MSEIP FIELD TRIP

Saturday April 9, 2016

Yongli Gao & Hongjie Xie
Department of Geological Sciences
The University of Texas at San Antonio

We will travel through the Texas Hill Country, the Balcones Fault Zone, the Blackland Prairie Ecological Region of Texas, and the South Texas plains. This field trip will include 5 stops detailed below.

Stop 1 is at Bear and Cub Caves in Stone Oak Park in the recharge zone of the Edwards aquifer. Looking at these natural cave openings gives an opportunity to begin our discussion of the regional geological and hydrological settings. The caves lie on the south flank of one of San Antonio’s flood control structures.

Stop 2 is at 337 Loop Road Cut, New Braunfels. Outcrops exposed in this area demonstrate typical formations of the Edwards Aquifer. We will discuss solution features of the Edwards limestone, the structure of the Balcones Fault Zone in the Texas Hill Country, and the structural and geological controls of the Edwards Aquifer.

Stop 3 is at Comal Springs, Landa Park, New Braunfels. This spring-fed ecosystem has the largest group of springs in the southwestern United States. All springs discharge from the Edwards Aquifer and are located mainly in Landa Park in New Braunfels. We will discuss hydrological features and their impact to endangered species and one of the largest habitat conservation projects in North America led by the Edwards Aquifer Authority (EAA) in Comal Springs.
Stop 4 is at the SAWS’ Aquifer Storage and Recovery (ASR) project in southern Bexar County. SAWS uses this site to temporarily stored Edwards aquifer groundwater in the Carrizo aquifer. The storage water is pumped from the Edwards aquifer during low demand periods and piped to the ASR facility. The stored water is ‘banked’ until drought conservation measures are implemented. Retrieval of the stored water to a degree can mitigate the impact of drought conservation measures on SAWS’ customers. The ASR and like operations involve a lot of hydrogeology and hydrologic engineering involving pipelines, pumps, storage tanks, wells, water chemistry, water treatment, monitoring.

Stop 5 is at the Olmos Basin well field, one of several areas in San Antonio where the San Antonio Water System (SAWS) has a cluster of water wells that pump water from the Edwards aquifer into the network of pipelines and storage tanks that make up the public-water system. We will discuss the relation between the water budget of the aquifer, water pressure in the aquifer, and the volumetric rate of discharge of water at these and other springs.

Scientists from EAA and SAWS will be invited to lead portions of the field trip to discuss multidisciplinary studies from local and regional geology, hydrological cycle and water budget, water management, ecology and habitat conservation, flood control, impacts of urban development and climate change to water resources, and hydraulic engineering efforts to provide water in the south-central Texas region.