Nehalem – 17100202

8-Digit Hydrologic Unit Profile

FINAL

SEPTEMBER 2005

Introduction

The Nehalem 8-Digit Hydrologic Unit Code (HUC) subbasin is comprised of 544,450 acres, of which ninety-eight percent is forestland in four counties, including Clatsop (39%), Columbia (30%), Tillamook (25%), and Washington (6%). Land management in the upper part of the subbasin, in Clatsop and Columbia Counties, is notably different from that of the lower part, in Tillamook County. There is a high level of resource management on the dairies and pastures in the lower part of the subbasin. The part in Clatsop County has little conservation activity. This is due in part to the lack of an NRCS field office in the county. In the entire upper part, landowners need additional technical assistance and have little experience working with the USDA. Resource concerns associated with pastureland and livestock include streambank erosion, soil compaction, surface water contamination, unreliable profits, and the need for timely technical assistance. There are 12 dairies in the subbasin.

There are 252 farms and 414 operators in the Nehalem subbasin. Sixty percent of the farms are less than 50 acres in size, and eighty-eight percent are less than 180 acres in size. Many of the small acreage operators have limited resources for adopting new or improved resource management systems.

Two NRCS service center, three soil and water conservation districts, the Northwest Oregon Resource Conservation and Development (RC&D) office, and other local organizations provide conservation assistance in the Nehalem subbasin.

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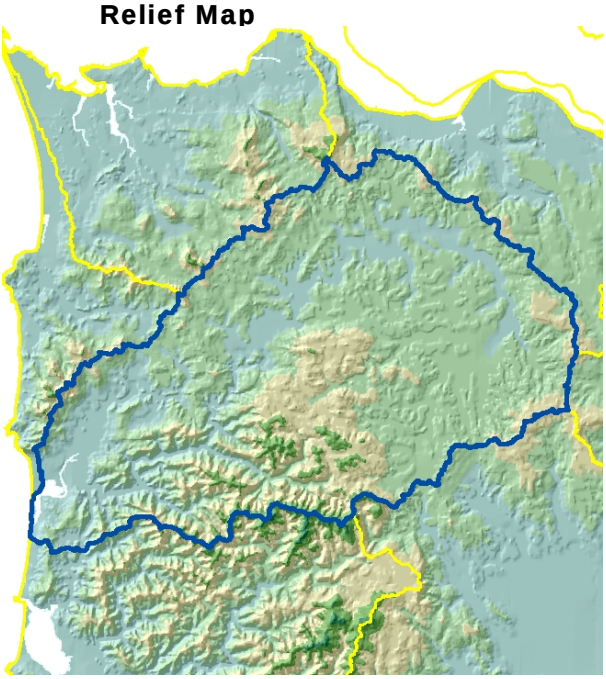

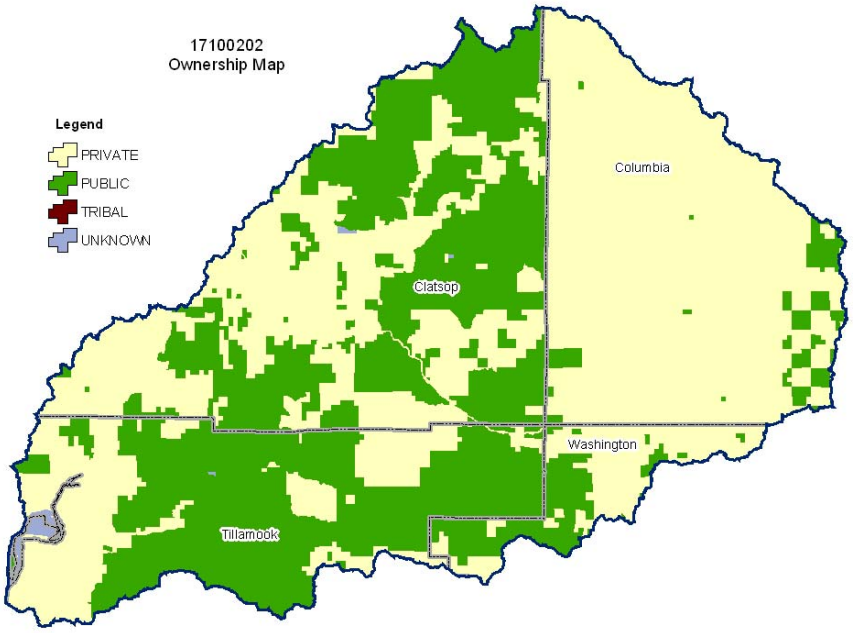

Produced by the Water Resources Planning Team Portland, OR

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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	222,500	41%	309,600	57%	0	0%	532,600	98%
Grain Crops	0	0%	*	---	0	0%	*	---
Conservation Reserve Program Land [a]	0	0%	*	---	0	0%	*	---
Grass/Pasture/Hay	*	---	8,000	1%	0	0%	8,400	2%
Orchards/Vineyards	*	---	*	---	0	0%	*	---
Row Crops	0	0%	*	---	0	0%	*	---
Shrub/Rangelands	*	---	*	---	0	0%	*	---
Water/Wetlands/Developed/Barren	*	---	*	---	0	0%	*	---
Oregon HUC Totals [b]	**223,200**	**41%**	**320,500**	**59%**	**0**	**0%**	**544,600**	**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:

- Eighty-four percent of the private forestland is under industrial forest ownership (OSU, Forestry Sciences Laboratory).
- Pasture includes commercial dairy and beef operations along the lower Nehalem River as well as small farms and ranchettes along the upper reaches.
- Land management in the upper part of the watershed, in Clatsop and Columbia Counties, is notably different from that of the lower part, in Tillamook County. A high level of management is used on the dairies and pastures in the lower part. Inadequate management is evident on many farms in the upper part.

Irrigated Lands (1997 NRI[13] Estimates for Non-Federal Lands Only)	Type of Land	ACRES	% of Irrigated Lands	% of HUC
	Cultivated Cropland	0	0%	0%
	Uncultivated Cropland	0	0%	0%
	Pastureland	1,400	100%	0%
	Total Irrigated Lands	**1,400**	**100%**	**0%**

(Continued on the following pages)

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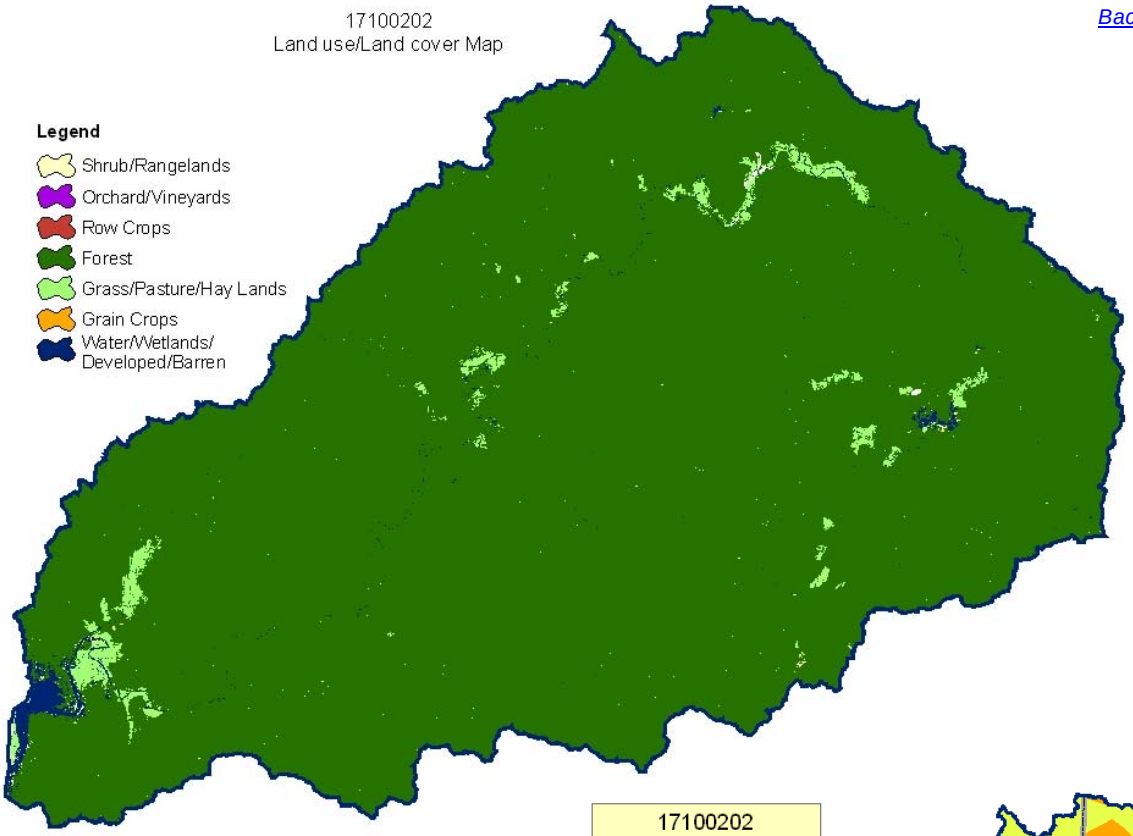

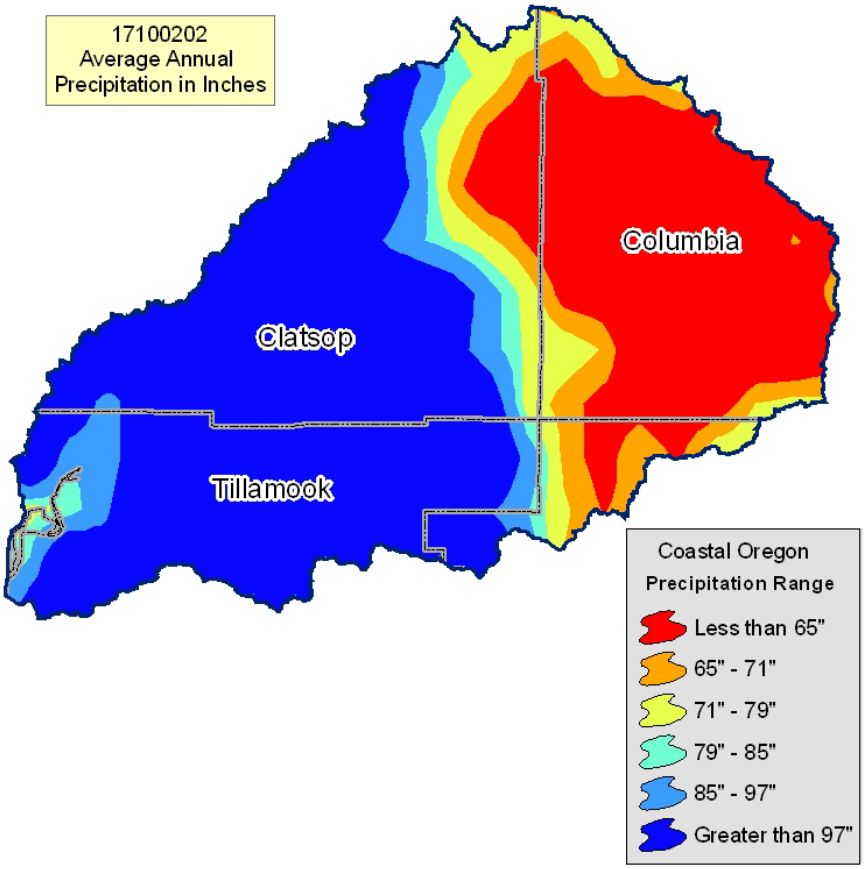

Common Resource Area Map

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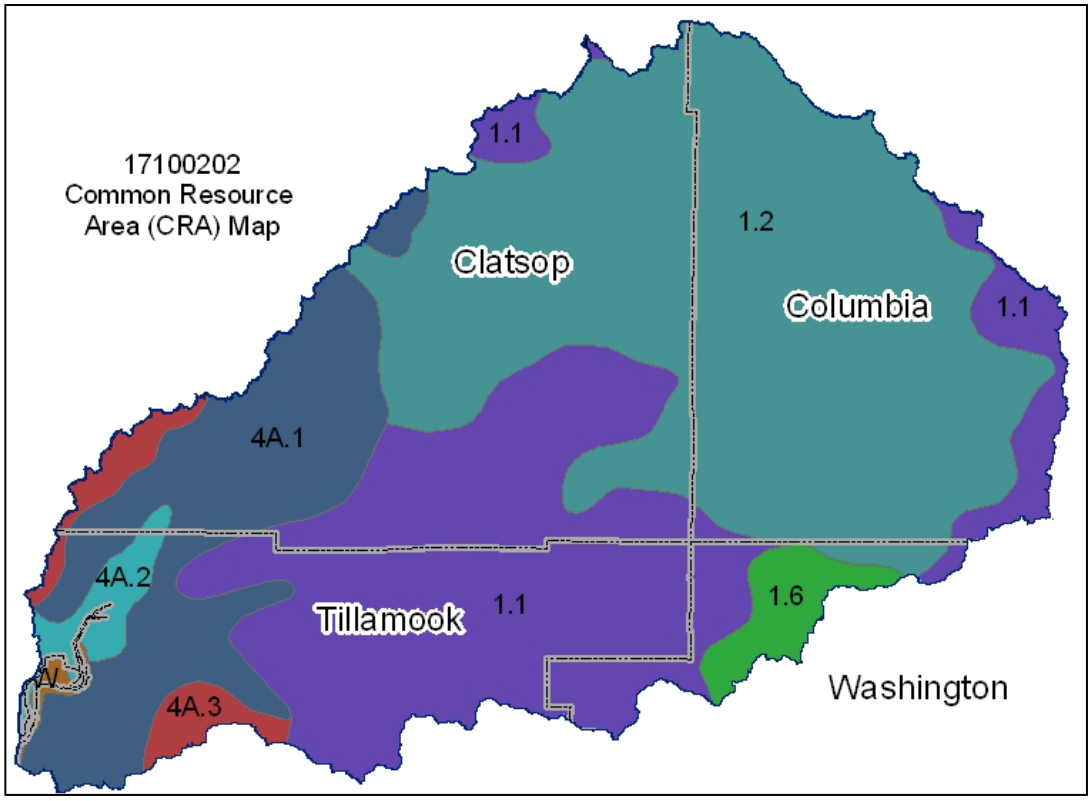
Only the major units are described below - for descriptions of all units within the HUC, go to: http://ice.or.nrcs.usda.gov/website/cra/viewer.htm



1.1 - Northern Pacific Coast Range, Foothills, and Valleys – Volcanics: This unit is comprised of mountains that consist of basalt and are outside of the "fogbelt." The temperature regime is mesic or frigid with a small area that is cryic, and the moisture regime is udic. The vegetation is Douglas fir and western hemlock.

1.2 - Northern Pacific Coast Range, Foothills, and Valleys - Willapa Hills: This unit is comprised of lower elevation mountains and foothills in the Coast Range. The soils are underlain by sedimentary rock and are silty and clayey throughout the profile. The soils in unit 1.6 are more loamy. Some of the soils in unit 1.2 have a fragipan. The temperature regime is mesic, and the moisture regime is udic. The vegetation is Douglas fir and western hemlock.

1.6 - Northern Pacific Coast Range, Foothills, and Valleys - Mid-Coastal Sedimentary: This unit is comprised of mountains that consist of sedimentary rock and are outside of the "fogbelt." The temperature regime is mesic, and the moisture regime is udic. Sitka spruce is typically absent. The dominant vegetation is Douglas fir and western hemlock. This unit includes narrow inland flood plains and terraces.

4A.1 – Sitka Spruce Belt - Coastal Sedimentary Uplands: This unit is comprised of mountains that consist of sedimentary rock and are in the "fogbelt." The temperature regime is isomesic, and the moisture regime is udic. Sitka spruce is present, which separates this unit from unit 1.1.

4A.2 – Sitka Spruce Belt - Coastal Lowlands: This unit is comprised of marine terraces, diked and undiked flood plains, and estuaries. The temperature regime is isomesic, and the moisture regime is udic.

4A.3 – Sitka Spruce Belt - Coastal Volcanic Uplands: This unit is comprised of mountains that consist of basalt and are in the "fogbelt." The temperature regime is isomesic and isofrigid, and the moisture regime is udic. Sitka spruce is present.

Physical Description – Continued

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		ACRES	ACRE-FEET
Irrigated Adjudicated Water Rights *(OWRD[4])*	Surface	1,292	3,229
	Well	11	27
	Total Irrigated Adjudicated Water Rights	1,303	3,257
Stream Flow Data	USGS 14301000 NEHALEM RIVER, NEAR FOSS, OR	**Total Avg. Yield**	1,932,795
		May – Sept. Yield	153,618
		MILES	**PERCENT**
Stream Data[5] **Percent of Total Miles of Streams in HUC*	Total Miles – Major (100K Hydro GIS Layer)	894	---
	303d/TMDL Listed Streams (DEQ)	278	31%
	Anadromous Fish Presence (StreamNet)	208	23%
	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	21,585	94%
	Grain Crops	0	0%
	Grass/Pasture/Hay	849	4%
	Orchards/Vineyards	1	0%
	Row Crops	0	0%
	Shrub/Rangelands – Includes CRP Lands	143	1%
	Water/Wetlands/Developed/Barren	310	1%
	Total Acres of 100-foot Stream Buffers	**22,890**	**---**
Land Capability Class *(Croplands & Pasturelands Only)* *(1997 NRI[3] Estimates for Non-Federal Lands Only)*	**1** – slight limitations	0	0%
	2 – moderate limitations	10,200	89%
	3 – severe limitations	500	4%
	4 – very severe limitations	0	0%
	5 – no erosion hazard, but other limitations	0	0%
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	700	6%
	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	**11,400**	**---**

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

Animal Type	Dairy	Feedlot	Poultry	Swine	Mink	Other
No. of Permitted Farms	12	0	0	0	0	0
No. of Permitted Animals	3,990	0	0	0	0	0

Resource Concerns

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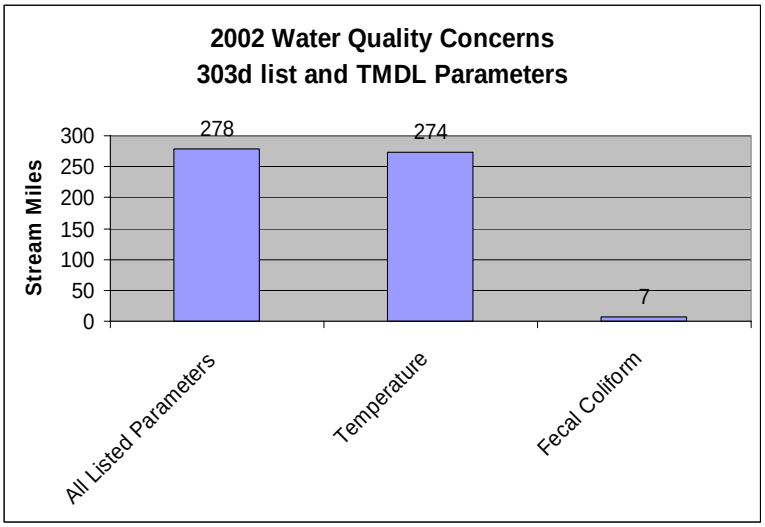
Tons of Soil Loss by Water Erosion: Due to the limited amount of non-Federal cropland and pastureland within this HUC, no reliable NRI soil loss estimates are available.

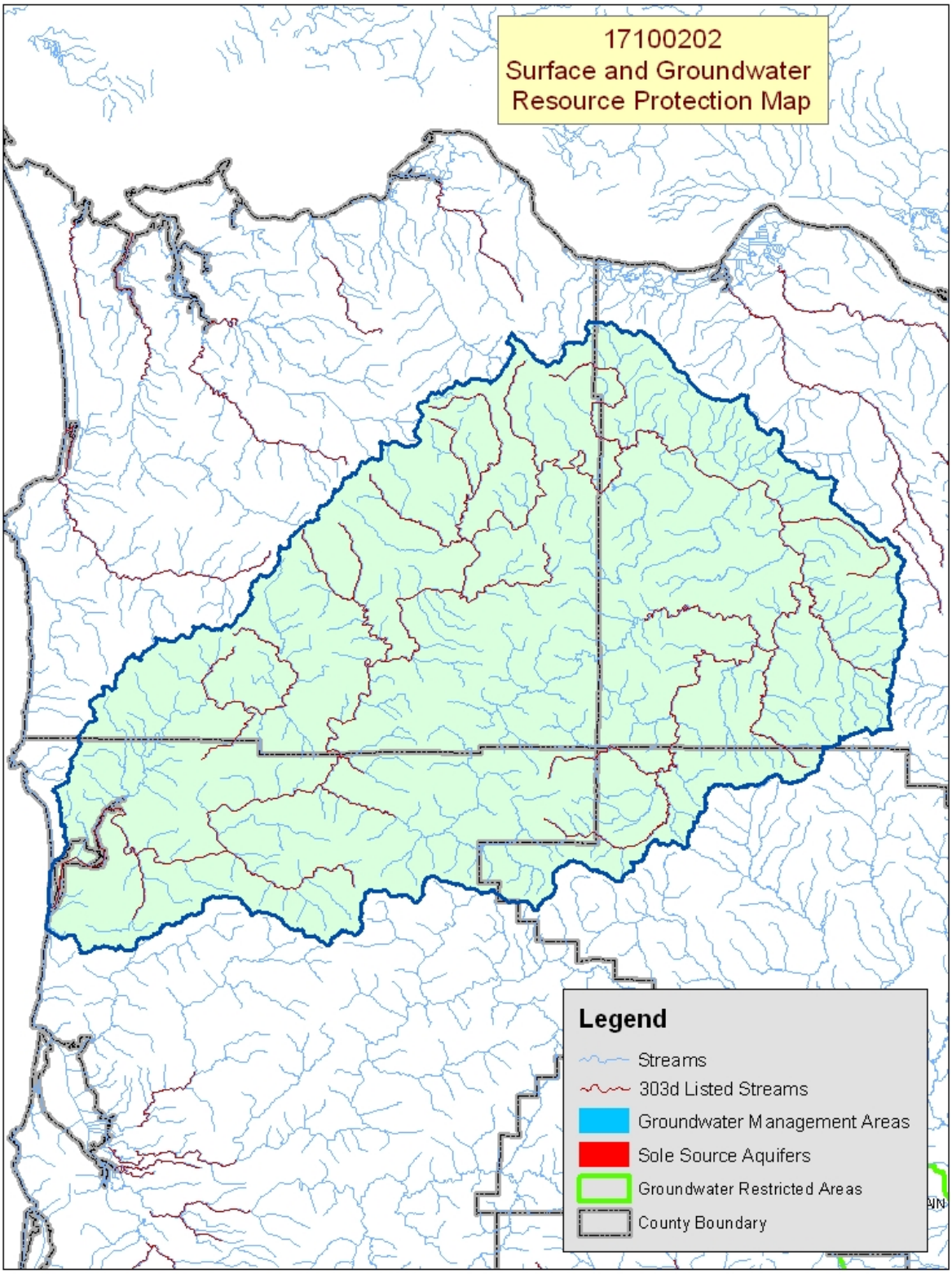


- Almost all of the listed stream miles exceed State water quality standards for temperature. Elevated stream temperatures may be due to inadequate riparian shade, stream channel widening, and other anthropogenic or natural causes.
- Fecal coliform can be indicative of livestock wastes, but it also is associated with improperly operating onsite sewage disposal systems.
- Conservation practices that can be used to address these water quality issues include grazing 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
None	None	None	None
ODEQ TMDL's[8]		ODA Agricultural Water Quality Management Plans[9]	
Name	Status	Name	Status
North Coast Subbasins	Completed	North Coast	Completed

OWEB Watershed Council[10]	Watershed Council Assessments[11]	NWPCC Subbasin Plans and Assessments[18]
Upper Nehalem Watershed Council, Lower Nehalem Watershed Council	Nehalem River Watershed Assessment	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**
Soil Erosion	Streambank	X					
	Soil Mass Movement						X
Soil Condition	Soil Compaction	X					
Water Quantity	Ponding & Flooding	X					
Water Quality, Surface	Nutrients & Organics	X					
	Suspended Sediments & Turbidity						X
	Temperature	X					X
	Pathogens	X					
	Aquatic Habitat Suitability	X					X
Plant Suitability	Site & Intended Use Suitability	X					X
Plant Condition	Productivity, Health, & Vigor	X					X
Plant Management	Establishment, Growth, & Harvest	X					X
Animal Habitat, Domestic	Management	X					
Animal Habitat, Wildlife	Food, Cover, &/or Shelter	X					
Human, Economics	High Capital/Financial Costs	X					X
	High Management Level Required	X					
	Low or Unreliable Profitability	X					
Human, Political	Lack of Technical Assistance	X					

Grass / Pasture / Hay

- Resource concerns such as soil compaction, nutrients and organics, and pathogens are typical for areas with a high number of livestock.
- Pasture condition overall is good; however, some health and vigor problems may occur because of prolonged grazing and the impact of wildlife.
- Smaller, hobby operations also commonly suffer from inadequate forage management.
- Invasive, noxious weeds can be a significant problem, especially on overgrazed pastures.

Forestland

- Over one-half of the private forestland is under industrial forest management.
- Invasive, noxious weeds (Japanese knotweed, purple loosestrife, and tansy ragwort) are a major concern.
- Much of the private, non-industrial forestland is being converted to residential and recreational property. Only a portion is managed for long-term timber production.

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[12]	
THREATENED SPECIES	**CANDIDATE SPECIES**
Marine – Steller (northern) sea lion **Mammals -** Columbian white-tailed deer **Birds –** Marbled murrelet , Western snowy plover, Bald eagle, Brown pelican, Short-tailed Albatross, Northern spotted owl **Fish –** Chum salmon, Coho salmon, Steelhead, Sockeye salmon, Chinook salmon **Invertebrates –** Oregon silverspot butterfly **Plants –** Howellia, Nelson's checker-mallow	**Fish** – Coho salmon, Steelhead **Birds –** Streaked horned lark **PROPOSED SPECIES** - None
ESSENTIAL FISH HABITAT[13] – Chinook, Coho	

Census and Social Data[/14]

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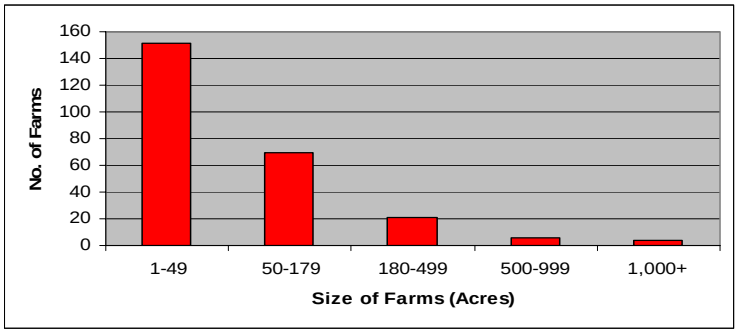


Number of Farms: 252

Number of Operators: 414

- Full-Time Operators: **130**
- Part-Time Operators: **284**

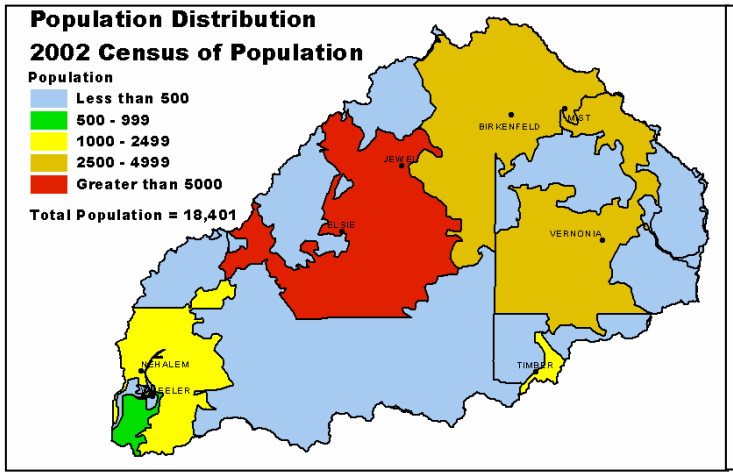
Estimated Level of Willingness and Ability to Participate in Conservation[/15]:

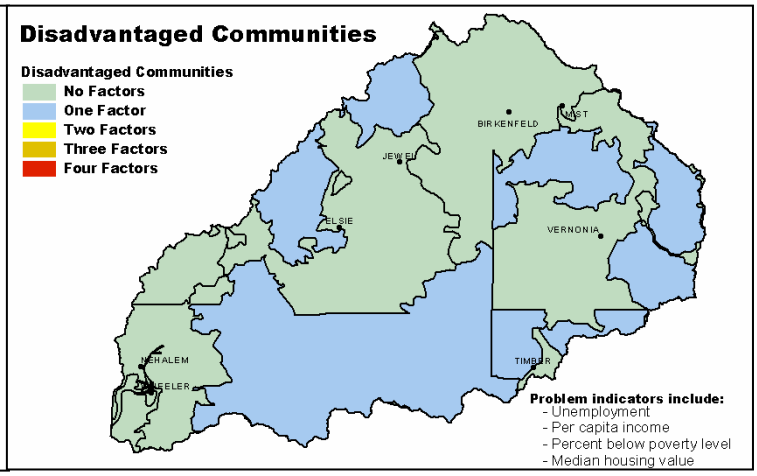
High ***(operators in Tillamook County)*** - Operators of viable commercial dairy operations in the Nehalem subbasin understand and appreciate the benefits of conservation and have a history of practicing conservation and natural resource management.

Low ***(small acreage operators in Columbia and Clatsop Counties)*** **–** The greatest obstacle to the diffusion of conservation among small acreage operators (less than 180 acres) is that the operators generally lack awareness of the connection between their agricultural operation and local resource problems. They also lack time and money to try new management systems. To improve resource conditions, landowners in these counties require intensive technical and financial assistance. Landowners in Clatsop County would benefit from locating a NRCS field office in the county.

Evaluation of Social Capital[/16] Low

Historically, social capital in the Nehalem watershed and the community's ability to successfully address local resource concerns has been low; however, they show signs of improving. Recently, a new city hall was built in one community, roads have been improved in several communities, and a resource conservation and development (RC&D) project to repair a local lake was completed. If community activities like these continue in the Nehalem watershed, social capital may increase to the point where community leaders begin to effectively address local natural resource concerns by sponsoring conservation activities, local organizations, and proposals for additional government assistance.





Progress / Status

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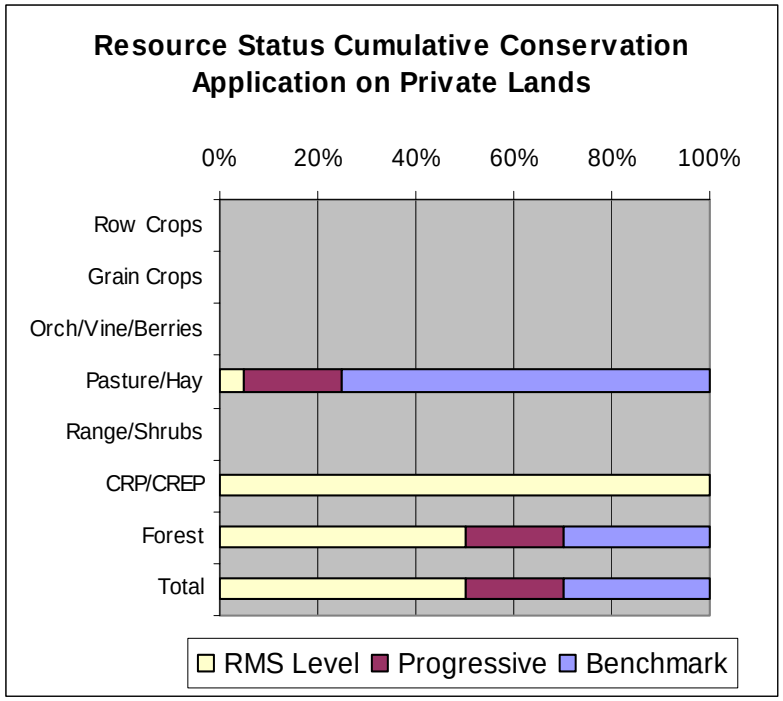
PRMS Data	FY99	FY00	FY01	FY02	FY03	Avg / Year	Total
Total Conservation Systems Planned (Acres)	1,061	1,085	670	641	1,458	983	4,915
Total Conservation Systems Applied (Acres)	1,143	803	182	0	605	547	2,733
Conservation Treatment Acres							
Waste Management (Number)	6	1	0	4	0	2	11
Buffers (Acres)	58	67	12	199	93	86	429
Erosion Control (Acres)	22	236	0	0	0	52	258
Irrigation Water Management (Acres)	0	0	0	0	0	0	0
Nutrient Management (Acres)	858	0	40	0	0	180	898
Pest Management (Acres)	137	682	94	0	0	183	913
Prescribed Grazing (Acres)	432	380	234	25	778	370	1,849
Trees & Shrubs (Acres)	62	233	4	200	11	102	510
Conservation Tillage (Acres)	0	0	0	0	0	0	0
Wildlife Habitat (Acres)	460	90	184	127	215	215	1,076
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:
  - Nutrient & pest management and prescribed grazing on CAFOs.
  - Wildlife habitat management in riparian and wetland areas.
- Most commercial dairies are at the progressive level.
- USDA services are limited because there is no service center in Clatsop County.
- The few programs that benefit small farm programs also have limited conservation planning.
- Focus during the last decade has been on meeting State CAFO permit regulations. Attention now is turning toward practices such as pasture and wildlife habitat management.
- Private, industrial forestland owners typically do not work with NRCS and SWCDs; however, their lands commonly comply with State forest practices act requirements.
- Much of the non-industrial, private forestland is used as rural homesites or recreational property. Only a portion is managed for long-term timber production.

Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **196 acres**
- Wetland Restoration Program (WRP): **None**
- Conservation Reserve Enhancement Program (CREP): **353 acres**

Footnotes/Bibliography

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1. Ownership Layer – Source: The 1:24,000 scale public ownership layer is the land ownership/management for public entities, 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.