



FEBRUARY 2021

Newsletter for Rocky View County Community-Based Groundwater Monitoring Program
Reporting progress and updates of the program to community volunteers.

Another good year of groundwater recharge

After several years of groundwater level decline in most parts of the Rocky View County, the aquifers started showing a sign of recovery in 2019. This is due to an increase in groundwater recharge assisted by abundant rain during summer months. The summer of 2020 was not as wet as 2019, but it was still wetter than an average summer. This resulted in another year of good recharge, as indicated by many wells in the Rocky View Well Watch network. Figure 1 shows examples of water level in three wells in the northwestern part of the county (W14, W20, and W39), three wells in the central and eastern parts (W17, W26, and W45), and two wells (W10 and W15) in the southwestern part. These graphs show water levels in each well relative to the average value for the well. This is a rare example of long-term groundwater data covering an entire county. Data sets like this do not exist anywhere else in Alberta. The unique data set allows researchers to identify patterns of water levels on a time scale of decade or longer.

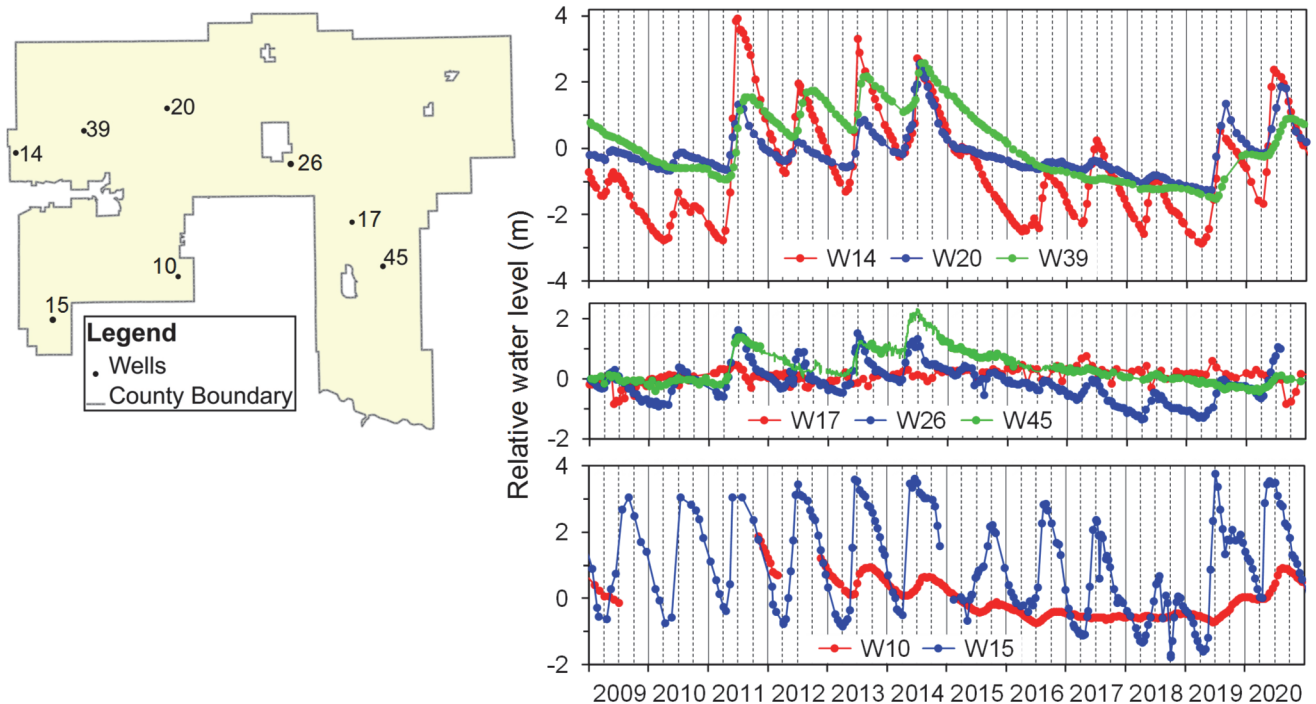


Figure 1. Map showing the location of selected wells within Rocky View County (left), and graphs showing relative changes in water level in these wells (right).

Long-term perspective on groundwater and weather

Figure 1 shows water levels going up and down in cycles repeated every 4 or 5 years. Scientists explore the relationship between these cycles of groundwater levels and weather conditions, using a number called the standard precipitation index (SPI). The SPI indicates the wetness or dryness of the weather. For example, in Figure 2, blue bars indicate wetter-than-normal and red bars indicate drier conditions based on the precipitation data measured at Calgary Airport. Since the beginning of water level monitoring, we have experienced a dry-wet-dry-wet sequence, similar to the down-up-down-up sequence of water level in many wells (Figure 1). So far, the water levels in Rocky View County have been going up and down within a limited range since the monitoring started in 2008. From a longer-term perspective, 2009-2020 was a relatively wet period (more blue than red in Figure 2) compared to the 1970's and 1980's (more red than blue). Researchers are not sure what this means, but it is possible that the groundwater level in the county was lower during the drier decades. Available data indicate that the flow in small prairie creeks in Alberta was much lower during the 70's and the 80's compared to the past decade, hinting at a possibility of lower amount of groundwater feeding these creeks, and possibly lower groundwater levels.

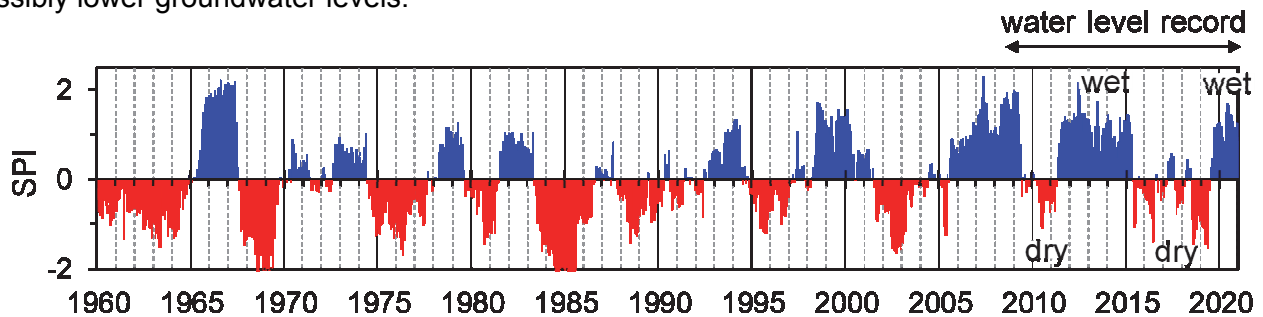


Figure 2. Standard precipitation index (SPI) for Calgary indicating wetter (blue) and drier (red) conditions compared to the long-term average

New program coordinator for Rocky View Well Watch

The former program coordinator, Evan Sieben moved to an engineering company in Calgary to broaden his professional skills and experiences. The position was filled by Quinn Decent. He graduated from the University of Waterloo with a Master of Science in Geography in 2020 and started working for the Department of Geoscience in June. Prior to this, he had spent three summers working in the Crowsnest Pass, Alberta researching water quality and sediment transport in rivers, and conducted other scientific fieldwork in the Northwest Territories and Ontario. Quinn is happy to call Calgary his new home, and is enjoying the recreational outdoor opportunities, especially the hiking, biking, and fishing.



Quinn working at a weather station.

Rocky View Well Watch web:
<http://rockyview.sensorup.com>

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