



## WHAT SHOULD I DO WHEN MY WELL FLOODS?



If your water well is currently flooded or has been exposed to flooding conditions, you should contact an Iowa DNR [Certified Well Contractor](#) for assistance in determining the safety of your well and water distribution system!

### **– WARNING! –**

**DO NOT DRINK OR WASH WITH THE WELL WATER**

People who drink, wash, or prepare food with water from a water supply influenced by flood water will risk getting SICK!

**DO NOT ATTEMPT TO WORK ON THE WELL, THE WELL PUMP, OR THE WATER SYSTEM**

There is a real danger of electrical shock, personal injury or death and well, well pump, and water system damage!

**Any well** that has been influenced by flood waters or by high ground water levels should be viewed as **UNSAFE** for drinking and other normal household uses until the well water has been sampled, and the water analyzed by a [Iowa DNR Certified Drinking Water Laboratory](#), and the water analysis report states that the well water is safe to use as drinking water.

**Homeowners** returning to their homes after flood waters have receded are often anxious to use the water for cleaning and bathing purposes. Please remember that flooding can present challenges that can keep your well from providing safe, potable water for you and your family. Water that is supplied by a water well that has been influenced by a flood event may present special health risks which require extra attention to protect your family's health.

**If you suspect** that your drinking water is contaminated, you should immediately stop using the water for drinking, ice making, cooking, and bathing. You should temporarily switch to a known safe source of water such as a neighbor's well that you know is safe, a community water supply, or purchased bottled water. If you do not have a source of safe water, you can boil clear well water for at least 1 minute at a rolling boil and then let the water stand until cool before use.

Please be aware that boiling water can increase the concentration of certain contaminants, you should only consume boiled water when an alternative source of safe drinking water is not available.

**The purpose of this document** is to provide well owners and well users with additional information regarding their drinking water supply wells and the common issues that flooding presents for a well owner.

The document has been assembled in a "question and answer" format so you can view the questions without reading the entire document. We have provided you with a table of contents to allow you find the questions that interest you.

In addition to the answers to commonly asked questions, we have assembled additional internet web resources that will help a well owner obtain more information regarding water testing, water supply wells, and IDNR Certified Well Contractors. These web resources can be found on the last two pages of this document.

The information contained in this document was compiled from various state and local health departments and environmental health departments.

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## Common questions and answers about water supply wells and flooding conditions

### Why should I worry about my well during flood situations?

- If the well casing is not finished above the high water level and tightly capped, flood water and sediment could enter the well and contaminate it.
- Sediment found in the flood waters can enter the well through well vents and leaky wiring conduits and cause rapid wear of the pump components, contaminated sediments settling in the well, and plugging of the aquifer.
- Bacteria, viruses, farm and industrial chemicals, and other contaminants like manure and sewage can be contained in floodwaters. This contaminated water can enter the well casing through the top of your well or through defects in the well's casing. Contaminants can migrate underground to your well via a neighbor's flooded well. Such contamination can make your water unsafe for drinking, ice making, preparation of food, cooking, bathing, and other normal home uses.
- What you cannot see can harm you. Wells can be contaminated, even if there is no apparent damage. Older wells may have non-visible construction or age related defects that allow flood water to enter the well.
- Flood water can carry debris that can hit the well and loosen well hardware, dislodge well vents and caps, or distort and damage well casing and pumping system.

### Well Site Locations – Is my well susceptible to flooding?

- Wells that are located in low landscape positions or in areas near streams, rivers or waterways, are susceptible to flood waters and the associated water quality problems that flooding can cause.
- Wells located below surface grade in frost pits are susceptible to influence of high groundwater levels and flood waters. Wells contained in frost pits can be flooded even if there is no water standing on the lands surface.
- Wells that are covered by flood waters can affect the drinking water of nearby well users even if the surrounding wells were not flooded.
- Frost pits are [confined spaces](#) and pose a number of safety risks. Because of this, any pit or vault should not be entered by the well owner.
- Hire only [Iowa DNR Certified Well Contractors](#) to assess and repair any damaged well components, pumping system components, and to have the well shock chlorinated for disinfection of the well and water system.

### My well has electrical connections – can this be a hazard?

- [Shock hazards do exist](#) with components associated with wells. **DO NOT** attempt to work on a wet electrical system.
- After the flood waters have receded, the pump and electrical system need to be thoroughly dried and evaluated for damage.

- Always get assistance in starting a well pump after a flood event. DO NOT turn on the pumping equipment until the pump's electrical system has been checked by an [Iowa DNR Certified Well Pump Installer](#).

### **Is there a chance that my well pump will be damaged?**

- Well pumps can fall to the bottom of a well if the casing experiences a severe impact. This complicates the well repair and adds expenses for "fishing" the pump from the bottom of the well and fixing any defects that are found.
- All well pump electrical devices, wiring, and wiring connections exposed to floodwater or high groundwater may be damaged and create hazards due to water, sediment, and debris carried by the flood water.
- You should hire a DNR Certified Pump Installer to assess and repair any damaged pumping system components and to have the well shock chlorinated to disinfect the well and water system if you suspect the well has been influenced by flooding conditions.

### **How do I clean up my well? – Shock Chlorination**

- Once flood waters have receded you should hire an Iowa DNR Certified Well Contractor to ensure that your water system is safe to operate. This inspection should look at all of the protections required for the type of well you are using. Any deficiencies should be addressed to reduce the potential for future well related problems.
- Once the pumping system can be safely energized, the well should be pumped until the water appears clear for an extended period of time – This is especially important if the well exhibits dirty or turbid water during the initial minutes of operation.
- The well requires shock chlorination to disinfect the well, the pressure tank, and the distribution system before the well is put back into service.
  - o A chlorine solution of at least 200 mg/L should be introduced into the water well from the top and should be pumped through the entire water system including all faucets, hot water heaters, toilet tanks, ice makers, yard hydrants, and livestock waterers that are connected to your water supply system. The chlorinated water should completely coat all of the well's interior surfaces.
  - o The chlorine solution should sit in the well and water system for a period of 4 - 8 hours before any additional water used.
  - o The chlorine must be pumped out of the well and water system before the well water can be tested and the water used.
  - o For severe flood related contamination, the well may require additional shock chlorination.
  - o Chlorination of a water well that has been flooded should be done by an [Iowa DNR Certified Well Contractor](#). For lists of certified well contractors please see the web link on page 6 or contact your local county health department for more information.

- Please remember that well disinfection will not provide protection from pesticides, heavy metals, fuels, oils, and other types of non-biological contamination. If you suspect such contamination due to proximity of these types of contaminant sources, special testing and treatment of the well water is required. Please contact your local county health department or the [State Hygienic Laboratory at The University of Iowa](#) for more information.
- In some cases the well will require a thorough cleaning by an Iowa DNR Certified Well Contractor before the water can be tested and the well placed back into service.

### **How do I know if my water is safe to drink again?**

- All wells and water systems that have been influenced by flood waters should be considered **UNSAFE** for use as drinking water until you submit a water sample to an [Iowa DNR Certified Drinking Water Laboratory](#) and the laboratory analysis report states that the water is safe to drink.
- Even if a well has been shock chlorinated, you should not drink the water until you submit a water sample to a certified laboratory and the analysis report states the well is safe to use as drinking water. Contact your local county health department for more information – see web link on page 6.
- Please remember that just because the water looks clean and clear does not mean that it is drinking water quality and can be consumed.

### **Who can perform Well Services in Iowa?**

- [All Well Services](#) must be done by an Iowa DNR Certified Well Contractor or by the homeowner themselves. Homeowners should not attempt well services that are beyond their understanding and/or technical abilities. To do so places the homeowner at risk of injury or death, may damage expensive well related equipment, and leaves the homeowner liable for well services that do not meet the minimum protective standards as found in Iowa Administrative Code.
- Please remember that problems with your well can create problems for neighboring well owners. For lists of [Iowa DNR Certified Well Contractors](#) please see the web link on page 6 or contact your local county health department for more information.

### **How do I protect my well from future flooding?**

- Make sure that the well head is properly protected and includes features needed to help reduce the impact that a flood event can have on the well.
- A few examples of things you can do include:
  - o Eliminate frost pit well installations and frost pit pressure system installations
  - o Reconstruct the well head area to include a pitless adapter and a high quality well cap.
  - o Maintain the well's final casing height at least 12 inches above the historic high water levels



- Protect the well area by constructing a berm of soil around the well so that flood water cannot pool in the well area.
- Inspect and repair or replace any non-conforming well cap. Make sure that a conforming well vent is placed in a proper location above the historic high water level.
- Install all wiring in water-tight, sealed conduits, and move all pump related electrical devices and boxes to areas that remain dry.
- Locate the water system pressure tank and pressure switch in an area that is not prone to high water levels or flooding.
- If it is not feasible to protect the current well area from flooding through well renovations and added protections, you should consider constructing a new well in a protected location.
  - Any unused or unneeded wells that are positioned in flood prone areas should be properly abandoned. See Grants-to-Counties program on page 6.
- Have the well and water system sampled and tested at least once a year so that you understand the safety of your drinking water. Please contact your local county environmental health sanitarian for more information.

### **The Three Keys to Maintaining a Well**

Flooding events and high groundwater levels can present major health risks and can contaminate your water supply well and the groundwater that your well accesses. This is especially true if your well is located in or near a floodway.

Please keep in mind that 1) proper well construction, 2) adequate well head protection, and 3) timely well maintenance and water testing are essential key points that you - as a well owner - can control. Proper management of these points can make a dramatic difference on the quality of water that your well supplies for your drinking, household, and general watering needs.

When you take an active role in the management of your water supply well(s), you will not only understand the quality of your family's drinking water, but you will also help protect the quality of the groundwater that many others depend on for their water supply needs.

Please consider calling one of your local [Iowa DNR Certified Well Contractors](#) to help answer questions related to your water supply. Your certified well contractor has the experience and the equipment to help you determine if your water well has structural problems or has missing or defective components that may affect the safety of your family's drinking water.

In general, Iowa has a plentiful supply of safe, good quality groundwater available for residents to access and use. Properly managing your private water supply is an important key in your well providing you with a safe, dependable source of drinking water.

Please see pages 9 – 10 for a list of additional web based resources.

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Phone 515/725-0282 Fax 515/725-0348 [www.iowadnr.gov](http://www.iowadnr.gov)



## **Additional Resources**

### **Iowa Department of Natural Resources Private Well Program**

On the web or by calling: Russ Tell, 515-725-0462 email at [Russell.tell@dnr.iowa.gov](mailto:Russell.tell@dnr.iowa.gov)

- [Well Plugging Information](#)
- [Private Well Consumer Information Booklet](#) - flood reference pages 19-20

### **Find an Iowa DNR Certified Well Contractor**

On the web or by calling: Russ Tell, 515-725-0462

### **Local Iowa County Environmental Health Departments**

[Grants to Counties Program – Water Testing – Well Plugging](#)

### **Iowa Department of Public Health (IDPH)**

[http://www.idph.state.ia.us/eh/env\\_health.asp](http://www.idph.state.ia.us/eh/env_health.asp)

[Local Environmental Health Directory](#)

### **Iowa State University Extension Service**

**Disaster Recovery – including well related topics**

<http://www.extension.iastate.edu/disasterrecovery/info/wells.htm>

**Shock Chlorinating Small Water Systems**

<http://www3.abe.iastate.edu/HTMDOCS/pm899.pdf>

**Good Wells for Safe Water**

<http://www.extension.iastate.edu/publications/pm840.pdf>

### **State Hygienic Laboratory at The University of Iowa**

**Frequently asked questions**

<http://www.shl.uiowa.edu/env/privatewell/faq.xml>

**Testing of your drinking water – Ordering a sample kit**

<http://www.shl.uiowa.edu/env/privatewell/ordering.xml>

**Flood Health and Safety**

<http://www.shl.uiowa.edu/env/privatewell/floodsafety.xml>

**Understanding you water test results**

<http://www.shl.uiowa.edu/env/privatewell/faq.xml#14>

**Additional Water Quality Tests**

<http://www.shl.uiowa.edu/env/privatewell/additionaltesting.xml>

### **Iowa Geological and Water Survey**

[Geology – Water Resources – Water Quality](#)

[Iowa Groundwater Basics - Explore Iowa's Groundwater](#)

### **Centers for Disease Control and Prevention (CDC)**

**Water Related Emergencies and Outbreaks**

[http://www.cdc.gov/healthywater/emergency/safe\\_water/wells/](http://www.cdc.gov/healthywater/emergency/safe_water/wells/)

– **Disinfecting Wells Following an Emergency**

<http://emergency.cdc.gov/disasters/pdf/wellsdisinfect.pdf>

## **United States Environmental Protection Agency (EPA)**

- Private Drinking Water Wells  
<http://www.epa.gov/safewater/privatewells/index2.html>
- What to Do After a Flood  
<http://water.epa.gov/drink/info/well/whatdo.cfm>  
[http://www.epa.gov/privatewells/pdfs/fs\\_what-to-do-after-a-flood.pdf](http://www.epa.gov/privatewells/pdfs/fs_what-to-do-after-a-flood.pdf)
- Emergency Disinfection of Water  
<http://water.epa.gov/drink/emergprep/emergencydisinfection.cfm>

## **The Iowa Water Well Association**

- An Iowa organization of professional water well contractors  
<http://www.iwwa.org/>

## **The National Groundwater Association**

- A national organization of professional water well contractors  
<http://www.ngwa.org/index.aspx>

## **Wellowner.org**

- This is a good resource for private well information for well owners.  
<http://www.wellowner.org/>  
<http://wellowner.org/water-quality/flood/>

## **The Water Systems Council - wellcare® information sheets**

- Fact sheets about water well related topics  
<http://www.watersystemscouncil.org/infoSheets.php>

## **National Environmental Service Center**

- Fact sheets about water well related topics  
<http://www.nesc.wvu.edu/subpages/wells.cfm>



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