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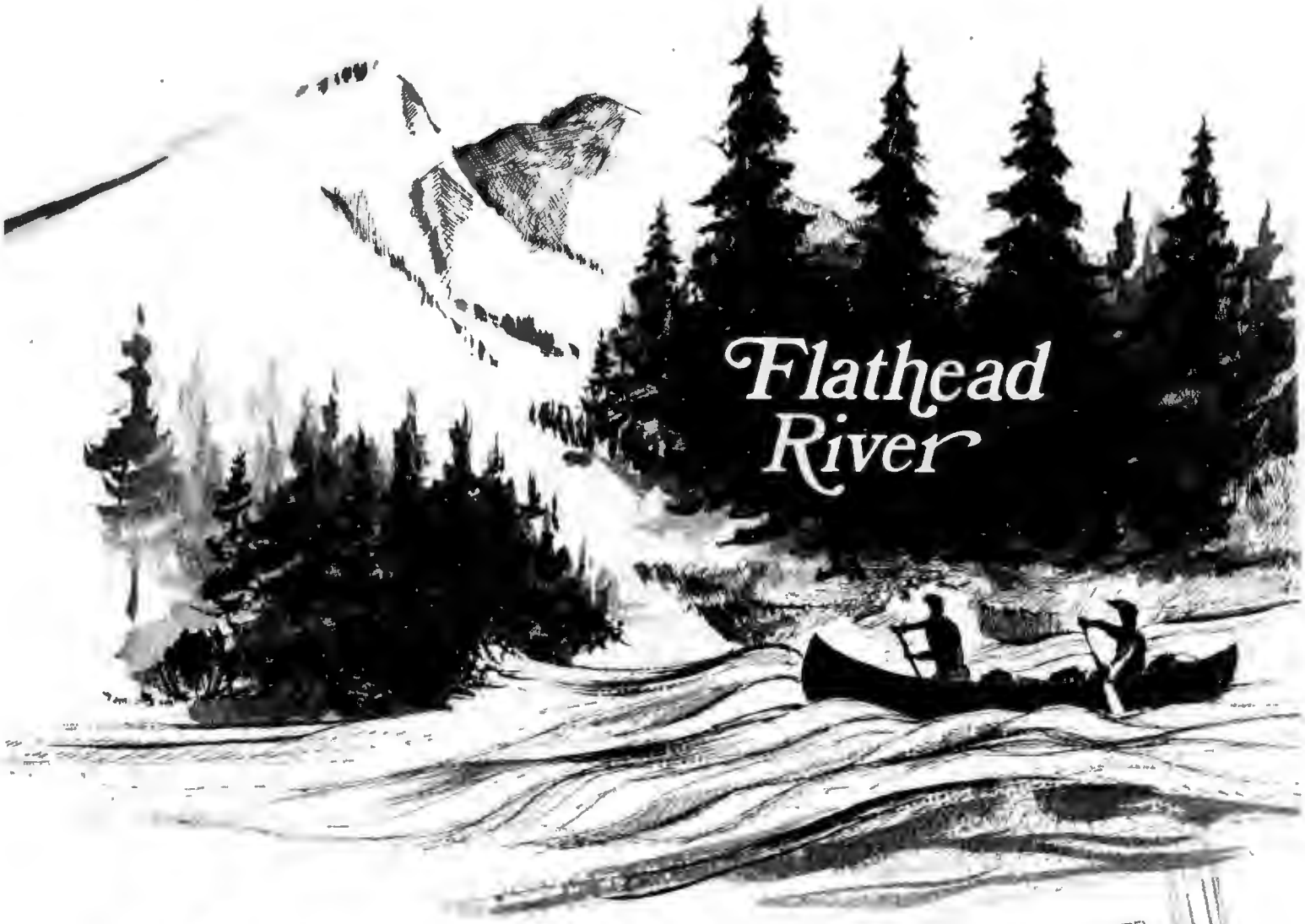
Wild & Scenic River

STUDY REPORT



MAR 14 1977

FLATHEAD NATIONAL FOREST

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Wild & Scenic River

STUDY REPORT

MAR 14 1973

FLATHEAD NATIONAL FOREST

FLATHEAD RIVER

WILD AND SCENIC RIVER STUDY REPORT

U.S. DEPARTMENT OF AGRICULTURE

FLATHEAD NATIONAL FOREST

1975

Prepared in Accordance with
Section 4(a) of Public Law 90-542

Preface

This report was originally published in July of 1973. It was sent to Federal agencies, State agencies, and made available for public review in August of 1973.

Consideration of review comments was the basis for changes made in this revision. Recommendations within the report have not changed, but numerous additions and corrections have been made in the support data.

The Wild and Scenic Rivers Act was passed prior to the passage of the National Environmental Policy Act. As a result of this sequence of legislative action two reports are required in the Flathead Wild and Scenic River Study: (1) a study report and (2) an environmental statement. The draft environmental statement was used more extensively than the study report for public review since it contained the items of essential interest in a more concise form.

The Wild and Scenic Rivers Act requires that responses from Federal agencies be sent with the study report to the President and Congress; therefore, they have been included in Appendix 11. A summary of public comment to the draft environmental statement is also included as a part of Appendix 11 of this report.

Public documents on the draft environmental statement which were also pertinent to the study report were considered in the revision of the study report.

Public, Federal, and State letters are all included in the final environmental statement with the responses by the Forest Service explaining how comments were considered in the revision of the report.

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Middle Fork Flathead River near Spruce Creek

I INTRODUCTION

The National Wild and Scenic Rivers Act of 1968 (Public Law 90-542) directs that the Department of Agriculture study 219 miles of the Flathead River system "...to determine whether it should be included in the National Wild and Scenic Rivers System."

This study report is in compliance with that direction. The objectives of the study were:

1. Determine if the Flathead River or portions thereof qualify for inclusion into the National Wild and Scenic Rivers System.

2. Determine if the Flathead River or portions thereof should be included in the System (this involves a determination of best use).

3. If yes,

   a. establish a River Management Zone and classify segments (wild, scenic, or recreational).

   b. prepare a development plan, acquisition plan, and management plan.

   c. identify outside area problems and opportunities which may be created or foreclosed.

The study of the river began in July of 1970 with the USDA, Forest Service, in the lead role as the coordinating agency. Under a provision of the Act, the Governor was given the right to jointly lead in the study. The Governor of Montana chose to cooperate with the Forest Service rather than jointly lead the study. In addition to State and Federal agencies interested individuals, organizations, and a 10-member public advisory committee cooperated in the Flathead River Study.

Canoeing on the North Fork

II SUMMARY OF STUDY FINDINGS AND CONCLUSIONS

Wild and Scenic River Qualifications

Study rivers must meet certain criteria established by the Wild and Scenic Rivers Act in order to be considered for inclusion in the Wild and Scenic Rivers System. Criteria include a determination of (1) free-flowing status, (2) the presence of high quality water, and (3) the fact that the river, with its immediate environment, possesses outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values.

It has been determined that the study portions of the Flathead River meet these criteria.

Considerations of Best Use

Use to the Present: Road (and railroad) construction and subdivision of private land are the two activities having the greatest impact on river values within the study area.

In many instances roads have not been detrimental. While roads have not precluded Wild and Scenic Rivers consideration, they have materially reduced the alternatives for possible classification; i.e., wild, scenic, or recreational. In the case of the lower Middle Fork, roads have substantially altered the character of the shoreline.

Subdivision of private land has been minor in the past but is steadily increasing. Little regard has been given to the need to protect river values. Small lots adjacent to the river have been sold with no provision for vegetative screening, minimum set-back distance from water's edge, minimum lot size, or building codes. This trend in use is resulting in losses to the scenic quality of the river environment.

The greatest use of the river area has been for recreation related activities. Fishing is a prime attraction. Portions of the Flathead River system are among the few areas which continue to support a pure strain of westslope cutthroat trout. Large Dolly Varden trout are also part of the fishery.

The potential for river floating far exceeds present use. Use has, however, noticeably increased in recent years. A variety of water conditions exist. The river ranges from fast-moving whitewater in deep canyons to more placid stretches of water in broad, timber-covered valley bottoms. Remote areas of the Bob Marshall Wilderness and the back country of the Middle Fork provide opportunities for long trips in solitude. Other stretches of river offer opportunities for day-type use in a near-natural environment.

With the exceptions noted, land uses along the study river are generally compatible with the standards established in the Act. Commercial timber harvesting has not been a principal activity. Timber cutting has resulted primarily from clearing for development of private land. Many original homestead dwellings still remain; most of these are log structures.

Portions of the private land are used for agriculture and grazing. These are compatible uses in the areas in which they occur.

Five contiguous patented claims on the North Fork lie within one-fourth mile of the river. These claims were surveyed for patent in January of 1891 for gold.

Hunting is an important use in the river drainage. The big game winter range, used mostly by deer, elk, and moose, is a significant resource of the river area. Other big game animals include mountain goats, mountain sheep, black bear, and grizzly bear.

Future Use: Major conflicting future uses may be between possible dam construction and maintaining the free-flowing status of the river.

Hydroelectric production has been high in the Pacific Northwest compared to the Nation as a whole. During 1965, 99 percent of all electric power sold in the Pacific Northwest was generated at hydroelectric plants in contrast with 20 percent from this source nationally. In 1972 the percentages were similar--95 percent and 16 percent, respectively.

Due to the availability of low-cost hydroelectric power in the Pacific Northwest, per capita consumption is high--more than double the national average. From 1965 to 2020 the population of the Pacific Northwest is expected to slightly more than double. Per capita electricity demands are expected to increase more than six times the 1965 use by 2020 (6).

It is evident that low-cost power has a marked effect on the economic growth of the Pacific Northwest; heavy power-consuming industries consider power costs in determining the location of new manufacturing plants.

The Smoky Range Dam site on the North Fork and the Spruce Park Dam site on the Middle Fork have potential for hydroelectric production. Spruce Park is estimated to have a benefit/cost ratio of 0.66, which is well below the economic break-even point of 1.0. While Smoky Range is economically feasible with a ratio of 1.03, it is near-marginal. (Economic feasibility is discussed in Appendix 2.)

It would be unrealistic, however, to discount the future need for these dams solely on the basis of their present economic feasibility. As the need for power increases, the economic feasibility of the dams may become more favorable. Increasing the efficiency of existing dams (through the addition of generating capacities and pumpback opportunities) could also provide increased future capacity.

Precluding dam construction within the study area results in a future need to consider alternative sources. These are discussed under "Alternatives to Hydropower."

Subdividing private land is the second major land use posing potential conflicts with the objectives of Wild and Scenic Rivers. Where controlled, subdivision can fulfill a public need without diminishing the scenic view from the river.

Except for improvement of existing roads, access appears to be adequate. The only extensive roadless area outside of wilderness is in the Middle Fork back country. Roads close to the river along this stretch do not appear feasible because of topography and soil conditions. Therefore, roads do not pose a substantial conflict in potential use of the river area.

Conclusions

The 219.0 miles of the river designated for study should be included in the National Wild and Scenic Rivers System. Classification is recommended as:

Wild River	--	97.9 miles
Scenic River	--	40.7 miles
Recreational River	--	80.4 miles

A River Management Zone containing about 57,400 acres should be established adjacent to the river and managed to protect the unique qualities.

It is recommended that the National Park Service have administrative responsibility for the portions of the proposed River Management Zone within the boundaries of Glacier National Park (approximately 11,800 acres).

State-owned lands (approximately 900 acres) within the recommended river boundary should be administered by the State of Montana pursuant to a cooperative agreement between the State and the Forest Service.

The remainder of the proposed River Management Zone (approximately 35,000 acres of National Forest land and 9,700 acres of privately owned land) should be administered by the Forest Service. The acquisition of scenic easements within the recommended river boundary

would be negotiated on a case-by-case basis. These easements would be purchased from the landowners to protect river values in accordance with a river management plan.

Figure 1 shows the proposed river classification. See Appendix 1, pages 1 through 19, for boundaries of the proposed River Management Zone.

Boundary of Area

The principal consideration for determination of the proposed boundary was the area seen from the river. Other considerations, such as special features, location of property lines, location of roads, potential problem areas, and the likelihood of the river shifting, also influenced the location. The rationale for establishing a boundary varied with different segments of river, depending on: (1) whether or not the adjacent land was surveyed, (2) the classification of the land, and (3) the presence or absence of private land.

Surveyed land -- Within surveyed lands the proposed boundary was located on legal subdivisions or private land lines. An exception was the use of surveyed roads as a proposed boundary near Hungry Horse. To minimize boundary irregularities, land units of 40 acres were usually considered. Except in cases where private landowners had subdivided, the smallest land unit considered was 10 acres.

Unsurveyed land -- Within unsurveyed lands roads, railroads, trails, or random lines were used as proposed boundaries. Where private land was involved the proposed boundary was located so it could be surveyed if necessary; random lines were not used.

Bob Marshall Wilderness -- The proposed boundary was established one-fourth mile from the river's edge on both sides of the river in the Wilderness.

Glacier National Park -- Methods used in determining the proposed boundary within the Park were: a meandering line one-fourth mile from the edge of the river was used in some areas, while the methods outlined above for surveyed and unsurveyed lands were used in others, including private land.

With the system described, not all land seen from the river was included within the boundary; conversely, some land not seen was included. The system led to the establishment of a proposed boundary which: (1) includes land most critically affecting the character of the river, (2) averages less than 320 acres per mile, (3) can be defined, and (4) is reasonable to survey where private land is involved.

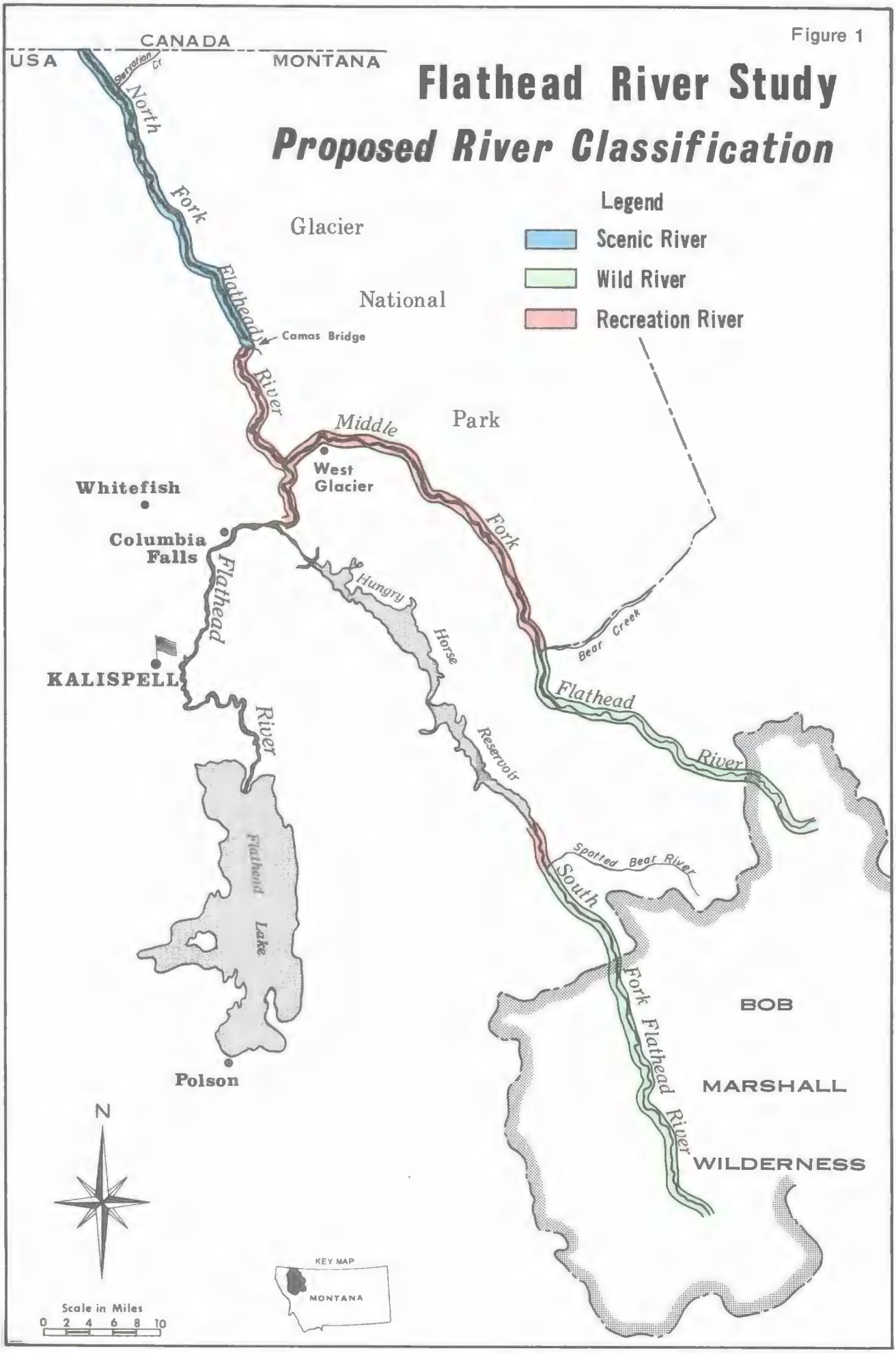


Figure 1
Flathead River Study
Proposed River Classification
Legend
Scenic River
Wild River
Recreation River
CANADA
USA
MONTANA
Saturation Cr
North Fork Flathead River
Glacier National Park
Camas Bridge
Middle Fork Flathead River
West Glacier
Whitefish
Columbia Falls
Flathead River
KALISPELL
Hungry Horse Reservoir
Bear Creek
Flathead River
Spotted Bear River
South Fork Flathead River
Flathead Lake
Polson
BOB MARSHALL WILDERNESS
N
KEY MAP
MONTANA
Scale in Miles
0 2 4 6 8 10

III GENERAL INFORMATION

Study Reach

The Wild and Scenic Rivers Act defined the portions of the Flathead River for study as:

> "Flathead, Montana: The North Fork from the Canadian Border downstream to its confluence with the Middle Fork; the Middle Fork from its headwaters to its confluence with the South Fork; and the South Fork from its origin to Hungry Horse Reservoir."

The study includes 219.0 miles of river: 58.3 miles on the North Fork; 100.6 miles on the Middle Fork; and 60.1 miles on the South Fork (see figure 2).

Study was most intensive on lands within one-fourth to one-half mile of the river. Extensive soil and watershed examinations were conducted on the entire watershed. No field inventories were made on the drainage area within Canada.

Management direction on portions of the South Fork and Middle Fork, within the Bob Marshall Wilderness, has been established. Therefore, inventory of some items, such as timber volumes, was omitted.

The official U.S. Geological Survey name for the river (and its forks) differs somewhat from that described above. Prior to January of 1972 the USGS listed the "North Fork" as the Flathead River. This stretch of river from the Canadian border downstream to its confluence with the Middle Fork has always been referred to locally as the North Fork. Early maps confirm this as the original name. This fact led to an official USGS name change in January 1972 to "North Fork Flathead River."

The official USGS nomenclature and the Wild and Scenic Rivers Act nomenclature are now synonymous except for the 9.6 miles of river downstream from the confluence of the North Fork and the Middle Fork. The official USGS nomenclature is "Flathead River;" the Wild and Scenic Rivers Act refers to it as the "Middle Fork."

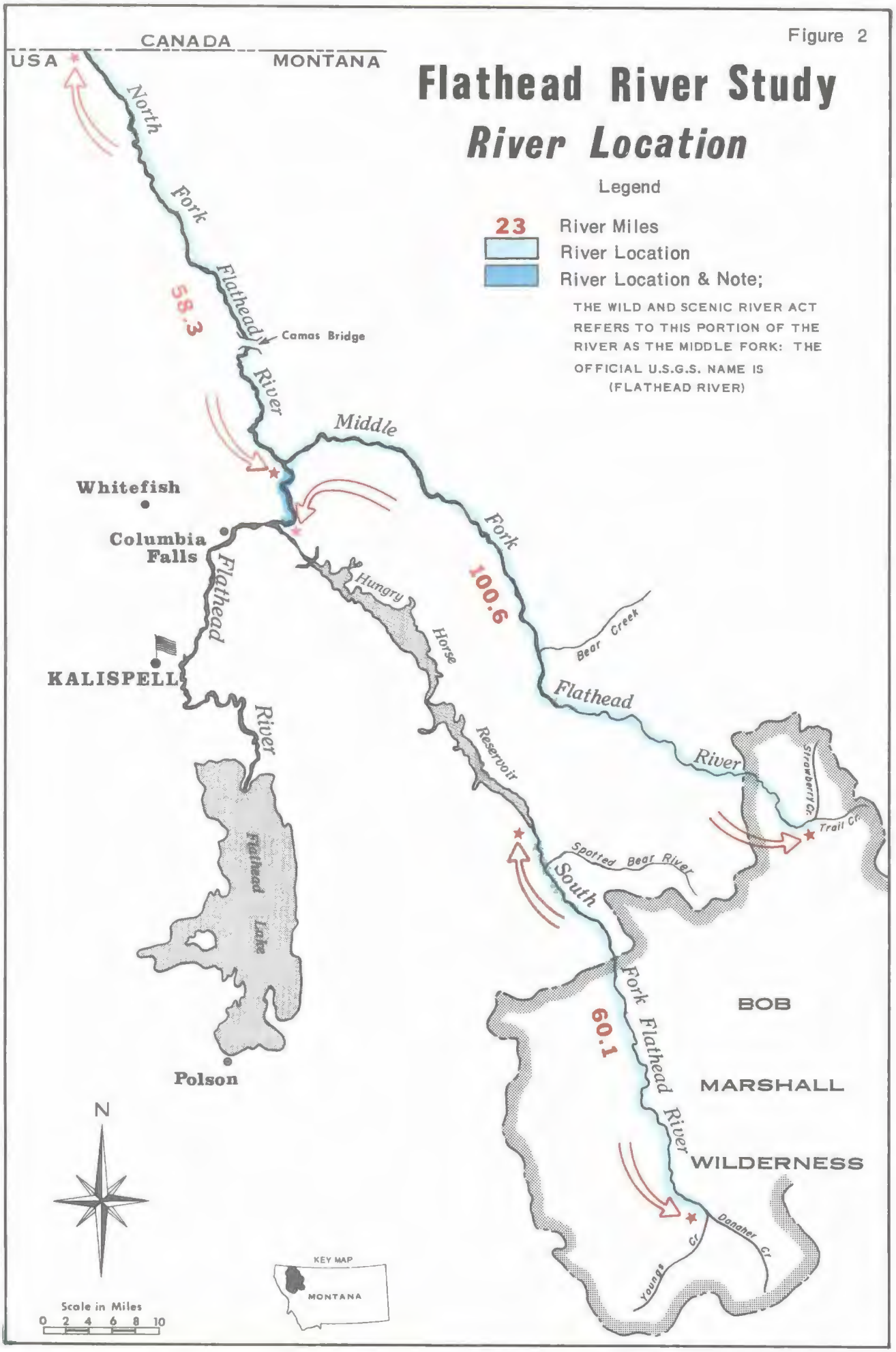
Because of the discrepancy that existed at the beginning of the study, it was found to be less confusing to use the nomenclature as defined in the Wild and Scenic Rivers Act. In the interest of clarity and continuity, this nomenclature has been carried throughout this study.

The Middle Fork is known as "Big River" by a few local old-timers, but it is not common usage.

Figure 2

Flathead River Study

River Location



Zone of Influence (See Figure 3)

The study river is in Flathead and Powell Counties of Western Montana. The portion in Powell County is within the Bob Marshall Wilderness and is entirely on National Forest land.

The regional zone of influence is the Flathead River Basin except that portion located in Canada. This area contains the private land (all located in Flathead County) that would be directly affected by inclusion of the river in the Wild and Scenic Rivers System. Decisions affecting water resource use and development are of primary concern to people in the Flathead River Basin because potential water resource developments could be located along the entire Flathead River. This area would also be most directly affected by the publicity and subsequent recreation impact brought about by national recognition of the river.

The boundaries of this drainage area closely approximate those of Flathead and Lake Counties. Therefore, population and economic data are given in reference to these counties.

In instances where the regional zone of influence is too confining to permit a realistic evaluation of a situation, outside zone influences are discussed in this report.

People and Their Way of Life

Lifestyles - The following section of material comprises the report Lifestyles of Western Montana: A Comparative Study by Dr. Lee Drummond, et al., Department of Anthropology and Institute for Social Research, University of Montana, Missoula, Montana, 1975:

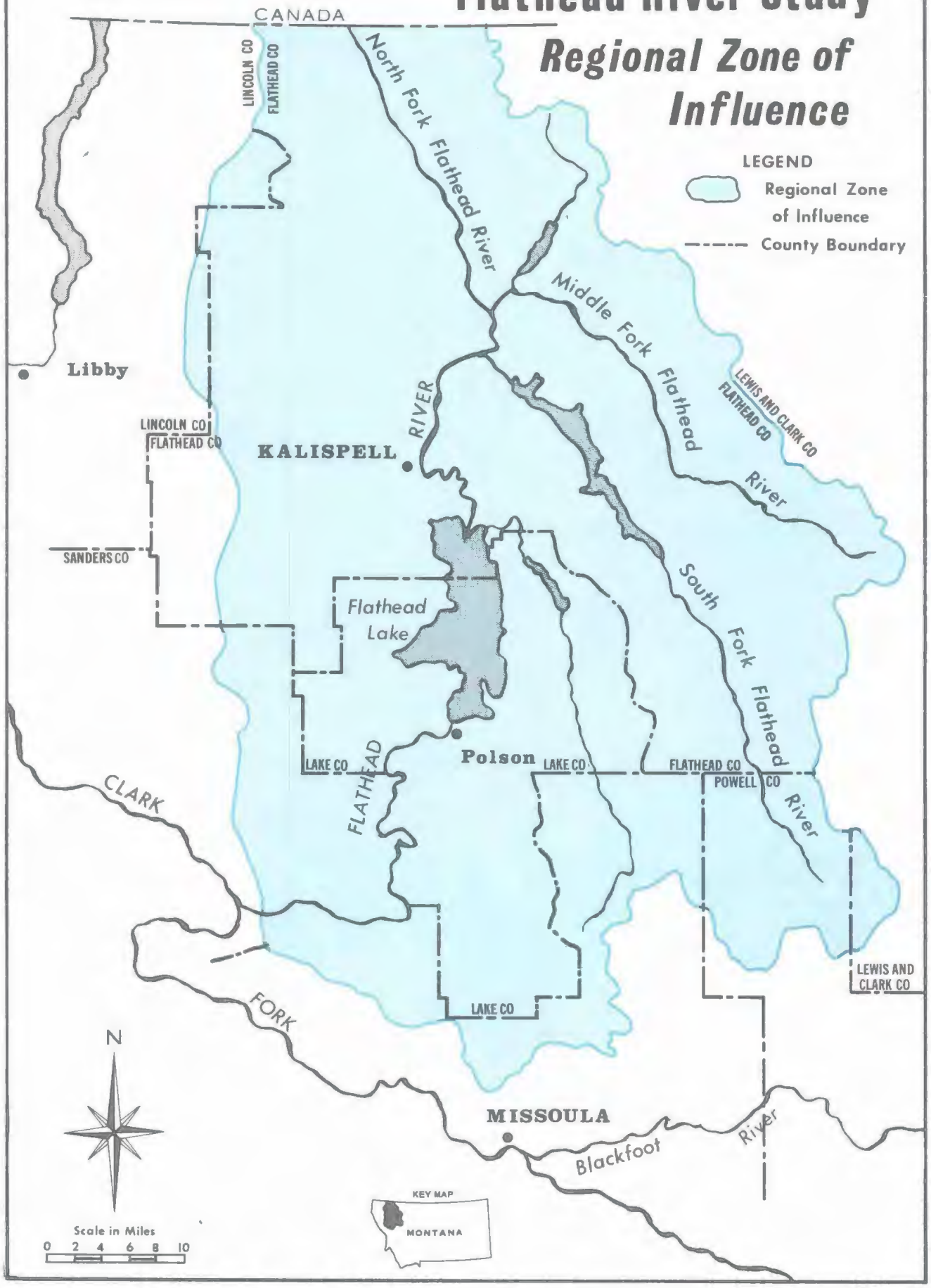
Human habitation in the Flathead National Forest is centered around the towns of Columbia Falls, Kalispell, and Whitefish, with many outlying smaller communities that are closely tied to these three commercial and occupational centers. Our study of these communities indicates that while each has its distinctive attributes, there is a high degree of interdependence among them and that the upper Flathead Valley lends itself well to consideration as one lifestyle area.

Columbia Falls advertises itself as "the industrial hub of the Flathead"; Kalispell, the largest population center and the county seat, emphasizes its commercial services and identifies strongly with the agricultural emphasis of the central valley; while Whitefish promotes its recreational resources and leisure attractions. Lifestyles of the three communities have much in common. Many residents of Kalispell and Whitefish commute daily to work in the lumber, plywood, and particle board mills or aluminum smelter in Columbia Falls, although business and government occupations support much of the Kalispell area and the railroad is considered by Whitefish residents to be the economic backbone of their community. Entertainment and leisure activities draw

Figure 3

Flathead River Study

Regional Zone of Influence



valley residents principally to Kalispell as well as to Whitefish, where much community energy is going toward the development of year-round recreational attractions for area residents and tourists. Social and voluntary organizations frequently include members from all three communities. While the majority of residents have been living in the Flathead for many years, recent industrial expansion coupled with an interest in western Montana by retirees from other states have brought steady growth to the area. We have noted concern with this trend, especially in Kalispell where "outsiders" and "newcomers" seem to be linked with concerns over subdivision and the loss of agricultural lands. In Whitefish and Columbia Falls there is less concern over these problems, although both communities are experiencing growth and keeping a cautious eye on expansion-related problems.

Residents of the Flathead feel themselves to be relatively secure economically and believe that their communities are sufficiently prosperous. There is little interest in attracting further economic development, although Columbia Falls residents would like to improve and possibly expand the industries that are there, making their community less vulnerable to regional and national economic trends. Whitefish residents would like the tax relief that a major development would bring, but are quick to caution that only "clean" industries would be considered. Kalispell residents are too concerned about the unwanted costs of development (crowding, population growth) to solicit any expansion.

While Columbia Falls and Kalispell residents see their lives and their communities as highly dependent upon the outside world and subject to the economic and political circumstances of the state and nation, Whitefish residents exhibit confidence and pride in their community's independence. They have experienced little impact from the recent recession and are confident that their recreation and railroad-centered economy is stable. Whitefish merchants are renovating the business district to keep local trade from going to Kalispell. Community interest in service organizations and social affairs is also high in Whitefish.

Residents of the Flathead Valley lifestyle area seem to be very interested in environment and land use-related problems. Much year-round interest is focused on tourism and the scenic attractions that bring more than a million visitors through the area each year. Area-wide concern over recent proposals to mine coal in the Flathead drainage in Canada demonstrates an increasing tendency to weigh developments against environmental and resource impacts. In Columbia Falls, concern over pollution and resource management is stimulated by both the desire to maintain the tourist economy and the desire to ensure long-range stability for the industrial firms that support the town. In Whitefish, residents are more concerned with preserving the recreational and aesthetic surroundings which they believe to be the main reasons for living in their community. In our study, residents of the Flathead Valley demonstrated high concern for recreational activities and also high valuational interest in the beauty and

appreciation of the natural environment. For Columbia Falls, especially, and for Kalispell, this indicates an ongoing struggle with the contradiction between the desire for amenities in nature and having the basis of the community rest on the exploitation and utilization of nearby resources. For Whitefish, where industrial activity is less important, the contradiction is not so evident.

Several significant trends emerge from this sketch of lifestyles in the Flathead National Forest area that should be important considerations for governmental planners. Future land management and resource allocation decisions will be of high interest to residents, particularly to residents of Columbia Falls. Alterations in the allowable timber cut will directly affect lifestyles there since lumber operations are crucial to community well-being and there is, at present, nothing in the way of alternative occupations. A reduction in the timber harvest will also have significant but less consequential impact upon Kalispell, due in part to its reliance upon business with Columbia Falls residents. Whitefish would be affected, but to a lesser degree due to minor employment in woods-products jobs. However, if valley residents have less money for recreational activity this will adversely affect the Whitefish economy.

At the same time, the strong indications of environmental concern suggest that any increase in resource exploitation will not be enthusiastically received. The emphasis upon the environment as an attraction for tourism and as an aesthetic benefit for residents suggests that strong opposition may occur to timber harvest or land alteration in areas visible from roads or townsites and that active reforestation programs will have strong local support. Striking a compromise between these interests presents a delicate problem for land use planners.

Indications are that resource utilization to meet existing needs (lumber, hydropower) will be supported but that new resource development would not be welcome. Ongoing controversy with mineral-related pollution could become more volatile if, for example, mining activities or oil leasing became realities in this area. Whitefish residents could be expected to oppose any major innovations that did not conform to or promote the image of a recreational center. The population growth that any significant development in the valley would bring to Kalispell would be likely to provoke negative response. In the lifestyles of Flathead residents, acquaintance with and awareness of social change is high and responses to it are increasingly conservative. Residents are accustomed to new issues and can be expected to actively participate in making decisions that in their view will alter their habitat or ways of life.

Population Trends (5) - The population of the regional zone of influence (Flathead River Basin) increased 16.7 percent from 1960 to 1970. This compares to 2.9 percent for the State of Montana and 13.3 percent for the United States. The growth trend for 1910 to 1970 shows a faster rate in the Flathead River Basin when compared with the State of Montana and the United States. In spite of this faster growth rate the 1970 census population of 53,800 indicates only 8.1 people per square mile in the regional zone of influence.

Kalispell is the largest town with a population of 10,526 (1970 census). The remaining urban population of 11,100 is in towns with populations less than 3,500 people.

During the 1960 to 1970 period the urban population has shown an increase of 22.0 percent, compared to 13.0 percent for rural population. Agriculture will continue to be important in the area's economy; a low trend of population increase is expected to continue.

Populations of the Regional Zone of Influence
(Flathead River Basin)
(1,000's)

1910	1920	1930	1940	1950	1960	1970
18.8	21.7	28.8	37.8	45.3	46.1	53.8

Population within Flathead County was 39,640 people (1970 census) with 42 percent urban and 58 percent rural. An increase of 4,440 is anticipated by 1975 and an additional 5,000 between 1975 and 1980.

A population increase of 10,000+ persons per decade is predicted for the period 1980 to 2000. However, this will depend on the trend of people moving away from metropolitan areas to urban areas. At present this immigration of people is greater than the number of available jobs. Beyond the year 2000 it is predicted that the population growth will level off to an increase of 5,000+ persons per decade (24).

Economy (1) (2) (3) (4) - Eighty-five percent of the land in the Flathead River Basin is forested. With the exception of minor acreages of land in urban development, all of the remainder is agricultural land.

Public lands comprise 65 percent of the total land area. The bulk of this is National Forest land; however, there is substantial land within Glacier National Park, the National Bison Range, State Forests, and Indian Tribal lands administered by the Bureau of Indian Affairs.

The economy of the Flathead River Basin is based largely on utilization of its natural resources. The principal industries are agriculture, forest products, and tourism.

Agriculture in the Flathead Valley is centered on beef production. There are some feedlots, but over 90 percent of the beef producers are operating a cow and calf unit and marketing the calves in the fall. Nearly all of the needed hay and grass are produced by the operators. Forage production is expected to continue to increase in importance while the trend in wheat production will continue to decline. As livestock production and feeding increase, the acres devoted to these uses will increase. The trend of irrigating land will also continue upward.

The 21 major forest product industries are important to the area's economy, providing approximately 1,800 jobs in logging and milling. Raw forest materials are utilized in production of lumber, plywood, posts, studs, poles, ties, and woodchips. Conversion of sawtimber to lumber is the principal industry; secondary manufacture is limited; there is little local finished wood product fabrication. Christmas tree production is a significant activity on both wildlands and former agricultural lands.

Tourism is increasing within the area. Recreation opportunities are possible at attractions such as Glacier National Park, Flathead Lake, Swan Lake, Bob Marshall and Mission Mountains Wildernesses, Jewel Basin Hiking Area, Hungry Horse Reservoir, National Bison Range, and the general naturalness of the country.

Growth in tourism has encouraged development of recreation facilities by private enterprise and has also resulted in greatly expanded subdivision activity for vacation and/or retirement residences. The attractiveness of the area has resulted in speculative land prices which do not represent the agricultural or woodland productivity of the land.

In the past recreation use was confined to the summer season, but increases in winter recreation through skiing and snowmobiling have extended the recreational use to an all-season industry. Recreation tourism is growing, but results in less economic activity than either agriculture or forest product industries.

Other industrial or manufacturing activity is relatively minor except for the Anaconda Aluminum Reduction Plant at Columbia Falls which employs about 800 workers.

Employment - Employment opportunities have increased at a dramatic rate in recent years due to several large construction and manufacturing projects. However, the labor force has increased at a faster rate than job openings have become available from new businesses. The Kalispell district, which includes Flathead, Lake, and Lincoln Counties, has one of the higher rates of unemployment in Montana. According to the Montana Employment Service, the average annual unemployment rate for the period 1970-1974 was 6.2 percent for the State, while the Kalispell district was 9.8 percent for the same period.

Impact of Wild and Scenic Rivers on People - Most use occurs along the study river during the summer months. Peak landowner use occurs at the same time since many are summer homeowners. Including the river in the Wild and Scenic Rivers System would probably attract more people to the Flathead River. This increased recreation use will inevitably diminish the relative solitude which landowners and local users enjoy, particularly in the more accessible areas of the North Fork and lower Middle Fork. However, with or without Wild and Scenic Rivers status, it appears recreation use will increase.

The effect of Wild and Scenic Rivers on the economy is discussed under "ANALYSIS OF ALTERNATIVES" in this report.

Access

Highway access is excellent. U.S. Highways Nos. 2 and 93 provide links to Interstate 90 at Missoula and Interstate 15 at Great Falls. Amtrak railroad provides east-west service with local stops at Whitefish and West Glacier. Bus transportation is available by Intermountain Transportation Company; Great Falls Coach Lines Company; Glacier Park, Inc.; and Central Canadian Greyhound Lines. Hughes AirWest provides daily jet flights between Glacier Park International Airport and Great Falls, Montana, and Spokane, Washington. Glacier View Skyways has instituted once-a-day service between Spokane and Kalispell.

Air travel is likely to expand. Glacier Park International Airport has a 7,000-foot paved runway, handling jet aircraft in the Boeing 707 class. Glacier International Airport has been designated a U.S. Port of Entry. Although no commercial airlines presently serve Canada from the airport, several charter jets and smaller aircraft check in regularly at Glacier International.

Depending on the success of Amtrak, the pattern of rail travel could change radically.

The National Park Service has acquired 892 acres outside Glacier National Park near East Glacier for the purpose of developing an airport. This facility, if constructed, would involve the participation of the Federal Aviation Administration and the State of Montana. It is contemplated that this facility, to be operated by the State of Montana, would serve private aircraft and feeder airlines bringing visitors to the Park (23).

Water Development Projects (See Figure 4)

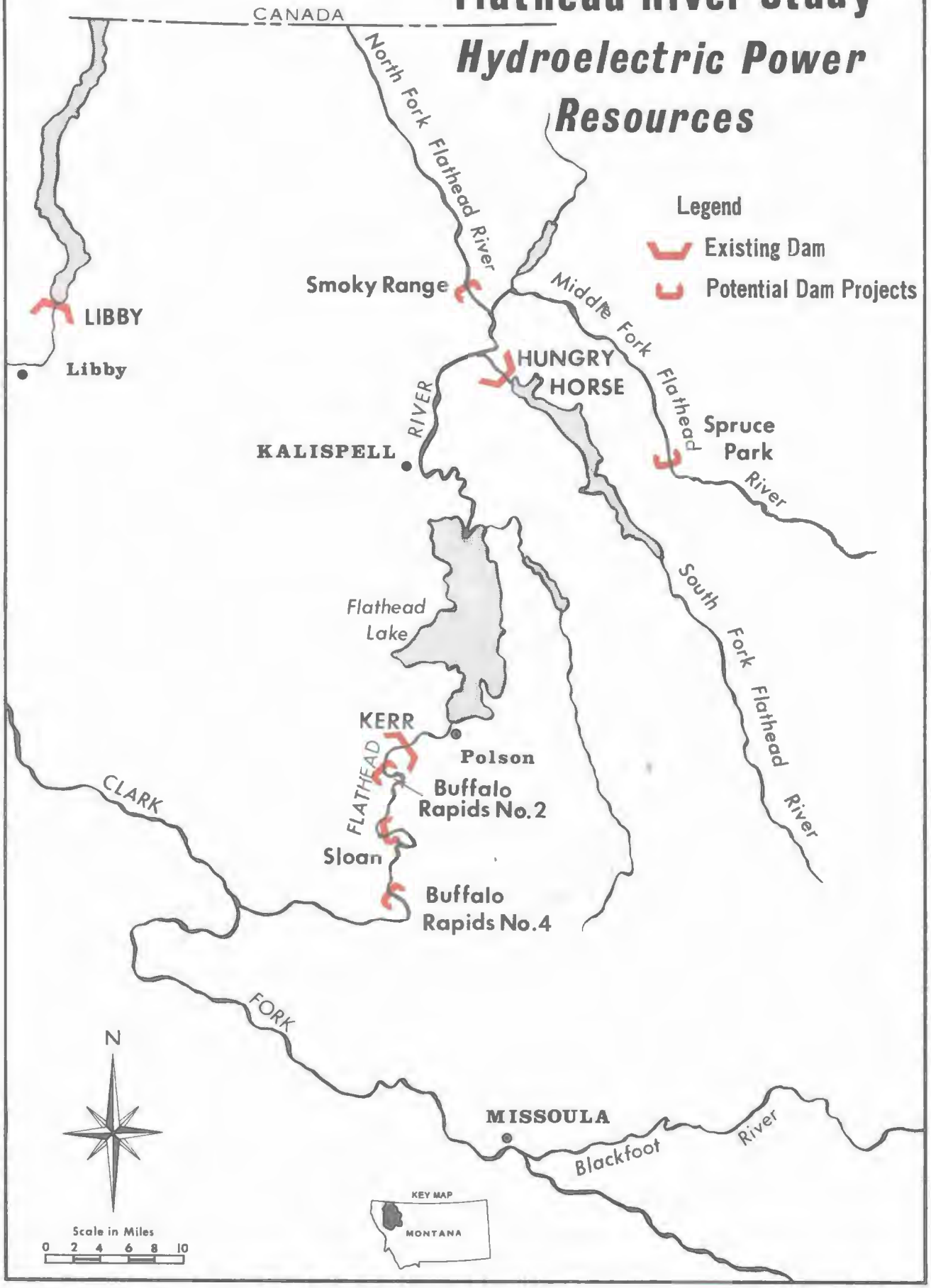
Existing

The two major hydroelectric plants in the Flathead River Basin are Hungry Horse Dam on the South Fork (285 megawatts, installed capacity) and Kerr Dam at the outlet of Flathead Lake (168 megawatts, installed capacity) (6). There is a small plant on the Swan River (Bigfork Dam) which has an installed capacity of 4.15 megawatts (34).

Figure 4

Flathead River Study

Hydroelectric Power Resources



An anticipated need for increased water yield for the Hungry Horse Project resulted in a pilot cloud-seeding project on the South Fork. The Bonneville Power Administration requested the project which was administered by the Bureau of Reclamation. Cloud-seeding generators were located in the Swan Range (west of the South Fork drainage) in an attempt to increase snowpack within the South Fork. The permit for continuation of the weather modification project was denied by the Montana State Water Resources Board in 1971, following a public hearing (7). Due to low precipitation in the summer and fall of 1973 it appeared that there might not be sufficient moisture to fill Hungry Horse Reservoir in the spring of 1974. Bonneville Power Administration made application to cloud seed and filed an environmental statement. The Department of the Interior and the State of Montana approved the permit application (for 1 year). However, higher than normal precipitation during the winter negated the need for supplemental moisture and the project was not implemented.

Potential

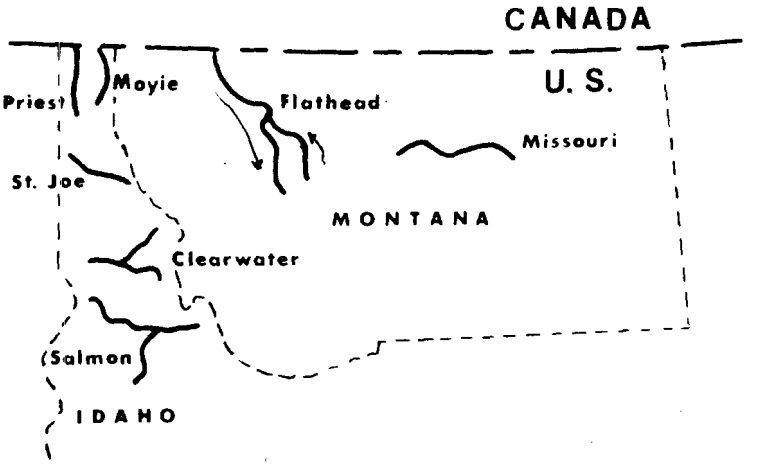
The Federal Power Commission (FPC) has investigated the potential of power developments on the reaches of the Flathead River that have been designated for study under the Wild and Scenic Rivers Act. The FPC has stated that the only two potential developments along the study river worthy of investigation are the Smoky Range project on the North Fork and the Spruce Park project on the Middle Fork. These projects are discussed further in this report under the section entitled "Need for Hydropower" and in Appendix 2.

The Army Corps of Engineers is concerned about the potential of Smoky Range and Spruce Park. The Corps feels that the sites should remain open for consideration in the light of needs and values 20 or 30 years in the future. The Federal Power Commission concurs that at least the river reach required of the Smoky Range project, which shows the best feasibility, should remain open (34).

Other damsites were once considered. The most significant were the Glacier View project, upstream from the site of Smoky Range on the North Fork, and the Coram project, near the town of Hungry Horse on the Middle Fork of the Flathead River (now officially named the Flathead River). Glacier View was considered as an alternative to Smoky Range in a report from the Corps of Engineers to the Federal Power Commission in 1967. The Coram project was also considered by the Corps of Engineers. It was discussed in the Review Report of Columbia River and Tributaries, October 1, 1948, for a run-of-river development, dependent on water storage at Smoky Range or Glacier View. Both projects were dropped in favor of more feasible alternatives.

Other Free-Flowing Rivers

The map below shows the rivers in Montana and northern Idaho which have been designated for inclusion or study under the Wild and Scenic Rivers Act. Only the Flathead is contained in the regional zone of influence of this report.



Section 5(d) of the Act states: "The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic, and recreational river areas within the United States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of the water and related land resources involved." There are no "5(d)" rivers in the regional zone of influence; however, a segment of the Blackfoot River from Landers Fork to Milltown (east of Missoula, Montana) has been so designated.

In the past several years bills have been introduced in the Montana State Legislative Assembly for a proposed State Wild and Scenic Rivers Act. None passed; however, there is considerable local interest in adding a portion of the Swan River in some category of Wild and Scenic Rivers classification.

Climate

Weather moves into the Flathead Valley mainly from the west, producing a milder climate than is characteristic of the region east of the Continental Divide.

Temperature extremes are tempered by the local influence of Flathead Lake, the numerous other bodies of water in the valley, and the high mountains which form an effective barrier to the severe winter cold waves that are often present east of the Rocky Mountains (11).

Weather differences are considerable within the valley. At Kalispell the temperature extremes, snowfall, and wind velocity are less than at the Glacier International Airport Weather Station 8 miles north of Kalispell. This is due, primarily, to the moderating effect of Flathead Lake and to the airport being closer to the mountains and in the path of air movements from the east (11).

Climatic conditions and variations are discussed in greater detail in this report under the section entitled "Hydrology and Climatic Factors."

River Basins Studies and Project Reports (6)

The Columbia-North Pacific Region has been the subject of many water resource development investigations at the Federal, State, and local level.

There have been four Federal principal water resource reports covering the Columbia River Basin which formed a framework for many subsequent studies and investigations. These are:

"Columbia River & Minor Tributaries," July 1931, Corps of Engineers, H. D. 103, 73rd Congress, 1st Session, March 1932.

"The Columbia River," February 1947, Bureau of Reclamation, H. D. 473, 81st Congress, 2nd Session, February 1950.

"Columbia River and Tributaries," October 1948, Corps of Engineers, H. D. 531, 81st Congress, 2nd Session, March 20, 1950.

"Water Resource Development of the Columbia River Basin," June 1958, Corps of Engineers, H. D. 403, 87th Congress, 2nd Session, 1962.

Detailed studies which are pertinent to the Flathead River Basin are listed below:

Corps of Engineers

1. In 1933 the "303" report of the Corps of Engineers on the Columbia River Basin was published in H. D. 103, 73rd Congress, 1st Session. It concluded that development of hydroelectric power, flood control, and irrigation were economically justified (12).

2. "Review Report on the Columbia River and Tributaries" (H. D. 531, 81st Congress, 2nd Session, 1948) contains an appendix on the Clark Fork-Pend Oreille Basin. This review proposed an integrated system of 12 projects for flood control and/or for hydropower and cited 19 other potential projects worthy of future study (12). Four of the proposed projects--Albeni Falls, Cabinet Gorge, Noxon Rapids, and Boundary--have since been built.

3. The Corps prepared a report entitled "Columbia River and Tributaries," published as H. D. 403, 87th Congress, 2nd Session, 1962. It updated H. D. 531 (81st Congress) and presented the Army's latest concept of regional development of the Columbia River Basin, characterized as the "Major Water Plan." Two projects in the Clark Fork-Pend Oreille Basin were selected for inclusion in this plan--Flathead Lake Outlet Improvement and Knowles--and were recommended by the Corps for construction. Twelve other projects in the basin, including eight run-of-river plants, were listed for possible future development (12). The Secretary of the Army recommended deferment of the Flathead Lake Outlet Improvement in his comments on the Chief of Engineers' report of review of "Columbia River and Tributaries."

4. "Report on Flood of June 1964, Upper Flathead River Basin, Upper Clark Fork Basin," December 1964, Corps of Engineers, includes a resume of the flood-fighting operation together with a summary of flood damages. The meteorologic conditions responsible for the flood and hydrologic characteristics of runoff are also presented. Investigations were made during and after the flood relative to emergency flood-fighting action, effectiveness of existing levee protection, and amount and nature of damage.

5. "Report on Flood Control Benefits, Spruce Park and Smoky Range Projects," February 1966, Corps of Engineers, was prepared for the Bureau of Reclamation. This report delineates flood control and related enhancement benefits which would result from development of proposed storage capacity at the Spruce Park site on the Middle Fork and either Smoky Range or Glacier View sites on the North Fork. This report includes benefits from reduction of flood damages along the lower Columbia River.

6. "Memorandum Report on Clark Fork Basin for the Federal Power Commission," September 1967, Corps of Engineers, is a study based on an updating of system power and flood control studies and project costs made in 1958 and presented in H. D. 403, 87th Congress (1962). This report includes considerations of Smoky Range, Glacier View, and Spruce Park damsites (as well as others downstream) and presents the results of overall studies made to determine which system of projects would permit the best water resource development in the basin.

7. "Flood Plain Information, Flathead, Stillwater and Whitefish Rivers," September 1969, Corps of Engineers, was prepared for the Montana State Water Resources Board. This report relates to the flood situation near the cities of Kalispell and Columbia Falls, Montana. The report was requested to aid in

the solution of local flood problems and in the best utilization of land subject to overflow. The report does not include plans for the solution of flood problems.

8. "Appendix A, Clark Fork-Flathead River Basin, Checkpoint 1 Review" is not a published document. It is an update of Item "6" above to reflect November 1969 costs for Smoky Range, Ninemile Prairie, High Buffalo Rapids No. 4, Knowles, Quartz Creek, and McNamara projects. In addition preliminary data on two alternative projects at the Smoky Range site and two sites in the Bitterroot Basin, Sula and Lower Conner, are presented.

Bureau of Reclamation (12)

1. A report entitled "The Columbia River," 1947 (H. D. 473, 81st Congress, 2nd Session), suggested a plan for use as a general guide for further investigation and development of the water resources of the Columbia River Basin. The Bureau listed 11 projects in the Clark Fork-Pend Oreille Basin with a potential hydroelectric capacity of 1 million kilowatts.

2. "Clark Fork Basinwide Investigation, Montana-Idaho," March 1948, is a short report citing the need for a comprehensive plan for the basin listing types of investigations that had been performed and citing investigations for which there was need.

3. "A Special Report of Multipurpose Storage Possibilities - Clark Fork Basin," February 1953, is a summary of analyses of storage possibilities in the Clark Fork Basin drawn largely from previous investigations but supplemented by some additional reconnaissance studies. This report cited 17 sites for storage with multiple purpose use, mostly flood control and power, and recommended that the Paradise and Glacier View sites be reconsidered.

4. "Clark Fork River Basin Special Report - Water Resources Development," May 1956, inventoried known possibilities for comprehensive water resources development but did not propose a scheme for development.

5. "Clark Fork Basin, Montana," June 1959, is a reconnaissance report primarily oriented to irrigation and water development sites. The report did not attempt to develop a new comprehensive plan for the area. In connection with this report, the National Park Service prepared a reconnaissance report on the recreational aspects of the Clark Fork Basin.

6. "Pend Oreille River Basin, Idaho-Washington," January 1964, is a reconnaissance report. Among its conclusions were that irrigation development at that time lacked economic justification and that hydroelectric power potential in the basin was almost fully developed.

7. The Bureau has also written several reports on specific projects, all in the State of Montana. These are the Bitterroot Valley project, Kalispell project, Blackfoot River project (Ninemile Prairie and McNamara projects), and the Flathead River project (Spruce Park project).

U.S. Geological Survey (12)

1. "Geology of Dam Sites on the Upper Tributaries of the Columbia River, Part 3," 1947, gives information on miscellaneous damsites on the Flathead River upstream from Columbia Falls, Montana.

2. "Selected Power Sites Between Mile 36 and 72, Flathead River Below Flathead Lake," dated April 1956, and "Knowles and Perma Dam Sites," dated January 1960, are open-file reports.

Federal Power Commission

1. Formal comments of the Commission on the Bureau's and the Army's 1947 and 1948 comprehensive plans for the Columbia River Basin and on the Army's 1962 updated report are contained in letters from the Chairman published with respective reports. In general, the Commission approved the plans presented as a valuable guide to an orderly development of the water resources of the Columbia River Basin (12).

2. "Clark Fork-Pend Oreille River Basin" is a Planning Status Report prepared in 1965. The report shows data on existing water resource developments and known potentials, summarizes the license status of non-Federal hydroelectric development, reviews planning studies, and identifies the needs for additional planning. The report points to the specific need to study the Flathead River downstream from Flathead Lake to determine the course of action on the license application for the Buffalo Rapids projects.

Bureau of Outdoor Recreation

"North, Middle, and South Forks of the Flathead River, State of Montana," Northwest Regional Task Group, July 1964, is a preliminary study made of wild rivers.

U.S. Department of Agriculture, Forest Service

1. "Impact Survey Report of the Smoky Range Dam," February 1971, is an analysis of the interrelationship of the Smoky Range Dam and reservoir on the resources and management of the Flathead National Forest. It is an update of the July 1966 survey.

2. "Impact Survey Report of the Spruce Park Dam," September 1966, is an analysis of the interrelationship of the Spruce Park dam and reservoir on the resources and management of the Flathead National Forest.

Both of the above reports point to resources which would be affected by a dam and list costs of minimizing resource losses.

Pacific Northwest River Basins Commission

The "Columbia-North Pacific Region Comprehensive Framework Study of Water and Related Lands" is a comprehensive study and plan completed in 1971. It encompasses the entire Columbia River Basin in a series of 16 appendices which report on the potential of the basin's water and related lands, its problems and needs, and a probable course of action to satisfy long-range needs. The study report recognizes the need for free-flowing rivers to complement the recreation opportunities furnished by lakes and impoundments.

The Pacific Northwest River Basins Commission has developed an inventory of water and related land studies for the Pacific Northwest. Some 1,500 individual studies, many of which concern the Flathead River Basin, have been cataloged.

Current and Scheduled Studies

1. The "Western U.S. Water Plan" by the U.S. Bureau of Reclamation, together with other Federal agencies and States, will provide background information for future water needs of the 11 Western States. This plan, which will include identification of major problems of river basins and recommendations for needed studies, will be completed and submitted to the Office of Management and Budget in the near future.

2. "Clark Fork of Columbia Type IV River Basin Study" was started July 1, 1971, and is scheduled to be completed in fiscal year 1976. This study is conducted by the U.S. Department of Agriculture cooperating with the State of Montana (type IV studies are made at the request of the State). The purpose of this survey is to outline a coordinated and orderly program for the conservation, development, utilization, and management of the water and related land resources of the Clark Fork of the Columbia River Basin (includes Flathead Basin). The purpose of the USDA's participation in this survey is to gather information which will provide a basis for effective coordination of USDA programs (for watershed protection, agricultural water management, other water management, recreation, and fish and wildlife development) with the related activities of local, State and other Federal agencies.

3. The Flathead Basin level B study has been initiated by the Pacific Northwest River Basins Commission. This is one of a series of reconnaissance level studies which will become the comprehensive coordinated joint plan of the River Basins Commission in response to the Water Resources Planning Act (Title II of Public Law 89-80). As explained in Section 4 (a) of the Wild and Scenic Rivers Act (P.L. 90-542), every Wild and Scenic Rivers Study "...shall be coordinated with any water resources planning involving the same river which is being conducted pursuant to the Water Resources Planning Act...."

   Active coordination is being maintained between these two study efforts on the Flathead River Basin. This is a State and multi-agency planning effort that will result in a plan of action for meeting the needs of people and recommendations for implementing that plan. Specific plan elements which should be implemented by the year 2000 will be identified and analyzed. Only a general framework evaluation will be prepared beyond the year 2000. A draft report for public review was issued in July of 1975.

4. The Flathead drainage has been selected and funded, through Section 208 of the Federal Water Pollution Control Act amendments of 1972 (P.L. 92-500), for an Areawide Waste Treatment Management Plan. The study leading to this plan is scheduled for completion in 1977. The plan will identify and set forth policy to control point and nonpoint sources of pollution in the Flathead drainage.

State Programs

Legislation to establish a State system of Wild and Scenic Rivers failed to pass in recent Montana State Legislatures.

The Montana Fish and Game Commission recognized that certain outstanding rivers and streams warranted special protection. The three forks of the Flathead River, along with two other rivers in the State, were included in a "State Recreational Waterway System". A brochure entitled Montana Recreational Waterways (27) states:

> "The Montana Fish and Game Commission, which has been designated as the official State recreational agency by the Montana legislature, has adopted a basic plan for the perpetuation and orderly development of Montana's remaining outstanding rivers and streams. The system has been designated as the 'State Recreational Waterway System.'"

The goals of the system are:

> "...to maintain our better streams as free flowing productive waters, and to improve their quality and recreational potential whenever possible."

> "...eventual improvement of somewhat less than prime streams...."

> "...to develop the recreational waterways in a manner that will encourage and obtain optimum recreational use by Montanans and their guests."

Other streams can be added to the system if the public shows interest and makes requests.

The program points to the need to face certain questions such as:

1. desirability or necessity of legislation to insure perpetuation of recreational waterways for future generations.

2. legal recognition for recreational use of water.

3. the need to know more about the sources and effects of pollution.

4. sources and effects of habitat changes.

5. land uses and their effect on the prime recreational waters.

6. the economic impact of outdoor recreation on the economy of Montana.

The system has been incorporated in the Statewide Recreation Plan with major emphasis on access areas and development of facilities adjacent to streams in the system.

> "Incorporation in the Statewide Recreation Plan will afford utilization of Land and Water Conservation Act funds for acquisition and development, and will be a good boost in perpetuation of outstanding recreational areas."

It appears that while the Recreational Waterways System gives recognition to outstanding streams in Montana, it lacks the legislative authority and financial support needed to reach the established goals of the Waterways System.

Polebridge on the North Fork

IV DESCRIPTION

The River (28)

The Flathead River system is divided into three main forks: the North, Middle, and South.

Two major geologic events shaped the three main forks of the Flathead River system. First there were periods of folding and faulting that brought about the existence of mountains and valleys, thus determining major drainage patterns. Second was the glaciation during the Pleistocene which brought about refinements in the drainage pattern. There are still some remnant glaciers in the upper portion of all three forks.

The North Fork meanders southeast out of Canada through a broad glaciated valley until it reaches the Apgar Range near Big Creek. From Big Creek to the confluence with the Middle Fork (15 miles) the channel is relatively straight and is shaped in a deeply incised "V".

The stream width varies from 100 feet at the Canadian border to 300 feet at its confluence with the Middle Fork (a distance of 58 miles). The river is seldom less than 2 feet deep and is suitable for small boats during years of normal flow.

The east side of the valley rises on a moderate gradient for about 10 miles to the 4,000- to 6,000-foot elevation range. About a dozen fjord-like lakes, up to 7 miles long, lie on this portion of the east side. Precipitation of up to 120 inches a year produces a heavy runoff.

Above the 4,000- to 6,000-foot elevation range the slope is much less uniform and rapidly breaks into the precipitous peaks of the 10,000-foot Livingston Range of the Continental Divide.

The slope gradient rising out of the valley on the west side is steeper than the east; however, it terminates with little of the precipitous character and height of the mountains on the east side. There are few peaks above timberline on the west side of the river and there is less precipitation (mean annual volume up to 80 inches).

The Middle Fork is 100 miles long and has the steepest gradient of the three forks (see Appendix 5, page 3). It originates on the west side of the Rocky Mountain Front Range and flows northwest between the Rockies and the Flathead Range.

Downstream the river course swings to the west and then to the south before its confluence with the South Fork.

Much of the river above the town of Essex flows through steep-walled valleys. Below Essex the river is characterized by broad valley, glaciated river bottoms. The river bottom and many of the side

drainages exhibit heavy and extreme scouring from the 1964 flood. Over-steepened slopes along the river and its tributaries provide sources of sediment during high runoff periods. Natural geologic erosion is high but is accelerated during severe floods.

Most tributaries of the Middle Fork originate in subalpine basins or alpine cirques and fall rapidly to the main drainage. In the extreme headwaters much of the country is above timberline.

Like the North Fork, the Middle Fork is dominated by the Continental Divide on its east side, although in the Middle Fork drainage the elevation of the Divide is lower. This side of the drainage contains many small lakes and the slope is deeply dissected by complex small drainage systems.

The Flathead Range on the west side of the valley is timbered almost to its 8,000-foot crest and contains few lakes. The slope is fairly unbroken with a normal drainage pattern.

Many of the sources in the headwaters are marshes and springs which reflect the artesian nature of the sedimentary bedrock.

The South Fork Flathead River valley is about 100 miles long. It is bounded by the Swan Range on the west, the Flathead Range on the east, and the Rockies to the south. About 50 miles of the valley is broad and glaciated.

The South Fork begins in the Danaher Meadows--an open forest-type meadow within the Bob Marshall Wilderness. From Danaher Meadows the river meanders in a northwesterly direction, gradually gaining additional flow from springs and tributary streams. With additional streamflow a more definite riverbank is formed, forest cover becomes more pronounced, and the meandering becomes less pronounced. The river has long, straight stretches with numerous short riffles and pools which provide ideal fish habitat. The average depth of the stream is 1-1/2 feet and is favorable for floating during summer months. The stream width averages about 50 feet in the upper area, narrows through the Meadow Creek Gorge (less than 10 feet in places), then quickly widens to 150 feet before entering Hungry Horse Reservoir. From the Gorge to Hungry Horse Reservoir the stream is favorable for fish production, angling, and boating.

The length of the South Fork from the headwaters to Hungry Horse Reservoir is about 60 miles.

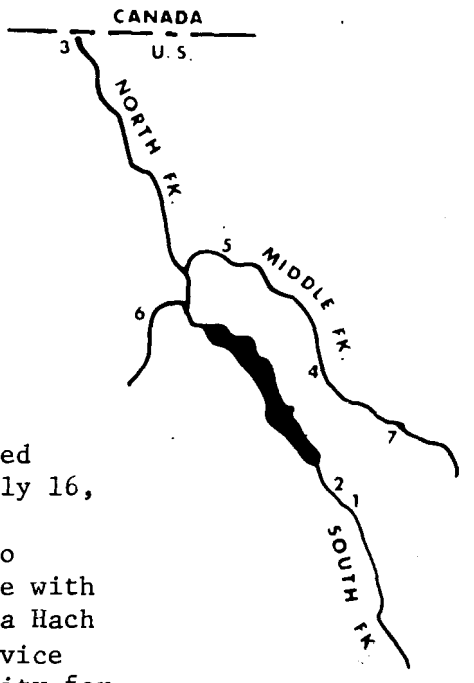
Appendix 5, page 4, presents channel cross-sections at selected points along the three forks of the Flathead River.

Water Quality (28)

Since little water quality data had been collected in the past, seven sampling points were established with the objective of isolating any problem areas. These sampling points were located at:

1. Harrison Creek
2. Twin Creek
3. United States-Canadian border
4. Bear Creek
5. West Glacier
6. Columbia Falls
7. Schafer

NOTE: The numbers correspond to the numbers on the map showing the location of the sampling points.



U.S. Geological Survey personnel conducted sampling and analyses from July 13 to July 16, 1970. Parameters sampled are listed in Appendix 5, page 5. Analyses revealed no significant problem or reason to continue with detailed sampling. Field sampling with a Hach portable lab was continued by Forest Service personnel to detect trends in water quality for the following parameters:

temperature	dissolved oxygen	esthetic appearance
Ph	turbidity	odor
specific conductance	total alkalinity	deleterious substances
total coliform	total hardness	

Sample sites at Harrison Creek, Bear Creek, and Schafer essentially reflect "natural" conditions since there is little man-caused activity above these sites. The sites at West Glacier and Twin Creek are affected by road construction and logging. The site at the United States-Canadian border monitors water quality as it enters the United States. This is important because of potential development in Canada which could affect water quality (principally coal extraction). The North Fork is the only fork which does not originate on the Flathead National Forest. A total integration of all three forks is measured at the Columbia Falls site.

Water quality was generally good. Turbidity fluctuated with volume of flow; temperatures and dissolved oxygen with time of year. Samples were taken during peak flows, base flows, late fall/early winter, and late winter/early spring. The sampling system established for the Wild and Scenic Rivers Study will be continued by the Flathead National Forest as a watershed management project. This will provide continuing refinement of data as well as monitoring the river system.

It is not likely that any river-oriented recreation activities would be precluded because of water quality problems on the three forks. Increased turbidity during peak flows could curtail some activities. However, river use is low because weather is usually unfavorable for outdoor recreation during this period. Most recreation activities are limited by climate and season, not water quality.

The possibility of bacterial infection due to use of untreated water is remote. In a study on the North Fork, Sonstelli (1971) reports that the major tributaries are low in total coliform count. The study revealed some possible problem areas that should be investigated.

The capacity of the river to purify itself is excellent. Normal biochemical oxygen demand is very low as evidenced by oxygen levels at or near saturation throughout the year. All three forks have good pool-riffle ratios, rough bottoms, and relatively rapid velocities providing ample recreation opportunity. If there is no increase in organic load into the river, water quality will remain excellent.

The principal species of fish, westslope cutthroat trout, Dolly Varden, grayling, and mountain whitefish, are all limited to waters with high levels of dissolved oxygen and temperatures below 20° C. None of the four species tolerate pollution.

The principal aquatic insects are mayflies, stoneflies, and caddisflies. All are indicators of high quality water. Few indicators of organic enrichment, such as algae, are present. The organisms present indicate a relatively unpolluted, primitive aquatic biota which makes the Flathead River unique among rivers its size. Many of the major streams in the country are suffering from too much organic enrichment and the adverse effects of thermal pollution. The waters of the Flathead are so pure and cool that conditions are below the optimum level for maximum fish production.

State of Montana Water Quality Standards

The State of Montana has established water quality criteria, water use classifications, and policy statements for the surface waters in the State with the intent of maintaining the best water possible in Montana. The water use description for the three forks of the Flathead reads:

> "The quality is to be maintained suitable for drinking, culinary and food processing purposes after adequate treatment equal to coagulation, sedimentation, filtration, disinfection and any additional treatment necessary to remove

naturally present impurities; bathing, swimming, and recreation; growth and propagation of salmonid fishes and associated aquatic life, waterfowl and furbearers; agricultural and industrial water supply."

This classification provides a legal basis for limited protection of the water quality regardless of the eventual outcome of the Wild and Scenic Rivers Study.

Sources of Sediment and Other Pollution (28)

All three forks carry a relatively heavy sediment load during high flows as compared to low flows. Sediment sources are primarily glacial materials through which each fork passes. The waters undercut steep-walled banks until large portions of vegetation, rocks, and soil are deposited in the channel. This naturally occurring process would be difficult to stop.

Additional sedimentation is contributed from road surfaces and ditch runoff and timber harvesting practices. Some of these sources could be eliminated with rehabilitation projects. Future contributions can be avoided with properly planned road locations and silvicultural methods used in timber harvest.

Surface erosion is minor within the study area.

The potential sediment yield per square mile from forest land is estimated to be low; however, the total volume possible is significant. Consequently erosion control measures on all areas of timber-harvest activity are important in maintaining high quality water.

Some coliform count has been measured in the study area near campgrounds, administrative sites, and areas where big game animals concentrate. Water quality analysis for the entire study area, however, indicates that all three forks of the Flathead River meet State of Montana water quality standards. It is important that management and use of the river be directed toward maintaining this condition.

Rates of Flow (28)

Opportunities for altering flows for recreational purposes are limited. The objective would be to dampen the peak flow in May and June and increase August and September flows. Theoretically these changes in flow might be accomplished by judicious manipulation of the vegetation, but in practice it does not appear feasible.

A large portion (approximately 60 percent) of the South Fork watershed is in Wilderness classification and not subject to vegetation management. Bunker Creek and Spotted Bear River would be the two watersheds most likely to be managed for flow improvement. Managing

for flow improvement in many cases is a single-use function and may not lend itself to multiple-use plans for Bunker Creek and Spotted Bear River.

Approximately 30 percent of the North Fork watershed is under Forest Service management. The remainder is in Glacier National Park, British Columbia, and private ownership. This limits flow improvement possibilities on the North Fork. Extensive logging on National Forest land in the North Fork watershed has reduced the possibilities of vegetation manipulation for increasing the water yield.

The land area in the Middle Fork watershed is about half National Forest and half Glacier National Park (other ownership is minor compared to the total drainage area). About 20 percent of the drainage in National Forest is within the Bob Marshall Wilderness. Total land in Wilderness and National Park is about 60 percent. Intensive water management would have to be undertaken on the remaining 40 percent to appreciably affect river flows.

There are no existing structures that affect flow on any of the river reaches under study. The proposed Smoky Range Dam would remove 46 miles of the North Fork from consideration as a Wild and Scenic River. The reservoir at full pool would inundate 26 miles of the fork. The fork would also be altered for approximately 20 miles downstream.

The proposed Spruce Park project, located 5.5 miles up the Middle Fork from Bear Creek, would inundate 12.5 miles of river. This would preclude that section of the Middle Fork from inclusion in the Wild and Scenic Rivers System.

Watercraft Opportunities

Air boats have been seen on the South Fork as far up as Meadow Creek Gorge; however, large crafts are seldom used on the river system. Jet boats are not used due to broad, flat, multiple stream channels. Outboard motoring is limited due to the effects of shallow water, channel splits, and debris. However, the three forks of the Flathead River offer a wide variety of river floating opportunities. Public interest and floating opportunity indicate that private and commercial floating will increase--mainly with the use of small inflatables, kayaks, and canoes.

It is difficult to correlate flow rates with optimum river recreation opportunities. An evaluation of climatic data from three stations suggests optimum river use is from May through September (Spotted Bear on the South Fork, West Glacier on the Middle Fork, and the Canadian border on the North Fork). Discussions with river recreationists support this conclusion.

Middle Fork - The most popular float on the Middle Fork is the 28 miles between Schafer airstrip and Bear Creek. The 4 miles of river below Spruce Park is the most challenging for whitewater enthusiasts. This section can be floated for only a short period during late spring and early summer flows. It is a narrow channel, studded with boulders, and averages a drop of 41 feet per mile, compared to an average of 24 feet per mile for the entire Middle Fork. Floating is limited to small inflatables and kayaks.

Access to the Middle Fork above Bear Creek is limited to trails along the river or aircraft to Schafer Meadows. There are few floating opportunities above Schafer.

Below the confluence of Bear Creek with the Middle Fork, the river parallels Highway No. 2, offering more accessibility and increased latitude in types of watercraft. The Middle Fork is floated frequently by day users from Bear Creek for 54 miles to its confluence with the South Fork. Opportunities exist for rapid running, fishing, and sightseeing, although vistas are compromised by manmade developments and are confined by the narrowness of the canyon in most places.

North Fork - Most boating on the North Fork occurs during the summer season in small inflatable rafts. The popularity of summer floating is due to the combination of easy access; warm, stable weather; low water levels; and slow currents which require less floating expertise than is required for spring or early summer floating.

Most whitewater running is confined to late spring flows in canoes, kayaks, and inflatables.

The access provided by the North Fork road encourages day and weekend floating. Users seek a wide range of recreational experiences including fishing, rapid running, sightseeing, and escape from summer heat. Exceptional scenery within Glacier National Park can be seen from the river, particularly between the Canadian border and Big Creek.

Boating opportunities decrease in late summer largely due to reduced flows and shallows.

There are two well-known hazardous areas on the river. One consists of two log jams about a mile below Polebridge; the other is an area restricted by bluffs and strewn with boulders about 9 miles below Big Creek. In this area the river drops on the average of 18 feet per mile as compared with an overall drop of 15 feet per mile. Depending on rates of flow and the expertise of the boater, negotiating these areas can range from easy to difficult.

South Fork - Primitive access to the South Fork restricts boating opportunities. The upper 41 miles of the South Fork is mostly within the Bob Marshall Wilderness and the river is accessible only by trail. Consequently, most floating is confined to small inflatables that can be carried to the river on packstock.

The restricted channel through the Meadow Creek Gorge makes it hazardous. In this area the river drops 42 feet per mile compared to the river length average of 19 feet per mile. At two locations the river is only 4 feet wide during summer flows. Steep bedrock walls pose several difficult portages.

The Gorge presents a hazard to floaters between Meadow Creek Bridge and Harrison Creek. Road and air access to Meadow Creek give greater floating opportunities on the lower portions of the South Fork.

Motorboats are prohibited on the portion of river which flows through the Bob Marshall Wilderness. This portion offers the unusual experience of a wilderness float. Floaters are either self-sufficient or are supported by packstock. River travel offers many more vistas than do the trails since trails are located in dense stands of timber.

Multiple channeling of the South Fork between White River and Salmon Forks limits watercraft to small, lightly-loaded inflatables and kayaks. Late summer flows make this section impractical to float.

With the exception of the Meadow Creek Gorge, river floating on the South Fork requires little expertise during summer flows. Portage around the Gorge is about 5 miles by trail.

Ownership of Streambed (10)

Ownership of the streambed on most of the river system is dependent on whether the river is determined navigable or non-navigable. Navigability is a judicial question and no decisions have been made for the three forks of the Flathead River.

The west half of the North Fork is the only stretch of river where a determination of navigability would not affect ownership of the riverbed. Since Glacier National Park boundary extends to the middle of the North Fork, the east half of the bed is under Federal ownership regardless of future determination of navigability.

If the remaining portions of the three forks were determined to be navigable by the courts, the State of Montana would own the riverbed. If determined non-navigable, the riparian owners would own the bed.

Other Considerations

Three acts recently passed by the Legislature of the State of Montana provide protection for the streambed and adjacent land. These acts are the Open Cut Mining Act of 1973, the Floodway Management Act of 1971 (amended 1973), and the Construction and Hydraulic Projects Act of 1971.

The policing action for boating has been defined and is controlled by the State of Montana as stated in Sections 69-3501 through -3518 of the Revised Codes of Montana, 1947, except that the policing action for boating and other activities on the east half of the North Fork adjacent to Glacier National Park is the responsibility of the National Park Service.

Problems related to flooding within the study area are limited primarily to accelerated scouring of riverbeds. Downstream effects of flooding are generally lessened by Hungry Horse Reservoir and Flathead Lake.

Within and adjacent to the study river little development occurred on the flood plains. Flood damage would generally be confined to agricultural land and residential areas below the study area. The Corps of Engineers is currently reviewing a proposal to mitigate damages in these areas.

Water Rights

Water rights within the State of Montana are established through the procedure known as appropriation through use. The only known water rights are the minimum flows of the river requested by the State Fish and Game Commission needed for preservation of fish populations and maintenance of wildlife habitat (Section 89-801, Revised Codes of Montana, 1947).

There have been some additional appropriations made in the drainages of the study area, but these are confined to specific tributaries and do not significantly affect the main river.

Any domestic water supplies for development of the recreational or administrative need of the rivers would also be from tributary streams and would not affect the flows of the main river.

Domestic and Industrial Use of Water (6)

Municipal water facilities serve 59 percent of the population in the regional zone of influence. Municipalities have an average annual water need of 7.1 mgd (million gallons per day). The largest water user is the City of Kalispell, with a need of 2.8 mgd. Whitefish and Polson use 1.3 and 1.0 mgd, respectively.

Most municipalities utilize water from wells and tributaries of the Flathead River. The only community obtaining water from Flathead Lake is Somers. The City of Kalispell relies upon groundwater sources and Columbia Falls obtains water from Cedar Creek. Other major towns (Polson, Whitefish, St. Ignatius, and Ronan) take surface water from tributaries of the Flathead River.

At the present time industrial use of water is relatively small. About 6 mgd are used, primarily at sawmill and plywood mills at Kalispell, Polson, Whitefish, and other small towns.

The rural-domestic water requirement amounts to approximately 4.2 mgd. About 2.6 mgd are used for domestic purposes and 1.6 mgd for livestock watering.

Approximately 41 percent of the population in the regional zone of influence is served by individual water systems. Most water is obtained from wells and tributaries of the Flathead River. Neither quantity nor quality limit water use for rural-domestic purposes.

Generally surface and groundwaters of the regional zone of influence available for municipal and industrial purposes are of excellent quality. Exceptions are caused by local bacterial contamination below municipalities and turbidity and suspended sediment problems during the period of high runoff.

Waste collection and treatment facilities serve 41 percent of the population. In general, municipalities provide an adequate level of waste treatment. Industrial waste problems are very limited.

Fisheries

The Flathead River system is characterized by self-sustaining populations of native fishes. The dominant strain of trout is the Montana westslope cutthroat.

Both migratory and nonmigratory (resident) populations of cutthroat trout exist in the study area. The resident populations of the North and Middle Forks occur mostly in the upper reaches of the drainage, while the cutthroat trout in the lower river are most apt to utilize Flathead Lake.

The South Fork appears to have a migratory cutthroat population below the Meadow Creek Gorge. The Montana Fish and Game Department suspects that cutthroat trout migrate from the upper reaches of the South Fork through Meadow Creek Gorge to Hungry Horse Reservoir, but this has not been confirmed.

Little, if any, cutthroat trout spawning occurs in the main river. Spawning occurs between late April and early July when the river is close to peak flow and spawning is very difficult to observe. The work of Johnson (1961) shows the small tributaries are utilized extensively. The peak of spawning is in mid-June in the tributary streams.

Dolly Varden, the largest fish in the river system, spawn in tributaries to all three forks of the Flathead River during September and October. They spend the first 3 years of life in the streams or rivers, then migrate into Flathead Lake or Hungry Horse Reservoir. A minimum size limit of 18 inches is required on Dolly Varden to prevent the harvest of the immature fish.

Whitefish are found throughout the river system; however, they have not been studied in detail. They congregate in large schools in deep holes prior to spawning in late October through December. Their numbers have increased in the South Fork since the construction of Hungry Horse Dam. Although aquatic insects are their principal food, they have been observed to feed on fish eggs and terrestrial insects as well. Most are in the 9- to 11-inch size.

Kokanee salmon are abundant in the river only when they migrate from Flathead Lake into the North and Middle Forks to spawn. The Middle Fork near the mouth of McDonald Creek has the largest concentration of kokanee. A few may stray upstream as far as Schafer Meadows on the Middle Fork. Even though the North Fork is not used by kokanee for spawning, the species is found in Kintla and Bowman Lakes in Glacier National Park, both of which feed tributary streams to the river.

Spawning occurs in October and the newly hatched fry do not leave the hatching area until late March and April. Kokanee are not found in the South Fork above Hungry Horse Dam.

Nongame fish species include northern squawfish, peamouth, redsided schiner, longnose, and largescale suckers, and at least two species of sculpins.

Arctic grayling inhabit the Flathead River system but are seldom taken by fishermen. The grayling resulted from stocking of lakes on tributary streams. The North Fork benefits from their drift downstream from Canada (13).

Rainbow and eastern brook trout, both introduced species, are present in minor numbers. Rainbow are present in several lakes on tributaries of the South Fork but do not appear in the river.

Hybrids between rainbow and cutthroat trout appear in the drainage wherever rainbow trout have been introduced.

Eastern brook trout are found mainly in the Middle Fork.

The requirement for fish life varies with the season of the year. The greatest volume of water is required for fish propagation during the April to September period. From October through March the cold water temperature and inactivity of the fish require less water to maintain the fishery.

A flow greater than the average minimum is required for adequate spawning and rearing area during the summer. The aquatic insects which are the principal food for the salmonids in the Flathead River are reduced to less than normal levels by long periods of low flow. Ideal conditions for fish production would require greater minimum flows than occur naturally. Fish population can withstand short periods of low water every 3 or 4 years. A constant lower flow will produce a small aquatic biota and a smaller fish population. See Appendix 6 for a summary of the physical features that affect fish habitat.

Fish Habitat Improvement - The limiting factors in fish habitat are available feed and low water temperature. It is not desirable to attempt to alter these conditions since any gain would be at the expense of the downstream fishery (e.g., an increase in nutrients for feed in the river would also add nutrients to Flathead Lake, which is already showing adverse effects from organic enrichment). Consequently, no habitat improvement projects are now contemplated for the main river.

The tributary streams (outside the proposed River Management Zone) contain the greatest opportunity for habitat improvement. This involves removing obstructions to fish passage such as log jams and improperly placed culverts.

Fishermen Use - The fishermen use is summarized in the following table from estimates made by the Montana Fish and Game Department's postal card survey of anglers.

A summary of fishermen use estimates on Flathead Lake and River above the Lake for 1965 and 1968 follows: (This data is the most recent available.)

LOCATION	NUMBER OF FISHERMEN 1965	1968
Flathead River (between mouth of South Fork and Flathead Lake)	---	34,703
North Fork Flathead River	5,013	10,081
Middle Fork Flathead River	1,993	7,051
South Fork Flathead River	2,756	5,263
Flathead Lake	---	64,996

Flathead Lake and the lower river are dependent upon the North and Middle Forks as spawning and nursery areas for fish. In order to protect the spawning fish and allow for adequate recruitment to the lake, four tributaries to the North Fork and four tributaries to the Middle Fork are closed to all fishing.

The Montana Fish and Game Department estimates 55 percent of the recruitment for Flathead Lake fisheries comes from the North Fork drainage and 45 percent comes from the Middle Fork. Hungry Horse Dam blocks all fish passage on the South Fork.

Wildlife

The variety of wildlife present in the drainage is seldom found elsewhere within the Continental United States. Observations of unusual animals include fisher, otter, mountain lion, lynx, wolverine, and wolves, including the Northern Rocky Mountain Wolf, an "endangered" species (see page 43 for definition).

Eight species of big game are found along the river--elk, moose, mule deer, white-tailed deer, mountain goats, mountain sheep, black bear, and grizzly bear. Woodland caribou occasionally wander into the North Fork drainage from Canada.

Most of the lands within the study area are utilized by big game animals. River bottoms and adjacent hillsides (as shown on figure 5) are important winter range for large numbers of elk, deer, and moose. The range for each species overlaps with range for other species; dominance is related to the number of animals in the area. Although deer utilize portions of the elk winter range, they cannot compete with the larger animals for food. Consequently, elk are dominant on most of the areas.

While the big game winter range within the proposed River Management Zone is important, it is also apparent that the range is small in relation to that which is adjoining. Since habitat improvement projects usually involve large areas, habitat improvement within the proposed River Management Zone should be considered with plans for adjacent lands.

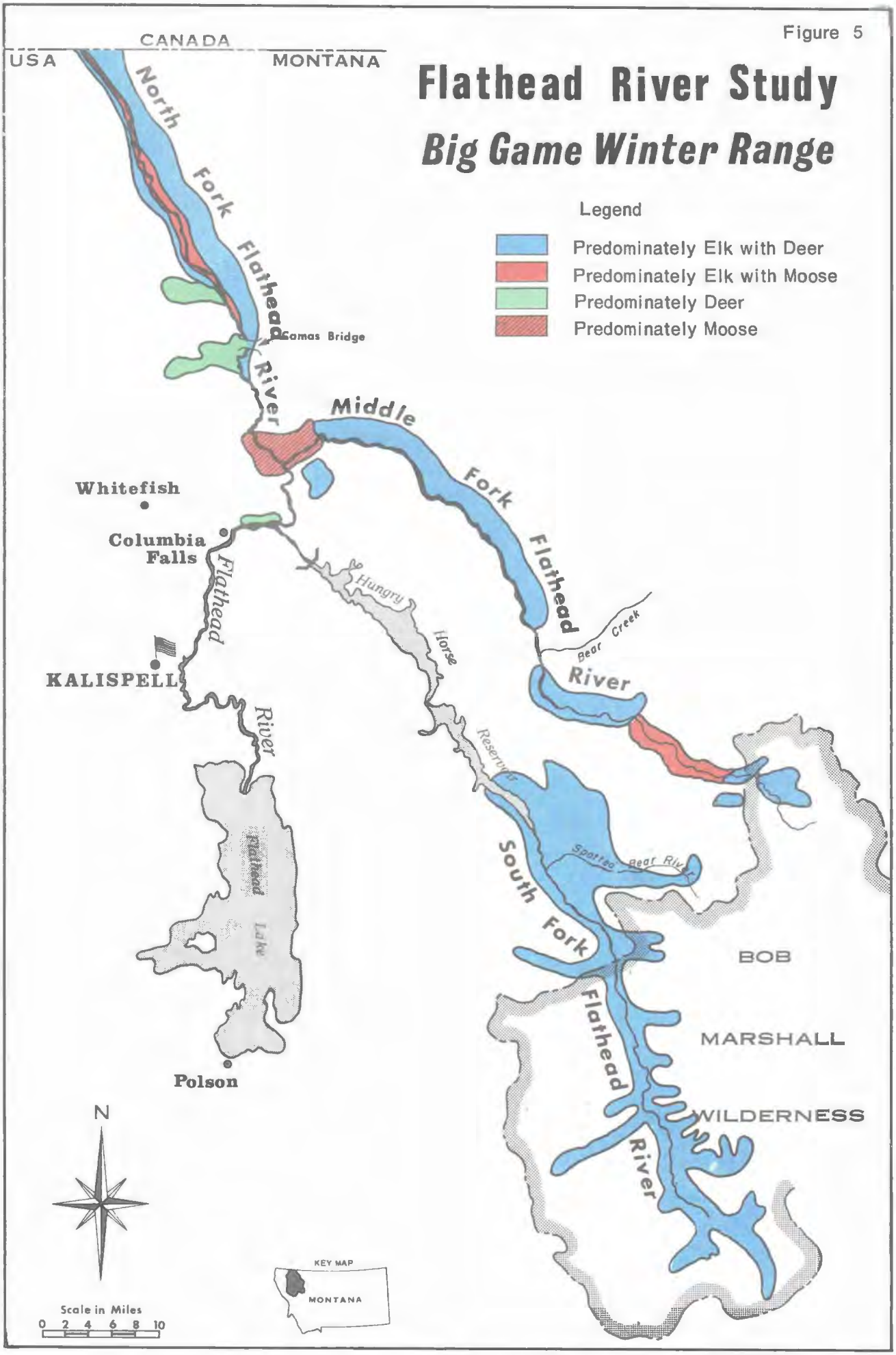
Large fires in the early 1900's resulted in conditions which produced browse for big game feed. In order to improve or maintain this feed, fire is necessary but the opportunity is limited. Much of the winter range is within Glacier National Park and the Bob Marshall Wilderness (see figure 5) where management direction precludes fire induced by man.

Outside of the Park and Wilderness opportunities for burning are also limited, mainly by steep terrain, erosive soil situation, and poor burning conditions. Other techniques for habitat improvement are limited due to lack of funds.

Figure 5

Flathead River Study

Big Game Winter Range



The number of animals wintering in the drainage is unknown; however, the Montana Fish and Game Department makes counts from aircraft to determine population ratios. The table below shows the elk herd composition in the Middle and South Forks.

Elk age composition trends, South and Middle Forks (Weckwerth and Cross, 1971):

Year	Branch Antlered Bulls (BAB)	Spikes	Cows	Calves	Total	Calves per 100 Cows	Bulls per 100 Cows	Spikes per 100 BAB
1967	84	51	521	162	833	31	26	61
1968	82	50	489	125	746	26	27	61
1969	91	34	543	169	837	31	23	37
1971	75	49	507	120	751	24	15	65

It is estimated that 300 to 500 elk winter in Glacier National Park along the North Fork (personal conversation in January of 1972 with Clifford Martinka, Research Biologist, Glacier National Park). About 1,100 elk winter along the Middle Fork within the Park. This area is critical for elk survival during periods of deep snow cover.

The combined area of the Flathead National Forest and Glacier National Park provides habitat which supports one of the largest populations of grizzly bear within the Continental United States. The grizzly bear is officially listed as a "threatened" species under the Endangered Species Act of 1973. The Northern Rocky Mountain Wolf, which also inhabits the area, is listed as an "endangered" species under the Act.

As defined in the Endangered Species Act, an "endangered" species is a species which is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Mountain goats are commonly seen on the Middle Fork between Walton and Bear Creek where a natural mineral lick attracts them. Big horn sheep are found near Bear Creek on the Middle Fork. Moose winter along the three forks of the river but are widely scattered.

Hunting is an important form of recreation. The area is well known for its elk, bear, and deer hunting opportunities.

About 200 species of birds can be found in the river study area. The more common species include: upland birds--the Franklin, blue, and ruffed grouse; waterfowl--mergansers and golden eye; and water ouzels and kingfisher.

Less common species of birds found in the area are osprey, golden eagle, bald eagle, peregrine falcon, and ptarmigan. The peregrine falcon is recognized under the Endangered Species Act as an "endangered" species.

The river environment contains a variety of insects common to the northern Rocky Mountain region. The most common pests are mosquitoes, no-see-ems, horse flies, and, during hot dry summers, yellow jackets. Although these and other insects are often considered annoying, no attempt is made to control them. Common garter and water snakes are found in the area; there are no poisonous snakes.

Geology and Soils

Bedrock (31) - Bedrock geology consists primarily of Precambrian-age (more than 600 million years old) metamorphosed, sedimentary rocks commonly referred to as the Belt Series. This group contains argillites (metamorphosed shales), quartzites (metamorphosed sandstones), and limestones. The Belt Series is intruded by igneous rocks also of Precambrian age. These intrusions are irregularly scattered and found along the upper reaches of the South and Middle Forks.

Paleozoic rocks (600 million to 230 million years old) are exposed in the areas surrounding the South and Middle Forks. These rock units consist primarily of sandstone, shale, and limestone; the sandstone and limestone rock units form many prominent cliffs and ridges.

A limited exposure of Mesozoic rocks (230 million to 65 million years old) occurs near the head of the Middle Fork. This unit consists primarily of sandstone and shale and is quite erosive.

Pre-glacial alluvial deposits consisting of sandstone, siltstone, conglomerate, and some shale and lignite crop out in all three river valley bottoms. These are probably an old flood-plain deposit that was being formed nearly 40 million years ago.

In varying degrees the previously mentioned rock units are mantled by glacial deposits and recent alluvium.

Glaciation began nearly 13 million years ago (some small alpine glaciers still exist) and substantially affected the present topography and drainage patterns within the river study area.

Structure (31) - The study area lies within the northern Rocky Mountain physiographic province. Major fault and fold trends are between north and N 35° W. Both normal and reverse faults occur but most are not exposed.

The Lewis Overthrust occurs along the upper reaches of the Middle Fork and can be traced for more than 300 miles through the region. In places it has a displacement of nearly 20 miles.

Landforms - In a report entitled "Flathead River Study, Landforms and Soil Interpretations" (26), USDA, Forest Service, landforms are divided in three main categories: (1) Bottom Lands, (2) Glaciated Valleys and Uplands, and (3) Mountainous Lands. A map of these landforms is shown in Appendix 7, page 3. It is estimated that the drainage area contains the following percentage of each landform:

	Bottom Lands	Glaciated Valleys and Uplands	Mountainous Lands
North Fork	25 percent	30 percent	45 percent
Middle Fork	10 percent	30 percent	60 percent
South Fork*	15 percent	30 percent	55 percent

*Information on the South Fork reflects a consideration of the area from Hungry Horse Reservoir to the Bob Marshall Wilderness boundary.

These three major topographic divisions are further separated into 11 distinct landforms as exhibited in Appendix 7, page 2. This appendix describes soil characteristics, climatic characteristics, erosion hazard, relative permeability, and relative productivity of the 11 landform separations.

The lands closely associated with the river are mostly bottomlands (composed of three landforms: river bottom, lacustrine bottoms, and glacial low terraces and benches). Therefore, the three landforms comprising the bottomlands are of principal concern in regard to development along the river. For this reason soil interpretive ratings for mass movement, compactibility, suitability for sanitation drainage fields, and development potential for roads, trails, and septic systems have been made on these landforms. They are shown in Appendix 7, page 1.

While the interpretations in Appendix 7, page 1, give an indication of suitability and limitation of the soil, any development should be preceded by onsite investigation to determine suitability for a given use.

Minerals (31)

In a study by the U.S. Bureau of Mines (31), the following conclusions are reached in regard to minerals resources:

The principal commodities in upper Flathead River are coal, oil, copper, gold, building stone, and sand and gravel. None of the mineral deposits are mineable under present economic conditions, but some could be if significant market changes occur in the future.

Geologic erosion near Blankenship Bridge (4 miles north of Coram)

The most abundant commodity is sand and gravel. Total potential resources of recent sediment and older alluvium along the North and Middle Forks are estimated to be in the order of a few hundred million cubic yards. The deposits are being developed in small quantities locally, but will probably not be extensively developed unless major construction projects are undertaken in the area; none are planned in the United States or Canada at this time. Future demands for sand and gravel may require limited expansion of present operations.

Coal has been produced from beds near the North Fork. Known resources total at least 10,350 tons. Additional tonnages probably occur, but surface data are insufficient to allow quantitative estimates. Total resources in the North Fork area probably are not large. Three million tons of coal are estimated at Teton Pass (headwaters of the Middle Fork), but are relatively inaccessible. Both deposits will be dependent on local consumption of large amounts of low-grade coal.

Building stone, the Siyeh Limestone, occurs in large quantities but will probably not be exploited in the near future.

Copper resources probably occur in the Java area (in the Middle Fork drainage near Bear Creek), but tonnage and grade are unknown. The location of deposits on National Park land prohibits further exploration or mining.

Gold occurs in the alluvial deposits along the three forks of the Flathead River but not in mineable quantities.

Any classification limiting access to the upper reaches of the South and Middle Forks of the Flathead River will affect the development of deposits. The sand and gravel and Teton Pass coal deposits would be directly affected. Mineral deposits some distance from the river, such as the Glacier barite property east of the South Fork, could be adversely affected.

The potential resources of some commodities may be needed in the future. Mining could conflict with classification if mine dumps, excavations, or buildings were visible from the river and would detract from scenic quality. Mining and rehabilitation in accordance with State mining regulations would minimize the effects but not eliminate them. Effluent from a mine or associated mill would be regulated by State law and would not be a problem. Removal of sand and gravel deposits could alter the river channels. Screening and washing plants and their noise, dust, and muddy water would not ordinarily be compatible with management in the Wild and Scenic Rivers System.

In 1974 the Forest Service received from the State Office of the Bureau of Land Management applications to lease oil and gas on about 236,000 acres of National Forest land in the North and South Fork drainages of the Flathead River. In a draft environmental statement filed with the Council on Environmental Quality on June 19, 1975, the Forest Service recommended that lease applications be denied on 53,323 acres, that they be granted with special stipulations on 111,954 acres, that they be granted with no surface occupancy on 53,727 acres, and that they be held in suspense on 16,996 acres. No lease applications in the North Fork drainage are within the proposed Wild and Scenic River area recommended. Approximately 1,592 acres of land along the South Fork within the proposed Wild and Scenic River area have been recommended for granting of oil and gas leases with the stipulation that there be no surface occupancy.

Hydrology and Climatic Factors

The Flathead River system is primarily affected by maritime weather characteristics which are sometimes modified by continental air masses. Weather varies considerably by elevation and season within the study area.

Data in Delk's report (28) point out a climatic situation unique to mountainous areas and northern latitudes. Large volumes of snow accumulate in the winter through April and then rapidly melt, causing high flows in the spring. Precipitation falls every month of the year; however, much is stored and runs off in a 2- to 4-week period. This has contributed to channel stability problems and an almost annual flood hazard downstream of the study area.

Other factors considered in Delk's report were temperature, wind, solar radiation, precipitation, soil moisture, stream channel and flow characteristics, water quality, and recreation versus climate. High points of the report are discussed below. (Charts and graphs of climatic data are displayed in Appendix 5 of this report.)

Precipitation

There are great variations in precipitation due to season and elevation, although some precipitation occurs every month at all elevation zones.

Generally precipitation is greatest in the higher elevations of the North Fork drainage. Parts of the east side of this drainage receive 120 inches of precipitation annually, while the river bottom is in the 25-inch category. Precipitation ranges from 25 inches to 100 inches in both the South and Middle Fork drainages. Columbia Falls, which is about 5 miles below the study area, receives 15 to 20 inches annually.

Precipitation is high in December and January and comes mostly in the form of snow, which is stored until spring runoff. June precipitation, which is also high, occurs during a period of increased solar radiation and is primarily rain. Daily minimum temperatures are above freezing; this condition adds considerably to the downstream flood hazard.

Natural erosion in the study area is generally restricted to channel areas where erosive material is greatly affected by high peak flows. The 1964 flood significantly altered all three rivers and erosion of these areas is still occurring.

High intensity storms occur in June and add to the downstream spring flood hazard. The record 24-hour rainstorm at Columbia Falls is 3.77 inches on June 7, 1924.

Soil Moisture

The ground seldom freezes during the winter months due to the insulating effect of snow. This allows complete recharge of the soil mantle with water, usually by mid-winter. Additional

water from snowmelt or precipitation is forced to run off. High peak flows are a result of completely saturated soil mantles, heavy snowpack accumulation, rapid melt rates in the spring and the effects of rain on snow. There is considerable variation in the time of snowmelt and the volume of water produced on low-energy slopes (those with northerly and easterly exposures) as compared to high-energy slopes (those facing southerly and westerly). Moisture stress on high-energy slopes occurs in late June and July. On low-energy slopes moisture depletion occurs in late summer.

Stream Channel Condition

The Middle Fork was drastically altered by the 1964 flood, although all three forks of the Flathead were significantly affected. Many tributaries were also subjected to the same type of channel change. Each spring large sediment loads are produced by the scouring effect of high water. Timber harvest activities, which increase flows during the snowmelt period, would probably add to this problem and prolong the "healing" process. Water-yield management projects that increased snowmelt period flows would be at the expense of the stream channel and streambed. Increased flows would also increase sedimentation.

Streamflow Characteristics (Data in Delk's report (28) presents duration curves, recurrence intervals, minimum 7-day mean flows and maximum 3- and 7-day mean flows for selected points on the river.)

Debris accumulation is common in all three forks of the Flathead. Natural bank erosion causes trees to fall into the river by undercutting the soil support. These trees usually collect on gravel bars and at bridges, creating hazards to boaters and damage to bridge structures. Channel braiding is common in all three forks, making it difficult to determine channel capacity in many areas. Braiding usually occurs when the present channel cannot handle the load. Much of the braiding probably occurred during the 1964 flood; however, some of the new channels carry water even during the low-flow season.

There have been no studies of sedimentation rates on the Flathead system. The Pacific Northwest River Basins Commission has estimated an annual sediment yield of less than .2-acre foot for each square mile of the Flathead River area. Conditions in the drainage which contributed to sedimentation range from virgin areas with little soil disturbance to areas where intensive development has occurred with inadequate regard for its effect on sedimentation.

Climate and Recreation

Recreation activity is greatly influenced by climate. Generally July and August have more precipitation-free days than any other months. Hiking, camping, fishing, driving for pleasure, and picnicking are most popular during these periods. September and October usually have some

stormy weather followed by periods of pleasant weather. This pattern may persist into November. By the end of October hiking and camping usually are restricted to the lower elevations such as river bottoms.

River rafting and canoeing are best from mid-July to mid-August when good weather and adequate flows coincide. After mid-August flows are low and more portages are required. Floating the river during peak runoff (usually in June) should be attempted only by the expert.

The period between December and April is generally undesirable for river-related activities. Ice on the river makes floating activities unsafe and many foggy days restrict sightseeing and driving for pleasure. The remainder of the year, May through November, lends itself to various types of boating activity. However, use during this period is more closely dependent upon flow characteristics than climate.

While most recreational activities along the river take place in June through September periods, there is ample opportunity for ski touring during the winter and early spring. Snow avalanche is a hazard within the drainage, but most danger areas are located away from the river area.

Recreation

Recreation Trends and Potential

Much of the mountainous terrain of the Flathead River Basin is relatively undisturbed. Existing and potential recreation use includes swimming, boating, water skiing, hiking, camping, horseback riding, fishing, hunting, snow skiing, skating, snowmobiling, and scenery viewing. The recreation opportunities attract an increasing number of tourists each year, as well as many new residents.

During the 1971 summer season 1,290,000 people toured Glacier National Park (1). The National Bison Range had a total of 110,000 visits in 1971. Visits at Glacier National Park and the National Bison Range have increased about 15 percent per year in recent years. Recreation visits on the Flathead National Forest passed one-half million in 1971, a 30 percent increase over 1967. This trend of tourism can be expected to continue (3).

The major reasons for a high recreation potential are a desirable climate during a 4- to 6-month period, the availability of water for recreation, a good highway system, closeness of natural scenic areas, and the widespread availability of natural scenery.

Camping along the North Fork

Major Recreation Opportunities Within the Flathead River Basin

1. Glacier National Park: Over half of the million acres in Glacier National Park is located in the Flathead River Basin. Set aside in 1910, the Park is the major summer attraction.

2. Bob Marshall Wilderness: This is the second largest wilderness in the United States. Most of this 950,000-acre wilderness is within the Flathead River Basin.

3. National Bison Range: This 19,000-acre preserve is located about 40 miles north of Missoula. The area supports 500 bison and herds of elk, deer, and pronghorn antelope which can be viewed yearlong.

4. Mission Mountains Wilderness: This 73,900-acre wilderness is located in the Mission Mountains and is characterized by vertical cliffs. Knife-edged ridges, subalpine cirques, and talus slopes offer abundant opportunities for solitude and challenge.

5. Big Mountain Ski Area: Big Mountain is located east of Whitefish Lake and provides winter skiing and summer sightseeing opportunities.

6. Jewel Basin Hiking Area: The area contains 15,000 acres of high mountain country interspersed with 28 lakes. Located 17 miles east of Kalispell, the area is well known as a day-use area in a primitive setting.

7. Flathead Lake: This is the largest natural fresh-water lake within a single state in the Western United States. The lake is an outstanding fishery and is popular for water recreation such as water skiing, boating, and swimming. These features make the lake one of the principal attractions in the Flathead River Basin.

8. Other lakes: Hundreds of other lakes within the Flathead River Basin range in size from small potholes to several thousand-acre lakes. They provide abundant opportunity for water-oriented recreation.

9. Hungry Horse Reservoir: Located on the South Fork of the Flathead River, this is the largest reservoir in the Flathead River Basin. It is popular for fishing but not for other types of water recreation due to the coolness of the water, lack of facilities, and the fact there are many other lakes in the area more attractive for water recreation.

Recreation Use and Activity Along the Study River

Since the amount and kind of recreation varies on each fork of the river, each is discussed separately below:

1. North Fork

   The combination of road access to the river and a large volume of water makes the North Fork the best suited of the three forks to accommodate river floating. As popularity increases, additional access areas for boat launching will be needed.

   Pleasure driving is the largest single recreation activity adjacent to the North Fork. Scenic views of Glacier National Park are outstanding. Fishing, berry picking, camping, and picnicking are also common activities. Limited tourist facilities are located near the river at Polebridge. Private land on the west side of the river could conceivably be developed to provide additional facilities.

   The greatest economic impacts from recreationists on the North Fork are realized along U.S. Highway No. 2 from West Glacier to Hungry Horse where motels, stores, restaurants, campgrounds, and other needed facilities are located.

2. Middle Fork

   The lower portion of the Middle Fork is similar to the North Fork since both are paralleled by roads and are adjacent to Glacier National Park. The character of the rivers is different, however. The North Fork is within a broad valley

bottom, while the Middle Fork is confined to a narrow canyon. Recreation use along this lower stretch is primarily scenic driving and picnicking. Other forms of day use such as fishing and river floating are pursued to a lesser degree.

Like the North Fork the economic impact from recreation use is principally in the West Glacier-Hungry Horse area, although there are limited facilities upstream from West Glacier. An opportunity exists for development on private land to provide additional tourist facilities.

The Middle Fork above Bear Creek is undeveloped National Forest land and wilderness. Recreation use outside the Bob Marshall Wilderness is trail- and river-oriented. Hikers, motorbike riders, and horseback riders all utilize the river trail primarily to fish and hunt. Wilderness use is confined to hikers and horseback riders.

The airstrip at Schafer provides fly-in access to the heart of the back country. A significant amount of recreation use on the Middle Fork originates here and the only developed campgrounds are located at the airstrip. Recreation associated with the use of Schafer airstrip varies. Some people fly in to fish a small stretch of river; some make arrangements with a commercial outfitter for 10-day trail rides or to hunt and fish; others float the river.

The Middle Fork is the most challenging of the three forks to float. Its popularity is growing and is expected to continue. Although commercial outfitting for river floating has been recently initiated, it is doubtful that this activity will lead to significant economic impacts due to the short float season.

The economic impact of recreation visitors to commercial outfitters is significant. Ten outfitters are presently in operation in this area. Use is heaviest during the fall hunting season, although summer trail rides are increasing in popularity. Continuation of this activity is dependent on the drainage remaining in a near-natural state.

3. South Fork

Much of the South Fork lies in a broad, gentle valley similar to the North Fork. It has long been a popular recreation river since the valley bottom provides access to more remote portions of the Bob Marshall Wilderness.

Past recreation use has been heaviest during the fall hunting season.

Backpacking has recently grown in popularity and in 1970 summer hikers for the first time outnumbered horseback riders. This change in travel has resulted in increased sales of backpacking equipment.

Roads up the South Fork terminate at Meadow Creek, a mile from the wilderness boundary. From this point downstream to slackwater of Hungry Horse Reservoir recreation use is primarily hiker and horseback oriented.

Since the South Fork is completely within National Forest, there are no commercial facilities except those provided by commercial outfitters. Nearest facilities to the road end, such as motels, restaurants, and stores, are located approximately 65 miles to the north along U.S. Highway No. 2. Consequently, about half of the visitors utilize the services of commercial outfitters. Summer trail rides, fishing, and fall hunting account for the majority of this use.

Recreation Developments - There are seven camping and picnicking areas provided by the Forest Service or Park Service near the river with a combined capacity of 410 persons. Their locations are shown in Appendix 8, as well as campgrounds farther from the river. During summer weekends these facilities are often filled to capacity. Private camping facilities, mostly along Highway No. 2 between West Glacier and Hungry Horse, help to meet public camping needs.

Visual Resource - The visual resource is all that portion of the landscape which can be seen by an observer from the river. It includes natural scenic features as well as manmade intrusions. Information was recorded to meet the following objectives:

a. to provide a record of the visual resource.

b. to recognize areas where the quality of the visual resource may have an important influence in recreation use and travel.

c. to provide information which could be used to preserve or enhance the visual resource within the river environment.

This inventory was an important factor in determining the location of a boundary for the proposed River Management Zone.

Wilderness (See figure 5(A))

The natural character of much of the Flathead River drainage is largely due to the fact that the headwaters of two of its three forks are within a wilderness. Twenty-five percent of the study river is within the 950,000-acre Bob Marshall Wilderness (portions of the Middle and South Forks). An additional 15 percent is located within a roadless area, the Middle Fork-Continental Divide New Study Area (RARE 11) selected by the Chief of the Forest Service for study as a potential addition to the National Wilderness Preservation System, and 5 percent is located within the Middle Fork Inventoried Roadless Area (RARE 273). Thus, 98.3 miles or 45 percent of the entire river system flows through wilderness or roadless areas.

Legislation has been introduced to establish a 378,200-acre Great Bear Wilderness on the Flathead and Lewis and Clark National Forests. That portion of the proposed wilderness on the Flathead National Forest coincides, for the most part, with the New Study Area (RARE 11) selected by the Chief of the Forest Service in the Middle Fork drainage for study as a potential addition to the National Wilderness System.

Legislative action is also pending on a National Park Service recommendation to establish 927,550 acres of wilderness within Glacier National Park. Portions of the North and Middle Forks recommended for inclusion in the Wild and Scenic Rivers System would be bordered by this proposed wilderness. (See figure 5(A) for areas proposed; area 1 - 503,860 acres, area 2 - 399,590 acres, and area 3 - 24,100 acres.)

Wilderness use has a direct impact on the environment along the river since trails along the river provide the most easily accessible route into the area. Water-oriented uses, such as fishing in the South Fork and Big Salmon Lake, are the biggest summer attractions. The river trails also provide access to side trails leading to more remote areas in the wilderness.

Areas within wilderness fulfill significant regional and national needs as well as local needs. The Bob Marshall Wilderness contains 55 percent of the classified wilderness acreage within the State of Montana as well as 9 percent of the Nation's wilderness acreage (as of November 1973).

Developments within wilderness are restricted to those necessary for the purpose of wilderness. They are restricted to administrative facilities, facilities for the safety of the user, and those for the protection of the wilderness resource.

A logical question regarding wilderness is: "Why should land within wilderness be considered for Wild and Scenic Rivers status when its natural state is already protected by the Wilderness Act?"

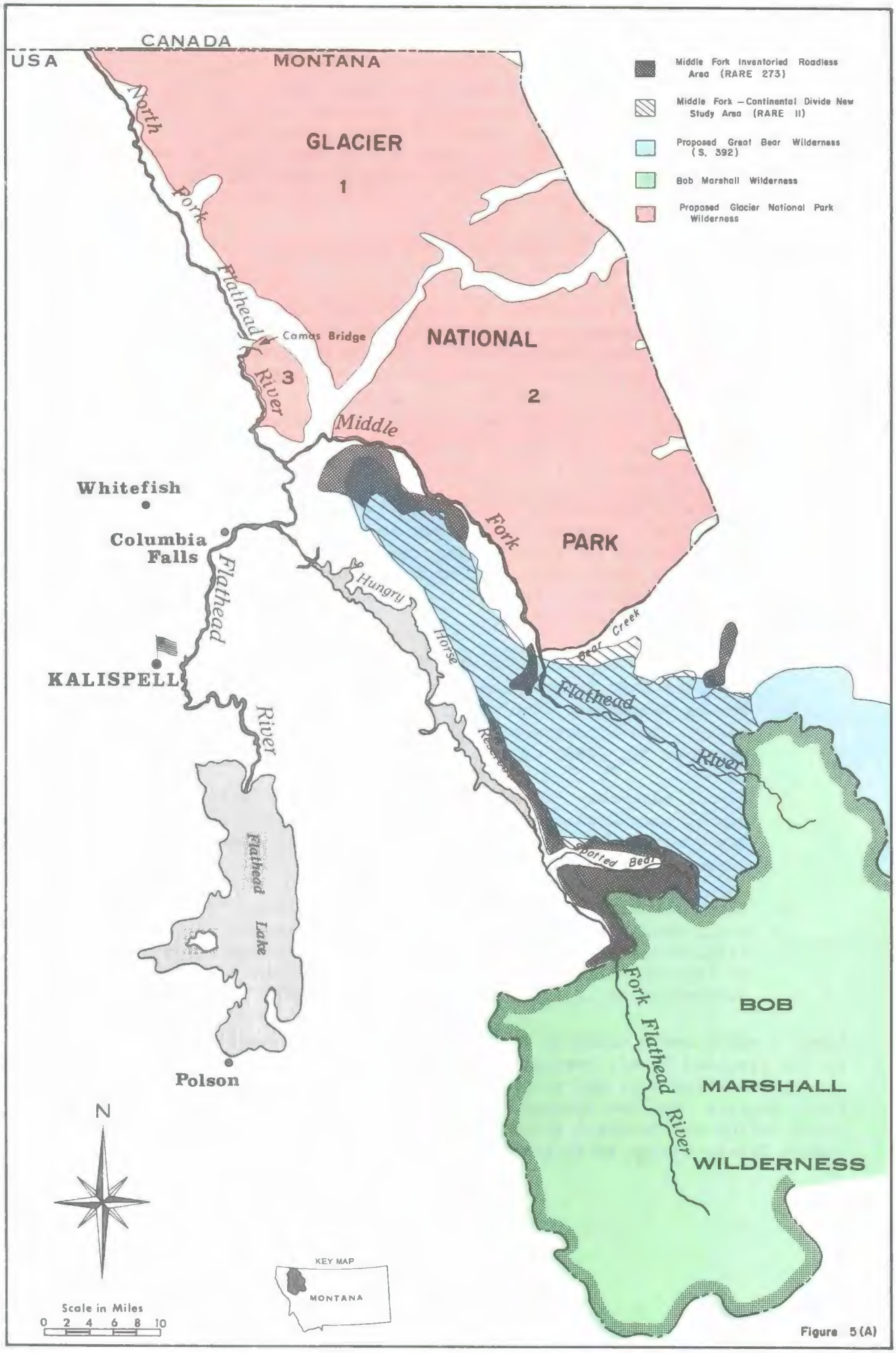

CANADA
USA
MONTANA
Middle Fork Inventoried Roadless Area (RARE 273)
Middle Fork – Continental Divide New Study Area (RARE II)
Proposed Great Bear Wilderness (S. 392)
Bob Marshall Wilderness
Proposed Glacier National Park Wilderness
GLACIER
1
NATIONAL
2
PARK
3
North Fork Flathead River
Camas Bridge
Middle Fork Flathead River
Whitefish
Columbia Falls
Flathead River
KALISPELL
Hungry Horse Reservoir
Bear Creek
Flathead River
Spotted Bear
Flathead Lake
Polson
Fork Flathead River
BOB MARSHALL WILDERNESS
N
KEY MAP
MONTANA
Scale in Miles
0 2 4 6 8 10

Figure 5(A)

Each of the rivers designated in the Wild and Scenic Rivers Act which is within designated wilderness also has a portion of its reach outside of classified wilderness. Congress evidently saw value in identifying the total length of rivers which possess outstanding characteristics by inclusion in the National Wild and Scenic Rivers System regardless of the protection afforded by existing wilderness classification on a part of the river.

The Wild and Scenic Rivers Act also gives some insight to an answer to this question:

> "Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system . . . shall be subject to the provisions of both the Wilderness Act and this Act with respect to preservation of such river and its immediate environment, and in case of conflict between the provisions of these Acts the more restrictive provisions shall apply."

From this quote it is obvious that Wild and Scenic Rivers status might be desirable if certain activities or uses permissible under the Wilderness Act (which would be adverse to the river environment) could be prevented under provisions of the Wild and Scenic Rivers Act. The most apparent provisions of the Wild and Scenic Rivers Act which are more restrictive are:

1. Mineral withdrawal - The Wild and Scenic Rivers Act provides that Federal lands included in the Wild and Scenic Rivers System as "wild" will be withdrawn from mineral entry. The Wilderness Act permits mineral entry through December 31, 1983.

2. Scenic easements - Under the Wild and Scenic Rivers Act scenic easements could be obtained on private land within the river boundary to protect river values. There is no corresponding authority under the Wilderness Act.

3. Water resource development - The Wild and Scenic Rivers Act would prohibit dam construction. The Wilderness Act provides Presidential authority for the establishment and maintenance of reservoirs and related development if these uses are determined to be in the best interests of the United States.

Items 1 and 2 above could be important along some rivers. On the forks of the Flathead River, however, there are no private lands within classified wilderness and mineral potential appears low. It, therefore, appears that the primary benefit of considering portions of the river in the Bob Marshall Wilderness for inclusion in the Wild and Scenic Rivers System is to give national recognition to the river and

to provide added protection against water resource development. There are no other activities and uses identified which would be more restrictive under the Wild and Scenic Rivers Act than the Wilderness Act.

Outstanding Features

Glacier National Park - Much of this 1-million-acre National Park contains rugged peaks, glaciers, snowfields, lakes, and streams. The spectacular scenery attracts more than 1 million visitors annually from all over the world. The portion of the Park next to the river and the high peaks in the background can be seen from various parts of the Middle and North Forks of the Flathead, either from a craft on the river or from roads close to the river. Shorelines bordering the Park are essentially undeveloped and have been retained in their natural character. Of the total shoreline included in this study, 24 percent borders Glacier National Park.

Glacier National Park as seen from the North Fork

Archeologic sites - An archeological survey of the Flathead River was made by the Montana Statewide Archaeological Survey, Department of Anthropology, University of Montana. Data following are from the report Archaeological Survey of the Forks of the Flathead River by Dale E. and Lynn Fredlund, 1971.

The majority of the sites recorded relate to late prehistoric Salish or Kootenai movements into, or through, the mountains on trips to the plains. The 1964 flood significantly influenced the findings of the study, especially along the Middle Fork. Any sites that might have existed on these low terraces were obliterated during the flood --either buried or washed away. The same is true for other portions of the river, but to a lesser degree.

Twenty-five sites were identified; most were along the South Fork. Most sites represent campsites of small transient groups moving into or through the mountains and were located in areas accessible to high country and to good game hunting.

The survey indicated the earliest evidence of man in the Flathead drainage being related to the Middle Period of the northwest plains. The Middle Period, in the mountains and mountain valleys, seems to be characterized by sites on subalpine ridges often associated with various types of game drive complexes. One reason why more sites are found on high ridges is related to the slow soil buildup and lack of vegetation to conceal sites.

Historic knowledge indicates that the Kootenai and Salish Indians were in the area after the introduction of horses. The lack of earlier sites in the valley supports the idea that all valley sites were late prehistoric-early historic occupations.

The absence of sites in the Middle and North Forks is mainly attributed to the valleys not being particularly suitable for habitation. Sites found in the North Fork were at the heads of east-bank streams lateral to the river, located at the outlet of long, narrow lakes.

Three Indian trails were identified: the Kintla Trail crossing the North Fork, the Bunker Creek Trail crossing the South and Middle Forks, and the Camp Creek-Gordon Creek Trail crossing the South Fork.

Portions of some trails have been destroyed through construction and superimposition of presently used Forest Service trails. The trails recorded are visible today, but only game animals use them except for occasional stretches where they correspond with modern Forest Service trails.

The survey was not a comprehensive study, but was designed to try and determine prehistoric occupational patterns. The authors of the survey recommended that a comprehensive multi-year survey program be conducted. ". . . prehistory of mountainous areas in Montana is just beginning to be studied and understood. Before any further development occurs in mountainous areas, provisions should be made for precedent archaeological research with ample time and money allowance for extensive study to compensate for the current lack of knowledge."

History and historical sites - David Thompson's trip in 1809 for the Northwest Trading Company is the earliest record of white man in the area (15). Both the Hudson Bay Company and the Northwest Fur Company entered the Flathead to establish trading posts shortly after the Lewis and Clark Expedition. Principal objectives of early trappers were beaver and marten pelts. Although shelters were constructed by trappers throughout the Flathead, little was ever recorded of their history (15).

In an 1898 survey by the U.S. Geological Survey it was noted that along the North Fork ". . . some thirty unoccupied cabins were seen. Many of these were in a tumble-down condition" (16). They also reported several trapper cabins occupied on the Middle Fork. At the same time they reported on the South Fork "There are about half a dozen cabins in the valley but these are not occupied all the year" (17).

One of the earliest reports on travels in the South Fork was by Colonel Sievers of the U.S. Army in 1874. His party travelled through the South Fork in search of a route for a railroad into the Flathead. They killed an elk on that trip, the first reported elk in the Flathead (15). The railroad was built over Marias Pass in 1893, bypassing the South Fork (18). In 1909 the Great Northern Railway and the Milwaukee Railroad simultaneously ran surveys for railroad right-of-way up the North Fork (18), but nothing was ever built.

The discovery of coal on the North Fork in 1886 by Frank Emerson stimulated some development. A townsite, laid out near Coal Creek by the Northern International Improvement Company, was never developed. The grade of coal proved to be so low that it was not economically feasible to mine (15). At the time of the U.S. Geological Survey in 1898 only one cabin at the site was occupied. Some mining activity was carried on until the late 1930's.

The USGS also reported petroleum in the upper North Fork (16). Since that time, there have been many attempts to find oil, all without success. Exploration for oil continues on all three forks of the Flathead.

Many homesteaders claimed land in the late 1800's and early 1900's, mostly on the North Fork. In 1898 the USGS reported "Many squatters and homestead claims have been taken and many cabins have been built" (16). Homesteading on the Middle Fork was confined to that area below Bear Creek, while there were no homesteads claimed on that portion of the South Fork included in the study.

The first bridge across the Middle Fork was constructed in 1897 a short distance upstream from the present Park Headquarters (18). In 1901 a crude road was built up the North Fork as far as Kintla Lake for oil drilling purposes. In 1915 reconstruction started, first to McGee Hill, then to Logging Creek, and later to Polebridge (18).

Charles Russell travelled in the Flathead on hunting and pack trips. One of his paintings, entitled "When Horses Turn Back There's Danger Ahead," depicts a scene along the South Fork near the mouth of the White River where a pack string crossing the river encounters a grizzly bear.

Forest Service history dates back to the turn of the century with the establishment of "Forest Reserves." The study river lies within what was established in 1897 as the Flathead Forest Reserve and the Lewis and Clark Forest Reserve. The name Forest Reserve was changed to National Forest in 1907 and the following year the area was divided into the Blackfeet National Forest (North Fork) and the Flathead National Forest (Middle and South Forks). Glacier National Park was established out of the Blackfeet National Forest in 1910. The last major change in names was in 1933 when the eastern portion of the Blackfeet was added to the Flathead National Forest and the western portion was added to the Kootenai National Forest (15).

Fire has played an important role in the history of the Flathead River valleys. Observations made by the USGS in 1898 along the North and Middle Forks were very descriptive. Concerning the North Fork, a report stated "Throughout the valley burns are found varying in destructiveness according to the intensity of the fires, which have ranged from slight, creeping surface fires to those that have swept through the tree tops, and even fires that have rendered the land barren" (16). They surveyed the lower portion of the Middle Fork and described the severely burned and reburned areas. "The upper portion of the valley is very nearly all burned over, and the fires have been severe and repeated" (16). The USGS reported on the South Fork "There is no doubt that some of the fires, especially on the higher ranges, are due to lightning, but most of those in the valley seem to have been set by Indian and other hunting parties or by prospectors" (17).

Years of major fire activity were: 1889 on the South Fork, 1910 and 1919 on all forks, 1926 on the North and South Forks, and 1929 on the Middle Fork.

There are few specific sites of historic significance along the river. Numerous claims and exploration work for coal and oil were located in the 1890's and early 1900's along the North Fork near the Canadian border. The yearlong residents brought by this activity generated development of the Polebridge area from 1912 through the late 1920's. A log store was built in 1914, followed shortly by another store (still in existence) and the first bridge across the North Fork.

There are several sites near the river used by the Forest Service and Park Service for early-day administration of public land. The log buildings on sites located at Spotted Bear, Black Bear, and Big Prairie on the South Fork and Schafer on the Middle Fork are perhaps the most significant. They are well preserved and were centers of activity in the early 1900's.

Unusual scenic features - The scenic value of the Flathead can be realized only by considering a combination of features. The variety of vegetation, scattered deep pools, the green tint of the water, rapids and riffles, broad timbered valleys, gorges and bluffs, and high peaks in the background all combine to create outstanding scenery along the river.

Meadow Creek Gorge - The "gorge," located on the South Fork, is so named because of sheer limestone walls rising up to 100 feet from a riverbed 4 to 30 feet wide. The green of the water is pronounced in frequent deep pools of the gorge which stretches for 6 miles.

Goat Lick near Walton - Between Highway No. 2 and the Middle Fork (within Glacier National Park) is a natural mineral lick which provides an opportunity for tourists to view mountain goats. A turnout and interpretive signing assist travelers in enjoyment of this feature.

Colored Rocks - Red, blue, and green argillite add color variety to the river area. Colors are more prominent when the rock is wet. This is most noticeable in the Middle and South Forks in shallow water when streambottom material is easily seen.

Elk Range - Most land along the Middle Fork within Glacier National Park (from Bear Creek to West Glacier) provides elk winter range. It is visible from both Highway No. 2 and the Middle Fork. This provides an opportunity to view elk in their natural surroundings.

Geologic Features - The geology is not unique from a scientific standpoint, but there are many geologic features which add significantly to the scenic view. As well as the previously mentioned "gorge," there are several red cliffs along the Middle and North Forks. These vary in height from near river level up to 100 feet.

Other Wildlife - The grizzly bear is officially listed as a "threatened" species under the Endangered Species Act of 1973. Other wildlife recognized under the Endangered Species Act that inhabit the area include the Northern Rocky Mountain Wolf, an "endangered" species.

As defined in the Endangered Species Act, an "endangered" species is a species which is in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Threatened Wildlife Species - The following information has been taken from the book Threatened Wildlife in the United States (1973 edition, Bureau of Sport Fisheries and Wildlife). Definition of terms:

THREATENED - Species or subspecies that are so few in number or so threatened by present circumstances as to be in danger of extinction.

PERIPHERAL - A peripheral species or subspecies is one whose occurrence in the United States is at the edge of its natural range and which is threatened with extinction within the United States, although not in its range as a whole.

STATUS UNDETERMINED - A species or subspecies that has been suggested as possibly threatened with extinction, but about which there is not enough information to determine its status. More information is needed.

Montana westslope cutthroat trout.....Undetermined
American osprey.....Undetermined
Northern white-tailed ptarmigan.....Peripheral
Pine marten.....Undetermined
Fisher.....Undetermined
Wolverine.....Undetermined
Canada lynx.....Undetermined

Westslope
cutthroat trout

Other - The closeness of Glacier National Park and the Bob Marshall Wilderness adds significantly to scenic values of the river area.

There are 438 miles of shoreline included in the Wild and Scenic River Study. Of this, 212 miles (48 percent) is either in Glacier National Park or the National Wilderness Preservation System.

The Middle Fork runs through a large portion of undeveloped National Forest land adjacent to the Bob Marshall Wilderness. This area has been selected by the Forest Service as a New Study Area.

The South Fork in the winter - Bob Marshall Wilderness

Landownership and Status

Most land along the study river is in Federal ownership. Private land is confined to old homesteads along the valley bottoms of the North Fork and lower portions of the Middle Fork (see maps in Appendix 1).

The table below is a summary of the miles of river frontage in various ownerships. (Mileage figures are based on bank miles; that is, the total mileage given is double the river mileage.)

	National Forest	National Park	State of Montana	Private	Total	
North Fork	19	58	7	32	116	27%
South Fork						
Inside Wilderness	81	—	—	—	81	18%
Outside Wilderness	39	—	—	—	39	9%
Middle Fork						
Inside Wilderness	28	—	—	—	28	6%
Outside Wilderness	101	45	1	27	174	40%
Total Miles	268	103	8	59	438	
	61%	24%	2%	13%		100%

As shown in the table, almost half of the shorelines are in either the Bob Marshall Wilderness or Glacier National Park (24 percent in each). Add to this the National Forest land outside of wilderness and it can be seen that 85 percent of the shorelines are within Federal ownership. Another 2 percent are in State ownership.

This can be somewhat misleading because all of the National Park land is confined to one side of the North Fork and Middle Fork with scattered National Forest, State, and private lands on the opposite bank. While only 13 percent of the shorelines are within private ownership, the land is scattered and affects management of about one-half the river system. (Subdivision of private land is discussed under "Residential Sites and Summer Homes" in the next section of this report.)

During the years 1960 through 1963 "Determinations of Surface Rights" pursuant to Public Law 84-167 (July 23, 1955) were made on the Flathead National Forest to determine whether or not the Federal Government had the right to manage and dispose of vegetative surface resources and other surface resources except minerals on mineral claims located prior to July 23, 1955. An *in rem* proceeding, as set forth in section 5 of the above Act, was followed in which all existing mining claims came under the provision of section 4 of the Act. In such case, the Government has the right to manage and dispose of the vegetative surface resources on these lands (except mineral deposits subject to location under the mineral laws).

Since 1961 no mineral locations have been filed within one-fourth mile of the river.

Five contiguous patented claims on the North Fork lie within one-quarter mile of the river. These claims were surveyed for patent in January of 1891 for gold.

All National Park land adjacent to the North and Middle Forks has been withdrawn from mineral entry. The Bureau of Reclamation has also withdrawn lands on the North and Middle Forks in connection with possible dams at Smoky Range and Spruce Park, as well as several powersites.

A withdrawal involving nonmetalliferous minerals (coal) exists on 1,300 acres adjacent to a portion of the Middle Fork near Nyack.

Several Forest Service administrative sites and campgrounds have been withdrawn from mineral entry (Coram, Black Bear, Big Prairie, and Moran administrative sites and Bear Creek, Paola, and Cascadilla recreation sites).

State legislation, which provides authority to counties to zone, has brought considerable public interest. A board was established in Flathead County in June of 1972 to implement planning and establish zoning districts. Zoning districts can also be created upon petition of 60 percent of the landowners affected (25). Concern expressed by landowners along the North and Middle Forks indicates zoning is needed.

Residential Sites and Summer Homes

Residential sites are scattered on private land along the North and lower Middle Forks. Until the late 1960's large land areas (40 to 200 acres) remained in the hands of a few owners. These parcels of land were principally homesteads. Land values in the Flathead River Basin began in inflate due to outside public interest for recreation land and many homesteads were subdivided. Subdivision has been further encouraged by the County through classification of the land as suburban land, which results in higher taxes. Subdivision has resulted in small lots near the Canadian border and tracts 3 to 5 acres in size at other locations farther south down the North Fork. Most of this subdivision is taking place immediately adjacent to the river. Indications are that the private land between Hungry Horse and Essex on the lower Middle Fork will continue to be subdivided. Private land near Martin City and Hungry Horse has been subdivided and developed with motels and private homes. Other than Forest Service administrative sites and resorts used by commercial outfitters, there are no residences in the portion of the South Fork under study.

Agriculture

Agriculture, the most significant industry within the regional zone of influence, is based on irrigated forage crop production to support livestock enterprises and to produce small grains, tree fruits, and field crops, with some dairying and vegetable production. The agricultural land located along the study river is limited. Six hundred to 700 acres along the North Fork are used to grow cattle feed, but production is marginal due to the short growing season. The situation is similar along the lower Middle Fork where several scattered ranches and farms grow hay or grain.

Irrigation - Water needs are predicted to be mostly for irrigation with only small demands expected for industrial uses (6). Despite this importance, less than 10 percent of the total average annual runoff in the regional zone of influence is diverted for irrigation purposes (21).

Projected needs show that by the year 2020 an additional 178,000 acres of agricultural land above Flathead Lake will need irrigation (6). About 78,000 acres would likely be irrigated by ground water and water from the Swan, Whitefish, and Stillwater Rivers. The Bureau of Reclamation has indicated that if the Flathead River could supply the water needed on the remaining 100,000 acres foreseeable irrigation needs will be met.

Sufficient water for this purpose appears to be available below the study river where the majority of the potential irrigable land is located. The Montana Fish and Game Department has indicated that the quantity of water needed for irrigation would not conflict with minimum river flow requirements for the fishery.

Along the lower Middle Fork 2,000 to 3,000 acres (within the study area) are part of the acreage included as needing future irrigation. Studies by the Forest Service indicate that water flows are sufficient in this area to allow extraction of water during the summer without adversely affecting the recreational use of the river. However, during August and September, conflict could arise since the Montana Fish and Game has appropriated the average minimum flows to protect the fishery.

Vegetation

River bottomlands are well vegetated with conifers, primarily lodgepole pine, Douglas-fir, larch, ponderosa pine, and Engelmann spruce. Associated hardwood tree species include birch, cottonwood, and aspen, with willow, alder, and other shrubs along most of the river. Grass meadows are most common along the South Fork, but are present along the other forks.

Vegetative types can be correlated with aspect and landform. Both the North and South Forks have broad valleys with glacial terraces. Steep slopes drop from the terraces into narrow alluvial river bottoms. Many of the drier terraced acres, especially along the South Fork, contain ponderosa pine, as well as Douglas-fir, western larch, and lodgepole pine (Douglas-fir climax series). 1/

Past fire activity along all three forks has resulted in the establishment of numerous dense stands of lodgepole pine. As a result, only a small part of the study river area supports merchantable timber.

Timber along the river system can be placed in four major categories: that under private ownership, that on Federal land managed by the National Park Service, that on Federal land managed by the Forest Service, and that on land owned by the State of Montana.

There are no restraints or controls on management of privately owned forests along the river system at this time. To date timber removal on private land adjacent to the river has been primarily associated with clearing for developments.

Management of forests within the study river boundaries inside Glacier National Park falls under the objective of preserving all of the Park in a natural condition except those relatively small portions designated for development of visitor and administrative facilities.

National Forest commercial timber land within the proposed Wild and Scenic River Management Zone has been placed in the "deferred" category, prohibiting timber harvest until studies have been completed and land management objectives have been determined. A total of 14,840 acres of commercial forest land have been placed in the deferred category. An additional 2,689 acres of National Forest land outside the Bob Marshall Wilderness, but within the proposed Management Zone, are classed as noncommercial forest or nonforest.

Total timber volume within the proposed river boundary is estimated at 57.6 MMBF on National Forest System lands outside the wilderness.

1/ Preliminary Forest Habitat Types of Western Montana, May 1972, by R. D. Pfister, S. F. Arno, R. C. Presby, and B. L. Kovalchik.

At this time no official list of endangered or threatened plant species has been adopted or proposed for Montana under the Endangered Species Act of 1973. If and when such a list is established, any plants so listed will be given due consideration under the Act.

The State of Montana owns scattered parcels of forest lands within portions of the study river system, but little timber harvest activity has occurred on these lands in the past. The Act provides an opportunity for State land, should it be included in the National Wild and Scenic Rivers System, to be managed through cooperative agreement between the State and the Forest Service.

Transportation (Existing)

(See map, figure 6)

Rough terrain has resulted in access roads constructed along the river valleys. All three forks are flanked by access roads on at least a portion of their reaches. The standards and uses of these roads vary considerably.

North Fork - The North Fork road is used extensively by logging trucks, summer homeowners, and recreationists. While there are only three to five yearlong residents on the North Fork, there are 40 to 50 families who reside in the area during the summer months. This is rapidly increasing with subdivision of private land. Most homes are located from Coal Creek north to the Canadian border.

The increased public recreation is resulting in a significant increase in recreation traffic. It is magnified along the North Fork because of Glacier National Park. The North Fork road extends into Canada (see figure 7), giving access to the towns of Michel and Fernie in British Columbia. Recreation traffic across the border is very light, due in part to the lack of recreation developments in either country near the border and the absence of Canadian Customs stationed at the border crossing.

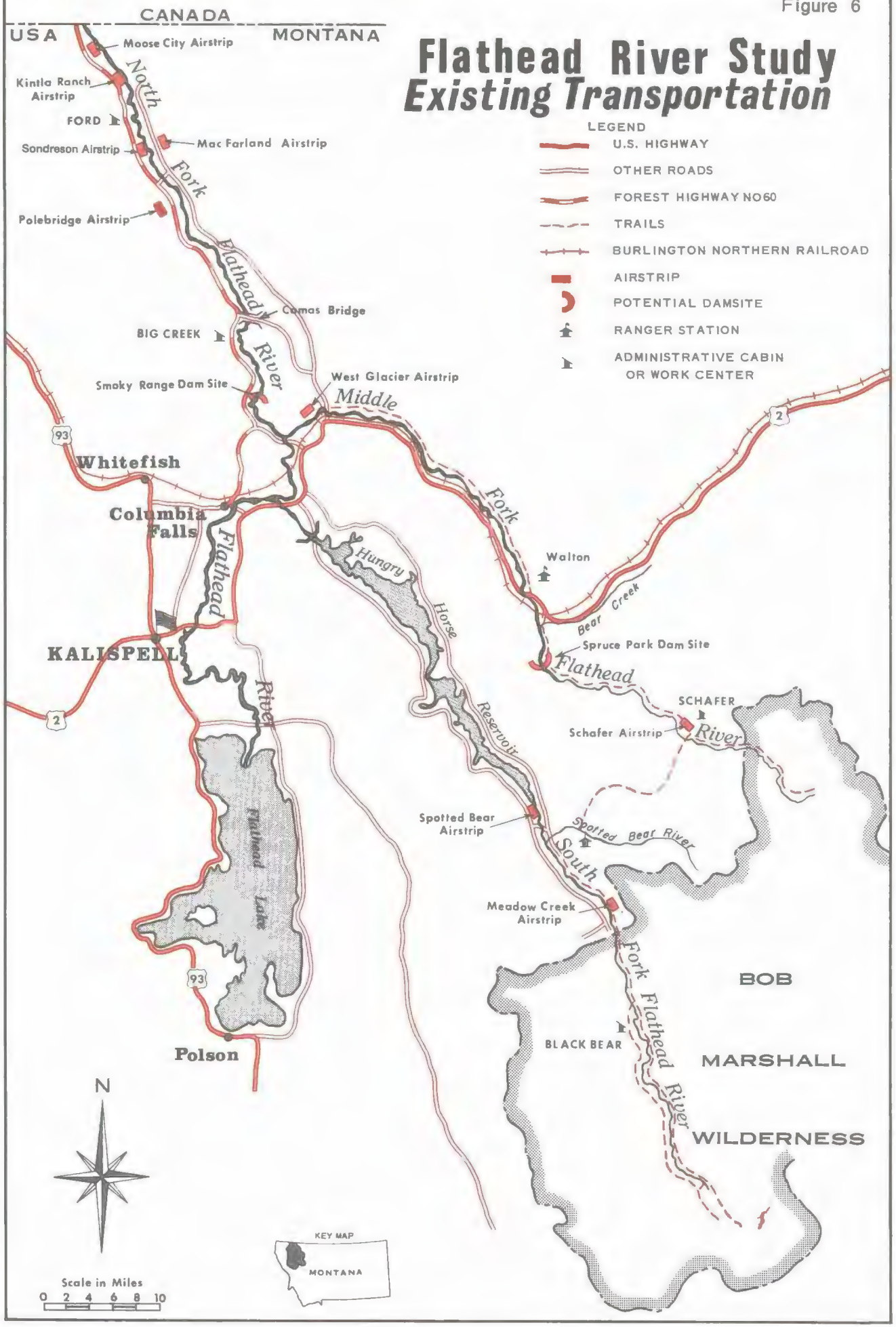
The North Fork road varies from a paved, double-lane standard at Columbia Falls to a single-lane, dirt road at the Canadian border.

In 1967 the road in Glacier National Park from West Glacier to the North Fork road (at Camas Creek) was completed. It is paved and double lane. Also within Glacier National Park there is a low-standard, one-lane road adjacent to the river which extends from Apgar 40 miles to Kintla Lake. Most use occurs on the stretch between Polebridge and Kintla Lake.

There are numerous other roads including the Blankenship road connecting with Highway No. 2 and logging roads branching off the North Fork to the west. Three low-standard roads interconnect with the North Fork road system and cross the Whitefish Divide to the west.

Figure 6

Flathead River Study
Existing Transportation



There are no public trails paralleling either side of the North Fork.

Four private airstrips are located on the North Fork. The Moose City and Sondreson's airstrips were built about 1960; the Kintla Ranch airstrip was built in 1971. A strip near Polebridge was cleared but never completed. In the 1940's an airstrip was built on the old MacFarland Ranch, land which has since been acquired by the Park Service. The field is maintained by the State and open to the public. Use is light.

Middle Fork - U.S. Highway No. 2 parallels the Middle Fork for 71 miles from its confluence with the South Fork upstream to Bear Creek. With the exception of the upper 4 miles which is within Glacier National Park, the road follows the river on the south side. This major east-west highway across northern Montana is heavily used and is a major access route to Glacier National Park. The 4-mile stretch within Glacier National Park and the 11-mile stretch from West Glacier south to Hungry Horse are to be reconstructed.

The Burlington Northern railroad closely follows the Middle Fork. This section contains five tunnels totaling more than a mile in length and a 1,500-foot snowshed located near Essex. The highway and railroad combined required 1-1/2 miles of major channel change or bank alteration of the Middle Fork and 5 miles of riprapping at 27 locations.

A trail within Glacier National Park closely parallels the river on the north bank from West Glacier to Walton Ranger Station. This trail is used principally by hikers and climbers for access to branch trails leading to glaciated peaks near the Continental Divide.

Two railroad bridges and four road bridges span this lower portion of the Middle Fork.

The 47 miles of the Middle Fork from Bear Creek to the upper reach of the study area is in unroaded country. An extensive network of trails paralleling major stream courses provides access. The entire length of this portion of the Middle Fork is flanked by Trail No. 155.

The trail along this portion of the river receives use by hikers, horsemen, and motorbikers. This is one of the few extensive roadless tracts in this area where motorized vehicles have not been prohibited. Hiker use is considered moderate and horse use light.

A Forest Service work center (Schafer Work Center) is located in the upper Middle Fork. The main trail access is from Spotted Bear over Trail No. 327.

While the area receives use by hikers and horseback riders, many recreationists fly light aircraft to the Forest Service airstrip at this location. Frequently groups fly to Schafer and continue by horseback into more remote areas. Others float down the Middle Fork in rafts or kayaks and fish in nearby streams.

Burlington Northern railroad along the lower Middle Fork

Spotted Bear airstrip near the South Fork

South Fork - Forty miles of the South Fork flows through the Bob Marshall Wilderness. Most of the 20 miles of study river below the wilderness boundary is paralleled by roads, although there are long stretches where roads cannot be seen from the river.

Double-lane roads parallel Hungry Horse Reservoir on both sides. Traffic results primarily from logging and recreation activities. There are numerous logging and land access roads which lead from the mountainous areas to the west and east and feed into the main roads around the reservoir.

Within the wilderness the river is paralleled by trails on both sides for most of its length, but generally the river cannot be seen from these trails. Concentrated use is resulting in increased conflict among various users.

Two airstrips are located near the South Fork outside the wilderness--Spotted Bear airstrip and Meadow Creek airstrip. The Spotted Bear airfield is used as a base for Forest Service air patrol for fire detection as well as administrative flights. This airstrip is also open to the public.

The airstrip near Meadow Creek is located approximately one-half mile from the road end at Meadow Creek packbridge. It is used by the public primarily for access in connection with recreational activities.

Transportation (Future)

North Fork - Recreation traffic is increasing annually along the North Fork. There is a potential for improving the North Fork road as a through road into Canada, but there appears to be considerable local concern for maintaining the status quo.

Middle Fork (lower portion up to Bear Creek) - A continual increase in use can be expected along this portion of the river. Increased development of private lands can also be expected. The substandard portions of Highway No. 2 are scheduled to be reconstructed within several years, giving adequate access to the area. Public access to the river for fishing and floating is not adequate for present use. Several potential access sites have been inventoried; there are no present plans for their construction.

Middle Fork (upper portion, Bear Creek to headwaters) - This portion of the Middle Fork drainage is located within the 302,700-acre Middle Fork-Continental Divide New Study Area. It will be studied for recommendation as a possible addition to the National Wilderness Preservation System. Portions of the trail system may need to be reconstructed or relocated to be more compatible with the environment along the river. Future use of the Schafer airstrip may also depend on the outcome of this study.

South Fork - Recreation traffic in increasing annually. Recreation facilities near the Meadow Creek road end are not adequate for present levels of use. Existing access points to the river for fishing and floating may need improvement as use increases.

Replacement of the South Fork bridge was completed in the fall of 1973. No improvement plans have been made for the road.

Use of the South Fork within the Bob Marshall Wilderness is increasing. Specific direction is provided in the Bob Marshall Wilderness Management Plan to cope with effects of use. Wilderness classification precludes developments other than those needed for the purpose of wilderness. Access is limited to trails.

Utility Lines

North Fork - There is no commercial power available on the North Fork. Where electricity is used, it is provided by gasoline or diesel generators furnished by individual landowners. A Forest Service telephone line roughly parallels the North Fork road from Polebridge to Ford Guard Station. A commercial telephone line within Glacier National Park extends from West Glacier to Polebridge. (Franchise rights prevent extending the line across the North Fork to serve residents on the west side of the river.)

Middle Fork - Land along that portion of the Middle Fork adjacent to Highway No. 2 has undergone considerable development. The Flathead Electric Cooperative maintains a 34.5 kv transmission line from Columbia Falls to West Glacier. The line follows the highway and crosses the South Fork downstream of the highway bridge near the town of Hungry Horse. Distribution lines (12.5 kv) branch from West Glacier to serve Glacier National Park and private users in the area. Two line crossings of the Middle Fork are located near West Glacier (one-half mile apart); another is located at Blankenship bridge; another at the bridge crossing near Essex (28 miles upstream from West Glacier). This crossing provides power to the Walton Guard Station in Glacier National Park, where the line terminates. These lines principally serve summer users; there is very little commercial use. The Cooperative has stated that the 12.5 kv line to Essex may need to be increased to 24.9 kv in the next few years. This can be done on the existing poles.

The Glacier Electric Cooperative maintains a line from Browning over Marias Pass and down Bear Creek, a tributary of the Middle Fork. There is an 8-mile gap between the lines of the Flathead Electric Cooperative and the Glacier Electric Cooperative. This gap is uninhabited Federal land.

Concerning future transmission lines, the Federal Power Commission states: "There are no known future major transmission lines that are proposed to cross the reaches of the Flathead River under study." (See Appendix 2.) However, Bonneville Power Administration states in regard to the Middle Fork that: "Several years ago, Bonneville Power Administration contemplated the construction of a transmission line from Hungry Horse to Browning in order to serve a potential new customer, Glacier Electric Cooperative. For some time these plans have remained dormant, although they may be revised in the future." (Excerpt from a letter to the Forest Supervisor, Flathead National Forest, from Bonneville Power Administration, Portland Office, dated April 7, 1972.) Bonneville Power Administration would like the option for future consideration of a transmission line to remain open.

In the absence of data relating to line location and design, evaluation is not possible. It appears, however, that a transmission line constructed under present standards and technology could pose

environmental conflicts. These would exist with or without Wild and Scenic Rivers status. The potential conflicts would result from terrain characteristics of the canyon, specifically those associated with the visual aspect of the landscape and soil stability.

Wild and Scenic Rivers status would not preclude consideration of a transmission line, particularly since this segment of river is proposed for a recreational classification. Development along a "recreational" river could be more permissive than either "scenic" or "wild" classifications. However, if the river were included in the Wild and Scenic Rivers System, development would not be permitted within the proposed River Management Zone which would have a direct and adverse effect on the values which caused the river to be included in the System.

The Montana Power Company owns and operates a natural gas pipeline from Canada to Kalispell, Montana, which passes through the Middle Fork drainage. The line is buried on the ditchside of U.S. Highway No. 2 and crosses the Middle Fork just above the highway bridge near the town of Essex. A second crossing is located at the South Fork below the highway bridge near the town of Hungry Horse. Two river crossings are located downstream from the study river--one at the bridge near Columbia Falls and one 12 miles above Kalispell, both on the mainstem of the Flathead River.

A commercial telephone line generally follows the highway in approximately the same location as the gas line. The Burlington Northern railroad also has a telegraph line which follows the railroad track. A telephone line provides communication from Schafer Work Center to Spotted Bear Ranger Station for Forest Service administrative use.

South Fork - Due to the undeveloped nature of the South Fork, no commercial utilities are provided. When the radio-telephone was installed at Spotted Bear in 1971 the Forest Service telephone line from Spotted Bear to Hungry Horse was abandoned. There is a telephone line from Spotted Bear Ranger Station along the South Fork to its headwaters. This line provides communication to Big Prairie Work Center and other administrative sites. With improved radio communication and new management direction provided in the Bob Marshall Wilderness Plan, telephone lines will be abandoned and removed from the area. Electrical power at Spotted Bear Ranger Station is provided by a generator at the site. There are no power facilities within the wilderness.

Commercial Uses and Industrial Installations

There are no commercial navigational uses made of the river except by a few river outfitters during the summer months.

Commercial Outfitters for Floating - There are three to five commercial outfitters who provide various types of recreation rafting services. One outfitter utilizes horse and pack animals to transport floaters and rafts into the Bob Marshall Wilderness. This provides an opportunity to float about 20 miles of the South Fork. Another outfitter provides services for floating 7 miles of the Middle Fork from West Glacier to its confluence with the North Fork and the lower few miles of the North Fork. Other river outfitting is sporadic and is usually in conjunction with commercial outfitting of horse and pack stock. River outfitting is limited but appears to be increasing.

Commercial Outfitters for Horseback Riding - Commercial use along the upper Middle Fork and South Fork is limited to commercial outfitters operating under special-use permits from the Forest Service. Presently 10 commercial outfitters in the Middle Fork and 12 in the South Fork operate base camps along the river. Other outfitters operating out of progressive travel camps also utilize the areas during the summer season. The number of commercial outfitters fluctuates annually. Three commercial outfitters operate from resorts under special-use permit from the Forest Service in the Spotted Bear area. In the past these outfitters were mainly concerned with hunters in the fall, but summer use for fishing, picture taking, and float trips is becoming increasingly important, not only because it extends the period of employment for outfitters, but also because the public is demanding these types of services.

Other - A county dump near Essex is within 100 yards of the river. This open dump does not meet minimum State sanitary standards. The county commissioners recognize the problem and have plans to rectify it. The unincorporated town of West Glacier is located near the bank of the Middle Fork. No commercial use is made of the river, but there are several cafes, a gas station, a novelty shop, and a golf course all located near the river at West Glacier. Similar developments are located along the riverbank near Martin City and Hungry Horse.

Need for Hydropower

Production of hydroelectric power has been high in the Pacific Northwest, as compared to the Nation. For example, the Federal Power Commission reports that during 1972 "...95% of all power sold in the Pacific Northwest was generated from hydroelectric sources, as compared to 16 percent for the nation as a whole."

Due to the availability of low-cost hydroelectric power in the Pacific Northwest, per capita consumption is high. In 1965 the Pacific Northwest per capita consumption was more than double the national average (6). (Most of the data in this section is tied to 1965 data. The Federal Power Commission, in May of 1974, furnished the 1972 data shown and made the following statement regarding projections: "While we have not updated power projections for this area, all indications

are that such projections would not significantly change the situation that there is a need for hydroelectric power. Our studies, as well as those by numerous other agencies, confirm that deficits in electrical power and energy resources will continue to exist in the area for the foreseeable future.")

In 1972 energy sales to industry amounted to approximately 47 percent of total sales in the Pacific Northwest (according to the Federal Power Commission). Heaviest power users in the Pacific Northwest include the aluminum industry, pulp and paper manufacturing, nonferrous metal mining and refining, and the phosphate industry. Approximately 30 percent of the natural aluminum reduction capacity in the United States is located in the region (6).

It is evident that low-cost power made available by hydroelectric plants has a marked effect on the rate of consumption and economic growth of the Pacific Northwest. Because use and development of hydroelectric power requires study and consideration of large river basins, it is impractical to attempt to approach the situation on a local basis. However, the Flathead area has received similar benefits as expressed for the Pacific Northwest. A prime example of this is the location of the Anaconda Aluminum plant in Columbia Falls. This location was possible due to its proximity to Hungry Horse Dam.

The benefit of water storage behind Hungry Horse Dam (3,161,000 acre-feet) is even more significant when viewed as a part of the power system of the Columbia River Basin. Water released from Hungry Horse is used 22 times by downstream hydroelectric plants. As a result, this local storage is the most valuable in the Pacific Northwest for hydroelectric purposes. Water storage resulting from development of other potential dams on the Flathead system (Smoky Range and Spruce Park) would have a similar value.

Potential hydropower resources within the Flathead Basin probably exceed power needs within the foreseeable future. However, future electric energy requirements for the Pacific Northwest, of which the Flathead Basin is an integral part, are estimated to be large. Projected increase for average megawatt requirements between 1965 and 2020 is 1,700 percent (21).

As previously explained, the main source of electric energy in the Pacific Northwest has been its hydroelectric resources. The rapidly growing population and expanding economy have accelerated hydroelectric development to the extent that a substantial part of the region's economical hydro sites have been developed and the region will soon have to turn to thermal-electric sources to serve the bulk of the base energy load grown. Although the number of remaining economical sites decreases as development takes place, the gradual shift to a hydro-thermal system will

increase demands and values of hydro peaking capacity. It may be expected that many projects which formerly proved to be marginal or uneconomical under higher plant factors will be reconsidered as sources for low-load factor peaking. In addition, increasing demands for additional water resource development projects to satisfy the growing needs for municipal and industrial water, irrigation, water quality, recreation, fish and wildlife, and flood control will provide many opportunities for including hydroelectric power as a project function (6).

The value of existing hydroelectric generation can be increased by modifying the regulation of reservoirs to permit optimal utilization of both hydroelectric and thermal generation resources of the region. The way in which this regulation is carried out will gradually change as the proportion of thermal to hydro generation changes. In addition, valuable peaking capacity can be obtained by adding units at existing plants and through construction of pumped-storage projects (6).

Alternatives to Hydropower

(This section is based on portions of a letter from the Federal Power Commission, San Francisco Office, to Frank Fowler, Flathead National Forest, dated May 16, 1974. The letter was written in response to a request by the Forest Service for data to aid in a discussion of environmental impacts of using alternative sources of power in lieu of hydro projects.)

The Federal Power Commission's "...most recent estimates of Pacific Northwest hydroelectric power values have been based on studies of the alternative cost of power from four types of generating plants: combustion turbine, combined cycle (combustion turbine and steam turbine), oil-fire based load, and nuclear-fired." The Federal Power Commission's "...discussion of environmental impacts of obtaining power from these types of plants as alternatives to a proposed hydroelectric plant's output usually covers the material given in the following:

"Combustion Turbine. The benefits of this type of plant are: the units are of relatively small capacity which permits installation near existing power plants which in turn may eliminate the need for additional transmission circuits: cooling water requirements are negligible; and normally a short lead time is required for construction. Adverse effects include the characteristics of operating at low efficiency and high operating and maintenance cost. The units emit combustion products into the atmosphere and also use exhaustible natural energy resources as fuel.

"Combined Cycle Plant (Combustion and Steam Turbines). The beneficial effects of the plant are: capability to operate at high and intermediate plant factors and to firm dump and secondary hydro energy in

the Pacific Northwest. Adverse effects are: siting problems; need for adequate cooling water supply; the need to locate, purchase and store adequate supplies of the proper type of fuel; use of exhaustible natural resources as fuel; air pollution from stack emissions; consumptive use of water and/or the alternative discharge of heated water; cost of providing condenser cooling and transmission facilities; and the accompanying potential adverse impact to scenic values of exhaust stacks, condenser water cooling towers, oil storage tanks and transmission facilities.

"Base Load Oil-Fired Steam-Electric Plant. The advantages of a base load oil-fired plant are: capability of high plant factor operation and potential usefulness for firming dump and secondary hydro energy. The adverse effects are similar to those connected with operation of a combined-cycle plant.

"Base Load Nuclear Steam-Electric Plant. The benefits of a nuclear-fired plant are: capability of producing high plant factor power for the electric system; no release of products of combustion to the atmosphere; and no consumption of exhaustible fossil fuels. Negative aspects include: plant siting problems; need for a large cooling water supply and possibly cooling towers; the long lead time needed for construction; problems and costs of disposing of spent nuclear fuel; costs connected with needed transmission facilities; depletion of an exhaustible natural resource (uranium); and potential adverse impact to scenic values resulting from installation of required cooling towers and transmission facilities."

Flood Problems and Existing and Potential Solutions

The wide Flathead River valley has perhaps the greatest need for flood control in the Columbia River drainage east of Spokane, Washington. Upstream from Flathead Lake along the Flathead River there are numerous recreation homesite developments in extremely flood-prone areas. The growth of subdivision on low land in the vicinity of Kalispell provides an example of increasing potential flood damage which might have been prevented by floodplain zoning. A substantial amount of high ground is available for expansion to the north, west, and south. However, recent development has taken place between the city and the river where a great deal of damage was experienced in the 1964 flood. At Columbia Falls, also, there is adequate room for expansion away from the river, and some growth has moved in that direction; however, there is some tendency to build on flood-prone land (21).

Agriculture is not as severely affected by flooding as residential areas and other intensive developments within the flood plain. The major portion of the agricultural land within the Flathead

valley is outside the flood plain. The agriculture that occurs within the flood plain is considered a compatible use. However, flood protection could provide the opportunity to produce higher value crops on these lands (33).

Flood History - There have been four major floods of record on the Flathead River (1894, 1933, 1948, and 1964). In June of 1964 a major storm occurred in the upper Flathead River Basin. The ensuing flood inundated approximately 30,000 acres between Columbia Falls and Flathead Lake and required evacuation of about 6,000 people. Damages estimated at about $22,300,000 occurred along the three forks and mainstem to property, buildings, businesses, highway and railroad bridges, and utilities. Damages along the upper Flathead River valley were estimated at about $5,200,000. Flood control by Hungry Horse Dam is credited with protecting 18,400 acres between Columbia Falls and Flathead Lake during this storm and with having prevented $10 million in damages. This extremely rare flood was approximately 76 percent greater than the calculated Standard Project Flood (9).

Existing Flood Control Structures - Hungry Horse Dam, constructed in 1952, on the South Fork, provides the only major flood protection for the Flathead River valley between Columbia Falls and Flathead Lake. It controls the South Fork and thereby contributes a significant reduction in flood discharges on the mainstem of the upper Flathead (9).

From Kalispell to Flathead Lake there are at least 10 levees, mostly across former river channels, preventing direct inflow (6). These levees provide a low degree of protection to limited areas (33).

Alternatives to Control Floods - Of the several potential storage sites which could be developed for control of floods in the Flathead River Basin, Smoky Range and Spruce Park could be most economically developed under existing conditions (6) (33).

A potential site on the Stillwater has not been investigated in sufficient detail to present any reliable data (6).

These dams would provide electric power and flood control. They would not only practically eliminate flooding on the Flathead River but would also reduce flooding downstream (6).

The average cost of storage at the Smoky Range site would be relatively low ($84 per acre foot); however, the average cost at Spruce Park would be relatively high ($298 per acre foot) (6).

The Corps of Engineers has conducted studies in the Kalispell area to formulate recommendations to combat the flood problem. The studies were authorized by resolutions adopted August 3, 1951, and

July 28, 1964, by the Committee on Public Works of the United States Senate, and September 3, 1964, by the Committee on Public Works of the House of Representatives (33).

In the course of study the Corps of Engineers has determined that the Smoky Range Dam is not a feasible alternative at this time.

In a revised draft environmental statement transmitted to the Council on Environmental Quality on May 22, 1975, the Corps recommended construction of a setback levee 6-3/4 miles long along the lower Flathead River. The levee would protect against a 200-year flood; this is, a flood with an average chance of occurrence of 0.5 percent in any year.

On March 15, 1971, the Governor of Montana signed House Bill 265, which relates to management and regulation of the floodways of water courses. This law required that major drainages be zoned to include the flood plain affected by flood flows having a recurrence interval of up to 50 years; i.e., a flood with an average chance of occurrence of 2.0 percent in any year.

Other Alternatives - One of the more effective and lower cost possibilities for developing flood control storage in the Flathead would result from increasing the capacity of the Flathead Lake outlet channel between the lake and Kerr Dam. The improved channel would allow the lake to be held at minimum controlled elevation until the storage space is needed for flood control. An increased channel capacity would allow control of the lake level during floods that exceed the capacity of the present channel (6).

The Corps of Engineers has stated that the flood control which would be provided by this project would be for the larger, infrequent floods and would primarily benefit the lakeshore residents (33). This alternative has been vigorously opposed by Flathead lakeshore owners.

Major Non-conforming Areas and Uses

The lower Middle Fork (between Bear Creek and Hungry Horse) has undergone extensive development such as the railroad and major highway near the river. During the 1964 flood some debris from manmade developments was washed into the stream. The debris included a guardrail from Highway No. 2 and iron bars from a railroad tunnel. There are also abandoned vehicles on the bank at two locations. This debris is hazardous to river floaters and/or detracting to the scenic environment.

There are opportunities for continued subdivision and development of private land. However, intensive development could be a major problem since it could result in deterioration of the scenic quality and contribute to pollution.

Development at the town of Hungry Horse along the lower Middle Fork

View into Canada from the North Fork

V INTERSTATE AND INTERNATIONAL

Interstate Compacts

Interstate compacts relating to river control, storage, distribution, and allocation of water stem from Federal and State legislation. These compacts are, in effect, equal to law. Therefore, water and related land resource development programs must be compatible with the requirements of compacts which are in effect (22).

There are no compacts now in effect, although one has been under consideration for several years:

Columbia Interstate Compact (Unperfected) (6)

Congress, by Act of July 16, 1952 (66 Stat. 737), gave its consent to the States of Idaho, Montana, Oregon, Washington, and Wyoming to enter into a compact providing the equitable division and apportionment of the waters of the Columbia River and all its tributaries in the states entering into such compact, upon the condition that one qualified person shall be appointed by the President of the United States as a representative of the United States. This congressional consent was modified to include the States of Nevada and Utah by Act of July 14, 1954 (68 Stat. 468).

Several drafts of the proposed compact have been prepared and signed by the compact commissioners; however, not all of the State legislatures have adopted the compact. Negotiations are still in progress.

Treaties with Canada (6)

Several treaties have been made affecting boundary waters between the United States and Canada. Only one treaty includes considerations which affect the North Fork of the Flathead: Boundary Waters Treaty with the United Kingdom (Dominion of Canada), January 11, 1909. The 14 articles in this treaty contain three features which are pertinent to the North Fork:

a. Establishes an International Joint Commission and gives the Commission, along with the United States and the Dominion of Canada, jurisdiction to pass upon certain cases involving uses, obstructions, and diversions of boundary waters.

b. Requires approval of the International Joint Commission to construct or maintain any remedial or protective work or any dams or other obstructions in waters flowing from boundary waters or in water at a lower level than the boundary in

rivers flowing across the boundary, the effect of which is to raise the natural level of waters on the other side of the boundary.

c. Provides that boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other.

It appears that provisions of the treaty would serve to enhance Wild and Scenic Rivers objectives if the North Fork were included in the System.

Discussion of Flathead Drainage in Canada

About 389,000 acres of the North Fork of the Flathead River drainage lie within British Columbia, Canada. Eighty-five percent of the land is within the Flathead Provincial Forest and is administered by the British Columbia Forest Service; another 13 percent is Park Reserve and is adjacent to Waterton Lakes National Park in Canada and Glacier National Park in the United States. The remaining 2 percent is private land in four parcels scattered along the river. Two of these parcels are within 3 miles of the border; however, none is inhabited.

The following quotations are taken from a letter written by Mr. J. R. Johnston, representing the Office of the District Forester in Nelson, British Columbia, in May of 1971 (see map, figure 7):

Oil and Coal:

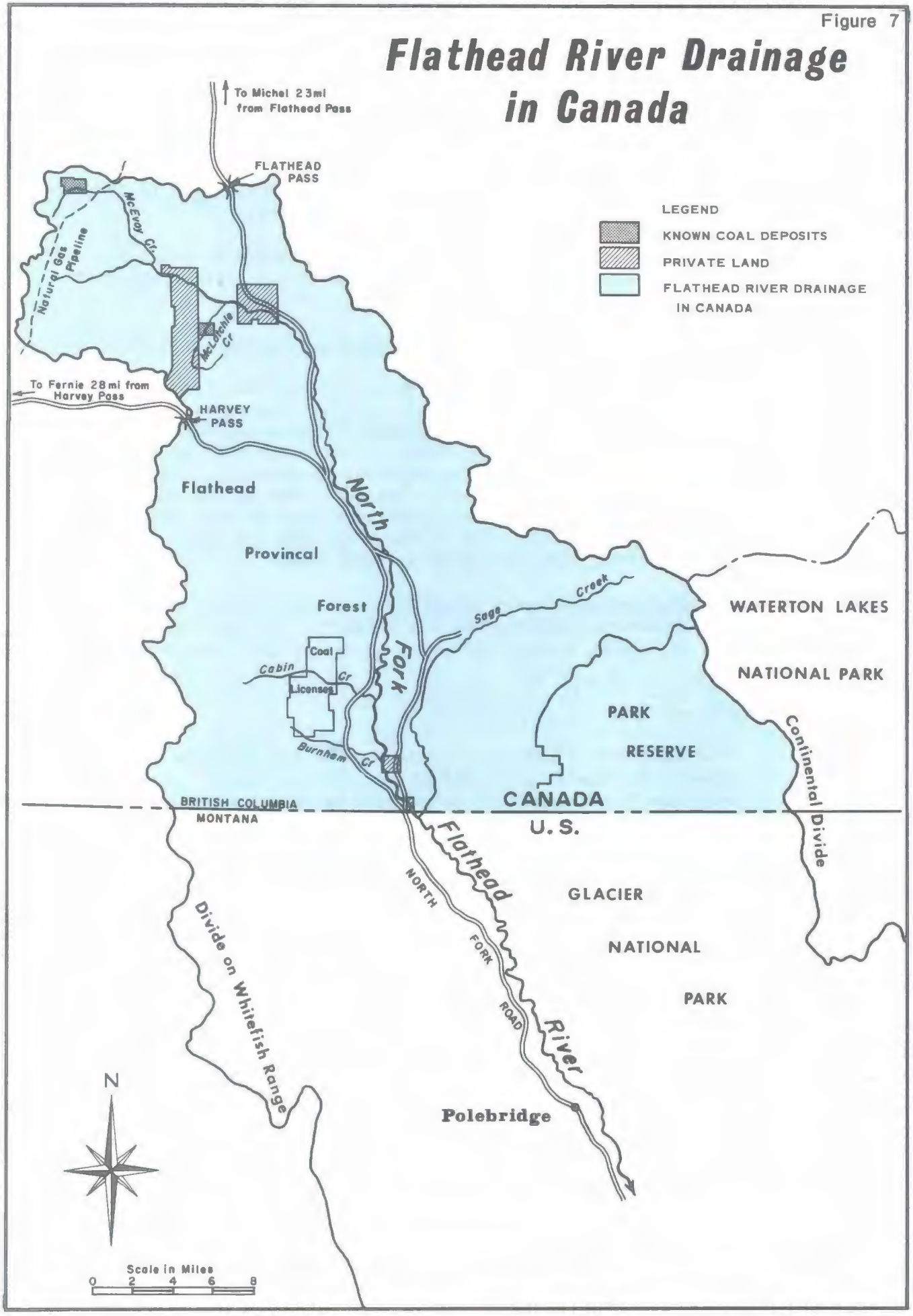
"Oil exploration has been carried out in the Flathead Forest (in Canada) since the early 1900's. Coal resources of considerable extent and value are known to exist in this area. All of the activity in this region to date has been exploratory. A few seismograph lines have been built, some drilling has been done, an ever increasing amount of tractor stripping is being carried out. Known coal deposits exist in the McEvoy and McLatchie Creek areas. Coal deposits in the Burnham Creek and Cabin Creek areas are now being checked over."

The McEvoy and McLatchie coal deposits are indicated on the map (figure 7) and are about 25 miles north of the United States-Canada border.

A coal license covering about 5,000 acres (known as the Sage Creek Project) has been issued in the Burnham-Cabin Creek area. It is located 4 miles north of the United States-Canada border. Pre-feasibility economic and engineering studies have been

Figure 7

Flathead River Drainage in Canada



conducted. Additional engineering, economic, and environmental feasibility studies are now being conducted before making a decision as to whether and how to develop the Sage Creek deposit for production, estimated at 3 million tons of coal per year (The Sage Creek Project, Rio Algom Limited, Toronto, Ontario, Canada, 1975).

Timber Harvest:

> "Forest fires in the past have repeatedly burned out the lower Flathead. The main Flathead Valley has considerable fire history. High winds in 1964 caused extensive blowdown in many mature timber stands. Spruce bark beetles in epidemic proportions since 1964 accelerated logging activity. Cutting areas have been designed with the idea of salvaging Spruce Bark Beetle attacked timber. In fact most of the logging in the Flathead since 1964 has been in blowdown and Bark Beetle salvage."

A map attached with Mr. Johnston's letter indicates that about 14,000 acres were included in existing timber sales. With the exception of 180 acres next to the Flathead River, all of these areas were in side drainages 2 to 15 miles from the Flathead River. Proposed sales, covering about 3,000 acres, were also planned at locations away from the river.

Industrial installations include two portable sawmills with a combined capacity of 12,000 to 18,000 board feet per day and some seismic and mining exploration of an intermittent nature.

Agriculture Uses:

> "Any agricultural venture in this area because of climatic conditions would be of marginal nature. Limited grazing is feasible. At present Forest Service grazing permits have been issued to cover 60 head of cattle."

Transportation:

> "Considerable number of low standard access roads exist from past and recent mining exploration and logging activities. Main access roads . . . vary from 20 feet to 12 feet wide, road surface gravel."

Michel is 23 miles north of Flathead Pass and Fernie is 28 miles west of Harvey Pass. The roads through these passes and the North Fork road from the United States provide the main access to the drainage.

Recreation:

"There is quite extensive recreational use by public: hunting, fishing, camping, during summer and fall. There is one Big Game Guide and Outfitter on Sage Creek. Owner has buildings and about ten horses. Tenure established by Special Use Permit. The owner . . . and his wife are the only actual residents in the Flathead, and they usually winter elsewhere."

"Seven other Guide Outfitters operate during hunting season, spring and fall, from temporary camps."

Other Residents:

"Logging, sawmilling and mining personnel are in the area on a short term seasonal basis. Trailers are in vogue for camp facilities."

Plans for the Future:

"No significant expansion in logging activity is expected in this area. Increased mining activity has the greatest potential. Discovery of major coal deposits will, no doubt, result in large scale coal development. With this eventuality, transportation and residential facilities would respond accordingly. The only activity that we could visualize that may have an adverse effect on water quality would be mining development. We should also mention that our Government is intensely concerned about environmental control. We hope that any industrial impacts will be minimal."

VI INVOLVEMENT OF OTHERS (prior to hearing)

Public Involvement

During the summer of 1970 five public meetings were held in Flathead Valley communities and Great Falls to explain the Flathead Wild and Scenic River Study. The response at these meetings indicated a need for a Public Advisory Committee and provisions for a hearing on the final recommendation. The study plan was revised to incorporate both of these concerns.

A nine-member Wild and Scenic Rivers Advisory Committee was appointed in October of 1970. A tenth member was later added from the agricultural community because of expressed public concern for this need.

Committee Members

John J. Craighead, Missoula	Larry Magone, Whitefish
Edward Foss, Condon	Charles McQueary, Kalispell
Robert W. Funk, Missoula	Louis T. Phillips, Kalispell
Floyd Johnson, Kalispell	Robert W. Sykes, Kalispell
Nonie Krall, Hungry Horse	William C. Walterskirchen, Kalispell

The Committee was formed to advise the Forest Supervisor on matters of public concern. Following is a summary of the Advisory Committee's activities:

1. Seven office meetings were held to discuss the study and approaches to public involvement.

2. Portions of the North Fork and Middle Fork were floated. Problems were observed on the ground in Meadow Creek area on the South Fork.

3. In order to expand their understanding of the public's wants and desires for management, the Advisory Committee held public meetings on the North and Middle Forks (location of private landowners).

4. A questionnaire survey was conducted on the North Fork to determine individual concerns for management of the river area.

The Advisory Committee used the information gathered to help give insight into problems and opportunities of public involvement and understanding.

Three followup meetings (with Advisory Committee representation) were held at the request of North Fork landowners (principally through the North Fork Improvement Association) to further explore river management possibilities.

There were no landowner organizations initially on the Middle Fork. Therefore, letters were sent to known landowners to determine their interest and concerns. As a result, meetings were held in Shelby and Cut Bank (east of the Continental Divide) primarily with summer homeowners along the Middle Fork. The Shelby area residents formed the "Middlefork Landowners Association" to determine the thoughts and opinions of its members. A questionnaire developed by officers in the Association was used for this purpose and the results were forwarded to the Forest Service.

Public Views - In November of 1971 a summary was made of the public response concerning the Flathead Wild and Scenic River Study. This summary was used in a Progress Report to interested publics and agencies participating in the study (29). The summary follows:

Points of agreement:

1. Indiscriminate subdivision of private land is not appropriate along the river.

2. Protection of tributary streams is important.

3. Management of land beyond river boundary is a concern.

4. There are enough airstrips along rivers.

5. There should not be any timber cutting which has a negative visual impact.

6. Additional parallel roads close to rivers should not be built.

7. High quality water standards must be maintained.

8. Construction of dams is opposed.

9. The landowner should pay no more nor no less for wild rivers than any other taxpayer.

10. Guidelines are needed to promote proper development and use.

11. Generally sufficient access exists on public land without acquiring private land access.

12. There should be no incompatible commercial development.

13. The possibility of pollution from Canada is a concern.

14. Increased public use will occur with or without classification.

15. Standards for adequate sewer systems need to be considered in river planning.

16. Additional road bridges are inappropriate.

17. Billboards are inappropriate.

18. Old rustic buildings along the rivers are picturesque.

19. Public use of private land along the river is a problem.

20. The public does not understand scenic easements.

21. The public likes the river the way it is.

22. The North Fork road should essentially remain in its present location.

23. The character of the North Fork road should not be materially changed.

24. Additional recreation developments are needed.

25. Public access points to the river should be signed.

26. Litter problems will increase.

27. The North Fork road is related to the river. It should be considered as part of the total management picture.

There was no general consensus on:

1. Future property values of land within the proposed river boundary.

2. The amount of land that should be included within the proposed river boundary.

3. The best method to protect river values (whether by scenic easement, county-wide zoning, purchase by government, etc.).

4. The specifics to be included in scenic easements.

Public response is discussed in further detail under the "ANALYSIS OF ALTERNATIVES" section of this report.

State Involvement

The Governor elected to participate and cooperate in the Flathead Wild and Scenic River Study rather than engage in a "joint" study effort. The chairman of the Governor's Resource Council was designated as the State liaison.

The Governor's Office was periodically informed by Progress Reports of the status of the study. His office was represented on a field trip in the summer of 1972 to review the problems and opportunities associated with the study.

Interagency Involvement

A list of Federal and State agencies participating in the study is included in Appendix 9.

Prior to the beginning of actual field inventory work, a meeting was held with Federal and State agencies to determine what information was already available and how the respective agencies might participate in the study. Followup visits were made to identify specific inventory items which agencies could help supply.

A field trip was held in July of 1971 to acquaint the agencies with the study and to discuss matters of concern.

The agencies were kept informed of the status of the study through personal contact and the periodic issuance of Progress Reports. Their comments have been considered in this report.

Elected Official Involvement

The Federal and State Congressional delegation, county commissioners, and mayors of local communities were periodically informed of the study progress. A field trip was held in July of 1971 to acquaint them with the study.

VII ANALYSIS OF ALTERNATIVES

Subjective review of some major points:

1. Forty-eight percent of the shoreline within the proposed Wild and Scenic Rivers System is within Glacier National Park or the Bob Marshall Wilderness. Management options within these areas are restricted by law.

2. Private ownership of land is small compared to public ownership along the study river; however, private land is situated so that it affects management considerations on half of the study river.

3. Existing or potential agricultural uses do not appear to be substantially affected with or without inclusion in the Wild and Scenic Rivers System.

4. Spruce Park Dam is not now economically feasible; Smoky Range is near-marginal, but future conditions may alter this situation. Wild and Scenic Rivers status, unless repealed, would preclude dam development that might contribute to the future needs for hydroelectric power.

5. Although land adjacent to most of the river supports stands of trees, the potential for timber harvest is affected by:

   a. lands located in Glacier National Park or the Bob Marshall Wilderness which preclude timber harvesting (48 percent of study river shoreline).

   b. management direction for National Forest land adjacent to water which gives recreation and wildlife primary consideration.

6. There is no existing mining activity and potential for mineral discovery appears low.

7. The North and Middle Forks are part of the fishery associated with Flathead Lake. Westslope cutthroat trout are dependent upon the free-flowing character of these forks for spawning.

8. Inclusion of the river within the Wild and Scenic Rivers System would directly affect private landowners adjacent to the river. Landowners are concerned about how this decision would affect their land.

While all resources, uses, and activities are important in determining the best use of the river area, the major concerns expressed by those involved in the study appear to be (1) the

need for water resource development, (2) the concerns of private landowners along the river, and (3) the need to protect the fisheries, scenery, and other related river values.

Alternatives began to form as the inventory was completed and public response was compiled. A questionnaire (prepared by Robert Funk of the Wild Rivers Public Advisory Committee) was used to solicit the thoughts of landowners residing on the North Fork regarding possible management of the river. A similar approach was used by the Middlefork Landowners Association to poll its membership on portions of the Middle Fork.

This information, along with that gathered at public meetings and the data gathered from other agencies and resource inventories, was reviewed. Alternatives were identified and recorded by the study leader and presented to the Wild Rivers Public Advisory Committee. The result of their review formed the basis for the first draft of a set of alternatives.

This first draft was again reviewed by the Wild Rivers Public Advisory Committee as well as District Rangers, resource specialists, and other Forest Service personnel. This resulted in alternatives to present to the public. However, since most of the public expression concerning the study was local, it was decided to make an analysis which more deliberately considered national as well as local needs. A procedure was used which resulted in the development of alternatives ranging from optimum consideration of environmental quality to optimum output of goods and services. This was developed with a multidisciplinary team and led to alternatives which could contribute support to one or more of the following broad objectives:

1. To enhance environmental quality by the management, conservation, preservation, creation, restoration, or improvement of the quality of certain natural and cultural resources and ecological systems.

2. To enhance regional development through increases in the value of a region's income, increases in employment, and improvements in its economic base, environment, and social well being.

3. To enhance national economic development by increasing the value of the Nation's output of goods and services and improving national economic efficiency.

Note: A condition in the development of alternatives was that each be (1) within the capabilities of the land, (2) compatible with existing laws, and (3) workable.

Step 1

The expressed needs of people were condensed to the eight categories which appeared most important in making the broad determination of the best use of the land.[1/] These were:

1. Water resource development (dams) - There is an increasing national need for electrical power and flood hazard reduction.

2. Timber production - Wood products continue as a primary material in helping to meet national needs for housing. Timber production is also important to the local economy.

3. Recreation - This need represents the activity associated with development of facilities to accommodate large numbers of recreationists.

4. Commercial development - This represents a need to develop land (primarily private) along the river to provide commercial services such as gas stations, motels, and stores. It could result in income for landowners and increase the taxable value of the land.

5. Subdivision of private land - Some landowners have purchased land as a speculative venture with the purpose of subdivision. This could also increase the taxable value for county income.

6. Wildlife habitat - There is an increase in public interest and concern for maintaining fish and wildlife resources. This concern has been regarded as a need the public believes should receive due consideration along with other resources.

1/ Determined by the multidisciplinary team by reviewing public expression at Wild and Scenic Rivers meetings and Forest listening sessions. Also included was a consideration of national needs published in Forest Service documents such as Framework for the Future.

7. Scenic values - The scenery along the Flathead River is considered outstanding by most people who have viewed it. Nationally the value of such scenery has been recognized. This represents a need for its protection.

8. Naturalness of the river - Much of the land adjacent to this free-flowing river is undeveloped. This condition is diminishing on the Nation's rivers and has brought increased public concern for protecting some streams in their natural environment.

Step 2

The character of the river varies along different stretches of the river. Therefore, the river was divided into 10 segments which tended to narrow the management consideration on each stretch. This division was based primarily on the degree of existing development, but also included considerations of classified lands (wilderness), resource potential, and expressed public concern. The 10 segments (see figure 8) are:

River segment No. 1 - That portion of the Middle Fork within the Bob Marshall Wilderness. Includes 13.5 miles of river from the headwaters downstream to the wilderness boundary.

River segment No. 2 - The undeveloped portion of the Middle Fork from the wilderness boundary downstream to Bear Creek, a distance of 33.1 miles. This was an area ranking high in naturalness and scenic values, with low recreation development opportunity, medium timber potential, and no private land. This segment includes a potential water development (Spruce Park Dam).

River segment No. 3 - That portion of the Middle Fork that parallels Highway No. 2 from Bear Creek downstream for 37.9 miles to West Glacier. Because of existing developments (i.e., highway and railroad), this stretch rated low in naturalness. It does include private land, some of which has been developed, but has little commercial development.

River segment No. 4 - The 16.1 miles of the Middle Fork from West Glacier downstream to its confluence with the South Fork is primarily in private ownership. Existing development (including commercial) is the greatest in this segment; naturalness is low.

River segment No. 5 - That portion of the South Fork within the Bob Marshall Wilderness. Includes 40.6 miles of river from the headwaters downstream to the wilderness boundary.

River segment No. 6 - The undeveloped portion of the South Fork from the wilderness boundary downstream to Spotted Bear, a distance of 11.1 miles. The naturalness of this area rated high. The reason for separating this segment from the previous segment is that it is outside the wilderness.

River segment No. 7 - The 8.4 miles of the South Fork from Spotted Bear downstream to Hungry Horse Reservoir. Because of developments this segment rated low in naturalness (roads parallel this segment). The scenic evaluation of this segment is lower than the adjacent segment upstream.

River segment No. 8 - Includes 7.2 miles of the North Fork from the Canadian border downstream to Starvation Creek. This scenic segment rated high in naturalness and recreation opportunity and contains important wildlife habitat. However, it also contains considerable private land, portions of which have been subdivided. National Park borders the east shore.

River segment No. 9 - The segment of the North Fork from Starvation Creek downstream to Camas Bridge, a distance of 33.3 miles, is bordered on the east shore by National Park and mixed ownership of National Forest, State, and private land on the west shore. Because of roads and developments, this segment rated medium in naturalness. It contains a high potential for subdivision and presently includes a commercial complex.

River segment No. 10 - The 17.8 miles of the North Fork from Camas Bridge to its confluence with the Middle Fork is bordered on the east shore by National Park and on the west shore by National Forest and private land. The segment includes a potential water development (Smoky Range Dam). It does not have the significant wildlife habitat found in the two segments upstream; however, it does rate high in recreation.

This segment rates medium in subdivision potential, especially along the lower end near the Middle Fork.

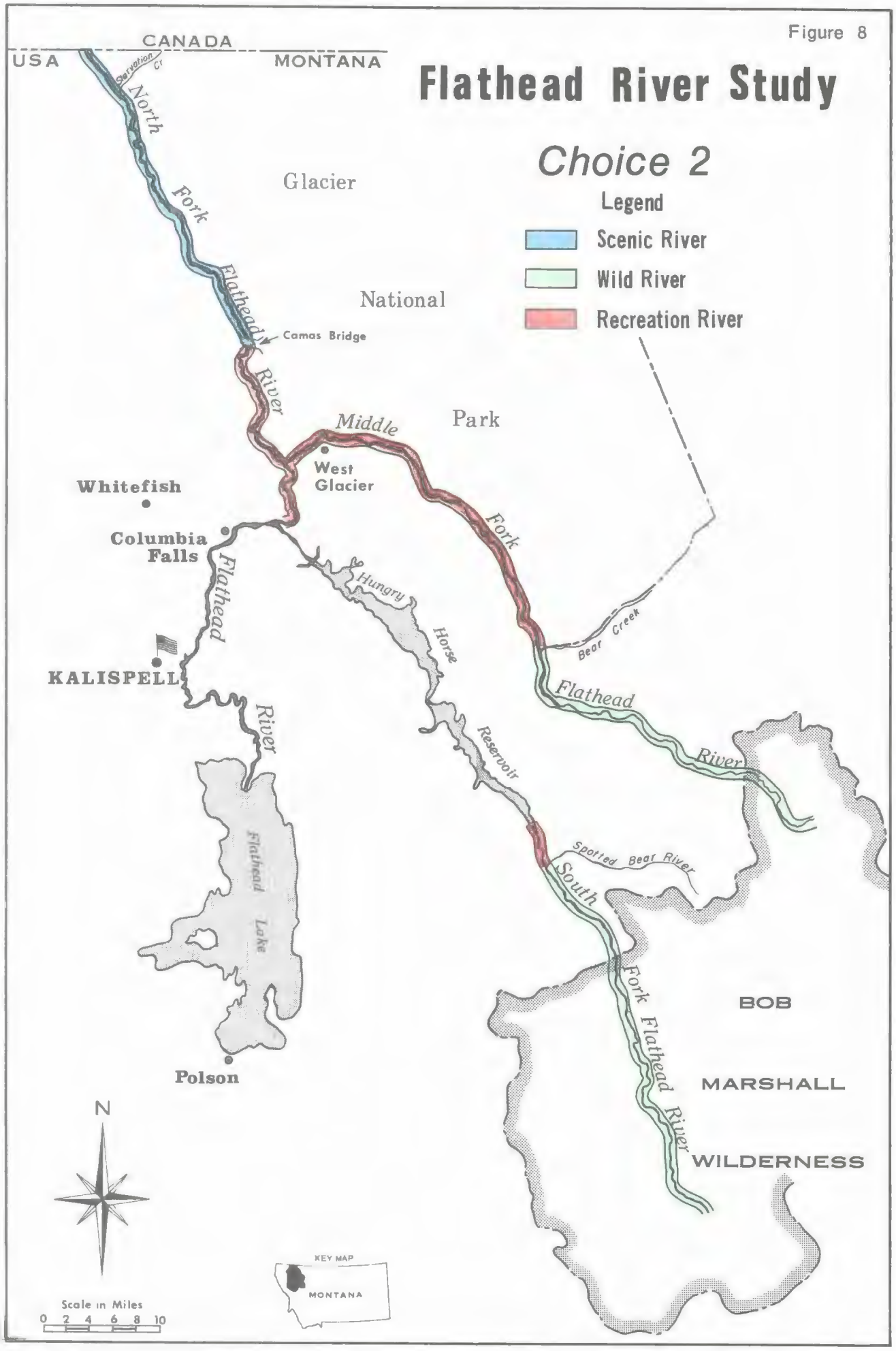


Figure 8
Flathead River Study
Choice 2
Legend
Scenic River
Wild River
Recreation River
CANADA
USA
MONTANA
Saturation Cr
North Fork Flathead River
Glacier National Park
Camas Bridge
Middle Fork
West Glacier
Whitefish
Columbia Falls
Flathead River
KALISPELL
Hungry Horse Reservoir
Bear Creek
Flathead River
Spotted Bear River
South Fork Flathead River
Flathead Lake
Polson
BOB MARSHALL WILDERNESS
N
KEY MAP
MONTANA
Scale in Miles
0 2 4 6 8 10

Step 3

The objective in developing alternatives was to derive "Choices for Management" to which the public could respond. With this in mind, it was decided at the onset to define the first alternative as follows:

Choice 1 - This alternative was listed as an opportunity for those interested to describe their plan of management (assuming other alternatives were not compatible with their thoughts).

Step 4 (Environmental quality alternative)

The eight identified needs were then arranged in descending order according to their potential to meet the objective of enhancing environmental quality (listed below).

The following is an analysis of the eight needs compared to the capability of each of the 10 river segments to meet these needs. Capability is defined at the potential of the resource or activity minus the constraints of the land. This capability is expressed in terms of "H" (high), "M" (medium), and "L" (low).

Major Needs Listed in Priority	Land Capability									
	River Segments									
	1	2	3	4	5	6	7	8	9	10
1. Naturalness of river	H	H	L	L	H	H	L	H	M	M
2. Scenic values	M	H	M	L	H	M	L	H	M	L
3. Wildlife habitat	M	M	H	L	H	H	H	H	H	L
4. Recreation	L	M	M	H	L	M	M	H	H	H
5. Subdivision of private land	-	-	H	H	-	-	-	H	H	M
6. Commercial developments	-	-	L	H	-	-	-	L	M	L
7. Timber production	-	L	M	L	-	M	M	-	L	M
8. Water resource developments (dams)	-	H	-	-	-	-	-	-	-	H

Based on the above rating, the best type of land use was derived for each river segment (to meet the objective of enhancing environmental quality).

The ratings at the top of the chart were considered first since the needs are listed in descending order of importance. This led to the following land use recommendations for each river segment:

Environmental Quality Alternative Best Use

River Segment	
1	Maintain naturalness; little or no development.
2	Maintain naturalness; little or no development.
3	Continue development compatible with scenic values and wildlife.
4	Continue development which does not detract from recreation development and activity.
5	Maintain naturalness; little or no development.
6	Maintain naturalness; little or no development.
7	Emphasize recreation and wildlife.
8	Maintain naturalness; plan some subdivisions.
9	Continue development compatible with scenic values; emphasize recreation and wildlife.
10	Continue development compatible with scenic values and wildlife values.

It was apparent that some segments could be combined since the type of indicated "best use" was similar (segments 1 and 2, for example). This consideration was made for the 10 segments and an alternative was defined as follows:

Choice 2 - Include in Wild and Scenic Rivers System with portions Wild, portions Scenic, and portions Recreational. See map, figure 8.

North Fork:
Canadian border to Camas bridge.....Scenic
Camas bridge to confluence with Middle Fork.....Recreational

Middle Fork:
Headwaters to Bear Creek.....Wild
Bear Creek to confluence with South Fork.....Recreational

South Fork:
Headwaters to Spotted Bear.....Wild
Spotted Bear to Hungry Horse Reservoir.....Recreational

Management of the portions of the South Fork and Middle Fork shown as "Wild" would be directed toward maintaining the river and its environment in its present condition. The portion of the North Fork shown as "Scenic" would be managed to permit only limited development to insure that the shorelines remain largely primitive. The river shown as "Recreational" would be managed with emphasis on recreational activities.

Step 5 (Regional Development Alternative)

The eight identified needs were arranged by the multidisciplinary team in descending order according to their potential to meet the objective of enhancing regional development (listed below). It should be noted that the priority listing of the needs is different than that listed for enhancing environmental quality.

The analysis procedure explained in Step 4 was used to determine the capability of the 10 segments to meet the eight needs (the capability is the same for each segment as that shown for enhancing environmental quality; only the priority of the needs has changed).

Major Needs Listed in Priority	Land Capability									
	River Segment									
	1	2	3	4	5	6	7	8	9	10
1. Recreation	L	M	M	H	L	M	M	H	H	H
2. Commercial developments	-	-	L	H	-	-	-	L	M	L
3. Subdivision of private land	-	-	H	H	-	-	-	H	H	M
4. Wildlife habitat	M	M	H	L	H	H	H	H	H	L
5. Timber production	-	L	M	L	-	M	M	L	L	M
6. Scenic values	M	H	M	L	H	M	L	H	M	L
7. Naturalness of river	H	H	L	L	H	H	L	H	M	M
8. Water resource development (dams)	-	H	-	-	-	-	-	-	-	H

Following the procedure explained in Step 4, the best type of land use was derived for each river segment (to meet the objective of regional development).

Regional Development Alternative Best Use

River Segment	
1	Natural with little or no development.
2	Emphasize primitive recreation and wildlife values.
3	Development including subdivision with consideration of wildlife and recreation.
4	Development including commercial development and subdivision with consideration of wildlife and recreation.
5	Natural with little or no development.
6	Natural with minimum developments.
7	Emphasize recreation.
8	Emphasize recreation; continue subdivisions.
9	Maximum recreation development.
10	Maximum recreation development.

Analysis of the river segments indicated that the best type of land use for regional development could not be expressed in one alternative. This is due to the fact that segments 3 and 4 could be developed to varying degrees and still serve the objective of regional development. Consequently two choices were derived under this alternative as follows:

Choice 3 - Include in Wild and Scenic Rivers System with portions Wild and portions Recreational (no Scenic). This differs from Choice 2 in that the portion of "Scenic" river would be managed as a "Recreational" river. See map, figure 9.

The principal differences between this choice and Choice 2 are that this choice would:

- give higher consideration for recreational values.
- permit greater opportunity for recreation developments on both private and public lands.
- result in less regulation of land use and development.
- possibly result in greater alteration of the natural environment.

Choice 4 - Include in Wild and Scenic Rivers System with the lower Middle Fork excluded. See map, figure 10.

This choice excludes consideration of the Middle Fork from Bear Creek downstream to the confluence of the South Fork. Other portions of the river are the same as described in Choice 3.

Step 6 (National Economic Development Alternative)

With the procedure used in Steps 4 and 5, an analysis was made to determine the best type of land use to meet the objective of national economic development.

Major Needs Listed in Priority	Land Capability									
	River Segments									
	1	2	3	4	5	6	7	8	9	10
1. Water resource development (dams)	-	H	-	-	-	-	-	-	-	H
2. Timber production	-	L	M	L	-	M	M	L	L	M
3. Recreation	L	M	M	H	L	M	M	H	H	H
4. Commercial developments	-	-	L	H	-	-	-	L	M	L
5. Subdivision of private land	-	-	H	H	-	-	-	H	H	M
6. Wildlife habitat	M	M	H	L	H	H	H	H	H	L
7. Scenic values	M	H	M	L	H	M	L	H	M	L
8. Naturalness of river	H	H	L	L	H	H	L	H	M	M

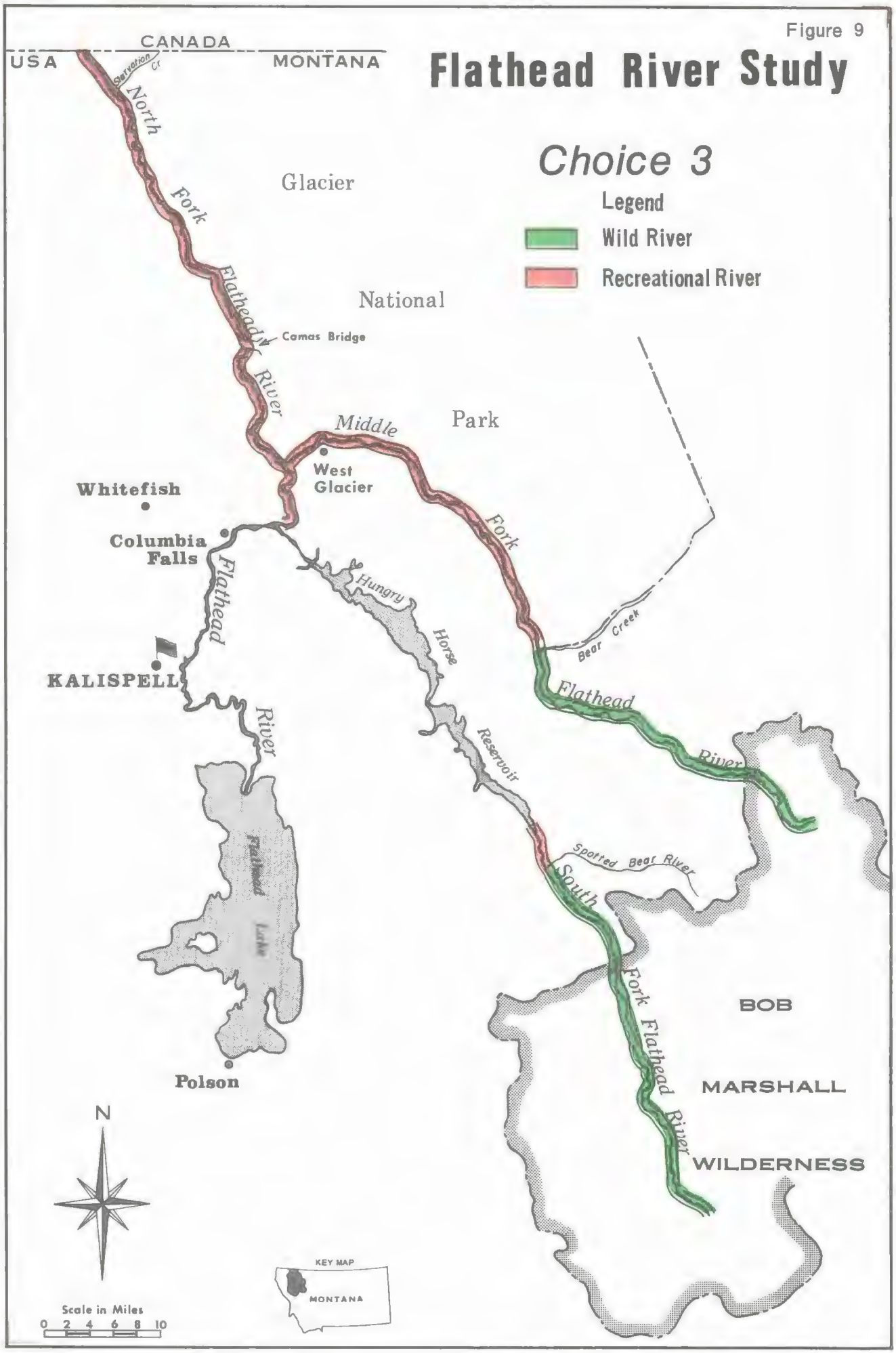


Figure 9
Flathead River Study
Choice 3
Legend
Wild River
Recreational River
CANADA
USA
MONTANA
Saturation Cr
North Fork Flathead River
Glacier
National
Park
Camas Bridge
Middle Fork Flathead River
West Glacier
Whitefish
Columbia Falls
Flathead River
KALISPELL
Hungry Horse Reservoir
Bear Creek
Flathead River
Spotted Bear River
South Fork Flathead River
Flathead Lake
Polson
BOB
MARSHALL
WILDERNESS
N
KEY MAP
MONTANA
Scale in Miles
0 2 4 6 8 10

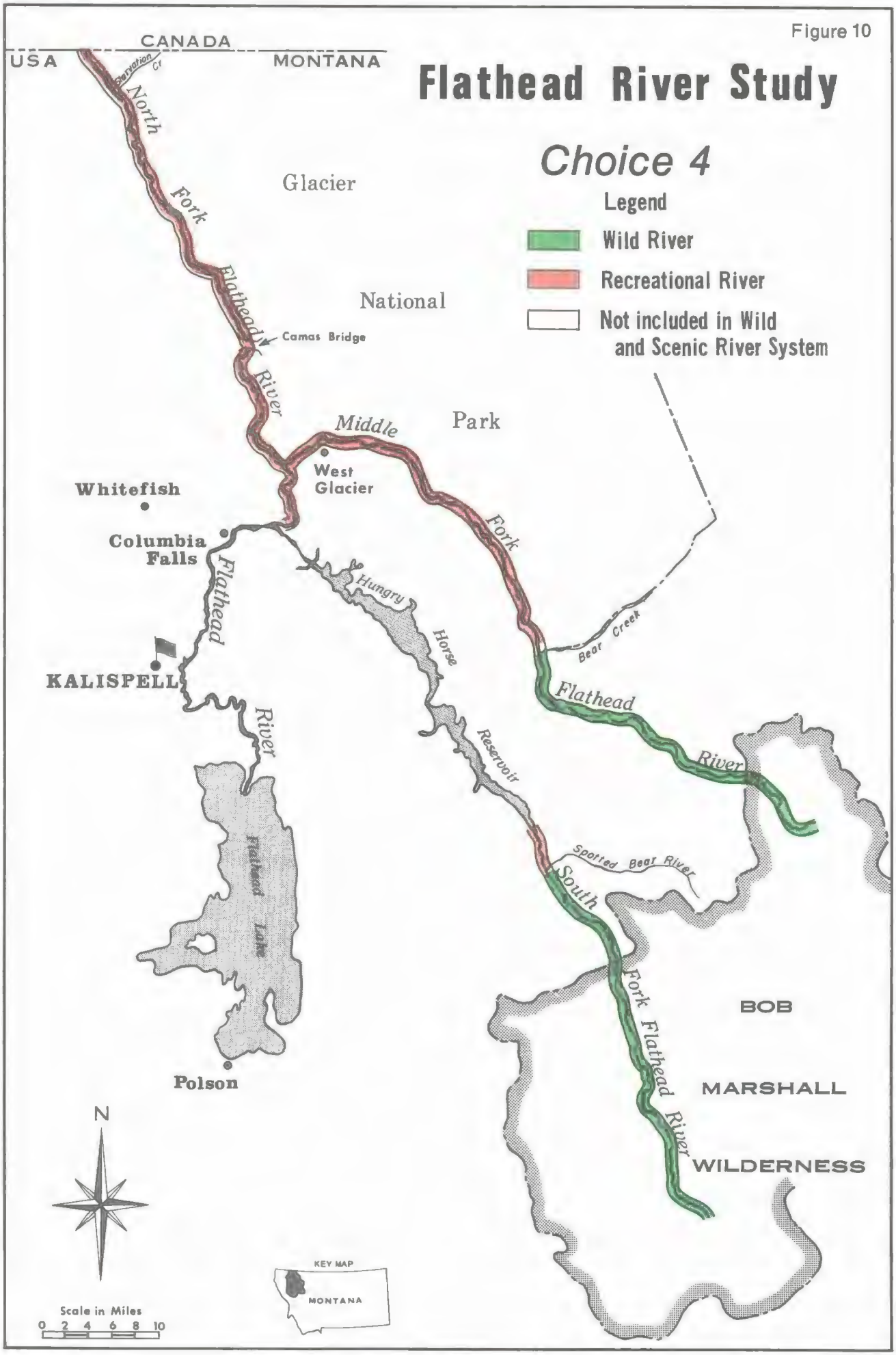


Figure 10
Flathead River Study
Choice 4
Legend
Wild River
Recreational River
Not included in Wild and Scenic River System
CANADA
USA
MONTANA
Boundary Cr
North Fork Flathead River
Glacier National Park
Camas Bridge
Middle Fork
West Glacier
Whitefish
Columbia Falls
Flathead River
KALISPELL
Hungry Horse Reservoir
Bear Creek
Flathead River
Spotted Bear River
South Fork Flathead River
Flathead Lake
Polson
BOB MARSHALL WILDERNESS
N
KEY MAP
MONTANA
Scale in Miles
0 2 4 6 8 10

National Economic Development Alternative Best Use

River Segment	
1	Leave natural; no development.
2	Construct dam with campground development; capitalize on recreation.
3	Full development with emphasis on timber production, recreation, and subdivision.
4	Full development with emphasis on recreation, but also including commercial development and subdivision.
5	Leave natural; no development.
6	Emphasize timber production and recreation facilities.
7	Emphasize timber production and recreation facilities.
8	Emphasize recreation facilities and include subdivision.
9	Same as segment 8, but include commercial development.
10	Construct dam with full development.

Analysis of this alternative led to the following choice for management:

Choice 5 - Entire river system not included under Wild and Scenic Rivers Act. Management would continue under existing laws and regulations. Dams would remain a possible alternative in future considerations of water resource development needs. See map, figure 11.

Step 7

Choices 2, 3, 4, and 5 were then evaluated on the basis of benefit and cost (or benefit and value foregone). This analysis was made to help determine the dollar values involved, the effects on people and the local and regional area, and the effect on the land resource. Choice 1 could not be evaluated in this analysis since it did not represent a definite alternative. The evaluation is shown in figures 12, 13, and 14.

Step 8 (Public Response)

Publication of "Choices for Management" followed public participation in (1) the North Fork Questionnaire, (2) Middlefork Landowners questionnaire, and (3) public meetings concerning the study and management of the river system.

The report, "Choices for Management," was intended to provide a summary of findings to date and to indicate the direction the study was headed. For example, the report stated that there was a lack of support to date for Choice 5 (entire study river not included under the Wild and Scenic Rivers System). The public was invited to make response and/or request more information through correspondence or through additional meetings.

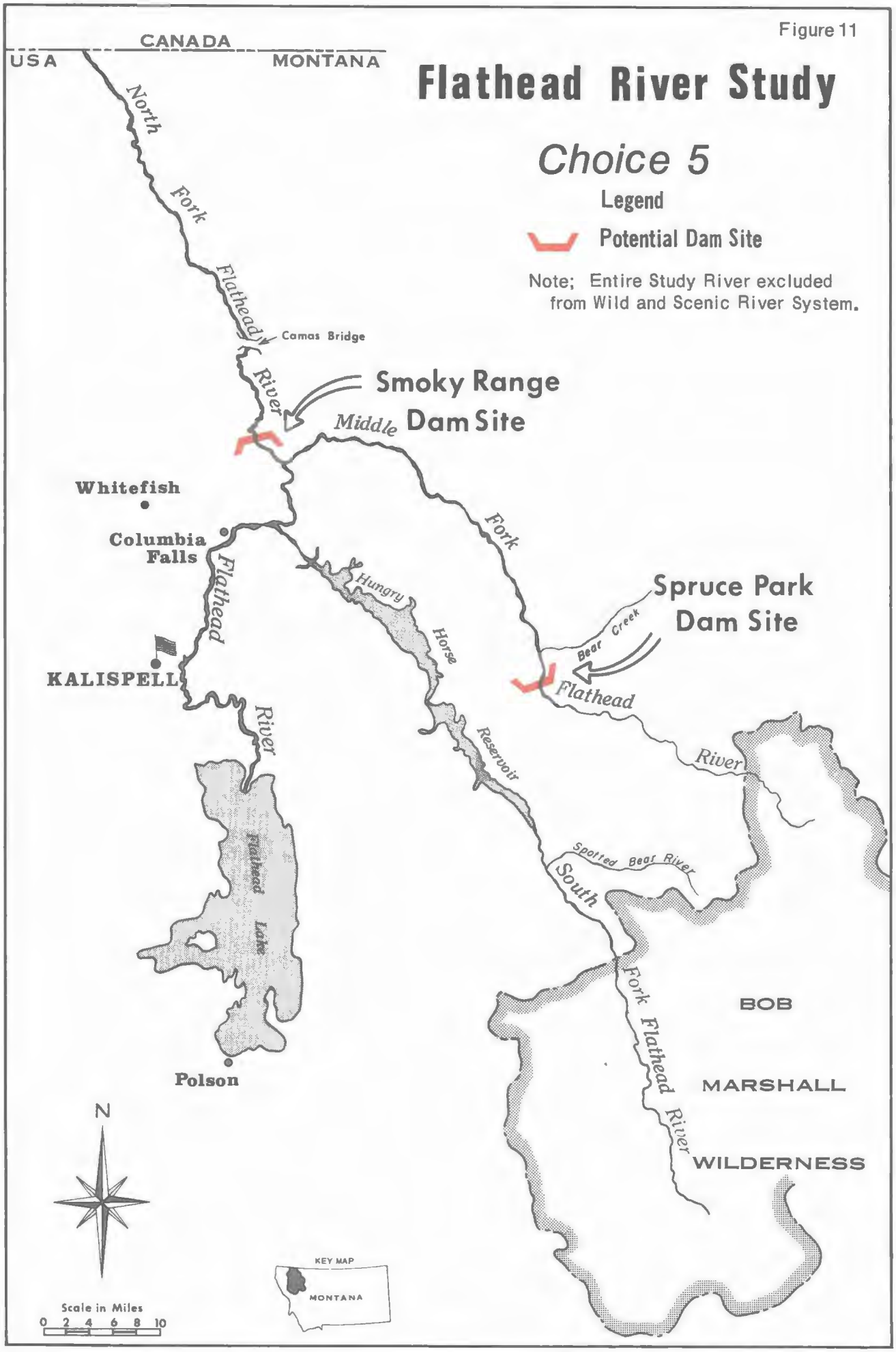


Figure 11
Flathead River Study
Choice 5
Legend
Potential Dam Site
Note; Entire Study River excluded from Wild and Scenic River System.
CANADA
USA
MONTANA
North Fork Flathead River
Camas Bridge
Smoky Range Dam Site
Middle Fork Flathead River
Whitefish
Columbia Falls
Flathead River
KALISPELL
Hungry Horse Reservoir
Spruce Park Dam Site
Bear Creek
Flathead River
Flathead Lake
Polson
Spotted Bear River
South Fork Flathead River
BOB MARSHALL WILDERNESS
N
KEY MAP
MONTANA
Scale in Miles
0 2 4 6 8 10

Over 700 copies of "Choices for Management" were distributed, principally to local residents and landowners. There were 121 responses. Many individuals had already expressed their views on questionnaires and at meetings and evidently did not feel a further response was necessary.

Following is a summary of public views for each choice from the response to "Choices for Management," questionnaires, public meetings, and correspondence.

Choice 1 (A write-in choice)

The response to "Choices for Management" showed that this choice received the second greatest support. The majority of those responding to this choice were "general public" and landowners (respondents were categorized as general public, landowners, conservation groups, industry, or other agencies).

Most of the respondents favored inclusion in the System but preferred a more restrictive classification than expressed in other choices; e.g., they preferred Wild in preference to Scenic.

Choice 2 (Include in the Wild and Scenic Rivers System; portions Wild, portions Scenic, and portions Recreational--most restrictive of the choices)

This choice was supported almost equally with Choice 1 according to the responses from "Choices for Management." The "general public" was the main supporter, although there was support by all publics. The North Fork landowners' response to the North Fork questionnaire showed that 95 percent favored inclusion of the North Fork in the System and most sought the most restrictive classification possible.

Choice 3 (Include in the Wild and Scenic Rivers System; portions Wild, portions Recreational, no Scenic)

Little support was given for this choice.

Choice 4 (Include in the Wild and Scenic Rivers System with lower Middle Fork excluded)

The response to "Choices for Management" shows that this choice received more support than either Choice 1 or 2. Those favoring this choice were almost entirely Middle Fork landowners from the Essex-Pinnacle area. The Middlefork Landowners questionnaire reflected a similar concern, principally a resistance to any form of Federal control of their land.

Choice 5 (Entire system not included under Wild and Scenic Rivers Act)

Little support was given for this choice.

General Comments on Public Response:

Landowners' views concerning management of the North Fork and lower Middle Fork were important because of the private land scattered along portions of these rivers. Private landowners were concerned about how classification would specifically affect their land. There was general agreement that the river area warranted protection, that restrictions on certain uses and activities were needed, and that dam development was contrary to the best use of the river.

Although there was a wide range of individual opinion, the North Fork landowners appeared to support classification. They expressed this view in response to questionnaires used by the Public Advisory Committee and by participation at public meetings.

It was more difficult to make a general statement for the Middle Fork landowners. Those who resided in the Hungry Horse to Nyack Flats area did not organize to exchange ideas or to present their thoughts as a group. Some individual expression was strong, but the general lack of involvement indicated a "let's wait and see" attitude. The Essex-Pinnacle area was represented by two groups--the Middlefork Landowners Association (MLA) and the Glacier Wildlife Association. The members of both groups reside in the Shelby-Cut Bank area with summer homes along the Middle Fork (the MLA is comprised entirely of Middle Fork landowners; the Glacier Wildlife Association has some members who are landowners).

The MLA was sympathetic to the need to protect river values but appeared opposed to restrictions involving regulation by the Federal Government. They favored control by other means without Wild and Scenic Rivers designation. Inclusion in the Wild and Scenic Rivers System would not have necessarily required Federal control through scenic easements, but other alternatives did not appear feasible. County zoning was reviewed to determine its adequacy to provide protection of the river environment. However, zoning could be altered through the granting of variances or by rezoning and did not meet the test of providing protection for present and future generations. Covenants were also considered and found to be enforceable only by those landowners directly affected.

The MLA favored exclusion of the portion of the Middle Fork in the Essex-Pinnacle area. The Glacier Wildlife Association supported inclusion of all the study river into the Wild and Scenic Rivers System.

Conclusion

Choices 1, 2, and 4 all received significant public support. Consideration of the responses to Choice 1 (an expression for more restrictive classification than contained in Choice 2) did not appear possible under the law (definitions of river classifications in the Wild and Scenic Rivers Act, Appendix 12). It was construed that since more restrictive classification was not possible, those who responded to Choice 1 would support Choice 2.

The principal support for Choice 4 was the Middle Fork landowners. While the concerns of private landowners were important, exclusion of a segment of river involved more than private land. The management of National Forest, National Park, and State lands would also have been affected by a decision to exclude a segment of the river.

While there was some public opposition, there appeared to be general public support for inclusion of the river in the Wild and Scenic Rivers System as defined in Choice 2.

An evaluation of the benefits accrued and values foregone, shown in figures 12, 13, and 14, also led to the judgmental decision that Choice 2 was the best use of the river and adjacent lands.

It was, therefore, recommended that Choice 2 be presented at a public hearing as the Forest Service proposal.

Placid waters of the South Fork

ENVIRONMENTAL QUALITY*

Figure 12

BENEFITS	CHOICE 2	CHOICE 3	CHOICE 4	CHOICE 5	REMARKS
1. Naturalness of the river:					
a. Mileage in free-flowing state.	219	219	The difference between this choice and Choice 3 is that 54 miles would not be protected under Wild and Scenic River status; however, it appears unlikely that its free-flowing character would be altered.	55 (all within the Bob Marshall Wilderness)	
b. Miles of white water protected.	48	48	48		Estimated; based on criteria set by American Whitewater Affiliation.
c. Water quality.	Greatest potential for maintaining high water quality compared to other choices.	Somewhat less than Choice 2.	Somewhat less than Choice 3.	If dams were a future consideration they would act as catch basins for silt.	State and Federal water quality standards apply under all choices.
2. Protection of scenic values on lands adjacent to the river.	Maximum consideration on 98 miles (Wild River). High consideration on 41 miles (Scenic River). Some consideration on 80 miles (Recreational River).	Maximum consideration on 98 miles (Wild Rivers). Some consideration on 121 miles (Recreational River).	Maximum consideration on 98 miles (Wild River). Some consideration on 67 miles (Recreational River).	55 miles protected by Wilderness classification (Bob Marshall).	
3. Protection of wildlife habitat.					
a. Fish migration routes	Protected.	Protected.	North Fork and South Fork protected.		
b. Fish habitat	Highest protection.	Somewhat less than Choice 2.	Somewhat less than Choice 3.		Although much of the river management zone is within big game winter range, it contains only about 5% of the total range. Most of this 5% lies within Bob Marshall Wilderness or Glacier National Park. The opportunity to improve the range on the remainder is limited due to topography and soil condition.
c. Big game habitat: (1) Protection against development on winter range.	High.	Medium.	Medium.	Low.	
(2) Opportunity to improve winter game range.	Low.	Low.	Low.	Medium.	

COST (Values Foregone)					
1. Naturalness of the river:					
a. Mileage of free-flowing river not protected.			Probably none.	164 miles not adequately protected.	
b. Miles of white water river not protected.			20 miles of the Middle Fork.	64 miles, although it is doubtful that 3 miles on the South Fork would be affected.	
c. Water quality (potential for pollution).	Lowest potential.	Somewhat higher than Choice 2 due to increased development potential.	Same as Choice 3 except in addition there is increased potential on the lower Middle Fork.	Greatest potential due to highest development potential.	
2. Scenic values not protected.	Commercial recreation development and use could detract from scenic values at points along 80 miles of river.	Commercial recreation development and use could detract from scenic values at points along 121 miles of river.	Commercial recreation development and use could detract from scenic values at points along 67 miles of river; 54 miles could be managed with little consideration of scenic values.	164 miles of river could be managed with little consideration of scenic values.	
3. Wildlife habitat not protected.					
a. Fish migration routes.			Middle Fork not protected by classification, but it is doubtful that migration routes would be adversely affected.	Future considerations could result in dams on the North Fork and Middle Fork and thereby block fish migration routes.	Reference Choice 5: There is no means at present to pass fish over dams as high as Smoky Range and Spruce Park would be.
b. Fish habitat.	Low potential for habitat disturbance.	Somewhat greater than Choice 2.	Somewhat greater than Choice 3.	Greatest potential for habitat disturbance.	Concerning Smoky Range or Spruce Park the Corps of Engineers state: "If either project were constructed, the fish losses could be mitigated by artificial fish propagation and by a collection and trucking system. The wildlife losses could be mitigated by development of replacement lands. However, such mitigation does not truly replace natural values and experiences which are lost."
c. Big game habitat: (1) Winter game range not protected.	Development and subdivision will occur on some areas of big game winter range.	Somewhat greater than Choice 2.	Somewhat greater than Choice 3.	Could be substantially greater than Choice 2.	
(2) Range improvement opportunity foregone.	Some opportunity may be lost.	Some opportunity may be lost.	Some opportunity may be lost.	Least opportunity foregone if big game management is considered a primary value.	

*Evaluation of intangible values; tangible values evaluated under National Economic Development and Regional Development.

BENEFITS	CHOICE 2	CHOICE 3	CHOICE 4	CHOICE 5	REMARKS
3. Wildlife habitat.	This choice provides the greatest protection to wildlife habitat; it would probably provide the best native fishery and highest opportunity to hunt or view wildlife.	Could be somewhat less than Choice 2.	Could be somewhat less than Choice 3.	The values associated with fishing, hunting and viewing wildlife could be sustained even though the potential for adverse effects are high. If dams were built, the resulting reservoirs could provide a different type of fishery.	
4. Recreation (use and development).	Consideration for optimum recreation activity along 80 miles of river.	Consideration for optimum recreation activity along 121 miles of river.	Consideration for optimum recreation activity along 67 miles of river. Recreation potential could be maximized along 54 miles of river	Recreation potential could be maximized along 164 miles of river (excludes consideration of Bob Marshall Wilderness).	
5. Commercial development.	New commercial facilities at appropriate areas. Examples are Polebridge, Hungry Horse, Martin City, Spotted Bear, West Glacier, and Essex. Other commercial development will be considered on a case by case basis.	Same as Choice 2.	Lower Middle Fork (54 miles) not restricted for commercial development. The greatest potential for development is the 28 miles of shoreline under private ownership. Other portions of the river are the same as Choice 2.	With the exception of the portion of river in the Bob Marshall Wilderness, the land along the entire river could be developed commercially. The greatest potential is the 60 miles of shoreline in private ownership.	
6. Subdivision of private land.	Private land could be subdivided. A minimum lot size for new subdivision will be determined. Probable minimums are: Scenic River--3 to 5 acres (includes 25 miles of shoreline property). Recreational River--1 to 5 acres (includes 34 miles of shoreline property).	Private land could be subdivided. A minimum lot size for new subdivision will be determined. Probable minimum is 1 to 5 acres (includes 59 miles of shoreline property on a Recreational River).	Private land could be subdivided without consideration of Wild and Scenic River values on 28 miles of shoreline property (lower Middle Fork). The segment classified as Recreational on the North Fork (32 miles of private shoreline property) could be subdivided to a probable minimum of 1 to 5 acres.	Private land could be subdivided without restriction on 80 miles of privately owned shoreline property (as long as State requirements are met).	
7. Timber Production (Excludes consideration of lands within Glacier National Park and Bob Marshall Wilderness).	200,000 to 300,000 board feet could be harvested annually. Harvest would occur mainly on river segments classified as Recreational. Cutting will generally result from the need to clear land for development, recreational development, control of insects and disease, or improve wildlife habitat.	Same as Choice 2 except that volumes would be slightly higher.	350,000 to 600,000 board feet could be harvested annually. The principal difference from Choice 3 is that the land adjacent to 54 miles of river would be excluded from Wild and Scenic River considerations and could be more intensively managed for forest products.	780,000 to 1,200,000 board feet could be harvested annually. All acres outside Glacier National Park and the Bob Marshall Wilderness could be considered for more intensive forest management.	
OTHER					
a. Agriculture	Existing agricultural uses continue. Potential agricultural use subject to considerations of other values; appears fully compatible on Scenic and Recreational rivers.	Same as Choice 2, but greater potential due to greater amount of Recreational river.	Essentially the same as Choice 3.	Except for Glacier National Park and the Bob Marshall Wilderness, all lands could be considered for agricultural development.	It appears that needed agricultural development could be accommodated under all choices.
b. Stabilization of income.	Little or no effect.	Little or no effect	Little or no effect.	Little or no effect unless dams built.	
c. Community growth.	Little or no effect.	Little or no effect.	Little or no effect.	Increase if dams are built.	
d. Reduced flood hazard (along the study river).	Low opportunity.	Same as Choice 2.	Same as Choice 2.	Highest opportunity.	There is a low existing flood hazard due to minimal cultural improvements in the flood plain.
COSTS (Values Foregone)					
3. Wildlife.	The subdivision and development possible under this choice could have some adverse effect on fish and wildlife and the public opportunity to enjoy the benefits associated with fish and wildlife.	Somewhat greater than Choice 2.	Somewhat greater than Choice 3.	It is likely that fish and wildlife will receive secondary consideration to development along portions of the river. Future considerations could result in dams which block fish passage and flood big game winter range.	
4. Recreation (use and development).	Recreation use and development not maximized.	Same as Choice 2 except that 41 miles of river could receive higher consideration.	67 miles of Recreational river not managed to maximize recreation use and development.	The quality of recreation may be substantially diminished.	
5. Commercial development.	Commercial facilities limited.	Same as Choice 2.	Commercial facilities limited on the North Fork.		
6. Subdivision of private land.	The potential to subdivide land in lots smaller than 3 to 5 acres along Scenic Rivers and 1 to 5 acres along Recreational Rivers could not be realized.	Less potential foregone than in Choice 2 since all private land would be along river classified as Recreational.	Less potential foregone than Choice 3 since there would be no restraints on subdivision on the lower Middle Fork.		
7. Timber production.	580,000 to 900,000 board feet annually. Little cutting along Scenic Rivers and essentially none along Wild Rivers.	Slightly less than Choice 2.	430,000 to 600,000 board feet annually. There would be essentially no cutting along Wild rivers.		

Figure 14

ENHANCEMENT OF NATIONAL ECONOMIC OBJECTIVES (National Economic Development)

BENEFITS	CHOICE 2	CHOICE 3	CHOICE 4	CHOICE 5	REMARKS
4. Recreation (use and development).	Low to medium.	Medium.	Medium.	High.	
5. Commercial development.	Low.	Low.	Medium.	High.	Ratings relative to the other choices.
6. Increase in private land values.	High.	High.	High.	High.	Forest estimate; ratings relative to the Flathead Valley.
7. Timber production:					
a. Annual timber harvest.	Average of 200,000 to 300,000 board feet could be harvested.	Somewhat higher than Choice 2.	Average of 350,000 to 600,000 board feet could be harvested.	Average of 780,000 to 1,200,000 board feet could be harvested.	Estimated; based on data from Forest Timber Management Plan.
b. Employment due to timber harvest (man years).	1.0 to 1.5	Somewhat higher than Choice 2.	1.8 to 3.0	3.9 to 6.0	Based on Procedures outlined by Maxine C. Johnson in "Wood Products in Montana," Montana Business Quarterly, University of Montana, Missoula, Montana, Spring 1972; and by Paul E. Polzin in "The Economic Impact of Alternative Timber Management Plans, Flathead NF," Region 1, Forest Service, August 1972.
c. Total employment (man years).	1.5 to 4.2	Somewhat higher than Choice 2.	2.7 to 8.3	6.0 to 16.7	
d. Dollars generated by employment (annually).	$12,622 to $37,012	Somewhat higher than Choice 2.	$22,088 to $74,025	$49,226 to $148,050	
e. 25% fund to county (annually).	$1,750 to $2,625	Somewhat higher than Choice 2.	$3,062 to $5,250	$6,825 to $10,500	
8. Water resource development (dams).				Total annual benefits: Smoky Range (on the North Fork) = $15,390,000. Spruce Park (on the Middle Fork) = $13,390,000.	See analysis in Appendix 2.
OTHER Minerals (mining development).	Low.	Low.	Low.	Low.	The area appears to have a low potential for mineral development.

COST (Values Foregone)					
4. Recreation use and development foregone.	High to medium.	Medium.	Medium.	Low.	The majority of the commercial development would likely take place outside the river management zone (with or without Wild and Scenic Rivers).
5. Commercial development foregone.	High.	High.	Medium.	Low.	
6. Amount private land value is suppressed.	Low.	Low.	Low.	Low.	
7. Timber production:					
a. Timber harvest foregone (annually).	580,000 to 900,000 board feet.	Somewhat lower than Choice 2.	430,000 to 600,000 board feet.		
b. Employment foregone (man years).	1.5 to 4.2	Somewhat lower than Choice 2.	2.1 to 3.0		
c. Total employment foregone.	4.5 to 12.5	Somewhat lower than Choice 2.	3.3 to 8.4		These ratings represent what is foregone when Choices 2, 3, and 4 are compared with Choice 5.
d. Dollars foregone because potential employment is not realized.	$36,604 to $111,038	Somewhat lower than Choice 2.	$27,138 to $74,025		
e. 25% fund to county potentially not realized.	$5,075 to $7,875	Somewhat lower than Choice 2.	$3,763 to $5,250		
8. Water resource development.				Total annual costs: Smoky Range = $14,953,000. Spruce Park = $20,292,000.	See analysis in Appendix 2.
OTHER Minerals					No estimates made.
Cost of Wild and Scenic Rivers to Government:					
a. Easement acquisition.	$6,719,000.	Somewhat lower than Choice 2.	$4,000,000.		Total cost. (estimation)
b. Recreation site development.	$193,000.	Probably higher than Choice 2.	$160,000.		Cost, first 5 years.
c. Project management (includes policing and maintenance).	$100,000.	$100,000.	$68,000.00		Cost, first 5 years.

VIII HEARING ANALYSIS AND PROPOSAL RESPONSE

Hearing

A news release announcing the March 15, 1973, public hearing on the Forest Service proposal to recommend the three forks of the Flathead River for inclusion into the National Wild and Scenic Rivers System appeared in local western Montana newspapers and on radio and television news broadcasts the week of January 8, 1973.

On January 30, 1973, a publication, "Waters of the Flathead - A Proposal," was released for distribution. Three thousand copies of the booklet describing the Forest Service proposal were made available to interested publics, landowners, organizations, and agencies. Wide distribution of the publication was made in an effort to inform the public of the Forest Service proposal, to announce the public hearing, and to solicit comments on the proposal. Formal public notices announcing the hearing were made the week of February 12, 1973.

The hearing was held on March 15, 1973, in the Eagles Hall, Kalispell, Montana. Oral testimony was presented by 45 persons representing various individuals, governmental agencies, and organizations. Written testimony was also received at the hearing from an additional nine individuals. From the time the proposal was first announced until 30 days following the hearing, a total of 190 responses were received with comments pertaining to the Forest Service proposal.

Although the majority of the comments received were in the form of personal letters to the Forest Supervisor stating the individual's or group's view on the proposal, other types of responses were also received. Two petitions were submitted (one with 56 signatures and one with 24 signatures) by landowners opposing portions of the proposal. Numerous conservation groups (National, State, and local) responded by letter to the proposal.

It is assumed that many landowners along the North Fork felt their response had been made in the form of a questionnaire given them by a member of the Public Advisory Committee. However, this action had taken place prior to any proposal made by the Forest Service.

Following the hearing many articles appeared in local newspapers, mainly in the form of editorials and letters to the editors. Numerous personal contacts were also made after the hearing, primarily to clarify specific questions pertaining to the proposal.

Response to Proposal

In evaluating comments an effort was made to tabulate all data received without applying weight factors. Thus a letter from a conservation group carried no more weight than a letter from an individual landowner or another member of the general public. The

objective was to try to get the pulse of all publics on a proposal of national interest, not just one of local concern, and to obtain new ideas, suggested changes, or deletions to the proposal.

The majority (84 percent) of the responses came from people in Montana. Most of the remainder were from other areas of the Western United States with about half of them being landowners along the river system. Few responses were received from people of the Eastern United States.

The proposal was favored by more than two-thirds of the respondents. Less than 10 percent voiced total opposition. The remainder commented on individual segments of the river rather than on the total system.

More than half of the respondents classified as "general public" strongly supported the proposal. Nearly one-third of the responses came from the private landowners along the North and Middle Forks, with more than half of them voicing some degree of opposition. Most landowners made reference only to the particular segment of the river system that involved their property. Approximately 10 percent of the response came from conservation groups, all favoring inclusion of the rivers in the System.

A small sample was received from governmental agencies, business or industry, motorized recreation vehicle clubs, people related to research projects, and members of the Advisory Committee.

To best understand why people responded the way they did, reasons given by respondents supporting their position on the proposal were tabulated with as many as six reasons listed by some individuals. The reason identified most often was that existing river values need to be protected. This was recognized not only by those favoring the proposal but also by some in opposition. Slightly more than 10 percent of the respondents gave no support reason for their position.

Most of the remaining reasons differ from those in favor of the proposal as compared with those in opposition. Of those given in support of the proposal, reasons given in descending order of occurrence were:

1. Classification will help to control unlimited subdivision and over-development of the river management area.
2. Classification will preclude dams and/or mining.
3. Classification will help to protect the quality of waters downstream.

Of those opposing the proposal, reasons given in descending order of occurrence were:

1. Oppose Federal control of private land.
2. Don't trust the Forest Service.
3. Wild and Scenic Rivers classification will attract too many people.
4. Management of the river area is good the way it is now.
5. Fear condemnation of private land for fee title.
6. The proposal is not specific enough.
7. Fear classification will give unrestricted right-of-way to the public on private land.
8. The river needs protection, but not by the Federal Government.
9. Proposed management will be too restrictive on some Federal lands.
10. Dams are needed for power.
11. Classification will result in an economic loss to the area or individuals.
12. Too much private land is involved.
13. Dams are needed for downstream flood control.
14. The area is not suitable for classification based on existing developments.

The category "other" was used for individual reasons not fitting in any of the above categories. The principal reason given in this category was the concern for water quality of the North Fork as it flows out of Canada into the United States.

Response was tabulated according to respondent's desire to change the proposed river classifications. This was categorized into three groups: (1) to exclude portions of the proposal, (2) to make classification more restrictive than proposed, and (3) to make classification the most restrictive possible under the Act.

1. Desiring portions excluded: 15.8 percent of the 190 responses, most of which (83.3 percent) were private landowners.
2. Desiring either a more restrictive classification or the most restrictive classification possible: 16.8 percent of the 190 responses, most of which (78.1 percent) were either general public or conservation groups.

Over half (57.9 percent) of the respondents made no comment on management proposed for the area. Landowners voiced strong concern about Governmental control of private lands. Of the 190 respondents, 25.3 percent voiced this concern. Of the total nonlandowners, only 7.5 percent of the respondents voiced concern for the private landowners.

Opposition to the use of scenic easements to control private lands was voiced by 8.9 percent of the respondents. Most (94.1 percent) of the objection came from the private landowners.

The two principal reasons given by those in opposition to scenic easements were: (1) the respondent did not understand the scenic easement approach and how it would affect him, or (2) he felt that Government purchase of a scenic easement would be an infringement on his personal rights.

Evaluation of Response

The evaluation of public response to the Forest Service proposal was based on consideration of answers to the following questions:

1. What degree of acceptance did the proposal receive?
2. What changes should be made in the proposal?
3. What new ideas should be incorporated in the proposal?

Consideration was given to people's desires, capabilities of the land, and requirements set forth in the Wild and Scenic Rivers Act. Through this evaluation public concerns were identified. These are listed below and followed by comments regarding consideration of their use in the proposal.

1. Should the three forks of the Flathead River be added to the National Wild and Scenic Rivers System?

The majority of people who responded favored the addition of the Flathead River to the National System. Support reasons given were important. Regardless of their position on the proposal, most people indicated a need to protect the river environment. It was determined that the three forks of the Flathead River should be added to the National Wild and Scenic Rivers System.

2. Should portions of the study river be excluded from the proposal?

Over half of the landowners who responded opposed inclusion, principally for the portions of river adjacent to their land. Many landowners in this group expressed concern for protection of river values but were nonetheless adamant in their opposition to the proposal. Their reasons were based principally on fear of what might happen to their right to control their land. In some cases it was apparent they feared the loss of ownership of their land.

Private landowners are obviously concerned that they will lose more than they are willing to give. Land cannot be taken in fee title without the landowners consent. The Wild and Scenic Rivers Act provides the means to compensate landowners for any monetary value lost through the purchase of scenic easements should private land be a part of the National Wild and Scenic Rivers System.

All opposition is not based on landowners' misunderstanding of the monetary compensations to be made. Many simply reject consideration of any degree of Federal control of their land. In general, the landowners' past land management practices have reflected a high concern for the river environment. The proposal essentially provides a legal means to purchase the right to protect the scenic qualities of the river area with continued use of the land by the owner. The study did not reveal other workable alternatives which would provide lasting protection for the river environment.

It was determined that all portions of the river should be retained in the proposal.

3. What specific impacts would scenic easements have on private landowners?

The "Action Plan" portion of this report has been revised to include a listing of specific scenic easement provisions which would apply to private land. These provisions are based on three considerations: (1) the capability of the land to support certain uses and activities, (2) public expression (principally landowner) concerning what is needed to protect river values, and (3) the intent of the Wild and Scenic Rivers Act.

These provisions define more specifically the items which would be contained in a scenic easement. The landowners expression for a need to know the limitations of scenic easements appears necessary and reasonable. For this reason these changes were made in the proposal regarding scenic easements.

4. Would inclusion of the river in the System give the public unrestricted access across private land?

No. Specific areas where access may be needed across private land have been identified in the Action Plan of this report.

5. Should all or portions of the North Fork proposed for Scenic River classification be classified as Wild?

The presence of private land in large acreages along this stretch of river makes the consideration unfeasible. The immediate river environment now possesses a high degree of naturalness even though development has occurred in several locations. More significant, however, is the fact that it is not feasible to impose the type of restrictions needed on private land to retain the degree of naturalness required of a river classified as Wild.

6. Should all or portions of the river segments proposed for Recreational classification be classified as Scenic?

All of the segments proposed as Recreational are paralleled by roads or a railroad for most of their respective lengths. Where these roads provide easy access to the river, Scenic classification is precluded by law. Although there are short stretches of river (2 to 5 miles in length) where roads and other developments are removed from the immediate river environment (principally on the Middle Fork), the stretches are not long enough to provide a significant change in the experience of those using the river.

IX RECOMMENDATIONS

Qualifying Reach of the River

The 219 miles of study river are free-flowing and possess a combination of outstanding characteristics which qualify it for inclusion in the National Wild and Scenic Rivers System. Based on the "Analysis" section of this report, we recommend that the entire study river be included in the National Wild and Scenic Rivers System.

Classification

The river is recommended for classification with 97.9 miles as Wild, 40.7 miles as Scenic, and 80.4 miles as Recreational (see figure 1). A narrative definition of these river segments follows:

North Fork

Scenic - United States-Canada boundary to Camas bridge (river mile 216.6 to 175.9), 40.7 miles.
Recreational - Camas bridge to confluence with Middle Fork (river mile 175.9 to 158.3), 17.6 miles.

Middle Fork

Wild - Headwaters to Bear Creek (river mile 91.0 to 44.4), 46.6 miles.
Recreational - Bear Creek to confluence with South Fork (river mile 44.4 to 0.0 and 158.3 to 148.7), 54.0 miles.

South Fork

Wild - Headwaters to Spotted Bear (river mile 104.6 to 53.3), 51.3 miles.
Recreational - Spotted Bear to Hungry Horse Reservoir (river mile 53.3 to 44.5), 8.8 miles.

Boundary of River Management Zone

The principal consideration for boundary determination is the seen area as viewed from the river. Due to its vastness all of the seen area could not feasibly be included in the proposed River Management Zone. The rationale used to determine the proposed Zone is discussed under "Boundary of Area" in Section II of this report. The proposed River Management Zone (shown in Appendix 1, pages 1 through 19) includes about 57,400 acres with the following ownerships:

Flathead National Forest	-	35,000 acres
Glacier National Park	-	11,800 acres
Private	-	9,700 acres
State of Montana	-	900 acres

Rafting through the Meadow Creek Gorge on the South Fork

X ACTION PLAN

The Congress gave direction for management of rivers included in the Wild and Scenic Rivers System in Section 1(b) of the Wild and Scenic Rivers Act:

> "It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations...."

In Section 10(a) the Act also states:

> "Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area."

Under these principles the following guidelines have been established to provide direction for management and administration of the Flathead River and its adjoining lands.

Administration

It is recommended that the National Park Service have administrative responsibility for the portions of the proposed River Management Zone within the boundaries of Glacier National Park. State-owned lands within the proposed boundary should be administered by the State of Montana pursuant to a cooperative agreement between the State and the Forest Service. The remainder of the proposed River Management Zone should be administered by the Forest Service. Private land is discussed below.

Private Land Considerations

The management of private land within the proposed River Management Zone would have to be compatible with classification (Scenic or Recreational). The cost to landowners to meet this

need was recognized in the Wild and Scenic Rivers Act and provisions made for monetary compensation through the purchase of scenic easements.

A scenic easement, as used here, would be an agreement between a landowner and the agency administering a Scenic or Recreationl River including items which directly and indirectly contribute to the scenic and environmental value of property. Each party to a scenic easement would agree to practice certain land management measures designed to protect the natural qualities or scenic values of the property involved. The landowner would be paid a fee to compensate him for property rights granted to the Government. Reimbursement would be based on the present value of the property--determined by professional real estate appraisers--and the value of the property rights granted to the Government. The amount of the fee would vary greatly, dependent upon land value, rights retained, and other considerations. Payment would be made on a one-time lump sum basis. The easement would be a legal document permanently recorded in the county records.

Needed access to the river could be provided across Federal or State lands in most instances. There are four locations where a right-of-way easement could be needed across private land. These are located on the North Fork in the vicinity of (1) the United States-Canada border and (2) Polebridge; and on the Middle Fork in the vicinity of (3) Blankenship bridge and (4) the confluence of the South Fork.

Right-of-way easements would not be needed to allow the public to traverse the river. Eighty-seven percent of the shoreline would be within Federal or State ownership and Montana State law provides the right of the public to traverse the edge of private land to fish. This access would be adequate.

Scenic easements would not affect, without the owner's consent and just compensation, any regular use exercised prior to the acquisition of the easement.

Private lands considered in this plan would not be acquired in fee title except on a willing seller-buyer basis.

National Forest lands in the proposed River Management Zone would not be used as a base for land exchange.

Management Guidelines

The following section of this report contains management guidelines for each proposed classification of the river. These guidelines would be used by the Forest Service to coordinate resource uses, land uses, and activities. Those which involve restrictions of private land would be in effect only when the right to make these restrictions has been purchased (as previously described).

These guidelines contain most of the specifics regarding restraints on private land. Guidelines for commercial development are not specific and would be decided on a case-by-case basis with individual landowners during the negotiations for a scenic easement.

Management Guidelines for Portions Proposed as Wild

This includes land within the proposed River Management Zone adjacent to 46.6 miles of the Middle Fork Flathead River (from the headwaters to Bear Creek) and 51.3 miles of the South Fork Flathead River (from the headwaters to Spotted Bear).

Wild River Areas (definition from the law) -

> "Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America."

Both portions of the river proposed as Wild are partially within the Bob Marshall Wilderness. The management guidelines which follow would apply with this exception (as stated in the Wild and Scenic Rivers Act):

> "Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system . . . shall be subject to the provisions of both the Wilderness Act and this Act with respect to preservation of such river and its immediate environment, and in case of conflict between the provisions of these Acts the more restrictive provisions shall apply."

River Values

The river area would be managed with emphasis on maintaining naturalness. Key values are its (1) free-flowing character, (2) inaccessibility except by trail, (3) watersheds and shorelines essentially primitive, (4) unpolluted waters, and (5) outstanding features such as scenery and wildlife.

Recreation

1. Administration of uses and activities would be directed toward maintaining the naturalness of the area. A visitor use registration system may be implemented as a management measure to obtain use date, distribute visitors, and improve visitor behavior.

2. Recreation facilities or other developments would be limited to those necessary to protect the river values. When facilities are found necessary, they would have to be: (1) located outside the immediate foreground of rivers, streams, trails, or other natural attractions, (2) totally screened from the river view, and (3) accomplished with the benefit of a detailed soil analysis to determine site capacity. Within the Bob Marshall Wilderness only developments which conform to wilderness management standards would be permitted.

3. Significant historic, scenic, geologic, archeologic, and similar sites or areas would be protected. Viewing wildlife is a recreational opportunity which would be favored over recreation developments where conflict exists.

4. All commercial services would be administered to serve the public needs commensurate with maintaining river values.

Range

There would be no domestic grazing of livestock other than that associated with recreational saddle and pack stock. Priority would be given to wildlife needs if conflict occurs between wildlife and recreational stock use of grazing areas.

Vegetation

The cutting of trees would not be permitted except when needed in association with a primitive recreation experience (such as clearing for trails) or to protect the environment (such as control of fires).

Water

In cases of conflict with water quality and other resources, uses, or activities, protection of water quality would take precedence. Alterations of natural channels or the streambank which significantly affect (1) the free flow of water, (2) the appearance of the stream, or (3) fish habitat would not be permitted. Water quality monitoring would be continued at established stations. If adverse trends are detected and found to be man-caused, appropriate action would be taken to correct the problem.

Wildlife and Fisheries

1. Fishing and hunting would continue to be controlled by State laws and regulations. Predator control would not be permitted.

2. Wildlife habitat would be managed in a manner compatible with the naturalness of the river environment.

Minerals

Subject to valid existing rights, the minerals in lands which are part of the System and constitute the bed or bank or are situated within one-quarter mile of the bank would be withdrawn from all forms of appropriation under the mining laws.

Transportation

Powerboats and motorized vehicles would be prohibited from the areas with the exception of the use of airplanes at Meadow Creek airstrip. This airstrip would be monitored to assure that use remained compatible with other river values. Existing clearing and runway surface could be maintained, but continued trail access for mechanized equipment would not be permitted.

Fire Management

1. In reaching fire management objectives, preference would be given to suppression methods which least alter the landscape. This need would be reflected in preplanning for fire suppression (plans which outline the procedure for the attack of fire in certain areas in advance of actual fire occurrence).

2. Fire could be managed and used as a tool when required to maintain natural ecological or environmental conditions or to sustain key values.

Land Occupancies

Existing uses on public land which are not compatible with management objectives would be terminated as soon as possible. New structures or installations would be permitted only when needed to protect the values of the river. Signing would be the minimum necessary to give direction, information, and regulations.

Management Guidelines for Portion Proposed as Scenic

This includes land within the proposed River Management Zone adjacent to 40.7 miles of the North Fork Flathead River (from the United States-Canada boundary to Camas bridge).

Scenic River Areas (definition from the law) -

> "Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads."

The portion of the river proposed as Scenic is partially within Glacier National Park. The management guidelines which follow would apply with this exception (as stated in the Wild and Scenic Rivers Act:

> "The lands involved shall be subject to the provisions of this Act and the Acts under which the national park system . . . is administered, and in case of conflict between the provisions of these Acts, the more restrictive provisions shall apply."

River Values

The river area would be managed with emphasis on preserving scenic quality. Key values are its (1) free-flowing character, (2) limited river access, (3) largely undeveloped and primitive shorelines, (4) unpolluted water, and (5) outstanding features such as scenery and wildlife.

Recreation

1. Administration of uses and activities would be directed toward maintaining the scenic qualities of the area with the shorelines largely primitive. A visitor use registration system may be implemented as a means to prevent damage from overuse.

2. Recreation facilities would usually be located outside the proposed River Management Zone, but limited developments could be widely spaced along the river if they would not cause a significant adverse effect on the natural character of the area. When recreation facilities are found appropriate, they would have to be: (1) located outside the immediate foreground of the river, (2) well screened from the river view, and (3) accomplished with the benefit of a detailed soil analysis to determine site capacity. As a part of planning any recreation development, consideration would be given to opportunities to relate users to their environment.

3. Significant historic, scenic, geologic, archeologic, and similar sites or areas would be protected. Viewing wildlife is a recreational opportunity which would be favored over recreational developments where conflict exists.

4. All commercial services would be administered to serve the public needs commensurate with maintaining river values.

5. The Forest Service would support public and private efforts designed to protect or improve river values on private lands adjacent to the proposed River Management Zone.

Range

On public lands domestic grazing would be regulated to protect river values and recreational use. Priority would be given to wildlife needs if conflict occurs between wildlife and recreational stock use of grazing areas. Private landowners would be encouraged to manage livestock use of the river area commensurate with protecting identified river values and in keeping with State and local pollution laws.

Vegetation

Trees would not be cut except: (1) in connection with construction of appropriate developments, (2) to reduce a safety hazard, (3) when determined necessary to prevent deterioration of river values, and (4) to improve wildlife habitat. Cutting would have to be accomplished in a manner that maintains the natural appearance of the river area. Each situation would be evaluated on a case-by-case basis.

Water

1. In cases of conflict with water quality and other resources, uses, and activities, protection of water quality would take precedence. Alterations of natural channels or the streambank which significantly affect (1) the free flow of water, (2) the appearance of the stream, or (3) fish habitat would not be permitted except those necessary to protect existing major manmade improvements such as highways and bridges. Water quality monitoring would be continued at established stations. If adverse trends are detected and found to be man-caused, appropriate action would be taken to correct the problem.

2. In the case of conflict over the use of water, the minimum flows established by the Montana Fish and Game Department to protect the fishery would take precedence. Water surplus to this need and for recreational use of the river could be removed for other purposes if done in a manner which would be compatible with the river environment.

3. The Federal Government would have to take aggressive action to obtain cooperative agreements on pollution control with Canada.

Wildlife and Fisheries

1. Wildlife habitat would be managed in a manner compatible with the esthetic values of the river environment. Fish habitat management programs would be directed toward maintaining a native fishery with emphasis on the westslope cutthroat trout.

2. Hunting is prohibited by law in Glacier National Park. Hunting outside of Glacier National Park would continue to be controlled by State laws and regulations. Predator control would not be permitted.

3. Fishing would continue to be controlled by the Park Service in Glacier National Park and by State laws and regulations in other areas.

Minerals

The river and its environment would be protected from adverse effects of development of surface resources as provided for under Public Law 90-542. Where mineral development would not detract from river values it would be permitted under regulations issued by the Secretary of Agriculture.

Rights of mining claimants on valid claims located before passage of the Wild and Scenic Rivers Act would be recognized. The cooperation of the miner would be solicited to reduce impacts on the river environment. The validity of existing mining claims would be determined and appropriate action taken on the findings.

Transportation

1. Power-driven boats would be prohibited from use of the river.

2. Should recreational development or new private residences be determined appropriate, additional road access would be permitted if it would not detract from the scenery as viewed from the river. Access routes would be kept to a minimum.

3. Existing transportation improvements would be maintained with high consideration of the river values which may be affected.

Fire Management

1. In reaching fire management objectives, preference would be given to suppression methods which least alter the landscape. This need would be reflected in preplanning for fire suppression (plans which outline the procedure for the attack of fire in certain areas in advance of actual fire occurrence).

2. Fire could be managed and used as a tool when required to maintain natural ecological or environmental conditions or to sustain key values.

Land Occupancies

1. Existing uses on public land which would not be compatible with management objectives would be terminated as soon as possible. Private landowners would be encouraged to screen existing structures with natural vegetation and paint them with earth-tone colors to reduce their contrast with the natural environment.

2. On public land signs would be designed and located to complement the surroundings and would be limited in most cases to directional, informational, and regulatory types. Private landowners would be encouraged to make modifications of existing signs to complement the environment.

Scenic Easements for Portion Proposed as Scenic River: Scenic easements would be negotiated with private landowners to protect river values. The following guidelines are proposed for negotiating scenic easements:

1. Scenic easements would not:

   a. give the public the right to enter upon the property for any purpose.

   b. deny the right of the landowner to use the area for general crops, livestock farming, and gardening.

   c. affect any regular use exercised prior to the acquisition of the easement without the owner's consent.

   d. affect the right of a landowner to sell his land or the right of his heirs to inherit the land.

   e. affect the right of the landowner to perform maintenance on all existing roads, structures, and buildings and the right to replace, rebuild, or substitute any road, building, or structure now existing with similar roads, buildings, or structures in substantially the same locations.

2. Scenic easements would:

   a. exclude industrial activity except for prior established use.

b. require that the easement area be kept in a neat and orderly condition with no garbage, trash, or other unsightly material allowed to accumulate.

c. require that the general topography be maintained in its present condition unless changes are approved by the Forest Service.

d. prevent unattractive or nonpermanent structures from being moved into the easement area.

e. require that trees not be cut, except for those which are dead or are a hazard to safety, unless approved in writing by the Forest Service.

f. prohibit signing other than one sign to designate the owner or name of the property and one small sign advertising services on the property.

g. require that construction, erection, or placement of new or additional buildings, structures, or facilities be approved by the Forest Service.

3. Residential development would be subject to the requirements listed below:

a. The minimum size of residential lots resulting from new subdivision would be 5 acres with a minimum river frontage of 300 feet. Additional rights would be purchased to the extent a landowner would be willing. Only one residential dwelling and associated buildings would be allowed per lot or tract.

b. A minimum distance from the river for new building would depend on the potential for water pollution and the screening from the river view given by topographic characteristics and vegetation. These minimums would probably be 200 to 300 feet distant from the river.

c. New or additional structures would not exceed a height of 30 feet.

d. The roofs of new buildings would have to be an earth-tone color.

e. Professional and commercial activities would be limited to those which could be conducted from within a residential dwelling without significant exterior alteration of the dwelling.

f. Mobile homes would be permitted for permanent residences provided their presence would be harmonious with the rural environment.

g. Access roads to new subdivisions would have to be designed and located so they would be inconspicuous from the river and its shorelines.

h. Only single-family dwellings and associated buildings would be permitted.

4. Commercial easement consideration: The principal existing commercial development is located outside the proposed River Management Zone at Polebridge. Future public needs for services could also be met with new development outside the River Management Zone. Some commercial campground development within the Zone might be appropriate on the west side of the river. Commercial development would not be permitted on land within Glacier National Park.

   Commercial developments within the proposed River Management Zone would be evaluated with those landowners having plans for such future development at the time scenic easements were negotiated. Commercial easements would include special provisions as follows:

   a. Commercial enterprises would be limited to those associated with a commercial campground. For example, individual camping units could be provided with a central building containing such facilities as showers, store, and laundry.

   b. New or additional structures would have to be in accordance with architectural and site plans approved by the Forest Service.

   c. Should commercial campground developments be determined appropriate, they would have to be located outside the immediate foreground of the river and well screened from the river view.

   d. Exterior flashing lights, neon signs, and exterior signs with internal lighting would not be permitted.

   e. Advertising signs and billboards would be limited to one on-premise sign and to designated sign plazas.

5. The administering agency, in this case the Forest Service, could inspect for violations of the terms of a scenic easement, but only after advance notice had been given to the landowner.

Access Easements

There are two areas where public access might be needed across private land to the river. One is a road access in the vicinity of the United States-Canada border and the other in the vicinity of Polebridge. There are no other anticipated access needs across private land.

Management Guidelines for Portions Proposed as Recreational

This includes land within the proposed River Management Zone adjacent to 17.6 miles of the North Fork Flathead River (from the Camas bridge to the confluence with the Middle Fork), 54.0 miles of the Middle Fork Flathead River (from Bear Creek to the confluence with the South Fork), and 8.8 miles of the South Fork Flathead River (from Spotted Bear to Hungry Horse Reservoir).

Recreational River Areas (definition from the law) -

> "Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past."

The portions of the river proposed as Recreational are partially within Glacier National Park. The management guidelines which follow would apply with this exception (as stated in the Wild and Scenic Rivers Act):

> "The lands involved shall be subject to the provisions of this Act and the Acts under which the national park system . . . is administered, and in case of conflict between the provisions of these Acts, the more restrictive provisions shall apply."

River Values

The area would be managed with emphasis toward providing quality recreation. Key values are its (1) free-flowing character, (2) accessibility for public use, (3) pleasing environment, (4) unpolluted waters, and (5) outstanding features such as scenery and wildlife.

Recreation

1. Administration of uses and activities would be directed toward maintaining the scenic qualities of the area even though intensive use and development may occur in the area. A visitor use registration system may be implemented as a management measure to obtain use data, distribute visitors, and improve visitor behavior.

2. Recreation developments would be appropriate if they were designed and constructed to maintain a pleasing view and would not diminish the qualities which caused the river to be included in the System. Recreation facilities would have to be: (1) located outside the immediate foreground of the river, (2) complementary to the view from the river, and (3) accomplished with the benefit of a detailed soil analysis to determine site capacity. As a part of planning any recreation development, consideration would be given to

opportunities to relate users to their environment. Within Glacier National Park only developments which conform to National Park standards would be permitted.

3. Significant historic, scenic, geologic, archeologic, and similar sites or areas would be protected. Viewing wildlife is a recreational opportunity which would be favored over recreation developments where conflict exists.

4. All commercial services would be administered to serve the public needs commensurate with maintaining river values.

5. The Forest Service would support public and private efforts designed to protect or improve river values on private land adjacent to the proposed River Management Zone.

Range

On public lands domestic grazing would be regulated to protect river values and recreational use. Priority would be given to wildlife needs if conflict occurs between wildlife and recreational stock use of grazing areas. Private landowners would be encouraged to manage livestock use of the river area commensurate with protecting identified river values and in keeping with State and local pollution laws.

Vegetation

Trees could be cut along the river (1) in connection with construction of appropriate developments, (2) to reduce a safety hazard, (3) when determined necessary to prevent deterioration of river values, (4) to improve wildlife habitat, and (5) to maintain a healthy, vigorous stand. Cutting would have to be accomplished in a manner that maintains a pleasing appearance* of the river area. Each situation would be evaluated on a case-by-case basis.

* Lands administered by the National Park Service are managed with emphasis on retaining the natural character of the landscape. Thinning and commercial timber harvest would not be permitted on private land within Glacier National Park.

Water

1. In cases of conflict with water quality and other resources, uses, and activities, protection of water quality would take precedence. Alteration of natural channels or the streambank which significantly affect (1) the free flow of water, (2) the appearance of the stream, or (3) fish habitat would not be permitted except those necessary to protect existing major manmade improvements such as highways and bridges. Water

quality monitoring would be continued at established stations. If adverse trends are detected and found to be man-caused, appropriate action would be taken to correct the problem.

2. In the case of conflict over the use of water, the minimum flows established by the Montana Fish and Game Department to protect the fishery would take precedence. Water surplus to this need and for recreational use of the river could be removed for other purposes if done in a manner which would be compatible with the river environment.

Wildlife and Fisheries

1. Wildlife habitat would be managed in a manner compatible with the esthetic values of the river environment. Fish habitat management programs would be directed toward maintaining a native fishery with emphasis on the westslope cutthroat trout.

2. Hunting is prohibited by law in Glacier National Park. Hunting outside of the Park would continue to be controlled by State laws and regulations. Predator control would not be permitted.

3. Fishing would continue to be controlled by the National Park Service in Glacier National Park and by State laws and regulations in other areas.

4. Develop and maintain opportunities for the visitor to view wildlife (such as at the mineral lick in Glacier National Park).

Minerals

The river and its environment would be protected from adverse effects of development of surface resources as provided for under Public Law 90-542. Where mineral development would not detract from river values it could be permitted under regulations issued by the Secretary of Agriculture.

Rights of mining claimants on valid claims located before passage of the Wild and Scenic Rivers Act would be recognized. The cooperation of the miner would be solicited to reduce impacts on the river environment. The validity of existing mining claims would be determined and appropriate action taken on the findings.

Transporation

1. Should development be determined appropriate, additional road access would be permitted if compatible with river values.

2. Existing transportation improvements would be maintained with high consideration of the river values which could be affected.

Fire Management

1. In reaching fire management objectives, preference would be given to suppression methods which least alter the landscape. This need would be reflected in preplanning for fire suppression (plans which outline the procedure for the attack of fire in certain areas in advance of actual fire occurrence).

2. Fire could be managed and used as a tool when required to maintain natural ecological or environmental conditions or to sustain key values.

Land Occupancies

1. Existing uses on public land which would not be compatible with management objectives would be terminated as soon as possible. Private landowners would be encouraged to screen existing structures with natural vegetation and paint them so they complement the river environment.

2. On public land signs would be designed and located to complement the surroundings and would be limited in most cases to directional, informational, and regulatory types. Private landowners would be encouraged to make modifications of existing signs to complement the environment.

Scenic Easements for Portions Proposed as Recreational: Scenic easements would be negotiated with private landowners to protect river values. The following guidelines are proposed for negotiating scenic easements:

1. Scenic easements would not:

   a. give the public the right to enter upon the property for any purpose.

   b. deny the right of the landowner to use the area for general crops, livestock farming, and gardening.

   c. affect any regular use exercised prior to the acquisition of the easement without the owner's consent.

   d. affect the right of the landowner to sell his land or the right of his heirs to inherit the land.

   e. affect the right of the landowner to perform maintenance on all existing roads, structures, and buildings, and the right to replace, rebuild, or substitute any road, building, or structure now existing with similar roads, buildings, or structures in substantially the same locations.

2. Scenic easements would:

   a. exclude industrial activity except for prior established use.

   b. require that the easement area be kept in a neat and orderly condition with no garbage, trash, or other unsightly material allowed to accumulate.

   c. require that the general topography be maintained in its present condition unless changes are approved by the Forest Service.

   d. prevent unattractive or nonpermanent structures from being moved into the easement area.

   e. require that trees not be cut, except for those which are dead or are a hazard to safety, unless approved in writing by the Forest Service.

   f. prohibit signing other than one sign to designate the owner or name of the property and one small sign advertising services on the property.

   g. require that contruction, erection, or placement of new or additional buildings, structures, or facilities be approved by the Forest Service.

3. Residential development would be subject to the requirements listed below:

   a. The minimum size of residential lots resulting from new subdivision would be 2 acres with a minimum river frontage of 300 feet. Additional rights would be purchased to the extent a landowner would be willing. Only one residential dwelling and associated buildings would be allowed per lot or tract.

   b. A minimum distance from the river for new building would depend on the potential for water pollution and the screening from the river view given by topographic characteristics and vegetation. These minimums would probably be 150 to 200 feet distant from the river.

   c. New or additional structures would not exceed a height of 30 feet.

   d. The roofs of new buildings would have to be an earth-tone color.

   e. Professional and commercial activities would be limited to those which could be conducted from within a residential dwelling without exterior alteration of the dwelling.

f. Mobile homes would be permitted for permanent residences provided their presence would be harmonious with the rural environment.

g. Access roads to new subdivisions would have to be designed and located so they would not substantially detract from a quality recreation experience along the river.

h. Only single-family dwellings and associated buildings would be permitted.

4. Commercial easement consideration: Commercial facilities exist at points along Highway No. 2 (which parallels the Middle Fork). The greatest concentration of development is located between Hungry Horse and West Glacier. These facilities appear to be adequate for present use, but the growing public use of Glacier National Park will probably increase the need for additional facilities adjacent to the Park.

   Commercial developments would not be permitted on land within Glacier National Park and on land on the west side of the Middle Fork between Hungry Horse and Blankenship bridge.

   On other private land commercial developments within the proposed River Management Zone would be evaluated with those landowners having plans for such future development at the time scenic easements were negotiated. Commercial easements would include special provisions as follows:

   a. Private land adjacent to Highway No. 2 between the towns of Hungry Horse and Coram and private land in the vicinity of West Glacier would be limited to new commercial enterprises offering necessary services or goods to visitors, through travelers, and local residents. Examples would be automobile service stations, stores, cafes, lodge or motel accommodations, trailer parks, campgrounds, and winter sports facilities.

   b. All other private land within the proposed River Management Zone of Recreational Rivers would be limited to commercial enterprises associated with a commercial campground. For example, individual camping units could be provided with a central building containing such facilities as showers, store, and laundry.

   c. New or additional structures would have to be in accordance with architectural and site plans approved by the Forest Service.

   d. Exterior flashing lights and neon signs would not be permitted.

e. Advertising signs and billboards would be limited to one on-premise sign per property and to designated sign plazas.

5. The administering agency, in this case the Forest Service, could inspect for violations of the terms of a scenic easement, but only after advance notice had been given to the landowner.

Access Easements

There are two areas where public access might be needed across private land to the river. One is a road access in the vicinity of Blankenship bridge and the other is in the vicinity of the confluence of the South Fork with the Middle Fork (near Hungry Horse). There are no other anticipated access needs across private land.

Development of Facilities and Access

1. Boat Launching Access:

   Additional access is needed on the lower Middle Fork (below Bear Creek) and on the North Fork. Parking facilities would be provided that would be screened from view from the river. Toilet and trash collection facilities would be provided as needed. These access points would be designed primarily for launching inflatable rafts and hand-propelled boats. It appears that access could be made on Federal land except near the Canadian border, Polebridge, Blankenship bridge, and the confluence of the South Fork. It might be necessary to seek an easement on private land at these locations.

2. Fisherman Access:

   Boat launching access would also serve for fisherman access. In addition, parking areas with foot trails to the river would be needed on the North Fork and lower Middle Fork.

3. Camping and Picnicking Areas:

   Additional camping and picnicking facilities would be needed on the South Fork between Hungry Horse Reservoir and Spotted Bear. Flats along the river within the proposed River Management Zone would appropriately fill this need.

   Camping facilities would be needed on the North Fork above Polebridge if not provided by private enterprise. One campground out of view from the river but within the proposed River Management Zone might be desirable.

4. Boating Rest Stops:

   Rest stops for floaters and other river users would be provided at three locations on the upper Middle Fork and three locations on the North Fork. These areas would include toilet facilities.

Development would be of a primitive nature with manmade improvements well screened from the river. Primary access would be from the river.

5. Rehabilitation of Roads:

The 0.2 mile of road leading to the Meadow Creek trail bridge should be closed, covered with topsoil, revegetated, and used as a trail.

6. Channel and Bank Cleanup:

The Forest Service and the Montana Fish and Game would make plans for the removal of debris from the stream channel and banks. This would involve consideration of abandoned vehicles on streambanks and guardrails and other hazardous objects deposited in the channel.

7. Interpretive Programs:

Points of historic, archeologic, geologic, and wildlife significance have been identified. An interpretive program would be based on explaining these features to the public to enhance their enjoyment of the sites. The following are based on cost estimates made in 1973:

Estimated Program Costs, First Five Years

First Year	
Project Management (includes policing, maintenance and overhead)	$ 12,000
Direct Project	
Easement acquisition (includes purchase price and administrative costs)	541,000
Recreation site plan and river access plan	12,000
Second Year	
Project Management	18,000
Direct Project	
Easement acquisition	1,206,000
Close and revegetate road near Meadow Creek	3,000
Construct 15-unit campground on North Fork	30,000
Provide river floating access (3)	12,000
Third Year	
Project Management	18,000

Direct Project	
Easement acquisition	$1,997,000
Provide river floating access (3)	12,000
Provide boating rest stops (3)	6,000
Fourth Year	
Project Management	22,000
Direct Project	
Easement acquisition	2,184,000
Provide boating rest stops (3)	6,000
Provide fisherman trail access (with parking) (2)	20,000
Fifth Year	
Project Management	30,000
Direct Project	
Easement acquisition	791,000
Construct 30-unit campground on South Fork	60,000
Provide river floating access (3)	12,000
Provide fisherman trail access (with parking) (2)	20,000

Summary
Dollars by Year

	1	2	3	4	5
Project Management	$ 12,000	$ 18,000	$ 18,000	$ 22,000	$ 30,000
Direct Project					
Easement acquisition	541,000	1,206,000	1,997,000	2,184,000	791,000
Obliterate existing road	3,000				
Recreation and access plans	12,000				
Recreation construction		42,000	18,000	26,000	92,000
Total	$565,000	$1,269,000	$2,033,000	$2,232,000	$913,000

Grand totals: Project Management: $100,000; Direct Project--Easement acquisition $6,719,000; Obliterate existing road, $3,000; Recreation and access plans, $12,000; Recreation construction, $178,000. Five-year total: $7,012,000.

Outside Area Considerations

The drainage area of the three forks of the Flathead River is collectively about 4,000 square miles. The following tabulation shows how this land area has been allocated for use:

Land Allocation	Percent of Total Drainage
Bob Marshall Wilderness	28
Glacier National Park	25
New Study Areas	13
Within Canada	15
Multiple use planning areas which have been studied (environmental statements have been filed and review is in various stages of completion)	13
Multiple use planning areas not yet completed	6

The allocation of land use has a direct effect on the management situation within the drainage. Following are comments regarding outside area considerations:

Fifty-three percent of the drainage area is within Glacier National Park and the Bob Marshall Wilderness. These areas are managed under Congressional laws and are not "development" oriented.

New Study Areas are areas of undeveloped National Forest land selected by the Chief of the Forest Service for their apparent high potential for addition to the National Wilderness Preservation System. They are to be given indepth study for potential addition to the System. It is not a foregone conclusion that they will become wilderness; however, they will continue to remain roadless and undeveloped pending the results of study.

The problems which could occur on the 15 percent of the drainage in Canada, which includes the headwaters of the North Fork Flathead River, will be the most difficult to influence. Most of the land is within Canadian Government ownership, but there are known coal deposits within the drainage that are presently under evaluation for development. A treaty with Canada includes considerations for protecting water quality. Continued local contact with the Forest Service in Canada is needed to anticipate problems and work toward solutions. The State Department and the International Joint Commission would be notified of development in Canada which might jeopardize the water quality so appropriate action could be taken.

Comprehensive land management planning (multiple use) has been started since the first draft of this report. All of the planning units (constituting the 13 percent referred to in the above tabulation) border upon one of the three forks of the Flathead

River. Each planning unit was studied for a multiplicity of uses and each has a management plan which reflects consideration of river values (even though most of the planning units are not within the proposed River Management Zone). While there is private land within these planning units, there was no attempt to give direction for its management. Consideration of private land did, however, affect the decisions on National Forest land. Flathead County has been actively engaged in studies to help give direction to growth and development. Zoning could result in many areas. Concern expressed by some landowners along the North and Middle Forks indicates it is needed.

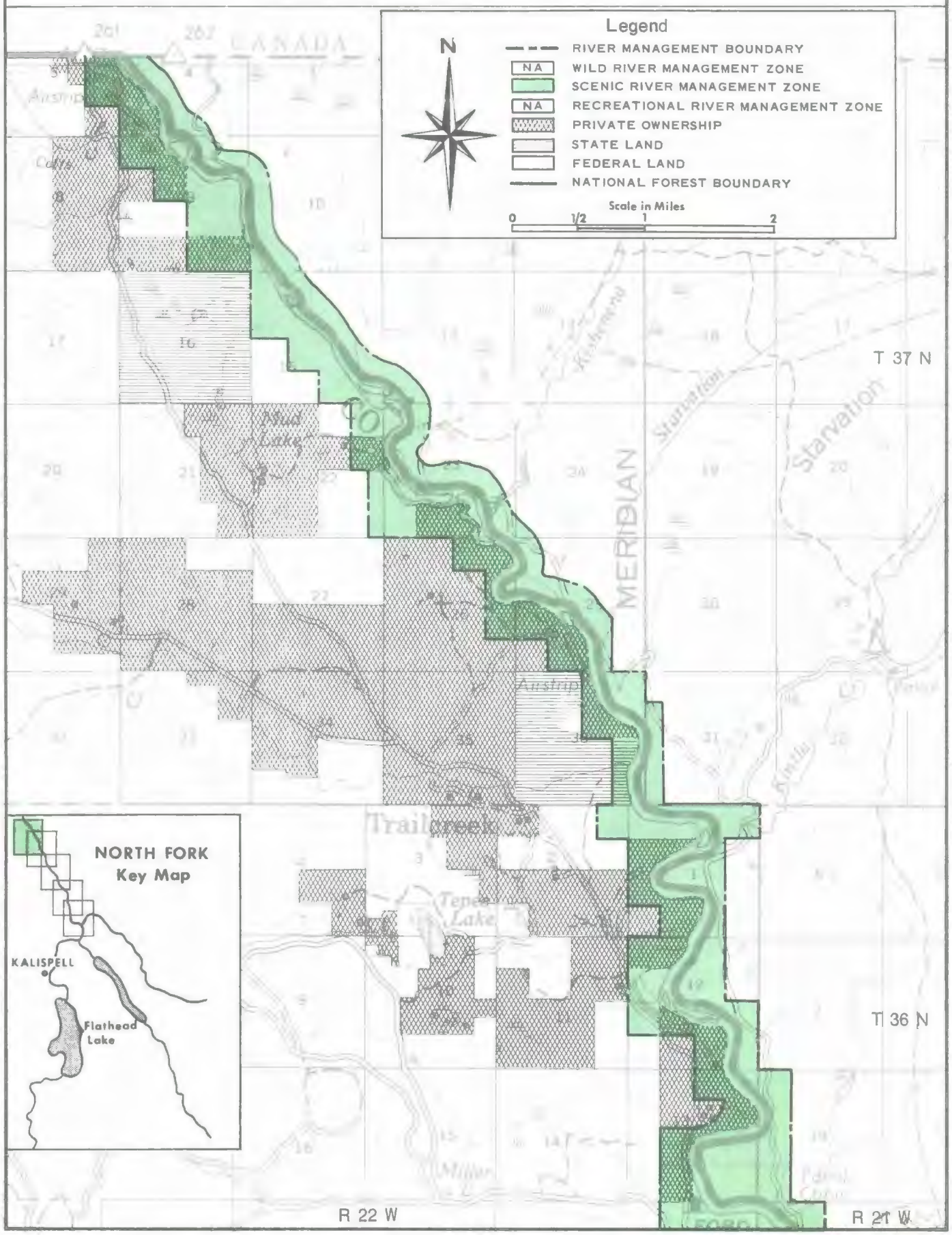
The remaining 6 percent of the drainage is scheduled for comprehensive study by 1977. Study on some portions has already begun. River values will be considered in the planning process along with the other resource uses and activities to derive appropriate management on National Forest land.

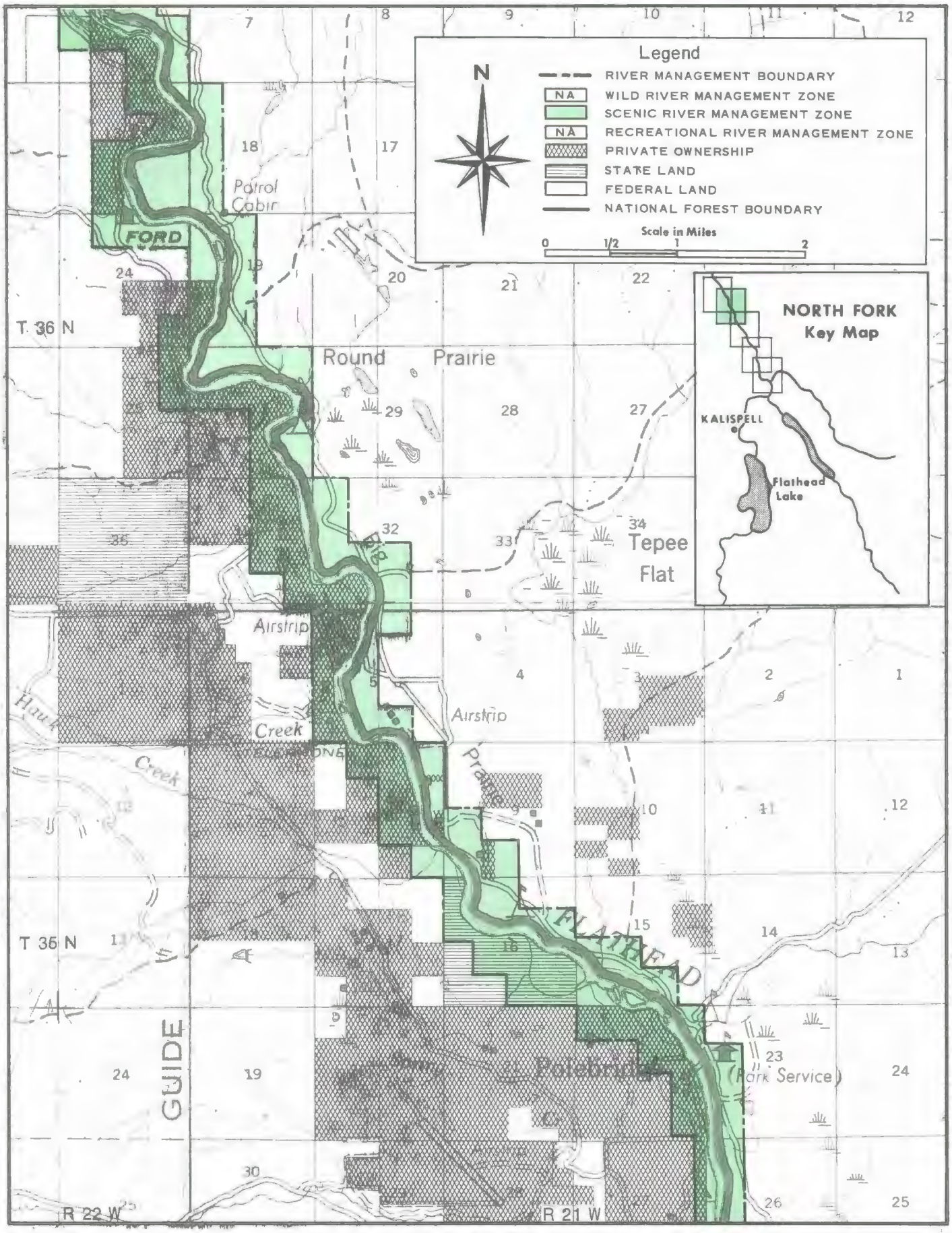
The greatest potential for recreation developments, such as campgrounds and picnic areas, on Federal land would be outside the proposed River Management Zone on the North Fork and the South Fork (outside of wilderness). Suitable sites should be considered for this use if needed to complement river classification objectives.

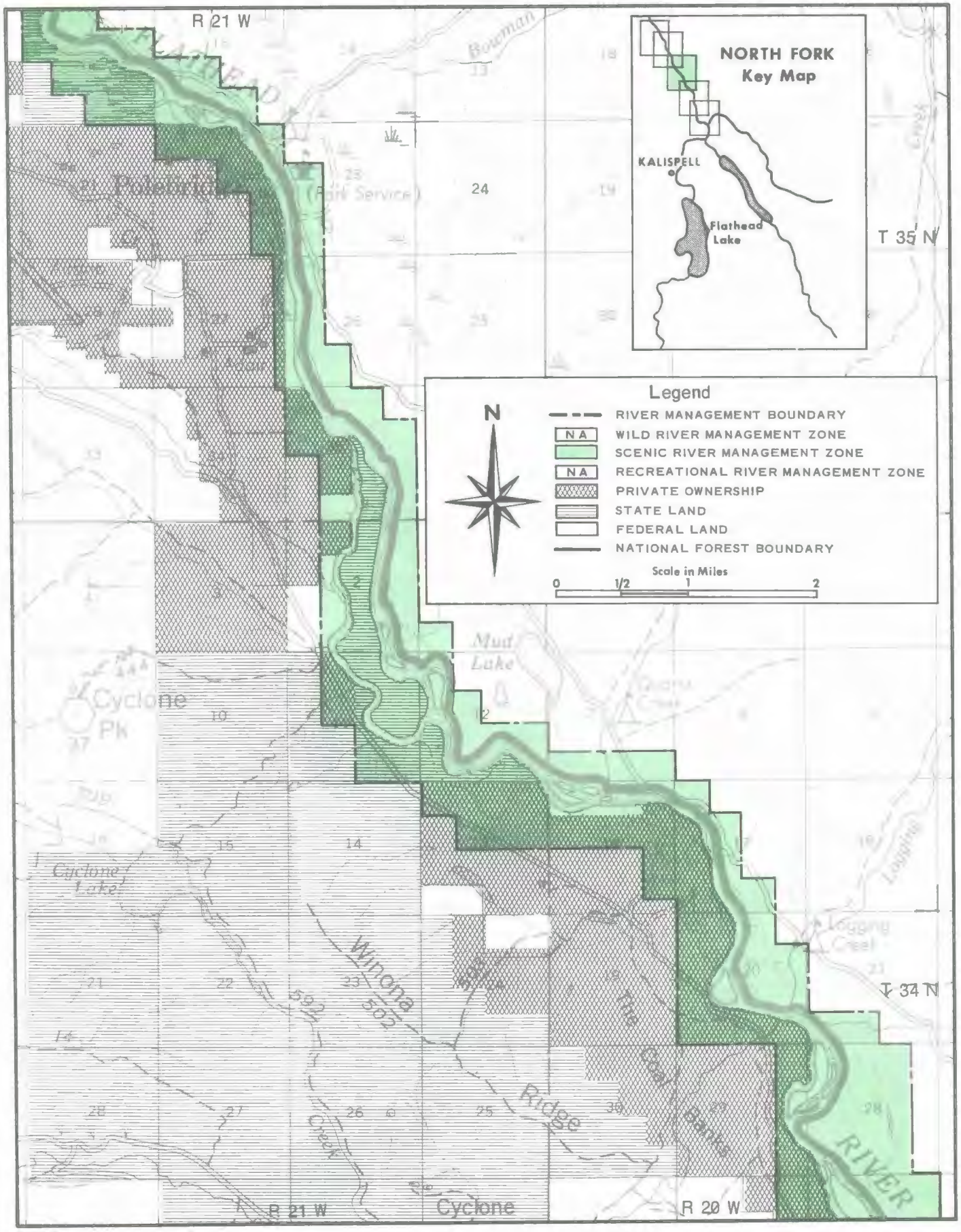
Protecting water quality of tributary streams is critical to maintaining water quality in the river. Data from the water monitoring system would be used in management practices on Federal lands to maintain water quality standards. Solution of water quality problems on private lands would be sought through State sanitation laws.

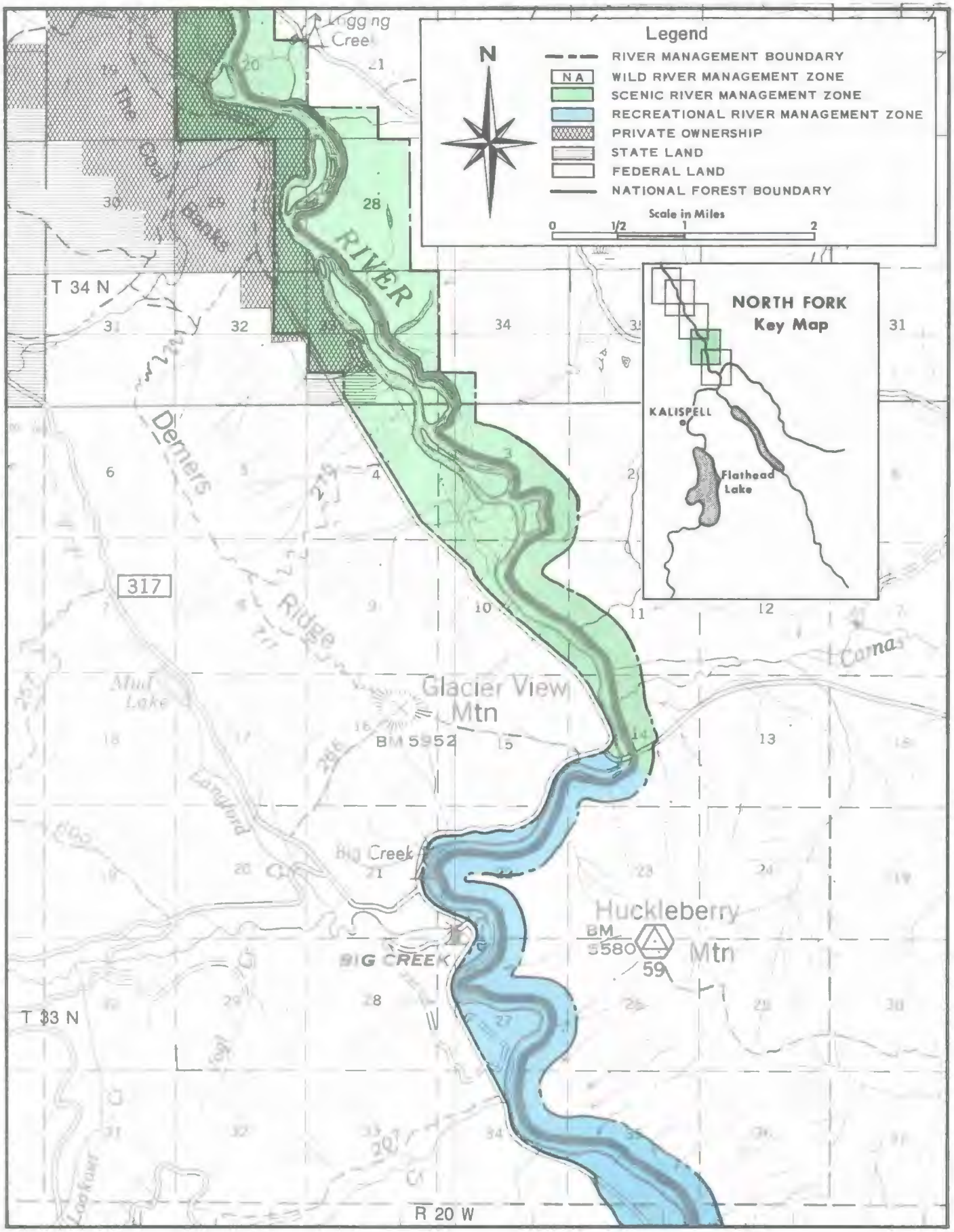
Tributary streams also serve as spawning and nursery areas for fish and provide fishing and other recreational opportunities that supplement values of the river. It would be necessary to protect and maintain fish habitat and fish populations on the tributaries as well as the river.

RIVER BOUNDARY LOCATION




Legend
N
RIVER MANAGEMENT BOUNDARY
NA
WILD RIVER MANAGEMENT ZONE
SCENIC RIVER MANAGEMENT ZONE
NA
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0
1/2
1
2
NORTH FORK
Key Map
KALISPELL
Flathead Lake
Patrol Cabin
FORD
T. 36 N
Round Prairie
Tepee Flat
Airstrip
Hawk Creek
Creek
Airstrip
Prairie
FLATHEAD
T 35 N
GUIDE
Polebridge
(Park Service)
R 22 W
R 21 W


R 21 W
NORTH FORK
Key Map
KALISPELL
Flathead Lake
T 35 N
Legend
N
RIVER MANAGEMENT BOUNDARY
NA
WILD RIVER MANAGEMENT ZONE
SCENIC RIVER MANAGEMENT ZONE
NA
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0
1/2
1
2
Bowman
Poolbrick
(Park Service)
24
Mud Lake
Cyclone Pk
Cyclone Lake
Winona
Ridge
Cyclone
Logging Creek
T 34 N
RIVER
R 21 W
R 20 W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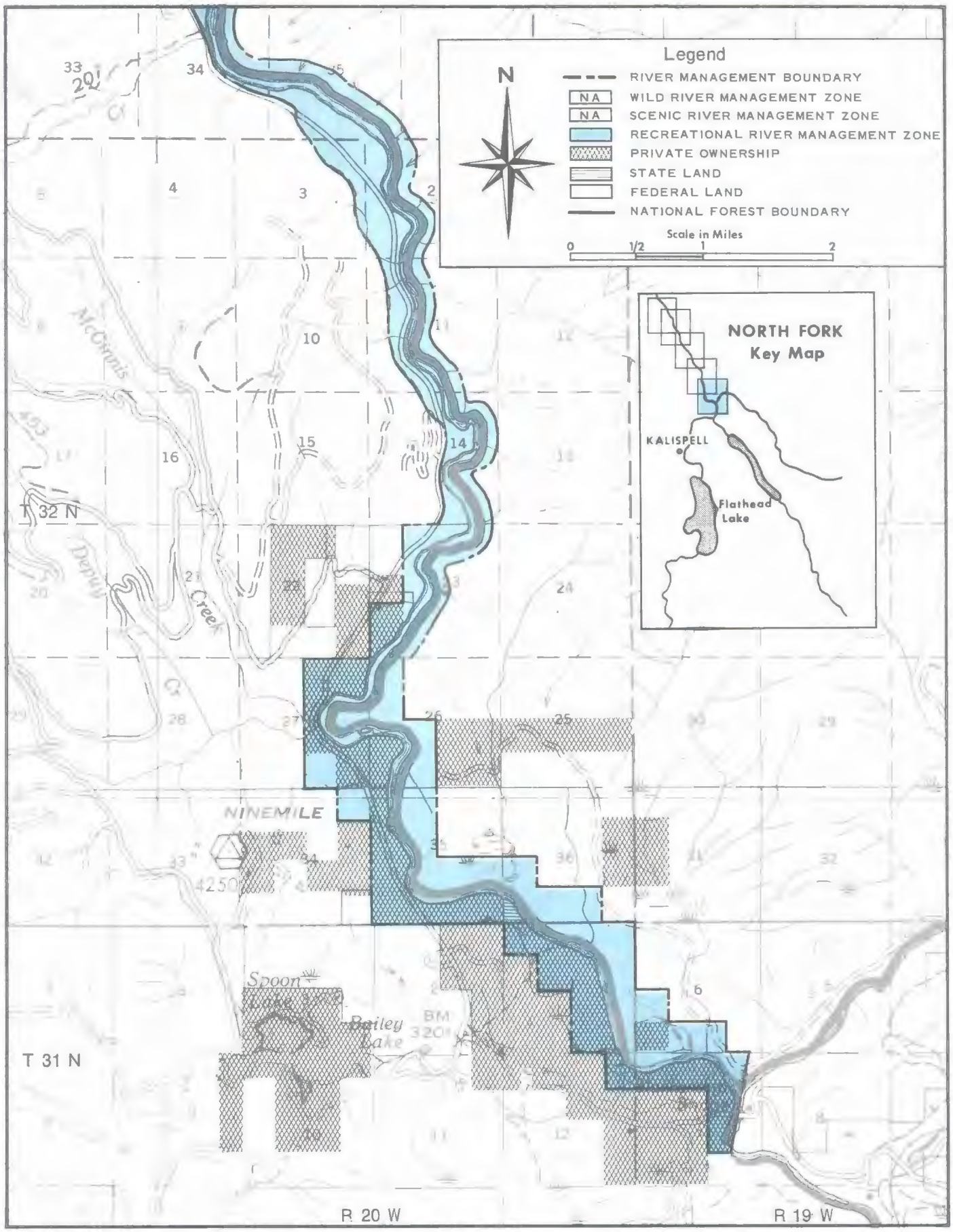
N
RIVER MANAGEMENT BOUNDARY
NA
WILD RIVER MANAGEMENT ZONE
SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0
1/2
1
2
NORTH FORK
Key Map
KALISPELL
Flathead Lake
T 34 N
T 33 N
R 20 W
RIVER
Demers
Ridge
317
Glacier View Mtn
BM 5952
Big Creek
BIG CREEK
Huckleberry Mtn
BM 5580
59
Camas
Mud Lake
Langford
Lookout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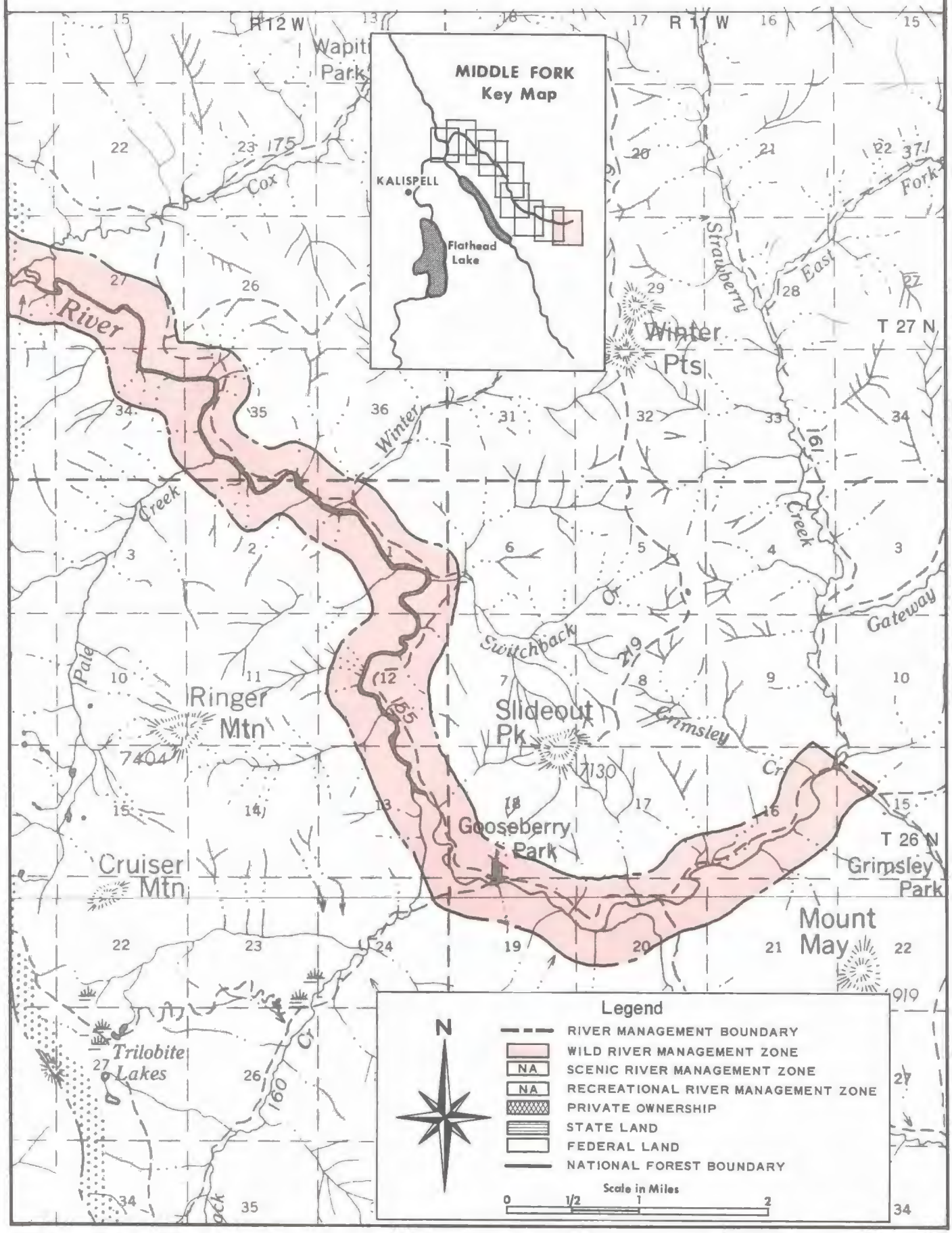
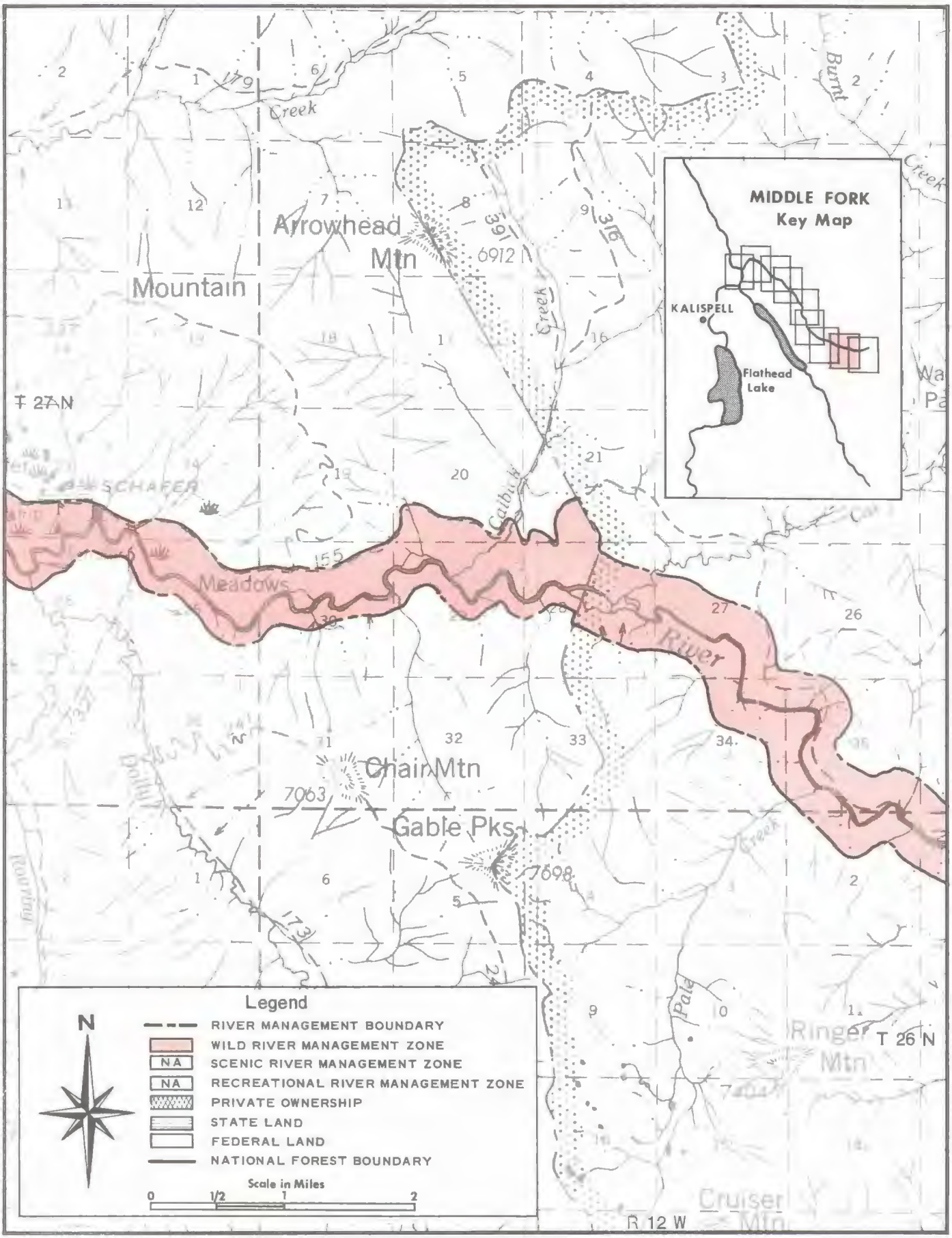
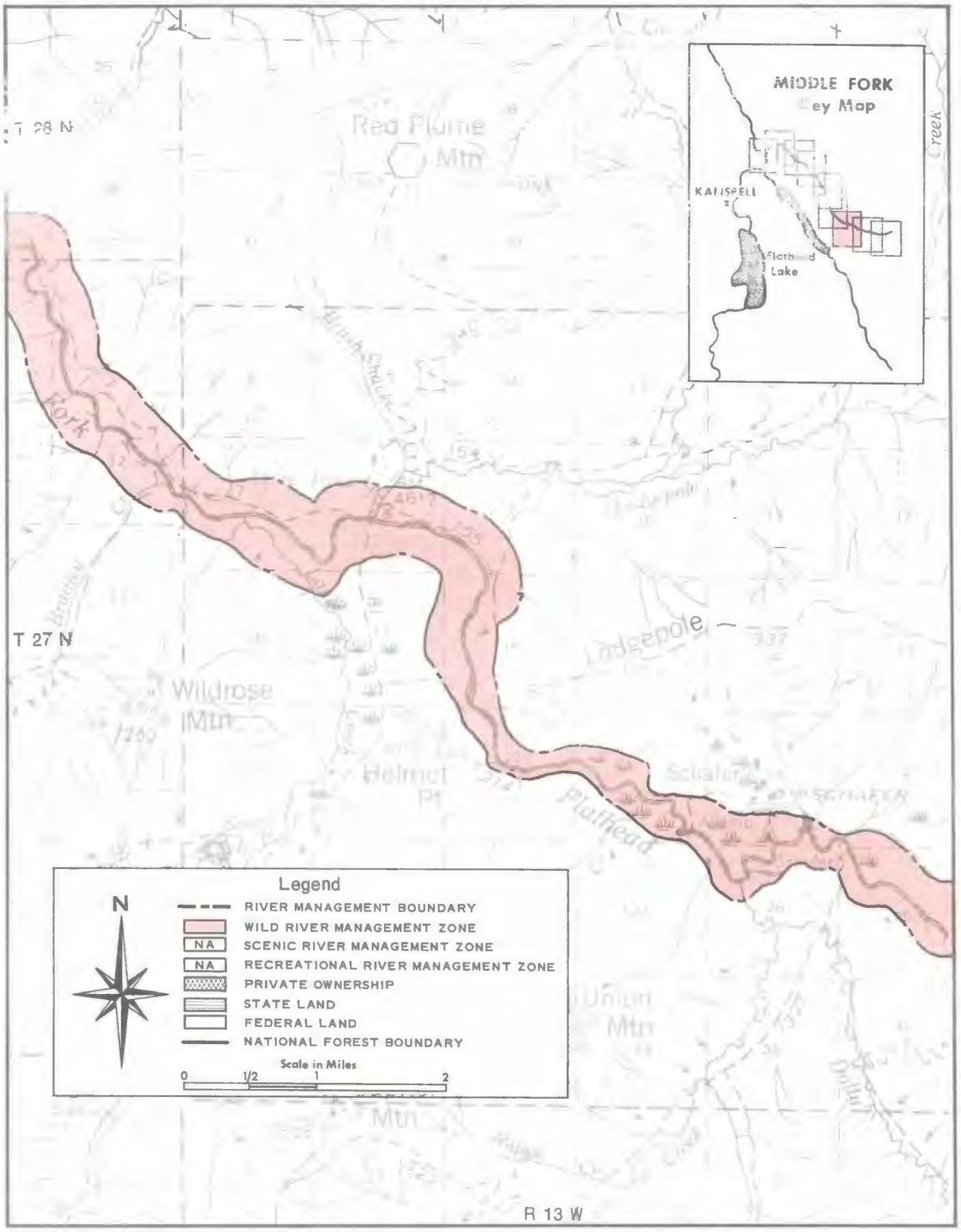
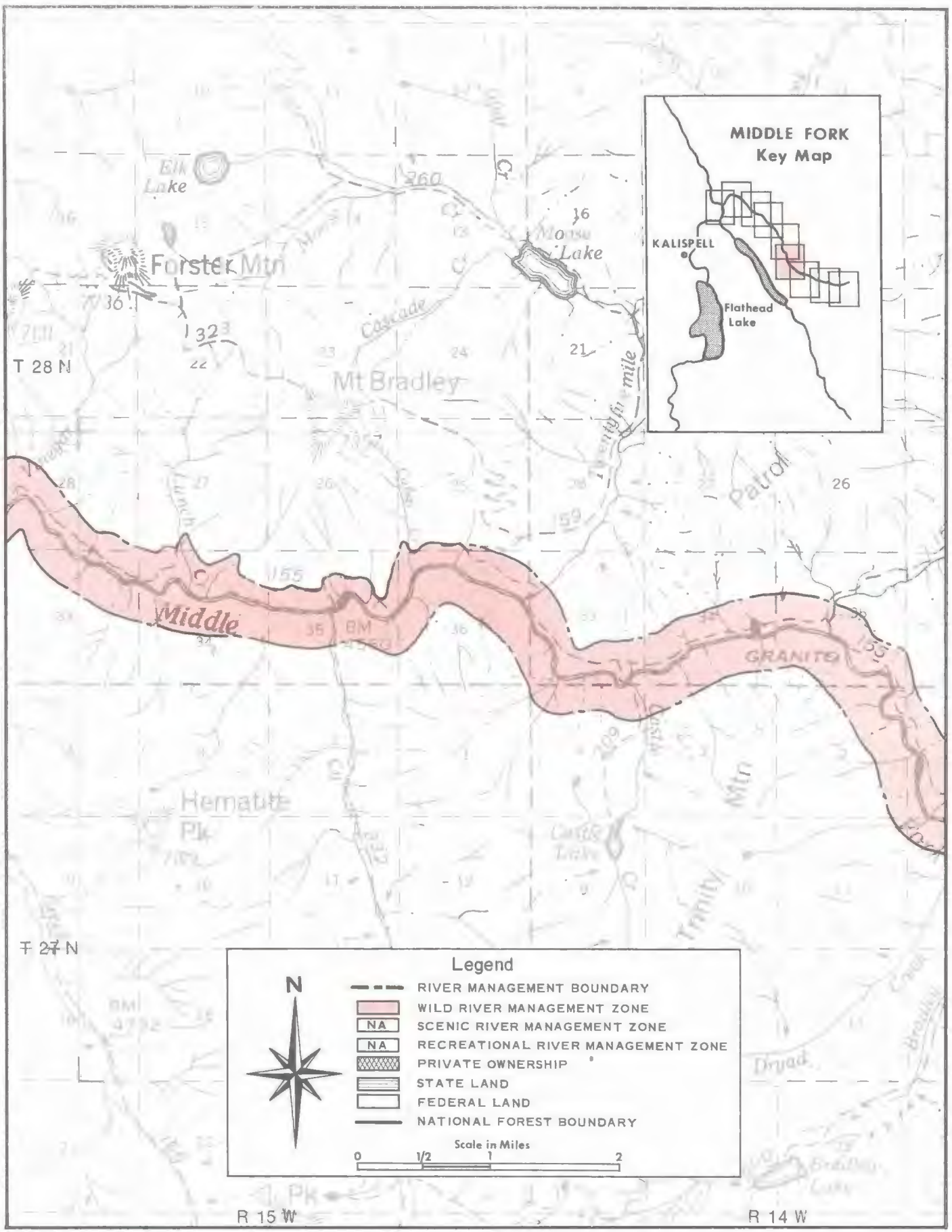
RIVER MANAGEMENT BOUNDARY
NA WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2
NORTH FORK
Key Map
KALISPELL
Flathead Lake
T 32 N
T 31 N
R 20 W
R 19 W
McGinnis
Deputy Creek
NINEMILE
Spoon Lake
Bailey Lake
BM 3201

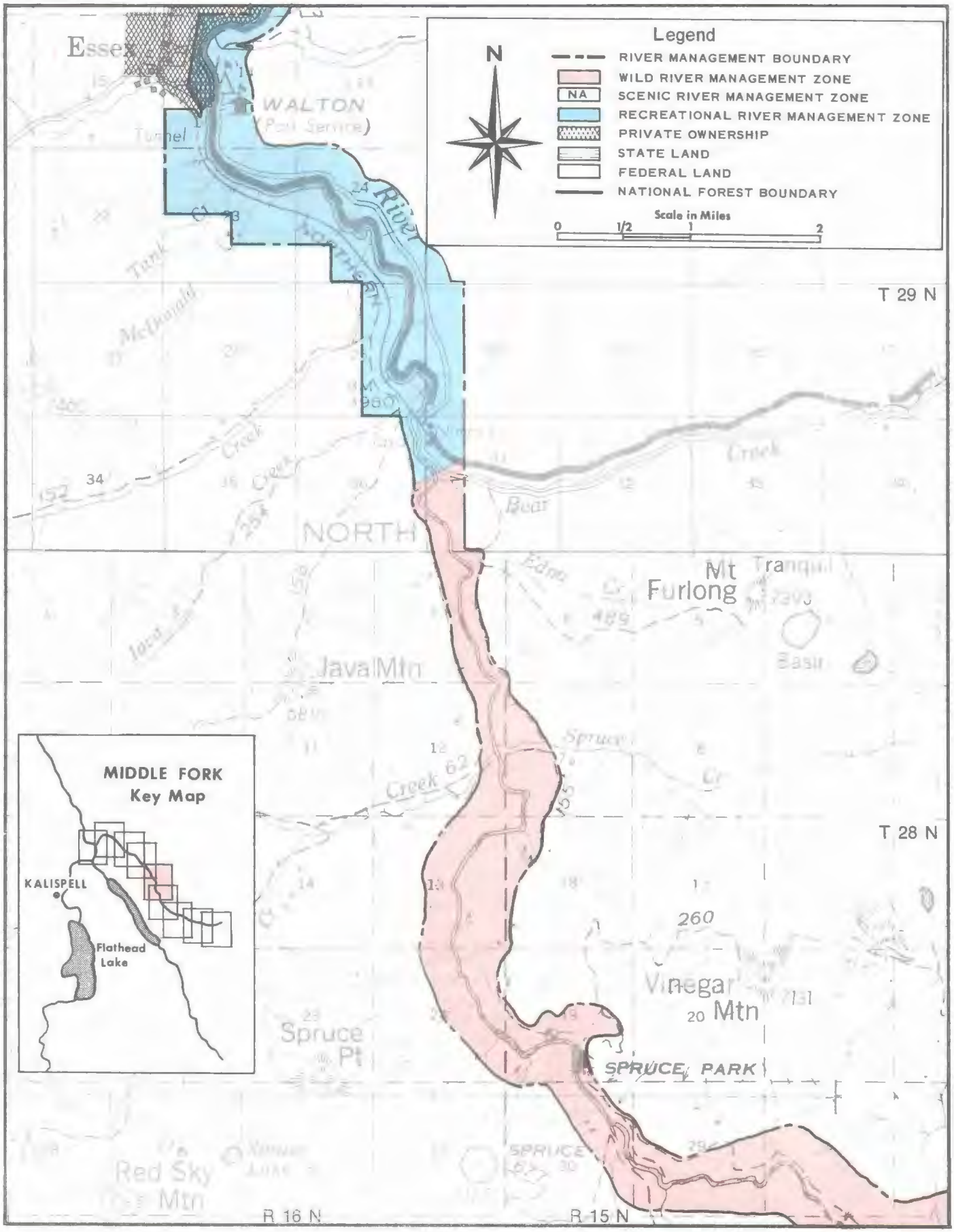
RIVER BOUNDARY LOCATION

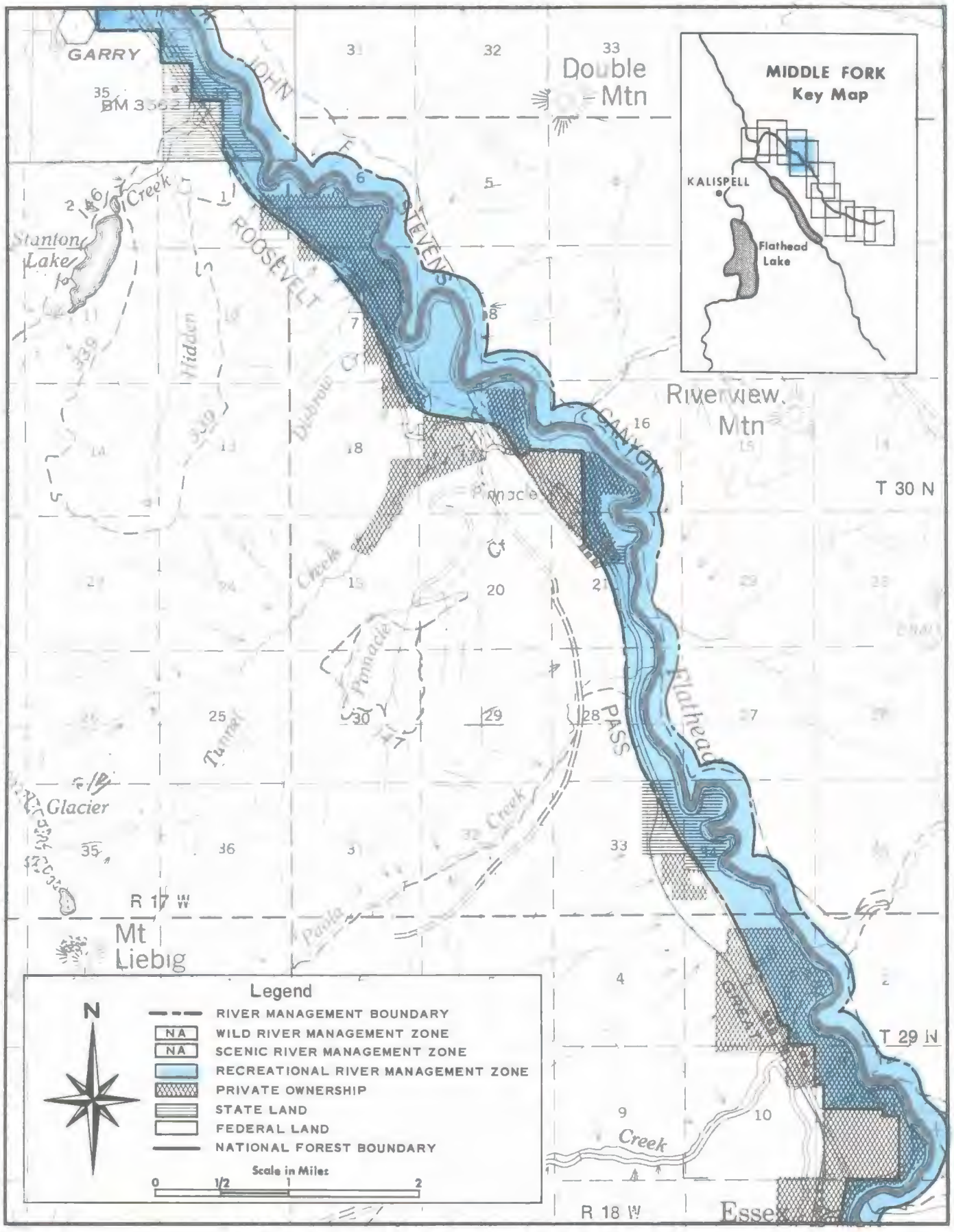


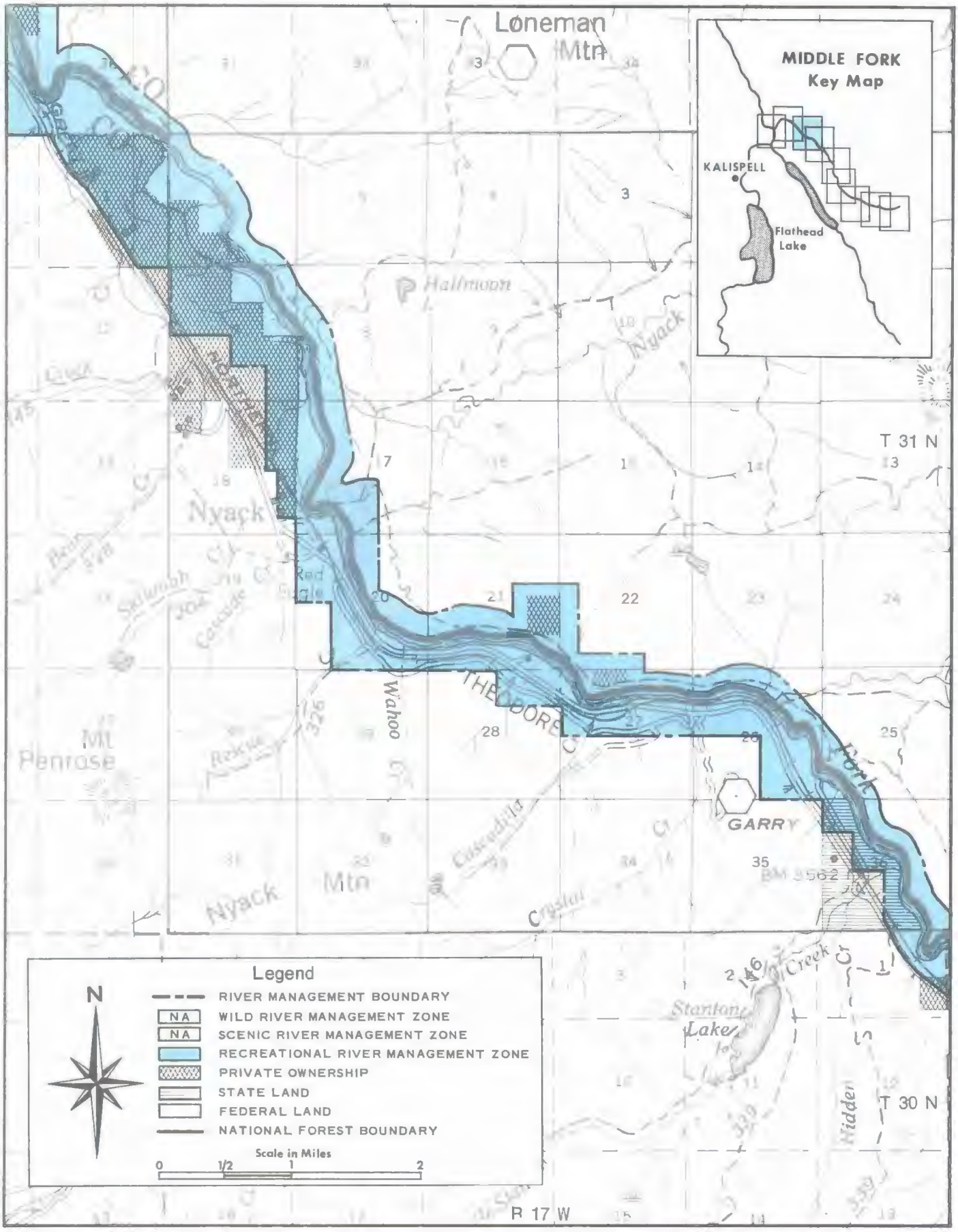

MIDDLE FORK
Key Map
KALISPELL
Flathead Lake
Arrowhead Mtn
Mountain
6912
T 27 N
SCHAFER
Meadows
River
Chain Mtn
7063
Gable Pks
7698
Ringer Mtn
T 26 N
Cruiser Mtn
R 12 W
Legend
N
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
NA RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2

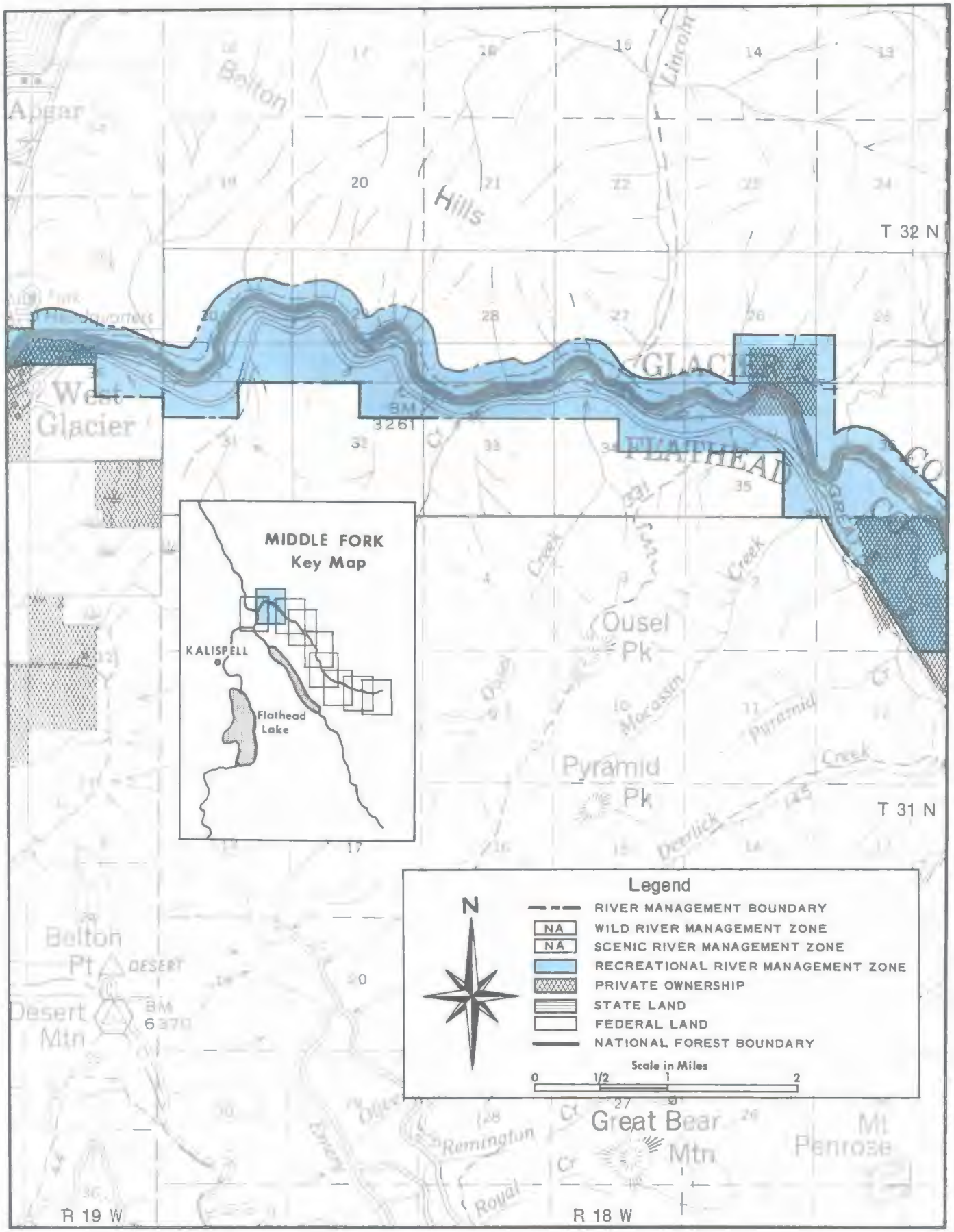

MIDDLE FORK
Key Map
KALISPELL
Flathead
Lake
T 28 N
Red Plume
Mtn
T 27 N
Wildrose
Mtn
Helmet
Pt
Ladsepole
Schafer
SCHAFER
Plathead
Union
Mtn
Mtn
R 13 W
Legend
N
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
NA
SCENIC RIVER MANAGEMENT ZONE
NA
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0
1/2
1
2

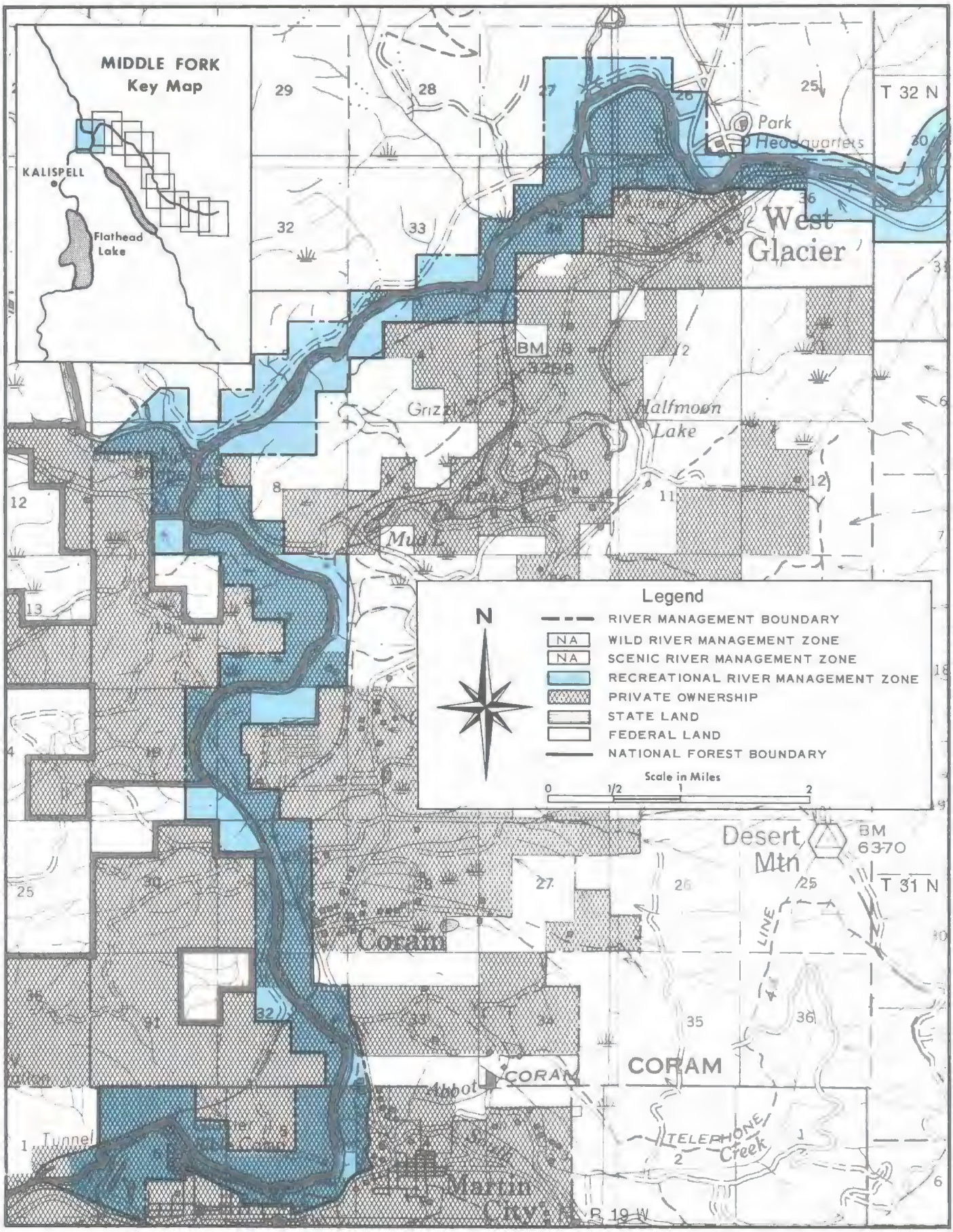

MIDDLE FORK
Key Map
KALISPELL
Flathead Lake
Elk Lake
Forster Mtn
Moose Lake
Cascade
Mt Bradley
Twenty mile
Patrol
Middle
GRANITE
Hematite Pk
Trinity Mtn
Dryad
T 28 N
T 27 N
R 15 W
R 14 W
Legend
N
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
NA RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2


Legend
N
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
NA
SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0
1/2
1
2
Essex
WALTON
(Post Service)
Tunnel
NORTH FORK
River
Tank
McDonald
Creek
Bear
Creek
NORTH
Edna
Cr
Mt
Furlong
Tranquil
Basin
Java Mtn
Spruce
Cr
Creek
T 29 N
T 28 N
MIDDLE FORK
Key Map
KALISPELL
Flathead
Lake
Vinegar
Mtn
Spruce
Pt
SPRUCE PARK
Red Sky
Mtn
R 16 N
R 15 N

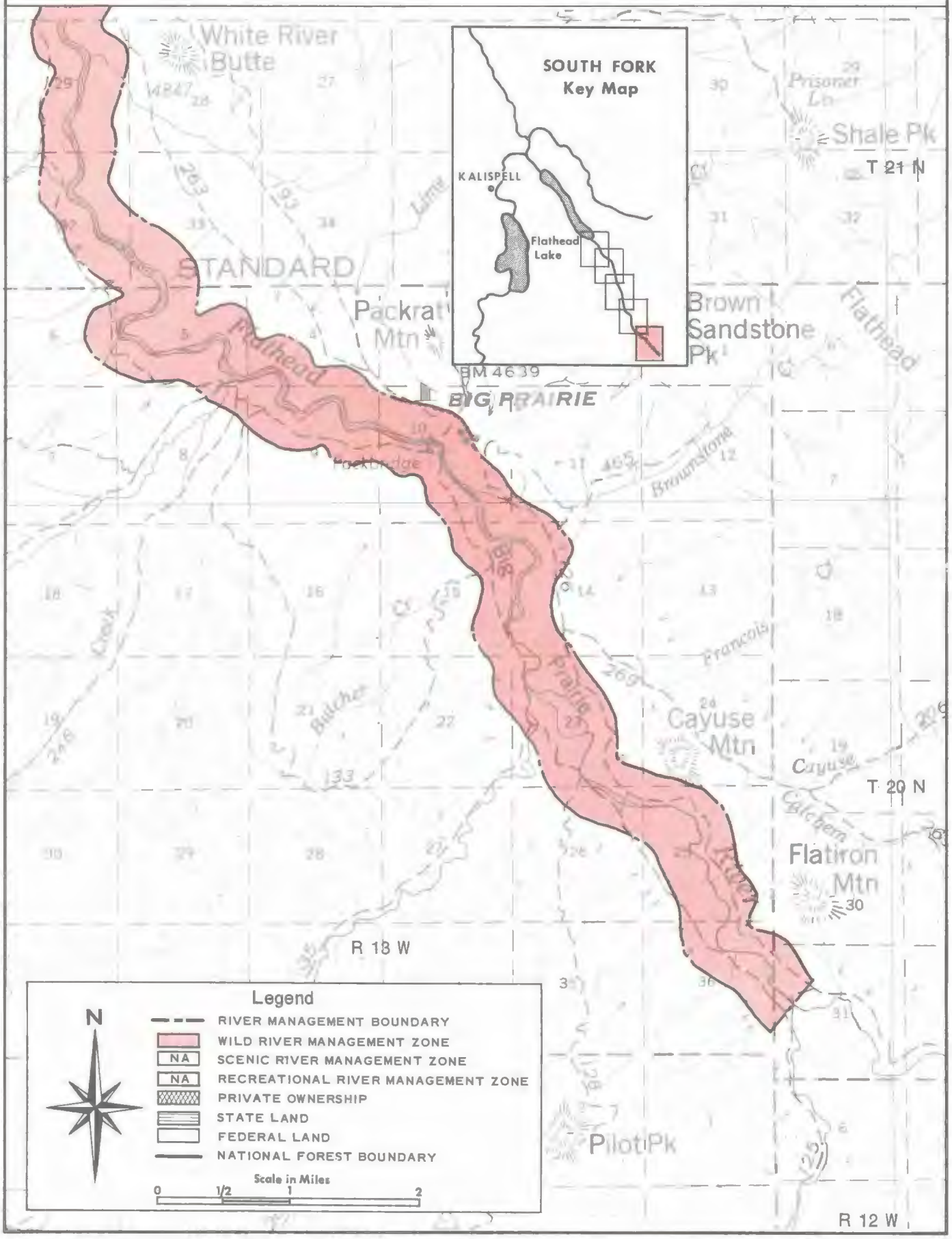

GARRY
Double Mtn
MIDDLE FORK
Key Map
KALISPELL
Flathead Lake
JOHN F. STEVENS
ROOSEVELT
Stanton Lake
Hidden
Riverview Mtn
CANYON
T 30 N
Pinnacle
Tunnel
PASS
Flathead
Glacier
R 17 W
Mt Liebig
T 29 N
R 18 W
Essex
Legend
N
RIVER MANAGEMENT BOUNDARY
NA WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2

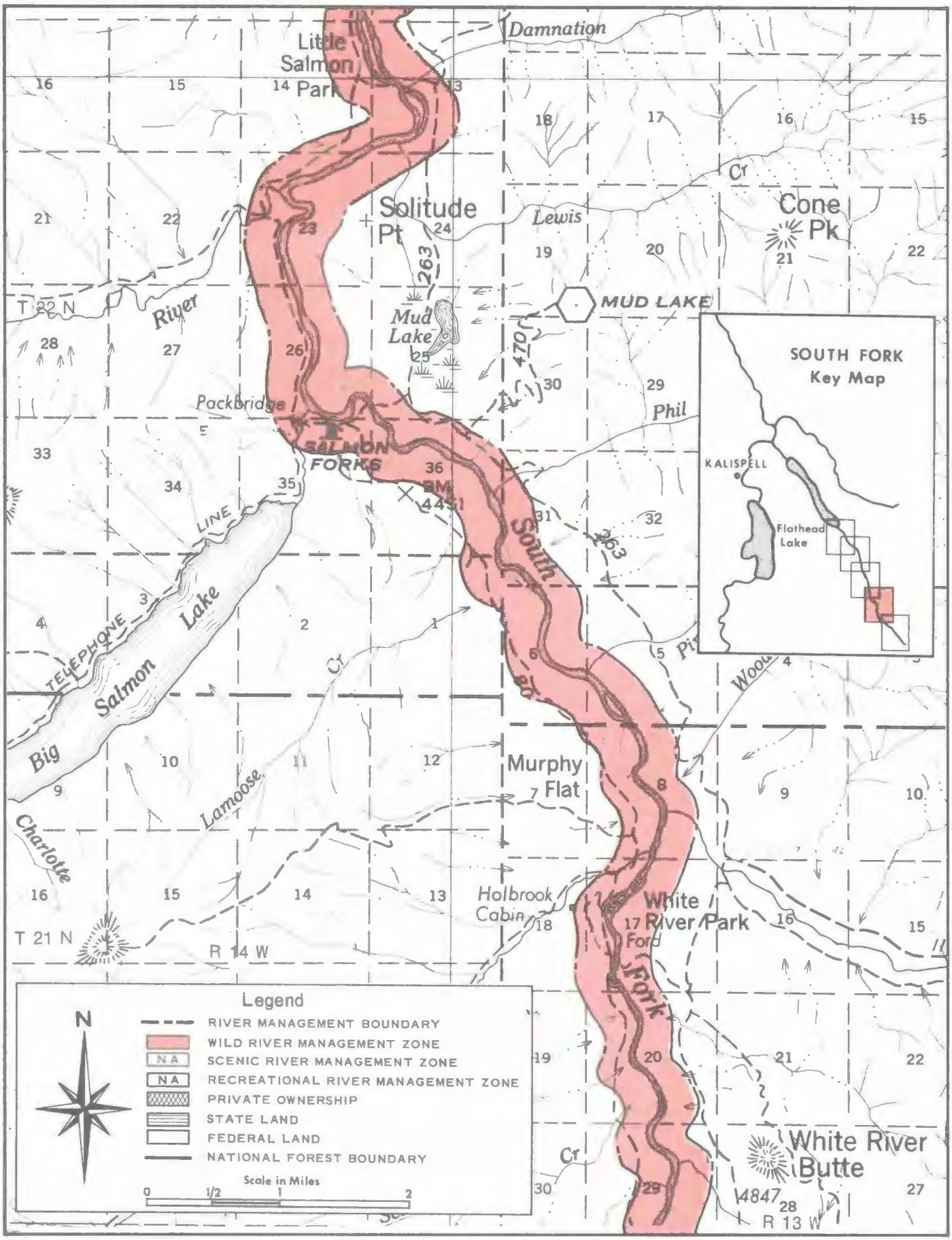

MIDDLE FORK
Key Map
KALISPELL
Flathead Lake
Loneman Mtn
Hallmoon
Nyack
T 31 N
Nyack
Red Eagle
Wahoo
THEODORE
Mt Penrose
GARRY
Nyack Mtn
Crystal
Stanton Lake
Hidden
T 30 N
R 17 W
Legend
N
RIVER MANAGEMENT BOUNDARY
NA WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2

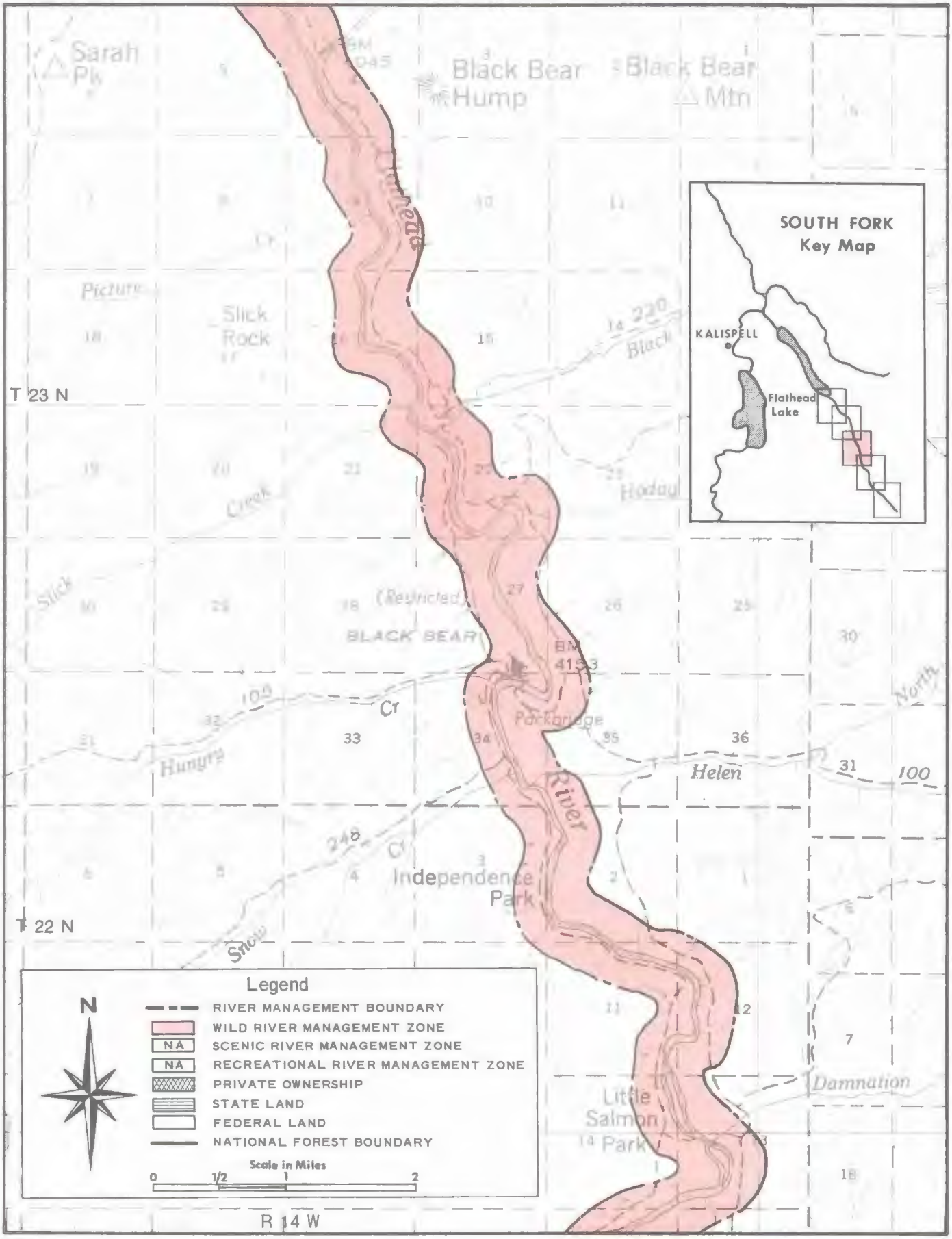

MIDDLE FORK
Key Map
KALISPELL
Flathead Lake
Legend
N
RIVER MANAGEMENT BOUNDARY
NA WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2
T 32 N
T 31 N
R 19 W
R 18 W
Belton Hills
Appar
West Glacier
GLACIER
FLATHEAD
Ousel Pk
Pyramid Pk
Belton Pt
Desert Mtn
Great Bear Mtn
Mt Penrose
Lincoln
Moccasin
Pyramid
Deerlick
Remington
Royal
Creek

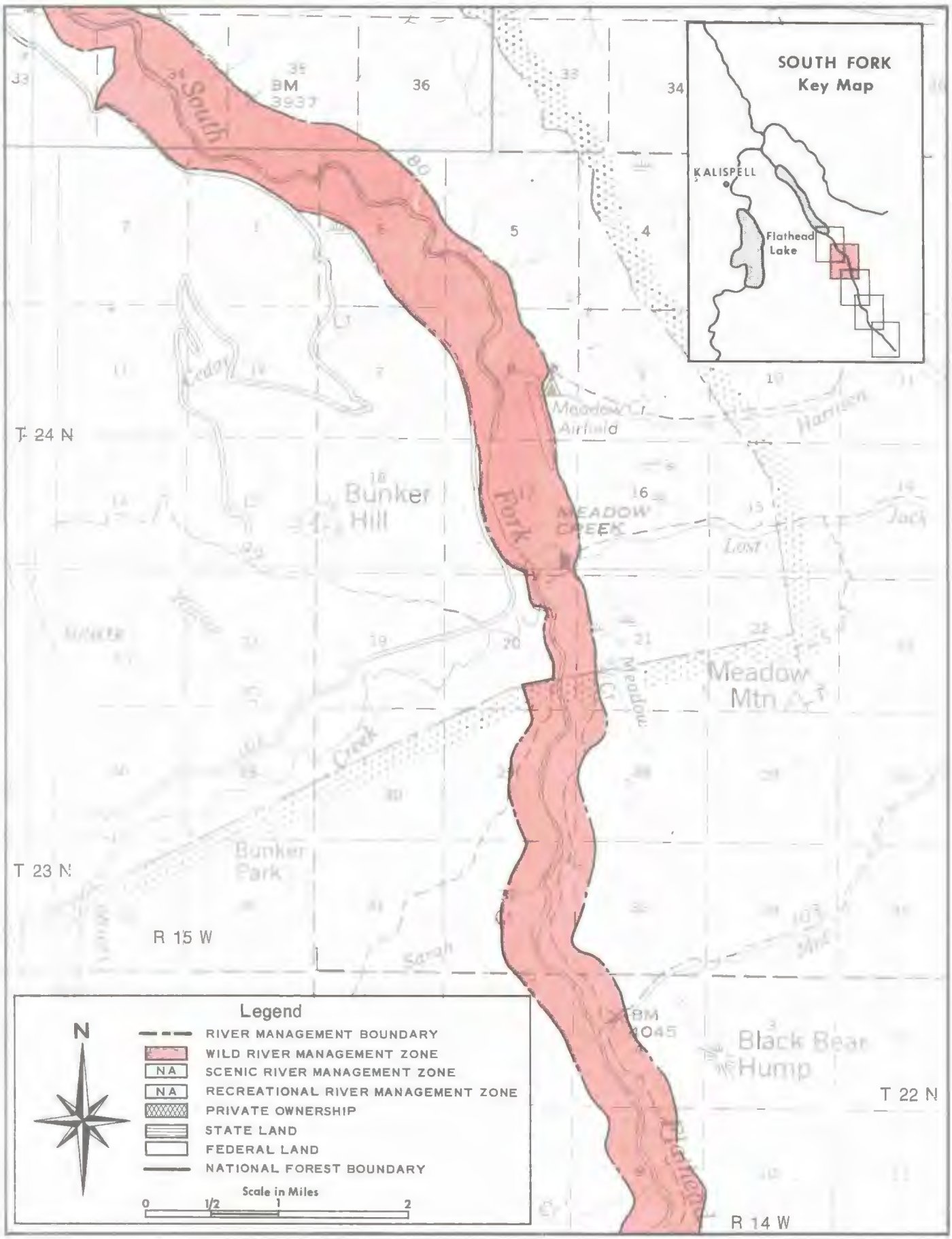

MIDDLE FORK
Key Map
KALISPELL
Flathead Lake
T 32 N
Park Headquarters
West Glacier
BM 3288
Halfmoon Lake
Mud L.
Legend
N
RIVER MANAGEMENT BOUNDARY
NA WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2
Desert Mtn
BM 6370
T 31 N
Coram
CORAM
Abbot
Tunnel
Telephone Creek
Martin City
R 19 W

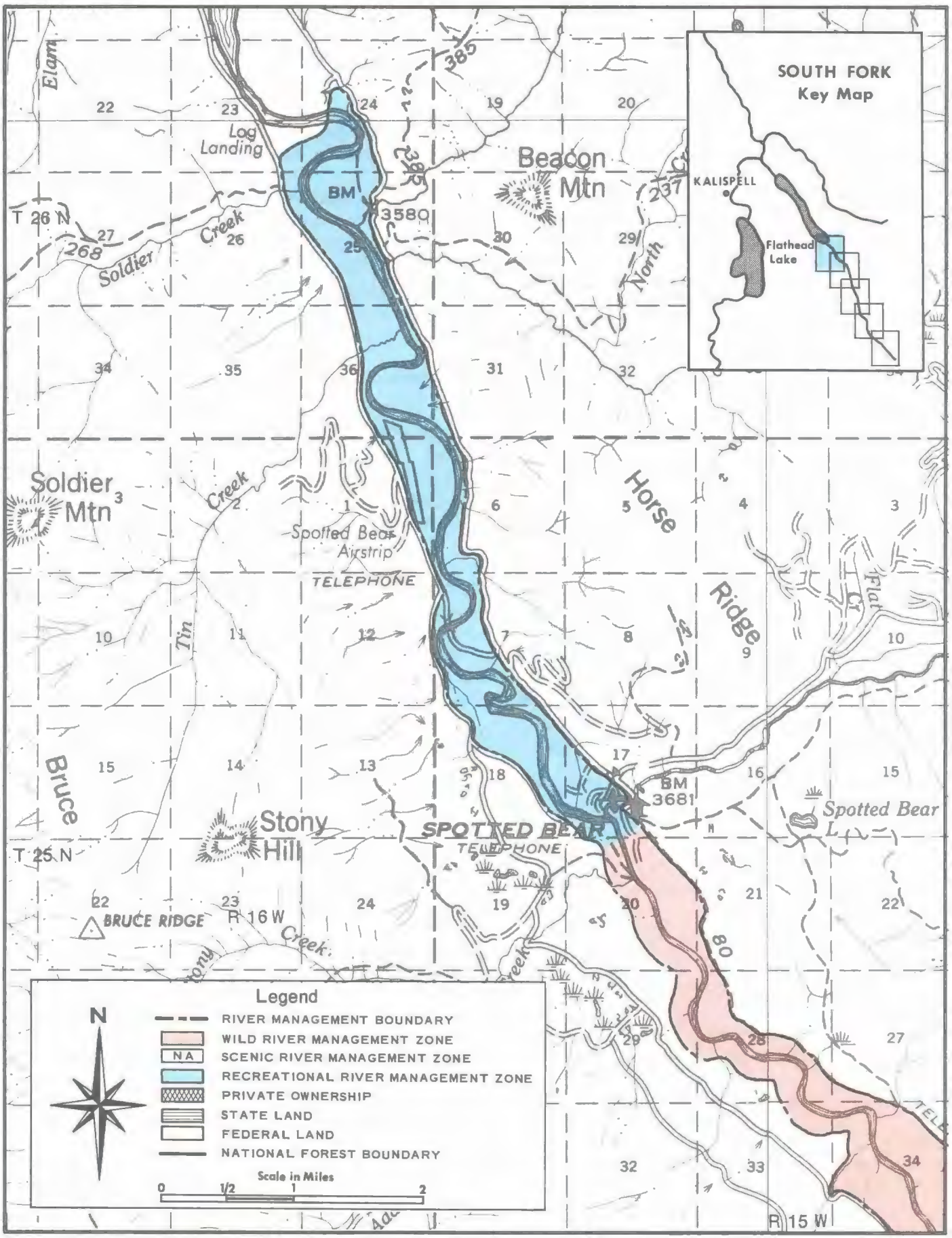
RIVER BOUNDARY LOCATION




Little Salmon Park
Damnation
Solitude Pt
Lewis
Cone Pk
MUD LAKE
Mud Lake
River
T 22 N
Packbridge
SALMON FORKS
Phil
South
Fork
Big Salmon Lake
TELEPHONE LINE
Lamoose
Charlotte
Murphy Flat
Holbrook Cabin
White River Park
Ford
T 21 N
R 14 W
White River Butte
R 13 W
SOUTH FORK Key Map
KALISPELL
Flathead Lake
Legend
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2
N


Sarah Pk
Black Bear Hump
Black Bear Mtn
Picture
Slick Rock
T 23 N
Black
Hodag
Creek
Slick
(Restricted)
BLACK BEAR
BM 4153
Packbridge
Hungry
Helen
North
River
Independence Park
T 22 N
Snow
Little Salmon Park
Damnation
R 14 W
SOUTH FORK
Key Map
KALISPELL
Flathead Lake
Legend
N
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
NA RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2


SOUTH FORK
Key Map
KALISPELL
Flathead Lake
South
Fork
Meadow Airfield
Bunker Hill
MEADOW CREEK
Meadow Mtn
Bunker Park
Black Bear Hump
T 24 N
T 23 N
T 22 N
R 15 W
R 14 W
Legend
N
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
NA SCENIC RIVER MANAGEMENT ZONE
NA RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2


SOUTH FORK
Key Map
KALISPELL
Flathead Lake
Beacon Mtn
Soldier Mtn
Horse Ridge
Stony Hill
Bruce Ridge
Log Landing
Spotted Bear Airstrip
TELEPHONE
SPOTTED BEAR
Spotted Bear L.
BM 3580
BM 3681
T 26 N
T 25 N
R 16 W
R 15 W
Legend
RIVER MANAGEMENT BOUNDARY
WILD RIVER MANAGEMENT ZONE
SCENIC RIVER MANAGEMENT ZONE
RECREATIONAL RIVER MANAGEMENT ZONE
PRIVATE OWNERSHIP
STATE LAND
FEDERAL LAND
NATIONAL FOREST BOUNDARY
Scale in Miles
0 1/2 1 2

Economic Analysis of Smoky Range and Spruce Park

Note: The following is based on information contained in two letters from the Federal Power Commission to the Forest Service. The first letter, dated February 16, 1972, provided the basic text and an economic analysis. The second letter, dated May 16, 1974, updated the analysis with more recent costs. The 1974 figures have been inserted to update the 1972 text.

"The only two potential developments on these reaches worthy of investigation are the Smoky Range project on the North Fork, and the Spruce Park project on the Middle Fork". (The Smoky Range project is estimated to have a benefit-cost ration of 1.03 and is now economically feasible. The Spruce Park project was found to have a benefit-cost ration of only 0.66. The analysis of these developments is based on July 1973 power values and price levels.*)

"Our economic analysis assumptions and project descriptions are presented below:

"The Smoky Range project would be located on the North Fork of the Flathead River 63 miles upstream from Flathead Lake. The gross storage would be 1,650,000 acre-feet, of which 1,510,000 acre-feet would be usable for flood control and power generation. The gross head would be 350 feet. Five 66 megawatt generators would provide a total installed plant capacity of 330 megawatts.

"The total project cost is estimated to be $238,000,000 based on July 1973 price levels. The total annual cost based on a 5-3/8 percent interest rate is estimated to be $14,953,000. The project benefits, itemized below, include power, flood control, and recreation. The at-site power benefits are based on an alternative oil-fired steam-electric peaking plant. Flood control and recreation benefits were estimated by the Corps of Engineers.

"Smoky Range Benefits and Costs

Annual Benefits		
Power		
At-site:		
Capacity:	330 MW @ $20.80/kW year	$6,900,000
Energy:	587 GWh @ 10.49 mills/kWh	6,150,000
Downstream:		
Energy:	122.5 GWh @ 10.49 mills/kWh	1,290,000
Total power benefits		$14,340,000
Flood Control		800,000
Recreation		250,000
Total Annual Benefits		$15,390,000
Total Annual Costs		14,953,000

"The Spruce Park project would be located on the Middle Fork of the Flathead River, 50 miles above its confluence with the North Fork. The gross storage would be 610,000 acre-feet, of which 600,000 acre-feet would be usable for

flood control and power generation. The rated head on the proposed plant would be 860 feet. Two 190 MW generators would provide a total installed plant capacity of 380 MW.

"The total project cost is estimated to be $322,000,000, based on July 1973 price levels. The total annual cost, based on a 5-3/8 percent interest rate, is estimated to be $20,292,000. The project benefits shown below only include power, since flood control benefits are negligible.

"Spruce Park Benefits and Costs

Annual Benefits		
Power		
At-site:		
Capacity:	369 MW @ $16.63/kW year	$6,150,000
Energy:	420 GWh @ 12.80 mills/kWh	5,400,000
Downstream:		
Energy:	175 GWh @ 10.49 mills/kWh	1,840,000
Total Annual Power Benefits		$13,390,000
Total Annual Costs		20,292,000

"The alternative source of electric generation that would be constructed to serve the area load, in lieu of these projects, is assumed to be an oil-fired steam-electric plant.

"There are no known future major transmission lines that are proposed to cross reaches of the Flathead River under study."

Economic Feasibility

The following comments are based on conversations between the Forest Service and the Federal Power Commission regarding the significance of a hydroelectric project which has been evaluated as economically feasible -- such as Smoky Range.

The Federal Power Commission has evaluated potential sites in the Columbia River Basin, inclusive of Smoky Range and Spruce Park, with the use of broad-base data. These evaluations lead to a determination of estimated benefit-cost ratios which are commonly used for comparison purposes among potential projects as an indication of relative feasibility. This data is especially useful to interested developers who wish to concentrate further study on the most feasible sites.

A favorable economic analysis does not mean that a project could or should be constructed, since this is only one of a number of considerations which must be made. For example, analysis must also be made concerning the environment, employment, and distribution of power.

* This wording is not included in quotes because of a change made in the text. The 1972 Federal Power Commission letter stated that neither Smoky Range nor Spruce Park were economically justified. From 1972 to 1974 the benefit-cost ration for Smoky Range has increased from 0.95 to 1.03. Since 1.0 is the break-even point for economic feasibility, a change in wording was required.

Potential Water Resource Development Projects Outside the Immediate Study River Area, but Within the Regional Zone of Influence

1. A doubling of the capacity of the Hungry Horse Project (6).

2. A ten percent increase in the capability of the Kerr plant (6).

3. High Buffalo Rapids Dam (8) - The High Buffalo Rapids Dam project, with 668,000 acre-feet of multiple-purpose storage, would partially control runoff of the Flathead River system. The project would do little to control floods within the basin as the site is below the major flood damage area. Annual flood control benefits are $39,500 locally and $87,500 downstream. Both at-site and downstream power benefits are credited to the project. The justification ratio of 0.95 indicates possible economic justification. Further study of this project is warranted.

4. Buffalo Rapids No. 4 (8) - The Buffalo Rapids No. 4 project would have no storage, except for pondage. Power benefits are therefore limited to at-site power. The justification ratio of 0.87 indicates further study of this project in combination with Buffalo Rapids No. 2 is warranted as an alternate for High Buffalo Rapids.

5. Sloan Bridge Dam (8) - The Sloan Bridge Dam project, with 400,000 acre-feet of multiple-purpose storage, would partially control the runoff of the Flathead River system. The project would do little to control floods within the basin as the site is below major flood damage areas. Annual flood control benefits are $39,500 locally and $87,500 downstream. Both at-site and downstream power benefits are credited to the project. No separate power study was made which considered Sloan Bridge Dam first-added to the system because systems with High Buffalo Rapids were found to be economically superior. The justification ratio of 0.93 indicates possible economic justification. Further study of this project as an alternate to High Buffalo Rapids is warranted.

6. Buffalo Rapids No. 2 (8) - The Buffalo Rapids No. 2 project would have no storage, except for pondage. Power benefits are therefore limited to at-site power. The justification ratio of 0.97 indicates further study of this project in combination with Buffalo Rapids No. 4 is warranted as an alternate for High Buffalo Rapids.

7. The Corps of Engineers is presently engaged in a "Flathead River Flood Control Study" to determine the most feasible approach to alleviate flood hazard between Flathead Lake and Columbia Falls. It appears that a system of levees in combination with flood plain zoning will likely be the alternative implemented. This project would provide protection against 200-year floods (9).

The Confederated Salish & Kootenai Indian tribes, in conjunction with Montana Power Company, have applied to FPC for a license to construct Buffalo Rapids No. 2 and No. 4. Because both the problems and their solutions are complex, additional interdisciplinary studies are required to formulate the best plan for the Flathead River Basin (6).

A "Memorandum Report on Clark Fork Basin for the Federal Power Commission, September 1967" states, "In the event that Smoky Range is not developed because retention of the river and the reservoir area in its natural state is considered to outweigh the value of the project for flood control, power and recreation, the best remaining plan would consist of High Buffalo Rapids, Ninemile Prairie and Quartz Creek." (The latter two projects are located on the other reaches of the Clark Fork.) The report concludes that "studies indicate that any selection of an overall plan of development on the Flathead River downstream from Kerr will not significantly affect selection of a plan of development for the rest of the Clark Fork Basin.

A report by the Pacific Northwest River Basins Commission indicates that there are potential pumped storage sites on Whitefish Lake; on Ball Creek, a tributary of the South Fork; and on Swan Lake and several of its tributaries.

The Commission's report refers to these pumping sites and the potential dams as having the capability to contribute to regional power needs. However, the report also states that less costly means appear to be available outside the Flathead River Basin for meeting these needs and that the greatest future water requirements will be mostly for irrigation.

SIZE CLASSES OF TIMBER SHOWN IN ACRES

	North Fork		Middle Fork		South Fork		
	National Forest	Other Ownership w/o Glacier N. Park	Nat'l. Forest w/o Wilderness	Other Ownership w/o Glacier N. Park	Nat'l. Forest w/o Wilderness	Total	
	Acres	Acres	Acres	Acres	Acres	Acres	%
Sawtimber	869	1421	1725	194	929	5138	22
Poletimber	187	721	3373	584	1771	6636	28
Seedling & Saplings	1510	1465	2887	172	1470	7504	32
Non-stocked	96	28	15	--	8	147	1
Non-Forest	476	978	306	374	22	2156	9
Non-operable	145	70	1562	15	144	1936	8
Water	--				34	34	--
TOTAL	3283	4683	9868	1339	4378	23551	100

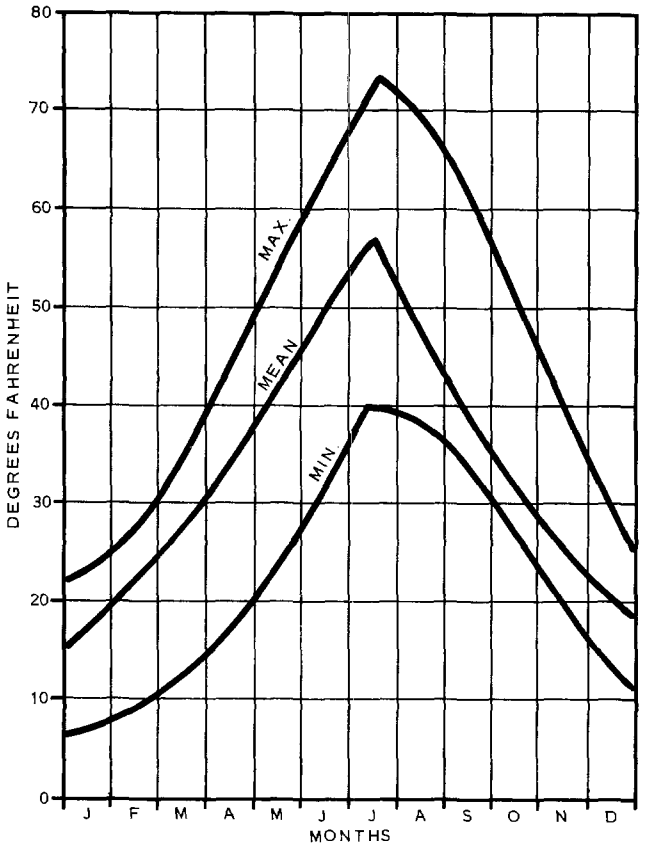
T I M B E R V O L U M E S

Sawtimber Size Class

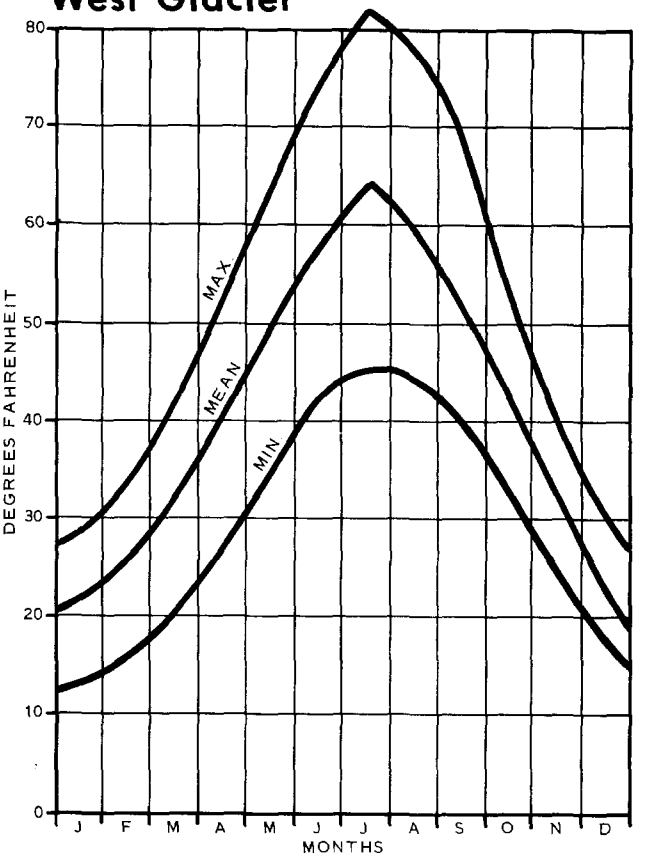
	Thousands of Board Feet
Douglas-fir	4704
Lodgepole pine	67
Western white pine	1278
Spruce	19784
Western red cedar	
Western larch	24079
Cottonwood	1846
Ponderosa pine	26
TOTAL	51784

Daily Mean Temperatures

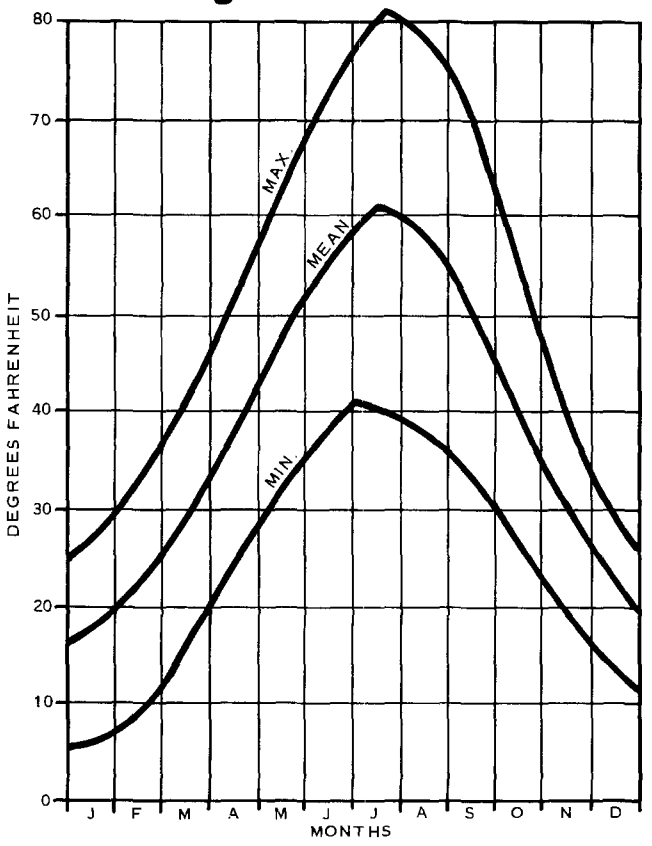
Summit



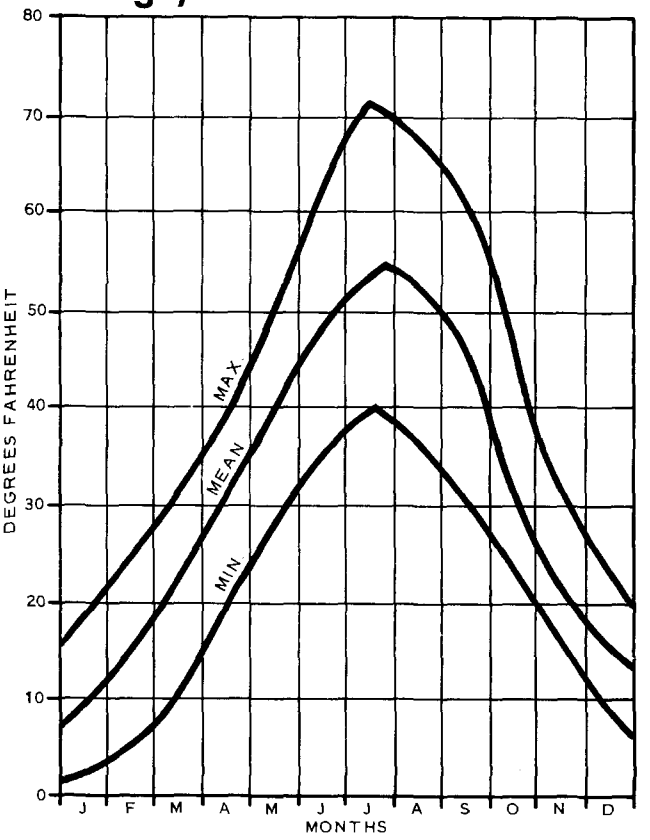
West Glacier



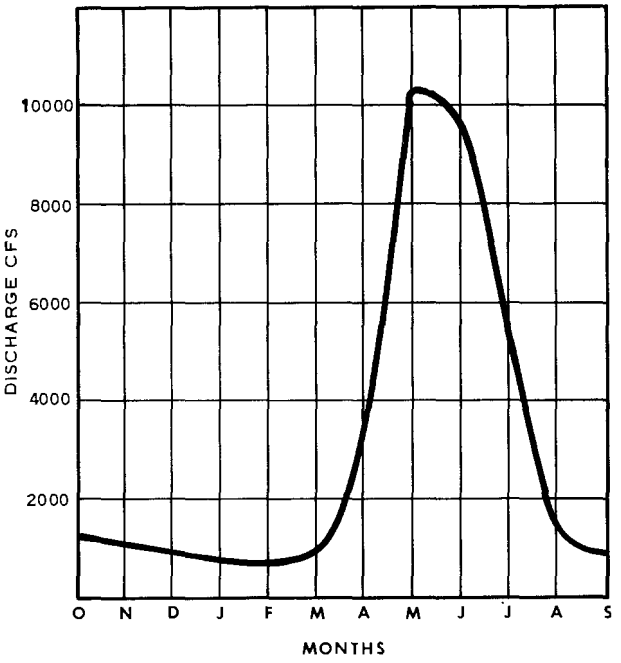
Polebridge



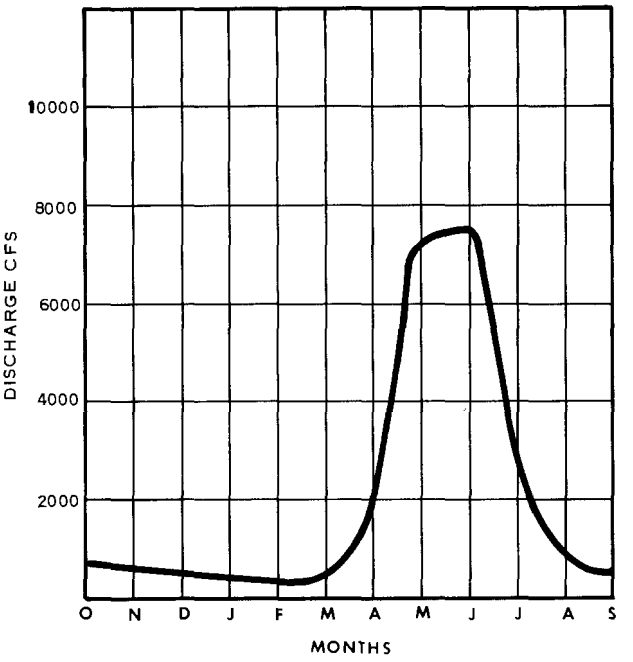
Hungry Horse Dam



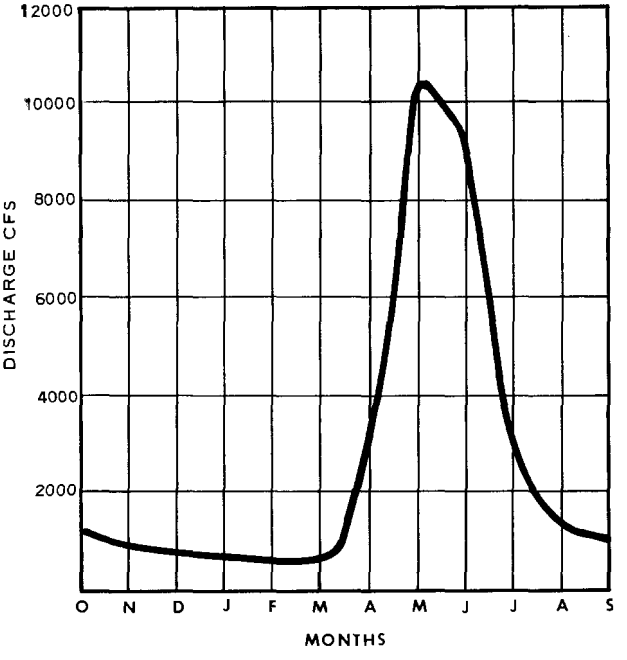
Mean Monthly Discharge



MIDDLE FORK at West Glacier

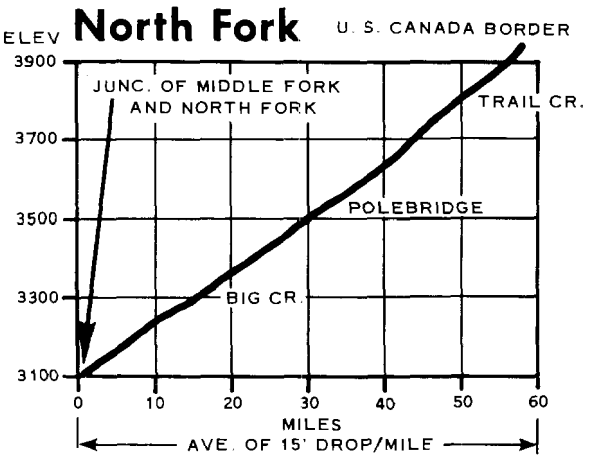


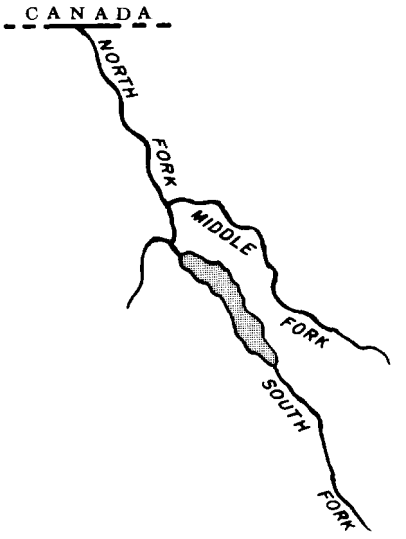
SOUTH FORK at Spotted Bear

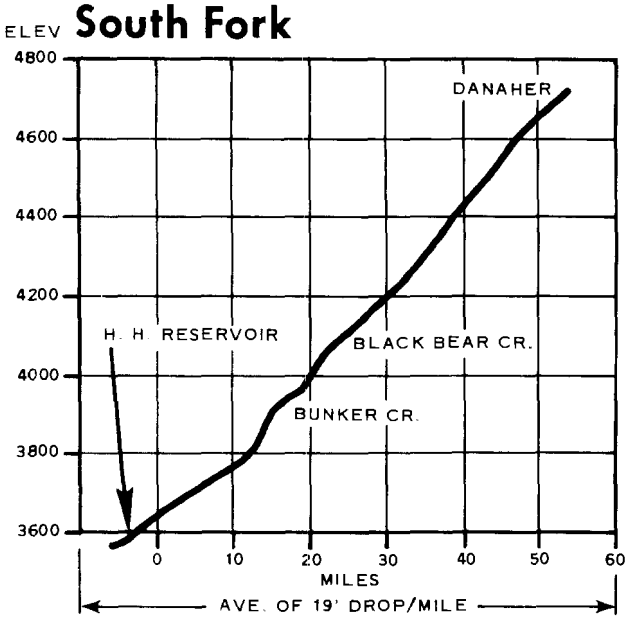


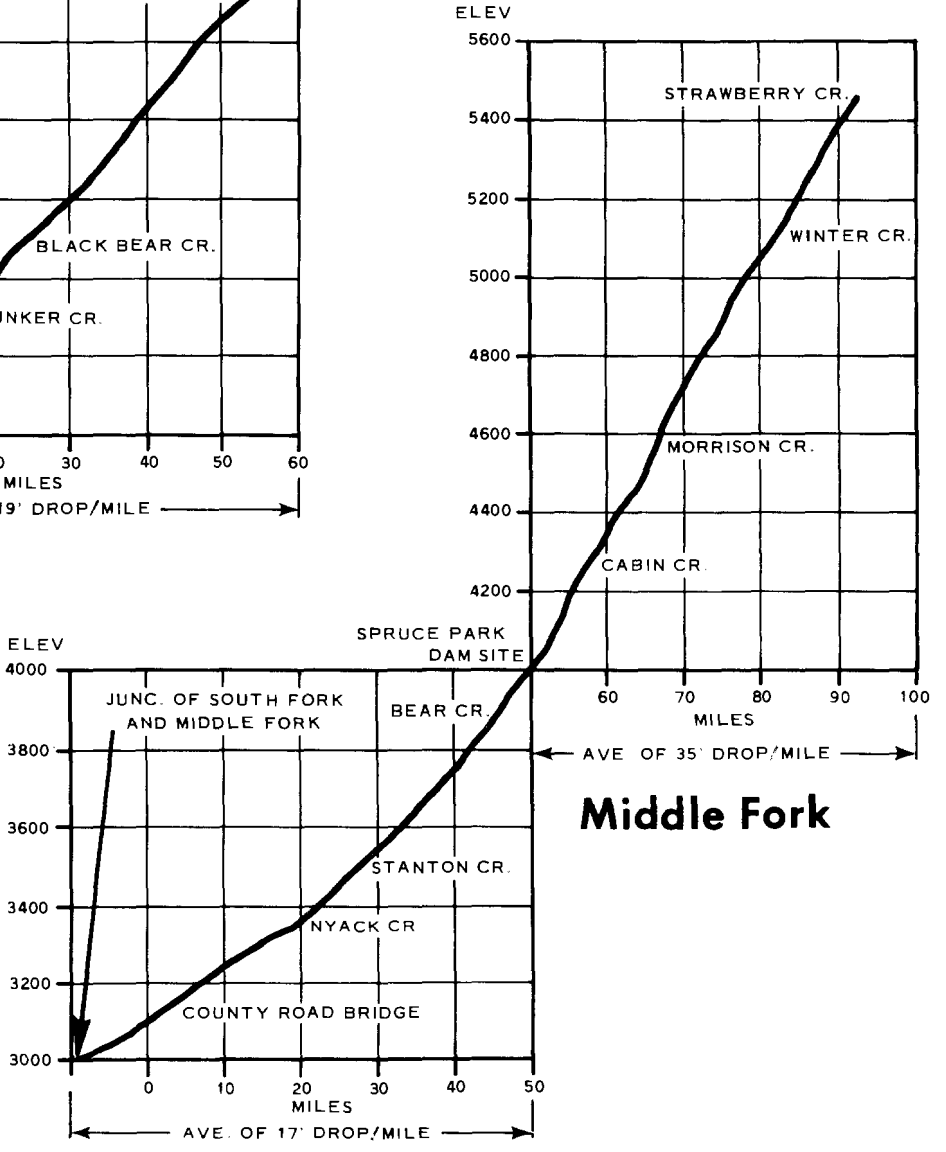
NORTH FORK near Big Creek

River Gradient Profiles

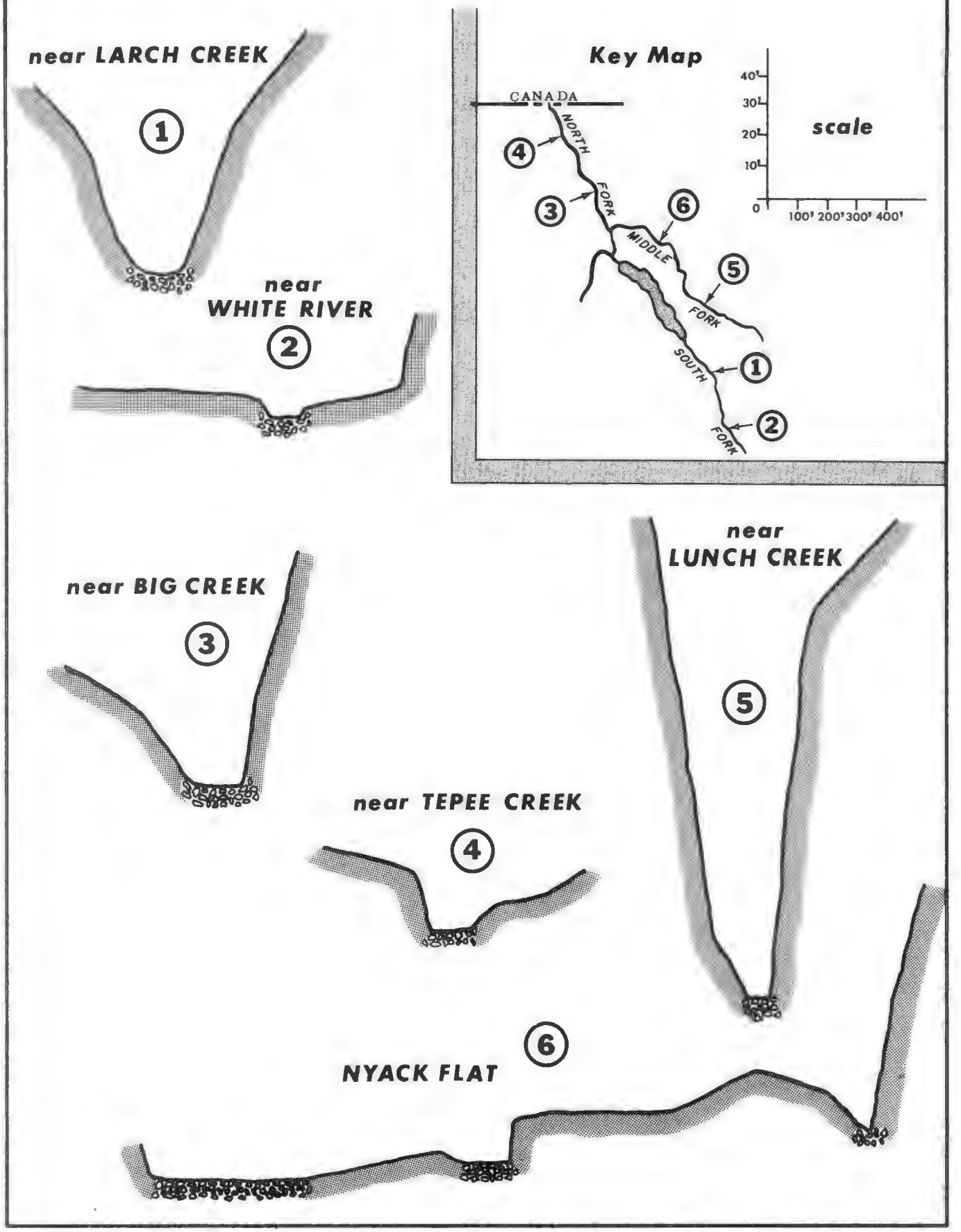








RIVER CROSS SECTION



Water Quality Analysis Data (28)

Water quality samples were sent to the U.S. Geological Survey water lab at Austin, Texas, for insecticide and herbicide analysis. Sediment analysis was done at the lab in Worland, Wyoming, and carbon samples were sent to Washington, D.C. Other parameters were analyzed by the water quality lab at Lincoln, Nebraska. The parameters analyzed were:

Insecticides		Herbicides
Aldrin	Heptacholor	2, 4-D
DDD	Heptachlor epoxide	Silvex
DDE	Parathion	2,4, 5-T
DDT	Methyl Parathion	
Dieldrin	Diazinon	
Endrin		

All insecticide and herbicide analysis produced negative results. Other parameters for which the samples were analyzed included:

Silica	Bicarbonate	pH
Aluminum	Carbonate	Nitrate
Iron	Alkalinity or CO	Noncarbonate hardness
Manganese	Sulfate	Color
Calcium	Chloride	*Barium
Magnesium	Fluoride	*Cadnium
Strontium	Nitrate	*Cobalt
Sodium	Dissolved ortho-phosphate	*Lead
Lithium	Boron	Molybdenum
Potassium	Conductivity	Selenium
*Beryllium	Total alkalinity	Carbon dioxide
*Total chromium	Total hardness	Total phosphate
Copper	SAR	Dissolved solids
*Nickel	Temperature	CAL dissolved solids
*Silver	Arsenic	

(* indicates 0.00 values in all cases)

This analysis revealed no significant problem or reason to continue with total analysis. Field sampling for the following parameters, which was begun for some stations as early as August 1969, was continued:

Temperature	Total alkalinity
pH	Total hardness
Specific conductance	Aesthetic appearance
Total coliform	Odor
Dissolved oxygen	
Turbidity	Deleterious substances

Mean Monthly Precipitation for Selected Stations

(Inches of precipitation)*

Station	Elevation	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Essex	3,870	5.60	3.86	3.07	2.77	2.46	3.48	1.37	1.74	2.89	3.48	5.05	5.04	40.81
Hungry Horse	3,150	3.65	2.71	1.93	2.02	2.49	2.94	1.58	2.05	2.13	3.33	3.29	3.02	31.14
Polebridge	3,690	2.91	2.16	1.63	1.60	1.60	2.19	1.17	1.34	1.28	2.00	2.31	2.87	23.06
Summit	5,213	4.26	3.54	3.16	2.78	2.86	3.70	1.23	1.52	2.51	3.10	3.96	4.28	36.90
West Glacier	3,154	3.10	2.34	1.74	1.73	2.20	2.83	1.44	1.39	2.02	2.64	2.91	3.24	27.58

*The figures on this chart are inclusive of the snowfall shown in the chart below.

# # # # #

Mean Monthly Snowfall for Selected Stations

(Inches of Snow)

Station	Elevation	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Essex	3,870	56.6	40.9	24.1	5.1	2.3	0	0	T	.3	6.1	23.7	50.8	209.9
Hungry Horse	3,150	30.5	22.8	16.0	2.2	.5	T	T	0	T	2.8	10.8	23.1	108.7
Polebridge	3,690	33.9	23.2	13.0	5.1	.8	T	T	T	.3	3.2	17.1	25.8	122.4
Summit	5,213	44.0	40.4	39.3	26.3	8.2	1.3	T	T	4.6	11.5	36.7	40.9	253.2
West Glacier	3,154	35.4	24.2	15.3	4.1	.4	.1	T	0	.2	2.6	15.9	30.4	128.6

Summary of the physical features that affect fish habitat. Only the principal limiting physical factors are listed. The procedure for determining the percentages of optimum is discussed in the Wildlife Surveys Handbook (Forest Service Manual).

	Flathead River	North Fork	Lower Middle Fork	Upper Middle Fork	South Fork
Length (miles)	9.6	58.3	45.4	45.6	60.1
Number stations	2	12	9	10	8*
Average depth (inches)	41	30	33	15.8	48
Average width (feet)	285	215	144	72	107
Limiting factors					
% stream within pools	59	25	56	57	54
Pool quality % optimum*	100	46	100	98	92
% of streambottom with desirable materials	77	78	75	80	66
Bank cover % optimum	55	60	52	50	69
Bank stability % optimum	64	67	80	53	80
Percent of habitat optimum	65	58	82	76.5	83

* only the lower 40 miles of the South Fork within the study area was surveyed.

* optimum is defined as the most desirable conditions.

SOILS OF THE FLATHEAD RIVERS

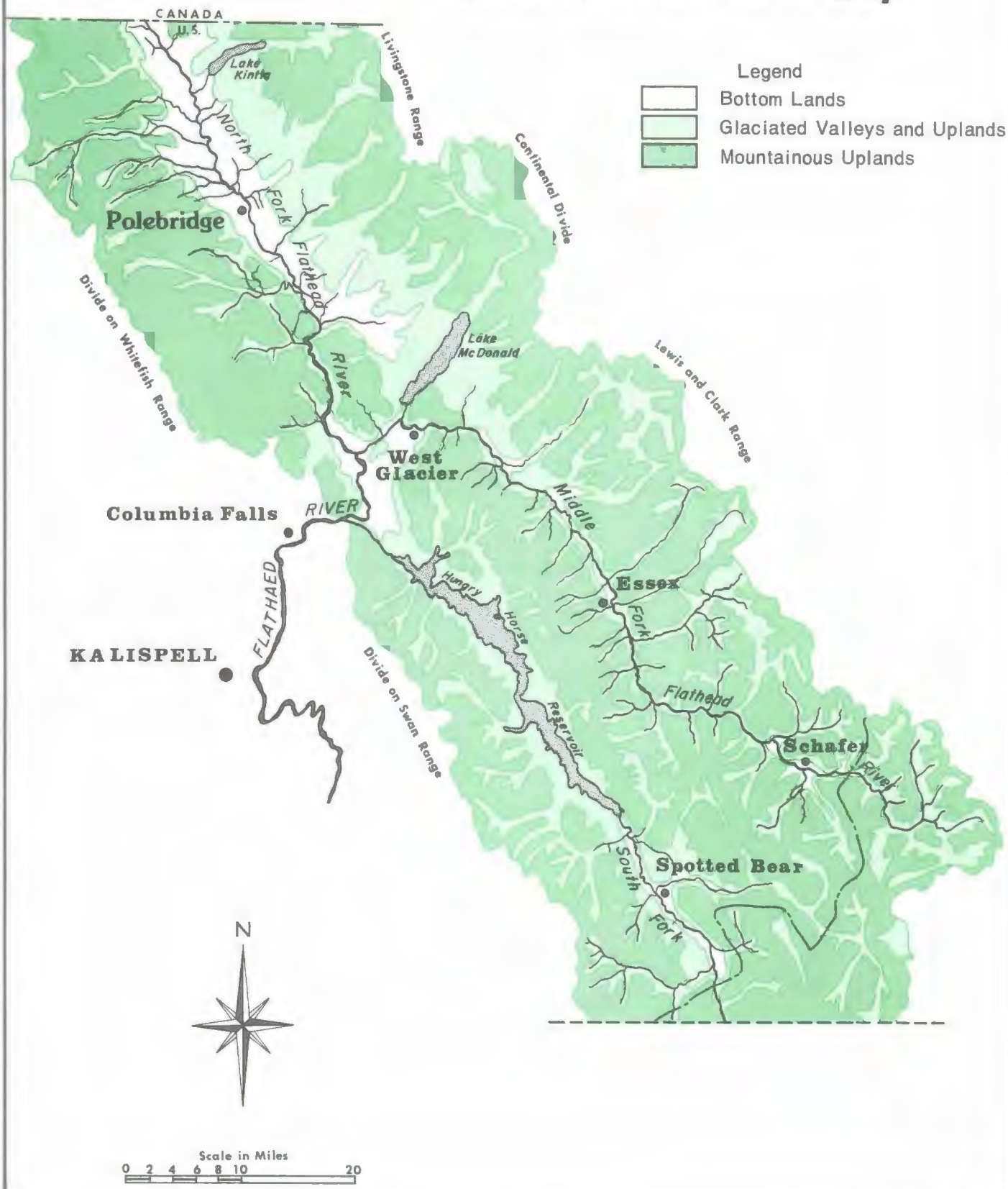
Land Form	Internal Drainage: Surface	Internal Drainage: Subsoil	Relative Soil Interpretive Ratings for: Soil Mass Movement	Relative Soil Interpretive Ratings for: Soil Compactibility	Relative Soil Interpretive Ratings for: Suitability for Sanitation Drainage Fields:	Development Potentials for: Roads	Development Potentials for: Trails	Development Potentials for: Septic Systems
River Bottoms: Alluvial bottoms along the rivers with grass meadows & trees, slopes are gentle, soils are coarse textured over sand & gravel.	High Coarse textured	High gravelly & sandy	Slight Slopes are gentle	Slight Soil textures are moderately coarse to gravelly	Moderate: When more than 6' of watertable Severe in areas that flood or are less than 4' to watertable.	Slight limitations, gentle land, may be subject to seasonal flooding.	Slight: Some trails may flood during spring runoff & high water.	Moderate: When more than 6' to watertable, Severe: in areas that flood.
Lacustrine Bottoms: Nearly level lake-laid soil deposits grassy meadows & broadleaf trees, soils are deep, silty & usually poorly drained.	Slow Silty soils	Slow Wet silty soils	Slight for level areas, bare gentle slopes are very erosive	Severe Soils are wet & fine textured	Severe: soils have restricted drainage &/or seasonal high watertable, some areas subject to seasonal flooding.	Severe - Wet silty soils have low stability and are subject to frost heave, a thick gravel blanket can minimize stability & heave problems.	Severe - trails are muddy & are difficult to maintain.	Severe: Seasonal high watertable & restricted internal soil drainage.
Glacial Low Terraces & Benches: Gently sloping till benches with steep terrace escarpments to river or bench below, soils are well drained & medium texture, glacial till substratum has a moderate to low permeability.	High Moderate permeability	Moderate Where till has been reworked by water Slow for compact glacial till	Slight on gentle benches Moderate to Severe on terrace escarpments due to geologic erosion from stream meandering	Moderate Soil has loam texture due to Loessal silt influence	Moderate on benches with permeable substratum over glacial till Severe on terrace escarpments due to steep slopes.	Slight on gentle benches Severe on terrace escarpments, steep cut slopes ravel.	Slight on gentle benches Severe on terrace escarpments. Trails ravel, scenic views may be good.	Moderate on benches with permeable substratum over till. Severe on terraces due to steep slopes.

SOILS OF THE FLATHEAD RIVERS

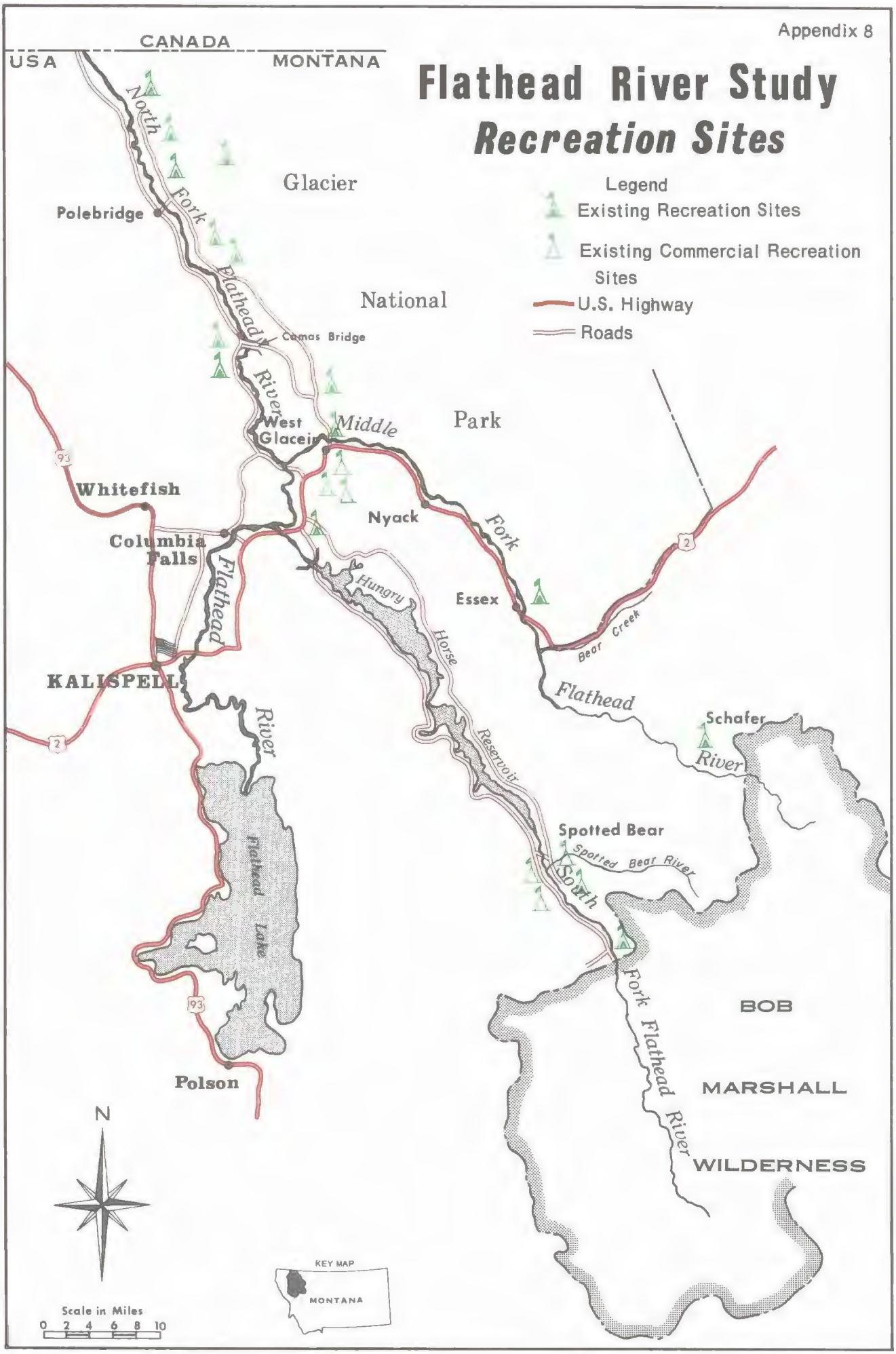
Position in the Landscape	Land Form	Soil Characteristics			Climatic Characteristics			Soil Interpretive Classes		
		Brief Soils Description	Slope Range	Elevation Range	Frost Free Days	Est. Annual Precip.	Est. Percent Runoff	Erosion Hazard	Relative Permeability	Relative Productivity
Bottom Lands	River Bottoms	Shallow to mod. deep coarse profiles over alluvial sand & gravel	0-10%	3000 - 4000	60-100	15-30	40-60	Low - Slopes are gentle	High - Sand and gravel substratum	Moderate - Low annual precip.
	Lacustrine Bottoms	Deep, poorly drained lake-laid silty deposits	0-5%	3000 - 4500	60-100	15-30	50-60	Low - Gentle slopes	Moderate - High runoff when wet	High - for grasses and pasture.
	Low Terraces & Benches	Mod. deep loess influenced profiles over thick glacial-fluvial deposits	0-10%	3000 - 4500	60-100	15-30	30-60	Low - on terraces High- on escarpments due to stream meandering	Moderate - semi-pervious till substratum	High - Often in lodgepole pine due to fire history
Glaciated Valleys & Uplands	Striated Bedrock	Low linear bedrock ridges interspersed with wet flat peat & mineral soils	10-40%	3500 - 4500	50-80	30-50	30-60	Moderate - Moderate slopes	Low - Wet bottoms & rock ridges	Low - Steep bedrock and wet soils
	Foothills	Shallow coarse profiles over glacial till & bedrock	40-70%	3500 - 6000	50-80	40-60	40-60	High - Steep slopes	Moderate - Semi-pervious till substratum	Mod.-High - N & E aspects Moderate - S & W aspects
	Rounded Uplands	Mod. deep loess influenced profiles over thick glacial till deposits	10-40%	3500 - 6000	50-80	30-60	25-50	Moderate - Moderate slopes	Moderate - Semi-pervious till substratum	High - Thick soils, good moisture
	"U"-Shaped Valley Bottoms	Shallow to Mod. deep coarse profiles with a loess cap over till & Colluvium	10-40%	3000 - 5500	45-70	30-60	40-60	Moderate - Moderate slopes some stream dissection	Moderate - Semi-pervious till substratum	Moderate - Good spruce sites elev. & growing season controlling factors
	High Basins	Shallow loess cap over a loose till with much local rock fragments	10-40%	5000 - 6500	30-50	50-80	50-75	Moderate - Moderate slopes	High - Loose coarse local glacial till	Moderate - Controlled by short season and elevation
Mountainous Uplands	Steep Valley Sides	Shallow loess influenced coarse cobbley profiles over shattered bedrock	40-70% & +70%	3000 - 6000	45-70	40-80	40-70	High - Steep slopes	High - Shattered bedrock, steep areas are moderate	Mod.-Low - N & E aspects Low S & W aspects, thin soils
	Subalpine Cirques	Very shallow loess cap over a loose till with much local rock fragments	10-40%	5500 - 7000	30-50	60-90	50-75	High - Moderate slopes, high annual precip.	High - Loose coarse local glacial till	Low - Non-commercial vegetation high elevation short season
	Alpine Rocky Ridges	Small patches of loess on sedimentary bedrock	+70%	6500 - 9000	30	60-120	60-90	High - Steep slopes severe climatic condition wear bedrock away	Low - Steep bedrock	Low - High elevation, short season, no soil

Flathead River Study

General Landform Map



Flathead River Study
Recreation Sites



List of Cooperating State and Federal Agencies

State

Department of Health
Fish and Game Department
Forestry Department
Governor's Council on Natural Resources
Highway Commission
Montana College of Mineral Science and Technology
University of Montana, Department of Anthropology
Water Resources Board

Federal

Department of Agriculture
- Economic Research Service
- Soil Conservation Service

Department of the Army
- Corps of Engineers

Department of Transportation

Department of the Interior
- Bonneville Power Administration
- Bureau of Indian Affairs
- Bureau of Mines
- Bureau of Outdoor Recreation
- Bureau of Reclamation
- Fish and Wildlife Service
- Geologic Survey
- National Park Service
- Water Quality Administration

Environmental Protection Agency

Federal Power Commission

Pacific Northwest River Basins Commission

Canada

Department of Energy, Mines and Resources

BIBLIOGRAPHY

(The listing below is referred to in the text of the report.)

(1) Flathead County Overall Economic Development and Planning Report, 1971.

(2) Flathead County USDA Committee for Rural Development, Situation Statement, 1972.

(3) Lake County USDA Committee for Rural Development, Situation Statement, 1972.

(4) The Missoulian, daily newspaper, Missoula, Montana, March 28, 1972.

(5) U. S. Department of Commerce, Bureau of Census, 1970 census.

(6) Pacific Northwest River Basins Commission, Comprehensive Framework Study, Columbia-North Pacific Region, 1969, 1970, and 1971.

(7) U. S. Department of Agriculture, Forest Service, Special Zone Chapter of Bob Marshall Wilderness Management Plan (draft), 1971.

(8) Department of the Army, Corps of Engineers, Memorandum Report on Clark Fork Basin, Montana, for the Federal Power Commission, September 1967.

(9) Department of the Army, Corps of Engineers, Public Brochure, Alternatives and Their Pros and Cons, Flathead River Flood Control Study, Flathead Lake to Columbia Falls, November 1971.

(10) Northwest Regional Task Group for consideration of the Wild Rivers Study Team, July 15, 1964, Draft Study Report on the North, Middle and South Forks of the Flathead River, State of Montana. This report was prepared by representatives of the Department of Agriculture and Interior, working under the leadership of the Bureau of Outdoor Recreation.

(11) Pacific Power and Light Company, Flathead Valley, Industrial Survey, December 1964.

(12) Federal Power Commission, Planning Status Report, Clark Fork-Pend Oreille River Basin, 1965.

(13) State of Montana, Fish and Game Department, Survey of Cutthroat and Dolly Varden Trout in Flathead River and Tributaries above Flathead Lake, Progress Report F-7-R-7, 1958.

(14) Dysen, James L., The Geologic Story of Glacier National Park, Special Bulletin Number 3, April 1969, Published by the Glacier Natural History Association in cooperation with the National Park Service, U.S. Department of the Interior.

(15) U. S. Department of Agriculture, Forest Service, The Flathead Story, by Charlie Shaw, 1967.

(16) U. S. Geological Survey, The Flathead Forest Reserve, 1900, by H. B. Ayres.

(17) U. S. Geological Survey, Twenty-First Annual Report of the U. S. Geological Survey, 1900, by H. B. Ayres.

(18) Robinson, Donald H., Through the Years in Glacier National Park, 1960, Glacier Natural History Association, Inc., Kalispell, Montana.

(19) Shaw, Charlie, personal conversation, December 1971, Kalispell, Mont.

(20) Thayer, Ralph, personal conversation, May 1972, Kalispell, Montana.

(21) Department of the Army, Corps of Engineers, Clark Fork-Flathead River Basin, Checkpoint 1 Review (Not a published document; report contains updated cost-benefit ratios applied to September 1967 Memorandum Report for Federal Power Commission.)

(22) U. S. Department of Agriculture, Forest Service, Forest Service Manual.

(23) U. S. Department of Interior, National Park Service, Master Plan, Glacier, March 1972.

(24) Beyer, Norman S., personal interview, State of Montana Employment Service, Kalispell, Montana, May 1972.

(25) Revised Codes of Montana, 1947, Title 16, Chapter 41, County Planning and Zoning Districts.

(26) Martinson, Albin H., U. S. Forest Service, Flathead River Study, Landforms and Soil Interpretations, January 1972, an unpublished report.

(27) State of Montana, Fish and Game Department, Montana Recreational Waterways, public brochure.

(28) Delk, Robert, U. S. Forest Service, Hydrology and Climate of Flathead Wild and Scenic River Study, January 1972; an unpublished report.

(29) U. S. Department of Agriculture, Forest Service, Progress Report for the Study of the Flathead River, Under the Wild and Scenic Rivers Act, January 6, 1972, Report Number 4.

(30) Groff, S.L., April 17, 1972, reply to Flathead National Forest brochure on Flathead River Choices for Management.

(31) U. S. Department of Interior, Bureau of Mines, Geology and Mineral Resources of the Flathead River Study Area, November 1972, by N. T. Zilka.

(32) State of Montana, State Department of Health, Report on Water Quality Criteria, Water Use Classifications, and Policy Statements.

(33) Department of the Army, Corps of Engineers, letter dated March 8, 1973.

(34) Federal Power Commission, letter dated March 20, 1973.

LITERATURE REVIEWED

Bolle, Arnold W., The Cooperative Study of Multiple Use of Natural Resources of the North Fork of the Flathead Valley, School of Forestry, Montana State University, Bulletin No. 15, April 1960.

Burk, Dale, Montana Wilderness, reprint from "Sierra Club" Bulletin, November-December 1970.

Burk, Dale A., Trout Stream in Danger, "Trout", Spring, Vol. 11, No. 2.

Columbia Basin Inter-Agency Committee, River Mile Index, Clark Fork River, Pend Oreille River, Columbia River Basin, Washington, Idaho, Montana, British Columbia, July 1965.

Craighead, Frank C. and Craighead, John J., Recreation Classification, Inventory and Evaluation, "Naturalist", Vol. 13, No. 2, 1962.

Craighead, John, Wild River, "Montana Wildlife", Montana Fish and Game Department official publication, June 1957.

Craighead, John J., Assets of Upstream Wilderness Areas: How Storage Reservoirs Affect Them, reprint from "High Dams and Upstream Storage", proceedings of Second Annual Water Resources Conference, Montana State University, Missoula, Montana, June 1957.

Department of the Army, Corps of Engineers, Report on Flood Control Benefits, Spruce Park and Smoky Range Projects, Flathead River, Montana, prepared for Bureau of Reclamation, February 1966.

Department of the Army, Corps of Engineers, Report on Flood of June 1964, Upper Flathead River Basin, Upper Clark Fork Basin, December 1964.

Department of the Army, Corps of Engineers, Flood Plain Information, Flathead, Stillwater and Whitefish Rivers, Kalispell-Columbia Falls, Montana, prepared for Montana Water Resources Board, September 1969.

Fredlund, Dale E. and Fredlund, Lynn, Archaeological Survey of the Forks of the Flathead River, 1971 (in fulfillment of National Forest Service-University of Montana Contract 26-2510).

Hicks, Billy L. and Prinkki, Larry D., Memorandum Report on the Geology of the North Fork of the Flathead River, U.S.D.A., Forest Service, June 28, 1971.

Hicks, Billy L. and Prinkki, Larry D., Memorandum Report on the Geology of the South Fork of the Flathead River, U.S.D.A., Forest Service, April 22, 1971.

Interagency Report, U. S. Army Corps of Engineers, U. S. Department of the Interior, U. S. Department of Agriculture, Big South Fork Cumberland River, Kentucky-Tennessee, December 1969.

Johns, Willis M. and Botz, Maxwell K., report, Geologic and Mineral Inventory for the South, Middle, and North Forks, Flathead River, Montana, Bureau of Mines and Geology, Butte, Montana.

Leopold, Luna B., Quantitative Comparison of Some Aesthetic Factors Among Rivers, printed by the U. S. Department of the Interior, Geological Survey Circular 620, 1969.

Malouf, Carling, Archaeological Reconnaissance, Vicinity of Wast Glacier, Glacier National Park, Montana, Montana State University, 1963.

Martinka, C. J., Grizzly Ecology Studies, Glacier National Park, National Park Service Progress Report, 1969.

Martinka, C. J., Vegetation Studies, Glacier National Park, National Park Service Progress Report, 1968.

Martinka, C. J., Ungulate Winter Ecology Studies, Glacier National Park, National Park Service Progress Report, 1968-69.

Michalson, E. L. and Kirkland, Larry, A Methodology Study to Develop Evaluation Criteria for Wild and Scenic Rivers, Progress Report Number One, Water Resources Research Institute, University of Idaho.

Montana State University, Cooperative Extension Service, Rural Zoning -- People, Property, Public Policy, Bulletin 331, April 1970.

Northern States Power Company, Minneapolis, Minnesota, Wild Waters of the Saint Croix.

Northern States Power Company, Minneapolis, Minnesota, Wild Waters of the Saint Croix, Addendum Report, 1970.

State Conservation Needs Committee, chairmanship assigned to U. S. Department of Agriculture, Soil Conservation Service, Montana Soil and Water Conservation Needs Inventory, 1970.

State Engineer's Office, Water Resources Survey, Flathead and Lincoln Counties, Montana, June 1965.

State of Montana, Fish and Game Department, Montana's Popular Float Streams, reprinted from "Montana Outdoors", August 1969 issue.

State of Montana, Montana Water Resources Board, Report on Flathead Wild Rivers Study, July 1, 1970 (memorandum).

State of Montana, Office of State Forester, Flathead Wild Rivers Study -- Report on State Lands, June 3, 1970.

State of Montana, The Governor's Council on Natural Resources and Development, The Smith River, An Opportunity for Quality, Report to Governor Forrest H. Anderson and the 42nd Montana Legislative Assembly, December 1, 1970.

The Government of the Province of British Columbia, Forest Service, letter concerning existing and planned developments in the Flathead Drainage in Canada, J. R. Johnston, May 27, 1971.

U. S. Congress, Committee on Interior and Insular Affairs, National Scenic Rivers System; Hearings before the Subcommittee on National Parks and Recreation of the Committee on Interior and Insular Affairs, House of Representatives, Ninetieth Congress, Second Session on H. R. 8416, H. R. 90, S. 119 and Related Bills to Establish a National Scenic Rivers System, March 7, 8, 18, and 19, 1968.

U. S. Congress, Committee on Interior and Insular Affairs, Wild and Scenic Rivers; Hearings before the Committee on Interior and Insular Affairs, United States Senate, Ninetieth Congress, First Session on S. 119 and S. 1092, April 13 and 14, 1967.

U. S. Department of Agriculture, The Principal Laws Relating to the Establishment and Administration of the National Forests and to Other Forest Service Activities, Agriculture Handbook No. 20, Revised July 1964.

U. S. Department of Agriculture, Forest Service, Scenic Road, A Basis for its Planning, Design and Management, Technical Report ETR-7700-2, December 1969.

U. S. Department of Agriculture, Forest Service, Utility Transmission and Distribution Lines, How to Assure Compatibility with Environmental Values, Technical Report ETR-7100-1, August 1969.

U. S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiement Station, Forest Landscape Description and Inventories -- A Basis for Land Planning and Design, 1968.

U. S. Department of Agriculture, Forest Service, Northern Region, Quality in Timber Management, July 1970.

U. S. Department of Agriculture, Forest Service, Northern Region, Magruder Corridor Resource Inventory.

U. S. Department of Agriculture, Forest Service, A Proposal, The Chattooga; A Wild and Scenic River, March 3, 1970.

U. S. Department of Agriculture, Forest Service, A Design for Wild and Scenic Rivers, Middle Fork Clearwater, Selway, Lochsa, 1969.

U. S. Department of Agriculture, Forest Service, River Plan, Middle Fork of the Clearwater including the Lochsa and Selway.

U. S. Department of Agriculture, Forest Service, Eleven Point River, Mark Twain National Forest.

U. S. Department of Agriculture, Forest Service, River Plan, Middle Fork of the Salmon.

U. S. Department of Agriculture, Forest Service, Updated Impact Survey Report, Smoky Range Project, Flathead National Forest, February 1971.

U. S. Department of Agriculture, Forest Service, Stage I Impact Survey Report, an analysis of the interrelationship of Spruce Park Dam and Reservoir on the resources and management of the Flathead National Forest, January 1967.

U. S. Department of Agriculture, Forest Service, Southern Region, Wild and Scenic River Study Report, Chattooga River, June 15, 1971.

U. S. Department of Agriculture, Forest Service, Northern Region, Flathead National Forest Basic Land Management Plan, January 1972.

U. S. Department of Commerce, A Proposed Program for Scenic Roads and Parkways prepared for the President's Council on Recreation and Natural Beauty, June 1966.

U. S. Department of Interior and U. S. Department of Agriculture, Environmental Criteria for Electric Transmission Systems, February 10, 1970.

U. S. Department of the Interior and U. S. Department of Agriculture, Wild Rivers, (the publication was designed by Graham Associates) May 1965.

U. S. Department of the Interior, Bonneville Power Administration, The Economic Base for Power Markets in Flathead County, Montana, October 1945.

U. S. Department of the Interior, Bureau of Land Management, Where Not to Build, A Guide for Open Space Planning, Technical Bulletin, April 1968.

U. S. Department of the Interior, Bureau of Outdoor Recreation, Proceedings: National Symposium on Wild, Scenic and Recreational Waterways, St. Paul, Minnesota, September 10-12, 1970.

U. S. Department of the Interior, Bureau of Reclamation, Memorandum on General Investigations Program -- Fiscal Year 1970.

U. S. Department of the Interior, Bureau of Reclamation, sketch Map of Irrigable Lands, March 1970.

U. S. Department of the Interior, Bureau of Reclamation, Memorandum on Geology, Flathead Wild and Scenic Rivers Study, March 1970.

U. S. Department of the Interior, Federal Water Pollution Control Administration, Report on the Committee on Water Quality Criteria, April 1, 1968.

U. S. Department of the Interior, Fish and Wildlife Service, Spruce Park Dam and Reservoir Flathead River Project, Montana, April 1960.

U. S. Department of Interior, National Park Service, various memoranda concerning: Rare and endangered species, big game ranges and population trends, notes on insects, disease and fire control, visitor use summary, and fisherman success and productivity of rivers for Glacier National Park.

U. S. Department of the Interior, National Park Service, Wilderness Study, Glacier National Park (preliminary draft subject to change), November 1971.

U. S. Water Resources Council, Proposed Principles and Standards for Planning Water and Related Land Resources, Federal Register, Vol. 36, No. 245, Tuesday, December 21, 1971.

Unknown, excerpt from Appendix IV, "Power", of the report entitled "Puget Sound and Adjacent Waters Comprehensive Study of Water and Related Land Resources", March 1970.

Water Resources Engineers, Inc., Walnut Creek, California, Wild Rivers, Methods for Evaluation, prepared for the U. S. Department of the Interior, October 1970.

Summary of Public Comments to Draft Environmental Statement

Public comments were made in response to the draft environmental statement. The draft environmental statement and the study report both contain the proposal details; comments on both were considered in revising this report.

Seventeen responses were received from the public. Seven of these were groups; ten were individuals. Nine supported the proposal; five opposed; and three were general comments. One of the groups in opposition is a landowner organization with an approximate membership of 70.

Comments which were directed towards content of the proposal were considered in revision of the report. Many, however, were a general expression of a point of view.

Public response to the draft environmental statement does not appear to be a good measure of public feeling -- either for or against the proposal. Evidently most people feel that their concerns have been expressed earlier in the study and have not chosen to restate them.

In general, we have concluded that the general public supports the proposal, and that private landowners are split between those who support and those who oppose.

The letters containing public comments are included in the final environmental statement.

State and Federal Comments

Comments from the Governor of Montana and federal agencies are included in this appendix on the following pages.

The Governor commented in response to the proposal presented at the March 15, 1973 public hearing, but not personally to the study report or draft environmental statement. Since the proposal has not changed since the hearing, his comments appear to remain applicable.

Several state agencies commented on the study report and draft environmental statement. These were considered in revision of this report. The letters containing their comments are included in the final environmental statement.

State of Montana
Office of The Governor
Helena 59601

Note: See next-to-last paragraph on opposite page.

THOMAS L. JUDGE
GOVERNOR

March 26, 1973

Mr. E. L. Corpe
Forest Supervisor
Flathead National Forest
Kalispell, Montana 59901

Dear Mr. Corpe:

After a careful review of the Forest Service Study, the statements presented at the subsequent public hearing in Kalispell on March 15, 1973, and the various alternatives available, we believe the Flathead National Forest proposal for the Flathead River system to be most in keeping with the best interests of the people of Montana and of this nation. I therefore support your proposal as outlined in the "Wild and Scenic River Study" dated December 1972.

In endorsing your proposal, I presume good faith will be exhibited on the part of the United States Forest Service should this proposal become law. Mutual agreements should be entered into with the private landowners affected, the provisions of which must be consistent both with individual desires in the management of their lands and with the values to be protected under the Wild and Scenic Rivers Act. Furthermore, I would recommend that a cooperative agreement be entered into with the State of Montana, acting through the State Land Board, with regard to those state-owned lands lying within the boundaries of the river system classifications.

The Flathead River system is of substantial value to the nation as well as to our State, and we concur in the goal of its maintenance in a free-flowing state of the highest possible quality for the benefit of present and future generations. The commendable proposal by the Flathead National Forest for this magnificant river is a major step toward achieving this objective.

Sincerely,

Thomas L. Judge

THOMAS L. JUDGE
Governor

cc: Congressional Delegation
Gary Wicks

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

In Reply Refer To:
D4219-Flathead River

JAN 28 1974

Dear Mr. Secretary:

This is in reply to Deputy Assistant Secretary Paul A. Vander Myde's letter of August 29, 1973, requesting our review and comment on the proposed Flathead Wild and Scenic River Study Report.

We concur with the recommendation in the report that the portions of the Flathead designated for study in the Wild and Scenic Rivers Act should be included in the National Wild and Scenic Rivers System. However, we request that the report not delineate river corridor lands within Glacier National Park by a "River Management Boundary" line.

We are pleased to note that the lands delineated within the park, as part of the proposal, will be administered by the National Park Service through a cooperative agreement between that agency and the Forest Service. We would expect that a compatible management plan would be developed involving lands on both sides of the river, as appropriate.

You should be aware that parklands along portions of both the North and Middle Forks have been recommended for classification as wilderness. We urge that this proposed action be considered carefully in developing the management plan.

In discussing problems and needs of the area, the need for hydroelectric power (pages 67 and 68) is not current. Most of the discussion is tied to 1965 data. We recommend that this section be updated to reflect current projections.

Beneficial effects and costs related to environmental, regional development, and national economic development objectives are displayed on pages 96-98. Benefits and costs related to water resource development opportunities (specifically the Smoky Range and Spruce Park projects) are not displayed but reference is given to their presence in appendix material. The purpose of such a display is to bring a summary of costs and benefits related to the components of the multiobjectives to the attention of the decisionmaking entity. Presentation of values related to some components and omission of values related to other components in the display does not serve the purpose of a multiobjective analysis.

We note that there is little, if any, discussion relating to repayment aspects of the "Action Plan." A discussion of this subject would be beneficial.

The opportunity to comment on the Flathead River Study Report is appreciated.

Sincerely yours,

Acting Deputy Assistant Secretary of the Interior

Honorable Earl L. Butz
Secretary of Agriculture
Washington, D.C. 20250

OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

NOV 2 1973

Honorable Paul A. Vander Myde
Deputy Assistant Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Vander Myde:

Thank you for your letter of August 29, 1973, to Secretary Brinegar, enclosing a copy of the Department of Agriculture's proposed report on the inclusion of three forks of the Flathead River and adjacent lands in Montana in the National Wild and Scenic River System.

We suggest that the final report include further discussion of existing bus/rail service to the recreation area affected, as well as plans for possible greater utilization of these transportation modes to serve recreational traffic seeking access to Glacier National Park and key river points for fishing, rafting and other recreational use.

We also recommend that the Forest Service remain in contact with relevant offices of the Federal Highway Administration, Federal Aviation Administration and Amtrak (Burlington-Northern Railroad) as the proposal is further developed. We appreciate the opportunity to comment on this proposed report.

Sincerely,

Martin Convisser, Director
Office of Environmental Affairs
Office of the Assistant Secretary
for Environment, Safety, and
Consumer Affairs

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
WASHINGTON, D. C. 20410

OFFICE OF THE ASSISTANT SECRETARY FOR
COMMUNITY PLANNING AND Development
Community and Environmental Standards

IN REPLY REFER TO:

SEP 25 1973

Mr. Paul A. Vander Myde
Deputy Assistant Secretary
Department of Agriculture
Washington, D. C. 20250

Dear Mr. Vander Myde:

The proposed report on the Flathead River pursuant to the National Wild and Scenic Rivers Act sent to this Department on August 29, 1973, has been referred to our Denver Regional Office for appropriate review and response.

We appreciate your informing the Department of these proposals; however, since this is a project level activity, we believe that it will receive more expeditious handling by the Regional Administrator, Mr. Robert C. Rosenheim, in our Denver, Colorado, Regional Office under whose jurisdiction the project is to be located. This procedure will expedite the review of any such future reports.

Sincerely,

Richard H. Broun
Acting Director

FEDERAL POWER COMMISSION
WASHINGTON, D.C. 20426

IN REPLY REFER TO:

Honorable Earl L. Butz
Secretary of Agriculture
Washington, D.C. 20250

Dear Mr. Secretary:

This is in response to letters from your Department, dated August 29, 1973, and September 24, 1973, furnishing for the Commission's comments, pursuant to provisions of the Wild and Scenic Rivers Act, your Department's proposed report and accompanying environmental statement on the Flathead River, Montana.

The proposed reports of your Department would give wild, scenic, or recreation river designation to 219 miles of river segments on the North Fork Flathead River, the Middle Fork Flathead River, and the segment of the South Fork Flathead River upstream of the Hungry Horse Reservoir.

The Commission staff has reviewed the wild and scenic river study to determine its effect on matters affecting the Commission's responsibilities. Such responsibilities relate to the development of hydroelectric power and assurance of the reliability and adequacy of electric service under the Federal Power Act, and the construction and operation of natural gas pipelines under the Natural Gas Act.

Review by the Commission staff shows the river segments proposed for wild and scenic river designation contain reservoir sites with a substantial hydroelectric power potential. The Smoky Range site on the North Fork and the Spruce Park site on the Middle Fork, which are discussed in your Department's proposed report, were identified in the 1972 Columbia-North Pacific Comprehensive Framework Study for possible future development. The Glacier View site on the North Fork upstream of Smoky Range, an alternative site to Smoky Range, is also identified in the Framework Study. Smoky Range or its alternative Glacier View could develop about 330,000 kilowatts of capacity and Spruce Park could develop some 380,000 kilowatts.

The above three sites were identified in the 1972 Framework Study as competing alternatives for development or preservation of the area's resources. Other alternatives included designation of the river segments

as national wild and scenic rivers and designation of some of the adjacent lands as national wilderness. The Framework Study concluded that further study was needed to evolve the best plan.

Further staff review indicates that the damsite for the potential Corum reservoir project, which would provide some 114,000 kilowatts of hydroelectric capacity, is located on the Middle Fork between the mouth of the North Fork and the mouth of the South Fork. This river segment is also included in the segments proposed for wild, scenic, or recreation river classification. The Corum project, considered by the Corps of Engineers, would require upstream regulatory reservoir storage, possibly at either the potential Smoky Range or Glacier View projects. Corum was not discussed in your Department's report or environmental statement.

Development of the Smoky Range or its alternative Glacier View, Spruce Park, and Corum could provide 824,000 kilowatts of hydroelectric capacity, which would be useful in meeting the rapidly expanding power demands in the Pacific Northwest. Although the potential projects are located in Power Supply Area 30, any power that they would generate could be utilized over the entire region served by the Northwest Power Pool, which extends into Canada. The portions of this pool in the United States generally encompass Power Supply Areas 30 and 41 to 45. According to the National Power Survey, the total power load of these areas is expected to increase from 21,180 megawatts in 1970 to 75,390 megawatts in 1990. The generation to satisfy the future loads will come from hydroelectric and thermal plants, many of which are not definitely planned at this time.

The staff notes that a natural gas pipeline owned by The Montana Power Company crosses the Middle Fork a short distance upstream of the mouth of Bear Creek. The reports of your Department do not mention this facility.

Based on its consideration of your Department's wild river study, the associated draft environmental statement, and the studies of its own staff, the Commission concludes that the proposed wild and scenic river designations of segments of the Flathead River system would conflict with possible future reservoir and power developments. It recommends that the possible reservoir and power benefits foregone be carefully considered in deciding whether or not to include these river segments in the national wild and scenic rivers system. It suggests that the reports of your Department discuss the gas pipeline crossing of the Middle Fork.

Sincerely,

John N. Nassikas

John N. Nassikas
Chairman

DEPARTMENT OF THE ARMY
WASHINGTON, D.C. 20310

15 NOV 1973

Honorable Earl L. Butz
Secretary of Agriculture
Washington, D. C. 20250

Dear Mr. Secretary:

This is in reply to Mr. Paul A. Vander Myde's recent letter forwarding for our review and comment a copy of your Department's proposed report on Flathead River, Montana, pursuant to the Wild and Scenic Rivers Act of 1968.

The consideration given to various environmental alternatives and the desires of local and public interests in arriving at a recommendation for including the entire study river in the National Wild and Scenic Rivers system is commendable. While we are generally in agreement with the recommendation, there are several minor areas in the report which we wish to clarify.

The report indicates on page 16 that the Corps of Engineers is concerned about the Smokey Range and Spruce Park potential multiple-purpose storage sites. Our concern is that in considering the report recommendation, Congress should also consider fully all the costs of designating the Flathead study rivers as units of the Wild and Scenic Rivers system. As pointed out in the report, the Pacific Northwest region has been almost entirely dependent on hydroelectric projects for power production, partly because of unusually available opportunities for such projects but also because of the scarcity of economical alternative power sources--primarily fossil and nuclear fuels. Hydroelectric power is clean and of a continuing supply, while both fossil and nuclear fuels cause air and water pollution and are limited in supply. Every kilowatt of power produced now by hydroelectric projects means an equivalent unit of fossil or nuclear fuel saved for future generations and a corresponding preservation of air and water quality now. Hydroelectric power production at Smokey Range and Spruce Park is not now economically feasible. However, future generations may place higher value on such power than on the free flowing wilderness character of the rivers, and should not be precluded from consideration of dam development as stated on page 80 of the report.

The discussion of House Document 403, 87th Congress, on page 18 of the report, should include the information that in his comments on the Chief of Engineers report on review of Columbia River and Tributaries, the Secretary of the Army recommended deferment of the Flathead Lake outlet improvement.

We appreciate the opportunity to review and provide the above comments which are also applicable to the environmental impact statement forwarded by separate letter.

Sincerely,

Charles R. Ford

Charles R. Ford
Chief
Office of Civil Functions

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

NOV 27 1973

Mr. Paul A. Vander Myde
Deputy Assistant Secretary
Department of Agriculture
Washington, D.C. 20250

Dear Mr. Vander Myde:

The Administrator, Mr. Russell E. Train, has asked me to respond to your recent letter requesting our comments and views on the final Flathead River Wild and Scenic River Study Report and its accompanying draft environmental statement.

The report is quite informative, complete, and very well written. The several alternatives presented offer a wide range of viable options for designating all or portions of the Flathead River system under the Wild and Scenic Rivers Act.

We support the findings and recommendations of the report classifying the total study area of 219 miles of streams in the river system as:

Wild River -- 97.9 miles

Scenic River -- 40.7 miles

Recreational -- 80.4 miles

Our Denver Regional Administrator forwarded comments on the draft environmental impact statement for this report to the Forest Supervisor of the Flathead National Forest on November 12, 1973. We have enclosed a copy of these comments for your information. Our comments commend the Forest Service for a well prepared statement and offer general comments for the consideration of the Forest Service in preparing the final impact statement. We have classified the statement as LO-1. A copy of our evaluation criteria for impact statements is enclosed.

We appreciate the opportunity to comment upon the report and accompanying draft environmental statement.

Sincerely yours,

Robert L. Sansom
Assistant Administrator
for Air and Water Programs

Enclosures

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

OCT 15 1973

Mr. Paul A. Vander Myde
Deputy Assistant Secretary
Office of the Secretary
U. S. Department of Agriculture
Washington, D. C. 20250

Dear Mr. Vander Myde:

Thank you for your letter of August 29, 1973, to Secretary Dent, transmitting for Department of Commerce review the proposed report on the Flathead River. Your letter has been directed to the attention of Dr. Sidney R. Galler, Deputy Assistant Secretary for Environmental Affairs.

Dr. Galler will direct the Departmental review of this report, and provide you with any comments which may be forthcoming. In order to expedite the Department's review, further correspondence concerning your letter should be addressed to Dr. Galler, Room 3425, U. S. Department of Commerce, Washington, D. C. 20230.

Sincerely,

Betsy Ancker-Johnson, Ph.D.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

NOV 26 1973

Mr. Paul A. Vander Myde
Deputy Assistant Secretary
Office of the Secretary
Department of Agriculture
Washington, D. C. 20250

Dear Mr. Vander Myde:

Thank you for your letter of August 29 to Secretary Weinberger enclosing a copy of the proposed report on the Flathead River pursuant to the Wilderness and Scenic Rivers Act of 1968, Public Law 90-542. This Department has reviewed the report and has no comments to offer.

Sincerely,

Paul Cromwell
Acting Director
Office of Environmental Affairs

Public Law 90-542
90th Congress, S. 119
October 2, 1968
AN ACT

To provide for a National Wild and Scenic Rivers System, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) this Act may be cited as the "Wild and Scenic Rivers Act".

(b) It is hereby declared to be the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The Congress declares that the established national policy of dam and other construction at appropriate sections of the rivers of the United States needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes.

(c) The purpose of this Act is to implement this policy by instituting a national wild and scenic rivers system, by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

Sec. 2 (a) The national wild and scenic rivers system shall comprise rivers (i) that are authorized for inclusion therein by Act of Congress, or (ii) that are designated as wild, scenic or recreational rivers by or pursuant to an act of the legislature of the State or States through which they flow, that are to be permanently administered as wild, scenic or recreational rivers by an agency or political subdivision of the State or States concerned without expense to the United States, that are found by the Secretary of the Interior, upon application of the Governor of the State or the Governors of the States concerned, or a person or persons thereunto duly appointed by him or them, to meet the criteria established in this Act and such criteria supplementary thereto as he may prescribe, and that are approved by him for inclusion in the system, including, upon application of the Governor of the State concerned, the Allagash Wilderness Waterway, Maine, and that segment of the Wolf River, Wisconsin, which flows through Langlade County.

(b) A wild, scenic or recreational river area eligible to be included in the system is a free-flowing stream and the related

adjacent land area that possesses one or more of the values referred to in section 1, subsection (b) of this Act. Every wild, scenic or recreational river in its free-flowing condition, or upon restoration to this condition, shall be considered eligible for inclusion in the national wild and scenic rivers system and, if included, shall be classified, designated, and administered as one of the following:

(1) Wild river areas--Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

(2) Scenic river areas--Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

(3) Recreational river areas--Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Sec. 3 (a) The following rivers and the land adjacent thereto are hereby designated as components of the national wild and scenic rivers system:

(1) CLEARWATER, MIDDLE FORK, IDAHO.--The Middle Fork from the town of Kooskia upstream to the town of Lowell; the Lochsa River from its junction with the Selway at Lowell forming the Middle Fork, upstream to the Powell Ranger Station; and the Selway River from Lowell upstream to its origin; to be administered by the Secretary of Agriculture.

(2) ELEVEN POINT, MISSOURI.--The segment of the river extending downstream from Thomasville to State Highway 142; to be administered by the Secretary of Agriculture.

(3) FEATHER, CALIFORNIA.--The entire Middle Fork; to be administered by the Secretary of Agriculture.

(4) RIO GRANDE, NEW MEXICO.--The segment extending from the Colorado State line downstream to the State Highway 96 crossing, and the lower four miles of the Red River; to be administered by the Secretary of the Interior.

(5) ROGUE, OREGON.--The segment of the river extending from the mouth of the Applegate River downstream to the Lobster Creek Bridge; to be administered by agencies of the Departments of the Interior or Agriculture as agreed upon by the Secretaries of said Departments or as directed by the President.

(6) SAINT CROIX, MINNESOTA AND WISCONSIN.--The segment between the dam near Taylors Falls, Minnesota, and the dam near Gordon, Wisconsin, and its tributary, the Namekagon, from Lake Namekagon downstream to its confluence with the Saint Croix; to be administered by the Secretary of the Interior: *Provided*, That except as may be required in connection with items (a) and (b) of this paragraph, no funds available to carry out the provisions of this Act may be expended for the acquisition or development of lands in connection with, or for administration under this Act of, that portion of the Saint Croix River between the dam near Taylors Falls, Minnesota, and the upstream end of Big Island in Wisconsin, until sixty days after the date on which the Secretary has transmitted to the President of the Senate and Speaker of the House of Representatives a proposed cooperative agreement between the Northern States Power Company and the United States (a) whereby the company agrees to convey to the United States, without charge, appropriate interests in certain of its lands between the dam near Taylors Falls, Minnesota, and the upstream end of Big Island in Wisconsin, including the company's right, title, and interest to approximately one hundred acres per mile, and (b) providing for the use and development of other lands and interests in land retained by the company between said points adjacent to the river in a manner which shall complement and not be inconsistent with the purposes for which the lands and interests in land donated by the company are administered under this Act. Said agreement may also include provision for State or local governmental participation as authorized under subsection (e) of section 10 of this Act.

(7) SALMON, MIDDLE FORK, IDAHO.--From its origin to its confluence with the main Salmon River; to be administered by the Secretary of Agriculture.

(8) WOLF, WISCONSIN.--From the Langlade-Menominee County line downstream to Keshena Falls; to be administered by the Secretary of the Interior.

(b) The agency charged with the administration of each component of the national wild and scenic rivers system designated by subsection (a) of this section shall, within one year from the date of this Act, establish detailed boundaries therefor (which boundaries shall include an average of not more than three hundred and twenty acres per mile on both sides of the river); determine which of the classes outlined in section 2, subsection (b), of this Act best fit the river or its various segments; and prepare a plan for necessary developments in connection with its administration in accordance with such classification. Said boundaries, classification, and development plans shall be published in the Federal Register and shall not become effective until ninety days after they have been forwarded to the President of the Senate and the Speaker of the House of Representatives.

Sec. 4 (a) The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and from time to time submit to the President and the Congress proposals for the addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system; which, in his or their judgment, fall within one or more of the classes set out in section 2, subsection (b), of this Act; and which are proposed to be administered, wholly or partially, by an agency of the United States. Every such study and plan shall be coordinated with any water resources planning involving the same river which is being conducted pursuant to the Water Resources Planning Act (79 Stat. 244; 42 U.S.C. 1962 et seq.).

Each proposal shall be accompanied by a report, including maps and illustrations, showing among other things the area included within the proposal; the characteristics which make the area a worthy addition to the system; the current status of landownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system; the Federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area be administered; the extent to which it is proposed that administration, including the costs thereof, be shared by State and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area as a component of the system. Each such report shall be printed as a Senate or House document.

(b) Before submitting any such report to the President and the Congress, copies of the proposed report shall, unless it was prepared jointly by the Secretary of the Interior and the Secretary of Agriculture, be submitted by the Secretary of the Interior to the Secretary of Agriculture or by the Secretary of Agriculture to the Secretary of the Interior, as the case may be, and to the Secretary of the Army, the Chairman of the Federal Power Commission, the head of any other affected Federal department or agency and, unless the lands proposed to be included in the area are already owned by the United States or have already been authorized for acquisition by Act of Congress, the Governor of the State or States in which they are located or an officer designated by the Governor to receive the same. Any recommendations or comments on the proposal which the said officials furnish the Secretary or Secretaries who prepared the report within ninety days of the date on which the report is submitted to them, together with the Secretary's or Secretaries' comments thereon, shall be included with the transmittal to the President and the Congress. No river or portion of any river shall be added to the national wild and scenic rivers system subsequent to enactment of this Act until the close of the next full session of the State legislature, or legislatures in case more than one State is involved, which beings following the submission of any recommendation to the President with respect to such addition as herein provided.

(c) Before approving or disapproving for inclusion in the national wild and scenic rivers system any river designated as a wild, scenic or recreational river by or pursuant to an act of a State legislature, the Secretary of the Interior shall submit the proposal to the Secretary of Agriculture, the Secretary of the Army, the Chairman of the Federal Power Commission, and the head of any other affected Federal department or agency and shall evaluate and give due weight to any recommendations or comments which the said officials furnish him within ninety days of the date on which it is submitted to them. If he approves the proposed inclusion, he shall publish notice thereof in the Federal Register.

Sec. 5 (a) The following rivers are hereby designated for potential addition to the national wild and scenic rivers system:

(1) Allegheny, Pennsylvania: The segment from its mouth to the town of East Brady, Pennsylvania.

(2) Bruneau, Idaho: The entire main stem.

(3) Buffalo, Tennessee: The entire river.

(4) Chattooga, North Carolina, South Carolina, and Georgia: The entire river.

(5) Clarion, Pennsylvania: The segment between Ridgway and its confluence with the Allegheny River.

(6) Delaware, Pennsylvania and New York: The segment from Hancock, New York, to Matamoras, Pennsylvania.

(7) Flathead, Montana: The North Fork from the Canadian border downstream to its confluence with the Middle Fork; the Middle Fork from its headwaters to its confluence with the South Fork; and the South Fork from its origin to Hungry Horse Reservoir.

(8) Gasconade, Missouri: The entire river.

(9) Illinois, Oregon: The entire river.

(10) Little Beaver, Ohio: The segment of the North and Middle Forks of the Little Beaver River in Columbiana County from a point in the vicinity of Negly and Elkton, Ohio, downstream to a point in the vicinity of East Liverpool, Ohio.

(11) Little Miami, Ohio: That segment of the main stem of the river, exclusive of its tributaries, from a point at the Warren-Clermont County line at Loveland, Ohio, upstream to the sources of Little Miami including North Fork.

(12) Maumee, Ohio and Indiana: The main stem from Perrysburg, Ohio, to Fort Wayne, Indiana, exclusive of its tributaries in Ohio and inclusive of its tributaries in Indiana.

(13) Missouri, Montana: The segment between Fort Benton and Ryan Island.

(14) Moyie, Idaho: The segment from the Canadian border to its confluence with Kootenai River.

(15) Obed, Tennessee: The entire river and its tributaries, Clear Creek and Daddys Creek.

(16) Penobscot, Maine: Its east and west branches.

(17) Pere Marquette, Michigan: The entire river.

(18) Pine Creek, Pennsylvania: The segment from Ansonia to Waterville.

(19) Priest, Idaho: The entire main stem.

(20) Rio Grande, Texas: The portion of the river between the west boundary of Hudspeth County and the east boundary of Terrell County on the United States side of the river: *Provided*, That before undertaking any study of this potential scenic river, the Secretary of the Interior shall determine, through the channels of appropriate executive agencies, that Mexico has no objection to its being included among the studies authorized by this Act.

(21) Saint Croix, Minnesota and Wisconsin: The segment between the dam near Taylors Falls and its confluence with the Mississippi River.

(22) Saint Joe, Idaho: The entire main stem.

(23) Salmon, Idaho: The segment from the town of North Fork to its confluence with the Snake River.

(24) Skagit, Washington: The segment from the town of Mount Vernon to and including the mouth of Bacon Creek; the Cascade River between its mouth and the junction of its North and South Forks; the South Fork to the boundary of the Glacier Peak Wilderness Area; the Suiattle River from its mouth to the Glacier Peak Wilderness Area boundary at Milk Creek; the Sauk River from its mouth to its junction with Elliott Creek; the North Fork of the Sauk River from its junction with the South Fork of the Sauk to the Glacier Peak Wilderness Area boundary.

(25) Suwannee, Georgia and Florida: The entire river from its source in the Okefenokee Swamp in Georgia to the gulf and the outlying Ichetucknee Springs, Florida.

(26) Upper Iowa, Iowa: The entire river.

(27) Youghiogheny, Maryland and Pennsylvania: The segment from Oakland, Maryland, to the Youghiogheny Reservior, and from the Youghiogheny Dam downstream to the town of Connellsville, Pennsylvania.

(b) The Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture shall proceed as expeditiously as possible to study each of the rivers named in subsection (a) of this section in order to determine whether it should be included in the national wild and scenic rivers system. Such studies shall be completed and reports made thereon to the President and the Congress, as provided in section 4 of this Act, within ten years from the date of this Act: *Provided, however,* That with respect to the Suwannee River, Georgia and Florida, and the Upper Iowa River, Iowa, such study shall be completed and reports made thereon to the President and the Congress, as provided in section 4 of this Act, within two years from the date of enactment of this Act. In conducting these studies the Secretary of the Interior and the Secretary of Agriculture shall give priority to those rivers with respect to which there is the greatest likelihood of developments which, if undertaken, would render them unsuitable for inclusion in the national wild and scenic rivers system.

(c) The study of any of said rivers shall be pursued in as close cooperation with appropriate agencies of the affected State and its political subdivisions as possible, shall be carried on jointly with such agencies if request for such joint study is made by the State, and shall include a determination of the degree to which the State or its political subdivisions might participate in the preservation and administration of the river should it be proposed for inclusion in the national wild and scenic rivers system.

(d) In all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas, and all river basin and project plan reports submitted to the Congress shall consider and discuss any such potentials. The Secretary of the Interior and the Secretary of Agriculture shall make specific studies and investigations to determine which additional wild, scenic and recreational river areas within the United States shall be evaluated in planning reports by all Federal agencies as potential alternative uses of the water and related land resources involved.

Sec. 6 (a) The Secretary of the Interior and the Secretary of Agriculture are each authorized to acquire lands and interests in land within the authorized boundaries of any component of the national wild and scenic rivers system designated in section 3 of this Act, or hereafter designated for inclusion in the system by Act of Congress, which is administered by him, but he shall not acquire fee title to an average of more than 100 acres per mile

on both sides of the river. Lands owned by a State may be acquired only by donation, and lands owned by an Indian tribe or a political subdivision of a State may not be acquired without the consent of the appropriate governing body thereof as long as the Indian tribe or political subdivision is following a plan for management and protection of the lands which the Secretary finds protects the land and assures its use for purposes consistent with this Act. Money appropriated for Federal purposes from the land and water conservation fund shall, without prejudice to the use of appropriations from other sources, be available to Federal departments and agencies for the acquisition of property for the purposes of this Act.

(b) If 50 per centum or more of the entire acreage within a federally administered wild, scenic or recreational river area is owned by the United States, by the State or States within which it lies, or by political subdivisions of those States, neither Secretary shall acquire fee title to any lands by condemnation under authority of this Act. Nothing contained in this section, however, shall preclude the use of condemnation when necessary to clear title or to acquire scenic easements or such other easements as are reasonably necessary to give the public access to the river and to permit its members to traverse the length of the area or of selected segments thereof.

(c) Neither the Secretary of the Interior nor the Secretary of Agriculture may acquire lands by condemnation, for the purpose of including such lands in any national wild, scenic or recreational river area, if such lands are located within any incorporated city, village, or borough which has in force and applicable to such lands a duly adopted, valid zoning ordinance that conforms with the purposes of this Act. In order to carry out the provisions of this subsection the appropriate Secretary shall issue guidelines, specifying standards for local zoning ordinances, which are consistent with the purposes of this Act. The standards specified in such guidelines shall have the object of (A) prohibiting new commercial or industrial uses other than commercial or industrial uses which are consistent with the purposes of this Act, and (B) the protection of the bank lands by means of acreage, frontage, and setback requirements on development.

(d) The appropriate Secretary is authorized to accept title to non-Federal property within the authorized boundaries of any federally administered component of the national wild and scenic rivers system designated in section 3 of this Act or hereafter designated for inclusion in the system by Act of Congress and, in exhange therefor, convey to the grantor any federally owned property which is under his jurisdiction within the State in which the component lies and which he classifies as suitable for exchange or other disposal. The values of the properties so exchanged either shall be approximately equal or, if they are not approximately equal, shall be equalized by the payment of cash to the grantor or to the Secretary as the circumstances require.

(e) The head of any Federal department or agency having administrative jurisdiction over any lands or interests in land within the authorized boundaries of any federally administered component of the national wild and scenic rivers system designated in section 3 of this Act or hereafter designated for inclusion in the system by Act of Congress is authorized to transfer to the appropriate secretary jurisdiction over such lands for administration in accordance with the provisions of this Act. Lands acquired by or transferred to the Secretary of Agriculture for the purposes of this Act within or adjacent to a national forest shall upon such acquisition or transfer become national forest lands.

(f) The appropriate Secretary is authorized to accept donations of lands and interests in land, funds, and other property for use in connection with his administration of the national wild and scenic rivers system.

(g) (1) Any owner or owners (hereinafter in this subsection referred to as "owner") of improved property on the date of its acquisition, may retain for themselves and their successors or assigns a right of use and occupancy of the improved property for noncommercial residential purposes for a definite term not to exceed twenty-five years or, in lieu thereof, for a term ending at the death of the owner, or the death of his spouse, or the death of either or both of them. The owner shall elect the term to be reserved. The appropriate Secretary shall pay to the owner the fair market value of the property on the date of such acquisition less the fair market value on such date of the right retained by the owner.

(2) A right of use and occupancy retained pursuant to this subsection shall be subject to termination whenever the appropriate Secretary is given reasonable cause to find that such use and occupancy is being exercised in a manner which conflicts with the purposes of this Act. In the event of such a finding, the Secretary shall tender to the holder of that right an amount equal to the fair market value of that portion of the right which remains unexpired on the date of termination. Such right of use or occupancy shall terminate by operation of law upon tender of the fair market price.

(3) The term "improved property", as used in this Act, means a detached, one-family dwelling (hereinafter referred to as "dwelling"), the construction of which was begun before January 1, 1967, together with so much of the land on which the dwelling is situated, the said land being in the same ownership as the dwelling, as the appropriate Secretary shall designate to be reasonably necessary for the enjoyment of the dwelling for the sole purpose of noncommercial residential use, together with any structures accessory to the dwelling which are situated on the land so designated.

Sec. 7 (a) The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act (41 Stat. 1063), as amended (16 U.S.C. 791a et seq.), on or directly affecting any river which is designated in section 3 of this Act as a component of the national wild and scenic rivers system or which is hereafter designated for inclusion in that system, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration. Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values present in the area on the date of approval of this Act. No department or agency of the United States shall recommend authorization of any water resources project that would have a direct and adverse effect on the values for which such river was established, as determined by the Secretary charged with its administration, or request appropriations to begin construction of any such project, whether heretofore or hereafter authorized, without advising the Secretary of the Interior or the Secretary of Agriculture, as the case may be, in writing of its intention so to do at least sixty days in advance, and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act.

(b) The Federal Power Commission shall not license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, as amended, on or directly affecting any river which is listed in section 5, subsection (a), of this Act, and no department or agency of the United States shall assist by loan, grant, license, or otherwise in the construction of any water resources project that would have a direct and adverse effect on the values for which such river might be designated, as determined by the Secretary responsible for its study or approval--

(i) during the five-year period following enactment of this Act unless, prior to the expiration of said period, the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture, on the basis of study, conclude that such river should not be included in the national wild and scenic rivers system and publish notice to that effect in the Federal Register, and

(ii) during such additional period thereafter as, in the case of any river which is recommended to the President and the Congress for inclusion in the national wild and scenic rivers system, is necessary for congressional consideration

thereof or, in the case of any river recommended to the Secretary of the Interior for inclusion in the national wild and scenic rivers system under section 2(a)(ii) of this Act, is necessary for the Secretary's consideration thereof, which additional period, however, shall not exceed three years in the first case and one year in the second.

Nothing contained in the foregoing sentence, however, shall preclude licensing of, or assistance to, developments below or above a potential wild, scenic or recreational river area or on any stream tributary thereto which will not invade the area or diminish the scenic, recreational, and fish and wildlife values present in the potential wild, scenic or recreational river area on the date of approval of this Act. No department or agency of the United States shall, during the periods hereinbefore specified, recommend authorization of any water resources project on any such river or request appropriations to begin construction of any such project, whether heretofore or hereafter authorized, without advising the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture in writing of its intention so to do at least sixty days in advance of doing so and without specifically reporting to the Congress in writing at the time it makes its recommendation or request in what respect construction of such project would be in conflict with the purposes of this Act and would affect the component and the values to be protected by it under this Act.

(c) The Federal Power Commission and all other Federal agencies shall, promptly upon enactment of this Act, inform the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture, of any proceedings, studies, or other activities within their jurisdiction which are now in progress and which affect or may affect any of the rivers specified in section 5, subsection (a), of this Act. They shall likewise inform him of any such proceedings, studies, or other activities which are hereafter commenced or resumed before they are commenced or resumed.

(d) Nothing in this section with respect to the making of a loan or grant shall apply to grants made under the Land and Water Conservation Fund Act of 1965 (78 Stat. 897; 16 U.S.C. 4601-5 et seq.).

Sec. 8 (a) All public lands within the authorized boundaries of any component of the national wild and scenic rivers system which is designated in section 3 of this Act or which is hereafter designated for inclusion in that system are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States.

(b) All public lands which constitute the bed or bank, or are within one-quarter mile of the bank, of any river which is listed in section 5, subsection (a), of this Act are hereby withdrawn from entry, sale, or other disposition under the public land laws of the United States for the periods specified in section 7, subsection (b), of this Act.

Sec. 9 (a) Nothing in this Act shall affect the applicability of the United States mining and mineral leasing laws within components of the national wild and scenic rivers system except that--

(i) all prospecting, mining operations, and other activities on mining claims which, in the case of a component of the system designated in section 3 of this Act, have not heretofore been perfected or which, pursuant to this Act or any other Act of Congress, are not perfected before its inclusion in the system and all mining operations and other activities under a mineral lease, license, or permit issued or renewed after inclusion of a component in the system shall be subject to such regulations as the Secretary of the Interior or, in the case of national forest lands, the Secretary of Agriculture may prescribe to effectuate the purposes of this Act;

(ii) subject to valid existing rights, the perfection of, or issuance of a patent to, any mining claim affecting lands within the system shall confer or convey a right or title only to the mineral deposits and such rights only to the use of the surface and the surface resources as are reasonably required to carrying on prospecting or mining operations and are consistent with such regulations as may be prescribed by the Secretary of the Interior or, in the case of national forest lands, by the Secretary of Agriculture; and

(iii) subject to valid existing rights, the minerals in Federal lands which are part of the system and constitute the bed or bank or are situated within one-quarter mile of the bank of any river designated a wild river under this Act or any subsequent Act are hereby withdrawn from all forms of appropriation under the mining laws and from operation of the mineral leasing laws including, in both cases, amendments thereto.

Regulations issued pursuant to paragraphs (i) and (ii) of this subsection shall, among other things, provide safeguards against pollution of the river involved and unnecessary impairment of the scenery within the component in question.

(b) The minerals in any Federal lands which constitute the bed or bank or are situated within one-quarter mile of the bank of any river which is listed in section 5, subsection (a) of this Act are hereby withdrawn from all forms of appropriation under the mining laws during the periods specified in section 7, subsection (b) of this Act. Nothing contained in this subsection shall be construed to forbid prospecting or the issuance or (sic) leases, licenses, and permits under the mineral leasing laws subject to such conditions as the Secretary of the Interior and, in the case of national forest lands, the Secretary of Agriculture find appropriate to safeguard the area in the event it is subsequently included in the system.

Sec. 10 (a) Each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.

(b) Any portion of a component of the national wild and scenic rivers system that is within the national wilderness preservation system, as established by or pursuant to the Act of September 3, 1964 (78 Stat. 890; 16 U.S.C., ch. 23), shall be subject to the provisions of both the Wilderness Act and this Act with respect to preservation of such river and its immediate environment, and in case of conflict between the provisions of these Acts the more restrictive provisions shall apply.

(c) Any component of the national wild and scenic rivers system that is administered by the Secretary of the Interior through the National Park Service shall become a part of the national park system, and any such component that is administered by the Secretary through the Fish and Wildlife Service shall become a part of the national wildlife refuge system. The lands involved shall be subject to the provisions of this Act and the Acts under which the national park system or national wildlife system, as the case may be, is administered, and in case of conflict between the provisions of these Acts, the more restrictive provisions shall apply. The Secretary of the Interior, in his administration of any component of the national wild and scenic rivers system, may utilize such general statutory authorities relating to areas of the national park system and such general statutory authorities otherwise available to him for recreation and preservation purposes and for the conservation and management of natural resources as he deems appropriate to carry out the purposes of this Act.

(d) The Secretary of Agriculture, in his administration of any component of the national wild and scenic rivers system area, may utilize the general statutory authorities relating to the national forests in such manner as he deems appropriate to carry out the purposes of this Act.

(e) The Federal agency charged with the administration of any component of the national wild and scenic rivers system may enter into written cooperative agreements with the Governor of a State, the head of any State agency, or the appropriate official of a political subdivision of a State for State or local governmental participation in the administration of the component. The States and their political subdivisions shall be encouraged to cooperate in the planning and administration of components of the system which include or adjoin State- or county-owned lands.

Sec. 11 (a) The Secretary of the Interior shall encourage and assist the States to consider, in formulating and carrying out their comprehensive statewide outdoor recreation plans and proposals for financing assistance for State and local projects submitted pursuant to the Land and Water Conservation Fund Act of 1965 (78 Stat. 897), needs and opportunities for establishing State and local wild, scenic and recreational river areas. He shall also, in accordance with the authority contained in the Act of May 28, 1963 (77 Stat. 49), provide technical assistance and advice to, and cooperate with, States, political subdivisions, and private interests, including nonprofit organizations, with respect to establishing such wild, scenic and recreational river areas.

(b) The Secretaries of Agriculture and of Health, Education, and Welfare shall likewise, in accordance with the authority vested in them, assist, advise, and cooperate with State and local agencies and private interests with respect to establishing such wild, scenic and recreational river areas.

Sec. 12 (a) The Secretary of the Interior, the Secretary of Agriculture, and heads of other Federal agencies shall review administrative and management policies, regulations, contracts, and plans affecting lands under their respective jurisdictions which include, border upon, or are adjacent to the rivers listed in subsection (a) of section 5 of this Act in order to determine what actions should be taken to protect such rivers during the period they are being considered for potential addition to the national wild and scenic rivers system. Particular attention shall be given to scheduled timber harvesting, road construction, and similar activities which might be contrary to the purposes of this Act.

(b) Nothing in this section shall be construed to abrogate any existing rights, privileges, or contracts affecting Federal lands held by any private party without the consent of said party.

(c) The head of any agency administering a component of the national wild and scenic rivers system shall cooperate with the Secretary of the Interior and with the appropriate State water pollution control agencies for the purpose of eliminating or diminishing the pollution of waters of the river.

Sec. 13 (a) Nothing in this Act shall affect the jurisdiction or responsibilities of the States with respect to fish and wildlife. Hunting and fishing shall be permitted on lands and waters administered as parts of the system under applicable State and Federal laws and regulations unless, in the case of hunting, those lands or waters are within a national park or monument. The administering Secretary may, however, designate zones where, and establish periods when, no hunting is permitted for reasons of public safety, administration, or public use and enjoyment and shall issue appropriate regulations after consultation with the wildlife agency of the State or States affected.

(b) The jurisdiction of the States and the United States over waters of any stream included in a national wild, scenic or recreational river area shall be determined by established principles of law. Under the provisions of this Act, any taking by the United States of a water right which is vested under either State or Federal law at the time such river is included in the national wild and scenic rivers system shall entitle the owner thereof to just compensation. Nothing in this Act shall constitute an express or implied claim or denial on the part of the Federal Government as to exemption from State water laws.

(c) Designation of any stream or portion thereof as a national wild, scenic or recreational river area shall not be construed as a reservation of the waters of such streams for purposes other than those specified in this Act, or in quantities greater than necessary to accomplish these purposes.

(d) The jurisdiction of the States over waters of any stream included in a national wild, scenic or recreational river area shall be unaffected by this Act to the extent that such jurisdiction may be exercised without impairing the purposes of this Act or its administration.

(e) Nothing contained in this Act shall be construed to alter, amend, repeal, interpret, modify, or be in conflict with any interstate compact made by any States which contain any portion of the national wild and scenic rivers system.

(f) Nothing in this Act shall affect existing rights of any State, including the right of access, with respect to the beds of navigable streams, tributaries, or rivers (or segments thereof) located in a national wild, scenic or recreational river area.

(g) The Secretary of the Interior or the Secretary of Agriculture, as the case may be, may grant easements and rights-of-way upon, over, under, across, or through any component of the national wild and scenic rivers system in accordance with the laws applicable to the national park system and the national forest system, respectively: *Provided*, That any conditions precedent to granting such easements and rights-of-way shall be related to the policy and purpose of this Act.

Sec. 14 The claim and allowance of the value of an easement as a charitable contribution under section 170 of title 26, United States Code, or as a gift under section 2522 of said title shall constitute an agreement by the donor on behalf of himself, his heirs, and assigns that, if the terms of the instrument creating the easement are violated, the donee or the United States may acquire the servient estate at its fair market value as of the time the easement was donated minus the value of the easement claimed and allowed as a charitable contribution or gift.

Sec. 15 As used in this Act, the term--

(a) "River" means a flowing body of water or estuary or a section, portion, or tributary thereof, including rivers, streams, creeks, runds, kills, rills, and small lakes.

(b) "Free-flowing", as applied to any river or section of a river, means existing or flowing in natural condition without impoundment, diversion, straightening, rip-rapping, or other modification of the waterway. The existence, however, of low dams, diversion works, and other minor structures at the time any river is proposed for inclusion in the national wild and scenic rivers system shall not automatically bar its consideration for such inclusion: *Provided*, That this shall not be construed to authorize, intend, or encourage future construction of such structures within components of the national wild and scenic rivers system.

(c) "Scenic easement" means the right to control the use of land (including the air space above such land) for the purpose of protecting the scenic view from the river, but such control shall not affect, without the owner's consent, any regular use exercised prior to the acquisition of the easement.

Sec. 16 There are hereby authorized to be appropriated such sums as may be necessary, but not more than $17,000,000, for the acquisition of lands and interests in land under the provisions of this Act.

Approved October 2, 1968.

LEGISLATIVE HISTORY:

House Reports:	No. 1623 accompanying H.R. 18260 (Committee on Interior and Insular Affairs) and No. 1917 (Committee of Conference).
Senate Report:	No. 491 (Committee on Interior and Insular Affairs).
Congressional Record:	Volume 113 (1967): August 8, considered and passed Senate. Volume 114 (1968): July 15, September 12, considered and passed House, amended in lieu of H.R. 18260. September 25, House agreed to conference report. September 26, Senate agreed to conference report.

Public Law 92-560
92nd Congress, S. 1928
October 25, 1972
AN ACT

To amend the Wild and Scenic Rivers Act by designating a segment of the Saint Croix River, Minnesota and Wisconsin, as a component of the national wild and scenic rivers system.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Lower Saint Croix River Act of 1972".

Sec. 2. Section 3 (a) of the Wild and Scenic Rivers Act (82 Stat. 907; 16 U.S.C. 1274 (a)) is amended by adding at the end thereof the following:

"(9) Lower Saint Croix, Minnesota and Wisconsin.--The segment between the dam near Taylors Falls and its confluence with the Mississippi River: *Provided,* (i) That the upper twenty-seven miles of this river segment shall be administered by the Secretary of the Interior: and (ii) That the lower twenty-five miles shall be designated by the Secretary upon his approval of an application for such designation made by the Governors of the States of Minnesota and Wisconsin."

Sec. 3 The Secretary of the Interior shall, within one year following the date of enactment of this Act, take, with respect to the Lower Saint Croix River segment, such action as is provided for under section 3 (b) of the Wild and Scenic Rivers Act: *Provided,* That (a) the action required by such section shall be undertaken jointly by the Secretary and the appropriate agencies of the affected States; (b) the development plan required by such section shall be construed to be a comprehensive master plan which shall include, but not be limited to, a determination of the lands, waters, and interests therein to be acquired, developed, and administered by the agencies or political subdivisions of the affected States; and (c) such development plan shall provide for State administration of the lower twenty-five miles of the Lower Saint Croix River segment and for continued administration by the States of Minnesota and Wisconsin of such State parks and fish hatcheries as now lie within the twenty-seven-mile segment to be administered by the Secretary of the Interior.

Sec. 4 Notwithstanding any provision of the Wild and Scenic Rivers Act which limits acquisition authority within a river segment to be administered by a Federal agency, the States of Minnesota and Wisconsin may acquire within the twenty-seven-mile segment of the Lower Saint Croix River segment to be administered by the Secretary of the Interior such lands as may be proposed for their acquisition, development, operation, and maintenance pursuant to the development plan required by section 3 of this Act.

Sec. 5 Nothing in this Act shall be deemed to impair or otherwise affect such statutory authority as may be vested in the Secretary of the Department in which the Coast Guard is operating or the Secretary of the Army for the maintenance of navigation aids and navigation improvements.

Sec. 6 (a) There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act, but not to exceed $7,275,000 for the acquisition and development of lands and interests therein within the boundaries of the twenty-seven-mile segment of the Lower Saint Croix River segment to be administered by the Secretary of the Interior.

(b) No funds otherwise authorized to be appropriated by this section shall be expended by the Secretary of the Interior until he has determined that the States of Minnesota and Wisconsin have initiated such land acquisition and development as may be proposed pursuant to the development plan required by section 3 of this Act, and in no event shall the Secretary of the Interior expend more than $2,550,000 of the funds authorized to be appropriated by this section in the first fiscal year following completion of the development plan required by section 3 of this Act. The balance of funds authorized to be appropriated by this section shall be expended by the Secretary of the Interior at such times as he finds that the States of Minnesota and Wisconsin have made satisfactory progress in their implementation of the development plan required by section 3 of this Act.

Approved October 25, 1972.

Public Law 93-279
93rd Congress, H.R. 9492
May 10, 1974
AN ACT

To amend the Wild and Scenic Rivers Act by designating the Chattooga River, North Carolina, South Carolina, and Georgia as a component of the National Wild and Scenic Rivers System, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Wild and Scenic Rivers Act (82 Stat. 906; 16 U.S.C. 1274 et seq.), as amended, is further amended as follows:

(a) In section 3 (a) after paragraph (9) insert the following new paragraph:

"(10) Chattooga, North Carolina, South Carolina, Georgia.--The Segment from 0.8 mile below Cashiers Lake in North Carolina to Tugaloo Reservoir, and the West Fork Chattooga River from its junction with Chattooga upstream 7.3 miles, as generally depicted on the boundary map entitled 'Proposed Wild and Scenic Chattooga River and Corridor Boundary', dated August 1973; to be administered by the Secretary of Agriculture: *Provided,* That the Secretary of Agriculture shall take such action as is provided for under subsection (b) of this section within one year from the date of enactment of this paragraph (10): *Provided further,* That for the purposes of this river, there are authorized to be appropriated not more than $2,000,000 for the acquisition of lands and interests in lands and not more than $809,000 for development.".

(b) (1) In section 4 delete subsection (a) and insert in lieu thereof the following:

"Sec. 4 (a) The Secretary of the Interior or, where national forest lands are involved, the Secretary of Agriculture or, in appropriate cases, the two Secretaries jointly shall study and submit to the President reports on the suitability or nonsuitability for addition to the national wild and scenic rivers system of rivers which are designated herein or hereafter by the Congress as potential additions to such system. The President shall report to the Congress his recommendations and proposals with respect to the designation of each such river or section thereof under this Act. Such studies shall be completed and such reports shall be made to the Congress with respect to all rivers named in subparagraphs 5 (a) (1) through (27) of this Act no later than October 2, 1978. In conducting these studies the Secretary of the Interior and the Secretary of Agriculture shall give priority to those rivers with respect to which there is the greatest likelihood of developments which, if undertaken, would render the rivers unsuitable for inclusion in the national wild and scenic rivers system. Every such study and plan shall be coordinated with any water resources planning involving the same river which is being conducted pursuant to the Water Resources Planning Act (79 Stat. 244; 42 U.S.C. 1962 et seq.).

"Each report, including maps and illustrations, shall show among other things the area included within the report; the characteristics which do or do not make the area a worthy addition to the system; the current status of land ownership and use in the area; the reasonably foreseeable potential uses of the land and water which would be enhanced, foreclosed, or curtailed if the area were included in the national wild and scenic rivers system; the Federal agency (which in the case of a river which is wholly or substantially within a national forest, shall be the Department of Agriculture) by which it is proposed the area, should it be added to the system, be administered; the extent to which it is proposed that such administration, including the costs thereof, be shared by State and local agencies; and the estimated cost to the United States of acquiring necessary lands and interests in land and of administering the area, should it be added to the system. Each such report shall be printed as a Senate or House document."

(2) In section 5 delete subsection (b) and reletter subsections (c) and (d) as (b) and (c), respectively.

(3) In section 7 (b) delete clause (i) and insert in lieu thereof the following:

> "(i) during the ten-year period following enactment of this Act *or* for a three complete fiscal year period following any Act of Congress designating any river for potential addition to the national wild and scenic rivers system, whichever is later, unless, prior to the expiration of the relevant period, the Secretary of the Interior and, where national forest lands are involved, the Secretary of Agriculture, on the basis of study, determine that such river should not be included in the national wild and scenic rivers system and notify the Committees on Interior and Insular Affairs of the United States Congress, in writing, including a copy of the study upon which the determination was made, at least one hundred and eighty days while Congress is in session prior to publishing notice to that effect in the Federal Register, and".

(4) In section 7 (b) (ii) delete "which is recommended", insert in lieu thereof "the report for which is submitted", and delete "for inclusion in the national wild and scenic rivers system".

(c) In section 15 (c) delete "for the purpose of protecting the scenic view from the river," and insert in lieu thereof "within the authorized boundaries of a component of the wild and scenic rivers system, for the purpose of protecting the natural qualities of a designated wild, scenic or recreational river area,".

(d) Delete section 16 and insert in lieu thereof:

"Sec. 16 (a) There are hereby authorized to be appropriated, including such sums as have heretofore been appropriated, the following amounts for land acquisition for each of the rivers described in section 3 (a) of this Act:

Clearwater, Middle Fork, Idaho, $2,909,800;
Eleven Point, Missouri, $4,906,500;
Feather, Middle Fork, California, $3,935,700;
Rio Grande, New Mexico, $253,000;
Rogue, Oregon, $12,447,200;
St. Croix, Minnesota and Wisconsin, $11,768,550;
Salmon, Middle Fork, Idaho, $1,237,100; and
Wolf, Wisconsin, $142,150.

"(b) The authority to make the appropriations authorized in this section shall expire on June 30, 1979."

Approved May 10, 1974.

LEGISLATIVE HISTORY:

House Report:	No. 93-675 (Committee on Interior and Insular Affairs).
Senate Report:	No. 93-738 (Committee on Interior and Insular Affairs).
Congressional Record:	Volume 119 (1973): December 3, considered and passed House. Volume 120 (1974): March 22, considered and passed Senate, amended. April 10, House concurred in Senate amendment with an amendment. April 23, Senate agreed to House amendment with amendments. April 25, House concurred in Senate amendments.

NINETY-THIRD CONGRESS OF THE UNITED STATES OF AMERICA

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the twenty-first day of January, one thousand nine hundred and seventy-four

AN ACT

To amend the Wild and Scenic Rivers Act (82 Stat. 906), as amended, to designate segments of certain rivers for possible inclusion in the national wild and scenic rivers system; to amend the Lower Saint Croix River Act of 1972 (86 State. 1174), and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Wild and Scenic Rivers Act (82 Stat. 906), as amended, is further amended as follows:

(a) In subsection (a) of section 5 after paragraph (27) insert the following new paragraphs:

"(28) American, California: The North Fork from the Cedars to the Auburn Reservoir.

"(29) Au Sable, Michigan: The segment downstream from Foot Dam to Oscoda and upstream from Loud Reservoir to its source, including its principal tributaries and excluding Mio and Bamfield Reservoirs.

"(30) Big Thompson, Colorado: The segment from its source to the boundary of Rocky Mountain National Park.

"(31) Cache la Poudre, Colorado: Both forks from their sources to their confluence, thence the Cache la Poudre to the eastern boundary of Roosevelt National Forest.

"(32) Cahaba, Alabama: The segment from its junction with United States Highway 31 south of Birmingham downstream to its junction with United States Highway 80 west of Selma.

"(33) Clarks Fork, Wyoming: The segment from the Clark's Fork Canyon to the Crandall Creek Bridge.

"(34) Colorado, Colorado and Utah: The segment from its confluence with the Dolores River, Utah, upstream to a point 19.5 miles from the Utah-Colorado border in Colorado.

"(35) Conejos, Colorado: The three forks from their sources to their confluence, thence the Conejos to its first junction with State Highway 17, excluding Platoro Reservoir.

"(36) Elk, Colorado: The segment from its source to Clark.

"(37) Encampment, Colorado: The Main Fork and West Fork to their confluence, thence the Encampment to the Colorado-Wyoming border, including the tributaries and headwaters.

"(38) Green, Colorado: The entire segment within the State of Colorado.

"(39) Gunnison, Colorado: The segment from the upstream (southern) boundary of the Black Canyon of the Gunnison National Monument to its confluence with the North Fork.

"(40) Illinois, Oklahoma: The segment from Tenkiller Ferry Reservoir upstream to the Arkansas-Oklahoma border, including the Flint and Barren Fork Creeks.

"(41) John Day, Oregon: The main stem from Service Creek Bridge (at river mile 157) downstream to Tumwater Falls (at river mile 10).

"(42) Kettle, Minnesota: The entire segment within the State of Minnesota.

"(43) Los Pinos, Colorado: The segment from its source, including the tributaries and headwaters within the San Juan Primitive Area, to the northern boundary of the Granite Peak Ranch.

"(44) Manistee, Michigan: The entire river from its source to Manistee Lake, including its principal tributaries and excluding Tippy and Hodenpyl Reservoirs.

"(45) Nolichuckey, Tennessee and North Carolina: The entire main stem.

"(46) Owyhee, South Fork, Oregon: The main stem from the Oregon-Idaho border downstream to the Owyhee Reservoir.

"(47) Piedra, Colorado: The Middle Fork and East Fork from their sources to their confluence, thence the Piedra to its junction with Colorado Highway 160, including the tributaries and headwaters on national forest lands.

"(48) Shepaug, Connecticut: The entire river.

"(49) Sipsey Fork, West Fork, Alabama: The segment, including its tributaries, from the impoundment formed by the Lewis M. Smith Dam upstream to its source in the William B. Bankhead National Forest.

"(50) Snake, Wyoming: The segment from the southern boundaries of Teton National Park to the entrance to Palisades Reservoir.

"(51) Sweetwater, Wyoming: The segment from Wilson Bar downstream to Spring Creek.

"(52) Tuolumne, California: The main river from its source on Mount Dana and Mount Lyell in Yosemite National Park to Don Pedro Reservoir.

"(53) Upper Mississippi, Minnesota: The segment from its source at the outlet of Itasca Lake to its junction with the northwestern boundary of the city of Anoka.

"(54) Wisconsin, Wisconsin: The segment from Prairie du Sac to its confluence with the Mississippi River at Prairie du Chien.

"(55) Yampa, Colorado: The segment within the boundaries of the Dinosaur National Monument.

"(56) Dolores, Colorado: The segment of the main stem from Rico upstream to its source, including its headwaters; the West Dolores from its source, including its headwaters, downstream to its confluence with the main stem; and the segment from the west boundary, section 2, township 38 north, range 16 west, NMPM, below the proposed McPhee Dam, downstream to the Colorado-Utah border, excluding the segment from one mile above Highway 90 to the confluence of the San Miguel River."

(b) In section 5 reletter subsections (b) and (c) as (c) and (d), respectively, and insert a new subsection (b), as follows:

"(b) (1) The studies of rivers named in subparagraphs (28) through (55) of subsection (a) of this section shall be completed and reports thereon submitted by not later than October 2, 1979: *Provided*, That with respect to the rivers named in subparagraphs (33), (50), and (51), the Secretaries shall not commence any studies until (i) the State legislature has acted with respect to such rivers or (ii) one year from the date of enactment of this Act, whichever is earlier.

"(2) The study of the river named in subparagraph (56) of subsection (a) of this section shall be completed and the report thereon submitted by not later than January 3, 1976.

"(3) There are authorized to be appropriated for the purpose of conducting the studies of the rivers named in subparagraphs (28) through (56) such sums as may be necessary, but not more than $2,175,000."

(c) In clause (i) of subsection (b) of section 7 strike the final comma and the following word "and" and insert in lieu thereof a colon and the following proviso: "*Provided*, That if any Act designating any river or rivers for potential addition to the national wild and scenic rivers system provides a period for the study or studies which exceeds such three complete fiscal

year period the period provided for in such Act shall be substituted for the three complete fiscal year period in the provisions of this clause (i); and".

(d) In the fourth sentence of subsection (a) of section 4:

(1) between "rivers" and "with" insert "(i)", and

(2) strike "system." and insert in lieu thereof "system, and (ii) which possess the greatest proportion of private lands within their areas.".

Sec. 2 Subsection (a) of section 6 of the Lower Saint Croix River Act of 1972 (86 Stat. 1174) is amended by deleting "$7,275,000" and inserting in lieu thereof "$19,000,000".

Speaker of the House of Representatives.

Vice President of the United States and
President of the Senate.

(S. 3022)

(Signed January 4, 1975)

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