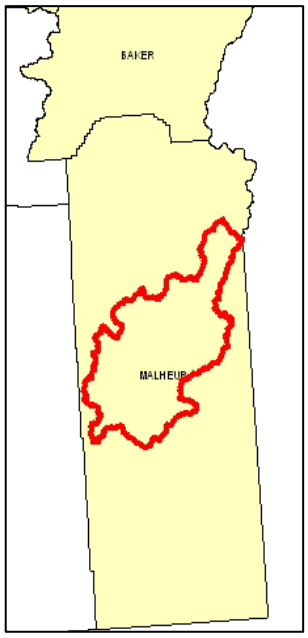
Lower Owyhee – 17050110

8-Digit Hydrologic Unit Profile

FINAL

NOVEMBER 2005



Introduction

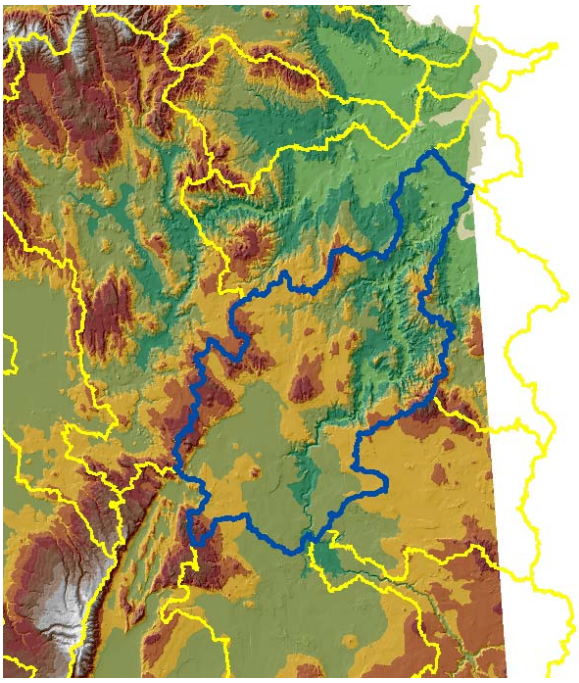
The Lower Owyhee 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 1,268,900 acres in Malheur County. Eighty-three percent of the subbasin is rangeland, fourteen percent is hayland and pastureland, and the remainder includes areas used for grain crops, wetlands, water areas, and developments. There are three permitted Confined Animal Feeding Operations (CAFOs) and about 1,650 permitted animals in the subbasin. Some resource concerns include concentrated flow, streambank, and irrigation-induced erosion; invasive and noxious weeds; insufficient water to meet livestock, wildlife, and irrigation needs; impaired water quality; and loss of wildlife habitat. High costs, unreliable profits, and inadequate incentives limit conservation adoption among the farmers and ranchers in the subbasin.

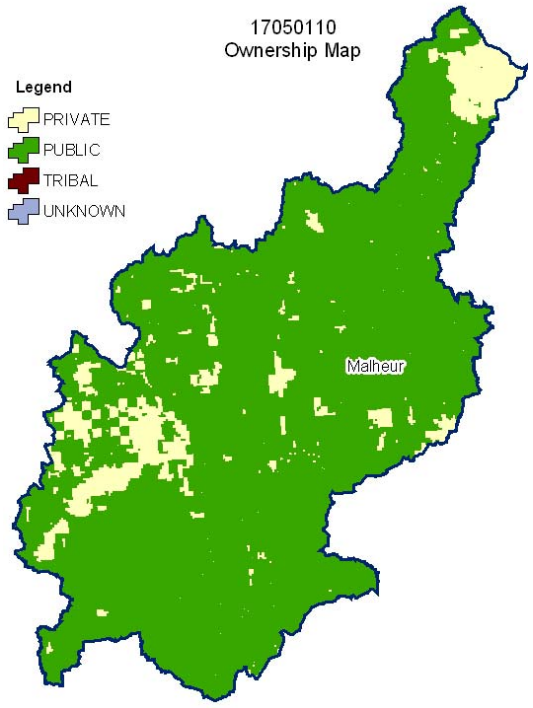
There are about 175 operations and 287 farmers and ranchers in the subbasin. Most operators are well educated, aware of local resource concerns, and good stewards of the natural resources. Unfortunately, the perceived expense and risk of implementing conservation limits its adoption. There is a need for additional risk-reducing incentives and greater community support to increase the diffusion of conservation in the Lower Owyhee subbasin.

The Ontario NRCS Service Center, Malheur County Soil and Water Conservation District, and Malheur Watershed Council provide much of the conservation assistance in the subbasin.

Profile Contents

Relief Map





Produced by the Water Resources Planning Team Portland, OR

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	*	---	*	---	0	0%	*	---
Grain Crops	*	---	*	---	0	0%	*	---
Conservation Reserve Program Land [a]	0	0%	0	0%	0	0%	0	0%
Grass/Pasture/Hay	150,700	12%	27,000	2%	0	0%	177,700	14%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	---	*	---	0	0%	*	---
Shrub/Rangelands	962,800	76%	87,800	7%	0	0%	1,050,600	83%
Water/Wetlands/Developed/Barren	22,300	2%	*	---	0	0%	27,500	2%
Oregon HUC Totals [b]	**1,136,800**	**90%**	**132,100**	**10%**	*	---	**1,268,900**	**100%**

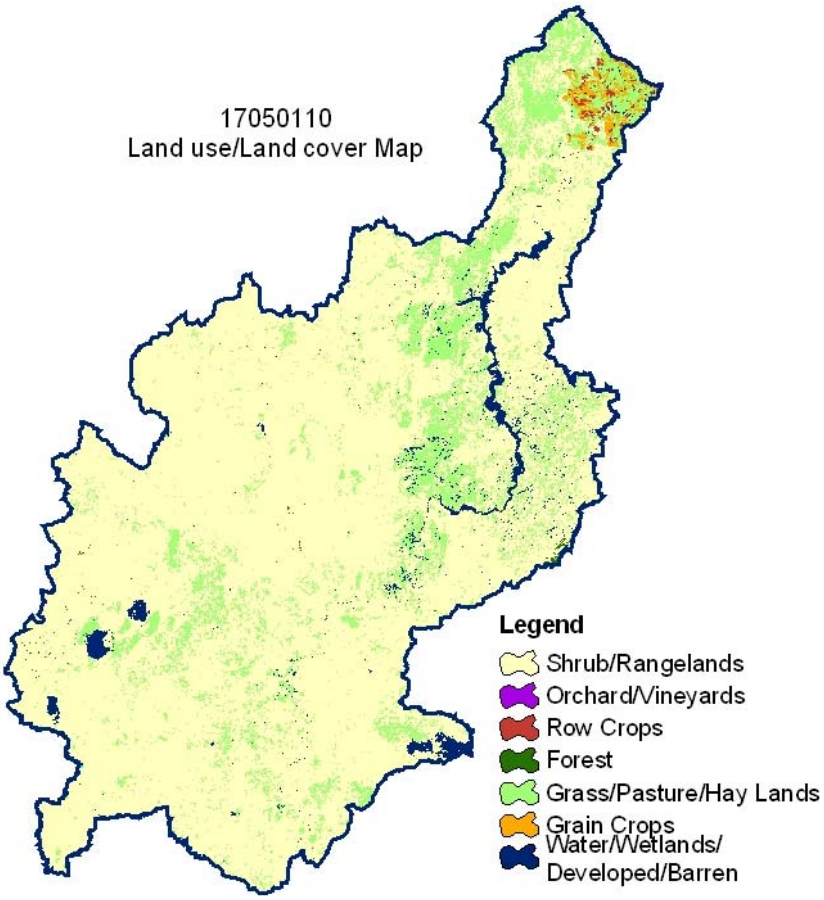
**: Less than 1 percent of total acres. See below for special considerations.*
a: Estimate from Farm Service Agency records and includes CRP/CREP.
b: Totals are approximate due to rounding and small unknown acreages.

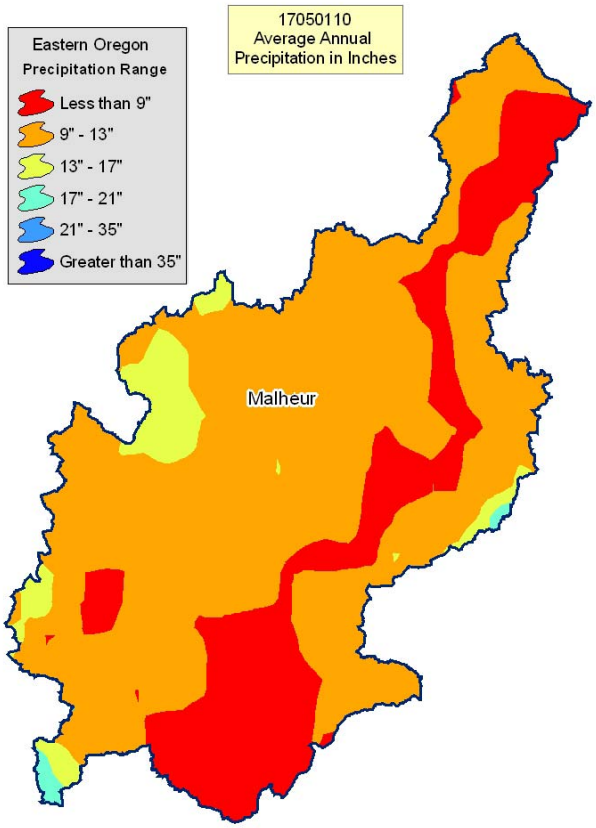
Special Considerations for This 8-Digit HUC:

- Most, if not all, ranchers have grazing allotments on public lands.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	11,600	51%	2%
	Uncultivated Cropland	4,700	21%	<1%
	Pastureland	6,400	28%	1%
	Total Irrigated Lands	**22,700**	**100%**	**3%**

(Continued on the following pages)


17050110
Land use/Land cover Map
Legend
Shrub/Rangelands
Orchard/Vineyards
Row Crops
Forest
Grass/Pasture/Hay Lands
Grain Crops
Water/Wetlands/
Developed/Barren


17050110
Average Annual
Precipitation in Inches
Eastern Oregon
Precipitation Range
Less than 9"
9" - 13"
13" - 17"
17" - 21"
21" - 35"
Greater than 35"
Malheur

Common Resource Area Map

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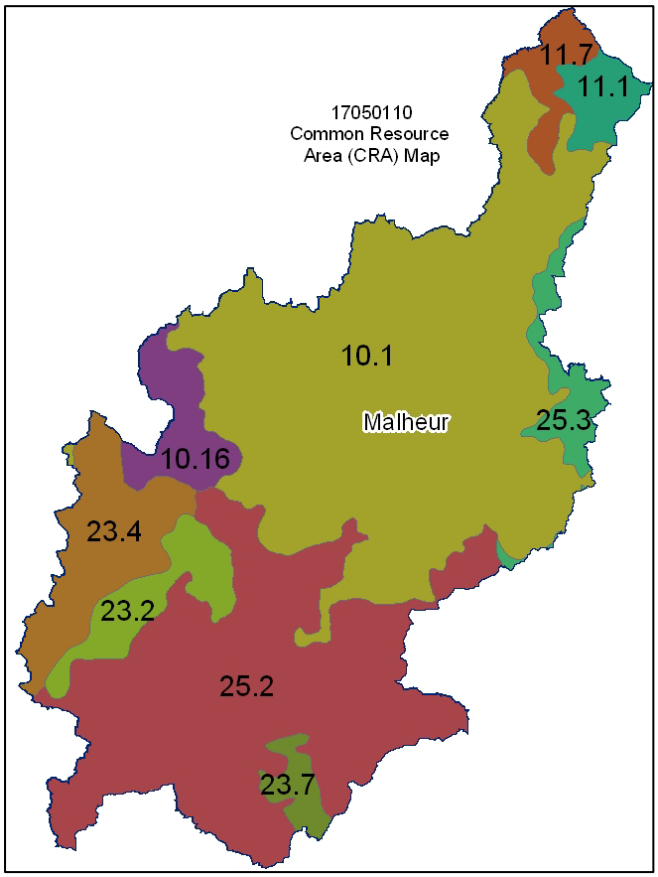
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



10.1 – Central Rocky and Blue Mountain Foothills – Warm, Dry Blue and Seven Devils Mountains Foothills: This unit lies between Oregon's Blue and Wallowa Mountains and the northwestern Snake River Plain. It is characterized by rangeland soils on hills and mountains associated with basalt and exposed tuffaceous sediment. The combined masses of the Cascade Range and the Blue and Wallowa Mountains block any maritime influence, creating a continental climate. As a result, plants are subject to a wide range in temperature, a high rate of evapotranspiration, and high early-season moisture stress. The dominant soils are those of the Brogan, Simas, Ruckles, and Ruclick series. The temperature regime is mesic, and the moisture regime is aridic. The mean annual precipitation is 9 to 12 inches. The vegetation is dominantly Wyoming big sagebrush and bluebunch wheatgrass (warm, dry climate).

11.7 – Snake River Plains - Dry Unwooded Alkaline Foothills: The shrub- and grass-covered unwooded alkaline foothills unit is higher and more rugged than adjacent valley units. Alkaline lacustrine terrace deposits are in this unit, unlike in other units, and they support a unique flora. Shallow and moderately deep soils over a cemented pan are common. The potential natural vegetation is saltbush-greasewood and sagebrush steppe. Today, cheatgrass and crested wheatgrass also are common. This unit is used for livestock grazing.

23.2 – Malheur High Plateau - High Desert Buttes: This unit is characterized by isolated mountainous peaks within the basalt plateau, including Beatty Butte, Glass Butte, Juniper Mountain, and Wagontire Mountain. The temperature regime is frigid, and the moisture regime is aridic or xeric. The dominant soils are those of the Westbutte, Felcher, and Riddleranch series. The soils typically are high in content of rock fragments and do not have a strong argillic horizon.

23.4 – Malheur High Plateau - High Lava Plains: This unit is on basalt plateaus and the escarpments of fault block mountains. The temperature regime is frigid or mesic, and the moisture regime is primarily aridic. The soils are typically shallow or moderately deep to bedrock or a cemented pan and have a strongly developed argillic horizon. The vegetation is dominantly low sagebrush, Wyoming big sagebrush, Idaho fescue, Thurber needlegrass, and bluebunch wheatgrass. Playas, small intermittent lakes, and clay that has a high shrink-swell potential are common in depressions.

25.2 – Owyhee High Plateau - Owyhee Uplands and Canyons: This unit contains deep, precipitous river canyons, barren lava fields, badlands, and tuffaceous outcroppings that are riddled by caves. The unit supports sagebrush grassland.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	10,072	32,673
	Well	2,064	6,162
	Total Irrigated Adjudicated Water Rights	12,136	38,834
Stream Flow Data	None	**Total Avg. Yield**	---
		May – Sept. Yield	--
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	272	---
	303d/TMDL Listed Streams (DEQ)	0	0%
	Anadromous Fish Presence (StreamNet)	0	0%
	Bull Trout Presence (StreamNet)	0	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	207	0%
	Grain Crops	544	<1%
	Grass/Pasture/Hay	9,482	13%
	Orchards/Vineyards	0	0%
	Row Crops	196	0%
	Shrub/Rangelands – Includes CRP Lands	57,656	82%
	Water/Wetlands/Developed/Barren	2,252	3%
	Total Acres of 100-Foot Stream Buffers	**70,338**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	8,400	37%
	2 – moderate limitations	6,300	28%
	3 – severe limitations	3,000	13%
	4 – very severe limitations	2,600	11%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	2,400	11%
	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	**22,700**	**---**

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	1	2	0	0	0	0
No. of Permitted Animals	1,800	850	0	0	0	0

Resource Concerns

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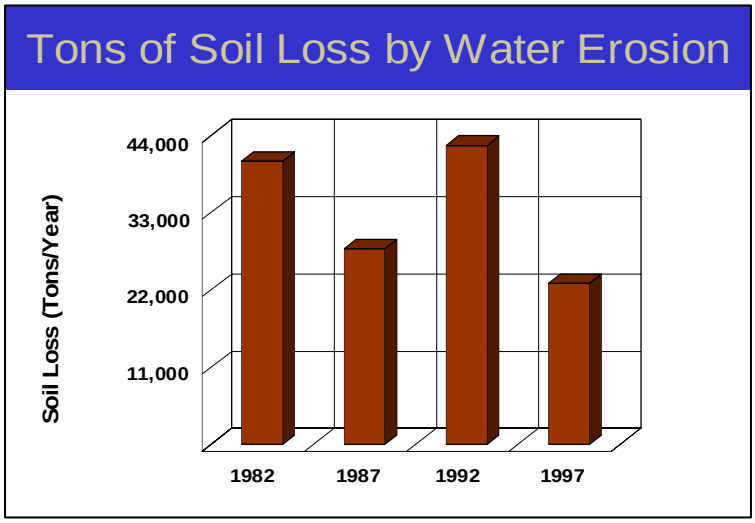


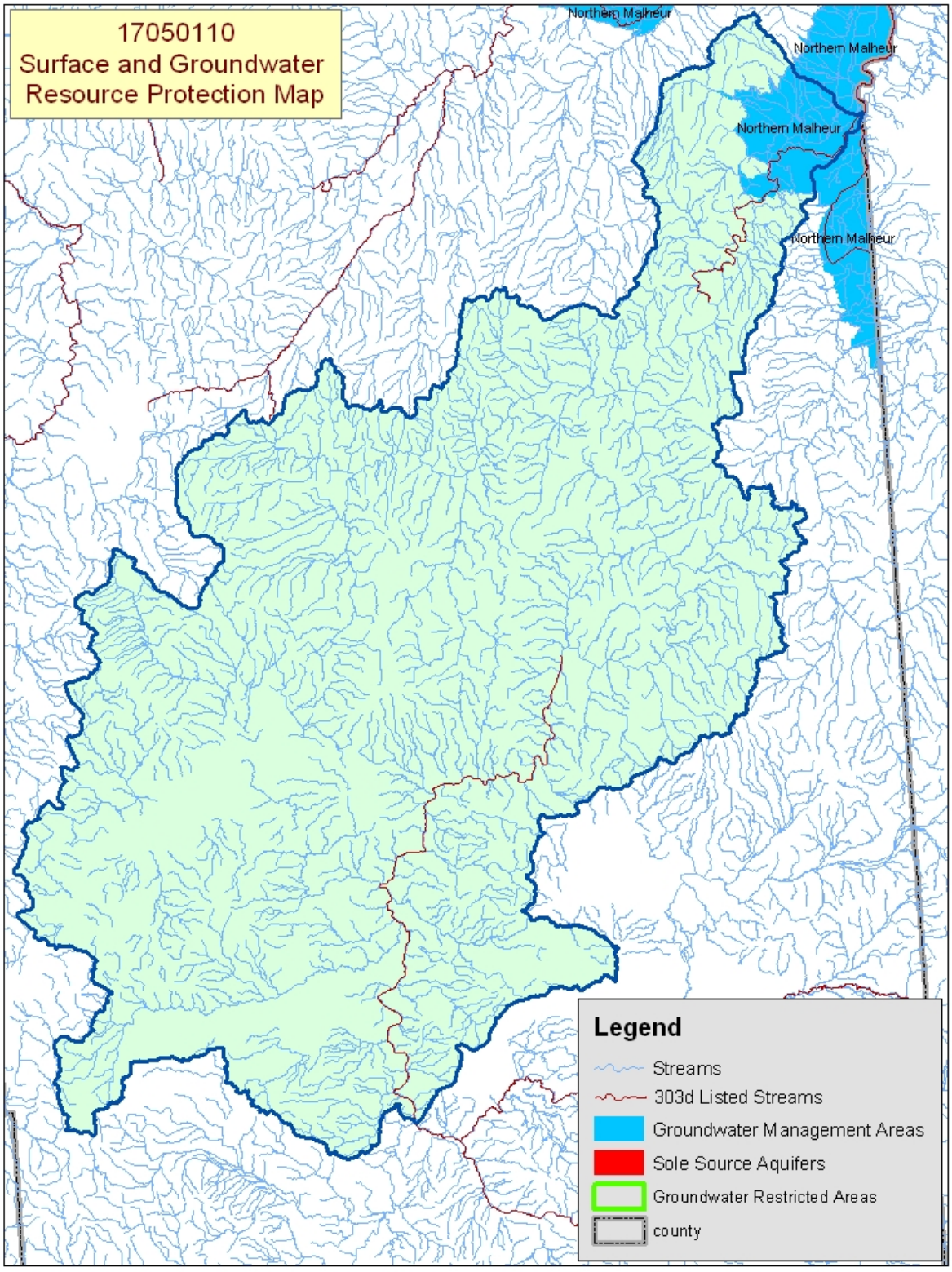
- Sheet and rill erosion by water on the cropland and pastureland have been reduced by more than 17,000 tons of soil per year from 1982 to 1997.
- NRI estimates indicate that none of the agricultural lands still had water erosion rates above a sustainable level in 1997.
- Controlling erosion not only 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 cropland and pastureland fell 32 percent, from 1.5 tons/acre/year to 1.0 ton/acre/year from 1982 to 1997.

303d/TMDL Listed Streams (DEQ): Oregon Department of Environmental Quality has both the Fletcher Street Drain and Overstreet Drain on the 303d list for copper, iron, lead, and manganese. These metals can become concentrated in the runoff and sediment from irrigated lands.

Watershed Projects, Plans, Studies, and Assessments			
NRCS Watershed Projects[6]		**NRCS Watershed Plans, Studies, and Assessments**[7]	
Name	**Status**	**Name**	**Status**
None	None	None	None
ODEQ TMDL's[8]		**ODA Agricultural Water Quality Management Plans**[9]	
Name	**Status**	**Name**	**Status**
None	None	Owyhee	Completed
OWEB Watershed Council[10]	**Watershed Council Assessments**[11]	**NWPCC Subbasin Plans and Assessments**[18]	
Owyhee Watershed Council	None	Owyhee	

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Birds – Bald eagle **Fish –** Lahontan cutthroat trout, Bull trout **Plants –** Howell's spectacular thelypody	**Birds –** Yellow-billed cuckoo **Amphibians and Reptiles –** Columbia spotted frog
	PROPOSED SPECIES - None
ESSENTIAL FISH HABITAT[13] **–** None	

(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	Confined Feeding Operations
Soil Erosion	Concentrated Flow or Gully					X		
	Streambank					X		
	Irrigation Induced	X	X	X				
Soil Condition	Tilth, Crusting, Infiltration, Organic Matter		X	X				
Soil Contamination	Excess Fertilizers & Pesticides			X				X
Water Quantity	Water Management For Irrigated Land	X	X	X				
	Water Management For Nonirrigated Land					X		
Water Quality, Groundwater	Pesticides			X				
	Nutrients & Organics		X	X				
Water Quality, Surface	Pesticides			X				
	Nutrients & Organics		X	X				X
	Suspended Sediments & Turbidity	X	X	X		X		
	Pathogens		X	X				X
Air Quality	Undesirable Odors from Agricultural Sources							X
Plant Suitability	Site & Intended Use Suitability	X						
	Invasive and Noxious Weeds	X	X	X		X		
Plant Condition	Productivity, Health, & Vigor	X				X		
Plant Management	Establishment, Growth, & Harvest					X		
Animal Habitat, Domestic	Water - Quantity & Quality					X		
	Management							
Animal Habitat, Wildlife	Food, Cover, &/or Shelter	X	X	X		X		
Human, Economics	Land Use Constraints/Restrictions							X
	High Risk & Uncertainty			X				X
	High Capital/Financial Costs	X	X	X		X		X
	High Management Level Required			X				X
	Low or Unreliable Profitability	X	X	X				
Human, Political	Inadequate Availability of Cost Share Programs					X		
	High Degree of Controversy							X

Pasture / Hay

- Better irrigation water management generally is practiced on the areas of alfalfa than on the pasture.
- In some areas, the pasture is in poor condition because of a lack of proper grazing management.
- Areas of pasture commonly are adjacent to streams, which can contribute to streambank erosion and sedimentation due to the loss of riparian vegetation.

Grain and Row Crops

- Most grain is produced in rotation with other crops (potatoes, onions, corn, alfalfa, etc.)
- Irrigation-induced erosion can occur on fields used to produce crops such as potatoes or corn.
- Surface-irrigated grain is prone to irrigation-induced erosion.
- Surface irrigation of crops generates tailwater returns high in content of nutrients and sediment.
- Water conservation is always a concern with irrigated crops, although irrigation water management on row crops is better than that on pastures.

Confined Animal Feeding Operations (CAFOs)

- Livestock manure, pathogens, and odors are continuing issues surrounding CAFOs.
- Winter feeding of cow-calf herds can result in erosion and contribute to poor water quality.

Rangeland

- Rangeland can become infested with noxious weeds, annual grasses, and shrubs due to inadequate forage and grazing management.
- Loss of riparian vegetation contributes to the warming and nutrient-loading of streams.

Census and Social Data[/14]

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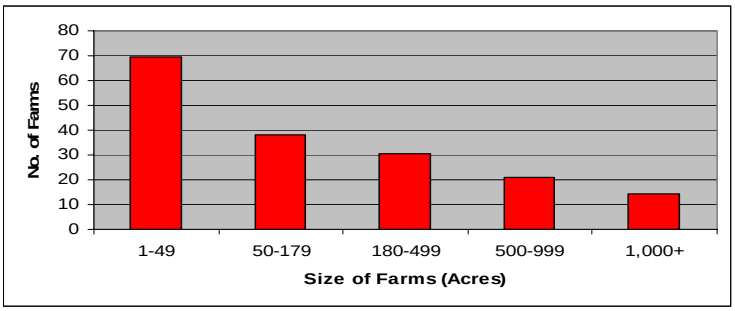


Number of Farms: 175

Number of Operators: 287

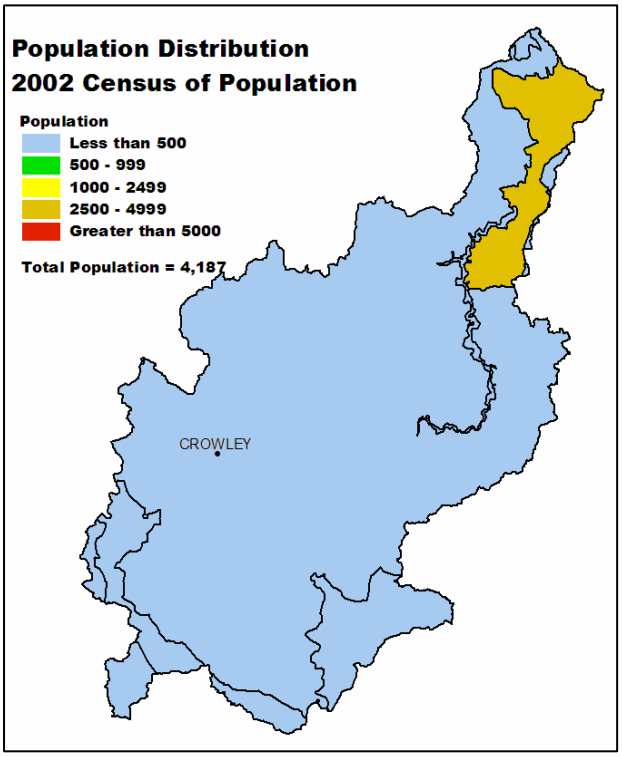
- Full-Time Operators: **103**
- Part-Time Operators: **184**

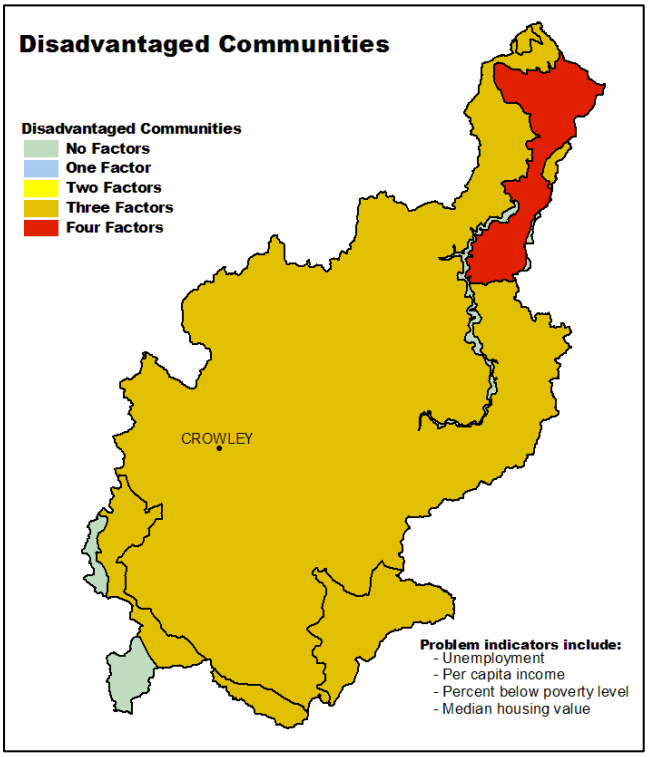
Estimated Level of Willingness and Ability to Participate in Conservation[/15]: Moderate to High

Most operators in the Lower Owyhee subbasin are well educated, are aware of local resource concerns, are likely to have conservation plans, have adopted some conservation practices, and understand the economic and environmental benefits of conservation. Most recommended conservation practices can be implemented incrementally and are compatible with local management systems and equipment. The perceived high capital costs of conservation and risks associated with intense irrigated agriculture discourage many operators from adopting conservation systems. Additional financial incentives and other risk-reducing incentives may increase the adoption of conservation in the subbasin.

Evaluation of Social Capital[/16]: Moderate

The community has the ability to solve problems, but because it has a small population and is in a remote area far from government and business decision-making centers, effecting change is difficult. On the other hand, the community is quite active in local school, church, and agricultural activities. Most of the ranchers know and support one another. Most of the community participates in activities and issues that they believe will affect their families and livelihood. Conservation systems will become more widely diffused in the subbasin as local resource concerns are acknowledged as critical to the survival of the ranching community.





Progress/Status

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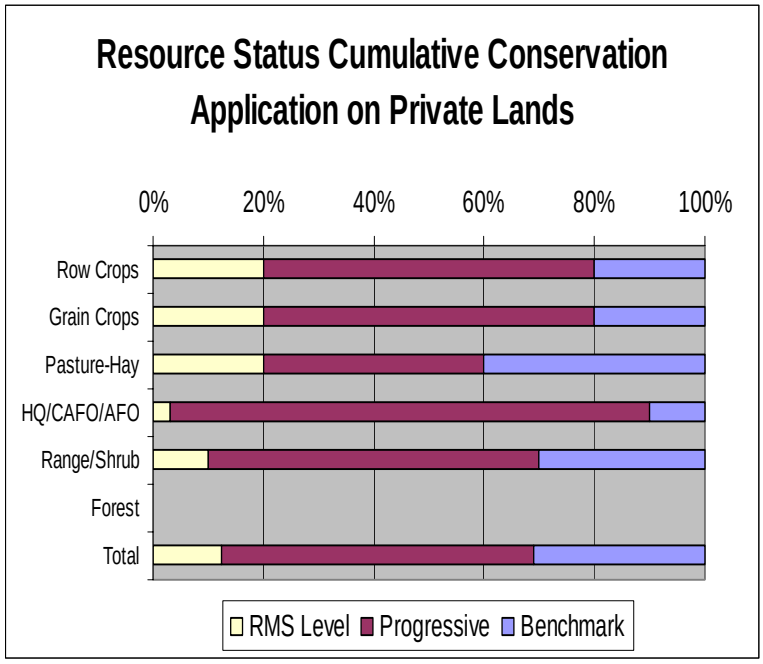
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	1,500	1,785	81,583	352	415	17,127	85,635
Total Conservation Systems Applied (Acres)	0	1,654	24,622	361	0	5,327	26,637
Conservation Treatment (Acres)							
Waste Management	0	0	0	0	0	0	0
Buffers	0	0	0	0	0	0	0
Erosion Control	596	1,098	372	209	0	455	2,275
Irrigation Water Management	498	298	372	116	0	257	1,284
Nutrient Management	422	1,596	457	488	278	648	3,241
Pest Management	20	1,468	139	0	0	325	1,627
Prescribed Grazing	0	33	41,764	0	0	8,359	41,797
Trees & Shrubs	0	40	0	0	0	8	40
Conservation Tillage	0	900	21	0	0	184	921
Wildlife Habitat	25	47	0	25	0	19	97
Wetlands	0	1	0	0	0	0	1



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

- Progress over the last 5 years has been focused on:
  - Erosion control and irrigation water management in areas of grain and row crops.
  - Nutrient and pest management.
  - Conservation tillage.
  - Prescribed grazing on pastureland and rangeland.
- Most grain and row crop producers practice conservation cropping and residue management.
- Most hay producers practice good irrigation water management; however, adequate grazing and water management commonly is lacking on pastures.
- Most livestock operations are at the progressive level. Focus has been placed on meeting State CAFO regulations. The high capital cost has kept conservation adoption to the RMS level.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **None**
- Wetland Restoration Program (WRP): **82 acres**
- Conservation Reserve Enhancement Program (CREP): **None**

Footnotes/Bibliography

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

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

3. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is because of changes in statistical estimation protocols and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/

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

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

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

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

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

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

Footnotes/Bibliography Continued

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

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

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

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

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

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

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

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

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