



USGS Water-Quality Information

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USGS collects data at the Birds Point-New Madrid Floodway

Search the USGS Water sites:

Noteworthy

National & Regional Science:

- **NEW** Circular 1383-G: USGS Water Science Strategy – Observing, Understanding, Predicting, and Delivering Water Science to the Nation
- **NEW** OFR 2013-1054: User's Manual for the National Water Information System of the USGS
- **NEW** New water-quality test for preventing unnecessary beach closures
- OFR 2012-5228: Organic contaminants, trace and major elements, and nutrients in water and sediment sampled in response to the Deepwater Horizon oil spill
- Fact Sheet: Tracking and Forecasting the Nation's Water Quality Priorities and Strategies for 2013–2023

Local Science Features:

- New Hampshire: [Concentrations of Chloride and Sodium in Groundwater in New Hampshire From 1960 Through 2011](#)
- Arkansas: [No Contamination from Fayetteville Shale Exploration Found in Sampled Wells](#)

[Past listings...](#)

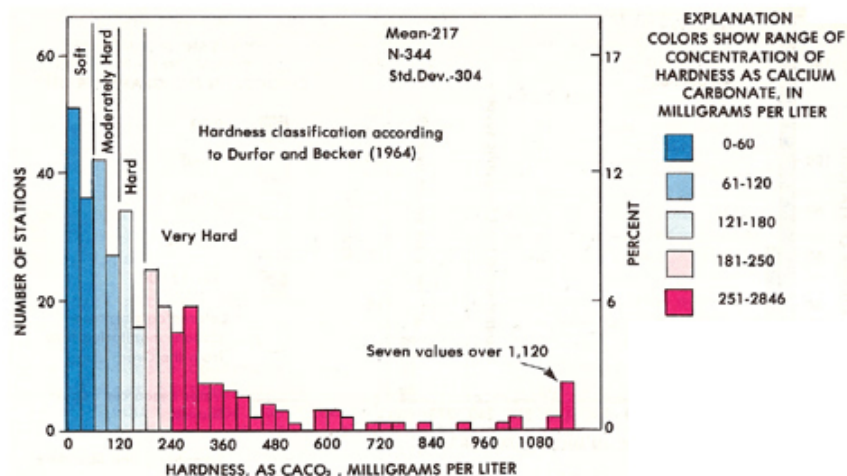
Water Hardness and Alkalinity

- [Water Hardness](#)
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Water Hardness

Many industrial and domestic water users are concerned about the hardness of their water. Hard water requires more soap and synthetic detergents for home laundry and washing, and contributes to scaling in boilers and industrial equipment. Hardness is caused by compounds of calcium and magnesium, and by a variety of other metals. General guidelines for classification of waters are: 0 to 60 mg/L (milligrams per liter) as calcium carbonate is classified as soft; 61 to 120 mg/L as moderately hard; 121 to 180 mg/L as hard; and more than 180 mg/L as very hard.

Mean values of hardness at 344 stations during the 1975 water year are represented by the [chart](#). The highest 7 values, those over 1,120 mg/L, are lumped in the last bar of the chart in order to maintain the scale. About half of the mean hardness values for the stations are in the soft to moderately hard categories, and about half can be classified as hard to very hard.



Source: [Briggs and others, 1977](#).

Patterns of hardness in the United States are shown on the [map](#) of accounting units below. Softest waters were in parts of New England, the South Atlantic-Gulf States, the Pacific Northwest, and Hawaii. Moderately hard waters were common in many rivers of Alaska and Tennessee, in the Great Lakes region, and the Pacific Northwest. Moderately hard waters were common in many rivers of Alaska and Tennessee, the Great Lakes region, and the Pacific Northwest. Hard and very hard waters were found in some streams in most of the regions throughout the country. Hardest waters (greater than 1,000 mg/L) were measured in streams in Texas, New Mexico, Kansas, Arizona, and southern California.

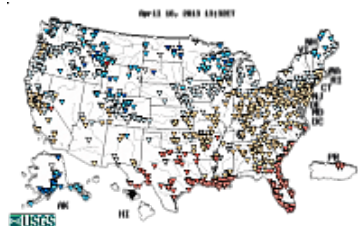
Water Quality Data

National Water Information System (NWIS)

[NWIS](#) provides current and historical water-quality data.

Today's Water Conditions

[Water-Quality Watch](#) provides continuous real-time water-quality measurements.



Water-Quality Web Services

[Web services](#) automate the sharing of USGS and USEPA water-quality monitoring data.

For More Data

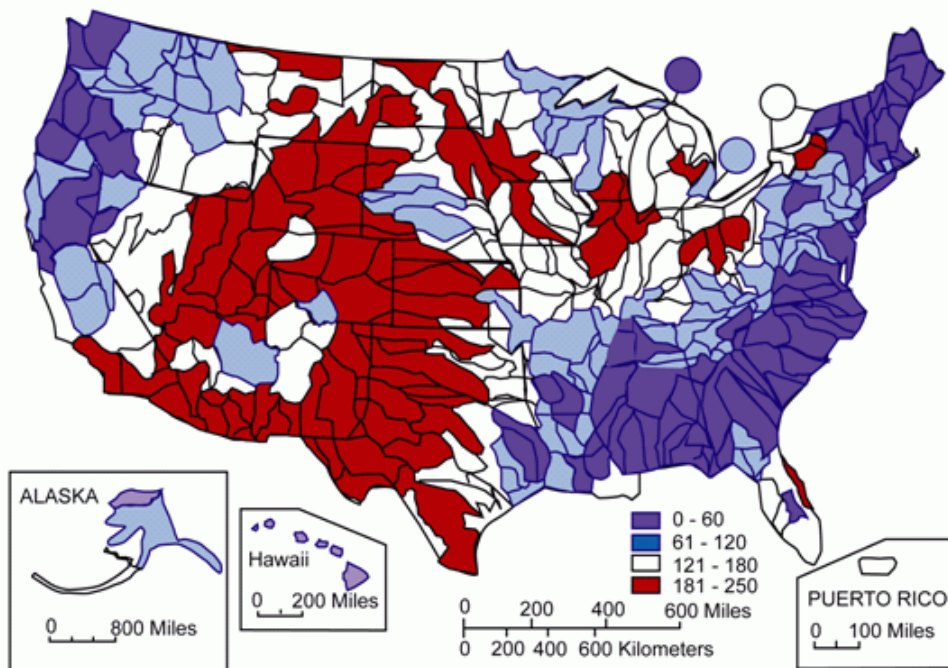
[Additional water-quality data resources](#) are available.

USGS in Your Area

USGS Water Science Centers are located in each state.



CONCENTRATION OF HARDNESS AS CALCIUM CARBONATE, IN MILLIGRAMS PER LITER



Mean hardness as calcium carbonate at [NASQAN](#) water-monitoring sites during the 1975 water year. Colors represent streamflow from the hydrologic-unit area. Map edited by USEPA, 2005. Modified from [Briggs and others, 1977](#).

Note to Readers:

Water hardness is based on major-ion chemistry concentrations. Major-ion chemistry in ground water is relatively stable and generally does not change over time. Although the map illustrates data from 1975, these data have been found to be accurate and useful in current assessments.

There are, however, several caveats about the nature, use, and interpretations of these data: (1) the data illustrated represent water hardness on a national and regional scale and must be so interpreted; (2) the 1975 data are not designed to be used to make local decisions or decisions on the scale of individual homeowner property; and (3) information that is directly relevant to water hardness and other chemical properties at a home or immediate locale should be provided by the local health agency, local water utility, or by the vendor of a local water-softening system.

Homeowners may refer to the following Web sites for additional information:

- [EPA's "Local Drinking Water Information"](#)
- [EPA's "Surf Your Watershed"](#)
- [American Water Works Association](#)

(From Briggs, J.C., and Ficke, J.F., 1977, Quality of Rivers of the United States, 1975 Water Year -- Based on the National Stream Quality Accounting Network (NASQAN): [U.S. Geological Survey Open-File Report 78-200](#), 436 p.)

Alkalinity

The U.S. Environmental Protection Agency produced a map illustrating the regional patterns of mean annual alkalinity of surface water in the conterminous United States. The map provides a qualitative graphic overview to the sensitivity of surface waters to acidification. The map is based on data from approximately 2,500 streams and lakes and apparent spatial



streams and lakes and apparent spatial correlations between these data and macrowatershed characteristics, especially land use.

- [Map: Total Alkalinity of Surface Waters - A National Map \(1.9MB PDF\)](#)
- [Description: Map Supplement - Total Alkalinity of Surface Waters-A National Map \(370KB PDF\)](#)



[Map: Total Alkalinity of Surface Waters - A National Map \(1.9MB PDF\)](#)

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URL: <http://water.usgs.gov/owq/hardness-alkalinity.html>

Page Contact Information: [USGS Office of Water Quality](#)

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