Plate 1. Cross-section of Paleozoic bedrock from the northern part of the Twin Cities Metropolitan area south to central Mower County showing hydrostratigraphic attributes and classification of aquifers and confining units (see Fig. 1 for the location of cross-section). The classification of aquifers and confining units is based on their hydrostratigraphic and hydraulic character in deep (relatively minimally fractured) bedrock settings. In deep bedrock conditions, major aquifers are composed chiefly of the coarse clastic layers and carbonate rock with abundant dissolution features. These aquifers typically have bulk horizontal hydraulic conductivity from about 5 feet to a few tens of feet per day. Discrete horizons with abundant secondary pores within the aquifers are known to have conductivities of hundreds of feet per day or greater. Fine clastic layers and carbonate rock without dissolution features are confining units that range in bulk vertical conductivity from about 10^{-7} to 10^{-3} foot per day.

In shallow bedrock conditions, all bedrock has fractures and/or dissolution cavities and ground-water flow may occur dominantly in such features. Hydrogeologic units that are of low vertical hydraulic conductivity in deep bedrock settings may be of much higher conductivity and at least locally lose the ability to serve as a confining unit in a shallow bedrock setting. Systematic fractures in deep bedrock settings are shown locally, particularly near faults and folds. Such features are poorly documented in deep bedrock conditions of southeastern Minnesota, but are drawn on this cross-section based on their known presence locally in similar settings elsewhere in the central midcontinent (for example Hurley and Swager, 1991).

Major karst systems are also shown. These karst systems are expressed at the land surface typically where drift is less than 50 feet thick.

The regional scale of this framework requires generalizations that obscure potentially important heterogeneities. For example, some aquifers on the cross-section contain fine clastic strata or tight carbonate rock that can provide confinement. Conversely, some confining units contain discrete horizons with abundant dissolution cavities or coarse clastic strata that can have moderate to high hydraulic conductivity.

Other figures in this report show greater hydrostratigraphic detail for individual units. Key to lithostratigraphic units:

- €mts—Mt. Simon Sandstone
- €igl—Ironton–Galesville Sandstone
- €stl—St. Lawrence Formation
- Opod—Prairie du Chien Group–Oneota Dolomite
- Ostp—St. Peter Sandstone
- Opvl—Platteville Formation
- Ogcm—Galena Group–Cummingsville Formation
- Ogsv—Galena Group–Stewartville Formation
- Omaq—Maquoketa Formation
- Dclp—Pinicon Ridge Formation and Bassett Member of the Little Cedar Formation
- Dcum—Coralville Formation and Hinkle and Eagle Center Members of the Little Cedar Formation
- €ecr—Eau Claire Formation
- €frn—Franconia Formation
- €jdn—Jordan Sandstone
- Opsh—Prairie du Chien Group–Shakopee Formation
- Ogwd—Glenwood Formation
- Odcr—Decorah Shale
- Ogpr—Galena Group–Prosser Limestone
- Odub—Dubuque Formation
- Dspl—Spillville Formation
- Dclc—Chickasaw Member of the Little Cedar Formation