Fire Management Plan

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Department of Interior

National Park Service

Midwest Region

Recommended

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Approved:

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I. Introduction

A. Reasons for Developing This Plan

This Fire Management Plan (FMP) outlines actions that will be taken by Herbert Hoover National Historic Site (NHS) in meeting the fire management goals for the park. This plan satisfies the requirement asserted in Director's Order 18 (DO-18) that "each park with vegetation capable of burning will prepare a fire management plan to guide a fire management program that is responsive to the park's natural and cultural resource objectives and to safety considerations for park visitors, employees, and developed facilities." It serves as a detailed program of action by providing specific guidance and procedures for accomplishing wildland fire management objectives. It addresses wildfire suppression, where protection of structures, cultural resources, and neighboring properties is paramount. The plan allows the NHS to manage natural resources in the most effective and efficient manner, which includes the use of prescribed fire.

B. Resource Management Relationship

The Resource Management Plan (RMP) expresses the primary goal to be appropriate stewardship of the NHS natural resources, so as to support the commemorative nature of the site. The natural resources component of the RMP for Herbert Hoover NHS addresses the issue of fire management in a general manner. This specific action plan implements fire related management actions from the RMP.

C. Compliance

This document complies with National Environmental Protection Act (NEPA) and requirements of the Iowa State Historic Preservation Office (SHPO). An environmental assessment serves as the NEPA documentation for this plan and is included as Appendix D. State Historic Preservation Office consultation is documented in Appendix D, and meets Section 106 or the National Historical Preservation Act (NHPA) requirements. Prescribed fires will have additional compliance work completed prior to project implementation as part of the annual burn prescription. This will include biological assessments and cultural/historical site surveys as appropriate. The Iowa Department of Natural Resources provided air quality compliance information that appears in Appendix E.

D. Authorities for Implementing this Plan

The Organic Act of the National Park Service (August 25, 1916, Section 102) provides the authority for implementation of this plan. This act states that the primary goal of the National Park Service (NPS) is to preserve and protect the natural and cultural resources found on lands under its management in such manner as will leave them unimpaired for future generations.

The NPS management policies (DO-18, November 1998, and Reference Manual 18, February 1999[RM-18]) provide guidance for FMP implementation. The park's fire management objectives conform to the referenced documents. Servicewide fire management policy is expressed in the current revisions of the Director's Orders and attendant Reference Manual, and "The Wildland and Prescribed Fire Management Policy: Implementation and Reference Guide," and is incorporated herein by reference.

Statutes cited below authorize and provide the means for managing wildland fire on lands under the jurisdiction of the Department of the Interior, or lands adjacent thereto.

- Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C. 594)
- McSweeney-McNary Act of 1928 (45 Stat. 221; 16 U.S.C. 487)
- Economy Act of June 30, 1932 (47 Stat. 417; 31 U.S.C. 1535)
- Taylor Grazing Act of June 28, 1934 (48 Stat. 1269; 43 U.S.C. 315)
- O. and C. Act of August 28, 1937 (50 Stat. 875; 43 U.S.C. 1181e)
- National Park Service Acts as amended (67 Stat. 495; 16 U.S.C. 1b)
- Federal Property and Administrative Service Act of 1949 (40 U.S.C. 471; et seq.)
- Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66; 42 U.S.C. 1856a)
- National Wildlife Refuge System Administration Act of 1966 as amended (80 Stat. 927; 16 U.S.C. 668dd through 668ee)
- Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688; 43 U.S.C. 1601)
- Disaster Relief Act of May 22, 1974 (88 Stat. 143; 42 U.S.C. 5121)
- Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C. 2201)
- Federal Land Policy and Management Act of 1976 (90 Stat. 2743)
- Federal Grant and Cooperative Agreement Act of 1977 (P.L. 950224, as amended by P.L. 97-258, September 13, 1982 (96 Stat. 1003; 31 U.S.C. 6301 thru 6308)
- Alaska National Interest Lands Conservation Act of December 2, 1980 (94 Stat. 2371)
- Supplemental Appropriation Act of September 10, 1982 (96 Stat. 837)
- Wildfire Suppression Assistance Act of 1989 (P.L. 100-428, as amended by P.L. 101-11, April 7, 1989)
- Indian Self-Determination and Education Assistance Act (PL 93-638) as amended
- National Indian Forest Resources Management Act (P. L. 101-630 November 28, 1990)
- Tribal Self-Governance Act of 1994 (P.L. 103-413)
- Department of the Interior and Related Agencies Appropriations Act (P.L. 103-32)

II. Compliance with NPS Policy and Relation to Other Plans

A. NPS Management Policies Concerning Fire Management

Fire once played an important role in the functioning of the tallgrass prairie ecosystem in Iowa. Far from being a negative and destructive force, fire maintained tallgrass prairie in eastern Iowa, where climate is conducive to woody plant succession. Forest cover occurred in floodplains, where moisture content excluded wildfire, but fire prevented the succession of prairie and oak-hickory savanna to maple forest outside of the moist floodplain. Tallgrass prairie and savanna predominated the landscape during the last 8000 years, where moisture levels were low and fire occurred cyclically, until settlement by Euro-Americans in the mid-1800s.

It is the policy of the NPS to allow natural processes to occur to the extent practical while meeting park unit management objectives. Department of the Interior policy (910 DM), regarding wildland fire suppression, states that all wildland fires will be classified as either wildfires (free-burning fires) or prescribed fires (skillful application of fire to wildland fuels by planned ignition). Wildfire will be met with immediate suppression in this park, because of the proximity of historic buildings and the city of West Branch.

The goal of fire management in the NPS system is to restore fire to park ecosystems where appropriate and possible. Prescribed fire will be used in the tallgrass prairie as an important management tool to control exotic weeds and woody vegetation. The presence of historic structures in the park, and people and human development in and around the park, require that protection of life and property be a primary concern in fire management. Prescribed fire reduces the presence of combustible fuels in the prairie and may prevent loss of life or damage to resources inside and adjacent to the park.

Principal considerations in park fire management programs, as stipulated in Reference Manual-18, include

- protection of human life, both employee and public
- protection of facilities and cultural resources
- perpetuation of natural resources and their associated processes

These considerations apply to the NHS and the surrounding city and landscape.

B. Enabling Legislation and Purpose of Herbert Hoover NHS

Herbert Hoover NHS enabling legislation (79 Stat. 510; 16 U.S.C. 1 et seq.; 16 U.S.C. 461-467), authorized August 12, 1965, provided for the preservation in public ownership historically significant properties associated with the life of Herbert Hoover. That included necessary acres of land in or near West Branch. Omnibus act, P.L. 92-272 (86 Stat. 120; April 11, 1972) authorized an increase in the development and land-acquisition ceilings of the site.

Values to be protected include those attributes that memorialize Herbert Hoover, encompassing his Birthplace Cottage (established as a National Historic Landmark in 1965), Gravesite, Presidential Library-Museum, Friends Meeting House, and Blacksmith Shop. Additional values to be protected include the Schoolhouse, statue of Isis, Isaac

Miles Farm, Thompson Farm, tallgrass prairie, a tributary to the west branch of Wapsinonoc Creek, and the cultural landscape, a dignified setting and representation of the Hoover's neighborhood within the city of West Branch, Iowa. Both the enabling legislation and Organic Act mandate that these values be maintained unimpaired for future generations.

C. General Management Plan (GMP) as It Relates to Wildland Fire

The draft GMP identifies the strategies, programs, and actions necessary to manage visitation and best protect the NHS resources. This document describes resource conditions and visitor experiences to be achieved in the park. Requirements are based on the park's purposes, significance, special mandates, administrative commitments, and the body of laws and policies directing the management of the national park system. The Resource Management section of the GMP says that, "The NPS, therefore, would not attempt to restore a complete prairie ecosystem, but it would manage the prairie community in a manner that would complement the spacious, commemorative setting of the Historic Site." This section also states, "The NPS would continue its present natural resource management actions including prescribed burns of sections of the prairie to improve populations of native grasses and forbs, and suppress the growth of invasive plants."

Fire management goals are addressed in the draft GMP. The document maintains that NPS will manage resources to provide a natural setting to support the commemorative emphasis of the site. As responsible stewards, NPS will manage these resources to a level that meets all applicable laws, policies, and NPS standards, while being a good neighbor to surrounding landowners and the city. Visitors will have the opportunity to experience the influence of the natural world on Herbert Hoover's life.

D. Objectives of Herbert Hoover NHS RMP as they Pertain to Fire Management

The RMP nests within the authority of the GMP and relates directly to resource management on the site. The RMP states, "The natural resources of the site, in addition to those included within the cultural landscapes and identified by the Congress … include the west branch of the Wapsinonoc and a 76-acre reconstructed tallgrass prairie."

The RMP states that Congressional committee reports on the enabling act transferred all properties outside the Library-Museum to NPS management. Congress authorized the acquisition of up to 200 acres "in order to preserve, as far as possible, the setting of the Hoover cottage, blacksmith shop, library, and graves." The Isaac Miles farm fields were planted as tallgrass prairie for educational purposes and to solve soil erosion and drainage problems that threatened the Gravesite, Library-Museum, and Historic Core. With the reintroduction of this historic landscape, NPS takes on the responsibility to manage this habitat in a manner

- compatible with the commemorative nature of the site
- that provides educational and interpretive opportunities
- that does no harm to species of concern using the habitat
- that does not adversely impact neighboring land
- that promotes best management practices for soil, water, and native species conservation, including control of invasive and exotic species

E. How the FMP will Help Meet GMP and RMP Goals

Implementation of the FMP will support Herbert Hoover NHS by

- reducing the fuel load through prescribed fire and thus reducing the opportunity for wildfire threats to human life and cultural resources in and around the site
- protecting and conserving the natural and historic resources associated with the life of Herbert Hoover by setting the policies associated with fire suppression and prescribed fire

Implementation of the FMP will also contribute to meeting goals specified in the Strategic Plan, as part of the requirements of the Government Performance and Results Act. The Strategic Plan specifically addresses the condition of the prairie within Goal Category I, Mission Goal Ia concerning preservation of park resources. Prescribed fire is one of the management tools listed in the work plan to achieve this goal in the prairie.

F. FMP Description

The FMP for Herbert Hoover NHS is a detailed program of action to carry out fire management policies and objectives.

III. Scope of Wildland Fire Management Program

The 1998 Wildland Fire and Prescribed Fire Policy Implementation and Reference Guide stipulates key points for wildland fire policy. Using these points, NPS policies, and park planning documents, the following goals and objectives describe the scope of a wildland fire management program for Herbert Hoover NHS. Wildland fire objectives apply to the area of the park specified as Natural Zone in the draft GMP.

A. FMP Goals and Associated Objectives

Goal: Make firefighter and public safety the highest priority of every fire management activity.

Objective: Ensure all wildland fire and prescribed fire operations cause no injuries to the public and limit injuries to firefighters to be consistent with NPS Strategic Plan goals for employee safety.

Protection of human life is reaffirmed as the first priority in wildland fire management. Property and natural/cultural resources jointly become the second priority, with protection decisions based on values to be protected and other considerations.

Strategies:

- Qualified individuals will carry out fire management operations with the safe and skillful application of fire management strategies and techniques, consistent with DO-18 requirements
- All personnel involved in fire management operations will receive a safety briefing describing known hazards and mitigating actions based on Lookouts, Communication Escape Routes, Safety Zones (LCES), current fire season conditions and current and predicted fire weather and behavior. Only properly trained and certified personnel will be working on a fire. Other personnel will

contribute with crowd control, smoke detection, weather condition assessment, and other aspects that can be accomplished in specified safe zones.

- NHS neighbors, visitors, and the local residents will be notified of all planned and, when possible, unplanned fire management activities that have the potential to impact them. A comprehensive list of contacts to be made prior to prescribed burn will be included with each prescribed burn plan.
- All or portions of the NHS will be closed to the public when fire activity poses a threat to human safety (at the discretion of the park superintendent). Safe zones will be established for visitors during prescribed fires. Should the situation warrant, safe zones will be closed to visitors and visitors will be removed from any potentially dangerous location.

Goal: Manage prescribed and wildland fires in concert with federal, state, and local air quality regulations.

Objective: Ensure air quality thresholds for National Ambient Air Quality Standards are not exceeded and visual quality is not reduced in adjacent air sheds due to fire use activities.

Strategies:

- Impacts to air quality will be considered as a part of the go/no go decision in the Wildland Fire Implementation Plan (WFIP), Stage I, and periodic assessment throughout the duration of any prescribed fire.
- Air quality impacts will be addressed as a part of the alternative development and selection in the Wildland Fire Situation Analysis.
- Air quality objectives will be incorporated in each prescribed burn plan.
- Particular attention will be given to the hazards associated with the interstate highway located on the park's southern boarder and the concerns of city residents on the remaining three sides of the park. Every consideration will be made to limit smoke impacts on the interstate and the city. This includes go/no go decisions and decisions to extinguish fires if wind conditions alter after ignition.
- Smoke impact mitigation measures will be implemented for prescribed burn and all wildland fire actions.
- Alternative methods (e.g., mechanical, biological, etc.) to fire use will be analyzed prior to selecting fire use treatments.

Goal: Suppress all unwanted and undesirable wildland fires regardless of ignition source to protect the public, check fire spread onto private property and protect the natural, cultural, and historic resources of the park.

Objective: Contain 95% of unwanted wildland fires at less than 10 acres in size, wherever suppression will not result in compromising public and firefighter safety or fire suppression damage that would exceed potential fire damage.

Strategies:

- Prioritize suppression actions on fires or portions of fires that threaten to damage public property.

- Ensure that park staff is trained in wildland fire operations.
- Ensure that park staff responsible for fire operations understands fire policy.
- Identify potential sources of unwanted fire on the park and take steps to mitigate their potential impacts.
- Maintain good working relationship with West Branch Community Fire Department.

Goal: Manage wildland fires so that NHS resources (natural, cultural, and improvements) are protected from damage by suppression actions and fire.

Objective: Manage suppression actions so that rehabilitation costs are less than 10% of suppression costs.

Strategies:

- Encourage the primary fire suppression responders (local city fire department) to employ Minimum Impact Suppression Tactics (MIST) in wildland fire suppression operations.
- Ensure fire operations personnel, including the local city fire department volunteers, are briefed on Herbert Hoover NHS resources and potential damage from fire and suppression actions.
- Ensure that a resource advisor is present on all suppression actions.

Goal: Facilitate reciprocal fire management activities through the development and maintenance of cooperative agreements and working relationships with pertinent fire management entities.

Objective: Annually review and modify as necessary agreements with the organizations listed below.

Strategies:

- Coordinate with the following entities:

  West Branch Community Fire Department

  Cedar County Sheriff

  Iowa State Patrol
- Encourage the use of MIST protocol and assist with firefighter training in techniques used within the NHS whenever appropriate and feasible.
- Cooperate with adjacent landowners to prevent wildfire on adjacent lands.

Goal: Use prescribed fire where and when appropriate as a tool to meet resource management objectives consistent with NPS policies. Maintain or restore, where possible, the primary natural resources of the tallgrass prairie and savanna, and the natural processes by which they are maintained.

Objective: Restore fire to 90% of the fire-dependent ecosystems within the NHS within the next five years.

Strategies:

- Achieve resource objectives, such as reduction of woody plant and invasive/exotic grasses and forbs in the prairie.
- Improve stream bank stability by improving herbaceous cover species that reduce soil erosion.
- Increase native plant diversity and reduce exotic species occurrence.
- Implement hazard fuel reduction burns throughout the prairie to reduce intensity of subsequent unwanted wildland fires.
- Restore fire as an ecological process in the prairie and savanna.
- Monitor the effects of fire on the ecosystem.

Goal: Reduce wildland fire hazard around developed areas, along interface boundary areas and adjacent to cultural and historic sites.

Objective: Ensure fire does not destroy any administrative or historic structure, nor incur costly damage (rehabilitation costs greater than $10,000) to any cultural or historic edifice or cultural landscape. Ensure that fire does not escape the NHS and cause damage to adjacent city or farms.

Strategies:

- Apply mechanical hazard fuel reduction around suppression zones to reduce fire intensity and severity to lesser levels.
- Apply mechanical hazard fuel reduction around vulnerable cultural and historic sites for protection from fire damage

B. Wildland Fire Management Strategies to be Applied.

1. Wildland Fire

The NHS will suppress all wildland fires that are not purposefully set according to an approved burn prescription. Any prescribed fire that deviates from its prescription will be suppressed.

a. Wildland Fire Suppression

All wildland fires will be suppressed using initial attack actions and using appropriate management response. Management responses to specific wildland fires will be determined through evaluation of public and firefighter safety, fire behavior, values at risk, potential suppression damage, and availability of fire management resources. Management responses will vary from fire to fire and

sometimes even along the perimeter of a fire. All available park and local firefighting resources will be utilized as necessary to limit damage to values at risk, protect private and public lands outside the park boundary, and provide for the health and safety of fire fighters and the public. Appropriate management response options range from containment and monitoring to intense suppression actions on all perimeters of the fire.

b. Wildland Fire Use

One management strategy not available to the NHS is wildland fires managed for resource benefits (wildland fire use). Wildland fire use is a strategy for allowing naturally ignited wildland fires, to burn as long as the fire meets pre-stated resource management objectives in the Maximum Manageable Area and prescriptive parameters are not exceeded. Due to the relatively small area involved in this park and the surrounding values, a wildland fire use program will not be implemented.

2. Prescribed Fire

Prescribed fires are intentionally ignited under predetermined weather and fuel-moisture conditions allowing managers to exert substantial influence over the spread and intensity of the fire. Managers ignite these fires to accomplish resource management objectives and subsequently reduce hazard fuel as well. All prescription parameters, acceptable ranges, and objectives are clearly stated in a Prescribed Fire Plan for each prescribed fire conducted.

a. Hazard Fuel Reduction

NHS managers will use fire for hazard fuel reduction within the prairie as needed. These projects will be documented with a written plan approved by the park superintendent. Each plan will describe the fuel hazard and the values at risk. The plan will specify proposed mitigation action with scope of work to be completed, and cost breakdown associated with the mitigation. Firefighter, public, and visitor safety associated with public use areas and travel corridors will be of highest priority, followed by protection of public and private property.

Managers may use fire to meet objectives for hazard fuel management activities outside of developed areas, while maintaining the fire dependency of the ecosystem treated. Managers may select mechanical removal of hazard fuel in areas with excess fuel loads and in areas outside of the Natural Zone. This program will reduce hazard fuel to levels that limit the probability of accidental ignition of fuels and that enable local wildland fire suppression forces to control fires with minimal loss of values to be protected, should fire occur.

Although hazard fuel reduction is one objective for prescribed fire, if the prairie is properly managed for ecological values, hazard fuel reduction will not become a pressing need. The focus of prescribed fire will be ecosystem management with reduction of hazard fuels as an additional benefit. Managers do not expect to use fire strictly for the purpose of hazard fuel reduction at Herbert Hoover National

Historic Site. Mechanical hazard fuel reduction may be necessary prior to a prescribed fire in the vicinity of cultural resources.

b. Ecosystem Management

Prescribed fire will be used in support of prairie and savanna ecosystem management to maintain and restore plant communities, increase plant diversity, cycle nutrients, and reduce or remove exotic plants.

Managers will use fire in conjunction with other techniques to maximize benefits for Natural Zone restoration in the park. Literature suggests that prescribed fire is not effective in removal of some exotic or invasive species, such as Canada thistle (*Cirsium arvense*) and bullthistle (*Cirsium vulgare*), although results of prescribed fire in control of those species in the NHS prairie have been fair to good (Christiansen 1984). Managers must time prescribed fire with care when the intention is to reduce populations of cool season grasses, such as smooth brome (*Bromus inermis*) and reed canary grass (*Phalaris arundinacea*). Fire suppresses annuals, such as smartweed (*Polygonum pensylvanicum*), giant ragweed (*Ambrosia trifida*), and wild parsnip (*Pastinaca sativa*), if seasonal timing is correct. Similarly, managers must consider the needs of wildlife, such as herpetofauna, birds, and butterflies that may be impacted by prescribed fire.

Managers will control woody plants in the prairie and savanna under story using prescribed fire coupled with other treatments, such as mechanical removal and chemical application. This combination approach has proved effective. Managers will rely less on costly mechanical removal and chemical application if they utilize prescribed fire as a management tool for invasive plant control.

C. Fire Management Units (FMUs)

Fire Management Units are functional areas defined by their uniquely differing fire management objectives (see map in Appendix F).

1. FMU 1

The 100 acres of urban-like lawns and greenway where historic buildings and other structures are located constitute a single FMU.

FMU 1 physical description

Herbert Hoover NHS is located within the city of West Branch in east-central Iowa. The city has a population of nearly 2000 and serves the surrounding rural community.

The park's historic core, picnic area, and other visitor services are contiguous with the city of West Branch. The area is relatively flat with 57 acres of mowed grasses and broadly spaced trees. The remaining area is building sites, parking lots, roadways, and lawns associated with houses on site.

The area lies in the flood plain of a tributary to the west branch of Wapsinonoc Creek. Roads, gravel traces, parking lots and concrete and board walkways

dissect the area. Wildlife in the area consists of species common to rural or suburban yards. No threatened or endangered species are known to exist within FMU 1.

Because of the proximity to the city, the cultural resources within FMU 1, and the commemorative nature of the area, any and all fire in FMU 1 will be immediately suppressed. Therefore, FMU 1 will not receive further description within the FMP.

2. FMU 2

The 76-acre restored prairie with its associated savannas and creek bank make up FMU 2 and encompasses the Natural Zone, as stated in the draft GMP. The total area is approximately 81-acres.

a. FMU 2 physical description

General:

A creek runs through the park's somewhat rectangular shape from the northwest to the east-central boundaries. The historic values to be protected are located in the northeast quadrant of the park away from FMU 2. The exceptions to this distancing of cultural resources from FMU 2 include the Miles Farm and the Herbert Hoover Library Association in the southeast quadrant and the Gravesite, located near the north-central boundary of FMU 2.

Interstate freeway borders the southern edge of FMU 2. Farm fields of the Thompson Farm, a cultural value to be protected, border the western edge. Parkside Drive, freeway entrance ramp, Miles Farm, and Herbert Hoover Presidential Library Association offices border the east edge. Park historic resources and city residences lie along the north. The historic resources and most city residences are separated from FMU 2 by extensive mowed greenway.

Topography and soils:

The topography of park is typical of the Southern Iowa Drift Plain. Soils originated from loess deposition on top of pre-Illinoisian glacial material. Subsequent water erosion provided relief with a slight north to northeast aspect. The prairie consists of gently rolling terrain, which substantially influences microclimates within the unit. Erosion hazards exist on some slopes on the western side of FMU 2.

The soils consist of five distinct silty-clay-loam types: Tama silty-clay-loam, Coco-Ely-Judson complex, Colosilty clay loam, Downs silt loam, and Adair clay loam. These soils have moderate to moderately slow permeability and are susceptible to sheet erosion.

Climatic conditions:

Temperatures range broadly over the annum with –28°F and 108°F representing the extremes. The average growing season extends over 183 days from April through September. Average precipitation is 36.31 inches with about 60%

occurring during the growing season in late spring through summer (recorded by National Weather Service at site #134101, Iowa City).

Air and water quality:

Cedar County is listed in the top 20% of counties with organic chemical air pollution (www.scorecard.org). West Branch is the community within the county with highest concentrations of these pollutants. A single point source of this pollution is not identified, but local topography, proximity to an interstate freeway, and local light industry may contribute. No data are available for the park, nor is the source of these published ratings known.

Development upstream impacts water quality in the tributary to the west branch of Wapsinonoc Creek located in the park. Land uses within the watershed, upstream of the park, include active development for new residential and business zones, agricultural lands, a golf course, and residential housing. Siltation is the greatest cause for concern, followed by nitrate loads. The creek floods periodically and shows signs of significant channel erosion.

Vegetation:

Reconstructed tallgrass prairie provides cover on more than 90% of FMU 2. The prairie is divided into seven prairie management units (PMU) based on vegetation and environmental factors. Each PMU is delineated by a mowed path, which serves as a firebreak.

Two savannas, planted in 1997 and 2000 on the southwest and the north-central portions of the prairie, respectively, and a small area of floodplain on the north side of the creek, make up the remaining cover within FMU 2. The savannas are treated as values to be protected and are included in the PMUs. At this time, they are excluded from prescribed fire by mowing and foaming around the perimeter. Savannas should be able to tolerate prescribed fire treatment in 20 to 30 years, and reconsideration of fuel models should be made at that time.

Prairie grasses dominate with 46% relative cover, and big blue stem (*Andropogon gerardii*) and Indian grass (*Sorghastrum nutans*) as predominant species. Prairie forbs constitute up to 43% of the cover. No overstory exists in the interior of FMU 2, and the savannas are not mature enough to be significant, quantitatively or qualitatively. Fire Behavior Fuel Model 3 (Anderson 1982), Tallgrass, best characterizes FMU2.

Wildlife:

Native animals typical for this region are found within the park. Mammals include opossum (*Diadelphis virginiana*), red fox (*Vulpes vulpes*), white-tailed deer (*Odocoileus virginianus*), and members of Cricetidae (mouse family), including *Peromyscus spp*. and *Microtus spp*., plains pocket gopher (*Geomys bursaritus*), eastern cottontail (*Sylvilagus floridanus*), and representatives of Muridae (European mouse and rat), Mustelidae (weasel family), and Sciuridae (squirrels), raccoon (*Procyon lotor*), and eastern mole (*Scalopus apuaticus*) are known to use FMU 2. Big brown bats (*Eptesicus fuscus*) have been observed overhead.

Northern brown snake (*Storeria dekayi dekayi*), eastern garter snake (*Thamnophis sirtalis parietalis*), western ribbon snake (*Thamnophis proximus proximus*), fox snake (*Elaphe vulpine*), black rat snake (*Elaphe obsolete obsolete*), and bullsnake (*Pituophis melanoleucus savi*) are believed to inhabit the prairie. American toad (*Bufo americanus*) is the only known amphibian in FMU 2. All herpetofauna can be impacted by late spring and summer fire.

The reconstructed prairie is considered too small to be an important breeding habitat for grassland birds such as the Bobolink (*Dolichonyx oryzivorus*), but numerous passerines use the area as a source of food. Ring-necked pheasant (*Phasianus colchicus*) nest in FMU 2. Eastern Meadowlark (*Sturnella magna*), Western Meadowlark (*Sturnella neglecta*), and Dickcissel (*Spiza americana*) establish territories in FMU 2. Killdeer (*Charadrius vociferous*) are observed passing through or loitering in the mowed pathways. Indigo Bunting (*Passerina cyanea*), Red-headed Woodpecker (*Melanerpes erthrocephalus*), and Eastern Bluebird (*Sialis sialis*) are observed along the edges. Grasshopper Sparrow (*Ammodramus savannarum*) has been observed in the years subsequent to prescribed burning. An assortment of common species is observed as being either residents or migrants, passing through the prairie.

Rare, threatened, and endangered species

No federally listed threatened or endangered species are known to exist on the park. Many of the prairie plants are considered locally rare. Iowa classifies about 150 plant species as rare and many of these are prairie species. A comprehensive list of plants in the prairie is not available at the writing of this document. Should future inventory produce evidence of threatened or endangered species, this document will be amended to take them into account.

Cultural resources

Archeologists have not surveyed FMU 2. The land had been agricultural during Herbert Hoover's years in West Branch and until its conversion to prairie in 1971. The constant tilling and soil disturbance makes the existence of surficial artifacts unlikely.

Cultural resources border the east and north sides of FMU 2. Along the north side, most cultural resources are separated from FMU 2 by large expanses of mowed lawn. The exception is the Gravesite, which is adjacent to the nut tree grove and presents a significant cultural landscape value. Cultural resources on the west are separated from FMU 2 by agricultural fields. An interstate freeway borders the south side.

Fifty-seven acres of the park contain structures, locations, and objects associated with Herbert Hoover's early childhood in West Branch. These structures are surrounded by mowed grass and are relatively distant from FMU 2. Picnic structures are separated from the FMU by more than 150 meters of mowed lawn.

b. FMU 2 Strategic Management Objectives

Within FMU 2, all wildfires will be suppressed using an appropriate management response with the intent of confining the fire to the smallest area within the FMU. The first priority during these suppression actions will be the safety of personnel and the public, including adjacent landowners.

Management of FMU 2 is designed to meet the following FMP objectives.

- Fire fighter and public safety have the highest priority in all fire management activities.
- Appropriate management response for all wildfires will be rapid containment and suppression to protect the public, check fire spread onto private property and protect the natural, cultural and historic resources of the NHS.
- Prescribed fire will be used to re-establish the dominance of native species and preserve natural processes for the tallgrass prairie. It will serve to suppress the encroachment of trees and shrubs, as well as to suppress the vigor of exotic species.
- NHS will place emphasis on working relationships with pertinent fire management entities, maintaining a cooperative agreement with West Branch Fire Department.
- Hazard fuel reduction will be given important consideration, because of the adjacent cultural and historic values. Mechanical hazard fuel reduction will be applied around vulnerable natural and cultural values for protection from fire damage. Prescribed fire and mechanical treatment will be used in the interior of FMU 2 to reduce hazard fuel build-ups that occur, facilitating protection of values at risk and recycling nutrients back into the soil.
- Apply mechanical hazard fuel reduction to borders of PMUs to create firebreaks and eliminate hot spots, such as brush piles on the prairie edge. This can be used as the first step in a fuels reduction program followed by prescribed fire.
- Prescribed fires will be accomplished under a prescription that minimizes escape possibilities. If fuel loadings are high enough to make control of the burn difficult then a two-stage process will be considered, such as mechanical treatment followed by prescribed burning.
- Cooperative fire and emergency services arrangements will be encouraged.

c. Management Constraints

- Smoke management reporting procedures for burning in Iowa will be followed for all prescribed fire operations (Appendix E)
- Employ Minimum Impacts Suppression Tactics (MIST), including 5% tolerance for mortality among mature trees in adjacent areas.
- No bulldozer or grader use will be allowed unless approved by park superintendent.
- Protection mitigation measures for known historic, biological, and cultural resource sites in or near the project area must be assured before a prescribed burn project is initiated.
- Park superintendent must approve chainsaw use.

- All fire management activities will consider safety of personnel and the public as the highest priority.
- Park neighbors, park visitors and the local residents will be notified of all planned and unplanned fire management activities that have the potential to impact them.
- All park closures are at the discretion of the park superintendent.
- No fire management operations will be initiated until all personnel involved receive a safety briefing describing known hazards and mitigating actions using Lookouts, Communication Escape Routes, Safety Zones (LCES), current fire season conditions, and current and predicted fire weather and behavior.
- Qualified individuals will carry out fire management operations that promote the safe and skillful application of fire management strategies and techniques.

d. FMU 2 Historic Role of Fire

This FMU does not allow for wildland fire use, even though fire was important to the health of the ecosystem. Managers will rely on prescribed fire to mimic the effects on the tallgrass prairie.

Historically, the tallgrass prairie experienced repeated natural fires with frequency of five to 10 years (Wright and Bailey 1982). Most wild fire occurred in late summer, before the fall rains, when fuel was dry from summer heat and grasses were going into dormancy. A second fire season occurred in late winter and early spring during dry years.

Pyne (1982) suggested that pre-settlement fires were started by aboriginal people to refurbish the grasslands for game species. These fires were set in late winter or early spring to promote early greening. Aboriginal people accidentally started wildfires, also. Fires set purposefully and accidentally and natural fire, collectively, maintained the prairie ecosystem.

e. Wildland Fire Management Situation

Historical weather

Traditionally, eastern Iowa experiences 60% of its annual precipitation (36.31 inches mean recorded National Weather Service at site #134101, Iowa City) in late spring through summer. The driest season starts in December and runs into February. Summer high temperatures can be near 90°F with mean highs in the low 80s. Winter lows can drop below 0°F with mean low in the single digits. Strong winds can pick up quickly. Summer winds come from the south and west, while winter winds are often from the north. Historical high wind values are documented for August. In August of 1997, maximum 5-second wind speed was documented at 79 MPH. Mean annual wind speed is 8.4 MPH. Wind actions, coupled with extreme temperatures, dries vegetation in winter and late summer.

Although terrain relief appears slight, updrafts form in rills, creating microclimates. Wind speeds will be highest on exposed ridges. On sunny afternoons, wind direction will be parallel to the main slope. Structures, such as the Thompson Farm, may affect wind direction and speed in localized areas.

Fuel characteristics and fire behavior

Only one wildfire has occurred in FMU 2. This was the result of a runaway incinerator fire that burned less than one acre. This threat no longer exists, since trash and yard waste may not be burned in the city or park.

There is one major fuel model represented in FMU 2. Fire spread and intensity characteristics under normal and extreme conditions are summarized.

Table 1: National Fire Danger Rating System (NFDRS) Fuel Model N and Fire Behavior Fuel Model 3 (Anderson 1982)

Extreme Conditions*			
Fuel Model	Rate of Spread	Flame Length	Fire Characteristics
3	264 chains/hr	19 feet	Fires in this fuel model will move extremely fast and have short residence times as these fuels are consumed rapidly. Direct attack is impossible
Normal Conditions**			
Fuel Model	Rate of Spread	Flame Length	Fire Characteristics
3 wind speed of 5mph 8% moisture	104 chains/hr	12 feet	Fires in this model are the most intense of the grass group and display high rates of spread under the influence of wind.

*Extreme is for 1 hour fuel moisture of 7% and midflame wind speeds of 10 mph
**Normal is for 1 hour fuel moisture of 10% and midflame wind speeds of 5 mph

Tall grasses and forbs are the dominant vegetation type in FMU 2. This corresponds to NFDRS Fuel Model N and Fire Behavior Fuel Model 3. Extreme fire behavior occurs when wind speeds are over 15 MPH or moisture levels drop below 8% in fuel.

Fire season

Most naturally ignited wildfire occurred in late summer, before the fall rains, when fuel was dry from summer heat and grasses were going into dormancy. A second fire season occurred in late winter during dry years or when started by aboriginal people.

Fire regime alteration.

The pre-European settlement fire regime can be characterized as frequent/low severity. Fire returned at intervals of about 10 years, eliminating most of the young woody species that had established since the previous fire and rejuvenating perennial grasses and forbs. Aboriginal people set fires to rejuvenate the prairie, thus shortening the fire interval from what lightening strikes would

have caused (Pyne 1982). Aboriginals managed the prairie in this way for many hundreds of years. Fire has been suppressed locally since the mid-1800s and only occurs through prescribed fire.

Some of FMU 2 has been invaded by woody species, because the prairie is a restored site and has not always received aggressive management with prescribed fire. The re-establishment of prescribed fire as a management tool in 1999 has reduced the amount of fuel on the prairie. A reduction in the prescribed fire program would result in the increase of woody and herbaceous fuel, thus shifting the natural fire regime to an infrequent/high severity regime.

f. Control problems

Control problems can be expected on fires burning in peak fire season or when fuels have built over many years. Fires will spread rapidly and be intense when environmental conditions are warm, dry, and windy.

g. FMU 2 values to be protected and special concerns

- Cultural resource areas, Historic Core, Gravesite, Herbert Hoover Presidential Library-Museum, Herbert Hoover Presidential Library Association, administrative areas, picnic area, and cultural landscapes
- Urban interface areas adjacent to FMU 2 boundary
- Hazardous fuels along the park boundary, particularly near the interstate provide a special concern, since accidental ignition from passing traffic is possible

IV. Wildland Fire Management

A. General Management Considerations

1. Appropriate management responses should seek to

- Immediately suppress wildfire throughout the park
- Limit fire size and contain it within FMU 2

2. Moreover, responses should be based on:

- Public and firefighter safety
- Cost expenditures should be commensurate with values to be protected
- Protection of cultural, historic, and natural resources
- MIST protocol
- Limiting fire line construction through use of existing barriers such as park roads
- Protection of park improvements (buildings, roads, etc.)
- Preventing fire spread onto private lands.

B. Wildland Fire Use

The resource management objectives do not promote or permit management techniques that will maintain desired natural systems within the park through wildfire use. Even though fire is an integral component of the tallgrass prairie ecosystem, the limited size, on-site cultural resources, proximity to the city, and the adjacent land values will preclude wildfire use.

C. Wildland Fire Suppression

1. Range of Potential Fire Behavior

Fire in the park can be fast moving on the surface in light fuels. For more detailed discussion refer to the fire behavior descriptions under FMU 2 (Section III, C).

2. Preparedness Actions

a. Prevention/wildland fire use educational activities

Fire prevention includes all activities designed to reduce the number of human-caused wildfires that occur in the park. The objective of the program will be to minimize preventable fires. Prevention activities will consist of prevention signs and reminders, prevention messages through interpreters and staff, and vigilance during periods of very high fire danger.

Fire prevention will be discussed at a selected staff safety meeting in the early spring to make sure all members are aware of concerns and procedures regarding response to wildfires and actions related to prescribed and wildland fires. The park may participate in fire prevention and safety fairs at local schools so that the general public is aware of the importance of fire prevention. Park will provide educational messages through local media that explains prescribed fire and provides wildfire prevention in conjunction with prescribed fire management education.

During periods of high fire danger, the general public and park visitors will be informed of conditions through press releases, interpretive media and, if necessary, the posting of signs at the visitor center or other park areas.

b. Annual Training

Annual training will consist of annual fire fighter safety refresher training, first aid, and other safety training for appropriate individuals. Basic safety, awareness, and prevention training will occur during staff meetings.

c. Annual Preparedness Activities

January

- Perform fire physical exams triennially (every three years) as per standards in RM-18, Fire Management Guidelines.
- Perform pack test on fire personnel annually, as per standards in RM-18, weather permitting. Pack tests may extend into February.
- Update and submit fire qualifications to National Interagency Fire Center (NIFC) through the Midwest Region Fire Management Office**.**

February

- Inventory fire equipment, order needed supplies and update equipment list. Includes both fire cache and personal equipment.
- Complete all prescribed fire plans for upcoming season and have approved by park superintendent.
- Prepare prescribed fire briefing messages for public notification.

March

- Inspect fire cache and ensure that equipment is ready.
- Check the established Midwest Regional Office procedure for utilizing suppression
- Review Step-up Plan and emergency preparedness accounts.
- Review cooperative agreement with West Branch Fire Department

April and May

- Perform prescribed fire treatment if planned for spring of any given year

June to October (fire season)

- Remain vigilant of potential fire hazards and implement fire prevention
- Monitor daily fire potential.

November and December

- Critique fire season including all fire management activities (i.e. wildland fire suppression, prescribed fires and mechanical fuel treatment, prevention, etc.)
- Evaluate individual performance of staff to correct deficiencies and recommend personnel for training.
- Review and revise FMP, if necessary.

d. Step-up Plan

Preparedness activities during the fire season will be based on the outputs from the Fire Danger Maps, a product of the Wildland Fire Assessment System. Currently, the Wildland Fire Assessment System is found on the Internet at

www.fs.fed.us/land/wfas. The assessments are based on the National Fire Danger Rating System (NFDRS). Fire danger is broadly divided into five staffing classes, according to the intensity of danger factors, as indicated by the Adjective Rating or Level.

The staffing classes relate to the expected severity of fire conditions. The park superintendent or Regional Fire Management Office (RFMO) may choose to increase preparedness-staffing class by one level for unusual events that would increase the potential for wildland fire. Preparedness actions are based on the latest Adjective Rating and the Next Day Forecast.

Table 2. Fire Danger Rating	
Low	I
Moderate	II
High	III
Very High	IV
Extreme	V

Fire conditions that typify each staffing class and the corresponding preparedness actions required are as follows:

Staffing Classes I and II (Low/Moderate)

Conditions

Fires will present at low to moderate level of control difficulty. Fires occurring at this level may be controlled with existing forces. Wind speed and direction will determine speed of fire spread. Fine fuels will be drying.

Preparedness Actions

- Fire weather reviewed daily.
- Hand tools and portable equipment in a state of readiness.
- Initiate wildland fire use location and purpose messages for dissemination to the public.

Suppression Actions

- One qualified employee will depart within five minutes for the fire location.
- Additional attack forces will be dispatched after size-up and upon request of the first firefighter to arrive.
- If necessary, cooperator assistance will be requested as described under the dispatch section.

Staffing Class III (High)

Conditions

Fires will present a moderate level of control difficulty. Light fuels are becoming dry. Heavy fuels are drying. Mop-up will be more difficult and time-consuming.

Preparedness Actions

- All actions specified for Staffing Class I and II days will be conducted.
- Ensure that a minimum of two qualified fire personnel is available for initial attack.

Suppression Actions

All suppression actions indicated for Staffing Classes I and II will be taken.

Staffing Classes IV and V (Very High/Extreme)

Conditions

Fire will present a moderate to high level of control difficulty. Initial attack and reinforcing crews may have difficulty controlling a fire at this level. All fuels are dry. Air temperature is high and humidity is low. Strong gusty winds are possible. Spotting may occur.

Preparedness Actions

- All actions specified for Staffing Class III days will be conducted.
- Fire Situation reports will be entered into the NIFC daily before 9:30 A.M.
- Visitor Center personnel will alert the public to fire hazards.
- Interpretive activities will include a fire safety message.
- Emergency preparedness funds (PWE 343) may be used to bring staff to required levels. However, regularly scheduled personnel will be used to the extent possible. It is recognized that both nonessential routine activities and project work may be postponed on Staff Class IV and V days.
- Fire danger notices will be posted.
- Park may have sections closed to preserve the safety of visitors.

Suppression Actions

All actions specified for Staffing Class III days will be taken.

3. Pre-attack Plan

Due to the small size and scope of the fire program at Herbert Hoover NHS, no formal pre-attack plan has been written. Certain preparations and procedures are however established prior to and during the fire season. Some are mentioned in the Annual Preparedness Activities section, other pre-attack plans are informally discussed among the fire crew during practice or equipment maintenance assemblies. Such preparation will inevitable emerge as the fire program evolves into a more complex and operationally committed program.

4. Initial Attack

a. Priority setting during multiple fire occurrences.

The following will be used to set the priorities.

- Cultural and historic site map
- Park facility map
- Map displaying park location relative to the city

b. Criteria for appropriate initial attack response consistent with RMP objectives:

- Public and firefighter safety
- Protection of cultural, historic, and natural resources
- Protection of improvements and private property
- Minimum fire line construction
- Available suppression resources and response times
- Fire danger as determined by fuels, weather, and topography
- Mechanized equipment use only where necessary to support above-listed criteria. Aircraft cannot be deployed in this setting.
- Confinement strategy selected for initial attack will not be used solely to meet resource management objectives
- Resource benefits may be a by-product of strategy, but strategy must be based upon the criteria listed above.
- Confinement strategy may also be selected in the Wildland Fire Situation Analysis (WFSA) process when initial attack has failed to contain a wildland fire. When confinement is selected as the initial action, the same management process applies as for wildland fire use decisions. A WFIP will be prepared in stages as the fire management conditions change and associated considerations require additional attention.

Typical fire response times will vary depending on the staffing at the park, availability of local fire fighters from the City of West Branch, and time of day. During fire season when no other fire activity is occurring, and staffing is available, park personnel can respond to the closest road access to fires within 10 minutes. Reinforcements from other agencies within the area can respond to closest road access to a fire within 15 minutes. Reinforcements from outside the area can arrive within 30 minutes after request.

d. Restrictions and special concerns

Initial attack should be aggressive to contain the fire as fast as possible and to keep fires from crossing boundaries and damaging private property. Minimum Impact Suppression Tactics (MIST) will be used in efforts to contain wildland fires. Priority would be given to FMU1 because of proximity to boundary and city, as well as the cultural resources located there in the event of multiple fires.

e. Escaped prescribed fires

Information that should be used to set incident priorities:

- Objectives involved in the fire

- Restrictions in areas of special concern
- Implementation plan requirements
- Social and political concerns
- Decision criteria matrix or flowchart including the risk assessment process
- Complexity decision process for transition from initial attack to extended action

5. Extended Attack and Large Fire Suppression

a. Determining extended attack needs -- Extended attack needs will be determined by considering the following:

- Threats to life, property, and park resources
- Availability of suppression forces
- Current and expected fire behavior

b. Implementation plan requirements - WFSA development

Follow guidance in Wildland and Prescribed Fire Policy, Implementation Procedures Reference Guide and RM-18, Chapter 9.

c. Complexity decision process from initial attack to extended attack

Follow guidance in RM-18, Chapter 9, Initial and Extended Attack.

6. Minimum Impact Suppression Tactics (MIST)

All fire management activities will rely on tactics that incur a minimum amount of resource damage while maintaining the safety of firefighters, personnel and the public as the highest priority. Park superintendent approval is needed for bulldozers and mechanized equipment. Complete minimum impact guidelines are listed in RM-18, Chapter 9, Exhibit 5.

7. Rehabilitation

All suppression activities will be carried out in such a manner as to cause the least amount of resource damage. After the fire is declared out, all litter and trash will be removed. Dug fire lines will be refilled and erosion control devices installed if necessary. Stumps will be flush cut. Logs and brush will be chopped and scattered or removed. The severity of the burn and its resultant impact will be considered in determining the need to seed or otherwise re-establish native plant species. Such efforts regarding landscaping and plants will be in full compliance with NPS Management Policies and given prior approval of the regional director. A rehabilitation plan, outlining what species are to be planted, techniques to be used, locations and cost estimates will be prepared before any action is taken, according to the guidance in RM-18, Chapter 12, Burned Area Rehabilitation.

8. Records/Reports

a. Wildland Fire Implementation Plan (WFIP)

A WFIP will be prepared for every wildland fire and will be the responsibility of the chief ranger to have completed.

b. Individual Fire Reports (DI-1202)

The basic report for documenting a wildland fire is the Individual Fire Report (DI-1202). The report is valuable in providing a historical record of the fire regime for the park. It is important that this form document all fires occurring within the boundaries. Further documentation is suggested. This includes fires that go out unassisted when the location is known. Incidents, known as Support Actions, where personnel respond to fires outside the park (including out of state), are reported on this form. It is impossible for an individual to receive credit for jobs performed on any fire unless NIFC has a record of that fire from the park through the DI-1202 with its attached Fire Number.

The incident commander for the fire is the person responsible for preparation of the Individual Fire Report. In most cases, this is the individual who put the fire out. Fires will be sequentially assigned a fire number by calendar year; i.e. fires in 1989 are numbered 8901, 8902,etc.

c. A complete fire report will include the following attachments, if applicable:

- any written policies, guidelines or authority statements signed by the park superintendent
- copy of the WFIP
- copies of equipment purchased or personnel request orders
- all situation maps
- personnel lists (including Emergency Time slips)
- press clippings
- accident reports
- all weather data reports and records
- documentation of financial charges
- rehabilitation plan

The report is then submitted, in draft, to the chief ranger. Instructions for filling out the report are found in RM-18. The chief ranger will review the report for completeness and will enter the data into the park database for a permanent record. This procedure also prepares a final draft of the form for the files. The information will be entered into the Shared Application Computer Software (SACS), accessible through the Internet via the NIFC homepage. A copy of the DI-1202 will be accessible in the NIFC computer.

d. Fire Experience and Qualifications

The SACS at NIFC is the central repository for all individual fire experience and training records. The chief ranger is responsible for entering all training and experience into the computer and ensuring the information is up to date.

e. Daily Situation Reports

Daily Situation Reports are required on those days when the Fire Danger Rating is Very High and the park moves into Staging Class IV and V or when a fire has occurred or is on going. The chief ranger is responsible for the preparation of the report and entering it into the Wildland Fire Management Computer System by 9:30 a.m.

f. Smoke Management Reports

Smoke Management reports are not required by the state of Iowa (Appendix E – part 2).

g. Report of Fire

When a report of a fire is received, the following information should be collected from the reporting party:

- Name of reporting party
- Address
- Phone number
- Location of fire and extent
- If fire is reported in person, ask if the reporting party is willing to show the investigating ranger the location, otherwise, determine if the person can be re-contacted if there are additional questions.

h. Resource Order Form, NFES 1470

All assistance requests must be documented on the Resource Order Form, NFES 1470. These forms are designed for verbal transmission over the telephone. The order form is, in essence, an obligating procurement document. If an out-of-park incident management team is ordered, the park superintendent must provide a written limited delegation of authority and a briefing package to the incoming incident commander.

i. Year-end Accomplishment

Completion of year-end accomplishment reports is the responsibility of Herbert Hoover NHS personnel with collateral FMO duties and will be coordinated by the chief ranger.

V. Prescribed Fire Management

Planning and execution of this prescribed fire management program will use qualified personnel and will follow the guidelines stated in document RM-18. Refer to RM-18 for guidance on all aspects related to implementing this prescribed fire program.

A. Scope of Prescribed Fire Program and Linkages to Resource Management

Prescribed fire is an important tool to manage vegetation communities and to achieve resource management objectives of the park. Herbert Hoover NHS preserves, protects, and interprets for present and future generations the natural and cultural resources associated with the life of Herbert Hoover in West Branch, Iowa. The tallgrass prairie is an interpretive asset, because native prairie still occurred in the vicinity and played an important role in the heritage of Iowans of the late 1800s. Herbert Hoover's family settled here because of the conditions established by the prairie. The prairie commemorates Herbert Hoover by presenting a part of his heritage and providing an interpretive link to President Hoover's relationship with natural resources. President Hoover was quoted, "My roots are in the soil . . . "

In addition, the draft GMP identifies the prairie setting as both a cultural and natural resource and as such should be managed to maintain its integrity. The area also separates the noise of the interstate from the commemorative area, and functions as an island of habitat and bank for local biological diversity.

Attempts to restore a native tallgrass prairie have dominated natural resource management actions since 1971. Nonnative grasses and forbs and woody vegetation continue to degrade localized sections of the prairie. Invasive and exotic species tend to increase when the prairie is not actively managed under a fire regime.

Surrounding agricultural land use, land use prior to establishment as a prairie, and proximity of ornamental, non-native plantings contribute to invasion. Reed canary grass and shrubs have become more abundant along the creek banks and in rills of the prairie. Dr. Paul Christiansen's (1984-1999) annual reports on prairie inventory indicate a general improvement in health of the prairie with conspicuous changes in dominance occurring after prescribed fire. He continues to recommend use of prescribed fire followed by mechanical and herbicide treatments of woody plants. In areas that are diverse and well populated with native grasses and forbs, natural competition coupled with fire management appears to be sustaining natives. Seed collection and manual redistribution after a fire may increase diversity in patches where a single species dominates.

1. Prescribed Fire Management Objectives

Prescribed fire may be used to assist in meeting wildland fire suppression objectives, to meet natural resource management objectives, and to accomplish hazard fuel reduction projects.

2. Prescribed Fire Priority Area – Tallgrass prairie

Prescribed fire must be used to preserve, restore and maintain these unique and valuable habitats. The absence of fire will favor the encroachment of shrubs and exotic species and will increase hazard fuel accumulations.

3. Prescribed Fire Behavior

Prescribed fire behavior must support resource management objectives of individual Prairie Management Units (PMU). A range of fire intensities will be required to meet PMU objectives and vary according to site conditions. Extreme fire behavior may be needed to achieve tree and shrub mortality, especially in areas with sparse surface fuels. Moderate fire behavior may be appropriate in areas with more surface fuels. Most prescribed fires will occur in the spring months as the cool-season exotic grasses reach their height, but before warm season grasses have developed. Prescribed fire in the summer months may be attempted to replicate the natural conditions of the prairie ecosystem (usually in July or August) and to target reductions in seed production of certain exotic species. Local restoration specialists feel that fall prescribed fire can be useful to manage certain problems. Ignition will be conducted primarily with hand drip torches.

B. Prescribed Fire Planning

1. Annual Activities Needed to Implement the Prescribed Fire Program

The park superintendent must approve prescribed burn plans prior to burn ignition. Multiple Prairie Management Units within FMU 2 facilitate accurate prescriptions for variables within the FMU. It is preferable to burn 50% or less of the FMU to maintain animal habitat, safe zones, and sources for colonization of burned areas.

Prescribed fire unit boundaries are created to utilize the ample natural features, natural fuel breaks (creeks and wet areas), and existing roads and trails for perimeter control. Construction of perimeter fire control lines, is discouraged due to impacts to natural resources. The use of mowed fuel breaks for reinforcing perimeter control lines is encouraged. Interior control lines and mechanical fuel treatments (primarily cutting woody vegetation and scattering debris or mowing) may be necessary to protect sensitive natural features from within the PMU.

2. Five Year Burn Program -- Herbert Hoover NHS Multiple Year Prescribed Fire Plan

This is a suggested sequence based on spatial distribution and need for exotic plant suppression. Firing will be conducted primarily with a drip torch. Ignition will occur in spring, summer, and on occasion, autumn. Acreage of PMUs does not include mowed perimeters. Blackening is usually very complete, creating a solid burn pattern within each PMU, but creating a burn mosaic within the PMU is a desirable alternative, also. Therefore, in most cases, no special efforts will be expended to ensure 100% burn coverage. Refer to map in Appendix F for PMU locations.

Table 3: Prescribed fire schedule for Prairie Management Units

Year	Unit	Acres	Objectives
2001	1, 3, 4, 7	37.89	Restoration
2002	1, 2, 5a, 6	39.349	Restoration
2003	3, 4, 7	35.234	Restoration
2004	1, 2, 5, 5a, 6	46.587	Restoration
2005	No burn		

This schedule will be adjusted as prairie plant monitoring indicates appropriate for the control of exotic and invasive plants and other prairie management concerns. Although the objectives for all parts of FMU 2 remain consistent throughout PMUs, division into seven PMUs allows managers to maintain wildlife habitat and cover in portions of the prairie, while burning other portions.

Objective for each PMU: Increase diversity and cover of native grasses and forbs, while reducing exotic and invasive species.
PMU 1 Acres: 2.656
Vegetation: Tallgrass prairie with sparse tree cover in flood plain. This newly defined area north of the creek has not been included in the 76-acres usually defined as the prairie.
PMU 2 Acres: 18.904
Vegetation: Wet meadow tallgrass prairie of varying conditions. This area includes flood plain and land influenced by agricultural drainage.
PMU 3 Acres: 18.653
Vegetation: Tallgrass prairie of variable condition with some quality forb areas. Sparse tree cover intrudes from north and will be protected from fire. Contains portion of recent restoration area that contains Kentucky bluegrass and smooth brome.
PMU 4 Acres: 9.130
Vegetation: Tallgrass prairie with grasses well established.
PMU 5 Acres: 7.238
Vegetation: Tallgrass prairie with grasses well established and an early stage savanna planted along the northern boundary that will be protected from fire.
PMU 5a Acres: .640
Vegetation: Tallgrass prairie originally restored as a forb nursery area.
PMU 6 Acres: 17.149
Vegetation: Tallgrass prairie with low diversity, except along north edge. Contains a recent addition to the restoration, where bluegrass and brome are well established. Tall goldenrod is the predominant forb in southern half. Reed canary grass is well established in the drainages and a large patch of giant ragweed persists on northern edge.
PMU 7 Acres: 7.451
Vegetation: Tallgrass prairie with low diversity and sparse tree placement. The area was reclaimed from a concrete covered gas station and is a location with many exotic and invasive plants.

3. Personnel Needed to Plan and Execute the Prescribed Fire Program

Planning and execution of this prescribed fire management program will use qualified personnel and will follow the guidelines stated in document RM-18. Refer

to RM-18 for guiding all aspects related to implementing this prescribed fire program.

Special note: Herbert Hoover NHS currently does not have qualified staffing to implement the prescribed burn. The Regional Fire Management Office, NPS Fire Use Modules, and local fire department must be relied upon for assistance in planning and implementing each of the prescribed fires.

4. Prescribed Fire Monitoring

Herbert Hoover NHS will develop a short and long term monitoring program to evaluate prescribed fire outcome, based on stated objectives. Monitoring is essential for adaptive management, where qualitative and quantitative changes to resources are measured and used as a tool to guide modifications for subsequent prescription treatments and burn objectives. The monitoring program will interface with the regional fire effects monitoring program.

See Section VIII. Monitoring.

5. Documentation Requirements

See RM-18 Chapter Ten, Prescribed Fire Plan Section.

6. Reporting Requirements

See RM-18 Chapter Ten, Prescribed Fire Plan Section.

7. Prescribed Fire Critique Format

There are no requirements for prescribed fire critiques. However, it is recommended that a critique be completed annually and/or for any prescribed fire with significant problems (escapes, failure to meet objectives, accidents and/or near misses, etc.).

When conducting a critique, ensure that representatives of all resources are invited. Provide an outline of critique topics to all participants prior to holding the critique. Focus the critique on identification of problems and not persons. Consider the following critique elements:

- Did the burn plan follow policy?
- Was the burn plan implemented correctly (were any prescriptive elements violated)?
- Were burn plan objectives met?
- Were all personnel qualified to perform the tasks assigned to them?
- Were any accidents caused by failure to follow policy?
- Solicit suggestions for improvements to planning and implementation of future prescribed burns.

C. Air Quality and Smoke Management

1. Pertinent Air Quality Issues

One potential source of controversy for prescribed fires is smoke, as all fires produce airborne particles that contribute to material normally found in the atmosphere.

However, fire was part of the pre-settlement environment. With the use of prescribed fires, the time and place can be chosen so that fuel characteristics, atmospheric moisture, velocity and direction of wind, and other weather conditions will cause a minimal impact on nearby communities.

2. Smoke Management Planning and Implementation Measures

The fire management program at Herbert Hoover NHS will seek to minimize adverse environmental effects and will comply with State air quality provisions and any permit requirements in addition to applicable provisions of the Clean Air Act (P.L. 88-206) and related federal regulations. The following smoke management guidelines will be adhered to during all phases of the above program.

- No management fires will be ignited during air pollution alerts, or temperature inversions.
- Fire weather forecasts will be used to predict smoke dispersal upon ignition.
- Burning will be conducted only when conditions will result in rapid smoke dispersal, as reflected in the wind components of the burn prescription.

Smoke will be monitored for effects. The news media will be kept informed on fire conditions and predictions regarding air movements and how they should affect areas surrounding the park.

At this time, no State burning and air quality permits are required for prescribed fires (Appendix E).

D. Prescribed Fire Plan Requirements

Refer to RM-18 Chapter Ten and Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide.

E. Exceeding Prescribed Fire Plan

When burn prescription parameters are exceeded during ignition, containment actions must be taken. In some cases the best containment strategy will be to complete firing of the unit or employ unit check-lines to avoid rapid runs at the unit boundary lines.

If the burn is declared an "escaped fire," then a WFSA must be completed and the appropriate management response will be utilized. Spot fires may not constitute an escape if they are contained within standards that are identified in the burn plan.

1. Information used to set incident priorities

Priorities for action if a fire requires a new strategy should be based first on safety of the public and firefighters. Secondary priorities include protection of private property and park resources and improvements. Rangers and maintenance staff should identify safety hazards.

The following maps will be available to burn bosses for setting priorities in the event a prescribed burn escapes:

- Map of West Branch, showing the proximity of privately owned buildings.
- Facility map

2. Objectives for FMU

Refer to Section III, C for description of objectives for each FMU.

3. Restrictions and special concerns by management area (FMU)

See Section III of this plan for details.

4. Implementation Plan Requirements

Use the incident action plan or prescribed burn plan to develop organization. Use strategy and tactics that have been successful in the past. Take care to ensure MIST is not forgotten in the efforts to return the fire use action to prescription.

5. Social and Political Concerns

In addition to life, property, and resource concerns, there is a high degree of public concern with regard to ability of NPS (and other federal agencies) to control fire use actions. Consequently, it is critical to bring escaped prescribed fires back under control as quickly as possible.

6. Decision Criteria Matrix

Refer to Wildland and Prescribed Fire Management Policy, Implementation Procedures Reference Guide.

7. Delegation of Authority

Refer to RM-18, Chapter Nine, Exhibit 3.

8. Complexity Decision Process for Transitioning from Initial Attack to Extended Attack or Escaped Wildland Fire

Appropriate organizational levels will be identified through the WFIP or the WFSA process or by evaluation of in-park capabilities.

VI. Fire Management Organization and Responsibilities

A. Organizational Structure of Park Fire Management Program

Herbert Hoover NHS does not have a fire management organization. The FMO from the Midwest Regional Office (MWRO) provides oversight and assistance as needed.

B. FIREPRO (NPS fire program) funding

Currently, all FIREPRO funding for Herbert Hoover NHS is managed by the FMO stationed at MWRO. Funding is available for engine maintenance, personal protective gear for firefighters, and training funds (on an as-needed and available basis) as well as for prescribed fire projects.

C. Fire Management Organization in Relation to Park Organization

The chief ranger at Herbert Hoover is responsible for coordinating the fire management program. This entails coordinating with regional FMO on fire and resource management objectives, and all prescribed and wildland fire implementation actions. The Herbert Hoover NHS superintendent gives final approval for Prescribed Fire Plans and other actions as outlined within this FMP.

D. Park Superintendent's Responsibility for Periodic Assessment Signature

The park superintendent must approve by signature periodic assessments for continued wildland fire use. For additional information see Wildland and Prescribed Fire Management Policy Implementation Procedures Reference Guide and RM-18, Chapter Nine.

E. Interagency Coordination

Interagency coordination and cooperation is essential for successful implementation of the fire management program at Herbert Hoover NHS. Only small, slow-moving wildland fires can be managed within the current capabilities of staff. All other wildland and prescribed fires will require external support by cooperators. Annual review of cooperative agreements (Appendix E) will ensure successful coordination.

F. Key Interagency Contacts

Table 4: Interagency contacts and phone numbers

Name	Phone Number
City Police	643-2222
Cedar County Sheriff's Office	(319) 886-2121
Iowa State Patrol (Davenport)	(319) 359-0388
West Branch Fire Dept.	643-2110

G. Fire Related Agreements (copies in appendix).

See Appendix E. for all interagency agreements.

VII. Fire Research

A. Previous and Ongoing Restoration Research at Herbert Hoover NHS

Research at Herbert Hoover NHS has monitored the restoration of the prairie. Although only two reports specifically address effects of fire on the prairie (Christiansen 1984, 1985), work has followed the dynamics of change within the prairie over years following prescribed fire and periods in which there was no burning (Christiansen 1984 – 1999). Managers used prescribed fire in 1972, but not again until 1984. During this period when managers did not burn, mowing, biological controls, mechanical removal, and chemical applications provided the only means to control exotic and invasive plants. Managers have relied most heavily on fire as the best and most cost effect means of furthering restoration efforts.

Dr. Paul Christiansen has monitored the prairie vegetation since 1984. His data provide insight to the dynamics of the system relative to the use of fire as a management tool. Generally speaking, fire has contributed to increases in cover by big bluestem (*Andropogon gerardii*), which was the predominant grass in this area prior to settlement (Landers 1975). Data indicate decreases in some annual and biennial weeds, such as ragweed (*Ambrosis trifida*), Queen Anne's lace (*Daucus carota*), and others, as competition by native perennials has increased. Fire has reduced the cover of smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*), particularly in areas that were reclaimed from lawn area.

B. Fire Research Needs and Opportunities

Despite the amount of research conducted on fire in the tallgrass prairie, there remains much that is unknown on this subject. The questions that are most pertinent to fire in the NHS are:

- What was the historic (pre-settlement) fire regime (frequency and season)?
- What was the historic vegetation composition of the local prairies, savannas, and forests?
- What are the fire effects on fauna (birds, reptiles, amphibians, butterflies)?
- What was the historic structure of the savannas and forested areas?
- What are the best methods of controlling exotic species using fire, herbicides and mechanical treatments?

Implementation of this FMP should not be contingent on completion of research of the local fire regime and fire effects on vegetation. A large body of scientific information regarding effects of fire and fire exclusion for tallgrass prairies already exists. Although this research was accomplished in other geographic areas, the results may be applied to Herbert Hoover NHS, taking care to identify site differences and any subtle effects that those differences might cause. Fire effects discussed in the literature appear to be similar to those indicated by the data.

In addition, fire effects monitoring may be funded by FIREPRO to measure changes in vegetation due to prescribed fire.

VIII. Monitoring

A. Monitoring Requirements

The goal of fire effects monitoring is to determine if the short-term burn objectives, and the long-term resource management objectives are achieved. This is generally accomplished through the installation and sampling of permanent vegetation plots. Plots are installed in a PMU and read prior to a prescribed fire. Following the fire, the plots are typically read at the following intervals: immediately following the fire, one year, two years, and ten years after the fire. Monitoring variables are chosen based on objectives outlined in the FMP or monitoring plan. Statistical techniques are used to evaluate if changes in these monitoring variables are significant. If objectives are not being met, adaptive management is used to determine if burn prescriptions or alternative techniques should be employed, or if the objectives should be modified.

The Christiansen surveys from 1984 have satisfied this monitoring need. Most prescribed fires have been done in spring, before plants could be inventoried in study plots. These data cover 16 years of monitoring in permanent plots and so give statistically correct basis for inference to the effects of fire.

B. Fire Monitoring Handbook (FMH) and Deviations from FMH

FMH is the program guide used throughout much of NPS to measure fire effects. Deviations from this protocol are allowed under certain circumstances. Given the fact that Paul Christiansen has already established and is monitoring permanent plots within the small acreage of the park, consideration should be given to this long-term study as being adequate for monitoring fire effects. If this is insufficient, an alternative monitoring program will be developed.

C. Herbert Hoover NHS Fire Monitoring Plan

To date, no monitoring plan exists. A plan will be developed in coordination with the regional fire effects monitoring program.

IX. Public Safety

A. Public Safety Issues

Wildland and prescribed fires can present a hazard to firefighters, the public visiting the park, and adjacent landowners. The safety of all people in the area is the primary concern of the Incident Commander.

B. Procedures for Mitigating Safety Issues

Usually the entire perimeter of the fire is easily monitored and there is little likelihood it will spread far. In these cases, the concern will be to keep the public out of the immediate fire area, so that they will not hinder the suppression activities. Under no circumstance will anyone be permitted near a fire without the appropriate training and personal protective equipment.

In the case of a wildfire that has potential for rapid spread, there will be a possibility that park visitors will be in areas of danger. Visitors will be informed at the visitor center and Herbert Hoover Presidential Library/Museum front desk regarding the fire and the area where caution should be exercised.

Roads will be closed or ranger escorted convoys established if visibility on park roads is significantly impaired. Temporary closure of the park or a portion may be needed when fire behavior has potential to endanger visitor and employee safety. When a fire threatens to escape from the park or has the potential to do so, adjacent authorities will be given as much advance notice as possible in order to take appropriate action. Local fire fighters and equipment are part of the prescribed fire crew and are used for protection of structures. They would be immediately available in the case of escape and would have the resources to immediately call in surrounding fire departments through mutual aid agreements.

X. Public Information and Education

A. Public Fire Information Capabilities and Needs

As with all park activities, the presence of an informed public can go far in providing support for the fire management program at Herbert Hoover NHS. A concerted effort will be made to educate public about fire concerns at the park, including fire danger messages during periods of drought and the presence of on-going fires. Fire management messages will be introduced into interpretive programs where appropriate.

The park will participate in fire education activities in the community, including demonstrations of fire fighting equipment and safety. Park visitors will be made aware of regulations regarding the use of fire within the park. High fire danger notices will be posted at the visitor center. The local media will be informed of fire prevention concerns through news releases, when appropriate. Media access to fire scenes will be facilitated when it is safe to do so. When interest is warranted, a staff member will be designated as the contact person for all information requests.

b. Step-up Plan Information Actions

Refer to Step-Up Plan in Section IV, C, 2d.

XI. PROTECTION OF SENSITIVE RESOURCES

A. Archeological Sites

While archeological sites have been identified in the park, a full archeological study has not been undertaken. Fire generally has a minimal impact on artifacts located below the soil surface. Fire management's greatest impact to archeological resources results from mechanical damage due to vehicle traffic or excavation on fire lines. The areas of greatest archeological importance are located within the historic core area, where fire will be immediately suppressed. Impacts will be mitigated through use of MIST protocols. All unrecorded sites that are discovered during a fire activity will be protected.

B. Cultural Resources

Cultural and historic resources of the park are primarily clustered in the northeast corner of the park. The Gravesite and Miles farms are located on the perimeter of the prairie and, therefore, more susceptible to damage from fire escaping the prairie. Heat and smoke could impair the cultural landscape surrounding these structures. Vehicles can access these structures and firebreak lies between these structures and the prairie. Building fire lines could damage tree plantings that are part of the cultural landscape. Impacts will be mitigated through maintaining firebreaks, such as mowed grass, and use of urban-interface mitigation techniques.

C. Modern Infrastructure and Developments

Urban-interface mitigation techniques should be applied to prevent or reduce negative impacts to modern developments within the park boundaries.

XII. Fire Critiques and Annual Plan Reviews

All FMPs are subject to informal review annually with formal review every five years.

A. Critiques

All wildfires occurring within the park will receive a review by those involved to evaluate such topics as: the initial response, "hotline" (on-going fire incident) review, control methods used, safety concerns, and the need for new and replacement equipment. This review will be conducted by one of the following: the incident commander, the fire management officer, or the official who has designated fire program responsibilities. The purpose of this review is to recognize and document actions that were successful and identify and rectify actions that were unsafe or ineffective.

The park superintendent will conduct closeout meetings with Incident Management Teams (IMT) to ensure a successful transition of the incident back to the NHS and to identify and evaluate incomplete fire business. Refer to Chapter 13, Exhibit 1 of RM-18 for a sample IMT closeout.

A regional or national level fire review may be conducted if one of the following occurs:

- Fire crosses the park boundary into another jurisdiction without the approval of landowner or agency.
- Fire resulted in adverse media attention.
- Fire involved serious injury or death, significant property damage, or has the potential to do so.
- Fire results in controversy involving another agency.

Refer to Chapter 13, Exhibits 2 & 3 of RM-18.

All entrapments and fire shelter deployments will be reported and investigated as soon as possible after the deployment incident. Refer to Chapter 13, Exhibit 4 & 5 of RM-18 for review directions and written outline format.

B. Plan Reviews

An informal fire management program review will be conducted annually to evaluate current procedures and identify any needed changes to the FMP. A formal fire management review will be conducted every five years. The park superintendent must approve significant changes to the body of this plan. The only exceptions to this procedure will be grammatical corrections, minor procedural changes, deletions, corrections, and additions to the appendices. Copies of all changes will be promptly forwarded to the Fire Management Program Center. Changes requiring the approval and concurrence will be submitted with a new cover sheet for signature and dates, which will replace the original cover sheet upon receipt by the park superintendent.

XIII. Consultation and Coordination

Agencies consulted:

Natural Resources Conservation Services, USDA, Cedar County District, Tipton, IA

Persons consulted:

Dan Banta, chief ranger, Herbert Hoover National Historic Site, NPS

Doug Alexander, fuels management specialist, Midwest Region, NPS

Jim DeCoster, fire ecologist, Midwest Region, NPS

Mike Madell, Environmental Compliance Specialist, Midwest Region, NPS

Fred Bird, Fire Management Officer, Midwest Region, NPS

Paul Christiansen, professor emeritus, Cornell College, Mt. Vernon, IA

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A. REFERENCES CITED

Anderson, H.E. 1982. Aids to Determining Fuel Models For Estimating Fire Behavior. General Technical Report INT-122, Forest Service, USDA. 22p.

Christiansen, P.1984. Prairie Inventory, Herbert Hoover National Historic Site, unpublished report.

Christiansen, P. 1984 – 1999. Prairie Inventory, Herbert Hoover National Historic Site, unpublished reports.

Daubenmire, R. 1968. Ecology of fire in grasslands. Advances in Ecological Research 5: 209-265.

Landers, R.Q. 1975. A Report on the Status and Management of Native Prairie Areas in National Parks and Monuments in the Midwest Region. Unpublished.

Pyne, S. 1982. *Fire in America: A Cultural History of Wildland and Rural Fire.* Princeton University Press, Princeton, N.J.

Wright, H.A. and A.W. Bailey. 1982. Fire Ecology: United States and Southern Canada. John Wiley & Sons. New York. 501 p.

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B. ACRONYMS USED AND GLOSSARY

DI-1202 – Individual Fire Report form

DO-18 – Director's Order 18

FIREPRO – National Park Service Fire Program

FMH -- Fire Monitoring Handbook

FMO -- Fire Management Office

FMP -- Fire Management Plan

FMU – Fire Management Unit

GMP – General Management Plan

HHPLA – Herbert Hoover Presidential Library Association

HHPLM – Herbert Hoover Presidential Library-Museum

LAL – Lightning Activity Level

LCES – Lookouts, Communication Escape Routes, Safety Zones (the 4 Fire Orders)

MIST – Minimum Impact Suppression Tactics

MWRO – Midwest Regional Office

NEPA – National Environmental Policy Act

NIFC -- National Interagency Fire Center

NFDRS – National Fire Danger Rating System

NHS – National Historic Site

NPS – National Park Service

PMU – Prairie Management Unit

RM-18 – Reference Manual 18

RMP – Resource Management Plan

SHPO – State Historic Preservation Office

WFIP - Wildland Fire Implementation Plan

WFSA - Wildland Fire Situation Analysis

Birthplace Cottage – National Historic Landmark within the historic core

Blacksmith Shop – cultural resource within the historic core

Friends Meetinghouse – historic resource within historic core

Gravesite – cultural resource located next to the Natural Zone

Historic Core – location of most of the historic buildings, located in the northeast portion of the park

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Herbert Hoover Presidential Library Association – a private association, one of three entities located at the NHS, with a mission to commemorate the life of Herbert Hoover

Herbert Hoover Presidential Library-Museum – a facility of the National Archives and Records Administration, located within the NHS

Miles Farm – historic farm structures located on east side of park

Natural Zone – area containing several significant natural resource values, including the prairie, stream outside of the historic core, savanna, and nut tree grove

Schoolhouse – historic resource located in the historic core

Thompson Farm -- historic farm structures located on west side of park; these structures belong to NPS, but are part of a lifelong lease and are not functionally part of the NHS

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C. SPECIES LISTS

Table C1: Plant Species List

Species	Common name	Plant family
Yucca glauca	soapweed	Agavaceae
Amaranthus arenicola	pigweed	Amaranthaceae
Amaranthus hybridum	green amaranth	Amaranthaceae
Rhus glabra	smooth sumac	Anacardiaceae
Toxicodendron radicans	poison ivy	Anacardiaceae
Angelica atropurpurea	angelica	Apiaceae
Daucus carota	Queen Anne's lace	Apiaceae
Eryngium yuccifolium	rattlesnake master	Apiaceae
Pastinaca sativa	wild parsnip	Apiaceae
Zizia aurea	golden alexanders	Apiaceae
Asclepias syriaca	common milkweed	Asclepiadaceae
Asclepias tuberosa	butterfly weed	Asclepiadaceae
Achillea millefolium	western yarrow	Asteraceae
Ambrosia artemisiifolia	common ragweed	Asteraceae
Ambrosia trifida	giant ragweed	Asteraceae
Antennaria neglecta	field pusseytoes	Asteraceae
Arctium minus	common burdock	Asteraceae
Aster azureus	sky-blue aster	Asteraceae
Aster ericoides	heath aster	Asteraceae
Aster laevis	smooth blue aster	Asteraceae
Aster novae-angliae	New England aster	Asteraceae
Aster pilosus	hairy aster	Asteraceae
Aster sp.	aster	Asteraceae
Brickellia eupatorioides	false boneset	Asteraceae
Cirsium arvense	Canada thistle	Asteraceae
Cirsium discolor	field thistle	Asteraceae
Cirsium vulgare	bull thistle	Asteraceae
Conyza canadensis	horseweed	Asteraceae
Coreopsis palmata	tickseed	Asteraceae
Coreopsis tinctoria	golden coreopsis	Asteraceae
Coreopsis tripteris	tall tickseed	Asteraceae
Echinacea pallida	pale coneflower	Asteraceae
Echinacea purpurea	purple coneflower	Asteraceae
Erechtites hieracifolia	fireweed	Asteraceae
Erigeron annuus	annual fleabane	Asteraceae
Erigeron strigosus	Daisy fleabane	Asteraceae
Helenium autumnale	sneeezeweed	Asteraceae
Helianthus annuus	common sunflower	Asteraceae
Helianthus tuberosus	Jerusalem artichoke	Asteraceae
Helianthus grosseserratus	saw-tooth sunflower	Asteraceae
Heliopsis helianthoides	ox-eye	Asteraceae

Table C1: Continued

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Species	Common name	Plant family
Lactuca canadensis	wild lettuce	Asteraceae
Lactuca serriola	prickly lettuce	Asteraceae
Liatris aspera	rough blazing star	Asteraceae
Ratibida pinnata	yellow coneflower	Asteraceae
Rudbeckia hirta	black-eyed Susan	Asteraceae
Rudbeckia triloba	brown-eyed Susan	Asteraceae
Senecio plattensis	prairie ragwort	Asteraceae
Silphium integrifolium	rosinweed	Asteraceae
Silphium laciniatum	compass plant	Asteraceae
Silphium perfoliatum	cup plant	Asteraceae
Silphium terebinthinaceum	prairie dock	Asteraceae
Solidago canadensis	tall goldenrod	Asteraceae
Solidago gigantean	smooth goldenrod	Asteraceae
Solidago rigida	stiff goldenrod	Asteraceae
Sonchus oleraceus	common sow thistle	Asteraceae
Taraxacum officinale	dandelion	Asteraceae
Tragopogon dubius	goat's-beard	Asteraceae
Vernonia fasciculata	ironweed	Asteraceae
Corylus americana	hazlenut	Betulaceae
Lithospermum canescens	hoary puccoon	Boraginaceae
Barbarea vulgaris	yellow rocket	Brassicaceae
Capsella bursa-pastoris	Shepard's purse	Brassicaceae
Lepidium densiflorum	peppergrass	Brassicaceae
Lobelia spicata	spiked lobelia	Campanulaceae
Lonicera tatarica	Tartarian honeysuckle	Caprifoliaceae
Sambucus canadensis	elderberry	Caprifoliaceae
Cerastium sp.	field chickweed	Caryophyllaceae
Saponaria officinalis	bouncing bet	Caryophyllaceae
Chenopodium album	lamb's quarters	Chenopodiaceae
Tradescantia sp.	spiderwort	Commelinaceae
Calystegia sepium	field bindweed	Convolvulaceae
Ipomea sp.	morning glory	Convolvulaceae
Cornus foemina ssp racemosa	gray dogwood	Cornaceae
Cornus stolonifera	red-osier dogwood	Cornaceae
Carex spp.	sedge	Cyperaceae
Equisetum arvense	common horsetail	Equisetaceae
Astragalus canadensis	milk vetch	Fabaceae
Baptisia lactea	white wild indigo	Fabaceae
Dalea candida	white prairie clover	Fabaceae
Dalea purpurea	purple prairie clover	Fabaceae
Desmodium canadense	showy tick-trefoil	Fabaceae
Lespedeza capitata	round-headed bush clover	Fabaceae

Table C1: Continued

Species	Common name	Plant family
Lotus corniculatus	bird's-foot trefoil	Fabaceae

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Medicago lupulina	black medic	Fabaceae
Melilotus alba	white sweet clover	Fabaceae
Melilotus officinalis	yellow sweet clover	Fabaceae
Trifolium hybridum	alsike clover	Fabaceae
Trifolium pratense	red clover	Fabaceae
Trifolium repens	white clover	Fabaceae
Quercus alba	white oak	Fagaceae
Quercus bicolor	swamp white oak	Fagaceae
Quercus borealis	northern red oak	Fagaceae
Quercus macrocarpa	bur oak	Fagaceae
Hypericum sp.	St. John's wort	Hypericaceae
Sisyrinchium campestre	blue-eyed grass	Iridaceae
Carya ovata	shagbark hickory	Juglandaceae
Juglans nigra	black walnut	Juglandaceae
Physostegia parviflora	obedient plant	Lamiaceae
Morus alba	white mulberry	Moraceae
Fraxinus pennsylvanica	green ash	Oleaceae
Pinus strobus	eastern white pine	Pinaceae
Oenothera villosa	gray evening primrose	Onagraceae
Plantago spp.	plantain	Plantaginaceae
Platanus occidentalis	sycamore	Plantanaceae
Agrostis gigantea	redtop	Poaceae
Alopecurus carolinianus	common foxtail	Poaceae
Andropogon gerardii	big bluestem	Poaceae
Bouteloua curtipendula	side-oats grama	Poaceae
Bromus inermis	smooth brome	Poaceae
Dactylis glomerata	orchard grass	Poaceae
Elymus canadensis	Canada wildrye	Poaceae
Panicum virgatum	switchgrass	Poaceae
Phalaris arundinacea	reed canary grass	Poaceae
Poa pratensis	Kentucky bluegrass	Poaceae
Schizachyrium scoparium	little bluestem	Poaceae
Setaria faberi	giant foxtail	Poaceae
Sorghastrum nutans	Indian grass	Poaceae
Polygonum aviculare	knotweed	Polygonaceae
Rumex crispus	curly dock	Polygonaceae
Potentilla arguta	tall cinquefoil	Rosaceae
Rosa multiflora	multiflora rose	Rosaceae
Verbascum thapsus	common mullein	Scrophulariaceae
Veronica sp.	speedwell	Scrophulariaceae
Veronicastrum virginicum	Culver's root	Scrophulariaceae

Table C1: Continued

Species	Common name	Plant family
Physalis heterophylla	ground cherry	Solanaceae
Physalis virginiana	ground cherry	Solanaceae
Solanum americanum	black nightshade	Solanaceae

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Solanum carolinense	horse nettle	Solanaceae
Ulmus pumila	Siberian elm	Ulmaceae
Viola pratincola	common blue violet	Violaceae
Viola sp.	violet	Violaceae
Parthenocissus quinquefolia	Virginia creeper	Vitaceae
Vitis riparia	riverbank grape	Vitaceae

Table C2: Breeding bird listing for state block #582, Herbert Hoover National Historic Site, 1985-1990 (species likely to be attributable to NHS).

Species	Probability of Breeding
American Kestrel	Probable
Ring-necked Pheasant	Confirmed
Northern Bobwhite	Possible
Killdeer	Probable
Mourning Dove	Confirmed
Yellow-billed Cuckoo	Probable
Eastern Screech Owl	Probable
Great Horned Owl	Probable
Common Nighthawk	Probable
Chimney Swift	Probable
Ruby-throated Hummingbird	Probable
Re-headed Woodpecker	Confirmed
Downy Woodpecker	Probable
Northern Flicker	Probable
Eastern Wood Peewee	Possible
Willow Flycatcher	Possible
Horned Lark	Possible
Purple Martin	Probable
Tree swallow	Possible
Northern Rough-winged Swallow	Confirmed
Barn Swallow	Confirmed
Blue Jay	Confirmed
American Crow	Possible
Black-capped Chickadee	Confirmed
Brown Creeper	Possible
House Wren	Confirmed

List taken from: Jackson, L.S., C. A. Thompson and J.J. Dinsmore. 1996. The Iowa Breeding Bird Atlas. Univ. Iowa Press. 484 pp.

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Table C2: continued

Species	Probability of Breeding
American Robin	Confirmed
Gray Catbird	Possible
Brown Thrasher	Confirmed
Cedar Waxwing	Probable
European Starling	Confirmed
Warbling Vireo	Possible
Yellow Warbler	Possible
Common Yellowthroat	Probable
Northern Cardinal	Probable
Indigo bunting	Probable
Dickcissel	Confirmed
Chipping Sparrow	Probable
Field Sparrow	Possible
Vesper Sparrow	Probable
Savannah Sparrow	Possible
Grasshopper Sparrow	Probable
Song Sparrow	Possible
Bobolink	Probable
Red-winged Blackbird	Confirmed
Eastern Meadowlark	Probable
Western Meadowlark	Confirmed
Common Grackle	Confirmed
Brown-headed Cowbird	Probable
Orchard Oriole	Probable
Northern Oriole	Confirmed
American Goldfinch	Probable
House Sparrow	Confirmed
House Finch	Possible

Table C3: Mammals – possible species composition based on range maps

* indicates confirmed sightings

Family	Common name	Species name
Marsupial	*Virginia opossum	*Diadelphis virginiana*
Canidae	*coyote	*Canis latrans*
	gray fox	*Urocyon cinereoargenteus*
	*red fox	*Vulpes vulpes*
Cervidae	*white-tailed deer	*Odocoileus virginianus*
Cricetidae	*deer mouse	*Peromyscus maniculatus*

Table C3: continued

Family	Common name	Species name
	*meadow vole	*Microtus pennsylvanicus*
	*muskrat	*Ondatra zibethicus*
	*prairie vole	*Microtus ochrogaster*
	*western harvest mouse	*Reithrodontomys megalotis*
	*white-footed mouse	*Peromyscus leucopus*
	woodland vole	*Microtus pinetorum*
Geomyidae	*plains pocket gopher	*Geomys bursarius*
Leporidae	*eastern cottontail	*Sylvilagus floridanus*
	white-tailed jack rabbit	*Lepus townsendii*
Muridae	house mouse	*Mus musculus*
	Norway rat	*Rattus norvegicus*
Mustelidae	*badger	*Taxidea taxus*
	eastern spotted skunk	*Spilogale putorius*
	ermine	*Mustela erminea*
	least weasel	*Mustela nivalis*
	long-tailed weasel	*Mustela freyata*
	*mink	*Mustela vison*
	*striped skunk	*Mephitis mephitis*
Procyonidae	*Raccoon	*Procyon lotor*
Sciuridae	*eastern chipmunk	*Tamias striatus*
	*fox squirrel	*Sciurus niger*
	*Franklin's ground squirrel	*Spermophilus franklinii*
	*gray squirrel	*Sciurus carolinensis*
	*thirteen-lined ground squirrel	*Spermophilus parryii*
	*woodchuck	*Marmota monax*
Soricidae	least shrew	*Cryptotis parva*
	masked shrew	*Sorex cinereus*
	short-tailed shrew	*Blarina brevica*
Talpidae	*eastern mole	*Scalopus aquaticus*
Vespertilionidae	*big brown bat	*Eptesicus fuscus*
	eastern pipistrelle	*Pipistrellus subflavus*
	hoary bat	*Lasiurus cinereus*
	Keen's myotis	*Myotis keenii*
	little brown bat	*Myotis lucifugus*
	Red bat	*Lasiurus borealis*
	silver-haired bat	*Lasionycteris noctivagans*
Zapodidae	meadow jumping mouse	*Zapus hudsoniu*

Herpetofauna

No inventory has been done at this time.

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D. NEPA AND NHPA COMPLIANCE – SEE ACCOMPANYING ENVIRONMENTAL ASSESSMENT

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E. UNIT SPECIFIC INFORMATION

1. Fire call-up list

Table E1: Fire call-up list

Name	Phone Number	Mandatory/Optional	When
City Police	643-2222	M	day before
Cedar County Sheriff's Office	886-2121	M	day before
Iowa State Patrol (Davenport)	359-0388	M	day before
West Branch Fire Dept.	643-2110	M	week before and day before
Iowa Department of Natural Resources (Tim Dorr)	643-2624	M	day before
Cookson Memorial Home	643-2325	M	day before
Crestview Care Center	643-2551	M	day before
West Branch Ford	643-2123	M	day before
West Branch Times	643-2131	M	day before
All Residents of Main Street Place	Door-to-door	O	evening before
West Branch Community Schools	643-7213	M	week before
Hoover Elementary School	643-7211	M	day before
WB Middle School	643-5324	M	day before
WB high School	643-7216	M	day before
City Offices	643-5888	M	day before
Community State Bank	643-3155	M	day before
Herbert Hoover Presidential Library Association	643-5327	M	day before
Herbert Hoover Presidential Library Museum	643-5301	M	day before
Geery Howe	643-7997	M	day before

2. Air Quality Compliancy for State of Iowa – following this page

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3. Table E2: Preparedness inventory

revised 9/24/00

Item	Ending Inventory
Tents	3
Sleeping Bags	8
Sleeping Bag Pads	9
Air Mattresses	9
Yellow Field Packs	10
Yellow Field Pack Harness (Shoulder Straps)	14
Field Pack Belt	9
Red Packs	10
Fire Shelters	19
Fire Shelter Case	18
Fire Shelter Case Liner (Protective Insert)	14
Water Bottles	59/23
Yellow Field Pack Canteen Case	18
Canvas Style Canteen Case	38
Yellow Web Hip Packs	6
Helmets	18
Gloves – Small	2 + ½
Gloves – Medium	9
Gloves – Large	9
Gloves – X Large	3 + ½
Eye Protection Goggles	14
Lanterns (Battery pack worn on belt)	11
Headlamp (Battery pack affixed to hard hat)	1
First Aid Kits (mini)	7
Shirt – Nomex – Small	6
Shirt – Nomex – Medium	17
Shirt – Nomex – Large	10
Shirt – Nomex – X-Large Long	5
Shirt – Nomex – X-Large	6
Shirt – Nomex – XX-Large	2
Pants – Nomex – 28x30	3
Pants – Nomex – 8x30	6
Pants – Nomex – 30x30	5
Pants – Nomex – 10x30	2
Pants – Nomex – 32 x various	4
Pants – Nomex – 34 x various	13
Pants – Nomex – 36 x various	5
Pants – Nomex – 38 x various	2
Tool - Flapper	26 + 1 w/ handle broken
Tool – Council Rake	7
Tool – McLeod	11 (no sheaths)
Tool - Shovel	3
Tool – Pulaski	4 (2 sheaths)
Complete Back Pack Pump (new)	4
Back Pack Pump (old)	8
Back Pack Pump Outfit (Galvanized Tanks)	4
Drip Torches	2

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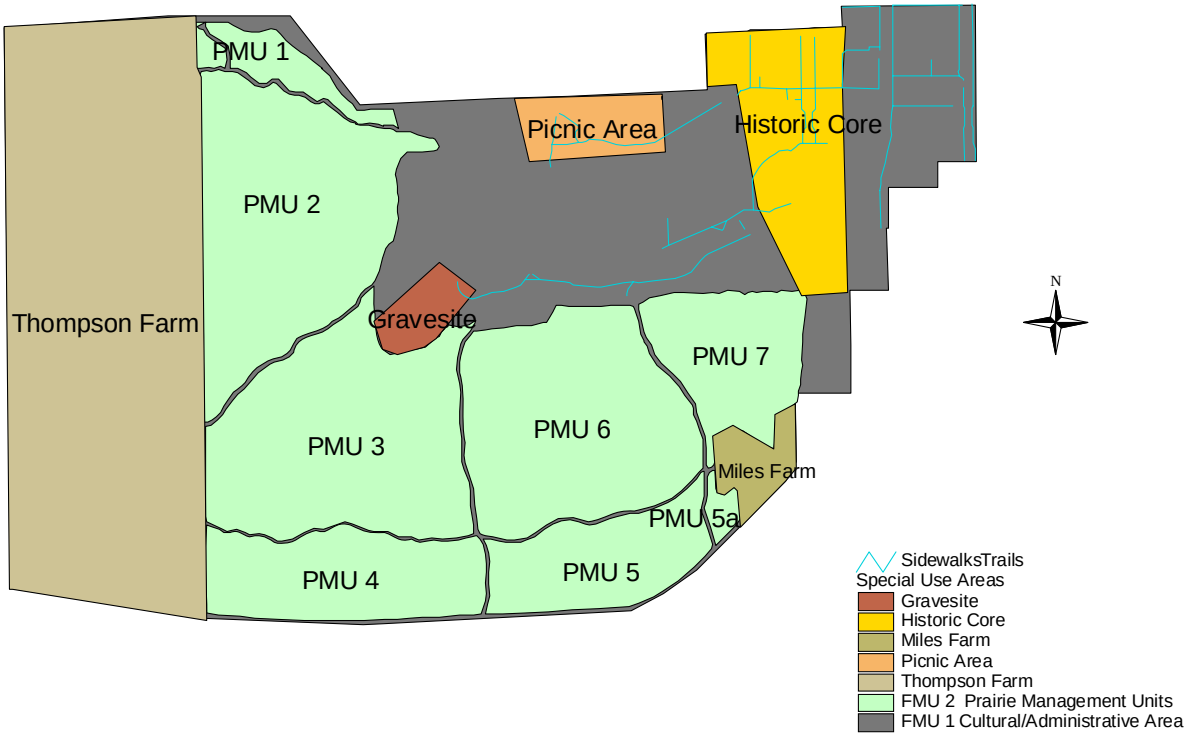
F. Site maps with FMUs and PMUs delineated

Herbert Hoover National Historic Site



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G. Cooperative Agreements

SCHEDULE OF SERVICES BETWEEN HERBERT HOOVER NATIONAL HISTORIC SITE AND THE CITY OF WEST BRANCH, IOWA FOR FIRE AND RESOURCE PROTECTION AND RELATED SERVICES, 2000

SCHEDULE OF SERVICES

The sum of two thousand and five hundred dollars ($2,500) has been reserved for payment to the City of West Branch, Iowa. This **maximum** total payment is to be paid in incremental amounts for specified services as they are performed and submitted to the National Park Service. This document does not obligate the Government for payment of funds without appropriate specified documentation. These services are recognized as being over and above normal fire protection and city service responsibilities.

Specified services are to be performed during the period of October 1, 1999, and September 30, 2000 on an "as requested" basis or as stipulated in the itemized description of services to be performed.

Method of Obligation and Payment: A specified service must be mutually agreed upon and arranged prior to the services being performed. Once mutually agreed upon, a Government Purchase Order will be issued to cover those specified services. Upon completion of the services, the City of West Branch will submit an invoice for payment describing those services rendered. In this manner, payment can be made for portions of the service agreement as the services are performed. The amounts listed are maximum amounts for specified services and do not constitute an agreement to pay absent those services.

Fire protection and emergency medical services shall be provided for the National Historic Site by the City on the same basis as it is provided to other non-profit organizations in the community, i.e. there shall be no cost for stand by. Services rendered to the Site may be billed as per a predetermined rate schedule.

Services to be Performed

Hydrant Check: Annually, flush and inspect all hydrants located within the historic site to insure that the valves, lines and fittings are serviceable and that adequate water pressure is available. All deficiencies will be reported within five (5) business days to the park Superintendent. A National Park Service employee will accompany the inspection team.	$ 400
Fire and Safety Inspection: In February or March, inspect all National Park Service public use facilities and other designated structures, except quarters, to determine if fire, health, or safety hazards exist. The inspecting official will document all deficiencies and a report submitted within ten (10) business days to the park Superintendent. A National Park Service employee will accompany the inspection team and specify designated structures.	$ 500
Training: One training session may be held annually. The subject of	$ 600

the training session shall be agreed upon by both agencies at least two (2) weeks prior to the anticipated date of the training, and final time, date, and location will be mutually set no later than one (1) weeks prior to the session. The training may consist of a lecture, film site orientation and/or "hands-on" exercise.

Management Support: The Fire Department may be requested to provide equipment and personnel for emergency medical services during special events, such as Hooverfest, held in the park. $ 1000

This agreement may be terminated by either party upon a 30-day written notice to the other.

The maximum payment under the Schedule of Services shall not exceed $2,500 per year.

For inspection services as listed in Items 1 and 2 above, three Day's prior notice will be provided to the National Park Service.

Prescribed burn activities are not included in this agreement. Compensation for burn support services will be arranged prior to the burn activity, and will be based on the level of support provided.

PARTIES TO AGREEMENT:

_____ _____
Chief Ranger Date
Herbert Hoover National Historic Site

_____ _____
Fire Chief, City of West Branch Date

Attest: _____ _____
Administrator, City of West Branch Date

Approved: _____ _____
Superintendent Date
Herbert Hoover National Historic Site

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H. LONG-TERM PRESCRIBED FIRE AND HAZARD FUEL REDUCTION PLAN

1. Multi-year prescribed fire schedule (see Appendix F for maps)

Table H1: Prescribed fire schedule

Year	Unit	Acres	Objectives
2001	1, 3, 4, 7	37.89	Restoration
2002	1, 2, 5a, 6	39.349	Restoration
2003	3, 4, 7	35.234	Restoration
2004	1, 2, 5, 5a, 6	46.587	Restoration
2005	No burn		

This schedule will be adjusted as prairie plant monitoring indicates appropriate for the control of exotic and invasive plants. Although the objectives for all parts of FMU 2 remain consistent throughout PMUs, division into seven PMUs allows managers to maintain wildlife habitat and cover in portions of the prairie, while burning other portions.

Objective for each PMU: Increase diversity and cover of native grasses and forbs.

PMU 1 Acres: 2.656
Vegetation: Tallgrass prairie with sparse tree overstory in flood plain.

PMU 2 Acres: 18.904
Vegetation: Wet meadow tallgrass prairie of varying condition.

PMU 3 Acres: 18.653
Vegetation: Tallgrass prairie in various stages of condition with some quality forb areas and savanna intruding from north that will be protected from fire by manual fuel removal.

PMU 4 Acres: 9.130
Vegetation: Tallgrass prairie with grasses well established.

PMU 5 Acres: 7.238
Vegetation: Tallgrass prairie with seedling trees planted along the northern boundary that will be protected from fire by manual fuel removal.

PMU 5a Acres: .640
Vegetation: Tallgrass prairie originally restored as a forb nursery area.

PMU 6 Acres: 17.149
Vegetation: Tallgrass prairie with reed canary grass well established in drainages.

PMU 7 Acres: 7.451
Vegetation: Tallgrass prairie with low diversity and sparse tree placement

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2. Hazard Fuels reduction areas and schedule

Hazard fuel reduction will be given priority in PMU 2, 3, 5a, 6, and 7, because of the adjacent cultural and historic values. Mechanical hazard fuel reduction will be applied around vulnerable natural and cultural values for protection from fire damage. Natural values to be protected include the nut tree grove located at the edge of PMU 2, 3, and 6. Prescribed fire and mechanical treatment will be used in the interior of FMU 2 to reduce hazard fuel build-ups that occur, facilitating protection of values at risk and recycling nutrients back into the soil.

Mechanical hazard fuel reduction will be applied to borders of PMUs to create firebreaks. This is the first step in a fuels reduction program followed by prescribed fire. Prairie Management Units along the interstate (PMU 4 and 5) are at risk for fire entering from the expressway. Fuels must be kept low and a mechanical hazard fuel reduction must be maintained in the forma of a mowed fire break between the expressway and prairie.

Table H2: Hazard fuel reduction schedule

Year	Units	Acres	Objectives
2001	1, 3, 4, 7	37.89	General reduction in hazard fuels with special attention to PMU 3 and 7 and nearby cultural values.
2002	1, 2, 5a, 6	39.349	General reduction in hazard fuels with special attention to PMU 2 and 5a and associated natural and cultural resources.
2003	3, 4, 7	35.234	General reduction with attention to values near PMU 3 and 7.
2004	1, 2, 5, 5a, 6	46.587	General reduction with attention to cultural and natural resource values around PMU 2, 5a, and 6.
2005	No burn		Fuels should be significantly reduced and the cycle length for prescribed fire must be reevaluated based on post-burn monitoring from the previous seven years.