

Kettle River, Minnesota

1. The region surrounding the river:

a. The Kettle River is located in east-central Minnesota. The river has its headwaters in Carlton County and flows generally north-south, passing through Pine County and into the St. Croix River.

The basin has a long history of faults and glacial activity. The bedrock formations are of pre-Cambrian metamorphic and volcanic rock. This layer is covered by Cambrian sandstone and unconsolidated glacial till. Outcroppings of sandstone and pre-Cambrian lava are frequent. The area is rugged and rolling with dramatic local relief.

The area has gone through a dramatic ecological change since the logging days when the white pine was the dominant vegetation. Today the region has a varied pattern of red pine, spruce, white pine, white birch maple, oak, aspen, and basswood.

Major transportation lines in the area include Interstate 35 running north-south through the basin and Minnesota 23 running northeast-southwest through the basin. Minnesota 48 crosses the river east-west just east of Hinckley, Minnesota, and Minnesota Route 65 runs north-south about 25 miles west of the river.

Land use in the basin is limited to agriculture and timber production. The Minneapolis-St. Paul area to the south supports heavy industry and manufacturing.

b. Population within a 50-mile radius was estimated at 150,700 in 1970. The Duluth, Minnesota/Superior, Wisconsin, metropolitan area lies just outside the 50-mile radius and had an additional 132,800 persons in 1970.

c. Numerous state forests are found in this part of Minnesota. They are Chengwatona State Forest, DAR State Forest, General C. C. Andrews State Forest, St. Croix State Forest, Rum River State Forest, Nemadji State Forest, Solana State Forest, and Fond Du Lac State Forest, all within a 50-mile radius. Rice Lake National Wildlife Refuge is located four miles to the northwest and Mille Lacs Wildlife area lies 30 miles due west.

The St. Croix National Scenic Riverway is now being developed by the National Park Service and the Mississippi River is about 75 miles to the south. Numerous lakes and free-flowing streams are found in this area.

2. River:

a. The Kettle River flows through and over several types of surface and subsurface geologies. On the northern part of the river, from River Mile 0 to River Mile 6, the river flows through an area of glacial moraine. Pools and rapids are closely spaced and do not exceed 50 yards in length. The rapids are shallow and very difficult to canoe, even in high water. The banks of the river are gravel and heavily forested with small aspen and birch with an occasional stand of larger Norway pine, white pine, and black spruce. The forest growth is right down to the edge of the river and encloses the river.

Starting at River Mile 6.9 a large open field on the left bank signifies a change in the river characteristics. The river broadens out; pools and rapids are longer (100 yards) and deeper; the rapids are more easily traversed due to the gravel type of bottom; and the banks of the river are higher and grassy but flat on top.

From River Mile 10 to River Mile 13 the river broadens out among islands and grass areas with low banks of sand and gravel. Distinguishing the main channel is difficult. Maple and elm are the dominant species of hardwoods, but there are a few pine visible. At River Mile 12.8 the Moose River joins the Kettle and seems to contribute a great deal of water which could be the reason for the strange behavior of the Kettle River directly above.

Below the confluence with the Moose River, the Kettle River becomes entrenched and narrows down once more. Pine are intermingled with hardwoods, farmland extends down to the edge of the river. The open woods, caused by grazing, are very scenic. There are no rapids in this stretch.

From River Mile 21 to River Mile 27 the Kettle River broadens out to over 150 feet wide. Average depth is about four feet. The banks slope up and away from the river and are covered with pine and hardwoods. Ground water inflow was noted at River Mile 23. At River Mile 23.9 a short set of rapids with a steep pitch occurs. Running them in high water is possible. A rock outcrop stands better than 10 feet above the water on the right-hand bank. There is a campsite on top of the rock outcrop. The whole area is quite

scenic. Directly below River Mile 24, Interstate 35W crosses the river. Downstream high hills are beginning to appear. The river characteristics remain much the same until River Mile 28.5 within Banning State Park.

The Kettle River flows through Banning State Park in a gorge approximately 130 feet deep, which forms the Hells Gate Rapids. These rapids are about one mile long and consist of four major drops of about five feet each. There is no portage and running the rapids is very dangerous. Several lives have been lost in the rapids. The river remains entrenched for more than 100 feet until it reaches the remains of the Kettle River dam at River Mile 33.0.

Below the Kettle River dam the river passes through several short rapids of moderate difficulty and through several pools, one of which is better than 20 feet deep. At River Mile 36.1, rapids of about one-half mile in length occur. These rapids are also of moderate difficulty.

From River Mile 37 to River Mile 46 the river once again becomes wide (over 200 feet) and placid. Flood plains develop on both sides with open hardwood forests.

At River Mile 46.1 the lower Kettle River rapids begin. These rapids are moderate in difficulty and very popular with the canoeists. They are, however, wide and shallow and cannot be run in low water. This is true of all the rapids in the Kettle River.

The St. Croix River confluence is at River Mile 53 and is the end of the survey. The average flow for 1967-1969 was 890 cfs.

b. The Kettle River is a very scenic and interesting river. The constantly changing topography and forest cover provide an everchanging scene. The river has rapids interspaced with long pools. The rapids provide a challenge, the pools a chance of relaxation and quiet reflection.

The glacial geology of the area, as reflected in the river, also is an interest point. Moraines, glacial outwash plains, gorges, kettle holes, and caves exist along the river and are primarily the result of glacial activity.

The history of the area is rich. The remains of the lumbering activity of the 1850's and 60's, the quarrying at Banning and Sandstone, the forest fires, and the development of the St. Croix State Park make the river corridor more desirable.

Wildlife within the river corridor is numerous. Deer, beaver, muskrats, herons, and hawks are all present within the river basin.

Fishing is also reported good. Walleyes, sturgeon, and small-mouth bass are especially good. Northern pike, red horse, suckers, and even trout (mainly in the Pine River and Willow River tributaries) are fished in the river.

c. See attached data.

d. There are 17 homes located along the river's edge although only five may be seen from the river. Two of the five are old farmsteads while the remainder are homes which have penetrated the wilderness setting. Fourteen bridges and two trestles cross the river. The Kettle River is one of Minnesota's most popular canoeing streams and receives moderate use.

e. -f. Approximately 26 miles of the Kettle River are already in public ownership of one form or another. The General C. C. Andrews State Forest abuts on the east side of the river from River Mile 13 to River Mile 15. 2. The undeveloped Banning State Park abuts both sides of the river from River Mile 24. 2 to River Mile 30. 8. The Sandstone Game Refuge abuts the east side of the river from River Mile 31. 5 to River Mile 40. 5. Part of this is also the Federal Correctional Institution.

Chengwatana State Forest and St. Croix State Park abut the river from River Mile 42. 6 to River Mile 51. Other stretches of the river are within the municipalities of Kettle River, Rutledge and Sandstone. Finally, the state and county own small parcels of land on the river which have not been declared parks, game refuges, etc.

The lower 10 miles of the Kettle River are almost totally in public ownership. From here on upstream public holdings are scattered, but large blocks do occur. Public ownership is sufficient to provide excellent access opportunities. (See Duluth and Stillwater 1:250, 000 quadrangles.)

g. Public areas within a 50-mile radius.

<u>Area</u>	<u>Acres</u>
Rice Lake National Wildlife Refuge	13, 370
Chengwatana State Forest	12, 959
DAR Memorial State Forest	360
Nemadji State Forest	90, 353

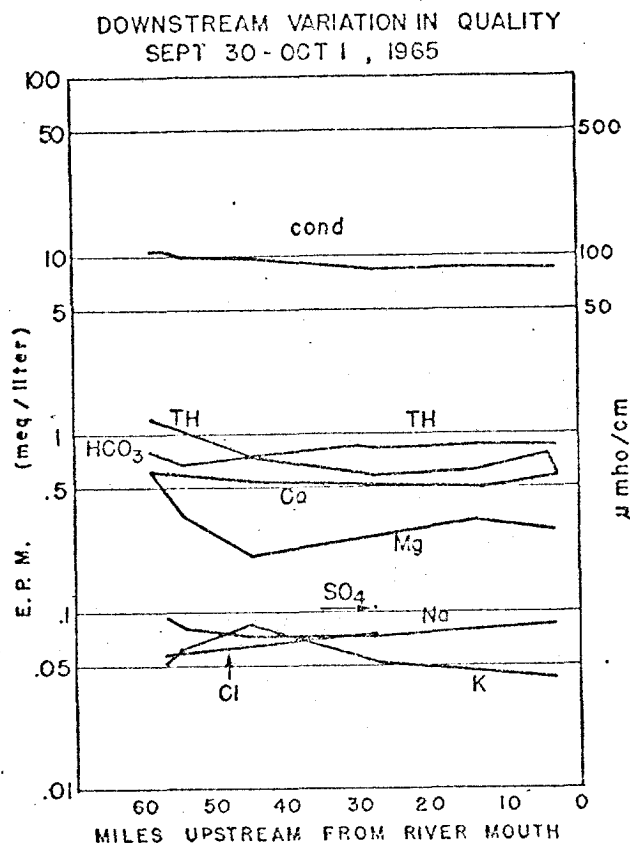
<u>Area</u>	<u>Acres</u>
General C. C. Andrews State Forest	5,373
St. Croix State Forest	26,153
Fond Du Lac State Forest	42,782
Mille Lacs Wildlife Area	36,286
St. Croix State Park	23,392
Jay Cooke State Park	9,040
Minnesota Interstate Park	167
Father Hennepin State Park	198
Mille Lacs Kathio State Park	6,419

h. There are developed access points at River Miles 21.0, 33.0, 40.5, and 47.0; however, access is also possible at other bridge crossings. See maps 1:250,000 Duluth quadrangle and Stillwater quadrangle.

3. The Kettle River is truly a fine stream. It has all of the qualities which a prime stream should have. Being off a major highway (35W), it is within range for weekend outings by the people of the major population concentrations.

The Kettle River setting is such that all river-oriented recreational activities could be accommodated and the small communities, through promoting and participating, can experience a significant economic gain. The current accommodations are in need of expansion and new campsites, parking areas, and trails should be developed.

4. The source for the information in this report was: Selected Rivers of Minnesota, Recreational Analysis. Midwest Planning and Research, Inc. September 1966. Water Resources Data for Minnesota. USGS. 1969. Final Population Count, Minnesota, U. S. Department of Commerce, Bureau of Census, December 1970.



WATER TEMPERATURE
SUMMER 1966

STATION: HIGHWAY 48
 DATES: JUN 29 - AUG 23
 MAX. 12-HOUR $\Delta T = 8^\circ$
 AVG. 12-HOUR $\Delta T = 1.9^\circ$
 MAX. 5-DAY $\Delta T = 15^\circ$
 BEGINNING DATE: AUG 6
 DAYS EXCEEDING $80^\circ\text{F} = 18$