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 your well's safety!

WARNING! DO NOT ATTEMPT TO WORK ON THE WELL PUMP

There is a real danger of electrical shock and pump damage!

WARNING! DO NOT DRINK OR WASH WITH THE WELL WATER

People drinking, washing, or preparing food with water from a water supply well influenced by flooding will risk getting SICK!

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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, tested by an Iowa DNR Certified Drinking Water Laboratory, and the test 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. The 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 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 your clear well water for at least 1 minute at a rolling boil and then let the water stand until cool before use. Because boiling water can increase the concentration of some contaminants, you should only consume boiled water if a safe source of 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. You will find additional resources at the back of this document that can help a well owner obtain more information regarding water testing, water supply wells, and IDNR Certified Well Contractors.

Common questions and answers about water supply wells and flooding conditions

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 in below ground 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.
- Frost pits are confined spaces and pose a number of safety risks. Because of this, the frost pit 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.

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What conditions are my well subject to during flooding?

- 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 and cause rapid wear of the pump components.
- 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.
- 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 could loosen well hardware, dislodge well vents and caps, or distort and damage well casing.

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

- Shock hazards do exist! 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?

- All well pump electrical devices, wiring, and wiring connections exposed to floodwater or high groundwater may be damaged.
- All well pumps and their electrical components may be severely damaged by sediment and debris carried by 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.
- The well should be pumped until the water appears clear for an extended period of time – especially if the well exhibits dirty or turbid water.

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- The well requires shock chlorination to disinfect the well, the pressure tank, and the distribution system before the well is put back into service.
    - 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 chlorine solution should sit in the well and water system for a period of 4 - 8 hours before any additional water used.
    - The chlorine must be pumped out of the well and water system before the well water can be tested and the water used.
    - For severe flood related contamination, the well may require additional shock chlorination.
    - 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.
- Well disinfection will not provide protection from pesticides, heavy metals, fuels, oils, and other types of non-biological contamination. If such contamination is suspected, 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 Iowa Hygienic Laboratory for more information.

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 report results state 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 they report the well is safe to use as drinking water. Contact your local county health department for more information – see web link on page 6.

Who Can Perform Well Services in Iowa?

- All well services must be done by an Iowa DNR Certified Well Contractor or by the homeowner. 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 services that may not meet minimum protective standards as found in law. 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.

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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:
    - Eliminate frost pit well installations and frost pit pressure system installations – reconstruct the well head area to include a pitless adapter.
    - 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 areas prone to flooding 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.

In general, Iowa has a plentiful supply of safe, good quality groundwater available for the residents to access and use. Water wells can provide a dependable source of drinking water and many Iowans depend on water supply wells to provide all of their water use needs.

Please keep in mind that that flooding events can present major health risks and can contaminate your water supply well and the groundwater that the well utilizes. <u>Proper</u> well construction, well head protection, and well maintenance are essential key points which the well owner controls that can affect the quality of the drinking water. Remembering these key points will help ensure that your well can be a safe, dependable source of drinking water that will not adversely effect the quality of your drinking water, your neighbor's water supply, or the groundwater of the state.

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Additional Resources

Water Testing and Analysis
Water Supply Wells
And Iowa DNR Certified Well Contractors

University Hygienic Laboratory

– **Testing of your drinking water**
http://www.uhl.uiowa.edu/services/wellwater/

– **Flood Health and Safety**
http://www.uhl.uiowa.edu/services/wellwater/floodsafety.xml

– **Understanding you water test results**
http://www.uhl.uiowa.edu/services/wellwater/results.xml

Iowa Department of Natural Resources Private Well Program

On the web at: http://www.iowadnr.gov/water/wells/index.html
or by calling: Russ Tell, 515-725-0462 Russell.tell@dnr.iowa.gov
or Brian Anderson, 515-725-0346 Brian.anderson@dnr.iowa.gov

– **Well Plugging Information**
http://www.iowadnr.gov/water/wells/plugging.html

– **Private Well Consumer Information Booklet - flood reference pages 19-20**
http://www.iowadnr.gov/water/wells/files/wellcib.pdf

Local County Environmental Health Departments

– Grants to Counties Program – Water Testing – Well Plugging
http://www.iowadnr.gov/water/septic/files/co_sanitarians.pdf
http://www.idph.state.ia.us/common/press_releases/2008/080331_well_rescue.asp

Finding an Iowa DNR Certified Well Contractor

On the web at: http://www.iowadnr.gov/water/wells/concert.html
or by calling: Russ Tell, 515-725-0462 or Brian Anderson, 515-725-0346

Iowa Geological Survey

– Geology – Water Resources – Water Quality
http://www.igsb.uiowa.edu/
http://www.igsb.uiowa.edu/GWBASICS/

Iowa Department of Public Health (IDPH)

http://www.idph.state.ia.us/eh/toxicology_env_health.asp

Iowa State University Extension Service

– Shock Chlorinating Small Water Systems
http://www3.abe.iastate.edu/HTMDOCS/pm899.pdf

– Water well related topics
http://www.extension.iastate.edu/disasterrecovery/info/wells.htm
http://www3.abe.iastate.edu/water.asp

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Centers for Decease Control and Prevention

– 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://www.epa.gov/privatewells/whatdo.html
http://www.epa.gov/privatewells/pdfs/fs_what-to-do-after-a-flood.pdf

– Emergency Disinfection of Water
http://www.epa.gov/safewater/faq/emerg.html

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://www.wellowner.org/flood_alert.pdf

The Water Systems Council - wellcare® information sheets

– Fact sheets about water well related issues
http://www.watersystemscouncil.org/wellcare/infosheets.cfm

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