



North Central Texas Water Quality Project

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Background

Water quality in North Central Texas reservoirs is a growing concern

Six of the major reservoirs in the Trinity River basin managed by Tarrant Regional Water District (TRWD) now serves **1.6 million** people across 11 counties (Ft. Worth and surrounding cities) and are expected to serve **2.66 million** by 2050

Watersheds need to develop comprehensive management plans

Objectives

Assemble information on sediment and nutrient loads for specific TRWD managed reservoirs and associated streams.

Use computer modeling to analyze the biological, physical, and economic feasibility of alternative management practices and facilities.

Identify the parameters that are discharged from point source (i.e. municipal and industrial wastewater treatment plants) that may affect water quality in TRWD reservoirs

Conduct public meetings and provide educational programs about water quality protection and stakeholders and customers

Study Area



Cedar Creek Reservoir Data

The lakewide median chlorophyll was 17.1 µg / liter, and a parametric trend model estimated a lakewide rate of increase of 8.4% APR ($R^2 = 0.465$, $P < 0.0001$).

The lakewide median total phosphorus was 0.09 mg P / liter, and a parametric trend model estimated a lakewide rate of increase of 3.6% APR ($R^2 = 0.557$, $P < 0.0001$).

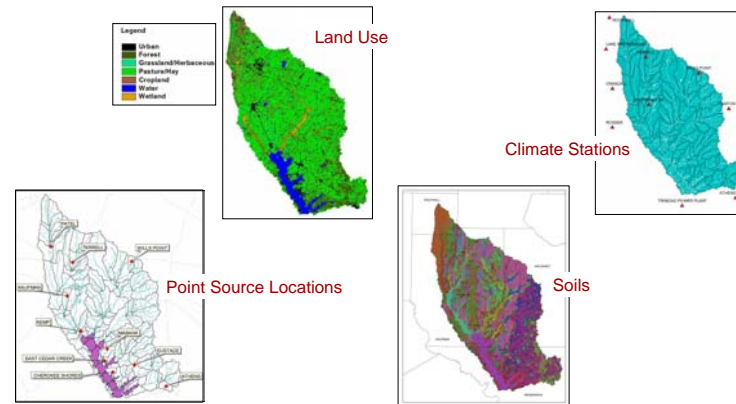
Model Development

A suite of three EPA-supported computer models is being used:

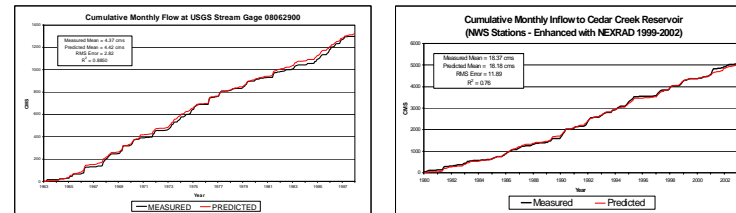
- 1. SWAT** to model watersheds for both point source and nonpoint source nutrient and sediment loads,
- 2. QUAL2E** to route and attenuate the SWAT-generated loadings of the water supply reservoir, and
- 3. WASP** to take these loadings and forecast the impact to the reservoirs.

SWAT Modeling

Basic watershed information has been gathered and incorporated into SWAT for Cedar Creek



Calibration and Validation are Completed on SWAT



Application of Complete Integrated Model

Once the 3 models (SWAT, QUAL2E, and WASP) are integrated, nutrient/sediment reduction scenarios will be run with varying nonpoint source and/or point source loadings

This approach will consider best management practices for nonpoint sources control and best available technologies for point source control

Economic Analysis

Conducting financial and budget analyses to estimate costs and returns for alternative management practices simulated with SWAT, QUAL2E, and WASP

Education/Outreach

Developed 2 publications on Watershed Management and Stormwater Management



Conducted 2-day training on Watershed Management and Nonpoint Source Pollution for County Extension Agents, USDA personnel, and Soil and Water Conservation Districts

Constructed stream trailer and educated 816 youth and adults in Tarrant County (Ft. Worth) and Cedar Creek Watershed



Conducted 2-day training on Watershed Management and Nonpoint Source Pollution for County Extension Agents, USDA personnel, and Soil and Water Conservation Districts

Delivered soil testing campaign to producers and homeowners in Cedar Creek Watershed

Upcoming Activities

Develop local stakeholder groups

Develop additional publications for nonpoint source pollution sources

Enhance public education and participation in developing watershed management plan

Funding Agencies

United States Environmental Protection Agency
United States Department of Agriculture – NRCS

For More Information

Project Website -- <http://nctx-water.tamu.edu/>