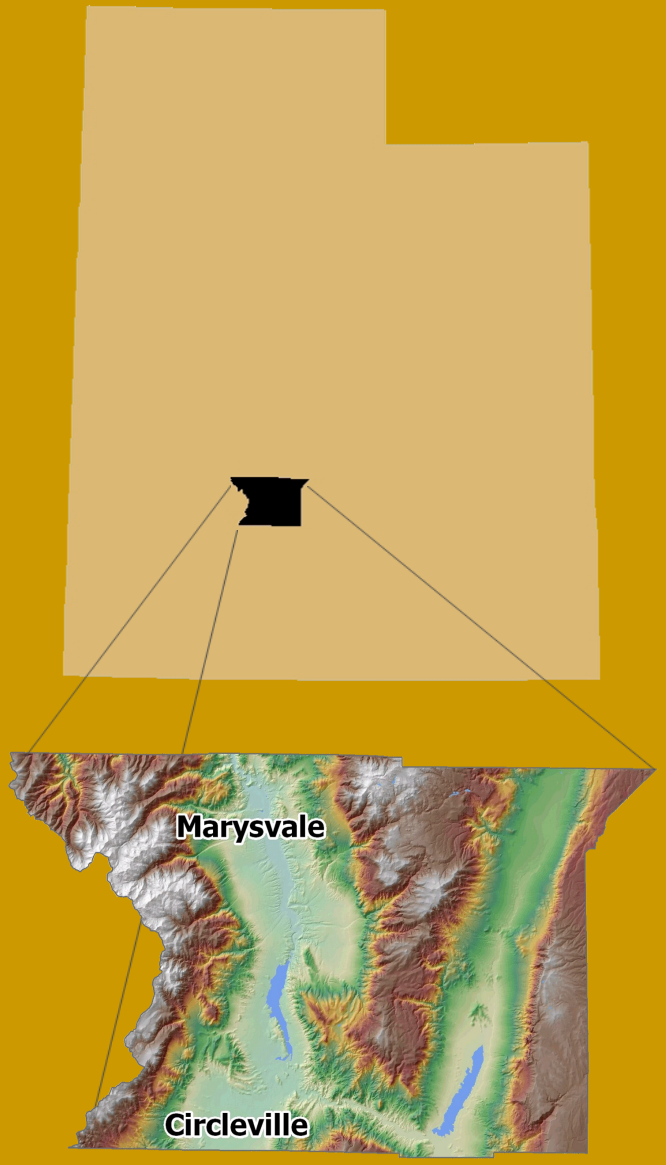
Piute County Resource Assessment

MARCH 2013



Conserving Natural Resources For Our Future

PIUTE CONSERVATION DISTRICT

UACD
Utah Association of Conservation Districts

UDAF
Utah Department of Agriculture and Food

USDA NRCS Natural Resources Conservation Service

Acknowledgments

Piute Conservation District (Piute County)
with the:
Utah Association of Conservation Districts
Utah Department of Agriculture and Food
Natural Resources Conservation Service

In partnership with the:
Utah Conservation Commission
Utah Conservation Districts Zone 4
Utah Association of Conservation Districts
Utah Department of Agriculture and Food
Utah Department of Environmental Quality
Utah Department of Natural Resources
Utah School and Institutional Trust Lands Administration
Utah State University Extension
Utah Weed Supervisor Association

Utah Partners for Conservation & Development (UPCD)
State Agencies and Organizations:
Utah Association of Conservation Districts
Utah Department of Agriculture and Food
Utah Department of Community and Culture
Utah Department of Environmental Quality
Utah Department of Natural Resources
Utah Resource Conservation & Development Councils
Utah School and Institutional Trust Lands Administration
Utah State University Cooperative Extension Service
Utah Energy Office

Federal Agencies:
U.S. Department of Interior
Bureau of Land Management
U.S. Fish and Wildlife Service
Bureau of Reclamation
U.S. Department of Agriculture
U.S. Forest Service
Natural Resources Conservation Service
Agriculture Research Service
Farm Service Agency

Other
State Historical Preservation Office
Governor's Office of Planning and Budget
Piute County Commission

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Many thanks to all those that have made comments and suggestions for this project.

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Piute County Resource Assessment: Executive Summary

Piute CD Board: George Allen, Joel Johnson, Wade Westwood, Cindy Stanton, and Deven Gass.

Why a Resource Assessment?

The Piute Conservation District has developed this resource assessment with the goal that conservation efforts in the county address the most important local resource needs. This report identifies natural and social resources present in Piute County and details specific areas of concern. Local, state, and regional entities can use this assessment to develop county resource management plans or to target conservation assistance needs.

We recognize that all who could have provided information may not have had the opportunity. This document is dynamic and will be updated as additional information is available.

Your comments are requested:

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Natural Resource Priorities and Concerns

The Piute Conservation District has identified five natural resource priorities and concerns. These priorities receive special emphasis because of their immediate significance to Piute County.

1. **Improve water quality, quantity, and irrigation efficiency.**
2. **Control and/or eradicate invasive plants and weeds.**
3. **Reduce the erosion of soil by either wind or water.**
4. **Adequate marketing for agricultural products.**
5. **Prevent loss of open space for agricultural lands.**

General Resource Observations

Natural and social resources are categorized as soil, water, air, plants, animals, and humans (SWAPA + H). This assessment describes the general condition of these resources and highlights additional concerns in each category. As opportunities become available to address these issues, and as circumstances change, their emphasis should be elevated accordingly.

Introduction

The Conservation District Movement

The Dust Bowl of the 1930's brought the beginning of national programs for conserving soil and water resources in the United States. On April 27, 1935, Congress declared soil erosion "a national menace" and established the Soil Erosion Service. Since then, the agency was changed to the Natural Resources Conservation Service (NRCS). In May of 1936, farmers were allowed to set up their own districts to direct soil conservation practices. Today, Utah has 38 conservation districts.

Conservation Progress

Since the organization of the Piute Conservation District in 1945, great strides have been made toward increasing and sustaining natural resources in Piute County. The District provides assistance to farmers in soil and water conservation and improved land use.

Public Outreach

In 2008, the Piute Conservation District conducted a survey to find out how others viewed the county's natural resources and what conservation issues were most pressing. Respondents indicated that the issues of highest concern were: 1) improved irrigation water management, 2) controlled invasive species and noxious weeds, 3) reduced soil erosion by wind and water, 4) increased agricultural sustainability, and 5) maintained open space for agriculture.

Conservation districts provide local leadership and education to connect private property owners with state and federal assistance to improve, protect, and sustain Utah's soil, water, and related natural resources.

A great "roller" moves across the land during the Dust Bowl.

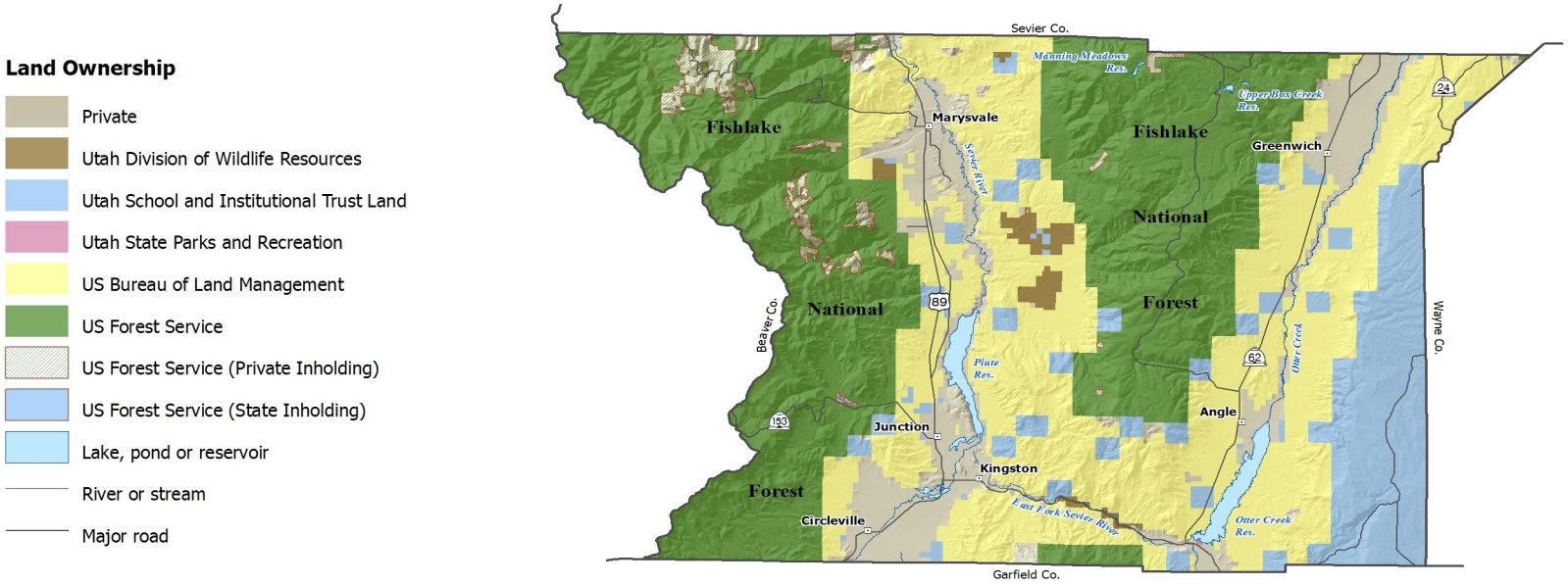
Mine building. *Photo by David Pace.*

Piute County Overview

Background and Landownership

Piute County was once home to both the Fremont Indians and, much later, the Piute Indians—the county's name sake. Later, in 1864, the towns of Circleville and Junction were settled by Mormon pioneers. The area became a mining area in 1868 and was labeled the Gold Mountain district. Towns, such as Marysvale, were built during this time. Several mining products have come from this area including gold, zinc, alunite, and uranium. These products were very important during World War I and II and may be important in the future, since there still remains areas that could be mined.
The Piute Conservation District includes all of Piute County, with the exception of a small eastern portion that is in the Fremont River CD. The boundary between these two districts is located along the Parker Mountain Divide. It is bounded on the north by Sevier County and on the west by Beaver County. The south boundary is the Garfield-Piute County line. The district contains approximately 481,000 acres, with about fourteen percent of this land being privately owned.

Land Ownership in Piute County



Piute County

Left to right, clockwise: Canyon of Gold tour, *photo by David Pace*; Butch Cassidy's childhood home, *photo by Lynn Koyle;* Tushar Mountains, *photo by Terry Balch;* Installing a pump and pivot using EQIP and ARDL, *photo by David Pace.*

Water Quantity, Quality & Irrigation Efficiency

Water supply for Piute County comes from mountain snowpack to stream, rivers and creeks, ground water springs and a minimal amount from pump wells. Perennial streams serving parts of the district are: Beaver Creek, Cottonwood Creek, Bullion Creek, Manning Creek, Sevier River (South and East Forks), City Creek, Loss Creek and Circleville Creek.

Challenges

Although the Otter Creek and Piute Reservoirs are located in Piute County, only 800 acres around Kingston can be irrigated with any of the water stored in the reservoirs.

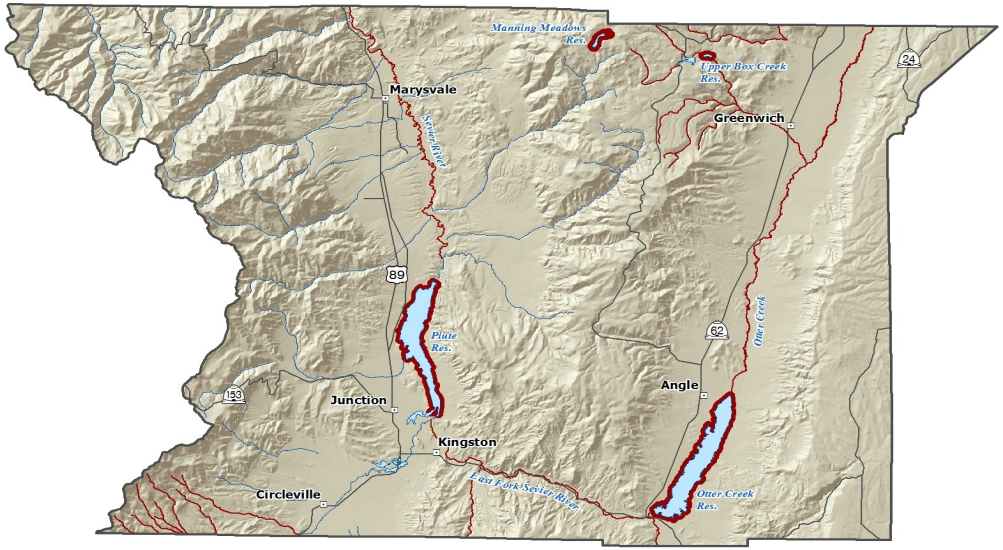
Resource Management, Needed Actions & Projects

- The Piute Conservation District has several recommendations that could improve water quantity, quality, and irrigation efficiency and management. Among these are to continue to take advantage of federal, state, and local programs that provide funding and technical assistance resources.
- The FY 2013 Piute County Local Work Group recommendations include a project for West Canal users irrigation improvement and a project for Circleville Transmission Line and Upper Canal. The Natural Resource Conservation Service is working with producers in the West Canal area and the Circleville area to better manage their irrigated cropland.
- A Water Quality Plan has been developed for the Middle/Lower Sevier River Watershed, and federal, state, local, and private funding is being used to reduce non-point source pollution from animal feeding operations and soil erosion.

Impaired Waters in Piute County

Impaired Waters 2006

- Supporting lake, pond or reservoir
- Non-supporting lake, pond or reservoir
- Supporting river or stream
- Non-supporting river or stream
- Major road



Invasive plants and weeds

The control of invasive species is a crucial part of improving the range resource.

Challenges

- Invasive species are increasing and they are reducing the amount of forage available for livestock and wildlife.
- Monocultures of these species, such as pinyon-juniper and sagebrush, lead to uncontrolled wildfire, increased soil erosion, and non-native annuals such as cheat grass.

Resource Management, Needed Actions & Projects

- Educate the public on invasive species.
- Continue working with conservation partners for technical assistance and funding.
- Identify new weeds in the area and control them before they become widespread.
- The FY 2013 Piute County Local Work Group recommendations include a project for noxious weed control and stream bank stabilization. This project is primarily between Circleville and the Kingston Bridge, and curly dock is the main focus.
- The control of invasive plants and weeds includes prescribed burns, biological and mechanical methods, and herbicide use to prevent wildfire, habitat degradation, and unproductive monocultures.

Outreach

- Cooperate and advocate the continued efforts of the Piute County Weed Board, County Commissioners, and Weed Spray Supervisor in controlling invasive species and noxious weeds.
- Cooperate with the local Cooperative Weed Management Area (CWMA) and be an advocate for the area.

Soil erosion

Controlling erosion not only sustains the long-term productivity of the land but also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters.

Challenges

- Flash floods.
- Erosion of the main irrigation water conveyance canals and ditches.
- Increased erosion on rangeland infested with monocultures of pinion-juniper, sagebrush, and other invasive vegetation.

Resource Management, Needed Actions & Projects

- The implementation of Best Management Practices (BMP's) dealing with irrigation and re-vegetation of rangeland, using ARDL, GIP, EQIP, WHIP, etc., is needed to protect soils from erosion.

Outreach

Continue a close working relationship with the Natural Resource Conservation Service and local irrigation companies.

Non-Point Source (NPS) 319 funding project in Piute County. Erosion due to flooding.
Photo by Lynn Koyle.

Natural Resource Priorities and Concerns

After rock-barbs and rip-rap were built. *Photos by Lynn Koyle.*

Marketing for Agricultural Products

Challenges

- Distance to auctions for livestock.
- Distance to viable market for alfalfa.

Resource Management, Needed Actions & Projects

- Increase the use of video auctions for livestock.
- Promote contacts with reputable hay brokers.
- The Piute CD encourages the Utah Department of Agriculture and Food and the Utah State University Extension to continue to help market agricultural products.

Livestock auction in Utah. *Photo from deseretnews.com.*

Loss of Open Space for Agricultural Lands

The majority of the federally owned ground in Piute County is under the jurisdiction of the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM). Portions are maintained as recreation areas. The state owned ground is primarily under the jurisdiction of the Utah School and Institutional Trust Land Administration (SITLA). The private ground is primarily farmland and grazing areas. The grazing of domestic livestock is an important part of Piute County's agriculture. Grazing requires a lot of open space.

Challenges

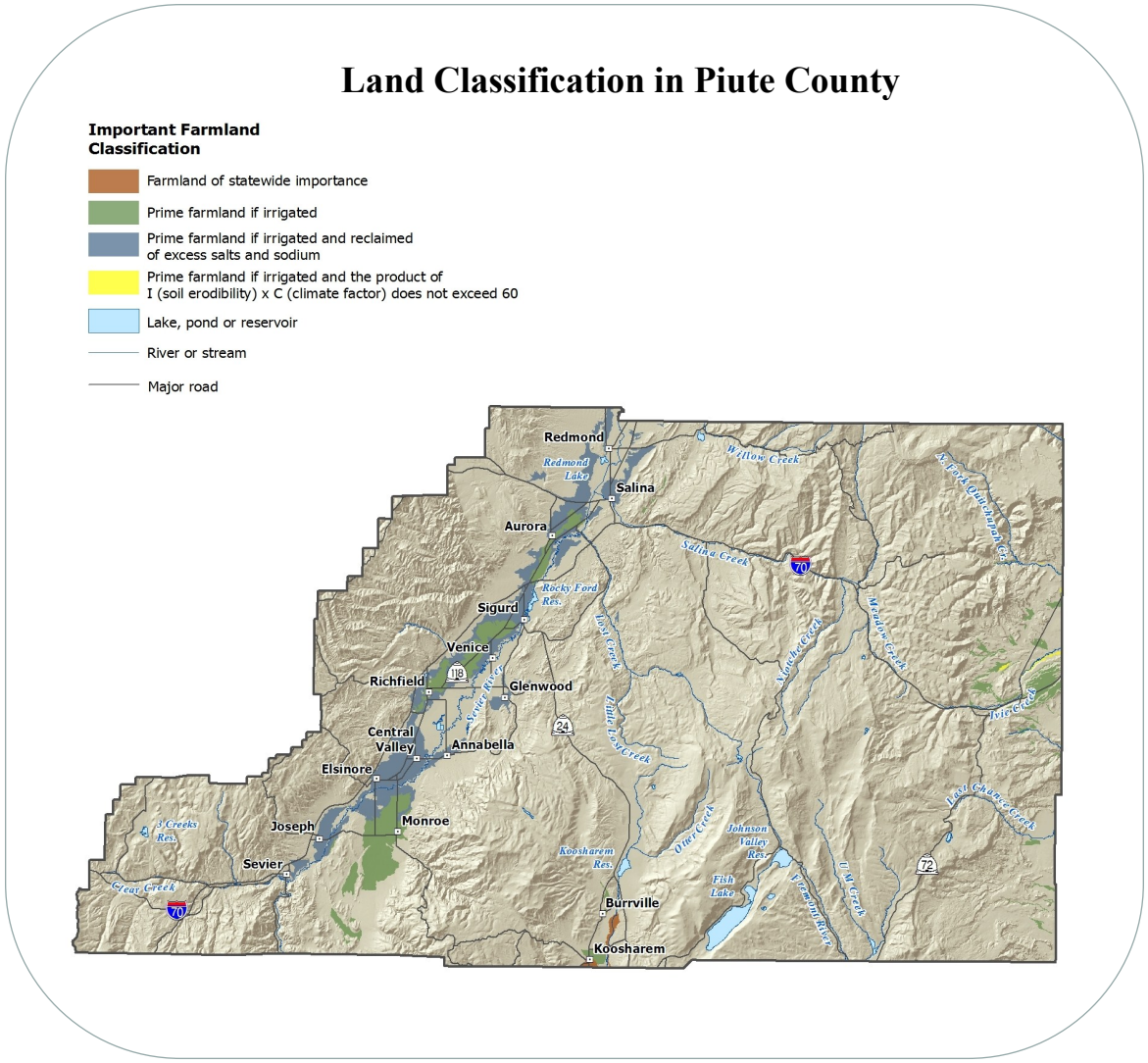
- Federal land management agencies that designate limited access, wilderness, wilderness study, or wild lands areas essentially close open space for agricultural uses.

Resource Management, Needed Actions & Projects

- Close correlation between the Piute County Commission and the Piute Conservation District.
- The Piute CD encourages UDAF and UACD to increase their assistance in keeping farmers informed about the Agricultural Protection Area Act (APA) and other programs that preserve and maintain open space.

Outreach

Invite County Commissioners, Forest Service, and BLM personnel to District meetings.

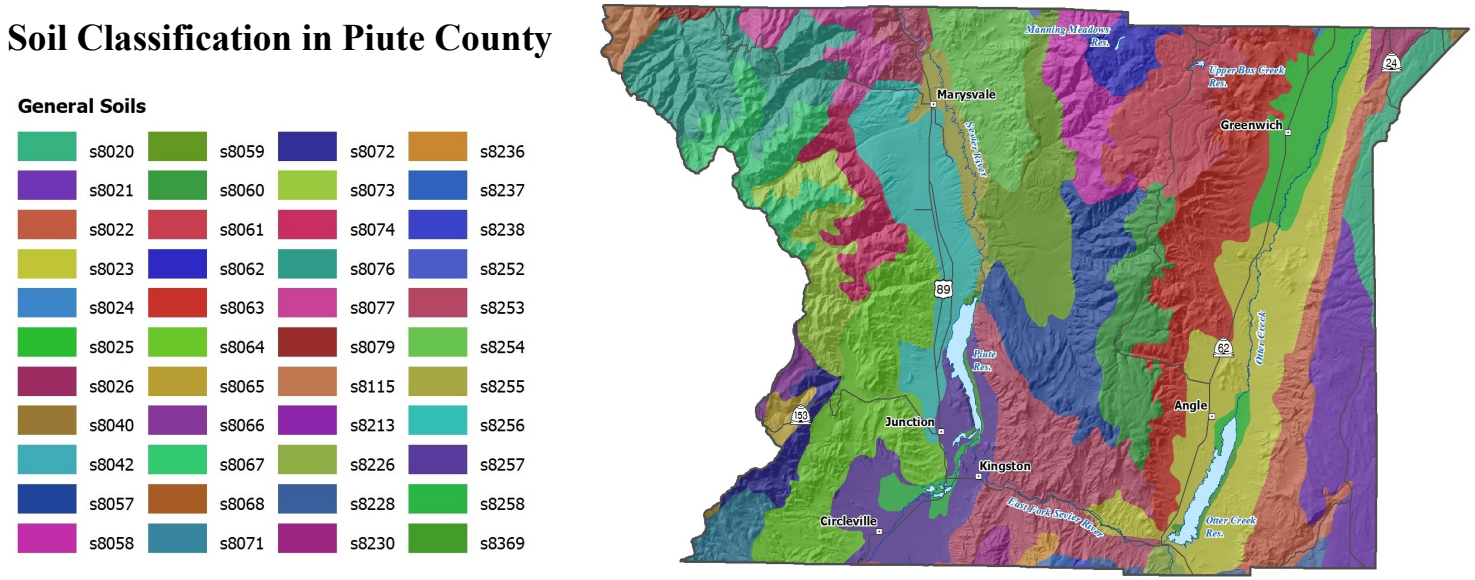


Soil • Water • Air & Climate • Plants • Animals • Humans

The NRCS conducts resource inventories to help resource managers make land use decisions. The reports evaluate the soil, water, air, plants, and animals and are discussed below. The Piute Conservation District used these inventories to determine its priority concerns for this assessment and in its long range planning process.

Soil

The soils in Piute County are a result of erosion of sedimentary and igneous rocks from the adjacent mountains. They are generally loam and clay loam on the valley floor, with coarser materials on steep land. Valley soils are generally deep with cobble-ly or gravelly sub-soils. Soils on the steeper mountain slopes vary in depth an over igneous bed rock. Slopes range from one percent in the valley bottoms to near perpendicular in the mountainous areas. A water table and some surface salt accumulation is common along the rivers.



Information on the soils in Sevier County can be obtained from the Web Soil Survey (WSS), located at: http://websoilsurvey.nrcs.usda.gov/. The soil survey provides data and information produced by the National Cooperative Soil Survey, a nationwide partnership of federal, regional, state, and local agencies and private entities and institutions. The WSS allows a user to: 1) define an area, 2) view the survey boundaries and soil types overlaid on a photo, 3) explore various interpretations, and 4) print maps and descriptive information.

The soil survey delineates and describes large areas of similar soils. Common uses are evaluating soil suitability for dwellings with basements, landscaping, roads, and septic systems and measuring for vegetative productivity and chemical and physical properties. Using this information, agriculture producers, agencies, counties, and municipalities know the various soil suitability's and are alerted to soil limitations. This basic resource information is critical when making land-use and management decisions. When limitations are identified, on-site investigations should be conducted by a soil scientist or soil engineer.

Water

Water for culinary use comes from mountain springs or wells that are piped to the towns' water systems. There are many perennial streams in the District. Ephemeral streams, ground water springs, and drilled wells furnish additional water to the District. There are fifteen irrigation companies that furnish water to local stackholders in the District. In addition, there are several small lakes and reservoirs in the District.

Water Quality

The Total Maximum Dairy Loads (TMDL's) have identified sediment and phosphorus as the primary sources of water pollution coming from irrigated lands, rangelands, and stream banks. Best Management Practices (BMP) that are used to correct the problem are improved irrigation efficiencies, improved stream banks, riparian work, and improved range health.

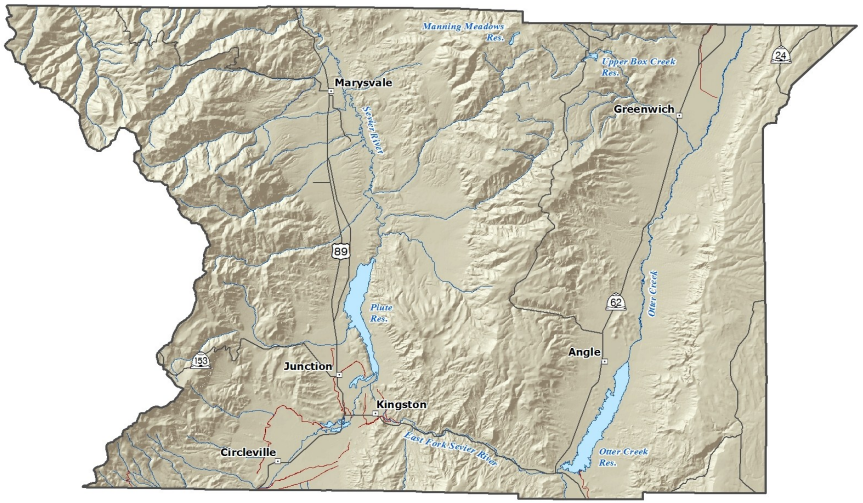
Water Quantity

The precipitation averages six to twelve inches in the valleys and twenty inches in the mountain areas. None of the water from the Upper-Sevier Watershed, which includes the Koosharem and Otter Creek Reservoirs and the flow of the Upper-Sevier River, can be used by Piute County farmers. Only the water which enters the Sevier River between Panguitch and Circleville can be diverted for irrigation by farmers in the Circleville and Junction areas. The farms in Marysvale are irrigated from Bullion and Beaver Creeks. The reservoirs usually do not contain enough water for the entire growing season. Springs and wells are also used for irrigation. Strict management of the reservoirs, canals, ditches, etc. is needed to provide irrigation water. Efficient on-farm irrigation systems, such as sprinklers, gated pipes, etc., are needed to make the best use of limited water supplies. Efficient irrigation systems also reduce sedimentation and nutrient and salinity impacts on water quality.

Water Sources in Piute County

Lakes, Rivers and Canals

- Lake, pond or reservoir
- River or stream
- Canal or ditch
- Major road



Air & Climate

Air Quality

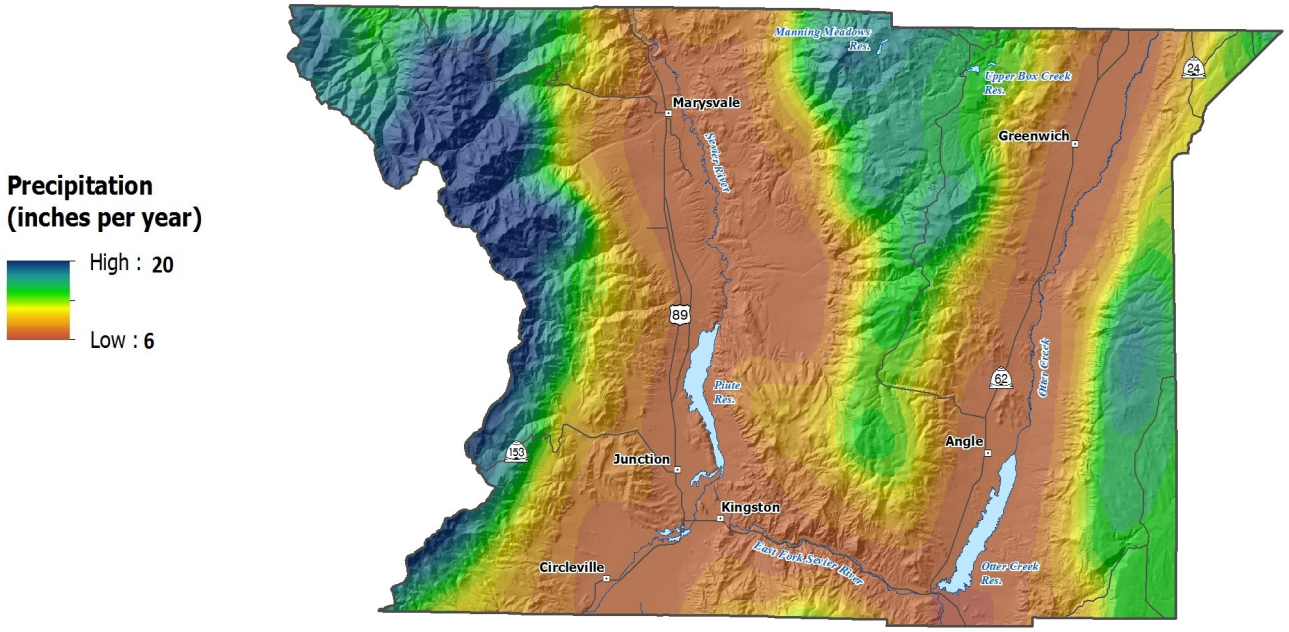
The air quality in the Piute Conservation District is in good condition due to the rural nature of the area. Air quality may be slightly decreased during wild land fires. The major sources of pollutants are from outside the area and beyond local control.

Climate

There are wide, local variations in climate in Piute County. The average temperatures range from 100ºF in the summer to -20ºF in very cold winters. The frost free period varies from 90 days in Angle to 97 days in Marysvale to and 153 days in Circleville.

The precipitation averages from six to twelve inches in the valleys and twenty inches in the mountain areas, with 45 to 55 percent of the precipitation occurring during the summer months.

Annual Precipitation in Piute County



NRCS Snow Survey

The NRCS Snow Survey Program provides mountain snow pack data and stream flow forecasts for the western United States. Common applications of snow survey products include water supply management, flood control, climate modeling, recreation, and conservation planning. NRCS operates three SNOTEL (SNOwpack TE-Lemetry) sites within Piute County. The SNOTEL sites of Big Flat, Kimberly Mine, and Squaw Springs monitor conditions for Piute County.

Big Flat SNOTEL site. *Photo by NRCS.*

Plants

Crops and Pasture

Pasturelands in the county are in poor to fair condition. Species have gone from high value to low value. Compaction has reduced infiltration, increased runoff, and reduced the filtering capacity of these lands.

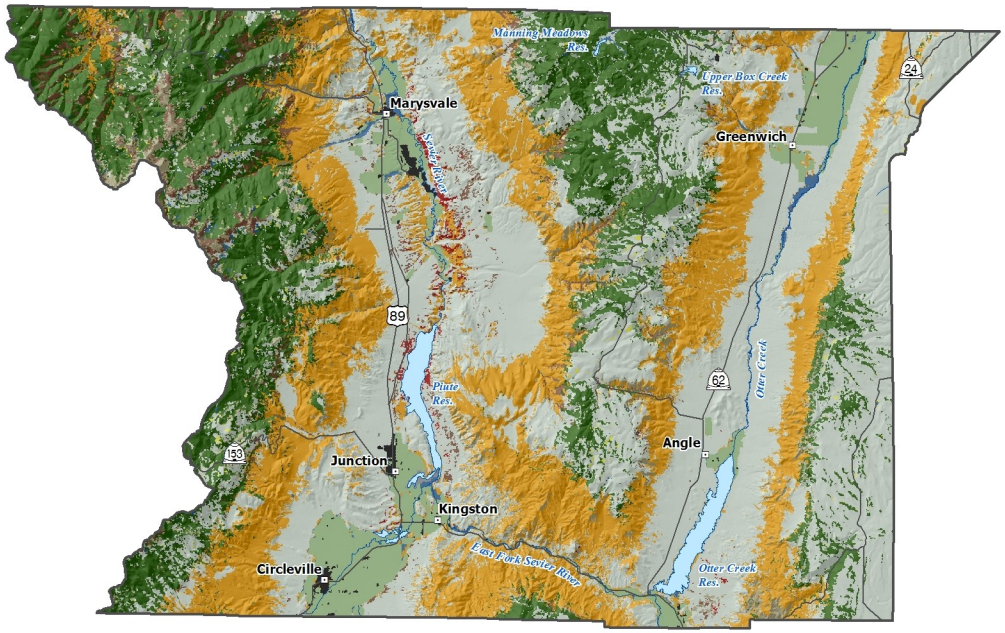
Rangeland

Rangeland health in the shrub-steppe is declining, which has increased the erosion off the rangelands and lowered the productive potential of these lands for livestock and wildlife. Thousands of acres of closed sagebrush stands have lost species diversity. Grazing capacity of all rangelands depends on the amount of annual precipitation received. Invasive species such as tamarisk, Russian olive, Curly Dock, and decadent stands of sagebrush reduce forage production. Poisonous plants, such as halogeten, loco weed, and larkspur, are a recurring problem.

Land Cover Distribution in Piute County

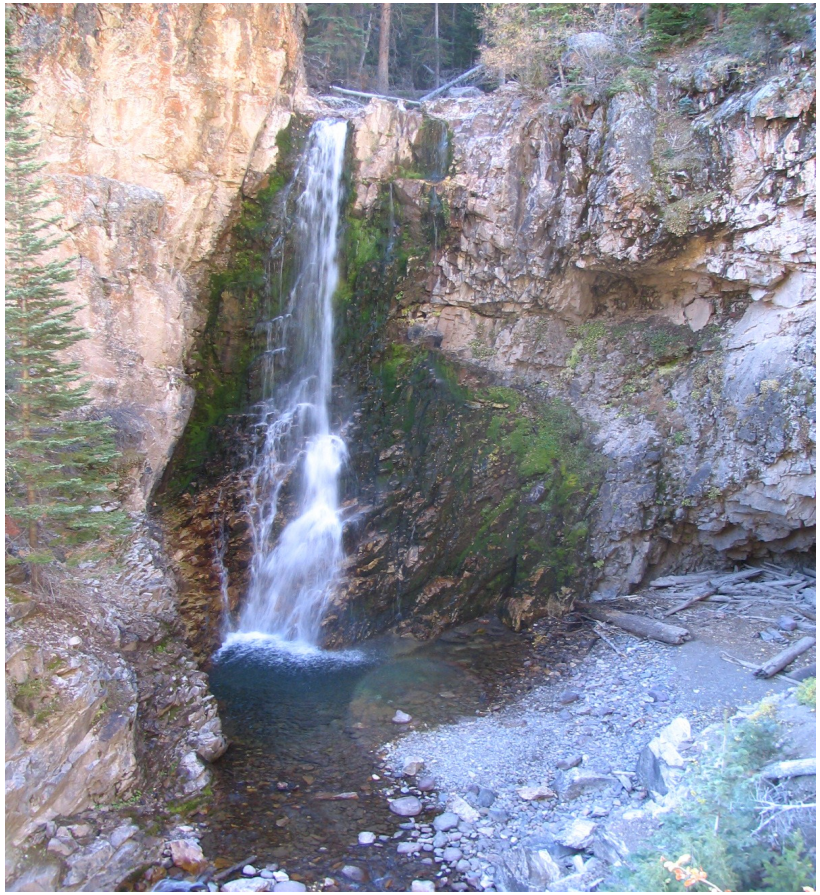
Land Cover

- Sagebrush - 207,096 ac.
- Pinyon-Juniper Woodland - 123,616 ac.
- Forestland - 94,358 ac.
- Agriculture - 25,243 ac
- Rock\Barren\Sand Dune - 13,719 ac.
- Other Shrublands - 12,592 ac.
- Riparian Area - 3,377 ac.
- Developed - 1,783 ac.
- Salt Desert Shrubland - 1,763 ac.
- Grassland - 847 ac.
- Lake, pond or reservoir
- River or stream
- Major road



Forest and Woodland

The Fishlake National Forest, located in south-central Utah, encompasses 1.5 million acres in Beaver, Garfield, Iron, Juab, Millard, Piute, Sanpete, Sevier, and Wayne Counties. The forest features majestic stands of aspen encircling open mountain meadows that are lush with a diverse community of forbs and grasses. The Beaver Ranger Districts includes Piute County.



Bullion Falls. *Photo from Fishlake Forest Service.*

The following weeds are officially designated and published as noxious for the State of Utah, as per the authority vested in the Commissioner of Agriculture and Food under Section 4-17-3, Utah Noxious Weed Act.

- Bermuda grass (*Cynodon dactylon*)
- Black henbane (*Hyoscyamus niger*)
- Broad-leaved peppergrass (*Lepidium latifolium*)
- Canada thistle (*Cirsium arvense*)
- Dalmation toadflax (*Linaria dalmatica*)
- Diffuse knapweed (*Centaurea diffusa*)
- Dyers woad (*Isatis tinctoria*)
- Field bindweed (wild morning-glory) (*Convolvulus arvensis*)
- Hoary cress (*Cardaria drabe*)
- Houndstounge (*Cynoglossum officianale*)
- Leafy spurge (*Euphorbia esula*)
- Medusahead (*Taeniatherum caput-medusae*)
- Musk thistle (*Carduus mutans*)
- Ox-eye daisy (*Chrysanthemum leucanthemum*)
- Perennial sorghum (*Sorghum halepense & Sorghum almum*)
- Poison hemlock (*Conium maculatum*)
- Purple loosestrife (*Lythrum salicaria*)
- Quackgrass (*Agropyron repens*)
- Russian knapweed (*Centaurea repens*)
- Saltcedar (*Tamarix ramosissima*)
- Scotch thistle (*Onopordum acanthium*)
- Spotted knapweed (*Centaurea maculosa*)
- Squarrose knapweed (*Centaurea squarrosa*)
- St. Johnswort (*Hypericum perforatum*)
- Sulfur cinquefoil (*Potentilla recta*)
- Yellow starthistle (*Centaurea solstitialis*)

Animals

Livestock

Livestock represents most of the agricultural income in the district. The largest industry is beef cow and calf operations. Other important industries are beef feedlots, dairy, and sheep. One major source of income is from beef cattle. Dairy cattle and sheep also contribute to the economy of the county. There is considerable summer range in the high mountains and spring and winter range in the low hills.

Endangered and At-Risk Species

There are several threatened species that live in Piute County that are of special concern. They are the:

- Greater sage-grouse
- Utah prairie dog

In 2010, USDA launched a new effort to sustain and conserve greater sage-grouse populations in the West. The NRCS is using popular conservation programs, including the Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Inventive Program (WHIP), to assist producers in eleven western states to simultaneously improve habitat for sage-grouse and improve sustainability and productivity of their native rangelands.

The Parker Mountain Greater Sage-grouse Conservation Plan is the culmination of over eight years of effort by the Parker Mountain Adaptive Resource Management Local Working Group (PARM). PARM members include representatives from state and federal land management and resource agencies, non-governmental organizations, private industry, and private landowners. Projects to improve habitat have been successfully implemented.

Greater sage-grouse.
Photo from utahwildlifephotos.com.

At-Risk Species

Included on Utah's State Listed Conservation Species Agreement with the U.S. Fish and Wildlife Service and Species of Concern in Piute County:

- **American White Pelican**
- **Bald Eagle**
- **Big Free-Tailed Bat**
- **Black Swift**
- **Bonneville Cutthroat Trout**
- **Brown Bear**
- **Burrowing Owl**
- **Canada Lynx**
- **Greater Sage-Grouse***
- **Kit Fox**
- **Northern Goshawk**
- **Short-Eared Owl**
- **Three-Toed Woodpecker**
- **Utah Prairie Dog**

This list was compiled using known species observations from the Utah Natural Heritage Program within the last 20 years. A comprehensive species list, which is updated quarterly, can be obtained from the Utah Division of Wildlife Resources website at: dwrcdc.nr.utah.gov/ucdc/.

*Greater sage-grouse status as a candidate species is verified and confirmed from U.S. Fish & Wildlife Service News Release *Interior Expands Common-Sense Efforts to Conserve Sage Grouse Habitat in the West*, dated 3/5/10, available at: www.fws.gov/news/NewsReleases/.

Wildlife and Aquatic Life

Piute County has some of the best hunting and fishing in the state. Deer are found in two herds units in the District. Other big game includes elk, mountain goats, mountain lions, bears, and coyotes.

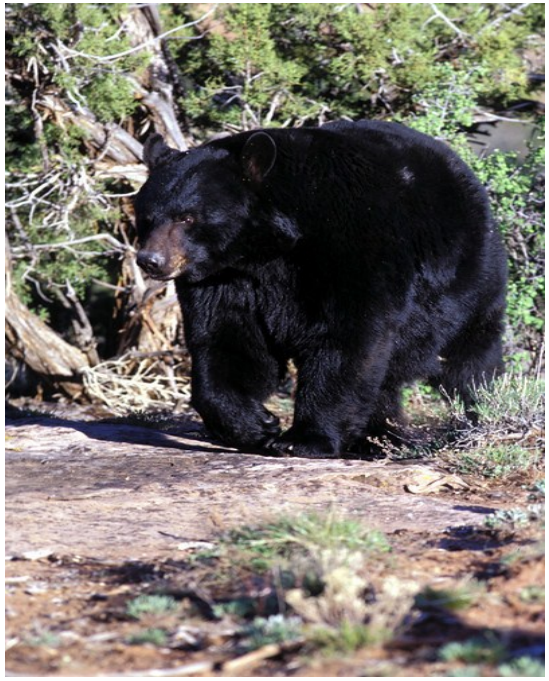
Small game, such as pheasants, quail, chukars, ducks, geese, doves, wild turkey, and some rabbits, are also found in the District.

Piute County has a variety of fish that includes rainbow, brown, brook, and Colorado River cutthroat trout.

Rio Grande turkey.
Photo from utahwildlifephotos.com.

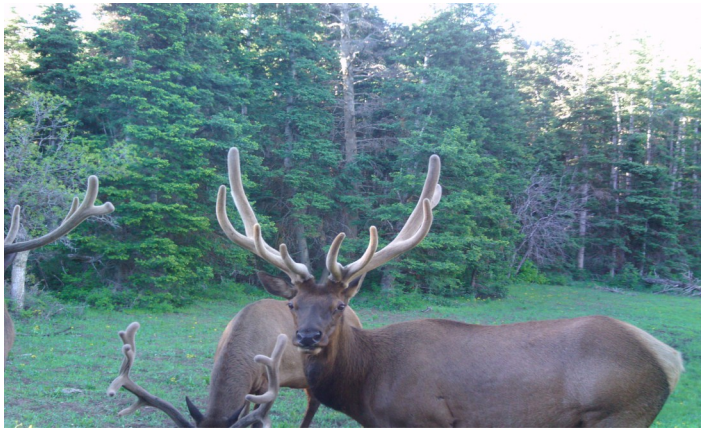
Local Animal Priorities

- No transplant of wolves.
- Increase coyote, and other predator, control.
- No more transplants of aquatic species.
- No more transplants of endangered species of any kind.
- Reduce impact of elk on aspen regeneration.
- Increase numbers of mule deer.



Black Bear. *Photo from utahwildlifephotos.com.*

Rocky Mountain goats. *Photo from utahwildlifephotos.com.*



Rocky Mountain elk. *Photo by Cullen Balch.*

Humans: Social and Economic Considerations

Population

As of 2011, the total Piute county population is 1,544, which has grown 8.43% since 2000. The population growth rate is much lower than the state average rate of 23.77% and is lower than the national average rate of 9.71%.

Economy/Labor Market

Piute County began as an agricultural area and remains so today. Metals and minerals became a significant part of the local economy during World War I & II but have since declined. Piute County, at one time, held vast mineral wealth, from uranium to alunite, from gold to tale. Piute County has the world's largest alunite deposits and is the largest producer of primary-type uranium ore (Autunite Uraninite) in the United States.

More than one-third of the county's labor positions are in leisure and hospitality services. Piute County's nonfarm jobs are dominated by the government—which includes public education. Roughly 42 percent of all nonfarm employment in the county can be found in government offices and schools. Trade, transportation, and leisure and hospitality services also provide jobs for many workers. A large share of Piute residents commute to other counties for employment.

Piute County Population Data

Area name	Piute
Period Year	2011
Population	1,544
Births	18
Deaths	22
Natural Increase	-4
Net Migration	-8
Annual Change	-12
Annual Rate of Change	-0.8 %

Source: Utah Population Estimates Committee
http://www.governor.state.ut.us/dea/UPEC.html

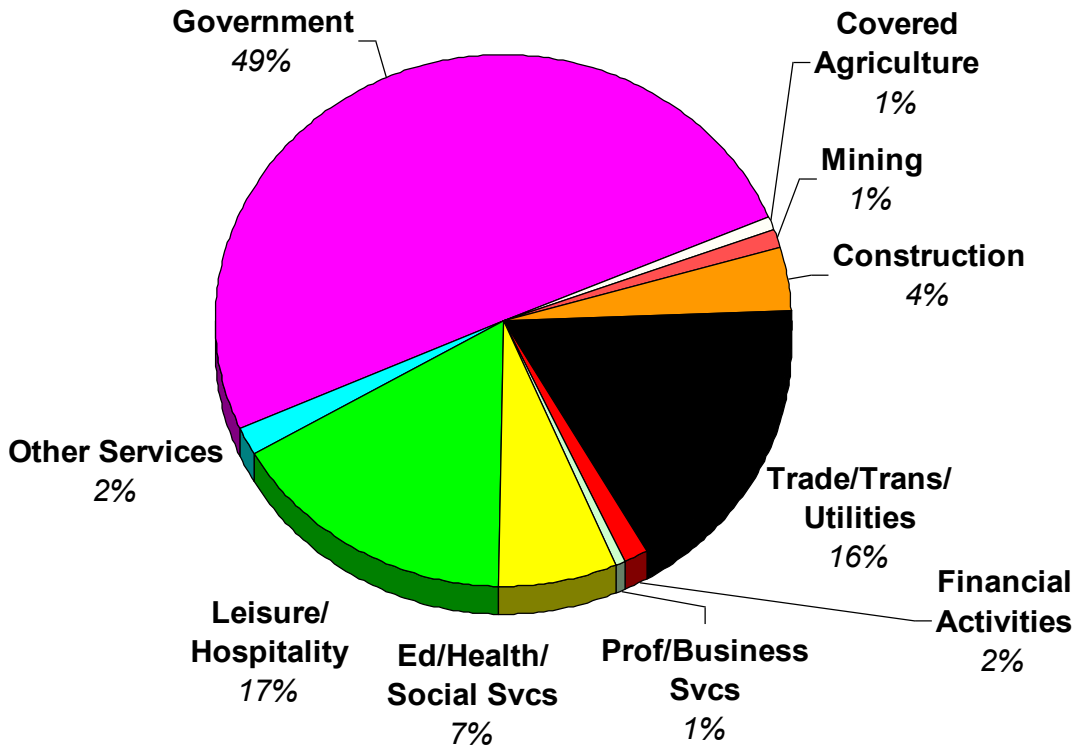
Recreation

Exploring Piute County unveils a world of things to see and do all year round. Outdoor enthusiasts will discover a recreational paradise on the 12,000 foot high Tushar Mountains and in the Fishlake and Dixie National Forests. Mountain biking, hiking, horseback and ATV riding, fishing, rock hounding, camping, and picnicking are some of the popular warm weather activities. In winter, the snow-covered mountains are perfect for snowmobiling, cross-country skiing, and downhill skiing at Elk Meadows Ski and Summer Resort. In the fall, the forests are ablaze with brilliant golden aspens and deep green pines and spruce. In the lower elevations, there are rodeos, rafting, gold panning, horseback riding, and sightseeing. Otter Creek and Piute Lake State Parks offer boating, fishing and sports in the summer and ice fishing in the winter.

ATV riders will find leisurely family-type riding along the Paiute ATV trail. The Paiute ATV Trail is a 278 mile-long loop course that crosses mountain ranges, rugged canyons, and deserts in south central Utah.

Fishing at Piute Reservoir. *Photo by Tracy Balch.*

2009 Piute County Jobs Distribution by Industry



Source: Utah Department of Workforce Services.

References & Credits

References

County Overview

1. Piute County. *Piute County*. Retrieved from http://www.uen.org/counties/piute.shtml.
2. Wikipedia. *Piute County, Utah*. Retrieved from http://en.wikipedia.org/wiki/Piute_County,_Utah.
3. Piute County. *A Brief History of Piute County.* Retrieved from http://pioneer.utah.gov/research/utah_counties/piute.html.

PRIORITY CONCERNS

Water Improvement

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Agriculture and Food. Retrieved from www.ag.utah.gov.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. Piute CD Long Range Plan.

Invasive Species Control

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Agriculture and Food. Retrieved from www.ag.utah.gov.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. US Fish and Wildlife Service. Information provided by Clint Wirick, USFWS.
5. Piute CD Long Range Plan.

Soil Erosion

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Agriculture and Food. Retrieved from www.ag.utah.gov.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. US Fish and Wildlife Service. Information provided by Clint Wirick, USFWS.
5. Piute CD Long Range Plan.

Agricultural Marketing

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Agriculture and Food. Retrieved from www.ag.utah.gov.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. Piute CD Long Range Plan.

Prevent Loss of Open Space

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Agriculture and Food. Retrieved from www.ag.utah.gov.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. Piute CD Long Range Plan.

GENERAL RESOURCE OBSERVATIONS

Soil

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Soil Survey of Piute County Utah, created by the U.S. Dept. of Ag., Soil Conservation Service, in cooperation with U.S. Dept. of the Interior, Bureau of Land Management, and the Utah Agricultural Experiment Station.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. Piute CD Long Range Plan.

Water

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
3. Piute CD Long Range Plan.

Air and Climate

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
3. Piute CD Long Range Plan.

Plants

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Agriculture and Food. Retrieved from www.ag.utah.gov.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. Piute CD Long Range Plan.

Animals

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Division of Wildlife Resources. Information provided by Kendall Bagley, DNR.
3. US Fish and Wildlife Service. Information provided by Clint Wirick, USFWS.
4. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
5. Piute CD Long Range Plan.

Humans

1. Piute CD Board. (Multiple 2011-2013). Board Meetings.
2. Utah Department of Workforce Services. *Piute County Fact Sheet.* Retrieved from jobs.utah.gov/wi/regions/western/piute/piutefs.pdf.
3. Utah NRCS. *Piute County Resource Assessment*. Retrieved from www.ut.nrcs.usda.gov/technical/nri/RA-piute.html.
4. Piute CD Long Range Plan.