



United States Department
of Agriculture

East-Taylor Watershed



Hydrologic Unit Code 14020001

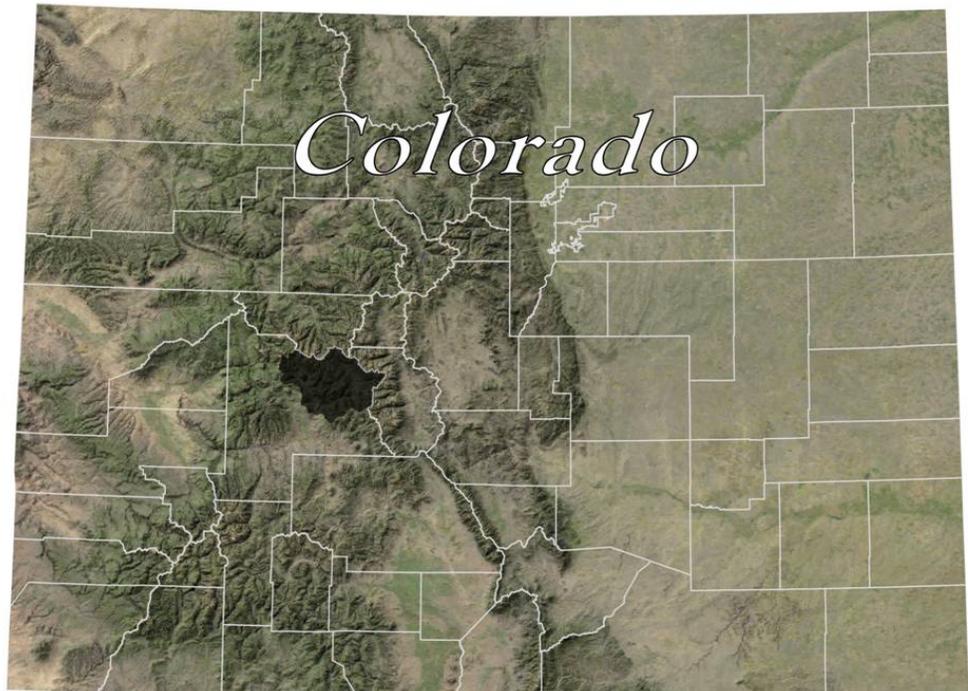
Natural Resources
Conservation Service

Lakewood, Colorado

Rapid Assessment

RWA 14020001

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 land-owners and local leaders set priorities and determine the best actions to achieve their goals.

Benefits of these Activities

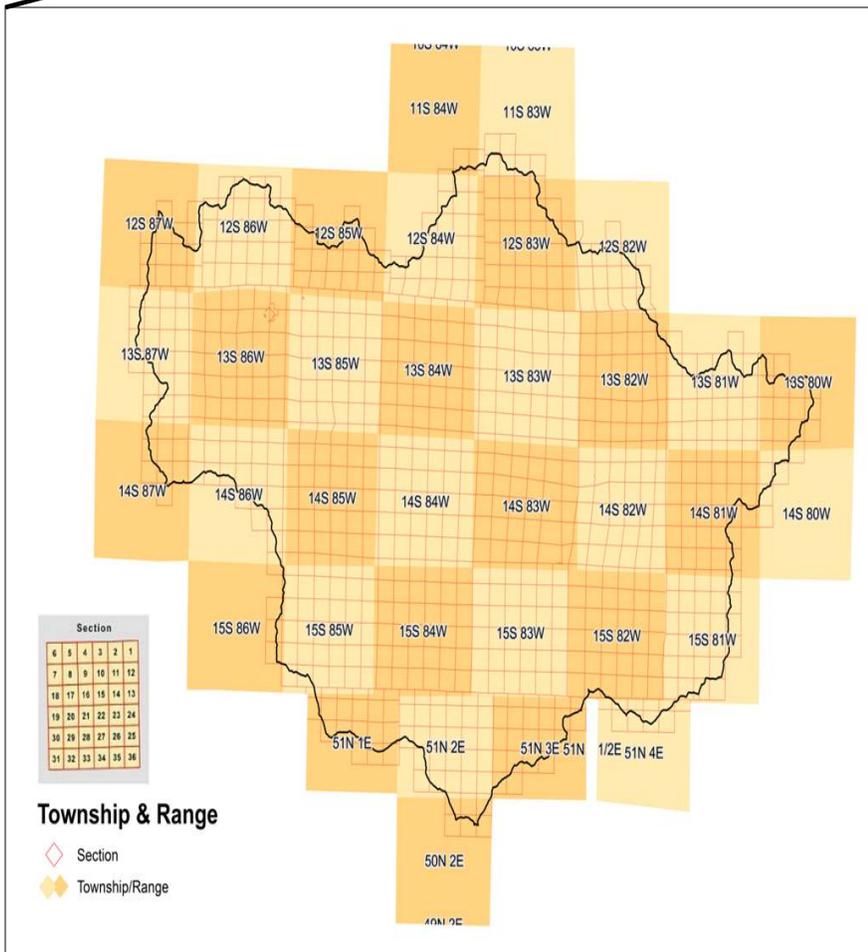
While rapid assessments provide less detail and analysis than full-blown studies and plans, they do provide the benefits of NRCS locally-led planning in less time and at a reduced cost. The benefits include:

- 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.

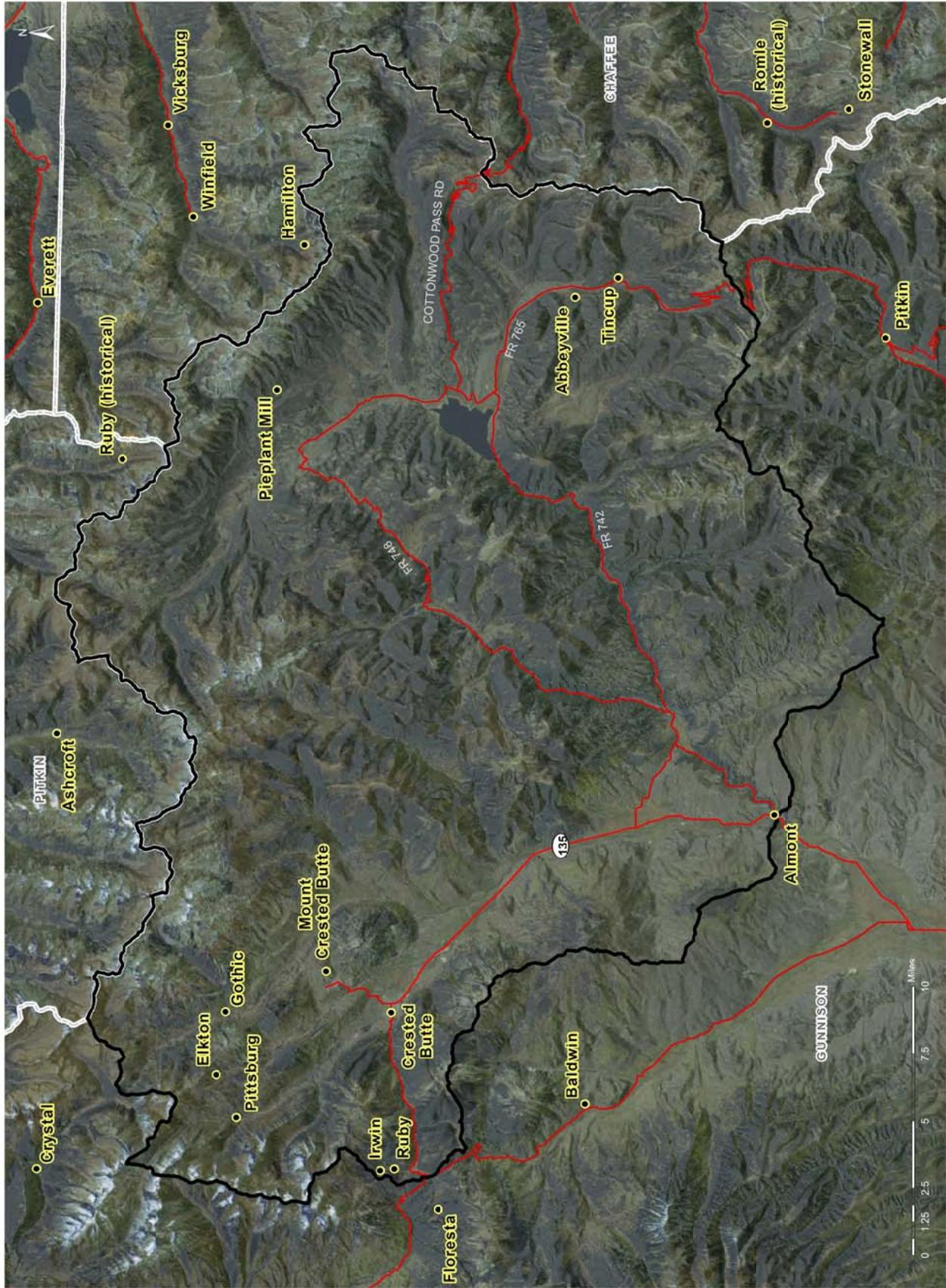


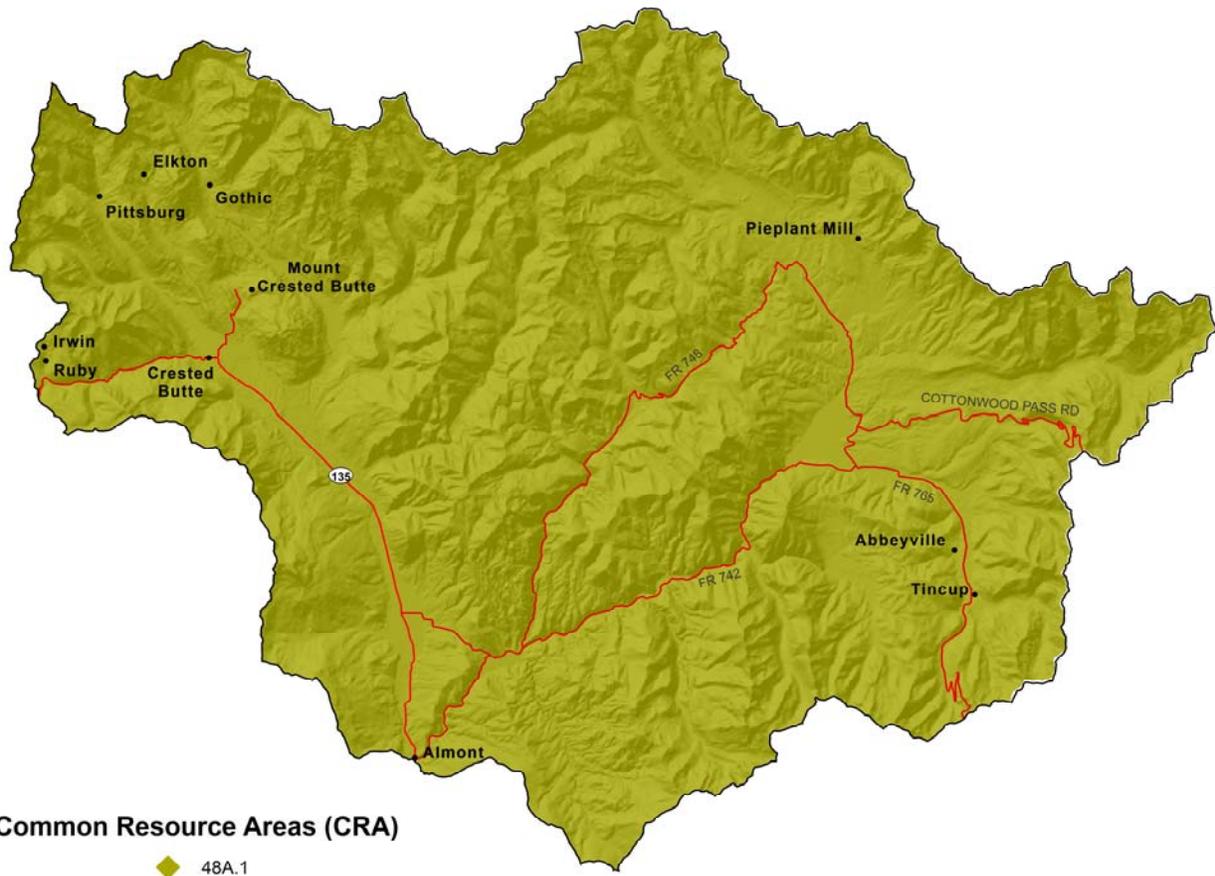
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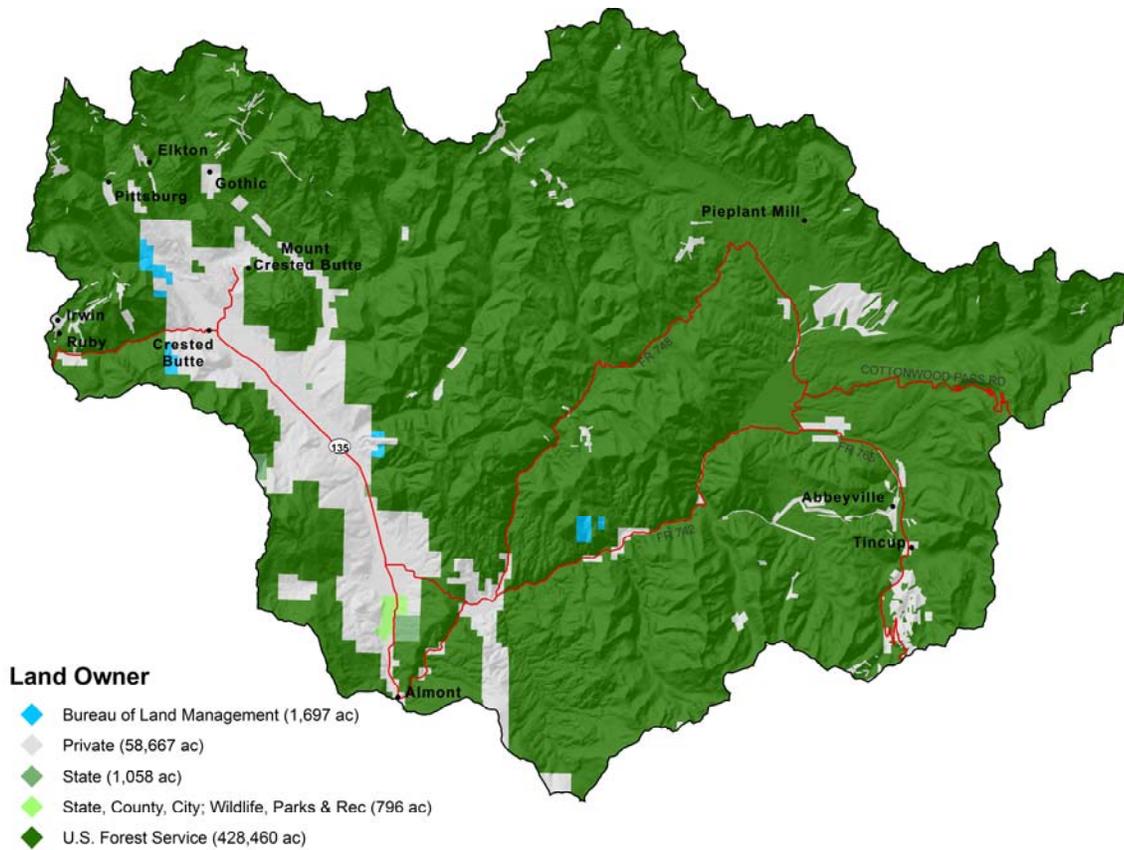
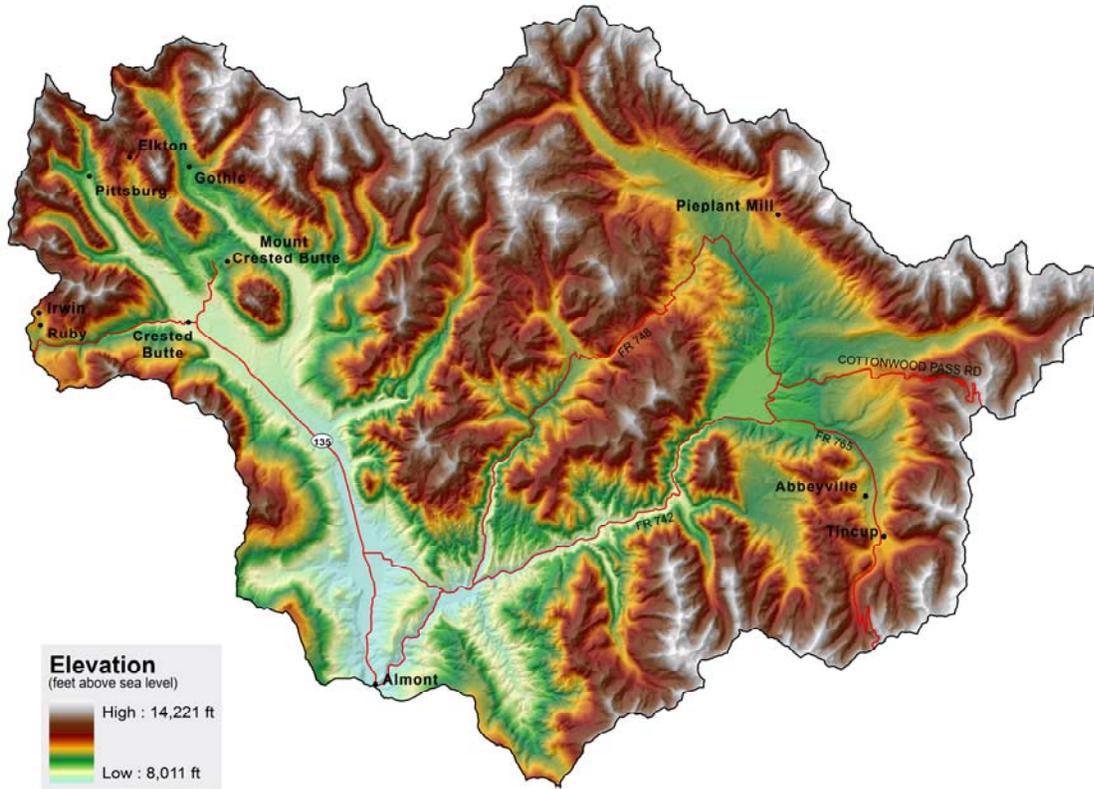
COLORADO County	County Acres	County Acres in East-Taylor Watershed	% of County in the Watershed	% of Watershed in the County
Gunnison	2,085,945	490,428	23.5%	100.0%
		490,428		

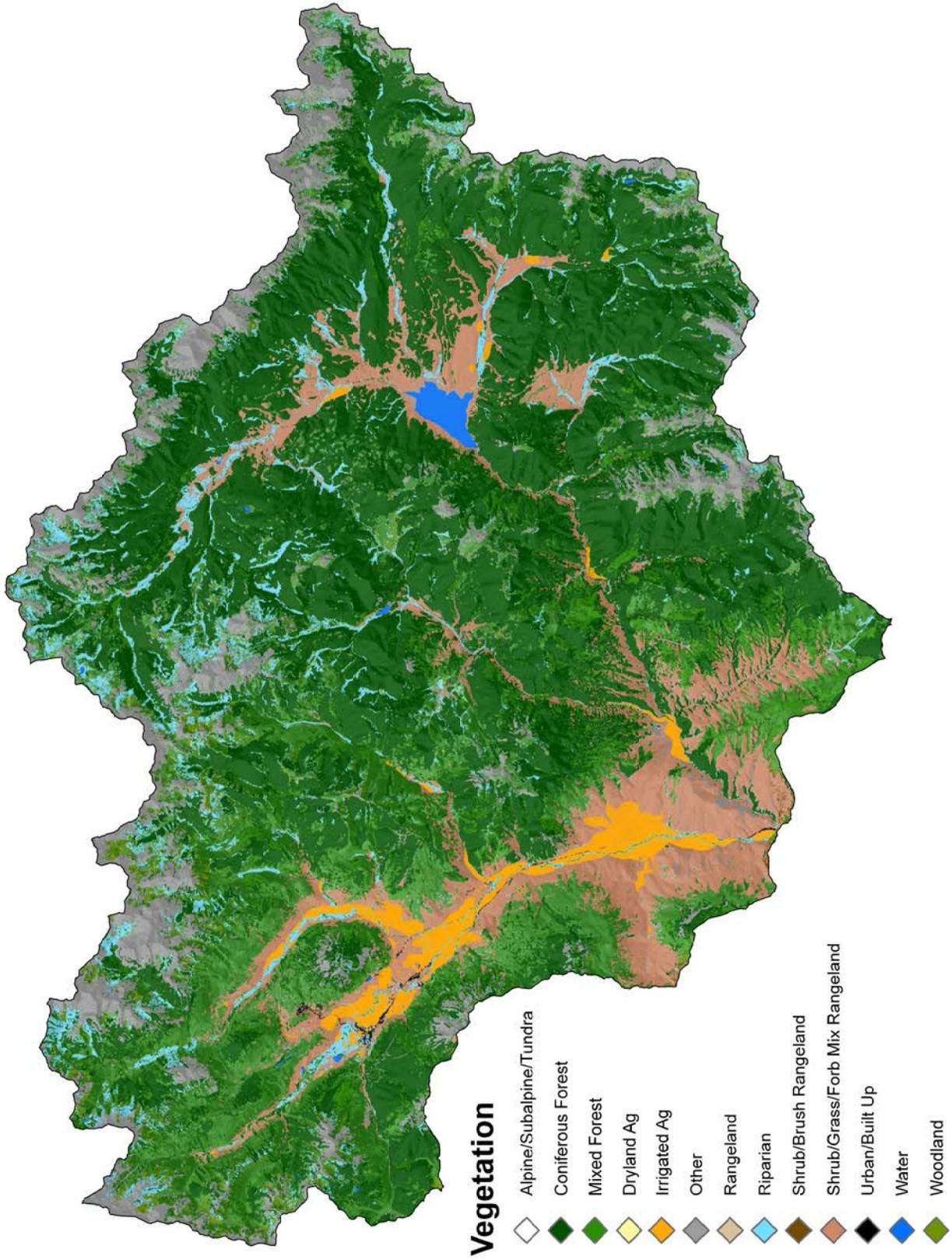
East-Taylor Watershed - 14020001





MLRA	CRA	CRA NAME	CRA DESCRIPTION
36	36.1	Southwestern Plateaus, Mesas, and Foothills - Cool Subhumid Mesas and Foothills	This area encompasses the higher elevation mesas and foothills that represent a transition to the Southern Rocky Mountains. The temperature regime is frigid, and the moisture regime is ustic. The typical vegetation is big sagebrush, Gambel oak, and ponderosa pine. Land use is mainly forest and grazing land.



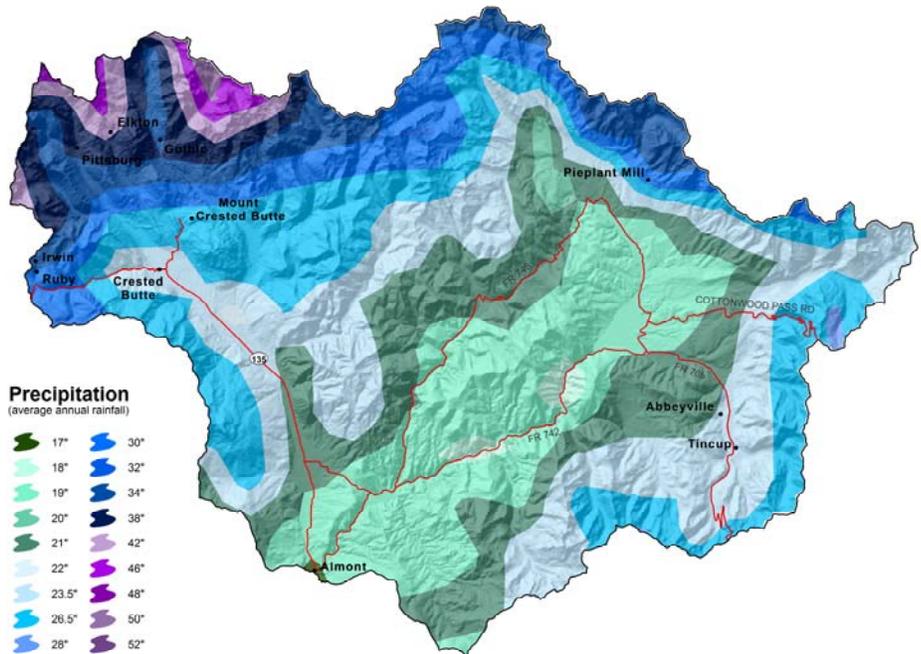


East Taylor Land Use	Total Acreage	Vegetation	Acreage
Cropland	10,192	Dryland Ag	0.3
		Irrigated Ag*	10,192.0
Rangeland/Grassland	114,997	Grass/Forb Rangeland	49.1
		Grass/Forb Mix	177.0
		Sparse Grass (Blowouts)	3.1
		Sagebrush Community	225.8
		Saltbrush Community	0.5
		Sagebrush/Gambel oak Mix	30.3
		Sagebrush/Grass Mix	41,250.9
		Sagebrush/Mesic Mtn Shrub Mix	10,536.3
		Gambel Oak	35.4
		Mesic Mtn Shrub Mix	2.9
		Upland Willow/Shrub Mix	9,709.3
		PJ-Mtn Shrub Mix	25.6
		Alpine Meadow	91.0
		Alpine Grass Dominated	2,527.5
		Alpine Grass/Forb Mix	25,240.0
Subalpine Grass/Forb Mix	22,174.0		
Subalpine Shrub Community	2,918.5		
Forest	284,054	Aspen	36,530.0
		Ponderosa Pine	3.7
		Englemann Spruce/Fir Mix	71,519.8
		Douglas Fir	3,840.6
		Lodgepole Pine	98,726.9
		Spruce/Lodgepole Pine Mix	26,525.9
		Lodgepole/Spruce/Fir Mix	17,566.9
		Fir/Lodgepole Pine Mix	5,317.9
		Spruce/Fir/Aspen Mix	9,712.4
		Douglas Fir/Aspen Mix	1,436.9
		Lodgepole Pine/Aspen Mix	11,323.6
Spruce/Fir/Lodgepole/Aspen Mix	1,549.4		
Riparian	28,763	Riparian	1.7
		Cottonwood	298.4
		Willow	28,333.6
		Herbaceous Riparian	129.7
Water	2,006	Water	2,005.7
Other	50,707	Barren Land	3.9
		Rock	40,223.4
		Soil	0.6
		Talus Slopes & Rock Outcrops	10,035.6
		Snow	9.0
		Urban/Built Up	434.6
~Total Watershed	490,720		490,720

*Colorado Decision Support Systems Data

Precipitation

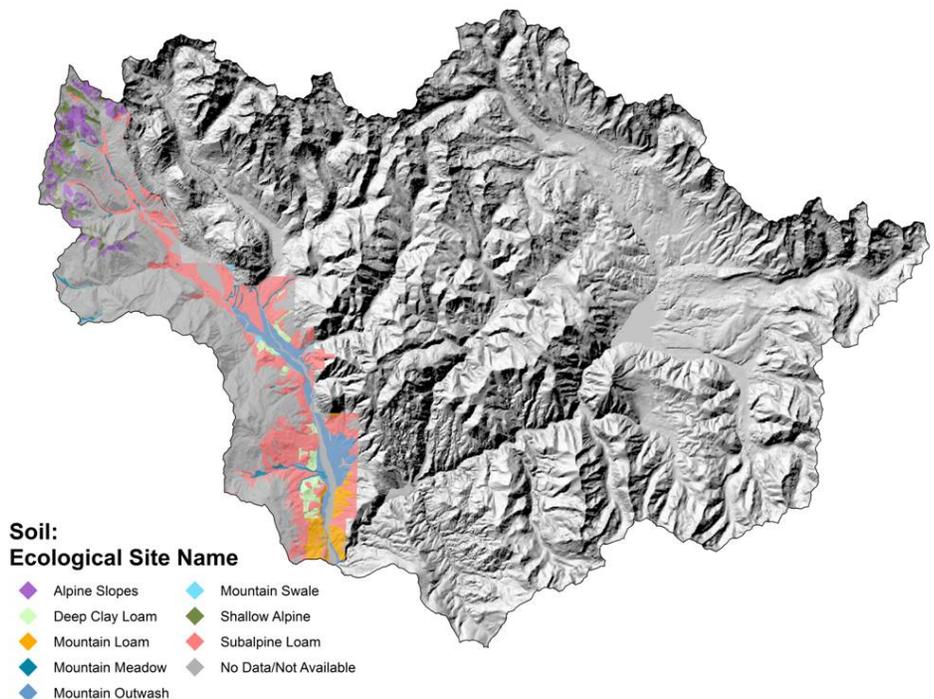
Droughts are regular visitors to the watershed as with the rest of Colorado. Statewide, in the 1900's alone, four prolonged dry spells occurred. There was one in the 1910s. Another, in the '30s, caused the dust-bowl period. The second worst drought on record in the state occurred in the mid-50s. A series 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.

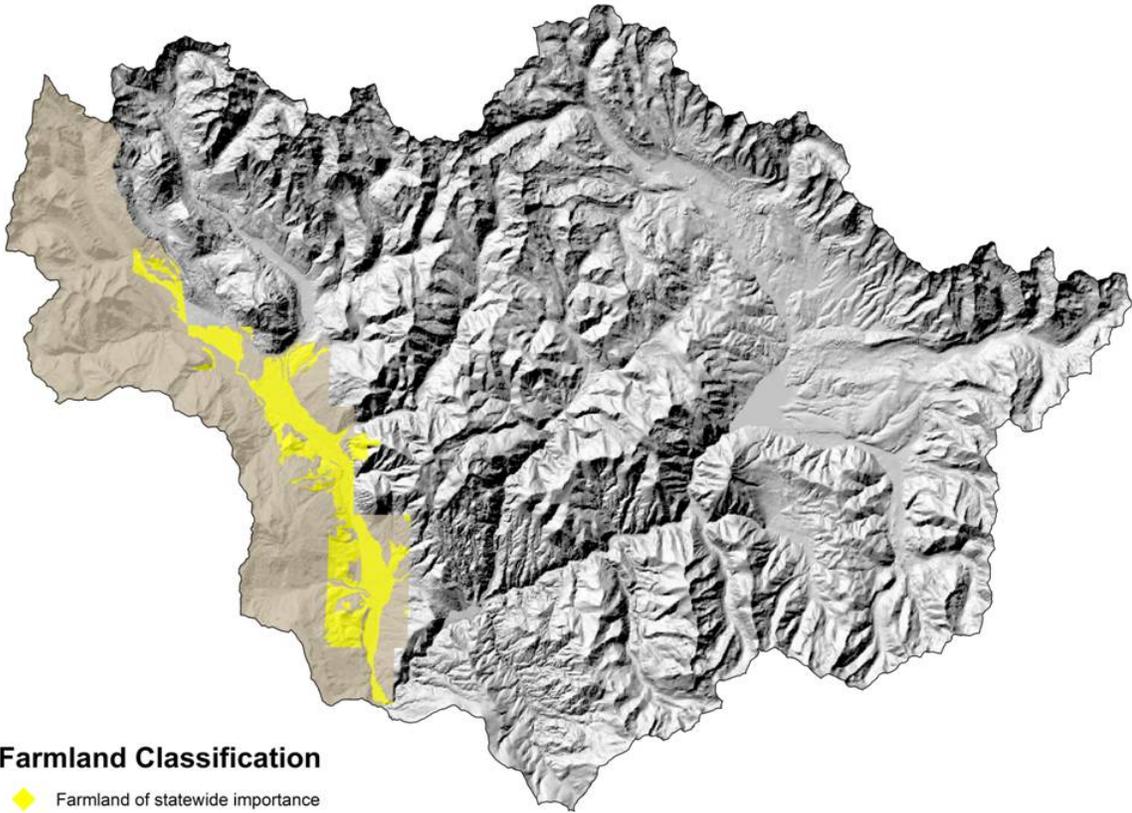


Ecological Sites

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.

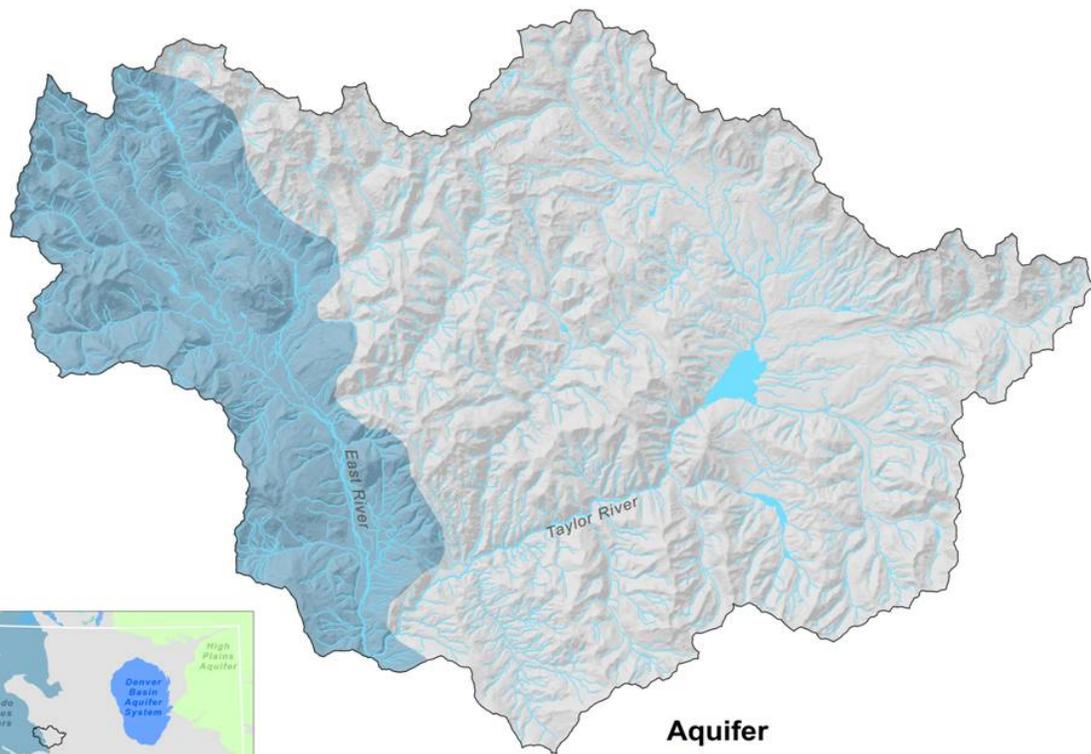
Ecological Site maps give an overall indication of the soils plant relationship in the area. More detailed descriptions of ecological sites are provided in the Field Office Technical Guide (FOTG). The FOTG is available in local offices of the Natural Resources Conservation Service and online at <http://www.nrcs.usda.gov/technical/efotg/>.





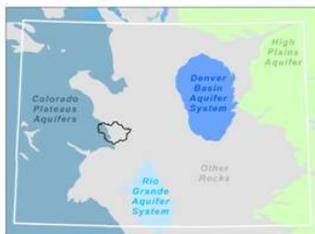
Farmland Classification

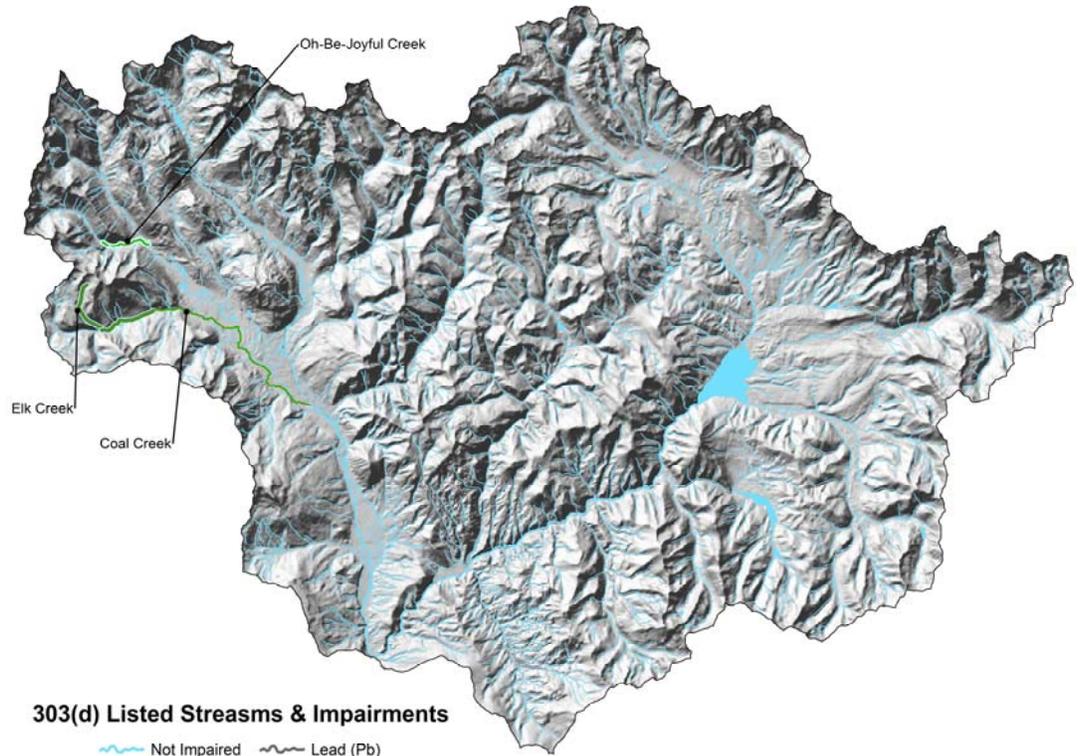
- ◆ Farmland of statewide importance
- ◆ Not prime farmland



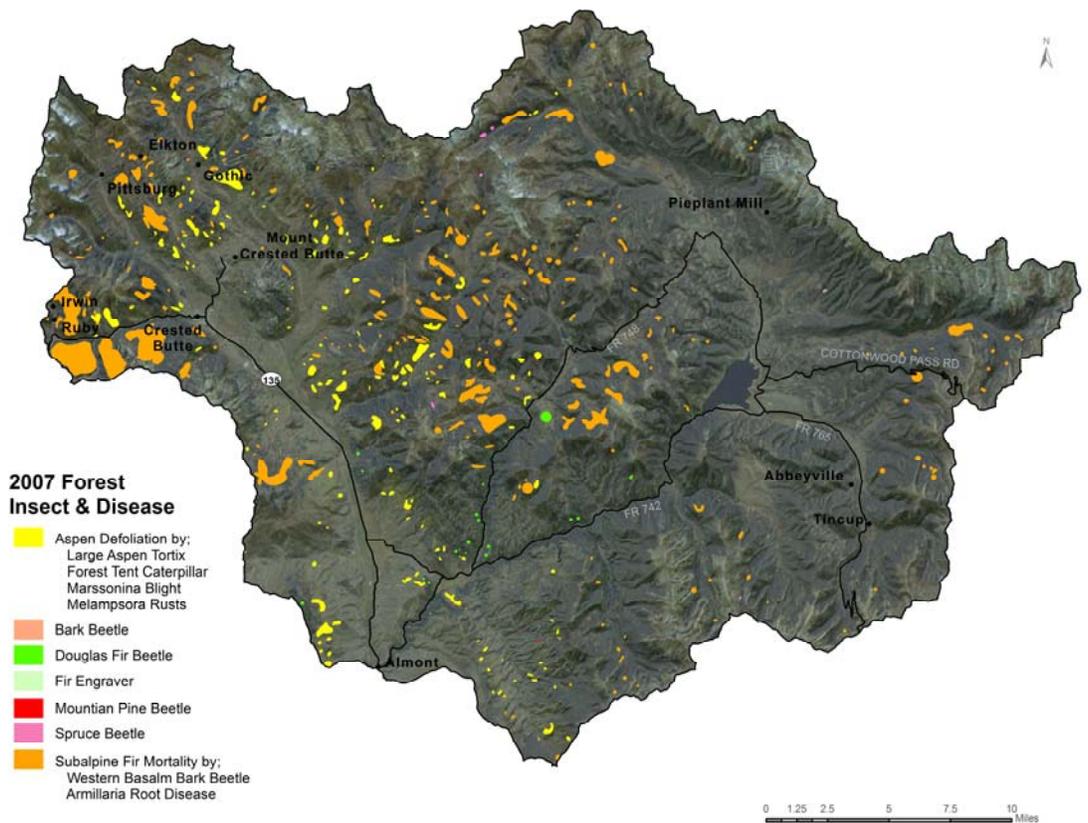
Aquifer

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



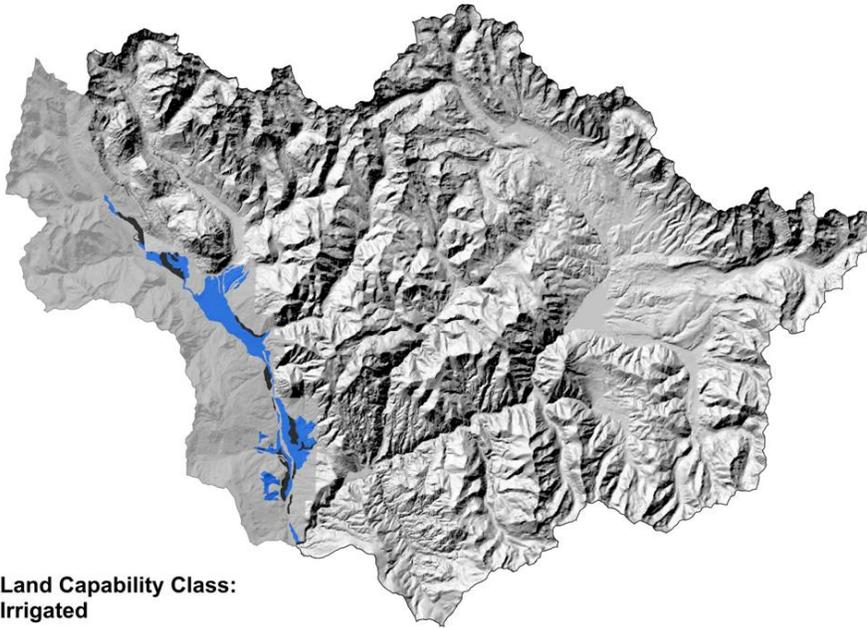


303(d) Listed Streams & Impairments

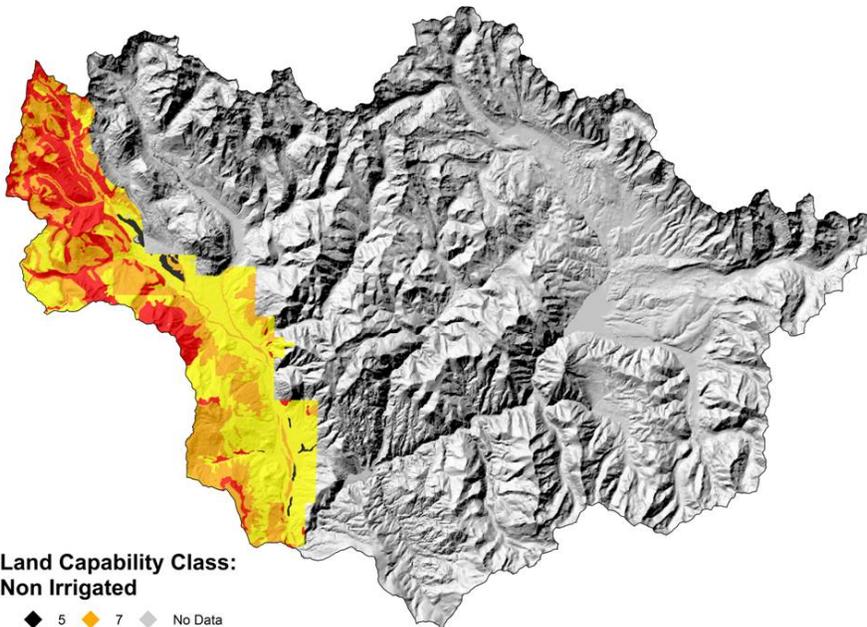


2007 Forest Insect & Disease





**Land Capability Class:
Irrigated**
◆ 5 ◆ 6 ◆ No Data



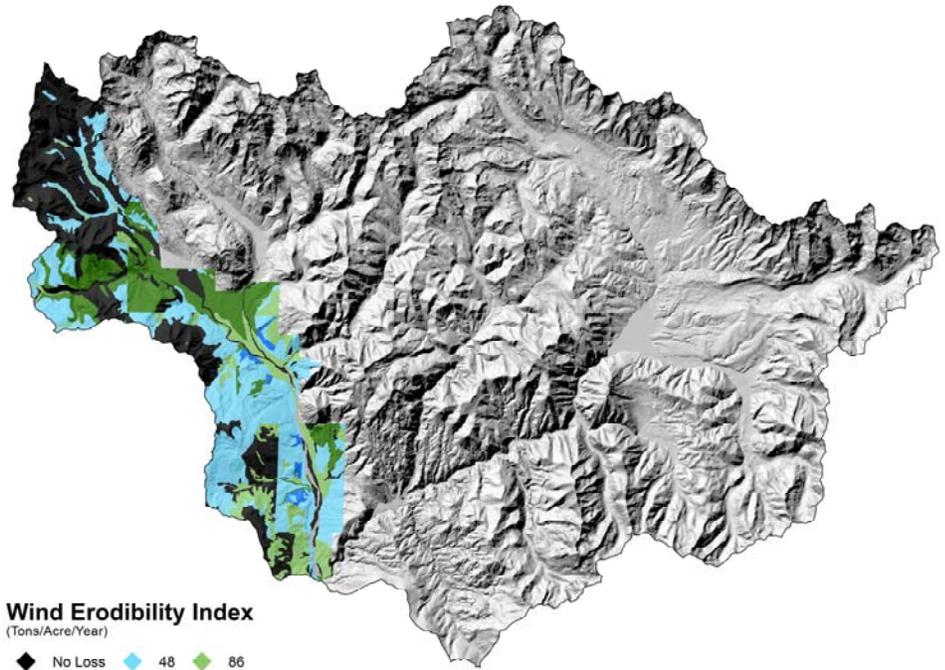
**Land Capability Class:
Non Irrigated**
◆ 5 ◆ 6 ◆ 7 ◆ 8 ◆ No Data

Land Capability Classification

- 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), is a 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.

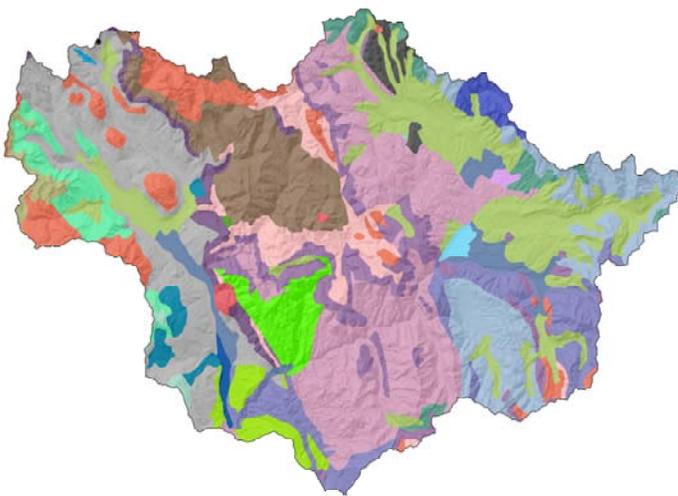


Wind Erodibility Index
(Tons/Acre/Year)

◆ No Loss	◆ 48	◆ 86
◆ 38	◆ 56	◆ No Data

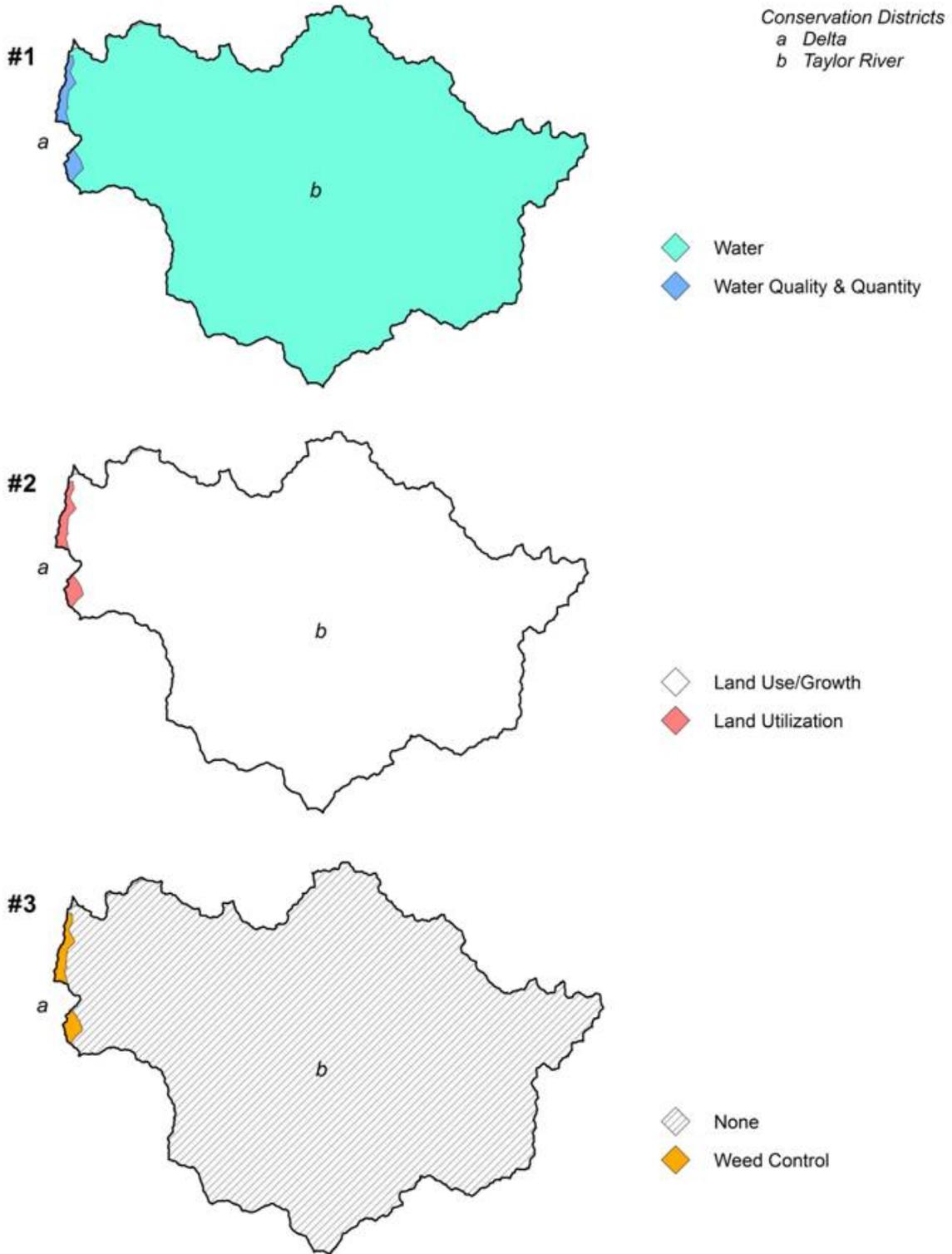
Geology

- ◆ ASH-FLOW TUFF OF MAIN VOLCANIC SEQUENCE
- ◆ BASALT FLOWS AND ASSOCIATED TUFF, BRECCIA, AND CONGLOMERATE OF LATE-VOLCANIC BIMODAL SUITE
- ◆ BELDEN FORMATION
- ◆ BIOTITIC GNEISS, SCHIST, AND MIGMATITE
- ◆ DAKOTA SANDSTONE
- ◆ DAKOTA, BURRO CANYON, MORRISON, AND JUNCTION CREEK FORMATIONS
- ◆ DAKOTA, PURGATOIRE, MORRISON, RALSTON CREEK, AND ENTRADA FORMATIONS
- ◆ FELSIC AND HORNBLENDIC GNEISSES, EITHER SEPARATE OR INTERLAYERED
- ◆ GLACIAL DRIFT OF PINEDALE AND BULL LAKE GLACIATIONS
- ◆ GRANITIC ROCKS OF 1,400- AND 1,700-M.Y. AGE GROUPS, UNDIVIDED
- ◆ GRANITIC ROCKS OF 1,400-M.Y. AGE GROUP (AGE 1,350-1,480 M.Y.)
- ◆ GRANITIC ROCKS OF 1,700-M.Y. AGE GROUP (AGE 1,650-1,730 M.Y.)
- ◆ GRAVELS AND ALLUVIUMS (PINEDALE AND BULL LAKE AGE)
- ◆ LANDSLIDE DEPOSITS
- ◆ LARAMIDE INTRUSIVE ROCKS (AGE 40-72? M.Y.)
- ◆ LEADVILLE LIMESTONE, WILLIAMS CANYON LIMESTONE, MANITOU LIMESTONE, AND SAWATCH QUARTZITE
- ◆ MANCOS SHALE
- ◆ MAROON FORMATION
- ◆ MESAVERDE GROUP, UNDIVIDED
- ◆ MIDDLE TERTIARY INTRUSIVE ROCKS (AGE 20-40 M.Y.)
- ◆ MINTURN AND BELDEN FORMATIONS
- ◆ MINTURN FORMATION IN WEST-CENTRAL AND SOUTH-CENTRAL AND OTHER UNITS OF MIDDLE PENNSYLVANIAN AGE
- ◆ MODERN ALLUVIUM
- ◆ MORRISON FORMATION AND ENTRADA SANDSTONE
- ◆ OLDER GLACIAL DRIFT (PRE-BULL LAKE AGE)
- ◆ RHYOLITIC INTRUSIVE ROCKS AND FLOWS OF LATE-VOLCANIC BIMODAL SUITE
- ◆ WASATCH FORMATION (INCLUDING FORT UNION EQUIVALENT AT BASE) AND OHIO CREEK FORMATION
- ◆ WATER



Identified Long Range Resource Concerns

Top Three Concerns within Conservation Districts



Threatened and Endangered Species in the watershed

Common Name	Scientific Name	Class	State Status	Federal Status	Comments
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Birds	Threatened	None	Year round occurrence 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
Gunnison Sage Grouse	<i>Centrocercus minimus</i>	Birds	Concern	None	Occurs in the watershed
Gunnison's Prairie Dog	<i>Cynomys gunnisoni</i>	Mammals	None	Concern	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
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 small amounts of irrigated cropland; big sagebrush shrublands; aspen, lodgepole and spruce-fir forest; and tundra at the highest elevations. Significant aquatic habitats are found in the East and Taylor Rivers and in other riparian and wetland areas in the watershed. These habitats provide food, cover, or water for many native species at some life stage.

Economically important species in the watershed include: black bear, elk, mule deer, mountain lion, and trout throughout most of the watershed. Snow geese make use of the East River and the confluence area of the East and Taylor Rivers. White-tailed ptarmigan occur at high elevations. Mountain goats occupy limited areas in the South-central part of the watershed and bighorn sheep occur in Taylor Canyon in the Southern part of the watershed.

Social Data	Gunnison
Demographics (US Census, American Factfinder)	
Total population	13,956
Male	7,563
Female	6,393
Median age (years)	30.4
White	13,269
Black or African American	68
American Indian and Alaska Native	98
Asian	75
Native Hawaiian and Other Pacific Islander	5
Some other race	201
Hispanic or Latino (of any race)	700
Economic Characteristics (US Census, American Factfinder)	
In labor force (population 16 years and over)	8,635
Median household income (dollars)	36,916
Median family income (dollars)	51,950
Per capita income (dollars)	21,407
Families below poverty level	182
Individuals below poverty level	1949
County Agricultural Characteristics (Colorado Agricultural Census, county data tables)	
Farms (number)	186
Land in farms/ranches (acres)	165,488
Average size farm/ranch (acres)	890
Median size farm (acres)	320
Average age of farmer or rancher	53.1
Net cash return from ag sales (\$1,000)	1,669
Cattle and calves (number)	19,000

Selected Conservation Application Data				East-Taylor Watershed – 14020001			
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Total
Practices Applied							
Prescribed Grazing	0	0	177	0	0	1,307	1,484

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 22,000 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.	40	19,982	799,280
Subtotal Rangeland costs:				\$799,280

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

Landuse	Resource	Measurable Effects	Non-measurable Effects	Cost (\$)
Pastureland	Plants		Improved plant condition, productivity, health and vigor. Grazing animals have adequate feed, forage, and shelter.	799,280
Total Costs				\$ 799,280

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.cdphe.state.co.us/regulations/wqccregs/100293wqlimitedsegtmdls.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 Mesa – West Elk Area (CO660) Published 09/28/2007

Gunnison Area (CO662) Published 01/04/2007

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.

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.

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.

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).

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/>