

APPENDIX E
Niobrara Community Wildfire Protection Plan

CENTRAL NIOBRARA WATERSHED FIRE MANAGEMENT PLAN



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1. EXECUTIVE SUMMARY

The over-arching purpose of this Fire Management Plan is to improve collaboration among and enhance communications between the various agencies and organizations who manage fire in the Central Niobrara Valley watershed. Another equally important objective is to educate private landowners about the benefits of utilizing prescribed fire and hazardous fuel reduction as tools to help restore native grasslands affected by invasive woody species and to protect valued woodlands from the effects of catastrophic wildland fire. Sections of interest to private landowners within this document include the introduction (history of the plan's development), plan boundaries, the natural communities, fire history, implementing prescribed fire on private lands and protecting homes and property from wildland fires (wildland urban interface). This plan will serve as the primary fire management document for the Niobrara National Scenic River and does not replace any other agency or organization's plan, but rather supplements them to coordinate fire management activities across a varied primarily privately owned landscape.

2. INTRODUCTION

Through the collaborative efforts of private landowners, various organizations, rural fire departments, and state and federal agencies the Central Niobrara Watershed (CNW) Fire Management Plan (FMP) was developed. As early as 2002, the National Park Service (NPS) explored the possibility of creating a FMP for the Niobrara National Scenic River (NSR). This was somewhat of a novel idea, as the NPS does not own any land within the Niobrara NSR. The NPS however, is directed by Congress to manage the river and its immediate environs to protect the outstandingly remarkable values that include its scenic attributes (six ecosystems with distinct vegetative characteristics) consisting of extensive pine, boreal, and hardwood forests and grasslands.

The NPS felt that one of the major threats to the scenic qualities of the NSR was the possibility of uncontrolled wildland fires. Pine densities in forests throughout the Niobrara River valley and its side canyons have increased substantially since the early 1900's and invasion by eastern red cedar (*Juniperus virginiana*) has created a thick, volatile understory of ladder fuels. This is due in part to the continual suppression of wildland fires for over a century. Resulting fires would be difficult to control, and would be capable of destroying homes, buildings, and other improvements along the river valley.

Rather than drafting a fire plan that would encompass only the NPS boundary along the river between Valentine and Newport (23,074 acres) the NPS suggested a more expansive boundary from rim to rim, or perhaps even including vast grasslands to the north and south of the river valley. Recognizing that a community fire planning effort utilizing multiple partnerships was the best way to protect the river's resources, the NPS met in July 2003 with various agencies, organizations, and private landowners to seek direction and gather input as to what kind of plan would best protect the outstandingly remarkable values of the designated river segment. From this meeting the concept of a need for a collaborative process to address

fire and fuels management over a much broader area was strengthened. Community involvement and education are essential components of this planning process. The overriding management goal of this plan is to provide an acceptable means for each of the partners to accomplish their own goals and objectives efficiently and effectively through the coordinated and cooperative use of limited resources. This document will serve as an overarching community wildland fire plan for the watershed in a four-county area, as well as satisfy NPS fire planning requirements outlined in the Service's primary reference manual, RM-18.

The CNW encompasses about 793,762 acres. Lands in private ownership comprise approximately 97% of the project area. The U.S. Fish and Wildlife Service, Nebraska Game and Parks Commission, National Park Service, and local governments manage the remaining lands. Wildland Fire Associates (a private contractor) through collaboration with the Central Niobrara Watershed Fire Advisory Council (FAC) facilitated the formulation of this FMP. Agencies and organizations within the CNW include the:

- National Park Service, Department of Interior (NPS)
- Natural Resources Conservation Service, Department of Agriculture (NRCS)
- Nebraska Forest Service (NFS)
- Nebraska Game and Parks Commission (NGPC)
- Niobrara Council (NC)*
- Rural Fire Departments**
- The Nature Conservancy (TNC)
- U.S. Fish and Wildlife Service, Department of the Interior (FWS)

** Not a member of the FAC*

*** FAC members include the Valentine Volunteer Fire Department (VFD), Springview VFD, Ainsworth VFD, and the Bassett VFD. Within the CNW planning area are the communities of Valentine, Long Pine, Wood Lake, Johnstown, Ainsworth, Bassett, Newport, Springview, Meadville, Norden, and Sparks.*

Broad management objectives that relate to resource management are compiled from the Niobrara NSR Final General Management Plan (NPS September 2006); the Fort Niobrara National Wildlife Refuge Comprehensive Conservation Plan (FWS 1999); the Niobrara Valley Site Conservation Plan (Steuter and Behrens 1999); and Nebraska Game and Parks Commission Focusing on the Future Plan (NGPC 2004). These management objectives are:

- Preserve, restore, and enhance the unique diversity of upland and riparian plant communities and associated water resources of the CNW.
- Preserve, restore, and enhance the ecological diversity and abundance of migratory and resident wildlife in the CNW.
- Contribute to the preservation and restoration of threatened and endangered flora and fauna that occur or have historically occurred in the CNW.
- Provide the public with quality opportunities to learn about and enjoy the ecological diversity, wildlands, wildlife, and history of the CNW in a largely natural setting and in a manner compatible with the purposes for which the Niobrara National Scenic River, Fort Niobrara National Wildlife Refuge, Niobrara Valley Preserve, Nebraska State Parks, State Wildlife Management Areas, and other land designations were established.

- Promote partnerships to preserve, restore, and enhance a diverse, healthy, and productive ecosystem in the CNW.

Partner goals (agencies/organizations and private landowners) vary widely and range from increasing farm or ranch production, restoration or maintenance of historic scenes, supporting native plant communities, providing for firefighter and public safety, to the protection of natural and cultural resources and human developments from unwanted wildland fire.

The specific goals of the CNW Fire Management Plan are to:

- Ensure firefighter and public safety by implementing LCES¹, reviewing the 10 Standard Firefighting Orders and 18 Situations that Shout Watch Out, implementing temporary closures, and providing public information and education.
- Suppress all unplanned ignitions to protect private property, natural, cultural, and paleontological resources from unacceptable impacts attributable to fire.
- Identify and assess hazardous fuels that have the potential to affect targeted natural and cultural resources.
- Utilize prescribed fire and/or other methods (e.g. mechanical) to reduce threats posed by hazardous fuels. Reduce fire hazards through construction of defensible fuel spaces that protect communities and resources. Protect the outstandingly remarkable values of the National Scenic River.
- Utilize prescribed fire and/or other methods, as appropriate, to maintain long-term stability, diversity of fire-dependent vegetation communities, and improve the integrity of the ecosystem.
- Cooperate with partners and other interested parties to incorporate their concerns and compatible resource objectives in fire management programs.
- Enhance communications among agencies and organizations involved with fire management.
- Develop the support and understanding of prescribed fire as a valuable management tool among communities, agencies and visitors through various educational efforts.
- Ensure that fire management activities do not adversely affect adjacent communities.
- Ensure smoke production from prescribed fires does not violate state and/or federal standards; minimize smoke impacts to neighbors and visitors to the watershed.
- Ensure fire management actions are consistent with other planning documents.
- Educate the public in *Firewise* landscaping and construction techniques.

3. GENERAL CONSIDERATIONS

The Central Niobrara Watershed is the area between Highway 12 to the north, Highway 137 to the east and Highway 20 to the south with three additional inclusions. These inclusions are

¹ (Lookout, Communications, Escape Routes, Safety Zones)

the town of Long Pine and the canyons to the south (also known as Hidden Paradise), Plum Creek Valley State Wildlife Management Area, and the town of Valentine and canyons to the north and west of Valentine. The CNW resides entirely within the State of Nebraska and in portions of Cherry, Rock, Brown and Keya Paha counties. Appendix A contains a map of the CNW and the surrounding region.

Niobrara National Scenic River, comprising approximately 23,074 acres, is located in north-central Nebraska. The 76-mile National Scenic River was established in 1991 by Public Law 102-50 (105 Stat. 254), which amended the Wild and Scenic Rivers Act. The Law also specified that the U.S. Fish and Wildlife Service would continue to manage that portion of the Scenic River within the Fort Niobrara National Wildlife Refuge (NWR). The Law established an advisory commission (now the Niobrara Council) and constrained the amount of land the National Park Service could own in fee-title.

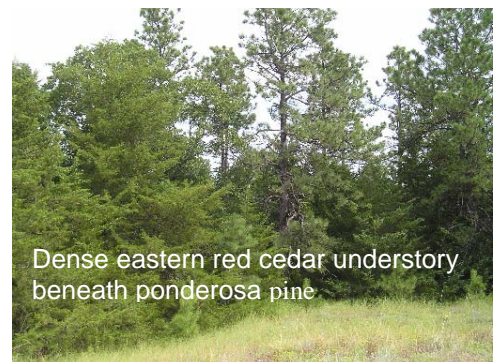
3.1 Natural Communities

In north-central Nebraska, the 100th Meridian runs north/south through the Niobrara River valley. Here an unusual blend of climate, geology, and topography provides for an incredible diversity of plants and animals. Varying exposure to sun, wind and moisture determines vegetative communities and their dependent wildlife. Six different ecosystems meet and mix within the watershed and include ponderosa pine forests; relict boreal forests of paper birch and aspen; eastern deciduous forests of ash, oak, elm, box elder, and cottonwood; mixed Sandhills prairie; patches of eastern tallgrass prairie along the river; and Dakota (Northern) mixed grass prairie.



Diverse hardwood forest with aspen & birch – note cedar understory

South of the Niobrara are the rolling Sandhills, a vast dunefield stabilized by vegetation with interspersed wetlands. At the Sandhills northern edge the Niobrara River has cut up to 400' deep through several rock layers, including the Ash Hollow, Valentine, Rosebud, and Pierre formations. These unique geological formations include fossils of many extinct mammalian species including beavers, camels, horses, rhinoceros, and mastodons, as well as fossils of fish, alligators, and land tortoises. Dense forests of pine and various hardwoods cover the slopes and canyons. Eastern red cedar has invaded the forest understory, creating ladder fuels and spreading into forest openings and across grasslands. In many places, entire pastures have been lost to cedar invasion. Hardwoods grow within the river valley and adjoining springbranch canyons (canyons created by the flow of water from springs and seeps that in turn, feed into the Niobrara River). Remnant patches of tallgrass prairie grow on river benches (elevated flatlands created by the natural down cutting of the river). On the northern slopes and rim are expansive forests of ponderosa pine that give way to mixed grasses further west and north.



Dense eastern red cedar understory beneath ponderosa pine

Within the project area, major vegetation types include prairie (533,528 acres), a coniferous

forest of mostly ponderosa pine and eastern red cedar (41,725 acres); eastern deciduous forest (42,082 acres); mixed conifer and deciduous woodlands (1,753 acres); and woody and herbaceous wetlands (27,090 acres). Fire is a natural component of most of these communities and one of the primary influences under which these communities developed. Residents have suppressed natural fire ignitions in the project area for over 120 years.

3.2 Land Use

Within the CNW planning area, the approximate distribution of land ownership is:

Table 1: Land Ownership

Ownership	Acres
U.S. Fish and Wildlife Service	19,131 acres
Bureau of Land Management	240 acres
Bureau of Reclamation	125 acres
Middle Niobrara Natural Resources District	2 acres
Nebraska Game and Parks Commission	7,106 acres
The Nature Conservancy (other private)	51,184 acres
Board of Educational Lands and Funds	29,900 acres
Private Ownership	686,074 acres

Croplands and pastures occupy about 136,055 acres. About 8,055 acres are open water. The remaining 3,445 acres include communities, commercial developments, roads, bare ground, quarries/gravel pits and urban grasslands.²

3.3 Economic Development & Tourism

Most rural areas in north-central and western Nebraska have declined in population over the last several decades. Cherry County has declined in population from 6,846 to 6,148 people in the last 30 years while the town of Valentine has only decreased by 55 since the 1960 census, which was an all-time high for the city. Agriculture (specifically cattle ranching) is the strongest component of the local economy. Tourism is the third largest economic input. The scenic river supports the local area economy with an estimated 4.7 million dollars income and 114 local jobs. Efforts are underway in local communities to recruit small businesses and light manufacturing and to promote tourism and the variety of recreational opportunities the area has to offer. New home construction is growing as retirees and those seeking vacation properties buy land and build cabins in the Niobrara River valley. Many of these newcomers and residents are likely unaware of the ecological changes in the forests and prairie and uninformed about the dangers from wildland fire. Fire management concerns include smoke from prescribed fires and its effect on tourism, potential impacts to cattle ranching, vehicular safety (visibility); resident and visitor safety during large wildland fires; area closures due to fire activities; and fire bans and their effect on visitors to the National Scenic River, state park, and other recreation areas.

² National Land Cover Data Set 1992

3.4 Special Considerations

The CNW is home to thirteen plant communities and a host of federal and/or state listed species, Nebraska Natural Legacy Project Tier 1 At-Risk Species, and other Nebraska rare species. The list includes fifteen birds, four mammals, ten fish, four insects, and seventy plants to consider when making management decisions associated with wildland fire, prescribed fire, or other habitat management actions. Many of the region's funding sources are designed to address the specific needs of rare and declining species. All fire management projects should consider critical life requirement periods (i.e. nesting) and enhance habitat quality for these species accordingly.

As much as possible managers should apply fire management activities outside the primary nesting season to minimize effects on production of most bird species. In addition, as the primary habitat for most fish species is near the headwaters of streams, land managers should take special care to insure that fire management activities do not contribute to increased erosion that can affect fish survival and production.

A portion (4,635 acres) of the Fort Niobrara National Wildlife Refuge is federally designated wilderness (PL 94-557 October 19, 1976). Special regulations governing the use of mechanized equipment and various impacts to the environment exist for the management of federally designated wilderness.

Congress designated seventy-six miles of the Niobrara River (PL 102-50, 5-24-1991) as a component of the Wild and Scenic Rivers System. Within its boundary of 23,074 acres, Congress has charged the NPS to protect five well-defined ORVs. These include its scenic, recreational, geologic, fish and wildlife, and paleontological values. Most of the land within the National Scenic River boundary remains in private ownership. The NPS is responsible to prevent actions within the boundary that might negatively affect these ORVs. The Niobrara Council reviews all burn permits for consistency with the purposes of the scenic river designation.

Smith Falls State Park, Borman Bridge Wildlife Management Area (WMA), Bobcat WMA, Thomas Creek WMA, Fred Thomas WMA, Plum Creek WMA and the Valentine State Fish Hatchery are all Nebraska Game and Parks Commission lands (6,467 acres) within the boundaries of the CNW. Various regulations and policies govern these lands as well. The Nature Conservancy's 51,184 acre Niobrara Valley Preserve (Preserve) is located along a 25-mile stretch of the Niobrara River extending from Smith Falls State Park to just west of Meadville, NE. The majority of the Preserve is located on the south side of the river. However, the Preserve also extends north of the river near Norden Bridge. Additionally, the Conservancy leases approximately 4,000 acres of state and federal lands that they also manage to meet specific conservation goals. The Nature Conservancy has an active fire program and manages their lands to preserve and enhance plant and animal diversity. Burn bosses should discuss cultural and paleontological resources with individual landowners when creating prescribed fire burn plans, or undertaking hazardous fuel reduction activities. Particular agencies and organizations address these items in their own fire management

plans. Landowners should inform VFD of these special resources when attacking wildland fires where fire personnel use heavy machinery for control and containment.

4. FIRE HISTORY OF THE SANDHILLS & NIOBRARA RIVER VALLEY

4.1 Present Conditions

In recent years, the intensity and extent of fires in the CNW have seemed to increase significantly. A tree limb shorted out a power line and ignited the Big Rock Fire, which started near Valentine on July 16, 2006. The resulting fire burned over 3,000 acres and resulted in severe property and ecological damage. Low humidity (approximately 9%), extreme temperatures (113 °F), and high winds resulted in rapid spread into the north edge of town and along canyon rims, where ten homes were destroyed and numerous other buildings were damaged or destroyed. Severe fire conditions resulted in areas of complete stand replacement, occurring particularly on steep forested slopes. Few local firefighters had previously witnessed the levels of extreme fire behavior and rapid rates of spread as those occurring during the Big Rock Fire.

The largest local fire event in recent history occurred on September 17, 2000. On that day, a lightning storm produced over 50 fires in Cherry County that burned over 100,000 acres in 36 hours (most outside the project area). Five fires ranged in size from 1,276 acres to 22,587 acres. Nearby, much larger fires have occurred on private property with one fire burning 87,000 acres in less than 24 hours. The Thedford Fire occurred in 1999, south of the Valentine NWR (outside of this plan's area), and burned 74,000 acres (much of it grasslands) in two and a half days. Most of the fire's spread occurred during the first burning period. Table 2 shows fire department reports from 2000 through 2006 (Note: some of these fires have occurred outside the plan's boundary). In addition, NWR staff suppressed an average of thirteen wildland fires that burned 935 acres in each of the last ten years (however, most of these fires occurred on the Valentine NWR or otherwise outside the management planning area).

Table 2: Wildland Fires Reported by Volunteer Fire Departments

Year	Lightning-Caused Reported	Acres Burned	Human-Caused Reported	Acres Burned
2000	15	6,156	13	662
2001	11	36	16	530
2002	41	610	45	13,374
2003	14	20	7	13
2004	9	15	12	1,590
2005	6	47	10	136
2006	20	169	14	3160
Total	116	7,053	117	19,465
Average	17	1,008	17	2,781

This short fire history period fails to capture information from recent years of high severity during which tens of thousands of acres burned.

4.2 Past Conditions

Local Fire Departments, the U.S. Fish and Wildlife Service (Fort Niobrara and Valentine NWR), and The Nature Conservancy maintain separate records for their respective lands. Thus, comprehensive and compatible fire records are not available for the CNW because of differences in reporting procedures and requirements.

Refuge staff has responded to wildland fires in every month of the year (FMIS 2001). The FWS quickly suppresses most wildland fires while they are still small but some fires have spread beyond FWS lands onto private ranches. Inhibitions of suppression efforts by firefighters are due in part to the lack of natural or fabricated fuel breaks. Fuel loads are generally light, but exhibit fast drying times and burn with high rates of spread. Wind driven fires in these fuels can burn for 20 miles or more in a single burning period.

Lightning, usually accompanied by wind most commonly occurs during April through September. Storms often may not be accompanied by rain. In general, dry lightning fires appear to be more common in drought years. Multiple starts on a single day are common during warmer months. Appendix C contains more information on fire occurrence.

4.3 Fire History

Fire is a natural component of the Sandhills and Niobrara River valley environments and one of the conditions under which vegetation on the CNW evolved (Harrison 1980, Bogan 1993, Bragg 1994). Historic records describe huge prairie fires ignited by lightning or humans. Fires burned millions of acres because there were few natural fuel breaks and no suppression. The River Valley/Sandhills ecotone indicates that fires occurred every 4 to 5 years between 1850 and 1900 (Bragg 1986 and 1994). A great reduction in bison numbers on the Great Plains also occurred during this period, which may have influenced fire return intervals and/or fire intensity. Steinauer and Bragg (1987) reported that the mean fire interval increased from 3.5 years between 1851 and 1900 to 8.5 years between 1901 and 1951. Presumably, the fire frequency now is near zero, as fire suppression became more effective post World War II than it was before World War II. There is no comprehensive fire history database for the CNW to evaluate the pre-settlement fire intervals on the grasslands, Niobrara River Valley, and ponderosa pine/prairie ecotone.

Research throughout the Great Plains indicates historic fire frequencies of 1 to 10 years for tallgrass prairies (Kucera 1981), 5 to 10 years for rolling mixed-grass prairies (Wright and Bailey 1980), 2 to 25 years for ponderosa pine forests (Wright and Bailey 1980), and 10 to 30 years for other forested Great Plains areas (Wright and Bailey, 1980). Research at Wind Cave National Park indicated mean fire intervals of 10-12 years in ponderosa pine savannah (twice as frequent as at interior forest sites), probably due to the influence of fire in adjacent prairies (Brown and Sieg 1999).

TNC (1999), citing Moore (1972) indicates that 32% of fires in the Northern Great Plains could be attributed to Native American ignition, 14% to early European settlers, and the balance to lightning Westover (1984). Higgins (1986) notes that regardless of ignition source, wildland fires occurred primarily during two periods: March through May and July through November, with peak periods of ignition in April and October.

Grasslands historically evolved in areas with a disturbance frequency too high to permit the establishment of tree species, or in areas too dry or too wet for most regionally indigenous tree species. Over 120 years of wildland fire suppression on the CNW has resulted in various changes in vegetation composition and structure - the most visible of which are the pioneering of eastern red cedar, ponderosa pine, and other shrubs into prairies and into the understory of savannas and forests, or the filling of wetlands with slowly decomposing decadent vegetation and invading woody growth. Steinauer and Bragg (1987) note encroachment of ponderosa pine, particularly on north slopes beginning mainly after 1900. Reducing this encroachment could increase the scenic aesthetic and create a more natural ecosystem eventually reducing the potential for large stand replacing fires.

Changes in grass and forb composition caused by fire exclusion are not well documented due to a lack of baseline data, except in cases of exotic species invasion. Bragg (1997, 1998) studied the effects of single fires during various seasons on Sandhills mixed-grass prairie. He noted that a single fire did not result in any substantive changes in species or community diversity. There were, however, differences in abundances of various species and litter – usually for less than four years – following fire. No dramatic changes in species richness were observed in response to fire. Bragg (1998) concluded, “Data suggest that more frequent fires occurring in different seasons have the potential to maintain a highly diverse landscape through differentially affecting species occupying different topographic locations.” Pfeiffer and Steuter (1994) found that spring burning increased production of both rhizomatous grasses and bunchgrasses, but that summer burning reduced production of bunchgrasses. They further noted that bison reduced the standing crop of bunchgrasses much more than rhizomatous grasses following burning.



Biondini, et al. (1999) noted that bison actively selected burned areas on the Niobrara Valley Preserve during the growing season for one to three years following fire. They mostly avoided old burns and unburned areas (there was no significant effect of fire on bison range use during the non-growing season). Biondini noted other management implications to this pattern of bison use, particularly (1) providing undisturbed nesting cover for waterfowl and other species in unburned areas, (2) providing habitat for species preferring short stature grasslands, (3) providing areas of increased forb abundance and diversity, and (4) enhancing control of woody species.

4.4 Desired Future Conditions

Desired future conditions will vary widely among private landowners. Agencies and organizations may also manage for different conditions depending upon their mission, goals and objectives. In a broad sense land managers could accomplish ecological objectives throughout the watershed (i.e. non-crop and undeveloped lands) with seasonally prescribed fires occurring every three to thirty years, depending upon vegetative type (forest or grasslands) and specific objectives.

Generally, maintenance for grasslands would require burning every three to ten years and ponderosa pine forests every two to twenty-five years following initial fuel treatment and burning. Fire frequency would need to be adjusted to meet the needs of landowners and managers and in consideration for grazing needs, drought, and other disturbance factors. Surface fires of low to extreme intensity would be needed on 55-85% of the landscape (over 16% is either not burnable or difficult to burn, such as wetlands).



In order to initially restore the health of the natural communities within a decade, an estimated 50,000+ acres of grasslands, 8,000+ acres of mixed woodlands, and 3,600+ acres of ponderosa pine would need to be burned annually throughout the planning area. These figures are determined from an average return interval of 10 years for grasslands, 20 years for mixed forests, and 11.5 years for ponderosa pine forests and their relative area covered.

A fire regime of infrequent fires has replaced a historic fire regime of frequent low intensity fuel-reducing surface fires within ponderosa pine and mixed pine forests. This has led to increased fuel levels, and a greater probability of high intensity/stand replacement fires, which pose a greater threat to life, property, and resources, because such fires are difficult to suppress.

The desired condition is a landscape with an appearance of what would exist with natural processes uninterrupted and what probably had existed historically. It should display a mosaic of complex vegetation patterns that would have evolved naturally from ecological and geological processes. Vegetation types should vary greatly with openings, seral stages, and a variety of plant communities occurring in a random patchwork.

Fire-management activities should maintain or improve production and native-species diversity in all six of the area's ecosystems. Conifer encroachment and the resulting increased stand densities are threatening these ecosystems. The invasion of exotic grasses and weedy forbs also threaten many area grasslands. This is partly a result of fire exclusion, and in some cases, improper grazing practices. Land managers should apply prescribed fire and other management tools, where appropriate, at a time and in a manner that will counter these threats and realize goals.

Fire-management activities should improve the quality and quantity of habitat for wildlife species by reducing woody-species encroachment and timber stand densities, and promoting more desirable native-plant species. Restoring and improving plant-species diversity improves ecosystem health and promotes a greater diversity and abundance of wildlife.

5. CURRENT FIRE MANAGEMENT ACTIVITIES & STRATEGIES

5.1 Landowner Prescribed Fire & Hazard Fuel Reduction

The state of Nebraska prohibits open burning (81-520.01). The Fire Chief or their designee of a Rural Fire Department may issue a waiver by issuing a burn permit to private landowners to conduct prescribed fires (including pile burns). Statistics are not currently compiled concerning private landowner conducted burns or hazardous fuel reduction activities. The Fire Advisory Council (FAC) has distributed a new fire report card to Volunteer Fire Departments to record fire data in order to compile annual statistics on wildland fires and prescribed fires (Appendix G). Within the National Scenic River corridor, the Niobrara Council must approve all prescribed fire permits by private landowners or organizations to ensure that they are consistent with the scenic river's desired future conditions.

The Nebraska Game and Parks Commission (NGPC) has been actively funding prescribed fire projects on private lands in the Niobrara River watershed with funding received through the Landowner Incentive Program (LIP), Nebraska Environmental Trust Fund, and State Wildlife Grants. Rare and declining plant and animal species occur in the watershed and eastern red cedar encroachment and invasive species such as cool season grasses are threatening their habitats. The NGPC intends for LIP funds to be used to restore habitat for these rare and declining species.



The NGPC has funded numerous prescribed burns in the last several years. In 2004 three prescribed burn projects totaled 417 acres. In 2005 327 acres were burned, and three projects involving 804 acres were burned in 2007. In 2008, 4 spring burns and 1 fall burn were conducted comprising 1719 acres. Prescribed burn plans and agreements are currently being developed that will involve 8 burns encompassing 1384 acres in 2009, 12 burns encompassing 2081 acres in 2010, and some follow-up smaller burns occurring in succeeding years.

The first prescribed fire with technical assistance provided by the Natural Resources Conservation Service (NRCS) occurred within the planning area on April 15, 2004. A contractor from Kansas on a local ranch conducted the 132-acre prescribed fire. Staff from the Broken Bow NRCS field office wrote the burn plan. Its purpose was to stimulate warm season grasses, control invasive woody plants, reduce cool season grasses and improve wildlife habitat. The landowners received cost-share funds through the EQIP program.

Personnel carried out three additional prescribed fires in April of 2005. The District Conservationist in the Valentine NRCS office developed each plan. The FWS and TNC fire program personnel also reviewed these burn plans. The goals of each of these burns (178, 158 and 75 acre burns)



were to reduce competition from cool season grasses (smooth brome and/or cheat grass), stimulate warm season grasses, improve wildlife habitat (increase diversity), control eastern red cedar invasion, and reduce hazardous fuel loads. In 2006, the Valentine NRCS office had four requests for prescribed fire plans; none were implemented due to poor weather and the lack of available burn contractors. In the spring of 2007, the Valentine NRCS office conducted three prescribed fires. Two prescribed fires (76.6 acres) were cost shared under EQIP (both of which were carried over from 2006) and one burn (217.7 acres) was not cost shared. Of the two remaining prescribed fires planned in 2006, a landowner withdrew one and NRCS scheduled the other for the spring of 2009. In 2008 the Valentine NRCS office had four requests for prescribed fire plans.

Nebraska Forest Service personnel recognize the need for reducing wildland fire fuel loads in many types of woodlands within the state. Overstocked woodland populations will require some type of initial entry to reduce hazardous fuels prior to follow up prescriptions, such as prescribed burning to manage future stocking levels. Initial treatments will reduce ladder fuels and provide space between dominant and co-dominant crowns. Resulting trails and roads will facilitate future fire control. In the summer of 2006, the National Forest Service called for private landowner applications to access cost share grants from the National Fire Plan (50% of \$350/acre) to eliminate hazardous fuels like eastern red cedars and reduce pine densities in forests to protect structures and property. A Forester/Wildland Fuel Specialist is now stationed in Valentine. Their duties include assisting landowners in managing forest health and establishing fuel breaks. There is \$200,000 in grant money (75% cost-share) currently designated for this program along the Central Niobrara.

5.2 Agency/Organization Prescribed Fire & Hazard Fuel Reduction

5.2-1 Nebraska School Trust Lands (Board of Educational Lands and Funds)

The Board of Educational Lands and Funds (BELF) is the constitutionally established Trustee of Nebraska's K-12 School Trust Lands. The Board's Field Representative initially reviews each request by a lessee to conduct a prescribed fire and the associated prescribed fire burn plan. Further review by BELF State Office staff may be required and the approval by the Board is a necessary final step. There is no policy for "automatic approval."

5.2-2 The Nature Conservancy

Dr. Allen Steuter, former graduate student of Professor Henry Wright, Texas Technological University, and pioneer fire practitioner and researcher, introduced prescribed fire to the Niobrara Valley Preserve (NVP) in 1984. After the introduction of bison to the preserve in 1985, many fires were set in different seasons in the original 7,500-acre "east" bison pasture. Researchers used these plots to test and refine the concept of fire-grazing interactions to increase both structural and species diversity and distribution in Sandhills Prairie, and to improve forage quality for bison, which winter without supplemental feeding.

In succeeding years, other fires were set primarily for eastern red cedar control and to thin overstocked ponderosa pine stands, both with some success. Fire activity varied annually due to weather and other variables, and in some years, personnel were unable to conduct any burns. Burning reached a peak in the late 1990s and then declined beginning in 2000, due both to chronic drought and loss of key personnel at a time when The Nature Conservancy was converting to National Wildland Fire Coordinating Group (NWCG) standards. Recently the fire program has become revitalized with personnel holding improved qualifications and more burns conducted through cooperative measures. Nearly 4,000 acres were burned in 2007-08, with the majority of the burning completed in the spring of 2008.

Table 3: Prescribed fires on Niobrara Valley Preserve

Year	Burns	Total Acres	Year	Burns	Total Acres
1984	2	300	1999	8	2,393
1987	1	60	2000	4	373
1988	2	160	2001	3	135
1989	3	949	2002	2	125
1992	1	70	2004	1	200
1994	1	80	2005	0	0
1996	7	1,880	2006	0	0
1997	5	950	2007	3	500
1998	4	2,237	2008	10	3,600

The NVP also has a long history of cutting eastern red cedar, both for fence posts and saw timber as well as for conservation purposes. An emphasis on harvest dictated that most clearing occurred in small stands of straight, clear-trunked trees, usually in or near the valley bottom. Partial harvesting of thick stands also helped to open up areas otherwise largely impenetrable by prescribed fire. In early 2007, TNC received a grant and staff subsequently expanded mechanical clearing activities to include Sandhills pastures with the goal of complete elimination of eastern red cedars on targeted areas. These areas included low-density stands, Preserve boundary areas, and other areas where fire would be less economical or relatively risky. Cedars were removed from about 5,600 acres of land during the fall and winter of 2007-08 and efforts are still on-going.



Cost of burning for The Nature Conservancy under National Wildfire Coordinating Group (NWCG) standards, both for equipment and personnel, is higher when compared to pre-NWCG burning, and funding is sometimes difficult to obtain. However, NVP has received grant funds to conduct mechanical clearing, as described earlier, and for the actual implementation of prescribed fire. TNC has used these resources for hazardous fuel reduction, burn unit preparation, and the application of fire.

5.2-3 Fort Niobrara National Wildlife Refuge

After the introduction of prescribed fire at the Fort Niobrara National Wildlife Refuge in 1995, the program continued to grow throughout the following decade (Table 4, list of acres burned by year is included below). Presently, FWS is targeting approximately 1000 acres per year using prescribed fire, of which 700–800 acres include eastern red cedars. There will be a mechanical fuel reduction target primarily of large cedars, for approximately 100 acres each year.

Table 4: Fort Niobrara NWR - Year & Acres Burned

Year	Acres burned	Year	Acres burned
1995	30	2004	22
1997	65	2005	43
1988	358.1	2006	956
1999	222	2007	1315
2001	642	2008	0 ³
2002	20		

From 2006-07 at the Borman Bridge State Wildlife Management Area a contractor cut and piled eastern red cedars to reduce cedar invasion on grasslands and in easily-accessible wooded portions. This project was part of a fuel reduction project in conjunction with the FWS and NGPC. A major hazardous fuel reduction project is now underway at the Fort Niobrara Refuge to reduce eastern red cedar and ponderosa pines along the western boundary and southwest corner where wildland urban interface is a concern. Agency personnel are now removing fuels and hope to conduct prescribed fires in treated areas. The FWS may utilize a contractor in the future.

5.2-4 Nebraska Forest Service

The Nebraska Forest Service has a brochure with information on forest fuels management (fuels reduction) at: <http://www.nfs.unl.edu/documents/fireprotection/nfsfuelstreatment.pdf>

5.3 Initial Attack & Suppression

Most wildfires are suppressed by VFDs in their respective districts. Currently the FWS performs initial attack through mutual aid agreements with local VFDs. The FWS receives support from the local VFDs for fires occurring on Refuge System lands and FWS supports the local VFDs by responding to fires occurring in their respective response areas. The NPS accompanies the USFWS on initial attack when within/adjacent to the scenic river boundary. TNC performs initial attack with direct assistance from VFDs.

³ 72 acres of cedars were mechanically removed on the refuge's western boundary in 2008. All prescribed fires in 2008 were conducted on the Valentine NWR.

5.4 Training

FWS refuge staff has offered some suppression training to local VFDs but there are incomplete records. The FWS will continue to offer S-130 Basic Firefighter, S-190 Introduction to Fire Weather, S-211 Portable Pumps and Water Use, S-234 Ignition Operations, and other courses based on interest, funding, instructor availability, and need.

In 2004, the Valentine NRCS staff participated in Prescribed Burn Training in North Platte and received job approval authority for Job Class I prescribed fires. In March of 2005, the District Conservationist (DC) completed training at the Prescribed Burn School in Miller, Nebraska. In June 2005, he also attended a prescribed fire conference in Kearny, Nebraska and completed S-130 Basic Firefighter, S-190 Introduction to Fire Weather and L-180 Human Factors on the Fire line in Grand Island, Nebraska. Because of this training, the DC job approval authority was increased to Job Class IV.

In 2006, the DC training assignment was renewed with a private fire contractor. The DC now serves as a member of the Invasive Plants Subcommittee on the Tools Task Group (for prescribed burning). The DC also attended the initial meeting of the Nebraska Prescribed Burn Task Force in November 2006. A prescribed fire course was presented in Mead, Nebraska in early April 2007. Plans are underway to offer advanced prescribed fire training to twelve NRCS employees to increase their job approval authority. Advanced Prescribed Burn School for NRCS employees was held March 27-29, 2007 in Broken Bow and North Platte. The District Conservationist attended S-131 Advanced Firefighter in Grand Island on March 2, 2007.

The Nebraska Forest Service contracts with the training division of the State Fire Marshal's Office. A part of each Firefighter I course is devoted to wildland fire suppression under the terms of this contract.

Each year, NPS personnel take refresher training offered by the Fort Niobrara NWR staff. They may also attend refresher training or gain other certification levels in other geographical areas. In 2006, the NPS readied a Type 6 engine and has plans to bring at least one employee up to qualification as an Engine Boss and two to Engine Operator within the next few years. The NPS will be called out by the FWS and suppress fires under their supervision as a member of the Keya Paha Brown Rock and Cherry (KBRC) Mutual Aid Association.

The NPS has no specific fire staff and, therefore, is not able to offer training directly to other agencies or the public. In the past, however, the NPS did offer training to rural fire departments through the Rural Fire Assistance grant program. In 2002 and 2003 the NPS and FWS teamed up to facilitate S-130, S-190 and water handling training for several VFDs throughout the watershed. Annually two to four NPS rangers are red-carded.

Three TNC personnel are currently qualified to the Firefighter 2 level. The Conservancy also draws upon non-local staff and partners to supplement fire team needs.

5.5 Education

Currently, the Central Platte Natural Resources District (NRD) Fire Program aids in providing prescribed fire training to local landowners at several locations each spring. This one-day training is followed by participation in a prescribed fire, and is held in conjunction with the Prescribed Burn Taskforce. The NRD also offers NWCG training such as S-130 Basic Firefighter, S-190 Introduction to Fire Weather, and S-131 Advanced Firefighter training to local firefighters and cooperating agency personnel.

In 2005, the Central Platte NRD gave presentations at the Society for Range Management meeting in Ainsworth, Nebraska and the NARD conference in Kearney, Nebraska. They also hosted educational booths at the Nebraska Grazing Conference, Husker Harvest Days, and the NARD conference where they distributed a booklet, *Landowners Guide to Prescribed Fire*, and a brochure discussing the NRD cost-share to numerous landowners. In the future, they hope to give presentations to local schools, and to conduct training for other interested NRDs. They are also aiding in the formation of a statewide council to address prescribed fire education, cooperation, and policy.



In 2006, after the Big Rock Fire, the NRCS, UNL Extension office, NFS and the local NRD presented three public meetings for affected landowners and interested parties about hazardous fuel reduction needs around structures, erosion control methods, cost-share programs, and information for managing pine forests in the watershed through thinning and other methods. In addition the FAC (NPS, NGPC, NRCS and NFS) held a public meeting in Valentine, Nebraska on October 5, 2006 to inform the public about the FMP process, cost-share programs for hazardous fuel reduction, wildlife benefits and conducting prescribed fires, and efforts to start a private landowner prescribed fire association. On January 23, 2007, the NPS gave a presentation in Ainsworth, Nebraska explaining the status of the CNW Fire Management Plan. This occurred during a NGPC informational meeting about the Nebraska Natural Legacy Project that also included the application of prescribed fire to improve habitat for Tier I and II wildlife species and discussion of the availability of NFS cost-share money for hazardous fuel reduction in forests. Private landowner representatives from the Taylor/Sargent area also described their efforts to start a local prescribed fire association of ranchers. The NFS in cooperation with the North Central RC&D also conducted a *Firewise* Workshop for the public in Ainsworth that fall. A second public meeting, centered on forest fuels management was conducted in July 2008 at the Norden fairgrounds. The workshop included presentations, a tour of recent fuels management projects, demonstrations related to wood utilization and wood products exhibits.

The FWS will continue to support private land prescribed fire projects through the NRCS. Support will include the development, editing and review of fire prescription plans. NRCS will also serve as a member of a core team for training and education. The Niobrara Council will continue to look for opportunities to be involved in public education concerning fire management.

Two excellent articles have appeared in Nebraska Game and Parks Commission's Nebraskaland magazine. An article in the December 2006 issue, *Saving an Ecosystem*, explains the importance of prescribed fire in restoring the mosaic of grasslands and forests at the Rock Glen Wildlife Management Area. A lengthy article in the January 2007 issue, *Fire on the Ridge*, describes the effects of recent wildland fires on Nebraska's Pine Ridge, the ecological implications of the absence of fire over the last several decades, and the need for improved forest and grassland resource management. Before and after photos in these articles are visual goldmines that illustrate the changes in tree densities after a fire, especially pine and cedar densities.

The Nebraska Prescribed Fire Council held its formative meeting on December 8, 2005. Their mission is to increase the understanding of safe, professional fire use and to assist landowners in utilizing prescribed fire as an important tool in grassland management. The Council is examining state laws and procedures to ease barriers to conducting prescribed fires and continue to provide quality training to landowners.

The Nature Conservancy participates in educational and outreach activities, including the Fire Learning Network, which holds local, regional, and national meetings. The FMP area lies within the Great Plains-FLN "Middle Niobrara-Sandhills" anchor site. Much of the original FLN momentum has spun off into the FMP itself, which has a high degree of overlap with the original FLN-identified issues and objectives, and other fire-related efforts. In October 2008, the Middle Niobrara-Sandhills anchor site hosted a Great Plains FLN meeting in Ainsworth, Nebraska. More than fifty participants attended the conference, shared successes and challenges, and toured local fire management sites. Some attendees also participated in NVP-hosted burns conducted immediately following the meeting.

The NPS offers an outreach program in the local schools and is available to speak to classes on an "as requested" basis about a variety of resource topics. The Fifth Grade Curriculum book Science Horizons has a short (two-page) section on fire titled, *2000: How Should We Manage Forest Fires?* The NPS should examine the Valentine Rural High School curriculum to determine if any courses address fire management and should offer their educational services to the school.

Local reporters and NPS staff have also written several newspaper articles in which the NPS and other partners (FWS, TNC) have teamed up to educate the public about wildland fire, fire ecology and the need for hazardous fuel reduction/ prescribed fire. The following articles have appeared in the Valentine Midland News:

August 9, 2006 - After the Fire Land Care Workshop Held

August 23, 2006 - Plans underway since 2004 for Central Niobrara Watershed Fire Management Plan

September 27, 2006 - Good fire – bad fire – what you can do

October 4, 2006 - Fire...friend and foe – find out more

January 21, 2009 – Central Niobrara Watershed Fire Management plan open houses

The NPS plan, “A Strategy for the National Park Service Wildland Fire Communications and Education Program” aims to enhance recognition, acceptance and support for the role of fire in ecosystems and management of fire and fuels in the NPS. The document should be adaptable to address and meet local needs and is directed towards protecting lives, property and resources while restoring and maintaining healthy ecosystems. There are six mission goals; goals 4 and 6 apply poignantly to the CNW:

Mission Goal 4: Internal and external audiences understand and support the role of fire in ecosystems and the management of fuels and fire.

Mission Goal 6: A well-established wildland fire communications and education program enhances the service’s collective efforts towards its number one priority, firefighter and public safety.

Educating visitors and local residents about the importance of fire in maintaining healthy forests and grasslands and resident/visitor safety are two of the highest educational goals for the CNW project area. Efforts to implement these mission goals should include public meetings, newspaper, radio and magazine articles, brochures, school classroom speakers, attending organization meetings, media relations, wayside exhibits, public demonstration burns, tours and hikes, self-guided trails, training and other educational opportunities.

5.6 Recent Investigations & Research

Researchers are addressing fire issues in the Niobrara Valley and adjacent Sandhills through ongoing research. One topic investigated is the decline of blowout penstemon (*Penstemon haydenii*) in the Nebraska Sandhills and its relationship to fire suppression and the absence of grazing bison.

A study conducted by the University of Nebraska-Lincoln (UNL) in the Bessey District of the Nebraska National Forest (Wedin 2003) is investigating the environmental effects of a planted forest on grasslands. In Nebraska, the spread of woody species into grasslands is due in part to the suppression of wildland fire. Prolonged periods of fire suppression cause a vegetation change from grassland to open canopied forest, and eventually closed canopied forest (pine and/or cedar). Carbon storage is also affected. Under dense pine stands, soils are losing up to 50% of their organic matter and becoming more acidic. Compared to 75% of the carbon stored in Sandhills prairie, only 10% is stored beneath dense pine stands. In addition, pine forests tend to use much more water in the winter (when temperatures exceed freezing) than grasslands. Winter is perceived as a critical period for groundwater recharge of aquifers. Comparable studies (Steuter 1990) have shown that the woodlands are expanding out of the Niobrara River valley and its springbranch canyons into adjoining Sandhills Prairie.

A similar study (Eggemeyer, et. al. 2006) also examined the expansion of ponderosa pine and eastern red cedar into Sandhills prairie and concluded that these deeply rooted trees used more water than grasses in summer which, because grasses senesced when rainfall is scarce. In winter, when grasses are not utilizing water, the trees will grow and tap deep soil moisture to compensate for a lack of growth during droughts.



By examining sedimentary and fossil records, other research from UNL has shown that drought and fire increased dune formation in the recent geologic past, and that as recently as 1,000 years ago there were droughts more severe than in the 20th century (Nicholson, Swinehart 2005). A similar project at UNL (IANR News Service 2003) is an interdisciplinary study of the interaction of sand, grass, and water in stabilizing the dunes in the Sandhills region. They are exploring how grazing and fire, along with climatic factors affect the dunefields. The dunes

have gone from grass-covered to barren several times over the last few thousand years. Yet another study (Mangan, et. al. 2004) examined the impacts of drought, functional plant type, fire grazing, and erosion relative to dune stability in the Sandhills. It concluded that fire and grazing alone did little to adversely impact vegetation, but when combined with drought, biomass decreased.

The Nature Conservancy (Steuter 1996) has studied the effects of fire on grasslands and the interactions of bison grazing with other mammals, like pocket gophers, after fire. Generally, bison are attracted to burned areas to feed on new bunch grasses. Their preference for a particular burned area declines over time. During summer burns, bison favor burned areas in open, rolling country when breeding, even though better forage may be available on recently burned lands in hilly or wooded areas. Biomass after bison grazing tends toward rhizomatous grasses and forbs. The Fire Learning Network reports that for the Sandhills particular, specific, and improved prescriptions and methods need to be developed.

Forest Type Mapping Project: Nebraska Forest Service staff classified areas of homogeneous forest/woodland vegetation to provide a base-mapping layer for forest management applications in the Niobrara Valley. Definiens Image processing software was used to classify 2006 color-infrared (CIR) imagery into grassland, ponderosa pine forest, eastern red cedar forest, deciduous forest, developed land, bare earth, and water as land cover categories. Agricultural land was removed prior to classification using the Farm Service Agency common land unit layer. Noticeable errors and inconsistencies were removed from the final classifications using Erdas Imagine image cleaning tools.

Using the forest type information, hazardous fuel potential may be more readily identified and mapped. Areas of high priority for fuel reduction efforts may be established based on fuel characterization, proximity to high value property, topographical features, etc. Acreage determinations based on planned management activities will help guide funding and labor needs.

Using forest types to stratify inventory sampling may provide estimates of available small diameter round wood and woody biomass resulting from forest/woodland management activities. The potential to spur economic growth exists within areas where there are sufficient quantities of raw materials for lumber, posts and the bio-fuels industry.

Two recent studies (Buenger 2003 and Sturdevant, et. al. 2006) relate to the effects of fire on archaeological resources. They describe how buried archaeological resources are generally

not threatened by either wildland or prescribed fires unless trenching or machinery is used to construct fire lines. Surface objects can be damaged, depending on fire and fuel characteristics. This would be more of an issue in the forests rather than prairies where black lines are used. Pile burns located directly over resources can also adversely affect these resources. Fossil resources would be most likely threatened by heavy machinery use if fire lines were to be constructed for major forest fires.

6. STRATEGIES TO RESTORE A FIRE ADAPTED SYSTEM

6.1 Landowner Prescribed Fire Workshops

NRCS and partners held two prescribed fire schools in St. Paul and Osceola during January of 2007. As previously mentioned, the FAC held a public information meeting in October of 2006 in Valentine. Presentations from the NGPC regarding the Landowner Incentive Program and the NRCS explaining EQIP were supplemented by information provided by the NFS about current and proposed funding for hazardous fuel reduction projects in the central Niobrara River valley. In addition, the FAC described problems associated with eastern red cedar encroachment and high densities of ponderosa pine, and provided a brief overview about the FAC. Availability of Private Landowner Prescribed Burn Associations was also a topic of great interest among landowner participants.

6.2 Prescribed Fire Brochure

The FAC has created a prescribed fire brochure entitled, *Prescribed Fire Use in the Nebraska Sandhills and Niobrara River Valley* (Appendix E). The NGPC provided funding for printing this brochure.

6.3 Hazard Fuel Reduction Brochure

The FAC recommends that the brochures, *Country Living at its Best* and *It's the Little Things That Count* (both published by the Nebraska Forest Service University of Nebraska-Lincoln), be made available to each new zoning request applicant in the four-county area. These brochures and various other hazardous fuel reduction handouts will be made available to the public through various agencies and at local libraries.

6.4 Prescribed Fire Groups and Crews

At two recent meetings, ranchers from the North Platte and Taylor/Sargent areas discussed local fire associations in which ranchers and farmers have collaborated to implement prescribed fires. In one instance, the group sought non-profit status, received grants to purchase fire equipment, and conducted burns to improve grasslands and reduce or eliminate eastern red cedars. Another group of ranchers did not formally organize, but burned numerous acres each spring to reduce or eliminate eastern red cedars and improve grazing.

These presentations generated significant interest from local ranchers, especially when they learned that up to 80% of some lands were lost to cedar invasion and that prescribed fire restored the land to pasture. The NGPC held a well-attended meeting in Sparks, Nebraska in October of 2008 to introduce the concept of formulating a private landowner prescribed fire

group. Subsequently, in December a number of local residents formed a Prescribed Fire Group that encompasses six counties. They appointed a president, vice-president and a secretary/treasurer. There will be an eastern and western representative for this large landscape as well. Collaboration will occur with the local Fire Learning Network (FLN). This group investigates strategies to encourage and empower local ranchers to form prescribed fire groups, get needed training, and make equipment available for prescribed fires.

A number of models exist for conducting prescribed fire on private lands, including the use of contracted crews, dedicated agency and NGO (non-government organization) crews, and groups of cooperating landowners. No one model is best for all situations, nor are they mutually exclusive. Rather, fulfillment of the FMP goals will require use of all models, alone or in combination.

However, application of prescribed fire ideally will undergo an evolution within the area as people accept use of fire and become experienced in its use. It is reasonable that in the short term, some expert assistance might be required to conduct fires on private property. This can take the form of contractors, agency and NGO crews, and planners working with individuals, who gain experience and confidence with prescribed fire. In the long term it is envisioned that groups of cooperating landowners having some degree of organization will apply most prescribed fire.

The benefits of enabling landowners to burn their own property are significant. Once a critical mass of cooperators is reached, the group can supply adequate labor. Ranchers can share equipment and its cost spread among members. At a more organized level, such a group may be able to accept grants to pay for training and equipment. Newer cooperators can gain valuable experience by assisting more seasoned members on fires. Also, when trained and experienced, landowners or managers have a distinct advantage when conducting fires on their own property, in that they know the land and fuels and can best gauge whether management objectives have been met. Liability is also reduced. Finally, others can replicate this model across a larger landscape, with the formation of local groups to service optimally sized rural neighborhoods.

Despite this vision of substantial self-reliance, it is reasonable that broader cooperation among all partners should continue, especially when burning larger units, complex and potentially dangerous fuels, or under more extreme conditions.

6.5 NWCG Training

The FWS and other cooperators will offer NWCG training courses in the local area. FWS will serve as a contact for training outside the local area. The State Fire Marshal's office offers training for VFDs.

6.6 Prescribed Fire Equipment Caches

The Nebraska Game and Parks Commission secured fire equipment with State Wildlife Grant funds. They will use or lend this equipment to implement prescribed fire on private lands. Equipment available to be loaned for prescribed fire include one pump unit that slips on the back of a pickup, four flappers, five fire rakes, four drip torches, and one weather kit. The

Commission has secured funding for creating two fire cache trailers to be loaned to private landowners that meet guidelines and training established by the newly developed prescribed fire association. The trailers (one located at the NGPC in Bassett and one at the NRD office in Valentine) would be equipped to enable 10-person crews to conduct prescribed fire.

The TNC does not have a fire cache with equipment available for use by other entities. TNC may consider a loaner program after expansion and upgrade of their equipment cache.

6.7 Funding

In 2005, the Nebraska Game and Parks Commission received a Landowner Incentive Program (LIP) grant from the FWS to focus on management of unique ecosystems along the Niobrara National Scenic River corridor and within the Sandhills. Unique at-risk plant and animal species and wetland ecosystems occur in these areas and need protection against invasive species and management practices that threaten survival. One portion of the grant enabled NGPC to fill a three-year term employee to focus on restoring these ecosystems. The position was filled in the fall of 2006 and works with the Northern Prairies Land Trust. Another portion of the grant provides approximately \$245,000 for landowner agreements, which benefit at-risk species by improving habitat in these focus areas. Landowner agreements are required to obtain a 75% federal to 25% non-federal matching funds. Many landowner agreements will encourage eastern red cedar removal through prescribed fire or mechanical treatment, and meadow management strategies that benefit at-risk species. Several projects were planned or implemented in 2007 to conduct prescribed fires and reduce fuel loads.

The Nebraska Game and Parks Commission also administer the WILD Nebraska program that utilizes habitat stamp dollars to improve wildlife habitat on private lands. These funds are limited and can be used in cooperation with Natural Resource District funds. The Commission has cooperative agreements with all NRDs in the focused region. Funds are available for wetland, grassland, and woodland related projects.

The Nebraska Game and Parks Commission is continually applying, or assisting landowners in applying for other grants to benefit private lands habitat. Some of these granting sources include the Nebraska Environmental Trust Fund, Partners for Wildlife Program, Private Stewardship Grants, and State Wildlife Grants.

In 2007, the Nebraska Forest Service received a grant of \$200,000 to reduce hazardous fuel loads in the forests of the Middle Niobrara River valley. A previous seed grant of \$39,899 was made available to private landowners in the fall of 2006 following the Big Rock Fire and was distributed to local landowners. This grant was also for the purpose of reducing understory ladder fuels (primarily eastern red cedar) and thinning ponderosa pine forests. Another similar grant may become available in 2009.

6.8 Economic/Business Concerns

The Nebraska Forest Service has conducted numerous workshops across the State to demonstrate the utilization of merchantable and small diameter timber for wood products. Demonstrations include a portable band mill for lumber production and a post peeler to produce posts suitable for fencing material or post furniture and rail applications.

A Wood Energy Action Team was formed to investigate, demonstrate, and promote new technology using woody biomass for energy. This team will work to:

- Accelerate timber stand improvement on private woodlands based on increased market demand for firewood.
- Promote fire safety in the home when heating with wood; work with larger institutions statewide (schools, clinics, private businesses, etc.) that could utilize wood heating and cooling.
- Utilize urban tree waste for wood fuels.
- Facilitate the development and expansion of companies engaged in harvesting and conversion of trees to other products.

Recent discussions have occurred in Nebraska concerning the possibility of utilizing various fast-growing tree species (such as poplars) to produce ethanol. It is unknown if cedars would be considered feasible for this process. Other possible uses of forest resources include production of cedar oil and chips for roads and landscaping, and building a power plant fueled by wood products.

7. FIRE TRAINING & EQUIPMENT

7.1 Goal

An important goal is to encourage that all government, for-profit, and nonprofit entities* that support the CNW Fire Management Plan, and who apply prescribed fire within the watershed, meet National Wildfire Coordinating Group (NWCG) PMS 310-1 standards within five years of this plan's endorsement.

Rationale: There are numerous county, state, and federal agencies within the CNW that use prescribed fire as a management tool. Some nonprofit organizations also manage land with prescribed fire. However, uniform training and equipment standards currently do not exist among agencies and organizations conducting prescribed fires.

Adopting uniform standards will enhance the safety and effectiveness of prescribed fire efforts and help to control public liability in the CNW. By using the same training and equipment standards, wildland firefighters and their staff will improve communication lines and realize safety standards intended to create a positive climate for prescribed fire throughout the landscape.

** This would not include local prescribed fire associations composed of ranchers, VFDs, etc.*

7.1-1 Action Step

The FAC will develop fire standards for the CNW using NWCG 310-1 as a framework. (PMS 310-1 is available at <http://www.nwcg.gov/pms/docs/310-1new.pdf>). These standards include:

- Personal Protective Equipment Standards
- Nomex trousers and shirt or other NWCG approved wildland fire resistant clothing
- Hard hat (designed for high-heat environment)
- Eight (8) inch high leather boots with lug-type soles
- Eye protection (goggles, face shield, or safety glasses)
- Leather gloves
- Fire ignition devices (matches, lighters, fusees)
- Fire shelter

7.1-1a Physical Fitness Standards

Each agency would be responsible for issuing fitness tests to satisfy their agency standards, health screenings, and certification forms. Fitness levels include:

- Moderate level fitness test -- all firefighters required to carry a 25-pound pack for 2 miles in 30 minutes or less (Field test).
- Arduous level fitness test -- all firefighters required to carry a 45-pound pack for 3 miles in 45 minutes or less (Pack Test).

7.1-1b Training Standards

Most agencies/organizations utilize seasonal workers on the fire line. Seasonal workers can participate as firefighters as long as they meet their respective agency's physical fitness standards.

Within five years of plan endorsement, all agencies and organizations should either have a burn boss or be able to share qualified personnel to carry out burns.

7.1-2 Action Step

Facilitate the adoption of NWCG standards among cooperating agencies and organizations.

- Seek funding to assist with the acquisition of equipment, training, and Personal Protective Equipment.
- Set up centralized locations to qualify individuals for physical fitness testing (field and pack tests).
- Offer NWCG training opportunities in cooperation with DNR Fire Coordinator Specialist.

7.2 Goal

One hundred percent of burn bosses will utilize a fire complexity-rating system for prescribed fires.

Rationale: A fire complexity-rating system is used to identify prescribed fire plan elements or characteristics that may pose special problems or concerns and where prescribed fire

plan changes may be prudent to mitigate or eliminate these problems or concerns. Fire complexity-rating system considers three factors:

- Risk, the probability or likelihood that an adverse event or situation will occur
- Potential consequence, some measure of the cost or result of an adverse event or situation occurring.
- Technical difficulty, which indicates the skill needed to implement the burn and deal with unexpected or adverse events.

7.2-1 Action Step

Develop a prescribed fire rating system for the CNW, or utilize the prescribed fire complexity guide (PNS-424, NFES 2472).

(See http://www.nwcg.gov/pms/RxFire/complexity_analysis.pdf)

7.2-2 Action Step

Establish guidelines for the use of a fire complexity-rating system.

Example: For low complexity burns, agencies may be able to determine their own qualifications, whereas on burns of moderate or higher complexity, and on which resources of more than one agency are utilized, the NWCG 310-1 standards should be applied.

8. INITIAL ATTACK

8.1 Incident Command System

Federal agencies such as the NPS and FWS use the Incident Command System (ICS) a component of the National Incident Management System (NIMS) when responding to and fighting wildland fires and other emergency incidents. Some VFDs have had specific training in ICS, but few if any of their firefighters have qualified for ICS positions. The FAC encourages VFDs, Sheriff Departments and the local Office of Emergency Management to work together to get a basic ICS course offered in the area, so that emergency personnel can attend and receive training in managing incidents, such as fire. There is a high probability of large-scale wildland fires in the immediate future. Management complications can ensue from one VFD trying to manage the numerous responding departments and agencies. The complexity of a large-scale incident could overwhelm a fire chief.

When over fifty VFDs responded to the Big Rock Fire in 2006, it placed a heavy burden on a few individuals to coordinate operations. A Unified Command structure is an alternative for incident management when many personnel respond and an incident becomes very complex. A typical fire department has a Chief with an Assistant Chief in command positions. Utilizing the Incident Command System would enhance the incident's organizational effectiveness by utilizing various personnel from within the primary agency, as well as personnel from other

entities and organizations to fill IC positions such as Incident Commander, Information Officer, Operations Chief, Planning Chief, Logistics Chief, and Finance Chief.

Basic Function/Position responsibilities are as follows:

Incident Command: Leads the entire operation from start to finish and obtains targeted results. Other members of the fire organization accomplish the work, rather than solely the IC. The command is responsible for all on scene activities, staff consensus and decisions, establishment of a command post, policy implementation, and establishing communications with local dispatch or the responsible agency.

Operations: Carries out tactical activities (ground, air, water); commits resources; assigns operational work based on contents of a daily management plan (Incident Action Plan).

Planning: Acquires all information pertinent to the operation (who, what, where, how, why, when); tracks resources and their status; prepares maps, record, photos, weather forecasts and records, etc.; conducts briefings and debriefings; establishes strategy; mobilizes and demobilizes resources and entire operations; provides documentation; completes investigations.

Logistics: Acquires what is necessary to support operations; provides resources, supplies, equipment to carry out the mission; responsible for transportation, medical care, food, sleep facilities, personal hygiene, etc.; provides all incident communications infrastructure (network, interface, messages, etc.).

Finance: Establishes costs for lost and damaged property, resource costs (all items used to suppress the fire), injury/claims compensation, personnel costs tracking (hours worked, days, OT, hazard pay, etc.), fiscal documentation and logs, etc.

Information Officer: Relates incident news to media in a timely matter.

Safety Officer: Provides risk analysis, and daily safety briefings; collects injury and near miss reports.

Liaison(s): Helps to coordinate business between departments and agencies.

Technical Specialists: Specifically addresses special problems.

Appendix L contains an organizational chart of the Incident Command System.

8.2 Fire Reporting

Members of the public generally report wildland fires by calling 911 or dialing the local county sheriff department. County dispatchers will complete a form CNW FAC – F1 (Appendix G) and immediately notify the VFD or agency that is accountable for response. The Dispatcher Card (see section 8.7) will be kept in the dispatch office and will be available to the FAC or responding agency.

8.3 Response



After a county dispatch center receives a report of a wildland fire they notify VFD members by pager and/or phones. Each respective VFD reports to the firehouse and then responds to the scene of the fire. County Dispatch notifies the FWS to respond to a particular fire when requested by the primary responders. The FWS will notify the NPS by phone to assist them with a response to a fire. Presently the NPS will act under the direction and authority of the FWS when responding to fires on a National Wildlife Refuge or on mutual aid fires within or adjacent to the National Scenic River boundary. TNC

responds directly to wildland fires and requests assistance from VFDs when needed. See Appendix O for a flowchart illustrating fire reporting and response.

8.4 Equipment Lists

A list of VFD equipment is included in Appendix I. Each VFD was sent a letter (approved by the FAC on 8-18-06) in October 2006 and January 2007 requesting updated equipment lists of trucks and major equipment capabilities. Most VFDs have responded.

8.4-1 The Nature Conservancy (TNC)

- 1 Type 6 engine (300 gallon)
- 2 Type 7 engines (200 gallon)
- 1 Draft Pump
- 6 Panama drip torches; 5 silver-type drip torches
- 1 Cat motor grader w/ radio
- 1 Ford 4WD tractor/Brush Hog mower w/ radio
- 10 old style shelters
- 6 new Nomex@ 2-piece PPE; 10 old Nomex@ 1-piece PPE
- 6 FSA complete backpacks
- 10 FSA spare bags
- 5 metal Indian pumps, with upgrades suspension systems
- Assorted helmets, goggles, headlamps
- 12 flappers, 4 council rakes, 6 Pulaskis, 4 chainsaws

8.4-2 NPS

Currently the NPS has the following general equipment:

Hand tools (flappers, Pulaskis, Council rakes, axes, McLeods, shovels, etc.)

Portable hand pumps (backpack)

Drip Torches

Belt Weather Kits

Firefighter Packs and PPE (yellow packs, sleeping bags/pads, water bottles, headlamps, files, flagging, fusees, personal first aid kits, headlamps, leather gloves, Nomex@ shirts and pants.)

Educational materials (training manuals, forms, Fireline Handbooks, etc.)

1988 Chevrolet 1 ton fire truck (6.2 liter - 30 Custom deluxe Diesel) I-147065, with a 1997 "Wildfire Pacific" 250-gallon tank w/18 hp engine Wajax Pacific BB4 pump (110 gpm @ 100 psi) mounted on the truck bed. A complete inventory record is kept of all equipment.

8.4-3 FWS

The FWS has a fully stocked fire cache with the following engines:

E6315 300 gallon model 52

E6316 300 gallon model 52

E6317 300 gallon grass rig

E125 300 gallon grass rig

E126 300 gallon grass rig

E127 300 gallon grass rig

WT13 1250 gallon tender

8.5 Fire Chiefs and Department Addresses (See Appendix J)

8.6 Emergency Contact Information (See Appendix K)

8.7 Coordination with County Dispatches

The NPS gave county dispatch centers a Dispatcher Card in February 2007 to assist them with recording information from reporting parties for wildland fire. Though its use is voluntary, the card improves information collection and assists VFDs in gathering accurate information on the type of fire, location, rate of spread, etc.

8.8 Annual Operating Plan (AOP)

With an approved FMP and a formal written agreement among the members of the Fire Advisory Council, an Annual Operating Plan will be prepared (2009) outlining the specific tasks that the various partners will seek to accomplish on an annual basis. Job positions, names, phone numbers call lists, radio frequencies, and equipment lists will be included in the AOP. The AOP will remain in effect for the duration of the FMP.

8.9 MOU/General Agreements

The state of Nebraska and federal land management agencies (including U.S. Fish and Wildlife service, National Park Service, and U.S. Forest Service) entered into a general wildland fire agreement in 2007. This agreement states in part that all parties may assist each other for fire suppression operations within the state of Nebraska. The NPS and FWS will develop an Annual Operating Plan (AOP) to provide direction to all involved partners. Mutual Aid Agreements exist among the U.S. Fish and Wildlife Service and local rural fire departments that allow each party to assist in wildland fire suppression when needed.

8.10 Plan When Fire Exceeds Local Capabilities

When a fire exceeds the capabilities of the local fire district, the fire district will call for mutual aid. If mutual aid resources are not sufficient to control the fire, then the Region 24 Emergency Management Director can declare an emergency and contact the Nebraska Emergency Management Agency (NEMA). If the resources of the State are insufficient to control the fire, then NEMA can begin to call for other state and federal resources through the Great Plains Interagency Dispatch Center in Rapid City, South Dakota. This Dispatch Center, in turn, is linked to the National Interagency Coordination Center in Boise, Idaho. The FWS will operate under their own policies within their own fire management plan. The NPS owns no lands at this time, but in the future, if lands are owned and managed by the NPS, it would request

assistance from local resources first, and then contact the Interagency Dispatch Center for additional suppression resources.

8.11 Emergency Preparedness & Evacuation

The Region 24 Emergency Management director has the responsibility to determine emergency preparedness and evacuation procedures for their respective counties and communities. Cherry County has a detailed Local Emergency Operations Plan that addresses evacuation procedures. The FAC suggested that the river valley be divided into various districts with contact persons, organizations and calling trees. Each agency/organization is responsible for evacuation plans for their lands.

8.12 Training

Training will be agency-specific for initial attack. The FWS/NPS will offer S-130 Basic Firefighter and S-190 Introduction to Fire Weather on an as-needed basis as well as make higher level courses available when feasible (Burn Boss, Engine Boss, etc.)

9. FIRE MANAGEMENT COORDINATION

9.1 NPS Role

The NPS's role in current fire management activities is largely a supportive one. The NPS assists in the suppression of wildland fires within and immediately adjacent to its boundaries as a member of the KBR&C Mutual Aid Association and through other agreements. The NPS will respond to wildfires under the direct guidance and supervision of the U.S. Fish and Wildlife Service until the NPS has its own fire management organization. When feasible the NPS will also assist with prescribed fires at the Fort Niobrara National Wildlife Refuge and The Nature Conservancy. For the purposes of this plan there is only one Fire Management Unit and only one response – suppression. Other agencies, entities and private landowners have the primary responsibility of direct fire management during wildland fires and prescribed fires. In extended attack situations, the NPS could fill an overhead role that is appropriate to incident management and provide firefighters and/or equipment to the extent training and qualifications allow.

At higher staffing classes, the NPS will work closely with the FWS and assist them when feasible in providing personnel.

NOTE: Congress mandates that the National Park Service protect the outstandingly remarkable values of the Niobrara National Scenic River. Although the NPS cooperatively manages these resources, only four percent of landowners along the river felt the NPS should have primary responsibility for management of natural resources. Protecting local ownership of the land and maintaining its rural character were the highest objectives to these landowners (2001 Niobrara Council Landowner Survey). One of these values includes its scenic attributes, which are composed of an astonishing array of forest types and grasslands. A second value includes the great diversity of wildlife species. Managing these diverse resources is an especially challenging task because the **NPS does not own or directly control any land** at this time. Presently the NPS is unable to conduct or assist with prescribed fires on private lands (the NPS may assist TNC on prescribed fires). Efforts are underway to allow federal agencies (especially a non-land owning agency) to help manage land within and/or adjacent to its boundaries in more creative ways, thus the necessity for the NPS to help manage a broader landscape by collaborating with various agencies and organizations in an attempt to affect positive ecological changes over a much greater area.

9.2 Education/Interpretation

Rural fire departments, the NPS and other federal agencies such as the U.S. Forest Service have had a long tradition of fire suppression. Historically the general goal of fire management was to control and extinguish wildland fires as quickly as possible, usually within the first twenty-four hours. The images of Smokey Bear and Bambi conjure up thoughts of the destructive power of wildland fire upon our nation's forests and the death of countless wildlife. Our culture has largely accepted these engrained impressions. The point is that we may not want to change the local public's image of "wildland fires". Wildland fires destroy millions of acres of forest annually, burn homes and vehicles, and adversely affect water quality. Worst of all is the annual loss of firefighter and civilian lives. However, we want to educate people about the potential benefits of utilizing prescribed fire and managing our forest resources through reducing hazardous fuels and establishing firebreaks.

Part of this process is educating the public about the role that fire plays in the maintenance of various ecosystems. Excluding all fires will result in unwanted wildland fires becoming more frequent and dangerous than if fire management is used. Fire suppression has been successful, and resulted in detrimental changes to the ecosystem and hazardous fuels buildup.

Native Americans used fire as a tool to manage landscapes for hunting, personal protection, and survival. Farmers and ranchers have traditionally used fire to burn ditches, debris piles, and pastures though many landowners have little understanding of the role that fire plays in an ecosystems, maintaining healthy grasslands and forests. With the frequent barrage of media images during busy summer fire seasons, the public has developed a fear of fire as a destructive force, yet ironically, this same public seems to take little action in locating homes in areas away from fire prone areas or providing a defensible space around their homes.

There are various publications available to the public that inform landowners of risks and teach methods to protect private property. Though we have had some success in educating the public about fire across the country, much work remains. Education alone may not be enough.



Fire Learning Network workshop - Hazel Creek post burn inspection

Because of a longstanding tradition of good stewardship, area ranchers take great pride in the care and preservation of the landscape and the sustainability of the Sandhills ecosystem. Productive grasslands, sufficient water and healthy forests are all common goals that landowners want to preserve, protect, and improve. The CNW Fire Advisory Council's role on the Niobrara is to cooperate and assist other local agencies and organizations, and to inform the public of the advantages and inherent dangers of fire. This opens the door to discussions on how the public can use

prescribed fire as one of several tools to improve livestock production, ensure better grasslands, and begin the prolonged task of managing forests to reduce the possible effects of catastrophic wildland fire.

Educating younger generations about fire's natural role and effects is an important first step. With a myriad of new educational standards and requirements to meet, local schools have little

time to learn about fire. The FAC, NPS, Niobrara Council, and other partners can provide additional information and insight to ecosystem management lessons. Many of the associated issues fit into science curriculum, including the water cycle, energy relationships in biotic communities, pollution, and animals and their habitats. Fire plays a crucial role in all of these basic concepts and many more.

As an example the third grade curriculum includes science topics such as, *Living in a Forest*, *Living in a Desert*, and *Forces that Change the Land*. Fourth graders read the chapter *Using Our National Parks* and fifth graders learn about nature in *How do Ecosystems Change Naturally?* The creative interpreter will weave fire into these required curricula. This will begin to educate the next generation of landowners so that fire becomes a familiar topic -- a natural process and a manageable tool that they can use to benefit economies, as well as ecosystems. Teachers could integrate upper class science students into pre- and post-burn field studies to see the differences in grasslands and forests with and without fire management.

A second undertaking is to work with the current generation of landowners. The vast majority are ranchers. Unlike Kansas where the skies are said to turn black each spring, using fire as a tool in north-central Nebraska is in its infancy. The combined efforts of organizations, such as the Natural Resources Conservation Service, Nebraska Game and Parks Commission, Nebraska Forest Service, and The Nature Conservancy's Fire Learning Network, results in slow but steady progress to educate landowners about the role and benefits of fire in dependent ecosystems. Cost-share programs provide resources and expertise to help landowners reduce forest density, protect property from fire, improve grasslands, and eliminate or reduce the invasion of woody vegetation into pastures. Hazardous fuel reduction efforts, best management practices (which might include deferred grazing) and prescribed fire are methods being used to attain management goals.

Local residents have long looked at fire as a thing to be feared and immediately extinguished. VFDs aggressively attack prairie fires, and rightly so. People most often focus on the dangers and destructive nature of fire because it burns valuable grazing lands and can destroy property and livestock, rather than examine the beneficial aspects of fire. In the early stages of local burning efforts, mistakes made in the application of fire to the landscape can cause great damage and set a program back months or perhaps years. It is critical that agencies and contractors as well as private landowners take the highest of precautions when conducting prescribed fires. Certainly private landowners need to be told up front that fire is dangerous and sometimes unpredictable. Usually human error or unanticipated changes in weather cause fire escapes. Although topography and fuel conditions are predictable, weather is not and sometimes the best-laid plans may go awry without adequate site preparation and contingency plans.

Getting local residents to accept prescribed fire as a practical tool and gaining the trust of fire management authorities are two critical aims of this FMP. Illustrating that direct fire management can protect valuable resources and property and may increase profits is an important aspect as well.

A third issue is to convince local authorities of the importance of protecting personal property and lives. In theory, this should not be a hard sell, but if it involves implementing new regulatory measures, it can become difficult to sell. Current and new landowners need to become aware of how best to situate homes, but also of how to protect structures before disaster strikes. The Big Rock Fire in Valentine in July of 2006 and the Chadron Area Fires in August were wake-up calls for Nebraskans, illustrating that if we do not start acting soon, destructive fires will continue to occur. What is surprising is how many landowners have not made efforts to protect their property, have only made cursory efforts, or have even rebuilt on the same locations that have the same topographical risks. The Fire Advisory Council is working with county zoning authorities and county commissions to notify new landowners of fire risks when choosing a building site. It is a first step in a lengthy process of awareness, education, and perhaps future regulatory oversight.

Fourth, insurance providers are beginning to see the results of poor building site choices made by property owners. Through the destructive forces of hurricanes, floods, landslides, and fire, insurance agencies are beginning to increase rates for high-risk policies or are even refusing to insure properties. Until insurance companies tighten standards regarding the placement of homes and modification of traditional building/construction standards, homeowners will continue to place themselves and their property at unnecessary risk.

The FAC will work with its partners in advising the public about planned burns and fuel reduction projects. Good public relations and notifying the local populace about the fire-related activities is an important step in helping local communities and landowners to understand fire. The FAC will seek to notify visitors of fire danger levels through signage and through public media (newspapers, television and radio stations). VFDs have the authority to implement burning restrictions and fire bans and they work closely with county commissioners and law enforcement agencies when making these decisions. The vast majority of wildland fires and prescribed fires within the CNW boundary take place with inadequate communication among agencies and organizations. Efforts to meet with fire agencies and VFDs to improve communication and to record fires for statistical purposes are underway. Neighbors need to be notified, the media contacted, and signs placed to inform the public about planned prescribed fires or hazardous fuel reduction projects. These efforts will help enhance public education and safety, and decrease the likelihood that visitors might report or attempt to put out a prescribed fire.

During extended attack operations within the scenic river boundary, the Chief of Interpretation or their designee will function as a liaison between a local media contact person and/or a Public Information Officer in order to provide for effective communication between park personnel, the public and the media. During the case of a large-scale wildland fire, the Park may request a Public (Fire) Information Officer (PIO) from outside the Park. In the NPS Long Range Interpretive Plan "Fire History" is listed as a research need (pg. 76) and fire should certainly be considered as a subject matter in the development of wayside exhibits, site bulletins, educational outreach and interpretive programs. The NPS should incorporate elements of the fire management program into the overall Interpretive Program and explained where possible and appropriate.

Barriers to effective education and interpretation include mobility of visitors and the numerous entry/exit points to the CNW; a lack of public facilities, such as ranger stations, picnic areas, public campgrounds, etc., the absence of a central visitor center for the river/Sandhills environs; seasonal visitation fluctuations; and a lack of wayside exhibits.

The FAC will meet post-season and will gather statistical data from area dispatchers, agencies, and organizations. The FAC will also complete an informal assessment of public perception of the FACs fire management efforts. The FAC will accomplish this through coordination with neighbors, local groups, and other agencies/entities. This coordination should include consultation on any pertinent issues with the State fire office and VFDs. In some instances, NPS park staff may take the lead on issues with adjacent landowners, State air quality and VFDs. The purpose of soliciting feedback is to revise plans, procedures, and educational efforts regarding fire management within the planning area. The FAC will issue a joint press release summarizing the year's accomplishments of its partners.

The Fire Program Coordinator will cooperate with the Regional Fire Education, Prevention and Information Specialist on the following programs:

- Development of site bulletins or brochures on the basic objectives for using prescribed fire for hazardous fuel reduction and ecological benefits.
- The FAC will maintain a file of public comments received concerning prescribed fires and use them to improve procedures, public relations, and communication efforts targeted at increasing support for the fire management program.

The FAC is committed to keeping the public informed of its fire management program and activities. Staff will develop informational and educational media to reach as many segments of the public as possible. This may include park neighbors, local and state government representatives, special interest groups, schools, public organizations, and other groups. Within agencies (NPS, FWS, NFS) materials and programs exist currently that will help deliver information concerning the role that fire plays in preserving and protecting the cultural and natural resources of the fire management area. Regionally appropriate and specific information will be developed and disseminated.

The Volunteer Fire Departments will take the lead in an active fire prevention program and should coordinate with other agencies to protect human life and property, and prevent damage to cultural resources or physical facilities. Fire prevention activities will be based upon fire history, including ignition sources, and current conditions.

An integral part of the fire prevention program is that all employees, cooperators, contractors and permit holders be mindful of their own activities that could lead to unwanted ignitions. Setting a good example will aid the FAC's credibility with its neighbors. Public contact staff will look for opportunities to integrate fire prevention and safety messages into informal and formal visitor contacts.

If NPS staffing levels increase, the Interpretive Division may implement a program of public education regarding potential fire danger. They would do this through visitor contacts, bulletin

board materials, handouts, and interpretive programs in order to increase visitor and neighbor awareness of fire hazards.

It is essential that the FAC inform agency employees, partners and cooperators about fire prevention and the objectives of the fire management program as well as changes in existing conditions throughout the fire season.

Prior to, during, and after a prescribed fire, cooperators need to communicate to the public the beneficial effects of prescribed fires and the dangers of unplanned wildland fires. Information must be included that emphasizes the potential severity and prevention of human-caused wildland fires.

During periods of extreme or prolonged fire danger, FAC agencies should provide fire prevention messages to the visiting public and park neighbors. These messages may be informal contacts by various agency/organization staff, press releases to area media outlets and on agency/organization websites, or by such means as the staff determines necessary and appropriate, including future interpretive programs. Emergency restrictions regarding fires or area closures may become necessary. Such restrictions, when imposed, would be consistent with those implemented by fire chiefs and cooperators.

When a cooperator is conducting a prescribed burn within the river corridor, a notice at the Valentine Ranger Station, Fort Niobrara NWR Visitor Center, NRCS office, NGPC office in Bassett, the Smith Falls State Park office, and the Niobrara Council should be posted to supplement visitor contacts. Agencies would use these notices to direct, inform, guide, and caution visitors about existing fire conditions and prescribed fire activities. When feasible, partners will also post information on websites and share information with interested parties by email or effective means.

All partners are responsible to communicate their organizations' policies about the use of fire in the various ecosystems to the public. The primary goal of information management is to provide fire information to the public. Another

Note: Step-up plan for Public Information Activities (Specific to the Niobrara NSR Only)

Prior to the beginning of each spring fire season the Park Superintendent, Chief Ranger, Chief of Interpretation, Regional Fire Education and Prevention Specialist, and Regional Prescribed Fire Specialist should discuss any known prescribed fires planned by partners or plans to burn on NPS administered areas for the upcoming year. The Chief Ranger will evaluate the potential of the upcoming fire season and a public notification plan will be prepared based upon that analysis. It is essential that agencies carefully articulate information pertaining to fire danger, public advisories, closures, prescribed fire activity, and suppression operations to the public. They should consider a variety of methods in this planning process, including the use of local television, radio and newspaper resources, as well as other informational contacts such as the use of posters, flyers, Internet sites and letters to neighbors.

The managing agency or entity needs to apprise the public of the basic facts regarding wildland fire activity, including the location and status of a fire and any special restrictions that may be enacted. When someone discovers a wildland fire in the area, they generally report it to an area Dispatch Center via 911. The local VFD Chief (who may work closely with county commissioners and sheriff departments) handles public information activities for at least the first 24 hrs. If officials expect the fire to exceed the initial attack period (24 hrs), it is likely that other entities and agencies (such as the Nebraska Emergency Management Agency or other federal agencies) could assist, and the Incident Command System implemented. Managers should consider a request to order a qualified Fire Information Officer (PIO) if the fire is located within the NPS boundary. Park staff should fill these positions if possible, to help ensure familiarity with the resources involved in the incident. Should the incident transition to a Type I incident, a PIO will generally accompany the Incident Management Team to the fire; this can also apply to some Type II incidents. Notifications will always be supportive of public concerns. PIOs should emphasize that trained professionals are leading the incident and that action taken will manage the situation according to established guidelines.

As is the case with most incidents, news media often arrive on the scene unannounced. Fire managers need to manage the media, not prohibit it. The Fire Chief or Incident Commander would be responsible for ensuring that media activities do not jeopardize the safety of the media crew, public, or fire management personnel, and that they do not hamper effectiveness of wildland fire operations. Managers should not allow media personnel on fire lines without required personal protective equipment, including fire shelters and a current "red-card" certifying their qualifications for being on the line. When possible, a CNW representative shall accompany media personnel on larger, longer duration fires within the park's boundary.

essential goal is to provide accurate and updated information to elected officials, cooperating agencies, media, and local communities.

Activities planned to meet these goals include the following:

- 1) Undertake an information and education program to ensure that citizens, key contacts, and employees understand the status of the fires within the planning area and the purpose of the specific action(s). This will include providing updated information to visitor contact personnel along the river at cooperating agencies.
- 2) Prepare and send a fire information update to all employees, cooperating agencies, media, legislative outlets, local communities, adjacent landowners, and other interested parties on a regular basis. Such updates should include the past 24-hour status, anticipated planned actions, and other pertinent information regarding such things as smoke management, structure protection, or closures.
- 3) Prepare news releases as needed on specific events related to the management of the fire(s).
- 4) Arrange and coordinate special visits or tours with Congressional offices, feature writers or photographers, local community officials, outfitters and guides, or other appropriate officials.
- 5) Meet the interests and needs of private citizens, contractors, and outfitters in conjunction with resource advisors.
- 6) Coordinate with partner agency Public Affairs Officers or suppression team information officers via conference calls or meetings.
- 7) Include information pertaining to closures or fires when visitors inquire regarding boating, hunting or other affected activities.
- 8) Assist when possible in the staffing of an information office during large extended-attack fires to provide current information.
- 9) Provide updated information to office personnel across the fire management boundary and at adjoining and cooperating agencies. Educational specialist or PIOs should incorporate ecological concepts into information handouts, selected books written about the area, web pages, and wayside and visitor center exhibits. Information handouts explaining the fire management program will be prepared and periodically updated. During periods when prescribed fires are burning, various field personnel will distribute these handouts to visitors at information boxes or visitor centers, during informal contacts along the river valley.
- 10) Interpreters should feature the fire management program into future interpretative talks, walks, automated programs, and other written materials, web pages, and wayside and visitor center exhibits, giving particular attention to these activities when fires are conspicuous from visitor centers and/or local communities.
- 11) NPS staff and involved partners will prepare and release joint news articles during ongoing fires within the scenic river boundary to local newspapers, radio, and television stations, and post information on web sites.
- 12) The NPS will write articles about the CNW FAC fire management program for publication in statewide or regional periodicals.

- 13) The FAC will provide public information outlets of neighboring land management agencies with fire management information, particularly when ongoing fires are burning within the area.
- 14) Fire organizations should inform employees of the fire management program and the status of ongoing fires. This will enable employees to communicate effectively with the public.
- 15) Fire personnel should discuss the fire management program during informal contacts with other agencies, organizations, contractors, commercial users, Special Use Permit holders, neighbors, and area-wide visitors.
- 16) When possible, the NPS will place signs notifying the public about ongoing prescribed fires, wildland fires, area closures, dense smoke, or other special situations along roadways, visitor centers, launch ramps, trailheads, campsites, and day use sites.

Neighbors are those private parties having property within or immediately adjacent to the boundaries of the fire management area. Fire management activities can directly affect these parties in both beneficial and adverse ways. Keeping neighbors informed of fire management activities is a key component of mitigating adverse impacts of those activities. In order to accomplish this:

- Each agency, entity or landowner conducting a prescribed fire should notify landowners having property adjacent to prescribed fire units of the planning process and contact them directly, by telephone or e-mail, not more than 48 hours before ignition.
- Each spring before prescribed burning begins the FAC with assistance from its partners will prepare and send out a press release describing the locations, objectives, and planned treatment windows of prescribed fire projects planned for initiation in the following spring, summer, and fall. The fire manager will notify at least one local newspaper covering each of the counties affected by smoke from any of the prescribed fires. The notice will include contact names and numbers.
- Using the NPS web site to provide information or links to information about fire ecology and about prescribed fire activities in the river valley is an excellent tool. Staff will direct inquiries about fire operations within the National Scenic River to this web site.
- Public outreach will be used to inform people of ways to protect themselves from the impacts of smoke from prescribed and wildland fires. Examples of possible methods of public outreach are disseminating brochures about fire and smoke, posting notices at local businesses and boat ramps, and placing signs in and around burned areas.

9.3 Sandhills Cattle Association

The FAC met with the Sandhills Cattle Association and will address the issues of prescribed burning and the loss of grasslands to woody shrubs in future meetings. They currently distribute the Fire Advisory Council brochure on prescribed fires to area ranchers and produce a newsletter.

9.4 UNL Extension

The University of Nebraska-Lincoln (UNL) Extension in Cherry County supports the creation and implementation of the CNW Fire Management Plan. People understand the importance of wildland fire suppression, but as a landscape management tool the public is less accepting of prescribed fire. This plan will facilitate a balanced approach to fire in the Niobrara River ecosystem. UNL Extension will assist in disseminating information about the FMP. UNL Extension will also be involved in educational workshops on fuel reduction to reduce wildland fire severity and the use of prescribed fire as a land management tool.

9.5 Sandhills Task Force

The Sandhills Task Force is a coalition of ranchers and conservationists formed in 1991 to address issues and problems facing a 20 county region. Its vision is to promote economic diversity and prosperity for individuals and communities in the Nebraska Sandhills. The careful management of native grasslands and wetlands will help enhance and support diverse wildlife communities.

The Sandhills Task Force works with landowners to design projects suited for their range operations by building partnerships with private and public organizations. It can assist in financial assistance, technical assistance, matching researchers or funding to projects, and by providing support to educational programs. Restoring and maintaining grasslands and forests in their natural state benefits wildlife as well as cattle and bison.



Ponderosa Pine invading valuable grazing pasture

The Sandhills Task Force works exclusively to promote conservation on private lands within the Nebraska Sandhills. The majority of their sixteen-member board are ranchers, who support the voluntary application of fire as a management tool for landowners. Use of fire to maintain and improve production while supporting diversity of native species has long been one of the board's goals. Reflected in this FMP are the Sandhills Task Force's diverse landowner goals, objectives, and management styles. Prescribed fire planning and

implementation can make a significant contribution to preservation of existing native plant and animal species while controlling encroachment of various non-natives. Prescribed fire also helps to ensure the safety of residents, visitors, and firefighters in the watershed by minimizing the chances of uncontrollable wildland fire. The Sandhills Task Force supports the concepts of community supported fire policies that respect stakeholders' views. Empowering local VFDs, harnessing their commitment to community, coupling their energy with the agencies that operate with external funding, and molding these factions into a cohesive FMP coalition will leave our resource base stronger as well as help individual agencies meet their resource goals.

9.6 Fire Advisory Council Partners

The NPS, FWS, NFS, NGPC, NRCS, TNC and four VFDs are all core members of the Fire Advisory Council. Agencies and entities of the FAC have signed a General Agreement (Appendix N) to assist in the administration of CNW fire management. Additionally, a representative of the timber industry and private landowners are involved in the FAC. The Fire Advisory Council will meet on at least an annual basis to coordinate fire management activities within the project area. Each agency/entity will manage their own fire-related goals and objectives through individual management plans. Items of business for FAC will include:

- Enhancing training opportunities (NWCG training, monitoring, evaluation, etc.)
- Promoting prescribed fire schools
- Gathering data (acres burned by prescription and unwanted wildland fire and number of acres of hazardous fuel mitigation)
- Creating maps with fire locations (GIS layers, etc.)
- Setting annual goals for acres burned/treated
- Reviewing FMP annually
- Providing input into burn plans
- Offering public education and information on the wise use of fire
- Working with other agencies and entities to find funding sources for hazardous fuel reduction, prescribed fire, acquisition of fire equipment, and other matters relating to fire management

9.7 Funding

There is no specific funding other than agency base funds and project funds from grants to specific agencies and entities for the FAC. The FAC will work through interagency or agency programs to accomplish the goals/tasks of the FMP.

9.8 Shared Equipment

The Nebraska Forest Service (NFS) in cooperation with the U.S. Forest Service has access to Federal Excess Personal Property (FEPP). The NFS can assign FEPP, predominantly all wheel drive vehicles, to local fire districts for use in fire suppression. The Springview VFD houses a hose trailer (funded through the NPS and the RFA program) that is available for use by any local department to suppress fires when forests are involved. Fort Niobrara NWR maintains an inventory of Class A foam to battle large blazes for multiple days before they need to resupply.

9.9 Upcoming Prescribed Fires/Burn Evaluations/Lessons Learned

The FAC will review any data cards (CNW FAC – F2) received on a bi-annual basis (late spring/early summer, late fall/winter) and calculate statistics and note problems. The FAC will provide a copy of these statistics to all partners and VFDs.

9.10 Liability

Each landowner conducting prescribed fires or hazardous fuel reduction projects on their own property is responsible for their own insurance and liability coverage. Agencies will conduct prescribed fires under their own agency guidelines and policies. Private contractors should be

required to carry liability insurance by the employing private landowner wishing to conduct a burn. Prescribed Fire Associations will need to work out individual details in regard to insurance and liability before conducting prescribed fires.

9.11 Maintenance

Each agency, entity, organization or individual will be responsible to maintain group equipment according to agreed upon standards.

9.12 Fire Monitoring

Except for agency specific monitoring and requirements, the NRCS, NFS or NGPC will design monitoring plans for private landowner prescribed fires in accordance with project goals and objectives.

10. PRESCRIBED FIRE ON PRIVATE LAND

10.1 Goals

The CNW project area encompasses all of the Niobrara National Scenic River corridor (23,074 acres) and adjacent lands in public and private ownership, totaling 793,762 acres. Lands in private ownership make up approximately 97% of the project area with cattle ranching functioning as the principle industry. Grazing management is the primary land management tool to steward rangelands and riparian areas.

Historically, fire was prevalent on the landscape and responsible for shaping and developing Nebraska's unique grassland and riparian woodland resources. Due to the lack of fire as a management tool, species such as eastern red cedar have invaded rangelands and the Niobrara corridor causing a loss in grassland production and ecological diversity across the landscape.



As previously mentioned, a primary goal of this FMP is to promote and utilize prescribed fire through a collaborative partnership effort to preserve, restore, and enhance the unique biological and ecological diversity of upland and riparian habitat to sustain long-term, viable populations of unique flora and fauna in the region. Other objectives include firefighter and public safety; suppress all unwanted wildland fires to protect human life, private property, and natural, historical, and cultural resources; identify, assess, and

reduce/mitigate hazardous fuels; improve communications with the public; and provide training and education concerning prescribed fire.

Fire and fuels management goals for the ensuing five years may be very ambitious given that prescribed fire is not currently a common land use practice. Some goals are to:

- Utilize an appropriate management response to suppress about 200 wildland fires totaling approximately 25,000 acres.
- Conduct 150-200 prescribed fires in ponderosa pine, prairie, eastern deciduous forest, and wetland communities with total burned acreage of about 150,000-300,000 acres.
- Carryout mechanical hazardous fuel reduction projects totaling about 6,000-8,000 acres during a typical five-year period.
- Burn debris piles to dispose of biomass from hazardous fuel reduction projects.

10.2 Training Opportunities for Private Landowners

To be completed at a later date

10.3 Local Prescribed Fire Caches

To be completed at a later date

11. AGREEMENTS, RULES & REGULATIONS

11.1 Annual Review

The FMP will be reviewed on an annual basis and if needed updated at a minimum every three years. The FAC will collect fire report cards (Form CNW FAC – F2) on an annual basis in the early winter (November/December) and prepare a report that tracks the number and kinds of wild fires, acreages, prescribed fires, etc. (Appendix G). The report findings will be sent to VFDs, partner agencies, and the local press (as a news release), and will be used to set goals for the coming year, strengthen funding requests, and aid in future planning.

11.2 Legislation Allowing NPS and FWS to Burn on Private Lands

The Wild and Scenic Rivers Act does gives broad authority to the managing agency (i.e., NPS) to work cooperatively with private landowners, as well as states and private organizations to protect and manage river resources in section 11 (b) (1). One of the greatest threats to the National Scenic River corridor is the invasion of grasslands by woody shrubs and eastern red cedar trees and the increase in tree and understory (mostly cedar) densities in forests because of fire suppression. Annual appropriations language may give the NPS some authority to address hazardous fuel reduction (HFR) needs.

SECTION 11.(b)(1) *The Secretary of the Interior, the Secretary of Agriculture, or the head of any other Federal agency, shall assist, advise, and cooperate with States or their political subdivisions, landowners, private organizations, or individuals to plan, protect, and manage river resources. Such assistance, advice and cooperation may be through written agreements or otherwise. This authority applies within or outside a federally administered area and applies to rivers, which are components of the national wild and scenic rivers system, and to other rivers. Any agreement under this subsection may include provisions for limited financial or other assistance to encourage participation in the acquisition, protection, and management of river resources.*

11.3 Other Important laws and Policies

Nebraska law prohibits open burning without a permit.

Chapter 81, Article 5 –Open Burning

81-520.01 State Fire Marshal; open burning ban; waive; permit. (1) *There shall be a statewide open burning ban on all bonfires, outdoor rubbish fires and fire for the purpose of clearing land.* (2) *The fire chief of a local fire department or his or her designee may waive an open burning ban under subsection (1) of this section for an area under his or her jurisdiction by issuing an open burning permit to a person requesting permission to conduct open burning. The permit issued by the fire chief or his or her designee to the person desiring to conduct an open burning shall be in writing, signed by the fire chief or his or her designee, and on a form prescribed by the State Fire Marshall. The State Fire Marshall shall provide local fire departments with such forms.* (3) *The fire chief of a local fire department or his or her designee may waive the open burning ban in his or her jurisdiction when conditions are acceptable to the chief or his or her designee. Anyone burning in such jurisdiction when the open burning ban has been waived shall notify the fire department of his or her intention to burn.*

81-520.03: Range-management burning, defined.

For purposes of sections 81-520.04 and 81-520.05, range-management burning shall mean the controlled application of fire to existing vegetative matter on land utilized for grazing.

81-520.04: Range-management burning; permit; issuance; when.

The fire chief of a local fire department or his or her designee may waive an open burning ban under subsection (1) of section 81-520.01 by issuing a permit for range-management burning only if the range-management burning is to be conducted in accordance with 81-520.05.

81-520.05 Range-management burning; application for permit; plan; contents; fire chief; duties.

(1) A landowner, tenant, or other landowner's agent of the land where range-management burning is proposed shall file an application for a permit and a plan for conducting such burning. The plan shall include:

- (a) The name of the landowner of the land on which the range-management burning is to occur;*
- (b) The name of the person who will supervise the range-management burning if such person is different from the landowner;*
- (c) The land-management objective to be accomplished;*
- (d) A map showing the areas to be burned including natural and manmade firebreaks;*
- (e) Procedures to be used to confine the fire in boundary areas without preexisting firebreaks;*
- (f) A list of equipment that will be on and;*
- (g) The types and conditions of the vegetative matter to be burned on the land and in adjacent areas;*
- (h) Identification of roads and habitations that may be affected by smoke;*
- (i) A description of weather conditions believed to be required to safely and successfully conduct the range-management burning, including wind speed, temperature, and relative humidity; and*
- (j) Such other information as may be prescribed by the fire chief of a local fire department.*

(2) The fire chief of a local fire department or his or her designee shall evaluate each plan to determine its compliance with subsection (1) of this section. If a plan fails to comply with all provisions of such subsection, a permit for range-management burning shall not be issued.

(3) the fire chief of a local fire department or his or her designee shall issue a permit for range-management burning if (a) the plan complies with subsection 91) of this section and (b) the fire chief or his or her designee determines that range-management burning conducted in accordance with the plan would be conducted with due regard for the safety of people and property outside the burning area. No permit shall be valid for more than thirty days.

11.4 Niobrara Council

The Niobrara Council must approve requests for open burning permits within the National Scenic River corridor to ensure that they are,

*“ . . .consistent with and as described by the laws of the State of Nebraska, and in consideration of the purposes of the Niobrara National Scenic River designation, including the scenic river’s free-flowing condition and scenic, geological, biological, agricultural, historic and prehistoric resources.” **

Although not a member of the Fire Advisory Council, a Niobrara Council representative attends meetings and provides input acting as a liaison with the FAC.

** Source: state law language for Niobrara Council’s authority*

11.5 Wyden Amendment

If managers are applying prescribed fire to federal land the Wyden Amendment allows an agency to burn on private lands within or adjacent its boundaries. This amendment allows prescribed fire practices that only recently began widespread use in our country. The FWS has the ability to conduct prescribed fires on private lands bordering the Fort Niobrara NWR. Summary excerpted from RM 18 Chapter 10

Fuels Treatment on private Lands: is authorized under the authority of the Wyden amendment which is codified in Title 16, Chapter 18, Section 1011(a) of the Code of Federal Regulations (CFR); or the authority within the Interior Appropriations Act. The Wyden Amendment allows the Service to enter into agreements with the, “heads of other federal agencies, tribes, State and local governments, private and nonprofit entities and landowners for the protection, restoration and enhancement of fish and wildlife habitat and other resources on public or private land and the reduction of risk from natural disaster where public safety is threatened that benefit these resources on public lands within the watershed.”

All fuel treatments must also comply with NPS Fire Management policies. To comply with the CFR there must be a signed agreement with the landowner that:

- Includes such terms and conditions mutually agreed to by the Service and the landowner;
- Stipulates improved viability of and otherwise benefit the fish, wildlife, and other biotic resources on public land within the watershed;
- Authorizes the provision of technical assistance by the Service in the planning of the management activities that will further the purposes of the agreement;
- Provides for the sharing of costs of implementing the agreement among the Service, the landowner, and other entities, as mutually agreed on by the affected interests;
- Ensures that any expenditure by the Service pursuant to the agreement is determined by the Service to be in the public interest; and
- Includes such other terms and conditions as are necessary to protect the public investment on private lands, provided the Secretary and the landowner mutually agree to such terms and conditions.

At this time, the only prescribed burning occurring on private lands (Wyden Amendment) is through the private lands group of the FWS.

The Nebraska Game and Parks Commission developed a white paper in the spring of 2005 outlining a concept for using federal fire resources, specifically trained fire personnel, to assist

with prescribed fire on private lands in Nebraska. Prescribed fire is an effective and ecologically beneficial tool for managing native grassland and woodlands. Benefits may include increased floral and faunal diversity, control of invasive plant species, and increased vigor of native plants to mention a few.

The white paper pointed out that even though there is interest among landowners, and public and private land managers to conduct prescribed fires, there are several roadblocks to achieving a desired level of use of fire as a tool. Among the principal barriers to prescribed fire on private lands are the lack of technical expertise or equipment to effectively conduct prescribed fires, and the availability and cost of risk management instruments. Local VFDs have assisted with conducting prescribed fires, but their abilities are limited because firefighters are volunteers and have other full time employment and may be unavailable during opportune burning conditions.

The intent of the white paper was to seek means of using federal fire crews (i.e. FWS, USFS, USBOR, NPS) to assist and train private landowners in Nebraska in conducting prescribed fires. Federal fire crews generally have the knowledge, training, equipment, personnel, and technical expertise to conduct prescribed fires. The USFS, through the Wyden Amendment, has the authority to perform management practices like prescribed fire on private lands adjacent to federal lands. The objective of the white paper was to broaden the intent of the Wyden Amendment to enable other federal agencies to work on private lands. Further exploration is still needed to enable assistance by federal fire crews on private lands.

12. WILDLAND URBAN INTERFACE

The Wildland Urban Interface (also known as WUI) is the area where structures and other human development meet or intermingle with undeveloped wildland. In most areas throughout the country, this interface is evident where suburbs or rural housing developments have encroached upon wildlands. People are building houses on the edges of forests, or even within forests, often bordering federal lands such as National Forests and National Parks. On a smaller scale, however, any place a person builds a house within or adjacent to forests, brushy areas, or even grasslands can constitute a WUI situation. Within the Niobrara valley watershed, this is most evident as new landowners build cabins and houses atop ridges overlooking the river valley or adjacent creeks and canyons. Even ranch houses may constitute WUI situations if a prairie fire can sweep into the vicinity and threaten to destroy the house, outbuildings, and other development where there are ungrazed or unmowed grasses, brush, or windbreaks (often-eastern red cedar). Wildland fire can easily spread to manmade structures from the surrounding land.



WUI areas are evident within the FMP boundaries and include the canyons (Minnechaduzza Creek and its tributaries) north and west of the Valentine city limits where developers have constructed several housing

developments, as well as individual homes. The Big Rock Fire of July 2006 destroyed ten homes on the north side of town. Some homeowners have rebuilt in the exact same places. Ponderosa pine covers these steep canyon walls with an understory of cedar and shrubs, while hardwoods dominate the wetter canyon bottoms. The cities of Valentine and Long Pine have houses scattered within or adjacent to pine forests and ungrazed grasslands and brushy areas. These homes are subject to great danger from wildland fire.

The area surrounding the Highway 20/83 Bridge south of Valentine and over 70 miles eastwards along the river to the east boundary of the CNW include rugged pine canyons and tributaries north and south of the river with high densities of ponderosa pine and thick understories of cedar and shrubs. Eastern red cedar and ponderosa pine are also encroaching on grazing land. Traveling east, the pine gives way to hardwoods and cedar. Due to a slight increase in moisture, the cedar understory is most dense in the eastern half of the project area. Residents often build summer cabins and new homes deep within the pines or atop ridges, affording pleasant views of the valley, yet they are at high risk for being destroyed by wildland fire. The Plum, Pine, Fairfield, and Bone Creek drainages all contain dense forests of pine, cedar, and/or hardwoods. Many homes within these canyons are at great risk. Along Hwy 20 near the town of Long Pine, the forested canyons are so dense that it is difficult to walk through them. Many homes are nestled among the trees. In the Hidden Paradise area south of the town of Long Pine, dozens of vacation cabins are at extreme risk. These homes are crowded together in a narrow canyon with limited access in dense forests of cedar, hardwoods, and mixed pine. Fire would quickly spread from one home to another.

12.1 Hazardous Fuel Reduction Plans

Perhaps the first step in addressing the issue of WUI is education. Since private citizens own most of the land within the project area, fire managers must inform them of the risk. Many landowners are as of yet, unaware of the problem, or if aware, unwilling to take action. Often homeowners think that fire will not destroy their home. Most homeowners cannot identify hazardous fuels. Some property owners may be unable to do the necessary work or cannot afford to hire a contractor to reduce hazardous fuels. Within weeks of the Big Rock Fire, only a few landowners were making efforts to reduce hazardous fuels around their homes. Property owners need to address the most serious threats found around homes and buildings. These are:

- Reducing ladder fuels (dead branches, shrubs, etc.)
- Eliminating the cedar understory in pine and mixed pine/hardwood forests
- Thinning the density of the pine forests
- Improving access for fire department vehicles, and
- Establishing a sufficient fire control buffer space between the forest or natural grassland edge and the structures

Many other secondary problems exist as well. A lack of water sources, construction materials used in buildings, firewood piles adjacent to homes, and inadequate vehicular access pose a serious risk. Agencies held several workshops in the Valentine area during the summer/fall of 2006 to educate homeowners about the dangers of hazardous fuels and living in the WUI. The Nebraska Forest Service has offered cost-share funding to private landowners who reduce

hazardous conditions in adjacent forests and around their structures. A list of current contractors who thin forests and cut cedar is found in Appendix M.

Fire managers need to get more information out to other communities. This will better inform the public of their role in protecting private property from unwanted fire. Since participation is voluntary, and it is in the early stages of implementation, it is too soon to evaluate the success of the efforts currently underway. The FAC will hold meetings in other towns in the future to better educate the public and get the word out about the need for mitigation of fire hazards.

Landowners need to establish fuel breaks (Fig. 1) within the river corridor along county roads and state/federal highways to help slow or stop the spread of severe wildland fires. Some agencies within the FAC such as the NFS will encourage landowners to apply for cost-share grants to conduct hazardous fuel reduction operations on their property bordering roads and to utilize mowing or grazing strategies to reduce flashy fuels. Agencies such as the NPS may also enter into cooperative agreements with landowners to construct firebreaks.

12.2 Zoning Issues

(See Appendix F)

12.3 Emergency Management

The FAC recommended that the Region 24 Emergency Management Director divide the river valley into various districts with contact persons, organizations and calling trees. It will be their responsibility to coordinate the notification of local residents and visitors to evacuate any portion of the watershed in case of a wild fire occurrence. This will be accomplished through County Dispatch Centers, County Sheriff Departments and volunteer or cooperating departments such as local police, fire departments, Nebraska Highway Patrol, NGPC, NPS, FWS, etc.). Emergency notification for fires within the Fort Niobrara NWR or Smith Falls State Park will be the responsibility of the respective agency. The NFS has a [Fire Danger Map](#) posted on their website that is updated twice daily. The NPS & its partners will seek to place fire danger signs in strategic locations along the valley and will help coordinate fire bans with Rural VFDs and Sheriff Offices.

12.4 Brochures

The FAC hopes to persuade county zoning authorities to send a one-page handout and hazardous fuel reduction brochures to all new zoning applicants (new residents or construction permits). Fire managers can distribute this information to the public through various media (newspaper, radio) and made available in certain locales (libraries, extension offices, etc.). The NPS mailed "*Country Living At Its Best*" (fire protection information) and, "*Prescribed Fire Use in the Nebraska Sandhills and Niobrara River valley*" to over 200 Niobrara River Valley residents in December of 2007. The NFS also has a brochure about managing forest fuels (see Section 5.2-3)

12.5 Media

County Emergency Managers will coordinate the release of fire information with the cooperation of the local governments (city, county officials) and the involved Volunteer Fire

Departments. Agency-specific personnel such as Public Information Officers, Superintendents, etc. will handle fire information on state or federal land.

13. MONITORING AND EVALUATION

Federal agencies will implement long and short term monitoring to assess accomplishments, and determine the effects of management activities on cultural and natural resources. Private landowners and non-Federal agencies may or may not opt to participate in this monitoring. The NPS could confer with fire ecologists at the NPS Midwest Regional Office or the FWS Mountain Prairie Regional Office on the monitoring of prescribed fires and fire effects. The NPS should consult them about future prescribed fire plans with regard to potential fire effects and attaining desired conditions. The fire effects monitors may assist in establishing vegetation-monitoring plots and assessing fire effects and hazardous fuel mitigation activities on the vegetative community.

The National Park Service Fire Monitoring Handbook may serve as a reference for other agencies to use in the monitoring of prescribed fires. Other resources are available that will also serve as excellent references.

13.1 Voluntary Monitoring

The purpose of monitoring is to evaluate the effects of past management practices, confirm new effective management practices, identify trends that can be used to predict future changes, and learn about environmental factors that affect the land. Site managers should develop monitoring plans that evaluate short term and long-term timber or grass (AUM) production goals and management objectives for the burn unit(s).

Pre-burn Monitoring: As part of the planning process for a prescribed fire, Rx Burn Specialists should select permanent monitoring site(s) that are representative for the burn unit using a Global Positioning System device.

The monitoring specialist could collect the site's baseline information by taking five photographs at each monitoring point. The first photograph should be looking down on a 3 ft. x 3 ft. frame (made out of ½" PVC pipe) lying on the ground adjacent to the point. It should include an identification label (land steward name, date, location, field number, monitoring point number, etc.). The photograph will document current ground cover, plant composition, total annual production, etc. Next landscape photographs should be taken facing out from the site in all four directions (identify each photo as N, S, E, or W). Private landowners may prefer a simple photo point site for monitoring as their primary concern is economic loss or gain. They may have goals that differ substantially from land management agencies and organizations.

The "Grazing Lands Monitoring Plan and Key Area Documentation" (NE-ECS-8) sheet or similar form (Appendix H) can be used by managers to record baseline information and other observations related to land steward goals and management objectives for the prescribed fire.

Post-burn Monitoring: Regular monitoring intervals (semi-annual, annual, etc.) can be set up on a schedule, as needed, to document the results of the prescribed fire and progress made towards meeting land steward goals and/or management objectives. At a minimum, researchers should collect monitoring information on the site(s) annually (at least for the first few years) and at the same time each year.

Summary: Fire managers can apply the monitoring technique discussed above to any landscape (grazing lands, forestlands, etc.). Monitoring techniques need to be as simple as possible with the underlying goal of data collection being: “keep the records you need, use the records you keep.” Detailed monitoring methods and techniques are available to land stewards, depending on the short and long-term management and monitoring objectives for the burn unit(s). Individual agencies will utilize their own monitoring methods per policy. Technical assistance for monitoring is available to land stewards by contacting local conservation agencies (County Extension Services, NPS, NRCS, and FWS).

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