

Rural Living *- in -* Southwest Colorado

A vibrant field of yellow wildflowers, likely Goldenrods, stretches across the foreground and middle ground. The flowers are in various stages of bloom, with some fully open and others as buds. The background features a range of mountains under a clear, bright blue sky. The overall scene is bright and sunny, suggesting a clear day in a rural landscape.

A Resource Handbook by:
The Dolores & Mancos
Conservation Districts

INTRODUCTION

Southwest Colorado is unique in its beauty and spirit. For millennia the majestic mountain peaks, picturesque mesas, and steep rock canyons have been home to numerous cultures. We who live in this area now, are so fortunate.

The Dolores and Mancos Conservation Districts of Montezuma County have developed this handbook. It is full of resource information to help land users be good stewards of the land. The handbook is intended to help those who have generations of roots in this land and those who are new to the area come together to share experiences and innovative ideas to help shape the future. It is up to us to work together to thoughtfully move forward while maintaining the flavor that makes Southwest Colorado such a desirable place to live.

We hope to spark your interest and connect you to more in-depth information by providing links to websites and other resources needed to maintain and nurture a strong community. The handbook offers information about the natural and man-made laws applicable to Southwest Colorado and includes many recommended practices, tips, and tools that will help facilitate good land stewardship. The topics covered are diverse and expansive.

It is important for landowners to understand that in our interrelated environment, one practice for a particular desired outcome may negatively affect another natural resource. In order to avoid this, landowners should engage in area-wide, watershed-based planning to ensure that potential practices reap positive results.



Spruce Tree House, Mesa Verde National Park from National Park Service



Aspen grove - Dolores, CO

We hope this handbook will improve your life in Southwest Colorado.

A copy of this book can be found online at the:

Dolores Conservation website:
www.dolorescd.org

and

Mancos Conservation website:
www.mancoscd.org

Respect: The Code of the West

When you move into Southwest Colorado, you're moving into a social and economic system that's been evolving for over 150 years and into a natural environment hundreds of thousands of years older than that.

Respect for property and people and a willingness to lend a helping hand are the values that knit us together.

Agricultural communities such as ours often have their own flavor of etiquette with additional governmental guidelines and regulations. Get to know your neighbors; they're valuable sources of information. Neighboring farmers and ranchers will appreciate your interest in learning about their operations and understanding how you can co-exist with them. The original "Code of the West" was based on integrity and self-reliance of the rugged individuals who lived here. Montezuma County, Dolores County, and surrounding areas continue that philosophy with their own version of the "Code of the West". The Montezuma County Code of the West can be found at: www.co.montezuma.co.us/documents/planning/codeofthewest.pdf

In addition to the "Code of the West", Montezuma County is governed by the Montezuma County Comprehensive Plan: www.co.montezuma.co.us/documents/planning/comp%20plan.pdf

Above all, common courtesy helps to nurture good neighbors more than all rules and regulations combined.

Our Land

Of the 2,084 square miles of land in Montezuma County: 30% is private land, 36% is federal land, 1% is state land, and 33% is Ute Mountain Ute tribal land.

Of the federal land, 53% is part of the San Juan National Forest, 11% is managed by the National Parks Service (Mesa Verde National Park), and the remaining 36% is managed by the Bureau of Land Management. <http://dare.colostate.edu/pubs/EDR/EDR04-02.pdf>

Each agency has its own rules about the access to and use of its lands. All agencies want to work with neighboring landowners to promote good stewardship on cross-boundary issues, such as, protecting riparian areas along streams and lakes, maintaining wildlife habitat and migration routes, controlling weeds, keeping forests healthy, and reducing wildfire hazards.

A Few Things You Need to Get Along in Southwest Colorado

- Take the natural environment, from rocks, soils, vegetation, and water to fire danger, into account when you build on and manage your property.
- Know and respect private property boundaries. Ask first before entering private land, even for a casual stroll, and before driving on private roads. And leave gates the way you find them, open or closed.
- Keep your pets under control and build fences that contain your livestock but allow wildlife to pass through safely.
- In our arid climate, water is one of our most precious natural resources. Use it wisely and protect riparian areas and wetlands on your land.
- Practice good land stewardship: control weeds, avoid overgrazing, and limit tillage, which can damage your land and local water quality.
- In Colorado, water is owned just like other property. Using water you're not legally entitled to is a sure route to trouble with your neighbors and the law.
- If your property adjoins public land, contact the responsible agency and ask about their management goals and ways you can cooperate.

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THE LAY OF THE LAND

The topography of our area is extremely varied, with a semi-desert in the southwest corner at about 5,000 feet elevation and high alpine tundra at over 14,000 feet toward the north and northeast. Precipitation varies from 8 inches annually in the semi-desert regions to 40+ inches in the mountains. In most areas, the sun shines 300+ days per year. In the mountains, most precipitation comes as winter snow and midsummer thunderstorms; in the lower areas precipitation comes mostly from midsummer thunderstorms. Seasonal precipitation varies greatly and impacts the productivity of this area.

The prevailing winds are from the southwest to the northwest and are strongest in the spring. Because humidity is quite low, winds have a highly desiccating impact on plants (and people).

Montezuma County is home to all five of the vegetative zones found in Colorado:

Semi-Desert 6,000 feet and below	Foothills 6,000 - 8,000 feet	Montane 8,000 - 10,000 feet	Subalpine 10,000 - 11,500 feet	Alpine above 11,500 (tree line)
Cottonwoods Pinon Pine Juniper Gambel Oak Yucca Mountain Mahogany Saltbush Sagebrush Wildflowers, dependent on winter moisture, March - June	Pinon Pine Juniper Gambel Oak Douglas Firs Ponderosa Pines Serviceberry Mountain Mahogany Snowberry Wildflowers, dependent on winter and spring rains, May and June	Open Aspen Forests Snowberry Currants Elderberry Colorado Blue Spruce Ponderosa Pine Douglas Fir Wildflowers, June - August	Spruce/Fir forests Aspens Wildflowers mid-June - August	Tundra: land of thin soil, rocks, a very short growing season, and frost any day of the year. Carpets of dwarfed flowering plants June, July, and August

For more information on Colorado's vegetative zones, see: www.ext.colostate.edu

The soils of our area are as varied as the landscape and vegetation. Some of the best soils in the area are wind deposited. These soils blown in from Arizona and Ne Mexico and are reddish clay loam. They are usually not rocky and can be very deep. They occur north-west of Cortez, on Florida Mesa east of Durango, and in the southwestern part of La Plata County. Although these soils are great for growing, they can be a potential problem for development because of their high shrink-swell tendency and slow permeability, which inhibits leach field function.

Another soil type found in the area comes from ancient ocean deposit known as the Mancos Shale. The Mancos Shale is prominently visible in the steep, grey slopes at the base of the cliffs south of Mancos and Cortez and contains abundant fossils of marine animals, The grey mud soil derived from this marine shake us composed of marine mud, has a high salt content, has a high shrink swell character, erodes easily, and is sticky ad slimy when wet, Such soil needs significant amendmets to make good garden soil and can cause extensive damage to home and structures.

The last type of soil comes from materials deposited by rivers and streams. This soil occurs throughout the area in all river valleys and most smaller valleys, but it can also be found on mountain slopes or plateaus. It may be sandy or heavy in clay, and often has a marginal amount of stone, cobble, and gravel. Areas with this soil may have a high water table and may pose a potential flood hazard. This rocky soil can be difficult to excavate and till. See the Soils section on page 28 to learn how to determine your specific soil type.

ADDITIONAL INFORMATION

U.S. EPA, San Juan Basin Report: www.epa.gov/ogwdw/uic/pdfs/cbmstudy_attach_uic_attach01_sanjuan.pdf

U.S Department of the Interior BLM Tres Rios Field Office: www.blm.gov/co/st/en/fo/sjplc.html

USDA USFS Dolores Ranger District: www.fs.usda.gov/recarea/sanjuan/recreation/recarea/?recid=42734

HISTORICAL PERSPECTIVE & CULTURAL RESOURCES



Square Tower House, Mesa Verde National Park

Southwest Colorado has been occupied by humans for approximately 10,000 years, and the landscape has remained much the same over that period of time, with a semi-arid geography of mountains, mesas, canyons, and cuestas. The earliest humans in the area were gatherer hunters, whose projectile points and hearths remain to give us a small window into their lives.

Later humans, the Ancestral Puebloan people (also known as the Anasazi) lived in semi-subterranean pithouses, and later used the area's abundant sandstone to build masonry buildings above ground and in alcoves. The Ancestral Puebloan people were farmers who grew crops including corn, beans, and squash, and cultivated a variety of wild plants. Though many people

now associate the alcove sites ("cliff dwellings") of Mesa Verde National Park with the Ancestral Puebloans, the spectacular alcove sites are not typical. Most Ancestral Puebloans lived in surface sites, some of which are visible today but many of which remain buried. By studying these various sites, we have learned a good deal about the Ancestral Puebloan. We do know, for instance, that their population in the 1200's actually exceeded today's population of Montezuma County. We also know that the Ancestral Puebloans left the area just prior to 1300 and resettled in New Mexico and Arizona. The Ute people have oral history of moving into this area just before the Ancestral Puebloans left.

The prehistoric and historic inhabitants of southwestern Colorado left a legacy of cultural remains that many area landowners still encounter. Prehistoric artifacts regularly surface in plowed fields and gardens, while generations of farmers have worked around mounds of prehistoric masonry structures. Some local landowners live in historic homes or have historic outbuildings on their property. They have the legal right to do that and to dig and collect artifacts on their property. However, human remains, including unmarked burials, are protected by law, and anyone encountering human remains should notify the Montezuma-Cortez Communications Center at (970) 565-8441. It is strictly illegal to excavate burials or collect or disturb human bones and it is strictly illegal to collect any artifacts on public lands or on private lands when the private landowner has not given you permission.

Beyond the Ancestral Puebloans

The first big wave of pioneers came in the 1860's with mining and ranching. Small settlements grew into permanent communities to serve the needs of large mining operations. Agriculture was the next logical step as an industry to support Southwest Colorado's new population. When mining declined, agriculture became the backbone of the area's economy and remains so today. Irrigation water development was necessary to produce the food needed by the growing population. Settlement of the Montezuma Valley in Southwest Colorado was made possible in the 1880's by the construction of the Montezuma Valley Irrigation system. The system, consisting of a tunnel (5,400 feet long) called the "Great Cut", siphons, and wooden flumes channeled water from the Dolores River through a steep divide. The system constitutes one of the earliest large scale, privately funded, and continuously operating irrigation projects in the Southwest, but with it came water rights disputes. The Colorado State Constitution gave priority water rights to agriculture. The management policies and conservation resources continue to evolve for both private and public lands. Farming, ranching, recreation, logging, and mining all have a stake in how we care for the land, as well as our growing communities. Our actions today will significantly shape the future of our area.

For more information on the history of this area, Ancestral Puebloans, and visiting cultural sites see:

- www.historycolorado.org/archaeologists/montezuma-county
- www.cortezculturalcenter.org
- www.nps.gov/meve/historyculture
- www.blm.gov/co/st/en/fo/ahc.html
- www.blm.gov/co/st/en/nm/canm.html
- www.crowcanyon.org
- www.nps.gov/history/history/online_books/rmr/river_of_sorrows

TRIBAL LANDS



Ute Mountain Ute Tribe

www.utemountainute.com

The Ute Mountain Ute Reservation lies almost entirely in the southwest corner of Colorado, with small acreage in southeast Utah and Northern New Mexico. It is a high desert area with one mountain range and deep canyons carved through mesas. The reservation encompasses 597,000 acres. The tribal headquarters is located in Towaoc, Colorado. There are two communities on the Ute Reservation, one at Towaoc and another much smaller one at White Mesa, Utah. Ute Mountain Ute enterprises include the award winning Farm and Ranch Enterprise where over 7,634 acres are irrigated to grow wheat, corn, sunflowers, and alfalfa. Other enterprises are the Ute Mountain Ute Tribal Park, Ute Mountain Ute Casino and Resort, Ute Mountain Ute Indian Pottery, and Weminuche Construction Company.

Photos from the Ute Mountain Ute Tribe Farm & Ranch Enterprise



Southern Ute Indian Tribe

www.southern-ute.nsn.us

The Southern Ute Indian Tribe is located on the Southern Ute Indian Reservation in Southwest Colorado. The reservation land area covers approximately 300,000 acres. Tribal Council headquarters are located in Ignacio, Colorado. The reservation is home to the Sky Ute Casino and Resort, Sun Ute Community Center, and the new Southern Ute Cultural Center and Museum. Oil and gas reserves have been developed so successfully by the highly successful Red Willow Production Company that the Southern Ute Indian Tribe is one of the financially richest in the United States.



PUBLIC & PROTECTED LANDS



*Spring Creek Herd Management Area,
BLM Tres Rios Field Office*

In Southwest Colorado, the public can enjoy over two million acres of public lands managed by the U.S. Forest Service, the Bureau of Land Management (BLM), and the National Park Service.

The San Juan National Forest, BLM Tres Rios Field Office, Canyons of the Ancients and Mesa Verde National Park contribute to the economy and quality of life by attracting a major tourist industry. These public lands provide recreation, timber products, energy, clean water and air, rangelands, wildlife habitat and scenic beauty.

The San Juan National Forest includes the Weminuche Wilderness northeast of Durango, Lizard Head Wilderness north of Dolores, and South San Juan Wilderness southeast of Pagosa Springs. One of the most valuable commodities National Forests provide the nation is clean water. The San Juan Mountains

contribute a large amount of the flows in the Colorado River and Rio Grande river systems.

The BLM lands are incredibly diverse and rich in natural and cultural resources, from the spectacular Rocky Mountain scenery of the Alpine Triangle to the wealth of Ancestral Puebloan sites in the Four Corners area. One of the most valuable commodities provided to the nation by BLM lands are rich energy sources, ranging from oil and natural gas, carbon dioxide, coal and uranium to wind, solar and geothermal power.

Mesa Verde National Park yearly attracts about 700,000 visitors from around the world, brings a huge boost to the economy of the area, and provides a stunningly beautiful backdrop to life in Mancos and Cortez and to the lives of many nearby property owners.

The public has access to thousands of miles of backcountry roads and trails. While Wilderness is reserved for foot and stock travel, the rest of these public lands offer numerous other opportunities for other forms of non-motorized and motorized access.

For more information, please visit: www.fs.usda.gov/sanjuan or www.blm.gov/co/st/en/fo/sjplc.html

REGULATIONS

You are responsible for knowing the regulations on the public lands you use and you must obtain permission from private landowners.

PERMITS

Public lands belong to the American people. To safeguard the sustainability of this national legacy, permits are mandatory for many activities. You must obtain prior written authorization to conduct the following activities for personal or commercial purposes, but remember that some of these activities are prohibited on some public lands:

- To cut or remove firewood, Christmas trees, mushrooms, posts, poles, transplants, boughs, pine cones, plants, berries, seeds, basket-making materials, rocks;
- To construct or maintain any kind of road, trail, structure, fence, or facility, or to perform any surface-disturbing activity;
- To sell or offer for sale any type of merchandise;
- To conduct any kind of work or service (such as guiding) for pay or other type of compensation;
- To conduct any use or activity where an entry or participation fee is charged, or where the primary purpose is the sale of a good or service, regardless of whether the use or activity is intended to produce a profit;
- To hold a large group activity;
- To remove snow from any road or trail crossing;
- To use any road for commercial hauling;
- To conduct commercial or non-commercial film and video production activities;
- To divert water.

REGULATIONS

WEED FREE

Only weed-free certified feed and hay is allowed on public lands.

ARCHAEOLOGICAL AND HISTORIC SITES

Removing or defacing prehistoric and historic sites is against federal law. Please look, but don't touch. Camping is prohibited in archaeological sites. Be careful around unstable structures and stay out of mine shafts.

FIRE SAFETY

Even when the public lands look lush and green, a spark, a puff of wind, and nearby flammable materials can combine to cause disaster.

- Check and adhere to fire restrictions posted at campgrounds, entrance signs, and trailheads.
- Consider using a camp stove instead of building a fire. If you must build a fire, use an existing fire ring, and keep the fire small and sit close.
- Put fires out every time you leave camp. Pour water and stir until there is no smoke and heat.
- Do not park hot vehicles over dry grass.
- Never toss cigarette butts, always extinguish smokes safely, and field strip your cigarettes.



Chicago Basin, Weminuche Wilderness, San Juan National Forest Columbine Ranger District



Dolores River Canyon

CAR CAMPING

Camping outside campgrounds is allowed on some public lands, but it is not allowed on others. Always read the regulations. When possible, choose a site that has been used previously. On some public lands, you may drive up to 300 feet off an open road to car camp, but only if you can do so without causing damage to soils and vegetation. You cannot camp within 100 feet of any source of water or for more than 14 days in the same spot.

DOGS

Dogs must be leashed in campgrounds and under voice control at your side in the backcountry.

BEAR SAFETY

Bear-safety regulations are in effect for campgrounds and recreation areas.

ROADS

Public lands roads may be temporarily closed during wet seasons, following rockslides, or during sensitive wildlife seasons, and many roads are not closed and/or maintained in the winter.

OFF-HIGHWAY VEHICLES

Motor vehicles must stay on open roads or trails designated for their use. Cross-country use of motorized vehicles is banned in some areas, and violators risk fines. Maps and posted signs offer site-specific restrictions. State registration is mandatory for ATVs, dirt bikes, motorboats, and snowmobiles.

AGRICULTURE & ECONOMIC HISTORY



Although much of the information in this handbook is applicable to areas throughout Southwest Colorado, the information presented on agriculture is focused on Montezuma County. For more information on agriculture in Dolores County visit www.dolorescounty.org

Family-based agriculture has been a cornerstone of the Montezuma County landscape since the 1880's. While there have been considerable changes in agriculture, key aspects of agriculture in Montezuma County have remained consistent: we have many family-based businesses, small scale operations, and consistent production of beef cattle and irrigated hay.

Montezuma County's agriculture flourished when it fed the local community and was able to compete in regional, national, and global markets. In 1930, Montezuma County had 978 farms with a market value production of \$36,263,082. In 2007, there were 1123 farms with a market value production of \$26,673,000.

A growing number of consumers want to know where their food comes from and how it is grown, and many want to buy locally. Farmers and ranchers of Montezuma County increasingly gear their production to these needs, and a diversity of crops are being produced. Small acreage farms that cater to local needs are also increasing. Conservation Districts support this growth by providing workshops on agricultural enterprises, sustainable farming techniques. They also have quality conservation supplies for sale such as weed barrier and drip systems. Learn more about Conservation Districts on page 25.

Montezuma County's climate is as conducive to excellent farm production as any temperate climate in the United States. There are good quality soils and excellent sources of water for livestock and irrigation. Variations in elevation and microclimates provide growing conditions for a diversity of crops and fruit as well as livestock. Many thousands of acres of non-irrigated soils are also productive.

Producers sell their products world-wide (enough pinto beans were harvested in 2007 to feed over 1.5 million people!) and they sell increasingly direct to consumers at three Farmers' Markets in the area:



Greens growing in a Montezuma County high tunnel

- Cortez Farmers Market - www.cortezfarmmarket.com
- Mancos Farmers Market - www.mancoscolorado.com/farmmarket.htm
- *Dolores Farmers Market*

For more information see Mesa Verde Country, Adventures in Agriculture - www.mesaverdecountry.com/tourism/agritourism/farmersmarkets.html

In addition, producers are providing products to local restaurants, groceries, and natural food stores. Some are using the "community supported agriculture (CSA)" model that involves selling shares of garden produce to members who may also share some of the work of producing the food. Other venues for local producers are opening up with the School-to-Farm movement in the Mancos, Cortez, and Dolores school districts. Other institutions such as SW Memorial Hospital are beginning to show interest in local sources of food as well.



Dolores vegetable garden on Road T

Current economic markers, demographics, and trends, can be found at Region 9 Economic Development: www.scan.org

HORTICULTURE & GARDENING



Perennial flower garden with yarrow, salvia and daisies - Dolores, CO

If you're a gardener in Southwest Colorado, you know (or will find out) that growing plants is a challenge and is sometimes difficult and frustrating. At first glance the cold winter temperatures might seem to be the problem, but in fact our low temperatures are rarely as cold as those in states in the Northeast. What causes more damage to plants here are the late frosts (early to mid-June) and the extreme temperature fluctuations; a 30 degree difference between day and night time is average for the year and 40-50 degree differences are common.

Also, although our intense winter sun may be great for keeping your spirits up, when it is combined with our sometimes strong winter winds, the result can be desiccated foliage and dead broad-leaved evergreen plants.

Many areas have soil better suited to making adobe bricks than growing garden plants. These heavy clay soils are not well-drained, are often extremely alkaline, with pH of 8.2 and higher, and a number of areas have soils with a high salt content, commonly even enough to show white salts on the surface. This combination effectively eliminates acid-loving plants such as rhododendrons, azaleas, holly, flowering dogwood, blueberries, and laurel that generally thrive at a pH level of

4.5-6.0. But don't despair, clay soils can be improved by adding organic matter and other amendments. These alterations to build healthy soils will also help neutralize the alkalinity by gradually lowering the soil's pH. Excess salts can be leached out over the years with proper irrigation practices. Gardening in raised beds or containers with soil brought in from local sources, can also be a solution to poor soils.

At the high desert elevations and, of course, into the mountains, the growing season is significantly shorter than at the low elevations which dominate most of the U.S. For instance, the average number of frost-free days in some parts of Montezuma County is 118 with even fewer days in other parts of the county.

There are some tricks to extending the growing season: walls of water and high-tunnels, warm weather crops, and new quick growing plant varieties.

Our low humidity eliminates many diseases that are a problem in more humid climates, but part of the reason for the low humidity is low precipitation and that means being water-wise with your irrigation. Those people without irrigation water find the most success growing plants that thrive on fall rains, winter

snows (farmers like winter wheat), mid-summer thunder showers, or that tolerate very dry conditions. Become a Master Gardener by taking classes from CSU (see link below).



Flower lovers can make their life much easier by using the native plants which long ago evolved to live happily in our climate. Native plants are sold in most plant nurseries and several businesses raise native plants and sell their seeds. Learn to identify the native plants that grow on your property and nearby lands and then buy seeds of these plants or collect the seeds from your own property and propagate them. Become a Native Plant Master by taking classes from CSU (see link below).

Information about gardening in the area is readily available through many sources including state, federal and local agencies, and local nurseries and growers. And don't hesitate to ask your neighbors who appear to have green thumbs.

ADDITIONAL INFORMATION

CSU Extension Colorado Master Gardener (CMG) Resources: www.cmg.colostate.edu

CSU Extension Native Plant Master: www.extension.colostate.edu/jefferson/npm/npm.shtml

Waterwise Landscaping in San Juan Basin: www.ocs.fortlewis.edu/waterwise/general.htm



Perennial flower garden with coneflower, cat mint and hollyhock - Dolores, CO

Farming & Ranching on Small Acreages



Stonefree Farms - Cortez, CO

Small acreage farming (less than 20 acres) provides a unique and often profitable lifestyle. Montezuma and the surrounding counties support many diverse enterprises including vineyards, wineries, orchards, fruit and vegetable market gardens, seed growers (native, reclamation, and landscape), nursery stock, and many types of livestock production for food and fiber. Becoming an agricultural producer, farmer or rancher, requires capital, land, and knowledge. Developing a strong business plan for your farm or ranch will be important to the long-term success of your enterprise. Successful production also requires careful and often complex land and animal management. Without progressive knowledge and management, your soil (your primary resource) may become abused and unable to support the production activities you had planned.

Water

The amount of water you have available will determine everything about your agricultural choices. Natural precipitation is fickle at best and always varies widely with location. Near Cortez you might receive an average of 12" of moisture but just a few miles northwest you might receive an average of 16". The average precipitation is an average over multiple years, but one year you may receive only 60% of average and the next 130%.

In some locations, most of the precipitation is in the form of snowfall, but this will not help your crops during some of the hottest months unless you have irrigated lands. Keep in mind, however, irrigation is highly dependent on the amount of snow in the high country that can be stored to use during the summer months. Appropriate crop choices, relentless irrigation water management, and conservation practices such as no-tillage and cover cropping can make all the difference in your success. The Natural Resource Conservation Service/Dolores Conservation District (970-565-9045), and Mancos Conservation District (970-533-7317) can help you plan for optimum production.

Pastures

Creating and maintaining quality pasture land is critical for raising hay and livestock and for the good stewardship of the land. Properly managed pastures are important for:

- Reducing or eliminating soil erosion
- Increasing water holding capacity
- Improving water quality downstream
- Reducing noxious weed infestations
- Improving wildlife habitat

One of the best reasons is ECONOMICS! A properly managed pasture produces healthier livestock through improved pasture performance and it improves the resale value and aesthetics of your land. All it requires is some planning, careful thought, adaptability, and monitoring. The planning process begins by determining the amount of acreage needed for the number of animals you plan to house. The Cortez NRCS office can help with your planning. Call 970-565-9045.

ADDITIONAL INFORMATION

Colorado Department of Agriculture: www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928159176

CSU Extension Protective Grazing Heights fact sheet: www.ext.colostate.edu/sam/grazing-heights.pdf

CSU Extension Small Acreage Pasture Management: www.ext.colostate.edu/sam/pasture.html

CSU Extension Within Range Management Page: www.range.colostate.edu

CSU Extension Range Publications: www.ext.colostate.edu/pubs/pubs.html#natr_range

Land Use History of the Colorado Plateau (CP-LUHNA), Cattle and Sheep Grazing Info: www.cpluhna.nau.edu/Change/grazing.htm

CSU Extension Grass growth and response to grazing: www.ext.colostate.edu/pubs/natres/06108.html



Harvesting clover/grass hay - Dolores, CO

Making Hay

Hay is the primary crop grown in Montezuma County and much of the surrounding area. There are three basic types of hay grown in the area; grass hay, alfalfa hay, and a combination of both. The type of hay grown depends on the use, soil conditions, and availability of irrigation. For additional information on the type of pasture grasses to seed, fertilizer needs to support the crop, and specific pasture management techniques, consult NRCS (970-565-9045) or CSU Extension (970-565-3123).

ADDITIONAL INFORMATION

Intermountain Grass and Legume Forage Production Manual, 2nd Edition, TB11-02, CSU.

CSU Extension Agriculture and Business Management: www.coopext.colostate.edu/ABM/

CSU Soils Publications: www.extsoilcrop.colostate.edu/Soils/publications.html

NMSU Extension Forages: www.forages.nmsu.edu/index.html

Utah State University Extension Intermountain Planting Guide: www.extension.usu.edu/files/publications/publication/pub__7717229.pdf

Raising Livestock

All types of livestock can help to improve the soil quality while providing an income to the producer if properly managed. Animal manure helps to complete the natural production cycle without the use of expensive inputs like fertilizer, herbicides, pesticides, and diesel. Healthy soil also has a greater water holding capacity and can help to save money and energy. Planning and management is the key to using this free resource on your farm.

ADDITIONAL INFORMATION

CSU Extension Livestock Resources: www.ext.colostate.edu/pubs/pubs.html#livestock

CSU Guide to Poisonous Plants: www.southcampus.colostate.edu/poisonous_plants/index.cfm

CSU Extension Small Acreage Management Animal Resources: www.ext.colostate.edu/sam/animals.html

CSU Extension Livestock Management Publications: www.ext.colostate.edu/pubs/pubs.html#live_mgt

Water Consumption for Livestock

An important consideration here in Southwest Colorado when raising stock is drinking water availability. In many areas water may not be present and may have to be hauled in. Well water may be so limited that it is sufficient only for domestic use. Using municipal water can be expensive. It is wise to know your water source before you decide to become a stock owner.

ADDITIONAL INFORMATION

CSU Extension Small Acreage Management Water Resources Info: www.ext.colostate.edu/sam/water.html



Livestock watering pond

Farming & Ranching on Small Acreages

Fencing

For food, fiber, or pleasure, many livestock breeds can be raised on small acreages. No matter what type of livestock you choose, you will want to protect your investment by providing secure fencing. Mountain lions, black bears, coyotes, raptors, and other predatory wildlife occasionally take unprotected livestock. Fences also help to keep unwanted deer and elk out of valuable pastures and croplands. Fences are also used as critical tools in pasture management. Colorado Parks and Wildlife (970-247-0855) can help with suggested fence designs to meet your needs.



In the early 1880's the Colorado legislature passed a fencing statute, commonly referred to as the "open range" or "fence out" statute. Colorado law requires that fences be built to keep livestock out of an area, say your pasture or front yard as opposed to requiring the livestock owner to fence the livestock in. Since most livestock owners are considerate and anxious to keep their animals at home to protect their investment and future income, they provide sturdy fencing on their property. Livestock owners are also aware that they must abide by the laws in the Colorado Revised Statutes (C.R.S. 35-46-105) to reduce the likelihood of liability costs should their animals stray.

The Natural Resource Conservation Service may be able to help with the cost of providing fencing needed to maintain a healthy environment for your animals. Call them at 970-565-9045 to find out more.

Cattle Production

A cattle producer is ultimately harvesting grass, not just producing pounds of beef. For small acreage landowners, producing a freezer beef every year or a 4-H steer might be the only feasible cattle production option. Generally under dryland production, an acre of pasture in Montezuma county will support one 1,000 pound cow with a calf for less than one month. Under ideal pasture conditions, an irrigated acre will support around five cows with calves for a total of one month during the growing season.

There are two basic types of beef cattle enterprises: "cow/calf" and "yearling." A cow/calf enterprise is a year-round operation where calves are the primary product. A yearling operation involves purchasing weaned calves in the spring and selling heavier weight calves in the fall utilizing summer grazing. There are advantages and disadvantages to each enterprise. Yearlings are much more risky financially because the cattle market can shift significantly, and weight gain does not guarantee a profit. A combination of both cow/calf and yearling enterprises allows for more market flexibility.

Cow/Calf Operations

Cow/calf operations are the most common type of beef enterprise in Southwest Colorado. There are two basic purposes, differentiated by product: commercial and pedigree (or registered). The product of the commercial herd is calves, or pounds of beef, while the main product of a registered herd is breeding stock. Registered herds can be profitable, but it takes years to establish a reputation, and most small herds don't become successful suppliers of breeding livestock.

Yearling Operations

Yearling operations take advantage of available forage throughout the growing season. Yearling operators typically purchase 600-pound weaned calves in the spring and sell them 90 to 150 days later. In Southwest Colorado, a moderately sized mature cow with a calf will need approximately two acres for each month they are grazing on non-irrigated, seeded pasture. Adjustments can be made to this figure if management, such as, periodic rest or a grazing rotation can be implemented during the growing season.

Raising Sheep

The relatively low investment and natural, gradually increasing size of a flock make sheep ideal for the beginning small and part-time farmer. There are several kinds of markets for small-scale sheep production in the United States. Plain white wool, naturally dark-colored wool, freezer lambs, and ordinary slaughter lambs. A market could be developed for sheep milk products.

Advantages of Sheep

When a farmer already has some beef cattle, there are economical and biological advantages to adding sheep to the operation. Lamb prices tend to go up when beef prices fall, and vice versa. Shared pastures work well: Sheep prefer forbs, and cattle prefer grasses. Sheep can be fed out to market on forage alone, thus requiring little outlay for feed except for winter feeding.

Since sheep are easy targets for predators, ranchers can sustain heavy losses without adequate fencing and protection. Sheep require tight, woven wire fences or multi-strand electric fencing. Of the local predators, coyotes, mountain lions, and domestic dogs are the most destructive. To guard against these predators, farmers use llamas or guard dogs to protect the flock. Special breeds of dogs such as Great Pyrenees, Akbash, and Komodors are especially effective. Additional Information: CSU Extension Livestock, Sheep: www.livestock.colostate.edu/sheep/articles.html



Churro sheep, mom & newborn



Three day old llama

Raising Llamas and Alpacas

Adding these animals to an operation provides an easy way to introduce diversity into your small acreage operation while providing income and possibly a tax break. Llamas and alpacas do not require a large space. In the Southwest, two to three adult llamas or six to eight alpacas can be maintained on one, well-managed, irrigated acre of pasture. Most standard 48-inch fences are adequate. Wildlife-friendly fences work well, barbed wire is discouraged. A three-sided shelter for extremes of weather is required. Animals kept in a large pasture will probably need a small catch pen. Llamas and alpacas are clean, essentially odor-free, and usually defecate in a communal dung pile. Their pelletized manure is easily gathered and is an excellent soil enhancer.

Alpacas are primarily raised for fiber production or to create breeding stock. Each alpaca can produce five to eight pounds of fleece per year, enough for several sweaters. Llama fiber is also commercially usable, but llamas are raised more often for other reasons, such as, livestock guardians, packing, breeding stock, and cart pulling. Both alpacas and llamas are also often kept as pets, for use in pasture management, to provide a source of manure, as 4-H projects, or as therapeutic healing animals. Additional information: www.llama.org/do_llama.htm

Raising Goats

Goats are perfectly suited to the needs of a homestead. A goat or two can provide a family with inexpensive dairy products, fertilizer for the garden, four-legged mowers, and pack animals for outdoor adventures.

It is usually best to buy at least two goats because goats like companionship. Tether the goats or provide a five-foot tall stock fence or electric fence around their pasture. Since goats love to perch on high places, include rocks or outcroppings within the pasture. Provide a southern-exposed, draft-free shelter. Goats will browse on any weeds, bark, grass, or leaves available within their reach and without proper management goats will destroy trees, shrubs, and prized ornamentals. Additional Information: Washington State University Goat Info: www.smallfarms.wsu.edu/animals/goats.html

Farming & Ranching on Small Acreages

Raising Pigs

The much-maligned pig will out-gain, out-produce, and out-perform any other domestic animal. A pig can grow to market weight (200 pounds) in 5 months, be bred at 6 or 7 months (approximately 250 pounds), and bear two litters a year. The average gestation period is 3 months, 3 weeks and 3 days. Litters average 8 to 12 piglets. In Colorado, it is best to raise wiener pigs in the summer and sell them as market swine in the fall. Our winter weather makes year-round swine enterprises less economically productive than other livestock such as beef and sheep. However, wiener pigs purchased at 25 to 50 pounds and fed to 210 to 240 pounds are popular and profitable due to a strong local demand.

Additional Information:

CSU Extension, Raising Livestock, Swine: www.colostate.edu/Dept/CoopExt/Adams/sa/livestock.htm



Hampshire pig

Raising Chickens



Chickens can be a fun project for a rural family and are often a good 4-H project. Farm fresh eggs or a home-grown chicken dinner make for good family meals. The first question you will want to answer is why you want to raise chickens. You might be interested in egg production, meat production (fryers and broilers), or both. It might simply be the therapeutic value of raising something. In any case, the answer will determine the kind of birds you select for your flock. Locate your chicken coop where the birds can get plenty of sunshine when the weather is cool. Provide a fenced area of about 1000 square feet per 25 birds so they can range outside. Chickens can also be allowed to range freely, which is healthy for them and hard on the local insect populations, but free ranging chickens may lay eggs where you can't find them, and if they range near the house, it will be difficult to keep the doorstep clean. And, of course, coyotes love free ranging chickens.

Healthy chickens are a result of good management more than good luck. Constant vigilance for signs of disease will allow you to detect and treat the problem before it decimates your entire flock. Balanced feed rations and reasonably clean facilities are a must. Take the time to seek out experienced growers, and talk to your local farm supplier and County Extension Agent

for advice. Most libraries have books about raising poultry. Invest in a good book on the subject and study it thoroughly before you get started.

ADDITIONAL INFORMATION

ATTRA Poultry: www.attra.ncat.org/attra-pub/poultry/

CSU Extension Home Produced Chicken Eggs: www.ext.colostate.edu/pubs/foodnut/09377.html

CSU Extension Poultry Links: www.veterinaryextension.colostate.edu/menu2/avian.shtml

Ostriches, Emus and other Ratites

Ratites are "running birds", characterized by the possession of a flat breast plate (sternum) without a keel and with small undeveloped wings. Emus (native of Australia) and ostriches (native of Africa) constitute the greatest population of ratites in the United States. Emus and ostriches are very efficient at converting feed to weight gain. More information can be found at www.nal.usda.gov/afsic/AFSIC_pubs/srb9706.htm

Raising Rabbits

Young fryer rabbits grow fast, and a single female doe can produce 30 young per year, which can be marketed at 8 weeks of age at 4-5 pounds. The rabbitry can be individual enclosures of wire cages hung indoors in barns, sheds, etc., or weather-protected outside cages (which may be preferred due to cleanliness and lack of odor). Hutches should allow for 1 square foot per pound of rabbit. Rabbits can consume 4-6 ounces of pellets per day. Supplements of hay and homegrown vegetables are encouraged. However, a complete diet of vegetables is not recommended, and cabbage, cauliflower, and Brussels sprouts are deadly to rabbits. Water must be clean and fresh and is particularly important during summer heat.

Additional Information:

CSU Extension Rabbit Equipment and Housing Plans: www.ext.colostate.edu/pubs/blueprints/rabbit.html

CSU Extension 4-H Rabbit Info: www.colorado4h.org/project_resources/livestock-projects/rabbit/rabbit_projects.php

Pheasants, Quail, Chukars, and Turkeys

Available in many poultry catalogs as well as local agricultural products stores, these birds are easy to raise and can be treated like chickens. Nesting occurs in the spring and early summer so they will be a year old before any production occurs. They need larger cages than chickens to prevent fighting. They are great bug catchers around the yard and garden. You can also let them run free. If you feed them routinely and if there is good cover nearby, they will stay around for a while before scattering permanently. Check with Colorado Parks and Wildlife regarding regulations: www.wildlife.state.co.us/Pages/Home.aspx



Wild rabbit and pheasant. Photo by Bob Fuller



Raising Bees

If you like to eat, you can thank a bee. Whether it grows out of the ground or from a tree, many of the fruits, vegetables, nuts, and grains that keep us strong and healthy rely on bees to pollinate them. In addition, bees produce honey, one of the healthiest and most natural sweeteners on the planet. Some people make money from honey, royal jelly, and beeswax products; some profit from renting out their hives to pollinate farmers' fields; while others work with bees and honey just for their personal use.

As bee populations in North America and elsewhere decline due to a combination of factors from parasites to pesticides, many are starting hives as a way to save these important insects from extinction. Your level of involvement depends on how many bees you'd like to keep, and how much time you plan to spend on them. The Conservation Reserve Program (CRP) includes a wild bee habitat incentive for producers. The program is offered through NRCS, (970) 565-9045.

People have been keeping bees domestically for thousands of years, and though the practices have changed drastically in that time, keeping bees is still a fairly simple, low-tech hobby. A basic hive set-up requires only a few hours of attention each week for harvesting honey, checking on the health of your colony, and doing any necessary maintenance on your hive structure.

Additional information:

Colorado Beekeepers Association: www.coloradobeekeepers.org and www.beekeeping-for-beginners.com

Farming & Ranching on Small Acreages

Raising Horses

Horses are a great way to enjoy life in Southwest Colorado. There are a wide variety of horse related activities in the area: trail riding, roping, barrel racing, shows, Pony Club and 4-H, team penning, and more.

You will need to supply fencing and shelter. As long as they have access to dry shelter and adequate feed and water, horses do fine outdoors all year long. A three-sided shed faced away from the prevailing wind with good slope for drainage works well. A rule of thumb is to plan on about 100 square feet of shelter per horse. Provide a salt block and lots of fresh water. Any conventional fencing material will work with horses: electric, smooth, or rails. Be cautious of sheep field fence as horses can get caught in it easily. A corral is very nice to keep horses off pasture when needed for weight control and pasture management. Feeding requirements vary greatly depending on the animal and its activity level.

Pasture management is critical for maintaining good quality feed for your horse and for preventing weed invasion. Keep the horses off the pasture after irrigation, heavy rains, or snow until the surface dries. This reduces compaction and trampling. Corral horses at night so they only graze during the day. Think of the pasture as a supplemental feed and exercise area. Divide the pasture into smaller grazing sections with electric fence. During the summer move the horses often or when they have eaten half of the available forage. This



Kopenhafer Farm - Mancos, CO

gives each section adequate rest. Employ the “take half and leave half” rule of thumb to promote good pasture management. During the non-growing seasons, rotate the horses every several days or keep them off the pasture except for a few hours each day. Think of the pasture as an exercise area during this time to prevent damage to the grasses and soil. In the winter, be sure you are feeding enough and providing ice-free accessible water.

An annual veterinary check-up is essential and part of a proper basic health care plan for your animals. In addition, plan on at least two or three visits per year by the horse shoer (farrier), depending on how much you ride.

Consider the costs associated with your horse: saddle, miscellaneous equipment, a trailer, barn and fence, hay, grain, vet, farrier, fly spray, emergency vet visits, etc. Anticipate feeding and checking-in on your horse at least twice a day and arranging for someone else to do it whenever you are out of town.

ADDITIONAL INFORMATION

Extension Horse Pasture Management Publications: www.extension.org/pages/17119/horse-pasture-management-publications

SMALL ACREAGE CROP PRODUCTION

Various agricultural cropping enterprises are suited for small-acreage tracts, but before a landowner decides on a specific crop, planning and research should take place. The Southwest Colorado Small Business Development Center (970-247-7009) offers a customized program to help farmers and ranchers plan successful business strategies. The assistance includes making an inventory of resources available on the property as well as marketing considerations. For more information: www.sbdcfortlewis.org



Vineyard in Battlerock, CO

Reasons to consider agriculture:

1. Land tax classification for agriculture versus residential classification.
2. Satisfaction of farming as a hobby.
3. Niche markets can be developed by growers with entrepreneurial skills and abilities.
4. Alternative crops can provide positive cash return.
5. Income tax considerations for expenses related to agricultural operations may offset other taxable income. Consult your local accountant or the IRS for specific rules and regulations.
6. Local foods and other agricultural products being demanded by consumers.

Challenges growers encounter:

- Equipment is generally made for larger acreage and is sometimes not efficient for small areas.
- Custom rates for farm work (plowing, planting, harvesting, etc.) are usually above standard rates.
- Marketing opportunities may be limited.
- Labor demands compete with individual recreational and leisure times as well as off-farm employment demands.
- Specialized crops sometimes require larger capital inputs before any returns are realized.
- Typical small-scale agricultural enterprises in the Southwest include fruit trees, wine grapes, berries, grains, and a wide variety of vegetables, flowers, herbs, honey, and nursery stock. Even more variety is being explored with the use of high-tunnels to extend our growing season.

Organic Certification:

Some local growers are targeting the “Certified Organic” market. Fruits and vegetables that fit in this category fall under the Colorado Organic Certification Act of 1989. This act defines what conditions must be met to obtain this designation. The act is administered by the Colorado Department of Agriculture. For specific questions contact CSU Extension (970-565-3123) or the Colorado Department of Agriculture (303-239-4100).

ADDITIONAL INFORMATION

Colorado State Department of Agriculture: www.colorado.gov/cs/Satellite/ag_Plants/CBON/1251623406907
CSU Extension: www.co.montezuma.co.us/newsite/extensionhome.html
High Tunnels: www.hightunnels.org

AGRICULTURE EDUCATION & RESEARCH

Youth in Agriculture: 4-H

The Colorado State University Extension 4-H and Youth Development program is open to anyone between the ages of 8 and 18. Youth may join one of several clubs located throughout the area. Through 4-H project work and various activities, youth learn life skills such as communication, citizenship, decision making, leadership, interpersonal relations, and community awareness. This is accomplished with the cooperation of families and the commitment of adult volunteers.

4-H is a hands-on approach to learning. Even though youth may join at any time, enrollment in the projects is taken once a year.

POPULAR 4-H PROJECTS

General	Livestock	Heritage Arts	Shooting Sports	Cloverbuds (Youth under 8)
<ul style="list-style-type: none">• Artistic Clothing• Breads and Baking• Cake Decorating• Ceramics• Clothing Construction• Gardening• Model Rocketry• Scrapbooking• Woodworking	<ul style="list-style-type: none">• Beef• Horse• Goats• Poultry• Rabbits• Sheep• Alpacas• Swine• Dogs	<ul style="list-style-type: none">• Crochet• Fine Beading• Knitting• Quilting• Weaving	<ul style="list-style-type: none">• Archer• Air Rifle• Air Pistol• 0.22• Shotgun• Muzzle loading	<p>Various activities</p> <p>No participation in livestock or competition projects</p>

4-H is a non-profit educational program which is open to all youth. It is the educational component of CSU Extension and the Department of Agriculture which is directed at youth. This unique linkage to the land grant university system makes 4-H one of the premiere agricultural youth organizations.

ADDITIONAL INFORMATION

Montezuma County Extension Programs: www.co.montezuma.co.us/newsite/extensionprograms.html

FFA - "Future Farmers of America" was founded by a group of young farmers back in 1928. Their mission was to prepare future generations for the challenges of feeding a growing population. They taught us that agriculture is more than planting and harvesting-- it's a science, it's a business, and it's an art. In 1988 the official name of the organization was changed from "Future Farmers of America" to "The National FFA Organization" to reflect the growing diversity of agriculture.

FFA continues to help the next generation rise up to meet agricultural challenges by helping its members develop their own unique talents and explore their interests in a broad range of career pathways. So today, FFA is still the Future Farmers of America, but they are also the Future Biologists, Future Chemists, Future Veterinarians, Future Engineers, and Future Entrepreneurs of America.

Each school that has a agricultural education program is invited to form a local chapter. Cortez High School hosts the Montezuma County Chapter.

ADDITIONAL INFORMATION

www.ffa.cccs.edu

Southwest Colorado Research Center

The Southwestern Colorado Research Center (SWCRC) is located at 16910 Montezuma County Road Z, Yellow Jacket, CO 81335. It has a 158 acre irrigated farm of which 20 acres were converted to dryland in 2010. The SWCRC is part of Colorado State University's Agricultural Experiment Station whose mission is to "conduct research that addresses the economic viability, environmental sustainability, and social acceptability of activities impacting agriculture, natural resources, and consumers in Colorado". Learn more at: www.aes.colostate.edu



Annual u-pick at SWCRC orchards

Currently, the two major research programs at the SWCRC are crop testing and management practices to optimize crop production. The information generated through field experimentation is disseminated via publications and presentations at meetings, workshops, and field days. Most of the published results can be accessed online at:

www.colostate.edu/Depts/AES/pubs_list.html

www.extsoilcrop.colostate.edu/CropVar/

In addition to replicated research trials, the SWCRC conducts demonstration projects such as a fruit tree and vineyard orchard, a native plants seed production project, and tree and shrub plantings for windbreaks and wildlife. The fruit tree and vineyard demonstration orchard was initiated in 1991 to demonstrate surface drip and micro-spray irrigation. It was later expanded to include a dozen varieties of wine grapes and over 40 varieties of apples, peaches, pears, and plums, plus high-density apple plantings and grass cover plantings.



The orchard is managed by Dolores County and Montezuma County Extension with assistance from the Southwestern Colorado Research Center. A fruit tree pruning workshop is held each year. The fruit is marketed through U-PICK days with the proceeds helping fund the operation of the orchard. The orchards performance is evaluated annually and can be accessed at: www.extension.colostate.edu/WR/Dolores/fruitproj.html

ADDITIONAL INFORMATION

www.colostate.edu/depts/swcrc/index.html

CONSERVATION DISTRICTS



What is a Conservation District?

In the early 1930's the United States experienced an unparalleled ecological disaster known as the Dust Bowl. Severe, sustained drought in the Great Plains caused soil erosion and huge black dust storms that blotted out the sun. The storms stretched south to Texas and east to New York. Dust even sifted into the White House and onto the desk of President Franklin D. Roosevelt. After seeing the sky black with dust in Washington, the United States Congress unanimously passed legislation declaring soil and water conservation a national policy and priority. Since about three-fourths of the United States was privately owned, Congress realized that only active, voluntary support from landowners would guarantee the success of conservation work

on private land. In 1937, President Roosevelt wrote the governors of all the states recommending legislation that would allow local landowners to form soil conservation districts.

Conservation Districts are an integral part of the United States Department of Agriculture (USDA). Working in conjunction with the Natural Resource Conservation Service (NRCS), they are the link between landowners and the USDA in determining priorities for farm bill legislation and conservation issues. The Districts provide guidance and oversight to NRCS projects and supply technical staff support to local field offices. They are the key to accessing a wide variety of resources, including programs, services, funding, and conservation supplies.

The Dolores Soil Conservation District was established April 18, 1942 and the Mancos Soil Conservation District on August 31, 1948. In 2002, legislation was passed to move the State Conservation Program from the Colorado Department of Natural Resources to the Colorado Department of Agriculture and to remove "soil" from the names of districts to better reflect the current broader activities of the conservation districts in this state.

Additional Information: Colorado State Conservation Board: www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928159642

Project Examples:

Dolores Conservation District | (970) 565-9045 | 628 W 5th Street | Cortez, CO 81321 | www.dolorescd.org

Workshops/Seminars: High Tunnel, Soil Health, Bio-char, Southwest Food and Farmland Forum, Rangeland Monitoring, Agricultural Water Management	Tamarisk Control around McPhee Reservoir, Hawkins Preserve, and Verde Vu Estates Initiation of Agricultural Roundtable Bio-char Trials	Great Plains No-till Seed Drill for Rent Covercrop & No-Till Demonstration Acreages Sprinkler Irrigation Assessment	Seedling Tree & Shrub Sale Retail Supplies for Sale Weed Barrier Drip-Tape Drip Irrigation Kits
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Mancos Conservation District | (970) 533-7317 | 604 Bauer Avenue | Mancos, CO 81328 | www.mancoscd.org

Workshops/Seminars: Weed Control, Rangeland, Seedling	School-to-Farm – Hands on Education Project Diversion Replacement – replacing old diversions in the river with environmentally friendly ones River Restoration – On-going projects in the Mancos River restoring fish and wildlife habitat	Plotmaster Seeder for Rent On-farm irrigation piping, sprinklers and wheel rolls replacing above ground open ditch irrigation systems	Irrigation Water Management Seminars in partnership with the NRCS Seedling Tree and Shrub Sales
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We are always looking for people that would like to serve as board members, volunteers and communicators of local conservation needs. If you are interested, please call us at (970) 565-9045.

RIPARIAN AREAS

Riparian areas are areas along streams and lakes. They make up less than 3 percent of Colorado's landscape, but contain about 75 percent of our plant and animal diversity. Almost everything we love about living near a stream or wetland in Colorado's semi-arid climate depends on humans leaving these areas in their natural state.

Keys to a Healthy Riparian Area

Good stewardship maintains or improves important riparian vegetation and prevents streambank erosion, loss of water quality, and loss of wildlife habitat.

A healthy riparian system will:

- Slow flood flows and reduce soil erosion and property loss.
- Provide travel corridors, food, cover, and nesting and breeding sites for wildlife.
- Keep water cooler in the summer and prevent ice damage in winter.
- Reduce water pollution by filtering out sediments, chemicals, and nutrients from runoff.
- Hold more water in the soil, slowly releasing it to keep streams flowing longer while replenishing groundwater.



Cottonwoods and willows along a healthy riparian area



Sedges, rushes & cattails grow in wetland areas



Healthy riparian corridors provide wildlife habitat



Riparian greenline: vegetation along a watercourse

So You Have a Wetland?

Whether an area is or is not a wetland is determined by specific soil, vegetation, and hydrologic conditions. If you're not sure, visit the Army Corps of Engineers: www.nwo.usace.army.mil/

Wetlands are legally protected under Section 404 of the federal Clean Water Act. Section 404 establishes a permitting process to ensure that excavating, dredging, or filling in a wetland or riparian area complies with the law. The Army Corps of Engineers and Environmental Protection Agency jointly administer this permitting process. Before you drain or fill an area, contact the Army Corps of Engineers (970-375-9506) to find out if you have a wetland on your property.

The "Swampbuster" provision of the 1985 Food Security Act, as amended, requires all agricultural producers who receive federal farm program benefits to protect wetlands on land they own or operate.

The Colorado Department of Public Health and the Environment, Water Quality Control Division (303-782-3500) can answer questions about state and federal water quality laws. See the Resources section in the back of this booklet for other agencies that can help you learn more about water quality, riparian areas, and wetlands.

TREE & SHRUB PLANTING - AGROFORESTRY

Definition of 'Agroforestry'

Agroforestry is the integration of agriculture and/or farming with forestry so the land can simultaneously be used for more than one purpose. This practice is meant to have both environmental and financial benefits. The presence of trees can provide benefits such as sheltering livestock from the elements and improving the soil so that crops will be more productive. The agroforestry system can also provide a more even income for landowners since all of their income is not tied to a few crops or a single season. Agroforestry can also make it easier for farmers to transition from one type of crop to another as market demand for their products changes.



Agroforestry does require more planning and know-how than simpler land uses because the system must take into consideration the diverse and sometimes contradictory needs of each component, for example, the grazing needs of cattle versus uncompacted soil needs of a tree so that its roots are undisturbed. Agroforestry practiced in the United States includes alleycropping, silvopasture, windbreaks, riparian buffer strips, and forest farming.

Tree and Shrub Planting

Local Conservation Districts work with the Colorado State Forest Service (CSFS) to provide trees and shrubs to farms, ranchers, and landowners at a nominal cost. The goal is to encourage landowners to plant new forests; to establish effective windbreaks that reduce erosion; to protect homes, cropland, livestock and highways; and to enhance wildlife habitat.

Trees and shrubs are grown at the CSFS nursery for conservation benefits only. Ornamental qualities such as color, degree of flowering, fruit production, etc. are not guaranteed. Contact your local Conservation District for more information regarding the tree and shrub program.

MANCOS CONSERVATION DISTRICT:

www.mancoscd.org | (970) 533-7317
604 Bauer Ave (PO Box 308), Mancos, CO 81328

DOLORES CONSERVATION DISTRICT:

www.dolorescd.org | (970) 565-9045
628 W. 5th Ave., Cortez, CO 81321

ADDITIONAL INFORMATION

www.investopedia.com/terms/a/agroforestry.asp#ixzz21SqLOR6C
www.nac.unl.edu

Agroforestry – Working with Trees for Rural Living

The force of the wind exaggerates daily weather conditions. A well-designed windbreak around your home, ranch, or farmstead slows the wind and improves the surrounding environment.

- Energy costs may be cut as much as 20 to 40 percent by planting trees to create living, working windbreaks.
- Chores such as firewood cutting, working on equipment, and feeding livestock are safer and more comfortable in areas protected from cold and desiccating winds.
- A properly placed windbreak can reduce or eliminate snowdrifts on driveways, in work areas, and around buildings.
- Strategically placed trees and shrubs can improve living conditions by screening undesirable sights, sounds, smells, and dust.
- Well-placed shade trees provide summer energy savings of 15 to 35 percent. Shaded areas protected from wind by windbreaks, provide a private, park-like atmosphere for family enjoyment.
- Plantings for wildlife habitat provide food, shelter, nesting, and breeding areas for many birds and animals.
- Firewood, fence posts, fruit, and wild game are potential products from the forest you create when you plant working trees for rural living.

MANAGING PRIVATE FOREST LANDS



Many of Colorado's forests are in an unhealthy condition. This is primarily due to human interruptions, such as, improper management and fire suppression which interfere with the natural cycles of disturbance that occur in healthy forest ecosystems. Over the past 100 years, many forests have become too dense and lack the diversity to be healthy and sustainable. The stress of competing for sunlight, water, and nutrients leaves trees extremely vulnerable to insects, diseases, and wildfire. This can occur on your land as well. To improve forest conditions on your land:

- Maintain a variety of tree species and ages suited to your site. Concentrate on species native to Colorado and to your area.
- Remove trees and debris infected with disease or infested with insects as soon as possible to reduce loss of nearby healthy trees.
- Thin trees to improve growth, health, and vigor; increase forage; and reduce wildfire hazard. Remove damaged or poorly formed trees, and leave healthy trees.
- Avoid concentrated livestock use of your forest. This compacts soils over roots and further damages trees by browsing or rubbing.
- Dispose of heavy accumulations of downed woody materials, but leave some standing dead trees and large downed logs for wildlife habitat and as a nutrient source for your forest.

- Construct access roads away from streams, construct adequate drainage where needed, and plant grass on fills or cuts promptly to reduce soil erosion and water pollution.
- Use only properly registered, labeled chemicals to control weeds (or contact an expert). Keep chemicals away from water and live trees.
- Avoid activities that damage roots or tree trunks. This is especially critical during construction.

Remember – what you do in your forest affects your neighbors, other forest residents (including wildlife), and those downstream from your land.

Cost-share funding may be available for some of these practices. Contact your local office of the Colorado State Forest Service (970) 247-5250. Learn more at: www.csfs.colostate.edu/pages/durangodist.html

A Healthy Forest, Did You Know...

- Most of Colorado's native tree insect pests and diseases are always present in our forests. What we sometimes encounter are epidemics due to unhealthy forest conditions or natural swings in plant/insect/disease relationships.
- During catastrophic wildfire seasons, there are not enough firefighters to defend every home. That is why it is critical that homeowners take responsibility for creating defensible space around their homes. See: www.csfs.colostate.edu/pages/wf-protection.html

GRAZING

Grazing land in Southwest Colorado includes native rangeland and irrigated or non-irrigated pasture. Hay is also grown to supplement grazing during the winter or when additional feed is required. To keep their grazing land productive and healthy, land managers need to be knowledgeable about animal nutrition, plant growth, soils, and nutrients cycling.

Rangeland

Rangeland is land on which the native vegetation is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. Much of the rangeland in our area occurs on public land managed by the Bureau of Land Management, Forest Service, or State Land Board. Ranchers who own private agricultural land may apply for a grazing permit and pay an annual fee to graze their livestock on public lands.

Grazing management on rangelands should be based on the ecological potential of plant communities. Information about the native plant community and forage production of rangelands in Montezuma County may be obtained from the Natural Resources Conservation Service (970-565-9045) or the Forest Service and BLM (970) 882-7296.

ADDITIONAL INFORMATION

BLM: www.blm.gov/co/st/en/fo/sjplc.html

Web Soil Survey: <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

National Range and Pasture Handbook: <http://policy.nrcs.usda.gov/viewerFS.aspx?id=1333>



Harvesting hay - Pleasant View, CO

Pasture and Hayland

Pasture and hayland is most often planted with cool season native and non-native grass species and/or legumes to increase production, forage quality, and to lengthen the growing season. Our area has extensive dryland and irrigated land farming and ranching, but because our precipitation is quite low, pasture and hayland has limited production capability without irrigation. Yield of dryland grass hay is around 600-800 pounds per acre versus 3-4 tons per acre under irrigation.

For optimal production, pasture and hayland should be fertilized according to soil test recommendations. Fertilizing is not recommended on dryland pastures.

To avoid soil compaction, pastures should not be grazed while actively being irrigated.

The amount of irrigation available throughout the Southwest is dependent on the amount of snow received in previous years and the amount of rain during the growing season. Average moisture varies dramatically.

There are two main sources of irrigation water in Montezuma County.

1. Shares from an irrigation company, which can be bought and sold.
2. Adjudicated water out of a natural drainage that is typically tied to the land and managed by the Colorado Division of Water Resources.

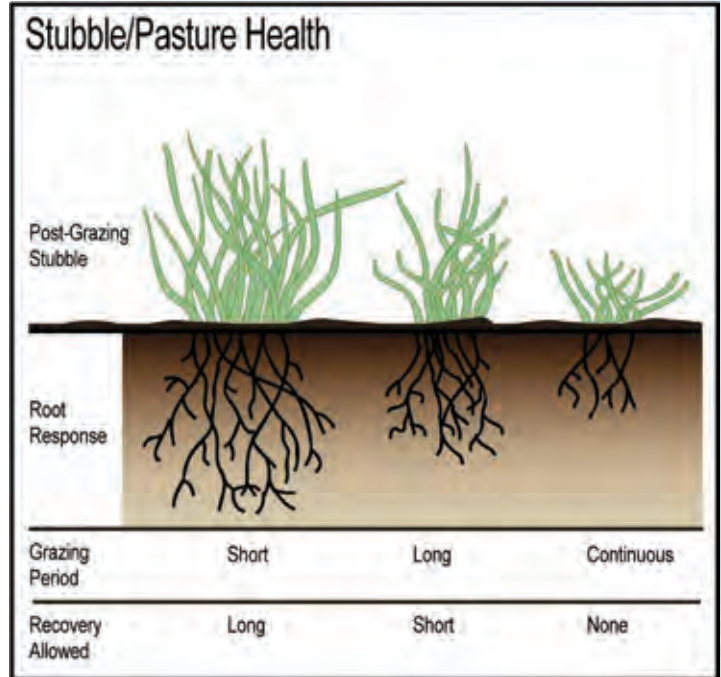
If you do not own water shares or have an adjudicated right, it is illegal to use irrigation water even if it crosses your property.

Forage Management

The NRCS and Colorado State University Cooperative Extension can assist land managers with developing a grazing management plan. Proper utilization of forages is critical for sustaining desirable plant species and in maintaining or improving the quality and quantity of the forage produced.

To maintain high quality forage, grazing animals should not be allowed to remove more than half of the plant production. By following the “take half, leave half” rule of thumb, you will protect the plants growing point and allow enough leaf area for quicker re-growth. An intensively managed pasture, with frequent movement of animals and the resulting short, intense grazing periods, will produce much higher quality forage than an unmanaged pasture.

The picture to the right shows how grass roots are affected by overgrazing. The plant on the right has been continuously grazed while the plant on the left has been grazed for a short period and allowed to recover for a longer period.



How Many Animals

It is important to know the “stocking rate” or how many animals your pasture will support. Generally under dryland production, an acre of pasture in Montezuma County will support one 1,000 pound cow with a calf for less than one month. Under irrigation, an acre will support around five cows with calves for one month during the growing season.

Although each situation varies tremendously due to soil quality, water availability, types of vegetation, weather, etc., we can roughly estimate that with appropriate management techniques, one dryland acre will support a horse for about twenty days per year. An irrigated acre would support one horse for about ninety-four managed, non-consecutive days. If the animals are left to graze beyond that time the vegetation will be depleted and will be difficult to re-establish. Even if additional hay is provided, the horses will continue to deplete the natural vegetation with the same effect.

For more information on determining the stocking rate in your pasture or on native rangeland:

www.range.colostate.edu/calculators.shtml or www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1043061.pdf

If your pasture does not have sufficient forage production to support the livestock that you own, reduce your herd, lease additional pasture, or keep animals in a barn or small sacrifice area and provide them supplemental feed.

Livestock Laws

Fences — Colorado has an open range law. This means that if you do not want livestock on your property it is your responsibility to fence them out. It is not the responsibility of the rancher to keep livestock off your property. A landowner who maintains a lawful fence may recover damages for trespass from the owner of livestock that breaks through the fence.

Livestock Purchase, Sale, Transportation — Inspection is required for sale or movement of livestock within Colorado or from state. Inspection is required on all classes of stock at the point of origin. The seller or a legal agent must be present. www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1183672504470

ADDITIONAL INFORMATION

www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1176829292622

www.co-parkcounty.civicplus.com/DocumentCenter/Home/View/381

SOIL

More Than Just Dirt

Soil is a living factory of macroscopic and microscopic workers who need food to eat and places to live to do their work. There are more individual organisms in a teaspoon of soil than there are people on earth!

What Type Do You Have?

The kinds of soils your land has will greatly affect what you can build and grow on it. Soils can vary widely, even over a distance of just a few feet. They differ in chemical makeup and physical properties based on:

- Parent material (the kinds of rocks your soil has been formed from)
- Climate
- Temperature
- Biological factors (native vegetation)
- Topography
- Time (most of Colorado's soils are young in geologic time, meaning that we have thin topsoils and lower fertility)

Soils & Living Things

The kinds of soils you have will affect:

- What type & how much grass or crops your land can produce.
- How quickly water moves through the soil.
- If the soil will filter animal & human wastes before they reach the groundwater.
- How often you need to water.
- How much fertilizer is needed.
- If your soil is subject to deep percolation constraints.
- Whether you have a salinity or selenium problem.

Soil tilth and fertility can best be determined by a simple and inexpensive soil test. Contact the Conservation District (970-565-9045) or CSU Extension (970-565-3123) for more information. Soil types you can expect in the Southwest region are described in the "Lay of the Land" on page 5.



Dryland field of Triticale - Mancos, CO

Is Your Soil Covered?

... not by insurance, but by vegetation! Vegetation protects the soil from erosion by rain, runoff, and wind. Vegetation increases infiltration of water through soils and holds soils in place on slopes and along streams.

Above ground diversity = Below ground diversity
(plants) (soil food web)



Soil Texture

How does it feel in your hand.

- Clay feels sticky.
- Sand feels coarse and gritty
- Silt feels silky and smooth
- Loam is a combination of all of these

Soil Health

Soil is a living system, and healthy soil should look, smell, and feel alive. A healthy fully functioning soil is balanced to provide an environment that sustains and nourishes plants, soil microbes, and beneficial insects.

Healthy soils lead to:

1. Increased Production

Healthy soils typically have more organic matter and soil organisms which improve soil structure, aeration, water retention, drainage, and nutrient availability. Organic matter holds more nutrients in the soil until the plants need them.



Furrowed field

2. Increased Profits

Healthy soils may require fewer passes over fields because they are only minimally tilled and they aren't over-reliant upon excessive nutrient inputs to grow crops. Healthy soils can increase farmers' profit margins by reducing labor and expenses for fuel, fertilizer, and pesticides.

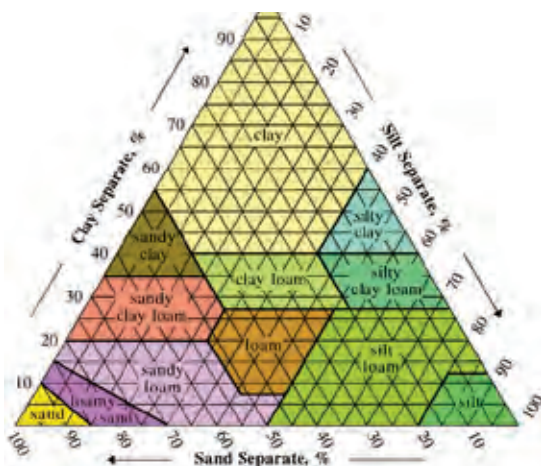
3. Natural Resource Protection

Healthy soils hold more available water. The soil's water-holding capacity reduces runoff that can cause flooding, and a high water-holding capacity increases the availability of water to plants during dry times. Good infiltration and less need for fertilizers and pesticides keep nutrients and sediment from loading into lakes, rivers, and streams. Groundwater is also protected because there is less leaching from healthy soils. Additionally, fewer trips across fields with farm machinery means lower fuel cost, fewer emissions, and better air quality.

Improving Soil Health

It's not difficult to improve soil health. Here's how:

- Till the soil as little as possible.
- Grow as many different species of plants as possible through rotation and a diverse mixture of cover crops.
- Keep living plants in the soil as long as possible by using crops and cover crops.



ADDITIONAL INFORMATION

Natural Resource Conservation Service: http://soils.usda.gov/sqi/management/files/21st_century_soil_health_tech_doc.pdf
Web Soil Survey (WSS): www.websoilsurvey.nrcs.usda.gov
CSU Extension: www.montezumacounty.colostate.edu
Dolores Conservation District: www.dolorescd.org
Mancos Conservation District: www.mancoscd.org

WEEDS

Noxious Weeds in Southwest Colorado

What Are Noxious Weeds and Why Are They So Bad?

A weed can be described as a plant that is invasive and alien to the surrounding ecosystem often forming monocultures. “Weed” is often used to describe any plant not desired in a particular location at a particular time. The term “noxious” refers to a weed that is on a federal, state, or local list that recommends or mandates some type of management.

Noxious weeds are not native to the United States and therefore have no natural enemies such as insects or diseases to keep them from spreading out of control. These plants have been transported primarily from Africa, Asia, and Europe. These species typically are very aggressive in nature and extremely competitive. They displace native vegetation from the ecosystem reducing wildlife habitat and decreasing agricultural crop production that results in economic losses. Many noxious weeds that have become established on rangeland can be poisonous and dangerous to livestock and domestic animals. The most poisonous of these plants include Halogeton, Western and Poison hemlock, Houndstongue, Russian knapweed, and Black henbane.



Halogeton

Russian Knapweed

Houndstongue

Black henbane

Western hemlock

Poison hemlock

Noxious weeds are looking for any area that has been disturbed whether by construction, recreation, or other human caused activities. Spreading can occur from livestock, wildlife, construction, the oil and gas industry, people, water, and wind. Once the weed gains a foothold, it can be quite difficult to control because the controlling insects, diseases, and animals that are found in their native environments are missing. Developing controls for these plants in the United States is a long, arduous process that takes many years and millions of dollars to develop.

Colorado Noxious Weed Act

In July, 1990, the Colorado Noxious Weed Act (35-5.5 CRS) was passed to protect the state’s natural and agricultural resources from invasive weeds. Recent revisions to this Act have enabled city and county governments to implement management programs directed at controlling noxious weeds and reclaiming infested acres. The major changes included prioritizing the State’s noxious weeds into three separate lists: A, B, and C.

- List A weeds are specifically designated for eradication on all County, State, Federal, and Private lands.
- List B weeds include those that may require eradication, containment, or suppression.
- List C weed species are selected for recommended control methods.



Common burdock

Leafy spurge

Montezuma County Comprehensive Weed Management Plan

In March of 1993, The Board of County Commissioners of Montezuma County, Colorado, passed Resolution #4-93, with the recommendation of the Montezuma County Weed Advisory Commission. That resolution is known and referred to as the Montezuma County Comprehensive Weed Management Plan. This plan was updated in March, 1994 with the addition of 13 additional noxious weeds. This complete plan can be viewed on the Montezuma County Weed Program website: www.co.montezuma.co.us/newsite/weedshome.html

The goal of Montezuma County is to aggressively control the known infestations of undesirable plants, to identify new infestations that affect the economic and aesthetic value of lands within the County, to prevent the introduction, spread and reproduction of undesirable plant species through integrated weed management techniques, and to educate the community about these noxious weed problems.

The Montezuma County Weed Control Program was organized according to (C.R.S. 35-5.5), the “Colorado Weed Management Act”. By enacting the “Colorado Weed Management Act”, the Colorado General Assembly, declared that all lands of the state of Colorado, whether in private or public ownership, are subject to the jurisdiction of a local government, empowered to manage those undesirable plants designated by the state of Colorado and the local governing body. Control of undesirable weeds is the responsibility of all landowners: federal, state, county, municipal, and private.

Weed Identification & Weed Control Methods

Weed identification is the first step in weed control. Once the weed is identified, the plant can be classified as a winter or summer annual, biennial, or perennial. Once this is established, a weed management plan can be developed. A weed management plan is very important since weed control is a multi-year process involving cultural, biological, mechanical, and chemical considerations:

Cultural: Establishing and managing an adequate population of desirable vegetation to compete with the weeds, utilizing livestock grazing when possible, mulching, burning, and plastic weed barriers.

Biological: Biological weed control involves the utilization of natural enemies for the control of invasive weed species. This method can often take 5-10 years to see successful results.

Mechanical: Techniques such as mowing, tilling, hand-pulling, and hoeing can physically disrupt plant growth and reproduction (seeds) resulting in decreased spreading.

Chemical: Herbicides can be a safe and effective tool when applied properly. Always READ THE LABEL before purchasing or applying any herbicide. There are several factors to consider when choosing a chemical program: herbicide selection, timing of application, target weeds, desirable crops or vegetation that are being grown, number of applications for control, and equipment required.

Herbicide recommendations can be obtained from the CSU Extension office or from a commercial pesticide applicator licensed through the Colorado Department of Agriculture see: www.colorado.gov/ag/weeds

WEEDS



Musk thistle

Field bindweed

Cost Share Program

Anyone owning, controlling, or operating land in Montezuma County, may apply for the Cost Share Program. Only property on the county tax roll is eligible. Cost share funds are available for both chemical and biological control of weeds. Property owners can receive a 50% reimbursement per year on their control method (labor excluded) of which, a maximum of \$250.00 per year can be reimbursed (\$500 chemical costs = \$250 reimbursed). For spray equipment, a maximum of \$50.00 can be reimbursed. Equipment reimbursement is included in the total cost-share maximum and the applicant must not exceed that amount with combined reimbursements.

For more information visit the Montezuma County Weed Program website at: www.co.montezuma.co.us/newsite/weedshome.html or call (970) 565-0580.



Downy brome (Cheatgrass)

Spotted knapweed

ADDITIONAL INFORMATION

Colorado Department of Agriculture: www.colorado.gov/cs/Satellite?c=Page&childpagename=Agriculture-MainCDAGLayout&cid=1167928360848&p=1167928360848&pagename=CDAGWrapper#PestApp

Colorado Weed Management Association: www.cwma.org

Weed Identification Images: <http://www.colorado.gov/cs/Satellite?c=Page&cid=1167928184099&pagename=Agriculture-Main/CDAGLayout>

High Plains Integrated Pest Management: <http://wiki.bugwood.org/HPIPM>

Crop Data Management System (MSDS / Labels): www.cdms.net/LabelsMsd/LMDefault.aspx?manuf=254&t=1,2,3,4

Weeds to Grazing Calculator: <http://199.133.173.229/WeedImpact/>

Colorado State University Extension: www.ext.colostate.edu/pubs/pubs.html

North American Weed Management Association: www.nawma.org

La Plata County Weed Program: www.co.laplata.co.us/departments_elected_officials/general_services/weed_office

Sprayer Calibration Instruction: www.co.montezuma.co.us/documents/weeds/HandSprayer%20Calibration.pdf

Major Weeds in Southwest Colorado

- Russian knapweed
- Canada thistle
- Musk thistle
- Spotted knapweed
- Houndstongue
- Hoary cress (Whitetop)
- Leafy spurge
- Common burdock
- Oxeye daisy
- Downy brome (Cheatgrass)



Oxeye daisy



Canada thistle



Hoary cress (Whitetop)



Houndstongue



Yellow toadflax (Butter & Eggs)



Diffuse knapweed



Russian knapweed

WILDLIFE

The people of Southwest Colorado share their special environment with wildlife of many kinds. Wildlife is partially why this area is so desirable. Maintaining a balanced wildlife population benefits our community ecologically and economically. Hunters, anglers, and wildlife viewers help create jobs and contribute significantly to our state and our local economy.

Creating & Preserving Wildlife Habitat

Your property may already include high-quality habitat such as native grasses, shrubs, trees, wetlands, and stream corridors.

To maintain this habitat and improve your land for fish and wildlife, think first of the food, water, cover, and space needs of the wildlife you want to attract throughout the year. Then begin to establish plants, water sources, and other practices that fit those needs. Additionally, your property may provide high-quality habitat for important or sensitive wildlife species. As a result, wildlife habitat projects on your property might be eligible for funding through a variety of federal, state, or local programs. Contact your local Natural Resources Conservation Service, (970) 565-9045, or Colorado Parks and Wildlife, (970) 247-0855, to determine what species occur in your area and what their cover requirements might be.



Red Tail Hawk



Photo by David Hannigan via Colorado Parks & Wildlife

Grass & hay fields

- Leave streamsidings, ditchbanks, roadsides, grassed waterways, and other odd areas undisturbed or wait until after the nesting season to mow (typically April - July).
- Diverse grass plantings and blocks of native grasses and forbs intermingled with shrubland and crop fields provide protection from predators as well as nesting and cold weather cover for grassland birds.
- Farm ponds offer water for wildlife and habitat for fish, waterfowl, frogs, and other species. Plant the surrounding area with trees, shrubs, and grasses.
- Add flushbars to mowing equipment.
- Mow hayfields from the center to the outside, giving wildlife a chance to escape to field edges.

Managed Timber

- Plant lower densities of trees, thin or burn, and leave open spaces or borders of grasses and legumes.
- Leave trees along streams for fish habitat.

Restored Wetland/Riparian Area

If you had to choose a single conservation practice, restoring wetlands and riparian areas would benefit the greatest number of wildlife species. While riparian areas and wetlands make up less than 3% of the Colorado landscape, over 75% of our wildlife depends on these areas. Conservation practices that protect soils and riparian areas produce cleaner water for wildlife, fish, livestock, and people. Help protect wetlands and the fish, wildlife, water quality, plant diversity, and soil health by following these guidelines:

- Keep the soil covered year round (on crop land, plan a cover crop rotation).
- Keep animals (and large farm equipment) off wet soils to avoid compaction.
- Minimize the use of fertilizer or manure in areas where it may leach into riparian areas.
- Do not apply or dispose of toxic chemicals (including petroleum products) on soils.
- Maintain native vegetation in riparian areas and avoid introduction of non-native species.
- Protect plant diversity.
- Avoid altering natural stream flow.



Mule deer

Additional Information: NCAT Sustainable Agriculture: www.attra.ncat.org/index.php



Great Horned Owl

Crop fields

- Use no-till or conservation tillage to provide cover and food for wildlife in winter.
- Leave a few rows of standing crop along field edges to provide wildlife food. “Edge” plantings, a strip planted between a crop field and forest, meets several wildlife needs at once.
- Maximize the survival of pheasants, quail, and other birds by leaving rows next to large tracts of grasses, trees, or other habitat. ftp://ftp-fc.sc.egov.usda.gov/WHMI/WEB/wildlife/ctfancy.pdf
- Use integrated pest management practices to minimize fish and wildlife exposure to pesticides and encourage beneficial insects, bats, raptors, and other species to help in reducing crop pests.
- Maximize odd areas. Make full use of non-farmed areas by establishing habitat used by the wildlife you want to see on your farm. Use native grasses, forbs, and legumes. Large blocks of grasslands, wetlands, or woodlands are most useful when connected by corridors of grasses and trees that protect wildlife on the move.
- Plant native trees and shrubs to produce fruits and nuts. Plant windbreaks/shelterbelts. Leave dead trees standing in woodlots to provide nesting and foraging sites for woodpeckers and other cavity nesting wildlife.
- Put up bird houses, bat boxes, and other artificial nesting structures.

WILDLIFE

Shrublands

One of the most valuable habitat types in Southwest Colorado is the native shrub community. Many wildlife species including mule deer, elk, Merriam's turkey, grouse, and various songbirds are dependent on the shelter and food provided by sagebrush, Gambel oak, chokecherry, hawthorn, mountain mahogany, piñon pine, juniper, and other shrubs and trees. Approximately 100 species of birds and 90 mammals use sagebrush. The sagebrush community also contains a diverse understory of plant species, reduces solar radiation hitting the ground (thereby positively influencing soil moisture retention), and has a higher soil nutrient content than areas without a canopy.



Mountain lion cub from Patt Dorsey, Colorado Parks & Wildlife

Because every management practice benefits certain species (perhaps to the detriment of others), please contact your local Natural Resource Conservation Service office at (970) 565-9045 or Colorado Parks and Wildlife office at (970) 247-0855 for suggestions about managing your shrubland.



Mule Deer

Your Pets & Wildlife

Uncontrolled pets are one of the biggest threats to wildlife. Domestic cats kill many small mammals and countless birds every year. Dogs on the loose can harass and kill wildlife and livestock. Law enforcement officers are authorized to destroy dogs seen chasing livestock or wildlife – and fine the pet owner. Free-roaming pets also are easy sources of food for predators. Pets should be under control at all times; they should be leashed, kenneled, or kept indoors.

Rangeland & Pasture

Grazing can be compatible with good wildlife habitat, if you follow a few key guidelines. Heavy, continuous grazing is of little value to wildlife and, of course, it's also not recommended for optimum pasture production. High intensity grazing, where

pastures are divided and heavily grazed for short durations on a short-term rotation, are good for pasture production, but tough on wildlife.

ADDITIONAL INFORMATION

USDA Natural Resources Conservation Service: www.co.nrcs.usda.gov/technical/ecs/Biology/Biology.html and www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/whip

Colorado Parks and Wildlife, Private Lands Program: www.wildlife.state.co.us/LANDWATER/PRIVATELANDPROGRAM/Pages/PrivateLandPrograms.aspx

US Fish and Wildlife Service, Partners for Fish and Wildlife Program: www.fws.gov/mountain-prairie/pfw/colorado/

Colorado State Forest Service: www.csfs.colostate.edu/pages/durangodist.html

National Agroforestry Center: www.nac.unl.edu/workingtrees/wtw.pdf

CSU Library, Rangeland Science: www.lib.colostate.edu/research/corange/rangesci.html

Fencing For Wildlife

When you fence in your property you are unavoidably fencing out wildlife, as well as livestock. If you build your fences according to the information given here, you will benefit for years by spending less time and money maintaining fences, while knowing you will be minimizing danger to wildlife. The key to keeping fences in good shape is to keep wires taut and at heights that allow game to cross safely. In deer and elk country, keep the fence under 42 inches. Since deer and elk jump with their hind legs forward, keep the top two wires at least 12 inches apart so they won't get their legs twisted in the fence. Keep the bottom strand barbless and at least 16 inches off the ground so young animals can go under safely. Flag the new fence immediately after it is built so animals will see the new obstacle. Building a good fence to suit wildlife will not cost you any more than the time it takes to find out how to do it. You will save yourself much expense and frustration in the long run.



Safe, smooth wire fence

ADDITIONAL INFORMATION

Colorado Parks and Wildlife publication, Fencing with Wildlife in Mind: <http://wildlife.state.co.us/SiteCollectionDocuments/DOW/LandWater/PrivateLandPrograms/FencingWithWildlifeInMind.pdf>

Orphaned or Abandoned Wildlife

Deer fawns, elk calves, and baby birds have the greatest chance of survival when they are cared for by their parents. When they are learning to fly, baby birds often fail at their first few attempts and may be found on the ground. Elk and deer hide their young in a safe area and are usually feeding or resting nearby. These birds, calves, and fawns are cute, but they are not abandoned. Please do not pick them up! Leave the area quietly; most often, mothers will return to care for their children. If the mother has not returned after 8 hours or if you have any questions, call Colorado Parks and Wildlife at (970) 247-0855.



Photo from U.S. Fish & Wildlife Service

Sick & Injured Wildlife

When animals appear to be sick or injured, resist the urge to handle them. Some wildlife diseases can be transmitted to people and pets. If an animal needs assistance, wear protective clothing or use tools like a shovel or box to capture it.

In Colorado, it is illegal to possess live wildlife and it is also illegal to possess certain dead wildlife, such as protected birds or even their feathers. Licensed wildlife rehabilitators and veterinarians are the only people permitted to care for orphaned, abandoned, sick, or injured wildlife. Please call Colorado Parks and Wildlife at (970) 247-0855 with any questions or to locate a local wildlife rehabilitator.

WILDLIFE

What's your fish and wildlife habitat IQ?

Do you have a good basic understanding of what fish and wildlife need to survive? You probably do if you can answer the questions below correctly. Choose only one answer for each.

1. Everything you do on your land affects wildlife.
 - a. True
 - b. False
2. What are the basic needs of wildlife? (choose best answer)
 - a. Food, water, cover, and space
 - b. Food, water, and shelter
 - c. Food, water, and a place to raise young
 - d. Food, water, and winter cover
3. Which habitat statement below is most nearly correct?
 - a. What is good for one species of wildlife is good for all others as well
 - b. Individual species have specific habitat needs
 - c. Habitat you create for one species will be wrong for all others
4. A soft, gradual transition from crop field to other habitat is better for more species than an abrupt change.
 - a. True
 - b. False
5. Rotational grazing helps birds as well as cows.
 - a. True
 - b. False
6. The best conservation practices for fish and wildlife habitat include:
 - a. Restored wetlands, streamside buffers and ponds
 - b. Windbreaks, diverse grass plantings, and clean water
 - c. Connecting corridors, and managed timber and grassland
 - d. All of the above
7. Which is not a good general rule for habitat plantings?
 - a. Use natives over exotics
 - b. Use a variety of plants
 - c. Create habitat away from water
 - d. Use plants that offer food and cover for wildlife



Photo by David Hannigan via Colorado Parks & Wildlife



Photo by David Hannigan via Colorado Parks & Wildlife

Answers: 1)T, 2)a, 3)b, 4)T, 5)T, 6)d, 7)c

Avoiding Conflicts with Wildlife

Some tips for avoiding unpleasant interactions with your wild neighbors:

- Don't feed deer, elk, or other wildlife. Putting out food or salt for deer and elk will also lure predators that may prey on the wildlife – and on your livestock and pets. Concentrating wildlife at a food source can cause nutritional problems or diseases in wildlife. Instead, concentrate on creating water features or planting natural foods for wild creatures.
- Feed your pets indoors and store pet food inside.
- Store garbage in plastic and metal containers with tight-fitting lids; keep the containers in a closed shed or garage and put them out only on trash-collection days. Clean trash cans periodically with hot water and chlorine bleach to control odors.
- In Southwest Colorado, you live in black bear, bobcat, and mountain lion country, so take special precautions:
- Use specially designed bear-resistant containers.
- Clean grease from your barbecue grill and store the grease inside.
- Hang bird seed, suet, and hummingbird feeders on a wire at least ten feet off the ground and away from anything bears can climb, and bring feeders in at night.
- Do not put fruit, melon rinds, and other tasty items in mulch or compost piles.



Photo by Michael Seraphin, Colorado Parks and Wildlife

For more information on feeding birds, camping or living in black bear country:

<http://wildlife.state.co.us/WildlifeSpecies/LivingWithWildlife/Mammals/Pages/LivingWithBearsL1.aspx>

For more information on mountain lion encounters and living in mountain lion country:

<http://wildlife.state.co.us/WildlifeSpecies/LivingWithWildlife/Mammals/Pages/LionCountry1.aspx>

ADDITIONAL INFORMATION

Colorado Parks and Wildlife, Game Damage Program: <http://wildlife.state.co.us/LANDWATER/PRIVATELANDPROGRAM/GAMEDAMAGE/Pages/GameDamage.aspx>

Colorado Parks and Wildlife, Habitat Partnership Program: <http://wildlife.state.co.us/landwater/privatelandprogram/hpp/Pages/HPP.aspx>

La Plata County Living with Wildlife Advisory Board: www.wildsmart.org

USDA Wildlife Services, National Wildlife Research Center: <http://lib.colostate.edu/research/agnic/what-is.html>

Internet Center for Wildlife Damage Management: <http://icwdm.org/handbook/index.asp>

WATER

Water is arguably the most precious resource of the West and we are fortunate in Southwest Colorado to have a number of sources for water, although at times we still live on the edge. McPhee Reservoir is the second largest body of water in the state. McPhee's water comes from snow melt and rain at higher elevations and provides that water to transform our area into a rich agricultural landscape. McPhee's water also provides much of the drinking water in our area, opportunities for recreation, wildlife sustenance, and much more. Many smaller reservoirs furnish additional storage. Without water storage, we would be a much different community.



One or more years of below average precipitation demands a more judicious release of irrigation water to reserve enough to meet all or our needs.



It is important to understand that all of Colorado's water is owned or adjudicated. Even water that crosses your land may not be yours to use. Colorado water law follows a long held doctrine of "first in time, first in right". In other words, those who filed first for water rights or uses have senior rights over later filers. When there is a shortage of water, those with junior rights might not receive their water.

The water in a creek, stream or river is all adjudicated (distributed according to a judicial decree) to someone or some entity. Just because water flows across your property, it does follow that you have rights to that water. Even the water in a large storage pond on your property may belong to others and you may have no right to use that water.

If you are purchasing or leasing land and want to use water for irrigation, make sure to ask the Realtor and/or lessor for proof of ownership to the water rights. When considering residential land, know which, if any water company will supply you with domestic water or if you will need to haul water to a cistern on your property.

Water, Who Manages It?

Numerous federal, regional, state, and local agencies manage the supply and protection of our water.

Water Conservation Districts

Created as a legal entity with taxing abilities to manage water in a watershed or some other subdivision.

DOLORES WATER CONSERVANCY DISTRICT

This District operates McPhee Dam and Reservoir, the Dolores Project Water for the Dove Creek canal system that services the Ute Mountain Tribe, and storage/delivery for Montezuma Valley Irrigation Company. McPhee Dam and Reservoir is the principle storage feature of the Dolores Project which includes a system of canals, tunnels, and laterals to deliver water to over 61,000 acres of land. It also provides storage for the municipal and industrial water supplies of the City of Cortez and Montezuma Water Company. www.doloreswater.com

MANCOS WATER CONSERVANCY DISTRICT

This District operates Jackson Gulch Reservoir and delivers water to the many users and canals in the Mancos valley. The mission of the Mancos Water Conservancy District is to provide irrigation water for over 13,000 acres of agriculture, municipal water for Mesa Verde National Park, the Mancos Rural Water Company, and the Town of Mancos. www.jacksongulchrehab.info

SOUTHWESTERN WATER CONSERVATION DISTRICT

This District was created by the State of Colorado legislation on April 16, 1941. The charter of the District is to protect, conserve, use, and develop the water resources of the Southwestern basin for the welfare of the District, and to safeguard for Colorado all waters of the basin to which the state is entitled. It is one of four Conservation Districts in the state. www.swwcd.org



McPhee Reservoir - Dolores, CO



Jackson Gulch Reservoir - Mancos, CO

State Government

The Colorado Division of Water Resources, also known as the Office of the State Engineer, administers water rights, issues water well permits, represents Colorado in interstate water compact proceedings, monitors stream flow and water use, approves construction and repair of dams, performs dam safety inspections, issues licenses for well drillers, assures the safe and proper construction of water wells, and maintains numerous databases of Colorado water information.

www.water.state.co.us/Home/Pages/default.aspx

WATER

Water Wells

Additional water may come from wells. Contact the Colorado Division of Water Resources (970-565-0694) for more information: www.water.state.co.us/Home/Pages/default.aspx

Domestic Water Companies:

These companies or towns provide water for domestic or potable uses. The following entities provide various kinds of water services.

- City of Cortez
- Town of Mancos
- Town of Dolores
- Montezuma Water Co. Currently the company has approximately 5,000 members, providing service in 3 counties. It is one of the largest rural water systems in the state; it has delivery pipelines from Dove Creek, to McElmo Canyon, to the Summit Ridge Area.
- Mancos Rural Water Co



Parshall Flume



Center Pivot



Sideroll draining



Ditch Diversion

Irrigation Water

Irrigation water is administered and controlled by many entities. Please contact your neighbor, Montezuma Valley Irrigation, or the Division of Water Resources for information on your irrigation water rights if you have them.

WATER LAW

The Colorado Doctrine

Adopted by the people of Colorado starting in the 1860s, the Colorado Doctrine is a set of laws regarding water use and land ownership. It defines four essential principles of Colorado water law:

1. All surface and groundwater in Colorado is a public resource for beneficial use by public agencies and private persons.
2. A “**water right**” is a right to use a portion of the public water resources.
3. **Water rights** owners may build facilities on the lands of others to divert, extract, or move water from a stream or aquifer to its place of use.
4. **Water rights** owners may use streams and aquifers for the transportation and storage of water.



Outlet from McPhee Reservoir to Narraguinnep Reservoir

WATER RIGHT

A water right is a property right to the use of a portion of the public’s surface or tributary groundwater resource obtained under applicable legal procedures.

Measuring Water

CUBIC FEET PER SECOND (CFS)

CFS is a measurement of flow rate of water in running streams or in a diversion from the stream. Water flowing at 1 cfs will deliver 448.8 gallons per minute or 646,272 gallons per day. CFS is most often used on free-flowing streams and adjudicated water monitored by the Colorado Division of Water Resources.

ACRE FOOT

An acre-foot is a volumetric measurement of water used for quantifying reservoir storage capacity and historic consumptive use. This is the amount of water that will cover an acre of land at a depth of one foot, or 325,851 gallons of water. The Dolores Water Conservancy District measures water in acre feet.

1 BAUER SHARE = 0.1 CFS or 44.88 GPM	SUMMIT SHARE = 1/12 CFS or 37.4 GPM	1 MVI SHARE = 5.61 GPM
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The amount of water in a share may vary from year-to-year based on the available reservoir supply and current rainfall conditions. A “share” is exactly that, a share of a total adjudicated right of a ditch company or irrigation company. Your share is a portion or percentage of the total. Any shortages are thus shared by all.

WATER FOR IRRIGATION & RECREATION



McPhee Dam & Reservoir - Dolores, CO

The reservoirs in the Southwest corner of the state are used to store water that comes from snow melt and precipitation from higher elevations. The water is released for various uses, such as, supplying drinking water, providing for municipal and commercial water needs, irrigating farmland, and providing for fish.

Each year precipitation may be very different from the previous, from drought conditions to flooding. The reservoirs help smooth out these differences and are also a tool used to prevent flooding in years of high precipitation. Some are also a source of recreational opportunities.

Each reservoir must be managed wisely to ensure that water is available for human consumption, food production, and maintenance of sensitive eco-systems. When recreation is available on the reservoir, management is often assigned to a state or federal agency. For example, McPhee Reservoir

recreation is managed by the US Forest Service while Jackson Gulch Reservoir is managed by Colorado Parks and Wildlife.

McPhee Dam and Reservoir

The Dolores Project, located in the Dolores and San Juan River Basins in Southwest Colorado, develops water from the Dolores River for irrigation, municipal and industrial users, recreation, fish and wildlife, and hydroelectric power. It also provides vital water to the Dove Creek area, central Montezuma Valley area, and to the Towaoc area on the Ute Mountain Ute Indian Reservation.

The economy of the area benefits from increased agricultural production and strengthened service-related enterprises dependent on agriculture. The municipal and industrial water supply of 8,700 acre-feet permits a moderate, but healthy, future growth rate for the area.

McPhee Reservoir covers 4,470 surface acres, with over 50 miles of shoreline and several long, narrow tree lined canyons. It is the second largest body of water in Colorado with a maximum water depth at the dam of 270 feet. Since McPhee is located in a river canyon, much of the best fishing is accessible only by boat. It is one of the few places where rainbow trout and crappies can be caught in the same water. In the side canyons, wakeless boating zones have been established for safety and to allow still-water fishing.

McPhee Lake has two concrete boat ramps, one located at the recreation site on the west bank and the other at House Creek Recreation Site on the east bank. Parking for trailers and easy boat access are provided at both areas. Five fishing access points with parking are located on improved gravel or paved roads. Car-top boats can be launched from these points: Dolores, Dolores Town Park, Big Bend, Old McPhee Road, Sage Hen, and Dry Canyon.

Groundhog Reservoir

Groundhog Reservoir State Wildlife Area is located in a remote area in Dolores County. There are approximately 500 surface acres of water at an elevation of 9,000 feet. Fishing and wakeless boating are popular here.

Jackson Gulch Reservoir

In the spring, summer and fall, canoeists, kayakers, and wakeless power boaters enjoy the calm waters of Jackson Gulch Reservoir. In the winter, depending on conditions, there are great opportunities for cross-country skiing, snowshoeing, and ice fishing. Fishing enthusiasts have pulled numerous species of fish, including yellow perch and rainbow trout, out of the reservoir. The reservoir was originally built as a part of the Mancos Irrigation Project.

www.parks.state.co.us/Parks/Mancos/Pages/MancosStatePark.aspx

Narraguinnep Reservoir

Narraguinnep Reservoir and State Wildlife Area is comprised of 566 acres at an elevation of 6,681 feet located in a ranch land setting surrounded by piñon-juniper. The reservoir is stocked with walleye, yellow perch, northern pike, black crappie, bluegill, and channel catfish. Recreational activities include: powerboating, sailboating, windsurfing, waterskiing, wildlife viewing, and waterfowl hunting.



Narraguinnep Reservoir - Dolores, CO

Summit Reservoir

Located about half way between Dolores and Mancos, this reservoir is managed by Summit Reservoir and offers a rare opportunity for warm water fishing in western Colorado. Recreation on the reservoir is managed by Colorado Parks and Wildlife.

Puett-Reservoir

Puett Reservoir was originally constructed in 1905, and then reconstructed in 1960. It contains 163 surface acres when full and is owned and operated by the Summit Reservoir and Irrigation Company. The lake is stocked with fish by the Colorado Division of Wildlife and is open for public fishing (from the bank and from trolling motor powered boats). No swimming is allowed. The lake is on private land and access is limited to 3 feet above the high water line.

Bauer Reservoir (privately owned)

Weber Reservoir (privately owned)

Mancos River

The Mancos watershed, which covers the area on both sides of the river, drains an area of about 800 square miles. It often is divided into two parts: the upper watershed, which is about 203 square miles and includes the Mancos Valley and the surrounding mountains; and the lower part that begins in Mancos Canyon at the confluence of Weber Creek and drains the mesa and semi-desert lowland country of Mesa Verde National Park, the Ute Mountain Ute Indian Reservation, and the surrounding regions. The watershed boasts three reservoirs: Jackson Gulch Dam, Bauer Lake, and Weber Reservoir.

Dolores River

The Dolores River flows for more than 200 miles through Southwest Colorado, starting high in the San Juan Mountains and descending to its confluence with the Colorado River near the Colorado-Utah border. In an average snowpack year, the river is boatable a number of days between late April and early June, while in a dry year, there may be no boatable flows at all. The Dolores flows through five major western life zones, from the alpine zone at its headwaters to the semi-desert zone along much of its lower reach.

Additional information:

USFS- McPhee Campgrounds: www.fs.usda.gov/wps/portal/fsinternet!/ut/p/c4/04_SB8K8xLLM9MSSzPy8xBz9CP0os3gDfxMDT8MwRydLA1cj72



Jackson Gulch Reservoir - Mancos, CO

WATER CONSERVATION



McPhee Reservoir

Domestic Water

Water is such a valuable commodity in the arid Southwest that there are many very good reasons to conserve it. Water from a rural water district can be expensive, especially if you use it to keep your lawn green. And if you have to haul your domestic water to your cistern every few days, you will learn in a hurry how to conserve. Look to common sense ideas around the house to save water: flush less often; use grey water for irrigating gardens, flower beds, and lawns; and plant drought tolerant lawns and landscaping. CSU Extension Service has information on household water savings ideas and xeriscaping: www.ext.colostate.edu/menu_garden.html

Estimates vary, but each person uses about 80-100 gallons of water per day. The largest use of household water is to flush the toilet, and after that, to take showers and baths. For more information see: <http://ga.water.usgs.gov/edu/qa-home-percapita.html>

Rural Water

Just when you think you've purchased a little bit of heaven here in Southwest Colorado, someone throws cold water in your face! And much of that cold water is about water. Municipal, piped water is not available to everyone. This means you may have to haul or pay someone to haul drinking water to your home. That water will need to be stored in a cistern and from there pumped into your home. You may think about drilling a well, but much of our underground water sources in the area are not suitable for culinary use unless you install an expensive filter system. So it pays to know what water (and electricity) is available before you buy that property you've been dreaming about.

Fortunately, domestic water is available through water companies and districts in most of our area, and these services are slowly expanding into more rural areas. Sharing the cost of new water lines with neighbors is a good idea.

Preventing Water Pollution

- Plant and maintain shrubs and grasses along streams and around livestock corrals and pens to trap and absorb pollution-laden runoff before it reaches streams or groundwater.
- Locate livestock corrals, pens, and septic systems downslope of streams and domestic wells.
- Use off-stream stockwater tanks to keep livestock from trampling streambanks.
- Avoid over-irrigating crops and lawns. It wastes valuable water, leaches soils nutrients, causes erosion, and spreads fertilizer and pesticide.
- Properly dispose of manure, feed, and bedding wastes by composting or spreading on cropland.
- Contact your county health department about proper disposal of weed-control chemicals, used motor oil, or other toxic substances.
- Keep soil covered with vegetation to prevent erosion.
- Maintain septic systems.
- Practice integrated pest management.
- Avoid over-fertilization.

WATER QUALITY



Seasonal mountain stream, San Juan National Forest

Water Moves

Your water comes from a watershed. A watershed is simply all the land that drains to a specific area. En route to your well or stream, water can pick up organic debris, bacteria, motor oil, pesticides, and other pollutants. Rivers, streams, reservoirs, lakes, ponds, and wetlands are obvious surface water sources. Less obvious are swales, gullies, or even the highway road ditches that only collect and carry water after a rainstorm. These surface water sources sustain wildlife and livestock and also are sources of drinking water for humans, or contribute to the recharge of groundwater aquifers that supply our wells. The quality of surface water is at risk of pollution anytime contaminants are introduced into watersheds. Understanding the risks from placing contaminants in proximity to surface and groundwater resources is key to protecting water quality.

Protecting Water Quality

Drinking Water Wells

Whether your water comes from an individual well or spring on your property or a community well and water system, adequate well protection is the key to preserving drinking water quality. A well downhill from a livestock yard, a leaking fuel storage tank, or failing septic system has a greater chance of being contaminated than a well uphill from these pollution sources. Wells should be at least 50 to 100 feet away and uphill from any source of

contamination. Factors such as relation to surface drainage courses and direction of groundwater flow are vital to consider.

Wells must be constructed by a licensed well installer in accordance with Colorado regulations, which may vary for different types of wells. Contact the Colorado Division of Water Resources (970-247-1845) for more information, or read more at: www.water.state.co.us/groundwater/groundwater.asp

Your Drinking Water

A safe, reliable water source is part of quality living. To assure that quality, chemical analysis is recommended to detect contaminants such as nitrates, sodium, chlorides, and the hardness of the water. The Colorado State University Soil Testing Laboratory and private labs are equipped to determine the chemical constituents of water. Bottles for sampling can be obtained from the Montezuma public health department (970-565-3056) or CSU Extension (970-565-3123). Read more at: www.cdph.state.co.us/lr/water.htm

The appearance, taste, or odor of water offers some information about obvious contamination; however, this is not the case with all contaminants. Laboratory analysis is the only sure way to determine the quality of your water. Obvious contaminants include silt (cloudiness) and hydrogen sulfide (smell). Generally, the senses will not detect impurities that cause hard water, or corrode pipes and stain sinks.

Certain organic compounds, such as bacteria associated with sewage or those occurring naturally in water, may be present. Usually they will impart an undesirable odor or taste. Bacterial analysis is strongly recommended for all private water supplies, especially for a well in close proximity to septic systems or animal confinement facilities.

For information regarding water quality in your service area, contact your water company or the Montezuma public health department: www.co.montezuma.co.us/newsite/healthhome.html

ENERGY



Grid-tied solar array at Cliffrose Garden Center - Cortez, CO

Energy Resources

There are many energy resources available in Southwest Colorado. Operational energy industries include: electricity, natural gas, propane, coal, wood, geothermal, biomass, solar, wind, and hydro.

Although average monthly energy consumption in Southwest Colorado is lower than both state and national averages, conservation goals should still include a reduction in the amount of energy consumed per person.

Electric – Empire Electric Association, Inc. (www.eea.coop) is a non-profit, member-owned rural electric Cooperative. It has provided electric power to residential, commercial, and industrial customers in Southwest Colorado and Southeast Utah since 1939 and provides

energy and energy related services to Cortez, Dolores, Mancos, Dove Creek, Towaoc, and Monticello.

Green Power – Green power has been an option offered by area electric companies in Southwest Colorado for the last several years. Empire Electric Association, La Plata Electric Association, and San Miguel Power Association purchase power from Tri-State Generation and Transmission (Tri-State). Tri-State has agreements with commercial wind farms and hog farms (biomass) in Wyoming and New Mexico to supply the demand for green electricity. Some green power has also been generated by local hydroelectric plants as well as private photovoltaic systems.

Natural Gas – Atmos Energy (atmosenergy.com) is one of the largest natural-gas-only distributors in the United States. Regulated distribution operations deliver natural gas to 3.2 million residential, commercial, industrial, agricultural, and public-authority customers. Distribution services are provided to Montezuma and Dolores counties and to more than 1,600 communities in 12 states.

Renewable Alternatives – Some of the renewable power being produced locally:

- A \$1.5 million, 258-kilowatt (kW) photovoltaic tracking array constructed by Skanska, Southwest of Cortez in December of 2010, has generated more than 533,000 kilowatt-hours of electricity.
- Mesa Verde National Park began production in mid-summer of 2012 with approximately 76 kW solar panel array.
- Cortez Recreational Center is currently heating their pool with recently installed solar panels.
- Cliffrose Garden Center has erected 44 panels to generate enough solar-power to provided 100 percent of the business' electrical needs, roughly 10.3 kilowatts.
- The Anasazi Heritage Center has erected a solar array with the goal of generating 138 kilowatts or 60 percent of the facility usage.

Oil, natural gas, coalbed methane gas, and carbon dioxide gas are produced from both public and private lands in Montezuma, Dolores, and La Plata counties. These resources are often owned separately from the land creating a “split-estate”. Learn more about “split-estates” and the impacts on the environment and the economy via the links below.

ADDITIONAL INFORMATION

www.blm.gov/wo/st/en/prog/energy/oil_and_gas/best_management_practices/split_estate.html
www.splitestate.com/video_clips.html
www.sanjuancitizens.org

AIR QUALITY



Haze from wildfires settles over the San Juan Mountains

agricultural and other open burns, wildfires, and dust particulates. These contaminants must be monitored in our high desert locale as the decrease in oxygen due to the increase in elevation make it crucial to keep our air free of contaminants.

New Air Quality Research at Mesa Verde National Park

A new webcam and device set-up to monitor dust storms in the area and collect airborne particles has been installed at Mesa Verde National Park as part of a multi-agency air quality research project. In 2011, Mesa Verde National Park became a part of a dust monitoring network spread across the Colorado Plateau and maintained by researchers at the University of Colorado at Boulder and the United States Geological Survey (USGS). Find out more at: www.nps.gov/meve/naturescience/dustmonitoring.htm

Development of the monitoring network was prompted by a series of large dust deposition events for many springs in the Colorado high country. These events blanketed the mountains in dust, initiated the early onset of snowmelt, reduced summer runoff, and even periodically restricted air traffic into airports in western Colorado. The dust is blown in from the deserts and is partially the result of widespread human disturbance of desert soils that began in the mid to late 1800's and continues today. Most of the dust associated with these large events is not currently measured. Nor is the full impact on visibility, particularly in federally protected airsheds, captured by other kinds of monitoring networks.

Both land management activities and climate change (such as aridity and storm intensity) can affect the frequency and amount of dust moving in and settling across our area. The new results from the dust monitoring stations will help scientists evaluate dust deposition trends, lead to a better understanding of the cause(s) of these events, and can then be applied in future land management decisions.

According to a desert soil expert with the USGS, "...reducing dust loads in this area and in similar mountainous areas around the world may help lessen regional effects of climate change." The data from this and similar studies can ultimately have major implications for people living in seven U.S. states and Mexico who rely on the Colorado River for drinking, agricultural, and industrial water.

In addition to Mesa Verde National Park, the dust monitoring network includes stations at Canyonlands National Park, UT; Niwot Ridge, Front Range, CO; Telluride, CO, and Craig, CO.

ADDITIONAL INFORMATION

Four Corners Air Quality Task Force – Final Report: www.nmenv.state.nm.us/aqb/4C/Docs/4CAQTF_Report_FINAL.pdf
Colorado Dust on Snow – www.snowstudies.org/codos1.htm

More consideration is being given to the air quality of the Four Corners region as the area grows. The Colorado Department of Public Health and Environment is the agency responsible for monitoring air pollution and for issuing permits when an activity affects our air quality: www.colorado.gov/cs/Satellite/CDPHE-AP/CBON/1251582562056. They oversee the mercury and ozone monitoring site in Cortez: www.apcd.state.co.us/air_quality.aspx.

Pollution sources in our area include: internal combustion engines, oil and gas exploration, coal fired power plants,

STAYING HEALTHY & SAFE

Farm Safety

Just about anything you do on the farm can be, and usually is, dangerous. If you know any old farmer with all his fingers and a complete hide, chances are he was mighty careful or mighty lucky. Farm safety is especially critical to the new guys and gals since they probably didn't grow up watching and learning as their neighbors and family fell casualty to farm accidents. Just look at some of the things that you can get in trouble with on the farm.

The Tractor and Other Equipment

Chances are an old tractor came with your property or you bought one from a retired farmer who was getting too far along to use it. The lack of safety shields and good brakes on these older tractors can be very dangerous. Tractors have a neat device called a power-take-off (PTO) that spins around at the back of the tractor making bailers, swathers, and other farm tools do their jobs. They are also good at removing clothing and limbs from the operators. It is also not uncommon for tractors to roll over on their operators. Tractors can be safe and useful tools if you keep them safe and learn how to use them correctly.

Just about every farm has a chain saw, skill saw, grinder, air compressor, welder, and all other kinds of labor-saving devices.

What most farms seem to be without are safety shoes, eye protectors, ear protectors, heavy gloves, and user's manuals. If you don't want to test the response time of the county medics, it might be a good idea to get and use safety manuals and know how to use your power tools safely.

Insecticides, Pesticides and Herbicides

Although useful, these killers tend to collect on shelves in sheds, barns, and basements. We read regularly about people (children especially) who run afoul of these compounds. The best advice is to get rid of them after you have used them, and to do so according to the directions. Call CSU Extension (970-565-3123) to find out about annual "turn in" days to dispose of pesticides and other household hazardous substances.

Firearms

People who move to the country sometimes think that they can turn the pasture into a firing range. Rural areas are getting more congested all the time, so plinking that tomato can in the back yard may not be a good idea. Knowing where your neighbor is and knowing where his cow and your horse are is a good idea as stray bullets tend to be non-discriminatory. Be absolutely positive that you have a very close slope or hillside in the direction of and close to your line of fire so that your bullets are safely stopped on your property.

ADDITIONAL INFORMATION

www.osha.gov/OshDoc/data_General_Facts/FarmFactS2.pdf



Combine

Diseases

There are numerous diseases that can be transmitted from animals to humans. Below is a list of the most common diseases in our area. For more information contact your county health department:

Montezuma County: www.co.montezuma.co.us/newsite/healthhome.html

Dolores County: www.dolorescounty.org/nursing.shtml

OR

Colorado Department of Public Health and Environment: www.cdphe.state.co.us/dc/zoonosis/

Giardia

www.cdc.gov/parasites/giardia

Hantavirus Pulmonary Syndrome (HPS)

www.cdc.gov/hantavirus/

Plague

www.cdc.gov/plague/

Rabies

www.cdc.gov/rabies/

Tularemia

www.cdc.gov/tularemia

West Nile Virus

www.cdc.gov/ncidod/dvbid/westnile/index.htm

Tick-borne Diseases

www.cdc.gov/ticks/index.html

-Colorado Tick Fever

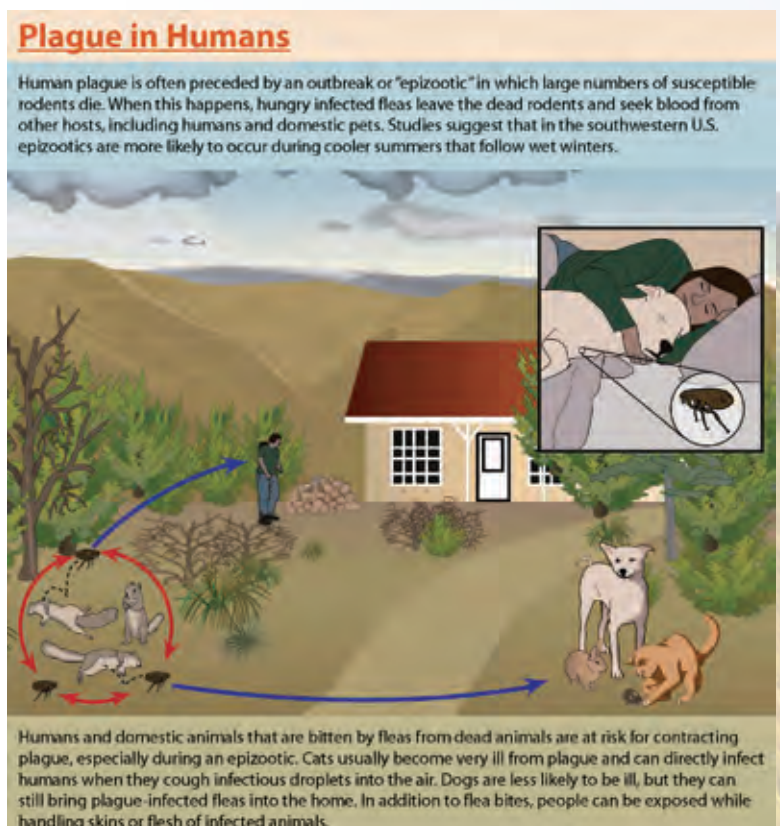
www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001696/

-Rocky Mountain Spotted Fever

www.cdc.gov/rmsf/

-Lyme Disease

www.cdc.gov/lyme/



STAYING HEALTHY & SAFE



Dryland bean field - Lewis, CO

Climate

Most of us enjoy the dry air and warm climate of our region and we like to spend a good deal of time outside in the sunshine. As with anything else, there are trade-offs. In both the high desert region and at higher elevations, it is important to be aware of some pitfalls of enjoying too much of a good thing. The following websites offer information on prevention and treatment of some of the most common outdoor hazards:

Summer - www.cdc.gov/Features/MovingOutdoors/

Winter - www.cdc.gov/Features/WinterWeather/

Heat Exhaustion & Dehydration

Heat exhaustion is precipitated by strenuous physical activity and/or dehydration. Its symptoms include muscle cramps, paleness, nausea, heavy sweating, and a rapid pulse – all a result of your body overheating. Heat exhaustion is one of three heat-related syndromes, with muscle cramps being the mildest, heat exhaustion next in severity, and heat stroke the most severe. Heat cramps and heat exhaustion are treated by getting out of the heat, drinking tepid fluids, and cooling by fanning or getting into a breeze. Without prompt treatment, heat exhaustion can lead to heat stroke, a life-threatening condition in which a person can no longer sweat to cool their body. Immediately call 911 for a person with heat stroke and then cool them.

www.mayoclinic.com/health/heat-exhaustion/DS01046

www.mayoclinic.com/health/dehydration/ds00561/dsection=prevention

Sunburn

Sunburn, the burning of skin tissue caused by overexposure to the sun's harmful ultraviolet (UV) radiation, may seem like just a temporary irritation, but sunburn can cause long-lasting damage to the skin. Children are especially at risk: One blistering sunburn in childhood or adolescence more than doubles a child's chances of developing melanoma later in life. Since most of the Southwest is over a mile high in elevation, the atmospheric shield between your skin and harmful rays of the sun is significantly reduced. Don't get burned: wear a hat (a full-brimmed cowboy hat is far better than a baseball cap), use sunblock, and if your skin is particularly sensitive, wear long pants and a long-sleeved shirt. See: www.mayoclinic.com/health/sunburn/DS00964/DSECTION=prevention

Quickly Changing Weather (rain/snow/rapid drop in temps)

You can be more prepared if you know what to expect and as anyone who hikes in the mountains knows, you can expect freezing temperatures and snow any day of the year – even on a July afternoon that starts out sunny and in the 70s. Wet clothing, temperatures in the 40s and low 50s, and wind all set the stage for hypothermia, a life-threatening condition. See: www.weather.gov/for_current_weather_advisories.

Flash Floods

Flash floods are short-term events which occur soon after a heavy rain, dam break, levee failure, rapid snowmelt, or ice jam breakup. A flash flood is characterized by a rapid stream rise with depths of water that can reach well above the banks of a stream. Flash flood damage and most fatalities tend to occur in areas immediately adjacent to a stream or arroyo. A creek only 6 inches deep in mountainous areas can very quickly swell to a 10 foot deep raging river if a thunderstorm inundates an area with intense rainfall. Additionally, heavy rain falling on steep terrain can weaken soil and cause mud slides that can damage homes, roads, and property. Flash floods can be produced when slow moving or multiple thunderstorms occur over the same area. When storms move faster, flash flooding is less likely since the rain is distributed over a broader area.



Fast moving water after a rain storm

Lightning & Thunderstorms

There is no safe place outside when thunderstorms are in the area. If you hear thunder, you are likely within striking distance of the storm. When Thunder Roars, Go Indoors! Too many people wait far too long to get to a safe place when thunderstorms approach. Unfortunately, these delayed actions lead to many of the lightning deaths and injuries in the U.S.

If you are hiking in the mountains, get below tree line as quickly as possible. If you cannot get below tree line, get away from metal backpacks, squat low on your feet, and get as much distance as you can between yourself and your companions so that if one person is injured, others can come to their assistance. Be off ridges and mountain peaks by noon. Most mountain summer thundershowers occur in the afternoon.

The best way to protect yourself from lightning is to avoid the threat. You simply don't want to be caught outside or in a vulnerable area in a storm. Have a lightning safety plan and cancel or postpone activities early if thunderstorms are expected. Substantial buildings and hard-topped vehicles are safe havens. Rain shelters, small sheds, trees, and open vehicles are not safe. www.lightningsafety.noaa.gov/overview.htm

Snow & Ice

- Winter driving is a practiced art. Learn more at: www.in.gov/indot/2439.htm. Learn about current road conditions at: www.coloradodot.info/travel/winter-driving
- Check snow and ice conditions before heading out to take part in outdoor activities. Pay attention to news warnings about storms and severe drops in temperature. Accidents really do happen all the time; cancel your trip, stay home, eat popcorn, and be safe. Live to go out another day!
- Don't drink or smoke before going outside in the cold. Alcohol, nicotine, and caffeine increase the risk of cold injury to the skin.
- If you get wet, get inside and remove your wet clothes.
- If you need to be outdoors in very cold weather, continually check yourself for signs of frostbite. Go inside if your toes, fingers, ears, or other parts of your body become numb or tingle.
- In your home keep an emergency supply kit that includes a battery-powered radio with extra batteries, canned food, plenty of drinking water, a manual can opener, flashlights and battery-powered lamps for power failures, wood for fireplaces, etc.
- Make sure your car is in proper working condition and includes blankets, extra clothing, booster cables, tools, water, dried fruits and nuts, a first aid kit, a fire extinguisher, flashlights and batteries, a shovel and ice scraper, and tire chains. Many folks also include rock salt to melt ice and sand to improve traction
- Wear layers to protect yourself from the cold. A hat, scarf, and mittens are essential protection.

STAYING HEALTHY & SAFE



Agricultural Burning

All counties adhere to the State Air Pollution Control Regulations, which require an Open Burning Permit or permission given from the presiding fire protection district. All counties allow agricultural open burning for preparing soil for crop production, for weed control, for clearing irrigation ditches, and for other agricultural cultivation purposes. Prior to any open agricultural burning, permission must be obtained in all counties by calling the local fire district or sheriff's dispatch. It's important that authorities know about your fires, so they can insure that proper conditions exist and they can avoid false alarms. Contact your local fire protection district or sheriff's department if you have any questions.

For all Fire Emergencies **dial 911**

Cortez Fire Protection District - (970) 565-3157
Dolores Fire Protection District - (970) 882-4096
Lewis-Arriola Fire Protection District - (970) 882-7718
Mancos Fire Protection District - (970) 533-7400

Montezuma County Sheriff - (970) 565-8452

Wildfires

Wildfires occur:

- In all seasons of the year.
- Occur in all fuel types: Grass, brush and trees.
- Occur in all sizes.
- May move with incredible speed. Most people are caught totally by surprise with only a few minutes to collect their most prized possessions and evacuate to safety.



Wildfires in rural areas are a very real and potentially disastrous problem. No one is immune from this threat. To reduce the risk of wildfire, it is recommended that you create a "defensible space". You can find the how-to's at the Colorado State Forest Service website:

<http://csfs.colostate.edu/pages/defensible-space.html>

Seldom are there enough trained personnel and sufficient equipment to protect every structure when a fire erupts. Professionals are forced to choose which homes can be defended and which cannot. The action you take now to protect your home will make a difference!



Wildfires

Accessibility: Unlike urban areas that have fire and ambulance service very close by, rural emergency services may be far away. In some areas there are NO emergency services.

You can do several important things to assist emergency crews:

1. Make sure your home address is prominently displayed.
2. Make your driveway easily accessible by emergency vehicles under all weather conditions. Specifications are available from the county sheriff or local fire department.
3. Build a second emergency entry and escape route.

The bottom line is, if they can't get there, they can't help you.

Water Supply

A second important factor to consider is the water needed to fight a fire on your property. Construction of an on-site all-weather water supply that can be used by a fire department is a good idea. Contact your local fire district for the guidelines for on-site water supplies that can be used effectively.

Fire Extinguishers and Smoke Detectors

Several fire extinguishers and several smoke detectors are recommended for each structure. Contact the county building department or fire district for information about safety codes for new and older homes

ADDITIONAL INFORMATION

Firewise: www.firewise-81328.org/?page_id=10

CSU Forest Service: www.csfs.colostate.edu/pages/wf-protection.html

WHAT EVERY RURAL LANDOWNER NEEDS TO KNOW

Rural Agencies

You, Your Land, and the County Assessor

The county assessor is responsible for classifying your property for tax purposes. An agricultural classification means that property's value for tax purposes is based on the property being used for agricultural production rather than on market value. This can mean less property tax to pay, but the land must meet specific requirements. Learn more at: www.co.montezuma.co.us/newsite/assessoraglandclassification.html



Rural Law Enforcement

Law Enforcement comes from different agencies depending on location. The State Highway Patrol has jurisdiction on state roads and highways, larger towns have their own municipal police department, the unincorporated areas of the counties and some towns fall to the sheriff's office, and tribal police oversee areas within the tribal boundaries.

In our mostly unincorporated, agricultural areas, the sheriff's department is often the law enforcement agency that will be handling conflicts. The sheriff is an elected official who provides multiple services to the county residents. Deputies patrol roads and answer emergency calls 24 hours a day and detectives investigate major crimes.

Sheriff offices, such as the Montezuma County Sheriff's Office, have an open door policy when it comes to communicating with the public. Citizens can visit the office and meet with law enforcement personnel. Such communication allows the sheriff and citizen to understand each other.

Minimizing Conflicts

The best way to avoid law enforcement intervention is to minimize conflicts. Common courtesy and respect for diversity, help us all to stay out of conflict and be good neighbors. Although most points below have already been discussed in various parts of this handbook, they are worth emphasizing again.

Dogs: A Problem for Livestock, Wildlife, and Neighbors

When animals are chased by dogs, they are put under undue stress, which results in lower weight gain and physical injury. Ranchers have the right to protect their livestock, and in some cases, they may destroy animals that threaten their herds. It is also unlawful to allow pets to harass wildlife. Make sure your pet stays on your property or is under your control at all times.

Land Care

Most farmers and ranchers have strong land stewardship ethics. Many newcomers do also, but are unfamiliar with local issues such as weed control, overgrazing, and prairie dog infestation. Failure to control weeds leads to their spread onto the neighbors' land. Overgrazing is simply a result of poor management. Opportunistic prairie dogs carry the plague and destroy productive crop land.

Minding Your Fences

Under Colorado Law, when agricultural landowners share a property line, it is the duty of each to maintain half of the fence or share equally in its construction. Contact adjacent landowners and work out fence maintenance or construction. You can either split the labor and materials equally, or one may supply the labor and the other person supply materials.

Sheriff's deputies respond to numerous complaints between neighbors over fences mostly because there are many misconceptions concerning fences. Colorado gives livestock owners the flexibility that they need to operate a successful enterprise. Landowners have to fence out livestock if they want to protect their crops, grass, gardens, and flowers. www.colorado.gov/cs/Satellite?c=Page&childpagemame=Agriculture-Main%2FCDAGLayout&cid=1176829292622&p=1176829292622&pagemame=CDAGWrapper

Respecting Private Property and Privacy

It is always your responsibility to know whose land you are on, regardless of whether it is fenced. To keep from trespassing, obtain a county map that clearly shows public and private lands and roads. Ask first before entering private lands, even when you are doing something as harmless as walking in a meadow. Many landowners will let people on their property within certain guidelines. Some landowners, due to privacy desires and liability fears, may not let people on their property at all.

When thinking about respecting others privacy, don't forget that light and noise also affect your neighbor.

We live in a very unpopulated part of the world and that affords benefits such as being able to look up and see dark skies glowing with the Milky Way. This marvelous sight is diminished by poorly placed residential and commercial lighting. Install or retrofit your outdoor lighting so that no light shines outward or upward from your property. It is an easy fix to satisfy everyone by adding shades or purchasing lights that meet dark sky requirements.

Consider Wildlife in Fence Building

The fencing you choose can make a big difference to wildlife, and fencing that accommodates both livestock and wildlife doesn't have to cost more. Spacing smooth fence wires at 16, 22, 28, and 40 inches from the ground will allow antelope, deer, and elk to get through with reduced fence damage. Leaving that 12-inch gap between the highest wires also will help keep animals from getting tangled in the wires.

The noise from farm equipment, mowers, balers, etc. is a necessity in an agricultural area. On the other hand, loud motorized recreational vehicles, continually barking dogs, gun shots, loud music, etc. may be enjoyable for the user, but not the neighbors. Reasonable common courtesy can often alleviate the conflict without having to involve mediation or law enforcement.

ADDITIONAL INFORMATION

Colorado State Patrol: www.colorado.gov/cs/Satellite/StatePatrol-Main/CBON/1251592908196

Cortez Police: www.cityofcortez.com/government/police

Mancos Marshal's Office: www.mancoscolorado.com/marshal.htm

Montezuma County Sheriff: www.montezumasheriff.org

Ute Mountain Ute: Bureau of Indian Affairs (BIA): 970-565-3706

Southern Ute Police Department: www.southern-ute.nsn.us/supd/about

WHAT EVERY RURAL LANDOWNER NEEDS TO KNOW

Communication, Transportation, and Trash

Telecommunications

Cell service is improving, but many areas receive spotty, weak, or no service at all. Talking to your neighbors and co-workers to compare services available is probably the most reliable way to choose a provider. Television reception varies from hilltop to valley. You may not have cable available, so ask your neighbors how they access television and what channels they are able to receive.

Phones and Internet Service

Landline phone service is available in most of our area and there are several Internet service providers to choose from. However, due to the mesas, mountains, valleys, and canyons in the area, internet service choices may be limited or very unreliable. Talk with your neighbors to determine which provider can meet your needs.

Rural Mail Delivery

The U.S. Postal Service will, in most cases, deliver your mail to your rural mailbox. Otherwise you will need to have a mailbox at a post office. If the mail is delivered to you, it may be to a box at the junction of your driveway, or at the beginning of your private subdivision road, or at a corner of a road near you. Where your mail is delivered is based on the established route.

For specifics about location, height, and placement of your mail box, contact your mail carrier or post office. Post offices exist within each rural county. You can find the one you need at www.tools.usps.com/go/ZipLookupAction!input.action

Rural Roads

Unpaved roads help create the ambiance of this area. They can also be teeth-jarring, mud-rutted, dust-choked, and snow-packed. All state roads and many county roads are maintained year-round. However, that maintenance may only occur every few months. Road information for Montezuma County can be found at www.co.montezuma.co.us/newsite/roadhome.html

If your house is on a road with a red-colored road sign, your road will NOT be maintained by the county. You and your neighbors will have to hire someone to do the maintenance work or you will have to do it yourselves.

Our climate encourages visitors and residents alike to use the roads for running, bicycling, walking dogs, horseback riding, and the occasional cattle drive. Often the roads have very little or no shoulder, so be a good neighbor. Be courteous, slow-down (even way below the speed limit), and give the non-auto drivers as much space as possible – and a smile and wave of the hand. Even stop now and then to talk to them.

Public Transportation

Currently, public transportation is limited to a van service operating out of the Senior Center and a commercial taxi service for hire.

MoCo Public Transportation: www.co.montezuma.co.us/documents/senior/MoCoPublicTransportation.pdf

Cortez Cab: www.cortezcab.com



Trash – Where to Put It?

Most of our area has rural trash pickup available but if you do not have trash service, you should plan for a weekly trip to the Montezuma County Landfill (970-565-9858). www.co.montezuma.co.us/newsite/landfillhome.html

Burying trash on your property can compromise water quality and create situations that are hazardous to your health. Burning trash contributes to air pollution and the risk of wildfire. There are excellent waste removal contractors which service the entire county, consult the phone book or internet.



Market vegetable garden compost pile

If you are an avid gardener, consider composting, see: www.ext.colostate.edu/safefood/newsltr/v14n1s04.html

Remember, however, you are in bear country and that you also share your space with raccoons and skunks. Adjust your compost pile accordingly if you have seen these critters on or around your property. See: www.bearsmartdurango.org/qna.shtml

Much of what we dump, we could recycle. Almost all paper, plastic, glass, cans, cardboard, etc. can be recycled at many drop off points around Cortez, Dolores, Mancos, and Durango. Before you dump it, consider recycling. www.4cornersrecycles.org and www.cityofcortez.com/government/public_works/recycling

Rural Sewage Disposal – It's Your Responsibility

Unless you live close to a town and can hook into a municipal sewage disposal system, you will be using a septic system. It is one of the home ownership responsibilities that can have environmental consequences far beyond the boundaries of your property.

A septic tank provides a place for the waste water flow to slow down so bacteria can breakdown and digest ingredients. The remaining waste water flows into the leach field where it percolates through soil which cleanses it. It's simple, and works well if you follow the rules: www.co.montezuma.co.us/documents/septic/regs.pdf

Colorado State Law (25-10-111) requires that before a person constructs, remodels, occupies, or maintains any dwelling, he must first complete a permit for an individual sewage disposal system. There are a variety of subtleties in this process. The State of Colorado empowered local county health departments to enforce the rules of on-site sewage disposal systems: www.cdphe.state.co.us/regulations/wqccregs/100306individualewagedisposalsystems.pdf

These rules are very important because septic systems, if installed or maintained improperly, have the capacity to contaminate ground water from which rural people draw their drinking water. Sewage that invades ground water can contain dysentery, hepatitis, typhoid, and other diseases.

RESOURCES

Medical Resources

A number of medical centers provide services:

Southwest Memorial Hospital
1311 N. Mildred Road
Cortez, CO 81321
(970) 565-6666
www.swhealth.org

Mercy Regional Medical Center
1010 Three Springs Blvd
Durango, CO 81301
(970) 247-4311
www.mercydurango.org

Montezuma County Health
Department - County Annex
106 West North
Cortez, CO 81321
(970) 565-3056
[www.co.montezuma.co.us/
newsite/healthhome.html](http://www.co.montezuma.co.us/newsite/healthhome.html)

There are many other outpatient surgical centers, medical centers and surgical hospitals in the area:

Mancos Valley Health Care Clinic
111 Railroad Avenue
Mancos, CO 81328
(970) 533-9125

Southwest Walk-In Care
2095 North Dolores Road
Cortez, CO 81321
(970) 564-1037

Valley Inn Nursing Home and
Independent Living Center
211 3rd Avenue
Mancos, CO 81328
(970) 533-9031

Axis Health Care
691 E Empire St
Cortez, CO 81321
(970) 565-4028
www.axishealthsystem.org

Vista Mesa Assisted Living
1206 North Mildred Road
Cortez, CO 81321
(970) 564-1888
www.vistamesaliving.com

Durango Urgent Care
2577 N. Main Avenue
Durango, CO
(970) 247-8382
www.durangourgentcare.com

Educational Services

This area provides many educational opportunities for all ages. Below is a list of the local community school systems, tech schools, and colleges. There are many private schools and day cares not listed here. Please see the local phone book for all the listings.

Cortez Public Schools
450 West 2nd Street
Cortez, CO 81321
(970) 565-7876
www.cortez.k12.co.us

Dolores Public Schools
17631 Hwy 145, Dolores, CO 81323
(970) 882-7255
www.dolores.k12.co.us

Mancos Public Schools
395 Grand Avenue
Mancos, CO 81328
(970) 533-7748
www.mancosre6.edu

Durango Public Schools
201 E 12th Street
Durango, CO
(970) 247-5411
www.durangoschools.org

Dove Creek (Dolores County) Public
Schools
425 Main Street, Dove Creek, CO 81324
(970) 677-2522
www.dolorescounty.k12.co.us

Southwest Open School
401 N Dolores Rd, Cortez, CO
(970) 565-1150
www.cortez.k12.co.us

Head Start Programs
Cortez: (970) 565-6040
Mancos: (970) 533-7822
Dolores: (970) 882-2159
Durango: (970) 247-9487
www.tchs4c.org

Southwest Colorado Community College
Cortez Campus - (970) 564-6200
33057 Hwy 160 E, Cortez, CO
Durango Campus - (970) 247-2929
701 Camino Del Rio, Durango, CO
www.pueblocc.edu/Campuses/SCCC

Fort Lewis College
1000 Rim Drive, Durango, CO
(970) 247-7010
www.fortlewis.edu

Many resource agencies are similar to those in larger towns and cities but there may be some sources of information that you have not yet discovered. This list will help you find information you need in Southwest Colorado.

Air Quality

Agricultural Burning: Montezuma County Sheriff - (970) 565-8452

Current Air Quality Status: Colorado State Air Pollution Control Center - http://apcd.state.co.us/air_quality.aspx

Permits: Colorado State Air Quality Division
www.colorado.gov/cs/Satellite/CDPHE-AP/CBON/1251582562056

Montezuma County Health Department - (970) 565-3056 - www.co.montezuma.co.us/newsite/healthhome.html

Cultural Resources

Anasazi Heritage Center - (970) 882-5600
www.blm.gov/co/st/en/fo/ahc.html

U.S. Bureau of Land Management (BLM) - (970) 882-7296 - www.blm.gov/co/st/en/fo/sjplc.html

U.S. Forest Service - (970) 882-7296 - www.fs.usda.gov/main/sanjuan/home

Colorado State Historical Preservation Office
www.historycolorado.org/connect/office-archaeology-historic-preservation

Crow Canyon Archeological Center - (970) 565-8975 - www.crowcanyon.org

Mesa Verde National Park - (970) 529-4465
www.nps.gov/meve/historyculture/index.htm

Natural Resource Conservation Service, Cortez – (970) 565-9045

Emergency Services

Ambulance/Fire/Police/Sheriff – 911

Fire

Cortez Fire Protection District - (970) 565-3157

Dolores Fire Protection District - (970) 882-4096

Lewis-Arriola Fire Protection District - (970) 882-7718

Mancos Fire Protection District - (970) 533-7400

Grazing

On Private Lands

Natural Resource Conservation Service, Cortez – (970) 565-9045

CSU Extension, Montezuma County - (970) 565-3123
www.co.montezuma.co.us/newsite/extensionhome.html

On Public Lands

U.S. Bureau of Land Management-Tres Rios Field Office
(970) 882-7296 - www.blm.gov/co/st/en/fo/sjplc.html

U.S. Forest Service-San Juan Public Lands Office - (970) 247-4874 - www.fs.usda.gov/sanjuan

Colorado State Board of Land Commissioners - (303) 866-3454 - www.trustlands.state.co.us/Pages/SLB.aspx

Law Enforcement

Dial 911 for Emergencies or for non-emergencies:

Colorado State Patrol, Cortez - (970) 564-9556
Dispatch - (970) 249-4392 - www.colorado.gov/cs/Satellite/StatePatrol-Main/CBON/1251592908196

Cortez Police – (970) 565-8441
www.cityofcortez.com/government/police

Dolores Police – Call Montezuma County Sheriff or Cortez Police

Mancos Marshal's Office - (970) 533-1432
www.mancoscolorado.com/marshal.htm

Montezuma County Sheriff – (970) 565-8452
www.montezumasheriff.org

Ute Mountain Ute – Bureau of Indian Affairs (BIA)
(970) 565-3706

Southern Ute Police Department – (970) 563-0246
www.southern-ute.nsn.us/supd/about

Local Government

City of Cortez - (970) 565-3402 - www.cityofcortez.com

Dolores - (970) 882-7720 - www.townofdolores.com

Mancos - (970) 533-7725 - www.mancoscolorado.com

Montezuma County - (970) 565-8317 - www.co.montezuma.co.us

RESOURCES

Property Ownership

Montezuma County Assessor's Office – (970) 565-3428
www.cci.co.montezuma.co.us/propertyInquiry/Inquiry.aspx

Resource Conservation

Colorado Dept of Agriculture - Colorado State Conservation Board - (303) 239-4100 - www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928159642

Dolores Conservation District - (970) 565-9045 - www.dolorescd.org

Mancos Conservation District - (970) 533-7317 - www.mancoscd.org

Colorado Water Conservation Board - (303) 866-3441 - <http://cwcb.state.co.us/Pages/CWCBHome.aspx>

Dolores Water Conservancy - (970) 565-7562
www.doloreswater.com

Mancos Water Conservancy - (970) 533-7325 - www.jacksongulchrehab.info

United States Department of Agriculture – Natural Resource Conservation Service (NRCS) - (970) 565-9045

Roads

Montezuma County Road and Bridge - (970) 565-8666
www.co.montezuma.co.us/newsite/roadhome.html

Rural Living

Farm Service Agency (FSA) - (970) 565-9045. FSA administers farm commodity, crop insurance, credit, environmental, conservation, and emergency assistance programs for farmers and ranchers - www.fsa.usda.gov

Rural Development (RD) - (970) 565-9045. RD provides business loans and Grants, cooperative grants and other programs, single family housing loans and grants, multi-family housing loans and grants, community facilities loans and grants, electric loans and grants, telecommunications loans and grants, water loans and grants, and community and economic development programs - www.rurdev.usda.gov/COHome.html

Soils

Natural Resource Conservation Service, Cortez - (970) 565-9045 - www.soils.usda.gov/sqi/

CSU Extension/Montezuma County - (970) 565-3123 - www.ext.colostate.edu

Trees and Forests

Colorado State Forest Service - (970) 247-5250 - www.csfs.colostate.edu

Dolores Conservation District - (970) 565-9045 - www.dolorescd.org

Mancos Conservation District - (970) 533-7317 - www.mancoscd.org

Water

Pond Permits, Water Rights, Well Permits
Colorado Division of Water Resources, Animas/San Juan River Division office - (970) 565-0694 - www.water.state.co.us/SURFACEWATER/Pages/default.aspx

Irrigation Companies

Montezuma Valley Irrigation - (970) 565-3332
www.mvic.info

Summit Reservoir and Irrigation - 11800th Road, Mancos, CO 81328

(NRCS may be able to help with contact information for other irrigation groups or companies 970-565-9045)

Water Organizations

Southwestern Water Conservancy District - (970) 247-1302 - www.swwcd.org

Dolores Water Conservancy District - (970) 565-7562 - www.doloreswater.com

Mancos Water Conservancy District - (970) 533-7325
www.jacksongulchrehab.info

Colorado Department of Public Health, Water Quality Control Division: www.colorado.gov/cs/Satellite/CDPHE-WQ/CBON/1251583425927

Montezuma County Health Department - (970) 565-3056 - www.co.montezuma.co.us/newsite/healthhome.html

Environmental Protection Agency, Region 8 - (303) 312-6312 - www.epa.gov/region8/water/

US Army Corps of Engineers – (970) 375-9506 - Permit required to alter many perennial waterways: www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl07-02.pdf

Colorado Division of Water Resources - (970) 565-0694

Wetlands

Colorado Parks and Wildlife - (970) 247-0855 - www.parks.state.co.us/NaturalResources/Pages/NaturalResourcesLandingPage.aspx

EPA: <http://water.epa.gov/type/wetlands/index.cfm>

Weeds

Montezuma County Weed Board - (970) 565-0580
www.co.montezuma.co.us/newsite/weedshome.html

CSU Extension (970) 565-3123: www.montezumacounty.colostate.edu

NRCS - (970) 565-9045

Wildlife

Colorado Parks and Wildlife - (970) 247-0855 - <http://wildlife.state.co.us/LANDWATER/COWILDLIFEHABITATPROTECTIONPROGRAM/Pages/COWildlifeHabitatProtectionProgram.aspx>

Colorado Fish & Wildlife Service - (303) 236-4216 - www.fws.gov

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www.co.montezuma.co.us/newsite/weedshome.html

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