

The Effect and Sustainable Management of Simply Overdraft in Two Different Groundwater Observation Wells

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Abstract

The term overdraft has been defined as a situation in which groundwater extraction by pumping exceeds the aquifer charge over an extended period of time. Groundwater is the main source of drinking and utility water in rural areas, especially in arid and semi-arid regions. The aquifer is recharged by precipitation, rivers, and lakes. Causes such as the increase in temperatures due to climate change, decrease in precipitation, pollution of aquifers with wastes negatively affect the recharge of groundwater. When unlicensed wells and unconscious use of water in agriculture are added to all these reasons, which increase overdraft, the future of groundwater is endangered. For this reason, the sustainable management of groundwater is of great importance. In this study, changes in water levels were investigated by using the data of some observation wells within the borders of Uluova micro-basin in Elazığ Province, one of the sub-basins of the Fırat basin, one of the important basins of Turkey. The study was carried out by comparing the seasonal water level measurements of two different observation wells drilled at the same ground level in Yurtbaşı and Yazıkönak towns within the borders of the Uluova basin in 2011-2018. Seasonal water level measurements for each year in the relevant observation wells were made in September when the water level is the lowest and in April when the water level is the highest. In both observation wells, it was observed that groundwater levels dropped significantly in September, the end of the dry period. Except for 2018, it was observed that the water levels in the Yurtbaşı observation well in September and April decreased much more than the water levels in the Yazıkönak observation well. In the September 2018 measurement, the measurement could not be made because the water in the Yazıkönak observation well was completely exhausted. When the seasonal water changes in the wells are examined, it can be said that the seasonal water level change in the Yurtbaşı observation well is more pronounced, except for 2018. As a result, it was observed that the water level in both wells decreased with each passing year compared to the previous year. This shows that overdraft results should be investigated in more detail by examining different observation wells in the region. In addition, it has been understood that it is very important to create a management model for the sustainability of groundwater resources by using the data of other observation wells in the basin.

Keywords: Groundwater, Overdraft, Well, Sustainable management

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