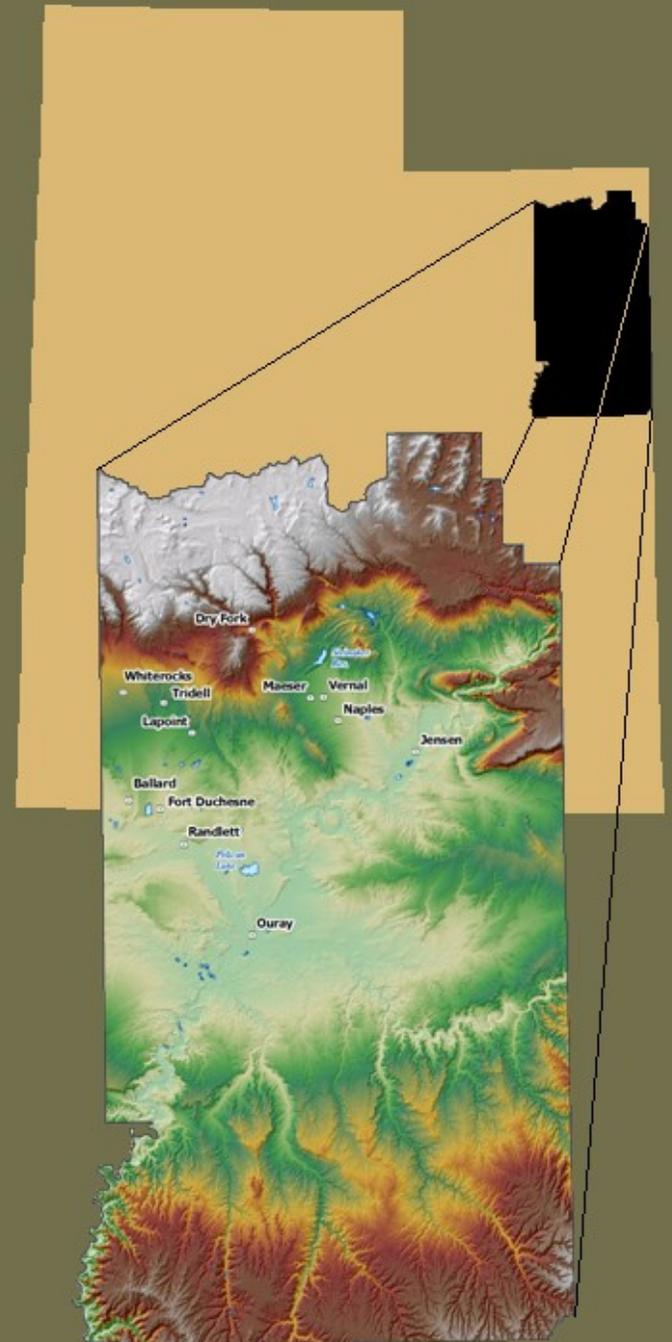


# UINTAH COUNTY RESOURCE ASSESSMENT

JANUARY 2012

*Conserving Natural Resources For Our Future*

UINTAH COUNTY CONSERVATION DISTRICT



## Acknowledgments

### Uintah County Conservation District

*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 6  
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

### UtahPCD

#### 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  
Uintah County Commission

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

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# Executive Summary



## Why a Resource Assessment?

The Uintah County 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 Uintah 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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Vernal, Utah 84078-2028  
Phone: (435) 789-2100

## Natural Resource Priorities and Concerns

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

1. **Water Quality and Quantity**
2. **Surface and Mineral Rights**
3. **Weeds-Riparian Health**
4. **Pasture and Rangelands**
5. **Air Quality**
6. **Sage Grouse**

## 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.

- **Soil**
- **Water**
- **Air/Climate**
- **Plants**
- **Animals**
- **Humans**

# 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, which are divided into seven zones.

## Conservation Progress

Since the organization of the Uintah Basin Conservation District in 1940, which included Duchesne and Uintah Counties, great strides have been made toward increasing and sustaining natural resources. In 1990, the Uintah Basin Conservation District was split by county and formed the Uintah County Conservation District. Board members serve on various other boards in efforts to address natural resources needs. Resource assessments have provided a framework for future direction in addressing those needs. This resource assessment continues to identify and address the resource concerns of Uintah County.

## Public Outreach

The Uintah County Conservation District provides numerous opportunities to get the public involved in conservation efforts, holding meetings, teaching classes, and providing field trips for school children. In July 2010, the Uintah County Conservation District conducted a survey to find out how the public views the county's natural resources and what conservation issues were most pressing. Respondents indicated that water quantity and quality are still major concerns, as well as properly managing grazing and agricultural land to maintain a sustainable agricultural industry. Other top concerns included weeds, energy, sage-grouse, air quality, and maintaining current levels of recreational opportunities in Uintah County.

*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.*

Photo Courtesy of NRCS



Great "rollers" moves across the land during the Dust Bowl.



# Uintah County Overview

## Background

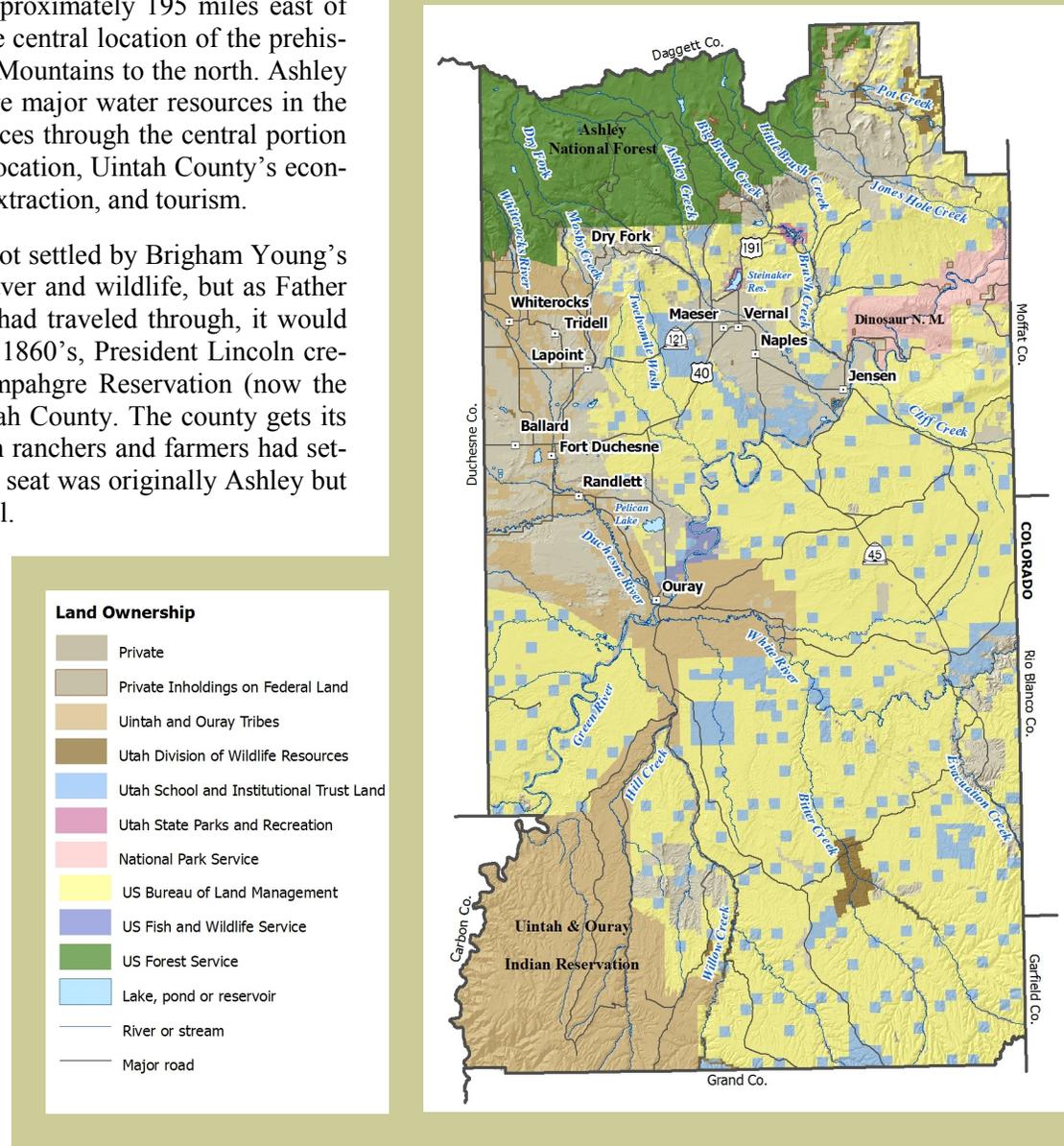
Uintah County is located on the east side of the Uintah Basin in northeastern Utah. The county borders Colorado to the east and is approximately 195 miles east of Utah's Capital, Salt Lake City. Uintah County is the central location of the prehistoric Uinta Lake and is home to the famous Uintah Mountains to the north. Ashley and White Creek and the Uinta and Green rivers are major water resources in the county. The Green River, the largest of the four, slices through the central portion of the county. Due to its geologic nature and rural location, Uintah County's economy is supported mainly by ranching, farming, oil extraction, and tourism.

Unlike most counties of Utah, Uintah County was not settled by Brigham Young's settlers. Trappers and traders found it rich with beaver and wildlife, but as Father Dominguez and Escalante had decided when they had traveled through, it would have to be irrigated for people to live there. In the 1860's, President Lincoln created the Uintah Indian Reservation and the Uncompahgre Reservation (now the Uintah and Ouray Reservation) in and around Uintah County. The county gets its name from the Uintah Ute's. By the 1880's, enough ranchers and farmers had settled in the area, creating Uintah County. The county seat was originally Ashley but it was later moved to the larger community of Vernal.

Uintah County consists of 4,477 square miles of land. In 2010, the entire population of Uintah County was 32,588. The median family income was \$57,735, or just over Utah's median income of \$55,183. Since a large part of the county's economy is dependent of the extraction of oil and gas, it is extremely influenced by worldwide energy prices. Due to this, Uintah County was greatly affected by the economic recession, but it has begun to recover. Uintah County's racial makeup is primarily Caucasian, but it also has large Native American and Hispanic populations.

Hay, alfalfa, and some grains are grown in Uintah County. The average growing season is four months. Uintah County also has a large beef cow production. Elevation fluctuates greatly throughout the county, with the elevation of Vernal being 5,328 ft above sea level and increasing significantly in the Uintah Mountains.

## Uintah County Land Ownership





## Uintah County

Photos courtesy of Chris Holm.

# Natural Resource Priorities and Concerns

## WATER QUALITY AND QUANTITY

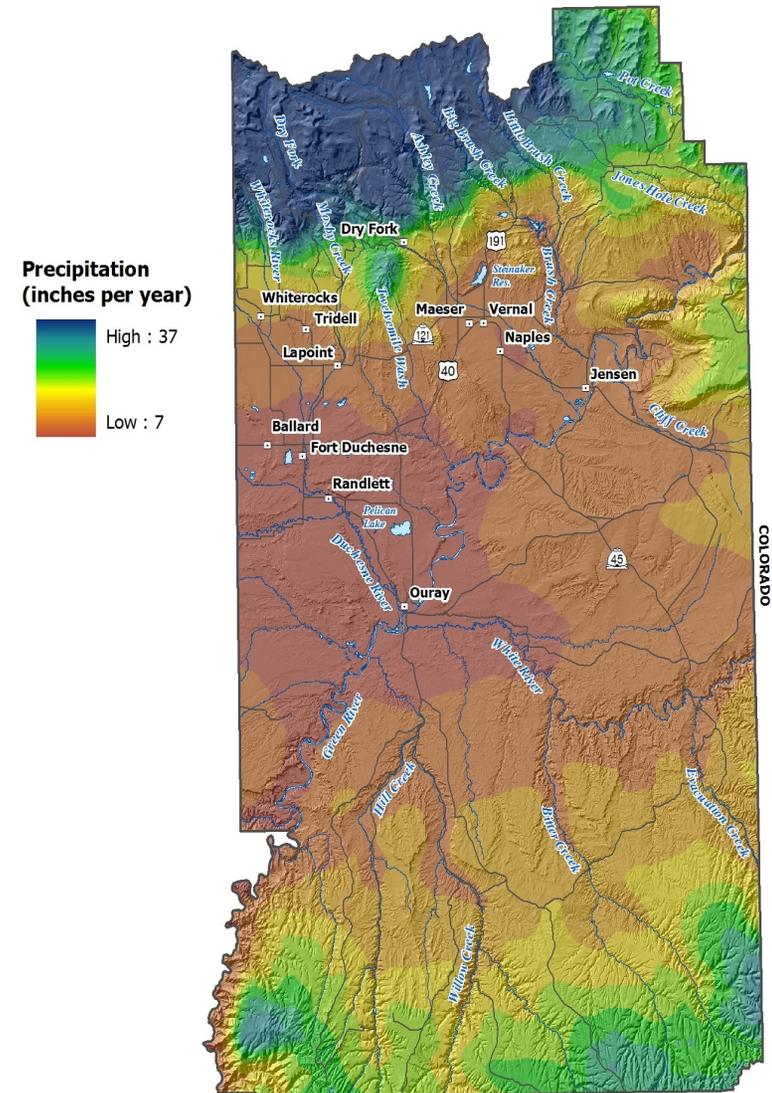
Water is considered the blood of the Uintah Basin. The majority of the Uintah County water supply comes from the Uintah Mountains, with the Forest Service overseeing this federal land. This life sustaining resource is utilized by agriculture, residential, industrial, and recreational users. The top priority concern of the county is the maintenance and enhancement of the water storage and delivery systems within the county.

### Challenges

Uintah County water users face many challenges that impact how water is developed, controlled, and used. Some of these challenges include the following.

- Increased governmental regulations and the high cost of planning and constructing storage facilities makes it difficult to construct and maintain additional storage facilities.
- With the number of irrigation companies and water organizations overseeing the use of delivery of water within the county, it makes it more complex to coordinate comprehensive water storage and delivery in the county.
- Salt entering the Colorado River Drainage from poor irrigation methods and lack of understanding from area producers.
- Flash flooding.

Uintah County Precipitation



## Water Quality

Uintah County is within the Colorado River Watershed. The Utah Division of Water Quality (UDWQ) has classified the Green and Duchesne Rivers, as well as some of their tributaries, as impaired for not meeting state standards. Soil erosion, inefficient irrigation systems, animal waste, and toxins from energy production and other industries contribute to a decrease in water quality.

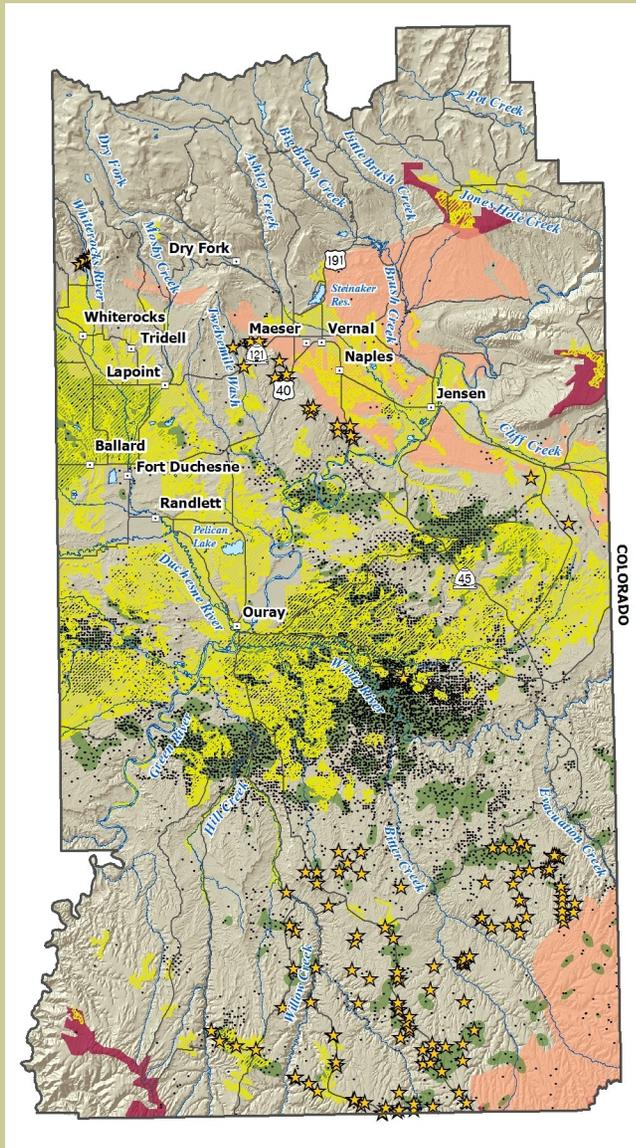
The UDWQ regularly conducts monitoring of surface waters to assess water quality. An integrated report, which can be accessed at <http://www.waterquality.utah.gov/documents/pdf>, is provided to the EPA and to the public to report assessment results and to account for the state's progress in addressing TMDL requirements.



## Needed Actions

- Circumvent onerous federal regulations by changing focus of water storage sites to privately owned smaller storage sites.
- Circumvent onerous federal regulations by storing water off-channel, away from “waters of the US”
- Increase coordination with the Ute Tribe in finding water storage sites on lands within the reservation.
- Increase coordination amongst the water management entities to ensure the best and most timely actions dealing with storage and delivery systems are achieved.
- Encourage participation in the Colorado River Basin Salinity Control Program, as well as other programs, to improve irrigation management and water conservation.
- Encourage wise-water stewardship to protect and preserve water rights in the basin
- Increase education efforts in training water managers, producers, public representatives, and the public on water storage needs, water delivery systems, and water conservation efforts.
- Encourage efforts to enhance streambeds and control erosion.

## ENERGY, SURFACE, AND MINERAL RIGHTS



The boom-and-bust cycle of the Uintah Basin over the last 50 years has been based on the oil and gas extraction industries, which have proven critical to the economy of the Uintah Basin. Because of the importance of these industries in the Basin, all aspects of the economy are impacted by these extraction industries. It is important for the county to ensure that the stability and soundness of the extraction industries are doing well. There are many challenges facing these industries that need to be identified and addressed for the Basin.

### Challenges

- **Permitting.** Permitting has been identified as one of the greatest concerns for the oil and gas extraction industry in the Uintah Basin. Sixty percent of the county is federally owned, and much of that land could be used for oil and gas extraction. Obtaining permits on federal land is becoming more and more difficult due to increasing environmental controls.
- **Distribution.** Distributing these commodities out of the basin has limited the growth of the oil and gas extraction industry. Although there have been improvements in gas distribution, it could still be a limiting factor for future growth. There are many other distribution challenges facing these industries, exclusive to the Uintah Basin, including the following.

- \* No railroad service.
- \* No oil pipeline.
- \* For winter travel, high mountain passes are used by highway traffic.
- \* Geographic isolation from refineries and population centers.

- **Environmental.** There are many natural resources that need to be preserved and protected within Uintah County. However, the county needs to find the right balance between protection and economic development. The oil and gas industries have many environmental concerns. They are becoming overly cautious in investing in long-term infrastructure because of increasing environmental concerns. This may become the greatest limiting factor for oil and gas extraction.

## Challenges (cont.)

- **Private Land Ownership.** Surface rights and mineral rights are usually separate, thus creating conflict between the owners of these rights. Many landowners feel violated, or at least not compensated, for the imposition of well drilling on their property.
- **Oil Shale.** Within the Uintah Basin there lies a massive amount of oil shale. This oil shale has the potential to provide an amazing amount of fuel for the world. Currently, the extraction of the energy from this resource has not proven economically viable. However, with recent technological breakthroughs, extraction may become feasible.

## Needed Actions

- **Permitting.** Currently, many local politicians, including county commissioners, are doing all they can to encourage federal authorities to increase permitting on federal grounds and decrease regulatory burdens. We encourage the continuation of these efforts.
- **Distribution.**
  - \* Promote the development of infrastructure to more freely transport oil and gas raw materials from the Uintah Basin to refineries and population centers.
  - \* Encourage the development of local refineries.
  - \* Promote the use of natural gas vehicles within the basin.
- **Environmental.**
  - \* Seek the appropriate balance between economic development, protection, and preservation of natural resource areas. In order to find this balance, there needs to be open communication between regulators and industry representatives.
  - \* Many of these environmental issues will be debated on a national or federal level. We encourage our local representatives to ensure that the Uintah Basin's concerns are identified and discussed.
- **Private Land Ownership.**
  - \* Encourage open communication between well drillers and private land owners.
  - \* Ensure closed sites are reclaimed in a timely and appropriate manner, utilizing native seeds to ensure erosion control.
- **Oil shale.** Promote the development of oil shale extraction technologies.



Photo courtesy of Troy Cooper, USU Extension

# Natural Resource Priorities and Concerns

## WEEDS AND RIPARIAN HEALTH

The Utah Department of Agriculture and Food defines a noxious weed as “any plant the commissioner (Commissioner of Agriculture) determines to be especially injurious to public health, crops, livestock, land, or other property.”

Most noxious weeds are non-native plants that have been intentionally or accidentally introduced into the United States. Some of the main problems caused by noxious weeds are reduced crop yields, reduced livestock forage, limited recreational opportunities, reduced wildlife habitat, displaced native vegetation, increased soil erosion, and altered soil and water quality.

### Challenges

- Some troublesome weeds, such as Russian olive, saltcedar, and perennial pepperweed, are established to the point that they can only be controlled, not eliminated.
- A mix of land ownership, including federal, state, tribal, and private, makes weed control efforts hard to coordinate. Neighboring lands can harbor weed stock, making prevention difficult in adjacent fields.
- Increased land disturbance and human activity has increased the mobility of seeds.

### Needed Actions

- **Prevention.** Preserving and protecting lands not presently infested is the first line of defense against aggressive noxious weeds. Prevention requires awareness and action by land managers as well as the general public to recognize, report, and control new infestations before they have a chance to establish, expand, and spread.
- **Coordination.** Work with all land owners and managers to ensure a well funded and coordinated effort in prevention as well as an attack against already established weeds.
- **Quick Response Team.** A team of volunteers in the area need to be able to respond to controlling noxious weeds that haven't been established in an area. This team should have the ability to respond to these early invading weeds regardless of land ownership.
- **Education.** Continuing efforts to inform and educate the public, land managers, and property owners.

Utah List of  
Noxious Weeds  
(page 23)

### Russian Knapweed

*Centaurea repens*

Utah Class B

**Background:** Russian knapweed is native to Eurasia. It infests rangelands, field edges, pasture, roadsides, and other disturbed soils. Knapweeds release chemical substances into the soil that inhibit the growth of competing vegetation. It can cause “chewing disease” in the horses that consume it.

**Description:** A perennial, Russian knapweed grows two to three feet tall. Roots may go eight feet deep or more. Basal leaves are lobed and are two to four inches in length. It has pinkish flowers. Flower bracts have membranous cream-colored tips. Bloom is early summer through late summer.

**Control:** Biocontrol is available but limited. Select herbicides can offer good to excellent control when applied between pre-bloom and the killing frost. Contact your state or county weed specialist for specific, updated information.



[http://extension.usu.edu/files/publications/publication/pub\\_\\_8746541.pdf](http://extension.usu.edu/files/publications/publication/pub__8746541.pdf)

## Saltcedar

*Tamarix romosissima*

Utah Class C

**Other Common Names:** Tamarisk/tamarik/tamarix

**Background:** Saltcedar was introduced from Eurasia and is found throughout the United States. It is widely used as an ornamental plant. It commonly infests lake and stream banks as well as pastures and rangeland. Large plants can transpire 200 gallons of water per plant per day, drying up ponds and streams.

**Description:** This perennial plant grows five to twenty feet tall. Stems are reddish-brown. Leaves are small and scale-like. Branches are long and slender. White to pink flowers have five petals and are borne in finger-like clusters. The root system is extensive. Saltcedar may exhibit either deciduous or evergreen traits.

**Control:** Biocontrol is available but is still undergoing testing. Select herbicides can offer excellent control when applied in late summer through early fall. Contact your local state or county weed specialist for specific updated information.



<http://uintahweeds.org/weedID.html#salt>

## Perennial Pepperweed

*Lepidium latifolium*

Utah Class B

**Other Common Names:** Tall whitetop, broad-leaved peppergrass

**Background:** Native to southern Europe and western Asia, perennial pepperweed is commonly found in wet drainage areas of waste areas, ditches, roadsides, and crop lands.

**Description:** Perennial pepperweed grows from one to six feet high. It has spreading lateral rootstocks. Leaves have smooth to lightly toothed margins. Stems and leaves are waxy. White flowers form dense clusters at the end of branches. Flowering takes place from summer into early fall.

**Control:** Biocontrol research is in early stages. Select herbicides can offer fair to good control when applied to actively growing plants to pre-bloom. Contact your local state or county weed specialist for specific updated information.



<http://uintahweeds.org/weedID.html#pere>

## Russian-Olive

*Elaeagnus angustifolia*

Class C

**Background:** This tree, from Europe, is often used as an ornamental plant. Fruits can be a valuable food for wildlife. It grows well in meadows, pastures, and along waterways. Reproduction is from seed and rootstock. Russian-olive is very difficult to control. Thick stands can develop if left unchecked.

**Description:** Russian-olive trees grow up to 25 feet in height. From a distance they have a light gray-green appearance due to tiny scales on the leaf surfaces. The trunk and branches have many one- to two-inch thorns. Leaves are narrow and two to three inches in length. Inconspicuous yellow flowers are found in clusters, which later produce tan or silver colored olive-like fruits half an inch in length.

**Control:** Biocontrol is not available. Herbicides can offer fair to good control when applied in late summer through early fall. Contact your local state or county weed specialist for specific updated information.



<http://uintahweeds.org/weedID.html>

# Natural Resource Priorities and Concerns

## PASTURE AND RANGELANDS

Utah County's agriculture production is based primarily on the rearing of livestock and crops to support the livestock industry. As part of the livestock industry, the use of pastures and rangelands are an important tool used in the area. Pasture and rangeland health is key to long-term watershed health and profitability. Often, livestock using these permitted allotments are under-managed by ranchers who are unable to make dramatic changes in grazing plans due to regulatory, financial, legal, and technical complications.

### Challenges

- Most land used for pasture consists of soils that are not suitable for other crops. These include those areas that are too wet, dry, rocky, or shallow.
- Due to the lack of grazing management, or the inability to utilize grazing management, most pastures are not very productive and are over used.
- Most pastures consist of native grasses or those grass species that can withstand continuous livestock use.
- Understanding grazing management including irrigation, fertilizer, rotation, and weed control.
- Inefficient irrigation systems and saline soils.
- Weeds continue to be a concern for rangeland and watershed health.
- Pressures from the Endangered Species Act and the potential listing of the sage-grouse.
- Increase cost of energy, impacting both transportation and production costs.
- Challenges from interest groups on public land grazing.
- Energy production impacts on desert range.
- Insects that include grass hoppers, crickets, and pine beetles.



## Needed Actions

- Responsible and innovative grazing management.
- Noxious and invasive weed control.
- Irrigation systems improvements.
- Nutrient management is crucial to pastures and should include soil testing.
- Cooperation between land management agencies.
- Responsible and innovative grazing management.
- Brush management.
- Wildlife management, including wild horses.
- Sage-grouse habitat needed to prevent listing as endangered species.



- Improved monitoring efforts to assist with management decisions.
- Workshops that promote and improve grazing education.
- More communication and cooperation between government agencies, ranchers, and oil and gas companies.

# Natural Resource Priorities and Concerns

## AIR QUALITY

During the winter of 2009-2010 in the Uinta Basin, limited air quality monitoring revealed periods of elevated daytime ozone concentrations exceeding the current U.S. Environmental Protection Agency (EPA) standards. Although the Uinta Basin 2009-2010 winter measurements were not made at regulatory stations, the results raised concerns regarding the winter ozone levels in the region. Of particular concern was the potential impact these ozone levels might have on the health of Uinta Basin residents. Concern was also expressed that a failure to meet EPA standards for ozone levels could result in a nonattainment designation for the Uinta Basin's counties, a consequence that could severely impact the economy of eastern Utah and the state as a whole.

The results of the basin-wide winter ozone study showed elevated wintertime ozone concentrations throughout most of the Uinta Basin during wintertime temperature inversion events. Results also showed that the lower elevation monitoring locations, with the greatest number of nearby wells, tended to have the highest ozone concentrations and the greatest number of exceedances. Locations at higher elevations, approximately 5,500-6,000 ft above sea level, had relatively few exceedances despite being near significant numbers of oil and gas wells.

### Challenges

- There have been no air quality studies that meet EPA monitoring standards at this time. The 2009-2010 study identifies a problem, however; it takes three years of EPA monitoring to show exceedances of EPA standards prior to declaring an area as nonattainment. If a portion of the Uintah Basin is identified as being in nonattainment then the EPA is obligated to place measures to ensure attainment. These measures can, at times, be severe in nature and will negatively impact any potential economic growth for the area.
- Many of the roads found within the county have not been paved. The desert climate found in most of the county creates roads that are usually dry and conducive to producing dust when driven upon. When a dirt road is overly utilized, the dust can be destructive to the local area.

### Needed Actions

- Encourage accurate and concise air monitoring studies that meet EPA standards.
- Support all actions that will decrease the potential of being declared a nonattainment area.
- Urge the oil and gas extraction industry to support air quality monitoring efforts and quickly respond to all air quality concerns.
- Identify dirt roads that need improvements for dust control.



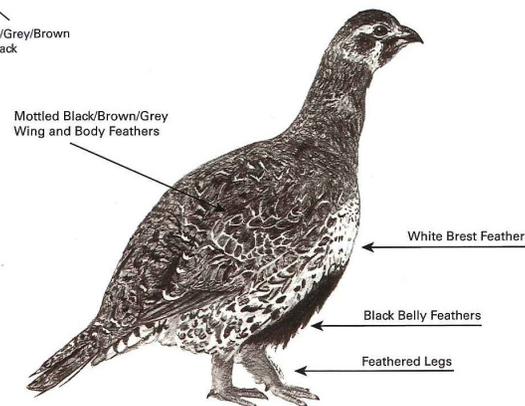
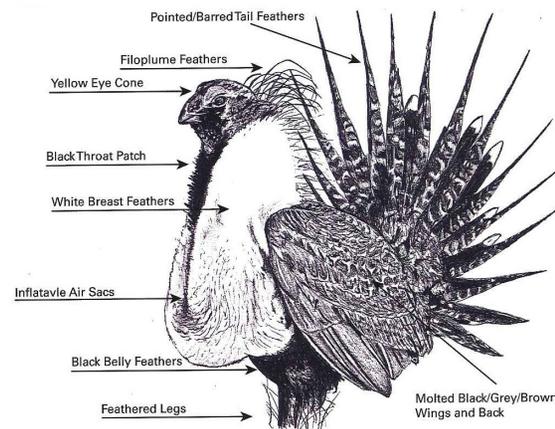
# Natural Resource Priorities and Concerns

## GREATER SAGE-GROUSE

The greater sage-grouse (*Centrocercus urophasianus*), often called a “sage chicken” in Utah, is the largest grouse species in North America. Adult males can reach weights exceeding seven pounds, twice the weight of the females, and have wing spans of 2.5 feet. Both the male and female sage-grouse are brownish-gray with marks of drab gray and white and have a very distinguishable black belly patch. The male can be distinguished from the female by its white breast and neck feathers, while the female is more plainly colored from head to toe. Both sexes have long pointed tails and are noticeable in flight and in display by the males. Sage-grouse are a relatively long-lived upland game bird species and, once they reach adulthood, can often live five or more years. [Sage Grouse Pamphlet]

In March 2010 the U.S. Fish and Wildlife Service announced that “the greater sage-grouse warrants the protection of the Endangered Species Act but that listing the species at this time is precluded by the need to address higher priority species first.” The agency’s announcement reaffirmed that states would continue to be responsible for managing the bird and that voluntary conservation agreements, federal financial and technical assistance, and other partnership incentives are needed. The BLM has coordinated with state fish and wildlife agencies and their technical committee in the development of a range-wide habitat map. The mapping project, not intended to replace individual state fish and wildlife agency core habitat maps, identifies priority habitat for sage grouse within each of the western states.

Research has found a variety of reasons for the decline in greater sage-grouse populations. Some of these reasons include predation, weeds, and human disturbances.



## Greater Sage-Grouse

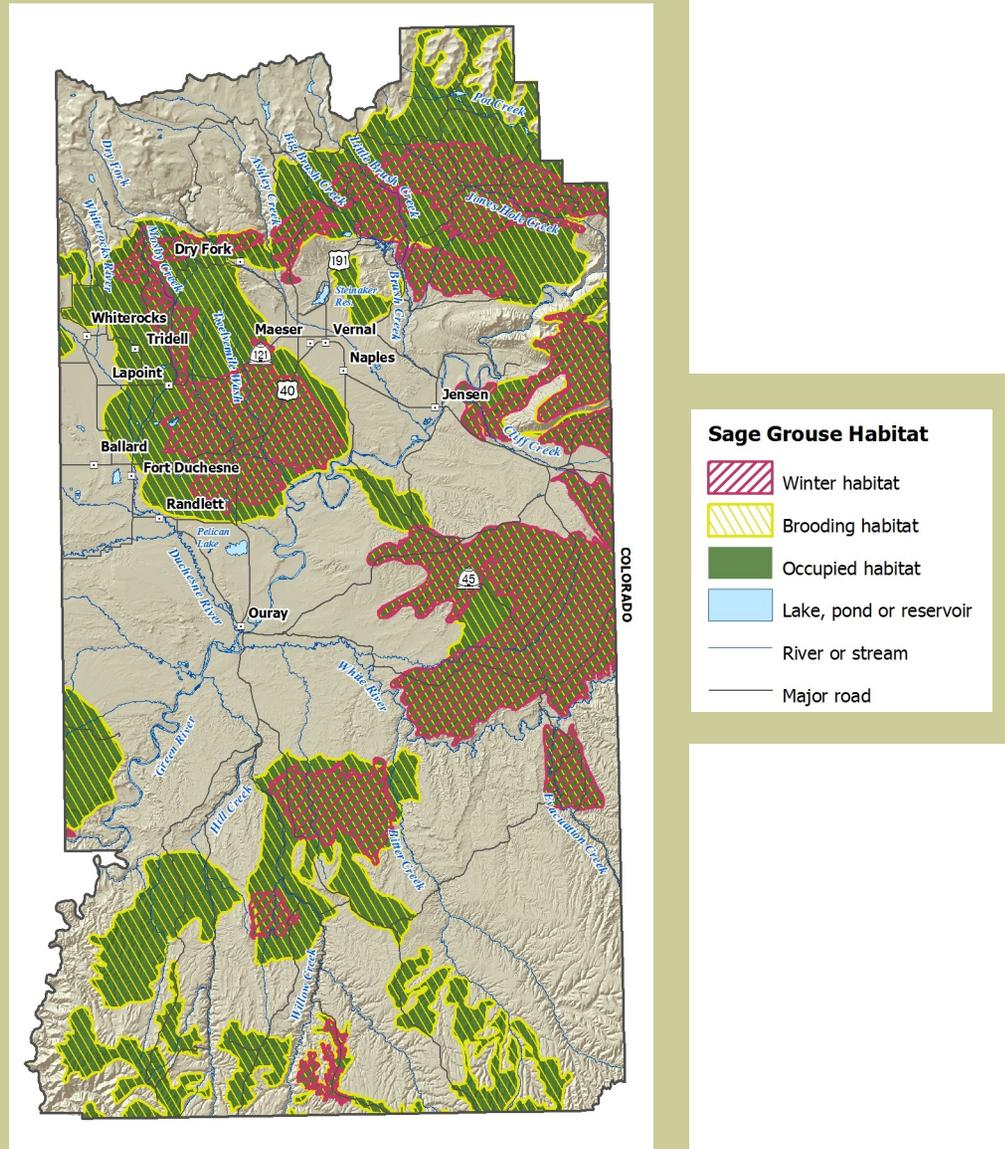


The greater sage-grouse inhabits sagebrush plains, foothills, and mountain valleys. Sagebrush is the predominant plant of quality habitat. A good mosaic of understory grasses, wet meadows, low sagebrush, and forbs are essential for optimum habitat.

Greater sage-grouse are native to Utah and are listed as a candidate species by the Utah Division of Wildlife Resources.

*Sources: Utah Conservation Data Center, source data from Biotics Database, 2005. Utah Division of Wildlife Resources, Nature Serve, and the network of Natural Heritage Programs and Conservation Data Centers.*

## Sage Grouse Habitat



# General Resource Observations

## SOIL

As typical of the soils in the intermountain West, Uintah County soils are comprised of such variety to make it difficult to generalize characteristics.

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

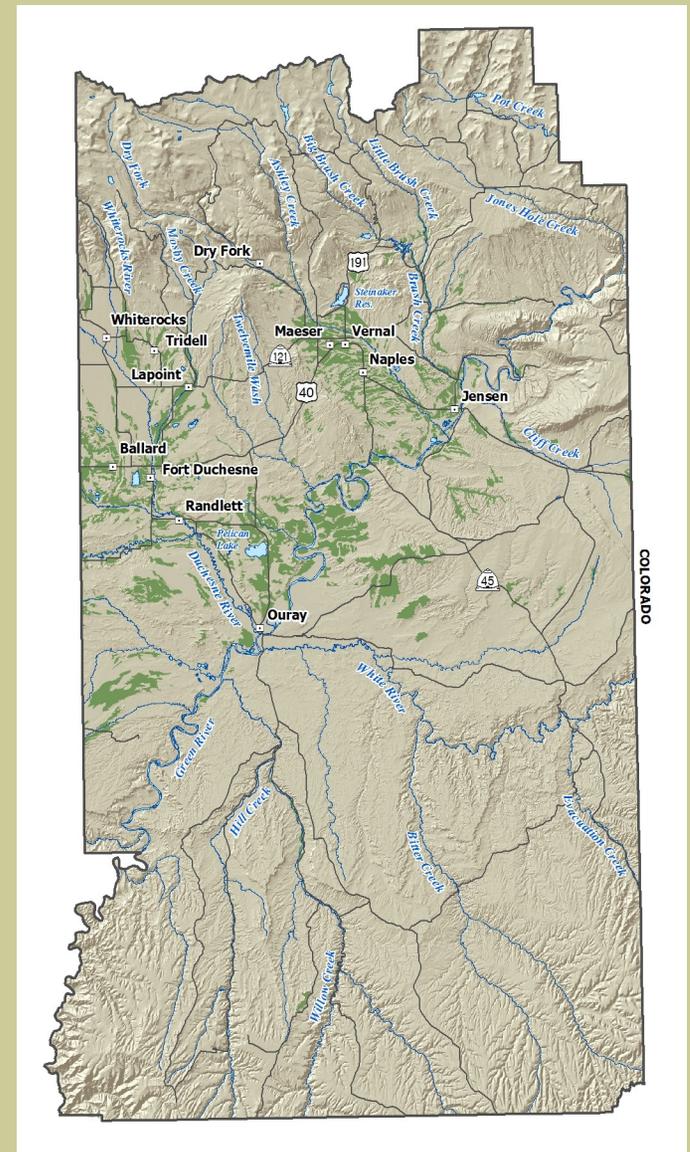
The soil survey delineates and describes large areas of similar soils. Common uses for the survey are evaluating soil suitability for dwellings with basements, landscaping, roads, and septic systems, and obtaining measurements for vegetative productivity and chemical and physical properties. Using this 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.

### Prime Farmland

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion. All the potential prime agriculture land in Uintah County must be irrigated to qualify for this designation.

## Uintah County Irrigated Farmlands



## Farmland of Statewide Importance

Land that is identified by state agencies as important for agricultural use, but not of national significance, can be designated as statewide important farmland. The soils of local importance, as set by the Uintah County Conservation District, are those areas with the highest potential for production as well as the lowest potential for resource concerns.

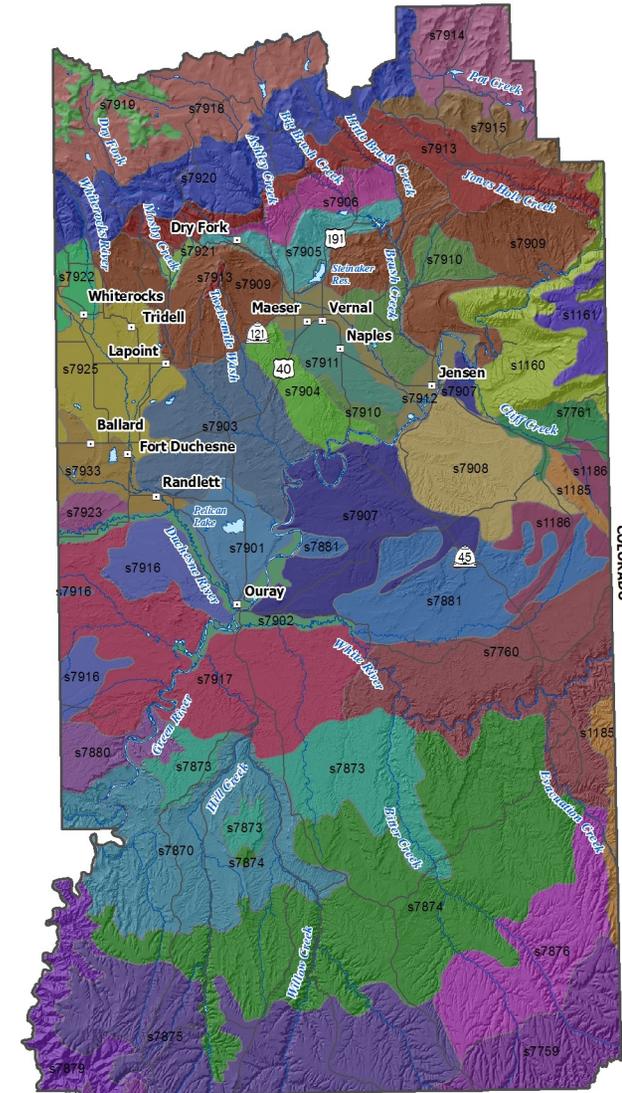
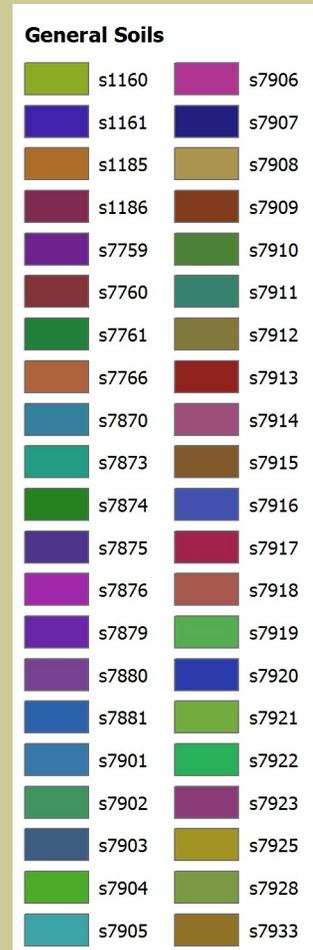
Soils in Uintah County vary considerably, as do most of the soils in the Uintah Basin and the Intermountain West. Layers of mancos shale are prevalent in Uintah County and contain large amount of salts. Flood irrigating this land raises these salts to the surface, affecting yield and water quality when runoff leaves the land. Deep percolation drives the salts down further into the soil and thus into the water table. This salty water then seeps into the Green River, a tributary of the Colorado River, which has problems with high salinity.

To aid this problem, farmers are being encouraged to move from flood irrigation to sprinklers. Sprinklers are more efficient with water use, giving just enough to help counter the salt build-up at the surface of the land yet not so much as to further contaminate the Colorado River.

The soil in Uintah County has very high alkaline levels.

Soils used for agriculture production vary across the county, from most of the higher irrigated lands consisting mainly of shallow rocky soils used mostly for grass and pasture production to lower elevation lands with soils adequate for small grains and hay land production. Irrigation is required for most croplands in Uintah County. Some dry farming has been successful in the areas east of Vernal. Rangelands consist mostly of forestland used as summer range and dry desert used as winter range.

## Uintah Soils



# General Resource Observations

## WATER

Uintah County receives very limited amounts of precipitation in lower areas, and it is dependant on winter snowfall in high mountain elevations to provide the water needed. The major rivers in the county include the Green River, Duchesne River, Uintah River, Whiterocks River, Dry Fork River, and White River, as well as the many other smaller creeks that feed them. These rivers are fed by springs, storm runoff, and snowmelt from the high Uinta Mountains and foothills and by groundwater discharge. Lakes, reservoirs and pipelines are used to provide irrigation and flood control as well as water for domestic use in towns and communities. Nearly all rivers and lakes are also used for recreation, with other uses being municipal and industrial.

### Water Quantity and Storage

Lakes and reservoirs are used for water storage. The high Uintah Mountains also contain many unregulated lakes, rivers, and small streams that provide the water for Uintah County.

### Irrigation Water

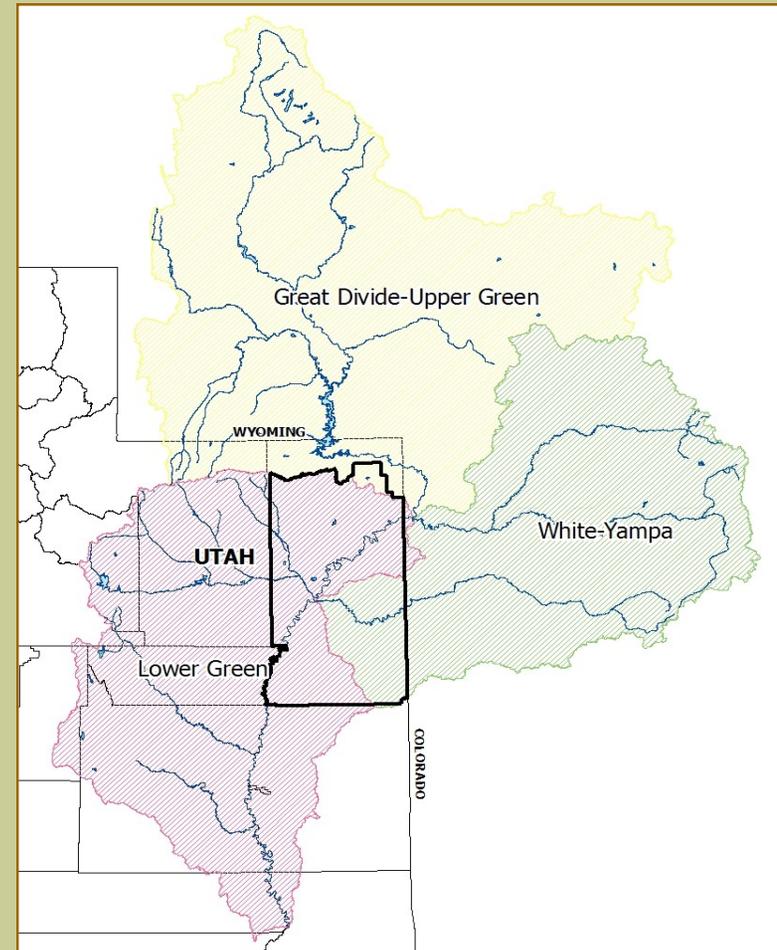
The county's water supply comes from precipitation, mostly in the higher elevations. However, rainfall in the county is not adequate for crop production; therefore, irrigation is used to supplement plant growth requirements. Irrigation companies provide water to approximately 78,800 acres of agriculture land.

Contact the Uintah Water Conservancy District for a list of irrigation companies in Uintah County.

#### Local Water Priorities

- Irrigation Water Management
- Irrigation Canals
- Impaired Waterways

## Uintah County Watersheds



## Industry Water

With the increase in oil and gas extraction industry, higher demand for water for industry has accrued in Uintah County. This industry has two different water classifications that are now needed. The first is the need for fresh water used in the drilling process and the second is the need of disposal of production water that is extracted with the oil and gas.



# General Resource Observations

## AIR AND CLIMATE

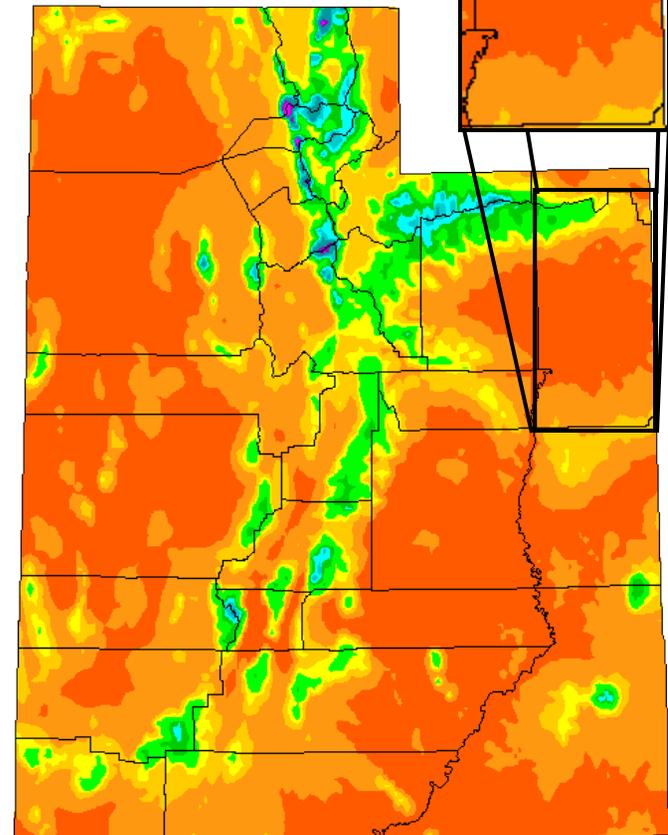
### Climate

Summers in Uintah County are hot and winters are cold. The average high temperature in July is 89.8°F and the average low temperature in January is of 7.3°F. The average annual precipitation is 8.14 inches. The average frost-free period throughout Uintah County ranges from 118 to 134 days.



**Air Quality**  
(see page 12)

### Uintah County Precipitation



## NRCS Snow Survey and SCAN Programs

The NRCS Snow Survey Program provides mountain snowpack 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 SNOTEL (SNOWpack TELEmetry) sites monitor mountain snowpack and climate to forecast water supplies. Uintah County has three SNOTEL sites located at King's Cabin (8,724'), Mosby Mountain (9,510'), and Trout Creek (9,518').

Timing and amount of snowpack, along with temperature fluctuations throughout the spring and summer months, impact the amount of water available for irrigation throughout the growing season. The Utah Snow Survey provides valuable data that is used to help manage water usage to maximize the water that is available. During dry years, it becomes very challenging to provide adequate water to landowners. As a result, it is common to have inadequate water resources available to sufficiently supply the land with irrigation needs for maximum crop growth.

The amount of moisture within the soil profile is an important factor in determining the amount of forage and water runoff that will occur during a given season. The NRCS Soil Climate Analysis Network (SCAN) sites monitor soil moisture and assess drought risk. Uintah County has one site located within its boundaries, Split Mountain. The SCAN site provides valuable information relating to available soil moisture.

**For additional information, contact the Natural Resource Conservation Service.**

**Information about the Utah Snow Survey Program is located at <http://www.ut.nrcs.usda.gov/snow>.**



# General Resource Observations

## PLANTS

### Crops and Pasture

In Uintah County, the main crop production is hay followed by small grain and pasture. Native pasture comprises most of the lower quality soils that will not produce alfalfa. Alfalfa and grass/alfalfa mixes are used by most landowners for hay production. Small grains such as corn, barley, and oats are used for livestock production and crop rotation. Other crops, such as sorghum, potatoes, orchards, and nurseries, are grown in the area in limited quantities.

Much of Uintah County's land is primarily forest and pasture land. The inhabited portion of Uintah County is devoted to agriculture. As previously mentioned, most of this agriculture is dedicated to livestock production. Due to this, hay production, pasture, and feed for livestock are the main crops grown in the county.

### Rangeland

Today's rangeland in Utah provides feed for domestic livestock, forage and habitat for wildlife, outdoor recreation, and energy development and mineral extraction. The various demands on this resource makes grazing on public lands a delicate balance. A majority of grazing occurs in the summers in the forests with some winter grazing occurring in the desert lowlands. Federal

and state rangelands have been an important source of livestock grazing, while private lands provide feed for use in the winter season.

#### Local Plant Priorities

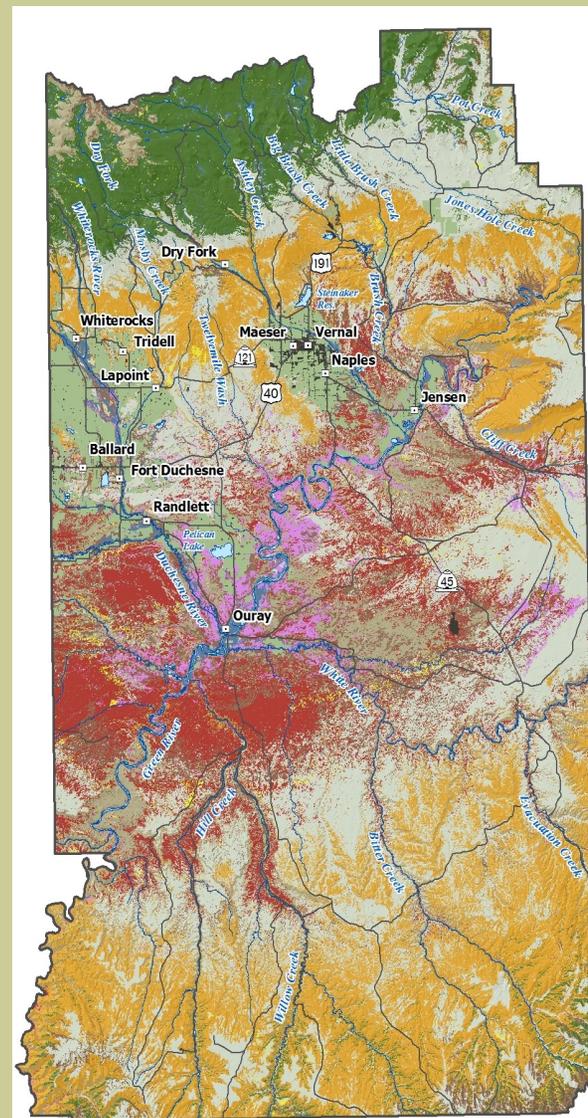
Noxious Weeds (see pg. 23)

Grazing Management (see pg. 10)

### County Land Cover

#### Land Cover

	Sagebrush - 872,128 acres
	Pinyon-Juniper Woodland - 681,713 acres
	Salt Desert Shrubland - 294,468 acres
	Rock\Barren\Sand Dune - 255,424 acres
	Other Shrublands - 239,191 acres
	Forestland - 235,806 acres
	Agriculture - 130,552 acres
	Invasives - 71,190 acres
	Riparian Area - 54,031 acres
	Open Water - 21,343 acres
	Grassland - 15,103 acres
	Developed - 11,156 acres
	Lake, pond or reservoir
	River or stream
	Major road



## Forest Land

From an elevational gradient, the lowest species of forested land in the basin consists mainly of pinyon pine and juniper. This forest type encompasses the majority of the landscape. Recently, there have been attacks on pinyon pine from the pinyon engraver beetle. With continued above normal precipitation, the pinyon pine is recovering from past drought and should be able to more effectively fight the attack of the pinyon beetle.

Moving higher in elevation, Douglas-fir is the dominant species found on the landscape. Over the past several years, the Douglas-fir beetle has taken a devastating toll on these forests, creating very high mortality rates. Field observations are now showing a decrease in beetle populations and attack. This could likely be attributed to the increased precipitation amount the area has received over the past two years.

Other species that can be found at mid-elevations (8,000'-9,500') are white-fir, ponderosa pine, limber pine, and lodgepole pine. These species are not as pronounced, but they still serve as important habitat for wildlife and provide a diversity of tree species within the area.

The highest elevation species found in the area are Englemann spruce and subalpine fir. Currently, the spruce beetle is moving further north, and areas of spruce are experiencing high mortality rates.

Quaking aspen can be found from low elevation to high elevation. The health of aspen depends on stand age, disease, and recruitment of aspen and aspen suckers in the understory. Much of the aspen in the western U.S. is being overrun by the encroachment of a understory conifer. The decrease of aspen is associated with lack of natural disturbances, like wildfire.

Blue spruce is a species that can be found mainly in riparian areas or areas with moisture-rich soil types. [PJ Abraham]

## Rare and Endangered Plants

There are also many rare and endangered plant species that can be found in Uintah County. These include:

- Hookless cactus
- Ute ladies' tresses
- Flowers penstemon
- Shrubby reed mustard
- Graham's penstemon
- Horseshoe bend milkweed
- Clay reed mustard

## Utah Noxious Weed List

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.

- Bermudagrass (*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 (*Dardius mutans*)
- Ox-Eye daisy (*Chrysanthemum leucanthemum*)
- Perennial sorghum (*Sorghum halepense* & *Sorghum almunm*)
- 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*)

### Additional weeds listed by Uintah County:

- Common Teasel
- Puncturevine
- Russian-Olive

Utah Department of Agriculture and Food, Utah Noxious Weed List, October 2010.

<http://ag.utah.gov/division/plant/noxious/noxUtah.pdf>

# General Resource Observations

## ANIMALS

### Sensitive and Endangered Species

The Utah Division of Wildlife Resources maintains information on Utah plants and animals classified as at-risk. The state's objective is to prevent at-risk species from being listed by the federal U.S. Fish and Wildlife Service as threatened, endangered, or candidate species under the Endangered Species Act.

In March 2010, the greater sage-grouse was listed as a candidate species. A candidate species does not receive statutory protection, though it increases the urgency for state and federal agencies to give priority to, and manage to, improve habitat and mitigate impacts. Further, the yellow-billed cuckoo is listed as a candidate species. The black-footed ferret is listed as endangered, and the population in Uintah County is considered experimental and non-essential.

### Game

Utah statewide management plans for mule deer, elk, mountain goat, moose, bighorn sheep, and pronghorn are at located at <http://wildlife.utah.gov/hunting/biggame/>. Various other upland game species including rabbits (cottontail, jack, etc), turkeys, and grouse are found throughout the county. Waterfowl species also frequently use the lakes and rivers and uplands in Uintah County.

### Human/Wildlife Interactions

Wildlife can conflict with private land and/or livestock. Private lands in some locations are seeing an increase in use from pronghorn, deer, and elk. Predation from coyote, bears, mountain lions, and wolves can also be localized concerns.

### Aquatic Species

Various species of trout are numerous in most mountain lakes and streams. Lower elevation lakes also hold trout, large mouth bass, small mouth bass, bluegill, and channel catfish. The lower Green River is an important habitat for some endangered species including the Colorado pikeminnow, humpback chub, razorback sucker, and bonytail.

### At-Risk Species

The following species are included on Utah's State Listed Conservation Species Agreement with the U.S. Fish and Wildlife Service and Species of Concern in Uintah County.

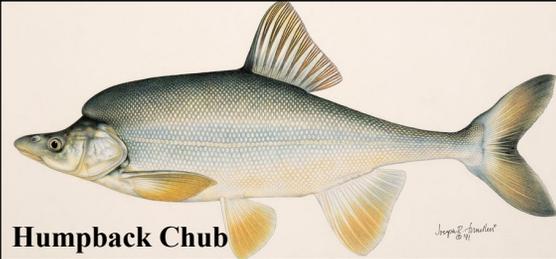
- **Greater Sage-Grouse\***
- **Humpback Chub**
- **Bonytail**
- **Colorado Pikeminnow**
- **Razorback Sucker**
- **Yellow-billed Cuckoo**
- **Black-footed Ferret**
- **Brown (Grizzly) Bear**
- **Canada Lynx**
- **Ute Ladies'-tresses**
- **Shrubby Reed-mustard**
- **Clay Reed-mustard**
- **Pariette Cactus**
- **Uinta Basin Hookless Cactus**
- **White River Beardtongue**

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 <http://dwrcdc.nr.utah.gov/ucdc/>.

\*The greater sage-grouse status as a candidate species has been 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 <http://www.fws.gov/news/NewsReleases/>.



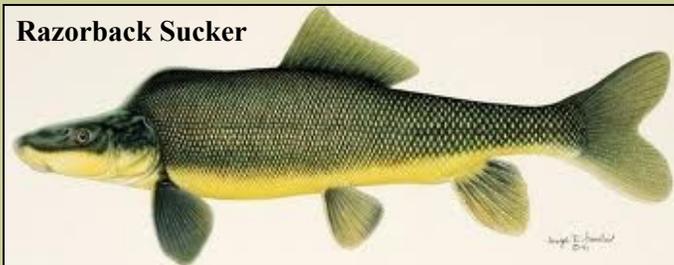
**Canada Lynx**



**Humpback Chub**

**Uintah County's Federally Listed Threatened (T), Endangered (E), and Candidate (C) Species**

Common Name	Status
Western Yellow-Billed Cuckoo (bird)	C
Black-Footed Ferret (animal)	E
Bonytail (fish)	E
Canada Lynx (animal)	T
Colorado Pikeminnow (fish)	E
Razorback Sucker (fish)	E
Greater Sage-Grouse (animal)	C
Humpback Chub (fish)	E
Mexican Spotted Owl (animal)	T



**Razorback Sucker**



**Black-footed Ferret**



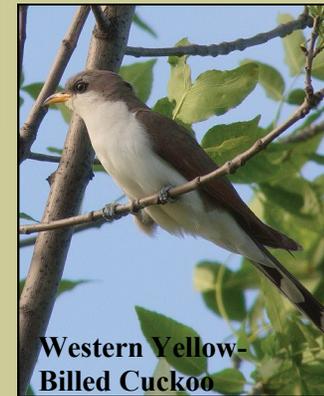
**Colorado Pikeminnow**



**Greater Sage-Grouse**



**Bonytail**



**Western Yellow-Billed Cuckoo**



**Mexican Spotted Owl**

## HUMANS: Social and Economic Considerations

### Population

The 2010 census reported Uintah County's population at 32,588 residents. The population grows every year, although the number depends significantly on the oil and gas extraction industry. The population is primarily Caucasian, but it also has a large Native American population and the Hispanic population continues to rise.

### Labor Force

In November of 2011, Uintah County's labor force was estimated at about 17,674. Unemployment raised significantly during the recession but once again dropped and now continues to drop. In November 2011, unemployment was at 3.8% in Uintah County, well below the state and national levels. As with the population, the labor force fluctuates greatly depending on the oil and gas industries.

### Economy

The economy in Uintah County is largely diversified, depending on activities including mineral extraction, gas, oil, oil shale, and tar sands development, timber production, agriculture and grazing, tourism, and outdoor recreation. Although mineral extraction is a large part of the economy, it often dwindles and rises based on booms, making it hard for a lot of people to invest in the industry. The average monthly wage in the county is \$3,846.



### 2009 Uintah County Population Data



Area name	Uintah
Period Year	2009
Population	31,291
Births	703
Deaths	180
Natural Increase	523
Net Migration	322
Annual Change	845
Annual Rate of Change	↑ 2.8%

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



## Education

Uintah County has great education opportunities for such a small community. The Uintah Basin Applied Technology College offers over 20 programs for both adults and high school students. These programs range from construction to the medical field to computer technology. The Utah State University Uintah Basin Extension has over 50 degrees, licenses, certificates, and endorsements to choose from, ranging from education to business to science.

## Recreation

Uintah County has a wealth of recreational activities that include, but are not limited to hunting, fishing, hiking, boating, rafting, and camping. The Uintah Mountains, the Green River, and other rivers and lakes, as well as the parks such as Red Fleet State Park, Steinaker State Park, and Dinosaur National Park, all provide perfect places for many recreational activities.



**UBATC**

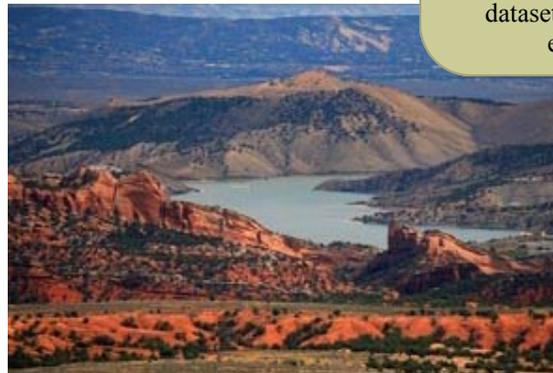
**the Tech**



### Virtual Utah

[www.earth.gis.usu.edu/utah/](http://www.earth.gis.usu.edu/utah/)

*Virtual Utah* offers aerial imagery (photography) for most of the state from 1993/97, 2003, 2004 and 2006. Using aerial images from multiple dates allows you to see how land use has changed over the years! Other geographic datasets include land cover, hillshade (shaded relief), elevation data, and other satellite images.



# Appendices

## References

**Soil Survey of Uintah County Utah.** Created by the U.S. Dept. of Ag., Soil Conservation Service, Forest Service, Dept. of Interior and Bureau of Land Management, in cooperation with the Utah Agricultural Experiment Station. A pdf of the report can be accessed at the NRCS website at <http://soildatamart.nrcs.usda.gov>.

**State of Utah Geographic Database.** Date from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. The AGRC website is <http://agrc.utah.gov/>.

**Uintah County Land Ownership.** Data from Utah School and Institutional Trust Lands Administration and the U.S. Bureau of Land Management, April 2010.

**2003 Noxious Weed List.** Obtained from the State of Utah Department of Food and Agriculture (UDAF). For more information contact Steve Burningham, 801-538-7181, or visit their website at <http://ag.utah.gov/divisions/plant/noxious/index.html>.

**Soil Survey Maps.** Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey available online at <http://websoilsurvey.nrcs.usda.gov/>.

**Landcover/Vegetation Map.** Data from USGS National Gap Analysis Program. 2004. Provisional Digital Land Cover Map for the Southwestern United States. Version 1.0. RS/GIS Laboratory, College of Natural Resources, Utah State University. Published 9/15/2004. Multi-season satellite imagery from 1999-2001 was used in conjunction with digital elevation model derived datasets to model natural and semi-natural vegetation.

**Precipitation Map.** Data from U.S. Department of Agriculture, Natural Resources Conservation Service – National Cartography & Geospatial Center. Vector dataset provides derived average annual precipitation according to a model using point precipitation and elevation data for the 30-year period of 1971 – 2000.

## Credits

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John Bennett – Utah Governor's Office of Planning and Budget  
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## Acknowledgments

### Uintah County Conservation District

*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's 1 through 7  
Utah Association of Conservation Districts  
Utah Department of Agriculture and Food  
Utah Department of Environmental Quality  
Utah Department of Natural Resources  
Utah Grazing Board (Chair and Vice-Chair)  
Utah School and Institutional Trust Lands Administration  
Utah State University Extension  
Utah Weed Supervisor Association

### UtahPCD

#### 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 College of Natural Resources  
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  
Cache County Commission

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