Aquifer Susceptibility Map of the Deadwood Formation, Pactola Dam Quadrangle

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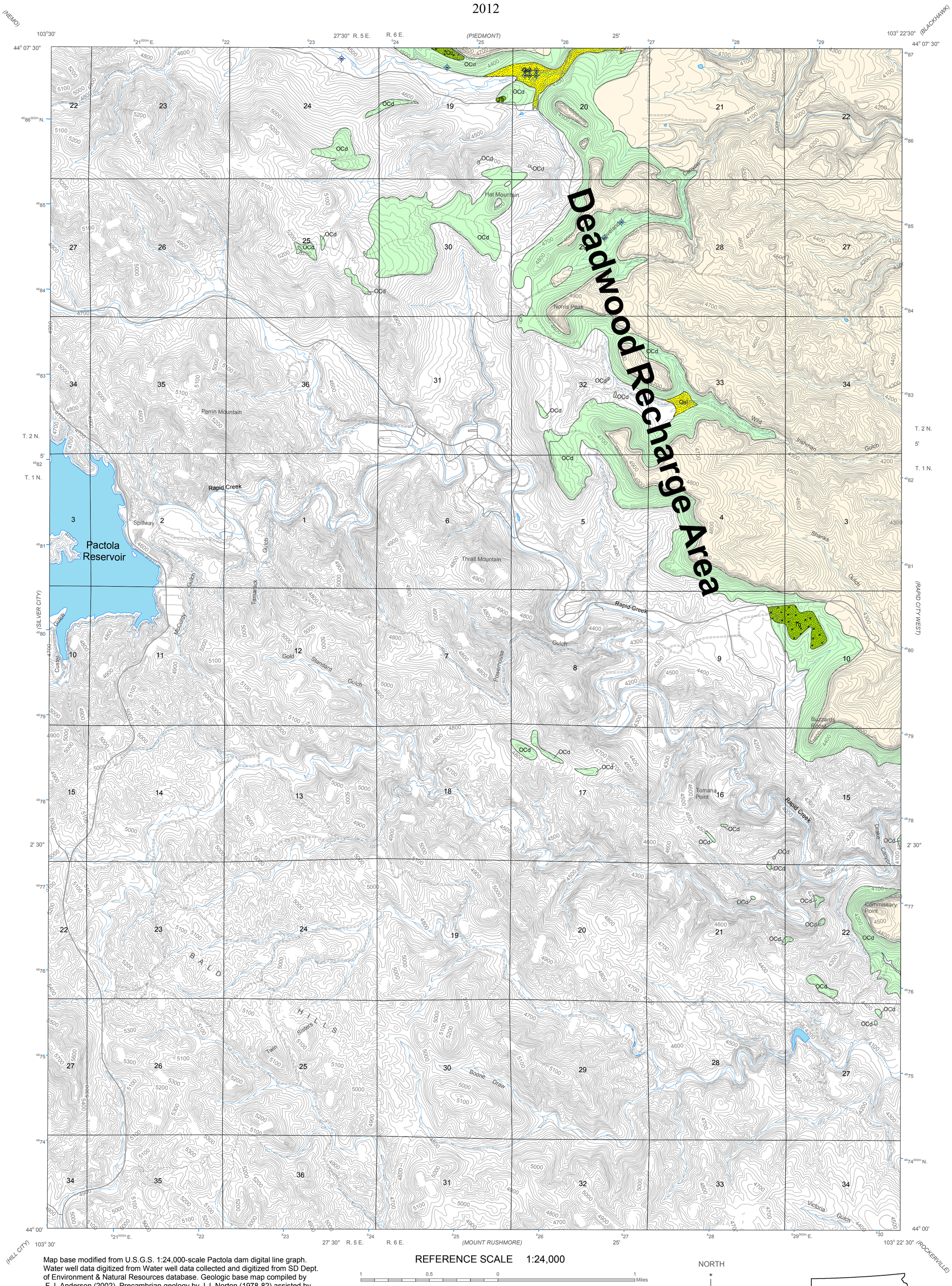

Map base modified from U.S.G.S. 1:24,000-scale Pactola dam digital line graph. Water well data digitized from Water well data collected and digitized from SD Dept. of Environment & Natural Resources database. Geologic base map compiled by F.J. Anderson (2002). Precambrian geology by J.J. Norton (1978-82) assisted by R. Marin. Sedimentary rocks mapped by W. Daly (1981). Precambrian geology revised by J.A. Redden (2002).

Digital Cartography: M.T. Tekle & Darren Johnson, 2012.
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REFERENCE SCALE 1:24,000

1 0.5 0 1 Miles

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

1 0.5 0 1 Kilometers

TOPOGRAPHIC CONTOUR INTERVAL 20 FEET

NORTH

UTM GRID AND 1971 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

South Dakota

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	Low	Medium	High	Very High
Deadwood Recharge Area		8 - 16		
Terrace (Gravel/Sand/Clay) Deposits over Deadwood aquifer	3 - 8			
Alluvium over Deadwood aquifer		13 - 26		

0 5 10 10 15 15 20 20 25 35 30 40 35 45 40 45 60 50 65 55 60 65

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

- Water wells penetrating Deadwood aquifer
- Trail
- Unimproved Road
- Paved Road
- Highway
- Lake
- Intermittent Stream
- Perennial Stream

Contact
Solid where location certain; dashed where approximately located.

Geologic Units

Surficial Deposits

Qal — **LOW SUSCEPTIBILITY - Gravels over Deadwood Formation**
Susceptibility ratings range between 3 to 6; unit is more susceptible when saturated

Qal — **MEDIUM SUSCEPTIBILITY - Alluvium over Deadwood Formation**
Susceptibility rating ranges between 13 to 24. Unit is more susceptible if saturated

Unconformity

Ordovician / Cambrian — OCd — **LOW SUSCEPTIBILITY - Deadwood Formation**
Deadwood Formation- Susceptibility rating ranges between 8 to 14.

Deadwood Formation Present in Subsurface

Deadwood Formation Absent