Conservationist Essay

Managing a Watershed

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Westport, N. Y.

FOR almost five generations the clay soils of the Champlain Valley have produced food and fodder and today are still abundantly fertile. A mile or so from the lake the clay ends abruptly in a nearly level line which follows the configurations of the Adirondack foothills. Farmers know this as the "clay line", a more reasonable name than the tag, "glacial drift", which geologists have put on the sandy, gravelly soils of the hills. Although the glacial soil was nearly sterile except for a top layer of ancient forest humus, the early settlers farmed it with some success in producing hay. Successive crops and erosion depleted the fragile humus and by 1900 the land had returned to forest and brush pasturage for sheep and cattle.

In the Westport area there exists a resource deep within the glacial drift that is more valuable than any plants that can be grown. Underground water, invisible of course, until it meets impenetrable clay or bedrock and comes rushing and bubbling to the surface in clear, cool mountain springs.

About one hundred years ago two of these springs so excited the imagination of a resident, Tom Lee, that he went into the water business. By purchasing farms and easements from eleven different owners he consolidated an entire watershed of 1500 acres and then laid water pipes to supply the village with natural, uncontaminated (even by chlorine) mountain spring water. That supply has never failed us. A measure of the water's quality is attested in the fact that Mr. Lee bottled and shipped the water. This water once graced the dining table of the first Roosevelt to occupy the White House.

In the 1930's the Lee family heirs sold the water company and the entire watershed to the Village of Westport. For several decades under public ownership the water company was operated about the way that Tom Lee had except that the depression had turned off the demand for bottled table water. From time to time suggestions were made that the village might benefit from harvesting timber which had vigorously reestablished itself on the abandoned farms. Such ideas were viewed as heretical as it was common knowledge that you planted trees on watersheds and never never cut trees down.

Then in the 1950's water shortages began to make headlines in downstate newspapers. Westport's first lady mayor possessed a gift of prescience and sought professional advice in the management of the watershed forest. Dave Strong and Don Peterson of Adirondack Forestry Service, Inc., of Wilmington, N. Y., were employed to make a thorough study of the area and to prepare a management plan that would insure a maximum of water quantity and quality.

In 1961 the Village Board of Trustees decided to put the plan into action. To the surprise and dismay of many residents the plan had determined that on much of the forest there were too many trees! How could this be?

Very little was known about the relationships of forests to groundwater supply until the U. S. Forest Service established an outdoor hydrological laboratory at Coweeta, N. C., about forty years ago and more recently at Hubbard Brook in New Hampshire's White Mountains and on the Fernow Forest in West Virginia. Most of our knowledge about watershed management comes from the years of experimentation at Coweeta and their findings have been verified and amplified at the two newer research stations.

The efficiency of plants — trees, shrubs, grasses — in maintaining a watershed mantle has never been disputed though studies have revealed many complexities. For instance, a dense forest canopy of leaves often intercepts 12 to 20 percent of the precipitation preventing it from reaching the ground. A 34-inch annual rainfall is thus shrunk to 28 inches of usable water. Also, as we all realize on reflection, plants use a great deal of water. Accurate measurements have shown that a medium size elm can transpire as much as 2,000 gallons on a hot, dry, clear day. While soil types and conditions vary, the generalized results are conclusive; trees use water in large quantities, particularly in late summer and early fall when they may cause excessive loss of groundwater. Of equal importance is the finding that partial cutting under controlled conditions does not affect water quality. It is evident that the real importance of trees and other vegetation is to continually replenish and protect the top layer of absorbent humus.

The first improvement cutting was done on 68 acres during the winter of 1962-63 with 30 to 50 percent of the stand marked for removal by the professional foresters. The volume harvested amounted to 365,000 feet of logs and 78 cords of pulpwood. However, it was difficult for many to believe that the watershed had been improved and campaigns were launched to stop the enterprise. Committees were formed and studies made, all of which essentially verified the forester's plan; to so regulate the forest cover as to produce the maximum of water quantity and quality.

In nine of the past ten winters the work has continued with 883 acres receiving an initial stand improvement. Over 2½ million feet of timber and 1,000 cords of pulpwood have been made available to North Country industry. The average net return has exceeded $60 an acre and the village has accumulated over $56,000 in a water system improvement fund. It must be borne in mind that the trees removed in this first cut were either poorly formed, diseased, over mature, or overly dense and limiting the entry of precipitation to the ground.

Many residents having lived now with scientific forest management for ten years find it absurd that so many others cannot see the wisdom of some similar plan for the 1¼ million acres of Forest Preserve recently classified as other than wilderness in character. Some residents urge even faster cutting and have to be reminded that the only valid reason to cut at all is to improve the watershed quality of the forest.

In our "Conservationist Essay" feature, we open our pages to innovative and sometimes controversial ideas which are not necessarily the position or the policy of the Department of Environmental Conservation. — The Editor