Minnesota Department of Natural Resources
County Geologic Atlas Program
mndnr.gov/groundwatermapping

Hydrogeologic Cross Sections

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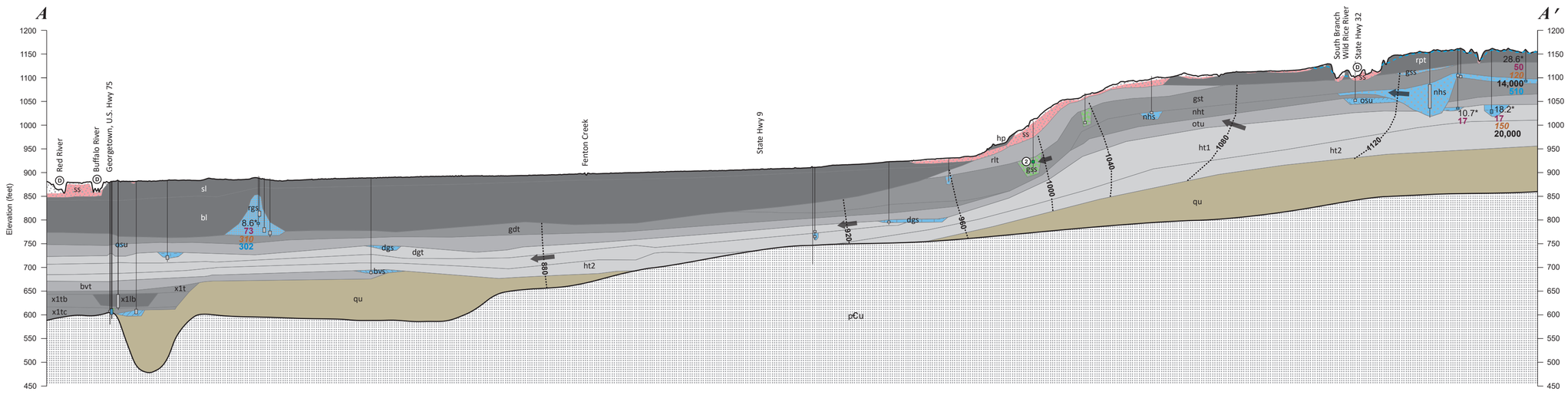
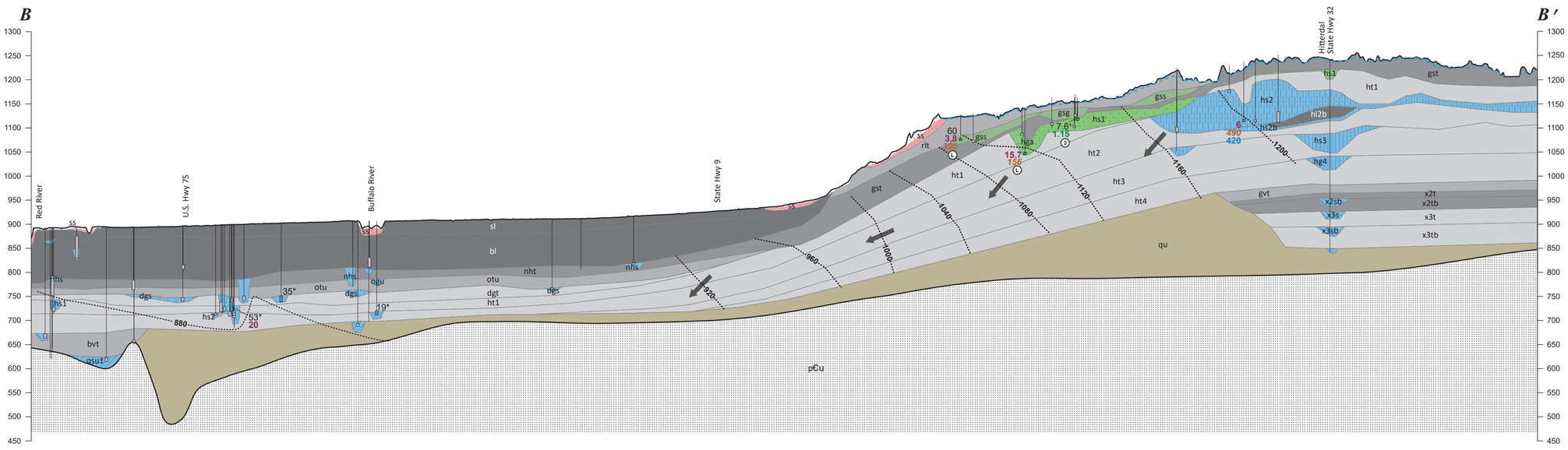
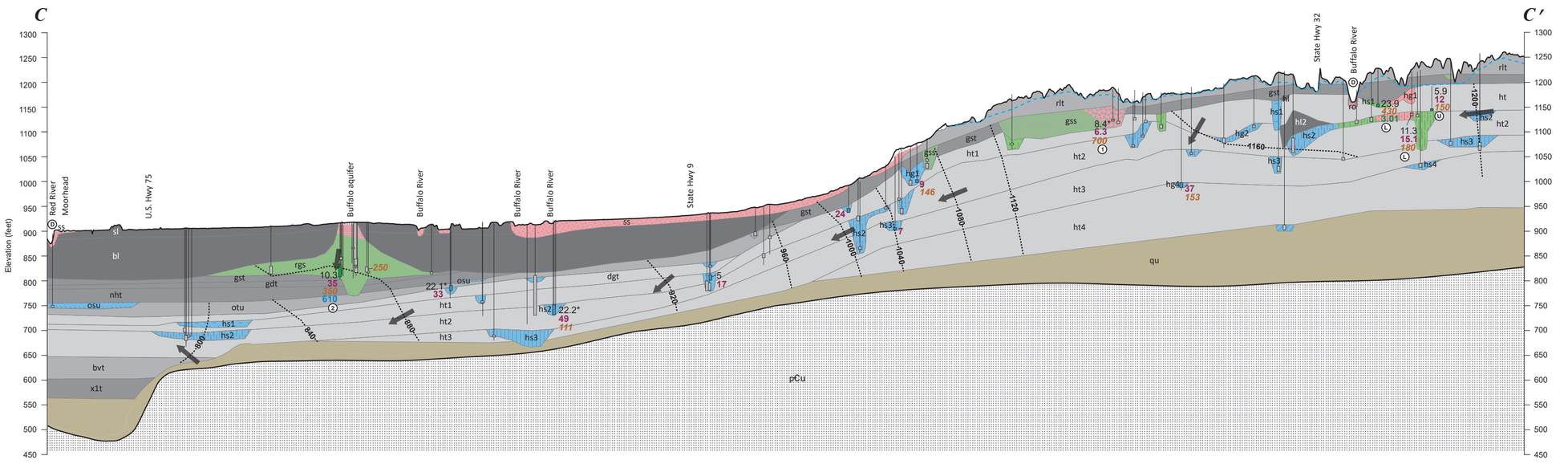
2018

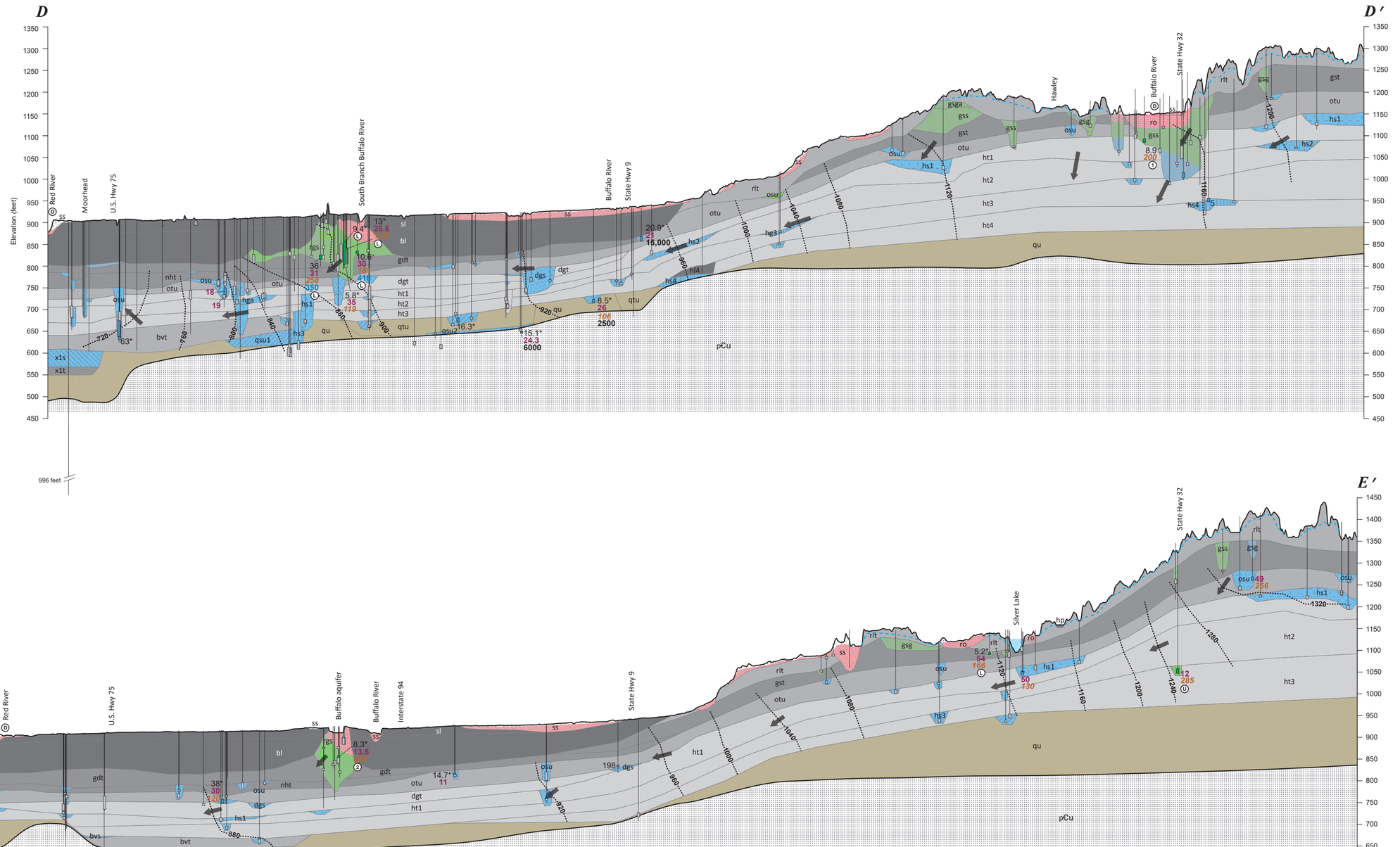
Geologic Atlas of Clay County
County Atlas Series C-29, Part B
Plate 7 of 8
Hydrogeologic Cross Sections
A–A′ through E–E′

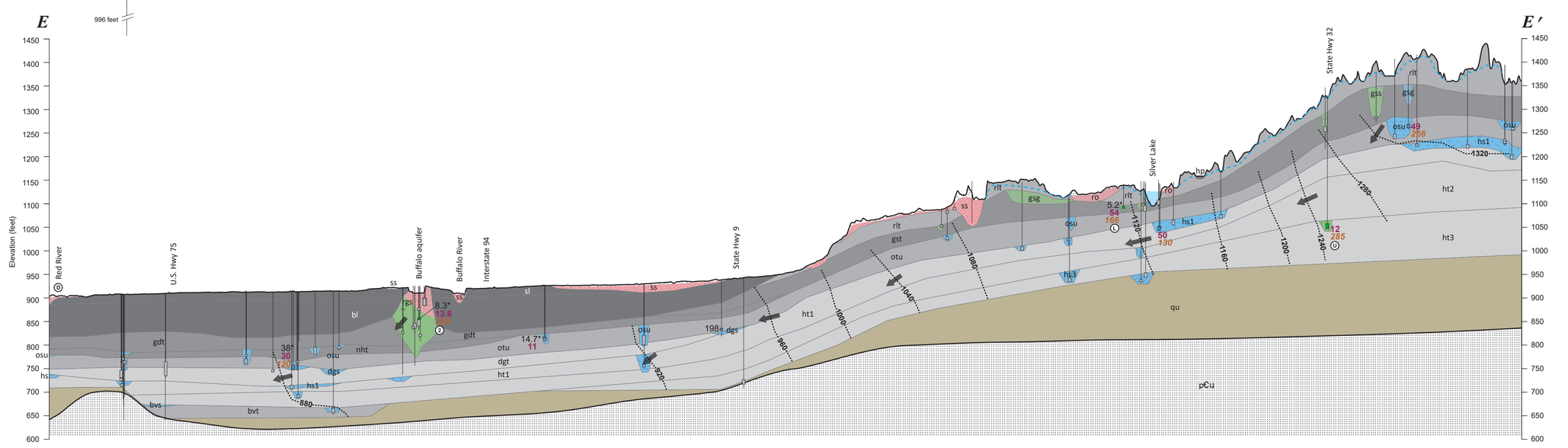
To accompany atlas Report, Plate 6, and Plate 8.











CROSS SECTION EXPLANATION

Quaternary unconsolidated sediments

Interpreted tritium age is indicated by background color.

Surficial sand and gravel

- ss

Buried aquifer or aquifer group

- prf
- rlf (ro, rgs)
- gr (gsga, gss, gsg, gds, gdg)
- nh (nhs, nhg)
- ot/nv (osu, ogu)
- dg/br (dgs)
- h1 (hga, hs1, hg1)
- h2 (hs2, hg2, hs2b)
- h3/h4 (hs3, hg3, hs4, hg4)
- bv/x (bvs, bvg, x1s, x1sc, x2sb, x3s, x3sb)
- qu (qsu1, qsu2)
- Undifferentiated Pleistocene sediment (qu, qtu)

Quaternary aquitards

Grouped by texture ranging from highest to lowest sand content indicating relative hydraulic conductivity.

Geologic unit code	Percent sand
dgt, ht1, ht2, ht3, ht4, x3t, x3tb	>50% and ≤60%
rlt, gvt, otu, bvt	>40% and ≤50%
gst, gdt, nht, x1t, x1tb, x1tc, x2t, x2tb	>30% and ≤40%
sl, bl, hp, rpt, hl, hl2, hl2b, hl4, x1lb	≤30%

SCALE 1:100 000
VERTICAL EXAGGERATION X 50

1 0 1 2 3 4 5 MILES
1 0 1 2 3 4 5 6 7 8 9 KILOMETERS

Bedrock

Interpreted tritium age is indicated by pattern.

- pCu: Precambrian crystalline bedrock

Tritium age

Darker color in small vertical rectangle (well screen symbol) indicates tritium age of water sampled in well. Lighter color indicates interpreted age of water in aquifer.

- Recent: water entered the ground since about 1953 (8 to 15 tritium units [TU]).
- Mixed: water is a mixture of recent and vintage waters (greater than 1 TU to less than 8 TU).
- Vintage: water entered the ground before 1953 (less than or equal to 1 TU).
- Well not sampled for tritium.

Groundwater conditions

- ① Water from the surface moves through a thin layer of overlying fine-grained material to an underlying aquifer.
- ② Groundwater moves from an overlying surficial aquifer to a buried aquifer.
- ③ Groundwater moves from an overlying buried aquifer to an underlying buried aquifer.
- Ⓛ Groundwater flows laterally.
- Ⓤ Groundwater flowpath is unknown.
- Ⓓ Groundwater discharges to a surface-water body.

Symbols and labels

- 8.6* Chloride: if shown, concentration is ≥5 ppm. (* naturally elevated values, · unknown source)
- 17 Arsenic: if shown, concentration is ≥2 ppb.
- *490* Manganese: is shown, concentration is ≥100 ppb.
- 3.01 Nitrate: if shown, concentration is ≥1 ppm.
- 14,000 Carbon-14 (^{14}C): if shown, estimated groundwater residence time in years.
- 410 Sulfate: if shown, concentration is ≥250 ppm.
- General groundwater flow direction
- ····1040···· Approximate equipotential contour; contour interval 40 feet
- Land or bedrock surface
- Water table

This map was compiled and generated in a geographic information system. Digital data products are available on the Groundwater Atlas Program page (mndnr.gov/groundwatermapping).

This map was prepared from publicly available information. Every reasonable effort has been made to ensure the accuracy of the factual data on which this map interpretation is based. However, the DNR does not warrant the accuracy, completeness, or any implied uses of these data. Users may wish to verify critical information. Sources include both the references in the report and information on file in the offices of the Minnesota Geological Survey and the DNR. Every effort has been made to ensure the interpretation shown conforms to sound geologic and cartographic principles. This map should not be used to establish legal title, boundaries, or locations of improvements.

Base modified from Minnesota Geological Survey, Clay County Geologic Atlas, Part A, 2014.

Universal Transverse Mercator projection, zone 15N, North American Datum of 1983. North American Vertical Datum of 1988.

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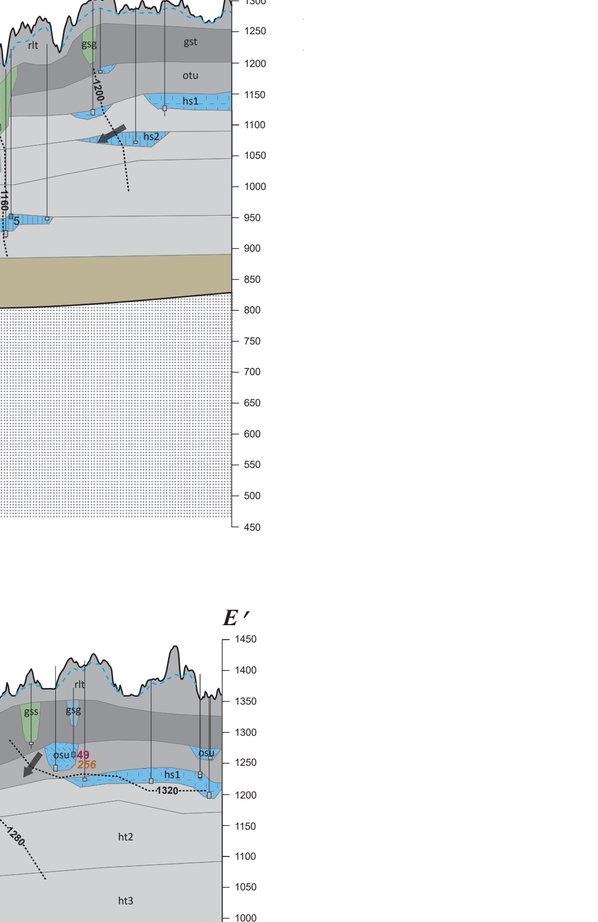

Symbols

- ○ Well used to generate cross section
- A——A′ Part B line of cross section shown on this plate
- F——F′ Part B line of cross section shown on Plate 8
- A——A′ Part A line of cross section

SCALE 1:400 000
1 0 1 2 3 4 5 MILES
1 0 1 2 3 4 5 6 7 KILOMETERS

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