

Groundwater levels in downtown Dayton



Monitoring by MCD of groundwater wells in downtown Dayton show declining groundwater levels which could threaten geothermal systems. If water levels fall below the screened interval of the geothermal well it may require wells being shut down to prevent damage to pumps.

According to MCD research, the depth-to-water in two wells in downtown Dayton is trending downward starting around 2005 and continuing to the present (see charts on following page). To track groundwater levels, MCD manages and maintains two real-time observation wells (named MT-6 and MT-426) in downtown Dayton in cooperation with USGS. Each well has a logger that records an hourly water level measurement and transmits the reading to MCD. Staff visit the wells to make a manual measurement and check the logger's accuracy.

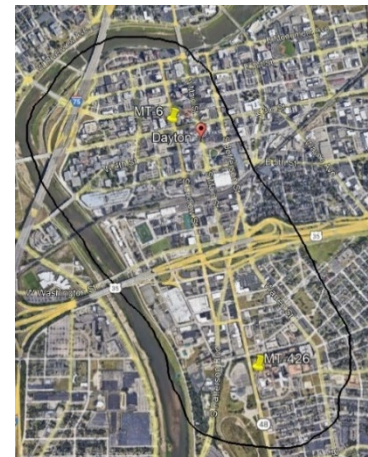
Possible cause – geothermal systems

While it is not certain, a possible cause for lower levels could be pumping for geothermal cooling systems, which was estimated at 3.6 billion gallons per year in 2005 and increased to 5.6 billion gallons per year by 2021 (according to ODNR water withdrawal data).

Recommendations

To manage groundwater use in the downtown Dayton area, MCD recommends the following actions:

- Conduct an inventory of open loop geothermal systems in the downtown area.
 - Locate all pumping wells and estimate the amount of water withdrawn for geothermal use.
- Implement a groundwater level monitoring network.
 - Assess groundwater levels and flow directions in the vicinity of geothermal wells and across downtown Dayton.
- Build a numerical groundwater flow model.
 - Assess potential impacts of new or additional pumping wells.

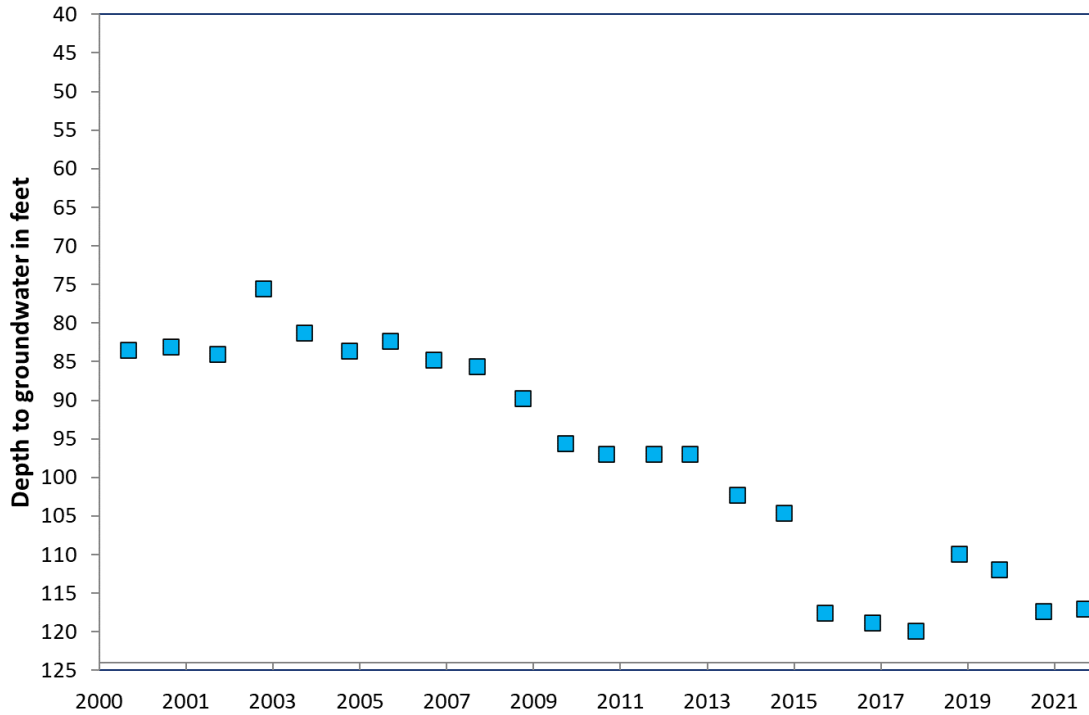


For more information or questions, please contact Mike Ekberg, Manager of Water Resources Monitoring and Analysis at mekberg@mcdwater.org or (937) 223-1278 X3237.

MCD AND WATER STEWARDSHIP

MCD works to help protect and improve water for people living and working within the Great Miami River Watershed – a 3,946 square mile area in southwest Ohio using data collected by our staff and partners, we work collaboratively with elected officials and community leaders, providing them with valued research and insight. This helps support the overall health and growth of our region. This work is funded through MCD's Aquifer Preservation Subdistrict.

**Annual Low Groundwater Level (depth to groundwater)
at MCD Observation Well MT-426
near Apple Street and South Main Street**



**Annual Low Groundwater Level (depth to groundwater)
at ODNR Observation Well MT-6
Third and Ludlow Streets**

