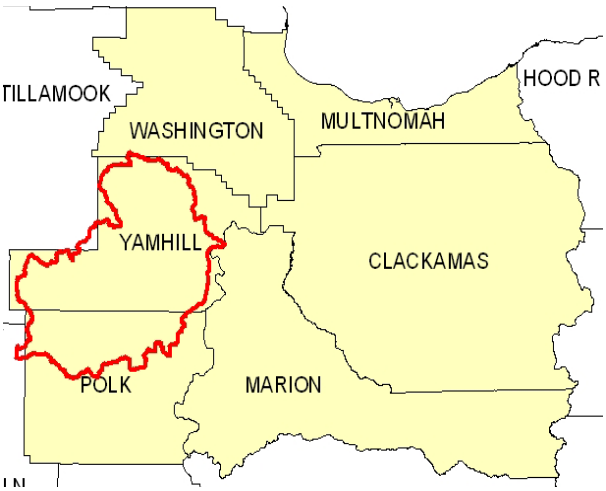
Yamhill - 17090008

8 Digit Hydrologic Unit Profile

FINAL

JANUARY 2005



Introduction

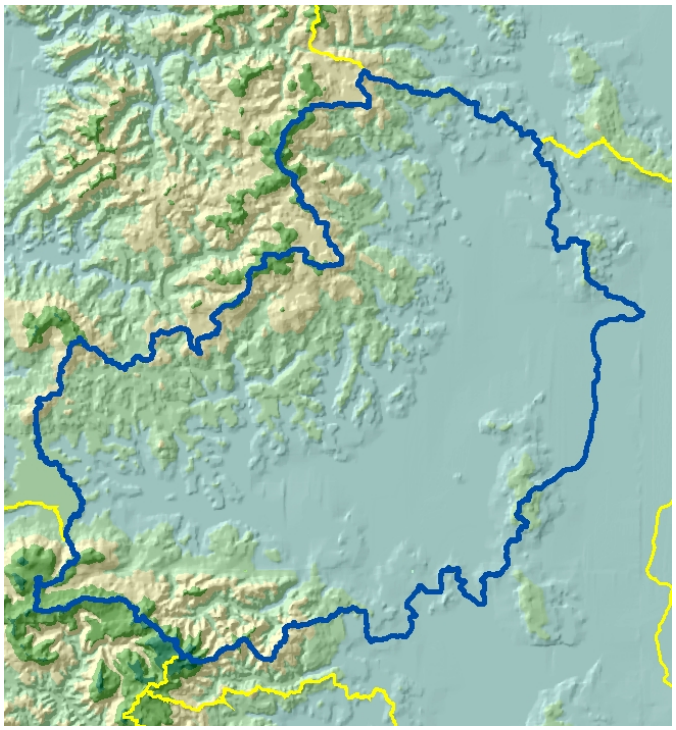
The Yamhill 8-Digit Hydrologic Unit Code (HUC) watershed is 493,469 acres in Northwest Oregon. Ninety-nine percent of the Yamhill watershed is in Yamhill and Polk counties. There are 1,679 farms in the watershed. Sixty-five percent of the farms are less than 50 acres.

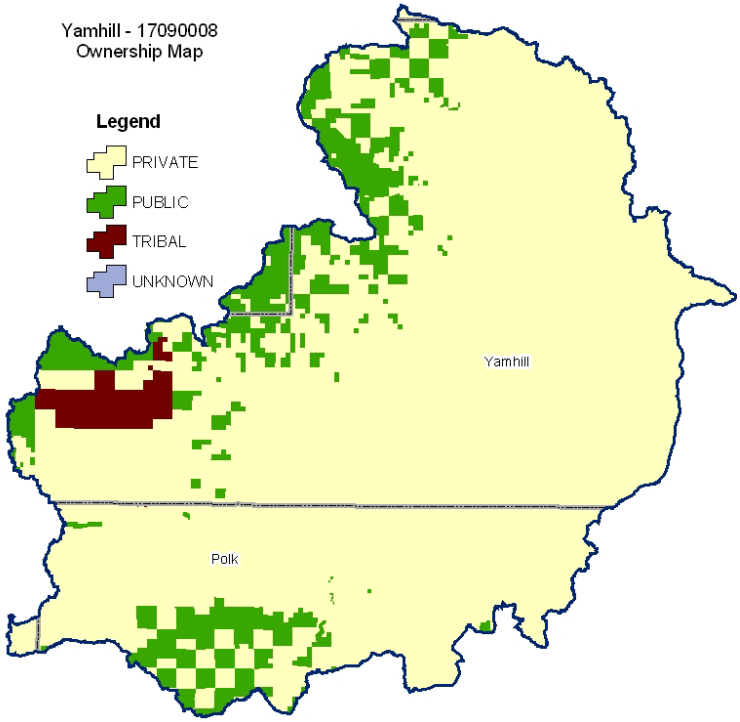
Eighty-six percent of the watershed is in private ownership. The land is 58 percent forest, 29 percent grass seed pasture and hay land, and the remaining acres are mostly in grain crops, nurseries, vineyards, or row crops.

Conservation assistance is provided by six NRCS service centers, one Resource Conservation and Development (RC&D) office, one soil survey office, and seven Soil and Water Conservation Districts.

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 [b]	%
	Acres	%	Acres	%	Acres	%		
Forest	56,800	12%	214,700	44%	9,400	2%	**280,900**	**58%**
Grain Crops	*	0%	28,600	6%	0	0%	**28,600**	**6%**
Conservation Reserve Program Land [a]	0	0%	*	--	0	0%	*	--
Grass Seed/Pasture/Hay Lands	*	--	142,700	29%	*	--	**144,100**	**29%**
Orchards/Vineyards/Berries/Other perennial crops	0	0%	15,100	3%	0	0%	**15,100**	**3%**
Row Crops	*	--	14,800	3%	0	0%	**14,800**	**3%**
Shrub/Rangelands	*	--	*	--	0	0%	*	--
Water/Wetlands/Developed/Barren	*	--	7,700	1%	0	0%	**7,700**	**1%**
Oregon HUC Totals [b]	**57,600**	**12%**	**425,900**	**86%**	**10,000**	**2%**	**493,469**	**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 may not add due to rounding and small unknown acreages.

Special Considerations for this 8 Digit HUC:

- Fifty-five percent of private forest is in industrial forest ownership (OSU, Forestry Sciences Laboratory).
- Grain is usually grown in rotation with grass seed and other crops.
- As of December 2004, 195 acres of CREP have been applied (FSA).
- Orchards/Vineyards/Berries include other perennial crops such as hops, nursery stock and Christmas trees.
- Grass/Pasture/Hay includes approximately:
  - ~ 48,000 acres of grass seed (field office estimate)
  - ~ 40,500 acres of pasture (Pacific Northwest Ecosystem Research Consortium)
  - ~ 32,500 acres of hay (Pacific Northwest Ecosystem Research Consortium)
- Pasture includes commercial dairy and beef operations as well as small farms and ranches.
- Row crops primarily consist of corn, beans and cole crops grown for cannery processing.

Irrigated Lands (1997 NRI[3] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	12,300	86%	2%
	Non-Cultivated Cropland	2,000	14%	<1%
	Pastureland	0	0%	0%
	Total Irrigated Lands	**14,300**	**100%**	**3%**

(Continued on following pages)

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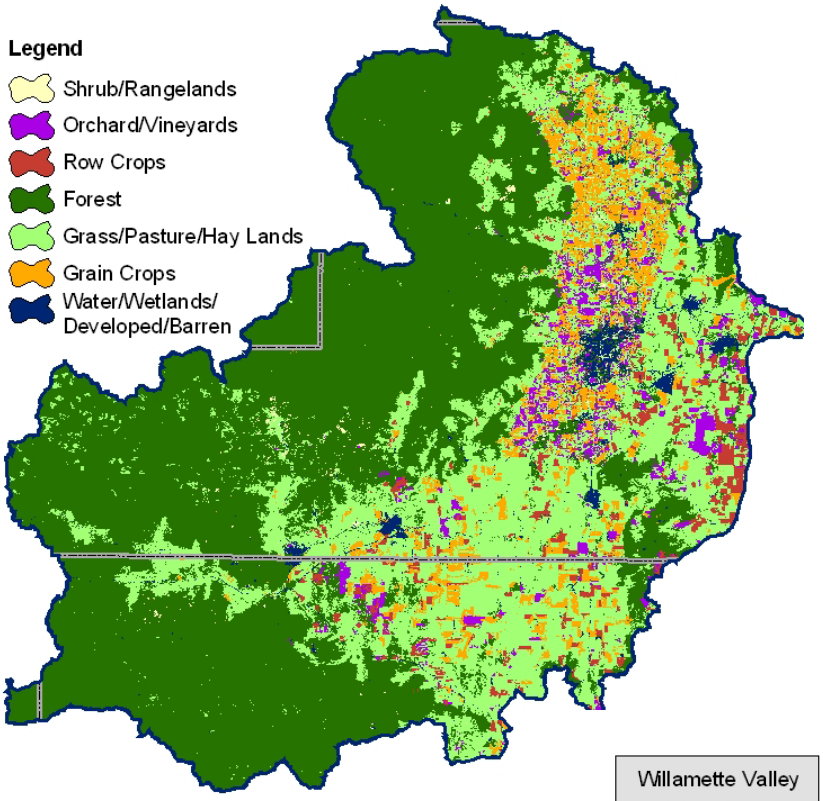
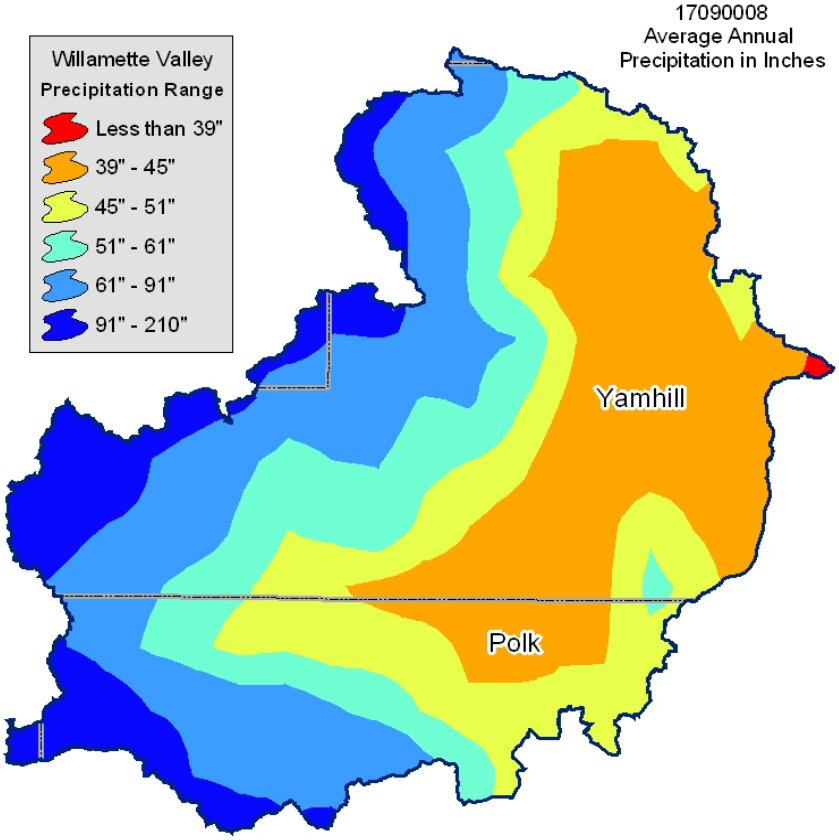
17090008
Land use/Land cover Map



17090008
Average Annual
Precipitation in Inches



Common Resource Area Map

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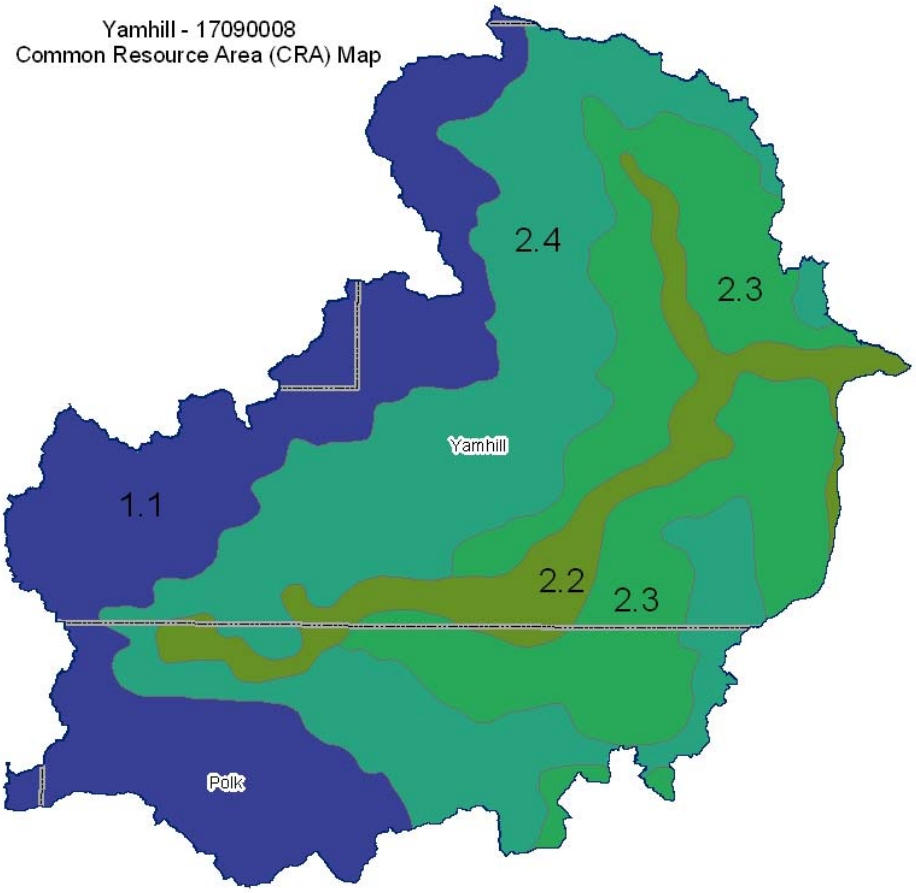
CRA Map - areas with a majority are listed below - for descriptions of every class within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



1.1 - Northern Pacific Coast Range, Foothills, and Valleys – Volcanics: This unit is comprised of mountains having basalt bedrock outside of the "fog belt". Temperature regime is mesic, frigid and small area of cryic; moisture regime is udic. Vegetation is Douglas-fir and western hemlock.

2.2 - Willamette and Puget Valleys - Willamette River Floodplains and Tributaries: This unit is comprised of the floodplain of the Willamette River and its major tributaries. It includes historic riparian areas and intensive row crops. Temperature regime is mesic; moisture regime is xeric.

2.3 - Willamette and Puget Valleys - Prairie Terraces: This unit is comprised of the terraces in the Willamette Valley. The soils range from well drained to poorly drained. Land use is variable. Temperature regime is mesic; moisture regime is xeric. Numerous ponded seasonal wetlands.

2.4 - Willamette and Puget Valleys - Valley Foothills: This unit is comprised of the foothills of the Willamette Valley. The soils are over basalt and sedimentary bedrock and are typically red and clayey. Vegetation is Douglas-fir and Oregon white oak. Temperature regime is mesic; moisture regime is xeric. The unit lacks western hemlock which is characteristic of the adjacent units in the Coast and Cascade MLRA's.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	49,263	124,096
	Well	9,240	23,276
	Total Irrigated Adjudicated Water Rights	58,503	147,372
Stream Flow Data	USGS 14197000 NORTH YAMHILL R AT PIKE, OREG.	**Total Avg. Yield**	175,012
		May - Sept Yield	12,470
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	847	--
	303d (DEQ Water Quality Limited Streams)	440	52%
	Anadramous Fish Presence (Streamnet)	101	12%
	Bull Trout Presence (Streamnet)	0	0%
		ACRES	**PERCENT**
Land Cover / Use[2] based on a 100 ft. stretch on both sides of all streams in the 100K Hydro Layer	Forest	12,740	62%
	Grain Crops	607	3%
	Grass/Pasture/Hay Lands	5,683	28%
	Orchards/Vineyards	560	3%
	Row Crops	117	1%
	Shrub/Rangelands – Includes CRP Lands	168	1%
	Water/Wetlands/Developed/Barren	598	3%
	Total Acres of 100 ft stream buffers	**20,474**	**--**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**I** – slight limitations	3,800	2%
	II – moderate limitations	68,200	43%
	III – severe limitations	45,900	29%
	IV – very severe limitations	20,300	13%
	V – no erosion hazard, but other limitations	0	0%
	VI – severe limitations, unsuited for cultivation, limited to pasture, range, forest	21,100	13%
	VII – very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0	0%
	VIII – misc areas have limitations, limited to recreation, wildlife, and water supply	0	0%
	Total Crop & Pasture Lands	**159,300**	**--**

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

Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Permitted Farms	14	2	6	1	0	1
No. of Permitted Animals	10,768	1,109	1,247,000	400	0	18

Resource Concerns

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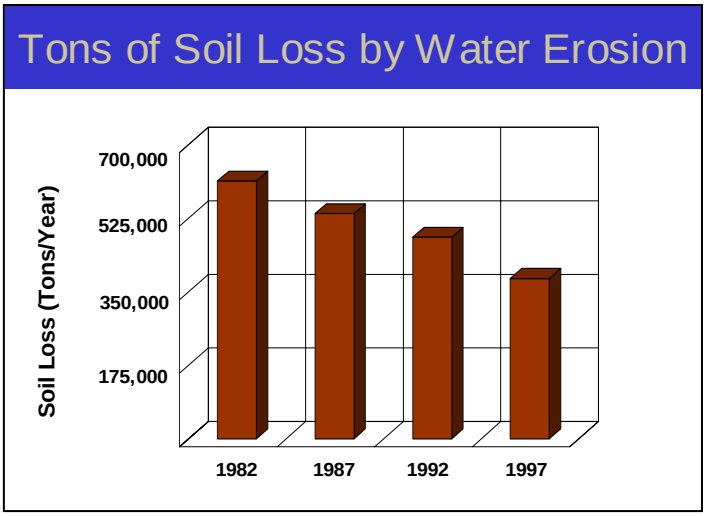
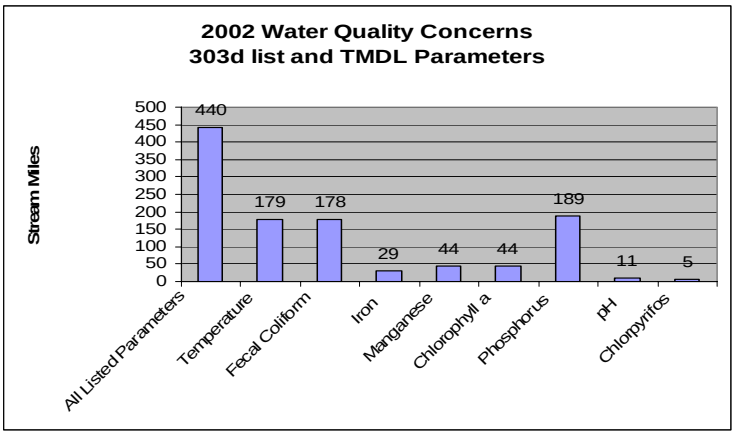


- Sheet and rill erosion by water on the subbasin croplands and pasturelands have been reduced by more than 230 thousand tons of soil per year from 1982 to 1997. Most of the reduction occurred on steep HEL cropland.
- NRI estimates indicate 31,600 acres of the subbasin agricultural lands still had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only sustains the long-term productivity of the land, but 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 33 percent from 4.4 to 2.9 tons/acre/year from 1982 to 1997.

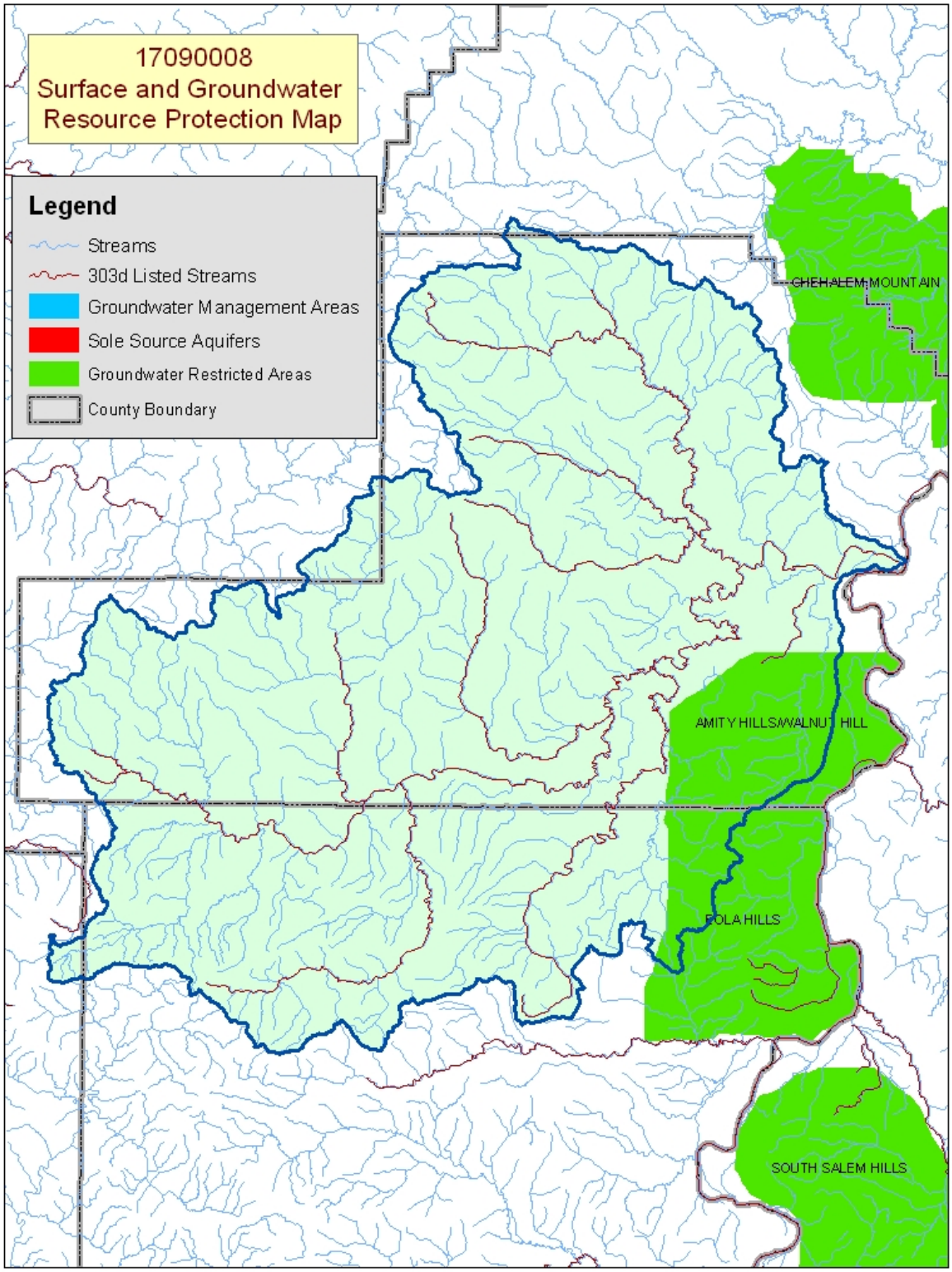


- Forty percent of the listed stream miles exceed state water quality standards for stream temperatures, fecal coliform and phosphorus.
- The wide array of other listed water quality parameters are indicative of more intense agriculture as well as suburban, urban and commercial land uses.
- Conservation practices that can be used to address these water quality issues on agricultural lands include erosion control, irrigation water management, nutrient and pest management, livestock waste management, grazing management and riparian buffers.

Watershed Projects, Plans, Studies and Assessments			
NRCS Watershed Projects[6]		**NRCS Watershed Plans, Studies & Assessments[7]**	
Name	**Status**	**Name**	**Status**
None		None	
ODEQ TMDL's[8]		**ODA Agricultural Water Quality Management Plans[9]**	
Name	**Status**	**Name**	**Status**
Yamhill	EPA Approved - 1992	Yamhill	Completed

OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans & Assessments[18]
Yamhill Basin Council	North Yamhill River, Chehalem Creek, Lower Yamhill River, Willamina Creek, Lower South Yamhill River/Deer Creek, Salt Creek, Upper South Yamhill River, and Mill Creek	Willamette

(Continued on page 8)



Map Footnote [17]

Resource Concerns - Continued

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Resource Concerns / Issues by Land Use							
SWAPA +H Concerns	**Specific Resource Concern / Issue**	**Grass \ Pasture \ Hay**	**Grain Crops**	**Row Crops**	**Perennial Crops (Orch / Vine / Berries)**	**Shrub / Range**	**Forest**
Soil Erosion	Sheet & Rill	X	X	X	X		
	Concentrated Flow or Gully		X	X	X		
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter	X	X	X			
	Soil Compaction	X	X	X	X		
Soil Contamination	Excess Animal Wastes & Other Organic Nutrients	X	X				
	Excess Fertilizers & Pesticides			X	X		
Water Quantity	Ponding & Flooding	X		X			
	Water Mgt. For Irrigated Land	X		X	X		
Water Quality, Groundwater	Pesticides			X			
	Nutrients & Organics	X	X	X	X		
	Pathogens	X					
Water Quality, Surface	Pesticides			X			
	Nutrients & Organics	X	X	X	X		
Human Economics	High Capital/Financial Costs		X	X	X		
	High Labor Costs or Availability				X		
	High Management Level Required			X	X		
	Low or Unreliable Profitability		X				

Grass / Pasture / Hay Lands

- Pastureland on small farms and ranches has serious forage and grazing management issues.
- Proper waste management is a concern for CAFO operations to avoid water quality problems associated with nutrients and pathogens.
- In suburbanizing areas, odor associated with animal waste is increasingly becoming a contentious issue.
- Grass seed is usually produced under contract. Nutrient management and erosion control are primary concerns during the years the crop is being established.

Grain, Row & Perennial Crops

- Residue, nutrient, and pest management, filter strips and buffers are necessary to control erosion and protect water quality.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
Threatened Species	**Candidate Species**
Marine – Not listed with the HUC **Birds -** Marbled murrelet, Bald eagle, Northern spotted owl **Fish -** Coho salmon (Oregon Coast), Steelhead (Upper Willamette River, Chinook salmon (Upper Willamette River) **Invertebrates –** Fender's blue butterfly, Oregon silverspot butterfly **Plants –** Golden Indian paintbrush, Willamette daisy, Howellia, Bradshaw's lomatium, Kincaid's lupine, Nelson's checker-mallow	**Fish** - Steelhead (Oregon Coast) **Birds –** Yellow-billed cuckoo, Streaked horned lark **Amphibians and Reptiles –** Oregon spotted frog **PROPOSED SPECIES** None
ESSENTIAL FISH HABITAT[13] - Chinook	

Census and Social Data[/14]

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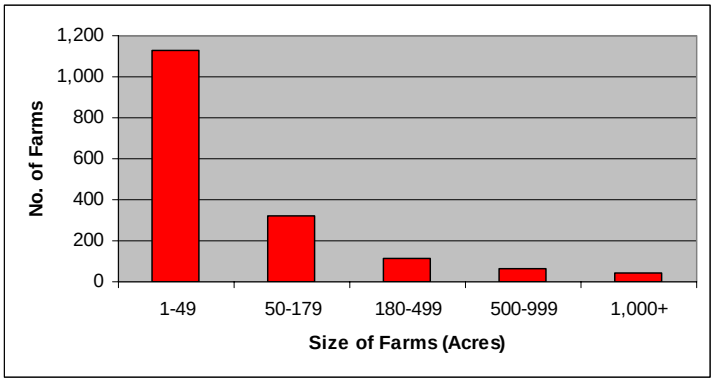
Number of Farms: 1,679

Number of Operators: 2,708

- Full-Time Operators: **840**
- Part-Time Operators: **1,868**



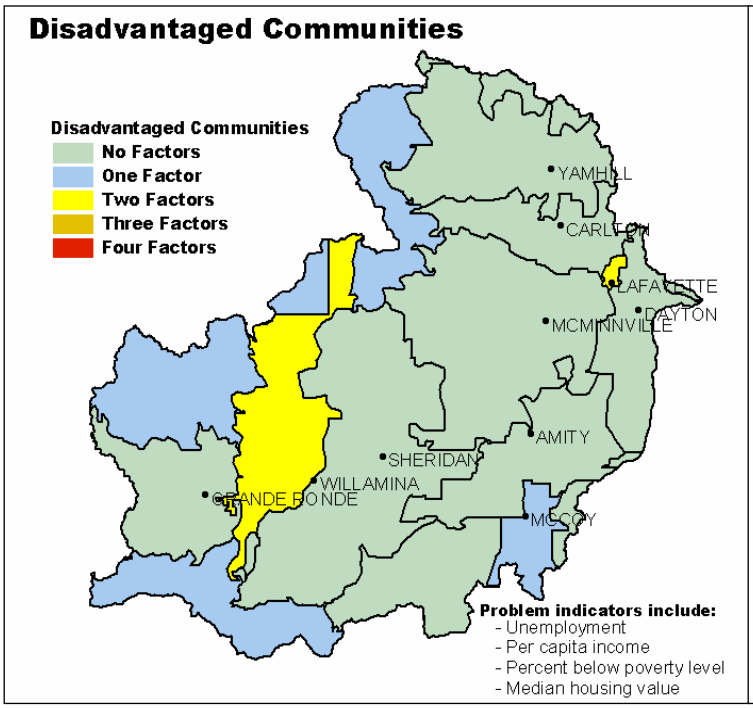
Estimated Level of Willingness and Ability to Participate in Conservation[/15]: GENERALLY HIGH

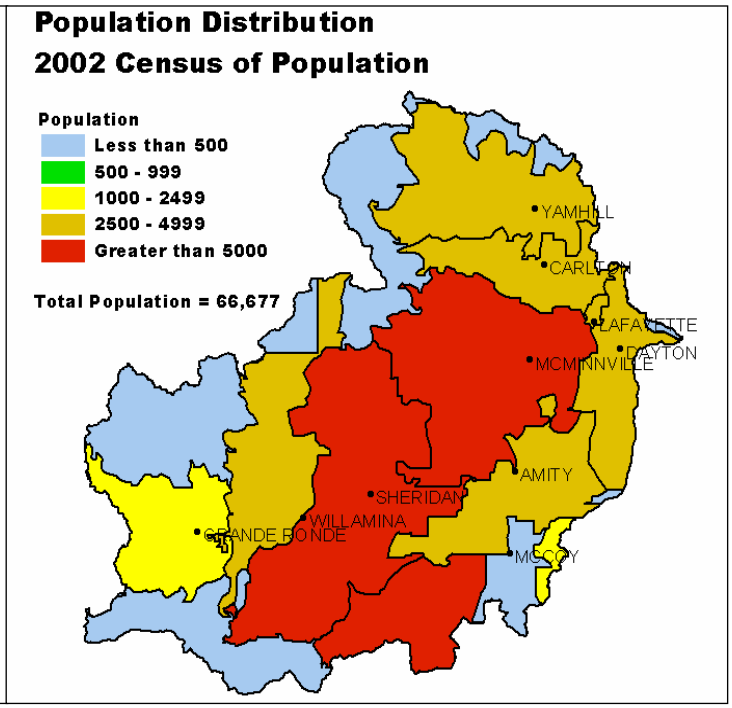
Part-time operators with farms less than 50 acres (i.e. the vast majority of watershed farmers) will require the most time and technical assistance to adopt appropriate conservation practices and systems on their land. They need information about local resource problems, information on the appropriate conservation practices or system needed on their land, and management skills to adopt conservation. This group is generally well educated, have a positive stewardship ethic, and have adequate financial resources.

Other farmers in the watershed are well aware of local resource concerns and, for the most part, know what to do about them. Their greatest need would be for more timely technical assistance and additional incentives to adopt conservation.

Evaluation of Social Capital[/16]: MODERATE

The communities in the watershed generally have adequate human resources (e.g. leadership, widespread volunteerism, access to information) to successfully promote conservation and assist landowners adopt conservation practices and systems. The community and local organizations may be a key to successfully motivating small landowners to adopt conservation.





Progress/Status

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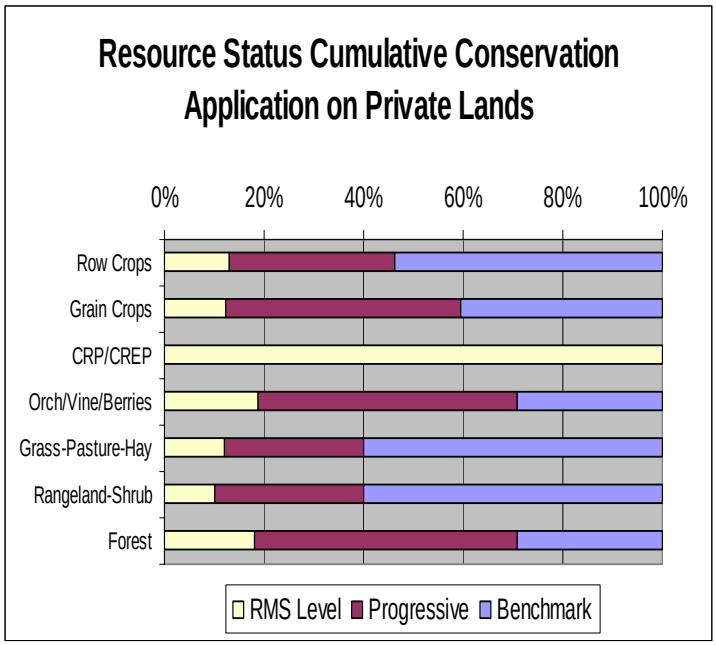
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	1,401	2,762	806	223	477	1,134	5,669
Total Conservation Systems Applied (Acres)	668	1,554	1,151	1,564	613	792	3,986
Conservation Treatment Acres							
Waste Management	8	4	3	2	0	3	17
Buffers	17	195	43	29	7	58	291
Erosion Control	168	84	463	195	225	227	1,135
Irrigation Water Management	52	107	117	4	26	61	306
Nutrient Management	957	1,307	1,365	535	26	836	4,182
Pest Management	1,111	734	459	260	35	520	2,599
Prescribed Grazing	455	422	95	147	10	226	1,129
Trees & Shrubs	439	126	228	183	26	200	1,002
Conservation Tillage	300	429	1,409	0	35	435	2,173
Wildlife Habitat	698	501	148	561	328	447	2,236
Wetlands	79	24	148	229	55	107	535



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

- Progress over the last five years has been focused on:
  - Nutrient and pest management on CAFOs and cropland.
  - Erosion control on cropland.
  - Wildlife habitat management on riparian and wetland areas.
- Row crop (e.g. corn, beans, and cole crops) farmers often rely on crop consultants representing canneries and fertilizer dealers.
- Farmers who grow perennial crops such as nursery stock and Christmas trees usually do not seek assistance from NRCS or SWCDs.
- Much of the pasture that is at the benchmark level is located on small farms.
- Private industrial forest owners typically do not work with NRCS and SWCDs; however, their lands usually comply with state forest practices act.
- Much of the range and forest land in the watershed is on farms less than 50 acres and is not managed for forage or timber. Frequently, these non-industrial private forest lands do not comply with the state forest practices act.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **none**
- Wetland Restoration Program (WRP): **850 acres**
- Conservation Reserve Enhancement Program (CREP): **195 acres**

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, Federal, Tribal, State, and Local. This will be a seamless, statewide Oregon Public Ownership vector layer composed of fee ownership of lands by Federal, State, Tribal, County, and City agencies. The layer will be comprised of the best available data compiled at 1:24,000 scale or better and linework will match 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 or 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, Publication_Information: Publication_Place: Sioux Falls, SD USA, Publisher: U.S. Geological Survey, Online_Linkage: http://edcwww.cr.usgs.gov/programs/lccp/nationallandcover.html, Description: 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 faciliate 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 due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. 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 Resource Conservation Service, Watershed Projects Planned and Authorized, http://www.nrcs.usda.gov/programs/watershed/Purpose.

7. Natural Resource 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 degree of social capital helps a community to be physically healthy, socially progressive, and economically vigorous. Low amounts of social capital typically result in community conflict, lack of trust and respect, and unsuccessful attempts to solve problems. The evaluation used 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.