



# Groundwater Vulnerability Linn County, Iowa

## LEGEND


This map delineates the relative vulnerability of drinking-water supply aquifers to surface-derived contamination via naturally occurring pathways. Groundwater vulnerability to contamination is related to the thickness of slowly permeable materials ("confining beds") that overlie individual aquifers and limit the downward movement of shallow groundwater and contaminants to the aquifers. Clayey glacial deposits (Quaternary age) form the most important confining bed, but shale rock strata also provide confinement in Linn County. Groundwater aquifers include the sands and gravels of river-valley alluvium and terrace deposits; relatively extensive, mappable sands buried within glacial deposits; and the carbonate rocks of Devonian and Silurian age. Other, less commonly used groundwater sources exist, but their vulnerability to contamination is not addressed by this map.


### MOST VULNERABLE AQUIFERS

 This unit includes relatively thick, shallow alluvial and terrace aquifers (isolated terrace remnants may not be saturated, and therefore may not be aquifers); carbonate rock aquifers where they are exposed at the surface; and carbonate rock aquifers in areas covered by less than 50 feet of Quaternary deposits that contain a significant thickness (>20 feet) of sand. *In these settings, overlying confining beds are thin or non-existent, and therefore these aquifers are highly vulnerable to contamination.*


 This unit delineates areas where the Pinicon Ridge Formation (Devonian) is the bedrock and is covered by less than 50 feet of Quaternary deposits; solid blue indicate areas where this formation is exposed. Sinkholes and other karst features commonly occur within the upper part of the Pinicon Ridge Formation. *As effective confining beds do not overlie the carbonate rock aquifers in this area and karst features may locally provide a direct connection to the land surface, the carbonate rock aquifers in this mapped area are highly vulnerable to contamination.*

### VULNERABLE AQUIFERS


 This unit includes carbonate aquifers covered by less than 50 feet of Quaternary deposits that are comprised predominantly of loess (silt and fine sand) and/or glacial till; and carbonate rock aquifers covered by 50 to 100 feet of Quaternary deposits that contain a significant thickness (>20 feet) of sand. *Effective confining beds do not overlie the carbonate rock aquifers in these settings, and therefore the aquifers are vulnerable to contamination.*

 This unit includes relatively continuous buried sand and gravel aquifers that occur within the Quaternary deposits less than 50 feet beneath the land surface. *Effective confining beds do not overlie the aquifer in this area, and therefore the aquifers are vulnerable to contamination.*

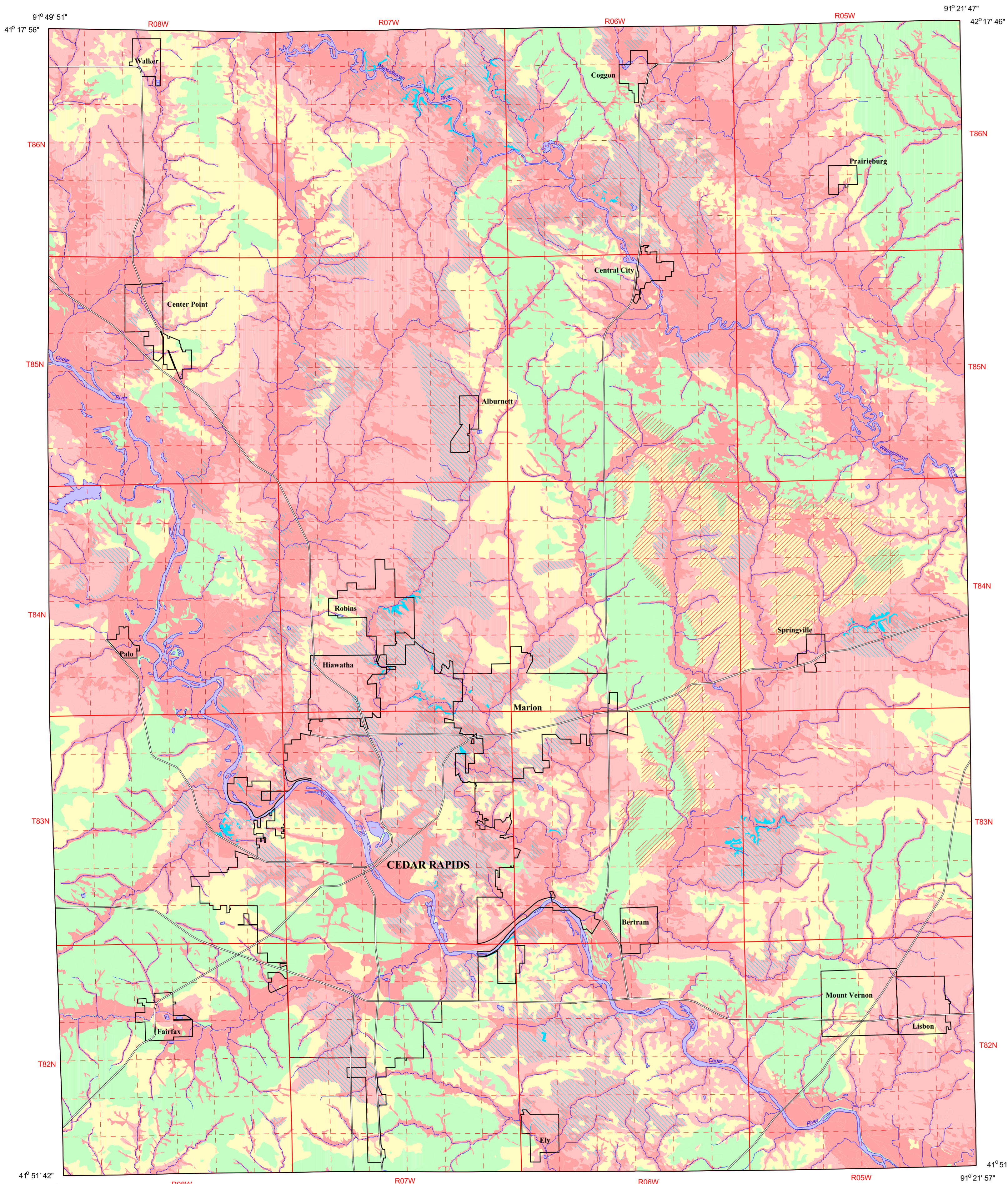
### LESS VULNERABLE AQUIFERS

 This unit includes bedrock aquifers covered by 50 to 100 feet of Quaternary deposits comprised predominantly of loess (silt and fine sand) and/or glacial till. *This thickness of relatively low-permeability materials may form a relatively effective confining bed, and the bedrock aquifers have a limited vulnerability to contamination.*

### PROTECTED AQUIFERS

 This unit includes bedrock aquifers that are covered by over 100 feet of Quaternary deposits. *This thickness of relatively low-permeability materials forms an effective confining bed, and the aquifers are largely protected from contamination.*

Prepared by the Iowa Department of Natural Resources,  
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Open File Map 98-4



SCALE 1:100,000

