

NAME:

City of Ft. Myers Water Treatment Plant

LOCATION:

Ft. Myers, Fla.

PLANT SIZE:

12-mgd capacity

INFRASTRUCTURE:

The plant uses RO membranes to filter drinking water. Two 9,100-gpm backflush filters were recently installed to stop a sand ingress that was causing increased labor and maintenance.



Two 9,100-gpm, multi-element, backflushing filters were installed at the Ft. Myers plant in October 2006.



The filters gather and deposit the sand into concrete basins; city trucks vacuum it out and haul it away every six months.

LEARN MORE

For additional articles on this topic, visit:
www.wwdmag.com/lm.cfm/wd030814

PLANTPROFILE

By Clare Pierson

Sun & Sand

Special filters reduce sand ingress that was causing increased labor and maintenance time

In sun-drenched Ft. Myers, Fla., residents' drinking water flows at a rate of 12 million gal per day (mgd) through reverse osmosis (RO) membranes at the local drinking water treatment plant.

Everything appeared to be going fine until 2004, when large volumes of fine sand were infiltrating into the membranes and thereby overloading the cartridge filter elements. The source was the Florida Aquifer; pumps that delivered raw water to the plant now delivered sand as well. This buildup of sand—wheelbarrows full, literally—required plant officials to replace overloaded cartridge filters at least once a month, according to Byron Weightman, the plant superintendent.

A Permanent Solution

Performing basic well maintenance and installing simple basket strainers proved only to be a temporary fix. Plant officials realized they needed a permanent solution to this problem, and fast. After measuring the particle size of the sand coming out of the aquifer wellfield, plant officials decided they needed some heavy-duty sand strainers that were micron-rated for 75 microns.

Weightman said he and other plant officials called a number of different vendors that offered filters of all kinds and talked to them about what they could offer. Their main goals were to extend the life of the RO elements and reduce replacement and labor costs.

The plant narrowed its search to three companies and received proposals from each. Because the sand ingress was somewhat of an emergency, a major factor in choosing a vendor was how fast each one could ship the necessary equipment. Hydac Technology Corp., Bethlehem, Pa., a manufacturer of filters for every element and of every shape and size, offered Ft. Myers a shipping time of 16 weeks, rather than the standard 22 weeks. The plant had found its vendor.

Sixteen weeks later, two 9,100-gal-per-minute (gpm), multi-element Hydac automatic backflush filters began to be installed at the plant.

The RF3-5 automatic backflush filter has applications in sewage treatment, wastewater and the paper, mining and chemical industries. It is advertised as having conical/cylindrical elements that result in even flow, low pressure drop and complete cleaning of the elements—which, in turn, result in fewer backflushing cycles and less backflushing fluid lost in the process.

Its basic process is: The sand flows through the slotted-tube filter elements of the filter, passing from the inside to the outside. Contamination particles then collect on the smooth inside of the filter elements. As the level of contamination increases, the differential pressure between the contaminated and the clean sides of the filter increases. An adjustable automatic timer will indicate when the differential pressure reaches a certain limit, and then backflushing starts automatically.

Significant Savings

The filters went online in October 2006, and although they have been installed only a little more than a year, Weightman said plant operators waited eight or nine months after installation to replace the filters, rather than once per month as previously required. This has created huge labor, maintenance and cartridge replacement savings to the tune of about \$30,000. The filters gather and deposit the sand into concrete basins; city trucks vacuum it out and haul it away every six months.

The two filters cost approximately \$150,000. With piping and other related installation costs, Weightman estimated that the total project cost about \$600,000.

Recommendations

"When a plant is trying to determine what type of strainer to use, proper sizing is most important, as well as how much maintenance will be involved," Weightman said. "You also have to remember these types of filters will normally be outside, so it's important to have one that will withstand weather conditions. We expect the stainless steel hardware on the filters to withstand the harsh Florida sun."

He also noted that the number of elements in each filter housing is critical and will impact the maintenance and downstream pressure. When planning for discharge and recovery, backflush recovery basins must be sized to allow the sand to settle before water discharge.

"All in all, we are very happy with the process," Weightman said. **wwd**

Clare Pierson is associate editor for *Water & Wastes Digest*. Pierson can be reached at 847.391.1012 or by email at cpierson@sgcmail.com.

For more information, write in 1114 on this issue's Reader Service Card.