RBC Blue Water Project™

Groundwater Connections

UNIVERSITY OF CALGARY

FEBRUARY 2022

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

Low snowmelt and rain resulting in little recharge in 2021

As we all know the climate in the Prairies has a few years of wet weather followed by a few years of dry weather, repeating every ten or so years. This means that groundwater recharge also has runs of good years and poor years. Scientists call this 'decadal-scale variation'. In Rocky View County, we saw good amounts of snowmelt and summer rain in 2019 and 2020. As a result, we observed noticeable rises of water level indicating good recharge of local groundwater (Figure 1). Much of groundwater recharge in the Canadian Prairies is sourced by snowmelt ponds (see next page). Therefore, when we see many snowmelt ponds in the spring, that signals good recharge. As you may recall, we saw few snowmelt ponds in the spring of 2021, and on top of that, we received relatively little rainfall in May-September, only about 65 % of 'normal' years. As a result, water levels in many wells declined in 2021 (Figure 1). The snowpack in the field does not look very promising this winter so far, but let's hope that we will receive more snow in March and April and soil moisture conditions will improve before and during the growing season.

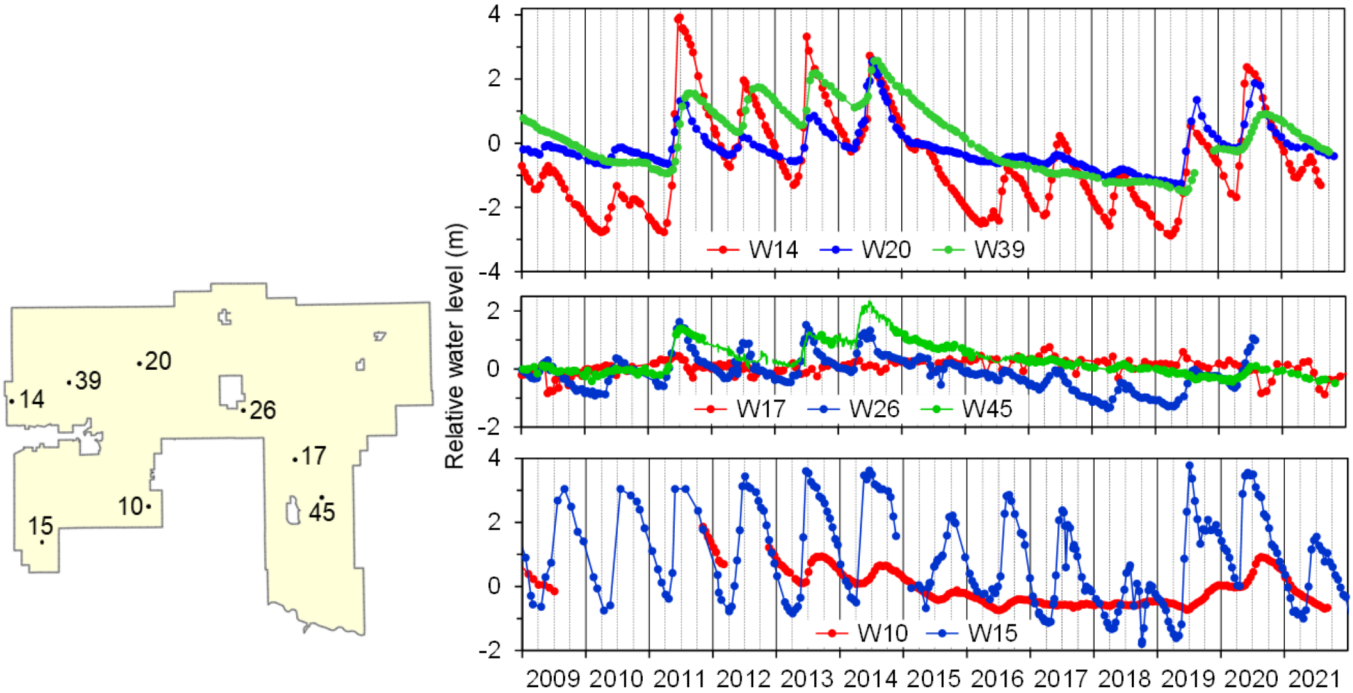

Figure 1. Map showing the location of selected wells within Rocky View County (left), and graphs showing relative changes in water level in these wells (right).

Groundwater recharge and snowmelt ponds

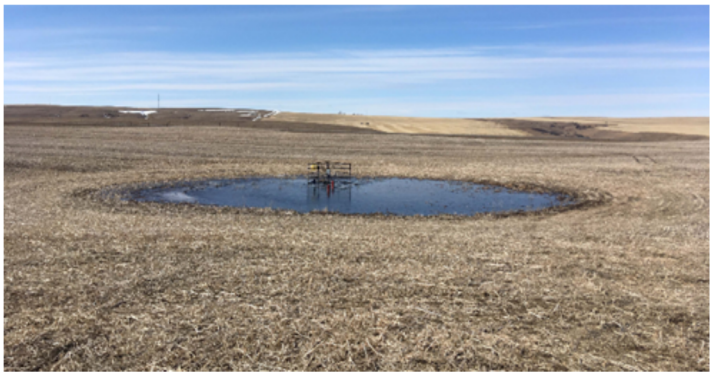

Figure 2. Snowmelt pond in a wheat field near Rosebud, AB (April 13,2020). No pond formed in the spring of 2021.

Water level data collected by Rocky View Well Watch have helped us (the university researchers) understand groundwater recharge processes in the Prairies. We are particularly interested in the roles played by small depressions focusing infiltration and sending it down to the water table. The photo shows our instrumented study site south of Rosebud. As a culmination of many years of research, we published a scientific paper on this topic in an international journal in September, which generated interests among agricultural magazines in the Prairies; for example, The Western Producers (November 10) and Manitoba Co-operator (October 29). If you are a digital reader, you can search these articles using a key word 'groundwater recharge'. Take-home messages of these articles are that these small depressions are important for groundwater recharge, and that the timing and amount of recharge will change as the climate in the Canadian Prairies will become wetter and warmer in future years.

New website for Rocky View Well Watch

The Rocky View Well Watch website was originally set up by researchers from the Department of Geomatics Engineering at the University of Calgary. The website was transferred to a spinoff company called Sensorup started up by the same researchers in 2016 and had been running smoothly until it was abruptly shut down last July, when Sensorup upgraded their system to improve the cyber security. We tried to work with Sensorup to migrate our website to the new system, but a project like Rocky View Well Watch was no longer compatible with their business model. Instead, we teamed up with our academic colleagues from Global Water Futures (GWF) and developed the new Rocky View Well Watch data portal. You can access it through: https://gwfnet.net/rockyview. The new site has a different look and functionality compared to the previous one. Most importantly, you cannot enter your data by yourself. Please send us your data by e-mail so we can enter them for you. Also, please e-mail or call us any time if you have any questions or suggestions.

New volunteers from Foothills County

With the move to new GWF database and website, it is now easy to add wells from regions outside of Rocky View County. This is something we have been considering for a long time. We are happy to report that two new well owners from the Fish Creek watershed in Foothills County have joined Rocky View Well Watch. We may see a few more volunteers from Foothills and other counties or municipalities in coming years.

Rocky View Well Watch web:
https://gwfnet.net/rockyview

Contact Information: Quinn Decent - Hydrology Technician

Department of Geoscience
University of Calgary
2500 University Drive NW
Calgary, Alberta, T2N 1N4

Phone: 403-220-2495
E-mail: hydro@ucalgary.ca