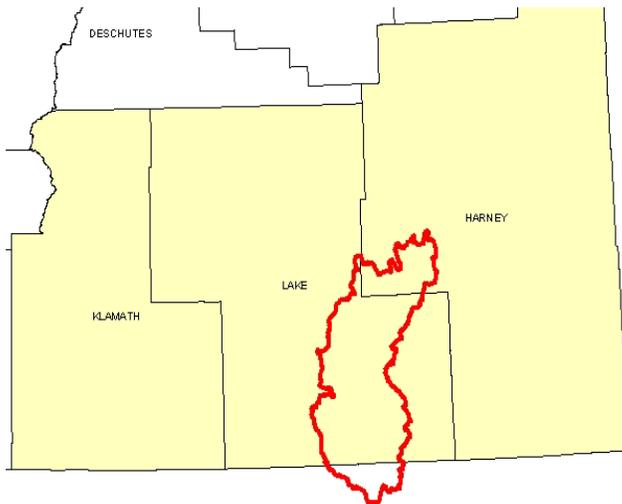


Introduction

The Warner Lakes 8-Digit Hydrologic Unit Code (HUC) subbasin is 1,214,838 acres. Seventy-four percent of it is in Lake County in South Central Oregon. Sixteen percent is in Harney County and the remaining 10 percent is in California and Nevada. Eighty-three percent of the subbasin is in public ownership.

Seventy-two percent of the private and public land in the subbasin is rangeland, ten percent is forest, eight percent is pasture and hay land. The subbasin is largely unpopulated, having only about forty farmers and ranchers on twenty-five farms.

Conservation assistance is provided by three NRCS service centers, one soil survey office, and four Soil and Water Conservation Districts.



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[Introduction](#)

[Physical Description](#)

[Landuse Map & Precipitation Map](#)

[Common Resource Area](#)

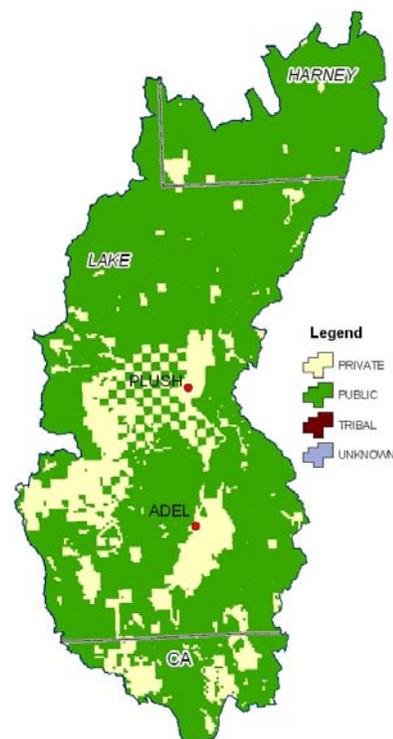
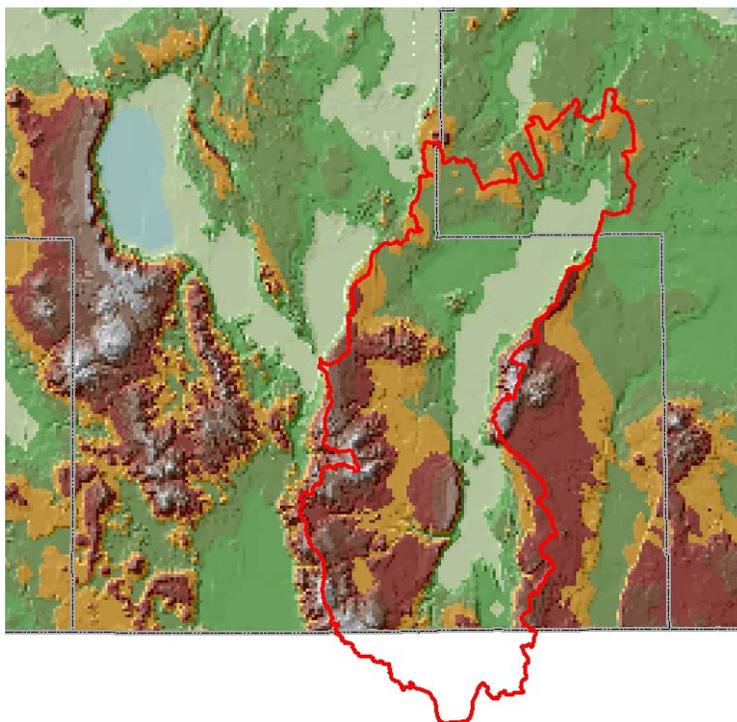
[Resource Concerns](#)

[Census and Social Data](#)

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Relief Map



Physical Description

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ALL NUMBERS WITHIN THIS PROFILE ARE FOR OREGON ONLY

Land Cover/Land Use (NLCD ²)	Ownership - (2003 Draft BLM Surface Map Set ¹)						Totals ^b	%
	Public		Private		Tribal			
	Acres	%	Acres	%	Acres	%		
Forest	80,100	7%	31,800	3%	0	0%	111,900	10%
Grain Crops	*	--	*	--	0	0%	*	--
Conservation Reserve Program Land ^a	0	0%	0	0%	0	0%	0	--
Grass/Pasture/Hay Lands	61,200	6%	26,300	2%	0	0%	87,500	8%
Orchards/Vineyards	0	0%	0	0%	0	0%	0	0%
Row Crops	*	--	*	--	0	0%	*	--
Shrub/Rangelands	678,700	62%	106,900	10%	0	0%	785,600	72%
Water/Wetlands/Developed/Barren	81,100	7%	32,400	3%	0	0%	113,500	10%
Oregon HUC Totals ^b	901,100	82%	197,500	18%	0	0%	1,098,600	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:

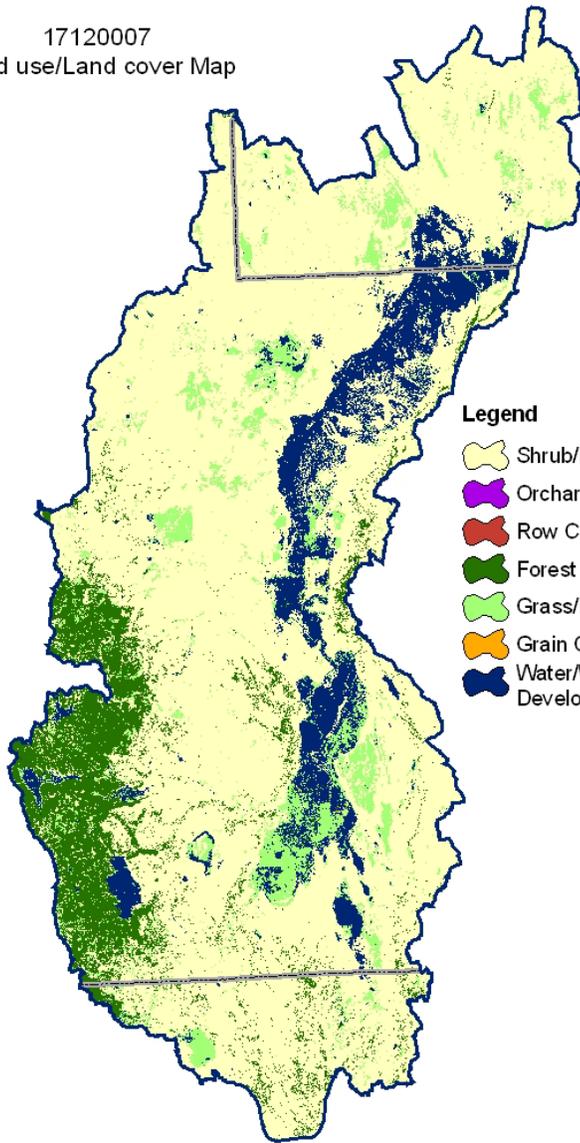
- ~ Cattle ranching is the primary agricultural use.
- ~ Over 50% of the private forest land is under industrial forest ownership and management.
- ~ About 200 acres of irrigated wheat is grown in the hydrologic unit.
- ~ Pasture & hayland also includes natural grasslands.

Irrigated Lands (1997 NRI ³ Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	1,800	4%	<1%
	Non-Cultivated Cropland	35,400	83%	3%
	Pastureland	5,600	13%	<1%
	Total Irrigated Lands	42,800	100%	4%

(Continued on following pages)

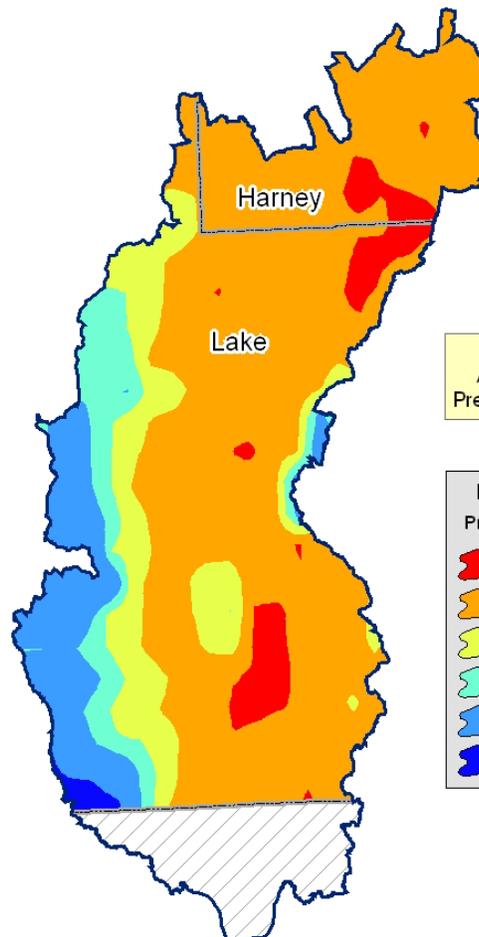
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17120007
Land use/Land cover Map



Legend

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



17120007
Average Annual
Precipitation in Inches

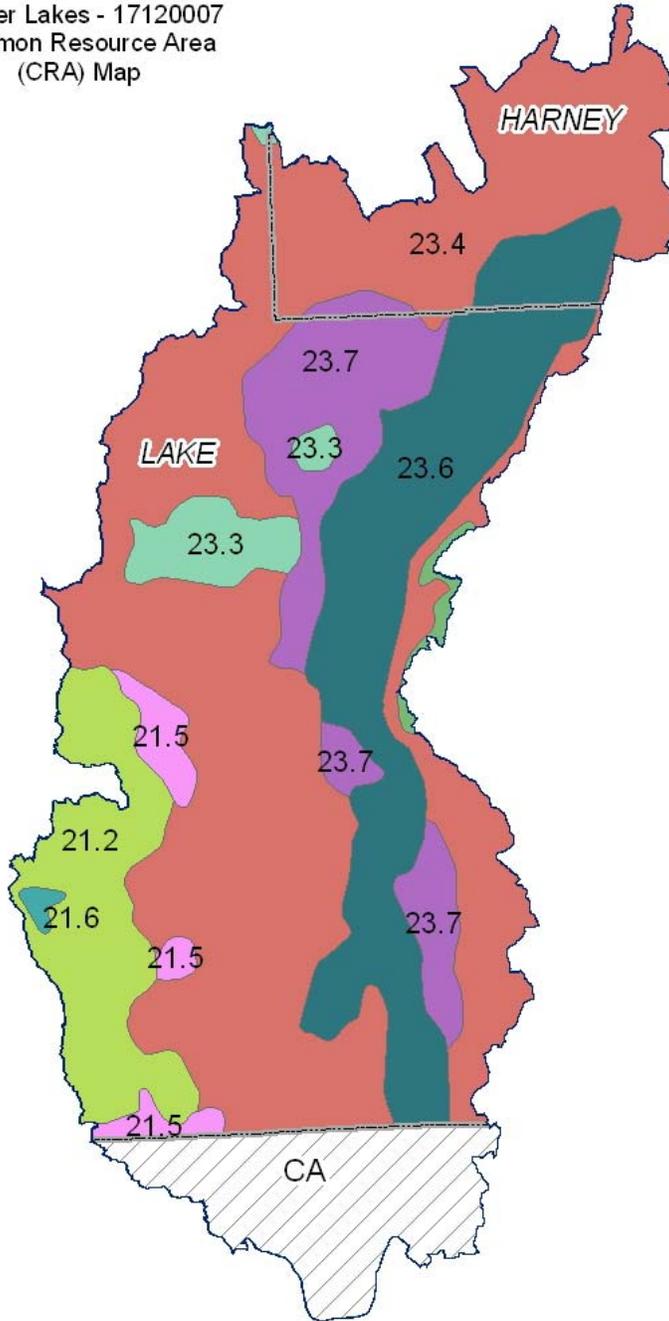
- Eastern Oregon
Precipitation Range
-  Less than 9"
 -  9" - 13"
 -  13" - 17"
 -  17" - 21"
 -  21" - 35"
 -  Greater than 35"

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>

Warner Lakes - 17120007
Common Resource Area
(CRA) Map



21.2 - Klamath and Shasta Valleys and Basins - Fremont Pine-Fir Forest: This unit is characterized by forested mountains and plateaus in the eastern portion of the MLRA. Temperature regime is frigid with higher areas being cryic; moisture regime is xeric. Dominant soils are Rogger, Mound, Chocktoot and Hallihan. Vegetation is dominantly ponderosa pine and white fir with lodgepole pine in the higher areas.

23.4 - Malheur High Plateau - High Lava Plains: This unit is on basalt plateaus, and the escarpments of fault block mountains. Temperature regime is frigid or mesic; moisture regime is primarily aridic. The soils are typically shallow or moderately deep to bedrock or cemented pan and have strongly developed argillic horizons. Vegetation is dominated by low sagebrush, Wyoming big sagebrush, Idaho fescue, Thurber needlegrass and bluebunch wheatgrass. Playas, small intermittent lakes and high shrink-swell clays are common in depressions.

23.6 - Malheur High Plateau - Warm High Desert Basins: This unit is characterized by basins that contain significant amounts of volcanic ash. Temperature regime is dominantly mesic; moisture regime is aridic. The soils are typically very deep. Drainage ranges from well drained to very poorly drained. Wetland areas, shallow lakes and playas are locally common.

23.7 - Malheur High Plateau - Alluvial Fans and Pluvial Lake Terraces: This unit is characterized by warm soils on lake terraces. Wetlands and saline-sodic soils are typically absent but cemented pans within 40 inches of the soil surface are typical. The soils lack bedrock within 60 inches of the surface. Temperature regime is mesic; but near frigid, moisture regime is aridic. Dominant soils include Deppy, McConnel, Spangenburg and Norad.

Physical Description – Continued

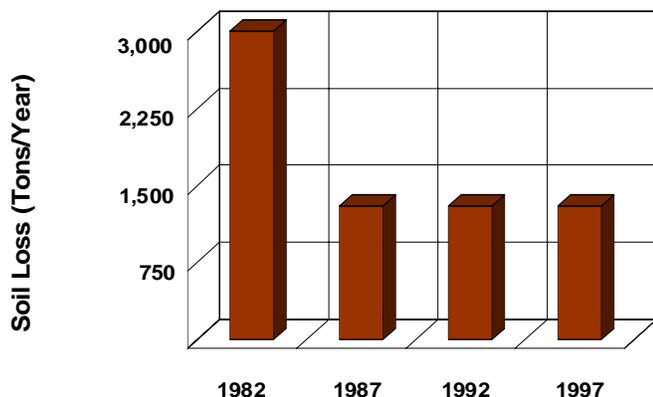
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		ACRES	ACRE-FEET			
Irrigated Adjudicated Water Rights <i>(OWRD⁴)</i>	Surface	72,210	185,825			
	Well	3,341	10,023			
	Total Irrigated Adjudicated Water Rights	75,551	195,848			
Stream Flow Data	USGS 10378500 HONEY CREEK NEAR PLUSH, OREG.	Total Avg. Yield	24,345			
		May - Sept Yield	10,758			
	USGS 10366000 TWENTYMILE CREEK NEAR ADEL, OREG	Total Avg. Yield	29,630			
		May - Sept Yield	6,493			
	USGS 10371500 DEEP CREEK ABOVE ADEL, OREG.	Total Avg. Yield	97,199			
		May - Sept Yield	41,930			
		MILES	PERCENT			
Stream Data ⁵ <i>*Percent of Total Miles of streams in HUC</i>	Total Miles – Major (100K Hydro GIS Layer)	577	--			
	303d (DEQ Water Quality Limited Streams)	186	32%			
	Anadromous Fish Presence (Streamnet)	0	--			
	Bull Trout Presence (Streamnet)	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	2,404	17%			
	Grain Crops	3	0%			
	Grass/Pasture/Hay Lands	2,555	18%			
	Orchards/Vineyards	0	--			
	Row Crops	4	0%			
	Shrub/Rangelands – Includes CRP Lands	5,739	41%			
	Water/Wetlands/Developed/Barren	3,258	23%			
	Total Acres of 100 ft stream buffers	13,964	--			
Land Capability Class <i>(Croplands & Pasturelands Only)</i> <i>(1997 NRI³ Estimates for Non-Federal Lands Only)</i>	I – slight limitations	0	--			
	II – moderate limitations	0	--			
	III – severe limitations	3,900	9%			
	IV – very severe limitations	7,600	17%			
	V – no erosion hazard, but other limitations	22,600	50%			
	VI – severe limitations, unsuited for cultivation, limited to pasture, range, forest	10,700	24%			
	VII – very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife	0	--			
	VIII – misc areas have limitations, limited to recreation, wildlife, and water supply	0	--			
	Total Crop & Pasture Lands	44,800	--			
Confined Animal Feeding Operations – Oregon CAFO Permit – 12/2004						
Animal Type	Dairy	Feed Lot	Poultry	Swine	Mink	Other
No. of Permitted Farms	0	2	0	0	0	0
No. of Permitted Animals	0	0	0	0	0	0

Resource Concerns

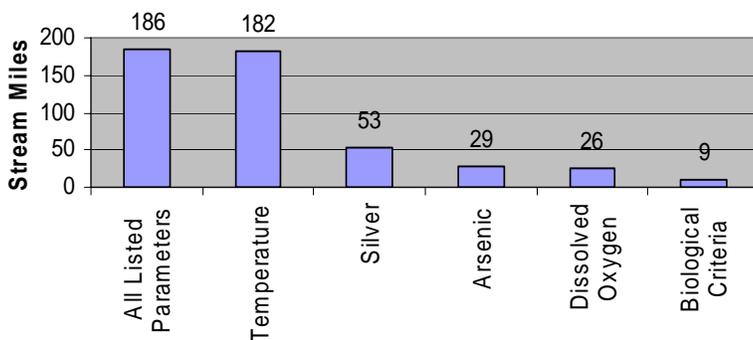
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Tons of Soil Loss by Water Erosion



- ❖ Sheet and rill erosion by water on the subbasin croplands and pasturelands have been reduced by more than 1,700 tons of soil per year from 1982 to 1997.
- ❖ NRI estimates indicate that none of the subbasin agricultural lands 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 croplands and pasturelands averaged less than .1 tons/acre/year in 1997.

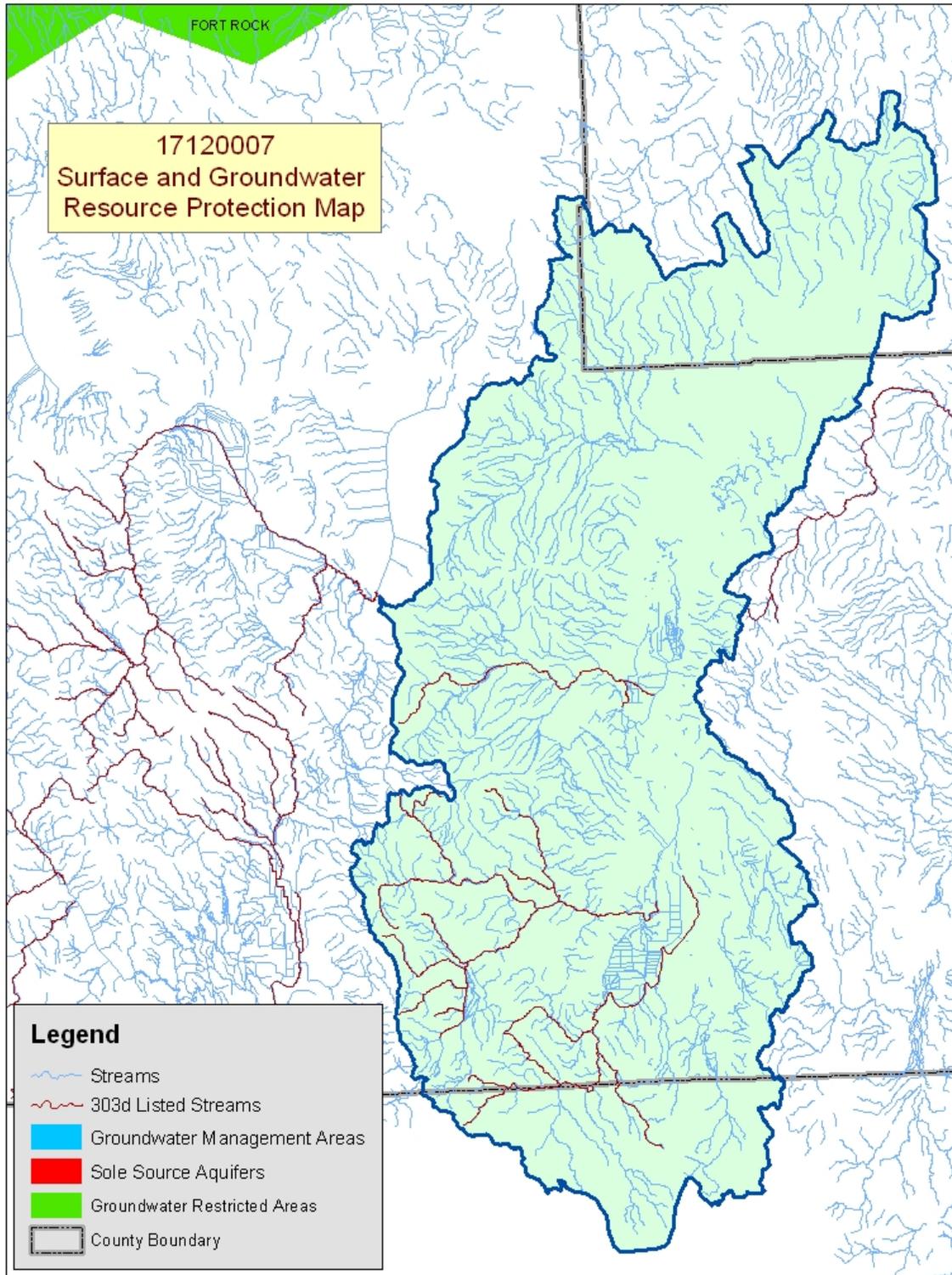
2002 Water Quality Concerns 303d list and TMDL Parameters



- ❖ Almost all listed stream miles exceed state water quality standards for stream temperatures. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, warm irrigation return flows, and other anthropogenic or natural sources.
- ❖ Conservation practices that can be used to address these water quality issues include grazing management, irrigation water 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
None		Goose and Summer Lakes	Completed
OWEB Watershed Council ¹⁰		Watershed Council Assessments ¹¹	
Deep Creek Watershed Council Harney County Watershed Council	To Be Completed Later	NWPC Subbasin Plans & Assessments ¹⁸	
		Not Applicable	

(Continued on page 8)



Map Footnote [417](#)

Resource Concerns - Continued

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Resource Concerns/Issues by Land Use							
SWAPA +H Concerns	Specific Resource Concern/Issue	Pasture\Hay	Grain Crops	Row Crops	Orchards/Vnyrd	Shrub/Range	Forest
Soil Erosion	Wind	X	X				
	Streambank					X	X
	Irrigation Induced						
Water Quantity	Water Mgt. for Irrigated Land	X	X				
Water Quality, Surface	Temperature					X	X
Plant Suitability	To Site & Intended Use					X	X
Plant Condition	Productivity, Health & Vigor	X					X
Plant Management	Establishment, Growth & Harvest	X	X				X
Animal Habitat, Domestic	Water - Quantity & Quality					X	
Animal Habitat, Wildlife	Water - Quantity & Quality						X
Human, Economics	High Capital/Financial Costs		X				X
	Low or Unreliable Profitability	X	X			X	
	High Management Level Required						X

Grass/Pasture/Hay Lands

- Most ranches have irrigated hay and pasture units where water conservation is an issue.
- Wind erosion can be a resource concern on sandy soils where the forage stand has not been properly managed for cover or to maximize production.
- A low economic return limits adoption of appropriate conservation.

Grain Crops

- Wind erosion and irrigation water management are the primary resource concerns.
- High costs to update irrigation systems compared to potential profits often hinder additional conservation.

Shrub/Rangelands

- Rangeland productivity can be reduced by invasion of noxious weeds, annual grasses, brush and juniper.
- Loss of riparian vegetation can contribute to stream warming.
- Low profits limit conservation adoption.

Forest

- Lack of thinning and forest management can result in stagnate stands with low commercial value for wood products, livestock grazing or wildlife habitat.
- High costs, unreliable markets and inadequate incentive programs limit forest management activities on private, non-industrial forest lands.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES ^{/12}	
Threatened Species	Candidate Species
Mammals – Canada lynx Birds - Bald eagle Fish – Shortnose sucker, Warner sucker, Lost River Sucker, Bull trout, Hutton Springs tui chub, Foskett speckled dace, Borax Lake chub, Lahontan cutthroat trout Invertebrates – None Plants – Malheur wire-lettuce	Plants – Northern wormwood Amphibians and Reptiles - Oregon Spotted frog, Columbia spotted frog
	PROPOSED SPECIES None
ESSENTIAL FISH HABITAT ^{/13} – None	

Census and Social Data^{/14}

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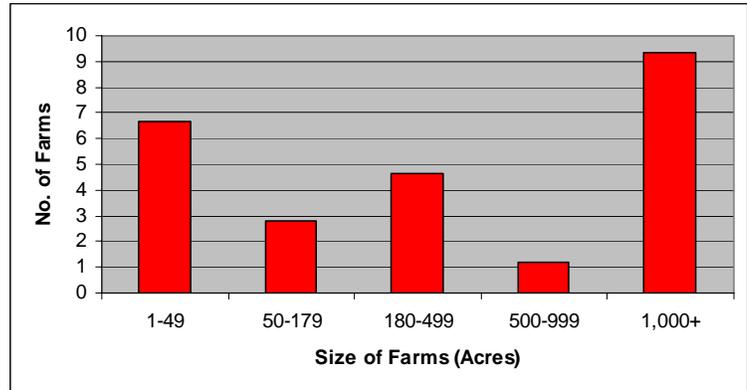
Number of Farms: 25

Number of Operators: 40

- Full-Time Operators: **17**
- Part-Time Operators: **23**

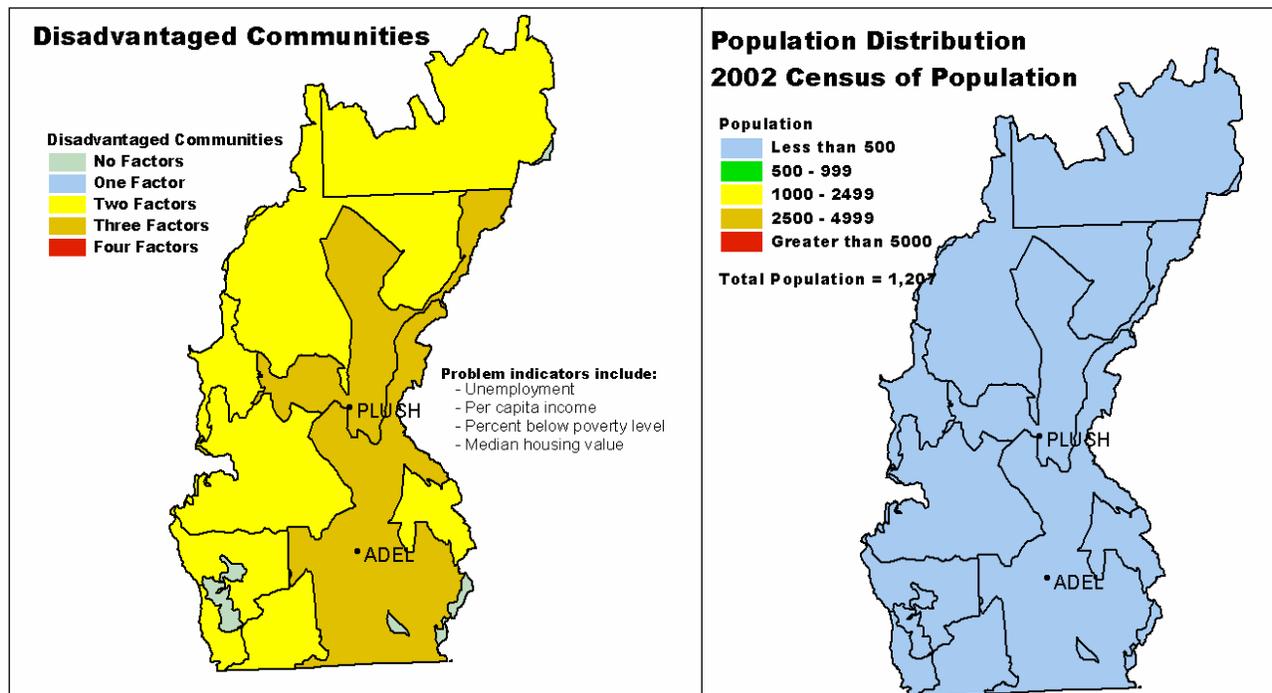
Estimated Level of Willingness and Ability to Participate in Conservation^{/15}: **Moderate to High**

Evaluation of Social Capital^{/16}: **Moderate Social Capital**



The few who farm and ranch in the Warner Lakes watershed tend to be financially stable, full-time operators, who intend to pass their farm or ranch along to their heirs. They are generally well-educated, aware of natural resource issues, and have a positive stewardship attitude. Increasing conservation adoption among these operators may be possible by providing more timely technical assistance, and tailoring recommended conservation practices and systems to meet the particular needs of the operator and his or her operation.

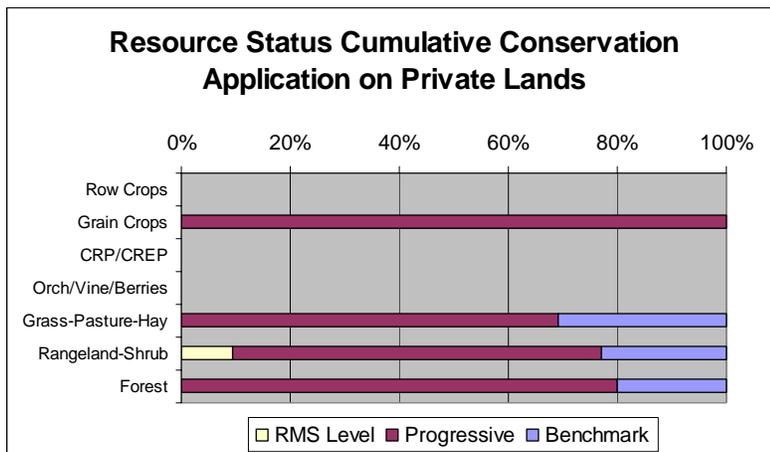
The agricultural community in the watershed and surrounding area is generally supportive of conservation and agriculture. It has effective leaders, a well-educated voting public, and a history of working together to complete community projects. The community may help to accelerate conservation by increasing public awareness of natural resource issues and directing the public's attention to the connection between conservation and economically stable farms and ranches.



Progress/Status

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PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg/Year	Total
Total Conservation Systems Planned (Acres)	10,185	160	0	0	0	2,069	10,345
Total Conservation Systems Applied (Acres)	0	0	3,177	0	3,243	1,284	6,420
Conservation Treatment Acres							
Waste Management (number)	0	0	0	0	0	0	0
Riparian Forest Buffers (acres)	0	0	0	0	0	0	0
Erosion Control (acres)	10,185	0	0	0	0	2,073	10,185
Irrigation Water Management (acres)	0	0	0	0	0	0	0
Nutrient Management (acres)	0	0	0	0	0	0	0
Pest Management (acres)	0	0	0	0	0	0	0
Prescribed Grazing (acres)	10185	1834	3177	0	3243	3688	18,439
Trees & Shrubs (acres)	0	0	0	0	0	0	0
Conservation Tillage (acres)	0	0	0	0	0	0	0
Wildlife Habitat (acres)	10,185	0	3,177	0	0	2,672	13,362
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 five years has been focused on:
 - ~ Erosion control and conservation tillage.
 - ~ Prescribed grazing.
 - ~ Wildlife habitat management on riparian areas and uplands.
- ❖ Low profitability limits further progress in conservation on grazing lands (pasture and range).
- ❖ Most private, industrial forestland meets state forest practices.
- ❖ High costs, unreliable markets and inadequate incentive programs limit forest management activities on private, non-industrial forest lands.

Lands Removed from Production through Farm Bill Programs

- ❖ Conservation Reserve Program (CRP): **none**
- ❖ Wetland Restoration Program (WRP): **none**
- ❖ Conservation Reserve Enhancement Program (CREP): **none**

Footnotes/Bibliography

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All data is provided "as is". There are no warranties, express or implied, including 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, 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 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 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>.