

About Sinkholes

A sinkhole is a localized collapse or subsidence of bedrock and/or soil. Sometimes a break in soil is visible, which indicates a “cover-collapse” sinkhole. A “closed depression” is another type of sinkhole where the ground cover hasn’t collapsed, but where the subsurface is likely to be relatively unstable and water may flow very quickly into bedrock aquifers.

A unique type of sinkhole in our area is called a “swallow hole” or swallet. These features develop near the base of our mountains and often transmit vast quantities of stormwater runoff directly into the groundwater.

Sinkholes develop in areas that have bedrock that can dissolve in water—such as limestone or dolomite—also known as “karst” areas. The combination of slightly acidic precipitation or surface water runoff, karstic bedrock, and time gradually results in complex, elaborate sculpting of bedrock, development of caves and sinkholes, and “robbing” of water flow from surface streams into underground flow systems.

Sinkholes are related to groundwater quality. Water is naturally purified as it passes slowly through soil. Where soil cover is thin, groundwater may not be filtered sufficiently to remove surface contaminants. Surface water that enters a sinkhole passes directly into the groundwater reservoir without any filtration. In addition, contaminants that enter a sinkhole are carried away from the sinkhole at a very high rate of speed. Please be careful with fuels, fertilizer, chemicals, and waste material. Don’t put anything in a sinkhole that you wouldn’t want to have in your drinking water!

About ClearWater Conservancy

The mission of ClearWater Conservancy is to promote conservation and restoration of natural resources in central Pennsylvania through land protection, water resources protection, and environmental outreach to the community.

*Everyone working together to conserve natural beauty
and the environment in the heart of Pennsylvania*

Special thanks to project partners: Centre County Solid Waste Authority, PA Department of Environmental Protection, MS4 Partner municipalities, and the many many volunteers and in-kind contributors who have helped over the past 10 years!



ClearWater Conservancy

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excerpts from Sinkhole Awareness

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ClearWater Conservancy

Stories of Land, Water, and People

Sinkholes, and Dumpsites, and Trash... Oh My!

ClearWater’s Watershed Cleanup Day

A pile of trash is not an attractive sight, but trash can do worse than spoil the natural beauty of a place. Pollutants leaching from trash can enter your drinking water. Garbage also causes injuries, harms wildlife, and its removal uses tax dollars that could be put to other uses. These were some of the reasons that the ClearWater Conservancy created Watershed Cleanup Day.



Jennifer Shuey

In 2005, donated equipment and volunteer operators from Glenn O. Hawbaker, Maxwell Trucking, and LandServ hauled 246 tons of trash out of this Walker Township sinkhole at the base of Nittany Mountain. The area where the valley meets the base of the ridge is particularly sinkhole prone and a critical area for groundwater recharge.



Stacie Bird

On Watershed Cleanup Day, hundreds of volunteers from the community come out to clean Centre County's roadways, stream banks, sinkholes, and illegal dumpsites in fields and forests. Businesses, high schools, college students, community groups, and families all take some time out of their busy schedules to make their county a little cleaner.

April 22, 2006 marks the 10th annual Watershed Cleanup Day. Over the years, this event has evolved into a large-scale community staple. Both Kristen Saacke-Blunk and Gert Aron are long-time members of the ClearWater Conservancy and helped found Watershed Cleanup Day. Gert's reasoning was, "We wanted to do something a little more pro-active rather than just complaining about problems."

According to Kristen, who also served as ClearWater's first full-time coordinator, "Gert Aron is the recognized champion for initiating and tackling major sinkhole cleanup projects." Sinkholes form as a result of interaction between limestone bedrock, soil, and water. They col-

lapse because the support of soil and rock has been eroded away in the subsurface. Unfortunately, sometimes nearby residents feel as though these sinkholes are nature's landfills, and many have been illegal dump sites for generations.

When trash is thrown in sinkholes, it is in close contact with our groundwater, and groundwater is the source of drinking water in Centre County. Of particular concern are chemicals found in containers of oil, pesticides, herbicides, and fertilizer that have been thrown into these illegal dumps. In one of ClearWater's trash removals, a full, one-quart container of herbicide was found in a sinkhole in the Spring Creek Watershed. Calculations using current public health protection standards indicate that the contents of this container could make the drinking water supply for one person unfit to drink for 1,500 years.

Gert observed that one of the major ways in which Watershed Cleanup Day has evolved is that the trash removal has become more "motorized." He tells a story from one of the first Watershed Cleanups in which he and other volunteers were using a tiny winch to help manually haul trash out of a sinkhole.

All this changed when Gert discovered an entire Jeep in one of the sinkholes. He knew they needed heavy equipment for this sort of a job, so he called Glenn O. Hawbaker, Inc. Jeff Sturniolo from Hawbaker volunteered to come with a backhoe, and, as Gert says, "The first thing we knew, he had pulled the whole Jeep out." Gert also noted that, "Ever since, Jeff has

been there every year."

In fact, Jeff Sturniolo became the volunteer chair of Watershed Cleanup Day, and in 2005 Jeff recruited volunteers and equipment donations not only from Glenn O. Hawbaker, but also from Ameron Construction, Stone Valley Construction, LandServ, Maxwell Trucking and Excavating, Terra Excavating, H&R Excavating, Cleveland Bros. Equipment Co., Rob Smith, and Groff Tractor & Equipment.

With this heavy equipment and volunteer manpower now at their disposal, volunteers from the ClearWater Conservancy went in search of sinkholes that had historically been used as illegal dump sites. As Jeff said, "Sinkholes are like icebergs. 90% of the trash is under the surface."

In 2005 Watershed Cleanup Day volunteers collected and properly disposed of a landmark 410 tons of trash, removing it from the landscape and watercourses of Centre County. To put this figure in perspective, it equals the weight of approximately 230 cars!



Jeff Sturniolo

"Sinkholes are like icebergs. Ninety percent of the trash is under the surface."

~ Jeff Sturniolo

Thirty tons of trash was a respectable haul for one of the early Watershed Cleanup Days, but by using the heavy equipment to safely excavate below the surface of sinkholes, the tonnage of trash collected on Watershed Cleanup Day has dramatically increased.

Fortunately, the generosity of donors and the involvement of volunteers have kept pace with our vision to make Watershed Cleanup Day a growing success. Fishermen and paddlers take to the streams; church groups, scouts, and 4-H clubs tackle roadsides and headwaters stream corridors; and volunteers from local businesses and community groups give of their time to protect the water supplies and enhance the natural beauty of Centre County.

Cleaning up our watersheds is a noble cause, but even more important is the educational message the effort sends to the community. "It is not OK to use our natural resources for a dumping ground", says ClearWater's Watershed Cleanup Day project manager, Becky Dunlap. "Watershed Cleanup Day is a great project, but we look forward to the day that everyone takes their stewardship responsibility seriously and we no longer have anything left to clean up."