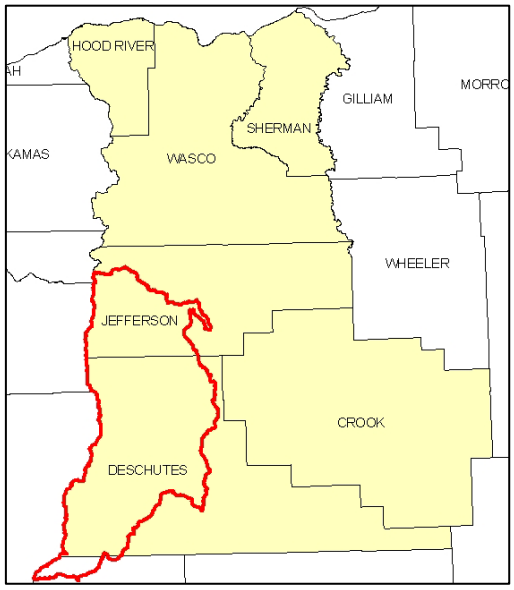
Upper Deschutes - 17070301

8-Digit Hydrologic Unit Profile

FINAL

MAY 2005

Introduction



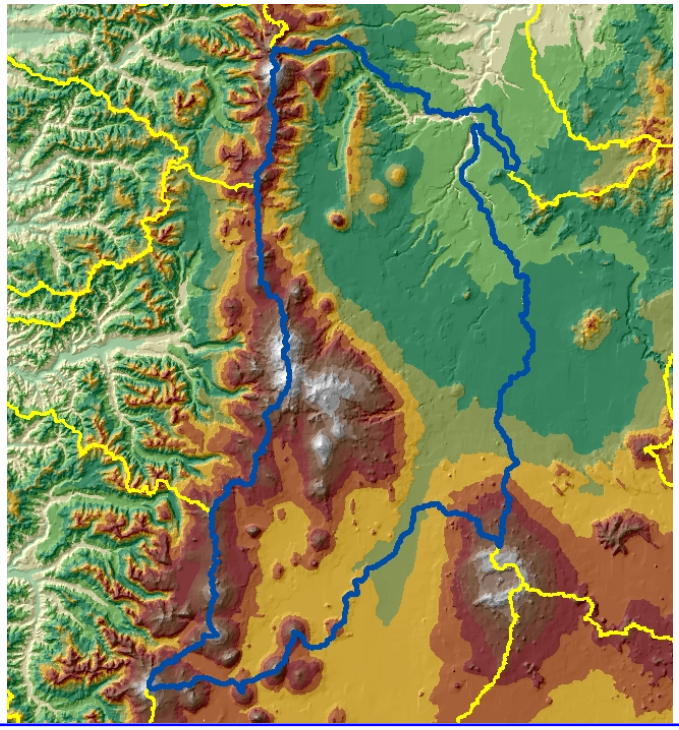
The Upper Deschutes 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1.4 million acres. It extends into three counties, with 70 percent in Deschutes County, 25 percent in Jefferson County, and 5 percent in Klamath County. There are about 1,100 farms in the subbasin, 80 percent of which are less than 50 acres in size, and about 1,800 operators, two-thirds of which are part-time.

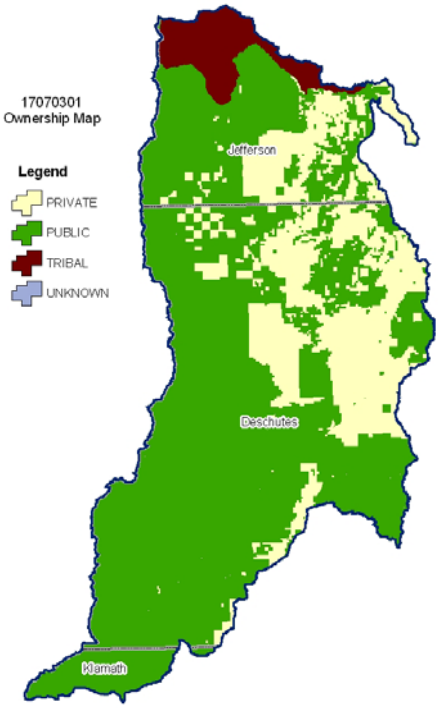
Over 70 percent of the subbasin is forested. Of this, 57 percent is under public ownership. Approximately thirty-five percent of the private forest land is under industrial ownership. Other land uses include range (13 percent), row and specialty crops (7 percent), and grass and alfalfa hay (6 percent).

Conservation assistance is provided by three NRCS service centers, one soil survey office, one resource conservation and development (RC&D) office, and two satellite field offices (Warm Springs Indian Reservation and Hood River).

Profile Contents

Relief Map





Produced by the Water Resources Planning Team Portland, OR

Physical Description

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Land Cover / Land Use (NLCD[12])	Ownership - (2003 Draft BLM Surface Map Set[11])							
	Public		Private		Tribal		Totals	% of HUC
	Acres	%	Acres	%	*	%		
Forest	790,600	57%	172,000	12%	56,100	4%	1,018,700	74%
Grain Crops	*	*	*	*	0	0%	*	*
Conservation Reserve Program (CRP) Land [a]	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	27,300	2%	48,400	4%	*	*	76,700	6%
Orchards/Vineyards/Berries	0	0%	0	0%	0	0%	0	0%
Row Crops	*	*	*	*	0	0%	*	*
Shrub/Rangelands	88,700	6%	88,100	6%	*	*	182,700	13%
Water/Wetlands/ Developed/Barren	74,000	5%	20,100	1%	*	*	98,100	7%
HUC Totals [b]	**980,600**	**71%**	**330,600**	**24%**	**67,000**	**5%**	**1,378,200**	**100%**

**: Less than one percent of total acres. See below for special considerations.*
a: Estimate from Farm Service Agency records and include CRP/CREP.
b: Totals are approximate due to rounding and small unknown acreages.

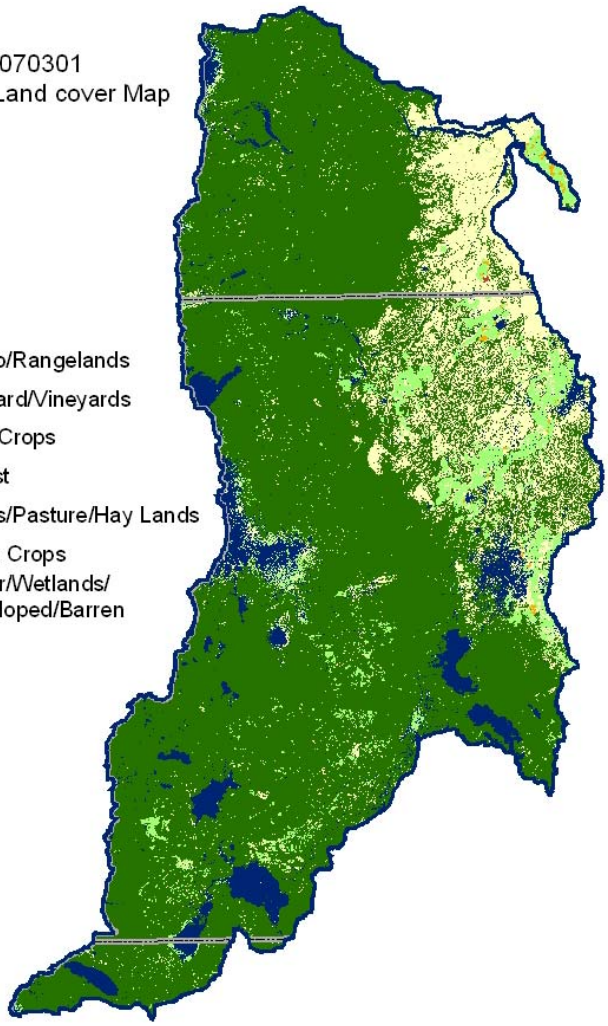
Special Considerations for This 8-Digit HUC:

- Approximately thirty-five percent of the private forest land is under industrial forest ownership.
- 24,000 acres are used for grass and alfalfa hay.
- Row crops and other specialty crops include potatoes, vegetable seed, garlic, mint, and nursery crops.

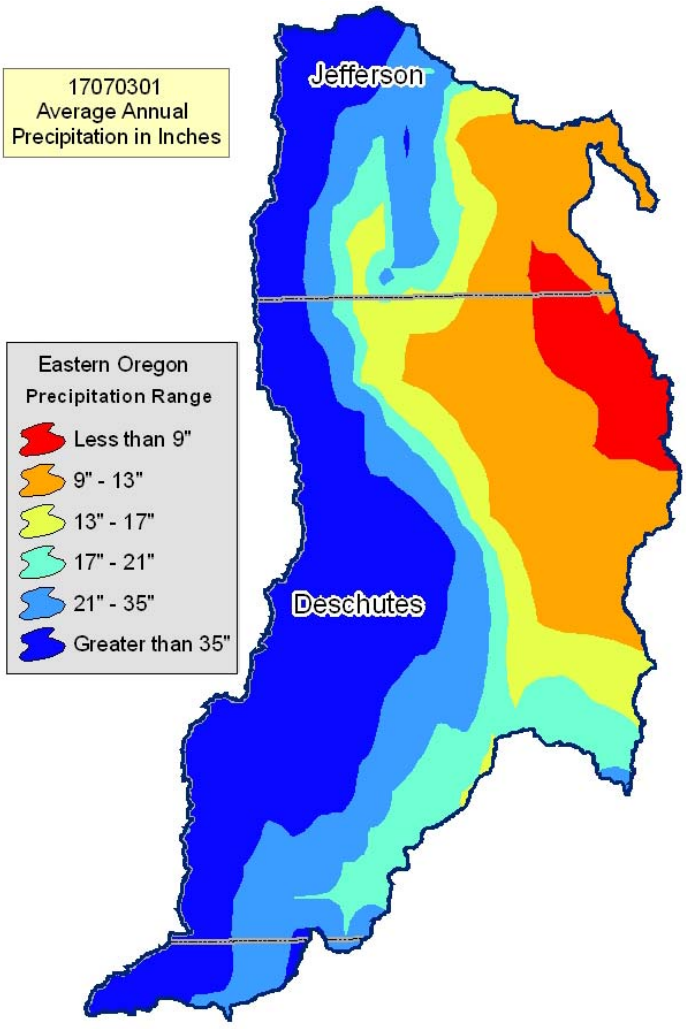
Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	400	1%	0%
	Uncultivated Cropland	15,900	27%	1%
	Pastureland	43,700	73%	3%
	Total Irrigated Lands	**60,000**	**100%**	**4%**

(Continued on following pages)

17070301
Land use/Land cover Map



17070301
Average Annual
Precipitation in Inches



Common Resource Area Map

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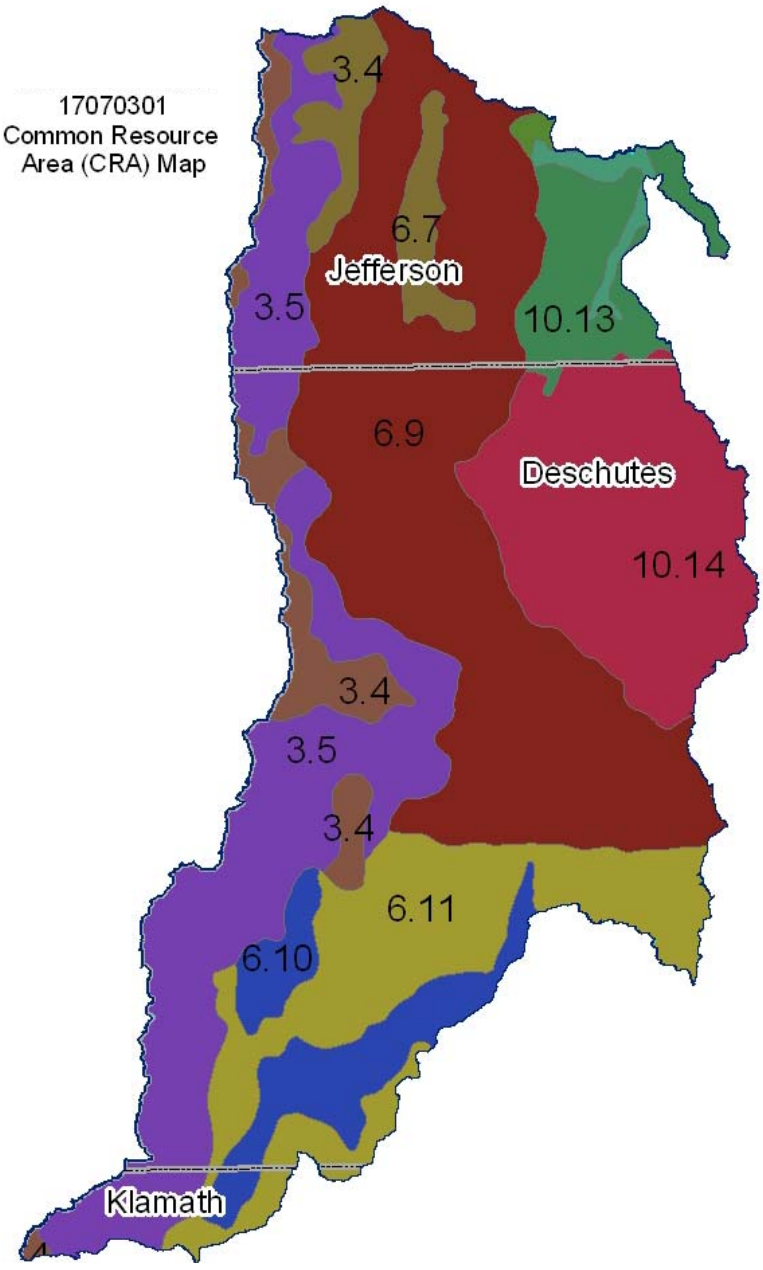
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



3.4 - Olympic and Cascade Mountains - Cascade Subalpine-Alpine: This unit consists of high, glaciated, volcanic peaks that rise above subalpine meadows. It is characterized by barren rock outcroppings, lava flows, and volcanic peaks. Elevation is 5,600 to 12,000 feet. Active glaciation occurs on the highest volcanoes and decreases from north to south. The winters are very cold, and the growing season is extremely short. Flora and fauna adapted to the high elevations include herbaceous and shrubby subalpine meadow vegetation and scattered patches of mountain hemlock, subalpine fir, and whitebark pine.

3.5 - Olympic and Cascade Mountains - Northern Cascade Crest Montane Forest: This unit consists of an undulating plateau punctuated by volcanic buttes and cones that reach a maximum elevation of about 6,500 feet. It is extensively forested with mountain hemlock and Pacific silver fir. The temperature regime is cryic, and the moisture regime is udic. Although this unit has the same moisture and temperature regimes as unit 3.3, this unit is noticeably more moist. The break between units 3.3 and 3.5 is transitional.

6.9 - Cascade Mountains, Eastern Slope - Ponderosa Pine/Bitterbrush Woodland: This unit is characterized by undulating ash-mantled lava flows. The vegetation is dominantly ponderosa pine, antelope bitterbrush, and Idaho fescue. The unit does not have the dominance of lodgepole pine and the coarse pumice fragments that are characteristic of unit 6.1. The temperature regime is frigid, and the moisture regime is xeric.

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 or hay. Slopes are nearly level to undulating. The dominant soils are those of the Deschutes and Deskamp series. The soils are sandy loam and loamy sand throughout. The temperature regime is mesic, and the moisture regime is aridic.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	12,764	41,918
	Well	16,993	50,821
	Total Irrigated Adjudicated Water Rights	29,757	92,739
Stream Flow Data	USGS 14076500 DESCHUTES RIVER, NEAR CULVER, OR	**Total Avg. Yield**	669,499
		May – Sept. Yield	176,955
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	922	---
	303d/TMDL Listed Streams (DEQ)	168	18%
	Anadromous Fish Presence (StreamNet)	0.0	0%
	Bull Trout Presence (StreamNet)	117.7	13%
		ACRES	**PERCENT**
Land Cover / Use[2] Based on a 100-foot stretch on both sides of all streams in the 100K Hydro GIS Layer	Forest	26,303	70%
	Grain Crops	61	0%
	Grass/Pasture/Hay	2,545	7%
	Orchards/Vineyards	0	0%
	Row Crops	4	0%
	Shrub/Rangelands – Includes CRP Lands	4,578	12%
	Water/Wetlands/Developed/Barren	3,837	10%
	Total Acres of 100-foot Stream Buffers	**37,328**	---
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	0	0%
	3 – severe limitations	52,200	83%
	4 – very severe limitations	4,700	7%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	6,000	10%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	0	0%
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%
	Total Croplands & Pasturelands	**62,900**	---

Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	3	0	0	0	0	1
No. of Permitted Animals	685	0	0	0	0	200

Resource Concerns

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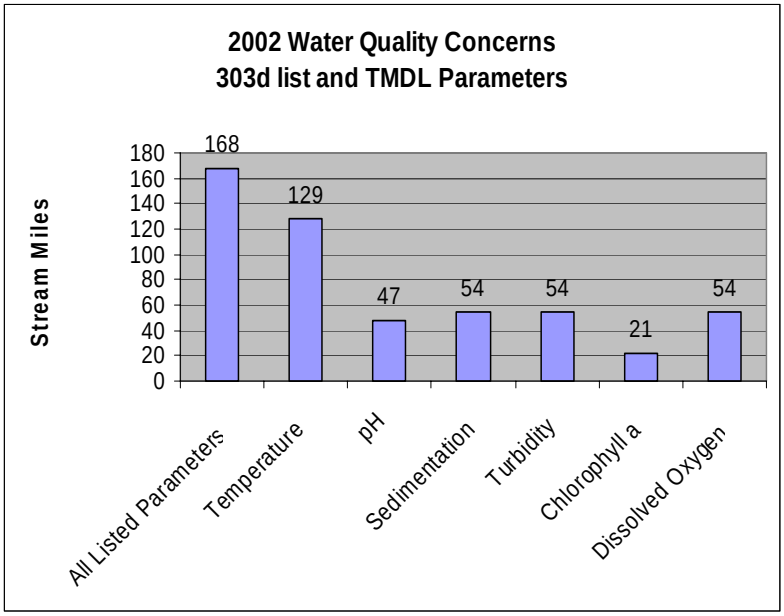
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.



- Seventy-seven percent of all listed stream miles have temperatures exceeding State water quality standards. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural causes.
- Stream reaches listed for sediment and turbidity are affected by erosion on croplands and streambanks.
- Dissolved oxygen, chlorophyll a, and pH commonly are indicative of high nutrient loading from phosphorus attached to sediment or from dissolved nutrients in surface runoff.
- Conservation practices that can be used to address these water quality issues include erosion control, nutrient management, grazing management, irrigation water management, and use of riparian buffers.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects[6]		**NRCS Watershed Plans, Studies, and Assessments[7]**	
Name	**Status**	**Name**	**Status**
McKenzie Canyon Irrigation Project	Active	McKenzie Canyon Irrigation Project	Completed - 2004
ODEQ TMDL's[8]		**ODA Agricultural Water Quality Management Plans[9]**	
Name	**Status**	**Name**	**Status**
Upper Deschutes Basin	Data Collection	Crooked River Middle Deschutes Upper Deschutes	Completed Completed Completed
OWEB Watershed Councils[10]	**Watershed Council Assessments[11]**	**NWPCC Subbasin Plans & Assessments[18]**	
Crooked River and Upper Deschutes Watershed Councils	Upper Deschutes Watershed Assessment	Deschutes Subbasin Plan	

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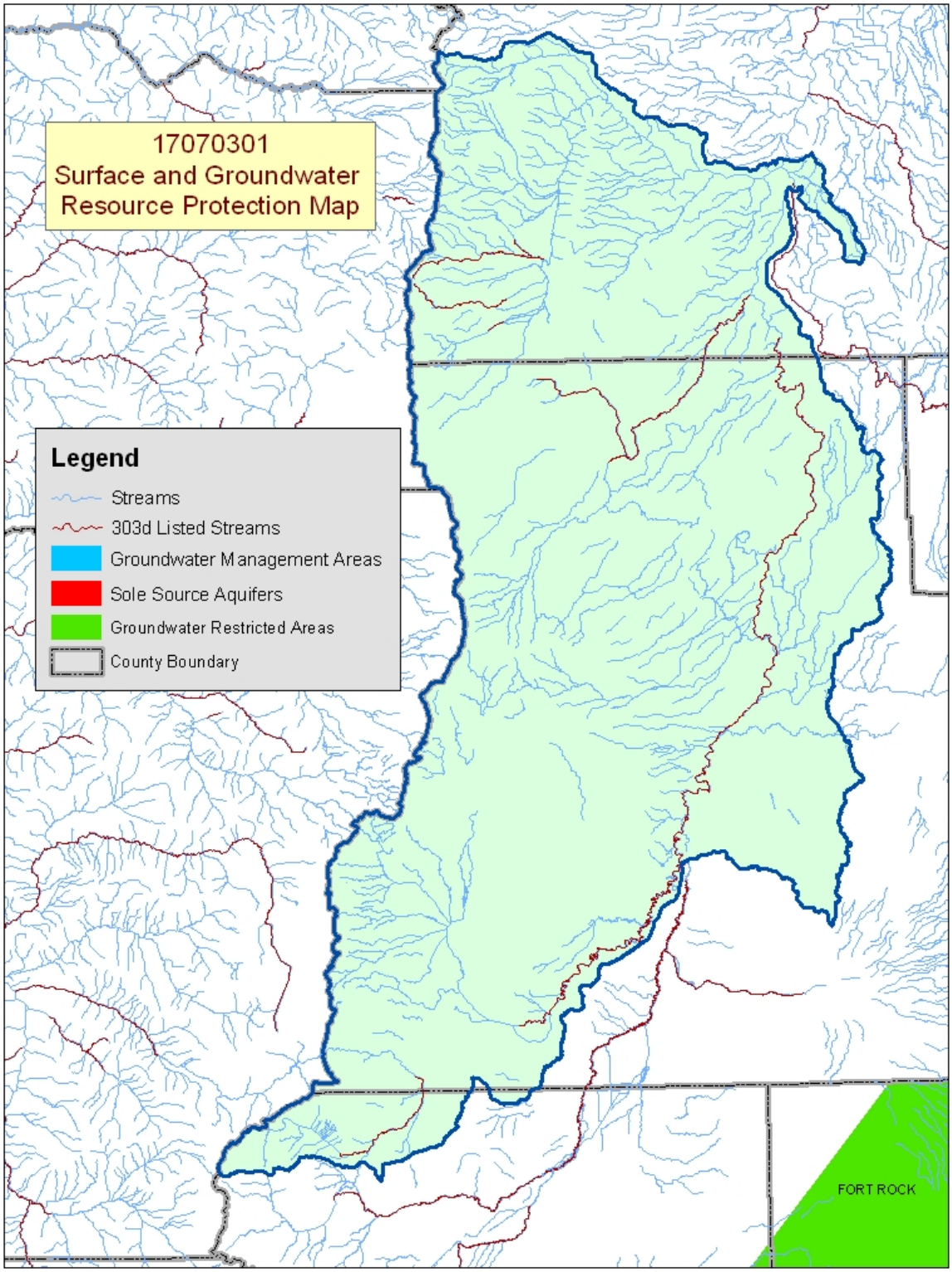

Map Footnote [17]

Resource Concerns - Continued

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Resource Concerns / Issues by Land Use							
SWAPA +H Concerns	**Specific Resource Concern / Issue**	**Pasture \ Hay**	**Grain Crops**	**Row Crops**	**Orchards / Vnyrd**	**Shrub / Range**	**Forest**
Soil Erosion	Wind		X	X			
	Irrigation Induced			X			
Water Quantity	Water Management For Irrigated Land	X	X	X			
Water Quality, Surface	Temperature	X					
Plant Condition	Productivity, Health, and Vigor	X				X	X
Animal Habitat, Domestic	Management	X				X	
Animal Habitat, Wildlife	Food, Cover, and/or Shelter						X
Human, Economics	Land Use Constraints/Restrictions					X	X
	High Capital/Financial Cost			X			
	High Labor Cost or Availability			X			
	Low or Unreliable Profitability	X	X			X	X
Human, Social	Low Community Well-Being						X
Human, Political	Lack of Technical Assistance	X	X	X		X	

Grass / Pasture / Hay

- Water and grazing management are primary concerns in areas of irrigated pasture on small farms and ranches.
- Low profitability on ranches and unavailability of technical assistance for small farms and ranchettes hinder conservation efforts.

Grain and Row Crops

- Wind erosion and water management are resource concerns on irrigated cropland.
- High capital and labor cost to improve and manage more efficient irrigation systems is an obstacle to use of additional conservation practices, especially in areas used for row crops.

Rangeland and Forest land

- Overstocked lodgepole pine/ponderosa pine on forest land and invasive weeds on rangeland reduce the productivity for timber, grazing, and wildlife habitat.
- Some of these areas are under pressure for development into ranchettes and vacation and recreational property.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals - Canada lynx **Birds -** Bald eagle, Northern spotted owl **Fish** - Bull trout	**Birds –** Yellow-billed cuckoo **Amphibians and Reptiles –** Oregon spotted frog
	PROPOSED SPECIES – None
ESSENTIAL FISH HABITAT[13] - None	

Census and Social Data[/14]

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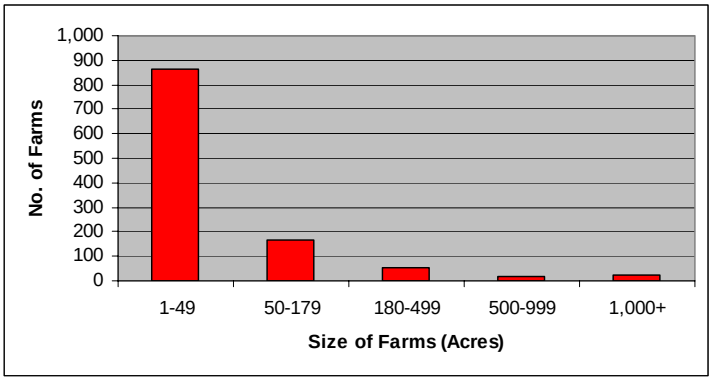
Number of Farms: 1,127

Number of Operators: 1,820

- Full-Time Operators: **571**
- Part-Time Operators: **1,249**



Estimated Level of Willingness and Ability to Participate in Conservation: [/15]

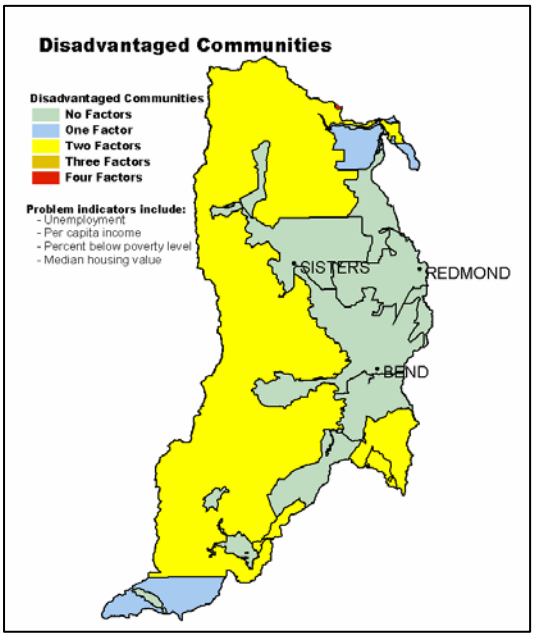
- Full-time, large-acreage operators farming over 90 percent of the agricultural land: **MODERATE TO HIGH**
- Part-time, small-acreage (<50 acres) operators: **LOW TO MODERATE**

The full-time, large-acreage family farmers in the Upper Deschutes subbasin, whose operations are in at least fair financial health, generally are both able and willing to try conservation practices and systems. Increasing awareness of local resource concerns and the connections to their agricultural operations may improve the rate of adoption of conservation practices.

The part-time, small-acreage farmers, who comprise the majority of the farmers in the subbasin, are well-educated and somewhat aware of the resource concerns in their area. Because of their off-farm work, many of the small-acreage farmers have limited farming experience, minimal familiarity with USDA programs, and limited time to try new conservation practices and systems. While their ability may inhibit adoption of conservation practices, these operators do show concern for the environment and a willingness to consider conservation practices. These landowners, however, will need more time.

Evaluation of Social Capital: [/16] MODERATE

A fundamental problem in the Upper Deschutes subbasin is that the community does not recognize agriculture's contribution to the economic viability and quality of life in the community. Thus, the community is currently not a source of help in promoting conservation among local agricultural landowners. The community has demonstrated an ability to work together to solve other community problems. The key to conservation diffusion among farmers in this subbasin is getting the community to appreciate the value of agriculture to their well-being.



Progress / Status

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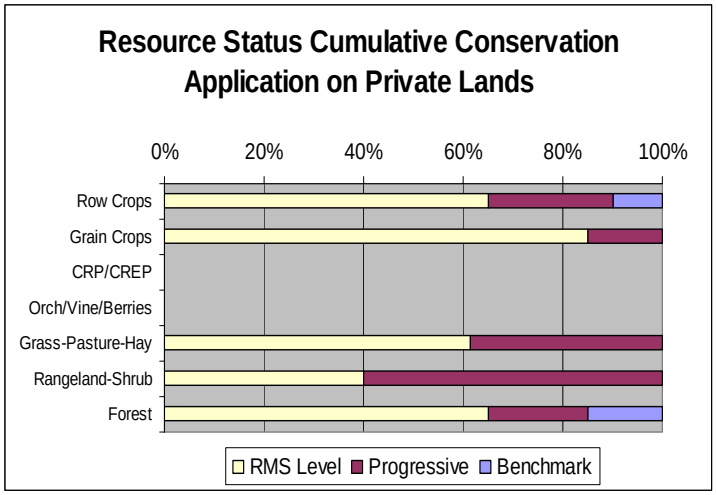
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	3,302	5,155	1,038	0	0	1,899	9,495
Total Conservation Systems Applied (Acres)	298	262	2,002	0	0	512	2,562
Conservation Treatment							
Waste Management (Number)	0	0	0	0	0	0	0
Buffers (Acres)	0		0	0	0	0	0
Erosion Control (Acres)	218	262	355	0	0	167	835
Irrigation Water Management (Acres)	545	0	296	0	0	168	841
Nutrient Management (Acres)	0	0	0	0	0	0	0
Pest Management (Acres)	0	103	133	0	0	47	236
Prescribed Grazing (Acres)	70	0	1,106	0	0	235	1,176
Trees and Shrubs (Acres)	0	0	32	0	0	6	32
Conservation Tillage (Acres)	0	0	0	0	0	0	0
Wildlife Habitat (Acres)	20	1,005	472	0	0	299	1,497
Wetlands (Acres)	0	0	0	0	0	0	0



- Progress over the last five years has been focused on:
  - Prescribed grazing on rangeland and pastureland.
  - Erosion control and water management on pastureland and cropland.
  - Wildlife management.
- Cost to improve irrigation water management can hinder water conservation on cropland.
- Forested areas developed as homesites and for recreational property commonly are not actively managed for timber or wildlife.
- Private, non-industrial forest land that is not managed commonly creates fire safety issues.

(Estimates are based on information received from local conservationists in the watershed.)

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **None**
- Wetland Restoration Program (WRP): **None**
- Conservation Reserve Enhancement Program (CREP): **None**

Footnotes/Bibliography

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1. Ownership Layer – Source: The 1:24,000 scale public ownership layer is the land ownership/management for public entities, including Federal, Tribal, State, and local entities. This is a seamless, statewide Oregon Public Ownership vector layer composed of fee ownership of lands by Federal, State, Tribal, county, and city agencies. The layer is comprised of the best available data compiled at 1:24,000 scale or larger, and the line work matches GCDB boundary locations and ORMAP standards where possible. The layer is available from the State of Oregon GIS Service Center: http://www.gis.state.or.us/data/alphalist.html. For current ownership status, consult official records at appropriate Federal, State, and county offices. Ownership classes grouped to calculate Federal ownership vs. non-Federal ownership by the Water Resources Planning Team.

2. National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 19990631; Title: Oregon Land Cover Data Set, Edition: 1; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA; Online linkage: http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html; Abstract: These data can be used in a geographic information system (GIS) for any number of purposes, such as assessing wildlife habitat, water quality, pesticide runoff, land use change, etc. The State data sets are provided with a 300-meter buffer beyond the State border to facilitate combining the State files into larger regions.

3. 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 because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. 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/

4. Irrigated Adjudicated Water Rights – Water Rights Information System (WRIS), Oregon Water Resources Department, http://www.wrd.state.or.us/maps/wrexport.shtml

5. StreamNet is a cooperative venture of the Pacific Northwest's fish and wildlife agencies and tribes and is administered by the Pacific States Marine Fisheries Commission. StreamNet provided data and data services in support of the region's fish and wildlife program and other efforts to manage and restore the region's aquatic resources. Official StreamNet website: http://www.streamnet.org/

6. Natural Resources Conservation Service, Watershed Projects Planned and Authorized, http://www.nrcs.usda.gov/programs/watershed/Purpose.

7. Natural Resources Conservation Service, Watershed Plans, Studies, and Assessments completed, http://www.nrcs.usda.gov/programs/watershed/Surveys_Plng.html#Watershed%20Surveys%20and%20Plan

8. Oregon Department of Environmental Quality Total Maximum Daily Loads, http://www.deq.state.or.us/wq/TMDLs/TMDLs.htm

9. Oregon Department of Agriculture, Agricultural Water Quality Management Plans, http://www.oregon.gov/ODA/NRD/water_agplans.shtml

Footnotes/Bibliography Continued

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10. Oregon Watershed Enhancement Board, http://oregon.gov/OWEB/WSHEDS/index.shtml

11. Watershed Assessments completed by local watershed councils following the Oregon Watershed Assessment Manual, http://oregon.gov/OWEB/docs/pubs/ws_assess_manual.shtml.

12. NRCS Field Office Technical Guide, Section II, Threatened and Endangered List.

13. Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265. As amended through October 11, 1996.

14. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Data were also taken from the U.S. Population Census, 2000.

15. Conservation participation was estimated using NRCS Social Sciences Technical Note 1801, Guide for Estimating Participation in Conservation, 2004. Four categories of indicators were evaluated: Personal characteristics, farm structural characteristics, perceptions of conservation, and community context. Estimates are based on information received from local conservationists in the watershed.

16. Social capital is an indicator of the community's ability and willingness to work together to solve problems. A high amount of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. A low amount of social capital typically results in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation is based on NRCS Technical Report Release 4.1, March, 2002: Adding Up Social Capital: An Investment in Communities. Local conservationists provided information to measure social capital. Scores range from 0 to 76.

17. Surface and Groundwater Resource Protection Map
    a. 2002 303d Listed Streams designated by Oregon Department of Environmental Quality and approved by the Environmental Protection Agency, Section 303d Clean Water Act, http://www.deq.state.or.us/wq/303dlist/303dpage.htm
    b. Groundwater Management Areas designated by the Oregon Department of Environmental Quality, Oregon Revised Statutes – Ground Water ORS 468B.150 to ORS 468B.190, http://www.deq.state.or.us/wq/groundwa/wqgw.htm
    c. Groundwater Restricted Areas designated by Oregon Water Resources Commission, Oregon Department of Water Resources, http://egov.oregon.gov/OWRD/PUBS/aquabook_protections.shtml
    d. The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et. seq), http://www.epa.gov/safewater/ssanp.html

18. Subbasin assessments and plans are developed by local groups (SWCDs, watershed councils, tribes, and others) as part of the Northwest Power and Conservation Council's fish and wildlife program in the Columbia River Basin. This program is funded and implemented by the Bonneville Power Administration. http://www.nwcouncil.org/fw/subbasinplanning/Default.htm.