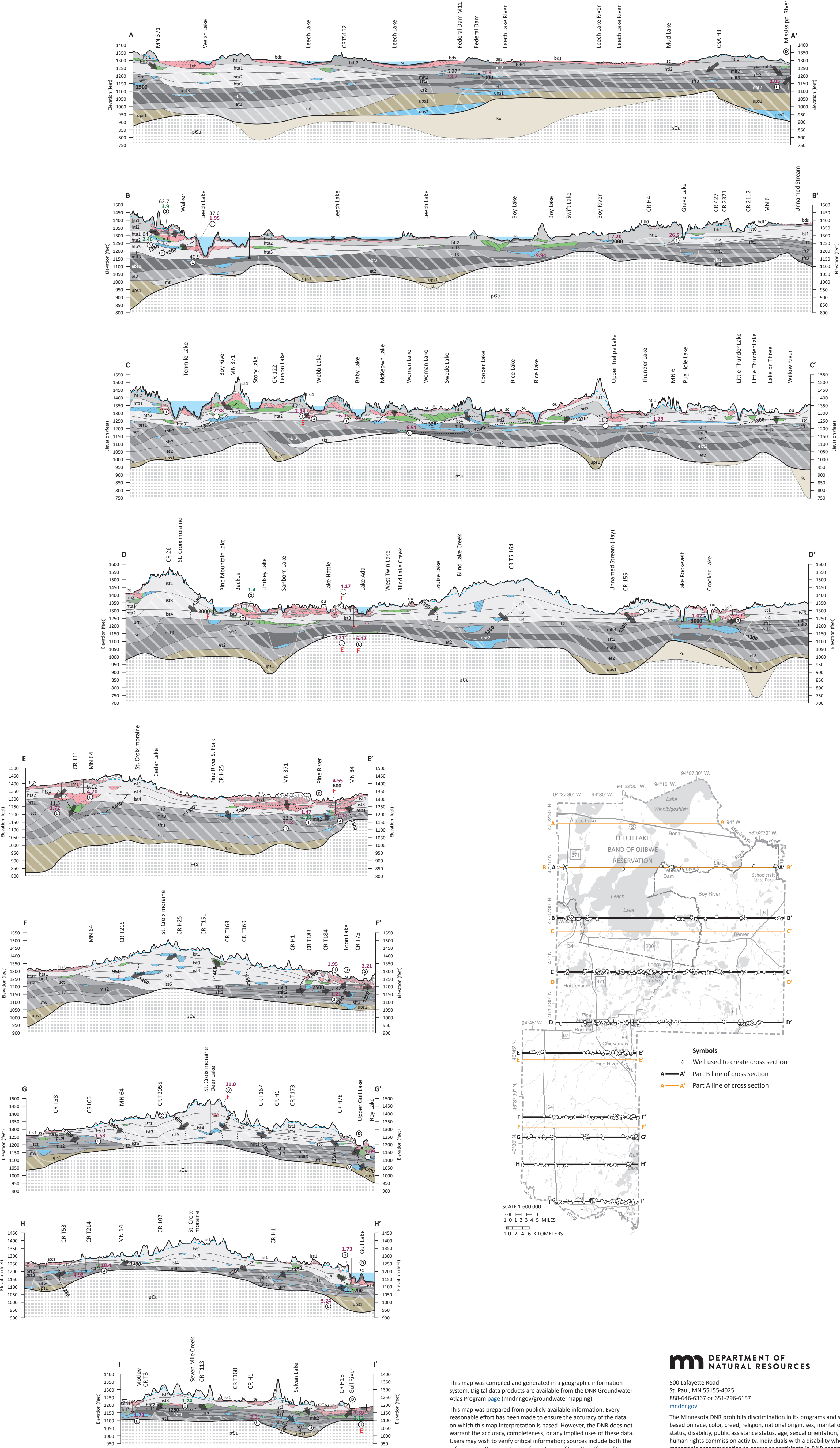


2023



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. Overlying white hatching pattern indicates areas with few or no wells, resulting in speculative unit boundaries.

sc	brt2
pgs	brs3
te	brt3
ou	scs
bds	sct
bdt1	mls1
hti0	mlt1
hsi1	sfs1
ist0	sft1
iss1	mls2
ist1	mlt2
hsi2	sfs2
hti2	sft2
iss2	mls3
ist2	mlt3
hsa1	sfs3
hta1	sft3
iss3	ebt1
ist3	ebt2
hsa2	skt
hta2	es1
iss4	et1
ist4	es2
hsa3	usw
hta3	utw
iss5	ms
ist5	mt
iss6	uns1
ist6	ups1
hsa4	uns2
brs1	
brt1	
brs2	

Bedrock

Ku	Undifferentiated cretaceous
pCu	Precambrian crystalline bedrock

Quaternary aquitards

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

Geologic unit code	Percent sand
ebt3, hta1, hta2, hta3, ist1, ist2, ist3, ist4, ist5, ist6, skt	>60%
hti0, hti1, hti2, mt	>50% and ≤60%
bdt1, bdt2, brt1, brt2, et1, et2, sct, sft1, sft2, sft3, utw	>40% and ≤50%
mlt1, mlt2, mlt3	>30% and ≤40%
bdt2, ebt1, ebt2, sc	≤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.

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.
Well not sampled for tritium.

Symbols and labels

37.6	Chloride: if shown, concentration is ≥5 ppm. (* naturally elevated)
26.5	Arsenic: if shown, concentration is ≥1 ppb.
3.9	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	
Approximate equipotential contour; contour interval 25 feet	
Geologic contact	
Land or bedrock surface	
Water table	

Groundwater conditions

- Water from the surface moves through a thin layer of overlying fine-grained material to an underlying aquifer.
- Groundwater moves from an overlying surficial aquifer to a buried aquifer.
- 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.

This map was compiled and generated in a geographic information system. Digital data products are available from the DNR Groundwater Atlas Program [page](https://mndnr.gov/groundwatermapping) (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 Cass County, 2018.

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

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