



# REUSING WASTEWATER DELIVERS SUSTAINABLE WATER SUPPLY TO LABORATORY

**Argonne’s canal water system taps a regional wastewater source and helps the laboratory support the ever-growing cooling demand generated by the processes at Argonne.**

Processing wastewater from the canal helps Argonne use less drinking water from Lake Michigan, which is provided by the DuPage Water Commission. The canal water is primarily made up of treated wastewater from the Metropolitan Water Reclamation District’s wastewater treatment system. This water was previously used by households and businesses across Chicagoland. The canal water is treated, stored, and distributed throughout Argonne’s campus through a canal water distribution system.

Cleaning the canal water for use by Argonne’s equipment is a 24/7 process. A five-person team, including four operators, one foreman, and an engineer, operates the Canal Water Plant and other wastewater treatment facilities. Suspended solids are first removed from the raw canal water, and then chemicals are added to make it suitable for the various pieces of cooling equipment. The treated canal water can be as clear as drinking water.

Using the canal water saves about 190 million gallons of drinking water and \$1.2 million in costs to the Laboratory annually. The cost savings are due to the fact that processed canal water is about one-fourth the cost of the Lake Michigan water. Argonne also has plentiful access to canal water, while it is permitted to withdraw only a limited quantity of Lake Michigan water.

For nearly 60 years, Argonne has operated its own canal water treatment system that cleans and recycles water from the Chicago Sanitary and Ship Canal. Canal water is used as the primary source of cooling makeup water for the Argonne campus.



**Waste/Water Treatment Operator Greg Walker (FAC) reviews tank levels and discharge pressure at the Canal Water Plant.**

## SUCCESS STORY: **WATER MANAGEMENT**

Argonne completed several additional wastewater reuse projects that help to reduce potable water use. In 2016, operations staff suggested using laboratory wastewater as process water for the laboratory's waste treatment plant. Water purchased from DuPage Water Commission was previously used for this purpose. The laboratory purchases potable water from DuPage Water Commission for about \$5 per 1,000 gallons. Canal water, in contrast, costs 75 cents per 1,000 gallons to process.

Following the successful implementation of the water-saving project at the Laboratory's wastewater treatment plant, staff pursued additional opportunities for water reuse. A similar savings project was completed using treated canal water as process water for the canal water treatment plant.

Together, these two projects save about 4.5 million gallons of water and a combined \$18,000 each year.

Once canal water is discharged to Argonne's laboratory sewer system, it is treated at the Laboratory wastewater treatment plant. Three 400,000-gallon storage tanks hold the wastewater until it can be treated in two claricones, or cone-shaped settling tanks. Coagulant and flocculent chemicals are added in very small quantities to aid the filtering process. The treated wastewater is then discharged to the Des Plaines River via Sawmill Creek. The treated wastewater is returned at a higher quality than the raw canal water, thus improving the water system.

### **FOR MORE INFORMATION PLEASE EMAIL**

**Sustainability Program Manager  
[sustainability@anl.gov](mailto:sustainability@anl.gov)**