

Repairing tile blowouts: What you need to know

Discovery Farms 2019

Tile blowouts in Wisconsin are increasing in occurrence as older clay and concrete tile drainage systems continue to age. The gradual expansion of tile lines to an existing system, without proper resizing or venting, has only exacerbated this problem. Tile blowouts can introduce soil and nutrients into the tile drainage system and increase the potential for nutrient loss and tile blockage (Figure 1).

Blowouts result from excessively high flow velocity or pressure inside the tile, causing it to crack or burst. Blowouts often create a direct conduit to the soil surface when the surrounding material is drawn into the tile and transported through the system. This can often cause blockages in the tile lines. Blowouts range in size from a few inches to several feet and can be hard to find.

Causes of tile blowouts

- Collapse of tiles from degradation over time
- Inadequate venting
- Expansion of tile system without adequately resizing main or sub-mains
- Outlet blockages
- Improper joint connections or junctions between old/new tile lines
- Contact of deep tillage equipment with shallow tile lines
- Animal burrows

Keys to identifying blowouts

- Identify blowouts during the late stages of spring snowmelt or after subsequent rain events, if possible. These periods are generally times of high flow and reduced soil cover, making blowouts more obvious.
- Listen for a 'sucking' noise that is caused by air and water being drawn into the blowout (Figure 2).
- Look for upwelling water or water draining through a hole in the ground during high flow periods (Figure 3).
- During times of low flow, look for holes in the ground above tile drains (Figure 4).
- Use GPS technology and/or accurate maps that identify tile line locations to greatly expedite the inspection process.



Figure 2: Hole identified by 'sucking' noise

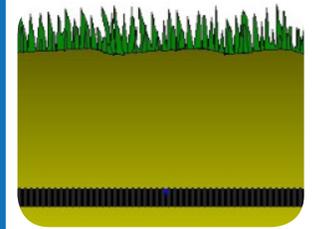


Figure 3: Hole identified during high flow

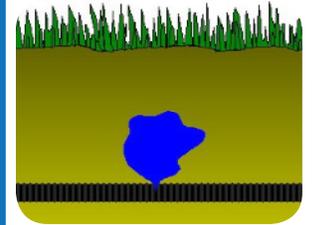


Figure 4: Hole identified during low flow

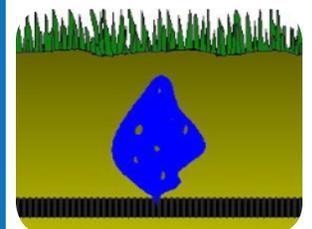
Figure 1: Sequence of steps forming a sinkhole from a tile blowout



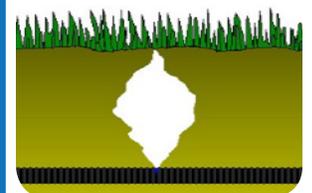
Weak point in tile drain



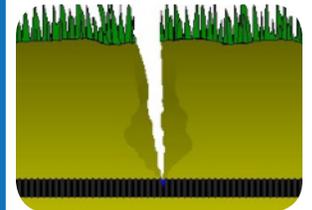
Pressure causes drain to rupture



Soil is drawn into ruptured drain



Void left in soil



Sinkhole forms

What to do before repairing a tile blowout

Identify and properly mark the blowout.

Blowouts in tile systems should be well marked when identified and repaired promptly by knowledgeable individuals. The direct pathways from the soil surface to the tile system created by these features can result in large amounts of sediment, debris, manure, fertilizer, or chemicals entering tiles (Figure 5). Discovery Farms tile drainage research has observed increased soil and nutrient loss to tile systems from blowouts. Improper repairs and quick fixes can result in on-going problems with blowout development and tile system blockages.



Figure 5: Evident sediment buildup in a tile line during a repair to a blowout in Eastern WI

Contact proper government agencies before you repair tile.

There are three government agencies that should be contacted before you repair a tile drainage system in Wisconsin. The **Wisconsin Department of Natural Resources** (DNR) <https://dnr.wi.gov/>, the **Natural Resources Conservation Service** (NRCS) if you are a USDA Farm Program/Crop insurance Participant <https://www.nrcs.usda.gov/wps/portal/nrcs/detail/wi/programs/farmbill/cc/?cid=nrcseprd346606>, and the **Army Corps of Engineers** <https://www.usace.army.mil/>. All three have a “maintenance” exemption for tile repairs if it is a replacement in kind, meaning the size and depth of the replacement tile is identical to the existing tile. Also check with local county governments to see what their requirements could include.

If the tile system is within a Drainage District, contact your local drainage board.

If the tile drainage system you are planning to repair is part of a Drainage District, the local drainage board needs to be contacted prior to tile system maintenance. Cost-sharing for the tile system repair might be available through the drainage board. To determine if your tile system resides in a drainage district, visit the Wisconsin Department of Agriculture, Trade and Consumer Protection Drainage District Program at: <https://datcp.wi.gov/Documents/DrainageDistrictFactsheet.pdf> for a web map and additional information.

Determine what caused the blowout to develop.

Determining the cause of a blowout is critical to the prevention of additional blowouts. Tile age degradation, improper venting, and/or undersized tile drains are common issues that will result in persistent development of blowouts. If tile system issues are not remedied in conjunction with the tile blowout, the problems will persist.

Always contact Diggers Hotline (800.242.8511 or dial 811 on a cell phone) prior to excavation for tile repairs.

For more information on managing tile-drained lands, visit the Extension Tile Drainage Resources website: <https://fyi.extension.wisc.edu/drainage/>