

Brule River nr Hovland, MN61
STATION ID: H01022001
NWS ID: BRLM5
USGS ID: 04011000
EQUIS ID: S000-251

LOCATION:

Lat:	47°49'07.0" N	UTMX:	720690.8	Township:	Unknown township				
Long:	90°03'06.1" W	UTMY:	5300348.4	PLS:	TWP	RNG	SEC	Q	QQ
					62	3E	27	SW	SE

County: Cook**Drainage area (acres):** 168,960**Driving directions:** From Grand Marais, MN, travel north on MN Hwy 61 for 14 miles. The site will be on the right after the Manitow Trail (CR59). Gage is located on east side of bridge downstream left bank.**History:** Minnesota Pollution Control Agency (MPCA) milestone site for stage only started in 2002. Permanent long term Design Analysis gage was installed on the downstream side of the bridge by the Minnesota Department of Natural Resources (MN DNR) on 08/07/13 for the MPCA Watershed Pollutant Load Monitoring Network (WPLMN). The Minnesota Department of Natural Resources started collecting regular open water flows and maintained equipment starting in the spring of 2014.**Cooperation:** Minnesota Pollution Control Agency, Minnesota Department of Natural Resources**GAGE:** A Design Analysis H-350XL data logger is housed in a 30" x 30" x 9" elevated stainless steel enclosure. A Campbell Scientific radar sensor is mounted on the downstream side of the bridge. Solar panel, Vaisala WXT-520 multi-parameter weather sensor, and a Texas Electronics tipping rain bucket are attached to side of shelter on a 10' mast. A Campbell pyranometer is installed on a separate post away from the gage house. The equipment is powered by a 1.2 ampere solar panel run to a 12V battery through a SunSaver power regulator. Data collected at 15-minute intervals and transmitted hourly through a H-222 GOES transmitter at 300 baud within a 10 second window. The H-222 clock is synced to GMT, and the datalogger clock is set to CST (6 hour offset).

Goes ID:	D5556216	Random Channel:	124
Primary Channel:	34	Azimuth:	232
Transmit Time (GMT):	00:52:20	Elevation:	24

CHANNEL AND CONTROL: Riffle control 100 ft downstream of the bridge and channel control at higher stages.**DISCHARGE MEASUREMENTS:****Low flow:** Wading 65 ft downstream of the bridge or tagline just downstream of the bridge.**High flow:** Bridge measurement off of the side of the bridge.**REFERENCE MARKS:****B.M. 1:** MNDOT Geodetic disk ID 1602B 2007, is located on the downstream, left side of the bridge.
Elevation = 48.96 ft assumed datum (633.696 ft NAVD88 MN DOT Geodetic Data Sheet)**R.M. 1:** Chiseled square (Spray painted dot small crack in bridge) located on bottom bevel of concrete rail on the downstream side of the bridge.

Elevation: 50.00 ft assumed datum (634.736 ft NAVD88)

R.M. 2: Wire weight checkbar on the downstream side of the bridge.Elevation: ~~48.82 ft assumed datum~~ (Installed by MPCA on 07/31/12)

Elevation: 49.27 ft assumed datum (Moved/surveyed by MN DNR on 07/08/15) (634.006 ft NAVD88)

Primary reference: R.M. 2 (CHECKBAR)**Gage Zero:** 584.736 ft NAVD88