Section 319
NONPOINT SOURCE PROGRAM SUCCESS STORY
Oregon

Stakeholders Collaborate to Reduce Bacteria Levels

Waterbody Improved

Bacteria from livestock and human sources caused Oregon's Wilson River to exceed water quality standards, prompting Oregon's Department of Environmental Quality (ODEQ) to add an 8.5-mile segment of the lower Wilson River to the state's 1998 Clean Water Act (CWA) section 303(d) list of impaired waters. With support from multiple organizations, landowners installed best management practices (BMPs) throughout the Wilson River watershed and beyond. Data show a statistically significant decreasing trend in bacteria levels. In fact, the river has met water quality standards since 2005. However, ODEQ still lists the river as impaired while ODEQ performs a final data review and upload to the assessment database.

Problem

The 194-square-mile Wilson River watershed is the largest of five main drainage basins feeding Tillamook Bay on Oregon's northern coast. The dominant land use in the watershed is state and federal forestlands (81 percent of the watershed's total area). Dairy pastures dominate the lowland areas of the watershed. Development pressures from the city of Tillamook are also affecting the lower portions of the watershed.

The Wilson River (Figure 1) is protected for recreational contact use (swimming and wading). Oregon's recreational use water quality standard requires that (1) the 30-day log mean not exceed 126 *Escherichia Coli* counts per 100 milliliters (mL) from a minimum of five samples, and (2) no single sample exceed 406 *E. Coli* counts per 100 mL.

In the mid-1990s, data showed that bacteria concentrations were relatively low in the upper, forested part of the watershed. However, data indicated that bacteria concentrations exceeded water quality standards throughout the year near the river's mouth. Therefore, ODEQ added an 8.5-mile segment of the river (mouth to Little North Fork Wilson River) to Oregon's 1998 CWA section 303(d) list of impaired waters.

Project Highlights

The Tillamook Bay National Estuary Program, now known as the Tillamook Estuaries Partnership (TEP), worked closely with community, state and federal entities to develop and implement the Tillamook Bay Comprehensive Conservation and Management Plan beginning in 1999. The plan recommended 63 actions that could help improve water quality, enhance aquatic habitat and mitigate flooding.

Figure 1. Oregon's Wilson River is popular site for kayakers and canoeists.

ODEQ completed a Tillamook Bay watershed total maximum daily load (TMDL) for temperature and bacteria in 2001. Also in 2001, the U.S. Department of Agriculture's Natural Resources Conservation Service and the Tillamook Soil and Water Conservation District (SWCD) published a Watershed Plan/Environmental Assessment for the Lower Tillamook Bay watershed. That document outlines agricultural facilities, practices and restoration activities needed to address TMDL-related water quality issues in the Tillamook Bay watershed.

On a smaller scale, the Tillamook County Performance Partnership and a local citizens' group called the Tillamook Bay Watershed Council (TBWC) developed a watershed assessment report specifically for the Wilson River in 2001. The report describes watershed conditions and recommends actions that address issues of water quality, fisheries and fish habitat, and watershed hydrology.

In 2001 TEP began working with Oregon State University on a three-year genetic marker study on bacteria in the watershed. The study indicates that livestock and other ruminants contributed most of the bacteria in the lower Wilson River. Using the data, watershed managers began targeting practices to reduce bacteria. In 2003 TEP began offering its Backyard Planting Program (BYPP), a cost-free, voluntary assistance program to help

private landowners remove invasive species and improve habitats for fish and wildlife. The program's coordinator works with landowners to develop site-specific riparian restoration plans. Between 2003 and 2007, the program helped plant almost 10,000 trees along more than 17 miles of streams in the Tillamook Bay watershed.

Between 2002 and 2007 stakeholders implemented numerous BMPs in the lower Wilson River watershed (Figure 2). The TBWC, TEP and Tillamook SWCD worked with landowners to complete 20 riparian enhancement projects (12 of which were BYPP projects) that included planting, fencing and invasive species removal. The projects stabilized streambanks and removed livestock from the river's riparian area. In addition, TEP acquired three sensitive wetland parcels, which will be restored in the coming years and maintained by Tillamook County as permanent wetland areas.

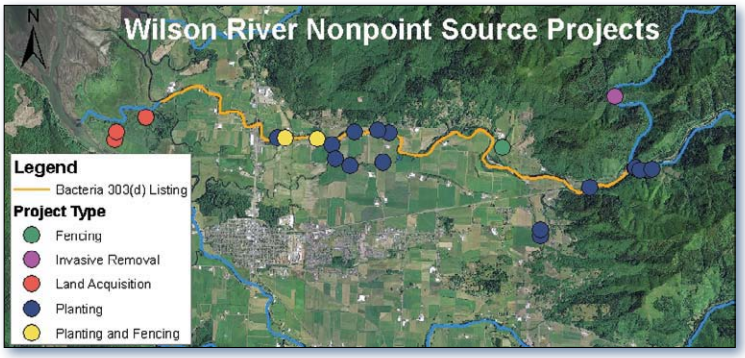

Figure 2. Stakeholders completed numerous restoration projects in the lower Wilson River watershed.

Two wastewater treatment systems discharge to the Wilson River, including a campground and the Tillamook County Creamery Association (TCCA). Improvements to the TCCA system helped to reduce bacteria levels released to the river.

TBWC is also partnering with the Oregon Department of Forestry, Bonneville Power Administration, and Oregon Department of Fish and Wildlife to remove vehicle access roads and primitive camping areas from more than four acres of upper Wilson River riparian areas.

Results

Stakeholders' efforts to target and reduce bacteria pollution throughout the Tillamook Bay watershed appear to be working. Data show that bacteria levels in the Wilson River have met water quality standards since 2005 (Figure 3). The lower sections of the other four main tributaries in the Tillamook Bay watershed—Miami, Kilchis, Trask, and Tillamook rivers—still violate Oregon's water quality standards for recreational use; however, data indicate that bacteria levels in those rivers are declining steadily. Although the Wilson River now meets standards for bacteria, it remains on the impaired waters list until ODEQ does a final review of recent data and uploads it to ODEQ's assessment database.

Partners and Funding

Numerous partners have worked to restore Tillamook Bay and its watershed, including the Oregon Watershed Enhancement Board, Oregon Department of Agriculture, ODEQ, Oregon Department of Fish and Wildlife, TEP, Tillamook County, TBWC, U.S. Fish and Wildlife Service (USFWS), TCCA, Tillamook SWCD, Tillamook Native Plant Cooperative and private landowners.

Partners spent more than $1.4 million restoring and protecting the lower Wilson River watershed. TEP spent the majority of the funds ($1.3 million, mostly through USFWS grant programs) to purchase three sensitive wetland tracts. Partners also completed 20 riparian restoration projects at a cost of $68,000, which included $26,000 in CWA section 319 funds; $13,000 in matching funds from Oregon Watershed Enhancement Board; and a variety of other federal, state, private and in-kind funds.

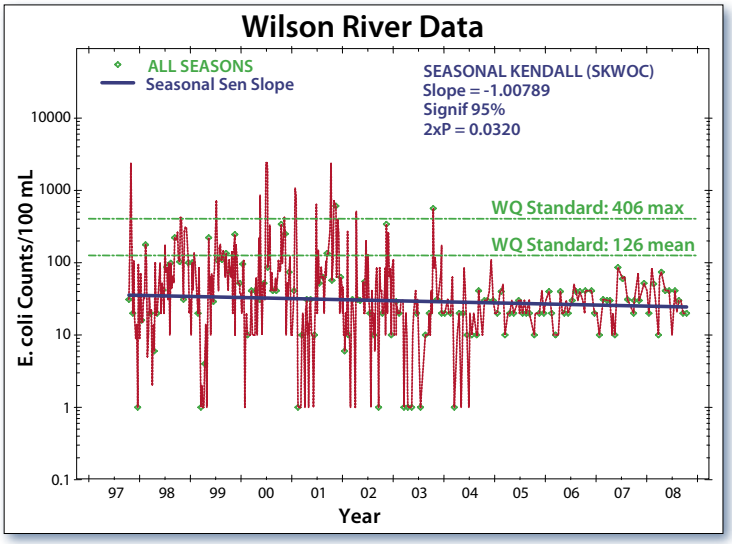

Figure 3. Bacteria levels in the Wilson River have steadily declined since 1997 and now consistently meet the two-part recreational use water quality standard, which requires (1) that the 30-day log mean not exceed 126 *E. Coli* counts per 100 mL from a minimum of five samples and (2) that no single sample exceed 406 *E. Coli* counts per 100 mL.

U.S. Environmental Protection Agency
Office of Water
Washington, DC

EPA 841-F-10-001A
January 2010

For additional information contact:

York Johnson
Oregon Department of Environmental Quality
503-322-2222 • johnson.york@deq.state.or.us