



McPherson Looks South for New Source

An article highlighting the proactive vision of the McPherson Board of Public Utilities has been published in this magazine before and as this latest article will describe, that attitude is confirmed to be alive and well.

There is no “one way” to organize a public water system in Kansas. Kansas law allows for the creation of Rural Water Districts, Rural Water Supply Districts, Public Wholesale Water Supply Districts and a special district for Johnson County informally called WaterOne (although they may have a trademark on the name). There are privately-owned water systems, usually small and associated with a business, like mobile home parks or recreation areas. There are also government-owned systems at the city, county, state and federal levels. There could be a cooperative water system where the customers own shares of the system, although I am not aware of any in Kansas. Some cities have established boards of public utilities, to have independent officials manage only the community's utilities, such as natural gas, electricity, sewage and drinking water. McPherson is one such community.

The McPherson Board of Public Utilities provides electricity and drinking water to the city of McPherson and its environs. Members of the board are chosen by the mayor of McPherson and confirmed by the city commission to serve terms of three years. Each city commissioner and the mayor are to serve one-year terms as an ex-officio board member, without a vote, on a rotating basis. The board is a separate unit of city government and has the full jurisdiction, control and management of the water and electricity utilities.

The current wellfield for McPherson is located west and southwest of town. They operate 11 wells. The water rights for these wells authorize using up to 1,500 million gallons per year (m.g.y.). The city of Windom and Rural Water District Nos. 2, 3 and 4 in McPherson County are wholesale customers.

McPherson IGUCA scrutinized

McPherson, its 11 wells and groundwater supply lie within the boundaries of McPherson Intensive Groundwater Use Control Area, or IGUCA. (Water right practitioners pronounce this acronym “eye-goo’-kuh”.) Established in 1980, the order

which created that area also demands that no new applications for water rights could be approved within an area of approximately 56 square miles located entirely in McPherson County. No reductions of authorized water rights were made when the order was issued, nor were any allocations applied to water rights.

In 2020, the Chief Engineer of the Division of Water Resources issued a review of the effectiveness of this IGUCA and slightly modified descriptions in the original order. Evidence showed that the rate of decline of the aquifer was approximately 0.86 feet per year during the period of 1972 to 1980. The rate of

Evidence showed that the rate of decline of the aquifer was approximately 0.86 feet per year during the period of 1972 to 1980.

decline for the period the IGUCA has been in place is only 0.25 feet per year. While the slowing of the rate has been encouraging, the water table is still dropping. Also concerning is that the estimated recharge for the area is approximately 8,355 acre-feet, while water diversions of all uses averaged approximately 12,926 acre-feet per year from 2010 to 2014. It is easily concluded that Safe Yield has not been achieved through the provisions of the IGUCA Order. Water use diversion averages for the decades since adoption show increases every decade. Rainfall data does not indicate any trend in changes of precipitation from pre-IGUCA to post-IGUCA periods. The Order of the Chief Engineer in 2020 kept the McPherson IGUCA in place but did not add any new restrictions and did not expand the boundaries. It was clearly stated, however, that additional restrictions were possible after the next review of aquifer conditions.

Back in 2004, I wrote an article about McPherson’s effort to secure irrigation water rights in the vicinity of their community, which can be found on the Kansas Rural Water Association website (<https://krwa.net/portals/krwa/lifeline/currentissue/0407bpu.pdf>). The purchase of water rights was made for two purposes. The first and most obvious reason was to obtain water which would help the water system meet future demand. The second was to preserve the life of the aquifer by reducing existing demand on the aquifer. To date, McPherson has purchased nine irrigation water rights. Three of those rights continue to be used for irrigation use. The other six water rights have been enrolled in the Water Rights Conservation Program (WRCP). (Of the six, one has been converted to municipal use.) This program of the Division of Water Resources allows water rights to be enrolled for a specific period of time, stipulating that water will not be used, and thus with the signed contract, the water right owner avoids any status questions regarding abandonment. The

The purchase of water rights was made for two purposes. The first and most obvious reason was to obtain water which would help the water system meet future demand. The second was to preserve the life of the aquifer by reducing existing demand on the aquifer.



This view facing south from the current treatment plant, shows the grassy area, on both sides of the fence where the raw water tank and the filtration building will be constructed.



General Water Tower Maintenance

Specializing in Painting & Repairing Elevated & Ground Storage Water Tanks

Kelly Koehn (Owner) - 563-380-2647
Joe Koehn (Sales Rep) - 563-880-5405
 22528 Canoe Rd., Elgin, IA 52141
www.centraltankcoatings.com
office@centraltankcoatings.com

Contract Services available:

- Sandblasting
- Painting
- OSHA Updates
- Roofs
- Pipes
- Jackets
- Repairs
- Annual Maintenance
- Emergency Services

Toll Free 877-530-6226 • Office 563-426-5967 • Fax 563-426-5641



The new wellfield is located on a tract composed of primarily of undulating sand dunes covered with native grasses, plum thickets and cottonwood trees. In May of 2023, the yucca plants which thrive in sandy soil, were in full bloom. Recharge of the aquifer through the sandy soil is expected to be excellent.

five McPherson irrigation rights have suspended the annual use of up to 1,114 acre-feet, or nearly 363 million gallons, per year. The municipal water right enrolled in the WRCP has suspended the use of approximately another 90 million gallons per year. The contracts for the five irrigation water rights expire on December 31, 2025; the municipal water right expires in 2026. With the McPherson Valley Aquifer not yet in a sustainable state, relying on these purchased irrigation rights for municipal use could be problematic. It is likely that new contracts will be signed in 2026 and 2027.

If the water rights in the McPherson IGUCA are currently in an unsustainable source, and a future IGUCA order or orders could reduce the authorized quantities or apply an allocation that does not allow the full diversions of the authorized quantities every year. In that case, there is exposure to

real, but intangible, risk. There is also risk that the Division of Water Resources or the courts could fail to protect water rights from water level declines. To mitigate this risk, McPherson has looked outside of the IGUCA area to find a new source of water that is not over-appropriated. An area in Harvey County appears to fit the bill.

In October 2017, the Chief Engineer approved applications for three permits to develop water rights north of Burrton, in Harvey County. The permits authorize the drilling of three wells and the annual diversion of approximately 1,721 million gallons per year, limited to that same quantity when combined with all previously authorized municipal water rights used in McPherson and by their customers. In January of 2022, the authorized wells were drilled to depths of approximately 200 to 245 feet. The static water level is shown to be 33 feet from the surface. The well logs filed by Layne Christensen show that each well is estimated to produce 1,400 gallons per minute!

This project includes a new water treatment plant designed to remove iron and manganese by greensand filtration. Greensand is primarily made up of the mineral glauconite, a potassium-iron-aluminum silicate. Commercial sources of greensand in the United States appear to be limited to New Jersey and Delaware. A raw water tank with approximately 1.10 million gallons capacity will be constructed south of the current chlorination building, storing water before treatment in one of three greensand filter vessels. It was originally proposed that the plant would have a 3.0 million gallons per day capacity. Further justification was found to increase the production to 4.000 million gallons per day. Burns and McDonnell designed the plant. It was estimated in 2019 to have a cost of \$10.46 million. The plant is scheduled for completion in 2024.

- LINE STOPPING**
3/4" - 60"
- LINE TAPPING**
2" - 60"
- VALVE INSERTION**
4" - 16"
- VALVE TURNING**
- PIPE REPAIR**



FOR ALL YOUR POTABLE AND WASTE WATER NEEDS

WWW.MUNICIPALPIPESERVICES.COM

MUNICIPAL PIPE SERVICES

Billy Laws
Sales Manager
1615 West J. Street
Hastings, NE 68901

1-800-395-7473
Cell: 515-238-4693
Fax: 402-462-4408
Email: billylaws78@gmail.com



BILL@MUNICIPALPIPESERVICES.COM



Wellhouse No. 15 is ready for pumping equipment to be installed. Wellhouse No. 16 is visible approximately ⅓-mile to the east, on the left side of the photo. Well No. 17 is behind the hill further east.

Is this a Water Transfer?

Connecting the new wells to the new water treatment plant will be a 16-inch pipeline, approximately 20 miles long. While the total annual quantity

authorized by the three permits is higher than one of the “triggers” in the Water Transfer Act, the 20-mile distance the water is transferred does not meet the 35-mile distance to the

This project includes a new water treatment plant designed to remove iron and manganese by greensand filtration. Greensand is primarily made up of the mineral glauconite, a potassium-iron-aluminum silicate.

point of use condition. The cost of this pipeline was estimated to be \$14.36 million in 2019. That computes to \$718,000 per mile! Construction of the pipeline is scheduled to start soon. The debt service was anticipated to cause less than a \$17 increase per month on each customer’s water bill.

This project will secure McPherson's water future for many years. Continued reuse of wastewater at the local refinery, water conservation messaging, Advanced Metering Infrastructure (AMI) data made available to customers, judicious recruitment of businesses with low water demand and a large sustainable water supply puts McPherson in a position surely to be envied by other Kansas communities.

Douglas S. Helmke has been the Water Rights Tech at KRWA since June 2000, and also a Wellhead / Sourcewater Protection Tech since 2003. He holds professional geologist certification in

Kansas and Missouri. Doug received a bachelor’s degree in geology from Kansas State University.



Bartlett & West

Water solutions for community growth.

Clean, safe and reliable water is a basic building block of a modern community. Residents and industry depend on your system. You need proactive communications regarding system needs and innovative, comprehensive solutions. As a national leader with long-time relationships in water-focused services, Bartlett & West is your ally for success.

(888) 200-6464 ■ www.bartlettwest.com