



United States Department
of Agriculture

Upper Yampa Watershed



Hydrologic Unit Code 14050001

Natural Resources
Conservation Service

Lakewood, Colorado

Rapid Assessment

RWA 14050001

July 2010



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Introduction

Background Information

The Natural Resources Conservation Service (NRCS) is encouraging the development of rapid watershed assessments in order to increase the speed and efficiency generating information to guide conservation implementation, as well as the speed and efficiency of putting it into the hands of local decision makers.

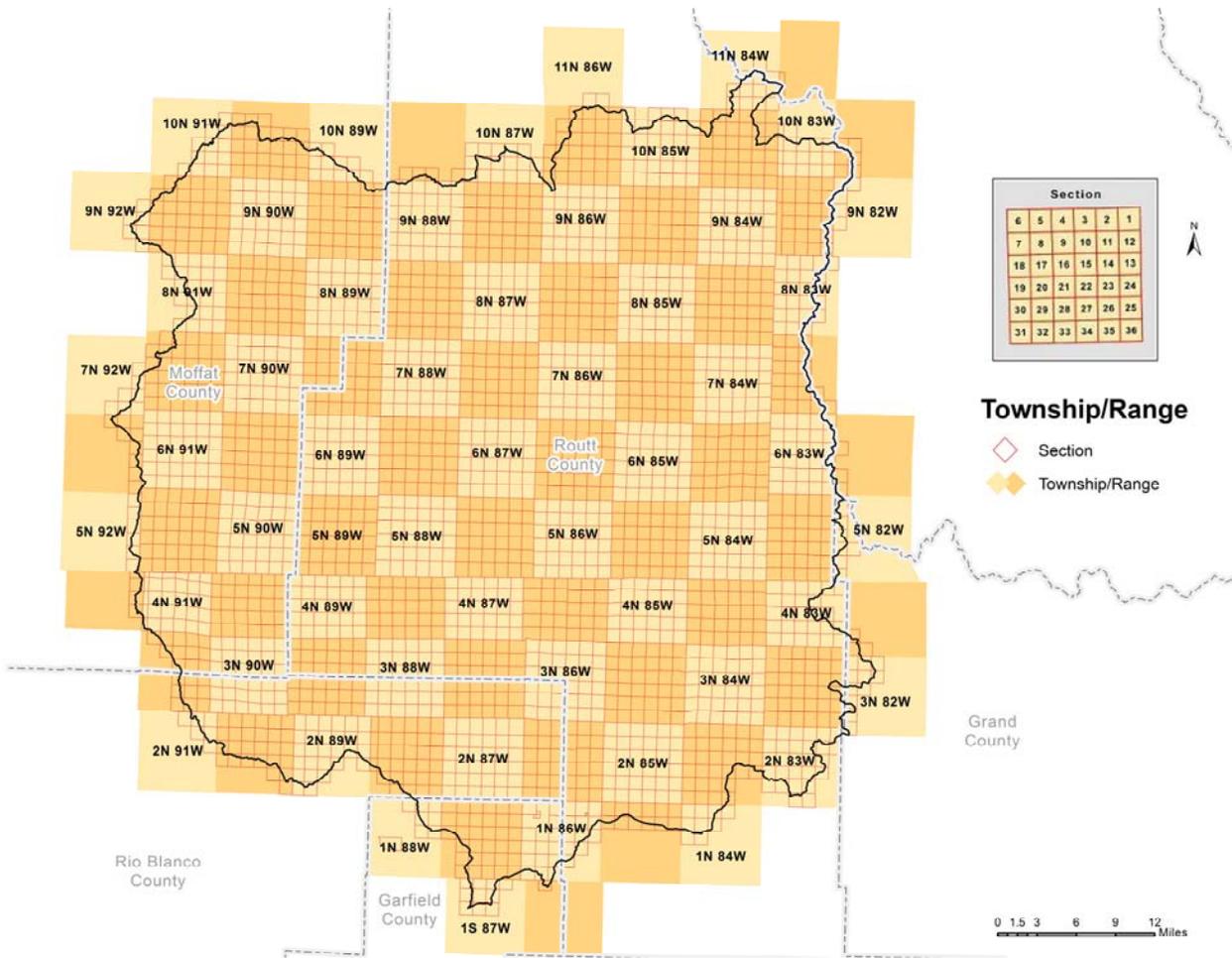
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best actions to achieve their goals.

Benefits of these Activities

While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- Quick and inexpensive tools for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis but these activities are part of standard requirements for use of best management practices (BMPs) and conservation systems
- Identifying where further detailed analyses or watershed studies are needed
- Plans address multiple objectives and concerns of landowners and communities
- Plans are based on established partnerships at the local and state levels
- Plans enable landowners and communities to decide on the best mix of NRCS programs that will meet their goals
- Plans include the full array of conservation program tools (i.e. cost-share practices, easements, technical assistance)

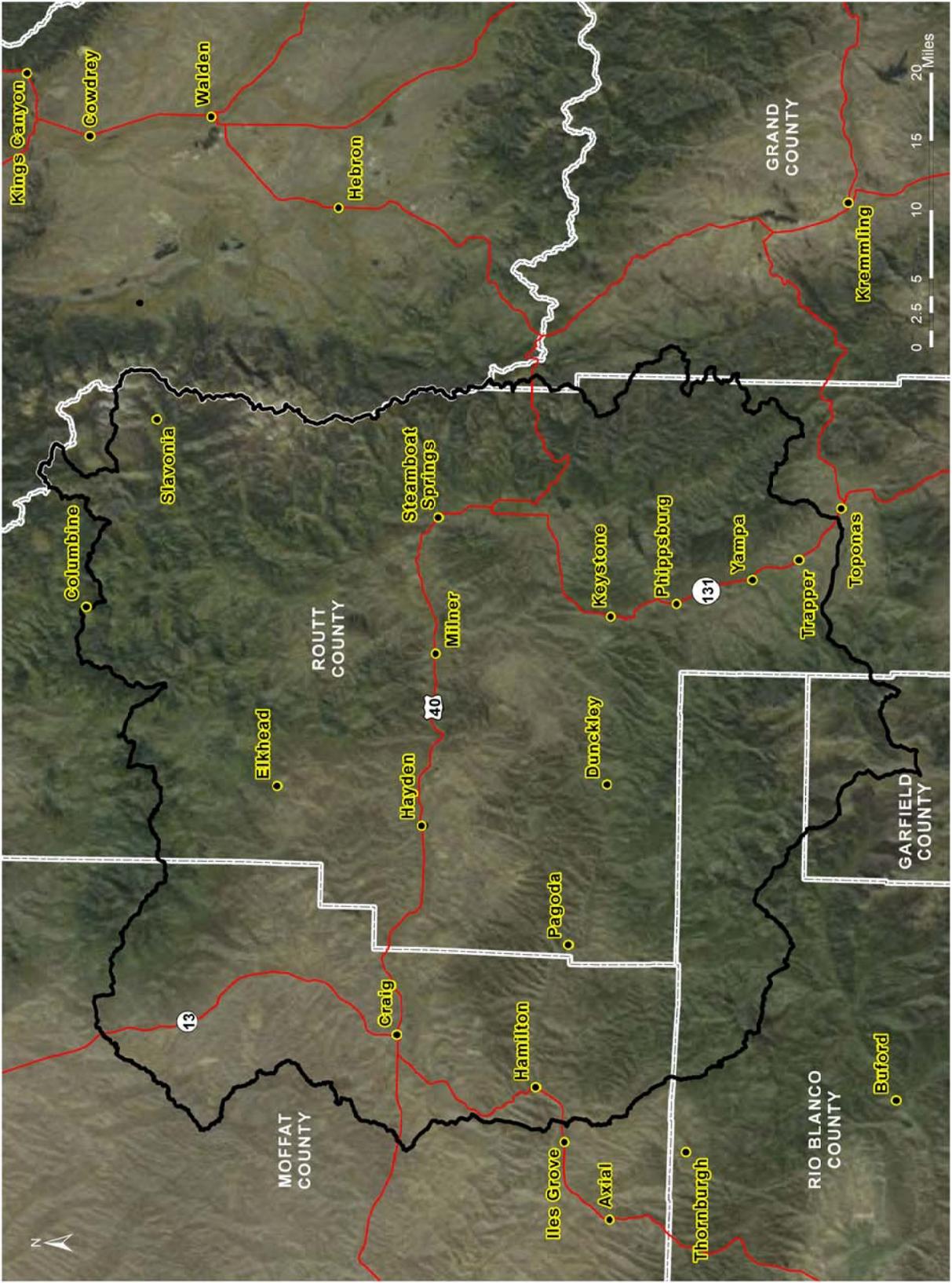
Rapid Watershed Assessments provide information that helps land-owners and local leaders set conservation priorities.

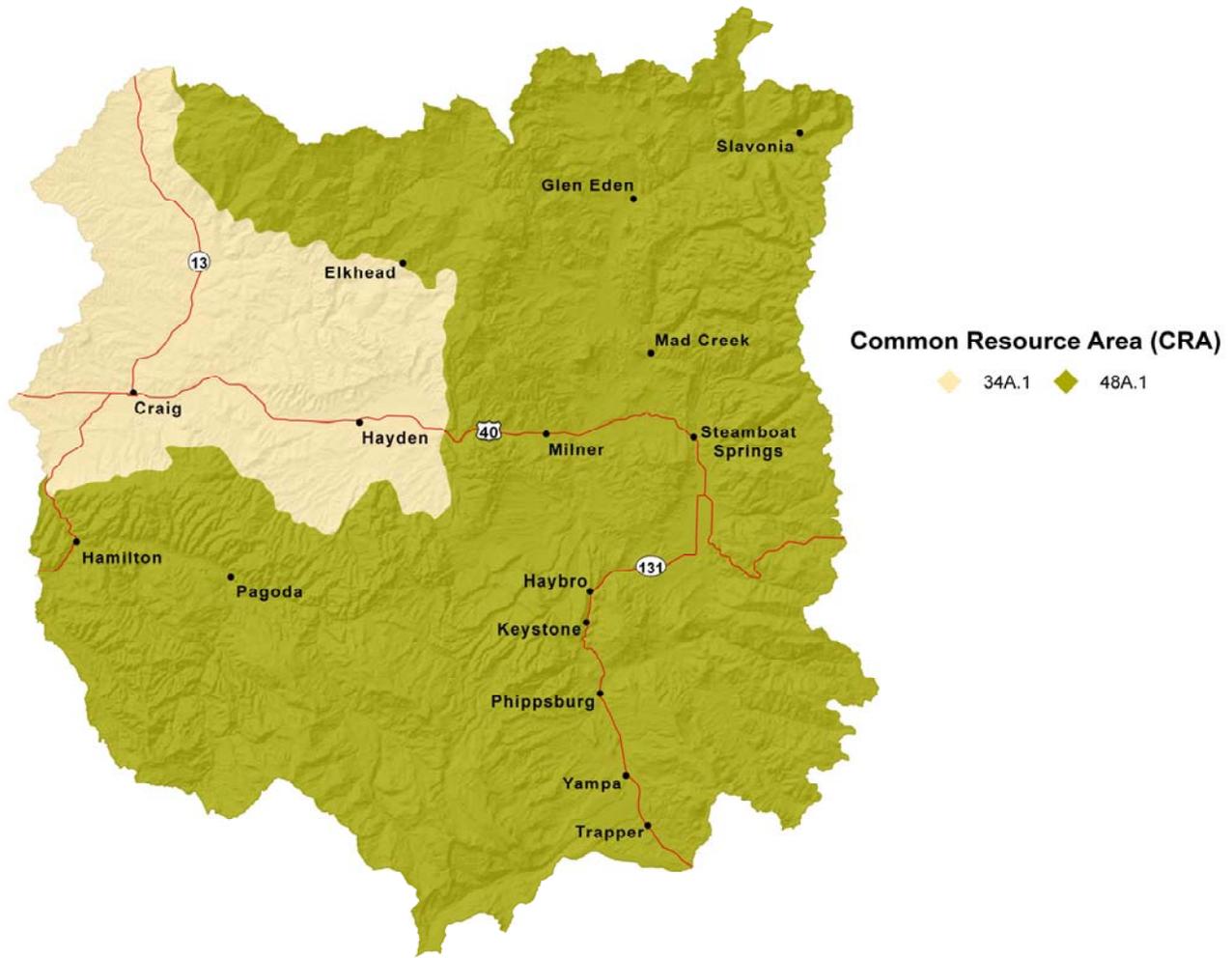


County	County Acres	County Acres in UPPER YAMPA Watershed	% of County in the Watershed	% of Watershed in the County
Garfield	1,893,489	34,955	1.8%	2.1%
Grand	1,196,525	5,731	0.5%	0.3%
Jackson	1,036,272	241	0.0%	0.0%
Moffat	3,043,524	352,416	11.6%	21.2%
Rio Blanco	2,064,823	142,345	6.9%	8.6%
Routt	1,516,045	1,128,527	74.4%	67.8%

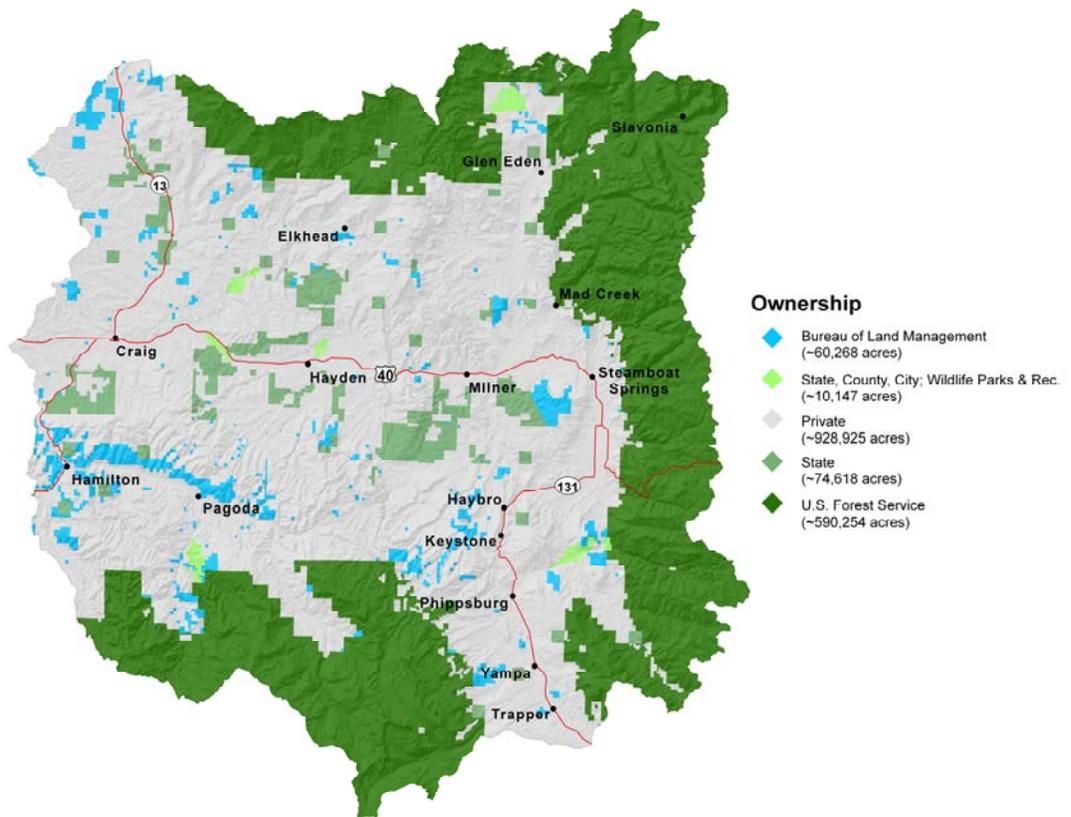
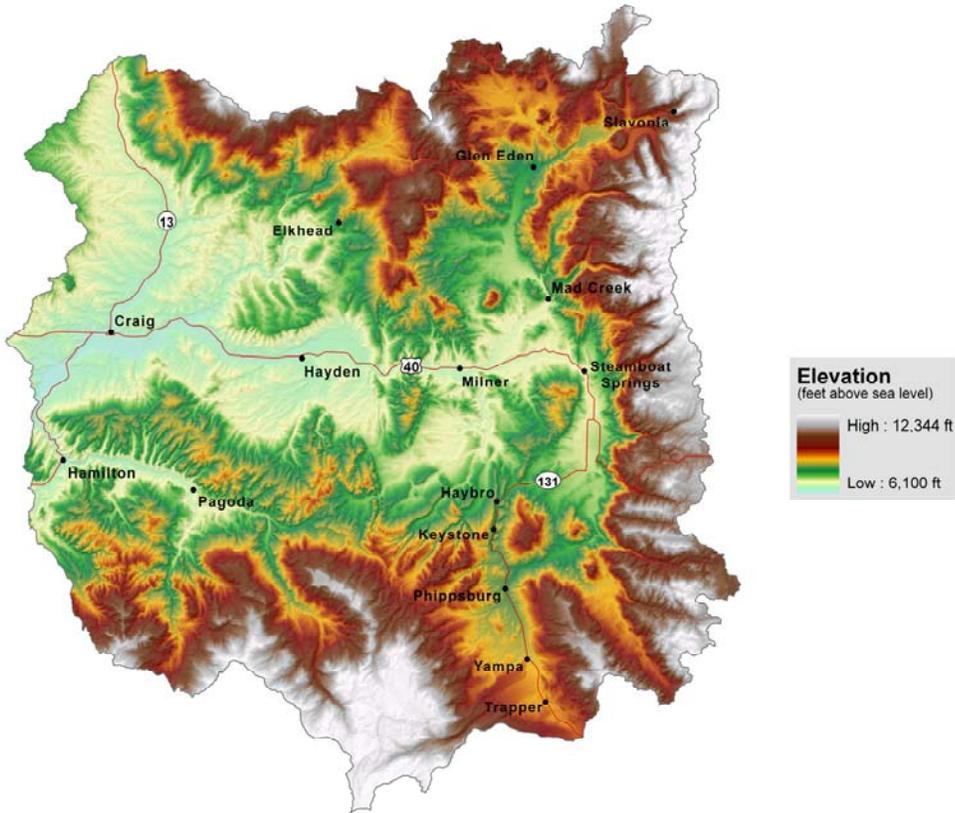
1,664,213

Upper Yampa Watershed - 14050001





MLRA	CRA	CRA NAME	CRA DESCRIPTION
34A	34A.1	Cool Central Desertic Basins and Plateaus--Green River Basin	This unit is in the cool semiarid basins, plateaus, and low mountains that are west of the Continental Divide in MLRA 34A. Soils have an aridic moisture regime and frigid temperature regime. Vegetation is sagebrush or shadscale and bunchgrasses. Major use is range. Precipitation ranges from 7 to 14 inches. Elevations range from about 4,000 to 7,000 feet.
48A	48A.1	Southern Rocky Mountains - High Mountains and Valleys	This area is best characterized by steep, high mountain ranges and associated mountain valleys. The temperature regimes are mostly frigid and cryic; moisture regimes are mainly ustic and udic. Vegetation is sagebrush-grass at low elevations, and with increasing elevation ranges from coniferous forest to alpine tundra. Elevations range from 6,500 to 14,400 feet.



Vegetation

- ◇ Alpine/Subalpine/Tundra
- ◆ Coniferous Forest
- ◆ Mixed Forest
- ◆ Dryland Ag
- ◆ Grass Dominated
- ◆ Irrigated Ag
- ◆ Other
- ◆ Rangeland
- ◆ Riparian
- ◆ Shrub/Brush Rangeland
- ◆ Shrub/Grass/Forb Mix Rangeland
- ◆ Urban/Built Up
- ◆ Water
- ◆ Woodland

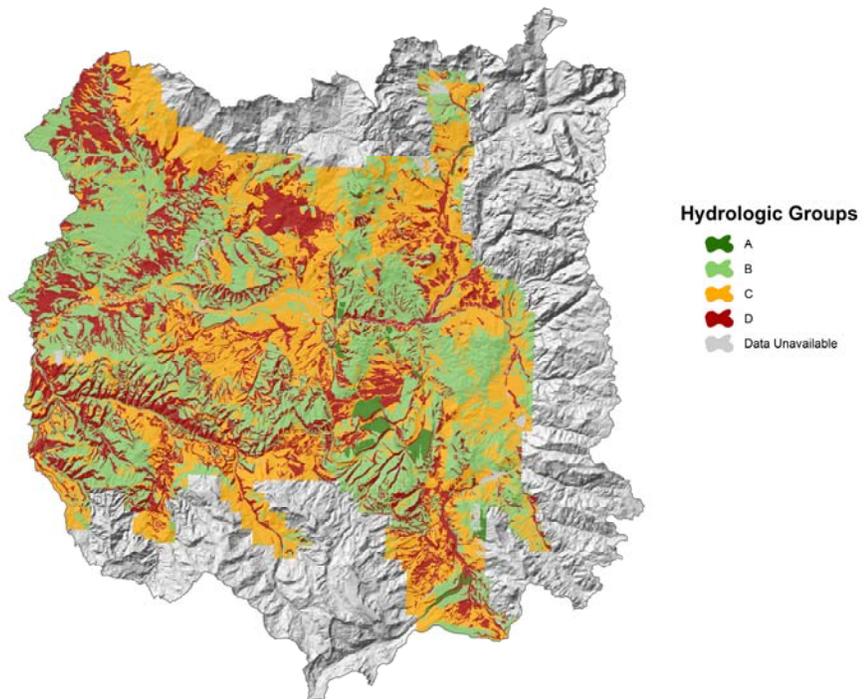
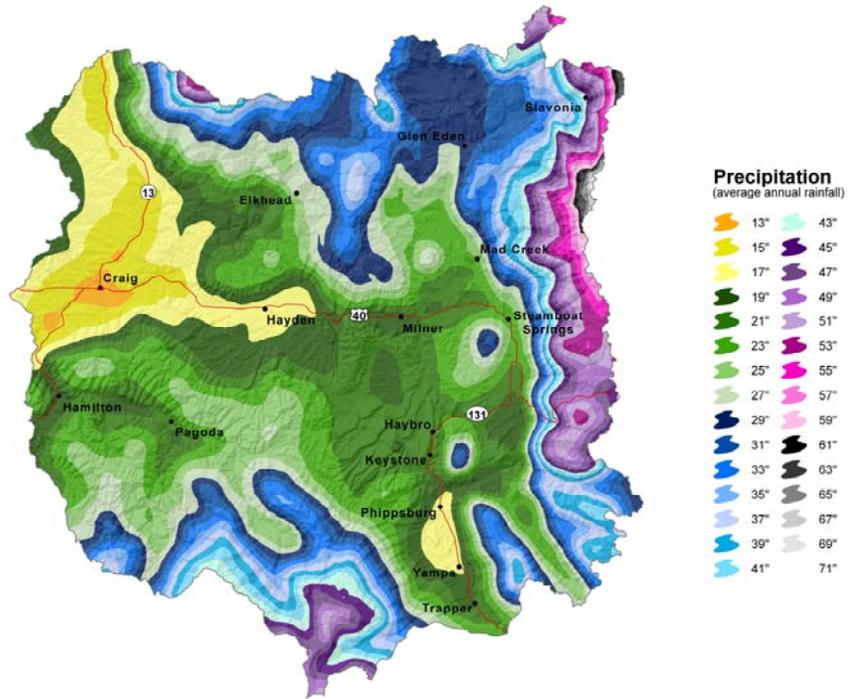


<u>UPPER YAMPA WATERSHED Land Use</u>	Total Acreage	Vegetation	Acreage
Cropland	106,349	Dryland Ag	49,689.0
		Irrigated Ag*	56,660.0
Rangeland/Grassland	796,766	Gambel Oak	11,761.6
		Grass Dominated	59,908.9
		Grass/Forb Mix	92,757.5
		Juniper	3,307.5
		Juniper/Mtn Shrub Mix	5,692.7
		Juniper/Sagebrush Mix	26.4
		Mesic Mountain Shrub Mix	115,450.0
		PJ-Sagebrush Mix	33.8
		Sagebrush Community	100,153.7
		Sagebrush/Grass Mix	142,799.7
		Sagebrush/Greasewood	12.2
		Sagebrush/Mesic Mtn Shrub Mix	259,002.3
		Sagebrush/Rabbitbrush Mix	124.0
		Saltbush Community	13.3
		Shrub/Grass/Forb Mix	1,506.6
		Snowberry/Shrub Mix	2,289.6
Sparse Juniper/Shrub/Rock Mix	1,421.2		
Upland Willow/Shrub Mix	440.5		
Forest	642,407	Aspen	169,790.1
		Aspen/Mesic Mountain Shrub Mix	59,410.6
		Douglas Fir	6,658.1
		Douglas Fir/Aspen Mix	8,545.5
		Englemann Spruce/Fir Mix	133,559.5
		Fir/Lodgepole Pine Mix	4,095.0
		Lodgepole Pine	81,292.3
		Lodgepole Pine/Aspen Mix	40,534.2
		Lodgepole/Spruce/Fir Mix	71,009.0
		Mixed Forest Land	23.6
		Spruce/Fir/Aspen Mix	23,552.5
		Spruce/Fir/Lodgepole/Aspen Mix	39,320.8
Spruce/Lodgepole Pine Mix	4,612.5		
Riparian	34,773	Conifer Riparian	316.8
		Cottonwood	6,892.5
		Herbaceous Riparian	1,576.5
		Sedge	3,647.9
		Shrub Riparian	10,472.0
		Willow	11,867.2
Water	7,973	Water	7,973.0
Other	75,911	Alpine Grass Dominated	196.4
		Alpine Grass/Forb Mix	6,971.8
		SubAlpine Shrub Community	1,896.1
		Subalpine Grass/Forb Mix	37,329.0
		Residential	1,012.7
		Urban/Built Up	3,423.6
		Barren Land	2,458.9
Rock	19,846.0		
Talus Slopes & Rock Outcrops	2,740.9		
~Total Watershed Acres			1,664,179

* Colorado Decision Support Systems Data

Precipitation

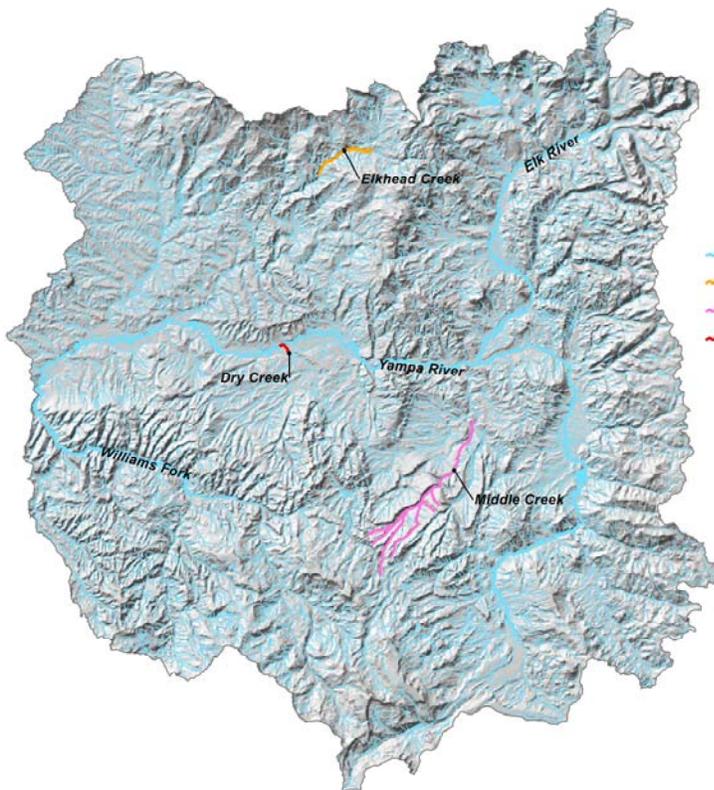
Droughts are regular visitors to the watershed as with the rest of Colorado. Statewide, in the 1900's alone, four prolonged dry spells occurred. There was one in the 1910s. Another, in the '30s, caused the dust-bowl period. The second worst drought on record in the state occurred in the mid-50s. A series of hot, dry summers following a period of scant mountain snowpack created water shortages. The fourth drought hit parts of Colorado in the late 1970s. In this century, the most severe drought since 1723 hit the state in 2002. Prior to the 1700's, researchers looking at tree ring records have found evidence of even more severe droughts, some lasting many years.





Aquifer

-  Colorado Plateaus aquifers
-  Rocks that are generally poorly permeable, but locally may contain productive aquifers



303(d) Listed Streams & Waterbodies

-  Not Impaired
-  Escherichia Coliform Bacteria (E.Coli)
-  pH
-  Selenium (Se)

Class 1 - soils have few limitations that restrict their use.

Class 2 - soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 - soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

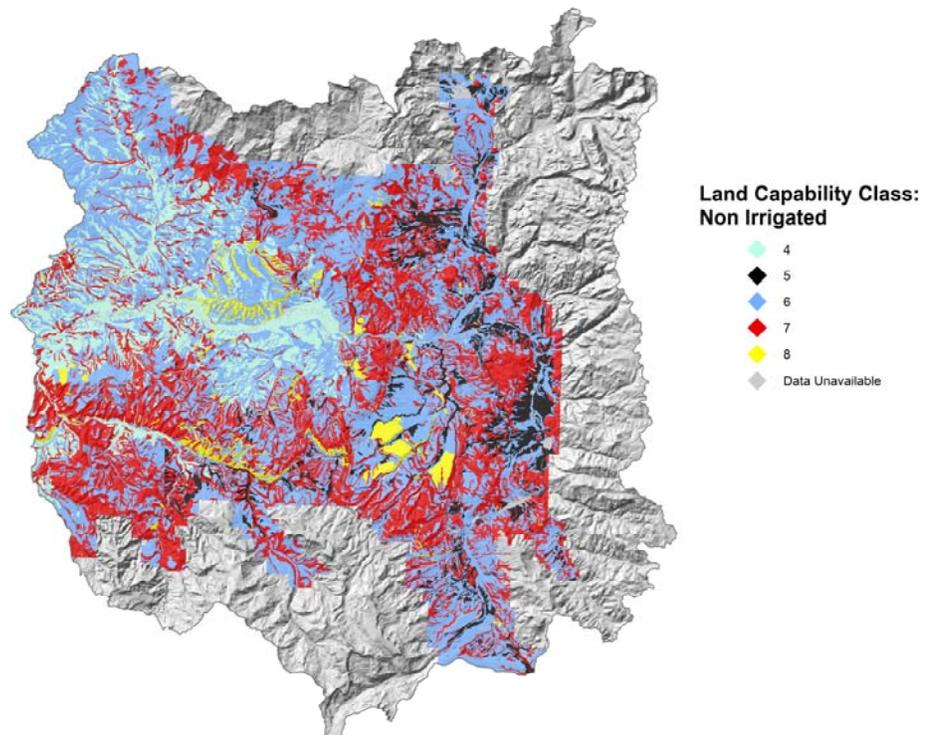
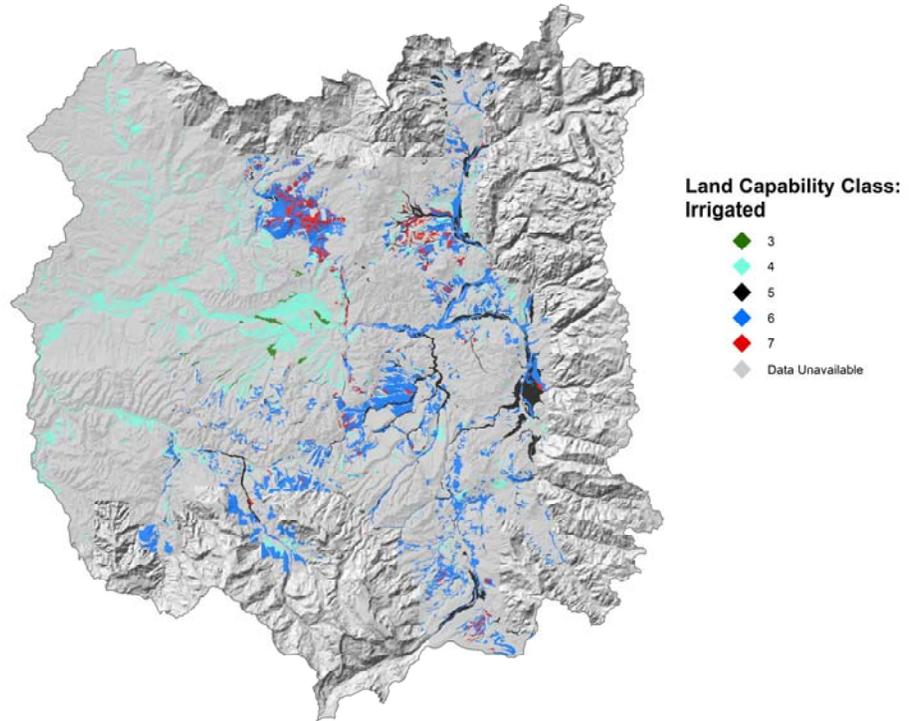
Class 4 - soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 - soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 - soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

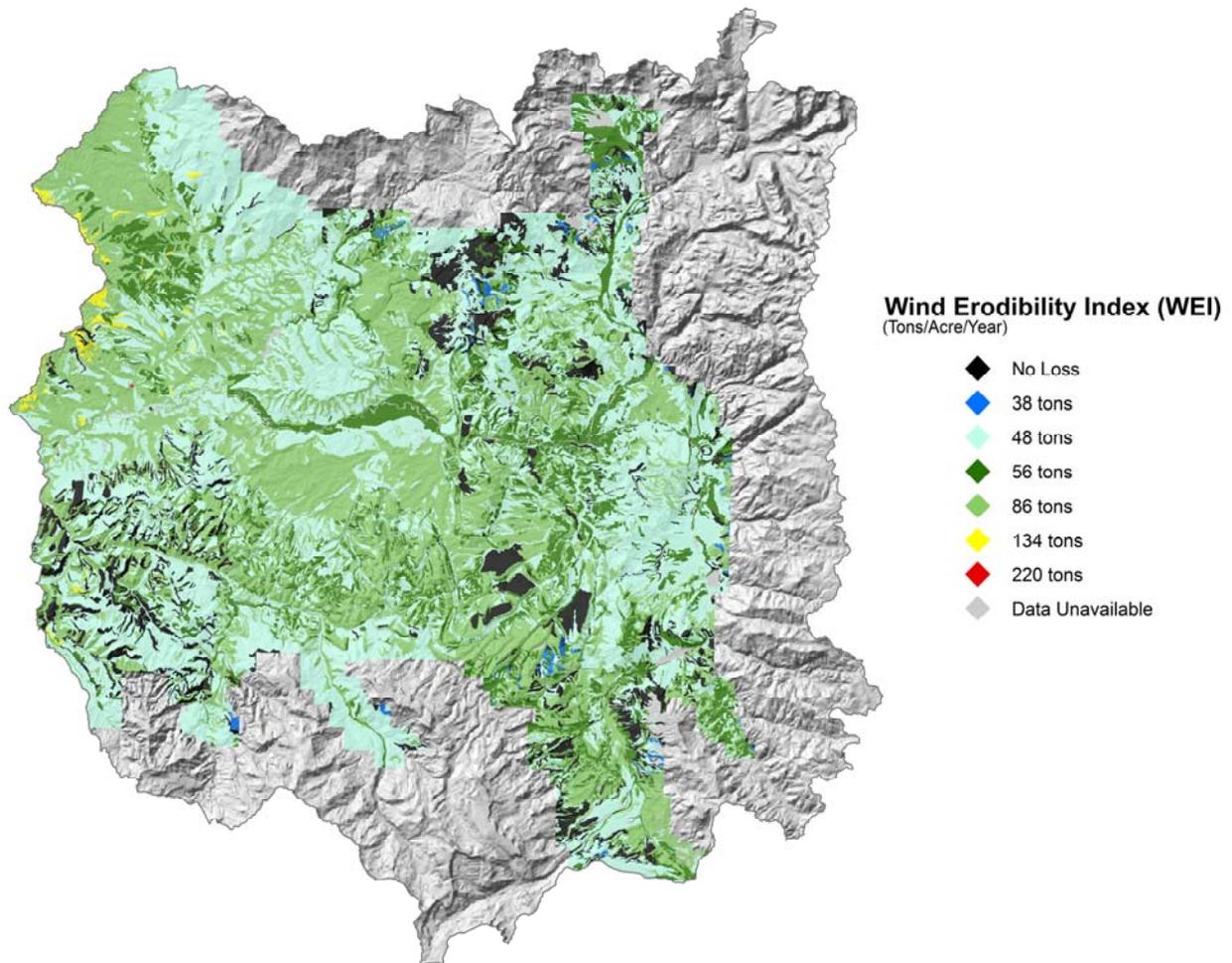
Class 7 - soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

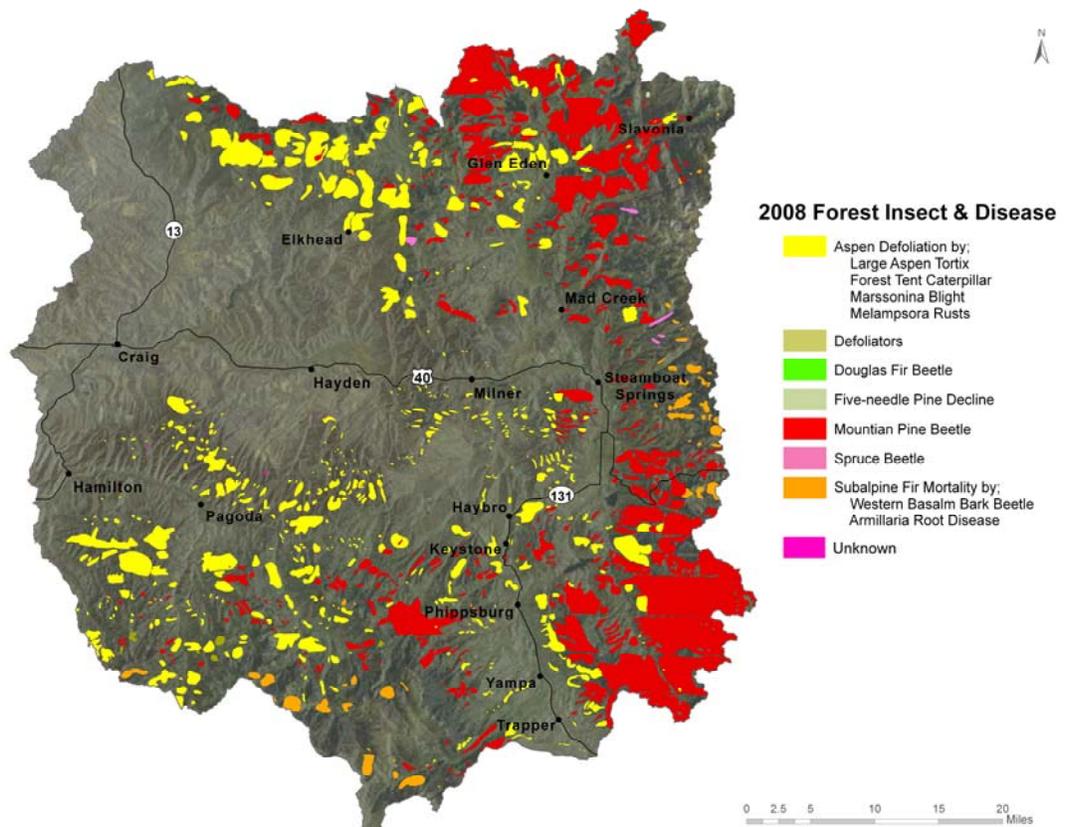
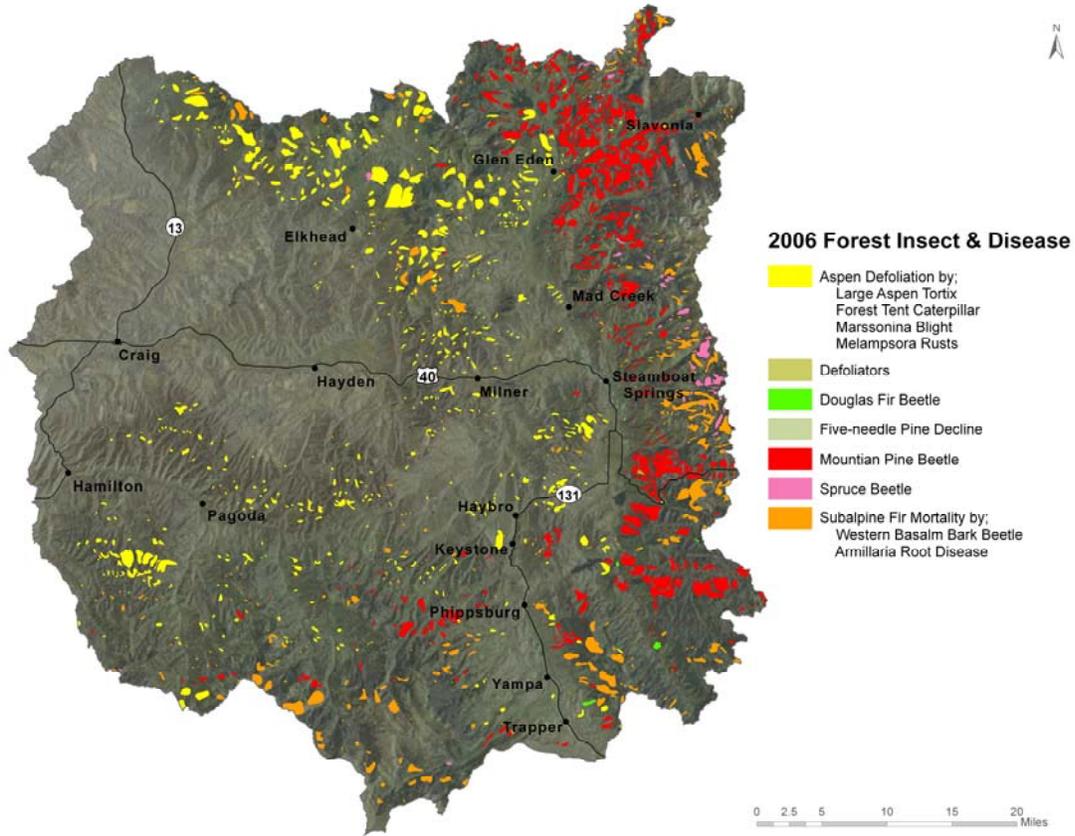
Class 8 - soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or aesthetic purposes.



The Wind Erodibility Index (WEI): numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion if it is assumed there is no vegetative cover or management.

Soils with an erodibility index equal to or greater than 8 are considered highly erodible.





State and Federal Threatened, Endangered, and Candidate Species and Species of Special Concern in Lower Yampa Watershed

Common Name	Scientific Name	Class	State Status/Federal Status	Comments
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Birds	Concern/None	Nests in the watershed
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened/None	Occurs year-round in the watershed
Bonytail	<i>Gila elegans</i>	Fish	Endangered/Endangered	Critical habitat in the watershed
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Fish	Threatened/Endangered	Critical habitat in the watershed
Canada Lynx	<i>Lynx canadensis</i>	Mammals	Endangered/Threatened	May occur in the watershed
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>	Fish	Concern/None	May occur in the watershed
Colorado Roundtail Chub	<i>Gila robusta</i>	Fish	Concern/None	May occur in the watershed
Columbian Sharp-tailed Grouse	<i>Tympanuchus phasianellus columbianus</i>	Birds	Concern/None	Occurs in the watershed
Greater Sage Grouse	<i>Centrocercus urophasianus</i>	Birds	Concern/None	Occurs in the watershed
Greater Sandhill Crane	<i>Grus canadensis tabida</i>	Birds	Concern/None	May occur in the watershed
Humpback Chub	<i>Gila cypha</i>	Fish	Threatened/Endangered	Critical habitat in the watershed
Northern Leopard Frog	<i>Rana pipiens</i>	Amphibians	Concern/None	Occurs in the watershed
Northern River Otter	<i>Lontra canadensis</i>	Mammals	Threatened/None	Occurs in the watershed
Razorback Sucker	<i>Xyrauchen texanus</i>	Fish	Endangered/Endangered	Water depletions in the watershed may affect downstream habitats/fish
Townsend's big-eared bat (pale ssp)	<i>Corynorhinus townsendii pallascens</i>	Mammals	Concern/None	Occurs in the watershed
Ute Ladies'-tresses Orchid	<i>Spiranthes diluvialis</i>	Plants	None/Threatened	Occurs in the watershed
Western Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Birds	Concern/Candidate	May occur in the watershed

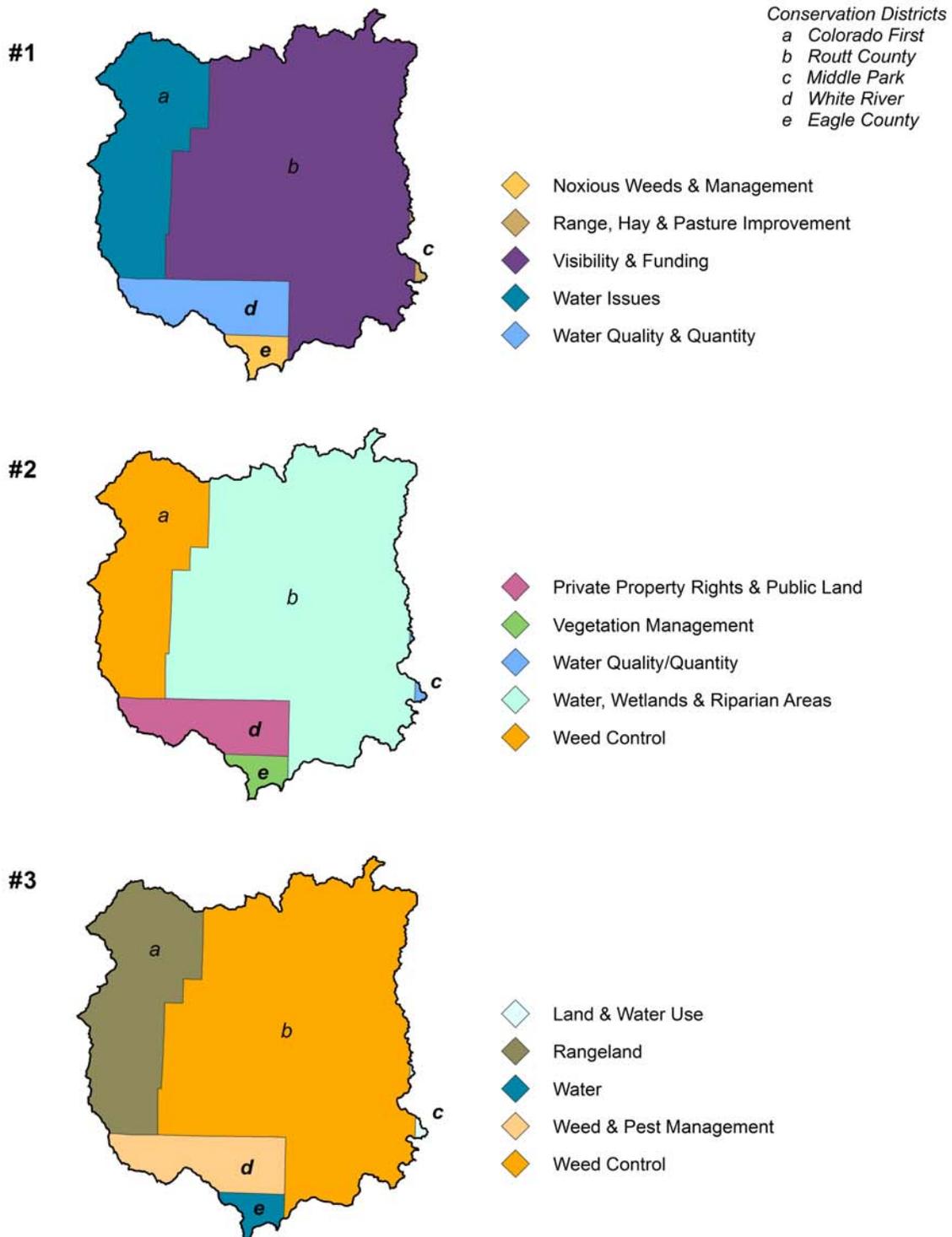
The terrestrial habitats in this watershed include both irrigated and dry cropland; big sagebrush and oak shrub habitats; lodgepole, spruce-fir, and aspen forest habitats; and subalpine meadows. Numerous riparian areas and lakes provide aquatic habitats in the watershed.

Wildlife species found at the highest elevations on the east edge of the watershed include pika, marmot, and white-tailed ptarmigan.

Economically important species in the watershed include: black bear, elk, mule deer, moose, mountain lion, and trout, throughout large parts of the watershed; pronghorn in the western part of the watershed; and snow geese in the Yampa and associated riparian areas.

Social Data	Rio Blanco	Moffat	Garfield	Jackson	Routt
Demographics (US Census, American Factfinder)					
Total population	5,986	13,184	43,791	1,577	19,690
Male	3,021	6,836	22,489	794	10,599
Female	2,965	6,348	21,302	783	9,091
Median age (years)	37.5	35.4	34.2	40.5	35
White	5,687	12,341	39,394	1,517	19,079
Black or African American	11	28	196	4	25
American Indian and Alaska Native	46	116	310	12	96
Asian	17	44	191	1	76
Native Hawaiian and Other Pacific Islander	0	3	35	0	18
Some other race	121	418	2861	23	144
Hispanic or Latino (of any race)	296	1247	7300	103	634
Economic Characteristics (US Census, American Factfinder)					
In labor force (population 16 years and	3,143	6,875	23,562	829	12,687
Median household income (dollars)	37,711	41,528	47,016	31,821	53,612
Median family income (dollars)	44,425	45,511	53,840	37,361	61,927
Per capita income (dollars)	17,344	18,540	21,341	17,826	28,792
Families below poverty level	112	249	522	46	135
Individuals below poverty level	556	1086	3206	220	1183
County Agricultural Characteristics (Colorado Agricultural Census, county data tables)					
Farms (number)	245	443	499	89	593
Land in farms/ranches (acres)	376,509	1,017,612	404,335	437,630	450,239
Average size farm/ranch (acres)	1,537	2,297	810	4,917	759
Median size farm (acres)	305	400	110	2,000	188
Average age of farmer or rancher	56.5	52.7	54	54.5	52.1
Net cash return from ag sales (\$1,000)	2,081	1,407	-1,364	4,355	1,626
Cattle and calves (number)	21,000	32,000	22,000	24,000	26,000

Identified Long Range Resource Concerns Top Three Concerns within Conservation Districts



Selected Conservation Practices Applied, FY 2005 through FY 2009

Practice Code	Practice Name	Practice Unit	Applied Amount	Applied Count
645	Upland Wildlife Habitat Management	ac	25,609	249
449	Irrigation Water Management	ac	881	31
528	Prescribed Grazing	ac	25,393	174
511	Forage Harvest Management	Ac	3,328	88

Conservation Systems to Address Major Resource Concerns *from the Field Office Technical Guide*

Grazed Rangeland—The grazing Resources need improved plant condition (similarity index), productivity, health and vigor. Animals need feed, forage, and shelter. The animals are adapted to the climatic and ecological condition of the resources.

CO 34.1-GR-01

Practices

Description

Resource Concerns Addressed

314 Brush Management

338 Prescribed Burning

378 Pond

382 Fence

528 Prescribed Grazing

574 Spring Development

595 Pest Management

614 Watering Facility

645 Upland Wildlife Habitat Management

666 Forest Stand Improvement

This area encompasses the lower elevation mesas and Plateaus that represent the transition to the Southern Rocky Mountains. The typical vegetation is a scattered overstory of two needle pinyon and Utah juniper with a understory of big sagebrush and perennial bunchgrasses. In some areas pinyon and juniper can increase and become a dominant species.

Fish and Wildlife - T&E Species: Declining Species, Species of Concern
Plant Condition - Productivity, Health and Vigor
Soil Erosion - Sheet and Rill
Soil Erosion - Wind

Hayland—Wild flood irrigation system converted to Structure for Water Control, Underground & Gated Pipeline, IWM, and Forage Harvest Mgt.

CO 34.1-HY-Pipe—R-1

Practices

Description

Resource Concerns Addressed

430DD Irr. Water Conveyance, Pipeline, H

431 Above Ground, Multi-Outlet Pipeline

443 Irrigation System, Surface and Subsurface

449 Irrigation Water Management

511 Forage Harvest Management

587 Structure for Water Control

Cool season grasses, alfalfa, or alfalfa/grass hay. Annual precipitation ranges from 8 - 20". Moisture usually lacking in the summer during peak ET and supplemented with gravity irrigation, the water source may be ground or surface water; rainfall often comes in short intense spring and early summer storms and as snowfall in the winter. Wildlife potential for use by elk, deer and other wildlife.

Soil Erosion - Sheet and Rill
Soil Erosion - Wind
Water Quantity - Inefficient Water Use on Irrigated Land

Pasture—This system is a non irrigated pasture. Prescribed Grazing is applied to improve plant health and production.

CO 34A.1-PA-Dry

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
382 Fence	The pasture is non irrigated without significant slope. The pasture species are predominantly cool season and are sometimes utilized in conjunction with rangeland pastures.	Fish and Wildlife - T&E Species: Declining Species, Species of Concern Plant Condition - Productivity, Health and Vigor Soil Erosion - Sheet and Rill Soil Erosion - Wind
528 Prescribed Grazing		
614 Watering Facility		
645 Upland Wildlife Habitat Management		

Dry Cropland —Seasonal residue management system with Crop rotation, Nutrient and Pest Mgt.

CO 34A.1-CR-Dryland

<i>Practices</i>	<i>Description</i>	<i>Resource Concerns Addressed</i>
328 Conservation Crop Rotation	Crops: small grains. Fallow usually included in rotation. Soils: heavy loams, silt loams, and loams. Annual precipitation ranges from 8 - 20". Moisture usually lacking in the summer during peak ET; rainfall often comes in short intense spring and early summer storms and as winter snowfall. Wildlife potential for use by pheasant, grouse, deer and other wildlife. Long term agricultural production practices have resulted in sheet and rill erosion, wind erosion, soil compaction and decrease in organic matter.	Soil Erosion - Sheet and Rill Soil Erosion - Wind Water Quantity - Inefficient Water Use on Non-irrigated Land
344 Residue Management, Seasonal		
590 Nutrient Management		
595 Pest Management		

Estimated Costs of Application of Conservation Systems

Landuse	Estimated Acres Need to be Treated	Estimated Average Cost per Acre (\$)	Costs (\$)
Range	330,000	30	9,900,000
Crop	25,000	45	1,125,000
Hayland	7,000	880	6,160,000
Pasture	35,000	35	1,225,000

Total Costs: \$18,410,000

FOOTNOTES/ BIBLIOGRAPHY

303(d) listed streams within the Watershed were created using data from Colorado Department of Public Health & Environments' Water Quality & Control Commission. Impaired streams are current as of April 30, 2006. For a list of all Colorado impaired streams, locations and priority ratings, visit <http://www.cdphs.state.co.us/regulations/wqccregs/100293wqlimitedsegtdls.pdf>.

Stream data from National Hydrologic Dataset <http://nhd.usgs.gov>

Threatened and Endangered Species information was gathered using data from the Colorado Division of Wildlife (CDOW) Natural Diversity Information Source (NDIS). NDIS GIS data may be downloaded at <http://ndis.nrel.colostate.edu>. For more information on Colorado's Endangered & Threatened Species, as well as Species of Concern, visit <http://wildlife.state.co.us/WildlifeSpecies/SpeciesOfConcern/ThreatenedEndangeredList/ListOfThreatenedAndEndangeredSpecies.htm> or <http://mountainprairie.fws.gov/endspp/CountyLists/COLORADO.htm>

Resource Concerns were identified using the Colorado Association of Conservation Districts' (CACD) long range (10 year) plans from the period of 1996-2000. Only the top three environmental resource concerns for each district were used. For more information on Colorado's Conservation Districts, visit <http://www.cacd.us>.

Maps were generated using Soil Survey Geographic Database (SSURGO) tabular and spatial data. SSURGO data was downloaded for the following Colorado surveys:

Routt County Area (CO648) Published 9/25/2007

Moffat County Area (CO686) Published 2/4/2008

Vegetation data was generated using the Colorado Division of Wildlife's "Colorado Vegetation Classification Project" (CVCP) data. Completed in 2003, the CVCP is a landscape level vegetation dataset created using Landsat TM imagery and then formatted for GIS use. The species identified are an overview of the most common species associated in each cover type, in order of greatest occurrence. For more information on the Colorado Vegetation Classification Project, visit <http://ndis.nrel.colostate.edu/coveg>.

Common Resource Area (CRA), a subdivision of the Major Land Resource Area (MLRA), is a geographical area where resource concerns, problems, or treatment needs are similar. Geographic boundaries of a CRA are determined by landscape conditions, soil, climate, human considerations and other natural resource information. For more information on Common Resource Areas visit <http://soils.usda.gov/survey/geography/cra.html>.

Average Annual Precipitation data was developed through a partnership between the Natural Resources Conservation Service's (NRCS) National Water and Climate Center (NWCC), the National Cartography and Geospatial Center (NCGC), and the PRISM (the Parameter-elevation Regressions on Independent Slopes Model) group at Oregon State University (OSU), developers of PRISM. Mean annual precipitation maps were developed calculating averages of rainfall for the period of 1961-1990. For more information on PRISM data visit <http://www.ncgc.nrcs.usda.gov/products/datasets/climate/docs/fact-sheet.html> or for more information about technical aspects of PRISM, visit the PRISM website at <http://www.ocs.orst.edu/prism>.

Land Ownership (status,07/22/2006 dataset) data was obtained from the Bureau of Land Management, Colorado State Office. For more information, visit http://www.blm.gov/co/st/en/BLM_Programs/geographical_sciences/gis.html

Relief & Elevation maps were created using the National Elevation Dataset (NED), 30m Digital Elevation Model (DEM) raster product assembled by the U.S. Geological Survey (USGS). A hillshade grid was created from the 30m DEM to create a 3D effect. For more information about the NED visit <http://ned.usgs.gov>. The data was downloaded from the NRCS Geospatial Data Gateway at <http://datagateway.nrcs.usda.gov>.

Forest Insect & Disease data obtained from the U.S. Forest Service annual aerial survey. For more information visit <http://www.fs.fed.us/r2/resources/fhm/aerialsurvey/>