

A Compilation of non-USGS Environmental Spatial Data, Fort Cobb Reservoir Watershed, Southwestern Oklahoma

By Carol J. Becker

Abstract

This chapter of the U.S. Geological Survey report “Assessment of Conservation Practices in the Fort Cobb Reservoir Watershed, Southwestern Oklahoma” contains spatial layers describing groundwater, surface-water, and other types of environmental information collected in the Fort Cobb Reservoir watershed and the encompassing upper Washita River Basin. The upper Washita River Basin covers about 8,311 square kilometers in parts of Beckham, Caddo, Canadian, Comanche, Custer, Dewey, Grady, Kiowa, and Washita Counties in southwestern Oklahoma.

This collection of 12 spatial layers was created from information compiled from Oklahoma state agencies and the U.S. Environmental Protection Agency STORET (short for STORage and RETrieval) Legacy and Modern databases. The spatial layers do not contain information collected by the U.S. Geological Survey. The purpose of these spatial layers is to provide environmental information in a format that can be easily queried and used for environmental assessment and decision making. Four spatial layers describe well sites and related tabular files contain well information, depth-to-water measurements, and groundwater quality. Eight spatial layers describe surface-water sites and related tabular files contain water-property values and concentrations of major and minor ions, nutrients, trace elements, and pesticides. Additional tabular files contain habitat-assessment data, fish surveys, pesticide concentrations in fish tissue, macroinvertebrate surveys, and concentrations of organic compounds in sediment. The spatial layers are provided in shapefiles and related tabular files are provided in dBASE format.

Introduction

This chapter of the U.S. Geological Survey (USGS) report “Assessment of Conservation Practices in the Fort Cobb Reservoir Watershed, Southwestern Oklahoma” contains spatial layers describing groundwater, surface-water, and other types of environmental information collected in the Fort Cobb Reservoir watershed and encompassing upper Washita

River Basin (fig. 1). The upper Washita River Basin covers about 8,311 square kilometers in parts of Beckham, Caddo, Canadian, Comanche, Custer, Dewey, Grady, Kiowa, and Washita Counties in southwestern Oklahoma.

This collection of 12 spatial layers was created from information compiled from Oklahoma state agencies and the U.S. Environmental Protection Agency STORET (short for STORage and RETrieval) Legacy and Modern databases. The spatial layers do not contain information collected by the U.S. Geological Survey. All USGS surface-water and groundwater data collected in the Fort Cobb Reservoir watershed and upper Washita River Basin are provided in the USGS report by Becker and others (2007). The purpose of these spatial layers is to provide environmental information that has been collected in a format that can be easily queried and used for environmental assessment and decision making. Four spatial layers describe well sites and can be related to tabular files that contain well information, depth-to-water measurements, and groundwater quality (fig. 2) (tables 1 and 2). Eight spatial layers describe surface-water sites and can be related to tabular files that contain water-property values and concentrations of major and minor ions, nutrients, trace elements, and pesticides (fig. 3) (tables 2 and 3). Additional tabular files contain habitat assessment data, fish surveys, pesticide concentrations in fish tissue, macroinvertebrate surveys, and concentrations of organic compounds in sediment (table 3). The spatial layers are provided in shapefiles and related tabular files are provided in dBASE format.

The spatial layers can be displayed on personal computers with geographic information system software. The spatial layers are provided in shapefile format and tabular files are provided in dBASE format. The information in the tabular files can be associated to the sites by using a shared attribute described in the metadata. Documentation files, referred to as metadata, are located in the “METADATA” directory. These files contain attribute definitions and other detailed information about the spatial layers and related tabular files. This report contains approximately 24 megabytes of data stored on one compact disc.

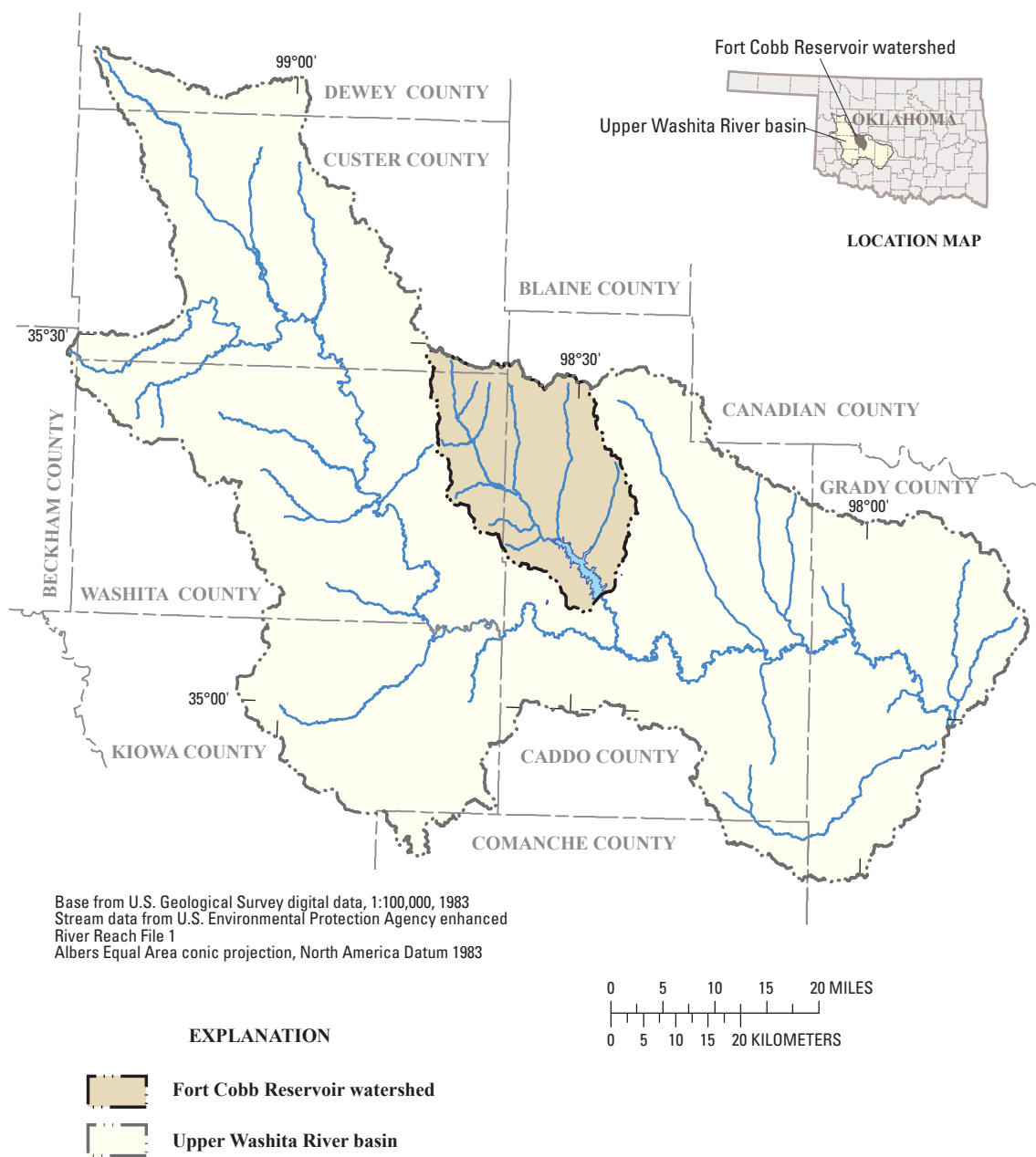


Figure 1. Location of the Fort Cobb Reservoir watershed and the upper Wichita River Basin, southwestern Oklahoma.

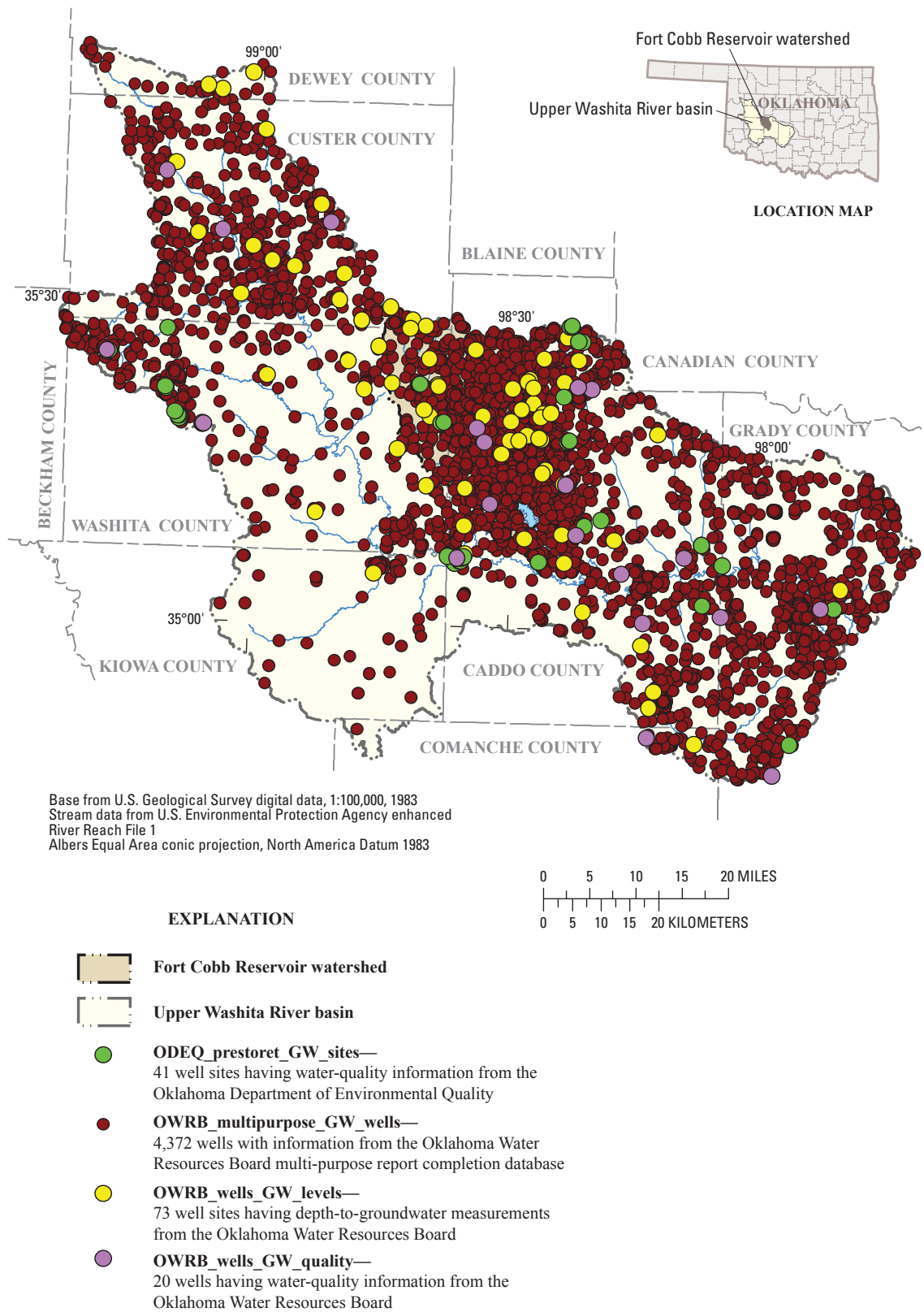


Figure 2. Groundwater sites described in shapefiles created from information compiled from Oklahoma State agencies and the U.S. Environmental Protection Agency STORET (STORage and RETrieval) Legacy and Modern databases for the Fort Cobb Reservoir watershed and the upper Washita River Basin, southwestern Oklahoma.

4 A Compilation of non-USGS Environmental Spatial Data, Fort Cobb Reservoir Watershed, Southwestern Oklahoma

Table 1. Shapefiles and associated tabular files containing information relating to well sites and groundwater in the Fort Cobb Reservoir watershed and upper Washita River Basin, southwestern Oklahoma.

Groundwater shapefiles ¹	Description	Related tabular files in dBase format
ODEQ_prestoret_GW_sites	41 well sites having water-quality information from the Oklahoma Department of Environmental Quality	ODEQ_prestoret_GW_quality.dbf
OWRB_multipurpose_GW_wells	4,372 wells with information from the Oklahoma Water Resources Board multipurpose report completion database	OWRB_lithology_desc.dbf
OWRB_wells_GW_levels	73 well sites having depth-to-groundwater measurements from the Oklahoma Water Resources Board	OWRB_GW_levels.dbf
OWRB_wells_GW_quality	20 wells having water-quality information from the Oklahoma Water Resources Board	OWRB_GW_quality.dbf

¹ Each shapefile is composed of seven files; all seven files must be included when moving a shapefile to a personal computer.

Table 2. Tabular files with information about groundwater, surface water, and other environmental substrates that relate to groundwater and surface-water shapefiles in the upper Washita River Basin, southwestern Oklahoma.

Tabular data files in dBase format	Description	Related shapefiles
Groundwater		
ODEQ_prestoret_GW_quality.dbf	Water-quality information for ground-water samples	ODEQ_prestoret_GW_sites
OWRB_GW_levels.dbf	1,398 depth-to-groundwater measurements for 73 wells from the Oklahoma Water Resources Board	OWRB_wells_GW_levels
OWRB_GW_quality.dbf	Groundwater quality data for 20 wells from the Oklahoma Water Resources Board	OWRB_wells_GW_quality
OWRB_lithology_desc.dbf	Lithology descriptions from the Oklahoma Water Resources Board multipurpose report completion database	OWRB_multipurpose_GW_wells
Surface water		
OCC_prestoret_SW_quality.dbf	Water-quality information for surface-water samples	OCC_prestoret_SW_sites
OCC_SW_comment_1990_2006.dbf	Comments and observations concerning information collected at stream sites by the Oklahoma Conservation Commission	OCC_SW_sites
OCC_SW_nutrient_1990_2006.dbf	Nitrogen and phosphorus compound concentrations in surface water from the Oklahoma Conservation Commission	OCC_SW_sites
OCC_SW_pesticide_1998_1999.dbf	Pesticide concentrations measured in surface water from the Oklahoma Conservation Commission	OCC_SW_sites
OCC_SW_phys_prop_1990_2006.dbf	Physical-property measurements in surface water from the Oklahoma Conservation Commission	OCC_SW_sites
OKCORPCOM_prestoret_SW_quality.dbf	Water-quality information for surface-water samples	OKCORPCOM_prestoret_SW_sites
OWRB_prestoret_SW_quality.dbf	Water-quality information for surface-water samples	OWRB_prestoret_SW_sites
OWRB_SW_wq_parameter.dbf	Descriptions of water-quality properties and constituents measured in surface-water samples from the Oklahoma Water Resources Board	OWRB_SW_sites
OWRB_SW_wq_result.dbf	Water-quality information collected at surface-water sites from the Oklahoma Water Resources Board	OWRB_SW_sites

Table 2. Tabular files with information about groundwater, surface water, and other environmental substrates that relate to groundwater and surface-water shapefiles in the upper Washita River Basin, southwestern Oklahoma.—Continued

Tabular data files in dBase format	Description	Related shapefiles
OWRB_SW_wq_sample.dbf	Contains sample numbers to relate sites in the shapefile OWRB_SW_sites to water-quality information in OWRB_SW_wq_result.dbf	OWRB_SW_sites
STORET_legacy_SW_major_ion.dbf	Concentrations of major ions measured in surface-water samples	STORET_legacy_SW_sites
STORET_legacy_SW_nutrient.dbf	Information about nitrogen and phosphorus compounds measured in surface-water samples	STORET_legacy_SW_sites
STORET_legacy_SW_phys_prop.dbf	Information about physical properties of water at surface-water sites	STORET_legacy_SW_sites
STORET_legacy_SW_trace_element.dbf	Information about trace elements in water collected at surface-water sites	STORET_legacy_SW_sites
STORET_modern_SW_quality.dbf	Water-quality information collected at three stream sites	STORET_modern_SW_sites
USFWS_SW_major_ion.dbf	Concentrations of major ions measured in surface-water samples	USFWS_SW_sites
USFWS_SW_nutrient.dbf	Concentrations of nutrient compounds measured in surface-water samples	USFWS_SW_sites
USFWS_SW_phys_prop.dbf	Information about physical properties of water at surface-water sites	USFWS_SW_sites
USFWS_SW_trace_element.dbf	Concentrations of trace elements measured in surface-water samples	USFWS_SW_sites
Other environmental substrates		
OCC_SW_fish_1990_2004.dbf	Fish types and counts from the Oklahoma Conservation Commission	OCC_SW_sites
OCC_SW_habitat_1993_2004.dbf	Habitat assessment information from the Oklahoma Conservation Commission	OCC_SW_sites
OCC_SW_macroinvert_1990_2004.dbf	Numbers and types of aquatic macroinvertebrates collected during habitat assessment by the Oklahoma Conservation Commission	OCC_SW_sites
STORET_legacy_sediment.dbf	Concentrations of organic compounds measured in sediments	STORET_legacy_SW_sites
STORET_legacy_tissue.dbf	Information about organic compounds measured in 30 tissue samples collected from fish at five surface-water sites	STORET_legacy_SW_sites

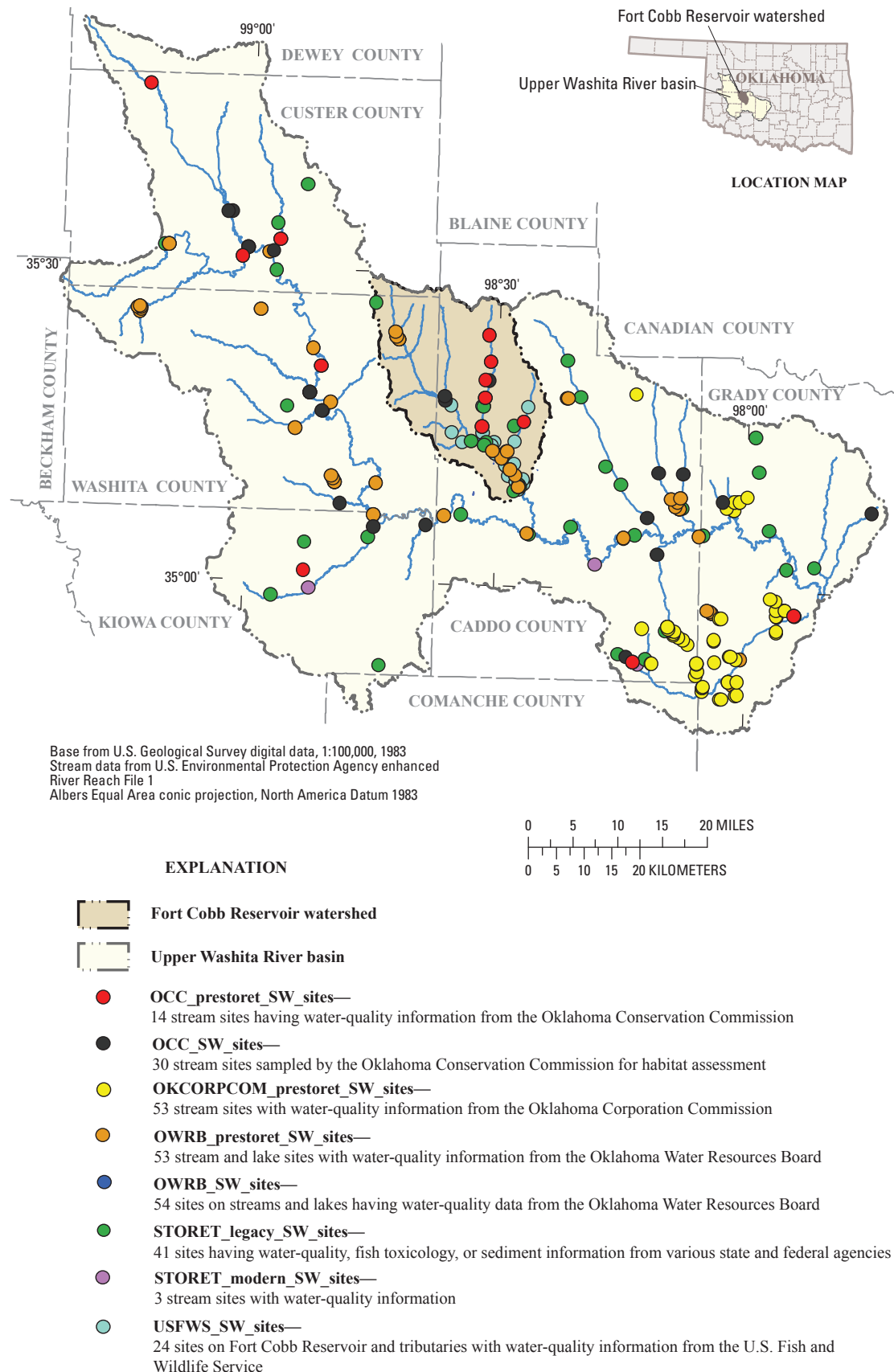


Figure 3. Surface-water sites described in shapefiles created from information compiled from Oklahoma State agencies and the U.S. Environmental Protection Agency STORET (STORage and RETrieval) Legacy and Modern databases for the Fort Cobb Reservoir watershed and the upper Washita River Basin, southwestern Oklahoma.

Table 3. Shapefiles and associated tabular files containing information collected at surface-water sites in the Fort Cobb Reservoir Watershed and upper Washita River Basin, southwestern Oklahoma.

Surface-water shapefiles ¹	Description	Related tabular files in dBase format in table 2
OCC_prestoret_SW_sites	14 stream sites having water-quality information from the Oklahoma Conservation Commission	OCC_prestoret_SW_quality.dbf
OCC_SW_sites	30 stream sites sampled by the Oklahoma Conservation Commission for habitat assessment	OCC_SW_comment_1990_2006.dbf OCC_SW_fish_1990_2004.dbf OCC_SW_habitat_1993_2004.dbf OCC_SW_macroinvert_1990_2004.dbf OCC_SW_nutrient_1990_2006.dbf OCC_SW_pesticide_1998_1999.dbf OCC_SW_phys_prop_1990_2006.dbf
OKCORPCOM_prestoret_SW_sites	53 stream sites with water-quality information from the Oklahoma Corporation Commission	OKCORPCOM_prestoret_SW_quality.dbf
OWRB_prestoret_SW_sites	53 stream and lake sites with water-quality information from the Oklahoma Water Resources Board	OWRB_prestoret_SW_quality.dbf
OWRB_SW_sites	54 sites on streams and lakes having water-quality data from the Oklahoma Water Resources Board	OWRB_SW_wq_sample.dbf OWRB_SW_wq_result.dbf
STORET_legacy_SW_sites	41 sites having water-quality, fish toxicology, or sediment information from various state and federal agencies	STORET_legacy_SW_major_ion.dbf STORET_legacy_SW_nutrient.dbf STORET_legacy_SW_phys_prop.dbf STORET_legacy_SW_trace_element.dbf
STORET_modern_SW_sites	3 stream sites with water-quality information	STORET_modern_SW_quality.dbf
USFWS_SW_sites	24 sites on Fort Cobb Reservoir and tributaries with water-quality information from the U.S. Fish and Wildlife Service	USFWS_SW_major_ion.dbf USFWS_SW_nutrient.dbf USFWS_SW_phys_prop.dbf USFWS_SW_trace_element.dbf

¹ Each shapefile is composed of seven files; all seven files must be included when moving a shapefile to a personal computer.

Non-USGS Environmental Spatial Data

Data Quality Statement

The spatial datasets were compiled from many different data sources with varying quality. Users need to check the metadata to determine proper use of these data. These data were not collected by the USGS and were not checked for accuracy or completeness. Should a question of accuracy or completeness arise, the user should contact the originator cited in the metadata.

Data Organization

A_NOTICE.txt -- Liability disclaimer.

A_README -- This file.

/GROUNDWATER_SHAPES/ -- Shapefiles that can be related to tabular files containing information relating to well sites and groundwater (table 1).

/METADATA/ -- Documentation describing shapefiles and tabular data files. Federal Geographic Data Committee (1994) metadata files in text document format.

/SURFACEWATER_SHAPES/ -- Shapefiles that can be related to tabular files containing information relating to surface-water sites (table 3).

/TABULAR_DATA/ -- Tabular data files (table 2).
 /GROUNDWATER/ -- Tabular data files
 with information about well sites and groundwater.
 /SURFACE_WATER/ -- Tabular data files
 with information collected at surface-water sites.
 /OTHER_ENVIRON/ -- Tabular data
 files with information about other
 environmental substrates.

Geometric Registration

The Albers Equal-Area Conic map projection (Snyder, 1987) is used as the base projection for all spatial layers included in this publication. This projection frequently is used for spatial-map datasets within the conterminous United States because of the visual presentation and equal-area characteristic, which facilitates areal analysis. This projection slightly distorts shapes and distances (scale) to maintain equal-area properties. Scale is true along the standard parallels, which are to the north and south of Oklahoma. Scale distortion in Oklahoma reaches a maximum of slightly less than 1 percent at the northern border of the State (Snyder, 1987). Table 4 provides map projection information.

Table 4. Albers Equal Area Conic map projection parameters.

Spheroid	Geodetic Reference System 1980
Datum	North American Datum 1983
First standard parallel	29° 30' 00" North
Second standard parallel	45° 30' 00" North
Central meridian	96° 00' 00" West
Latitude of projection origin	23° 00' 00" North
False easting	0
False northing	0
Planimetric units of measure	Meters

References Cited

Becker, C.J., Masoner, J.R., and Scott, J.C., 2007, Digital atlas of the upper Washita River Basin, southwestern Oklahoma: U.S. Geological Survey Data Series 270, 3 DVDs, available online at <http://pubs.usgs.gov/ds/270/>.

Federal Geographic Data Committee, 1994, Content standards for digital geospatial metadata (June 8): Federal Geographic Data Committee, Washington, D.C., 78 p.

Snyder, J.P., 1987, Map projections—A working manual: U.S. Geological Survey Professional Paper 1395, 383 p.