

This resource assessment is designed to gather and display information specific to Duchesne County, Utah. This report will highlight the natural and social resources present in the county, detail specific concerns, and be used to aid in resource planning and target conservation assistance needs. This document is dynamic and will be updated as additional information is available through a multi-agency partnership effort. The general observations and summaries are listed first, followed by the specific resource inventories.

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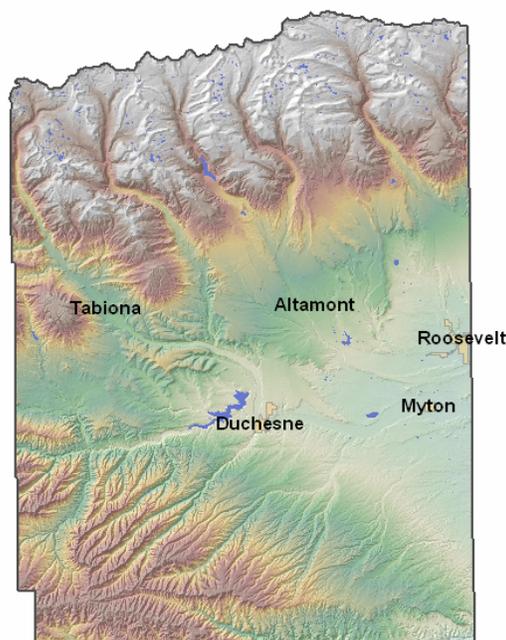
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Introduction

Utah's Duchesne County is located on the south slope and foothills of the longest east-west mountain range in the continental United States, known as the Uinta Mountains. Located between Denver and Salt Lake City, the County's scenic attractions and unlimited outdoor recreation opportunities attract thousands of visitors. The High Uinta Wilderness, including its many rivers, streams, and lakes, and the western end of the mineral-rich Roan and Book Cliff mountains are located within short driving distances from county locations. The rich history and culture of the area is evident throughout the county. Many amenities are available, such as the outstanding 18-hole golf course in Roosevelt City and Starvation State Park Reservoir near the community of Duchesne, offering 3,500 acres of fishing and boating. The Uintah and Ouray Indian Reservation lies within and adjacent to the county boundaries, and there are many joint ventures between county and tribal governments. County leaders and residents carry on in the spirit of their pioneer ancestors, building for the future and fostering innovation and excellence in schools, business, industry and government.

Equal Opportunity Providers and Employers.



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Duchesne County is the western most county in Northeastern Utah and is bordered by Uintah County on the east. It encompasses an area of 3,238 square miles, or 3.94 percent of the state's area. Elevations range from 4,251 to 13,528 feet at Kings Peak (the highest point in the state). Fifty-four percent of the county land base is managed by state and federal government agencies; 27 percent is private and 18 percent is part of the Uintah & Ouray Indian Reservation.

General Land Use Observations

Grass / Pasture / Hay Lands

- Complications related to overgrazing include poor pasture condition, soil compaction and water quality issues.
- Control of noxious and invasive plants is an ever increasing problem.
- The small, part-time farms are less likely to adopt conservation due to cost and low farm income.
- Most farmers are unlikely to adopt conservation due to lack of knowledge about opportunities and practices.

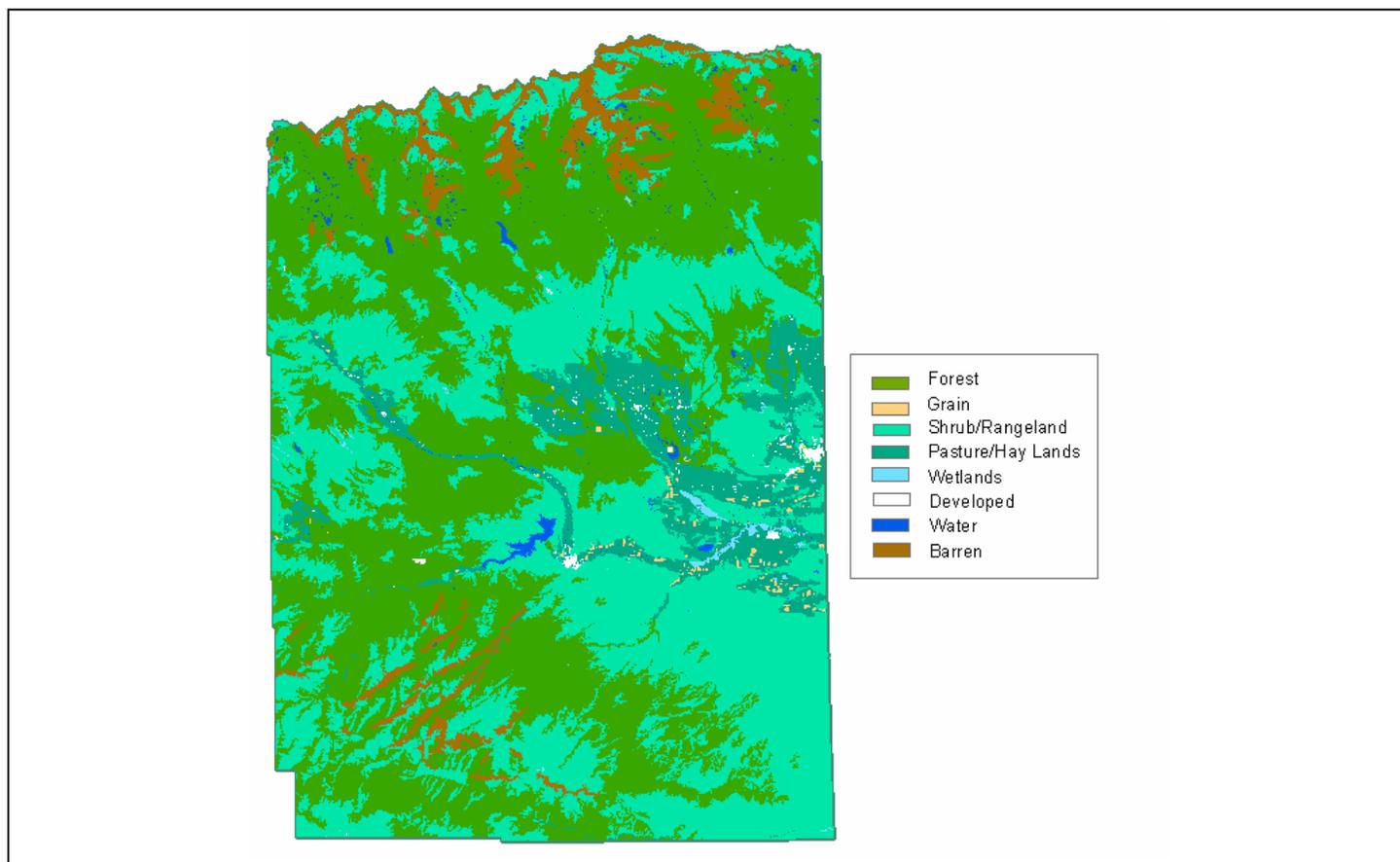
Forest

- On private, non-industrial forest there are issues with water quality and quantity and forest productivity
- On non-industrial forest land, landowner objectives often are not on actively managing the land for timber production. Land use constraints and the lack of economic incentives further discourage conservation.

Resource Assessment Summary

Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	High	Lack of completed soil survey for county is the main concern, especially where CSP funding is concerned. There is also some concern because of oil and gas percolation into the soil.
Water Quantity	High	Drought is always an issue, especially in the west side of the county, in the lower elevations. Also due to more precipitation this year flooding has become an issue where adequate water storage is unavailable.
Water Quality Ground Water	High	Salinity is a major resource concern in Duchesne County
Water Quality Surface Water	Medium	Salinity is a major resource concern in Duchesne County
Air Quality	Low	Dust
Plant Suitability	High	Invasive species are taking over areas, especially in Eastern Duchesne county, ruining crops, taking over habitats, etc.
Plant Condition	Medium	Drought has caused many areas to become dry and severe fire hazards. Palatability for animals is also decreased due to drought leading to other resource concerns.
Fish and Wildlife	High	Habitats are being lost to invasive species, reducing shelter, and causing depredation; rangeland restoration, riparian rehabilitation, and wetland enhancement need to be promoted to compensate for losses from irrigation conversion.
Domestic Animals	Medium	Grazing on public rangeland is decreasing due to diminished range quality and availability.
Social and Economic	Medium	The main concern is a lack of education; The public lacks information on what needs are and what can be done to preserve resources. Even students around the county could benefit in the future from such knowledge now. Other social and economic concerns include agricultural stability and minor loss of agricultural land, due to subdivisions and community growth.

Land Use/Land Cover



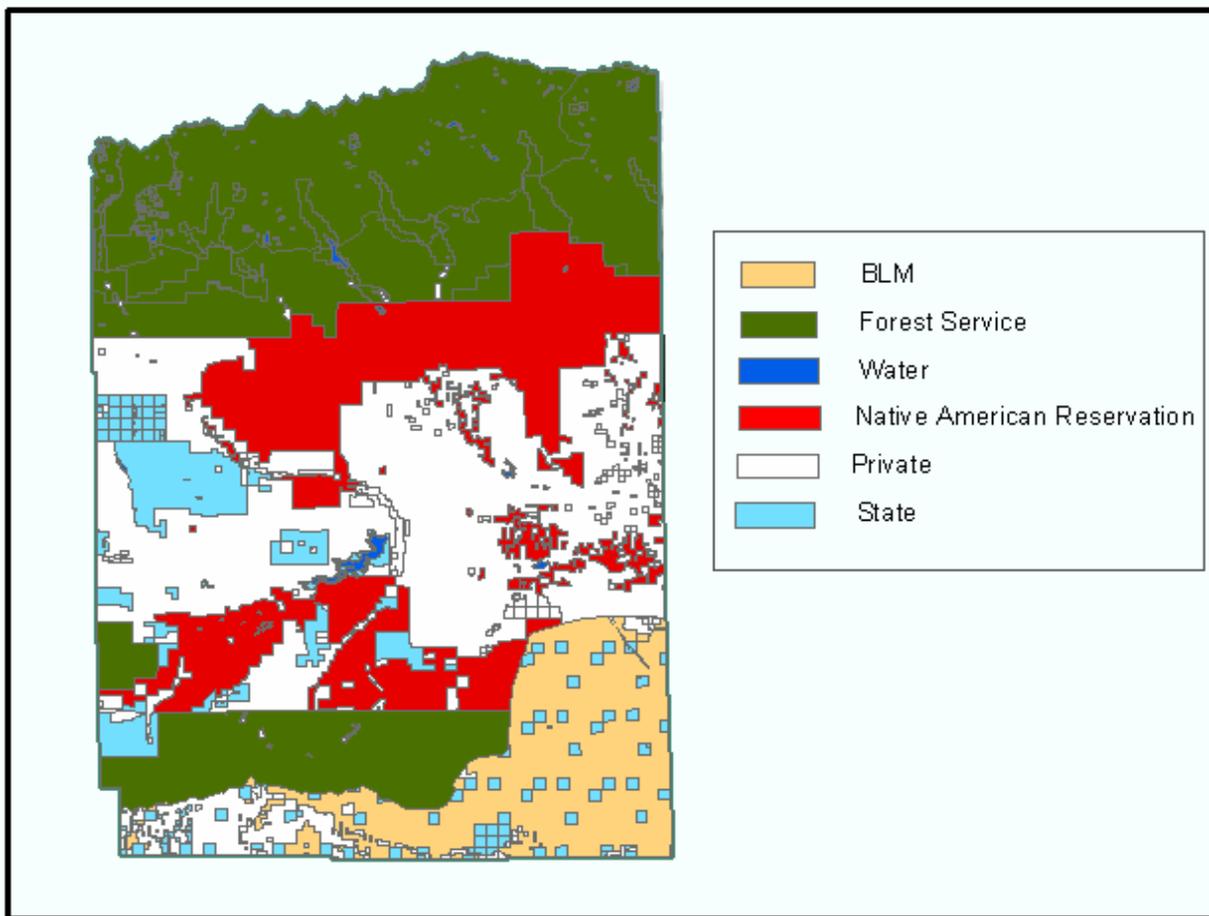
Land Cover/Land Use		
	Acres	%
Forest	4000000	29.4%
Grain Crops	3500	0.0%
Conservation Reserve Program <i>*a</i>	0	0.0%
Grass/Pasture/Haylands	130000	1.0%
Orchards/Vineyards	0	0.0%
Row Crops	0	0.0%
Shrub/Rangelands	9450000	69.4%
Water	13000	0.1%
Wetlands	7500	0.1%
Developed	5000	0.0%
Duchesne County Totals <i>*b</i>	13609000	100.0%

**a: Estimate from Farm Service Agency records and include CRP/CREP. *b: Totals may not add due to rounding and small unknown acreages.*

Special Considerations for Duchesne County:

- Many of Duchesne County's resources are on public land, with 54% of the land controlled by federal and state agencies, 27% of the county is Uinta & Ouray Indian reservations, and only 18% owned by private entities (Duchesne County Chamber of Commerce).
- Duchesne County is dependant mainly upon agriculture and the oil field for industry.
- Forest makes up 24.7% of Duchesne County, with 22.0% federal, 0.4% state, and 2.3% private (USU, Department of Forest Resources).
- Grain is produced as a component of the alfalfa rotation. A typical rotation would consist of 5 years alfalfa and 2 years small grain or corn.
- Shrub/rangelands consist primarily of salt brush, cedars, pinyon-juniper forests and other open areas.

Land Ownership

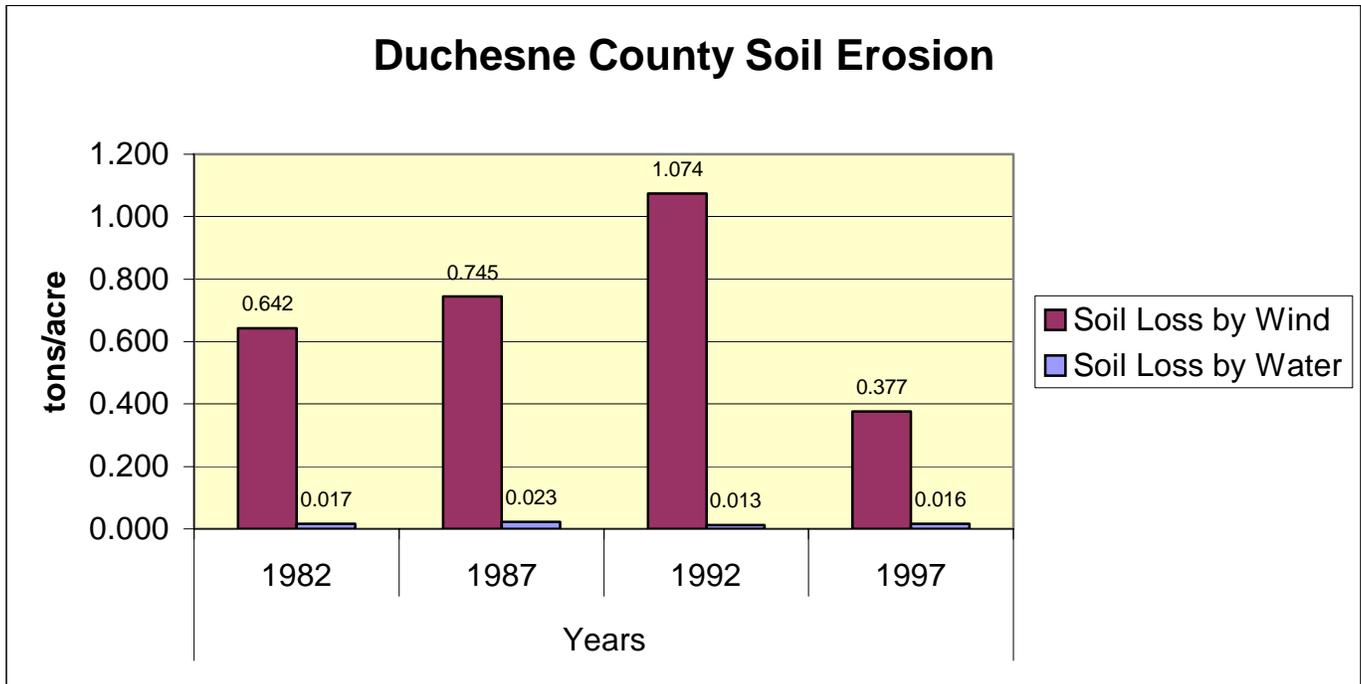


There are no digitized soil surveys for Duchesne County; therefore, Prime & Unique Farm Land and Land Capability Class on Cropland and Pastureland will not be included in this assessment.

Resource Concerns – SOILS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Soil Erosion	Sheet and Rill	X	X		X		X	X	X	X			X		X	X
	Wind	X	X		X										X	
	Ephemeral Gully				X	X	X			X						X
	Classic Gully				X	X				X						
	Streambank			X	X	X	X			X						
	Shoreline															
	Irrigation-induced	X	X	X												
	Mass Movement				X	X				X				X		
	Road, roadsides and Construction Sites				X	X				X				X		
Soil Condition	Organic Matter Depletion				X	X				X						
	Rangeland Site Stability				X	X										
	Compaction	X	X	X												
	Subsidence													X		
	ContaminantsSalts and Other Chemicals	X	X	X	X	X	X		X			X		X	X	
	Contaminants: Animal Waste and Other OrganicsN								X					X		
	Contaminants: Animal Waste and Other OrganicsP								X					X		
	Contaminants: Animal Waste and Other OrganicsK								X					X		
	Contaminants : Commercial FertilizerN													X		
	Contaminants : Commercial FertilizerP													X		
	Contaminants : Commercial FertilizerK													X		
	ContaminantsResidual Pesticides	X	X	X										X		
	Damage from Sediment Deposition								X	X				X		

Soil Erosion

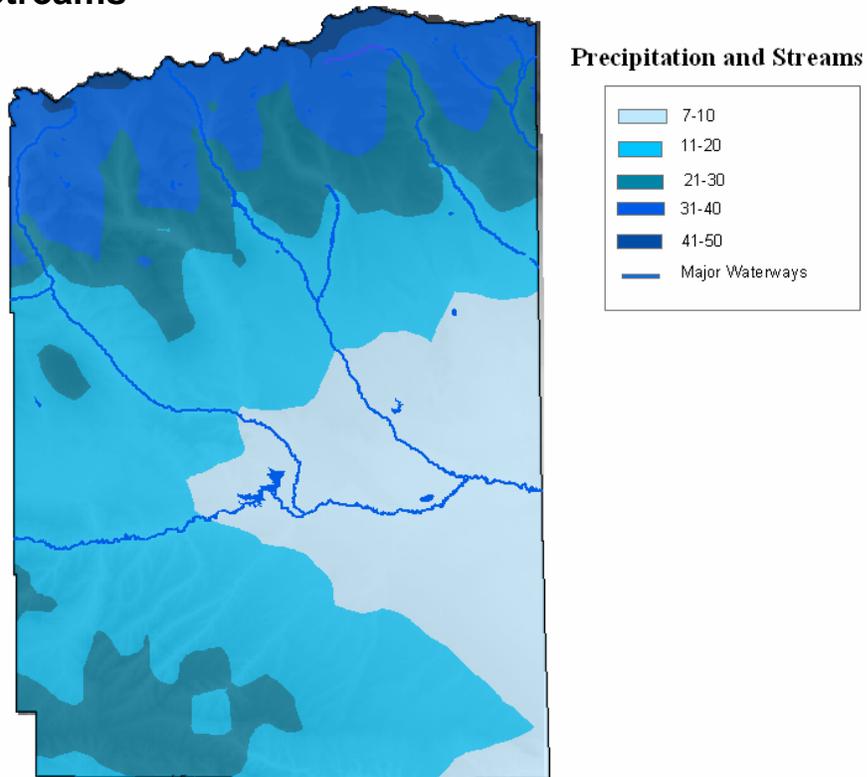


- ❖ Controlling erosion not only sustains the long-term productivity of the land, but also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters.

Resource Concerns – WATER

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Water Quantity	Water Quantity – Rangeland Hydrologic Cycle				X	X										
	Excessive Seepage	X	X	X												
	Excessive Runoff, Flooding, or Ponding	X	X	X	X											
	Excessive Subsurface Water	X	X	X												
	Drifted Snow											X	X			
	Inadequate Outlets	X	X	X												
	Inefficient Water Use on Irrigated Land	X	X	X												
	Inefficient Water Use on Non-irrigated Land															
	Reduced Capacity of Conveyances by Sediment Deposition	X	X	X					X							
	Reduced Storage of Water Bodies by Sediment Accumulation								X						X	
	Aquifer Overdraft	X	X	X											X	
	Insufficient Flows in Watercourses	X	X	X					X							
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater	X	X	X					X							
	Excessive Nutrients and Organics in Groundwater	X	X	X					X							
	Excessive Salinity in Groundwater	X	X	X					X							
	Harmful Levels of Heavy Metals in Groundwater														X	
	Harmful Levels of Pathogens in Groundwater															
	Harmful Levels of Petroleum in Groundwater															X
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water	X	X	X												
	Excessive Nutrients and Organics in Surface Water	X	X	X												
	Excessive Suspended Sediment and Turbidity in Surface Water	X	X	X					X							
	Excessive Salinity in Surface Water	X	X	X					X							
	Water Quality – Colorado River Excessive Salinity	X	X	X					X							
	Harmful Levels of Heavy Metals in Surface Water														X	
	Harmful Temperatures of Surface Water															
	Harmful Levels of Pathogens in Surface Water														X	
Harmful Levels of Petroleum in Surface Water														X		

Precipitation and Streams

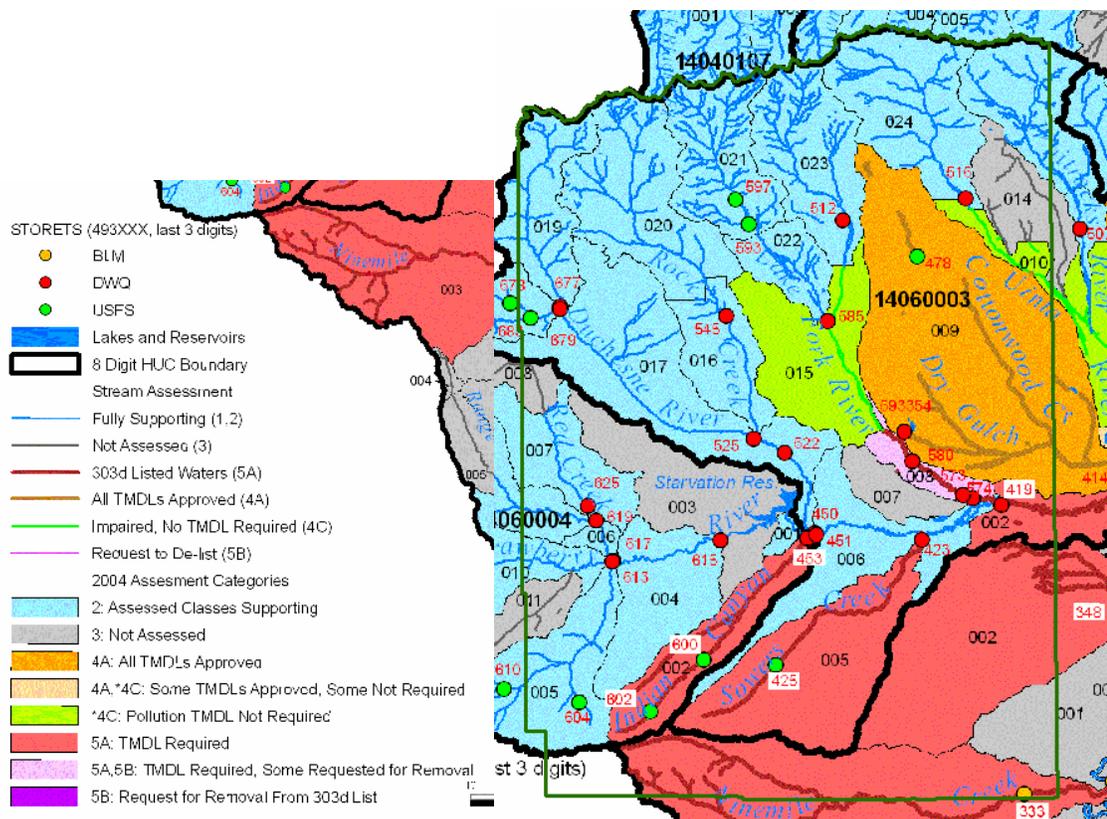


		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights	Surface		
	Well		
	Total Irrigated Adjudicated Water Rights*	123900.00	371700.00
Stream Flow Data	USGS 09292000 Yellowstone River at Bridge Campground near Altonah	Total Avg. Yield	100,000
		May-Sept Yield	73,000
	USGS 092775000 Duchesne River near Tabiona	Total Avg. Yield	136,376
		May-Sept Yield	88,140
	USGS 09279000 Rock Creek near Mountain Home	Total Avg. Yield	110,595
		May-Sept Yield	85,590
USGS 092968000 Uintah River below Power Plant near Neola	Total Avg. Yield	109,000	
	May-Sept Yield	86,000	
Stream Data		MILES	PERCENT
	Total Miles - Major (100K Hydro GIS Layer)		n/a
	303d (DEQ Water Quality Limited Streams)		#DIV/0!
*estimates based on agricultural_urban_land_use_2003 GIS data from AGRC.			

		Irrigation Efficiency:		
		<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	10%	0%	90%
	Pastureland	48%	8%	44%

Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
Sand Wash	Complete		
Martin Lateral	Complete		
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status
Dry Gulch Duchesne River	EPA Approved - 2002 Draft for Review - 2005	23 No. 8 No.	Planned Implemented



AFO/CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms	14	135	0	25	0	15
No. of Animals	3000	7000	0	400	0	3000

Potential Confined Animal Feeding Operations (PCAFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms	2	7	0	0	0	1
No. of Animals	200	1500	0	0	0	55

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Other
No. of Permitted Farms	0	0	0	0	0
No. of Permitted Animals	0	0	0	0	0

Resource Concerns – AIR, PLANTS, ANIMALS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area	
Air Quality	Particulate matter less than 10 micrometers in diameter (PM 10)																
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)																
	Excessive Ozone																
	Excessive Greenhouse Gas: CO2 (carbon dioxide)																
	Excessive Greenhouse Gas: N2O (nitrous oxide)																
	Excessive Greenhouse Gas: CH4 (methane)																
	Ammonia (NH3)																
	Chemical Drift	X	X	X													
	Objectionable Odors																
	Reduced Visibility	X	X														
	Undesirable Air Movement																
	Adverse Air Temperature																
Plant Suitability	Plants not adapted or suited			X	X				X					X			
Plant Condition	Plant Condition – Productivity, Health and Vigor	X	X	X					X								
	Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act							X									
	Threatened or Endangered Plant Species: Declining Species, Species of Concern																
	Noxious and Invasive Plants		X	X	X				X						X		
	Forage Quality and Palatability		X	X	X												
Plant Condition – Wildfire Hazard				X					X								
Fish and Wildlife	Inadequate Food							X									
	Inadequate Cover/Shelter							X									
	Inadequate Water				X			X									
	Inadequate Space							X									
	Habitat Fragmentation	X	X	X													
	Imbalance Among and Within Populations				X			X									
	Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act				X				X								
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage			X	X												
	Inadequate Shelter			X	X												
	Inadequate Stock Water			X	X	X											
	Stress and Mortality			X	X	X											

Noxious Weeds

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 under Section 4-17-3, Utah Noxious Weed Act:

- Bermudagrass** (*Cynodon dactylon*)
- 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 alnum*)
- 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 Duchesne County (2003): Russian Olive

Wildlife Species of Greatest Conservation Need

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. The following table lists species of greatest conservation concern in the county.

AT-RISK SPECIES				
	Common Name	Group	Primary Habitat	Secondary Habitat
FEDERALLY-LISTED				
Endangered:	Black-footed Ferret (experimental)	Mammal	Grassland	High Desert Scrub
	Gray Wolf (extirpated)	Mammal	Mountain Shrub	Mixed Conifer
	Bonytail	Fish	Water - Lotic	
	Colorado Pikeminnow	Fish	Water - Lotic	
	Humpback Chub	Fish	Water - Lotic	
	Razorback Sucker	Fish	Water - Lotic	
	Barneyby Ridge-crest	Plant	Shrubsteppe	Salt Desert Shrub
Threatened:	Barnaby thelypody	Plant	Shrubsteppe	Salt Desert Shrub
	Brown (Grizzly) Bear (extirpated)	Mammal	Mixed Conifer	Mountain Shrub
	Canada Lynx	Mammal	Sub-Alpine Conifer	Lodgepole Pine
	Bald Eagle	Bird	Lowland Riparian	Agriculture
	Ute Ladies Tresses	Plant	Lowland Riparian	
Candidate:	Uinta Basin Hookless Cactus	Plant	Shrubsteppe	Salt Desert Shrub
	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
	Shale Columbine	Plant	Lowland Riparian	Cliff
	Dragon Milkvetch	Plant	Shrubsteppe	Salt Desert Shrub
	Tufted Cryptanth	Plant	Shrubsteppe	Salt Desert Shrub
	Canyon Sweetvetch	Plant	Lowland Riparian	Dry Washes
	Low Hemynoxys	Plant	Shrubsteppe	Salt Desert Shrub
	Flowers' beardstounge	Plant	Shrubsteppe	Salt Desert Shrub
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Colorado River Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Bluehead Sucker	Fish	Water - Lotic	Mountain Riparian
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Roundtail Chub	Fish	Water - Lotic	
	Flannelmouth Sucker	Fish	Water - Lotic	
	Arctic Poppy	Plant	Shrubsteppe	Sub-Alpine Tundra
	Uinta Parrya	Plant	Shrubsteppe	Sub-Alpine Talus
Species of Concern:	Bristle-stalk sedge	Plant	Lowland Riparian	
	Black Swift	Bird	Lowland Riparian	Cliff
	Burrowing Owl	Bird	High Desert Scrub	Grassland
	Eureka Mountainsnail	Mollusk	Mountain Shrub	Rock
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Fringed Myotis	Mammal	Northern Oak	Pinyon-Juniper
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Lewis's Woodpecker	Bird	Ponderosa Pine	Lowland Riparian
	Short-eared Owl	Bird	Wetland	Grassland
	Smooth Greensnake	Reptile	Mountain Riparian	Wet Meadow
	Spotted Bat	Mammal	Low Desert Scrub	Cliff
	Three-toed Woodpecker	Bird	Sub-Alpine Conifer	Lodgepole Pine
Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub	
Western Toad	Amphibian	Wetland	Mountain Riparian	
White-tailed Prairie-dog	Mammal	Grassland	High Desert Scrub	

*Definitions of habitat categories can be found in the Utah Comprehensive Wildlife Conservation Strategy.

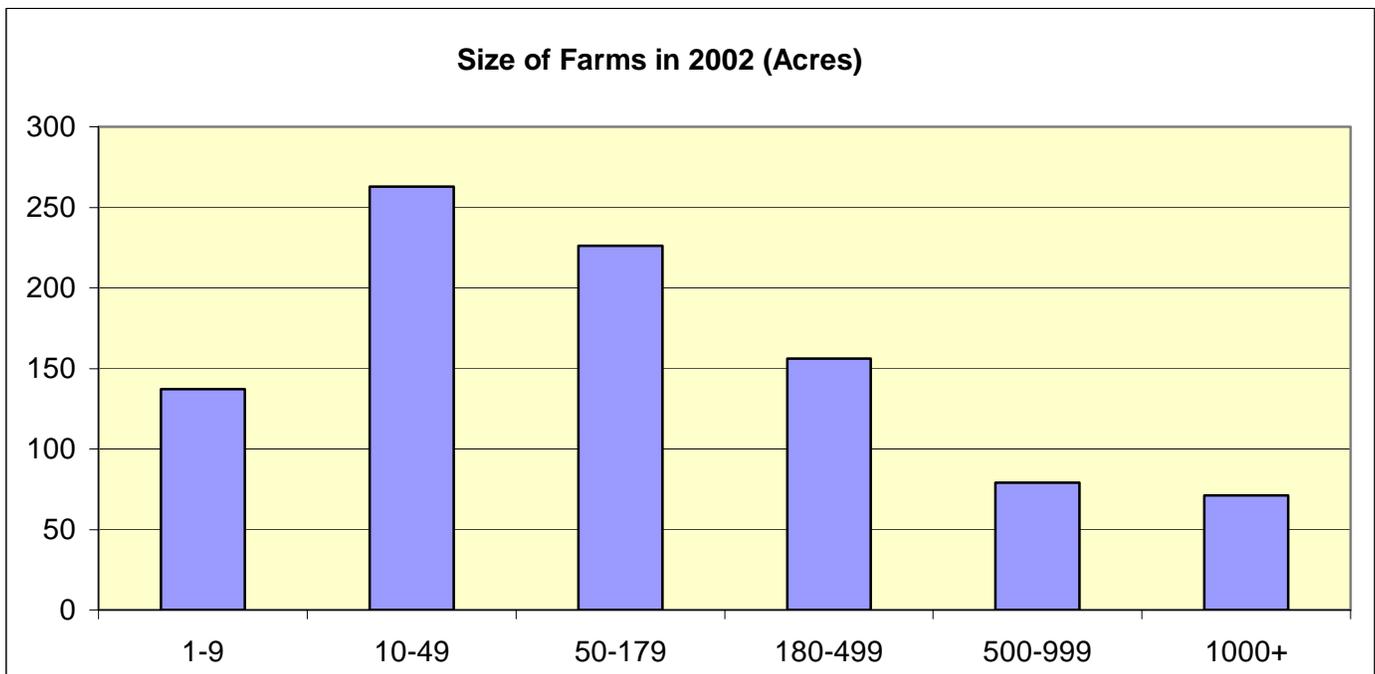
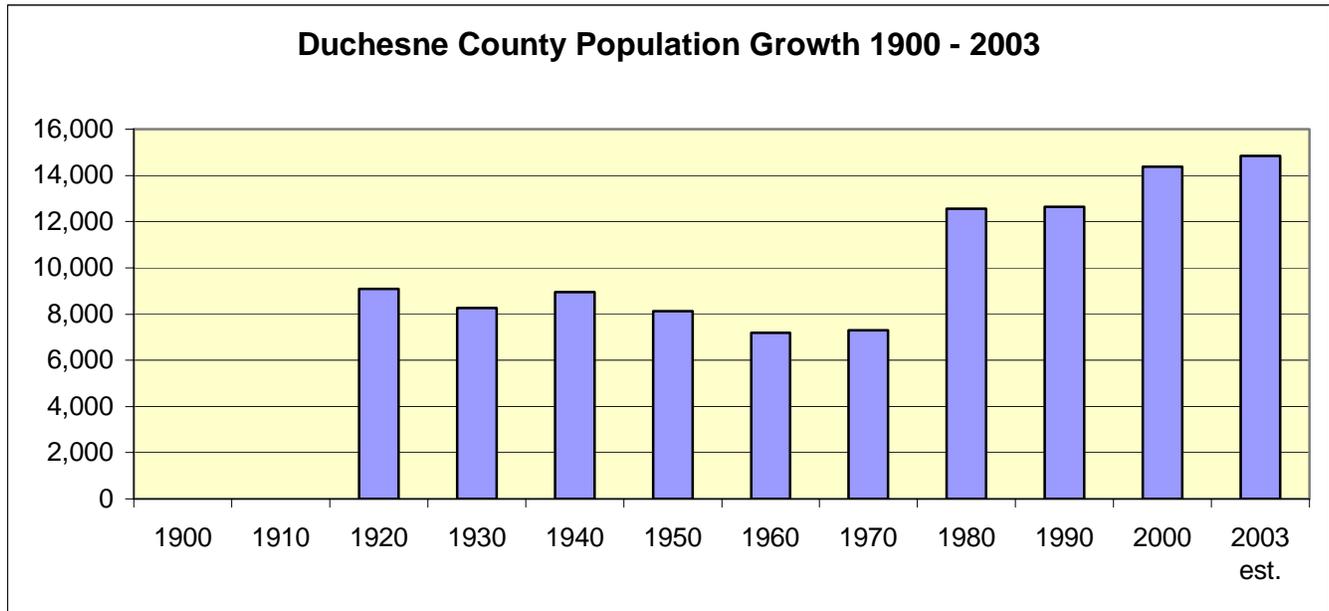
The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten key habitats state-wide are (in order of priority):

- 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: narrowleaf cottonwood, willow, alder, birch and dogwood)
- 4) **Shrubsteppe** (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

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Social and Economic	Non-Traditional Landowners and Tenants	X	X	X												
	Urban Encroachment on Agricultural Land		X													
	Marketing of Resource Products	X	X													
	Innovation Needs															
	Non-Traditional Land Uses															
	Population Demographics, Changes and Trends												X			
	Special Considerations for Land Mangement (High State and Federal Percentage)									X						
	Active Resource Groups (CRMs, etc)															
	Full Time vs Part Time Agricultural Communities	X	X													
	Size of Operating Units	X	X													
	Land Removed from Production through Easments								X							
Land Removed from Production through USDA Programs																
Other																

Census and Social Data



Number of Farms: 932

Number of Operators: 932

- Full-Time Operators: 472
- Part-Time Operators: 460

Public Survey/Questionnaire Results:

Soil Resource Concerns-

- 1- Duchesne County needs a completed soil survey.
- 2- Quality of soil (percolations from oil & gas, septic systems may contaminate soil) creates limitations as it relates to planning issues.

Water Resource Concerns-

- 1- Water control is not adequate.
- 2- Water storage is not adequate. During drought, we run out of water. During high water we can't control flooding.
- 3- We don't have a complete water table survey. (Planning new water wells).
- 4- We don't have a complete flood plane survey.
- 5- Culinary water supply is limited because of wells going bad. (oil & gas, irrigation changes)
- 6- Limited culinary supply.

Air Resource Concerns-

- 1- Dust control.

Plant Resource Concerns-

- 1- Forest health is an issue. Trees are consumed by fire or by bugs rather than used for industry. We don't have access to timber resources.
- 2- Noxious weeds are a growing problem. We haven't controlled our old weeds and now it may be too late; worse weeds are coming. There is also a lack of education. Many people can't identify these weeds and are unable to control them. Specific problems include: Whitetop, Russian Olive trees, Russian Knapweed, and Cheatgrass, which is taking over rangelands, so that native grasses are disappearing and erosion is a potential problem. Fire regime has increased also due to this problem.
- 3- We are missing a grazing potential on private land because of poor maintenance of pastures.

Animal Resource Concerns-

- 1- Irrigation projects have dried up wildlife habitat.
- 2- In terms of agriculture, management of big game wildlife is an issue. Agriculture competes with the wildlife in way of space and food. Depredation is becoming a huge concern.
- 3- Marketing opportunities are lacking for animal products.

Concerns Affecting All Resources-

- 1- Denial of access to public (state and federal) lands and to their resources (grazing, timber, oil and gas, watersheds, mining).

Human Resource Concerns-

- 1- Sustainable agriculture: Agricultural industry has changed. There is a lack of market. We haven't adapted to the changes in the Basin.
- 2- Denial of entry has limited access for multiple uses.
- 3- Recreation is an untapped resource in the Basin for many landowners. However, its existence now creates negative impacts on land owners. As it stands now, recreation needs to be capitalized or its negative impacts compensated.

- 4- Lack of funding and human resources to deal with problems.
- 5- Lack of communication between tribal and non-tribal entities.
- 6- Lack of understanding (education) in terms of what help is available to deal with agribility issues.
- 7- Lack of education/resources creates vulnerability to wild land fires (not utilizing defensible spaces).

Footnotes / Bibliography

1. General information about Duchesne County obtained from the Duchesne County Chamber of Commerce website: <http://www.duchesne.net/demo/>
2. 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/>
3. Land Use/Land Cover layer created using ArcMap using Gap layer from uidaho website and Agricultural Urban Land Use layer from AGRC.
4. Prime and Unique farmlands derived from SURGO Soils Survey UT607 and 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 SURGO Soils Survey UT607 and 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 commuter error discovered in March 2000. For more information: <http://www.nrcs.usda.gov/technical/NRI/>
7. Precipitation data was developed by the Oregon Climate Service at Oregon State University using average monthly or annual precipitation from 1960 to 1990. Publication date: 1998. Data was downloaded from the Resource Data Gateway, <http://dgateway-wb01.lighthouse.itc.nrcs.usda.gov/lighthouse>
8. Irrigated Adjudicated Water Rights obtained from the Utah Division of Water Rights.
9. Stream Flow data from USGS Gauging Stations.
10. Stream length data calculated using ArcMap and 100k stream data from AGRC and 303d waters from the Utah Department of Environmental Quality.
11. Watershed information from NRCS and Utah DEQ records.
12. AFO/PCAFO/CAFO numbers obtained from Duchesne County Soil Conservation District, current as of August 12, 2005.
13. 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

14. 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/>).
15. County population data from the U.S. Census Bureau, Utah Quick Facts, <http://quickfacts.census.gov/qfd/states/49000.html>
16. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. <http://www.nass.usda.gov/census/census02/volume1/index2.htm>
17. Public Survey information taken from minutes of May 25, 2005 Public Outreach Resource Assessment Meeting, where 10 people were in attendance.
18. Public Survey information also collected from 20 people by online survey during Spring and Summer of 2005.