Last Update September 2 2011

Crook County Natural Resources Conservation Service Strategic Plan

2011 - 2016

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Contents

Section 1: Introduction

This Natural Resources Long Range Strategy lays out a road map for the Natural Resources Conservation Service (NRCS) and its conservation partners to effectively address some of the most important and urgent natural resource problems facing Crook County. The purpose of the strategy is to identify priority resource problems, describe desired future outcomes, and establish measurable objectives so that NRCS and its partners can focus financial and technical assistance to achieve measurable and meaningful outcomes.

This Natural Resource Long Range Strategy covers the period from 2011 – 2015. The strategy will serve as the guiding document for NRCS decisions regarding delivery of financial and technical assistance and administration of conservation programs. This is a living document, intended to be updated and modified, as appropriate, to account for emerging issues.

During the summer of 2010, the NRCS Crook Field Office conducted Strategic Conservation Community Meetings to gather input for the development of this document. During these special local work group meetings, NRCS and its partners identified natural resource problems facing Crook County and prioritized these problems based on the importance of each and our ability to treat them given current knowledge and technology.

NRCS gratefully acknowledges the assistance of the following partners in the development of this document.

Vision: Shared responsibility and commitment to local action generates effective land stewardship.

Mission: To build alliances and strategically invest to effectively solve natural resource concerns in Crook County

Purpose: The purpose for this document is to provide a strategic approach to on-going and emerging conservation activities in Crook County, in order to effectively and efficiently address the resource concerns and challenges in the 21st Century.

Time Frame:

The time frame covered by the plan begins January 2011 and end December 2016

Section 2: Natural Resource Inventory

This section provides baseline information about the resource challenges facing Crook County. This section addresses human, soil, water, air, plant, animal, and energy resource concerns that will impact conservation and development activities in future years.

A resource concern is an expected degradation of the soil, water, air, plant, or animal resource base to an extent that the sustainability or intended use of the resource is impaired. Because NRCS quantifies or

describes resource concerns as part of a comprehensive conservation planning process that includes client objectives, human and energy resources are considered components of the resource base. This section shows the natural resource inventory organized into Major Resource Concerns that include

- Soil Erosion
- Soil Quality Degradation
- Excess / Insufficient Water
- Water Quality Degradation
- Degraded Plant Condition
- Inadequate Habitat for Fish and Wildlife
- Livestock Production Limitation
- Inefficient Energy Use
- Air Quality Impacts

Major Resource Concerns are further broken down into 31 natural resource concerns.

Many of these resource concerns have been identified by agency and stakeholder management plans, including but not limited to:

Management Plan	Agency
NRCS Rapid Watershed Assessment Profiles: • Upper Crooked – 17070304, • Lower Crooked – 17070305, • South Fork Crooked – 17070303 • Trout – 17070307	Natural Resource Conservation Service
Soil Survey: • OR618 - Crook County Area, Oregon • OR666 Trout Creek-Shaniko Area	Natural Resource Conservation Service
Crook County Field Office Technical Guide	Natural Resource Conservation Service
Crooked River Agriculture Water Quality Management Areal Plan (March 30, 2004)	Oregon Dept. Agriculture, Agriculture Water Quality Management Plans
Crooked River Watershed Assessment	Crooked River Watershed Council
Wy'East Resource Conservation & Development Area Plan	Wy'East Resource Conservation & Development Council
Deschutes Subbasin Plan	Northwest Power and Conservation Council
Oregon Department of Fish and Wildlife (ODFW) Conservation Strategy	Oregon Department of Fish and Wildlife

The NRCS Subbasin Profiles provide a natural resource snapshot and overview of each Oregon 8-Digit Hydrologic Unit or watershed. The Subbasin Profiles organize information into one document that local conservationists, landowners and others can use to: identify conservation opportunities and direct technical and financial resources to the appropriate subbasins. They provide a concise description of the sub-basins' natural resources, resource concerns, conservation needs, and ability to resolve natural resource issues. These profiles organize into one document what most local conservationists and landowners already know about their watersheds.

Physical resources, land use and land cover, common resource areas, soils, stream, precipitation data, resource concerns, census and social data.

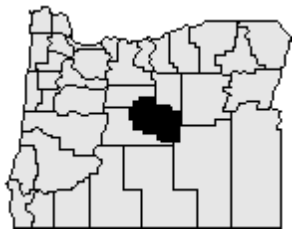
NRCS published the Watershed Profiles based on the HUC. The 8-digit HUC watersheds within Crook County include:

- Upper Crooked – 17070304,
- Lower Crooked – 17070305,
- South Fork Crooked – 17070303
- Trout – 17070307

http://www.or.nrcs.usda.gov/technical/watershed-resources.html

Resource Concern: Humans

Snapshot of Crook County



Crook County encompasses an area of 2,991 square and ranks 12th among counties in area. The County is situated in the geographic center of Oregon. Crook County lies on the broad high plateau of this part of the state.

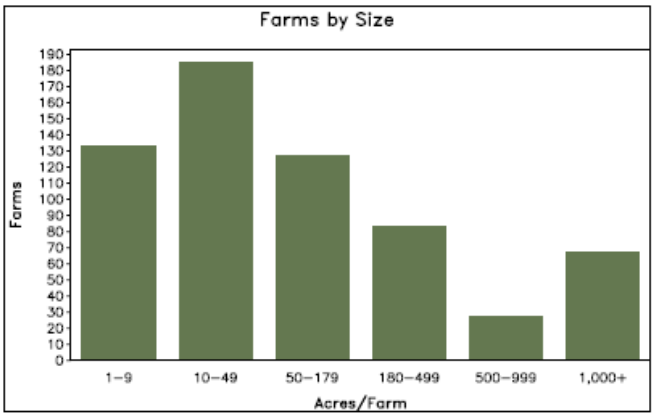
Crook County is bounded on the west by Deschutes County, on the North by Jefferson and Wheeler counties, on the east by Grant and Harney Counties and on the south by the panhandle of Deschutes County. Ninety-six percent of the county is within the Deschutes River Basin. The economy is based on livestock, forest products, recreation, agriculture, manufacturing and wholesale trade.

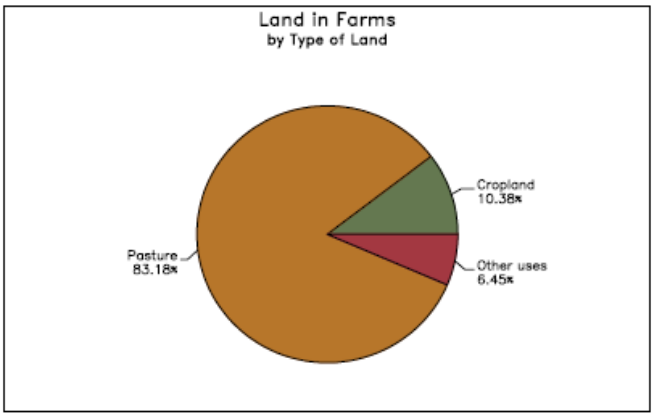
About
Population (2009): 27,185
Established: Oct. 24, 1882
Elev. at Prineville: 2,868'
Area: 2,991 sq. mi.
Average Temp.: January 31.8° July 64.5°
Assessed Value: $1,638,541,593
Real Market Value: $2,046,232,956
Annual Precipitation: 10.50"
Economy: Livestock, forest products, recreation, agriculture, manufacturing and wholesale trade.

Source: Oregon Blue Book

Number Types & Size of Farms. The data included in this section is from the **2007 Census of Agriculture.** The following is a quick profile of Crook County agriculture and producers. Crook County is 2,991 sq. mi.. The average size farm is 1,224 acres with the median size farm 10 - 49 acres. The largest land in farms by land type is pasture, followed by cropland then woodland. The total number of agricultural producers is 622.

Deschutes County Farms			
	2007	**2002**	**% Change**
Number of Farms	622	685	- 9
Land in Farms	761,548 acres	937,628 acres	- 19
Average Size of Farm	1,224 acres	1,369 acres	- 11
Source: http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Oregon/cp41013.pdf			





Operator Characteristics	Quantity
Principal operators by primary occupation:	
Farming	292
Other	330
Principal operators by sex:	
Male	509
Female	113
Average age of principal operator (years)	57.4
All operators by race [1]:	
American Indian or Alaska Native	16
Asian	6
Black or African American	-
Native Hawaiian or Other Pacific Islander	-
White	992
More than one race	12
All operators of Spanish, Hispanic, or Latino Origin [2]	24

All Sources Above: http://www.agcensus.usda.gov/Publications/2007/Online_Highlights/County_Profiles/Oregon/cp41013.pdf

Types and Size of Farm Operations

The Economic Research Service has establish a typology of farms to group farms by similar characteristics.

Large family farms have market value of agricultural products gross sales between $250,000 and $499,999 and the principal operator who reports his/her occupation as being primarily farming. There are 17 farms and 61,976 acres.

Nonfamily farms are farms organized as nonfamily corporations, as well as farms operated by hired managers. There are 19 farms and 303,133 acres.

Small Family Farms, Farming Occupations/Higher Sales have market value of agricultural products gross sales between $100,000 and $240, 999 and the principal operator who reports his/her occupation as being primarily farming. There are 12 farms and 38,123 acres.

Small Family Farms, Farming Occupations/Lower Sales have market value of agricultural products gross sales of less than $100,000, and the principal operator who reports his/her occupation as being primarily farming. There are 92 farms and 49,764 acres.

Small Family Farms, Limited-Resource have a market value of agriculture products sold gross sales of less than $100,000, and the total principal operator household income of less than $20,000. There are 86 farms and 17,142 acres.

Small Family Farms, Residential/lifestyle have market value of agricultural products gross sales of less than $100,000, and the principal operator who reports his/her occupation as other than farming. There are 230 farms and 64,474 acres.

Small Family Farms, Retirement have market value of agricultural products gross sales of less than $250,000, and the total principal operator who reports being retired . There are 154 farms and 46,149 acres.

Crook County Farm Operations 2007 Census of Agriculture	
Data Item	**Value**
Large Family Farms – Acres	61,976
Large Family Farms – Number of Operations	17
Non family farms – acres	303,133
Non family farms – Number of Operations	19
Small Family Farms, Farming Occupations/Higher Sales – Number of Acres	38,123
Small Family Farms, Farming Occupations/Higher Sales – Number of Operations	12
Small Family Farms, Farming Occupations/Lower Sales – Acres	49,764
Small Family Farms, Farming Occupations/Lower Sales – Number operations.	92
Small Family Farms, Limited-Resource – Acres	17,142
Small Family Farms, Limited-Resource – Acres – Number of	86
Small Family Farms, Residential/lifestyle – Acres	64,474
Small Family Farms, Residential/lifestyle – Number of operations	230
Small Family Farms, Retirement – Acres	46,149
Small Family Farms, Retirement – Number of Operations	154
Source: NASS Census Of Agriculture 2007	

Land Use

The agriculture land us consists of 974,252 acres. The major uses of the cropland are for the production of small grains, hay, grass seed and livestock grazing.

Crook County Land Use	
CROPLAND - ACRES	79,018
CROPLAND - NUMBER OF OPERATIONS	432
IRRIGATED - ACRES	73,242
IRRIGATED - NUMBER OF OPERATIONS	492
PASTURELAND - ACRES	695,033
PASTURELAND - NUMBER OF OPERATIONS	492
Includes rangeland	
WOODLAND - ACRES	34,866
WOODLAND - NUMBER OF OPERATIONS	91
Includes natural or planted woodlots	
Source: NASS Census Of Agriculture 2007	

Land Conversion

The number of Crook County farms have increased while the size of farms have decreased. The number of farms in Crook County has increased from 334 in 1978 to 622 in 2007. The average size of farms is decreasing down from an average of 2,580 acres in 1978 to 1,224 acres in 2007. These changes are the direct result of the sub-division of larger agriculture operations to small-scale farms.

Tribes & Treaty Rights

For centuries preceding western settlement, Columbia Basin Tenino and Wyam Indians lived, fished, hunted and traded in the region. The Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakima Indian Nation are the tribes in the Columbia Basin with 1855 Columbia River Treaty rights to anadromous fish.

Resource concern: Soils

Soil Survey

The Natural Resources Conservation Service has published three Soil Surveys that cover all or parts of Crook County. Published Soil Surveys:

- OR618 - Crook County Area, Oregon

- OR666 Trout Creek-Shaniko Area

Source: http://www.or.nrcs.usda.gov/pnw_soil/or_data.html

Common Resource Areas

The USDA has developed a method of characterizing geographical areas that share similar natural resource characteristics known as common resource Areas. These area are defined as geographical area where local resource concerns, problems or treatment needs are similar. These areas are considered a subdivision of an existing Major Land Resource area (MLRA) Landscape conditions, soil climate human considerations, and other natural resource information are used to determine the geographic boundaries of a common Resource Area.

10.12 - Central Rocky and Blue Mountain Foothills - Cool Dry Blue Mountain Foothills: This unit is characterized by rangeland soils on hills and mountains associated with basalt. The dominant soils are those of the Searles, Redcliff, Choptie, and Madeline series. The temperature regime is frigid, and the moisture regime is aridic. The mean annual precipitation is 10 to 12 inches. The vegetation is dominantly Wyoming big sagebrush and bluebunch wheatgrass and a lesser amount of Idaho fescue.

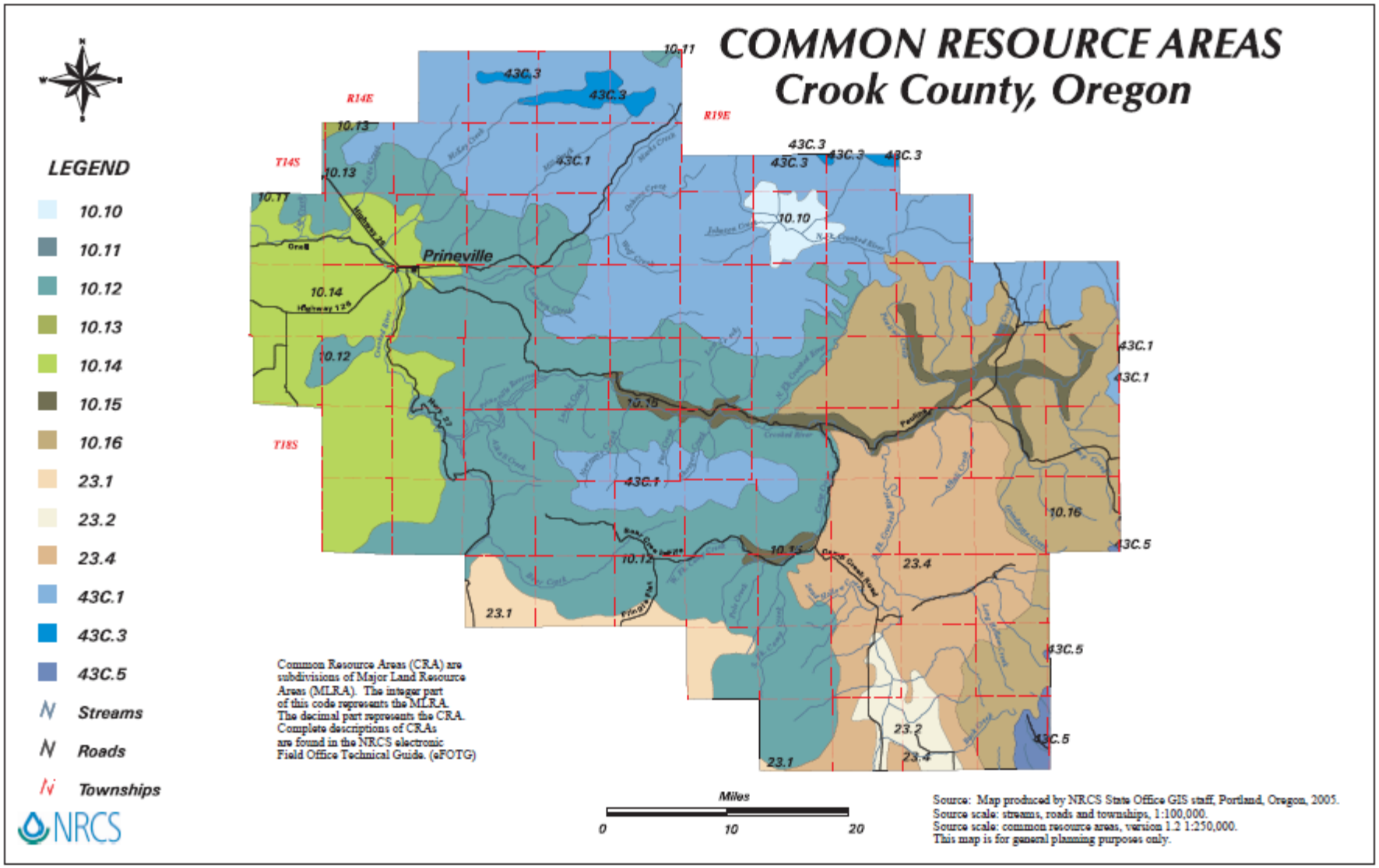
10.14 - Central Rocky and Blue Mountain Foothills - Bend-Redmond Lava Plains: This unit is characterized by moderately deep and shallow soils that formed in ash from Mt. Mazama and are underlain by basalt. Most areas are used for irrigated pasture and hay. Slopes are nearly level to undulating. The dominant soils are those of the Deschutes and Deskamp series. The soils are sandy loam or loamy sand throughout. The temperature regime is mesic, and the moisture regime is aridic.

10.16 - Central Rocky and Blue Mountain Foothills - Cool Moist Blue Mountain Foothills: This unit is characterized by rangeland soils on hills and mountains associated with basalt. It is similar to the Lava Fields unit except that this unit has higher precipitation and a xeric soil moisture regime. The dominant soils are those of the Ateron, Durkee, Menbo, Merlin, and Observation series. The temperature regime is frigid, and the moisture regime is xeric. The mean annual precipitation is 12 to 20 inches. The vegetation is dominantly mountain big sagebrush and Idaho fescue.

23.1 - Malheur High Plateau - Ashy Pluvial Lake Basins: This unit is characterized by cold basins that contain significant amounts of volcanic ash. The basins are Millican Valley and Fort Rock Basin. The temperature regime is frigid, and the moisture regime is aridic. The dominant soils are those of the Fort Rock, Bonnick, Abert, Gardone, and Borobey series. Most of the soils are well drained. Few wetlands are present.

23.4 - Malheur High Plateau - High Lava Plains: This unit is on basalt plateaus and escarpments of fault-block Mountains. The temperature regime is frigid or mesic, and the moisture regime is primarily aridic. The soils typically are shallow or moderately deep to bedrock or a cemented pan and have a strongly developed argillic horizon. The vegetation is dominantly low sagebrush, Wyoming big sagebrush, Idaho fescue, Thurber needlegrass, and bluebunch wheatgrass. Playas, small intermittent lakes, and clay with high shrink-swell potential are common in the depressions.

43C.1 - Blue and Seven Devils Mountains - John Day-Clarno Highlands: This unit is characterized by forest land that is underlain by the John Day/Clarno Formation. The temperature regime is frigid, and the moisture regime is xeric. The vegetation is dominantly ponderosa pine and scattered Douglas-fir. The amount of volcanic ash on the soils is minimal. The soils typically are clayey and have a strongly developed argillic horizon.


COMMON RESOURCE AREAS
Crook County, Oregon
LEGEND
10.10
10.11
10.12
10.13
10.14
10.15
10.16
23.1
23.2
23.4
43C.1
43C.3
43C.5
Streams
Roads
Townships
NRCS
Prineville
R14E
R19E
T14S
T18S
Common Resource Areas (CRA) are subdivisions of Major Land Resource Areas (MLRA). The integer part of this code represents the MLRA. The decimal part represents the CRA. Complete descriptions of CRAs are found in the NRCS electronic Field Office Technical Guide. (eFOTG)
Miles
0
10
20
Source: Map produced by NRCS State Office GIS staff, Portland, Oregon, 2005.
Source scale: streams, roads and townships, 1:100,000.
Source scale: common resource areas, version 1.2 1:250,000.
This map is for general planning purposes only.

Resource Concern Water Quality & Quantity

Of the 270 miles of streams and rivers within Crook County, most are listed on the 303d list. In addition, federally listed salmon and steelhead were introduced into the Crooked River below Bowman Dam in 2008. Prior to this reintroduction, there were no listed fish species in the Crooked River drainage.

Climate

Prineville receives 10 inches of rain per year. The number of days with any measurable precipitation is 75. On average, there are 204 sunny days per year. The July high is around 86 degrees. The January low is 21.

Climate	Prineville, OR
Rainfall (in.)	10.1
Snowfall (in.)	12.6
Precipitation Days	75
Sunny Days	204
Avg. July High	86
Avg. Jan. Low	20.6
Elevation ft.	2,840

Source: http://www.bestplaces.net/climate/city/oregon/prineville

303(d)-Listed Streams

Of the 270 miles of streams and rivers within Crook County, most are listed on the 303d list for temperature and sediment. In addition, federally listed salmon and steelhead were introduced into the Crooked River below Bowman Dam in 2008. Prior to this reintroduction, there were no listed fish species in the Crooked River drainage.

A number of stream segments in Crook County have been declared water quality limited by Oregon's Department of Environmental Quality (DEQ) under Section 303(d) of the Clean Water Act are listed in the Crooked River Agricultural Water Quality Management Area Plan, 3rd Biennial Revision January 12, 2010 (See next page)

Water quality standards are exceeded primarily for temperature with some streams exceeding pH and dissolved oxygen. Of these, temperature, flow, and pH primarily are summer concerns. Dissolved oxygen is primarily a summer/fall concern. Exceeding these standards indicate potential problems for fish.

A copy of the plan and progress reports can be found at:
http://www.oregon.gov/ODA/NRD/water_agplans.shtml#lwrdes

Water Quality Limited Streams

On the next page is the location of exceedances of Oregon Water Quality Criteria in the Management Area listed on the 2004/2006 list. All exceedances are of the temperature standard unless noted otherwise.

Subbasin	Streams
Lower Crooked River	Crooked River to Baldwin Dam (Mile 0-51) *and pH* Crooked River: Baldwin Dam to Prineville Reservoir (51-70)– *total dissolved gas only* Canyon Creek (0-5.5) Hamilton Creek (0-1.7) Harvey Creek (0-1.4) Little Hay Creek (0-3.6) Little McKay Creek (0-6.7) Marks Creek (0-17.1) McKay Creek (0-19.5) Mill Creek (0-11.5) Mill Creek, East Fork (0-7.6) Mill Creek, West Fork (0-4.9) Ochoco Creek (0-36.4)
Upper Crooked River	Allen Creek (Mile 0-10.1) Bear Creek (0-34.3) Cow Creek (0-7.2) Crazy Creek (0-3.5) Crooked River: Prineville Reservoir to North Fork Crooked R. (82.6-109.2)– *also pH* Crooked River, North Fork (0-44.7)
	Deep Creek (0-10.6) Deer Creek above private reservoir to headwaters (0.9-4) Double Corral Creek (0-5.4) Fox Canyon Creek (0-6.8) Fox Creek (0-4.9) Gray Creek (0-6.7) Happy Camp Creek (0-6.7) Horse Heaven Creek (0-14) Howard Creek (0-9.5) Indian Creek (0-9.1) Jackson Creek (0-5.9) Klootchman Creek (1-5.3) Little Horse Heaven Creek (0-2.9) Little Summit Creek (0-10) Lookout Creek (0-1.5) Lytle Creek (0-4.2) Peterson Creek (0-10.7) Porter Creek (0-4.5) Shotgun Creek (0-5.9) Toggle Creek (0-5.3) Wickiup Creek (0-8.6) Wildcat Creek (0-4.3)
Beaver Creek/South Fork Crooked	Beaver Creek, South Fork (Mile 0-26.4) Begg Creek (0-2.2) Beaverdam Creek (0-10.8) Dippingvat Creek (0-7.7) Dry Paulina Creek (0-13.1) East Wolf Creek (0-3.3) Powell Creek (0-12.7) Rager Creek (0-8.5) Roba Creek (0-7.2) South Fork Crooked River (0-18) Sugar Creek (0-11.5) Wolf Creek (0-17.1) Wolf Creek, North Fork (0-10.3)
Note: River miles are measured from the mouth; the mouth is designated as Mile 0.	

Water Resources

Other water quality and quantity issues covering irrigated lands, water rights and irrigation districts, stream flows, groundwater and drinking water are addressed in the following, 8 - Digit Hydrologic Unit Watershed Profiles:

- Upper Crooked – 17070304,
- Lower Crooked – 17070305,
- South Fork Crooked – 17070303
- Trout – 17070307

Source: http://www.or.nrcs.usda.gov/technical/watershed-resources.html

Irrigation

Irrigation is an important aspect to agriculture in Crook County today. The table below is broken down by the number of irrigators and acres irrigated. There are 73,242 acres irrigated with 492 operations dependant on irrigation to grow crops.

Crook County Agriculture Irrigated Acres and Number of Operations		
Acres & Operations	**Acre Range**	**Units**
Irrigated - Acres	2,000 Acres or More	4,470
Irrigated - Number of Operations	2,000 Acres or More	13
Irrigated - Acres	1,000 to 1,999 Acres	438
Irrigated - Number of Operations	1,000 to 1,999 Acres	107
Irrigated - Acres	1.0 to 9.9 Acres	2,734
Irrigated - Number of Operations	1.0 to 9.9 Acres	152
Irrigated - Acres	10.0 to 49.9 Acres	3,281
Irrigated - Number of Operations	10.0 to 49.9 Acres	38
Irrigated - Acres	100 to 139 Acres	1,856
Irrigated - Number of Operations	100 to 139 Acres	23
Irrigated - Acres	140 to 179 Acres	1,928
Irrigated - Number of Operations	140 to 179 Acres	18
Irrigated - Acres	180 to 219 Acres	39,823
Irrigated - Number of Operations	180 to 219 Acres	38
Irrigated - Acres	220 to 259 Acers	1,205
Irrigated - Number of Operations	220 to 259 Acers	7
Irrigated - Acres	260 to 499 Acers	8,112

Crook County Agriculture Irrigated Acres and Number of Operations		
Acres & Operations	**Acre Range**	**Units**
Irrigated - Number of Operations	260 to 499 Acers	35
Irrigated - Acres	50.0 to 69.9 Acers	494
Irrigated - Number of Operations	50.0 to 69.9 Acers	12
Irrigated - Acres	500 to 999 Acers	7,276
Irrigated - Number of Operations	500 to 999 Acers	20
Irrigated - Acres	70.0 to 99.9 Acers	1,625
Irrigated - Number of Operations	70.0 to 99.9 Acers	29
Irrigated - Acres	Total Acers	73,242
Irrigated - Number of Operations	Total Operations	492
Source: NASS Census Of Agriculture 2007		

Resource Concerns: Air and Energy

Agriculture producers have become more aware of energy as a resource concern. Energy is an issue in terms of fuel costs for agricultural operations and cost and availability of electricity for pumping irrigation water and indirect energy costs for fertilizer and chemicals . Opportunities to produce energy on-farm that did not exist previously include solar, biomass and manure.

Some of the irrigation districts in the Deschutes Basin have been working to put some of their canals into pipes. This provided the opportunity to provide gravity pressurized water to the farms to reduce the pumping needs. The Wy'East Save Water – Save Energy program as assisted irrigators to implement energy conservation measures such as scientific irrigation scheduling and the installation of variable speed drives for pumps. This saves irrigators approximately 10 to 20 percent on water and energy pumped.

Utilities serving Crook County include Central Electric Cooperative and Pacific Power and Light. Both utilities have energy efficiency and conservation program targeted at agriculture energy.

The NRCS policy has recently recognized energy as a resource concern:
(1) Improving the efficiency of energy use;
(2) Conserving energy;
(3) Producing renewable energy;
(4) Producing biomass energy feed-stocks in a sustainable manner.

Renewable Energy
The primary energy concern in the installation of wind farms throughout the county. Currently a large wind farm is proposed in the West Butte area in South Central Crook County. The potential for this wind farm to compromise sage grouse habitat has been an ongoing debate throughout the county.
In addition to wind energy, Co-generation plants have also been proposed within the county. There is a large supply of biomass within the county in the form of timber residue and juniper trees but the transportation cost of these fuels has been the limiting factor. At this time, none of the proposed Co-Gen plants have been built but every few years a new developer shows up with a new proposal.

Air Quality
Air resource concerns are intermittent field burning and forest fire smoke. There is no large air fouling industries in Crook County.

Resource Concerns: Plants and Animals:

Rangeland
A major concern in recent years is the spread of juniper over much of the range. Prior to 1900, juniper was mostly confined to rocky south-facing slopes, ridges, and dry canyons. Since 1934, the area dominated by juniper has increased significantly. Forest maps and landscape photos made since 1900, conversations with old-time residents, and personal observations support this contention. Overgrazing by an extremely large number of livestock from 1890 to 1920, followed by the severe drought of the 1930's, brought about deterioration of the range and provided space for juniper encroachment. During periods of good moisture and lack of fires, reproduction of juniper rapidly increased. According to ring counts made of representative trees from present-day juniper stands are less than 80 years old.

Juniper Trees

Approximately 85% of the 704,000 acres of privately owned rangeland is under threat from encroaching juniper trees. Most of these acres were not historical juniper sites but have become dominated by this invasive tree since natural fire has been removed from the ecosystem.

Juniper trees intercept and/or transpire about 75% of the effective precipitation on a site where the trees have become dominate. Since water is the limiting factor on most of these range sites, the effect of juniper trees is gross. In addition to using or reducing the effective precipitation, the trees also have a major influence on the general ecology of the region.

Most of the range in Crook County was historically sagebrush steppe. As the trees encroach into these areas, the brush component is the first to be eliminated followed by the grasses. Eventually only a monoculture of juniper trees will remain and the ecologic function of the land has been forever altered.

Many forms of wildlife and plants depend on the sagebrush steppe for most or all of their life cycle. As the sage/steppe disappears, many of the plants and animals disappear as well. Sage grouse are a prime example of one of the more visible of these species. As juniper trees reach about 15% cover in a sage

grouse area, the grouse quit using the site. There are many other sagebrush obligate species of birds and animals that can be affected the same way.

Much of the almost 77,000 acres of forest land in Crook County is in poor health. Overstocked forest, wildfire, disease and bug damage are all concerns on these acres.

- The deteriorated range plant community impacts other resource concerns:
- Reduced connectivity between habitats and wildlife populations.
- Reduced ability of uplands to retain and slowly release runoff and maintain soil stability.
- Loss of riparian and floodplain function reduces habitat complexity and diversity and contributes to extreme seasonal stream flows and temperatures.

Riparian / Buffer land use

Fish production in most of the lower Deschutes River sub-basin is limited by water quality and quantity. Habitat problems identified as limiting threatened and endangered anadromous fish production in the tributary streams. Resource issues include low stream flow, unstable stream banks, inadequate stream shading, shallow pools, elevated water temperature, low amount of pool habitat, and gravel impacted by fine sediment.

Stream channel degradation is common. The cause is due in part to over 100 years of livestock impacts on riparian vegetation. This combined with damaging flood events has resulted in habitat problems we see today. Wide, shallow channels, lack of pools and lack of healthy riparian plant communities, particularly the shortage of the woody component, all contribute to the water quality and quantity problems. These problems can be solved with riparian buffer systems.

The Conservation Reserve Enhancement Program (CREP) and Conservation Reserve Program (CRP) continuous sign-up each offers an opportunity to create riparian buffer systems. They directly address water quality and habitat limitations.

Confined Animal Feeding Operations

No Confined Animal Feeding Operations (CAFOs) is located in Crook County.

Threatened and Endangered Species

Threatened and Endangered Species are found in the NRCS Field Office Technical Guide.

Section 3 Natural Resources Progress Analysis

This section looks at where conservation partners are focusing their efforts, what overall conservation progress in the county during from 2006 – 2010 by the conservation partners and NRCS. While resource concerns address the application of conservation applied on the ground, this section addresses future resource concerns. Finally, an analysis as to where NRCS should invest conservation program incentives in future years.

Conservation Practices Applied 2006 - 2010

NRCS invested about 3million dollars through its Environmental Quality Incentives Program (EQIP) in the last 5 years. A large portion of that was used to make improvements to on farm irrigation systems with mainlines, rangeland improvement benefiting sage grouse and riparian areas.

Integrated Data Enterprise Analysis

The NRCS integrated Data Enterprise Analysis (IDEA) provides a summary of practices planned or applied in Crook County from 2006 through 2005. This data is used for workload planning, progress tracking, trends, management reviews, and quality assurance. The conservation practices applied have benefited most resource concerns.

Integrated Data Enterprise Data					Benefits					
Pr. Code	Practice Name	Pr. Unit	Applied Amount	Applied Count	Soil	Water	Animal	Plants	Air	Energy
100	Comprehensive Nutrient Management	no	1	1	x	x			x	x
327	Conservation Cover	ac	68	1	x	x	x	x		
328	Conservation Crop Rotation	ac	331	10	x	x	x	x	x	
314	Brush Management	ac	8840	77		x	x	x		
338	Prescribed Burning	ac	1665	16		x	x	x	x	
382	Fence	ft	145299	45			x	x		
391	Riparian Forest Buffer	ac	191	35	x	x	x	x	x	
430HH	Irrigation Water Conveyance, Pipeline	ft	13404	18		x		x		x
442	Irrigation System, Sprinkler	ac	359	11		x		x		x
449	Irrigation Water Management	ac	198	15		x		x		x
472	Access Control	ac	346	44			x			
511	Forage Harvest Management	ac	39	2	x	x		x	x	
516	Pipeline	ft	16071	6		x	x			
528	Prescribed Grazing	ac	78876	70	x	x	x	x		
550	Range Planting	ac	671	16	x	x	x	x		
574	Spring Development	no	7	6		x	x	x		
587	Structure for Water Control	no	34	18	x	x		x		x
590	Nutrient Management	ac	39	2						
595	Integrated Pest Management (IPM)	ac	20	1	x	x	x	x	x	x
614	Watering Facility	no	5	4		x	x			
642	Water Well	no	1	1		x	x	x		
645	Upland Wildlife Habitat Management	ac	79081	89	x	x	x	x	x	
666	Forest Stand Improvement	ac	200	6	x	x	x	x	x	x
633	Waste Recycling	ac	42	3		x		x		x
472	Access Control	ac	15	7	x	x	x			
CCIA	Conservation Completion Incentive First Year	no	4	4	x	x	x	x	x	x
CCIB	Conservation Completion Incentive Second Year	no	8	8	x	x	x	x	x	x

Partner Conservation Activities

The conservation activity in Crook County is the result of a cooperative effort by the Natural Resources Conservation Service (NRCS), and its conservation partners. All of these groups working either

together or independently have implemented countless projects involving restoration of uplands, riparian areas, irrigation systems, wildlife habitat etc. over the last 5-10 years.

The leadership role of the Crook County Soil and Water Conservation District and the members of its staff cannot be over-stated in maintaining the relationship with each of the organizations and agencies listed below.

The primary focus of efforts in the last 5-10 years in Crook County has been split between working on upland restoration type projects and in-stream type projects. Much of the efforts of the watershed council through funding from the **Oregon Watershed Enhancement Board** has been aimed at stream bank stabilization. **Bureau of Land Management** has focused mostly on upland work specifically juniper control and rangeland improvements. **US Forest Service** has contributed technical assistance for some of the instream work undertaken by NRCS and the SWCD. They have also assisted with work done by the watershed council in stream. **Oregon Department of Forestry** (ODF) has implemented a fuels reduction program and some insect mitigation funding in the forests of Crook County. **Oregon Department of Fish & Wildlife** has been an important partner for NRCS both in early sage grouse habitat projects and currently through the Maury Mountain Mule Deer Initiative. **Oregon State University Extension** has provided countless hours of technical support for many of the juniper/ upland grant application and projects submitted by the SWCD and NRCS. Tim Deboot specifically has been an excellent partner and provided the scientific foundation for much of the work we are undertaking today. **Deschutes Resource Conservancy** has worked tirelessly to improve irrigation efficiencies on McKay Creek and others and is currently working on resubmitting an AWEP project to secure NRCS funding to assist with on-farm irrigation associated with Mckay Creek. **Deschutes Basin Land Trust** has partnered with NRCS and a landowner to implement a Farm and Ranch Protection Program near Mill Creek.

Resource Concern Trend & Need for Additional Work

This section addresses the remaining work needed to address resource concerns.

Major Resource Concern: Water Quantity and Quality

Below are specific resource concerns affecting water quantity and quality:

Resource Concerns	Resource Trend & Need For Additional Work
Water Quantity – Insufficient Flows in Watercourses	Water flows are not consistently available in sufficient quantities to support ecological processes and land use and management. Increase minimum flows.
Water Quantity – Inefficient Water Use on Irrigated Land	Limited water supplies are not optimally utilized. All or nearly all summer flow is allocated to consumptive use by irrigation pumping from the watershed creeks. The application water efficiency practices such as intensive irrigation and water management using technology like soil moisture probes, properly designed irrigation systems and better irrigation practices in

Resource Concerns	Resource Trend & Need For Additional Work
	general are needed.
Water Quality – Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality. Restore and maintain upland vegetative conditions to improve overall watershed health.

Major Resource Degraded Plant Condition

Resource Concerns	Resource Trend & Need For Additional Work
Degraded Plant Condition - Inadequate structure and composition	Rangeland in low ecological condition. Over-grazing at the turn of the 20th century has impacted forage production. The degradation of uplands has impacted the ability of the watersheds to capture, store and safely release water. **Juniper invasion** has reduced forage availability and reduced water availability altering the hydrologic cycle throughout the county. Other **noxious and invasive weeds** are present. The County Weed Department has initiated education and incentives on weed control. Unique plant communities like riparian buffers have been degraded affecting wetland habitat and unique plant communities.
Degraded Plant Condition - **Productivity, health and vigor**	On rangeland the invasion of cheatgrass and medusahead rye and other annual grasses into bunchgrass stands, as well as an increasing number of junipers and sagebrush have reduced the forage production. Forest health - overstocked stands create fire hazards.

Resource Concerns for Fish and Wildlife

Resource Concerns	Resource Trend & Need For Additional Work
Water Quality – Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality. Exceeds state standards for salmonids rearing habitat. >64 F.

Resource Concerns	Resource Trend & Need For Additional Work
Fish and Wildlife – Inadequate Water	The quantity and quality of water is unacceptable for the species or guild of species of concern. Provide efficient fish passage to all historic fish habitat. Protect, restore and maintain 1,971 acres of riparian habitat along 219 miles of stream. (Deschutes Subbasin Plan, Management Plan MP-54)
Fish and Wildlife – Threatened and Endangered Fish and Wildlife Species: Species Listed or Proposed for Listing under the Endangered Species Act	The site includes individuals, habitat or potential habitat for one or more fish or wildlife species listed or proposed for listing under the Endangered Species Act. Includes: Winter Steelhead, Pacific Lamprey (species of concern). Protect, restore and maintain suitable habitat conditions for all species life history stages and migratory patterns. (Deschutes Subbasin Plan, Management Plan MP-54)

Major Resource Concern: Inefficient Energy Use & Air Quality Impacts

Resource Concerns	Resource Trend & Need For Additional Work
Inefficient Energy Use – Farming/ranching practices and field operations	Inefficient use of energy in field operations headquarters increases dependence on non-renewable energy sources that can be addressed through improved efficiency and the use of on-farm renewable energy sources. Irrigation pumping systems are the largest user of electrical energy. As the cost of energy increases, climate change and overall cost of farming irrigations have begun to take advantage of energy efficiency programs offered through utilities, Bonneville Power Administration and Oregon Energy Trust.

Major Resource Concern: Degraded Plant Condition

Resource Concerns	Resource Trend & Need For Additional Work
Degraded Plant Condition - Inadequate structure and composition Rangeland in low ecological condition	Over-grazing at the turn of the 20th century has impacted forage production. The degradation of uplands has impacted the ability of the watersheds to capture, store and safely release water. Juniper invasion has reduced forage availability and reduced water availability altering the hydrologic cycle. Unique plant communities like riparian buffers have been fragmented and degraded affecting wetland habitat and unique plant communities.

Resource Concerns	Resource Trend & Need For Additional Work
Human - Land conversion and development.	**Working Farms & Ranch Lands Preservation.** Land - Change in Land Use. The degree to which implementing the conservation practice is expected to cause an increased change from one land use to another. The urbanization of agriculture land has created very small farms often referred to a hobby farms used for pasture and small livestock operations. The impact includes pasture management, manure, weed, riparian, and irrigation water management.

NRCS Future Conservation Program Investment

Historically Jefferson NRCS has made funding investments based on funding allocation awarded from NRCS Oregon State Office. Given the demand for conservation program funding the

Oregon NRCS offers 26 programs that include Financial Assistance Programs, Grant Programs, Stewardship Programs, Easement Programs and Conservation Technical Assistance Programs.

Jefferson Field office will contract all available funding to address resource concerns identified in this strategic plan. The specific programs include:

Environmental Quality Incentives Program (EQIP) - Voluntary financial and technical assistance for structural and management conservation practices on working agricultural lands.

EQIP Organic Initiative - Special EQIP funding is available to organic growers that are certified organic, transitioning organic or those who make under $5,000 of gross organic product farm sales.

EQIP Agricultural Water Enhancement Program (AWEP) - A program under the Environmental Quality Incentives Program (EQIP) through which NRCS may enter into partnership agreements with eligible entities to conserve ground and surface water and/or improve water quality in a priority area or region.

Conservation Stewardship Program (CStP) (2008 Farm Bill)- Voluntary program that encourages producers to address resource concerns in a comprehensive manner by undertaking additional conservation activities and improving, maintaining, and managing existing conservation activities.

Conservation Reserve Program (CRP) - Administered by the Farms Service Agency (FSA), it is a program that encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to permanent vegetative cover.

Projected future investments for NRCS conservation programs through 2013 is estimated to be $2,158,915

NRCS Conservation Programs	Investment 2011 - 2016
Environmental Quality Incentives Program (EQIP)	
EQIP Organic Initiative	0
EQIP Agricultural Water Enhancement Program (AWEP)	
Conservation Stewardship Program (CStP)	
Wildlife Habitat Incentive Program	
Conservation Reserve Enhancement Program	
Total	

Section 4: Prioritization of Natural Resource Problems and Solutions

In Section 4, three areas of resource concern were identified as the primary focus for conservation work in Crook County over the next five years.

In prioritizing the resource concerns the following question asked:

- Does the resource concern support the NRCS vision and mission?
- What is the capability of the field office and partners to achieve identified goals?
- What are the values and expectations of the Conservation District and Local Work Group?
- Does the cost to implement the projects feasible with the amount of funding that can be leveraged by NRCS and partners?
- What legislation and regulations impact the resource concerns identified?

In July 2010, NRCS held special Local Work Group meetings called Strategic Conservation Community Meetings to provide a forum for the development of partnerships and identify opportunities to strategically invest to effectively solve natural resource problems in Crook County. The desired outcome was to identify natural resource problems, set priorities, and determine desired future outcomes. Below are the Priority resource concerns the Local Work Group identified.

Priority Natural Resource Concern	Description of Concern
Soil Erosion – Excessive bank erosion from streams, shorelines, or water conveyance channels	Sediment from banks or shorelines threatens to degrade water quality and limit use for intended purposes including wildlife habitat. Restore and maintain vegetative conditions to improve overall watershed health function and connectivity. Restore and maintain healthy riparian and floodplain areas with good habitat complexity and species diversity to meet biological objectives.

Priority Natural Resource Concern	Description of Concern
Water Quantity – Inefficient water use on irrigated land	Limited water supplies are not optimally utilized. Indicators are tailwater recovery and ponds. Piping for irrigation to improve conservation, maintenance and control weeds.
Water Quantity – Insufficient Flows in Watercourses	Water flows are not consistently available in sufficient quantities to support ecological processes and land use and management. Irrigation water conservation with improved irrigation efficiencies through structures, piping and irrigation water management, also benefiting energy efficiency.
Water Quality – Harmful Temperatures of Surface Water	Undesired thermal conditions degrade surface water quality. Priority streams (Deschutes Subbasin Plan, Assessment pg 8-31) Crooked MS-5 through 14, McKay Cr 1-3, Allen Cr, Little McKay Cr Ochoco Cr -1.
Plant Condition – Noxious and Invasive Plants	The site has noxious or invasive plants present. Remove noxious weeds and reduce invasive conifer, including juniper.
Plants not adapted or suited	Plants are not adapted and/or suited to site conditions or client objectives. Control invasive weeds. Restore and maintain upland vegetative conditions to improve overall watershed health.
Plant Condition – Wildfire Hazard	The kinds and amounts of fuel loadings (plant biomass) pose risks to human safety, structures, and resources, should wildfire occur.
Fish and Wildlife – Threatened and Endangered Fish and Wildlife Species: Fish and Wildlife Species Listed or Proposed for Listing under the Endangered Species Act	The site includes individuals, habitat or potential habitat for one or more fish or wildlife species listed or proposed for listing under the Endangered Species Act. Target species include redband trout, summer steelhead (extirpated), spring chinook (extirpated), bull trout, pacific lamprey (extirpated). Improve or restore sage-grouse habitat and demonstrate that sage-grouse conservation is compatible with the sustainability of working ranches. This approach is based on the principle that focusing resources on a specific problem in the most critical locations on the landscape results in the highest likelihood of affecting sage-grouse populations in the shortest amount of time.
Fish and Wildlife – Inadequate Water	The quantity and quality of water is unacceptable for the species or guild of species of concern. Increase summer flows and channel habitat complexity, remove artificial barriers, restore connectivity to areas where good riparian habitat exists now or did historically.

Priority Natural Resource Concern	Description of Concern
Fish and Wildlife – Habitat Fragmentation	Habitat has insufficient structure, extent, and connectivity to provide ecological functions and/or achieve management objectives. Restore and maintain healthy riparian and floodplain areas with good habitat complexity and species diversity to meet biological objectives. Remove noxious weeds and reduce invasive confer, including juniper, populations to improve riparian areas and watershed health.
Energy	Energy saving from irrigation water management, efficient irrigation system design.

Seventy percent of the privately owned land within Crook County is rangeland and a very large percentage of that land is under the looming threat of loss due to juniper encroachment. We have proven that juniper trees can affect the hydrologic function of rangeland and we have proven that juniper control can immediately improve sage grouse habitat. This is a huge resource concern within a huge area. We need to define a strategic approach to treating this resource concern so our efforts will be effective.

Currently there are many entities working on concerns in the riparian areas but relatively few focusing on privately owned land in the uplands. NRCS has an opportunity to fill this niche while partnering with a multitude of other like minded groups as outlined above.

A strategic approach to juniper encroachment and rangeland hydrologic cycle is crucial to improving the condition of these areas within Crook County.

The current Conservation Implementation Strategy (CIS) focuses on Conant Creek watershed and is working to address all of the resource concerns within the watershed boundary. Crook SWCD and Crooked River Watershed Council have written a grant to OWEB and received funds to partner in this effort. This CIS began in 2011 and is scheduled for completion in 2013. ODFW, BLM and most of the landowners within the watershed are also working as partners on this project.

Upon completion of the Conant Creek Watershed CIS in 2013, the Local Workgroup has identified dwindling aspen stands as a resource concern worthy of our resources. It is probable that a new CIS will be developed to address Plant Condition, Health and Vigor which will focus on restoring aspen within Crook County.

Section 5: Natural Resource Problems and Desired Future Outcomes

"Our goal is not just a sustainable, nutritious, abundant food supply, but also thriving ecosystems that support a diversity of life. In the next century, NRCS will not only continue to tackle familiar challenges like ensuring clean water and healthy soil, but will also rise to meet new issues, such as clean air, clean energy, climate change, and new technology.

--Chief Dave White

This section provides a roadmap that guiding the specific direction to address major resource concerns for the next five years. To describe a successful desired future condition (goal) that communicates an intended result. Well written goals, objectives and strategies are written to describe intended results. These characteristics are as follows:

- **S**pecific actions the field office will attribute to the conservation programs.
- A **m**easurable amount of change. For example, the number of acres a conservation cropping system was applied.
- **A**ttainable ambitious results.
- **R**ealistic prediction of the expected change from the present condition should be significant, while being realistic about the extent of change.
- **T**rackable over time; the next five years.

SET SMART GOALS

When setting goals, they should be:

S	=	specific
M	=	measurable
A	=	attainable
R	=	realistic
T	=	trackable over a specific time period.

Resource Concern

The priority major resource concerns identified by the local conservation partnership include:

- Degraded Plant Condition,
- Threatened and Endangered Fish and Wildlife Species,
- Inefficient Energy Use & Air Quality Impacts,

What is the severity of the problem? Water quantity and plant health and vigor are major attributes of healthy rangeland and critical to maintaining a healthy hydrologic cycle. Crook County is experiencing declining levels of rangeland health, with a major cause being degraded riparian areas that are affecting the water quantity and plant health. Crook County has about 350,000 acres of privately owned rangeland that have been invaded with Juniper trees, with a small percentage of trees directly above or adjacent to streams and other sources of water. In many cases these water sources have been greatly reduced by the change in plant community and the associated downward shift in the hydrologic cycle. Removing the Juniper trees in these areas will address this problem.

Resource Trends. Oregon State University-Extension has done watershed studies and scientifically documented a correspondence between Juniper and water levels, creating a definite demand for

Juniper control to improve water quality and quantity. Stream bank health has been deteriorating in past years, possibly due to upland health, and exhibit unhealthy riparian qualities such as erosion and stream cutting. The Oregon Watershed Enhancement Board has been working on stream bank stabilization. The USFWS has contributed technical assistance for some of the in-stream work undertaken by the NRCS and SWCD.

Major Resource Degraded Plant Condition: Rangeland and Upland Restoration

Desired Future Condition (Goal) The desired future condition are healthy grazing lands capable of sustained use to produce food and fiber, clean water, healthy fish and wildlife populations and social and economic stability.

Objective / Outcome: describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur.

> ***Target Audience****:* Ranchers and other landowners
>
> ***Specific Action:*** Working lands and water provide habitat for diverse and healthy wildlife aquatic species, and plant communities by applying Prescribed Grazing (528) and Upland Wildlife Habitat Management (645). Other practices will be applied as needed.
>
> ***Measurable:*** By 2016 agriculture producers will apply Prescribed Grazing and Upland Wildlife Management on 79,000 acres.

Possible Partnership Participation: Partner dollars will be used to address in-stream issues as identified by the Crooked River Watershed Council. Once the in-stream concerns have been addressed, eligible acres will be enrolled into the CREP program.

Brush control will be used to remove Juniper trees within ¼ mile of springs or seeps and some areas may require rangeland seeding following treatment. Once flows increase, some streams may benefit from spring developments, pipelines and troughs, and fencing for livestock management.

Major Resource Concern: Threatened and Endangered Fish and Wildlife Species: In-Stream Health

Private landowners countywide are willing to participate in riparian improvement as the riparian areas affect water quantity and plant health.

Desired Future Condition (Goal): Improve riparian, wetland, and upland habitats that support healthy and diverse fish and wildlife populations that covers threatened and endangered species, wetlands, and riparian areas.

Objective / Outcome: describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur.

***Target Audience**:* Agriculture producers

Specific Action: Working lands and water provide habitat for diverse and healthy wildlife aquatic species, and plant communities by applying Riparian Forest Buffers (391). Other practices will be applied as needed.

Measurable: By 2016 agriculture producers will apply wetland and upland wildlife habitat management practices on 200 acres.

Partner dollars will be used to address in-stream issues as identified by the Crooked River Watershed Council. Once the in-stream concerns have been addressed, eligible acres will be enrolled into the CREP program.

Major Resource Concern: Inefficient Energy Use & Air Quality Impacts

The **desired future condition** is to expand on-farm energy conservation and renewable energy production and use. Agriculture makes a positive contribution to local air quality and efforts to sequester carbon.

Objective / Outcome: describes what the specific impact of the technical and financial assistance and the degree to which that impact must occur.

***Target Audience**:* Agriculture producers

Specific Action: Implement Agriculture Energy Management Plan - Landscape Criteria (124) on 2 operations. A Landscape Agricultural Energy Management Plan (Landscape AgEMP) contains the strategy by which the producer will explore and address his/her on-farm energy problems and opportunities on the working land. This plan will enable agriculture producers to integrate energy concerns into field office planning assistance and programs to take advantage of public and private utility agriculture energy conservation programs.

Measurable: By 2016 two agriculture producers will demonstrate a positive reduction in on-farm energy consumption.

Section 6: Implementation Strategy

Rangeland and Upland Restoration: Conant Creek Watershed Project

What is the severity of the problem?

The Conant Creek Watershed project is a watershed level Juniper control and spring enhancement project that will improve watershed function and health and will positively influence several resource values including sage steppe and mule deer habitat, water quality, quantity and timing of flow, and forage productivity.

Who is willing to help with this resource concern?

The NRSC is planning to improve the rangeland health with the help of private landowners, Oregon Department of Fish and Wildlife, Crooke River Watershed Council, Oregon Department of Forestry, Bureau of Land Management, United States Fish and Wildlife Services, Crook County Soil and Water Conservation District, Crooked River Weed Management, and potentially other groups interested in the Maury Mule Deer Initiative (Oregon Wildlife Heritage Foundation). The project supports western Juniper reduction recommendations identified for the area in the Crooked River Watershed Assessment (CRWC), Crooked River Agricultural Water Quality Management Plan, (ODA; CCSWCD), Greater Sage Grouse Conservation Assessment and Strategy for Oregon (ODFW), and the Oregon Mule Deer Initiative (ODFW). The project also addresses restoration priorities for the Crooked River Watershed established by the Oregon Watershed Enhancement Board including riparian habitat.

Resource Trends

Juniper encroachment has been increasing in the past several decades. Sporadic efforts have been made but with no measurable positive effect. Dealing with the problem using a strategic approach should create more progressive results.

What are the goals*?*

- Improve rangeland productivity in the Conant Creek Watershed

Juniper will be controlled on 1/3 of the privately owned acres within this watershed for three consecutive years. Areas requiring reseeding, supplemental water or fencing to improve livestock distribution will also be addressed in this three year timeframe. All of the resource concerns in this watershed will have been addressed at the end of this three year window. Partner dollars will be used to address similar resource concerns occurring on publicly owned property within the watershed and all of these concerns will be addressed within a five year timeframe.

Preliminary meetings with most of the partners and landowners have been scheduled and Craig Carr has laid plan work. About three landowners have never worked with USDA so getting them learned on the system, eligibility, customs and practices is needed to be done as painlessly as possible. The first year will be spent clearing obvious areas. In the meantime, they will determine practices needed, such as burning, and then determine any post Juniper work such as replanting/seeding, water, and fencing.

How much funding is needed?

Treating 1,700 acres a year at $124 per acre, $211,000 will be needed annually for the first three years. At the conclusion of the three years, funding will be re-evaluated taking into account progress made and funding used. A timeline for an estimated date of project completion will also be made after the initial three years.