WASHINGTON COUNTY SERVICE AUTHORITY

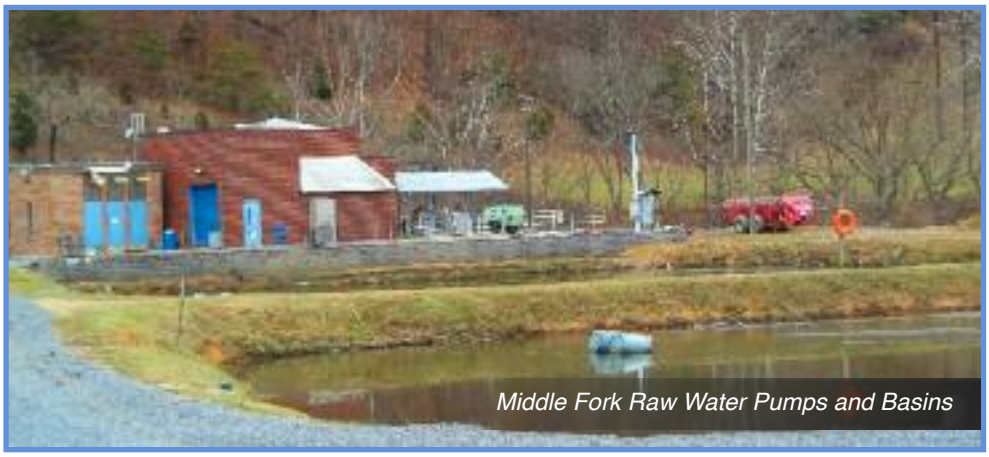
IN THE PIPE

NEWSLETTER

Spring/Summer 2014 No. 6

Applying the Proper Treatment: WCSA's Methods for Cleaning Water

This is the second in a three-part series of articles about WCSA's water and wastewater treatment processes. The first installment, published in the Winter/Spring issue of In the Pipe, touched on general water treatment processes, the Reservation Spring groundwater source and the Mill Creek Water Treatment Plant.



Middle Fork Raw Water Pumps and Basins

Water Treatment: The Middle Fork Drinking Water Plant

The Middle Fork Drinking Water Plant is a conventional surface water treatment plant that was initially placed into service in 1977. Major upgrades have been completed that increased overall capacity from 4.6 million gallons per day to 12 million gallons per day.

Middle Fork Plant Flocculator

Raw water is currently pumped from the Middle Fork of the Holston River to the plant; when the upgrade is complete, water from the South Fork of the Holston River will also be pumped to the plant for processing. Sodium permanganate is a liquid oxidant that is added to the raw water to address taste and odor that may occur naturally. Next, powder-activated carbon is added to the water to remove organic contaminants, as well as to improve upon any taste and odor that may be present.

Processes at the facility that remove particles and harmful bacteria from the raw water include: coagulation, flocculation, sedimentation, clarification and filtration.

Coagulation removes dirt and other particles found in the water. Chemicals are added to the water to form tiny sticky particles, called "floc," which attract the dirt particles. The floc grows in size and weight through this slow mixing process; as the water begins its three-hour journey through the sedimentation basins, the floc settles to the bottom of the basins. Static devices, called "tube settlers," increase the settling capacity of the sedimentation basins, thereby enabling more particles to be captured at this stage of treatment. The water then enters the (adsorption) clarifier, where vigorous mixing captures and removes any remaining particles.

Most modern water-treatment plants utilize rapid dual-media filters following coagulation and sedimentation. A dual-media filter consists of a layer of

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WCSA Project Updates

To learn more about WCSA projects, visit our website at www.wcsawater.com, highlight "Capital Projects" and select "Project Current Status" on the menu bar at the left of the page. This will direct you to our Capital Improvement Projects Report, which includes a comprehensive overview of WCSA's water and wastewater projects.

Recently Completed Projects:

The **Middle Fork Drinking Water Plant Expansion, South Fork Intake and Raw Water Line Project** expanded the water production capacity of the Middle Fork Drinking Water Plant from 6.6 million to 12 million gallons per day (MGD). A second new raw water intake, completed in March, was constructed on the South Fork of the Holston River, where raw water is pumped to the treatment plant via a new raw water line.

Ongoing Projects:

The **Sutherland Community Water Project** will serve the Sutherland community in the Shady Valley area, located at the Washington County, Va./Johnson County, Tenn., line, and the recreation area at Backbone Rock. Funding is provided by the Tennessee Department of Economic and Community Development, the U.S. Environmental Protection Agency and the U.S. Forest Service. Service is expected to be available by June.

Middle Fork Drinking Water Plant

The **Nordyke Road Water Project** will replace an older, 2-inch water line along Nordyke Road, located between Benhams Road and Rich Valley Road, with new water line. Construction is expected to be completed in June.

The **Tumbling Creek South Water Project and North Fork River Road at Tumbling Creek South Water Project** will extend water service along the remaining southern portion of Tumbling Creek Road, and also approximately 1,400 feet along North Fork River Road from its intersection with Tumbling Creek Road. Construction is expected to be completed in July.

The **Rich Valley Road/Whites Mill Road Water Project** will extend water service along Rich Valley Road from Greendale Elementary School to the intersection of Whites Mill Road, and along Whites Mill Road toward the town of Abingdon. Construction is expected to be completed by early December.

Rich Valley Road Water Line Project

The **Galvanized Water Line Replacement – Phase 2 Project** is the second step in a three-phase project to replace all galvanized pipe in WCSA's distribution system over the next several years. Phase 1 was recently finished, and WCSA plans to advertise Phase 2 for construction bids in May.

WCSA Featured in Water System Operator Magazine

An article on WCSA was featured in the February issue of Water System Operator magazine. The article, "Covering the Territory," highlighted WCSA's system upgrades and use of technology to cut water losses and improve operating efficiency. Please visit www.wsomag.com/ezine/2014/02 to view the article.

WCSA's Methods for Cleaning Water

Continued from Page 1

anthracite coal above a layer of fine sand. The upper layer of coal traps any remaining floc, while the lower layer of sand traps smaller impurities. Eight of these filters, housed in concrete boxes, are employed by WCSA. A large tank, called a clear well, is built under the filters to hold the water temporarily. At this point, we add chlorine for disinfection and fluoride for dental health before the water is pumped to the water distribution system.

Middle Fork Plant Sediment Basin

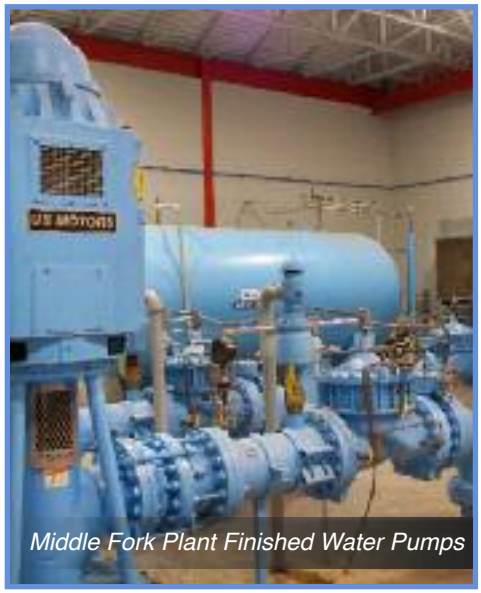
Each process mentioned here has an associated cleaning or backwash process. At the most optimal time, the impurities (sludge) removed in the process are conveyed to holding ponds or lagoons. Later, the sludge is moved to an open-air drying bed where water is evaporated. The goal is to dry the sludge as much as possible before it is properly disposed off-site.

The expanded Middle Fork Drinking Water Plant not only features more capacity, but it will demonstrate innovative energy recovery as well. At the point where raw water enters flocculation, pressure reduction was required for the South Fork water. Rather than wasting that energy through a large pressure-reducing valve, Francis turbines were added to generate electrical energy from water passing through the turbines. The electricity generated is then used to power other parts of the treatment process.

The Middle Fork Drinking Water Plant has received numerous awards, including the Virginia Department of Health Optimization Program Gold Award. This award recognized the facility as one of the top performing water plants in Virginia. The mission of Virginia's Optimization Program (VOP) is to encourage waterworks to provide water with a quality that exceeds minimum regulatory standards and to operate water systems in an exemplary manner. VOP attempts to accomplish this mission by establishing optimization goals, communicating the goals to affected waterworks, and measuring performance. The Virginia Department of Health believes that when waterworks owners and operators are aware of enhanced performance goals and track specific performance measures, they will improve the finished water quality delivered to their consumers and enhance public health protection. Water treatment plants are graded on six criteria. To meet gold standards, a water treatment plant must meet or exceed goals at least 95 percent of the time. From 2010 to 2012, the Middle Fork facility was ranked No. 1 out of 130 similarly sized facilities in Virginia.

The Middle Fork Drinking Water Plant is manned 24 hours per day, seven days per week, 365 days per year. The plant also serves as the after-hours call center for customers who have questions after normal business hours.

Areas served daily by the Middle Fork Drinking Water Plant include the Town of Abingdon, points north along and adjacent to Route 19, along Route 75 to Green Springs Road, and adjacent areas all the way to the City of Bristol, Va., and the City of Bristol, Tenn., and Scott County, Va. When necessary, the plant can also replace the Mill Creek and Reservation Spring sources (except for Taylor's Valley).


Middle Fork Plant Finished Water Pumps

Resolution of Commendation Issued for Polar Vortex Weather Event

The WCSA Board of Commissioners recently passed a Resolution of Commendation that recognized WCSA employees for their dedication to the community during the Polar Vortex weather event in January. Each employee who worked Jan. 5 to Jan. 10 received a signed resolution recognizing their hard work and commitment during difficult weather conditions and sub-zero temperatures.

First Annual Chili Cook-Off Results in $100 Donation to Nonprofit Organization

WCSA's First Annual Chili Cook-Off was held Feb. 25. Twenty-six taste testers braved a variety of entries, some of which included wild game! The "Dog-Gone Good Chili" entry, submitted by April Helbert, manager of engineering, was voted as the winner.

April Helbert

WCSA employees voluntarily donated $100 for the winner's nonprofit charity of choice. April chose to give the proceeds to the Siberian Husky Assist in Bristol, Va., which rescues Siberian Huskies from shelters in East Tennessee and Southwest Virginia.

"I decided to donate the proceeds from the Chili Cook-Off to Siberian Husky Assist because I really wanted to donate to a pet organization," April says. "I chose this particular organization because I owned a Siberian Husky until last year, and I hold a special place in my heart for the breed."

Congratulations!


Joey Forster

Joey Forster has successfully completed the requirements for the Class 4 Waterworks Operator License. Joey joined WCSA's filter plant team in July 2013.

Jimmy Mullins has successfully completed the requirements for the Class 3 Wastewater License. Jimmy joined WCSA's wastewater team in March 2010.

Tommy Orfield has successfully completed the requirements for the Class 3 Wastewater License. Tommy joined WCSA's maintenance department in July 2007 and transferred to the wastewater department in March 2010.


Tommy Orfield (at left) and Jimmy Mullins

WCSA Calendar

Memorial Day
May 26

Independence Day
July 4

Board Meetings

AMENDED 2014 FISCAL YEAR BOARD MEETING DATES

May 28, 2014
June 25, 2014
July 23, 2014

Board meetings are held at WCSA in the E.W. Potts Board Room at 6 p.m. The public is welcome to attend.

Actual dates may vary. Please contact our office to confirm all meeting dates.

REMINDER

AVOID THE TIME AND EXPENSE OF MAILING AND POSTAGE WITH WCSA's AUTO-DRAFT, ONLINE BILLPAY, OR 24/7 PAY BY PHONE.

CALL OUR CUSTOMER SERVICE DEPARTMENT AT 276-628-7151 FOR DETAILS.

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