

quality in the receiving waterbody. While the headwaters of the Transylvania Brook are rated Class A, its rating lowers to Class B after the school's discharge. A preliminary look at the fish species upstream and downstream of the facility noted more pollutant tolerant species downstream of the facility than upstream. Further study is needed to verify these results and to determine the relationship, if any, between the Training's School discharges and local fish species. In 1998, Transylvania Brook was listed on *Connecticut Waterbodies Not Meeting Water Quality Standards* due to the quantities of copper, zinc, ammonia, and chlorine.

Under guidelines established by the Federal Clean Water Act, all surface water bodies that do not meet minimum water quality standards must be studied to determine the Total Maximum Daily Load (TMDL) allowed. This study is currently being conducted on Transylvania Brook. The Southbury Training School will then complete the necessary alterations to its treatment system in order to be in compliance with the findings of the TMDL study. All modifications to the treatment system are expected to be completed by 2003.

The local community has taken an active interest in the brook in order to preserve and protect it. Trout Unlimited and other interested citizens are considering projects to stabilize stream banks, install in-stream habitat structures for the fish species, and increase the riparian buffer zones.

LAND USE

Land use and zoning regulations effect the appearance and patterns of development within a community, as well as the quantity and quality of remaining natural resources. The regulatory responsibilities for managing the watershed resources are divided among town, state and federal agencies. Town agencies include planning and zoning and inland wetland boards, water pollution control authorities and local public health districts. The state agencies include the Connecticut Department of Environmental Protection, the Connecticut Department of Public Health, the Department of Public Utility Control and the Connecticut Department of Agriculture.

Local plans of development and conservation, as well as zoning, subdivision, and inland wetlands regulations, determine the density and type of development that can occur within the watershed. These regulations and land use plans can also help protect the quality of the region's ground and surface waters. The local wetland permitting process can require BMPs such as vegetated buffers which prevent many non-point source pollutants, such as road runoff, from entering valuable surface waters. Aquifer Protection Zones established in Southbury and Woodbury regulate activities above an aquifer to reduce the potential impacts to water resources.

Instituting protection for riparian borders (the vegetation on either side of a body of water) in a watershed minimizes the amount of non-point source pollution that will reach a waterway and helps preserve fish and wildlife habitat. All of the three major watershed towns have erosion and sediment control regulations, which serve to minimize erosion at construction sites. The Town of Bethlehem currently does not have zoning regulations, though it does have some building guidelines in its subdivision regulations. Under its subdivision regulations, Bethlehem can require that a percentage of a subdivision (not less than 15%) remain open space.

Residential development is the most prevalent land use in the Pomperaug Watershed (Figure 16). The town centers, as in colonial times, are the focal points for most commercial and industrial activities. The land use and zoning regulations in the towns of Bethlehem, Southbury, and Woodbury, which compose 83% of the watershed, have the most direct effect on the quality of water. Land use patterns have changed significantly in Bethlehem, Southbury and Woodbury over the last several decades. Residential, commercial, and industrial land uses increased in all three towns between 1975-1990. Agricultural land use has decreased in Southbury and Woodbury, while Bethlehem has seen a rise in the number of acres devoted to agricultural use. Quarrying of the local glacial deposits, especially in the towns of Woodbury and Southbury, is another type of land use. In October of 2000, six earth material permits were in existence in Woodbury, and two gravel quarry permits existed in Southbury.

Open Space

According to the land use surveys, open space in the three towns decreased between 1975 and 1990. As town populations increase, setting aside parcels of land as protected open space is critical to maintaining the rural character of a community, protecting natural resources and biodiversity, and providing recreational opportunities for the public. Even if a town is not excessively developed, only a fraction of its land may actually be classified as open space.

Public open space is defined as land owned by the local, state, or federal government, which can be used for recreational purposes by the public. Such land may be partially developed, such as school properties, and may be subject to future development. In 1993, only 2% of Bethlehem and Woodbury and 4% of Southbury were designated as public open space.

Protected open space is land that has been set aside specifically to prevent future development from occurring on its premises. Protected open space can be owned as a public resource by the town, as a wildlife refuge by an environmental organization such as The Nature Conservancy or Audubon Society, or privately by a land trust. According to the Southbury Open Space Steering Committee, less than 10% of Southbury was protected open space in 1998. However, there have been significant open space acquisitions within the watershed since that time. Protecting open space from development, through conservation easement, purchase, or other method, is necessary in order to protect the quantity and quality of local water resources and preserve wildlife habitat. Moreover, preserving open space is less costly to taxpayers than residential development, which requires increased expenditures for schools, roads, fire and police, etc. If open space is set aside early in a town's development, it is easier to preserve greenways and wildlife corridors necessary for species migration, and connect existing open space parcels in an ecologically sensible fashion.

The primary function of land trusts is to acquire and protect open space. While these parcels are privately owned by the land trust, they are typically open to the public for hiking and other forms of passive recreation. The Southbury Land Trust, the Bethlehem Land Trust, and

Flanders Nature Center (Woodbury) are currently working with their towns to preserve open space; as does the Bent of the River Audubon Center in Southbury. The National Audubon Society is the largest single landowner along the Pomperaug River.

HABITAT

The Pomperaug River watershed provides habitat for a variety of birds, mammals and other wildlife. There are also a number of increasingly rare plants that occur within the rivers floodplain. Historically, the Pomperaug River was renowned for its trout populations and excellent fly-fishing. Protecting the local water resource is important for maintaining critical habitat for these species as well as protecting our primary source of drinking water.

According to the CTDEP website, the Natural Diversity Data Base (NDDB) is the central repository for information on the biology, population status and threats to the elements of natural diversity in the state of Connecticut. Information from biologic inventories of the state's species and habitats, conducted over the past ninety years by the Connecticut Geological and Natural History Survey, has been incorporated into the Natural Diversity Data Base. The Database currently contains information on the status of more than 1000 species of plant and animals, including invertebrates, and 45 significant natural communities, which includes the Endangered, Threatened or Special Concern species listed in Connecticut.

According to the NDDB map (Figure 17), there are numerous species that are listed as *Endangered*, *Threatened*, or *Of Special Concern* within the watershed. Although the general location of these plants and animals is noted on the map, the specific location and species name is omitted to prevent illegal collecting or destruction. At the Bent of the River National Audubon Center in South Britain section of Southbury, several listed species were recorded during on-going field research projects, including Bald Eagles, Eastern Box and Wood Turtles, Red Bats, and Red-shouldered Hawks. In all, 159 birds, 49 species of butterfly, 26 amphibians and reptiles, 29 species of mammal (including black bears and bobcats), and 22 species of fish have been recorded on the preserve. Three

of these are *Endangered*, two are *Threatened*, and fifteen are *Of Special Concern* in the state of Connecticut.

CONCLUSION

This report is an assessment of current conditions in the Pomperaug River watershed - a first step at quantifying the watershed's development and health. This information will be continually revised based on scientific studies in the watershed and input from The Pomperaug River Watershed Coalition, state and federal agencies, and the public.

All of the information and data in this report is available at the office of The Pomperaug River Watershed Coalition. For a list of this reference material and for contact information visit the Coalition's website at www.pomperaug.org.