

# **The Arid West Water Quality Research Project - - What the last five years have told us.**

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## **ABSTRACT**

Since the early 90s, the co-authors have completed on a series of EPA-funded projects that have considered the need to address the ecology, hydrology, climate, and geology of the arid and semi-arid West in the development of water quality criteria. Many of our project-specific conclusions have been presented at other symposia. But now that its over, what have we synthesized from these studies?

Our investigation into the habitat of effluent-dependent streams suggested that physical, rather than chemical, water quality often played a dominant role in determining habitat performance, when the entire stream ecosystem was involved. It was also concluded that these streams, even if they flow year-round, are fundamentally different than perennial streams and need distinct water quality criteria. Current water quality toxicity databases skew water quality criteria toward the protection of fish that we did not find in the studied desert streams, such as salmonids, while ignoring species that are present but may be threatened or endangered, such as cyprinids (minnows, carps) and centrarchids (sunfish, bass, etc.). Finally, the communities of ephemeral streams suggest that they better represent the entire upland watershed than a hydrologically integrated aquatic ecosystem. Appropriate water quality criteria would need to address this transitional role.

Taken as a whole, the results of the Arid West Water Quality Research Project suggest that there are unique protective problems in the West that need to be incorporated into the next generation of Clean Water Act tools. The ecological function of non-perennial arid west streams is not the same as that of humid climates. Inappropriate water quality uses and criteria are causing difficulties in restoring streams that have been appropriated for other consumptive uses.