Escalante Valley– Iron County, Utah
Rapid Watershed Assessment - 8 Digit HUC # 16030006
May 2007

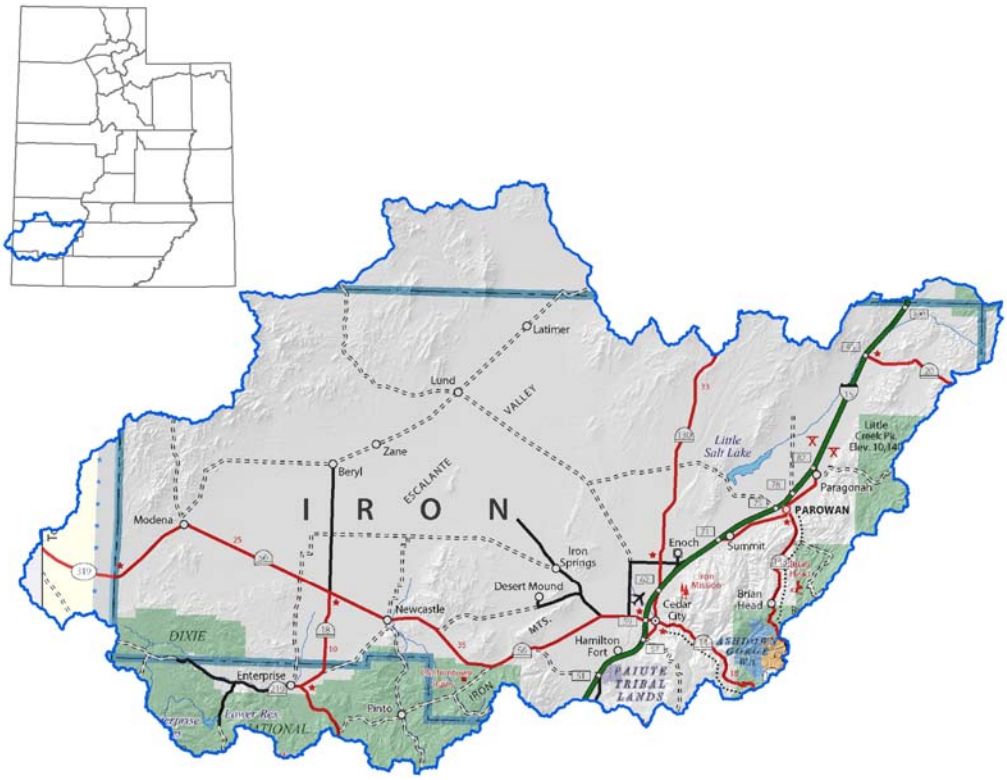
This rapid assessment is designed to gather and display information specific to the basin identified. This summary will highlight the natural and social resources present in the basin, detail specific concerns, and aid in resource planning and target conservation assistance needs. This document is dynamic and will be updated as additional information is available through a multi-agency partnership effort.

Contents

Objective/Introduction
Land Use
Physical Description
Special Considerations
Resource Concerns - Air, Plants, Animals
Resource Concerns - Social and Economic
Resource Concerns - Soils
Resource Concerns - Water
Survey Results
Footnotes/Bibliography

Objective

Building alliances and partnerships is an important component of successful voluntary conservation programs. This approach is based on encouraging local landowners and stakeholders to take a greater responsibility for managing their resources. This in turn can empower local people, leverage both dollars and human resources, and reduce duplication of personnel and programs across federal, state, and local agencies. The overarching objective of this general assessment is to create a forum in which individual and group interests can be expressed and reconciled, thereby changing the attitudes and behavior of clients and stakeholders.



Introduction

The watershed is comprised of approximately 2,110,720 acres and is in the southwestern corner of Utah. Seventy Seven percent of the area is public land or urban lands. Most Federal Public Land is administered by the Bureau of Land Management (BLM) and the Forest Service (USFS). Much of the State Land is administered by the School and Institutional Trust Lands Administration (SITLA) and Utah Division of Wildlife Resources (DWR).

Major land uses in the area include range, alfalfa and grass hay, corn and small grain crops, hog production facilities, forest production, and industrial and urban areas. Recreational uses are also common activities both on private and public lands.

Physical Description

Elevation and land cover are diverse within the watershed. Elevations range from over 11,000 feet in the Markagaunt Plateau found on the Eastern margin of the watershed down to 5,000 feet in the Escalante Desert. The county is surrounded by four mountain ranges which drain into the Escalante Desert.

The higher elevations support Sub Alpine Meadows, Conifer and Aspen Forests. These areas receive from 25 to 40 inches of precipitation annually. Middle elevations support Mixed Forest Communities, Mountain Shrub Lands and Pinion/Juniper forests. Precipitation in the Mixed Forest Communities ranges from 15 to 25 inches. Lower elevations support Semi-Desert and Salt Desert Rangelands and receive 8 to 15 inches of precipitation. It is in this lower elevation where cropland and irrigated pastures are found. Irrigated lands utilize water from mountain stream runoff or from underground aquifers.

Special Considerations – General Observations:

- Held public meeting soliciting comments for this assessment at Enterprise City Hall – 11/7/07 – 22 participants
- Presented RWA effort to SW Utah Partners for Conservation Development – 11/6/07 – 31 participants
- News Article and Brochure completed for public information
- Recreational use of private and federal lands is very high and results in its own resource concerns.
- Grass/Pasture/Hay includes approximately:
    - 3100 acres of pasture
    - 71,900 acres of Hayland/Cropland
- Most crop rotations consist of Alfalfa Hay followed by Corn and Small Grains.
- Shrub/rangelands consist of oak savannahs and Pinion/Juniper areas.
- Seventy seven percent of the county consists of public and urban land
- Poor grazing management practices have reduced range and pasture productivity in some areas as well as creating other natural resource problems.
- Noxious weeds and invasive plants are an ever increasing problem.
- Water availability and efficient use of water is a concern. Aquifer levels in the Escalante Desert Area have steadily decreased 50 to 100+ feet in the last 50 years.
- Urban build up is a concern in the Cedar City area.
- The small, part-time and hobby farms are increasing in number and may require different types of assistance.
- The conversion of agricultural land to urban land is a concern from a water use/water rights perspective.

- **The Endangered Utah prairie dog:**
  http://www.r6.fws.gov/species/mammals/utprairiedog/Iron%20County%20HCP%20(2).pdf

  The Utah Prairie Dog is a federally threatened species that occurs only in southwestern Utah. A large proportion (65%) of the total population of Utah prairie dogs occurs in Iron County, and a high percentage (86%) of those occur on privately owned lands. Population growth in Iron County has averaged more than 6% over the last five years, and is expected to continue at least at the same pace, and possible as high as 10% (Colgan 1997). The increase in both residential and

commercial development in Iron County has been the greatest in Cedar City, but has also increased in and around other municipalities along the Interstate 15 corridor, including Kanarraville, Enoch, Summit, and Parowan. It is along this corridor where the majority of Utah prairie dogs in Iron County occur. So, conflicts between development of private lands and the federally protected Utah prairie dog have become increasingly common. Iron County and the Utah Division of Wildlife Resources(DWR) have developed a Habitat Conservation Plan to obtain a Section 10(a)(1)(B) Incidental Take Permit from the U.S. Fish and Wildlife Service. The Plan process allows take of a species, and/or its habitat, as long as the species is protected, its habitat is conserved, and the permitted take is incidental to otherwise lawful activities. Utah prairie dog habitat will continue to be an issue in all land use operations, especially along the I-15 corridor.

- **Cedar Valley Basin:** Surface water in this part of the HUC is derived primarily from snowmelt at higher altitudes east of the study area or from occasional large thunderstorms during the summer. Coal Creek, a perennial stream with an average annual discharge of 24,200 acre-feet per year, is the largest stream in Cedar Valley. Typically, all of the water in Coal Creek is diverted for irrigation during the summer months. All surface water is consumed within the basin by irrigated crops, evapotranspiration, or recharge to the ground-water system *(USGS- Report 2005-5170-Cedar Valley).*
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- **Ground Water - Beryl-Enterprise Area:** A 1982 study near Beryl-Enterprise showed ground water level declines of 40 to 60 feet over an area of about 90 square miles. Another study of the same area 18 years later showed declines of at least 40 feet over 100 square miles. A third study noted several surface cracks near Newcastle in the same area. The most likely cause of these cracks is the compaction and subsidence accompanying drying and consolidation of the fine-grained materials in the aquifer due to lowering of the water table. Surface water flow and grazing animals have subsequently eroded these cracks. In January 2005, additional cracks totaling about 1,300 feet were discovered in the Beryl Junction area and caused a fracture across Highway 56 about one-half mile east of Beryl Junction. The subsidence/cracking area mentioned above coincided with, and was centered above an approximately 100 square mile area where ground water levels have declined over 75 feet. *(Conjunctive Management of Surface and Ground Water in Utah – Utah State Water Plan, July 2005. http://www.water.utah.gov).*

Fissure near Beryl, Utah
Source: UGS-Web Page

- **Water Reuse:** Enterprise's wastewater treatment facility receives and treats roughly 0.11 million gallons per day through the use of two 10-acre aerated lagoons. At the present time, 100 percent of the effluent is evaporated. During wetter times, when evaporation rates cannot keep up with effluent flows, part of the water is drained to an adjacent 10-acre field, the site of a future third lagoon. Enterprise has not raised any crops there, but cattle have grazed the land. For several years, community leaders have discussed the possibility of using the effluent for irrigation, but haven't yet done so (Water Reuse in Utah, UDNR, Div of Water Resources, April 2005).

- Cedar City's regional wastewater treatment plant began operation in 1996 and currently treats about 2.1 mgd. The city's plant is a trickling filter treatment facility with a capacity of 4.4 mgd to meet anticipated future growth. When the land was purchased from a local rancher, an agreement was made that the rancher would receive a portion of the reclaimed water for a minimal fee to irrigate some land.

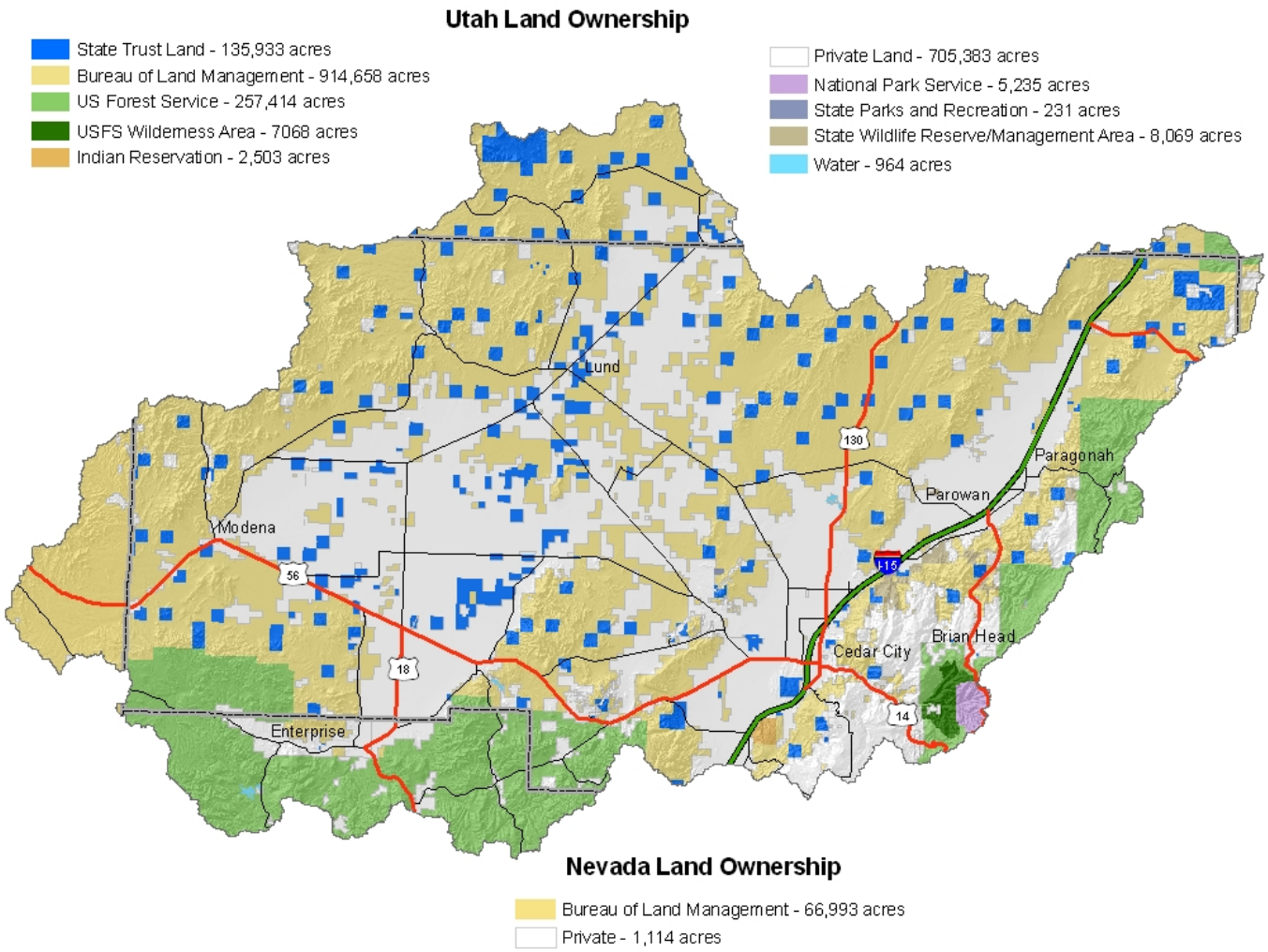
- **State Forestry-Fire & State Lands:** The state of Utah administers a Forest Legacy Program that is designed to protect and manage, for future generations, environmentally important forest areas that are threatened by conversion to non-forest uses. Conservation easements are used to achieve this goal with priority given to lands which:

- are threatened by future conversion to non-forest uses; maintain forest sustainability; protect and enhance water quality and water supplies; protect wildlife habitat and maintain habitat connectiity for biodiversity; maintain and restore riparian areas, and assist in maintaining the cultural and economic vitality of rural communities

Once key areas and properties are subdivided, fragmented and converted to developed uses, the critical natural resource values are often lost forever. The program has been operating in Utah since 1999. There are currently 3,200 acres identified as "under negotiation" for this program in Iron County. Source: http://www.ffsl.utah.gov/legacy.php

Future Opportunities: The new Farm Bill will create numerous opportunities for landowners continue with traditional conservation strategies as well as create new avenues for using, developing or enhancing innovative energy-based conservation strategies or techniques.

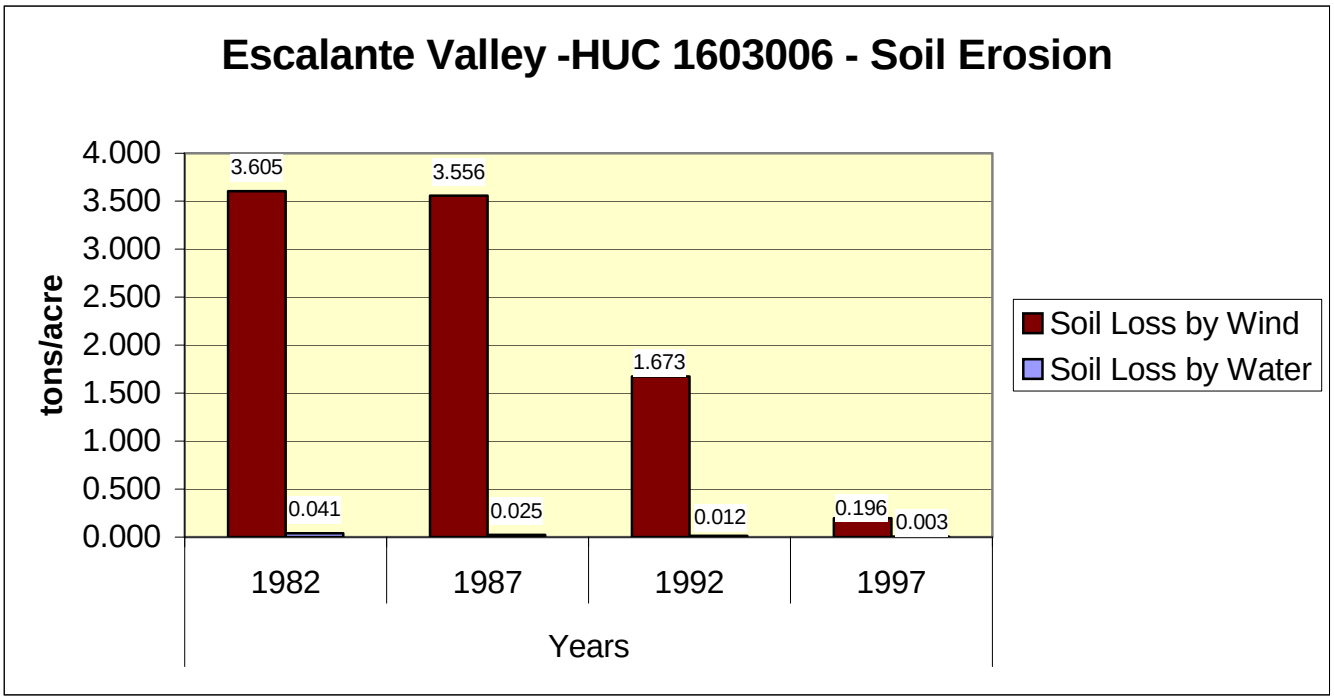
Landownership - HUC # 16030006



Resource Assessment Summary

Soil Erosion

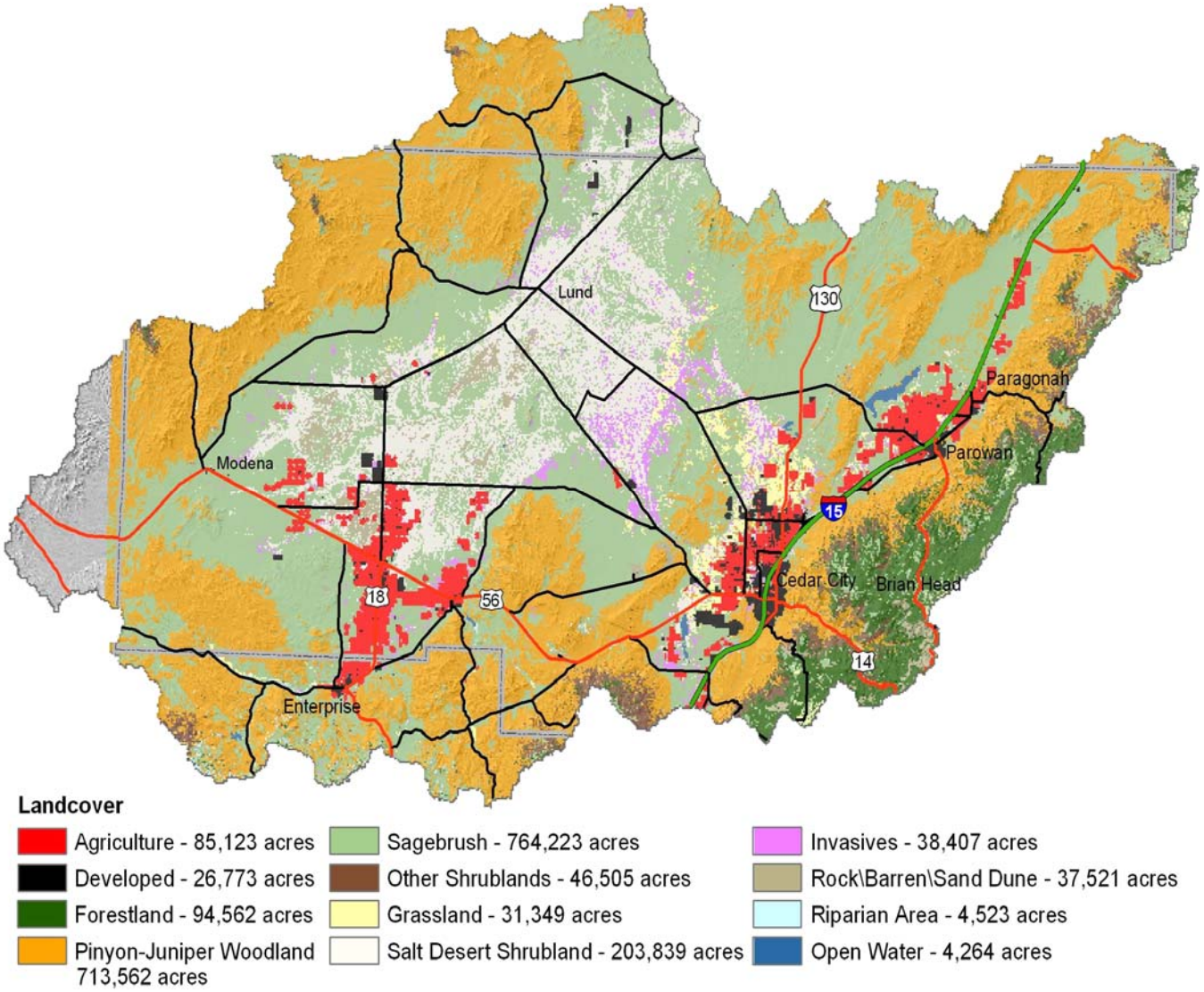
Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	**High**	Wind Erosion on Soil is a concern for much of the lower elevations of the Escalante Desert and Buckhorn Flat areas of the county. Winds are constant and strong in many of the valley locations. High wind conditions coupled with soils that are susceptible to wind erosion makes this a constant concern for human health and safety as well as health to livestock, crops and environmental stability of the area. Soil Erosion from Water is much less a concern generally within the watershed, but in specific locations and under certain conditions water induced soil erosion is a concern. Coal Creek near Cedar City, Parowan Creek near Parowan, as well as Shoal Creek near Enterprise are areas that have recently experienced stream bank and other water induced soil erosion problems.



Resource Assessment Summary Continued

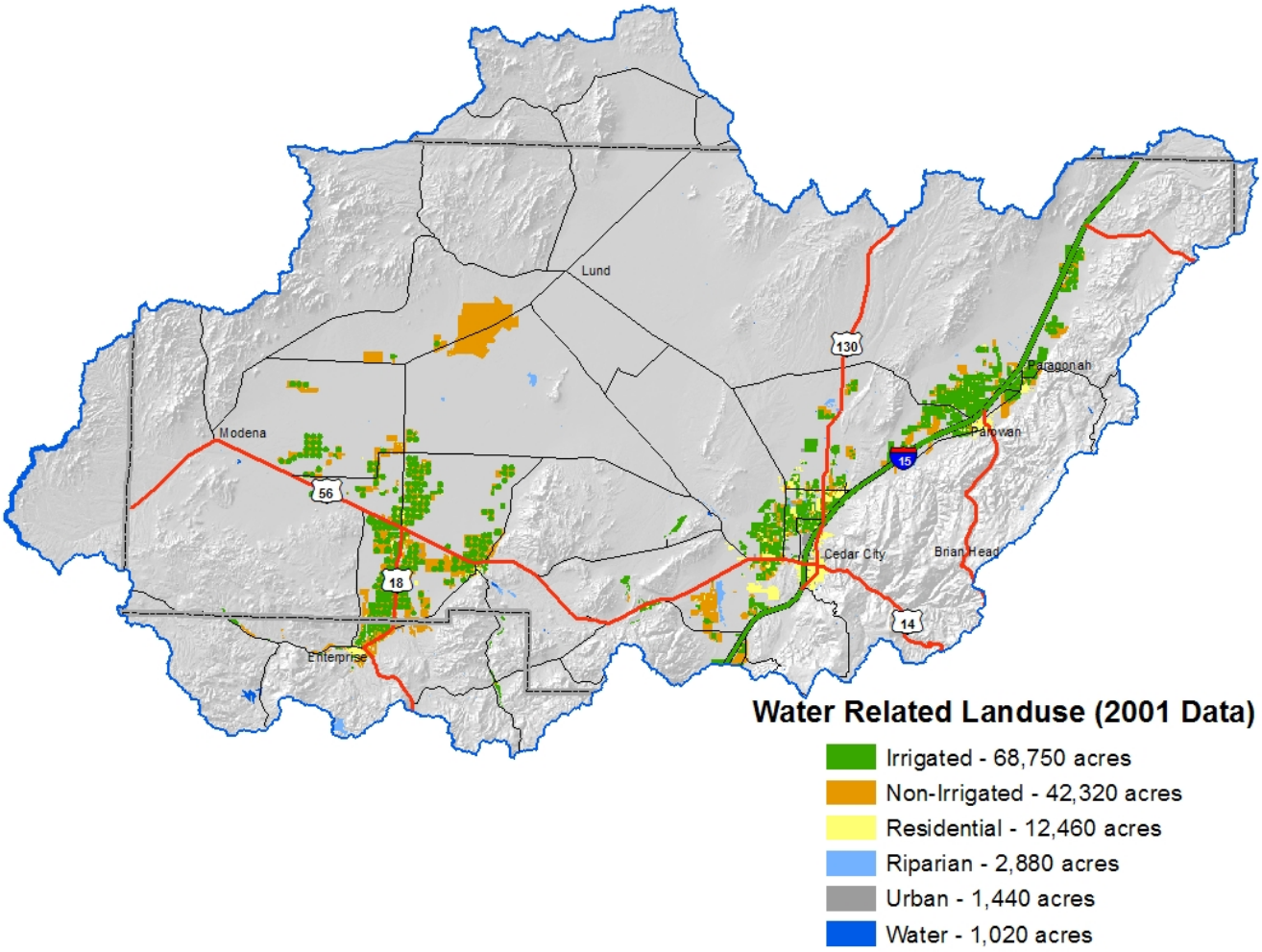
Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Water Quantity	**High**	In the Agricultural area where deep wells supply water to fields the aquifer has been documented as reseeding for many consecutive years. Many operators have to deepen wells and increase pump size to obtain access to the available well water. This condition has decreased the economic viability of these farming and ranching operations. The use of larger engines and motors to drive the increased size in pumps has increased energy consumption and decreased air quality. In other areas of the county where surface water is utilized the concern for water quantity is related to the availability of water. Climatic conditions, water is in excess during wet cycles while in short supply in others.
Water Quality Ground Water	**High**	The concerns for water quality are generally tied to surface water conditions and sediment loads explained in the Soil Erosion from Water category listed above.
Water Quality Surface Water	**High**	The concerns for water quality are generally tied to surface water conditions and sediment loads explained in the Soil Erosion from Water category listed above.
Air Quality	Medium	Air Quality concerns is related to the description of Soil Erosion due to Wind and Water Quantity sections as listed above.
Plant Suitability	**High**	The major concern in this category relates to the invasion of unwanted and unproductive plant species on rangelands and fields. Pinion/Juniper encroachments, as well as evasion of Cheatgrass and other noxious weeds have decreased productivity of many rangelands and cropland.
Plant Condition	Medium	General range health is a concern within the county. Some plant communities are old and decadent, with low diversity and low productivity.
Fish and Wildlife	**High**	Concerns in this category are related to regulations and restrictions that are brought upon producers by the Endangered Species Act. Other concerns are related to Big Game habitats and populations.
Domestic Animals	Low	
Social and Economic	**High**	Encroachment from urban development is a concern. The farming areas around the community of Cedar City have begun to be converted to housing and business developments. The ability to maintain a way of life has been a great concern in the area. There are many pressures and influences that are making it hard to maintain some types of traditional lifestyles. (updated from Med to High for this HUC assessment based on further input from local entities)

Land Cover (HUC 16030006 - Revised GAP data-2006)



Pinyon-Juniper and sagebrush lands comprise the bulk of this basin with 1,477,785 acres. Cropland in the western part of the basin is predominantly limited to the volume of ground water available. Ground water pumping and the recent drought has depleted the aquifer water level to where landowners are experiencing significantly increased pumping costs.

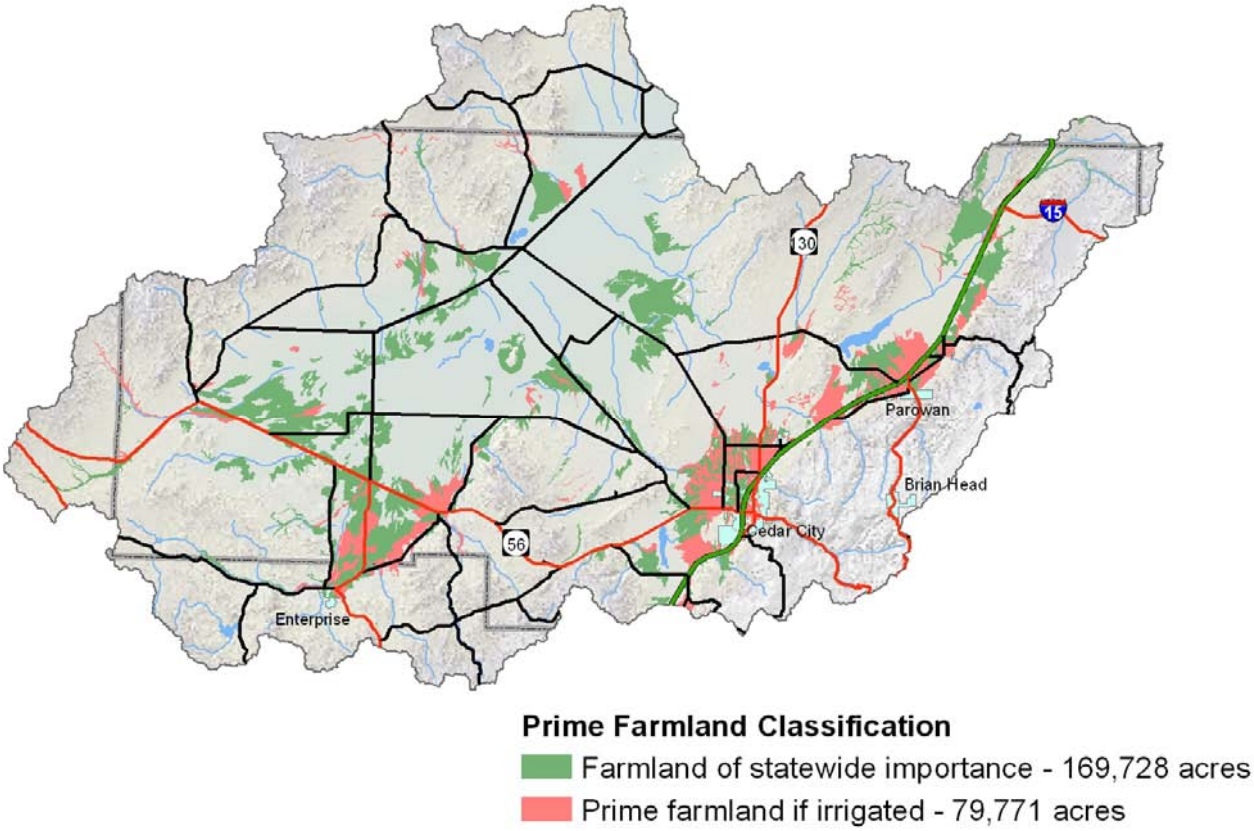
Water Related Landuse



Water use in the basin has increased over time and will continue to increase with the push of development into the sub-basins of the Escalante Valley basin. The area is one of the fastest growing regions in the country and is near the fastest growing metro-area in the country (St. George, Utah). Water use for agriculture is still the main use of the water in the basin and is critical to the economic fabric of the rural communities.

The principal basin-fill aquifer of the Beryl-Enterprise area consists of interbedded alluvial-fan and lacustrine deposits. Water quality is generally moderately good with total-dissolved-solids values at or below 1000 mg/L recorded across much of the Beryl-Enterprise area, but most ground water is hard to very hard. Table Butte, the mountains surrounding the Beryl-Enterprise area basin floor, and the upper parts of alluvial fans along the margins of these uplands make up the primary recharge areas. The principal discharge area occupies the central and northeastern parts of the basin floor, based on water levels at the time the wells were drilled. Discharge exceeds recharge in the basin-fill aquifer, resulting in a declining water table throughout much of the Beryl-Enterprise area. Consequently, the discharge area is shrinking and should be treated as a secondary recharge area for land-use planning *(UGS, May 2007, GSA Rocky Mtn Section meeting, abstract).*

Prime & Unique Farm Land



Prime farmland

Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

Unique farmland

Land other than prime farmland that is used for the production of specific high-value food and fiber crops...such as, citrus, tree nuts, olives, cranberries, fruits, and vegetables.

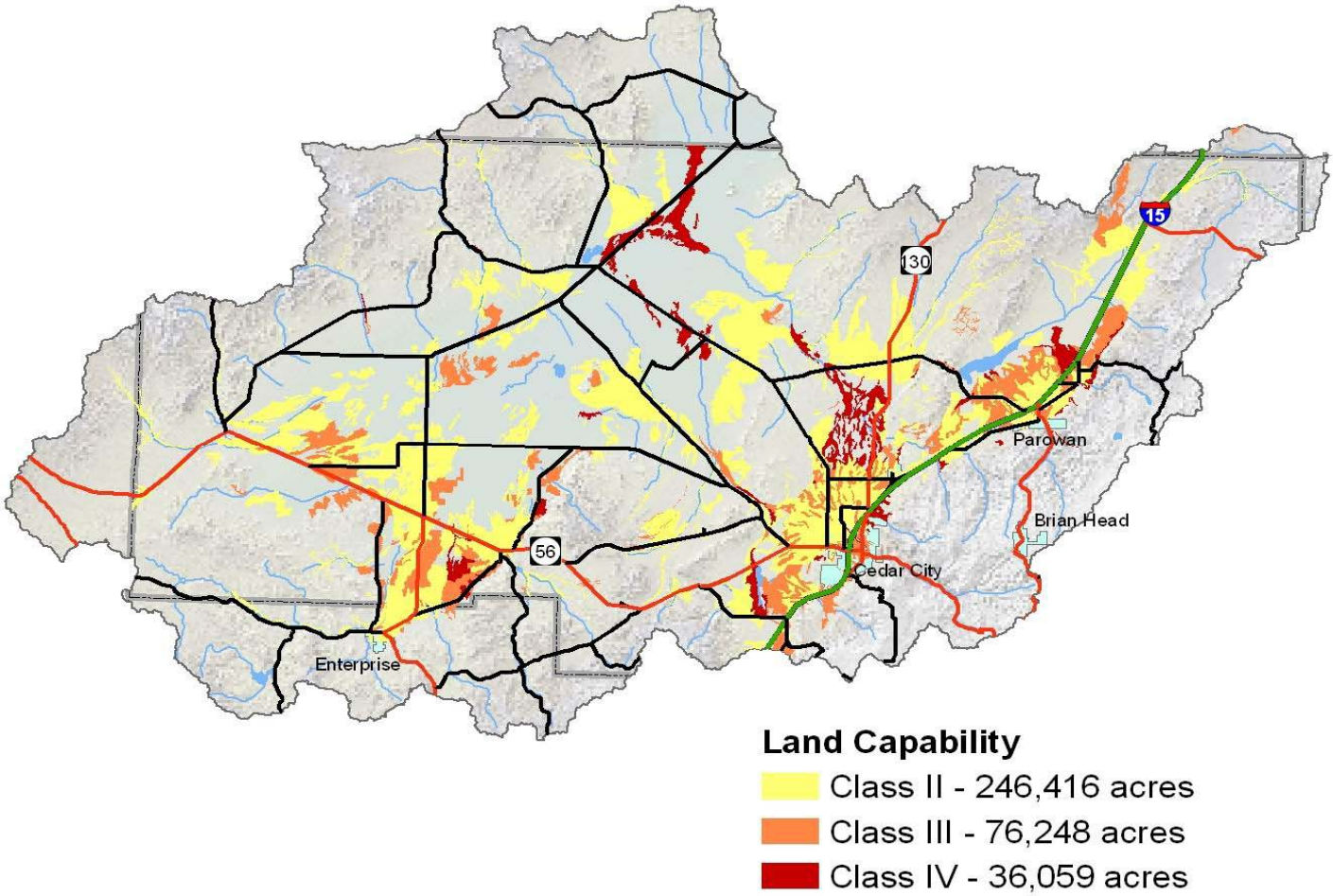
Additional farmland of statewide or local importance

Land identified by state or local agencies for agricultural use, but not of national significance.

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							
	Wind	x	x		x				x			x			x	
	Ephemeral Gully	x														
	Classic Gully	x			x	x	x			x					x	
	Streambank				x	x	x		x	x			x			x
	Shoreline															
	Irrigation-induced	x	x	x												
	Mass Movement									x			x			
	Road, roadsides and Construction Sites											x				
Soil Condition	Organic Matter Depletion	x	x													
	Rangeland Site Stability			x	x	x	x	x	x	x						
	Compaction	x	x	x												
	Subsidence															
	Contaminants: Salts and Other Chemicals														x	
	Contaminants: Animal Waste and Other OrganicsN															
	Contaminants: Animal Waste and Other OrganicsP	x	x	x										x		
	Contaminants: Animal Waste and Other OrganicsK															
	Contaminants : Commercial FertilizerN															
	Contaminants : Commercial FertilizerP	x	x	x										x		
	Contaminants : Commercial FertilizerK															
	Contaminants: Residual Pesticides															
	Damage from Sediment Deposition			x	x		x	x	x			x	x	x		x

Note: Soil erosion is occurring in the western part of the HUC due to extensive overgrazing of “ranchette” lands that do not have any source of water for irrigation.



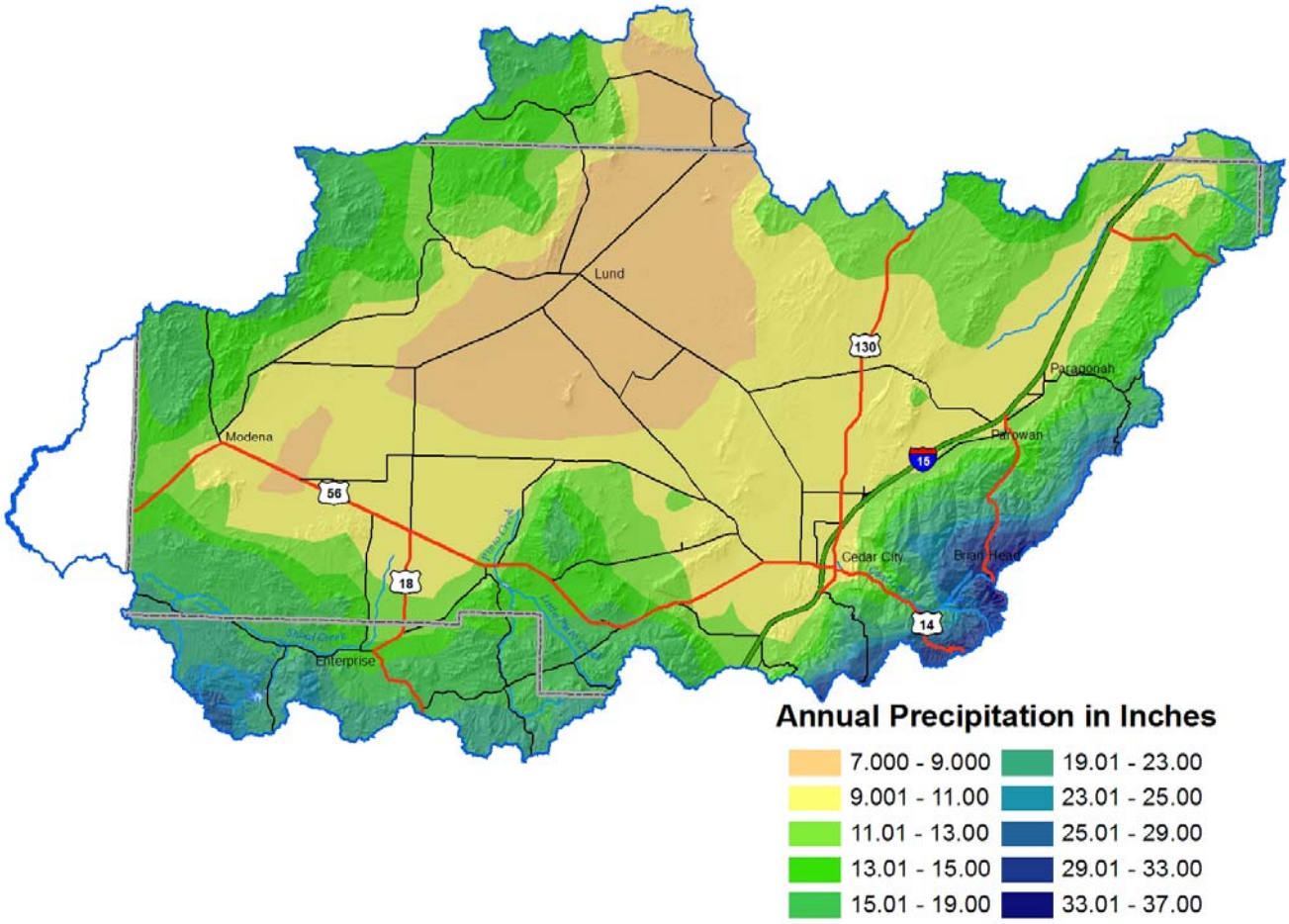
Land Capability

		Acres	Percentage
Land Capability Class (Irrigated Cropland & Pastureland Only)	**I** - slight limitations	0	0%
	II - moderate limitations	244,606	68%
	III - severe limitations	76,662	21%
	IV - very severe limitations	36,059	10%
	V - no erosion hazard, but other limitations	0	0%
	VI - severe limitations, unsuited for cultivation, limited to pasture, range, forest	0	0%
	VII - very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0	0%
	VIII - misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%

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	x	x	x	x	x						x
	Excessive Seepage															
	Excessive Runoff, Flooding, or Ponding				x	x		x							x	x
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets											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		x				x			
	Reduced Storage of Water Bodies by Sediment Accumulation															
	Aquifer Overdraft	x	x	x												
	Insufficient Flows in Watercourses	x	x	x	x	x	x	x	x	x		x	x	x		x
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater															
	Excessive Nutrients and Organics in Groundwater															
	Excessive Salinity in Groundwater															
	Harmful Levels of Heavy Metals in Groundwater														x	
	Harmful Levels of Pathogens in Groundwater															
	Harmful Levels of Petroleum in Groundwater															
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water															
	Excessive Nutrients and Organics in Surface Water	x	x	x			x									
	Excessive Suspended Sediment and Turbidity in Surface Water									x			x			x
	Excessive Salinity in Surface Water															
	Water Quality – Colorado River Excessive Salinity															
	Harmful Levels of Heavy Metals in Surface Water															
	Harmful Temperatures of Surface Water									x			x			x
	Harmful Levels of Pathogens in Surface Water															
	Harmful Levels of Petroleum in Surface Water															

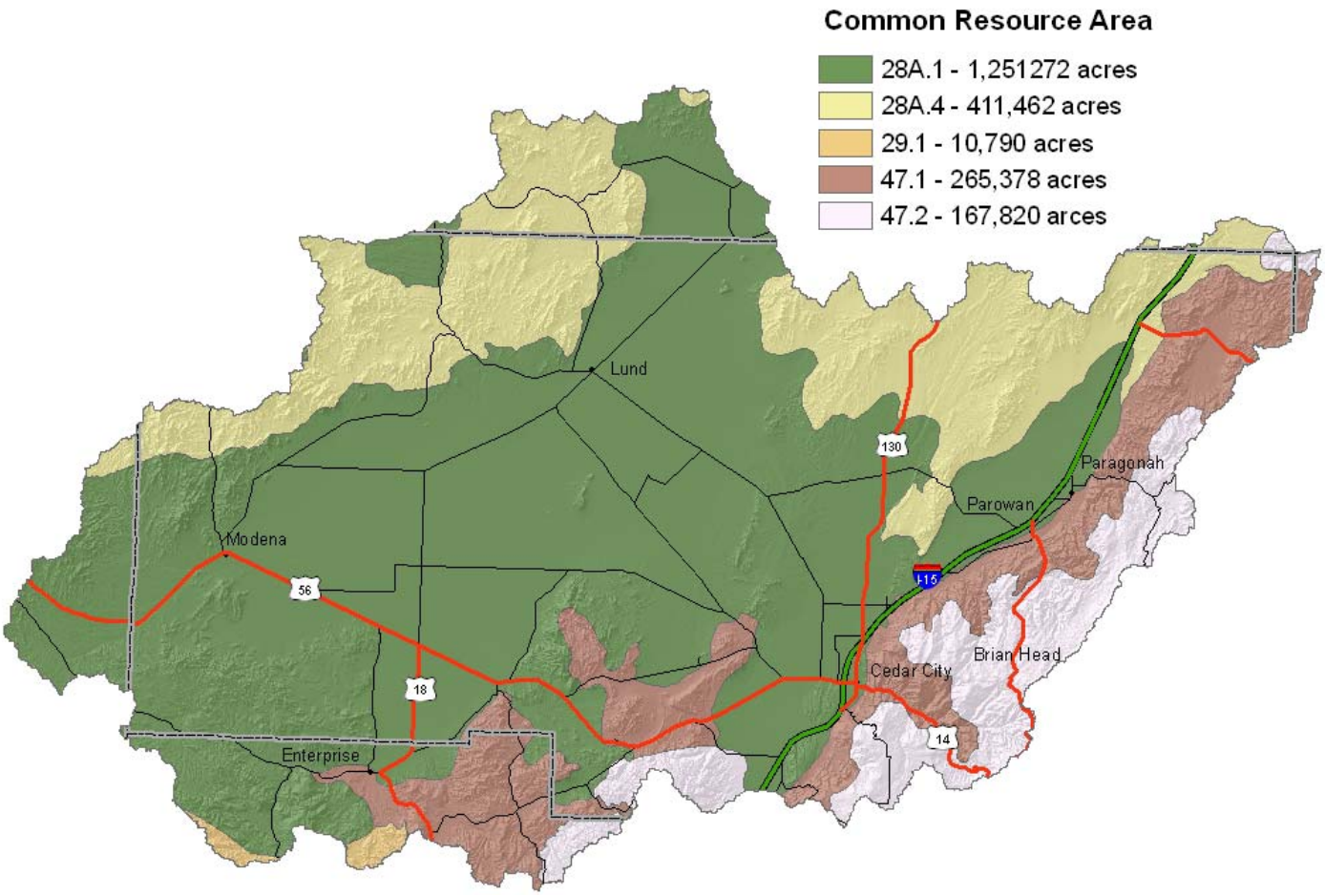
Precipitation



		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights	Surface	30,000	
	Well	45,000	
	Total Irrigated Adjudicated Water Rights	75,000	0.00
Stream Flow Data	USGS 10242000 Coal Creek at Cedar City	April-July Yield	19,300
		MILES	**PERCENT**
Stream Data	**Total Miles - Major (100K Hydro GIS Layer)**		n/a
	303d **(DEQ Water Quality Limited Streams)**		#DIV/0!

	Irrigation Efficiency:	<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	5%	35%	60%
	Pastureland	20%	80%	0%

Common Resource Area - Descriptions



28A.1 Sagebrush Basins and Slopes

This unit consists of basins, fan piedmonts and low terraces that are often internally drained. Soil temperature regimes are mostly mesic, and soil moisture regimes are typically aridic bordering xeric with some xeric areas mainly in the urban and cropland zones along the western slopes and valleys of the Wasatch Mountains. Soils range from shallow to very deep. Lime- and silica-cemented hardpans are common on stable landscapes. Typical vegetation includes Wyoming big sagebrush, black sagebrush, winterfat, Indian ricegrass, with singleleaf pinyon and Utah juniper in some areas.

28A.4 Mountains and High Fans

This unit is dominated by low mountains and hills, and includes high elevation fans and intermontane valleys. Soil temperature regimes are mostly mesic and frigid; soil moisture regimes are xeric and aridic bordering xeric. Vegetation is mostly juniper-pinyon woodland, with Wyoming big sagebrush, mountain big sagebrush, black sagebrush, muttongrass and bluebunch wheatgrass in the understory.

29.1 Semiarid Uplands and Fans

This unit is dominated by low mountains and hills, and includes high elevation fans and intermontane valleys. Soil temperature regimes are mostly mesic. Precipitation ranges from about 8 to 16 inches.

Elevations range from about 3,800 to 7,700 feet. Common vegetation includes juniper-pinyon woodland, with Wyoming big sagebrush, mountain big sagebrush and black sagebrush.

47.1 Low Mountains and Foothills; Utah, WY, and CO.
This unit is in the gently sloping to steep semiarid low mountains and hills in the Wasatch and Uinta Mountains. Soils have xeric or ustic moisture regimes with frigid or cryic temperature regimes. Precipitation ranges from 10 to about 18 inches. Elevations are about 5,000 to 8 ,000 feet. Range and cropland are the predominant land uses.

47.2 High Mountains
This area is in the higher elevations of the Wasatch and Uinta Mountains. Precipitation ranges from 16 to about 30 inches. Elevations are usually more than 6,000 feet and range to more than 10,000 feet. The mountains are covered in a mixture of mountain big sagebrush, mountain brush, and coniferous forests; with alpine vegetation on the highest mountain summits.

Watersheds & Total Maximum Daily Load (TMDL)

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects		NRCS Watershed Plans, Studies & Assessments	
Name	Status	Name	Status
Green Lakes	Closed Out. Turned over to Cedar City Corp.	Coal Creek Congresional Earmark	FEIS - August 2006
DEQ TMDL's		NRCS Comprehensive Nutrient Management Plans	
Name	Status	Number	Status
Other		Other	
Hamlin Valley Veg Enhancement Project	BLM		

AFO / CAFO

Animal Feeding Operations (AFO)						
Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Sheep	Other
No. of Farms		20			12	12
No. of Animals						

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

Confined Animal Feeding Operations - Utah CAFO Permit					
Animal Type	**Dairy**	**Feed Lot (Cattle)**	**Poultry**	**Swine**	**Other**
No. of Permitted Farms	2				
No. of Permitted Animals					

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

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 almum)
- Purple loosestrife (lythrum salicaria L.)
- Quackgrass (agropyron repens)
- Russian knapweed (centaurea repens)
- Scotch thistle (onopordum acanthium)
- Spotted knapweed (centaurea maculosa)
- Squarrose knapweed (centaurea squarrosa)
- Yellow starthistle (centaurea solstitialis)

Additional noxious weeds declared by Iron County (2003): Poison Western Whorled Milkweed

Wildlife Species of Greatest Conservation Concern

The Utah Division of Wildlife Resources (UDWR) has records of occurrence for the following speicies within a one-mile radius of the basin boundary (9/16/2006). For further assistance call: 801-538-4759

- American three-toed woodpecker, American white pelican, Arizona toad, bald eagle, black swift
- Bonneville cutthroat trout, Brian Head mountainsnail, burrowing owl, California Condor
- Dark kangaroo mouse, ferrugijnous hawk, greater sage-grouse, kit fox, least chub
- Lewis's woodpecker, long-billed curlew, northern goshawk, pypmy rabbit
- Southwestern willow flycatcher, spotted bat, spotted owl, Townsend's big-eared bat
- Utah prairie dog and the yellow-billed cuckoo

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:	California Condor (experimental)	Bird	Cliff	
	Southwestern Willow Flycatcher	Bird	Lowland Riparian	Mountain Riparian
Threatened:	Mexican Spotted Owl	Bird	Cliff	Lowland Riparian
	Utah Prairie-dog	Mammal	Grassland	Agriculture
	Bald Eagle	Bird	Lowland Riparian	Agriculture
Candidate:	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Least Chub	Fish	Water - Lentic	Wetland
Species of Concern:	Arizona Toad	Amphibian	Lowland Riparian	Wetland
	Black Swift	Bird	Lowland Riparian	Cliff
	Brian Head Mountainsnail	Mollusk	Mountain Shrub	Rock
	Burrowing Owl	Bird	High Desert Scrub	Grassland
	Common Chuckwalla	Reptile	High Desert Scrub	Low Desert Scrub
	Dark Kangaroo Mouse	Mammal	High Desert Scrub	Shrubsteppe
	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
	Long-billed Curlew	Bird	Grassland	Agriculture
	Pygmy Rabbit	Mammal	Shrubsteppe	
	Short-eared Owl	Bird	Wetland	Grassland
	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

*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 hey 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

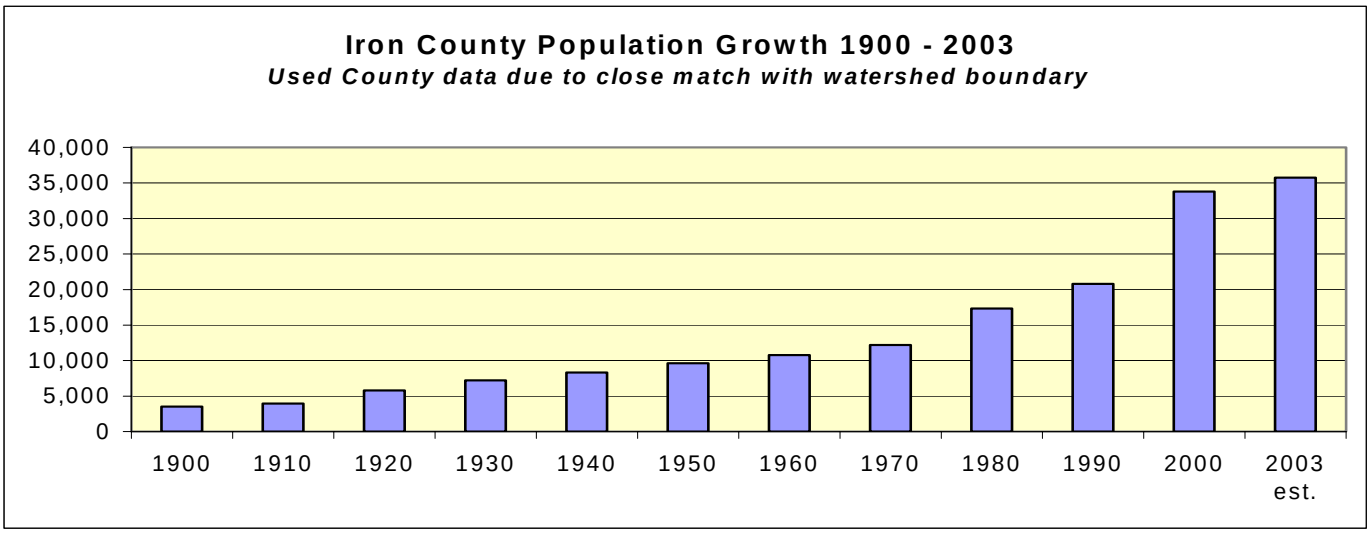
Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Social and Economic	Non-Traditional Landowners and Tenants	x	x	x			x			x						
	Urban Encroachment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

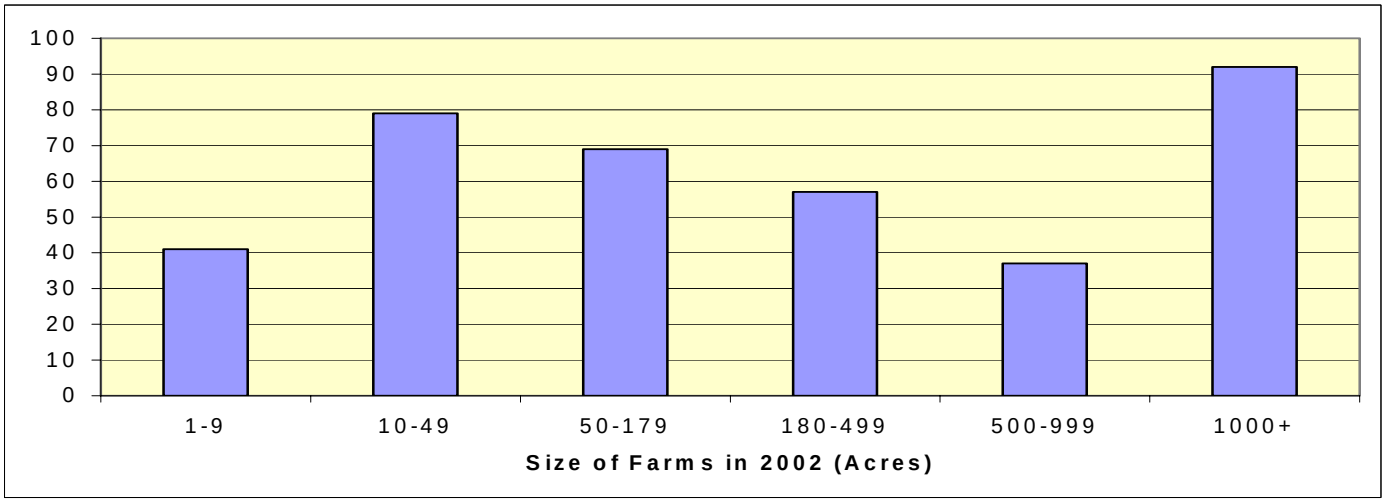
Ability to Participate in Conservation: Moderate to High
Most operators in this watershed are aware of local resource concerns and likely to have some form of conservation plan; have adopted some conservation practices; and understand the economic and environmental benefits of conservation. Most recommended conservation practices can be implemented incrementally and are compatible with local management systems and equipment. The perceived high capital costs of conservation and risks associated with irrigated agriculture and rangeland management discourage many operators from adopting conservation systems. Additional financial incentives or other risk-reducing incentives may increase the adoption of conservation in the watershed.

Evaluation of Social Capital: Moderate
Social capital and the ability of the community to solve problems and support conservation are estimated to be moderate. Recent trends indicate that the population within the watershed is increasing, especially along the I-15 corridor. The primary occupation of new landowners commonly is non-agricultural and not resource based. People moving to the area commonly do so for the rural, high-quality lifestyle, recreation and relatively inexpensive housing and property. Newcomers to the area tend to look at the natural resources as recreational opportunities, not as a means for making a living. In part, this has resulted in community interest shifting from agricultural and natural resource concerns to issues related to improving schools, transportation, health services, and so on.

The agricultural community is overall aware of the ground water issues facing them and the potential impacts to them if the aquifer in the western part of the basin continues to recede.

Census and Social Data





Number of Farms: 437
Number of Operators: Full Time : 183 Part Time Operators: 254

Beginning Farmers/Ranchers: 285
Potential Limited Resource Farmers: 117

Demogrpaphics HUC # 16030006: White = 34,864; Black or African American = 118; American Indian Alaska Native = 785; Asian = 255; Hawaiian/Pacific Islander = 106; Hispanic Origin = 1,508; Other = 646

CONSERVATION PROGRESS - STATUS

Performance Results (PRS) Data	FY01	FY02	FY03	FY04	FY05	FY06	Total
Total Conservation Systems Planned (Acres)	6,601	15,894	17,159	914	4,561		45,129
Total Conservation Systems Applied (Acres)	2,039	9,940	4,177	16,208	34,398		66,762
Conservation Treatment (Acres)							
Brush Management				386	403	255	789
Clearing and Snagging						400	
Conservation Crop Rotation				492	1,745	95	2,237
Buffers (ft)	250						250
Conservation Cover				42	46	211	88
Erosion Control	320	310	370				1,000
Irrigation Water Management		4,613			2,054	211	6,667
Fence				10,622		3,705	10,622
Forage Harvest Management				150	152		150
Nutrient Management		2,742	2,745	418	95	109	2,837
Irrigation System-Surf&Subsurface (no)				5			5
Irrigaiton Water Conveyance-430DD (ft)				4.18			4
Irrigation Water Management	1,164		4,837	273			6,274
Pest Management	1,371	3,052	2,745	284	95		7,452
Pasture & Hay Planting					20		
Nutrient Management	954		2,745	418			4,117
Prescribed Grazing	5,515	15,945	1,088	2,430	13,050		38,028
Pipeline-516 (ft)				17,444		3,590	17,444
Range Planting				238	153	255	238
Streambank & Shoreline Protection (ft)						650	
Upland Wildlife Habitat Management						2,647	
Water Well				3	1	1	4
Watering Facility				4		1	4
Wildlife Habitat	610	7,046					7,656
CNMPs			2				2

Data from NRCS- Performance Results System(PRS) -intended to show broad distribution trends in service provided to customers by the conservation partnership.

- The predominant practices applied in the HUC relate mostly to grazing and irrigation
- Irrigation is a critical concern to landowners in the watershed
- Pumping for water in the Escalante Valley (Beryl-Enterprise area) is a critical concern due to ground water level declines of 50 to 110 feet (1950-2004)
- Conversion of Agricultural Land to urban or other development is a concern

PUBLIC SURVEY/QUESTIONNAIRE RESULTS:

Iron County Resource Assessment Survey Project
Enterprise & Iron Soil Conservation District
July 20, 2005

The E&I Soil Conservation District received 73 resource assessment surveys from citizens/stakeholders in Iron County from;

1. E&I SCD Resource Assessment Public Meeting
2. E&I SCD Conservation Tree Program
3. Color Country RC&D Meeting

Top Five Concerns that should be addressed immediately:

1.	Adequate Water Supply for Desired Uses	59%
2.	Ground Water Quality & Quantity	58%
3.	Storm Water Runoff & Flooding	53%
4.	Soil Loss/Erosion on Land/Stream Channels	9%
5.	Loss of Open Space or Agricultural Lands	43%

Top Five Concerns that should be addressed in the future:

1.	Air Quality, Including dust, Pollutants	41%
2.	Soil Condition Due to Compaction or Other Changes	37%
2.	Urban/Suburban Growth	37%
2.	Recreational Opportunities	37%
3.	Adequate Marketing for Ag Products	36%
3.	Adequate Support of Historic/Prehistoric Resources	36%
3.	Adequate Energy Sources Available	36%
4.	Plant Health, Production, and Adequate Quantities	34%
5.	Presence of Invasive Plants Including Noxious Weeds	33%
5.	Adequate Food, Water and Cover for Wildlife	33%

Iron County Survey Demographics:

Gender – 65 Responses
Male - 55%
Female – 45%

Age – 62 Responses
18-24 – 2%
25-38 – 13%
39- 50 – 24%
51-65 – 42%
65+ - 19%

Race/Ethnicity – 51 Responses
European/Caucasian – 55%
Native American – 6%
Other – 37%
Hispanic – 2%

13 Responses
Ag Producers - 70%
Non-Ag Producers – 30%

RWA Public Meeting: 11/7/2006 – 22 participants, concurred with resource concerns identified in County Assessment, reinforced concerns with ground water pumping – aquifer depletion, presentation on existing conditions in western portion of the basin

SW Utah Partners for Conservation & Development Meeting: presented efforts to group 11/6/2006

All data is provided "as is." There are no warranties, express or implied, including the warranty of fitness for a particular purpose, accompanying this document. Use is intended for general planning purposes only.

Footnotes / Bibliography

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

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

3. 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

4. Land Capability Classes derived from SURGO Soils Survey UT607 and Soil Data Viewer.

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

6. 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

7. Irrigated Adjudicated Water Rights obtained from the Utah Division of Water Rights.

8. Stream Flow data from NRCS Snow Survey Stream flow forecast data.

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 data.

12. 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

13. 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/). Sensitive Species list as per letter from DWR – 9/19/2006.

14. County population data from the U.S. Census Bureau, Utah Quick Facts, http://www.fedstats.gov/qf/states/49/49053.html

15. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. http://www.nass.usda.gov/census/census02/volume1/index2.htm
16. Southwest Sage Grouse Local Working Group: http://greatbasin.nbii.gov/LWG/LWGDetail.asp?State=UT&LWG=49

Escalante Valley– Iron County, Utah
Rapid Watershed Assessment - 8 Digit HUC # 16030006
May 2007

The following assessment information is a general evaluation of the private irrigated acreage and grazing land acreage within the basin. The evaluation considers the percentages of the particular landuse in a "benchmark" condition (landowners not participating in conservation systems); a "progressive" condition (some conservation implemented); and an "RMS" condition (resource management system – conservation implemented considering all resource concerns). The information is intended for general planning only and gives only an overall trend for future conservation within the basin and is subject to change.

WATERSHED NAME & CODE	ESCALANTE DESERT-IRON COUNTY - 16030006				LANDUSE ACRES		68,750	
LANDUSE TYPE	Irrigated Acres - 68,750				TYPICAL UNIT SIZE ACRES		80	
ASSESSMENT INFORMATION					CALCULATED PARTICIPATION		36%	
	Benchmark Conditions	Future Conditions			RESOURCE CONCERNS			
Conservation Systems by Treatment Level	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Wind	Water Quantity – Aquifer Overdraft	Plant Condition – Productivity, Health and Vigor	Fish and Wildlife – T & E Species: Declining Species, Species of Concern
Baseline				**System Rating ->**	**3**	**2**	**4**	**-1**
Conservation Crop Rotation (ac.) 328	48,125	24,063	0	24,063	3	0	4	0
Forage Harvest Management (ac.) 511	48,125	24,063	0	24,063	4	0	5	0
Irrigation System, Sprinkler (ac.) 442	48,125	24,063	0	24,063	2	3	0	0
Irrigation System, Surface and Subsurface (ac.) 443	48,125	24,063	0	24,063	2	2	0	0
Land Smoothing (ac.) 466	48,125	24,063	0	24,063	0	0	0	-2
Total Acreage at Baseline	**48,125**	**24,063**	**0**	**24,063**				
Progressive				**System Rating ->**	**5**	**2**	**5**	**2**
Conservation Crop Rotation (ac.) 328	13,750	18,906	0	18,906	3	0	4	0
Irrigation System, Surface and Subsurface (ac.) 443	13,750	18,906	0	18,906	2	2	0	0
Irrigation Water Management (ac.) 449	13,750	6,875	12,031	18,906	2	4	3	0
Pest Management (ac.) 595	6,875	3,438	6,016	9,453	1	0	3	0
Pond (no.) 378	172	86	150	236	0	0	0	0
Prescribed Grazing (ac.) 528	9,625	4,813	8,422	13,234	5	0	5	2
Residue and Tillage Management, Mulch Till (ac.) 345	13,750	6,875	12,031	18,906	4	0	0	0
Restoration and Management of Declining Habitats (ac.) 643	13,750	6,875	12,031	18,906	3	0	5	3
Structure for Water Control (no.) 587	172	86	150	236	0	0	0	0
Tree/Shrub Establishment (ac.) 612	1,375	688	1,203	1,891	5	0	4	0

Total Acreage at Progressive Level	**13,750**	**6,875**	**12,031**	**18,906**				
RMS				**System Rating ->**	**5**	**3**	**5**	**2**
Conservation Crop Rotation (ac.) 328	6,875	20,969	0	20,969	3	0	4	0
Irrigation System, Sprinkler (ac.) 442	6,875	14,094	6,875	20,969	2	3	0	0
Irrigation System, Surface and Subsurface (ac.) 443	6,875	20,969	0	20,969	2	2	0	0
Irrigation Water Management (ac.) 449	6,875	13,750	7,219	20,969	2	4	3	0
Nutrient Management (ac.) 590	6,875	6,875	14,094	20,969	1	0	5	0
Pest Management (ac.) 595	6,875	10,313	10,656	20,969	1	0	3	0
Pond (no.) 378	86	172	90	262	0	0	0	0
Prescribed Grazing (ac.) 528	6,875	11,688	9,281	20,969	5	0	5	2
Pumping Plant (no.) 533	86	86	176	262	0	0	0	0
Residue and Tillage Management, Mulch Till (ac.) 345	6,875	13,750	7,219	20,969	4	0	0	0
Restoration and Management of Declining Habitats (ac.) 643	5,500	11,000	5,775	16,775	3	0	5	3
Tree/Shrub Establishment (ac.) 612	688	1,375	722	2,097	5	0	4	0
Upland Wildlife Habitat Management (ac.) 645	5,500	5,500	11,275	16,775	0	0	4	0
Well Decommissioning (no.) 351	86	86	176	262	0	3	0	0
Windbreak/Shelterbreak Establishment (ft.) 380	42,969	42,969	88,086	131,055	5	0	3	0
Total Acreage at RMS Level	**6,875**	**6,875**	**14,094**	**20,969**				

WATERSHED NAME & CODE	ESCALANTE DESERT-IRON COUNTY - 16030006	LANDUSE ACRES	68,750
LANDUSE TYPE	IRRIGATED LANDS	TYPICAL UNIT SIZE ACRES	80
CONSERVATION COST TABLE		CALCULATED PARTICIPATION	42%

	FUTURE	FEDERAL				PRIVATE		
Conservation Systems by Treatment Level	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive								
Conservation Crop Rotation (ac.) 328	0	$0	$0	$0	$0	$0	$0	$0
Irrigation System, Surface and Subsurface (ac.) 443	0	$0	$0	$0	$0	$0	$0	$0
Irrigation Water Management (ac.) 449	12,031	$0	$721,875	$144,375	$787,569	$0	$240,625	$370,407
Pest Management (ac.) 595	6,016	$0	$360,938	$72,188	$393,784	$0	$120,313	$185,203
Pond (no.) 378	150	$451,172	$0	$90,234	$541,406	$451,172	$45,117	$641,222
Prescribed Grazing (ac.) 528	8,422	$29,477	$0	$5,895	$35,372	$29,477	$0	$29,477
Residue and Tillage Management, Mulch Till (ac.) 345	12,031	$0	$721,875		$787,569	$0	$240,625	$370,407
Restoration and Management of Declining Habitats (ac.) 643	12,031	$150,391	$0		$180,469	$150,391	$15,039	$213,741
Structure for Water Control (no.) 587	150	$300,781	$0		$360,938	$300,781	$12,031	$351,461
Tree/Shrub Establishment (ac.) 612	1,203	$406,055	$0		$487,266	$406,055	$8,121	$440,264
Subtotal	**12,031**	**$1,337,875**	**$1,804,688**	**$628,513**	**$3,574,371**	**$1,337,875**	**$681,871**	**$2,602,180**
RMS								
Conservation Crop Rotation (ac.) 328	0	$0	$0	$0	$0	$0	$0	$0
Irrigation System, Sprinkler (ac.) 442	6,875	$2,406,250	$0	$481,250	$2,887,500	$2,406,250	$96,250	$2,811,690
Irrigation System, Surface and Subsurface (ac.) 443	0	$0	$0	$0	$0	$0	$0	$0
Irrigation Water Management (ac.) 449	7,219	$0	$433,125	$86,625	$472,541	$0	$144,375	$222,244
Nutrient Management (ac.) 590	14,094	$0	$634,219	$126,844	$691,935	$0	$211,406	$325,429
Pest Management (ac.) 595	10,656	$0	$639,375	$127,875	$697,561	$0	$213,125	$328,074
Pond (no.) 378	90	$270,703	$0	$54,141	$324,844	$270,703	$27,070	$384,733
Prescribed Grazing (ac.) 528	9,281	$32,484	$0	$6,497	$38,981	$32,484	$0	$32,484
Pumping Plant (no.) 533	176	$572,559	$0	$114,512	$687,070	$572,559	$22,902	$669,032
Residue and Tillage Management, Mulch Till (ac.) 345	7,219	$0	$433,125	$86,625	$472,541	$0	$144,375	$222,244
Restoration and Management of Declining Habitats (ac.) 643	5,775	$72,188	$0		$86,625	$72,188	$7,219	$102,596
Tree/Shrub Establishment (ac.) 612	722	$243,633	$0		$292,359	$243,633	$4,873	$264,158
Upland Wildlife Habitat Management (ac.) 645	11,275	$0	$338,250		$369,032	$0	$112,750	$173,562
Well Decommissioning (no.) 351	176	$44,043	$0		$52,852	$44,043	$0	$44,043
Windbreak/Shelterbreak Establishment (ft.) 380	88,086	$29,949	$0		$35,939	$29,949	$599	$32,472
Subtotal	**14,094**	**$3,671,809**	**$2,478,094**	**$1,229,980**	**$7,109,780**	**$3,671,809**	**$984,944**	**$5,612,761**
Grand Total	**26,125**	**$5,009,684**	**$4,282,781**	**$1,858,493**	**$10,684,152**	**$5,009,684**	**$1,666,815**	**$8,214,941**

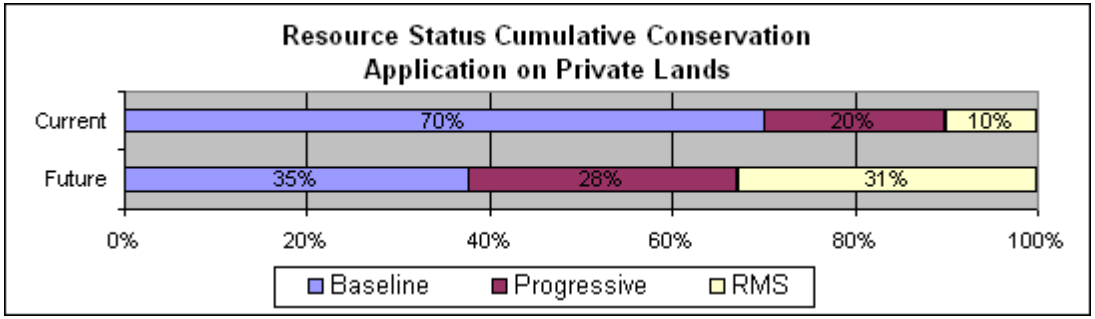


Chart Refers To	
Landuse Type	IRRIGATED LANDS
Calculated Participation Rate	42%

Average PV Costs per Ac		
System	Federal	Private
Prog	$297.09	$216.29
RMS	$504.46	$398.24

Private Grazing Lands – Typical unit size used is about 500 acres

WATERSHED NAME & CODE	ESCALANTE DESERT-IRON COUNTY - 16030006				LANDUSE ACRES	636,633		
LANDUSE TYPE	Private Grazing Lands				TYPICAL UNIT SIZE ACRES	500		
ASSESSMENT INFORMATION					CALCULATED PARTICIPATION	36%		
	Benchmark Conditions	Future Conditions			RESOURCE CONCERNS			
Conservation Systems by Treatment Level	Total Units	Existing Unchanged Units	New Treatment Units	Total Units	Soil Erosion – Wind	Plant Condition – Productivity, Health and Vigor	Plant Condition – Noxious and Invasive Plants	Domestic Animals – Inadequate Quantities and Quality of Feed and Forage
Baseline				**System Rating ->**	**2**	**4**	**4**	**4**
Brush Management (ac.) 314	95,495	47,747	0	47,747	1	5	5	3
Fence (ft.) 382	763,960	381,980	0	381,980	0	1	0	1
Pipeline (ft.) 516	763,960	381,980	0	381,980	0	0	0	0
Range Planting (ac.) 550	381,980	190,990	0	190,990	4	5	4	5
Watering Facility (no.) 614	764	382	0	382	0	1	0	0
Total Acreage at Baseline	**381,980**	**190,990**	**0**	**190,990**				
Progressive				**System Rating ->**	**4**	**5**	**5**	**5**
Brush Management (ac.) 314	47,747	47,747	0	47,747	1	5	5	3

Fence (ft.) 382	2,291,879	1,336,929	954,950	2,291,879	0	1	0	1
Fuel Break (ac.) 383	9,549	4,775	4,775	9,549	-1	1	0	0
Grazing Land Mechanical Treatment (ac.) 548	190,990	95,495	95,495	190,990	4	4	0	3
Prescribed Burning (ac.) 338	190,990	95,495	95,495	190,990	0	4	4	4
Prescribed Grazing (ac.) 528	133,693	66,846	66,846	133,693	5	5	4	5
Range Planting (ac.) 550	190,990	190,990	0	190,990	4	5	4	5
Spring Development (no.) 574	382	191	191	382	0	0	0	0
Upland Wildlife Habitat Management (ac.) 645	190,990	95,495	95,495	190,990	0	4	4	1
Watering Facility (no.) 614	382	382	0	382	0	1	0	0
Total Acreage at Progressive Level	**190,990**	**95,495**	**95,495**	**190,990**				
RMS				**System Rating ->**	**4**	**4**	**5**	**5**
Brush Management (ac.) 314	15,916	54,114	0	54,114	1	5	5	3
Early Successional Habitat Development/Management (ac.) 647	44,564	44,564	106,954	151,519	0	-2	1	2
Fence (ft.) 382	190,990	592,069	57,297	649,366	0	1	0	1
Fuel Break (ac.) 383	3,183	7,958	2,865	10,823	-1	1	0	0
Grazing Land Mechanical Treatment (ac.) 548	63,663	159,158	57,297	216,455	4	4	0	3
Pest Management (ac.) 595	63,663	63,663	152,792	216,455	1	3	5	3
Pipeline (ft.) 516	127,327	241,921	190,990	432,910	0	0	0	0
Prescribed Burning (ac.) 338	63,663	159,158	57,297	216,455	0	4	4	4
Prescribed Grazing (ac.) 528	63,663	130,510	85,945	216,455	5	5	4	5
Range Planting (ac.) 550	63,663	216,455	0	216,455	4	5	4	5
Restoration and Management of Declining Habitats (ac.) 643	50,931	50,931	122,234	173,164	3	5	3	0
Spring Development (no.) 574	127	318	115	433	0	0	0	0
Upland Wildlife Habitat Management (ac.) 645	50,931	127,327	45,838	173,164	0	4	4	1
Watering Facility (no.) 614	127	433	0	433	0	1	0	0
Wildlife Watering Facility (no.) 648	127	127	306	433	0	0	0	0
Total Acreage at RMS Level	**63,663**	**63,663**	**152,792**	**216,455**				

WATERSHED NAME & CODE	ESCALANTE DESERT-IRON COUNTY - 16030006	LANDUSE ACRES	636,633
LANDUSE TYPE	GRAZING LANDS	TYPICAL UNIT SIZE ACRES	500
CONSERVATION COST TABLE		CALCULATED PARTICIPATION	43%

	FUTURE	FEDERAL				PRIVATE		
Conservation Systems by Treatment Level	New Treatment Units	Installation Cost 50%	Management Cost - 3 yrs 100%	Technical Assistance 20%	Total Present Value Cost	Installation Cost 50%	Annual O & M + Mgt Costs 100%	Total Present Value Cost
Progressive								
Brush Management (ac.) 314	0	$0	$0	$0	$0	$0	$0	$0
Fence (ft.) 382	954,950	$1,193,687	$0	$238,737	$1,432,424	$1,193,687	$47,747	$1,394,817
Fuel Break (ac.) 383	4,775	$9,549	$0	$1,910	$11,459	$9,549	$2,865	$21,617
Grazing Land Mechanical Treatment (ac.) 548	95,495	$1,193,687	$0	$238,737	$1,432,424	$1,193,687	$119,369	$1,696,511
Prescribed Burning (ac.) 338	95,495	$1,671,162	$0	$334,232	$2,005,394	$1,671,162	$33,423	$1,811,952
Prescribed Grazing (ac.) 528	66,846	$233,963	$0	$46,793	$280,755	$233,963	$0	$233,963
Spring Development (no.) 574	15	$19,099	$0		$22,919	$19,099	$382	$20,708
Upland Wildlife Habitat Management (ac.) 645	95,495	$0	$2,864,849		$3,125,561	$0	$954,950	$1,470,003
Subtotal	**95,495**	**$4,321,146**	**$2,864,849**	**$1,437,199**	**$8,310,937**	**$4,321,146**	**$1,158,736**	**$6,649,571**
RMS								
Brush Management (ac.) 314	0	$0	$0	$0	$0	$0	$0	$0
Early Successional Habitat Development/Management (ac.) 647	106,954	$802,158	$0	$160,432	$962,589	$802,158	$0	$802,158
Fence (ft.) 382	57,297	$71,621	$0	$14,324	$85,945	$71,621	$2,865	$83,689
Fuel Break (ac.) 383	2,865	$5,730	$0	$1,146	$6,876	$5,730	$1,719	$12,970
Grazing Land Mechanical Treatment (ac.) 548	57,297	$716,212	$0	$143,242	$859,455	$716,212	$71,621	$1,017,907
Pest Management (ac.) 595	152,792	$0	$9,167,515	$1,833,503	$10,001,796	$0	$3,055,838	$4,704,010
Pipeline (ft.) 516	190,990	$238,737	$0	$47,747	$286,485	$238,737	$9,549	$278,963
Prescribed Burning (ac.) 338	57,297	$1,002,697	$0	$200,539	$1,203,236	$1,002,697	$20,054	$1,087,171
Prescribed Grazing (ac.) 528	85,945	$300,809	$0	$60,162	$360,971	$300,809	$0	$300,809
Range Planting (ac.) 550	152,792	$6,875,636	$0	$1,375,127	$8,250,764	$6,875,636	$137,513	$7,454,890
Restoration and Management of Declining Habitats (ac.) 643	122,234	$1,527,919	$0		$1,833,503	$1,527,919	$152,792	$2,171,534
Spring Development (no.) 574	9	$11,459	$0		$13,751	$11,459	$229	$12,425
Upland Wildlife Habitat Management (ac.) 645	45,838	$0	$1,375,127		$1,500,269	$0	$458,376	$705,602
Watering Facility (no.) 614	31	$15,279	$0		$18,335	$15,279	$917	$19,141
Wildlife Watering Facility (no.) 648	18	$13,751	$0		$16,502	$13,751	$275	$14,910
Subtotal	**152,792**	**$11,582,010**	**$10,542,642**	**$4,424,930**	**$25,400,476**	**$11,582,010**	**$3,911,748**	**$18,666,179**
Grand Total	**248,287**	**$15,903,156**	**$13,407,491**	**$5,862,129**	**$33,711,413**	**$15,903,156**	**$5,070,484**	**$25,315,751**

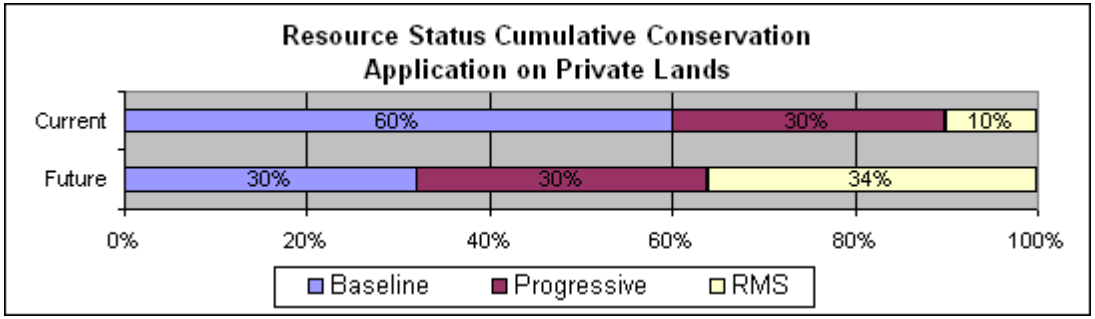


Chart Refers To	
Landuse Type	GRAZING LANDS
Calculated Participation Rate	43%

Average PV Costs per Ac		
System	**Federal**	**Private**
Prog	$87.03	$69.63
RMS	$166.24	$122.17

WATERSHED NAME & CODE	ESCALANTE DESERT - 16030006	LANDUSE ACRES	68,750
LANDUSE TYPE	IRRIGATED LANDS	TYPICAL UNIT SIZE ACRES	80
POSSIBLE SOURCES OF FUNDING		CALCULATED PARTICIPATION	42%

	FUTURE	FARM BILL						OTHERS			
Conservation Systems by Treatment Level	New Treatment Units	CTA	EQIP	WRP	WHIP	CSP	CRP/ CREP	Fed	State	Local	NOTES/COMMENTS
Progressive											
Conservation Crop Rotation (ac.) 328	0	X	X								
Irrigation System, Surface and Subsurface (ac.) 443	0	X	X								
Irrigation Water Management (ac.) 449	12,031	X	X			X					Most already in Pivot Systems - improve on O&M
Pest Management (ac.) 595	6,016	X	X		X	X					
Pond (no.) 378	150	X	X			X					
Prescribed Grazing (ac.) 528	8,422	X	X			X					Aftermath grazing?
Residue and Tillage Management, Mulch Till (ac.) 345	12,031	X	X			X					
Restoration and Management of Declining Habitats (ac.) 643	12,031	X			X	X					
Structure for Water Control (no.) 587	150	X	X								
Tree/Shrub Establishment (ac.) 612	1,203	X	X		X				X	X	Potential along fence rows, borders…etc.
New Treatment Acreage	**12,031**										
RMS											
Conservation Crop Rotation (ac.) 328	0	X	X			X					
Irrigation System, Sprinkler (ac.) 442	6,875	X	X								
Irrigation System, Surface and Subsurface (ac.) 443	0	X	X								
Irrigation Water Management (ac.) 449	7,219	X	X			X					
Nutrient Management (ac.) 590	14,094	X	X		X	X					
Pest Management (ac.) 595	10,656	X	X	X		X					
Pond (no.) 378	90	X	X			X					Recharge Basin/s ? Feasibility? Need Water..
Prescribed Grazing (ac.) 528	9,281	X	X			X					
Pumping Plant (no.) 533	176	X									
Residue and Tillage Management, Mulch Till (ac.) 345	7,219	X	X								
Restoration and Management of Declining Habitats (ac.) 643	5,775	X	X								
Tree/Shrub Establishment (ac.) 612	722	X	X		X	X					

Upland Wildlife Habitat Management (ac.) 645	11,275	X	X	X	X	X					
Well Decommissioning (no.) 351	176	X	X		X						Potential due to aquifer overdraft
Windbreak/Shelterbreak Establishment (ft.) 380	88,086	X	X		X	X					
											Note: Recharge basin potential? Feasibility?
											- Review with UGS, State, others….?
New Treatment Acreage	**14,094**										