Aesthetics

The most distinctive features of Ashland County are its Apostle Islands in Lake Superior, the rocky and picturesque Penokee Range, the broad, marshy stream valley plains with their numerous beaver ponds, and the extensive marshy sloughs behind the Lake Superior beach ridge which offer exceptional opportunities for observing waterfowl. The Bad River, an appropriate name, and its tributaries, offer exceptionally scenic woodlands, rugged rock formations, and waterfalls as it flows across the ridge of granite out to the Lake Superior lowlands. The development of cottages, resorts and homes has not yet reduced the scenic qualityes of the few lakes in this county. Other features of the county that are of interest are open agricultural lands irregularly broken by streams and stands of hardwood and spruce, and the extensive bog lands add an additional wildness to the waters of Ashland County.

AVAILABILITY OF THE WATER RESOURCE

Area and Population

Ashland County has 0.9 percent of the total state population. Table 11 compares the county population and area with that of the state. The county population is more urban than rural with 65 percent of the people living in the two communities of Ashland and Mellen. Both of the rural and urban populations decreased by 10.7 percent over the last decade as compared to a 15.1 percent increase for the rest of the state.

The county area, including surface waters, except the waters of Lake Superior is 1,047 square miles, or about 2 percent of the area of the entire state, ranking thirteenth in size. The inland water area is 7,300 acres or about 0.8 percent of the state's water area, ranking Ashland County thirty-second in acreage. The surface water available per capita is 0.45 acres.

Of the 200.48 miles of lake frontage, 55.83 miles, or 28 percent, are publicly-owned. Of the 1,096.2 miles of named stream frontage, 413.1 miles, or 38 percent is publicly-owned. Table 12 is a breakdown of land ownership types. Public lands appear on the map provided (Fig. 8).

Public Access to Water

The lakes of Ashland County which have a fishery are generally provided with adequate public access except several located in the east central part of the county. The accompanying map (Fig. 7) shows the location and types of access, and the individual waters summaries provide a more detailed description of the accesses. The lakes smaller than 100 acres more often than not lack an improved access. A number of these lakes are winterkill or bog lakes and have only a limited potential, and boat access to them at this time is not important. Access to these and other lakes by an improved road may not be desirable because of wilderness qualities that should be preserved; therefore, a foot trail over publicly-controlled land would be adequate. Public lands, principally Chequamegon National Forest and County Forest, already border many of these small lakes. Stream access to the larger waters having a fishery resource is generally good and many of the smaller trout streams except those north and east are accessible by trail over public lands. The higher quality trout streams, however, are mostly in private land ownership and improvement of the access to these waters for fishing would be highly desirable.

Table 11. Population and area comparison of Ashland County with the State of Wisconsin*

	Area (sq. miles)	Population	Percent Change (1950-1960)	Per Square Miles
Ashland County	1,047	17,375	-10.7	16.6
State of Wisconsin	52,044	3,951,771	+15.1	75.9

* Rural and Urban Population Change in Wisconsin, 1950-1960, Department of Rural Sociology, University of Wisconsin, Madison, March, 1961.

Table 12. Public-owned lands

Ownership	Acres Owned	
U. S. Government-owned lands:		
Chequamegon National Forest	176,966.33	
Unallotted lands	507.25	
Other U. S. Government lands	263.03	
Total Government lands		177,736.61
State of Wisconsin:		
Conservation Department:		
Apostle Island State Forest	10,221.43	
Big Bay State Recreation Area	649.00	
Copper Falls State Park	1,480.00	
Hoffman Lake Wildlife Area	5,562.20	
Remnant Fish Habitat Project, Clam Lake	7.35	
White River Wildlife Area	960.00	
Total acres		18,879.98
Land Commission:	3,283.66	
Total State-owned lands		22,163.64
Ashland County-owned lands:		
County Forest in Towns of Agenda, Jacobs, Morse and Peeksville	32,169.21	
Apostle Islands	5,242.96	
Town of Agenda	940.00	
Town of Ashland	616.00	
Town of Chippewa	79.74	
Town of Gingles	1,402.22	
Town of Gorden	206.87	
Town of Jacobs	577.59	
Town of Peeksville	638.50	
Town of Sanborn	12,142.42	
Town of Shanagolden	134.00	
Town of White River	180.00	
Total County-owned lands		54,329.51

Table 12. Public-owned lands-continued

Ownership	Acres Owned	
Town-owned lands:		
Town of Agenda	328.72	
Town of Ashland	40.00	
Town of Gingles	215.00	
Town of Gorden	67.75	
Town of Jacobs	134.67	
Town of La Pointe	300.15	
Town of Morse	415.00	
Town of Sanborn	510.85	
Town of White River	200.00	
Total Town-owned lands		2,212.14
City-owned lands:		
City of Ashland		536.49
School-owned lands:		120.00
Total Public-owned lands		257,098.39

Table 13. Public parks in Ashland County

Ownership and Name	Waters adjoining	Park acreage	Swimming facilities	Camping units	Improved boat landing
U. S. Forest Service, Chequamegon National Forest					
Beaver Lake Campground	Beaver Lake	-	No	10	Yes
East Twin Lake Campground	East Twin Lake	-	No	12	Yes
Lake Three Campground	Lake Three	-	No	8	Yes
State:					
Big Bay State Recreation	Madeline Island, Lake Superior	649.00		(Undeveloped)	
Copper Falls State Park	Loon Lake & Bad River	1,480.00	Yes	56	Yes
County:					
Chippewa River Camp Grounds	East Fork of Chippewa River	-	No	15	Yes
Town:					
Big Bay Beach	Madeline Island, Lake Superior	64.77	Yes	30	No
Butternut G.A.R. Park	--		No	20	No
Gorden Lake Park	Gorden Lake	3.00	No	0	Yes
City:					
Prentice Park	Chequamegon Bay, Lake Superior	80.00	Yes	40	No
Total Units				191	

Public Park Areas

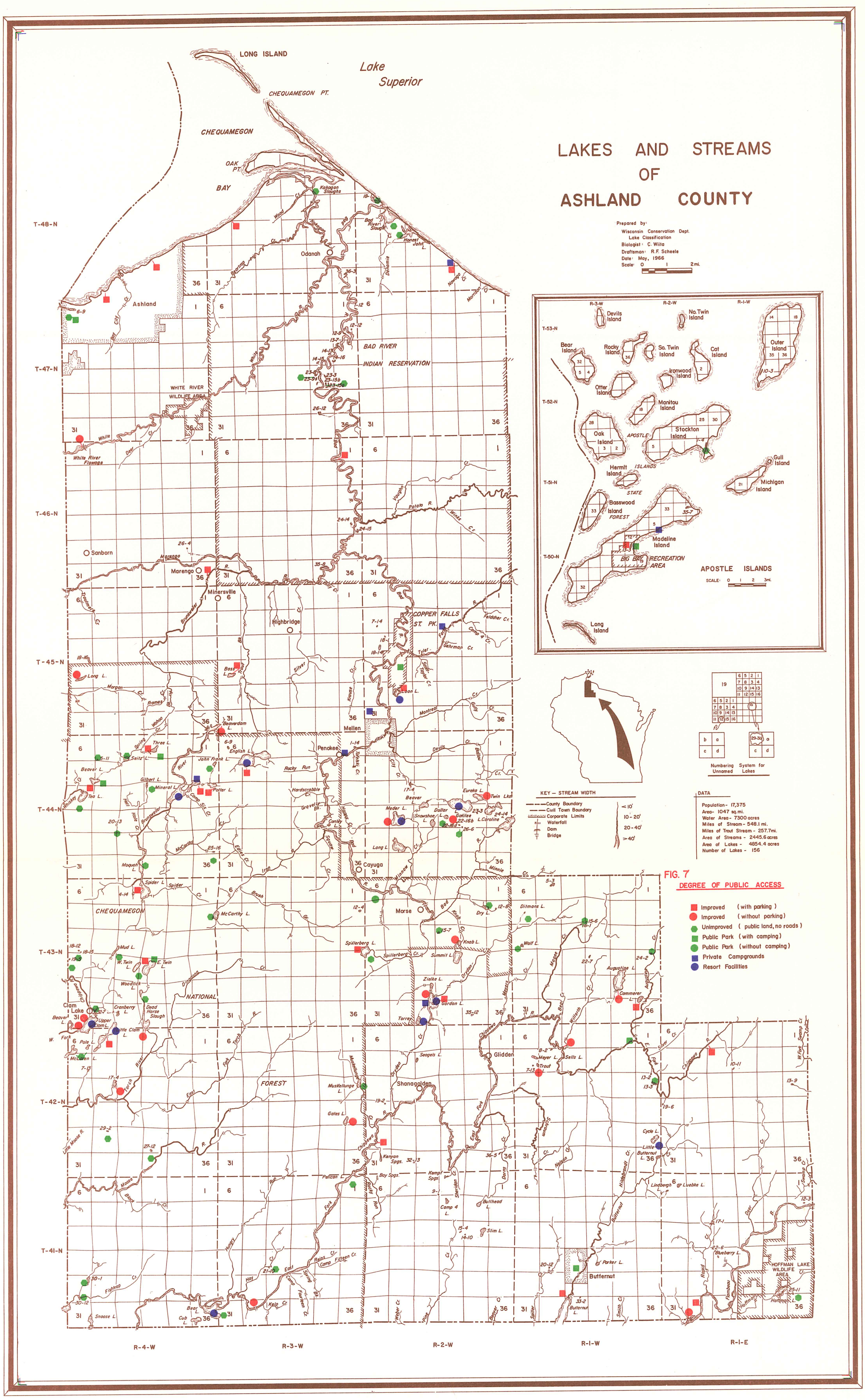
There are ten public parks in Ashland County besides several waysides. Table 13 and Fig. 7 incidate the ownership, acreage, types of facilities available and their locations. All have picnicking areas. The U. S. Forest Service, the State, and several local units of government have been active in providing this type of recreational facilities on many of the county's waters. Eight campgrounds with a total of 191 camping units are scattered over the county, and include those on Madeline Island. Besides the public campgrounds there are eight other privately-operated camping areas with a total of about 140 units. There are 257,098 acres of public land in the county, or approximately 38 percent of the total county area, providing an extensive land area for public use. Most of these public lands are included in the Chequamegon National Forest, Ashland County Forest and Conservation Department-owned lands of the Apostle Islands State Forest, Big Bay State Recreation Area, Copper Falls State Park, Hoffman Lake Wildlife Area, and the White River Wildlife Area.

Private Development

The inland lake frontage that is the most desirable for private cottage, resort, and camp development is, of course, the frontage on larger lakes having game fish populations and good quality building sites with sandy beaches. Table 14 shows the comparative levels of development of lakeshore by the number of lakes in each size class. Considering the total shoreline of these lakes, or their total surface acreages by the same class, their development levels are all exceptionally low. Of the 200 miles of lakeshore, only a small percentage of it is in private development since there are only 195 homes and cottages and resorts in the county.

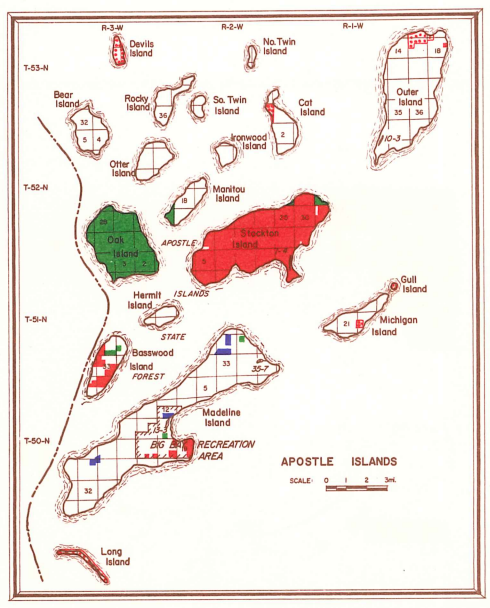
Table 14. The private development of lakeshore in Ashland County

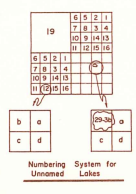
Lake size by acreage	Number of lakes	Cottages and houses	Resorts	Boat rentals	Organizational camps
50	128	36	3	2	0
50-99	11	21	0	0	0
100-199	12	74	7	7	0
200-499	5	64	7	6	1
Total	156	195	17	15	1


LAKES AND STREAMS
OF
ASHLAND COUNTY
Prepared by:
Wisconsin Conservation Dept.
Lake Classification
Biologist: C. Wilta
Draftsman: R.F. Scheele
Date: May, 1966
Scale: 0 1 2 mi.
Lake Superior
LONG ISLAND
CHEQUAMEGON PT.
CHEQUAMEGON
OAK PT.
BAY
Kakagon Sloughs
Bad River Slough
Honest John L.
Odanah
Ashland
BAD RIVER
INDIAN RESERVATION
WHITE RIVER
WILDLIFE AREA
White River Flowage
Sanborn
Marengo
Minersville
Highbridge
COPPER FALLS
ST. PK.
Mellen
Penokee
Cayuga
Morse
Clam Lake
Glidden
Shanagolden
Butternut
CHEQUAMEGON
NATIONAL
FOREST
HOFFMAN LAKE
WILDLIFE
AREA
T-48-N
T-47-N
T-46-N
T-45-N
T-44-N
T-43-N
T-42-N
T-41-N
R-4-W
R-3-W
R-2-W
R-1-W
R-1-E
Devils Island
No. Twin Island
Outer Island
Bear Island
Rocky Island
So. Twin Island
Cat Island
Ironwood Island
Otter Island
Manitou Island
Oak Island
APOSTLE
Stockton Island
Hermit Island
ISLANDS
Gull Island
Michigan Island
STATE
Basswood Island
FOREST
Madeline Island
BIG BAY RECREATION AREA
Long Island
APOSTLE ISLANDS
SCALE: 0 1 2 3mi.
Numbering System for Unnamed Lakes
KEY — STREAM WIDTH
County Boundary
Civil Town Boundary
Corporate Limits
Waterfall
Dam
Bridge
<10'
10-20'
20-40'
>40'
DATA
Population - 17,375
Area - 1047 sq.mi.
Water Area - 7300 acres
Miles of Stream - 548.1 mi.
Miles of Trout Stream - 257.7mi.
Area of Streams - 2445.6 acres
Area of Lakes - 4854.4 acres
Number of Lakes - 156
FIG. 7
DEGREE OF PUBLIC ACCESS
Improved (with parking)
Improved (without parking)
Unimproved (public land, no roads)
Public Park (with camping)
Public Park (without camping)
Private Campgrounds
Resort Facilities

LAKES AND STREAMS OF ASHLAND COUNTY

Prepared by:
Wisconsin Conservation Dept.
Lake Classification
Biologist: C. Wilia
Draftsman: R.F. Scheele
Date: May, 1966
Scale: 0 1 2 mi.





KEY — STREAM WIDTH

County Boundary	
Civil Town Boundary	
Corporate Limits	
Waterfall	< 10'
Dam	10 - 20'
Bridge	20 - 40'
	> 40'

DATA

Population - 17,375
Area - 1047 sq. mi.
Water Area - 7300 acres
Miles of Stream - 548.1 mi.
Miles of Trout Stream - 257.7mi.
Area of Streams - 2445.6 acres
Area of Lakes - 4854.4 acres
Number of Lakes - 156

FIG. 8
PUBLIC LANDS

- U.S. Govt. Land
- State Land
- County Land
- County Forest Land
- Town and City Land
- School Land

SURFACE WATER PROBLEMS

In the management of surface waters, the problems of water quality to be dealt with are caused by either nature or man. In the case of Ashland County, the naturally-occurring conditions are the most problematic factors influencing water quality. A common problem to both lakes and streams is the low fertility or nutrient levels, acidity and the brown stained water. These factors, along with the short periods of warm temperatures in this part of the state contribute to the low production of plant and animal materials. Winterkill is a common problem to smaller lakes, particularly the bog waters. Another naturally occurring problem is an unbalanced population relationship between the numbers of predator fish and forage fish. An unbalanced population is indicated by the small size of one species, or groups of fish, usually the panfish. However, the reverse is true of some Ashland County lakes where walleyes become the predominant fish population while eliminating almost completely the panfish. The smaller, low fertility lakes are the waters most affected by the problem of slow-growing panfish. The exact number of lakes in the county where population inbalance occurs is not available, but generally it is widespread. Chemical rehabilitation of these lakes is possible and is presently being carried on in a few lakes of the county, however reestablishment of a balanced predator-forage fish population is difficult to achieve, and may be of short duration. Management of small, infertile seepage or bog lakes by this method is more often the most practical method of management.

Some problems encountered in the management of streams in Ashland County include the same infertile conditions and brown staining as in the lakes. The physical condition of extremely low gradient or high gradient is also a problem. The southern half of the county generally has low gradients and slow runoff from the vast swamp and bog lands. In the region of the Penokee Range, habitat conditions become unstable because of the high stream gradients that adversely affect trout spawning and food production. Extremes in water level fluctuations is also a problem except where the stream flows are mainly from groundwater sources. Since the groundwater supply of the county is limited by the shallow depth of the glacial till over the granite bedrock formations, groundwater supplies are generally small. As a result, during dry periods, flows become extremely low, and during periods of high precipitation and during spring runoffs, flooding is widespread.

Another problem to streams is the high usage made by beaver. On many of the low water quality streams of the county, particularly in the southwest portion, beaver may be the most important resource of the stream since good water quality for fishing is absent. However, beaver are not confined to this type of water elsewhere in the county and as a result, most of the better trout streams have undergone some habitat destruction from beaver activity. This destruction includes siltation of the stream bottom after flowages are drained and the formation of extensive marshy shorelines without adequate vegetative cover. Spawning habitat is eliminated and the quality of the aquatic insect food supply changes. On good quality trout streams beaver dams are removed but elsewhere reliance is placed on harvest intensity to keep beaver numbers reduced.

The larger streams, such as the Flambeau, Marengo, White Potato, and the East Fork of the Chippewa River have either shifting sands and silty bottoms or excessively rocky, boulder-covered bottoms. They are also subject to extreme variations in volumes of water flow. Deep pools, that ordinarily would provide habitat for warm water game fish, seldom occur naturally in these rivers. Artificial improvement of a few of these waters is possible, though expensive.

Table 15. Methods of municipal sewage disposal in Ashland County

Municipality	Method of treatment	Waters that are affected by effluents
Ashland	Primary and chlorination	Lake Superior
Butternut	Primary and stabilization pond	Butternut Creek
Glidden	Primary and chlorination (planned)	East Fork Chippewa River
Mellen	Primary and chlorination	Bad River

The problem of water pollution in Ashland County is gradually becoming controlled. Table 15 summarizes the methods of treatment that various municipalities employ for waste disposal. There are also a few borderline problems or potential pollution sources in the county. Briefly, these include chemical and material wastes from manufacturing plants at Ashland, two dairying plants on Butternut Creek and the Marengo River and possibly a veneer mill at Mellen that discharges some boiler and log-soaking wastes into the Bad River. Since industrial or agricultural activity is not extensive in this county, the potential for pollution is not as great as elsewhere in the state.

THE FUTURE

Ashland County has a variety of water recreational opportunities that exist in a relatively unspoiled condition. The county is particularly fortunate in having a large land area in public ownership which is available to the urban population center of Ashland and to the incoming tourist.

These are capital assets which can remain in excellent condition with good care. But Nature was not so generous with some waters, and man-made improvements have real potential for creating unrealized benefits. Dark water with poor light penetration, infertile bog lakes, poor instream habitat conditions and stunted panfish await the challenge of man's ingenuity.

ACKNOWLEDGMENTS

Appreciation is extended to other members of the Fish Management Division who assisted in the field investigations and to the Law Enforcement Division, pilot and wardens who provided information for this report. Acknowledgment is also extended to personnel of other governmental agencies providing data for this inventory, particularly, the assistance given to the water survey investigations by the U. S. Forest Service.

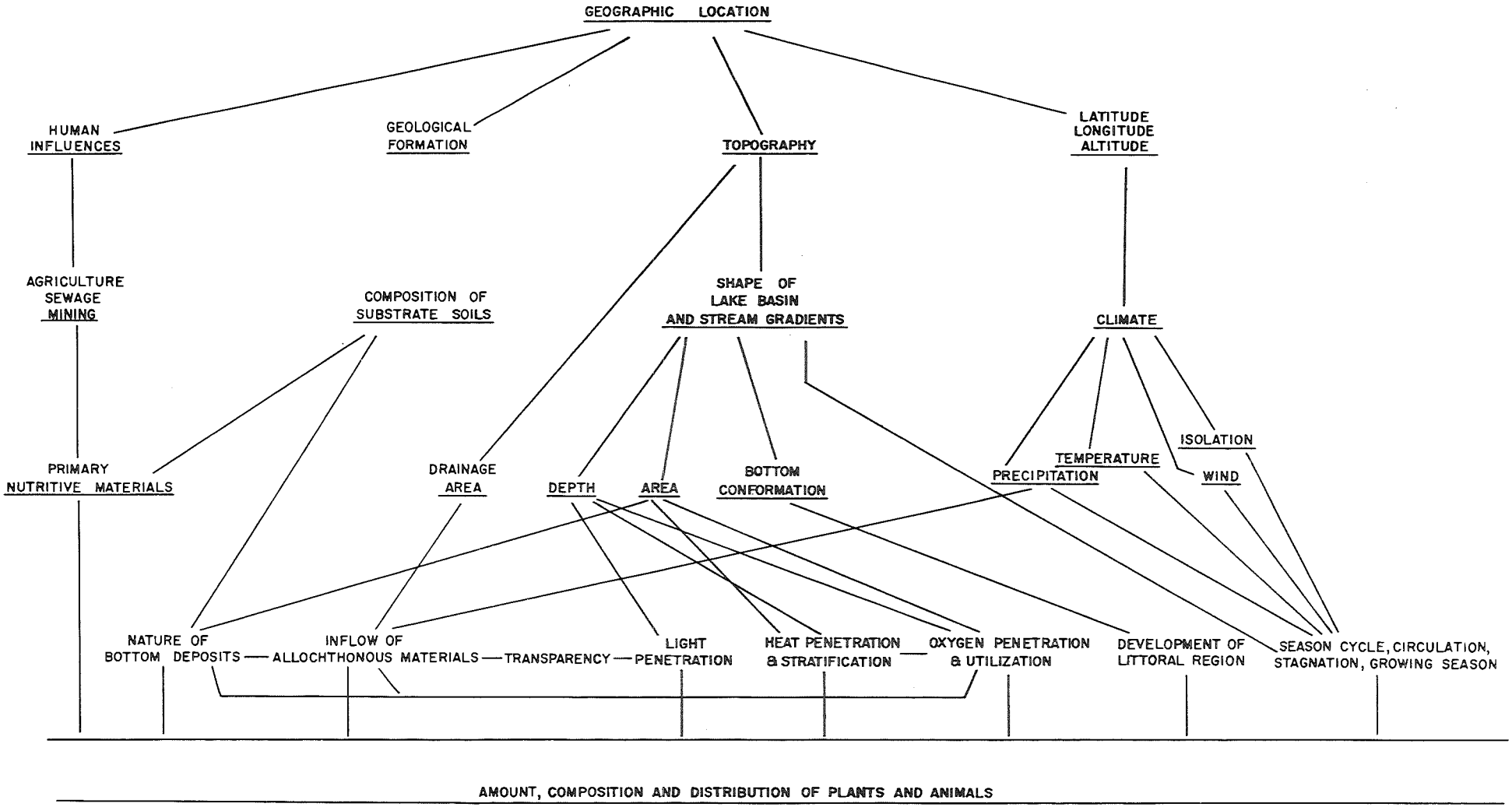


Fig. 9. Factors contributing to the character of surface waters and their trophic nature and productivity.

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DEFINITIONS

aesthetics - The scenic qualities of water and its surroundings. Wild shorelines usually have higher scenic values than developed shorelines because they harbor wildlife and a varied plant life. The marshes are often spawning and nesting grounds.

direct drainage area - The land area where runoff flows directly into only a particular lake or stream, as differentiated from watershed areas. The direct drainage for streams is only the area drained within the county; for lakes the drainage area includes the total area that may also drain into the lake from other counties.

estimated normal flow, cfs. - The amount of water measured in cubic feet per second flow that may be expected in streams at their outlet, either to another stream or at the county line. Estimations of flow were not measured during periods of excess runoff, such as during March, April and May; hence, they are not peak flows but approximate average flows.

lake types - There are significant limnological characteristics peculiar to each lake type, based on their physical and chemical properties. The production of plant and animal life generally varies in accordance with lake type. The lakes of Wisconsin (Prescott, 1951) fall into four main types, hard water and soft water, seepage and drainage lakes. Three other subtypes have been added for further classification of the four main types, since these three lake types, the acid bog, alkaline bog, and spring pond show additional definitive characteristics.

hard water drainage lakes: Impoundments and lakes whose main water source is from stream drainage. Methyl purple alkalinity (or M.P.A.) of 50 ppm or over, year-around. Usually a pH of 7.0 and above.

soft water drainage lakes: Impoundments and lakes whose main water source is from stream drainage. M.P.A. below 50 ppm at least during part of the year, or year-around; usually have a pH below 7.0.

hard water seepage lakes: Landlocked, or nearly so. Water levels maintained by groundwater table and bottom seal. M.P.A. of 50 ppm, or over; usually a pH of 7.0 and above.

soft water seepage lakes: Landlocked, or nearly so. Water levels maintained by groundwater table and bottom seal. M.P.A. of less than 50 ppm; usually pH below 7.0. Perhaps, the most common lake type in Wisconsin.

acid bog lakes: Small usually brown water lakes of the kettle hole type; usually landlocked or with only little outlet flow; only slight fluctuations of water levels; and encroaching marginal mats of vegetation of Sphagnum, leatherleaf, etc., from 50 percent of the shore. With pH below 7.0 and a low M.P.A.

alkaline bog lakes: Small, brown water kettle hole lakes with a stream meandering through them, and with a pH above 7.0 and an M.P.A. medium to high.

spring ponds (Limnokrenes): Clear water, with groundwater flowing visibly out of the bottom of the basin and the overflow of which forms the beginning of a stream. Seldom freeze-over in winter. M.P.A. usually above 50 ppm with a pH neutral or above 7.0.

landlocked - Shut in by land and not connected by a stream flowing eventually to the oceans.

littoral - The shoreward region of a body of water. The zone affected by waves and currents near the shore. The term is more literally interpreted when describing small lakes which have modest wave action.

methyl purple alkalinity, M.P.A. -The test used to determine the amount of available carbonates, bicarbonates, and hydroxides in parts per million of water. This measurement is used to express the level of fertility of waters. Low alkalinity waters are generally biologically less productive than those with high alkalinities. In 1946, Moyle found the annual yield of yellow walleye fingerling in pounds per acre was related to total alkalinity in his experimentation of 69 Minnesota rearing ponds. The relationship follows.

Total Alkalinity-ppm	Average Yield in lbs. Per Acre	Maximum Yield in lbs. Per Acre	Productivity of Fish & Plant Life
8 - 20	17.1	50	Low
21 - 40	28.3	83	Low to medium
41 - 80	63.3	234	Medium to high
81 - 120	62.7	232	High
121 - or more	48.2	194	High

moraine - An accumulation of debris deposited by a glacier. Moraines are classified in part as follows:

terminal moraine: Glacial till deposits left at the forward edge, or end, of the receding ice sheet. The till is composed of a mixture of clay, silt, sand gravel and sometimes boulders. Numerous small knolls and ridges, interspersed with basins forming many kettle hole lakes and marshes, are characteristics of the terminal moraine.

ground moraine: Extended sheets of glacial till deposited irregularly over the path of the glacier. These nearly level areas are also composed of a mixture of sand, gravel, boulders, and clay, and occasionally, the bedrock is left exposed. The few lakes found in this type of moraine are usually shallow and marshy.

glacial outwash: These are morainic deposits made up of the material produced by glaciers and carried, sorted and deposited by water that originated mainly from melting of glacial ice. The deposits now exist as stratified beds of clay, sand, or gravel in the form of plains, valley trains, and deltas of old glacial lakes. The outwash may extend far beyond the farthest advance of the ice. In outwash of Ashland County fewer lakes occur than in terminal moraine, and beaches are usually composed of sorted deposits of sand. Outwash in other areas of buried ice blocks produced numerous lakes. Outwash of this kind is known as pitted outwash.

pH - The negative logarithm of the hydrogen ion concentration expressed in gram equivalents. A pH of less than 7.0 is acid, a pH of 7 neutral and more than 7.0 is alkaline. Usually, swamp drainage contributes to a low pH.

panfish - Includes the bluegills, perch, rock bass, green sunfish, pumpkinseeds, crappies, rock and warmouth bass, and bullheads. To be described as either a panfish or forage minnow lake suggests the waters in question have a winterkill problem.

predator fish - Includes muskellunge, northern pike, walleyes, largemouth and smallmouth bass as the predominating members of this fish group.

private development - The improvement of lakeshore resulting from the construction of commercial resort facilities, cottages, organizational camps, marinas, etc.

public access - An improved roadway over lands owned or leased by a unit of government for egress to lakes and streams.

public frontage - The government-owned or leased shoreline bordering lakes or streams.

shore development figure, S.D.F. - The ratio of the perimeter of a given lake to that of a circle with the same area as the lake.

specific conductance - The total concentration of dissolved electrolytes in waters expressed in micromhos at 77 degrees Fahrenheit. Corresponds roughly to the methyl purple alkalinity test, though of a different value scale.

stream gradient - The overall average per mile fall of water levels from a stream's permanent source to its outlet.

trout stream - The term implies a stream which has cool water, is fed by numerous springs and is capable of supporting cold water fish in the salmonoid family.

water color - Either clear, light brown, medium brown, or dark brown. Dark brown is a "coffee" color derived from drainage of humic materials in swamps, and the other browns are lighter. Color is a limiting factor in light penetration and, subsequently, determines the amount of dissolved oxygen supplied by the photosymthetic activity of plants to waters.

watershed area - The whole water gathering land surface of a lake or stream basin, and includes the runoff surfaces of other lakes and streams above the one in question. Stream watershed areas, however, are only the runoff surfaces above to the county line, while lake watershed areas include the entire basin system within and out of the county.

wetlands - Any area where the water table is at such a level that raising of a cultivated crop is usually not possible. Wetland definitions follow those used by the U. S. Fish and Wildlife Service for wetlands inventories. Wetland classifications are as follows:

deep marshes: Water from six inches to three feet in depth during growing season. Vegetation of cattails, reeds, bulrushes, spike rushes and pondweed.

shallow marshes: Water present during most of the growing season, at least in parts of the area. Vegetation of cattails, river rush, bulrushes, and spike rushes.

fresh meadows: Soggy ground or seasonally flooded areas which are normally too wet for agricultural practices. Vegetation of smartweeds, grasses, sedges, broad-leaved plants, or bur reed.

shrub swamp: Waterlogged soil, with occasional standing water. Vegetation of alders, willow, dogwoods, etc.

timber swamps: Waterlogged soil, with occasional standing water. Vegetation of tamarack, black spruce, black ash, balsam, etc.

bogs: Waterlogged soil conditions. Vegetation of leatherleaf, cranberries, and Labrador tea.

Plant species above are not intended to be a complete list for each type: they are a guide to groups of which serve as indicators for various types.

wilderness lake - A body of water near which there are no buildings or car accesses or commercial facilities within 200 feet of the shore, but where access is possible by trail or water.

APPENDIX 1A - - PHYSICAL AND CHEMICAL CHARACTERISTICS OF ASHLAND COUNTY LAKES

NAMED LAKES	LOCATION S - T-N-R	SURFACE ACRES	MAXIMUM DEPTH (FEET)	MAXIMUM LENGTH (MILES)	MAXIMUM WIDTH (MILES)	MILES SHORELINE	pH	METHYL PURPLE ALKALINITY (PPM)	SPECIFIC CONDUCTANCE MMHOS (AT 77 °)	WATER COLOR	SAMPLE DATE
Augustine Lake	26-43-1W	165.5	10	.90	.42	2.31	6.4	9	28	Med. Brown	May - 1964
Bad River Slough	17-48-2W	184.4	7	.89	.72	4.67	8.4	73	148	Med. Brown	July - 1964
Bass Lake	19-45-3W	28.2	10	.43	.23	1.20	6.6	10	51	Med. Brown	May - 1962
Bay Springs	6-41-2W	1.9	5	.22	.03	0.45	7.2	83	152	Clear	Nov.- 1963
Bear Lake	31-41-3W	219.7	8	.87	.67	7.45	7.2	43	78	Med. Brown	July - 1963
Beaver Lake	21-44-2W	24.4	8	.42	.16	1.10	6.5	20	47	Dark Brown	May - 1964
Beaver Lake	31-43-4W	60.8	12	.58	.48	2.27	6.4	7	30	Dark Brown	June- 1963
Beaver Lake	7-44-4W	34.8	12	.35	.31	1.15	6.8	9	30	Lt. Brown	July - 1963
Beaver Dam Lake	36-45-4W	120.4	33	.94	.18	7.30	6.8	23	60	Dark Brown	June- 1963
Blueberry Lake	21-41-1E	2.4	7	.12	.05	0.29	5.2	8	22	Lt. Brown	March-1963
Bullhead Lake	11-41-2W	14.0	13	.29	.13	0.70	6.2	25	61	Dark Brown	March-1963
Cammerer Lake	36-43-1W	14.8	24	.23	.13	0.58	6.3	17	35	Med. Brown	Sept.- 1963
Camp Four Lake	10-41-2W	10.1	19	.22	.13	0.59	6.2	5	18	Clear	Sept.- 1963
Caroline Lake	24-44-2W	129.2	8	.84	.40	2.39	6.4	17	52	Dark Brown	June - 1964
Conley Lake	23-44-3W	5.6	25	.17	.16	0.34	6.2	10	24	Lt. Brown	Aug. - 1963
Cranberry Lake	33-43-4W	8.3	15	.24	.09	0.59	6.2	26	73	Dark Brown	July - 1963
Cub Lake	36-41-4W	31.0	21	.38	.30	1.20	6.5	9	15	Lt. Brown	May - 1964
Cycle Lake	25-42-1W	36.6	23	.40	.19	1.15	6.8	11	27	Med. Brown	July - 1959
Dead Horse Slough	34-43-4W	87.0	7	1.04	.38	2.99	6.9	30	67	Med. Brown	June - 1963
Ditman's Lake	7-43-1W	2.6	17	.10	.06	0.25	5.3	8	29	Dark Brown	Sept.- 1963
Dollar Lake	22-44-2W	13.2	17	.19	.15	0.55	5.4	5	23	Lt. Brown	April - 1964
Dry Lake	11-43-2W	18.0	7	.38	.15	1.08	6.4	20	47	Med. Brown	July - 1963
East Twin Lake	22-43-4W	110.0	15	.71	.34	1.88	6.8	18	55	Med. Brown	June - 1963
English Lake	8-44-3W	244.2	40	1.29	.60	4.03	6.9	29	70	Med. Brown	June - 1963
Eureka Lake	14-44-2W	42.0	27	.46	.19	1.31	6.6	24	79	Dark Brown	June - 1964
Gallilee, Lake	15-44-2W	211.5	23	.99	.52	3.00	6.5	24	91	Clear	June - 1964
Gates Lake	24-42-3W	20.2	13	.37	.16	0.92	6.0	4	16	Clear	June - 1963
Gilbert Lake	15-44-4W	3.8	13	.15	.06	0.35	6.6	23	50	Dark Brown	Nov. - 1963
Gorden Lake	33-43-2W	140.2	28	1.28	.29	4.53	6.5	21	72	Med. Brown	June - 1961
Hoffman Lake	26-41-1E	89.4	6	.86	.38	2.43	5.9	28	78	Dark Brown	March-1964
Honest John Lake	21-48-2W	92.9	8	1.50	.34	5.69	6.6	36	71	Med. Brown	July - 1964
John Frank Lake	12-44-4W	5.4	11	.15	.08	0.40	6.3	24	42	Med. Brown	Aug. - 1963
Kakagon Slough	10-48-3W	294.2	25	3.05	.20	30.25	6.8	46	103	Lt. Brown	Sept. - 1964
Kempf Springs	3-41-2W	2.7	9	.18	.07	0.63	6.9	57	124	Clear	Nov. - 1963
Kenyon Springs	31-42-2W	6.6	2	.59	.05	1.48	7.1	70	148	Clear	Nov. - 1963
Knab Lake	15-43-2W	9.2	7	.19	.14	0.44	6.8	31	51	Med. Brown	June - 1963
Lindbergh Lake	6-41-1E	4.0	1	.11	.08	0.33	7.4	58	220	Clear	April - 1964
Little Butternut Lake	36-42-1W	9.6	11	.26	.10	0.68	7.2	84	154	Med. Brown	Oct. - 1963
Little Clam Lake	5-42-4W	144.2	11	1.64	.29	3.90	6.3	8	21	Clear	June - 1963
Long Lake	19-45-4W	20.0	4	.46	.09	1.02	6.5	11	39	Lt. Brown	July - 1963

Appendix 1A -- Physical and Chemical Characteristics of Ashland County Lakes (Continued)

NAMED LAKES	LOCATION S - T-N-R	SURFACE ACRES	MAXIMUM DEPTH (FEET)	MAXIMUM LENGTH (MILES)	MAXIMUM WIDTH (MILES)	MILES SHORELINE	pH	METHYL PURPLE ALKALINITY (PPM)	SPECIFIC CONDUCTANCE (MMHOS AT 77°)	WATER COLOR	SAMPLE DATE
Long Lake	29-44-2W	108.9	15	.67	.44	2.10	6.8	14	56	Med. Brown	May - 1964
Loon Lake	29-45-2W	34.0	21	.33	.26	1.31	6.2	11	38	Lt. Brown	Aug. - 1963
Luebke Lake	6-41-1E	7.8	9	.25	.12	0.62	6.0	12	32	Clear	April - 1964
McCarthy Lake	12-43-4W	41.6	2	.43	.23	1.08	7.1	45	108	Lt. Brown	July - 1963
McLaren Lake	6-42-4W	66.0	12	.90	.65	3.03	6.1	2	26	Clear	July - 1963
Meder Lake	20-44-2W	131.3	10	.65	.61	2.03	6.7	17	56	Med. Brown	May - 1964
Meyer Lake	7-42-1W	14.1	27	.30	.10	0.66	6.3	8	13	Lt. Brown	Sept. - 1963
Mineral Lake	14-44-4W	225.1	26	1.63	.45	5.28	6.6	28	65	Lt. Brown	June - 1963
Moquah Lake	33-44-4W	75.7	5	2.52	.20	5.40	6.6	27	67	Med. Brown	June - 1963
Mud Lake	17-43-4W	9.6	14	.35	.07	0.79	5.6	10	18	Lt. Brown	March - 1963
Muskellunge Lake	13-42-3W	21.1	8	.32	.13	0.88	6.9	31	76	Med. Brown	Aug. - 1963
Parker Lake	22-41-1W	12.6	6	.18	.17	0.54	6.6	60	126	Clear	March - 1963
Pelican Lake	1-41-3W	45.5	10	.85	.19	5.42	7.3	54	118	Med. Brown	July - 1963
Pole Lake	6-42-4W	12.5	21	.24	.12	0.60	6.4	21	45	Clear	Feb. - 1966
Potter Lake	13-44-4W	29.2	8	.30	.21	1.10	6.8	31	77	Lt. Brown	June - 1963
Seagels Lake	9-42-2W	7.2	9	.17	.19	0.40	6.0	6	20	Med. Brown	Sept. - 1963
Seitz Lake	4-44-4W	18.7	5	.30	.18	0.78	6.6	59	130	Clear	July - 1963
Sells Lake	9-42-1W	16.2	5	.74	.07	2.00	7.5	67	126	Med. Brown	Sept. - 1963
Slim Lake	14-41-2W	15.0	33	.32	.11	0.76	6.2	8	25	Clear	March - 1963
Snoose Lake	31-41-4W	23.9	13	.34	.16	0.93	6.6	35	105	Lt. Brown	March - 1964
Snowshoe Lake	21-44-2W	25.5	11	.38	.19	0.89	6.2	18	51	Clear	April - 1964
Spider Lake	4-43-4W	103.4	20	.90	.23	2.52	6.8	27	67	Med. Brown	June - 1963
Spillerberg Lake	19-43-2W	70.0	25	.47	.37	1.28	6.8	33	72	Lt. Brown	June - 1963
Summit Lake	22-43-2W	91.4	6	.57	.38	1.50	6.7	19	48	Med. Brown	June - 1964
Tea Lake	18-44-4W	50.0	42	.46	.27	1.30	6.7	22	64	Lt. Brown	June - 1963
Three (Lake)	3-44-4W	63.2	14	.70	.35	2.24	6.7	17	44	Lt. Brown	June - 1963
Torrey Lake	33-43-2W	28.9	31	.31	.19	0.86	6.1	12	44	Lt. Brown	March - 1964
Trout Lake	7-42-1W	4.8	28	.12	.08	0.42	6.0	8	10	Clear	Sept. - 1963
Twin Lakes (East)	24-44-2W	27.2	26	.32	.25	1.00	6.1	13	25	Dark Brown	June - 1964
Twin Lakes(West)	24-44-2W	62.1	12	.47	.40	1.51	6.4	11	31	Dark Brown	June - 1964
Upper Clam Lake	31-43-4W	164.6	20	.94	.51	2.75	7.0	44	97	Med. Brown	June - 1962
West Twin Lake	21-43-4W	44.0	20	.48	.23	1.18	6.6	13	41	Med. Brown	June - 1963
White River Flowage	6-46-4W	47.4	26	.60	.24	1.80	7.3	86	166	Turbid	June - 1964
Wolf Lake	18-43-1W	5.4	17	.12	.10	0.34	5.8	6	29	Lt. Brown	March - 1964
Woodtick Lake	27-43-4W	11.7	5	.23	.14	0.60	6.6	22	68	Med. Brown	July - 1963
Zielke Lake	28-43-2W	21.2	10	.39	.14	0.85	6.1	13	41	Dark Brown	May - 1964

Appendix 1 A -- PHYSICAL AND CHEMICAL CHARACTERISTICS OF ASHLAND COUNTY LAKES.

UNNAMED LAKES TOWNSHIP–RANGE SECTION – (FORTY *)	SURFACE ACRES	MAXIMUM DEPTH (FEET)	MAXUMUM LENGTH (MILES)	MAXIMUM WIDTH (MILES)	MILES SHORELINE	pH	METHYL PURPLE ALKALINITY (PPM)	SPECIFIC CONDUCTANCE (MMHOS) (AT 77°)	WATER COLOR	SAMPLE DATE
T41N – R1E										
12 – (3)	0.4	3	.10	.04	.25	6.1	12	35	Clear	April, 1964
17 – (1)	6.0	10	.24	.17	.75	6.6	40	134	Clear	April, 1964
21 – (6)	0.4	9	.03	.03	.09	5.2	10	17	Lt. Brown	March, 1963
25 – (11)	1.9	11	.08	.06	.20	5.3	6	17	Lt. Brown	March, 1964
T41N – R1W										
20 – (12)	5.6	6	.14	.08	.39	6.8	99	201	Clear	March, 1963
33 – (2)	6.2	10	.10	.07	.26	6.2	35	105	Med. Brown	April, 1964
T41N – R2W										
9 – (1)	1.3	3	.06	.06	.15	6.2	7	16	Lt. Brown	Sept., 1963
14 – (10)	1.2	22	.06	.05	.18	5.4	8	18	Clear	March, 1963
15 – (4)	1.1	12	.07	.05	.15	5.4	10	19	Clear	March, 1963
T41N – R3W										
21 – (10)	0.4	2	.02	.01	.09	7.2	85	156	Clear	Nov., 1963
T41N – R4W										
30 – (1)	18.6	5	.50	.17	1.25	6.0	10	20	Lt. Brown	March, 1963
30 – (12)	4.9	2	.20	.06	.60	6.0	10	21	Lt. Brown	March, 1963
T42N – R1E										
10 – (11)	0.9	16	.06	.04	.14	5.8	12	34	Med. Brown	April, 1964
13 – (9)	4.3	10	.16	.08	.43	5.8	12	34	Clear	April, 1964
19 – (6)	2.0	11	.11	.06	.25	6.7	53	128	Clear	April, 1964
T42N – R1W										
7 – (13)	1.2	25	.08	.03	.18	6.0	5	13	Med. Brown	Sept., 1963
8 – (2)	1.4	15	.08	.04	.19	6.0	9	26	Med. Brown	March, 1963
13 – (2)	2.1	3	.25	.03	.88	8.8	86	154	Clear	Oct., 1963
13 – (3)	2.2	1	.26	.03	.66	8.6	64	122	Clear	Oct., 1963
T42N – R2W										
19 – (2)	0.5	15	.04	.03	.10	6.8	44	77	Clear	March, 1963
32 – (13)	0.3	5	.04	.02	.09	6.0	12	26	Med. Brown	March, 1963
36 – (5)	0.7	1	.19	.01	.52	7.2	63	123	Clear	Feb., 1966
T42N – R4W										
7 – (13)	0.1	1	.09	.04	.25	6.8	35	82	Clear	Nov., 1963
17 – (4)	15.9	11	.31	.13	1.04	6.8	25	57	Clear	March, 1963
27 – (12)	3.4	20	.11	.07	.28	6.2	16	40	Dark Brown	March, 1963
29 – (2)	2.3	9	.12	.05	.28	5.3	5	14	Clear	March, 1964
T43N – R1W										
5 – (3)	10.2	5	.23	.14	.64	6.0	10	20	Med. Brown	Aug., 1963
15 – (6)	1.1	3	.07	.04	.15	6.0	12	21	Med. Brown	Aug., 1963
16 – (1)	0.5	5	.12	.02	.34	7.3	75	155	Clear	Aug., 1963

APPENDIX 1A -- Physical and Chemical Characteristics of Ashland County Lakes (Continued)

UNNAMED LAKES TOWNSHIP - RANGE SECTION – (FORTY*)	SURFACE ACRES	MAXIMUM DEPTH (FEET)	MAXIMUM LENGTH (MILES)	MAXIMUM WIDTH (MILES)	MILES SHORELINE	pH	METHYL PURPLE ALKALINITY (PPM)	SPECIFIC CONDUCTANCE (MMHOS) (AT 77°)	WATER COLOR	SAMPLE DATE
T43N – R1W (cont.)										
22 – (7)	0.6	2	.06	.01	.13	6.2	14	19	Lt. Brown	Sept., 1963
24 – (2)	0.5	1	.07	.01	.15	7.0	58	100	Clear	Nov., 1963
T43N – R2W										
12 – (8)	0.7	8	.07	.03	.13	6.1	18	53	Dark Brown	Nov., 1963
15 – (7)	0.3	18	.07	.02	.13	5.4	6	22	Lt. Brown	March, 1964
35 – (12)	1.8	16	.09	.06	.34	6.0	15	24	Med. Brown	Aug., 1963
T43N – R3W										
12 – (4)	0.8	6	.07	.03	.18	6.0	6	11	Dark Brown	Aug., 1963
T43N – R4W										
4 – (14)	2.8	9	.09	.07	.25	6.1	18	42	Dark Brown	June, 1964
18 – (12)	0.4	8	.04	.03	.10	5.5	6	59	Lt. Brown	March, 1964
18 – (15)	0.3	4	.04	.01	.09	5.4	5	77	Med. Brown	March, 1964
19 – (6)	3.0	2	.11	.08	.32	5.8	8	25	Med. Brown	July, 1963
32 – (7)	4.2	6	.20	.09	.68	6.9	50	108	Med. Brown	July, 1963
T44N – R2W										
17 – (1)	0.5	8	.05	.02	.16	7.2	71	137	Clear	Aug., 1963
22 – (16b)	2.8	27	.08	.08	.24	5.5	9	44	Lt. Brown	April, 1964
22 – (16d)	0.4	21	.05	.02	.10	5.3	8	13	Lt. Brown	April, 1964
23 – (3)	0.4	15	.04	.03	.12	4.9	8	27	Lt. Brown	April, 1964
24 – (14)	1.9	8	.09	.06	.22	6.0	9	14	Med. Brown	Aug., 1963
26 – (6)	0.5	38	.06	.04	.12	5.4	17	17	Lt. Brown	April, 1964
T44N – R3W										
1 – (14)	2.0	8	.18	.03	.77	6.1	15	46	Clear	Feb., 1966
6 – (9)	2.9	9	.09	.07	.28	6.6	26	47	Med. Brown	Aug., 1963
T44N – R4W										
5 – (11)	0.7	14	.05	.03	.13	6.2	31	83	Lt. Brown	March, 1964
20 – (13)	2.1	15	.09	.06	.24	5.2	4	19	Med. Brown	March, 1964
25 – (16)	3.5	11	.14	.06	.30	6.4	19	80	Med. Brown	June, 1963
T45N – R2W										
7 – (14)	1.3	3	.10	.05	.25	6.0	14	37	Dark Brown	Aug., 1963
18 – (1)	2.3	17	.09	.07	.24	6.0	11	28	Dark Brown	Aug., 1963
18 – (14)	9.9	33	.22	.11	.52	6.0	14	38	Med. Brown	Aug., 1963
T45N – R4W										
18 – (16)	9.7	7	.29	.08	.78	6.6	10	39	Med. Brown	July, 1963

Appendix 1A -- Physical and Chemical Characteristics of Ashland County Lakes (Continued)

UNNAMED LAKES TOWNSHIP–RANGE SECTION–(FORTY*)	SURFACE ACRES	MAXIMUM DEPTH (FEET)	MAXIMUM LENGTH (MILES)	MAXIMUM WIDTH (MILES)	MILES SHORELINE	pH	METHYL PURPLE ALKALINITY (PPM)	SPECIFIC CONDUCTANCE (MMHOS) (AT 77°)	WATER COLOR	SAMPLE DATE
T46N – R3W										
24 – (14)	2.2	3	.20	.03	.45	6.2	114	198	Med. Brown	Feb., 1966
24 – (15)	1.8	5	.26	.02	.55	6.9	119	152	Lt. Brown	Feb., 1966
35 – (8)	5.2	6	.59	.02	1.28	6.3	102	195	Med. Brown	Feb., 1966
T46N – R4W										
26 – (4)	1.0	3	.08	.04	.23	7.5	85	156	Lt. Brown	Aug., 1963
T47N – R3W										
1 – (12)	1.9	7	.25	.02	.38	6.5	42	97	Dark Brown	June, 1964
12 – (9)	4.6	9	.29	.03	.66	7.2	88	136	Dark Brown	June, 1964
12 – (12)	0.7	10	.06	.04	.19	7.2	63	130	Dark Brown	June, 1964
13 – (7)	6.9	8	.47	.03	1.04	6.8	56	107	Dark Brown	June, 1964
14 – (12)	3.2	6	.14	.03	.38	6.6	95	169	Lt. Brown	Feb., 1966
14 – (13)	3.2	7	.10	.05	.40	6.8	57	126	Dark Brown	June, 1964
14 – (16)	3.7	9	.18	.04	.45	7.1	70	126	Dark Brown	June, 1964
23 – (3)	3.4	5	.17	.04	.43	7.2	119	208	Dark Brown	June, 1964
23 – (8)	5.8	9	.33	.04	.76	7.0	62	131	Dark Brown	June, 1964
23 – (9)	2.9	7	.23	.02	.54	6.8	63	147	Dark Brown	June, 1964
23 – (12)	1.9	5	.13	.02	.29	6.8	76	154	Dark Brown	June, 1964
23 – (15a)	4.7	8	.32	.03	.68	7.1	95	213	Dark Brown	June, 1964
23 – (15b)	1.5	5	.18	.02	.38	7.1	94	213	Dark Brown	June, 1964
26 – (12)	10.4	19	.18	.16	.50	6.6	48	102	Med. Brown	July, 1965
T47N – R4W										
6 – (9)	5.7	3	.22	.07	.56	7.5	113	298	Clear	June, 1965
T48N – R2W										
18 – (1)	18.9	13	.45	.08	1.05	7.0	51	92	Med. Brown	July, 1964
T48N – R3W										
36 – (3)	8.9	9	.38	.04	.94	7.0	72	136	Turbid	July, 1965
T50N – R3W										
13 – (3) Madeline Is.	104.6	10	1.32	.65	3.71	7.2	40	86	Clear	July, 1965
T51N – R2W										
35 – (7) Madeline Is.	32.1	5	.38	.42	1.81	6.0	8	52	Med. Brown	Aug., 1965
1 – (4) Stockton Is.	30.4	8	.72	.10	2.45	6.8	26	73	Med. Brown	Aug., 1965
T52N – R1W										
10 – (3) Outer Is.	35.6	6	.53	.20	2.00	7.2	10	30	Med. Brown	Aug., 1965
TOTAL	4,854.4				200.48					
AVERAGE						6.5	33	73		

APPENDIX 1B -- PHYSICAL CHARACTERISTICS OF ASHLAND COUNTY LAKES

Named Lakes	Drainage System	Direct Drainage (Sq. Miles)	Percent of Direct Drainage Agriculture	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	S.D.F.	Wetlands (Total Acres)	Watershed Percent Marsh	Watershed Percent Wooded	Miles of Public Frontage
Augustine Lake	Willerth Creek	2.1	5	95	2.1	1.37	250	5	95	0.28
Bad River Slough	Bad River	2.6	2	98	22.6	2.48	1,150	25	75	2.58
Bass Lake	Landlocked	1.6	80	20	1.6	1.61	5	60	40	0.10
Bay Springs	Rocky Run	0.4	0	100	0.4	2.32	65	95	5	0
Bear Lake	Chippewa River	3.6	0	100	230.4	3.64	132	33	67	3.13
Beaver Lake	Minnow Creek	0.9	0	100	4.2	1.59	12	0	100	0
Beaver Lake	Landlocked	0.3	0	100	0.3	2.08	182	30	70	0.72
Beaver Lake	Spring Brook	0.2	1	99	0.2	1.38	0	0	0	1.15
Beaver Dam Lake	Brunsweiller River	1.8	0	100	39.2	4.76	0	0	0	0
Blueberry Lake	Landlocked	0.2	0	100	0.2	1.34	29	0	100	0
Bullhead Lake	Dorns Creek	0.2	15	85	0.2	1.34	374	20	80	0
Cammerer Lake	Landlocked	0.5	0	100	0.5	1.08	139	25	75	0.39
Camp Four Lake	Landlocked	1.4	5	95	1.4	1.32	1	100	0	0
Caroline Lake	Bad River	2.7	0	100	2.8	1.50	129	0	100	0
Conley Lake	Landlocked	0.1	0	100	0.1	1.02	5	10	90	0
Cranberry Lake	Chippewa River	0.5	0	100	0.5	1.46	110	5	95	0
Cub Lake	Landlocked	0.6	0	100	0.6	1.55	120	40	60	0
Cycle Lake	Landlocked	0.7	2	98	0.7	1.36	1	50	50	0
Dead Horse Slough	Torch River	2.5	0	100	5.6	2.29	425	75	75	2.50
Ditman's Lake	Dryden Creek	0.1	0	100	0.1	1.11	67	0	100	0.25
Dollar Lake	Landlocked	0.3	0	100	0.3	1.08	84	5	95	0.36
Dry Lake	Bad River	1.7	0	100	3.4	1.20	204	10	90	1.08
East Twin Lake	Torch River	2.9	0	100	2.9	1.67	17	25	75	1.51
English Lake	Trout Brook	4.0	0	100	4.0	1.84	470	35	65	0
Eureka Lake	Minnow Creek	0.4	0	100	1.6	1.44	12	0	100	0
Gallilee, Lake	Minnow Creek	1.7	5	95	3.3	1.47	50	14	86	0
Gates Lake	Landlocked	0.2	0	100	0.2	1.43	1	100	0	0.92
Gilbert Lake	Hell Hole Creek	0.8	15	85	0.8	1.04	10	0	100	0.35
Gorden Lake	Dryden Creek	1.9	45	55	19.3	2.03	300	5	95	.15
Hoffman Lake	Hoffman Creek	0.9	0	100	5.0	1.84	425	20	80	1.15
Honest John Lake	Lake Superior	5.3	3	97	5.3	4.20	675	30	70	0.18
John Frank Lake	Brunsweiller River	0.6	10	90	0.6	1.23	36	5	95	0.40
Kakagon Slough	Lake Superior	9.2	1	99	42.9	12.62	5,300	65	35	3.31
Kempf Springs	Chippewa River	0.2	0	100	0.2	2.72	19	100	0	0
Kenyon Springs	Chippewa River	0.3	0	100	0.3	4.10	24	0	100	0
Knab Lake	Knab Creek	0.1	0	100	1.0	1.03	10	0	100	0.38
Lindbergh Lake	Butternut Creek	0.5	10	90	0.5	1.18	38	5	95	0
Little Butternut Lake	Butternut Creek	0.1	0	100	5.5	1.57	20	25	75	0
Little Clam Lake	Landlocked	1.4	0	100	1.4	2.28	94	90	10	3.48

Appendix 1B -- Physical Characteristics of Ashland County Lakes (Continued)

Named Lakes	Drainage System	Direct Drainage (Sq. Mile)	Percent of Direct Drainage Agriculture	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	S.D.F.	Wetlands (Total Acres)	Percent Marsh	Percent Wooded	Miles of Public Frontage
Long Lake	Landlocked	0.8	5	95	0.8	2.58	3	75	25	1.02
Long Lake	Minnow Creek	1.0	0	100	1.0	1.43	161	5	95	0
Loon Lake	Landlocked	0.8	35	65	0.8	1.60	22	0	100	.03
Luebke Lake	Landlocked	0.2	45	55	0.2	1.59	2	50	50	0
McCarthy Lake	Iron River	4.1	0	100	4.1	1.31	48	30	70	1.08
McLaren Lake	Landlocked	0.3	0	100	0.3	2.36	26	70	30	0.19
Meder Lake	Minnow Creek	2.2	8	92	2.2	1.26	120	0	100	0
Meyer Lake	Landlocked	0.2	60	40	0.2	1.25	1,088	0	100	0
Mineral Lake	Brunsweiller River	1.4	0	100	34.6	2.51	36	25	75	0.80
Moquah Lake	Brunsweiller River	7.0	0	100	18.5	2.88	1,400	7	93	1.68
Mud Lake	Chippewa River	0.2	0	100	0.2	1.80	26	0	100	0.28
Muskellunge Lake	Muskellunge Creek	2.5	0	100	8.5	1.37	1,075	5	95	0.60
Parker Lake	Butternut Creek	0.4	50	50	0.4	1.07	65	5	95	0
Pelican Lake	Chippewa River	3.6	0	100	179.8	4.50	300	12	88	4.72
Pole Lake	Landlocked	0.4	0	100	0.4	1.21	21	10	90	0.60
Potter Lake	Brunsweiller River	1.3	0	100	1.9	1.49	62	20	80	1.10
Seagels Lake	Landlocked	0.1	2	98	0.1	1.06	12	0	100	0
Seitz Lake	Spring Brook	0.3	5	95	2.3	1.90	17	5	95	0.38
Sells Lake	Chippewa River	0.5	60	40	47.8	3.55	41	65	35	0
Slim Lake	Landlocked	0.8	30	70	0.8	1.40	14	10	90	0
Snoose Lake	Chippewa River	0.3	0	100	0.3	1.36	24	10	90	0
Snow Shoe Lake	Minnow Creek	0.3	0	100	0.3	1.26	0	0	0	0
Spider Lake	Brunsweiller River	5.2	0	100	10.2	1.76	840	10	90	0
Spillerberg Lake	Spillerberg Creek	0.7	0	100	0.7	1.20	132	0	100	0.28
Summit Lake	Knab Creek	0.6	30	70	0.6	1.12	211	0	100	0
Tea Lake	Whiskey Creek	1.7	0	100	1.7	1.36	43	0	100	0.05
Three (Lake)	Spring Brook	0.9	5	95	0.9	1.99	17	0	100	2.24
Torrey Lake	Dryden Creek	0.6	15	85	0.6	1.15	94	10	90	0
Trout Lake	Landlocked	0.1	30	70	0.1	1.42	20	0	100	.01
Twin Lakes (East)	Minnow Creek	0.5	0	100	0.5	1.37	55	10	90	0
Twin Lakes (West)	Minnow Creek	0.7	0	100	1.2	1.37	65	0	100	0
Upper Clam Lake	Chippewa River	0.9	1	99	12.6	1.54	5	100	0	.03
West Twin Lake	Landlocked	0.6	0	100	0.6	1.25	197	5	95	0.88
White River Flowage	White River	0.2	20	80	172.0	1.87	2	95	5	.01
Wolf Lake	Landlocked	0.2	0	100	0.2	1.04	135	0	100	0.34
Woodtick Lake	Torch River	0.2	0	100	0.2	1.25	22	0	100	0.60
Zielke Lake	Dryden Creek	4.9	7	93	4.9	1.32	2,240	5	95	0

Appendix 1B -- Physical Characteristics of Ashland County Lakes (Continued)

Unnamed Lakes Township – Range Section – (Forty #)	Drainage System	Direct Drainage (Sq. Mile)	Percent of Direct Drainage Agriculture	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	S.D.F	Wetlands (Total Acres)	Percent Marsh	Percent Wooded	Miles of Public Frontage
T41N – R1E										
12 – (3)	Landlocked	0.1	0	100	0.1	2.82	1	100	0	0
17 – (1)	Rapid Creek	0.1	10	90	0.9	2.19	2	100	0	0
21 – (6)	Landlocked	0.1	0	100	0.1	1.01	19	0	100	0
25 – (11)	Landlocked	1.4	0	100	1.4	1.04	520	5	95	0.20
T41N – R1W										
20 – (12)	Spiller Creek	0.3	60	40	0.3	1.17	0	0	0	0
33 – (2)	Landlocked	0.6	20	80	0.6	1.07	68	2	98	0
T41N – R2W										
9 – (1)	Landlocked	0.1	15	85	0.1	1.02	0	0	0	0
14 – (10)	Landlocked	0.1	0	100	0.1	1.17	79	0	100	0
15 – (4)	Landlocked	0.1	0	100	0.1	1.02	31	0	100	0
T41N – R3W										
21 – (10)	Hay Creek	0.1	0	100	0.1	1.01	5	90	10	.09
T41N – R4W										
30 – (1)	Fishtrap Creek	0.2	0	100	1.6	2.14	33	0	100	1.20
30 – (12)	Fishtrap Creek	0.1	0	100	5.5	1.93	31	2	98	.60
T42N – R1E										
10 – (11)	Landlocked	0.2	0	100	0.2	1.05	38	0	100	0
13 – (9)	Swamp Creek	0.7	0	100	0.7	1.36	105	0	100	0
19 – (6)	Chippewa River	0.1	0	100	0.1	1.26	5	0	100	0
T42N – R1W										
7 – (13)	Landlocked	0.1	10	90	0.1	1.17	26	0	100	0
8 – (2)	Landlocked	0.1	35	65	0.1	1.14	40	0	100	0
13 – (2)	Chippewa River	0.1	0	100	0.1	4.33	7	0	100	0.88
13 – (3)	Chippewa River	0.1	0	100	0.1	3.17	17	100	0	0.66
T42N – R2W										
19 – (2)	Landlocked	0.9	35	65	.09	1.01	132	25	75	0
32 – (13)	Landlocked	0.1	0	100	0.1	1.16	89	17	83	0
36 – (5)	Dorn's Creek	0.2	35	65	0.2	4.44	9	95	5	0
T42N – R4W										
7 – (13)	Torch River	0.2	0	100	0.2	5.64	17	0	100	0.25
17 – (4)	Torch River	1.0	0	100	1.0	1.87	12	0	100	1.04
27 – (12)	Landlocked	0.2	0	100	.16	1.05	29	0	100	0.28
29 – (2)	Landlocked	0.2	0	100	0.2	1.35	29	100	0	0.28
T43N – R1W										
5 – (3)	Landlocked	0.1	0	100	0.1	1.40	0	0	0	0
15 – (6)	Landlocked	0.1	0	100	0.1	1.02	1	100	0	0.15

Appendix 1B -- Physical Characteristics of Ashland County Lakes (Continued)

Unnamed Lakes Township – Range Section – (Forty*)	Drainage System	Direct Drainage (Sq. Miles)	Percent of Direct Drainage Agriculture	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	S.D.F.	Wetlands Total Acres	Percent Marsh	Percent Wooded	Miles of Public Frontage
16 – (1)	Magee Creek	0.2	0	100	0.2	3.44	0	0	0	0.34
22 – (7)	Landlocked	0.1	10	90	0.1	1.21	9	50	50	0
24 – (2)	Augustine Creek	0.1	0	100	0.1	2.40	14	0	100	0.15
T43N – R2W										
12 – (8)	Bad River	1.7	0	100	1.7	1.21	38	0	100	0.13
15 – (7)	Landlocked	0.1	0	100	0.1	1.11	17	0	100	0.13
35 – (12)	Landlocked	0.3	40	60	0.3	1.80	150	17	83	0
T43N – R3W										
12 – (4)	Landlocked	0.2	5	95	0.2	1.44	91	0	100	0
T43N – R4W										
4 – (14)	Brunsweiller River	1.3	0	100	1.3	1.07	444	5	95	0
18 – (12)	Landlocked	0.1	0	100	0.1	1.13	29	5	95	0
18 – (15)	Landlocked	0.1	0	100	0.1	1.16	0	0	0	0.09
19 – (6)	Landlocked	0.1	0	100	0.1	1.32	7	0	100	0.32
32 – (7)	Chippewa River	2.9	0	100	11.7	2.52	43	10	90	0.28
T44N – R2W										
17 – (1)	City Creek	0.1	0	100	1.2	1.61	0	0	0	0
22 – (16b)	Landlocked	0.1	0	100	0.1	1.02	5	10	90	0.24
22 – (16d)	Landlocked	0.1	0	100	0.1	1.13	7	10	90	0.10
23 – (3)	Landlocked	0.1	0	100	0.1	1.35	24	0	100	0
24 – (14)	Bad River	0.1	0	100	0.1	1.14	5	0	100	0
26 – (6)	Landlocked	0.1	0	100	0.1	1.21	38	10	90	0.12
T44N – R3W										
1 – (14)	Bad River	0.2	30	70	0.2	12.31	0	0	0	0
6 – (9)	Landlocked	0.2	55	45	0.2	1.17	2	50	50	0
T44N – R4W										
5 – (11)	Landlocked	0.1	0	100	0.1	1.10	0	0	0	0.13
20 – (13)	Landlocked	1.1	0	100	1.1	1.24	228	0	100	0.24
25 – (16)	McCarthy Creek	0.1	0	100	0.1	1.22	30	0	100	0.30
T45N – R2W										
7 – (14)	Landlocked	0.4	40	60	0.4	1.57	31	65	35	0
18 – (1)	Landlocked	0.4	40	60	0.4	1.13	0	0	0	0
18 – (14)	Landlocked	0.9	20	80	0.9	1.18	69	50	50	0
T45N – R4W										
18 – (16)	Landlocked	0.6	10	90	0.6	1.63	0	0	0	0
T46N – R3W										
24 – (14)	Bad River	0.1	0	100	0.1	2.16	0	0	0	0
24 – (15)	Bad River	0.1	0	100	0.1	2.93	0	0	0	0
35 – (8)	Marengo River	0.1	0	100	0.1	4.01	1	10	90	0
T46N – R4W										
26 – (4)	Marengo River	0.1	20	80	0.1	1.65	1	10	90	0

Appendix 1B -- Physical Characteristics of Ashland County Lakes (Continued)

Unnamed Lakes Township – Range Section – (Forty#)	Drainage System	Direct Drainage (Sq. Miles)	Percent of Direct Drainage Agriculture	Percent Direct Drainage Wooded	Watershed Area (Sq. Miles)	S.D.F.	Wetlands Total Acres	Percent Marsh	Percent Wooded	Miles of Public Frontage
T47N – R3W										
1 – (12)	Bad River	0.1	0	100	0.1	1.93	7	0	100	0
12 – (9)	Bad River	0.1	0	100	0.1	2.20	0	0	0	0
12 – (12)	Bad River	0.1	0	100	0.1	1.62	81	0	100	0
13 – (7)	Bad River	0.1	0	100	0.1	2.82	0	0	0	0
14 – (12)	Bad River	0.1	0	100	0.1	1.51	0	0	0	0
14 – (13)	Bad River	0.1	0	100	0.1	1.60	0	0	0	0
14 – (16)	Bad River	0.1	0	100	0.1	1.67	0	0	0	0
23 – (3)	Bad River	0.1	0	100	0.1	1.66	0	0	0	0
23 – (8)	Bad River	0.1	0	100	0.1	2.28	0	0	0	0.76
23 – (9)	Bad River	0.1	0	100	0.1	2.26	0	0	0	0
23 – (12)	Bad River	0.1	0	100	0.1	1.50	0	0	0	0
23 – (15a)	Bad River	0.1	0	100	0.1	1.50	0	0	0	0.68
23 – (15b)	Bad River	0.1	0	100	0.1	2.22	14	0	100	0.38
26 – (12)	Bad River	0.4	0	100	0.4	1.12	160	0	100	0
T47N – R4W										
6 – (9)	Fish Creek	0.3	0	100	0.3	1.68	21	90	10	0.56
T48N – R2W										
18 – (1)	Landlocked	0.2	0	100	0.2	1.67	100	90	10	0.58
T48N – R3W										
36 – (3)	Bad River	0.1	0	100	0.1	2.26	0	0	0	0
T50N – R3W										
13 – (3) Madeline Is.	Lake Superior	1.2	0	100	1.2	2.59	60	70	30	0.93
T51N – R2W										
35 – (7) Madeline Is.	Lake Superior	0.6	10	90	0.6	2.28	40	50	50	0
1 – (4) Stockton Is.	Lake Superior	2.1	0	100	2.1	3.17	420	60	40	2.45
T52N – R1W										
10 – (3) Outer Is.	Lake Superior	0.4	0	100	0.4	2.52	54	25	75	0
TOTAL		128.7					23,211			55.83
AVERAGE						1.90				

APPENDIX 2A -- PHYSICAL AND CHEMICAL CHARACTERISTICS OF ASHLAND COUNTY STREAMS

Name	Outlet Location S - T - N R	Surface Acres	Length (Miles)	Width (Av. Feet)	Approximate Depth (Av. Feet)	Approximate Average Gradient (Ft./Mile)	pH	Methyl Purple Alkalinity (PPM)	Specific Conductance (MMHOS at 77°)	Water Color	Sampling Date
Augustine Creek	2 - 42 - 2W	18.1	6.0	25	0.6	24	7.2	54	123	Lt. Brown	Sept. 30 - 1965
Bad River	25 - 48 - 3W	678.8	70.2	80	2.0	14	6.8	27	67	Med. Brown	Sept. 30 - 1965
Ballou Creek	2 - 44 - 2W	2.3	2.4	8	0.6	40	6.8	23	41	Clear	Oct. 22 - 1965
Bay City Creek	6 - 47 - 4W	5.2	4.3	6	0.5	27	7.4	182	343	Clear	Oct. 21 - 1965
Bear Creek	32 - 43 - 1W	0.7	1.1	5	0.6	14	6.5	25	53	Lt. Brown	Oct. 14 - 1965
Beartrap Creek	22 - 48 - 3 W	14.5	10.0	12	0.7	8	6.5	86	105	Turbid	Oct. 22 - 1965
Beaver Creek	36 - 41 - 2W	0.5	0.6	8	1.0	12	6.8	67	134	Med. Brown	Oct. 1 - 1965
Billy Creek	35 - 46 - 3W	0.2	0.4	3	0.3	37	7.2	121	229	Clear	Feb. 23 - 1966
Black Creek	4 - 41 - 4W	1.9	3.1	5	0.4	9	5.8	18	81	Dark Brown	Sept. 30 - 1965
Brunsweiller River	31 - 46 - 3W	53.5	22.1	20	1.0	41	6.8	26	41	Lt. Brown	Sept. 29 - 1965
Brush Creek	6 - 43 - 3W	4.1	5.7	6	0.7	16	6.0	9	25	Lt. Brown	Oct. 5 - 1965
Butternut Creek	33 - 41 - 1W	27.4	11.9	19	0.7	10	7.2	69	107	Lt. Brown	Sept. 14 - 1965
Camp Fifteen Creek	22 - 41 - 3W	1.1	1.5	6	0.4	50	6.8	51	130	Lt. Brown	Oct. 1 - 1964
Camp Four Creek	10 - 45 - 2W	1.4	1.9	6	0.4	36	7.0	41	107	Clear	Sept. 30 - 1965
Camp Fourteen Creek	21 - 41 - 3W	1.4	2.3	5	0.4	37	5.8	19	57	Med. Brown	Oct. 1 - 1964
Camp Six Creek	14 - 44 - 4 W	0.7	1.1	5	0.4	36	6.6	29	35	Lt. Brown	Oct. 5 - 1965
City Creek	5 - 44 - 2W	1.4	2.0	6	0.3	35	7.2	71	137	Clear	Sept. 30 - 1965
Deer Creek	15 - 41 - 1E	6.9	6.3	9	1.0	19	6.5	22	87	Med. Brown	Oct. 9 - 1964
Deer Creek	26 - 47 - 4W	2.0	3.4	5	0.4	16	7.6	132	169	Clear	Oct. 21 - 1965
Denomie Creek	20 - 48 - 2W	2.5	3.4	6	0.5	7	6.6	51	88	Turbid	Oct. 20 - 1965
Devils Creek	5 - 44 - 2W	7.8	5.9	11	0.7	32	7.0	38	64	Clear	Sept. 30 - 1965
Dingdong Creek	3 - 42 - 4W	11.5	9.5	10	0.9	8	6.0	20	75	Dark Brown	Sept. 29 - 1964
Dorn's Creek	26 - 42 - 2W	11.3	6.2	15	2.0	6	7.0	59	79	Lt. Brown	Sept. 18 - 1965
Dryden Creek	20 -42 - 2W	19.5	13.4	12	0.8	8	7.1	41	72	Lt. Brown	Sept. 18 - 1965
East Fork Chippewa River	33 - 41 - 4W	517.8	53.4	80	1.5	4	7.2	53	86	Lt. Brown	Sept. 17 - 1965
East Fork Torch River	16 - 42 - 4W	17.3	9.5	15	1.0	7	6.1	19	78	Med. Brown	Sept. 29 - 1965
Edies Creek	32 - 44 - 3W	1.6	2.7	5	0.5	13	7.0	31	76	Med. Brown	Aug. 2 - 1962
Feldcher Creek	2 - 45 - 2W	0.7	1.0	6	0.6	55	6.8	34	115	Lt. Brown	Oct. 14 - 1965
Fishtrap Creek	31 - 41 - 4W	5.1	4.2	10	0.8	12	5.6	12	29	Dark Brown	Sept. 18 - 1965
Flambeau River	32 - 41 - 1E	274.8	10.2	222	6.0	3	7.0	34	74	Lt. Brown	Sept. 14 - 1965
Frames Creek	27 - 45 - 4W	0.6	1.7	3	0.4	50	7.0	16	66	Clear	Sept. 29 - 1965
Gehrman Creek	15 - 45 - 2 W	0.6	0.5	5	0.3	70	7.2	55	131	Clear	Sept. 30 - 1965
Gravelly Brook	14 - 44 - 3W	0.1	0.5	2	0.5	120	6.8	21	38	Clear	Oct. 18 - 1965
Gully Creek	26 - 45 - 2W	1.7	2.4	6	0.4	37	6.8	27	91	Lt. Brown	July 9 - 1965
Happy Creek	14 - 44 - 3W	2.0	3.4	5	0.6	59	6.8	30	52	Lt. Brown	Oct. 18 - 1965
Hardscrabble Creek	14 - 44 - 3 W	1.1	1.8	5	0.6	90	6.8	21	37	Clear	Oct. 18 - 1965
Hay Creek	30 - 41 - 3W	2.5	3.4	6	0.6	6	6.2	20	74	Med. Brown	Sept. 30 - 1965
Hell Hole Creek	21 - 44 - 4W	1.4	2.4	5	0.5	10	6.7	20	31	Med. Brown	Oct. 5 - 1965
Hildebrandt Creek	2 - 41 - 1W	1.2	1.6	6	0.5	15	7.2	66	76	Clear	Oct. 13 - 1964

Appendix 2A -- Physical and Chemical Characteristics of Ashland County Streams (Continued)

Name	Outlet Location S - T-N R	Surface Acres	Length (Miles)	Width (Av. Feet)	Approximate Depth (Av. Feet)	Approximate Av. Gradient (Ft./Mile)	pH	Methyl Purple Alkalinity (PPM)	Specific Conductance (MMHOS AT 77°)	Water Color	Sampling Date
Hinder Creek	33 - 43 - 2W	0.7	1.1	5	0.6	9	5.8	18	48	Dark Brown	Oct. 22 - 1965
Hoffman Creek	33 - 41 - 1E	3.1	4.3	6	0.4	9	6.2	12	30	Dark Brown	Oct. 15 - 1964
Hungry Run	30 - 41 - 3W	8.3	7.6	9	0.7	3	6.4	19	59	Dark Brown	Sept. 30 - 1965
Iron River	26 - 44 - 3W	11.5	6.8	14	0.8	7	6.4	19	44	Dark Brown	Oct. 15 - 1965
Kakagon River	23 - 48 - 3W	8.0	1.1	55	2.0	7	6.8	51	115	Lt. Brown	Sept. 25 - 1964
Kelp Creek	32 - 41 - 3W	0.5	1.5	3	0.4	33	6.6	27	53	Med. Brown	Sept. 17 - 1965
Knab Creek	10 - 43 - 2W	1.1	1.9	5	0.4	38	6.5	28	30	Lt. Brown	Oct. 7 - 1965
Krause Creek	19 - 45 - 2W	1.9	3.2	5	0.3	86	6.8	30	66	Clear	Oct. 20 - 1965
Little Moose River	30 - 42 - 4W	0.1	0.1	3	0.3	10	6.1	14	40	Dark Brown	Sept. 17 - 1965
Magee Creek	32 - 43 - 1W	19.4	10.7	15	0.5	9	6.0	14	27	Med. Brown	Oct. 1 - 1965
Marengo River	25 - 46 - 3W	187.3	20.6	75	0.7	5	7.2	49	78	Clear	Sept. 29 - 1965
McCarthy Creek	23 - 44 - 4W	5.8	6.9	7	0.6	19	6.4	18	29	Lt. Brown	Oct. 5 - 1965
Meyers Creek	1 - 42 - 2W	2.6	3.6	6	0.6	7	5.9	14	25	Dark Brown	Sept. 30 - 1965
Minnie Creek	35 - 44 - 2W	2.8	2.3	10	0.6	13	6.4	21	31	Lt. Brown	Oct. 7 - 1965
Minnow Creek	5 - 43 - 2W	5.9	4.9	10	1.3	11	6.4	19	51	Lt. Brown	Oct. 22 - 1965
Montreal Creek	5 - 44 - 2W	8.8	6.1	10	0.8	25	6.2	23	65	Lt. Brown	Sept. 30 - 1965
Moose River	6 - 41 - 4W	62.2	17.1	30	1.5	6	6.0	19	84	Dark Brown	Sept. 30 - 1965
Morgan Creek	30 - 45 - 4W	2.5	3.4	6	0.4	22	6.6	29	45	Clear	Sept. 28 - 1965
Morrison Creek	36 - 48 - 2W	0.2	0.4	2	0.2	57	7.4	141	191	Clear	Oct. 19 - 1965
Muskellunge Creek	30 - 42 -2W	5.6	4.2	11	0.5	9	6.7	26	43	Med. Brown	Sept. 17 - 1965
Muskellunge Lake Feeder	13 - 42 - 3W	0.4	0.8	4	0.3	6	6.9	40	81	Clear	Aug. 22 - 1962
Nawago Creek	35 - 48 - 2W	0.4	0.3	6	0.3	66	7.4	156	209	Clear	Oct. 19 - 1965
Nelson Creek	28 - 42 - 1W	0.9	1.8	4	0.4	3	5.4	5	30	Dark Brown	Oct. 16 - 1964
Pine Creek	33 - 41 - 2W	5.3	5.5	8	0.7	29	7.2	74	147	Clear	Sept. 15 - 1965
Potato River	24 - 46 - 3W	46.7	11.0	35	0.8	15	6.8	25	73	Lt. Brown	Oct. 15 - 1965
Rapid Creek	29 - 41 - 1E	3.9	4.0	8	0.8	13	6.9	52	109	Lt. Brown	Oct. 9 - 1964
Reins Creek	22 - 41 - 3W	0.5	1.3	3	0.3	38	7.0	53	134	Lt. Brown	Oct. 1 - 1964
Rocky Run	1 - 41 - 3W	3.7	3.8	8	0.7	11	7.1	63	98	Lt. Brown	Sept. 18 - 1965
Rocky Run	11 - 44 - 3W	1.1	1.9	5	0.6	68	6.8	27	50	Lt. Brown	Oct. 26 - 1965
Schraum Creek	13 - 42 - 2W	20.7	9.5	18	2.0	3	7.0	58	117	Med. Brown	Oct. 16 - 1964
Scott - Taylor Creek	16 - 45 - 2W	0.9	1.6	5	0.5	56	7.2	66	104	Clear	Oct. 21 - 1965
Sheridan Creek	34 - 42 - 2W	0.6	1.0	5	0.4	6	6.7	38	77	Lt. Brown	Sept. 22 - 1965
Silver Creek	12 - 42 - 1W	2.6	2.4	9	0.8	33	7.4	74	161	Clear	Sept. 30 - 1965
Silver Creek	34 - 46 - 3W	6.8	7.0	8	0.4	90	7.2	48	118	Clear	Sept. 30 - 1965
Smith Creek	35 - 41 - 1W	0.5	1.1	4	0.7	16	6.5	20	114	Med. Brown	Oct. 7 - 1964
Spider Creek	3 - 43 - 4W	2.4	2.8	7	1.0	5	6.2	25	47	Dark Brown	Oct. 5 - 1965
Spiller Creek	31 - 41 - 1W	4.6	5.5	7	0.5	12	7.0	62	145	Med. Brown	Oct. 1 - 1964
Spillerberg Creek	9 - 43 - 2W	5.3	4.9	9	0.8	9	6.2	19	44	Dark Brown	Sept. 30 - 1965

Appendix 2A -- Physical and Chemical Characteristics of Ashland County Streams (Continued)

Name	Outlet Location S - TN - R	Surface Acres	Length (Miles)	Width (Av. Feet)	Approximate Depth (Av. Feet)	Approximate Av. Gradient (Ft./Mile)	pH	Methyl Purple Alkalinity (PPM)	Specific Conductance (MMHOS at 77°)	Water Color	Sampling Date
Spring Brook	22 - 41 - 3W	0.7	1.5	4	0.3	60	6.6	46	103	Med. Brown	Oct. 1 - 1964
Spring Brook	23 - 45 - 4W	6.2	5.7	9	0.6	47	7.2	39	86	Clear	Sept. 29 - 1965
Squaw Creek	26 - 44 - 3W	1.6	3.4	4	0.8	10	6.6	26	56	Med. Brown	Oct. 15 - 1965
Swamp Creek	1 - 41 - 1E	3.4	0.8	35	1.0	3	6.2	17	42	Dark Brown	Oct. - 1964
Tafelski Creek	1 - 44 - 3W	0.3	0.6	5	0.4	166	7.1	35	85	Clear	Oct. - 1965
Torch River	19 - 42 - 4W	24.3	8.4	25	1.7	4	6.2	24	75	Dark Brown	Sept. - 1964
Trout Brook	31 - 46 - 3W	10.6	8.8	10	0.5	70	7.2	32	74	Lt. Brown	Oct. - 1965
Troutmere Creek	6 - 45 - 4W	1.5	1.6	8	0.4	30	7.4	106	210	Clear	Oct. - 1965
Tyler Forks River	17 - 45 - 2W	32.0	6.6	40	1.2	18	6.6	23	62	Med. Brown	Sept. - 1965
Vaughn Creek	20 - 46 - 2W	12.5	6.9	15	0.5	16	7.2	71	160	Turbid	Oct. - 1965
Waboo Creek	34 - 45 - 4W	0.4	1.1	3	0.4	39	7.0	20	69	Clear	Sept. - 1965
Weber Creek	32 - 41 - 2W	0.3	0.5	4	0.5	25	6.2	32	51	Med. Brown	Sept. - 1965
West Fork Chippewa River	6 - 42 - 4W	8.5	2.8	25	1.2	3	6.9	50	108	Med. Brown	Sept. - 1965
West Fork Swamp Creek	1 - 42 - 1E	2.8	1.9	12	0.8	5	6.6	28	59	Dark Brown	Oct. - 1964
Whiskey Creek	18 - 44 - 4W	3.6	1.5	20	1.0	40	6.6	29	44	Med. Brown	Sept. - 1965
White River	26 - 48 - 3W	181.6	21.4	70	1.0	5	7.4	88	131	Turbid	Oct. - 1965
Willerth Creek	9 - 42 - 1W	4.7	4.8	8	0.4	18	7.0	32	89	Lt. Brown	Sept. - 1965
Winks Creek	15 - 46 - 2W	1.2	1.9	5	0.5	101	7.2	61	139	Clear	Oct. - 1965
Wood Creek	15 - 48 - 3W	0.6	0.5	10	0.4	10	6.5	40	85	Lt. Brown	Sept. - 1964
TOTAL		2,445.6	548.1								
AVERAGE						27	6.7	42	85		

APPENDIX 2B – PHYSICAL CHARACTERISTICS OF ASHLAND COUNTY STREAMS

Name	Drainage System	Direct Drainage (Sq. Miles)	Percent of Direct Drainage Agr.	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	Estimated Normal Flow (cfs.)	Wetlands (Total Acres)	Percent Marsh	Percent Wooded	Miles Trout Stream	Miles Public Frontage
Augustine Creek	Chippewa R.	4.2	–	100	11.6	14.0	75	2	98	5.0	11.4
Bad River	Lake Superior	88.3	1	99	870.8	252.0	3,840	35	65	23.0	42.7
Ballou Creek	Devils Cr.	4.2	–	100	7.7	4.2	95	4	96	2.4	–
Bay City Creek	Lake Superior	7.0	92	8	7.0	0.7	–	–	–	–	–
Bear Creek	Chippewa R.	0.4	10	90	0.4	0.7	45	8	92	1.1	–
Beartrap Creek	Kakagon Slough	26.6	65	35	26.6	1.5	175	40	60	–	0.8
Beaver Creek	Butternut Cr.	5.8	55	45	5.8	0.3	825	20	80	–	–
Billy Creek	Marengo R.	2.9	65	35	2.9	1.0	–	–	–	0.4	–
Black Creek	Moose R.	12.7	–	100	12.7	1.0	1,300	15	85	–	5.6
Brunsweiller River	Marengo R.	23.2	23	77	79.0	10.0	350	7	93	14.4	11.7
Brush Creek	Iron R.	8.3	–	100	8.3	4.0	1,075	1	99	5.7	10.2
Butternut Creek	Flambeau R.	21.0	30	70	23.6	20.0	2,950	10	90	7.7	–
Camp Fifteen Creek	Chippewa R.	5.1	–	100	5.1	4.5	585	5	95	1.5	3.0
Camp Four Creek	Tyler Forks R.	2.9	25	75	2.9	3.2	45	2	98	1.4	–
Camp Fourteen Creek	Chippewa R.	1.3	–	100	1.9	1.0	185	20	80	–	4.6
Camp Six Creek	Brunsweiller R.	1.2	–	100	1.2	0.4	42	15	85	–	1.5
City Creek	Devils Cr.	2.9	–	100	4.1	3.0	10	30	70	2.0	–
Deer Creek	Flambeau R.	13.3	6	94	13.3	7.0	1,285	5	95	6.9	2.2
Deer Creek	White R.	7.0	50	50	9.4	1.7	3	50	50	–	0.8
Denomie Creek	Lake Superior	15.0	3	97	15.0	1.5	110	25	75	–	–
Devils Creek	Bad River	5.3	40	60	27.6	11.0	125	10	90	5.9	–
Dingdong Creek	Torch R.	21.1	–	100	21.1	6.0	5,780	3	97	9.5	18.2
Dorns Creek	Chippewa R.	6.5	20	80	6.9	3.8	790	25	75	4.0	0.6
Dryden Creek	Chippewa R.	12.7	22	78	22.2	8.0	2,272	20	80	4.4	9.8
East Fork Chippewa River	Chippewa R.	65.7	18	82	237.3	250.0	7,400	15	85	13.3	38.9
East Fork Torch River	Torch R.	14.1	–	100	14.1	7.0	4,670	10	90	2.0	17.8
Edies Creek	Iron R.	3.1	–	100	3.1	0.5	340	1	99	–	5.4
Feldcher Creek	Tyler Forks R.	1.2	30	70	1.9	0.5	2	–	100	1.0	–
Fishtrap Creek	Chippewa R.	8.2	–	100	8.5	2.0	1,900	10	90	–	8.4
Flambeau River	Chippewa R.	15.9	15	85	754.0	620.0	825	5	95	–	0.1
Frames Creek	Spring Brook	1.2	–	100	1.2	1.0	20	20	80	1.7	3.2
Gehrman Creek	Tyler Forks R.	1.9	20	80	1.9	0.6	1	–	100	0.5	–
Gravelly Brook	Bad R.	0.4	–	100	0.4	0.3	–	–	–	–	–
Gully Creek	Montreal Cr.	2.4	11	89	2.4	1.5	35	15	85	1.7	–
Happy Creek	Bad R.	3.0	8	92	3.0	3.0	125	5	95	3.4	–
Hardscrabble Creek	Bad R.	2.2	–	100	2.2	2.5	35	15	85	1.8	–
Hay Creek	Chippewa R.	5.9	–	100	6.0	3.5	1,700	10	90	–	6.4
Hell Hole Creek	Brunsweiller R.	2.1	–	100	2.9	3.5	170	7	93	–	3.3
Hildebrandt Creek	Butternut Cr.	1.6	5	95	1.6	3.5	70	2	98	1.6	–
Hinder Creek	Dryden Cr.	2.0	55	45	2.0	0.4	360	2	98	–	0.6

Appendix 2B – Physical characteristics of Ashland County streams (Continued)

Name	Drainage System	Direct Drainage (Sq. Miles)	Percent of Direct Drainage Agr.	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	Estimated Normal Flow (cfs.)	Wetlonds (Total Acres)	Percent Marsh	Percent Wooded	Miles Trout Stream	Miles Public Frontage
Hoffman Creek	Flambeau R.	5.2	–	100	8.3	5.0	2,330	5	95	–	6.8
Hungry Run	Chippewa R.	16.0	–	100	16.0	5.0	3,840	7	93	–	15.2
Iron River	Bad R.	10.3	–	100	29.1	8.5	620	10	90	6.8	13.6
Kakagon River	Lake Superior	2.3	15	85	2.3	1.0	350	40	60	–	–
Kelp Creek	Chippewa R.	1.9	–	100	7.6	1.0	205	15	85	–	3.0
Knab Creek	Bad R.	1.5	4	96	2.2	2.5	90	5	95	1.6	2.8
Krause Creek	Bad R.	3.3	25	75	3.3	1.9	20	5	95	3.2	0.4
Little Moose River	Moose R.	1.3	–	100	1.3	0.1	170	5	95	–	0.1
Magee Creek	Chippewa R.	12.1	5	95	17.3	8.5	2,300	10	90	–	12.2
Marengo River	Bad R.	46.8	45	55	195.0	95.0	450	10	90	20.6	1.0
McCarthy Creek	Brunsweiller R.	6.6	–	100	6.7	5.5	500	10	90	6.9	11.1
Meyers Creek	Chippewa R.	4.2	13	87	4.2	5.0	740	4	96	3.6	1.6
Minnie Creek	Bad R.	1.9	–	100	5.0	3.0	35	10	90	2.8	4.2
Minnow Creek	Bad R.	3.9	2	98	11.6	9.0	190	5	95	1.6	5.4
Montreal Creek	Devils Cr.	6.6	10	90	10.5	3.0	30	15	85	6.1	–
Moose River	Chippewa R.	32.5	–	100	45.2	25.0	8,320	8	92	–	30.6
Morgan Creek	Marengo R.	6.7	1	99	6.7	3.5	85	20	80	3.4	6.8
Morrison Creek	Lake Superior	5.2	3	97	5.2	0.1	3	–	100	–	–
Muskellunge Creek	Chippewa R.	7.7	1	99	10.9	4.0	1,900	3	97	–	6.0
Muskellunge Lake Feeder	Muskellunge Cr.	0.7	–	100	0.7	0.3	270	4	96	0.8	0.8
Nawago Creek	Lake Superior	1.3	–	100	1.3	0.9	2	–	100	–	–
Nelson Creek	Schraum Creek	3.6	20	80	3.6	2.0	1,028	1	99	–	0.6
Pine Creek	Flambeau R.	11.6	10	90	11.6	7.5	1,140	11	89	5.5	–
Potato River	Bad R.	10.2	–	100	139.0	12.0	–	–	–	11.0	2.9
Rapid Creek	Flambeau R.	8.7	20	80	8.8	5.0	1,280	40	60	4.0	–
Reins Creek	Camp Fifteen Cr.	2.2	–	100	7.3	0.6	85	30	70	1.3	2.6
Rocky Run	Chippewa R.	13.2	–	100	13.6	3.0	2,330	10	90	–	0.8
Rocky Run	Bad R.	2.9	–	100	2.9	1.3	80	2	98	1.9	–
Schraum Creek	Chippewa R.	10.9	20	80	14.5	13.0	1,650	22	78	–	2.8
Scott-Taylor Creek	Tyler Forks R.	1.9	30	70	1.9	1.8	3	20	80	1.6	–
Sheridan Creek	Chippewa R.	1.2	–	100	1.2	1.0	360	20	80	1.0	0.6
Silver Creek	Chippewa R.	1.5	–	100	3.8	6.0	16	20	80	2.4	4.8
Silver Creek	Marengo R.	8.9	20	80	8.9	5.0	140	30	70	7.0	–
Smith Creek	Flambeau R.	4.1	65	35	4.1	0.4	350	10	90	–	–
Spider Creek	Brunsweiller R.	5.0	–	100	5.0	3.5	950	5	95	–	4.9
Spiller Creek	Butternut Cr.	8.9	55	45	9.2	4.2	1,340	10	90	–	–
Spillerberg Creek	Bad R.	8.3	6	94	9.0	4.5	1,320	3	97	–	5.2
Spring Brook	Chippewa R.	1.4	–	100	2.1	2.5	370	15	85	–	3.0
Spring Brook	Brunsweiller R.	4.4	2	98	8.0	6.8	60	15	85	5.7	11.1
Squaw Creek	Iron R.	3.3	–	100	3.3	3.0	200	20	80	3.4	5.8
Swamp Creek	Flambeau River	2.6	–	100	40.0	15.0	345	5	95	–	–

Appendix 2B – Physical characteristics of Ashland County streams (Continued)

Name	Drainage System	Direct Drainage (Sq. Miles)	Percent of Direct Drainage Agri.	Percent of Direct Drainage Wooded	Watershed Area (Sq. Miles)	Estimated Normal Flow (cfs.)	Wetlands (Total Acres)	Percent Marsh	Percent Wooded	Miles Trout Stream	Miles Public Frontage
Tafelski Creek	Bad R.	0.4	–	100	0.4	0.5	1	50	50	0.6	–
Torch River	Chippewa R.	7.9	–	100	49.0	18.0	1,230	20	80	–	14.1
Trout Brook	Brunsweiller R.	9.4	25	75	13.4	8.0	3	50	50	8.8	0.6
Troutmere Creek	Marengo R.	3.2	65	35	3.2	1.7	–	–	–	1.6	–
Tyler Forks River	Bad R.	5.8	20	80	85.2	48.0	180	2	98	6.6	0.6
Vaughn Creek	Potato R.	11.7	–	100	25.8	2.0	–	–	–	6.9	0.7
Waboo Creek	Spring Brook	1.0	–	100	1.0	0.5	80	5	95	1.1	2.2
Weber Creek	Pine Cr.	0.6	–	100	0.6	0.8	7	10	90	–	–
West Fork Chippewa River	Chippewa R.	4.9	3	97	13.5	8.0	880	35	65	–	3.8
West Fork Swamp Creek	Swamp Cr.	2.7	–	100	8.3	6.0	320	5	95	–	1.2
Whiskey Creek	Marengo R.	2.5	–	100	4.2	5.0	42	5	95	1.0	3.0
White River	Bad R.	52.0	18	82	235.6	234.0	600	5	95	–	12.0
Willerth Creek	Chippewa R.	6.1	5	95	8.2	4.5	560	5	95	4.7	1.0
Winks Creek	Potato R.	3.3	–	100	3.3	3.3	30	20	80	1.9	–
Wood Creek	Kakagon R.	4.8	25	75	4.8	0.2	30	50	50	–	–
TOTAL		**838.9**					**79,075**			**257.7**	**413.1**

SURFACE WATER RESOURCE PUBLICATIONS

Adams County	1966
Ashland County	1966
Barron County	1964
Chippewa County	1963
Clark County	1965
Columbia County	1965
Dane County	1962
Dodge County	1965
Door County	1966
Dunn County	1962
Eau Claire County	1964
Green County	1961
Kenosha County	1961
Kewaunee County	1966
Marquette County	1963
Menominee County	1963
Milwaukee County	1964
Ozaukee County	1964
Polk County	1961
Racine County	1961
St. Croix County	1961
Vilas County	1963
Walworth County	1961
Washington County	1962
Waukesha County	1963

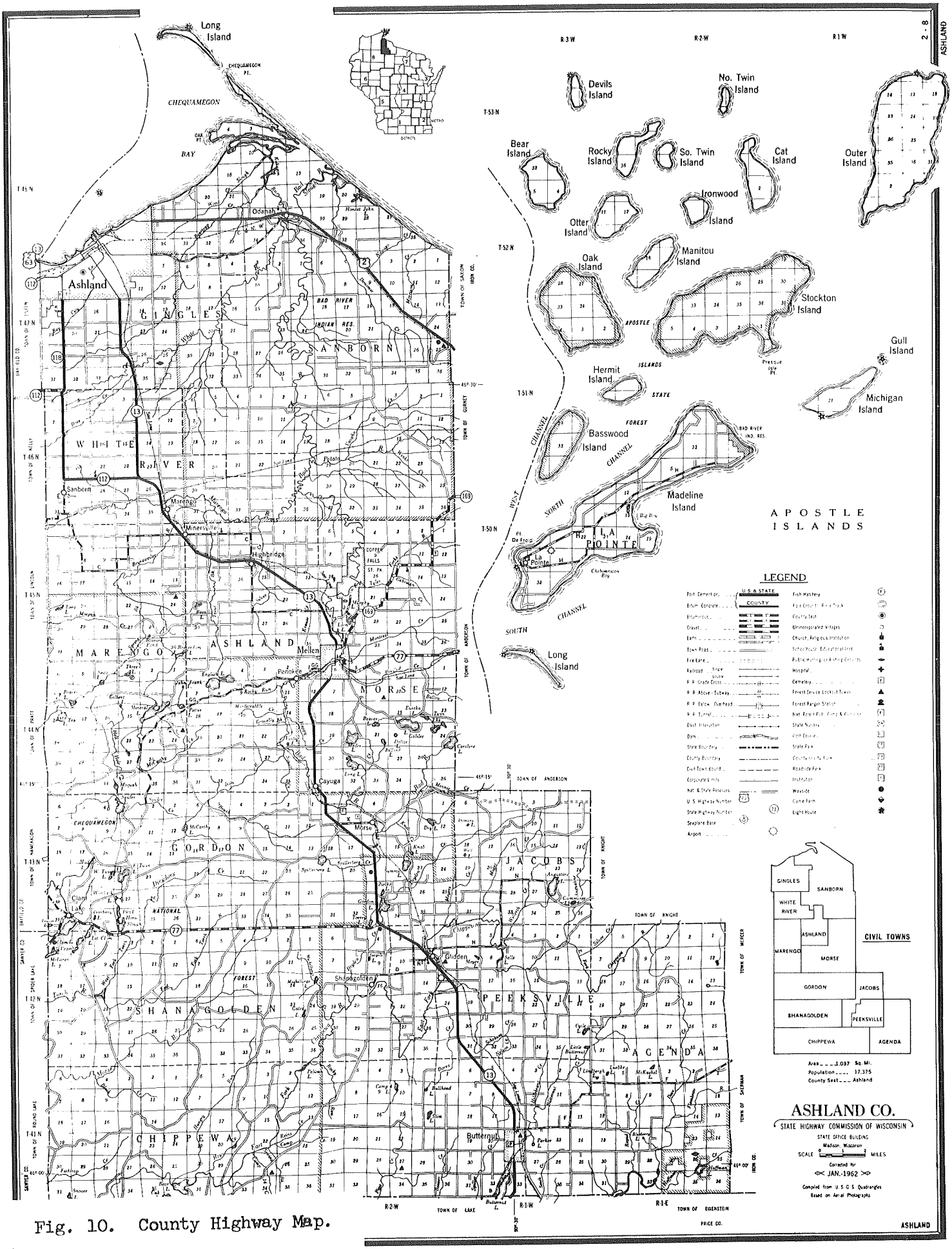

Fig. 10. County Highway Map.