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STAKEHOLDER OPINION: MANAGEMENT IMPLICATIONS FOR THE PERE MARQUETTE NATIONAL SCENIC RIVER CORRIDOR, MICHIGAN

By

Andrea Stephanie Smith

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ABSTRACT

STAKEHOLDER OPINION: MANAGEMENT IMPLICATIONS FOR THE PERE MARQUETTE NATIONAL SCENIC RIVER CORRIDOR, MICHIGAN

By

Andrea Stephanie Smith

The Pere Marquette National Scenic River in Michigan is a protected watershed under the Wild and Scenic Rivers Act of 1968. The United States Department of Agriculture – Forest Service (USFS) has prepared a plan to manage this natural resource and the many visitors and landowners that use the corridor. The USFS is mandated to scope for public opinion and revise the management plan. This study has collected information to assist the USFS and the many other stakeholders involved in managing the scenic corridor.

A telephone survey was developed to sample corridor visitors and landowners. The questions were structured using a Likert Scale to determine the importance of key issues and performance of managers on these issues. Then an Importance/Performance (I/P) analysis was conducted to provide policy direction for managers.

Results show that there are numerous similarities and some differences among the respondent groups. By comparing groups, managers can focus on consensus building, an integral part of the Limits of Acceptable Change (LAC) process. The LAC framework is proposed as the ideal process to incorporate into the revised management plan.

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KEY TO ABBREVIATIONS

Term	Abbreviation
Department of Natural Resources	DNR
Federation of Fly Fishers	FFF
Final Environmental Impact Statement	FEIS
Forest and Rangeland Renewable Resources Planning Act	RPA
Importance/Performance	I/P
Lake County Riverside Property Owners Association	LCRPOA
Limits of Acceptable Change	LAC
Michigan Salmon and Steelhead Fisherman's Association	MSSFA
Michigan State University	MSU
Michigan United Conservation Clubs	MUCC
Multiple-Use Sustained-Yield Act	MUSYA
National Environmental Policy Act	NEPA
National Forest Management Act	NFMA
Pere Marquette	PM
Pere Marquette Watershed Council	PMWC
Record of Decision	ROD
Recreational Opportunity Spectrum	ROS
The Nature Conservancy	TNC
Trout Unlimited	TU
United States Department of Agriculture	USDA
United States Department of Interior	USDI
United State Forest Service	USFS
Visitor Experience Resource Protection	VERP
Visitor Impact Management	VIM

Chapter 1

INTRODUCTION

The Wild and Scenic River system was created in 1968 to protect treasured watersheds throughout the United States of America. The Wild and Scenic Rivers Act of 1968 begins with the statement:

> It is hereby declared ... that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreation, 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 (Wild and Scenic Rivers Act of 1968, 82 Stat. 906, as amended; 16 U.S.C. 1271-1287).

Originally, only ten rivers or portions of rivers were authorized for inclusion into program by Congress. However, by 1992, 75 river segments totaling over 7,709 miles were made part of the system (Cubbage, O'Laughlin and Bullock, 1993).

Public agencies involved in protecting the watersheds under the Wild and Scenic Rivers Act are striving to develop, implement and enforce strategic management plans to ensure the health of these ecosystems. These plans must be revised periodically to address changing ecosystems and uses placed on the environment. The plans are developed and revised in consultation with various key stakeholders. Furthermore, managers must satisfy planning requirements as specified by the Wild and Scenic Rivers Act of 1968 and related acts such as the Wilderness Act of 1964, Multiple-Use Sustainable Yield Act of 1960, National Environmental Policy Act of 1969, Forest Rangeland Renewable Resources Planning Act of 1974 and the National Forest Management Act of 1976.

Section 10 of the Wild and Scenic Rivers Act states that,

> 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 (Wild and Scenic Rivers Act, 1968).

Congress can delegate management authority to various agencies to oversee management of a Wild and Scenic River or portion of a river. Typically, the Department of the Interior (USDI) or the Department of Agriculture (USDA) will manage these watersheds. In the case of the Pere Marquette National Scenic River, the USDA - Forest Service (here after referred to as USFS) is charged with implementing the designation. However, others involved in the management of the Pere Marquette National Scenic River are the Michigan Department of Natural Resources and private stakeholders such as riparians, recreationists, commercial guides and canoe liveries.

Section 12(a) of the Wild and Scenic Rivers Act states,

> The Secretary of the Interior, the Secretary of Agriculture, and the head of any other Federal department or agency having jurisdiction ... shall take such action respecting management policies, regulations, contracts, plans, affecting such lands ... as may be necessary to protect such rivers in accordance with the purposes of this Act (Wild and Scenic Rivers Act, 1968).

In respecting the guidelines of the Wild and Scenic Rivers Act, the USFS must take a lead role in ensuring that the management plan and implementation practices achieve the intent of the act.

In 1978, sixty-six miles of the Pere Marquette River in Lake and Mason counties, Michigan were incorporated into the Wild and Scenic Program under Public Law 90-542 as amended by Public Law 95-625 (Pere Marquette National Scenic River Management Plan, 1990). The USFS was authorized to manage the Pere Marquette National Scenic River Scenic River corridor that stretches from the M37 highway down to the town of Custer (Figure 1). The original management plan has undergone a number of revisions to accommodate variations in federal, state and local legislative mandates, changes in public demand and changes in the natural environment. The current river management plan contains resource management objectives to protect the river corridor from damage due to overuse and to safeguard its scenic, historic, aesthetic and scientific values. There are seven resource objectives of the plan: Recreation, Trees and Forest Cover, Fish and Wildlife, Visual, Air Quality, Water and Mineral. The Management Plan was last amended in 1990. Since the amendment, USFS managers believe there have been changes in the types of users, number of users and river ecosystem. Thus, it is appropriate to update the plan to ensure that the quality of the natural environment and recreational opportunities are maintained and that the specifications of the Wild and Scenic Rivers Act are met.

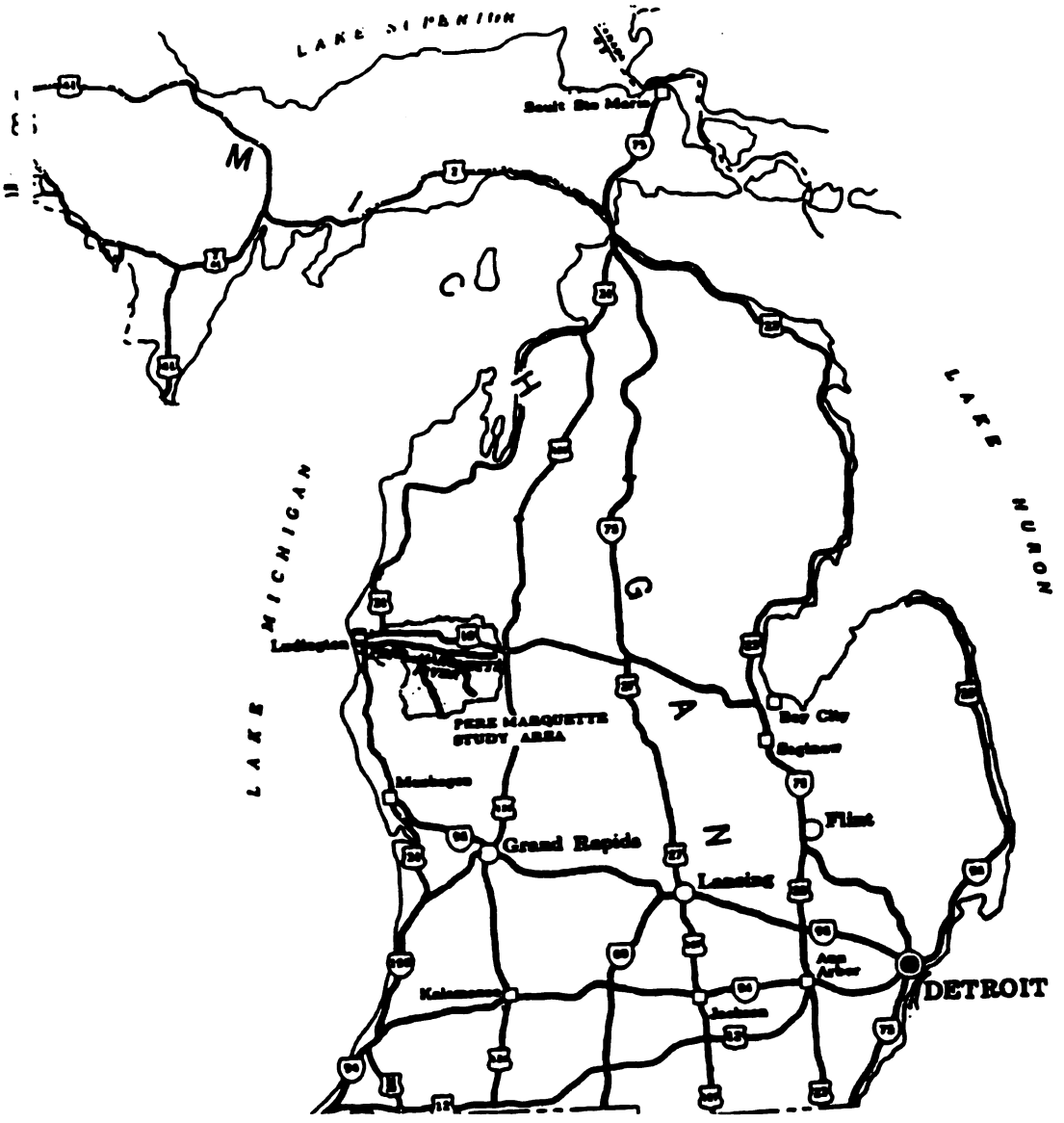

Figure 1 - Pere Marquette National Scenic River Location Map

Map cited from the Pere Marquette River Natural River Plan, 1978

Limits of Acceptable Change

In order to update the plan, managers should undertake two fundamental tasks. The first is to gather public opinion data along with baseline scientific data. According to the National Forest Management Act of 1976, the USFS is obligated to provide for public input programs and to gather scientific information to protect plant and animal communities. The second task is to establish a theoretical framework to revise the river management plan. Historically, plans have taken on various methodological approaches. Thus, it is important for the USFS to decide on an appropriate blueprint to guide data collection, policy development, implementation and monitoring. The estimate of recreation use (Phase I Study - Nelson, Stynes and Johnson, 1997) and this issue scoping study (Phase II) have been instrumental in gathering public opinion data. Much scientific data already exists concerning the ecological processes occurring in the corridor. Thus, one remaining key task is to choose a management framework to assist with the revision of the plan.

There are primarily four types of management frameworks that could be suitable: (1) Recreation Opportunity Spectrum (ROS), (2) Visitor Impact Management (VIM), (3) Limits of Acceptable Change (LAC) and (4) Visitor Experience Resource Protection (VERP). The LAC framework was originally developed by USFS researchers in 1985 to improve management of recreation impacts on wilderness and primitive areas. It has been specifically applied to wild and scenic rivers (Nilsen and Tayler, 1998). This framework identifies desirable resource and social conditions while assigning appropriate actions to achieve the desired conditions. The model itself has undergone a number of adaptations to better accommodate the complex and dynamic natural resource planning process.

Research indicates that the LAC process has been a positive planning framework for land management agencies (Cole and McCool, 1998). This is because the LAC process assesses not only ecosystems, but also the socio-political/economic context affecting the ecosystems (McCool, 1994). The LAC framework is able to incorporate the ROS process that links setting and management to desired recreation outcomes. The ROS framework typically zones a natural area into six classes from primitive to urban while outlining appropriate recreational amenities.

The VIM framework is not a suitable framework because it does not incorporate ROS methodology, and generally assesses current conditions of impact versus potential impacts. Further, the VERP framework is not proposed because the methodology has so far been embraced by the US National Park Service, not the USFS and because it sets *use* limits versus desired *resource* conditions. The focal point should be resource management that incorporates user restrictions, not user restrictions that meet resource needs.

Because the Pere Marquette National Scenic River plan already utilizes the ROS process, the LAC framework is an ideal tool to update the Management Plan. Currently in the corridor, the ROS framework is used in conjunction with the Land Type Association (LTA) method. The LTA is a method used to zone the corridor using soil type and topography criteria. These two methods are used to group similar areas and to develop guidelines for management. Currently, the corridor is zoned "Roaded Natural". With this designation in place, the LAC process can begin.

Cole and McCool (1997) provide a useful summarization of the LAC process.

Step 1. Identify two or more goals that are in conflict.

Step 2. Resolve that all goals must be compromised to some extent.

Step 3. Establish a hierarchy of goals.

Step 4. Record suitable indicators and standards. Stankey and McCool define indicators as variables that are indicative of the desired conditions and define standards as measurable aspects of indicators that are capable of judging the conditions (Stankey and McCool in Nilsen and Tayler, 1997).

Step 5. Compromise the ultimate constraining goal (i.e. provision of recreational opportunities) until the standard is reached (i.e. scenic designation criteria of the Wild and Scenic Rivers Act, 1968).

Step 6. Assure that the standards are not violated by compromising the remaining goals.

This study does not propose a specific LAC framework for the Pere Marquette corridor, but rather highlights some opportunities and barriers to the process. One major opportunity of LAC process is that it can be applied to recreational and non-recreational issues. This is important because USFS managers must plan for conserving and protecting the natural resources along with providing recreational opportunities to various publics. The management plan can outline the resource opportunity, desired condition, indicator, and success or shortcoming in reaching or maintaining the desired condition. Recreational issues to be considered include: amount of public access, facility maintenance, canoe/angler conflict, drift boat/wading angler conflict and visitor/local landowner conflict. Resource issues to be considered include: water quality, appearance of the shoreline and amount of litter. One barrier is that although the LAC process acknowledges that there will be differences in opinion among stakeholders regarding the acceptable degree of change, LAC assumes consensus on the direction of change

(Brunson, 1997). However, in the case of the Pere Marquette National Scenic River, there are some issues where key stakeholder groups may have opposing goals. For example, some people may feel that salmon populations should be enhanced because they are an exciting sport fish. Others may want salmon populations reduced because they perceive that salmon are harming other more desirable fish.

Problem Statement

Increasingly, public land managers are adopting the role of user managers as well as resource managers. This is caused by a growing population, land ownership fragmentation, mandated public input and a broad scope of land uses. This is exacerbated on a site like the Pere Marquette corridor where public and private lands intermingle. In addition to conducting studies on the environment, managers must conduct social impact studies to quantify and qualify the effects of human use on the environment and on the satisfaction of public land visitors and private landowners.

The primary purpose of this study is to scope important issues facing the USFS as managers of the Pere Marquette scenic corridor. This will assist in determining how public agencies have performed in handling selected issues and to explain the differences and similarities among stakeholders. Secondarily, the goal is to relate the findings to the intent of the Wild and Scenic Rivers Act, to determine if stakeholder preferences and perception of public land management actions are in harmony with the act. The collection of stakeholder opinion will guide direction for future management action.

There are a number of issues pertaining to recreation use and preservation/conservation measures facing Pere Marquette corridor. The USFS must

address these issues in light of the Pere Marquette National Scenic River Management Plan and the intent of the Wild and Scenic Rivers Act.

Primary Research Objectives

This study addresses the following primary research objectives:

1. Summarize general characteristics of corridor visitors and riparian landowners.
2. Identify which issues are important to corridor visitors and riparian landowners concerning the Pere Marquette scenic corridor.
3. Determine how corridor visitors and riparian landowners rate the performance of public agency managers on key issues.
4. Examine the relationship of importance to performance ratings on key issues for visitors and riparian landowners.
5. Test hypothesis that visitor interest group members are more likely to have "knowledge" of manager performance than are non-interest group members.
6. Test hypothesis that riparian landowners are more likely to have "knowledge" of manager performance than corridor visitors.

Secondary Research Objectives

This study also addresses the following secondary research objectives:

7. Relate the findings of this study to the 1990 Pere Marquette National Scenic River Management Plan.
8. Relate the findings of this study to the 1968 Wild and Scenic Rivers Act.

Definitions

The following terms are defined for the purpose of this study:

Interest Group - Cubbage, O'Laughlin and Bullock (1993) define an interest group as, "an organization of individuals sharing one or more interests who try to influence decisions of government agencies, political representatives, or other policymakers (p. 201)".

Landowner - A landowner is an individual who owns a property along the Pere Marquette National Scenic River with river access.

Pere Marquette corridor - The corridor runs from M37 down to the town of Custer and is a mix of lands owned by the USFS, State of Michigan and private individuals and organizations and, as defined by the Wild and Scenic Rivers Act, can include a quarter mile on each side of the designated area.

User Group - A user group is a group of individuals that share a common recreational activity concerning the corridor.

Visitors - Visitors are individuals who do not own property along the Pere Marquette National Scenic River with river access but recreate within the corridor.

Limitations

The following is a list of study limitations:

- Only current users were sampled.
- Frequent users had a better chance of being sampled than infrequent users.
- There is an element of self-selection bias in Phase II, as people with a keen interest in the Pere Marquette corridor were more likely to provide their phone numbers to be contacted again by the USFS than people who had little interest in the Pere Marquette.
- Commercial drift boat operators were not as readily sampled as independent users due to the possibility that the operators did not distribute the original surveys in Phase I.
- Landowners were surveyed using a census of riparian owners; thus, all had a chance of being sampled in comparison to the sample of current visitors.
- The follow-up period of Phase II occurred approximately one year after Phase I was completed; thus, a number of the respondent phone numbers had been disconnected.

Although the findings of this study may not completely represent all stakeholders of the Pere Marquette National Scenic River, they are based on stakeholders who voluntarily participated in both a self-administered survey and a lengthy telephone interview. They were chosen through a random sampling process and questioned using objective measures.

Chapter 2

LITERATURE AND SITUATION REVIEW

The purpose of this chapter is to review the literature on the historical importance of river recreation and the Pere Marquette corridor, key policies concerning public land management agencies, planning frameworks, methods used for assess public opinion and the current situation in the Pere Marquette corridor . The information is presented in the following categories: (1) history of river recreation; (2) history of Pere Marquette National Scenic River; (3) key land management agencies; (4) key federal land management statutes; (5) key plans for the Pere Marquette corridor; (6) private interest groups; (7) summary of past and current issues in the Pere Marquette corridor; and (8) Importance/Performance analysis methodology.

History of River Recreation

It is important to provide some context to the use of rivers for recreation purposes to better understand how and why Wild and Scenic River policy was formulated. Before road and rail networks were established, rivers were used as transportation. Rivers then were used for hydropower, irrigation, sanitation, sewage disposal and consumer consumption (Nash in USDA No. 28, 1977). As population centers became more urbanized, attitudes toward the environment changed. Increasingly, people saw the natural environment, such as rivers, as a place to seek solitude or to undertake challenges (Nash in USDA No. 28, 1977). During the 1900's, the quality of watercraft improved due to the use of new materials such as aluminum, fiberglass and neoprene rubber (Nash in

USDA No. 28, 1977). As people increasingly sought out rivers to fulfill their recreational needs, managers were faced with decisions dealing with user limits. Carrying capacity became a term that addressed the ability of the environment to accommodate the demands of recreation users while maintaining a level of biological productivity or type of recreational experience. Managers developed the concept of a user spectrum. A part of the spectrum may involve one portion of the river devoted to high levels of use where people are provided an 'amusement park' type experience. Another part may be characterized by low use where people are provided a wilderness, solitude-oriented experience (Nash in USDA No. 28, 1977). The Wild and Scenic Rivers Act addresses this spectrum of use. However, allocation of the river experience to diverse user groups seeking different experiences is a complicated task requiring careful planning and management.

History of Pere Marquette National Scenic River

The Pere Marquette National Scenic River flows west for over 100 miles from Baldwin, Michigan until emptying into Lake Michigan at Ludington. When the river became designated a study river under the Wild and Scenic River Program in 1968, the USFS and the State of Michigan jointly cooperated in the research. On November 10, 1978, a 66-mile portion of the river was designated as a National Wild and Scenic River under Public Law 95-625 (USFS, 1990).

The major attributes of the river are that it is free-flowing and maintains high populations of brown trout and spawning grounds for steelhead and salmon (USFS, 1990). The corridor of the river provides abundant flora and fauna with opportunities for

wildlife observation and hunting. Very little forest harvesting occurs on the surrounding lands and there is no mineral extraction occurring within the river management zone. Also, there are a number of significant archaeological resources. The many natural features of the river are a powerful draw for canoeists, campers, anglers and hunters. Over 50 million people live within a one-day drive of the Pere Marquette corridor.

In 1990, land ownership within the corridor was a mix of 8,441 acres of private land, 3,050 acres of Federal land, 1,302 acres of State land and 260 acres of municipal land (USFS, 1990). There is more private development along the upper portions of the river than lower.

Historically, the river was populated with grayling and brook trout. However, the logging era and over-fishing destroyed grayling and brook trout habitat and populations. Stocking of brown trout revived the stream trout fishery. Rainbow trout (steelhead) stocked in Lake Michigan and the river provided an anadromous fish population. In the 1930's and early 1940's, the sea lamprey spread throughout Lake Huron and Michigan which endangered the indigenous lake trout, whitefish and other species (DNR Website, 1998). The DNR reported that, "...this single catastrophe nearly collapsed most commercial fishing operations on the Great Lakes, and by the mid-'50's, it was clear that all lake trout fishing even in Lake Superior would collapse within a short time (DNR Website, 1998)". Canada and the United States of America launched a 15-year battle to control the parasitic lamprey population by studying chemicals that could reduce the lamprey population. Following much research, a chemical was found to kill lamprey larvae without killing most other fish or aquatic organisms. After eight years, the lamprey population had been reduced by approximately 80 percent. However, during this time, the

exotic alewife population which had entered via the St. Lawrence Seaway, was exploding due to the lack of predator fish (DNR Website, 1998). The population was so high it threatened other species in the Lakes. Further, during the 1960's, the alewife population was subject to periodic die-offs, leaving the shores of the Great Lakes covered with dead fish. This significantly harmed the tourism industry.

One method to remediate the situation was to introduce a hardy anadromous predator to the alewife. The Coho and King salmon were aggressively stocked by the Michigan Department of Natural Resources, other Great Lakes states and Canadian provinces.

By 1967, the population of salmon was so great that the sport fishing industry expanded. As a result, sales of fishing licenses and boats increased and the tourism industry benefited.

The Pere Marquette corridor was unprepared for the drastic increase of recreationists. There were not enough access points, launches were undersized and parking lots were crowded. Further, the numerous anglers standing along the shore increase bank erosion (DNR Website, 1998).

The Pere Marquette National Scenic River also draws many users other than anglers such as canoeist. Although canoeing is still popular, there is a noticeable decline in boaters. The USFS believes many people are now participating in activities such as mountain biking, spelunking and rollerblading, which may explain the decline in boaters (Personal comminations, John Huschke and Diane Walker, 1998). Furthermore, the USFS and canoe liveries have worked together to implement restrictions on the number of users by restricting the number of boat permits and hours of use.

In 1990, the USFS committed to improving facilities to accommodate users while better safeguarding the environment. Further, the USFS has spent considerable efforts in facility planning and provision. Today, the challenge is finding a balance between protecting the environment from overuse and impairment of the natural environment while providing public access to the corridor.

Key Land Management Agencies

The Pere Marquette River was designated a National Scenic River under P.L. 90-542 as amended by P.L. 95-625 and a State Natural River under Michigan Public Act 231 1970 in 1978. Therefore, the two major corridor management agencies are the USFS and the Michigan Department of Natural Resources.

Department of Agriculture - Forest Service

The Department of Agriculture is a federal agency created by Congress in 1862 and raised to cabinet level status in 1889. The Forest Service (USFS), established in 1905, is a part of the Department of Agriculture that provides a sustainable flow of quality water and timber for the United States of America. Presently, the USFS controls almost 191 million acres of land and is responsible for providing multiple uses on their lands

including water, forage, wildlife, wood and recreation. As stated in the USFS website, "...the agency is dedicated to multiple-use management of these lands for sustained yields of renewable resources such as wood, water, forage, wildlife, and recreation to meet the diverse needs of people (1998)."

The Forest Service carries out its mission through five main activities:

1. Protection and management of natural resources on National Forest System lands.
2. Research on all aspects of forestry, rangeland management, and forest resource utilization.
3. Community assistance and cooperation with State and local governments, forest industries,, and private landowners to help protect and manage non-Federal forest and associated range and watershed lands to improve conditions in rural areas.
4. Achieving and supporting an effective workforce that reflects the full range of diversity of the American people.
5. International assistance in formulating policy and coordinating U.S. support for the protection and sound management of the world's forest resources (USFS Website, 1998).

The National Forest System includes forest areas, wilderness, rangelands, grasslands, and wild and scenic rivers, national recreation areas along with other purposes. There are a number of issues facing the USFS including: sustainable timber harvesting practices, encroaching developments, below-cost timber sales, herbicide and pesticide use, recreational pressures, visitor safety, off-road vehicles and marijuana cultivation (Cubbage, O'Laughlin and Bullock, 1993).

Department of Natural Resources

The Michigan Department of Natural Resources (DNR) is a state agency that had its role first outlined in the establishment of the Geological Survey Office in 1837 (DNR Website, 1998). The DNR manages natural resources and has specific responsibilities such

as recreation programs, forest management, wildlife and fisheries management, parks and forest campgrounds, and law enforcement. The DNR Website (1998) outlines the missions of the agency.

> To provide for the protection, integrated management, and responsible use of a healthy, productive, and undiminished forest resource base for the social, recreational, environmental, and economic benefit of the people of the State of Michigan.
>
> To protect and enhance fish environments, habitat, populations and other forms of aquatic life and promote optimum use of these resources for the benefit of the people of Michigan.
>
> To protect Michigan's natural resources and the environment, and the health and safety of the public through effective law enforcement and education.
>
> Acquire, protect, and preserve the natural, historic, and cultural features of Michigan's unique resources and provide public recreation and education opportunities.
>
> To enhance, restore, and conserve the State's wildlife resources, natural communities, and ecosystems for the benefit of Michigan's citizens, visitors, and future generations.

Under the Forest Management Division of the DNR, responsibilities include managing,

> 3.8 million acres of State forest lands, providing forest fire protection and control on 20.0 million acres of forest and wild lands, administering forest insect and disease control programs, providing opportunities and leadership in developing dispersed recreation resources, management of 1,700 miles of State designated natural Rivers and their associated public and private lands, coordinating State resource and land management of 1,089 miles of federal Wild and Scenic River corridors, and for providing assistance to private forest land owners and associated industries which affect forest resources (DNR Website, 1998).

Key Federal Land Management Statutes

The following section describes a number of key federal land management statutes that have influenced policy developed for the Pere Marquette National Scenic River.

Multiple-Use Sustained-Yield Act (MUSYA) of 1960

The concept of multiple-use was used by the USFS to provide theoretically equal consideration to a variety of natural resources in planning and management. Although 'multiple-use' became a buzzword, resource management did not radically change. However, there were so many competing demands placed on the natural resources that the USFS lobbied for the MUSYA of 1960 This was so that the mission of the agency could be clarified to address competing pressures and to affirm that the USFS was a legitimate provider of recreation facilities and opportunities on national forests (Cubbage, O'Laughlin and Bullock, 1993).

After considerable debate, a revised MUSYA was passed in 1980 that addressed new uses and new pressures. However, the Act simply acknowledged the value of resources other than timber and placed them on an equal plane with timber. It provided little guidance in the mechanics of establishing resource-planning priorities. The main conflicts within the USFS were and remain logging methods, timber supply and recreation (Cubbage, O'Laughlin and Bullock, 1993). The Sierra Club was the only interest group that did not support the passage of the MUSYA based on the fact that the Act lacked specific management standards. This Act has been criticized for its vagueness as to how to handle competing demands such as hunting, fishing, timbering, grazing, oil, gas and mineral development, watershed protection, wildlife preservation and recreation (Beck et

al. in Cubbage, O'Laughlin and Bullock, 1993). However, the MUSYA has been instrumental in establishing a widespread recognition that there are many valuable opportunities; resources in addition to timber that should be managed. Recently new USFS Chief Michael Mondeck has heightened the importance of watershed conservation. He views this as a unifying force in determining the broad conservation mandate of the USFS.

The Wilderness Act of 1964

The Wilderness Act of 1964 was sparked by the interest of preservationist groups in 1956. They were concerned with the road building and other development practices of the USFS and National Park Service (which is part of the Department of the Interior). The interest groups wanted to reserve areas for exclusive non-economic use. After many revisions, the legislation was enacted. Initially, 54 areas were designated on USFS land encompassing 9.1 million acres as wilderness. By 1990, the National Wilderness Preservation System had grown to include 92 million acres, with the majority located in Alaska (Cubbage, O'Laughlin and Bullock, 1993). However, in the lower 48 states, the USFS manages the largest acreage of designated wilderness of any Federal agency. Similar to the Wilderness Act of 1964, the Eastern Wilderness Act of 1975 was created to preserve wilderness areas in the heavily populated eastern U.S. and to address issues associated with increasing urbanization.

Wild and Scenic Rivers of 1968

Sprouting from similar causes as the Wilderness Act in 1964, the Wild and Scenic Rivers Act of 1968 was established to protect nationally significant rivers for the benefit of present and future generations. Rivers deemed nationally significant had unique scenic, recreational, geographic, fish and wildlife, historic, cultural, or other values (Cubbage, O'Laughlin and Bullock, 1993).

Both the federal and state governments have been involved in designating portions of nationally significant rivers. In order to designate portions of a river, applications are made to Congress or by state legislative designation and acceptance by the Secretary of the Interior (Davis in Cubbage, O'Laughlin and Bullock, 1993.) Under the Wild and Scenic Rivers Act, there are three designations of a river: wild, scenic or recreational. The Act defines these designations:

> (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 (16 U.S.C. 1273) (Wild and Scenic Rivers Act, 1968).

National Environmental Policy Act (NEPA) of 1969

The MUSYA was succeeded by acts that were modeled after comprehensive planning frameworks. The National Environmental Policy Act (NEPA) of 1969 and the Endangered Species Act (ESA) of 1973 were two major pieces of legislation enacted after

MUSYA. The NEPA required that the USFS and other agencies develop plans that are accompanied by Environmental Impact Statements. These statements, "...shall be prepared using an inter-disciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts (1502.6 of the NEPA in Cubbage, O'Laughlin and Bullock 1993, p. 332)." One main purpose of the Endangered Species Act of 1973 was to conserve endangered and threatened species and their habitat. These two acts were responsible for shaping numerous forest plans.

Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974

The (RPA) of 1974 was enacted to further reduce conflict within the National Forest System by making development and maintenance of land and resource management unit plans statutory requirements. Further, the RPA was instrumental in evaluating Forest Service programs and in assigning priorities, with Congress involvement. Cubbage, O'Laughlin and Bullock (1993) summarize the three components of the RPA as: "(1) an assessment, which includes an inventory of all resources, every 10 years, (2) a program, proposing resource goals, every five years, and (3) a presidential statement of policy, to be used in framing budget requests, also every five years (p. 333)." The RPA directed the secretary of agriculture to develop land and resource management plans for units of the National Forest System, using a "...systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, and other sciences (RPA 1974, in Cubbage, O'Laughlin and Bullock, 1993, p. 335)."

Although the RPA outlined a comprehensive planning approach to forest management, Congress frequently has been unable to fund the management programs to

implement the plans. Also, there were neither provisions for managers that clarify how the plans are to be specifically prepared nor the specific items they should contain.

Then there was a revision to the RPA. Cubbage, O'Laughlin and Bullock (1993) summarized an amendment to the RPA that addressed three issues.

> (1) the lack of long-term planning in the federal government, (2) polarization of forestry issues - the timber industry and conservation groups were at odds with each other, and both distrusted the U.S. Forest Service and (3) the threat to natural resource conservation by the president's Office of Management and Budget, stemming from its impoundment of funds that had been appropriated by Congress (Le Master in Cubbage, O'Laughlin and Bullock, 1993, p. 333).

This amendment became a separate Act in 1976 named the National Forest Management Act (NMFA) to provide additional details for plan development.

National Forest Management Act of 1976

The NFMA was passed in 1976 as an amendment to the 1974 RPA. It was in direct response to a law suit successfully brought against the USFS concerning substantial clear cutting in West Virginia. It insured greater public input throughout the planing process and placed the onus to faithfully respond to public comment on the USFS. It also made it significantly more difficult to use clear cutting as a management tool.

The Act was drawn up among the Forest Service; the House committee on Agriculture, Nutrition, and Forestry; the Senate Committee on Energy and Natural Resources; and the various national conservation groups and trade associations of the timber industry (Le Master in Cubbage, O'Laughlin and Bullock 1993, p. 334). The Act requires the USFS to protect the diversity of plant and animal communities and provide

for detailed public participation. Furthermore, the Act requires the input from disciplines other than forestry and transportation engineering to broaden the planning perspective. Wilkinson and Anderson (in Cubbage, O'Laughlin and Bullock, 1993) summarize the four fundamental requirements of the NFMA:

> (1) prepare detailed inventories
> (2) monitor the condition of the reserves
> (3) determine sustainable use levels
> (4) exclude use from specific areas where necessary to protect watershed and other resources (Wilkinson and Anderson in Cubbage, O'Laughlin and Bullock, 1993, p. 328).

These four components are based on utilitarian and protective planning techniques and are designed as a framework and method for allocating forest resources to their various uses (Krutilla and Haigh in Cubbage, O'Laughlin and Bullock, 1993). However, actual management of forest resources may digress from the four planning components. It was argued by Wilkinson and Anderson (1987) that management of forest resources has historically shown a predominance of timber production versus protection of the resources. However, NFMA provides the USFS with specific planning instructions; a marked improvement over previous planning requirements and procedures. Together, the RPA and NFMA became key pieces of legislation that govern forest policy (Cubbage, O'Laughlin and Bullock, 1993).

Key Plans for the Pere Marquette Corridor

Managers of the Pere Marquette Scenic River must use many of the key federal land management statues to prepare documents directly pertaining to the corridor. The following section describe key plans shaping management for the Pere Marquette corridor.

Pere Marquette National Scenic River Management Plan, USFS, 1983 & 1990

In 1977, the Michigan Natural Resource Commission instructed the State Division of Land Resource Programs to draft a natural river management plan for the corridor. Public law directed that authority over the corridor was to be shared by the USFS and the State of Michigan. In 1978, the river was classified a National Scenic River. The USFS updated the Pere Marquette National Scenic River Management Plan of 1983 in 1990 to reflect current conditions, uses and demands on the corridor. The management plan includes objectives to protect the corridor from damage caused by overuse and to protect its scenic, historic, aesthetic and scientific values. Specifically, the objectives include, as outlined in the Pere Marquette National Scenic River Management Plan as filed in the National Register:

> 1. Recreation. A recreational opportunity classed as "Rural" will be provided [to] visitors to the river. A "Rural" Classification provides for predominantly natural environments with moderate evidences of the sights and sounds of man.
> 2. Trees and Forest Cover. Protect and enhance the river's unique values through establishment or maintenance of native vegetation that provides a natural environmental setting.
> 3. Fish and Wildlife. Maintain and improve high quality fish and wildlife habitat with emphasis given to the return and protection of threatened and endangered species.
> 4. Visual. Maintain or enhance the natural character of the shoreline by meeting specific visual quality standards.
> 5. Air Quality. Meet State of Michigan air quality standards.
> 6. Water. Maintain free flow and meet State of Michigan standards for Total Body Contact and Cold Water Fisheries.
> 7. Mineral. Limit extraction of minerals so as not to interfere with other river objectives.
> 8. Cultural. Preserve, as required by law, all known significant cultural sites for present and future generations.
> 9. Soils. Assure protection of soils by maintaining healthy vegetative cover along stream banks and eliminating man-caused erosion in fragile areas (Plan as Filed in National Register, 1990, p.3)

In order to address these objectives additional management directives were included in the plan. There are two main components to these guidelines, (a) Land Uses and Protection and (b) Administrative Activities and Improvements. Land Uses and Protection guidelines provide direction to:

- Prevent or correct incompatible uses, preserve areas of special significance, or to permit development of public facilities.

- Control chances of wild fire in the corridor by restricting campfires to developed recreation sites and by controlling the types of recreation uses.

- Monitor insects and disease. Vegetative matter will only be removed in the cases of removing dead or diseased trees, or safety hazards. Further, vegetation will only be restored following disastrous natural instances when the vegetation is either damaged or destroyed.

The second component of the guidelines address Administrative Activities and Improvements to:

- Reduce impacts to the resource and visual quality of the corridor by restricting the construction of any additional roadways except for resource management and the U.S. Highway 31 crossing.

- Prohibit motorized watercraft upstream from Indian Bridge.

- Permit motorized vehicles only on private land, developed public roads, designated trails such as ORV trails, or for public resource management and protection activities, or for search and rescue, fire, or law enforcement.

- Use signs only to provide direction, increase safety, inform of special interest areas and regulate uses.

- Limit utilities to existing corridors.

- Provide a rural atmosphere by limiting visitors and regulate the number, timing and/or location of boating use.

- Ensure the capacity of launch sites is consistent with the protection of the 'rural' atmosphere and enhances the recreational experience in the corridor.

- Establish a code for visitor behavior. State of Michigan laws will be enforced by local law enforcement units (i.e., fishing and hunting, water quality standards, water use and submerged lands regulations).

- Focus management on water-oriented recreation, resolving user conflicts, visitor information and interpretive programs.

- Development partnerships with local governments to protect resource values.

- Engage in scientific studies within the corridor.

- Use natural materials such as logs, stones and stumps when maintaining public access sites, fisheries habitat, stream banks.

- Promote a rustic experience while providing some carefully designed recreation facilities such as rest stops, camping sites, parking lots and launch sites.

- Control recreation use, educate visitor and administer regulations that would minimize the negative impacts of unnatural noise, litter and vandalism.

Huron-Manistee National Forests Lands and Resource Management Plan

The Huron-Manistee National Forests Lands and Resource Management Plan is an integrated plan providing direction for multiple use management and sustained yield of goods and services from National Forest System lands. The Plan is a companion document to the Final Environmental Impact Statement (FEIS) and the Record of Decision (ROD). The FEIS describes the various planning options and their associated significant environmental impacts. The optimal alternative became the Huron-Manistee National Forests Lands and Resource Management Plan. As stated in the Plan, "The direction contained in the Management Prescriptions guides management activities to allow for the use and protection of the Forest' resources while fulfilling legislative

requirements and responding the public issues, Forest Service concerns, and management opportunities for the use of the Forests.

Pere Marquette River Natural River Plan, Department of Natural Resources, 1978

The Pere Marquette River Natural River Plan was adopted by the Natural Resources Commission in July 1978. It was a combined effort of the Department of Natural Resources and the Pere Marquette Advisory Group. The Advisory Group included representatives of: riparian property owners; local governmental officials; the Pere Marquette Watershed Council; the USFS; and other governmental agencies, interested citizens and groups. The goal of the plan was, "To preserve, protect and enhance the river environment in a natural state for the use and enjoyment of present and future generations (DNR, 1978)." The objectives of the plan were:

> 1. To maintain water quality consistent with the designated classification of the river and adhere to the concept of non-degradation of water quality.
> 2. To prohibit development or activity which may damage the ecologic, aesthetic or historic values of the river and adjacent lands.
> 3. To ensure that any development which may occur shall be done in an orderly manner consistent with the natural environment and aesthetic qualities of the stream.
> 4. To ensure that recreational uses which occur, be done in an orderly manner consistent with the natural environment and aesthetic qualities of the stream, and that a quality recreation experience is maintained (DNR, 1978).

Private Interest Groups

Private interest groups have a significant role in creating, refining, implementing and monitoring plans affecting the Pere Marquette corridor. Interest groups take on roles such as decision-making, fundraising, partnership-building, citizen law-enforcement and physical labor projects. The following section summarizes the key groups that are actively

involved in the Pere Marquette corridor, and that have established channels of communication with the USFS.

The Pere Marquette Watershed Council

The Pere Marquette Watershed Council (PMWC) was founded in 1970 and is dedicated to ensuring that the Pere Marquette National Scenic waterway is protected, enhanced and restored (PMWC Website, 1998). The organization works closely with landowners, government agencies and universities. They address issues such as erosion control, legislation, membership and fish populations. Currently, the PMWC is undertaking a significant bank stabilization project and habitat rehabilitation. The Council is the author of the publication, "Mainstream", which is a monthly newsletter addressing key issues and river ethics. The Council works in close partnership with the USFS.

The Michigan United Conservation Clubs

The Michigan United Conservation Clubs (MUCC) was established in 1937. The "MUCC is a non-profit, statewide organization, devoted to the protection and enhancement of Michigan's natural resources through the promotion of quality outdoor recreation and protection of our natural environment (MUCC Website, 1998)". The organization's motto is "Conservation Through Education." They offer a variety of education and outdoor recreation publications and workshops to promote the rights of all citizens to enjoy the outdoors and to protect Michigan's outdoor heritage. They also have staff specialists in a wide variety of resource areas including recreation, fisheries, forestry and wildlife. Through these specialists, members and executive staff, they work to establish and influence policy and management actions. Many members are especially

concerned with conservation and environmental quality issues at the Pere Marquette corridor so that hunting and fishing opportunities may be maintained.

Trout Unlimited

The mission of Trout Unlimited (TU) is, "To conserve, protect and restore North America's trout and salmon fisheries and their watersheds (TU Website, 1998)." The organization was founded in 1959 and is driven by a network of volunteers and national staff of legal and scientific professionals. Currently, there are over 85,000 members and 450 chapters nationwide. In 1961, TU was instrumental in encouraging Michigan to abandon its indiscriminate stocking of cacheable-sized trout and adopt stream improvement programs, fingerling planting, and protective fishing regulations (TU Website, 1998). In 1995 and 1996, TU was instrumental in preventing the 104th Congress from dismantling the Clean Water Act and other important natural resource conservation statutes. In the Pere Marquette corridor, TU has been a major cooperator in erosion control efforts.

Sierra Club

In 1892, the conservationist John Muir founded the Sierra Club along with a dedicated group of volunteers. These people became charter members of the Sierra Club. The mission of the Sierra Club is, "To explore, enjoy, and protect the wild places of the earth; To practice and promote the responsible use of the earth's ecosystems and resources; To educate and enlist humanity to protect and restore the quality of the natural and human environment; and, To use all lawful means to carry out these objectives (Sierra Club Website, 1998)." The Sierra Club has been instrumental in the formulation of

numerous pieces of environmental conservation legislation with a focus on limiting or eliminating commodity uses of resources and preserving natural systems. The Sierra Club has directly challenged every USFS plan in Michigan over environmental preservation issues.

The Federation of Fly Fishers

The Federation of Fly Fishers (FFF) is a non-profit organization founded 32 years ago focusing on sport fishing and fisheries. The FFF recognizes that some of the world's fisheries are in dire need of help and that water resources should be managed holistically versus focusing efforts on isolated parts. They have over 260 clubs with approximately 35,000 members located across North America and the world. Significant efforts have been placed to address issues such as fishing regulations, hatchery displacement of wild fish, riparian degradation and pollution of ground water. The FFF's involvement at the Pere Marquette corridor has been largely over fishing regulatory issues.

The Michigan Steelhead and Salmon Fishermen's Association

The Michigan Steelhead and Salmon Fishermen's Association (MSSFA), founded in 1972, is a non-profit organization dedicated to the protection, education and preservation anadromous sportfishing in the Great Lakes and surrounding watersheds. The organization has raised funds to help protect and enhance the sport fishery of Michigan, including the Pere Marquette corridor.

The Nature Conservancy

The Nature Conservancy (TNC) is responsible for protecting imperiled plant and animal species by managing the largest private system of sanctuaries in the world totaling over 9 million acres of ecologically significant land. The Nature Conservancy's mission is, "...to preserve plants, animals and natural communities that represent the diversity of life on Earth by protecting the lands and waters they need to survive (TNC Website, 1998)." The organization has been in existence for 45 years in the United States and is now also operating in Latin America, the Caribbean and the Pacific.

Lake County Riverside Property Owners Association

The Lake County Riverside Property Owners Association (LCRPOA) was founded in 1961 and is comprised of 12 board members and 174 general members. Any individual owning waterfront property in Lake County is eligible for membership. To primary goals of the organization are to protect riparian rights and protect the river system in Lake County. Efforts are often done in conjunction with the DNR, USFS, and Pere Marquette Watershed Council. Past projects include donating funds to improve signage within the Pere Marquette corridor, assist with streambank stabilization, and help with survey work done by the DNR. Future challenges include monitoring that regulations are obeyed. For example, members will check that zoning ordinances are followed, and abusive behavior on the river is controlled.

Summary of Past and Current Issues at Pere Marquette Corridor

Amount of Access

One of the methods to meet recreational objectives and safeguard the environment is to select an appropriate number and location of access points. Over time, access points have been closed, opened and/or relocated. In the case of the Pere Marquette corridor, the USFS decided along with stakeholders, that angler boat use would be accommodated in Lower Branch by providing an additional launch site. Currently, there are 18 designated public access sites in the corridor. From results of the earlier on-site survey of recreationists, conversations with members of the Pere Marquette Watershed Council and input from USFS managers, 16 issues concerning the Pere Marquette Scenic corridor management were identified. They broadly fall into two categories: social and biological. However, social issues, such as use levels and alcohol use may influence biological issues such as water quality through environmental damage, non-point source pollution and wear and tear on facilities.

Number of River Users

The Pere Marquette corridor is a popular recreational destination. As a result, a number of commercial outfitters have established themselves in the area and are running successful businesses. The main commercial operations are canoe liveries and commercial drift boat anglers. The main user groups are anglers and canoeists. Fly-fishing has also seen a rise in popularity and part of the river was designated at "flies only" by the Michigan Natural Resources Commission. The sizeable runs of Chinook or King salmon

that were introduced have been very influential on river use. Nelson et al 1998, reported that fall users primarily focused on salmon fishing.

Because of the river's popularity, there are many users. Currently, the USFS is preparing a Fee Proposal that aims to generate revenue and to regulate visitor use. However, there has been considerable debate over watercraft permit fees and reservation fees. The proposal in Fall of 1998 included:

- Charging a fee for the Kirtland Warbler tours.
- Charging a fee for camping and reservation like the Ausable River.
- Requiring parking stickers on vehicles at trailheads, angler access sites, campsites and parking lots at launch sites. Stickers can be purchased daily, weekly or yearly.
- Charge for watercraft permits and reservation fees on the Pere Marquette National Scenic River and Pine River or just a reservation fee.

Water Quality

In 1986, 19 inches of rain fell during a storm causing the river to flood. As a result, the water clarity was reduced and fish populations were negatively impacted. One key problem was that fewer fish could spawn successfully because the gravel beds were covered with sand. The Pere Marquette Watershed Council, in concert with the USFS, Fish and Wildlife Service, property owners, the Department of Natural Resources and the Conservation Resource Alliance began erosion control and clean-up efforts. Rock rip-rap and wooden structures along the stream banks to control sedimentation through natural appearing stabilization have been constructed. These efforts have resulted in notable improvements in the clarity of the water and health of the fish habitat. It took 10 years to remediate erosion from the headwaters to Ludington. This coordinated effort was judged

by many as one of the best management actions implemented in the corridor. Further erosion control efforts are directed at elimination of sedimentation from road crossings.

Presence of Litter

Unfortunately, some of the users, due to forgetfulness, carelessness or outright abuse, leave litter that is aesthetically negative and often environmentally damaging. Litter can be seen in the water and along the shoreline, at points. However, many people feel that the amount of litter is actually less than in prior years. This has been attributed to increased environmental awareness, outstanding involvement from interest groups such as the Cub Scouts and the Michigan deposit law for soft drink and beer containers.

Use of Alcohol

USFS managers of the Pere Marquette corridor feel that alcohol abuse is not a major issue; rather, they perceive that a few out of control alcohol abusers during peak summer times ruin the experiences of law abiding and respectful users. However, some landowners complain that alcohol abuse is more prevalent near homes located far enough downstream from popular launch sites to give canoeists and other watercraft users opportunity to become intoxicated. Furthermore, when people become intoxicated, there is an increased chance of threatening their own personal safety and others. Also, intoxicated people may not acknowledge the needs of other users, thereby contributing to user conflict.

Sense of Personal Security

Currently, the USFS is not aware of any outstanding instances of felonious assaults that reflect a loss of the sense of security in the Pere Marquette corridor. However, there have been a number of break-ins of riparian homes tending to occur in the winter months when some homes are vacant. Furthermore, there have been a number of thefts from vehicles left in access site parking lots. However, there does not seem to be an upward trend that indicates that sense of personal security is increasingly threatened in the Pere Marquette corridor.

Level of Regulation of Recreational Use

Regulation of recreational use has increased since the initial designation of the corridor. The following lists some significant changes:

- Restrictions of the number of canoes permitted to be rented by canoe liveries to control crowding.
- Restriction of boating hours to reduce interference with morning and evening anglers.
- Efforts to educate boaters to secure belongings to ensure personal goods do not litter the river in the event that the boat capsizes.
- User fees are imposed at two campgrounds to increase revenues and develop partnerships with concessionaires.
- The "flies-only" section separates types of anglers to reduce conflict and support the specialized sport.
- Reduction of parking at USFS launch sites.
- Removal of riverside access sites and conversion to walk-in sites.
- Confining camping to designated sites.

Appearance of the Shoreline

Development regulations promulgated under the Michigan Natural Rivers designation by the state and local zoning authority provide control over the amount and type of riverside development. Regulations focus on residential housing, industrial and commercial structures and uses, building setbacks, building design and screening, docks, on-site sanitation system and signs.

Lamprey Weir

Lampreys were introduced into the Great Lake Ecosystem through the Welland Canal in 1921. By the early 1940's, the lampreys had spread throughout Lake Huron and Michigan, and consequently, the lampreys entered the Pere Marquette National Scenic River. Lampreys are parasitic and feed on mature fish with thin scales such as trout and salmon. They are anadromous, using rivers such as the Pere Marquette for spawning, while spending their adult lives in the Great Lakes.

Managers of the Pere Marquette corridor have used two methods to control lampreys. The first method was the construction of the lamprey weir. The weir prevents the lamprey from swimming upstream and thus, spawning. However, the impact of this method has been to also impede the passage of desirable anadromous fish such as steelheads. The second method is the use of a lampricide by the Fish and Wildlife Service. There is no evidence that the lampricide is harming insect life and consequently, fish life (Personal communications, John Huschke and Diane Walker, 1998).

Fish Populations

Historically, grayling and brook trout were native to the river. However, the Michigan grayling is now extinct and the range of brook trout has been reduced due to competition from other fish and an increase in water temperature. In the 1930's, brown trout were introduced into the river and have since become thought of as native fish. Since steelhead were introduced into the river and Lake Michigan, they have also been perceived as native. Salmon were successfully introduced to Lake Michigan in 1964. While stocking was not done in the Pere Marquette River, pioneering salmon seeking quality spawning areas found the river. They now have created a naturally reproduced population augmented by continued stocking in other Lake Michigan tributaries. Concerns has been expressed that salmon and steelhead are a more aggressive fish than trout and thus, the trout population has suffered. It is also a concern that the high number of anglers attracted to salmon are depleting the stock of steelhead and trout caught accidentally. Typically, anglers visit the river in the fall to fish for salmon, in the spring for steelhead, and in the spring and summer for brown trout.

Trespass on Private Lands

The Pere Marquette corridor is a mix of private, Federal and State lands. Although land boundaries have been clearly established in title, it is often difficult to visually mark these boundaries throughout the corridor. Furthermore, it is difficult to enforce private property rights over such a large area. Many users, whether by ignorance of the Michigan Recreational Trespass Act of 1976, ignorance of property boundaries, or outright disregard for private property rights, are upsetting some private landowners.

Some landowners understand that the river is a shared resource and tolerate users crossing their properties while other people have become increasingly frustrated with the use and sometimes abuse by users on their private land. A key challenge in this area is defining the rights of river users to use the bank to get around obstructions, deep water, etc., of this navigable public river.

Facility Maintenance

The major facilities within the Pere Marquette corridor are the campgrounds, boat launches at the access points and supporting facilities at these sites such as toilets, litter receptacles, roads and picnic tables. Facilities were upgraded with substantial public investment under the last Pere Marquette management plan and need to be maintained. Many landowners view these facilities as instrumental to reducing trespass by attracting visitors to designated access points.

Conflicts between Canoeists and Anglers

The Pere Marquette National Scenic River is an attractive river for canoeing and fishing. Two canoe liveries rent canoes daily between 9:00 a.m. and 6:00 p.m. during summer months. There are also numerous private canoes owned by riparians and visitors. Some canoeists are more skilled than others in navigating the river. Conflict may occur when an angler has been patiently waiting for a fish to bite and a canoeist passes by hitting their canoe on an underwater obstruction, an angler or the bank. Some anglers are aware that it is a shared resource, while others feel very territorial. The problem is compounded when the canoeists are intoxicated making it more difficult to respect anglers, or vice versa. Anglers may also block the passage of canoes, especially in the upper river portion

where the channel is narrow and trees near the bank make fishing easier from the center of the river.

Conflicts between Wading and Drift Boat Anglers

There have been some instances of conflict between wading and drift boat anglers. The conflict occurs when a wading angler has staked out a fishing hole but then a drift boat, with high maneuverability anchors at the upper end and the anglers in it drift their bait downstream. Some anglers feel that there is shared respect for each other, while others are say that drift boat anglers are disrespectful of wading anglers. Another factor is that drift boats trail chains to slow down their speed, which tends to scare away the fish that a wading angler had so patiently waited for.

Importance/Performance Analysis Methodology

Public agencies are increasingly incorporating marketing techniques into the natural resource planning process. Public input is a necessary component to policy development and implementation. Therefore, "...managers need timely, accurate, and adequate market information as a basis for making sound marketing decisions (Kotler 1982 in Guadagnolo, 1985, p. 13)." One such method is Importance/Performance Analysis (I/P Analysis) which is free of complicated statistical analysis and is frequently used to measure the effectiveness of a management action (Crompton and Lamb 1986; Theobald 1987 in Havitz, Twynam and DeLorenze, 1992, p. 45). This method has been used since 1976 (Swan & Coombs, 1976; Matilla and James, 1977) and has been frequently used to assess consumer satisfaction by determining attributes important to the

consumer and then relating the relative importance to the agency's performance rating (Guadagnolo, 1985).

There are three steps to conducting I/P Analysis as a part of a survey instrument. First, managers must obtain a list of issues. These may be acquired through literature review, focus group sessions, prior research or management insight (Richardson, 1987, p. 74). Second, researchers must ask survey respondents to rate the importance and performance of each issue using a point-scale. Third, the means or medians of the issues must be plotted using a two-dimensional, four-quadrant grid.

Depending on where the mean values are located in the matrix, one of four management actions can be determined: (1) Concentrate here, (2) Keep up the good work, (3) Low priority, or, (4) Possible overkill (Richardson, 1987) (Figure 2).

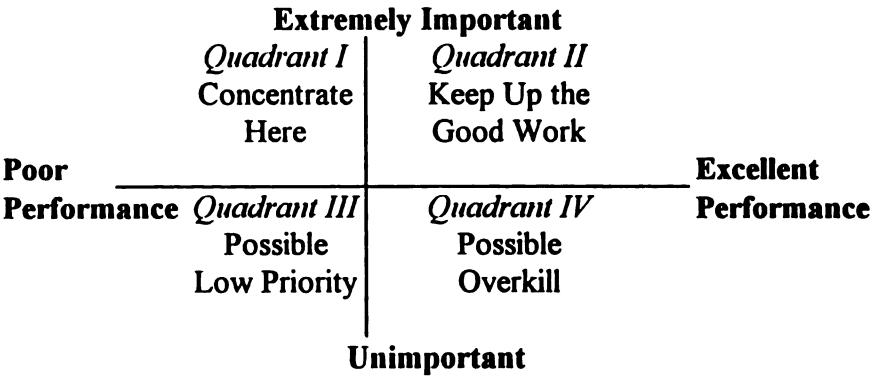

Figure 2 - Importance/Performance Analysis Grid

This method can help managers prioritize efforts and determine management action or policy direction. The points (means derived from an interval scale) provide visual representation to the managers as to which issues are important and how managers

are performing on the individual issues. Essentially, the results enable managers to determine where to maintain their current practices, divert energies from areas where performance if it is unimportant, or focus energy on areas where performance is low but the issue is deemed important. Because I/P Analysis is an instrument which can highlight the success of the organization in understanding its clientele (Richardson, 1987), it is an effective tool for assessing management of the Pere Marquette corridor.

Guadagnolo (1985) proposed a seven-point scale to reduce the skewness reported in prior studies using the five-point scale. However, studies following Guadagnolo have successfully used a five-point scale such as Havitz, Twynam, DeLoreno, 1992.

Another "gray zone" is where to place the crosshairs of the matrix. Some studies have shown that when many respondents rated issues as important, it became necessary to move the crosshairs higher along the axis to a mid-point within the cluster of important ratings.

The method used in this study (Phase II) is a simplistic version of the two-dimensional four-quadrant matrix, and uses the same first two steps of the I/P Analysis: (1) identify important issues (2) obtain ratings for importance of issues and performance of management on the issues. However, it differs on the third step by subtracting the means of the importance ratings from the means of the performance ratings and plotting values in the form of a bar chart after ranking the new values in descending order. The more positive values at the top of the bar chart indicates the issue that is most in need of managerial attention relative to its importance. The issue listed at the bottom of the chart, if negative, suggests that managerial direction could shift from that issue to an issue of higher importance. This method would not be appropriate if there was a lot of variation in

importance values because it would be difficult to ascertain the difference between a person that rated the importance of an issue as a five, then the performance as a four, with a person that rated the importance of an issue as two, then performance as a one; the subtraction of the performance value from importance value equals one in both cases. All issues discussed on the survey were already identified as very importance, thus the importance value was accepted as a constant.

Chapter 3

METHODS

The methodology used to collect opinions from stakeholders in the corridor is built upon the I/P process. The study will examine stakeholder opinions of the importance of various issues and how public land managers are performing when dealing with the issues. The methodology used in this study is presented in the following sections: (a) review of Phase I of the study; (b) selection of subjects; (b) instrumentation; (c) collection of data; and (e) analysis of the data.

Review of Phase I of the Study

In 1996 and 1997, a mail-back questionnaire survey was conducted. A mail-back survey was the most appropriate tool because of efficiency and courtesy. Because users were recreating in the corridor for generally long periods of time, the surveyor could not wait for their exit. Further, as a courtesy to the visitors, the surveyor did not interfere with their recreational experience by administering a survey. Researchers left surveys on the vehicles parked at 20 public access sites within the Pere Marquette corridor. The sample sites were chosen by Michigan State University (MSU) researchers in cooperation with the USFS (Appendix A). Distribution of the surveys occurred from fall of 1996 until summer of 1997. Distribution was done throughout the day at each site to ensure that the widest range of users were sampled. Caution was taken to counteract bias related to length of stay and frequency of visit. The on-site questionnaire survey focused on

determining the following:

- Spending levels per vehicle party
- Recreation activity engaged in
- Party size
- Length of stay
- Reason for visiting Pere Marquette
- Home city, region and state
- Name and phone if they desired more opportunity to comment on the Pere Marquette corridor management

Of the 7075 surveys distributed, approximately 1,500 on-site surveys were mailed back to MSU researchers. Of the 1,500 responses, 726 provided their phone numbers so that they could be contacted. Response rates suffered due to the lack of personal contact with visitors by survey administrators, no opportunity for follow-up and many repeat visitors who may have completed one questionnaire, but discarded subsequent ones.

The summary from the Final Report by Nelson et al (1998) is as follows:

> The Pere Marquette National Scenic River corridor, from M37 to Custer, is a very popular recreation site. Over 67,000 vehicles are estimated to have parked at selected designated access points providing over 760,000 recreation use hours during fall of 1996 and spring and summer of 1997. The most common activities center on the river. Fishing is the dominant fall and spring activity, with a wider variety of water oriented activities popular in the summer.
>
> While most respondents reported a high level of satisfaction with their experiences, they also provided warning of some challenges. They highly value the scenic beauty, system of easy access, the management/maintenance of facilities and the quality of the river itself. Often satisfaction turns on whether fishing was good or poor. But problems were raised including overcrowding, poor behavior by recreationists, concerns over regulation/management, poor access for some and litter. Use levels indicate that peaks of use occur on weekends, especially in the summer. These peaks may have the potential to overwhelm managers with maintenance situations where personnel cannot keep up with prevention and repairs or where overcrowding is experienced and poor behavior is magnified by proximity.
>
> The level of tourist visitation to the corridor generates a sizeable economic impact in a region in need of stable economic growth. A large part of the estimated 229 jobs and $7 million total sales effect are in Lake county, one of the poorest in the state. Balancing these economic benefits and the recreational enjoyment of thousands with the need to sustain and enhance environmental quality and to maintain the statutory mandates of a Federal Scenic river is the on-going challenge. But the interest many display in the river and the opportunities related to it suggest many are willing to be involved in the process.

Selection of Subjects

There are two categories of stakeholders used for Phase II of the study: visitors and landowners. Visitor subjects were selected from the list of 900 different respondents that completed and mailed back the questionnaire from Phase I of the study and who had provided their contact number. Landowner subjects were selected from a census of riparian owners within the corridor. Their recreational use of the corridor was initially elicited through a mail questionnaire. Those who responded and indicated their

willingness to provide further input concerning Pere Marquette corridor management were selected for this study.

Instrumentation

The final instrument was a telephone survey consisting of : (1) Introductory statements explaining the study and providing background information about the U.S. Forest Service and key issues, (2) the telephone questionnaire (Appendix B). The questionnaire included segmentation variables and open-ended questions that assisted with obtaining opinions on the importance of key issues and determining how respondents assessed the management of issues. The survey was developed knowing that those to be sampled had previously volunteered their participation. This allowed the instrument to elicit more detailed information than a "cold-call" survey. The survey took approximately 15 minutes to complete and required the respondent to provide an open-ended explanation of their performance ratings and to detail their opinions for other open-ended questions. The landowner questionnaire was very similar to the visitor survey and had a few extra questions regarding length of land ownership and quality of experience in the corridor.

The sections on segmentation variables included questions on: age; gender; childhood and current residence; area now residing in; property ownership with river access; river access through another's private property; typical use of the corridor; type of party; party size; age breakdown of party; organization membership; and, most common recreation activity in the Pere Marquette corridor. The open-ended opinion questions include questions on: noted positive and/or negative changes over years of patronage; importance of issues; managerial performance on issues; and, solutions.

The issues discussed in the survey include:

- Amount of public access
- Number of river users
- Water quality in the river
- Presence of litter
- Use of alcohol
- Sense of personal security
- Level of regulation of recreational use
- Appearance of the shoreline
- Populations of salmon/steelhead/trout in the river
- Trespass on private lands
- Maintenance of public recreation facilities
- Conflicts between canoeists and anglers
- Conflicts between drifting and wading anglers
- Conflicts between visitors and local landowners

These 'issue' questions isolated importance on a five-point Likert scale, ranging from "extremely important (5)" to "unimportant (1)". Performance questions used a five-point Likert scale ranging from "very good (5)" to "very poor (1)". Respondents also had the option to answer "no knowledge" of management performance. The Likert scale for this survey was developed using ordinal phrasing and interval numbers. The interval numbers were then calculated into means to provide a summary of findings.

Collection of Data

On February 18, 1998, the researchers began telephone interviews with visitor respondents who had participated in Phase I of the study and who volunteered for Phase II. Those who had participated in the earlier parts of Phase I were contacted first, before any more time lapsed between the initial survey and this follow-up. The list was followed from beginning to end before repeat calling began. One list consisted of visitor respondents and the other list consisted of landowner respondents. Although respondents were categorized in Phase I by activity, each respondent was again asked which was their

most important activity when visiting the corridor. This is because the question in Phase I of the study asked what activity the respondent was engaged in on the day of the survey, not their most important activity over all uses. This most important overall activity was used to segment the respondents for Phase II of the study. It was difficult to segment some of the users, as the sample size was relatively small and proved difficult to achieve statistically valid results.

Out of the total sample of 726 Phase I visitor respondents, 157 of the numbers were either: a wrong number; no longer living at that address; or, were disconnected. Another 234 people who had returned the questionnaire from Phase I of the study and who had provided their phone number were unable to be contacted. A total of 335 respondents were actually contacted. Of the 335, 37 respondents that declined to part take in the follow-up questionnaire. Thus, 298 completed the Phase II survey. The overall response rate was 89% for those contacted. At least five attempts were made to all landowners and visitors had been attempted four or more times. Each time a call was placed, the time of day was recorded. If there was no response after the third attempt of calling in the evenings, the next time the researcher called would be during the day.

The name of the surveyor was stated and association with Michigan State University was mentioned. This was done to immediately distill any concern that the call was a telemarketing/sales call. The surveyor then asked to speak with the respondent who had part taken in Phase I and volunteered to provide further input. It was also mentioned that the call was in regards to Pere Marquette National Scenic River Corridor. Upon confirming that the surveyor was speaking with the original respondent, the respondent was reminded of the survey they had completed in the past year. Furthermore, the

surveyor stated that the general length of the survey and received confirmation that the respondent intended to participate in the survey.

The surveyor began the survey by providing background information about key issues and public manager of the Pere Marquette corridor. This information was reviewed by the USFS and the DNR Natural Rivers program staff. The USFS was concerned that respondents were made aware that a number of public agencies and private organizations, such as canoe liveries that have a role in management and operation of the corridor. It was also necessary to state the importance of the USFS obtaining opinions of users and landowners to update the management plan for the Corridor.

Analysis of the Data

As the questionnaires were completed, they were entered into the computer using the statistical package SPSS (1998). Open ended responses were careful coded, using up to 40 different response categories. Then, data were cleaned by searching for unusual codes that could indicate typing errors. Value labels were applied to codes to facilitate interpretation of tables. Frequencies were done to summarize respondent characteristics and initial findings of importance and performance ratings. Then, to determine if there were any significant differences between visitors versus landowners in the way they responded to I/P questions, a Z-Statistic was calculated using a 95% Confidence Level. The Z-Statistic was used in this case because the population sizes were significantly large ($n>30$) and normally distributed to approximate a standard normal distribution. A Z-value between -1.96 and $+1.96$ indicated there was no significant difference between groups. Conversely, a value outside this range showed a significant difference between the groups.

Once it was determined that there was a difference, the mean values were used to determine direction of the difference. For example, that visitors found an issue *more* important than landowners.

A Chi-Square test was done to determine if respondents' knowledge of managerial performance on an issue was dependent on respondent type (i.e., visitor versus landowners, or interest group member versus non-member). Using a Significance Level of 5%, a Chi-Square value of 3.341 was calculated as the rejection region for each 2 by 2 contingency tables. Each key issue was tested by calculating a Chi-Square value for that issue. If the Chi-Square value was greater than 3.841, then it was determined that there was a significant difference between the two groups. This conclusion could not be made for issues where the calculated Chi-Square value was less than 3.841.

The study findings were then subjectively related to relevant excerpts of the 1990 Pere Marquette National Scenic River Management Plan and the 1968 Wild and Scenic River Act. The phrasing of the goals and objectives of the Plan and Act were related to the findings of the study to determine if the current situation in the corridor is in line with the intent of the documents.

Chapter 4

RESULTS

The purpose of this study was to assess the opinions of visitors and riparian landowners concerning important management issues and the performance of public land managers concerning these issues. This is critical for the USFS to update the Pere Marquette Management Plan and to comply with the intent of the Wild and Scenic Rivers Act. Equally important was to determine how the opinions of the key segments compared enabling the USFS to devise appropriate management strategies within the LAC framework.

The chapter had been divided into the following sections: (1) respondent characteristics; (2) importance of issues; (3) performance of managers; (4) relationship of I/P ratings of key issues; (5) comparison of corridor interest group members' and non-members' knowledge of managers' performance; and, (6) comparison of corridor visitors' knowledge of managers' performance. Each section corresponds to the primary research objectives of this study. The information will be provided below and the results are presented in the respective tables. It should be noted that to simplify this chapter, only results reflecting 10 percent of the respondents or higher will be discussed, although the tables show greater detail. Many of the survey questions were open-ended. Thus, the responses had to be grouped in order to code. To report "one-of" comments in this text may confound significant findings.

Research Objective 1 - Respondent Characteristics

First Year Visited

The largest proportion of visitors started using the Pere Marquette corridor between 1990 and 1998 (Table 1). More visitors started using the corridor from 1960's onwards, than those who have started visiting before 1960. However, this is opposite for landowners; most landowners have had their first experiences in the corridor between the 1940's and 1970's.

Table 1. First Year Visited

First Year	Visitors			Landowners	
(N=295)	#	%	(N=51)	#	%
1920-1929				1	2
1930-1939				1	2
1940-1949	5	2		6	12
1950-1959	8	3		14	27
1960-1969	42	14		5	10
1970-1979	70	24		20	39
1980-1989	69	23		2	4
1990-1998	101	34		2	4

Primary Area of Corridor Use and Primary Area of River Use

An overwhelming majority of the visitors focused their use on the river (Table 2). In contrast, landowners were more evenly distributed in their primary area of use.

The majority of visitors primarily used the upper portion of the river during their corridor visit. In comparison, the majority of the landowners primarily used the lower portion of the river.

Table 2. Primary Area of Corridor and River Use

	Visitors			Landowners	
Primary Area of Use (N=285)	#	%	(N=50)	#	%
River	264	93		19	37
Land	7	2		20	39
Equally divided	14	5		11	22
Primary Portion of Use (N=284)			(N=50)		
Upper river	172	61		14	27
Lower river	77	27		35	69
Evenly divided	35	12		1	2

Year of Birth and Gender

The largest proportion of visitors were born during the 1950's (Table 3). In comparison, landowners are fairly evenly distributed across birth years from the 1920's to 1950's. Landowners have an older age profile than visitors. Males represented the large majority of responses from both visitors and landowners.

Table 3. Year of Birth and Gender

	Visitors			Landowners	
Age (N=295)	#	%	(N=51)	#	%
Before 1929	6	2		13	26
1930-1939	41	14		11	22
1940-1949	61	21		12	24
1950-1959	104	35		14	27
1960-1969	63	21		1	2
1970-1979	17	6			
1980-1989	3	1			
Gender (N=295)			(N=51)		
Male	273	93		47	92

Most Important Recreational Use

The most frequently cited most important recreational use for visitors and landowners is shore/wade fishing (Table 4). Eighty percent of the visitors and 56% of the riparians cited some type or combination of fishing methods. Besides fishing, rental canoeing was the next most cited activity for visitors and nature observation for landowners.

Table 4. Most Important Recreational Use

	Visitors			Landowners	
Recreational Use (N=293)	#	%	(N=50)	#	%
Shore/wade fishing	162	55	Shore/wade fishing	20	40
Private drift boat	45	15	Combo fishing	8	16
Combo fishing	30	10	Nature observation	6	12
Rent canoe	26	9	Hunt	4	8
Private canoe	10	3	Private tube	4	8
Commercial drift boat	7	2	Private canoe	3	6
Hiking	4	1	Hiking	1	2
Hunt	2	1	Camping	1	2
Nature observation	1	0	Private drift	1	2

Area Respondent Grew Up and Now Lives

The largest proportion of visitors and landowners reported that they grew up in a rural area, followed suburban then urban areas (Table 5). Currently, most visitors now live in a suburban area, followed by rural then urban area. In comparison, more landowners now live in a rural area, followed by suburban then urban area. Some landowners are seasonal residents in the corridor. Therefore, it is logical that some landowners report living in a suburban or urban area.

Table 5. Area Respondent Grew Up and Now Lives

Area Respondent Grew Up (N=294)	**Visitors** #	%	**Landowners** (N=51) #	%
Rural	135	46	20	39
Suburban	104	35	18	35
Urban	55	19	13	25
Area Respondent Now Lives (N=295)			(N=51)	
Rural	118	40	22	43
Suburban	129	44	18	35
Urban	48	16	11	22

Party Type and Size

The largest portion of visitors came to the corridor with friends, while the largest portion of landowners recreate in the corridor with family (Table 6). Both visitors and landowners most often reported that they recreated in a group of three to nine people.

Table 6. Party Type and Size

	Visitors			Landowners	
Party Type (N=295)	#	%	(N=50)	#	%
Friends	124	42		11	22
Friends/family	79	27		13	25
Family	40	14		18	35
By yourself	47	16		8	16
Clients	5	2			
Party Size (N=287)			(N=50)		
Alone	40	14		13	26
2 people	74	26		11	22
3-9 people	150	52		26	52
10-20 people	14	5			
21+ people	9	3			

Interest Groups Membership

The largest portion of visitors belong to Trout Unlimited, followed by the Michigan Conservation Clubs and Federation of Fly Fishers (Table 7). In comparison, the majority of landowners are members of the Pere Marquette Watershed Council, followed by Lake County Riverside Property Association, Michigan United Conservation Clubs, Trout Unlimited and The Nature Conservancy.

Table 7. Interest Group Membership

Interest Group (N=295)	**Visitors**		(N=51) **Landowners**	
	#	%	#	%
MUCC	78	26	22	43
Sierra Club	12	4	4	8
Trout Unlimited	96	33	15	29
Federation of Fly Fishers	36	12	5	10
MSSA	18	6	0	0
The Nature Conservancy	24	8	5	10
PMWC	24	8	31	61
LCRPOA	6	2	23	45
Total	294		105	

Visitors Having Land Ownership With River Access or Access Through Private Property

The majority of visitors do not have land ownership with river access (Table 8). This question was asked to verify that only visitors were sampled. Although a few visitors replied they did have land ownership, they were likely mistaken in regards to the boundaries of the study area. This is because none of these visitors' names matched those of riparian owners according to the USFS review of Lake and Mason counties property assessment records. However, slightly more than one in five visitors reported they had permission to access the river across private property. Thus, quite a few visitors have access through private property because they are visiting friends, renting a canoe from a livery, or are affiliated with an association located within the Pere Marquette corridor.

Table 8. Visitors Having Private River Access

Visitors with Land Ownership Having River Access		
(N=295)	#	%
No	286	97
Yes	9	3
Visitors having River Access Through Private Property		
(N=294)	#	%
No	233	79
Yes	61	21

Age Distribution of Party Members

The largest portion of typical visitor and landowner parties in the corridor are between the age of 40 and 49 (Table 9). Seniors area much larger portion of landowner than visitor parties.

Table 9. Age Distribution of Party Members

Distribution	**Visitors** #	**Landowners** #
0-12 Years Old	32	5
13-17 Years Old	42	6
18-29 Years Old	86	8
30-39 Years Old	121	11
40-49 Years Old	139	28
50-59 Years Old	89	17
60-64 Years Old	41	7
Over 65 Years Old	23	17

Seasonal Visits

When asked about the number of visits per season they had over the past year, visitors were most likely to come to the corridor during the fall, followed by spring, then summer and then winter (Table 10). In contrast, the landowners are in the corridor most during the summer, followed by fall, then spring and winter. Also, on average, visitor respondents come to the corridor 19 times a year. It should be noted that the Final Report prepared by Nelson, Johnson and Stynes (1997) indicates that the highest use by visitors was in summer; however, this report shows that the highest use by visitors is in fall. This result indicates that sample used for this study is more representative of fall visitors. Phase I study by Nelson, Johnson and Stynes (1997) reports that fishing activities were the main reason for visiting the site for 80% of the respondents.

Table 10. Seasonal Visits

Season	**Visitors** (N=295) #	**Landowners** (N=51) #
Spring	1647	1572
Summer	1637	1873
Fall	1894	1596
Winter	499	1040
Total Visits	5677	6081

Overall Quality of Experience

Most landowners stated that they were very to highly satisfied with their experience in the Pere Marquette corridor (Table 11).

Table 11. Rating of the Overall Quality of Experience at Pere Marquette

Satisfaction (N=51)	**Landowners** Rating	#	%
Highly Dissatisfied	1	1	2
	3	1	2
	4	3	6
	5	3	6
	7	10	20
	8	14	27
Highly Satisfied	9	19	37

Reason for Quality of Experience Rating

This question was only asked of landowners. The majority of the landowner respondents stated that their reason for a quality experience in the Pere Marquette corridor was because they, "enjoy it, corridor is beautiful/peaceful/rustic" (Table 12).

Table 12. Reason for Quality of Experience Rating

Reason (N=51)	**Landowners** #	%
Enjoy it/beautiful/peaceful/rustic	30	59
Nice river but too much abuse	13	25
Poor management	1	2
Good Management	3	6
Other	4	8

Year of Land Ownership

Results show that the majority of landowners (83%) have had their property in the Pere Marquette corridor in family possession since 1980 or earlier. (Table 13).

Table 13. Year of Land Ownership

Year (N=51)	**Landowners**	
	#	%
1860	1	2
1900's	1	2
1910's	1	2
1920's	3	6
1930's	3	6
1940's	1	2
1950's	5	10
1960's	4	8
1970's	14	27
1980's	9	18
1990's	9	18

Final Comments

In closing of the survey, respondents were asked if they had any additional comments (Table 14). The top three comments made by visitors area: the Pere Marquette is: a beautiful river; keep it natural; keep up the good work; glad to do the survey; good that the Forest Service is following up. The top three comments made by landowners are: it's a great river; it is too crowded; it is no longer a quality experience; and, glad to do the survey.

Table 14. Final Comments

Comments (N=119)	Visitors #	Visitors %	(N=20)	Landowners #	Landowners %
Beautiful river, keep it natural	38	32	Great river	7	35
Keep up the good work	22	18	Too crowded, it is no longer a quality experience	3	15
Glad to do the survey, glad FS is following up	8	7	Glad about the survey	2	10
PM is overused	7	6	Never seen enforcement	1	5
Need enforcement	4	3	Keep up the good work	1	5
Great fishing river	4	3	Locals should not have to pay fees	1	5
Too much commercial use	2	2	USFS is unfocused due to multi-agency input	1	5
People disrespect environment and landowners	2	2	Lower Branch site harmed his property	1	5
Launch at Lower Branch disperses pressure	1	1	Easier access is needed	1	5
Need more campsites	1	1	Too much trespassing	1	5
Need a No Kill area and deal better with trash	1	1	A lot of study but little action	1	5
Fish population is declining	1	1			
Keep up the Baldwin Airport	1	1			
Need education to remove fishing line	1	1			
Canoes, salmon and trash must be addressed	1	1			
Should be allowed to walk on the banks	1	1			
Should limit fishing to daylight hours	1	1			
Plow roads, establish open season on beavers	1	1			
Don't like fee proposal but support user fees	1	1			
Quality of experience is better except for canoers	1	1			
Move the prison downstate	1	1			
Don't know how the land is being managed	1	1			
Orvus is degrading fish habitat	1	1			

Table 14. Con't

Comments (N=119)	Visitors #	Visitors %	Landowners (N=20)	Landowners #	Landowners %
Limit access	1	1			
Too many snaggers	1	1			
Lotteries for use is bad, need better management	1	1			
Get alcohol and sand out, increase cover	1	1			
Need better maps with mile marks on the trails	1	1			
Wild turkeys need the pine trees, don't cut them	1	1			
Loosen up the regulations	1	1			
Baldwin livery was very professional & educative	1	1			
Need more trout	1	1			
Low opinion of FS, prefer fishing at Muskegon	1	1			
Hard to get to the river as a disabled	1	1			
Plant more trees	1	1			
Should allow food concessionaires	1	1			
Need more parking	1	1			
Don't like fee proposal	1	1			
Worried about chemicals on fish, weir is helping	1	1			
There should be more accomodations	1	1			

Research Objective 2 - Importance of Issues

Distribution of Importance Ratings of Key Issues

Table 15 shows the distribution of visitor responses across the importance rating categories (unimportant, slightly important, moderately important, highly important and extremely important) for each issue. The majority of visitors (54%) cited the issues in the extremely important category.

Table 16 shows the distribution of landowner responses across the importance rating categories. The majority of landowners (51%) reported the issues in the extremely important category. The results are not surprising as all the issues selected for this study were already determined "important" from prior research.

Ranking of Importance Ratings by Visitors Compared to Landowners

Table 17 ranks the importance ratings of key issues using the means of visitors and landowners. For both groups, water quality had the highest mean importance rating while drift/wading conflict had the lowest. When interpreting the results, note that the respondents were not asked to rank the issues, but rather the means for the importance ratings are used to rank the results. Besides water quality, litter and shoreline appearance were mean rated highest for visitors. For riparians, shoreline appearance and trout populations had the next highest mean ratings. The average of means indicate that all issues are of moderate to extremely high importance.

Table 15. Distribution of Importance Ratings of Key Issue by Visitors

Key Issues	N	Mean	Visitors										Total
			Unimportant		Slightly Imp.		Moderately Imp		Highly Imp.		Extremely Imp.		
			#	%	#	%	#	%	#	%	#	%	%
Amount of Access	N=295	4.3	12	4	10	3	33	11	57	19	183	62	100
Number of Users	N=294	4.2	9	3	20	7	29	10	74	25	161	55	100
Water Quality	N=295	4.9	0	0	0	0	3	1	16	5	276	94	100
Litter	N=295	4.7	1	0	1	0	12	4	52	18	229	78	100
Alcohol	N=295	3.0	69	23	44	15	71	24	36	12	75	25	100
Security	N=295	4.0	17	6	23	8	45	15	61	21	149	51	100
Level of Regulation	N=294	4.2	5	2	13	4	49	17	80	27	147	50	100
Shoreline Appearance	N=295	4.6	2	1	4	1	21	7	67	23	201	68	100
Salmon	N=294	4.0	25	9	28	10	40	14	43	15	158	54	100
Steelhead	N=293	4.4	16	5	14	5	18	6	45	15	200	68	100
Trout	N=291	4.2	15	5	19	7	34	12	46	16	177	61	100
Trespass	N=294	4.3	13	4	12	4	33	11	65	22	171	58	100
Facility Maintenance	N=294	4.3	7	2	16	5	30	10	79	27	162	55	100
Canoe/Angler Conflict	N=294	3.5	44	15	28	10	65	22	64	22	93	32	100
Angler Conflict	N=294	2.9	82	28	42	14	63	21	52	18	55	19	100
Visitor/Local Conflict	N=292	3.8	29	10	22	8	49	17	74	25	117	40	100
Total			346	7	296	6	595	13	911	19	2554	54	

Table 16. Distribution of Importance Ratings of Key Issues by Landowners

Key Issues	N	Mean	Landowners									
			Unimportant		Slightly Imp.		Moderately Imp.		Highly Imp.		Extremely Imp.	
			#	%	#	%	#	%	#	%	#	%
Amount of Access	N=51	3.2	12	24	5	10	11	22	7	14	16	31
Number of Users	N=51	4.3	2	4	2	4	4	8	15	29	28	55
Water Quality	N=51	4.8	0	0	0	0	2	4	5	10	44	86
Litter	N=51	4.6	0	0	1	2	4	8	8	16	38	75
Alcohol	N=51	3.8	1	2	5	10	14	27	12	24	19	37
Security	N=51	4.0	3	6	2	4	7	14	17	33	22	43
Level of Regulation	N=51	4.2	0	0	1	2	9	18	18	35	23	45
Shoreline Appearance	N=51	4.7	0	0	0	0		0	17	33	34	67
Salmon	N=51	3.4	9	18	7	14	9	18	7	14	19	37
Steelhead	N=51	4.3	1	2	4	8	3	6	12	24	31	61
Trout	N=51	4.7	0	0	2	4	1	2	7	14	41	80
Trespass	N=49	4.5	1	2	1	2	6	12	7	14	34	69
Facility Maintenance	N=51	3.9	5	10	2	4	7	14	17	33	20	39
Canoe/Angler Conflict	N=51	3.5	5	10	3	6	16	31	15	29	12	24
Angler Conflict	N=50	3.0	9	18	6	12	18	36	9	18	8	16
Visitor/Local Conflict	N=49	4.1	3	6	4	8	6	12	10	20	26	53
Totals			51	6	45	6	117	14	183	23	415	51

Table 17. Ranking of Importance Ratings of Key Issues Using Means

Key Issues (N=295)	**Visitors** (Means)	(N=51)	**Landowners** (Means)
Water Quality	4.9	Water Quality	4.8
Litter	4.7	Trout	4.7
Shoreline Appearance	4.6	Shoreline Appearance	4.7
Steelhead	4.4	Litter	4.6
Amount of Access	4.3	Trespass	4.5
Facility Maintenance	4.3	Steelhead	4.3
Trespass	4.3	Number of Users	4.3
Number of Users	4.2	Level of Regulation	4.2
Trout	4.2	Visitor/Local Conflict	4.1
Level of Regulation	4.2	Security	4.0
Security	4.0	Facility Maintenance	3.9
Salmon	4.0	Alcohol	3.8
Visitor/Local Conflict	3.8	Canoe/Angler Conflict	3.5
Canoe/Angler Conflict	3.5	Salmon	3.4
Alcohol	3.0	Amount of Access	3.2
Drift/Wading Conflict	2.9	Drift/Wading Conflict	3.0

A Z-statistic was calculated using a 95% Confidence Level to test for differences between both groups. Using the mean, it was determined which group had rated an issue higher in importance than the other group. Table 18 indicates the five issues (highlighted rows) that had significantly different means between the visitors and landowners groups. Amount of access, salmon populations and facility maintenance is more importance to visitors than landowners. Alcohol issues and trout populations are more important to landowners then visitors.

Table 18. Importance Rating Comparisons of Visitors and Landowners

Key Issues	Visitors			Landowners			Z
	N	Mean	S.D.	N	Mean	S.D.	Statistic*
Public access	295	4.32	1.07	51	3.20	1.56	4.94
Number of users	293	4.22	1.07	51	4.27	1.04	-0.33
Water quality	295	4.93	0.30	51	4.82	0.48	1.47
Litter	295	4.72	0.59	51	4.63	0.72	0.86
Alcohol	295	3.01	1.49	51	3.84	1.10	-4.68
Security	295	4.02	1.22	51	4.04	1.13	-0.09
Regulations	294	4.19	0.98	51	4.24	0.81	-0.32
Shoreline appearance	295	4.56	0.74	51	4.67	0.48	-1.31
Salmon	294	3.96	1.35	51	3.39	1.54	2.46
Steelhead	293	4.36	1.14	51	4.33	1.03	0.18
Trout	291	4.21	1.19	51	4.71	0.70	-4.15
Trespass	294	4.26	1.09	49	4.47	0.94	-1.44
Facility maintenance	294	4.27	1.01	51	3.88	1.26	2.08
Canoe/angler conflict	294	3.46	1.41	51	3.51	1.21	-0.29
Drift/wading angler conflict	294	2.85	1.47	50	3.02	1.30	-0.84
Visitor/landowner conflict	291	3.78	1.31	49	4.06	1.25	-1.43

* A Z-value between the range of -1.96 and +1.96 satisfies to a 95% confidence level that importance ratings between groups are significantly different.

Positive and Negative Changes Over Years of Visitation

When visitors and landowners were asked what was the most important positive change that had occurred over their years of visitation, good erosion control was the most common response. Over 10% of visitors also noted improved access/launches, no positive changes, no development and clean conditions. For landowners, over 10% noted no positive changes, improved management and no development (Table 19). Landowners answered similarly. They reported good erosion control, no positive changes had occurred, improved management and no development had occurred.

Table 19. Most Important Positive and Negative Change Over Years of Visitation

Postive Changes (N=280)	**Visitors**			**Landowners**	
	#	%	(N=51)	#	%
Good erosion control	78	28	Good erosion control	24	47
Improved access/launches	53	19	No positive changes	6	12
No positive changes	43	15	Improved management	6	12
No development	38	14	No development	5	10
Clean/cleaner	29	10	Fewer canoes	4	8
Better fishery	17	6	Clean/cleaner	3	6
Improved management	12	4	Better fishery	2	4
Good habitat improvements	5	2	Improved access/launches	1	2
Landowners are more positive	2	1			
Fewer canoes	1	0			
Users are good for tourism	1	0			
Less abuse	1	0			
Negative Changes (N=280)	280	100	(N=51)		
Increased use	69	25	Increased use	11	22
No negative changes	45	16	No negative changes	8	16
Increased litter	25	9	Increase in guides/drifts	6	12
Abuse/conflict	22	8	Poor management/regulation	3	6
Increase in guides/drifts	19	7	Increased erosion	3	6
Increased canoes	15	5	Abuse/conflict	3	6
Increased anglers	14	5	Lack of enforcement	3	6
Reduced access	12	4	Increased litter	2	4
Poor management/regulation	11	4	Increased anglers	2	4
Increased erosion	9	3	Worse fishery	2	4
Worse fishery	8	3	Reduced access	2	4
Lack of enforcement	6	2	Other	6	12
Unfriendly landowners	5	2			
Too much access	4	1			
Other	16	6			

It should be noted that the statement "no positive changes" does not necessarily imply that only negative change had occurred. It could also mean that the situation was similar to their initial use.

When asked to report the most important negative change, visitors and landowners were most likely to cite increased use. No negative change was noted by 16% of visitors and landowners.

Listing of "Other" Important Issues

When respondents were asked if there were any other important issues that were not already mentioned in the survey questions, 23% of visitors and 20% of landowners cited additional issues (Table 20). Visitors were most likely to cite a lack of enforcement, too much illegal fishing/poaching occurs and too much commercial use. Landowners were most likely to note the need to continue with lamprey controls.

Issue Most Important to Immediately Manage and Proposed Solutions

The survey asked respondents to identify the issue that managers should immediately address (Table 21). There was little consensus as the three most frequently mentioned issues for visitors were water quality (15%), number of river users (9%) and presence of litter. Similarly, landowners were concerned with the number of river users (14%), appearance of the shoreline (14%) and water quality (12%). The respondents were asked to propose a solution to the most important issue. Table 22 indicates that visitors and landowners most frequently stated that managers should increase staff or enforcement or increase the monitoring/education of users.

Table 20. Listing of "Other" Important Issues

Other Issues (N=49)	Visitors #	Visitors %	(N=10)	Landowners #	Landowners %
Lack of enforcement	8	16	Lamprey control	3	30
Illegal fishing/poaching occurs	6	12	Too much commercial use	1	10
Too much commercial use	5	10	Define navigable waters	1	10
Need education of regulation	2	4	Undesignated camping	1	10
Need maintenance of deadfalls	2	4	High beaver population	1	10
Need handicapped access	2	4	Taxes are too high	1	10
No Kill in Flies Only	1	2	Timber management	1	10
Should allow snagging	1	2	Erosion problems	1	10
Larger Flies Only section	1	2			
Winter maintenance is needed	1	2			
Catches should be limited	1	2			
Fee proposal	1	2			
No fishing at night	1	2			
Need more fishing regulations	1	2			
Lamprey control	1	2			
Buck and doe ratio is off	1	2			
Too many out of state licenses	1	2			
Too many turkeys	1	2			
Good wildlife population	1	2			
Too few commercial licenses	1	2			
PM is too marketed	1	2			
FS staff are helpful	1	2			
Increase livery competition	1	2			
Need more rest areas	1	2			
Loosing campsites	1	2			
Crowded	1	2			
Manage fish populations	1	2			
More overnight accomodations	1	2			
Need better livery management	1	2			
Can't get boat across at weir	1	2			

Table 21. Issue Most Important to Immediately Deal With

Most Important Issue	**Visitors**			**Landowners**	
(N=293)	#	%	(N=50)	#	%
Water quality	44	15	Number of river users	7	14
Number of river users	26	9	Appearance of the shoreline	7	14
Presence of litter	26	9	Water quality	6	12
Pop of steelhead	20	7	Presence of litter	4	8
Level of regulation	19	6	Trespass on private lands	4	8
Pop of trout	19	6	Amount of public access	3	6
Amount of public access	16	5	Drift/ wading angler conflict	3	6
Trespass	16	5	Use of alcohol	2	4
Canoe/angler facilities	14	5	Salmon populations	2	4
Deal with fish populations	13	4	Trout populations	2	4
Use of alcohol	11	4	Canoeists/ angler conflict	2	4
Drift/wading conflict	10	3	Visitors/local landowners conflict	2	4
Visitor/local conflict	10	3	Other	5	10
Appearance of shoreline	7	2			
Pop of salmon	6	2			
Maintenance of facilities	5	2			
Personal security	4	1			
Other	27	9			

Table 22. Proposed Solutions for Issue Most Important to Deal With

Solutions (N=292)	**Visitors**			**Landowners**	
	#	%	(N=51)	#	%
Need staff/enforcement	53	18	Need to monitor/educate	10	20
Need to monitor/educate	33	11	Need staff/enforcement	7	14
Monitor/stock fish	28	10	Nonsensical	5	10
Limit users/ permit systems	25	9	Limit commercial users	4	8
Work on fish habitat	23	8	Work on fish habitat	4	8
Limit commercial users	17	6	Keep up good work	3	6
Keep up good work	16	5	Limit users/permit systems	3	6
No knowledge	15	5	Need more signage	2	4
Need more facilities	10	3	Monitor/stock fish	2	4
Allow access to the banks	10	3	Other	11	22
Ban/control alcohol	9	3			
Should address trash issues	8	3			
Use volunteers	8	3			
Ban/limit canoers	7	2			
Nonsensical	7	2			
People need respect	6	2			
Liveries to take responsibility	3	1			
Need more markings to deal with trespass	2	1			
Other	12	4			

Research Objective 3 - Performance of Managers

Distribution of Managers' Performance Ratings

Table 23 represents the distribution of responses from visitors across all performance rating categories (very poor, poor, okay, good, and very good). The data show that 33% of visitors responses that management can be rated as "good" followed by "OK." Only in the case of management related to trespass did a majority of landowners rate management performance as poor or very poor. Table 24 shows the distribution of landowner responses as being fairly evenly distributed across the categories.

Table 23. Distribution of Management Performance Ratings of Key Issues by Visitors

Key Issues N=295	Mean	Visitors												Total
		Very poor		Poor		OK		Good		Very good		No Knowledge		
		#	%	#	%	#	%	#	%	#	%	#	%	%
Amount of Access	3.8	13	4	16	5	58	20	125	42	64	22	8	6	100
Number of Users	3.0	33	11	54	18	68	23	64	22	29	10	8	16	100
Water Quality	4.3	1	0	11	4	28	9	82	28	129	44	12	15	100
Litter	3.4	21	7	38	13	66	22	89	30	55	19	11	9	100
Alcohol Use	3.4	22	7	23	8	52	18	59	20	38	13	10	34	100
Security	3.7	10	3	23	8	53	18	59	20	74	25	13	26	100
Level of Regulation	3.4	20	7	36	12	69	23	81	27	50	17	8	13	100
Shoreline Appearance	4.0	15	5	12	4	36	12	102	35	110	37	4	7	100
Salmon	3.9	16	5	18	6	39	13	74	25	91	31	12	19	100
Steelhead	3.6	20	7	20	7	49	17	69	23	65	22	12	24	100
Trout	3.7	9	3	16	5	57	19	79	27	50	17	9	28	100
Trespass	3.1	22	7	44	15	60	20	54	18	27	9	6	30	100
Facility Maintenance	4.1	1	0	14	5	46	16	126	43	92	31	10	5	100
Canoe/Angler Conflict	3.1	29	10	25	8	54	18	61	21	25	8	11	34	100
Drift/Wading Angler Conflict	3.2	30	10	18	6	37	13	44	15	30	10	19	46	100
Visitor/Local Conflict	3.2	16	5	30	10	42	14	42	14	28	9	10	46	100
Totals		278	8	398	11	814	22	1210	33	957	26	163	5	

Table 24. Distribution of Management Performance Ratings of Key Issues by Landowners

Key Issues N=51	Mean	Landowners												Total
		Very poor		Poor		OK		Good		Very good		No Knowledge		
		#	%	#	%	#	%	#	%	#	%	#	%	%
Amount of Access	3.2	4	8	9	18	13	25	9	18	8	16	8	16	100
Number of Users	3.0	7	14	6	12	15	29	12	24	3	6	8	16	100
Water Quality	3.9	2	4	1	2	8	16	15	29	13	25	12	24	100
Litter	2.9	9	18	8	16	7	14	12	24	4	8	11	22	100
Alcohol Use	2.6	13	25	6	12	9	18	12	24	1	2	10	20	100
Security	3.2	6	12	6	12	7	14	11	22	8	16	13	25	100
Level of Regulation	3.0	7	14	10	20	8	16	14	27	4	8	8	16	100
Shoreline Appearance	3.6	5	10	7	14	5	10	15	29	15	29	4	8	100
Salmon	2.9	9	18	7	14	8	16	9	18	6	12	12	24	100
Steelhead	3.4	4	8	3	6	13	25	13	25	6	12	12	24	100
Trout	3.0	5	10	10	20	11	22	11	22	5	10	9	18	100
Trespass	2.4	18	36	9	18	5	10	7	14	5	10	6	12	100
Facility Maintenance	3.9	1	2	2	4	9	18	16	31	13	25	10	20	100
Canoe/Angler Conflict	3.2	7	14	2	4	14	27	11	22	6	12	11	22	100
Drift/Wading Angler Conflict	2.8	8	16	2	4	11	22	7	14	3	6	19	38	100
Visitor/Local Conflict	2.8	7	14	9	18	13	26	7	14	4	8	10	20	100
Totals		112	14	97	12	156	19	181	22	104	13	163	20	

A large number of respondents also cited that they could not rate the performance of managers because they had no knowledge of management action. Thirty percent or more of the visitors reported that they had no knowledge of management performance on alcohol use, trespass issues, canoe/angler conflict, drift/wading angler conflict and visitor/local conflict. The one issue that over 30% of the landowners cited that they had no knowledge was regarding drift/wading angler conflict.

Ranking of Performance Ratings by Visitors Compared to Landowners

Table 25 ranks the performance ratings of key issues using means of respondents. The top three issues that had the highest performance ratings according to both visitors and landowners are: water quality, facility maintenance and shoreline appearance. Visitors did not rate any issues as being managed less than OK. In contrast, landowners rated the issues: salmon populations, litter, drift/wading angler conflict, alcohol and trespass as poor.

Table 25. Ranking of Performance Ratings of Key Issues Using Means

Key Issues (N=295)	**Visitors** (Means)	(N=51)	**Landowners** (Means)
Water Quality	4.3	Facility Maintenance	3.9
Facility Maintenance	4.1	Water Quality	3.9
Shoreline Appearance	4.0	Shoreline Appearance	3.6
Salmon	3.9	Steelhead	3.4
Amount of Access	3.8	Security	3.2
Security	3.7	Amount of Access	3.2
Trout	3.7	Canoe/Angler Conflict	3.2
Steelhead	3.6	Trout	3.0
Litter	3.4	Number of Users	3.0
Level of Regulation	3.4	Level of Regulation	3.0
Alcohol Use	3.4	Salmon	2.9
Visitor/Local Conflict	3.2	Litter	2.9
Drift/Wading Angler Conflict	3.2	Drift/Wading Angler Conflict	2.8
Canoe/Angler Conflict	3.1	Visitor/Local Conflict	2.8
Trespass	3.1	Alcohol Use	2.6
Number of Users	3.0	Trespass	2.4

Also, Table 26 indicates the individual issues that had significantly different values between visitors and landowners. A Z-statistic using a 95% Confidence Level was calculated to test difference between both groups. Then using the mean, it was determined which group rated the performance on an issue higher than the other group. Visitors rated the performance of managers higher than landowners on the following issues: amount of access, water quality, litter, alcohol, security, level of regulation, shoreline appearance, salmon populations, steelhead populations, trout populations, trespass populations and visitor/landowner conflict.

Table

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Table 26. Performance Rating Comparison of Visitors and Landowners

Key Issues	Visitors			Landowners			Z
	N	Mean	S.D.	N	Mean	S.D.	Statistic*
Public access	276	3.76	1.02	43	3.19	1.24	2.91
Number of users	248	3.01	1.22	43	2.95	1.17	0.28
Water quality	251	4.30	0.86	39	3.92	1.06	2.13
Litter	269	3.44	1.19	40	2.85	1.35	2.63
Alcohol	194	3.35	1.24	41	2.56	1.29	3.59
Security	219	3.75	1.16	38	3.24	1.38	2.15
Regulations	256	3.41	1.18	43	2.95	1.27	2.20
Shoreline appearance	275	4.02	1.10	47	3.60	1.36	2.02
Salmon	238	3.87	1.20	39	2.90	1.41	4.05
Steelhead	223	3.62	1.24	39	3.36	1.16	1.30
Trout	211	3.69	1.0	42	3.02	1.2	3.29
Trespass	207	3.10	1.2	44	2.36	1.4	3.14
Facility maintenance	279	4.05	0.9	41	3.93	1.0	0.78
Canoe/angler conflict	194	3.14	1.24	40	3.18	1.28	-0.14
Drift/wading angler conflict	159	3.16	1.37	31	2.84	1.32	1.25
Visitor/landowner conflict	158	3.23	1.24	40	2.80	1.22	1.97

* A Z-value between the range of -1.96 and +1.96 satisfies to a 95% confidence level that importance ratings between groups are significantly different.

Reason for Performance Ratings for Public Access and Number of Users

When respondents were asked what was the one most important reason for their performance rating on public access, the two most frequent reasons visitors and landowners provided were: good/easy access/launches/improved and access adequate/enough (Table 27). For visitors, these reasons were followed by more ramps/access is needed. For landowners the top two reasons were followed by: "no knowledge" of management performance and too much access.

When visitors provided a performance rating for management on the issue of the number of river users, the reasons were mainly based on the following: corridor is

Table 27. Reason for Performance Rating for Public Access and Number of Users

	Visitors			Landowners	
Public Access (N=295)	#	%	(N=51)	#	%
Improved access	113	38	Improved access	9	18
Access adequate/enough	41	14	Access adequate/enough	7	14
Need more ramps/access	39	13	No knowledge	7	14
No knowledge	23	8	Too much access	5	10
Good maintenance	18	6	Good maintenance	4	8
Too much access	11	4	Need more enforcement	4	8
Need more parking	6	2	Hard to balance	2	4
Too crowded/abusive	6	2	Too crowded/abusive	2	4
Need more enforcement	5	2	Too crowded/abusive	2	4
Landowners are mean	5	2	Other	11	22
Too much commercial us	4	1			
Hard to balance	2	1			
Need more trash bins	2	1			
Nonsensical	4	1			
Other	16	6			
Number of Users (N=295)			(N=51)		
Crowded	58	20	Crowded	11	22
No knowledge	33	11	Lack of enforcement	8	16
Doing a good job	31	11	Canoe limits helped	6	12
Level of users is OK	30	10	Doing a good job	5	10
Lack of enforcement	28	9	Canoes disrupts fishing	4	8
Canoes disrupts fishing	20	7	Too commercial	4	8
Too commercial	18	6	Abuse	4	8
Abuse	13	4	Level of users is OK	2	4
Don't know what to do	11	4	No knowledge	1	2
Too hard to get permits	10	3	Other	6	12
Canoe limits helped	8	3			
Nonsensical	6	2			
Oppose more regulations	5	2			
Guide limits helped	3	1			
Access too easy	2	1			
Other	19	6			

crowded, "no knowledge" of management performance, management is doing a good job, and level of users are okay. Reasons landowners provided for the performance ratings given are: the corridor is crowded, there is a lack of enforcement/management, limits on canoes have helped control numbers and management is doing a good job. The reasons, "crowded" and "doing a good job" were common among visitors and landowners.

Reason for Performance Rating for Water Quality and Amount of Litter

When respondents were asked for the one most important reason for their performance rating on water quality, the three most frequent reasons visitors and landowners provided include: water is clean/deposit law helped, erosion controls are good, and "no knowledge" of management performance (Table 28).

Reasons visitors provided for management performance on the amount of litter are: corridor is clean/cleaner and litter is noticeable. Similarly, landowners commented that: the corridor is clean/cleaner, users are cleaning up, and litter is noticeable.

Reason for Performance Rating for Alcohol Use and Sense of Security

Reasons visitors provided for management performance on the issue of alcohol use are: there are no problems, "no knowledge" of management performance, there is a lack of enforcement/regulation. Reasons landowners provided for performance ratings are: there is a lack of enforcement/regulation, abuse is noticed, a balance needs to be found between regulation and freedom and the situation has gotten better (Table 29).

When respondents were asked to provide a performance rating for management on the issue of security, visitors and landowners cited that there are no problems and that

Table 28. Reason for Performance Rating for Water Quality and Amount of Litter

	Visitors			Landowners	
Water Quality (N=295)	#	%	(N=51)	#	%
Clean/deposit law helped	132	45	Clean/deposit law helped	16	31
Good erosion controls	60	20	Good erosion controls	13	25
No knowledge	35	12	No knowledge	5	10
Lots of fish/insects	20	7	Too much erosion	4	8
Too much litter	11	4	Managers should do more	2	4
PM Council is good	10	3	Other	11	22
Too much erosion	9	3			
Managers should do more	8	3			
Canoeists damage river	2	1			
Other	8	3			
Amount of Litter (N=295)			(N=51)		
Clean/cleaner	108	37	Clean/cleaner	14	27
Notice litter	47	16	Users are cleaning up	12	24
Need more trash bins	27	9	Notice litter	6	12
Users need to take onus	18	6	Users need to take onus	4	8
Lack of enforcement/education	18	6	Lack of enforcement/education	4	8
Canoers litter	16	5	Not doing enough	3	6
Trash bins are overflowing	15	5	Trash bins are overflowing	2	4
Not doing enough	15	5	Canoers litter	2	4
Users are cleaning up	13	4	No knowledge	1	2
No knowledge	13	4	Other	3	6
Other	5	2			

Table 29. Reason for Performance Rating for Alcohol Use and Sense of Security

	Visitors			Landowners	
Alcohol Use (N=295)	#	%	(N=51)	#	%
No problems	102	35	Lack of enforcement/regs	15	29
No knowledge	64	22	Notice abuse	11	22
Lack of enforcement/regs.	31	11	Need to find a balance	5	10
Lots of litter/often canoeists	23	8	Situation has gotten better	5	10
Notice abuse	19	6	No problems	4	8
Good enforcement/education	13	4	Alcohol should be banned	3	6
Need to find a balance	13	4	Lots of litter/often canoeist	2	4
Support restrictions	9	3	No knowledge	1	2
Situation has gotten better	8	3	Other	5	10
Alcohol should be banned	6	2			
Lack of education	3	1			
Other	2	1			
Sense of Security (N=295)			(N=51)		
No problems	146	49	No problems	14	27
Officers responsive	50	17	Officers responsive	8	16
No knowledge	44	15	Need more enforcement	7	14
Need more enforcement	26	9	Out of control people	6	12
Out of control people	15	5	Have not seen officers	5	10
Don't want enforcement	4	1	No knowledge	5	10
Physical threats are present	3	1	Don't want enforcement	2	4
Other	7	2	Other	4	8

officers respond fast/officers are visible. Fifteen percent of the visitors had "no knowledge" of management performance. Other reasons landowners provided for performance ratings are: need more enforcement, some people are out of control, have not seen officers and had "no knowledge" of management performance.

Reason for Performance Rating for Level of Regulations and Appearance of the Shoreline

When respondents were asked to provide a reason for the performance ratings on level of regulations include, both visitors and landowners cited: good level of regulations/there are no problems, more enforcement is needed and "no knowledge" of management performance (Table 30).

When respondents were asked to provide a performance rating for management on the issue of shoreline appearance, both visitors and landowners stated: shoreline is clean and erosion controls are good. Other reasons landowners provided are: managers are not doing anything and erosion is a problem.

Reason for Performance Rating for Salmon and Steelhead Populations

When respondents were asked to provide a performance rating on salmon populations, both visitors and landowners cited: there is a good quantity of fish/caught fish (Table 31). Many visitors and landowners did not have knowledge of managers' performance. Most landowners stated: too many salmon/harm other species.

When respondents were asked to provide a management performance rating on the issue of steelhead populations, both visitors and landowners stated: there is a good

Table 30. Reason for Performance Rating for Regulations and Shoreline

	Visitors			Landowners	
Level of Regulations (N=295)	#	%	(N=51)	#	%
Good level of regulation	77	26	Need enforcement	21	41
Need enforcement	50	17	Good level of regs	8	16
No knowledge	30	10	No knowledge	6	12
Need regulations on canoes	21	7	Need regs on canoes	3	6
Too many regulations	15	5	Other	13	26
Good enforcement	13	4			
Too crowded	13	4			
Need regulations on anglers	12	4			
Need regs on commercial use	10	3			
Support canoe regulations	10	3			
Need larger Flies Only	7	2			
Hard to balance	7	2			
Nonsensical	5	2			
Need regs to stop abuse	2	1			
Need more public involvement	2	1			
Need more access	2	1			
Other	19	6			
Shoreline Appearance (N=295)			(N=51)		
Clean	112	38	Good erosion controls	15	29
Good erosion controls	79	27	Clean	12	24
Too much damage/litter	24	8	Managerial inactivity	6	12
Erosion is a problem	23	8	Erosion is a problem	5	10
No knowledge	14	5	A lot of damage/litter	3	6
Trespassing a problem	13	4	Trespassing a problem	2	4
Let nature take its course	9	3	No knowledge	2	4
Managerial inactivity	5	2	Nonsensical	1	2
Nonsensical	1	0	Other	5	10
Other	15	5			

Table 31. Reason for Performance Rating for Salmon and Steelhead Populations

	Visitors			Landowners	
Salmon Populations (N=295)	#	%	(N=51)	#	%
Good quantity/caught fish	148	50	Too many salmon	22	43
No knowledge	52	18	Good quantity/caught fish	10	20
More enforcement/management	17	6	No knowledge	8	16
Too many salmon/harm others	14	5	Poor fishing	2	4
Let nature take its course	10	3	Other	9	18
Poor fishing	8	3			
They are doing their best	7	2			
Should deal better with weir	5	2			
Limit fish kills	4	1			
Habitat improved	4	1			
Need more hatcheries	4	1			
Larger Flies Only	3	1			
Not doing a lot	2	1			
Nonsensical	1	0			
Other	16	5			
Steelhead Populations (N=295)			(N=51)		
Good quantity/caught fish	80	27	Good quantity/caught fish	12	24
No knowledge	69	23	No knowledge	8	16
Poor fishing	57	19	Poor fishing	7	14
More enforcement/management	17	6	More enforcement/manage	3	6
Good regulations and monitoring	11	4	Let nature takes its course	3	6
Let nature takes its course	11	4	Deal better with the weir	3	6
Limit fish kills	8	3	Problem in the Lakes	2	4
They are doing their best	7	2	Not planting enough	2	4
Deal better with the weir	6	2	Other	11	22
Habitat improvements have helped	5	2			
Larger Flies Only	3	1			
Population declining	3	1			
Problem in the Great Lakes	3	1			
Nonsensical	2	1			
Other	13	4			

quantity/caught fish, have "no knowledge" of management performance and fishing is poor.

Reason for Performance Rating for Trout Populations and Trespass Issues

When respondents were asked to provide a reason for management performance on the issue of trout populations are, both visitors and landowners cited: there is a good quantity of trout/caught fish, have "no knowledge" of management performance, and fishing is poor (Table 32). Another reason landowners provided was that salmon/steelhead were harming trout.

When respondents were asked to provided a reason for their performance rating for the issue of trespass, both visitors and landowner cited: there is a lack of enforcement/management and there is no problem/enforcement and management is good. Other reasons visitors provided were: "no knowledge" of performance, and that users should be able to use the banks.

Reason for Performance Ratings for Facility Maintenance and Canoe/Angler Conflict

When respondents were asked to provide a reason for their performance rating on the issue of facility maintenance, both visitors and landowners reported: facilities are well maintained/clean (Table 33). Landowners also commented: "no knowledge" of management performance and there is room for improvement.

When respondents were asked to provided a reason for their performance rating for management on the issue of canoe and angler conflict, both visitors and landowners stated: no problems/courteous people. Visitors also stated: "no knowledge" of

Table 32. Reason for Performance Rating for Trout Populations and Trespass Issues

	Visitors			Landowners	
Trout Populations (N=295)	#	%	(N=51)	#	%
Good quantity/caught fish	86	29	Trout being harmed	11	22
No knowledge	79	27	Good quantity/caught fish	7	14
Poor fishing	37	13	No knowledge	6	12
Improved habitat	16	5	Poor fishing	6	12
Salmon/steelhead harming trout	15	5	Improved habitat	3	6
Need more stocking/hatcheries	9	3	More stocking/hatcheries	3	6
Good law enforcement/regs.	8	3	Good stocking	3	6
More enforcement/management	7	2	More enforcement/manage.	2	4
Limit fish kills	6	2	Limit fish kills	2	4
Good stocking	5	2	Nonsensical	1	2
Erosion harms habitat	5	2	Other	7	14
Population declining	3	1			
Deal better with the weir	3	1			
Lamprey controls have helped	2	1			
Let nature take its course	2	1			
Nonsensical	1	0			
Other	11	4			
Trespass Issues (N=295)			(N=51)		
No knowledge	58	20	Lack of enforcement/manage.	18	35
Lack of enforcement/manage.	54	18	No problems/good enforce.	10	20
Not a problem/good enforce.	46	16	Too much trespassing occurs	4	8
Should be able to use the banks	32	11	Need more signs/education	3	6
Landowners are mean	21	7	No knowledge	3	6
Too much trespassing occurs	14	5	Other	13	26
Confusing laws/need education	14	5			
Signs help a lot	12	4			
Hard to deal with	9	3			
More access to reduce trespass	7	2			
Need more signs/education	5	2			
Nonsensical	4	1			
Other	19	6			

Table 33. Reason for Performance Rating for Facility Maintenance and Canoe/Angler Conflict

	Visitors			Landowners	
Facility Maintenance (N=295)	#	%	(N=51)	#	%
Well maintained/clean	191	65	Well maintained/clean	27	53
Room for improvement	25	8	No knowledge	10	20
Adequate facilities	18	6	Room for improvement	6	12
Trash a problem	17	6	Adequate facilities	4	8
No knowledge	16	5	Trash a problem	3	6
No need to overdo it	7	2	Improve launches	1	2
Bad at Lower Branch	4	1			
Improve access	3	1			
Not enough facilities	3	1			
Improve launches	2	1			
Overused access points	2	1			
Nonsensical	1	0			
Other	6	2			
Canoe & Angler Conflict (N=295)			N=(51)		
No problems	91	31	No problems	11	22
No knowledge	57	19	Support canoe restrictions	11	22
Support canoe restrictions	27	9	Lack of enforcement	10	20
Too many canoes	26	9	No knowledge	5	10
Lack of enforcement	22	7	Too many canoes	4	8
Need education	17	6	Need education	3	6
Hard to balance issue	16	5	Avoid river canoes	2	4
It is a problem	14	5	Other	5	10
Moderate conflict	8	3			
Avoid river canoes	6	2			
Too commercial	3	1			
Nonsensical	1	0			
Other	7	2			

management performance. Landowners commented: they support canoe restrictions/they are helping; there is a lack of enforcement and "no knowledge" of management performance.

Reason for Performance Ratings for Angler Conflict and Visitor/Landowner Conflict

When respondents were asked to provide a reason for rating management performance on the issue of drift and wading/shore angler conflict, visitors and landowners were most likely to cite there is no problem/people are courteous, have "no knowledge" of management performance and restrictions on commercial guides/drifts are needed/they are often mean (Table 34).

When respondents were asked to provide a reason for their performance rating for management on the issue of visitor and landowner conflict, visitors and landowners cited: have "no knowledge" of management performance, and there is a lack of enforcement/management.

Research Objective 4 - Relationship of I/P Ratings of Key Issues

Relationship Between Importance/Performance Visitor and Landowner Ratings on Issues

According to visitors, management should prioritize their efforts according to the following list: litter, number of users, trespass, level of regulation, steelhead populations, water quality, visitor/local conflict, amount of access, shoreline appearance, trout populations, canoe/angler conflict, security, facility maintenance, salmon populations, drift/wading angler conflict and alcohol use (Figure 3). However, it must be restated that the majority of respondents rated all issues as extremely important.

Table 34. Reason for Performance Rating for Angler and Visitor/Landowner Conflict

	Visitors			Landowners	
Drift/Shore Angler Conflict (N=295)	#	%	(N=51)	#	%
No problems/courteous people	143	48	No problems	21	41
No knowledge	73	25	No knowledge	10	20
Restrictions on commercial/drifts	30	10	Commercial restrictions	7	14
Lack of management	19	6	Lack of management	4	8
Need to educate	10	3	Reduce or disperse users	3	6
Reduce or disperse users	8	3	Need to educate	2	4
There is conflict	3	1	Other	4	8
Other	9	3			
Visitor/Landowner Conflict (N=295)			(N=51)		
No knowledge	106	36	No problems	15	29
No problems/courteous people	80	27	Lack of management	13	25
Lack of management	20	7	No knowledge	7	14
Landowners are mean	15	5	There is conflict	4	8
They're trying hard	15	5	They're trying hard	4	8
Need more information	13	4	Landowners are mean	2	4
There is conflict	8	3	Other	6	12
Address landowners concerns	7	2			
Need to review laws	6	2			
Need more access	5	2			
Managers are not involved	4	1			
Should be able to use the banks	3	1			
Nonsensical	2	1			
Other	11	4			

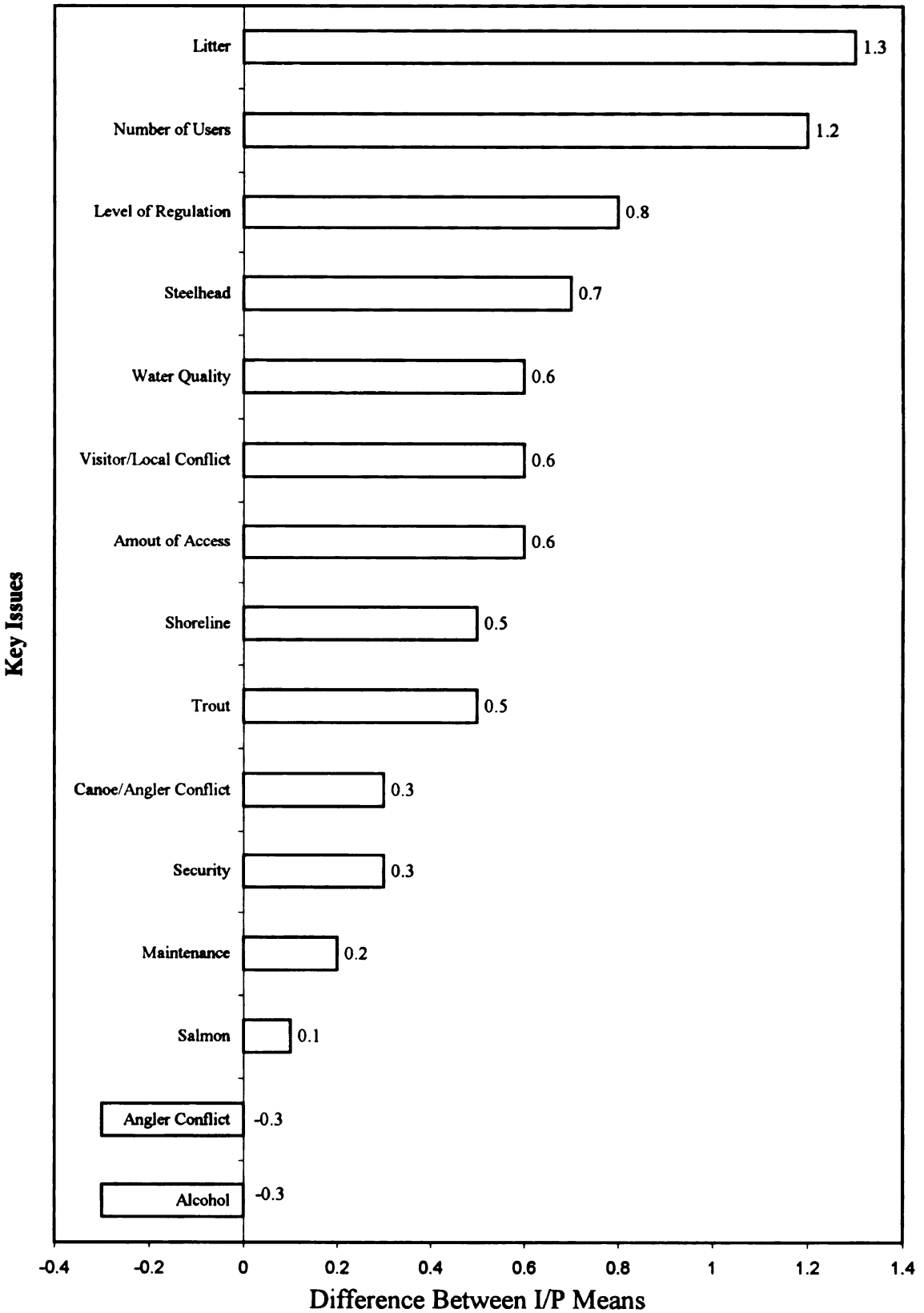

Figure 3. Relationship Between I/P Visitor Ratings on Key Issues

According to landowners, management should prioritize their efforts according to the following list: trespass, litter, trout populations, number of users, alcohol use, level of regulation, visitor/local conflict, shoreline appearance, steelhead populations, water quality, security, salmon populations, canoe-angler conflict, drift/wading angler conflict, amount of access and facility maintenance (Figure 4).

After subtracting the performance means from importance means, the issues with the greatest discrepancy are highest in management priority. Management action should also take into consideration the issues respondents cited as most important to immediately manage. However, the USFS cannot manage most of these issues without assistance from other agencies. For example, the USFS must develop boating regulations that are streamlined with the DNR Fish and Wildlife Service and powerful canoe livery associations. Trespass and alcohol issues cannot be addressed without the assistance of the Lake and Mason county sheriff departments. Fish populations are primarily under the supervision of the DNR. Number of users can be managed by the USFS, but there are also DNR access points within the corridor. Shoreline appearance can be managed by the USFS, DNR and local planning department.

A Z-Statistic using a 95% Confidence Level was calculated to determine a difference of I/P ratings of visitors compared to landowner (Table 35). Visitors cited that relative to the importance of public access, steelhead, facility maintenance, canoe/angler conflict and drift/wading angler conflict, managers were performing better than what landowners reported. Because some of the values of other issues were so close to the Z-Statistic, a 90% Confidence Level would show that visitors cited managers were performing better on alcohol and salmon populations than what landowners rated.

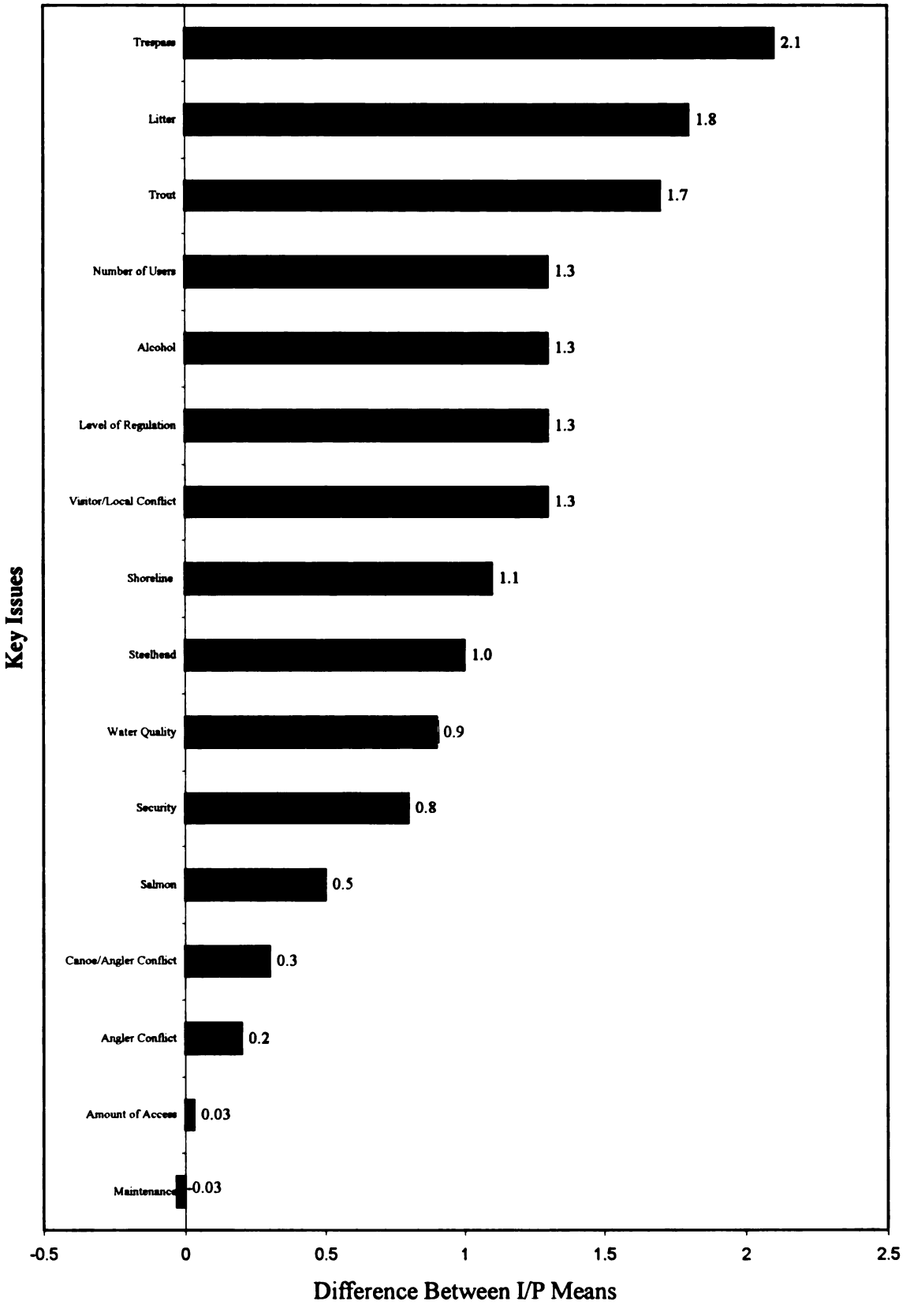

Figure 4. Relationship Between I/P Landowner Ratings on Key Issues

Table 35. I/P Ratings Comparison of Visitors and Landowners

Key Issues	Visitors			Landowners			Z
	N	Mean	S.D	N	Mean	S.D.	Statistic*
Public access	276	0.54	1.46	51	-0.43	2.22	3.00
Number of users	247	1.26	1.72	51	0.84	2.06	1.33
Water quality	251	0.63	0.85	51	0.41	1.31	1.16
Litter	269	1.28	1.35	51	1.10	1.94	0.64
Alcohol	194	-0.09	2.06	51	0.61	2.35	-1.93
Security	219	0.39	1.55	51	0.10	1.76	1.08
Regulations	256	0.83	1.44	51	0.80	2.03	0.08
Shoreline appearance	275	0.60	1.24	51	0.88	1.57	-1.23
Salmon	238	0.31	1.47	51	-0.24	2.19	1.70
Steelhead	223	1.00	1.42	51	0.35	1.82	2.40
Trout	211	0.94	1.24	51	1.16	1.92	-0.76
Trespass	207	1.30	1.59	49	1.65	2.31	-1.00
Facility maintenance	279	0.24	1.19	51	-0.45	1.55	3.00
Canoe/angler conflict	194	0.62	1.92	51	-0.27	2.23	2.62
Drift/wading angler conflict	159	0.11	2.34	50	-1.02	2.71	2.66
Visitor/landowner conflict	158	0.75	1.73	49	0.67	2.49	0.19

* A Z-value between the range of -1.96 and +1.96 satisfies to a 95% confidence level that importance ratings between groups are significantly different.

Research Objective 5 - Comparison of Interest Group Members' and Non-Members' Knowledge of Managers' Performance

Some respondents were unable to issue a performance rating on certain issues because they did not have knowledge of management action (Table 36 – Note: Results are based on visitor survey). If a respondent provided a reason for the management rating given, then they were categorized as having knowledge. The Chi-Square statistic using a significance level of 5% was used to test whether the knowledge of managerial performance of an issue was dependent on respondent type. If was found that members had more knowledge of management performance on salmon, steelhead and trout

populations. Non-members had more knowledge of management performance on alcohol issues.

Table 36. Performance Knowledge Dependent on Respondent Type (Member/Non-Member)

Key Issues	Members (N=154)				Non-Members (N=141)				Chi-Statistic*
	Knowledge		No now.		Knowledge		No Know.		
	#		#		#		#		
Public access	146	95%	8	5%	130	92%	11	8%	0.830
Number of users	131	85%	23	15%	117	83%	24	17%	0.239
Water quality	135	88%	19	12%	116	82%	25	18%	1.687
Litter	140	91%	14	9%	129	91%	12	9%	0.031
Alcohol	93	60%	61	40%	101	72%	40	28%	4.131
Security	114	74%	40	26%	105	74%	36	26%	0.008
Regulations	135	88%	19	12%	121	86%	20	14%	0.219
Shoreline appearance	141	92%	13	8%	134	95%	7	5%	1.408
Salmon	132	86%	22	14%	106	75%	35	25%	5.243
Steelhead	125	81%	29	19%	98	70%	43	30%	5.429
Trout	122	79%	32	21%	89	63%	52	37%	9.368
Trespass	113	73%	41	27%	94	67%	47	33%	1.583
Facility maintenance	149	97%	5	3%	130	92%	11	8%	2.977
Canoe/angler conflict	106	69%	48	31%	88	62%	53	38%	1.347
Angler conflict	89	58%	65	42%	70	50%	71	50%	1.966
Visitor/landowner conflict	83	54%	71	46%	75	53%	66	47%	0.015

* A number greater than 3.841 indicates that knowledge of performance is dependent upon whether respondent is a member vs. non-member according to a significance level of 5%.

Research Objective 6 - Comparison of Corridor Visitors' and Landowners' Knowledge of Managers' Performance

There was variation in the frequencies that visitors and landowners cited that they had no knowledge of managers' performance (Table 37). Also using the Chi-square statistic, it was found that landowners had more knowledge of management performance

on alcohol, trespass and visitor/landowner conflict. Further, the data showed that visitors had more knowledge of management performance on amount of access, litter and facility maintenance.

Table 37. Performance Knowledge Dependent on Respondent Type (Visitor/Landowner)

Key Issues	Visitors (N=295)				Landowners (N=51)				Chi Statistic*
	Knowledge		No Know		Knowledge		No Know.		
	#		#		#		#		
Public access	276	94%	19	6%	43	84%	8	16%	5.166
Number of users	248	84%	47	16%	43	84%	8	16%	0.002
Water quality	251	85%	44	15%	39	76%	12	24%	2.379
Litter	269	91%	26	9%	40	78%	11	22%	7.408
Alcohol	194	66%	101	34%	41	80%	10	20%	4.271
Security	219	74%	76	26%	38	75%	13	25%	0.002
Regulations	256	87%	39	13%	43	84%	8	16%	0.225
Shoreline appearance	275	93%	20	7%	47	92%	4	8%	0.076
Salmon	238	81%	57	19%	39	76%	12	24%	0.482
Steelhead	223	76%	72	24%	39	76%	12	24%	0.018
Trout	211	72%	84	28%	42	82%	9	18%	2.594
Trespass	207	70%	88	30%	44	86%	7	14%	5.662
Facility maintenance	279	95%	16	5%	41	80%	10	20%	12.588
Canoe/angler conflict	194	66%	101	34%	40	78%	11	22%	3.188
Angler conflict	159	54%	136	46%	31	61%	20	39%	0.833
Visitor/landowner conflict	158	54%	137	46%	40	78%	11	22%	10.989

* A number greater than 3.841 indicates that knowledge of performance is dependent upon whether respondent is a visitor vs. landowner according to a significance level of 5%.

Chapter 5

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

The primary purpose of this study is to scope important issues facing the USFS and other managers of the Pere Marquette corridor, to assess stakeholder perception of management performance in handling the issues and to explain key differences and similarities between visitors versus landowners and interest group members versus non-members. The secondary purpose of the study is to relate the findings to the 1990 Pere Marquette National Scenic River Management plan and relate the findings to the 1968 Wild and Scenic Rivers Act. The organization of this chapter is as follows: (1) Explanation of findings related to primary research objectives; (2) Examination of findings in relation to secondary research objectives; (3) Conclusions; (4) Discussion and implication; and (5) Recommendations for further research.

Explanation of Findings Related to Primary Research Objectives

The following section explains the findings related to the primary research objectives. Areas discussed include: respondent profiles, I/P analysis, and open-ended questions that assisted with obtaining opinions on the importance of key issues and determining how the issues were being managed.

Research Objective 1: Summarize general characteristics of corridor visitors and riparian landowners.

Results showed that visitors and landowner respondents are very familiar with the river. Landowners' familiarity is a result of their time and financial investment. Further, most of the visitors sampled are frequent and longstanding patrons of the corridor.

Most visitors focus their recreational use to the river, where as the landowners use both land and river. Visitors primarily use the upper portion of the river. The upper portion is closer to the canoe liveries and is the location of the "flies only" zone. In contrast, landowners are more likely to use the lower portion of the river. This is because many landowners are located downstream and recreate near their properties. Landowners do not need to go to the upper portion to recreate and further, may wish to avoid tourists. The top recreational use for both groups was shore/wade fishing.

It appears that landowners are older than visitors, on average. In fact, many of the landowners were in retirement. The large majority of survey respondents were male, for both visitors and landowners. When visitor and landowner respondents were asked where they grew up, there was a fairly even distribution from rural, suburban and urban areas. However, currently, more visitors live in suburban areas, while landowners live in rural areas. Many visitors came in a party involving their friends. In contrast, more landowners recreated with family. The average group size was from 3-9 people. Many of the visitors belong to Trout Unlimited, Michigan United Conservation Council, and the Federation of Fly Fishers. In comparison, many landowners belong to the Pere Marquette Watershed Council, Lake County Riverside Property Owners Association, Michigan United Conservation Council and Trout Unlimited. Thus, visitors tend to belong to sport groups

while landowners are more likely to belong to local community organizations. Most visitors do not have access to the river through another person's private property. The largest influx of visitors occurs in the fall, followed by spring, summer and winter. The draw for most visitors to the river are ideal fishing conditions, while the draw for landowners are holiday seasons. The landowners reported recreating in the corridor most often in the summer followed by fall, spring and winter.

Research Objective 2: Identify which issues are important to corridor visitors and riparian landowners concerning the Pere Marquette Scenic corridor.

The issues that had means indicating that they are between highly or extremely important to visitors are: (1) water quality, (2) amount of litter, (3) shoreline appearance, (4) steelhead populations, (5) amount of access, (6) facility maintenance, (7) trespass, (8) number of users, (9) trout populations, (10) level of regulation, (11) sense of security and (12) salmon populations.

The issues that had means indicating that they are between highly and extremely important to landowners are: (1) water quality, (2) trout populations, (3) shoreline appearance, (4) amount of litter, (5) trespass issues, (6) steelhead populations, (7) number of users, (8) level of regulation, (9) visitor/local conflict, and (10) sense of security. Both groups rated water quality, shoreline appearance and amount of litter within the top five issues. This suggests that significant management attention to those three issues will be strongly supported by the range of stakeholders. Further, these issues were also signaled out from immediate attention by many landowners and visitors when asked about the one, most important issue to immediately address.

After ranking the importance issue using means, a comparison between the two groups was done using a Z-test at a 95% Confidence Interval. Access and facility maintenance are significantly less important to landowners than visitors because landowners already have convenient corridor access through their own property. Further, many landowners have their own recreational facilities. Salmon is significantly more important to visitors than landowners because many visitors seek the salmon sport fishing experience, while landowners are often annoyed by the influx of salmon anglers. Not surprisingly, trout populations are significantly more important to landowners than visitors. This is because many landowners have an attachment to brown trout, as trout populated the river prior to salmon populations. Many landowners are concerned over the perceived decline of trout populations. It should be noted that some respondents rated salmon populations extremely important because they want a bountiful supply of salmon in the river, while other respondents rated salmon extremely important because they did not want a large salmon population. Use of alcohol in the corridor is a more important issue to landowners than visitors. This is because landowners are sensitive to visitor/landowner conflict situations that are complicated by intoxicated visitors.

Research Objective 3: Determine how corridor visitors and riparian landowners rate the performance of public agency managers on key issues.

In general, visitors rated managers' performance higher than did landowners. The three issues that visitors mean rated managers' performance between very good and good (on a scale of very good to very poor) are: water quality, facility maintenance and shoreline appearance. The highest mean ratings by landowners are confined to "good' and

"OK". It is likely that landowners are more critical of managers due to the familiarity they have with the lands and the high financial and temporal stake they have in the corridor due to their lengthy tenure of land ownership.

After ranking the performance ratings using means, a comparison between the two groups was done using a Z-test at a 95% Confidence Interval. There were eleven issues that had significantly different means between visitors and landowners; landowners rated the performance of managers significantly lower than visitors on the following issues: amount of access, water quality, litter, alcohol, security, level of regulation, shoreline appearance, salmon populations, trout populations, trespass and visitor/landowner conflict.

Amount of Access

Landowners rated the performance of managers on the amount of access significantly less than visitors because landowners already have access to the river and because many landowners are concerned over the number of corridor visitors. Further, some landowners rated managers poorly because they feel that the number and/or location of public access sites are contributing to over use of the river.

Water Quality, Litter and Shoreline Appearance

Managers' performance on water quality, litter and appearance of the shoreline were rated lower by landowners than visitors likely because landowners are more critical of the environmental integrity of the corridor as they have more time to notice litter and have a financial investment in the corridor.

Alcohol, Trespass, Visitor/Landowner Conflict and Level of Regulation

Landowners rated managers' performance on use/abuse of alcohol lower than visitors. This is because alcohol often complicates visitor/landowner relations. It seems that some landowners, due to the location of their properties, are more likely to encounter intoxicated people. Landowners also rated performance on trespass issues lower than visitors because landowners are concerned with the number of people trespassing on their private property and at times, disregard for privacy and personal belongings. Trespassing is related to the visitor/landowner conflict issue. Landowners also rated the managers' performance of visitor/landowner conflict less than visitors for reasons stated above such as alcohol use and number of river users. Landowners also rated managers' performance on sense of security less than visitors; in some cases, alcohol affects an individuals own personal safety and can threaten the safety of others. Further, landowners are likely to be more concerned with security because of their private properties and personal possessions within. Landowners rated managers' performance less than visitors on the issue of level of regulation. This is because many landowners feel that regulations should be stricter and/or regulations should be better enforced.

Salmon and Trout Populations

Landowners rated managers' performance lower on salmon populations than visitors because many landowners are concerned over the large number of visitors that come to fish for salmon. Further, there is concern that salmon populations are harming trout populations. Landowners have become accustomed to trout populations through

long tenure in the corridor. Landowners argue that the behavior of trout anglers is less intrusive than salmon anglers.

Research Objective 4: Examine the relationship of I/P ratings on key issues for visitors and riparian landowners.

Figure 3 illustrates visitor assessed discrepancies between importance and performance ratings. The graph was developed by subtracting the performance means from the importance means. The larger the value, the greater the performance gap on that issue. It was found that management should devote considerable additional efforts in priority order: (1) amount of litter, (2) number of users, (3) trespass, (4) level of regulation, (5) steelhead, (6) water quality, (7) visitor/local conflict, (8) amount of access, (9) shoreline appearance, (10) trout, (11) canoe/angler conflict, (12) security, (13) facility maintenance, (14) salmon. It was found that the issues "drift/wading angler conflict" and "alcohol" were being managed at a performance rating exceeding their importance rating. It must be noted that all of the issues rated had been identified as important issues from the Phase I study. Thus, it is a difficult task to assign priority to addressing the issues. As noted by the high importance ratings for most issues, stakeholders expect the issues to receive significant management attention. Furthermore, many of the issues are related to each other.

Figure 4 shows landowner assessed discrepancies between importance and performance ratings. The issues "trespass" and "litter" are also within the top three issues, similar to visitor responses. A difference between the two groups is that landowners felt management was performing poorly relative to the importance of the issue in regards to

alcohol use. In contrast, visitors felt that alcohol use was being managed better than its relative importance. This will be one issue that will pose significant debate regarding how it will be regulated. Furthermore, landowners felt that facilities are being maintained better than their relative importance. Again, alcohol is often involved in visitor/landowner conflicts and containers also are a major litter item. Convenient access sites in good condition draw users; the number of users are a concern to landowners. However, many of the paved access sites are designed to maintain water quality by moving the parking spaces away from the shore.

It was hypothesized that the relationship between importance ratings and performance ratings would be very similar between two respondents groups, visitors and landowners. This is because both groups consider themselves to be stakeholders of the river corridor and both groups are attracted to the quality character of the corridor's characteristics. The long tenure of patronage is another similarity between both groups.

However, the data show there are some significant differences between visitors and landowners. Visitors cited that relative to the importance of public access, steelhead, facility maintenance, canoe/angler conflict and drift/wading angler conflict, managers were performing better than what landowner reported. Because some of the values of other issues were so close to the Z-Statistic, a 90% Confidence Level would show that visitors cited managers were performing better on alcohol and salmon populations than what landowners rated. Visitors have noted that a number of improvements have been made to access points throughout the corridor. Some commented on improved parking and launch facilities. Thus, many people were pleased with the maintenance of facilities. Perhaps landowners were less pleased with the issue of steelhead populations because of the large

number of anglers that influx the corridor during Spring steelhead runs and that more effort could be done to control the number of users. It is likely that landowners had a lower I/P rating on canoe/angler conflict and drift/wading angler conflict than visitors because of their increased chance to observe and/or experience conflict because of their length of stay in the corridor.

Research Objective 5: Test hypothesis that interest group members are more likely to have "knowledge" of manager performance than non-interest group members.

It is hypothesized that interest group members are more likely to have "knowledge" and thus, be able to rate managers' performance than non-interest group members. It is important to determine whether there is a difference between these groups to verify if the USFS has successfully communicated management actions in the corridor with private interest groups. Further, if it is found that either groups members do not have knowledge of management action on specific issues, then the USFS knows to devote additional effort to establishing lines of communication with various publics. The hypothesis was developed on the grounds that the USFS has spent considerable effort communicating with interest groups about management initiatives and issues. Hence, their knowledge of the management of the Pere Marquette corridor should be greater than non-interest group members. This research question is extremely important in the context of public outreach. When groups of individuals report having "no knowledge" of management performance, it becomes a reflection of how successfully information has been disseminated or received. By improving the exchange of communication, different

stakeholder groups can become aware of the perspectives of other groups. This would help goal setting and facilitate the LAC process.

On average, interest group members responded less frequently that they had "no knowledge" of managers' performance than did non-interest group member. A closer look at Table 36 shows that there is a dramatic difference between members and non-members with regards to trout, steelhead, salmon populations. The only instance where more members had less knowledge of management performance than non-members was regarding the issue alcohol use. This suggests that membership in the angling organizations listed in the survey, such as Trout Unlimited and the Michigan United Conservation Clubs, was a useful source of information to the respondents.

Research Objective 6: Test hypothesis that riparian landowners are more likely to have "knowledge" of manager performance than visitors.

It is hypothesized that landowners are more likely to have "knowledge" of managers' performance than visitors because landowners have increased exposure to key issues and perhaps even some involvement in management initiatives, there by increasing knowledge about the management of the Pere Marquette corridor. This test is important to USFS managers because they can assess if respondents are aware of management action on specific issues. If landowners have less knowledge regarding a specific issue, managers can provide information or vice versa. By determining which group have knowledge on which issue, the USFS can develop information campaigns. In so doing, both groups can learn the perspectives of each other which can facilitate partnerships. Partnerships would be instrumental in the LAC process.

Table 37 shows that landowners are more likely to have knowledge than visitors on the following issues: alcohol, trespass and visitor/landowner conflict. These three issues are closely related. Due to the high frequency landowners are in the corridor and length of stay, landowners are likely more exposed to these issues. Visitors are more likely to have knowledge than landowners on public access, litter and facility maintenance. Landowners do not generally need to make use of public access and other facilities, and therefore, may not be aware of how managers are performing. Landowners may have not provided a public agency performance rating on litter because many landowners felt that private organizations are primarily responsible for cleaning up litter. Thus, the hypothesis cannot be accepted because both groups show having more knowledge than the other groups on certain issues.

Relationship of Findings Related to Secondary Research Objectives

Research Objective 8: Relationship of findings to the 1990 Pere Marquette National Scenic River Management Plan.

The Pere Marquette National River Management Plan, as filed in the National Register, contains a number of components including: Introduction, Resource Management Objectives and Management Direction, Ongoing Planning and Dissemination of Information. The results found in this study (Phase II), enable a critical examination of the plan to determine whether the current situation is on course with the intent of the plan. The findings show that although, the current situation in the corridor meets Resource Management Objectives, there are a few inconsistencies regarding Management Direction

and Dissemination of Information. Only the outstanding issues will be summarized using excerpts (in Italics) from the plan.

- *No new vehicular access sites will be provided and some existing sites will be modified to permit foot access only. Commercial access sites will be prohibited.*

  A river carrying capacity will be developed and maintained controlling use and limited facilities. Capacity will reflect the visitor density for the appropriate stream riparian zones as set forth in the guidelines for implementation of the National Forest Recreation Opportunity Spectrum (1990, Pere Marquette National Scenic River Management Plan.)

Currently, there are plans to provide a new vehicular access site with a boat launch at Lower Branch Bridge. The main argument for this new site is to disperse users to this 'less used' portion of the river. However, this action does not comply with the intent of the Recreation Opportunity Spectrum, where by recreation use in the corridor should flow from a higher density of recreation users to a lower density of recreation users. Further, there is some concern that this new launch site will increase the amount of commercial drift boat operators. Although some respondents were in support of this new access, the majority expressed concern over increased use and commercialization of the river.

- *Signs will be utilized where needed for direction, safety, interpretation of special interest areas, and regulation of use.* (1990, Pere Marquette National Scenic River Management Plan.)

The USFS, DNR and landowners have made a concerted effort to clearly mark land ownership and information signs have been erected at some of the access points to disseminate some information. However, numerous respondents still expressed confusion over land ownership within the Pere Marquette Scenic corridor and what uses were

permitted on these lands. For example, there is considerable confusion over trespass law and camping regulations. Conversely, signage must be provided consistent with ROS classification zones to reduce overt evidence of regulation.

- *Controls will be instituted on National Forest lands to regulate the numbers, timing and/or location of boating use to prevent damage to the resources and preserve the quality of a visitor's recreation opportunity.* (1990, Pere Marquette National Scenic River Management Plan.)

Canoe traffic has been controlled by the introduction of limits on the number of canoes and hours permitted on the river. Canoe liveries have been instrumental in regulating the number and timing of users. Although most respondents were aware of the new regulations, others were not aware of any limitations and were concerned over the high canoe traffic. Others stated that the limits were not being enforced. Many of the people commented that the issue was not the amount of canoes but rather it was the behavior and skills of canoeists that mattered.

Drift boat licensing has also been regulated. However, there is still a concern that the number of drift boats, particularly commercial drift boats, may contribute to exceedingly high boat traffic. Although there are no additional licenses for drift boat operators being issued, respondents are noting that there is nothing stopping these operators from sub-contracting out their licenses or launching at DNR or private sites. It seems that licensees often sub-contract out to friends or relatives. Some respondents who desire to obtain commercial licenses commented that the current regulation is unfair; many feel that existing commercial operations are essentially inbred.

- *A limited number of boat launching sites with road access will be selected from existing launching sites on National Forest land to disperse use over the entire river. Capacity of the sites will be consistent with protection of river resources and a high quality recreation opportunity (*1990, Pere Marquette National Scenic River Management Plan).

Although the proposal of the new launch site is consistent with the intent to distribute use over the entire river, the Plan specifies that use should be dispersed using *existing* launching sites. Further, there is little consistency between USFS launch sites and DNR launch sites. DNR sites are more developed while the USFS sites are more rustic. The DNR sites are able to accommodate more users and have the potential to stress the immediate environments in which they are located. One problem is that people are already using the proposed site for boat access which has caused erosion and other problems. The challenge is to balance use with environmental protection. This is further complicated by allowing road side parking. Thus, even though parking areas at access sites are designed to limit the number of users, there is nothing stopping people from parking near the access points.

- *The number of people at developed recreation sites on National Forest land would be limited to a specified capacity and rules and regulations for general visitor behavior will be established (*1990, Pere Marquette National Scenic River Management Plan).

There do not appear to be any set guidelines regarding the specified capacity, nor for a means of monitoring the capacity. Furthermore, although there is mention that rules and regulations for visitor behavior will be established, additional enforcement or education appear needed. Many respondents spoke as though they were not aware of any limits on

boats. Also, there was significant confusion over the rules regarding permitted areas of camping and trespass laws. There were enough comments about intoxicated people disturbing other people's recreational experience to indicate that the behavior of many visitors is not in accordance with the intent of use on National Forest Land. Further, there were many comments about illegal fishing (i.e., snagging) and the lack of enforcement of fishing regulations.

- *Maps and brochures containing information and use regulations will be provided* (1990, Pere Marquette National Scenic River Management Plan).

Although it was beyond to scope of this study to examine to effectiveness of maps and brochures containing information and user regulations, it would be interesting to conduct a future study to review how information is disseminated and usefulness of the material. From conducting the telephone interview, it became apparent that a number of respondents were confused over regulation.

- *Controlled recreation use, visitor education and appropriate administrative restrictions would minimize the adverse affects of human noise, litter and vandalism* (1990, Pere Marquette National Scenic River Management Plan).

Although, crime does not seem to be a critical issue in the corridor, respondents expressed concern about rowdiness that detracts from the wilderness experience. There are a number of rules and regulations that address appropriate recreation use; however, visitor education seems to be limited. Therefore, conveyance of the rules and regulations could be improved. Some landowners expressed concern about property thefts during the

winter months when there is higher dwelling vacancy. A number of landowners commented that they felt local enforcement officials were poor at following up crime reports. Again, complexity is introduced as many situations are the responsibility of the Lake and Mason county sheriff departments.

- *Information including available recreation opportunities, user regulations, and management direction will be disseminated to the public via the news media, pamphlets at the Forest Service headquarters, the State Department of Natural Resources, canoe liveries, on-site, and by interest groups* . (1990, Pere Marquette National Scenic River Management Plan).

The USFS has undoubtedly made a concerted effort to communicate to the public and various stakeholders. The USFS has spent considerable time in communicating management initiatives and issues to interest groups. The data supports that interest group members are more aware of management action. However, in general, the results from the survey indicate that many respondents are unaware of certain management actions. For example, some respondents were not aware of which parties participated in the streambank stabilization project. As a result, it is hard for the public to hold that agency accountable for objectives, and it is difficult to give credit to the appropriate management agencies. Further, lack of awareness increases the likelihood that rules and regulations will be misunderstood or disobeyed. Also, it becomes difficult to enforce regulations when people argue that they were unaware of the rules. A number of respondents thanked the researcher for asking the performance rating questions because it made them realize that they should be more informed.

Research Objective 9: Relate study findings to the 1968 Wild and Scenic Rivers Act.

Considerable research was conducted to probe for public opinion regarding key issues in the Pere Marquette Corridor. The USFS is responsible for including the public into the decision making process, and has made a concerted effort to obtain profiles of users and acquire insight into public opinion concerning major issues facing the Pere Marquette corridor. More specifically, this study focused on the importance of key issues and the performance of managers in addressing the issues. Throughout the process, respondents suggested various management actions. This section will discuss the management findings of the study that relate to whether Pere Marquette corridor management is in line with the intent of the Wild and Scenic Rivers Act. Excerpts of the Act will be presented in italics below followed by comments. The excerpts are essentially the desired conditions to maintain using LAC methodology. It would be useful for the USFS to develop indicators of the desired conditions.

- *It is hereby declared .... that certain selected rivers ... be preserved in free-flowing condition* ...(Wild and Scenic Rivers Act, 1968, (Sec. 1(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 (Wild and Scenic Rivers Act, 1968 (Sec. 15 (b)).

The USFS, Pere Marquette Watershed Council, Fish and Wildlife Service, DNR, Conservation Resource Alliance and private landowners have worked together for several years to control streambank erosion. Many respondents are enthusiastic about this effort while a few stated that human intervention to control erosion was not necessary. The USFS should address why rip-rapping has been done even though the Act clearly specified

otherwise. However, it should be noted that the materials used for rip-rapping consisted of native fieldstone or wood; concrete or synthetic products were not used. Further, the type of rip-rapping materials are not consistent throughout the corridor. Areas within the DNR lands utilized rocks along the banks, while USFS lands utilized wooden structures. Rip-rapping, if done at all, should be done in a coordinated approach. Rip-rapping is not consistent with the intent of the Act. Another problem is that portions of the shoreline is not in natural condition due to private development, past erosion related to 1850-80's logging road crossings, etc.

- *Any development or management plan ... shall include (a) provisions for the dissemination of information to river users and (b) such regulations relating to the recreational and other uses of the river as may be necessary in order to protect the area comprising such river (including lands contiguous or adjacent thereto) from damage or destruction by reason of overuse and to protect its scenic, historic, esthetic, and scientific values* (Wild and Scenic Rivers Act, 1968, (Sec. 3(a)(16))

Results from the survey indicate that users are confused over regulations, especially concerning trespassing. The USFS should not only provide more coverage of corridor regulations, but why these regulations were developed. Providing a context for the regulations may increase compliance. It is interesting to note that the Act does not specify that information be disseminated to landowners within the corridor. Naturally, the USFS should address regulatory issues affecting landowners in information dissemination campaigns.

Furthermore, one of the most prevalent comments from respondents of the study was that there was a noted lack of enforcement and/or education. This calls for additional research to determine the level of awareness and compliance of regulations in the corridor

and to explore possible avenues to increase awareness and compliance of regulations. Thus, although the management plan does indicate that regulations will be developed to protect the resource and control use, there is no mention of user limits, environmental indices or enforcement plans. Thus, more detail is needed in the management plan in order to ensure compliance to the Act.

- *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 ... primary emphasis shall be given to protecting its esthetic, scenic, historic, archeologic and scientific features* (Wild and Scenic Rivers Act, 1968, (Sec. 10 (a)).

Much emphasis is placed on the importance of esthetic, scenic, historic, archeologic and scientific features of the wild and scenic rivers. The USFS has spent considerable effort to provide rustic facilities and unobtrusive signage along the corridor. Signage regulations should be devised that are consistent throughout corridor lands, regardless of the property ownership. For example, negative, threatening signs posted by some landowners should be removed and replaced with signage that is esthetically appealing and positive. For example, private lands could be posted with signs reading "Please no trespassing." The colors and shape of the signs could be designed to be visible while not obtrusive. This will not stop some people from trespassing, but these people will trespass regardless as to what sign is posted. At least the remainder of users are not subjected to unfriendly signs. The USFS has done numerous management actions that are consistent with the intent of the Act. However, there is opportunity to improve compliance to the Act, by increasing communication with other stakeholders to bring their goals in line with the Act.

- *The Secretary of the Interior, the Secretary of Agriculture, and the head of any other Federal department or agency having jurisdiction over any lands which include, border upon, or are adjacent to, any river included within the National Wild and Scenic Rivers System ...shall take such action respecting management policies, regulations, contracts, plans affecting such lands ... as may be necessary to protect such rivers in accordance with the purposes of this Act. Such Secretary or other department or agency head shall, where appropriate, enter into written cooperative agreements with the appropriate State or local official for the planning, administration, and management of Federal lands which are within the boundaries of any rivers for which approval has been granted* ... (Wild and Scenic Rivers Act, 1968 (Sec. 12 (a)).

There is significant opportunity to increase communication and partnership between the USFS, DNR and the counties of Lake and Mason. Improved partnerships will encourage that plans regarding the Pere Marquette are parallel. For example, launch sites will be designed with consistent materials, layout and signage. Further, parking outside of access sites will be prohibited and enforced. Thus, the current situation with stakeholder partnerships is not fully utilizing partnerships to achieve the basic intent of the Act.

Conclusions

The LAC process can be used to further management action in the Pere Marquette corridor and the findings in this study can be used to commence the LAC process. The study has scoped key issues facing the Pere Marquette corridor which is step one in the LAC process. The second step would be to describe recreational opportunity classes using the concept of ROS. For example, the USFS should inventory and map the corridor into three distinct settings, each providing a certain recreational experience. The distinct

settings can be defined using the following criteria as suggested by Nilsen and Tayler (1997):

- Access
- Remoteness
- Visual characteristics
- Site Management
- Visitor Management
- Social Indicators
- Visitor Impacts

Considering the river is designated "Scenic" under the Wild and Scenic River Program, the zones should compliment this designation. Thus, three appropriate zones would be:

(1) Rural - Some improvements made within the corridor to facilitate recreational use and resource management. Effort is made to group and manage recreation activities. Education and law enforcement is targeted in this area. Signage should be clear specifying permitted use and associated regulations. Facilities should also be provided within this area of the ROS spectrum. Monitoring methods should be established to control visitor conflict, litter, crowding and resource depletion in this area. Visible management should be kept to a minimum.

(2) Semi -Primitive - Few improvements made within this portion of the corridor to facilitate recreational use and resource management. Signage should be sparse and used to delineate permitted activities. Facilities should only be provided to address trespass issues.

(3) Primitive - No improvements made within this portion of the corridor. The area should remain completely naturalized with very little visual management. Monitoring methods should be established to determine extent of use in this area, such as streambank erosion from foot traffic and litter.

After the areas are defined, and the desired conditions are determined for each area (i.e., aquatic condition not impaired by human activity) the USFS can then look for any inconsistencies. Many of the comments from the visitor and landowner respondents will help with this analysis. If there are any conflicts, the issue should be outlined and the stakeholders identified. This would be an integral part of beginning a focus group and information campaign. The USFS should also review that the resource management activities are in line with the ROS spectrum.

Step three would be to develop resource and social condition indicators. For example, riparian species composition and quantity, and satisfied anglers.

Step four would inventory existing resource and social indicators. This scoping study would bring significant information to the inventory of social indicators. A review would need to be completed using biological data from the USFS and DNR, for example.

Step five would be to develop standards for resource and social condition indicators. For example, using data from the DNR Fish and Wildlife service, desired versus actual fish populations could be used to determine aquatic condition. Further, levels of sedimentation and turbidity could be used. Regarding social condition indicators, comments from meetings at sporting organizations or preservationist groups concerned with the Pere Marquette corridor could be used as standards along with common

responses taken from visitor comment forms. If anglers are saying that they no longer intend on returning to the corridor, then the situation has exceeded the desired limit.

Step six would identify alternative opportunity class allocations. Thus, because there is an established recreational infrastructure within the Pere Marquette corridor, such as campgrounds and public access sites, alternative classes may need to be developed. A recreational spectrum may not be able to be implemented, but that the intent of ROS could be incorporated. Even though the spectrum may not follow along to corridor promoting higher use to lower use in a linear pattern, there can be well defined pockets that provide to specific recreational groups. However, every effort should be made to delineate areas which are rural, semi-primitive and primitive. That may mean closing access points or arresting the construction of any further access points.

Step seven would develop management actions for each alternative. An example of management actions for a low use zone would be to reduce signage to a minimum, enforce laws against roadside parking in low use zones, concentrate proactive law enforcement in high use zones and implement wilderness education programs.

Step eight would evaluate the suitable alternative. After public and scientific review, the ideal alternative is selected.

Step nine would implement management actions. An important component to this step would be to monitor the indicators and standards. It is here that partnerships with interest groups, landowners and other governmental agencies are especially important. Feedback from these groups could indicate successfulness of various management actions.

This study has been effective in gathering information from various publics; the data could be segmented into interest group/non interest group members,

visitor/landowners, shore and wading anglers/rental canoeists. The perspectives of these groups can help develop recreational opportunity classes using ROS methodology. Further, opinions collected from these respondents are useful in developing indicators and standards for the LAC process. Similarities and differences among some of the groups show differing priorities and levels of awareness of management action. The USFS must work on stakeholder consensus building, especially where opinions differ, to prioritize goals and develop management action.

Recommendations for Future Research

Recommendation 1

Importance/performance analysis is a useful management tool that can provide managerial direction and monitoring of management success. However, because the issues used in this study had already been identified as "important", it made the importance rating on each issue difficult to differentiate. Perhaps a wider scale could have been used, thus, using a one to ten Likert scale instead of a scale of one to five.

Recommendation 2

The phrasing of importance issues is crucial to the value of the response given. For example, one person may rate salmon populations as a five, "very important", indicating they feel strongly that salmon should be an integral part of the river system. However, the next person may also rate salmon populations as "very important", but feel very strongly that salmon are harming other fish populations and should not be part of the system. Thus, importance ratings used on neutrally phrased questions can cause polar answers with the same rating. Fortunately, this extensive survey provided for open-ended responses following each issue, thus providing qualification to the rating given. However, if further researchers do not intend on conducting such an extensive study, key issues should be directional (i.e., respondents answer agree to disagree that salmon populations are an integral component of a desirable river system).

Recommendation 3

The study was intended to scope key issues and the survey has successfully obtained a range of public opinions. Pere Marquette corridor managers could conduct a survey of proposed management actions using a rating scale of "strongly support" to "strongly oppose". Furthermore, management could review prior management actions by stating a specific action and asking the respondent to answer if they are "completely aware" to " completely unaware" of the management initiative. If the respondent was "completely aware" to "somewhat aware", then the researcher could ask the respondent to rate the management actions as "well done" or "poorly done."

Recommendations for Future Planning and Management

Recommendation 1

Prior to proposing management actions, managers must decide upon future goals, prioritize the goals, and determine the desired direction of change. This would begin the implementation of the LAC process. By prioritizing issues, financial and human resources can be appropriately distributed. This will require the development and strengthening of partnerships among the USFS, DNR, Pere Marquette Watershed Council, landowners, visitors, planning department, law enforcement units and other key stakeholders. This will involve an information exchange among various groups so that understanding of various viewpoints are understood. Currently, there are inconsistencies regarding improvements made within the corridor by the DNR and USFS. Access points, parking lots and facilities should all be planned in accordance within the ROS zones: Rural, Semi-Primitive and

Primitive. Further, streambank improvements should be done in partnership with agencies and stakeholders at the Federal, State and Local level. The LAC process would build upon the current planning process by devising criteria that can be used as a checklist to determine if the Pere Marquette National Scenic River is being managed in accordance with the Wild and Scenic Rivers Act of 1964 and specifically, that it meets the "Scenic" designation.

Recommendation 2

To improve information dissemination, managers should recognize that landowners and visitors have varying levels of awareness of management actions over the key issues. Further, that interest campaigns should be aimed at improving awareness of regulations and management for non-members.

By examining the similarities between groups, the USFS can develop partnerships among groups that may seem to have divergent goals. All users found water quality, shoreline appearance and amount of litter as very important issues. Thus, regardless of interest group affiliation, type of recreational user, visitor versus landowner, all share common concern over this issue. The USFS can develop indicators according to the Limits of Acceptable Change framework to monitor water quality. All stakeholders can work with the USFS to develop desired standards for the resource, design appropriate management actions, implement programs and evaluate. The issues that had significantly different responses between user groups, the USFS should embrace this as a challenge to decide on management direction. This is where managers could devote energies to improve their performance ratings. By looking at the data, it became evident that there is a

disparity of knowledge of management action between visitors and landowners. Both groups should be brought to closer to understanding each other's perspectives and what managers are doing to address the issues. This will be the only way to begin the LAC process, where by there is a consensus on the goals and how to prioritize them.

Recommendation 3

Signage should have a consistent design. Currently, the signage in the corridor ranges from neutral and unimposing to negative and intrusive. However, in most cases, more effort is placed on defining property ownership than on permitted use. A visitor to the river may not know if there is any difference of permitted used between Federal and State land. More effort should be made to clarify permitted use on various lands.

Recommendation 4

The survey results have provided direction for management priority, such as litter, number of users, trespass, level of regulation and fish populations. However, the USFS does not have the physical and human resources to manage all of the issues identified, nor does it have the authority. Yet, because the USFS has been given the authority, by congress to manage the Scenic corridor, it should be responsible for creating and strengthening partnerships among stakeholders. Resources from the sheriff departments are needed to control trespass, sense of security, alcohol use and enforce regulations. Resources from the local planning department are required to monitor and enforce building structures of riparian landowners. Resources from the DNR are required to monitor fish populations and develop and enforce angling regulations. The USFS can

control the number of users by strategically opening, closing or relocating access points and by coordinating USFS access sites with DNR sites and with canoe liveries "put-in" areas. Essentially, the management implications of the survey findings should be shared with other stakeholders so that the ultimate goal of protecting and enhancing the significant attributes of the Pere Marquette Scenic River can be achieved.

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APPENDICES

APPENDIX A

SAMPLED PUBLIC ACCESS POINTS TO THE P.M. SCENIC RIVER CORRIDOR (PHASE I STUDY)

Name	Manager	Site Number
M37 Baldwin Canoe Livery	Baldwin Canoe Livery	1
Ivan's Canoe Livery	Ivans' Canoe Livery	1a
The Forks	DNR	2
M37	DNR	3
72nd Street Walk-in	USFS	4
Green Cottage	USFS	5
Clay Banks	USFS	6
Jorgenson's Walk-in	USFS	7
Gleason's Landing	USFS	8
Rosebush	USFS	9
Bowman Bridge County Rd.	County/USFS	10
Bowman Canoe Livery	USFS	11
Rainbow Rapids	USFS	12
Sulak	DNR	13
Upper Branch Bridge	USFS	14
Lower Branch Bridge	USFS	15
Walhalla	DNR	16
Maple Leaf	USFS	17
Indian Bridge	USFS	18
Custer Bridge	DNR	19

MSU/PERE MARQUETTE SCENIC RIVER CORRIDOR
VISITOR TELEPHONE INTERVIEW
Phone #_____
Code #_____ **# Attempts 1 2 3 4 5**

Hi, this is _____ from Michigan State University. I'm calling concerning _____interest in the Pere Marquette Scenic River corridor. May I speak to _____? You responded to a questionnaire we left on your vehicle this past year and now, I'd like to follow up by asking your opinions about the management of the area. As before with the questionnaire we left on your vehicle, you indicate your voluntary agreement to participate by completing this interview. The information you provide will remain confidential and will not be connected with you in any way. Could you take 15 minutes to do this now? (If no, find out when and write it down here _____).

Before we start, I need to begin with a little background information. As you probably know, the Pere Marquette Scenic River corridor, which runs from M37 down to the town of Custer, was designated by federal law as a Wild and Scenic River in 1978. This means the U.S. Forest Service is charged with managing Forest Service lands in the corridor to maintain their largely primitive character and natural appearance. They are also charged with providing recreational opportunities for enjoying nature without damaging the environment or unduly impacting the experiences of others.

Management of the corridor is challenging. It is a mix of US Forest Service, private and State of Michigan lands. In particular, 18 public access sites are operated by the Forest Service or the Michigan DNR. Also, two canoe liveries provide access for their customers. In addition, more than 100 different individuals, associations and businesses own river shoreline within the corridor. Besides land ownership, the river's waters and fisheries resource are managed by the Michigan DNR. Further, the river was designated a Michigan Natural River by state law in 1978. Through zoning related to this designation, development of public and private lands along the corridor has been regulated to protect the natural character of the river.

Currently the US Forest Service is revising its corridor management plan. To do this, it is essential to get input from you and other users of the corridor.

1. What year did you first visit the Pere Marquette Scenic corridor? _____year

2. Over the past year, approximately how many days (or portions of a day) have you stopped in the corridor during the following seasons?

Spring (Feb. 15 - May 15, 1997)	_____# days
Summer (May 16 - Sept. 14, 1997)	_____# days
Fall (Sept. 15 - Dec. 15, 1997)	_____# days
Winter (Dec. 16 - Feb 14, 1998)	_____# days

3. Over the past year, would you say most of your use of the corridor was focused on the river or the lands?

___River ___Land ___Equally divided (don't mention)

(River includes all fishing/canoeing/kayaking/tubing)

4. Over the past year would you say most of your use was in the upper part of the corridor, from M37 to Gleason's Landing, or downstream from Gleason's to the town of Custer?

___Upper River ___Lower River ___Evenly divided (don't mention)

5. What ONE recreational use of the corridor is MOST important to YOU? _____

Hiking =1; Backpacking=2; Nat. photo =3; Nat. obs. =4; Horseback riding =5; Pick b/m=6;
Other =7; Camping =8; Swimming =9; Picnic =10; Hunt =11; Bike =12; Party =13;
Rent canoe =14; Pr. canoe =15; Rent tube =16; Pr. tube =17; Pr. drift = 18;
Com. drift =19; Shore/wade fish =20; Combo fish =21

6. Over the years you have visited the corridor, what is the SINGLE most important positive change you have noted?

_____

_____

7. Over the years that you have visited the corridor, what is the SINGLE most important negative change you have noted?

_____

_____

8. From our recent on-site survey of corridor visitors and land owners, some issues emerged. Please rate the **importance** of these issues to **you** concerning the PM corridor. Use a scale of 5 - 1, where 5 is extremely important, 4 is highly important, 3 is moderately important, 2 is slightly important and 1 is unimportant. After rating the issue's importance, please rate the **performance** of public land and water managers on the issue as being very good, good, OK, poor, very poor or no knowledge of their performance. First, how important is the amount of public access to you?

Code # **Performance** **Importance**

1. **Amount of public access** ____

Now, how would you rate public agency performance on the amount of public access provided?

Amount of public access (very good, etc.)____Why?_____

_____

2. Number of river users ____

Number of river users ____ _____

_____

3. Water quality in the river ____

Water quality in the river ____ _____

_____

4. Presence of litter ____

Presence of litter ____ _____

_____

5. Use of alcohol ____

Use of alcohol ____ _____

_____

6. Sense of personal security ____

Sense of personal security ____ _____

_____

7. Level of regulation of recreational use ____

Level of regulation of recreational use____ _____

_____

8. Appearance of the shoreline ____

Appearance of the shoreline ____ _____

_____

9. Populations of salmon in the river ____

Populations of salmon in the river ____ _____

_____

	Performance	Importance
10. Populations of steelhead in the river		____
Populations of steelhead in the river	____	_____

_____

11. Populations of stream trout in the river		____
Populations of stream trout in the river	____	_____

_____

12. Tresspass on private lands		____
Tresspass on private lands	____	_____

_____

13. Maintenance of public recreation facilities		____
Maintenance of public recreation facilities	____	_____

_____

14. Conflicts between canoeists and anglers		____
Conflict between canoeists and anglers	____	_____

_____

15. Conflicts between drifting and wading anglers		____
Conflict between drifting & wading anglers	____	_____

_____

16. Conflicts between visitors and local landowners		____
Conflict between visitors & landowners	____	_____

_____

17. Is there another issue that influences your experiences in the corridor? (If yes) What is it and what is its importance?_____

_____Imp. Rating

How are public land managers performing on it? _____Perf. Rate

_____

9. Thinking of the issues you rated as extremely important (read from Q9), which **ONE** would be **most important for managers to immediately deal with?**

Use code # in left hand column from Q 9 _____

10. What solution would you suggest?

_____

_____

_____

11. Now, I'd like to finish with a little information about you.
What year were you born? _____ year

12. Are you male or female? (don't ask if you know) ____ Male ____Female

13. Which best characterizes the place you spent most of your time growing up?
Was it ...

___Rural ___Suburban or ___Urban

14. Which best characterizes the place you now live? Is it...

___Rural ___Suburban or ___Urban

15. Do you own land in the PM Scenic River corridor with river access? ___Yes
___No

Do you have access to the river through another's
private property in the Corridor? ___Yes
___No

16. When you are in the Corridor, are the majority of your outings with...

___Friends ____ Friends & Family ____ Family or ____ by yourself

17. How many people including yourself are typically in your party on these outings?
(If by yourself, do not ask)
____# (and use in Q 18)

18. What are the ages of these people?

____0-12 years old ____13-17 years old ____18-29 years old ____30-39 years old
____40-49 years ____50-59 years old ____60-64 years old ____65 and over

19. My final question is, in which of the following groups are **YOU** a member?

___Michigan United Conservation Clubs

___Michigan Salmon & Steelheaders Association

___Sierra Club

___The Nature Conservancy

___Trout Unlimited

___Pere Marquette Watershed Council

___Federation of Fly Fishers

___Lake Co. Riverside Property Owners Assoc.

Do you have any other comments concerning the PM Scenic corridor?

_____

_____

_____

That's it. Thanks for your help. Do you want to be further involved in updating the Forest Service management plan for the PM corridor? (If yes) The number for the Forest Service in Baldwin is (616) 745-4631. (If no) Thanks again for your help.