



## How the USGS Can Help

The USGS is the primary Federal agency responsible for scientific evaluation of the natural resources of the United States, including its water and biological resources. Many of its current programs provide the foundation upon which the Water Census of the United States can be built. The agency has a diverse cadre of scientists and technicians who work on aspects of the status and trends of freshwater quality and quantity for the Nation's human and environmental needs at the local, State, regional, and national levels. The USGS also has an existing infrastructure from which it can conduct a regular inventory of natural resources and water use, including water quantity, quality, and environmental water needs, in partnership with local, State, and regional water and environmental agencies. The USGS has the skills needed to better define the geologic framework of aquifers, physical characteristics of watersheds, geochemical aspects of soil, land-cover change, land-use practices, and related environmental factors, all



**Discharge measurement during drought conditions.** A USGS streamgager measures discharge at North Fork Little Wind River near Fort Washakie, Wyoming, August 28, 2002. Photo by Jerrod Wheeler, U.S. Geological Survey.

of which affect the movement of water and its quality. The USGS also has the biological capabilities needed to relate the presence of individual species, groups of species, and ecosystem function to the quantity, quality, and timing of water movement as well as environmental habitat requirements of those organisms. Its research on past climate variability enables the USGS to provide scientific

understanding and modeling perspectives for expected changes in water availability due to ongoing climate fluctuations. USGS ground-water flow models are the international standard and, when coupled with watershed, water-quality, and ecosystem models, will enable decisionmakers to better predict the consequences of water- and land-use decisions.

## USGS Science Can Meet the Challenge

### The USGS is ready to take action by:

- Defining the water needs of the Nation's natural landscapes and changing environments, and relating the quantity, quality, and temporal variability of water to ecosystem structure and function.
- Expanding its capabilities for collection of data on the status of and trends in water quantity, quality, and use by humans and biota, and making the information available to decisionmakers and the public in increasingly useful, nationally consistent formats.
- Promulgating the systematic identification and mapping of changes in land cover and land use in the United States on a continuous basis and relating these changes to the availability of water resources for human and environmental needs.
- Documenting changes in the water-storage and -retention capabilities of aquifers and watersheds through the development and use of advanced technologies such as geophysics and remote sensing.
- Refining existing ground-water and watershed models and developing new modeling techniques that accurately characterize system interactions, identify uncertainties, and forecast changes in the hydrologic cycle to provide resource managers with improved tools for predicting the consequences of their management decisions.
- Designing and developing a Water Census of the United States in cooperation with local, State, regional, and other Federal agencies that provides these partners, policymakers, communities, and citizens with a regularly updated, nationally consistent inventory of the Nation's freshwater resources.

## A Vision For the Future

An enhanced, fully integrated, real-time data-collection network is supplemented by remote sensing, analyses and models based on long-term records, and improved water-use and -demand information. The USGS provides the Nation with a comprehensive view of the status of and trends in the quantity and quality of its freshwater supply to facilitate a flexible and informed response by water decisionmakers to a wide range of challenges and ensure that local, State, and regional water needs are met.

### For Additional Information

U.S. Geological Survey, 2007, *Facing Tomorrow's Challenges—U.S. Geological Survey Science in the Decade 2007–2017*: Available online at <http://pubs.er.usgs.gov/usgspubs/cir/cir1309>

Also, visit the USGS home page at <http://www.usgs.gov/>