

## TR-332

### Seymour Aquifer Water Quality Improvement Project Final Report

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The Seymour Aquifer is a shallow aquifer underlying over 300,000 acres in 20 counties in northwest central Texas. High nitrate concentrations are widespread in the Seymour Aquifer. Median nitrate levels in Knox, Haskell, Baylor, Hall, Wichita, Wilbarger, and Fisher counties exceeded the federal safe drinking water standard (10 mg/L NO<sub>3</sub>-N). This high concentration is a concern because although 90% of the water pumped from the aquifer is used for irrigation, it is also used as a municipal water source for the communities of Vernon, Burkburnett, and Electra and rural families in the region.

To address this threat, the Texas State Soil and Water Conservation Board (TSSWCB), with 319(h) grant funding provided by the Environmental Protection Agency (EPA), worked cooperatively with the Haskell, Wichita-Brazos, and California Creek Soil and Water Conservation Districts (SWCDs); U.S. Department of Agriculture - Natural Resources Conservation Service (NRCS); Texas AgriLife Extension Service (AgriLife Extension); Texas A&M AgriLife – Texas Water Resources Institute (TWRI); Rolling Plains Groundwater Conservation District; and Texas AgriLife Research (AgriLife Research) to encourage the installation of subsurface drip irrigation (SDI) systems and other best management practices (BMPs) to improve water quality (i.e. reduce nitrate) and increase water quantity in the Seymour Aquifer. The project provided technical and financial assistance to producers to implement SDI and other BMPs, education programs and demonstrations of methods for reducing nitrate infiltration and improving irrigation efficiency and an evaluation of the effectiveness of SDI implementation.

Considerable interest has been generated in SDI and other more efficient irrigation methods through the efforts of project partners. Through technical and financial assistance provided by the project through the TSSWCB and Haskell, Wichita-Brazos and California Creek SWCDs, 17 producers installed SDI systems on over 1,000 acres. In addition, irrigation management was implemented through the Water Quality Management Plans (WQMPs) developed

on over 1,800 acres and nutrient management was implemented on over 2,500 acres. NRCS also began funding irrigation improvements in Haskell, Knox, Baylor, Wilbarger, Hardeman and Foard counties through the Seymour Aquifer Special Emphasis Area. Since this Special Emphasis Area was established in 2004, over \$16 million dollars have been provided.

In addition to implementing BMPs, a very important component of this project was conducting educational programs and demonstrations. Through seven programs conducted between 2005 and 2008, AgriLife Research and AgriLife Extension provided educational programs and demonstrations on nutrient management and irrigation management to 671 participants. The establishment of the permanent SDI demonstration site at the Chillicothe Station will ensure that these programs are sustained for many years to come and offer producers in the Texas Rolling Plains additional crop production options to enhance economic returns and water quality, and improve their quality of life.

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TWRI and the [Texas A&M Institute of Renewable Natural Resources](#) are working together to foster and communicate research and educational outreach programs focused on water and natural resources science and management issues in Texas and beyond.

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