



Colorado River below Lady Bird Lake: Alluvium Case Study of Pathogens

Water Body	Colorado River below Lady Bird Lake (Seg 1428)
Location	Travis County
River Basin	Colorado River (14)
Contractor	Texas AgriLife Research, Texas Water Resources Institute (TWRI)
Project Period	August 1, 2011 to August 31, 2013
Project Total	\$245,746 (Federal 60% and Local Match 40%)

Background

The Colorado River below Lady Bird Lake is downstream of the downtown portion of the city of Austin. This segment of the river has been included on the 303(d) List of impaired water bodies since 2006 for exceeding the *E.coli* geomean standard.

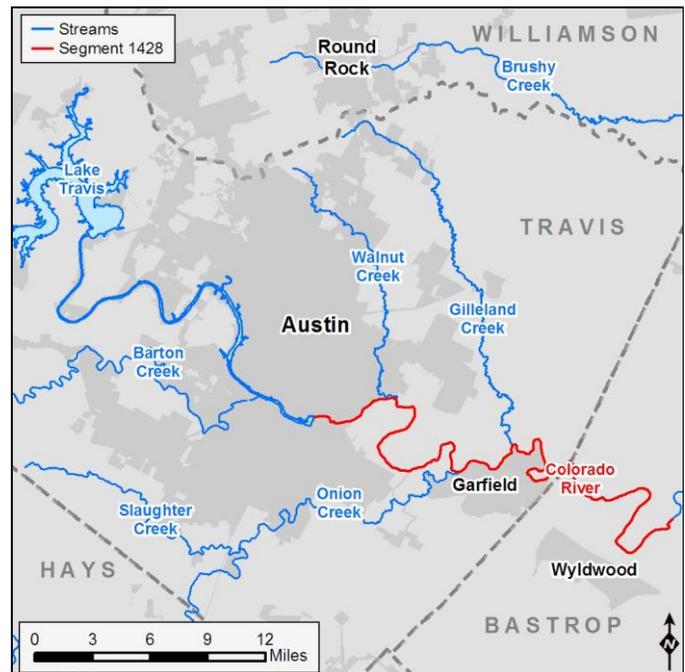
A recent study conducted on the Colorado River below Lady Bird Lake by researchers at the University of Texas (Sawyer et al., 2009) indicates that hydrologic connectivity between a river and its adjacent alluvial aquifer is very sensitive to changes in surface water flows, especially large daily releases from dams. The study demonstrates that dam operations alter the hydrological dynamics of riparian aquifers. However, little is known about how this connectivity affects the movement of pollutants between surface water and groundwater.

Project Description

This study investigated pathogen movement between the river and alluvial aquifer of the Colorado River below Lady Bird Lake as a case study. Findings from this segment may provide insight into these interactions in river segments with similar dam-influenced flows. Unfortunately, dam release practices changed between the 2009 Sawyer study and this project to involve much smaller daily dam releases in 2013 and 2014, so direct comparisons with the Sawyer findings were not possible.

This project is the assessment component of a two part study. The initial phase was conducted under section 604(b) of the Clean Water Act and was designed to gather the necessary studies and resources in order to initiate the water quality monitoring part of the proposed study.

Groundwater sampling was conducted over three 24-hour periods in 2013 and 2014 during which dam releases caused a temporary rise and fall in river stage. Groundwater chemistry as well as microbial data was



evaluated to determine mixing of surface water and groundwater and their constituents. A transect of wells at different distances from the river was sampled to determine how far from the river the groundwater was influenced. Water samples were analyzed for total coliforms, fecal coliforms and *E. coli*. For one sample set, testing for *Cryptosporidium* and for enteroviruses was also conducted.

Current Status

The project has been completed.

For More Information

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Project Highlights

- 08/2011 – The contract was initiated.
- Winter-Spring 2012 – Coordination meetings with project partners held.
- 01/2013 – Draft Monitoring QAPP submitted
- 05/2013 – Landowner agreement established with City of Austin
- 08/2013 – Final Monitoring QAPP approved
- 02/2014 – Well drilling completed
- 06/2014 – First data set submitted
- 10/2014 – Second data set submitted
- 02/2015 – Draft Pathogen Risk study submitted
- 03/2015 – Draft Final Report submitted
- 04/2015 – Public outreach materials submitted
- 05/2015 – Final Pathogen Risk study and Final Report approved.