows Cheyenne's growth over the last 25-plus years. Notable changes from 1985 to 2011 include conversion to rural residential subdivisions from row crop agriculture northeast of the city and from pasture and rangeland to the north. Ongoing construction activities are visible in the southeast (County Fairgrounds) and southwest (industrial complex) portions of the 2011 image.

Trends in Laramie County are congruent with research that indicates sprawling development is more likely to occur in unincorporated areas. In Wyoming and throughout the Mountain West, county governments generally lack strong land-use authority and are unable to regulate development in as strong a manner as municipalities (Carruthers 2003).

According to the most recent comprehensive plan for the Cheyenne area, a 2 percent annual population growth rate could require up to a 125 square mile expansion of the Cheyenne urbanized area by 2030.

*Source: Cheyenne Metropolitan Planning Organization 2006*

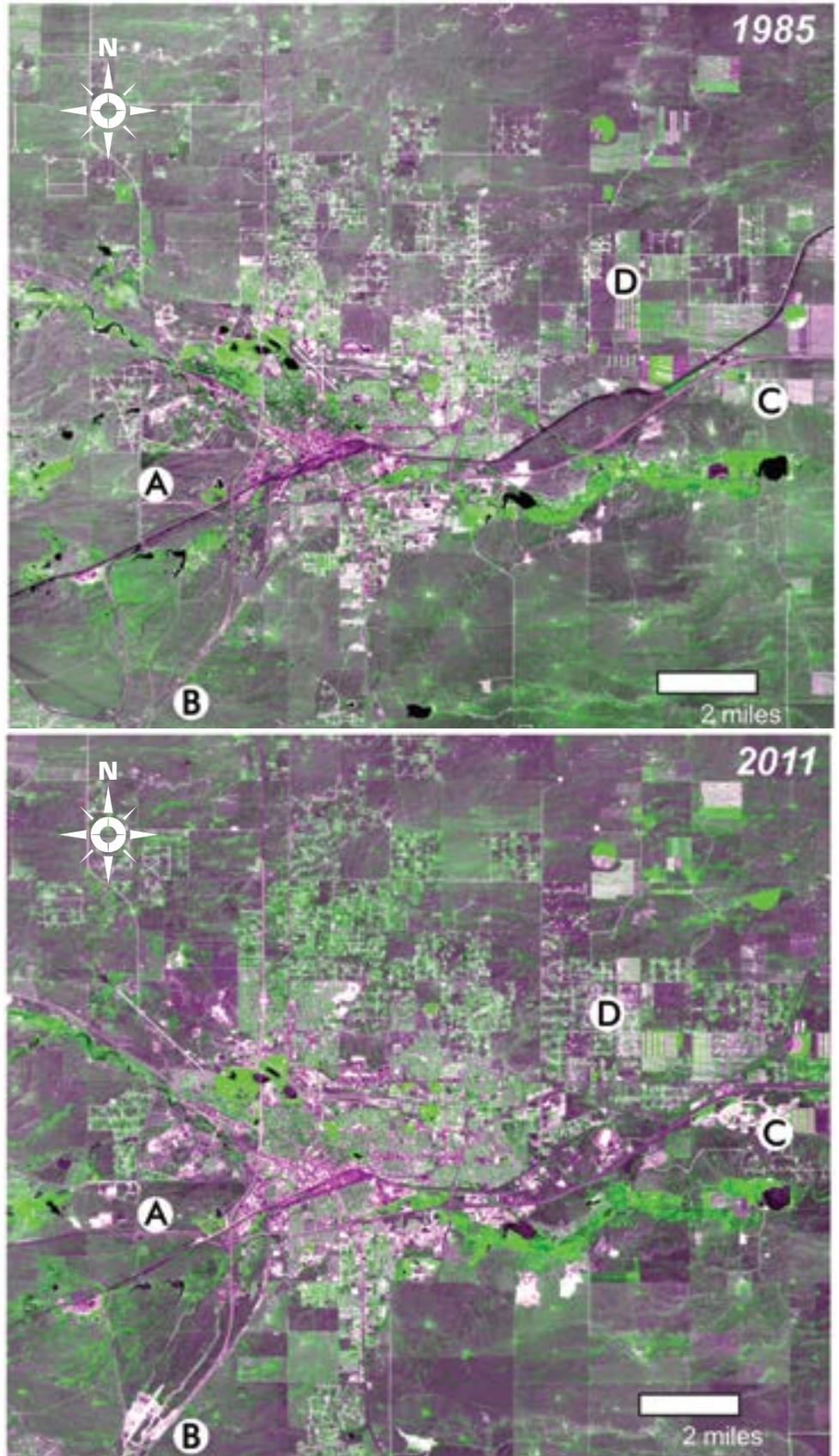
### Figure 5. Cheyenne, Wyoming, land use, 1985 and 2011

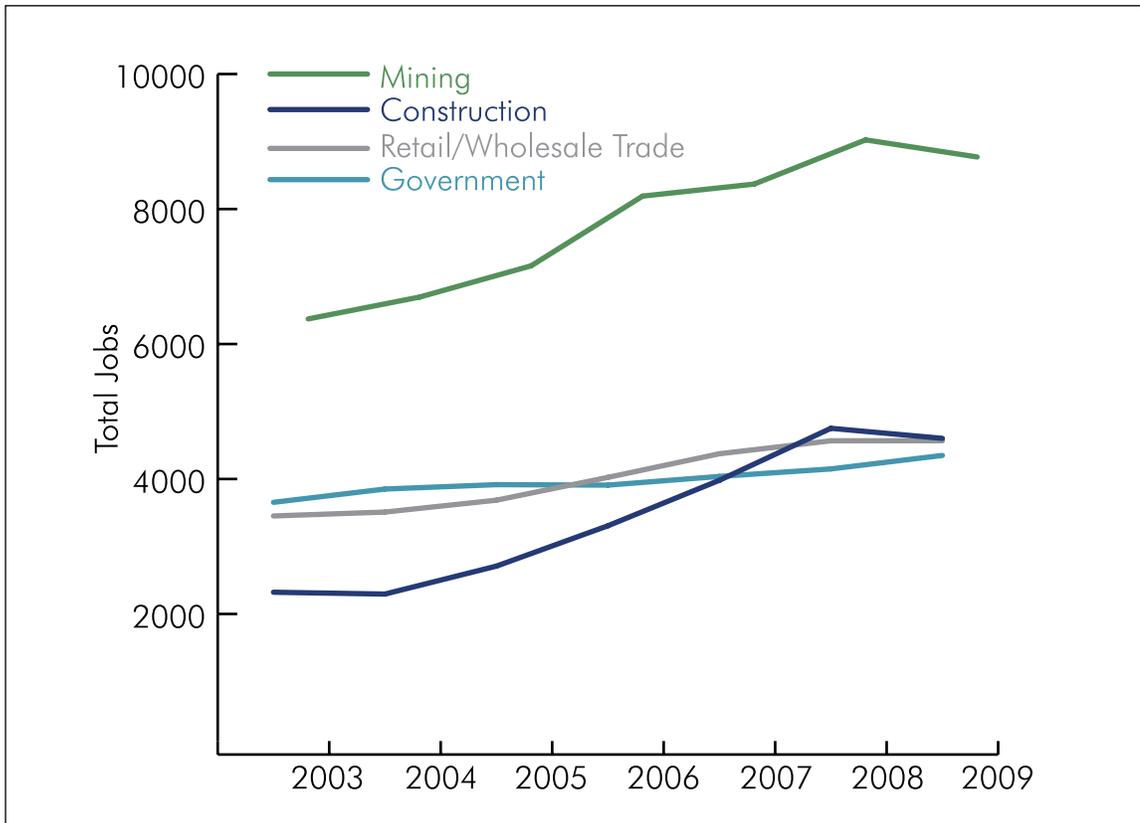
In this Landsat image pair, purple colors represent bare ground and human-made impervious surfaces. Bright green colors represent healthy vegetation, which includes riparian areas along Crow Creek as well as “irrigated” residential and agricultural lands. Water appears black in color.

Between 1985 and 2011, the City of Cheyenne and its suburbs have witnessed numerous changes. University of Wyoming’s supercomputing facility and a distribution center for a major U.S. retailer were added outside the western limits of the City (A), a new industrial center was established to the south of the city along Interstate 25 (B), and Laramie County Fair purchased the Archer research and extension land in 2004 in East Cheyenne along Interstate 80 (C). Several new sub-divisions have been added in the northern part of the city, and some of the agricultural lands have been converted to accommodate this increased growth (D).

Several new sub-divisions have been added in the northern part of the city, and some of the agricultural lands have been converted to accommodate this increased growth (D). Also, newly constructed roads within the city and access roads to the industrial center (B) are visible in the 2011 image.

**Source:** U.S. Geological Survey, Landsat Program ([landsat.usgs.gov](http://landsat.usgs.gov)); false-color infrared (bands 5, 4, and 2) image pair was provided by Dr. Ramesh Sivanpillai, WyomingView coordinator, Wyoming Geographic Information Science Center





**Figure 6. Changes in employment by sector, Campbell County, Wyoming, 2003–2009**

The biggest non-government sector total employment increases in Campbell County were seen in the mining and construction sectors, followed by retail/wholesale services (37 percent, 98 percent, and 32 percent change, respectively). Government jobs—the fourth largest employer in the county—increased 19 percent over the same time period.

**Source:** Wyoming Division of Economic Analysis 2011

### Case #2: City of Gillette

When most people think of the impact of energy development on the landscape, new roads and well pads typically come to mind. However, land-use change associated with energy development is also evident in nearby cities and towns, driven by activities associated with new jobs, population growth, and housing and commercial infrastructure needs.

Campbell County is a case in point. Between 2000 and 2010, the county was second in Wyoming for percentage population increase (+36.9 percent) and first in the state in absolute terms (12,435 new residents). The population of Gillette, the county seat, increased 48 percent from 2000 to 2010 to more than 29,000 (WDEA 2010b). Not surprisingly, the biggest increases in employment in Campbell County during that decade were seen in the mining and construction sectors, followed by retail/wholesale trade services (Figure 6; WDEA 2011).

The impacts of rapid growth on both residential and commercial development patterns are visible in and around Gillette, as evidenced by new subdivision plats and new commercial and industrial facilities along major transportation corridors. Figure 7 provides a visual display of this land-use change, comparing conditions in 1994 with those in 2011. Similar expansion is visible in other large energy centers in the state, including Pinedale and Rock Springs, as well as smaller towns like Wamsutter, where energy-based economic activity has driven the first significant growth there in decades.

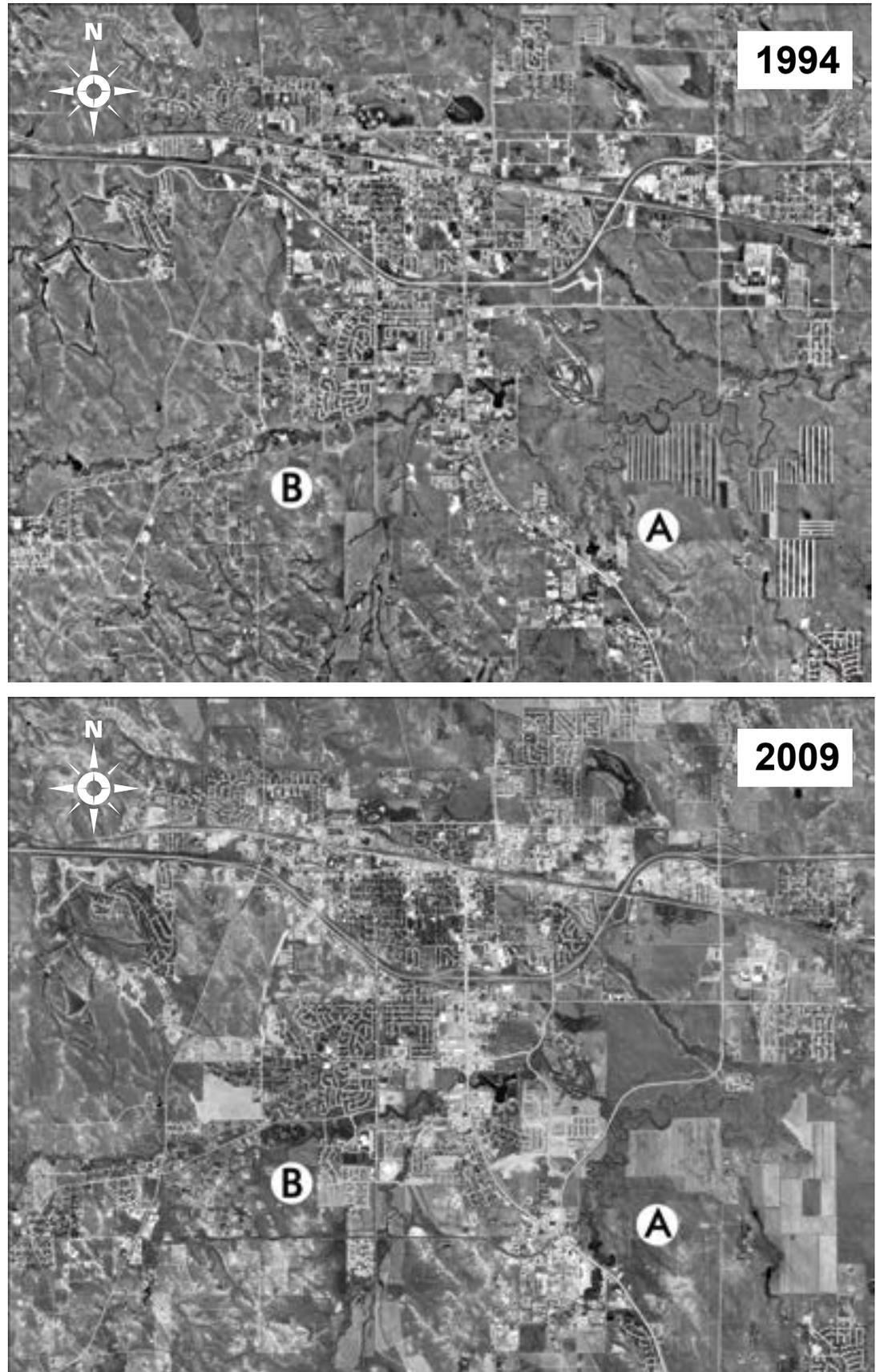
### LAND USE AND COMMUNITY PLANNING

Despite the most recent national economic slowdown, Wyoming will likely continue to grow because of its natural resources, recreational amenities, and quality of life. Given its unique mix of low-density (and aging) population, dispersed built environments, and open spaces of varying real and perceived value, small changes

**Figure 7. Gillette, Wyoming, land use, 1994 and 2009**

While meeting demand for more business infrastructure (south of A) and housing (east and west of B), expanding development also extends the functional boundaries of the city, creating increased challenges for water and sewer infrastructure, and fire and police protection, among other community services.

**Source:** U.S. Department of Agriculture Digital Ortho Quarter Quads (1994) and Digital Ortho Quads (2009); image pair was provided by Dr. Ramesh Sivanpillai, WyomingView coordinator, Wyoming Geographic Information Science Center



in land use—driven by population, employment, and infrastructure development—can have significant impacts on the very landscape characteristics that attract people and commerce to its communities. Land-use change is often accompanied by other challenges including affordable housing shortages, traffic congestion, insufficient water and sewer infrastructure, crowded schools, and loss of traditional ways of life. In the face of such change, citizen-based local community planning is one tool citizens can use to help make informed choices in creating and maintaining places where people want to live, work, and conduct business.

In the United States, land-use planning is primarily the responsibility of city and county governments that are empowered by state-level enabling legislation or land planning policy to preserve public health, safety, and welfare. Decisions about which land uses are permitted, their size, location, and compatibility, occur at the local government level, guided by citizen input and implemented by local elected officials. In addition to guiding land-use decisions, planning also enables communities to promote economic development; protect private property rights, farmland, ranchland and historic areas; and make fiscally responsible decisions regarding community services and infrastructure needs.

In Wyoming, the common tools used for managing land development are comprehensive plans, zoning and subdivision regulations, and capital improvement plans. Unfortunately, many of these mechanisms are based on planning principles that date to the 1920s and may not be adequate to deal with today's complex development activities and increasingly diverse community values. Today, opportunities exist to both improve existing regulatory mechanisms and enhance current legislation with incentive-based strategies to better support economic growth, environmental resilience, and quality of life. Such topics will be explored in subsequent issues of this publication series.

## SUMMARY

- “Land use” typically refers to the activity taking place on a specific piece of property or an aggregation of properties, for example, agriculture, recreation, and residential development.
- While many people think of Wyoming as a rural state, 69 percent of the population lives within urban areas, or incorporated cities and towns. Its cities and towns cover only 77 of the state's 97,800 square miles.
- Natural resource development, rural residential development, large retail chain development, and tourism and outdoor recreation have intensified in Wyoming over the last 20 years.
- Because of its natural resources, recreational amenities, and quality of life, Wyoming will likely continue to grow in these areas.
- Small changes in land use—driven by population, employment, and infrastructure development—can have significant impacts to the very landscape characteristics that attract people and commerce to Wyoming's communities.
- Citizen-based, local community planning is one tool cities and counties can use to help make informed choices to create and maintain places in Wyoming where people want to live, work, and conduct business.



## ACKNOWLEDGEMENTS

The authors thank Dr. Ramesh Sivanpillai of the Wyoming Geographic Information Science Center for his analysis and interpretation of remotely sensed imagery. The authors thank Joanne Garnett and Matt Ashby for their constructive reviews. The authors acknowledge the Wyoming Department of Administration & Information, Division of Economic Analysis as the principal source for socioeconomic data reported in this publication. This organization

serves as the lead agency for the Wyoming State Data Center Network, providing access to a wide range of information from the U.S. Census Bureau, U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, and U.S. Department of Agriculture. Whenever possible, data reported in this publication reflect the most current available published data from the 2010 U.S. Census of Population and Housing. Any errors in value are solely the responsibility of the authors.

## REFERENCES

- Beaumont, C. and L. Tucker. 2002. Big-box sprawl and how to control it. *Municipal Lawyer*, March/April.
- Carruthers, J.I. 2003. Growth at the fringe: The influence of political fragmentation in the United States metropolitan areas. *Papers in Regional Science* 82: 475–499.
- Cheyenne Metropolitan Planning Organization. 2006. *Plan Cheyenne: Community Plan Snapshot Report*. Cheyenne, WY. [http://plancheyenne2006.com/pdf/final/2/ALL\\_Snapshot\\_text\\_files.pdf](http://plancheyenne2006.com/pdf/final/2/ALL_Snapshot_text_files.pdf)
- Coupal, R., D.T. Taylor, and D. McLeod. 2002. *The Cost of Community Services for Rural Residential Development in Wyoming*. Laramie, Wyoming: Ruckelshaus Institute of Environment and Natural Resources.
- Dean Runyan Associates. 2012. *Wyoming Travel Impacts (1998–2011p)*. Report prepared for Wyoming Travel and Tourism. <http://www.wyomingofficeoftourism.gov/industry/pdf/2011EconomicImpactReport.pdf>
- Friedman, J.P., J.C. Harris, and J.B. Lindeman. 2008. *Dictionary of Real Estate Terms*, 2<sup>nd</sup> edition. Hauppauge, New York: Barron's Educational Series, Inc.
- Hulme, D., C. Anderson, K. Parady, J. Hamerlinck, S. Lieske, and I. Burke. 2009. *Wyoming's State of the Space: A Comprehensive Review of Land Use Trends in Wyoming*. Laramie, Wyoming: Ruckelshaus Institute of Environment and Natural Resources.
- Laramie Community Development Department (LCDD). 2007. *Laramie Comprehensive Plan*. Laramie, WY. <http://www.ci.laramie.wy.us/index.aspx?nid=230>
- McMahon, E.T. 2011. The future of the strip? *Urban Land Magazine*. <http://urbanland.uli.org/Articles/2011/Mar/McMahonStrip>
- Nickerson, C., R. Ebel, A. Borchers, and F. Carriazo. 2011. *Major Uses of Land in the United States, 2007*. Economic Information Bulletin No. EIB-89. Washington, DC: U.S. Department of Agriculture, Economic Research Service. 67 p.
- Platt, R.H. 2004. *Land Use and Society*. Washington D.C.: Island Press.

- Riebsame, W.E., and J.J. Robb, eds. 1997. *Atlas of the New West: Portrait of a Changing Region*. A project of the University of Colorado, Boulder: Center of the American West. New York: W.W. Norton & Company.
- Taylor, D.T. and S. Lanning. 2012. *Population Growth in Wyoming, 2010–2012*. Laramie, Wyoming: Ruckelshaus Institute of Environment and Natural Resources.
- Theobald, D.M. 2003. *Defining and Mapping Rural Sprawl: Examples from the Northwest U.S.* White Paper, Growth Management Leadership Alliance. [http://warnercnr.colostate.edu/~davet/Theobald\\_rural\\_sprawl-v1.pdf](http://warnercnr.colostate.edu/~davet/Theobald_rural_sprawl-v1.pdf)
- Travis, W.R. 2007. *New Geographies of the American West: Land Use and the Changing Patterns of Place*. Washington, D.C.: Island Press.
- U.S. Census Bureau. 2012. *2010 Census of Population and Housing, Population and Housing Unit Counts, CPH-2-52, Wyoming*. Washington, DC: U.S. Government Printing Office. [http://eadiv.state.wy.us/demog\\_data/pop2010/CPH-2-WY.pdf](http://eadiv.state.wy.us/demog_data/pop2010/CPH-2-WY.pdf)
- U.S. Department of Agriculture (USDA). 2009. *Summary Report: 2007 National Resources Inventory*, Natural Resources Conservation Service, Washington, DC, and Center for Survey Statistics and Methodology, Iowa State University, Ames, Iowa. 123 pages. [http://www.nrcs.usda.gov/technical/NRI/2007/2007\\_NRI\\_Summary.pdf](http://www.nrcs.usda.gov/technical/NRI/2007/2007_NRI_Summary.pdf)
- Wyoming Division of Economic Analysis (WDEA). 2010a. *Equality State Almanac*. Cheyenne, Wyoming: State of Wyoming Economic Analysis Division. <http://eadiv.state.wy.us/Almanac/Almanac.html>
- \_\_\_\_\_. 2010b. *Wyoming's Population Experiences its Fastest Decennial Growth since 1980*. [http://eadiv.state.wy.us/demog\\_data/pop2010/2010\\_state\\_newsrelease.pdf](http://eadiv.state.wy.us/demog_data/pop2010/2010_state_newsrelease.pdf)
- \_\_\_\_\_. 2011. *The Wyoming Employment, Income, and Gross Domestic Product Report*. [http://eadiv.state.wy.us/i&e/Inc\\_Emp\\_Report09.pdf](http://eadiv.state.wy.us/i&e/Inc_Emp_Report09.pdf)
- Wyoming Rural Development Council (WRDC). 2010. *2010 Annual Report*. Cheyenne, Wyoming: Wyoming Business Council. [http://www.wyomingrural.org/\\_pdfs/2010%20Annual%20Report%20-%20FINAL%20compressed.pdf](http://www.wyomingrural.org/_pdfs/2010%20Annual%20Report%20-%20FINAL%20compressed.pdf)



Wyoming Open Spaces Initiative  
Ruckelshaus Institute of Environment  
and Natural Resources  
804 E. Fremont Street  
Laramie, WY 82072



*Funding for the Wyoming Open Spaces Initiative is provided by private individuals and foundations.  
If you would like to contribute, please contact us at (307) 766-5080 or [ruckelshaus@uwyo.edu](mailto:ruckelshaus@uwyo.edu).*