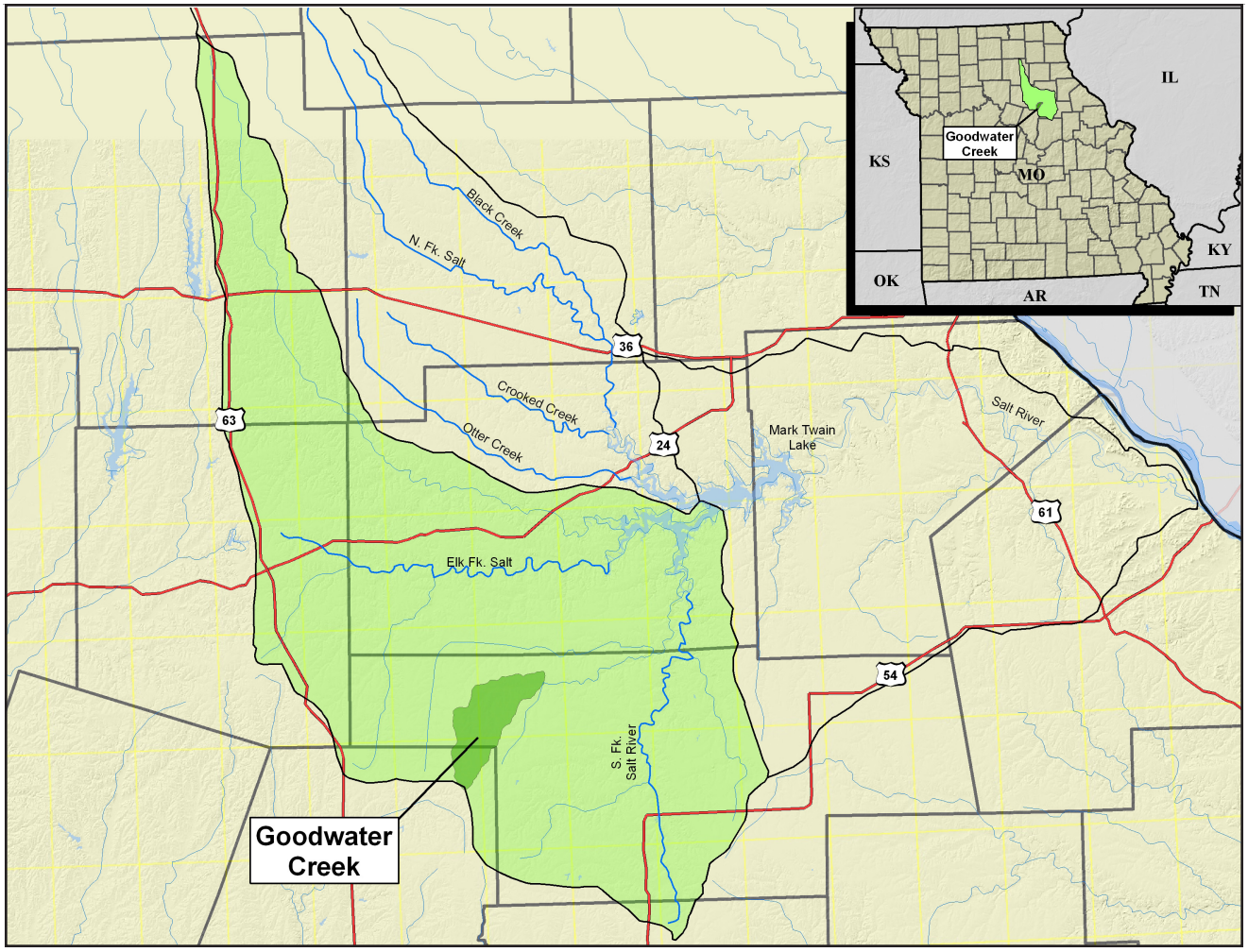
United States Department of Agriculture

Conservation Effects Assessment Project (CEAP)

Watershed Fact Sheet

Goodwater Creek Watershed, Missouri: 2005-2008

A CSREES* Competitive Grant Watershed, one of 37 CEAP watershed projects.



CEAP Assessment

Watershed Description

- Audrain and Boone County, Missouri. It includes part of the town of Centralia (population 3,700).
- 18,000 acres
- 80% cropland: primarily corn, soybeans, sorghum, wheat, and hay
- Livestock operations: two cattle operations
- Other land uses: Conservation Reserve Program (fescue or warm season grasses), urban and residential, wood

*Cooperative State Research, Education, and Extension Service

A majority of the soils in the watershed have a high content of shrink-swell clays in the subsoil and are referred to as clay pan soils. This claypan layer, usually located one to two feet below the soil surface severely restricts water infiltration and increases runoff potential.

Water uses: Goodwater Creek drains in to Mark Twain Lake which is an important water supply source for several towns and public water supply districts in Northeast Missouri. Approximately 40,000 people receive water from Mark Twain Lake. The lake provides currently 2.5 millions gallons of drinking

Newell Kitchen, soil scientist with USDA-ARS, demonstrates how to collect water from a groundwater testing well. August 2006.

Gene Alberts and Ken Sudduth with USDA-ARS, explain how soil characteristics vary within a research field of Goodwater Creek.

water per day, but has the capacity of delivering 16 million gallons a day. Mark Twain Lake is also used for recreation. Mark Twain Lake watershed is also the subject of an USDA-Agricultural Research Service (ARS) CEAP study.

Issues: Nonpoint source pollution from atrazine, nutrients, and sediment moving with surface runoff impact drinking water supplies and recreational uses.

Approach

- Statistical analysis of long-term ARS data for flow (1970-present) and water quality (1992-present) to detect trends and relationships with implementation of best management practices (tillage systems, terraces, grassed waterways).
- Watershed modeling using SWAT (Soil and Water Assessment Tool).
- Landscape modeling using APEX (Agricultural Policy/Environmental eXtender).
- Farm operator survey to determine factors that lead to the implementation of a best management practice or to a change in the farm operator behavior.
- Development of a watershed management plan and a curriculum on watershed management.

Communicating Results

- Six or more published papers
- Posters and presentations at regional and annual meetings
- Three annual reports
- Field days, public watershed meetings, place mats, and newspaper articles

Collaborators

- University of Missouri
  - School of Natural Resources
  - Dept. of Soil, Environmental, and Atmospheric Sciences
  - Dept. of Rural Sociology
  - Dept. of Agricultural Economics
  - Outreach and Extension
- USDA-ARS, Cropping Systems and Water Quality Research Unit
- Watershed landowners and farm operators
- USDA-NRCS Missouri state and Audrain and Boone County offices

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http://www.nrcs.usda.gov/technical/nri/ceap/