The Freshwater Trust®

Changing the course of conservation.

A New Approach to Temperature Compliance

Restoring Shade Along Local Streams is a Viable Way to Meet New Effluent Temperature Limits in Wastewater Permits

When concerns about stream temperature conditions for fish require adjustments at wastewater treatment facilities, stream shade restoration projects are a viable alternative for cities to avoid costly technological solutions. Stream side restoration projects also provide significant, positive ecological and economic benefits for the local community.

Water temperatures in many streams in the Pacific Northwest are too warm for salmon. As a result, agencies that regulate water quality are requiring wastewater treatment facilities to minimize the effect of clean but warm discharge (effluent) entering rivers and streams.

Until recently, new temperature regulations would have meant expensive new facilities to cool effluent before entering a stream, but today, conservation groups and regulatory agencies have developed more ecologically beneficial approaches to compliance.

Conservation groups, regulatory agencies, and treatment facility managers have built a system in which cities can restore streamside shade in places critical for fish to rest, rear, and spawn, instead of cooling water directly at a treatment facility's point of discharge. In other words, the increase in overall stream temperature from the facility's effluent is offset by cooling water naturally upstream, with numerous secondary benefits, such as trees for bird and other species habitat, stabilizing banks to control sediment, and controlling runoff from agriculture and roads.

Treatment facility managers in many parts of the Pacific Northwest are faced with new temperature limits on clean, but warm effluent. The Freshwater Trust is working with regulatory agencies and facility managers to determine where restoring shade on local streams is a workable compliance alternative. Where the conditions are right, the streamside restoration alternatives being developed by The Freshwater Trust not only provide numerous secondary ecological benefits, they also tend to be about half the cost of refrigeration, keep rate payer dollars in the community, and create local jobs for people restoring local streams.

Clearly a viable alternative from an ecological perspective, the "restoration solution" also looks good economically, keeping local funds from rate payers in the local community.

Restoration and Rural Economies

Restoration is a proven economic benefit to the rural communities where most work occurs. Typically, $1,000,000 of restoration work creates 20 local jobs.

Watershed Restoration = Local Economic Impact

Stream restoration work is local, and the money and jobs associated with this work generally stay local. Moreover, this work commonly involves on-the-ground activity that requires skills and machinery located in the local workforce. More restoration work translates into more jobs. This is not just a green dream; existing numbers back it up.

In a recent review tracking the flow of ecological restoration grant dollars, a University of Oregon study found that over 80 cents of every project dollar stays in the county where a project is located, and over 90 cents of every dollar stays in the state.[1] The local private sector captured the largest portion of these dollars as compared to any other industry sector, with the majority of the money spent on watershed council coordinators and construction workers (excavators, heavy equipment operators, etc.) who live in or near the communities in which the project exists. In addition, the research noted that every dollar spent on restoration work indirectly generates, on average, an additional $2.10 to $2.40 in spending within the county as original dollars are re-spent locally by those who directly earned them.[2] Further, the study showed that every $1,000,000 spent on restoration work generates 15-20 jobs. Through the sale of goods and supplies and through employment in stream restoration work, wastewater permit compliance can now result in direct investment in local and regional economies.

Employment and output effects per $1 million invested in forest and watershed restoration[2]

Employment (jobs)	*Labor-intensive contracting*	*Equipment-intensive contracting (watershed)*	*Equipment-intensive contracting (forestry)*	*Technical contracting*
Direct effects	*13.1*	*4.8*	*6.6*	*8.7*
Indirect effects	*4.4*	*5.7*	*5.4*	*3.9*
Induced effects	*6.3*	*5.2*	*5.2*	*6.5*
Total effects	*23.8*	*15.7*	*17.2*	*19.1*
Multiplier[1]	*1.3–1.8*	*2.2–3.3*	*1.8–2.6*	*1.4–2.2*
Economic output				
Direct effects	*$1,000,000*	*$1,000,000*	*$1,000,000*	*$1,000,000*
Indirect effects	*$472,068*	*$814,997*	*$810,804*	*$408,638*
Induced effects	*$681,334*	*$565,189*	*$567,191*	*$704,418*
Total effects	*$2,153,402*	*$2,380,186*	*$2,377,995*	*$2,113,056*
Multiplier[1]	*1.5–2.2*	*1.8–2.4*	*1.8–2.4*	*1.4–2.1*

The multiplier is reported as a range reflecting the Type I and Type II multiplier values. The Type I multiplier is calculated as the sum of the direct and indirect effects divided by the direct effects. The Type II multiplier equals the sum of all effects divided by the direct effect. For more detailed discussion on multipliers, see the technical appendix.

[1] Hibbard, M. and S. Lurie. "Some community socio-economic benefits of watershed councils: A case study from Oregon." Journal of Environmental Planning and Management 49:891-908 (2006).

[2] Nielsen-Pincus, M. and C. Moseley, "Economic and Employment Impacts of Forest and Watershed Restoration in Oregon." Institute for a Sustainable Environment, University of Oregon (Spring 2010).

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