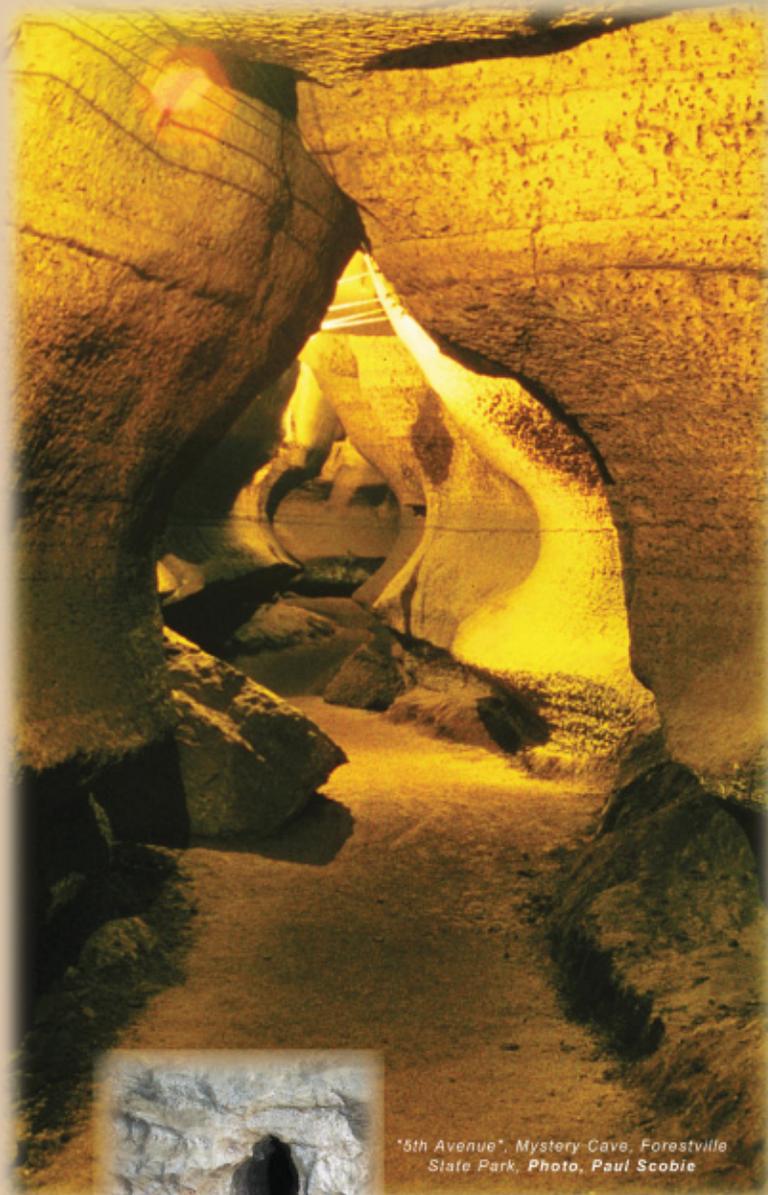


## Appendix E      What is Karst?

Karst is a distinctive region characterized by integrated drainage, and largely shaped by the dissolving action of water on limestone. Over time, this process creates unusual surface and subsurface features ranging from sinkholes, springs and disappearing streams, to complex underground drainage systems and caves. Water and pollutants can flow rapidly through these features to wells and streams.



Frozen springs discharging to Seven Mile Creek, Nicollet County, Photo, MPCA Staff



"5th Avenue", Mystery Cave, Forestville State Park, Photo, Paul Scobie

"Spigot", Spring Valley Caverns, Photo, Allen Lewerer



Solution enlarges joint in bedrock, Fillmore County, Photo, Ramesh Venkatakrishnan

Frozen springs emerging from roadcut, Fillmore County, Photo, Dr. E. Calvin Alexander, Jr., University of Minnesota



Minnesota  
Pollution  
Control  
Agency

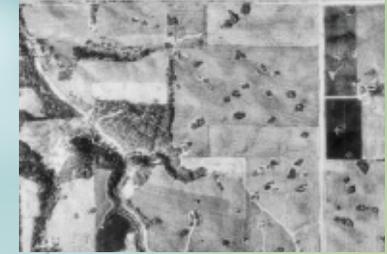
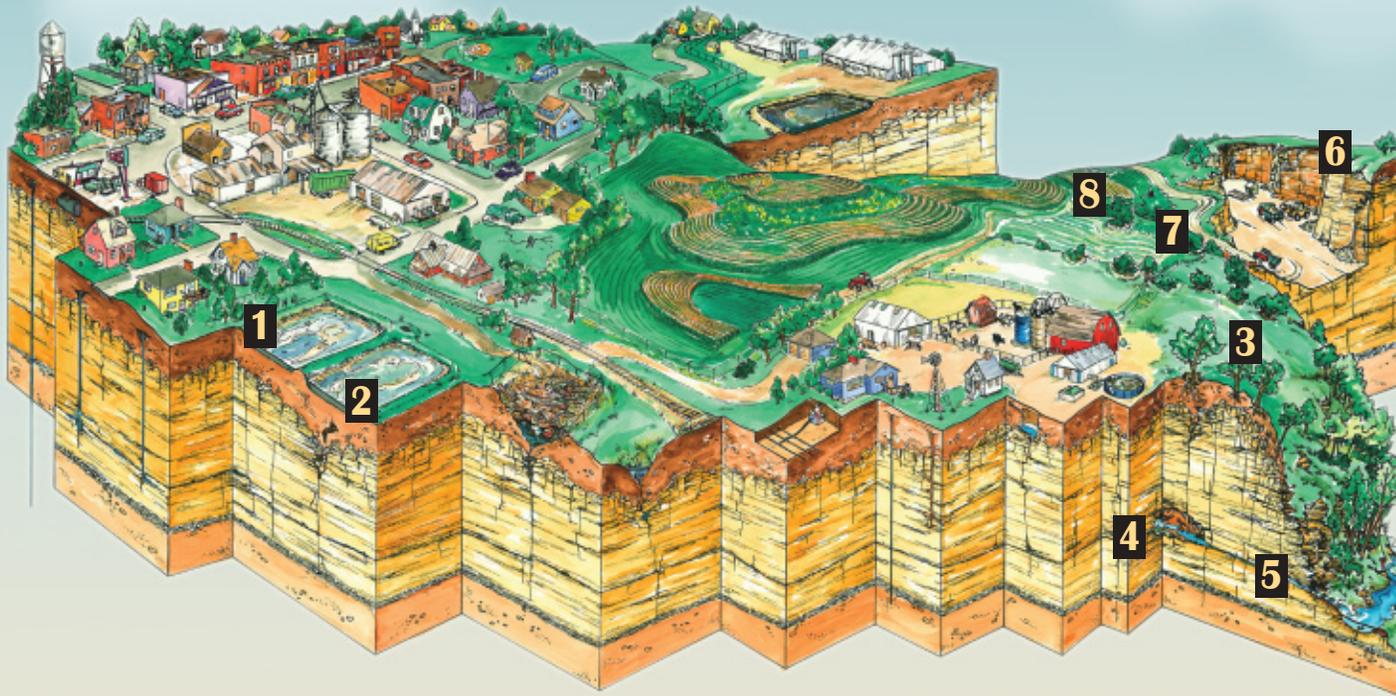
# KARST

## A Complex Landscape Sculpted by Water

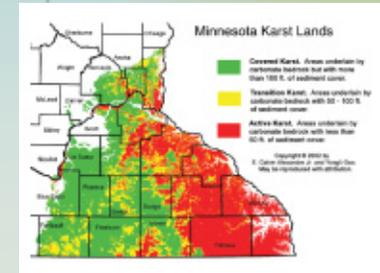
[www.pca.state.mn.us/water/  
groundwater/karst.html](http://www.pca.state.mn.us/water/groundwater/karst.html)

# Minnesota Karst:

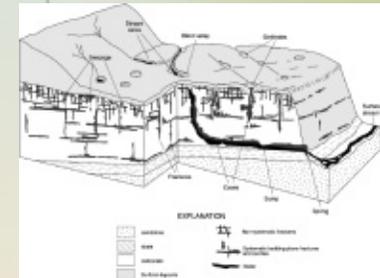
## More than just sinkholes



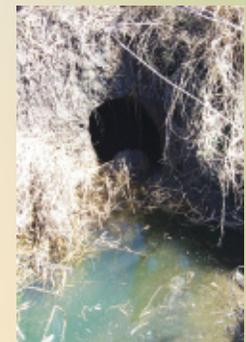
Aerial photograph of a sinkhole plain in Fillmore County.



Distribution of karst areas in Minnesota.



Three dimensional schematic of a typical karst system.



Disappearing (sinking) stream, Southeastern Minnesota



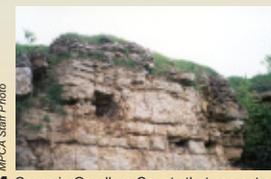
**1** Multiple sinkhole collapses in a sewage pond at a southeastern Minnesota city.



**2** Close-up of one of the sinkholes that drained sewage to drinking water aquifers.



**3** Isolated tree clusters on agricultural lands commonly mark the locations of sinkholes.



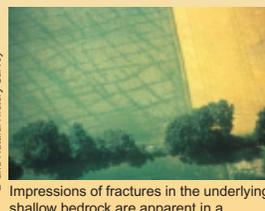
**4** Caves in Goodhue County that can act as conduits for rapid flow of groundwater.



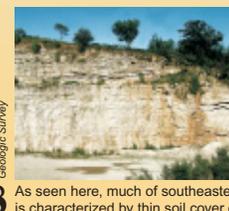
**5** A spring emerges from a southeastern Minnesota hillside.



**6** Horizontal and vertical fractures typical of the limestone in southeastern Minnesota provide paths for rapid movement of groundwater and pollutants.



**7** Impressions of fractures in the underlying shallow bedrock are apparent in a Wisconsin alfalfa field.



**8** As seen here, much of southeastern Minnesota is characterized by thin soil cover over bedrock, leading to rapid infiltration of water into the bedrock aquifers over the entire region.