

## **Rationale for a Bastrop County Public Interest stakeholder seat on the Colorado & Lavaca Rivers, Matagorda & Lavaca Bay Area Environmental Flows Stakeholder Group**

The segment of the Colorado River from the Bastrop County Line to just below the City of Bastrop is in one of the most critical ecological and hydrological sections of Central Texas and the Lost Pines Region. The Geological Atlas of Texas (Austin Sheet) reveals that the most abundant major groundwater aquifers in the region (the Carrizo-Wilcox Group) and the most significant surface water in the region (the Colorado River) intersect in Bastrop County.

Between Uteley, Texas (just above the bridge on Highway 969) and Piney Creek just upriver from Bastrop, Texas, the most abundant formations in the Wilcox Group come into direct connection with the river. The Simsboro formation directly intersects Wilbarger Creek and then the Colorado River at the confluence of the river and Wilbarger Creek, and again at the confluence of Big Sandy Creek.

The Calvert Bluff formation intersects with the river just down river from Big Sandy Creek and then indirectly connects with the river by way of the Colorado River alluvial aquifer from there down to the Piney Creek and Fisherman's Park in Bastrop, Texas. Several of the City of Bastrop water wells are located in the alluvial aquifer in Fisherman's Park.

Further down river, in the area of the Pines and Prairies Land Trust's Colorado River Refuge and down stream of the Missouri-Kansas-Texas railroad bridge, and continuing down river to the ColoVista Club and Golf Course, the Carrizo aquifer outcrops are in direct connection with the river.

All along the river in Bastrop County (and between these points of direct connection with the Wilcox Group and the Carrizo Sands), the Colorado River alluvium and fluvial deposits form a significant indirect connection between the river and this major aquifer group.

These "outcrop" areas represent the recharge zones for the Carrizo-Wilcox aquifer group. It is in these recharge zone that water is exchanged between the aquifers and the river. Currently the Colorado River is a "gaining" river in this zone because the aquifers are full and provide base-flow to the river. It is the base-flow of water from the aquifers in this area that make the Colorado River a "gaining" river from this point on to the coast by providing natural instream flows which then contribute to the freshwater inflows to the bay. Thus, from a water perspective, this area is a critical interface between the groundwater and surface water features.

The dynamics of this hydrological exchange between the groundwater and surface waters in Bastrop County become more critical as this aquifer group is being viewed by water planners as a major source of water for growing thirsty populations elsewhere in the region. Should over-pumping of this aquifer group occur to a significant extent the dynamics of this hydrology is expected to be reversed. The gaining nature of the river being contributed by base-flows from the Carrizo-Wilcox would likely be lost and the river would start losing water in this region to the aquifer. From an environmental flows perspective this would mean that the water that is naturally provided to keep the river and bay system healthy (ecologically sound) would no longer be available and other sources of water would be needed. During drought conditions, more flow would need to come from the Highland Lakes and return-flows. Stated another way, if the aquifers are over-pumped then the groundwater models indicate that the river will lose water to the aquifer as if there were a hole in the river that drains the water into the ground rather than a pipe from the ground that feeds the river. This would be a major hydrological and ecological shift.

In addition to the above hydrological aspects, this section of the river is ecologically important as critical habitat for the Blue Sucker fish. The up-river segment associated with the Wilcox recharge zone is also known to be a spawning areas for this fish because they (the fish) like the deep holes that are in the riverbed. It is the blue sucker that caused this section of the river to be classified by TCEQ with the highest water quality standards available in the State.