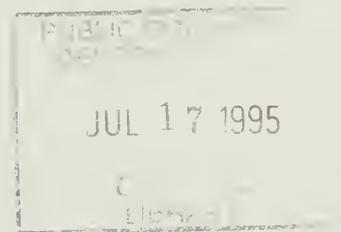


Draft
Special Resource Study



NIOBRARA
National Park Study • Nebraska

This report has been prepared to provide Congress and the public with information about the resources in the study area and how they relate to criteria for parklands. Publication and transmittal of this report should not be considered an endorsement or a commitment by the National Park Service to any of the alternatives presented. Authorization and funding for any new commitments by the National Park Service will have to be considered in light of competing priorities for existing units of the national park system and other programs.



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Special Resource Study

May 1995

NIOBRARA

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SUMMARY

Public Law 102-50, the Niobrara Scenic River Designation Act of 1991, amended the Wild and Scenic Rivers Act to add segments of the Niobrara River and Verdigre Creek in Nebraska and the Missouri River in Nebraska and South Dakota. Separate management plan documents are being prepared for these rivers. The act also directed the National Park Service to prepare a study for a potential Niobrara–Buffalo Prairie National Park in Nebraska. This document was prepared to comply with that portion of the act. Establishment of a national park system unit would require an act of Congress and additional annual funding.

The act refers to a study area map of land east of the Fort Niobrara National Wildlife Refuge near Valentine, Nebraska, and adjacent to the Niobrara River in Brown, Cherry, and Keya Paha Counties. The area has an unusually diverse ecology, including upland Sandhills mixed-grass prairie, tallgrass prairie, oak forest, ponderosa pine forest, and northern forest remnants with paper birch and aspen stands. Many fossil beds along the Niobrara River have been scientifically excavated over the last 100 years, and the fossils have played an important role in the understanding of early mammals and prehistoric climate changes. Scenic resources include the rural and natural landscape of the Niobrara River valley, waterfalls and bluffs unusual on the great plains, and the open space of the Sandhills prairie.

Much of the land in the study area is occupied by family-owned ranches. The Niobrara Valley Preserve, owned by The Nature Conservancy, is also in the study area and is managed for preservation, biological research, and education.

After gathering resource data the National Park Service (NPS) evaluated the area and its resources for significance and for suitability for inclusion into the national park system. The unusual ecosystem diversity, the fossils, and the free-flowing river met NPS criteria for national significance. Not all the significant resources are currently protected by the National Park Service, other land managing entities, or local land use regulations. Therefore the area is conditionally suitable pending national scenic river boundary development and local zoning.

The act also requires consideration of alternatives for managing the area. A no-action alternative and three action alternatives are described in this document. Alternative A, no action, would continue existing trends of ownership and management and also serves as a baseline for comparison with the other alternatives.

Alternative B proposes a plan for a locally administered conservation district. The purpose would be to enhance conservation efforts affecting resources beyond the Niobrara National Scenic River east of the Fort Niobrara National Wildlife Refuge. No land would be purchased by the federal government.

Alternative C proposes a national park of approximately 138,000 acres. There would be significant federal ownership and facility development.

Alternative D proposes a national scientific reserve of separate fossil sites scattered across northern Nebraska, administered by the University of Nebraska State Museum with federal funding assistance. Some new interpretive facilities would tie together existing state and

SUMMARY

federal sites into an auto tour route. Assistance could be provided to private landowners to preserve fossil resources for scientific study.

There is no preferred alternative. This report takes no stand on which alternative, if any, should be pursued.

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INTRODUCTION

LEGISLATIVE BACKGROUND AND PURPOSE

Public Law 102-50, the Niobrara Scenic River Designation Act of 1991 (see appendix A), amended the Wild and Scenic Rivers Act to designate portions of the Niobrara River, Missouri River, and Verdigre Creek in Nebraska and South Dakota as components of the national wild and scenic rivers system. This act also directed the National Park Service to complete "a study of feasibility and suitability of establishing a national park in the state of Nebraska and study the feasibility of managing the area by various methods" (see map of Congressionally authorized study area). The national park study area is in Brown, Cherry, and Keya Paha Counties and does not include Fort Niobrara National Wildlife Refuge.

For the designated rivers, the National Park Service is preparing general management plans and environmental impact statements for the long-term protection of resources. These are being prepared independently of the park study; however, approximately 30 miles of the designated Niobrara National Scenic River east of Valentine, Nebraska, flows through the study area (see Region map).

This document was prepared to comply with the congressional act and will be submitted to Congress. In addition to complying with stipulations in the act, this document follows National Park Service *Management Policies* (NPS 1988) for such studies (see appendix B) as well as criteria for special resource studies. A broad range of management alternatives were examined, including no change and management by entities other than the National Park Service.

SUMMARY OF PUBLIC INVOLVEMENT

In 1991 three public meetings were held near the study area to answer questions about the newly enacted Niobrara Scenic River Designation Act of 1991. In early 1992 two public meetings were held near the study area. One was also held in Lincoln and another in Omaha. These meetings were held as a first step in planning for both this special resource study and the general management plan for the scenic river. Meetings were held to identify public concerns, meet interested individuals, and formally announce the beginning of the planning process. The public expressed a great deal of concern. Many comments from the local area opposed establishing a national park because of fear of federal land acquisition by condemnation, erosion of the county tax base, increased trespassing, federal development, growth of federal government, increased cost for county services, and loss of land used for hunting and trapping. City people voiced more support for a park alternative than those from rural areas.

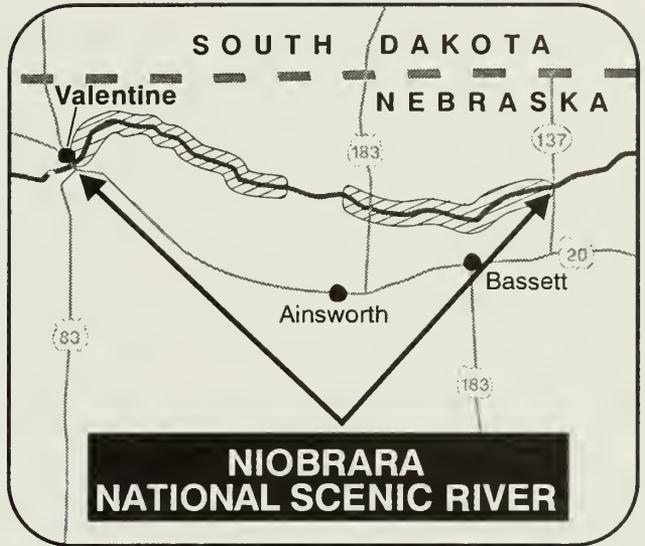
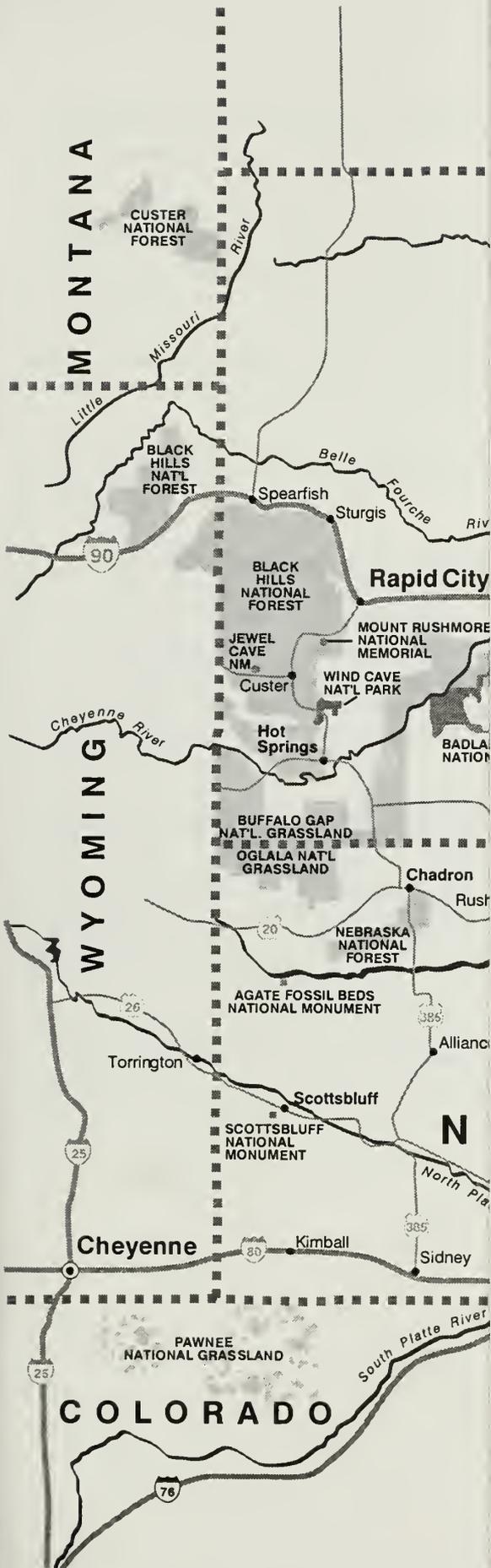
An interagency scenic river planning team was established to begin development of the Niobrara National Scenic River general management plan. The interagency team includes representatives of Brown, Cherry, Keya Paha, and Rock Counties, the Middle Niobrara Natural Resource District, Nebraska Game and Parks Commission, Nebraska State Historic Preservation Office, and the U.S. Fish and Wildlife Service. This team participated in discussions with the National Park Service on the park study and was involved in



CONGRESSIONALLY AUTHORIZED PARK STUDY AREA

RE-CREATION OF NATIONAL PARK SERVICE MAP NBP 80,000

United States Department of the Interior • National Park Service
DSC/MARCH 1995/NIOB/20,005



MAP INSET A



REGION

NIOBRARA NATIONAL SCENIC RIVER

United States Department of the Interior • National Park Service
DSC/Jan. 1995/NIOB/20,000



MAP INSET A

NIOBRARA NATIONAL SCENIC RIVER
(See Map Inset A)

N
No Scale

REGION
NIOBRARA NATIONAL SCENIC RIVER
United States Department of the Interior • National Park Service
DSC/Jan. 1995/NIOB/20,000

development of alternatives; however, all members did not necessarily agree with the conclusions that were made. County representatives disagreed with the NPS conclusion of park suitability.

For preparation of the scenic river general management plan, three newsletters were mailed to the public that included mailback response forms. Comments invariably reflected opinions on federal involvement and the park study. In general, landowners and other local people and governments opposed any federal action affecting private land. Some people who commented favored some sort of federal action to stimulate tourism and the local economy. Other residents of Nebraska are divided over establishment of a park. Any action restricting hunting and trapping would be opposed by sportsman's groups.

In 1994 a petition was circulated for those opposing establishment of a national park. More than 1,700 signatures were gathered from both rural and urban areas of Nebraska. The petition stated:

We, the undersigned, hereby state we oppose the establishment of a national park in the Niobrara River region. We further oppose any federal government involuntary taking of private property or private property rights from Niobrara River region landowners or the restriction of traditional activities in conjunction therewith. We support the preservation of the historic customs, culture, land and river uses of the Niobrara River region through ongoing private landowner, local business and outfitter efforts, county government action, local zoning and state cooperation.

CRITERIA FOR SPECIAL RESOURCE STUDIES

To be eligible for addition to the national park system, an area must possess nationally significant natural, cultural, or recreational resources; be a suitable and feasible addition to the system; and require direct NPS management instead of alternative protection by other agencies or the private sector.

These criteria are designed to ensure that the national park system includes only outstanding examples of the nation's natural, cultural, and recreational resources. They also recognize that inclusion in the national park system is not the only option for preserving the nation's outstanding resources.

EVALUATION OF SIGNIFICANCE

SIGNIFICANCE CRITERIA

NPS *Management Policies* (NPS 1988) requires that natural, cultural, or recreational resources be considered nationally significant in order to be considered for inclusion in the national park system. A resource is considered nationally significant if it meets all of the following criteria:

It is an outstanding example of a particular type of resource.

It possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage.

It offers superlative opportunities for recreation, public use and enjoyment, or for scientific study.

It retains a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource.

The following discussion assesses the resources of the Niobrara valley in relation to each of the four criteria.

OUTSTANDING RESOURCE TYPE

Natural Resources, Biological

The Niobrara region is recognized by ecologists for its biogeographic significance. The Rocky Mountain coniferous forest extends east to the Niobrara River. The Niobrara valley is a post-Pleistocene refugium for boreal (northern forest) plants at their southern limit on the Great Plains. Many eastern deciduous forest and tallgrass prairie species are at their western boundary in the valley. The most striking feature of the Niobrara valley is that at least four distinctly different major vegetation types grow within 1 or 2 miles of each other. Nowhere else do the Rocky Mountain and eastern deciduous forests come together on the Great Plains with such species diversity. The Niobrara valley serves as the distribution limit for approximately 160 species.

Natural Resources, Geological

Precipitation falling onto the Sandhills south of the valley exceeds runoff and transpiration, which results in a large accumulation of groundwater in the sand above the impervious rock of the Rosebud Formation. The river valley cuts through the aquifer, and water from numerous springs and seeps runs down the valley slopes, which creates microhabitats favorable to a wide variety of plants and animals. Waterfalls, rare in Nebraska and including the state's highest, occur along these streams. The rapid downcutting by the relatively fast-flowing river has created high bluffs along some stretches of the river. The free flowing

character of the Niobrara River through the area has been recognized by its inclusion as a scenic river in the national wild and scenic rivers system.

Fossil resources of the Niobrara valley include Miocene and Pleistocene fossil sites of worldwide significance. Fossiliferous Miocene strata spanning the interval from about 9 million to 13.5 million years ago are in the area. One quarry has identified a minimum of 146 vertebrate species and is unrivaled among North American Miocene-age, single-quarry accumulations. Species diversity includes 90 mammals and 56 lower vertebrates. This site is in the designated area of the Niobrara National Scenic River; however, many other fossil sites are some distance from the river but are in the study area. Other sites in the park study area having exceptional significance in the history of North American vertebrate fauna, especially in the central Great Plains, have been recommended for listing on the National Register of Historic Places. A Pleistocene age site provides the most southern record on the Great Plains of a number of boreal mammals.

Cultural Resources, Prehistoric and Historic Native American

A University of Nebraska archeological survey, undertaken for the Bureau of Reclamation to assess the proposed Norden Dam project, covers about 30% of the national park study area (Falk et al. 1985). The central Niobrara drainage was used by several historic groups, notably the Ponca, the Brule band of the Teton Sioux, and the Pawnee, for subsistence and migration. Current regional knowledge of general occupation, behavior of groups, and ethnohistoric information indicate that the area was mostly used for seasonal hunting and gathering. The Norden Dam study suggests two sites for possible nomination to the National Register of Historic Places as archeological districts for the potential to yield significant findings. However, there are no known individual sites that are outstanding examples of a quality to meet national significance criteria.

Cultural Resources, Historic

Historically this area has been viewed as a natural division between dryland farming areas to the east and grazing lands to the west. Although a number of initial settlers in the 1880–1916 settlement period were immigrants from England, Wales, and Central Europe, the majority (74%) were native-born citizens from midwestern and eastern states. With the exception of steel bridges few historical resources are of individual merit, but they do provide examples of vernacular architecture typical of the region. None are identified with singular historical events of national significance. Adjacent to the study area is the Fort Niobrara National Wildlife Refuge, which has several buildings and sites listed on the National Register of Historic Places.

Recreational Resources

Floating a portion of the Niobrara Scenic River is the most predominant recreational use of the study area. About 30,000 user days per year of canoe and inner tube floating originate from Nebraska and adjacent states. A nationally published article one ranked the Niobrara in the top 10 American rivers for canoeing. The river is easy to float, and people can enjoy

the scenery of cliffs, waterfalls, mixed forest, meadows, and ranches. The river is an outstanding recreational resource, which contributed to its designation as a national scenic river. Other recreational uses include deer and upland bird hunting, camping, sightseeing, and bird watching.

EXCEPTIONAL VALUE OR QUALITY IN ILLUSTRATING NATURAL AND CULTURAL THEMES

Natural Themes

Natural History in the National Park System and on the National Registry of Natural Landmarks (NPS 1990) outlines a thematic framework for evaluating natural areas as potential new units of the national park system. The Niobrara study area is in the Great Plains natural region, and represents the following themes.

Group I. Landforms of the Present

Theme 1: Plains, Plateaus, and Mesas. The heavily dissected and wooded Niobrara River valley, transecting the 100th meridian, occupies a transitional area between the loess hills and prairies to the east and the high plains and sandhills to the west. The eroded tableland north of the valley is characterized by its nearly level to gently rolling surface interrupted by the draws and canyons where small streams are located. The Ainsworth tablelands to the south of the river contain numerous subirrigated meadows and wetland areas among the sandhills. The study area is cut by streams and canyons and transitional between sandhills and eroded tablelands. As such, the area does not possess exceptional value in illustrating the plains landform.

Theme 7: Eolian Landforms. The tablelands south of the river are covered by the sheet sands and dunes of the Nebraska Sandhills. The Sandhills in western Nebraska cover some 19,000 square miles and are the largest tract of dunes in the Western Hemisphere. These dunes differ from most in that they are almost completely stabilized by vegetation. The dunes have been unvegetated shifting sands in the geologic past and could be again. The Niobrara River valley is at the northeastern edge of the dune field and does not display the most typical or best examples of the dunes.

Theme 8: River Systems and Lakes. The Niobrara River is an unusual river on the Great Plains. It is fast flowing due to a steep gradient and has cut a relatively deep valley. It is largely spring fed by the Ogallala aquifer. Numerous spring branches and waterfalls contribute to a steady stream flow. Other streams on the Great Plains beyond the Sandhills fluctuate more due to dependence on rainfall and snowmelt runoff. The exceptional combination of the free-flowing river and springs, cliffs, biodiversity, and scenic views was a major reason for designating the Niobrara as a national scenic river in 1991.

The river is of exceptional quality and of value in illustrating the theme of a Great Plains river. The study area examples of plains, plateaus, and mesas and eolian landforms (dunes) are not exceptional.

Group II. Geologic History

Theme 19: Oligocene – Recent Epochs. Miocene fossil resources in the Niobrara valley are numerous, and collections from the study area have added significantly to the understanding of both mammal and lower vertebrates from 9 to 14 million years ago. One quarry in the study area has provided a minimum of 146 identified vertebrate species and is unrivaled in the world among single-quarry Miocene locations. In addition, late Pleistocene-age fossils represent the only known record of boreal mammals on the Great Plains, providing evidence of cooler climate and plant communities beyond the limit of continental glaciation. Several fossil sites were proposed in earlier studies for nomination to the National Register of Historic Places because of their high value for interpretation and scientific study. Many fossil sites in the study area present an unusual species diversity and have been significant in the scientific understanding of past life forms.

The area along the Niobrara River as well as fossil sites some distance from the river in the study area are of exceptional value and quality in illustrating the theme of geologic history.

Group III. Land Ecosystems

Theme 21: Boreal Forest. The spring branch canyons on north-facing slopes of the Niobrara River valley provide cool and moist conditions suitable as a botanical refugium for plants normally found far to the north and east. Scientists have identified 42 species that have southern distribution limits along the Niobrara River, including paper birch and other species typical of boreal forest and cold water marshes and bogs. Some boreal small mammals are also found. The value of local resources that illustrate this theme is of a plant community beyond its normal range that is a relict from Pleistocene climate conditions.

Theme 23: Dry Conifer Forest. Ponderosa pine forests on the edge of the eroded northern slope of the valley form one of the most significant eastern outliers of the forest type on the Great Plains. Species characteristic of the Rocky Mountain foothills or High Plains vegetation type are at their eastern or southeastern distribution limits in the valley. The value in illustrating this theme is the display of the eastern distribution limit of this ecotype.

Theme 24: Eastern Deciduous Forest. A major vegetation type of the Niobrara valley is associated with the spring-fed canyons on the south side of the river. Eighty-three species of the eastern forests or forest margins and tallgrass prairies reach their western limit in the Niobrara valley. Many of the species are typical of the moist, shady, forest understory environments found in the Missouri River lowlands much farther east. Likewise, two eastern mammals, a woodrat and a white-footed mouse, have relict distributions in the valley. The Niobrara River provides habitat continuity for natural bird hybridization between eastern and western species. Some reptile and amphibian species are also at their distribution limits in the valley. The value of local resources that illustrate this theme lies in the display of the range limits.

Theme 25: Grassland (steppe). A distinctive mixed-prairie grassland occurs on the drier, drought-susceptible, sandy soils developed on the bedrock of the table north of the valley. Sandhills prairie has taller, vigorous grasses that grow in the deep, often moist sand soil of stabilized dunes south of the valley. Mesophytic tallgrass communities are located in wet meadows where the deep root systems of the tallgrasses are in contact with the water table.

Other prairie elements, such as mammals, are present or known from historic accounts. Bison have been reintroduced on The Nature Conservancy's Niobrara Valley Preserve in the study area. The Fort Niobrara National Wildlife Refuge, adjacent to the study area, was established to preserve native birds and later added bison, elk, and longhorn cattle.

The combination of ecosystems found in the region is of exceptional value in illustrating unusual biological diversity in a limited area, distribution range limits of major plant communities, and disjunct relict species from cooler climate conditions. The area offers an exceptional opportunity for interpretation, scientific study, and enjoyment of these natural resource themes.

Group IV. Aquatic Ecosystems

Theme 33: Streams. The aquatic ecosystem along the Niobrara River and tributaries has not been extensively studied and documented. The Niobrara River is a relatively fast-flowing stream with a rocky bottom in the upper 25 miles and a sandy, meandering river in the lower reaches of the study area. In areas along the river or streams where an old oxbow or meander occurs or around sandhill lakes, characteristic eastern and boreal vegetation elements and associated eastern and western animal species occur.

The aquatic ecosystems in the study area are not well known. They do not appear to be of exceptional illustrative value.

Conclusions. Under the theme "Landforms Of The Present, River Systems," the Niobrara River is found to be of exceptional value in illustrating a river on the Great Plains. It has been recognized as such by its addition to the national wild and scenic rivers system.

As a repository for significant fossils of the Miocene and Pleistocene epochs, the study area is unsurpassed and therefore has exceptional value to illustrate the Oligocene to Recent epochs of geologic history.

The land ecosystems represented in themes 21, 23, 24, and 25 are not individually the best examples because they exist at the margins of their range, but collectively they have exceptional value for the same reason. This is the only place in the nation where eastern and western species intermingle in such diversity.

These resources are found to be of national significance for illustrating and interpreting several natural themes of our nation's heritage.

Cultural Themes

History and Prehistory in the National Park System and the National Historic Landmarks Program (NPS 1987) outlines a thematic framework for evaluating cultural areas as potential units of the national park system. The resources in the potential park study area represent the following themes:

Theme I. Cultural Developments: Indigenous American Populations

The subthemes of "The Earliest Inhabitants," "Post-Archaic and Pre-contact Developments," "Prehistoric Archeology," "Prehistoric Archeology: Topical Facets," and "Ethnohistory of Indigenous American Populations" are all represented in the area through their respective subfacets "Plains Hunters and Gatherers." An individual treatment of each is not considered necessary as the following discussion will indicate.

There is evidence that the valley was used by the plains tribes for hunting and gathering purposes. The intermingling of western and eastern ecosystems contributes to archeological and ethnographic diversity. Evidence of prehistoric use in the valley consists mostly of scatters of artifacts such as lithics (stone chips) and a few ceramics. Artifacts documented in both private and public collections indicate use of the valley throughout from the early Paleo-Indian period through Plains Archaic, Plains Woodland, and the Plains Village periods. Historic Native American use is also evident. While substantial occupation sites were not found, some sites discovered could contribute knowledge of general use of the area for hunting and gathering activities during prehistoric and historic Native American occupation. The University of Nebraska Norden Dam study, which covered about 30% of the national park study area, suggested that some of the sites be studied for listing on the National Register of Historic Places (Falk et al. 1985). The recommendation is based on their potential to yield significant information about archeological resources of the Great Plains. There is potential for discovery of archeological resources that could illustrate this cultural theme, but additional work would be required for a thorough assessment.

Theme X. Westward Expansion of the British Colonies and the United States, 1763–1898

Several subthemes such as "British and United States Exploration of the West," "The Fur Trade," "Military–Aboriginal American Contact and Conflict," "Western Trails and Travelers" all have minor representation in the valley study area but are not present on the study area landscape in significant ways. The Lewis and Clark expedition recorded the Niobrara River as L'eau Qui Court as they passed the mouth but did not explore the study area. French fur trappers had preceded them in the area. Euro-American western trails and travelers were not significant in the area, although several journal accounts exist that record early observations in the study area.

Military explorations were conducted in the area, and Fort Niobrara, which abuts the study area on the west side, was built in 1879 to keep peace between the settlers and Sioux Indians on the nearby Rosebud Reservation and to control local cattle rustlers and horse thieves. No battles were fought here, and from 1906 to 1911 the fort was retained as a remount station. Portions of the fort, now included in the Fort Niobrara National Wildlife Refuge, have been listed on the National Register of Historic Places.

Subtheme F. The Farmer's Frontier. This subtheme is well represented in the area under the facet "Settling and Farming in the Great Plains." Homestead claims were filed in the study area during the 1881–1916 period. During this same period, droughts and the difficulty of dryland farming forced a decrease in the number of farms. Probably fewer than 25% of older structures survive and eight extant structures from the early settlement period were recommended for listing on the National Register of Historic Places by the University of Nebraska Norden Dam studies as samples relating to historic rural settlement and vernacular

architecture with one or more features of interest. These sites have been recorded in state survey data files. Beyond the Norden study area the national park study area could include other such resources. These resources would make interesting contributions to a park, but no sites have been found to meet national significance criteria.

Subtheme G. The Cattlemen's Empire. Family farms and ranches have constituted the primary economic focus of the study area. Livestock and grain production are prominent but much of the land has remained uncultivated. The wooded slopes of the valley and the sandhills to the south are used for open grazing. The customs and culture of the ranching community are prominent in the valley, and there is a strong local desire to retain the pastoral landscape. The ranches are typical of those found widely in the Nebraska Sandhills and are not unusually significant.

Theme XXXII. Conservation of Natural Resources

Theme C. The Conservation Movement Matures, 1908–1941

Subtheme 3. Fish and Wildlife Refuge System. Adjacent to but not in the study area, the 19,131-acre Fort Niobrara National Wildlife Refuge was established in 1912. The refuge is managed primarily for protection of buffalo, elk, and (after 1936) Texas longhorns. The 4,635-acre portion of the refuge north of the river was designated as wilderness on October 19, 1976. In addition the rolling sandhills and breaks straddling the Niobrara River are home to a great variety of wildlife, including wintering bald eagles, sharptailed grouse, prairie chickens, prairie dogs, and burrowing owls.

Conclusions. The native American archeological and ethnographic resources are characteristic of those that are widespread on the Great Plains. Habitation sites and use of the area appear to have been primarily seasonal. The known resources do not appear to possess outstanding qualities or present superlative opportunity for illustrating the prehistory of the nation. Further study could reveal resources that have potential for national significance, so no recommendations can be made.

Farming and ranching subthemes are also well represented in the area under the theme "Settling and Farming in the Great Plains." Certain structures from the early settlement period relate to historic rural settlement and vernacular architecture with one or more features of interest. They have been recorded in state survey data files but do not have outstanding qualities under national significance criteria.

SUPERLATIVE OPPORTUNITIES FOR RECREATION, PUBLIC USE, ENJOYMENT, AND SCIENTIFIC STUDY

The park study area currently draws recreational use focused along the Niobrara National Scenic River. There are facilities for canoeing, tube floating, camping, and sightseeing. The study area resources are becoming better known for canoeing, views of cliffs and waterfalls that are unusual in this part of the country, camping in a relatively undeveloped wooded riparian environment, and general sightseeing of a mixed pastoral natural landscape.

Adjacent to the study area is the Ft. Niobrara National Wildlife Refuge. Recreational opportunities include viewing wildlife in a fenced area, interpretation in a visitor center displaying military history and wildlife, picnicking, and day hiking on interpretive trails and in a 4,635-acre wilderness area that overlooks the Nebraska Sandhills. Refuge visitation is about 130,000 people per year.

A large proportion of river float trips begin on the refuge and finish on private land or at Smith Falls State Park. River use is mainly canoeing and inner tubing along a 25-mile portion, with annual use at about 30,000 user days.

Smith Falls State Park downstream along the river in the study area is being developed on a 300-acre leased tract to provide the opportunity to view the tallest waterfall in Nebraska, camping, and interpretation, as well as a canoe base. Visitation in 1992, the first year of state park management, was about 20,000 people; 26,000 visitors were reported in 1993, and 31,800 were recorded in 1994. Various private landowners offer camping and canoe and inner tube outfitting.

The Niobrara Valley Preserve offers facilities for scientific research and educational groups. On private land along the river, hunting for deer and turkey is popular. County-maintained roads provide adequate access through the area. Some cabins have been developed for recreational occupancy.

Conclusion. The study area encompasses the above uses (except the Fort Niobrara National Wildlife Refuge) and offers superlative opportunities for resource-based recreation. These are mainly enjoyed by regional visitors due to distance from population centers and lack of publicity about the area. Knowledge of the area is growing, and use is increasing at a significant rate. Scientific study of area resources is continuing, with a number of publications in scientific journals regarding flora and fauna of the Niobrara Valley Preserve. Studies include hybridization of eastern and western plant and bird species, disjunct populations of plants and mammals, and prairie flora response to bison grazing and fire. The University of Nebraska and other institutions are continuing to excavate and study fossils from the study area. Resources also represent superior opportunities for recreation, public use, scientific study and enjoyment. Visitors are attracted because of their beauty and unusual quality.

RETAINS A HIGH DEGREE OF INTEGRITY

The surface natural resources of the study area fall into three general categories: the Niobrara River water resource, the natural and pastoral mixed woodlands and clearings of the river valley, and the upland sandhills prairie south of the river valley. Fossil resources have been exposed by downcutting of the Niobrara River and tributary creeks and by scientific collecting over the past 100 years.

River flow is largely natural and water quality is generally good. Livestock has access to water on private land; however, stocking rates and growing conditions do not generally result in obvious degradation.

The valley landscape of alternating woodland and meadow was influenced by small subsistence farms established about 100 years ago, of which many were later consolidated into

large ranches. Natural plant conditions have been influenced by grazing, wildfire suppression, and logging, but the area appears to be in equilibrium and in good condition. The upland sandhills prairie south of the river is generally used for pasture, whether managed by family-owned ranches, The Nature Conservancy, or Fort Niobrara National Wildlife Refuge. Modern grazing and fire suppression have influenced native plant communities more than natural processes of wild animal grazing and natural/aboriginal burning. However, range conditions are good, and local standards of stewardship are excellent.

Fossils have been collected and removed to museums. The extent of private collection is unknown. Collecting and selling fossils for profit is becoming an increasing threat near the Black Hills in South Dakota due to market conditions, and this could become an issue in Nebraska. Known sites have generally not been exploited and have not been exhausted by scientific groups.

Conclusion. Even though much of the area has been settled and used for agriculture for over 100 years, the surface resources and fossil sites of the area retain a high degree of integrity.

CONCLUSION ON NATIONAL SIGNIFICANCE

Resources in the national park study area along the Niobrara River meet all four NPS criteria of national significance for new areas. The area contains outstanding examples of a Great Plains river, unusually diverse land ecosystems with numerous plant and animal species at their range limit, and scientifically important Miocene and Pleistocene fossil beds. The same outstanding resources are of exceptional value and quality in illustrating natural themes cited by the National Park Service. The area resources offer outstanding opportunities for recreation, public use, and scientific study. They retain a high degree of integrity, and are relatively unspoiled.

EVALUATION OF SUITABILITY

INTRODUCTION

NPS *Management Policies* (NPS 1988) describes criteria of suitability for addition to the national park system:

An area will be considered suitable for addition to the national park system if it represents a natural / cultural theme or type of recreational resource that is not already adequately represented in the national park system, unless such an area is comparably protected and presented for public enjoyment by another land-managing entity. Adequacy of representation will be determined on a case-by-case basis by comparing the proposed addition to other units in the national park system, considering differences or similarities in the character, quality, quantity, or combination of resources and opportunities for public enjoyment.

The following natural themes are represented in the study area and were found to be of national significance (see above). These themes are from *Natural History in the National Park System and on the National Registry of Natural Landmarks* (NPS 1990). The following evaluation tests these themes for representation by other NPS sites in the Great Plains or by equivalent entities.

GREAT PLAINS NATURAL THEMES

Landforms of the Present

Theme 8: River Systems and Lakes. River systems of the Great Plains are represented by 14 NPS sites distributed from Texas to North Dakota, plus the Niobrara National Scenic River and the nearby Missouri National Recreation River. These nearby rivers were added to the national wild and scenic rivers system in 1991. The National Park Service was designated the managing federal agency and general management plans are being developed. The Niobrara River was found to meet criteria of national significance and exceptional value representing the landform theme of a Great Plains river.

Conclusion. River systems of the Great Plains are already adequately represented by NPS units, including the new Niobrara National Scenic River.

Geologic History

Theme 19: Oligocene–Recent Epochs. This theme is represented by four NPS units: Agate Fossil Beds National Monument, Badlands National Park, Scotts Bluff National Monument, and Theodore Roosevelt National Park. The study area geological resources of exceptional value include many fossil sites of Miocene and Pleistocene ages. These sites differ from Miocene sites at Agate Fossil Beds in their unusual species diversity. Agate is known for many specimens of a few species, whereas one site in the park study area has yielded the

greatest number of animal species (146) found at any one fossil site in the world. Fossils collected from the study area over the past 100 years have yielded many of the type specimens from which extinct Great Plains animal species are known to science. Badlands National Park represents the earlier Oligocene series, and fossils of a different age. Scotts Bluff National Monument and Theodore Roosevelt National Park represent examples of Oligocene–Recent outcrops but contain few fossils.

The adequacy of representation of local fossil sites by the National Park Service is dependent on the Niobrara National Scenic River planning process. Some known fossil sites are close to the river and in the scenic river planning corridor, but some significant sites are beyond the scope of the river planning effort. The degree of protection or interpretation that could be afforded by scenic river management is uncertain at this time.

Conclusion. NPS sites outside of the study area do not adequately represent the unusual animal species diversity of fossil sites in the park study area. The new Niobrara National Scenic River has potential for representation of some sites, but planning is incomplete and this remains to be demonstrated. Some significant sites would be beyond the zone of the scenic river corridor planning and protection.

Land Ecosystems

Theme 21: Boreal Forest, Theme 23: Dry Conifer Forest, Theme 24: Eastern Deciduous Forest, and Theme 25: Grasslands. These themes were considered collectively due to the significance of their ecological overlap in a 5-mile wide and 30-mile long zone of the Niobrara River valley in the park study area. This geographical and ecological overlapping of all four themes is represented in Wind Cave National Park and in the developing Niobrara National Scenic River. Custer State Park and Black Hills National Forest adjacent to Wind Cave have similar representations.

Wind Cave displays a conifer forest / prairie ecotone, with some eastern deciduous species and isolated patches of paper birch trees representing relict boreal forest. Nowhere at Wind Cave is this ecological overlap as concentrated, diverse, or as easily viewed as along the Niobrara River.

The Niobrara National Scenic River is still in a planning phase, so the degree of land protection is unresolved. The area of ecological significance generally extends from valley rim to rim, or averaging about 5 miles wide. This exceeds the average of .25 mile on each side of the river (average of 320 acres per river mile) that can be protected under the Wild and Scenic Rivers Act by acquisition of fee or easements. Fee ownership acquisition of private land by a federal agency is further restricted to no more than an average of 100 acres per river mile.

The above area of significant ecological overlap is protected in part by land managing entities in or near the park study area. Adjacent to the study area, Ft. Niobrara National Wildlife Refuge is managed by the U.S. Fish and Wildlife Service and preserves 19,000 acres and 9 miles of riparian frontage. Management and interpretation emphasize current husbandry of bison, longhorn cattle, and elk, and the frontier Army fort history. Canoeing, hiking, and wildlife viewing are available. The Niobrara Valley Preserve, owned by The Nature Conservancy, includes 54,000 acres inside the study area. It protects 15 miles of riparian

frontage on one side of the river and an additional 4 miles of frontage on each side. Protection of biodiversity, research, and environmental education are primary goals of The Nature Conservancy, with lower priorities for public interpretation and recreation. Smith Falls State Park is leased and managed by the state of Nebraska, protects about 300 acres, and is being developed for camping, canoeing, and interpretation. Five other Nebraska state land units in the study area total 4,800 acres. These sites preserve less than half of the most important 30-mile long zone of ecological overlap. The remainder is in private ownership and currently used for cattle grazing, some alfalfa production, and sparse residential use.

Conclusion. The overlap of four plant ecosystem themes on the Great Plains is nowhere as well represented as in the study area. The developing Niobrara National Scenic River will afford some land protection of the adjacent riparian zone, and non-NPS managed preserves afford some land protection and opportunities for public enjoyment. The sum of these units still leaves over half of the area in private ownership under a variety of management practices and goals.

GREAT PLAINS CULTURAL THEMES

None of the cultural resources in the study area representing these themes were considered outstanding examples and of national significance, and therefore will not be evaluated for suitability for addition to the national park system.

CONCLUSION ON SUITABILITY

The study area resources are conditionally suitable for addition to the national park system. The geologic history theme of the Oligocene–Recent epochs and the overlapping Land Ecosystem themes are partially included in the newly designated Niobrara National Scenic River. Some of the resources are protected and presented for public use by other land managing entities such as the U.S. Fish and Wildlife Service, Nebraska Game and Parks Commission, and The Nature Conservancy. However, over half of the sensitive resources are privately owned. Unplanned incremental real estate development and recreational use pose the main threats to resources. Neither threats are dramatically increasing, but over time both will directly and indirectly change the area, affecting resources and the rural lifestyle. Brown County recently enacted zoning ordinances that fulfill most of the scenic river objectives. The other two counties are developing zoning ordinances. If good stewardship traditions continue, reinforced by effective local land use zoning and scenic river protection, then the study area would be adequately protected by other agencies and the private sector. It therefore would not require federal protection in the national park system.

FEASIBILITY FOR MANAGEMENT AS A UNIT OF THE NATIONAL PARK SYSTEM

To be feasible as a new unit of the national park system natural systems (or historic settings) must be of sufficient size and appropriate configuration to ensure long-term protection of the resources and accommodate public use. There must be potential for efficient administration at a reasonable cost. Important feasibility factors include landownership, acquisition costs, access, threats to the resources, and staff or development requirements.

For all alternatives, no known mineral resources exist with the exception of small sand and gravel pits used for county road maintenance. No survey of hazardous material sites has been performed, but there are no active or abandoned industrial sites or mines and no known illegal chemical dumping sites in the study area. Agricultural use of pesticide is not widespread.

The boundary described in alternative C includes an area that is sufficient in size and configuration to facilitate long-term protection of the significant resources and accommodate public use. The boundary includes significant privately owned acreage. Acquisition would be controversial, and likely involve unwilling sellers. Land prices would be significantly less than for many other areas in the national park system, but with current budgetary constraints, Congress would have to decide whether the park would be feasible from a cost standpoint.

DESCRIPTION OF ALTERNATIVES

FEATURES COMMON TO ALL ALTERNATIVES

Planning for the Niobrara National Scenic River will continue regardless of whether any of the alternatives in this study are authorized by Congress. The plan will address resource protection, visitor interpretation, public use, and facilities along the scenic river. Although a final plan is not in place for the river corridor at this time, the following assumptions apply.

Private land use will remain largely unchanged in all scenic river alternatives under consideration.

A variety of methods will be developed to ensure long-term conservation, including county zoning, land trusts, voluntary covenants, incentives, conservation easements, and acquisition.

Public access will continue to be available via county roads, existing public sites, and through private land where landowners consent to such access.

Visitors will continue to canoe or inner tube on the Niobrara River, either independently or with outfitting services.

Private and public campgrounds will continue to operate.

Private development along the scenic river corridor will be subject to any applicable county zoning, state, and federal laws.

Public facility development along the scenic river corridor will follow the general management plan.

Hunting, fishing, and trapping on private land will continue with landowner permission in accordance with state laws.

Public access to private land will remain under landowner control.

ALTERNATIVE A: NO ACTION — CONTINUE EXISTING TRENDS

Management Goals

This alternative would continue the existing patterns of management, ownership, land use, and development.

Boundary and Resources

No new land management unit boundary would be developed under this alternative beyond the Niobrara National Scenic River boundary. Resources beyond the scenic river boundary would receive no additional attention.

Ownership and Management Strategies

The ownership and management mix of private, state, federal, and Nature Conservancy land would continue as described in the "Affected Environment" portion of this document. A small amount of land could be acquired for scenic river facilities.

Protection Strategies

No new resource protection strategies (other than the scenic river corridor) would be implemented due to NPS efforts. Resources on private land would continue to be protected by methods and programs described below and would be directed by the owner's management goals.

Private Land under Federal, State, and Private Conservation Programs

A significant amount of ranch and farmland in the study area is managed under a variety of government agricultural conservation programs or private voluntary covenants that restrict subdivision and nonagricultural uses. Department of Agriculture (USDA) programs are generally based on contracts that extend from 1–10 years for a given activity. In general, landowners are not required to maintain improvements past the contract life. Acreages given below are approximate for the general area that could be affected by the broadest boundary alternative. Some landowners participate in more than one program, but an effort was made to not count the same acreages twice. The locations are not shown on a map because of privacy considerations.

Agricultural Conservation Program. This USDA program provides cost-share assistance to private landowners for conservation practices that reduce wind and water erosion. Qualifying projects include building check dams and installing pasture fencing and water devices to reduce overgrazing. Seven private landowners have nearly 74,500 acres enrolled under the program.

Great Plains Conservation Program. This USDA program is similar to the agricultural conservation program. Types of projects include windbreaks, reseeding plowed land to grass, cross fencing, wells, tanks, creating ponds, waste management, sediment control, brush control, irrigation tail water management, and erosion control. All projects must be accompanied by a grazing management plan. In the study area six landowners have 9,600 acres enrolled in the program. Another four landowners participate in this program on 7,200 acres immediately adjacent to the study area.

Conservation Reserve Program. This USDA program leases marginal cropland, which is taken out of production and planted in approved native grasses and shrubs. In the study area there are 7,457 acres enrolled in this program. It involves 22 private landowners. This 10-year program will be discontinued unless reauthorized by Congress. The last leases expire in 2002.

Acreage Production Adjustment Program. This USDA program takes cropland out of production for farm price supports. Set-asides have erosion control plans. Four landowners in the study area have a total of 1,875 acres enrolled in this program.

Wetlands Reserve Program. This is a new USDA voluntary program that buys easements and pays for restoring and protecting wetlands on private property. Easements are usually permanent. No landowners in the study area use this program.

U.S. Fish and Wildlife Service Private Lands Program. The U.S. Fish and Wildlife Service provides cost share funding for landowners to create and improve wetlands and wildlife habitat. Six projects in the study area are restoring 10.5 miles of streambank along Niobrara tributaries, involving 2,040 acres.

U.S. Fish and Wildlife Service Sandhills Area Management Program. This is a cooperative program administered by the Fish and Wildlife Service to conserve wetlands and wildlife habitat. There are two small erosion control projects along Niobrara tributaries. Acreage figures are not applicable.

Nebraska Soil And Water Conservation Program. This state cost share program is administered by the Middle Niobrara Natural Resource District to aid erosion control. Various methods include improved crop and livestock management, windbreaks, check dams, terraces, and range seeding. Twenty-eight landowners have approximately 32,400 acres enrolled.

Nebraska Wildlife Habitat Improvement Program. This joint cooperative program sponsored by the Nebraska Game and Parks Commission and natural resource districts assists in the development of new habitat or improvement of existing habitat on private land. An annual payment is made for planting expenses. Cooperators who allow public access on enrolled lands receive an additional annual payment. Two landowners in the study area participate in this program, and a total of 26 acres are enrolled.

Nebraska Private Lands Wetlands Initiative. This Nebraska Game and Parks Commission program assists wetlands creation and restoration and encourages participation in the water bank program. Two landowners in the study area participate with 15 acres involved.

Stewardship Incentives Program. This state program provides technical assistance and cost share payments to landowners for developing forest management plans, reforestation, erosion control, wetland protection, and other forest-related conservation activities. Eight landowners in the area have consulted with a state forester and developed management plans for 3,000 acres of woodland.

Natural Resource District Conservation Easements. Natural resources districts in Nebraska have the authority to accept conservation easements from landowners to protect natural resources. All easements must be accepted from landowners on a willing grantor basis because state statutes provide no authority for condemnation. Easement conditions and the

length of the easement are up to the natural resource district and the individual landowner. The natural resource district can reimburse landowners for the easement. There are no such easements in place in the study area.

Private Restrictions. A group of seven owners of 38,700 acres have formed a nonprofit corporation and recorded a deed restriction that runs with the land at the Keya Paha County Courthouse. A portion of the acreage is in the park study area. The agreement provides some protection measures such as development setbacks along the river. Approximately 16 miles of Niobrara National Scenic River frontage on the north bank and 3.5 miles on the south bank are protected by this covenant in and east of the study area.

County Zoning. Brown County currently has countywide zoning ordinances to guide real estate development. Other counties are addressing land use and zoning ordinances.

TABLE 1: PRIVATE LAND UNDER FEDERAL, STATE, AND PRIVATE CONSERVATION PROGRAMS

Agricultural Conservation Program		
County	Acres	Owners
Brown	0	0
Cherry	74,487	7
Keya Paha	0	0
Total	74,487	7

USFWS Private Lands Program		
County	Acres	Owners
Brown	130	3
Cherry	1,910	3
Keya Paha	0	0
Total	2,040	6

Great Plains Conservation Program		
County	Acres	Owners
Brown	6,880	3
Cherry	640	1
Keya Paha	2,080	2
TOTAL	9,600	6

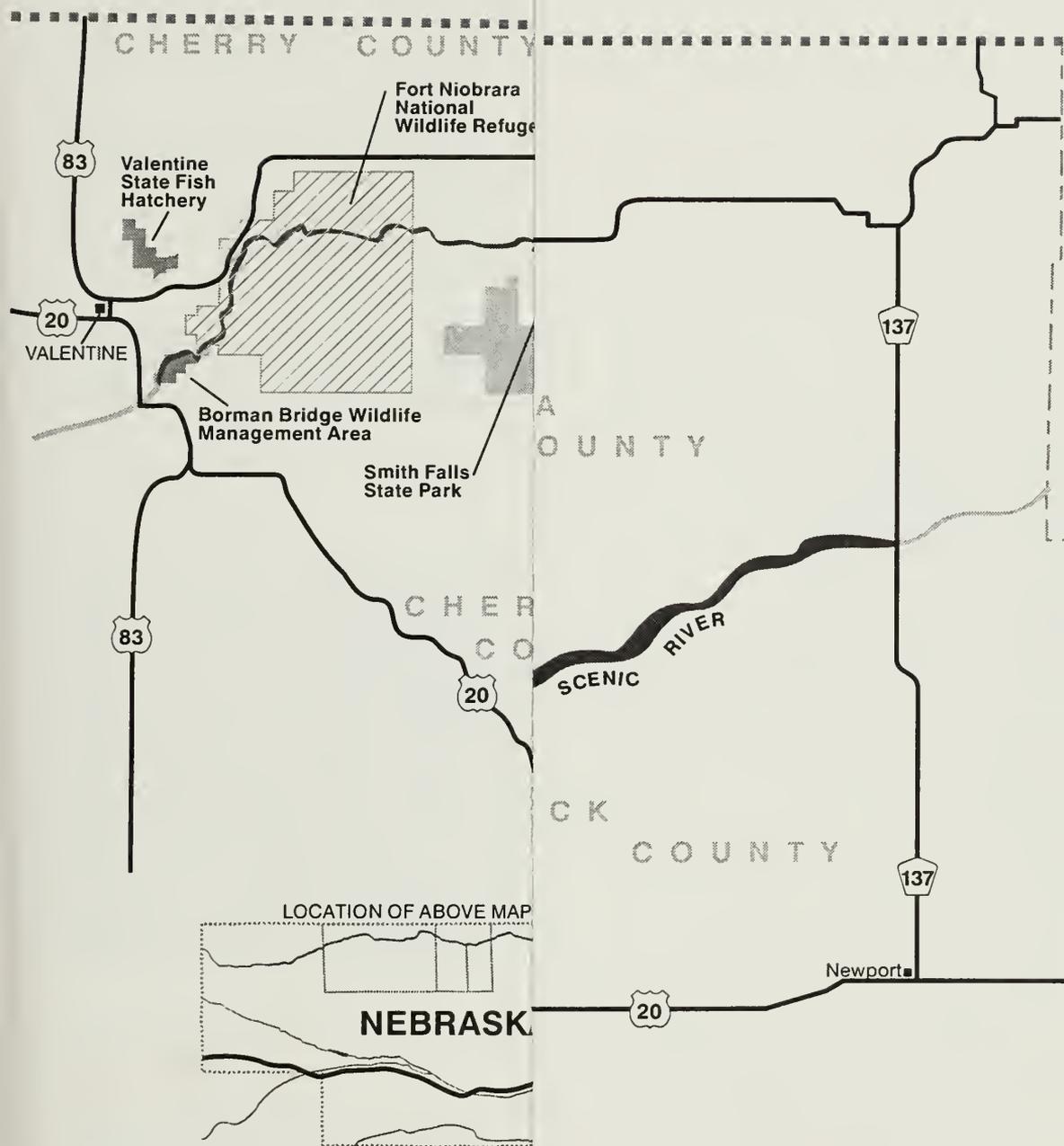
Nebraska Private Lands Wetlands Initiative		
County	Acres	Owners
Brown	10	1
Cherry	5	1
Keya Paha	0	0
Total	15	2

Conservation Reserve Program		
County	Acres	Owners
Brown	6,080	15
Cherry	1,377	7
Keya Paha	0	0
Total	7,457	22

Nebraska Soil & Water Conservation Program		
County	Acres	Owners
Brown	2,607	3
Cherry	28,684	19
Keya Paha	1,089	6
Total	32,380	28

Agricultural Production Adj. Program		
County	Acres	Owners
Brown	0	0
Cherry	1,875	4
Keya Paha	0	0
Total	1,875	4

Nebraska Wildlife Habitat Improvement Program		
County	Acres	Owners
Brown	26	2
Cherry	0	0
Keya Paha	0	0
Total	26	2



-  Nebraska Game & Parks
-  Preserve Land
-  U.S. Fish and Wildlife Service

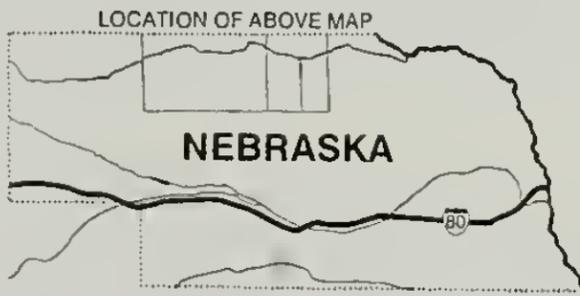
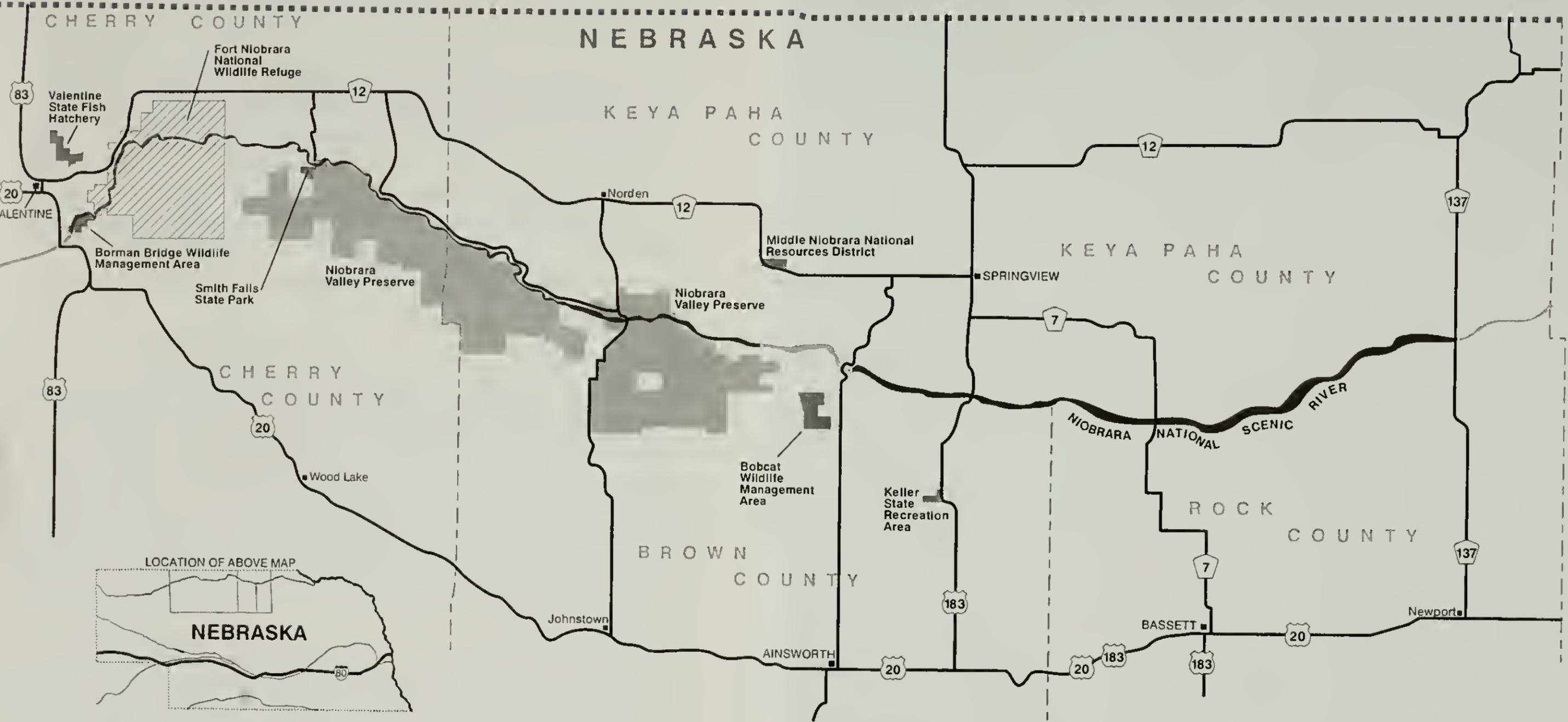
ALTERNATIVE A

NO ACTION - CONTINUE EXISTING TRENDS
 NIOBRARA NATIONAL PARK STUDY

United States Department of the Interior • National Park Service
 DSC/Nov. '94/NIOB/20,001

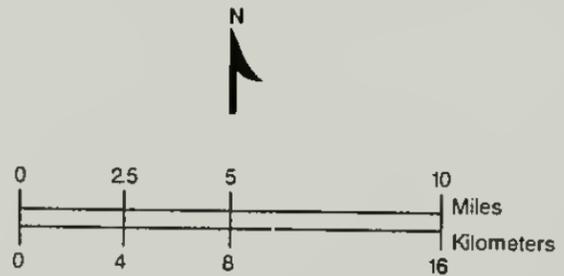
SOUTH DAKOTA

NEBRASKA



-  Nebraska Game & Parks Commission
-  Preserve Land
-  U.S. Fish and Wildlife Service

-  Niobrara National Scenic Riverway
-  County Line



ALTERNATIVE A
 NO ACTION - CONTINUE EXISTING TRENDS
 NIOBRARA NATIONAL PARK STUDY
 United States Department of the Interior • National Park Service
 DSC/Nov. '94/NIOB/20,001

Public Access and Use

Visitors would continue to use county roads for recreational access. River access and use would continue and will be addressed in the Niobrara National Scenic River general management plan.

Smith Falls State Park would continue to provide public access to the falls, river, and riparian forest. The main activities are sightseeing, canoe access, camping, picnicking, nature study, and short hikes. The park facilities will continue to be upgraded as the state develops the site. The Brewer Bridge picnic area would continue to be maintained by the Middle Niobrara Natural Resource District with parking and river access. Hiking and some public day use at Niobrara Valley Preserve would continue.

The 19,122-acre Fort Niobrara National Wildlife Refuge, adjacent to the study area, would continue to provide the primary public access to the Niobrara River in the study area, riparian forest, and upland sandhills prairie.

Camping would continue at commercially operated sites and at Smith Falls State Park.

Public Information and Interpretation

Visitor information would continue to be provided by a variety of sources, such as canoe outfitters, U.S. Fish and Wildlife Service, Nebraska Game and Parks Commission, The Nature Conservancy, and chambers of commerce in Valentine and Ainsworth. Adjacent to the study area, Fort Niobrara National Wildlife Refuge would continue operation of its visitor center with displays on the prairie environment and the history of Fort Niobrara. Inside the study area, Smith Falls State Park would continue providing informal interpretation. A nature trail is under development and a visitor reception building is planned for construction in the near future. The Niobrara Valley Preserve would continue providing educational opportunities and facilities for school groups and ecological research projects. Group facilities are available by reservation. Self-guided interpretive trails and brochures would continue to be provided to the public. Scenic river planning will address how a managing agency would provide public information and interpretation in the river corridor.

Facility Development

Smith Falls State Park facilities are being upgraded independently of this study. River-oriented public facilities could be constructed in the future, depending on the outcome of the Niobrara National Scenic River plan.

Required Legislation

No legislation would be required.

ALTERNATIVE B: LOCALLY ADMINISTERED CONSERVATION DISTRICT

Management Goals

The intent of this alternative is to complement protection of the Niobrara National Scenic River by supporting local conservation efforts. A local administering entity, such as the Middle Niobrara Natural Resource District, would coordinate protection of land and water resources for the conservation district.

Boundary and Resources

The Conservation District suggested boundary would include large areas of sandhills mixed-grass prairie, riparian tallgrass, western ponderosa pine forest, eastern deciduous forest, and relict northern forest. A large number of fossil and archeological sites are included. Excluded are some isolated fossil and archeological sites beyond Nebraska Highway 12 and U.S. Highway 20.

Ownership and Management Strategies

The ownership and management mix of private, state, federal, and Nature Conservancy land would continue as described in the "Affected Environment" portion of this document. A small amount of land could be acquired for Niobrara National Scenic River facilities. The Middle Niobrara Natural Resource District could acquire easements from willing sellers for protection of sensitive resources.

Conservation assistance would be coordinated by the administering entity, in conjunction with a local advisory council and the three affected county commissions. Voluntary conservation efforts and information sharing would be coordinated. Landowners would be provided incentives to protect the diverse ecosystems and fossil resources through best management practices. The council would act in an advisory capacity and would include area landowners and participating agencies. Administrative overhead, conservation programs, easements, or agreements would be funded in part by existing state or federal programs. Some federal funding assistance might be provided through the Niobrara National Scenic River.

Protection Strategies

Cooperative agreements or conservation easements between the coordinating entity and landowners could provide enhanced ecosystem protection. Incentives such as increasing cost share percentages or providing payments for conservation easements could be used. The Middle Niobrara Natural Resource District estimates current annual cost share needs of \$32,000 for projects in the area.

To improve effectiveness it could be necessary to modify programs, seek legislation to amend state laws, and target funds for the designated area. Federal agriculture programs generally cannot give preference to a specific area or conservation district. Funding for resource

Public Access and Use

Visitors would continue to use county roads for recreational access. River access and use would continue and will be addressed in the Niobrara National Scenic River general management plan.

Smith Falls State Park would continue to provide public access to the falls, river, and riparian forest. The main activities are sightseeing, canoe access, camping, picnicking, nature study, and short hikes. The park facilities will continue to be upgraded as the state develops the site. The Brewer Bridge picnic area would continue to be maintained by the Middle Niobrara Natural Resource District with parking and river access. Hiking and some public day use at Niobrara Valley Preserve would continue.

The 19,122-acre Fort Niobrara National Wildlife Refuge, adjacent to the study area, would continue to provide the primary public access to the Niobrara River in the study area, riparian forest, and upland sandhills prairie.

Camping would continue at commercially operated sites and at Smith Falls State Park.

Public Information and Interpretation

Visitor information would continue to be provided by a variety of sources, such as canoe outfitters, U.S. Fish and Wildlife Service, Nebraska Game and Parks Commission, The Nature Conservancy, and chambers of commerce in Valentine and Ainsworth. Adjacent to the study area, Fort Niobrara National Wildlife Refuge would continue operation of its visitor center with displays on the prairie environment and the history of Fort Niobrara. Inside the study area, Smith Falls State Park would continue providing informal interpretation. A nature trail is under development and a visitor reception building is planned for construction in the near future. The Niobrara Valley Preserve would continue providing educational opportunities and facilities for school groups and ecological research projects. Group facilities are available by reservation. Self-guided interpretive trails and brochures would continue to be provided to the public. Scenic river planning will address how a managing agency would provide public information and interpretation in the river corridor.

Facility Development

Smith Falls State Park facilities are being upgraded independently of this study. River-oriented public facilities could be constructed in the future, depending on the outcome of the Niobrara National Scenic River plan.

Required Legislation

No legislation would be required.

ALTERNATIVE B: LOCALLY ADMINISTERED CONSERVATION DISTRICT

Management Goals

The intent of this alternative is to complement protection of the Niobrara National Scenic River by supporting local conservation efforts. A local administering entity, such as the Middle Niobrara Natural Resource District, would coordinate protection of land and water resources for the conservation district.

Boundary and Resources

The Conservation District suggested boundary would include large areas of sandhills mixed-grass prairie, riparian tallgrass, western ponderosa pine forest, eastern deciduous forest, and relict northern forest. A large number of fossil and archeological sites are included. Excluded are some isolated fossil and archeological sites beyond Nebraska Highway 12 and U.S. Highway 20.

Ownership and Management Strategies

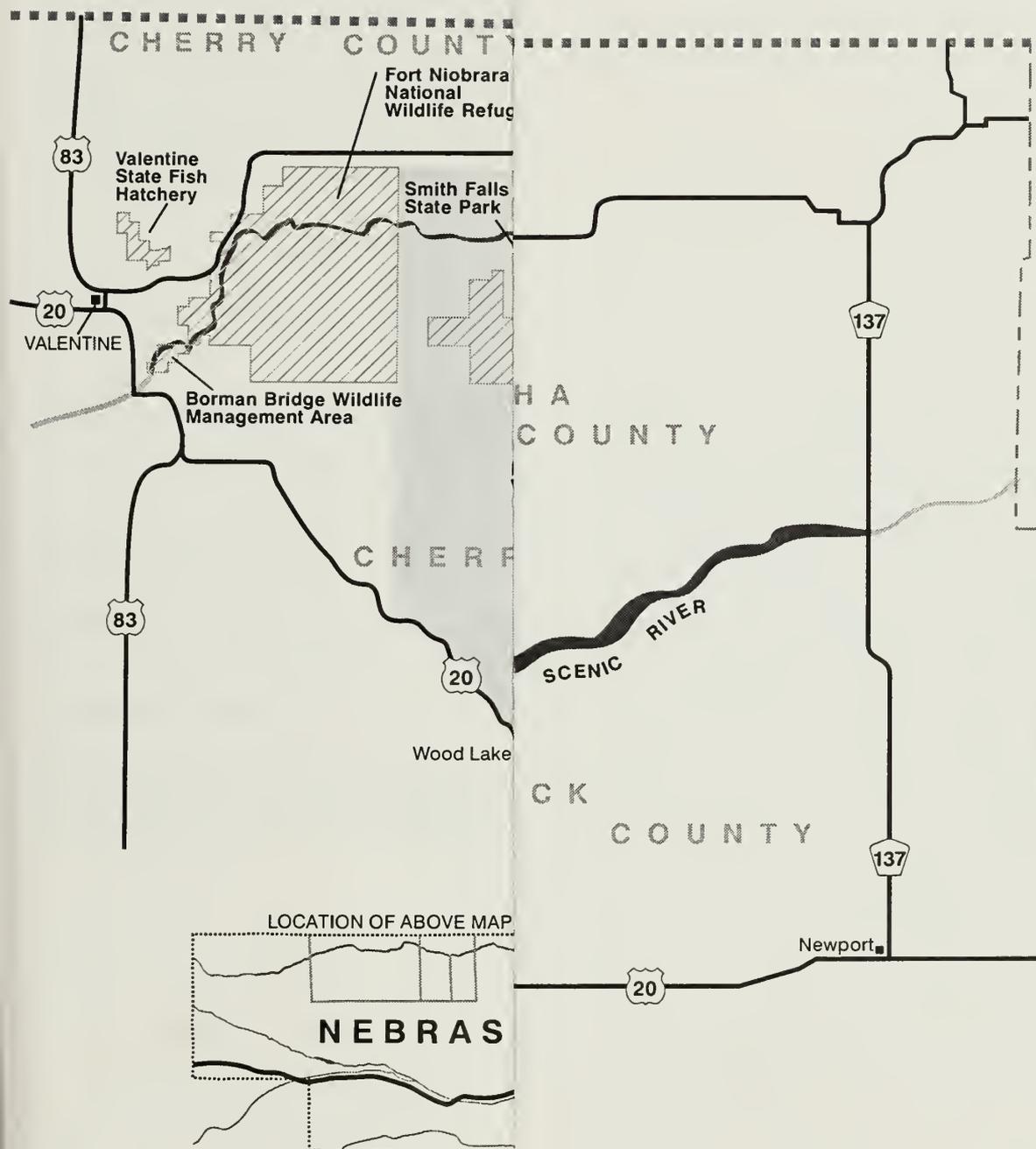
The ownership and management mix of private, state, federal, and Nature Conservancy land would continue as described in the "Affected Environment" portion of this document. A small amount of land could be acquired for Niobrara National Scenic River facilities. The Middle Niobrara Natural Resource District could acquire easements from willing sellers for protection of sensitive resources.

Conservation assistance would be coordinated by the administering entity, in conjunction with a local advisory council and the three affected county commissions. Voluntary conservation efforts and information sharing would be coordinated. Landowners would be provided incentives to protect the diverse ecosystems and fossil resources through best management practices. The council would act in an advisory capacity and would include area landowners and participating agencies. Administrative overhead, conservation programs, easements, or agreements would be funded in part by existing state or federal programs. Some federal funding assistance might be provided through the Niobrara National Scenic River.

Protection Strategies

Cooperative agreements or conservation easements between the coordinating entity and landowners could provide enhanced ecosystem protection. Incentives such as increasing cost share percentages or providing payments for conservation easements could be used. The Middle Niobrara Natural Resource District estimates current annual cost share needs of \$32,000 for projects in the area.

To improve effectiveness it could be necessary to modify programs, seek legislation to amend state laws, and target funds for the designated area. Federal agriculture programs generally cannot give preference to a specific area or conservation district. Funding for resource

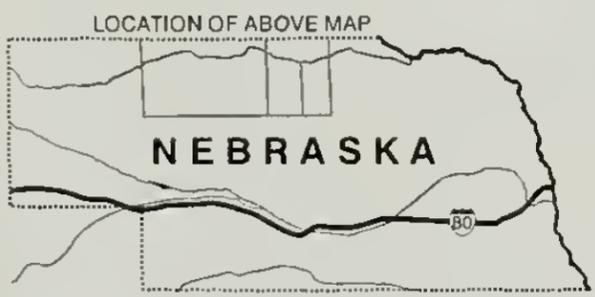
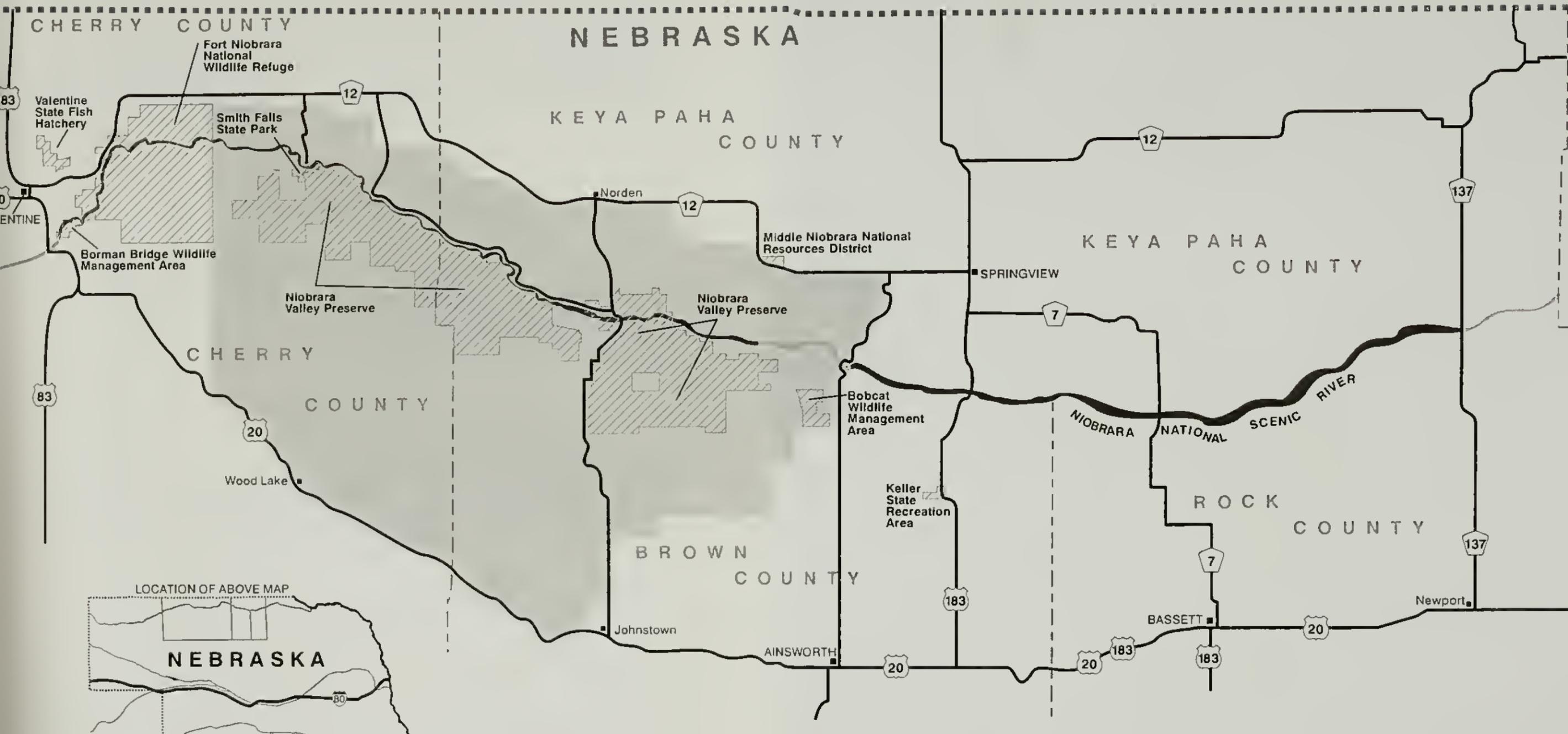


-  Suggested Conservation District
-  State, Federal, or other land

ALTERNATIVE B
LOCALLY ADMINISTERED
CONSERVATION DISTRICT
NIOBRARA NATIONAL PARK STUDY

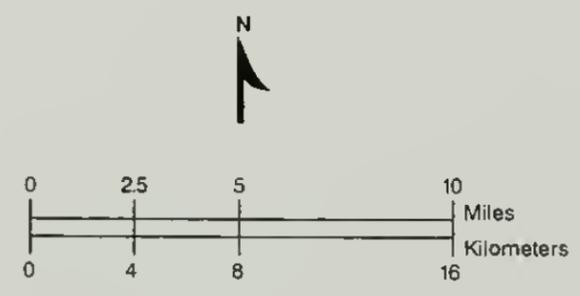
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 DSC/Jan. 1995/NIOB/20,002

SOUTH DAKOTA



 Suggested Conservation District
 State, Federal, or Preserve Lands

 Niobrara National Scenic Riverway
 County Line



ALTERNATIVE B
 LOCALLY ADMINISTERED
 CONSERVATION DISTRICT
 NIOBRARA NATIONAL PARK STUDY
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protection (subject to appropriations) would be provided by the state or federal government. Most of the resource protection methods and tools described in alternative A are contracts with time limits (usually from 1 to 10 years). To guarantee a longer term of resource protection, it could be necessary to extend contract periods.

Federal, state, and local sources of technical assistance include the Natural Resources Conservation Service, Farm Services Agency, U.S. Fish and Wildlife Service, National Park Service, Nebraska Forest Service, Nebraska Game and Parks Commission, and the Middle Niobrara Natural Resources District.

Public Access and Use

Public access and use would be the same as described under alternative A.

Public Information and Interpretation

Public information and interpretation would be the same as described under alternative A.

Facility Development

Facility development would be the same as described under alternative A.

Required Legislation

No federal legislation would be required. If a new managing entity is desired, authorizing state legislation would be necessary. This legislation could also be used to appropriate funding or change cost share requirements.

ALTERNATIVE C: NATIONAL PARK

Management Goals

The intent of the national park alternative is to conserve and provide for public enjoyment of the unusually diverse plant ecosystems and nationally significant fossil resources. A variation of a national park alternative would be establishment of a national preserve. The difference would be that legislation to establish a preserve would allow for hunting on federal land.

Boundary and Resources

The park would include the valley itself and portions of contributing upland ecosystems beyond the valley rim.

The western boundary would be Fort Niobrara National Wildlife Refuge. The north boundary would run near the rim top south of highway 12. The east boundary would be the Meadville Road and the east rim of lower Plum Creek. The south boundary would follow segments of the south boundary of Niobrara Valley Preserve to Fort Niobrara National Wildlife Refuge. This area would include approximately 138,000 acres. The alternative C map shows the affected area.

The park would include large samples of diverse plant ecosystems including upland sandhills prairie; riparian tallgrass; ponderosa pine, oak, and birch forest; significant fossil sites; half of the Niobrara National Scenic River; and all of the Niobrara Valley Preserve. It would not include entire tributary watersheds or remote fossil sites.

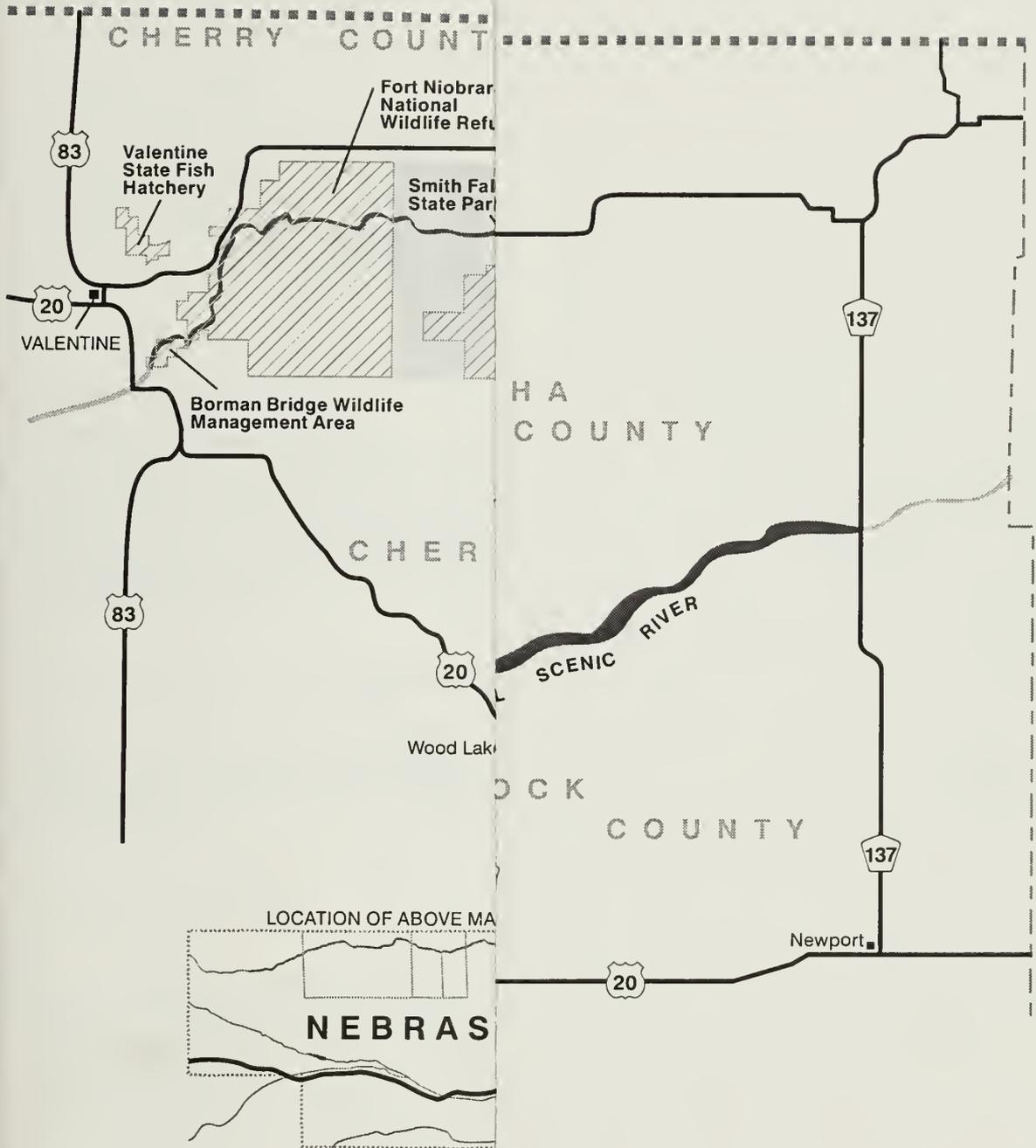
Ownership and Management Strategies

The National Park Service would administer the park or preserve.

Land would be acquired with the goal of protecting all natural resource values inside the boundary. Land would be purchased from willing sellers where possible. Eminent domain would be authorized but used only in case of immediate threat or continuing destruction of a natural resource.

To facilitate land acquisition, the National Park Service would propose that legislation grant authority to purchase land from willing sellers anywhere in the three-county area to exchange for land inside the park boundary. Authority to purchase state school land would also be needed. Other state land could be incorporated into the park if donated. The Niobrara National Scenic River in the park area would be included and managed as part of the park.

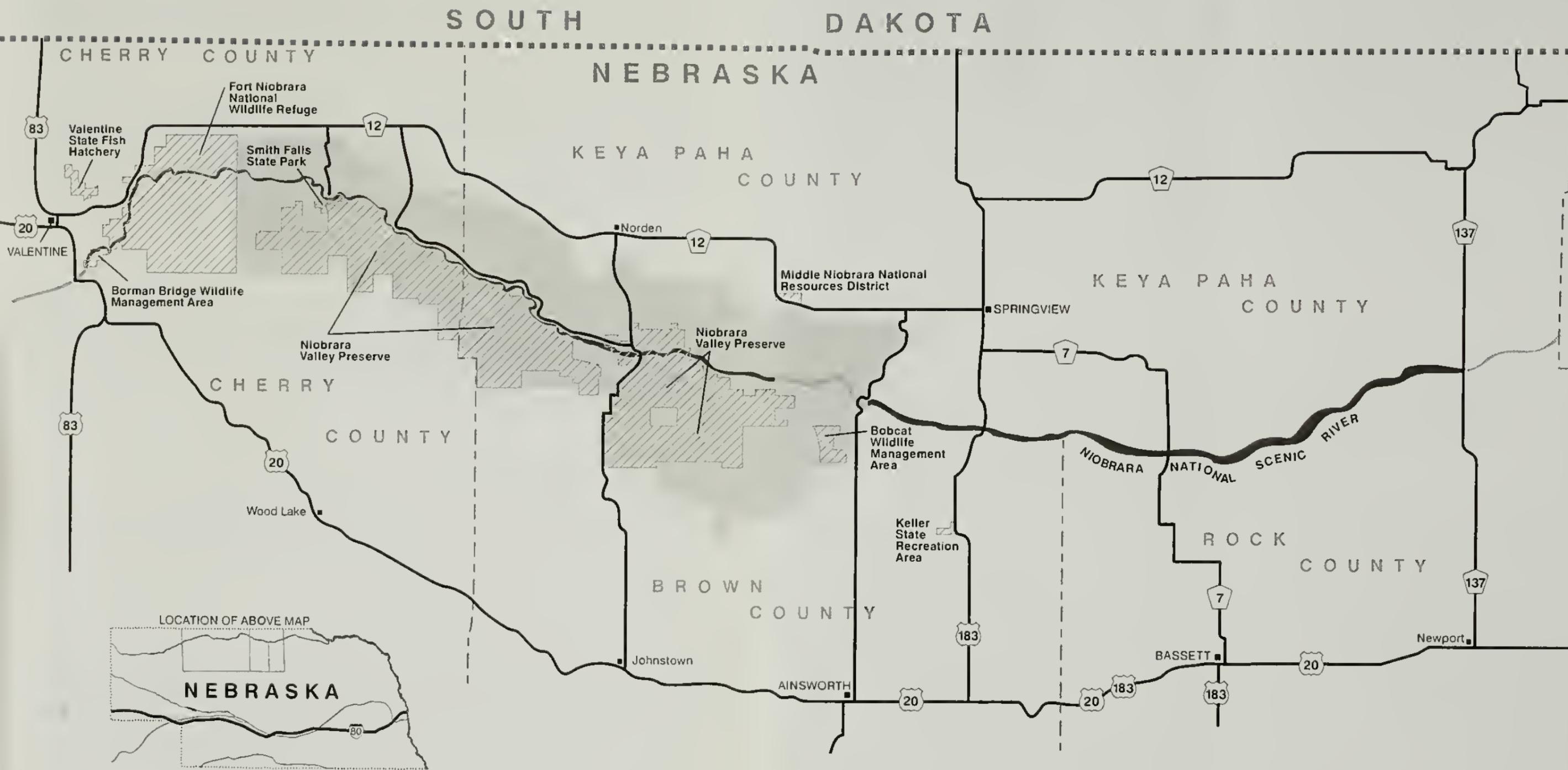
Law enforcement and emergency services on federally acquired land would be provided by the National Park Service in cooperation with counties. Local jurisdictions would continue to provide law enforcement on other land. Concurrent jurisdiction would be beneficial and would be sought from the state.



ALTERNATIVE C

NATIONAL PARK
 NIOBRARA NATIONAL PARK STUDY

United States Department of the Interior • National Park Service
 DSC/Nov. '94/NIOB/20,003



SOUTH DAKOTA

NEBRASKA

KEYA PAHA COUNTY

KEYA PAHA COUNTY

CHERRY COUNTY

BROWN COUNTY

ROCK COUNTY

NEBRASKA



ALTERNATIVE C

NATIONAL PARK
 NIOBRARA NATIONAL PARK STUDY

United States Department of the Interior • National Park Service
 DSC/Nov. '94/NIOB/20,003

County roads and bridges inside the park boundary would be maintained by the National Park Service if donated to the federal government by the local governments. There are no state highways inside the potential boundary.

Protection Strategies

Before any land acquisition could occur, a general management plan and land protection plan would be developed to determine protection strategies. Land acquired in fee title would be managed to perpetuate natural processes and protect fossil resources. The plan would also identify other protection strategies, such as conservation easements and cooperative agreements. It would also define compatible and incompatible uses for private lands. Grazing, for example, could be a compatible use.

Public Access and Use

Public access would be carefully planned to avoid impacts on resources on federally acquired land or on private land inside or adjacent to the park. Preservation of natural values would take precedence over all other park activities. The public would have no right to enter private lands without permission of the landowner. Hunting and trapping would be prohibited on federally owned land. Sport fishing under state regulations is compatible with NPS management policy.

Public Information and Interpretation

Public information and interpretation would be developed by the National Park Service to present and explain resource values, including the ecosystem diversity and fossils. Various forms of visitor education and information could be used, such as brochures, exhibits, and conducted tours.

Facility Development

A general management plan would be prepared to guide development. National park visitor traffic would be greater and more dispersed than for the scenic river, and would therefore require more facilities. Visitor and support facilities, such as a visitor center, ranger stations, camping or picnic sites, could be developed onsite. Facilities would be geared to resource-based recreation and scientific interpretation. The National Park Service would also encourage private interests to provide facilities outside the park.

Required Legislation

An act of Congress would be required to authorize a new unit of the national park system. If grazing were to be used as a management tool, it would have to be specifically authorized. Legislation would also be required for the proposed exchange authority and authority to purchase state school trust lands.

ALTERNATIVE D: NORTHERN NEBRASKA FOSSIL NATIONAL SCIENTIFIC RESERVE

This alternative considers a much broader geographic area than the other alternatives. The concept was developed in response to the finding of national significance of Nebraska fossil resources. The fossil sites extend from Ashfall State Historical Park in northeastern Nebraska to Agate Fossil Beds National Monument and Trailside Museum at Fort Robinson State Historical Park in northwestern Nebraska. This concept would also tie in with a north-south fossil discovery route in western Nebraska leading from Scottsbluff to the Black Hills, which was identified by the Forest Service in their joint state and federal prehistoric prairie plan.

This alternative would establish only the second federally authorized national scientific reserve in the country. The first is the Ice Age National Scientific Reserve in Wisconsin, which was authorized in 1964. Because this is a little-used concept, a brief description of how the Ice Age National Scientific Reserve operates follows.

The Ice Age National Scientific Reserve is administered by the state of Wisconsin and is not a unit of the national park system. However, because the National Park Service is responsible for providing certain assistance, it is an affiliated area of the national park system. Congress authorized the secretary of interior (through the National Park Service) to cooperate with the state of Wisconsin to ensure protection and interpretation of examples of the nationally significant values of Wisconsin continental glaciation. This has taken the form of planning assistance (development of the first comprehensive management plan for the area) and limited financial assistance for land acquisition, development, and operations. The National Park Service played a major role in assisting with educational activities.

Management Goals

This alternative has the dual goal of linking and improving interpretation of developed fossil sites managed by various entities across northern Nebraska and enhancing scientific study and collection by the University of Nebraska State Museum (UNSM). This proposal would have no effect on the continuing scientific collection of fossils on private land under agreements between landowners and various research institutions.

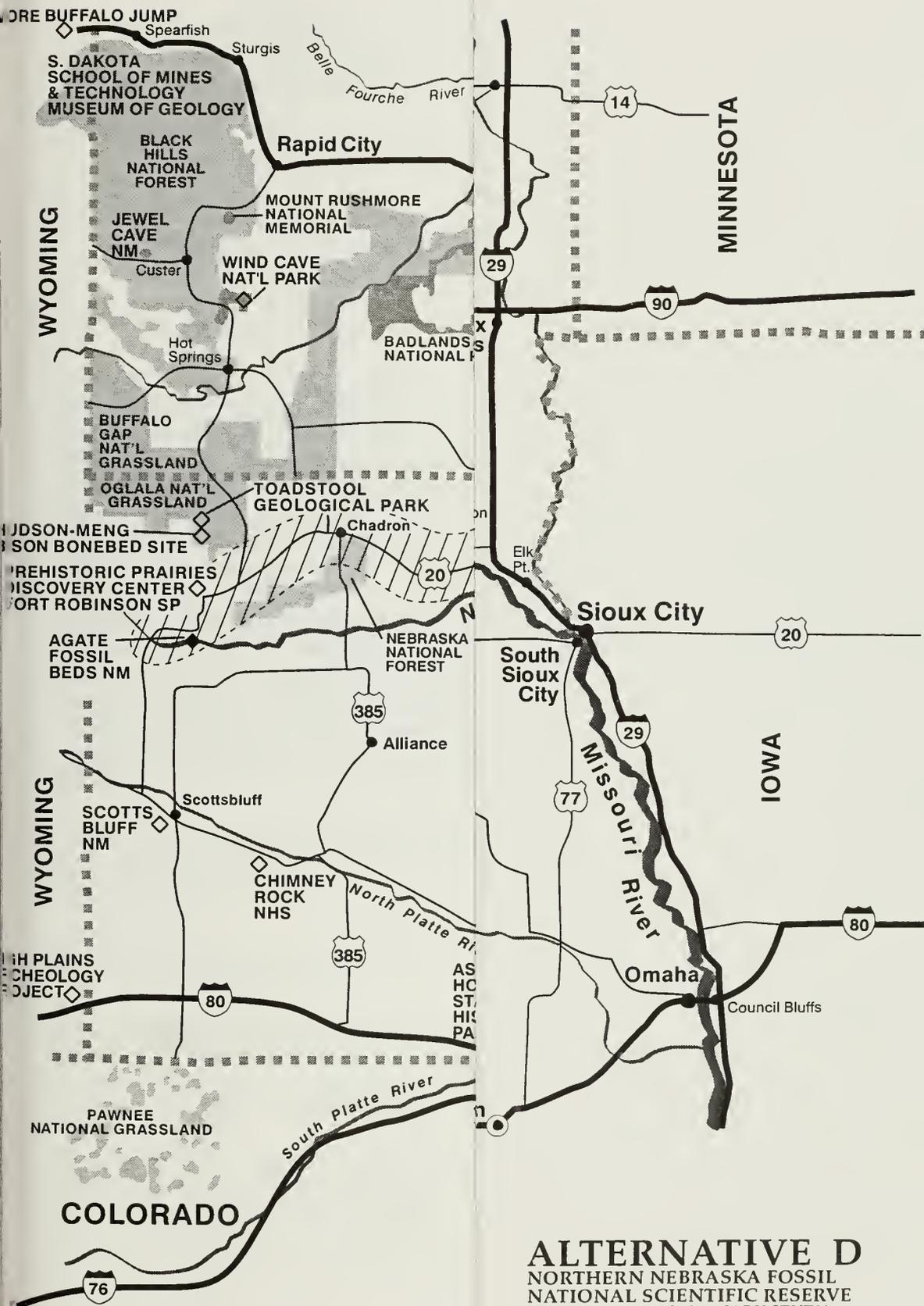
Resources and Facilities

A number of developed fossil sites and some potential development sites would be included in this proposal for interpretive development.

Developed interpretive sites would include:

Ashfall State Historical Park in Antelope County in northeastern Nebraska (a park with fossil interpretation)

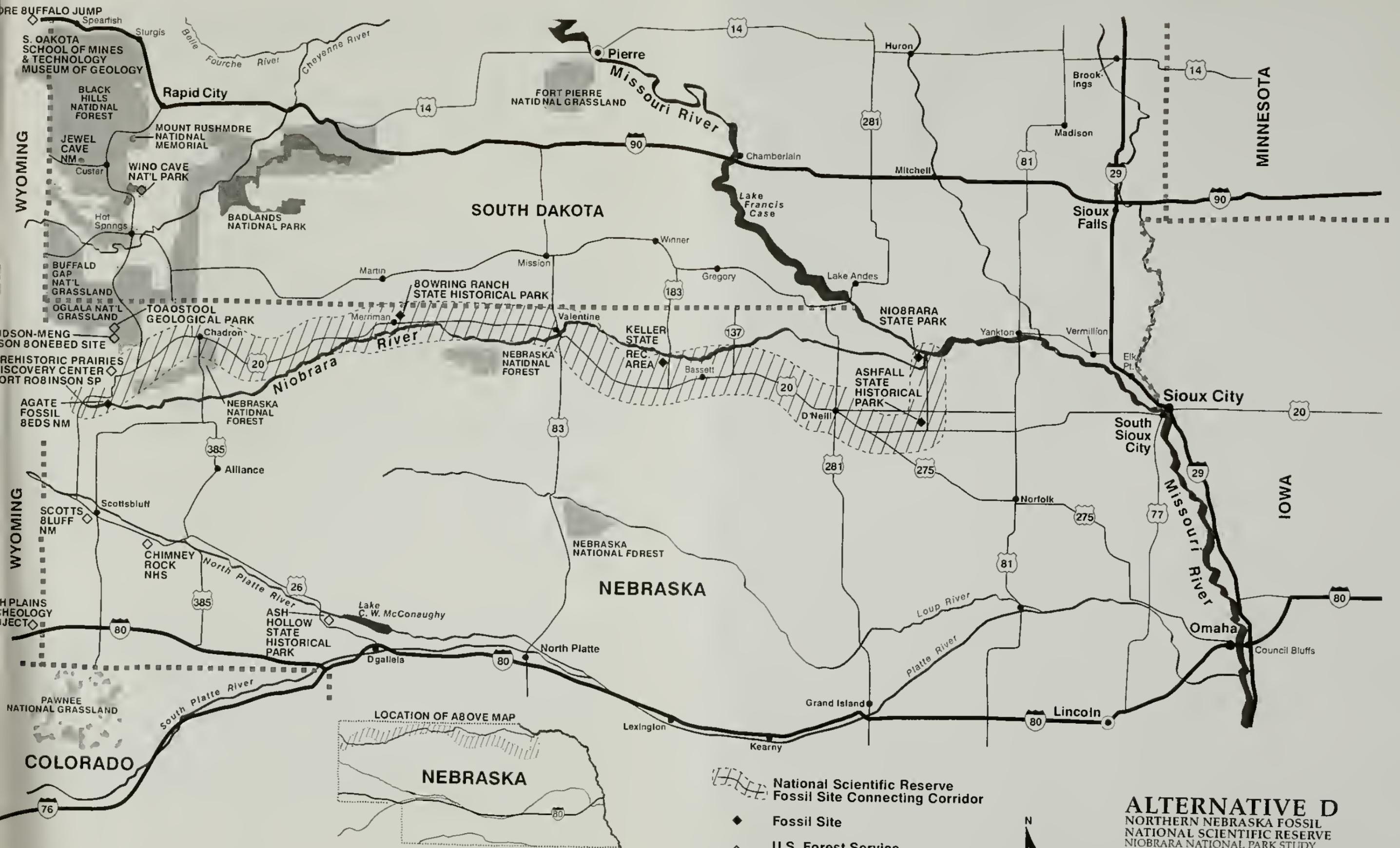
Trailside State Museum, Fort Robinson State Historical Park near Crawford, Nebraska (natural history museum with fossil interpretation)



ALTERNATIVE D

NORTHERN NEBRASKA FOSSIL
NATIONAL SCIENTIFIC RESERVE
NIOBRARA NATIONAL PARK STUDY

United States Department of the Interior • National Park Service
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ALTERNATIVE D
NORTHERN NEBRASKA FOSSIL
NATIONAL SCIENTIFIC RESERVE
NIOBARRA NATIONAL PARK STUDY

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-  National Scientific Reserve Fossil Site Connecting Corridor
-  Fossil Site
-  U.S. Forest Service Corridor Site

Prehistoric Prairies Discovery Center (under development by the U.S. Forest Service and the University of Nebraska State Museum to replace the Trailside Museum at Fort Robinson State Historical Park)

Toadstool Geological Park, Oglala National Grassland, U.S. Forest Service (a remote primitive site with a self-guided geological nature trail)

Hudson-Meng Bison Bonebed Site, Oglala National Grassland, U.S. Forest Service (a remote primitive site slated for interpretive development)

Agate Fossil Beds National Monument in Sioux County, northwestern Nebraska (a park with fossil interpretation under development)

Developed sites currently managed for other purposes that could supplement the above include Keller State Recreation Area, Bowring Ranch State Historical Park, and Niobrara State Park. Keller State Recreation Area offers a developed site on U.S. Highway 183 in Brown County with potential for presenting self-guided interpretive displays of the area's rich fossil history and scientific significance. Bowring Ranch State Historical Park off U.S. Highway 20 in Cherry County offers a historical site with potential for presenting interpretive displays of nearby fossil sites. Niobrara State Park is a popular site in Knox County in northeastern Nebraska that offers the potential to interpret regional geology and a local fossil find.

Additional undeveloped potential sites include a highway wayside interpretive exhibit southeast of Valentine along U.S. Highway 20 near the Niobrara River bridge in Cherry County. An important fossil quarry is nearby. A regional museum could be developed at this site or in Valentine or Ainsworth. Numerous specimens have been removed from adjacent areas during the past 120 years by scientific expeditions. A regional museum would provide opportunities to display specimens currently stored in the University of Nebraska State Museum.

A fossil quarry in Brown County has the greatest number of animal species found at any one site in the world (Voorhies and Corner 1993). The site has potential as a site for a shelter and interpretive display.

Ownership and Management

State and federal museums, parks, and road rights-of-way would provide the land for displays and interpretation for most of the above sites. No federal land acquisition is proposed. The Nature Conservancy owns one potential site. If the University of Nebraska State Museum were to develop the site for interpretation, an agreement would be needed.

The project would be managed by the University of Nebraska State Museum with the Nebraska Game and Parks Commission, Nebraska Department of Roads, U.S. Forest Service, and National Park Service as partners. It would be funded by the state with assistance from the National Park Service, as authorized by Congress.

Protection Strategies

Many fossil sites are on private lands in isolated areas. Landowners would continue to provide protection of remote fossil sites on their land. Two new UNSM-directed professional paleontologist positions would be needed. The paleontologists would work with landowners and agencies to monitor rapidly eroding fossil sites and collect newly exposed material. They would also act as liaisons with landowners, coordinate with state and federal parks and museums, and assist in developing an integrated interpretive program. Institutions could continue to accept donations of fossil specimens, provide long-term museum collection storage, perform scientific research, and produce public education programs for public sites. Landowners may be able to claim tax deductions for donations to these institutions.

Public Access and Use

Only state or federal public sites would be made accessible for public use. New highway design and construction could provide for wayside turnouts adjacent to the highway. Owners of private land would control use and access on their lands.

Public Information and Interpretation

A regional interpretive program would be developed to tie together parks, displays, and museums. The program would explain northern Nebraska's nationally and internationally significant fossil sites and materials and their contribution to scientific understanding of past life forms and climate conditions. An auto tour route using highways in northern and western Nebraska would connect interpretive sites. Information brochures describing sites and the overall geological story could provide direction as well as interpretation. New interpretive displays would be placed at parks and at new or existing highway waysides. No privately owned sites would be described in public brochures.

Required Legislation

An act of Congress would be required for federal authorization and funding as a national scientific reserve. As such it would become an affiliated unit of the national park system, but without federal ownership. Federal funding would then be possible to aid the coordination and operation efforts. Overall management by the University of Nebraska State Museum or state and federal partnership would be addressed in authorizing legislation, perhaps through the establishment of a management commission.

ALTERNATIVE CONSIDERED BUT REJECTED

A heritage reserve was considered with the same boundary as the conservation district. Management goals would have been similar to the conservation district, but with federal funding and administration under the Niobrara National Scenic River. The alternative was rejected because it was too similar to the conservation district concept and federal funding was considered uncertain.

AFFECTED ENVIRONMENT

LOCATION AND ACCESS

The study area is located in north-central Nebraska in Brown, Cherry, and Keya Paha Counties. It consists of 138,000 acres and is roughly bounded on the north by Nebraska Highway 12, on the south by U.S. Highway 20, on the east by Plum Creek and Rock Creek north of the town of Ainsworth, and on the west by Fort Niobrara National Wildlife Refuge (see Congressionally Authorized Study Area, Region, and Alternative A maps).

The nearby county seat towns are Ainsworth, Valentine, and Springview. Also nearby are towns of Sparks, Norden, Johnstown, and Wood Lake. Access to the area is by highways 12 and 20 and by several unpaved county roads. County maintained gravel roads and bridges cross the Niobrara River in the study area and provide access to ranches and Smith Falls State Park.

The nearest airport with scheduled passenger service is in North Platte, which is 136 miles south of Valentine.

NATURAL ENVIRONMENT

Weather

Weather is continental; wide extremes are caused by movement of air masses from the far north or the Gulf of Mexico. Average annual precipitation is 22 inches. Winters are dry, windy, and cold with subzero lows. Snow covers the ground for an average of 36 days each winter. Summers are warm and moderately humid. Humid air from the south brings summer thunderstorms, and 80% of the annual moisture falls between April and September. Tornadoes and hailstorms sometimes occur in the area.

Air Quality

Air quality is generally good and meets all state and federal standards. The area is a class 2 air quality area under the Clean Air Act. No obvious point sources of pollution exist in the area. The nearest instrumented monitoring station is at Badlands National Park, South Dakota, about 175 miles to the northwest.

Topography

The study area lies on both sides of the Niobrara River in north-central Nebraska at the northern edge of the Nebraska Sandhills. Sandhills cover 19,000 square miles between the Platte and the Niobrara Rivers. This is the largest dune field in the western hemisphere, although it is covered by grassland and is not well known outside Nebraska. Sandhills terrain is undulating with the dune tops 10 to 100 feet higher than low areas. Moisture is sufficient

to support a grassland covering that stabilizes the dunes. Elevations in the study area range from 2,000 feet above sea level to 2,800 feet.

Flowing east along the north edge of the Nebraska Sandhills, the Niobrara River has cut a valley 200 to 300 feet deep and between 0.5 and 2 miles wide. Valley side slopes are generally steeper on the south bank with some cliffs and waterfalls. The valley floor widens as the river flows east through the study area. Terraces and moderate slopes are more common on the north bank, but the upper north valley has rough slopes cut by steep-sided tributary streams, reaching up to a broad plain that defines the north edge of the valley.

Water Resources

The Niobrara River flows east approximately 300 miles from its headwaters in Wyoming and across almost the entire breadth of Nebraska to where it enters the Missouri River. In the western portion of the study area, the river is confined in a narrow valley along the edge of the Sandhills. In the eastern portion of the study area, the valley widens and the river spreads out and splits into multiple meandering channels. The river is laden with sand and silt and flows swiftly at about 6 to 8 miles per hour. There is widespread rapid downcutting by tributary streams in the general region. While this appears to be a recently occurring pattern, there is no consensus on causes.

The river depends on ground water discharge more than rain runoff or snow melt. The Sandhills store water and the annual precipitation exceeds transpiration loss through vegetation. This area is the northern extent of the Ogallala or High Plains aquifer. The entrenchment of the Niobrara River along the Sandhills drains local groundwater into cold springs, which flow constantly and have an important influence on vegetation. Waterfalls form where spring creeks pour over harder rock layers. Smith Falls is the most notable and is the highest waterfall in Nebraska.

Ground water flow provides for a fairly stable river flow throughout the year, averaging about 1,000 cubic feet per second; however, floods of 10,000 cubic feet per second have been recorded at stream gauging stations.

Floods along the Niobrara mainstem mostly result from winter ice jams, which have backed water and ice onto roads and fields. Spring and summer floods are rare on the mainstem river. Tributary creeks, especially on the north bank, have a history of flash flooding with localized mud deposits during summer thunderstorms.

Wetlands along the river are generally limited to the immediate bank vegetation on the upper single channel portion and to occasional backwater channels in the lower, more braided portion of the river. Occasional flat floodplain areas near the river grade support meadow vegetation dependent on a high water table. To the south of the study area and in headwaters of tributaries of the Niobrara River, ponds or wet meadows are frequently found in valleys between dunes. Some meadows used for hay cutting have been ditched in the past to improve grass production or equipment access.

Ground and surface water quality is generally good. The Nebraska Department of Environmental Quality rated the Niobrara as a class A water for which the water quality will

be maintained and protected. Surface water quality was monitored by the Nebraska Department of Environmental Quality at a station on the Niobrara River south of Sparks. Monthly samples indicated fecal coliform bacterial counts generally within standards for water contact recreation, but occasional samples exceed health standard levels. Ranchers depend on free access to the river or tributaries for cattle watering. There are no major livestock feedlots in the study area. Local ranching is not dependent on chemical fertilizers or pesticides, and there is little rowcrop agriculture in the area. The city of Valentine recently completed a new wastewater treatment plant, which has improved the water quality of discharge into a Niobrara River tributary.

Soils

The upland dunes south of the Niobrara River are mostly sand with little or no organic content and low fertility. Bottomland in pockets of low, moist areas between dunes has a high organic content. Along the Niobrara River bottom, soils range from sandy to silty loam. North of the river, soils have more clay content.

Approximately 3,400 acres in the study area meet the Natural Resources Conservation Service definition of prime farmland. All prime farmland soil types in the study area must be irrigated in order to meet the prime farmland criteria. The area also contains at least another 4,000 acres that are not irrigated but meet the soil type requirements for prime farmland. Most of the prime farmland is located north of the river in Cherry and Keya Paha Counties.

Geology

The oldest exposed rock formation in the study area is the Pierre shale. It is of the Cretaceous age, dates back 65 to 100 million years, and was deposited in a shallow inland sea. It crops out along the lower slopes of the Niobrara River valley east of the study area. Steep slopes of Pierre shale tend to develop slumps or landslides along the banks of the river.

Above the Pierre shale lie several formations of the Tertiary period of Oligocene to recent age. These are mostly stream-deposited sand and siltstone formations up to 37 million years old.

Fossils

The study area is exceptionally rich in documented fossil sites. It contains one of the best fossil records of the Tertiary Age of any area in North America. Fossil mammal deposits from the Miocene and Pliocene ages figured prominently in scientific studies of mammal evolution in North America (Voorhies and Corner 1993). Fossils are typically found where ancient streams concentrated deposits in slow meanders. The area has been studied for over 100 years, but large portions of the study area still have not been systematically searched.

Among the earliest discoveries in the study area were new species of Miocene large mammals. New species of amphibians and reptiles were also discovered. Discoveries of rodent skeletons in the 1930s aided the study of the evolution of pocket mice.

In an inventory of fossil sites by the University of Nebraska State Museum, 164 sites were cataloged; 15 sites rated as internationally significant and 37 sites are nationally significant (Voorhies and Corner 1993). An estimated 76% of the sites are intact. Eighty species of extinct vertebrates were first identified in the project area, including 56 mammals, 13 reptiles, eight amphibians, two birds, and one fish.

One objective measure of significance is the collection of previously unknown species at a site. Such sites are known as type localities. The study area contains 26 such type localities. Another measure of significance is the diversity of species recovered from a site. At least 146 vertebrate species were found at one site. One site has produced 89 mammal species (more than any other single fossil quarry in the world), another site produced 84 microvertebrate species, and a late Pleistocene site along the Niobrara River yielded the only known remains of several species of northern forest mammals in the Great Plains.

In a report prepared for the Norden dam and reservoir site at the east end of the study area, 20 fossil sites were recommended for inclusion in the National Register of Historic Places (Falk et al. 1985). The assessment noted that the sites in the study area were expected to contribute to an understanding of the prehistory of vertebrate life in the Great Plains (Voorhies and Conner 1993).

Other sites outside of the study area that protect and display fossils are Ashfall State Historical Park in northeast Nebraska, Trailside State Museum at Fort Robinson State Historical Park in northwest Nebraska, Hudson-Meng Bison Bonebed Site in northwest Nebraska, Agate Fossil Beds National Monument in western Nebraska, and Badlands National Park in western South Dakota.

Mineral Resources

Mining activities have been limited to small sand and gravel pits scattered along the Niobrara River, which are used for county road maintenance. No commercial pit operations are underway in the study area. No hardrock mining or coal mining has occurred. Three oil or gas test wells were drilled and capped in the study area north of the Niobrara River and one south of the river; no production resulted.

Vegetation

The Niobrara River valley in the study area has unusually diverse plant associations. Plants of eastern, western, and northern forest ecosystems and several Great Plains prairie ecosystems meet and intermingle. Approximately 160 plant species are at the edge of their natural range in the study area. The study of plants at their extremes allows scientists to determine their absolute climatic and other requirements.

Several factors cause this unusual environmental diversity. The river valley provides an unbroken east/west riparian corridor connecting the dryer western landscape with the more humid midwestern prairie and eastern forest. Plants typical of each condition intermingle in the transition zone. The river valley also provides a variety of habitats due to differing slope, moisture, and soil conditions. Also, as climate conditions changed over geologic time, plants

typical of past colder conditions survived due to the cool, wet, north-facing spring-fed canyons. Ponderosa pine forest is at its eastern limit in the study area. Eastern deciduous forest has extended up the valley and includes bur oak, American elm, black walnut, green ash, basswood, and hackberry. Broadleaf shrubs and vines include sumac, snowberry, gooseberry, wild plum, woodbine, and grape. Northern (or boreal) forest is found on cool, moist, north-facing slopes and includes paper birch, quaking and bigtooth aspen, ferns, and several species of club-mosses. These plants apparently have survived as relicts of the Pleistocene ice age, when they were more widely distributed on the Great Plains.

Several types of grassland plant communities are also found. The area provides a botanical transition between the tallgrass prairie of more humid areas to the east and the dryer shortgrass prairie to the west. Sandhills mixed-grass prairie covers the upland country south of the river, and the plants have adapted to the sandy conditions. Typical plants are sand bluestem grass, little bluestem, needle and thread grass, junegrass, prairie sandreed, sand dropseed, blue and hairy gramma grass, switch grass, Louisiana sage, sand milkweed, lead plant, blazing star, purple sand clover, spiderwort, yucca, poison ivy, sumac, and wild rose.

Along moist river bottoms, small remnant patches of tallgrass prairie grow. Species include big bluestem, switchgrass, Indian grass, sedges, heath aster, annual sunflower, and prairie coneflower.

North of the river on clayey soils, a mixed-grass prairie is found without the specialized sandhills plants. Species include western wheatgrass, little bluestem, needle and thread grass, blue and hairy gramma, purple lovegrass, prairie junegrass, common yarrow, evening primrose, prickly poppy, prickly pear, and buckbrush. Smooth brome and Kentucky bluegrass have been introduced.

The sandbar-marsh plant community is found along the broader, eastern portion of the Niobrara River. The marshes have a wide variety of aquatic plants and animals.

Changes to vegetation after homesteading settlement include introduction of nonnative grasses (more north of the river) and nonnative weeds. River valley forested area and density has generally increased, apparently due to fire suppression and reduction of early timber cutting (Steuter 1990). Eastern red cedar is spreading into grassland and developing dense thickets due to suppression of prairie fires.

During the past 25 years some grasslands were plowed and converted to center pivot irrigated cropland. This process has reversed due to changes of economic conditions, and some croplands have been replanted to grassland under various conservation programs. A variety of conservation programs provide technical assistance and cost-share funding for restoring impacted sites on private land.

Noxious Plants

Leafy spurge and spotted knapweed are scattered about the study area, mostly along the Niobrara River bottoms, and are designated as noxious weeds by the state of Nebraska. County weed boards and landowners practice controls. Purple loosestrife is not designated

as a noxious weed but is spreading up the Niobrara River and threatening wildlife habitat. Wild marijuana is widely established along roadsides and in disturbed areas.

Wildlife

Larger mammals found in the area include pronghorn antelope, mule deer, white-tailed deer, coyote, red fox, bobcat, skunk, mink, muskrat, raccoon, opossum, badger, porcupine, and beaver. Smaller mammals include several types of bats, shrews, moles, rabbits, gophers, voles, mice, squirrels, black-tailed prairie dog, Ord kangaroo rat, and eastern woodrat. Otters have been reintroduced.

Over 200 species of birds can be found in the study area. Turkey, grouse, quail, dove, pheasant, and several species of ducks and geese are hunted. The east-west river corridor provides habitat for eastern and western bird species, and some species have hybridized.

There are 29 species of amphibians and reptiles present, including rattlesnakes. Fish include channel catfish, a variety of native minnows, and trout in tributary creeks.

Notable invertebrates include 56 species of butterflies and several species of ticks.

Endangered Species

Several plant and animal species are found in the study area that are listed for federal protection under the Endangered Species Act.

Endangered plants found near the area are the endangered blowout penstemon (*Penstemon haydenii*) and the western prairie fringed orchid (*Platanthera praeclara*). Blowout penstemon grow on bare sand dunes in the Nebraska Sandhills, but natural populations have not been recorded in the study area. Fringed orchids grow in wet meadows between sandhills, and one population of fringed orchid has been recorded in the study area in Cherry County.

Endangered animal species include the bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), whooping crane (*Grus americana*), interior least tern (*Sterna antillarum athalassos*), piping plover (*Charadrius melodus*), and the American burying beetle (*Nicrophorus americanus*).

Bald eagles migrate through the area during spring and fall and also spend the winter months along the Niobrara River between late October and early April. No nests have been documented. Winter population numbers depend on the severity of the winter; more birds can be found along the Niobrara River during mild winters. An average of 50 birds have been counted in mid-January aerial surveys of the area from west of Valentine to the confluence of the Niobrara and Missouri Rivers, which is a considerably longer segment of river than the study area. Winter populations vary a great deal and no definite population trend is evident. Eagle carcasses from the study area were recovered over a period of several years and analyzed by the U.S. Fish and Wildlife Service. Lab analysis indicated death by shooting, power line electrocution, or pesticides. Fewer carcasses have been found in recent years.

Peregrine falcons migrate through Nebraska in late April and early May and in September and October. Falcons prey on waterfowl and are found around marshes, cropland, and grassland. Few sightings have been documented, and little is known about numbers of birds or population trends in this area.

Whooping cranes migrate through the area during spring and fall. Five sightings have been recorded over the past 40 years on the Niobrara River between Valentine and the Meadville bridge. Shallow, sparsely vegetated segments of streams are used for roosting, and wetlands and cropland are used for feeding. No nesting has been documented.

The interior least tern and piping plover nest during the summer on barren exposed sandbars in the river east of the Meadville bridge outside the study area. There is no documented nesting in the study area, probably due to different river conditions and lack of sandbars.

Black-footed ferrets are not found in the area. It is unknown if they lived in the area historically, but prairie dog colonies, which are thought to be necessary to the survival of black-footed ferrets, exist on adjacent land.

The American burying beetle has been found nearby on the Valentine National Wildlife Refuge and on habitat similar to parts of the study area, but no occurrences have been documented in the study area.

Candidate species are those plant and animal species whose survival is in question. They are being studied for inclusion under the Endangered Species Act. The following candidate species may be in the study area.

Regal fritillary butterfly	<i>Speyeria idalia</i>
Belfragi's chlorochroan bug	<i>Chlorochroa belfragi</i>
Plains top minnow	<i>Fundulus sciadicus</i>
Topeka shiner	<i>Notropis tristis</i>
Ferruginous hawk	<i>Buteo regalis</i>
Loggerhead shrike	<i>Lanius ludovicianus</i>
Black tern	<i>Chlidonias niger</i>
Swift fox	<i>Vulpes velox</i>
Plains spotted skunk	<i>Spilogale putorius interrupta</i>
Blanding's turtle	<i>Emydoidea blandingii</i>
Yellow mud turtle (northern population)	<i>Kinosternon flavescens flavescens</i>

See appendix C for a listing of Nebraska sensitive species.

Scenic Resources

The Niobrara River valley has a variety of features that are uncommon in the Great Plains, such as waterfalls and cliffs. Gravel public roads run parallel to portions of the river, with several bridge crossings. Open fields and woodlands, valley slopes, occasional roadside viewpoints at valley rims, old steel truss bridges, and occasional old farm buildings provide scenic interest. The most popular portion of the study area is along the Niobrara River east

of Fort Niobrara National Wildlife Refuge to Norden Bridge. Several roads on the north valley rim provide distant vistas to the south of the river valley and the Sandhills.

CULTURAL RESOURCES

The information in this section was excerpted from an historical overview prepared by the National Park Service (Franklin et al. 1994) and an archeological overview (Wolley Vawser and Osborn 1994) prepared by the National Park Service.

The area geography, a transition zone between the moist east and dry west, has determined the type of human use from prehistoric times to the present. Every occupant of this region has had to come to terms with the harsh environment of the Great Plains.

Prehistoric Use

Prehistoric use consisted of nomadic hunting and gathering camps in the Niobrara River valley and in the surrounding Sandhills. Archeological remains date back through several cultures to the Paleo-Indian period of 7,500–11,500 years before present and include scattered flint chips and projectile points, other stone tools, animal bone fragments, charcoal, and pieces of pottery. No archeological sites are listed on the national register; however, several concentrations of sites were recommended as eligible for listing. The majority of recorded sites have not been evaluated. Resources apparently were not as suitable for villages and farms as were those found farther east at the confluence of the Niobrara and Missouri Rivers, where village sites are more common.

The Niobrara River valley was shared by the people who became the Dakota Sioux, Ponca, and Pawnee. In addition to hunting and gathering, the valley offered the only source of stone in the region suitable for the manufacture of tools.

Exploration

Early explorations discouraged development of the region. James Mackay explored the Nebraska Sandhills region between 1795 and 1796. Mackay's map of the area was published in 1802. A notation on the map reads, "Grand Desert of moving sand where are neither wood, nor soil, nor stone, nor water, nor animals, except some little tortoises of various colors."

In 1857 Lieutenant Warren of the Army Corps of Topographic Engineers traveled near the Niobrara in search of a railroad route west. The rugged side canyons of the Niobrara River made wagon travel difficult, and he paralleled the valley at some distance. He recommended the Platte River railroad route to Fort Laramie even though it was 40 miles longer than the Niobrara route. The rugged terrain of the Niobrara River valley proved to be an obstacle to transportation and settlement, instead of providing a transportation corridor as on other rivers.

After the Civil War, mining camps in the Black Hills and in Montana created markets for freight. Several wagon trails crossed the Niobrara River east of the study area. Other historic routes, including Old Gordon Road, paralleled the Niobrara River through the study area.

Military History

In 1851, by terms of the Fort Laramie treaty, the Sandhills and the Niobrara River flowing through them were divided between the Sioux and the Pawnee. In 1857 the Pawnee tribe ceded 14 million acres, including the central Niobrara River area, to the federal government for \$200,000 in annuities.

After Custer's defeat at Little Big Horn, the government pursued a policy to confine Indians to the less settled areas of the northern plains. In 1877 and 1878 the Sioux tribes were restricted to the Great Sioux reservation in Dakota Territory (now western South Dakota). Fort Niobrara was established in 1879 for monitoring Sioux activity. Cattle were trailed from Texas for distribution to the Sioux, and the fort served as a market for locally furnished goods and services. No major battles or events occurred, although soldiers were dispatched to several skirmishes. African American troops of the 9th Cavalry were stationed here. The fort was closed in 1906. One Army-constructed warehouse remains and the fort site is listed on the National Register of Historic Places. In 1912 the original military reservation was reduced by 54 sections to 19,131 acres and converted to the Fort Niobrara National Wildlife Refuge.

Settlement

Cattlemen herded Texas cattle into the Sandhills in the late 1870s and 1880s. They had good conditions and the Army provided a market. By 1883 the Fremont, Elkhorn, and Missouri Valley Railroad reached Fort Niobrara, and the town of Valentine developed. In addition to providing law enforcement and protection, the fort was a ready market for local farm produce and labor, which encouraged homesteading. Several saw and flour mills were in operation along the Niobrara River by the mid-1880s.

Homesteading and farming grew during the 1880s but were challenged by drought and recession in the 1890s. The 1904 Kinkaid Act increased the homestead tracts from 160 to 640 acres in the western two-thirds of the state. This encouraged more settlement, although the Sandhills area was nearly the last of the Great Plains to be homesteaded. Population in the area increased and peaked during World War I with elevated commodity prices but steadily declined through the 1990 census. Family-owned ranches are still the predominant type of property, and many ranches in the area have been owned by the same family for as many as six generations.

The agricultural demographics of the area have followed a pattern of continual consolidation of ranch and farm properties, greater efficiency, and fewer and fewer people required to work the land. At the turn of the century most cattle operations had 640 acres; by 1935 most had 1,280 acres. In 1992, average ranch/farm size in Brown County was 1,957 acres, in Cherry County 5,751 acres, and in Keya Paha County 2,165 acres (University of Nebraska Bureau of Business Research 1995).

Properties in the study area vary widely in size from the 54,000 acre Niobrara Valley Preserve, family owned ranches of several thousand acres, small truck farms, and small residential lots of several acres or less. Ownership south of the river in the study area is dominated by the Niobrara Valley Preserve, while north of the river are numerous individually owned tracts of several hundred acres or less plus a few large ranches. A recent trend is people moving back into the rural area, generally north of the river, for retirement or pursuit of self-employed life styles on a year around basis.

A scattering of older houses and barns remain in the study area and are considered regionally significant. Many of the older structures are unused and unmaintained, and in various stages of deterioration. Several prefabricated iron truss bridges over the Niobrara River still serve the county road systems. Berry (1920–1921), Brewer (1899), and Allen (Bell)(1903) bridges were listed separately in 1992 on the National Register of Historic Places, under criterion C for significance at the state level, and as part of a multiple property listing "Highway Bridges of Nebraska, 1879–1942." These bridges are examples of rigid or pin connected Pratt through truss design. Berry bridge is used for through traffic and Brewer and Allen for local ranch traffic. Borman bridge (1916) is west of the study area and was included with the above bridges in the 1992 listing. Other bridges of similar age and design in the study area, but not listed on the National Register are the Norden, County Line (privately owned), and Meadville bridges.

Cultural Landscapes

The study area reflects the historic human activities of ranching and farming superimposed on a natural landscape. Although there are few roads, buildings, and fences, the landscape is affected by current land management. Broad patterns of current use are visible in the large ranches with few buildings. The open ranchland is punctuated by windmills and barbed wire fences. There is little rowcrop farming in the study area. The current ranching and conservation uses maintain a landscape with the same general appearance as the earliest ranches and the natural grassland, although woodlands in canyons and along the Niobrara River are more extensive than in presettlement times due to suppression of prairie fires.

SOCIOECONOMIC ENVIRONMENT

Visitor Use

Visitor use in the study area is concentrated along the Niobrara River. Adjacent to the study area, Fort Niobrara National Wildlife Refuge provides opportunities for wildlife viewing and hiking on self-guided nature trails and in a wilderness area. Visitor center displays feature fort history and Great Plains wildlife. Reported attendance for 1994 was 130,000.

The refuge also provides the major launch site for canoe and tube float trips on the Niobrara River, and a popular 5-mile portion of river is in the refuge. In 1993 approximately 24,000 individual floater days began on the refuge and continued downstream (USFWS 1994). Figures for 1994 river use were not available. An additional number began trips below the refuge, using about 25 miles of river, which increased the total to an estimated 30,000 river floaters. An additional estimated 5,000 nonriver users visit the valley below the refuge, which

brings the overall total for the study area to 35,000 visitors per year. Eleven commercial outfitters rent canoes and inner tubes. Access facilities are managed by the Fort Niobrara National Wildlife Refuge, Smith Falls State Park, the Middle Niobrara Natural Resource District, and commercial operators on private land. A survey of river floaters indicated that people generally had a high quality experience (Lime and Thompson 1994).

Camping is available at Smith Falls State Park and at commercial sites along the river in the study area.

The Niobrara Valley Preserve accommodates school groups for nature study and ecological research.

Hunting for deer, turkey, and quail is popular, and fishing for catfish in the Niobrara River and trout in larger tributary creeks is common. Fur trapping occurs for recreation, commercial value, and nuisance animal control.

Chambers of commerce in Valentine and Ainsworth operate information centers and provide information on recreational activities and accommodations by telephone and mail.

Attendance is shown below at other park or refuge sites in Nebraska. Attendance appears to be more related to the degree of facility development and publicity, than distance from population centers.

TABLE 2: VISITOR ATTENDANCE AT SIMILAR SITES

Location	Visitors in 1994
Smith Falls State Park	31,800
Ft. Niobrara National Wildlife Refuge	130,000
Valentine National Wildlife Refuge	15,600
Niobrara State Park	123,400
Fort Robinson State Park	342,000
Chadron State Park	202,000
Scotts Bluff National Monument	141,800
Homestead National Monument	46,500
Agate Fossil Beds National Monument	28,000
Trailside Museum	24,900
Ashfall Fossil Beds	31,000

Demographics

The 1990 census recorded 11,000 people in the three counties of the study area. This was down 12% from 1980. The population seems to have stabilized since 1990. Valentine (2,800) and Ainsworth (1,900) are the principal cities. The rural population density is very sparse due to large ranch sizes. Residents are 98% white, 1% Native American, and less than 1% black and hispanic. Median age ranges from 36 years in Cherry County to 39 years in Keya Paha

County. The high school graduation rate averages 76%. Seventy-seven percent of the people in the area were born in Nebraska (University of Nebraska at Lincoln Bureau of Business Research 1993).

Employment

Farming and ranching provided the most employment, with 33% of jobs in the area. The percentage of nonagricultural jobs increased by 10% between 1975 and 1990. Between 1975 and 1990 total employment decreased 3% in the region, versus a 25% increase statewide. Keya Paha County recorded the greatest decrease, of 11%. Government employment declined 3% between 1975 and 1990, but government transfer payments (retirement, medical, welfare payments) increased 57% on a per capita basis adjusted for inflation (University of Nebraska at Lincoln Bureau of Business Research 1993).

Table 3 summarizes average ranch earnings and generation of sales, tax revenue, and nonagricultural jobs per ranch for the three counties (University of Nebraska Bureau of Business Research 1995).

TABLE 3: AVERAGE RANCH/FARM ECONOMIC FIGURES

	Brown County	Cherry County	Keya Paha County
Ranch/farm earnings	\$13,800	\$23,100	\$12,800
Nonranch/farm earnings	\$4,300	\$6,800	\$2,100
Nonranch/farm jobs	<1	<1	<1
Total retail sales	\$7,700	\$14,200	\$3,600
Retail sales tax revenue	\$356	\$682	\$166
Ranch/farm property tax revenue	\$4,000	\$6,300	\$3,700
Average ranch/farm acres	1,957	5,751	2,165

Landownership

Federal Land. Adjacent to and west of the study area is the 19,122-acre Fort Niobrara National Wildlife Refuge, which is managed by the U.S. Fish and Wildlife Service. The 71,500-acre Valentine National Wildlife Refuge, under the same management, is 30 miles south and is outside of the study area.

The U.S. Fish and Wildlife Service manages a 221-acre conservation easement in Keya Paha County in the study area. This includes a wetland and a grassland buffer area where grazing is permitted.

The Forest Service manages the 116,000-acre McKelvie division of the Nebraska National Forest 40 miles to the southwest. This acreage includes a portion of Merritt Reservoir State Recreation Area.

The Bureau of Land Management (BLM) manages several small scattered parcels totaling 280 acres in the study area. All but 40 acres are leased to and managed by The Nature Conservancy, Niobrara Valley Preserve. The remaining 40-acre parcel is leased to a rancher and is used for grazing.

State Land. The study area includes 12,791 acres of state-owned school trust land that is leased for grazing. A 2-acre tract at Brewer Bridge is managed for recreation by the Middle Niobrara Natural Resource District. The Nebraska Game and Parks Commission administers the 244-acre Smith Falls State Park through a 30-year lease on 200 acres and ownership of the balance.

Nebraska completed a statewide recreational trail plan in 1994 (Nebraska Energy Office 1994). This identified different potential trails and byways in the planning area. Recreational uses would use roads or the railroad for bike / hike trails, scenic byways for car and bike traffic, and scenic highways. These concepts could be implemented independently or in conjunction with any of the alternatives in this plan.

The railbanked right-of-way (U.S. Highway 20) has been purchased by a nonprofit foundation and is being developed for recreation as the "Cowboy Trail." It will be maintained by the Nebraska Game and Parks Commission.

Private Land. Most of the land in the study area (95%) is privately owned by individuals, family ranches, and The Nature Conservancy.

The Niobrara Valley Preserve, owned by The Nature Conservancy, includes 54,000 acres in Cherry, Brown, and Keya Paha Counties. Management goals are resource preservation, education, and ecological research.

Land values in the study area in 1993 ranged from \$75 to \$185 per acre for pastureland. Pastureland north of the Niobrara River (hard soils) ranges from \$125 to \$185 per acre, and south of the river (sandy soils) from \$75 to \$160 per acre. Recreational land with access, water, fences, and electrical power was valued at \$160 to \$500 per acre. Riverfront land values were between \$500 and \$1,000 per acre for small tracts. Dry farmland ranges from \$250 to \$450 per acre, and soil quality is an important factor. Irrigated farmland ranged from \$700 to \$1,000 per acre. Subirrigated meadowland, which has a high natural water table and grows hay well, ranged from \$300 to \$500 per acre.

Land Use

Ranching and farming have been the primary land uses and cornerstones of the economy in the study area since its settlement in the 1880s. During the 1970s and early 1980s a few center pivot irrigation systems were installed in the study area and native prairie was plowed for crops. The latest trend is to take marginal cropland out of production and replant grass.

Irrigated cropland exists in a few flat areas near the river and on flat uplands away from the river. Upland prairie is used for pasture, and hay is cut on moist meadows between sandhills farther to the south. Ranching land stewardship has improved over the long term, with

improved grazing methods, stable ownership, and cumulative experience gained over several generations of family ownership.

Besides livestock grazing, land uses include truck farming, aquaculture, private hunting, wood cutting, and homesites. Along the north bank of the Niobrara River and west of Norden bridge are seven privately owned properties that provide camping or canoe outfitting services for river visitors. This portion of the river is also within the Niobrara National Scenic River.

LAND PROTECTION STATUS

Public Land

The public land in the study area is managed under the long-term protection goals and resource stewardship mandates of the managing agencies and is subject to state and federal environmental protection laws. This land is predominantly undeveloped and will probably remain undeveloped due to agency goals and mandates.

Private Nonprofit Land

The Niobrara Valley Preserve has a long-term primary management goal to protect natural resources. Under Nature Conservancy ownership the land is protected from subdivision, real estate sales, and resource degradation.

ENVIRONMENTAL CONSEQUENCES

This section provides an analysis of impacts of the four alternatives. Because the alternatives are general concepts of ownership and management without definite development plans, impacts of alternatives can only be analyzed in general terms and relative to each other. If Congress were to pass legislation to authorize one or a combination of alternatives, a more specific plan would be prepared with appropriate environmental analysis.

Brown County has developed zoning ordinances, and zoning is being developed for Cherry and Keya Paha Counties, and a general management plan is being developed for the Niobrara National Scenic River. For the purpose of this analysis, it is assumed that under alternatives A, B, and D, zoning and scenic river management would work to conserve the river valley landscape without significant fee title purchase of land by the federal government, and public facility development would be minimal. For alternative C it is assumed that significant fee title purchase of land by the federal government would occur, and that facilities would be constructed to accommodate public use.

IMPACTS ON AIR QUALITY

Alternatives A, B, and D

There would be no effect on air quality.

Alternative C

Impact on air quality would consist of minor increased dust along gravel roads, due to increased traffic.

IMPACTS ON WATER QUALITY

Alternative A

State and federal conservation projects in the area would generally continue to promote agricultural conservation practices. General benefits on water quality and stream systems include reduction of downcutting erosion and resulting siltation.

Alternative B

Beneficial effects of conservation programs in alternative A would be increased with an increase in information sharing and number of project sites.

Alternative C

Conservation projects similar to those in alternatives A and B could be performed on park lands by NPS staff. No effects on water quality would be expected from park public use and development of adequate facilities.

Alternative D

No effect would be expected on water quality.

IMPACTS ON WETLANDS

Alternative A

Wetland conservation projects in the area would continue with improvements on wetlands. Benefits from wetland restoration generally include increased water retention, moderation of runoff, improved natural filtration, increased streambank vegetation and stabilization, and increased wildlife habitat.

Alternative B

Wetland conservation efforts would generally be increased, with increased benefits of alternative A.

Alternative C

Conservation projects similar to those in alternatives A and B could be performed on park lands by NPS staff. No adverse impacts on wetlands would be expected. Federal construction of facilities in alternative C would be required to comply with Executive Order 11990 ("Protection of Wetlands") and NPS directives, which generally require delineating wetlands and avoiding impacts.

Alternative D

No effect would be expected on wetlands.

IMPACTS ON FLOODPLAINS

Alternative A

There are no identified impacts on floodplains due to current uses. Development could occur but would be discouraged by zoning regulations, scenic river management, local knowledge of the unpredictability of ice jam flooding, and insurance restrictions.

Alternative B

The effects of alternative A would occur, and floodplain development would be monitored as part of the watershed conservation.

Alternative C

No effects on floodplains are expected. Federal construction of park facilities would be required to comply with Executive Order 11988 ("Floodplain Management") and NPS directives, which require mapping of floodplains and only allow construction of facilities that are water dependent, such as boat launch areas and adjacent parking.

Alternative D

There would be no effect on floodplains.

IMPACTS ON FOSSILS

All Alternatives

Fossil resources could be impacted by hobby or commercial collection on private land. Such collection is legal but adversely impacts scientific study. University studies would continue on a limited basis subject to available funding and landowner agreement.

Alternative A

The impacts would be the same as "All Alternatives" above. Scenic river management would encourage preservation by landowners along the river area but would not reach out to adjacent areas.

Alternative B

Conservation district management could promote fossil site protection methods and incentives on private lands over the large area of the conservation district.

Alternative C

Private fossil collecting would be prohibited on federally purchased or managed land. Funding for scientific collection would be possible.

Alternative D

Fossil preservation and scientific collection would be increased. With increased staff the University of Nebraska State Museum would be able to expand liaison efforts with owners of land with fossil beds and increase monitoring of naturally eroding sites. The sites are scattered across northern Nebraska, and this alternative would affect a much wider geographic area than the other alternatives.

IMPACTS ON SOIL

Alternative A

Conservation programs would continue to provide assistance in reducing erosion impacts from downcutting streams.

Alternative B

Increased conservation programs would further reduce erosion impacts.

Alternative C

Construction of park facilities such as buildings and parking areas would result in localized disturbance of topsoil at construction sites, unless previously undisturbed sites were used.

Alternative D

Facility construction could result in soil disturbance, however previously disturbed sites could be used. Excavation of fossils would result in localized disturbance of surface soil at collection sites.

IMPACTS ON VEGETATION

Alternative A

Conservation programs would continue promoting vegetation restoration and general improvement of localized impacted sites.

Some hardwood and pine is being commercially harvested on private land. Consultation services from a state forester have been used. Well planned cutting is not expected to impact forest health or diversity and could improve stand health. Suppression of prairie fire over the last century has resulted in red cedar encroachment of grassland and pine forest, and generally denser forest stands along the Niobrara River and close tributaries than in presettlement times.

Grazing practices are generally well managed and reflect good long-term stewardship. Some localized sites have been impacted. Some nonnative grasses have become established; however, this does not impact current uses. Noxious weed control is managed by landowners and county weed boards.

Alternative B

Effects would be similar to those in alternative A but increased conservation program funding available to private landowners would assist vegetation restoration of locally impacted areas.

Alternative C

Prescribed burning by the National Park Service could result in more natural vegetation conditions, including controlling cedar and opening forest. Weed control is mandated by NPS policy but would be difficult and expensive over a large area. Grassland plant associations could change if grazing ungulates are not present.

Construction of facilities such as park buildings and parking lots would result in localized permanent loss of vegetation at construction sites unless previously disturbed sites were used. Impacts from unplanned trails due to increased visitor use would be monitored and controlled.

Alternative D

Short-term, localized impacts on vegetation would result from fossil excavation. Facility construction could result in long-term localized vegetation loss at sites.

IMPACTS ON WILDLIFE

Alternatives A, B, and D

There would be no effect on wildlife management and no expected change to current wildlife population levels. Wildlife is fairly abundant and populations appear to be stable. Hunting, trapping, and fishing would continue under state regulations. Wildlife populations would probably remain at current levels.

Alternative C

Sport fishing would continue in park waters under state regulations. Federally owned park land would be closed to hunting and trapping. Bison (if present) would be contained by fences, and the herd would be managed to maintain a stable population. Without hunting, populations of deer, turkey, and beaver would probably increase, and deer and beaver populations could reach nuisance levels unless control actions were used. Without hunting, park wildlife would become less wary of humans and more easily viewed by the public.

In the event that the national preserve option were chosen, hunting and trapping would continue on federal land. Effects on wildlife population would be similar to alternatives A, B, and D.

IMPACTS ON ENDANGERED SPECIES

Alternative A

No new effects would be expected from continuing current trends.

Alternative B

Actions of alternative B would have no effect on federally listed threatened or endangered species. No actions are proposed that would affect habitat or individuals.

Alternative C

Actions of alternative C would have no effect on federally listed threatened or endangered species. No actions are proposed that would affect habitat or individuals. Any NPS development and management programs would be required to comply with the Endangered Species Act, including consultation and project review by the U.S. Fish and Wildlife Service.

Under alternative C with increased NPS staff, there would be increased monitoring of habitat and seasonal populations, with potential for better detection of human-caused mortality or other impacts in the park area.

Alternative D

There would be no effect on endangered species.

IMPACTS ON SCENIC RESOURCES

Alternative A

The area most susceptible to development lies within the Niobrara National Scenic River and is being addressed in the river general management plan and by county zoning. The rest of the study area is not as prone to development due to scenic considerations and distance to water.

Impacts of development could be aggravated by poorly designed and located structures. However, impacts could be mitigated by good planning, protective zoning ordinances with density and location controls, and careful consideration of design, materials, color, and construction.

Alternative B

Conservation district management would be natural resource oriented and would have no affect on scenic values.

Alternative C

Park facility development would be guided by extensive planning to avoid impacts on scenic resources. Establishment of a park would protect natural scenic values through acquiring interests in land.

Alternative D

There would be no effect on scenic resources from developments built in developed areas or on highway rights-of-way.

IMPACTS ON THE CULTURAL LANDSCAPE

Alternatives A, B, and D

Cultural landscapes are dynamic and change over time. The rural cultural landscape along the Niobrara River valley could change over time due to residential and commercial development. County zoning and scenic river management should mitigate the impact of new development. The study area away from the river would probably change little in the foreseeable future due a stable agricultural economy and little development pressure.

Alternative C

The cultural landscape and uses of the land would change with landownership changing from private to federal. Privately owned ranches, some of which people reside on and some of which are vacant pasture lands, would be replaced by a park. Ranch culture would be replaced by public ownership, management, and use. This would be a significant change from past cultural trends and use.

IMPACTS ON HISTORIC STRUCTURES

Alternatives A and B

Under continuing trends many older buildings will deteriorate over time, with eventual loss of old buildings from the turn of the century. County-owned bridges would be maintained as conditions merit, and priorities would be influenced by structural requirements and funding.

Alternative C

Federal funding could assist county bridge maintenance, possibly slowing deterioration and forestalling replacement. There might be potential for stabilization of selected old buildings, or rehabilitation and adaptive use, however this is usually more expensive than constructing new public buildings.

Alternative D

There would be no effect on historic structures.

IMPACTS ON ARCHEOLOGICAL SITES

Alternatives A and B

Archeological resources could be impacted by hobby collection on private land. Such collection is legal but impacts scientific study. University studies would continue on a limited basis subject to available funding and landowner agreement.

Alternative C

Collection of artifacts would be prohibited on land purchased by the federal government. Site surveys would be completed (with scientific recovery if needed) before new ground was disturbed for facility development.

Alternative D

Site surveys and recovery would be completed as described under alternative C.

IMPACTS ON RECREATIONAL OPPORTUNITY

Alternatives A, B, and D

Outdoor recreational activities such as canoeing and tubing on the river, camping, nature study, sightseeing, and hiking would continue and could increase. Hunting, fishing, and trapping would also continue unchanged. Most recreational use in the study area is river oriented, and will be addressed by the scenic river plan.

Alternative C

Added recreational opportunities for hiking, sightseeing, and nature study would be possible on federally purchased land. Hunting and trapping would not be permitted on federally owned or managed land unless authorized by Congress (as in the national preserve option). Fishing under state rules would continue on park land.

IMPACTS ON EDUCATION AND INTERPRETATION

Alternatives A and B

Programs of natural science education and interpretation would continue on a limited scale. Visitors would continue to have limited opportunities for learning about local natural features and their significance. Scenic river planning will address interpretation in the riverway.

Alternative C

Opportunities would be increased for educational programs and for public interpretation of natural and cultural features in the area. Facilities and staff would be readily available to the general public.

Alternative D

Interpretation of fossils would be expanded due to increased funding for facility development and educational media (exhibits, brochures, etc.) in many sites in northern Nebraska. Information linking geographically separate sites across northern Nebraska would improve understanding of the geological sequence and fossil significance and would encourage people to visit more than one site.

IMPACTS ON LANDOWNERSHIP

Alternative A

There would be no effect beyond possible river access sites purchased for scenic river management.

Alternative B

Conservation easements could be purchased from willing sellers by the Middle Niobrara Natural Resource District and the owners ability to change land use would be restricted.

Alternative C

Alternative C could lead to federal purchase of private ranchland to prevent real estate development. Property values adjacent to parks usually increase, which would provide economic incentive for conversion of large ranches to small tracts.

Alternative D

There would be no effect on landownership.

IMPACTS ON THE LOCAL ECONOMY

General factors that could directly affect the local economy include increased visitor numbers and spending, park staff size and payroll spending, reduction of ranch income and population, increased or decreased county services cost, increased or decreased county tax base, cost share assistance to counties, and cost share assistance to landowners for conservation projects.

Public spending for facility construction would have only a short-term effect on the local economy, and benefits would depend on where contractors were based and where they obtained materials and labor.

Projected Visitor Numbers and Spending

Estimates were made for current recreational use and spending and for low and high projected use and spending for different alternatives. Spending figures were developed by the University of Nebraska Bureau of Business Research staff (UNL 1995). Use and spending figures are summarized below.

Estimates are based on 1993 recreational use figures at Fort Niobrara National Wildlife Refuge and Smith Falls State Park, and Nebraska Department of Economic Development figures for Cherry County. Figures for 1994 were not available when estimates were made. Spending estimates were based on state of Nebraska data for average daily spending for activities such as boating, picnicking, and camping. All figures are in 1995 dollars.

Recreational use numbers for alternatives A and B would mostly be river oriented. Recreational use for alternative C would depend on facility construction, services offered, and publicity. The numbers shown are for the first year after facility construction and staffing are complete. It is assumed that river recreation use numbers for alternative C would remain at the levels of alternatives A and B. All alternatives would be greatly influenced by private sector marketing.

Alternatives A and B. Visitor use in the study area is concentrated along the Niobrara River valley and includes river floaters plus other visitors (13% at Smith Falls State Park). Estimated annual attendance for 1993 was approximately 35,000 visitors for the study area (including Smith Falls State Park but excluding Fort Niobrara National Wildlife Refuge). Local direct

sales from recreation is estimated at \$918,800. Money recirculates in the local economy, so spending is multiplied (by 1.3 for water users and 1.4 for nonwater recreationists, whose money stays longer in the local economy) to estimate the effect of total direct and indirect sales in the local economy. Estimated recreational spending then translates to \$1,197,700.

Projected use and spending for alternatives A and B in 10 years is expected to be bracketed between current levels and as much as a 25% increase (43,800 visitor days, with \$1,148,400 direct sales, and \$1,497,100 direct and indirect sales).

Alternative C. The river valley recreation component would be same as A, with an estimated equal number of visitors to the upland resources. Total annual attendance one year after facilities were completed is estimated between 70,000 and 87,500 visitors. Annual visitor spending in direct sales is estimated at between \$1,185,900 and \$1,482,400. Direct and indirect sales in the local economy would be from \$1,571,700 to \$1,964,600.

Alternative D. No visitor attendance estimates were made for alternative D. It would affect a different geographic area with separate sites spread across northern Nebraska. Attendance in 1994 at Ashfall Fossil Beds State Historical Park was 31,000 visitors and attendance at Agate Fossil Beds National Monument totaled 28,000. This alternative could generate comparable attendance to a new regional museum and increase visitor traffic at various sites.

Park Staff Payroll and Other Expenditures

NPS staff positions would create new jobs in the area and inject new personal income into the three-county local economy (see appendix E). The amount of annual salary spent locally would vary with the individual employee, but housing, food, fuels, and other necessities would be acquired locally. Park supplies include materials, transportation, and equipment purchases. An unknown percentage would be purchased locally.

Alternatives A and B. No new expenditures would be made beyond scenic river management.

Alternative C. Payroll and benefits would total about \$1,125,000 and \$371,000 for supplies.

Alternative D. Payroll with benefits would total about \$124,000 (staff could be based outside the local study area) and \$41,000 for supplies.

Ranch Population and Income

Alternatives A and B. No land beyond the scope of the scenic river would be acquired by the federal government, and there would be no effect on ranch income (with the exception of conservation program assistance, which is sometimes shown as income) or populations.

Alternative C. Analysis of impact from lost ranch income is complicated by a wide variation of profit (spendable income) per ranch. See table 3 for average ranch figures per county. Some ranchers live on the property and spend money locally. In other cases, land is used as pasture, with the owner living and spending elsewhere.

Local ranch income and population would be reduced as land was purchased by the federal government. Money gained from land sales might be reinvested locally, or could leave the area. Reduced ranch spending would reduce retail sales locally and wherever such spending took place. Effects on ranching would be proportional to the amount of acreage purchased by the government, which is unknown at this time. Reduction of local expenditures by ranchers would be offset to some extent by new spending by visitors and park employees. The result would be a shift from ranch to tourism economy, rather than necessarily a net loss in population and local spending.

Alternative D. There would be no effect on ranch populations and income.

County Expenses

Alternatives A and B. Increasing visitor use could result in increased law enforcement and emergency services workloads and increased cost to counties for road and bridge maintenance. Scenic river planning will address these issues. Dispersed residential and recreational or commercial development would likely increase demand on county services.

Alternative C. Increased visitor traffic on county roads would result in increased road maintenance cost and more demand for law enforcement and other emergency services. Alternative C would include park staff to maintain roads inside the park boundary and respond to emergencies.

Alternative D. There would be an undetermined but probably minor effect on county services expenses depending on location of new facilities and increased traffic.

County Revenue

Alternatives A and B. Residential and recreational or commercial development, with changes from ranch valuation, would increase the county tax base.

Alternative C. Land purchased by the federal government would be removed from the county tax base. See table 3 above for average tax payments per ranch in each county. The Payments In Lieu of Taxes Act, as amended, allows for federal payments to county governments for lands affected as appropriated by Congress. If the congressional appropriation is less than 100%, payment is prorated on the percentage appropriated. At this time no estimates of acreage per county has been made for alternative C.

During the first five years after purchase, the authorized federal payment in lieu of taxes is \$.75 per acre plus 1% of the fair market value at time of purchase, not to exceed annual tax payments at time of purchase. After five years authorized payment is reduced to a flat rate of \$.75 per acre.

It would appear that during the 5-year period federal payment in lieu of taxes would approximately equal previous county tax revenue on grassland if the program is fully funded. After five years counties could lose from \$.75 per acre for grassland to about \$5.00 per acre for hay meadows.

Under alternative C land tax revenue loss could be partially offset by increased tourist business development, leading to more local spending and commercial development. Increases in property tax revenues from commercial establishments are impossible to estimate at this time, however would be expected to increase more under alternative C than for alternatives A and B. Brown and Cherry counties collect lodging taxes, which would increase with tourism. Sales and motor fuel tax receipts collected by the counties are submitted to the state and then reapportioned to counties, and would be difficult to estimate.

Alternative D. There would be no expected impact on county property tax revenue. Tourism could have similar effects on property and lodging tax receipts as alternative C.

Conservation Program Cost Share

Alternative A. There would be no effect.

Alternative B. Cost share funding could be increased an estimated \$32,000 per year for conservation work on private land to meet estimates of unfunded projects. This would be spent (presumably in the local economy) for materials, equipment, and labor.

Alternatives C and D. There would be no effect.

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APPENDIX A: NIOBRARA SCENIC RIVER DESIGNATION ACT OF 1991

ST. 254

PUBLIC LAW 102-50—MAY 24, 1991

Public Law 102-50
102d Congress

An Act

May 24, 1991
[S. 248]

To amend the Wild and Scenic Rivers Act to designate certain segments of the Niobrara River in Nebraska and a segment of the Missouri River in Nebraska and South Dakota as components of the wild and scenic rivers system, and for other purposes.

Niobrara Scenic

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Designation
of 1991.
al.
es.
SEC 1271

SECTION 1. SHORT TITLE.

This Act may be cited as the "Niobrara Scenic River Designation Act of 1991".

SEC. 2. DESIGNATION OF THE RIVER.

Section 3(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1274(a)) is amended by adding at the end thereof the following:

"() NIOBRARA, NEBRASKA.—(A) The 40-mile segment from Borman Bridge southeast of Valentine downstream to its confluence with Chimney Creek and the 30-mile segment from the river's confluence with Rock Creek downstream to the State Highway 137 bridge, both segments to be classified as scenic and administered by the Secretary of the Interior. That portion of the 40-mile segment designated by this subparagraph located within the Fort Niobrara National Wildlife Refuge shall continue to be managed by the Secretary through the Director of the United States Fish and Wildlife Service.

"(B) The 25-mile segment from the western boundary of Knox County to its confluence with the Missouri River, including that segment of the Verdigre Creek from the north municipal boundary of Verdigre, Nebraska, to its confluence with the Niobrara, to be administered by the Secretary of the Interior as a recreational river.

"After consultation with State and local governments and the interested public, the Secretary shall take such action as is required under subsection (b) of this section.

"() MISSOURI RIVER, NEBRASKA AND SOUTH DAKOTA.—The 39-mile segment from the headwaters of Lewis and Clark Lake to the Ft. Randall Dam, to be administered by the Secretary of the Interior as a recreational river."

SEC. 3. STUDY OF 6-MILE SEGMENT.

(a) STUDY.—Section 5(a) of the Wild and Scenic Rivers Act (16 U.S.C. 1276(a)) is amended by adding the following at the end:

"() NIOBRARA, NEBRASKA.—The 6-mile segment of the river from its confluence with Chimney Creek to its confluence with Rock Creek."

SEC 1274

(b) WATER RESOURCES PROJECT.—If, within 5 years after the date of enactment of this Act, funds are not authorized and appropriated for the construction of a water resources project on the 6-mile segment of the Niobrara River from its confluence with Chimney Creek to its confluence with Rock Creek, at the expiration of such 5-

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(c) **TERMS.**—Members shall be appointed to the Commission for a term of 3 years. A member may serve after the expiration of his term until his successor has taken office.

(d) **CHAIRPERSON; VACANCIES.**—The Secretary shall designate 1 of the members of the Commission, who is a permanent resident of Brown, Cherry, Keya Paha, or Rock Counties, to serve as Chairperson. Vacancies on the Commission shall be filled in the same manner in which the original appointment was made. Members of the Commission shall serve without compensation, but the Secretary is authorized to pay expenses reasonably incurred by the Commission in carrying out its responsibilities under this Act on vouchers signed by the Chairperson.

(e) **TERMINATION.**—The Commission shall cease to exist 10 years from the date of enactment of this Act.

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SEC. 6. MISSOURI RIVER PROVISIONS.

(a) **ADMINISTRATION.**—The administration of the Missouri River segment designated in section 2 of this Act shall be in consultation with a recreational river advisory group to be established by the Secretary. Such group shall include in its membership representatives of the affected States and political subdivisions thereof, affected Federal agencies, organized private groups, and such individuals as the Secretary deems desirable.

(b) **BRIDGES.**—The designation of the Missouri River segment by the amendment made by section 2 of this Act shall not place any additional requirements on the placement of bridges other than those contained in section 303 of title 49, United States Code.

(c) **EROSION CONTROL.**—Within the Missouri River segment designated by the amendment made by section 2 of this Act, the Secretary shall permit the use of erosion control techniques, including the use of rocks from the area for streambank stabilization purposes, subject to such conditions as the Secretary may prescribe, in consultation with the advisory group described in subsection (a) of this section, to protect the resource values for which such river segment was designated.

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SEC. 7. NATIONAL RECREATION AREA STUDY.

(a) **IN GENERAL.**—The Secretary of the Interior, acting through the Director of the National Park Service, shall undertake and complete a study, within 18 months after the date of enactment of this section, regarding the feasibility and suitability of the designation of lands in Knox County and Boyd County, Nebraska, generally adjacent to the recreational river segments designated by the amendments made by section 2 of this Act and adjacent to the Lewis and Clark Reservoir, as a national recreation area. The Secretary may provide grants and technical assistance to the State of Nebraska, the Santee Sioux Indian Tribal Council, and the political subdivisions having jurisdiction over lands in these 2 counties to assist the Secretary in carrying out such study. The study under this section shall be prepared in consultation with the Santee Sioux Tribe, affected political subdivisions, and relevant State agencies. The study shall include as a minimum each of the following:

- (1) A comprehensive evaluation of the public recreational opportunities and the flood plain management options which are available with respect to the river and creek corridors involved.

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year period the 6-mile segment shall be designated as a component of the National Wild and Scenic Rivers System by operation of law, to be administered by the Secretary of the Interior in accordance with sections 4 and 5 of this Act and the applicable provisions of the Wild and Scenic Rivers Act (16 U.S.C. 1271-1287). The Secretary of the Interior shall publish notification to that effect in the Federal Register.

Federal Register, publication.

SEC. 4. LIMITATIONS ON CERTAIN ACQUISITION.

16 USC 1274 note.

(a) LIMITATIONS.—In the case of the 40-mile and 30-mile segments of the Niobrara River described in the amendment to the Wild and Scenic Rivers Act made by section 2 of this Act, the Secretary of the Interior shall not, without the consent of the owner, acquire for purposes of such segment land or interests in land in more than 5 percent of the area within the boundaries of such segments, and the Secretary shall not acquire, without the consent of the owner, fee ownership of more than 2 percent of such area. The limitations on land acquisition contained in this subsection shall be in addition to, and not in lieu of, the limitations on acquisition contained in section 6 of the Wild and Scenic Rivers Act.

(b) FINDING; EXCEPTION.—The 5 percent limitation and the 2 percent limitation contained in subsection (a) of this section shall not apply if the Secretary of the Interior finds, after notice and opportunity for public comment, that State or local governments are not, through statute, regulation, ordinance, or otherwise, adequately protecting the values for which the segment concerned is designated as a component of the national wild and scenic rivers system.

SEC. 5. NIOBRARA SCENIC RIVER ADVISORY COMMISSION.

16 USC 1274 note.

(a) ESTABLISHMENT.—There is hereby established the Niobrara Scenic River Advisory Commission (hereinafter in this Act referred to as the "Commission"). The Commission shall advise the Secretary of the Interior (hereinafter referred to as the "Secretary") on matters pertaining to the development of a management plan, and the management and operation of the 40-mile and 30-mile segments of the Niobrara River designated by section 2 of this Act which lie outside the boundary of the Fort Niobrara National Wildlife Refuge and that segment of the Niobrara River from its confluence with Chimney Creek to its confluence with Rock Creek.

(b) MEMBERSHIP.—The Commission shall consist of 11 members appointed by the Secretary—

(1) 3 of whom shall be owners of farm or ranch property within the upper portion of the designated river corridor between the Borman Bridge and the Meadville;

(2) 3 of whom shall be owners of farm or ranch property within the lower portion of the designated river corridor between the Meadville Bridge and the bridge on Highway 137;

(3) 1 of whom shall be a canoe outfitter who operates within the river corridors;

(4) 1 of whom shall be chosen from a list submitted by the Governor of Nebraska;

(5) 2 of whom shall be representatives of the affected county governments or natural resources districts; and

(6) 1 of whom shall be a representative of a conservation organization who shall have knowledge and experience in river conservation.

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(2) An evaluation of the natural, historical, paleontological, and recreational resources and values of such corridors.

(3) Recommendations for possible land acquisition within the corridor which are deemed necessary for the purpose of resource protection, scenic protection and integrity, recreational activities, or management and administration of the corridor areas.

(4) Alternative cooperative management proposals for the administration and development of the corridor areas.

(5) An analysis of the number of visitors and types of public use within the corridor areas that can be accommodated in accordance with the full protection of its resources.

(6) An analysis of the facilities deemed necessary to accommodate and provide access for such recreational uses by visitors, including the location and estimated costs of such facilities.

(b) **SUBMISSION OF REPORT.**—The results of such study shall be transmitted to the Committee on Interior and Insular Affairs of the House of Representatives and the Committee on Energy and Natural Resources of the Senate.

SEC. 8. STUDY OF FEASIBILITY AND SUITABILITY OF ESTABLISHING NIOBRARA-BUFFALO PRAIRIE NATIONAL PARK.

16 USC 1a-5
note.

(a) **IN GENERAL.**—The Secretary of the Interior shall undertake and complete a study of the feasibility and suitability of establishing a national park in the State of Nebraska to be known as the Niobrara-Buffalo Prairie National Park within 18 months after the date of enactment of this Act.

(b) **AREA TO BE STUDIED.**—The areas studied under this section shall include the area generally depicted on the map entitled “Boundary Map, Proposed Niobrara-Buffalo Prairie National Park”, numbered NBP-80,000, and dated March 1990. The study area shall not include any lands within the boundaries of the Fort Niobrara National Wildlife Refuge.

(c) **RESOURCES.**—In conducting the study under this section, the Secretary shall conduct an assessment of the natural, cultural, historic, scenic, and recreational resources of such areas studied to determine whether they are of such significance as to merit inclusion in the National Park System.

(d) **STUDY REGARDING MANAGEMENT.**—In conducting the study under this section, the Secretary shall study the feasibility of managing the area by various methods, in consultation with appropriate Federal agencies, the Nature Conservancy, and the Nebraska Game and Parks Commission.

(e) **SUBMISSION OF REPORT.**—The results of the study shall be submitted to the Committee on Interior and Insular Affairs of the House of Representatives and the Committee on Energy and Natural Resources of the Senate.

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16 USC 1274
note.

SEC. 9. AUTHORIZATION OF APPROPRIATIONS.

There are hereby authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act.

Approved May 24, 1991.

APPENDIX B: NPS MANAGEMENT POLICIES, NEW AREA PLANNING REQUIREMENTS

2 Park System Planning

The National Park Service will conduct planning activities to evaluate possible additions to the national park system; to identify how park resources will be preserved and how parks will be used and developed to provide for public enjoyment; to facilitate coordination with other agencies and interests; and to involve the public in decision making about park resources, activities, and facilities. NPS plans will represent the Park Service's commitment to the public and to Congress of how parks will be managed.

NEW AREA STUDIES AND CRITERIA

The National Park Service identifies nationally significant natural, cultural, and recreational resources and assists in their preservation both inside and outside the national park system. The areas managed by the National Park Service are only one part of a national inventory of special and protected areas managed by innumerable federal, state, and local agencies and the private sector. Consequently, addition to the national park system is only one of many alternatives for ensuring the preservation of significant national resources for public enjoyment and benefit. A great variety of specially designated areas, including natural landmarks, historic landmarks, wild and scenic rivers, trails, wilderness areas, areas of critical environmental concern, biosphere reserves, and recreation areas, managed by the U.S. Forest Service, Fish and Wildlife Service, Bureau of Land Management, other federal, state, county, and local agencies, native American authorities, and the private sector, complete the broader national inventory.

As directed by Congress (16 USC 1a-5), the National Park Service will study and monitor areas to determine if they are nationally significant, and if so, whether they have potential for inclusion in the national park system. Planning for the future of the national park system is guided by a framework of themes representing all the aspects of America's natural and cultural heritage. Additions to the system recognize new understanding of natural resources, national recreational trends, and the continuing progression of history. New area studies may be initiated within the Service or may be conducted in response to requests from Congress, other federal, state, or local agencies, or the private sector. The Service will review all proposals and provide advice about planning, studies, or other appropriate actions. Where formal new area studies are appropriate, the Service will establish priorities and conduct studies as funds are available. Studies will include consultation with interested landowners, state and local governments, native American tribes and groups, and other federal agencies.

To be eligible for favorable consideration as a unit of the national park system, an area must (1) possess nationally significant natural, cultural, or recreational resources, (2) be a suitable and feasible addition to the system, and (3) require direct NPS management instead of alternative protection by other agencies or the private sector. These criteria are designed to ensure that the national park system includes only outstanding examples of the nation's natural, cultural, and

recreational resources. They also recognize that inclusion in the national park system is not the only option for preserving the nation's outstanding resources.

(See Public Participation in Planning 2.6, Special Designations 4.4, Resource Identification, Evaluation, and Registration 5.1)

Criteria for National Significance

A natural, cultural, or recreational resource will be considered nationally significant if it meets all of the following criteria:

It is an outstanding example of a particular type of resource.

It possesses exceptional value or quality in illustrating or interpreting the natural or cultural themes of our nation's heritage.

It offers superlative opportunities for recreation, public use, and enjoyment or for scientific study.

It retains a high degree of integrity as a true, accurate, and relatively unspoiled example of a resource.

Examples of natural resources that may be nationally significant include

an outstanding site that illustrates the characteristics of a landform or biotic area that is still widespread

a rare remnant natural landscape or biotic area of a type that was once widespread but is now vanishing due to human settlement and development

a landform or biotic area that has always been extremely uncommon in the region or nation

a site possessing exceptional diversity of ecological components (species, communities, habitats) or geologic features (landforms, observable manifestations of geologic processes)

a site containing biotic species or communities whose natural distribution at that location makes them unusual (a relatively large population at the limit of its range, or an isolated population)

a site harboring a concentrated population of a rare plant or animal species, particularly one officially recognized as threatened or endangered

a critical refuge necessary for the continued survival of a species

a site containing rare or unusually abundant fossil deposits

an area with outstanding scenic qualities, such as dramatic topographic features, unusual contrasts in landforms or vegetation, spectacular vistas, or other special landscape features

a site that is an invaluable ecological or geological benchmark due to an extensive and long-term record of research and scientific discovery

Nationally significant cultural resources include districts, sites, buildings, structures, or objects that possess exceptional value or quality in illustrating or interpreting our heritage and that possess a

high degree of integrity of location, design, setting, materials, workmanship, feeling, and association. Examples of cultural resources that may be nationally significant include those that

are associated with events that have made a significant contribution to and are identified with, or that outstandingly represent, the broad national patterns of United States history and from which an understanding and appreciation of those patterns may be gained

are associated importantly with the lives of persons nationally significant in the history of the United States

represent some great idea or ideal of the American people

embody the distinguishing characteristics of an architectural type specimen, exceptionally valuable for study of a period, style, or method of construction; or represent a significant, distinctive, and exceptional entity whose components may lack individual distinction

are composed of integral parts of the environment not sufficiently significant by reason of historical association or artistic merit to warrant individual recognition but collectively composing an entity of exceptional historical or artistic significance; or outstandingly commemorate or illustrate a way of life or culture

have yielded or may be likely to yield information of major scientific importance by revealing new cultures or by shedding light upon periods of occupation over large areas of the United States

Ordinarily, cemeteries, birthplaces, graves of historic figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, and properties that have achieved significance within the past 50 years are not considered appropriate for addition to the national park system unless they have transcendent importance, unless they possess inherent architectural or artistic significance, or unless no other site associated with that theme remains.

Examples of recreation resources that may be nationally significant include

a natural or cultural feature providing a special setting for a variety of recreational activities different from those available at the local or regional level

a spacious area located near a major population center with the potential to provide exceptional recreational opportunities and to serve visitors from around the nation rather than solely from the immediate vicinity

an area that protects a unique recreation resource that is scarce and disappearing in a multi-state region, such as an outstanding recreational river, a unique maritime environment or coastline, or a unique scenic area

a unique combination of natural, cultural, and recreational resources that collectively offer outstanding opportunities for public use and enjoyment even though each feature might not individually be considered nationally significant

Suitability and Feasibility

An area will be considered suitable for addition to the national park system if it represents a natural/cultural theme or type of recreational resource that is not already adequately represented in

the national park system, unless such an area is comparably protected and presented for public enjoyment by another land-managing entity. Adequacy of representation will be determined on a case-by-case basis by comparing the proposed addition to other units in the national park system, considering differences or similarities in the character, quality, quantity, or combination of resources and opportunities for public enjoyment.

To be feasible as a new unit of the national park system an area must be of sufficient size and appropriate configuration, considering natural systems and/or historic settings, to ensure long-term protection of resources and to accommodate public use, and it must have potential for efficient administration at a reasonable cost. Important feasibility factors include landownership, acquisition costs, access, threats to the resource, and staff or development requirements.

(See Hazardous Materials and Toxic Waste 9.6)

Management Alternatives

Studies of potential new park units will evaluate an appropriate range of management alternatives, which may include

- continued management by states, local governments, native American authorities, the private sector, or other federal agencies

- technical or financial assistance to others through established NPS programs or special projects

- management by others as a designated national natural landmark, national historic landmark, national wild and scenic river, national trail, biosphere reserve, state or local park, or other specially designated and protected area

- cooperative management involving joint efforts by the National Park Service and other entities

New additions to the national park system will not usually be recommended if other arrangements can provide adequate protection for the resource and opportunities for public enjoyment.

Authorization

Studies by the National Park Service provide information for consideration by Congress in deciding whether a new unit should be authorized or whether some other form of protection and management is most appropriate. NPS studies may include suggestions about what uses should be permitted, prohibited, or allowed subject to certain conditions in a potential new unit. Specific direction on these issues is often provided in the text of the act, the legislative history, or the designation when Congress establishes a new unit.

PARK PLANNING PROCESS AND PRODUCTS

Planning will be conducted as a dynamic, continuous process for making choices about how to accomplish the National Park Service's preservation and enjoyment mandates. This process will include the gathering and analysis of data, an assessment of existing conditions and future trends, the identification of issues that need to be addressed, an evaluation of alternative actions, and the selection of a preferred alternative. Formal planning projects will generally result in the preparation

of documents for use by NPS employees, the public, and the Congress. In addition, the planning process is an important problem-solving tool that will often be used in day-to-day operations and management. Specific guidance is provided in the *Planning Process Guideline* (NPS-2).

(See Planning and Proposal Formulation 5.4)

Statement for Management

Each park will prepare a statement for management, which will be evaluated by the superintendent and the regional director every two years and revised as necessary. This document will compile information about the park's purpose, the nature and significance of its resources, the existing uses of its lands and waters, its regional context and adjacent land considerations, the legislative and administrative requirements for its management, the influences on park resources and the experience of park visitors, and nonrecreational park use by native Americans and others. This information will be used to identify major issues and problems that need to be addressed, to determine needs for additional information, and to establish park management objectives, all of which will also be included in the statement for management.

The statement for management will assess existing conditions without identifying solutions. The management objectives established in the statement for management will describe the conditions that need to be achieved to realize the park's purpose consistent with NPS policy. The discussion of issues will describe the problems that need to be addressed.

(See Chapter 1: Introduction)

Outline of Planning Requirements

Upon completion of the statement for management, an analysis will be undertaken of the plans and tasks needed to address issues, gather information, and achieve objectives. The results of this analysis will be included in the outline of planning requirements, a programming document that will be reviewed annually by the superintendent and the regional director and updated as necessary. This document will contain a priority listing of the studies and surveys needed to produce an adequate information base for planning and compliance, and the plans and designs needed for the park. This listing will ensure a logical sequence of task programming and accomplishment.

(See Planning Priorities 2.6)

Information Base

Sufficient information will be available prior to initiating a plan. Each park will develop, gather, compile, store, analyze, and update information about natural and cultural resources and regional demographic, ethnographic, and socioeconomic data relevant to planning and management. These data will serve as an information base for formulating proposals, evaluating alternatives, and making decisions during planning. Acquisition of adequate information for planning and management decisions will be a prerequisite to the allocation of planning funds. Parks and regional offices will work together to ensure that information-gathering projects needed for plans scheduled to begin in two to five years are programmed and funded.

(See Science and Research 4.2, Inventory and Monitoring 4.4, Resource Identification, Evaluation, and Registration 5.1, Research 5.2, Ethnographic Research and Inventories 5.12)

Public Participation In Planning

Throughout the planning process, opportunities will be provided for the public at the national, regional, and local levels to voice their concerns about planning and management of parks. Certain consultations with specific parties and agencies are required by law, regulation, and NPS policies. In addition, positive actions will be taken to identify and involve the public as individuals and through public interest groups and organizations at the earliest possible stages in the planning process and before planning decisions have been made. Those involved will include federal agencies, state and local governments, regional planning commissions, native Americans, state historic preservation officers, state liaison officers, advisory organizations, concessioners, park users and their associations, owners and users of adjacent lands, and other interested parties. Opportunities for public participation may include public workshops and meetings, informal work sessions on particular issues, and public review and comment on draft documents.

(See Facility Planning and Design 9.1)

General Management Plan

Each park will have an approved general management plan (GMP) which will set forth a management concept for the park; establish a role for the unit within the context of regional trends and plans for conservation, recreation, transportation, economic development, and other regional issues; and identify strategies for resolving issues and achieving management objectives, usually within a period of 15 years. All other plans will be consistent with the direction established in this lead planning document. Until a GMP is completed and approved, the management objectives established by the statement for management will guide day-to-day operations. No new development or major rehabilitation will be undertaken without an approved GMP. The GMP components will be reviewed periodically and revised or amended as necessary to reflect new issues or changes in management objectives.

Planning Priorities. The Director and the regional directors will establish and periodically review a servicewide priority list of GMPs that need to be undertaken. Congressionally directed plans will be given a priority that enables their completion within the required time frame.

Planning Team. General management planning will be conducted by an interdisciplinary team of planning professionals and park managers. Superintendents will have the major responsibility of directing planning efforts in their parks and will actively participate in all aspects of plan preparation. The team will include specialists with expertise to address the park-specific planning concerns. Staff from the Denver Service Center, the regional office, the Harpers Ferry Center, other field offices, and the park may be part of the planning team. Staff from other affected government agencies and others possessing specialized knowledge of the park or special expertise may serve as advisors to the planning team.

Evaluation of Alternatives. As required by the National Environmental Policy Act (42 USC 4371 et seq.), during the planning process a range of alternatives will be formulated to evaluate distinct management approaches for dealing with the issues. All GMPs and their accompanying environmental documents will consider no-action and other reasonable alternatives. Innovative, practical, and cost-effective solutions to the issues will be contained in the alternatives.

The environmental assessment or environmental impact statement will describe the potential environmental and other impacts of the alternatives. Planners and managers will consider these potential impacts before deciding which actions to implement. Potential environmental effects, resource protection, visitor safety, visitor use and enjoyment of park resources, interests of park-associated communities and groups, and short- and long-term cost-effectiveness will be important

considerations in the selection of proposed actions. These considerations will be included in the environmental document accompanying the GMP so that decision makers and the public can clearly understand the issues and the rationale for decision making. If the actions proposed in the plan constitute a major federal action significantly affecting environmental quality, an environmental impact statement will be prepared. Specific guidance for analyzing environmental impacts and preparing environmental impact statements is provided in the *National Environmental Policy Act Guideline* (NPS-12).

Management Zoning. The general management plan will prescribe a system of management zoning for park lands and waters to designate where various strategies for management and use will best fulfill management objectives and achieve the purpose of the park. The delineation of management zones will be based on an evaluation of the congressionally established purposes of the park; the nature of the park's natural and cultural resources; all past, existing, and anticipated uses; and park management objectives. This prescriptive zoning will consider the capability of lands to support identified uses and will be used as a framework for specific planning and management decisions on use and development of the park. The management zoning system will recognize that different types of parks have different purposes and consequently should be managed differently. For example, recreation areas, preserves, riverways, and seashores are generally managed to provide for a wider range of public recreational uses than are parks or monuments.

Four primary management zones will be identified: natural, cultural, park development, and special use. Within this framework, subzones may be designated for any park where it is useful to indicate in greater detail how the land or water will be managed. Subzones will be used to focus management on specific types of protection, use, or development as necessary to achieve the park-to-park distinctions in management emphasis called for by Congress in enabling legislation. Subzones will also be used to distinguish the particular resource values and use potentials of various areas within parks. Numerous management subzones are defined in chapter 5 of the *Planning Process Guidellne*.

Zones and their basic management strategies are described below. Depending on the particular resources present in each zone, other management strategies may also apply.

Natural Zone: This zone will include lands and waters that will be managed to conserve natural resources and ecological processes and to provide for their use and enjoyment by the public in ways that do not adversely affect these resources and processes. Development in the natural zone will be limited to dispersed recreational and essential management facilities that have no adverse effect on scenic quality and natural processes and that are essential for management, use, and appreciation of natural resources. Examples of typical facilities include trails, signs and trailside information displays, walk-in primitive shelters, walk-in storage facilities, stream-gauging devices, weather stations, and small-boat docks. Types of natural subzones include outstanding natural area, natural environment, protected natural area, wilderness, research natural area, and special management.

Cultural Zone: This zone will include lands that will be managed for the preservation, protection, and interpretation of cultural resources and their settings and to provide for their use and enjoyment by the public. Cultural resources that are key to the purposes of the park will be included in this zone. Other cultural resources, including properties listed or eligible for listing in the National Register of Historic Places, along with resources not eligible for the register but worth preserving for interpretive or other management purposes, will be included in the zone that best reflects the primary management emphasis of their particular area of the park. Development in the cultural zone must be compatible with preservation and interpretation of cultural values. Consistent with policies for preservation and use of cultural resources, historic structures may be adaptively used for utilitarian or other purposes. Types of cultural subzones include preservation, adaptive use, and commemoration.

Park Development Zone: This zone will include lands that will be managed to provide and maintain facilities serving park managers and visitors. It will include areas where park development or intensive use may substantially alter the natural environment or the setting for culturally significant resources. Impacts associated with such development will be mitigated to the greatest extent possible. The development zone will encompass the facilities themselves and all associated lands directly modified as a result of their continuing management and use. Development zones will be restricted to the smallest area necessary to accommodate required development and use. New development zones will be established only after considering alternative sites (including locations outside the park and locations outside areas with significant natural and cultural resources) and alternative levels of use, facilities, and services. Types of park development subzones include administrative development, visitor support, and landscape management area.

Special Use Zone: This zone will include lands and waters that the National Park Service anticipates will continue to be used for activities not appropriate in other zones. Types of special use subzones include commercial, exploration/mining, grazing, forest utilization, and reservoir.

(See Basic Management Concepts 4:1, Rights-of-Way 8:11, Mineral Development 8:12, Agricultural Uses 8:14, Grazing 8:14; also see individual zones in the Index)

Scope of the GMP. Every general management plan will include interrelated proposals for resource protection and management, land protection, cooperation with associated local interests, interpretation, visitor use, native American activities, accessibility for disabled visitors, carrying capacities, and park operations, along with a general indication of location, size, capacity, and function of physical developments. A plan implementation schedule and cost estimates will be included. Other elements that may be added to GMPs include development concept plans, land protection plans, boundary studies, land suitability analyses, wilderness suitability reviews, and detailed strategies for access and circulation, resource management, mineral management, and interpretation. Such planning guidance may be incorporated into the general management plan or separated into individual studies or implementation plans.

(See Implementation Plans 2:9)

Boundary Studies

Congress has specifically directed the National Park Service to consider, as part of the planning process, what modifications of external boundaries might be necessary to carry out park purposes (16 USC 1a-7(b)(4)). The National Park Service will conduct studies of potential boundary adjustments and may recommend boundary revisions

- to include significant resources or opportunities for public enjoyment related to the purposes of the park

- to address operational and management issues such as access and boundary identification by topographic or other natural features or roads

- to protect park resources critical to fulfilling the park's purposes

Recommendations to expand park boundaries will be preceded by determinations that

- the added lands will be feasible to administer considering size, configuration, ownership, costs, and other factors

- other alternatives for management and resource protection are not adequate

Where a boundary adjustment appears to be appropriate, the National Park Service will recommend it to the Secretary of the Interior for legislative or administrative action. Congressional action is required for boundary adjustments; however, in some cases the Secretary may make minor boundary adjustments where authorized by existing law without additional congressional action.

Implementation Plans

Following approval of a GMP, the park's outline of planning requirements will be updated to guide plan implementation. The GMP is a comprehensive plan that will vary in detail with the size and complexity of a given park. In most instances, more detailed plans and studies will be prepared for subjects that are only generally addressed in the GMP. All implementation plans will be consistent with the GMP.

Examples of implementation plans include development concept plans, land protection plans, wilderness management plans, resource management plans, mineral management plans, concession management plans, backcountry management plans, interpretive prospectuses, special resource studies, collection management plans, historic structure reports, and exhibit plans. These plans will be prepared in accordance with guidelines developed by staff in the respective program areas.

(See Land Protection Plans 3:1, Planning for Natural Resource Management 4:2, Planning and Proposal Formulation 5:4, Wilderness Management Plan 6:4, Interpretive Plans and Documents 7:2, Facility Planning and Design 9:1, Concession Planning 10:1; see also listing under Plans in the Index)

PARK PLANNING IN A REGIONAL CONTEXT

Many park management and resource protection issues are not confined by park boundaries. Since park boundaries may not incorporate all of the natural resources, cultural sites, and scenic vistas that relate to park resources or the quality of the visitor experience, the activities on adjacent lands may significantly affect the success of park programs. Furthermore, the activities of the National Park Service may have effects outside the boundaries of the parks. Recognizing that parks are integral parts of larger regional environments, the National Park Service will work cooperatively with others to anticipate, avoid, and resolve potential conflicts, to protect park resources, and to address mutual interests in the quality of life for community residents, considering economic development as well as resource and environmental protection. Such regional cooperation will involve federal, state, and local agencies, native American authorities, neighboring landowners, and all other concerned parties.

Through planning, parks will be considered within the broader context of the surrounding region. Cooperative regional planning will be undertaken to integrate parks into their regional environments and to address adjacent land use issues that influence park resources. This will occur on an ongoing basis as well as during the development of general management plans and other plans. Information on the status of cooperative regional planning will be included in each park's updated statement for management. Joint agency planning is especially important when a park is adjoined by Indian reservations, other federal lands, state lands, or lands subject to state, regional, or local planning or regulation. Where appropriate, formal agreements will be pursued with landowners, land use planners, and managers of these lands. Early coordination on specific proposals and projects will occur to ensure that various points of view are considered in formulating proposals and that potential conflicts are identified and avoided or resolved if possible.

Superintendents will work with neighboring landowners on topics of mutual interest and will explore ways of providing technical assistance to neighboring landowners. The National Park Service will be sensitive to the influences and impacts that its management of park lands may have on adjacent landowners, and it will seek to enhance beneficial effects and to mitigate adverse

effects in whatever ways are consistent with its policies and management objectives. NPS participation in regional planning is not intended to prevent reasonable uses of the land and will be undertaken with attention to the rights of other landowners.

While the National Park Service does not propose to create buffer zones around parks, it will use all available authorities to protect park resources and values from potentially harmful activities. Superintendents will be aware of what uses are planned on adjacent lands. They will seek to encourage compatible adjacent land uses and to mitigate potential adverse effects on park values by actively participating in planning and regulatory processes of neighboring jurisdictions, other federal, state, and local agencies, and native American authorities.

(See Natural Resource Management 4:1, Biosphere Reserves 4:4, Cooperation with Others 4:5, General Policy 6:3, Interpretation and Native Americans 7:5, Management of Recreational Use 8:2, Emergency Preparedness and Emergency Operations 8:6, Location 9:1, Access and Circulation Systems 9:7; see also listing under Cooperation and Consultation in the Index)

**APPENDIX C: NEBRASKA NATURAL HERITAGE PROGRAM
NIOBRARA REGION SENSITIVE SPECIES**

PLANTS

SCIENTIFIC NAME	COMMON NAME
<i>Sagittaria longiloba</i>	
<i>Sagittaria rigida</i>	Sessile-fruited arrowhead
<i>Aralia nudicaulis</i>	Wild sarsaparilla
<i>Aralia racemosa</i>	American skikenard
<i>Athyrium filix-femina</i>	Subarctic lady-fern
<i>Dryopteris carthusiana</i>	
<i>Aster brachyactis</i>	Rayless alkali aster
<i>Aster junciformis</i>	
<i>Erigeron divergens</i>	Spreading fleabane
<i>Hieracium canadense</i>	Canada hawkweed
<i>Betula papyrifera</i>	Paper birch
<i>Coryphantha missouriensis</i>	Missouri corycactus
<i>Callitriche hermaphroditica</i>	
<i>Callitriche verna</i>	
<i>Triodanis perfoliata var biflora</i>	
<i>Lonicera dioica var glaucescens</i>	
<i>Arenaria lateriflora</i>	
<i>Silene menziesii</i>	
<i>Stellaria longifolia</i>	
<i>Atriplex nuttallii</i>	
<i>Helianthemum bicknellii</i>	
<i>Lechea stricta</i>	Upright pinweed
<i>Triadenum fraseri</i>	
<i>Juniperus horizontalis</i>	Creeping juniper
<i>Carex buxbaumii</i>	Brown bog sedge
<i>Carex diandra</i>	
<i>Carex granularis</i>	Sedge
<i>Var granularis</i>	
<i>Carex limosa</i>	Mud sedge
<i>Carex peckii</i>	
<i>Carex saximontana</i>	Rocky Mountain sedge
<i>Eleocharis puaciflora</i>	Fewflower spikerush
<i>Eriophorum gracile</i>	Slender cotton-grass
<i>Eriophorum polystachyon</i>	
<i>Scirpus hallii</i>	Hall bulrush
<i>Pterospora andromedea</i>	Giant pinedrops
<i>Pyrola elliptica</i>	Eliptical-leaf wintergreen
<i>Pyrola virens</i>	Green pyrola
<i>Amoripha nana</i>	Fragrant indigobush
<i>Astragalus agrestis</i>	
<i>Petalostemon compactum</i>	Compact prairie-clover
<i>Psoralea hypogaea</i>	Little breadroot scurf-pea

<i>Vicia cracca</i>	
<i>Ribes ozyacanthoides</i>	
<i>Vallisneria americana</i>	
<i>Juncus canadensis</i>	Canada rush
<i>Juncus scirpoides</i>	Scirpus-like rush
<i>Dracocephalum parviflorum</i>	American dragonhead
<i>Physostegia pariflora</i>	Purple dragonhead
<i>Lemna valdiviana</i>	
<i>Fritillaria atropurpurea</i>	
<i>Pilularia americana</i>	American pillwort
<i>Menanthes trifoliata</i>	
<i>Nuphar luteum</i>	American lotus
<i>Nymphaea odorata</i>	
<i>Nymphaea tuberosa</i>	
<i>Ludwigia polycarpa</i>	
<i>Bortrychium campestre</i>	
<i>Ophioglossum vulgatum</i>	Adder's-tongue
<i>Cypripedium candidum</i>	Small white lady's slipper
<i>Habenaria hyperborea</i>	Northern green orchid
<i>Habenaria viridis</i>	Frog orchid
<i>Var bracteata</i>	
<i>Liparis loeselii</i>	Loesel's twayblade
<i>Platanthera praeclara</i>	Western prairie fringed orchid
<i>Sparanthes romanzoffiana</i>	
<i>Corydalis aurea</i>	
<i>Alopecurus geniculatus</i>	
<i>Glyceria borealis</i>	Small floating manna-grass
<i>Muhlenbergia filiformis</i>	
<i>Muhlenbergia glomerata</i>	Marsh muhly
<i>Muhlenbergia richarsonis</i>	
<i>Poa nevadensis</i>	
<i>Var juncifolia</i>	
<i>Scholochloa festucadea</i>	
<i>Zizania aquatica</i>	Indian wild rice
<i>Microsteris gracilis</i>	
<i>Talinum calycinum</i>	Large-flower fame-flower
<i>Talinum rugospermum</i>	
<i>Potamogeton alpinus</i>	Northern pondweed
<i>Potamogeton friesii</i>	
<i>Potamogeton praelongus</i>	
<i>Potamogeton stricctifolius</i>	
<i>Lysimachia hybrida</i>	Lance leaf loosestrife
<i>Caltha palustris</i>	Marsh marigold
<i>Physocarpus opulifolius</i>	
<i>Rubus pubescens</i>	Catherinettes berry
<i>Triglochin palustre</i>	March arrow-grass
<i>Gratiola neglecta</i>	
<i>Mimulus alatus</i>	
<i>Pedicularis lanceolata</i>	Swamp lousewort

<i>Penstemon haydenii</i>	Blowout penstemon
<i>Sparganium chlorocarpum</i>	Greenfruit bur-reed
<i>Viola nephrophylla</i>	Northern bog violet
<i>Vitis aestivalis</i>	

VERTEBRATES AND INVERTEBRATES

<i>Botaurus lentiginosus</i>	American bittern
<i>Ixobrychus exilis</i>	Least bittern
<i>Nycticorax nycticorax</i>	Black-crowned night-heron
<i>Plegadis chihi</i>	White-faced ibis
<i>Cygnus buccinator</i>	Trumpeter swan
<i>Aythya valisineria</i>	Canvasback
<i>Haliaeetus leucocephalus</i>	Bald eagle
<i>Circus cyaneus</i>	Northern harrier
<i>Accipiter striatus</i>	Sharp-shinned hawk
<i>Accipiter cooperii</i>	Cooper's hawk
<i>Buteo swainsoni</i>	Swainson's hawk
<i>Falco peregrinus</i>	Peregrine falcon
<i>Grus americana</i>	Whooping crane
<i>Charadrius melcouis</i>	Piping plover
<i>Numenius americanus</i>	Long-billed curlew
<i>Gallinago gallinago</i>	Common snipe
<i>Sterna forsteri</i>	Forster's tern
<i>Sterna antillarum athalassos</i>	Interior least tern
<i>Chlidonias niger</i>	Black tern
<i>Asio flammeus</i>	Short-eared owl
<i>Phalaenoptilus nuttallii</i>	Common poorwill
<i>Caprimulgus vociferus</i>	Whip-poorwill
<i>Certhia americana</i>	Brown creeper
<i>Vireo flavifrons</i>	Yellow-throated vireo
<i>Passerculus sandwichensis</i>	Savannah sparrow
<i>Melospiza georgiana</i>	Swamp sparrow
<i>Calcarius ornatus</i>	Chestnut-collared longspur
<i>Couesius plumbeus</i>	Lake chub
<i>Notropis heterolepis</i>	Blacknose shiner
<i>Notropis topeka</i>	Topeka shiner
<i>Phoxinus eos</i>	Northern redbelly dace
<i>Phoxinus neogaeus</i>	Finescale dace
<i>Rhinichthys atratulus</i>	Blacknose dace
<i>Luxilus cornutus</i>	Common shiner
<i>Margariscus margarita</i>	Pearl dace
<i>Fundulus sciadicus</i>	Plains topminnow
<i>Culaea inconstans</i>	Brook stickleback
<i>Etheostoma nigrum</i>	Johnny darter
<i>Myotis septentrionalis</i>	Northern long-eared myotis
<i>Perognathus fasciatus</i>	Olive-backed pocket mouse
<i>Neotoma floridana baileyi</i>	Bailey's eastern woodrat
<i>Mustela nigripes</i>	Black-footed ferret
<i>Spilogale putorius</i>	Eastern spotted skunk
<i>Lutra canadensis</i>	River otter
<i>Kinosternon flavescens</i>	Yellow mud turtle

Opheodrys vernalis
Nicrophorus americanus
Hesperia ottoe
Poanes viator viator
Euphyes dion
Satyrium edwardsii
Speyeria idalia
Bolaria bellona

Smooth green snake
American burying beetle
Ottoe skipper
Broad-winged skipper
Dion skipper
Edward's hairstreak
Regal fritillary
Meadow fritillary

APPENDIX D: DEVELOPMENT COSTS OF ALTERNATIVES

LAND PURCHASE COST

No estimate has been made for land cost, and will not be unless a definite proposal and boundary is authorized.

FACILITY CONSTRUCTION COST

The following estimates are for comparison purposes only. The estimates are not based on known site conditions. No design work has been performed. The estimates are conceptual in nature and are based on average federal construction costs of typical facilities at similar national park units. The estimates could be revised if specific legislative proposals were developed in Congress that differ in scope or nature from what is presented here. All costs are in 1994 dollars.

Alternatives A and B

There would be no construction costs.

Alternative C

This estimate assumes construction of a fossil quarry shelter, road overlooks, interpretive trails, parking areas, picnic sites, two campgrounds, administrative building, ranger stations, and a maintenance facility. Construction, including project supervision and contingency funding, would cost \$4,708,000. Advance project planning would cost \$899,000. Total construction cost would be \$5,607,000.

If all roads were eventually upgraded and paved, construction, including project supervision and contingency funding, would cost \$41,396,000. Advance project planning would cost \$7,900,000. Total road construction cost would be \$49,296,000.

Alternative D

Facility construction costs would be shared by various partners with potential for partial federal cost sharing. Federal construction cost estimates below are for comparison only. Assumed facilities are a fossil quarry shelter and parking, four additional parking areas for roadside displays, and a regional museum with utilities and parking. Construction, including project supervision and contingency funding, would cost \$1,327,000. Advance project planning would cost \$253,000. Total construction cost would be \$1,580,000.

APPENDIX E: ANNUAL STAFFING AND OPERATIONS COSTS

All alternatives except A assume that further planning and development would occur before full operations would be funded at the following levels. All figures shown reflect 1994 salary rates. The following estimates are for comparison purpose only.

ALTERNATIVE A

This alternative would result in no additional staff and no increased operating cost to the National Park Service.

ALTERNATIVE B

This alternative would result in no additional staffing or operation cost to the National Park Service. Administration would be by local agencies.

Cost Share Incentives

Cost share incentives could be used as a resource conservation tool; however, it would have to be funded annually and is shown here in lieu of an annual operations expense. Local agencies would administer the program.

Approximately 50,000 acres would qualify for conservation cost share incentives. Estimated needs are \$32,000 per year.

ALTERNATIVE C

Assumptions for the following are:

The county roads and maintenance could be transferred to the National Park Service.

The National Park Service would acquire land or interest in land. The National Park Service could enter into agreements with management responsibility on lands owned by others.

Costs include management of the scenic river inside the park boundary.

NPS Staffing

National park staffing estimates were based on comparable existing park staffs, including rangers, maintenance, interpretation, and administration. Salaries with benefits would total \$1,125,000, and park operations (equipment, materials) would cost \$371,000 annually. Total annual operation cost would be \$1,558,000.

ALTERNATIVE D

Staff positions would be employees of the University of Nebraska State Museum. Estimates are federal and are only for comparison with other alternatives.

Museum staff would consist of two paleontologists. Salaries plus benefits would total \$124,000. Operations costs (equipment, materials) would add \$41,000. Total annual operation cost would be \$165,000.

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