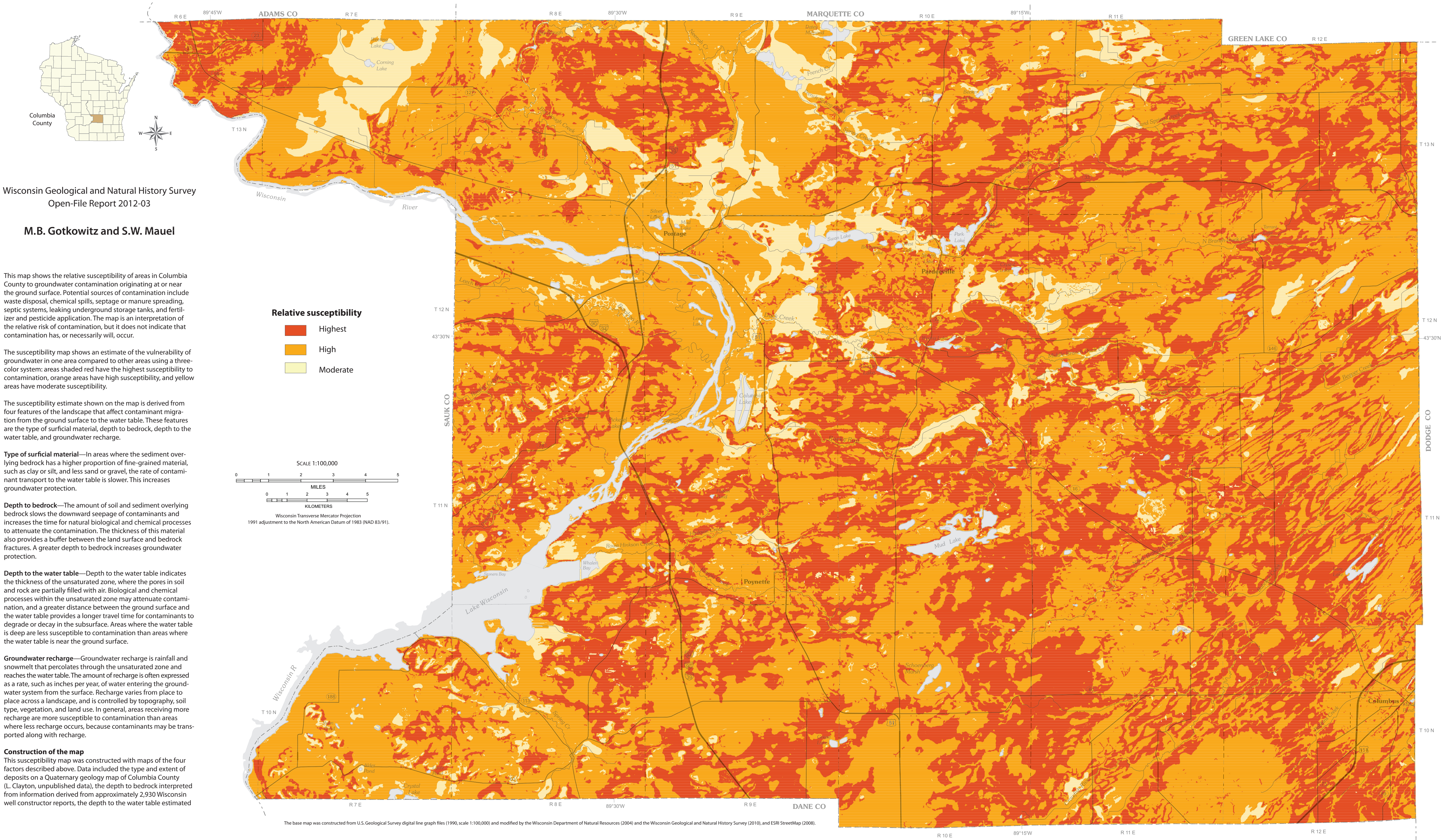


Groundwater susceptibility map of Columbia County, Wisconsin



from a countywide water table map (Sellwood, 2012), and the annual average recharge rates estimated in the county (Schoephoester and Gotkowitz, 2012). Each of these four components was classified using a 10 x 10-meter cell size. Each cell was assigned a score of 1 to 5, with 5 being the most vulnerable, for each of the four categories. The scores were summed for each cell and then divided by four to arrive at a susceptibility rank of 1 to 5, the higher values indicating greater susceptibility to contamination. This method assigns an equal weight to each of the four factors. These numerical scores were grouped into three categories, as shown on the map.

Uses of the map
This map is primarily an informational and educational tool to indicate relative susceptibility to groundwater contamination throughout Columbia County. Decision makers and private land owners can use this map as a guide to the risk of locating facilities and for making land-use decisions in various parts of the county. Likewise, the map can be used to help assess the relative risk of contamination from land spreading of septage or other waste, spills, or other accidents in different parts of the county.

Limitations of the map
Not all factors that influence the transport of contaminants were considered in this evaluation of groundwater susceptibility. Such factors are independent of the natural groundwater system and may change over time, such as the type of contaminant present and the location of the contamination relative to the groundwater flow direction. For instance, an increase in the rate of pumping from a well can alter groundwater flow paths, potentially drawing contamination in a new direction or increasing its rate of migration within the subsurface. Sources of contamination are likely to vary over time, as land use and development alter the landscape. Areas where agricultural or industrial waste is land-spread are more likely to have groundwater contamination than areas that do not receive these wastes, regardless of factors considered in this susceptibility evaluation. An additional caution related to this map is that groundwater susceptibility cannot be directly measured; it is estimated from the four variables listed earlier.

Summary
In the analysis presented here, locations most susceptible to groundwater contamination are those with the potential for rapid contaminant transport from the land surface to shallow groundwater. This includes areas that have surficial deposits consisting primarily of sand and a shallow depth to the water table. In comparison, areas mapped as moderately susceptible contain extensive deposits of peat or lake sediment and receive less groundwater recharge. Although contamination can reach the water table in this setting, extensive groundwater contamination is less likely than in other areas of the county. Due to the widespread nature of permeable geologic deposits and shallow depths to water, groundwater almost everywhere in the county is highly susceptible to contamination.

References
Schoephoester, P.R., and Gotkowitz, M.B., 2012, Groundwater recharge map of Columbia County, Wisconsin: Wisconsin Geological and Natural History Survey Open-File Report 2012-02, scale 1:100,000.

Sellwood, S.M., 2012, Water-table elevation map of Columbia County, Wisconsin: Wisconsin Geological and Natural History Survey Open-File Report 2012-04, scale 1:100,000.

This map represents work performed by the Wisconsin Geological and Natural History Survey and is released to the open files in the interest of making the information readily available. This map has not been edited or reviewed for conformity with Wisconsin Geological and Natural History Survey standards and nomenclature.

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