Utah Resource Assessment

October 2005

About this Report:

The resource assessment was designed to gather and summarize information specific to Utah. This report will highlight the natural and social resources present in the state, detail unique resource concerns, aid resource planning, and target conservation assistance needs. This document is a general compilation of the individual inventories completed in each of the 29 counties. The county assessments provide a greater level of detail on each topic and are available through sources listed on page 23. This assessment was begun in April 2005 and completed in October 2005 as a partnership effort between Utah Association of Conservation Districts (UACD), Utah Department of Agriculture (UDAF), and the Natural Resources Conservation Service (NRCS). This assessment is intended to be updated on an annual basis and include additional resource information provided by other state, federal and private partners in conservation.

Contents

Introduction

Located in the Rocky Mountain Region, Utah derives its name from the Native American Ute tribe and means “people of the mountains”. Utah is 84,900 square miles and is ranked the 11th largest state (in terms of square miles) in the US. As hosts of the 2002 Winter Olympic Games, Utah boasts the “greatest snow on earth” and is the home of 18 colorful National Parks and monuments. Utah's peaks are, on average, the tallest in the country and create great contrasts that range from the snow covered peaks of the Uinta Range in the east, to the renowned natural and colorful rock formations of the deserts in the south. The geography is characterized throughout the 29 counties by three major eco-regions: Rocky Mountain, Basin and Range, and Colorado Plateau.

The Rocky Mountain area is characterized by the Wasatch and Uinta mountain ranges. The Wasatch Range stretches from Sanpete County north to Idaho. The Uinta range is the only east-west oriented range in the Rockies and contains the state’s highest elevation (King’s Peak at 13,528 feet above sea level).

The Basin and Range area is located in western Utah and contains some of the driest areas of the US, including the Bonneville Salt Flats west of the Great Salt Lake. This province is typically identified by valleys and small mountain ranges. “Utah’s Dixie,” also known as the St. George area, is in this part of the state. It has the lowest elevation (2350’ at Beaver Dam Wash) and is also the warmest part of Utah.

The Colorado Plateau covers most of the southern and eastern areas of Utah and is marked by high upland country cut by deep canyons and valleys. The western part includes plateaus rising to 11, 000 feet, such as Aquarius, Markagunt, Cedar Breaks, and Fish Lake. Canyons include the national treasures of Bryce, Zion and Canyonlands. The Colorado River and its tributaries drain the Colorado Plateau. Utah's southeast corner is on the Plateau and is adjacent to the borders of Arizona, New Mexico, and Colorado. This is the only place in the US where four states meet and is known as the "Four Corners."

Utah is the second driest state and is very dependent on stored water for municipal, industrial, and agricultural applications. Despite the dry climate, Utah is ranked 26th in the nation in the amount of land being farmed (11,600,000 acres) and is 35th in the number of farms. Agricultural land is targeted for urban development; data from the Natural Resources Inventory (NRI) indicates that 105,000 acres of cropland were converted to other uses from 1982 to 1997.

In terms of production, Utah is the second largest producer in mink pelts in the US, third largest in apricots and tart cherries, sixth in sheep and sweet cherries, seventh in onions, and ninth in pears and farm-raised trout. Barley production ranks eleventh and alfalfa hay production ranks thirteenth. Poultry (especially turkeys), breeding hogs, peaches, apples, and dry beans are other major agricultural products. Utah agriculture generates more than $1 billion in raw products annually, adding $368 million in net farm income for farmers and ranchers and helps fuel the state's rural economy.

The state is also known for its research and development work, especially in the areas of health care and information technology. Construction, tourism, energy, and mineral extraction are other key focus areas of Utah's economy.

Utah's population is estimated at 2.4 million people; it ranks 34th in US population size and has an estimated 21 persons per square mile. The bulk of the population resides in what is known as the Wasatch Front—a region that spans the entire western side of the Wasatch Mountains. The area begins in Provo, at the south end of the range, and ends about 100 miles north, in Brigham City. Salt Lake County has the highest population, followed by the other Wasatch Front counties of (in order of size) Utah, Davis, and Weber. Next in population size, where much of the current population growth is centered, is the rapidly growing Washington County in southwest Utah. Garfield, Wayne, Rich, Piute, and Daggett have the lowest population, each with less than 5000 persons. The median household income is $18,185, compared to $21,587 nationally. Population growth ranks 7% nationally, with natural in-state growth the prime component combined with in-migration. Utah ranks first in the nation in household size (3.13) and has the lowest median age (27.1).The following tribal nations have reservation land within Utah borders: Confederate Tribes of the Goshute Indian Tribe, Navajo Nation, Northwestern Band of Shoshoni Tribe, Paiute Indian Tribe of Utah, Skull Valley Band of Goshute Indians, Ute Indian Tribe, Ute Mountain Ute Tribe, and the White Mesa Ute Tribe.

Many counties in Utah have a small percentage of private land due to the vast tracts of federal, state, and reservation lands; 65% of Utah is in federal ownership. For example, 96% of Garfield County is in non-private ownership. This non-private ownership impacts development pressures to convert traditional agricultural land to urban uses, particularly second homes and recreational properties, closely links livestock operations to federal and state land management policies and restrictions, and complicates long term conservation planning with intermingled leased land.

General Land Use Observations Summary:

This summary is compiled from land use observations reported by all twenty-nine counties in Utah. The comments generally pertain to five categories of land use: grass/pasture/hay lands, rangeland, forest, water management, and wildlife.

There were two observations repeated by nearly all the counties. One was that complications related to overgrazing have led to poor range condition, soil compaction, and water quality issues. The other was that the control of noxious weeds and invasive plans is an ever increasing problem. These concerns were typically mentioned when talking about range, grass/pasture/hay lands, and forest lands.

An additional widespread grass/pasture/hay land observation was that more than half of the counties reported that small, part-time farms are less likely to adopt conservation due to cost, low farm income, and lack of knowledge about opportunities and practices.

Another common rangeland observation was the widespread concern regarding the current ability of rangeland to provide adequate food, water, and cover for livestock. A common forested lands observation was the desire for fire-wise planning in several counties across the state.

Water management concerns that were commonly expressed were focused on water availability for irrigation, livestock, wildlife, forests, and public consumption. There were also concerns about declining water quality, TMDL (Total Maximum Daily Load), stream bank instability, and poor riparian vegetation.

The most common wildlife observation was concerns associated with surrounding threatened, endangered, and species of special concern designation. Other observations included unhealthy wildlife habitat, plant diversity, and urban encroachment practices that do not adequately consider wildlife.

Resource Assessment Summary

Ten primary resource areas were selected for evaluation. Each county provided a qualitative assessment of whether the concern was high, medium or low. The following section lists summaries of these statewide concerns and a description of their manifestations in decreasing order of concern.

Water Quantity
There are lingering drought impacts where counties have experienced six years of below normal precipitation (1998 – 2004). The current water year is above normal, suggesting that Utah is returning to an average or above average water year. Impacts of the drought are wells and springs drying up, local communities increasing water rates and searching for new culinary water sources, and irrigation companies trying to maintain peace among share holders as they distribute smaller volumes of water. Cost-share assistance has been available for irrigation system improvements but demand has exceeded the financial assistance available.
Farmers face competition for stored water with plans to expand power generation facilities using existing agricultural water rights.
With urbanization, cities face pressure to increase their demands for water. As a result, water conservation issues will be targeted towards municipal and industrial sectors on the Wasatch Front with an effort to generate bigger savings than the agricultural sector.
There are insufficient amounts of available water from surface supplies and aquifers. Aquifers in areas have dropped as much as 40 feet in 50 years. Much of irrigation water source is based on these declining aquifers.
Counties must plan for growing population and water needs. More water storage areas are needed.
Whether or not there is a drought, water is in a limited resource in Utah. As a result, land users need improved water delivery systems and improved management practices. In seven out of ten years, the irrigation water supply runs out before the growing season (90 days) is over. Major reservoirs in some areas generally run dry by mid summer. Both on and off farm water delivery systems need maintenance or improvement.
Surface Water Quality
Some tributaries and major water courses are impaired by non-point source pollutants. Some pollutants exceed the numeric criteria established by the state standard for the designated water use by as much as 80%.
TMDLs have identified the primary pollutants coming from irrigated lands, rangelands, and stream bank erosion as sediment and phosphorus. Best management practices (BMPs) to correct the problem are improved irrigation efficiencies, improved range health, and the need to address nutrient application practices. Technical assistance is also needed to provide land users with the information they need to apply fertilizers at correct agronomic rates.
Soil
Sheet, rill, and gully erosion along the alluvial fans is excessively delivering sediments and phosphorus identified in the TMDLs for counties. This erosion is also affecting the range health by reducing the water holding capability of these fans and is one of the major causes of desertification and declining range health.
Soil erosion from head cutting and irrigation laterals is contributing to soil loss. Soil quality is low due to naturally high salt content in the Uintah Basin.

The winter of 2005 produced record precipitation events within the mountainous regions of the county. These events caused tremendous stream bank erosion, sheet/rill erosion, and sediment deposits. Assessments of damages done to properties, structures, crops, roads, and infrastructures totals hundreds of millions of dollars. These river systems are vulnerable to future destabilization until re-vegetation takes place.

Winds are constant and strong in many of the valley locations. High wind conditions, coupled with soils susceptible to wind erosion, make this a constant concern for the health and safety of humans, livestock, and crops as well as the environmental stability of the area.

Fish & Wildlife

Most of the operators use federal lands for part of their operations. They are concerned about the possibility for an at-risk or listed species to occur on the land because of the potential impacts from added regulation.

The urban-wild land interface creates that greatest wildlife impact because habitat is lost. This interface also creates concern about habitat fragmentation and loss of big-game wintering ranges.

There is keen focus on the impact of structural and management practices on at-risk species, particularly the impact on wetland habitats with implementation of improved irrigation systems**.**

Groundwater Quality

There are groundwater quality concerns in recharge zones and well-head areas.

The quality of groundwater is a specific concern where highly saline water often exceeds crop tolerances. The corrosive nature of this water can also be problematic for irrigation systems because of premature system failure.

Aquifers have been receding for many consecutive years in agricultural areas where deep wells supply water to fields. Many operators have to deepen wells and increase pump size to obtain access to the available well water. This condition has decreased the economic viability of these farming and ranching operations.

Over irrigating could cause deep percolation of pesticides and nutrients. This could have a negative impact on groundwater supplies. Potential over irrigation also may impact other downstream water users.

Plant Suitability

The spread of both noxious and invasive species is a great concern because of their negative impacts on agriculture, wildlife, and water regimes.

Additional plant suitability concerns are the presence of noxious weeds in proximity to travel routes and the encroachment of juniper on grazing lands.

Producers are exploring options to increase and maintain productivity such as new varieties of Round-up Ready corn and alfalfa and new hay and alfalfa varieties.

Social and Economic

There is an increasing conflict between urban development and agriculture. Ranches are being subdivided to 5-10 acre ranchettes. Additional pressures and influences make it hard for farmers and ranchers to maintain their lifestyle and livelihood.

Land values for housing and business developments are at record highs and continue to climb. The economic viability of farming and ranching has decreased over the last several years. For instance, in the summer of 2005, some agricultural lands were reportedly sold for $190,000/ac. Again, the ability for farmers and ranchers to maintain their livelihood and lifestyle is a great concern.

Area producers struggle to stay in business because they are faced with diminishing economic returns, higher input costs, and increased pressure to clean up non-point source pollution problems. As a result, these single and family run operations face difficult decisions regarding their future viability and existence. Development and urbanization have resulted in less available agricultural land, leaving many to question the future of agriculture.

In areas of the state where surface water is utilized, water quantity is directly related to precipitation Unpredictable weather affects the amount of water available to use. For instance, drought conditions reduce the reservoir capacities, consequently reducing the amount of water producers can use.

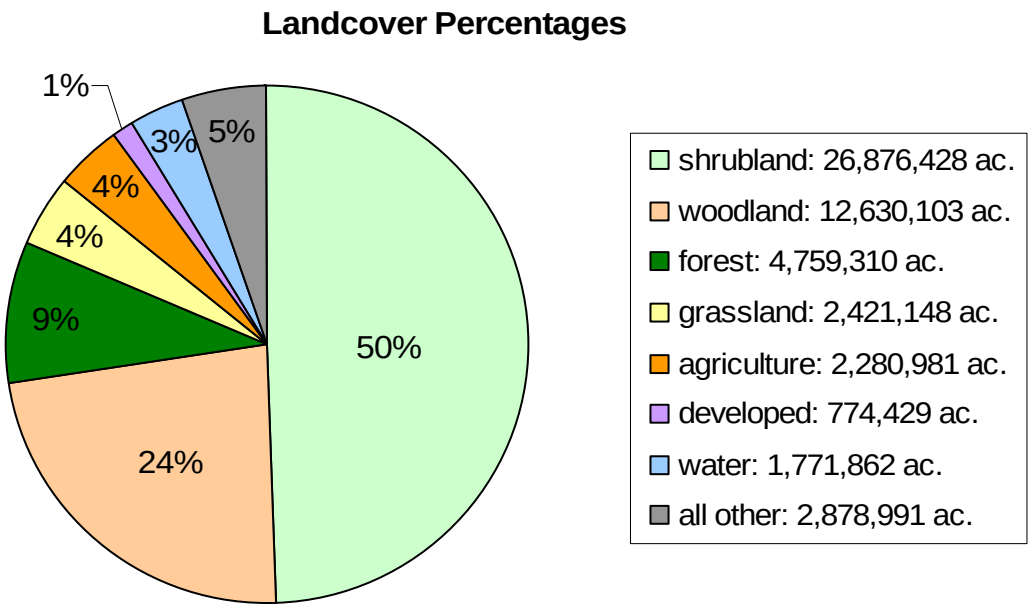
Most counties acknowledge that their natural resources contribute to their high quality of life and would therefore like to protect these resources.

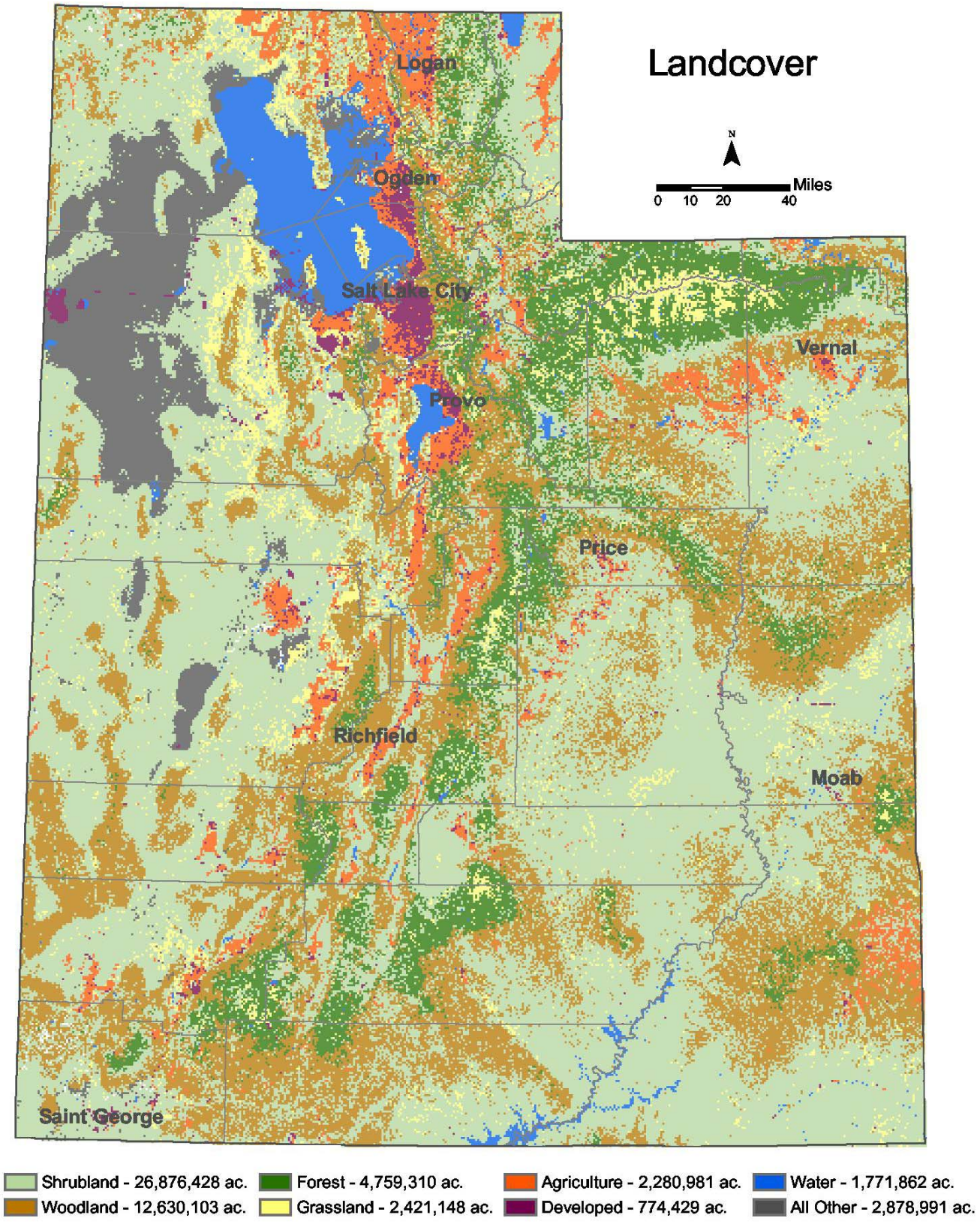
Although input costs are rising, productivity is the same. As a result, increased efficiencies should be developed and implemented. To improve these cost-to-benefit ratios, more education in irrigation water management and nutrient management is needed.

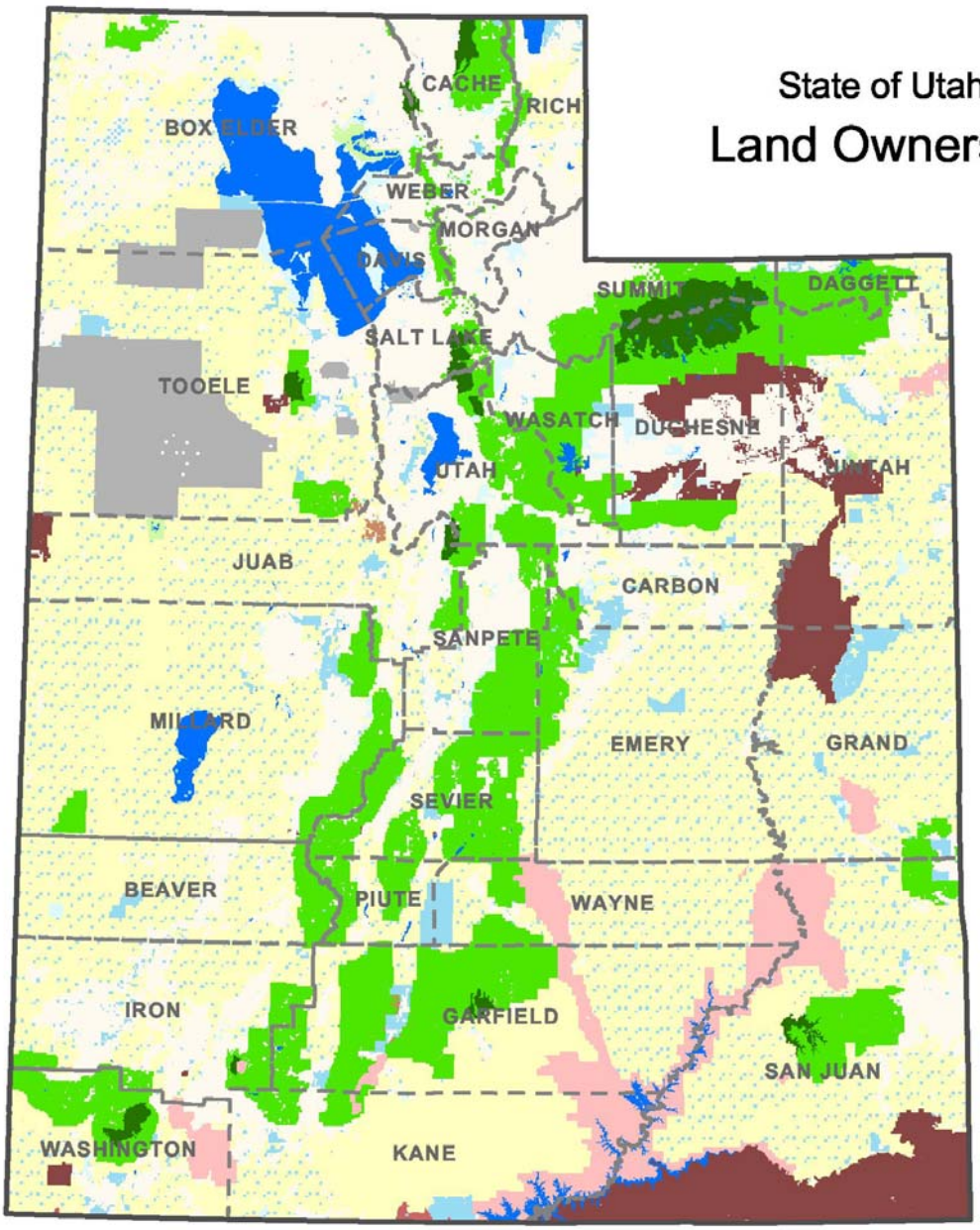
Plant Condition

The availability of plant material is limited for range or dryland seedlings in desert precipitation zones. Much of

private and public desert ranges have been invaded by cheatgrass, an invasive species that undermines the native plant vitality.
The extended drought cycle (ten years) has impacted the health and condition of plants on rangelands; lower precipitation rangelands have been the most negatively impacted.
General range health is a concern across the state. Some plant communities are old, decadent, and have low diversity and low productivity.
Rangeland health in the shrub-steppe is declining. This increases the erosion of rangelands and reduces the productive potential of these lands for livestock and wildlife. Thousands of acres of closed sagebrush stands have lost species diversity.
Unwanted and unproductive plant species on rangelands and fields are a major concern. The encroachments of pinion/juniper, cheatgrass, red brome and other noxious weeds have decreased the productivity of many rangelands and cropland. These invaders have exacerbated the wildfire danger within the county resulting in many thousands of acres of rangeland have been consumed by wildfires. These fires have reduced range productivity; without proper revegetation practices, these lands will perpetuate additional stands of annual grasses and weeds thus increasing the potential for future fires.
Air Quality
Air quality can be reduced hundreds of miles from fire locations. This is a temporary situation if the burned rangelands are rehabilitated quickly and properly.
Dust from county roads, dry alkali areas, poor range quality, and dryland cropping systems are additional air quality concerns. Urban growth and its associated construction, energy development, and impacts from increased recreational vehicle use are secondary contributors.
Air quality has decreased and energy consumption has increased from using larger engines and motors to drive the bigger irrigation pumps.
Domestic Animals
Domestic animals face potential threats from West Nile Virus and Bovine Spongiform Encephalopathy (BSE).
Grazing on public rangeland is decreasing due to diminished range quality, conflicts in public land use policy and management, lease availability, and pricing.
Livestock industry has been plagued by drought and until recently low prices. In some cases, this has an impact on herd health; forage loss has led to additional winter feedings or selling the livestock. Both situations combine to to losses in herd genetics.
Efforts are underway to enhance economic returns by including area dairies in organic milk production.




Landcover
N
Miles
0 10 20 40
Logan
Ogden
Salt Lake City
Provo
Vernal
Price
Richfield
Moab
Saint George
Shrubland - 26,876,428 ac.
Forest - 4,759,310 ac.
Agriculture - 2,280,981 ac.
Water - 1,771,862 ac.
Woodland - 12,630,103 ac.
Grassland - 2,421,148 ac.
Developed - 774,429 ac.
All Other - 2,878,991 ac.



State - 3,436,406 acres
Private - 11,520,584 acres
US Forest Service (USFS) - 7,334,692 acres
Bureau of Land Management (BLM) - 22,631,646 acres
BLM Wilderness Area - 24,966 acres
USFS Wilderness Area - 738,415 acres
Bankhead-Jones Land Use Lands - 31,851 acres
Indian Reservation (IR) - 2,441,480 acres
National Park Service (NPS) - 1,950,465 acres
State, County, City; Wildlife, Park and Outdoor Recreation Areas - 654,403 acres
US Fish and Wildlife (USFWS)National Wildlife Refuge - 62,034 acres
Military Reservations and Corps of Engineers - 1,813,211 acres
Water - 1,674,218 acres

N

0 25 50 100 Miles

Resource Concerns – SOILS

Counties were given a list of common agricultural concerns for soils and land uses where they could occur. The following list summarizes their responses in decreasing order of concern.

Soil Erosion and Condition Resource Concerns	Associated Land Use
Stream Bank Erosion	Concern is greatest on grazed range, grazed forest and watershed protection areas, but is an issue for all land uses.
Sheet and Rill Erosion	Concern is greatest on grazed range and forest, cropland, and watershed protection areas, but is an issue for all land uses.
Wind Erosion	Primarily a concern on crop, grazed range, and hay lands, but applies to all land uses.
Contaminants, Salts and Other Chemicals	Cropland, hayland, pasture, and water bodies are the areas where this is of greatest concern.
Ephemeral Gully	The impact of grazing on range and forest are the primary concerns, in addition to watershed protection areas and cropland.
Rangeland Site Stability	Land used for grazing and wildlife are the focus of this concern.
Classic Gully	Grazed forest and range are areas of concern.
Compaction	Crop, hay, and pasture lands exhibit compaction problems.
Damage from Sediment Deposition	A moderate concern for water bodies in Utah.
Organic Matter Depletion	Concerns expressed on crop, grazed range and hayland.
Irrigation-induced Erosion	This happens on irrigated crop, hay, and pastureland for three quarters of the state.
Contaminants: Animal Waste and Other Organics	Concern on crop, hay, and pasture lands.

Land Capability Class on Cropland and Pastureland

Land capability classification is a system of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over a long period of time. It is essentially a soil classification system that shows the crop limitations due to physical or chemical reasons such as slope or salinity. Further, classes I through IV are normally cropped. Classes V through VIII are not normally cropped for economic reasons. The following table shows the acres and state percentage of each of the capability classes for irrigated cropland and pasture in Utah.

		Acres	Percentage
Land Capability Class (Irrigated Cropland & Pastureland Only)	**I** - slight limitations	82,802	2%
	II - moderate limitations	1,420,095	28%
	III - severe limitations	1,430,241	28.61%
	IV - very severe limitations	1,753,003	35.07%
	V - no erosion hazard, but other limitations	8,001	0.16%
	VI - severe limitations, unsuited for cultivation, limited to pasture, range, forest	208,469	4.17%
	VII - very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	94,483	1.89%
	VIII - misc areas have limitations, limited to recreation, wildlife, and water supply	2,039	0.04%
	Total Crop & Pasture Lands	**4,999,133**	**100%**

Land Capability Class acreages are based on digitized soil surveys. Many counties have only partial coverage of digitized soil surveys. There are four counties that have no digitized soil surveys: Duchesne, Emery, Piute, and Sevier Counties.

Soil Erosion on Utah Cropland

The Natural Resources Inventory (NRI) is national NRCS program that provides updated information on the status, condition, and trends of non-federal land, soil, water and other related resources. NRI records indicate that in 1997, about 705,300 acres in Utah were cultivated and 973,800 were non-cultivated. Utah cropland occupies a small, declining part of Utah's total surface area. In 1984, it made up 4% of the total surface area and in 1997 it comprised about 3%. Cultivated ground is either in row crops or in hay and pasture that is in rotation with row crops. Non-cultivated ground is permanent hay, pasture or orchards lands.

The NRI has shown that sheet and rill erosion have had varying effects on cultivated and non-cultivated cropland in Utah. In cultivated areas, the erosion rate for the monitoring period between 1982 and 1997 varied from 1.4 to 1.6 tons per acre per year. On non-cultivated cropland, it averaged about .2 tons. The totals equal about .8 tons of erosion from water. The erosion from water on pastureland has been about .1 to .2 tons per acre.

The Conservation Reserve Program (CRP), a NRCS program that uses vegetative cover to systematically curb water and wind erosion on cropland that would otherwise be eroding at a high rate, has been quite helpful in Utah. The first recordings for erosion on any CRP land were in 1987. Initial readings indicated that water erosion was occurring at about 3.2 tons per acre. By 1997, data indicated that erosion rates were down to about 0.9 tons, a reduction of about 72 percent. These were the most erosive soils in the state prior to the CRP program.

Wind erosion has also affected Utah cropland. NRI data shows that cultivated cropland was blown away at a rate of 6.0 to 6.7 tons per acre until 1997, when it slowed to about 4.5 tons per acre. The non-cultivated rates ranged from 1.1 to 2.1 and dropped to 0.7 in 1997. By 1997, the average wind erosion rates for Utah cropland had dropped from 4.4 to 2.3, with the most dramatic drop in CRP areas. The 1997 figures were almost 1 tenth of what they were ten years previous. Overall decreases on pastureland were about .2 tons. In 1982 they were about 1.5 and in 1997, about 1.3 with increases and decreases throughout the 15-year monitoring period.

Prime & Unique Farm Land

Prime farmland is land with 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 no intolerable soil erosion. In Utah, irrigation is normally essential for land to be classified as prime. There are 2,451,048 acres of prime farmland in seventeen counties and 1,863,920 acres in twenty-one counties that would be prime if they were irrigated. However, since five Utah counties lack the digitized soils data that determines this classification, this data is incomplete.

Unique farmland is land other than prime farmland used for the production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. In Utah, these are primarily orchards. There are 37,164 acres of designated unique farmland in the following five counties: Box Elder, Davis, Utah, Wasatch, and Weber.

Farmland of statewide or local importance has criteria encouraged for protection by the Farmland Protection Policy Act. This is land, in addition to prime and unique farmlands, is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. In the late 1970's, the Utah Department of Agriculture and Utah State University, in cooperation with the NRCS, developed the following criteria which defines soil moisture supply and storage criteria: soil temperature, pH, water table, salt conductivity, flood potential and potential erodibility. Cache is the only county to develop and implement the local criteria.

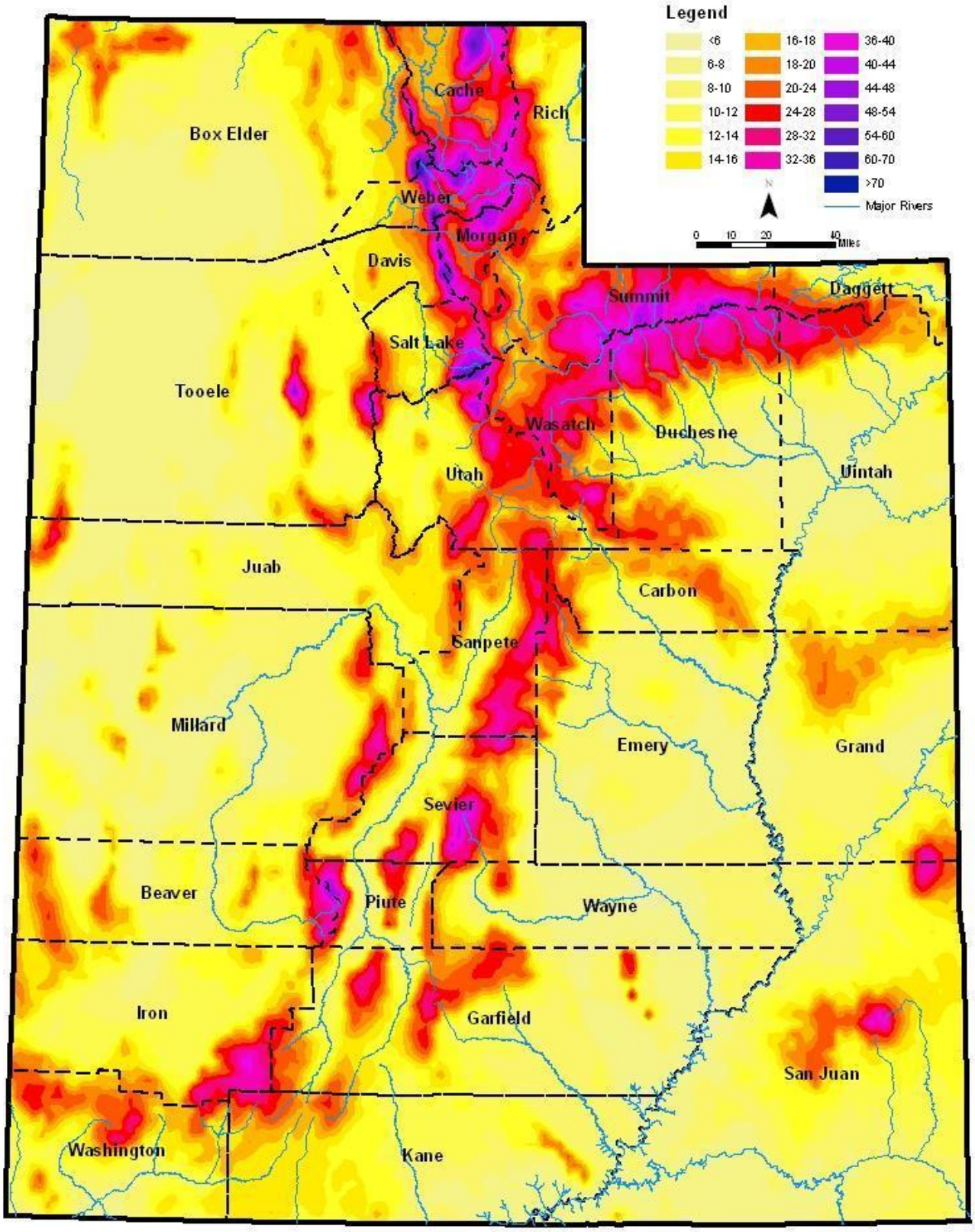
The Farm and Ranch Lands Protection Program (FRPP), administered by the NRCS, has a goal to protect farm and ranch lands with prime, unique, statewide and locally important soils as well as other historic and archaeological resources from conversion to non-agricultural uses. The program preserves valuable farm and ranch lands for future generations.

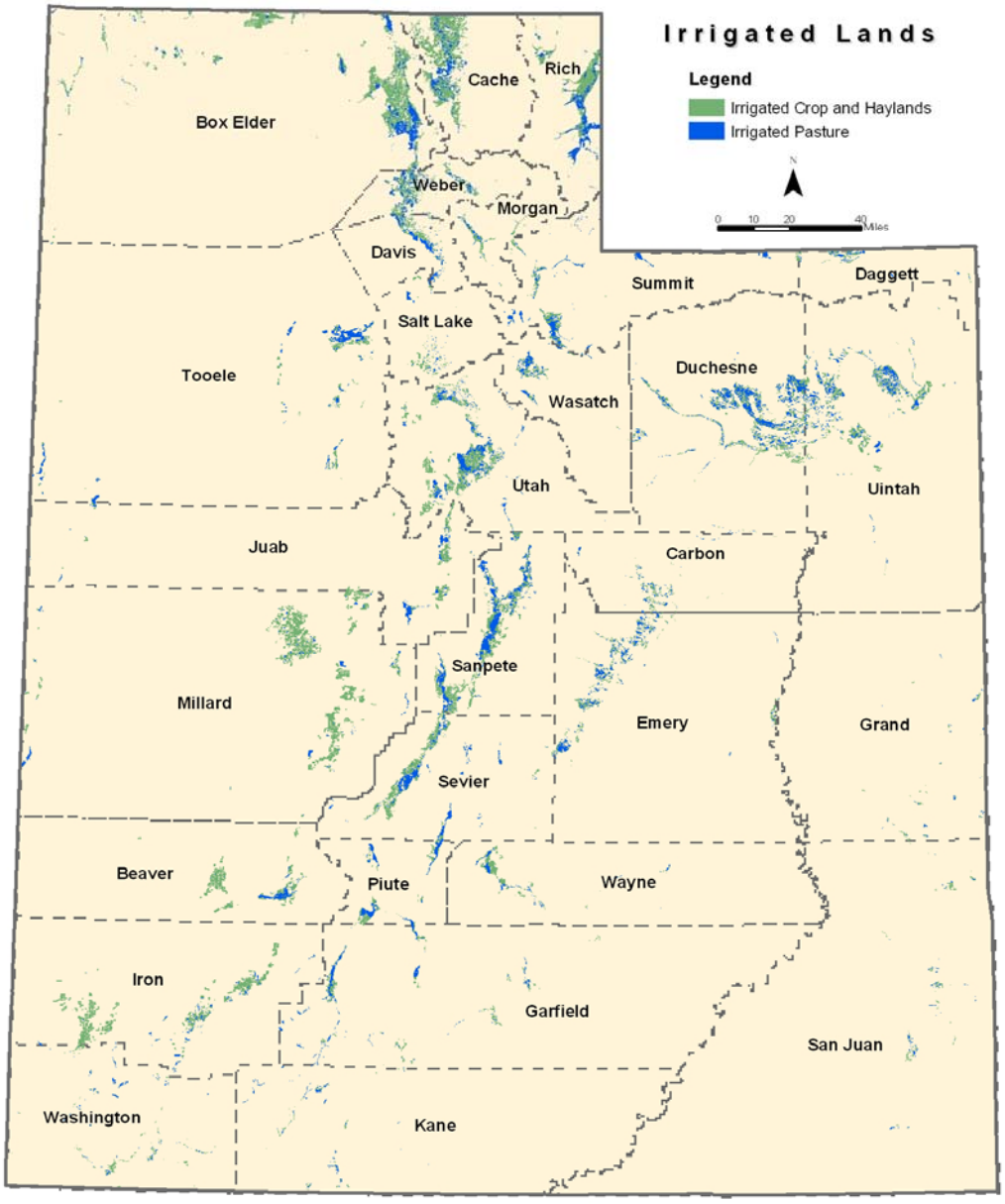
Resource Concerns – WATER

Counties were given a list of common natural resource concerns and land uses. The following list summarizes the responses in decreasing order of concern. This list is not inclusive of all the state concerns; it merely highlights the most pervasive concerns across Utah.

Surface Water and Groundwater Quantity and Quality Resource Concerns & Issues	Associated Lands
Excessive Runoff, Flooding, or Ponding	This was a substantive concern on all Utah land uses.
Insufficient Flows in Watercourses	A primary concern for watershed protection, grazing lands, wildlife, and pasture lands.
Reduced Capacity of Conveyances by Sediment Deposition	Water bodies, watershed protection areas, pasture, and hay land are the areas of concern.
Water Quantity – Rangeland Hydrologic Cycle	In addition to traditional grazing land, watershed protection areas are targeted concern areas.
Inefficient Water Use on Irrigated Land	All irrigated working lands in Utah report this concern.
Excessive Salinity in Surface Water	40% of Utah indicated this as a concern on crop, hay, pasture, and grazed range lands.
Excessive Suspended Sediment and Turbidity in Surface Water	Water used on traditionally irrigated land (crop, hay and pasture) are areas of concern
Reduced Storage of Water Bodies by Sediment Accumulation	Half of Utah counties report surface water bodies as an issue.
Excessive Salinity in Groundwater	Ten counties report excessive salinity in groundwater associated with irrigated lands.

Annual Precipitation





Irrigation Efficiency

	Irrigation Efficiency*:	<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	23%	29%	48%
	Pastureland	58%	22%	20%

These numbers are estimates based on local knowledge of irrigation systems in Utah.


Total Maximum Daily Load (TMDL)
Status Map
Legend
Approved TMDL
Partial TMDL Completed
TMDL in progress
N
0 10 20 40
Miles
Box Elder
Cache
Rich
Weber
Morgan
Davis
Summit
Daggett
Salt Lake
Tooele
Wasatch
Duchesne
Uintah
Utah
Juab
Carbon
Sanpete
Millard
Emery
Grand
Sevier
Beaver
Piute
Wayne
Iron
Garfield
San Juan
Washington
Kane

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
Otter Creek/Koosharem	Completed	Price-San Rafael Rivers Unit FEIS	Completed
Little Bear	Active	Beaver River Watershed Plan	Completed
Lower Bear	Active	West Beaver Watershed Plan	Planning
Cub River	Active	Sheep Creek Salinity Area	Draft in review
Price River	Active	Green River Salinity	Acting
San Rafael River	Active	Upper Sevier Watershed Management Plan	Completed
Blue Creek Howell	Maintenance	Escalante River Watershed Water Quality Management Plan	Draft
Beaver River Watershed Plan	Active	Paria River Watershed Management Plan	Draft
West Beaver Watershed Plan	Planning	Coal Creek Congressional Earmark	Planning
Muddy Creek	Active	Virgin River Watershed Management plan	Draft
Upper Sevier River Community Watershed Project	Active	San Pitch River Watershed Plan	Draft
Montezuma Creek	Active	Otter Creek Kosharem HUA	Completed
East Canyon	Active	Echo Watershed Plan	Planning
Uintah Basin Salinity Project	Active	Clover Creek CRMP	Active
		Vernon CRMP	Completed
		Deep Creeks CRMP	Planning
		West Canyon CRMP	Planning
		Spanish Fork River CRMP	Completed
		Spanish Fork City River Bottoms Area	Planning
		Tri-Valley Watershed Plan	Completed
		Fremont River CRMP	Completed
		Ogden Valley	Planning

Resource Concerns – AIR, PLANTS, ANIMALS

Counties were given a list of common natural resource concerns and land uses. The following list summarizes the responses in decreasing order of concern. This list is not inclusive of all state concerns; it merely highlights the most pervasive concerns across all of Utah.

Resource Concerns and Issues with Air, Plants, and Animals	Associated Lands
Noxious and Invasive Plants	This is an extremely high priority on all land uses in the state.
Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act	This was reported as an issue in nearly 60% of Utah's counties.
Plant Condition – Productivity, Health and Vigor	Major concern on both traditional agricultural land and watershed protection areas.
Fish and Wildlife Inadequate Food	Grazed range and forest are the primary land uses where this is a concern.
Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act	A concern primarily on grazing lands and forested lands.
Threatened or Endangered Plant Species: Declining Species, Species of Concern	
Fish and Wildlife Inadequate Water	Statewide resource concern on grazed range, grazed forest and wildlife lands.
Fish and Wildlife Habitat Fragmentation	
Fish and Wildlife Inadequate Cover/Shelter	
Forage Quality and Palatability	
Inadequate Quantities and Quality of Feed and Forage	
Plant Condition – Wildfire Hazard	
Plants not adapted or suited	
Domestic Animals: Inadequate Stock Water	
Fish and Wildlife: Imbalance Among and Within Populations	A moderate concern across the state.

AFO/CAFO

The Utah AFO/CAFO partnership was formed to restore and protect water quality, maintain a viable and sustainable agricultural industry, and keep the decision-making process at the state and local level. The strategy was developed as a voluntary incentive-based approach that would regulate only the largest facilities or facilities where voluntary methods fail to solve pollution problems. The partnership included a number of state and federal agencies as well as private agricultural agencies and livestock producer associations.

The AFO/CAFO strategy, finalized in March of 2001, called for a statewide assessment of all animal feeding operations. This assessment was completed in 2004. A total of 2,895 AFO's were inventoried & assessed over a three year period. 55 were identified as CAFO's, 379 as potential CAFO's (meaning they have less than 1,000 animal units but have pollution problems), 405 did not meet the definition of an animal feeding operation, and 2,056 AFO's had no water quality problems. The information given in the resource assessment represents the number of operations assessed and identified in the state.

Animal Feeding Operations (AFO)									
Animal Type	**Dairy**	**Feed Lot (Cattle)**	**Poultry**	**Swine**	**Mink**	**Horses**	**Sheep**	**Mixed**	**Other**
No. of Operations	243	914	52	12	52	280	32	425	49
Potential Confined Animal Feeding Operations (PCAFO)									
Animal Type	**Dairy**	**Feed Lot (Cattle)**	**Poultry**	**Swine**	**Mink**	**Horses**	**Sheep**	**Mixed**	**Other**
No. of Operations	106	197	2	1	0	20	2	45	12
Confined Animal Feeding Operations - Utah CAFO Permit									
Animal Type	**Dairy**	**Feed Lot (Cattle)**	**Poultry**	**Swine**	**Mink**	**Horses**	**Sheep**	**Mixed**	**Other**
No. of Permitted Farms	17	23	7	2	0	0	0	0	0

Plant Species of Special Concern

There are forty-three plants in Utah listed as threatened and endangered. These plants are protected under the Endangered Species Act. Federal agencies must ensure that actions they fund or carry out do not jeopardize the continued existence or adversely modify the critical habitat of any of these species. For an excellent photo and descriptive reference please see: Utah Native Plant Society. 2003-2005. Utah Rare Plant Guide. Salt Lake City, UT: Utah Rare Plant Guide Home Page. http://www.utahrareplants.org.

Noxious Weeds

The following weeds are officially designated and published as noxious for the State of Utah in 2003:

- Bermudagrass** (corsium arvense)
- Canada Thistle (cirsium arvense)
- Diffuse Knapweed (centaurea diffusa)
- Dyers Woad (isatis tinctoria L)
- Field Bindweed (Wild Morning Glory) (convolvulus arvensis)
- Hoary Cress (cardaria drabe)
- Johnsongrass (sorghum halepense)
- Leafy Spurge (euphorbia esula)
- Medusahead (taeniatherum caput-medusae)
- Musk Thistle (carduus mutans)
- Perennial Pepperweed (lepidium latifolium)
- Perennial Sorghum (sorghum halepense L & sorghum almum)
- Purple Loosestrife (lythrum salicaria L.)
- Quackgrass (agropyron repens)
- Russian Knapweed (centaurea repens)
- Scotch Thistle (onopordum acanthium)
- Spotted Knapweed (centaurea maculosa)
- Squarrose Knapweed (centaurea squarrosa)
- Yellow Starthistle (centaurea solstitialis)

Additional noxious weeds declared by Utah Counties (2003):

County	Weeds
Beaver:	Bull Thistle
Box Elder:	St. Johnswort
Cache:	Goatsrue, Poison Hemlock, Puncture Vine
Carbon:	Russian Olive
Davis:	Poison Hemlock, Yellow Nutsedge, Buffalobur
Duchesne:	Russian Olive
Iron:	Western Whorled Milkweed
Juab:	Blue Flowering Lettuce
Millard:	Buffalobur
Morgan:	Puncturevine, Burdock
Rich:	Black Henbane, Dalmation toadflax, Poison Hemlock
San Juan:	Silverleaf Nightshade, Buffalobur, Whorled Milkweed, Jointed goatgrass, Camel thorn
Sanpete:	Houndstongue, Black henbane, Velvet leaf
Sevier:	Russian olive
Tooele:	Yellow toadflax, Houndstongue, Dalmation toadflax, Jointed goatgrass
Uintah:	Russian Olive, Salt Cedar
Washington:	Poison Milkweed, Silverleaf Nightshade
Wasatch:	Yellow toadflax, Dalmation toadflax, Houndstongue
Wayne:	Russian olive
Weber:	Puncturevine

Wildlife Species of Special Concern

Federally-listed species are listed under the procedures detailed in Section 4 of The Endangered Species Act (ESA). "Endangered" means the species is in danger of becoming extinct throughout all or a significant portion of its range. "Threatened" means the species is likely to become endangered within the foreseeable future. "Candidate" species are warranted to be listed, but the listing action has been precluded by higher priority listings. Threatened, Endangered, and Proposed species are equally protected from "take" under the ESA. Candidate species are not. "Take" is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt any such conduct" and includes habitat modification or degradation that significantly impairs breeding, feeding, or sheltering.

AT-RISK SPECIES				
	Common Name	**Group**	**Primary Habitat**	**Secondary Habitat**
FEDERALLY-LISTED				
Endangered:	California Condor (experimental)	Bird	Cliff	
	Southwestern Willow Flycatcher	Bird	Lowland Riparian	Mountain Riparian
	Bonytail	Fish	Water - Lotic	
	Colorado Pikeminnow	Fish	Water - Lotic	
	Humpback Chub	Fish	Water - Lotic	
	June Sucker	Fish	Water - Lentic	Water - Lotic
	Razorback Sucker	Fish	Water - Lotic	
	Virgin River Chub	Fish	Water - Lotic	Lowland Riparian
	Woundfin	Fish	Water - Lotic	
	Black-footed Ferret	Mammal	Grassland	High Desert Scrub
	Gray Wolf (extirpated)	Mammal	Mountain Shrub	Mixed Conifer
	Desert Valvata (extirpated)	Mollusk	Water - Lentic	
	Kanab Ambersnail	Mollusk	Water - Lentic	Wetland
Threatened:	Bald Eagle	Bird	Lowland Riparian	Agriculture
	Mexican Spotted Owl	Bird	Cliff	Lowland Riparian
	Lahontan Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Brown (Grizzly) Bear (extirpated)	Mammal	Mixed Conifer	Mountain Shrub
	Canada Lynx	Mammal	Sub-Alpine Conifer	Lodgepole Pine
	Utah Prairie-dog	Mammal	Grassland	Agriculture
	Desert Tortoise	Reptile	Low Desert Scrub	
Candidate:	Relict Leopard Frog (extirpated)	Amphibian	Wetland	Water - Lotic
	Gunnison Sage-grouse	Bird	Shrubsteppe	
	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
	Coral Pink Sand Dunes Tiger Beetle	Insect		
	Fat-whorled Pondsnail	Mollusk	Wetland	
	Ogden Rocky Mountainsnail	Mollusk	Mountain Shrub	Rock
Proposed:	(None)			

The Utah Comprehensive Wildlife Conservation Strategy (CWCS) prioritizes native animal species according to conservation need. At-risk and declining species in need of conservation were identified by examining species' biology and life history, populations, distribution, and threats. Conservation Agreement Species, on the other hand, have been identified as a species of concern under Utah Division of Wildlife Resources Administrative Rule R657-48 and are currently receiving special management under a conservation agreement developed between the state and the U.S. Fish and Wildlife Service to preclude the need for listing under the ESA. The following table lists species identified in Utah as Conservation Agreement Species.

Conservation Agreement Species:	Columbia Spotted Frog	Amphibian	Wetland	Wet Meadow
	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bluehead Sucker	Fish	Water - Lotic	Mountain Riparian
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Colorado River Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Flannelmouth Sucker	Fish	Water - Lotic	
	Least Chub	Fish	Water - Lentic	Wetland
	Roundtail Chub	Fish	Water - Lotic	
	Virgin Spinedace	Fish	Water - Lotic	Lowland Riparian

Wildlife Species of Concern: Species with credible scientific evidence to substantiate a threat to continued population viability. It is anticipated that species of concern designations under Utah Division of Wildlife Resources Administrative Rule R657-48 will identify species for which conservation actions are needed. Furthermore, timely and appropriate conservation actions implemented on their behalf will preclude the need to list these species under the provisions of the federal Endangered Species Act. There are two amphibians, eleven birds, seven fish, fourteen mammals (including six bats), twenty-four mollusks, and twelve reptiles currently listed on the Utah Species of Concern list.

The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten key habitats state-wide are (in order of priority):

1. **Lowland Riparian** (riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow)
2. **Wetland** (marsh <5,500 ft elevation; principal vegetation: cattail, bulrush, and sedge)
3. **Mountain Riparian** (riparian areas >5,500 ft elevation; principal vegetation: narrow leaf cottonwood, willow, alder, birch and dogwood)
4. **Shrub steppe** (shrubland at 2,500 - 11,500 ft elevation; principal vegetation: sagebrush and perennial grasses)
5. **Mountain Shrub** (deciduous shrubland at 3,300 - 9,800 ft elevation; principal vegetation: mountain mahogany, cliff rose, bitterbrush, serviceberry, etc.)
6. **Water - Lotic** (open water; streams and rivers)
7. **Wet Meadow** (water saturated meadows at 3,300 - 9,800 ft elevation; principal vegetation: sedges, rushes, grasses and forbs)
8. **Grassland** (perennial and annual grasslands or herbaceous dry meadows at 2,200 - 9,000 ft elevation)
9. **Water - Lentic** (open water; lakes and reservoirs)
10. **Aspen** (deciduous aspen forest at 5,600 - 10,500 ft elevation)

Resource Concerns – SOCIAL AND ECONOMIC

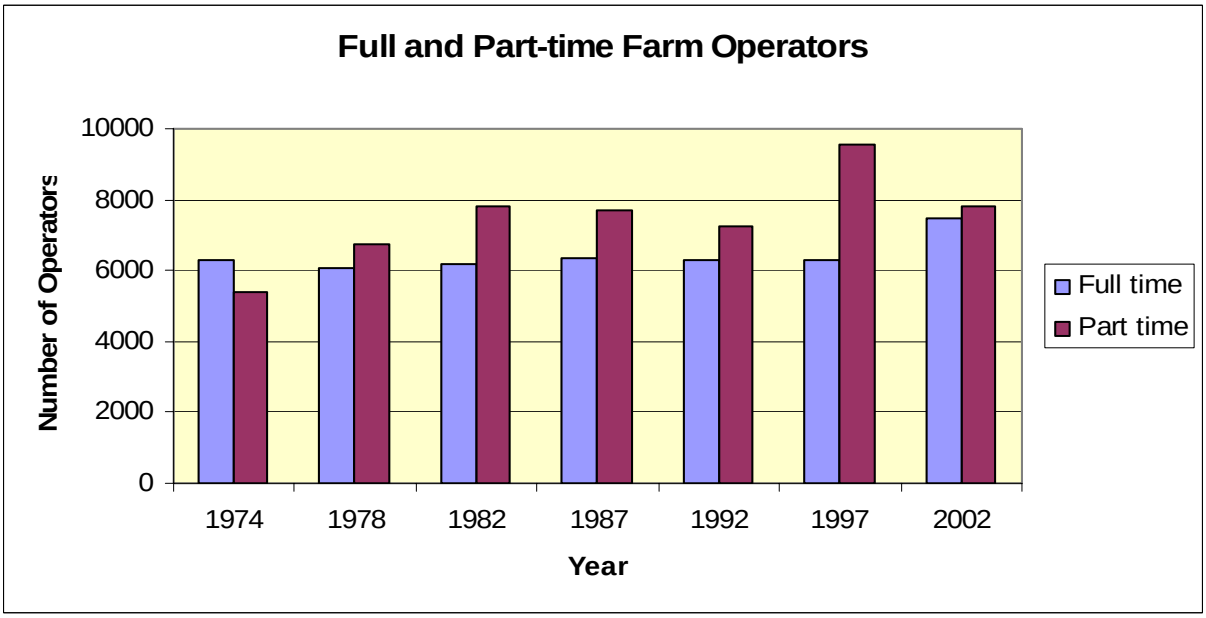
Counties were given a list of common natural resource concerns and land uses. The following list summarizes the responses in decreasing order of concern. This list is not inclusive of all state concerns; it merely highlights the most pervasive concerns across all of Utah.

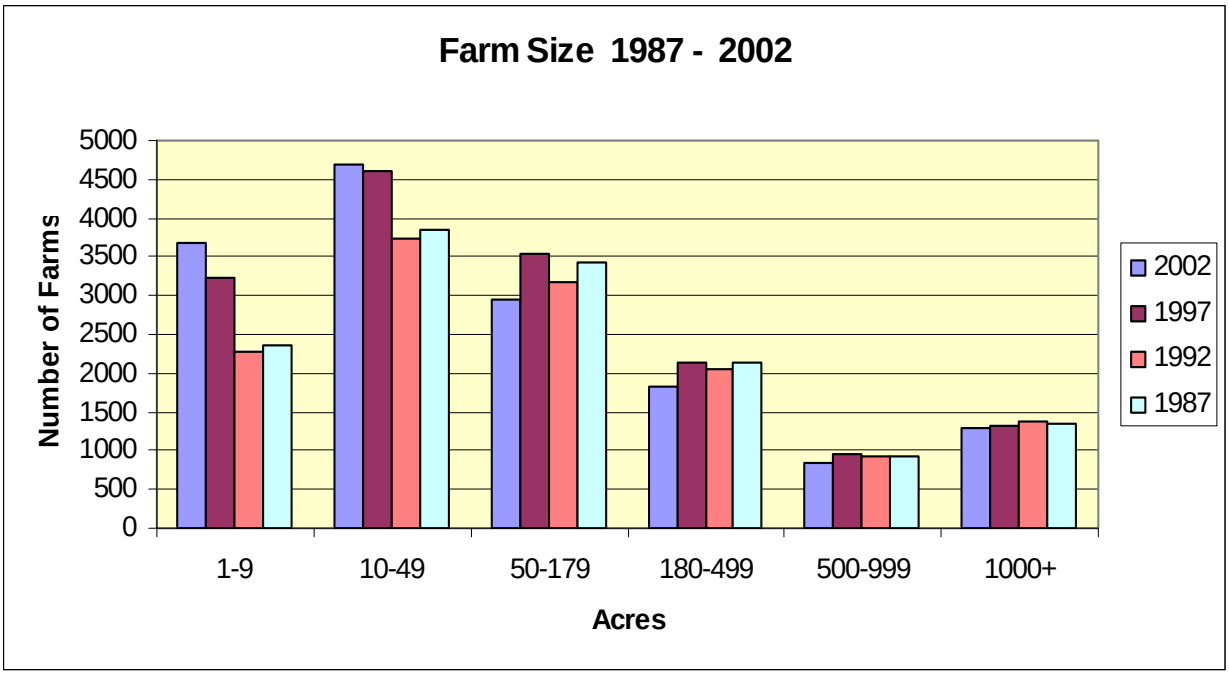
Social and Economic Resource Issues	Observations
Urban Encroachment on Agricultural Land	Encroachments are primarily on hayland, pasture, and cropland, but concerns are present on all land uses
Non-Traditional Landowners and Tenants	Impacts are primarily on hay, pasture, and cropland, as well as grazed range. Concerns, however, are present on all land uses.
Special Considerations for Land Management (High State and Federal Percentage)	Concerns are targeted primarily to grazed range, grazed forest, and forest lands.
Active Resource Groups (Coordinated Resource Management Groups, etc)	Active resource groups are focusing efforts primarily on traditional agricultural land.
Full Time vs Part Time Agricultural Communities	Utah communities place a high value in maintaining an agricultural component to their livelihood.
Innovation Needs	Crop, pasture, grazed range, hay, watershed protection, and water bodies are key land use areas where innovations are recommended.
Non-Traditional Land Uses	A moderate number of respondents expressed concerns regarding pasture and recreation
Population Demographics, Changes and Trends	The development of agricultural land is a concern in nearly half of Utah counties.
Size of Operating Units	The decrease of land available for cropland, hayland and pastureland is a concern.
Marketing of Resource Products	Crop and hay production desire additional marketing options.

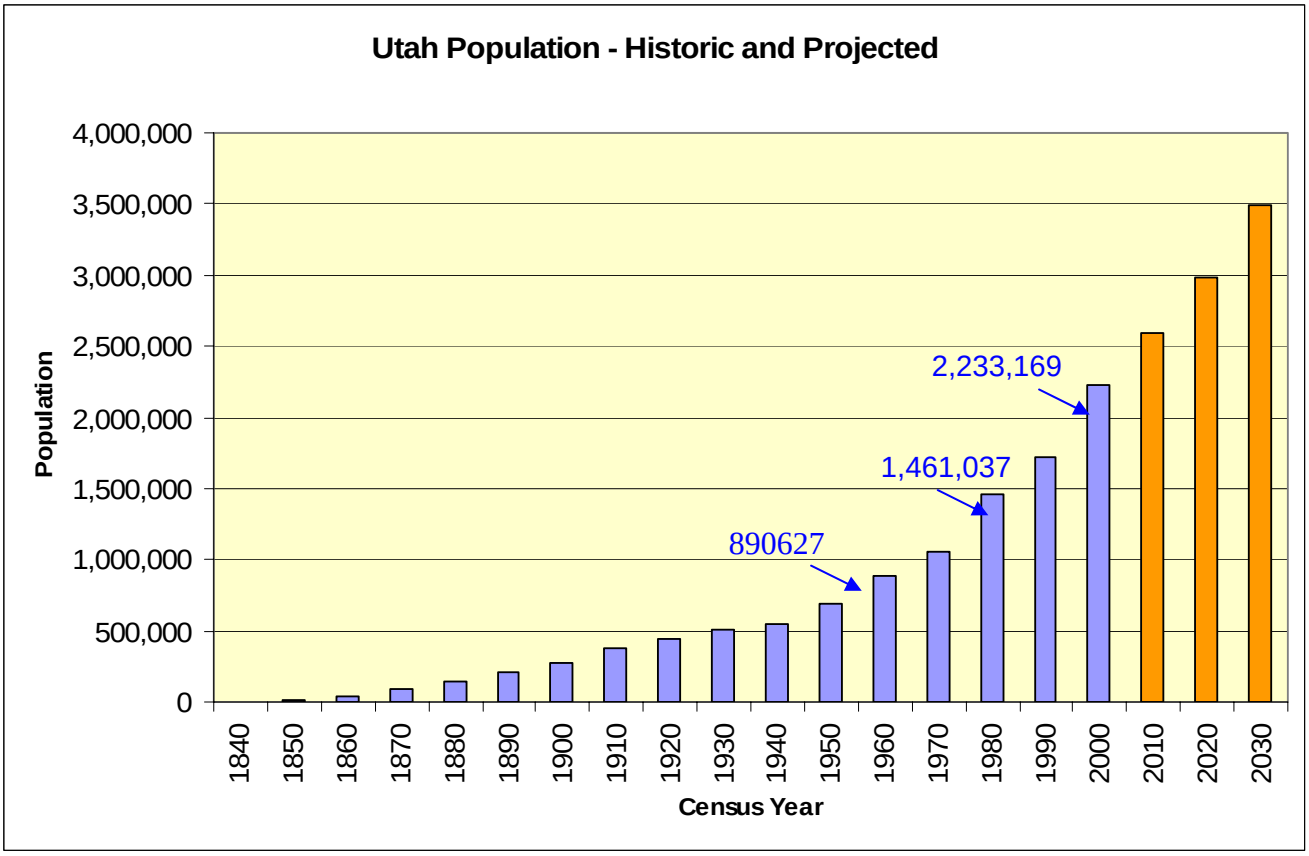
Cultural Resources:

Utah is home to an abundance of archaeological and historic resources. The cultural history of Utah spans over 10,000 years, from the Paleoindian Period through historic times. Utah's prehistoric archaeological resources include rock shelters, open camp sites, structural sites, village sites and rock art. During historic times, explorers, miners, mountain men, cowboys, sheepherders, and many other religious and cultural groups left their mark on the land. For additional information on Utah's cultural and historic resources visit http://history.utah.gov/index.html .

Census and Social Data

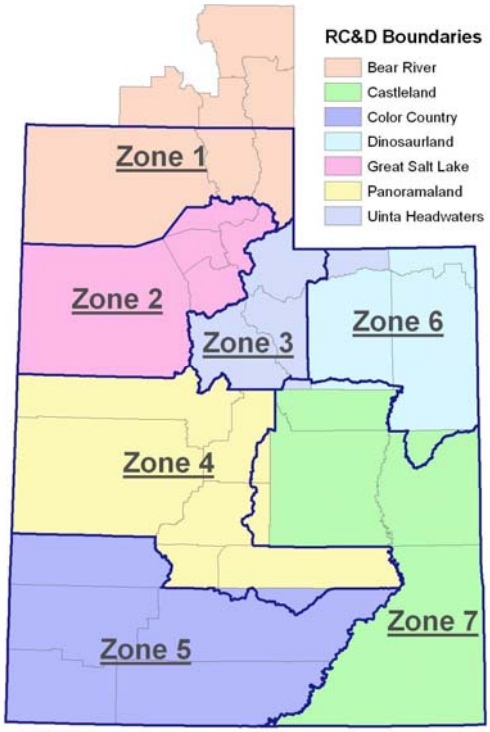





Utah Population - Historic and Projected
Population
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
2,233,169
1,461,037
890627
1840
1850
1860
1870
1880
1890
1900
1910
1920
1930
1940
1950
1960
1970
1980
1990
2000
2010
2020
2030
Census Year

Public Survey/Questionnaire Results:

Outreach efforts to include public feedback on Utah resources concerns were an integral part of this assessment. Surveys, public meetings, and scoping assessments were undertaken by the soil conservation districts (SCD) with the assistance of the Utah Association of Conservation District (UACD) Zone Coordinators for each of Utah's seven zones. Valuable administrative assistance for this assessment / was provided by the Utah Department of Agriculture & Food, (UDAF). In addition local NRCS Resource Conservation and Development (RC&D) coordinators and councils solicited feedback from their constituents. The partnership between the SCD, UACD, UDAF, RC&D, and NRCS Field Offices is a critical alliance to effectively get conservation activities implemented in Utah. However, the specifics of these surveys do not lend themselves to summary in this document so please contact the following for specific results of each of these outreach efforts or the entire county assessment.



Zone 1: Cache, Box Elder, Rich
UACD – Thayne Mickelson, (435-753-6029, x38), or thayne.mickelson@ut.nacdnet.net.
NRCS – Logan Field Office for Cache County (435-753-5616 x25); Tremonton Field Office for Box Elder County (435-257-5403 x16).

Zone 2: Davis, Morgan, Tooele, Salt Lake, Weber
UACD – Ken Mills (801-393-3830 x15) or ken.mills@ut.nacdnet.net. Executive survey posted at http://www.uacd.org/.
NRCS – Ogden Field Office for Davis, Weber and Morgan Counties (801-629-0575 x26);
Murray Field Office for Tooele and Salt Lake (801-263-3204 x109).
Great Salt Lake RC&D Council will post the data at www.greatsaltlakercd.org,

Zone 3: Summit, Wasatch, Utah
UACD – Ray Loveless, (801-229-3838) or RLOVELESS@mountainland.org
NRCS – Provo Field Office (801-377-6928 x20) for Utah County.
Uinta Headwaters RC&D, Barbara Carey (435-654-0242 x12) – for Summit and Wasatch Counties.

Zone 4: Juab, Milliard, Piute, Sanpete, Sevier, Wayne
UACD – David Pace (435-896-8566) or david.pace@ut.nacdnet.net.
NRCS – Nephi Field Office for Juab County (435-623-0342); Fillmore Field Office for Millard County (435-743-6655); Richfield Area Office for Piute, Sevier and Wayne Counties (435-896-5489 x135); Manti Field Office for Sanpete County (435-835-4171 x14).
Panoramaland RC&D Council – Linda Lind (Coordinator) linda.lind@ut.usda.gov, (435) 896-8965 x100.

Zone 5: Beaver, Garfield, Iron, Kane, Washington
UACD – Tyce Palmer (435-865-0703 or 435-676-8021) or tyce.palmer@ut.nacdnet.net
NRCS – Beaver Field Office for Beaver County (435-438-5092 x101); Panguitch Field Office for Garfield and Iron Counties (435-676-8280); Cedar City Field Office for Iron and Washington Counties (435-586-2429 x21).

Zone 6: Daggett, Duchesne, Uintah
UACD – Darrell Gillman (435-722-4621 x114) or Darrell.Gillman@ut.nacdnet.net.
NRCS – Roosevelt Field Office for Duchesne County (435-722-4621 x111); Vernal Field Office for Uintah and Daggett Counties (435-789-1338 x32).

Zone 7: Carbon, Emery, Grand, San Juan
UACD – Hal Lemon (435-384-2985) or hal.lemon@ut.nacdnet.net
NRCS – Price Area Office for Carbon and Emery Counties (435-637-0041 x19); Monticello Field Office for Grand and San Juan Counties (435-587-2473 x118).

Bibliography

1. General information about Utah obtained from the official Utah state government website: http://www.utah.gov/about and Agricultural facts from http://ag.utah.gov/FarmFacts.pdf and the Annual Utah Agricultural bulletin at http://www.nass.usda.gov/ut/2005ab.htm.

2. Land Use/Land Cover layer developed by the Utah Department of Water Resources. A polygon coverage containing water-related land-use for all 2003 agricultural areas of the state of Utah. Compiled from initial USGS 7.5 minute Digital Raster Graphic water bodies, individual farming fields and associated areas are digitized from Digital Orthophotos, then surveyed for their land use, crop type, irrigation method, and associated attributes.

3. Location and land ownership maps made using GIS shape files from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. Website: http://agrc.utah.gov/

4. Prime and Unique farmlands derived from SSURGO Soils Survey using the Soil Data Viewer. Definitions of Prime and Unique farmlands from U.S. Geological Survey, http://water.usgs.gov/eap/env_guide/farmland.html#HDR5

5. Land Capability Classes derived from SSURGO Soils Survey using the Soil Data Viewer.

6. Tons of Soil Loss by Water Erosion data gathered from National Resource Inventory (NRI) data. Estimates from the 1997 NRI Database (revised December 2000) replace all previous reports and estimates. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/

7. Irrigated Lands Map - 2004 Water Related Land use Data provided by Utah Division of Water Resources. http://www.water.utah.gov/planning/landuse/index.htm County boundaries provided by Automated Geographical Reference Center (AGRC) http://agrc.utah.gov/

8. Precipitation Map - Precipitation data obtained from the USDA/NRCS Geospatial Data Gateway http://datagateway.nrcs.usda.gov/, County boundaries provided by Automated Geographical Reference Center (AGRC) http://www.agrc.utah.gov/. Major Rivers provided by Utah Division of Water Resources -Technical Services Section http://www.water.utah.gov/

9. TMDL Map - TMDL data provided by Utah Department of Water Quality: http://www.waterquality.utah.gov/TMDL/index.htm#inprogress. County boundaries provided by Automated Geographical Reference Center (AGRC)

10. Utah Animal Feeding Operation (AFO) information was obtained from “Utah! Animal Feeding Operation Strategy: five Years of Progress 1999-2004

11. The 2003 noxious weed list was obtained from the State of Utah Department of Food and Agriculture. For more information contact Steve Burningham, 801-538-7181 or visit their website at http://ag.utah.gov/plantind/noxious_weeds.html.

12. Wildlife information derived from the Utah Division of Wildlife Resources' Comprehensive Wildlife Conservation Strategy (CWCS) (http://wildlife.utah.gov/cwcs/) and from the Utah Conservation Data Center (http://dwrcdc.nr.utah.gov/ucdc/).

13. County population data from the U.S. Census Bureau, Utah Quick Facts, http://quickfacts.census.gov/qfd/states/49000.html.

14. Size of farms from 2002 Census of Agriculture, State Level Data, Utah Table 9: Land in Farms, Harvested Cropland, and Irrigated land, by Size of Farm: 2002 and 1997 with additional information available from the National Agricultural Statistics Service, 2002 Census of Agriculture. http://www.nass.usda.gov/census/census02/volume1/index2.htm

15. State Population Facts in chart format from http://www.npg.org/states/ut.htm.

16. Photo Credits to Ron Francis, NRCS Utah Public Affairs specialist and Mary Grande, Technology Coordinator.