

Water Grand Challenges: Water Governance

Non-point Source Pollution and Watershed Management

Background – A watershed is a region in which the surface water drains into a similar geographic area.¹ All land masses feed into some body of water that comprise a watershed describes how the water travels to eventually supply streams, rivers, lakes, aquifers, and oceans.¹ Watersheds are vital to the ecological health of a region and everyone lives in a watershed. Both dissolved and insoluble substances within a watershed, including pollutants and runoff, ultimately end up in the water supply. In the State of Texas, ecological protection is under the auspices of the Texas Commission on Environmental Quality (TCEQ), and the Texas Water Development Board (TWDB) oversees planning. Current and projected population growth requires comprehensive watershed management in order to ensure resource availability in the future.²

Federal Watershed Policy –Texas currently has no provisions for comprehensive watershed protection. There are, however, state and federal statutes which govern watersheds in the United States. The [Clean Water Act of 1977](#) has several sections that indirectly effect how watersheds are managed regarding both point and nonpoint source pollution. [Section 303\(d\)](#) requires states to develop a list of impaired waters that are too polluted, or otherwise degraded, to meet certain quality standards. A Total Maximum Daily Load (TMDL) is a calculation of the maximum amount of a pollutant that can be present in a water body and still meet water quality standards. A TMDL is the current load that results in the standards set through federal and state regulation being exceeded. It is the target load to achieve water quality standards.³

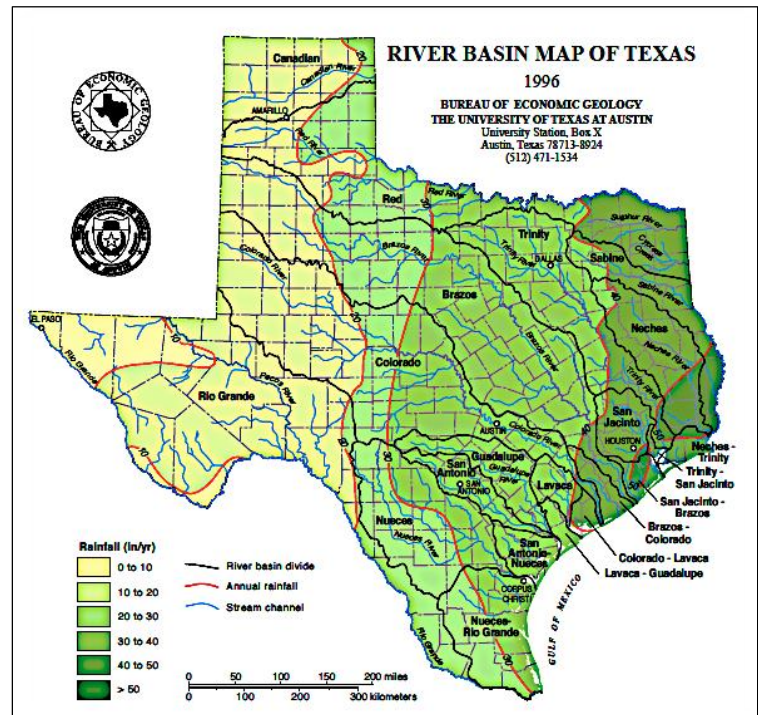


Figure 1: River Basins and Watershed in Texas⁴

Additionally, [Section 319 \(Nonpoint Source Management Program\)](#), recognizes the need for greater stewardship of environmental quality. Under this section, states and territories receive

grant money to support various activities, including education, training, technical assistance, and monitoring to assess nonpoint pollution.⁵ This can help ameliorate the watershed impairment through actions taken at the local level, through federal means. The [Watershed Protection and Flood Prevention Act of 1954](#), (amended in 1956 and 1958), provides planning assistance and construction funding for local projects that deal with flood control management infrastructure. While this act does deal directly with watersheds, it does little to ensure any form of control over the quality of the water supply that watersheds feed.⁶ The [National Pollutant Discharge Elimination System \(NPDES\)](#) Permitting Policy addresses watershed-based activities from a variety of issues unique to each individual region.

State and Local Watershed Policy – It is often left to local authorities and communities to protect their own watershed. In many cases there is no policy put in place at all. In many western states like Colorado, Oregon, state-level watershed regulations are in place.^{7,8} In Texas, there is no mandated requirement for the protection of entire watersheds (including wildlife, etc.); there are, however, some regional approaches. Austin, Texas passed its first watershed ordinance in 1980 with the [Lake Austin Watershed Ordinance](#). This ordinance helped manage the health of the Lake Austin watershed by regulating zoning and development. The watershed was particularly vulnerable because Lake Austin was, and continues to be, the primary water source for the city. The ordinance set minimum standards for development to reduce soil erosion, reduce runoff volumes and velocities, reduce vegetation loss, reduce pollutant concentrations in the runoff, prevent structural deficiencies of buildings built on slopes that could cause erosion of land, and prevent unacceptable wastewater discharges from reaching the lake.⁹ Other regional examples of watershed protection in Texas include [Coordinated Watershed Protection in Southeast and South Central Texas](#) through the Texas State Soil and Water Conservation Board (TSSWCB) and the [Regional Ecosystem Framework](#) developed by the [North Central Texas Council of Government](#).

¹ EPA. [What is a Watershed](http://water.epa.gov/type/watersheds/whatis.cfm). <http://water.epa.gov/type/watersheds/whatis.cfm>> accessed May 17, 2013

² Texas Water Development Board. [Watershed Protection for Texas Reservoirs](#). #1004831120 January 2012.

³ 33 USC § 1313 - [Water quality standards and implementation plans](#). ch. 758, title III, § 303, as added Pub. L. 92–500, § 2.

⁴ The Bureau of Economic Geology. “River Basin Map of Texas.” University of Texas at Austin, 1996.

⁵ EPA. [Clean Water Act Section 319](#). 2014 and subsequent section 319

⁶ Natural Resource Conservation Service. United States Department of Agriculture. [Watershed and Flood Prevention Operations Program](#). 2013

⁷ Colorado Water Conservation Board. "Monitoring and Enforcement." cwcb.state.co.us/environment/instream-flow-program (accessed May 24, 2013).

⁸ Oregon Water Resources Commission. *Oregon's integrated water resources strategy*. Salem: Oregon Water Resources Department, 2012.

⁹ Robbins, R.W., Glicker, J.L., Bloem, D.M., and B.M. Niss. 1991. [Effective Watershed management for Surface Water Supplies](#). AWWA. Research Foundation and American Water works Association. Pg 319-328.