Hydrologic Classification of Carbonate Aquifers

Flow type	*Hydrologic control*	*Associated cave type*
I. Diffuse flow	Gross lithology Shaley limestones; crystalline dolomites; high primary porosity	Caves rare, small, have irregular patterns
II. Free flow	Thick, massive soluble rocks	Integrated conduit cave systems
A. Perched	Karst systems underlain by impervious rocks near or above base level	Cave streams perched, often have free-air surfaces
1. Open	Soluble rocks extend upward to land surface	Sinkhole inputs; heavy sediment load; short fragments of conduit caves
2. Capped	Aquifer overlain by impervious rocks	Vertical shaft inputs; lateral flow under capping beds; long integrated caves
B. Deep	Karst system extends to considerable depth below base level	Flow is through flooded conduits
1. Open	Soluble rocks extend to land surface	Short tubular abandoned caves likely to be sediment-choked
2. Capped	Aquifer overlain by impervious rocks	Long, integrated cave, systems under caprock, active level of system likely to be inundated
III. Confined flow	Structural and stratigraphic controls	
A. Artesian	Impervious beds, which force flows below regional base level	Inclined 3-D network caves
B. Sandwich	Thin beds of soluble rock between impervious beds	Horizontal 2-D network caves

Source: After White (1969).

Figure 3.2-9

Former York Naval Ordnance Plant

1425 Eden Road, York, PA 17402

Hydrogeologic Classification of Carbonate Aquifers

DRAWN BY: JPB	CHECKED & APPROVED BY: SMS	DATE: 8/17/2011

K:\10000\10012\Data\CAD\10012-021.dwg

GROUNDWATER SCIENCES CORPORATION

Source: White, William B. Geomorphology and Hydrology of Karst Terrains. New York: Oxford University Press, 1988.