



## POPO AGIE CONSERVATION DISTRICT

221 South 2nd Street • Lander, Wyoming 82520  
(307) 332-3114 • [www.popoagie.org](http://www.popoagie.org)

# *Rural Living* HANDBOOK

FOR THE LANDER, WYOMING AREA

Funding for this project was provided by the Wyoming Department of Environmental Quality through a Section 319 Non-Point Source Clean Water Act Grant

## INTRODUCTION

About Popo Agie Conservation District	3
Historical Account of the Lander Area	8
Being a Good Neighbor	10
Recreation Opportunities in the Lander Area	10
Forestry Resources in the Lander Area	12
Solid Waste and Recycling Services	13

## YOUR RURAL LAND

Buying Land	14
Your Rural Property	15
Wildland Fires	17
Property Management Plan	18
Emergency Preparedness	19

## WATER RESOURCES IN THE LANDER AREA

Water Resources and Water Quality	20
Water Uses in the Lander Area	22
Septic Systems	24

## AGRICULTURE ON A SMALL SCALE

Soil: The Foundation	26
Soil Sampling Techniques	27
The Importance of Weed Control	28
Water Rights and Wyoming Water Law	29
Improving Small-Scale Irrigation Efficiency	30
Small-Scale Grazing Management	31
Managing Animal Waste	32

## LANDSCAPING RESOURCES

Water-Wise Landscaping	34
Tough Trees for Your Landscape	34
Composting	36
Uniquely Wyoming: Resources for All Seasons	37

## LIVING WITH WILDLIFE

Wildlife Considerations	38
Wildlife Friendly Fencing of Private Property	39
Domestic Livestock and Wildlife Disease Issues	40
Wildlife Feeding Facts	42
Fisheries and Water Resources	42
Enhancing Backyard Wildlife Habitat	43
Habitat Extension Bulletins	43

## APPENDIX

Federal, State and Local Agency Contacts	45
--	----



Justin Moore

# What is the Rural Living Handbook for the Lander Area and who is Popo Agie Conservation District?

This Handbook has been facilitated by Popo Agie Conservation District (PACD), with written contributions from numerous local agencies, organizations and individuals. Please note the contributors are credited in each section. PACD received a Section 319 Non-Point Source Clean Water Act Grant from the Wyoming Department of Environmental Quality (WDEQ) to develop and disseminate this Handbook as part of a number of education and demonstration projects designed to promote wise use of our natural resources.

PACD is a political subdivision of the State of Wyoming and is charged by state statute with the conservation of natural resources. Conservation districts have a locally elected five-member Board of Supervisors. In addition, PACD has a publicly approved mill levy which provides funding that is also leveraged with partnering efforts such as this one with WDEQ and the contributing partners. PACD currently has two staff members working in partnership the USDA Natural Resources Conservation Service (NRCS).

## The intent of the Handbook and how to use it...

This Handbook would not have been possible without the outstanding help of the authoring contributors on a fairly comprehensive list of topics. The intent of this publication is to provide a guide to not only landowners and those who provide land services but also to other citizens who use and enjoy our natural rural environment. It is not meant to contain highly detailed information on a given topic but rather sufficient information to guide and stimulate considerations of how to conserve our natural resources, be good stewards and enjoy the natural magnificence and rich western heritage of the Lander area.

Each topic includes contact information for more in-depth assistance, as well as a Resource Directory located at the back of this publication. The Resource Directory provides a quick reference to contact information for numerous agencies and organizations that may provide further service on handbook topics and other natural resource conservation information.

# Introduction

## PACD MISSION STATEMENT

To plan for, protect, manage, and utilize the natural resources within the boundaries of the Popo Agie Conservation District through application of sound ecological, financial, and cooperative management principles that will sustain the quality of life and the natural resources for future generations to enjoy.



## About Popo Agie Conservation District

### History of PACD

The Conservation District concept began in the Dust Bowl Era of the 1930's in response to severe drought and drastic soil loss. The federal government created the USDA Soil Conservation Service, now the Natural Resource Conservation Service (NRCS), under the Soil Conservation Act of 1935. This agency was charged with administration of programs and practices to address soil erosion concerns.

In February of 1937 the President urged all states to pass legislation authorizing locally led soil conservation programs. This need initiated the formation of conservation districts across the United States with the first passage of the Soil Conservation District Law in Arkansas in March, 1937. The Wyoming

State Legislature followed suit by passing the enabling legislation for the formation of local conservation districts in March of 1941.

The Popo Agie Conservation District was organized on May 20, 1942. There have been seven additions to the original District boundaries since its formation, bringing the total acreage within the Popo Agie Conservation District boundaries to 2,470,710 acres.

### Authority

PACD is a local subdivision of the state as defined and established by the Wyoming State Statutes at Title 11, Chapter 16, et seq., entitled "Wyoming Conservation Districts Law." The Popo Agie Conservation District, pursuant to W.S. 11-16-122(iv) and (xvi) of the Wyoming Conservation Districts Law, is authorized to develop plans for the Popo Agie Conservation District and to file said plans in the office of the Fremont County Clerk.

The people residing within the PACD boundaries elect the five-member Board of Supervisors of the Popo Agie Conservation District by popular vote during the general election. The elected members represent both the rural and urban populations within the District. The Board of Supervisors is the only locally elected board charged with the responsibility of representing local people on natural resource issues. A conservation district supervisor serves the community voluntarily.

The PACD's programs and administration is supported by a one mill levy, and by grants, retail program sales and other agreements. The one mill levy was first approved in 1988, and was passed as a petition recall in 2004.

### Location

The Popo Agie Conservation District is one of three conservation districts within Fremont County, and is located within the southern portion. The Dubois-



Crowheart Conservation District borders the PACD to the northwest, while the Lower Wind River Natural Resource District lies to the northeast.

### Physical Setting

The Popo Agie Conservation District lies entirely within the Wind River Basin of central Wyoming. The western border of the PACD is the Wind River Mountain Range, an extension of the Middle Rocky Mountain province. This distinguished mountain range gives way to rolling to broken grass-covered foothills and the extensive rangelands of the Wind River Basin.

### Elevation

Elevations range from over 13,200 feet above sea level at Wind River Peak along the continental divide to below 5,000 feet in certain basin areas.

### Watersheds

The Popo Agie Conservation District encompasses three hydrologic units, or drainage basins, within its borders. The first of these is the Popo Agie Watershed consisting of the Little, Middle, and North Forks of the Popo Agie River. Major tributaries and several smaller creeks and draws feed into the three branches of the Popo Agie River. The second hydrologic unit within PACD boundaries is a portion of the Little Wind River drainage including Beaver Creek. The third hydrologic unit is the Sweetwater, encompassing portions of the Sweetwater River and its tributaries within Popo Agie Conservation District care.

### Municipalities

The City of Lander is the largest municipality in the Popo Agie Conservation District, and is also the Fremont County seat. Other towns include Atlantic City, Ethete, Fort Washakie, Hudson, Jeffrey City and South Pass City.

### Climate

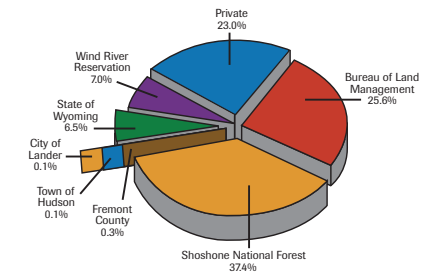
Climate within the Popo Agie Conservation District can vary widely depending on elevation. Generally the mountain and foothill areas receive more snow during winter months and tend to receive more frequent rainfall in summer. The Wind River Mountain Range obstructs moisture arriving from the west, leaving much of the low-lying basin area in a rain shadow creating a semi-arid climate regime. On average, the district receives 11-13 inches of annual precipitation, most of which arrives during October and spring months, although snow has been recorded on occasion in summer.

Sub-zero temperatures are not uncommon during winter, and inversions are frequent in the Lander Valley. The average summer temperature is 82 degrees Fahrenheit, with temperatures recorded into the 100's. The normal daily range in summer temperature is about 30 degrees. The average growing season is 126 days, although freezing temperatures have been known to occur in July and August.

### Land Use

Approximately 55 percent of the district is rangeland, which is used for a variety of production activities, including agriculture. Many of these agricultural operations supplement range forage with irrigated hay and pasture. Approximately 60,000 acres within the District are irrigated hay or pasture lands. Cattle, sheep, and horses graze both the range and irrigated pasture. The area also supports many deer, elk, pronghorn antelope, and some moose and bighorn sheep.

Some timber is harvested from the national forest lands and gravel is produced from a number of gravel pits commonly associated with glaciated areas in the district. Oil is also mined from the Dallas, Derby, Lander-Hudson, Winkelman Dome, and Beaver Creek fields, and a few isolated wells. The Beaver Creek field is also a producer of natural gas. Bentonite, Coal, Gypsum, Gold, Iron ore, Taconite, and Uranium were also mined at various times, but are not currently in production.



Land Ownership in the Popo Agie Conservation District is categorized by Federal, State, Private, and Other. The portion of the District under federal jurisdiction, including Bureau of Land Management, U.S.D.A. Forest Service, Bureau of Indian Affairs, and the Bureau of Reclamation accounts for roughly sixty percent of the total land area. State lands encompass twelve percent of the land area within PACD boundaries including Wyoming Game and

Fish properties, public schools, state parks, cultural resources, historic sites, and state forestry. Private land ownership accounts for about twenty-seven percent of the total lands, while Other, including riparian areas, wetlands, and otherwise unclassified land, accounts for less than one percent.

## Vegetation

The higher elevations are dominated by coniferous species including Lodgepole pine, Subalpine and Douglas fir, and Engelman spruce. Large Aspen stands are common at these elevations. Major grass species include bluebunch and western wheatgrass, Idaho fescue, junegrass, several of the bluegrass species, and various needle grasses, bromes, and muhlenbergia species. Wyoming sagebrush, juniper, buffaloberry and antelope bitterbrush are some of the most dominant shrubs.

Basin areas are generally void of the large tree overstories typical in the mountains. Exceptions are planted trees around structures and in shelterbelts. Plains cottonwood, golden willow, and Russian olive are among the more common species. Major grasses include western and thickspike wheatgrass, blue grama, Indian ricegrass, sandreed, and needle and thread. Big and silver sagebrush, fourwing saltbush, and rabbitbrush are common shrubs.

There is a wide variety of riparian habitat found in the Popo Agie Conservation District. Cottonwood and aspen are common overstory species. Willow, water birch, chokecherry, gooseberry, rose, and red-osier dogwood are common shrubs. A number of grasses and grass-like plants occur in these riparian areas including several species of sedges, rushes, cattails, and reed grasses.

Noxious weeds occur throughout the district. Thistle species, leafy spurge, and Russian knapweed are the most widespread.

## Sensitive Habitats

Wetland and riparian landscapes occur in saturated soils along streams and waterways in the Popo Agie Conservation District. Riparian areas and wetlands are critical to the lifecycles of native animals in Wyoming. These productive habitats also serve as travel corridors for many animal species, both as seasonal migratory stops and permanent home territories. Such densely vegetated zones provide important thermal cover to protect species from temperature extremes. These particular habitats also help to collect and filter surface water and in effect purify, redistribute, and protect the district's water. In addition to wetlands and riparian areas, there are other sensitive areas where threatened and endangered species are known to exist including Red Canyon and Beaver Divide among them.

## POPO AGIE CONSERVATION DISTRICT SPECIAL PROJECTS

### Squaw/Baldwin Creek Water Quality Improvement Project

From 1993-1998 the Popo Agie Conservation District implemented a Section 319, Clean Water Act Grant to reduce non-point source water pollution on Squaw and Baldwin Creeks near Lander. Best management practices included streambank stabilization, livestock water gaps, grade stabilization structures, irrigation pipelines, re-vegetation, and riparian fencing for grazing management.

### Squaw Creek Bioengineering Demonstration Project

The Popo Agie Conservation District partnered with the Museum of the American West and Lander Valley High School students in 2003 to create an education demonstration project on Squaw Creek. The project utilized a number of bioengineering techniques in combination with traditional engineering to highlight the use of natural materials to achieve a healthy riparian system. Bioengineering practices included fish lunkers, willow mattress, willow fascine, and root wads. This project was documented in an educational video to highlight the project and promote the effectiveness of bioengineering practices for use on public and private lands.



### Storm drain decals in Lander

In order to raise awareness of the potential for non-point source water pollution to enter our waterways, the Popo Agie Conservation District partnered with Lander area Boy Scouts to place decals near city storm drains with the message "Keep It Clean: Drains to Popo Agie River".

### Household Hazardous Waste Collection

The Popo Agie Conservation District partnered with local, state, and federal agencies to raise awareness and encourage safe, proper disposal of household waste products and chemicals. Used motor oil, antifreeze, freon units, oil & latex paint, batteries, pesticides, and herbicides were collected at annual events from 2000 to 2004 in an effort to reduce non-point source pollution.

### Xeriscape Demonstration Project at Museum of the American West

In order to promote the use of drought tolerant landscaping techniques in our community, Popo Agie Conservation District sponsored a Xeriscape Demonstration Garden at Museum of the American West. This garden was made possible through a Section 319, Clean Water Act Grant, Wyoming State Forestry funding, donations, and countless volunteer hours.

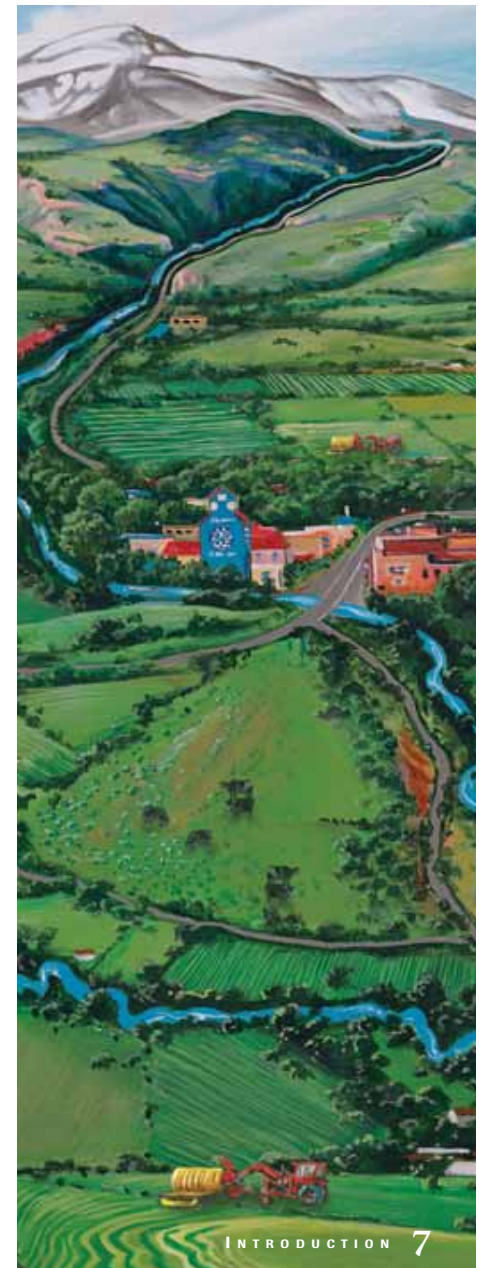
### Wise Water Use Campaign

The Popo Agie Conservation District continues to support and promote wise water use in an urban setting. In order to accomplish this goal, PACD created an extensive Wise Water Use campaign to encourage urban residents to conserve municipal water.

### Water Quality Monitoring

The Popo Agie Conservation District conducts water quality monitoring in the Popo Agie Watershed. The study investigates the existing surface water conditions and provides valuable physical, chemical, and biological data for use in resource management watershed planning efforts. PACD has collected information on 45 sites from 1999 to 2004.

Popo Agie Conservation District received funding for the Popo Agie Watershed Poster and the Popo Agie Watershed Project by a Section 319 Clean Water Act Grant administered by the Wyoming Department of Environmental Quality. The goal of the Popo Agie Watershed Project is to create a watershed plan that will be used as a tool to guide sound natural resource management that sustains the beauty and ecological health of the Popo Agie Watershed, enhances diverse and dependable economic opportunities and promotes the social and cultural heritage of the area.





## HISTORICAL ACCOUNT OF THE LANDER AREA

The Fremont County area has been a focus of horticultural activities for thousands of years. Archaeologists have excavated ancient pit house villages in the Wind and Sweetwater River drainages. Most are in riparian areas near playas and moving water sources where prehistoric Native Americans lived for long periods of time and utilized plant food resources to feed their families. They gathered naturally occurring wild plant roots, berries, stems and seeds, plus native flora that thrive in (intentionally) disturbed soils and thus become a reliable food source for people who return to the same spot frequently or even annually—almost like farming. The nomadic tribes of buffalo hunters also camped along local waterways and depended on plant foods that grew in riparian areas for sustenance and a healthy, balanced diet. Their deep understanding of local ecosystems allowed them to flourish in what others later called “The Great American Desert.”

The earliest white settlers were drawn to the Lander valley for its agricultural potential. The gold miners at South Pass labored in harsh conditions to extract wealth from the ground, but had to eat. A prescient few realized that down in the valley water and sunshine would help them pull a different kind of wealth from the ground: food crops that miners would pay dearly to acquire. The miners belittled the original loose community of truck farmers

scattered along the Popo Agies and Little Wind Rivers and called the area “Pushroot.” But they lined up to pay in gold for all the wheat, root crops and other foodstuffs that could be produced. As the mining camps became ghost towns and the homestead communities grew and thrived, more than one lonely prospector admired the farmers’ daughters who were part of the community of families that developed in the Lander valley and on ranches along the Sweetwater. Whereas nineteenth century mining was an inherently unstable industry, the renewable resources of what the Shoshones called “the Warm Valley” allowed the growth of a comparatively stable farming economy that has provided for generations of families who have tried to be stewards of the land.

During the late 1800s and early 1900s, thousands of new families moved to this area from all over the world and claimed homesteads. The refrain of an old folksong rhapsodized, “Come along, come along, Uncle Sam is rich enough, to give us all a farm!” So many people immigrated and the population grew so large that the county boundaries, which once extended from Colorado to Montana, were reduced again and again by the creation of new counties like Sublette and Park. Economic vagaries forced many to abandon their claims while a variety of homestead laws helped others to enlarge their holdings and accumulate enough wealth to buy even more land. Today, the Sweetwater and Wind River valleys are home to numerous families who have made their livings from hay, sugar beets and cattle for a century or more. Nevertheless, ranches and farms continue to be subdivided into ranchette homes for newcomers seeking small versions of the American dream. These recent

arrivals have to learn about irrigation law and responsible, sustainable grazing—something like the original pioneers who arrived believing that rain would follow the plow.

The continuing drought is worrisome. Ranchers watch the withering grass and ponder selling off cattle herds they’ve worked for years to develop. Farmers worry about getting enough irrigation water for their hay and sugar beets. Archaeologists wonder if this is the beginning of something like the great Althermal drought that parched Wyoming for thousands of years. Environmentalists fret that global warming is taking us past the tipping point into climatic chaos.

But people have been here raising families, depending on our natural resources and adapting to changing climates since the end of the last ice age. When the woolly mammoths and giant Bison Antiquus disappeared, hunters found other ways to make a living. As our modern circumstances change, the Popo Agie Conservation District board and staff are playing an increasingly important role in teaching people how to live, cooperate and prosper within our environment, how to maintain healthy floral and faunal communities, how to irrigate efficiently as water becomes increasingly

scarce, and many other important activities. Several of the PACD demonstration projects are available for public examination at the Museum of the American West at 1445 Main Street in Lander. Museum and PACD staff would be happy to show and discuss these projects to interested people.

CONTRIBUTED BY:  
Todd Guenther



## BEING A GOOD NEIGHBOR

Getting along with your neighbors can pose different challenges in the country than in town. Rules and perceptions can be different, so it's a good idea to understand the neighborhood before you move in and start making changes to the land. Conflicts between new and existing rural landowners can arise from both real and perceived differences between landowners. Get to know your neighbors. They are valuable sources of information on what it takes to live in rural areas. Neighboring farmers and ranchers especially will appreciate your learning about their agricultural operations.



Many people are unaware of private boundaries when first arriving in the country. Public land often blends into private parcels in the Lander area including the Wind River Indian Reservation. Unintentional trespass sometimes occurs due to preconceived notions about open ranges and federal

and state managed lands. It is always the responsibility of the individual to know whose land they are on regardless of whether or not it is fenced. To alleviate unwanted trespass, obtain a good map that clearly shows public (State and Federal), Wind River Indian Reservation and private lands. Remember to always ask before entering private lands.

In addition, domestic pets can be a threat to livestock and wildlife and it is unlawful to allow dogs and cats to harass wildlife or livestock. Dogs may chase livestock or wildlife, while domestic cats may hunt not only plentiful animals, but rare and endangered species. In addition to domestic pets, stray and feral cats roam our cities, farmlands and natural areas. Some people presume that a cat killing certain animals such as field mice, is beneficial, but native small mammals are important for maintaining biologically diverse ecosystems. Also, unvaccinated pets can transmit rabies and may spread parvo virus, feline leukemia virus, canine and feline distemper, feline infectious peritonitis and feline immunodeficiency virus as well as other parasites.

## RECREATION OPPORTUNITIES IN THE LANDER AREA

Recreational opportunities abound in the Lander Area, and many focus on our scenic rivers and the amenities they provide. Visitors and residents alike enjoy a wide variety of recreational activities including outstanding trout fishing, scenic hiking trails, boating and kayaking, four-wheeling, rock climbing, camping, backcountry pack trips and wildlife viewing. The winter season incorporates additional prospects with cross-country skiing, ice fishing, snowmobiling, snow shoeing, ice climbing and much more. Much of our recreational areas are found on federal and state public lands. The Bureau of Land Management and Shoshone National Forest, Lander Region both offer ample recreation opportunities and are excellent sources of information. Sinks Canyon State Park, Atlantic City and South Pass City are also popular destinations, and the City of Lander also provides a wide variety of opportunities. For a glimpse into history, visit the Fremont County Pioneer Museum or the Museum of the American West. Contact the Lander Chamber of Commerce at (307) 332-3892 or the Wind River Visitors Council at 1-800-645-6233 for local information and events schedules.

Due to the popularity of outdoor recreation in the Lander Area, it is important to be considerate of other visitors as well as our amazing natural resources. The Leave No Trace Principles of outdoor ethics demonstrate simple and effective ways to enjoy your outdoor experience and minimize impacts to the environment.



### Plan Ahead and Prepare

Know the regulations and special concerns for the area; prepare for extreme weather, hazards and emergencies; schedule your trip to avoid times of high use; visit in small groups; use a map and compass.

### Travel and Camp on Durable Surfaces

This includes established trails and campsites, rock, gravel, dry grasses or snow; protect riparian areas by camping at least 200 feet from lakes and streams; use existing trails and campsites; walk single file in the middle of the trail and keep campsites small and disperse use and prevent the creation of new campsites and trails.

### Dispose of Waste Properly

Pack it in, pack it out. Pack out all trash, leftover food, and litter; deposit solid human waste in cat-holes and cover when finished; carry water 200 feet away from streams or lakes and use small amounts of biodegradable soap to wash self and dishes.

### Leave What You Find

Preserve the past: examine, but do not touch, cultural or historic structures and artifacts; leave rocks, plants and other natural objects as you find them; avoid introducing or transporting non-native species.

### Minimize Campfire Impacts

Use a lightweight stove for cooking; where fires are permitted, use established fire rings, fire pans, or mound fires; keep fires small and use sticks from the ground; burn all wood and coals to ash, put out campfires completely, then scatter cool ashes.

### Respect Wildlife

Observe wildlife from a distance and do not follow or approach them; never feed animals; protect wildlife and your food by storing rations and trash securely; control pets at all times; avoid wildlife during sensitive times: mating, nesting, raising young, or winter.



### Be Considerate of Other Visitors

Respect other visitors and be courteous; yield to other users on the trail; step to the downhill side of the trail when encountering pack stock.

#### CONTRIBUTED BY:

- Lander Chamber of Commerce
- Wind River Visitors Council
- Popo Agie Conservation District
- Leave No Trace Center for Outdoor Ethics

## FORESTRY RESOURCES IN THE LANDER AREA

The Wyoming State Forestry Division (WSFD) is charged with the management, protection, and improvement of all forest interests and matters pertaining to forestry within the State of Wyoming. The Division is responsible for the management of 270,000 acres of forested state trust lands in the state, along with direct fire protection responsibilities for 3.6 million acres of state land. The Division is also responsible for the implementation of several landowner and community assistance programs throughout the state including Fire Protection and Prevention, Federal Excess Property Program (FEPP), Community Forestry, the National Fire Plan, Forest Stewardship and the Forest Health Program.

The *Forest Stewardship Program* assists rural landowners in many areas of natural resource management, including: forest thinning, timber sale design and administration, aspen enhancement, hazardous fuel reduction, windbreak and shelterbelt establishment, watershed protection, fish and wildlife improvement and invasive tree species control. WSFD provides stewardship plans and on-the-ground assistance to landowners in each of the above areas. Cost-share assistance may also be available for landowners to implement many of these practices. A few of the programs which combine many of the above practices that are more commonly implemented in Fremont County include:



### Windbreak and Shelterbelt plans:

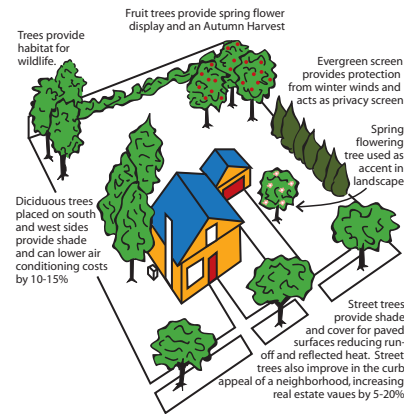
Developing planting plans for rural landowners to establish windbreaks comprised of deciduous and/or coniferous trees and shrubs with one or more of the following goals: protecting livestock from winter winds, controlling blowing snow, developing wildlife habitat and improving the aesthetics of the property.

### Forestland stewardship plans:

Developing plans for landowners with forested lands to improve overall forest health and diversity, while reducing fuel loads and the susceptibility of the property to wildfire.

### Streambank management plans:

Developing plans for landowners with streams or rivers which run through their property, to improve overall riparian health by re-establishing native species, improving wildlife habitat, reducing erosion and sedimentation and improving water yield and water quality.



### The Community Forestry Program

This program assists rural and municipal residents with numerous tree care concerns, such as: tree species selection, planting, pruning, placement, fertilization, insects, disease and etc. Written recommendations, brochures and/or on-the-ground assistance are available to residents with tree care questions.

Please contact WSFD if any of the above programs would apply to your property or if you would like more information. They would be happy to work with you to meet the natural resource goals for your property.

CONTRIBUTED BY:  
Mark Ellison, Wyoming State Forestry Division



## SOLID WASTE AND RECYCLING SERVICES

Fremont County Solid Waste Disposal District maintains a landfill at 53 Beebe Road, just one mile north of Lander on Highway 789. Regular landfill hours are from 8 a.m. to 5 p.m. seven days a week. There is no charge for regular household disposal, although special fees may apply for construction waste or large items.



### Recycling

Recycling in the Lander area is made possible in cooperation with Fremont County Solid Waste Disposal District and Community Entry Services.

The recycling center, operated by Community Entry Services, is located at the Lander Landfill. Community Entry Services requests that patrons bring their recyclables to the facility from 8:30 a.m. to 3:30 p.m. Monday through Friday. Patrons can also use the containers outside the facility during regular landfill hours.



### Materials accepted at the recycling center include:

- Corrugated Cardboard
- #1 (clear) & #2 (no color added) plastic: please remove lids on plastic bottles. NO OIL CONTAINERS are accepted, including vegetable oil. No chemical bottles other than #1 and #2 household cleaning products. No colored plastics are accepted.
- Newspaper, magazines, slick-coated paper: use the same bins. No hardback books, please.
- Office pack: includes all household mailings, manila envelopes and envelopes with windows. Colored paper is accepted, but no bright fluorescent colors.
- Shredded paper is accepted as high quality office pack. Please bring shredded paper in clear plastic bags so it is easily identifiable. No shredded newsprint or other types of paper, please.
- Aluminum cans

CONTRIBUTED BY:  
• Fremont County Solid Waste Disposal District  
• Community Entry Services



Recycled Trash comparison

# Your Rural Land



## BUYING LAND

Buying land in the Lander Area is definitely different than buying land in the city. Most rural areas do not have existing basic utilities such as electricity, water, or septic systems. Accessing your land can also be more difficult in the country where access roads may be owned by the county, state or federal government, or even your neighbor.

The fact that you can drive to your property does not necessarily guarantee that you, your guests or emergency service vehicles can achieve that same level of access at all times. To establish access through private land or off a private road, you should obtain legal advice and consult with a local title company to ensure that access is available to your property.

There are many private and public roads that serve rural properties which are not maintained by the State of Wyoming or Fremont County personnel. Be sure you know what type of maintenance to expect and who will provide that maintenance. There are also a number of public roads that are not maintained by anyone (subdivisions, etc.). Make sure you know what type of maintenance, grading, snow removal, etc., to expect and who will provide that maintenance prior to finalizing your purchase.

In extreme weather even county and state maintained roads can become impassable. You may need a four-wheel drive vehicle with chains for travel during those episodes, which may last for several days. In addition, unpaved roads generate dust and increase vehicle maintenance costs, which is a fact of life for most rural residents.

School buses travel only on roads that have been designated by the school district as bus routes. If you have school age children check with your school district as to the location of the nearest bus stop.

## YOUR RURAL PROPERTY

There are many issues that can affect your property. It is important to research these items before purchasing rural land in the Lander area. Easements may require you to allow construction of roads, power lines, water lines, sewer lines, etc. across your land. Research these issues carefully. You may be provided a plat of your property, but unless the land has been surveyed by a licensed surveyor, you cannot assume that a plat is accurate.

Many subdivisions have covenants that limit the use of the property. It is important to obtain a copy of the covenants and make sure that you can live with the rules. Homeowners associations are required to take care of common elements, roads, open space etc., and dues are often a requirement.

### Sewer & Water

Public water and/or sewer and other services may or may not be available in rural areas. Contact the City of Lander to see if sewer service and/or water service is available to your property. If municipal sewer service is not available, you will need to obtain a permit to construct an approved septic system or other treatment facility from the Fremont County Planning Department. Since 1976 the State of Wyoming and Fremont County have required a

permit to construct or modify any residential small wastewater (septic) system. If you are buying a home built after 1976, a permit may be on file with the Fremont County Planning & Rural Addressing Department.

If you do not have access to a supply of municipal or community water, it may be necessary to procure an alternate source. Domestic wells are permitted through the Wyoming State Engineer's Office, Groundwater Section, which is located in Cheyenne at 307-777-7354.

The quality and quantity of well water can vary considerably from location to location and from season to season. It is important to test your household well regularly to ensure a safe domestic water supply. The Popo Agie Conservation District and the UW Fremont County Extension Service have more information on drinking water safety and well water testing. Lastly, keeping wells free from contamination requires careful planning, location and proper installation. Contact the Fremont County Planning Department or Wyoming Department of Environmental Quality for more information on planning, drilling and maintaining a well.

The U.S. Environmental Protection Agency (EPA) determines safe levels of many chemical parameters for groundwater wells intended for domestic use in Wyoming. Although you can have your well tested for a number of other parameters, your household well should meet the following general safety requirements listed in the chart below:

Contaminant	Unit Measurement	MCLG*	Likely Source of Contamination
Turbidity	NTU	N/A	Soil runoff; well failure
Copper	mg/L	1.3	Corrosion of household plumbing; erosion of natural deposits; leaching from wood preservatives
Lead	mg/L	0.015	Corrosion of household plumbing; erosion of natural deposits
Sodium	ppm	None	Naturally occurring
Xylenes	ppm	10.0	Discharge from petroleum or chemical factories
Nitrate	mg/L	10.0	Leaching from fertilizers, septic system discharge and livestock waste
Arsenic	ppm	0.01	Natural deposits in earth; agricultural/industrial practices
E. coli	mg/L	0.0	septic system discharge, livestock waste, wildlife

\*MCLG: Maximum Contaminant Level Goal - the level of contaminant in drinking water below which there is no known or expected health risk. MCLG's allow for a margin of safety.

## Soils

Soil conditions are determined by the soil types found on your property. Many of the soil types found in Fremont County are rated slight to severe when evaluating them for construction practices. It is important to determine what soil limitations may be present on your property BEFORE you begin



any project. Soil conditions in the area of proposed construction of a leach field are an important factor in determining the cost and function of your septic system. Some soils in the Lander area will not readily absorb septic effluent. Some areas contain soils with highly expandable clays like bentonite which can make installation of conventional septic systems difficult, expensive and sometimes impossible. Shallow outcrops of bedrock can also impact building and septic system construction. Seasonally fluctuating water tables are common, especially in areas under irrigation. Information on soils, bedrock and water tables can be obtained from the Popo Agie Conservation District, Natural Resources Conservation Service and the Fremont County Planning & Rural Addressing Department.

## Floodplains

The ten-year floodplain means the land which is subject to a ten percent (10%) or greater chance of flooding in any given year. Flooding is a temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland waters and/or the unusual and rapid accumulation or runoff of surface waters from any source.

Fremont County has adopted the minimum Federal Emergency Management Agency (FEMA) regulations for development in numbered A zones (100 year flood hazards). Essentially, these regulations state that, for residential structures, if you are building anywhere within an area for which the elevation of the 100 year flood depth is delineated, you must build your lowest floor (including basement) at

least one foot above the level of the 100 year flood. For commercial structures you must flood proof structures to one foot above the elevation of the 100 year flood. Most of the A Zones in Fremont County are located near Lander and Hudson, and specific regulations are available at the Fremont County Planning Department.

## Wetlands

Many areas of Fremont County contain wetlands designated by the U. S. Army Corps of Engineers. These areas can only be disturbed under a special permit from the Corps. Wetland maps are available for review at the Planning Department. Some wetlands are not easily recognized and may not appear very wet. If you intend to do any construction in a wetland or suspected wetland, contact the Corps of Engineers regarding required approvals under Section 404 of the Clean Water Act. It is the responsibility of the property owner to apply for all federal permits. The Army Corps of Engineers can be contacted at 307-772-2300.



## Property lines

You may be provided with a description of your property, but unless the land has been surveyed and pins placed by a licensed surveyor, you cannot assume that it is accurate. Fences that separate properties are not always aligned with the property lines. A survey of the land is the only way to confirm the location of your property lines and any existing easements.

## Utilities

It is important to determine the proximity of electrical power as it can be very expensive to extend power lines to remote areas. It may be necessary to cross property owned by others in order to extend electrical service to your property in the most cost-efficient manner. It is important the proper easements are in place to allow lines to be built to your property. Cellular phones may not work in all areas.



## Agriculture

If you plan to raise livestock on a small scale there are numerous local resources available to you. This guide offers general suggestions on small scale grazing, animal waste management, weed control and more. The UW Fremont County Extension Service and USDA Natural Resources Conservation Service (NRCS) can offer valuable assistance for small acreage landowners. The State of Wyoming Livestock Board and Wyoming Department of Agriculture are also useful resources. Keep in mind that if you are going to purchase livestock of any sort, you will need to verify ownership. A bill of sale and brand inspection is required any time livestock changes hands in the State of Wyoming or when moving livestock across county boundary lines. Contact the Wyoming Livestock Board at 307-777-7515 or visit <http://wlsb.state.wy.us/index.htm> for more information or to find a local brand inspector.

## One Call System

Before undertaking any work, contractors and landowners have a duty to call and locate any utilities buried beneath the work site. In fact, it's the law. To report planned digging, call the One Call System number and the center will notify the appropriate utility to mark the locations of underground lines, pipes and other facilities. It may be necessary to meet utility representatives at the work site.

When calling the One Call System it is necessary to have the address of the work or construction site. If this will be a new address in the rural area of Fremont County please call the Fremont County and Rural Addressing Department at 307-332-1076. Remember: the safety of all depends on compliance with the law. Wyoming One Call: 1-800-849-2476

### CONTRIBUTED BY:

- Fremont County Planning Department
- Popo Agie Conservation District

## WILDLAND FIRES

### Wildfire & Fremont County Firewise

Wildfires have, and will always be an integral part of the ecosystem here in the Lander area and across Wyoming. Before there were homes in many of these ecosystems, wildfires burned the dead vegetation and prepared the ground for new growth. Now that humans have put homes in rural areas, wildfires are no longer welcome but this does not keep fire from entering. It simply makes their "cleansing" process a disaster for rural property owners. These fires not only occurred in the forests, but also on the sage dominated rangelands, grassland prairies and riparian zones or wetlands.



Most likely your new home is located in an area that evolved with fire as a part of the ecosystem. By knowing this, you can begin to make changes and be aware of the dangers so that a wildfire does not burn your investment to the ground. There are a wealth of knowledge and practices that are easy to obtain and implement. If you are new to the Lander area, please contact Fremont County Firewise at 307-857-3030 or visit [www.fremontcountyfirewise.com](http://www.fremontcountyfirewise.com) to set up a free wildfire assessment of your property. We can give you literature and ideas on how to reduce the fire danger on your property while still maintaining the aesthetics and integrity of the area.

### Agricultural Burning

Ditch and agricultural burning is a common practice here in Wyoming. It is a great way to mimic the effects of a wildfire, but they can also get out of hand very easily. Please note that if a fire originates on your property and crosses into neighboring properties, you may be held liable for any damages. It is very important that you notify the Fremont County Fire Protection District at 307-857-3030 or the Fremont County Sheriff at 1-800-967-2302 before burning any debris or ditches; they can inform you of the proper steps that need to be followed to make your burn as safe as possible.

### CONTRIBUTED BY:

- Fremont County Fire Protection District
- Fremont County Firewise



## PROPERTY MANAGEMENT PLAN

A property management plan is an incredibly useful tool to help guide a landowner's efforts to ensure that the property best provides the desired benefits. Some like to think of property management plans as a way to turn one's dreams into reality. Of course, what you end up doing with your property depends on the characteristics of your property and your goals. Another way to think about this is what you have and what you want.

A good place to start is to consider your goals for the property. In coming up with your goals, it is helpful to answer a number of questions such as:

1. Why did you decide to buy land?
2. Why did you decide to purchase the particular parcel you now own?
3. What do you want your property to look like?
4. How do you want to use your land or in other words, what is it that you want your land to do for you?

Initially, try not to limit your ideas for goals by such things as time and money – shoot for the moon! Reality will take over soon enough and you will be forced to revise your goals. But take advantage of the opportunity to capture all the ideas you can. If you have an idea of a timeline for individual goals, put them down as well.

Next, take an inventory of what you have. One useful way to approach this is to draw a map of your property including such features as property lines, fences, easements (utilities), required buffer zones or setbacks, streams, buildings, water lines, septic systems, wells etc. It is also helpful to categorize areas in terms of what is growing there in a general sense. Are there weedy areas, places with bare soil, trees / windbreaks and so on? Include buildings, pastures and corrals and anything else that might influence what you might like to do with the property. It is also important to consider state and local (city, county) regulations, covenants, codes and restrictions at this time as well. Finally, keep in mind the importance of being a good neighbor and be sure to consider how your activities on your property might affect neighbors.

After the inventory is completed, it is good to look back to your goals and reconsider them along with your inventory. Some goals may need to be adjusted given the opportunities and constraints of your particular property. By this time, about the only thing standing between you and what you want to accomplish is time and money. Get those two figured out and then get busy!

Taking the time to put together a plan for your property is a worthwhile investment. It can help landowners avoid a number of pitfalls and frustrating detours. Most, if not all of the partners who put this guide together would be happy to help with property management plans.

Contributed By:  
• Dr. Paul Meiman, UW Cooperative Extension Service

## EMERGENCY PREPAREDNESS

The Lander area is subject to a variety of hazards, both natural and man-made. Wildland fires, flooding, avalanches, landslides, severe weather, and seismic events have all occurred in the region. Are you prepared for a wildfire in your neighborhood? What should you do if an earthquake strikes? Would you know what to do if a winter storm warning were issued? The Fremont County Emergency Management website, [www.fremontcounty.org/emergency.htm](http://www.fremontcounty.org/emergency.htm), will help to answer these questions, as well as provide useful information so that you can be better prepared for a natural disaster, if and when it occurs. The next time disaster strikes, you may not have much time to act. Learn how to protect yourself and cope with disaster by planning ahead. Discuss plans with your family and post the plan where everyone will see it.



### Template for Developing an Emergency Plan

#### Materials Needed:

- Emergency Contact List including names and phone numbers
- Map of facility/home/church indicating exit routes
- Map of facility/home/church indicating location of main electric fuse box, water service main and natural gas main
- Map of facility/home/church indicating "safe spots"

- Emergency supplies and location of disaster kit(s)
  - Flashlight with extra batteries
  - Portable, battery-operated radio and extra batteries
  - First aid kit and manual
  - Emergency food and water
  - Nonelectric can opener
  - Essential medicines
  - Cash and credit cards
  - Sturdy shoes
- List of communication capabilities (phone, cell phone, email, radio, weather radio, etc.)
- Insurance records

#### Disaster Plan Elements:

1. Develop emergency responses or "disaster drills" for each type of disaster and a schedule to practice them.
2. Develop two meeting places:
  - Immediately outside facility in case of fire or sudden emergency
  - Outside neighborhood in case you cannot return to the facility
3. Develop an "out of state" contact person.
4. Develop evacuation plan.

Wyoming weather can be unpredictable. To obtain the latest up-to-date information, you can visit the National Weather Service (NWS) website at <http://weather.gov/riverton> for the most recent local weather information for Fremont County. Links to statewide road conditions, webcams, and weather warnings and watches can be viewed for events such as thunderstorms, tornadoes, floods, winter storms and high winds. Perhaps the best way to receive up-to-the-minute weather information is by purchasing a NOAA Weather and All Hazards Radio (NWR). These specialized radios are portable and can keep you informed of the latest weather changes when you are outdoors or away from home.



Contributed By:  
• Fremont County Emergency Management

# Water Resources in the Lander Area



## WATER RESOURCES & WATER QUALITY

### Streams

Streams offer an aesthetic enhancement to our natural surroundings, as well as important habitat for numerous wildlife species. In the Lander area, streams are bodies of running water that have annual flow and sustain fisheries and wildlife habitat. The Lander area has several streams which originate from small springs, streams, and ponds from high elevations near the Continental Divide in the distinguished Wind River Mountain Range. These waterways are fed by annual snowmelt and seasonal precipitation, and may flow through your rural property. The three forks of the Popo Agie River (North, Middle & Little) as well as Squaw, Baldwin, Twin and Willow Creeks provide beautiful scenery, irrigation water, wildlife habitat and endless recreational opportunities for residents and visitors to the Lander area.

If you are fortunate enough to own property along one of these streams, chances are you own a riparian area. A riparian area is the ribbon of lush vegetation found along streams, lakes and wetlands. While these areas make up less than five (5) percent of

the landscape, they contain up to seventy-five (75) percent of our plant and animal diversity. Technically, a riparian area is the land adjacent to a river or stream that is periodically influenced by flooding. Periodic flooding is an important component of the successful natural maintenance of the riparian area because it determines the type and productivity of vegetation found along a watercourse. Typical riparian vegetation consists of willows, alders, cottonwoods, Colorado blue spruce, as well as numerous shrubs, flowering plants, grasses, and aquatic vegetation. Riparian areas generally have soils with high permeability and a high water table, making them unsuitable for traditional septic systems. Check with an engineer and county and state (Department of Environmental Quality) regulations to avoid groundwater contamination.

Riparian areas are important in the Lander area for many reasons. They slow flood flows and reduce streambank erosion; provide food and cover for fish, birds and other wildlife; moderate water temperatures; reduce water pollution by filtering sediment, chemicals and nutrients; and provide important groundwater recharge and continuous streamflow.

Managing a riparian area on your property is an important responsibility, and there are several things you can consider in order to enhance this special resource. Contact the Popo Agie Conservation District with any questions you may have regarding the health and welfare of your riparian area.



One excellent example of riparian area management is the Squaw Creek Bioengineering Demonstration Project at the Museum of the American West site in Lander. In the fall of 2002, the Popo Agie Conservation District approached the Museum of the American West Board of Directors for a potential streambank restoration project on Squaw Creek. Historical floods and other factors had contributed to steep streambanks and the invasion of non-native vegetation at the site. The Popo Agie Conservation District partnered with the Museum of the American West in 2003 to create an education demonstration project on Squaw Creek.

This public educational demonstration project utilized a number of bioengineering techniques in combination with traditional engineering to highlight the use of natural materials to achieve a healthy riparian system. Bioengineering practices included:

**Root Wads:** Large root masses from old trees that were keyed into the streambank

**Willow Fascine:** Sausage-like bundle of willow branches placed at the water level

**Willow Mattress:** Dense mat of willows staked onto bare streambank

**Fish Lunkers:** Submerged wooden structures used to imitate undercut banks to create additional fish habitat

**Vertical Willow Bundles:** Individual willow bundles trenched into the streambank

This project was documented in an educational video to highlight and promote the effectiveness of bioengineering practices for use on public and private lands. Students from the Lander Valley High School Natural Resource Science Class installed many of the bioengineering practices. Their hard work and dedication made the project possible.

### Wetlands

Wetlands are areas where water is at, near, or above the land surface long enough to support aquatic or hydrophytic (growing in water or soil too water-logged for most plants to survive) vegetation and which has soils indicative of wet conditions. Determination of wetlands is based upon the 1989 Army Corps of Engineers definition of jurisdictional wetlands, which excludes irrigation-induced wetlands. Wetlands are protected at federal and state levels; therefore, obtaining a permit from the Army Corp of Engineers (federal) for developing a wetland is necessary. A permit from the Wyoming Department of Environmental Quality (state) may also be advised.

### Groundwater

Ground water is stored in, and moves slowly through, moderately to highly permeable rocks called aquifers. An aquifer may be a layer of gravel or sand, a layer of sandstone or cavernous limestone, a rubbly top or base of lava flows, or even a large body of massive rock, such as fractured granite, that has sizable openings. In terms of storage at any one instant in time, ground water is the largest single supply of fresh water available for use by humans. Groundwater is replenished by precipitation and, depending on the local climate and geology, is unevenly distributed in both quantity and quality. Most rural landowners in the Lander area rely on a well for their drinking water. Wells have the potential to become contaminated if groundwater is not protected from water pollution.



## WATER USES IN THE LANDER AREA

The Lander area has a rich and diversified community, and is able to put our precious water resource to a variety of uses. The State of Wyoming designated water uses apply to our local streams:

1. **Agriculture:** Agriculture dominates water usage in the Popo Agie Watershed with an estimated 96% of the basin's total use of surface water. Crops produced as a result of irrigation include alfalfa, wheat, grass, and irrigated pasture for livestock. Agricultural producers increase irrigation efficiency through the use of gated pipe, sprinkler systems and a variety of other improvements.
2. **Fisheries:** Protection and propagation of fish and wildlife
3. **Industry:** Mineral development, manufacturing, etc.
4. **Domestic Water Uses:** There are two communities within the Popo Agie Watershed that derive their municipal water supplies from the Popo Agie River system and related sources: the City of Lander and Town of Hudson.
5. **Recreation:** Recreational opportunities abound in the Popo Agie Watershed, and many focus on our scenic rivers and the amenities they provide including outstanding trout fishing, scenic hiking trails, boating and kayaking, four-wheeling, rock climbing, numerous established camping areas, backcountry pack trips, and wildlife viewing. Winter incorporates recreational prospects with cross-country skiing, snowmobiling, snow shoeing, ice climbing, and much more.
6. **Scenic value.**

### Non-point Source Pollution

Non-point source pollution can occur from a variety of sources, and is caused by surface runoff which transports pollutants to lakes, streams, and wetlands. Non-point source pollution is the leading cause of water quality issues. The effects of non-point source pollutants vary, but may have serious and harmful effects on drinking water supplies, recreation, fisheries, wildlife, and agriculture. Unlike point-source pollution, the causes of non-point source pollution may not be readily apparent, and could affect local water quality in the Popo Agie Watershed. Such pollutants include:

- Excess fertilizers, herbicides, and insecticides from lawns and fields
- Oil, antifreeze, grease, and other chemicals from urban runoff
- Sediment from eroding stream banks and other land areas with little or no vegetation
- Bacteria and other nutrients from pet waste, wildlife/livestock, and faulty septic systems.



### Preventing NPS Pollution in Surface and Groundwater?

What can you do to help protect surface and ground waters from non-point source pollution? Begin by taking a close look at practices around your house that might be contributing to polluted runoff. You may need to make some changes. The following are just a few specific tips to help you become part of the solution to non-point source pollution.

- Keep paint, oil, grease, chemicals, litter, and debris off the ground and out of waterways.
- Clean up after your pets. Pet waste contains nutrients and pathogens that can contaminate surface water.
- Dispose of used oil and antifreeze, paints, and other household chemicals properly, not in storm drains or on the ground. The Lander community can dispose of leftover oil & antifreeze at the Fremont County Solid Waste Disposal District 307-335-8713. Try donating leftover paint to a neighbor or service organization.
- Don't hose down driveways or sidewalks. Dry sweeping paved areas, along with careful trash disposal, are simple, effective pollution reducers.
- Place litter in trash receptacles rather than in streets or down storm drains.
- Preserve existing trees, and plant trees and shrubs to help prevent erosion and promote infiltration of water into the soil.



- Use landscaping techniques such as grass swales (low areas in the lawn) or porous walkways to increase infiltration and decrease runoff. Install gravel trenches along driveways or patios to collect water and allow it to filter into the ground.
- Select household chemical alternatives such as low-phosphate or phosphate-free detergents, or water-based products. Buy chemicals only in the amount you expect to use, and apply them only as directed.
- Test your soil before applying fertilizers. Use slow-release fertilizers on areas where the potential for water contamination is high, such as sandy soils, steep slopes, compacted soils, and near water bodies.
- Control soil erosion on your property by planting ground cover and stabilizing erosion-prone areas. Restore bare patches in your lawn as soon as possible, or spread mulch materials.

- Establish and maintain shrubs and grasses along streams and around animal confinement areas to trap and absorb pollution-laden runoff before it reaches streams or groundwater.



- Locate corrals and other livestock confinement areas away from streams. Properly dispose of manure, feed and bedding wastes by spreading them on your cropland. Be sure soil isn't too wet or frozen to absorb it. This will reduce your need for expensive commercial fertilizers. Avoid over-irrigation that can cause valuable topsoil, fertilizer, and pesticide runoff.
- Locate corral and septic systems downslope of your drinking water well. Make sure you know where your neighbors' well and septic systems are located. Their systems can pollute your well and vice versa.
- Have your septic tank pumped every three to five years.
- Do not mix, apply, or dispose of weed-control chemicals, used motor oil, or other toxic substances near streams or where they can leak into groundwater. Only use enough of the product to get the job done. Avoid household products with hazardous ingredients, or handle them with extreme care. Many toxic ingredients in paint thinners and drain cleaners can contaminate water sources. Never dump hazardous products down drains, the toilet, or near flowing water, ponds or lakes. Do not dump them on the ground. Contact the Popo Agie Conservation District, Fremont County Weed and Pest, or Fremont County Solid Waste Disposal District for information on proper disposal of these substances.

#### CONTRIBUTED BY:

- Popo Agie Conservation District
- Wyoming Department of Environmental Quality
- U.S. Environmental Protection Agency

## SEPTIC SYSTEMS

Before buying your little piece of heaven, make sure you will have the ability to treat household wastewater in a sanitary and responsible way. Some form of wastewater treatment should be in place for developed properties. Before purchasing any property, investigate the septic system. The Fremont County Planning Department requires that homeowners apply for a septic permit prior to construction, and there will be a record of your permit. Many lending agencies will also require a septic system inspection before financing your purchase. If you are planning to develop the property after purchase, ensure that a septic system can be installed and that the property is large enough to have a replacement field if the original system fails.

It is a requirement that when a public sanitary sewer system is located within 300 feet and legal access can be obtained, you must connect to the public system, which can be expensive. If a public sanitary system is not available, lot owners are required to install individual septic tanks and sewer disposal systems. In many areas surrounding Lander where the water table is high, mounded septic systems may be the only acceptable method and can be more expensive than traditional systems. Regardless of the type of system, regular maintenance and repair should be planned to avoid potential failure and costly replacement.



### Septic Systems: The Basics

If you are one of the 25 percent of rural homeowners who have a septic system, selecting a proper septic system is a consideration.

Selecting the proper system may prevent the occasional, but very exasperating problem. A septic system's tank separates solids and liquids. The liquid effluent is then dispersed to a drain field of pipes and gravel, or gravel-less chambers. The most commonly used drain field is gravity fed. However, there are other, more complex, pressure dosing applications and more advanced pretreatment packages that can be used when soil conditions are less than optimal or when other site limitations, such as high groundwater table, are a problem.

When it comes to situating a new septic system, always remember "location, location, location". Before construction begins, take a look at the NRCS Soil Survey for the Lander Area or the subdivision soil review provided by Popo Agie Conservation District. This survey can provide valuable information on suitability for septic systems, as well as septic system placement.

Also, check with the Fremont County Planning Department regarding permits and site evaluations. A percolation test will be required to determine the soil's water absorption capability. Improper percolation tests could result in an inadequately sized drainfield or a costly oversized field. Additionally, proper setbacks for drinking water wells and setbacks for your neighbor's property should be determined. Finally, know how your tank, drainfield, and soil all function together to purify water and absorb liquids to ensure your septic system will work efficiently now and into the future.

If properly designed, your septic system can provide long-term, effective treatment of household wastewater. However, when a septic system isn't properly maintained, you may need to replace it. Septic system failure is not only a costly problem, but can also be a serious water quality concern. No one wants to flush a toilet into a drinking water supply. Follow these simple steps to help protect your septic system and avoid costly repairs.

1. Inspect your system every 1 to 2 years and have your tank pumped every 3 to 5 years. Change effluent filters (if the system has a filter) every six months. Contact a licensed professional for services.
2. Care for your drainfield. Avoid driving or parking vehicles on your drainfield. Plant only grasses (NO trees or shrubs) over and near your drainfield to avoid damaging lines from invasive roots.
3. Use household water efficiently so as not to overload your septic tank. Try composting instead of a garbage disposal unit, and do not install water softeners.
4. Consider washing laundry intermittently instead of all in one day because large quantities of water can overload the system. Consider installing low-volume plumbing fixtures.
5. Avoid disposing of household hazardous wastes in sinks or toilets. Oils, solvents and other chemicals can disrupt the natural biological treatment necessary to purify household wastes.
6. It is not necessary to use additives. Chemical additives may disrupt the natural bacterial action and do more harm than good. Bleach and other household cleaners should be used in moderation.



### Signs of Septic System Failure

Contrary to popular belief, septic systems are not maintenance-free. Signs of neglect include backed-up plumbing such as a toilet that won't flush, or water coming up through floor drains or the bathtub. Other signs include lush grass over the drainage field, effluent seeping in the drain field area, or effluent over the top of the risers in the distribution box located at the front of the drain field. Surfacing effluent is black in color and has a distinct sewer odor.

Long before you may notice these signs, the system may discharge untreated sewage into valuable ground or surface water supplies. If changing your filter and pumping the tank do not solve the problem, chances are the system has failed.

### Effects on Water Quality: Drinking Water

Fresh, clean groundwater is a very important resource if you own a rural home. If your septic system, or a neighboring system, is failing it may be inadvertently discharging household waste into a surface or ground water supply. Bacteria that have entered a groundwater supply are cause for concern in regard to the quality of your drinking water. Bacteria can be very difficult to remove and may cause physical illness before a problem is detected.



### Effects on Water Quality: Surface Water

The ability to swim, fish or boat on any of our local lakes and rivers is a large part of what makes rural living so desirable. However, no one wants to recreate in water that has been affected by septic system discharge. Exposure to many types of bacteria from sewage can cause severe gastro-intestinal illnesses and other environmental effects. Contact the Popo Agie Conservation District for more information on water quality and septic systems in the Lander area.



#### CONTRIBUTING SOURCES:

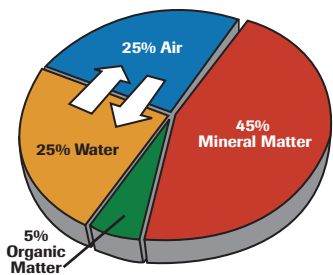
- Popo Agie Conservation District
- Fremont County Planning Department
- Wyoming Department of Environmental Quality
- April Gindulis, City of Casper-Natrona County Health Department

# Agriculture on a Small Scale

## SOIL: THE FOUNDATION

Soil consists of mineral and organic matter, soil air, and soil water. Soils differ in appearance, composition, productivity, and management requirements within short distances. The properties of the soil at any given place result from the integrated effects of five factors: parent material, living matter, climate, relief, and time. No single factor is responsible for all soil characteristics. All of the factors act together, but at different rates, to form each individual soil. The relative importance of the factors varies.

Soil texture is the relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion



TYPICAL SOIL MAKE-UP

of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse", "fine", or "very fine". The combination of these textures, as well as the depth to bedrock, the depth to the water table, and the steepness of the slope determine the capacity of the soils.



The Soil Survey for the Lander Area, published by the Natural Resources Conservation Service, explains all of these factors. Wyoming soils are very fragile and susceptible to erosion when not adequately protected. Without productive soils we would not be able to grow plants that provide us with food, medicine, industrial products, wildlife habitat, and aesthetics. Vegetation prevents soil erosion from wind and water, on steep slopes, and along streams and rivers. It also increases water infiltration and water-holding capacity. Cover crops, sod-forming grasses, and native plants are excellent soil protectors. Re-seed immediately after any ground disturbing activity with a certified (weed-free) mix of native grasses. Soil testing is a good way to determine the nutrient level of the soil. A basic soil test will cost approximately \$20.00. You can sample the soil yourself and send it to the lab or you can call the Natural Resources Conservation Service for assistance.

CONTRIBUTED BY:  
Jenny Castagno, Resource Conservationist, NRCS

## SOIL SAMPLING TECHNIQUES

**Container:** Collect samples in a plastic bucket or stainless steel container. Do not use galvanized or brass equipment. Samples will be placed in new, sealable Zip-Lock™ bags or comparable product.

**Sample volume:** One Quart per depth zone.

**Preservative:** Air-dry samples within 12 hours of collection. Air drying prevents microbes from mineralizing soil organic matter. Microbial activity can result in less accurate nitrogen fertilizer recommendations.

**Holding Time:** 12 hours, 6 months if air dried.

Prior to sampling, consider each of the following:

**1. Field area (acreage) per sample:** A composite soil should represent a uniform field area. Each area should have similar crop and fertilizer history for at least the last two years. Exclude small areas within a field that are different as they can be sampled separately. The field represented by a single composite sample should be no more than 40 irrigated acres or 100 dryland acres. Fewer acres are better.

**2. Sampling procedure:** Use a grid system and take one sample within each grid. Use imaginary grid lines, or obtain a copy of aerial photography of the area from NRCS. Obtain an accurate nutrient evaluation of a field site with a minimum of 15-20 sub-samples from each sampled depth. Mix the sub-samples thoroughly and collect 1 quart for analysis. This mixture is the composite soil sample.

**3. Sampling depth:** Where soil physical properties allow, take sub-samples from the 0-12 inch depth and from the 13-36 inch depth. Where shallow soils preclude sampling to 36 inches, take samples from the deepest allowable depth. Be sure to note actual depth.

**4. When to sample:** Sample fields before each cropping season and/or before the anticipated application of manure. Allow enough time between manure application for sample analysis and interpretation.



**5. Sampling tools:** A stainless steel soil sampling probe is recommended. A shovel is satisfactory, although it is more time consuming. Tools must be clean and free of dust.

**6. Sample handling:** Remove any organic or vegetative matter from the soil surface prior to collection and remove from the soil prior to bagging sample. After each sub-sample is taken, clean any remaining soil and organic or vegetative matter from the probe.

The type and amount of irrigation required on your land is dependent on many factors, including soil type and land use. Some crops have higher water requirements than others or need more water at different times of the growing season. The Natural Resources Conservation Service (NRCS) can help determine the type, fertility and water holding capacity of your soils, and recommend the most efficient irrigation system for your land.

CONTRIBUTED BY:  
Jenny Castagno, Resource Conservationist, NRCS





## THE IMPORTANCE OF WEED CONTROL

Noxious weeds should be of concern to every rural property owner in the Lander area. Many times, landowners do not even realize that these invaders are slowly choking out the native plant community and competing with desirable plants. It is the property owner's responsibility to control weeds on their property and to educate themselves about the impacts of weeds. In Wyoming there are 24 designated noxious weeds. Controlling these noxious weeds is a state law.

Early detection and eradication of small infestations is the most cost effective way to manage weeds. The Fremont County Weed and Pest Control staff is available to look at your property and help you with any weed problems. Herbicides are available for purchase at the Weed & Pest shop at 56 Tweed Lane, and cost-share may be available for certain products.



Spray equipment can also be rented to help you control weed problems on your property.

The introduction of weeds occurs in many ways; they are planted intentionally as ornamentals, as well as accidentally in crop seed. Weed seed can get attached to our clothing, pet and livestock hair and vehicles, as the seeds drop off they may start new infestations down the

road or trail. Weedy hay is a significant source of weed seed, many patches of weed in Fremont County can be traced to contaminated hay. The Bureau of Land Management and the U.S. Forest Service allow only certified weed free hay on the public lands they administer. Fremont County Weed & Pest staff members certify many thousands of acres of weed free hay prior to cutting each summer.

Landowners can help prevent the establishment of noxious weeds on their property regardless of the size of the parcel. The presence of weed seed does not make establishment certain. For the seed to grow, it has to land in a favorable place with adequate moisture and soil contact. In most cases, it takes some kind of disturbance to the native vegetation for the seed to germinate. Construction activity destroys the existing vegetation; livestock grazing pressure can create bare ground which allows weeds to become established. Some types of noxious weeds, such as spotted knapweed and field bindweed, can still germinate after lying dormant for 50 years.

With the constant selective grazing by even one horse, pastures can become dominated by weeds such as Russian knapweed, curly cup gum weed and field bindweed. Horses don't like to eat these plants because of their bitter flavor, but instead graze heavily on the more palatable plants until they are gone, leaving a pasture full of inedible vegetation. Some weeds such as Russian knapweed and water hemlock can be deadly if horses feed on them.

It is very important that we all keep a watchful eye out for any new species. Fremont County Weed & Pest has an ongoing weed survey and mapping program on both public and private lands to look for and monitor weed problems. Private property owners are contacted for permission by our staff to do survey work on their property.

The Weed & Pest Control District staff is eager to answer any questions about weed control on your property. The main office is located in the County Court House at 450 North 2nd St. in Lander. Stop by our office or phone at 307-332-1052 or 307-857-3686. Working together, we can all play an important role in keeping Fremont County a beautiful place to live.

**CONTRIBUTED BY:**  
Fremont County Weed & Pest Control District



## WATER RIGHTS AND WYOMING WATER LAW

The Wyoming State Constitution provides that water from all natural streams, springs, lakes and other collections is the property of the State. This relates to both surface water and groundwater resources within the state. Wyoming has a water rights system that requires users to file for permits prior to the commencement of any construction. A permit will provide the appropriator the opportunity to place a portion of this valuable resource to a recognized beneficial use. In times of shortage, water may be divided by the State with earlier rights holding the preference to water over those rights of later filing dates. The Wyoming State Engineer and staff are empowered by the State Constitution and subsequent legislation to administer the water rights within the State.



Under Wyoming law, a person must first apply to the State Engineer for a permit to put water to a new beneficial use on their property. Different types of facilities, sizes of facilities, and uses of water relate to different permit application requirements. Once a permit has been issued, the applicant may then commence construction of the facilities necessary to accomplish this new water use, i.e. headgate, ditch, sprinkler system, well, pond, or pump system. Upon completion of the construction phase and commencement of water use, the applicant will submit a statement claiming that they have completed the application of water within the terms of their permit to the beneficial use contemplated in that permit. A field inspection by agency staff generally follows,

succeeded by an advertisement of the water use for public review and input and eventually culminating in the adjudication of the water right. Most changes to existing water rights such as moving the point of diversion, place of use, or means



of use requires a petition to either the State Engineer or the State Board of Control. Each different type of change has its own specific requirements as outlined in the agency's Regulations and Instructions.

All lands within Fremont County and the Wind River Indian Reservation lie within the boundaries of Water Division III which maintains its' division office in Riverton. Some water rights within the Water Division III have been affected by a series of state court decisions through the general stream adjudication process. On the Wind River Indian Reservation, the courts have adjudicated federal reserved water rights and Walton rights (a water right appurtenant to land that had previously been allotted to an Indian, but which subsequently passed into non-Indian ownership) that have a treaty based priority date of July 3, 1868. Throughout the Reservation, there may be state permitted water rights, federal reserved water rights and Walton rights on one ditch system.

If you believe your water use is affected by a federal reserved water right or Walton right, or for further assistance in determining the type of water right that may be appurtenant to specific land within Water Division III, or to determine what processes must be complied with to permit or change a water right, please contact the Water Division III, Division field office at: 715 E. Roosevelt Ave., Riverton, WY 82501 (307) 856-0747. Additional information may also be obtained through the State Engineer's Office website at: <http://seo.state.wy.us>.

**Contributed By:**  
Loren Smith, Wyoming State Engineer's Office



## IMPROVING SMALL-SCALE IRRIGATION EFFICIENCY

### Steps to Improve Conservation of Irrigation Water

1. Reduce conveyance losses by lining channels or, preferably, by using closed conduits.
2. Reduce direct evaporation during irrigation by avoiding midday sprinkling. Minimize foliar interception by under-canopy, rather than by overhead sprinkling.
3. Reduce runoff and percolation losses due to over irrigation.
4. Reduce evaporation from bare soil by mulching and by keeping the inter-row strips dry.
5. Reduce transpiration by weeds, keeping the inter-row strips dry and applying weed control measures where needed.
6. Enhancement of crop growth
7. Select most suitable and marketable crops for the region.
8. Use optimal timing for planting and harvesting.
9. Use optimal tillage (avoid excessive cultivation).
10. Use appropriate insect, parasite and disease control.
11. Apply manures and green manures where possible and fertilize effectively (preferably by injecting the necessary nutrients into the irrigation water).
12. Practice soil conservation for long-term sustainability.
13. Avoid progressive salinization by monitoring water-table elevation and early signs of salt accumulation, and by appropriate drainage.
14. Irrigate at high frequency and in the exact amounts needed to prevent water deficits, taking account of weather conditions and crop growth stage.

CONTRIBUTED BY:  
United States Department of Agriculture

## SMALL SCALE GRAZING MANAGEMENT

The basics of grazing management apply to pastures of all sizes. The most important principle to keep in mind is to leave a portion of what grows each year for the good of your pasture and the plants growing there. A common rule of thumb is to "take half and leave half". This ensures that sufficient plant material remains to support plant growth and keep your pastures in good condition. Taking too much plant material can weaken pasture plants, increase erosion (wind and water) and dramatically increase weed problems.

A second very important grazing management principle is to provide plants with an opportunity to grow or re-grow in the absence of grazing pressure. The best way to accomplish this is to divide the pasture area into at least 3 or 4 subunits and move or "rotate" grazing animals through the subunits. This way, at any given time, grazing animals are in only one of the 3 or 4 subunits and the other 2 or 3 have a chance to grow or regrow in the absence of grazing pressure.

The amount of time animals are in any one place depends on the relationship between forage supply and forage demand. Forage supply is dictated by

the productivity of the land where pastures are located. Irrigated pastures are significantly more productive than non-irrigated or dryland pastures. One acre of these more productive irrigated pastures, when managed properly and in good condition, might be able to support 1-2 horses or 1-2 cows for one month of grazing. In non-irrigated areas, it might take 2-20 (or more) acres to support one horse or one cow for one month of grazing. Obviously, the productivity of pastures in our area varies considerably. The University of Wyoming Cooperative Extension Service and Natural Resources Conservation Service can help you estimate the productivity of your pastures.

CONTRIBUTED BY:  
Paul Meiman, UW Cooperative Extension Service



## MANAGING ANIMAL WASTE

Considering that a horse only needs to graze a few hours each day and that part of the year your livestock will be confined to a corral area, you'll need to decide what to do about the manure that accumulates and how to prevent runoff from contaminating water. Runoff can carry manure,



soil, chemicals and other pollutants that may contaminate surface or ground water. Feeding sites can also be a potential source of nitrate contamination in water wells. Animal feeding lots, no matter their size or how many animals are housed there, are areas where animal wastes concentrate. The potential for surface water contamination is especially critical when there is no system in place to divert clean water (spring or stream) from the animal lot or to collect contaminated runoff for diversion to an area where its effect on surface or groundwater will be minimal.

### The potential for animal lots to affect groundwater is greatest if:

- The lot is not surfaced and located over coarse-textured, permeable soils
- The water table is at or near the surface
- Contaminated runoff is discharged to permeable soils

### Maintaining Corrals

One way to prevent pollution is to clean corral areas regularly. Do not clean earthen lots to bare dirt. Leave a thin layer (1 to 2 inches) of manure pack to seal the surface. Water will move very slowly through this compacted layer, minimizing the potential for leaching nitrates and bacteria through the soil to groundwater. The manure that you remove can be

stored and then later applied to your ground, hauled off your property or used in compost. The best time to apply manure as a source of nutrients is just before planting in the spring, or in the fall before snow and frozen soil conditions occur so it can be tilled into the soil to avoid contaminated surface water runoff. The application of animal manure to pastures, lawns or garden areas at low application rates poses little danger to surface or groundwater due to filtering of contaminants by the soil or plant uptake of nutrients. Be sure your corrals and/or manure storage areas are not vulnerable to runoff, especially directly into a surface water body or domestic well. Establishing and maintaining shrubs and grasses around the perimeter of your corrals will help trap and absorb pollution-laden runoff before it reaches streams or groundwater. It will also add aesthetic appeal to your property.

### More Benefits

In addition to decreasing the chance of contaminating surface or groundwater, a well-drained and dry lot will improve the comfort and health of your animals, as well as use of feed. You will reduce the need for expensive commercial fertilizers by spreading manure, feed and bedding wastes on your land. Reducing these waste levels will also decrease flies and parasites, their associated health risks and odor problems. The value and visual appeal of your property will increase with the improved health of your livestock and vegetation.

CONTRIBUTED BY:  
"Living on a Few Acres", NRCS



# Landscaping Resources



## WATER WISE LANDSCAPING

Our arid climate poses a number of challenges for landscaping. Xeriscape gardening can alleviate many of the environmental concerns faced in traditional landscapes. Xeriscape gardening can provide techniques to create a water-efficient, minimum maintenance home landscape. The seven principles of Xeriscape gardening are:

- 1. Planning and Design:** Trying to create a landscape without a plan is like trying to build a home without blueprints. Consider your existing landscape, how you will use your new Xeriscape, proper irrigation, and types of plants.
- 2. Soil Improvements:** To enable your soil to better absorb water and allow for deeper roots, you may need to add a soil amendment such as compost or well-aged manure before you plant.
- 3. Efficient Irrigation:** A Xeriscape can be irrigated efficiently by hand or with an automatic sprinkler system. Drip or bubbler emitters are most efficient for watering because they put out big drops close to the ground. Water deeply and infrequently to develop healthy roots.
- 4. Plant Zones:** To minimize water waste, group together plants with similar light and water requirements, and place them in an area in your yard which matches these requirements. By grouping your plants appropriately, you minimize water waste while ensuring that your plants will flourish in the right environment.
- 5. Mulches:** Mulching is essential for gardening in the Lander area. Mulch helps keep plants roots cool, prevents soil from crusting, minimizes evaporation and reduces weed growth. Mulches also give beds a finished look and increase the visual appeal of your garden.
- 6. Turf Alternatives:** Native or low water use plantings, patios, decks or mulches can beautify your landscape while saving water. Choosing a lower water use turf grass also serves the same purpose.

Choices include Buffalograss, blue grama grass, turf type tall fescue & fine fescues.

**7. Appropriate Maintenance:** The first year or two, your new landscape will require proper maintenance to become established, but efforts can decrease over time. When your garden is well taken care of, you can sit back and enjoy!

Contact Popo Agie Conservation District for more information on water-wise landscaping techniques!

### CONTRIBUTED BY:

- Popo Agie Conservation District
- USDA Bridger Plant Materials Center

## TOUGH TREES FOR YOUR LANDSCAPE

The climate in the Lander Area can be harsh, and successfully growing trees can pose many challenges. Our elevation, short growing season, and arid climate all have an impact on which tree species can successfully survive in this region. Several considerations can increase the success of planting trees in your rural landscape. Factors to be considered before you plant new trees include:

**Site selection:** Exposure to prevailing winds, proximity to structures and utilities, proximity to other trees, sun exposure, water availability, and soil type including soil pH.

**Purchase healthy trees:** Ensure trees are free from pests and disease. Look for clean, clear foliage, minimal broken or damaged branches, no visible wounds or scars, healthy root systems and signs of new, healthy growth.

**Site preparation:** After site selection, dig appropriately sized holes before tree purchase.

**Planting:** Handle trees carefully by the root ball rather than the trunk, set tree at correct soil level and fill by gently tamping soil periodically. Build a well around the perimeter to hold water. Water with a slow trickle over a few hours.

**Maintain young trees:** Do not fertilize the new tree. Use stakes to support young trees, especially in windy areas. Prune dead or broken branches and water frequently.

You may attract wildlife with your tree and shrub selections. While many species are beneficial for birds, these same tree and shrub species can also attract bears. Chokecherry, serviceberry, apple trees, Buffaloberry and plum are all species that are strong attractants to both grizzly and black bears. Species in the Ribes genus and Rubus genus, for example

currants, raspberries, and gooseberries should also be avoided in bear country. When planning how to landscape your property consider planting trees and shrubs that will not attract bears. Contact the Wyoming Game & Fish Department for more information on landscaping in Bear Country.

### CONTRIBUTED BY:

- Karen L. Panter, UW Cooperative Extension Service Horticulture Specialist
- Wyoming Game & Fish Department

## Successful Tree Species for the Lander Area

Evergreen Trees	Hardy to	Height	Width	Exposure	Comments
White Fir	9000'	30-50'	20-30'	Sun, part shade	Attractive, native, bluish color
Rocky Mountain Juniper	8,500'	6-20'	4-8'	Sun	Native, fine textured, colors vary from dark green to silver
Eastern Redcedar	6,500'	6-20'	5-20'	Sun, part shade	Coarse foliage; vigorous growth
Douglas Fir	10,000'	50-80'	15-25'	Sun	Upright; alternative to blue spruce
Colorado Blue Spruce	10,000'	2-60'	3-30'	Sun, part shade	Heavily used native; varying growth habits
Deciduous Trees/Shrubs	Hardy to	Height	Width	Exposure	Comments
Amur Maple	8,500'	15-20'	15'	Sun	Attractive, shrubby; red leaves in fall; often chlorotic
Hackberry	7,000'	30-35'	30'	Sun	Hardy native species
Green Ash	8,500'	40-50'	30-40'	Sun, part shade	Glossy foliage; sturdy
Honeylocust	6,500'	35-45'	30-40'	Sun	Tap rooting tree; lacy foliage; requires deep soil
Plains Cottonwood	7,000'	50-60'	50'	Sun	Rapid growing; adaptable
Chokecherry	10,000'	8-20'	8-12'	Sun, part shade	Good fruit; glossy foliage; attracts birds; suckers
Bur Oak	8,000'	40-60'	30-40'	Sun	Slow growing; sturdy, long-lived
Native plum	7,000'	10-15'	10'	Sun	Colorful summer foliage; white flowers in spring



## COMPOSTING

Gardeners have long made and used compost to improve garden soil. Composting is a biological process in which microorganisms convert organic materials such as manure, sludge, leaves, paper, and food wastes into a soil-like material that can benefit landscapes and gardens. Compost is an important way to reduce the amount of waste that is burned or dumped in landfills. Composting is an effective way to recycle that waste.

Compost is a valuable soil additive that is similar to soil organic matter. It also improves soil structure when mixed into your different soil types. It holds water and nutrients in sandy soils and even makes it more porous and easier to dig in tight clay soils.

Composting carries out part of the earth's biological cycle of growth and decay. Plants grow by capturing energy from the sun, carbon dioxide from the air, and nutrients and water from the soil. When plants die, they become raw materials for the composting (decay) process. It can be used as a fertilizer because it contains several nutrients. Nitrogen, phosphorous, and potassium are nutrients that are available in varying amounts depending on the materials that are added to your compost pile. These nutrients are available throughout the growing season because they are held in organic form and released slowly. It is a good idea not to solely count on compost to provide all the fertilizer needs for your garden or landscape. Usually more nitrogen and potassium need to be added to meet the needs of your plants.

With a little management, the decomposition of yard and garden waste can be greatly accelerated, depending on what materials you are using, the attention you give the process, and the system you

select. The process may be completed within a matter of weeks instead of years. Think of it this way, you are recycling a valuable soil conditioner for your yard and garden versus adding waste to the waste system. The type of system you select to manage depends on a number of factors:

- 1. Labor:** How much time and effort are you willing commit to maintaining optimum conditions.
- 2. Rate of Decomposition:** How fast you want the waste to become compost depending on how much waste you generate. If you have a large yard or garden, you will need to consider a system that will promote rapid breakdown. This will accommodate the larger volume of waste.
- 3. Materials:** The kind of materials you include will make a big difference in rate of decomposition. Green leafy materials breakdown more quickly than wood chips, while smaller particles breakdown more quickly than larger chunks. The faster the breakdown means more frequent mixings.
- 4. Site:** If is out in the open, be mindful of the neighbors and aesthetic value.
- 5. Cost:** There are several composting options out there for the public, make sure you utilize your resources appropriately.

Composting is not a new technology, nor is it new to landowners, including urbanites, agriculturalists and suburbanites. This information is intended to introduce the use of composting to individuals who are interested reducing their yard and food wastes.

CONTRIBUTED BY:  
Alex Malcolm, UW Fremont County Cooperative Extension Service

## UNIQUELY WYOMING: RESOURCES FOR ALL SEASONS

The UW Fremont County Cooperative Extension Service (CES) provides residents of the Lander Area access to the University of Wyoming's Cooperative Extension Service network. CES offers research-based information to residents in each Wyoming county. Issues and needs specific to our are identified and developed into educational programs, which are available in an array of topics: rangeland resources and monitoring, sustainable agriculture, horticulture, Master Gardeners, foods and nutrition, community leadership, mediation, rural enterprises 4-H and youth development and much more. CES offers a

wide variety of educational bulletins and publications. In addition, CES publishes the quarterly Barnyards & Backyards: Rural Living in Wyoming magazine has the answers for you! Barnyards & Backyards features articles written by a statewide team of natural resource experts, and is the perfect resource for the small acreage landowner, new landowner or backyard enthusiast. CES publications are available through the UW Fremont County Extension Agent or the UW CES webpage at <http://uwadmnweb.uwyo.edu/UWces>.



Gardening		
Number	Date	Title
B-1115	2002	Gardening: Vegetables in Wyoming
B-1144	2004	Gardening: Growing Herbs in Wyoming
B-1148	2004	Gardening: Extending the Vegetable Growing Season
B-1151	2004	Gardening: Hotbeds & Cold Frames
Trees & Shrubs		
Number	Date	Title
B-1139	2003	WyoScape Landscaping for the Wyoming Climate
B-1050	1998	Management of Hardwood Borers of Trunks and Large Branches
Landscaping		
Number	Date	Title
B-682R		Keep Ahead of Lawn Drought
B-1129	2002	Landscaping: Turf in Wyoming
B-1090	2000	Landscaping: Recommended Trees for Wyoming
B-1108	2001	Landscaping: Recommended Shrubs for Wyoming
B-1143	2004	Landscaping: Water-Wise Wyoming Gardens
B-1152	2004	Landscaping: Herbaceous Perennials for Wyoming
MP-6.2		Lawn and Garden Soil Questionnaire
B-1070	1998	Low-Maintenance Grasses for Revegetating Disturbed Areas and Lawns
B-988	1994	Soil Salinity, Salt Tolerance, and Growth Potential of Horticultural and
Landscape Plants		
Number	Date	Title
B-1172	2006	Landscaping: Fertilizing Trees and Shrubs



Larby Parker

## WILDLIFE CONSIDERATIONS

### Living with Wildlife in the Lander Area

One of the amenities of country living is the endless opportunity to observe wildlife. Wildlife habitat includes year-round food supplies, water sources, and cover. Large and small acreages alike provide ample opportunity for wildlife habitat for birds, reptiles, amphibians, fish and large and small mammals.

**Food:** Crops and other plants provide forage, fruits and seeds for many species of wildlife. You can enhance food sources through a variety of means including selecting native plant species such as Buffaloberry or Chokecherry shrubs in your rural landscape and reducing competition from non-native or invasive species such as Russian olive trees. The Wyoming Game & Fish Department's publication "Wyoming Wildscape" contains wonderful recommendations for enhancing backyard wildlife habitats. Please realize, however, that planting native shrubs to attract wildlife may also result in wildlife damage to other ornamental shrubs and trees.

**Water:** Wildlife need a good water source. Streams, ponds and watering tanks can provide useful sources of water. In addition, local fisheries are an important resource that is entirely dependent on ample water supplies.

# Living With Wildlife

**Winter Range:** Deep snow, cold temperatures and a lack of food make winter a stressful time for wildlife. Human presence stresses wildlife, causing them to use precious energy they need to survive until summer. Large ungulates such as elk, mule deer, moose and bighorn sheep rely on wind-swept south facing hillsides for winter food.

There are several things you can do to minimize impacts to wildlife winter range. First, respect wildlife and their habitats by knowing locations of closed areas before entering them. To find the locations of these critical areas, obtain a free winter travel map from the local U.S. Forest Service office at 333 E. Main Street in Lander. Most closures are in effect from December 1 - April 30. Second, help spread the word about winter closures with your friends. Many violations of closed areas are not intentional and could be avoided if residents and visitors simply knew where the closure areas were located. Obey the closures even when the snow is beginning to melt and dry areas are exposed. Hikers, horseback riders and bicyclists can have equal impacts on weakened wildlife just coming out of the winter season. Spring is an important time for wildlife to restore depleted energy resources.

### Hunting and Fishing Permits and Licenses

In order to hunt both big and small game animals in Wyoming, both children and adults must first obtain the applicable hunting licenses from the Wyoming Game & Fish Department. In addition, all anglers fishing in private or public waters of Wyoming must abide by Wyoming Game & Fish Department fishing regulations. Exceptions are waters where fishing preserve or landowner fishing regulations apply. Contact the Game & Fish for more information or to obtain a license.

Contributed By:  
Wyoming Game & Fish Department and  
USDA Forest Service

## WILDLIFE FRIENDLY FENCING OF PRIVATE PROPERTY

We share the Lander Area with many different species of wildlife and some that are unique to this area. Certain animals such as elk and deer migrate back and forth between the mountains and the valley floor. Others live as year round residents on ranchlands or in river bottom corridors. Fences act as barriers, and can lead to needless wildlife deaths - something that most people would work to prevent if they could. So what is the "ideal" fence? From wildlife's standpoint, the ideal fence is one that can be easily seen, leapt over or scurried without injury. Or one that isn't there at all when it isn't needed. Some ranchers use lay-down or temporary fence that is only up during the summer when cows are in the pasture.

Here are some ideas for fencing that meet the needs of both landowners and wildlife. Consider the reason for building the fence when planning your project: to delineate a property boundary, to contain livestock or pets, to prevent trespassing and to enclose gardens and barns. Evaluating existing fences can help you determine whether or not you may need simple alterations for safe wildlife passage. In addition, if the fence is strictly aesthetic, try a low post and rail fence that wildlife can easily jump. Finally, consider fencing only a portion of your property as a child's play area, dog run or to protect a garden from wildlife. In this case use a tall fence that



Pressure-treated poles are recommended.  
Top rail 4" diameter and 13' long.  
Posts 5"-6" diameter and 8' long. Posts set on 12' centers.

will not allow wildlife to enter and become trapped. Wooden plank fences, chain link, or wire mesh fences with top rails work well for these purposes.

Consider the following guidelines for constructing wildlife friendly fence:

1. The height of the top rail should be no higher than 38-40 inches.
2. If wire is desired, only use smooth wire and make sure that the bottom wire is at least 16 inches off the ground to allow young animals and antelope to crawl under.



3. Choose a post and rail fence over a buck and rail fence; which is generally too tall and too wide for wildlife to navigate.
4. Reduce fencing whenever possible to maintain a wildlife corridor and where appropriate, use natural vegetation in the form of trees, bushes and gardens to delineate property boundary.
5. Consider removing the rails every 400' on a buck and rail fence during the winter months to allow wildlife passage, unless the fence is used to contain livestock.
6. If you have a barbed wire fence, be sure to keep the posts upright and the wire taut and in good condition; consider replacing the top wire with a wooden top rail to prevent wildlife from becoming entangled and increase visibility. As maintenance demands require replacement wire, use smooth wire instead of barbed wire.

CONTRIBUTED BY:  
Wyoming Game & Fish Habitat Bulletin No.53



## CHRONIC WASTING DISEASE (CWD)

Chronic wasting disease (CWD) is a transmissible spongiform encephalopathy (TSE) of deer and elk. To date, this disease has been found only in cervids (members of the deer family). First recognized as a clinical "wasting" syndrome in 1967 in mule deer in a wildlife research facility in northern Colorado, it was identified as a TSE in 1978. CWD is typified by chronic weight loss leading to death. There is no known relationship between CWD and any other TSE of animals or people. In the mid-1980s, CWD was detected in free-ranging deer and elk in contiguous portions of northeastern Colorado and southeastern Wyoming. Species that have been affected with CWD include Rocky Mountain elk, mule deer, white-tailed deer, and black-tailed deer. Other ruminant species, including wild ruminants and domestic cattle, sheep and goats have been housed in wildlife facilities in direct or indirect contact with CWD-affected deer and elk with no evidence of disease transmission. There is ongoing research to further explore the possibility of transmission of CWD to other species. However, there is no record of a human becoming infected with CWD.

About 400 cases of CWD have been reported in wild mule deer, white-tailed deer and elk in Wyoming from 1997 to 2005. The number of cases has gone

up in recent years, but it is not known whether that is because officials are looking harder for the disease or because the rate of infection has increased. At this point, chronic wasting disease is found in eastern Wyoming and the Big Horn Basin. Chronic wasting disease can take several years to claim its victims, and the veterinarians studying CWD expect to continue research. In the meantime, the Wyoming State Veterinary Laboratory cooperates in the national watch for TSE, and the Game and Fish Department will continue to test for chronic wasting disease to keep tabs on how many animals are affected and where the disease is found. Even in the parts of Wyoming and Colorado where chronic wasting disease is found, less than six percent of deer are infected. In these areas and in other places where big game animals may carry different diseases, a few precautions are sensible:

1. Don't shoot an animal that is acting abnormal or looks sick.
2. Wear rubber or latex gloves when you field-dress your animal.
3. In areas where chronic wasting disease has been reported, minimize your contact with a dead deer's brain and spinal cord and wash your hands after contact.
4. Don't consume deer brain or spinal cord.
5. Bone out your deer meat and discard the brain, spinal cord, eyes, spleen, and lymph nodes.

Clinical Signs of CWD generally occur in adult animals. The disease is progressive and always fatal. The most obvious and consistent clinical sign of CWD is weight loss over time. Behavioral changes also occur in the majority of cases, including decreased interactions with other animals, listlessness, lowering of the head, blank facial expression, and repetitive walking in set patterns. Most deer show increased drinking and urination. In elk, behavioral changes may also include hyper-excitability and nervousness. Affected animals continue to eat grain but may show decreased interest in hay. Excessive salivation and grinding of the teeth also are observed.

CONTRIBUTED BY:  
 • [www.aphis.usda.gov](http://www.aphis.usda.gov)  
 • [gf.state.wy.us](http://gf.state.wy.us)

## WEST NILE VIRUS



West Nile virus (WNV) is a mosquito-borne disease that can cause encephalitis or brain infection. Mosquitoes

spread this virus after they feed on infected birds and then bite people, other birds, and animals. WNV is not spread by person-to-person contact, and there is no evidence that people can get the virus by handling infected animals. Surveillance for West Nile virus was initiated in Wyoming in 2001 and currently involves the reporting and testing of dead birds and the testing of sick horses. Suspected human cases are also tested in the Wyoming Department of Health's Public Health Lab.

People with mild infections may experience fever, headache, body aches, skin rash, and swollen lymph glands, which is known as West Nile fever. A more severe infection, West Nile encephalitis, occurs when people experience high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions and paralysis. If you have any of these symptoms, contact your health care provider immediately.

West Nile virus human cases in Wyoming occur primarily in the late summer or early fall, although the mosquito season is April through October. The majority of people who get infected with the virus have no illness, or at most, have an infection similar to a mild flu with fever, headache and fatigue. The virus will rarely multiply in the central nervous system and cause the brain disease West Nile encephalitis. Two-thirds of people who do develop

encephalitis or meningitis will have serious long-term health problems and some people never fully recover.

Horses are affected by West Nile virus (WNV) much more often than any other domestic animals. Many horses infected with WNV do not develop any illness, but of horses that become ill, about 30 percent die or need to be euthanized. Other livestock and poultry do not commonly show any illness if infected with WNV. In 2002, more than 15,000 equines were diagnosed with cases of illness caused by WNV. Of those, it is estimated that approximately 33 percent died or were euthanized. This does not rule out the possibility that other horses may have been infected with the virus. It is likely that many horses recover from infection without clinical illness. No treatment is currently available for WNV; however, a vaccine intended to aid in the prevention of the disease in horses is available through licensed veterinarians.

Preventing animals' exposure to mosquitoes is essential. The best way to do this is by removing any potential sources of water in which mosquitoes can breed.

- Dispose of any water-holding containers, including discarded tires. Drill holes in the bottom of containers that are left outside.
- Clean clogged roof gutters on an annual basis.
- Turn over wading pools or wheelbarrows when not in use, and do not allow water to stagnate in bird baths.
- Aerate ornamental pools or stock them with fish. Clean and chlorinate swimming pools that are not in use and be aware that mosquitoes can breed in the water that collects on swimming pool covers.
- Use landscaping to eliminate standing water that collects on your property; mosquitoes can breed in any puddle that lasts more than 4 days.
- Thoroughly clean livestock-watering troughs on a weekly basis, if possible.
- In locations where eliminating mosquito breeding areas is not a practical alternative, larviciding is the most effective control measure. Several biologically-based larvicides are available to the public. Local mosquito-control authorities can help in assessing the mosquito-breeding risks associated with your property. Contact the Fremont County Weed & Pest Department for more information.

CONTRIBUTED BY:  
[www.badskeeter.org](http://www.badskeeter.org)



## WILDLIFE FEEDING FACTS

Wildlife managers in the Lander area strongly encourage private citizens to avoid intentionally feeding wildlife including big game for the welfare of wildlife and the safety of people. Feeding habituates animals to human activity and leads to a loss of fear of humans. Food-habituated wild animals often become bold and aggressive, and may become dangerous to people and pets. In addition, feeding unnaturally concentrates animals which can lead to the spread of disease, increased mortality on roads and damage to surrounding vegetation. Feeding large and small game animals often attracts predators such as mountain lions into residential areas. Therefore, it is highly recommended that rural and urban residents alike not intentionally attract or feed wildlife by placing salt, hay, grain, fruit, etc. on their property as a food source for big game animals.

While understandable that bird feeders might also attract wildlife other than birds, it is suggested that bird feeders be placed where deer and other wildlife can't reach them. In addition to bird feeders, livestock feed can also attract wildlife to your property. Wyoming Game & Fish Department personnel can provide ideas for property owners to secure livestock feed so it is out of reach of wildlife.

Contributed By:

- Wyoming Game & Fish, Lander Region
- USDA Forest Service, Shoshone National Forest

## FISHERIES AND WATER RESOURCES

The elements that make good fish habitat are complex, but at a minimum must include adequate water supply and appropriate water quality, as well as physical habitat that will allow fish to migrate, hide, feed and reproduce. Beyond water, which is the common habitat need for all fish, fish species differ on what habitat conditions they prefer or are adapted to. For instance, channel catfish prefer warm water, and trout prefer cold water temperatures. In fact, trout would typically die in water temperatures that keep catfish happy. Similarly, certain fish species may be well-adapted to turbid water, while trout, such as cutthroat trout, are adapted to cold, clear water.

Any change to the aquatic environment will affect a fish's ability to live and use its habitat accordingly. Therefore, it is important to consider all the limitations on habitat that might be affecting a population. Just treating one thing might address a symptom of other watershed ills that also could be fixed. Good management of the entire stream, and its accompanying watershed, to minimize impacts on natural habitat should be our first priority.

A stream is a function of its past, whether good or bad. When a stream channel is altered, the waterbody can lose some of its ability to function properly, including the ability to move sediment efficiently. A stream may also lose pool and riffle habitat needed for trout streams. Through some creative management, habitat enhancement and restoration can create new habitat or improve existing fisheries in the Lander area.



## ENHANCING BACKYARD WILDLIFE HABITAT

All creatures need space, food, water and cover in which to rest, escape from predators and weather, and raise their young. All species need varying amounts and combinations of the requirements, which vary seasonally. The greater the variety in these basic requirements and terrain, habitat structure and plant species composition, the greater the abundance and diversity of wildlife a particular area can support.

Providing diverse types of native vegetation in your rural landscape is the best way to provide and improve habitat. Not only will you enhance wildlife habitat, but you can also increase the value of your property, provide privacy and reduce noise, reduce heating and cooling costs, and decrease your annual landscaping maintenance. Greater landscape diversity puts more basic wildlife species in close proximity to one another, while at the same time making them more numerous. This allows a particular site to support more individuals.

In order to enhance existing landscaping or create a new environment, a "blueprint" or plan will be useful. Items to consider in your backyard habitat plan include:

- Existing buildings, fences, sidewalks, driveways and property lines.
- Existing landscaping and water sources.
- Overhead wires and other utilities.
- Underground utilities.
- Your soil type: certain plants are better adapted to certain soil types. Know what you have and what type of soil your plant selections may require.

Once you have inventoried your existing features, you can begin your backyard wildlife plan. Contact your local Game & Fish Lander Region office or the Popo Agie Conservation District for more information on creating wildlife habitat. With proper planning in appropriate areas, wild- scaping can mimic natural ecosystems, providing a home for wildlife and a backyard haven for you!

CONTRIBUTED BY:

- "Wyoming Wildscape", WY G&F
- Habitat Extension Services, WY G&F

## Habitat Extension Bulletins

In an effort to provide comprehensive information on a wide variety of wildlife topics, the Wyoming Game & Fish Department has created a series of Habitat Extension Bulletins. These bulletins are available at <http://gf.state.wy.us/habitat/ExtBulletins/index.asp> or by contacting your regional office in Lander.

Bulletin No. 1	Setting Wildlife Goals & Objectives For Your Land
Bulletin No. 2	Ring-Necked Pheasant Habitat Development
Bulletin No. 3	Habitat Needs and Developments for Canada Geese
Bulletin No. 4	Duck Habitat Needs and Development
Bulletin No. 5	Habitat Considerations for Urban or Backyard Wildlife
Bulletin No. 6	Nesting Structures for Canada Geese
Bulletin No. 6b	Design, Placement, and Maintenance of Duck Nesting Structures
Bulletin No. 8	Wetland Wildlife Management
Bulletin No. 9	Improving Streamside Wildlife Habitats
Bulletin No. 10	Importance of Nesting/Winter Cover to Upland Game Birds
Bulletin No. 11	Brush Piles and Rows for Wildlife Management
Bulletin No. 12	Windbreak Habitats for Wildlife

Continued on page 44

## Habitat Extension Bulletins (Continued)

Bulletin No. 14	Conservation Easements and Donations for Tax Deductions
Bulletin No. 15	Wildlife Habitat Cost-Share Programs
Bulletin No. 16	Producers and Distributors of Wildlife-Related Publications
Bulletin No. 19	Trout Farming
Bulletin No. 21	Aquatic Plant Management for Fish and Wildlife
Bulletin No. 22	Sport Fishery Habitat Requirements
Bulletin No. 24	Habitat Needs and Developments for Wild Turkeys
Bulletin No. 25	Habitat Needs and Developments for Sharp-tailed Grouse
Bulletin No. 27	Rocky Mountain Elk
Bulletin No. 28	Pronghorn Antelope
Bulletin No. 30	Habitat Needs and Developments for Cottontail Rabbits
Bulletin No. 31	Sage Grouse Habitat Requirements and Development
Bulletin No. 32	Game Bird Farm & Stocking Permit Requirements
Bulletin No. 33	Raising Pheasants or Other Game Birds
Bulletin No. 34	Habitat Modification Techniques
Bulletin No. 35	Wooded Draw Management in Northeast Wyoming Rangelands
Bulletin No. 36	General Guidelines for Planting Trees and Shrubs for Wildlife
Bulletin No. 37	Guidelines for Planting Herbaceous Species for Wildlife
Bulletin No. 38	The Role of Beaver in Riparian Habitat Management
Bulletin No. 44	Fish Farm and Stocking Permit Requirements
Bulletin No. 45	Homeowner's Guide for Resolving Wildlife Conflicts
Bulletin No. 46	Snag and Den Tree Habitats for Wildlife
Bulletin No. 47	Grazing Management for Streamside Areas
Bulletin No. 48	Nest Boxes for Wildlife
Bulletin No. 49	Fire Management and Wildlife
Bulletin No. 51	Controlling Streambank Erosion
Bulletin No. 52	Reducing Trout Losses From Irrigation Diversions
Bulletin No. 53	Fencing Guidelines for Wildlife
Bulletin No. 57	Predator Control and Wildlife
Bulletin No. 58	Guidelines for Reducing Damage From Big Game Animals
Bulletin No. 59	Reducing Waterfowl-Related Cropland Damage

# Appendix

TOPIC	AGENCY	ADDRESS	PHONE	WEB SITE
Backyard Wildlife	Wyoming Game & Fish Department	260 Buena Vista Dr. Lander, WY 82520	307-332-2688	<a href="http://gf.state.wy.us">http://gf.state.wy.us</a>
	UW Fremont County Cooperative Extension	450 N. 2nd St. Lander, WY 82520	307-332-1044	<a href="http://uwadmweb.uwyo.edu/uwces">http://uwadmweb.uwyo.edu/uwces</a>
Composting Tree Care	Popo Agie Conservation District	221 S. 2nd St. Lander, WY 82520	307-332-3114	<a href="http://www.popoagie.org">www.popoagie.org</a>
	UW Fremont County Cooperative Extension	450 N. 2nd St. Lander, WY 82520	307-332-1044	<a href="http://uwadmweb.uwyo.edu/uwces">http://uwadmweb.uwyo.edu/uwces</a>
Landscaping & Xeriscape	Fremont County Master Gardener's Program	450 N. 2nd St. Lander, WY 82520	307-332-1044	<a href="http://uwadmweb.uwyo.edu/UWCES/Horticulture.asp">http://uwadmweb.uwyo.edu/UWCES/Horticulture.asp</a>
Construction Permits	Fremont County Planning Department	450 N. 2nd St. Lander, WY 82520	307-332-1077	<a href="http://www.fremontcounty.org/planning.htm">www.fremontcounty.org/planning.htm</a>
Drinking Water Wells	U.S. Environmental Protection Agency (EPA)	999 18th St., Suite 200 Denver, CO 80202	800-227-8917	<a href="http://www.epa.gov/Region8">http://www.epa.gov/Region8</a>
	Wyoming State Engineer's Office	715 Roosevelt Ave. Riverton, WY 82501	307-856-0747	<a href="http://seo.state.wy.us">http://seo.state.wy.us</a>
	Fremont County Planning Department	450 N. 2nd St. Lander, WY 82520	307-332-1077	<a href="http://www.fremontcounty.org/planning.htm">www.fremontcounty.org/planning.htm</a>
Emergency Services	Fremont County Emergency Management	322 N. 8th W. Riverton, WY 82501	307-856-2374	<a href="http://www.fremontcounty.org/emergency.htm">www.fremontcounty.org/emergency.htm</a>
	National Weather Service	12744 W. U.S. Hwy 26 Riverton, WY 82501	307-857-3898	<a href="http://www.crh.noaa.gov/riw">www.crh.noaa.gov/riw</a>
Fisheries	Wyoming Game & Fish Department	260 Buena Vista Dr. Lander, WY 82520	307-332-2688	<a href="http://gf.state.wy.us">http://gf.state.wy.us</a>
	US Fish & Wildlife Service	170 N. 1st St. Lander, WY 82520	307-332-2159	<a href="http://mountain-prairie.fws.gov/wy.html">http://mountain-prairie.fws.gov/wy.html</a>
Grazing & Raising Livestock	UW Fremont County Cooperative Extension	450 N. 2nd St. Lander, WY 82520	307-332-1044	<a href="http://uwadmweb.uwyo.edu/uwces">http://uwadmweb.uwyo.edu/uwces</a>
Hunting & Fishing	Wyoming Game & Fish Department	260 Buena Vista Dr. Lander, WY 82520	307-332-2688	<a href="http://gf.state.wy.us">http://gf.state.wy.us</a>
Irrigation	USDA Natural Resources Conservation Service	221 S. 2nd St. Lander, WY 82520	307-332-3114	<a href="http://www.wy.nrcs.usda.gov">www.wy.nrcs.usda.gov</a>
Livestock Health	Wyoming State Veterinarian	2020 Carey Ave. Cheyenne, WY 82002	307-777-6443	<a href="http://www.wlsb.state.wy.us">www.wlsb.state.wy.us</a>
Livestock Transport	Wyoming Livestock Board	2020 Carey Ave. Cheyenne, WY 82002	307-777-6443	<a href="http://www.wlsb.state.wy.us">www.wlsb.state.wy.us</a>
Noxious Weeds	Fremont County Weed & Pest Control	450 N. 2nd St. Lander, WY 82520	307-332-1052	<a href="http://www.fcwp.org">www.fcwp.org</a>
Septic Systems	Fremont County Planning Department	450 N. 2nd St. Lander, WY 82520	307-332-1077	<a href="http://www.fremontcounty.org/planning.htm">www.fremontcounty.org/planning.htm</a>
Solid Waste Disposal	Fremont County Solid Waste Disposal District	52 Beebe Rd. Lander, WY 82520	307-335-8713	<a href="http://www.trashmatters.org">www.trashmatters.org</a>
Soils	USDA Natural Resources Conservation Service	221 S. 2nd St. Lander, WY 82520	307-332-3114	<a href="http://www.wy.nrcs.usda.gov">www.wy.nrcs.usda.gov</a>

Continued on page 46

APPENDIX CONTINUED

TOPIC	AGENCY	ADDRESS	PHONE	WEB SITE
Recreation	Bureau of Land Management, Lander Field Office	1335 Main St. Lander, WY 82520	307-332-8400	<a href="http://www.wy.blm.gov/lfo/index.htm">http://www.wy.blm.gov/lfo/index.htm</a>
	Shoshone National Forest, Lander Region	333 E. Main St. Lander, WY 82520	307-332-5460	<a href="http://www.fs.fed.us/r2/shoshone/">http://www.fs.fed.us/r2/shoshone/</a>
	Wind River Visitors Council	P.O. Box 1449 Riverton, WY 82501	800-645-6233	<a href="http://www.wind-river.org/">http://www.wind-river.org/</a>
	South Pass City State Historic Site	125 South Pass Main South Pass, WY 82520	307-332-3684	<a href="http://wyoparks.state.wy.us/SPCslide.htm">http://wyoparks.state.wy.us/SPCslide.htm</a>
	Sinks Canyon State Park	3079 Sinks Canyon Rd. Lander, WY 82520	307-332-6333	<a href="http://wyoparks.state.wy.us/scslide.htm">http://wyoparks.state.wy.us/scslide.htm</a>
	Museum of the American West	1445 West Main Lander, WY 82520	307--335-8778	n/a
	Lander Chamber of Commerce	160 North 1st St. Lander, WY 82520	307-332-3892	<a href="http://www.landerchamber.org/default.aspx">http://www.landerchamber.org/default.aspx</a>
	Lander Parks and Recreation	405 Fremont St. Lander, WY 82520	307-332-4647	<a href="http://www.landerwyoming.org/index.html">http://www.landerwyoming.org/index.html</a>
Recycling Disposal	Fremont County Solid Waste Disposal District	52 Beebe Rd. Lander, WY 82520	307-335-8713	<a href="http://www.trashmatters.org">www.trashmatters.org</a>
	Community Entry Services (CES)	52 Beebe Rd. Lander, WY 82520	307-335-7196	n/a
Rural Security	Fremont County Emergency Management	322 N. 8th W. Riverton, WY 82501	307-856-2374	<a href="http://www.fremontcounty.org/emergency.htm">www.fremontcounty.org/emergency.htm</a>
	Fremont County Sheriff's Department	460 Railroad Ave. Lander, WY 82520	307-332-5611	<a href="http://www.fremontcounty.org/sheriff.htm">www.fremontcounty.org/sheriff.htm</a>
	Wyoming Department of Environmental Quality	510 Meadowview Dr. Lander, WY 82520	307-332-3144	<a href="http://deq.state.wy.us/index.asp">http://deq.state.wy.us/index.asp</a>
Stream & Riparian Management	Wyoming Game & Fish Department	260 Buena Vista Dr. Lander, WY 82520	307-332-2688	<a href="http://gf.state.wy.us">http://gf.state.wy.us</a>
	USDA Natural Resources Conservation Service	221 S. 2nd St. Lander, WY 82520	307-332-3114	<a href="http://www.wy.nrcs.usda.gov">www.wy.nrcs.usda.gov</a>
	US Fish & Wildlife Service	170 N. 1st St. Lander, WY 82520	307-332-2159	<a href="http://mountain-prairie.fws.gov/wy.html">http://mountain-prairie.fws.gov/wy.html</a>
Tree Care	Wyoming State Forestry Division	305 S. Smith Rd. Riverton, WY 82501	307-856-8655	n/a
	Fremont County Master Gardener's Program	450 N. 2nd St. Lander, WY 82520	307-332-1052	<a href="http://uwadmnweb.uwo.edu/LWCES/Horticulture.asp">http://uwadmnweb.uwo.edu/LWCES/Horticulture.asp</a>
Water Quality	Wyoming Department of Environmental Quality	510 Meadowview Dr. Lander, WY 82520	307-332-3144	<a href="http://deq.state.wy.us/index.asp">http://deq.state.wy.us/index.asp</a>
	Popo Agie Conservation District	221 S. 2nd St. Lander, WY 82520	307-332-3114	<a href="http://www.popoagie.org">www.popoagie.org</a>
Wildfire/Controlled Burning	Fremont County Fire Protection District	305 S. Smith Rd. Riverton, WY 82501	307-857-3030	<a href="http://www.fremontcountyfirewise.com">www.fremontcountyfirewise.com</a>
	Fremont County Firewise	305 S. Smith Rd. Riverton, WY 82501	307-857-3030	<a href="http://www.fremontcountyfirewise.com">www.fremontcountyfirewise.com</a>
Wildlife Habitat	Wyoming Game & Fish Department	260 Buena Vista Dr. Lander, WY 82520	307-332-2688	<a href="http://gf.state.wy.us">http://gf.state.wy.us</a>
	US Fish & Wildlife Service	170 N. 1st St. Lander, WY 82520	307-332-2159	<a href="http://mountain-prairie.fws.gov/wy.html">http://mountain-prairie.fws.gov/wy.html</a>
Wyoming Water Law	Wyoming State Engineer's Office	715 Roosevelt Ave. Riverton, WY 82501	307-856-0747	<a href="http://seo.state.wy.us">http://seo.state.wy.us</a>



Justin Moore