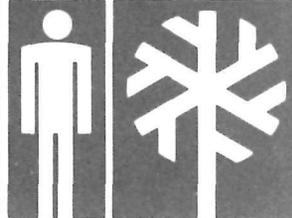


lakecountry and backcountry site management plan

april 1988

VOYAGEURS



NATIONAL PARK / MINNESOTA

LAKECOUNTRY AND BACKCOUNTRY SITE MANAGEMENT PLAN

Voyageurs National Park
Minnesota

1988

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L A K E C O U N T R Y A N D B A C K C O U N T R Y
S I T E M A N A G E M E N T P L A N

Voyageurs National Park
Minnesota

1988

S U M M A R Y

Types and Numbers of Developed Sites. The National Park Service will designate and develop a number of watercraft accessible campsites and day use sites in Voyageurs National Park to meet existing and projected recreational needs. These sites will include developed and undeveloped campsites and abandoned cabin sites that meet the site selection criteria described in Appendix B. About 300 undeveloped campsites and cabin sites will be converted, thereby bringing Voyageurs' total number of developed sites to approximately 400. A minimum of 25 of the 400 developed sites will be exclusively for day users where overnight camping will not be permitted. A minimum of 100 sites will be exclusively for use by houseboaters who do not need to set up a tent on shore and want a wood fire. A minimum of 250 sites will be available for tent camping by hikers, skiers, canoeists, snowmobilers, motorboaters, or houseboaters. A minimum of three small campgrounds will be maintained. A minimum of 4 group campsites will be available for organized groups on Kabetogama, Rainy, and Sand Point lakes.

Overnight Use Limited to Developed Sites. No earlier than 1990, all overnight visitors who set up tents on shore or build wood fires will use one of Voyageurs' developed campsites. The only overnight visitors not required to use the park's developed campsites are those who are traveling away from maintained trails and portage routes in the backcountry; boats that must anchor in deeper water away from shore for the night; and houseboaters who do not want to set up a tent on shore or build a wood fire.

Overnight Houseboat Use. Houseboaters who wish to build a wood fire while camped for the night will use one of Voyageurs' developed houseboat sites. Houseboaters who wish to set up a tent while camped for the night will use one of the park's developed tent sites. Houseboaters not building a wood fire or setting up a tent on shore may moor anywhere in the park except: (1) within navigation channels, narrow channels that provide passage between or through lakes, and the vistas from scenic overlooks and visitor centers; (2) where

less than 1/4 mile line-of-sight distance separates a houseboat from any of the park's designated campsites; (3) within stands of floating or emergent vegetation located in shallow water; and (4) within 1/4 mile of active bald eagle and osprey nests, 200 feet of active loon nests and colonial nesting waterbird rookeries, and on islands closed to protect calving areas.

Day Use Activities. A minimum of 25 of the park's developed sites will be exclusively for day users where overnight camping will not take place. Visitors may also use unoccupied developed campsites for a variety of recreational day use activities. Day users will vacate unoccupied campsites by 4 p.m. so that potential overnight users may have access to these sites. Day use will continue at all undeveloped locations in the park if visitors do not build wood fires. Day users may build fires if they use one of Voyageurs' designated sites.

Party Size Limits at Developed Sites. Small campsites will accommodate up to nine people. Large campsites will accommodate up to 18 people. Small campgrounds will accommodate a maximum of five to seven individual groups with nine people per party. Groups with more than nine people can also use campgrounds if they break into parties of nine or less and occupy two or more individual sites. Group campsites will generally accommodate up to seventy-two people. Houseboat sites will accommodate two houseboats. Most day use sites will accommodate two groups of nine people simultaneously. A few day use sites, however, will accommodate simultaneously 49 tour boat passengers or other large parties and several smaller day use groups that are not using the tour boat, such as Anderson Bay.

Camping Permit/Reservation System. When use reaches a level where competition for sites is high, a camping permit/reservation system will be implemented. At that time, all tent campers and houseboaters will be required to obtain a camping permit for each overnight trip into Voyageurs' lakecountry and backcountry environments. All other boats, such as sailboats and cabin cruisers, that anchor for the night away from shore must also obtain a permit.

Wood Fires and Wood Gathering. Wood fires will be permitted only in metal firegrills at Voyageurs' designated sites. Fire use will be allowed as long as fuelwood is adequate to satisfy user needs and wood gathering does not impact site resources. Sites where wood is depleted will be closed to wood fires. Although wood fires will be permitted, wood gathering at the park's small campgrounds and group campsites will be prohibited; users must bring their own wood from outside the park or collect it more than a 1/4 mile away from their site.

Visitors using any site closed to wood fires must use stoves or charcoal in firepans for cooking and warmth. Backcountry campers who are traveling away from maintained trails and developed campsites must also use stoves for cooking and warmth. Wood gathering will be limited to dead and down material collected more than 200 feet from small and large campsites, houseboat sites, and day use sites. The use of chain saws for cutting wood is prohibited.

Temporary Site Closures to Protect Wildlife and Visitors. Areas will continue to be temporarily closed to protect the denning, nesting, calving, foraging and brood-rearing habitats of threatened and special concern species, such as

the eastern timber wolf, bald eagle, osprey, common loon, common tern, deer and moose. Temporary site or area closures will be lifted either when the den, nest or colony fails, or the young are fledged or weaned. Campsites and day use sites that are involved with human-bear problems may also be temporarily closed. Sites may be temporarily closed in response to the presence of prescribed natural fires or prescribed burns, special habitat requirements of ungulates, or accelerated erosion that releases archeological materials.

Schedule for Implementing the Site Management Program. Implementation of this site management program will require a phased approach due to funding and manpower constraints, the presence of abandoned cabins and debris on some sites, the presence of retained use and occupancy cabins on others, and the presence of private cabins that have not yet been acquired by the National Park Service. The schedule for implementing this site management program is outlined below.

- A. Beginning in the summer of 1988, campsites that are badly impacted or have public health limitations will be permanently closed and restored to natural conditions. Some of these sites will be converted to houseboat sites or day use sites. Facilities will be removed from campsites that will be permanently closed. Appropriate facilities will be installed at campsites that will be converted to houseboat or day use sites. Metal firegrills will be removed from sites where wood fires are prohibited. Bear-proof food storage lockers will continue to be installed at campsites frequented by bears. Appropriate signing will be placed at areas closed to fires or camping.
- B. As funding permits, new developed campsites and day use sites will be created from among the park's undeveloped campsites and cabin sites; several sites will be handicapped accessible. The highest priorities for campsite and day use site development will be on Rainy Lake west of Brule Narrows, and Kabetogama and Sand Point Lakes. Funding for an accelerated construction program will be pursued so that all sites identified for long-term management will possibly be developed within 5 years, except those sites encumbered with retained use and occupancy leases or private cabins.
- C. By the summer of 1990, there will be enough sites either developed or designated to accommodate all overnight use. Sites not yet developed will be signed and a metal firegrill installed; the park's camping and hiking brochure will identify where these sites are located and the level of facility development at each site. At that time, overnight users will be required to camp at designated sites. Day users who want to build a wood fire must likewise use designated sites.
- D. Beginning no earlier than the summer of 1992, if overnight use reaches a level where competition for developed and designated sites is high, a camping permit/reservation system will be implemented.

INTRODUCTION

The approved Master Plan for Voyageurs National Park (U.S. NPS 1980) specified that within the park's natural zone (99.96 percent of the park) there would be located minor development and primitive development areas (ibid, pg. 30-31). Minor developed areas are small campgrounds, such as at Mukooda Lake and King Williams Narrows, for family or small group camping. Primitive developed areas are single unit camping sites located in the backcountry, on islands in the major lakes, or along the shores of the major lakes on the Kabetogama Peninsula and the mainland. The Master Plan states that development at these sites will blend with the natural surroundings; and that each developed (designated) site will have a toilet, firegrill, picnic table and tent pads; sites in the backcountry, however, would not have picnic tables.

The Master Plan thus specified that minor and primitive developed areas will be located within the park's natural zone but it did not identify how many sites would be developed, where these sites would be located, or the type of use that is appropriate for each site. Appropriate uses of the park's natural zone include hiking/backpacking, camping (tent and houseboat), picnicking, boating/canoeing, wind-surfing, water skiing, scuba diving, swimming, all season sport fishing, floatplane/skiplane travel, snowmobiling, cross-country skiing, and snowshoeing. Since the Master Plan did not identify how many overnight and day use sites would be developed for these appropriate park uses or where those sites would be located, a Lakecountry and Backcountry Site Management Plan Environmental Assessment (EA) (U.S. NPS 1986) was prepared to accomplish that purpose. This site management plan implements the NPS preferred alternative described and evaluated in that EA. National Environmental Policy Act compliance for this plan was covered in the EA.

Voyageurs National Park, Boundary Waters Canoe Area Wilderness (BWCAW) and Quetico Provincial Park form a contiguous unit of relatively undisturbed wilderness in the center of the North American continent that provides a diversity of recreational experiences for citizens of both Canada and the United States. While non-motorized primitive recreation opportunities are being expanded in the BWCAW, motorized opportunities in Voyageurs will continue to offer visitors some of the kinds of use settings and experiences that are no longer available or have decreased considerably in the BWCAW since passage of the BWCA Wilderness Act in 1978. Visitor and site management programs in Quetico and the BWCAW require users to obtain mandatory wilderness permits and camp at designated sites.

Away from maintained roads, in the park's natural zone, Voyageurs' lakecountry and backcountry environments provide two distinct types of recreational experiences in the summer. The lakecountry is primarily accessible by motor powered vessels and canoes. It provides visitors with a semi-primitive motorized experience where they have opportunities for some isolation from the sights and sounds of man, a high degree of interaction with the natural environment, moderate challenge and risk, and use of outdoor skills and motorized equipment. Voyageurs' backcountry, on the other hand, is primarily accessible by trails, portages and aircraft. The backcountry provides

visitors with a primitive experience where they have opportunities for isolation from the sights and sounds of man, feeling a part of the natural environment, a high degree of challenge and risk, and use of outdoor skills.

Voyageurs' natural and cultural environments and resources are fully described in the Final Environmental Statement for the Master Plan (U.S. NPS 1979) and the Lakecountry and Backcountry Site Management Plan EA (U.S. NPS 1986). For the sake of brevity this descriptive material will not be repeated here.

MANAGEMENT PROBLEM

Lakeside camping and picnicking have been traditional uses in Voyageurs National Park and vicinity for thousands of years. Members of the Archaic culture hunted bison and mammoth along the receding shoreline of glacial Lake Agassiz 5000 years ago. People from Laurel (1000 BC to 800 AD) and then Blackduck (800 AD to 1500 AD) cultures were gathering berries and wild rice, and hunting and fishing along the park's lakeshores for several thousand years. For a century and a half, with the assistance of the Ojibway Indians, French-Canadian voyageurs plied this maze of lakes and streams in frail birch bark canoes and transported vast quantities of furs and goods between Montreal and the far Northwest.

During the last 90 years, however, the means used to access the park's campsites and desirable day use sites and the number of people using them has changed dramatically. Today large numbers of visitors use motorboats and houseboats to gain easy access to lakeside campsites and day use sites or trailheads leading to them. One can be at the most remote backcountry campsite within three to four hours after leaving any population center on the park perimeter. Visitors can fly from local seaplane bases to most park campsites in less than one hour.

When recreational camping and day use became popular in wilderness water areas prior to the establishment of Voyageurs, few developed campsites or day use sites were available to accommodate user needs. Most campers and day users established the tradition of camping or picnicking on the most desirable sites regardless of ownership or site durability. The Minnesota Department of Natural Resources and the U.S. Forest Service were the first public agencies to provide developed sites within the future park to meet increasing user needs. As resorts developed and houseboat businesses opened, visitor demands for campsites and day use sites heightened. Private ownership and state leases for summer cabins increased so new campsites were continually being established to replace lost areas. Boise Cascade Corporation responded by developing thirty-three campsites (and portage trails to them) on what were then corporate lands during the decade prior to creation of the park.

Severe localized ecological impacts result from recreational use of Voyageurs' 600 campsites and day use sites, even when there is only minimal use of a site. Common impacts on vegetation at such sites are loss of ground cover, elimination of tree reproduction, damage to tree boles that increases their susceptibility to insect and disease attack, loss of overstory trees, changes in species composition toward more trampling-resistant species, invasion by exotic plant species, and threats to rare plant species and communities. Common impacts on soils are loss of organic layers, increase in exposed mineral soil, increased soil compaction, and soil erosion that exposes tree roots and rocks.

Water quality is also degraded in the immediate vicinity of Voyageurs' recreation sites. Recreational use at campsites and day use sites results in changes in the distribution, abundance and behavior of a variety of wildlife

species, particularly black bears. Many undeveloped campsites and day use sites, cabin sites, and some developed campsites are located on top of prehistoric and historic archeological sites. Many abandoned cabin sites that are suitable for long-term management as campsites or day use sites continue to be occupied by a variety of developments that were associated with their use as either year round residences, summer residences, resorts, or fish camps.

It is not unusual to have more visitors using Voyageurs' undeveloped than developed campsites during most summer periods. As a result, human waste, garbage and fish offal are not adequately managed and undesirable human-bear conflicts occur where food is not properly stored. Visitor use is currently exceeding the capacity of the natural environment or physical facilities to adequately absorb a variety of recreational impacts on some developed and undeveloped campsites and day use sites. Although signs and park literature encourage campers to use developed campsites, there is no policy restricting camping to these sites only.

Conflicts frequently occur between Voyageurs' diverse user groups. Competition for the limited number of developed sites commonly occurs between houseboat users, tent campers and day users. Houseboaters may occupy a developed site for mooring protection but not use its facilities. Day users frequently occupy developed campsites during the day or have difficulty finding a picnic site because all suitable sites are occupied by tent campers and houseboaters. Day users must use unoccupied developed or undeveloped campsites since there are no developed day use sites in the park at this time. Consequently, tent campers must use undeveloped campsites or create new ones. Few group campsites exist in the park, so single unit campsites are often expanded and their physical capacity exceeded.

GOALS AND MANAGEMENT OBJECTIVES

The impacts on the park's natural and cultural resources, and the conflicts between different types of users described above are incompatible with Voyageurs National Park's purpose "to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (Public Law 91-661). According to the park's enabling legislation, management actions must "preserve, for the inspiration and enjoyment of present and future generations, the outstanding scenery, geological conditions, and waterway system which constituted a part of the historic route of the Voyageurs."

National Park Service Management Policies states that "campsites may be designated to protect park resources from deterioration from indiscriminate camping. Other improvements, such as fireplaces, shelters, privies, and picnic tables, may be provided if they aid in protection of the resources. The use of open camp and cooking fires may be prohibited in areas where the management goal is wide dispersion of users, restoration at overused sites, or where the evidence of previous campers (charcoal, fire-rings, etc.) would detract from the quality of experience, or where sufficient firewood is not generally available. Management of the backcountry requires a system for limiting and directing use where overuse is adversely affecting the resources or the user's experience" (U.S. NPS 1978: VII-11). "Reservation systems may be employed when the demand for camping periodically or chronically exceeds the number of campsites" (ibid., 13). "Organized group campsites or campgrounds may be developed and managed in parks where such use is desirable and beneficial to the enjoyment of the park resources" (ibid., 12).

The goals for lakecountry and backcountry site management at Voyageurs are to: (1) maintain the integrity of natural ecological processes; (2) protect and preserve historic and prehistoric cultural resources; (3) provide for satisfying experiences consistent with legislation, policy and social demands; and (4) confine visitor impacts on recreation sites to acceptable levels.

The objectives for Voyageurs' lakecountry and backcountry site management program are listed below under the applicable site management goal. In meeting these objectives, the Service will comply with the legislation governing Voyageurs National Park and the National Park Service.

1. Maintain the integrity of natural ecological processes:

- A. Maintain, perpetuate and restore natural ecosystem processes at work in the park's lakecountry and backcountry environments.
- B. Restore and perpetuate naturally occurring plant and animal species in the vicinity of campsites and day use sites.
- C. Protect endangered, threatened, and special concern species of plants

and animals, and rare plant communities from disturbance by campers and day users, particularly the threatened eastern timber wolf and bald eagle.

- D. Maintain acceptable water and air quality in this federal Class I area.
- E. Conduct a fire prevention program in cooperation with other agencies to protect human life, physical facilities, cultural resources, and prevent modification of park ecosystems by excessive human-caused wildfire.

2. Protect and preserve historic and prehistoric resources:

- A. Permit only those developments which are compatible with the preservation of the park's historic and prehistoric cultural resources in the vicinity of campsites and day use sites.
- B. Ensure that cultural resource inventories have been conducted prior to removal of abandoned cabins or debris and construction of facilities.
- C. Ensure that all design and construction measures at campsites and day use sites avoid or minimize impairments to cultural resources.

3. Provide for satisfying experiences consistent with legislation, policy, and social demands:

- A. Promote visitor enjoyment of the park by providing campsites and day use sites that offer rewarding experiences and opportunities to enjoy various examples of natural, cultural, and scenic resources for the greatest number of visitors compatible with resources protection and visitor safety.
- B. Provide maximum opportunities for visitor solitude and privacy in a natural setting with minimum restrictions and where the imprint of man is substantially unnoticeable.
- C. Recreation opportunities in the park will be managed for relatively homogeneous groups of visitors, thereby minimizing user group conflicts and increasing the park's social capacity.
- D. Obtain objective and systematically collected information about what affects satisfaction so the park can meet visitor needs.

4. Confine visitor impacts on recreation sites to acceptable levels:

- A. Plan campsites and day use sites that blend with the topography and the environment and that minimize adverse effects on cultural and natural resources, including threatened and rare species.

- B. Predicate campsite and day use site management in the park on documented data obtained through appropriate investigation, monitoring and research.
- C. Improve standard techniques for constructing and rehabilitating campsites and day use sites that will be capable of restoring and maintaining park ecosystems and protecting cultural resources.
- D. Design campsites and day use sites that are cost effective to construct and efficient to maintain.

Attainment of these goals and objectives in Voyageurs' lakecountry and backcountry environments will be accomplished by implementing a site management program that has two major components: (1) developed site management; and (2) visitor management. Developed site management will use management of where visitor use occurs, as well as physical manipulation of the site itself. Visitor management on the other hand will use regulation, information, and education to influence the number, type, distribution, and behavior of visitors. The actions necessary to implement these two site management components are described below.

Specific operational standards, guidelines and procedures for constructing and rehabilitating developed sites, maintaining sites, closing and restoring undesignated sites, issuing camping permits/reservations, enforcing regulations, and research and monitoring are yet to be developed. When developed they will be appended to this site management plan.

DEVELOPED SITE MANAGEMENT

Developed site management in Voyageurs' lakecountry and backcountry environments involves management of where visitor use occurs, as well as physical manipulation of the site itself. It will affect the amount, type, and distribution of visitors, the durability of the resource, and it will be used to rehabilitate or restore sites that have been excessively damaged. All site management actions will strive to maintain a natural appearance where the imprint of man is substantially unnoticeable. Closure and restoration of undesignated sites that have not been identified for development and management is also described below. Developed site management actions will entail significant costs for construction, rehabilitation, and maintenance.

The number of campsites and day use sites in Voyageurs is severely limited by steep shorelines, shallow bays and coves, shallow soils, easily eroded soils, high water tables, dense hardwood forest cover, biting insects, wildlife habitat needs, archeological sites, and exposure to lake winds. The park presently has 120 developed campsites that receive regular maintenance and patrol during the open water season: each is equipped with at least a table, firegrill, and pit toilet; some also possess tent pads, bear-proof food storage lockers, and mooring aids. The park also has numerous undeveloped campsites which are regularly used by overnight and day users but which possess no facilities and do not receive any cleanup or maintenance; and 400 cabin sites that have been or may eventually will be acquired for public use, some of which are suitable for development as overnight or day use sites.

Types of Developed Sites

The types of developed sites in Voyageurs' lakecountry and backcountry environments will be increased from three to seven to provide visitors seeking different types of park experiences improved, more numerous and more widely dispersed facilities, reduce visitor conflicts, and increase protection of natural and cultural resources. At present, the park manages three types of developed sites: (1) backcountry campsites that provide visitors with minimum levels of facility development; (2) small campsites that provide individuals or groups of family and friends with two to nine members sites that meet their needs for moderate facility development; and (3) small campgrounds that provide one or more groups of family and friends with sites that meet their needs for increased facility development and privacy.

In addition to the three existing types of sites described above, four new types of sites will be developed and managed in Voyageurs: (1) houseboat sites that provide mooring protection and a place for houseboaters to build a wood fire; (2) day use sites with moderate facility development that provide visitors opportunities to picnic, build fires, swim, and relax in the sun while enjoying the park's largest beaches; (3) large campsites that provide groups of family and friends with nine to eighteen members sites with moderate facility development and increased privacy; and (4) group campsites that provide organized groups with nineteen or more members sites that meet their

needs for increased facilities that are also remote from other users.

Standard Facilities at Developed Sites

Each developed site in Voyageurs will possess appropriate facilities for the type of use intended. Backcountry campsites will be designed to accommodate up to nine people and possess a firegrill, two tent pads, bear pole, and a visually screened vault or composting toilet. Small campsites in the park's lakecountry environment will accommodate up to nine people and possess a picnic table, firegrill, two tent pads, bear-proof food storage locker, and a visually screened vault or composting toilet. Large campsites will accommodate up to 18 people and possess two picnic tables, a firegrill, four tent pads, two bear lockers, and a vault or composting toilet with a privacy screen enclosing it. Depending upon local conditions, a mooring aid may be installed to protect moored boats from dangerous fetches, wakes of passing boats, or a rocky shoreline.

Small campgrounds will be designed to accommodate a maximum of five to seven individual groups with nine people per party. Groups larger than nine people can also use the campground if they break up into parties of nine or less and occupy two or more individual sites. Each site in a campground will possess a picnic table, firegrill, two tent pads, and bear-proof food storage locker. An enclosed vault or composting toilet will be centrally located in the campground for easy access from all sites. Depending upon local environmental conditions, a small dock or floating breakwater may be installed to protect moored boats from dangerous fetches or the wakes of passing boats. Although wood fires will be allowed, wood gathering in the vicinity of the site will not; groups will be encouraged to bring their own wood and/or use stoves or charcoal for cooking and warmth.

Group campsites will be designed to accommodate up to seventy-two people. The capacity of each group campsite will vary depending upon local environmental conditions. Group campsites will possess for each nine people of capacity a picnic table, firegrill, two tent pads, and bear-proof food storage locker. Two enclosed vault or composting toilets will be centrally located in the campsite for easy access. Depending upon local conditions, a small dock or floating breakwater may be installed to protect moored boats from dangerous fetches or the wakes of passing boats. Although wood fires will be allowed, wood gathering in the vicinity of the site will not; groups will be encouraged to bring their own wood and/or use stoves or charcoal for cooking and warmth.

Houseboat sites will be designed to accommodate two houseboats and possess mooring posts or rings to protect trees from girdling and root exposure, and a metal firegrill. Since houseboats already have impervious vault toilets onboard, houseboat mooring sites will not be equipped with a toilet. Houseboats that use the park's undesignated sites must use protective pads where mooring ropes are tied to trees. Houseboat users who want to build wood fires or set up tents on shore must use developed sites.

Day use sites will generally be designed to accommodate two groups of nine people simultaneously and possess two picnic tables, two firegrills, and a toilet with a privacy screen enclosing it. A few day use sites, however, will

be designed to accommodate simultaneously 49 tour boat passengers and several smaller day use groups that are not using the tour boat, such as Anderson Bay. At such large day use sites, an enclosed vault or composting toilet will be centrally located in the picnic area for easy access. A dock or floating breakwater may be installed to protect moored boats from dangerous fetches or the wakes of passing boats. Although wood fires will be allowed, wood gathering in the vicinity of the site will not; groups will be encouraged to bring their own wood and/or use stoves or charcoal for cooking and warmth.

All developed sites will be identified by a location specific sign, such as Northland Small Campsite, Eks Bay Large Campsite, Sugarbush Island Houseboat Site, or Cemetery Island Day Use Site. Each site will also possess appropriate signs to inform users of potential hazards, minimum impact camping techniques, or site closure to wood fires or wood gathering. Composting or impervious vault toilets will gradually replace the pit toilets installed at the park's developed campsites. Sites closed to wood fires will not be equipped with a metal firegrill; signing will recommend that visitors use a stove or burn charcoal in a firepan for cooking and warmth. Some sites will be handicapped accessible.

Site Inventory and Site Selection Criteria

The three most important criteria for evaluating a site for development and management will be: (1) adequate soil area and depth (at least 3 feet) for systematically rotating the locations of pit toilets as they filled up; (2) if the site was on an island, the island must be at least five acres in size; and (3) no conflicts with important vegetative, wildlife, archeological and historical resources or leased or private lands. Many sites that are very desirable in terms of other criteria but have problems with one or more of the criteria above can be developed if: (1) a vault or composting toilet is installed in place of a pit toilet; (2) the use of wood fires on small islands is prohibited; (3) sites could be temporarily closed during the nesting or calving seasons to protect bald eagles, osprey, common loons, deer, or moose; and (4) historical or archeological surveys and clearances allow for development and use of the site.

Each potential developed site will also be evaluated for water access to the site. Since Voyageurs is a water based park, site users must be able to approach and land a boat safely at the site or very close by, and be reasonably assured that changes in lake wind direction and velocity will not threaten their boat, its equipment, or their safety. A site's resistance to recreational use will be evaluated by examining the amount of flat ground needed to accommodate different types of use (day users, houseboaters, or tent campers) and size of party (small, large or organized group). Each site will also be evaluated for availability of firewood and the susceptibility of the site to soil compaction and erosion.

An additional set of factors that will be evaluated is a site's potential to be developed and used as a small campsite, large campsite, small campground, group campsite, houseboat site, or day use site. In other words, will the site's geometry and its location relative to lake winds and intervisibility with other potential developed sites make the site a desirable place to spend

the day and/or night? Factors examined will be: (1) ease of access from the water to the core of the site where most of the use will be concentrated; (2) sufficient area in the core area to accommodate picnic tables, firegrills, and bear-proof food storage lockers; (3) sufficient flat ground for 2 or more tent pads at each site that can be developed in a particular area; (4) opportunities for visitors to have solitude or privacy from other parties while using a site; (5) potential for lake winds to reduce problems with insects; and (6) the aesthetic appeal of a site.

To protect the outstanding scenery and waterway system which constituted a part of the historic route of the Voyageurs, this site management plan will protect the scenic integrity of navigation channels, narrow channels that provide passage between or through lakes, and the vistas from scenic overlooks park visitor centers, and by not developing any campsites or houseboat sites that would compromise the natural scene in the following areas of the park: Black Bay Narrows, Kempton Channel, Anderson Bay, American Channel, Kettle Falls developed area, Kabetogama, Squirrel, Squaw, Namakan, Harrison and King Williams Narrows, and between Gagnon Island and Gehering Point.

Using the site selection criteria described above and in Appendix B, the park staff will identify sites in Voyageurs that are suitable for development and management as campsites and day use sites. Sites will be selected primarily on the basis of their potential to support different types and intensities of satisfying recreational experiences in a natural environment while protecting natural and cultural resources and reducing visitor conflicts. Based on such a site evaluation, about forty percent of the park's 1000 campsites and cabin sites are suitable for long-term recreational use by tent campers, houseboaters, and day users.

Sites Selected for Development and Management

The Service will convert most undeveloped campsites and cabin sites that meet the site selection criteria described above to developed campsites and day use sites. About 300 sites will be converted, thereby bringing Voyageurs' total number of developed sites to approximately 400 (Table 1). A minimum of 20 developed sites will be located in the backcountry while the remaining 380 sites will be located along the shorelines of the park's major lakes. A minimum of 25 of the 400 developed sites will be exclusively for day users where overnight camping will not be permitted. A minimum of 100 sites will be exclusively for use by houseboaters who do not need to set up a tent on shore and want a wood fire. A minimum of 250 sites will be available for tent camping by hikers, skiers, canoeists, snowmobilers, motorboaters, or houseboaters. A minimum of three small campgrounds will be maintained. A minimum of 4 group campsites will be developed for organized groups on Kabetogama, Rainy, and Sand Point lakes. These sites will be periodically reevaluated in the future as part of routine resource impact and visitor use monitoring programs. Based on such evaluations, sites may be added to or deleted from the management program.

All undesignated campsites and cabin sites that are not scheduled for conversion to developed recreational sites in Voyageurs will eventually be permanently closed to onshore overnight visitor use, cleaned up and restored

Table 1. Projected number of campsites and day use sites for development in each of Voyageurs National Park's six management areas once this site management program is fully implemented.

MANAGEMENT AREA	NUMBER OF CAMPSITES AND DAY USE SITES						Totals
	Small Camp-Sites	Large Camp-Sites	Small Camp-grounds	Group Camp-Sites	House-boat Sites	Day Use Sites	
Backcountry	18	0	0	0	0	2	20
Kabetogama Lake	46	11	0	2	20	10	89
Namakan Lake	60	4	1	0	26	5	96
Rainy Lake East	32	7	0	0	32	2	73
Rainy Lake West	27	8	0	1	20	6	62
Sand Point Lake	38	6	2	1	10	3	60
Totals	221	36	3	4	108	28	400

to natural conditions. Five basic steps will be used to restore closed sites to natural conditions: (1) eliminate all recreational use on the site; (2) control drainage and sheet erosion; (3) prepare the soil by aerating the compacted, barren core and fertilization; (4) plant the site using native genotypes or let the site revegetate naturally; and (5) maintain the plantings.

Sites Closed to Wood Fires or Wood Gathering

In order to reduce the proliferation of fire-rings and minimize the threat of human-caused wildfires, wood fires will only be permitted in metal firegrills at Voyageurs' designated sites. Due to a severe lack of firewood at some campsites and day use sites receiving heavy use, wood fires will not be permitted at these sites. Although wood fires will be permitted, wood gathering at the park's small campgrounds and group campsites will not. Since wood gathering for use in wood fires is the single greatest threat to the continued existence of a forest cover on such heavily used sites, wood gathering at small campgrounds and group campsites will not be allowed; users will bring their own wood from outside the park or collect it more than a 1/4 mile away from their site.

Visitors using undeveloped sites or campsites and day use sites closed to wood fires may only use stoves or charcoal in firepans for cooking and warmth. Backcountry campers who are traveling away from maintained trails and developed campsites will also use stoves for cooking and warmth. Wood gathering will be limited to dead and down material collected more than 200 feet from small and large campsites, houseboat sites, and day use sites. The use of chain saws for cutting wood is prohibited in order to protect both standing live and dead trees and large dead and down logs that provide habitat important to a wide variety of park wildlife.

In order to reduce firewood consumption and thereby protect the forest cover in the immediate vicinity of sites where wood fires are allowed, users will be encouraged to use stoves or charcoal for cooking. Wood fires would then be used primarily for socializing and camaraderie in the evening and for warmth during cold windy or rainy days. Such a self-imposed limitation on wood use will be a central feature of the park's minimum impact program.

Temporary Site Closures to Protect Wildlife and Visitors

Campsites and day use sites will continue to be temporarily closed to protect the denning, nesting, calving, foraging and brood-rearing habitats of threatened and special concern species, such as the eastern timber wolf, bald eagle, osprey, common loon, common tern, and moose. Temporary site or area closures will be lifted either when the den, nest or colony fails or the young are fledged or weaned. Campsites and day use sites that have human-bear problems will also be temporarily closed. Sites may also be temporarily closed in response to the presence of prescribed natural fires or prescribed burns, special habitat requirements of ungulates, or accelerated erosion that releases archeological materials.

VISITOR MANAGEMENT

Visitor management in Voyageurs' lakecountry and backcountry environments will include regulation, information, and education to influence the number, type, distribution, and behavior of visitors. Regulation will be used to concentrate use on developed sites, and limit the amount of use and party sizes. Information and education will be used to reduce resource impacts and visitor conflicts. Minimum impact education will be used to reduce impacts associated with illegal, careless, unskilled, and uninformed visitor actions. All visitor management actions will strive to maximize visitor satisfaction within the constraints of providing natural area experiences; concerns for resource protection will be tempered with a concern for promoting recreational opportunities. Visitor management actions will entail significant costs for a camping permit/reservation system, enforcement of regulations, and minimum impact education.

Concentrate Use on Developed Sites

Visitor use will be concentrated on developed sites and on as small a portion of each developed site as possible in Voyageurs' lakecountry and backcountry environments. Resource impacts will be prevented from proliferating widely by requiring visitors to use facilities at designated sites that have been hardened and shielded to increase their durability. Once use is concentrated on designated sites, undesignated sites will be closed to onshore overnight use and restored to natural conditions.

All overnight visitors who set up tents on shore or build wood fires must use one of Voyageurs' designated campsites. The only overnight visitors not required to use the park's designated campsites are those who are traveling away from maintained trails and portage routes in the backcountry; sailboats and cabin cruisers that draw too much water to moor at park campsites and must anchor in deeper water away from shore for the night; and houseboaters who do not need to set up tents on shore or build wood fires.

Twenty-eight of the park's 400 developed sites will be exclusively for day users where overnight camping will not be permitted. Visitors may also use unoccupied developed campsites for a variety of recreational day use activities. Day users must vacate unoccupied campsites by 4 p.m. so that overnight users may have access to these sites. Day use will continue to be permitted at all undeveloped locations in the park if visitors do not build wood fires. Day users who want to build wood fires must use one of Voyageurs' designated sites.

Regulations for Dispersed Houseboat Use

Houseboaters who want to build wood fires while camped for the night may use one of the park's designated sites. Houseboaters who want to set up tents while camped for the night must use one of the park's 264 designated tent

sites (small campgrounds, and small, large, and group campsites). Houseboaters not building a wood fire or setting up a tent on shore may camp anywhere in the park except:

- A. Within navigation channels, narrow channels that provide passage between or through lakes, and the vistas from scenic overlooks and park visitor centers; Black Bay Narrows, Kempton Channel, Anderson Bay, American Channel, Kettle Falls developed area, Kabetogama, Squirrel, Squaw, Namakan, Harrison and King Williams Narrows, and between Gagnon Island and Gehering Point. They may camp in these areas only if they use designated campsites.
- B. Where less than 1/4 mile line-of-sight distance separates a houseboat from any developed or designated campsites.
- C. Where boats would be moored within stands of floating or emergent vegetation, such as cattails, wild rice, reeds, or pond lilies, located in shallow water near shore or in small bays and coves.
- D. Within 1/4 mile of active bald eagle and osprey nests, 200 feet of active loon nests and colonial nesting waterbird rookeries, and islands closed to protect calving areas; generally such areas will be posted as closed.

Although this policy allows mooring at large by houseboats, it is contingent upon the effectiveness of the above regulations to disperse use and keep use levels within resource capacities. Houseboat use levels, resource damage, and user conflicts will continue to be monitored by the park staff. If monitoring reveals that this policy has been ineffective in maintaining acceptable houseboat use levels, protecting resources and reducing user conflicts, a new policy may be implemented that will either limit houseboat use levels or require all houseboats to use designated sites, or both.

Camping Permit/Reservation System

When use reaches a level where competition for sites is high, a camping permit/reservation system will be implemented. At that time, all tent campers and houseboaters will obtain a camping permit for each overnight trip into Voyageurs' lakecountry and backcountry environments. All other boats, such as sailboats and cabin cruisers, that anchor for the night away from shore will also obtain a permit.

The use of a camping permit/reservation system has several advantages for visitors and reduces impacts on the park's natural and cultural resources. Use of the reservation system will allow visitors to reserve campsites in advance of their trip and guarantee that they will have a site when they arrive. The camping permit will be used during search and rescue operations to locate lost or injured visitors or to locate and inform visitors about family emergencies. The permit will be used as a control on the amount of visitor use, where and when it occurs, group size, and length of stay. Requiring visitors to pick up permits in person provides perhaps the only

opportunity for one-to-one communication about minimum impact camping, park regulations, and safety concerns between a uniformed Park Service representative and the public. Information derived from issued permits will be used to refine the park's entire site management program.

Visitors will obtain a permit to camp within one or more of the park's travel zones, at specific campsites, or some combination of the two, during their trip. The number of camping permits issued daily will be limited to that number which maintains a 90 percent occupancy rate. The 90 percent rate was selected to: (1) make locating unoccupied campsites late in the day easier; and (2) enable visitors to relocate their camp to a protected, unoccupied site if wind speed and direction changed dramatically and threatened their safety. The Superintendent may modify the 90 percent occupancy rate either up or down for each type of developed site in each management area to adapt use levels to changing environmental and social conditions.

Party Size Limits at Developed Sites

Party size limits will be placed on each type of developed site to keep disturbed areas small and reduce social conflicts. Small campsites will accommodate up to nine people. Large campsites will accommodate up to 18 people. Small campgrounds will accommodate a maximum of five to seven individual groups with nine people per party. Groups larger than nine people can also use campgrounds if they break into parties of nine or less and occupy two or more individual sites. Group campsites will generally accommodate up to seventy-two people; the capacity of each group campsite will vary depending upon local environmental conditions. Houseboat sites will accommodate two houseboats. Most day use sites will accommodate two groups of nine people simultaneously. A few day use sites, however, will accommodate simultaneously 49 tour boat passengers and several smaller day use groups that are not using the tour boat, such as Anderson Bay.

Minimum Impact Education

Without educated and caring users, impact management in Voyageurs will remain primarily reactionary in nature. Minimum impact education will be used to reduce impacts associated with illegal, careless, unskilled, and uninformed visitor actions; other steps will be needed to control unavoidable impacts. Educational messages will be tailored specifically to Voyageurs and its user groups.

A variety of media will be used to encourage Voyageurs' visitors to build wood fires only at developed sites that possess metal firegrills, collect only dead and down wood for fires more than 200 feet from developed sites, use bear-proof food storage lockers or bear poles at developed sites, pack out all trash, and not disturb nesting birds. Visitor education about minimum impact camping techniques and philosophy, and safety hazards such as submerged rocks, mercury in fish, and bears will be provided in brochures that will be available at visitor contact stations, boat launching ramps, bulletin boards inside and outside the park, houseboat rental outlets, and floatplane bases. Interpretive programs, visitor center displays, the park newspaper, and

contacts with uniformed National Park Service personnel will inform visitors about minimum impact camping, camping in bear country, and safety hazards. Information on recreational opportunities in the park will also be available at visitor contact stations.

One of the primary benefits of issuing camping permits will be the opportunity for all overnight visitors to receive information that will make their park visit safer and more enjoyable while protecting Voyageurs' natural and cultural resources. Evening interpretative programs will frequently touch on the park's campsite and day use site management program, and minimum impact camping. Day and evening patrols by park rangers will enforce compliance with camping permit, designated site, wood fire, and food storage requirements, and area closures to protect fish and wildlife. Patrols will also provide additional opportunities for visitors to learn more about attractions, safety hazards, and minimum impact camping techniques and philosophy.

CONSULTATION, COORDINATION AND PREPARERS

The following agencies, organizations and individuals were consulted in preparing this plan.

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Minnesota State Planning Agency, St. Paul

Minnesota State Historic Preservation Office, St. Paul

Ontario Ministry of Natural Resources; Atikokan and Fort Frances Districts and Quetico Provincial Park

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St. Louis County Planning and Zoning Department, Duluth

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U. S. Fish and Wildlife Service, St. Paul

U. S. Forest Service, Superior National Forest; Forest Supervisor's Office and

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APPENDIX B: SITE SELECTION CRITERIA

The suitability of Voyageurs National Park's 120 developed campsites, 480 undeveloped campsites and 400 cabin sites for development and management as campsites and day use sites will be evaluated using the site selection criteria described below (Oveson 1983, Reaume 1983). Sites selected for development and management must rate high numerically during the evaluation process and pass several site inspections by personnel from the Resource Management and Maintenance Divisions.

Critical Site Selection Criteria

The three most important site selection criteria will be latrine potential, island size, and conflicts with critical natural and cultural resources. If a site does not meet all of these selection criteria, it will not be considered for development unless mitigating measures are available to minimize the severity of a problem. Many sites that are very suitable in terms of other criteria but have problems with one or more of the criteria above can be developed if: (1) a vault or composting toilet is installed in place of a pit toilet; (2) the use of wood fires on small islands is prohibited; (3) sites could be temporarily closed during critical periods to protect bald eagles, osprey, common loons, and other wildlife; and (4) historical or archeological surveys and clearances allow for development and use of the site.

Latrine Potential. In order to minimize problems with human waste, all sites except houseboat sites, must have sufficient soil (preferably a sandy loam) to accommodate a minimum of four alternate pit toilet locations. Soil pockets must be at least 3 feet deep. Pit toilet locations must also be at least 100 feet from water and visually screened from the site and passersby. To be selected for development, large campsites, group campsites and day use sites must possess almost unlimited alternate pit toilet locations. Sites with insufficient soil for a pit toilet may be developed if they are found to be extremely resistant to recreational impacts and equipped with a composting toilet or impervious vault. Since human waste on houseboats is stored onboard in a holding tank and is pumped out by the houseboat rental operator after each trip, houseboat sites do not require onshore toilet facilities.

Island Size. Many of the park's small islands have been severely impacted by recreational use. Firewood gathering has eliminated much of the understory herb and shrub layers, tree reproduction (seedlings and saplings), dead standing trees, down logs, and many live overstory trees have been cut. Islands that are less than five acres in size are not suitable as sites because all use, particularly wood gathering, is concentrated in such a small area. Islands less than five acres in size will not be developed except where wood fire use is prohibited.

Conflicts with Critical Resources. Sites that are in conflict with critical resources will not be developed in order to protect the integrity of Voyageurs' natural and cultural resources. At each site, conflicts with

fish and wildlife, vegetation, historical and archeological resources, or leased or private lands will be evaluated. Wildlife conflicts that will receive special consideration include: close proximity to bald eagle or osprey nests (1/4 mile from historically active nest) and great blue heron rookeries; wetland habitat for loons, other waterfowl, and shore nesting birds; and moose calving areas. Vegetation conflicts occur when sites are on or near plant species or communities that are rare in the park or in danger of local or regional extinction. Cultural conflicts occur where sites are officially designated as an historical landmark, site, or district or have the potential for such designation, or have been identified as an archeological site. Sites may be selected for development that will have to be closed temporarily when nesting eagles or osprey are less than 1/4 mile from the site. Closed sites will be reopened when the nest fails or the young fledge.

Additional Site Selection Criteria

If a site passes all three of the critical site selection criteria described above, it will then be evaluated for water access, resource protection, and development potential.

Water Access. Since Voyageurs is a water based park, site users must be able to approach and land a boat safely at the site or very close by, and be reasonably assured that changes in lake wind direction and velocity will not threaten their boat, its equipment, or their safety. Four criteria will be evaluated to assess water access: approach, landing, shoreline and exposure.

Approach - If the area through which boats must navigate to the site landing is limited by shallow water or unmarked submerged hazards such as rock shoals, outcrops or submerged boulders, or boat mooring is limited by rocks in the water, the site will be considered unsuitable. If these hazards can be easily removed during site development, the site will be considered suitable. For instance, many houseboat sites can be made suitable for development by removing a few submerged rocks.

Landing - If the boat landing area at the main entry to a site is difficult or unsafe for visitors, the site will be considered unsuitable for development. If these problems can be minimized by installing a small dock, mooring posts or rings, or stairs up a steep rock face, the site will be considered suitable for development.

Shoreline - If the shoreline has obvious potential for erosion and vegetation loss as a result of recreational use, the site will be considered unsuitable for development. If these problems can be corrected by stabilizing eroding banks with rock riprap or treated timbers, the site will be considered suitable for development. Sand beaches or exposed bedrock are the most desirable types of substrate for shorelines at developed sites.

Exposure - If all potential site landings are directly open to dangerous wave action, the site will be considered unsuitable for development. The ideal site location is a small bay that provides protection from

winds from almost all directions. Sites that will only provide protection from winds for about half of the cardinal points will be acceptable for recreational use on days when lake winds are coming from cardinal directions specific to that site. Sites that will provide protection to users from only one cardinal direction will be considered unsuitable for development. Site landings with sand beaches are more resistant to exposure problems such as strong wave action, than site landings on exposed bedrock.

Resource Protection. The number of potential campsites and day use sites in the park is severely limited by topography, shallow soils, high water tables, plant cover, insects, wildlife habitat needs, archeological sites and exposure to lake winds. Since Voyageurs has very few suitable locations for these types of developed sites, it is very important that the sites selected for development and management can withstand recreational use for hundreds of years with only routine maintenance. Three factors will be evaluated to assess resource protection: expansion potential, firewood, and soil impact capacity.

Expansion Potential - Since most of the park's undeveloped and developed sites are relatively small in area, it is very important that sites selected as large campsites, small campgrounds, group campsites and day use sites have enough flat ground to accommodate the maximum size group that will use these sites. Sites that do not possess enough flat ground to accommodate a small campsite will be considered for development as a houseboat site. It is also very important at houseboat sites that enough flat ground is available in the vicinity of the site for activities on shore; an ideal situation would be one where there is a sand beach and nearby rock promontories. Sites that do not possess enough flat ground to accommodate a large campsite will be considered for development as a small campsite. Sites that do not possess enough flat ground to accommodate a small campground, group campsite, or day use site will be considered for development as a large campsite.

Firewood - If firewood availability is low, the site will not be considered suitable for development: particular attention will be paid to depletion of live and dead trees and lack of down wood within 100 yards of the site core. If this problem can be corrected by prohibiting wood fire use or wood gathering, the site will be considered suitable for development. This factor will be important primarily in evaluating the suitability of small islands for developed sites.

Soil Impact Capacity - Since recreational use increases soil compaction and the rate of soil erosion on a site, it is critical that these processes be stabilized by development and maintenance activities. Soil compaction and erosion are particularly important because as soil porosity decreases and soil is removed from a site, tree roots are exposed; trees are thus mechanically and physiologically stressed and many will eventually die. Soil compaction and erosion also restrict the regeneration of grasses, herbs, shrubs, and trees on a site.

Sites with relatively steep slopes or easily eroded soils will not be considered suitable for development. The most durable campsites are located on exposed granite while the least durable are on sandy soils. Many sites located on schist are unsuitable for development because of shallow soils; even limited recreational use would quickly remove the lichen and moss layer and expose tree roots that are confined to narrow linear depressions in the rock. The most suitable houseboat and day use sites are those with sand beaches that do not possess any bank erosion or undercutting.

Development Potential. An additional set of criteria that will be evaluated at each site is the site's potential to be developed and used as a campsite or day use site. In other words, does the geometry of the site and its location relative to breeze potential and intervisibility with other sites make the site a desirable place to spend the day or night? Seven criteria will be evaluated to assess development potential: access to core area, central core area, tent pads, circulation, site intervisibility, breeze potential, and scenic attributes.

Access to Core Area - All of Voyageurs' sites will be located immediately adjacent to the water because sites on the shore are no more or less resistant to recreational impacts than sites located 100 or more feet from shore. No sites will be located away from the lakeshore because visitors want a view of the water and insect problems are frequently intolerable a short distance away from shore in the woods during the summer. Sites that will require the construction and maintenance of long access trails between the site landing and the campsite core area will not be considered suitable for development. Ideally, the distance between landing and core should be about 50 to 100 feet. Distances of 100 to 150 feet will be acceptable but anything longer, with few exceptions, will be considered too far for practical purposes.

Central Core Area - If a large enough central core area where a picnic table(s), firegrill(s), and bear-proof food storage locker(s) can be placed is not present, the site will be considered unsuitable for development. Since most recreational impacts on a site are concentrated in the central core area, this critical area must be the most durable part of a site; if it is not, the site will not be considered suitable for development. If these problems can be corrected by bringing in additional soil or building a large tent pad like structure under the picnic table, the site will be considered suitable for development.

Tent Pads - The site will be considered unsuitable for a small campsite if there is not enough flat ground to accommodate at least one tent pad (13x13 feet) with good drainage; most small campsites must have enough flat ground to accommodate two pads. Large campsites must have enough flat ground to accommodate four tent pads. Small campgrounds must have enough flat ground to accommodate from 10 to 14 tent pads. Group campsites must have enough flat ground to accommodate about 18 tent pads.

Circulation - If circulation between the central core area, tent pads, latrine, and landing(s) is conducive to extensive social trail development and does not facilitate fluid movement around the site, the site will not be considered suitable for development.

Site Intervisibility - An important aspect of every visitor's experience at Voyageurs is the opportunity to find solitude or privacy while using developed sites, and experience being in a remote wild area uncluttered by the presence of others. Thus, if a site is visible from an adjacent suitable site that is less than 1/2 mile away, one of the sites will be considered unsuitable for development. To protect the outstanding scenery and waterway system which constituted a part of the historic route of the Voyageurs, the site management program will protect the scenic integrity of navigation channels, narrow channels that provide passage between lakes, and the vistas from scenic overlooks or visitor centers by not developing any campsites or houseboat sites that would compromise the natural scene in the following areas of the park: Black Bay Narrows, Kempton Channel, Anderson Bay, American Channel, Kettle Falls developed area, Kabetogama, Squirrel, Squaw, Namakan, Harrison and King Williams Narrows, and between Gagnon Island and Gehering Point.

Breeze Potential - The presence of biting and stinging insects seriously detracts from visitor use and enjoyment of a site during the summer. Visitors readily use sites that are located on small islands or rocky promontories; they avoid sites that are located in hardwood forest. Sites dominated by an overstory of red, white, or jack pine will be considered very desirable because they are located on dry sites that create an open forest stand that lake winds can easily penetrate.

Hardwood stands dominated by quaking aspen, paper birch, or black ash, and conifer stands dominated by white or black spruce are located in very moist environments that favor insects. Such stands are also very dense and do not allow lake winds to penetrate the forest understory and force biting insects to protective cover. Hardwood stands, therefore, will not be considered desirable locations for developed sites.

Scenic Attributes - The aesthetic appeal of each site will be evaluated in terms of opportunities for near and far views of water, islands, mainland, geology, mosses and lichens, trees, etc. Sites which offer the most diversity in terms of aesthetic appearance will be considered very desirable. Sites that are located on shallow bays that are surrounded by hardwood forest will be considered undesirable because of the monotony of the visual scene. Sites that are very scenic but possess shallow soils or insufficient firewood may be developed if a composting or impervious vault toilet is installed at the site, or the site is closed to wood fires, respectively.

Summary of Criteria for Different Types of Sites

The criteria that will be the most critical in the selection of a particular

site as either a houseboat site, small campsite, large campsite, small campground, group campsite, or day use site are briefly outlined below.

Houseboat Site - Island size, conflicts with critical resources, exposure to lake winds, approach and landing (deep near shore, free of rocks, and sand or bedrock substrate), shoreline, firewood, soil impact capacity, site intervisibility, breeze potential and scenic attributes.

Small Campsite - Latrine potential, island size, conflicts with critical resources, approach and landing, shoreline, exposure to lake winds, firewood, soil impact capacity, central core area (suitable location for 1 picnic table, 1 firegrill and 1 bear-proof food locker or bear pole), tent pads (suitable locations for 2 tent pads), site intervisibility, breeze potential and scenic attributes.

Large Campsite - Latrine potential, island size, conflicts with critical resources, approach and landing, shoreline, exposure to lake winds, expansion potential, firewood, soil impact capacity, central core area (suitable location for 2 picnic tables, 1 firegrill and 2 bear-proof food lockers), tent pads (suitable locations for 4 tent pads), circulation, site intervisibility, breeze potential, and scenic attributes.

Small Campground - Conflicts with critical resources, approach and landing, shoreline, exposure to lake winds, expansion potential, soil impact capacity, central core area (suitable locations for 5 to 7 picnic tables, firegrills, and bear lockers), tent pads (suitable locations for 10 to 14 tent pads), circulation, site intervisibility, breeze potential, and scenic attributes.

Group Campsite - Latrine potential, island size, conflicts with critical resources, approach and landing, shoreline, exposure to lake winds, expansion potential, soil impact capacity, central core area (suitable locations for 8 picnic tables, firegrills and bear lockers), tent pads (suitable locations for 18 tent pads), circulation, site intervisibility, breeze potential, and scenic attributes.

Day Use Site - Latrine potential, island size, conflicts with critical resources, approach and landing, shoreline (preferably sand beach suitable for swimming and sunning), exposure to lake winds, expansion potential, firewood, soil impact capacity, central core area (suitable locations for at least 2 picnic tables and 2 firegrills), circulation, site intervisibility, breeze potential, and scenic attributes.

As the nation's principal conservation agency, the Department of the Interior has basic responsibilities to protect and conserve our land and water, energy and minerals, fish and wildlife, and parks and recreation areas, and to ensure the wise use of all these resources. The department also has major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

