Upper Willamette – 17090003

8-Digit Hydrologic Unit Profile

SWCD	Acres	SWCD	Acres
Linn	400,547	Siuslaw	17,095
Benton	317,356	Lincoln	7,826
East Lane	310,199	Marion	264
Polk	143,765		

Introduction

The Upper Willamette 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1,197,000 acres in parts of six counties. Forty-five percent of the subbasin is forestland; thirty-nine percent is grassland, pastureland, and hayland; and much of the remainder is used for orchards, vineyards, Christmas trees, nursery stock, and berries and as developed areas. Pastureland is included in the commercial dairy and beef operations. There are 41 permitted CAFOs and well over 1 million permitted animals. Resource concerns include soil and streambank erosion, deteriorating surface water quality, loss of habitat for fish and wildlife, and airborne sediments. Significant economic issues, such as the high capital cost, high risk, and low, unreliable profits of agriculture, hinder the adoption of conservation. Landowners also feel that land use regulations and development pressure impede the diffusion of conservation in the subbasin.

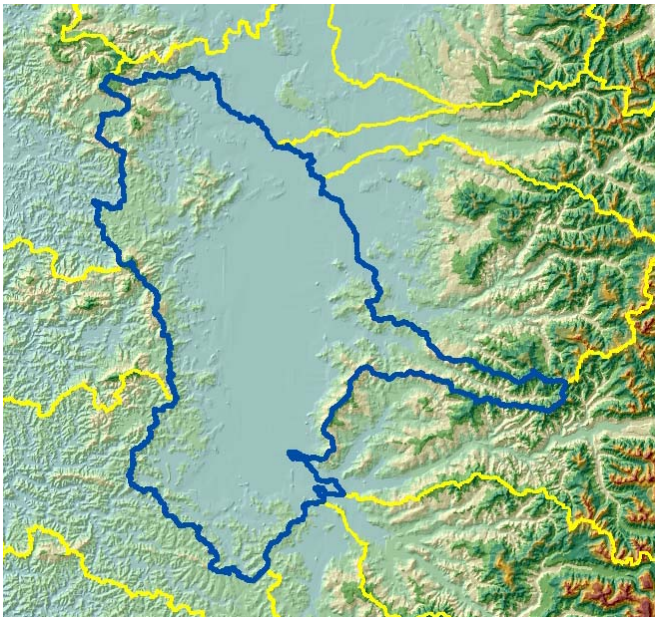
There are 3,021 farms and nearly 5,000 operators in the subbasin. Nearly 70 percent of the farms are less than 50 acres in size. Many of the landowners are well educated; are aware of local resource concerns; tend to be early adopters of agricultural innovations, but not necessarily conservation; and are very concerned about regulatory threats. Regarding conservation, most landowners do not have a conservation plan, perceive conservation to have a negative economic effect and low environmental effect, and do not expect to receive financial assistance. Conservation marketing and technical assistance will need to be substantially enhanced to increase the diffusion of conservation throughout the Upper Willamette subbasin.

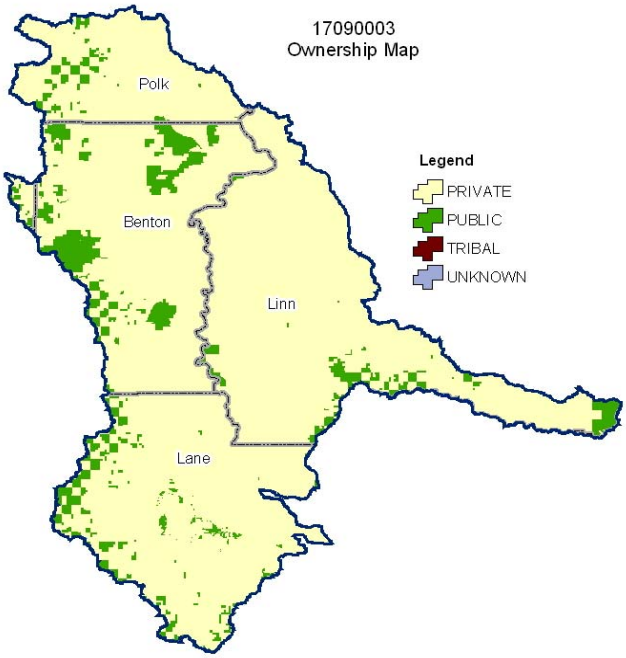
Conservation assistance in the subbasin is provided by three NRCS service centers, three soil and water conservation districts, five watershed councils, and the Cascade Pacific Resource Conservation and Development (RC&D) office.

Profile Contents

Introduction
Physical Description
Land Use Map & Precipitation Map
Common Resource Area
Resource Concerns
Census and Social Data
Progress/Status
Footnotes/Bibliography

Relief Map





Produced by the Water Resources Planning Team Portland, OR

The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington DC 20250-9410, or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

Physical Description

Back to Contents

ALL NUMBERS IN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD[1,2])	Ownership - (2003 Draft BLM Surface Map Set[1,1])							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	88,700	7%	445,600	37%	0	0%	534,300	45%
Grain Crops	*	---	60,000	5%	0	0%	61,400	5%
Conservation Reserve Program Land [a]	*	---	*	---	0	0%	*	---
Grass/Pasture/Hay	10,200	1%	452,300	38%	0	0%	462,500	39%
Orchards/Vineyards	*	---	11,000	1%	0	0%	11,200	1%
Row Crops	*	---	47,400	4%	0	0%	47,400	4%
Shrub/Rangelands	*	---	*	---	0	0%	*	---
Water/Wetlands/Developed/Barren	*	---	72,000	6%	0	0%	73,700	6%
Oregon HUC Totals [b]	**103,500**	**9%**	**1,093,100**	**91%**	**0**	**0%**	**1,196,600**	**100%**

**: Less than 1 percent of total acres. See below for special considerations.*
a: Estimate from Farm Service Agency records and includes CRP/CREP.
b: Totals are approximate due to rounding and small unknown acreages.

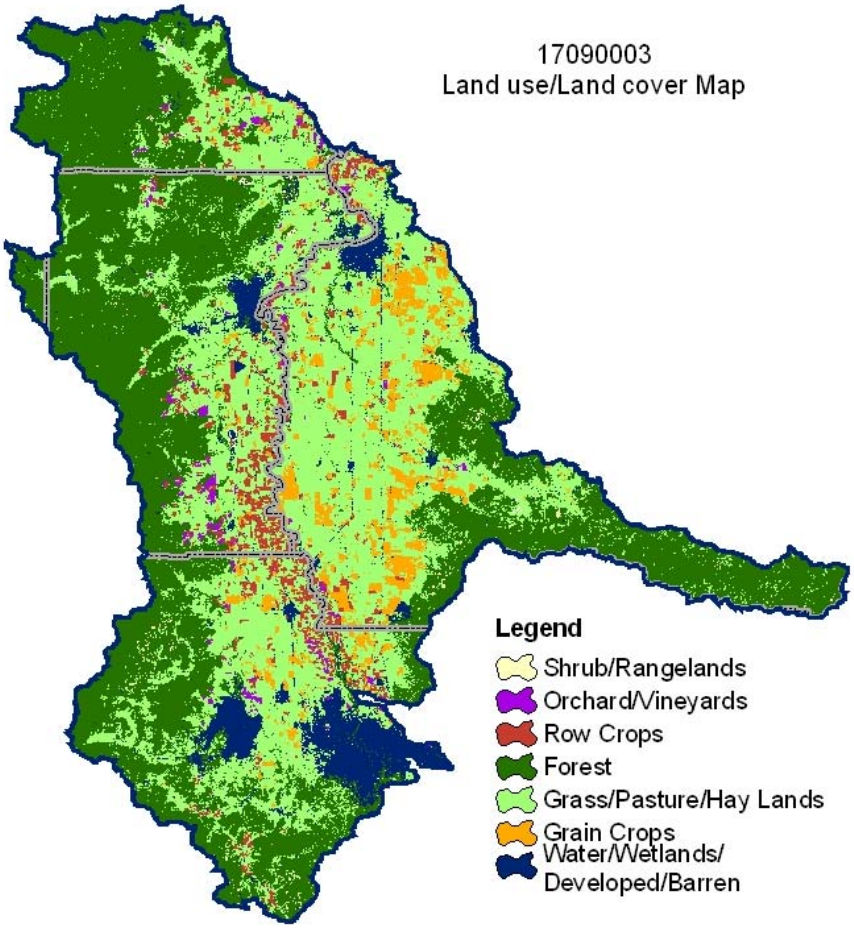
Special Considerations for This 8-Digit HUC:

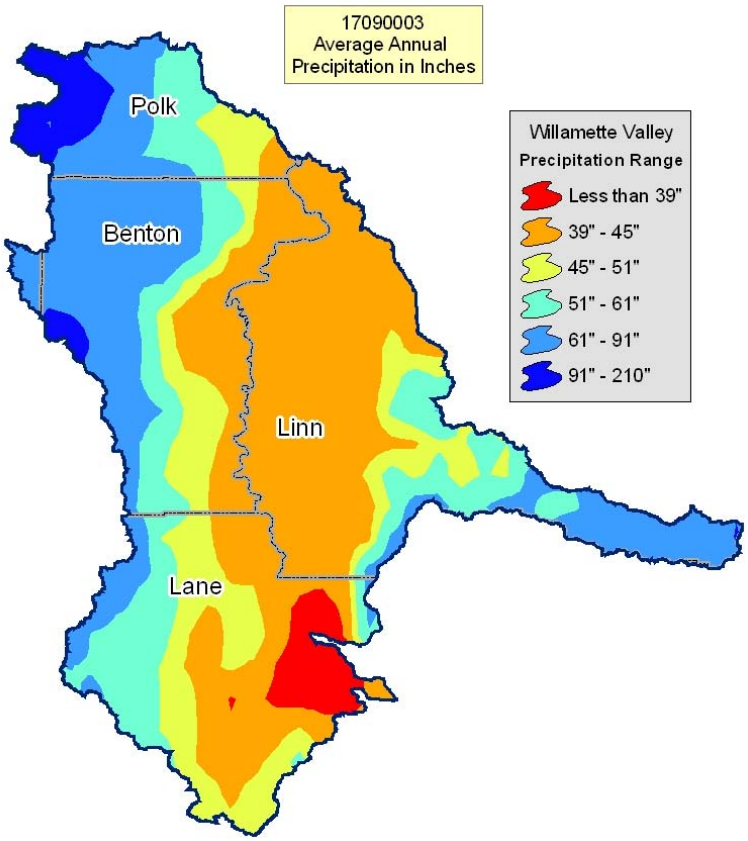
- Fifty-four percent of private forestland is under industrial forest ownership (OSU, Forestry Sciences Laboratory).
- Grain commonly is grown in rotation with grass seed and other crops.
- Orchards/Vineyards/Berries includes other perennial crops such as hops, mint, nursery stock, and Christmas trees. (Pacific Northwest Ecosystem Research Consortium)
  - ~ Orchards/Vineyards/Berries - 11,800 acres
  - ~ Nursery stock - 300 acres
  - ~ Christmas trees - 8,100 acres
- Grass/Pasture/Hay includes approximately:
  - ~ 203,900 acres of grass seed and turf(Pacific Northwest Ecosystem Research Consortium)
  - ~ 79,200 acres of pasture (Pacific Northwest Ecosystem Research Consortium)
  - ~ 51,100 acres of hay (Pacific Northwest Ecosystem Research Consortium)
- Pasture is included on commercial dairy and beef operations as well as small farms and ranches.
- Urban land comprises 53,200 acres.

Irrigated Lands (1997 NRI[1,3] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	52,700	66%	4%
	Uncultivated Cropland	4,800	6%	0%
	Pastureland	22,000	28%	2%
	Total Irrigated Lands	**79,500**	**100%**	**7%**

(Continued on the following pages)

Back to Contents

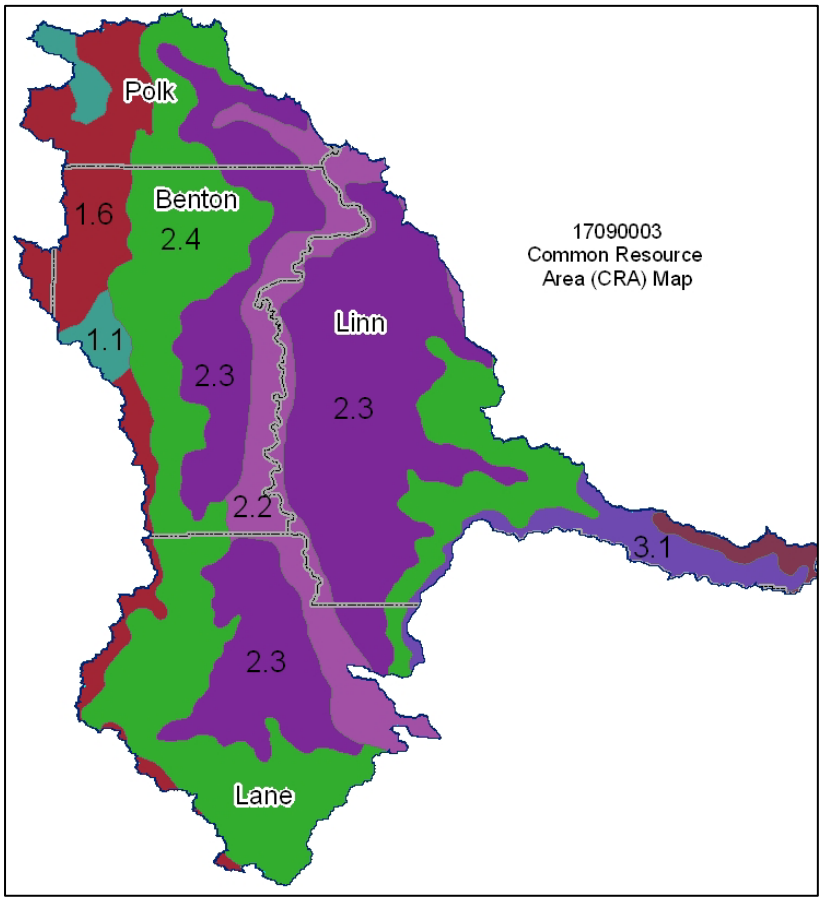




Common Resource Area Map

Back to Contents

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



2.2 - Willamette and Puget Valleys - Willamette River Floodplains and Tributaries: This unit is comprised of the flood plain of the Willamette River and its major tributaries. It includes historic riparian areas and areas of intensive row crops. The temperature regime is mesic, and the 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 are well drained to poorly drained. Land use is variable. The temperature regime is mesic, and the moisture regime is xeric. There are 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 underlain by basalt and sedimentary bedrock and are typically red and clayey. The vegetation is Douglas-fir and Oregon white oak. The temperature regime is mesic, and the moisture regime is xeric. The unit does not support western hemlock, which is characteristic of the adjacent units in the Coast and Cascade MLRA's.

3.1 - Olympic and Cascade Mountains - Western Cascades Lowlands and Valleys: This unit comprises the lower elevations of the Cascade Mountains, adjacent to the Valley Foothills unit (2.4). The bedrock is basalt, andesite, and rhyolite. The vegetation is Douglas-fir and western hemlock. This unit is one of the most important timber-producing areas in the Northwest. The temperature regime is mesic, and the moisture regime is udic.

Physical Description – Continued

Back to Contents

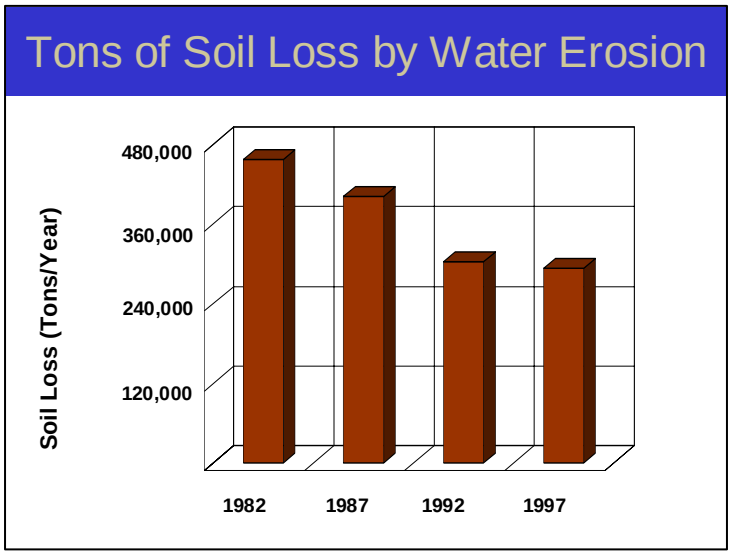
		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	94,729	237,207
	Well	53,463	133,874
	Total Irrigated Adjudicated Water Rights	148,191	371,081
Stream Flow Data	USGS 14174000 WILLAMETTE RIVER AT ALBANY, OR	**Total Avg. Yield**	10,327,045
		May – Sept. Yield	2,208,565
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	1,261	---
	303d/TMDL Listed Streams (DEQ)	314	25%
	Anadromous Fish Presence (StreamNet)	130	10%
	Bull Trout Presence (StreamNet)	1	0%
		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	20,911	38%
	Grain Crops	2,592	5%
	Grass/Pasture/Hay	25,133	46%
	Orchards/Vineyards	352	<1%
	Row Crops	1,789	3%
	Shrub/Rangelands – Includes CRP Lands	325	<1%
	Water/Wetlands/Developed/Barren	4,083	7%
	Total Acres of 100-foot Stream Buffers	**55,187**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	20,500	4%
	2 – moderate limitations	161,800	35%
	3 – severe limitations	114,100	25%
	4 – very severe limitations	125,600	27%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	37,700	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	**459,700**	**100%**

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

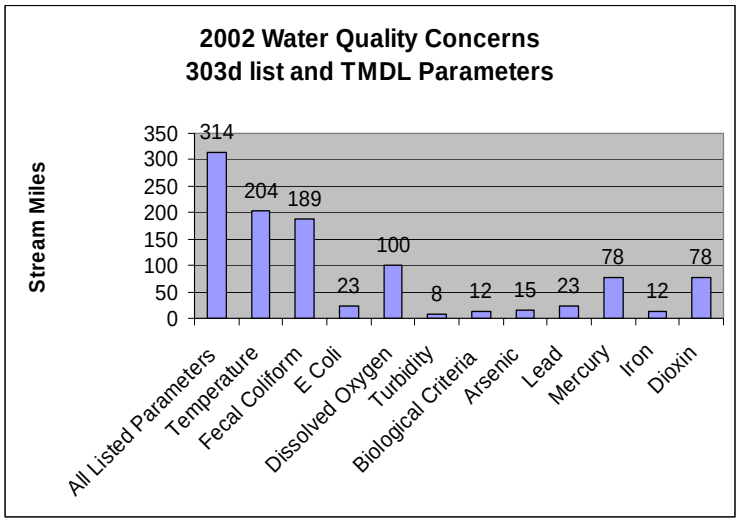
Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	20	3	12	4	2	0
No. of Permitted Animals	18,326	1,180	1,031,700	900	63,000	0

Resource Concerns

Back to Contents



- Sheet and rill erosion by water on the cropland and pastureland have been reduced by more than 163,000 tons of soil per year from 1982 to 1997.
- NRI estimates indicate that 34,100 acres of the 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 the cropland and pastureland fell 32 percent, from 0.9 to 0.6 ton/acre/year, from 1982 to 1997.



- Sixty-five percent of the listed stream miles exceed State water quality standards for temperature. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, and other anthropogenic or natural causes.
- E Coli and fecal coliform and nutrients can be indicative of livestock, human, or wildlife waste.
- The wide array of other listed water quality parameters are indicative of more intense agriculture as well as suburban, urban, and commercial/industrial land uses.
- Conservation practices that can be used to address these water quality issues include livestock waste management, grazing management, nutrient and pest management, and use of riparian buffers.

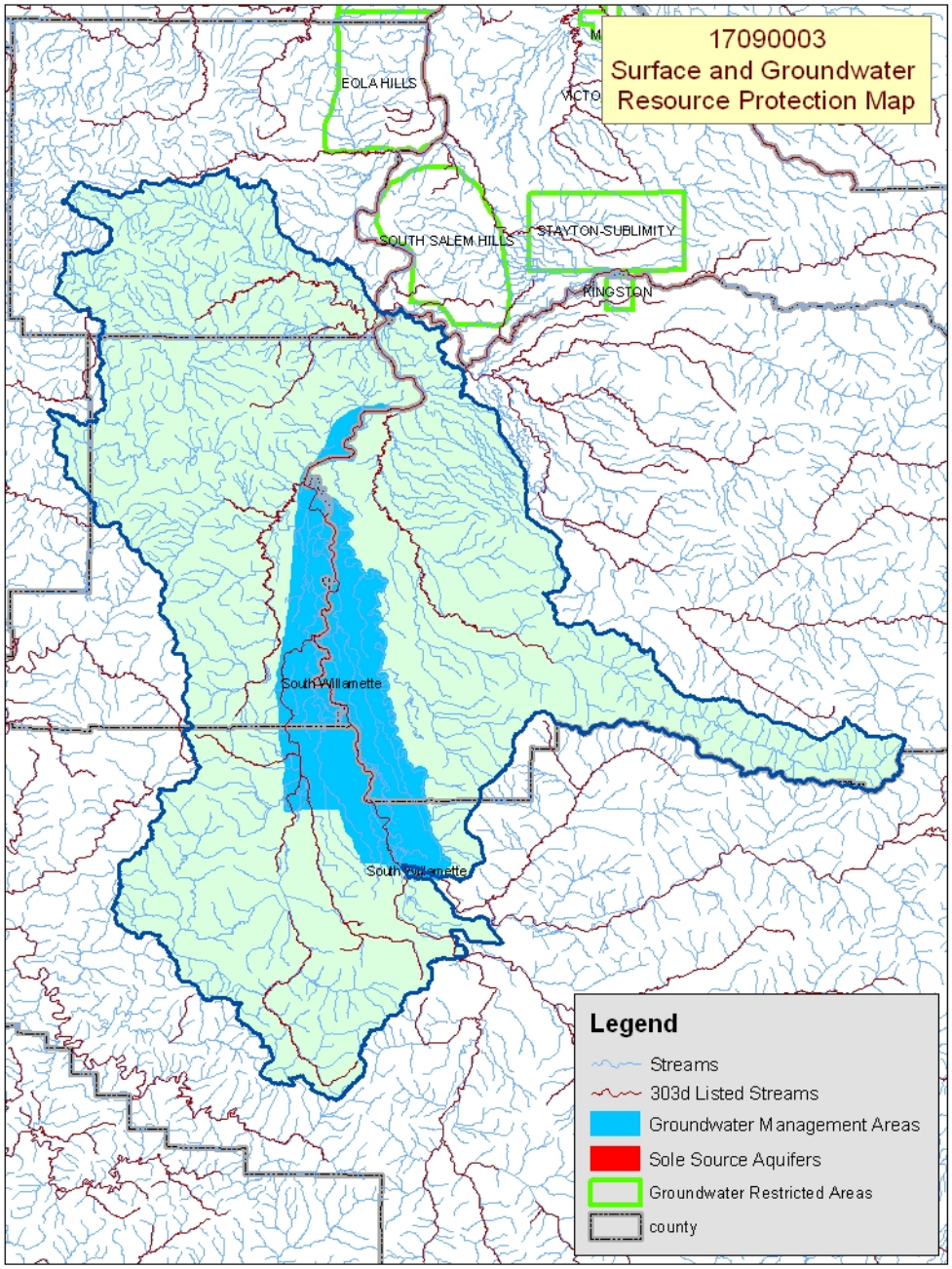
Watershed Projects, Plans, Studies, and Assessments

NRCS Watershed Projects[6]		NRCS Watershed Plans, Studies, and Assessments[7]	
Name	**Status**	**Name**	**Status**
Lower Amazon & Flat Creek Grand Prairie Little Luckiamute River	Installed – 1966 Installed – 1970 Deauthorized	None	None

ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	**Status**	**Name**	**Status**
Columbia & Willamette Rivers Willamette Basin	Completed Completed	Southern Willamette Valley Middle Willamette Upper Willamette & Upper Siuslaw	Completed Completed Completed

OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]
Calapooia Watershed Council, Coast Fork Willamette Watershed Council, Long Tom Watershed Council, Luckiamute Watershed Council, Mary's River Watershed Council	Calapooia River Watershed Assessment, Long Tom Watershed Assessment, Mary's River Preliminary Assessment	Willamette Subbasin Plan

(Continued on page 8)



Map Footnote [17]

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals- Canada lynx, Columbian white-tailed deer **Birds –** Bald eagle, Northern spotted owl, Marbled murrelet **Fish –** Coho salmon, Steelhead, Chinook salmon, Oregon chub, Bull trout **Invertebrates –** Fender's blue butterfly, Oregon silverspot butterfly **Plants –** Golden Indian paintbrush, Willamette daisy, Water howellia, Bradshaw's lomatium, Kincaid's lupine, Nelson's checker-mallow	**Fish** – Steelhead **Birds –** Yellow-billed cuckoo, Streaked horned lark **Amphibians and Reptiles –** Oregon spotted frog **Invertebrates-** Taylor's checkerspot **PROPOSED SPECIES** - None
ESSENTIAL FISH HABITAT[13] - Chinook	

Resource Concerns - Continued

Back to Contents

Resource Concerns / Issues by Land Use							
SWAPA +H Concerns	**Specific Resource Concern / Issue**	**Pasture\Hay**	**Grass Seed**	**Grain Crops**	**Row Crops**	**Perennial Crops (Orch/Vine/Berries)**	**Forest**
Soil Erosion	Sheet and Rill		X	X	X	X	
	Concentrated Flow or Gully					X	
	Streambank	X	X	X	X		X
	Irrigation Induced				X		
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X	X	X		
Water Quantity	Water Management for Irrigated Land				X		
Water Quality, Surface	Pesticides		X	X	X	X	
	Nutrients and Organics	X	X	X	X		
	Suspended Sediments and Turbidity	X	X	X	X		X
	Low Dissolved Oxygen	X	X	X	X		
	Temperature	X	X	X	X		
	Pathogens	X					
	Aquatic Habitat Suitability	X	X	X	X		
Air Quality	Airborne Sediment Causing Safety/Health Problems		X	X	X		
	Smoke Particulates Causing Safety/Health Problems		X				
	Undesirable Odors from Agricultural Sources	X					
Plant Condition	Productivity, Health, and Vigor	X					
Plant Management	Establishment, Growth, and Harvest	X					X
Animal Habitat, Wildlife	Food, Cover, and Shelter		X	X	X		
Human, Economic	High Risk and Uncertainty		X		X	X	
	High Capital/Financial Costs			X	X	X	
	High Labor Costs or Availability					X	
	High Management Level Required				X	X	
	Low or Unreliable Profitability	X	X	X	X	X	
Human, Political	Inadequate availability of Cost Share Programs		X				
	High Degree of Controversy		X				

Pasture / Hay

- Pastureland, especially on small farms and ranches, commonly is overgrazed or lacks needed fertility.
- Invasive weeds are present on pastures and other open grassy areas.
- Proper waste management is a concern in order for CAFOs to avoid water quality problems associated with nutrients and pathogens.

Grass Seed

- Grass seed commonly is produced under contract; however, pest management and erosion control are concerns during establishment.
- Smoke from burning stubble after harvest sometimes creates health and safety issues.

Grain, Row, and Perennial Crops

- Residue, nutrient, and pest management and use of filter strips and buffers are necessary to control erosion and protect water quality.
- Water management is an issue for irrigated crops in groundwater management areas.
- Sheet and rill erosion is higher on the steeper slopes used for Christmas trees, vineyards, or orchards.
- Adopting integrated pest management in lieu of use of chemicals is a risk on high-value orchards and vineyards.

Forestland

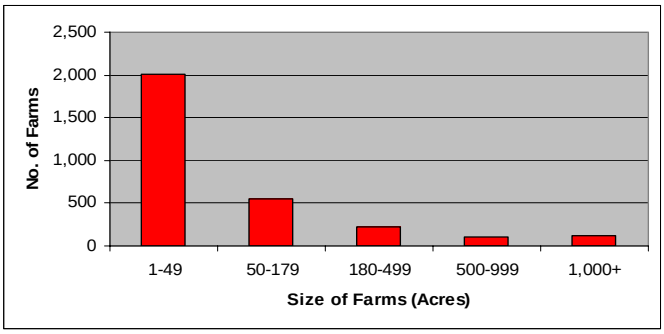
- Non-industrial forest landowner objectives commonly do not include actively managing for timber production.

General

- Land use constraints and pressure to develop hinder conservation efforts, jeopardizing the long-term future for agriculture.
- Controversy surrounds the eligibility of producers for USDA programs if fields have been previously drained.
- High land values and the conflict between agriculture and urban/suburban land uses increase the cost and social issues for farming.

Census and Social Data[14]

Back to Contents



Number of Farms: 3,021

Number of Operators: 4,986

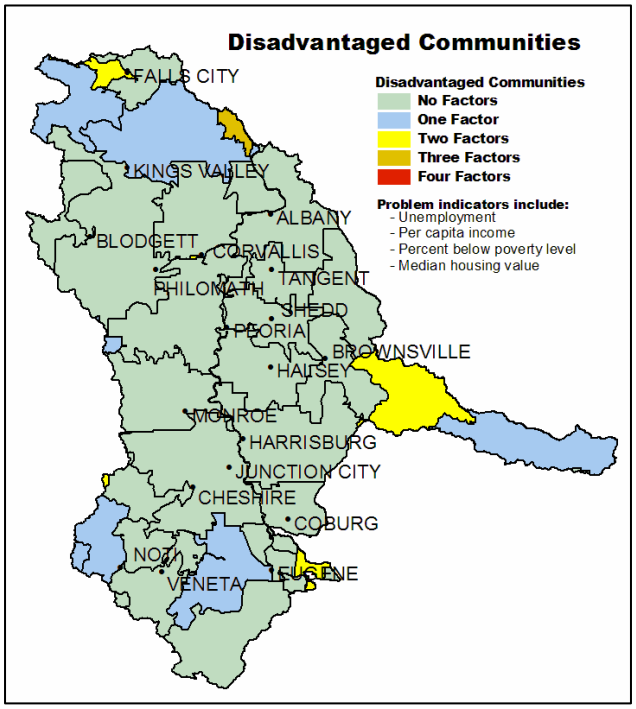
- Full-Time Operators: **1,582**
- Part-Time Operators: **3,404**

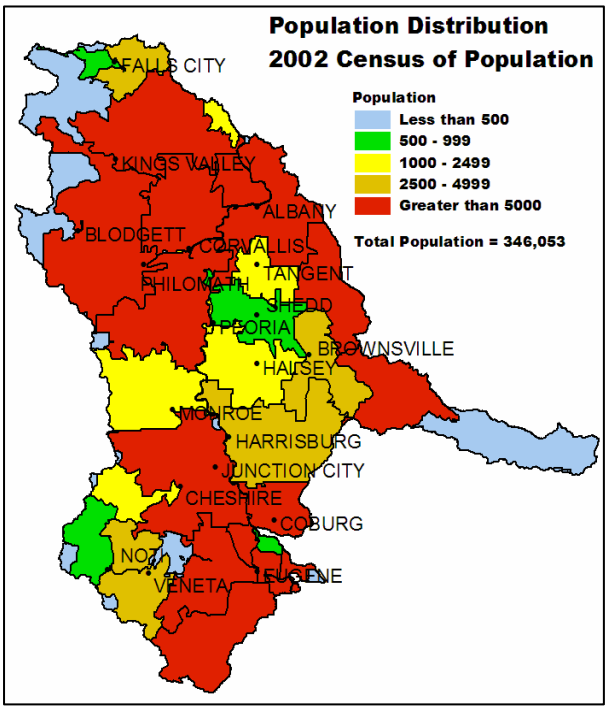
Estimated Level of Willingness and Ability to Participate in Conservation[15]: Moderate

There are 3,021 farms and nearly 5,000 operators in the subbasin. Nearly 70 percent of the farms are less than 50 acres in size. Many of the landowners are well educated; aware of local resource concerns; tend to be early adopters of agricultural innovations, but not necessarily conservation; and are very concerned about regulatory threats. Regarding conservation, most landowners do not have a conservation plan, perceive conservation to have a negative economic effect and low environmental effect, and do not expect to receive financial assistance. Conservation marketing and technical assistance will need to be substantially enhanced to increase the diffusion of conservation throughout the Upper Willamette subbasin.

Evaluation of Social Capital[16]: High

Social capital and the ability of communities in the subbasin to solve problems tend to be high. The strengths of the communities are widespread participation in organizations, well-educated and financially stable residents, effective leadership, and a history of completing community projects. There is presently active community support for conservation in the subbasin. As long as communities continue to deem conservation important to their well-being, they will remain an effective partner in the diffusion of conservation.

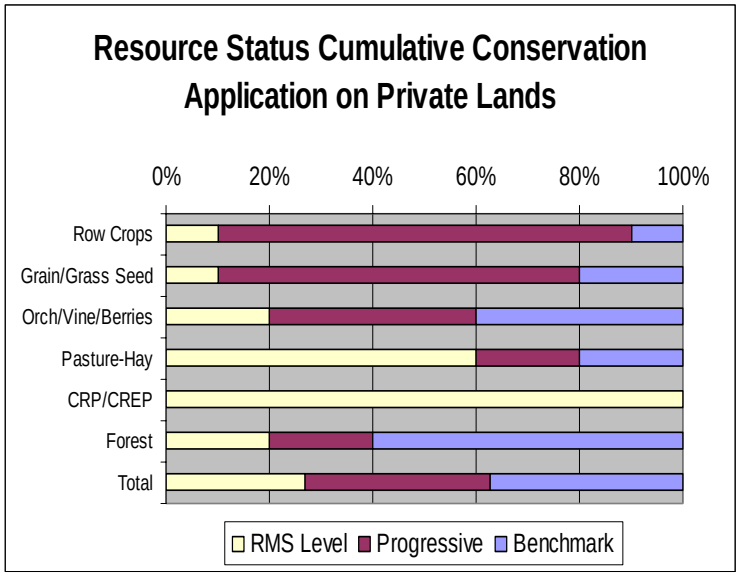




Progress / Status

Back to Contents

PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	2,901	4,069	2,631	1,171	4,616	3,078	15,388
Total Conservation Systems Applied (Acres)	1,041	2,793	2,551	2,471	4,705	2,712	13,561
Conservation Treatment (Acres)							
Waste Management	2	4	0	0	4	2	10
Buffers	47	829	276	502	238	378	1,892
Erosion Control	68	910	80	64	0	224	1,122
Irrigation Water Management	0	890	379	640	787	539	2,696
Nutrient Management	332	1,495	1,026	1,221	1,181	1,051	5,255
Pest Management	138	691	1,025	1,014	916	757	3,784
Prescribed Grazing	39	222	746	391	944	468	2,342
Trees & Shrubs	26	454	165	386	303	267	1,334
Conservation Tillage	163	187	193	0	329	174	872
Wildlife Habitat	357	2,472	2,182	1,371	1,483	1,573	7,865
Wetlands	524	1,722	396	648	1,032	864	4,322



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

- Progress over the last 5 years has been focused on:
  - Nutrient and pest management on CAFOs and cropland.
  - Erosion control on cropland.
  - Wildlife habitat management in riparian and wetland areas.
- Row crop (e.g. corn, beans, and cole crops) farmers often rely on crop consultants.
- Grain/grass seed producers typically have not worked with NRCS, but they have adopted a high level of management.
- Farmers growing perennial crops generally operate at a high level of management, except in areas of some nut crops.
- Much of the pasture that is at the benchmark level is located on small farms.
- Much of the forestland is associated with riparian areas and oak savannahs and is not managed for forage or timber.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **189 acres**
- Wetland Restoration Program (WRP): **1,417 acres**
- Conservation Reserve Enhancement Program (CREP): **589 acres**

Footnotes/Bibliography

Back to Contents

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/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

Back to Contents

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.

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.