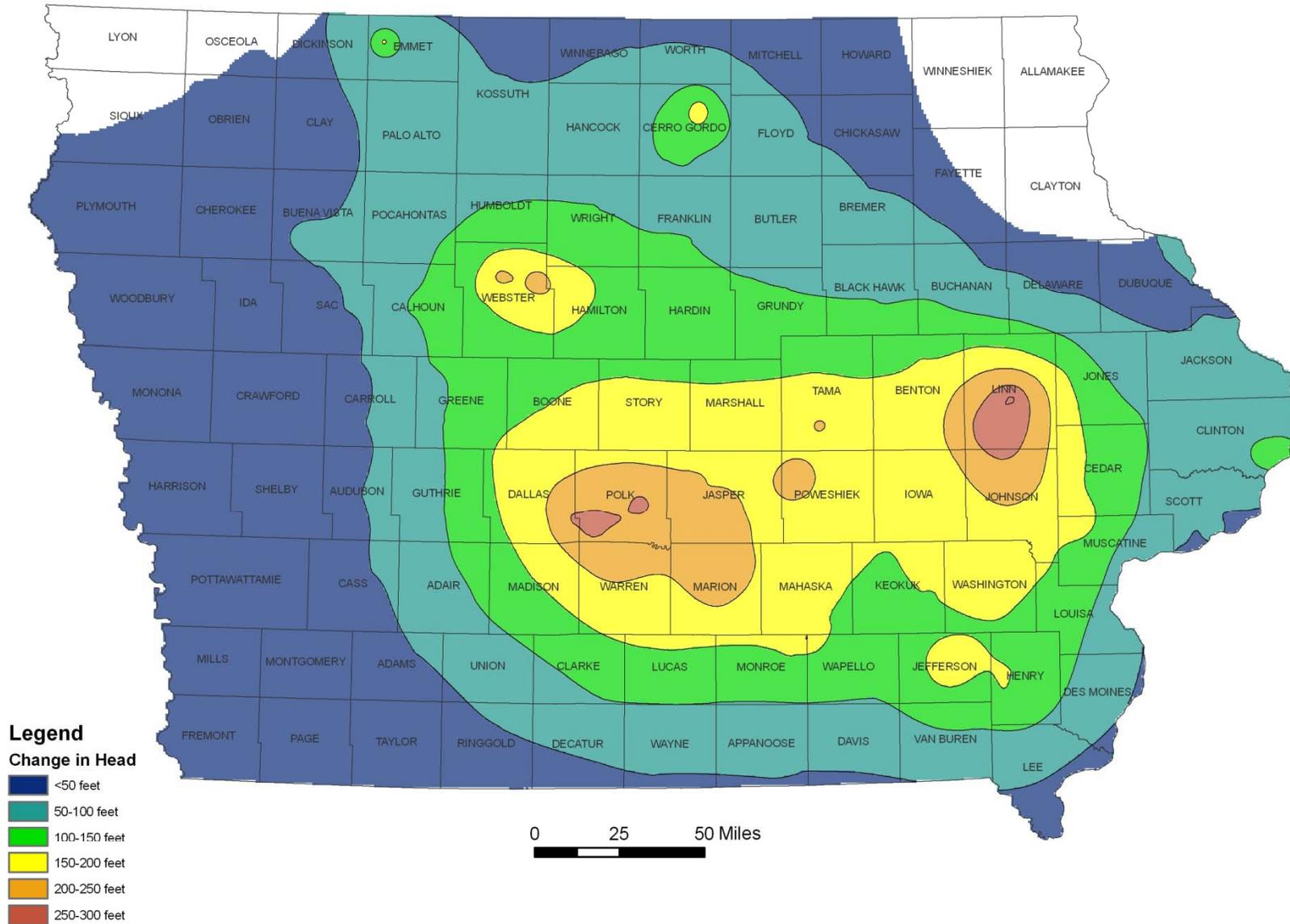


GW Management Concepts

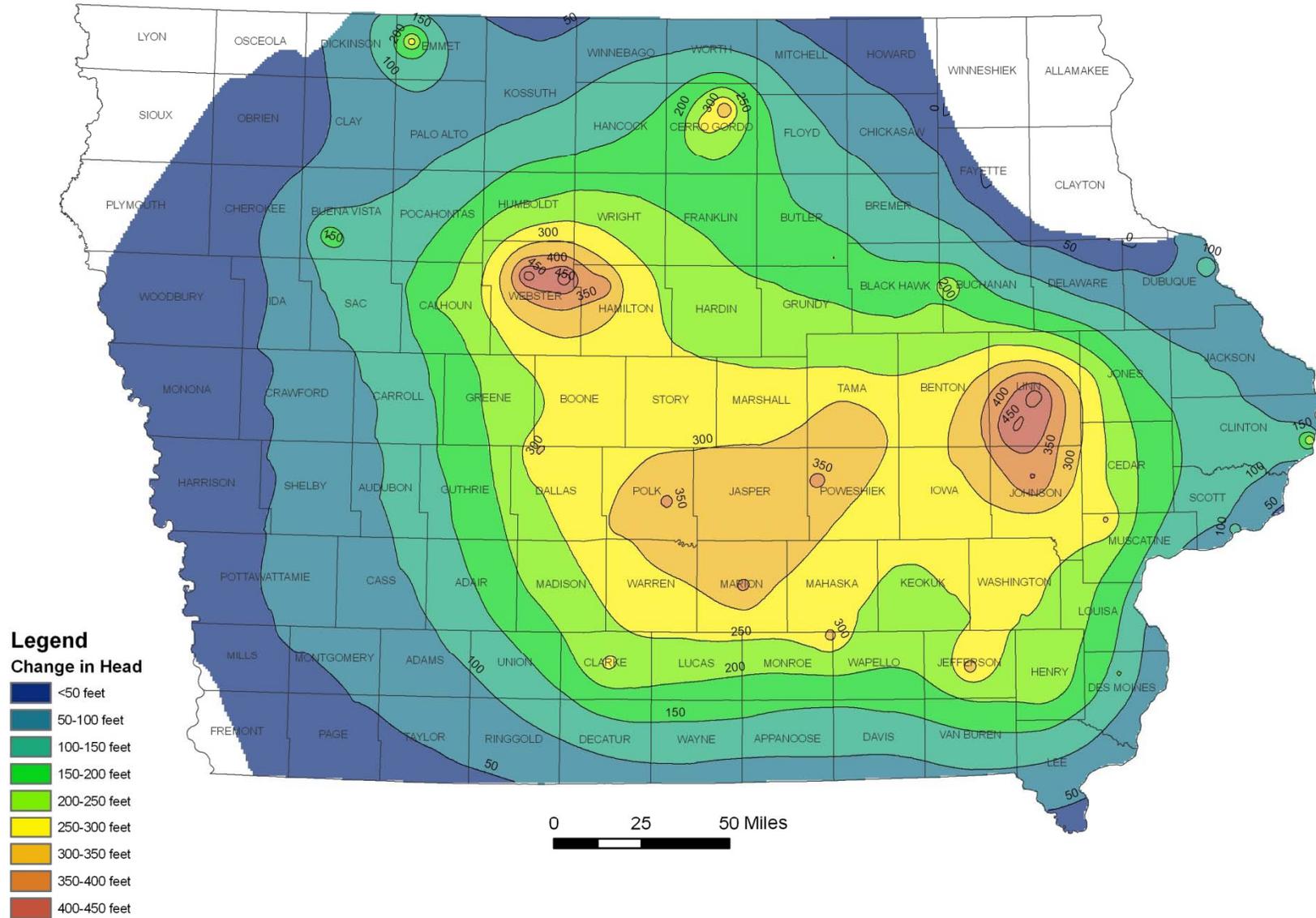
- Jordan Aquifer -
Pressure declines and
statutory limits.

- Jordan and Silurian
Aquifer "Yellow Flag"
Zone

Change in Head (Drawdown) from Pre-Development to 2008



Change in Head (Drawdown) from Pre-Development to 2029 (50% increase in water usage)

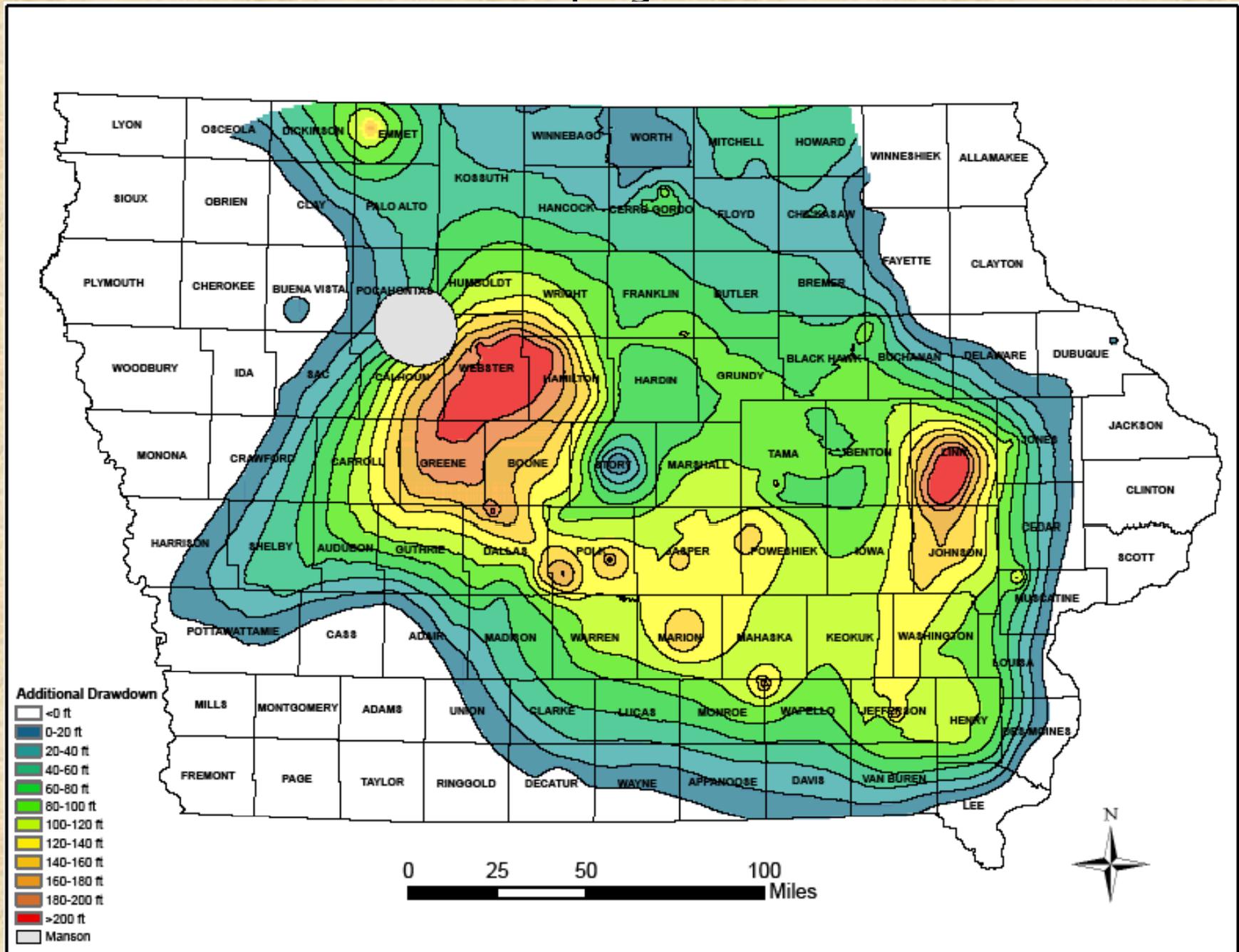


Sustainability Criteria:

IAC 567 Chapter 52.4(3)c.

Two hundred (200) foot limit on the decline of groundwater piezometric levels. The maximum collective long-term decline in groundwater piezometric levels in the Cambrian Jordan Sandstone Aquifer in any high use area will not be permitted to exceed 200 feet from the 1977 baseline as determined from available records of the department's Iowa Geological Survey (IGS).

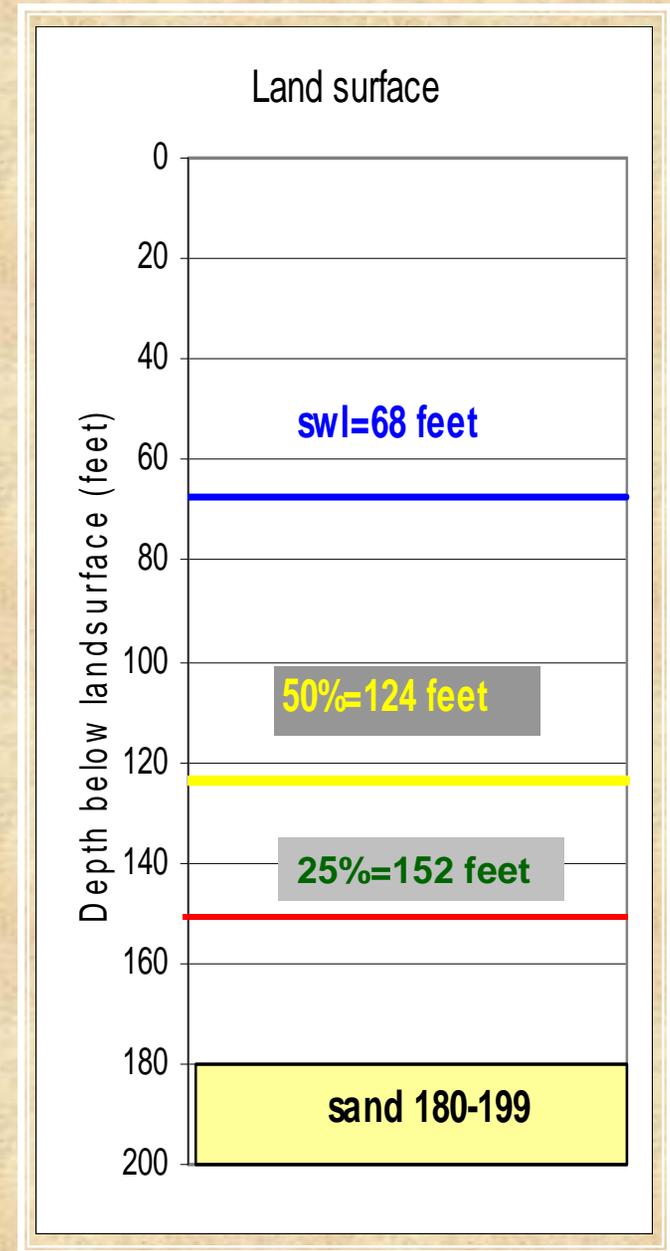
25% Increase in Pumping Rates 2009-2029



Sustainability Criteria:

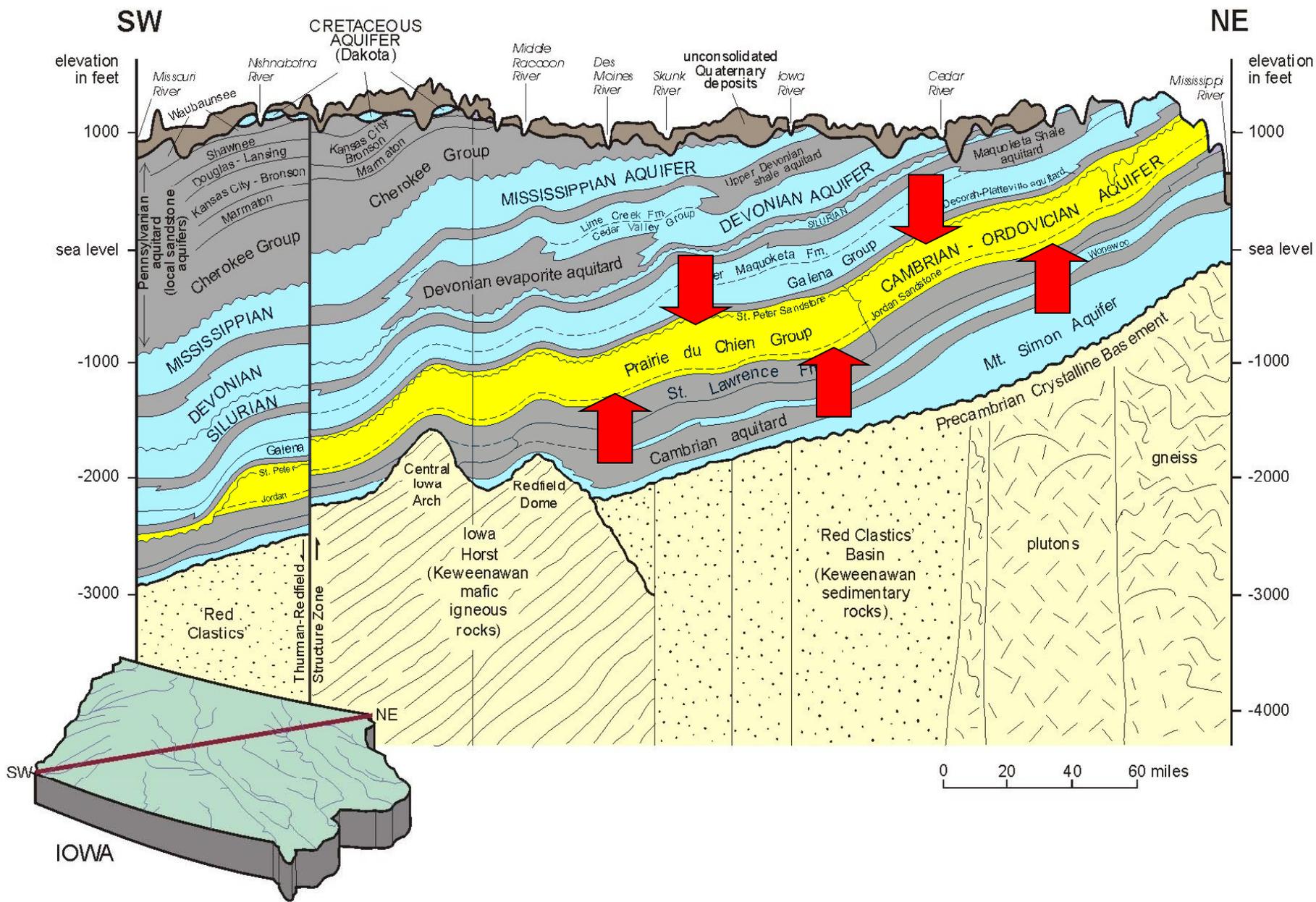
- One allowable drawdown for the entire Aquifer (i.e., 200 feet from 1977?)
- Percent of original "Pressure Head"?
- MN DNR uses Pressure (Available) Head approach. At 50% loss, submit a plan to assure Available Head will not fall below 25% of original.
- MN DNR applies this at the well, not in a mapped zone around it.

Pressure
Head

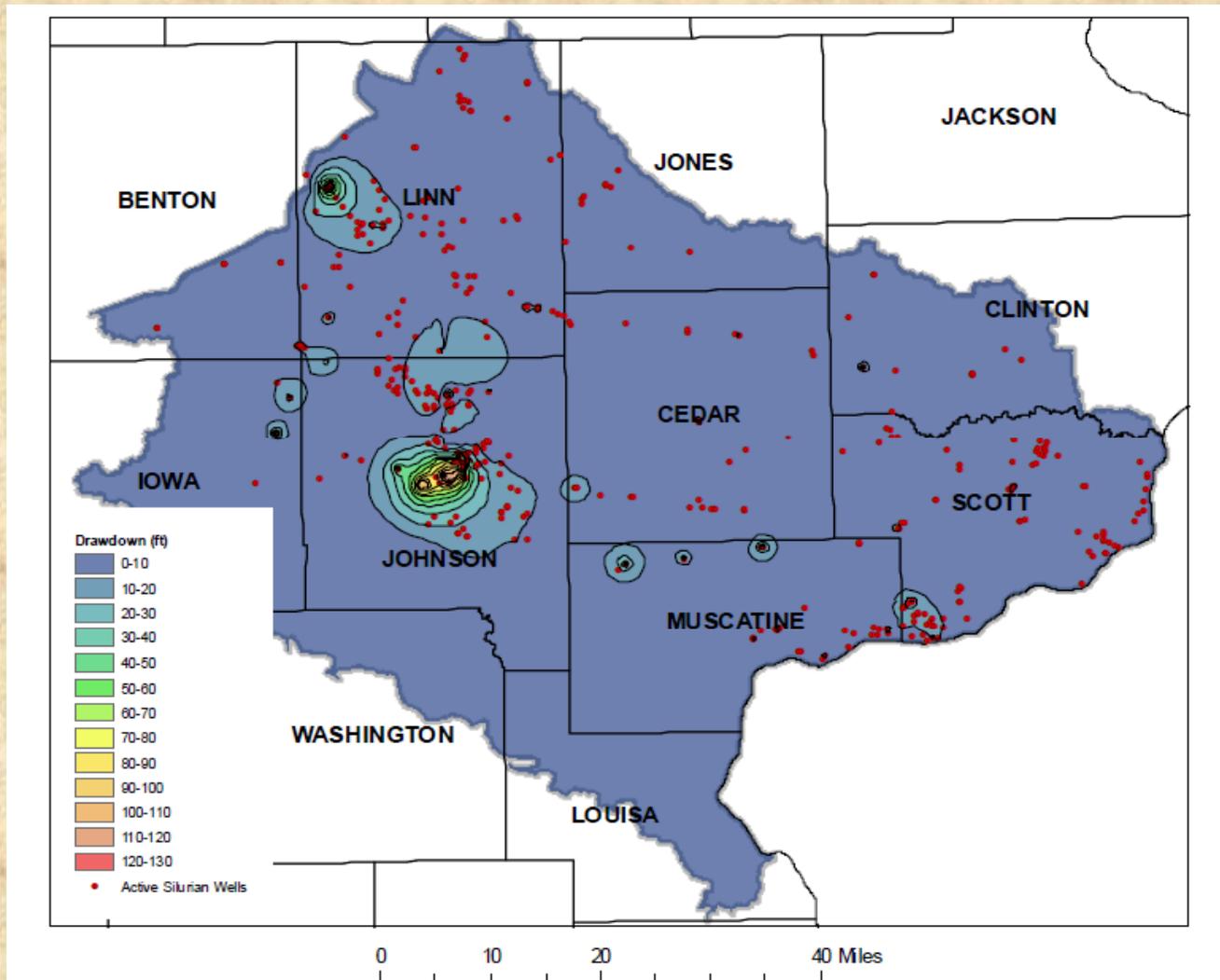


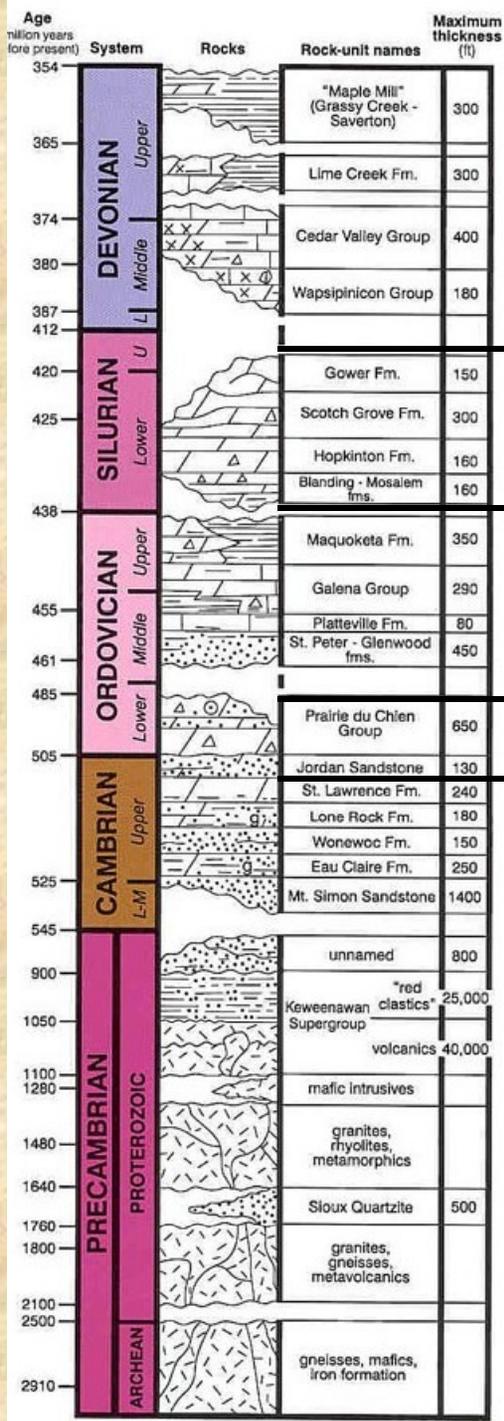
Bedrock Aquifer Systems across Iowa

Southwest to Northeast



Silurian Aquifer Yellow Flags

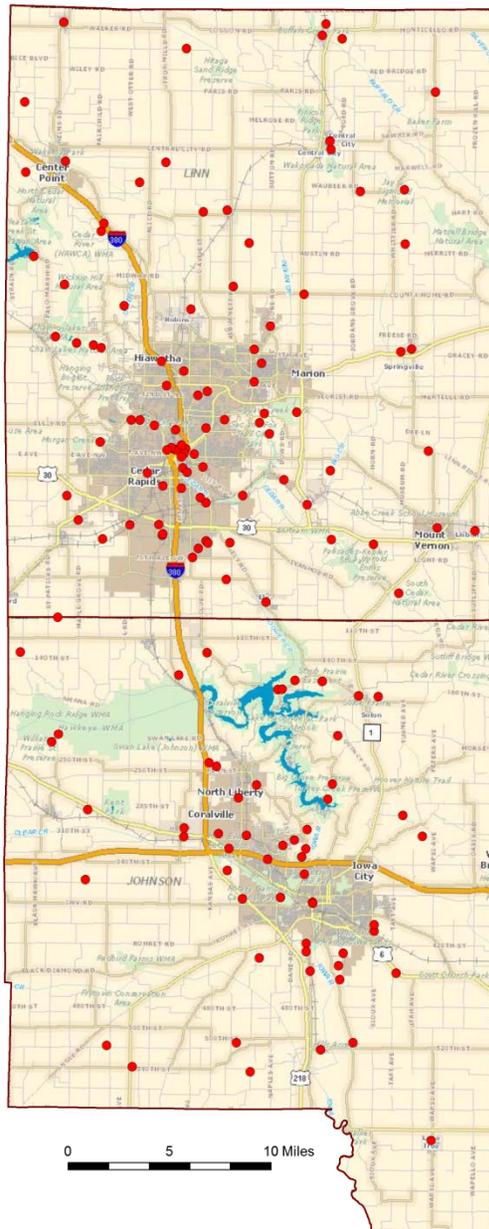




Two High-Yield Bedrock Aquifers in Linn and Johnson Counties

← Silurian

← Jordan



Water Users Permitted
for > 25,000 gpd Withdrawal
Linn and Johnson Counties

● Water Withdrawal Permit

There are about
150 water use
permits issued for
Linn and Johnson
Counties.

GW in Linn and Johnson counties.

- Significant demand and water lowering occurring for major aquifers.
- Assemble main GW users and interests.
- Present current status and future conditions.
- Collect feedback - further actions needed?
- Can be formal or informal "next steps".

Protected Water Sources

- A formal designation that allows specific rules to be generated and applied to water issues within an area of concern (IAC 567-53).
- Goal: "...to preserve the availability of the protected source for sustained beneficial use."