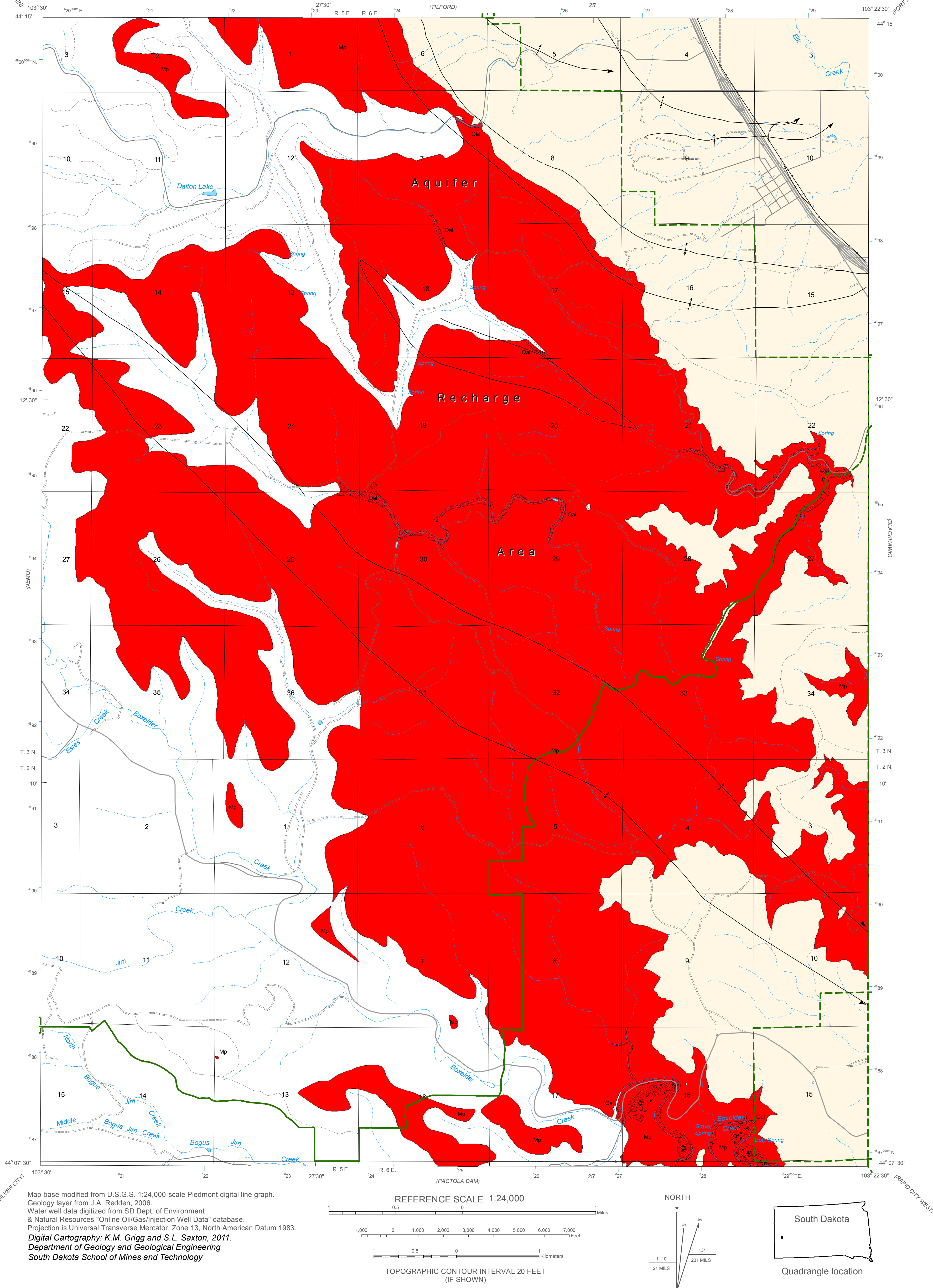


Aquifer Susceptibility of the Madison Aquifer (Pahasapa Limestone), Piedmont Quadrangle

By
A.L. Lisenbee, A.D. Davis, and M.H. Price
2011



The preparation of this map was financed by the West Dakota Water Development District in association with the Department of Geology and Geological Engineering South Dakota School of Mines and Technology

Definition of Susceptibility

Aquifer susceptibility is the inherent ability of a formation to accept and transmit liquids (potentially including contaminants).

Susceptibility Ranges for Hydrogeologic Units

Hydrogeologic Units	Recharge Potential															
	Low				Medium				High				Very High			
Madison (Pahasapa Limestone) Recharge Area																
Gravel Deposits over Pahasapa Limestone																
Alluvium over Pahasapa Limestone																
	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75

Summary of ratings associated with the Minnelusa aquifer. Number falling within the range area indicates the qualitative rating for aquifer susceptibility (adapted from Hargrave, 2005).

Susceptibility Ratings Explanation:
The susceptibility range is the sum of ratings for susceptibility parameters of the aquifer. The parameters used for the Minnelusa aquifer are rock type, overlying material, joints, minor karst, breccia and minor faults affecting the hydrogeologic units of the Minnelusa Fm.
The ratings for these parameters are: Rock Type: 5-8 for sandstone; Overlying Material: 5-10 for alluvium and negative 5-10 for gravel, sand and clay mixture; Joints: 5-7; Minor Karst: 5-8; Breccia: 5-7 and; Minor Faults: 4-6.
The ratings suggested for the parameters are from Aller et al. (1987) and Davis et al., (1994).

EXPLANATION

- Contact
Solid where location certain; dashed where approximately located.
- Fault
Solid where location certain; dashed where approximately located. Bar and ball on downthrown side.
- Anticline
Showing crestline and direction of plunge. Solid where location certain; dashed where approximately located.
- Syncline
Showing troughline and direction of plunge. Solid where location certain; dashed where approximately located.
- Black Hills National Forest Boundary

Geologic Units - Color indicates degree of susceptibility; see chart to left.

- Quaternary
Includes alluvium (Qal) deposits. Increased potential for infiltration of water.
- Quaternary/Tertiary
Includes terrace deposits (Qt). Decreased potential for infiltration of water.
- Unconformity
- Lower Mississippian
Mp
Susceptibility rating ranges between 58 to 65.
- Madison Aquifer Absent
- Madison Aquifer Present in Subsurface