

Introduction

The Middle Columbia-Hood 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of over 1.3 million acres, with the majority stretching across 3 of the 6 counties in the NRCS Deschutes Basin Administrative Area. Of the 1.3 million acres in the subbasin, 47 percent (over 650,000 acres) extends across the Columbia River and into the state of Washington. Of the about 730,000 acres within Oregon, 48 percent is in Wasco County, 10 percent is in Sherman County, and 42 percent is in Hood River County. There are 940 farms in the subbasin. Fifty-three percent of the farms are less than 50 acres in size.

From the Columbia Gorge to Central Oregon, this area encompasses resources and commodities ranging from orchards to cattle and flower seed to wheat.

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).

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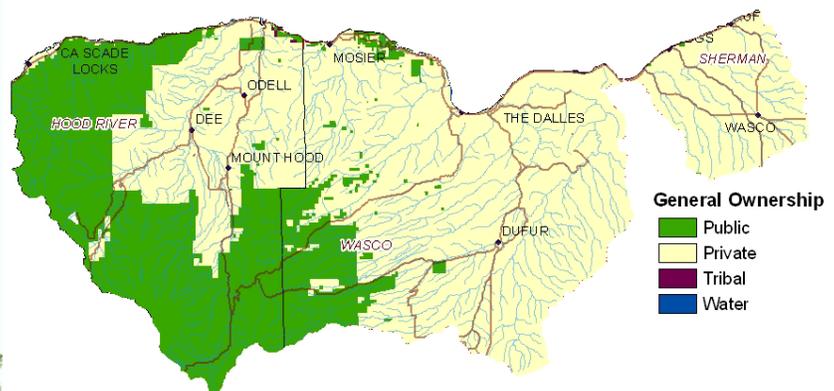
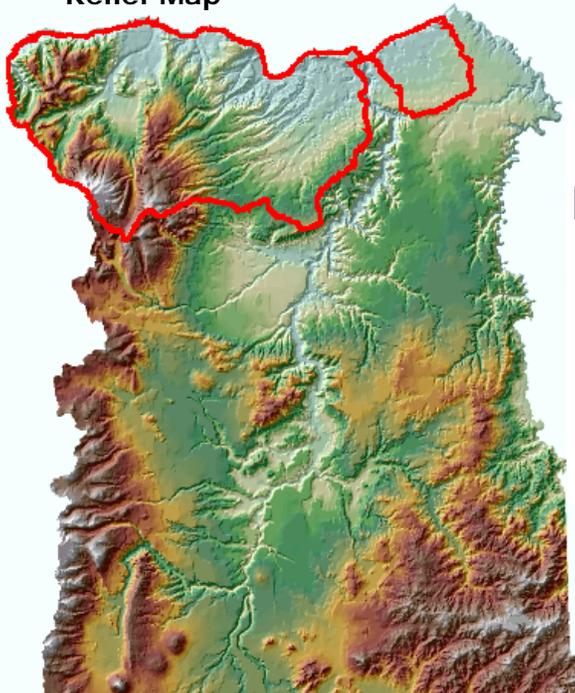
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General Ownership

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ALL NUMBERS WITHIN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/ Land Use (NLCD ²)	Ownership - (2003 Draft BLM Surface Map Set ¹)						Totals	% of HUC
	Public		Private		Tribal			
	Acres	%	Acres	%	*	%		
Forest	210,200	29%	168,400	23%	*	---	378,922	52%
Grain Crops	*	---	149,900	21%	*	---	150,119	21%
Conservation Reserve Program (CRP) Land ^a	0	0%	21,400	3%	*	---	21,396	3%
Grass/Pasture/Hay	*	---	48,100	7%	*	---	54,236	8%
Orchards/Vineyards/Berries	*	---	19,600	3%	*	---	20,094	3%
Row Crops	*	---	*	---	*	---	*	---
Shrub/Rangelands	5,200	1%	78,000	11%	*	---	104,642	12%
Water/Wetlands/ Developed/Barren	9,700	1%	11,700	2%	*	---	21,975	2%
Oregon HUC Totals ^b	232,000	32%	497,300	68%	*	--	730,300	53%

*: 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.

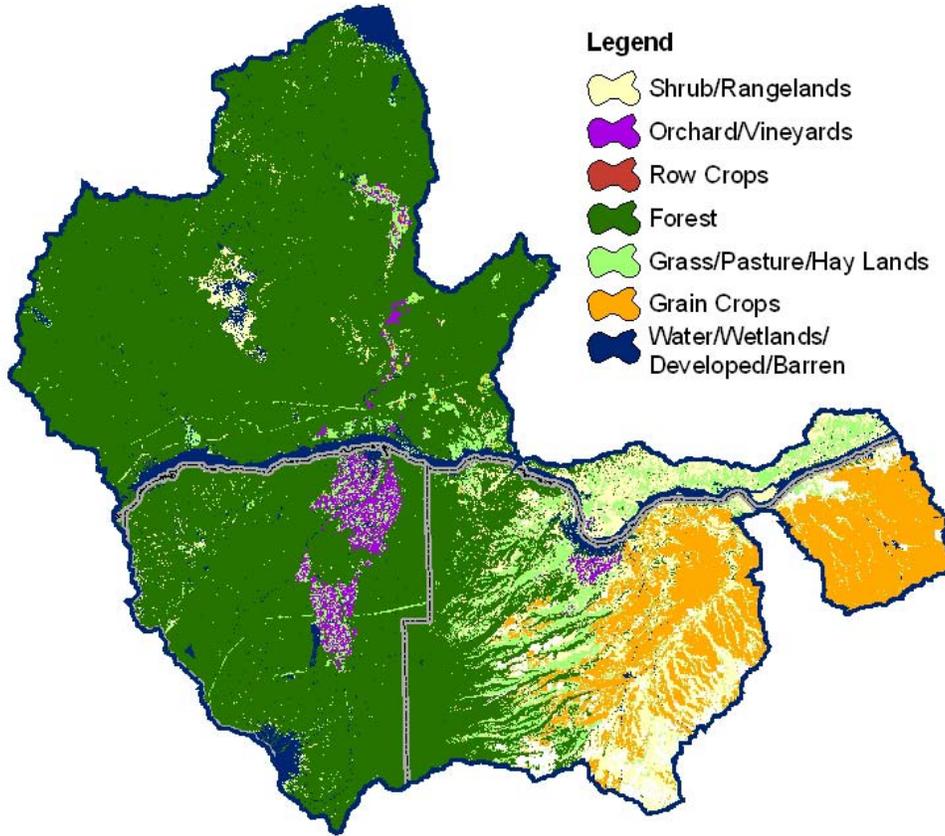
Special Considerations for This 8-Digit HUC:

- ~ Over one-half of the private forest land is under industrial forest management.
- ~ In the 12+-inch precipitation zone, some grain is annually cropped. In the lower precipitation zones, a grain-fallow rotation is used.
- ~ Pasture units occur on large ranches and many smaller farms in the vicinity of Hood River.
- ~ Most orchards (pears, cherries, and apples) are located in Hood River and other areas near the Columbia River.
- ~ Irrigated row crops (corn, vegetables, carrot seed, onions, etc.) are also grown on minor acreages.

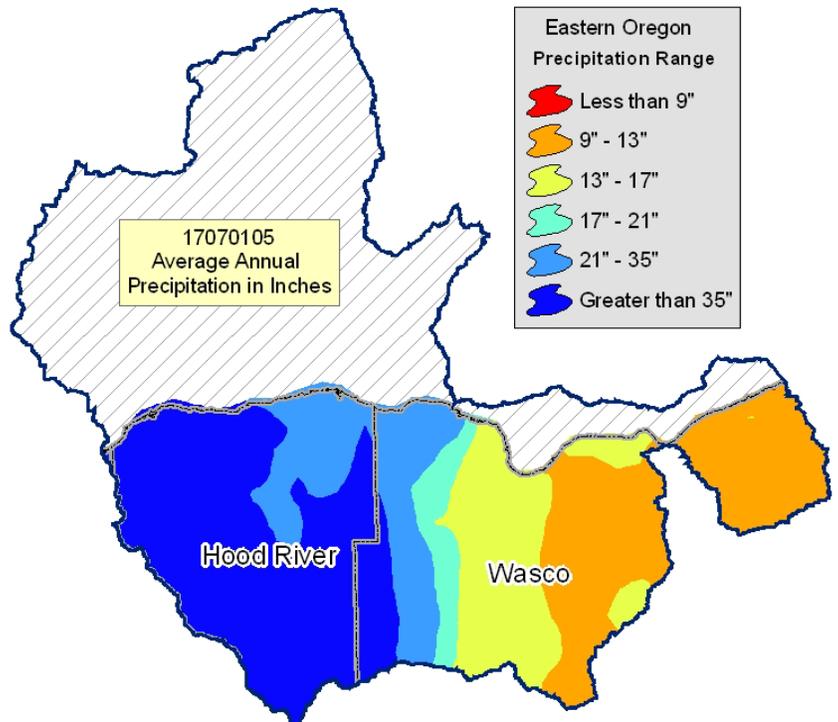
Irrigated Lands (1997 NRI ³ Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	4,200	11%	<1%
	Uncultivated Cropland	26,900	72%	4%
	Pastureland	6,500	17%	1%
	Total Irrigated Lands	37,600	100%	5%

(Continued on following pages)

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Land use/Land cover Map



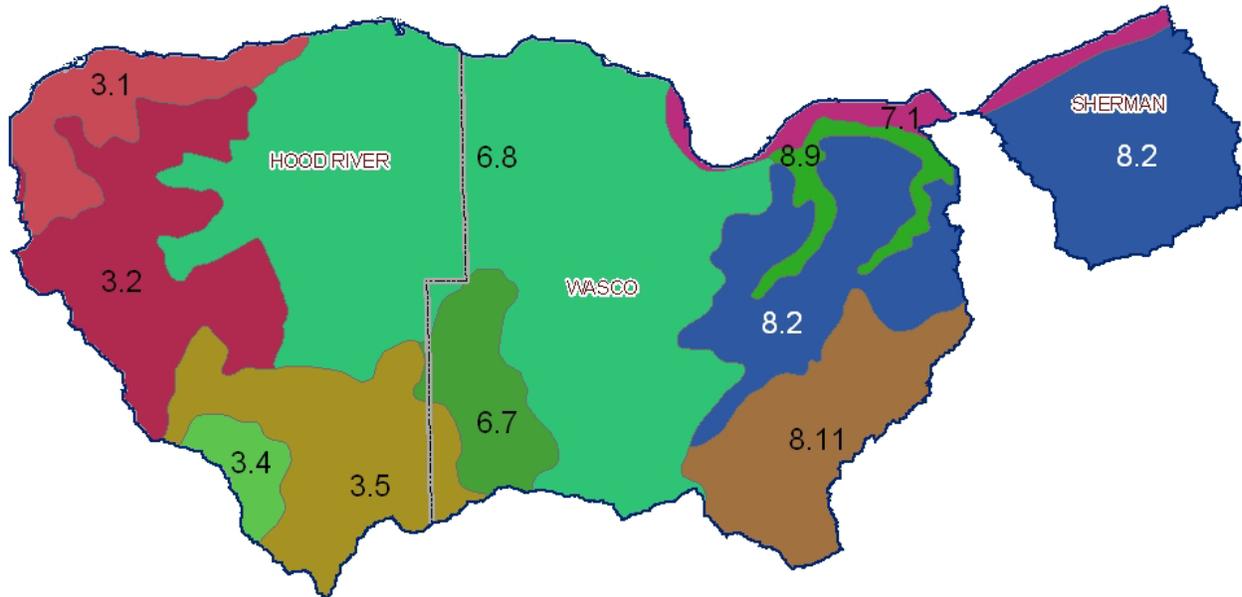
- Legend**
-  Shrub/Rangelands
 -  Orchard/Vineyards
 -  Row Crops
 -  Forest
 -  Grass/Pasture/Hay Lands
 -  Grain Crops
 -  Water/Wetlands/Developed/Barren



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>



3.2 - Olympic and Cascade Mountains - Western Cascades Montane Highlands: This unit comprises the middle to high elevations of the Cascades. The vegetation is Douglas-fir, western and mountain hemlock, Pacific silver fir, and noble fir. Elevation typically is above about 3,000 feet. The mountains are highly dissected with steep slopes. The temperature regime is frigid and "warm" cryic, and the moisture regime is udic. The unit normally has a deep annual snowpack.

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 regime as unit 3.3, this unit is noticeably more moist. The break between units 3.3 and 3.5 is transitional.

6.8 - Cascade Mountains, Eastern Slope - Oak-Conifer Eastern Cascades-Columbia Foothills: This unit occurs at the eastern extreme of the Columbia River Gorge. It is characterized by Oregon white oak, ponderosa pine, and Douglas-fir. It is characteristic of the Columbia River Gorge "microclimate." This unit extends about equal distance into Oregon and Washington. The temperature regime is mesic, and the moisture regime is xeric. This unit includes the orchards in Hood River.

8.2 - Columbia Plateau - Loess Islands: This unit is the remnant of the once unbroken mantle of wind-deposited loess that covered the entire Columbia Plateau. It is surrounded by eroded Pleistocene flood channels. The mean annual precipitation is 9 to 15 inches, increasing from west to east. The temperature regime is mesic, and the moisture regime is aridic and xeric. The big sagebrush-bluebunch wheatgrass plant association is dominant. Threetip sagebrush and Idaho fescue grow in a band around the northern perimeter. Present-day land use has transformed the loess islands into wheatfields. Because of the low annual precipitation, crop rotations generally include a fallow period.

8.11 - Columbia Plateau - Umatilla Plateau: This is the major unit within the MLRA. It consists of loess-mantled basalt plateaus. The soils consist of moderately deep silt loam of the Condon and Morrow series. The temperature regime is mesic, and the moisture regime is xeric. Precipitation is about 12 to 15 inches.

Physical Description – Continued

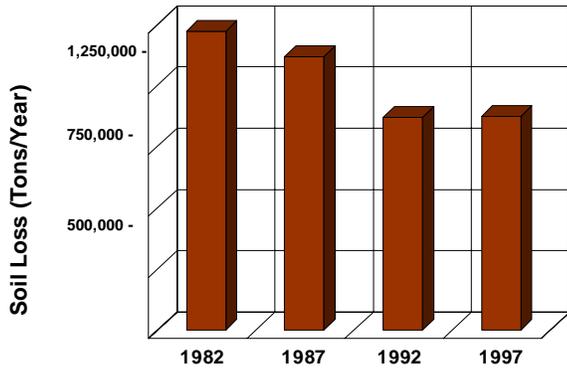
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		ACRES	ACRE-FEET			
Irrigated Adjudicated Water Rights (OWRD ⁴)	Surface	30,908	93.615			
	Well	11,345	33,756			
	Total Irrigated Adjudicated Water Rights	42,252	127,371			
Stream Flow Data	USGS 14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR	Total Avg. Yield	734,487			
		May – Sept. Yield	212,684			
		MILES	PERCENT			
Stream Data ⁵ <i>*Percent of Total Miles of Streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	480	---			
	303d/TMDL Listed Streams (DEQ)	312	65%*			
	Anadromous Fish Presence (StreamNet)	114	24%*			
	Bull Trout Presence (StreamNet)	106	22%*			
		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	6,355	55%			
	Grain Crops	1,735	15%			
	Grass/Pasture/Hay	1,027	9%			
	Orchards/Vineyards	256	2%			
	Row Crops	3	0%			
	Shrub/Rangelands – Includes CRP Lands	1,905	16%			
	Water/Wetlands/Developed/Barren	325	3%			
	Total Acres of 100-foot Stream Buffers	11,603	---			
Land Capability Class (Croplands & Pasturelands Only) (1997 NRI ³ Estimates for Non-Federal Lands Only)	1 – slight limitations	1,900	1%			
	2 – moderate limitations	51,800	29%			
	3 – severe limitations	85,500	47%			
	4 – very severe limitations	27,200	15%			
	5 – no erosion hazard, but other limitations	0	0%			
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	14,200	8%			
	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	180,600	---			
Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004						
Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	1	0	0	0	0	0
No. of Permitted Animals	140	0	0	0	0	0

Resource Concerns

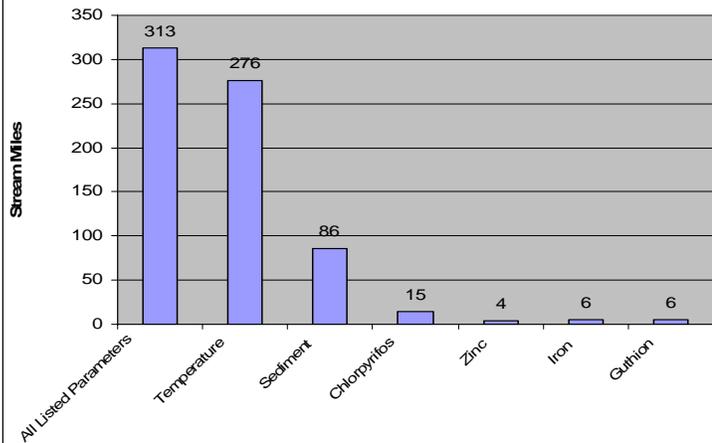
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Tons of Soil Loss by Water Erosion



- ❖ Sheet and rill erosion by water on the subbasin croplands and pasturelands has been reduced by almost 350,000 tons of soil per year from 1982 to 1997.
- ❖ NRI estimates indicate that 90,600 acres of the subbasin agricultural lands still had water erosion rates above a sustainable level in 1997.
- ❖ Controlling erosion not only sustains the long-term productivity of the land, but it also affects the amount of soil, pesticides, fertilizer, and other substances that move into the Nation's waters.
- ❖ Through NRCS programs many farmers and ranchers have applied conservation practices to reduce the effects of erosion by water. As a result, erosion rates on cultivated cropland fell 22 percent, from 8.0 to 6.2 tons/acre/year, from 1982 to 1997. Recent results indicate reduction of rates down to 2 tons/acre/year.

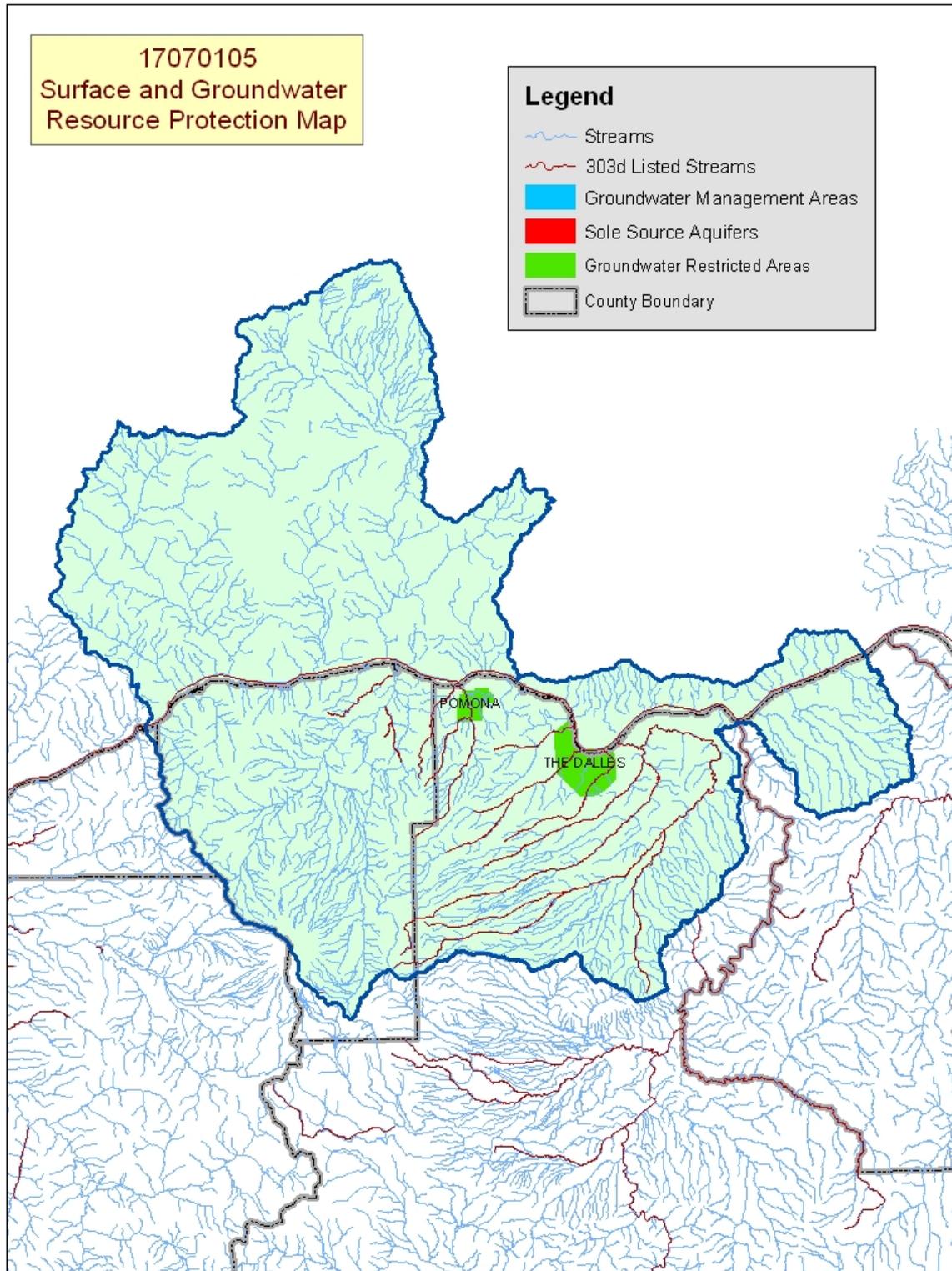
**2002 Water Quality Concerns
303d list and TMDL parameters**



- ❖ Eighty-eight 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 are affected by erosion on croplands and streambanks.
- ❖ Other parameters are listed for localized problems most often associated with orchards and vineyards.
- ❖ Conservation practices that can be used to address these water quality issues include erosion control, nutrient and pest management, grazing management, irrigation water management, and use of riparian buffers.
- ❖ Pesticide listings based on detections from limited sampling of water quality in orchards.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects ⁶		NRCS Watershed Plans, Studies, and Assessments ⁷	
Name	Status	Name	Status
Middle Fork Hood River Mt. Hood Irrigation District	Installed - 1963 Installed - 1985	Central Canal Pipeline - East Fork Irrigation District	Preliminary Investigation Report - 2004
ODEQ TMDL's ⁸		ODA Agricultural Water Quality Mgt Plans ⁹	
Name	Status	Name	Status
Western Hood Columbia & Willamette Rivers Columbia & Snake Rivers TMDLs	EPA Approved 2002 EPA Approved 1991 Draft for Review	Hood River Lower Deschutes	Completed Completed
OWEB Watershed Councils ¹⁰	Watershed Council Assessments ¹¹	NWPC Subbasin Plans & Assessments ¹⁸	
Fifteenmile, Fulton/Gordon Canyons, Hood River, Mosier, North Sherman, and The Dalles Watershed Councils	The Dalles Watershed Assessment	Columbia Gorge, Lower Columbia Mainstem, Hood River, Fifteenmile Creek Subbasin Plans	

(Continued on page 8)



Map Footnote [417](#)

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	Sheet and Rill		X	X			
	Wind		X				
	Concentrated Flow						X
	Classic Gully					X	
	Irrigation Induced			X	X		
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X				
Water Quantity	Water Management For Irrigated Land	X		X	X		
Water Quality, Surface	Pesticides			X	X		
	Suspended Sediments and Turbidity		X				X
	Temperature	X	X		X	X	X
	Aquatic Habitat Suitability		X		X	X	
Plant Suitability	Site and Intended Use Suitability	X					
Plant Condition	Productivity, Health, and Vigor	X				X	X
Animal Habitat, Domestic	Water Quantity and Quality					X	
Animal Habitat, Wildlife	Food, Cover, and/or Shelter						X

Grass/Pasture/Hay

- Major concerns involve controlling invasive weeds and maintaining good pasture condition.

Grain Crops

- Direct seeding and annual cropping have been successful in the higher rainfall (12 inches plus) zone.
- Soil erosion and low organic matter content are resource concerns in lower rainfall zones where conventional grain-fallow rotations are still used.

Row Crops

- Competition for clean, plentiful water for fish and wildlife mandates water conservation on irrigated row crops.

Orchards/Vineyards/Berries

- Water conservation and water quality (potential for pesticide contamination) are issues on irrigated orchards.

Shrub/Rangelands

- Noxious weeds and poor range condition restrict the productivity of vegetation for livestock and wildlife.
- Rangelands adjacent to watershed streams can have an impact (habitat and temperature) on fisheries.

Forest Land

- Much of the private forest land is managed by private industrial owners who generally comply with State forest practices.
- Most of the private non-industrial forest land is associated with small woodlots or rural homesites that are not actively managed for timber production.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES ^{/12}	
THREATENED SPECIES	CANDIDATE SPECIES
Marine - None	Fish - None
Mammals - Canada lynx	Birds - Yellow-billed cuckoo
Birds - Bald eagle, Northern spotted owl	Amphibians and Reptiles - Oregon spotted frog
Fish - Steelhead, Chinook salmon, Bull trout	Plants - Northern wormwood
Invertebrates - None	PROPOSED SPECIES - None
Plants - None	
ESSENTIAL FISH HABITAT ^{/13} - Chinook, Coho salmon	

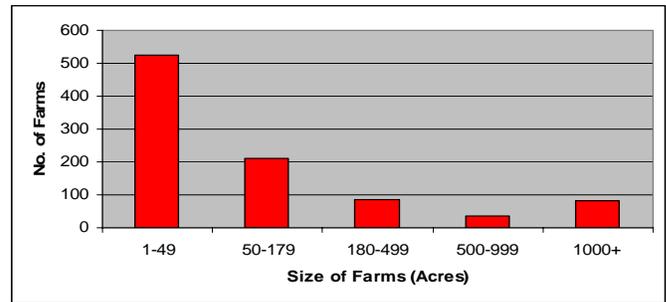
Census and Social Data^{/14}

Number of Farms: **940**

Number of Operators: **1,485**

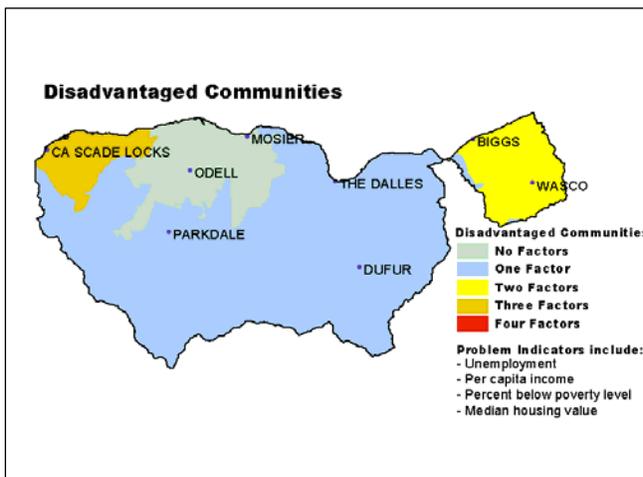
- Full-Time Operators: **577**
- Part-Time Operators: **908**

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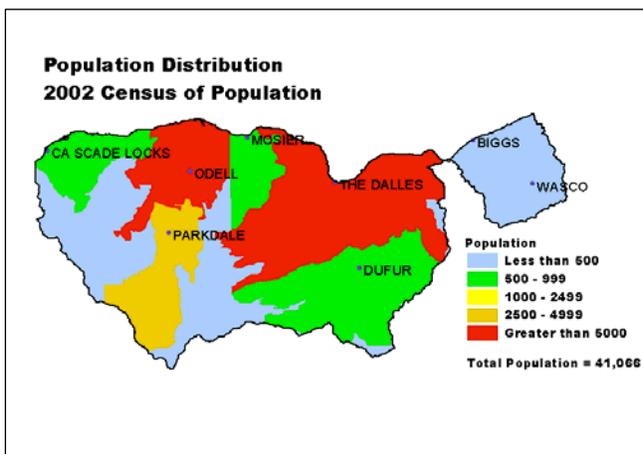


Estimated Level of Willingness and Ability to Participate in Conservation^{/15}: **MODERATE**

Evaluation of Social Capital^{/16}: **LOW TO MODERATE**



While some variation exists throughout the watershed, overall conservation participation in the Middle Columbia-Hood HUC is above average and the communities in the watershed have adequate human resources to effectively deal with natural resource concerns. Conservation implementation would benefit from additional incentives and increased technical assistance to improve and develop individual, on-farm management skills. Many communities in the watershed have strong leadership, internet access, and experience completing local projects. Most individuals in the communities actively participate in public meetings and local organizations, exercise their right to vote, and have previously used government assistance to solve problems. The communities would benefit from more media coverage of local issues. Also, broadening public participation to include more minority groups in local organizations and groups could help to build consensus and support for decisions affecting the entire communities.

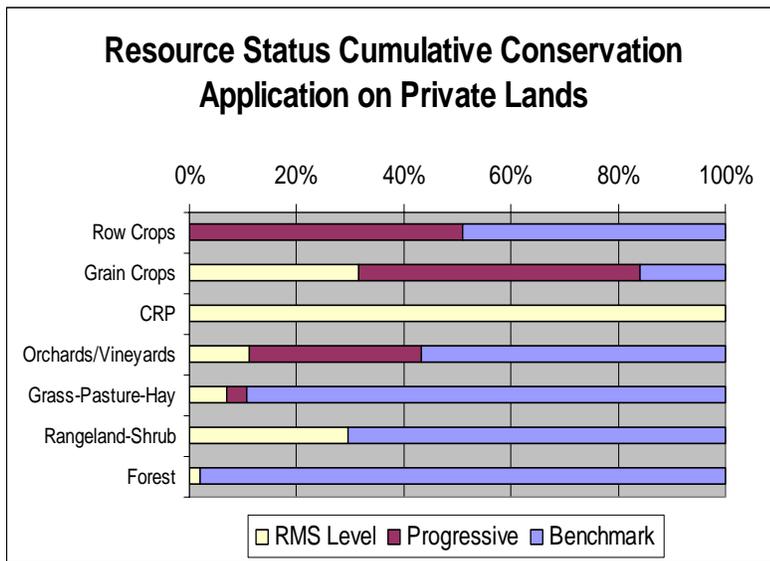


Sixty-one percent of the operators are part-time, and more than 50 percent of the farms are less than 50 acres in size. These facts point to the potential need for special technical assistance targeted to reach people who may (1) lack experience with government farm programs, (2) have good stewardship intentions but lack management skills, and (3) lack the time during a normal 40-hour workweek to visit an NRCS field office to seek assistance.

Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	10,066	9,353	24,969	15,177	11,581	14,229	71,146
Total Conservation Systems Applied (Acres)	4,126	6,449	38,739	12,116	24,866	17,259	86,296
Conservation Treatment							
Waste Management (number)	0	0	0	1	0	0	1
Riparian Forest Buffers (acres)	155	0	179	476	76	177	886
Erosion Control (acres)	5,870	21,326	40,561	12,775	10,787	18,264	91,319
Irrigation Water Management (acres)	433	0	12	9	667	224	1,121
Nutrient Management (acres)	147	280	2,669	6,167	0	1,853	9,263
Pest Management (acres)	3,020	3,539	3,499	4,253	2,021	3,266	16,332
Prescribed Grazing (acres)	0	273	219	0	0	98	492
Trees and Shrubs (acres)	22	1	228	113	388	150	752
Conservation Tillage (acres)	3,439	15,668	36,360	11,749	8,240	15,091	75,456
Wildlife Habitat (acres)	1,338	14,509	18,765	306	118	7,007	35,036
Wetlands (acres)	0	0	0	10	0	2	10



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

- ❖ Progress over the last five years has been focused on:
 - ~ Erosion control and conservation tillage on nonirrigated grain.
 - ~ Nutrient and pest management on orchards.
 - ~ Wildlife habitat management in riparian areas and on uplands.
- ❖ Row crops generally are produced by small-acreage farmers in Hood River who have not previously worked with NRCS.
- ❖ Eighty-five percent of resource concerns on grain farms are being addressed.
- ❖ Advanced pest and irrigation management practices have not yet been adopted on many orchards.
- ❖ Resource concerns with pasture management commonly are not being addressed on small farms.
- ❖ Most private non-industrial forest land that is not managed for timber would not meet State forest practices requirements.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **21,396 acres**
- ❖ Wetland Restoration Program (WRP): **None**
- ❖ Conservation Reserve Enhancement Program (CREP): **1,720 acres**

Footnotes/Bibliography

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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 for general planning purposes only.

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/wlexport.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>.