THE CONNECTION BETWEEN WATER QUALITY AND WATER QUANTITY

LaJuana Wilcher
Assistant Administrator
Office of Water
U.S. Environmental Protection Agency
Washington, DC

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LaJuana Wilcher[1]

It is a pleasure to be here to discuss innovation in one of the most complex issues of our times -- the water quality and water quantity relationship. The Natural Resources Law Center's conference on Innovation in Western Water Law and Management foreshadows a new, or for some, a renewed approach -- one that accommodates varied but valuable uses of water.

Water quality and water quantity are not separate elements, nor have they ever truly been. Our predecessors to this land knew this long ago. As Indian Chief Seattle said almost 150 years ago, "All things are connected like the blood that unites one family. All things are connected." The connection between water quality and water quantity is not a new idea. Rather it is a "renewed" idea, and one that we cannot deny.

Having enough water is essential to all of us. Water is the source of life for us, and for every living thing around us. It covers 70 percent of the earth. Water sustains the plants and animals we cultivate and rely upon. It keeps us clean. It quenches our thirst, and renews our souls when we dive into it or sail on it, or feel the tug of a fish on the end of our lines. But having enough is not having it all. Not only do we need enough water, we need enough "good" water.

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[1]LaJuana Wilcher, Assistant Administrator, Office of Water, U.S. Environmental Protection Agency, gave the following presentation on June 7, 1991 at the Natural Resources Law Center's twelfth annual summer program, Innovation in Western Water Law and Management.

In this presentation I will address two major points. First, water quality and water quantity are not separate elements in the laws and policies of our country today. Second, as we begin to address the connection between water quality and water quantity, we must be innovative in our policies and technologies; but, more importantly, we must be innovative in the way we think.

Water Quantity and Water Quality Are Not Separate Elements

For much of our history, we seemingly ignored the connection between water quality and water quantity. Many of today's western water policies were developed in order to serve the needs of a developing and expanding frontier nation. Where would the West be if water were not available to its settlers or if the streams provided no food or drinking supplies? Many of our nation's successes clearly are related to water, both its use and its development.

Water and its depletion signaled progress and growth. Water allowed settlers to grow food, raise livestock, and anchor a civilization. Yet development had its costs. We are all aware of the concern across the nation when waterfowl at Kesterson National Wildlife Refuge in California were poisoned by high selenium levels, and when Mono Lake water levels dropped so low that coyotes could walk across newly-exposed land bridges and devour California seagulls.

In aquatic ecosystems the regulation, timing, volume, withdrawal and return of water flows often are critical factors in determining the condition of aquatic habitats, particularly in arid, low-flow areas. As population and economic growth result in increased water diversions and consequent reductions in flows, maintenance of water quality and aquatic ecosystems has become more difficult.

Today EPA is faced with a classic water quality/water quantity dilemma. As freshwater north of the San Francisco Bay-Delta estuary is allocated to southern regions of the state, and

thus routed around the estuary, less water is available for the aquatic life in the Delta. The diversions and the resulting saltwater intrusions appear to be adversely affecting the fisheries and the Bay-Delta ecosystem as a whole, including striped bass, salmon, and other fish and wildlife species. Many are calling for reallocating this water to permit a larger proportion to remain in the Bay-Delta ecosystem, although Southern Californians protest that reducing further the low drought flows that do reach them will degrade their drinking water quality. Environmental groups have filed a notice of intent to sue EPA, asking that the agency be ordered to promulgate federal flow standards for water quality in the San Francisco Bay-Delta. We have yet to make a final decision on that issue.

But EPA has made some water quality decisions that relate to water quantity. Implementation of Section 404 of the Clean Water Act (33 U.S.C. § 1344) may prevent a dam from being built -- as occurred with Two Forks in Colorado -- to prevent unacceptable adverse effects to fisheries and recreational areas. Also, point source wastewater dischargers may be required to regulate the timing and variability of their discharges by the National Pollution Discharge Elimination System (NPDES) permit limits.

Some may question EPA's role in regulating water quantity, citing the language in the Wallop Amendment, Section 101(g) of the Clean Water Act:

> It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this [Act]. It is the further policy of Congress that nothing in this [Act] shall be construed to supersede or abrogate rights to quantities of water which have been established by any State. (33 U.S.C. § 1251(g).]

At first reading, this provision appears to preclude any federal action affecting a state's water quantity allocation. But Section 101(g) cannot be read alone. Consider the additional requirements that the Clean Water Act prescribes for EPA:

- Section 101(a) states the objective of the Clean Water Act: "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251(a).)

- Section 101(a)(2) establishes a goal to "provide[] for the protection and propagation of fish, shellfish, and wildlife and provide[] for recreation in and on the water . . . . " (33 U.S.C. § 1251(a)(2).)

- Section 303(c)(2)(A) requires states to adopt water quality standards "to protect the public health and welfare, enhance the quality of water and serve the purposes of this [Act]." (33 U.S.C. § 1313(c)(2)(A).) EPA reviews and approves these standards.

How do these requirements relate to Section 101(g)? Although EPA is well aware of state water allocation rights, the exact limitations imposed by Section 101(g) are not as clear as some would like to believe. Interestingly enough, Senator Wallop himself had a few enlightening words about this section when it was enacted in 1977:

> Legitimate water quality measures authorized by this act may at times have some effect on the method of water usage. . . . The requirements of section 402 and 404 permits may incidentally affect individual water rights. . . . It is not the purpose of this amendment to prohibit those incidental effects. (123 Cong. Rec. 39,212 (Dec. 19, 1977).)

The legislative history and the courts' interpretations of Section 101(g) support the Clean Water Act's water quality measures (such as water quality standards) even if such measures incidentally affect individual water rights. For example, in Riverside Irrigation District v. Andrews, 758 F. 2d 508 (10th Cir. 1985), a Section 404 permit applicant argued that Section 101(g) prevented the Army Corps of Engineers from requiring any analysis of instream flows because the instream flows were a state water allocation issue. The Tenth Circuit disagreed and relied upon Section 101(g) in concluding that "where both the state's interests in allocating water and the federal government's interest in protecting the environment are implicated, Congress intended an accommodation." (758 F.2d at 513.) This "accommodation" is similar to that identified seven years earlier in a 1978 EPA General Counsel Memorandum which recognized

that EPA could impose requirements which could affect water usage, but that EPA should do so "only where they are clearly necessary to meet the Act's requirements."

Of course, that leaves a number of thorny issues. How does anyone accommodate competing beneficial uses? Is wildlife habitat more important than a drinking water supply? Than agriculture? With our population increasing, especially in the West, innovation will be a necessity.

Innovative Concepts – Where Do We Go From Here?

One of the Clean Water Act's objectives is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." (33 U.S.C. § 1251; emphasis added.) EPA is charged with accomplishing this objective. As we focus more on ecosystems and biological integrity, the challenges of accommodating both water quality goals and water quantity rights loom large and innovation becomes critical.

Some Westerners define Easterners as people born standing under an umbrella, implying that Easterners therefore have no understanding of water quantity issues. However, water quality and quantity are issues not only out west, but in other parts of the country faced with growing water demands and changing climactic conditions. Consider the effects of water manipulation in Florida, where draining the lands north of the Everglades has been a major cause of the loss of 93% of the wading birds in the Everglades since the 1930s. And look at the Mississippi River, where damming and channeling are responsible for the loss of 30 or 40 square miles of Louisiana each year; as silt is blocked by the dams and the Mississippi is changed from its natural course, the sediment which historically has replenished the shoreline no longer travels downstream to do its job in the Delta. Clearly we need innovation as we work all across the country to address water quality and water quantity issues.

Perhaps our greatest innovation will be changing the way we think. Status quo is always easier than change; a comfortable rut (or "ditch") is still comfortable. But to move forward on difficult issues we must be prepared to change, to put up with some uneasiness, and to accept or at least consider new ideas to meet new challenges.

The first step in changing the way we think is to accept that western water realities are changing. Five years ago Governor Richard Lamm of Colorado foresaw this change, stating in a forward to a report to the Western Governors' Association:

> In 1986, the picture is quite different. The boom in western resources development has fizzled, though tourism remains an economic mainstay. The people who moved West are living largely in cities, holding urban jobs, wanting urban services and amenities, and they and other Americans are looking to non-urban areas of the West as vacation sites. Congress, including members of the western delegation, has to worry about how to cut spending, not which projects to fund. The Bureau of Reclamation is retiring from its role as a construction agency. Farmers are trying to stay in business and are recognizing that their water is often worth more than their crops. Policy makers recognize that the natural environment must be protected because it is a major economic asset in the region. Western states must now adjust to these new water realities. (Foreword, Western Water: Tuning the System (1986).)

Adjusting to these new realities will require creativity and strength on the part of policy makers and water users. Our old concepts may not fit new realities.

But what if we do take this first step -- to agree to think innovatively -- then what are the next steps ahead of us? To make these choices, we need to be well grounded in the facts. I've listed a few of them below.

FACT #1: We don't really have much "natural flow" left in the nation.

We have diverted, dammed or otherwise changed most of the waterflow in the U.S. to achieve certain uses. The National Park Service estimates that less than two percent of the nation's river miles are still free-flowing. And the USGS reports that offstream (diverted) water use has increased from 184 billion gallons/day to almost 400 bgd in 1985. Certainly, we are not

managing or regulating much that could be called "natural" flows. Unfortunately, these unnatural flows (such as the 36.7 bgd discharged into the nation's rivers and lakes from wastewater treatment facilities) are affecting our natural environment -- the fish, the wildlife and complex ecosystems as a whole, such as estuaries or wildlife refuges.

FACT #2: Most water prices in this country are not market based or supported.

Historically, both state and federal policies encouraged growth by subsidizing water development costs. In effect, very little private cost was borne by the pioneering populations. Taxpayers today still provide substantial subsidies for water projects.

According to the Office of Technology Assessment (OTA), the cheapest water available is that diverted for agricultural irrigation. A recent article in The Economist stated that California farmers get their water at about one-tenth the cost of supplying it, and that taxpayers are saddled with the true costs of building dams and aqueducts. (The Economist at p. 16, February 16, 1991.) The OTA estimates that federally subsidized irrigation water costs the producer between $0.01 - 0.18 per thousand gallons for surface water and $0.05 - 0.08 for groundwater. But what are the costs without federal subsidies? Various figures exist, based on various assumptions. For example, the OTA estimates that western farmers pay only 17 percent of the actual cost of water supplied by Bureau of Reclamation projects.

FACT #3: Technical innovation will be a big part of the solution.

Some innovation involves new technologies. We need to look at these technologies in a new light, reflecting more realistic assessments of the comparable costs of these options. For example, water desalination is beginning to be evaluated as a potential new technology for meeting water demands in the U.S. This is not, however, a new technology. According to the

OTA, the U.S. has about 750 desalination plants with individual capacities greater than 25,000 gpd, with a combined capacity of about 212 mgd (about 1.4 percent of the fifteen billion gallons of freshwater consumed each day for domestic and industrial purposes). Although this country ranks second in the world in the number of desalination plants, it ranks fourth in capacity, with less than one-tenth of the world production. Desalination technologies are now used in 46 states and on the Marshall and Virgin Islands. (OTA, Using Desalination Technologies for Water Treatment 52 (1988).)

One traditional objection to desalination is that the cost is prohibitive. According to the OTA report, the cost of desalination of brackish water is $1.33/thousand gallons (5 mgd plant), using reverse osmosis technology; seawater is more expensive, costing $6.78/thousand gallons (5 mgd plant). But if we compare desalination costs to assessments of the true costs of delivering water (if subsidies and environmental damage are taken into account) or if we compare them to the cost of developing new water supplies (considering stricter environmental controls and rising legal costs), desalination costs don't look so bad after all. On the other hand, there may be some environmental effects of desalination; the disposal of waste concentrates of sludges from secondary impacts associated with transporting raw water to the plant or generating electric power must be considered.

Often we think of technology as a new piece of control equipment or a lab method that will yield the scientific, technically correct answer to our problems. But some of the best technologies for addressing water quantity problems are not new and in most cases are not expensive. These "innovative" technologies can be summed up by one word: conservation. Conservation of water resources, while increasing the availability of the quantity of water, also has many environmental payoffs: fewer pollutants entering the water; protection of aquatic

habitat; energy conservation; and protection of drinking water supplies. Water conservation, water reuse and reclamation should be high on any list of innovative approaches.

FACT #4: Most states recognize that water quality and water quantity are connected.

The inherent connection between water quality and water quantity can be seen in a variety of state laws, such as statutory protections for instream flows in the western states. Today, every state west of the Mississippi River except one (New Mexico) has some sort of instream-flow program, according to a 1987 US Geological Survey report. According to the USGS report, during the early 1970s streamflows for fishery maintenance and management, recreation, water quality, aesthetics and estuarine ecosystem protection have all been recognized as legitimate uses of water.

CONCLUSION

We are faced with many challenges as we deal with the marriage of water quality and water quantity. While EPA may be one of the "ushers" of this union, we don't have many easy answers. For the tough problems that remain, we must change the way we act and the way we think, and we must endeavor to be creative, innovative and bold. We must take a holistic approach and look at all the effects of our human actions. We cannot use a piecemeal approach to solving our environmental problems. As Aldo Leopold wrote almost 50 years ago in A Sand County Almanac, "instead of learning more about less and less, we must learn more and more about the whole biotic landscape."

As I have discussed, water quality and water quantity are not separate constituents, nor have they ever truly been. As we take a broader view of this issue, we will face many challenges

and conflicts. But when creative and innovative minds meet to share ideas and values, we can create new solutions to those challenges.

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