

Rivers & Streams Monitoring

FACT SHEET

OWRB
the water agency

River and stream monitoring data are important indicators for determining compliance with water quality standards, tracking general water quality trends, and identifying pollution problems. Historically, most water quality monitoring performed by the Oklahoma Water Resources Board has targeted sites at bridges over large rivers and streams. Unfortunately, obtaining data from targeted monitoring is not the best way to ascertain the condition of Oklahoma's water.

An integrated approach to monitoring is required to answer the big questions:

How good is Oklahoma's stream water quality?

What is the condition of all rivers and streams in Oklahoma?

For statistical survey monitoring, randomly selected rivers and streams across the entire state are sampled. These sites are selected by a computer program, where each stream site has an equal probability or chance of being targeted for monitoring. This approach is very similar to how public opinion polls are conducted for large groups of people, where the data from a relatively small, representative, random sample are used to describe the characteristics of a much larger population.

The goal of Oklahoma's Rivers & Streams Probabilistic Monitoring Program is to provide statistically sound, unbiased information on the health of streams and rivers across Oklahoma. At each site, a broad suite of parameters is collected to assess the condition of the stream. These parameters include the following:

Water Chemistry

Water samples are taken from each stream site and analyzed for a variety of parameters, such as nutrients, metals, minerals, alkalinity, hardness, turbidity, dissolved oxygen, pH, and specific conductivity. Varied collections occur during each biological sampling event.

Algae Collection

Samples are collected and analyzed for types and amounts of algae present in both the water column and on the bottom substrate. Two collections occur, one each during summer and winter months.

Macroinvertebrate Collection

Aquatic macroinvertebrates (e.g., insects) are collected from various habitats within each stream reach. Two collections occur, one each during summer and winter months.

Fish Collection

Fish are collected from each stream reach using seines or electrofishing equipment (if water conditions permit). Most fish are identified in the field, including all large fish. Only unidentifiable fish and voucher specimens are removed and kept for later identification. At selected sites, some predator fish may be kept for fish tissue analysis. One collection occurs between mid-May and October.

Physical Habitat Assessment

A visual habitat assessment is performed at each stream reach, which involves measuring and estimating several characteristics of the stream, such as stream substrate composition, stream width and depth, canopy cover, bank vegetation, stream discharge, erosion, and riparian condition. Varied collections occur during each biological sampling event.



Collection of biological samples at a statistical survey monitoring site.

Data Application

Data collected through the Probabilistic Monitoring Program are used both locally and nationally. In 2004, Oklahoma participated in the National Wadeable Stream's Assessment (<http://www.epa.gov/owow/streamsurvey/>), which was led by the US Environmental Protection Agency. The program was further developed in 2005-2007 as a cooperative effort led by the OWRB through partnerships with the Oklahoma Conservation Commission and the Office of the Secretary of Environment. From 2008-2009, Oklahoma participated in the National Rivers and Streams Assessment, sponsored by the USEPA. The most recent study occurred from 2010-2012 and included results from the recent national assessment. During the current study Oklahoma will participate in the National Rivers and Streams Assessment sponsored by the EPA.



www.owrb.ok.gov/monitoring