DEPARTMENT OF NATURAL RESOURCES

Update: Little Rock Creek Area Water Flow Monitoring and Analysis

April 25, 2019

The DNR is implementing the actions found in the Sustainable Use of Groundwater in the Little Rock Creek Area Plan (link). The plan's aim is to assure sustainable use of groundwater, consistent with state laws. This will help water users better understand whether groundwater use in the area negatively impacts Little Rock Creek. The DNR aims to conduct high quality monitoring and analysis based on sound science to support continued, sustainable groundwater use in the area. Groundwater use is not sustainable if it negatively impacts Little Rock Creek.

Groundwater flow analysis

The DNR measures groundwater level data and stream flow. DNR's analysis of these data focused on August base flow of Little Rock Creek. Base flow is the portion of streamflow that is sustained largely by groundwater in the absence of direct runoff. August typically represents a biologically sensitive period of relatively low streamflow that is mostly base flow.

As water is pumped out of the ground, stream flow in Little Rock Creek can be reduced. The 2015 analysis showed that in more than half the years evaluated (2006 to 1014), groundwater use reduced the August base flow in Little Rock Creek by more than 20% of the median compared to a scenario with no groundwater use. Research by the DNR and others across the United States found that negative impacts to ecosystems are very likely above 20% August median flow reductions. Negative impacts are possible between 10% and 20% stream flow reductions, depending on the stream characteristics. The DNR is now analyzing the stream ecosystem characteristics to help clarify the negative impacts threshold for Little Rock Creek.

Statewide experts see no critical issues with DNR analysis

On January 22, a group of groundwater experts reviewed and gave feedback to the DNR on the department's analysis of the groundwater flow in the Little Rock Creek Area. It was the last of four meetings for these third–party groundwater experts called the Technical Advisory Team.

After their review, members of the Technical Advisory Team did not recommend changes to DNR's analysis. They asked clarifying questions and made a few suggestions to improve the communication of the process and results.

Next steps

The work of the Technical Advisory Team is complete. Here are the DNR's next research steps in the Little Rock Creek Area:

- Update the groundwater flow analysis to include data collected after 2014.
- Complete an analysis of groundwater movement near the Sartell Wildlife Management Area impoundment.
- Begin year two of a two-year stream ecosystem analysis in Little Rock Creek.
- Begin year two of a two-year study on water use report accuracy with volunteer Little Rock Creek Area irrigators.

The DNR wants farmers, businesses and communities to use groundwater. However, the DNR can only permit high volume groundwater use if it is sustainable as outlined in Minnesota statutes and rules. To write the Sustainable Use of Groundwater in the Little Rock Creek Area plan (link), the DNR has worked with individuals, communities and businesses. We will continue to work with the community, as we collect and analyze additional information to determine whether total permitted groundwater use is having a negative impact on Little Rock Creek.

Contact Information

Direct questions about this project can be addressed to Mark Hauck, DNR project manager, at 320-223-7846 or mark.hauck@state.mn.us

For more information on the Little Rock Creek Area, visit the project web page at www.mndnr.gov/littlerock. For more information on DNR's groundwater management programs, visit www.mndnr.gov/gwmp/index.html.