



United States Department
of Agriculture

Blue Watershed



Hydrologic Unit Code 14010002

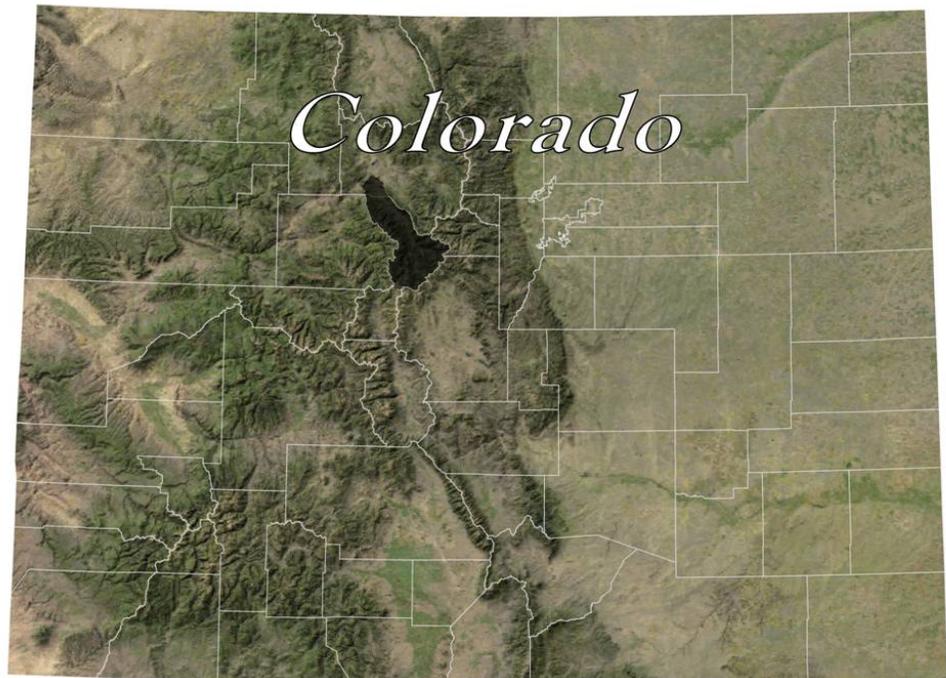
Natural Resources
Conservation Service

Rapid Assessment

Lakewood, Colorado

RWA 14010002

December 2009



Satellite Imagery: ArcIMS Server - Geographic Network Services hosted by ESRI

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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.

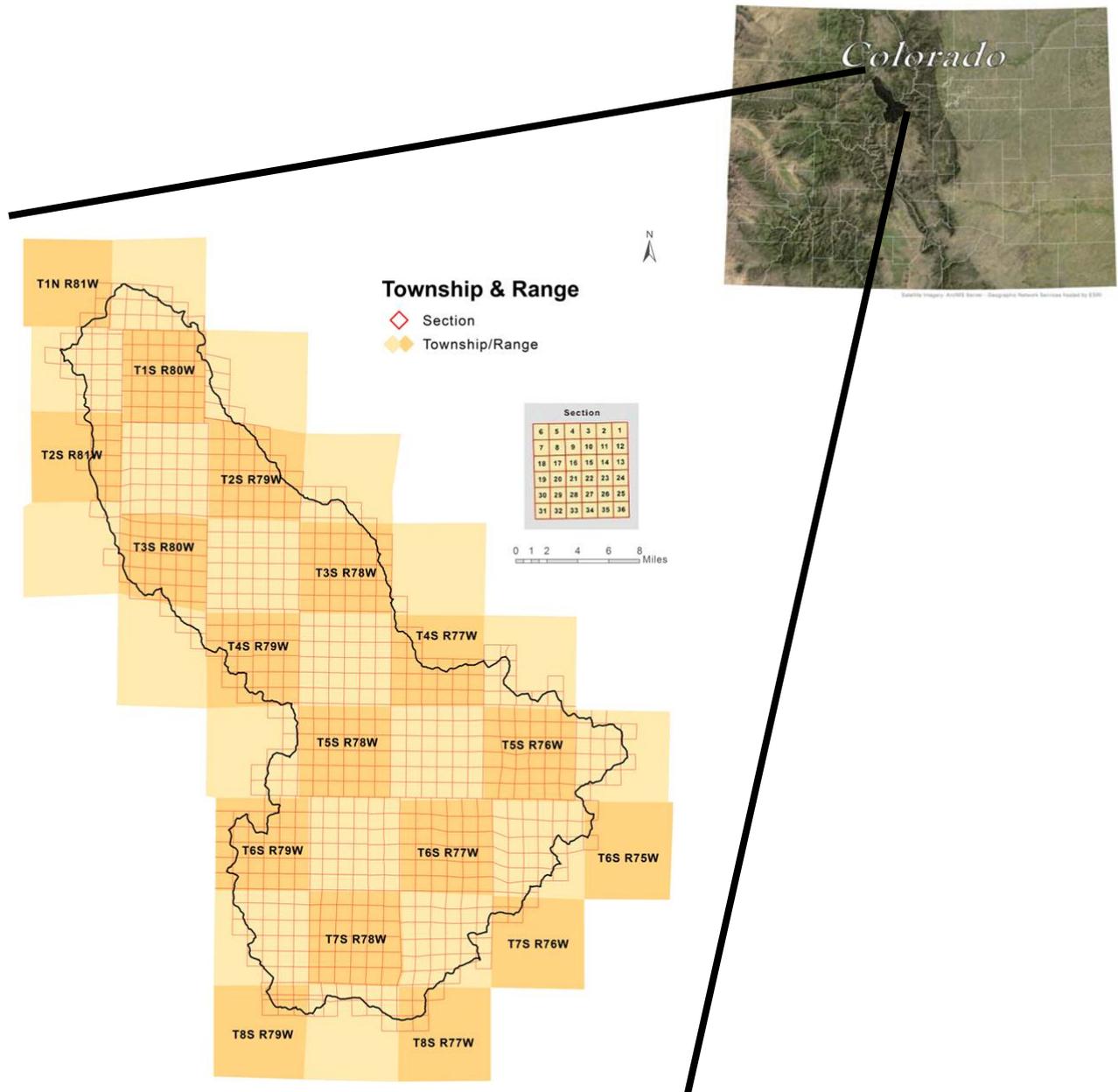
Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help landowners and local leaders set priorities and determine the best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

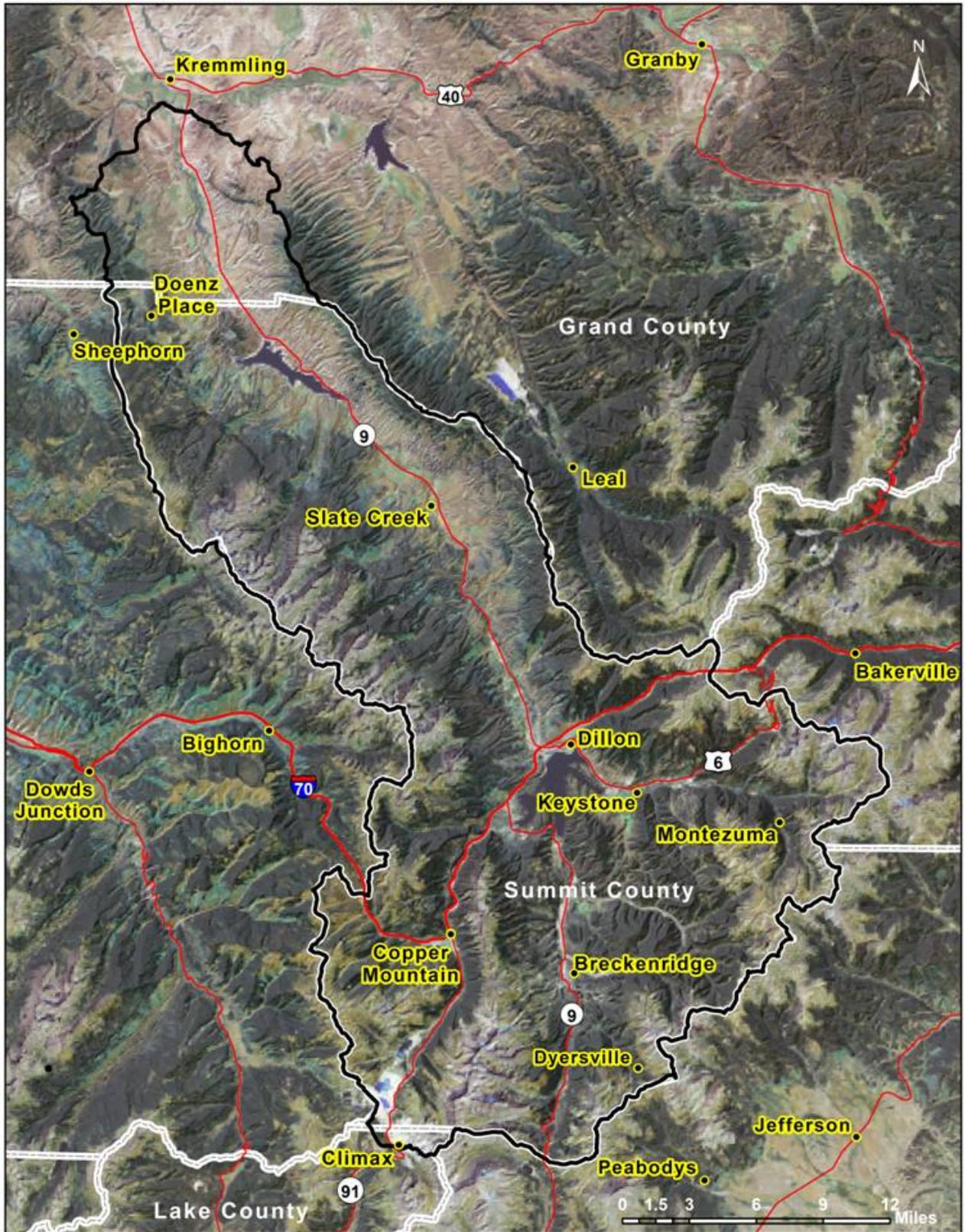
- Quick and inexpensive tools for setting priorities and taking action
- Providing a level of detail that is sufficient for identifying actions that can be taken with no further watershed-level studies or analyses
- Actions to be taken may require further Federal or State permits or ESA or NEPA analysis 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 BLUE Watershed	% of County in the Watershed	% of Watershed in the County
Grand	1,195,555	39,296	3.3%	9.0%
Lake	245,639	1,958	0.8%	0.4%
Summit	395,962	395,298	99.8%	90.5%
		436,962		

Blue Watershed - 14010002

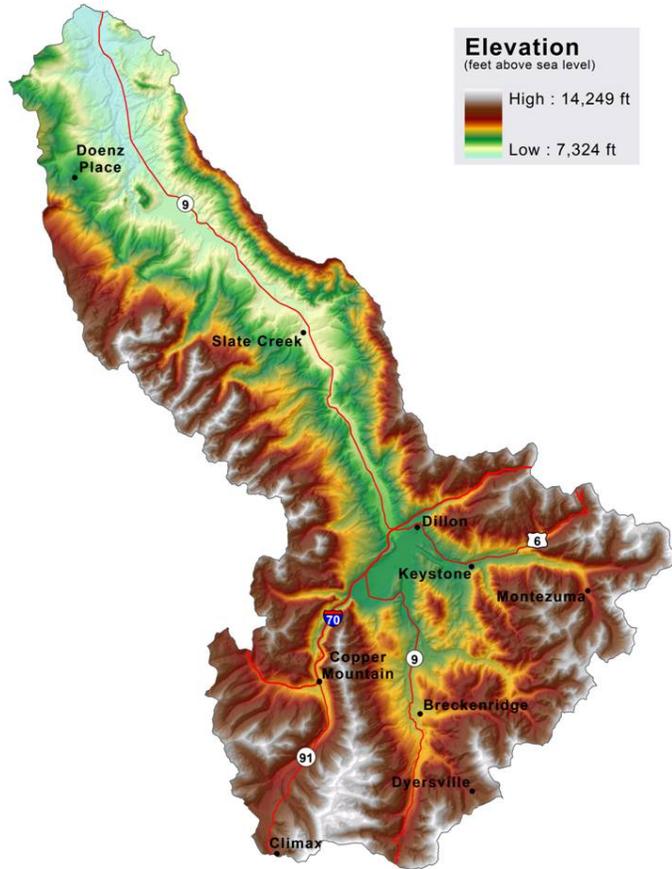


Satellite Imagery: ArcIMS Server - Geographic Network hosted by ESRI



Common Resource Areas (CRA): Geographical areas where resource concerns, problems, and treatment needs are similar. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographical boundaries of the common resource area.

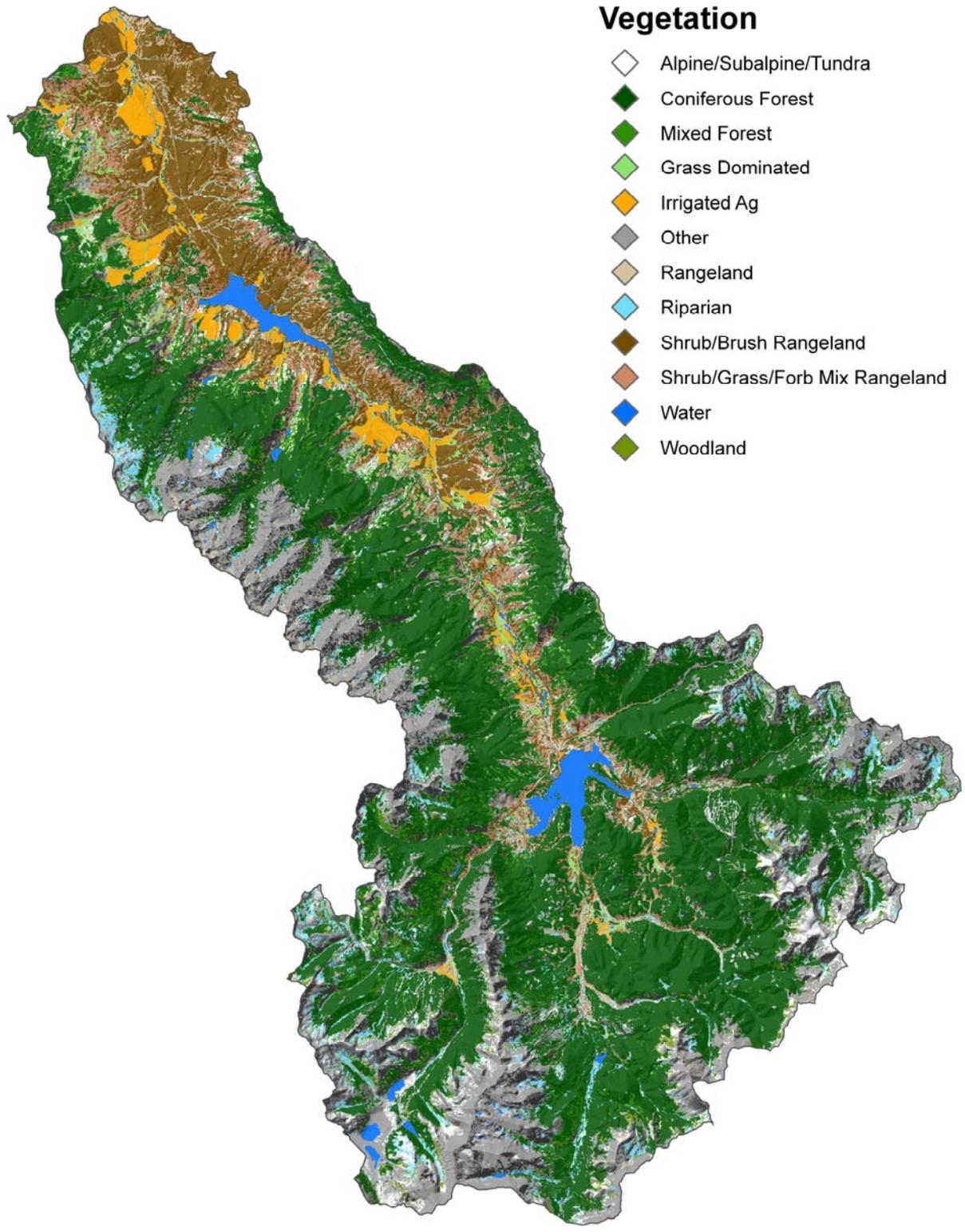
MLRA	CRA	CRA NAME	CRA DESCRIPTION
48A	48A.1	Southern Rocky Mountains - High Mountains and Valleys	This area is best characterized by steep, high mountain ranges and associated mountain valleys. The temperature regimes are mostly frigid and cryic; moisture regimes are mainly ustic and udic. Vegetation 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.
48B	48B.1	Southern Rocky Mountain Parks	This is an area of high elevation intermontane valleys surrounded by the Southern Rocky Mountains. The temperature regimes are mainly cryic, moisture regimes are aridic and ustic. Characteristic vegetation is big sagebrush-grass or grassland. Grazing is the dominant land use.



Land Owner

- ◆ Bureau of Land Mgmt
- ◆ National Grasslands
- ◆ Private
- ◆ State
- ◆ State, County, City; Wildlife, Parks & Rec
- ◆ U.S. Forest Service

Bureau of Land Management	11,877
National Grasslands	33
Private	104,339
State	857
State, County, City; Wildlife, Parks & Rec	823
U.S. Forest Service	<u>319,034</u>
	436,962



Vegetation

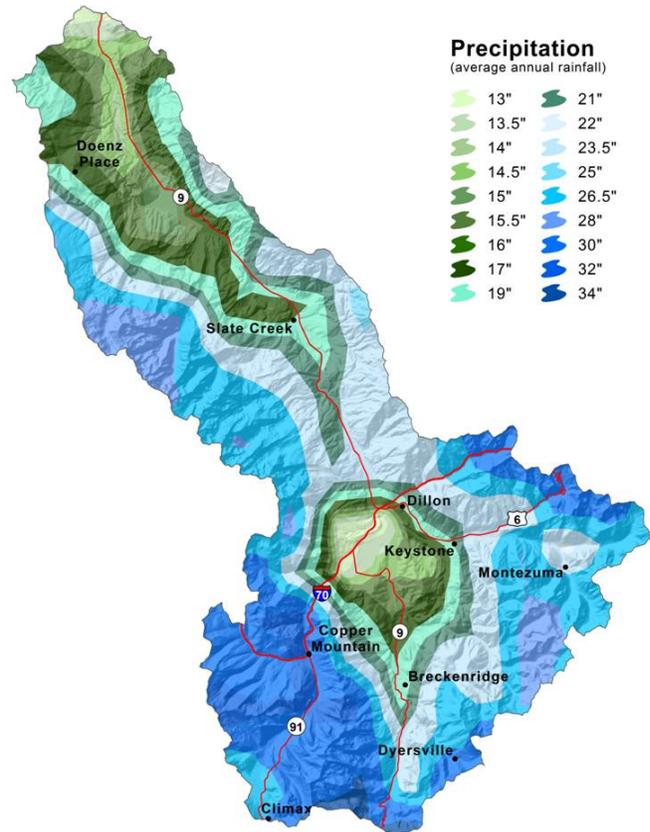
- ◇ Alpine/Subalpine/Tundra
- ◆ Coniferous Forest
- ◆ Mixed Forest
- ◆ Grass Dominated
- ◆ Irrigated Ag
- ◆ Other
- ◆ Rangeland
- ◆ Riparian
- ◆ Shrub/Brush Rangeland
- ◆ Shrub/Grass/Forb Mix Rangeland
- ◆ Water
- ◆ Woodland

BLUE Land Use	Total Acreage	Vegetation	Acreage
Cropland	7,389	Irrigated Ag*	7,389.0
Rangeland/Grassland	126,456	Alpine Grass Dominated Alpine Grass/Forb Mix Alpine Meadow Grass Dominated Grass/Forb Mix Greasewood Sagebrush Community Sagebrush/Grass Mix Sagebrush/Mesic Mtn Shrub Mix Shrub/Brush Rangeland Shrub/Grass/Forb Mix Soil Sparse Grass (Blowouts) SubAlpine Shrub Community Subalpine Grass/Forb Mix Upland Willow/Shrub Mix	714.7 40,422.4 0.6 4,754.0 1.5 2.8 35,468.0 10,445.2 10,175.2 1,947.2 2,046.7 12.3 0.6 1,264.8 11,646.5 7,553.4
Forest	224,847	Aspen Douglas Fir Englemann Spruce/Fir Mix Fir/Lodgepole Pine Mix Lodgepole Pine Lodgepole Pine/Aspen Mix Lodgepole/Spruce/Fir Mix Mixed Forest Land Spruce/Fir/Aspen Mix Spruce/Fir/Lodgepole/Aspen Mix Spruce/Lodgepole Pine Mix	17,099.9 16.1 38,493.8 0.6 83,566.3 13,253.3 60,641.3 839.5 937.7 5,066.4 4,932.1
Riparian	16,392	Forested Riparian Herbaceous Riparian Riparian Shrub Riparian Willow	815.4 442.5 323.0 567.6 14,243.9
Water	6,987	Water	6,987.4
Other	54,891	No Data Barren Land Rock Snow Talus Slopes & Rock Outcrops	1.2 7,006.9 28,170.5 2,690.7 17,021.5
~Total Watershed Acres			436,963

*Colorado Decision Support Systems Data

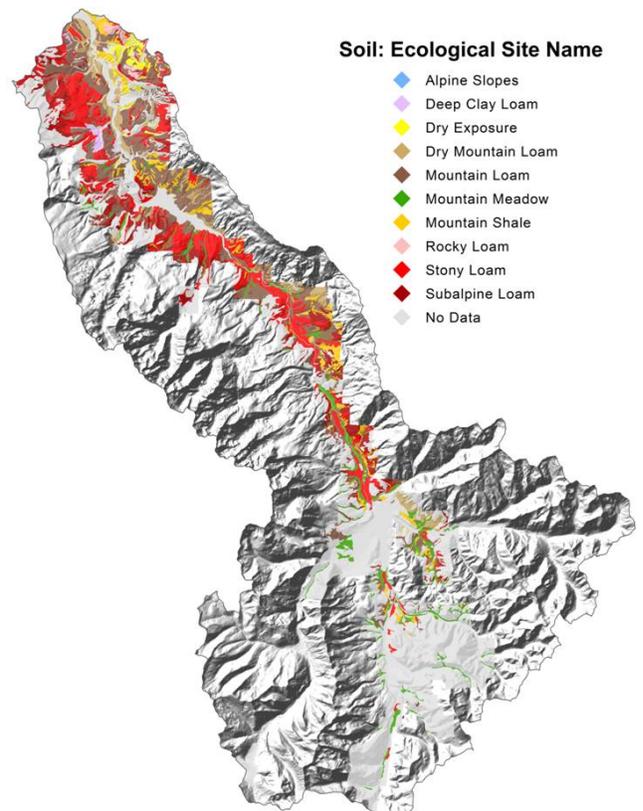
Precipitation

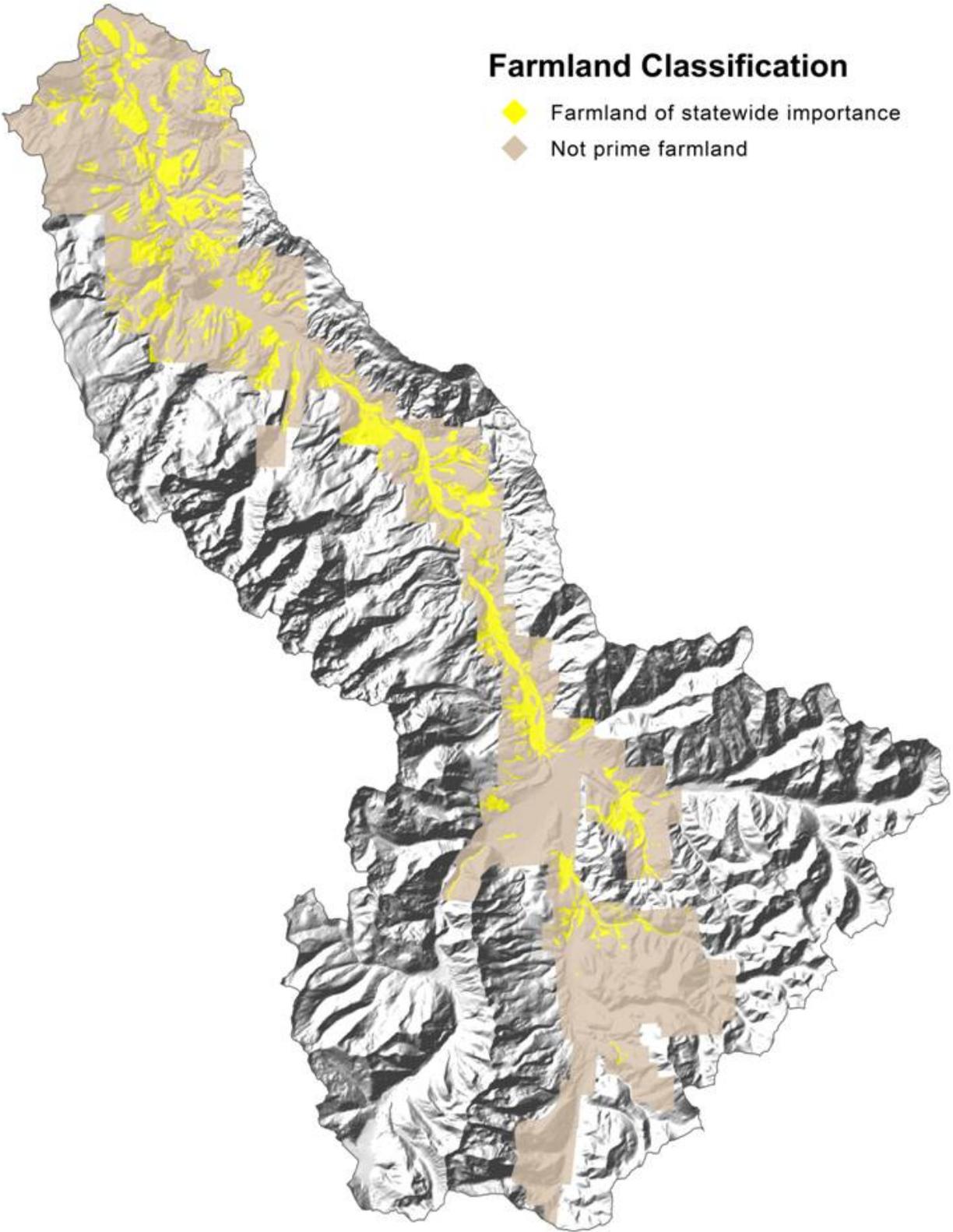
Droughts are regular visitors to the watershed as with the rest of Colorado. Statewide in the 1900's alone, four prolonged dry spells occurred. There was one in the 1910s. Another, in the '30s, caused the dust-bowl period. The second worst drought on record in the state occurred in the mid-50s. A series 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. Rainfall occurs as frontal storms in the spring and early summer and high intensity, convective thunderstorms in late summer. Maximum precipitation is from mid spring through late autumn. Precipitation in winter is snow. The average annual temperature is from 45 to 55 degrees F. The frost free period averages 162 days but ranges from 133 to 191 days.

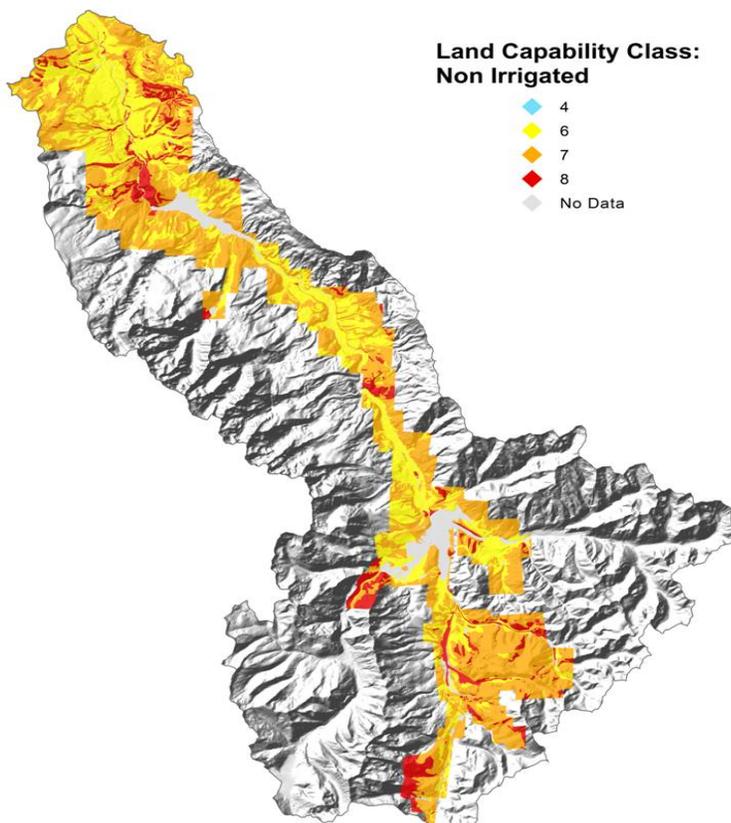
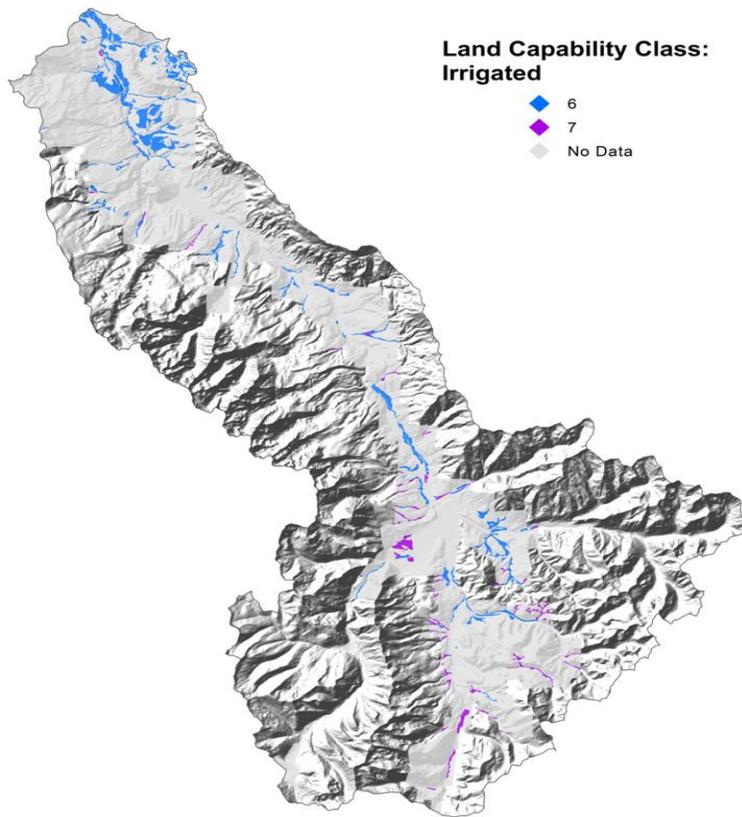


Ecological Sites

The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Ecological Site maps give an overall indication of the soils plant relationship in the area. More detailed descriptions of ecological sites are provided in the Field Office Technical Guide (FOTG). The FOTG is available in local offices of the Natural Resources Conservation Service (NRCS) and online at <http://www.nrcs.usda.gov/technical/efotg/>.







Land Capability Classes

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.

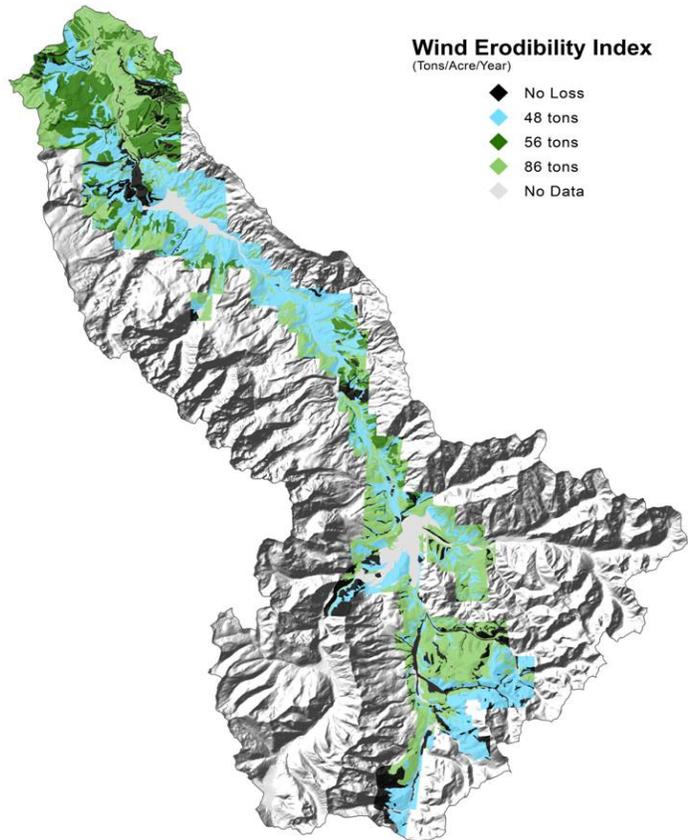
Class 7 - soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

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.

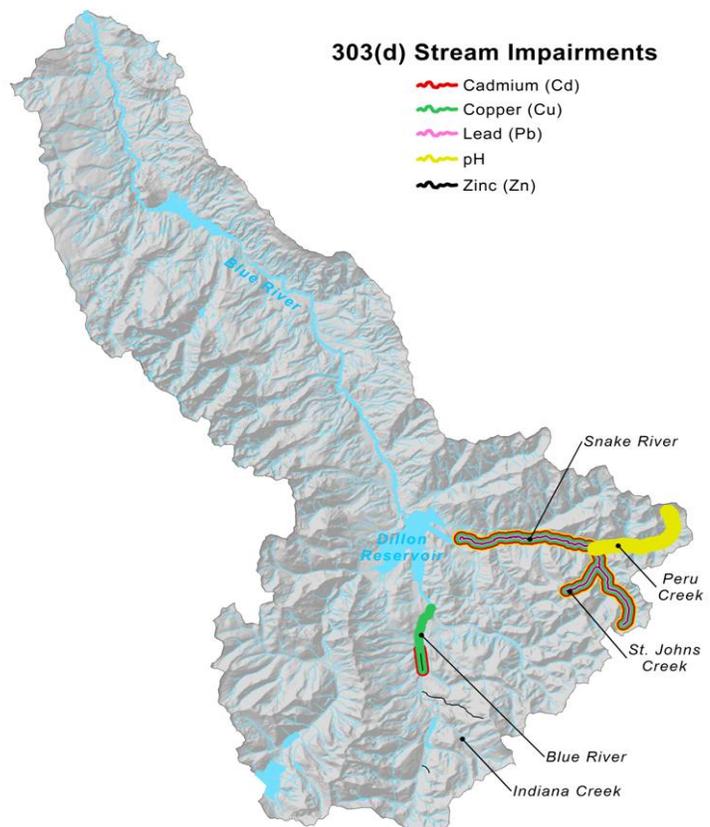
As shown on the Wind Erodibility Index map below, most cropland soils in the Blue Watershed are considered highly erodible.

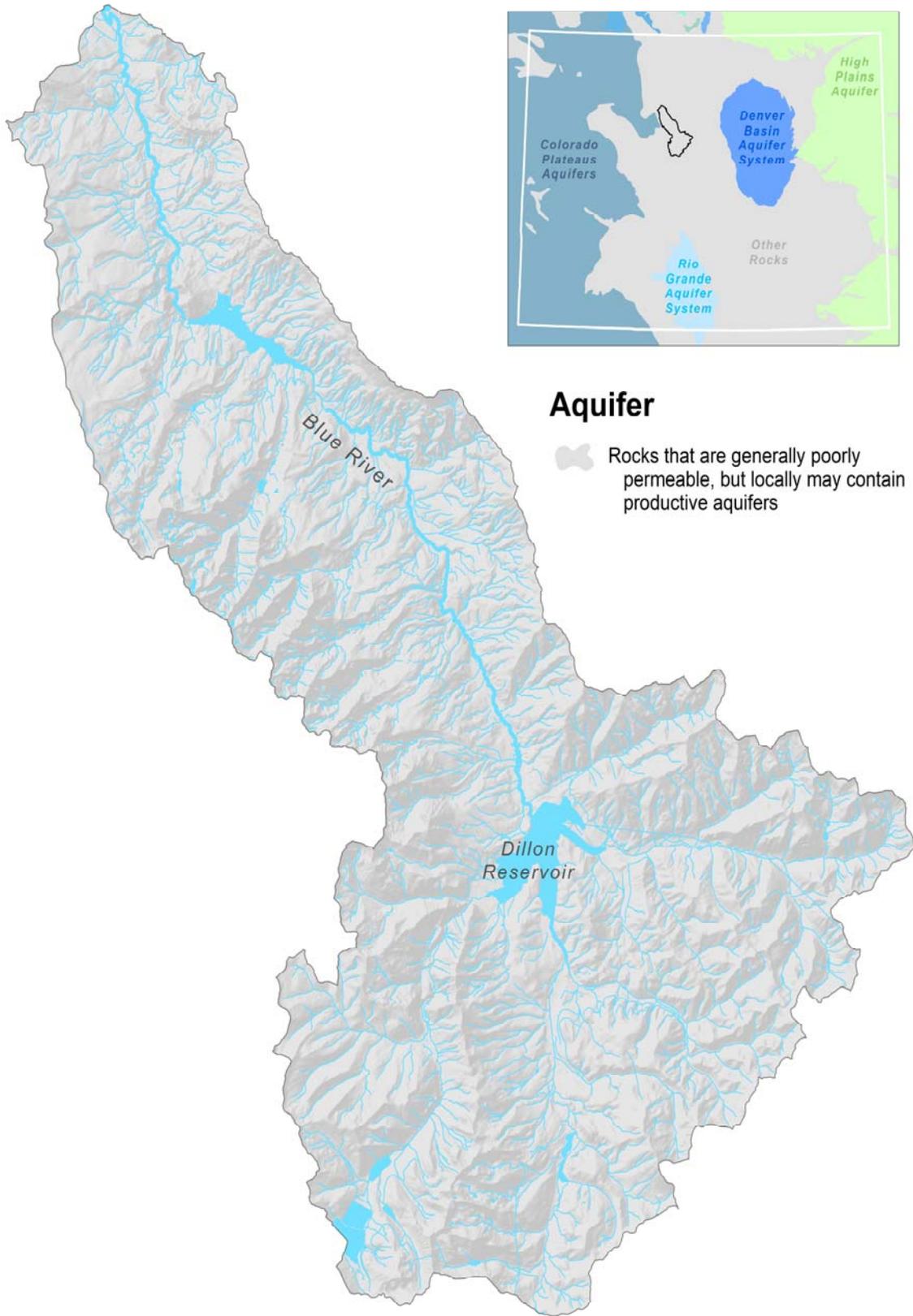


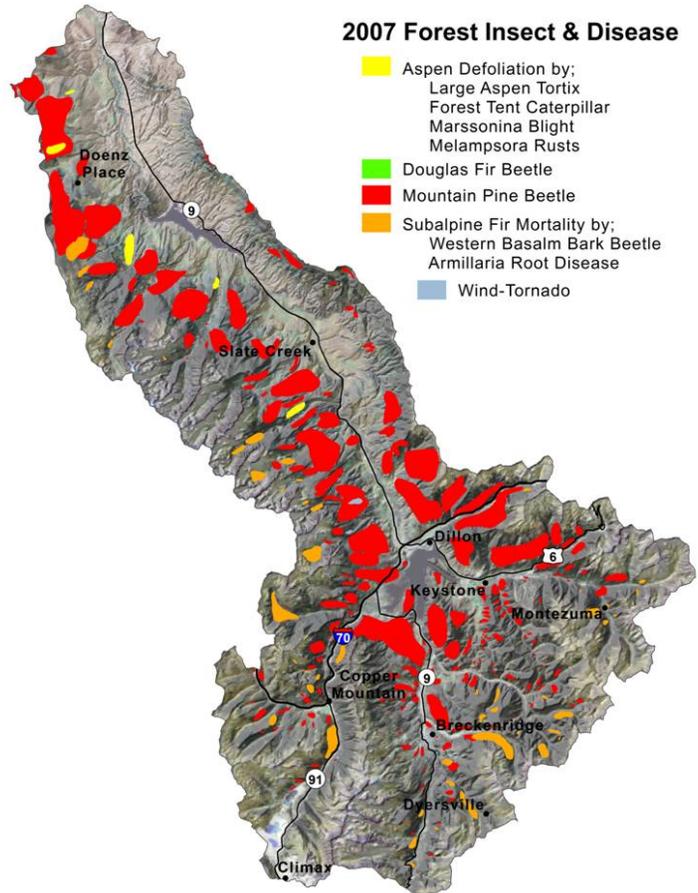
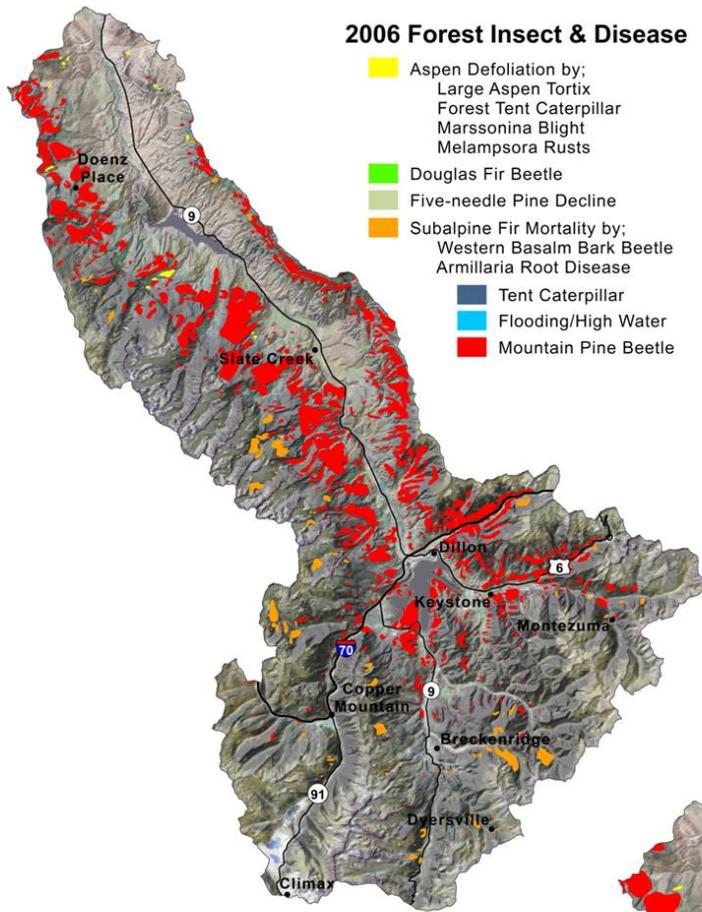
Stream Impairments

Section 303(d) of the Clean Water Act requires states to identify and list all water bodies where state water quality standards are not being met.

Thereafter, TMDLs compromising quantitative objectives and strategies have been or will be developed for these impaired waters within the watershed in order to achieve their water quality standards.







State and Federal Threatened, Endangered, and Candidate Species and Species of Special Concern

Common Name	Scientific Name	Class	State Status/ Federal Status	Comments	
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 in the watershed
Bonytail	<i>Gila elegans</i>	Fish	Endangered	Endangered	Water depletions in the watershed may affect downstream habitats/fish
Boreal Toad	<i>Bufo boreas boreas</i>	Amphibians	Endangered	None	Occurs in the watershed
Canada Lynx	<i>Lynx canadensis</i>	Mammals	Endangered	Threatened	Occurs in the watershed
Colorado Pikeminnow	<i>Ptychocheilus lucius</i>	Fish	Threatened	Endangered	Water depletions in the watershed may affect downstream habitats/fish
Colorado River Cutthroat Trout	<i>Oncorhynchus clarki pleuriticus</i>	Fish	Concern	None	Occurs in the watershed
Greater Sage Grouse	<i>Centrocercus urophasianus</i>	Birds	Concern	None	Occurs in the watershed
Humpback Chub	<i>Gila cypha</i>	Fish	Threatened	Endangered	Water depletions in the watershed may affect downstream habitats/fish
Northern leopard frog	<i>Rana pipiens</i>	Amphibians	Concern	None	Occurs in the watershed
Penland alpine fen mustard	<i>Eutrema penlandii</i>	Plants	None	Threatened	Occurs at south end of the watershed
Razorback Sucker	<i>Xyrauchen texanus</i>	Fish	Endangered	Endangered	Water depletions in the watershed may affect downstream habitats/fish
River Otter	<i>Lontra Canadensis</i>	Mammals	Threatened	None	Occurs in the watershed

The terrestrial habitats in this watershed include big sagebrush, aspen, lodgepole pine, spruce-fir, subalpine meadow; and alpine tundra. Numerous riparian areas and wetlands provide aquatic habitats in the watershed.

Wildlife species found in this watershed are diverse. Representative species of the highest elevations include pika, marmot, bighorn sheep, mountain goats, and white-tailed ptarmigan.

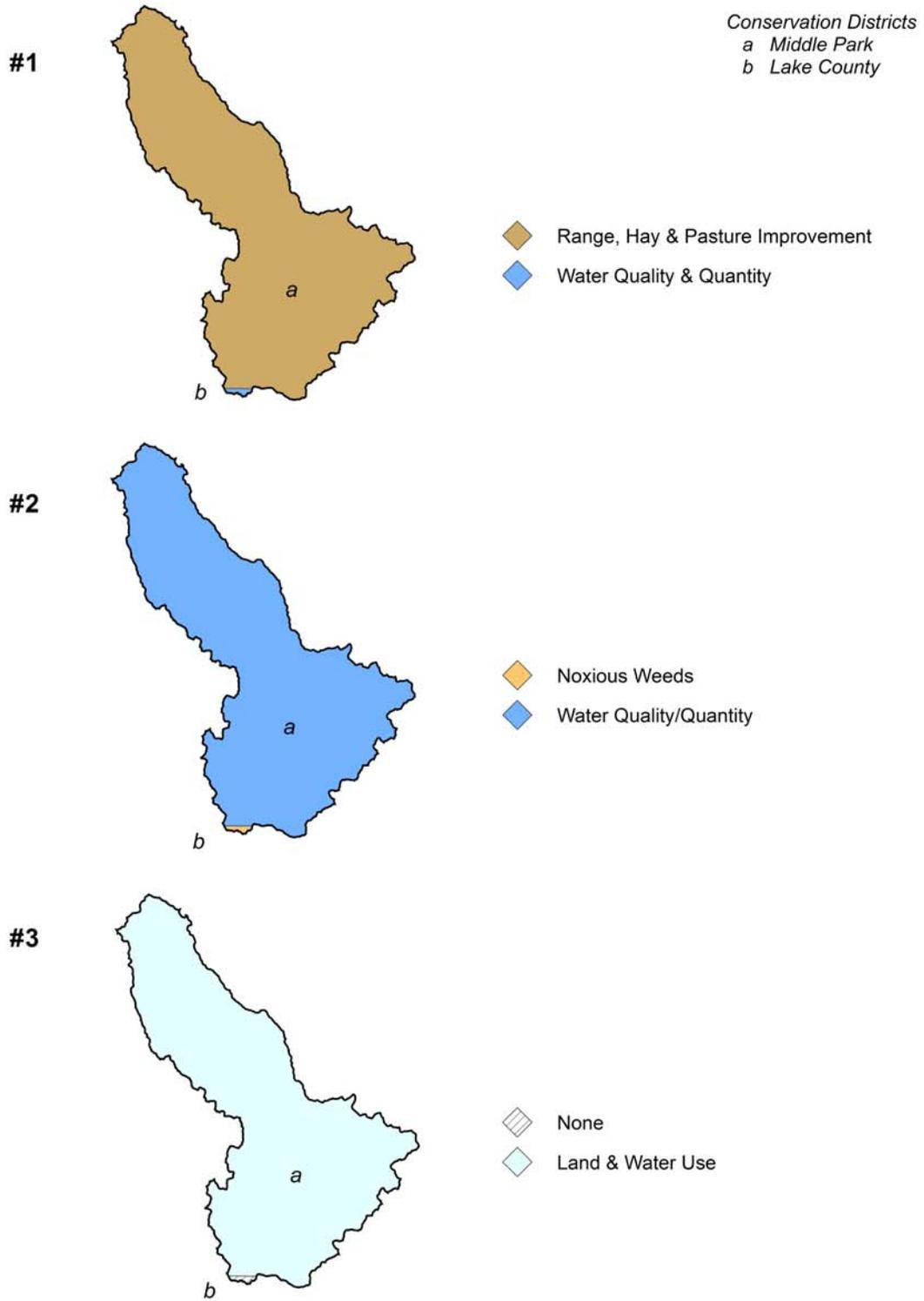
Economically important species in the watershed include: black bear, elk, mule deer, moose, mountain lion, and trout, throughout most of the watershed; moose on the north side of the watershed; pronghorn in the northern part of the watershed; wild turkey in the northwest part of the watershed; and snow geese on Green Mountain and Dillon Reservoirs.

Social Data

	Grand	Lake	Summit
Demographics (US Census, American Factfinder)			
Total population	12,442	7,812	23,548
Male	6,593	4,192	13,697
Female	5,849	3,620	9,851
Median age (years)	36.9	30.5	30.8
White	11,839	6,062	21,626
Black or African American	60	14	160
American Indian and Alaska Native	54	98	112
Asian	85	24	205
Native Hawaiian and Other Pacific Islander	12	4	17
Some other race	249	1405	933
Hispanic or Latino (of any race)	543	2823	2306
Economic Characteristics (US Census, American Factfinder)			
In labor force (population 16 years and over)	7,768	4,306	17,081
Median household income (dollars)	47,759	37,691	56,587
Median family income (dollars)	55,217	41,652	66,914
Per capita income (dollars)	25,198	18,524	28,676
Families below poverty level	172	184	150
Individuals below poverty level	901	991	2098
County Agricultural Characteristics (Colorado Agricultural Census, county data tables)			
Farms (number)	173	34	36
Land in farms/ranches (acres)	219,598	17,253	27,814
Average size farm/ranch (acres)	1,269	507	773
Median size farm (acres)	350	268	242
Average age of farmer or rancher	54.8	55.2	57.6
Net cash return from ag sales (\$1,000)	-1,467	-144	-390
Cattle and calves (number)	18,000		2,000

Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts



Selected Conservation Application Data		Blue 14010002					
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Total
Total Conservation Systems Planned (Acres)	186	1,355	Not Avail.	0	38	0	1,579
Total Conservation Systems Applied (Acres)	256	1,037	Not Avail.	551	16	0	1,860

Conservation Systems to Address Major Resource Concerns

Primary Resource Concern: Rangeland Health					
Conservation System Description:		Prescribed Grazing—planned management that provides adequate recovery opportunity between grazing events and proper stocking of animals. Estimate 12,000 acres need to be treated on median sized ranches of 550 acres.			Based on Conservation System Guide Code: CO 48A-GR-01-R-Grazing
Practices	Unit	Quantity	Cost/Unit (\$)	Estimated Cost per Median Sized Ranch (\$)	
Prescribed Grazing					
Fence (382)	Ft.	5,120	0.6	3,072	
Pest Management (595)	Ac.	300	4,500	4,500	
Pipeline (516)	Ft.	5,000	2.40	12,000	
Upland Wildlife Habitat Management (645)	Ac.	300	na	0	
Watering Facility (614)	No.	1	410	410	
Costs to apply prescribed grazing per median sized ranch of 5,000 acres	No.	22	19,982	439,604	
Subtotal Rangeland costs:				\$ 439,604	

General Effects, Impacts, and Estimated Costs of Application of Conservation Systems

Landuse	Resource	Measurable Effects	Non-measurable Effects	Cost (\$)
Pastureland/Rangeland	Plants		Improved plant condition, productivity, health and vigor. Grazing animals have adequate feed, forage, and shelter.	439,604
Total Costs				\$ 439,604

References Not Cited in Document

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.cdphe.state.co.us/regulations/wqccregs/100293wqlimitedsegtmls.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:

Grand County Area (CO649) Published 12/21/2006 Summit County Area (CO690) Published 01/30/2008

To download SSURGO data, visit <http://soildatamart.nrcs.usda.gov>. The surveys were then loaded into Soil Data Viewer <http://soildataviewer.nrcs.usda.gov> (a tool built as an extension to ArcMAP for quick geospatial analysis of soil data for use in resource assessment) and the subsequent data was exported to a GIS shapefile.

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>.

All border state (if applicable) vegetation data courtesy of the National Land Cover Dataset (NLCD). For more information visit http://www.mrlc.gov/mrlc2k_nlcd.asp

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>.