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## Hydrologic Connection of the Edwards Aquifer between San Marcos Springs and Barton Springs, Texas

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### ABSTRACT

The Edwards Aquifer is the primary source of water for many needs in south-central Texas and is the source for several major springs. In developing a plan to manage discharge from San Marcos Springs, the concept and characteristics of a persistent hydrologic divide between the San Antonio and Barton Springs segments of the Edwards Aquifer have been questioned. To address these questions, a water-level data collection program was conducted. Water-level elevations indicate that a groundwater divide exists in the vicinity of the surface drainage divide between Onion Creek and Blanco River during wet and normal hydrologic conditions. However, data collected during the 2009 drought suggest that the groundwater divide dissipated and no longer hydrologically separated the two segments. As a result, there is potential for groundwater to flow past San Marcos Springs toward Barton Springs during major droughts. The groundwater divide appears to be influenced by recharge along Onion Creek and Blanco River, and appears to be vulnerable to extended periods of little or no recharge and pumping. The 2009 dataset shows very low gradients in the potentiometric surface between San Marcos Springs and Kyle with very little variation in levels between drought and non-drought periods. From Kyle northward, the potentiometric surface slopes significantly to the north and has dramatic changes in levels between drought and non-drought periods. Structural influences or hydraulic properties inherent in the aquifer appear to change significantly in the vicinity of Kyle, and may also influence the degree of hydrologic connection between San Marcos and Barton springs.

Land, L. F., B. B. Hunt, and B. A. Smith, 2010, Hydrologic connection of the Edwards Aquifer between San Marcos Springs and Barton Springs, Texas: Gulf Coast Association of Geological Societies Transactions, v. 60, p. 401-417.