



## Project Profile

### 6 MGD RO System, Hutchinson, Kansas

Reverse Osmosis Removes Chlorides from Contaminated Groundwater



*Interior of this Hutchinson, Kansas treatment plant shows Reverse Osmosis trains.*

Located 39 miles northwest of Wichita, the City of Hutchinson, Kansas has a population of over 40,000. The public water supply is derived from 20 municipal wells, most of which have been installed and maintained by Layne Christensen Company.

The City discovered that carbon tetrachloride and other Volatile Organic Compounds (VOCs) had contaminated one of its well sites. Further, high levels of inorganic chlorides (salts) were present. VOCs are typically treated by air stripping, however, this strategy was complicated by the chlorides, which cannot be removed through air-stripping processes.

An engineering firm was brought in to devise a treatment strategy. The resulting facility treats water from the contaminated well, removing iron and manganese with manganese dioxide pressure filters, removing chlorides through Reverse Osmosis (RO), then removing CO<sub>2</sub> and VOCs in a degasifier concealed in the clock tower. The resulting pure water is blended with city water, resulting in a peak production capability of 10 MGD.

In June of 2007 Layne Christensen Company was awarded a contract from the General Contractor to assist in the design and fabrication of a 6 MGD RO system, including 5 micron cartridge filters, Clean-in-Place equipment, and chemical feed equipment.

The four RO skids were fabricated in Layne's Lakeland, Florida manufacturing facility, while chemical feed equipment was fabricated in Layne's Kansas City facility. There are four RO trains comprised of 24 x 12 -7M arrays, using Hydranautics ESPA 2 membranes. Each train is capable of producing 1.5 MGD of permeate from 2 MGD of influent. The RO trains provide a combined 6 MGD of RO water from 8 MGD of feed.

Layne was also contracted to provide startup and training in the operation of the RO system, the 5-micron cartridge pre-filters, Clean-in-Place equipment, the degasifier and the chemical feed equipment.

The RO system was completed in April of 2009. As a result of the new facility, the City now has water that is significantly cleaner and softer, while also recovering water that would otherwise have been unusable. For its innovation and commitment to its residents, the City of Hutchinson received the 2008 Drinking Water State Revolving Fund Award, and the 2008 Clean Water State Revolving Fund (PISCES) Award.

**Start Date:**

June, 2007

**Completion Date:**

April, 2009

**Owner:**

City of Hutchinson, Kansas

**Engineer:**

Professional Engineering Consultants

**General Contractor:**

Walters Morgan Construction

**Equipment Provider:**

Layne Christensen Company



*Exterior of the Hutchinson Water Treatment Center. The clock tower conceals a degasifier.*



*Shown above is one of four RO trains, each capable of producing up to 1.5 MGD of pure water.*

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