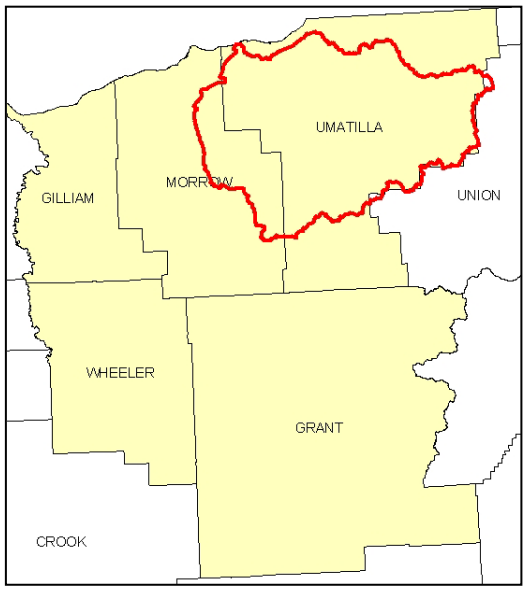
Umatilla – 17070103

8-Digit Hydrologic Unit Profile

SWCD	Acres
Umatilla	1,329,062
Morrow	272,447
Union	12,641



Introduction

The Umatilla 8-Digit Hydrologic Unit Code (HUC) subbasin is 1.6 million acres of primarily rangeland, cropland used for grain, forestland, hayland, and pastureland. Resource concerns associated with these land uses include soil erosion, management of water for irrigation, water quality, health of grazing land and forestland, and wildlife habitat. Social concerns include unreliable profits, high risks, and inadequate availability of cost share programs.

There are slightly more than 1,000 farms and ranches in the Umatilla subbasin. Most are less than 50 acres in size, and about 20 percent are more than 1,000 acres in size. Most operators in the subbasin have conservation plans, are aware of local resource concerns, and have adopted conservation practices. Conservation systems that are easy to implement, operate, and maintain are well received.

Conservation assistance is provided by two NRCS service centers, three soil and water conservation districts, the Columbia Blue Mountain Resource Conservation and Development (RC&D) office, and the Mission satellite office, which serves the Umatilla Indian Reservation.

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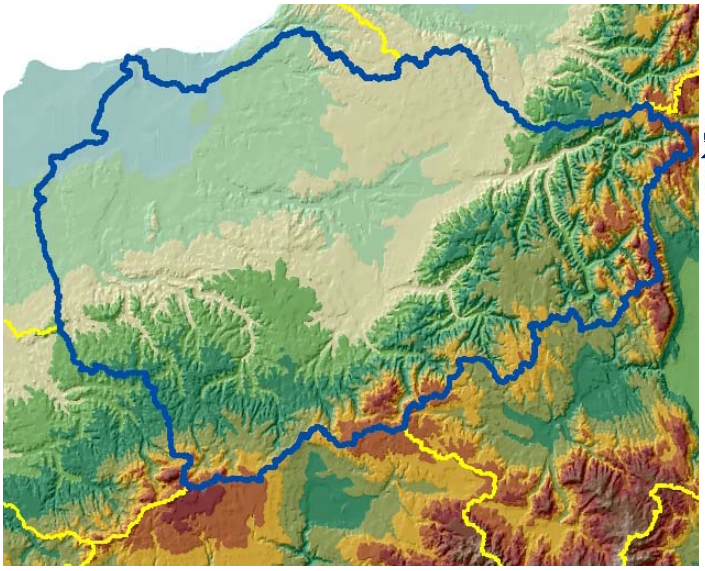

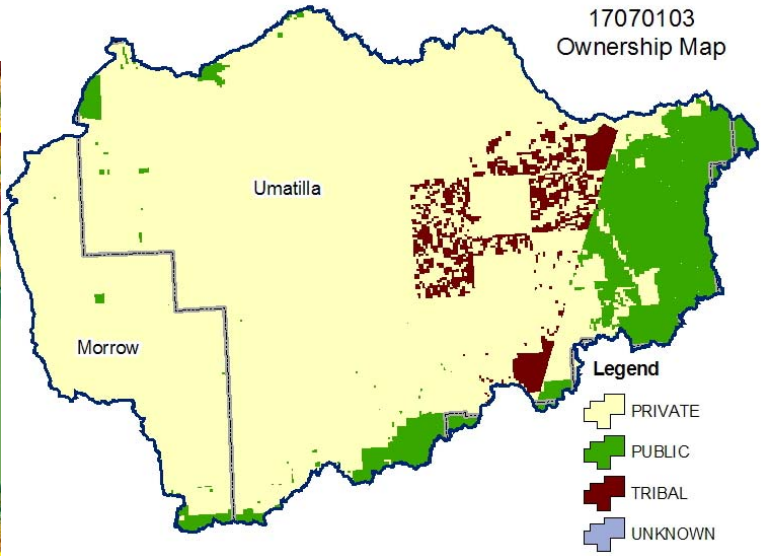

Produced by the Water Resources Planning Team Portland, OR

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Physical Description

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ALL NUMBERS IN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD[12])	Ownership - (2003 Draft BLM Surface Map Set[11])							
	Public		Private		Tribal		Totals	%
	Acres	%	Acres	%	Acres	%		
Forest	131,600	8%	145,400	9%	22,100	1%	299,100	19%
Grain Crops	---	*	360,100	22%	18,300	1%	378,600	23%
Conservation Reserve Program Land [a]	---	*	111,800	7%	---	*	115,700	7%
Grass/Pasture/Hay	---	*	140,000	9%	---	*	149,900	9%
Orchards/Vineyards	0	0%	---	*	0	0%	---	*
Row Crops	0	0%	---	*	0	0%	0	0%
Shrub/Rangelands	57,000	4%	566,500	35%	20,900	1%	644,400	40%
Water/Wetlands/Developed/Barren	---	*	21,600	1%	---	*	25,400	2%
Oregon HUC Totals [b]	**198,900**	**13%**	**1,345,900**	**83%**	**68,800**	**4%**	**1,613,600**	**100%**

**: Less than one 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:

- Some row crops are grown, including onions, corn, and potatoes.
- Both dry peas and green peas are grown; they are included with the grain crops in the table above.
- Approximately 50 percent of the private forestland is under industrial forest ownership.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	64,200	58%	4%
	Uncultivated Cropland	40,200	36%	2%
	Pastureland	6,600	6%	<1%
	Total Irrigated Lands	**111,000**	**100%**	**7%**

(Continued on the following pages)

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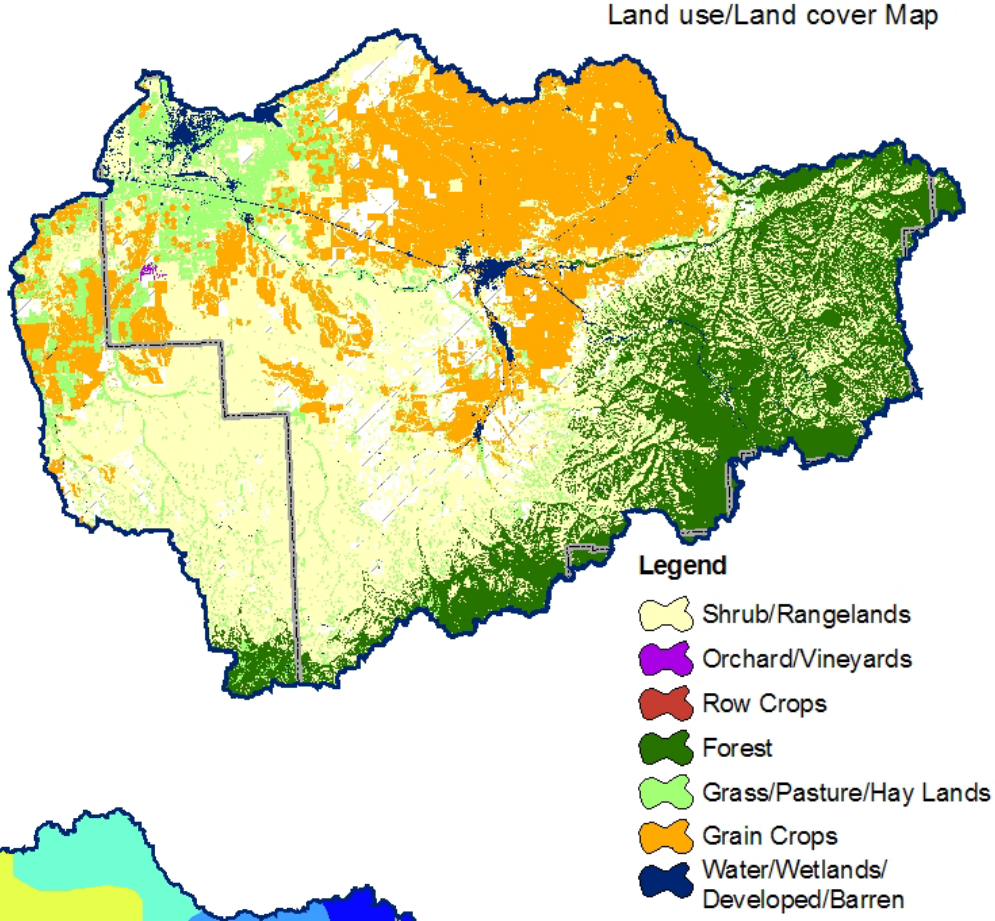
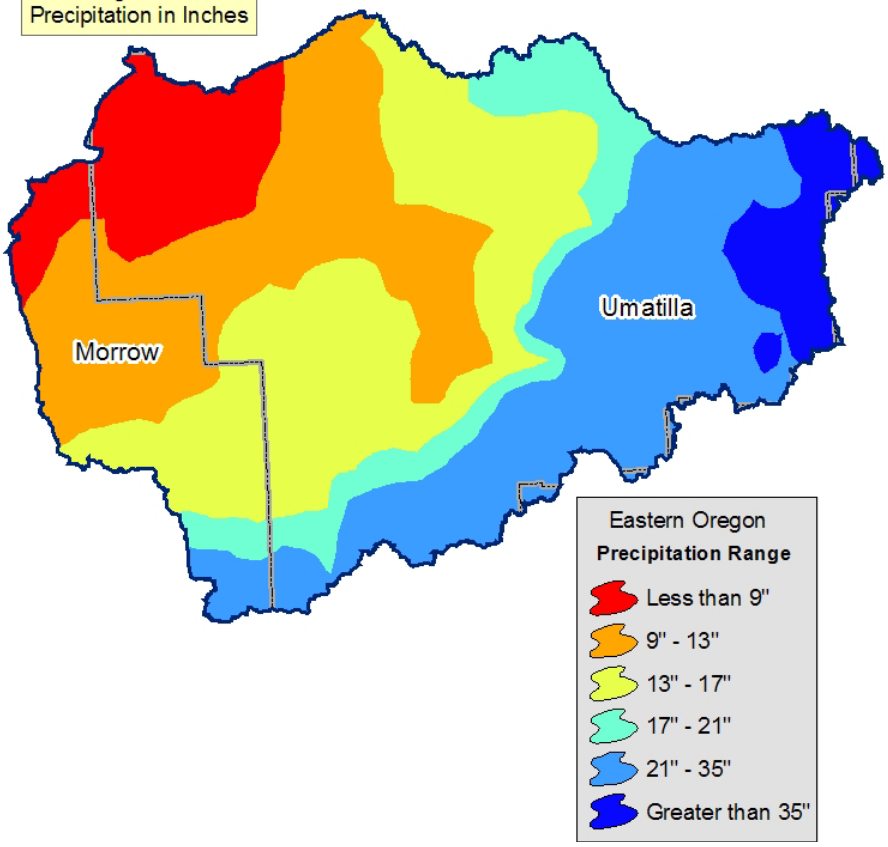
17070103
Land use/Land cover Map



17070103
Average Annual
Precipitation in Inches



Common Resource Area Map

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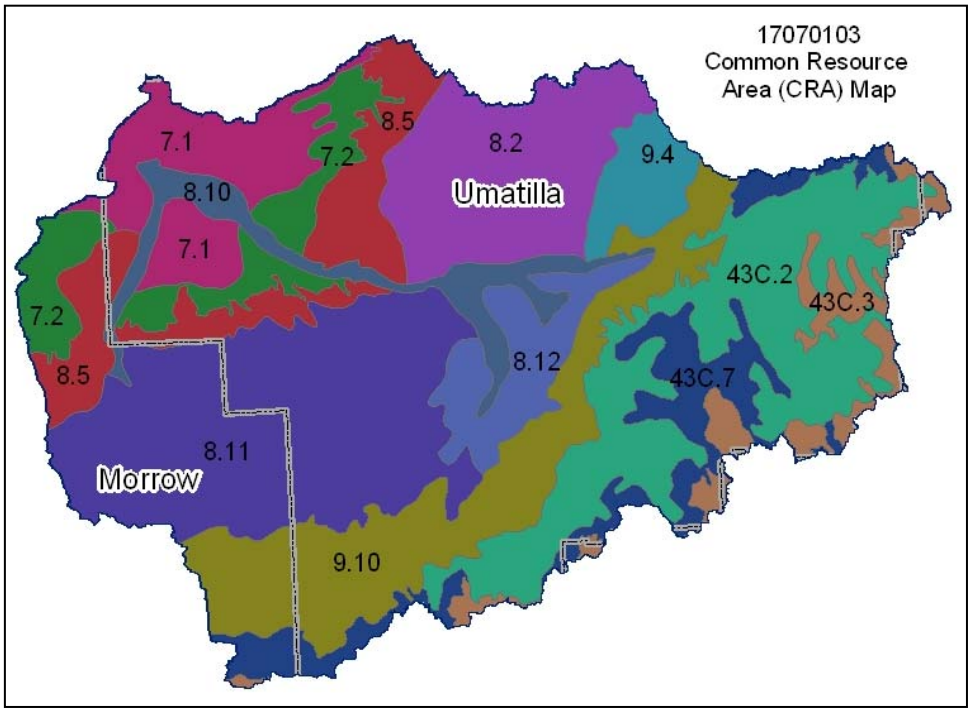
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



7.1 - Columbia Basin - Sandy Missoula Flood Deposits: This unit once contained vast temporary lakes that were created by floodwater from glacial Lake Missoula. The mean annual precipitation is 6 to 9 inches. The soils are dominantly sand, loamy sand, and sandy loam and include those of the Quincy, Sagehill, Roloff, Olex, and Koehler series. The temperature regime is mesic, and the moisture regime is aridic. The native vegetation consists of bluebunch wheatgrass and sagebrush. Major irrigation projects provide water to this unit from the Columbia River and have allowed for the conversion of large areas of sagebrush to agriculture use. Although the water supply is not limited, the quality of the groundwater is a major issue.

8.2 - Columbia Plateau - Loess Islands: This unit is a remnant of the once unbroken mantle of wind-deposited loess that covered the entire Columbia Plateau. The unit 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 of the CRA. The loess islands have been transformed 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 are moderately deep silt loam and are of the Condon and Morrow series. The temperature regime is mesic, and the moisture regime is xeric. Precipitation is about 12 to 15 inches.

9.10 – Palouse and Nez Perce Prairies - Umatilla Dissected Uplands: This unit is characterized by shallow and moderately deep soils on gently sloping to steeply sloping hills and mountains adjacent to forestland. The dominant soils are those of the Gwin, Gwinly, Gurdane, and Waha series. The temperature regime is mesic, and the moisture regime is xeric. Precipitation is about 16 to 25 inches. Most areas are used for livestock grazing.

43C.2 - Blue and Seven Devils Mountains - Maritime-Influenced Zone: The Maritime-Influenced Zone CRA is the part of the Blue Mountains that directly intercepts marine weather systems moving east through the break in the Cascades at the Columbia River Gorge. Rain or snow events occur throughout the year except in summer. Loess soils that have a moderately high water holding capacity are at lower elevations near the Columbia Plateau. Moisture is sufficient to support forests at the lower elevations. The xeric forests consist of ponderosa pine and Douglas fir with a dense and diverse shrub layer.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	64,219	215,152
	Well	83,361	279,285
	Total Irrigated Adjudicated Water Rights	147,580	494,437
Stream Flow Data	USGS 14033500 UMATILLA RIVER, NEAR UMATILLA, OR	**Total Avg. Yield**	361,443
		May – Sept. Yield	57,196
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	720	---
	303d/TMDL Listed Streams (DEQ)	293.7	41%
	Anadromous Fish Presence (Streamnet)	126.4	18%
	Bull Trout Presence (Streamnet)	97.8	14%
		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	17,585	23%
	Grain Crops	14,206	19%
	Grass/Pasture/Hay Lands	7,880	11%
	Orchards/Vineyards	28	0%
	Row Crops	0	0%
	Shrub/Rangelands – Includes CRP Lands	32,960	44%
	Water/Wetlands/Developed/Barren	1,948	3%
	Total Acres of 100-Foot Stream Buffers	**74,608**	**100%**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	2,800	1%
	2 – moderate limitations	162,600	36%
	3 – severe limitations	215,200	47%
	4 – very severe limitations	63,000	14%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	8,200	2%
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	4,800	1%
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	0	0%
	Total Croplands and Pasturelands	**456,600**	**---**

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	2	4	0	0	0	1
No. of Permitted Animals	15,900	16,750	0	0	0	4,150

Resource Concerns

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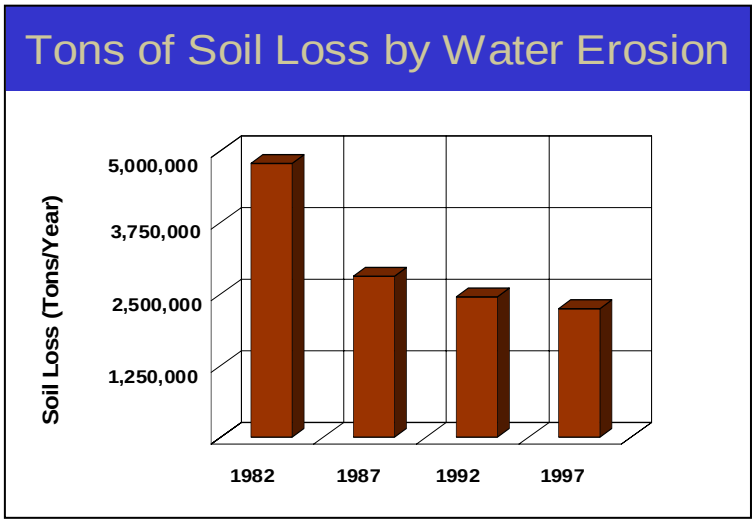
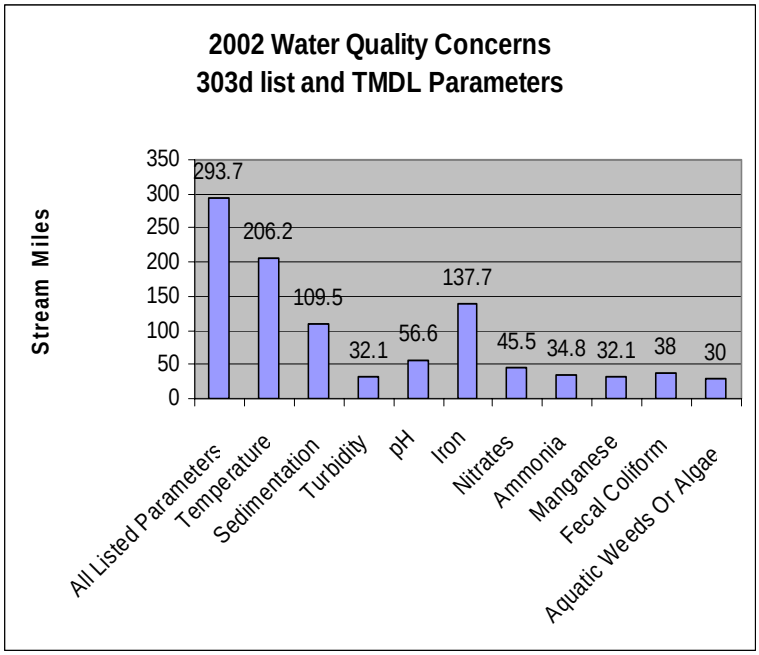


- Sheet and rill erosion by water on the croplands and pasturelands have been reduced by more than 2.5 million tons of soil per year from 1982 to 1997.
- NRI estimates indicate that 251,400 acres of the agricultural lands still had water erosion rates above a sustainable level in 1997.
- Controlling 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 cultivated croplands fell 37 percent, from 9.4 tons per acre per year to 6.0 tons per acre per year, from 1982 to 1997.

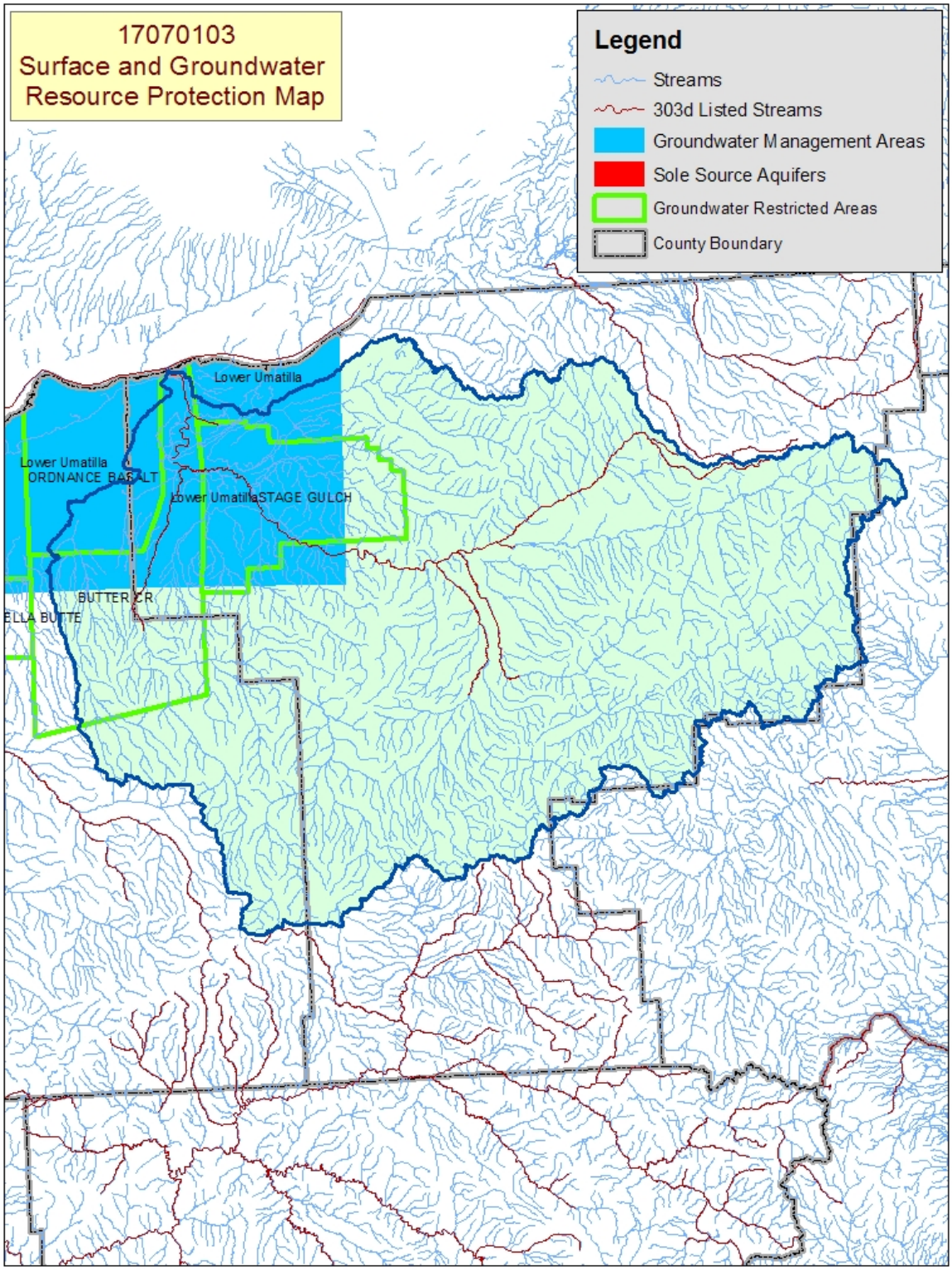


- Seventy percent of the 303d listed stream miles exceed State water quality standards for temperatures. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural causes.
- Irrigation-induced, sheet and rill, and streambank erosion are sources of sediment affecting water quality. In addition, cropland agriculture can contribute excessive nutrients to area streams which can stimulate the growth of aquatic weeds and algae.
- Fecal coliform may originate from livestock, onsite septic systems, and wildlife.
- Conservation practices that can be used to address these water quality issues include erosion control, crop residue management, grazing management, nutrient 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**
Upper Stage Gulch	Active	None	
ODEQ TMDL's[8]		**ODA Agricultural Water Quality Management Plans[9]**	
Name	**Status**	**Name**	**Status**
Umatilla River Basin	EPA Approved - 2001	Umatilla River Subbasin Willow Creek	Completed Completed

OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]
Umatilla Basin Watershed Council-	None	Umatilla Subbasin Plan

(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 and Rill		X				
	Wind			X			
Soil Condition	Tilth, Crusting, Infiltration, and Organic Matter		X				
Water Quantity	Water Management For Irrigated Land	X		X			
Water Quality, Groundwater	Nutrients & Organics			X			
Water Quality, Surface	Nutrients & Organics	X	X	X			
	Temperature	X	X			X	
Plant Suitability	Site & Intended Use Suitability					X	X
Plant Condition	Productivity, Health, and Vigor	X				X	X
Plant Management	Establishment, Growth, and Harvest	X				X	X
Animal Habitat, Domestic	Management	X				X	X
Animal Habitat, Wildlife	Food, Cover, and/or Shelter	X	X			X	X
	Water Quantity and Quality	X	X	X		X	
Human, Economics	High Risk and Uncertainty		X	X		X	
	High Capital/Financial Costs			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	X			X	X
General	Tribal Reservation and Ceded Lands	X	X	X		X	X

Grass / Pasture / Hay

- Management of nutrients and irrigation water can be an issue on irrigated pasture.
- Pastures adjacent to streams commonly lack adequate riparian vegetation to shade and buffer streams.

Grain Crops

- Sheet and rill erosion remain resource concerns.
- Some fields are cropped to the edge of streams, leaving little riparian vegetation for shade and habitat.
- Fields typically are cropped from property line to property line without fence rows or other vegetation for wildlife.

Row Crops

- Row crops are generally well managed; however, one or two criteria for quality, such as nutrient or pest management, commonly are not being met.

Rangeland

- Invasive weeds (yellow star-thistle, knapweed, etc.) reduce the value of grazing lands.
- Water sources for wildlife commonly are inadequate.

Forest

- Most private forestlands are managed by private industrial owners who generally comply with State practices.
- Private non-industrial forestland commonly is associated with small woodlots or rural homesites, which are not actively managed for timber production.
- Private woodlots commonly suffer from hygrading (harvesting the best trees) or poor stand management (overstocked stands).

General

- The complex ownership pattern of tribal reservation lands commonly makes conservation decisions difficult.
- Tribal interest in management of their ceded area is perceived by some as a deterrent to conservation.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Mammals - Canada lynx **Birds –** Bald eagle **Fish –** Sockeye salmon, Chinook salmon **,** Steelhead**,** Bull trout **Plants –** Spalding's campion	**Mammals** - Washington ground squirrel **Birds –** Yellow-billed cuckoo **Amphibians and Reptiles –** Columbia spotted frog **Plants-** Northern wormwood
	PROPOSED SPECIES - None
ESSENTIAL FISH HABITAT[13] – Chinook	

Census and Social Data[/14]

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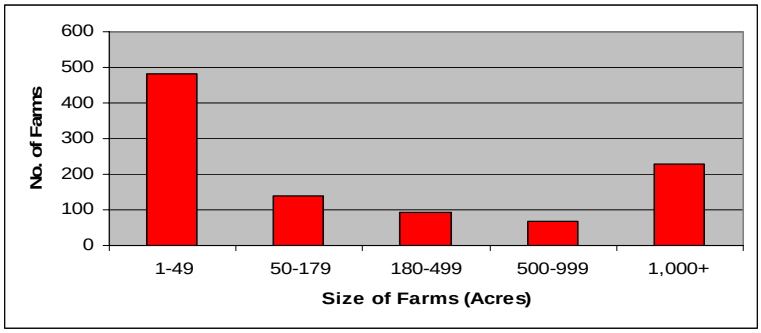


Number of Farms: 1,016

Number of Operators: 1,690

- Full-Time Operators: **574**
- Part-Time Operators: **1,116**

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

In the Umatilla subbasin, many of the farmers and ranchers outside of the tribal reservation boundaries incorporate conservation practices in their operations. They have an appositive stewardship attitude and appreciate the effect conservation practices have on local resource concerns. However, many also perceive that implementing, operating, and maintaining conservation practices are too costly and too difficult.

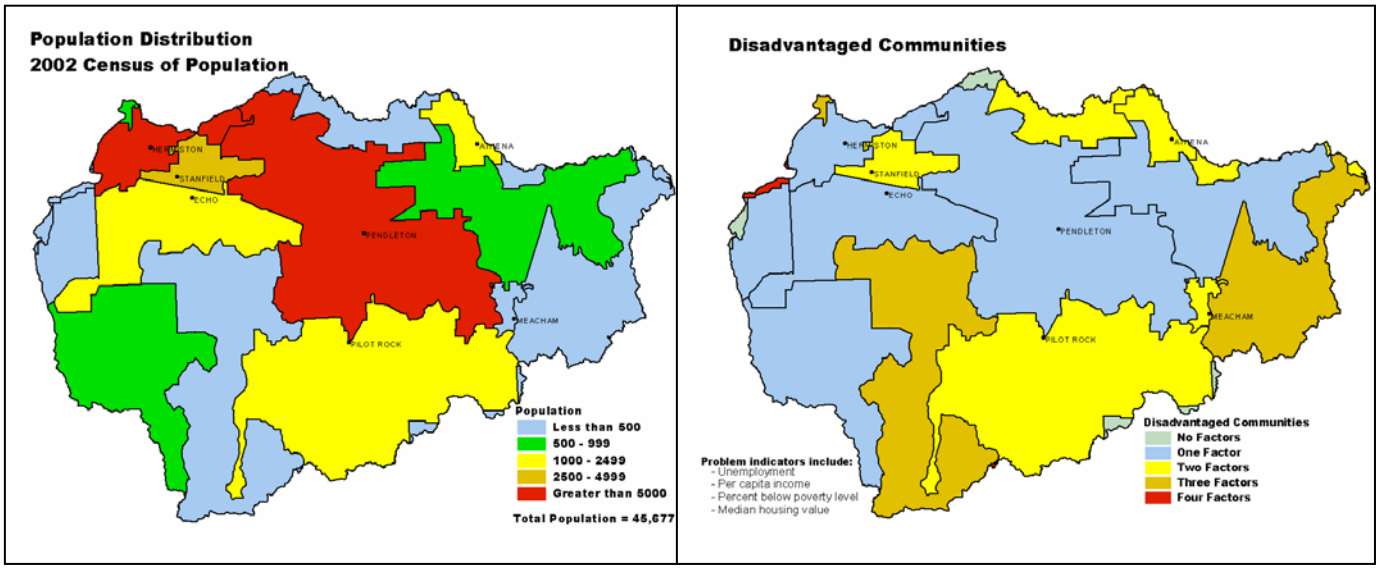
Those individuals farming and ranching on tribal lands and/or for absentee landowners report difficulty in getting agreement on the adoption of resource management and conservation systems. Landowners who have a say in management decisions but do not actually participate in the day-to-day operation of the farm or ranch may not understand or fully appreciate the benefits of conservation to the operation and community.

Efforts aimed at raising awareness of the benefits of conservation among the community-at-large (i.e. more than just the agricultural operators) might yield benefits for conservation throughout the entire Umatilla subbasin.

Evaluation of Social Capital[/16] Moderate to high

The agricultural community in the Umatilla subbasin is reasonably active in conservation, especially the large-acreage operators. The community as a whole is less inclined to be involved in resource issues, possibly because it considers social issues, such as health, education, and housing, more pressing. For conservation to become more widespread, the agricultural community needs to provide technical and financial assistance to small-acreage farmers and ranchers.

Social capital in the Umatilla subbasin and the willingness of the residents to solve community problems is moderate to high if the issue is regarded as important. Local leaders and conservationists might improve community support for natural resource management by increasing awareness of resource concerns and the benefit to the entire community in addressing these concerns.



Progress / Status

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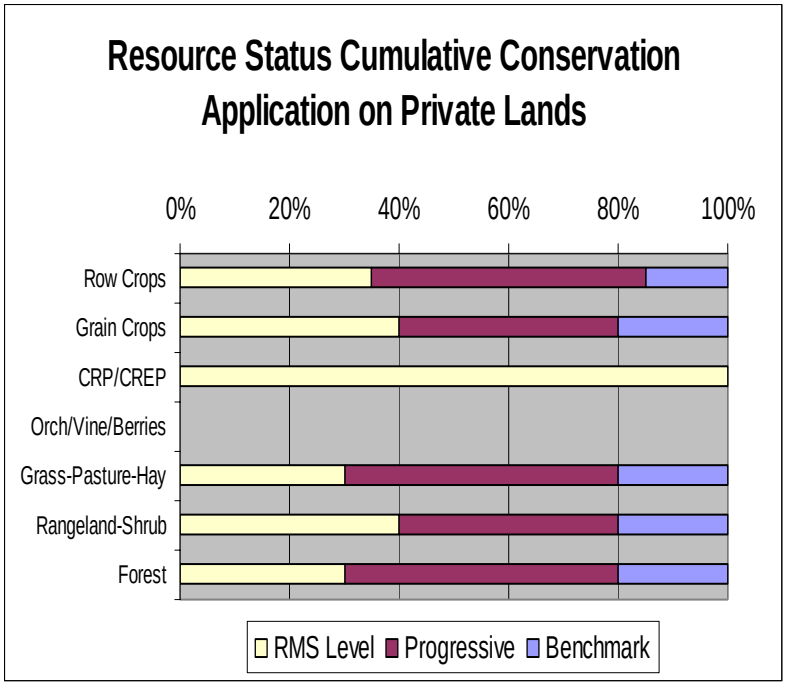
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	58,913	40,173	37,192	28,654	57,397	44,466	222,329
Total Conservation Systems Applied (Acres)	25,474	71,424	51,050	43,416	46,863	47,645	238,227
Conservation Treatment							
Waste Management (number)	0	0	0	0	0	0	0
Buffers (acres)	0	135	25	86	177	85	423
Erosion Control (acres)	25,483	56,871	23,179	34,655	27,289	33,495	167,477
Irrigation Water Management (acres)	0	0	0	0	0	0	0
Nutrient Management (acres)	359	4,992	5,864	8,506	3,622	4,669	23,343
Pest Management (acres)	2,241	21,598	10,914	9,741	3,859	9,671	48,353
Prescribed Grazing (acres)	0	73,218	24,734	10,393	25,696	26,808	134,041
Trees & Shrubs (acres)	31	5	183	241	2,644	621	3,104
Conservation Tillage (acres)	792	39,158	5,020	14,955	6,849	13,355	66,774
Wildlife Habitat (acres)	24,473	31,881	8,103	19,760	38,811	24,606	123,028
Wetlands (acres)	0	0	0	0	0	0	0



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

Progress over the last 5 years has been focused on:

- o Erosion control, nutrient and pest management, and conservation tillage in areas of grain and row crops.
- o Prescribed grazing on rangeland and pastureland.
- o Wildlife habitat improvement.
- ❖ Most irrigated crops are well managed; however, there are at least one or two remaining resource concerns.
- ❖ Many grain producers use stubble burning and moldboard plowing and are reluctant to change because of the deep soils and high yields.
- ❖ Small operators commonly lack the knowledge to properly manage pasturelands.
- ❖ Most rangelands are well managed. In areas not meeting RMS quality criteria; however, plant productivity commonly is low due to invasive weeds such as medusahead.
- ❖ Most private industrial timber owners are applying good conservation practices and are satisfying State forest practices requirements.
- ❖ Some private non-industrial forests not managed for timber do not meet State forest practices requirements.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **111,804 acres**
- ❖ Wetland Restoration Program (WRP): **None**
- ❖ Conservation Reserve Enhancement Program (CREP): **454 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/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.