

Open-File Report 03-315

Database of Historically Documented Springs and Spring Flow Measurements in Texas

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Introduction

Springs are naturally occurring features that convey excess ground water to the land surface; they represent a transition from ground water to surface water. Water issues through one opening, multiple openings, or numerous seeps in the rock or soil.

The database of this report provides information about springs and spring flow in Texas including spring names, identification numbers, location, and, if available, water source and use. This database does not include every spring in Texas, but is limited to an aggregation of selected digital and hard-copy data of the U.S. Geological Survey (USGS), the Texas Water Development Board (TWDB), and Capitol Environmental Services.

Purpose and Scope

The USGS developed this database in cooperation with the TWDB to provide interested parties and the general public with a verified source of data regarding springs and spring flow in Texas. Collection of data was limited to digital data from the USGS, TWDB, and Capitol Environmental Services, and to hard-copy data of the USGS. These data were aggregated into a singular digital database. The Texas Parks and Wildlife Department (TPWD) provided additional support for the release of Version 1.2.

Approach

Data sources were limited to digital spreadsheets from the TWDB and Capitol Environmental Services, the USGS National Water Information System (NWIS), and hard-copy annual Water-Data Reports and Water-Supply Papers of the USGS. Digital sources were imported, and hard-copy sources were manually entered into a digital database.

To remove duplicate spring and spring flow records and improve the accuracy and precision of the data, a number of data quality assurance techniques were used. Database queries and geographic information system (GIS) proximity analyses were used to match duplicate spring records. Digital raster graphics (DRGs) (7.5-minute) were used to improve the accuracy of spring locations. Additionally, the attributes of spring records that match existing NWIS records were updated to improve accuracy; in some cases, NWIS attributes were updated if they were less accurate than those in the database. Spring flow measurements were limited to three significant figures when converting from cubic feet per second to gallons per minute.

Results

After removal of duplicate spring records, 1,891 springs populate the final database (fig. 1). All spring locations have been assigned an NWIS site identification number. In addition, 6,924 spring flow measurements, 543 alternate names, and 295 alternate identification codes are contained in the database. Unless modified through use of DRGs as described above, data accuracy is dependent on the original source. This database should not be used to make final decisions on the existence of springs in Texas. Other springs exist in Texas, but were not recorded in this project, because of the few sources of data. Additional data sources currently are being developed by Capitol Environmental Services, but were not complete at the time of publication of this report.

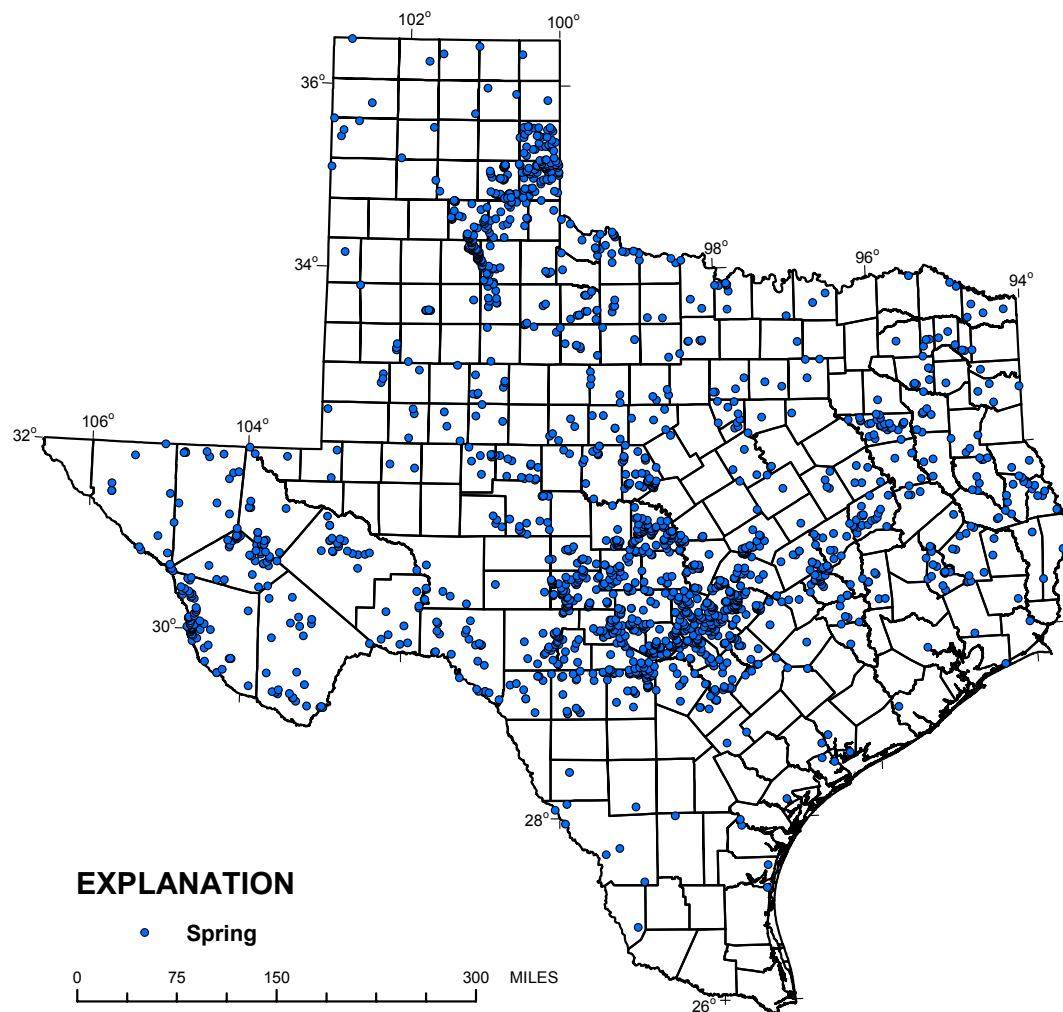


Figure 1. Locations of springs in Texas.

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TX-84, v. 1-3; TX-85, v. 1-3; TX-86, v. 1-3; TX-87, v. 1-3; TX-88, v. 1-3; TX-89, v. 1-3; TX-90, v. 1-3; TX-91, v. 1-3; TX-92, v. 1-3; TX-93, v. 1-3; TX-94, v. 1-3; TX-95, v. 1-3; TX-96, v. 1-3; TX-97, v. 1-3; TX-98, v. 1-3; TX-99, v. 1-5; TX-00, v. 1-5; TX-01, v. 1-5.