



# Oregon Envirothon Resources

## **Aquatic Ecology Study Concepts:**

1. Describe the processes and phases of the hydrologic cycle including evaporation, condensation, precipitation, transpiration, and aquifer recharge.
2. Discuss methods of conserving water and reducing point and non-point source pollution.
3. Identify common aquatic organisms through the use of a key.
4. Delineate the watershed boundary for a small water body.
5. Explain the different types of aquifers and how each type relates to water quantity and quality.
6. Briefly describe the benefits of wetlands, including both function and value.
7. Describe the benefits of riparian areas, including both function and value.
8. Know methods used to assess and manage aquatic environments and be able to utilize water quality information to assess the general quality of a specific body of water. This includes sampling techniques and water quality parameters used to monitor point and non-point source pollution.
9. Understand and be able to discuss the various processes of contamination of well water and aquifers of the United States and Oregon.
10. Describe proper well construction practices. Know what well head protection is and what constitutes a wellhead protection program.
11. Discuss the Federal Clean Water Act, its importance and how drinking water is monitored under the Safe Drinking Water Act.
12. Know and discuss the Federal and State agencies that provide oversight of water resources.
13. Be familiar with major methods and laws used to protect water quality (i.e., both surface and ground water) and utilize this information to make management decisions to improve the quality of water in a given situation.
14. Define “use” as it applies to Water Quality Standards and special water resource classifications. Explain how they relate to the planning required for resource protection.
15. Analyze the interaction of competing uses of water supply, hydropower, navigation, wildlife, recreation, waste assimilation, irrigation, industry and others.
16. Discuss coliform bacteria and explain why they are used as indicator organisms in drinking water or recreational water that might be ingested.
17. Discuss what causes lead contamination in drinking water and how to decrease it.
18. Discuss potential agricultural and urban impacts upon reservoirs, streams, rivers, lakes, and groundwater.
19. Describe how aquatic life (fish, insects, and plants) can be used to determine the water quality condition of a water body. Describe the changes to the aquatic ecosystem based on alteration to the aquatic habitat.
20. Understand the ecology of wetlands such as marshes, bays estuaries, lagoons, etc.
21. Discuss the major viral, bacterial, and protozoa pollutants of water bodies, such as chriptosporidium, giardia, etc.
22. Know and understand the National Environmental Policy Act of 1969 that defines the role of environmental impact or assessment statements, and reports (Environmental Impact Statement and Report or Environmental Analysis) as they relate to national water resources.
23. Be familiar with ways to manage stormwater for both quality and quantity.
24. Describe the impacts an urban area has on watershed functions. Compare this to the impacts of a rural area.