

Water Worries - Localities face more demand, limited supply," *Winchester Star*, April 19, 2009

Water worries

Localities face more demand, limited supply

By Drew Houff
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Winchester — As the area grows, so does its need for water. But water isn't an unlimited resource.



Leaning out over a railing, operator John Mayers samples the water from a sedimentation basin at the Percy Miller Water Treatment Plant. The plant, operated by the Winchester government, is in Warren County and draws water from the North Fork of the Shenandoah River
(Photos by Ginger Perry)

The state government has imposed limits on the amount of water that can be drawn daily from the Shenandoah River.

Winchester's aging pipes leak large amounts of water.

Add the threat of drought and the promise of more housing developments, and the future appears a bit murky.

The Frederick County Sanitation Authority — which manages and handles water for the county — received a study last September from O'Brien and Gere Engineers Inc. showing that local water sources would not meet the demand after 2012.

Then — about 4 1/2 months later — authority Executive Director Uwe Weidel told the county Planning Commission and Board of Supervisors that the prospects of finding additional supplies of water were good.

So will the area have enough water?

It will have enough to last until 2020, Weidel said, as long as no major water-dependent industry sets up shop.

Patrick E.W. Barker, executive director of the Winchester-Frederick County Economic Development Commission, confirmed that an extreme water user could pose challenges.

“It’s the same with any other need — gas, electric, or fiber, for example — we have to look at each on a case-by-case basis,” he said.

Where the water comes from

In Winchester, the city government taps the Shenandoah River south of Middletown. The water is primarily directed to city users, but some of it is sold to Frederick County. Perry Eisenach, Winchester’s public services director, said recently that the city’s average pull from the Shenandoah River in the past year was 7.4 million gallons per day.

The city uses almost 6 million of those gallons, he said. The rest is sold to Frederick County.

The water is treated and then stored in one of five large tanks (four within the city limits and one west of the city):

The 3 million-gallon Fruit Hill Tank just outside the city limits.

The 3.8 million-gallon Jefferson Street Ground Tank.



These images show two water sources for Winchester and Frederick County. Above is the north quarry at the James H. Diehl Water Filtration Plant near Stephens City, which supplies water for Frederick County’s system. Water from the quarry, as much as three million gallons daily, is pumped to the plant for treatment. Below, operator Corey Crabill stands near the intake station at the city’s Percy Miller plant in Warren County that collects water from the Shenandoah River.



The 3.8 million-gallon Jefferson Street Elevated Tank.

The Strothers Lane Tank, which can store 3 million gallons.

And the Tennyson Tank, which can store 3 million gallons.

Frederick County purchases 1.6 million to 2 million gallons of water per day from the city.

The money made from selling water to the county covers the operational costs of treating and delivering the water, plus capital improvements to the system, Eisenach said.

Overall, Weidel said, the county uses about 5 1/2 million gallons per day, some from the city supply and some from its quarries near Stephens City or other sources, Weidel said.

The quarries receive their water from ground sources and rain, building a supply that offers the county enough water— along with the water from the city — to serve current customers, both residential and business.

Neighboring Clarke County also relies on the Shenandoah River, along with groundwater sources such as wells.

The vast majority of residents outside Boyce and Berryville, for example, obtain their water from wells.

Town residents, however, are able to get water from the town, with that supply typically coming from the Shenandoah River.

Treating the water

Employees of Winchester and the Frederick County Sanitation Authority treat the water, ensuring its safety before it goes to customers.

Eisenach said the water from the Shenandoah River is treated with potassium permanganate, ferric chloride, powder activated carbon, chlorine, and fluoride.

Alarms are set to sound if carbon and other particles reach unhealthy levels, said Corey Crabill, plant operator and lab technician at Winchester's Percy D. Miller Water Treatment Plant — in Warren County southeast of Middletown.

"If it gets out of whack, it sets off an alarm so that we can find out what's going on and check it out," he said. "If there is turbidity [murkiness], we make sure there is a problem. If it is a problem, we would stop flow, and we would have to shut down the plant.

"If it's another problem somewhere else before it goes out of here, we might be able to take care of it without shutting the plant down," Crabill said.

The monitors provide detailed information about Winchester's operation, including the large water storage tanks that serve the city.

Crabill said the tanks are coordinated, ensuring an ample supply throughout the city.

The tower tank near John Kerr Elementary School on Jefferson Street, for example, holds water to serve customers near the school.

Rain dancers needed

Glenn Boireau, chief operator of Frederick County's James H. Diehl Water Filtration Plant near Stephens City, said area residents should wish for average or better rainfall this spring to ensure that supplies remain adequate.

"If we get below average, the county, the city, or other communities will have to put in conservation measures," he said.

Boireau said the spring season is difficult to predict, but sufficient rainfall would alleviate possible drought conditions in the summer and fall.

"We can't predict weather for three months," he said. "[Meteorologists] say you can't really predict beyond a week, so we know we can't be confident that far ahead — despite what the 'Farmer's Almanac' might say."

Eisenach said Winchester officials continue to monitor supplies, but most of their attention goes to the repair of the aging water system.

"Our biggest concern right now is to replace our old infrastructure — that's our priority," he said.

Eisenach said the system (the third-oldest in the country) has developed problems as years passed, forcing repairs and upgrades just to keep its operations level. He said the continued upgrade to the pipes at various spots in the downtown area has prevented water loss, but is expensive.

The city government has agreed to spend close to \$16.5 million on the repairs and upgrade of the older system.

Eisenach said officials have no other choice. “The older pipes get, the more they leak. We have a pretty high rate of loss just because our system is so old.”

Updating the system remains crucial, just to serve existing residential and business customers, he said. “We need to update beyond the existing work. It’s 50 years old, so there is a lot of work that needs to be done out there.”

The replacement of the infrastructure is crucial, particularly since leakage remains the main variable in the city’s water supply, Eisenach said.

In recent months, city workers have completed upgrades along Cork Street and East Lane, with Woodstock Lane, North Avenue, and Berryville Avenue remaining.

The two-mile project, officially titled the Northeast Infrastructure Improvement Projects, will cost \$6.5 million.

The city government is also gearing up to replace the aged lines under Cameron and Braddock streets as part of the Downtown Utility Infrastructure Replacements Project — the thoroughfares will soon become two-way streets.

This will cost \$9.8 million — and most of the work includes new sidewalks.

Partnerships are crucial

Planning is also important in Frederick County, but for a different reason.

Weidel said the Sanitation Authority must take long- and short-term approaches to the county’s water supplies.

While the county uses about 5.5 million gallons per day now, projections show water use increasing to 7 million gallons each day by 2012 or 2014, he said.

Acquiring that amount of water is possible if county leaders are able to purchase 2 million gallons from Winchester and still obtain about 5 million from its own resources, such as its quarries.

Short-term planning, Weidel said, concentrates on maintaining resources so that existing customers have ample water.

The long-range planning requires more effort, he said, particularly since water can be such a limited resource.

“We need to begin to start looking at availability from new sources, maybe some partnerships [with other neighboring counties, even some in West Virginia],” Weidel said.

The Sanitation Authority’s agreement with Winchester allows the purchase and use of at least 625,000 gallons of water per day — but no more than 2 million.

Weidel said the 2 million-gallon limit does not put the city near its own maximum draw of 14.27 million gallons of water a day. (Under regulations enforced by the state government, city authorities are allowed to withdraw up to that amount without a permit, Eisenach said.)

Weidel said Frederick County's karst geology means no river sources will develop during the next 20 years.

A partnership could be the answer, he said, since other counties and localities must also consider their water needs and supplies.

Warren and Shenandoah counties, for example, could become partners with Winchester and Frederick County, Weidel said.

But forming such partnerships can require 10 to 15 years of negotiations and actions, so planning must be a top priority.

Frederick County's central location between Warren, Shenandoah, and the West Virginia counties makes it an ideal hub location.

"Water is a limited resource," Weidel said. "[But the limitations] are not as severe as they are in some other places."

Virginia governments, for example, may not have to desalinate ocean water, as Florida and California leaders have done.

But alternatives — such as reusing treated wastewater or imposing stricter conservation measures — seem likely.

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