CONSERVATION PLAN





Adopted by the Board of Directors July 2015



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Introduction

This conservation plan has been developed to help the Crested Butte Land Trust assess the current state of conservation in the Upper Gunnison Valley and to focus its future efforts strategically on the most important conservation priorities. The plan includes maps identifying current conservation by the Land Trust and other agencies as the basis for future conservation priorities.



The purpose of this plan is to:

- 1) To re-assess and re-affirm the Crested Butte Land Trust's conservation strategies
- 2) To utilize conservation analysis and mapping to identify areas with significant concentrations of conservation values.

Although the Land Trust's geographic area is Gunnison County, this plans scope is northern Gunnison County from Schofield to the north, Kebler Pass to the west and along the Highway 135 corridor from Crested Butte to the Jack's Cabin area. The scope has been broken into seven key geographies that the Land Trust created based on topographic features and existing conservation; these are not official or regulatory boundaries of any kind.

Overview Map





Background

As of May 2015, the Land Trust has conserved more than 3,900 acres in 39 conservation easements and more than 1,200 acres in 19 fee simple acquisitions. In addition, the Land Trust has helped conserve more than 900 acres through facilitated projects as well as numerous trail easements.

The Crested Butte Land Trust consists of

professional staff members, a dedicated Board of Directors and committee members, energetic volunteers and seasonal interns. We are committed the four tenants of our mission:

- Open space
- Wildlife habitat
- Ranching
- Recreation

To meet these tenets we focus on conservation projects that:

- Preserve scenic areas and view corridors
- Protect wildlife habitats and fragile ecosystems
- Protect agricultural and ranching uses
- Enhance access to public lands and create recreational and educational opportunities on conservation lands

Mission

In our 2014 strategic planning process the board and staff had the opportunity to work together to review and re-affirm the organization's mission. It is: *To forever protect and steward open lands for vistas, recreation, wildlife, and ranching, thus contributing to the preservation of Gunnison County's unique heritage and quality of life.* We strive to balance these conservation values in order to provide our community with a diverse portfolio of projects.

Conservation Approach

We work proactively to foster lasting landowner and partner relationships to complete projects with strong conservation values that are important to our community. This work requires that we remain non-political, operate with integrity and speak with one voice.

Board of Directors

The Crested Butte Land Trust Board of Directors is focused on providing strategic direction to the Executive Director and improving the organization's financial position. It places a priority on best practices in governance. The Land Trust uses four committees to efficiently fulfill its strategic role. These committees include:

- Lands- responsible for reviewing project feasibility and criteria
- Development- responsible for raising funds needed to build and sustain the organization
- Finance- responsible for financial policy, budget and audit review
- Governance- responsible for performance of board and executive director as well as strategic planning

Conservation

Plan Methods While this is the first formal conservation planning effort completed by the Crested Butte Land Trust, the organization frequently discusses conservation



priorities and has ranked them over the years.

Current priorities for this plan are based on board surveys and discussion, on-going public surveys on specific conservation issues, input from key stakeholders and staff knowledge.

Based on 2015 input, it is clear that the Land Trust should continue to balance the protection of open space (including ranchlands), wildlife habitat and public recreation and education. While some people are preferential to one value over another, each value is essential to the Land Trust's work and particularly strong projects will protect numerous values. Connectivity to other conserved lands, water resources and parcels with greatest biodiversity are considered



particularly important. As for conservation threats, 2015 input indicates that development and population growth is the number one concern for the organization followed by climate change and declining water resources.

Descriptions of conservations methods are based on the Crested Butte Land Trust's use of terms not general or standardized definitions. The list of fauna is a summary of numerous Baseline Documentation Reports for Land Trust projects in the plans scope. Information on climate change vulnerability is based on the Gunnison Basin Vulnerability Assessment for the Gunnison Climate Working Group. All published sources and websites used for the creation of this plan are listed in the Reference section starting on page 37.

Methods of Conservation

Acquisitions

While fee-simple acquisitions typically come with an initially higher price tag, future costs for easement defense and violation resolution can be expected to be much lower. This is generally the preferred method of conservation for recreation and education values, or for reserves that are home to endangered plants or wildlife, or otherwise particularly valuable in terms of natural or cultural resources.

Ambassador Landscapes

An ambassador landscape is a property that first and foremost has a purpose to connect people to the land, especially newcomers and those who have not grown up immersed in that landscape. It is not a traditional



nature preserve. Instead, its job is to "speak" to people, sharing the organization's passion for the land and helping to create emotional connections to that type of landscape and our work.

An ambassador landscape will often have secondary "jobs" or attributes, which could include wildlife habitat conservation, water quality enhancement, scenic views and cultural protection, or working lands conservation. That said, the land trust understands that the planning for ambassador landscapes are done differently: The user experience by the public is seen as the first goal in the effort to allow them to experience the land with family and friends.

Fee-simple acquisitions are best suited for ambassador landscapes, whose purpose is to help foster appreciation of land conservation, nature and natural resources through recreation, education, community programming and passive and active land use.

Conservation Easements

CE's are strong tools that allow the Land Trust to accomplish the breadth of its mission. Working with willing landowners to complete easement projects can help grow the community of conservationists and lead to future opportunities. The main concern with easements is the potential for future violations. The Land Trust is required to defend all easements if necessary and it maintains conservation specific insurance as well as a stewardship fund for this purpose. Strong landowner outreach and education is key, and if possible, informing prospective buyers about a CE's allowed and restricted uses before a purchase is complete can help protect the Land Trust from future costs of easement defense and violation resolution. This is generally the preferred method of conservation for properties where the landowner wants to retain ownership of the property.

As the only local entity certified by the state of Colorado Division of Real Estate to hold conservation easements for which a state tax credit is claimed, the Land Trust has acquired land in fee simple and subsequently transferred the title to a partner so that the Land Trust can hold the CE. While these projects can leverage lucrative state tax credits, they require a strong partnership with an entity that has the capacity and knowledge to manage conservation lands.



Trail Easements

This type of easement has made many of the trails surrounding the Town of Crested Butte feasible. This tool is essential for trail access near development where certain parcels are key to connecting trail corridors but where the entire property doesn't offer sufficient conservation values or the landowner isn't interested in a larger conservation agreement.

Land Trades

Federal agencies prefer to manage their lands on a landscape level, rather than manage lands that are proximate or surrounded by privately owned lands or inholdings. Also, private inholdings can reduce

the conservation values of publicly managed lands because access must be allowed to the inholding. Therefore, federal agencies will trade lands in and out of their management portfolio to promote connectivity. Any trades must be of equal financial value. While land trades can be very successful, they do require a significant amount of time, often years to complete.



Management Agreements

In specific cases, the Land Trust may enter management agreements on properties for which it does not hold ownership rights. Management agreements are also tools for working with landowners interested in future conservation of their land or for other land owning entities that may lack land management capacity.

When using management agreements, the Land Trust must ensure that the costs of management, including staff time, are realistically assessed and reimbursement is appropriate.

Conservation Development

Through conservation development, a Land Trust typically purchases fee simple to a property and places a conservation easement over the areas with conservation values, and sells or develops the remainder to finance the project. In addition to the scenario described above,

where a conservation easement is combined with a reserved homesite, other conservation development approaches include conservation subdivision or a conservationoriented master planned community. Any funds generated from this type of transaction can be



used for the initial project, or other conservation projects or programs of the Land Trust.

Protected Area Analysis

The Crested Butte Land Trust strives to create a diverse portfolio of conservation projects which include land acquisitions, conservation easements, trails, land trades and managed lands.

Project Type	Project number %	Acreage %
Acquisitions	26%	18%
Conservation Easements	51.50%	65%
Land Trades	11.50%	16
Management Agreements	1%	1%
Trail Easements	10%	N/A

Land Trust Acquisitions

-Slate River Valley- 9 properties totaling 771.61 acres -Schofield- 3 properties totaling 190.31 acres -Mt. Crested Butte- 3 properties totaling 135.28 acres -Hwy 135 corridor- 3 properties totaling 39.47 acres -Washington Gulch- 1 property of 54.33 acres

Land Trust Conservation Easements

-Slate River Valley- 14 properties totaling 623.63 acres -Hwy 135 corridor- 12 properties totaling 2,737.67 acres -Coal Creek/Kebler pass- 3 properties totaling 18.2 acres -Gunnison- 2 properties totaling 227.8 acres -Schofield- 2 properties totaling 164.96 acres -Mt. Crested Butte- 2 properties totaling 111 acres -Gothic- 2 properties totaling 87.45 acres -Town of CB- 2 properties totaling 12.56 acres

Land Trust trail easements

Budd trail (Lower Loop system)
Hermanson trail (Old Kebler Pass Road & Chocolate Peak- not yet built)
Eve Kochevar trail (not yet built)
Bench Cross Country ski trails- 2 trails

Trades to Town of Crested Butte

- -Woods Walk easements- 3 properties totaling 59.81 acres
- -Baxter Gulch- 2 properties totaling 28.41 acres
- -Baxter Gulch trail easements- 2 trails

Other trades

Brush Creek/Robinson (14.53 acres)
Hidden Mine Ranch (523.8 acres)
Kebler parcel (320 acres) to U.S. Forest Service



Public Land Acreage by Key Geographies

						Kebler		
		Highway 135				Pass/Irwin/Coal	Brush/Cement	
Key Geographies	Slate River Valley	Corridor	Washington Gulch	East River Valley	Schofield	Creek	Creek	Total
U.S. Forest Service	16,448	24,653	6,291	29,766	9,859	13,017	9,114	109,149
Bureau of Land Management	655	155	0	0	0	384	56	1,250
Colorado Parks & Wildlife	0	788	0	0	0	48	0	837
State of Colorado	0	8	12	0	0	0	0	20
Colorado State Land Board	0	977	0	0	0	0	0	977

Natural Resources

Overview

Northern Gunnison County is known for its scenic mountain views, working cattle ranches, brilliant summer wildflowers, extensive trail systems, challenging ski terrain, and lakes and river ripe for fishing and boating. Locals and long-time visitors can also speak of the copious species of wildlife roaming our natural areas, the immense amount of public and conserved lands near all our population centers and a tight-knit community that is deeply invested in this little corner of paradise.

Geography and Habitat

Local peaks range from 10,000 to 13,400 feet above sea level and the valley floors start around 8,200 feet and climb to over 10,000 feet. While alpine topography typically dominates the high elevation areas, forests



populate middle range elevations, and meadows and grasslands lead to lower elevations where water is abundant and biodiversity thrives.

Lower elevation forests are made up primarily of aspen and lodgepole pines. In higher ranges, Englemann spruce and subalpine firs dominate. Star gentian, alpine meadow rue, pearly everlastings, paintbrush, yarrow, asters, Aspen sunflowers and monument plants colonize alpine meadows. Cow parsnip, larkspur, showy daisy, orange sneezeweed, American vetch, osha and fireweed populate slightly lower meadows. Mountain sage-brush, rabbit brush, shrubby cinquefoil and foxtail can be found on drier open hillsides below tree line. And Corn lilies, Drummonds willow, geyer willow, monks hood, water sedge, elephantella, spike rush and Canadian reed grass grow in riparian areas. Countless other plant species grow throughout this range and make up the beautiful patchwork of our views; feed our wildlife and cattle; and support a whole collection of ecosystem services including flood and erosion control, water filtration, carbon sequestration, and aesthetic enjoyment to name a few.

Geology

This plans area is located within the Southern Rocky Mountains physiographic province, known for rugged and high-elevation peaks. The geology and therefore topography were generally influenced by the Piceance Basin to the northwest, the Elk and West Elk Mountains within the area, the Sawatch Range to the southeast and the San Juan Volcanic Field to the south.



The river valleys were formed by glaciation and are therefore comprised of glacier drift. These sedimentary materials range in size and composition. The most recent period of glaciation was approximately 12,000 years ago which accounts for the limited soil development. In the southern portion of the priority area, the broad valley floor is made up primarily of sedimentary river deposits and mountain debris ranging from silt to boulders.

Throughout the local formations, gray, yellow, brown and red sandstone can be found. Conglomerates and shale are common as well with

intermittent limestone beds. Mudstone, siltstone and minor carbonate beds are scattered throughout the area. Dikes and stocks of quartz and granite can also be found in specific areas. Mineralized rock includes silver, minor gold, copper, lead, zinc, molybdenum and coal. Except for molybdenum, the current threat of mineral development is very minor.

Land Cover Types

Land Cover Type	Acres	Percentage		
Agricultural Area	4,882	3.1%		
Alpine Bedrock & Scree	13,153	8.4%		
Alpine Tundra or Meadow	12,243	7.8%		
Aspen	20,979	13.3%		
Aspen-Conifer Mix	733	.5%		
Conifer	45,898	29.2%		
Developed Area	623	.4%		
Mountain Cliff & Canyon	3,205	2%		
Mountain Meadow	17,778	11.3%		
Mountain Shrubland	1,465	.9%		
Open Water	248	.2%		
Riparian Area	12,504	7.9%		
Sagebrush Shrubland	23,669	15%		
TOTAL	157,382	100%		

These calculations are for the plan scope area (northern Gunnison County). Conifer forest is the majority land cover type and the second largest, sage shrubland, is roughly half as much. All the forest types together make up 43% of the land cover, meadow types make up 19.1%, shrublands are 15.9% and rocky areas are 10.4%. The .4 % developed area is evidence of strong conservation as well as significant public land. It should be noted that the 3.1% of agricultural area only includes irrigated ranchlands, not the thousands of acres of shrub, meadow and forest lands grazed

throughout the year.

For the context of this plan, these land cover types are defined as follows:

- Agricultural Area- irrigated or cultivated farm and ranchlands
- Alpine Bedrock & Scree- exposed solid rock and loose rock making up mountains
- Alpine Tundra or Meadow- treeless plains and meadows with frost-molded landscapes, extremely low temperatures, and short growing seasons
- Aspen- comprised of aspen stands commonly called American, mountain or quaking aspen with understories likely to include common juniper, snowberry, meadow rue, osha, columbine, arnica, larkspur and false hellebore
- Aspen-Conifer mix- forested land with a mix of aspen, fir, pine and spruce
- Conifer- Forest type dominated by firs, pines, and spruce
- Developed Area- high density development in and around towns as well as residential and commercial communities
- Mountain Cliff & Canyon- rocky outcroppings and ravines between cliffs
- Mountain Meadow- a field habitat vegetated by primarily grass and other non-woody plants (grassland)
- Mountain Shrubland-habitat with vegetation dominated by shrubs, but often including grasses, herbs, and perennials
- Open Water- lakes and ponds both natural and man made
- Riparian Area- the interface between land and water bodies including rivers, streams and lakes

Land Cover Type Map





Climate

In general, the plans area has a mountainous climate with strong localized patterns that are heavily impacted by the surrounding topography.

As shown in both the maximum and minimum (pg. 15) mean daily temperature maps, higher elevation regions around the edges of the area are generally cooler and the valley bottoms stay warmer. The primary exception to these averages is temperature inversions that occur mostly during the winter months where cooler air is trapped in the valley floors and high elevations remain warmer.

July is regularly the hottest month with an average high of 75 degrees Fahrenheit. June, August and September also bring warm weather with a combined average high temperature of 69 degrees.

January and September tend to have the largest temperature variance between high and low averages, while April and May have the least variance. October and November shows the most significant average temperature change between months and April to May show the second largest change.

Schofield

Slate River

Valley

Kebler

Pass/Irwin/Coal Creek

The coldest month, on average, is January with a mean low of -8 degrees Fahrenheit. December and February also have average lows in the negative

degree range.



Mile

Brush/Cement Creek

East

River Valley

Washington

Gulch

November and March typically signify the transition into and from warmer temperature ranges.



The precipitation map shows how moisture generally increases from south to north with the low valley floors receiving the least moisture.

The chart below shows snowfall in the Gothic townsite. While the Paradise Divide and Irwin zones will likely receive more snow than Gothic, Crested Butte South and much of the Hwy. 135 corridor will receive less, therefore it serves as a rough average of the entire area.

The majority of snowfall is between November and April. There has been significant historical variance from year to year in snow depths.

Winter	Sept.	Oct.	Nov.	Dec.	Jan	Feb	Mar	Apr	May	June	July	Total
Aver/mo.	13.9	66.7	136.5	150.4	164.4	175.6	158.8	134	76.4	9.8	0.1	1094.3
Ave/day/ mo.	0.46	2.15	4.55	4.87	5.3	6.29	5.17	4.47	2.46	0.33	0	431
Highest	116	125	328	465	441	383	342	252	275	39	3	1641
Year	1986	2002	1985	1983	1980	1993	1991	2011	1995	1993	1993	1994-95
Lowest	0	0	36	18	35	49	31	53	7	0	0	474
Year	many	2004	2007	1976	1992	2002	2012	1985	2002	many	many	1976-77

Fauna

The area is populated by a range of species, some of the most notable animals include:

Mammals American elk Mule deer Moose Mountain lion Bobcat Lynx Coyote Red fox Black bear Porcupine Muskrat Long-tailed weasel Pocket gopher **Pine squirrel** Yellow-bellied marmot Jumping mouse Mountain vole Skunk Ermine American pika Snowshoe hare Beaver Badger Colorado chipmunk

<u>Amphibians</u> Boreal toad Cricket frog Tiger salamander

<u>Fish</u> Rainbow trout Brown trout Brook trout









<u>Birds</u>

American Bald Eagle Golden Eagle **Great Blue Heron** Canada goose Great Horned Owl Red tailed-hawk Swainson's hawk Yellow Warbler Lincoln's sparrow Mountain Bluebird Nuthatch Starling Woodpecker Mountain Chickadee Killdeer Kestrel Pine Gross Beak Pine Siskin Mallard Green Winged Teal **Clarks Nut Cracker** Western Tanager Red-naped Sapsucke r Kingfisher White-tailed Ptarmigan Western flycatcher Violet-green swallow House wren Gadwall Lincoln's sparrow **Rufus Hummingbird** Spotted sandpiper Goldfinch Common snipe

Elk Range Map



Mule Deer Range Map



Moose, Bighorn Sheep and Mountain Goat Range Map



Black Bear Range Map

Gunnison Prairie Dog Range Map

Great Blue Heron and White-tailed Ptarmigan Range Map

Lynx Potential Habitat Map

Pika and Beaver Modeled Habitat Map

Northern Leopard Frog Modeled Habitat Map

Water

Positioned at one of the headwaters of the Colorado River Basin, the Upper Gunnison Valley has valuable water resources. Major water sources in the area include Coal Creek, the Slate River,

Washington Gulch, the Crystal River, the East River, Brush Creek and Cement Creek. Their tributaries are Elk, Ruby Anthracite, Wildcat, Oh-Be-Joyful, Poverty Gulch, Quigley, Rustlers Gulch, Perry, Copper, Rock, Deer, Farris, Alkali, Granite and Slumgullion Creeks. Each valley addressed in this plan includes a year-round

water source that eventually all meet up and flow together in the East River, except for the Crystal River which flows northwest into the Town of Marble.

Climate Change Vulnerability

<u>Water</u>

Mid-sized streams, rivers, reservoirs and associated wetlands are some of Gunnison County's most important natural resources. Future climate projections indicate that decreasing water supply and increasing water temperatures are likely. Water supply for animals and humans could become at risk if growth continues, annual precipitation decreases, and aquifers are dried up. Decreasing water runoff could trigger people to build new reservoirs, new diversions for human uses, and higher agricultural water use (as evapotranspiration increases) in an attempt to buffer our water supplies from climate change and population growth. Increasing stream temperatures are anticipated to approach thermal limits for native fish, change the timing of flowering and seeding of cottonwood and willow, impact the emergence of aquatic insects, increase productivity of some algae, plants, invertebrates, and fish as well as invasive species, and heighten vulnerability to pathogens resulting from whirling disease, giardia, cryptosporidium and other pathogens. The protection of instream flows, seeps and springs and ecosystem services can help defend against these threats.

Ecological systems that have undergone substantial losses or experienced substantial impacts from human activities can be expected to be more vulnerable to future changes (e.g. stream

channels, riparian habitats, and floodplains). Therefore, conservation and stewardship of imperiled areas are important in protecting land from further development of water resources as well as making lands more resilient to climate change.

Alpine Tundra

Alpine tundra ecosystems have some of the best protection in the County because so much is within public lands including Wilderness areas. However, this ecosystem is particularly vulnerable to climate change because there is little room for species to migrate and therefore it is extremely difficult to protect. Three of the most vulnerable species, the white-tailed ptarmigan, brown-capped rosy finch and American pika rely on alpine tundra for survival.

Forest Connectivity

Aspen, Lodgepole Pine and mixed conifer forests are well protected in our area and have experienced relatively minor threats on a large scale. Climate change could increase susceptibility to root diseases and invasive species. Spruce-fir forests are critical habitat for Canada lynx and boreal toad, both threatened species, as well as the boreal owl, a vulnerable species. This ecosystem is particularly susceptible to drought and therefore vulnerable to climate change. An outbreak of Spruce beetle in the upper valley is also likely to impact this ecosystem in the near future. In 2014, the U.S. Forest Service and Colorado State Forest Service reported 54,000 acres of new Spruce Beetle infestation on USFS administered lands in the County. If annual increases of this magnitude continue, wide spread forests kills will offer wildfire fuel and temporarily limit forest habitat.

Productive Land

Irrigated hay meadows, particularly those with junior water rights are vulnerable to drought conditions and will likely be converted to development if they are not permanently protected and if the financial stress of agriculture becomes too great. Historic cattle ranching is vulnerable to climate change because it depends on public lands, relies on irrigation water, is susceptible to extreme weather

events and is threatened by population growth and development; all of which challenge the

ability to maintain current ranching operations. Innovative growing techniques, improved irrigation that requires less water, and new crop development may become essential for agricultural producers.

Sagebrush Habitat

A limited amount of sage-brush habitat exists in the northern portion of the Gunnison Valley and this ecosystem throughout the County is considered quite healthy. However, due to the recent listing of the Gunnison Sage-Grouse as a threatened species, this habitat type is particularly important. Because of this status, federal agencies will likely mandate some specific actions to protect the bird under the direction of the Endangered Species Act (ESA). Existing conservation easements with identified habitat are proposed to be exempt from ESA management requirements.

Keystone Species

The beaver is a keystone species that creates suitable habitat for other species. Beaver ponds may buffer habitat damage due to climatic extremes by maintaining water levels and food sources of other species. Although beavers have been considered a nuisance animal by some landowners in the past, current research indicates that watershed health, particularly in the arid west where water is a heavily used resource, relies on these animals to maintain flows and provide habitat.

Vulnerable Species

The most vulnerable species occur within the freshwater, alpine, spruce-fir and sagebrush ecosystems. Plants, amphibians, fish and insects are particularly vulnerable to climate change because they are limited by their ability to disperse. While conservation has often focused on mammal and bird species protection because people more easily connect with these types of wildlife, species lower in the food chain build the platform for all life and must be considered in conservation efforts.

Colorado Natural Heritage Program Potential Conservation Areas Map and Chart

CNHP tracks and ranks Colorado's rare and imperiled species and habitat and provides scientific information and expertise to promote the conservation of Colorado's wealth of biological resources.

Key Geography

Slate River Valley

Washington Gulch

East River Valley

Schofield

Highway 135 Corridor

Brush/Cement Creek

Trends and Local Community

The local community has shown overwhelming support for conservation since the Land Trust's inception in 1991. Locals and visitors alike seem to understand the importance of a wellplanned community with good access to recreation, protection for wildlife, a diverse

and viable economy that includes ranching, and natural beauty as a part of everyday life.

Growth

The State of Colorado is currently the 4th fastest growing state with a 1.59 % population gain in 2014, adding 83,780 people. Gunnison County is projecting a 24% population growth in the next 45 years. Since 2000, Crested Butte's population has grown 2.56%.

Since 2009, real estate sales by number of properties and sale prices have more than doubled. Local realtors generally agree that the post recessions real estate prices hit a low in 2011-2012 and have since increased significantly.

In summary, while our area is growing in terms of population and development, new residents and visitors are attracted by Crested Butte's rural character, recreational amenities and natural beauty - therefore they are often conservationists.

Economy <u>Agriculture</u> Ranching in Gunnison County produces roughly 3 million pounds of beef each year and the estimated economic impact is \$46

million. Two-hundred thousand acres or 9.5% of land in the County is agricultural and nearly all ranches in the area are family owned.

While the local ranching heritage is strong and has proven adaptable and successful since the valley was settled in the late 1800's, dependence on public land, increasing pressure from recreation and the listing of the Gunnison Sage-grouse as a threatened species could all limit the ability of ranchers to adjust to current trends and climate change. Permanent protection of ranchland now is essential in preserving this industry and way of life.

Beef cattle have been, and continue to be, the predominant agricultural product, although some crops and value-added products are produced in the area as well. In addition, there is increasing community interest in crop production in order to make the Gunnison Valley more self-sufficient and therefore sustainable. New technologies and farming innovations are making high altitude growing more prosperous and community support has been driving recent local food efforts.

Irrigated Lands Map

<u>Tourism/Outdoor</u> <u>Recreation</u> Tourism is Gunnison County's largest economic engine, producing a multitude of professional, service and amenity related employment opportunities. The tourism industry is inextricably linked to the

utilization and enjoyment of our natural resources. Popular activities include fly fishing, horseback riding, bird watching, hiking, biking, Nordic, downhill and backcountry skiing, motorized sports, camping, rafting and trail running.

While the ski area was once considered the biggest local draw, summer tourism has now surpassed winter in terms of visitor numbers and revenue generated. Festivals nearly every weekend, stunning wildflowers, incredible trails, pleasant temperatures and local character bring first time visitors who often become repeat visitors or even second homeowners. Of course the winter season, with its own races and festivals, continues to bring tourists to the valley as well. Whether tourists are actively participating in a recreational sport or not, all visitors experience the remarkable and pristine natural environment that surrounds our towns.

Recreation businesses, which bring in more than \$150.6 million annually to Gunnison County, are dependent on regional and national economic conditions that are not under their control. Climate impacts in other locations may increase recreation pressure in the Gunnison Basin. Recreation businesses with diversified experiences and sources of income are the best positioned for predicted climate changes. For example, climate models predicted increased snow in Crested Butte but also increased dust-on-snow events so diversity will allow businesses to highlight different activities depending on conditions that year. However, federal agencies do not always have the ability to be flexible with recreation permits so these businesses are vulnerable to changes in timing of activities.

<u>Other</u>

Local Government, nonprofits, construction industries, accommodation businesses, food services and retail are the other largest local employers. The later four are certainly growing in relation to increased tourism and real estate development. Nonprofits as well have experienced recent success and continue to help bring local residents, second homeowners and visitors together.

Ecosystem Services

Land conservation plays an integral role in local industries and it also has an effect on our economy through all the services and products it provides us. These ecosystem services are critical to all aspects of our local economy. For example, clean water reduces the need for expensive water filtration facilities and improves tourism. The aesthetic value of open spaces helps the community define itself and shape future development, small businesses and local government. Supporting ecosystem services like photosynthesis and soil formation support

heritage cattle ranching operations.

Other services not shown in the chart include wood fuel, natural gas, oil, climate regulation, decomposition, erosion control, and plant material for fibers and medicinal use. In short, the indirect benefits provided by conservation of ecosystem services sustain our community.

Ecosystem Services diagram source: metrovancouver.org

Mapping Methods

Mapping for this document was created using Esri® ArcGIS 10.3[™]geographic information systems (GIS) software. Basemaps consist of U.S. Geological Survey (USGS) digitized topographic quadrangles and hillshade surfaces generated from a digital elevation model, all accessed from the Esri® online server. The coordinate system used for all maps is UTM NAD 1983 UTM Zone 13 (meters).

The following data layers were used in the maps and calculations:

- Watersheds layer obtained from the USGS National Hydrography Dataset (1:24,000 scale) accessed at the NRCS Data Gateway, and clipped to areas of interest to create the Key Geographies.
- Mean annual temperature and precipitation data for Gunnison County obtained from the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Data Gateway at https://gdg.sc.egov.usda.gov/GDGOrder.aspx.
- Development risk data produced in 2007 by David Theobald at the Natural Resource Ecology Lab, Colorado State University, and based on housing density for the conterminous US in 2000 and 2030, respectively, from 2000 US Census Bureau block (SF1) datasets. These data were accessed through the Esri® online server.
- The irrigated lands dataset downloaded from the Colorado Department of Natural Resources Decision Support Systems GIS Data website at http://cdss.state.co.us/GIS/Pages/Division4Gunnison.aspx, and covers the Gunnison Basin as of February 24, 2015.
- Wildlife range layers (except for pika, beaver, and northern leopard frog) from Colorado Parks and Wildlife Public SAM Data last updated on December 3, 2014, and accessed from the Esri online server.
- Predicted species distributions for pika, beaver, and northern leopard frog downloaded from the National Gap Analysis Program (GAP) species data portal at http://gapanalysis.usgs.gov/species/data/download/.
- The Colorado Natural Heritage Program (CNHP) Potential Conservation Areas layer package dated September 2014, downloaded from CNHP at http://www.cnhp.colostate.edu/download/gis.asp.
- Roads, lakes, streams, and parcel layers obtained from the Gunnison County GIS Department.
- The Southwest Regional Landcover dataset downloaded from http://earth.gis.usu.edu/swgap/landcover_download.html, then reclassed (simplified) in GIS to display the vegetation communities discussed in this document.
- Trails layers based on a 2011 dataset obtained from the Town of Crested Butte and modified/updated with assistance from CBLT staff, and two other trails datasets obtained from publicly available resources by CBLT staff.
- Wetlands layer for Colorado as of March 2015 from the National Wetland Inventory at http://www.fws.gov/wetlands/data/Data-Download.html.

Acreage estimates for various features within the Key Geographies were calculated in GIS by intersecting data layers of interest and using GIS statistics tools and Microsoft Excel pivot tables. The potential conservation lands layer was created by intersecting merging all privately-owned parcels in the Gunnison County Parcel layer and erasing areas encumbered by conservation easements or owned by conservation organizations. The conserved land dataset is compiled from various sources and maintained by CBLT.

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