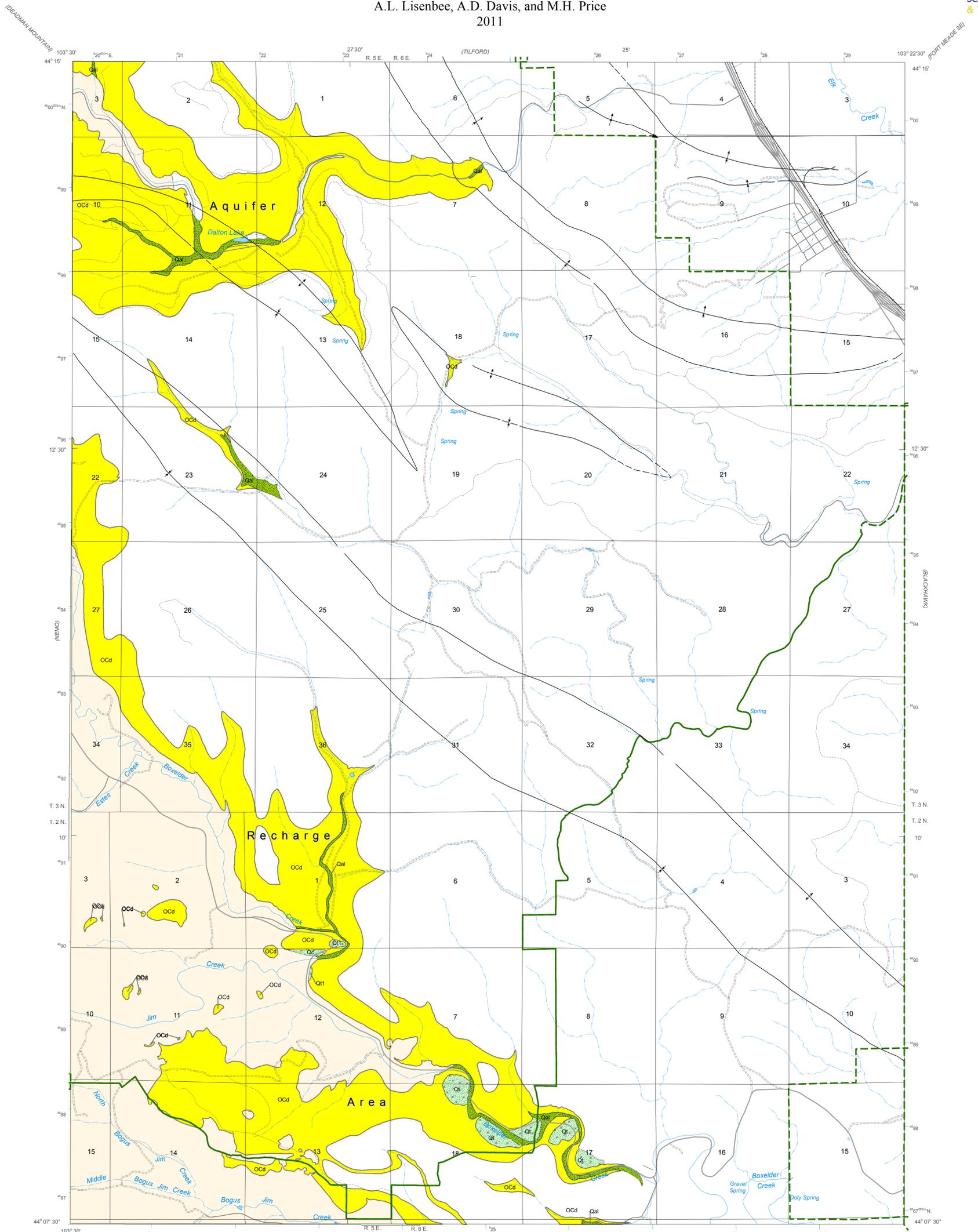


Aquifer Susceptibility of the Deadwood Formation, Piedmont Quadrangle

By
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2011



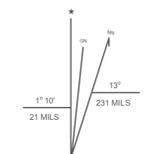
Map base modified from U.S.G.S. 1:24,000-scale Piedmont digital line graph.
Geology layer from J.A. Redden, 2006.
Water well data digitized from SD Dept. of Environment & Natural Resources "Online Oil/Gas/Injection Well Data" database.
Projection is Universal Transverse Mercator, Zone 13, North American Datum 1983.
Digital Cartography: K.M. Grigg and S.L. Saxton, 2011.
Department of Geology and Geological Engineering
South Dakota School of Mines and Technology

REFERENCE SCALE 1:24,000



TOPOGRAPHIC CONTOUR INTERVAL 20 FEET (IF SHOWN)

NORTH



Quadrangle location

The preparation of this map was funded 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	Susceptibility Rating													
	0	5	10	15	20	25	30	35	40	45	50	55	60	65
Deadwood Aquifer Recharge Area			8-16											
Deadwood aquifer by terrace deposits				13-26										
Saturated alluvium over Deadwood aquifer		3-6												

Summary of ratings associated with the Deadwood 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 Deadwood aquifer are rock type, overlying material, and joints affecting the hydrogeologic units of the Deadwood 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 and Joints; 5-7.

The ratings suggested for the parameters are from Ailer 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; queried where uncertain. 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

- Quaternary** **Floodplain Surficial Deposits**
Includes alluvium (Qal) deposits. Increased potential for infiltration of water.
- Quaternary/Tertiary** **Other Surficial Deposits**
Includes colluvium (Qc) and terrace deposits (Qt, Qt₁). Decreased potential for infiltration of water.
- Unconformity**
- Ordovician/Cambrian** **Deadwood Formation**
Susceptibility rating ranges between 24 to 37.
- Deadwood Formation Absent**
- Deadwood Formation Present in Subsurface**