Problems with stormwater drainage wells

Common problems with stormwater drainage wells include slow drainage due to clogging, sinkhole collapse and injection of contaminants. Stormwater runoff is the only material allowed into drainage wells, with some exceptions. Intentional disposal of other materials such as sediment, grass clippings, leaf litter, oil, grease, paint, chemicals or other contaminants is a violation of the City's Illicit Discharge Ordinance and is punishable by fines and cleanup costs.

Sediment and debris impacting drainage well

Soil collapse around drainage well

Leaking sewer line flowing into drainage well

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Stormwater Drainage Wells

City of Bowling Green
Stormwater Program

The City of Bowling Green is built upon the Karst sinkhole plain of south central Kentucky. Karst is characterized by caves, underground streams, sinkholes, springs and sinking streams. Unlike typical urban environments, Bowling Green has very few surface streams. Most cities drain stormwater runoff to the nearest surface stream. As Bowling Green lacks this ability, the City uses the caves below for stormwater drainage.

What is a stormwater drainage well?

Stormwater drainage wells manage surface water runoff (rainwater and snow melt) by injecting it below the ground surface. They are typically shallow disposal systems designed to infiltrate stormwater runoff to the caves below. Stormwater drainage wells have a variety of designs and may be referred to by other names including dry wells, injection wells and improved sinkholes.

The names may be misleading so it is important to note that a stormwater drainage well, by definition, is any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, a sub-surface fluid distribution system, or an improved sinkhole. An improved sinkhole is a naturally occurring karst depression which has been modified by man for the purpose of directing or emplacing fluids into the subsurface (caves).

Why does the EPA regulate stormwater drainage wells?

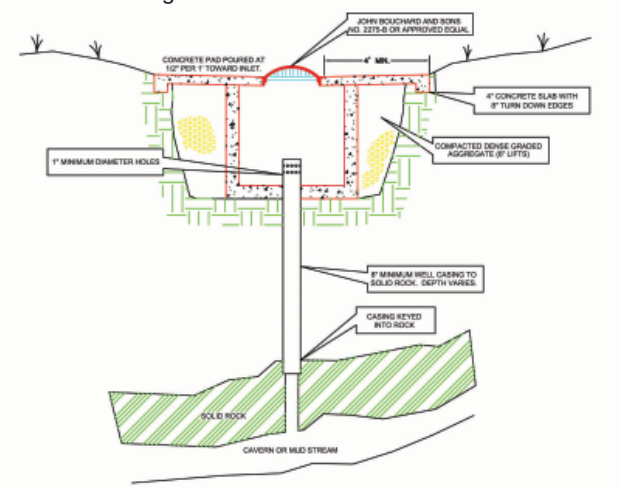
In 1974, Congress passed the Safe Drinking Water Act (SDWA). The SDWA required the Environmental Protection Agency (EPA) to report to Congress on waste disposal practices, and develop federal requirements for injection activities. These requirements protect public health by preventing drainage wells from contaminating underground sources of drinking water. Stormwater runoff is not treated.

The EPA considers stormwater drainage wells and improved sinkholes Class V (five) Injection Wells. Class V Injection Wells must be permitted through the Underground Injection Control (UIC) Section of Region 4, US EPA. The basic requirements for Class V Wells include:

1. Submit a permit to the UIC Section, Region 4, US EPA

2. Appropriate BMP's should be utilized to prevent sediment, oils, greases, and any other non-stormwater contaminant from entering Class V Injection Wells.

3. More information can be obtained from the US EPA at **http://www.epa.gov/safewater/uic/class5/types_stormwater.html** or from the City of Bowling Green.



DRAINAGE WELL DETAIL

Installation

Installation of stormwater drainage wells is achieved by one of two methods, drilling or improving an existing sinkhole.

It is important to note that a good seal with the bedrock interface is required to avoid potential failure or soil collapse. This is achieved by keying the solid casing pipe into rock or by grouting around the perimeter of a sinkhole structure.

Depths of structures vary based on depth to rock. Competent rock is required for quality installation.