2026 Oregon Envirothon Current Issue

Nonpoint Source Pollution Mitigation – It Begins at Home!

Introduction

Clean water is a fundamental need for people, fish and wildlife, and the environment. It is vital for thriving communities and economies. Despite the importance of clean water, the most recent assessment of the health of Oregon's waters found that 37% of the waters assessed were impaired (Source: Protecting Oregon's Drinking Water Sources).

A growing number of Oregon communities are facing challenges to reliably accessing clean, affordable water for drinking and sanitation. These challenges are only expected to become more complex as the state's population grows, our built infrastructure ages, natural systems degrade and climate change stresses water supplies (Source: Protecting Oregon's Drinking Water Sources).

Nonpoint source pollution refers to pollution that doesn't come from a single, identifiable source but instead comes from many diffuse sources across the landscape. In Oregon, it often results from rainwater running over the land and picking up pollutants. This runoff can carry things such as fertilizer from farms, oil from roads or sediment from construction sites, which end up in nearby streams and rivers. Nonpoint source pollution is one of the biggest threats to Oregon's water quality. It also impacts aquatic habitats, especially for salmon and other native species that depend on clean, cold water.

The Clean Water Act (CWA) is the main federal law protecting water quality in the United States. Passed in 1972, it was originally designed to regulate point source pollution — pollution that comes from a single, identifiable source, such as a pipe or factory — through a permit system. To address nonpoint source pollution, Congress added Section 319 to the CWA in 1987. Section 319 requires states to create plans for managing nonpoint source pollution and provides tools and federal funding to support solutions.

In Oregon, the Department of Environmental Quality (DEQ) runs the state's Nonpoint Source Program. One strategy DEQ uses to address both point and nonpoint source water pollution is the Total Maximum Daily Load (TMDL) process, which focuses on restoring water quality to meet state standards. A TMDL plan determines how much pollution can go into a river or stream without it being dangerous to human health or other uses of that water body (Source: Oregon Department of Environmental Quality: Total Maximum Daily Loads). The CWA requires states, or the U.S. Environmental Protection Agency, to develop a TMDL for each water body on the state's polluted waters list (also known as the 303(d) list or Integrated Report) and then

allocate that load among different sources, including nonpoint sources. The TMDL process is just one strategy used to clean up polluted waters.

In Oregon, people are reducing nonpoint source pollution through community action, education and policy. Farmers and forest managers use practices such as planting buffer strips, limiting chemicals and improving drainage to reduce runoff. Cities add green infrastructure — rain gardens, bioswales and permeable pavement — to filter stormwater. Watershed councils restore streams, remove invasive plants and replant natives. Education programs from schools, nonprofits and the Oregon Department of Environmental Quality show residents how actions such as proper pet waste disposal, lawn chemical reduction and septic maintenance protect water quality. Together, these efforts help keep Oregon's waterways clean for people and wildlife.

Key Topics and Objectives

Key Topic #1: Nonpoint Source Pollution Status

Learning Objectives:

1. **Define** nonpoint source (NPS) pollution and differentiate it from point source pollution using real-world examples from urban and rural settings.
2. **Identify** major sources and pathways of NPS pollution in surface waters, such as stormwater runoff, agriculture and impervious surfaces.
3. **Explain** how changes in watershed ecology (e.g., water and nutrient cycles) influence NPS pollution.
4. **Describe** the impacts of NPS pollution on water quality and designated water uses (such as recreation, fisheries and drinking water).

Resources

NCF-Envirothon Resources: See pages 4-45 in the 2026 Envirothon Current Environmental Issue Study Resources guide.

Oregon Resources:

- **Nonpoint Source Pollution webpage** – Oregon DEQ
  Links to resources about NPS pollution in Oregon.
- **Nonpoint Source Success Stories: Oregon** – U.S. Environmental Protection Agency (EPA)
  Case studies showing how NPS pollution has impacted Oregon rivers and how it's been addressed.
- **Water Quality & Quantity** – Oregon Conservation Strategy
  Explains how watershed processes (e.g., water cycle or nutrient cycles) affect NPS pollution and water quality.

- **Protecting Oregon's Drinking Water Sources** – Coalition of Oregon Land Trusts
  Provides information on how to use land conservation strategies to protect drinking water sources, including how to reduce NPS pollution such as sediment, nutrients and runoff.

Other Resources:

- **Watersheds and Nonpoint Source Pollution** – PBS
  A five-part series introducing students to scientific models that help them conceptualize watersheds and their importance for managing nonpoint sources of pollution.
- **Nonpoint Source Discovery Kit Tutorial** – NOAA
  A suite of webpages that introduce students to the history and types of nonpoint source pollution, and to methods used to detect, assess and reduce its effect on the environment.

Key Topic #2: NPS in a Growing World and Your Role in It

Learning Objectives:

1. **Explain** how population growth, urban expansion and agricultural intensification contribute to NPS pollution locally and globally.
2. **Compare** how different land use types (urban, suburban, agricultural) affect runoff volume and pollutant loading.
3. **Identify** common products and everyday activities that contribute to NPS pollution.
4. **Illustrate** how personal choices and environmental footprints relate to NPS pollution.

Resources

NCF-Envirothon Resources: See pages 46-82 in the 2026 Envirothon Current Environmental Issue Study Resources guide.

Oregon Resources:

- **Keeping Drinking Water Safe** – Oregon Forest Resources Institute
  Report of a study that found that forested watersheds in Oregon produce higher-quality source water than any other type of surface water source.

Key Topic #3: The Role of the Individual/Community in NPS Issues and Solutions

Learning Objectives:

1. **Describe** the roles and actions individuals, families and communities can take to reduce NPS pollution through behavior change and local initiatives (e.g., storm drain markings, rain gardens and stream cleanups).

2. **Identify** city/county services that contribute to NPS issues and solutions (e.g., garbage service, building permits and road maintenance).
3. **Compare** the effectiveness of individual vs. collective actions in mitigating NPS pollution at the watershed scale.
4. **Design or assess** a local outreach or NPS monitoring project, such as a stormwater audit or pollution prevention campaign.

Resources

NCF-Envirothon Resources: See pages 83-111 in the 2026 Envirothon Current Environmental Issue Study Resources guide.

Oregon Resources:

- **Oregon Watershed Councils**
  Local councils meet regularly in their communities to assess conditions in a given watershed and to conduct projects that restore or enhance the watershed. This resource provides a map and list of watershed councils and their contact information.

- **Oregon Watershed Restoration Inventory –** Oregon Watershed Enhancement Board
  This database tracks voluntary actions of private citizens and landowners who have worked in partnership with federal, state and local groups to improve aquatic habitat and water quality conditions.

- **Oregon-based environmental organizations, including**:
  - Oregon Environmental Council: Works to protect Oregon's water, air and land, including advocating for policies to reduce urban and agricultural runoff and prevent water pollution. See their Clean Water webpage.
  - Columbia Riverkeeper: Works in solidarity with Tribes to restore clean water and healthy fish from toxic pollution in the Columbia.
  - Oregon Rural Action: Works to address nitrate pollution in the Lower Umatilla Basin.

Key Topic #4: Strategies to Evaluate NPS Sources, Issues and Solutions

Learning Objectives

1. **Identify** tools and techniques used to assess and monitor NPS pollution, including watershed mapping, stormwater flow tracing and visual assessment, and describe the challenges with each.
2. **Explain** how water quality indicators (e.g., turbidity, presence of E. coli and nutrients) can be used to evaluate NPS pollution.
3. **Interpret** basic field data, maps and aerial imagery to locate potential sources of NPS pollution and recommend solutions.

Resources

NCF-Envirothon Resources: See pages 112-145 in the 2026 Envirothon Current Environmental Issue Study Resources guide.

Oregon Resources:

- **Oregon Explorer Water Map Viewer** – Oregon Water Resources Department
  Access data and create a water report for an area of interest within Oregon. The report includes information about water quality, water quantity, water rights and more.
- **Water Quality Monitoring Strategy 2020** – Oregon DEQ
  Describes the statewide water monitoring and assessment program for providing high quality, publicly accessible data to address water quality program needs.

Key Topic #5: Legislation, Regulations and Voluntary Measures

Learning Objectives

1. **Summarize** major U.S. and Oregon state policies and programs that address NPS pollution, including the U.S. Clean Water Act (especially Sections 303 and 319) and Total Maximum Daily Loads (TMDLs), Oregon water quality standards, and local regulations aimed at protecting water resources.
2. **Differentiate** between regulatory and voluntary approaches to controlling NPS pollution and identify examples of each.
3. **Describe** how federal and state agencies support local communities in managing NPS pollution through funding, education and technical assistance.

Resources

NCF-Envirothon Resources: See pages 146-170 in the 2026 Envirothon Current Environmental Issue Study Resources guide.

Oregon Resources:

- **Nonpoint Source Pollution webpage** – Oregon DEQ
  Links to resources about NPS pollution in Oregon.
- **Oregon Nonpoint Source Management Program Plan (2022-2026)** – Oregon DEQ
  Describes Oregon's programs and process for preventing and controlling nonpoint source pollution.

- **Oregon Water Quality Program Plan (2025-2027)** – Oregon DEQ
  Provides a broad overview of Oregon DEQ's Water Quality Program work and special projects to help meet desired outcomes.

- **Oregon Water Quality Standards** – Oregon DEQ
  Defines point and nonpoint source regulation under Oregon law.

Key Topic #6: Your Best Management Practices for NPS

Learning Objectives

1. **Identify** common best management practices (BMPs) used to reduce NPS pollution (e.g., rain gardens, cover crops, buffer strips and pervious pavement) and explain how they reduce pollutant loads or improve stormwater infiltration.
2. **Compare** the costs, benefits and feasibility of different BMPs in various land use contexts (e.g., a schoolyard vs. a farm vs. a residential street).
3. **Recommend** appropriate BMPs for a hypothetical site based on field observations, soil conditions and observed pollution risks.

Resources

NCF-Envirothon Resources: See pages 170-203 in the 2026 Envirothon Current Environmental Issue Study Resources guide.

Oregon Resources:

- **Erosion Control Manual** – Oregon Department of Transportation (ODOT)
  Provides information on erosion prevention and sediment control BMPs for ODOT projects.

- **Erosion Prevention and Sediment Control Planning and Design Manual** – Clean Water Services
  Field-ready BMP designs for construction, development and erosion control.

- **Nonpoint Source Implementation** – Oregon DEQ
  Shows how BMPs are supported by state technical assistance and funding.

- **Oregon Nonpoint Source Management Program Plan (2022-2026)** – Oregon DEQ
  Identifies BMPs for agriculture, forestry and urban areas. (Search for "BMP.")

- **Rain Gardens: Low-Impact Development fact sheet** – OSU Extension
  Explains the benefits of a rain garden and how to create one.

Oregon State Education Standards Related to Nonpoint Source Pollution

Science Standards

Earth & Human Activity

- **HS.ESS3.4**: Evaluate or refine a technological solution that reduces impacts of human activities on climate change and other natural system*s.*

Earth's Systems

- **HS.ESS2.2**: Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth's systems.
- **HS.ESS2.5**: Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes.

Ecosystems: Interactions, Energy and Dynamics

- **HS.LS2.7**: Design, evaluate and refine a solution for reducing the impacts of human activities on the environment and biodiversity.

Social Studies Standards

Geography

- **HS.42**: Use geographic data to analyze the interconnectedness of physical and human regional systems (such as a river valley and culture, water rights/use in regions, choice/impact of settlement locations) and their interconnectedness to global communities.
- **HS.46**: Assess how changes in the environmental and cultural characteristics of a place or region influence spatial patterns of trade, land use and issues of sustainability.
- **HS.48**: Analyze how humans have used technology to modify the physical environment (e.g., dams, tractor, housing types and transportation systems).
- **HS.49**: Assess the impact of human settlement activities on the environmental and cultural characteristics of specific places and regions.

Human Interaction and Interconnection (in optional, 2024 standards)

- **HS.G.HI.8**: Identify examples of conflict and cooperation involving the use of land and natural resources.

Human-Environmental Interaction (in optional, 2024 standards)

- **HS.G.HE.9**: Explain how technological developments, societal decisions and personal practices influence global resource consumption patterns, conservation and environmental sustainability.
- **HS.G.HE.10**: Evaluate efforts at the local, national or international level to address the use of limited or environmentally harmful resources.
- **HS.G.HE.11**: Identify and describe how the relationship to land, utilization of natural resources, displacement and land ownership affects historically underrepresented identities, cultures, and communities.