What Do I Need to Know About Preparing a Water Well for Flooding/Storm Events?

Since Hurricane Harvey dumped more than five feet of water in 2017, Texans are more aware of the damage such an event can inflict. Even in areas where there may not have been flooding prior to this event, the changing landscape as the result of a growing population has resulted in the expansion of flood-prone areas. This FAQ features suggestions for private well owners before and after a storm/flood, with additional resources provided to assist in developing your own specific plan of how best to protect your well.

Wells with a history of being flooded should be especially prepared for such events to limit or prevent damage to the well's electrical system and to prevent pollutants from entering the well. Preparation efforts could include choosing where to place the well, designing the wellhead, and how best to seal the well casing and electrical system. A little more effort and money now may save problems and expenses in the future and could help ensure your well will operate again as soon as possible.

Guidance is available on several websites, including FEMA, EPA, USDA, some states, and many private water and well service sites that provides good recommendations to consider if you are moving to and/or building in a flood-prone area or already have a water well in one of these areas. The website links to these and other sites can be found throughout this document and under the heading "Resources and Helpful Links."

What Should I Consider if I'm Drilling a New Well?

If you are planning on having a water well drilled and installed, locate it on a higher elevated part of the property, if possible. Also, ensure it is not installed near potential sources of contamination, such as septic systems, burn pits, or chemical storage areas. These are prudent considerations for private well owners. The next step is the design of the well system.

How Do I Know I Have a Good Well System Design?

Considerations for well design include the wellhead and pad or well house, how high to make the well casing above surface, a sanitary cover, backflow valve, surface and casing seal, and sealing the electrical system, which should also protect against insect or animal access and damage. General requirements are found on the Texas Department of Licensing & Registration (TDLR) Water Well Drillers and Pump Installers' webpage, *Well Construction and Plugging Specifications*: https://www.tdlr.texas.gov/wwd/wwdspecs.htm.

Details include the following:

- The sanitary cover or cap should seal the casing to prevent floodwaters, children, and animals from entering the well.

- Slope the area around the well to drain surface runoff away from the well.
- The casing height should be at least 2 feet above any previous known flood level.
- The wellhead or pad should support 400 pounds, include at least 10 feet of annular concrete grout and provide a watertight seal.
- The piping to a treatment system or spigot should include a backflow valve to prevent contaminated water from the surface flowing back down the well.
- The electrical controls need to be protected to prevent shorting out or being otherwise damaged during a flood event. Licensed electricians can be located using TDLR's *License Data Search*, at https://www.tdlr.texas.gov/LicenseSearch.

What Should I Consider if I have a Preexisting Well?

Existing wells can be protected; however, wells need to be in good condition (usually less than 50 years old) and of sufficient depth to prevent or limit surface contaminants from easily migrating into the water table (usually greater than 50 feet depending on the aquifer and whether it is connected to the surface).

More details on what is considered a "non-deteriorated well" are available on TDLR webpages, *Technical Guidance on Abandoned or Deteriorated Water Wells* (https://www.tdlr.texas.gov/wwd/abandonedwells.htm) and *Well Construction and Plugging Specifications* (https://www.tdlr.texas.gov/wwd/wwdspecs.htm).

If your well does not have casing or a pump in good condition, it should be properly decommissioned (plugged). Instructions for plugging a well can be found in the Texas Commission on Environmental Quality (TCEQ) publication, *Landowner's Guide to Plugging Abandoned Water Wells, RG-347*: https://www.tceq.texas.gov/downloads/groundwater/publications/landowners-guide-to-plugging-abandoned-water-wells-rg-347.pdf (also available in Spanish: https://www.tceq.texas.gov/downloads/groundwater/publications/guia-del-terrateniente-para-tapar-pozos-de-agua-abandonados-rg-347esp.pdf).

If you need assistance in determining the condition of your well, you can contact:

- Your local groundwater conservation district (GCD):
  - TWDB map of GCDs: https://www.twdb.texas.gov/mapping/doc/maps/GCDs_8x11.pdf?d=2964.5000000018626lice
  - TCEQ contact list for GCDs: https://www.tceq.texas.gov/downloads/groundwater/gcd/gcd-contact-list.pdf
- A Texas licensed water well driller located in your area, https://www.tdlr.texas.gov/LicenseSearch/

- The TDLR Water Well Drillers and Pump Installers Program, https://www.tdlr.texas.gov/wwd/wwd.htm

What Should I Do Following a Flood/Storm Event?

There are many details to consider in preparing for flood events and for testing your well after such an event. You may be disinfecting your well, having a water sample analyzed, and contacting a licensed electrician/well installer to test the electrical controls and pump for soundness. Well owners may also choose to have a backup generator should the power system be delayed or seriously damaged. Further details are available from your local GCD, a licensed water well driller, electrician, or the Water Well Drillers Program of TDLR. More detail on steps to take after a flood/storm can be found in the following U.S. Environmental Agency (EPA) document, *What to Do After the Flood*: https://www.epa.gov/sites/production/files/2015-05/documents/epa816f05021.pdf.

Should you want to know how to protect your well from winter freezes, information is available at the following two webpages:

- https://wellowner.org/2021/02/winterizing-your-well-southern-style/

- https://wellowner.org/2021/02/keep-your-well-safe-and-operating-through-winter-weather/.

Resources and Useful Links

In addition to resources already provided, the following links may be helpful:

- Federal Emergency Management Agency (FEMA) document, *Protecting Your Business From Flooding*; https://mitigation.eeri.org/files/resources-for-success/00065.pdf

- TCEQ webpage, *Preparing Your Public Water System for a Natural Disaster*; https://www.tceq.texas.gov/drinkingwater/homeland_security/disasterprep/disasterprep.html

- *TWDB Flood Programs* webpage, https://www.twdb.texas.gov/flood/index.asp

- *Texas Flood* website, https://www.texasflood.org/index.html

- Texas A&M AgriLife Extension Service Factsheet ESC-058; *How to Ready your Well for the Next Flood: Preparation, Evacuation and Return Home*, https://twon.tamu.edu/wp-content/uploads/sites/3/2021/06/ecs-058-how-to-ready-your-well-for-the-next-flood-preparation-evacuation-and-return-home-919.pdf

- TDLR website, https://www.tdlr.texas.gov/

- Texas A&M AgriLife Extension Service at https://agrilifeextension.tamu.edu/browse/featured- solutions/water/

- California Department of Water Resources, *Flood Preparedness* webpage, https://water.ca.gov/What-We-Do/Flood-Preparedness

- Clean Water Store, *What To Do When Your Well is Flooded*, https://www.cleanwaterstore.com/technical/water-treatment-guides/Floods-And-Your-Well-Water.pdf

Other Frequently Asked Questions (FAQs)

To find additional FAQs visit the Texas Groundwater Protection Committee's FAQ webpage at https://tgpc.texas.gov/frequently-asked-questions-faqs.