DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
MICHIGAN GEOLOGICAL SURVEY

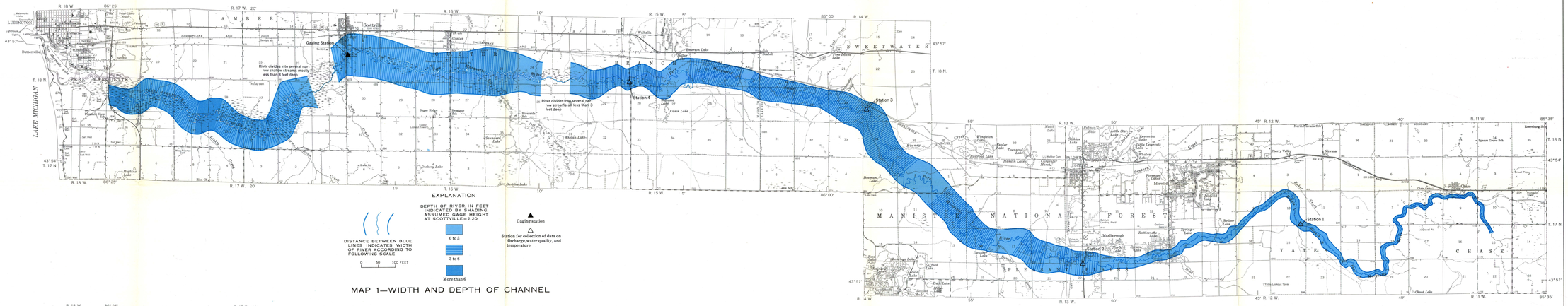
HYDROLOGIC INVESTIGATIONS
ATLAS HA-384 (SHEET 2 OF 2)

CHANNEL, BED, AND BANKS

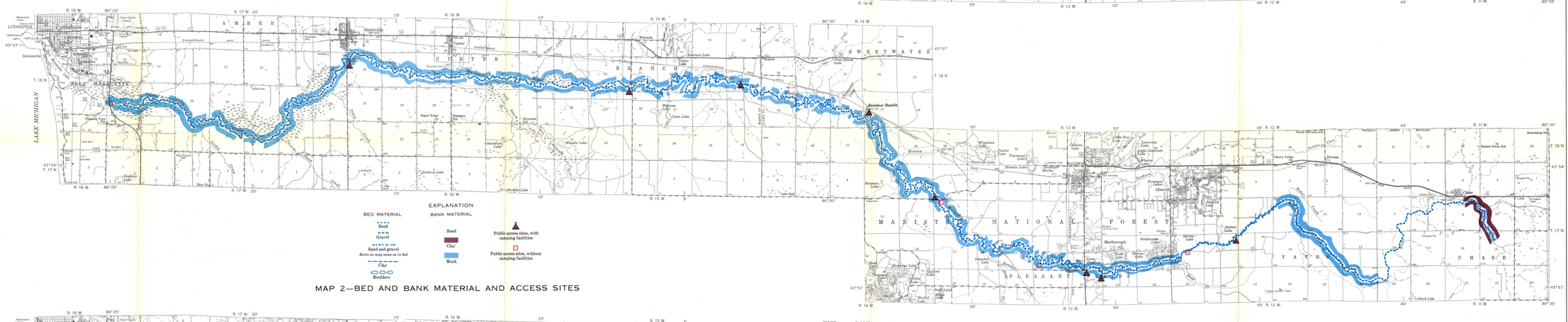
The character of channel, bed, and banks of a river strongly influences streamflow characteristics, water temperature, chemical quality, and recreational values. The three maps at right indicate the physical features of the Pere Marquette River determined by field reconnaissance in July and August, 1966. During this reconnaissance the gage height (stage) at Scottville varied from about 2.0 to 2.5 feet. The depth and width of stream and apparent height of banks vary with stage. The maps show the width and depth of stream, the bed and bank materials, height of banks and character of bank cover. Each of these maps is generalized, showing the predominent character of bed and banks.

The character of channel, bed, and banks of the Pere Marquette River and the effects on recreational uses are summarized below:

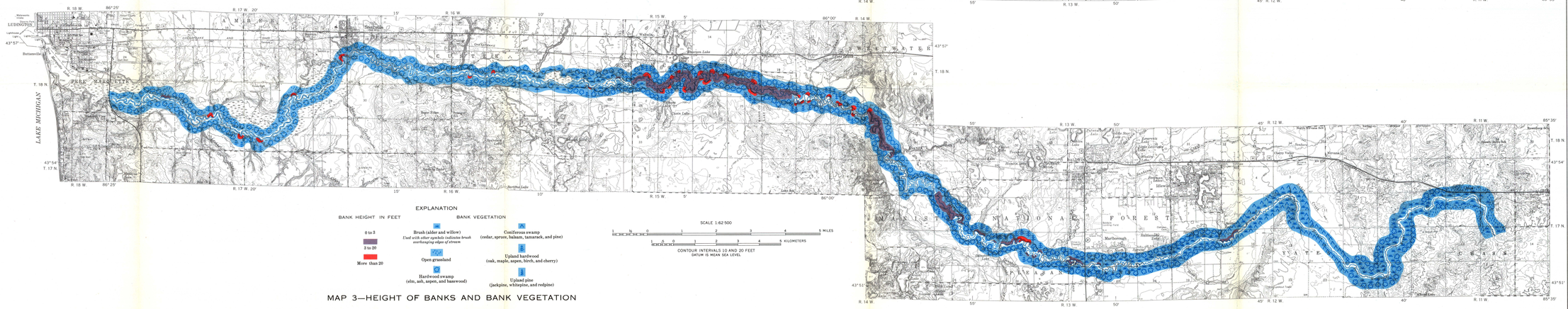
Recreational use	Relation of physical and hydrologic characteristics to recreational use (Prepared by Michigan Department of Natural Resources)	Characteristics of Pere Marquette River
Trout fishing	Broad open water makes fly casting easier, but tends to warm the water. Warm water can have adverse effects on trout propagation and population	Too narrow for easy fly casting in upper reaches. Broad enough downstream from Custer with little warming by Branch and Baldwin. Broad reaches downstream from Custer contribute to warmer water temperatures
	Variability in depth, usually related to variability in velocity and affects wading. Predominantly shallow depth make wading easier	Varied depths most of river length above Custer. Too deep for easy wading at mid-channel many places below Baldwin. Some holes more than 10 ft deep
	Gravel beds provide spawning opportunity and produce fish food. Sand fills deeper holes; buries escape cover, food organisms, and gravel beds	Sand and gravel beds alternate most of river length. Mostly sand downstream from Walhalla
	Overhanging banks, logs, fallen trees, and boulders provide trout cover	Fair to good cover most of river length
	Streamside trees and shrubs shade water and keep water temperature low. This shade may reduce food production, and the trees may intercept part of ground-water discharge to stream	River is well-shaded most of river length. Downstream from Custer the greater width of river opens larger surface area to sunlight
	Clay banks and bottoms productive of turbidity, low photosynthesis, and poor food production. Turbidity also interferes with sight feeding by trout. Sand, gravel, and muck banks more desirable in this respect	Clay banks and bottoms very rare in entire length of river
	Banks devegetated by erosion, undercutting, cattle crossing, and boat landing traffic may add undesirable quantities of sand, silt, and clay to the water	Most of river banks are in good shape. A few eroded areas near campsites, bridges, and other access points
	Variability in gradient is related to variability in velocity and affects wading	Stream gradient varies in different reaches of river. Wading is difficult to impossible in some fast reaches
	Bottom vegetation adequate to contribute to food production is desirable, but when excessive it chokes stream and produces excessive diel fluctuations in dissolved oxygen and temperature	Bottom vegetation is sparse to moderate most of river length. Fairly heavy for 2 to 3 miles downstream from Baldwin. Dissolved oxygen is within acceptable limits for trout propagation and population
Boating	Boatability increases as width and depth increase	Easily boatable for canoes and other light boats downstream from mouth of Little South Branch. Between Custer and Scottville river can be traveled by larger boats with outboard motors. Downstream from Scottville, narrow branching channels and fallen trees discourage boating with the larger boats
	On smaller streams, sweepers and log jams decrease boatability. Obstructions, shallows, boulders objected to by some canoeists, welcomed by others. If present in excessive amounts, may eliminate boating	Obstructions make boating difficult in upper reaches and below Scottville. River is generally clear of obstructions from confluence of Little South Branch to Scottville
	A meandering stream is more attractive and interesting than a straight stream	Pere Marquette is a meandering stream all of its boatable length
	Variety of streamside vegetation adds to interest	Streamside vegetation mostly hardwood swamp and hardwood upland. Some coniferous swamp in upper reaches
	Alternating high and low banks add to interest	Banks are mostly low in upper reaches and downstream from Walhalla. Alternating high and low banks in middle reaches
	Undeveloped river banks add to enjoyment of most canoeists	Streamside cabins are abundant near Baldwin, sparse elsewhere
	Frequency and suitability of boat launching and take-out points, as determined by bank characteristics and vegetation, influence usability	Low sandy banks and clearings provide easy launching and take-out points at most public access sites and at several bridges. High, steep banks, swampy areas, and heavy vegetation discourage boat launching and take-out in most intermediate areas
Camping and cabin living	Characteristics favorable to fishing and boating generally also desirable for camping and cabin living	See descriptions above
	Moderately high sandy slopes provide good drainage and easy access to river	High sandy banks with good drainage provide good camping and cabin sites along most of river between Idlewild and Walhalla, and upper Walhalla and mouth. Walhalla banks are mostly low and swampy



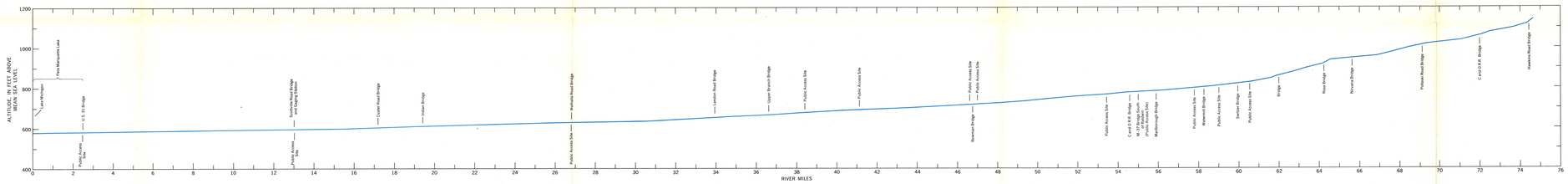
MAP 1—WIDTH AND DEPTH OF CHANNEL



MAP 2—BED AND BANK MATERIAL AND ACCESS SITES



MAP 3—HEIGHT OF BANKS AND BANK VEGETATION



RIVER PROFILE

Base from U.S. Geological Survey
Ludington, Custer, Baldwin, and Reed City, 1959

RECONNAISSANCE OF THE PERE MARQUETTE RIVER, A COLD WATER RIVER IN THE CENTRAL PART OF MICHIGAN'S SOUTHERN PENINSULA

By
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