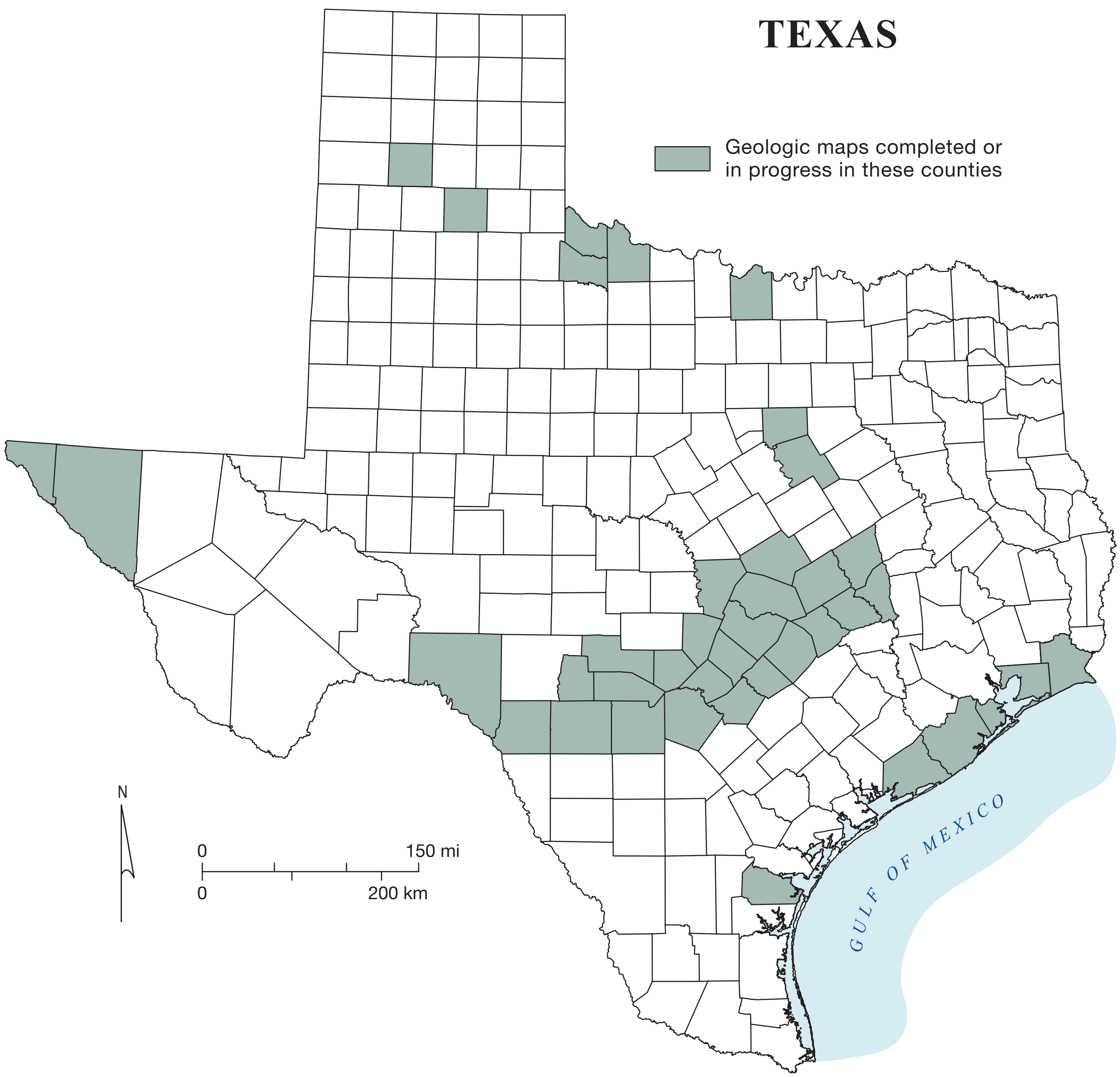
National Cooperative Geologic Mapping Program

STATEMAP Component: States compete for federal matching funds for geologic mapping



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Summary of STATEMAP Geologic Mapping Program in Texas

Federal Fiscal Year	Project Title	State Dollars	Federal Dollars	Total Project Dollars
1993	El Paso STATEMAP Project New Braunfels STATEMAP Project	$43,769 52,297	$24,821 31,412	$68,590 83,709
1994	El Paso STATEMAP Project New Braunfels STATEMAP Project	52,152 50,287	44,164 35,000	96,316 85,287
1995	El Paso STATEMAP Project	60,636	51,000	111,636
1996	Digital Geologic Map of New Braunfels Geologic mapping of karst aquifer areas	25,910 85,849	20,974 79,421	46,884 165,270
1997	Geologic mapping of critical aquifers	122,785	96,169	218,954
1998	Geologic mapping of critical aquifers	120,714	120,874	241,588
1999	Geologic mapping of urban corridors and critical aquifers	119,915	106,049	225,964
2000	Geologic mapping of urban corridors and critical aquifers	96,278	93,194	189,472
2001	Geologic mapping of urban corridors and critical aquifers	147,088	147,088	294,176
2002	Geologic mapping of critical aquifers	100,000	100,000	200,000
2003	Geologic mapping of critical aquifers and areas of special environmental concern	115,043	112,669	227,712
2004	Geologic mapping of critical aquifers	14,805	14,805	29,610
2005	Geologic mapping of critical aquifers and areas of environmental concern	214,795	214,795	429,590
2006	Geologic mapping of critical aquifers and areas of environmental concern	108,134	108,134	216,268
2007	Geologic mapping of urban corridors, Southeast Austin corridor	46,785	46,752	93,537
2008	Geologic mapping of areas of environmental concern and population corridors: Port Arthur–Port Bolivar (year 1) and South Fort Worth (year 1) corridors	182,550	181,389	363,940
2009	Geologic mapping of areas of environmental concern and population corridors: South Fort Worth (year 2) corridors	114,473	114,473	228,946
2010*	Geologic mapping of population corridors and areas of environmental concern: Matagorda-Matagorda Southwest and South Forth Worth (year 3) corridors	78,641	78,491	157,132
	TOTALS	**$2,052,873**	**$1,821,647**	**$3,874,520**

**Project to begin November 2010; therefore, matching figures are estimated.*

The STATEMAP program, part of the National Cooperative Geologic Mapping Program, has benefited Texas by increasing the State's coverage of detailed geologic maps. Geologic mapping for this program has been conducted in areas where high-quality geologic maps provide important data that support responsible decision-making regarding the utilization of land and natural resources. Management of water resources, land-use planning, identification of sources of aggregate and other earth resources, recognition of areas prone to foundation problems, and evaluating changes in sensitive coastal environments are a few examples of the many uses of geologic maps. Map study areas include the Texas coast, central and west Texas areas that are undergoing rapid urban development, areas of major and minor aquifers throughout the State, State parks, and areas of special environmental concern. Mapping priorities are set by the Texas STATEMAP Advisory Panel whose membership is made up of staff from many State agencies.

Geologic maps are made available to the public at a scale of 1 inch to 2,000 feet (1:24,000) and 1 inch to 1.6 miles (1:100,000). Some maps are available in a digital, Geographic Information System (GIS) format. A program goal is to eventually have all new Texas maps in a GIS format to fulfill the needs of users. Geologic maps are used by professionals in geology, hydrology, engineering, urban planning, archeology, biology, and related fields, as well as policy makers, teachers, students, and laypersons. For example, a recent geologic map of the northern Edwards aquifer of Central Texas has been used by staff at the Texas Water Development Board for groundwater availability modeling, has been used by consulting geologists and landowners for land use planning and property evaluations, and has been used to develop teaching exercises for middle school students. Uses of this map, The Geologic Map of the West Half of the Taylor, Texas, 30 × 60 Minute Quadrangle: Central Texas Urban Corridor, Encompassing Round Rock, Georgetown, Salado, Briggs, Liberty Hill, and Leander, include (a) identification of aquifer recharge areas; (b) characterization of attributes and heterogeneities within aquifer strata; (c) location and characterization of faults; (d) information for water-management decisions regarding groundwater flow and aquifer response to pumpage and recharge; (e) improved planning and permitting related to land-use activities such as construction, design of foundations, and siting of landfills and other waste-disposal sites; and (f) location of construction materials. An example for applied use of this geologic map involves work by the Texas Water Development Board (TWDB) for groundwater availability modeling of the northern segment of the Edwards aquifer, a faulted, karst, limestone aquifer composed of three Cretaceous-age formations. Staff of the TWDB used the map and mapping data to help define the geologic framework of the aquifer, an important aspect of their modeling studies. Mapped geologic units, faults and displacement information, cross sections, and thickness changes of the aquifer units determined during the mapping study provided important information for the surface to subsurface structural and geologic framework of the aquifer. Subsequent to the surface mapping, a derivative map illustrating the elevation of the top of the subsurface aquifer sequence was constructed using geologic map data, borehole data, and knowledge of the stratigraphy of the map area. The derivative map provided additional subsurface information on the aquifer's geologic framework.