

Water Resources



Moodna Creek



Glenmere Lake

Orange County has had a long and continued interest in water. The County is physically and historically defined by two of America's great rivers: the Hudson River on the east and the Delaware River on the west. Until the dominance of rail and, most recently, car mobility, the County heavily relied on its proximity to the Hudson and the Delaware, as well as their tributaries, such as the Wallkill, Moodna, Ramapo and Neversink. More recently, as land use has spread and diversified, surface and ground water continue to be vital resources, but less for transportation or power than for drinking water, first and foremost. Other leading uses include agricultural irrigation, recreation and waste assimilation.

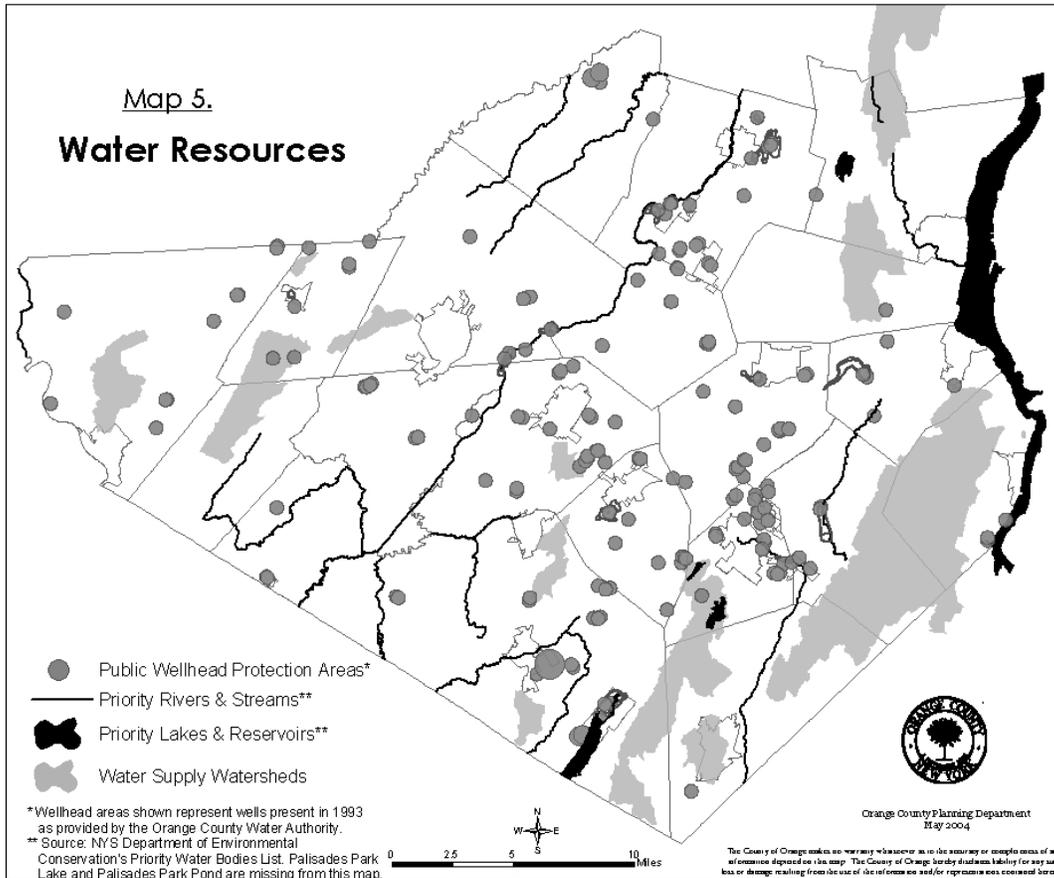
Today, Orange County constituents consistently identify water resources protection as a priority goal of open space preservation. Indeed, based on research, interviews and other outreach for this Plan, water resources are the lead priority. And the majority of up-to-date municipal master plans proactively cite water supply, water quality, river corridors, or aquifer protection as major community values. The benefits of open space distinguished by water resources can include:

- ❖ water quality protection
- ❖ water supply
- ❖ groundwater recharge
- ❖ sedimentation & erosion control
- ❖ stormwater management
- ❖ waste assimilation
- ❖ flood protection
- ❖ scenic enhancement
- ❖ habitat protection
- ❖ transportation (surface waters)
- ❖ recreation (surface waters)
- ❖ historic preservation (surface waters)
- ❖ agricultural productivity

Water resources are truly regional, defying municipal, county and even state borders. They are also shared. For example, significant portions of the Ramapo River and Pochuck Creek watersheds are in Orange County, yet both have been designated by

the US Environmental Protection Agency as *sole source aquifers* for their roles in serving as the sources of water for thousands of nearby New Jersey residents. (See Map 2) With water, what Goshen does links it with Washingtonville, as Greenville does with Middletown, Otisville with Pine Bush, Chester with Tuxedo, Deerpark with Port Jervis, Pine Island with Walden, and Newburgh with Cornwall. In the end, all of our County's communities are connected with each other and with hundreds of others in the Hudson and Delaware watersheds.

Under this water resources category, our focus is on two primary components – water supply and water quality protection. The following map highlights this focus.



Public Water Supply

There are three primary types of public water systems: community, non-community, and non-transient non-community systems. In relation to open space, the County's highest priority is community systems, those serving at least five connections and/or 25 residents year-round. This category includes all municipal water systems. While these systems rely predominantly on groundwater sources, significant populations are served by surface water reservoirs.

According to the Orange County Department of Health, as of March 2004, there are 161 community water systems in Orange County. One hundred and thirty two (132) rely on ground water (wells) while twenty-nine (29) use surface water as a source.

There are also some three hundred and fifty five (355) non-community water systems in Orange, of which forty-nine (49) serve non-transient customers (schools, commercial/industrial)-- forty-seven (47) from groundwater wells and two (2) from surface sources. The remaining majority of non-community systems, three hundred and six (306), serve transient customers (e.g. motels/hotels, restaurants), again predominantly (301 of 306 total) through groundwater wells.ⁱ

Protecting these water supplies provides a connection to open space planning; improved land management and open space conservation at both current and potential high-yield water supply sources can help ensure residents, institutions and businesses that clean, plentiful water will be available.

The New York State Source Water Assessment Program Planⁱⁱ establishes policies for water supply protection from which are adapted recommended open space/ water resource protection areas (see Map 5). For surface water supplies, the critical protection area is the topographic watershed of all public reservoirs (also known as surface water supplies) in the County. For groundwater supplies, the adopted recommendation here is a two-zone approach: an inner well zone is a 100-foot sanitary radius around any community supply well where ownership and strict protection is the highest priority. This is complemented by a 1500-foot radius or outer wellhead protection zone for all community groundwater systems, where development and land use should be monitored to assure "aquifer-friendly activities".

When mapped, the total area of the County in these water supply protection areas is estimated at 84.9 square miles or 54,571 acres (wellhead protection areas = 22,358 acres or 34.9 square miles + water supply watersheds = 32,213 acres or 50.3 square miles).

Water Quality Protection

Federal regulations under the Clean Water Act, as amended in 1987, require each of the 50 states to address its non-point source water pollution problems. In New York State, the job of developing and implementing comprehensive strategies for protecting and enhancing water quality was delegated to the individual counties.

The Orange County Soil and Water Conservation District, as the leader, established an Orange County Water Quality Coordinating Committee in 1992. Priorities, goals and activities were compiled into the original Orange County Water Quality Strategy, dated August 12, 1992 and recently updated in 2002.

Rapid urbanization and land development have directly impacted the majority of waterbodies cited in the 1996 Priority Waterbodies List (PWL), as cooperatively defined

by the County Water Quality Coordinating Committee and NYS Department of Environmental Conservation. Groundwater resources face similar threats to their integrity. Twenty (20) Orange County waterbody segments were identified as stressed, threatened, impaired or precluded on the 1996 PWL, ten (10) of which are adversely impacted, primarily by urban/suburban sources. Agriculture is identified as the primary polluter of five (5) of the listed segments.

Another primary water quality threat is referred to as "urban runoff". Inadequately designed or managed development can result in increased erosion from unprotected or inadequately protected construction sites. As paving and roofs replace permeable soil surfaces, management of excess storm water runoff becomes a necessity. A primary concern of growers who farm the County's unique mucklands is the additional runoff from residential developments that is causing earlier and more extensive flooding of their fields. The adverse impact of sediment, road salt, farm and lawn chemicals, animal manure and hydrocarbon residues transported by runoff directly into our vulnerable waterways, including surface drinking water supplies, must be addressed. Waterways identified as adversely impacted require concerted efforts to upgrade water quality or to prevent the pollution problems described as "imminent."

1996 NEW YORK STATE DEC
PRIORITY WATER BODIES LIST FOR ORANGE COUNTY

<u>Segment</u>	<u>Condition</u>	<u>Primary Source</u>
Dwaar Kill	Threatened	Urban runoff
*Greenwood Lake	Impaired	Urban runoff
Hudson River	Impaired	Contaminated sediment
Longhouse Creek	Threatened	On-site systems
Lower Mongaup River	Impaired	Hydromodification
Mombasha Lake	Threatened	Urban runoff
Orange Lake	Stressed	On-site systems
Pakanasink Creek	Threatened	Urban runoff
Palisades Park Lake	Threatened	Acid rain
Palisades Park Pond	Threatened	Acid rain
Pochuck Creek	Stressed	Agriculture
Quaker Creek	Stressed	Agriculture
Quassaick Creek	Stressed	Urban runoff
*Ramapo River	Stressed	Other source
Rutgers Creek	Stressed	Agriculture
*Walkkill River	Stressed	Agriculture
Walton Lake	Stressed	On-site systems
Wawayanda Creek	Threatened	Urban runoff
Wheeler Creek	Stressed	Agriculture
Woodbury Creek	Threatened	Private

* Identified as priority watersheds by the Orange County Water Quality Coordinating Committee

The Neversink River is also listed as a Priority Waterbody in Sullivan County.

Selected Priority Watersheds

(In alphabetical order)

1. **Hudson River/Moodna Creek:** The Moodna Creek, from Orrs Mills to its confluence with the Hudson, and the Hudson River between miles 44 and 56, have been designated as "irreplaceable" Significant Coastal Fish and Wildlife Habitats by the New York State Coastal Management Program.
2. **Neversink River:** In 1990, according to The Nature Conservancy, the lower Neversink was found to contain thriving populations of the globally endangered dwarf wedgemussel (*Alasmodonta heterodon*). The Neversink River population of heterodon is considered the largest and healthiest remaining population of this species in the world.
3. **Ramapo River:** The Ramapo and its associated aquifer have been declared a "Sole Source" of drinking water for the community of Mahwah, NJ. A total of two million people living and/or working in Rockland County, NY, and northern New Jersey rely on the Ramapo aquifer. The watershed, in Orange County, includes the Towns of Blooming Grove, Monroe, Tuxedo and Woodbury, and the Villages of Harriman, Monroe and Tuxedo Park.
4. **Walkill River:** The Walkill River drains the heartland of Orange County, including approximately 14,000 acres of highly productive organic soils (black dirt/muck). Along the length of its course the River is seen as being impacted by both muck and upland agriculture, two landfills on its banks, numerous sewage treatment plant discharges, and continued urban development.

Priority Water Quality Issue: Drinking Water Supplies

Both surface reservoirs and groundwater aquifers face the same potential risks of pollution as the identified Priority Water Bodies. Portions of the recharge zones of two sole source aquifers have been identified in Orange County. The Orange County Groundwater Study, published in 1995, highlights areas with a high potential for groundwater development, and provides estimates of groundwater resource quantities available in and near local municipalities. Recommended next steps could involve actual groundwater exploration, and assistance to communities to define where additional water supplies are or will soon be needed. Water conservation, wellhead and aquifer recharge area protection, and surface reservoir watershed studies are recommended as continuing priorities.

ⁱ Orange County Department of Health, Environmental Health, 2004.

ⁱⁱ New York State Department of Health, Source Water Assessment Program Plan (NYS DOH, Bureau of Public Water Supply Protection, Troy, NY: 1999)