Tour the Grimes Water Treatment Plant during AMTA's Des Moines workshop.

JOIN US IN DES MOINES

for Membrane Technology Exchange

Join AMTA for our first in-person Technology Transfer Workshop of the year!

Taking place in **Des Moines, Iowa, May 10-12**, this two-day program, *Planting the Seeds for Membranes in the Midwest US*, offers membrane professionals a unique opportunity to learn about the latest technologies, research and innovations that are solving complex regional water treatment challenges.

This AMTA Technology Transfer Workshop will focus on membrane plant design, optimization and innovations in the Midwest US and offers a tour of the Grimes Water Treatment Plant.

The program will offer the following learning opportunities:

- Membrane practices, applications, operations, regulations, troubleshooting, innovations and design.
- Real-world membrane case studies and projects.
- On-site facility tour of the Grimes Water Treatment Plant.
- Networking and knowledge exchange with industry leaders and practitioners on the cutting-edge of membrane technology.

Learn more about this exciting program and register for the workshop.

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GRIMES IOWA DRINKING WATER TREATMENT FACILITY

GRIMES REVERSE OSMOSIS DRINKING WATER TREATMENT PLANT

Grimes Reverse Osmosis Drinking Water Treatment Plant

GRIMES 3.5 MGD REVERSE OSMOSIS WATER TREATMENT PLANT

The City of Grimes is currently in the end stages of construction of a new reverse osmosis water treatment plant to be opened in the spring of 2022. The new water treatment plant adds two new Harn reverse osmosis trains that produce 950,400 GPD. The trains are expandable up to 1,066,000 GPD. These trains join two previously operated R/O trains that were moved into the new building from a temporary building onsite. The existing Harn R/O trains produce 828,000 GPD. Two Jordan Aquifer wells provide the raw water source for the R/O's.

JORDAN AQUIFER SOURCE WATER

The source water from the Jordan Aquifer is low in metals such as iron and manganese. This makes it a good option for source water. Obtaining the source water is not without its challenges. The Jordan Aquifer is a contained aquifer that is approximately 1500-2000 ft below ground level. We had a new Jordan Well constructed in 2020 that was brought online in the spring of 2021. This well has a 200 BHP pump that is 500 ft below ground level. This well is two miles from the R/O water plant. We have a second Jordan Well onsite with a smaller pump to accommodate the two smaller R/O trains.

PRE-FILTERING SOURCE WATER

The distance between the plant and the well requires us to flush the Jordan well each time the well turns on. This helps flush contaminants that may have settled in the raw water transmission mains during down time. In addition, the R/O plant utilized low service booster pumps to boost the raw water through 100 micron bag filters. The pumps also boost the well pressure to accommodate the flow through 1 micron cartridge filters. This pre-filtering of the source water helps to extend the life of the membranes.

Low Service Boosters and Bag Filters

R/O Production Floor

LIME SOFTENED BLEND WATER

The water treatment facility also includes a 1.4 MGD lime softening plant that was built in 2000. The lime plant was upgraded in 2021 as part of the new R/O plant construction. The blending of the lime water helps add taste and raise the pH of the R/O permeate. This blending results in high quality drinking water with a pH that can be controlled without chemicals that can have adverse taste and smell issues.

INCREASING WATER DEMAND

Grimes is one of the fastest growing communities in Iowa. Grimes population has increased from 9,509 in 2015 to 15,392 in 2020. With the increase in population comes the increase in water demand. This demand forced the city to greatly expand the water treatment capabilities for current and future growth. The construction of the new R/O plant provided an initial increase of 1.9 MGD which brought the total water treatment production to 5 MGD. The plant also has space for three additional R/O trains for future expansion.

MEMBRANE CLEANING SKID

In the event of wash through of prefilters or interruption of anti-scalant feeds, the membranes have the potential to be blinded. In the event of membrane damage, the city has added a cleaning skid. This allows us to clean the R/O membranes with high or low pH solutions depending on the source of the blinding. With a cleaning skid in place, we can clean the R/O membranes in a matter of hours and have the train back online. With the increased water demand the city cannot afford to have a train offline for extended periods of time during high demand months. This cleaning skid greatly reduces any down time for maintenance. ■

Membrane Cleaning Skid

VISIT THE GRIMES IOWA DRINKING WATER TREATMENT FACILITY
at AMTA's Two-Day Technology Transfer Workshop, Des Moines, IA, May 10-12, 2022.