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

Hydrogeologic Cross Sections

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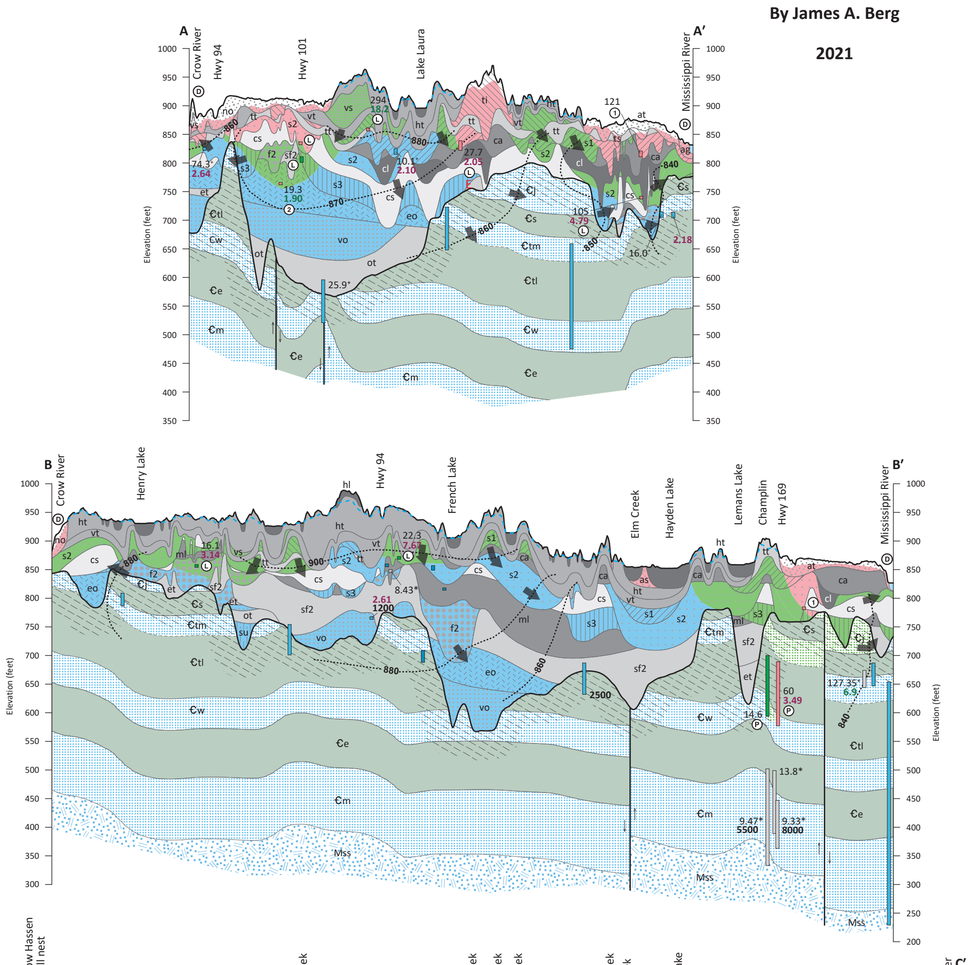
2021

Groundwater Atlas of Hennepin County
Hydrogeologic Cross Sections
A–A′ through G–G′
County Atlas Series C-45, Part B
Plate 8 of 9

To accompany atlas Report and Plate 7 and Plate 9.



Cross Section Explanation

Aquifers and aquitards

Quaternary unconsolidated

Interpreted tritium age is indicated by background color. See Figure 5 in the report for geologic unit correlation.

- l/afhl
- as
- ag
- at
- lt
- nd
- nb
- no
- hl
- hi
- sh
- ht
- vs
- vt
- ts
- ts2
- tc
- tl
- st
- ti/aftci
- tt
- ts1
- ms
- mt
- si
- s1
- ca
- cl
- s2
- cs
- s3
- ce
- h1
- sc
- f1
- sf1
- h2
- f2
- sf2
- wo
- wt
- eo
- et
- vo
- ot
- su
- u

Bedrock

Interpreted tritium age is indicated by pattern color. See Figure 6 in the report for geologic unit correlation.

- Od — Decorah Shale*
- Opg — Platteville and Glenwood
- Os — St. Peter
- Ops — Shakopee
- Opo — Oneota Dolomite*
- Cj — Jordan
- Cs — St. Lawrence Formation*
- Ctm — Upper Tunnel City (includes unmapped part of underlying unit)
- Ctl — Lower Tunnel City Group*
- Cw — Wonewoc
- Ce — Eau Claire Formation*
- Cm — Mt. Simon
- Mss — Hinckley, Solor Church, Fond du Lac
- Mcv — North Branch mafic volcanic sequence
- Mcv — Chengwatana volcanic rock

*aquitard

Quaternary aquitards

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

Geologic unit code	Percent sand
ce, cs, mt, sf1, wt	>60%
et, ot, sf2, tt	>50% and ≤60%
ht, sh, st, vt	>40% and ≤50%
ca, ml, sc, tc	>30% and ≤40%
cl, hl, l, lt, tl	≤30%

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. Well casings (thin vertical lines) are not shown on cross sections to avoid obscuring other information.

- Modern: water entered the ground since about 1953.
- Mixed: water is a mixture of modern and premodern waters.
- Mostly premodern*: tritium not detected and the premodern threshold is below the detection limit.
- Premodern: water entered the ground before 1953.
- Well not sampled for tritium.

*These samples are referred to as "premodern" in the report. Both "mostly premodern" and "premodern" are shown on plates and figures for consistency with the dataset.

Symbols and labels

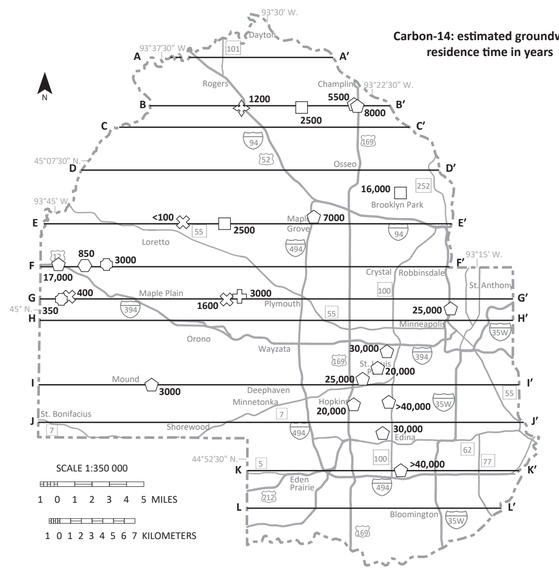
- 33.6 — Chloride: if shown, concentration is ≥5 ppm. (* naturally elevated, ˚ source unknown)
- 17.3 — Arsenic: if shown, concentration is ≥2 ppb.
- 1.75 — Nitrate: if shown, concentration is ≥1 ppm.
- 2500 — Carbon-14 (^{14}C): estimated groundwater residence time in years
- E — Groundwater sample with evaporative signature
- General groundwater flow direction
- 880 — Approximate equipotential contour; contour interval 20 feet
- Geologic contact, dashed where approximate
- Land or bedrock surface
- Water table
- Direction of fault movement, arrows indicate relative movement
- Enhanced-permeability zone

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.
- Ⓟ Tritium concentrations are likely artificially elevated by high-volume pumping.
- Ⓤ Groundwater flowpath is unknown.
- Ⓓ Groundwater discharges to a surface-water body.

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



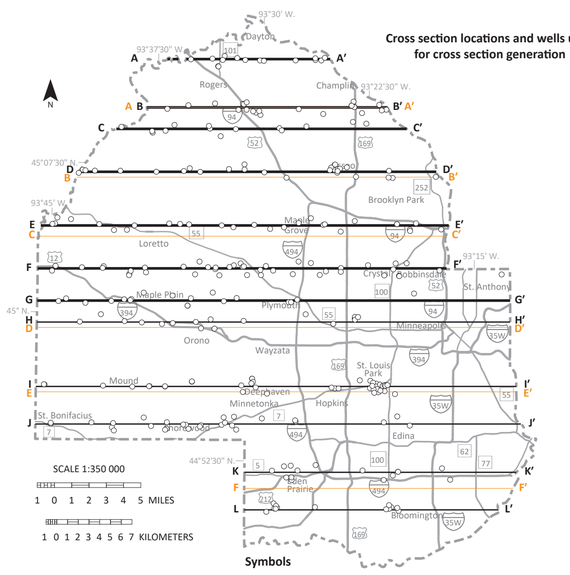
Water sample and aquifer symbols

Unconsolidated
- s2, s3
- f1
- vo

Bedrock
- Prairie du Chien
- Jordan, Jordan–St. Lawrence
- Tunnel City, Tunnel City–Mt. Simon
- Mt. Simon, Mt. Simon–Fond du Lac, Mt. Simon–Red Clastics

Symbols and labels

- 5500 — Carbon-14 (^{14}C): estimated groundwater residence time in years.
- A —— A′ — Line of cross section (Part B)



Symbols

- Well shown on cross section
- A —— A′ — Part B line of cross section shown on this plate
- H —— H′ — Part B line of cross section shown on Plate 9
- B —— B′ — Part A line of cross section

This map was compiled and generated in a geographic information system. Digital data products are available from the DNR 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 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, Geologic Atlas of Hennepin County, 2018.

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

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