

Introduction



Welcome to the PNW Water Quality and Monitoring Program

A 'Community-Based' Water Education Short-course for the Pacific Northwest

Goal

This short-course is designed to provide community representatives such as yourself with information about a major effort to increase awareness, knowledge, and protection of our water resources.

After attending this short-course, you will have basic knowledge and resources to provide leadership in water quality monitoring and surface water assessment. You will also be able to share information about water and surface water assessment with others in your community.

This is your opportunity to see how your community can take advantage of, and get involved in personal and community water education and protection efforts.

Introduction	Material	Time
Welcome	Overhead Intro. - 1	2 minutes
Basic Short-Course	Overhead Intro. - 2	10 minutes
Key Points to Remember	Overhead Intro. - 3	3 minutes
Icebreaker Activity	Butcher paper, markers, or dots	40 minutes



The **Introduction** is designed to give short-course participants an overview of the purpose, content, and suggested schedule. It also provides ideas and resources for program presenters.

Upon completion of the **Introduction**, you will be able to:

- ▶ Increase your awareness of water issues in your community.
- ▶ Increase your understanding and technical expertise related to TMDL issues.
- ▶ Increase your awareness of watersheds, drinking water, and ground water.
- ▶ Increase your understanding of water quality and assessment through physical, biological, and chemical field studies.
- ▶ Improve your understanding of the role of community monitoring and management of water supply.
- ▶ Identify key sustainable practices (Best Management Practices) to improve water quality in your community.
- ▶ Learn, plan, and act on this new water quality and monitoring knowledge in your community!

Glossary

A glossary is presented at the end of the modules with definitions of terms used in this short-course. In addition, a **web directory** (index) of all sites is listed in Appendix B for the the convenience of organizers and participants.

Short-course Review

This workshop is broken down into five parts:



Part One: Water, Watersheds, and Beneficial Uses of Water

- ▶ Learn, plan, and act on local water quality issues.
- ▶ Understand key terms and legislation about water and watersheds.
- ▶ Identify the beneficial uses of water and TMDLs.
- ▶ Survey local water uses/resources in your community.



Part Two: Ground, Drinking, and Surface Water

- ▶ Identify drinking and ground water standards.
- ▶ Recognize opportunities and responsibilities for individual community involvement in water monitoring efforts.
- ▶ Understand why and how water quality monitoring is done.
- ▶ Research specific local water issues of concern in your community.



Part Three: Nine Key Indicators of Surface Water Quality

- ▶ Examine the nine key indicators of water quality: temperature, dissolved oxygen, pH, BOD, fecal bacteria, phosphates, nitrates, turbidity, and total solids.
- ▶ Recognize and review components of water chemistry test kits, sources of these kits, and where kits might be found in a local community.
- ▶ Understand physical indicators and approaches to examining surface water quality.
- ▶ Understand biological indicators and approaches to examining surface water quality.



Part Four: Experience Surface Water Quality Monitoring and Safety in the Field

- ▶ Recognize and observe basic safety considerations in field water quality monitoring.
- ▶ Conduct physical, chemical, and biological water habitat assessments in selected streams, rivers, ponds, lakes, estuaries, or beaches.



Part Five: Spread the Word!

- ▶ Recognize opportunities and responsibilities for public involvement in water quality monitoring, water assessment, and water protection process.
- ▶ Identify key contacts in your community that could be involved in water quality monitoring, water assessment, and water protection processes.
- ▶ Identify links and resources to existing or planned programs that can be used to facilitate elements of these processes in your community, state, and region.

Basic Short-Course Schedule:

DAY	MODULE	TOPIC	COVERAGE
Wednesday	1 (55 min.)	Introduction/Expectations Learn, Plan, Act	Pre-test, Water Issues, Water Quality Assessment, Monitoring, and Protection
Wednesday	2 (45 min.)	Water and Watershed Concepts	Water Facts, Stream Systems, Watersheds, Point/Nonpoint Pollution; USGS map reading
Wednesday	3 (35 min.)	Beneficial Uses and TMDLs	Water Uses; TMDLs
Wednesday	4 (35 min.)	Survey of Local Water Uses / Resources	Expert review of water use, resources, and issues locally
Thursday	5 (55 min.)	Ground Water, Drinking Water, and Standards	What is Ground Water and Surface Water. Water Standards.
Thursday	6 (35 min.)	Why We Monitor and Voluntary Monitoring	Getting Started: Idaho, Oregon, and Washington Resources
Thursday	7 (35 min.)	How We Monitor and Practical Reporting	Types of water monitoring and assessment; Record keeping
Thursday	8 (35 min.)	Addressing Key Local Water Concerns	Issues Investigation, Beliefs, and Values
Friday	9 (55 min.)	Surface Water Quality Indicators including Chemistry	Temperature, BOD, pH, DO, Turbidity, Fecal coliforms, Phosphates, Nitrates, Solids
Friday	10 (35 min.)	Water Testing Kits	Recommended Equipment List; Suggestions and Local Sources
Friday	11 (35 min.)	Physical Habitat Assessment	Field Observations; Transect Measurements; Reach Evaluation
Friday	12 (45 min.)	Biological Habitat Assessment	Benthic Macroinvertebrates; Insect Life Cycles; Aquatic Plants; Algae; Bacteria; DO
Saturday	13 (35 min.)	Safety and Access Issues	Personal Health and Environmental Safety; Site Maps, Directions, Protocol
Saturday	14 (2 hours)	Orientation, Safety Review, Streamwalk; Monitoring Stream Surface Waters	Biological Habitat Assessment Physical Habitat Assessment Surface Water Quality Indicators
Saturday	(1 hour)	Instructions/Travel/Lunch	
Saturday	15 (2 hours) or	Monitoring Ponds, Lakes, and Reservoirs (Opt. A)	Synthesis, application of monitoring principles to new water body and site.
Saturday	16 (2 hours)	Monitoring Beach/Estuary Surface Waters (Opt. B)	Synthesis, application of monitoring principles to new water body and site.
Saturday	17 (25 min.)	Options for Citizen Involvement	Regional and national water quality and monitoring programs; Post-test



Discussion Points

- ❖ Every community has concerns and issues related to water. Can you name the issues related to water that have been of greatest importance the last three years in this community?
- ❖ Are there any questions before we proceed?



Major Points to Remember

- ❖ Identify the issues, concerns, and beneficial uses related to water in your own community.
- ❖ Know the standards for drinking and ground water and link them to water quality in your community.
- ❖ Understand the indicators of surface water quality, water chemistry, and physical and biological habitat assessment.
- ❖ Be safe, correct, and accurate during field water quality testing and monitoring events. Use the correct protocols for the concern you are addressing and record the right data.
- ❖ Spread the word! There are many options for citizen involvement in water quality assessment and volunteer monitoring. Contact information and additional resources are readily available in your community.



Journal and Evaluation

Record and/or illustrate in your journal the water quality issues raised in discussion found in your community. Were all of them mentioned? Did we miss any? If yes, why don't you jot down several for future personal reference and thought.



▶ *Short-course Presenters*

Welcome to the PNW Water Quality and Monitoring short-course. We hope this will be a bridge to learning about water, water quality monitoring, and water assessment in your community.

We recommend that this short-course be presented consecutively over four days to enhance learning as an evening program. This allows participants time to read over provided materials, time to collect water samples, and presenters time to research participant questions. Alternatively this short-course can be offered as a daytime program, as a two-day program on Friday and Saturday, or once a week over an agreed upon period of time. Plan your program to best meet the needs of the target groups and community. We strongly recommend that the field portion of the program be presented at the end of the short-course and the supporting activities lead toward that goal.

This short-course provides the basic tools for community representatives to recognize and take advantage of the opportunities for public involvement in water quality monitoring and assessment. It also will help in identifying issues and concerns related to water quality that can be addressed in the future.

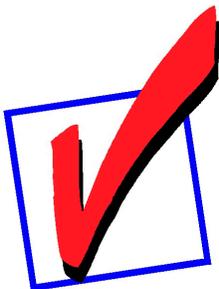
There are over 3,000 lake and stream segments throughout Idaho, Oregon, and Washington State that need protection under the provisions of the 1972 Federal Clean Water Act. These waters are often listed on the state “303d list,” so named because it is a section of the Clean Water Act. Other streams not listed may also be of concern in each community.

Today community, tribal, state and federal agencies, along with private and nonprofit organizations, are working together to improve lake and stream protection or maintain their water quality. Waters that do not meet or are expected not to meet water quality standards can be improved through community action. This short-course is designed to help all individuals and groups who want to learn more about their water resources and act!

This guide includes copies of the workshop participant materials, along with a great deal of background information you can use to supplement the participant materials. This information will also be valuable as you get more involved in your community's water quality, water monitoring, and water protection efforts.

At the end of the introduction period the participants should:

1. be able to identify general water issues in their community,
2. either be able to identify water quality and monitoring issues or have knowledge to return to their community and contact key individuals who could help them in this process.



Tips for Short-course Presenters

- ❖ Copies of the overheads are provided in the workshop participant materials, along with text meant specifically for participants. Participant materials are identified by the field person at a desk icon shown here:





- ❖ Some ideas for an icebreaker:
 1. Ask workshop participants to identify water issues or concerns in their community.
 - What are the water issues in this community?
 - Can they identify sources of their drinking water?
 - What else would they include as beneficial uses of water?

Extension Presenter Note: This activity is an outstanding CES Program Planning and Needs Assessment opportunity. Data collected from each group that the short-course is presented to during the year can be tabulated to support local, tribal, and state needs assessments. It may also support ongoing CES program planning processes. Over a period of years each new group's data can then be monitored to pinpoint trends and concerns related to water quality among our northwest population. Emergent themes, concerns, or issues might then be used to justify grants and other funding opportunities.

2. Another icebreaker is to ask participants to share their expectations for the short-course. Ask each one to identify two short-course expectations and record them on a flip chart or marking board.
 - Did any of their responses surprise you?
 - What could you do to best meet these water learning needs?
3. Ask participants to introduce themselves, share where they are from, and their role(s) in their community — then have them share one key water issue or concern they are interested in learning more about.
 - Did any one know where their drinking water came from?
 - How many beneficial uses did this group come up with?

4. Display a USGS topographical map of the region and ask workshop participants to insert a pin at the location where they live or work — then discuss how the water issues identified affect them.
 - Was anyone surprised by how close or far away they were from the issues raised?
 - Why do you think they came to this program?
 5. If you have access to the Internet,
 - visit US EPA’s Surf Your Watershed site at: <http://www.epa.gov/surf>. Visitors can use their zip code to locate their drinking water source and learn more about local water quality.
 - visit the Clean Water Action Plan site at: <http://www.epa.gov/win>. Visitors can learn how to improve water quality monitoring and assessment, and learn more about the water information network.
- ❖ Get an idea of how many participants have already been involved in water monitoring and assessment to determine the knowledge level of the group. Whether you have experts or beginners or a combination of both, all have a unique perspective and experiences they can and should share with the group. Be sure to model “shared learning” or indicate that for this short-course the group will be a learning community to get the most from this resource!
- ❖ Some presenters may wish to make overheads and present the *Major Points to Remember* before each module

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- ❖ Now is good time to discuss the logistics of the short-course:
 1. How much time will be set aside to work through each module of the short-course.
 2. Whether there will be any breaks, the length of the breaks, whether refreshments will be served or available from other sources.
 3. Where the restrooms are located and provisions for such on the field day.
 4. Who is responsible for bringing water and snacks to the short-course and in particular on the field day.

