



Water Cleanup Plans

Taking the temperature of Washington's waterways

Issue

This summer, the state Department of Ecology (Ecology) will measure stream temperatures in several Washington rivers using thermal imaging technology (infrared).

Increased water temperature is one of the leading water-quality problems in Washington's waterways. Federal law requires states to identify sources of pollution (which includes high temperatures) in waters that fall short of water quality standards. States must determine how much pollution the waters can receive and *still* remain healthy – (also called a total maximum daily load, known as a TMDL or water cleanup plan). A water quality study defines the maximum allowed pollution for the water body and allocates pollutant “loads” among the sources. A draft strategy for cleaning the pollution, based on the water quality study, is called a water cleanup plan.

Background

Between July 15 and August 30, 2001, Ecology will contract with Snowy Butte Helicopter Company of Medford, Oregon, to fly over the Willapa River in Pacific County, the Stillaguamish River in Snohomish County, and Fisher, Carpenter and Nookachamps creeks in Skagit County.

The helicopters will be equipped with state-of-the-art Forward Looking Infrared Radiometry (FLIR) thermal-imagery equipment. The equipment mounted on the helicopters will take infrared photographs of the rivers to provide a visual image of each river's surface temperatures. Ecology also is placing temperature gauges in the rivers to confirm flight data with field readings.

The helicopters will fly no lower than 1,000 feet -- the length of about three football fields -- and will work between 2 and 5 p.m., when daytime temperatures are highest.

Several state, federal and tribal agencies in Oregon and Washington have successfully used infrared imaging to help identify and address environmental problems. Similar technology will also be used by various tribal, state and federal agencies to study the Columbia, Pend Oreille, Yakima, and Methow river systems this summer.

The data from Ecology's studies will be valuable to waterfront landowners, tribes, local governments, watershed planning units, and state water-quality managers for planning stream restoration efforts, particularly in determining where to plant vegetation to decrease river temperatures.

Eventually, Ecology hopes to obtain grants from other sources so the work can be expanded to other rivers in the state.

Why is water temperature a problem?

High temperatures are bad news for water supplies, stock watering, wildlife habitat, shellfish, and the spawning, rearing and migration of fish. In particular, elevated water temperature influences the health and survival of native fishes. Fish require cold water for healthy habitat. Lack of vegetation along the river, sediment (from eroding banks, etc.), and low stream flows typically cause higher temperatures in rivers and lakes.

Why is Ecology using helicopters and thermal imaging technology?

This technology, while not essential to water cleanup work, will help speed the study and cleanup process. There is a lot of work to do: The Department of Ecology has more than 600 polluted waters on its cleanup list, and about 300 of them have temperature problems. Ecology believes the technology will help the water cleanup plans be more scientifically sound. Also, the information revealed will give Ecology and the local communities more and better information about the surface temperature of the waters so we can work together to reduce temperatures.

How is this going to affect landowners along the rivers being studied?

Stream improvements to reduce temperatures will be discussed and coordinated with landowners and local officials. There are many benefits for landowner involvement and assistance, including improved water quality, compliance with federal Clean Water Act requirements, and preventing endangered-species listings of fish or other aquatic animals.

Why test the rivers this year, when we are expecting lower flows than normal?

It's better to sample when water flows are low because it will give more certainty that any solutions that are developed will work in even the worst-case years, when fish need protection the most.

What will the helicopters take pictures of, and what will Ecology do with the images?

The focus of images will be the center of the stream. It will cover an area of approximately 100 by 150 meters (330 by 490 feet) and will have a spatial resolution of approximately 0.5 meters (less than 2 feet). Infrared and photographic images will be collected along the entire length of the streams. Ecology will use the information collected from the surface of the streams to measure the stream temperatures. The information from the adjacent land areas may be used to estimate shading from vegetation.

How does Ecology know these temperatures are high or unhealthy?

Taking the temperature of the rivers from the helicopters with the high-tech measuring devices will provide the best data available to confirm or deny initial sampling information that has been collected. The new information should establish a base line to determine when there is a problem. The information will help Ecology evaluate whether the highest temperatures are caused by natural conditions or by human activities. The state's fish populations have declined significantly, and the habitat – the lakes and rivers where the fish live – needs to be healthy homes for the fish populations to recover. Habitat is one of many factors causing the decline in salmon and steelhead populations.

Will Ecology be taking enforcement based on the information found?

No. Ecology will not use the information to take enforcement actions. Rather, the information will provide a better perspective on the health of specific water bodies and help Ecology and local communities develop effective water cleanup plans. Ultimately, Ecology will use a combination of tools – including education, technical and financial assistance, wastewater discharge permits, and compliance actions (which may include inspections and enforcement) – to improve the quality of the waterways. Any enforcement that Ecology might consider, as a part of the water cleanup plan will be based on site-specific information gathered on the ground, not from the helicopters.

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