

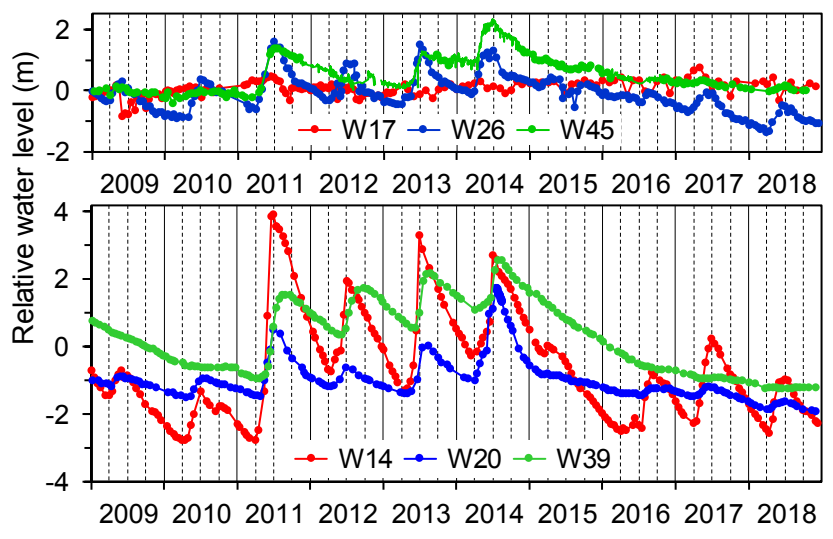
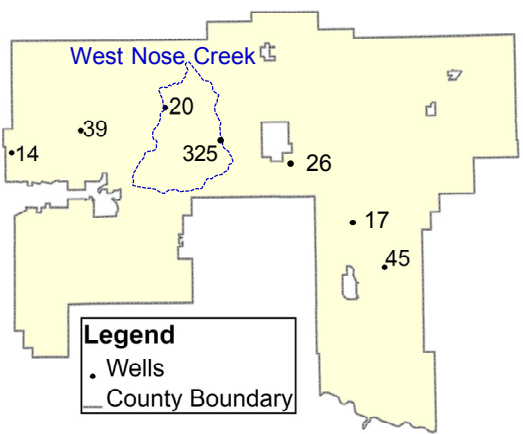


FEBRUARY 2019

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

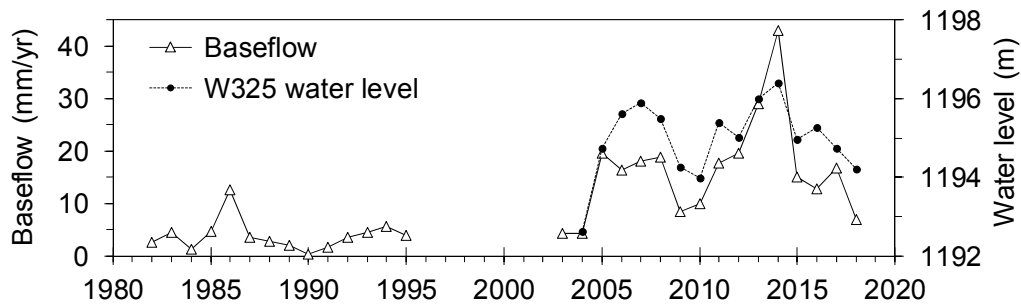
## Slow decline of groundwater levels in Rocky View County

As Rocky View Well Watch have entered the second decade of data collection, we can now see a decadal-scale trend of water levels in the county. Thank you very much for your time and efforts in sustaining the monitoring network for so many years. In the last edition of Groundwater Connections (May 2018), we saw that the fast decline of groundwater levels following the wet period of 2013-2014 had slowed in 2017. Figure 1 shows examples of water level in three wells in the western part of the county (W14, W20, and W39) and three wells in the central and eastern parts of the county (W17, W26, and W45). These graphs show the water level in each well relative to the average value over the whole period. In most years, water levels go up in spring or early summer in most years, as snowmelt or rain water recharges groundwater. The amount of recharge was higher during 2011-2014 than in other years, because we had a relatively large amount of snowmelt and rain in those years. In years with little or no recharge, water levels decline slowly mostly due to the natural release of groundwater to springs and creeks, but partly due to pumping. A slow but steady decline of water levels continued in 2018, and more than half of the wells in Rocky View Well Watch now have the lowest water levels recorded since 2008. This is part of the natural cycle and does not indicate an alarming condition. However, a decline in the water table can affect the flow of springs and small creeks, because the higher water table means higher pressure in the “hose” connecting aquifers to outflow points. As an example, Figure 2 shows the baseflow of West Nose Creek (the outline of the West Nose Creek watershed is shown in Figure 1).



**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).

Baseflow refers to the amount of flow in the creek when it is almost solely supplied by groundwater, such as in the late fall before freeze up. Baseflow is shown with a unit of mm per year, meaning that on average, that many mm of groundwater per unit area is discharged to the creek in a year. This can be compared to amounts of snow and rain we receive in a year, which is usually about 400 to 500 mm. Baseflow was highest in 2014, and declined afterwards. Changes in baseflow had a similar pattern to changes in the aquifer water level measured at W325 in Rocky View Well Watch, indicating the connection between baseflow and groundwater. There was a flow monitoring station in West Nose Creek during 1982-1995 at the exact same location. We see that the past ten years was indeed a wet period with high baseflow, and groundwater levels may be adjusting to a drier condition.



**Figure 2.** Baseflow measured in West Nose Creek and the water level in the well W325.

## New coordinator for Rocky View Well Watch

After three years of coordinating Rocky View Well Watch program, Brandon Hill moved onto a hydrology career in private sector. The experience working on many hydrology projects at the university is allowing him to use his skills in environmental monitoring at various field sites in Alberta.

His position has been taken up by our former field assistant, Evan Sieben. Evan is an Alumnus of the University in Calgary, who graduated in June of 2018 with a BSc degree in Geology. During his time as an undergraduate student he was able to work closely with Brandon, helping implement field equipment and monitor current sites such as the wells in Rocky View County. Evan was born and raised in Calgary, and likes its close proximity to the mountains for hiking in the summer and skiing in the winter. He is also an enthusiastic rugby player and spends many of his evenings in summer at practice and games. Evan has plans to continue his education by pursuing a graduate degree in Environmental Engineering while still working as the hydrogeology field technician with Masaki Hayashi.



New coordinator, Evan Sieben at a groundwater study site near Innisfail, along with local resident Diesel.

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