

The life types of sinkholes essay sample



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The life/types of Sinkholes Essay Sample

Sinkholes are common where the rock below the land surface is limestone carbonate rock salt beds or rocks that can naturally be dissolved by ground water circulating through them. As the rock dissolves, spaces and caverns develop underground. Sinkholes are dramatic because the land usually stays intact for a while until the underground spaces just get too big. If there is not enough support for the land above the space then a sudden collapse can be small or they can be huge and it could occur. The most damage from sinkholes tends to occur in Florida, Texas, Alabama, Missouri, Kentucky, Tennessee and Pennsylvania. Two processes create three types of sinkholes, which are found through water dissolution or erosion. The Mantled Karst of West Central Florida consists mostly of buried carbonate rock. I will identify the common signs of sinkholes.

Sinkholes can be human induced when natural water drainage patterns are changed and new water diversions systems are developed. Some sinkholes form when the land surface is changed such as when industrial and run-off storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material thus causing a sinkhole.

Three types of sinkholes can be formed the dissolution cover-subsidence and cover collapse are most common in Florida dissolution consist of limestone or dolomite is most intensive where the water first contacts the rock surface aggressive dissolution occurs where flow is focused in pre-existing openings. Cover-subsidence sinkholes tend to form where sediments are permeable

cover collapse sinkholes develop abruptly over a period of hours and cause catastrophic damage.

In mantled karst terrane, the buried carbonate rock is furrowed and pitted. When the covering deposits subside into the underlying depressions, sinkhole and a hummocky topography result. Where karst processes affected rocks that are covered by insoluble deposits, the presence of buried karst features forms a distinctive type of terrain known as karst regions, the carbonate units are not exposed at land surface, but their presence may be indicated by sinkholes and the hummocky topography that results when the covering deposits take the shape of the underlying depressions. The mantled karst of west central Florida has resulted in a number of distinct geomorphic regions including several lakes districts with numerous lakes created by subsidence of overburden into the buried karst surface.

When locating common signs of sinkholes you will look for interior joint areas, window or doors. Cracks will appear in your exterior block or stucco. Windows and doors will become harder to close and open. Depression in your yard or street or other yards near you, deep cracks and separation of paved concrete walks and drives, circular patches of wilting plants, sediment in your water, neighbors have had or confirm possible activity or observation of an actual cavity beginning to open.

Four types of sinkholes all beginning with a solution cavity

Solution sinkholes – surface depressions, not complete collapse, Cover-

subsidence sinkholes – loose, overlying sand slides into solution cavity,

Collapse sinkholes – roof of an underground channel suddenly collapses,

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forming a steep-sided cavity and Cover-collapse sinkholes – thick layer of sand over clay over limestone. Limestone dissolves, clay keeps the sand from collapsing-in, then suddenly fails, leading to sudden and very violent collapse: the most dangerous. An example of collapse sinkholes is the collapse of underground mines which can lead to a fracture and collapse of the ground surface above.

Three general types occur in Florida: collapse, solution, and subsidence

Collapse sinkholes are most common type of sinkhole in Florida, Happen suddenly, Where the overburden is thick soil and heavy clay, Deep, steeply-sided holes, frequently triggered by fluctuations in the water-table. As water levels fluctuate, the roof of the cavity is stressed and weakened.

When the water-table drops too far, the cavity walls are unsupported and the ceiling becomes too weak to hold the heavy overburden. Eventually, the ceiling collapses and a sinkhole is formed. If the water-table rises, the collapse sinkhole can fill with water, and overflow like a spring. An off-set sinkhole will have an upstream and downstream conduit as water flows into the sink and siphons underground. If the water-table drops below the sinkhole, it will remain dry and accumulate sediments and vegetation.

Solution Sinkhole form slowly, the surface of limestone is broken down from wind and surface water. Chemical and physical processes the rock to erode.

Subsidence Sinkholes form slowly, dissolving limestone is replaced by sand that fall into the depression and fill the holes, form a concave depression, may be only a few feet in diameter and depth (the development of the cavities in the limestone is retarded since they are filled with clay and sand)

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As the sediments fill the depression, they restrict the flow of water through the bottom and the hole begins to retain water and as water accumulates, a lake is formed.