



### **Pall Aria™ AP Microfiltration Membrane System and Lakeview Utility District Make History**

#### **Overview**

Small communities with aging water treatment facilities and limited resources face unique challenges meeting water quality goals—particularly when vital wellfields become subject to the Environmental Protection Agency’s Surface Water Treatment Rule. Compliance requirements usually give local officials three options: locate a new water source, purchase water from another utility, or treat the affected water to bring it into compliance.

The Lakeview Utility District in Hawkins County, Tenn. opted for treatment by using a unique strategy that combined state-of-the-

art technology with a community-based historic preservation effort. District general manager Tim Carwile envisioned turning an abandoned building into a new treatment facility—but first he had to locate an “off-the-shelf” plant that could fit into the compact structure and provide the treatment capacity needed to serve a growing population. His search ended when he discovered the Pall Aria™ AP microfiltration membrane system.

Pall Aria systems include all the elements of the treatment process in the type of compact footprint his project required. They are capable of capturing particles, bacteria,



Lakeview Utility District turned a historic site into a state-of-the-art water treatment plant.



The Pall Aria system's microfiltration modules deliver consistent performance with minimal maintenance.

and protozoa. With coagulation, they can also remove viruses and large organic matter. Fully automated operation was ideal for the District's small staff, ensuring consistent, reliable, and predictable performance with minimal maintenance.

### **The Challenge**

Ever since the mid-1990s, Carwile had been fascinated by a local property known as the Pressmen's Home. The long-abandoned site had once been a self-contained community for members of the Pressmen Union and their families. In its heyday from 1911 to 1969, the Home had comprised a trade school, two hotels, a sanatorium, chapel, power plant, and other facilities. By 2005 many of the large structures were no longer standing, but Carwile saw an opportunity to begin preserving what was left.

"We had recently developed two wells at the site," Carwile says. "The craftsmanship of the remaining buildings was evident, so I thought here was a chance to combine the old with the new and prepare our district for the future."

Carwile saw an opportunity where other people might have seen only insurmountable obstacles. He convinced the Lakeview board to purchase the Home's old plumbing and heating shop, which had been vacant for more than 40 years, and then set about marshaling the resources to turn it into a state-of-the-art water treatment plant. High on his list of key decisions during this process was determining how to best address the newly mandated filtration requirement. For guidance, he turned to infrastructure, environmental, and facilities engineering firm ARCADIS.

"We looked at traditional sand filtration, pressure filters, and a couple of types of microfiltration," says ARCADIS project manager David Bible, P.E.

Bible considered a range of issues to help the district select the most appropriate solution, including water quality, demand trends, hardware reliability, regulatory requirements, and ease of operation. In particular, he focused on the suitability of different solutions

for use with the soon-to-be renovated shop building.

“The size of the workspace was an issue,” Bible says. “In the end we determined that a Pall Aria system was the best skid-mounted plant for Lakeview. It was compact enough to fit into the historic building and could easily be expanded to add more capacity. There are great advantages to this type of self-contained unit.”

### The Solution

The Lakeview Utility District acquired two Pall Aria AP-4 systems, each with 10 Microza microfiltration modules. A significant benefit of the system's hollow fiber membranes is their ability to be chemically cleaned for an in-use life typically greater than 10 years. During the life of the membranes, their only consumable costs are those linked to providing power to the pumps on the system and the chemicals used during monthly cleaning. Both consumables are minimal expenses, much lower than the replacement costs associated with the traditional choice of disposable filter cartridges.

Installation was quick and simple, notes Carwile. “We finished two months ahead of schedule and could have been done sooner, but we were also installing a new 50,000 gallon raw water tank and a 60,000 gallon filter well.”

Bible was impressed by Pall's commitment to client satisfaction throughout the project. He says the service from design to start up has been great. “Pall's staff has been fabulous to work with,” he says.

Carwile says that much of the credit for the project's success also has to go to the employees of the Lakeview Utility District and their friends and families. He notes that many people volunteered to work on the building rehabilitation at no cost to the district. Employees even returned to the site during their off-hours to finish the structure.

“We started with a vision,” Carwile says. “As more people got that vision, I began to see a



Lakeview's Pall Aria systems are compact and expandable to meet future demand growth.

sparkle in everyone's eyes. You could see they were proud of what we were doing.”

The Lakeview District has an average demand of 140,000 gallons a day. At current levels, it can meet this load requirement using just one of its Pall Aria systems. Potentially, the two systems could be expanded to treat a peak demand capacity of up to 1.15 million gallons per day. For Carwile and the members of the Lakeview board, those are reassuring statistics.

“Hawkins County has had 40 percent growth in five years,” Carwile says. “We see a lot of potential for continued growth as more retirees move here.”

When that growth occurs, the Lakeview Utility District will be ready to meet the demand in large measure because of the capabilities of their new Pall Aria systems.

## The Benefits

More communities are selecting the Pall Aria systems for their ability to deliver affordable water treatment solutions with:

- High tolerance for suspended and solids loading.
- Uniform membrane structure, which prevents penetration of bacteria and colloidal suspended material.
- Quick installation.
- Minimal chemical cleaning, which reduces chemical and disposal costs and downtime.
- Fully automated operation, which ensures consistent and reliable flux, predictable performance, and minimal maintenance.
- Low circulation flow rates for minimal power consumption.
- Long service life.
- Effluent quality that complies with EPA regulations.

## About Pall Corporation

Pall Corporation is the largest and most diverse filtration, separation, and purification company in the world. Pall serves municipalities and industries with advanced membrane filtration technology and systems engineered for reliability and cost effectiveness. Pall's space-saving membrane filtration systems are easy to install, simple to use, and satisfy a wide range of filtration requirements.



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