



State of Oregon  
Department of  
Environmental  
Quality

# Tillamook Bay Watershed

(Portions extracted from "Tillamook Bay Environmental Characterization: A Scientific and Technical Summary", Tillamook Bay National Estuary Project, July 1998)

**WATER QUALITY CONCERNS:** The federal Clean Water Act (CWA) requires each state to undertake specific activities to protect the quality of their rivers, estuaries and lakes. DEQ is required to develop and implement water quality standards that protect sensitive beneficial uses of waters throughout Oregon. Section 303(d) of the CWA requires each state to develop a list of waters that do not meet the water quality standards. These are called Water Quality Limited waters. The Tillamook Bay Watershed is Water Quality Limited for Temperature and Bacteria. The number of segments and parameters that exceed water quality standards in the Tillamook Watershed are summarized below. In addition, sedimentation is a parameter of concern throughout the basin and several sloughs in the lower watershed have low dissolved oxygen levels. For more information on streams that are listed in the Tillamook watershed, go to: <http://waterquality.deq.state.or.us/WQLData/SubBasinList98.asp>.

<b>Water Quality Limited Waters in Tillamook (from 1998 303(d) List)</b>	
Total Number of Water Bodies Listed	20
<b>Parameter</b>	<b>Number of Segments Listed</b>
Bacteria	15
Temperature	12

**Total Maximum Daily Loads:** The CWA further requires DEQ to develop Total Maximum Daily Loads (TMDLs) for all water quality limited waters. Generally speaking, TMDLs define the maximum amount of controllable impacts a water body can accept and still assure that designated beneficial uses are being adequately protected. DEQ has developed TMDLs for temperature and bacteria in the Tillamook Bay Watershed.

DEQ is requesting comments on the TMDLs from the public between February 2 and April 2, 2001. A hearing will be held on March 27, 2001 at 7 P.M. at the First Christian Church, 2203 4<sup>th</sup> Street, Tillamook, OR 97141. Comments on the documents below should be directed to Eric Nigg [(503) 229-5325] at 2020 SW 4<sup>th</sup> Avenue, Suite 400, Portland, OR 97201-4987 or e-mail at: [nigg.eric@deq.state.or.us](mailto:nigg.eric@deq.state.or.us)

**Available Documents:**

[Final Tillamook Bay Watershed Total Maximum Daily Load and Water Quality Management Plan](#)

Fact Sheet: [Implementation and Enforcement of TMDLs](#)

Fact Sheet: [Tillamook Bay Watershed Bacteria TMDL](#)

Fact Sheet: [Tillamook Bay Watershed Temperature TMDL](#)

**DEQ Tillamook Basin Coordinator:** Please contact the following people for more information about the Departments efforts in the Tillamook watershed or send comments to:

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### **THE SETTING:**

**Tillamook Bay and its Uses:** Tillamook Bay is a small, shallow estuary about 60 miles west of Portland on the Oregon Coast. Approximately 6.2 miles long and 2.1 miles wide, the Bay averages only 6.6 feet depth. At low tide, about 50% of the bottom is exposed as intertidal mud flats.

Since the first European settlements in the 1850's, humans have altered the estuary and surrounding watershed. Heavy sediment loads convinced the U.S. Army Corp of Engineers to abandon its activities in the southern end of the bay shortly after the turn of the century. The last ocean-bound ship left the town of Tillamook in 1912 and today only the Port of Garibaldi, at the northern end of the bay, serves deep-water traffic. However, for recreational boating, the Tillamook watershed is ranked second to the Rogue River system in the amount of income generated by recreational fishing in coastal watersheds, the most widely used bay in Oregon, and the sixth most-used waterbody statewide. Virtually all of the boating visitor-days are spent fishing.

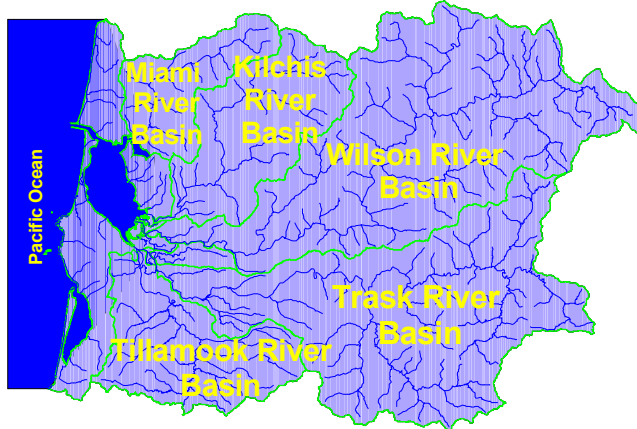


The bay provides habitat for numerous fish, shellfish, crabs, birds, seals and sea grasses. 53 species of fish have been identified in the bay at various times of the year. Five species of anadromous salmon use the bay at some point in their life cycle.



Oysters have been grown commercially in Tillamook Bay since the 1930s. Tillamook Bay has been one of the leading oyster producing bays in Oregon, with an average annual production of about 21,200 shucked gallons during the 1970s and 1980s. Beginning in 1990, the level of production dropped off sharply and has remained low due to reduced production by several Oyster Companies. Reductions in oyster production have resulted from business closures, bacterial contamination of the beds where they are grown, flooding, siltation and infestations of burrowing shrimp. Some years, shellfish beds are closed to

harvest for commercial sale for more than 100 days due to risk of bacterial contamination.



**The Rivers and their Uses:** Five rivers enter Tillamook Bay from the south, east and north – Tillamook, Trask, Wilson, Kilchis and Miami. These rivers still provide some of the West Coast's most productive fishing. The Tillamook Watershed is home to Summer and Winter Steelhead, Coho, Chum, Spring and Fall Chinook and sea-run Cutthroat Trout. Coho Salmon are currently listed as threatened by the National Marine Fisheries Service under the Endangered Species Act and Coastal Cutthroat are currently candidates being considered by the U.S. Fish and Wildlife Service. These fish are generally in decline in the

basin and have been lost from some tributaries due to a variety of factors that also include changes in habitat and water quality.

**The Upper Watershed and its Uses:** The Tillamook Watershed is part of the coastal, temperate rain forest ecosystem. With a mean annual precipitation around 90 inches per year in the lower basin and close to 200 inches per year in the uplands, the watershed's coniferous forests – with trees such as Douglas fir, true fir, spruce, cedar and hemlock – cover about 89% of the total land area. Hardwood species such as alder and maple grow throughout, especially as second growth in riparian areas.

The Tillamook Burn, a series of forest fires from 1933-1951, affected the use of forestlands in the region. The fires killed about 200,000 acres of old-growth timber in the Wilson and Trask River watersheds. Road building followed the fires, for salvage logging, fire protection and replanting purposes. Much of the upper watershed (64%) is deeded to the State and managed by the Oregon Department of Forestry as the Tillamook State Forest.



Since 1960, most timber harvesting in the basin has occurred on private and federal lands because the state trust lands replanted after the burns are still developing into mature, harvestable stands. The timber products industry generated 11% (\$37 million)

of Tillamook County personal income in 1993. Harvest rates and forestry-related employment in Tillamook County are expected to rise over the next 25 years as stands reach harvestable age. Two-thirds of the proceeds from State Trust land timber harvesting is distributed among county schools (73%), general fund (22%) and other taxing districts (5%).

Recreation (camping, hunting, hiking, biking and off-road vehicle usage) is popular, especially given the proximity to the Portland metropolitan area, and is increasing. The Tillamook State Forest represents 1/3 of the acreage available for riding in the entire State.

**The Lower Watershed and its Uses:** In the lower watershed, forest gives way to rich alluvial plains, which are used primarily for dairy agriculture. About 6.5% of the basin is agricultural, 1.5%

is urban or rural development (approximately 23,300 people live in Tillamook County (1995)) and the remaining 3% is covered by water.

Early settlers recognized the rich agricultural potential of the lowlands and drained the area with numerous dikes, levees and ditches. Once characterized by tree-lined meandering rivers and networks of small channels that provided fish habitat, woody debris and organic matter, the lowlands now support about 28,600 dairy cattle (Pedersen, B. 1998) and produce about 95% of Oregon's cheese. In 1995, agricultural commodity sales from Tillamook County totaled \$75.8 million with dairy products generating 82% of the county's agricultural income. While the total number of dairy farms has declined since the 1940s (e.g. 30% decline from 1977 to 1993) due to conversion and combination of small farms to larger commercial farms, milk production among the Tillamook county Creamery Association (TCCA) has increased (e.g. 60% increase between 1984 and 1995).



#### **Some Actions Addressing Water Quality in the Tillamook Watershed:**

**Tillamook Performance Partnership:** In 1992, EPA designated Tillamook Bay as an estuary of national significance and included it in the National Estuary Program (NEP). A Comprehensive Conservation and Management Plan (CCMP) was developed for the basin and approved by EPA in December 1999. The CCMP lays out 62 specific actions that will address and solve the most significant environmental problems in the Tillamook Bay Watershed. These 62 actions relate to four-priority problems and citizen involvement: Habitat Loss and Simplification; Water Quality; Erosion and Sedimentation; and Flooding. For further information, see the NEP website: <http://www.co.tillamook.or.us/countygovernment/estuary/tbnep/nephome.html>.

The Tillamook County Performance Partnership was formed to track and help implement the plan. The Partnership is a group of 120 members representing community leaders, state and federal agencies, citizens, industries and municipalities. For more information, see the Tillamook County Performance Partnership website: <http://www.co.tillamook.or.us/countygovernment/Estuary/TCPP/performance.html>.

The Partnership is an active part of the Oregon Plan (<http://www.oregon-plan.org/>) and works activity with the Tillamook Watershed Council.

**Upper Watershed – Forestry:** Legacy practices (prior to the Forest Practices Act) from log drives, splash dams, widespread clear-cutting of timber stands and salvage logging after the Tillamook Burn led to serious erosion, sedimentation and channel modification. Roads built in the 1950's to salvage timber are still the largest potential cause of erosion and sedimentation. During severe storm events, old culverts and roads may fail possibly leading to significant erosion and major sedimentation. In addition, old culverts bar the passage of salmon.

ODF has put a large effort into improving the roads in the Tillamook State Forest (for example, it spent a record \$3.6 million on road improvements in 1995). The Tillamook State Forest is currently developing a Habitat Conservation Plan that should address both endangered species and water quality issues as well as provide a sustainable yield of timber from the forest. For more

information, see the Tillamook State Forest website:  
<http://www.odf.state.or.us/TSF/TSFhome.htm>.

**Lower Watershed – Agricultural and Urban Impacts:** The most obvious potential water quality impact of the dairies is from the manure. Manure can enter the rivers, streams, sloughs and ditches directly from cows or via runoff from pastures on which manure has been spread. A typical cow can produce 7-20 tons of manure annually and with approximately 90 inches of rainfall and about 28,600 dairy cattle, there is a high risk of contamination. Other sources of bacteria include sewage treatment facilities and on-site septic systems. Reductions in all of these sources will be needed to achieve bacterial standards for the bay. In addition, many streams in the lower watershed have limited shading due to alterations in the riparian area.

In 1981 the Tillamook Watershed received funding through the Rural Clean Water Program (RCWP) as part of a national effort to help clean up agricultural wastes. The RCWP covered 23,540 acres and provided funding to install such best management practices as manure storage facilities, roofing, gutters, fencing and other management practices on farms. In addition, there have been many efforts in recent years to fence and improve riparian and stream habitat sponsored by DEQ, ODFW, OWEB, TCCA and participants in the Hire-the-Fisherman program.

The North Coast Basin Agricultural Water Quality Management Area Plan (SB1010 Plan) was recently developed and is going into rule. In addition, Tillamook County is reviewing its Riparian Ordinance. Tillamook County recently found an area with a high failure rate of on-site sewage systems and will either extend sewers to the area or require corrections. For more information, see the Tillamook County Soil & Water Conservation website:  
<http://www.tbcc.cc.or.us/~tcwrc/swcd/> or the Tillamook County website:  
<http://www.co.tillamook.or.us/>.



**Other Challenges:**

Flooding has been an on-going concern in Tillamook County. In the aftermath of the 1996 flood, Tillamook County produced a comprehensive Flood Hazard Mitigation Plan that provides a comprehensive strategy for reducing the flood hazards in Tillamook County.

Management efforts will need to satisfy multiple objectives: to reduce flood-related hazards and damages, while minimizing

the potential long-term environmental impacts and economic costs of flood control and flood plain management practices. Some flood control practices, such as the use of structural measures such as dikes, levees and dredging, may conflict with various resource management plans and would involve regulatory approvals. The North Coast Community Solutions Team, an inter-agency group of managers that meet on a frequent basis, is examining flood control in the Tillamook Basin in an attempt to reduce potential regulatory conflicts. For more information, see the U.S. Army Corp of Engineer website: <http://usace.co.tillamook.or.us/>.