

JORDAN RIVER NATURAL RIVER PLAN

ANTRIM AND CHARLEVOIX COUNTIES

OCTOBER 1972



FISHERIES DIVISION

MICHIGAN DEPARTMENT OF
NATURAL RESOURCES
Revised March 12, 2002

TABLE OF CONTENTS

PREFACE	1
Map of Watershed	2
BACKGROUND.....	3
A. Location and General Characteristics of River, Watershed and Region.....	3
B. Recreational Opportunities in the Area.....	4
C. Existing and Proposed Local Zoning	4
D. Other Laws & Programs.....	5
E. Other Factors	5
THE WATERSHED	7
A. Physiography.....	7
B. Soils.....	7
C. Vegetation	8
D. Stream Characteristics.....	10
E. Hindrances and Hazards.....	13
F. Climate and Seasons.....	14
THE STUDY AREA.....	15
A. Study River Area.....	15
B. Ownership and Status.....	15
C. Existing Uses.....	15
D. Existing Facilities.....	20
E. Land Uses Which Weaken the Wild Scenic Concept.....	21
PRELIMINARY DESIGNATION OF RIVER AREA	23
A. Analysis of Alternatives for Use of the River.....	23
B. Proposed Designation.....	23
C. River Management Zone.....	23
PROPOSED MANAGEMENT RECOMMENDATIONS.....	24
A. Management Objectives.....	24
B. Measures for Plan Implementation	28
C. Management of Areas Beyond the Natural River Zone.....	29
APPENDIX A—PART 305 – NATURAL RIVERS PA 451 OF 1994	30
APPENDIX B--“ALTERATION OF RIVERS” LAWS	34
APPENDIX C--RELATED LAWS	36

PREFACE

The Natural Rivers Act (Part 305, P.A. 451 of 1994) authorizes the Michigan Natural Resources Commission to set up a system of “natural” rivers in the State and to provide for their preservation, protection, and enhancement. In line with this charge, the Michigan Department of Natural Resources is studying the Jordan River and its tributaries for possible inclusion in the Natural Rivers System, either as a whole or in part. The river (or reaches of it) and adjacent lands have been studied or examined as to (1) aesthetic and historic values, (2) free-flowing condition—now and prospectively, (3) water quality, (4) fish, plant, and wildlife resources, and (5) ecological values (e.g., in relating plant, animal and man’s activities to the surrounding lands). The river has been found to rank high in such values, and is proposed for inclusion in the Michigan Natural Rivers System. A river management plan has been prepared with the participation of local people and presented to the public at hearings in the area. The Natural Resources Commission may now designate the river or a portion of it as either a (state) wilderness, wild scenic, or country-scenic river.

This report includes the river management plan for the Jordan River, which is proposed as a wild-scenic river. In brief, a wild-scenic river is a stream with wild or forested borders, shorelands and/or backlands, in close proximity to man-made development. The plan (1) provides a physical description of the river, the surrounding lands, and nearby structures; (2) reviews the natural values of the river and factors affecting its future value and use; and (3) develops a management objective to preserve, protect, and enhance the natural qualities of the river area and facilitate their best use.

BACKGROUND

A. Location and General Characteristics of River, Watershed, and Region

The Jordan River is located in the northwestern part of the Lower Peninsula of Michigan. The mainstream is 33 miles in length with headwaters in northwestern Antrim County, from whence it flows southwesterly to the center of the county, flowing north by northwesterly through the county and the southern part of Charlevoix County. It empties into the South Arm of Lake Charlevoix at the Village of East Jordan (Figure 1). The river has two major tributaries—the Green River and Deer Creek—with numerous minor tributaries to both the mainstream and Deer Creek.

The upper Jordan River consists of a wide valley and many islands, channels, and sloughs. (From the base of the steep hills on either side, the valley is often nearly a mile wide.) The upper river area is noted for its scenic beauty and for its undeveloped landscape. Its only intrusion being a single trail road paralleling the river. The lower Jordan is bordered by “northwoods-types” trees and lands.

The river is associated with a wealth of history dating back to the lumbering era when it was used principally as a log driving stream. Then, as now, it was an excellent trout stream with the reputation of having the best water quality of any stream in the Lower Peninsula of Michigan. Large-scale logging operations started in the Jordan Valley in 1909 and ended in 1925. At one time, eight mills in Boyne City and East Jordan were operating and using timber from the river valley. Following the removal of the timber and abortive attempts at farming, most of the land in the upper valley reverted to state ownership because of non-payment of taxes. These tax-reverted lands are now a part of the Jordan River State Forest and are managed for multiple-use purposes, including timber, fish and wildlife, water conservation, and recreation. However, the lower six miles of the Jordan River, the upper two miles of the Green River, and the entire length of Deer Creek flow through private lands. The drainage area of the river system consists of approximately 100,000 acres.

The entire watershed is located in the 10-county northwest Michigan state planning and development region. Highway access to the region is good, or will be, with various north-south highways connecting the region with the urban centers of the southern Great Lakes area. Interstate freeway I-75 runs along the eastern border of the region. US-31, M-37, US-131, and M-66 traverse the region, or substantial parts of it, south to north and likewise connect with the region and connects this area with I-75 and US-127. US-31 and US-131 have been programmed for freeway construction in the next decade.

As seen in the chart below, the population of the two counties is still rather sparse, although it has grown significantly in the last decade. The only towns in or near the watershed, East Jordan and Mancelona, are relatively small and are not expected to increase significantly in size in the foreseeable future. Therefore use pressures on the river are not expected to be influenced from nearby towns.

POPULATION

	Charlevoix County	Percent Change	Antrim County	Percent Change	Towns in two Counties	
						1970
1950	13,475		10,721		East Jordan	2,041
1960	13,421		10,373		Bellaire	705
1970	16,131		12,055		Mancelona	1,208
					Boyne City	2,887
					Charlevoix	3,391

B. Recreational Opportunities in the Area

During winter, the Jordan River watershed area is used extensively as a snowmobilers' paradise. Many trails have been laid out by the East Jordan Snowmobilers' Club, and guided winter safaris are often held. At this time of year, a few hardy souls still enjoy snowshoe hare hunting with hound dogs in the cedar swamps along the Jordan.

When spring arrives, the first fishing occurs at a special season for steelheads on the lower area of the river below Webster's Bridge. Spring flowers bring out many to tramp the woods to see Mother Nature awoken from her winter's sleep. During May, a favorite recreational pastime is looking for the delicious morel mushroom. Seasoned fly fishermen happily await the night May fly hatch along the river bank while for others, camping and trail bike riding throughout the beautiful Jordan River watershed area promise much recreation.

The Jordan and its tributaries has always been a favorite trout stream for many. Nothing can compare with a day spent floating down the river in a riverboat and cooking the day's catch along the side of the riverbank.

Today, canoeing the Jordan is becoming a favorite pastime. A three-to-four hour trip from Graves Crossing to East Jordan is a scenic delight.

With fall arriving, color tours through the valley are popular. All of the bright colors of the spectrum are to be seen in the hardwoods. The vantage point for color is Dead Man's Hill located near the headwaters of the Jordan. With the opening of small game season, grouse and woodcock are hunted with dogs. Some like to float the Jordan and jump shoot the ducks that are found there. Deer are common throughout the watershed, but more abundant in the southern portion, and provide both bow and firearm hunters with quality sport. Many hardy souls have taken up the late fall sport of fishing from Websters Bridge down for steelhead and German brown trout.

These recreational opportunities for all ages in the Jordan River watershed offer their bounty for all four seasons.

C. Existing and Proposed Local Zoning and Analysis of Zoning Situation

Two countywide interim zoning ordinances and one final ordinance have been turned down in Antrim County in recent years. The first proposed interim zoning ordinance was rejected at a referendum. A zoning commission in Charlevoix County is presently working on a countywide zoning ordinance, and adoption will require intensive educational work to overcome resistance to zoning by local people. However, South Arm Township, in which the extreme lower end and mouth of the Jordan River is situated, has a zoning ordinance. It establishes a minimum lot size of 60,000 square feet with a minimum of 150-foot frontage, a 50-foot setback from the river and a 35-foot minimum no-cutting strip.

Because practically all of the upper portion of the river lies within the Jordan River State Forest or is owned by the state, zoning may not be needed to protect that river area. Also, much of this land lies within a floodplain, which is inherently self-preserving.

From where the river turns northerly to its mouth, most of the land is in private ownership. However, much of the bordering land at the southern quarter of this 12-mile stretch is also in governmental ownership. Considerable lands along the entire stretch are lowlands of a cedar-tamarack swamp type, which tends, of course, to ward off land development. However, there are (1) cottages in various places, (2) riverside areas that are elevated sufficiently to make them attractive building sites, feeder streams attractive for damming, and (3) three bridge crossings which, of course, give good access to the river. Because of these factors, it would seem necessary to zone this entire stretch.

D. Other Laws & Programs Reinforcing Natural Rivers Management Objectives

A number of Michigan laws now authorize Department of Natural Resources programs or activities for the protection of rivers, directly or indirectly. Officials administering the river management program for the protection of the Jordan River should utilize these statutes to the extent possible in implementing the management plan objectives of the river and its tributaries. (See Appendix A)

The presently proposed Department of Natural Resources program to establish rules for river use on heavily-used streams may also be directed toward protecting natural rivers, particularly on those rivers where recreational use is or may be expected to be heavy. The rules have been designed to protect the river resources and the recreational experiences that are characteristic of a particular stream.

E. Other Factors

1) Proposed Water Development Projects:

No applications for water development projects are presently being planned within the Jordan River Basin under the jurisdiction or review of the Department of Environmental Quality or Surface Water Quality, in relation to dam construction (Act 184, P.A. 1963), dredging or filling in or near the stream bed (Act 291, P.A. 1965), or extensive residential development within the floodplain under Act 167, P.A. 1968.

2) Existing or Proposed Watershed Councils and Their Future Intentions:

The Jordan River Watershed Commission was formally organized on January 15, 1967, under the authority of Part 311, PA. 451 of 1994. Prior to the formal organization of the Commission, substantial effort was expended in the Jordan River area through the parent organization, "Save the Jordan Steering Committee". The committee held their first meeting on June 27, 1967. At this meeting the committee formally decided to incorporate their activities under the provisions of Part 311, PA. 451 of 1994. Numerous individual efforts in promoting an awareness of needs of the Jordan River basin began as early as 1961.

The Watershed Commission is composed of sixteen members – one representative of each of the aforementioned governmental units and, a representative of the Alba Sportsman's Club, Jordan River Sportsman's Club, Mancelona Liar's Club, Charlevoix County Soil Conservation District and the Antrim County Soil Conservation District.

THE WATERSHED

A. Physiography

The headwaters of the Jordan River originate in level to smoothly rolling outwash plains with gentle slopes and immature drainage. From its source the river drops rapidly into a broad deep valley, changing to swamp flatlands and lowlands. There are many beaver meadows throughout the middle reaches of the river system. Feeder streams in this area flow from hilly land with complex slopes of sand and gravel soils.

Elevation at the headwaters of the Jordan River is 1,190 feet above sea level; the mouth at Lake Charlevoix is at an elevation of 590 feet. A profile of the river shows that it drops approximately 125 feet per mile for the first few miles. The velocity of the river slows somewhat as it flows through the tamarack swamp flats of the middle reaches. The average drop for the upper two-thirds of the Jordan River is 25 feet per mile. From Graves Crossing downstream to the mouth, the stream descends at an average of five feet per mile.

B. Soils

Soils in this watershed tend to be sandy, acid and with low to medium fertility. The soil types in the upland areas consist of dry sands of low fertility and sandy loams with areas of reddish clay of medium fertility. Soil types along the Jordan River at its headwaters consist of dry sands, but after several miles, change to organic soils of peat and muck. Soil types along the river change to sandy loams shortly after the river enters Charlevoix County. A rough breakdown of the soil classes in the watershed is as follows:

Soil Classes in the Watershed

Dry sands (Wexford, Emmett, Kalkaska)	40%
Sandy loams (Emmett, Roselawn)	35%
Dry sand and light sandy loam (Kalkaska, Rubicon)	10%
Peat and muck (Rifle, Carbondale, Greenwood)	15%

These soils were created from relatively insoluble minerals.

Water moving rapidly through the soils, to the river, is thus incapable of dissolving great amounts of minerals. (The waters of the Jordan have, consequently, lower amounts of dissolved nutrients; algae and heavy aquatic vegetation are therefore not a problem.)

The exceptional capability of sandy soil to allow precipitation to infiltrate and percolate is well known. Sandy soils have 30-40 percent pore space; thus 30-40 percent of the volume of sand is good for water storage or percolation. Furthermore, sandy soils will give up 90-95 percent of the water retained in pore spaces to gravitational movement which create the numerous springs which feed high quality, cold water to the river.

C. Vegetation

Forest cover for most of the upland areas of the Jordan River watershed consists of northern hardwoods – hard and soft maple, elm, beech, yellow birch and basswood, with some cedar in the wetter areas. Streamside vegetation generally consists of tamarack, birch, aspen and tag alder in the upper third of the Jordan, but gradually changes to swamp conifers (cedar, balsam and spruce). Below Graves Crossing the forest cover is reduced to a strip of swamp conifers with an occasional woodlot on either side of the river. The following map provides a generalization of timber types found in the watershed.

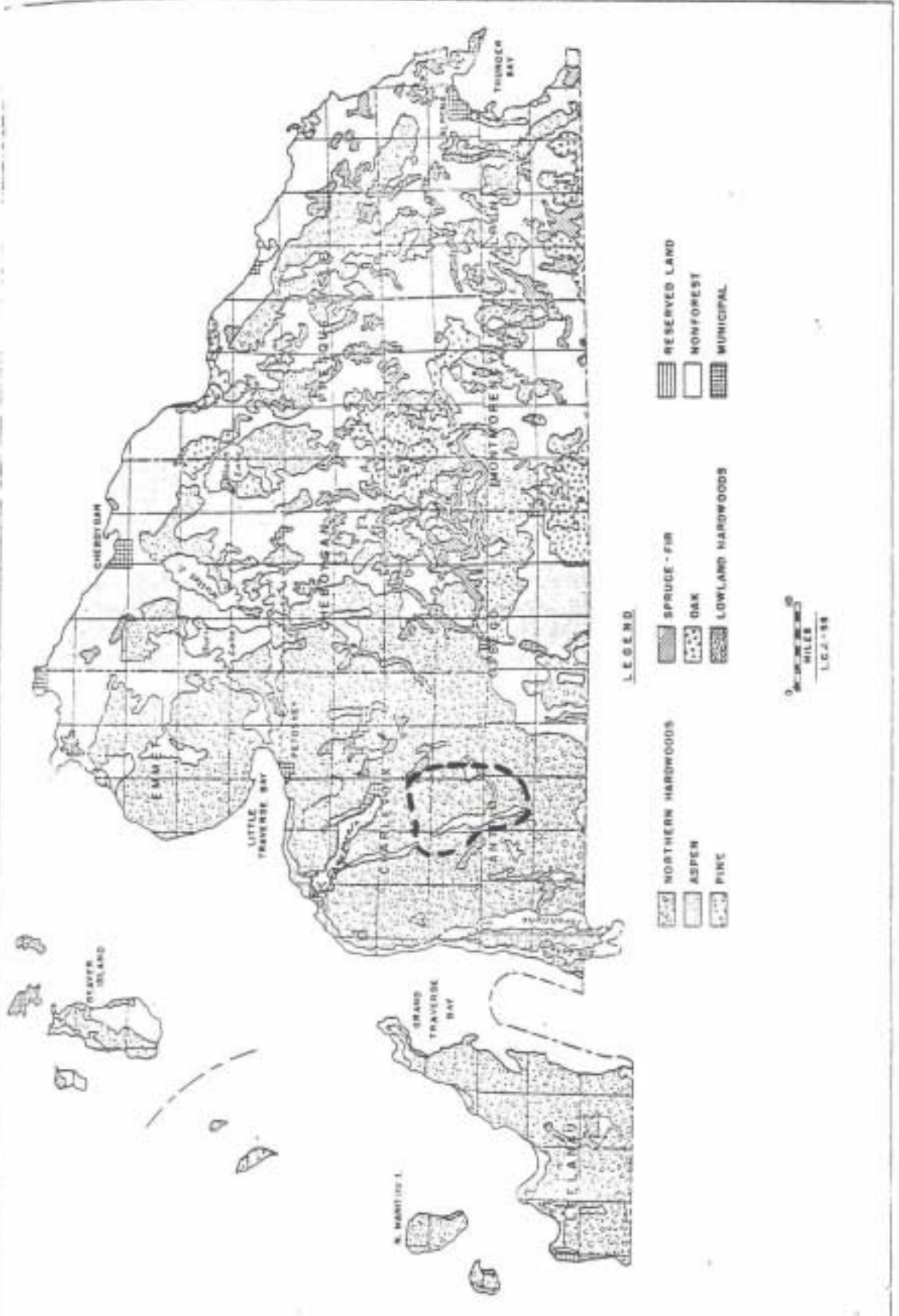


FIGURE 1. GENERALIZED FOREST COVER TYPES, NORTH TIP BLOCK, MICHIGAN, 1955.

D. Stream Characteristics

1) Water Quality:

The Michigan Water Resources Commission has established intrastate water quality standards and use designations¹ for the Jordan River. It is to be protected for recreation – total body contact (i.e., swimming); intolerant fish – cold water species; industrial water supply; agricultural and commercial water supply and other uses. Where water is to be protected for more than one use under these standards, the most restrictive individual standard of designated water use applies. Also, if existing water quality is superior to the designated use requirements, it must be maintained at that level until it has been adequately demonstrated to the Michigan Water Resources Commission that the change in quality does not or will not become injurious to the public health, safety, or welfare, or become injurious to any other uses being made of such waters.

Studies² conducted on the Jordan River by the Surface Water Quality staff, Department of Natural Resources, indicate that the quality of the waters within the Jordan River basin meet or exceed all criteria established by the water quality standards for the designated uses of the river.

The Jordan River National Fish Hatchery is the only known discharge to the Jordan River or its tributaries within the area considered for designation under the Natural Rivers Program.

Construction has been completed to control solid waste and associated nutrient discharges arising from the fish rearing operations.

Considerable quantities of sediment from feeder streams have been deposited in the river. This sediment while being carried downstream by the current reduces the clarity of the water and when settled out in slack areas covers up high quality fish habitat.

2) Streamflow:

Stream discharge data for the Jordan River is limited to the records obtained by U.S.G.S. at their “near East Jordan” gaging station, located in the NW ¼ of the NW ¼ of Section 7, T31N, R6W, Antrim County, 600 feet downstream from Webster Bridge, 4.2 miles south of East Jordan, and 4.5 miles upstream from its mouth. The drainage area at the gage is 67.6 square miles. The period of record available at this time are the water years 1967 through 1970, inclusive.

The maximum discharge recorded at this gage was 832 cfs. The minimum of 109 cfs, was the result of a freeze-up.

¹Use Designation Areas for Michigan Intrastate Water Quality Standards, published by Michigan Water Resources Commission, Surface Water Quality, Department of Environmental Quality, March 1969.

²Water Quality of Selected Lakes and Streams in the Grand Traverse Bay Region, published by the Michigan Water Resources Commission, Surface Water Quality, Department of Environmental Quality, March 1970.

A flow duration curve of average daily discharges, for the four years of record available, is attached. Such a curve indicates the percent of time during the period of record that specified discharges were equaled or exceeded.

The shape and slope of a flow duration curve is a key to the character of an individual river. The flow duration curve for the Jordan River has a relatively flat slope which would indicate that this river has a steady, uniform flow having neither extremely high or low flows. Normally a four-year record is not sufficient to define long term trends. However, in the case of the Jordan river with its uniform flow characteristics it is not likely that a flow duration curve based on a long term record would vary greatly from the one presented here, particularly at low discharges.

The Jordan River is typical of northern Michigan trout streams in that the permeable soils found within its watershed area conducive to ground water recharge, which results in high sustained base flows and cold water which is a necessary ingredient for top quality trout habitat.

A U.S. Geological Survey open file report "Hydrology and Recreation on the Coldwater Rivers of Michigan's Southern Peninsula", Hendrickson and Doonan, September 1971, compares streamflow characteristics and temperature data, and contains cross-sectional data of the lower peninsula's cold water rivers.

This report indicates that the Jordan River has the highest discharge yield per square mile of all southern Michigan cold water streams and that 90 percent of its discharge is derived from groundwater. The report also indicates that during the 1967-68 water year water temperatures at the U.S.G.S. gage near East Jordan varied from zero (0) and two (2) degrees centigrade in the winter and from 11 to 18 degrees centigrade in the summer.

3) Stream Bed Characteristics:

From the headwaters to its confluence with the Green River, the Jordan River ranges from 4 to 40 feet in width and 1 to 3 feet in depth. It is characterized by its low, bushy undercut banks and diverse stream channel with many stumps and fallen cedar trees which provide excellent fish cover but makes wading extremely difficult and canoeing virtually impossible. Bottom types are composed mostly of sand with areas of gravel and silt.

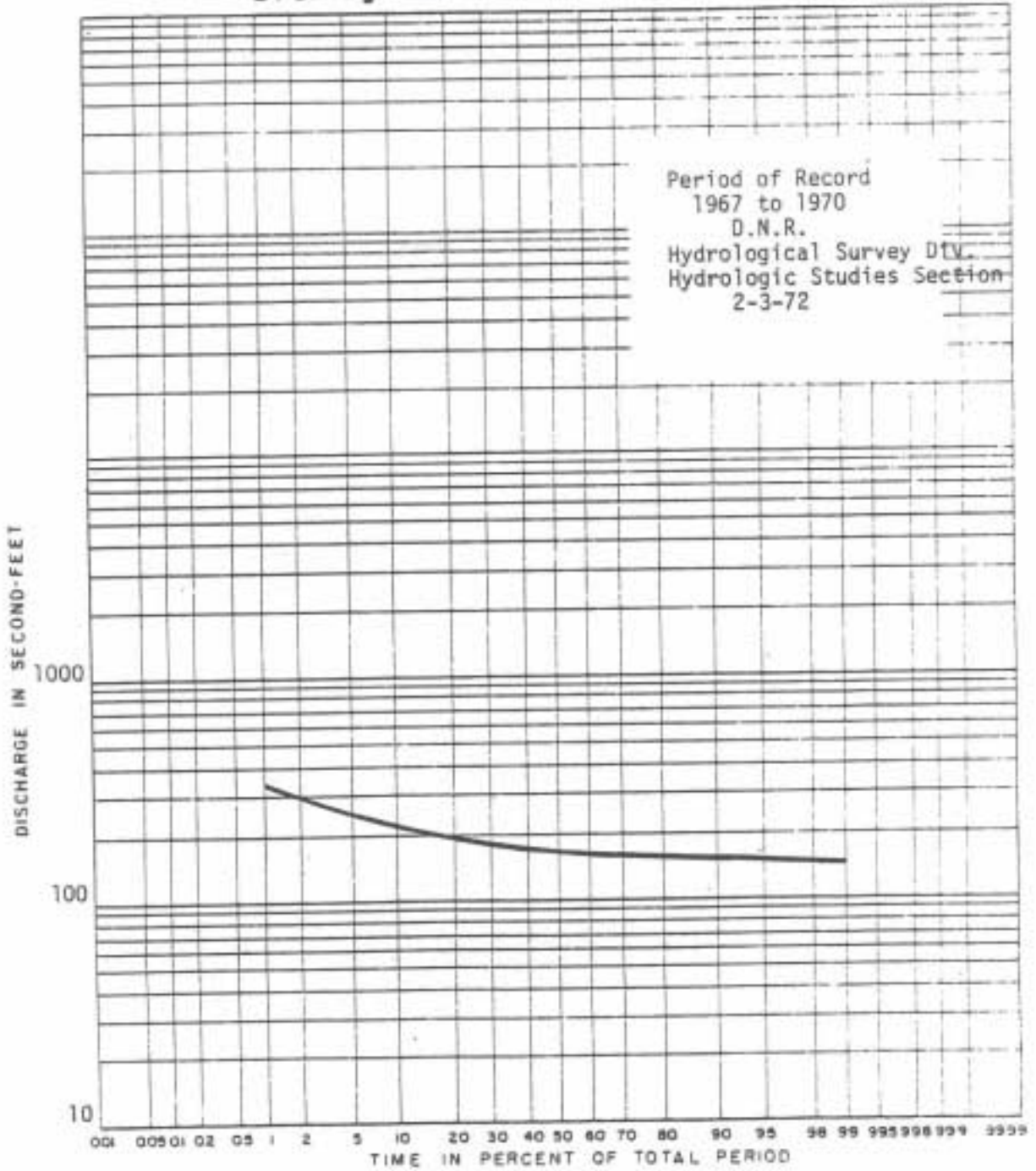
Between the Green River and Rogers Bridge the Jordan River averages 60 feet in width and 2 ½ feet in depth, but contains many holes four to six feet deep. The bottom is composed mostly of sand and gravel, except in slow pool areas where sand and silt are deposited. Deep pools, undercut banks, logjams and overhanging brush provide excellent cover and habitat for fish populations.

Below Rogers Road Bridge the river loses much of its gradient and becomes relatively slow moving, wide (150 feet) and deeper (3-6 feet). The bottom types consists mostly of sand and silt.

FLOW DURATION CURVE

JORDAN RIVER near EAST JORDAN

Drainage Area 67.6 square miles



Percent of Time Indicated, Discharge was Equalled or Exceeded

4) Stream Size:

The Jordan has many named and unnamed tributaries, but most are small (less than 1 ½ miles long), shallow and swift. The mainstream and its two major tributaries, Green River and Deer Creek, plus the several secondary tributaries total 102.0 miles of stream.

Stream	Linear Miles	Stream	Linear Miles
Mainstream	33.0	Landslide Creek	2.0
Bennett Creek	2.7	Cascade Creek	2.5
Todd Creek	1.5	Section Thirteen Creek	1.0
Bartholomew Creek	1.7	Six Tile Creek	.5
Severance Creek	1.7	Five Tile Creek	.5
Webster Creek	1.0	Unnamed Creeks	5.0
Lilak Creek	1.5	Birney Creek	1.0
Martin Creek	1.5	Jones Creek	1.0
Mill Creek	3.7	Deer Creek	10.0
Sutton Creek	2.2	Warner Creek	7.0
Kocker Creek	2.5	Collins Creek	3.0
Scott Creek	1.0	Eaton Creek	1.0
Tutstone Creek	1.0	Marrin Creek	1.5
Green River	6.0	Misc. Creeks	<u>3.0</u>
Stevens Creek	2.0		
		Total	102.0

Only three lakes, ranging in size from 2 to 500 acres, drain into the Jordan River system. Two of the lakes are exclusively in private ownership and Deer Lake has public access. The increasing number of private trout ponds may have a significant effect upon the thermal and nutrient qualities of some of the tributaries.

E. Hindrances and Hazards to Public Use

The entire Jordan River system is readily accessible for public use even though the lower portion traverses predominately private land. The twenty-mile reach between the headwaters and the junction with Green River is not canoeable and difficult to wade because of insufficient water depth and the presence of brush and logs. However, this material provides excellent fish cover, and the upper river area is considered a fisherman's paradise.

The lower portion downstream from Graves Crossing is canoeable, although the swiftness of the rapids as well as the presence of numerous logs and the winding nature of the river provide considerable challenge to the canoeing novice.

F. Climate and Seasons

The climate of the watershed is favorable for the summer recreationist with pleasant daytime temperatures and cool nights. The mean temperatures during the summer months average 5 to 10 degrees cooler than in southern lower Michigan. Precipitation is heaviest during the months of April through September. The heaviest rainfall is in September with an average of nearly four inches. Snowfall averages about 80 inches per year.

Prevailing westerly winds pickup moisture from Lake Michigan and as they rise over the hilly topography of the area, release substantial quantities of rain and snow. This precipitation is not spread evenly over the year, and periodic heavy rains wash some topsoil and debris into feeder streams originating in the hills. Careless removal of large areas of forest cover could result in increased amounts of sediments washing into the Jordan River and its tributaries.

THE STUDY AREA

A. Study River Area

The Jordan River including its major tributaries and all adjoining lands for at least one-quarter mile on each side has been considered. Sharper focus on section of river considered for designation will be brought out later in the report.

B. Ownership and Status

The Jordan River watershed comprises approximately 100,000 acres. Roughly one-quarter (24,000 acres) is in state ownership contained in the Jordan River State Forest. The remaining 75,800 acres is in private ownership. Almost 800 persons own property in the watershed, with roughly 500 non-resident property owners. A land use survey prepared by the Jordan River Watershed Commission indicates that approximately 20 percent of the land is in farms or permanent residential, 23 percent in summer cottages and the remainder undeveloped.

Most of the land along the major tributaries (Green River and Deer Creek) is in private ownership. On the mainstream the state owns roughly 23 miles of the total 33.5 miles of stream. Most of state ownership is found along the upper river. Below Graves Crossing the state owns only 5.0 miles of the 20 miles of stream frontage.

C. Existing Uses

1) Scenic or Aesthetic Areas and Features:

The hardwood-forested hills surrounding the upper Jordan River Valley offer spectacular scenery, especially in the fall. The view from Dead Man's Hill is particularly beautiful. Here one can look down on the dark green swamps, the reds, oranges, and yellows of the hardwoods and the silver ribbon of the Jordan River. History also adds to the aesthetic value of the area. Old railroad grades snake through the hills and are reminiscent of the early logging days. Grassy openings with old unkept apple trees mark the locations of early homesteads. Along the river one can see the swamp conifers, lowland hardwoods, and brush that is productive of wildlife. The few cabins along the lower part of the river interfere but little with the wild scenic character of the river. At least six trout ponds have been built on tributaries.

2) Fishing:

The Jordan River above its junction with the Green River is prime spring fed brook trout water. This headwater area of the mainstream is interlaced with countless downed cedars and a few beaver dams. Bait fishing predominates, although fly fishing is also rewarding. The water is very cold; and brook trout, although numerous, run small – a 10 incher considered a good one. Occasional 14 to 16 inch brookies are taken in beaver ponds.

The numerous short spring-fed tributary streams harbor schools of brook trout, but most are sublegal. Conditions for natural reproduction in these headwater creeks are favorable, except where trout ponds stop the free passage of fish.

The Green River, the upper Jordan's only major tributary, is similar to the upper Jordan River in water quality and temperature. It is generally fast and shallow with occasional holes and is a lightly fished brook trout stream.

The Jordan River below the mouth of the Green River changes abruptly in character. The river deepens and remains confined to a single channel. Numerous bend holes with undercut banks, submerged logs, and logjams provide excellent cover for large trout.

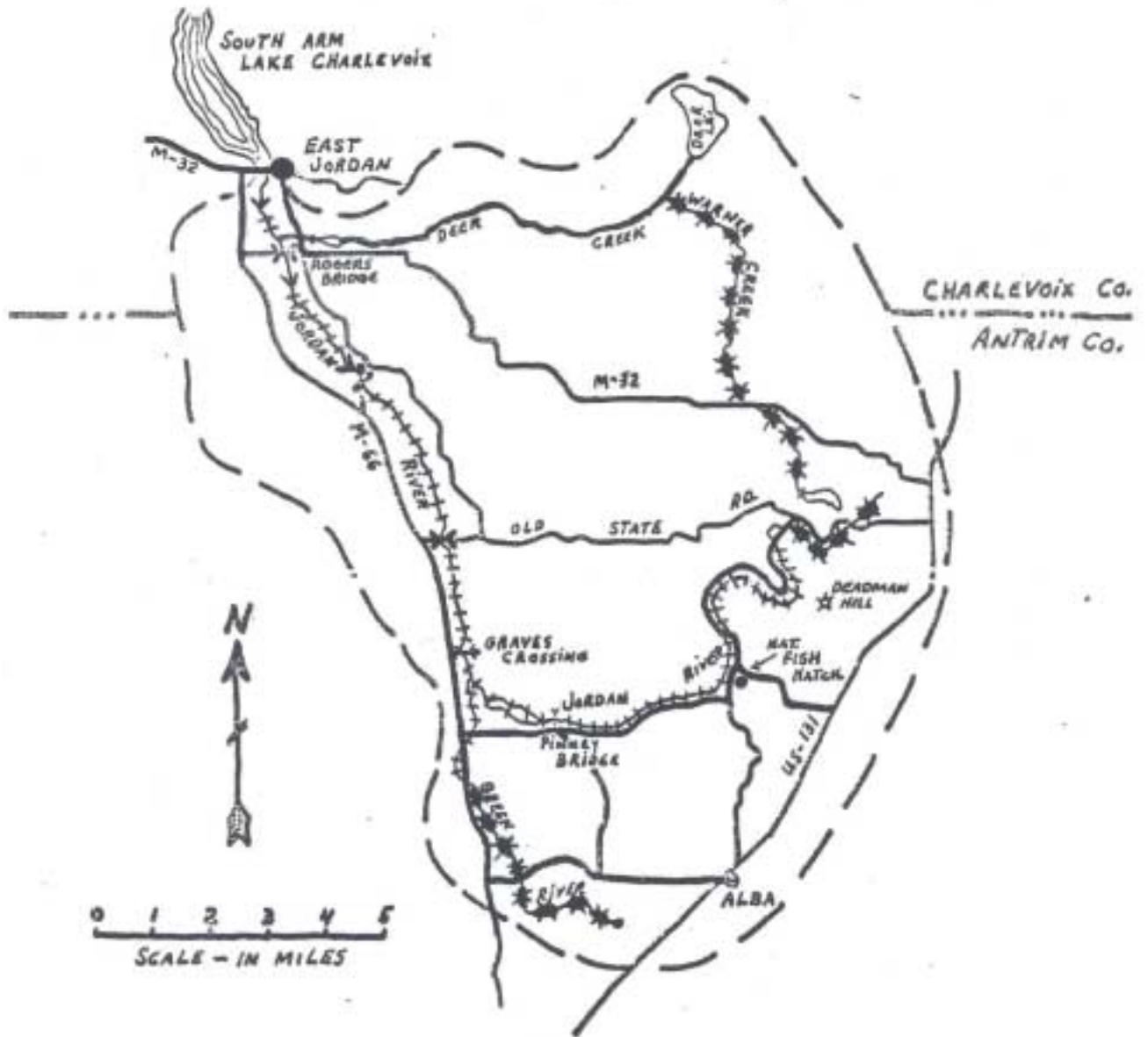
In the spring and fall the lower river has a fine steelhead run which provides good angling particularly in the area from Webster's Bridge to the mouth. Although the lower Jordan is quite sandy, there are enough gravel riffles to provide for steelhead spawning.

In the early 1900's brook trout dominated the entire river and some large brook trout up to three and four pounds were taken. Although some steelhead spawned in the river, brown trout were scarce. Since the 1940's, however, brown trout have gradually taken over the lower river and their upstream influence seems to be continually increasing at the expense of brook trout. Some of these browns are migratory and may range from four to 13 pounds. They provide exciting fishing for the trophy angler during late June and July and again in September and October.

3) Wildlife Observation and Hunting:

The wildlife in the Jordan River Valley provide many hours of recreation for the hunter, sightseer, and naturalist. Deer are common in the area, but not abundant because the climax-type forest vegetation provides little food and cover. Grouse and woodcock can be found in the lowland brush and forests along the river. Cottontail rabbits and snowshoe hares also frequent the area. O'Brien's Pond provides favorable habitat for ducks, as do other marshy sections of the river. The patient observer can also see beaver, otter, mink and several species of rodents and other small mammals. Resident species of songbirds abound in the brushy areas and can be seen along the entire river summer and winter, and during migrations.

JORDAN RIVER WATERSHED ANTRIM & CHARLEVOIX CO.



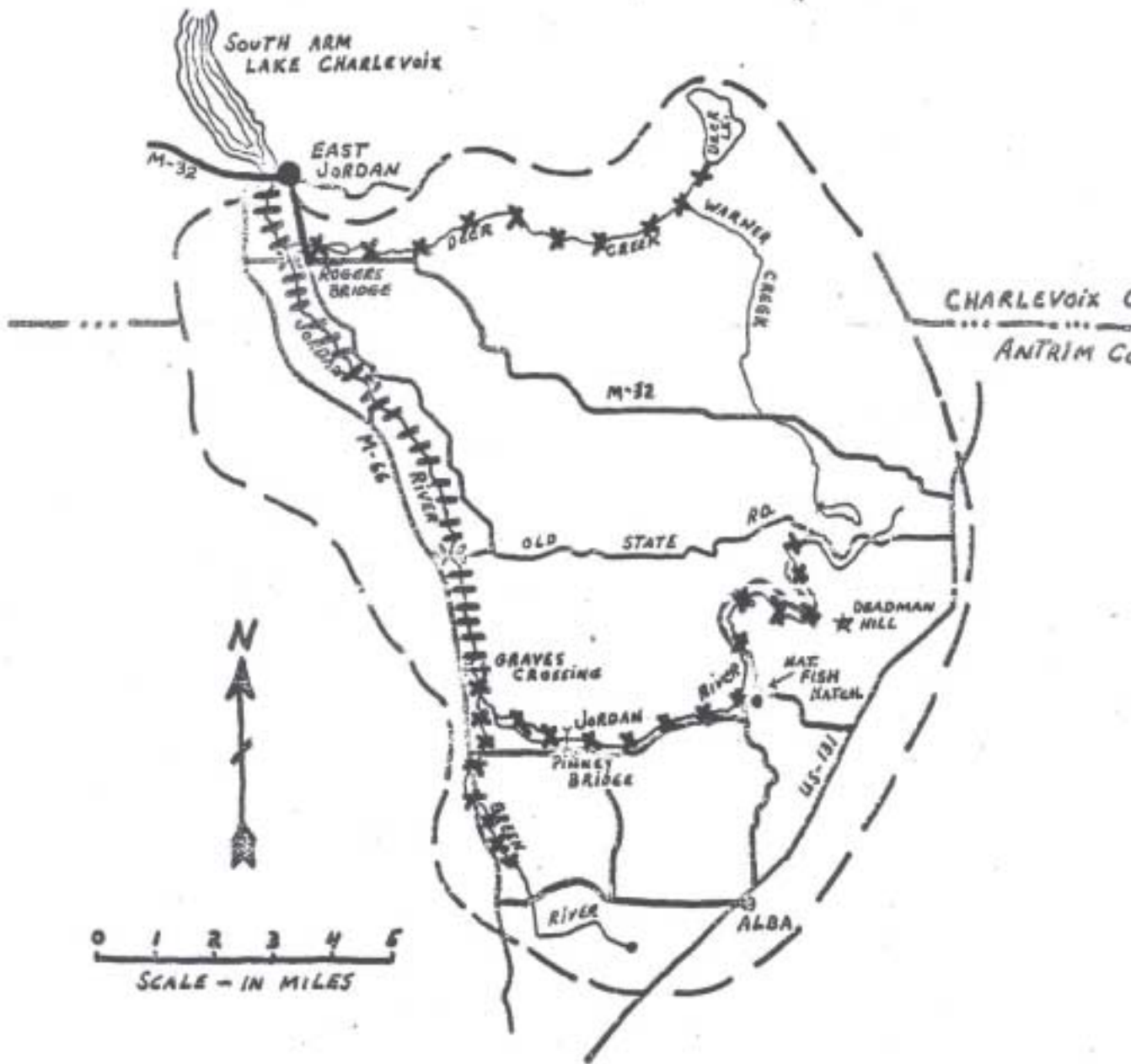
FISHERY	MAIN. TRIB.
TOP QUALITY TROUT	— +++++ * * *
2ND. QUALITY TROUT	— ——— — — —
ANADROMOUS RUNS	— ———>>>>

4) Canoeing and Boating:

The upper Jordan River is interlaced with countless downed cedars and numerous beaver dams which makes canoeing almost impossible. The best canoeing water extends from Graves Crossing downstream to the mouth. This stretch of the river has a drop of only 70 feet to the mouth although during the first mile below Graves Crossing, there are a number of riffles and obstacles that will challenge the novice canoeist. The flow is swift and combined with the relatively undeveloped swamp conifer forest border provides a “northwoods-type” experience for the canoeist.

Below Rogers Bridge the river becomes slow, wide and deep. It meanders through a marshy area where numerous species of waterfowl can be observed.

JORDAN RIVER WATERSHED ANTRIM & CHARLEVOIX CO.



STREAM SIZE

- CANOEABLE WITH DIFFICULTY ***
- CANOEABLE +++++

5) Historical Interests:

The Hinsdale Archaeological Atlas does not show any archaeological sites along the Jordan River, most probably indicating that the area has not been investigated. In fact, the general terrain and character of the Jordan Valley strongly suggests that it is rich in Woodland Indian occupation sites, and possible burial sites. A team of archaeologists from Michigan State University proposed making an archaeological survey of the valley in the summer of 1971 but it was not implemented. Plans are still active to do so.

No historical sites are identified on either the national or state registers in the valley as yet. The statewide survey has not been completed and some sites may be discovered. There is little doubt that the main significance of the valley in relation to our country's heritage lies in the discovery, analysis, and development of Woodland Indian prehistoric archaeological sites.

6) Ecologic Systems and Stages:

The vegetation of the Jordan River Valley is progressing toward a climax forest. Hard maple and basswood are the dominant tree species in the uplands and the canopy of this forest is so dense that little sunlight reaches the forest floor. Without sunlight few tree seedlings can survive. Only maple, basswood and other shade-tolerant tree seedlings can survive and thus the climax maple forest perpetuates itself.

Evidence of the maturing forest can be seen in other vegetation types as well. The swamp conifers, cedar, spruce and balsam, have grown so tall and their canopies so dense that little sunlight reaches the lower limbs. These lower limbs die and in time fall off. This self-pruning process soon results in little food or cover near the ground for terrestrial forms of wildlife.

7) Other Amenity Resource Uses:

The upper valley is especially noted for its scenic beauty and is used extensively by hikers, cyclists, and snowmobilers. The Jordan River Road and Penny Bridge Road have also been designated as a state forest scenic trail with designated points of interest. The Hawk Lake Snowmobile Trail is located a short distance away in southeastern Antrim County.

Swimming in Jordan River waters cannot be recommended because the water temperature rarely exceeds 60 degrees.

D. Existing Facilities (July-1972)

1) Structures for Natural Resources Management:

Manmade structures for natural resources management are minimal in the study area. The U.S. Fish and Wildlife Service operates the Jordan River National Fish

Hatchery in the Upper Jordan Valley, which lies generally 100-200 feet from the Jordan River between Five and Six Tile Creeks. Lake trout are produced here for stocking the Great Lakes.

2) Public Recreation Areas:

Camping facilities along the river include Graves Crossing State Forest Campground and a township park at East Jordan. In addition, there are five public access sites (four developed and one undeveloped) between Graves Crossing and the mouth of the river. The City of East of Jordan maintains two municipal parks on the lower river. In addition to these developed facilities, camping is allowed on state lands in the Jordan Valley provided camps are not set up on the river side of the road.

3) Private Recreation Areas:

A private canoe livery with 28 rental watercraft is located in East Jordan. A private recreation area near Graves Crossing has nine rental watercraft and in winter rents snowmobiles. A resort at nearby Walloon Lake has 20 canoes available which are used on the Jordan probably four times a year. Three group camps in the area have 31 canoes which contribute a total of roughly 100 trips on the Jordan per summer. Camps and homes along the river have about 15 to 20 canoes.

4) Accessibility:

The Jordan River is accessible by improved state or county roads. The lower 10 miles of mainstream is paralleled in various places, within one-quarter mile to one-half mile, by M-66 on the west and by Alba, Freeman and Mount Bliss Roads on the east. There are four road crossings along this lower stretch. The upper Jordan is paralleled most of its length (within 100-660 feet) by the Jordan River State Forest Trail. This county road originates at US-131 on the east side of the watershed, winding along the river, culminating on the west side of the watershed at M-66.

E. Land Uses Which Weaken the Wild-Scenic Concept

1) Timber Cutting and Agriculture:

Historically, the Jordan River Valley has been the site of considerable logging activity dating back to the late 1800s when the river was used extensively as a log-driving stream. Subsequently, the stream banks along the upper reaches were clearcut for cedar products and the scars are still very much in evidence. At the present time, cutting in close proximity to the river is very limited and none is permitted within 200 feet of the stream bank on state-owned land.

Only about 10 percent of the land in the watershed can be classified as agricultural land and of this acreage, less than 5,000 acres are probably actively

farmed. Very little farming takes place within one-quarter mile of the river in the study area.

The private acreage along the lower half of the river could, if improperly subdivided and developed, likely be incompatible with the criteria of the Natural Rivers Program.

From Deer Creek to the mouth of the river, the current diminishes and the river extends into wide marshes with adjacent pasturelands which change the aesthetic qualities of the river.

2) Residential Uses:

Twenty cottages are visible along the Jordan River below Graves Crossing. Most are seasonal dwellings, set back from the river and do not detract greatly from the wild scenic atmosphere. Some however are aesthetically out of character with a wild scenic setting.

3) Water Uses:

At least seven trout pond operations, including the Federal Lake Trout Hatchery, currently are on the cold feeder streams of the Jordan River. These operations do not seem to be adversely affecting water temperatures at present, but unrestricted construction of ponds in the future may warm water temperatures. Additional nutrients are added to the river from the out falls of the ponds, however, new settling basins at the Federal Hatchery have alleviated a major source of this material.

PRELIMINARY DESIGNATION OF RIVER AREA

A. Analysis of Alternatives for Use of the River

A number of potential use and management alternatives exist for the Jordan River. Without land use guidance, increased future development, especially in the lower ten miles, will probably occur and could destroy the natural character of the stream and adjoining shorelands. In the future, even the state-owned land in the upper portion of the valley could be seriously damaged by over-use.

One alternative might call for closure of roads on state lands in the upper valley to protect the wilderness character of the river. Over time this could result in a reversion to a wilderness-like setting. On the downstream privately-owned stretches of the Jordan River, strict zoning, acquisition, easements or other measures could be undertaken to prevent any further development or use of the riverbanks. Such measures seem extreme under the circumstances, and could, if strictly implemented, deprive many from enjoying the natural beauty of the river and valley.

Another, perhaps more rational approach is to consider the Jordan River for designation under the Natural Rivers Program. A long-range management plan, as authorized by the Natural Rivers Act, permits management which preserves existing natural values and allows certain other compatible uses.

B. Proposed Designation:

The Jordan River, uninterrupted by dams as it flows for 33 miles through the beautiful Jordan River Valley, has extremely high water quality, stable flow, and an excellent trout fishery. Its forested borders and the deep upper valley are well known for their scenic beauty and wildlife values. The headwaters and nearly 15 miles of the upper portion of the stream flow through state-owned land in the Jordan River State Forest. Because of their unique natural characteristics the Jordan River and its tributaries, from its source in Section 22, T31N, R5W, in Antrim County, to Rogers Bridge in Charlevoix County, qualify for inclusion under Michigan's Natural Rivers System.

The Natural Rivers Task Force recommends that the mainstream and tributaries of the Jordan River, described above, be designated by the Natural Resources Commission as a Natural River under Part 305, P.A. 451 of 1994. Because of the near-natural setting of the river and the type and proximity of development, it is recommended that it be classified and managed as a wild-scenic river. Deer Creek and other tributaries entering the Jordan River below Rogers Bridge are not included in the recommended designation.

C. River Management Zone:

The River Management Zone shall include 400 feet of land on each side of and parallel to the river and its tributaries. Private ownership within this area is approximately 3,700 acres in about 160 individual ownerships. Of state-owned lands, about 3,800 acres are in the River Management Zone. Under certain circumstances on state-owned lands, this

zone may be extended beyond 400 feet in order to achieve or protect the wild-scenic character of the river.

PROPOSED MANAGEMENT RECOMMENDATIONS

A. Management Objectives

Management recommendations for the designated River Management Zone were developed to protect the river, enhance its natural qualities and to provide suitable outdoor recreation opportunities in a near –natural setting.

The primary purpose of a Natural River designation is to protect the wild-scenic qualities of the river while permitting certain appropriate uses consistent with the designation. A wild-scenic river could, by the act of designation, become a prime candidate for overuse and overdevelopment. The River Management Plan has been developed to avoid such a possibility.

1. Administration:

State Resources: Overall responsibility for implementing and coordinating the River Management Plan is assigned to the Fisheries Division of the Department of Natural Resources. The Office of Planning Services and the DNR Natural Rivers Task Force will act in an advisory capacity. Enforcement of water quality standards and water use regulations will be the responsibility of the Water Resources Commission and other divisions of the Department of Natural Resources.

Other Public Properties: Agreements between the Department of Natural Resources and other public landowners will be developed as needed and feasible.

Private Properties: Pursuant to Section 8 of the Natural River Act, administration of local zoning regulations along the river shall be the responsibility of the local unit of government. Should state zoning be necessary, it will be administered by the Department of Natural Resources.

2. Water Quality:

Water quality will be maintained in a near-natural, high quality state as it presently exists. The river will be monitored periodically by the Surface Water Quality to insure the maintenance of water quality (Part 31, P.A. 451 of 1994). Enforcement of water quality standards and water use regulations will be implemented by the Water Resources Commission and other Department of Natural Resources divisions involved in these activities. Particular surveillance will be directed to pond development and the quality of the Federal Fish Hatchery effluent. An additional monitoring station has been added in the vicinity of Penny Bridge to compliment the two stations presently operated by the Surface Water Quality.

3. Land Development

- a. Subdivisions: No additional subdivisions or unplatted land sales shall be permitted in the River Management Zone on the mainstream unless lots are of sufficient size to allow for 200-foot setbacks for buildings and have a minimum of 150 feet of lot width. On tributaries the minimum setback shall be 100 feet with at least 150 feet of lot width.
- b. Land Fills: Land fills or building on the land in the flood plain or on the uplands within the 400-foot zone where the highest ground water table is within six feet of the land surface shall be prohibited.
- c. Stream Alteration: To protect the natural character of the river, and the natural flow of its waters, no damming, dredging, filling or channelization will be permitted in the portions of the Jordan River or tributaries designated under the Natural Rivers Act. Stream improvements for fish habitat or watercraft docking shall be camouflaged to retain the natural character of the river.
- d. Building Setbacks: New buildings and appurtenances shall be set back at least 200 feet on the mainstream and 100 feet on tributaries. New structures on state lands will adhere at least to minimum setback requirements or, where possible, be placed further back and out of view.
- e. Building Design and Screening:
 - 1) Single family buildings of a rustic design are preferred. Owners should be encouraged to use natural materials and unobtrusive colors in the construction of new or maintenance of old buildings.
 - 2) Screening: Owners of the existing buildings, visible from the river, are encouraged to screen them with native vegetation. The DNR Area Forester will advise on planting.
- f. Commercial and Industrial Structures: No commercial or industrial structures or use will be permitted in the 400-foot River Management Zone except for campgrounds. Local zoning should not permit commercial or industrial activities beyond the 400-foot zone, which unreasonably interfere with the Natural River environment.
- g. Utilities: Gas or oil pipelines, or electric power lines of more than 35 KV, generally shall not be permitted in the River Management Zone except on existing rights-of-way. Plans for cross-country transmission utilities which recommend crossing the management zone or river must be approved by the Natural Resources Commission. (Sec. 15, Natural Rivers Act). New local service lines will not cross the river or the 200-foot setback zone to private dwellings unless they are placed underground.
- h. Signs: Only those signs necessary for (a) direction, (b) resource information, and (c) regulation of use should be placed along public use areas of the designated river zone.

- i. Highways and Roads: No new public roads or highways will be permitted in the River Management Zone. Plans for relocations or improvements to public roads must be approved by the Natural Resources Commission (Part 305, P.A. 451 of 1994).
 - j. Disposal of solid wastes shall be prohibited in the River Management Zone.
4. Management of Adjacent Lands:
- a. Trees and Other Vegetation: Trees, shrubs, and other vegetation will be managed to protect and enhance the river's natural values through maintenance of vegetation types native to the area.
 - 1) State-owned land: On state-owned land, cutting will be restricted within 100 feet of the edge of the mainstream and tributaries [see 4a 3) below]. Controlled cutting practices may be used in the area between the 100-foot and 400-foot lines to carry out natural resource management programs which are in conformance with the wild-scenic character of the river. Such cutting plans must first receive specific authorization from the Lansing Office of the Fisheries Division (Part 305, P.A 451 of 1994).
 - 2) Private land: On private frontage, a restricted cutting belt 100 feet wide will be maintained on the mainstream (Part 305, P.A 451 of 1994) and 25 feet wide in the tributaries. Grazing will not be permitted within these belts if it contributes noticeably to stream degradation. In those cases, cattle will be fenced out to protect the riverbanks. (Cost of fencing may be financed by USDA-REAP Programs.) Provisions will be made for cattle crossings and watering areas.
 - 3) Restricted cutting provisions: Restricted cutting means that dead, diseased, unsafe, or fallen trees and certain other kinds of vegetation can be removed. The Area Forester will work with private owners to advise on cutting practices, restrictions, and authorize cutting within the restricted zone when appropriate.
 - 4) On private lands outside the River Management Zone, it is recommended that the local Soil Conservation Districts, County Extension Service and Department of Natural Resources cooperate with landowners to ensure that timber harvest, agricultural practices and housing or other development, are compatible with the wild-scenic designation of the river.
 - b. Minerals: New development, exploration or production of oil, gas, salt brine, sand and gravel or other minerals except ground water, are not permitted within 300 feet of the river on private lands. (Sec. 10, Natural Rivers Act) Natural Resources Commission policy prohibits drilling for oil or gas within ¼ mile of streams on state land.

5. River or River-Related Activities:

a. Boating and Canoeing:

- 1) The use of motorized watercraft is presently prohibited upstream from the M-32 Bridge in East Jordan by an existing rule established under Part 801, Marine Safety, of 1994 PA 451.
- 2) Upon approval of the Jordan River Management Plan by the Natural Resources Commission, the number of rental watercraft permitted on the river will be limited to existing numbers (currently 37 rental watercraft are available locally) pending further study and the determination of possible need for a permit system.
- 3) Public launching shall be limited to designated boat launching sites.

b. Camping:

- 1) No new private campgrounds shall be established within 200 feet of the mainstream, or within 100 feet of the tributaries.
- 2) Camping between the Jordan River/Pinney Bridge Road and the river is presently prohibited. A comprehensive management plan for the Jordan River State Forest should consider the following camping regulations for state-owned lands in the River Management Zone.
 - (a) Camping on state-owned lands is not permitted within 200 feet of the mainstream or tributaries. Beyond 200 feet, camping is permitted at designated sites only. Sites to be designed to accommodate one or two camping parties only.
 - (b) As new sites are developed, the camping that is immediately adjacent to the road and river be eliminated and thereafter prohibited.

c. Fishing and Hunting:

- 1) Fishing and hunting will continue to be permitted in the management area and adjoining land areas under current laws and regulations.
- 2) Emphasis will be given to maintaining the high-quality trout fishery and quality fishing experience.
- 3) Wildlife management practices will be undertaken in the River Management Zone in conformance with the wild-scenic character.

6. Access and Motorized Travel:

a. Public Access:

- 1) Additional vehicular access will not be provided to the river. New roads and river crossings will not be permitted in the River Management Zone, except that road access to private property will be permitted upon approval of the appropriate zoning authority.
- 2) The public currently has access at five sites from Graves Crossing downstream to Rogers Bridge. Additional walk-in access may be acquired and/or developed where appropriate. Where possible, parked vehicles at access sites should be out of view of the river. Native trees and shrubs should be planted to screen parked vehicles from being seen from the river. Where this is not possible, additional land for parking should be acquired and adequate screening provided.

Motor Vehicles:

- 1) Licensed motor vehicles will be prohibited in the 400-foot River Management Zone except for travel on existing public roads, private roads, and designated trails on publicly owned lands. Parking will be allowed only at designated areas within the management zone.
- 2) Amphibious vessels, all-terrain vehicles or other off-road machines for which licenses are not required will be prohibited on publicly-owned land except on such trails as may be designated the River Management Zone.
- 3) The muffler requirement of the Michigan Vehicle Code shall be enforced for all motorized vehicles using public roads within the management zone. This means muffler must be original equipment or equivalent. (Sec. 707, Act 300, P.A. 1949).

B. Measures for Plan Implementation:

1. Property Control:

- a. Zoning or other land-use regulations shall be the chief means of protecting the Jordan as a wild-scenic river under the River Management Plan.
 - 1) Zoning shall be applied to the 400-foot management zone on both the mainstream and tributaries. Upon adoption of a local zoning ordinance, certified copies or maps and/or documents describing the Natural River Zone shall be filed with the local tax assessing officer and the State Tax Commission. In establishing true cash value of property within the Natural River Management Zone, the assessing officer shall recognize the effect of use limits established by the ordinance. (Part 305, P.A. 451 of 1994).

- 2) Appeals: Under certain circumstances strict adherence to this plan may create unreasonable hardships for the frontage owner. Such cases may be appealed to the appropriate local board for a variance. The Area Forester and other experts should be consulted to recommend to the appropriate board or to the Natural Resources Commission a course of action which will have the least impact on the wild-scenic character of the Natural River.

b. Land Acquisition:

- 1) The state may purchase or trade lands with owner consent on the designated river to maintain or improve the river and its environment. Efforts should be made by the appropriate divisions of the department to purchase lands on or trade other lands for lands along the river as funds become available. (Part 305, P.A. 451 of 1994).
- 2) Some landowners in this wild-scenic river zone may be interested in offering scenic or other easements which coincide with their property interests. The opportunity to purchase such easements should be pursued.

- c. Cooperative agreements will be developed with federal and other state agencies to support the Natural Rivers Programs by implementing policies which will provide financial assistance for practices which will protect and enhance the quality of the natural river and its tributaries and conversely will not provide grant assistance, loan funds or ensure mortgages for any persons or contractors who develop project plans which are not in harmony with the Natural Rivers concept and plan.

2. Other laws and programs reinforcing Natural Rivers management objectives should be utilized to the extent necessary to protect the river in implementing the management plan for the river and its tributaries.

C. Management of Areas Beyond the Natural River Zone:

It is recommended that local government units zone areas to maintain the integrity of the Jordan River as a wild-scenic river:

1. By limiting residential development to low density single-family structures.
2. By providing zones where industry which may produce noise, smoke, fumes, odors, etc., will not intrude upon the valley.
3. By providing zones for commerce where heavy traffic, parking, automobile exhaust and noise will not create environmental intrusions upon the valley.

APPENDIX A

PART 305 NATURAL RIVERS

324.30501 Definitions.

Sec. 30501. As used in this part:

- (a) "Free flowing" means existing or flowing in natural condition without impoundment, diversion, straightening, riprapping, or other modification.
- (b) "Natural river" means a river that has been designated by the department for inclusion in the wild, scenic, and recreational rivers system.
- (c) "River" means a flowing body of water or a portion or tributary of a flowing body of water, including streams, creeks, or impoundments and small lakes thereon.
- (d) "System" means all of those rivers or portions of rivers designated under this part.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30502 Natural river; designation; purpose; long-range plans; publicity; cooperation.

Sec. 30502. The department, in the interest of the people of the state and future generations, may designate a river or portion of a river as a natural river area for the purpose of preserving and enhancing its values for water conservation, its free flowing condition, and its fish, wildlife, boating, scenic, aesthetic, floodplain, ecologic, historic, and recreational values and uses. The area shall include adjoining or related lands as appropriate to the purposes of the designation. The department shall prepare and adopt a long-range comprehensive plan for a designated natural river area that sets forth the purposes of the designation, proposed uses of lands and waters, and management measures designed to accomplish the purposes. State land within the designated area shall be administered and managed in accordance with the plan, and state management of fisheries, streams, waters, wildlife, and boating shall take cognizance of the plan. The department shall publicize and inform private and public landowners or agencies as to the plan and its purposes, so as to encourage their cooperation in the management and use of their land in a manner consistent with the plan and the purposes of the designation. The department shall cooperate with federal agencies administering any federal program concerning natural river areas, and with any watershed council established under part 311, when such cooperation furthers the interest of the state.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30503 Qualifications for designation; categories of rivers.

Sec. 30503. A river qualifying for designation as a natural river area shall possess 1 or more of the natural or outstanding existing values cited in section 30502 and shall be permanently managed for the preservation or enhancement of such values. Categories of natural rivers shall be defined and established by the department, based on the characteristics of the waters and the adjoining lands and their uses, both as existing and as proposed, including such categories as wild, scenic, and recreational. The categories shall be specified in the designation and the long-range comprehensive plan.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30504 Land acquisition; purpose; interest acquired; consent.

Sec. 30504. The department may acquire lands or interests in lands adjacent to a designated natural river for the purpose of maintaining or improving the river and its environment in conformance with the purposes of the designation and the plan. Interests that may be acquired include, but are not limited to, easements designed to provide for preservation and to limit development, without providing public access and use. Lands or interests in lands shall be acquired under this part only with the consent of the owner.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30505 Federal financial assistance programs; leases; expenditures; purposes.

Sec. 30505. (1) The department may administer federal financial assistance programs for natural river areas.

(2) The department may enter into a lease or agreement with any person or political subdivision to administer all or part of their lands in a natural river area.

(3) The department may expend funds for works designed to preserve and enhance the values and uses of a natural river area and for construction, management, maintenance, and administration of facilities in a natural river area conforming to the purposes of the designation, if the funds are appropriated by the legislature.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30506 Public hearings; notice.

Sec. 30506. Before designating a river as a natural river area, the department shall conduct public hearings in the county seat of any county in which a portion of the designated natural river area is located. Notices of the hearings shall be advertised at least twice, not less than 30 days before the hearing, in a newspaper having general circulation in each such county and in at least 1 newspaper having general circulation in the state and 1 newspaper published in the Upper Peninsula.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30507 Land uses; zoning; local ordinances; state rule.

Sec. 30507. After designation of a river or portion of a river as a natural river area and following the preparation of the long-range comprehensive plan, the department may determine that the uses of land along the river, except within the limits of an incorporated municipality, shall be controlled by zoning contributing to accomplishment of the purposes of this part and the natural river plan. County and township governments are encouraged to establish these zoning controls and additional controls as may be appropriate, including, but not limited to, building and subdivision controls. The department may provide advisory, planning, and cooperative assistance in the drafting of ordinances to establish these controls. If the local unit does not, within 1 year after notice from the department, have in full force and effect a zoning ordinance or interim zoning ordinance established under authority of the acts cited in section 30510, the department, on its own motion, may promulgate a zoning rule in accordance with section 30512. A zoning rule may also be promulgated if the department finds that an adopted or existing zoning ordinance fails to meet adequately guidelines consistent with this part as provided by the department and transmitted to the local units concerned, does not take full cognizance of the purposes and objectives of this part, or is not in accord with the purposes of designation of the river as established by the department.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30508 Zoning ordinance or rule; purpose.

Sec. 30508. A zoning ordinance adopted by a local unit of government or a zoning rule promulgated by the department shall provide for the protection of the river and its related land resources consistent with the preservation and enhancement of their values and the objectives set forth in section 30502. The ordinance or rule shall protect the interest of the people of the state as a whole. It shall take cognizance of the characteristics of the land and water concerned, surrounding development, and existing uses and provide for conservation of soil, water, streambed and banks, floodplains, and adjoining uplands.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30509 Zoning ordinance or rule; establishment of districts; powers; distance.

Sec. 30509. The ordinance or rule shall establish zoning districts within which such uses of land as for agriculture, forestry, recreation, residence, industry, commerce, and additional uses may be encouraged, regulated, or prohibited. It may limit or prohibit the placement of structures of any class or designate their location with relation to the water's edge, to property or subdivision lines, and to flood flows and may limit the subdivision of lands for platting purposes. It may control the location and design of highways and roads and of public utility transmission and distribution lines, except on lands or other interests in real property owned by the utility on January 1, 1971. It may prohibit or limit the cutting of trees or other vegetation, but such limits shall not apply for a distance of more than 100 feet from the river's edge. It may specifically prohibit or limit mining and drilling for oil and gas, but such limits shall not apply for a distance of more than 300 feet from the river's edge. It may contain other provisions necessary to accomplish the objectives of this part. A zoning rule promulgated by the department shall not control lands more than 400 feet from the river's edge.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30510 Local zoning ordinance; conformance with applicable law; construction.

Sec. 30510. A local unit of government, in establishing a zoning ordinance, in addition to the authority and requirements of this part, shall conform to the township zoning act, 1943 PA 184, MCL 125.271 to 125.310, or the county zoning act, 1943 PA 183, MCL 125.201 to 125.240, including, but not limited to, the variance provisions of those acts. Any conflict shall be resolved in favor of the provisions of this part. The powers granted under this part shall be liberally construed in favor of the local unit or the department exercising them, in such manner as to promote the orderly preservation or enhancement of the values of the rivers and related land resources and their use in accordance with a long-range comprehensive general plan to ensure the greatest benefit to the state as a whole.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995;--Am. 2000, Act 17, Imd. Eff. Mar. 8, 2000.

324.30511 Districts; valuation for tax purposes.

Sec. 30511. Upon adoption of a zoning ordinance or rule, certified copies of the maps showing districts shall be filed with the local tax assessing officer and the state tax commission. In establishing true cash value of property within the districts zoned, the assessing officer shall take cognizance of the effect of limits on use established by the ordinance or rule.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30512 Rules; enforcement; promulgation; variance; existing use.

Sec. 30512. (1) The department shall prescribe administrative procedures and rules and provide personnel as it considers necessary for the enforcement of a zoning ordinance or rule enacted in accordance with this part. A circuit court, upon petition and a showing by the department that there exists a violation of a rule properly promulgated under this part, shall issue any necessary order to the defendant to correct the violation or to restrain the defendant from further violation of the rule.

(2) The department shall promulgate a zoning rule to implement this part. The rule shall include procedures for receiving and acting upon applications from local units of government or landowners for change of boundaries or change in permitted uses in accordance with chapter 4 of the administrative procedures act of 1969, 1969 PA 306, MCL 24.271 to 24.287. An aggrieved party may seek judicial review under chapter 6 of the administrative procedures act of 1969, 1969 PA 306, MCL 24.301 to 24.306.

(3) A variance from a zoning rule promulgated by the department to implement this part may be applied for and granted pursuant to section 4 of the uniform condemnation procedures act, 1980 PA 87, MCL 213.54, and the variance provisions of the zoning rule.

(4) The lawful use of any building or structure and of any land or premise as existing and lawful at the time of enactment of a zoning ordinance or rule or of an amendment of a zoning ordinance or rule may be continued although the use does not conform with the ordinance, rule, or amendment. The ordinance or rule shall provide for the completion, restoration, reconstruction, extension, or substitution of nonconforming uses upon reasonable terms as set forth in the zoning ordinance or rule.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995;--Am. 2000, Act 17, Imd. Eff. Mar. 8, 2000.

324.30513 National wild and scenic river system; administration.

Sec. 30513. This part does not preclude a component of the system from becoming a part of the national wild and scenic river system under the wild and scenic rivers act, Public Law 90-542, 16 U.S.C. 1271 to 1287. The department may enter into written cooperative agreements for joint federal-state administration of rivers that may be designated under the wild and scenic rivers act.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30514 Area plans; approval; rules.

Sec. 30514. The department shall approve preliminary and final plans for site or route location, construction, or enlargement of utility transmission lines, publicly provided recreation facilities, access sites, highways, roads, bridges, or other structures and for publicly developed water management projects, within a designated natural river area, except within the limits of a city or incorporated village. The department may require any measure necessary to control damaging erosion or flow alteration during or in consequence of construction. The department shall promulgate rules concerning the approvals and requirements provided for in this section.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

324.30515 Construction of part.

Sec. 30515. This part does not prohibit a reasonable and lawful use of any other natural resource that benefits the general welfare of the people of this state and that is not inconsistent with the purpose of this part.

History: Add. 1995, Act 59, Imd. Eff. May 24, 1995.

APPENDIX B

“ALTERATION OF RIVERS” LAWS

Construction on Streams (Act 156, 1951): Authorizes county commissioners to permit or prohibit the construction of dams or bridges on navigable streams. They can also provide for the removal of obstructions.

Construction of Dams in Streams (Act 184, 1963): Prohibits dam building on a stream or river impounding more than five acres without a permit from the Department of Natural Resources.

Inland Lakes and Streams Act of 1972 (Act 346, 1972): Authorizes the Department of Natural Resources to regulate structures, fills, dredgings and other such actions on waterfronts.

Soil Erosion and Sedimentation Control Act of 1972 (Act 347, 1972): Control of soil erosion for the identified land uses of an area to prevent sedimentation of the waters of this state.

Regulate Alteration of Floodplain and Floodways (Act 167, 1968): Authorizes the Water Resources Commission to control alteration of the water courses and the floodplains of all rivers and streams, and to prohibit the obstruction of the floodways of rivers and streams of the state.

Goemaere-Andreson Wetland Protection Act (Act 203, 1979): Authorizes the Department of Natural Resources to regulate dredging, filling, draining and other such actions to wetlands, including those contiguous to Michigan rivers (effective October 1, 1980).

RIVER USE LAWS

Marine Safety Act (Act 303, 1967): Sets forth general regulations for the use of vessels on waters of the state. Department of Natural Resources may, via hearings and adoption of rules by local governments, further regulate the use of such waters by special regulation.

Pending Canoe Registration Act: Would require registering of canoes that are intended for use in public waters of the state.

POLLUTION LAWS AND PROGRAMS

Water Resources Commission (Act 245, 1929): Commission must establish “pollution standards for waters of the state in relation to the use to which they are or may be put.” Has the authority to make regulations and issue orders and permits restricting the polluting content of discharges into state surface and ground waters. Act prohibits discharges of any substance into water which are or may become injurious to public health, safety, welfare; domestic, commercial, industrial, agricultural, recreational or other uses of water; value or utility of riparian lands; to livestock, wild animals, birds, fish, aquatic life or plants, etc. Prohibits structures that will unduly restrict the capacity of the floodway.

Environmental Protection Act (Act 127, 1970): Allows the Attorney General, any public body, and private body or person to sue to enjoin the pollution or likely pollution of any natural resource or obtain relief with respect to such actions.

Clean Water Boding Act (Act 76, 1968 implemented by Act 329, 1966, as amended): For sewage treatment facilities eligible for federal aid, the Water Resources Commission may grant up to 25 percent of the project cost providing that the sum of state and federal aid shall not exceed 80 percent of the project cost.

RELATED & GENERAL LAWS APPLICABLE TO NATURAL RIVERS PROGRAM

Shorelands Protection and Management Act (Act 245, 1970): The Great Lakes counterpart of the Natural River Act.

Farmland and Open Space Preservation Act (Act 116, 1974): Provides tax relief for certain property owners signing nondevelopment agreements with the state.

Subdivision Control Act (Act 288, 1967): Regulates the subdivision of land; requires that the land be suitable for building sites and public improvements, and that there be adequate drainage thereof; to control residential building development within floodplain areas, etc.

State Constitution (Act IV, s.52): Legislature must provide for the protection of natural resources.

Department of Conservation (Act 17, 1921): Department must protect and conserve the natural resources of the State of Michigan.

Natural Beauty Roads (Act 150, 1970): Such roads may be established by county road commission upon local petition. After establishment, commission may enact regulations to preserve native vegetation in the road right-of-way.

Safety Zones (Act 61, 1968): Prohibits discharge of firearms within 150 yards of an occupied dwelling.

Reckless Use of Firearms Act (Act 45, 1952):

Recreational Trespass Act (Act 323, 1976): Must have written permission to be on an individual's property, and prohibits possession or discharge of a firearm within the limits of a right-of-way on certain public roads.

RIVER PLANNING & DEVELOPMENT ORGANIZATIONS

Local River Management Act (Act 253, 1964): Authority to establish both a watershed council (like a planning or advisory board) and a river management district and board (planning a development agency).

Intermunicipality Study Committee (Act 200, 1957): Two or more municipalities may establish an intermunicipality study committee to study area problems and formulate recommendations to their governing bodies.

APPENDIX C

DEPARTMENT OF NATURAL RESOURCES FISHERIES DIVISION JORDAN RIVER NATURAL RIVER ZONING

These rules take effect 15 days after filing with the secretary of State of Michigan (By authority conferred on the commission of natural resources by section 13 of Act 231 of the Public Acts of 1970 being section 281.773 of the Michigan Compiled Laws.)

R 281.1 Definitions

Rule 1. (1) "Applicant" means a person who requests on proper forms and via proper procedures, a zoning permit, special exception permit or variance.

(2) "Appurtenance" means a structure incidental to a dwelling including, but not limited to garages, pump houses, wells, sanitary facilities and electrical service lines.

(3) "Commission" means the natural resources commission.

(4) "Director" means the director of the department of natural resources.

(5) "Dwelling" means a building, or portion thereof, which is designed or used exclusively for residential purposes.

(6) "Dwelling, single family" means a detached building designed for or occupied exclusively by 1 family and containing housekeeping facilities.

(7) "Front" means that side of a lot abutting the water's edge of the mainstream or tributary.

(8) "Lot," means a parcel of land occupied or intended to be occupied by one dwelling and appurtenances incidental to it, including such open spaces as are arranged and designed to be used in connection with such buildings.

(9) "Natural river district" means the Jordan River natural river district as described in subrule (1) of rule 3.

(10) "Reforestation" means renewal of vegetative cover by seeding, planting or transplanting.

(11) "Setback" means the horizontal distance between any portion of a structure and the water's edge, measured at its closest point.

(12) "Structure" means anything constructed, erected or to be moved to or from any premise which is permanently located above, on or below the ground including signs and billboards.

(13) "Zoning administrator" means the administrator of these zoning rules appointed by the natural resources commission.

(14) "Zoning permit" means a standard form issued by the zoning administrator upon application and declaration by the owner or his duly authorized agent approving proposed construction and use of land and buildings and structures thereon.

(15) "Zoning review board" means a group of three or more persons appointed by the commission to act upon requests for special exceptions.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.2 Purpose.

Rule 2. It is the purpose of these rules:

(a) To promote the public health, safety and general welfare, to prevent economic and ecological damages due to unwise development patterns within the natural river district and to preserve the values of the natural river district for the benefit of present and future generations.

(b) To protect the free flowing conditions, fish and wildlife resources, water quality, scenic and aesthetic qualities and historical and recreational values of the Jordan River and adjoining land.

(c) To prevent flood damage due to interference with natural flood plain characteristics by excluding developments which are vulnerable to flood damages.

(d) To provide for residential and other permitted development that will complement the natural characteristics of the natural river system.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.3 Boundaries, map, abrogation and other restrictions.

Rule 3. (1) The Jordan River natural river district is that area comprising the Jordan River and its tributaries from its source in section 22, T31N, R5W in Antrim County to Roger's Bridge in Section 35, T32N, R7W in Charlevoix County and all lands lying within 400 feet of the river's edge.

(2) Certified copies of the Jordan River natural river zoning map shall be displayed in the office of the county register of deeds and in the office of the zoning administrator and shall be filed with the local tax assessing officer and with the state tax commission.

(3) These zoning rules do not repeal, abrogate or impair any existing easements, covenants or deed restrictions, nor permit actions prohibited by other statutes or ordinances, including zoning ordinances, applicable to the Jordan River natural river district, except that where these rules impose greater restrictions than found on such easements, covenants or deeds, the provisions of these rules shall prevail.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.4 Permitted uses.

Rule 4. The following uses shall be permitted by the owner upon his property within the natural river district, subject to limitations and requirements outlined in these zoning rules, local ordinances and other applicable statutes:

(a) One single family dwelling and appurtenances set back at least 200 feet from the water's edge on a lot at least 150 front feet wide along the mainstream and set back 100 feet with minimum lot width of 150 front feet on the tributaries.

(b) Plats if the minimum setback and lot width requirements in subdivision (a) are met.

(c) Camping and other recreational activities which do not require the construction of permanent facilities.

(d) Operation of watercraft subject to limitations of local ordinances established under authority of Act 303 of the Public Acts of 1967, being sections 281.1001 to 281.1199 of the Michigan Compiled Laws.

(e) Fishing and hunting in compliance with current laws and regulations.

(f) Reforestation.

(g) Normal agricultural activities, provided that such activities meet the provisions of these rules and that the bureau of water management of the department of natural resources determines that such activities do not contribute to stream degradation.

(h) Operation of licensed motor vehicles on dedicated public roads or access roads to private dwellings.

(i) Private footpaths constructed by the landowner of natural materials to facilitate permitted uses.

(j) Private boat docks constructed by the landowner of natural materials and camouflaged into natural surroundings.

(k) Mining and extractive industries beyond 300 feet from the water's edge.

(l) Underground gas and utility lines.

(m) Surface gas and utility lines on lands, or interests in real property continuously owned by the utility from and after January 1, 1971 subject to review and approval by the commission.

(n) Disposal fields and septic tanks in conformance with local county health codes.

(o) Cutting and filling of the land surface except where the high ground water table is within six feet of the land surface.

(p) Other uses which are granted permits by the zoning administrator according to rules 6 and 9.
History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.5 Natural vegetation strip.

Rule 5. A strip 100 feet wide on each side of and parallel to the mainstream and 25 feet wide on the tributaries shall be maintained in trees and shrubs or in its natural state, except that dead, diseased, unsafe or fallen trees may be removed and trees and shrubs, upon approval of the area forester, may be selectively pruned or removed for landscaping purposes or to provide a filtered view of the river.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.6 Special exception permits.

Rule 6: (1) Special exception permits may be granted to allow use in the natural river district that are not specifically permitted by Rule 4 where implementation of such uses does not contravene the purposes of these rules as specified in Rule 2.

(2) Application for special exception permit shall be made on forms provided by the zoning administrator.

(3) Upon reviewing an application for a special exception permit, the zoning review board at any time prior to rendering a decision thereon shall require the applicant to furnish such of the following information as is deemed necessary by the zoning review board for determining the suitability of the particular site for the proposed use:

(a) A detailed description of the proposed activity or use.

(b) A plan (surface view) showing elevations or contours of the ground, including existing earth fills; generalized vegetative cover map; size, location and spatial arrangement of all proposed and existing structures on the site; location and elevations of streets, access roads, water supply and sanitary facilities.

(c) Photographs showing existing land uses and vegetation as seen upstream and downstream from the proposed use.

(d) Valley cross sections showing the natural stream channel, streambanks and high water marks, if any, with indication of locations of proposed developments.

(e) Any other information deemed relevant by the zoning administrator.

(4) Before considering applications, the zoning review board shall give notice by certified mail to all property owners within 500 feet of the proposed use and to local officials and department of natural resources personnel, including but not limited to: township supervisor, county health officials, county and township zoning officials, soil conservation service, and regional office and natural rivers section of the department of natural resources.

(5) In passing upon applications, the zoning review board shall consider all relevant factors specified in these rules, in the light of the spirit and intent of the purposes as specified in Rule 2.

(6) The zoning review board may require public hearings to be held regarding the application. The zoning review board shall decide on an application within 15 days from receiving the application, except that where public hearings are held or additional information is required pursuant to subrule (3) it shall render a decision within 15 days of the end of hearings or receipt of the last requested information.

(7) The zoning review board shall attach such conditions to the granting of special exceptions as are necessary to further the purposes of these rules.

(8) A special exception use shall adhere strictly to the terms of the special exception permit.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.7 Nonconforming uses.

Rule 7. (1) The lawful uses of any land or structure existing at the effective date of these rules may be continued, although the use does not conform with these rules.

(2) Repairs and maintenance work required to keep a nonconforming structure or other use, such as a roadway, in sound condition may be made. Remodeling of nonconforming structures within the confines of the existing foundation and elevations shall be permitted.

(3) A special exception permit shall be granted by the zoning review board when a nonconforming building or structure is damaged or destroyed by fire, flood or other means, and it may be restored if restoration is started within one year from the time of damage. Where there are several buildings or structures which are used together by the landowner as a single operating unit, the value of the part destroyed shall be compared to the value of the total operating unit in determining whether 50 percent of the value has been destroyed. A nonconforming building or structure damaged by more than 50 percent of its value may be reconstructed or repaired only if all of the following conditions exist:

(a) The land upon which it is situated is not subject to flooding.

(b) Continued use of a nonconforming building or structure would not lead to bank erosion or other material degradation of the river resource.

(c) The continued use conforms with local county health codes and approval is granted by local county health department.

(4) The use of nonconforming structure or land may be changed to a use of a like or similar character, or to a use conforming to the rules of the natural river district.

(5) A nonconforming use of any land or structure may not hereinafter be enlarged or extended without the granting of a special exception permit as provided in subrule (3).

(6) An enlargement or extension of a nonconforming use of up to 50 percent of the land area or the floor area of a residential structure or public accommodation providing overnight facilities not exceeding 12 units may be approved by the zoning review board when the owner submits to the zoning review board a detailed description of the proposed enlargement or extension together with a site plan showing the location of all new structures or uses, and upon a determination that all of the following conditions exist:

(a) The land upon which it is situated is not subject to flooding.

(b) The enlargement or extension of the nonconforming use would not lead to bank erosion or other material degradation of the river resource.

(c) The enlargement or extended use conforms with local county health codes and approval is granted by local county health department.

(d) The enlarged or extended use does not contravene the purposes of these rules as specified in Rule 2.

(7) Substitution of nonconforming structures with new structures may be made, but the granting of a special exception permit is required to ensure that the changed uses will conform as closely as possible to the purposes of these rules as specified in Rule 2.

(8) If a nonconforming use is discontinued for 12 consecutive months, any future use at that site shall conform to these rules.

(9) A property owner may request the zoning review board to certify the existence of a prior nonconforming use on his property which certification shall be granted where a use meets the criteria of this rule and the common law criteria of nonconforming uses of the state.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.8 Variances.

Rule 8. (1) An applicant who is denied a zoning permit or a special exception permit shall have a hearing held in accordance with and subject to sections 71 to 87 of Act No. 306 of the Public Acts of 1969 being sections 24.271 to 24.287 of the Michigan Compiled Laws upon petition thereof filed with the director within 30 days of such denial.

(2) Upon receipt of a petition for a hearing, the director shall set a date for a hearing on the facts and proposed action and shall appoint a hearing officer to preside at the hearing. The proposed hearing shall be scheduled not more than four weeks after receipt of the petition. The hearing officer shall hear the evidence, prepare a record of the proceedings and a proposal for a decision including findings of fact and conclusions of law.

(3) The hearing officer shall give notice of the hearing by certified mail to the persons named in subrule (4) of Rule 6.

(4) The record or the proceedings and proposal for decision shall be transmitted to the commission and shall be served by certified mail on all other parties to the proceedings not more than three weeks after completion of the testimony.

(5) A final decision or order of the commission in a contested case shall be made not more than eight weeks after the date of the hearing and a copy of the decision or order shall be delivered or mailed forthwith to each party and to his attorney.

(6) The commission shall prepare an official record of hearing in accordance with section 86 of Act No. 306 of the Public Acts of 1969.

(7) The final decision or order of the commission after a hearing is conclusive unless reviewed in accordance with section 87 or sections 101 to 106 of Act No. 306 of the Public Acts of 1969 being sections 24.287 or 24.301 to 24.306 of the Michigan Compiled Laws.

(8) In determining a final decision in a contested case, the commission shall consider:

(a) The economic effect of the subject property weighed in light of the applicant's entire contiguous holdings and not merely the portion within the natural river district. If the subject portion is the remainder of a larger holding this fact and a description of the title history shall be included in the hearing evidence.

(b) Increase in flood levels and flood damages that may be occasioned by the proposed use at the site and upstream and downstream from the site, water quality consequences and other factors relevant within the terms of these rules.

(c) Cumulative effect upon the natural river district from potential development of holdings in a legal position similar to the applicant's if variances are requested and granted for these properties.

(d) Reasonable alternatives available to the applicant.

(e) All other factors relevant to the purposes and provisions of these rules.

(9) In weighing the application for a variance, considerations of public health, safety and welfare shall prevail, unless private injury is proved by substantial preponderance of the evidence to be so great as to override the public interest.

(10) A variance shall not be granted where the commission determines that the requested use will pose substantial hazard to life or property rights either public or private.

(11) Where by reason of the narrowness, shallowness or shape of a lot or property at the effective date of these rules, the lot or property cannot accommodate a building because of the required building setback, variances shall be allowed only upon a consideration of the factors prescribed in subrule (8) of Rule 8. Such variances shall provide that the structures shall be so placed as to best meet the spirit and objectives of the natural rivers act.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.9 Administration.

Rule 9. (1) The commission shall appoint a zoning administrator and a zoning review board to act as its agents to enforce these rules, including the receiving and processing of applications for zoning permits, special exception permits, petitions for variances, requests for changes, amendments or supplements, as outlined in these rules, or other matters the commission is required to decide.

(2) A person shall not commence excavation, erection, alteration or repair for any building or structure or commence a land use until an application for a zoning permit has been made, a site inspection has been completed and a zoning permit has been secured from the zoning administrator. Alterations and ordinary maintenance made on dwellings where total costs does not exceed five percent of the market value of the structure in any 12 month period are exempt.

(3) Application for a zoning permit shall be filed in writing with the zoning administrator. There shall be submitted with all applications for zoning permits:

(a) Two copies of a site plan giving accurate dimensions on either a scale drawing or a rough sketch and containing the following information:

(i) Location upon the lot of all existing and proposed structures.

(ii) Existing or intended use of the structures.

(iii) Generalized vegetative cover.

(iv) Lines and dimensions of the lot to be used.

(b) Evidence of ownership of all property affected by the coverage of the permit.

(c) Evidence that all required federal, state and county licenses or permits have been acquired or that applications have been filed for the same.

(d) Other information as may be required by the zoning administrator.

(4) One copy of both plans and specifications shall be filed and retained by the zoning administrator and the other shall be delivered to the applicant when the zoning administrator has approved the application, completed the site inspection and issued the zoning permit. To insure that new land uses in the natural river district are in conformance with these rules, the applicant shall display a permit required by these rules face out within 24 hours of its issuance by placing it in a conspicuous place facing the nearest street or roadway and displaying it continuously until the purpose for which issued is complete. Failure to obtain and display a permit is a violation of these rules and subjects each person for whose benefit the permit is required to court action.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.10 Enforcement.

Rule 10. (1) Buildings erected, razed, altered, moved or converted or any use of land or premises in violation of these rules are declared to be a nuisance.

(2) Each alleged violation shall be inspected by the zoning administrator who shall order the applicant in writing to correct all conditions found to be in violation of these rules.

(3) Violations of these rules shall be resolved by the appropriate circuit court in accordance with section 13 of Act No. 231 of the Public Acts of 1970 being section 281.773 of the Michigan Compiled Laws.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC

R 281.11 Changes, amendments, supplements.

Rule 11. (1) Changes, amendments and supplements to boundaries and to permitted uses requested by a local unit of government or by a landowner may be granted where implementation of such change does not contravene the purposes of these rules as specified in Rule 2.

(2) A local unit of government or a landowner who requests a change, amendment or supplement to the boundaries or to permitted uses shall have a hearing held in accordance with and subject to sections 71 to 87 of Act No. 306 of the Public Acts of 1969 as prescribed in subrules (2) to (10) of Rule 8.

History: 1954 ACS 81, Eff. Sept. 27, 1974; 1979 AC