

Maintaining your home well water system

Christine Mechenich, George Gibson, Jim Peterson, Byron Shaw and Gary Jackson

When your well system is suitably located, properly constructed and installed, correctly maintained and regularly tested, you should have few problems with water quantity and quality. *Construction, maintenance and protection* of home wells are the keys to safe water.

This file folder provides a place for you to record and save vital information about your well water. This information will be valuable to any professional advising you about your water system. It should be filed with other documents about your home and property, and passed on to future owners.

Since 1936, well construction reports have been required for all wells installed by licensed well drillers. State law requires the driller to provide one copy to the homeowner and another to the Wisconsin Department of Natural Resources. If you did not receive a report, ask your well driller, or request one (for a fee) from the Wisconsin Geological and Natural History Survey in Madison (see back page for address).

The well construction report provides much of the basic information you need to record. If a report cannot be located, it is doubly important to record information about the well as opportunities arise. For example, if a

pump must be replaced, the pump installer may be able to measure the depth of the well and depth to water at that time.

The hydrologic cycle—your water source

When rain or snow fall to the earth's surface, some water runs off into lakes or streams. Much of the rest soaks into the soil (see figure 1). Plants use some of it. Some evaporates. Some trickles slowly downward through the soil until it reaches the saturated zone, where all the spaces between rock and soil particles are filled with water. The top of this zone is called the water table. Water below the water table is groundwater. Wells extend below the water table to collect groundwater for your use.

Groundwater flows slowly underground from high to low areas. The slope of the water table often parallels the slope of the land surface. Groundwater becomes surface water again when it discharges into lakes, streams and springs. Surface water may then evaporate to form clouds and begin the cycle again. So groundwater, far from being new water from within the earth, is water that has been recycled many times since the earth was young.

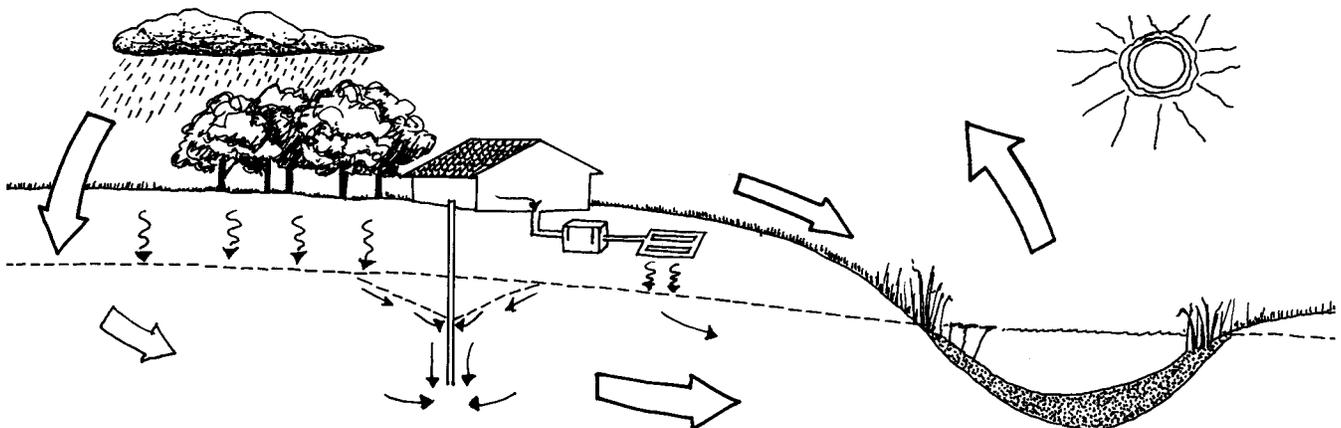
Protect your water supply

Proper well siting and construction are a landowner's first defenses against unsafe water. The Wisconsin DNR administers a well code, which provides minimum standards for well depth, construction materials, and distance from potential pollution sources. In addition to meeting separation distances, it's important to locate your well upgradient (usually uphill) from potential pollution sources. Contact the regional DNR office for advice on well construction or replacement.

If a groundwater supply is initially adequate and safe, homeowners must protect it by installing a proper withdrawal and distribution system. You can also protect your water supply with the following measures.

- Grade your lot so surface water runs away from the well.
- Check to make certain that the well cap or seal is in place and tightly secured. Ensure that insects and other vermin cannot enter. A vermin-proof well cap is one solution.
- Avoid using gasoline and lawn, household or agricultural chemicals near the well.

Figure 1. In the hydrologic cycle, water moves through the air, over land and through the ground.



- Protect basement wells from flooding and sewers which may back up. In most cases, basement wells are now prohibited.
- Protect wells in pits from surface water flooding. Pits subject to flooding should be abandoned. Contact the DNR for assistance.
- Properly abandon unused wells by filling them from bottom to top with grouting clay or cement. Call a pump installer or well driller for advice or assistance.
- Avoid improper plumbing connections that could allow contaminants to back-siphon down your well.
- Plan ahead to replace your well should it become necessary.

Continued protection of groundwater depends on proper land-use activities. Most residential wells draw water that entered the ground within a few miles of the well. How you and your neighbors use the land can be an important factor in the quality and quantity of your water supply. Possible sources of well contamination are animal waste, fertilizers, pesticides, septic tank systems, landfills and dumps, and commercial or industrial "spills" or discharges, including leaking underground fuel tanks.

Detecting contaminated groundwater requires regular testing. Homeowners should test their water supply each year. Consider seasonal tests if one sample shows elevated levels of contaminants. Always test water if unusual odors, colors or turbidity develop, or if you note an interrupted supply (for example, if the well pumps air or sediment).

Well drillers and pump installers are required to disinfect and test the well any time they service the well, pump, or plumbing system. (Follow the same procedure if you do the work yourself.) Homeowners should receive a copy of the test results.

Your well site

In the grid in the next column, sketch the location of your home and other structures on your lot in relation to your well. Include distances to your own or your neighbor's septic system, dry wells, barnyards, kennels, abandoned wells and gasoline or fuel oil tanks. Note any significant differences in elevation on your lot, and the general pattern of surface drainage. If a groundwater contour map is available from your county, use it to draw in the groundwater flow direction. If one isn't available, estimate the direction, remembering that groundwater flow is usually toward the nearest stream, and often follows surface topography.

You may also wish to indicate the location of and distance to local landfills or dumps, or industrial, commercial or agricultural activities. Consult this record when considering any landscaping or construction, or when interpreting well water quality results.

Your well records

(If it is available, include a copy of your Wisconsin well construction report with your other documents.)

Well driller

Name _____
 Address _____
 Phone _____

Maintenance service

Name _____
 Address _____
 Phone _____

Well construction report

When installed _____ Well depth _____
 Depth to water _____ Type of well _____
 Casing diameter _____ Casing depth _____
 Screen type _____ Screen length _____
 Pump type _____ Capacity _____
 Model _____ Setting _____

Soil and geologic information (well log)

Depth	Type of materials encountered

Wisconsin unique well number _____

Well and plumbing maintenance record

(Also include here information on any water treatment devices installed in your house.)

Date	Work done	Cost	Work done by:	Comments

Well water testing records

(Also keep copies of the laboratory reports.)

Date	Total coliform bacteria	Nitrate-nitrogen	Fluoride	Other*	Reason for sampling	Laboratory

* See *Tests for Drinking Water from Private Wells*, WI DNR PUBL-DG-023 00REV

Water testing services

- State Lab of Hygiene, 2601 Agriculture Drive, Box 7996, Madison, WI 53707, 1-800-442-4618
- Certified laboratories—see “Laboratories” in the business listings of the phone book or check the DNR web site.
- County or municipal public health offices.

Well construction reports

- Well driller
- DNR regional offices
- Wisconsin Geological and Natural History Survey. Call (608) 262-7430 for a request form.

For additional information

Cooperative Extension bulletins contain a variety of information about water safety. They are available through your county Extension office or from Extension Publications, 45 N. Charter St., Madison, WI 53715, (608)262-3346 or visit www.uwex.edu/ces/pubs/.

Nitrate in Wisconsin's Groundwater—

Sources and Concerns (G3054)

Nitrate, Groundwater and Livestock Health (G3217)

How Drinking Water Standards are Established (G3338)

Drinking Water Contamination:

Understanding the Risks (G3339)

Improving Your Drinking Water Quality (G3378)

Keeping Your Home Water Supply Safe (G3558-1)

Evaluating the Condition of Your Private

Water Supply (G3558-2)

Evaluating the Condition of Your Public

Water Supply (G3558-3)

Interpreting Drinking Water Test Results (G3558-4)

Choosing a Water Treatment Device (G3558-5)

You can obtain the following Wisconsin Department of Natural Resources publications from regional offices or by writing WDNR, Box 7921, Madison, WI 53707 or going to www.dnr.state.wi.us/org/water/dwg/prih2o.htm.

Groundwater—Protecting Wisconsin's Buried Treasure.

Wisconsin Natural Resources magazine supplement (1999).

You and Your Well PUBL

Bacteriological Contamination of Drinking Water

Nitrate in Drinking Water

Pesticides in Drinking Water

Radium in Drinking Water

Iron Bacteria Problems in Wells

Sulfur Bacteria Problems in Wells

Answers to Your Questions about Groundwater

Private Well Construction in Granite Formations

Lead in Drinking Water

Volatile Organic Chemicals in Drinking Water

Restoring Drinking Water—State Funds for Replacing

Contaminated Wells

Radon in Drinking Water

Well Abandonment

Tests for Drinking Water from Private Wells

Sources of assistance

- Well driller
- Pump installer
- County or municipal health specialist
- County Extension office
- Wisconsin Geological and Natural History Survey
3817 Mineral Point Road
Madison, WI 53705
(608) 262-1705
- DNR offices water supply unit

Northern Region

Department of Natural Resources
810 Maple St.
Spooner, WI 54801
(715) 635-2101

Department of Natural Resources
107 Sutliff Ave,
P.O. Box 818
Rhineland, WI 54501
(715) 365-8900

West Central Region

Department of Natural Resources
P.O. Box 4001
Eau Claire, WI 54702-4001
(715) 839-3700

Northeast Region

Department of Natural Resources
1125 N. Military Ave., P.O. Box 10448
Green Bay, WI 54307
(920) 492-5800

Southeast Region

Department of Natural Resources
2300 N. Dr. Martin Luther King, Jr. Drive
P.O. Box 12436
Milwaukee, WI 53212
(414) 263-8500

South Central Region

Department of Natural Resources
3911 Fish Hatchery Road
Fitchburg, WI 53711
(608) 275-3266



Authors: Christine Mechenich is the groundwater education specialist with the Central Wisconsin Groundwater Center, and Byron Shaw is a retired professor in the College of Natural Resources at the University of Wisconsin—Stevens Point. Jim Peterson and Gary Jackson are professors and George Gibson was formerly with the Environmental Resources Center in the College of Agricultural and Life Sciences, University of Wisconsin—Madison and the University of Wisconsin—Extension.

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, University of Wisconsin—Extension, Cooperative Extension. University of Wisconsin—Extension provides equal opportunities in employment and programming, including Title IX and ADA requirements. If you need this information in an alternative format, contact the Office of Equal Opportunity and Diversity Programs or call Extension Publishing at (608) 262-2655.

© 2001 by the Board of Regents of the University of Wisconsin System. Send inquiries about copyright permission to: Director, Cooperative Extension Publishing, 201 Hiram Smith Hall, 1545 Observatory Dr., Madison, WI 53706.

You can obtain copies of this publication from your Wisconsin county Extension office or from Cooperative Extension Publications, 45 N. Charter Street, Madison, WI 53715, 608-262-3346. Outside Madison, call toll free: 1-877-WIS-PUBS (947-7827). Before publicizing, please check on this publication's availability.

To see more Cooperative Extension publications, visit our web site: www.uwex.edu/ces/pubs/