



Our Water Resources and Watershed Protection

All water on Earth is ultimately connected in one vast system. Water that falls as rain or snow washes down our mountains and hillsides, runs across the land, percolates through the soil, swells our rivers and streams, and eventually flows into our lakes, ground water aquifers, or the coastal waters and oceans that surround our continents. Because water always flows downhill, the direction of water runoff over land is dictated by the landscape. The hills that surround a river or stream define its "watershed," the area from which water drains into a waterbody. Often, wetlands are found in the transitional zone between land and water. Wetlands are an integral part of water systems. They store water to recharge underground water supplies, and filter runoff from the land into nearby waterways, and protect the land from erosion.

We rely on our streams, lakes, rivers, wetlands, and coastal areas for living, working, and relaxing. These areas also serve as the home for a wide variety of birds, fish, shellfish, and aquatic and terrestrial wildlife. To protect these resources, our concerns must extend beyond their aquatic boundaries to address activities in the watersheds surrounding these waterbodies. As water flows downstream, the quality of the water is affected by those who live and work in the watershed and use its water. Pollutants enter the aquatic system from "nonpoint sources," such as runoff from agricultural lands, as well as from "point sources" or direct discharges of sewage and wastewater from industry and municipalities.

Our lakes, rivers, streams, wetlands, estuaries, and coasts play a critical role in supporting our Nation's economy. They provide drinking water to cities, irrigation water for agriculture, and cooling water to industry. Larger waterways provide passage for cargo entering and exiting our coastal and river ports. We are also attracted to lakes, rivers

and streams for their natural beauty and wildlife. Freshwater recreational activities also add to our economy. Wetlands, both inland and coastal, support an amazing diversity of life, ranging from waterfowl, fish, mammals, and shellfish to wild rice. Many plant and animal species depend on inland or coastal wetland habitat for survival, while others rely on wetlands for food, water, and cover. Coastal wetlands provide food, shelter, and spawning ground for more than 70 percent of our most valuable commercial fisheries, including shrimp, salmon, oysters, blue crabs, and finfish.

Wetlands are also important because of their ability to help maintain and improve water quality. They remove and transform nutrients, chemicals, and organic wastes that are carried in runoff. In addition, wetlands help absorb peak flows of water during floods by acting as natural sponges, storing flood waters that overflow riverbanks and releasing them more slowly, thereby reducing potential damage downstream. Serving as a buffer against the impact of floods and storms, they also protect shorelines from erosion. The roots of wetland plants bind the soil, and their stems and leaves slow the velocity of the water, protecting stream and river banks from erosion.

Recent assessments show that our wetlands are disappearing at alarming rates. Less than half the wetlands in this country that existed in the 1700s remain. Each year, an estimated 290,000 acres of wetlands are lost to agricultural drainage and urban development. The greatest losses during mid-1970s to mid-1980s occurred in forested wetlands of the Southeast. These losses have greatly diminished the benefits once provided by these irreplaceable resources. We have recently witnessed increases in flood damages and decline of waterfowl populations that are, in part, the result of wetland destruction.

Agriculture and the Environment



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Coastal areas support industries worth billions of dollars because of commercially valuable fisheries, trade, and tourism. In 1991, commercial fishermen caught more than 10 billion pounds of fish in coastal and marine waters with a dockside value of \$3.3 billion, which served as a basis for the \$26.7 billion fishery processing and sales industry employing hundreds of thousands of people.

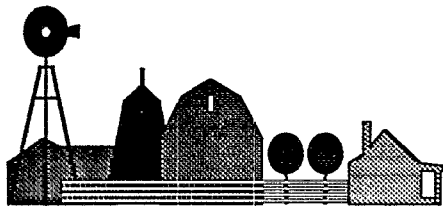
The quality of our inland waters is also vitally important for our economic well-being. For example, the total economic impact of sport fishing in 1985 was estimated to be \$70.6 billion, with salaries and wages totalling about \$19.7 billion from 1.2 million jobs. A two-year study completed in 1986 found that nearly \$1.2 billion was spent each year by those in pursuit of water-recreation activities in Minnesota alone.

Applying Watershed Protection in the Farm Community

The watershed protection approach is an integrated, comprehensive way in which human health and aquatic ecosystems can be protected and restored more effectively. This approach reflects a renewed effort by EPA to focus on hydrologically defined drainage basins—watersheds—rather than on areas arbitrarily defined by political boundaries. The approach includes not only the water resource, such as a stream, river, lake, estuary, or aquifer, but all the land from which water drains to that resource. To protect water resources, it is increasingly important to address the conditions of land areas within the watershed because, as water drains off the land, it carries with it the effects of human activities throughout the watershed.

The watershed protection approach has three major cornerstones:

- 1) *Problem Identification* — Identify the primary threats to human and ecosystem health within the watershed.
- 2) *Stakeholder Involvement* — Involve the people most likely to be concerned or most able to take action.



3) *Integrated Actions* — Take corrective actions in a comprehensive, integrated manner once solutions are determined. Evaluate success and refine actions, as necessary.

Some examples of local watershed projects currently underway include:

Pequea and Mill Creeks, Pennsylvania

Agriculture is the predominant land use in this watershed, with 63 percent of the land devoted to cropland and 13 percent to pasture. The watershed has been degraded by agricultural runoff, soil erosion, and pesticide contamination. Human health, especially the health of infants under 6 months, and livestock are at risk. Among those working together to reduce pollutants and control runoff and erosion are: local farmers; environmental advocacy groups; Lancaster County Conservation District; Pennsylvania agricultural, resource and environmental agencies; USDA; and EPA.

Upper Tensas River, Louisiana

Water quality in this basin has been degraded, in part, because there has been an 85% decline in the bottomland hardwood forests in the watershed. Most have been converted to agricultural lands that often extend to the stream edge. A coalition of stakeholders, with a wide range of interests, has united to find mutually acceptable solutions to the problem. The stakeholders participating include, the National Association of Conservation Districts, the Farm Bureau, Louisiana agricultural, resource and environmental agencies, USDA, EPA, and the Nature Conservancy.

West Lake, Osceola, Iowa

Local farmers; federal, state, and local agencies; as well as the county's vocational school students are working together to protect and improve West Lake. Water from the lake is used for municipal, industrial, and rural water supply, including drinking water, and fish, wildlife and recreational resources. Sediments, nutrients, and pesticides are carried to the lake through runoff from the 6,340-acre watershed and are threatening the quality of the water. Farmers are using an integrated crop management program to better manage fertilizer, manure, and pesticides to reduce runoff and improve farm profitability.

