

Effects of an off-stream watering facility on cattle behavior and instream *E. coli* levels

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Abstract

Excessive levels of fecal bacteria are the leading cause of water quality impairment in Texas, and livestock with direct access to water bodies are potentially a significant source of these bacteria. To help address this, the effect of providing alternative off-stream watering facilities to reduce manure, and thus bacterial, deposition in or near surface waters was evaluated from July 2007 to July 2009 in Clear Fork of Plum Creek in central Texas. An upstream-downstream, pre- and post-treatment monitoring design was used with off-stream water provided only during the second year of the study. Flow, *Escherichia coli* (*E. coli*) concentration, and turbidity were measured twice monthly. Cattle movements were tracked quarterly using global positioning system collars to assess the effect of providing alternative water on cattle behavior. Results showed that when alternative off-stream water was provided, the amount of time cattle spent in the creek was reduced 43%. As a result, direct deposition of *E. coli* into Clear Fork of Plum Creek was estimated to be reduced from 1.11×10^7 to 6.34×10^6 colony forming units per animal unit per day. Observed pre- and post-treatment instream *E. coli* loads suggested similar reductions; however, these reductions were not statistically significant.

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
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