Loss of Natural Streamflows

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Bakoven Creek, Oregon

Cities, farms, rural residences, power producers and other industries withdraw water for their own uses. Fish need this same water to live. When rivers dry up, a host of species that depend on aquatic habitats suffer. Reduced streamflows can have numerous effects on wildlife including the removal of drinking water, reduced living space for all aquatic species, changes in riparian vegetation, changes in flooding patterns affecting wetland habitats that depend on flood waters, and degradation of water quality.

Water quality and water quantity are inextricably linked. Calculations in NPDES permits show how much point source pollution that a water body can handle, based on its flow at different times of year. The impact of pollution is often relative to the amount of water flowing. Minimum instream flow is the amount of water necessary to preserve river or stream values. In some states, many basins have been "over-appropriated" — meaning there is not enough water in the river to satisfy all the legal claims to it. Usually, that doesn't even include maintaining an adequate instream flow. In the West, several states have adopted programs that require landowners to leave water in streams for fish, wildlife, ecosystem protection, recreation, aesthetics, water quality, navigation, hydropower and other uses. In these cases, water is unavailable for consumptive uses if flows drop below a specified level.

Dams and withdrawals are not the only factors in changing natural flows, and low flows are not the only concern. Replacing natural vegetation with buildings, roads and lawns creates conditions that result in higher stormwater flows. These flows can destroy aquatic habitats by undercutting banks, removing woody debris from streams and burying stream bottoms with sediment. They can also carry pollutants from lawns, roads, farms and industrial areas into water bodies.

Although the Clean Water Act does not directly address flow and cannot supercede state water quantity decisions (CWA, section 101(g)), effective use of basic CWA tools requires information about streamflow levels over time, likely impacts of permitted activities on streamflow and coordination with water quantity decisions.

Trout Unlimited-Western Water Project (www.tu.org)
Oregon Water Watch (www.waterwatch.org)
Upper Chattahoochee Riverkeeper (www.chattahoochee.org/policy2.htm)
NH Dept. of Environmental Services (www.des.state.nh.us/rivers/instream/)

Using the Clean Water Act

- **Water quality standards** —Identify the existing and designated uses in your watershed. How many of them are dependent on natural streamflows? Which uses are likely to be the most sensitive to fluctuations in or the lack of streamflow? To protect those uses, identify water quality criteria for parameters that are most affected by flow such as bacteria, temperature, sediment (total suspended solids), habitat and biological criteria. Are seasonal flow fluctuations included in the criteria? Does your state have a water quality criterion for instream flow? Evaluate whether the criteria are adequate to protect existing and designated uses that depend on streamflow. (Chapter 1)
- **303(d)** — Make sure "flow-impaired" water bodies or those that are threatened by unnatural flows have been placed on the 303(d) list. If not, identify what other criteria are exceeded due to reduced flows (e.g., temperature, dissolved oxygen) or excessive flows (e.g., bacteria, sediment). Identify how existing or designated uses are impaired when flows are unnaturally high or low. (Chapter 3)
- **TMDL process** — Is there a TMDL scheduled or in progress in your watershed? Does it account for the current flow regime? Does the implementation plan address seasonal flow fluctuations as part of the recommended changes to permits and land management practices? Are flow impacts of withdrawals and dam operations considered? (Chapter 3)
- **NPDES** — NPDES permit discharge limits are based on predicted low flows, and sometimes include variances for high storm flows. Make sure the flow assumptions in the permits for your watershed are correct. (Chapter 2)
- **Antidegradation** — Antidegradation is supposed to apply to any activity that might affect water quality. When permits for new activities that will alter streamflow are issued, all existing uses and outstanding waters must first be protected. In order to maintain adequate flows for high quality waters, alternatives must be considered with respect to their social and economic impact. (Chapter 1)
- **Section 404** — Section 404 requires permits for any discharges of dredged or fill material into "waters of the U.S." Building a dam requires a 404 permit. This permit process requires public input on the questions of need, alternatives and cumulative impacts. All projects are required to avoid any impact if possible, minimize impacts that are unavoidable, and mitigate for any necessary impact. If the permit is issued, the type of mitigation required is also subject to public comment. (Chapter 5)
- **Section 401** — Section 401 requires state water quality certification for federally permitted and licensed activities that may result in a discharge to water. If water quality standards may be violated by building a dam or diverting water, raise those concerns during the public review of the state certification process. Make sure that the agency considers physical and biological criteria upstream and downstream of any dam or diversion. (Chapter 4)

Using other laws (Chapter 10)

- **SDWA** (p. 183) — Is any of your watershed used or designated for drinking? If so, it is likely that human health needs for adequate surface and ground water flows will provide leverage to address insufficient or bacteria-laden excessive streamflows. Are ground water drinking wells connected hydraulically to waterways experiencing low streamflows? Identify the risks to the drinking water supply and talk to the agency in charge of developing the Source Water Assessment for your watershed. Be sure that the risks to drinking water sources related to inadequate or excessive flow are included in the assessment.
- **Wild & Scenic Rivers Act** (p. 187) — Is any part of your watershed designated as a Wild and Scenic River? If so, there are protections associated with that designation that could require more water be left in the stream for fish and wildlife and recreation. Find out if they apply.
- **Instream flow requirements** — Some states have set minimum instream flow requirements. Find out if your state is one of them.
- **ESA** (p. 186) — Are there threatened or endangered species in your watershed? If so, you have another tool for protecting against inadequate or excessive flows. The Endangered Species Act prohibits any activity that would result in harmful impacts to the species or its habitat.
- **Local land-use laws** — Is rapid development resulting in excessive ground or surface water withdrawals from your watershed? Link the land-use approval process to the availability of water resources.
- **State drought response plans** — Some states in the West have developed drought response plans that lay out voluntary reductions in water use by farmers and municipalities. Find out whether your state has tried this approach.