



A National Water Census

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Sustainable Water Resources
Roundtable
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U.S. Department of the Interior
U.S. Geological Survey

Water Census: A comprehensive accounting of the changing availability, quality, and use of the water resources of the United States.

Water Availability: The determination of the quantity of water, with sufficient quality and timing characteristics, to meet both human and ecological needs.

Primary Water Census questions:

Does the Nation have an adequate quantity of water, with sufficient quality and timing-characteristics, to meet both human and ecological needs?

Will this water be present to meet both existing and future needs?

USGS objective for the Water Census is to place the technical information and tools into stakeholders hands that allow them to evaluate water availability for the questions that they are facing.

USGS Circular 1223: Concepts for National Assessment of Water Availability

<http://pubs.usgs.gov/circ/circ1223/>

Circular 1309: Facing Tomorrow's Challenges – U.S. Geological Survey Science in the Decade 2007 – 2017

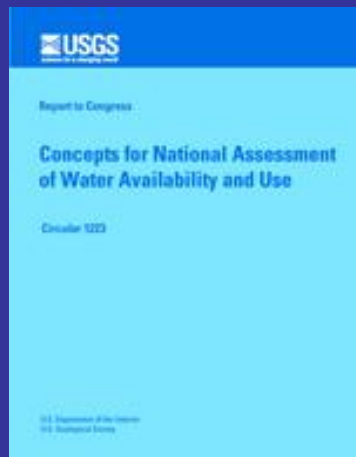
<http://pubs.usgs.gov/circ/2007/1309/>

The SECURE Water Act [P.L. 111-11 , 123 Stat. 991.]

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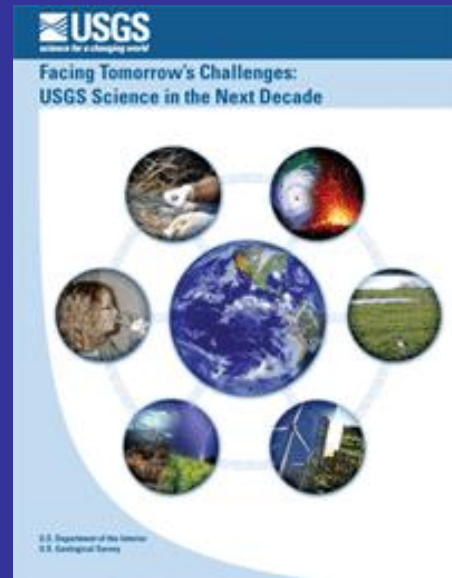
2002 Report to Congress

Circular 1223 proposed to Congress to organize studies around the 21 Water Resource Regions that generally follow the major river basins of the Nation.



A Water Census of the United States: Quantifying, Forecasting, and Securing Freshwater for America's Future

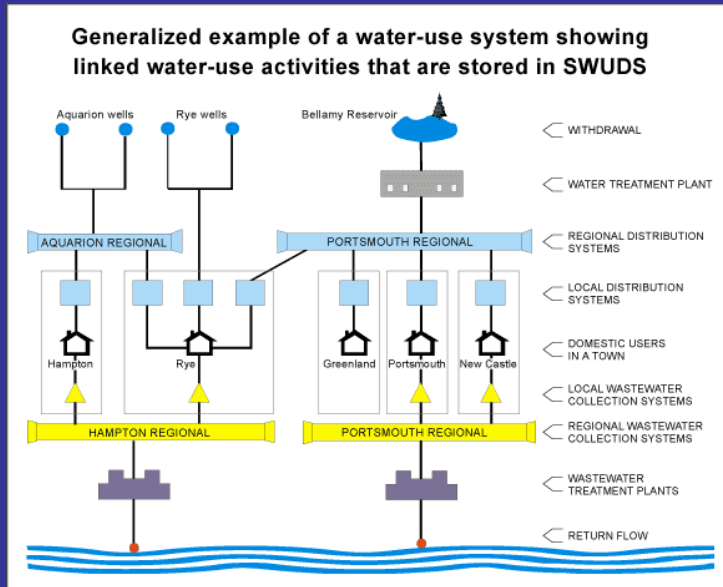
- The **status** of freshwater resources and how they are changing,
- Water use** for human, environmental, and wildlife needs,
- How freshwater availability is related to **natural storage and movement of water** as well as engineered infrastructure,
- The location of **water sources not commonly thought to be a resource** that might provide freshwater for human and environmental needs, and
- Forecasts** of likely outcomes of water availability, quality, and aquatic ecosystem health due to changes in land use and cover, natural and engineered infrastructure, water use, and climate.



Water for America

Areas of Emphasis for Science Resources

Water Use Science



Ecological Flows



Congress said they recognized
the importance of the work in
Water for America

But recommended USGS submit a
more integrated program request in
a future budget.

H.R. 146 Subtitle F
(SECURE Water Act as passed by the House March 25, 2009)

Section 9501: Findings

Section 9502: Definitions

Section 9503: Reclamation Climate Change and Water Program

Section 9504: Water Management Improvement

Section 9505: Hydroelectric Power Assessment

Section 9506: Climate Change and Water Intergovernmental Panel

Section 9507: Water Data Enhancement by United States Geological Survey

Full National Streamflow Information Program.

Creates a National Groundwater Resources Monitoring Program and a Brackish Groundwater Assessment.

Section 9508: Water Availability Assessments

Creates a national program to study water quality and quantity.

Requires first report in 2012 and every 5 years thereafter.

Grants are available to assist state agencies in developing and integrating state water use data.

Section 9509: Research Agreement Authority

Section 9510: Effect

Section 9507: Water Data Enhancement by United States Geological Survey

*Directs USGS to fully implement the **National Streamflow Information Program**.*

Establishes a base network of 4,700 gages funded directly through federal appropriation.

*Creates a **National Groundwater Resources Monitoring Program** for each “major aquifer system,” and a **Brackish Groundwater Assessment**, with a report in 2 years.*

Section 9508: Water Availability Assessments

*Directs creation of a **national program to study water quality and quantity**. Describes a significant water use component. Requires first report in 2012 and every 5 years thereafter.*

*Includes a grant authority for state water resource agencies. **Grants** are available to assist state agencies in **developing and integrating state water use data** with datasets maintained by the DOI for the Water Availability Assessments.*

Section 9508 of SECURE Water calls for a National Water Availability and Use Assessment Program

1. Assessment of the status of the water resources of the United States;
2. Quantity of water that is available for beneficial uses;
3. Quality of the water resources of the United States;
4. Long-term trends in water availability;
5. For each long-term trend - a more accurate assessment of the change in the availability of water
6. Develop the basis for an improved ability to forecast the availability.

Report- Not later than December 31, 2012, and every 5 years thereafter:

1. The **current availability** of water resources in the United States,
2. **Significant trends** affecting water **availability**, including documented or projected impacts as a result of global climate change,
3. The **withdrawal and use** of surface water and groundwater by various sectors,
4. **Significant trends** relating to each **water use** sector, including significant changes in water use due to the development of new energy supplies,
5. **Significant water use conflicts or shortages** that have occurred or are occurring,
6. Each **factor** that has **caused**, or is causing, a conflict or shortage.

Where do we go from here?

- Bring all of the existing plans and legislative mandates together.
- Integrate existing science efforts to bring more resources to bear on water availability questions.
- Develop an implementation plan for the Water Census

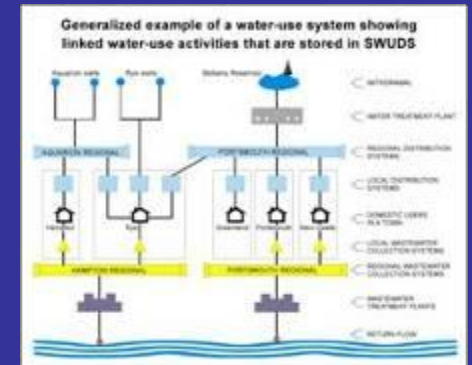
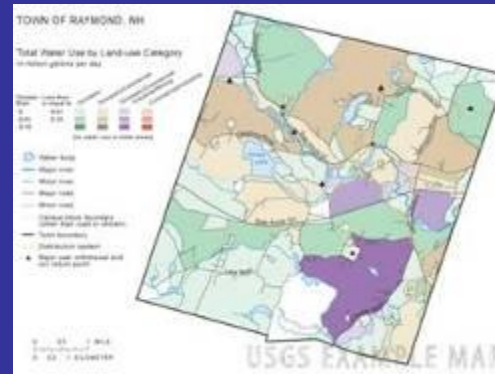
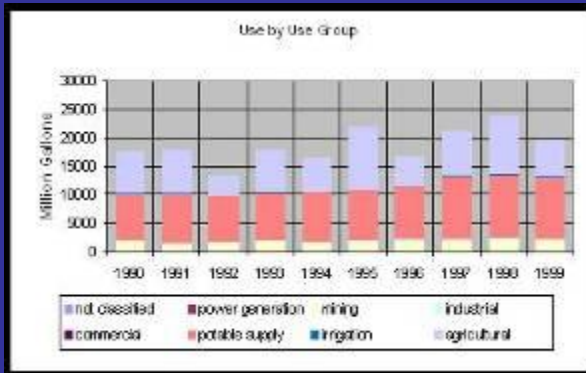
Enhancing the Nation's Water Use Information

Use New Methods to Estimate Water Use

- Stratified Random Sampling
- Regression Models

Develop models of water use based on land use

Ability to track water from point of withdrawal thru to return of flow.



Estimates of Consumptive Use by Categories
Map and Quantify Interbasin Transfers and Return Flows
Develop a strong Geospatial Component
Develop a stronger Trends Component

- a database of hydrologic indicators, addressing:
 - Precipitation
 - Evapotranspiration
 - Water in storage in snowpack, icefields, and large lakes
 - Ground-water level indices
 - Rates of ground-water recharge
 - Changes in ground-water storage
 - Stream and river run-off characteristics
 - Stream and river baseflow characteristics
 - Total water withdrawals by source
 - Interbasin Transfers
 - Consumptive Uses
 - Return Flows
 - Impaired sw and gw supplies used for existing demands;

New Water Use Initiative

Flows Needs for Wildlife and Habitat

- Classify the streams across the nation for their hydro-ecological type
- Systematically examine the ecological affects of hydrologic alteration
- Develop flow alteration – ecological response relationships for each type of river or stream.

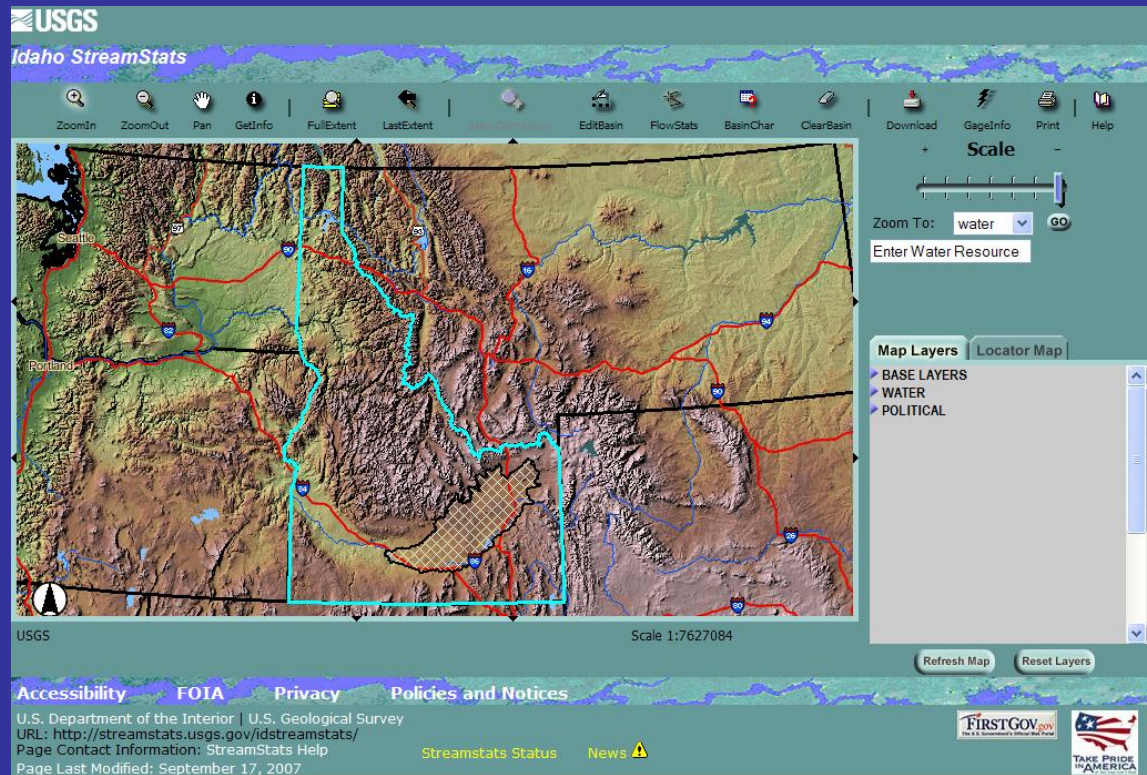


StreamStats

an application for delivering water availability information at scales that are relevant to the user

Use the strength of the StreamStats application to deliver the information on:

- Precipitation
- Runoff
- Baseflow
- Trends
- Integrating upstream
 - Withdrawal
 - Use
 - Consumption
 - Return flow



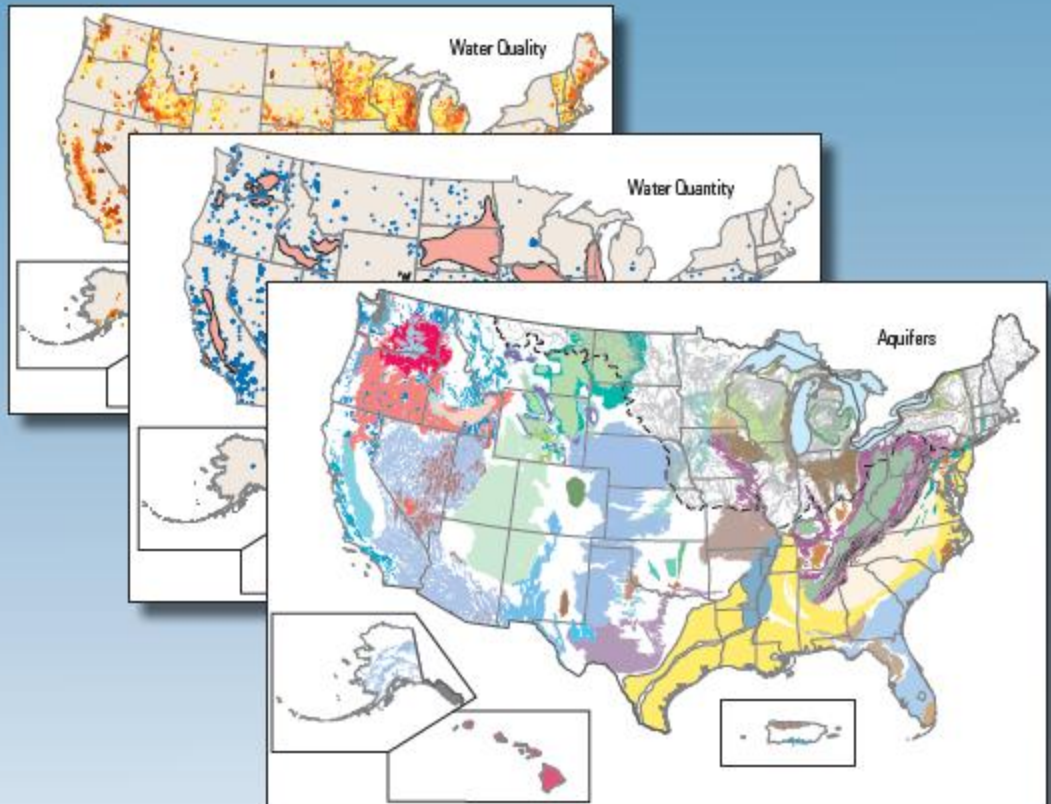
Regional Groundwater Assessments

Use the strength and enhance the resources within this program to provide the information on:

- Recharge
- GW yields
- Changes in storage.
- Saltwater Intrusion
- Trends in GW Indices
- Artificial Recharge
- Brackish and Saline Resources
- GW/SW Interactions
- Ecological Flows

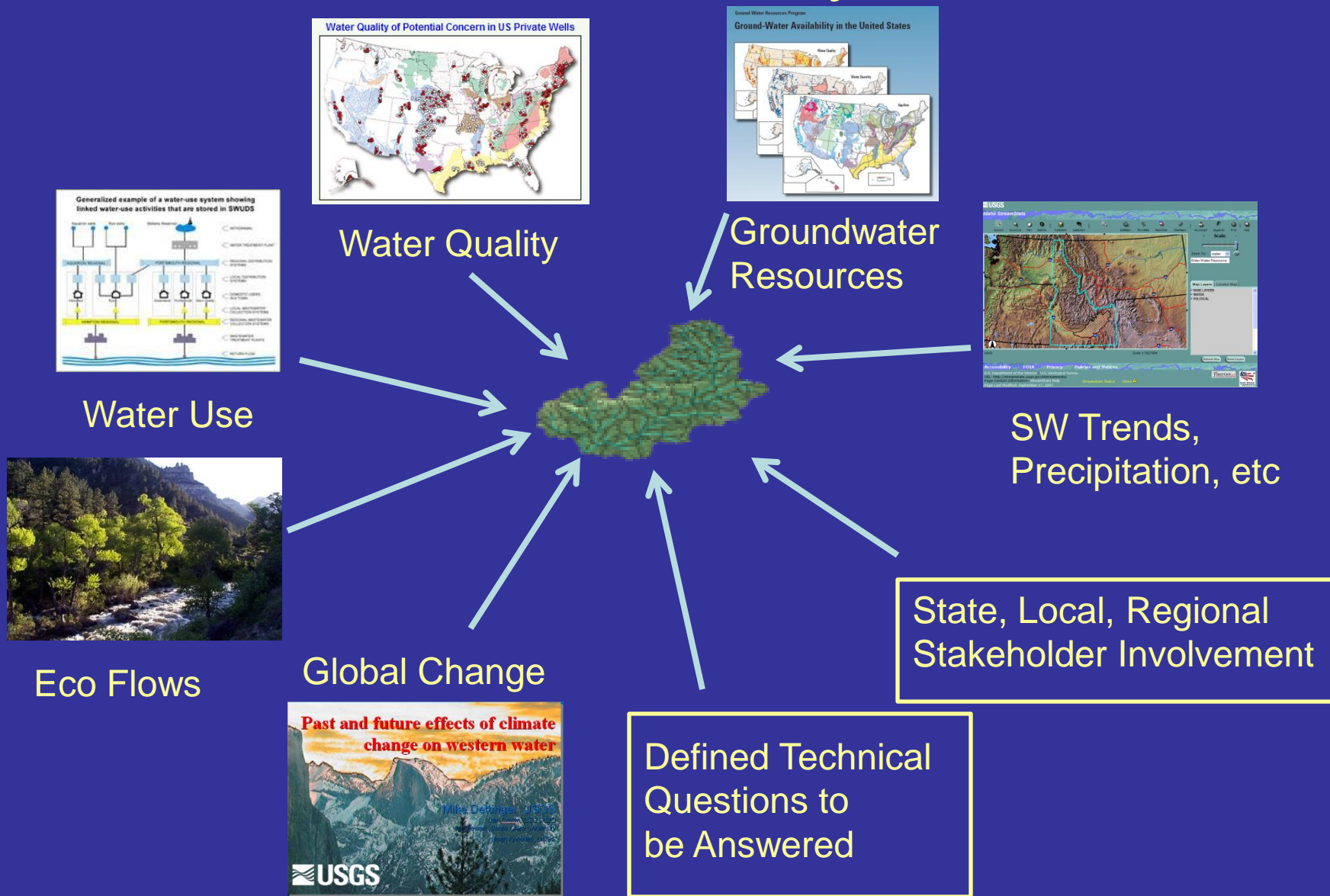
Ground-Water Resources Program

Ground-Water Availability in the United States



Finally, a series of studies focused on selected watersheds where there is significant competition over water resources. Here, the USGS will work collaboratively with stakeholders to comprehensively assess the technical aspects of water availability.

Focused Water Availability Assessments



The objective is to place the information and tools into stakeholders hands to answer the questions they are facing.



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