

**National Park Service
U. S. Department of the Interior**



**Knife River Indian Villages NHS
2008**



Environmental Assessment And Assessment of Effect

Fire Management Plan Knife River Indian Villages NHS, North Dakota

Summary:

Knife River Indian Villages National Historic Site (KNRI) is composed of approximately 1758 acres of land situated in west central North Dakota, ½ mile north of the town of Stanton in Mercer County. The park is surrounded by agricultural tracts that are mostly grazed or tilled. The Knife River traverses the middle of the park with the Missouri River forming most of the eastern boundary. The confluence of these two rivers is located within the park. These rivers served as trade routes and created the vast floodplains which were used for the aboriginal agricultural practices that allowed the indigenous people of this area to thrive for thousands of years.

The vegetative composition of the park, containing portions of both mixed and tall grass prairies, has continually been shaped and influenced by wildfires for thousands of years. Prior to modern farming and road building practices, these wildfires had the ability to run for hundreds of miles, checked only by major river systems or seasonal weather events. Historical documentation has shown that the cause of these fires ranged from natural actions like lightening to manmade events such as campfires and arson. Outright burning of the prairies to change buffalo migrations, clear campsites or cause hardships on other tribes was often conducted by the Indian tribes inhabiting these grasslands. Upon Euro-American settlement in the mid- to- late 1800's, most human- caused prairie fires resulted from the carelessness of cowboys and cooks, rather than Indians (Wright and Bailey 1980).

Fire, both natural and human caused, has historically influenced the fire dependent landscape at KNRI. In the past, these fires may have been uncontrolled wildfires or conducted as part of the prescribed fire program, which along with the park's Fire Management Plan (FMP) have been in place since 1997. The National Park Service's Fire Management Policy (*Director's Order #18: Wildland Fire Management*)(DO- 18)(USDI 2002) was revised in 2002, with specific guidance (*Reference Manual #18: Wildland Fire Management*)(RM- 18)(USDI 1999) implemented in 1999. Consequently, the park's existing FMP is inconsistent with the new terminology, documentation guidelines and policy.

This environmental assessment is an appendix to KNRI's FMP, which provides specific guidance and procedures for accomplishing park fire management objectives. The new FMP has been drafted to address the need to make KNRI's integrated fire management program consistent with new management terminology, documentation guidelines and policy. This Environmental Assessment (EA) describes two alternatives and the environmental consequences of each.

Alternative A: Integrated Fire Management

This alternative would call for all unplanned ignitions to be suppressed in such a manner to reduce the threat to human life and facilities while ensuring adequate protection of natural and cultural resources. Prescribed fires would be used to mimic the historic fire regime, reduce fuel loadings, control exotic species, assist with prairie restoration efforts and help achieve other resource management goals. Mechanical manipulation of fuels would be used in preparation for prescribed fires.

Alternative B: No Action/Prescribed Fire

This alternative would allow for current management practices to be continued. This would include suppression of all unplanned ignitions, in such a method as to protect human life and health, buildings and facilities as well as natural and cultural resources. Prescribed fires would be conducted on set intervals for fuel reduction purposes.

Neither of the alternatives would have major environmental consequences. In meeting plan objectives, the Integrated Fire Management alternative (Alternative A), which is also identified in this document as the environmentally preferred alternative, would be beneficial to the alternative of No Action (Alternative B).

Alternatives considered but rejected include no suppression of wildland fires, no prescribed fire, wildland fire use and mechanical manipulation and transporting of fuels off the site.

Public Comment

Please mail or email your comments to the address below. Our practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individuals who wish to have their names and/or addresses withheld must state this prominently at the beginning of their comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety.

The public comment period on this document will remain open for 30 days. **Comments should be received by February 29, 2008, and may be addressed:**

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Table of Contents

Summary.....	2
Park Purpose.....	7
Purpose of Action.....	8
Need for Action.....	9
Other Related Planning Documents.....	9
Objectives.....	10
Issues and Impact Topics Included in this EA.....	11
Table 1: Impact Topics.....	12
Aesthetics.....	13
Air Quality.....	13
Cultural Resources.....	13
Public Health and Safety.....	13
Soils Resources.....	13
Vegetation Resources.....	14
Wildlife Resources.....	14
Threatened and Endangered Species.....	14
Adjoining Lands.....	15
Economics.....	15
Visitor Use and Experience.....	15
Wilderness.....	15
Paleontological Resources.....	16
Energy Requirements/Natural and Depletable Resource Requirements and Conservation Potential.....	16
Environmental Justice.....	16
Indian Trust Resources.....	16
Ecologically Critical Areas.....	17
Prime and Unique Agricultural Areas.....	17
Water quality and hydrology/wetlands and floodplains.....	17
Conflicts with land use plans, policies, or controls.....	18
Sustainability and long-term management.....	18
Alternatives.....	19
Alternatives Analyzed in this EA.....	19
Alternative A –Integrated Fire Management Program	19
Alternative B – No Action/Prescribed Fires.....	20
Alternatives Considered but Rejected.....	20
Alternative C – No Suppression of all Wildland Fires.....	20
Alternative D –No Prescribed Fire.....	21
Alternative E – Wildland Fire Use.....	21
Alternative F – Mechanical Manipulation and Transporting of Fuels off the Site	21
Mitigation Measures for Alternatives.....	22
Environmentally Preferred Alternative.....	24
Comparison of the Alternatives.....	25
Table 2: Comparison of the Alternatives.....	25

Table 3: How Each Alternative Meets Project Objectives.....	26
Summary Matrix of Impacts of Alternatives.....	27
Table 4: Summary of Impacts of Alternatives.....	27
Affected Environment.....	30
Aesthetics (Visual).....	30
Air Quality.....	30
Cultural Resources.....	31
Ethnographic Resources.....	31
Public Health and Safety.....	32
Soils Resources.....	33
Vegetation Resources.....	33
Visitor Use and Experience.....	34
Wildlife Resources.....	34
Environmental Consequences.....	35
Impact Assessment Methodology.....	36
General Methodology.....	36
Cumulative Effects Analysis.....	36
Impairment Analysis.....	37
Aesthetics (Visual).....	39
Methodology.....	39
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	39
Impacts of Alternative B (Prescribed Fire).....	41
Air Quality.....	42
Methodology.....	42
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	42
Impacts of Alternative B (Prescribed Fire).....	44
Cultural Resources.....	45
Methodology.....	45
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	46
Impacts of Alternative B (Prescribed Fire).....	47
Ethnographic Resources.....	48
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	49
Impacts of Alternative B (Prescribed Fire).....	50
Section 106 Summary.....	51
Public Health and Safety.....	53
Methodology.....	53
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	53
Impacts of Alternative B (Prescribed Fire).....	55
Soils Resources.....	56
Methodology.....	56
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	57
Impacts of Alternative B (Prescribed Fire).....	57
Vegetation Resources.....	58
Methodology.....	58

Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	59
Impacts of Alternative B (Prescribed Fire).....	61
Visitor Use and Experience.....	62
Methodology.....	62
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	63
Impacts of Alternative B (Prescribed Fire).....	64
Wildlife Resources.....	66
Methodology.....	66
Impacts of Alternative A (No Action:Comprehensive Fire Management Program).....	67
Impacts of Alternative B (Prescribed Fire).....	68
Consultation and Coordination.....	70
Scoping.....	70
List of Preparers and Principal Contributors.....	71
List of Recipients.....	71
Federal Agencies.....	71
State Agencies.....	71
American Indian Tribes.....	72
References.....	73
Appendix 1:5 –Year Treatment Plan.....	75
Appendix 2:Glossary of Fire Management Terms.....	76
Appendix 3:Graphics.....	77
Geographical Area Map.....	77
Park Map.....	78
Treatment Unit Map.....	79

List of Tables

Table 1:Impact Topics for the Knife River Indian Villages Fire Management Plan Environmental Assessment.....	12
Table 2:Comparison of the Alternatives	25
Table 3:How Each Alternative Meets Project Objectives	26
Table 4:Summary of Impacts of Alternatives	27

Introduction

Park Purpose

Knife River Indian Villages NHS (KNRI) is comprised of approximately 1758 acres of land situated in west central North Dakota, ½ mile north of the town of Stanton in Mercer County. KNRI was established on October 26, 1974 by Public Law 93- 486 as a National Historic Site to “*preserve certain historic and archaeological remnants of the cultural and agricultural lifestyle of the Plains Indians*”. The primary values to be protected include scenic values, cultural deposits, expanses of remnant native mixed- grass prairie, riparian woodlands and the native wildlife species associated with these ecosystems and the human occupation story for the past 11,000 years.

The following statements of significance relating to the natural resources have been taken from the 1983 Interpretive Prospectus and the 1981 Statement for Management:

- A. Preserve the irreplaceable archaeological resources of the park and *restore the natural setting to a period in history* that will permit interpretation of a vast array of interpretive themes.
 - a) Develop and implement a strategy for *examining the archeological and historical resources* of the park consistent with the principles of historic preservation.
 - b) Provide a setting which will permit *interpretation of the areas significance*
 - c) Determine where *lands currently in agricultural use can be returned appropriately to native prairie or riverine habitat and managed accordingly to good wildlife management practices* where there is no conflict with legislative intent.

As demonstrated above, the significance of KNRI deals with both the cultural and natural resources. One can not correctly interpret the cultural aspects without interpreting the natural resources with which they were so heavily dependent. It is also clear that restoring and maintaining the health and diversity of the park’s natural ecosystems is one of the park’s mission goals as outlined in the Statement for Management and the Interpretive Prospectus. In order to preserve the natural and historic landscape that was envisioned in park planning, it is necessary to implement an active Fire Management Plan (FMP). The FMP is the working document that details how future fire management decisions such as prescribed fire and suppression actions will be conducted. Following the implementation guidelines of the FMP will help the park manage the fire dependent ecosystem that provided food, shelter and trade items to the Native Americans who inhabited this area for thousands of years.

PURPOSE OF ACTION

The purpose of this federal action is to provide a long term fire management program consistent with current fire management policy and guidelines that restores fire as a fundamental ecological process while ensuring public safety and protecting structures and adjacent lands. The proposed action is implementation of a long-range fire management plan. As required by the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), this environmental assessment (EA) analyzes program alternatives and their direct, indirect, and cumulative impacts.

This environmental assessment is an appendix to KNRI's **Fire Management Plan**, which provides specific guidance and methodologies for accomplishing park fire management objectives. The Fire Management Plan has been drafted to address the need to make the KNRI's integrated fire program (Preferred Alternative A) consistent with new management terminology, documentation guidelines and policy. In compliance with the National Environmental Policy Act (NEPA), this environmental assessment describes for comparative purposes the potential effects of implementing alternative fire management activities at KNRI. This Environmental Assessment (EA) describes two alternatives and the environmental consequences of each. At the conclusion of the NEPA process, the drafted FMP will be refined in accordance with the selected alternative.

Included with the description of the preferred alternative is a 15-year fuels treatment plan (Appendix A). This action plan defines fuels treatment activities proposed to be implemented for the period following the approval of KNRI's FMP. Upon approval of the Fire Management Plan, KNRI's management staff will *annually* evaluate the Park's fuel and resource conditions, progress on treatments and results, funding availability, and other issues to update the fuels treatment plan. The plan and its updates would be consistent with the program objectives and the selected alternative defined in the FMP and the EA. In this way, the fire program incorporates an adaptive management approach into its planning and program implementation. To ensure on-going compliance with specific laws such as the National Historic Preservation Act, the Endangered Species Act, consultation for resource impacts is performed as needed on a project-by-project basis where a programmatic agreement has not been developed. It is possible that during the FMP annual evaluation and update, changes in park conditions or in policy and law may indicate that the fire management plan is no longer applicable. It is also possible that the fire program staff may propose a 15-year fuels treatment plan that is inconsistent with the FMP and EA. If the park staff decide to revise the FMP or 15-year fuels treatment plan, and if said revisions would result in new impacts not considered in the original FMP EA, then such a program change would necessitate additional NEPA analyses. Please note that regardless of whether changes are made to the plan; if new regulatory requirements, threatened and endangered species listings, or changes to the environment have occurred since the original EA, additional compliance would be required to continue implementing the program.

Need For Action

While the park does have an existing plan, it is from 1997 and emphasizes fire suppression and set prescribed burning schedules for fuel reduction purposes. The 1997 plan does very little to address resource issues such as restoration practices and historic fire return intervals. Furthermore, the National Park Service's (NPS) fire management policy (*Director's Order #18: Wildland Fire Management*) was revised in 2002, with specific guidance (*Reference Manual #18: Wildland Fire Management*) implemented in 1999. Consequently, the park's existing Fire Management Plan is inconsistent with the new policy and requires revision. Because the revisions will be substantial, an entirely new Fire Management Plan is proposed.

Other Related Planning Documents

National Park Service management policy directs each park to prepare a wildland fire management plan appropriate for that park's purpose and resources. Fire management at KNRI is based upon this policy and the guidance found in *RM- 18: Wildland and Prescribed Fire Management Policy* (2006) and *Wildland and Prescribed Fire Management Policy: Implementation Procedures Reference Guide* (1998). These guidelines identify fire as the most aggressive natural resources management tool employed by the National Park Service. NPS policy also directs that all fires burning in natural vegetation be classified as either wildland fires or prescribed fires. Prescribed fires and wildland fire use may be authorized by an approved fire management plan and can be of significant importance in achievement of the park's resource management objectives. More detailed information regarding fire policy can be found in *Section II: Policy Compliance* of the Fire Management Plan. The draft Fire Management Plan for KNRI has been prepared in compliance with these policies. The National Environmental Policy Act of 1969 (NEPA), as amended, requires all federal agencies to prepare in- depth studies of the impacts of, and alternatives to, proposed major federal actions; use information contained in such studies in deciding whether to proceed with the action; and involve the interested and affected public before any decision affecting the environment is made. Specific policy and procedures by which the NPS will comply with NEPA are set forth in *RM- 12: Conservation Planning, Environmental Impact Analysis, and Decision making*. This Environmental Assessment for the Fire Management Plan for KNRI has been prepared in compliance with these policies.

Objectives of Fire Management and Planning

Consistent with NPS policy and the park's resource management objectives, the fire management plan will achieve the following fire management goals (for full discussion, see Fire Management Plan, page 14).

Overall fire management objectives:

Goal 1: Minimize both the incidence and extent of human- caused fires.

Goal 2: Restore fire to 95% of the vegetated landscape within the next 10 years

Goal 3: Restore fuel and vegetation mosaics to pre- European contact conditions on 50% of the landscape within the next 15 years.

Goal 4: Incur zero fatalities and an injury rate no higher than the national NPS average in association with wildland fire management activities.

Goal 5: Limit impacts from fire suppression activities to less than 5% of the estimated monetary value of the impacted resource.

Goal 6: Minimize impacts from fire suppression and uncontrolled wildfire on cultural resources located throughout the park.

Fire management goals as related to resource management:

- 1) *Use prairie restoration processes to return old field areas to native prairie. Restoration of fire dependent native grasses is only one benefit of maintaining historic fire intervals on the park's prairies.*
- 2) *Promote hardwood generation in the floodplain forests as well as the woody draws that border grassland areas. Without the presence of flooding and fire, many of these areas have become decadent and without these rejuvenating effects, nutrient levels in these areas will remain low, thus reducing natural regeneration, species composition and ecosystem diversity.*
- 3) *Shift species composition in natural areas from exotic species (Kentucky bluegrass, smooth brome) to native plant species.*
- 4) *Restore the mosaic pattern of different plant communities associated with post fire stages.*
- 5) *Restore fire as a critical component of the ecosystem.*

- 6) *To the extent practical, use fire as a tool to restore the ecosystem to a condition that resembles pre- European settlement periods. This may be accomplished by reproducing natural fires as well as Native American ignited fires.*

Issues and Impact Topics Included in this EA

Issues and impacts addressed in this EA were derived from park staff and through public scoping for the FMP which was conducted in February of 2005. These combined efforts identified the following that are to be addressed by this plan:

- Fires within the park (both prescribed (Rx) and wildfires (WF)) may create large volumes of smoke, impacting air quality of the park and surrounding lands.
- Rx fires conducted in the spring may impact nesting birds within the burn unit.
- Fire events within the park may have an adverse impact on archaeological resources, however the subsequent removal of thatch may provide an opportunity to conduct a more thorough surface collection.
- WF within the park pose a risk to park structures as well as those owned by park neighbors. Health and safety may be jeopardized if suppression actions are not taken.
- Natural process should prevail to the greatest extent possible, if this is not feasible, other methods should be used to emulate these processes.



Earthlodge at KNRI, NPS photo

Table I: Impact Topics

Impact Topic	Retain or Dismiss	Relevant Regulations or Policies
Aesthetics	Retain	No Specific Policy
Air Quality	Retain	Federal Clean Air Act (CAA), CAA Amendments of 1990 (CAAA), NPS Management Policies 2006
Cultural Resources	Retain	Section 106 National Historic Preservation Act, 36 CFR 800, National Environmental Policy Act, Executive Order 13007, Director's Order 28, NPS Management Policies 2006
Public Health and Safety	Retain	NPS Management Policies 2006
Soils	Retain	NPS Management Policies 2006
Vegetation Resources	Retain	NPS Management Policies 2006
Wildlife Resources	Retain	NPS Management Policies 2006
Threatened and Endangered Species	Retain	Endangered Species Act (ESA), NPS Management Policies 2006
Adjoining Lands	Dismiss	No Specific Policy
Economics NEPA	Dismiss	40 CFR 1500 Regulations for Implementing
Visitor Use and Experience	Dismiss	Organic Act, NPS Management Policies 2006
Wilderness 2001	Dismiss	Director's Order 41, NPS Management Policies
Paleontological Resources	Dismiss	NPS Management Policies 2006
Energy Requirements/ Natural And Depletable Resources	Dismiss	NPS Management Policies 2006
Environmental Justice	Dismiss	Executive Order 12898
Indian Trust Resources	Dismiss	Department of the Interior Secretarial Order No. 3206, Secretarial Order No. 3175

Water Quality	Dismiss	Clean Water Act, Executive Order 12088, NPS Management Policies 2006
Prime and Unique Agricultural Lands	Dismiss	Council on Environmental Quality 1980 memorandum on prime and unique farmlands

Aesthetics (visual)

There is no specific policy that guides or requires preservation of a specific aesthetic character except as defined under cultural resource preservation standards for historic landscapes. “Planning decisions will follow analysis of how proposals might affect the values that make resources significant and the consideration of alternatives that might avoid or mitigate potential adverse effects,” (Management Policies 2006). A social science study conducted in the parks that evaluated the public’s perception of the effects of prescribed fire (Quinn 1987), indicates a broad acceptance of the aesthetic conditions created by natural and prescribed fire events. Since aesthetic character is extremely subjective, analysis of this topic will consider all impacts.

Air Quality

Section 118 of the 1963 Clean Air Act (42 U.S.C.7401) requires parks to meet all federal, state and local air pollution standards. KNRI is a Class II airshed as designated by the federal 1963 Clean Air Act. Air quality would be affected to various degrees by fire events inside the park. Visibility would be affected by the presence of particulates associated with smoke. Thus, analysis of this topic will consider all impacts.

Cultural Resources

The National Historic Preservation Act, as amended in 1992 (16 U.S.C.470 et seq.), and the National Park Service Cultural Resource Management Guidelines require consideration of impacts on cultural resources listed on or eligible for listing on the National Register of Historic Places. Analysis of this topic will consider all impacts.

Public Health and Safety

Fire on the landscape poses obvious threats to public health and safety. Smoke can cause severe respiratory difficulty, particularly in children and the elderly. Visibility on roadways can be severely reduced, leading to vehicular collisions. Uncontrolled fire can threaten lives and property. For these reasons, fire management policies emphasize the safety of firefighters and the general public as priority one. Analysis of this topic will consider all impacts.

Soils Resources

Fires of varying intensities may alter the physical, chemical, and biological properties of the soil as a result of vegetation removal, consumption of organics, and increased temperatures. The lack of fire may also alter soil properties as a result of the absence of nutrient cycling in fire maintained habitat types. Microorganism populations in soils are

directly influenced by temperature increases that kill the organisms, which indirectly affect the aeration, nutrients, and moisture content of the soil environment. Fire use can result in furthering the nitrogen process, nutrient cycling, vegetation flushes, and composition diversity. Analysis of this topic will consider all impacts.

Vegetation Resources

The frequency, duration, and seasonality of fire have direct impacts on the composition and distribution of plant species. Analysis of this topic will consider all impacts.

Wildlife Resources

The distribution and frequency of fire have direct impacts on populations of mammals, birds, and invertebrates. Fire can also change wildlife habitat and forage quality. Fire's effect on habitat depends on its behavior characteristics. Low-severity fire increases herb diversity and stimulates plant growth, particularly among native legumes. Severe fires volatilize nutrients and occasionally decrease the ability of the soil surface to absorb moisture. Improved nutritional levels in forage species can occur following fire. Direct and indirect wildlife impacts are analyzed in the EA.

Threatened and Endangered Species

The Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) requires an examination of impacts on all federally listed threatened or endangered species. National Park Service policy also requires examination of the impacts on federal candidate species. The topic of threatened and endangered species will be addressed further, by U.S. Fish and Wildlife Service review of this EA. The NPS has found either alternative to have a very low probability of an adverse effect on the following species that are known to or are probable to frequent the park: bald eagles (*Haliaeetus leucocephalus*), piping plover (*Charadrius melodus*), pallid sturgeon (*Scaphirhynchus albus*) and interior least tern (*Sterna antillarum*). The whooping crane (*Grus americana*) and the black footed ferret (*Mustela nigripes*) are represented by either migration routes or historic range and impacts to these two species will not be analyzed in this EA. Concurrence by the U.S. Fish and Wildlife Service for findings will be sought during section 7 consultation through review of this EA.

Issues and Impact Topics Considered but not further addressed in this EA

Adjoining Lands

The park is surrounded by rangeland and agricultural areas. All non-city lands adjoining the park are in private ownership or in the case of islands on the Missouri River, held in trust by the State of North Dakota. The City of Stanton is located directly south and adjacent to the park and could be affected by the fire program. Direct impacts to be considered are those from smoke and vegetative impacts from fires that start in the park and escape to surrounding lands. Smoke is addressed as an Air Quality impact in this EA. Under any fire management scenario, risk to adjoining lands is similar. KNRI will work to prevent any ignition within the park from burning across the boundary, except where the park is conducting a prescribed fire with willing and cooperative partners. Therefore, impacts to adjoining lands will not be addressed in this fire plan.

Economics

The proposed action would neither change local and regional land use nor impact local businesses or other agencies. The local area surrounding the park is primarily of agricultural use except for the City of Stanton, population approximately 350. The economy of the local area is based mainly on agricultural, cattle ranching and power generation. Fire events may bring a short-term need for additional personnel in the park, usually provided by the local volunteer fire departments or other federal and state agencies, but would not affect the communities' overall population, income or employment basis. Therefore, this impact topic is not addressed in the analysis of this EA.

Visitor Use and Experience

National Park Service Management Policies (2006) require parks to provide for visitor use. Fire events may require temporary visitor use closures for visitor protection. However, the displacement of visitors would be temporary and localized due to the burn unit distribution. Generally, similar visitor experiences would be available in other areas of the park. Interpretive programs to explain the role of fire in the landscape are generally well received, and many visitors are curious about fire. Thus, fire operations may provide a desirable visitor experience. Therefore, this impact topic is not included for further analysis in this EA.

Wilderness

According to *Management Policies* (NPS 2006), proposals having the potential to impact wilderness resources must be evaluated in accordance with National Park Service procedures for implementing the National Environmental Policy Act. Due to the fact that

KNRI does not have any designated or proposed wilderness areas, this impact topic is not addressed.

Paleontological Resources

KNRI contains no known paleontological resources; hence this impact topic is not addressed in the EA.

Energy Requirements/Natural and Depletable Resource Requirements and Conservation Potential

None of the alternatives would affect energy, natural or depletable resource requirements, or conservation potential to the extent that detailed analysis would be required.

Environmental Justice

According to the Environmental Protection Agency, environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

Presidential Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low –Income Populations," requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low –income populations and communities. The proposed action would not have health or environmental effects on minorities or low –income populations or communities as defined in the Environmental Protection Agency's Environmental Justice Guidance under the National Environmental Policy Act (August 1997). Therefore, environmental justice is not included as an impact topic.

Indian Trust Resources

Indian trust assets are owned by Native Americans but held in trust by the United States. Requirements are included in the Secretary of the Interior's Secretarial Order No.3206, "American Indian Tribal Rites, Federal – Tribal Trust Responsibilities, and the Endangered Species Act," and Secretarial Order No. 3175, "Departmental Responsibilities for Indian Trust Resources." The Bureau of Indian Affairs (BIA) and the National Park Service have formed a joint agency, the National Interagency Fire Center, to handle wildfire management on Indian trust lands based on fire management plans approved by the Indian landowner. Indian trust assets do not occur within KNRI and this topic is not included in the EA analysis.

Ecologically critical areas

The Council on Environmental Quality regulations (40 CFR 1508.27(b)(3)) require consideration of the severity of impact (intensity) on unique characteristics of the geographic area. No ecologically critical areas have been identified within or adjacent to the park and, therefore, this impact topic has been dismissed from further evaluation.

Prime and unique agricultural lands

In August 1980, the Council on Environmental Quality directed that federal agencies must assess the effects of their actions on farmland soils classified as prime or unique by the Natural Resource Conservation Service (NRCS), U.S. Department of Agriculture. Prime or unique farmland is defined as soil that particularly produces general crops such as common foods, forage, fiber and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. According to the NRCS, KNRI contains lands classified as “Prime and Unique”, the park also contains lands of statewide importance. Although the park contains these properties, the effects of prescribed fire on the land will be negligible due to the low temperatures generated and the dominant fuel models located in the park; therefore, the topic of prime and unique farmland has been dismissed as an impact topic in this document.

Water quality and hydrology/wetlands and floodplains

National Park Service policies require protection of water resources consistent with the Clean Water Act. The park is traversed by the Knife River and bordered by the Missouri River. The Missouri River is listed as a Class I river under the following North Dakota State standard guidelines:

Class I

“The quality of waters in this class shall be such as to permit the propagation of life, or both, of resident fish species and other aquatic biota and shall be suitable for boating, swimming, and other water recreation.

The quality shall be such that after treatment consisting of coagulation, settling, filtration, and chlorination, or equivalent treatment processes, the treated water shall meet the bacteriological, physical, and chemical requirements of the NDDH for municipal use. The quality of water shall be such as to permit its use for irrigation, stock watering, and wildlife use without injurious effects.”

The Knife River is listed as a Class II river under the following guidelines;

Class II

The quality of this class of water shall be such that its uses shall be the same as those identified for Class I, except that additional treatment may be required over that noted in Class IA to meet the

drinking water requirements of the NDDH. Streams in this classification may be intermittent in nature which would make some of these waters of questionable value for beneficial uses, such as irrigation, municipal water supplies, or fish life.

A vegetation survey was completed at KNRI in June of 2002 (Salas). The survey identified no wetlands located within park boundaries.

Due to the abundant moisture and prolonged green period of vegetation located on or near the park's waterways, post burn bank erosion is negligible. Post burn bank erosion is mitigated by the natural mosaic left from unburned vegetation or the steepness of the river banks which do not support natural vegetation on their own.

Burned areas may be subjected to erosion that would result in a temporary increase in sediment loading of surface waters. However, this increase is negligible given the flatness of the terrain and the grasslands that dominate the park. Only 2.5% or approximately 43 acres of land within park boundaries have a slope greater than 5% and these areas are vegetated by mixed grass prairies that experience regrowth shortly after a fire event occurs.

This regrowth quickly stabilizes the soil and deters erosion therefore, this impact topic is not included for further analysis in this EA.

Conflicts with land use plans, policies, or controls

Refer to the section "Other Related Planning Documents" for a discussion of the absence of conflicts with other plans.

Sustainability and long-term management

Sustainability is the result achieved by doing things in ways that do not compromise the environment or its capacity to provide for present and future generations. Sustainable practices minimize the short- and long- term environmental impacts of development and other activities through resource conservation, recycling, waste minimization, and the use of energy-efficient and ecologically responsible materials and techniques. Project actions would not compete with, dominate park features, or interfere with natural processes, such as the seasonal migration of wildlife or hydrologic activity associated with wetlands.

Alternatives

All alternatives considered for analysis must be consistent with the park's purpose and significance and must meet the purpose and need for action, as well as the project's objectives. These considerations, as well as input obtained from team members, formed the basis of five alternatives that were developed for implementing a fire management plan at KNRI. Two alternatives were then selected to be analyzed in this document and are described in detail below. The other four alternatives were dismissed; a description and the reasons for their dismissal also follow.

For all alternatives, the park consists of a single fire management unit. This fire management unit encompasses all land owned and managed by the National Park Service within the park's boundaries. The fire management unit includes the park's developed areas and all other areas that have an identified value and are at risk from fire. This includes park boundaries, developed areas, and administrative, historic, and archeological sites.

See Appendix 2: Glossary of Fire Management Terms for definitions of fire management terms used in this EA.

Alternatives Analyzed in this EA

Alternative A: Prescribed Fire/Integrated Fire Management

This alternative would call for all unplanned ignitions to be suppressed in such a manner to reduce the threat to human life and facilities while ensuring adequate protection of natural and cultural resources. Prescribed fires would be used to mimic the historic fire regime, reduce fuel loadings, control exotic species, assist with prairie restoration efforts and help achieve other resource management goals.

Suppression actions would consist of raked or mowed fire lines, hose lays, engine support, and helicopter support through water drops by bucket and sling loads of supplies. All other tactics would need superintendent approval prior to implementation.

A goal of the program is to reintroduce fire into the ecosystem at the park to mimic fire's historic role. This would be done through a random series of prescribed fires to achieve *desired future conditions*. Approximately 1800 acres could be treated over the next 15 years. A treatment plan covering fifteen years is included in Appendix A: 15-Year Treatment Plan. Prescribed fire would not be utilized unless adequate staffing is available and favorable weather and fuel conditions are met. Reevaluation of the prescribed fire schedule would occur every five years. In the use of prescribed fire, a mosaic of burned and unburned vegetation is desirable within the unit.

Medium density archaeological sites will be made available for prescribed fire treatments.

Mechanical reductions will be allowed, with an accepted plan, for fuel reduction purposes within the park.

A site-specific burn plan must be completed prior to any burn and appropriate mitigation actions must be taken for any values at risk.

Alternative B: No Action/Continue As Is

This alternative would allow for current management practices to be continued. This would include suppression of all unplanned ignitions, in such a method as to protect human life and health, buildings and facilities as well as natural and cultural resources. Prescribed fires would be conducted on set intervals for fuel reduction purposes.

Prescribed fires will not be conducted in medium density archaeological sites.

Mechanical reductions will be limited to small areas to improve control lines for prescribed burning.

ALTERNATIVES CONSIDERED BUT REJECTED

Alternative C – No Suppression of all Wildland Fires

Under Alternative C, all ignitions would be allowed to burn in all areas and at all times, which could have significant political, socioeconomic, and environmental impacts. This alternative was rejected, as it does not meet several project objectives relating to safety, resource protection, and consistency with policy and guidelines.

Alternative D – No Prescribed Fire

The National Park Service mission is to protect and preserve the native ecosystems it manages for the enjoyment of future generations. Guided by this mandate, the fire management program focuses on mimicking and maintaining fire as a natural process while protecting human life and property. Furthermore, RM-18 directs parks to scientifically manage wildland fire using the best available technology as an essential ecological process to restore, preserve, or maintain ecosystems. Native species at KNRI evolved with fire, and many are dependent upon fire for their health and survival. An absence of prescribed fire would result in degradation of the native species and increase fuel loading at the park. Because of the reasons above and the fact that it does not meet

any of the park's five objectives, Alternative D was not further analyzed or incorporated into other alternatives.

Alternative E – Wildland Fire Use

Under this alternative, natural (lightning-caused) ignitions would be managed, rather than totally suppressed, in predetermined areas for resource benefit, if all prescription criteria were met. Alternative E is not feasible due to the small size of the park and staff limitations. Also, this alternative puts valuable cultural resources and other high values at risk, which is contrary to objective 6. Therefore, this plan does not recommend wildland fire use at the park.

Alternative F – Mechanical Manipulation and Transporting of Fuels off the Site

Under this alternative, hazard fuel build-ups would be mechanically manipulated and physically removed from the site. The mechanical manipulation in the woodlands would include the use of chainsaws and hand crews to remove downed fuel, and/or thinning of dense stands to reduce overstocking and ladder fuels. Physical removal of the fuels would then be accomplished by vehicles or other equipment and may require burning or chipping at an off-site location. Fuel reduction in the prairies would solely rely on the use of equipment to cut and remove grassland fuels. The natural ecological processes would not be allowed to function in this fire-dependent ecosystem community, i.e., the organic material would not be “recycled” into the ground, either by ashes or decomposition. This alternative was rejected because of the high expense, impact to the soil and vegetation from removal activities and an inability to achieve objectives 1 and 4.



Coneflower, NPS photo

MITIGATION MEASURES FOR ALTERNATIVES

Mitigation measures to reduce impacts are included in the discussion of Environmental Consequences specific to each impact topic. In many cases the same mitigation measure may serve to reduce impacts on a number of resources.

- Prior to implementing a project, a review of the park's cultural survey would be completed for any site-specific issues, and mitigation measures would be implemented for their protection. Appropriate mitigation measures would include reducing and protecting fuels on a site, excluding a site from the area to be burned and avoiding ground disturbance. Mitigation measures are subject to agreement between the NPS and SHPO.
- If during project implementation previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resource could be identified and documented. An appropriate mitigation strategy to protect these resources would be developed in consultation with the North Dakota State Historic Preservation Office.
- Pile and slash burning would be done when climatic conditions are appropriate to ensure that smoke would not interfere with visitors at the park or cause major indirect adverse impacts to viewsheds.
- A mosaic of vegetation would be left in prescribed fire areas to help stabilize soils, reduce erosion, and provide unburned habitat for small, slow-moving fauna.
- When safety allows, natural barriers would be used.
- All sites where improvements or obstructions are removed would be rehabilitated to pre-fire conditions.
- Areas treated with prescribed fire would be monitored for fire effects following National Park Service monitoring protocols in the Fire Monitoring Handbook (USDI 2001) to determine if prescribed fire objectives are being met and to ensure no unwanted effects are occurring.
- Prescribed fire and mechanical thinning activities (excluding fire suppression) would generally be conducted during times of off-peak use.
- Wet line or mow line would be favored over fire lines made with digging tools or heavy equipment.

- Fire lines would be located outside of highly erosive areas and steep slopes. After fire activities, fire lines would be re-contoured, water barred, and seeded as necessary with native plant species.
- All suppression actions would follow Minimum Impact Suppression Tactics (MIST) guidelines.
- Areas of the park may be closed to ensure visitor and employee safety during prescribed fires. Although it is not foreseen, in some instances, the entire park may be closed to ensure visitor and employee safety in the event of a wildland fire.



Tipi and Garden at KNRI visitor center, NPS photo

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is determined by applying the criteria suggested by the Council on Environmental Quality (CEQ), which provides direction in its guidance Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations (1981). CEQ defines the environmentally preferable alternative as, "...the alternative that causes the least damage to the biological and physical environment. It also means the alternative which best protects; preserves; and enhances historic, cultural, and natural resources. Section 101 of the National Environmental Policy Act states that "... it is the continuing responsibility of the Federal Government to ...

- (1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
- (3) attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
- (4) preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice;
- (5) achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities;
- (6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources."

The Environmentally Preferred Alternative is Alternative A, which is also the Preferred Alternative. This alternative has more long-term positive environmental impacts with lesser negative impacts than Alternative B. Specifically; the Preferred Alternative has long-term positive impacts by mimicking a natural process that would support native plant growth and survival. By supporting native plant species and communities, the Preferred Alternative would also have long-term benefits for the riparian woodland/mixed-grass ecosystem. In doing so, the Preferred Alternative would promote the policies expressed in numbers 1, 2, 3, and 4 listed above.

COMPARISON OF THE ALTERNATIVES

Table 2: Comparison of alternatives

Component	Alternative A- Preferred Alternative	Alternative B- No Action Alternative
Wildland Fire	Not allowed, full suppression.	Not allowed, full suppression.
Prescribed Fire	Allowed, burns are conducted to replicate the historic fire conditions (frequency and timing) and for resource management actions.	Allowed, Burns are conducted on standardized intervals.
Manual Reduction	Allowed, fuel reductions would be used in medium density archaeological sites to reduce 10,100 and 1000 hour fuel loadings. Reductions would also be conducted in areas where overstory tree mortality is to be minimized.	Conducted only around burn unit boundaries for control purposes

Table 3: How Each Alternative Meets Project Objectives

Project Objective	Alternative A- Preferred Alternative	Alternative B- No Action Alternative
Protect human health and safety during all phases of fire management	Meets objective; includes provisions to lessen the possibility of catastrophic wildfire.	Meets objective to some degree, but does not preclude occurrence of catastrophic wildfire and potential major health and safety impacts.
Consistent with current federal policy and guidelines	Meets objective; follows DO-18 and RM-18	Does not meet objective; hazard fuel reduction is not completely addressed.
Allow fire as a fundamental ecological process	Meets objective; prescribed fire used to mimic fire's historic role in the ecosystem both in timing and intensity.	Does not meet objective; Rotational prescribed fires, and fires conducted solely outside of historic peak fire seasons do not adequately mimic natural occurrences.
Protect resources at risk	Meets objective; provides for protection of cultural and natural resources; fuels mitigation can be conducted to lessen impacts to natural and cultural resources in case of wildfire or prior to prescribed fire operations.	Meets objective to some degree, but increases chances of negatively impacting resources by allowing prolonged and unnatural fuel buildup.

SUMMARY MATRIX OF IMPACTS OF ALTERNATIVES

Table 4: Summary of Impacts of Alternatives

Impact Topic	Alternative A- Preferred Alternative	Alternative B- No Action Alternative
Aesthetics	Long-term, moderately positive impacts to visual aesthetics would occur under Alternative A by reducing the impacts of wildland fire as a result of fuel reduction and prescribed fire.	Under Alternative B, long-term, minor negative impacts to the visual aesthetics of the park. Without the use of mechanical fuel reduction, higher fuel levels may allow for higher intensity fires resulting in more dramatic changes in the appearance of the area.
Air Quality	Alternative A would result in short-term, minor negative impacts to air quality as a result of smoke and particulate matter generation during prescribed fires or pile burning. These impacts may be offset by long-term positive impacts that may occur due to a reduced chance of a major uncontrolled wildfire.	Short-term, moderate negative impacts to air quality would occur under Alternative B as a result of increased fire intensity that would be expected to occur without mechanical fuel or prescribed fire fuel reductions.
Cultural Resources	For cultural properties and sites, Alternative A would have long term-moderately positive impacts to cultural resources by reducing the threat of extensive, high-intensity fires and mechanically reducing fuel loads in moderate density sites.	For cultural properties and sites, implementation of Alternative B would result in long-term, moderately negative impacts to cultural resources by increasing the potential for wildland fires requiring suppression and reducing the park's ability to adequately prepare sites for protection during prescribed fire.

Impact Topic	Alternative A- Preferred Alternative	Alternative B- No Action Alternative
Public Health and Safety	Implementation of Alternative A would provide long-term, moderately beneficial impacts resulting from the reduced threat of extreme uncontrolled wildfire and the health and safety risks associated with this condition.	Moderate negative, long-term negative impacts would result from Alternative B due to an increase in the possibility of intense wildland fire and smoke/particulate matter emissions that could occur due to the build-up of fuels in areas that are currently not in a prescribed fire rotation.
Soils	Under Alternative A, there would be negligible to minor adverse effects to soil chemistry and structure in the short term, with beneficial long-term impacts. The goal of this alternative is to use prescribed fire to mimic fire's historic role in the ecosystem. This would result in long-term benefits from fire based nutrient cycling and a reduced possibility of unplanned fire suppression activities.	Implementation of Alternative B would result in beneficial long term impacts due to nutrient cycling and minor to moderate, short-term and long-term adverse effect to the soils resource from both the increased chance of suppression activities and higher severity wildland fires that would be more likely to occur.
Vegetative Resources	Under Alternative A, there would be long-term; moderate positive impacts to vegetation through a more natural reintroduction of fire based on random fire return intervals. Other benefits are decreased fuel loadings and reduced potential for more severe wildfires.	Alternative B would result in moderate short term positive impacts through increased competition by native grasses, but there would be long term negative impact caused by the 5 year prescribed fire rotation. Species that thrive best on a 5 year rotation would out compete other species. Also long-term, moderate adverse impacts may occur to areas of fire exclusion by allowing unnaturally hot fires and the increased risk of extreme wildfires.

Impact Topic	Alternative A- Preferred Alternative	Alternative B- No Action Alternative
Visitor Use and Experience	Implementation of Alternative A would result in minor to moderate and mostly short-term adverse impacts during the periods of fuels reduction and prescribed fire activities that would require restrictions on park use or visitor services. However, long-term beneficial impacts would result from reduced threat of extensive wildfires and an improved landscape/historic scene.	Implementation of Alternative B would result in minor to moderate, generally short-term impacts to visitor use and experience, but with the possibility of major short- and long-term impacts in the case of wildfire.
Wildlife Resources	Alternative A would generally result in minor, short-term, adverse impacts to wildlife while they are displaced during a fuel reduction. When prescribed fire is reintroduced to mimic fire's natural role in the ecosystem, the habitat variety and diversity of plant communities would increase. Wildlife would benefit from increased nutritional quality and availability of forage. This would result in long-term beneficial impacts to most species.	Alternative B could have the same positive impacts at alternative A, however long-term, moderate negative impacts to wildlife by inadvertently increasing the destruction of wildlife habitat associated with increased suppression activities or greater fire intensity as the result of increased fuel loading.

AFFECTED ENVIRONMENT

This section describes the existing environment that could be affected by the alternatives considered, if they were implemented. Each resource topic described below was selected for detailed analysis based on internal and external project scoping issues, NPS requirements, and federal laws, regulations, and orders.

AESTHETICS (VISUAL)

There are numerous features located both inside and outside of the park that contribute to the aesthetics of the area. Located within the park are the Knife and Missouri Rivers and their bluffs, which were documented in paintings by George Catlin and if stood upon provide wonderful vistas of the park and surrounding area. These rivers total approximately six miles in length and wind through the riparian woodlands that provided shelter and food for early inhabitants of the area. Other important areas are the upland and lowland prairies which provided grass and forbs to attract game as well as plants for spiritual and medicinal uses.

Manmade impacts that affect the area are 9 structures built and operated by the park, the City of Stanton, County road 37 that borders the park to the west and County Road 18 that transects the middle of the park. Due to the relatively flat terrain, visual intrusions up to 30 miles away can be seen. At most points in the park, smoke stacks ranging in height from 300 to 500 feet, from five coal fired electrical generation plants can be observed. Also visible around the park are numerous private residences with out-buildings.

AIR QUALITY

Knife River is listed as a Class II airshed under the Clean Air Act of 1977 (CAA). Historically, the Park and surrounding area have enjoyed excellent air quality, with only occasional, short- term air pollution from transient wildfire smoke, blowing dust, and power plants. Since the early 1970's, large scale coal mining has been undertaken on lands surrounding the Park. There are several coal burning electrical generation plants situated within the Park's airsheds. The existing energy development related sites have resulted in occasional air pollution within Park boundaries.

Fire management activities, which result in the discharge of pollutants (smoke, carbon monoxide, and particulates), are subject to and must comply with federal, state, interstate, and local air pollution control requirements as specified by Section 118 of the CAA, as amended (42 USC 7418).

CULTURAL RESOURCES

Cultural resources will be discussed in two separate areas, archaeological resources and ethnographic resources, throughout the remainder of this document.

Archaeological Resources

The 64 identified cultural sites within the park are protected by federal legislation Antiquities Act of 1906, 1979 Archeological Resources Protection Act, Executive Order 11593 and Section 110 of the National Historic Protection Act. The management of cultural resources is guided by NPS-28: Cultural Resource Management Guideline.

Although the park contains cultural deposits dating back 11,000 years, the accumulated deposits of Native American culture spanning the most recent 3,500 years represents the primary cultural resource at KNRI. Three large villages sites located within the park are among the best surviving examples of aboriginal habitation in the Missouri River Valley environment of the Northern Great Plains.

Much of the archeological evidence lies buried beneath the surface leaving relatively unimpressive features for the untrained eye. At the time KNRI was established, only 4 village sites, Big Hidatsa, Sakakawea, Lower Hidatsa, and Buchfink were known to exist within the authorized boundary. Research has shown that the historical and archeological significance is of far greater scope than first envisioned.

Intensive archeological research has expanded the resource data base tenfold, to include 64 sites comprising 25% of the park area. The majority of the sites are comprised, to some degree, of village occupations; however, village periphery zones, off- village activity areas, burial sites, trails and debris- scatter areas also contribute to the data base. Most recently the Elbee site has also been identified as a linear village. KNRI remains one of the few areas of the National Park System in which such an intensive, park wide archeological survey has been completed.

Ethnographic Resources

In 2006 a Cultural Affiliation Study was completed for the Knife River Indian Villages NHS. During the study, representatives from Northern Plains tribes visited the park and were interviewed by Ethnographers. All of the representatives identified plants and plant communities that were very important culturally (for both daily and spiritual use) and that needed protection. Based in part on these comments, an ethnobotanical survey is being conducted and will be completed in 2007 with final report expected in 2008. The representatives were asked about prescribed fire as a management tool. Overall, they found it to be an acceptable practice. Comments from the survey include:

"In terms of resource management, the consultants (from the Blood Nation) stated that prescribed fires were used traditionally, at the end of the winter, to thin the woods and make room for understory species, particularly berries. Thus they support, at least in principle, the use of this managing tool by KNRI."

"Representatives were generally in favor of prescribed fires as a means for managing the native species, as this practice is most definitely a traditional Native American activity. "

PUBLIC HEALTH AND SAFETY

The health and safety of park visitors, park staff, and fire personnel are of utmost importance to the NPS. Wildfires, prescribed fires and other fire management activities can present risks to both the public and park employees.

The park has numerous access points, many of which are along County Road 37 or County Road 18. Most of these routes lead to public day use areas; however some are controlled access and used for administrative reasons only. No private land is located within the fenced boundary of the park although private property is included through a scenic easement within the administrative boundary along the park's western edge. Seven private residences as well as the City of Stanton are located within ¼ mile of the park. Stanton has a population of approximately 300 people and they inhabit 190 dwellings. Neighboring lands are almost exclusively agricultural or range lands.

Staffing levels at KNRI vary throughout the course of the year. Number range from eight employees in the off season to over 20 during the summer months. The park does not have government housing and contains no campgrounds or overnight areas.

Park visitation numbers average around 35,000 visitors per year, with most visiting during the late spring/early summer months. All employees and visitors to the park are at risk of wildfires that threaten the park. Law enforcement and line personnel are at a greater, direct risk. Prior to prescribed burn activities, the park notifies the public by distributing press releases to the local newspapers, distributing brochures to the public, and making phone calls to adjacent landowners to advise people of possible burn times and precautions that may be taken. If fire danger becomes high, park personnel would inform visitors if necessary, close portions or the entire park.

KNRI does have resources for firefighting within the park. The park does have one engine boss- ENGB, one incident commander type 4- ICT4, one incident commander type 5- ICT5 and numerous type I and type II fire fighters on staff. Also stationed at the park are two type 6 engines, along with a 10 person cache.

Although these resources are present at the park, primary suppression duties fall to the Stanton Rural Fire Protection District located ½ mile from the park in the City of Stanton.

SOILS RESOURCES

The geology of the Knife River Indian Villages National Historic Site and the immediate surrounding area consists of bedrock of the Paleocene age. Local formations consist of poorly lithified sandsilt, silty clay, and clay with shale and lignite. Fairly well consolidated sandstone occurs as a ledge in the channel or bed of the Knife River. The entire area was glaciated several times during the late Cenozoic. Eight geochronological units were identified by Reiten (1983). The range in dates is potentially 22,000 BP to the present. Although the area (Knife River Basin) was glaciated, erosion has removed much of the glacial sediment. A combination of wind and running water has reshaped the previous glacial sediment leaving sediments deposited in ponds, sloughs, trenches and flood plains (Groenewold et al. 1979). Soils within the park and surrounding area are primarily loams, silt loams and silty clay loams.

Soils of the site were mapped as part of the county wide soil survey in 1978. Seventeen soil mapping units and several slope variants were recognized. A copy of the Soil Survey of Mercer County (1978) by USDA is on file at park headquarters.

VEGETATION RESOURCES

KNRI lies within the Dry Domain, Temperate Steppe Division, Great Plains – Palouse Dry Steppe Province (Province 331) as described by Bailey (1995). The area is dominated by shortgrass prairie, as is most of this region. Given the proximity to the Missouri River, a wooded component is present.

Grasslands in and around KNRI are typically made up of mixed grass prairies that are dominated by midgrasses, shortgrasses, and upland sedges. Tall grasses dominated by Big Bluestem exist in the western portion of the state but only in isolated patches (Whitman and Wali 1975). Within the mixed grass prairie are a number of alliances and associations. NatureServe (2002) recognizes 15 associations within the Great Plains mixedgrass, shortgrass and sand prairies. Approximately 1430 acres at KNRI are mixed grass prairies with some prairies containing a degree of wooded component.

The wooded component, approximated at 432, acres is made up primarily of Ash, Elm, Boxelder and Cottonwood. There are three associations within two alliances. These are found along the Missouri River and within woody draws. These typically include a shrub component that may include snowberry, chokecherry and Buffaloberry.

The vegetation within the mapping area can be broadly split into 4 categories. These are the floodplain and associated woodlands, terrace vegetation, upland vegetation (outside the park boundary) and croplands. Various grasses such as wheatgrass, needlegrass, gramma grass, upland sedges, and little and big bluestem and a wide variety of forbs dominate the upper terraces in the park. Several non- native and noxious plants that exist

in the park include rhubarb, lilac, leafy spurge, Canada thistle, smooth brome, and sweet clover.

VISITOR USE AND EXPERIENCE

Visitation has varied considerably in the last ten years from a low of 24,000 in 1997 to 41,000 in 2004 during the peak of the Lewis and Clark Bicentennial Commemoration. In 2006 visitation was approximately 25,000. Most visitors come to the park to learn more about the culture and history of the Mandan and Hidatsa as well as the other people of the northern plains. Most visitors watch the park movie, visit the reconstructed earthlodge and walk to one or more of the village sites. In winter, cross country skiing is popular on the North Forest and Two Rivers trails.

A Visitor Study conducted through the Visitor Services Project (Littlejohn, 2003) examined the activities of the visitors and the value they placed on park resources. The most popular areas to visit were the Visitor Center complex, the Lower Hidatsa Village, and the Sakakawea Village. The activities rated as most important to the visitors were visiting the earthlodge, learning history and visiting the village sites.

In the study, visitors were also asked about the importance of selected resources and qualities in the park. 93% of respondents considered the village and archeological sites to be very important or extremely important and 93% also gave the same rating to the importance of Native American Culture. 78% of the visitors rated native prairie restoration as very or extremely important. Wildlife was also rated highly as 85% listed wildlife as very or extremely important.

WILDLIFE RESOURCES

Wildlife populations given major consideration in existing Park management plans include: white-tailed deer (*Odocoileus virginianus*), mule deer (*Odocoileus hemionus*), pronghorn (*Antilocapra americana*), porcupine (*Erethizon dorsatum*), beaver (*Castor canadensis*), prairie sharp-tail grouse (*Pedioecetes phasianellus*), ring-necked pheasant (*Phasianus colchicus*), bald eagle (*Haliaeetus leucocephalus*) and wild turkey (*Meleagris gallopavo*).

A bat inventory was conducted at KNRI in July of 2003. Using mist nets, two species of bats were captured, the hoary bat (*Lasiurus cinereus*) and the little brown bat (*Myotis lucifugus*). An acoustical inventory was also conducted; however the results of this survey have not yet been completed (Schmidt 2004).

Fish certification files, as taken off of *NPSPECIES*, in conjunction with a 2003 USGS vertebrate survey show KNRI as having 51 identified or probable fish species. Some of the major species inhabiting park waters are the walleye (*Sander vitreus vitreus*), Northern

Pike (*Esox lucius*), channel catfish (*Ictalurus punctatus*) and the introduced German Brown Trout (*Salmo trutta*).

Seventy- two bird species were observed during a survey conducted in June 2002. , all of which were likely breeding or summering in the area (Punjabi 2002).

The high number of bird species observed in the park is due largely to the great extent and condition of the diverse habitats found here, including the riparian woodlands, the rivers and sandbars, the native grasslands and the hayfields. By far, the greatest number of bird species was found in the “North Woods” area. This area consists of an exceptionally dense, mature riparian forest, with an abundance of dead and downed wood, and adjacent clearings, shrub lands and wetlands. An area with similar diversity and abundance of birds as the North Woods is located at the south end of the park, just north of the Stanton City park campground. However, this area is much smaller than the North Woods, and it consequently supports fewer birds (Punjabi 2002).

A significant difference was observed between species and abundance of birds in the North Forest verses the Peninsula Forest. Species types and populations were markedly higher in the North Forest area of the park as compared to the Peninsula area. Many factors may have contributed to this difference. Follow- up surveys may be needed to obtain more data on the species abundance in each area.

Also present in the Park are other populations of mammalian and avian carnivores, reptiles, amphibians, birds, and other small mammals. Resource Management Plans strive to maximize the existence and mix of the naturally- occurring wildlife species

ENVIRONMENTAL CONSEQUENCES

The National Environmental Policy Act requires that environmental documents disclose the environmental impacts of the proposed federal action, reasonable alternatives to that action, and any adverse environmental effects that cannot be avoided should the proposed action be implemented. This analysis provides the basis for comparing the effects of the alternatives. The intensity and duration of the impacts, mitigation measures, and cumulative impacts were all assessed.

IMPACT ASSESSMENT METHODOLOGY

General Methodology

This section describes the environmental consequences, or potential impacts, on the natural, cultural, and human environment at KNRI of implementation of the two alternatives considered in this EA. The topics discussed are the same as those described in the Affected Environment section.

The National Park Service based its impact analysis and conclusions on a review of the existing literature and park inventories, information provided by experts within the National Park Service and other agencies, and professional judgments and insights of park staff.

Impacts are described in general terms and are qualified as short-term and long-term, and adverse or beneficial, as appropriate. Impacts may also be described as direct or indirect. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later in time or farther removed from the area, but are reasonably foreseeable. Per NEPA requirements, cumulative impacts are also discussed, and the specific method used for cumulative impact assessment is described below.

Cumulative Effects Analysis

The Council on Environmental Quality (CEQ) regulations for implementing NEPA requires assessment of cumulative effects in the decision-making process for federal projects. Cumulative effects are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time. Cumulative effects are considered for both the no action and proposed action alternatives.

Cumulative impacts were determined by combining the impacts of the preferred alternative (integrated fire management program) with other past, present and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at KNRI and, if applicable, the surrounding region. Other actions with the potential to have a cumulative effect in conjunction with this project include the following:

- The park’s *General Management Plan* implementation.
- The park’s *Resource Stewardship plan* implementation.

- The *Prairie Management plan* implementation.
- The park's exotic plant management program.
- The development of the park's *Comprehensive Interpretive Plan*.
- Previous, present, and future fire management activities

Impairment Analysis

In addition to determining the environmental consequences of the preferred and other alternatives, under National Park Service Management Policies, Section 1.4 et seq. (NPS 2006), park managers must determine if management activities constitute impairment to park resources or values.

The fundamental purpose of the National Park System, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

These laws give the NPS the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within parks, that discretion is limited by the statutory requirement that the NPS must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise.

A prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may constitute impairment. Impairment may result from NPS activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. An impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or

- Identified as a goal in the park's general management plan or other relevant NPS planning documents.

A determination on impairment is included in the analysis section for all impact topics relating to park resources and values.



A stand of Big Blue Stem at KNRI, NPS photo

AESTHETICS

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and the immediate vicinity around the park. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible Changes would be barely detectable, and/or would affect few areas of the viewshed.

Minor Changes would be detectable; although the changes would be slight, and/or would affect some aspects of the viewshed.

Moderate Changes would be readily apparent, and/or would affect many aspects of the viewshed.

Major Changes would be severe or have exceptional benefits, and/or would affect most aspects of the viewshed.

Impact Duration Definitions:

Short-term Recovers in less than one year from the event or treatment action.

Long-term Takes more than one year to recover from the event or treatment action.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

The combination of upland prairies, wooded river bottoms and the confluence of the Knife and Missouri Rivers create a special ecosystem that provides wonderful vistas and beautiful scenery. The grassland ecosystem, including upland and lowland prairies, is one that developed and relies on fire as a disturbance to maintain health and diversity. Fire plays a key role in maintaining the scenic qualities of the grasslands and riparian forests and is paramount to visitor enjoyment.

Under Alternative A, short-term, adverse impacts to aesthetic values may be experienced but must be weighed with long-term aesthetic benefits of prescribed fire. Immediate post fire aesthetics in the prairie areas would be impacted, but only for the short term. Grassland regeneration begins almost immediately and full green up can be expected within a few weeks. This alternative would also introduce approximately 600 acres into the prescribed burn program that is currently not able to be burned. Most of this acreage is prairie, and through the use of prescribed fire, will become more diverse with native grass and forb communities.

Prescribed burning in the timbered areas of the park would produce different aesthetic results. Prescribed burns in wooded areas are conducted before leaf out or after leaf drop. The timing of these burns has little or no impact on above ground foliage in the timber. Standing dead or diseased trees are susceptible to fire and will often become involved. Dead trees either become burned standing snags or fall to the ground and are consumed, creating ash runs on top of the soil. Diseased trees (green ash and box elder) often lose most of their woody above ground biomass and consequently stump sprout later that season. Immediately after a fire, black snags may be visible and will typically stand for three to five years before falling over and decomposing at ground level. These decomposing trees, either through stump holes or ash runs, provide a disturbed area for new tree seeds to land and start the germination process. Depending on tree species, seedlings will reach heights of three to five feet in seven to ten years.

Periodic prescribed low intensity fires can be used to burn off leaf litter accumulations, reduce dead and down 1000 hour fuels and thin younger weaker trees. Reducing fuels in this manner will reduce the chance of catastrophic stand replacement wildfire.

Alternative A, the Preferred Alternative, would allow for long-term, moderately beneficial impacts and an opportunity to minimize impacts of wildland fire due to fuel reduction and prescribed fire. The visitor would experience a pattern of prescribed fires that would be used to somewhat mimic natural fire occurrences. Following mechanical thinning, a cool burning fire can be more easily achieved.

Cumulative Effects

Cumulative effects to the aesthetics of the park will come from prescribed burns, mechanical thinning projects and wildfires. Overall, the cumulative effects of Alternative A would be long-term, moderately positive impacts to visual aesthetics due to a reduction in the impacts of wildland fire as a result of fuel reduction and prescribed fire.

Conclusion

Alternative A would result in direct, short-term, adverse impacts to aesthetic values due to the immediate results of prescribed fires. Immediately after a fire, blackened ground and

black snags may be seen. These impacts would be offset by long-term, moderately beneficial impacts due to prescribed fire's role in mimicking fire's natural ecological processes.

Alternative A would not produce any major adverse impacts or impairment of aesthetic resources or values whose conservation is necessary to the purpose of the establishment of the park, that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Alternative B would result in a greater range of impacts to the visual resource as a result of the various higher levels of fire intensity created by lack of mechanical reduction and the exclusion of areas from the prescribed burn schedule. Due to the increased fuel levels, higher intensity fires would result in more dramatic changes in the appearance of the area. This would result in long-term, minor adverse impacts.

Cumulative Effects

Cumulative effects to the aesthetics of the park will come from prescribed burns, mechanical thinning projects and wildfires. Overall, the cumulative effects of Alternative B would be long-term, moderately positive impacts to visual aesthetics due to a reduction in the impacts of wildland fire as a result of fuel reduction and prescribed fire. Without the inclusion of the additional lands into the prescribed burn schedule and the use of mechanical fuel reductions, increased fuel levels may allow for more intense wildfires resulting in more dramatic changes in the appearance of the area.

Conclusion

Alternative B would result in long-term, minor adverse impacts as wildland and prescribed fire intensities would increase due to the absence of fuel reduction in certain park areas.

Alternative B would not produce any major adverse impacts or impairment of aesthetic resources or values whose conservation is necessary to the purpose of the establishment of the park, that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

AIR QUALITY

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and the local communities within an approximate 30-mile radius. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible Changes in air quality and air quality-related values would be below or at the level of detection. If detected, effects would be considered slight with no perceptible consequences to health or visibility.

Minor Changes in air quality and related values would be measurable; although the changes would be small, effects of smoke on health or visibility would be localized.

Moderate Changes in the air quality and related values would be readily apparent. The effects of smoke and other emissions to health or visibility would be sufficient to cause concern, although effects would be relatively local and short-term.

Major Changes in the air quality and related values would be obvious; the effect of smoke or other emissions would have substantial consequences to health or visibility, and be noticed regionally.

Impact Duration Definitions:

Short-term Recovers in seven days or less from fire or other action.

Long-term Takes more than seven days to recover from fire or other action.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Under Alternative A, all wildland fires would be suppressed, hazard fuels would be reduced using mechanical means, and prescribed fire would be used to mimic fire's natural ecological role.

A full suppression policy has the potential to have adverse impacts on air quality due to increased fuels that are available to burn. Increases in fuel loadings can be attributed to thatch in the prairies and increased stem counts in the woodland areas. As human actions around and within the park increase, the potential for man-made ignitions also rise, increasing the threat of wildfire. Reducing fuels through prescribed fire and mechanical fuel reduction would reduce some of these impacts.

Smoke impacts due to prescribed burning are mitigated by the requirement of the North Dakota Health Department- Division of Air Quality Guidelines which mandate burning on days when dispersal indices are listed as “good” or better.

Short-term, minor indirect adverse air quality impacts would occur in the area because of potential for wildland fires, coupled with prescribed fire activities. However, the potential for more intense impacts and long-term impacts would decrease, since fewer areas would have high wildfire potential, due to prescribed fire treatment, thinning, and hazard fuel reduction.

Cumulative Effects

Cumulative effects to local and regional air quality would be minor, short-term and adverse, depending on timing and extent of other emissions that would coincide with fire events within the park. Fire management activities in the surrounding areas, emissions from local development and automobiles, emissions from regional industry (coal-fired power plants), and management activities in the park, when viewed together, would result in minor short-term adverse impacts on air quality.

Conclusion

Alternative A would reduce fuel accumulations most rapidly under prescribed conditions that protect air quality resulting in short-term, minor negative impacts as a result of smoke and particulate matter generation during prescribed fires. These impacts may be offset by long-term positive impacts that may occur due to a reduced chance of a major or extensive wildfire.

Alternative A would not produce any major adverse impacts or impairment of aesthetic resources or values whose conservation is necessary to the purpose of the establishment of the park, that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Under Alternative B, all wildland fires would be suppressed and prescribed fire would be used to mimic natural occurrences. No mechanical hazard fuel reduction would occur and additional acres classified as medium density archaeological sites would not be included.

Effects due to wildfire suppression would be similar to Alternative A except that mechanical fuel reduction would not be used to aid in reducing adverse impacts.

Prescribed fire would be conducted in the same manner as Alternative A to mimic natural occurrences, but would be based on a five year schedule and not be allowed in areas classified as medium density archaeological sites. Exclusion from medium density sites would allow fuel in those areas to build up and produce large amounts of smoke should a wildfire occur.

Prescribed burning would result in short-term impacts by producing smoke more often. Lack of mechanical thinning around structures and high density archaeological sites would increase the risk of damage to those areas, should a wildland fire occur.

Without prescribed fire or mechanical fuel reductions, fuel loading within the park would continue to increase in both the amount of emissions from unplanned fires and the risk of fire potential. These emissions of air pollutants, including particulates (PM₁₀ and PM_{2.5}) and smoke, would result in short-term, moderate, indirect, adverse impacts to public health and visibility on an intermittent basis and would result in the short-term, moderate direct adverse impacts on air quality due to the possible localized exceeding of some standards. Adverse effects would decrease to minor levels as fuel levels are slowly reduced.

Short-term, minor to moderate negative impacts to air quality would occur as a result of more intense fires that would be expected to occur without mechanical fuel reduction and the use of prescribed fires.

Cumulative Effects

Cumulative effects to local and regional air quality would be minor, short-term and adverse, depending on timing and extent of other emissions that would coincide with fire events within the park. Fire management activities in the surrounding areas, emissions from local development and automobiles, emissions from regional industry (coal-fired power plants), and management activities in the park, when viewed together, would result in minor short-term adverse impacts on air quality.

Conclusion

Alternative B would result in minor to moderate, short-term adverse impacts to air quality and air quality-related values due to an increase in fuel loading and the possibility of wildfires.

Alternative B would not produce any major adverse impacts or impairment of aesthetic resources or values whose conservation is necessary to the purpose of the establishment of the park, that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

CULTURAL RESOURCES

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and the lands immediately adjacent to the park boundary. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Archaeological Sites and Resources

Impact Intensity Threshold Criteria:

Negligible Impact is at the lowest levels of detection – barely measurable without any perceptible consequences, either adverse or beneficial to historic resources. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor Adverse impact – disturbance of a site, which results in little, if any, loss of significance or integrity and the National Register eligibility of the site is unaffected. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – maintenance and preservation of a site. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate Adverse impact – disturbance of a site that does not diminish the significance or integrity of the site to the extent that its National Register eligibility is jeopardized, but impact is readily apparent. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – stabilization of a site. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major Adverse impact – disturbance of a site diminishes the significance and integrity of the site to the extent that it is no longer eligible to be listed in the National Register; impact is substantial, noticeable, and permanent. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – active intervention to preserve a site. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

In certain circumstances, under both alternatives, cultural resources at the park may be impacted by both prescribed and wildland fire.

Due to the grass fuel type and the horizontal continuity of the fuels, engine based operations are the safest and most efficient manner to control fire at the park. That being said, some vehicle use would be needed for suppression activities, prescribed fire actions, and mechanical fuel reduction. Vehicle use may include wildland fire engines, pickup trucks, and ATV use on roads and roadless areas throughout the park. Decisions on vehicle use would be in accordance with the "minimum tool concept," which allows for selection of a vehicle necessary to successfully and safely accomplish the objectives with the least impact on resources. While vehicular traffic can have a damaging impact on surface remnants, foot travel would not likely cause excessive damage. To prevent the potential crushing or scattering of archaeological resources, vehicle traffic should be kept to a minimum and avoid areas of high density archaeological resources.

Direct impacts of fire on surface artifacts in a grass fuel model are influenced by two main factors, temperature at the flame front and the duration of those temperatures. It has been determined through literature reviews and experiments conducted at KNRI that prescribed fires conducted under a predetermined set of parameters do not reach the irreversible damage threshold for surface artifacts (Sturdevant 2005). Surface artifacts are at greater risk from uncontrolled wildfire, where management has no control over influencing factors than from prescribed fire.

Alternative A will benefit surface artifacts by decreasing fuel loads through prescribed burning and mechanical fuel reductions. Reduced fuel loads will decrease fire intensity and durations

Cumulative Effects

Cumulative effects to properties include erosion, collection of artifacts, past fires and fire activities, and past ground-disturbing activities around and within the park. Smaller, planned maintenance projects for the park would not contribute substantially to cumulative impacts, since these can be planned in advance, with site surveys and use of various mitigation measures. Under Alternative A, cumulative effects would be reduced, as fuel reduction would result in lower intensity wildland and prescribed fires.

Conclusion

Alternative A would have long term-moderately positive impacts to cultural resources by eliminating the threat of extensive, high-intensity fires and reducing damaging fuels. Alternative A would allow for prescribed fire to increase the level of the protection of cultural resources. Alternative A would not produce any major adverse impacts or impairment of historic resources or values whose conservation is necessary to the purpose of the establishment of the park or that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Alternative B has the greater potential to impact archaeological resources through increased suppression activity and fireline intensities, due to increases in fuel loadings. Implementation of prescribed fires would be more difficult due to the inability to prepare the sites for protection through the use of mechanical fuel reduction or the inability to burn medium density sites altogether.

There is the possibility that fire or use of equipment could expose previously unknown sites or artifacts that had been obscured by vegetation, or leaf litter, which could be viewed as a benefit. However, runoff and erosion after the fire could displace these artifacts from their historic or prehistoric context, causing loss of site integrity. Adverse indirect impacts could also occur if unauthorized collecting would occur following a fire. Rehabilitation of burned areas could also disturb site or cause loss of site integrity.

Cumulative Effects

Alternative B would add to the cumulative losses of cultural resources from the possibility of intense wildland fires, which may lead to increased erosion and ground-disturbing activities during fire suppression, and a lack of fuel reduction in preparation for prescribed fire. The inability to treat medium density archaeological sites with mechanical or fire related fuels reductions would compound the problem. Non

treatment areas generate greater intensities and fire behavior which has the potential to destroy the integrity of surface archaeology.

Conclusion

Implementation of Alternative B would result in long-term, moderately negative impacts to cultural resources by increasing the potential for wildland fires requiring suppression and reducing the park's ability to adequately prepare sites for protection during prescribed fire.

Alternative B would not produce any major adverse impacts or impairment of historic resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Ethnographic Resources

Impact Intensity Threshold Criteria:

Negligible Impacts would be barely perceptible and would alter neither resource condition, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Minor Adverse impact – Impacts would be slight and noticeable, but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor alter the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Beneficial impact – impacts would allow access and/or accommodate a group's traditional practices or beliefs. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Moderate Adverse impact – Impacts would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – impacts would facilitate traditional access and/or accommodate a group's traditional practices or beliefs. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Major Adverse impact – Impacts would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group’s body of practices and beliefs, to the extent that the survival of a group’s practices and/or beliefs would be jeopardized. For purposes of Section 106, the determination of effect would be *adverse effect*.

Beneficial impact – impacts would encourage access to and/or accommodate a group’s traditional practices or beliefs. For purposes of Section 106, the determination of effect would be *no adverse effect*.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Under Alternative A, fire would still occur within the park, but the selective use of prescribed fire plus the proposed fuels reduction activities, would help prevent extreme wildfires in the future.

The entire park has been surveyed for ethnographic sites (Aehler 1980). Prescribed fire would be conducted in low moderate density areas and in areas where manual thinning has already reduced the density of fuel, so that burns could be controlled and kept at low intensities. Also, all prescribed burn plans would adhere to requirements of NHPA, and pre-burn surveys and the implementation of cultural resource protection measures would keep impacts to minor levels.

During thinning, some unknown sites could be damaged by vehicular traffic and work crews trampling sites and dragging slash over the ground surface. Damage could be managed by cutting limbs and brush into sizes that can be transported without dragging or heavy vehicular use. All slash burning areas would be located away from known resources, or located in previously disturbed areas in areas that have been surveyed. Direct adverse impacts from thinning would be minor.

Ethnographic resources in the park would be protected through the careful planning of fires and fuel reduction, plus working with the tribes and SHPO to identify such resources.

Cumulative Effects

Under Alternative A, cumulative impacts would result from surrounding fires, maintenance projects, exotic plant projects, development in and around the park and unauthorized collecting of artifacts. With the use of prescribed fire and fuels reductions, long-term cumulative adverse impacts to ethnographic resources would be minor, with

long-term moderate beneficial impacts due to the decreased potential for more intense and widespread wildfires.

Conclusion

Under Alternative A, there would be long-term, minor, direct and indirect adverse impacts to cultural resources, with some moderate, long-term beneficial impacts by eliminating the threat of extensive, high-intensity fires and reducing damaging fuels.

Alternative A would not produce any major adverse impacts or impairment of ethnographic resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Under this alternative, there would be an increase in fuel loading due to a lack of mechanical fuel reduction or treatment of medium density areas, which could result in increased wildfire occurrence and intensity. If higher intensity fires occurred, the effects of wildfires under Alternative B could be extensive because of the greater intensity of heat penetration into subsurface sites, the complete consumption of wood, and the more extensive suppression activities.

Fires could continue to smolder in vegetation and along roots near cultural resources, damaging sites. Ethnographic resources would be at risk from fire, suppression activities, and the buildup of fuels. Fire suppression could also affect ethnographic resources. The use of heavy equipment could directly damage surface artifacts. While some of the disturbances caused by suppression could be avoided by careful planning and the use of wet lines and burn outs, the ability to consider and protect all cultural resources during a wildfire is difficult.

Since the park's cultural resources are nonrenewable, most adverse effects on ethnographic resources would be considered direct and long-term. The intensity of impacts would depend on the intensity, duration, and location of fires, and the mitigation efforts that could be implemented. Given the higher potential for more intense wildfire as time goes on, Alternative B would result in minor to moderate, short- and long-term, direct and indirect adverse impacts to ethnographic resources.

Cumulative Effects

Alternative B would add to the cumulative losses of ethnographic resources from the possibility of intense wildland fires, which may lead to increased erosion and ground-disturbing activities during fire suppression.

Conclusion

Alternative B would result in direct and indirect, minor to moderate adverse impacts on ethnographic resources in the park. Short-term impacts may occur, but most impacts would be considered long-term, due to the non-renewable nature of these resources.

Alternative B would not produce any major adverse impacts or impairment of ethnographic resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Section 106 Summary

Upon completion, this environmental assessment will be sent to the North Dakota State Historic Preservation Office for review and comment in partial completion of NHPA Section 106 compliance for implementation of the fire management plan at KNRI. Government-to-Government consultation with concerned American Indian tribes (see list of recipients in the “Consultation/Coordination” section of this EA) has been initiated to help ensure that no adverse impacts occur to ethnographic resources during project implementation.

The environmental assessment provides detailed descriptions of two alternatives (including a no-action alternative), analyzes the potential impacts associated with possible implementation of each alternative, and describes the rationale for choosing the preferred alternative. Also contained in the environmental assessment are mitigation measures that would help avoid adverse effects on cultural resources.

The park has been intensively surveyed for cultural resources (Aehler 1980). Pursuant to 36CFR800.5, implementing regulations of the National Historic Preservation Act (revised regulations effective January 2001), addressing the criteria of effect and adverse effect, the National Park Service finds that the implementation of the fire management plan at KNRI in these previously surveyed areas, with identified mitigation measures, would not result in adverse effects to archeological, historic, or ethnographic resources eligible for or listed on the National Register of Historic Places.

All work would be performed in compliance with the Secretary of the Interior’s

Standards and Guidelines for Archeology and Historic Preservation and would be planned in consultation with the State Historic Preservation Officer. As appropriate, mitigation measures would be developed in consultation with the North Dakota State Historic Preservation Officer and interested persons prior to implementation of the preferred alternative.

To reduce subsequent unauthorized collecting from areas where fuels have been removed, fire treatment personnel would be educated about cultural resources in general and the need to protect any cultural resources encountered. Work crews would be instructed regarding the illegality of collecting artifacts on federal lands to avoid any potential ARPA (Archeological Resources Preservatives Act) violations. This would include instructions for notifying appropriate personnel if human remains were discovered. In the unlikely event that cultural resources are discovered during treatment, work would be halted in the vicinity of the resource, and procedures outlined in 36 CFR 800 would be followed.

The National Park Service is committed to further consultation with affiliated tribes and with the North Dakota State Historic Preservation Office regarding both the cultural resources surveys and proposed mitigation measures. The park would continue to work with American Indians to protect resources valued by the tribes.



Poly Archaeological Site, Post burn assessment of fires impacts on surface archaeology, NPS photo

PUBLIC HEALTH AND SAFETY

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and the local communities immediately adjacent to the park. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible There would be no impacts, or the impacts would be at the lowest levels of detection and would not have an appreciable effect on public health and safety, with no injuries or loss of life.

Minor The impact would be detectable, but would not have an appreciable effect on public health and safety, with few or minor injuries and no loss of life.

Moderate The impacts would be readily apparent and would result in substantial, noticeable effects to public health and safety on a local scale, with possible serious injuries, but no loss of life.

Major The impacts would be readily apparent and would result in substantial, noticeable effects to public health and safety on a regional scale, or with the possibility of extremely serious injuries and/or loss of life.

Impact Duration Definitions:

Short-term Impacts would last for the duration of the fire or treatment action.

Long-term Impacts would last longer than the duration of the fire or treatment action.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Suppression of wildland fire is inherently dangerous. Strict adherence to safety guidelines for fire fighting, equipment and procedures would minimize accidents. All

prescribed fire operations would be conducted by red-carded firefighters. Factors that impact firefighter health and safety include smoke inhalation, blisters, injuries from equipment use, and in severe cases, burns from wildland fires. Impacts to the public include smoke inhalation, and in severe cases consumption of dwellings and loss of life.

Over time, Under Alternative A, there would be less chance of extreme or widespread wildfires in the area due to the reduction of fuels, inclusion of moderate density areas and the use of prescribed fire in the park. This would result in a long-term, indirect, beneficial impact to local and regional health and safety, since the possibility of more severe health and safety impacts due to unplanned fire suppression efforts would be substantially reduced.

The actions involved with the use of prescribed fire and mechanical fuel reduction would involve more controlled conditions and pre-planning for the protection of health and safety, as well as appropriate notification and permitting prior to taking action. Also, prescribed fires and fuel reduction activities would be planned for seasons of low visitor use whenever possible. All prescribed fires would have an updated approved prescribed fire plan that contains measures to provide for public and firefighter safety. In addition, prescribed fire notices in local newspapers, brochures for the public and phone calls to adjacent landowners would advise them of burn times and precautions that may be taken. Therefore, the potential for adverse impacts related to fire control efforts, setting of fires for prescribed burns, smoke impacts, and use of chainsaws and equipment for thinning and limbing would be lessened, resulting in negligible or minor, adverse, short-term impacts. These impacts are often localized, with few off-site adverse health and safety concerns to nearby residents.

Alternative A, in the short-term, may increase the frequency of smoke emissions through the burning of slash piles and prescribed fires. This process can be implemented with smoke dispersal levels that are favorable and thus lessen impact on the public. In the long-term this would allow for safer suppression action of firefighters and more manageable elements for prescribed fires.

Cumulative Effects

Cumulative impacts to public health and safety include those that could result from the park's actions plus those from fire policies outside the park and other activities within the park that involve health and safety issues. Adverse health and safety impacts from smaller maintenance projects would be very short-term and negligible to minor, based on the types of projects normally undertaken, the health and safety planning that would precede these projects, and prior good safety records. Cumulative impacts to public health and safety under Alternative A would be less than under Alternative B, since the additional fuels reduction over time would reduce the potential for widespread or extreme wildfires, resulting in a cumulative beneficial impact. Adverse impacts relating to

fire fighting and fire and fuels management activities would be minor to moderate and short-term.

Conclusion

Implementation of Alternative A would provide long-term, moderately beneficial impacts resulting from the increased protection from extreme wildfire, which can create situations with higher health and safety risks. It would also result in more localized, negligible to minor, short-term adverse impacts from the prescribed fire and fuels reduction activities.

The Preferred Alternative (Alternative A) would allow for a greater measure of safety to the public and firefighter.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Under Alternative B, existing safety procedures and full suppression of all wildland fires would continue to ensure the health and safety of park visitors, staff, and the residents of the surrounding communities. Strategies would be in place to minimize risks to wildland firefighters and prescribed fire personnel. Safety impacts would be related to the severity of wildland fire and its location and prescribed fire and fuel reduction activities. With the buildup of fuel that would occur over time under Alternative B, more potential for severe fire behavior would exist, as well as more adverse impacts on the health and safety of the firefighters and park personnel. Health of nearby residents would also be of greater concern due to indirect impact of exposure to smoke. Direct impacts, including injuries and possible loss of life and property, could also occur.

Alternative B would provide some of the same benefits as the preferred action. However, the possibility of an intense wildland fire and smoke emissions would increase with the build up of fuels resulting in moderate, long-term adverse impacts to public health and safety. In addition, the possibility of extreme wildfire could cause the chances of major short-term impacts to increase.

Cumulative Effects

Cumulative impacts under Alternative B would be greater than under Alternative A, since the lack of fuels reduction would allow more fuels to build up over time, increasing the potential for widespread or extreme wildfires and moderate, long-term adverse impacts may result.

Conclusion

Moderate, long-term negative impacts would result from Alternative B due to an increase in the possibility of intense wildland fire and smoke/particulate matter emissions that could occur due to the build-up of fuels.

SOILS RESOURCES

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and immediately adjacent lands. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible Effects to soil attributes would be below or at the lower levels of detection.

Minor Effects would be detectable, but generally of limited area and localized.

Moderate Effects would be readily apparent and result in a change to the soil character over a relatively wide area.

Major Effects would have a substantial and possibly permanent consequence. Effects would be readily apparent, long-term, and substantially change the character of the soils over a large area.

Impact Duration Definitions:

Short-term Recovers in less than three years from fire or other action.

Long-term Takes more than three years to recover from fire or other action.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Under Alternative A, there would be negligible to minor adverse effects to soils in the short-term, with beneficial long-term impacts. The goal of this alternative is to use prescribed fire to mimic fire's historic role in the ecosystem. This would result in long-term benefits from the reestablishment of a fire-driven nutrient cycle and increased stability of the soil strata, given increased native herbaceous ground cover and the reduced possibility of unplanned fire suppression activities.

Cumulative Effects

Cumulative impacts to soils include the effects from fire and suppression activities in the park and on adjacent lands, plus soil disturbance from other projects planned for the area, some limited vehicle use for projects, and human presence in the park. As fire would be restored to a more natural role over the long-term, vehicle use for fuels management and related wildland fire projects would decline, offsetting impacts from non-fire related activities. Therefore, cumulative adverse effects to soils under Alternative A are predicted to be minor and relatively localized, with reclamation and revegetation of burned areas providing beneficial effects over time.

Conclusion

Under Alternative A, there would be negligible to minor adverse effects to soils in the short term, with beneficial long-term impacts. The goal of this alternative is to use prescribed fire to mimic fire's historic role in the ecosystem. This would result in long-term benefits from the reestablishment of a fire-driven nutrient cycle an increased stability of the soil strata, given increased native herbaceous ground cover and the reduced possibility of unplanned fire suppression activities.

Alternative A would not produce any major adverse impacts or impairment of soils resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Implementation of Alternative B would result in minor to moderate, short-term and long-term adverse effect to the soils resource from both suppression activities and higher severity wildland fires that would be more likely to occur.

Cumulative Effects

High-intensity wildland fires resulting from continued fuels buildup are more probable under Alternative B and would likely result in more severe impacts to soils stability.

Conclusion

Implementation of Alternative B would result in minor to moderate, short-term and long-term adverse effect to the soils resource from both suppression activities and higher severity wildland fires that would be more likely to occur.

Alternative B would not produce any major adverse impacts or impairment of soils resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

VEGETATION RESOURCES

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and immediately adjacent lands. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible Changes in vegetation communities would not be measurable, with no effect on native species populations. Any effects would be small in scale and no species of special concern would be affected.

Minor Changes in vegetation communities or species populations would be measurable, with small and localized effects to a relatively minor portion of any species population.

Moderate Changes in vegetation communities or species populations would be readily apparent, with effects to a sizeable segment of the species' population over a relatively large area.

Major Changes in vegetation communities or species populations would have a considerable long-term effect and affect a relatively large area in and out of the park. Species of special concern could be affected. Reclamation success could not be guaranteed.

Impact Duration Definitions:

Short-term Recovers in less than three years from fire or other action.

Long-term Takes more than three years to recover from fire or other action.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Under Alternative A, all wildland fires would be suppressed, hazard fuels would be reduced using mechanical means, low and medium density archaeological areas would be included in burn units, and prescribed fire would be used to mimic fire's natural ecological role.

Researchers are in agreement that fire provides an overall benefit to the continued growth, health and maintenance of the mixed-grass prairie ecosystem (Vogl 1979, Wright and Bailey 1980). Although research findings conflict as to whether fire benefits or harms a particular species during a specific stage of growth, they generally agree that fire plays an integral role in maintaining the mixed grass prairie ecosystem.

Given the rapid growth characteristics and the chemical composition of most grassland species, decomposition occurs slowly in the absence of fire in this ecosystem. Thus fires have the direct effect of removing stagnant, dead plant accumulations while converting that mass to ash and charcoal. The ash/charcoal material returns a number of minerals and salts to the soil, thus recycling them for new plant growth. Indirectly, the higher soil temperatures in the post-burn environment increase fungal, bacterial, and algal activities, which in turn increase available nitrogen. In addition to increasing nitrification and mineral and salt amounts in the soil, the ash and charcoal residue resulting from incomplete combustion aids in soil buildup and soil enrichment by being added as organic matter to the soil profile. The added material works in combination with dead and dying root systems to make the soil more porous and better able to retain water. In general, fires tend to stimulate plant growth, resulting in larger, more vigorous plants, greater seed production, and increased protein and carbohydrate content. Fires also tend to increase species diversity and reduce woody species relative to grass and forb species.

Cool-season, non-native grasses are usually decreased by fire, although responses vary somewhat depending on seasonality, frequency, residence time, and soil moisture

conditions. Research indicates that Kentucky bluegrass (*Poa pratensis*), crested wheatgrass (*Agropyron cristatum*), smooth brome (*Bromus inermis*), and downy brome (*Bromus tectorum*) are reduced by fire, particularly by repeated spring fires (Whisenant 1987; U.S. Department of Agriculture 2000).

Both alternatives provide for the use of prescribed fire for resource benefits. That is, prescribed fire may be used to stimulate the growth of native species or reduce the growth of non-native species, either directly or indirectly. This may be the primary goal of a prescribed fire, or a product of prescribed fire for fuel reduction. In many cases a prescribed fire unit identified for fuel reduction would be burned during a specific season and with a specific ignition pattern based on species, wind and topography, thus realizing both resource benefit and fuel reduction. Fire monitoring would continue to be used to assess the effects of fire on specific species, following standard monitoring protocols (Fire Monitoring Handbook 2001). The direct and indirect effects of prescribed fires are generally beneficial to the native vegetation species, although individual plants of some species may be destroyed by fire. All units would be assessed prior to prescribed fire implementation. Fire would be excluded from high density archaeological areas.

Both alternatives provide for suppression of unwanted wildland fires that would have a direct negative effect on vegetation. The impact of suppression activities would be reduced by the use of Minimum Impact Suppression Tactics (MIST). That is, suppression activities would generally favor wet-line or scratch line over fire lines made with heavy equipment. The use of MIST would reduce the impact on vegetation resources.

Alternative A would allow for a more controlled reintroduction of fire to the ecosystem with minor impacts due to the thinning activities. Due to the potential for lessened impacts through treatment activities that allow for fire to more closely mimic its natural role in the ecosystem, Alternative A would result in a long-term, positive impact of vegetation resources.

Cumulative Effects

The cumulative impacts to vegetation include those arising from activities within the park and the surrounding area, and projects, such as exotic plant management, planned for within the park boundaries. Previous and potential future fire suppression operations (vehicle compaction, fireline construction, etc.) and mechanical fuels reduction and prescribed fire activities would result in negligible to minor adverse impacts as suppression actions become less frequent with decreasing fuels across the landscape. Other management activities or uses would add to the overall impacts on vegetation over time, resulting in long-term minor to moderate impacts to vegetation, depending on the extent and severity of fires and the nature and location of the projects.

The exotic plant management program would have positive impacts by reducing populations of non-native plants, allowing restoration of native species. Proper timing of fires, corresponding to vegetation type and fire function, would mitigate these adverse impacts.

Conclusion

Alternative A would result in a long-term, positive impact of vegetation resources by allowing prescribed fires to more closely mimic its natural role in the ecosystem.

Alternative A would not produce any major adverse impacts or impairment of soils resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

As stated above, both alternatives provide for the use of prescribed fire for resource benefits and provide for suppression of unwanted wildland fires that would have a direct negative effect on vegetation.

Alternative B would allow continuous adverse impacts to vegetation resources by allowing unnatural fuel conditions. Exclusion of fire from medium density archaeological sites would increase the risk of uncontrolled wildfire in those areas, as well as increasing the chance those wildfires would spread to high density areas where fire is not wanted. These fires would then have a greater potential of long-term, moderate adverse impacts on the resource.

Cumulative Effects

The cumulative impacts to vegetation include those arising from activities within the park and the surrounding area, and projects, such as exotic plant management, planned for within the park boundaries. Previous and potential future fire suppression operations (vehicle compaction, fireline construction, etc.) and mechanical fuels reduction and prescribed fire activities would result in negligible to minor adverse impacts as suppression actions become less frequent with decreasing fuels across the landscape. Other management activities or uses would add to the overall impacts on vegetation over time, resulting in long-term minor to moderate impacts to vegetation, depending on the extent and severity of fires and the nature and location of the projects. Cumulative impacts under Alternative B would be greater than Alternative A due to increased fuel loads, uncontrolled spread into non-fire areas and the greater possibility of wildland fires.

Conclusion

Alternative B would result in a long-term, positive impact of vegetation resources by allowing prescribed fires to more closely mimic its natural role in the ecosystem. However, Alternative B has a greater potential of long-term, moderate adverse impacts on the resource due to unnatural fuel conditions from the lack of mechanical fuel reduction and exclusion of medium density archaeological sites.

Alternative B would not produce any major adverse impacts or impairment of soils resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

VISITOR USE AND EXPERIENCE

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings and relevant literature. The area of analysis for this topic included KNRI and land immediately adjacent to the park. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible Changes in visitor use and/or experience would be below or at the level of detection. The visitor would not likely be aware of the effects associated with the alternative.

Minor Changes would be small, though detectable. The visitor would be aware of the effects, but the effects would be slight and would not disrupt the visitor experience such that the park's values and facilities could not be enjoyed.

Moderate Changes would be readily apparent and the visitor would be aware of the effects, which would degrade or limit the visitor's enjoyment of the park's values and/or facilities.

Major Changes would be readily apparent and have important and possibly permanent consequences. The visitor would be aware of the effects, which would result in the visitor not being able to fully experience the enjoyment of park values and/or facilities.

Impact Duration Definitions:

Short-term Effects occur only during the fire or other action.

Long-term Effects continue to occur after the fire or other action.

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Under Alternative A, there would be decreased chance of extreme wildfires in the area due to the reduction in fuels and the use of prescribed fire within the park. This would result in a long-term, indirect, beneficial impact to visitor use and enjoyment, as the possibility of larger scale destruction of natural and cultural resources would be substantially lessened. Noise, smoke, and odor generation would also be reduced along with periods of reduced visibility. Avoiding wildfire damage and the resultant disruption to visitors, especially during the high tourist season, would increase the beneficial impacts of this alternative.

Prescribed fires and thinning/slash pile burning would generally be conducted at limited locations during the pre- and post-visitor use seasons when fire danger is lower and fewer visitors are present. Also, fire and slash burning would be done when climatic conditions are appropriate to ensure that smoke would not interfere with visitors at the park or cause major indirect adverse impacts to viewsheds. More frequent instances of visitor use restrictions and disturbance may occur due to smoke and odor, and noise from equipment, vehicles, and chainsaws during these activities. However, these impacts would be very short-term and localized. Therefore, these activities would have negligible to minor short-term adverse impacts on visitor use and experience.

Cumulative Effects

Cumulative impacts to visitor use and experience include those that result from the park's actions plus disruption from projects planned within the park. The effects from the smaller maintenance projects would be very minor and short-term, with limited noise and disruption; access would not be denied to most areas of the park. Under Alternative A, the fuels reduction program would result in fewer extensive wildfires and adverse impacts on visitor use and experience from such instances would be minor to moderate and short-term. Long-term, beneficial impacts would occur due to the protection of local resources from the adverse effects of wildfire suppression.

Conclusion

Implementation of Alternative A would result in minor to moderate and mostly short-term adverse impacts during the periods of fuels reduction and prescribed fire activities

that would require restrictions on park use. However, long-term beneficial impacts would result from the increased protection from extensive wildfires and the resultant improved landscape scene.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Under Alternative B, visitor use and experience would be subject to few, if any, adverse impacts until fire occurred within or near the park. Then suppression activities and the fire itself would disrupt public enjoyment and use of the park for the duration of the fire, and possibly for extended periods after widespread or extreme wildfires. The short-term adverse impacts would be minor to moderate, and include loss of access to the affected areas of the park and surrounding areas, and possibly additional restrictions on use of certain facilities, depending on the location and severity of the fire. Fire and the associated suppression efforts could affect areas more heavily used by visitors, primarily the park trails, fishing hole and visitor center area by directly causing damage to these areas or by causing noise, smoke, traffic, odors, or decreased visibility that would detract from the visitor experience in or near the area.

Under Alternative B there would be a higher possibility of extensive and widespread wildfire due to the expected buildup of fuels from suppression and lack of fuels reduction efforts. A more extensive wildfire would be likely to occur during the hotter summer months when visitor use is highest. This would result in similar types of impacts as described above, but to a greater degree, with possible closure of the park for an extended period of time. The visitor experience in future years may also be affected, since the cultural and/or natural resources that attract visitors to the park could be either changed or damaged, and it could take years to restore or replace the natural landscape and cultural attributes of the park. Some resources are nonrenewable and could be permanently lost to the park. In this case, impacts to visitor use and experience could approach major, long-term levels of intensity.

Cumulative Effects

Cumulative impacts include those listed for Alternative A, but in Alternative B firefighting activities that may occur would result in minor, short-term adverse effects on visitor access and enjoyment, with the level of impacts dependent on the location, extent, and intensity of the fires. Cumulative adverse impact would range from minor to moderate, and could be short- or long-term in duration, with some possibility of major impacts if extensive wildfires damaged many of the highly used areas of the park during prime tourist season.

Conclusion

Implementation of Alternative B would result in minor to moderate, generally short-term impacts to visitor use and experience, but could possibly result in major short- and long-term impacts in the case of widespread or extreme wildfire.

WILDLIFE RESOURCES

Methodology

The assessment of impacts uses the general methodology described above and the resource specific information provided below. Available information was obtained through interdisciplinary team meetings, spatial and inventory data, and relevant literature. The area of analysis for this topic included KNRI and area immediately adjacent to the park. The intensity of effects and impact duration are described in the analysis below using the following criteria and definitions.

Impact Intensity Threshold Criteria:

Negligible There would be no observable or measurable impacts on native fish and wildlife species, their habitats, or natural processes sustaining them. Impacts would be well within the range of natural fluctuations.

Minor Impacts on native fish and wildlife would be detectable and localized, but would not be expected to be outside the natural range of variability and would not be expected to have any long-term effects on native species, their habitats, or natural processes sustaining them.

Moderate Impacts on native fish and wildlife would be detectable and could be expected to be outside the natural range of variability and to have long-term effects on native species, their habitats, or the natural processes sustaining them.

Major Impacts on native fish and wildlife would be detectable, and would be expected to be outside the natural range of variability and have long-term effects on native species, their habitats, or the natural processes sustaining them. The change would be substantial and possible permanent.

Impact Duration Definitions:

Short-term Recovers in less than one to three years after fire or other action (depending on the species).

Long-term Takes more than one to three years to recover after fire or other action (depending on the species).

Impacts of Alternative A: (Integrated Fire Management Program)

Impact Analysis

Small Mammals

Wildland and prescribed fire may have some direct mortality on small mammal species, as individual animals may perish due to exposure to smoke and flames. Indirectly, fire may impact the population as a result of reducing the amount of available cover and increasing the amount of predation by raptors and other animals; however, leaving a mosaic burn pattern or burning smaller acreages would mitigate these potential effects. Prescribed fire would have the beneficial effect of increasing food for small mammals.

Birds

Direct mortality from fire probably does not occur in most bird species because they are able to move out of harm's way. Indirectly, fire may cause birds to nest in other locations immediately after the event if specific nesting areas are burned. Ground nesting birds may experience increased predation after prescribed burning. This event will often force the birds to renest in areas that were not affected by prescribed burning activities.

Reptiles

Very little information is available in literature on the direct effects of fire on snakes and lizards, but in general there may be some direct mortality. The fact that there are no reports of high mortality for any herptile species may indicate that they are not highly vulnerable to fire.

Ungulates

Fire probably does not have direct mortality on most healthy ungulates because they are able to move away from the flame front and out of harms way. The fire may kill sick, diseased or immobile ungulates. Indirectly, fire may cause ungulates to concentrate in specific areas immediately after the event to search for food or protective areas.

Effects on white-tailed and mule deer habitat are widely varied and well documented in literature. In general, fires that create mosaics for forage and cover are beneficial. Deer prefer foraging in recently burned areas (once growth begins) compared to unburned areas, although preference may vary seasonally (Davis 1976, Williams et al. 1980). This preference may indicate an increase in plant nutrients, which usually occurs following fire. Prescribed fire in grass communities reduces litter that otherwise inhibits new growth of grasses. This rejuvenates and improves the communities through increased nutrient content and palatability of forage (Dasmann and Dasmann 1963).

Alternative A allows for the use of mechanical treatments to prepare the resources for the reintroduction of fire to mimic conditions favorable to fire dependent species. Through this process, wildlife habitat areas can be managed more effectively, decreasing the potential of uncontrolled wildfire and stand replacement events.

Cumulative Effects

Cumulative impacts include past, present, and reasonable foreseeable future fire management activities, combined with other administrative and maintenance actions in the planning area would result in short-term, minor adverse impacts to wildlife, assuming mitigation is used and prescribed fires occur in appropriate seasons to minimize impacts on breeding animals. Human movements around wildlife may add to the short-term disruption of certain species. Alternative A would result in more beneficial impacts to wildlife, especially as habitat improves with fire and non-fire treatments.

Conclusion

Alternative A would generally result in minor, short-term, adverse impacts to wildlife. When prescribed fire is reintroduced to mimic fire's natural role in the ecosystem, the habitat variety and diversity of plant communities would increase. Wildlife would benefit from increased nutritional quality and availability of forage. This would result in long-term beneficial impacts to most species.

Based on the potential benefits of habitat improvements gained from mechanical treatment and inclusion of medium density areas, a long-term, positive impact to wildlife resources would occur by implementing Alternative A.

Alternative A would not produce any major adverse impacts or impairment of wildlife resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.

Impacts of Alternative B (No Action/Prescribed Fire)

Impact Analysis

Basically, impacts to small mammals, birds, reptiles, and ungulates would be the same as under Alternative A.

Alternative B could inadvertently increase the destruction of wildlife habitat associated with increased suppression activity as the result of increased fuel loading.

Cumulative Effects

Cumulative impacts include past, present, and reasonable foreseeable future fire management activities, combined with other administrative and maintenance actions in the planning area would result in short-term, minor adverse impacts to wildlife, assuming mitigation is used and prescribed fires occur in appropriate seasons to minimize impacts on breeding animals. Human movements around wildlife may add to the short-term disruption of certain species. Under Alternative B, cumulative impacts may be moderate and long-term due to destruction of wildlife habitat associated with intense wildfires and suppression activities.

Conclusion

Alternative B could have long-term, moderate negative impacts to wildlife by inadvertently increasing the destruction of wildlife habitat associated with increased suppression activity as the result of increased fuel loading.

Alternative B would not produce any major adverse impacts or impairment of wildlife resources or values whose conservation is necessary to the purpose of the establishment of the park that are key to the natural or cultural integrity of the park, or that are actions identified as a management goal of the park.



Bald Eagles perched over the Missouri River, NPS photo

CONSULTATION AND COORDINATION

SCOPING

Agencies contacted for information or that assisted in identifying important issues, developing alternatives, or analyzing impacts include: the; the U.S. Department of Interior – Fish and Wildlife Service; North Dakota Department of Air Quality; North Dakota State Historical Preservation Office.

Public scoping for the preparation of the proposed fire management plan and EA included distribution of a letter in April 2005 to solicit input on alternatives and other aspects of the planning process.

Upon completion, this EA will be sent to the North Dakota SHPO and USFWS for their respective Section 106 NHPA and Section 7 ESA review.

This EA will also be sent to the agencies, tribes, and organizations listed below. It will also be available at the park's administration building as well as on the NPS web site. Notice will be placed in public newspapers and press releases will be distributed to local media. All comments received during the public review period will be assessed by the NPS for their substance. Should substantive comments be received from the public, a determination will be made as to whether it would be appropriate to make a decision on this proposed plan, or whether a new EA or EIS should be prepared.

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Jay Sturdevant, Archaeologist, MWAC

LIST OF RECIPIENTS

A press release announcing availability and how to obtain hard or digital copies will be emailed to climbing groups, climbing publications, climbing guides, area newspapers and area radio stations. Adjacent landowners, other interested parties and the following, state and local agencies; tribes; and organizations will be mailed a copy of this document.

Federal Agencies

Fort Union Trading Post National Historic Site
Midwest Archaeological Center
National Park Service Midwest Regional Office
Northern Great Plains Fire Management Office, Wind Cave National Park
Theodore Roosevelt National Park
United States Army Corp of Engineers
United States Fish and Wildlife Service
United States Fish and Wildlife Service, Audubon National Wildlife Refuge
United States Forest Service, Dakota Prairie Grasslands

State Agencies

North Dakota State Department of Health, Air Quality Division
North Dakota State Forest Service
North Dakota State Game and Fish
North Dakota State Historical Preservation Office
North Dakota Parks and Recreation Department

American Indian Tribes

MHA Nation, Tribal Historic Preservation Office

Other

The Nature Conservancy, Cross Ranch Nature Preserve

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APPENDIX I: 15 year fuels treatment plan

Planned Year	Rx Block Names	Acres	Burn Season	Resource Goal	Total Acres Per Year
2005	Big Hidatsa	203	Spring	Exotics Reduction	203
2006	Knife River East	140	Spring	Exotics Reduction	140
2007					
2008	Big Hidatsa	203	Spring	Exotics Reduction	203
2009	North Forest	64	Spring	Fuel Reduction	64
2010	North Prairie	140	Fall	Prairie Restoration	368
	Big Hidatsa	203	Fall	Prairie Restoration	
	Running Deer	25	Spring	Exotics Reduction	
2011	Deer Exclosure	45	Spring	Exotics Reduction	260
	Peninsula	215	Spring	Exotics Reduction	
2012	Knife River East	140	Spring	Exotics Reduction	140
2013					
2014	Deer Exclosure	45	Spring	Exotics Reduction	70
	Running Deer	25	Spring	Exotics Reduction	
2015					
2016	North Prairie	140	Fall	Prairie Restoration	140
2017	Big Hidatsa East	78	Spring	Exotics Reduction	124
	North Terrace	46	Fall	Habitat Improvement	
2018	North Forest	64	Spring	Habitat Improvement	64
2019	Big Hidatsa	203	Fall	Habitat Improvement	203

APPENDIX 2: GLOSSARY OF FIRE MANAGEMENT TERMS

The following terms are defined in RM-18.

Control – A strategy involving aggressive suppression efforts and would be the strategy of choice whenever the imminent threat of life or property exists or when fire behavior is potentially extreme.

Containment – This strategy entails the use of natural or human-made barriers to stop the spread of the fire under prevailing and forecasted weather conditions to the fullest extent possible to minimize resource damage and to restrict an unwanted wildland fire to a defined area. It would be utilized when no significant values are at risk and fire behavior predictions preclude direct attack to assure firefighter safety.

Confinement – Confinement entails minimal suppression action intended to limit fire spread to a certain acceptable geographic area. This strategy may be used depending on size, irregular boundaries, and the values of resource at risk adjacent to the park.

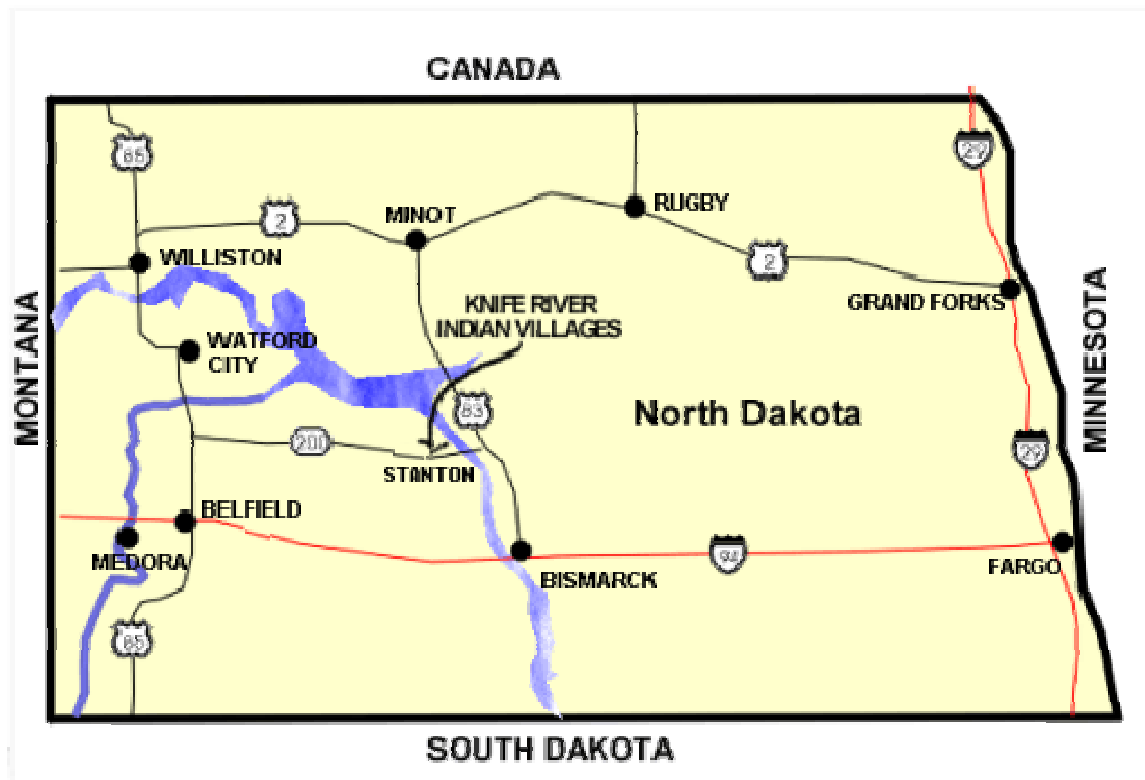
Prescribed Fire – Any fire ignited by management actions to meet specific objectives. A written approved prescribed fire plan must be completed and appropriate NEPA requirements followed prior to ignition.

Wildland Fire Use – The management of naturally ignited wildland fires to accomplish specific pre-stated resource management objectives in pre-defined geographic areas outlined in Fire Management Plans.

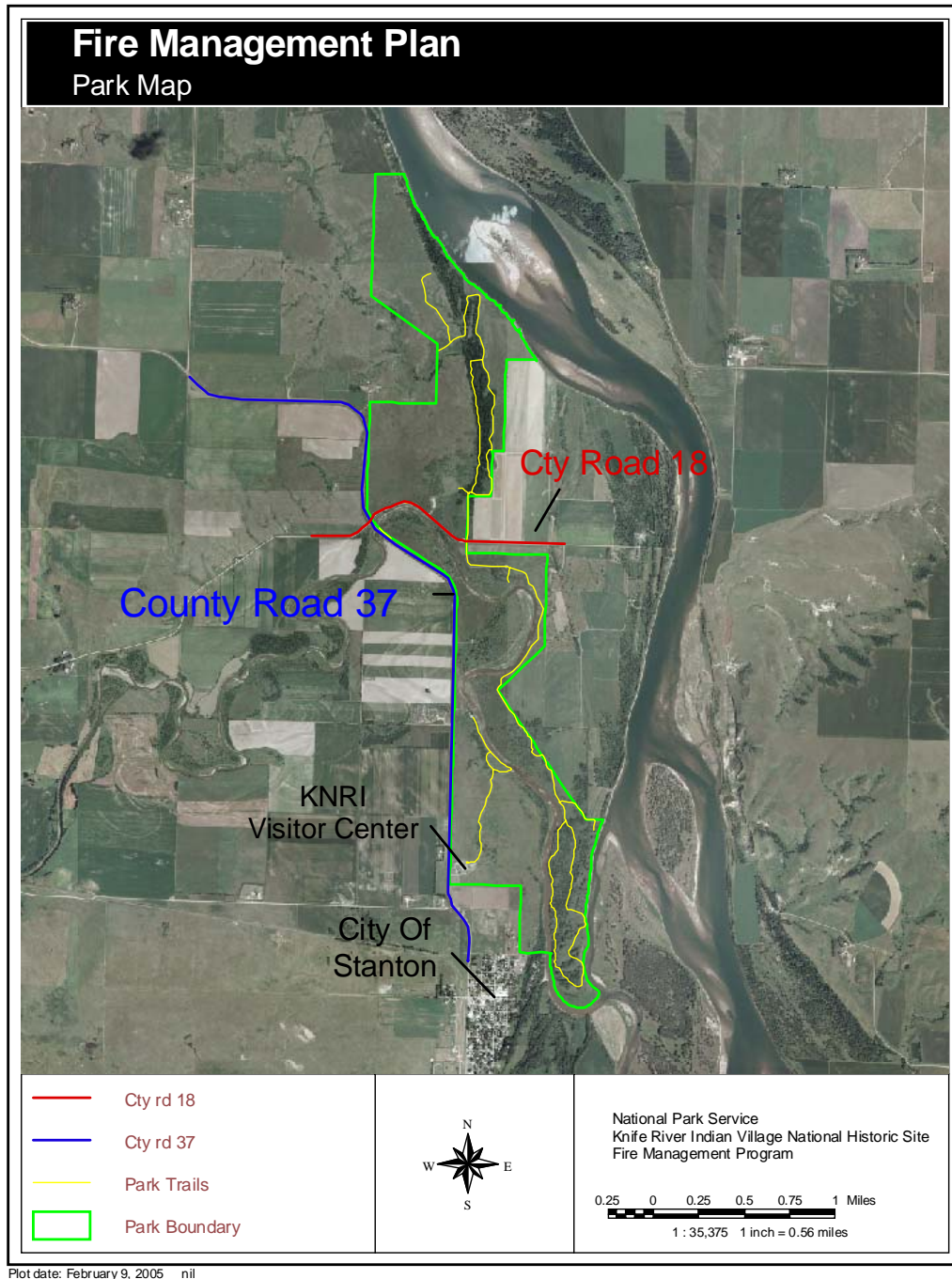
Wildland Fire Suppression – An appropriate management response (control, contain, confine) to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize the loss of resource values, economic expenditures, and/or the use of critical firefighting resources.

APPENDIX 3: GRAPHICS

GEOGRAPHICAL AREA MAP



PARK MAP



Plot date: February 9, 2005 nil

TREATMENT UNIT MAP

