Information Summary for Stony Hill Road TCE Site

TCE Contamination of Stony Hill in Wake Forest, NC

DENR FACT SHEET
STONY HILL ROAD TCE SITE
WAKE COUNTY
SEPTEMBER 19, 2012

When was the contamination first discovered on Stony Hill Road?

In August 2005, a property owner at 7305 Stony Hill Road complained to the Wake County Health Department about a petroleum smell associated with water from his residential well. Wake County tested the well and found that the well water had been contaminated by solvents (TCE and PCE). In October 2005, Wake County notified the N.C. Division of Water Quality (DWQ) about the contaminated well water.

Between October 2005 and March 2006, DWQ sampled six additional drinking water wells on adjacent properties and also took soil samples. None of the other drinking water wells showed contamination. The contaminated well at 7305 Stony Hill Road was closed for use as a drinking water supply and the owner was connected to a source of uncontaminated water.

What is TCE/PCE, and what are their potential health impacts?

Trichloroethylene (TCE)
Affected Organ Systems: Developmental (effects during periods when organs are developing) , Neurological (Nervous System)
Cancer Effects: Reasonably Anticipated to be Human Carcinogens
Chemical Classification: Volatile organic compounds
Summary: Trichloroethylene (TCE) is a nonflammable, colorless liquid with a somewhat sweet odor and a sweet, burning taste. It is used mainly as a solvent to remove grease from metal parts, but it is also an ingredient in adhesives, paint removers, typewriter correction fluids, and spot removers. Trichloroethylene is not thought to occur naturally in the environment. However, it has been found in underground water sources and many surface waters as a result of the manufacture, use, and disposal of the chemical.

Where did the contamination come from?

The soil samples taken by DWQ showed evidence of chlorinated solvents at 7303 Stony Hill Road. This property is the former location of two small circuit board assembly companies and thought to be the likely source of the well water contamination based on the presence of soil contamination.

What efforts have been made to fix the problem?

Since 2006, the Division of Water Quality, Division of Waste Management (DWM) and the Attorney General's Office have taken enforcement actions to compel those potentially responsible for the contamination (known as potentially responsible parties or PRPs) to delineate the extent of the contamination through a comprehensive site assessment. These actions have also extended to corporate entities associated with operations at or ownership of the 7303 Stony Hill Road property (under state law/regulations, the state only funds investigations of sites with unknown responsible parties, known as "orphan sites"). Multiple requests for assessment have been sent first by DWQ and then DWM. (DWM became the lead enforcement agency in 2007.) DWM and the Attorney General's Office have also made a number of requests for information about historic operations at the site in order to establish the origin of and responsibility for the contamination.

How soon before the contamination is cleaned up and our well water is clean?

Remediation of contaminated groundwater can be a lengthy process. The contaminants that have spread through the fractured bedrock aquifer become trapped in the small spaces between soil particles and in the rock fractures and are difficult and very costly to remove with current technologies. Additionally, the depth of the contamination and size of the contaminant plume may add to the difficulty of groundwater remediation. The current procedure is to identify the extent of the contamination, analyze the particular qualities of the local geology, then assess the most suitable method of containment and remediation.

Who has been notified of the contamination?
When the initial complaint of contamination came to the Division of Water Quality in 2005-2006, DWQ contacted and received permission to sample the wells of six adjacent properties due to the contamination detected in the well at 7305 Stony Hill Road.

In 2008, DWM provided notice of the contamination at 7303 Stony Hill Road to the developer of the Groves subdivision, a development that had been planned for the adjacent property immediately to the west. After the original developer went bankrupt, DWM provided that same notice to SunTrust Bank as the lien holder and then to Toll Brothers as a subsequent purchaser of the property.

In June 2012, the Division of Waste Management sent letters to 10 property owners who had drinking water wells located within 1,000 feet of the original contaminated well at 7305 Stony Hill Road.

Since receipt of sampling results indicating the presence of a groundwater contaminant plume, DWM and EPA have contacted local residents by phone, email and through a public meeting held Aug. 14, 2012, at a local church.

Why are more contaminated wells being discovered at the present time?
Although the Stony Hill Road site would have ranked as lower risk based on the 2005 well testing results (and removal from service of the one known contaminated well), DWM decided to perform additional well testing in 2012 to support enforcement action and to get an update on site conditions. DWM sent letters in June 2012 to 10 property owners who had drinking water wells located within 1,000 feet of the original contaminated well at 7305 Stony Hill Road. Only three property owners gave permission for testing – the owners of the wells at 7305 and 7303 Stony Hill Road (the original contaminated well and the source site respectively) and the owners of a residence located at 7333 Stony Hill Road. Results of the June 20 sampling event showed TCE/PCE contamination above drinking water standards in the well at 7333 Stony Hill Road. Based on that new information, DWM contacted EPA the day the results were received and asked for assistance in testing additional wells. Since that time, EPA has tested several dozen wells in the area; that testing has identified additional drinking water wells with solvent contamination – some with levels below the drinking water standards threshold and others with levels exceeding a safe concentration for drinking water.

In performing the additional well testing, EPA and DWM discovered a potential second source of contamination that had been previously unknown. That site – about 1/2 mile from 7303 Stony Hill Road – is located on property that was once owned by a previous owner of the original source site. Some of the highest TCE concentrations have been found in the well on that property and on properties nearby. Hydrogeologists at DWM believe that the groundwater contamination from this site seems to be following fractures in the bedrock along a line that is entirely different from the movement of contamination from the original site at 7303 Stony Hill Road. The nature of the contamination is also different. Test results from properties closer to 7303 Stony Hill Road show both TCE and PCE; wells near the second site only show high levels of TCE.

Where has the contaminated groundwater been found?
A map showing the location of the contaminated wells is available at: Stony Hill Road, Wake County
This map illustrates the difficulty in predicting the movement of contamination through fractured bedrock. For example, even when accounting for the existence of the possibility of two distinct contamination sources, the homes showing contamination levels above the safe drinking water standard are not necessarily contiguous.

What are the next steps?
EPA has provided bottled water and/or carbon filters to homeowners with contamination above or very close to the safe drinking water standard. EPA and staff in DWM and the Public Water Supply Section of the Division of Water Resources are also exploring options for providing a permanent alternative water supply to these homes. Though Aqua N.C. operates two community water systems in the area, both are groundwater-based systems and it may be a challenge for this private utility to produce enough water in this type of fractured bedrock to supply everyone who needs or wants an alternative water supply.

Contamination clean-up near Wake Forest homes could take years

Posted: October 25, 2012

Officials with Wake County Environmental Services, the North Carolina Department of Environment and Natural Resources and the U.S. Environmental Protection Agency say it could take years to clean up contaminated water in wells of at least 20 homes near Wake Forest.

The well water of homes in the Stony Hill Road area has tested positive for TCE, a cancer-causing degreasing agent. More than a dozen have dangerous levels of the substance.

"We are dealing with a dynamic and very complex issue. There is no short-term corrective action plan," Wake County Environmental Services Director Joseph Threadcraft told reporters Thursday. "We have further concerns, in that long-term remediation is a footprint that (has) no guarantees, and it has not been mapped out."

Threadcraft said that there is a possibility that the homes could be included on the EPA's National Priorities List for clean-up and that the homes could also be declared a Superfund site.

Superfund is a federal program that allows the EPA to clean up sites with hazardous waste and compel those responsible for the waste to pay for the cleanup.

"Those programs are some time away," Threadcraft said.

The DENR first knew seven years ago about contamination in at least one well in the area, but officials thought it was an isolated case, and it became one of more than 2,400 hazardous waste cases statewide, making it a low priority for clean-up.

When the state went back to the area in recent months as part of its investigation, other wells showed at least trace levels of TCE.

Since July, however, that number has risen to 20 – 14 with dangerous levels – prompting the state to move the site to the top of its priority list.

Testing continues on homes in the area, and the EPA is funding a waterline extension from nearby community water systems to provide affected residents with clean drinking water.

Officials have identified three likely sources for the TCE contamination: circuit board manufacturers – C-Tron, Circuit Board Assemblers and Flextronics – that used to operate in the area.

In the past two weeks, the EPA also said Thursday, it has discovered an area 2 miles north of Stony Hill Road, in Mangum Estates, that's also contaminated with TCE.

So far, nine wells there have tested positive for unsafe levels. Officials say there isn't enough information to know whether they are connected and that they are still testing both sites.

Reporter: Bruce Mildwurf
Photographer: Tom Normanly
Web Editor: Kelly Gardner

Questions about TCE Contamination in the Stony Hill neighborhood in Wake Forest, NC.

1. How was the contamination discovered?
2. What substance was found to have contaminated the well? What is this substance?
3. Who is responsible for the contamination?
4. Why is clean-up a long and complicated process?
5. According to the WRAL report, how many homes are affected?
6. What is a Superfund site?
7. How many hazardous waste cases currently exist in NC?
8. What has the EPA agreed to do in order to provide residents of Stony Hill safe drinking water?
9. Does it appear that this is the only neighborhood affected? EXPLAIN.