

general management plan  
environmental assessment

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september 1989

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**EFFIGY MOUNDS NATIONAL MONUMENT • IOWA**

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UNITED STATES DEPARTMENT OF THE INTERIOR / NATIONAL PARK SERVICE

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## SUMMARY

Effigy Mounds National Monument was established to preserve significant prehistoric earth mounds found in northeast Iowa. Many of these are known to be Indian burial mounds. They are in a variety of forms, including effigy, linear, conical, and compound (a combination of conical and linear). The monument has about 200 mound sites – 26 in the form of bear and bird effigies. These mounds are distributed in three units of the monument, called the north, south, and Sny Magill units.

## ISSUES

This document presents a proposed general management plan for the monument along with alternatives and an environmental assessment. The actions described in the plan would ensure protection of the significant cultural resources, provide better interpretation and understanding of the area, improve visitor facilities, and provide strategies for managing new lands that have been added to the monument since the 1963 *Master Plan* was completed. These actions address the following issues.

The integrity of the mounds is being damaged by people and natural forces, especially at the Sny Magill unit. Endangered, threatened, or rare federal and state-listed species in the monument need protection. Cultural sites near the monument that are closely related to monument themes also need to be identified and protected.

The types and levels of public access to the mounds in the units need to be determined. This includes access for disabled individuals.

The 1963 *Master Plan* proposes extensive development in the south unit and does not address the recently added Sny Magill unit.

Parking capacity for boat launching at Sny Magill, the headquarters visitor center, and south unit trailhead are inadequate at certain times during the year.

Some north unit trails require heavy maintenance, and certain areas create safety problems for visitors.

## THE PROPOSAL

There would be a broad range of research projects to support cultural and natural resource management actions. Visitor use and development concepts for the three units are as follows.

### North Unit

This unit would have the highest level of visitor use and intensive interpretive activities. Development would include a parking area for disabled visitors near Great Bear mound and improved trails for access to other mounds. A viewing platform would be constructed at Great Bear mound. The Firepoint trail would be rerouted, and safety barriers would be evaluated for design problems. A three-bay garage would be added to the maintenance area.



The boundary would be adjusted to add the Mississippi riverfront between the monument's north boundary and Yellow River to protect significant cultural sites along the Mississippi River. These include the "FTD" and Red House Landing habitation sites, which are currently unrepresented in the monument. No visitor use or development is proposed for the additional lands.

### **South Unit**

This unit would be managed to encourage visitor access to significant mounds, but a low-key, primitive setting would be maintained. A new trail would be developed from the visitor center into the south unit, with a tunnel under Iowa State Highway 76 (IA 76) and a footbridge over the Yellow River. Three overlooks would also be provided. The Yellow River Road would be gated and access limited to landowners and administrative uses. Visitor use levels and interpretive activities would be low.

### **Sny Magill Unit**

This unit would be managed for maximum resource preservation. The only development would be limited expansion of the parking area and boat ramp to support river access activities.

## **ALTERNATIVES**

Alternatives to the proposal range from no action (alternative C) to a major upgrade in activities and facilities (alternative B).


## **IMPACTS OF THE PROPOSAL**

The entire monument is listed in the National Register of Historic Places, and the mounds are on the monument's List of Classified Structures and the state of Iowa's archeological sites inventory. Under the proposal, cultural resources throughout the monument would be protected.

Under the proposal, archeological resources would not be affected in the Sny Magill unit, but slight disturbance from visitor activities would continue to occur in the south and north units. There would be no impacts to historic resources. Access to sites within the boundary addition would not be increased, and sites would receive additional protection under Park Service management.

Development and improvement of facilities would affect soils temporarily. The parking areas would affect about 1.5 acres and trail alignments and construction would affect about 0.2 acre. The new trail and parking area for disabled visitors would affect 0.06 acre, and the maintenance and storage area would affect about 0.03 acre of land.

In areas of construction, vegetation would be destroyed and runoff could encourage exotic species such as thistle and bindweed. Replanted vegetation would differ from vegetation in adjacent areas. Parking at Sny Magill would affect 0.4 acre of mixed grass/weed cover. Development of an interpretive trail in the south unit would affect 0.75 acre of shrubs and trees. A new trail alignment in the north unit would disturb 0.1 acre of vegetation. Access



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improvements in the north unit for disabled visitors would affect about 0.04 acre of vegetation. The maintenance and storage area would affect 0.03 acre of turf grass.

No noticeable impacts would occur on air or water quality.

Temporary displacement of wildlife would occur during facility construction, but effects would be minimal. Some improvement to wildlife habitat would occur because of reduced access on the Yellow River Road. Protected wildlife species (bald eagle, peregrine falcon, and red-shouldered hawk) would not be affected. There would be no impacts on known protected plant species.

NPS development and visitor use would not substantially affect floodplains or wetlands.

Minor short-term inconveniences to visitors would occur during development of facilities; however, most visitor activities would be enhanced.







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## PURPOSE AND NEED FOR THE PLAN

Effigy Mounds National Monument, in northeast Iowa, was established by presidential proclamation in 1949 to preserve a representative and outstanding example of a significant phase of the prehistoric American Indian mound building culture and to protect wildlife, scenic, and other natural values of the area.

The monument includes 1,475.5 acres in three units – north, south, and Sny Magill (see Vicinity map). These areas preserve over 200 mound sites, dating up to 2,500 years old, including 26 in the shape of bird and bear effigies. Indian burial mounds are found in a large part of the United States; however, effigy mounds are found in a relatively small area in northeast Iowa, southeast Minnesota, and western Wisconsin. The monument's Marching Bear Mound group is one of the finest in the country.

The north and south units are on adjacent bluffs next to the monument headquarters about 5 miles north of McGregor, Iowa, overlooking the Mississippi River. Sny Magill, about 11 miles south of the headquarters area, is in the river bottom and contains the largest extant concentration of Indian mounds (about 100) in the country.

## PURPOSE OF THE DOCUMENT

This draft *General Management Plan/Environmental Assessment* (GMP/EA) identifies problems and issues for Effigy Mounds, presents a proposal and three alternatives for solving identified problems, assesses the environmental consequences of the proposal and alternatives, and will be used to solicit public input into the planning process. If, based on review of the GMP/EA and the public comments, the regional director concludes that the GMP would result in significant impacts on the environment, then a draft and final environmental impact statement (EIS) would be prepared. If not, a finding of no significant impact (FONSI) would be prepared.

This report also serves other environmental compliance purposes, such as documentation for endangered species, floodplains, and wetlands protection procedures. It has been prepared in consultation with the state historic preservation officer and the Advisory Council on Historic Preservation. After either the EIS or FONSI is completed, a final GMP will be prepared. The final plan may include the proposal, one of the alternatives, or any combination of the proposal and alternatives that best meets the needs of the area as determined by the regional director based on public comment and other factors.

## MANAGEMENT ISSUES

There are two basic reasons for preparing a new GMP for Effigy Mounds. A general management plan has not been prepared since the *Master Plan* for the area was approved in 1963. Although some aspects of that plan are still valid, others need updating. Secondly, lands have been added to the monument since the *Master Plan* was approved. A strategy for managing these new lands needs to be incorporated into a new plan. Other issues to be addressed in this GMP follow.





## **Cultural/Natural Resources**

A variety of natural forces and human impacts are damaging the mounds' integrity. An area of particular concern is the shoreline erosion occurring on the mounds at Sny Magill. Land use changes and vegetation succession have altered the prehistoric landscape in the monument. When the mound builders lived in the area, the landscape was a woodland/prairie vegetative mix maintained by a fire regime (Blewett 1986). Today, prairie remnants exist in small patches and, without appropriate management, encroachment of woodland species will increase.

Other cultural sites near the monument, including additional mounds, the old military road, red house landing, prehistoric rock shelters, and the FTD site, play a role in the Effigy Mounds story. These sites are subject to natural and human caused disturbances and need protection. Federal law requires GMPs to describe any proposed modifications to external boundaries and the reasons for making any changes.

Limited baseline data suggests that rare animal and plant species inhabit the park, and these warrant special management consideration. Based on the results of an ongoing endangered species survey, the GMP will identify important habitat in the monument and determine appropriate management actions to protect endangered species and their habitat.

## **Visitor Use**

Approximately 40 of the mound sites in the monument are accessible to and interpreted for the public. For all practical purposes, the mounds at Sny Magill, which is the largest concentration of mounds in the monument, are not accessible to the public. A lack of trail facilities, signs, and dense vegetation discourage visitor use in the Sny Magill mounds area. The south unit's Marching Bear Mound group, the best example of effigy mounds in the monument, is accessible only by a 4-mile round-trip hike on an administrative access road. The trailhead is at a state day use area, and visitors must walk across a railroad track and state highway to get to the road/trail in the monument. The GMP will determine the appropriate levels and types of public access to the mounds.

Increased visitor activity, such as canoeing and camping along the Yellow River, sport fishing and boating at Sny Magill, trespass snowmobiling, four-wheeling along the Yellow River Road, hiking, photography, resource study, and cross-country skiing has potential for impacting the monument's resources. The GMP includes a policy for determining acceptable summer and winter recreational use.

The only identified carrying capacity issue is overcrowding at the visitor center parking area during a few peak weekends in the fall. This issue is addressed in accordance with PL 95-625, using a facility carrying capacity approach that assesses impacts on monument resources.

Some monument facilities, such as hiking trails, do not accommodate the needs of disabled visitors. Under certain circumstances, the park staff can provide escort services for physically restricted visitors. The study evaluates the potential for disabled visitors to access the monument and recommends areas for increased accessibility.



## **General Development**

The 1963 *Master Plan* recommended extensive development including an access road in the south unit; this need has been questioned in recent years. Based on a determination of appropriate visitor use, this GMP determines levels of activity for each park unit and defines the extent of facility development. Areas of special concern include boating and fishing access at Sny Magill, visitor access to the Marching Bear Mound group, canoe access to the Yellow River, and public use of Yellow River Road.

Existing parking is inadequate to serve the public during peak periods (fall color weekends). The GMP analyzes parking needs at the visitor center and at designated trailheads.

Current use of the low-standard boat launch at Sny Magill consistently exceeds the existing capacity of the informal parking area during summer months. No comfort facilities or other amenities are provided. The GMP determines area parking, launching, and other facility needs.

Existing trails, especially switchbacks in the north unit, require a high level of maintenance. Overlooks and steep areas present potential safety problems for visitors. The GMP analyzes alternative trail alignments and the general need for safety barriers.

## **MANAGEMENT OBJECTIVES**

The following objectives guide the preservation, visitor use, and development decisions for the monument. They were prepared by Park Service managers in the monument's *Statement for Management* (NPS 1988).

### **Cultural Resource Preservation**

Preserve and protect the integrity of prehistoric American Indian burial mounds

Restore mounds, with careful documentation, to their original profile in those areas where research has deemed it necessary

Eliminate destructive tree growth and animal burrowing on the mounds

### **Natural Resource Management**

Restore and perpetuate the ecological conditions that existed during the mound building period to protect and maintain the burial mounds and their environs

### **Interpretation, Visitor Use, and Visitor Orientation**

Foster appreciation and understanding of the Indian burial mounds, the culture of the people who produced them, and the forest in which they lived by providing appropriate and safe interpretive programs, visitor use activities, and orientation programs

Maintain the Ellison Orr archeological and geological collection and manuscripts and library collection in a manner conducive to appropriate scholarly research and use



## **Cooperation**

Cooperate with federal, state, and local government agencies; private organizations; and individuals (including historical and archeological societies) to:

- protect and preserve the mounds

- ensure compatible land and water use in areas adjacent to the monument

- conduct research and investigation of the mounds and the Indian culture

## **Development**

Ensure that facilities and related services for resource protection and visitor use and safety are compatible with resource preservation objectives

Ensure that facility carrying capacity is adequate to meet visitor use demand

## **Information Acquisition**

Encourage and participate in efforts to acquire information, through research and other means, to facilitate development of the best possible strategies for preserving the remains of the prehistoric American Indian mound building culture and enhancing opportunities for resource-compatible public use and enjoyment







## **DESCRIPTION OF THE AREA**

### **REGIONAL ENVIRONMENT**

#### **Location**

Effigy Mounds National Monument is in the northeast corner of Iowa, on the west bank of the Mississippi River. Park headquarters is about 5 miles north of Prairie du Chien, Wisconsin, and McGregor, Iowa. The monument lies within Allamakee and Clayton counties and is in the second congressional district. Containing 1,475.53 acres (75% Allamakee County, 25% Clayton County), the monument is geographically divided into two sections: Headquarters (north and south units) and Sny Magill. The Sny Magill unit is located on Johnson's Slough of the Mississippi River, 11 miles south of the monument headquarters.

#### **Geography**

The monument is in the driftless (nonglaciaded) zone, a geologically unique area of erosional topography drained by an intricate system of rivers and streams.

The north and south units are predominately uplands and steep bluff sides with old open fields on the highest upland flat areas. The uplands above the 900-foot elevation level comprise about 50 percent of the monument area. The area of steep slopes rising from the floodplain up to the 900-foot level make up about 25 percent, while the remaining 25 percent of monument lands consist of floodplains, water impoundments, and waterways.

There is approximately 500 feet of vertical relief in the monument, from the lowest point at the mouth of the Yellow River (600 feet above sea level) to the highest point in the south unit (1,084 feet above sea level).

#### **Access**

Transportation to the area and access to the monument headquarters is provided by Iowa State Highway 76 (IA 76). This road parallels the bank edge of the Mississippi River north of Marquette, Iowa, for 3 miles along the eastern edge of the monument. Access to the Sny Magill unit is from Iowa State Highway 340 (IA 340) south of McGregor. A gravel road off the paved highway provides access into this unit.

#### **Land Use**

Land use in the park is primarily resource preservation and recreation. The open fields, forested slopes, and river floodplain offer visitor activities such as hiking, mound interpretation, scenic viewing, and river boating. A developed area at the monument headquarters of approximately 6 acres includes the visitor center, parking lot, access roads, housing, and a maintenance area.

Lands adjacent to the monument boundaries on the north, west, and south are in private ownership. This includes farmlands and woodlands with adjacent Indian mounds, such as the McCormick and Ferguson properties, and other lands with residential development or agricultural uses, such as the Trudo and Schafer properties. Lands on the east boundary are owned by the state of Iowa and the Chicago, Milwaukee, St. Paul, and Pacific (Soo



Line) Railroad, which is on the west side at Sny Magill. Those lands suitable on the bluff tops are used principally as cropland or pastures. On the steeper woodland slopes and along the Yellow River valley timber is harvested. The state-owned land is unused woodland adjacent to the Mississippi River.

## **CULTURAL RESOURCES**

### **Prehistoric Resources**

Along the high bluffs and lowlands in the Upper Mississippi River Valley are numerous prehistoric Indian burial mounds that are unique in North America. Although different groups of prehistoric Americans built burial mounds at various times and places, in southern Wisconsin and adjacent areas in Illinois, Minnesota, and Iowa, they built some in the shape of birds and other animal effigies.

The oldest mounds in the Mississippi Valley belong to the Red Ocher culture of the early Woodland period. One mound excavated in the monument was dated at about 2,500 years old.

The next major cultural division is noted in pottery and the use of many materials obtained from distant sources. The remains from this period are called Hopewellian, a culture dating from about 100 B.C. to A.D. 600. Several mounds excavated in the monument are of the Hopewellian period. Three of these conical-shaped Hopewellian mounds are adjacent to the visitor center.

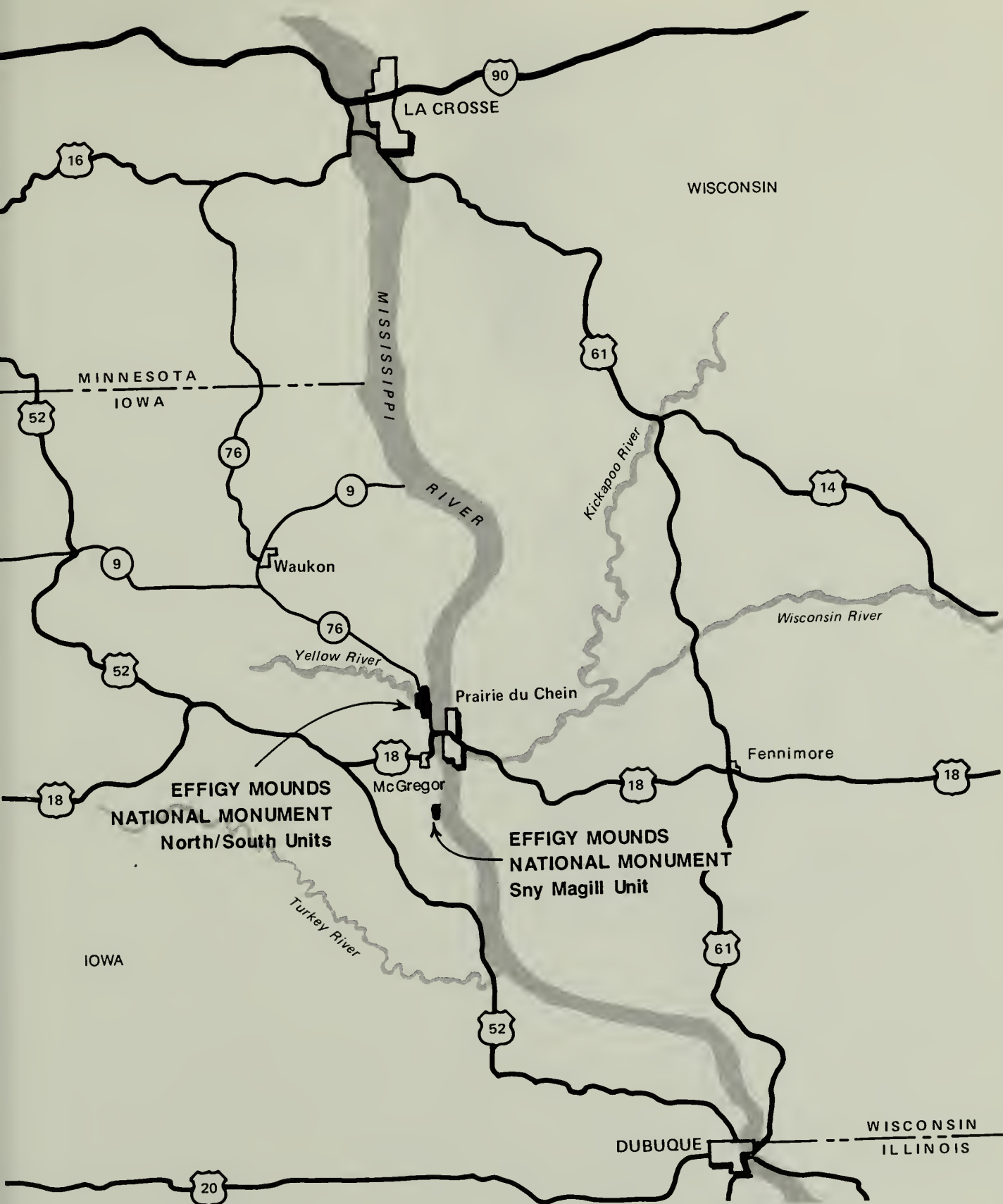
The Effigy Mound builders occupied the land in the monument area from a time overlapping the Hopewellian period until near historic times. Archeological excavations indicate the Effigy Mound builders were probably replaced by the Oneota culture about A.D. 1300 or 1400. Their cultural remains indicate they constructed mounds in effigy (animal-like) forms, used copper for tools rather than ornaments, and buried their dead with few if any intentional offerings of a lasting nature. These Oneota people placed a strong emphasis on agriculture and on life in villages.

The advent of the fur-trade era and European settlement eventually ended Indian occupation of land now in the monument.

There are about 200 known prehistoric mound sites in the monument, 26 in the form of visible bear and bird effigies. The remainder are conical, linear, or compound (a combination of conical and linear) shapes. Some mounds are monumental in size. The Great Bear mound is 70 feet across the shoulders and fore legs, 137 feet long, and 3-1/2 feet high. The Marching Bear mound group is a unique cluster of 10 bear, three bird, and two linear mounds in the monument's south unit.

The monument's mounds have been dated from 500 B.C. to A.D. 1300. The earliest mounds are simple dome-shaped (conical) structures. They were built throughout the period. The linear and compound mounds first appeared about 2,000 years ago. Effigy-shaped mounds first appeared about 1,500 years ago. The mounds represent a number of Woodland cultures, including the Red Ocher, Hopewell, and Effigy Mound builders.





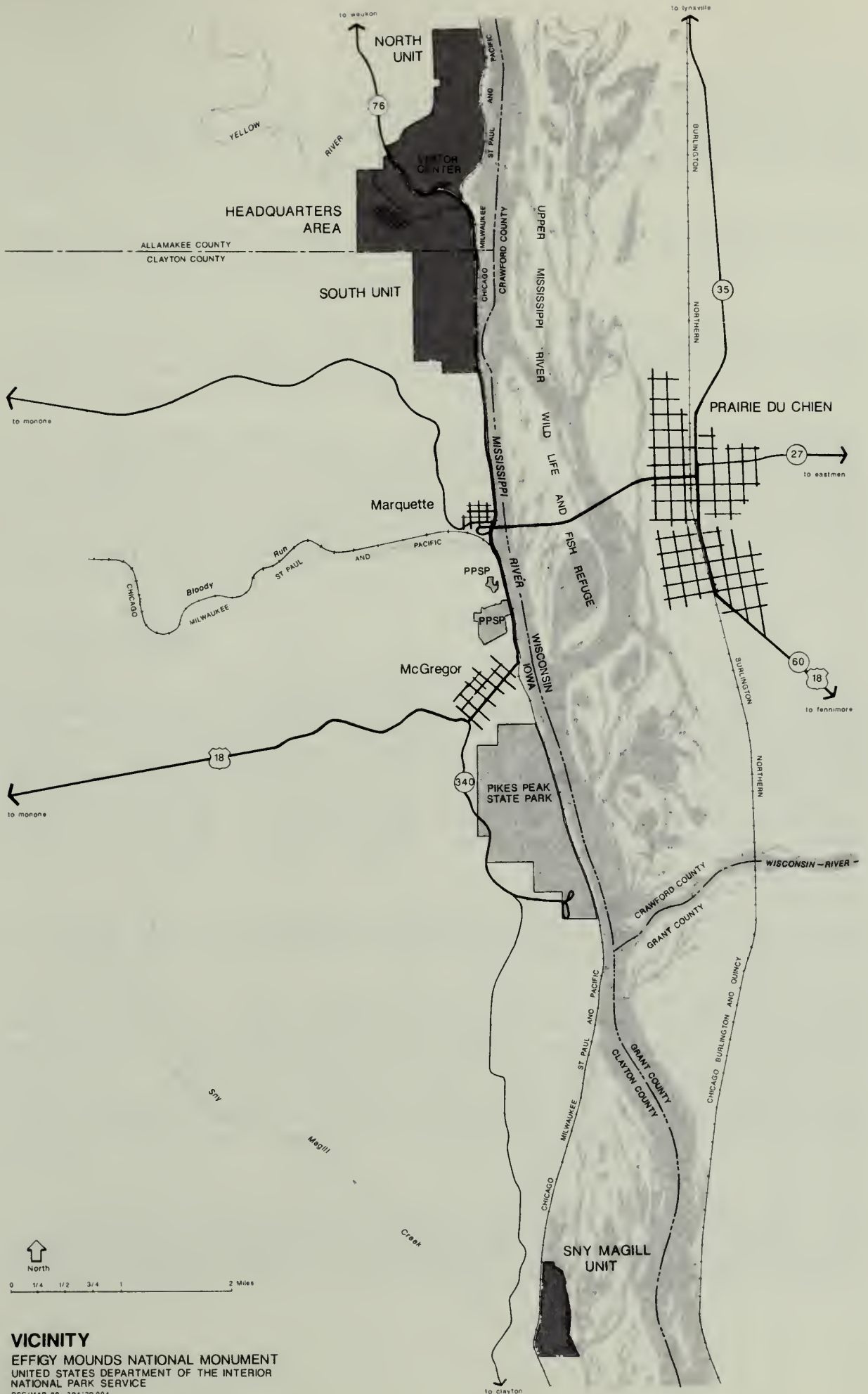
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**THE REGION**  
EFFIGY MOUNDS NATIONAL MONUMENT  
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NATIONAL PARK SERVICE

DSC / MAR 89 / 394-20,005







# VICINITY

EFFIGY MOUNDS NATIONAL MONUMENT  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
DSC/MAR 89 394 20.004





The over 100 mounds in the Sny Magill area represent the largest concentration of mounds in one compact group. The majority of the remaining mounds are on the ridgetops in the north and south units. A number of the mounds that were once in the Yellow River floodplain and open field areas were obliterated or partially destroyed by early farming activities.

Approximately 10 percent of the mounds have been excavated with the artifacts stored or displayed in the visitor center. Future excavations are not planned; the current emphasis is on preservation and nondisruptive mound study.

There are 18 rock-shelters in the north and south units (Petersen 1985). These small rock-shelters were used as either permanent or temporary habitations. Complete studies of these areas have not been conducted. A study of the rock-shelters may lead to further information on the hunting-gathering lifestyle of the mound builders.

There are also small mound groups in areas adjacent to the monument. These include conical, linear, and a few small effigy mounds. They occur on the Ferguson property west of the headquarters area, on the McCormick property north of the monument, and on the Elwick property west of the Sny Magill unit (see Alternative B - Boundary Adjustments map, later in this report). The significance of these adjacent resources has not been determined. Some of these mounds have been adversely affected by human activities such as farming, logging, and pothunting.

## **Historic Resources**

In addition to its unusual archeological resources, the monument has several historic resources. It is across the Mississippi River from historic Prairie du Chien, Wisconsin, an important point in the exploration and settlement of the upper Mississippi Valley. Prairie du Chien is at a strategic site where the Wisconsin River joins the Mississippi. Louis Jolliet and Father Marquette were the first white men to document their visit to northeast Iowa region while exploring the Wisconsin and Mississippi rivers in 1673. Others followed – exploring, building forts, and developing Indian trade. The first known mention of the Effigy Mounds area appears in Jonathan Carver's *Travels Through the Interior Parts of North America in the Years 1766, 1767, 1768*.

A number of historic sites are found in the monument. The military road built in 1840 by the U.S. Army between the Mississippi River and Fort Atkinson, Iowa, crosses the southern half of the south unit. Remnants of old roads can be found throughout the monument.

Red House Landing, a small settlement below Hanging Rock in the north unit, was a clamming town before the turn of the century. In the 1840s settlers harvested firewood for steamboats on the Mississippi River. The wood was cut on the ridgetops in the area that is now in the north unit overlooking the river. It was dumped down by chute to the riverbank at a steamboat stop called York Landing. Other trees were felled from the area to furnish steamboat fuel to red house and other landings. Adjacent to red house landing, but outside the monument, is a prehistoric village site. Neither site has been archeologically studied.

Also historically important, but outside the monument, is the Jefferson Davis sawmill site. In 1829 the sawmill was constructed just west of the monument's current boundary. This mill sawed the timbers and planks used to construct Fort Crawford at Prairie du Chien, Wisconsin. Jefferson Davis was later elected president of the Confederate States of



America. About 1834 the sawmill was abandoned and a few years later was burned to the ground.

In 1881 Theodore H. Lewis and Alfred J. Hill surveyed the mound groups of the Mississippi River valley. The mounds they mapped in 1892 included the Marching Bear mound group and a number of mounds that were destroyed before the monument was established.

On August 10, 1949, the first 1,000 acres to be included in the monument passed into federal ownership. Another 204.36 acres were conveyed to the United States by the Iowa General Assembly on April 14, 1952. An act of Congress on May 27, 1961, added about 263 acres and about 100 mounds to the monument at Sny Magill.

## **National Register Status and Context in NPS**

The entire monument is on the National Register of Historic Places. In addition, the monument's mounds are on the List of Classified Structures (LCS) and on the state of Iowa's archeological sites inventory. The national register significance is based on the major prehistoric remains in the monument.

The thematic framework for the monument is Indigenous American Populations, with subthemes of the Earliest Inhabitants, Post-Archaic and Pre-Contact Developments, and Prehistoric Archeology (NPS 1987). This includes facets of archaic and post-archaic adaptations of the Mississippi Valley region, and prehistoric religion, ideology, and ceremonialism. Secondary historic themes are European Exploration and Settlement, Westward Expansion, and Society and Social Conscience.

## **NATURAL RESOURCES**

### **Geology**

Sediment layers of limestone and sandstone form the bedrock of northeastern Iowa. The oldest layer exposed at the monument is the Jordan sandstone formation. Visible along the base of the east-facing bluffs, it serves as an important aquifer for the area. Overlying the Jordan sandstone is the Prairie du Chien formation of dolomite limestone, which forms the dominant geologic strata exposed along the river bluffs.

The rugged terrain of the area resulted from the waters eroding and dissolving the limestone bedrock. During the ice ages, this area was untouched by the continental glaciers. The portion of northeast Iowa and southwest Wisconsin that was completely surrounded by glaciers is known as the driftless zone. Although the area was not directly affected by glaciers, their meltwaters carved out the Mississippi River valley.

### **Soils**

Soils in the south unit (Clayton County) are moderately sloping to very steep, well-drained soils formed of loess or loamy sediments derived from limestone on uplands. Specific soils consist of well-drained, moderately permeable soils on uplands, upland ridges, side slopes, and stream benches formed in loess. Slopes range from 2 to 40%. Additional site-specific soils information on monument lands in Clayton County is available in the 1982 *Soil Survey of Clayton County, Iowa*.





Soils in the north unit (Allamakee County) are well-drained soils formed in loess, loess clayey pedisements, and loess over clayey pedisements on 5-14% upland slopes; loamy colluvium on 14-70% upland slopes; well drained, loamy or silty alluvium on 9-25% terrace slopes; and poorly drained, silty alluvium on flooded 0-2% bottomlands along the Yellow River.

In contrast, soils in the Sny Magill unit (Clayton County) are nearly level to gently sloping (0-5 percent), poorly drained to well-drained soils formed in silty, loamy, and sandy alluvial sediments on bottomland and stream benches. Permeability is moderate with a seasonal high water table, while surface runoff is slow to medium.

## **Vegetation**

The monument is in a transition zone of several vegetation communities. The microclimates produced from the north-facing slopes and the influence of the river valley provides habitat for a mixture of plants found nowhere else in Iowa.

The prehistoric vegetation on the uplands in the monument was a forest dominated by sugar maple and basswood with scattered prairie openings on the ridge tops and bluff edges (Blewett 1986). Current vegetation types are probably similar to the mound building period, with the majority of the uplands and bluffs being forested. However, openings are now dominated by exotic grasses and pockets of prairie species and pioneer species of shrubs, saplings, and small trees are gradually encroaching into the openings.

Vegetation at the north end of the north unit includes a variety of trees. Dominant species are white oak, shagbark hickory, red oak, big tooth aspen, and basswood. Interspersed species are ironwood, blue beech, eastern red cedar, and chinquapin oak.

The south end of the north unit is dominated by sugar maple, red oak, and shagbark hickory. Large stands of mature big-tooth aspen are found where the forest and old pasture border. Understory species include shagbark hickory, basswood, and sugar maple.

The forest of the south unit is dominated by sugar maple and red oak. Also common are large white oak and shagbark hickory. Sugar maple dominates along the drainage on the west side of the unit.

The Sny Magill unit, in the Mississippi River floodplain, has vegetation dominated by silver maple, elm, and green ash. Swamp white oak is also common in this area.

Old open field areas in both the north and south units have varying degrees of native prairie species and exotic grasses/weeds. In vegetation surveys conducted by Howell (1983) and Blewett (1986) in the south field area of the north unit, prairie flora were virtually nonexistent. Exotic domestic grasses, such as smooth brome and Kentucky bluegrass, dominate the area. Pioneer tree species are invading some of the field. Blewett's study shows that these two exotic grass species and the native Canada goldenrod are dominant species in the old south unit field area. Prairie species were not common, but were found more frequently than in the north unit. Blazing star is dominant, but Indian grass and little bluestem are also found.

The old open field area of the south unit is a mixture of forbs and grasses with scattered widely spaced shrubs and small trees. The area is dominated by Eurasian grasses but also includes a 50 percent increase in diversity (Blewett 1986) of prairie species over that of the





north field of the north unit. Numerous prairie species include Indian grass, cream gentian, blazing star, black-eyed susan, and stiff golden rod.

Dr. Blewett's 1986 study identified 21 bluff prairie remnants, of which 11 sites are suffering from invasion of woody species and need management to maintain their integrity.

None of the vegetation studies to date has made an extensive study of aquatic plants in the monument.

## **Water Quality**

Surface water quality testing in the monument and on adjacent rivers and streams has been limited. One water quality study and survey has been completed on the Yellow River. The results of the 1982 *Yellow River Rainfall Runoff and Low-Flow Water Quality Study* indicate that the most notable effects of the runoff were increased total solids and associated organic nitrogen, total phosphate, BOD, metals, and pesticides. The impact of these contaminants on stream biota is unknown. Pesticide levels were low and below acute toxic levels. Results of the study demonstrated very good water quality throughout the entire Yellow River reach. Based on the *Benthic Macroinvertebrate Survey* (1981), the densities, number of taxa, and types of benthic macroinvertebrates indicated generally good, long-term water quality in the Yellow River.

Results of the 1978 *Summer Water Quality Survey of the Sny Magill Creek Basin*, which included bacteriological, chemical, physical, and biological sampling, indicates that the water quality of Sny Magill Creek is good throughout the creek's reaches. However, elevated ambient water temperatures were noted at all Sny Magill sampling sites, which were probably caused by decreased groundwater recharge. Dissolved oxygen concentrations exceeded the minimum allowable concentration of 5.0 mg/l for a class "8" cold water. In addition, several monitoring stations on Sny Magill Creek during the 1978 water quality survey did exhibit unusually high fecal coliform concentrations 230,000-330,000 organisms per 100 ml, well above the 50-1,200 organisms per 100 ml limit.

## **Air Quality**

Effigy Mounds National Monument is designated as a class II clean air area under the prevention of significant deterioration program, as enacted by the Clean Air Act, amended on August 7, 1977.

The nearest air quality monitoring station is 65 miles south of the monument at Dubuque, Iowa, and maintained by the state of Iowa. The data indicates that sulfur dioxide levels are below national ambient air quality standards, and carbon dioxide levels are above the 8-hour national standards, probably because of heavier automotive and increased traffic conditions in the city. Particulate levels, although important, are unknown or not being monitored at this time.



## Wildlife

The status of fish species in the monument is unknown. Fishing under state regulations is permitted in the monument.

A number of species of reptiles are found at the monument, although their current status is unknown.

Approximately 291 species of birds nest in or migrate through the monument and surrounding area. The once extirpated wild turkey is now nesting on the monument. The Yellow River floodplain has been identified as one of about 12 nesting sites and one of two multiple nesting sites of the red-shouldered hawk in the state. Nesting has also been documented at the Sny Magill unit.

A formal wildlife survey has not been conducted within the monument. Observation records show that the status of wildlife common to the eastern hardwood ecosystem are well represented here. Data-base information on wildlife species in the monument is being collected. Occasional sightings of gray fox and coyote occur, and evidence shows that bobcat, black bear, and river otter are in the area.

Northeast Iowa has three species of land snails. There are land snails at the monument, but species types and population levels have not been documented.

## Threatened or Endangered Species

There are two federally listed endangered species observed seasonally in the monument area. The endangered bald eagle (*Haliaeetus leucocephalus*) migrates through the monument area in the spring and fall and resides in the area for breeding and wintering. Sightings have increased along the Mississippi River each year, but no specific nest or roost trees have been identified in the monument. Current species populations are unknown. The historic breeding range of the endangered peregrine falcon (*Falco peregrinus*) includes this general area. Peregrine falcons have been sighted during migration, but there is no known resident peregrine use in the monument.

Several other federally listed threatened or endangered species have been reported outside but near the monument, in Allamakee and Clayton counties. The threatened northern wild monkshood (*Aconitum noveboracense*) can be found specifically on north-facing slopes, while the endangered Iowa pleistocene snail (*Discus macclintocki*) prefers habitat associated with algal talus slopes. The endangered Higgin's eye clam (*Lampsilis higginsii*) is found in the Mississippi River channel bottoms.

State-listed threatened or endangered species in the area include the red-shouldered hawk (*Buteo lineatus*), the river otter (*Lutra Canadensis*), and the jeweled shooting star (*Dodecatheon amethystinum*). In addition, several species are currently being evaluated for state listing, which do not have listed status. They include the brown twayblade (*Liparis lilifolia*), leather grape fern (*Bothrychium Dissectum roman obliquum*), and the spotted sucker (*Minytrema melanops*).

The red-shouldered hawk is a year-round resident in the Effigy Mounds area. Three pairs nest in Effigy Mounds National Monument (Stravers 1989). Two nesting sites are located in the Founders Pond/Yellow River bottomland area, and one site is in the center of the Sny Magill unit. Their habitat requirements for nesting are mature floodplain forests with a well-developed overhead tree canopy. Primary tree species used for nesting are cottonwood





and silver maple over 18 inches in diameter. For hunting, their habitats are wet areas, marshy clearings, and ponds. The critical time of disturbance for the red-shouldered hawk starts in late February/early March (nest building and early nesting) and continues up to mid-June (fledgling stage development of young).

The river otter occurs year-round in the Effigy Mounds area. While their local population numbers are stable and considered low, tracking, sighting, and recovery records indicate they inhabit the mouths of the Yellow River and Magill Creek on the Mississippi River (Iowa DNR 1988). Otters require habitats of floodplain deciduous hardwood forest/wetlands and associated backwater areas with wetland emergents, cattails and brush piles, which serve as security vegetation. Critical times of disturbance for the river otter are during spring rearing (March through early May). Otters generally have adapted quite well to human presence and activity.

The jeweled shooting star is typically found on dry shaded bluffs. They require moist sandstone and limestone cliffs, ledges, and talus slopes, which are found mostly along the Mississippi River.

Several species of special concern found in the monument have no legal status. These include the hooded warbler, southern woodrush, and the pallid shiner.

### **Floodplains and Wetlands**

The estimated 100-year and 500-year flood levels in and adjacent to the north and south units between river miles 639.0 and 636.0 minimally affect monument lands (see Floodplain map). The 100-year and 500-year flood levels along the north and south units are about 631.0 and 633.0 feet above mean sea level (MSL), respectively. The entire Sny Magill unit is within the 100-year and 500-year floodplains, which are at 627.0 and 630.0 feet above MSL, respectively, in that area. Periodic and seasonal flooding is common, causing complete or partial inundation of the Sny Magill unit for short periods, usually in the spring.

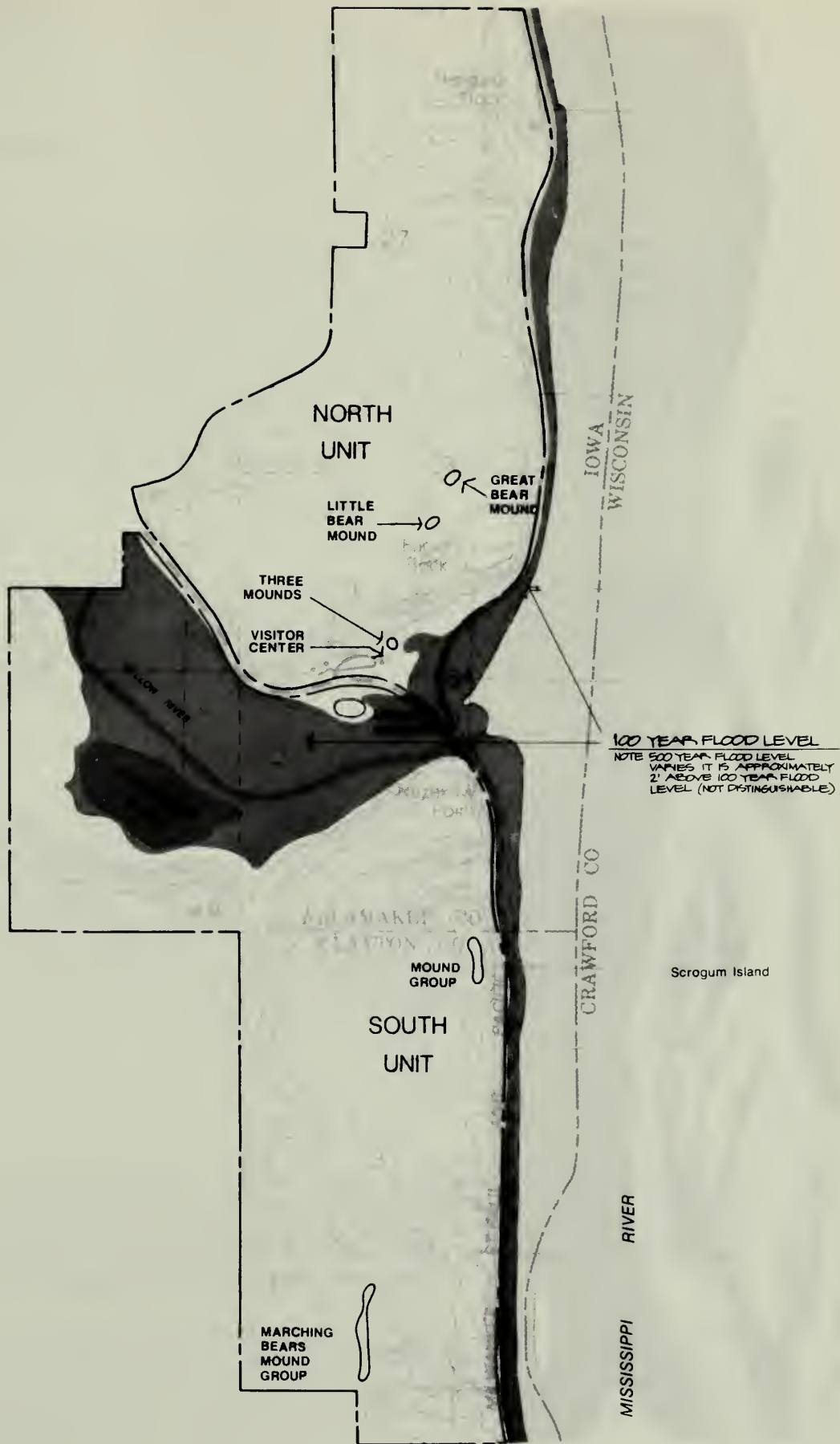
Wetlands in the monument include the seasonally flooded bottomlands, and four seasonally fluctuating ponds in the south unit. The ponds are adjacent to the Yellow River and total approximately 65 acres. These ponds are also in the 100-year floodplain. Limited information is available on these wetlands.

### **Prime and Unique Farmlands**

According to the Soil Conservation Service (SCS) classification system for prime and unique farmlands, no soils on lands in the monument (north, south, and Sny Magill units) are classified as prime and/or unique farmlands. There are bottomlands near the Yellow River west of the monument that would qualify as prime farmland (SCS, personal communication).







## FLOOD PLAIN MAP NORTH/SOUTH UNITS

EFFIGY MOUNDS NATIONAL MONUMENT

UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

DSC APR 89 394 20 013



## **EXISTING DEVELOPMENT**

### **NPS Facilities**

Existing facilities at the headquarters area include the visitor center/headquarters building (1960), the superintendent's and chief park ranger's three-bedroom residences (1960), three-bay maintenance shop building with office and storage (1960), single space garage for superintendent's vehicle, small metal storage shed, and small well pump house. Additions include a closed-in artifact storage room (1984) within the existing visitor center and a storage room (1983) for flammable liquids as part of the maintenance building. The north unit has a system of trails and overlooks (see Existing Development map). A gravel road, boat ramp, and parking area at Sny Magill are maintained by the state of Iowa's Department of Natural Resources (DNR) under a special use permit.

### **Roads and Railroads**

Two roads bisect the headquarters area – IA 76 on the north side of the Yellow River and an undesignated dirt road to the south side of the Yellow River. The Soo Line parallels the eastern boundary of the monument in the headquarters area. It is on a narrow strip of land between the monument and state of Iowa lands adjoining the Mississippi River. The Soo Line forms the western boundary at the Sny Magill unit.

### **Adjacent Facilities**

The DNR's Parks Division administers two areas adjacent to the south unit along the Mississippi River, directly east of the monument. The northernmost area is a designated day-use picnic, parking, and boat/canoe launch area. It also serves as trailhead parking for Effigy Mounds trails in the south unit. The other day use area to the south is a more formalized/developed picnic area that shares common access to state land and adjacent river residences. Additionally, the state of Iowa administers the land to the east of the monument along the east boundary of the north unit between the railroad and Mississippi River; there are no facilities and the area is not open for public use.

## **VISITOR USE**

### **Activities**

Effigy Mounds National Monument is a day use area; camping is not permitted. Visitors originate primarily from the Midwest. The primary visitor use is hiking along the trail system. The trail system of the north unit is the most highly developed, with a total walking distance of about 6 miles. A variety of vegetation types are found along the trails, and scenic views of the Mississippi River are available from several bluffs.

About 60 percent of the visitors hike part of the trail system during the peak fall season. The south unit's trail system is on a network of old roads that are also used for administrative access. The mounds area at the Sny Magill unit is not accessible for public hiking and is an undeveloped area. The state DNR maintains a double-wide public boat launching ramp at Sny Magill under a special use permit.

A variety of local, state, and federal government agencies provide for diverse outdoor recreational resources, facilities, and programs in the monument vicinity. These agencies



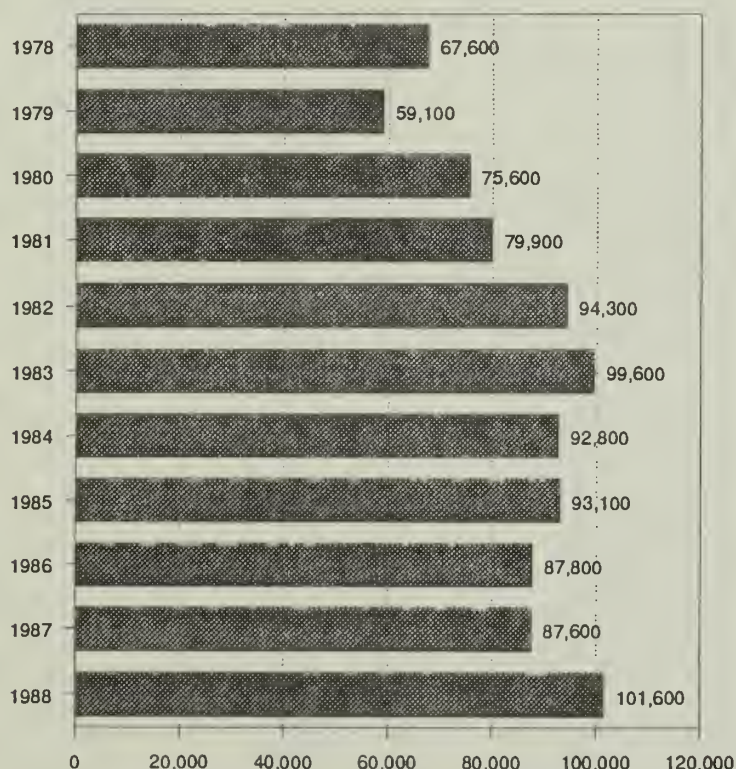
play an active role in meeting public demands for recreational services and facilities. The state of Iowa's *State Comprehensive Outdoor Recreation Program* (Iowa SCORP 1988) identifies various needs for recreational facilities in the surrounding 11-county area. Based on recreation standards, the SCORP shows a deficiency in boat ramp lanes and dock slips. Recreational activity participation levels reflect a high interest in fishing.

The SCORP also identifies critical statewide issues requiring planning and programming priorities to guide the actions needed over the next five years. SCORP issues related to Effigy Mounds National Monument are the acquisition, development, and management of fishing resources. Subsequent actions needed are shoreline protection and acquisition, development, and maintenance of fisherman access.

Following hiking to view the mounds and scenery, boating on the waterways in and adjacent to the monument is the next highest form of visitor use. Fishing and canoeing on the Yellow River account for some activity. Other forms of recreation such as off-road vehicle use, snowmobiling, horseback riding, and picnicking are prohibited in the monument.

**Existing and Forecasted Use Levels.** Following are reported visitor use levels for the years 1978 to 1988.

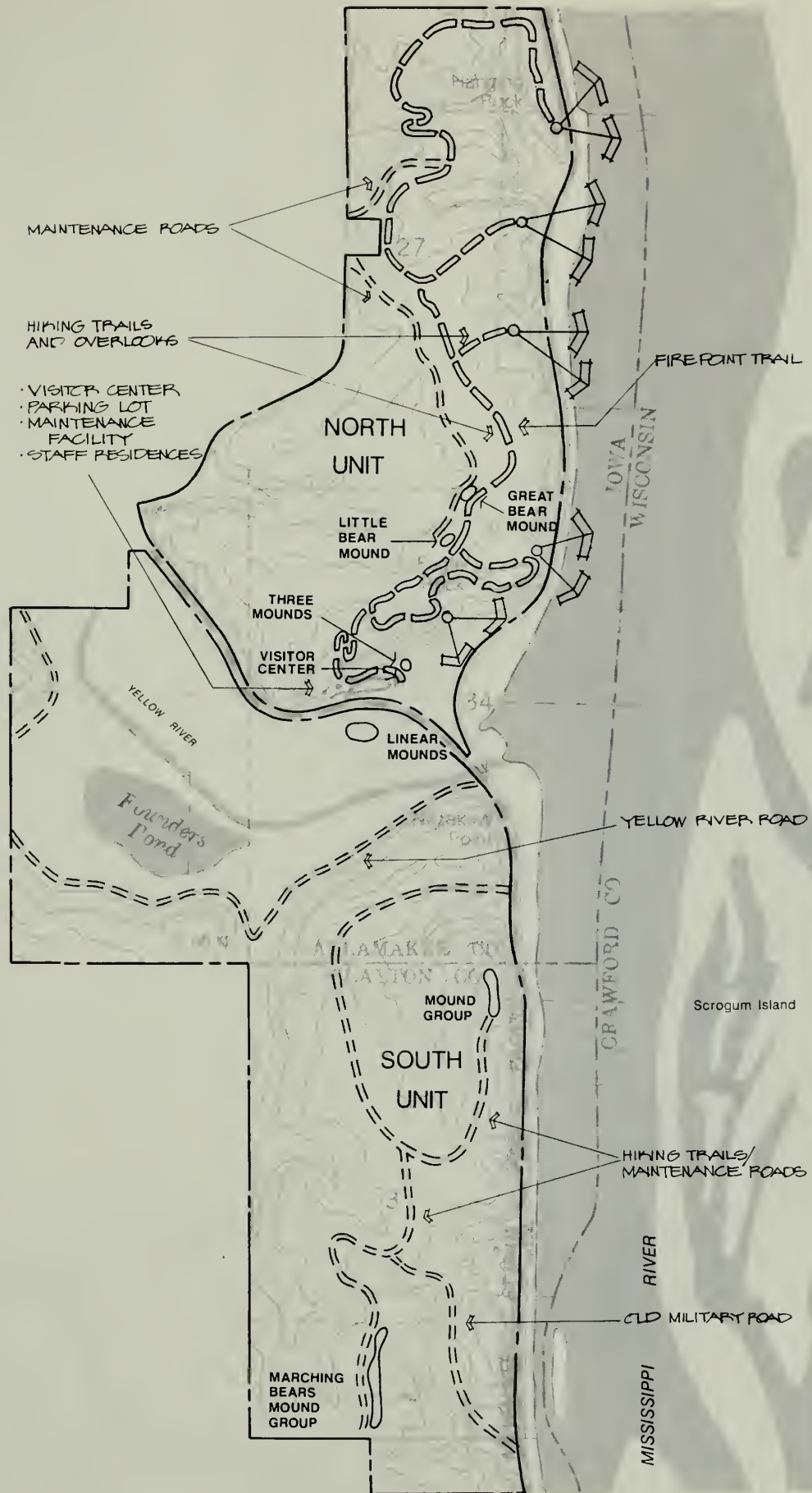
Visitor Use Levels  
1978-1988











500 1000 1500 2000 4000 Feet

## EXISTING DEVELOPMENT - SHEET 1 NORTH/SOUTH UNITS

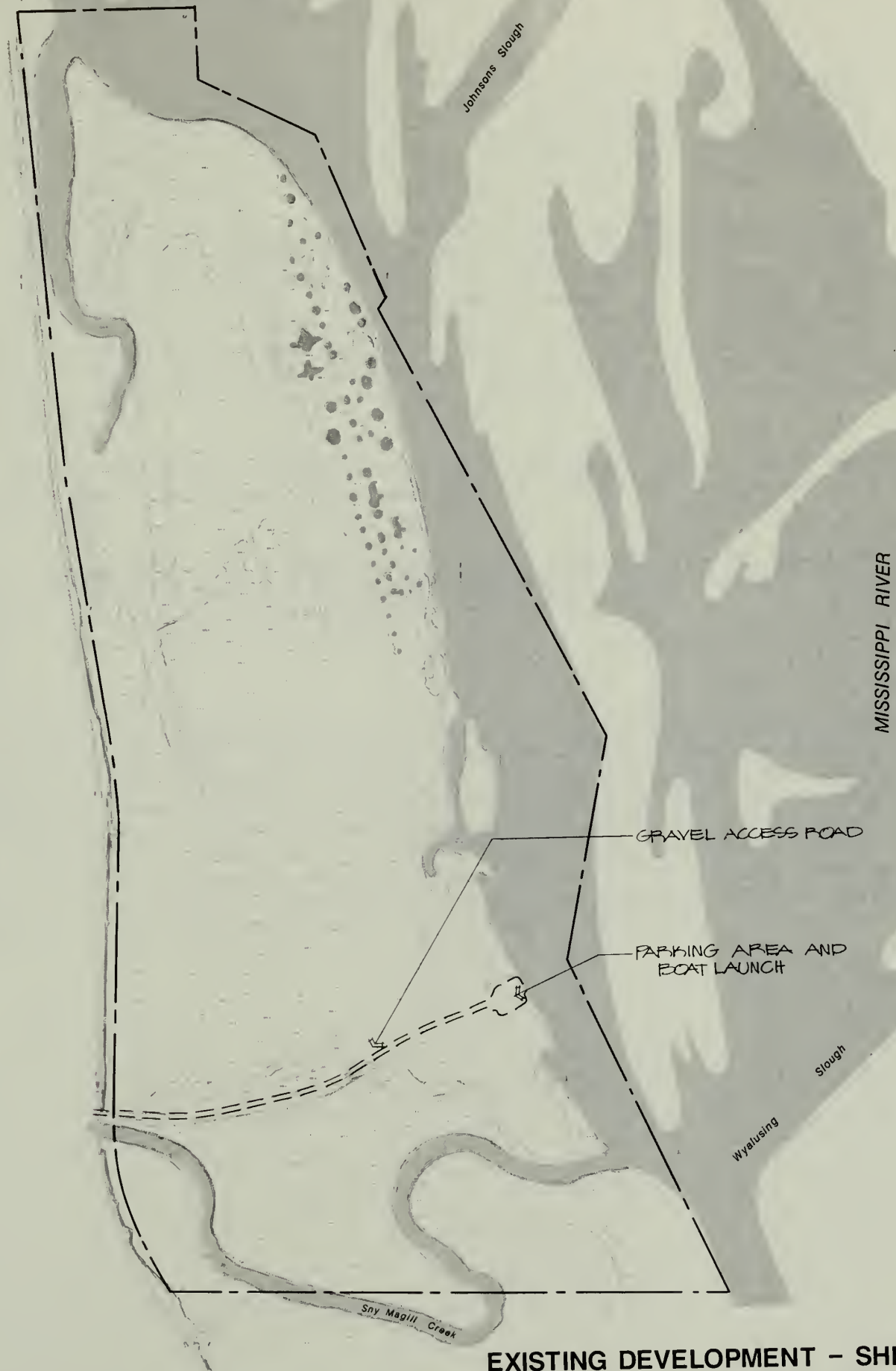
EFFIGY MOUNDS NATIONAL MONUMENT

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**EXISTING DEVELOPMENT - SHEET 2**  
**SNY MAGILL UNIT**

EFFIGY MOUNDS NATIONAL MONUMENT  
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Many visitors come during the summer and during fall color weekends, typically in October. The annual number of visitors that come to see the fall color is approximately 15,000. This is based on seven years of peak visitation data on the first four October weekends. On the average, about 63 percent of all visits recorded at the visitor center in October occur on these weekends. The average October weekend day has about 1,300 visitors.

The visitor center parking lot has a capacity of about 60 vehicles. Additional space on the adjacent grass area near the parking lot is provided for another 65 vehicles. During heavy visitation days, parking overflows onto the grass; most of these days are during the fall. The monument is open from 8 a.m. until 7 p.m. on October weekends. On the average, there are about six to 10 days in October when the parking lot overflows. The overflow period begins about noon and lasts until about 4 p.m. With visits spread out over the day, the parking lot has handled up to 500 vehicles a day. However, usually the visitors bunch up, and if there are 350 or more vehicles in a day, the parking lot overflows for some period during the day.

Visitors to Sny Magill from April through November usually come to fish, and use is more evenly dispersed. Total annual use was estimated to be about 7,500 visits in 1987 and 8,700 in 1988.

The forecasted annual visits to Effigy Mounds in the year 2003 is 106,300, with a possible low of 100,300 and a possible high of 111,300. This visitation forecast predicts a gain of about five percent over the reported annual use (101,600) in 1988.

### **Interpretive Programs**

Self-guided interpretive walking tours are a primary part of the north unit's designated trail system, while the south unit's interpretive program is informal. A printed interpretive pamphlet is provided to visitors for both the north and south units. Currently, four ranger-guided tours a day are given in the north unit Memorial Day through Labor Day, and about 125 prearranged tours are given the rest of the year. Ranger-guided tours in the north unit are also provided to disabled visitors on request. Present demand for ranger-led tours for disabled visitors has been low – approximately six per year. The visitor center museum displays artifacts and historic scenes. For the short-stay visitor, there is an interpretive point displaying conical mounds within walking distance of the visitor center.





## **THE PROPOSAL**

This section presents the National Park Service proposal for addressing the issues identified in the "Purpose and Need" section. The proposal is considered to be the "minimum requirements alternative" for solving the identified problems and effectively managing Effigy Mounds National Monument. The alternatives, presented in the following section, range from "no action" to a major upgrade and expansion concept for the monument.

### **LAND USE AND MANAGEMENT**

#### **Management Zoning**

The entire monument is listed in the National Register of Historic Places and, based on NPS policy, is included in a cultural zone with the primary purpose of protecting and interpreting cultural resources.

Under the proposal, most of the monument (1,464 acres) would be classified in a preservation subzone (see Management Zoning map). The management strategy would be to preserve, protect, and interpret cultural resources and their natural settings. Allowable uses would include interpretive hiking and NPS administrative activities needed to protect resources, manage visitor use, and maintain park facilities. Development would be restricted to trails, boardwalks, signs, interpretive waysides, and primitive administrative roads.

An 8-acre area, including the visitor center, parking area, surrounding landscaped area, park housing area, and maintenance area, would be in a park development subzone. Facilities in this area would continue to serve the needs of park management and visitors. A 3-acre area at Sny Magill would be designated a special river access subzone. This would include a 90-foot-wide corridor for the access road, boat launch, and parking area, which would allow continued day-use access for Mississippi River users. The state of Iowa would continue to manage the subzone under a special agreement with the Park Service.

#### **General Management and Use Concepts**

The three units in the monument, north, south, and Sny Magill, would be managed under three different concepts. The north unit would have the greatest level of visitor use, most intensive interpretive activities, and highest level of supporting development. The south unit would be managed to encourage some visitor use, but preserve a low-key, primitive setting. The unit would receive low levels of use, minimal interpretive activities, and little development. Except for the special river access subzone, Sny Magill would be managed for maximum resource preservation. Although it would not be closed to the public, visitor use in the mounds area would be minimal, with no on-site interpretive activities, and no facility development. Development would be undertaken only to protect the mounds, not for visitor use.



NOTE:  
THE ENTIRE MONUMENT  
IS IN THE CULTURAL ZONE



0 500 1000 1500 2000 4000 Feet

## MANAGEMENT ZONING - SHEET 1 NORTH/SOUTH UNITS

EFFIGY MOUNDS NATIONAL MONUMENT  
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NOTE:  
THE ENTIRE MONUMENT  
IS IN THE CULTURAL ZONE

PRESERVATION  
SUBZONE

MISSISSIPPI RIVER

SPECIAL RIVER  
ACCESS SUBZONE

PRESERVATION  
SUBZONE

Slough

Wyalusing

Sny Magill Creek

## MANAGEMENT ZONING - SHEET 2 SNY MAGILL UNIT

EFFIGY MOUNDS NATIONAL MONUMENT  
UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE

DSC/APR 89 394/20,018



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## RESOURCES MANAGEMENT

The National Park Service would continue to preserve and protect the cultural and natural resources of the monument. While these preservation efforts would generally be compatible, conflicts might arise; for example, natural vegetation growth causing root damage to mounds, animal burrowing, and bank erosion/stabilization. In these instances, management of cultural resources would take precedence over management of natural resources, according to applicable law, regulation, and NPS policy. Mound preservation would continue to be the major and primary emphasis in resource management activities.

### Cultural Resources

Active management of mounds in the monument is accomplished in accordance with an approved *Resources Management Plan* (RMP). This GMP summarizes the program as applied to mounds in the north and south units and, with some modification, the treatment of mounds in the Sny Magill unit.

**North and South Units.** The primary issue is the maintenance of appropriate groundcover vegetation. In past years, trees were removed from most of the mounds in the north and south units, and trees and shrubs are suppressed on these mounds. The present practice encourages grass and forb cover on maintained and heavily visited mounds. Trees are being removed from unmaintained mounds in the north and south units, but the growth of small shrubby plants is not systematically suppressed. Most mounds in the north and south units have been rehabilitated and, although written guidelines have been prepared for dealing with recent disturbances, mound restoration is not a significant issue for these units.

Present guidelines recognize the potential for contamination of archeological resources through the use of herbicides and fertilizers and consequently select a more passive or natural approach to the management of mound ground-cover. The existing guidelines also note, in this context, that the management of vegetation on the mounds cannot be separated from the management of the monument's adjacent natural resources.

No broad new initiatives for cultural resources management are planned for mounds in the north and south units. Recent investigations have been directed toward the evaluation of rock-shelters as occupation or activity areas, and a report is currently being prepared. Work is currently underway on cataloging the existing museum collections. An approved "Scope of Collections" statement would guide new collecting activities. The need to use nonmortuary data in the interpretive program has been recognized for some time. To date, most of the data needed to address nonmortuary aspects of the Effigy Mounds manifestation have been drawn from research on sites outside the monument.

**Sny Magill Unit.** Recent field research at Sny Magill has been directed toward the major research needs identified in the RMP. A photogrammetric contour map has been produced which provides accurate locational data for most of the mounds in the group. Further, on-the-ground field work has been directed at verification and amplification of the features documented via photogrammetry. Systematic data have been recorded on the number and condition of trees growing on the mounds. Similar data have been generated on the amount of disturbance from human activities and animal burrowing. Also, markers have been placed to measure the extent of mound erosion on the bank of Johnson's slough (a flowage channel of the Mississippi River). The Corps of Engineers has initiated a study to evaluate shoreline/mound erosion causes and potential solutions in this area.



The existing RMP procedures can be adapted to adequately deal with the problems of trees and ground-cover vegetation at the Sny Magill unit. Although the topographic setting is different than in the main units, the operation of the basic ecological mechanisms are similar. The mounds would receive the sort of selective tree removal used on the unmaintained mounds in the north and south units. Because of the density of mounds in the Sny Magill unit, this would entail a more complex program that could not be implemented in a single season.

## **Natural Resources**

Natural resource management objectives at the monument are to preserve and protect natural ecological processes except where they would threaten the integrity of the mounds (NPS 1988). The natural resources management program of the monument fulfills the objectives of this GMP. The protection and preservation of the natural environment for the enjoyment of park visitors and for the integrity of the mounds and ecosystem are the principle considerations.

This section summarizes the natural resources issues and major natural resources management recommendations at Effigy Mounds. Additional details on these and other projects are included in the monument's RMP.

Specific natural resource management recommendations include the following actions:

- undertake research to determine the projected climax forest succession/development and locate exotic plant species, commercially profitable plants, and rare or endangered species

- conduct an aquatic and wetland plant survey in and around the ponds, streams, and floodplains within the monument

- conduct an insect survey to determine beneficial insect species and species that may present management problems

- conduct research on acidity of rainfall and surface water, and develop method of determining degradation of vegetation and wildlife and use indicator plants to monitor acidity levels

- locate, monitor, and control garlic mustard in the monument

- conduct land use study of monument to record past ownership, and historic land use

- identify and inventory lichens and bryophytes

- identify, inventory, and recommend control strategy for exotic plant species

**Recreational Use.** The range of recreational uses in the monument area is increasing and has an impact on the park's resources. The new recreational use activities include off-road vehicles, all-terrain vehicles, camping, snowmobiling, cross-country skiing, and horseback riding. Access by IA 76 and local roads transecting and bordering the monument create a jurisdictional and operational problem. Year-round monitoring and research on recreational use patterns would be done to support management decisions and implementing actions.





**Trail Erosion Control.** Visitors short-cutting on trails is a continuing problem particularly on switchbacks and bluff edges, and results in visual scars and erosion. Research would be done to determine the feasibility of planting ground cover to control visitor use and soil erosion. Research is being undertaken to analyze soil components and natural plant associations in determining the best method to reestablish natural, impassable ground cover along the trail system.

**Forest and Vegetation Management.** The management strategy has been to allow the forest to mature and fill in open areas, except on burial mounds. It has been estimated that this will occur during the next 50 years if the area is protected from fire. Research is required to determine the impacts of this policy on the forest/prairie mix.

**Prairie Management.** Small prairie remnants are currently maintained along some bluff edges by removing shrubby growth, which provides scenic vistas of the Mississippi Valley. Other prairie remnants are rapidly being encroached on by the forest. Currently, a research program is being implemented to determine the feasibility and desirability of maintaining prairie openings along bluff edges and level uplands. Additional recommendations are:

- manage prairie remnants in the north and south units by prescribed burns, tree removal, mowing, vegetation surveys, photographic surveys, exotic species control, and monitoring ecological response to fire

- manage goat prairies in north and south units

- restore a 39-acre prairie on old field by reseeding

- conduct pollen study of sediments in and around Founders Pond area at the monument

- identify, inventory, and recommend control strategy for exotic plant species at the monument

A fire management plan was developed for Effigy Mounds in 1987 and partially implemented by a prescribed burn on five sites in the spring of 1988. As a follow-up, further research is needed to evaluate the effects and benefits of the burn. Prescribed burns would be continued on a regular basis as described in the fire management plan.

**Endangered Species.** As discussed above, several endangered, threatened, and rare species identified by the U.S. Fish and Wildlife Service and the state have been documented as transient and/or resident in the monument, including the federally listed bald eagle (*Haliaeetus leucocephalus*) and state-listed red-shouldered hawk (*Buteo lineatus*) and river otter (*Lutra canadensis*). Sightings of other rare species of plants, fish, and birds have not been confirmed. At this time there is no immediate threat to any species or its habitat, and present conditions are reasonably stable. Research to identify the subject species and potential habitat would be required. Specific resource management recommendations include the following actions:

- conduct habitat survey and inventory rare and endangered species of plants, animals, exotic animals, and extirpated and present native animals

- identify species of mollusks (land snail and clam) that inhabit the monument

- identify and inventory all vertebrates in the monument





**River Use.** The Yellow River and its associated ponds and backwaters bisect the headquarters area of the monument. It traverses about 3/4 mile through the monument and is considered a good fishing, trapping, and canoeing river.

Impacts on the monument's resources is evidenced by such activities as illegal camping, shooting, and off-road parking of trailers and vehicles. Monitoring of canoeing activity is required, as is research on river use.

The Park Service would conduct periodic stream monitoring to provide current water quality information and include pollen identification in sediments and benthic sampling.

**Wildlife Management.** The monument supports a population of many small mammals and birds native to the Upper Mississippi Region. There are no recognized populations of exotic or feral mammals. Wildlife populations are managed to reproduce naturally with no manipulation; however, some burrowing or rooting animals (gophers, moles, skunks) have been digging into the burial mounds. Their disturbance is relatively minor and close to the surface. Research is needed to document the effect of the benign neglect reforestation policy on wildlife habitat, the presence of undesirable species, and to support management decisions regarding burrowing and digging by animals on or in the mounds.

Other natural resource management recommendations for wildlife management contained in the RMP include:

- band migrating raptors on selected capture sites in the monument
- reintroduce peregrine falcons
- conduct land and snail and vertebrate survey
- conduct fish survey of the rivers, streams, and ponds
- provide wildlife management plan

## **VISITOR USE, INTERPRETATION, AND DEVELOPMENT**

Visitor activities in the monument would continue to include visitor center interpretive functions, interpretive walks to view mounds, hiking, and river access at Sny Magill. The *Interpretive Prospectus* for Effigy Mounds (NPS 1986b) identified the following interpretive themes for the monument:

- the marks left by a well-established native civilization prior to the arrival of Europeans
- changing human use of the land during the past 2,500 years
- a native civilization's view of the mounds may represent both death and life
- the effects of seasonal changes on lifestyles of ancient people
- the value of Mississippi Valley flora and fauna resources.



Following are specific visitor use, interpretation, and development proposals for the three units in the monument. Additional detail on interpretive elements is contained in the *Interpretive Prospectus* (NPS 1986b).

## **North Unit**

**Visitor Activities/Interpretation.** The visitor center would continue to be the focus for visitor activity in the monument, providing information and orientation, book sales, a film, and museum displays (NPS 1986b). The interpretive hikes would continue to be the primary visitor use, providing opportunities to view the mounds and their environment, including the vegetation, bluffs, and scenic views of the Mississippi River. Interpretive hikes would continue to include self-guided and ranger-led walks on a regularly scheduled basis in the summer.

The north unit interpretive trail system begins adjacent to the visitor center. The 2-mile Eagle Rock/Fire Point loop trail passes a variety of mound types and several scenic overlooks of the Mississippi River and bluffs. Branch trails to the north can extend the walk another 2 miles upriver to additional mounds and overlooks. Visitors take this trail not only to view the mounds, but also to enjoy the woods, birds, cliffs, and spectacular views. Interpretive wayside exhibits provide information and thought-provoking questions about the mounds and their builders. Other small signs identify types of vegetation. This is an easy trail to follow with abundant information and interpretive signs as well as viewing opportunities. Near Eagle Rock, a wayside addressing the changing ways people have used this area over the centuries would seem appropriate. All other existing waysides are adequate (NPS 1986b).

Wheelchair-bound visitors may find the steep trail up to the mounds in the north unit too tiring. Using a service road, a ranger would continue to guide disabled visitors to the mound area if time permitted. Conducted hikes are available for blind and mentally impaired visitors.

A two-car parking area would be constructed near, but set back from, the Great Bear mound to accommodate wheelchair-bound visitors, so that NPS-escorted cars could access it from the maintenance road that runs parallel to the trail past the Great Bear mound. From this new parking area, wheelchair-bound visitors would be able to traverse an accessible trail leading from the parking area to a proposed viewing boardwalk overlooking the Great Bear mound.

For wheelchair-bound and other disabled people who want to view mounds without going far from the visitor center, a spur trail would be constructed to enable these visitors to closely inspect the Three Mounds group that is adjacent to the north end of the visitor center. The spur trail would begin close to the north end of the footbridge (which is between the Three Mounds group and the visitor center) and would extend about 30 feet on the south side of the Three Mounds group. The slope of this and all other trails designed for disabled visitors would be less than 10 percent and preferably less than 8 percent.

To provide another use option, a new south unit trail beginning at the visitor center would be accessible for a few hundred yards to the linear mounds south of IA 76 via a tunnel under the highway. Additional detail on this trail is provided below.

**Development/Administration.** Currently, there are several switchbacks in the main trail into the north unit between the visitor center and the Firepoint trail loop. A portion of this trail





segment (about 1,000 feet) would be rerouted to reduce the number of switchbacks. This would greatly reduce the problem of hikers shortcutting at switchbacks and causing erosion of slopes. The slope of the new trail alignment would be less than that of the old trail. Rest areas with seating would be provided at approximately 300-foot intervals. The new trail would provide a less tiring experience for elderly and other less physically able visitors. Maintenance needs would decline because most short-cutting would be eliminated and the need for barriers would be substantially reduced.

The north unit trail system has a number of safety barriers at locations such as cliff edges, cliff overlooks, and trail switchbacks, and there is no design consistency among these barriers in materials, form, and, consequently, aesthetics. Some overlook barriers do not adequately restrict small children from going beyond the intended stopping point. In some instances, barriers are used with marginal necessity, and there are problems with maintaining numerous safety barriers. For example, many of the metal barriers require maintenance that is more frequent and labor intensive than other options that would be as effective for safety purposes and more desirable visually.

A consistent design approach would be developed for new safety barriers that is unifying and attractive. Existing barriers would be rehabilitated or redesigned with the standard design theme but with site-specific solutions. The safety barriers would prevent visitors (especially children) from inadvertently going beyond the intended stopping points. The need for safety barriers would be critically evaluated. Additional barriers that are necessary would be constructed, and excessive barriers would be eliminated. The new safety barriers would be designed for minimal maintenance.

Trails that are aligned so closely to the base of a mound that they cut into the mound directly or cause erosion that would deteriorate the mound would be realigned to eliminate such damage.

Many visitors have expressed a desire to view an effigy mound from an elevated platform to better distinguish the animal shape a given mound represents. To accomplish this, an elevated boardwalk (up to 8 feet high) would be constructed to view the Great Bear mound. This boardwalk would occupy the same alignment as the existing trail that runs along the south and east sides of the mound, so little additional vegetation clearing would be needed. The Great Bear mound is tilted because it was built on the side of a moderate slope. This slope faces the direction of the proposed viewing platform boardwalk. For this reason, the boardwalk would not need to be as high as it would if the mound were built on a level surface. This type of viewing arrangement would allow several visitors to observe the mound from an elevated viewpoint at the same time from a variety of angles, and it would be accessible to wheelchair-bound visitors. The platform would be carefully designed to keep it from overpowering the resource it is proposed to help interpret.

The 60-car parking area at the visitor center is adequate to accommodate parking needs most of the year. However, during a few weekends in the fall season, demand for parking space far exceeds the amount available. During these weekends, the park staff directs overflow parking to grassed areas immediately south and southeast of the parking lot and visitor center. This practice would continue if visitor use stayed within forecasted levels (i.e., no substantial increase). To maintain these grassed areas, a turf management program would be implemented. The management program would include watering the grassed parking area for several hours following weekend use. In the fall, after all parking use is finished, the grass area would be aerated. The pattern that cars are parked and the direction they drive should be varied each day to minimize soil compaction in the grassed parking area.





There is a current shortage of covered storage in the maintenance area, and acquisition of some additional maintenance equipment and materials would require additional storage space. The space would provide protection from the weather and security for the items stored. A three-bay garage would be constructed on the west end of the present maintenance area. This might require relocating the propane tanks and fill pipes in that area.

## **South Unit**

**Visitor Activities/Interpretation.** The south unit, with its famous marching bears and bird effigies, should evoke different feelings from visitors than the relatively more developed and heavily used north unit. These effigies would continue to be relatively remote, requiring a minimum 5-mile round-trip hike from the visitor center via the proposed trail system through dense forests, open prairie meadows, and scenic ridgetop vistas. A strong sense of nature would overshadow any man-made evidence. There would be few directional signs, no pavement, or powerlines, only a narrow, primitive trail. After about 2 miles, the trail would open up to a clearing along a ridgetop. The clearing winds for several hundred yards, displaying the 10 marching bears, several birds, and other mounds. Walking from this new trail into the collection of mounds would be an awesome experience. Visitors may feel like they were the first to discover this immense array of unique mounds.

As specified in the *Interpretive Prospectus* for Effigy Mounds (NPS 1986b), near the end of the trail, when the clearing is in sight, a wayside would show a diagram of the mounds and help orient the visitor to the effigies. The sign would also remind visitors that these are ancient burial grounds that deserve certain respect and decorum. It also might raise a few questions for contemplation at this site. This wayside should be positioned so it cannot be seen from the clearing. There would be few, if any, other interpretive signs in the south unit.

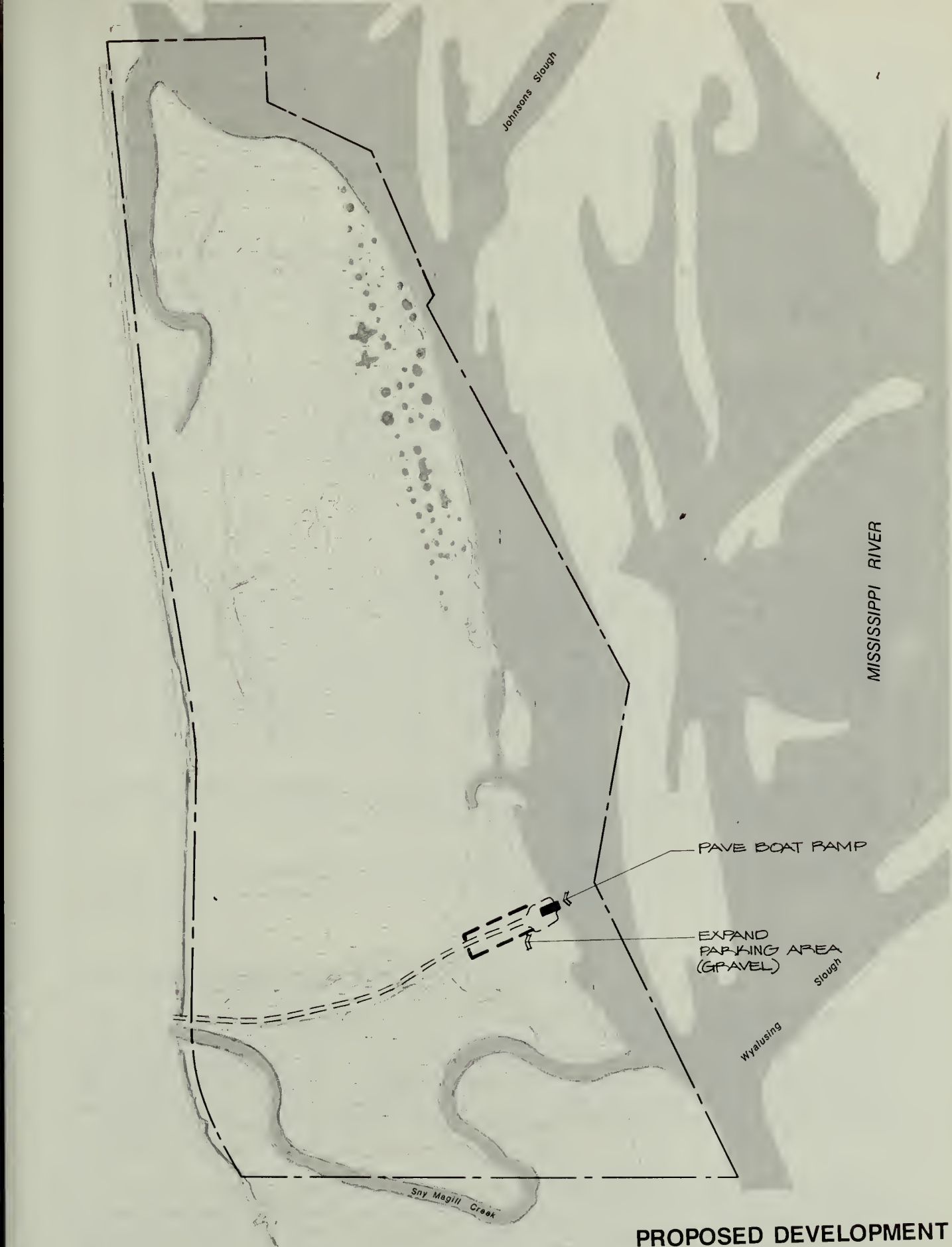
As the clearing is entered, there would be no trails to guide the visitor through the complex of mounds. The visitor would explore and wander through the clearing adjacent to the mounds. As long as preservation of the mounds is not threatened, the mounds area would be left without signs and internal trails.

**Development/Administration.** To improve the visitor experience in the south unit, a trail system would be established mostly separate from the administrative roads that are now used for the trail system. The new system's trailhead would begin at the visitor center, and from there the primary trail would pass through a new pedestrian tunnel under IA 76, cross the Yellow River via a proposed footbridge, wind up the back side of the bluff, and culminate at the Marching Bears mound group as discussed above. A spur trail would also provide access to a significant mound group near the Allamakee/Clayton County line.









MISSISSIPPI RIVER

PAVE BOAT RAMP

EXPAND  
PARKING AREA  
(GRAVEL)

Wyalusing  
Slough

Sny Magill  
Creek



0 200 300 400 500 1000 Feet

**PROPOSED DEVELOPMENT**  
**SNY MAGILL UNIT**  
EFFIGY MOUNDS NATIONAL MONUMENT  
UNITED STATES DEPARTMENT OF THE INTERIOR

NATIONAL PARK SERVICE  
DSC/APR 89 394/20.015







The new trail into the south unit would be developed so that disabled visitors can reach the linear mounds that are immediately south of IA 76 near the visitor center. New overlooks would also be established along the trail system on the bluffs above the river. (See Proposed Development map for specific locations of the areas and facilities discussed.)

In contrast to the highly developed north unit trail, the south unit should be left relatively undeveloped. The trail should be a high-standard trail designed for disabled visitors up to the linear mounds, but beyond that point, a two-foot-wide dirt trail tread is recommended. A simple one-page folder would be available to assist visitors to the south unit. A more thorough self-guiding booklet should be developed by the park and made available near the trailhead.

The south unit is traversed by a dirt road that roughly parallels the south side of the Yellow River. Because of past incidences of resource vandalism and administrative difficulties associated with this road, access would be limited to landowners who need access to their property and to park administrative uses. This access limitation would be facilitated by installing a gate that can be locked at the intersection of IA 76 and the Yellow River road.

## **Sny Magill**

**Visitor Activities/Interpretation.** The visitor use/interpretation approach at Sny Magill would be oriented to river access only. The majority of current visitor use activities is related to boating, which would continue to be limited to day use only. Due to the unit's location, isolation from the headquarters area, and the fragile nature of the mound resources, visitation of the prehistoric mounds would not be encouraged at Sny Magill. The monument provides several visitor opportunities for viewing mounds in the north and south units, so the Sny Magill unit mounds would be managed exclusively preservation-oriented. With current levels of visitor use in the mounds area, a closure is not warranted, but monitoring for potential impacts would be continued.

**Development/Administration.** To provide better access to the Mississippi River, the Park Service would permit the state DNR to enlarge the existing parking area and pave the boat ramp. The entrance road and enlarged river access parking area would remain unpaved.

To ensure better preservation of the mounds, administrative protection activities should be increased. The DNR would be asked for additional cooperative assistance to protect the mounds area.

## **BOUNDARY ADJUSTMENTS AND LAND PROTECTION**

There are no nonfederal lands within the boundaries of Effigy Mounds National Monument. A dirt road paralleling the Yellow River on the south side has been maintained by Allamakee County in the past, and it provides winter access for a landowner west of the monument. Because this road is across federal land, it would be gated to reduce resource damage and visitor management needs, and to provide access for NPS administrative use with continued access allowed for the landowner only. This proposal would require cooperation from the landowner and Allamakee County.

The monument boundary would be expanded by about 50 acres to include the narrow strip of land between the north unit and the Mississippi River (see proposed Boundary Adjustment map). This would incorporate the Red House Landing and FTD prehistoric sites on state land in the river floodplain. These prehistoric sites represent an important aspect



of the mound-building culture – village habitation – which is not currently included in the monument boundary. Negotiations would be initiated with the state of Iowa to transfer fee-title ownership to the federal government for inclusion in the monument. This would continue a tradition that started with the original state donation of 1,000 acres to form the national monument in 1949.

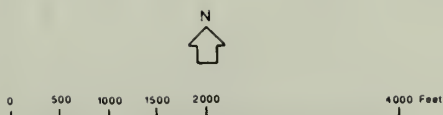
The proposed boundary adjustment would also permit acquisition of the Soo Line right-of-way if abandoned at some time in the future. Until that time, no action would be taken to acquire the railroad property. No other private lands are in the proposed boundary addition area. Based on a preliminary review of potential monument additions in the region, it does not appear that any other sites in the vicinity of the monument are significant enough to warrant addition to the monument as a detached unit.

Other additions of land immediately adjacent to the monument are evaluated under alternative B.

### **IMPLEMENTATION COSTS AND PRIORITIES**

Estimated development costs and priorities for the proposal and alternatives are shown in table 1. Annual operating costs are shown in table 2.





## PROPOSED BOUNDARY ADJUSTMENTS NORTH/SOUTH UNITS

EFFIGY MOUNDS NATIONAL MONUMENT  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE

DSC/APR 89 394/20.012





Issue (Priority)	Proposal	Alternative A	Alternative B
North Unit			
Peak use parking (3)	No Action	Install "grasscrete" for overflow areas <b>\$55,000</b>	Enlarge parking area <b>\$42,000</b>
Trails (2)	Reroute Firepoint trail at switchbacks; evaluate need for safety barriers at overlooks and other areas and develop consistent design solutions; develop viewing platform at Great Bear mound <b>\$409,000</b>	No Action	Add additional safety barriers to overlooks and switchbacks <b>\$183,000</b>
Access to mounds (2)	Provide escorted trips to and parking for disabled visitors at Great Bear mound; improve spur trail at Three Bear mound group; make trail into south unit accessible to linear mounds south of IA 76 <b>\$9,000</b>	Improve a short section of S. Bruckner Road, provide parking for disabled visitors and improve trail to scenic overlook <b>\$41,000</b>	Improve S. Bruckner Road to Little Bear Mound and provide accessible trail and parking <b>\$86,000</b>
Maintenance/storage (2)	Develop three-bay garage on west end of maintenance area <b>\$202,000</b>	Develop three-bay garage on south side of maintenance area <b>\$202,000</b>	Develop a maintenance/storage building in section 27 near county road <b>\$202,000</b>
South Unit			
Visitor use/development (1)	Develop new trail from visitor center into south unit with tunnel under IA 76 and footbridge over Yellow River; establish overlooks <b>\$322,000</b>	Develop trailhead at south unit ravine and use existing trails (administrative roads) <b>\$83,000</b>	Same as proposal <b>\$322,000</b>
Yellow River Road (1)	Gate and limit access to landowners and administrative uses <b>\$1,000</b>	Close and obliterate road or reduce to hiking trail <b>\$194,000</b>	Upgrade to low-standard gravel road <b>\$59,000</b>
Sny Magill			
Interpretive use/development of mounds area (3)	No action	Develop interpretive trail, use existing road and parking <b>\$16,000</b>	Develop interpretive trail, boardwalks, observation platform, waysides, and separate parking area; pave entrance road <b>\$377,000</b>
Visitor contact (3)	No action	Install information wayside at trailhead <b>\$2,000</b>	Develop flood-proof contact station with restrooms <b>\$314,000</b>
Mississippi River access (2)	Expand parking area (gravel), pave ramp <b>\$24,000</b>	Pave ramp only <b>\$9,000</b>	Pave ramp, expand and pave parking area, pave road, add picnic area <b>\$287,000</b>
Total Development Costs	<b>\$967,000</b>	<b>\$602,000</b>	<b>\$1,872,000</b>
Boundary Adjustments (2)	Add riverfront between north boundary and the Yellow River; acquire in fee when available	No action	Major boundary adjustments to include adjacent resources; acquire in fee or less-than fee

NOTE: Alternative C is "No Action." All development cost estimates include construction costs, project supervision, and contingencies. Land acquisition costs are unknown.



Table 2: Effigy Mounds National Monument – Proposal and Alternatives Operating Costs

	Proposal			Alternative A			Alternative B			Alternative C (No Action)*		
	FTE	Grade	Amount	FTE	Grade	Amount	FTE	Grade	Amount	FTE	Grade	Amount
Visitor & Resource Protection	0.3	GS-4	\$ 5,477	0.3	GS-4	\$ 5,477	0.6	GS-4	\$ 9,676	0.1	GS-4	\$ 1,826
	1.8	GS-5	35,568	1.8	GS-5	35,568	1.8	GS-4	35,568	1.0	GS-5	19,760
	Supplies/ materials		3,500	Supplies/ materials		3,500	Supplies/ materials		4,000	Supplies/ materials		3,000
Maintenance	1.7	WG-3	\$ 35,765	0.6	WG-2	\$ 13,278	3.0	WG-3	\$ 63,870	0.5	WG-4	\$ 11,400
	0.5	WG-4	11,400	0.7	WG-3	14,903	0.9	WG-4	21,556	1.0	WG-5	21,800
	1.0	WG-5	21,800	0.5	WG-4	11,400	1.5	WG-5	34,117			
	0.4	WG-6	9,990	1.3	WG-5	28,623	1.3	WG-6	32,467			
	Supplies/ materials & utilities		6,500	Supplies/ materials & utilities		9,990	Supplies/ materials & utilities		15,000	Supplies/ materials & utilities		6,800
Interpretation	1.0	GS-4	\$ 15,700	2.0	GS-4	\$ 31,510	2.0	GS-4	\$ 31,510	0.5	GS-5	\$ 9,880
	0.5	GS-5	9,880	0.5	GS-5	9,880	0.5	GS-5	9,880			
	Supplies/ materials		4,500	Supplies/ materials		5,500	Supplies/ materials		5,500	Supplies/ materials		4,500
Administration & Management	0.4	GS-3	\$ 5,000	0.5	GS-3	\$ 6,700	0.6	GS-3	\$ 10,000	0.3	GS-3	\$ 4,500
	Supplies/ materials		1,200	Supplies/ materials		1,300	Supplies/ materials		1,800	Supplies/ materials		900
TOTALS	7.6		\$166,280	8.7		\$183,629	12.2		\$274,944	3.4		\$ 84,366

\*Alternative C (no action) records existing deficits that are also included in all other alternatives.

Note: Salaries are calculated at 26% for FERS, 12.75% for CSRS, 7.55% for seasonal employees.



## **ALTERNATIVES**

This section describes the alternatives to the proposal and concentrates on how they differ from the proposal. (Alternatives are summarized in table 1 in the previous section.) Major development issues include: north unit – peak use parking, trails, access for disabled visitors to mounds, and maintenance storage; south unit – visitor use/development and Yellow River access; Sny Magill – interpretive use/development of mounds area, visitor contact, and Mississippi River access. The only boundary adjustment options being analyzed are under alternative B.

### **ALTERNATIVE A**

#### **North Unit**

Under alternative A, peak use parking at the visitor center would be accommodated by installing "grasscrete" in the turf areas (1.5 acres) directly adjacent to the visitor center building and paved parking lot. This would allow for an additional overflow parking area of about 60 vehicles, which would double the existing 60-car/3-bus capacity (see Alternative A map).

Under this alternative there would be no action on the trail alignment and safety barrier issues.

Access to the mounds would include improving a short road segment of South Bruckner Road, providing parking for disabled visitors, and improving the trail to second scenic overlook. The existing dirt one-lane road would be graveled for approximately 850 feet, leading to a graveled four-car parking area for disabled visitors. A portion of the existing foot trail (975 feet/.09 acres to the second scenic overlook) would be upgraded for use by disabled visitors. Access to the area would require some form of controlled use.

The covered three-bay maintenance/storage addition to the existing maintenance area would be constructed at the south end, which would maintain the integrity of the existing maintenance operation and facility. The new addition would be used for maintenance and equipment (fire vehicle/ cache, lawnmowers, tools, etc.) storage as described under the proposal; currently this equipment is stored uncovered in the maintenance yard.

Under alternative A, the boundary of the monument would remain unchanged.

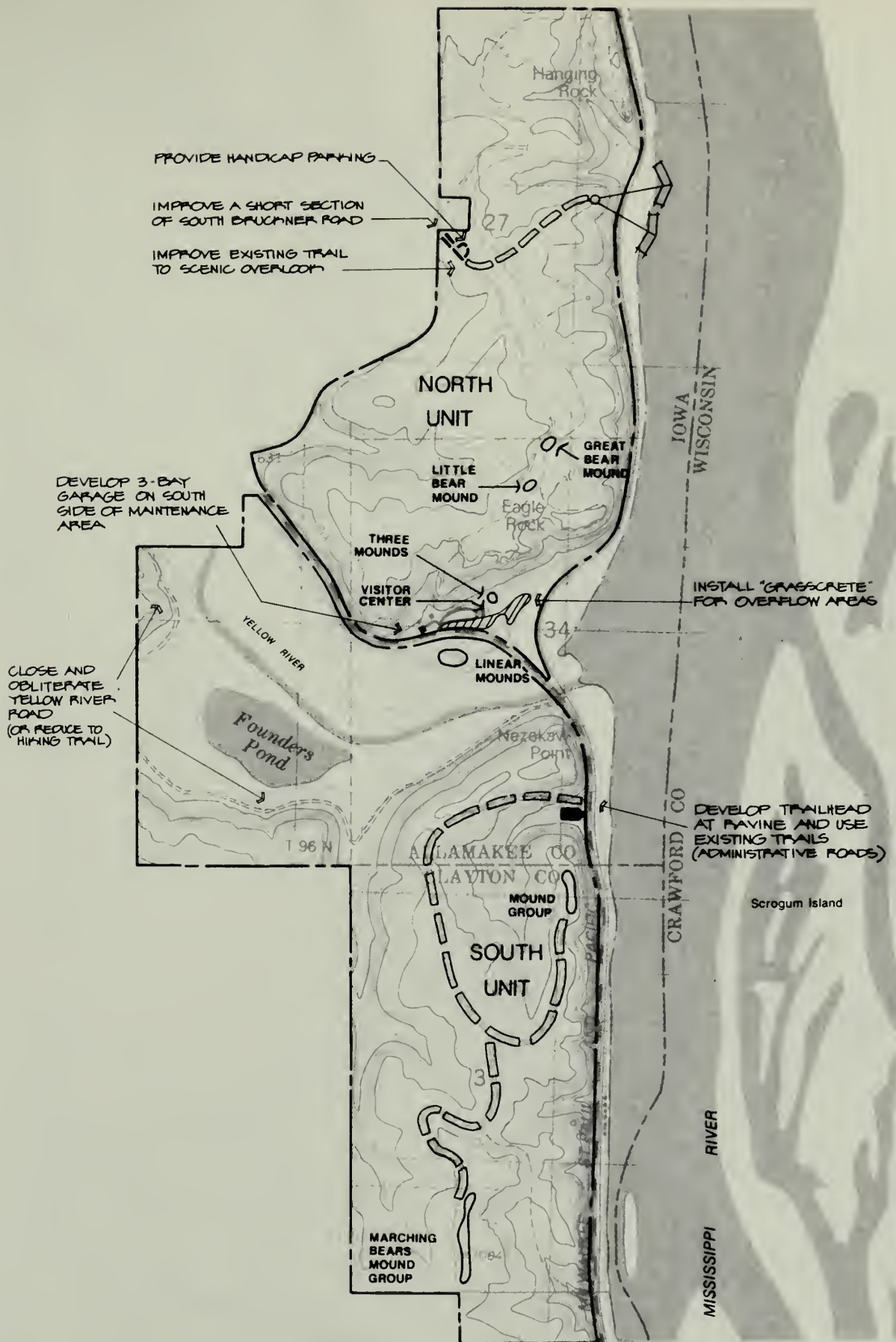
#### **South Unit**

Under this alternative, the Park Service would develop a trailhead along IA 76 at the south unit ravine site and use existing trails (administrative roads) for foot access, park maintenance use, and interpretation of the Marching Bears mound group. The trailhead parking area would accommodate about 10 to 12 vehicles.

The Yellow River Road would be closed and obliterated (6,400 feet/1.8 acres) or reduced to a hiking trail only.



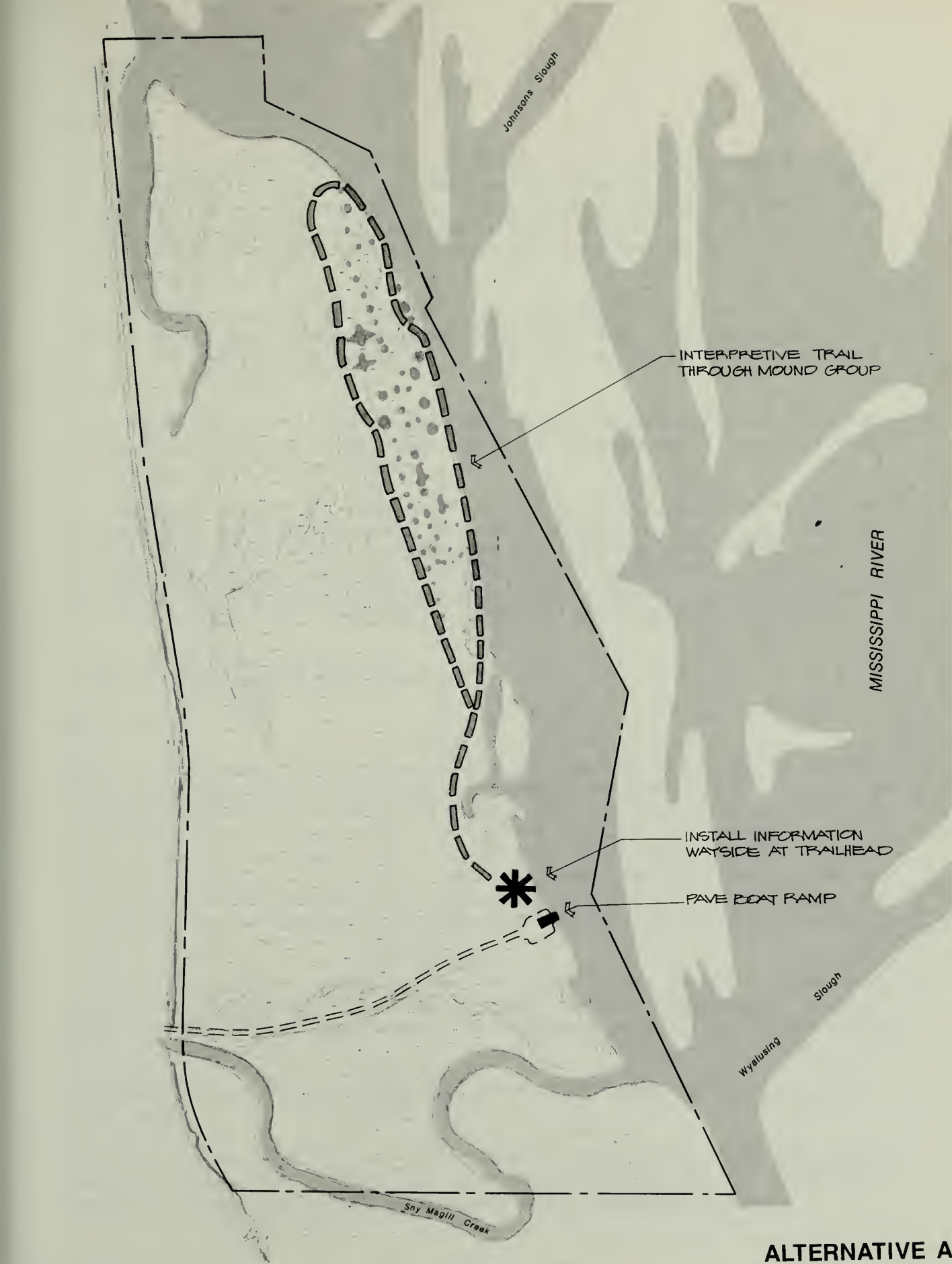




0 500 1000 1500 2000 4000 Feet

**ALTERNATIVE A**  
**NORTH/SOUTH UNITS**  
**EFFIGY MOUNDS NATIONAL MONUMENT**  
 UNITED STATES DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE  
 DSC/APR 89 394/20,009





**ALTERNATIVE A**  
**SNY MAGILL UNIT**

EFFIGY MOUNDS NATIONAL MONUMENT  
UNITED STATES DEPARTMENT OF THE INTERIOR  
NATIONAL PARK SERVICE  
DSC/APR 89 394/20.016





## **Sny Magill**

Under alternative A, the Park Service would develop a low-standard interpretive trail into the Sny Magill mounds area. The trail would facilitate access to the high concentration of mounds, while enhancing interpretation of floodplain mounds and providing more diversity for visitors to the park. Some vegetation clearing for the trail and on the mounds would be required. The existing gravel road and parking area would continue to be used without improvements.

The road and parking area is maintained by the Iowa Department of Natural Resources (DNR) through a cooperative agreement with the Park Service. Portions of the Sny Magill unit, which is entirely within the Mississippi River 100-year and 500-year floodplains, is subject to annual flooding.

Under this alternative, an information wayside would be installed at the trailhead. This would provide minimum on-site visitor orientation/interpretation/information. Floodplain design considerations would be necessary.

Mississippi River access at Sny Magill would continue through a cooperative agreement with the DNR. This would include paving the existing double-wide gravel boat ramp pad (approximately 400 sq ft) without expanding the ramp. The 30-car gravel parking area (0.25 acre) and 12-foot access road (1,500 linear feet/0.40 acre) would remain gravel and would not be expanded. The state would continue to maintain the access road, parking area, and boat ramp. Funding would be provided by the state as described for in the proposal.

## **ALTERNATIVE B (MAJOR UPGRADE)**

### **North Unit**

Under this alternative, the visitor center parking area would be enlarged by 1.5 acres for peak use and redesigned to improve traffic flow, eliminate the potential for turf damage, and reduce staff requirements for traffic control during peak use days. Safety barriers would be added or replaced on existing and new overlook areas and along switchbacks in the trails. Unsafe and inconsistent use of materials at overlooks and switchbacks would be eliminated, redesigned, and replaced. Also, marginally necessary barriers would be eliminated, while new barrier and safety rails/steps would be redesigned with consistent use of materials throughout the area's trail system. Additional amenities such as benches would be added for visitor use and convenience.

Under this alternative, the existing, one-lane dirt South Bruckner Road (3,450 feet) would be graveled for access by disabled visitors to the Little Bear mound. A four-car gravel parking area for disabled visitors only would be developed along with a 100-foot trail leading to the Little Bear mound.

Controlled use to the area would be required for visitor access and coordinated at the visitor center.

A maintenance/storage building would be developed in section 27 near the existing county road. An access road and an up to 1/2-acre building site for a three-bay maintenance/storage facility would be necessary, along with associated utilities.



## **South Unit**

Under this alternative, visitor use and development in the south unit would be the same as the proposal – a trailhead at the visitor center would lead to the tunnel under the road with new interpretive trails and a footbridge over Yellow River for access to the south unit's mounds, and new overlooks would be provided. The Yellow River Road (6,400 linear feet/1.8 acres) would be improved to a low-standard gravel road, continuing the traditional access point and use of the Yellow River bottom and adjoining Founders Pond area. Upgrading this road would provide the only standard vehicle access to an effigy mound in the monument.

## **Sny Magill**

Under alternative B, the Park Service would construct a high-standard interpretive trail system into the Sny Magill mounds area, with observation platforms, boardwalks, and wayside structures. Forest and shrub vegetation would be cleared on all the identified burial mounds in the Sny Magill unit. The visitor use and interpretive potential of the monument's floodplain mounds would be maximized. This alternative would provide access to the Sny Magill mounds for disabled visitors and offer maximum diversity of the visitor experience, thus encouraging greater cultural understanding of the mounds. A permanent stationary flood-proofed visitor contact station with restroom facilities would be constructed. The permanent contact station would be designed to withstand periodic flooding. A separate paved parking area would serve this contact station.

The existing entrance road, parking area, and boat ramp would be paved. The parking area would be enlarged as specified in the proposal. A picnic area would be provided near the contact station and boat ramp parking area.

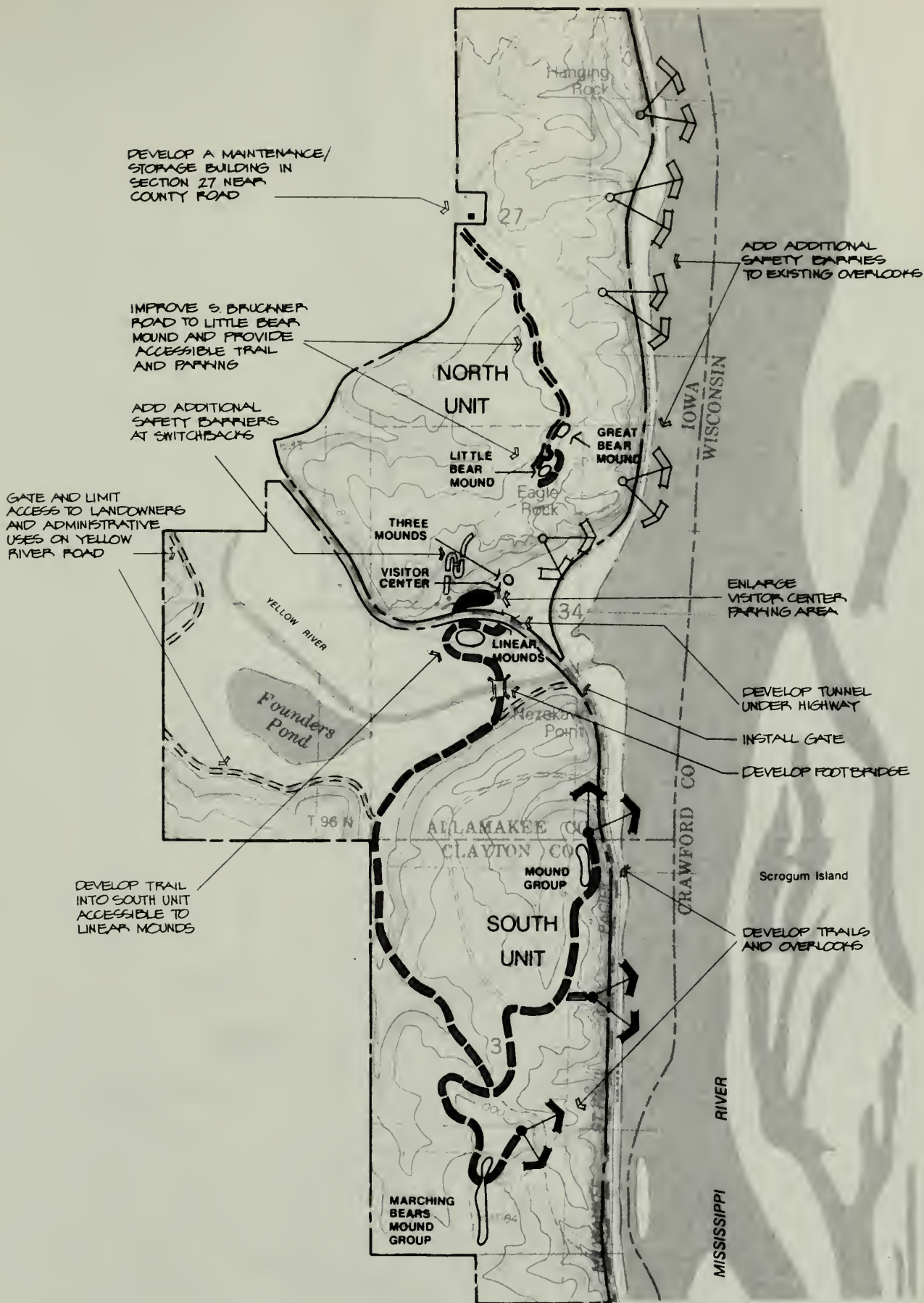
The access road, expanded parking, picnic area, and paved boat ramp improvements would be funded by the state.

## **Boundary Adjustment**

Under alternative B, a major boundary adjustment would be made to acquire approximately 1,300 acres to add nearby cultural resources and create more manageable monument boundaries. The land would be acquired in fee or less than fee. Designated land parcels would include: Ferguson tract, Trudo tract, the entire riverfront adjacent to the monument's eastern boundary (Red House Landing, FTD site, and state day use areas along the Mississippi River), McCormick mound group, Schaefer tract, and Sny Magill ridge mounds (see Alternative B Boundary Adjustments map). This alternative offers the potential to incorporate existing state picnic areas into the monument with the potential to remove visually intrusive development along the Mississippi River. Boundary adjustments along the monument's eastern border would provide for a more identifiable boundary, consistent with natural features (e.g., river shoreline vs. IA 76).







0 500 1000 1500 2000 4000 Feet

**ALTERNATIVE B**  
**NORTH/SOUTH UNITS**  
**EFFIGY MOUNDS NATIONAL MONUMENT**  
 UNITED STATES DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE

DSC/APR 89 394/20.010







## ALTERNATIVE B SNY MAGILL UNIT

EFFIGY MOUNDS NATIONAL MONUMENT  
UNITED STATES DEPARTMENT OF THE INTERIOR

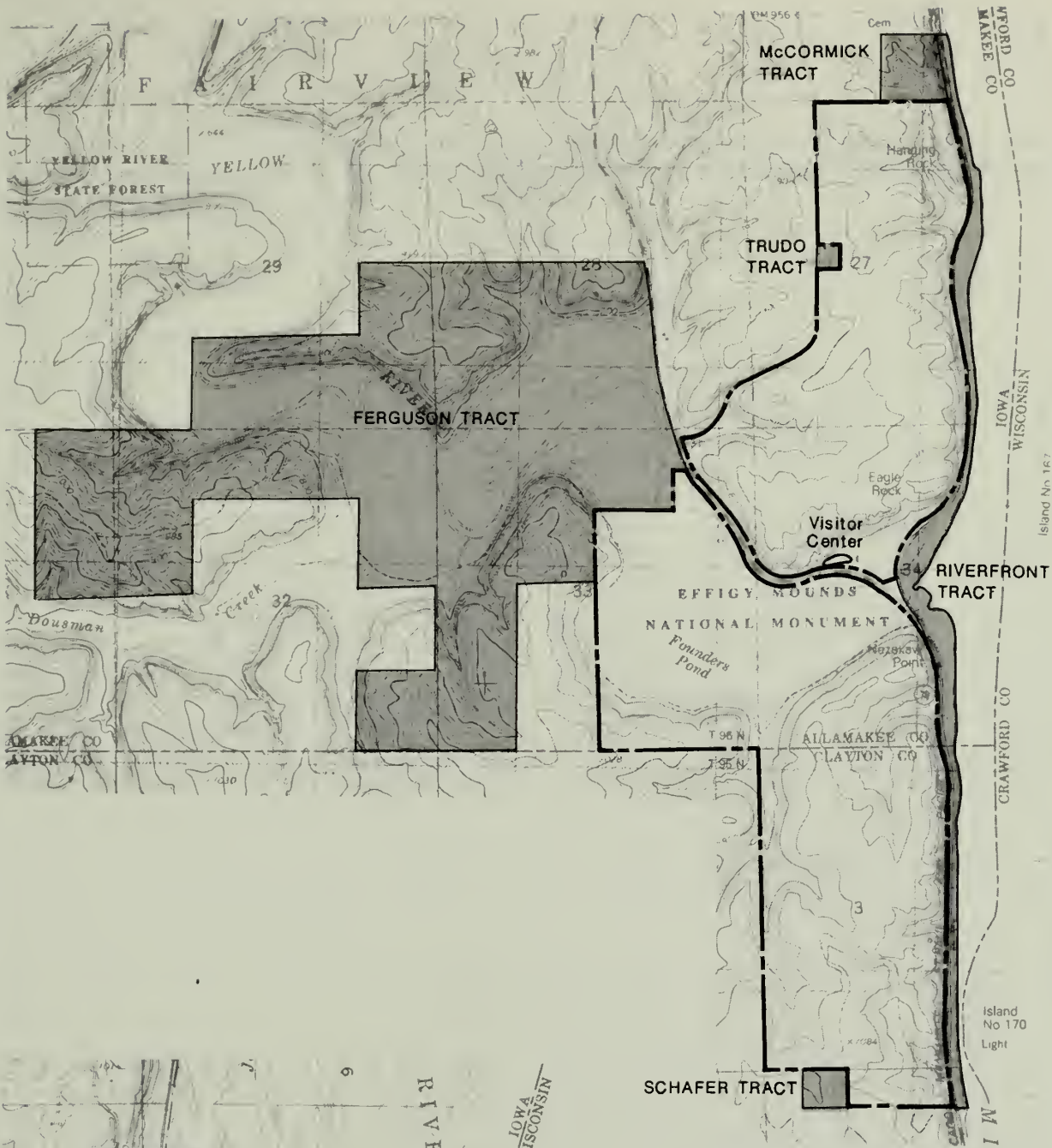
NATIONAL PARK SERVICE

DSC/APR 89 394/20,017



100 200 300 400 500 1000 Feet





**NORTH and SOUTH UNITS**



**SNY MAGILL UNIT**

(Located approximately 12 miles downstream from North and Sount Units, Clayton County, Iowa)



0 1000 2000 4000 6000 Feet

**ALTERNATIVE B**  
**BOUNDARY ADJUSTMENTS**  
 EFFIGY MOUNDS NATIONAL MONUMENT  
 UNITED STATES DEPARTMENT OF THE INTERIOR  
 NATIONAL PARK SERVICE

DSC / MAR 89 / 394-20,006





## **ALTERNATIVE C (NO ACTION)**

Under the no-action alternative, the present management strategy and development level in the monument would continue. For a more complete description, refer back to the "Description of the Area" section of this document.



## **ENVIRONMENTAL CONSEQUENCES**

This section describes the environmental impacts of the proposal and the alternatives for the monument.

### **IMPACTS OF THE PROPOSAL**

#### **Cultural Resources**

The entire monument is on the National Register of Historic Places, and the mounds are on the monument's List of Classified Structures (LCS) and the state of Iowa's archeological sites inventory. Therefore, special protection of the cultural resources would be continued.

The boundary additions to the north unit would provide additional protection to cultural resources on the riverfront lands. Because no visitor activities or facilities are proposed for this area, no impacts would occur from visitor use and development in the monument.

The increased use of interpretive trails could affect archeological resources in the monument. Archeological resources adjacent to or easily accessible from recreational and visitor interpretive points would be vulnerable to surface disturbance, inadvertent damage, and vandalism. Indiscriminate visitor traffic off trails and at visitor interpretation points at burial mound sites would moderately compact soil and disturb grass on the mounds. Cumulative effects would reduce grass cover on the mounds and expose bare worn areas to slight soil erosion and invasion of weeds.

Any areas not previously surveyed would be examined for cultural remains by archeologists. Additional archeological investigations, including recording and mapping of archeological features and artifacts, would be performed in those areas where unknown cultural remains may be affected by the plan.

Before any construction activities started, a professional archeologist would survey the proposed development site and the immediate vicinity for the presence of cultural remains, both prehistoric and historic. Should newly discovered or previously unrecorded cultural remains be located, additional investigations would be accomplished before earth-disturbing activities. Similarly, in those areas where unknown subsurface remains appear likely, an archeologist would be on hand to monitor ground disturbance during construction.

The entire Sny Magill unit has been intensively surveyed and studied for its archeological resources, primarily mounds. Development at Sny Magill would avoid direct impacts to the mounds. The proposal would not affect any known archeological resources at Sny Magill. Low visitor use of the Sny Magill unit would continue to minimize any unwanted human disturbance of the mounds.

Improved access to and interpretation of the Marching Bear Mound Group in the south unit would offer visitors an opportunity to observe these unique cultural resources; however, increased visitation to this mound group would have minimal, but gradual long-term deterioration effects. Unless monitored or patrolled, there would be unwanted foot traffic, soil compaction, and worn bare spots on the mounds which would increase erosion and weed growth. Because the hiking distance would actually increase slightly, major increased use at the south unit's mound group is not anticipated.



Construction of an observation platform at Great Bear mound in the north unit would provide improved observation and understanding of the monument's archeological resources. The facility would be designed to avoid direct construction impacts on the mound. The design would discourage unwanted foot traffic on the mound.

No development activities under the proposal would affect historic resources. Interpretive trail development to the Marching Bear mound group in the south unit would in places parallel the old 1840 historic trail but would not substantially affect it. Continued use of the historic trace would keep it open and visible to the public.

Visitor use impacts to the Red House Landing and FTD sites under the proposed boundary addition to the north unit are uncertain and unknown; however, the inaccessibility and remoteness of these sites would help protect these resources. Additional protection should be afforded them by bringing the sites under NPS management.

## **Natural Resources**

**Soils.** Development and/or improvement of trails, roads, boat ramps, parking areas, buildings, and any other impermeable structures would either wholly or partially eliminate direct inflow of water to soil. Compaction of soils in these areas would occur either directly through the construction of roads and parking areas or indirectly as a result of settling caused by the weight of vehicles or structures. Site preparation for new trails, roads, parking areas, and buildings would result in either removal or addition of earth, which would damage the soil structure. Topsoil would be retained and replaced when possible to conserve available organic matter. Imported topsoil would be used to supplement any shortage of topsoil removed from the areas that would be covered by gravel, pavement, or buildings. This would minimize the overall loss of topsoil caused by new development or facility improvement.

Any construction site where soil is disturbed would undergo accelerated erosion, at least temporarily, until drainage structures were operable and vegetation is recovered. Construction of roads, trails, boat ramps, parking areas, buildings, and other impervious structures would be restricted to the minimum area required for the facility.

To minimize soil erosion, most visitor facilities would be constructed where the slopes for roads, trails, ramps, parking areas, and buildings were less than 15 percent. Trail construction would include special design methods in areas where the slope is steep and soils are easily eroded.

Roads, trails, parking areas, buildings, and other impervious structures would collect and divert precipitation to adjacent areas. The runoff diverted would pour out onto adjacent areas, increasing soil moisture, which would result in localized increases in erosion and potentially alter the vegetative composition of the immediate area.

Areas in and around interpretive facilities and developed areas would be affected by foot traffic. The primary impact on soils would be compaction, which would decrease permeability and locally alter soil moisture. Continued foot traffic would gradually decrease vegetation and regeneration.





Paving the double-wide boat ramp for improved Mississippi River access at Sny Magill would affect an existing disturbed soil area of approximately 400 square feet. Soil disturbance and displacement would be minimal.

The proposed development of the new interpretive trail from the visitor center to the south unit's Marching Bear group, overlooks, and the associated foot tunnel under IA 76 would disturb approximately 0.75 acre of mixed grass understory and associated soils.

Peak use parking (4-6 weekends/year) on the turfed area would affect about 1.5 acres of soils because of random compaction by vehicles and reduction of air/moisture permeability; however, soil compaction could be lessened by an annual aeration program of the affected area. Tire ruts and rough turf would occur during wet periods.

Trail realignment of the north unit's Fire Point trail would result in the obliteration of about 1,000 linear feet of existing crushed/compacted gravel trails and switchbacks, with the new trail realignment construction of about 1,100 linear feet. Four existing switchbacks would be eliminated, while the new trail alignment would create one new switchback. Obliteration of the existing trail and construction of a new trail realignment would disturb about 0.1 acre each of mixed grass/shrub understory, causing temporary accelerated erosion and runoff. Revegetation and reseeding of native species would be required on obliterated trails, and the new trail alignment would necessitate compacting the soil, adding gravel, and grooming the trail.

Development of a new trail for disabled visitors to reach Great Bear mound and the conical mounds south of IA 76 would affect 0.04 acre of undisturbed soil, causing temporary surface disturbance and minor erosion. Soil compaction and reduction in water permeability would be permanent but minor. The construction of a new four-car gravel parking area for disabled visitors (about 0.02 acre) for Great Bear mound would directly affect normal water inflow to soil, with reduced soil percolation from increased gravel surface addition and soil compaction by vehicles. Use of the area would be limited; therefore, impacts would be minor. Topsoil that was disturbed during leveling would be reused where possible.

The maintenance/storage addition to the west end of the existing maintenance yard would require cut, fill, and leveling of about .03 acre. The construction would eliminate soil moisture inflow to the building site, and there would be water runoff and precipitation flowing off site onto the adjacent turf grass area. Soil disturbance would be permanent but the adjacent topsoil would be graded and reseeded.

**Vegetation.** Construction of buildings, roads, trails, and parking areas would destroy understory and, in some cases, overstory vegetation. Runoff that would not be diverted to natural drainage systems would run off into adjacent vegetated areas, altering the natural composition of vegetation. These conditions could encourage the growth of exotic species, such as thistle and bindweed.

Buildings, roads, trails, and parking areas would be constructed in a manner that would minimize the area disturbed. Topsoil from disturbed areas would be replaced, minimizing loss of organic material in the soil. These disturbed areas would be reseeded with native species. To the maximum extent possible, water runoff from impervious structures would be directed to natural drainages, minimizing the impacts of increased moisture availability.

Areas near trailheads, buildings, and scenic attractions would be impacted by foot traffic. Soil compaction and reduction in moisture availability could then alter the relative



abundance of some species. Germination of some plant species might be reduced by soil compaction.

During the recovery period following construction, the artificially seeded or replanted native vegetation would be different from vegetation in adjacent areas. A reduction in organic soil content would cause a slight change in species composition for several years.

The Sny Magill unit's interpretive use would continue to be minimal, and therefore vegetation and mound disturbance would be slight. The expanded gravel parking area at Sny Magill would affect 0.4 acre of mixed grass/weed area within an existing disturbed area. The mixed grass ground cover would be totally covered with gravel, and water runoff would be increased to the adjacent parking lot border area. This added runoff would cause a minor change in the moisture regime and an increase of native and exotic vegetation and species (grasses, weeds, shrubs, saplings) composition along the parking lot periphery. These conditions could encourage the growth of exotic weed species as described above. The overall impact would be minor.

Development of a new interpretive trail over the Yellow River to the south unit's Marching Bear Mound group and overlooks would affect about 0.75 acre of mixed grass, small shrubs, and immature trees. Some ground cover might need to be removed for the trail alignment because of slope and physical features, but extensive vegetation removal would be minimized. At overlook sites, some medium-sized trees (5"-10" trunks) could have to be removed to enhance vistas. At overlook sites, five to 10 trees could be cut down. Impacts would vary along trails and overlooks, but overall effects would be minor.

Peak use parking on the turf at the north unit's visitor center would continue to impact 1.5 acres of grass turf; however, since peak use is limited, effects on the grass would be temporary. Parking during wet periods would result in damaged turf.

The realigned portion of the Fire Point trail would cause ground cover vegetation disturbance to approximately 0.1 acre. Some other shrub vegetation could be removed because of slope, aspect, and topography, but it would be minimal. The existing trail would be obliterated and revegetated/reseeded to native species (0.1 acre). Impacts would be minor. Construction of a viewing platform for Great Bear mound would affect about 0.07 acre of mixed grass/shrub vegetation.

Vegetation affected by development of the improved access for disabled visitors at the visitor center's Three Mounds group would be minimal. Development of the trail access for disabled visitors at Great Bear mound and the trail leading to the conical mounds south of IA 76 would affect about 0.4 acre of mixed grass/shrub ground cover. Although impacts would be permanent, they would be minor in extent.

Construction of a maintenance/storage addition would affect about .03 acre of turf grass. Removal of a large white pine tree would probably not be necessary, although some lower limb pruning might be required because of building/roof design. Site construction activities could affect the root system, which could result in partial tree crown dieback. Efforts would be made to not disturb the white pine, which adds to the aesthetic quality of the monument as an outstanding example of the native white pine species of the area.

**Water Quality.** There would be no adverse impacts to water quality. Water quality monitoring along and within the monument's boundary would continue periodically by the monument staff.





In the south unit, the intermittent drainage crossing the Yellow River Road at the west end would have less vehicular traffic, reducing potential siltation into Founders Pond.

**Air Quality.** There would be no noticeable or adverse impacts to air quality. Air quality monitoring sites within the region would continue to be controlled by the state and periodically reviewed by monument staff for any area concerns.

Graveling the expanded Sny Magill parking area would cause minimal, temporary dust conditions. It would not affect overall air quality or have noticeable impacts.

**Wildlife.** Vegetative alterations caused by construction and development activities of an area usually results in the temporary displacement and disruption of some resident invertebrates, small mammals, and birds.

The limited construction at the Sny Magill river access site would have minimal impacts on fauna populations. Only temporary displacement of small mammals and birds would occur. Paving the existing gravel boat access ramp would cause only minor disruption and site utilization by local species. Some increase in ramp use would not adversely affect the area's wildlife.

Limiting access on the Yellow River Road would improve the habitat for wildlife populations.

The new trail realignment segment leading to Fire Point would cause only minimal affects to wildlife, and displacement would be temporary.

**Threatened or Endangered Species.** The bald eagle and peregrine falcon, both federally endangered species, would not be affected by the proposal.

The proposed use and development at Sny Magill under this alternative would not impact the red-shouldered hawk, river otter, or any other state-protected plant or animal species. However, with the known presence at Sny Magill of the red-shouldered hawk nesting site and river otter caution should be used during construction to avoid disturbance during critical times for these two species.

Under this alternative development actions in the south unit along and near the Yellow River through foot trail use could affect the red-shouldered hawk. No critical habitat would be disturbed, but human presence/activity near the two nesting sites by Founders Pond could result in permanent species displacement, if the site was disturbed during critical nesting/fledgling periods. Human activity during other noncritical periods would not be a concern. Hiking along and across the proposed trail crossing the Yellow River would not disturb the river otter except during rearing. Temporary species displacement could occur to the river otter if disturbed during spring rearing (March-early May).

The jeweled shooting star would not be affected by the proposal. Its habitat does not coincide with areas proposed for development and use.

Inclusion of the riverfront land along the north unit's eastern boundary would have an undetermined effect on the bald eagle and peregrine falcon, but it would probably not be measurable. Habitat values would be preserved in the monument. The limited use and accessibility of the riverfront land would minimize any effects on these raptor species from visitor activity.



**Floodplains and Wetlands.** Access roads, trails, and parking lots are excepted actions from compliance within the federal floodplain regulations. Currently no NPS facilities have impacts on the floodplain. However, any flood at the monument would affect some roads, trails, and parking areas and the visitors using them. Floods could result in minor road, trail, and parking area damage. The danger to visitors from flooding at Sny Magill would be minimized by posted signs and development of a flood emergency response and evacuation plan.

There is no flash flood concern in these areas. Safety signs would be posted in flood hazard areas, and all structures in the 100-year floodplain would be marked with flood heights. Any new structure developed in the floodplain would require flood-proofing measures for protection.

New structures are not proposed for Sny Magill. The proposed trail development in the south unit could be partially affected by flooding if located below 633 feet MSL. However, much of the proposed trail would be located on an old road fill, and the floodplain would not be affected.

Portions of the riverfront land in the boundary adjustment to the north unit would be in the 100 and 500-year floodplains. Because of the limited use/accessibility of these added sites, there would be no impacts on the floodplain.

The proposal would not affect the pond wetlands. The proposed trail to the south unit would have minimal impacts on the Yellow River bottomlands.

**Prime or Unique Farmlands.** By Soil Conservation Service definition there are no prime or unique farmlands in the monument's existing boundary, and the proposed boundary addition would not include any prime farmland soils.

## **Visitor Use/Socioeconomic Environment**

There would be minor, short-term inconvenience to visitors during the construction phases. In the long-term the visitor experience would improve with upgraded facilities and increased interpretive opportunities.

Parking for the boat access ramp would interfere with boat use at Sny Magill temporarily. However, the improvements would allow easier access to the river.

New interpretive trail construction from the visitor center to the south unit's Marching Bear mound group would cause minor visitor inconveniences in a little used area. The proposed trail would provide scenic overlook opportunities not now available in the south unit. The long-term effects would be a safer parking area, improved hiking experience, and a slightly longer round trip.

Limiting access to the Yellow River Road would have minimal impacts on the general public, because most visitors do not use the road.

During the north unit's Fire Point trail realignment construction, visitors would not be substantially inconvenienced. The existing Fire Point trail would continue to be used until completion of a new rerouted trail.





Redesign and safety barrier construction at the overlooks would improve aesthetics and provide a safer environment for the north unit visitor.

Access provided for disabled visitors to Great Bear mound, the Three Mounds group near the visitor center, and the conical mounds south of highway 76 would increase opportunities for the physically restricted visitors to observe effigy and conical/linear mounds.

## **IMPACTS OF ALTERNATIVE A**

### **Cultural Resources**

There would be no direct effects on known cultural resources under alternative A. The interpretive trail at Sny Magill would be located next to and through the mound group. While it would be laid out to avoid directly affecting individual mounds, increased visitor use in the mound group would have indirect impacts on the mound resources. Visitors could stray off the trail, compact soil, and disturb vegetation cover on the mounds.

### **Natural Resources**

**Soils.** The new low-standard interpretive trail leading into the Sny Magill mound area would result in minor compacted soil conditions from foot traffic, thereby reducing soil moisture availability with some runoff. The trail would also be subject to periodic inundation. Overall impacts would be minor.

Paving the existing gravel access boat ramp at Sny Magill would have a minor effect on soils within an existing disturbed area (400 square feet). Precipitation would not be absorbed. Paving the boat ramp would result in improved traction and elimination of rut problems in the current ramp.

Trailhead parking at the south unit ravine site would alter current undisturbed soil conditions on 0.1 acre. The 12-car parking lot area would require some fill and a retaining wall structure. The soils would be leveled, and fill would be added, graded, and covered with a gravel surface. Soil moisture/permeability would be partially reduced.

By closing and obliterating the Yellow River Road segment (1.8 acres) in the monument, the disturbed soils would be reclaimed to more natural conditions. Some grading along the road segment would be required and disturb the soil base, which would result in temporary erosion until naturally or artificially revegetated.

Soil compaction caused by the 60-car overflow peak parking area adjacent to the visitor center would be somewhat reduced through the use of grasscrete, allowing soil moisture penetration/filtration and permeability. Tire ruts in the turf area would be prevented during wet periods. Long-term impacts on soils would be minor.

Graveling the South Bruckner Road segment would affect 850 linear feet (0.24 acres) in an existing disturbed area (dirt road) of prairie/grassland soils. Soil compaction with reduced moisture infiltration would result. Runoff would be increased to the adjacent shoulder area. The four-car gravel parking area (0.02 acre) for disabled visitors would cause the same impacts as discussed under the proposal. The overall impacts, however, would be minor.





The three-bay maintenance/storage area addition to the south side of the existing maintenance yard would disturb and compact a 0.03-acre soil area. An impervious surface would direct precipitation to the adjacent turf area. Soil leveling, grading, and fill material would be required.

**Vegetation.** The interpretive trail development at Sny Magill would result in minor shrub and ground cover disturbance in the trail area. Foot traffic would retard existing ground cover, and soil compaction would gradually eliminate plant regeneration. Soil compaction on the trail area would alter some species composition directly adjacent to the trail. Periodic flooding would cause redeposition of soil onto the trail base, thus affecting and increasing the maintenance operation. However, the flat terrain area would minimize this problem.

The south unit's ravine trailhead parking area would lie at the foot of a prominent drainage. Development of the 12-car parking lot (0.1 acre) would result in the removal of 15 to 25 trees with 4- to 16-inch diameter trunks (elm, ash, oak, silver maple, basswood, walnut, and hackberry). Their removal would disturb the associated soil area, soil texture/composition, and natural water flow. Impacts would be permanent but not substantial.

Improving the South Bruckner Road segment (850 linear feet) to provide for access to disabled visitors would destroy the remaining grass in the road corridor. The associated four-car gravel parking area would disturb shrub and grass vegetation in a 0.02-acre area.

Some turf grass, small trees, and several large shrubs would be disturbed or destroyed by the south unit's three-bay maintenance/storage facility addition. About six landscaped shrubs along the existing retaining wall and one 10- to 12-inch diameter sugar maple tree would be removed. The total area disturbed by construction would be about 0.03 acre. New landscaping and reseeding of disturbed areas with native shrub/grass species would be necessary.

**Wildlife.** Closing the Yellow River Road and obliterating or reducing it to a hiking trail would improve the general wildlife habitat and abundance of small mammals and birds.

**Water Quality.** No effects would occur. Water quality would continue to be monitored by monument staff.

**Air Quality.** Graveling the South Bruckner Road segment and associated parking area would cause minimal, temporary dust conditions. It would not affect overall air quality or have noticeable impacts in the monument area.

**Threatened or Endangered Species.** No federal- or state-listed plant or animal species would be directly affected by construction. The state-listed red-shouldered hawk and river otter would have improved habitat in the Founders Pond area because the Yellow River Road would be closed. Increased visitor use in the Sny Magill unit could indirectly affect red-shouldered hawk use in that area. There would be no effect on the jeweled shooting star.

**Floodplains and Wetlands.** The minimum interpretive trail development at Sny Magill would be considered an excepted action from compliance within the floodplain regulations. However, periodic floods would result in minor trail damage.

Although the entire Sny Magill unit lies in the 100-year floodplain, this alternative would not affect the water resource value of the floodplain. Under this alternative, the trail



development, information wayside, and paved boat ramp at Sny Magill would not have impacts on the floodplain.

**Prime or Unique Farmland.** No designated prime or unique farmlands would be affected by alternative A.

### **Visitor Use/Socioeconomic Environment**

As described for the proposal, there would be minor short-term inconvenience to visitors during construction activities.

Minimal trail development and boat ramp paving impacts at Sny Magill would be minor, but temporary boat launching delays would occur. Over the long term, boaters would have an improved access point to the Mississippi River for recreational activities.

Development of trailhead parking at the south unit ravine site would eliminate the need for visitors to walk across the railroad tracks and state highway 76 to access the south unit and the hiking trail to the Marching Bear mound group.

Closing Yellow River Road would cause some restriction on visitor use and a negative public reaction, although use of the road is light. Access by a private landowner with property west of the monument would be by an alternate route. Closure of the road would eliminate administrative vehicle access and four-wheel-drive vehicle use by the park and public, and would remove the primary winter access by the adjacent landowner.

Improving the South Bruckner Road segment and trail for access to disabled visitors would result in minor construction inconvenience. Long-term effects would be improved interpretive opportunities for disabled visitors, while providing access to the scenic Mississippi River overlook areas.

## **IMPACTS OF ALTERNATIVE B (MAJOR UPGRADE)**

### **Cultural Resources**

Boundary adjustments in alternative B would provide increased protection and on-site management by Park Service personnel for lands containing archeological and historic resources.

Major cultural resource interpretation at Sny Magill would pose an uncertain but potential for substantial effects to the Indian burial mounds. At a minimum, continued monitoring and protection measures would be necessary to preserve and protect the integrity and sacred values of the mounds. The entire unit has been extensively surveyed for its archeological resources. Some pothunting could occur in the area, so it would be necessary to implement preventive measures along with improved access.

The proposed trail, boardwalks, and observation platform would be laid out to avoid individual mounds, but indirect impacts could occur from visitors straying off the trail. The major visitor use facilities would create greater use in the mound area and greater potential for disturbance than the proposal or other alternatives.





No facilities would be constructed in areas added to the monument, so there would be little or no impact from visitor use on prehistoric resources in the addition areas. The boundary adjustment would also have little or no direct effects on historic resources. The Red House Landing, Hazekaw terrace, McCormick cemetery, and the old lighthouse site would be protected in the boundary expansion. Alternative B would provide for a more secure protection of the area's historic resources.

The effects of the interpretive trail development to the south unit's Marching Bear Mound group would be the same as the proposal--no substantial effects would occur but there would be potential for interpretive benefits.

## **Natural Resources**

**Soils.** Development of an interpretive trail, boardwalks, waysides, observation platforms, and extensive clearing into the mound area for a parking area at Sny Magill would have some impact on the area soils. Topsoil would be disturbed and compacted by construction and foot traffic use, reducing soil moisture availability and increasing runoff and erosion potential. Mound clearing of large trees in the Sny Magill unit's mounds would disrupt and partially remove the underlying soil area. An undetermined amount of topsoil fill would be necessary for mound restoration. Construction of boardwalks and an observation platform would result in minor soil disturbances, mostly temporary displacement during construction phases. The bare soil areas created during construction of the trails and related facilities would experience minor erosion effects.

Paving the Sny Magill access road and adjacent trailhead parking area would affect 0.5 acre within an existing disturbed and compacted area. These impervious surfaces would further compact soils and reduce surface permeability. Topsoils would be disturbed and require grading, leveling, and possible fill for the trailhead parking area base. Peripheral areas to the road and trailhead parking lot would experience some soil disturbance and minor erosion.

Construction of a visitor contact station and parking area would cause soil displacement through foundation construction and utility line corridors. The disturbed soil areas would be approximately 0.3 acre, and 0.07 acre, respectively. The soil surface would be graded, leveled, and substantial fill added to flood proof the facility. The main level of the contact station may need to be raised up to align with the existing railroad track lines (about 10 to 15 feet in height). Proper slopes and grades designed for access to disabled visitors would be necessary.

Paving of the access boat ramp would cause the same impacts as those described under alternative A.

Additional paving of the boat ramp parking area would disturb the same area (0.4 acre) as described under the proposal. However, paving would totally eliminate water filtration on impervious surfaces and would result in precipitation being diverted to adjacent areas. Underlying disturbed soils would be more compacted, but overall impacts would be minor.

Under this alternative, the new trail development to the south unit would be the same as the proposal; therefore, impacts of this development would be the same as the proposal.



Upgrading of the Yellow River Road to a low-standard gravel road would minimally affect the existing disturbed soils along the interior monument segment (1.8 acres). The underlying soils would be further compacted and more impervious to precipitation. Soil moisture would be reduced, aiding in temporary accelerated soil erosion on the uphill and downslope sides of the road. All road surface soils would be initially disturbed and partially displaced during road grading and leveling operations. Reseeding of the disturbed bare spots along the road would be necessary, especially on the upslope and downslope areas.

Enlarging the visitor center parking area would affect about 1.5 acres. Paving the existing turf area would totally eliminate soil moisture and permeability to the underlying soil area. Soils would be further compacted. Surface precipitation would be diverted to adjacent areas, which would change the moisture regime of those areas. The soils directly adjacent to the paved surfaces would be temporarily displaced, disturbed, and subject to temporary erosion as a result of grading, leveling, and paving operation. These peripheral soil disturbance activities would result in only temporary, minor impacts to soils.

The addition and improvement of safety barriers at overlooks and switchbacks would result in minimal, isolated, surficial soil disturbances. No long-term impacts would occur.

Gravel road improvements and construction along the South Bruckner Road to provide for access to disabled visitors to the Little Bear mound would, through grading and leveling, result in further soil compaction and some topsoil displacement to an existing disturbed soil area of about 0.75 acre. The underlying soil moisture and permeability would be reduced, with minor soil erosion of exposed soil areas. Although not totally impervious, precipitation would be directed to the adjacent road shoulder areas, thus slightly altering the moisture regime.

The associated four-car capacity (about 750 square feet) parking area for disabled visitors would result in the same impacts as discussed for gravel surfacing of South Bruckner Road under this alternative and the gravel parking area for disabled visitors described under the proposal.

Construction of the trail for disabled visitors from the parking area to Little Bear Mound would result in soil impacts to about 150 linear feet of treadway. Soil permeability would be somewhat reduced, while actual soil disturbance and displacement of the soil in and along the trail would be more affected. These soil impacts would be minimal, but there would be some soil compaction caused by foot traffic. Impacts caused by the trail improvement to Great Bear mound would be the same as described under the proposal.

Development and construction of the separate three-bay maintenance/storage facility and yard area off-site in the north unit would directly impact up to 0.5 acre. The building and paved yard would collect and divert precipitation to adjacent areas and increase the adjacent moisture regime. All disturbed unsurfaced soil areas would experience temporary, minor erosion and need reseeding/landscaping. Invasion of exotic weed species in disturbed areas might result.

**Vegetation.** Interpretive trail use/development of mound areas at Sny Magill would affect existing shrubs and grass. Selected trees, shrubs, and grasses would be removed and or permanently disturbed on the mounds, trail(s), boardwalk, observation platform, and wayside development.

Paving the existing Sny Magill gravel access road would have no vegetation impacts.





Contact station facility development at Sny Magill would result in the removal of some trees, shrubs, and ground cover on the approximately 0.4-acre building and parking area site. Selected tree/shrub removal should be based on eliminating only, when necessary, those plant species that are visibly diseased, undesirable, less dominant, or less vigorous. Efforts should be made to maintain uniform vegetative stand density within the building site area.

Paved expansion of the existing boat access parking area in an existing disturbed area would eliminate about 0.2 acre of mixed grass/weeds.

Impacts to vegetation by visitor use and development of interpretive trails and overlooks in the south unit would be the same as those described under the proposal.

Minor disturbance to ground cover and shrubs along Yellow River Road would be caused by grading, leveling, and subsequent upgrading to a low-standard gravel road.

Enlarging the visitor center parking area for the 60-car peak parking area would destroy about 1.5 acres of turf grass area. The paved impervious surface would eliminate soil moisture, with precipitation being diverted to adjacent areas. During paving, minimal peripheral turf vegetation would be disturbed and would require reseeding.

Construction impacts from the addition and improvement of safety barriers to overlooks and along switchbacks in the north unit would result in minor impacts to ground cover and shrubs. Impacts would be mitigated by erosion control and replanting measures.

Access provided for disabled visitors to Little Bear Mound through gravel improvement of the So. Bruckner Road and associated parking area would impact an existing disturbed prairie/grassland area of about 1 acre. The vegetation affected by road upgrading from the existing one-lane dirt road and parking area to gravel would be minimal. Road grading and leveling might cause some peripheral ground cover disturbance directly adjacent to the gravel road.

Construction and development of a separate off-site maintenance/storage facility would disturb an approximate 0.5-acre site of mixed prairie/grassland. Also, an associated area for utility lines installation would further disturb mixed grass vegetation. Adverse impacts of construction to vegetation would be moderate, but reseeding/landscaping of the building site area would be required.

**Wildlife.** Some displacement of small mammals and birds at Sny Magill would be expected with the increased interpretive use/development of the mound area, Mississippi River access, and visitor contact station facility.

By upgrading the Yellow River Road, the resulting increased use would generally have minor impacts on wildlife. However, increased vehicle use and visitation would result in species displacement of some small mammals and birds.

Development of the separate maintenance/storage facility would cause short-term temporary displacement of small mammals and birds during construction. Small resident burrowing rodents would be displaced. Heavy use on the site by vehicles and visitors would detour and increase displacement of the area's wildlife species.

**Water Quality.** Paving of the Sny Magill access road, visitor contact parking area, and expanded boat ramp/access parking would reduce the potential siltation of gravel surfaces





into the Mississippi River. The effects would be beneficial to water quality although unnoticeable without monitoring. Impacts would be localized and small because of the size of the receiving watercourse.

Upgrading the Yellow River Road would improve the road surface and drainage with culverts, thus stabilizing and reducing siltation into the Founders Pond area.

**Air Quality.** Upgrading the Yellow River Road with gravel would result in a slight increase in dust and particles and could cause an increase in public use of the road. Impacts would be minor and relatively unnoticeable.

Graveling the South Bruckner Road would cause minimal, temporary dust conditions. It would not affect overall air quality or have noticeable impacts.

**Threatened or Endangered Species.** Major construction development and increased human activity from the visitor contact station and developed trail system at the Sny Magill unit would primarily impact nesting sites for the red-shouldered hawk. Permanent raptor displacement could occur especially during the critical nesting/fledgling period. Temporary displacement could occur if individuals were disturbed after the critical period. Possible overstory/understory tree removal of critical vegetative habitat at the contact station and developed trail system sites could also result in temporary or permanent displacement of the red-shouldered hawk. To a lesser degree the river otter could be temporarily displaced if disturbed during rearing. Disturbances at other times would not result in serious impact to this species.

Other development and visitor use activities in the Sny Magill, south, and north units would not impact any other known federal- or state-listed plant or animal species. There would be no impact on the jeweled shooting star.

Boundary adjustments would cause uncertain effects to the area's federal and state listed threatened and endangered species; however, the impact would probably not be significant. The habitat would be protected, and no visitor use is planned. Any future visitor use activities in these added areas should include a species monitoring before any implementation.

Upgrading the Yellow River Road would affect the area's state-protected red-shouldered hawk population. Heavy use of the road might result in permanent displacement of this raptor. The state-listed river otter would not be affected.

**Floodplains and Wetlands.** Development of the interpretive trail, boardwalk, road/parking area paving, and visitor contact station at Sny Magill would all be in the 100- and 500-year floodplains but would not substantially impact the floodplain. This area also contains river bottom wetlands. Periodic inundation and flooding would occur. Therefore, the visitor contact station would require a design for floodproofing of the facility, and visitor use and warning signs about the floodplain area would be necessary.

Interpretive trail development to the south unit's Marching Bear mound group would cross through about 0.08 acre (875 linear feet) of the floodplain zone, but there would be no measurable impacts.



Under this alternative, portions of the added shoreline areas of the red house landing and FTD sites would lie in the 100-year floodplain; no impacts would occur because no visitor use or development would occur.

**Prime or Unique Farmland.** The Ferguson Tract has about 300 acres of bottomlands near the Yellow River upstream of the monument that qualify as prime farmland and that would be added to the monument under this alternative. The prime farmland soils would be removed from potential agricultural uses.

### **Visitor Use/Socioeconomic Environment**

There would be no substantial impacts to visitor use during construction, but minor, short-term inconveniences would occur during improvement and redevelopment activities.

In the short-term, noticeable delays and inconveniences to visitors would result at Sny Magill during the development of the interpretive trail, boardwalk, observation platform, parking areas, contact station, and access road paving. Upon completion, the interpretive potential of Sny Magill's mounds would be greatly increased for the visitor.

Visitor use and development impacts at the south unit would be the same as those described under the proposal.

Upgrading the Yellow River Road would initially cause minor inconveniences, but in the long-term, they would be outweighed by the improved benefits of visitor access to the south unit and Founders Pond area. Increased use of the Yellow River Road could result in a hazardous traffic intersection at its junction with highway 76.

Enlargement of the existing visitor center parking area would inconvenience visitors during construction operations, but it would be temporary. The expansive new parking lot would be physically, psychologically, and visually obtrusive.

The addition of safety barriers would provide a beneficial effect for visitor use and safety. Minor inconveniences would result during construction.

Access improvements for disabled visitors from the South Bruckner Road to Little Bear mound would create no substantial impacts during construction. As described under alternative A, there would be minor short-term inconveniences with long-term benefits for disabled visitors. This action would provide improved access for disabled visitors to Little Bear mound, while offering greater self reliance and a better visitor experience.

Construction of the separate maintenance/storage facility would potentially result in visual intrusion for visitors using the access to the north unit.





## **IMPACTS OF ALTERNATIVE C (NO ACTION)**

### **Cultural Resources**

There would be no construction effects on archeological resources in the monument; however, archeological resource protection would not benefit from research and visitor management actions identified under the proposal. There would be less visitor use and potential for human disturbance of the Marching Bear mound group in the south unit. Not adding the FTD site to the monument would continue the level of protection it now receives under state ownership and control. This would be less than the on-site management presence and resource protection capabilities afforded the site under Park Service ownership (as in the proposal).

There would be no effects on historic resources.

### **Natural Resources**

**Soils.** Continued low visitor use of the Sny Magill mounds area would not affect area soils.

The continued use of the visitor center turf area for peak parking without an annual turf maintenance program would gradually deteriorate the grass area by increasing soil compaction and runoff, reducing air/moisture permeability, and causing tire ruts in turf on 1.5 acres.

The continued short cutting between the existing Fire Point trail switchbacks would result in soil compaction and removal of forest ground cover exposing bare soil. This condition would aid in accelerated soil erosion on steep side slopes. Eroded material would collect on switchback trails, causing added trail maintenance and visitor safety hazards.

**Vegetation.** The continued low visitor use levels at the Sny Magill unit would not cause deterioration of vegetation.

Continued peak use parking on grass at the visitor center area would result in minimal impact to 1.5 acres through a gradual deterioration of turf grass by compaction. Turf dieback might result from compaction stress.

**Wildlife.** The continued limited visitor use of the Sny Magill unit would not disrupt wildlife activities. Continued visitor use and routine maintenance operations in the north and south unit areas would not have any adverse wildlife effects. Temporary displacement in and out of the area by mammals and birds would be expected and not unusual.

**Water Quality.** No adverse impacts would occur. Park staff would continue to monitor the water monitoring stations.

**Air Quality.** No adverse impacts would occur. Park staff would continue to review data from the state's air quality monitoring stations.

**Threatened or Endangered Species.** Under this no-action alternative, continued low use of the Sny Magill area and Yellow River Road area would not affect the bald eagle, peregrine falcon, river otter, and red-shouldered hawk populations.



**Floodplains and Wetlands.** No effects would occur.

**Prime or Unique Farmland.** There are no prime or unique farmlands in the monument; therefore, no impacts would occur under this alternative.

### **Visitor Use/Socioeconomic Environment**

Continued use and deterioration of Sny Magill's existing gravel boat access would have the short and long-term potential to discourage visitor use of the boat ramp.

Access to the south unit would continue to be discouraged by inadequate trailhead facilities and incomplete hiking trails. South unit visitors would continue to cross the railroad tracks and highway 76, a potential safety hazard. Scenic overlook opportunities in the south unit would not be experienced. Visitors would continue to hike on an administrative access road.

Access for disabled visitors to the monument's mound resources would continue to be limited and subject solely to staff availability for guided trips to the Great Bear mound.

Visitors would continue to have free access to the Yellow River Road, although use of this area is currently limited.



## CONSULTATION

The Park Service consulted with the following agencies during the preparation of this document:

- U.S. Fish and Wildlife Service
- U.S. Army Corps of Engineers
- Advisory Council on Historic Preservation
- Iowa State Historic Preservation Office
- Iowa Department of Natural Resources

The GMP/EA will be sent to selected agencies, interested organizations, and individuals for review and comments. A public meeting or open house will be held in the park area to accept comments and answer questions during the public review period.





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