

draft general management plan
august 1979

SLEEPING BEAR DUNES



NATIONAL LAKESHORE / MICHIGAN

This plan has not yet been approved. Its purpose is to provide planning information for further consideration and discussion, and it may undergo considerable revision.

SLEEPING BEAR DUNES
NATIONAL LAKESHORE

DRAFT GENERAL MANAGEMENT PLAN

August 1979

United States Department of the Interior
National Park Service
Denver Service Center

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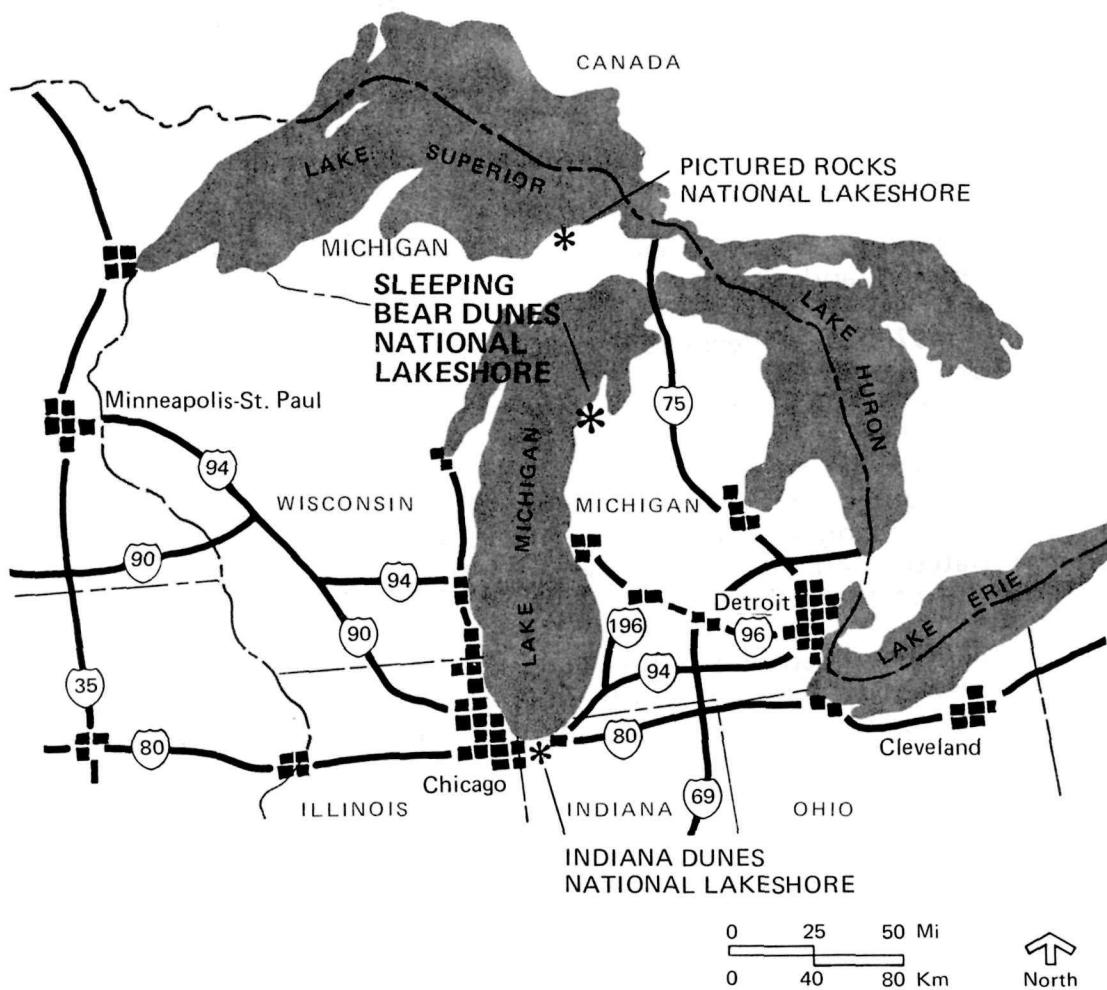
I N T R O D U C T I O N

In the 1950s, Congress requested the National Park Service to survey the U.S. portion of the Great Lakes shoreline to determine which areas were worthy of protection for their scenic, natural, or other recreational values. In 1966, Congress authorized the establishment of Pictured Rocks National Lakeshore on Lake Superior and Indiana Dunes National Lakeshore on the southern shore of Lake Michigan. On October 21, 1970, Congress established the 71,000-acre Sleeping Bear Dunes National Lakeshore along the northeastern shore of Lake Michigan to preserve "outstanding natural features, including forests, beaches, dune formations, and ancient glacial phenomena . . . for the benefit, inspiration, education, recreation, and enjoyment of the public" (Public Law 91-479, 84 Stat. 1075).

Before Sleeping Bear Dunes was established, a master plan had been prepared and approved. This plan was followed by a regional water and sewer system feasibility study in 1973, a wilderness study in 1974, a wilderness recommendation in 1975, and a scenic road study in 1977. In 1977 the National Park Service determined that the initial master plan needed to be revised because the majority of land within the legislated boundary (over 70 percent) had been acquired, more was known about the area's resources, and the public's perception of the national lakeshore's role in the region had changed. Consequently, the current planning effort was initiated, and this Draft General Management Plan represents the results of that effort.

This document contains the concepts for the overall visitor experience, a description of the major actions that will be taken in each planning unit and the rationale for their selection, management zoning for the lakeshore, an overview of how natural and cultural resources will be managed, and development concept plans for major use areas. Detailed resource descriptions are included in a separate document, the Resource Information Base. Another document, the Assessment of Alternatives, contains descriptions and analyses of the alternative resources management and visitor use actions considered during this planning effort. Both of these documents are available for review at lakeshore headquarters in Frankfort and at local libraries.

The implementation of the actions of this plan will cost an estimated \$16,628,000 (1979 dollars). Assessments for design alternatives will be prepared for individual components of the plan before any construction is initiated.



VICINITY

SLEEPING BEAR DUNES
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ENVIRONMENTAL OVERVIEW

Located within the five-county Grand Traverse Bay region, Sleeping Bear Dunes National Lakeshore is part of an area of diverse recreation resources that is attracting growing numbers of vacationers and permanent as well as summer residents. Traverse City, 20 miles east of the lakeshore, provides the majority of transportation (air and bus) and visitor services for the region. Adjacent communities such as Empire and Glen Arbor currently provide a limited range of visitor services, but they have the potential for accommodating the anticipated increases in numbers of visitors to the lakeshore.

Access to the mainland portion of Sleeping Bear Dunes is by way of U.S. 31 and Michigan 22 from the south, Michigan 72 and U.S. 31 from the east, and Michigan 22 from the north (see the Vicinity map). Michigan 22 traverses the entire length of the national lakeshore and has been recommended for designation as a state scenic road. North and South Manitou islands are seasonally accessible by boat from Leland, which is 5 miles north of the lakeshore boundary. Launching sites and docking facilities for private boats are located in Frankfort and Leland.

NATURAL RESOURCES

The topography of the Upper Great Lakes region--Michigan, Wisconsin, and Minnesota--has been and continues to be sculptured by geologic processes. The most evident examples are glacial remnants of the last great ice age--moraines, lakes, and drainage channels. Post-glacial lake formations are present, and although they are not highly visible, they illustrate an important part of the geologic story. The processes that are changing the landscape today include the gradual filling of bays, the erosion and accretion of beaches, the wearing away of headlands, and the formation of sand dunes, such as Sleeping Bear Dune itself.

Soils are predominantly sandy and well drained, making them conducive to outdoor recreational activities such as hiking, camping, and picnicking in most areas. In other areas, they are more suited to agriculture. Fruit growing is an economically significant industry.

Climatic conditions along the Lake Michigan shoreline have a pronounced influence on resources management, as well as on visitor use. Blowing sand in nonvegetated areas, cold winter winds, moisture, and fog all have a strong influence on plants and animals, the visitor experience, and the types of facilities that can be provided.

A variety of plant associations in the lakeshore illustrate the adaptive relationship between vegetation and soils, climate, and water. These plant associations are related to dune, forest, plain, meadow, swamp, and aquatic environments.

Diverse wildlife populations are a reflection of varied habitats. With the exception of birds, there are relatively few wildlife species on the Manitou islands, compared with the numerous species on the mainland. The most popular recreational activities in the lakeshore associated with wildlife resources are fishing and deer hunting.

CULTURAL RESOURCES

Cultural resources in Sleeping Bear Dunes include several archeologic and numerous historic sites. The archeologic resources are remnants of artifacts used by prehistoric people 3,000 years ago. In more recent times, the Ottawa and Chippewa Indian tribes visited the area to hunt and collect maple sap. It is from Indian legends that the name Sleeping Bear was first associated with the area.

The historic sites reflect the lumbering, maritime, agricultural, and resort-era history of northwestern Michigan. The establishment of lifesaving stations and lighthouses in the 1800s along the Lake Michigan shoreline indicates the importance of commercial shipping to the economic development of the region. Soon after the arrival of settlers in the mid-19th century, the cutting of the huge forests began. When the forests had been cut, the area's agricultural potential and its natural beauty provided a new impetus for growth. After the turn of the century, tourism became a major industry in the Sleeping Bear Dunes area, and it continues to influence the economic growth of the region today.

T H E P L A N

The four sections of this General Management Plan are visitor use, natural and cultural resources management, management zoning, and general development. Visitor use and resources management are discussed in the text below, while management zoning and the general development scheme are presented on maps. A chart accompanying the General Development map details specific actions for implementing the plan. Maps showing the development concepts for Glen Haven, Sleeping Bear Dune, and the Platte River corridor are also included. (See the foldout in the pocket on the back cover.)

VISITOR USE

The Manitou islands and the mainland portion of Sleeping Bear Dunes National Lakeshore present differing opportunities for use by visitors. Early in the planning process, therefore, a management distinction was made about the overall types of experiences that will be offered to visitors:

The islands will be managed as isolated, seasonal use areas, with access by boat only (the islands are inaccessible December through March); hiking will be the primary means of exploring and discovering their resources; and solitude, remoteness, and self-reliance will be the principal elements of the visitor experience.

The mainland will be managed to provide a wide range of experiences and a variety of year-round interpretive and recreational facilities and programs; the local towns will continue to serve as focal points for visitor services.

The islands and the mainland were then divided into six planning units so that equal attention would be given to all areas. The units are North Manitou Island, South Manitou Island, Good Harbor, Glen Lake, Empire, and Platte. (Each of the four mainland units is defined according to a drainage basin.) Although the National Park Service only has jurisdiction within its authorized boundary, the planning units include areas outside the boundary because conditions in these areas influence both the visitor experience and resources management within the lakeshore (for example, the National Park Service does not have jurisdiction over state or county roads that provide visitor access or over visitor services provided outside its boundary).

A number of proposed actions for visitor use are discussed together, rather than by planning unit, because they relate to the entire lakeshore. These actions deal with the scenic corridor,

access and circulation, interpretation, wilderness, and overnight use, and they are discussed in the following section. Development proposals for the individual planning units, and the rationale for their selection, are discussed afterward.

General Proposals

Scenic Corridor. The enabling legislation for Sleeping Bear Dunes authorized the acquisition of private lands to construct a scenic road to enhance visitor travel, to provide for interpretation, and to protect outstanding natural features. Previous studies recommended the acquisition of 4,584 acres for these purposes. This plan, however, recommends that only one portion (1,125 acres) of the scenic corridor be acquired for the construction of a road. This will be in the Platte planning unit along the Crystal Highlands, where a scenic parkway will provide a southern entrance to the national lakeshore and will reduce congestion on local roads. No other sections of the scenic corridor will be acquired for the construction of a road.

To protect outstanding natural, scenic, and recreation resources, approximately 2,780 acres will be acquired. These resources are discussed specifically under the Glen Lake and Empire units. A plan that outlines the overall goals of the land acquisition program will be prepared for these suggested additions and for private inholdings. Except for the scenic road in the Crystal Highlands, the proposals that call for additions to the lakeshore will require congressional action before the land can be acquired.

Access and Circulation. A docking facility for public transportation to the Manitou islands and launching ramps for private boats are needed somewhere between Port Oneida and the town of Empire. The exact location, size, and cost will be determined by a suitability/feasibility study conducted cooperatively by the National Park Service, the state of Michigan, and the local governments. Operating a boat service to the islands from somewhere other than Leland may allow for faster service and may help to reduce congestion in Leland caused by visitors traveling to the islands.

Because of anticipated increased use and resource considerations, public transportation systems may be initiated or required on South Manitou Island, on the Hart Nature Trail, and in the village of Glen Haven. These systems would enhance visitor convenience and enjoyment, be energy efficient, and serve visitors with limited abilities for sightseeing, such as the elderly, the handicapped, and those with small children. Before any of these systems could be initiated, however, transportation economic feasibility studies would have to be completed.

Vehicular access to private lands within the lakeshore boundary will continue to be provided by way of county or National Park Service roads. The private lands that will not be acquired by the National Park Service are in the Good Harbor, Glen Lake, Empire, and Platte planning units.

An integrated system of bicycle and hiking trails will be provided to link major features and to give visitors the opportunity to hike and bike the entire length of the mainland portion of the lakeshore. Hiking trails on the Manitou islands will connect key features. The trails will avoid hazardous and sensitive areas to ensure visitor safety and to minimize environmental damage. Trailheads at key locations will provide adequate parking for backpackers and day hikers. Trails designed for use by persons with physical limitations will be constructed at selected major visitor areas on the mainland and South Manitou Island.

Some local and state roads in the region have been used as bicycle routes. The National Park Service will work cooperatively with state and local governmental agencies to establish a bicycle trail system in the area. The trails will be designed to offer bicyclists a safe experience while allowing access to many of the lakeshore's outstanding features.

A limited system of horseback-riding trails will be developed in the Glen Lake unit to determine if there is a need for such trails. This initial trail system could either be expanded or eliminated at a later time, depending on the use it received.

Interpretation. The interpretive program will be based on the following assumptions:

The location of interpretive activities should be clearly indicated to serve visitors with varied interests and abilities--Visitors will be coming primarily for recreation--to camp, climb the dunes, hike and ski the trails, boat and fish, and drive through the picturesque countryside to scenic overlooks. These activities must be provided in a manner so that the resources are not abused, visitors are protected from hazards, there are ample environmental education opportunities, and use within the lakeshore is compatible with land use patterns outside the boundary.

Natural history and human history are inseparable parts of the interpretive story--The story of the many landforms and natural environments, which combine to make a scenically diverse and interesting terrain, are complemented by the history of settlement and the use of the land and water. Together these elements make up a story of human adaptation to and influence on the natural environment.

The linkage of past, present, and future should be stressed, and interpretive programs should make the resources come alive by creating vivid images of movement and change--The fluctuation of glaciers, shorelines, sand dunes, plant cover, and trends in human use of the land and water are all dynamic concepts that can be explained to stimulate visitor interest.

Visitors entering the lakeshore by way of major access routes will find unmanned information/orientation kiosks at four strategic roadside locations (see General Development map). These kiosks will identify and describe the principal environmental education, interpretive, and recreational opportunities available in the region, as well as visitor support services, such as restaurants, motels, and campgrounds.

First-time visitors who want personal assistance in planning their stay, as well as those visitors who want more detailed information, will be directed to a new lakeshore headquarters/interpretive facility in the Empire area. This centrally located facility will be easily accessible to most visitors and will provide information on how to reach outstanding resources, advice on when and how to enjoy them safely, and schedules for a variety of programs.

The most important of the large-scale interpretive concepts--such as the glacial origins of the land and lakes--will also be presented at this facility. These ideas are too extensive to be adequately described onsite, so audiovisual and exhibit techniques will be used to explain them. Where possible, natural and cultural themes will be interpreted onsite. Important concepts such as history and economic change will be presented by means of free or low-cost publications.

Obviously the best way to experience most of the lakeshore's resources is to see them firsthand. Self-guided and conducted interpretive hikes will be offered in several areas. Conducted tours will be provided in fragile or hazardous resource areas--for example, springs and bogs, wilderness areas where policy precludes interpretive development, and buildings with limited capacities. These tours will help ensure resource protection and visitor safety. Gathering points and parking areas for conducted walks will be designated near popular use areas.

A number of areas have been identified where the National Park Service staff can protect the resources from overuse by rotating interpretive programs. Changing tour locations will also offer repeat visitors as well as those staying longer a variety of experiences. Nature walks and environmental education programs will not be provided exclusively by the National Park Service; private organizations, such as clubs, schools, and environmental camps, will also be encouraged to provide field-study programs.

Because campers frequently have the time and interest to attend evening interpretive programs, the National Park Service will present programs at campgrounds that will interpret natural and cultural resources, as well as safe and environmentally compatible ways of using lakeshore resources.

Detailed information on interpretive themes and where they will be presented will be contained in the interpretive plan, scheduled for completion in late summer 1979.

Wilderness. In the 1975 Wilderness Recommendation, the National Park Service identified six areas within the national lakeshore that should be considered for designation as potential wilderness. The wilderness suitability of these areas was reviewed as part of this general management planning effort. With minor exclusions, wilderness was determined to be the most appropriate use in five of the six areas. The sixth area, the Sleeping Bear plateau, which includes the Hart Nature Trail, will not be recommended for potential wilderness designation because vehicular use on the trail is a traditional activity that is integral to the visitors' appreciation of the lakeshore. The area south of the Hart Nature Trail was removed from consideration because of its small size, private lands, and county roads.

On South Manitou Island, a corridor for public transportation to two farmsteads and associated fields (by horse-drawn vehicle) is to be excluded.

Private lands that will not be acquired by the National Park Service in the Good Harbor, Glen Lake, Empire, and Platte planning units, as well as road access to them, have also been removed from consideration.

After this General Management Plan has been approved, a revised wilderness recommendation will be prepared and submitted to Congress. Until Congress formally acts on the revised recommendation, the potential wilderness areas under Park Service jurisdiction will be managed as wilderness (see the Management Zoning map).

Overnight Use. One privately owned motel, three National Park Service family campgrounds, and one group campground will be the only overnight facilities provided within the lakeshore. All other accommodations will be provided by private interests outside the lakeshore.

The existing family campgrounds at Platte River and D.H. Day will be redesigned, and the entrance stations, comfort stations, amphitheaters, and campsites will be upgraded. A group campground with a central parking area is planned at a site adjacent to the D.H. Day Campground. A new primitive hike-in

campground with minimal facilities will be provided in the Burnham Woods area of the Glen Lake planning unit.

Primitive campsites with pit toilets and water pumps will be provided in backcountry areas in conjunction with the construction of trail systems. Only on North Manitou Island will camping away from designated sites be allowed. At designated and nondesignated campsites in backcountry areas, visitors will be required to carry out their own refuse.

Two existing structures will be adapted as hostels, one in the Good Harbor unit and one in the Empire unit. The hostels will provide opportunities for low-cost, overnight accommodations within the lakeshore, and they will be located along the trail systems to serve hikers and bicyclists.

Specific Proposals for the Planning Units

North Manitou Island. The primitive character of this island--its inaccessibility, lack of development, and relatively large size (14,753 acres)--will be emphasized. Essential aspects of the visitor experience will be a high degree of solitude, a feeling of self-reliance, and a sense of exploration.

Limited orientation and interpretive aids will be provided to encourage a different type of experience for visitors, one that will be based on an individual's skills at getting around. A limited trail system will be provided to connect major segments of the island with designated campsites and a docking area.

A docking facility will be provided in area A to ensure safe visitor access. The lifesaving station, also in area A, will be adaptively used as an administrative facility where resources management and visitor protection activities will be centered.

The introduced white-tailed deer population will be managed in accordance with the island's resource capability. This will provide opportunities for wildlife observation and hunting.

South Manitou Island. A sense of discovery and a feeling of solitude will be integral to the visitor experience. The island still has well-preserved examples of man's former presence that have withstood the forces of nature. As visitors arrive on the island and enter the village area, they will be able to discover the island's unique features on their own. The sense of exploration will increase as visitors move inland through the fallow farmlands; and when they reach the undeveloped western slopes with their outstanding dune formations and record-sized trees, the feeling will be one of seclusion.

In the village area, as many structures as feasible will be preserved and interpreted to reflect human history on the island. The lifesaving station and lighthouse will be preserved to interpret the maritime story. Conducted tours to the top of the lighthouse will be provided because of the excellent views of the shoreline embayment and the village. The museum in the post office building will be maintained to interpret fishing, logging, and agriculture on the island. The boathouse will be used as a waiting area and for shelter during inclement weather. Selected structures will be adapted for administration and food-concession services. Those buildings that have no appropriate use will be removed. The docking facility near the lifesaving station will be improved to ensure safe visitor access and to maintain the maritime setting.

A public transportation system using horse-drawn wagons may be instituted to provide access to selected farmsteads and other significant resources. The farm structures will be used for seasonal housing and concessioner operations, and adjacent fields will be maintained to enhance the agricultural setting. A conducted tour to the farms, schoolhouse, and cemetery will be provided to interpret past living conditions on the island. A system of loop trails will be constructed to link the major resource features with the village and the transportation system.

The herring and ring-billed gull colonies will be perpetuated to the extent possible, in keeping with natural area management. Visitors will have an opportunity to observe an interesting wildlife resource and to understand its history, behavior, and survival problems.

Good Harbor. Accessibility to diverse natural resources--a scenic, undisturbed embayment with wide sandy beaches, dunes, lakes, and swamps--encourages year-round activities such as hiking and nature observation. Because these activities relate to the resource, they will not require major developments. Plant succession and remnants of the ancient Algonquin shoreline afford outstanding opportunities for environmental study and research.

Actions will be undertaken to perpetuate as natural a setting along the Lake Michigan shoreline as possible. A trail system north of M-22 will lead to Lake Michigan and Pyramid Point, and a loop trail will be constructed around School and Bass lakes. Recreational activities like hang-gliding at Pyramid Point, picnicking near School Lake, and boating on School and Bass lakes (with limitations on the horsepower of motorboats), along with canoeing and rowboating on Shell Lake, will offer visitors diverse opportunities for enjoyment without causing substantial environmental impacts. Parking areas for wilderness access, interpretive programs (mainly conducted nature walks), and recreational activities will be provided at Pyramid Point, at the end of CO 651, along CO 669, and at a picnic site near School Lake. Principal interpretive themes will be forests, wetlands, wildlife, dunes, and shorelines.

Glen Lake. This unit's natural and cultural resources make it one of the focal points for year-round recreation in the northwest Michigan region. The lakes, dunes, and moraines clearly illustrate the geologic processes that shaped the region, and the views from these features are the most spectacular of the entire lakeshore. Sleeping Bear Dune and the Little Glen Lake area will continue to be the hub for recreation and natural history interpretation, and the village of Glen Haven will be a center for illustrating maritime history.

The Hart Nature Trail will be redesigned and upgraded to improve safety, enhance interpretive opportunities, lessen impacts on the resources, and reduce maintenance. The road will be made one-way and will be designed to accommodate public transportation vehicles during the peak visitor season to help eliminate congestion and traffic hazards resulting from private vehicle use on the trail. At other times of the year private vehicles will be allowed. A system of loop trails will connect three interpretive overlooks and several small picnic areas along the road. The principal interpretive themes here will be dunes, glaciers, and shorelines.

The existing dune-climb and the swimming beach at Little Glen Lake will continue to be recreation focal points. At the dune-climb, an open shelter will be constructed for interpretive exhibits that explain dune formation and movement and that provide information. The Pond Trail will be improved, and a conducted tour will be provided on top of the dunes so that the dunes and shoreline can be interpreted. Parking facilities will be improved, and self-contained comfort facilities will be provided at both the dune-climb and swimming beach. Minimal food service will be available in the vicinity of the dune-climb.

The village atmosphere of Glen Haven, its historical significance in the development of the region, and its proximity to major access routes make it ideal for becoming a major tourist attraction. Interpretive themes will cover logging, agriculture, maritime history, and recreational activities. The buildings in the village and the lifesaving station will be adapted for interpretation, food service, craft sales, and management. The village atmosphere will be further enhanced by encouraging visitors to tour the site on foot and by not allowing private vehicles in the town during the summer. Road access will be provided to a parking area on the edge of the village. Public transportation between the parking area, the town, the lifesaving station, and the northern tip of Sleeping Bear Dune may be available during the peak season for those who cannot walk or prefer not to. This would also help control use of the lifesaving station and the dune. At other times of the year, visitors will be able to drive their vehicles to the lifesaving station. Access will continue to be provided to private lands in the area.

The existing dune-ride will be eliminated because of visual and physical impacts on the dunes, conflicts with hikers, and the high cost of maintaining the road.

The D.H. Day Campground just east of Glen Haven will be rehabilitated. The capacity of the campground will remain the same, but there will be fewer campsites per acre, improving the visitor experience by increasing the vegetative cover between sites. Access to the beach in this immediate area will be limited to visitors staying at the campground. A 50-site group campground will also be developed in the area to help accommodate the demand for group facilities.

A new docking facility for public boat service to the Manitou islands and launching ramps for private boats will be constructed somewhere between Port Oneida and Empire. This action will remove the concession-operated boat service to the islands from Leland, which has limited parking facilities and is 5 miles north of the lakeshore. A detailed suitability/feasibility study will be prepared cooperatively by the National Park Service, the state of Michigan, and local governments before a specific site is selected and a design recommended. Leland and Frankfort will continue to provide docking and launching services until the new facility is constructed.

The pastoral setting of the farming complex in Port Oneida will be maintained and the agricultural practices interpreted. Much of this land will remain in private ownership. This area includes the Klett, Olsen, Barrett, Burfiend, and Baker farms, as well as Camp Innisfree. Agricultural uses of these lands will be compatible with the environmental education programs, which will continue to be offered at Camp Innisfree.

Neither the Glen Arbor bypass nor the road in the Miller Hill and Bow lakes areas will be built. The private lands that would have been needed to construct the Glen Arbor bypass will not be acquired because of the area's wetland environment and because the town of Glen Arbor has proposed its own solutions to traffic problems. However, to protect significant natural features and scenic vistas and backdrops for Glen Lake, 2,140 acres of private land will be recommended for acquisition in the Bow lakes and Miller Hill areas. The acquisition of 1,240 acres in the Bow lakes area will add to the lakeshore excellent examples of ice block lakes and long forested valleys, formed when great blocks of ice melted. The area contains an outstanding example of a floating leatherleaf bog and prime examples of plant succession, including the bog, an open marl lake, meadows, and forest. The area presents excellent opportunities for environmental education, especially for the adjacent high school. The attributes of Miller Hill are primarily visual, and the acquisition of 900 acres in this area will not be

undertaken if local zoning and development restrictions can be implemented to protect the scenic values of these slopes and ridges.

A trail system will be constructed to connect the key features of this unit. Hiking trails will be developed at the Hart Nature Trail, the dune-climb and swimming beach areas, Glen Haven, Alligator Hill, Pyramid Point, and the Bow lakes. These trails will be integrated with the lakeshore bicycle trail system.

Empire. This scenic, centrally located coastal unit contains diverse terrain features such as bluffs, dunes, glacial drainage channels, lakes, and wetlands within a relatively small area. The concentration of all these features within this unit will give visitors an outstanding opportunity to observe and learn about glacial history, shoreline dynamics, and plant life.

A combined headquarters and interpretive facility for Sleeping Bear Dunes will be built in the vicinity of Empire. This will be a central location for such a facility with respect to the lakeshore, and it will be along primary access routes. It will be convenient for visitors, who will be able to get information and receive an interpretive overview of the lakeshore before visiting significant resources, and it will also be well suited for National Park Service administration and management functions. An energy-efficient design will reduce operating costs. Until the new facility is built, the existing headquarters in Frankfort, the maintenance facility in Empire, and the existing visitor center near Glen Lake will be used.

The barracks and dining facilities at the air force base will be adaptively used for seasonal functions after the base is declared to be surplus by the Department of Defense and is transferred to the National Park Service. The potential seasonal uses are numerous and could include a hostel, YCC camp, quarters for seasonal employees, or research, storage, and minor maintenance facilities. All structures that cannot be feasibly used adaptively will be removed.

North Bar Lake is the only lake along the entire eastern shore of Lake Michigan that has maintained its connection to this Great Lake and that has remained undeveloped. Although the area is too small for designation as wilderness, it possesses outstanding natural characteristics that should be interpreted and protected through controlled access and use. Therefore, the lake and surrounding forest will be managed as a preserve, and interpretation will be only by conducted walks. Parking will be provided at the north end of the lake.

The Otter Creek and Aral dunes area will be used for conducted nature walks. An open shelter with seating for 50 people and a trailhead for beach access will be provided. An access road off

M-22 to Otter Lake will be maintained for trailheads and launches for canoes and other nonmotorized boats. The outstanding wetlands, dunes, and forests in this area require the highest order of protection, and conducted tours for limited numbers of visitors will be necessary to control visitor impacts and to ensure visitor safety. Because the Aral townsite will be within a wilderness area, conducted interpretive tours will be the principal means for interpreting this former logging community.

A self-guided interpretive tour along the existing Empire Bluffs trail, which will be improved, will be established because the trail passes through areas of diverse resources and offers unequalled views of Empire, the shoreline, and the embayment.

An agricultural setting along M-22 and Esch and Norconk roads will be maintained to enhance scenic driving opportunities and to allow for the interpretation of agricultural practices. The productive farmlands, interesting farmsteads, and pastoral scenes contrast strongly with the dense forests that will eventually reclaim many of the cleared lands in the lakeshore.

The only portion of the scenic corridor that will be acquired in this unit is a 640-acre, privately owned area off M-72 that contains a glacial kettle and kame. Currently, there are no comparable sites within the lakeshore where visitors can see how melting glaciers and huge ice blocks directly shaped the terrain. The kettle, a large glacial depression, is outstanding in its symmetry and depth. The adjacent kame, a hill that formed when sediment poured through a melting glacier, is the only such example in the area.

A loop trail system will connect this unique natural area to Burnham Woods, where a hike-in, primitive campground will be developed, as well as to other parts of the lakeshore.

Platte. The diverse natural resources in this unit offer several types of visitor experience. In the ridge and swale lowland forest and the low shoreline dunes, visitors will be able to experience a feeling of solitude and adventure along the Platte River corridor; they will be able to continue to enjoy water-oriented recreation; and from the Crystal Highlands, they will be able to enjoy panoramic views of the Crystal Lake and the Platte embayments.

The scenic corridor (1,125 acres) will be acquired and a road will be constructed to provide viewing opportunities and an entrance to the southern portion of the lakeshore. This will help alleviate the county's concern with traffic congestion and will reduce visitor use of local roads.

Access to the Platte River Campground, at the junction of the Platte River and M-22, will be moved north of the present

alignment. The three existing boat liveries will be removed, and a new facility will be constructed, with picnic facilities and a central parking area nearby. Pedestrian access between the Platte River Campground, the KOA Campground, and the livery will be improved. To make these improvements, 1.78 acres of private land will be acquired. All of these actions will improve the visual integrity of the site, will reduce traffic congestion and improve visitor safety, will eliminate the duplication of recreational services on the river, and will cluster development to maximize the preservation of natural features in the immediate area.

Recreational activities that focus on the river will still be provided, although a restriction on motorboats along the river will be proposed. A launch for limited-horsepower motorboats will be provided on Loon Lake for use only during the coho salmon fishing season. Small parking areas and short trails to the Platte River will be provided along Lake Michigan Road. These actions will accentuate the natural setting along the river and will provide a variety of recreational activities--canoeing, hiking, fishing, and sightseeing.

At the mouth of the Platte River, the boat launch will be upgraded. The parking area and a portion of Lake Michigan Road will be relocated to improve the river's natural and visual qualities. These actions will be worked on cooperatively with the state, Benzie County, and Lake Township. Cooperation with the Michigan Department of Natural Resources will be continued for the maintenance of coho salmon fishing, the operation of the weir, and the control of motorboats on the river. Traditional access to Platte Bay in Lake Michigan will still be provided for fishermen if dredging is continued by the state of Michigan. Interpretive themes will include the significant and unique natural features of the river--wetlands, wildlife, fishery management, and plant succession in embayment areas.

RESOURCES MANAGEMENT

Sleeping Bear Dunes National Lakeshore will be managed primarily for the perpetuation of the natural environment and the preservation of cultural features, with development being concentrated near existing roads and villages. The majority of agricultural lands, except in the Port Oneida/Pyramid Point area, on South Manitou Island, and along Esch Road, will be returned to a natural condition and managed in accordance with National Park Service wilderness policies. The Park Service will cooperate with the state of Michigan in regulating hunting and fishing within the lakeshore. Rare, threatened, and endangered plant and animal species identified in the Resource Information Base will be protected. Specific management issues will be addressed in the

natural resources portion of the resources management plan. This plan will include sections on the management of wildlife, agricultural land uses, inland lakes and streams, the Lake Michigan shoreline, forests, and dunes.

Key resource concerns such as the deer on North Manitou Island and the gull colonies on South Manitou Island will continue to be studied, and specific management actions will be presented in the resources management plan. Controlled study areas at strategic locations will be established and monitored to warn of potential impacts on the resources.

All lands within the lakeshore, except for North Manitou Island, have been inventoried for significant cultural resources. (North Manitou Island will be surveyed after the National Park Service acquires the land.) As a result of these archeological and historical inventories, one structure (the Hutzler barn) is on the National Register of Historic Places and 16 other sites (including farm complexes and historic districts) have been identified for nomination to the national register. All these sites will be managed in accordance with National Park Service management policies. For additional information on cultural resources, see the Resource Information Base.

Cultural resources physically evident in the lakeshore can be grouped under the themes of agriculture and maritime history. Agricultural resources are located on South Manitou Island, in the Port Oneida/Pyramid Point area, and along Esch Road. Significant farm structures on South Manitou will be adaptively used, and some of the fields will be maintained. Most of the farms in the two mainland areas will remain in private ownership. However, some of the properties that will be acquired by the Park Service will remain in agricultural use. Cultural resources reflecting a maritime history are located on South Manitou Island and at Glen Haven. The village atmosphere will be maintained in both areas by adapting key structures for visitor use and managerial functions. Where appropriate and feasible, buildings will be equipped with energy-conserving utilities (such as wood-burning stoves and windmills). Specific cultural issues will be addressed in the cultural portion of the resources management plan, which should be finished in 1980. A historic resource study inventorying and evaluating historic structures within the lakeshore is now in draft form.

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As the nation's principal conservation agency, the Department of the Interior has basic responsibility 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.

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PLANNING UNITS/ AREAS/ PROJECT SITES	ACTIVITIES	FACILITIES AND PROGRAMS	COSTS	VISITOR CAPACITIES (at one time)
1 North Manitou Island				
A – North Manitou Village	Backpacking (designated campsites)	Hiking trail improvement (3 miles) Road scarification (12 miles of existing road) Building stabilization or removal Dock improvement (8,000 square feet) Building restoration (2,000 square feet; lifesaving station and boathouse)	\$ 6,000 4,000 operating funds 48,000 28,000	60
B – North Manitou Plain	Backpacking (designated and nondesignated campsites)	Hiking trail improvement (27 miles) Road scarification (16 miles of existing road) Building stabilization or removal Deer management Hike-in campgrounds (2 locations, 40 sites total, 8 pit toilets, and 2 water pumps)	54,000 32,000 operating funds operating funds 40,000	300
C – North Manitou Dunes	Backpacking		—	60
Unit Subtotal			\$ 210,000	420
2 South Manitou Island				
D – South Manitou Village	Interpretation (maritime, fishing, and agricultural history) Picnicking Public transportation (horse-drawn wagon)	Hiking trail improvement (0.5 mile) Public transportation suitability/feasibility study (3 concession horse-drawn wagons in areas D and E) Hike-in campground improvement (1 location, 30 sites, 2 vault toilets) Building removal Building restoration (6 historic structures) Dock improvement (800 square feet) Building renovation for food service (1,000 square feet) Picnic area (20 sites) Lighthouse and keeper's quarters stabilization	\$ 1,000 5,000 30,000 operating funds 310,000 24,000 30,000 10,000 200,000	100
E – South Manitou Plain	Backpacking (designated campsites) Public transportation (horse-drawn wagon)	Hiking trail improvement (9.5 miles) Road scarification (7 miles) Building removal (approximately 15 to 25 structures) Building stabilization (2 farmsteads) Gull management Hike-in campground improvement (2 locations, 30 sites total, 2 vault toilets)	19,000 28,000 operating funds 127,500 operating funds 30,000	150
F – South Manitou Dunes	Backpacking		—	70
Unit Subtotal			\$ 814,500	320
3 Good Harbor				
G – Good Harbor Embayment	Cross-country skiing Bicycling Interpretation (forests, wetlands, and wildlife) Environmental Education (nature walks) Backpacking (designated campsites) Picnicking Canoeing/Rowing Motorboating (School and Bass lakes)	Hiking trail development (9 miles) Bicycle trail development (7 miles) Trailhead parking (CO 661 – 15 vehicles, and CO 669 – 25 vehicles) Vault toilets (2 locations) Roadside kiosk and parking (10 vehicles)	\$ 135,000 350,000 40,000 9,000 11,000	240
H – Port Omisca/Pyramid Point	Cross-country skiing Bicycling Interpretation (dunes and shoreline) Viewing (developed overlooks) Environmental Education (nature walks) Backpacking (designated campsites) Picnicking Hang-gliding	Trailhead parking (Pyramid Point – 15 vehicles) Vault toilets (2 locations) Picnic area and trailhead parking (School Lake – 20 picnic sites, 20 vehicles) Hiking trail development (4 miles)	15,000 9,000 30,000 60,000	130
Unit Subtotal			\$ 759,000	370
4 Glen Lake				
H – Port Omisca/Pyramid Point	Bicycling Cross-country skiing Horseback riding Interpretation (dunes, glaciers, and shorelines) Environmental Education Backpacking (designated campsites) Picnicking Hang-gliding	Public dock suitability/feasibility study (boat launch, comfort facilities, 2,000 square foot information/interpretation shelter, and 175 to 300-vehicle parking area) Public transportation (2 boats) Hiking trail development (10 miles) All persons trail (1 mile)** Wayside exhibits (3 locations) Bicycle trail development (5 miles) Horseback-riding trail development (11 miles) Trailhead parking (2 locations, 40 vehicles total) Land acquisition (Miller Hill – 900 acres)	\$ 50,000 Concession 150,000 50,000 7,500 250,000 330,000 40,000 +	270 assuming minimal development at docking area
I – Bow Lakes (scenic corridor)	Interpretation (glaciers and flora/fauna) Viewing (developed overlooks) Environmental Education	Hiking trail development (5 miles) All persons trail and overlook (0.5 mile) Trailhead parking (2 locations, 20 vehicles total) Vault toilets (2 locations) Land acquisition (Bow lakes, 1,240 acres)	75,000 25,000 20,000 9,000 +	70
J – Glen Arbor Bypass (scenic corridor)	Not acquired		—	—
K – Alligator Hill	Cross-country skiing Bicycling Interpretation (maritime and agricultural history) Viewing (developed overlooks)	Hiking trail development (9 miles) Trailhead parking (3 locations, 25 vehicles total) Wayside exhibit (1 location)	135,000 25,000 2,500	90
L – Glen Haven (see development concept plan below)	Bicycling Interpretation (maritime, logging, and recreation history) Camping Picnicking	Hiking trail development (2 miles) All-persons trail development (2 miles)** Bicycle trail development (3 miles) Building stabilization and comfort facilities (approximately 5 structures) Village parking (125 vehicles) Public transportation suitability/feasibility study (2 concession buses) Lifesaving station parking (20 vehicles) Rehabilitate D.H. Day Campground (100 sites) Wayside exhibits (11 locations) Inside exhibits (2 locations) Food services	30,000 100,000 150,000 700,000 125,000 10,000 20,000 underway 22,000 15,000 Concession	350

GENERAL DEVELOPMENT PLAN



PLANNING UNITS/ AREAS/ PROJECT SITES	ACTIVITIES	FACILITIES AND PROGRAMS	COSTS	VISITOR CAPACITIES (at one time)
5 Empire				
M – Sleeping Bear Dune (see development concept plan below)	Cross-country skiing Bicycling Interpretation (dunes, glaciers, shorelines, and flora/fauna) Viewing (developed overlooks) Picnicking Swimming (protected beach) Dune-climbing	Road improvement (Hart Nature Trail – 8 miles) Public transportation suitability/feasibility study (5 concession buses) Hiking trail development (12 miles) All persons trail development (4 miles) and 3 overlooks** Bicycle trail development (4 miles) Interpretive facility improvement (20 vehicle parking area) Trailhead parking (5 locations, 75 vehicles total) Picnic area (2 locations) Dune-climb shelter (1,000 square feet), parking (250 vehicles), and comfort facilities Swimming beach improvement, parking (75 vehicles), and comfort facilities Food services (dune-climb) Wayside exhibits (6 locations)	\$ 2,400,000 20,000 180,000 200,000 200,000 underway 75,000 Existing 125,000 37,500 37,500 Concession 15,000	1,600
N – Burnham Woods	Cross-country skiing Interpretation (glaciers) View (developed overlooks) Backpacking (designated sites)	Hiking trail development (6 miles) All persons trail, overlook, and trailhead parking (2 locations, 1 mile total)** Wayside exhibit (1 location) Hike-in campground (100 sites, 7 pit toilets, water pumps) Trailhead parking (2 locations, 25 vehicles total)	90,000 50,000 2,500 300,000 25,000	110
Unit Subtotal			\$ 6,061,000	2,490
6 Platte				
O – North Bar Lake	Cross-country skiing Bicycling Backpacking (designated campsites) Interpretation (forests, shorelines)	Hiking trail development (2 miles) Bicycle trail development (0.75 mile) Trailhead parking (25 vehicles) Vault toilet (1 location) Road scarification (1 mile)	\$ 30,000 37,500 25,000 4,500 8,000	380
P – Kettle (scenic corridor)	Interpretation (glaciers)	Hiking trail development (1 mile) Road development and trailhead parking (0.1 mile, 15 vehicles – Kettle area) Vault toilet (1 location) Roadside kiosk and parking (10 vehicles) Land acquisition (640 acres)	15,000 45,000 4,500 11,000 +	60
Q – Empire Dunes	Cross-country skiing Backpacking (designated campsites) Bicycling Interpretation (forests)	Hiking trail improvement (3 miles) Bicycle trail development (0.75 mile) Building renovation (2,000 square feet at air base for hostel) Trailhead parking (1 location, 15 vehicles) Land acquisition (640 acres)	45,000 5,000 37,500 70,000 15,000	50
R – Otter Creek	Cross-country skiing Backpacking (designated campsites) Boating (non-motorized) Interpretation (forests, wetlands, logging)	Hiking trail development (3 miles) Wayside exhibits (2 locations) Open shelter and trailhead parking (1,000 square feet, 30 vehicles) Vault toilet (1 location) Trailhead parking (1 location, 20 vehicles)	45,000 5,000 50,000 4,500 20,000	150
Town of Empire	Maintenance Administration Information Interpretation	Interpretive facility/lakeshore headquarters (7,000 square feet, 100 vehicle parking area, 12 exhibits, and audiovisual program)		Leased facility
S – Norocok Farms	Cross-country skiing Bicycling Interpretation (agriculture)	Bicycle trail development (10 miles)	500,000	80
Unit Subtotal			\$ 972,500	720
6 Platte				
T – North Platte Plain	Cross-country skiing Bicycling Backpacking (designated campsites)	Hiking trail development (7 miles) Bicycle trail development (4.5 miles)	\$ 105,000 225,000	125
U – Platte River Corridor (see development concept plan below)	Cross-country skiing Bicycling Interpretation (forests and wetlands along river's mouth) Campground (camping) Camping Picnicking Swimming Canoeing/Rowing Motorboating	Hiking trail development (7 miles) Bicycle trail development (1.5 miles) Boat launch and trailhead parking (Loon Lake, 25 cars) Open shelter and trailhead parking (Platte mouth) Road realignment and parking (0.75 mile, 80 vehicle parking area) Campground rehabilitation (160 sites) Campground access realignment (0.25 mile) Boat launch (day use area, food services, fishing and camping supplies, footbridge, 20-site picnic area, boat launch, 75 vehicle parking area) Vault toilets (2 locations) Land Acquisition (1.78 acres)	105,000 75,000 25,000 20,000 5,000 350,000 underway 40,000 202,500 202,500 9,000 +	230
V – South Platte Plain	Cross-country skiing Backpacking (designated campsites)	Hiking trail development (3 miles) Bicycle trail development (4.5 miles) Roadside kiosk and parking (10 vehicles)	45,000 225,000 11,000	65
W – Crystal Highlands (scenic corridor)	Cross-country skiing Bicycling Interpretation (glaciers and shorelines) Viewing (developed overlooks)	Bicycle trail development (6.5 miles) Road and bridge construction (6.5 miles) Roadside kiosk and parking (10 vehicles) Vault toilet (1 location) Land acquisition (1,125 acres)	325,000 6,000,000 11,000 4,500 +	150
Unit Subtotal			\$ 7,783,000	570
Lakeshore General				
Natural and Cultural Resources Management Plan				underway
Interpretive Plan				underway
Interpretive Prospectus			\$ 10,000	
Land Acquisition Plan			10,000	
Wilderness Recommendation (revisions)			8,000	
TOTAL			\$16,628,000	

NOTE: All estimated costs are based on the construction of similar facilities in other National Park System areas as of April 1979. They include net construction costs but do not include design or planning fees. These preliminary estimates will be refined as the specific site designs and programs are developed. To administer and maintain these additional programs and facilities, the National Park Service staff will be increased from 21 permanent full-time positions and approximately 25 seasonal positions to 24 permanent full-time and 21 seasonal positions. The operating budget would increase from \$1.1 million to \$1.5 million.

*Cost to be determined at time of acquisition.

**All Persons Trails – trails accessible to visitors in wheelchairs; overlooks have low protective walls, where necessary, for visitor safety.

DEVELOPMENT CONCEPT PLANS

