Wildland Fire Management Plan

FOR

National Bison Range Complex
Moiese, Montana

October 31, 2001

Recommended by: _____

Project Leader **Date**
National Bison Range Complex

Reviewed by: _____

Regional fire Management Specialist **Date**
Mountain-Prairie Region

Concurred by: _____

Regional Fire Management Coordinator **Date**
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Concurred by: _____

Refuge Supervisor, **Date**
Montana/Wyoming/Utah

Approved by: _____

Regional Director, **Date**
Mountain-Prairie Region

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3. Impacts of Regional and National Preparedness Levels on Station Activities As indicated previously, periods of drought can greatly impact fire behavior and resistance to suppression. For that reason the Palmer Drought Index and the Keetch-Byram Drought Index will be monitored at a minimum on a weekly bases throughout the year. All are available on the Internet at http://www.boi.noaa.gov/fwxweb/fwoutlook.htm. The Refuge fire staff can also contact the Flathead Interagency Dispatch Center during periods of high

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I. INTRODUCTION

This Fire Management Plan (FMP) is written to help achieve resource management goals and objectives as defined in Operating Statements of the National Bison Range Complex. These objectives will also be reflected in the Comprehensive Conservation Plan presently under development. This plan updates the 1983 Fire Management Plan, as amended in 1986.

The FMP is developed to provide direction and continuity and to establish operational procedures to guide all wildland fire program activities to insure that fire is properly used as a means of habitat management. The FMP presents actions that will integrate fire management with National Bison Range Complex land management goals. This plan will be evaluated and updated in future years as required by changes in policy, management actions, and priorities.

U.S. Fish and Wildlife Service (Service) policy requires that an approved Fire Management Plan must be in place for all Service lands with burnable vegetation. Service Fire Management Plans must be consistent with firefighter and public safety, protection values, and land, natural, and cultural resource management plans, and must address public health issues. Fire Management Plans must also address all potential wildland fire occurrences and may include the full range of appropriate management responses. The responsible agency administrator must coordinate, review, and approve Fire Management Plans to ensure consistency with approved land management plans.

Service policy allows for a wildland fire management program that offers a full range of activities and functions necessary for planning, preparedness, emergency suppression operations, emergency rehabilitation, and prescribed fire operation, including non-activity fuels management to reduce risks to public safety and to restore/sustain ecosystem health.

This Fire Management Plan describes fire management programs, activities and methods assumed by the Service to meet wildfire suppression objectives. It also summarizes prescribed fire management strategies to attain positive environmental effects of fire management in relation to refuge resources, the local environment, as well as impacts to the public, adjacent landowners and surrounding communities.

II. DESCRIPTION OF COMPLEX

The National Bison Range Refuge Complex consists of five National Wildlife Refuges (NWR) and 13 Waterfowl Production Areas (WPA), situated in Lake, Flathead and Sanders counties in Northwestern Montana (Figure 1). These units include about 23,600 acres of wetlands and uplands managed for migratory birds and 18,568 acres of big game range. These lands are strung along 70 miles of the southern end of the Rocky Mountain Trench. All areas except Swan River NWR, Lost Trail NWR and McGregor WPA are located in the Flathead Valley.

Figure 1: National Bison Range and Refuge Complex

A. General Description

National Bison Range, located in Sanders and Lake Counties, Montana, near Moiese, includes an area of 18,563 acres. It was established by Acts of Congress on May 23, 1908, and March 4, 1909, primarily for the preservation of the American Bison, by Executive Order 3596, on December 22, 1921, to function as refuge and breeding grounds for birds, and on August 12, 1958, to provide adequate pasture for the display of bison in their natural habitat at a location readily available to the public. The refuge is a large hill situated at the south end of the Flathead Valley. Elevation varies from 2,500' msl along Mission Creek to 4850' msl at the top of Red Sleep Mountain. The tops of the hills and some of the slopes are timber covered. Palouse prairie grasses cover 90% of the slopes and low elevation areas. The Range is within the exterior boundaries of the Flathead Indian Reservation. The main entrance is along Highway 212 at Moiese, 50 miles northwest of Missoula and 80 miles south of Kalispell (Figures 2, 3, & 4).

Northwest Montana Wetland Management District and Conservation Easements are located throughout Lake and Flathead counties in northwest Montana. The Wetland District consists of 14 Waterfowl Production Areas (WPA) and 26 Conservation Easements. Most of these areas are relatively flat and untimbered. Lake County WPA's and Conservation Easements are located from 3 to 9 miles north and northeast of the National Bison Range (Figure 5). Flathead County WPA's are located south and west of the Kalispell area (Figure 6). Flathead WPA is along the north shoreline of Flathead Lake at the mouth of the Flathead River. Batavia, Smith Lake and McGregor WPA's are located, 4 , 10 and 22 miles respectively, west-southwest of Kalispell along the south side of Highway 2. Blasdel WPA is located approximately 1 ½ miles north of Flathead Lake. Lake County WPA's cover 3,130 acres, Flathead County WPA's, 6,657 acres, and Conservation Easements are 6,251 acres.

Lands were acquired for migratory bird use subject to all provisions of the Migratory Bird Conservation Act (16 U.S.C. 715-715r), except the inviolate sanctuary provisions due to the Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718).

Ninepipe National Wildlife Refuge, is located in the Mission Valley of Northwest Montana on Tribal Trust Lands of the Confederated Salish and Kootenai Tribes of the Flathead Indian Reservation. Lands within the boundary were first withdrawn for an irrigation reservoir as part of the Flathead Project in 1910. The Refuge was established in 1921 (Executive Order 3503). The Refuge is operated as an "easement" refuge, meaning those rights pertaining to management of native birds and their habitat were purchased from the Tribes and are managed by the Service. It is about 5 miles south of Ronan and 50 miles north of Missoula, situated along U.S. Highway 93, encompassing 2,062 acres. The Refuge is surrounded by State Land managed by the Montana Department of Fish Wildlife and Parks (Figure 7).

Figure 2: National Bison Range

Figure 3: National Bison Range - Fuel Types

Figure 4: National Bison Range - Roads

Figure 5: Nine-pipe Area Recreational Access Guide

Figure 6: Flathead County WPAs

Figure 7: Nine-pipe National Wildlife Refuge

Pablo National Wildlife Refuge, is located in the Mission Valley of Northwest Montana on Tribal Trust Lands of the Confederated Salish and Kootenai Tribes. Lands within the boundary were first withdrawn for an irrigation reservoir as part of the Flathead Project in 1910. The Refuge was established in 1921 by Executive Order. The Refuge is operated as an "easement" refuge, meaning those rights pertaining to management of native birds and their habitat were purchased from the Tribes (Executive Order 3504). The Refuge is 2,542 acres and lies approximately 2 miles south of Polson, and 75 miles north of Missoula (Figure 8).

Swan River National Wildlife Refuge, is located in northwest Montana, 38 miles southwest of Creston, in the Swan Valley. Total acreage is 1,568 acres, with an additional 210-acre Forest Service inholding that is managed under a Memorandum of Understanding by the U.S. Fish and Wildlife Service. The Refuge was established in 1973 under authority of the Migratory Bird Conservation Act, at the request of Montana Senator Lee Metcalf. The refuge is a satellite unit of the National Bison Range. Day-to-day administration and operations are the responsibility of the on-site Deputy Project Leader located at Lost Trail National Wildlife Refuge, Marion, Montana (Figure 9).

Lost Trail National Wildlife Refuge, located in northwest Montana, 30 miles northwest of Kalispell and 15 miles northwest of Marion in the Pleasant Valley. Total acreage is 9280 acres, 3,112 acres were given to the Service by Montana Power Company as mitigation for erosion damage Kerr Dam caused to the Flathead Waterfowl Production Area (Fish & Wildlife Coordination Act). The remainder of the Refuge was acquired in 1999 under authority of the Migratory Bird Conservation Act. There is a 1,770 acre NRCS-WRP Easement that presently restricts haying, grazing and burning on those acres. The refuge is a satellite unit of the National Bison Range (Figure 10).

B. Climate

The area has a microclimate usually characterized by relatively mild winter temperatures, moderate winds, and temperature inversions creating intermittent valley fog and overcast skies. Snow cover melts quickly at lower elevations. Sub-zero weather is uncommon and summer temperatures seldom exceed 100 degrees Fahrenheit. The month of June usually has the heaviest rainfall. The northern part of the Flathead Valley and Lost Trail have an annual precipitation of about 17 inches and a shorter growing season. The lower valley lies in a noticeable rain shadow and records at the Bison Range weather station show annual precipitation at 12 inches. The growing season there averages 90-110 days with freezing conditions generally common November through March.

Figure 8: Map of Pablo National Wildlife Refuge

Figure 9: Swan River National Wildlife Refuge

Figure 10: Lost Trail National Wildlife Refuge

C. Topography

The Bison Range is essentially a small, rolling mountain connected to the Mission Mountain Range of the Rockies by a gradually descending spur. Range elevations vary from 2,585 feet near headquarters to 4,885 feet at Highpoint on Red Sleep Mountain, the highest point on the range.

The mountain ranges run generally north and south, separated by glacial valleys. Of these, the Rocky Mountain trench reaches far into Canada and has many names along its length. It divides to form the Flathead and Swan valleys. The portion of the Flathead south of Flathead Lake is also called the Mission Valley. Elevations for satellite refuge lands are: Ninepipe NWR and Lake County WPA's, 3,050 ft; Pablo NWR 3,300 ft; Swan River NWR 2,895 ft; Flathead County WPA's range from 3,170 to 3,800 ft and Lost Trail NWR from 3,500-4,100 ft.

D. Watershed

Mission Creek drains the north side and the Jocko River drains the south side of the National Bison Range. There are about 80 springs on the Range and 40 have been developed to provide water for wildlife. The Lake County wetland area surrounding Ninepipe NWR is glacial, kettle-basin drainage with Post/Mission Creek draining the south side of this terminal moraine and Crow Creek draining the north side. Glacial kettles (potholes) do not fill from ground water but from surface sources. Some of the runoff is from rain events but most is from snow melt that can not soak in because of spring frost in the ground. Due to the kettle topography, melt water runs to these depressions and accumulates there, rather than taking a path to the rivers of the valley.

The Flathead and Swan Rivers, along with other smaller streams and mountain torrents drain a watershed of 4.5 million acres. The North Fork of the Flathead arises in Canada and borders the west side of Glacier Park. The Middle and South Forks drain the Great Bear and Bob Marshall Wilderness Areas. The Swan flows through Swan Lake and joins the Flathead Valley as it widens to form Flathead Lake, a natural lake with high water levels maintained by Kerr Dam at Polson.

Other natural lakes occur especially in mountain valleys. Human-made impoundments have been developed for power and irrigation, including the Flathead Irrigation Project in the Mission Valley.

E. Habitats

The dominant habitat type on the top of the hills of the Bison Range are climax conifer forest, including both old growth and second growth stands. Several of the Pines are 400+ years old. Dominant forest trees are ponderosa pine and Douglas fir. Lower slopes, riparian areas and moist areas have aspen, willow, cottonwood, chokecherry, snow berry and wild rose. Lost Trail NWR is a seven-

mile long valley of wetlands and subirrigated wet meadows surrounded by native grasslands and scattered forests of ponderosa pine, Douglas fir and quaking aspen.

Native grasslands at lower levels consist of a Palouse Prairie combination of grasses and forbes. Native prairie remains at the National Bison Range, on Lost Trail NWR, on some of the lower hills of the Salish Range and a few other isolated sites. Most grasses in the Mission and Flathead Valley have been replaced by domestic crops and introduced grasses. Palouse remnants are composed of cool season bunch grasses (e.g., Idaho fescue, rough fescue and blue bunch wheatgrass) and forbes (e.g., balsamroot and lupine).

The Mission Valley wildlands are surrounded by mostly a grazing and hay agriculture that is excellent ground nesting bird habitat. Because of the abundance of glacial pothole ponds and the abundance of grass in the early and mid summer, there are an abundance of wetland birds.

Though primarily small grain agricultural, the Flathead Valley floor near Kalispell offers river backwaters, old oxbows, glacial pothole ponds and marshes which have formed excellent wildlife habitat.

F. Wildlife

The broad habitat types and vast area of public, tribal and private wildlands support sizeable populations of deer, elk, moose, mountain goats, bighorn sheep, black bear, and mountain lion. A number of threatened or endangered species, such as the grizzly bear, gray wolf, bull trout and west slope cut throat trout, also call this area home.

The wide habitat diversity provides for a great number of special interest bird species such as bald eagle, peregrine falcon, four species of grebes, black necked stilt, and long billed curlew. Several duck species nest in high density. Columbian sharptail grouse and trumpeter swan are likely candidates for reintroduction to the ecosystem. Large and nationally significant numbers of rough legged hawks, short eared owls, and northern harriers frequent and/or nest in the grasslands of these refuges and region.

The fishery includes both lake and stream species. Whirling disease, prevalent in other parts of the State, has not yet been found in this area. Complete plant and wildlife species lists for the Complex are on file at the Bison Range Headquarters.

G. Threatened, Endangered or Candidate Species

Threatened, endangered or candidate species include occasional grizzly bear at Swan River NWR, Ninepipe NWR, the National Bison Range and Lake County WPA's. Gray wolf are relatively common at Lost Trail NWR because a den has been noted on adjacent Plum Creek Timber Land. Wolves have also been

observed on occasion at the National Bison Range, Lake County WPA's and Ninepipe NWR. Bull trout are on the Bison Range in the Jocko River, in Flathead Lake, near Flathead WPA and in Swan Lake near Swan River NWR. The only T&E plant that might be found on the Refuge Complex is water howellia at Swan River NWR.

H. Cultural Resources

The National Bison Range, Ninepipe NWR, Pablo NWR and the nine WPA's in Lake County are within the boundary of the Flathead Indian Reservation. Ninepipe and Pablo are tribal trust lands managed for wildlife refuge goals by purchased conservation easements. Other Service lands are owned in fee by the Service and are not tribal trust.

The Service, as a Federal agency, has a trust responsibility to Tribal governments that includes identification and protection of tribal archeological resources. The Confederated Salish and Kootenai Tribes (CS&KT) and the National Bison Range Complex routinely coordinate on these issues and have established a good resource working relationship. The Service will work closely with the CS&KT to identify cultural resources associated with Service lands. A recent cultural resource overview of the entire Refuge Complex, including Lost Trail NWR, was completed by the CS&KT (2000). Archaeological surveys have been carried out on Wetland District properties, but no significant sites have been found. At the Bison Range the Barnier Archaeological Survey of 1969 located some lithic scatters and pits which may have been used to catch eagles or for vision quests. Certain old growth pine may have been culturally pealed and need to be protected. The Blasdel Barn on the Blasdel WPA has been listed on the National Register of Historic Places. Some of the buildings at Lost Trail NWR were constructed early in the 20th century and have historical significance. To date, Swan River National Wildlife Refuge has no known cultural resources. Ninepipe and Pablo NWRs are covered in the overview but have few know cultural resources.

Ninepipe NWR, Pablo NWR and the WPAs on the Reservation have some native grass component but most of the grassland vegetation has been converted to tame grass or crop land at some point in the past. Tribal members harvest plants throughout the reservation for food and medicine. On the Bison Range, white or silver sage is collected under special use permits issued to Native American tribal members with letters of support from their Tribal government. The sage is used for a variety of religious ceremonies. The cultural resource overview contains a list of significant plants to the Tribes.

I. Air Quality

Air quality is exceptionally good, with no nearby manufacturing sites or major air pollution sources. The Aluminum Plant at Columbia Falls is an exception and emissions from this refining operation have affected vegetation and wildlife on the nearby western slopes of Glacier National Park. Seasonal burning of logging slash in the mountains and burning of stubble fields on lower valley ranches cause some short term, localized smoke derived from natural vegetative sources. Heavy smoke may occur in drought years from wildfire either nearby or carried by the prevailing winds from the west. The area is a Class II Airshed. Wood burning stoves contribute to smoke and smog during winter temperature inversions.

J. Soils

The glacial aftermath left a disturbed, bull-dozed landscape and dunes of glacial outwash in the valley. Glaciers, glacial lakes and mountain run-off have deposited unconsolidated valley fill sediments, lacustrine silts and assorted glacial debris up to and including large drop stones which originated far north in British Columbia.

Topsoil are generally shallow and mostly underlain with rock which is exposed in many areas, forming ledges and talus slopes. Soils over the major portion of the range were developed from materials weathered from strongly folding pre-Cambrian quartzite and argillite bedrock. These soils are well drained, steep, and range from very shallow to moderately deep in parent material. They have a loamy surface horizon with near neutral pH, high organic content, and varying degrees of rock fragment. Except for surface soils, lower horizons have a loamy texture with rock fragment dispersals. Water percolation rates are high, thus soil erosion is minimal. Pothole wetlands often contain water throughout the year.

K. Facilities

Facilities of concern found within the National Bison Range consist of a visitor center and office complex, maintenance shop, horse barn, storage buildings and five staff housing structures. There are two houses built close to the north boundary of the Range. Both are in an area with short grass fuels and no woody fuels. Ninepipe NWR has two trailer pads on the north edge of the refuge that are occupied by volunteers or seasonal staff during spring and summer months. The state's Ninepipe Wildlife Management area has an a house and garage/office building just adjacent to the west boundary of Ninepipe NWR. Lost Trail NWR has valuable facilities including three residences, two horse buildings, two temporary housing apartment, a shop and two storage buildings. Some of these buildings were constructed early in the 20th century and have historical significance. The Blasdel WPA barn is already designated as a national historic structure.

L. Values Adjacent to Refuge

Western Montana has experienced significant human immigration in the past 20 years. Housing developments near Service lands have created an urban-wildland interface. In the Kallispell area, some single-family homes are within feet of Service lands. There are no buildings of value near the boundaries of Lost Trail, Pablo, or Swan River NWRs. WPA's with development close to the boundary include Batavia, Flathead, Blasdel, Smith Lake, McGregor, Duck Haven, Ereaux, Kickinghorse, Crow, Sandsmark and Montgomery.

The economy of the area is lead by ranching and farming. Significant agricultural products include small grains, sweet cherries, hay and mint. There are large areas of irrigated and dry-land pasture, farmsteads, and other associated improvements. Some areas along the Jocko River, south of the Bison Range, and bordering Swan River NWR, and all lands bordering Lost Trail NWR are tribal, private, or corporate timber lands. Small town business districts can be found in Ravalli and Dixon. There is moderate industrial activity such as tool manufacturing, defense contract electronics manufacturing, and commercial electronics manufacturing. Tourism is also a significant part of the economy; Service lands are frequently visited by tourists. The Bison Range alone receives 250,000 visits per year, creating economic benefits to the local economy. There is also significant government employment including Federal, State, County, Tribal and city jobs.

Natural resources outside the boundaries include significant riparian woodlands on the Jocko River and Mission Creek near the Bison Range, and significant timber and rare plant habitat near Swan River NWR or TNC lands. Two rare plants, not documented on Service lands, are located nearby, the water howellia (*Howellia aquatilias*) and the Spalding's champion (*Silene spaldingii*).

M. Socio-Political-Economic

In general, the Service presence in Northwest Montana for fire or any purpose, is appreciated and well supported. Fire is generally accepted as a land management tool. The public regularly uses spring burning to manage their own property. Acceptance of the Service fire program by communities is good when measures are in place to deal with potential negative impacts. Through significant public debate on forest management over the past decade, the community is well educated about excessive buildup of fuels on forest lands. The Confederated Salish and Kootenai Tribe's general population is also supportive of management of the excessive fuel buildup. Their own fire program includes prescribe burning tribal lands to manage fuels for the same purpose.

The local communities surrounding Service properties have provided feed back on the Service fire program. They have expressed concerned about safety issues, such as a prescribe fire which puts excessive smoke across highways, and resource management issues such as timing of prescribed burn activities. Some have expressed a concern that grass burned on WPA's should have been grazed by local ranchers. Members of the Confederated Salish and Kootenai Tribes, who

hold grazing allotments on Pablo and Ninepipe NWRs, are concerned about management activities that may conflict with their grazing opportunities on those Refuges.

The 1855 Hellgate Treaty reserved lands to the Confederated Salish and Kootenai Tribes, while conveying the remainder of their homelands to the United States. All Service properties in Lake County except Swan River NWR were once Tribal lands. Ninepipe and Pablo NWR are still Tribal lands with strong conservation easements purchased from the tribes by the United States. The Bison Range was also purchased in fee from the Tribes by the government. WPA's were purchased from private landowners, but most of those properties were originally purchased from the tribes by the landowners and the U.S. Government using a provision of a law that reimbursed the Tribes for lands conveyed to non-Indians. The Tribal government has asked to take over management of Service lands in Western Montana and the tribal member public is very supportive of tribal management. However, no agreements have been negotiated and non-tribal members, in general, are not supportive of tribal management. This social/political situation has had little effect on the Service fire program and working relationships with the Tribal fire staff are excellent.

N. Fire History and the Role of Fire on Bison Range Refuge Complex

Except for one large wildfire in 1934, the role of fire, as a natural process, has been absent since the Refuge was created in 1908. Limited historical records date back to that large fire of 1934 (Appendix A). These records show the next largest wildfire being 20 acres in 1973. There was also a very persistent fire of 13 acres in timber that lasted 3 days in 1994. The large fire was 5,300 acres mostly in grass and some timber. The exclusion of fire has dramatically altered the forest composition. The landscape has changed from open stands of large ponderosa pine and Douglas fir to dense stands of Douglas fir saplings surrounding the larger trees. This tremendous increase in fuel loading means any wildfire has the potential to cause stand replacement, catastrophic loss of the forest.

North American forests composed of ponderosa pine once had thousands of small, low intensity fires every few years. Most of those fires were not hot enough to kill mature trees but they did thin out the forest under story. The result was open forest with widely spaced old growth trees. There is ample evidence that American Indians used fire to clear many western valleys, creating the open, lower elevation forests that greeted the first European settlers (Pyne 1982).

O. Fire Effects

1. Vegetation and Fuels

Grasslands are burned to manipulate/favor certain vegetation and to enhance biological productivity and diversity. The use of fire will help managers accomplish wildlife and landscape management objectives. Fire will be used to retard invasion of undesirable species and open up overgrown areas, rejuvenate grasslands, and reduce vegetative litter prior to use of herbicide on weeds.

Fire will be an important wetland management tool, especially in areas where marsh vegetation has become decadent and is of lower value to many marsh birds. Dormant season burning may be used to remove accumulation of emergent vegetation to improve nesting for marsh bird species.

Fire will also be an important grassland management tool. It will be used to remove accumulations of mulch and dead plant material in order to expose the soil surfaces to sunlight and increase early spring soil temperature needed for plant growth.

A prescribed fire conducted in October of 1998 was successful in burning grasses and understory litter in mature ponderosa of upper Pauline Creek. The same fire was only 25% successful at burning thick dog hair stands of Douglas fir in upper Trisky Creek.

2. Wildlife

The Mission Valley has long been recognized as important wildlife habitat area. The extraordinary assortment of wildlife illustrates the importance of conserving and protecting habitat in the area. High densities of wetlands surrounded by grasslands produce quality nesting habitat for ground-nesting waterfowl, raptors, and songbirds. Such superb ground nesting habitat for migrating species is in relatively few states, including Montana. The area is one of the only places on the continent that provides both nesting habitat in the spring and foraging habitat in the winter for migratory waterfowl. The valley also provides a superb riparian corridor habitat for threatened and endangered species such as grizzly bear, bald eagle, and peregrine falcons. Grizzly bears follow riparian zones downstream and utilize the riparian stringers off the Mission Front as feeding sites, cover, and movement corridors.

Fires affects wildlife primarily by modification of habitat. Burns also increase local habitat diversity by creating a mosaic of habitats and increasing habitat interspersion and edge.

A major effect fire can have on wildlife is the destruction of nesting habitat. However, one of the primary reasons to use fire as a tool is to remove excessive litter that impedes new year grass growth and favors exotic plants. Ground nesting birds do not require excessive litter for nesting, just residual height. Although fire can be detrimental to ground nesting birds, prescribed burns can be timed to avoid overlap with nesting seasons. Some species are known to successfully renest following disturbance.

3. Air Quality

Particulate in smoke can impair visibility. Volume and nature of smoke produced depends upon burn size, general moisture conditions, and type of vegetation. The higher the moisture content of vegetation, the more smoke. Smoke effects can be mitigated by burning with wind and unstable atmospheric conditions to loft smoke and dissipate most ground level smoke.

The management of smoke is incorporated into the planning of prescribed fires. The majority of fuels are fine and create little smoke as these fuels are consumed rapidly. Air quality at this Refuge Complex is usually very good. The presence of smoke must be expected from any type of burn, but smoke will not be an air quality problem. Visibility along Highways 212, 200, 93 and 2, located adjacent to the boundary of the Complex, may be temporarily affected by smoke.

Burning in western Montana is by permit only except for the period March 1 - August 31. The State of Montana maintains a Memorandum of Agreement with most of the public land management agencies for prescribed burn emissions. They are in the process of revising and updating regulations and plan to include all land management agencies. Signatories of the agreement are dedicated to the preservation of air quality in Montana. However, the continuing importance of prescribed burning for removal of logging residue to assure protection and regeneration of forest areas and for other accepted forest practices, such as wildlife habitat improvement, is recognized.

Burning should only take place if weather conditions allow for quick dispersal of smoke.

4. Soils

Given adequate soil moisture, fire generally increases vegetative growth and plant reproduction. Plants are often greener, larger, and more vigorous. This results in improved nesting cover for

waterfowl, and some migratory and resident bird species. Exposed ground and residual ash creates a darkened soil surface. Burned surfaces warm more quickly in spring, increasing soil heating and often increase rates of microbial activity, seed germination, sprouting, and overall plant growth.

Increased soil heating could increase evaporation and transpiration, which could be detrimental to plants during warm, dry months. Generally, dark ash is broken down and the soil is shaded by new growth by mid-summer.
Fire can create conditions (temporarily) where erosion is elevated by increased soil exposure. Sod usually is sufficient to hold soil in place until vegetation regrowth occurs.

Fire also can cause temporary reduction of soil micro flora and micro fauna, especially in wet soils. Additionally, there is a loss of residue to build organic matter.

Since only small to moderate acreage will be burned at any one time, and since the fire is not expected to completely denude the soil of vegetation, the Complex expects to see little erosion following prescribed fires.

III. FIRE MANAGEMENT REFUGE STAFF RESPONSIBILITIES

The National Bison Range Complex has a dedicated fire management staff of one Fire Technician GS-6/7 and two seasonal firefighters GS 2/3/4. Fire management responsibilities fall under the direction of the Deputy Project Leader (DPL).

Most fire management duties on the Refuge are collateral duties. While the DPL is responsible for planning and implementation of an effective and safe fire management program at the Refuge, The Project Leader (PL) is ultimately responsible for all fire management decisions related to both wildfire and prescribed fire within the Refuge Complex. The fire job responsibilities in the Fire line Handbook and the ones described for the positions below are to be fulfilled. A listing of staff and their qualifications can be found in Appendix B.

1. Project Leader

- Responsible for the overall management of the refuge including fire management.
- Insures fire management policies are observed.
- Fosters effective cooperative relations within the refuge, cooperating fire organizations, and adjoining land owners.
- Makes fire assignments.

! Approves individual prescribed fire plans.
! Makes media contacts.
! Serves as collateral duty firefighter, as qualified.

2. Deputy Project Leader

! Within budgetary restraints, insures sufficient collateral duty firefighters meeting Service standards are available for initial attack.
! Supervises the collateral duty fire staff.
! Responsible for planning and coordinating preparedness activities including:
The Refuge fire training program.
Physical fitness testing and Interagency Fire Qualification System (IFQS) data entry.
Coordinating with cooperators on a regional level. Revising agreements as necessary.
Insuring the Step-up Plan is followed.
! Prepares annual Firebase budget request and manages and tracks use of Firebase account.
! Responsible for coordinating prescribed fire activities including:
Reviewing proposed annual prescribed fire program to meet resource management objectives.
Writing prescribed burn plans.
Completing daily validation that prescribed fires are under prescription and meet all other Service policy requirements.
! Maintains liaison with Regional Fire Management Coordinator and cooperators.
! Maintains fire records, reviews completed DI-1202's for accuracy and submits them to the Zone FMO.
! Annually reviews and updates as necessary the Fire Management Plan and local Annual Operating Plans.
! Serves as collateral duty firefighter, as qualified.
! Serves as Prescribed Fire Burn Boss, as qualified.

3. Refuge Mechanic

! Maintains engine(s) in a state of readiness.
! Repairs fire equipment.
! Supervises and trains assigned engine crew in the operation of pumps, etc., as qualified.
! Serves as collateral duty firefighter, as qualified.

4. Administrative Assistant/Clerk

- Serves as Dispatcher
- Completes all necessary administrative documents associated with fire management activities.

5. Seasonal and Collateral Duty Firefighters

- Responsible for their own fire records, equipment, and physical conditioning.
- Qualify annually by completing the appropriate fitness test by May 15, or within 2 weeks of EOD date.
- Maintains assigned fire equipment in ready state and using all safety gear assigned.
- Assists the Deputy Project Leader in maintaining fire records.
- Serves as collateral duty firefighter, as qualified.

6. Wildfire Incident Commander (as assigned)

- The Incident Commander (IC) is responsible for the safe and efficient suppression of the assigned wildfire.
- Fulfills the duties described for the IC in the Fire line Handbook.
- Notifies the Deputy Project Leader or Dispatcher of all resource needs and situational updates, including the need for extended attack.
- Ensures wildfire behavior is monitored and required data are collected and that firefighters are informed of expected and predicted weather and fire behavior, escape routes and safety zones, and lookouts are posted.
- Ensures personnel are qualified for the job they are performing.
- Ensures personnel are briefed of local weather and fire behavior predictions, the effect of drought on expected fire behavior, and LCES (Lookout, Communications, Escape Routes, and Safety Zones).
- Identifies and protects endangered and threatened species and sensitive areas according to the Fire Management Plan.
- Utilizes minimum impact tactics to the fullest extent possible.
- Ensures fire is staffed or monitored until declared out or until the management of rehabilitation has been assigned.
- Ensures that the fire site is fully rehabilitated or that management is notified that rehabilitation is required.
- Submits completed DI-1202 (wildfire report), crew time sheets, a listing of any other fire related expenditures or losses to the Deputy Project Leader, and completes task books within 3 days of the fire being declared out.

7. Prescribed Burn Boss (as assigned)

- Writes or reviews prescribed burn prescriptions for assigned blocks.
- Implements approved prescribed burn plans.
- Assist with the administration, monitoring, and evaluation of prescribed burns.
- Submits completed DI-1202 (wildfire report), crew time sheets, a listing of any other fire related expenditures or losses to the Deputy Project Leader, and completes task book within 3 days of the fire being declared out.

8. The Station Fire Management Team

This team has the primary responsibility for fire suppression and prescribed fire on the Complex. Fire management team members are responsible for maintaining their equipment and physical condition, following instructions, and making appropriate decisions based on their knowledge and training. The station's fire management position needs for both preparedness and prescribed fire are listed in Table 1.

Table 1. Fire Management Needs

Position	**Minimum # Required**
Incident Commander Type 5 (ICT5)	1
Prescribed Fire Burn Boss Type 3 (RXB3)	1
Engine Boss (ENGB)	2
Engine Operator (ENOP)	3
Fire Fighter Type 2 (FFT2)	3

IV. COMPLIANCE WITH FISH AND WILDLIFE SERVICE POLICY

Regulations published in the Federal Register (62 FR 2375) January 16, 1997 categorically excludes prescribed fire when used for habitat improvement purposes and conducted in accordance with local and State ordinances and laws. Wildfire suppression actions are categorically excluded, as outlined in 516 DM 2 Appendix 1. The Service has determined that prescribed fire activities will only be carried out in accordance with a Fire Management Plan that tiers off a land management plan that has addressed the use of fire as a management tool and has been through the NEPA process or a Fire Management Plan that has been through the NEPA process. This plan updates the 1983 Fire Management Plan, which has been through the NEPA process, therefore an EA will not be completed for this Plan. Environmental assessments (EAs) for the Fire Management Plan (1983) and the Plan Addendum for the use of Prescribed Burning on Refuge Lands (1986) are included as part of this plan (Appendix V). The use of mechanical and other means to achieve resource management objectives will be addressed in a separate NEPA document.

The U.S. Fish and Wildlife Service (Service) policy requires that all refuges with burnable vegetation develop a Fire Management Plan. The plan must detail wildfire suppression policies, the use of prescribed fire for attaining resource management objectives, and fire program operational procedures. This plan meets those requirements and provides fire management guidelines for the Bison Range Complex.

Authorities for implementing this plan are found in:

1. Protection Act of September 20, 1922 (42 Stat. 857; 16 U.S.C. 594). Authorizes the Secretary of the Interior to protect from fire, lands under the jurisdiction of the Department directly or in cooperation with other Federal agencies, states, or owners of timber.

2. Reciprocal Fire Protection Act of May 27, 1955 (69 Stat. 66, 67; 42 U.S.C. 1856,1856a and b). Authorizes reciprocal fire protection agreements with any fire organization for mutual aid with or without reimbursement and allows for emergency or major disaster by direction of the President.

3. National Wildlife Refuge System Administration Act of 1966 (80 Stat. 927; 16 U.S.C. 1601) 668dd-668ee). Defines the National Wildlife Refuge System as including wildlife Refuges, areas for the protection and conservation of fish and wildlife which are threatened with extinction, wildlife ranges, game ranges, wildlife management areas and waterfowl production areas.

4. Federal Fire Prevention and Control Act of October 29, 1974 (88 Stat. 1535; 15 U.S.C. 2201). Provides for reimbursement to state or local fire services for costs of firefighting on federal property.

5. Departmental Manual (620 DM 1-3). Defines Department of Interior Fire Management Policies.

6. U.S. Fish and Wildlife Service Manual (621 FW). Defines Fish and Wildlife policies based on Departmental Manual 620 DM.

7. U.S. Fish and Wildlife Service Fire Management Handbook 1998 (621 FW). Provides general planning and operational guidance for fire management programs in the Fish and Wildlife Service.

8. Economy Act of June 30, 1932. Authorizes contracts for services with other Federal agencies.

9. Disaster Relief Act of May 22, 1974 (88 Stat. 143;42 U.S.C. 5121). Authorizes Federal agencies to assist state and local governments during emergency or major disaster by direction of the President.

10. Wildfire Suppression Assistance Act of 1989 (Pub. L. 100-428, as amended by Pub. L. 101-11, April, 1989).

11. Federal Grants and Cooperative Act of 1977 (Pub. L. 95-244, as amended by Pub. L. 97-258, September 13, 1982, 96 Stat. 1003 31 U.S.C. 6301-6308).

V. REFUGE FIRE MANAGEMENT GOALS AND OBJECTIVES

The goal of wildland fire management is to plan and make decisions that help accomplish the mission of the National Wildlife Refuge System. That mission is to administer a national network of lands and waters for the conservation, management, and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans. Fire management objectives (standards) are used in the planning process to guide management to determine what fire management responses and activities are necessary to achieve land management goals and objectives.

The primary goal is to provide for firefighter and public safety, property protection, and natural resource values. Service policy and the Wildland Fire Policy and Program Review direct an agency administrator to use the appropriate management strategy concept when selecting specific actions to implement protection and fire use objectives. The resulting Appropriate Management Responses are specific actions taken in response to a wildland fire to implement protection and fire use objectives. With an approved Fire Management Plan, Refuge staff may use wildland fire in accordance with local and State ordinances and laws to achieve resource management objectives (habitat improvement).

Development of a Comprehensive Conservation Plan (CCP) for the Refuge Complex is scheduled to begin in 2003. The Lost Trail NWR CCP will be finished by 2002. When those two plans are completed, the Fire Management Plan will be reviewed to insure that the Plan is in compliance with management goals and objectives.

Existing Operating Statements, operational plans, Executive Orders, and laws pertaining to the Complex include objectives which pertain to fire management. For example, safety objectives found in the Refuge Safety Plan are:

1. To provide a working tool for both employees and visitors when conducting business on this facility.

2. To provide a safe and healthful environment for both employees and visitors to the facility.

3. Identify procedures for handling situations of an emergency nature.

4. To identify availability of equipment, its location and sources of help.

5. Identify individual responsibilities.

6. To inform the staff of health and safety requirements.

7. To promote a healthy safety attitude.

The mission of the Complex is to protect, restore and maintain wetland and upland habitats to provide for the life requirements of waterfowl and other migratory birds; to protect endangered and threatened species and their habitats; to optimize the diversity of naturally occurring plants and animals; and to provide opportunities for public recreation and appreciation of our natural heritage.

The general mission of the National Bison Range is to maintain a representative herd of American bison under reasonably natural conditions for public enjoyment. The range also supports a wide variety of other wildlife species including Rocky Mountain elk and bighorn sheep, mule deer, white-tailed deer, pronghorn, and mountain goats. In addition, 187 bird species and 40 small mammal species have been recorded on the Range.

Specific management goals include:

1. To provide a representative herd of American bison maintained under reasonably natural conditions on a year-around basis.

2. Management of all available wildlife habitat guided by ecological principles basic to the maintenance of a native vegetative association with natural environmental qualities.

3. To provide an opportunity for the public to view and enjoy bison and other natural resources of the refuge.

4. Maintenance of small, representative populations of Rocky Mountain elk, mule and white-tailed deer, Rocky Mountain bighorn sheep, and pronghorn to provide for a representative wildlife association typical of the natural buffalo

environment, for public enjoyment, and for research purposes to the extent that such populations do not endanger the primary objective.

5. To provide for maximum educational benefits from refuge wildlife and associated resources.

6. To provide optimum conditions for species of wildlife other than big game.

The following considerations influenced the development of the National Bison Range Complex's fire management goals and objectives.

1. Wildland fire is a natural part of the environment in this area.

2. Wildfire has the potential to negatively impact natural resources both on and off Service lands.

3. The effects of wildland fire on vegetation and wildlife depend on burning conditions, timing, and the species involved.

4. Use of the "minimum tool" concept will minimize resource damage.

5. Rapid rates of spread and lengthy response time by suppression forces can create suppression problems and increase the likelihood of a wildfire escaping Service lands and entering adjacent lands or a wildfire entering Service lands.

It is the intention of the fire management program to support the management objectives and operational goals of the Complex by protecting resources and habitats from the effects of uncontrolled wildfire. The fire management program will also include the use of prescribed fire alone or in combination with other means to reduce accumulations of hazardous levels of fuels, restore and enhance refuge habitats, promote natural diversity and manipulate wetlands to promote increased production of migratory birds, especially waterfowl.

A. Fire management **goals** for the National Bison Range Complex:

1. Protect life, property, habitat, and other resources from unwanted fire.

2. Use wildland fire as a management tool to accomplish resource management, land management and wildlife management goals and objectives.

B. Fire management **objectives** for the Complex are:

1. Provide for firefighter and public safety. This is the priority objective of the fire management program. All fire management activities will reflect this commitment.

2. Protect life, cultural and natural resources, public and property from wildfires starting on Service lands.

3. Suppress all wildland fires in a cost effective manner using strategies and tactics appropriate in light of safety considerations, values to be protected, and in accordance with Service policy.

4. Restore and perpetuate native wildlife species by creating and maintaining a diversity of plant communities through use of fire.

5. Use prescribed fire alone or in combination with other means to reduce accumulations of hazardous fuels. Treat 100 acres annually.

6. Invigorate desirable marsh, grass, forb, and shrub species and improve nutrition of vegetation used by wildlife on 2,000 acres of Service lands per year.

7. Maintain prairie and protect old growth trees by retarding the invasion of conifer species on 500 acres of the National Bison Range.

8. Inform the public regarding the role of prescribed fire within the Complex.

9. Prevent unplanned human-caused ignitions.

10. Manage wildland fire to achieve identified management goals.

11. Manage all wildland fire using the Incident Command System.

12. Restore and rehabilitate resources lost or damaged by fire or suppression activities in accordance with Service Policy.

VI. FIRE MANAGEMENT STRATEGIES

It is the intention of the Service to continue to suppress all wildfires occurring on Service lands, including lightning-ignited wildland fires. Management-ignited prescribed fire will be utilized under controlled conditions and defined weather variables in accordance with approved prescribed burn plans. Mechanical thinning, either alone or in combination with prescribed fire, will be used to reduce accumulations of hazardous fuels.

The Complex will place primary emphasis on the development of a fire management program that is capable of suppressing wildfires quickly, while minimizing resource damage from both the fire and suppression efforts. As indicated previously, wildfires will be managed using the appropriate management response concept. Every wildfire on or threatening Service lands will receive an appropriate level of response. The level of response will be consistent with land use objectives, and will be executed to minimize suppression cost and resource damage. The appropriate action may include high intensity direct efforts, lower intensity indirect efforts, or surveillance to ensure confinement within a designated area.

Fire suppression capabilities will be enhanced by hazard fuel reduction projects and fire prevention programs. Hazard fuel reduction will primarily consist of the systematic application of prescribed fire of varying intensities under carefully controlled conditions and mechanical thinning to gradually reduce accumulations of dead fuels in timber stands. Hazard fuel reduction will also include extensive hand cutting of dog-hair thickets of 5 to 20 year old Douglas fir that are encroaching on the native grasslands. Due to the hazardous levels of live fuels and heavy accumulations of dead fuels which currently exist adjacent to portions of the Complex, a wildfire not only threatens refuge resources, but can threaten numerous private residences built immediately adjacent to the Complex. The human communities surrounding the Refuge Complex are in a period of rapid development, combining houses with existing wildland fuels to create a complex

fire environment that may limit management alternatives in the future.

Overall strategies, limits, and the rational used to guide the fire management program are outlined below:

A. The Complex will manage all fires using the appropriate management response concept. The primary suppression strategy employed will be direct attack. However, there may be occasions when direct attack on high intensity, rapidly spreading wildland fire would jeopardize firefighter safety and not be appropriate. Aggressive direct suppression actions may be too costly and often ineffective until the fire reaches ridge tops or other barriers. In these cases, indirect strategy will be employed utilizing natural and human-made features as wildfire control points.

During the early and late season when fire danger is low, a monitoring strategy may be all that is required to ensure confinement within a designated area. An example is a lightning fire in an area surrounded by snow banks that is not causing any resource damage and will go out naturally. Suppression actions, other than monitoring, will not be required for this type fire as long as conditions do not change.

Confinement Criteria

< Fire is restricted to one area with low potential for spreading out of the unit.
< Normally applied to spring and fall fires (before 5/1 and after 10/1).
< Burning Index 0-15 (3-day average).
< Wind speed 0-10 mph.
< No weather changes predicted.
< No air stagnation alert

B. Strategies are as follows and will be employed to meet refuge fire management objectives:

1. All wildfire will be managed using the appropriate management response concept. Suppression strategies and tactics will be unique to each wildland fire, predicated by weather parameters, suppression costs, fuel conditions, safety considerations, availability of resources, and location of the fire in relation to Complex and other threatened resources. It may be necessary to employ an indirect strategy utilizing existing control barriers, such as roads, within close proximity of the fire, in conjunction with a burnout operation. The Matrix of Appropriate Management Response to different situations of wildland fire on Service lands is outlined in Table 2.

Table 2: Appropriate Management Response

SITUATION	STRATEGY	TACTIC
1. Wildland fire on Refuge lands which does not threaten life, natural or cultural resources or property values.	Restrict the fire within defined boundaries established either prior to the fire or during the fire.	1. Holding at natural and man-made barriers. 2. Burning out. 3. Observe and patrol.
1. Wildland fire on Service property with low values to be protected. 2. Wildfire burning on to Service lands. 3. Escaped prescribed fire entering another unit to be burned.	Take suppression action, as needed, which can reasonably be expected to check the spread of the fire under prevailing conditions.	1. Direct and indirect line construction. 2. Use of natural and man-made barriers. 3. Burning out 4. Patrol and mop-up of fire perimeter.
1. Wildland fire that threaten life, property or sensitive resources. 2. Wildland fire on Service property with high values to be protected. 3. Observed and/or forecasted extreme fire behavior.	Aggressively suppress the fire using direct or indirect attack methods, holding the fire to the fewest acres burned as possible.	1. Direct and indirect line construction 2. Engine and water use. 3. Aerial retardant 4. Burn out and back fire. 5. Mop-up all or part of the fire area.

2. Prescribed fire will be used to manipulate degenerated grasslands, help open up wetlands and timber, and as a tool for hazard fuel reduction to compliment resource management objectives.

3. Suppress all unplanned ignitions in a safe and cost effective manner consistent with resources and values to be protected. If it becomes necessary to prioritize between property and cultural/natural resources, the response will be based on the relative values to be protected, commensurate with fire management costs.

   Minimum impact strategies and tactics will be used when possible. However, utilization of heavy equipment remains an option for control of high intensity fires and fires threatening critical values such as historical structures, endangered species, cultural resources, private property, and the like, with appropriate Line Officer approval, or to protect human life.

4. Conduct all fire management programs in a manner consistent with applicable laws, policies, and regulations.

5. Initiate cost effective fire monitoring which will tell managers if objectives are being met. Monitoring information will

be used to refine burn prescriptions to better achieve objectives.

6. Fire management planning, preparedness, prescribed fire operations, monitoring and research will be conducted on an interagency bases with involvement of all partners, when appropriate.

C. Constraints on the refuge fire management strategies include the following:

1. Smoke management must be carefully considered for any prescribed burn and will be addressed in all prescribed burn plans.

2. Suppression resources will be assigned to all wildland fires occurring on the Refuge until mopped-up and declared safe to demobilize.

3. The use of heavy equipment, such as dozers, in and around sensitive areas must have approval of the Project Leader or his designee.

4. Qualifications standards. Along with other land management agencies, the Service has adopted the National Interagency Incident Management System (NIIMS) and the Wildland and Prescribed Fire Qualification Subsystem Guide, PMS 310-1, to identify minimum qualification standards for interagency wildland and prescribed fire operations. PMS 310-1 recognizes the ability of cooperating agencies at the local level to jointly define certification and qualification standards for wildland fire suppression. Under that authority, local wildland fire suppression forces will meet the standards established for their agency or department. All personnel participating in prescribed fire management activities must meet Service fitness and training standards.

1. Prescribed burning in areas where threatened, endangered, and candidate species exist will not be conducted if the prescribed fire will be detrimental to the species or any adverse impacts cannot be mitigated. Section 7 clearance will be secured, as appropriate.

2. The use of prescribed fire to achieve management objectives must be conducted in a cost effective manner.

3. Aerial Retardants and foams will not be used within 300 feet of any waterway as described in the Guidelines for Aerial Delivery of Retardant or Foam near Waterways.

D. Rationale behind fire management strategies.

4. A Cooperative Fire Protection Agreement between the State of Montana and federal agencies provides for interagency cooperation for the prevention and suppression of wildland fires (Appendix D). A Statewide Annual Operating Plan addresses the protection of certain state and federal lands, including the suppression of wildland fires on the Satellite Refuges through an off-set protection agreement (Appendix E).

5. Grassy and timbered areas could, if ignited, spread beyond the Complex staff's ability to suppress the fire. Consequently, it may be necessary to

request the assistance of local rural fire districts and cooperators to manage the wildfire. In accordance with the Cooperative Fire Protection Agreement, Annual Operating Plans (AOP) will be developed and maintained as appropriate to formalize responsibilities. AOPs can be found in Appendices F, G, and H.

3. It may be necessary to reduce fuel loading in some areas for fire safety reasons to reduce the risk from wildfire. In areas where this is deemed necessary, fuel reduction projects must compliment resource management objectives.

VII. FIRE MANAGEMENT UNITS (FMUs)

Fire management units are areas that have similar fuel and terrain characteristics, common fire management strategies, and require similar efforts in wildfire suppression or prescribed fire application. Direct attack will generally be the most effective control strategy, except during periods of drought and extremely high wind when rates of spread are to high and indirect attack is necessary.

The Bison Range will be considered one Fire Management Unit (FMU), Lost Trail NWR a second FMU, and the remainder of the Complex a third FMU. See Table 3.

Table 3: Fire Management Units

Fire Management Unit	Acres
National Bison Range	18,563
Lost Trail	9,280
Remainder (Pablo NWR, Batavia WPA etc.)	14,380

Guidance in this section of the Fire Plan will pertain to both wildfire and prescribed fire. There is little site specific data on the effects of fire for National Bison Range Complex. However, general conclusions can be made from the Fire Effects Information System (FEIS). Appendix Q contains a table which depicts the anticipated effects of fire on most plant species that are found on the Refuge Complex. Rough fescue and blue bunch wheatgrass are not covered nor are many of the exotic plants. Information on these important species will be explored in the appropriate Comprehensive Conservation Plan and incorporated into prescribed burn plans.

A. Safety Consideration for All Units:

The safety of firefighters and the public is the first priority. Persons engaged in fire suppression activities are exposed to a high element of risk. The Project Leader and fire line supervisors must make every effort to reduce the exposure to risk and enhance performance. One way is through formal and on-the-job training and improved physical fitness. The Service has adopted the training and fitness standards established in 310-1, and all firefighters must meet these and other standards established by the Service to participate in fire management activities.

Other actions to improve safety include:

1. Public will be prevented from accessing the area.

2. Weather will be watched carefully, especially when conditions are unstable and fire behavior is very high. Suppression crew must be kept apprized of weather conditions and potential fire behavior.
3. Crews will be briefed on escape routes, safety zones and lookouts will be posted.

1. All refuge personnel performing fire management jobs will meet appropriate training, experience, and qualification requirements for incident assignments according to FWS policy and NWCG 310-1 and DOI Incident Qualification and Certification System.

2. All fire suppression and prescribed burn personnel will be equipped with approved personal protective equipment (PPE).

3. Alert sheriff or state police if fire or smoke approach county roads or highways.

4. Suppression crews will maintain communications among themselves, cooperators, and the dispatch.

5. All Service personnel assigned to fire line duties will complete annual refresher training.

6. Take extra precautions for fires burning directly under power lines where the potential exists for electricity to arc to the ground in heavy smoke.

B. FMU #1 National Bison Range Unit

This Unit primarily is comprised of the entire NBR. The topography is primarily rolling hills that are relatively steep with some sparse rocky areas. The area has a good road system that allows for direct attack in most situations but would also allow for indirect attack when necessary.

A goal of the National Bison Range is maintenance of natural associations of native plant species for the public to enjoy. Burning will remove accumulated mats of duff and litter in timbered areas, release nutrients back to the soil rapidly, increase microbial activity by increasing soil temperature, and sometimes retards and/or removes competition by undesirable plant species (bulbous blue grass, cheat grass, red three awn and thistles). Removal of undesirable vegetation on the National Bison Range will permit reestablishment of native bunch grass and forbs which have been lost due to encroachment of Douglas-fir, and reduce fuel build-up which could result in the creation of a serious wildfire hazard.

1. Primary Fuel and Expected Fire Behavior

NFFL Fuel Model 1 is the most abundant fuel found on the unit and is largely represented as NFDRS Fuel Model L (perennials), with some classified as NFDRS Fuel Model A (annuals). Fire spread in this fuel type is governed by fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than ten percent of the area.

NFFL Fuel Model 2 is the secondary fuel model found on the unit and is represented as NFDRS Fuel Model C. Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, besides litter and dead-down stem wood from the open timber over story, contribute to the fire intensity. Because of the steep terrain, the mixed age stands of timber (new growth to old growth), and the current mistletoe infestation there is potential for stand replacement type fire events to occur, especially on the north facing timbered slopes of the refuge.

Fires normally react to terrain and will burn up-slope rapidly and make significant runs during high wind events. These fuels quickly respond to changes in relative humidity or precipitation. Most fires on the Refuge will either burn themselves out of available fuel, into natural barriers or be extinguished by suppression efforts within 1-2 burning periods.

2. Fuel Loading and Unusual Fire Behavior

Fuel loading found in the grassy areas of this unit falls within the normal range as grazing does occur regularly on the unit. Fuel loadings in the timbered areas are quite high at this time and could potentially burn with extreme fire behavior because of the fine fuel under story with continuous young to middle aged timber reproduction under the old age mistletoe infected stands of trees.

During periods of high fire danger (BI >35, KBDI >300), fires on the NBR have the potential to make significant runs and burn several thousand acres in one burning period. There are records of fires burning more then 5,000 acres on the NBR and the current drought conditions could produce similar fires.

3. Unit Fire Objectives

a. Ensure the safety of Service staff and the visiting public.

b. Minimize the damage of fire and fire suppression efforts on refuge resources by using Minimum Impact Suppression Tactics.

c. Prevent fires from escaping refuge boundaries onto adjacent private lands.

d. Utilize prescribed fire when it will be useful in achieving refuge wildlife and habitat objectives. On average, treat between 500 and 3,000 acres annually.

e. Respond to wildfires in a cost effective manner consistent with the values at risk.

4. Unit Strategies

All wildfire fires will be attacked aggressively. All fires on the Refuge have the potential to escape into adjacent private land and cause damage to crops, pasture or improvements. For that reason all fires must immediately sized up by the responding Refuge fire personnel and a

decision made as to whether the responding initial attack team can contain and control the fire. If there is any doubt, then assistance should immediately be requested from local fire departments or interagency resources. Appropriate Management Responses to different situations are outlined in Table 2.

5. Unit Tactics:

a. Fires will be attacked using engines when possible. Roads, wetlands, and other barriers will be used where possible as primary control lines, anchor points, escape routes and safety zones.

b. Burnout operations will be conducted from roads or other barriers when it is safe and effective to do so.

c. Burnouts will also be used to strengthen primary control lines when it is safe and effective to do so.

d. Approved fire retardant chemicals may be deployed by either air or ground forces when their use will be effective in containment, control or facility protection.

6. Limits to Strategy and Tactics

a. The use of dozer or plow lines will not be permitted on Service lands except to protect life or improvements such as buildings or bridges, and only with the approval of the Project Leader or his acting.

b. Hand line construction which causes soil disturbance is to be avoided.

c. Retardant is not used within 300 feet of a stream or other water feature.

d. Files and records of cultural resources and the Regional Archeologist should be consulted before major ground disturbing wildfire suppression action or prescribed burns.

C. FMU #2 Lost Trail NWR

This Unit is comprised of the entire Lost Trail Refuge. The topography is mostly flat to rolling hill, foot hill and some steep slope. The vegetation is native grass hillside, subirrigated meadow (reed canary grass), and wetland emergents. There are patches of willow and occasional ponderosa pine. The appropriate management response concept will be used. The response will vary depending on burning conditions, location of the wildfire, time of year, safety, cost, smoke problems, political concerns, and current and predicted weather.

1. Primary Fuel and Expected Fire Behavior

NFFL Fuel Model 1 is the most abundant fuel found on the unit and is nearly all represented as NFDRS Fuel Model L (perennials). Fire spread in the fuel type is governed by fine, very porous, and continuous

herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present, generally less than 10% of the area. Most of these areas are isolated islands willow or ponderosa pine, except near boundaries with the Plum Creek Timber land which is all **Fuel Model 8 Timber** - This fuel type describes areas where slow burning ground fires with low flame length are generally the case. Only under severe weather conditions involving high temperatures, low humidities and high winds do the fuels pose fire hazards.

2. Fuel Loading and Unusual Fire Behavior

Fuel loading found in the grassy areas of this unit fall within the normal range. Fuel loadings in the timbered areas are high but not extreme. There is significant buildup of needle duff, deadwood and slash. Unusual fire Behavior can be caused by the steep slopes and high fuel loading.

During periods of high fire danger (BI >35, KBDI >300), fires at Lost Trail Refuge have the potential to make significant runs and burn several thousand acres in one burning period. There are records of fires burning more then 6,000 acres on Plum Creek and Forest Service lands nearby. Future drought conditions could produce similar fires.

3. Unit Fire Objectives

a. Ensure the safety of Service Staff and the visiting public.

b. Minimize the damage of fire and fire suppression efforts on refuge resources by using Minimum Impact Suppression Tactics.

c. Prevent fires from escaping refuge boundaries onto adjacent private lands.

d. Utilize prescribed fire when it will be useful in achieving refuge wildlife and habitat objectives. On average, treat 500 to 1000 acres annually.

e. Respond to wildfires in a cost effective manner consistent with the values at risk.

4. Unit Strategies

All wildfire fires will be attacked aggressively. All fires on the Refuge have the potential to escape into adjacent private land and cause damage to timber, pasture or improvements. For that reason all fires must immediately be sized up by the responding Refuge fire personnel and a decision made as to whether the responding initial attack team can contain and control the fire. If there is doubt, then assistance should immediately be requested from the local fire departments or interagency resources. Refuge employees will warn or evacuate people who may be in danger.

The number of people dispatched to the fire will depend on the time of year and burning conditions at time of ignition. At a minimum two people will be dispatched and the Incident Commander will determine additional

needs. When the Burning Index is 30 or higher a second initial attack unit will be despatched. The Appropriate Management Response to different situations is outlined in matrix by Table 2.

5. Unit Tactics:

   a. Fires will be attacked using engines when possible. Roads, wetlands, and other barriers will be used where possible as primary control lines, anchor points, escape routes and safety zones.

   7. Burnout operations will be conducted from roads or other barriers when it is safe and effective to do so.

   8. Burnouts will also be used to strengthen primary control lines when it is safe and effective to do so.

   9. Approved fire retardant chemicals may be deployed by either air or ground forces when their use will be effective in containment, control or facility protection.

   e. Fires will receive aggressive suppression action if they pose a threat to escape the Lost Trail Refuge.

   f. When backup forces are needed for extinguishment of a wildfire, Montana Department of Natural Resources and Conservation (DNRC) will respond to a call from the on-site Project Leader.

6. Limits to Strategy and Tactics

   a. The use of dozer or plow lines will not be permitted on Service lands except to protect life or improvements such as buildings or bridges, and only with the approval of the Project Leader or his acting.

   b. Hand line construction which causes soil disturbance is to be avoided.

   c. Retardant is not used within 300 feet of a stream or other water feature.

   d. Files and records of cultural resources and the Regional Archeologist should be consulted before major ground disturbing wildfire suppression action or prescribed burn operations.

D. FMU #3 Remaining Lands Administered by National Bison Range

1. **NFFL Fuel Model 1** is the most abundant fuel found on this unit and is largely represented as NFDRS Fuel Model L (perennials), with some classified as NFDRS Fuel Model A (annuals). Fire spread in this fuel type is governed by fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through cured grass and associated material. This unit has little shrub or timber.

The Unit is comprised of remaining lands of the Refuge Complex, including three other Refuges of 1,777 to 2,542 acres and 14 Waterfowl Production Areas of 28 to 2,440 acres. Wildfire frequency in this unit is low. There are good road systems surrounding most of the properties, allowing for direct attack by initial attack forces utilizing hand tools and engines.
Waterfowl production is the primary objective on Waterfowl Production Areas and an important objective of the wetland Refuges involved. A goal is achievement of optimum waterfowl nesting and brood rearing conditions. On Swan River, Ninepipe and Pablo NWRs and Waterfowl Production Areas, in several areas grass stands have become decadent. Soil production has decreased due to tying up of soil nutrients in accumulated dead vegetation. Matted, dead vegetation serves as cover for rodents which tunnel into the soil and create seed beds for invading noxious weeds such as Hoary cress (Whitetop) and Canada thistle. Areas of decadent grass are less productive as waterfowl nesting and feeding areas. The use of fire rejuvenates decadent grassland. It is a unique management tool, the result of which cannot be duplicated by other management techniques.

2. Fuel Loading and Unusual Fire Behavior

Fuel loading found in the grassy areas of this unit can be heavy due to subirrigation and lack of grazing or haying. They could potentially burn with extreme fire behavior on windy days or during periods of drought.

During periods of high fire danger (BI >35, KBDI >300), fires on this Unit have the potential to make significant runs and burn several hundred acres in one burning period.

3. Unit Fire Objectives

a. Ensure the safety of Service staff and the visiting public.

b. Minimize the damage of fire and fire suppression efforts on refuge resources by using Minimum Impact Suppression Tactics

c. Prevent fires from escaping refuge boundaries onto adjacent lands.

d. Utilize prescribed fire when it will be useful in achieving refuge wildlife and habitat objectives. On average, treat between 500 and 1,000 acres annually.

e. Respond to wildfires in a cost effective manner consistent with the values at risk.

4. Unit Strategies

All wildfires will be attacked aggressively. All fires on the Refuge have the potential to escape into adjacent private land and cause damage to crops, pasture or improvements. There are houses next to the boundary of some WPAs (Duck Haven, Ereaux, Batavia, Flathead and Kickinghorse). For that reason all fires must immediately be sized-up by responding Refuge fire personnel and a decision made as to whether the responding

initial attack team can contain and control the fire. If there is doubt, then assistance should immediately be requested from local fire departments or interagency resources. Refuge employees will warn or notify the appropriate law enforcement authority that it may be necessary to evacuate people who may be in danger.

The number of people dispatched to the fire will depend on the time of year and burning conditions at time of ignition. At a minimum two people will be dispatched and the Incident Commander will determine additional needs. When the Burning Index is 30 or higher a second initial attack unit will be despatched. Table 2 outlines the Appropriate Management response to different wildland fire situations.

5. Unit Tactics:

a. Fires will be attacked using engines when possible. Roads, wetlands, and other barriers will be used where possible as primary control lines, anchor points, escape routes and safety zones.

b. Burnout operations will be conducted from roads or other barriers when it is safe and effective to do so.

c. Burnouts will also be used to strengthen primary control lines when it is safe and effective to do so.

d. Approved fire retardant chemicals may be deployed by either air or ground forces when their use will be effective in containment, control or facility protection.

6. Limits to Strategy and Tactics

a. The use of dozer or plow lines will not be permitted on Service lands except to protect life or improvements such as buildings or bridges, and only with the approval of the Project Leader or his acting.

b. Hand line construction which causes soil disturbance is to be avoided.

c. Retardant is not used within 300 feet of a stream or other water

d. Files and records of cultural resources and the Regional Archeologist should be consulted before major ground disturbing suppression action.

VIII. WILDLAND FIRE PROGRAM

A. Fire Prevention

Objectives of the wildfire prevention program are to:

1. Reduce the threat of human caused fires through visitor and employee education.

2. Integrate the prevention message into interpretive programs conducted or

sponsored by the Complex.

Fire prevention on the Complex will be stressed mainly as a routine safety precaution, with employees being made aware of when high fire danger is likely to occur, and what precautions can be taken during regular working operations to prevent fires. Field vehicles will carry suppression tools during the fire season. Site preparation will be done around burn units not bordered by other defensible barriers. These barriers will vary in size and type. The requirements will be included in the individual prescribed burn plan.

Smoking, open fires and Complex access may be closed by the Project Leader during periods of extreme fire danger. Notices will be posted at appropriate entrances, roads and through local radio and news releases.

The Project Leader will coordinate with other State and Federal Land Management Agencies in periods of extreme fire danger.

B. Fire Season

The wildfire season in a dry year runs from March through mid-November. A more typical fire season extends from June through mid-September.

C. Expected Fire Behavior

Wildfire behavior is variable depending on the burning conditions as reflected by the Burning Index (BI). A Burning Index of 35 or greater in Bison Range Complex fuel types can indicate very high to extreme burning conditions where direct attack is normally not feasible.

Factors used to calculate BI are relative humidity, air temperature, fuel type, fuel moisture, wind speed, slope, aspect, time of day, and season. BI's are obtained by calling Flathead Interagency Dispatch or SW Montana Interagency Center (SMIC) who have access to the WIMS database. The BI used to predict fire danger through NRDRS for this area is based on Fuel Model 7G3P3 where G3 is short needle conifers with heavy dead fuels with 41-51% slope and perennial grass. The location of the indices is Plains Montana. The web site for tracking burning conditions is at http://www.fs.fed.us/r1/fire/nrcc. Under the heading "Wildland Fire Potential", click on Daily Indices.

On-site predictions of estimated fire behavior can be made with the above inputs and provide outputs of rate of spread, fire line intensity, heat per unit area, and flame length through the use of nomogram and other prediction tools.

The predominate fuel types that can be used to predict fire behavior include:

Fuel Model 1 Grass - describes areas dominated by short grass, such as June grass. Rate of spread of 78 chains/hour with flame lengths of 4 feet are possible under moderate conditions. This fuel model occurs on low river terraces.

Fuel Model 3 Grass - describes areas dominated by grass or grasslike vegetation averaging 3 feet in height. This would include cured stands of cattail and patches of Basin wildrye. Rate of spread of 104 chains/hour

with flame lengths of 12 feet are possible under moderate conditions. This fuel model occurs around developed wetlands and some naturally occurring wetlands.

Fuel Model 4 Shrub - describes areas in which fast spreading fires involve the foliage and live and dead fine woody material. Stands of mature shrubs, 6 feet or more tall, are included. This fuel model occurs in scattered patches of mature stands of willow in the flood plain and along riparian areas such as Pauline Creek on the Bison Range.

Fuel Model 6 Shrub - describes areas where the shrub layer carries the fire at wind speeds greater than 8 mile/hour. Fire drops to the surface layer at lower wind speeds or openings in the stand. This fuel model occurs in extensive upland areas containing big sagebrush and several other species of desert shrub. Little if any fine dead fuels may be present, and the shrub layer will only carry a fire under moderate to severe wind speeds.

Fuel Model 8 Timber - describes areas where slow burning ground fires with low flame length are generally the case. Only under severe weather conditions involving high temperatures, low humidities and high winds do the fuels pose fire hazards.

Fuel Model 10 Timber - describes areas where fires burn in the surface and ground fuels with greater fire intensity than the other timber litter models. Dead-down fuels include greater quantities of 3-inch or larger limb wood resulting from over maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties.

Wildfire can be dangerous and unpredictable during any season of the year, however the months of July, August, and September typically have the potential for the **most severe fire behavior** and the most likely period of occurrence. During these months, cool season grasses and other plants have cured out, relative humidity is usually low, temperatures are the highest of the year, wind speeds are typically high in the afternoon, and ignition sources (lightning and visitors) are common.

D. Preparedness

The Fish and Wildlife Service has minimum training requirements for all fire positions. The Service is a member of the National Wildfire Coordinating Group (NWCG) and accepts its standards for interagency operations. There is required refresher training for all personnel that are involved with wildland fire activities. These requirements are found in the Service Fire Management Handbook under Training, Qualifications and Certification. Only employees meeting current fitness, training, and experience requirements will be dispatched to fires. Employees not meeting these requirements may assist in support capacities, but are not permitted on the fire line.

Annual fire readiness requires personal protective equipment for each employee assigned fire fighting duties. This equipment will be issued yearly prior to the fire season. Also, all fire fighting equipment, such as engines, must be ready prior to

the onset of the fire season. The first fire could be on a warm, dry day in March. AOP's will be maintained annually with local Fire Districts and cooperators. Activities will be in accordance with the **Refuge Step-up Plan** (Appendix L).

1. Annual Refuge Fire Management Activities (Table 4)

Table 4: Annual Refuge Fire Management Activities

ACTIVITY MONTH>	1	2	3	4	5	6	7	8	9	10	11	12
Review and update AOP's	x	x										
Winterize Fire Management Equipment										x		
Inventory Fire Engine and Cache			x									
Complete Training Analysis										x		
Annual Refresher Training					x							
Annual Fitness Testing					x							
Pre-Season Engine Preparation					x							
Weigh Engines to verify GVW Compliance					x							
Prescribed Fire Plan Preparation			x									

Review and Update Fire Management Plan				x							
Prepare Pre-season Risk Analysis					x						
Live Fuel Moisture Sampling						x	x	x	x		

Activities should be completed prior to the end of the month that is indicated.

2. Training and Qualifications

Fish and Wildlife Service policy sets training, qualification and fitness requirements for all wildland firefighters and prescribed fire positions. All personnel involved in fire management functions will be provided with the training required to meet Service qualification standards for the position they are expected to perform. Interagency training opportunities will be utilized whenever possible.

a. Training

The Regional Office will pay for approved fire training if the following criteria are met:

1. Participant completes and submits to the Zone FMO a National Wildfire Coordinating Group Interagency Training Nomination form (NFES 2131), complete with supervisory approval and an estimated cost of training, travel and per diem prior to the commencement of training.

2. In most instances, the training is approved by the Zone Fire Management Officer.

3. Upon completion of the training, a copy of the Certificate of Completion and a copy of the travel voucher are sent to the Budget Assistant for Refuges and Wildlife in the Regional Office.

b. Annual Refresher Training

All personnel involved in Fire Management activities are required to participate in 8 hours of fire management refresher training annually in order to be qualified for fire management activities in that calendar year. Refresher training will concentrate on local conditions and factors, the Standard Fire Orders, LCES, 18 Situations, and Common Dominators. NWCG courses Standards for Survival, Lessons Learned, Look Up, Look Down, Look Around, and others meet the firefighter safety requirement; but, efforts will be made to vary the training and use all or portions of other NWCG courses to cover the required topics. Fire **shelter use and deployment** under adverse conditions, if possible, **must** be included as part of the annual refresher.

c. **Physical Fitness**

All personnel involved in fire management activities will meet the fitness standards established by the Service and Region. At this point in time, firefighters participating in wildfire suppression must achieve and maintain an **Arduous** fitness rating. Firefighters participating in Prescribed Burns must achieve and maintain a **Moderate** rating. Information found in Appendix J provides specific instructions to administer the tests, a health screening questionnaire to aid in assessing personal health and fitness of employees prior to taking the test, an informed consent form, and safety considerations. A trained and qualified American Red Cross First Responder (or equivalent) who can recognize symptoms of physical distress and administer appropriate first aid procedures must be on site during the test.

Wildland fire fitness tests shall not be administered to anyone who has known or obvious physical conditions or known heart problems that would place them at risk. All individuals are

required to complete a pre-test physical activity readiness questionnaire prior to taking a physical fitness test. They must read and sign the Par-Q health screening questionnaire and an informed consent form (Appendix K). If an employee cannot answer NO to all the questions in the PAR-Q health screening questionnaire, or is over 40 years of age, unaccustomed to vigorous exercise, and testing to achieve a Moderate or Light rating, the test administrator will recommend a physical examination. As noted below, all individuals over 40 years of age **must** receive an annual physical **prior** to physical testing.

d. **Physical Examinations**

In keeping with Service Policy, a physical examination is required for all new permanent employees and all seasonal employees assigned to arduous duty as fire fighters prior to reporting for duty. A physical examination may be requested for a permanent employee by the supervisor if there is a question about the ability of an employee to safely complete one of the work capacity tests. All permanent employees over 40 years of age who take the Pack or Field Work Capacity Test to qualify for a wildland or prescribed fire position are required to have an annual physical examination before taking the test.

3. Impacts of Regional and National Preparedness Levels on Station Activities

As indicated previously, periods of drought can greatly impact fire behavior and resistance to suppression. For that reason the Palmer Drought Index and the Keetch-Byram Drought Index will be monitored at a minimum on a weekly bases throughout the year. All are available on the Internet at http://www.boi.noaa.gov/fwxweb/fwoutlook.htm. The Refuge fire staff can also contact the Flathead Interagency Dispatch Center during periods of high fire danger to track indices and anticipate possible fire activity. Preparedness actions have been identified in the Step-Up Plan to respond to unusual conditions associated with drought and other factors.

Large scale fire suppression activities occurring in various parts of the country can have an impact on local fire management activities. For example, resources may be limited to implement prescribed fire activities because the closest available resources may be assigned to fire suppression duties or Refuge personnel may be involved as well. Regional drought conditions may also tie-up local resources that would normally be able to assist with Refuge fire management activities. It may be necessary to go out of Region to get the resources needed to staff the Refuge engine during periods of extreme drought or high fire danger.

The Refuge is in the Northern Rockies Area. During National and Regional Preparedness Levels IV and V, it is necessary to receive approval from the Regional Fire Management Officer and the concurrence of the Northern Rockies Area Coordination Group to conduct prescribed burns during PL IV and the National Coordination Group during PL V. Prescribed fire activities will not be conducted when the National

Preparedness is at Levels IV or V without concurrence of the Coordination Group.

E. Normal Unit Strength

1. Engines, Tools and Other Equipment

Engines are the primary initial attack resource on the Refuge because of the predominance of fine fuels and access roads. Earth moving equipment is available, however it will only be used after approval of the Project Leader and when no other alternatives exist. Equipment and cache supplies are identified in Appendix S. Appendix T lists items that are to be stocked in the Type 6 engine if it is to be used on Interagency Dispatches. Appendix U lists items to be taken by firefighters on fire assignments. Each firefighter will be issued a Hard Hat, Goggles, Fire Shirt, Fire Pants, Leather Gloves, Fire Shelter, and Ear Plugs, and will wear 8' High Leather Boots.

Engines will be fully prepared for fire suppression activities prior to the established fire season and after the possibility for hard freeze is past, usually in May. All other equipment will be stored at Refuge headquarters and may be kept in the equipment storage building during the winter months.

2. Personnel

A listing of required positions for wildfire management activities can be found in Section III. Current staffing status can be found in Appendix B.

F. Severity Funding and Drought Indicators

Severity funding may be essential to provide adequate fire protection for the Refuge during periods of drought, as defined by the Palmer Drought Index, the ERC component, or other appropriate drought indicator. Severity funds may be used to hire additional firefighters, extend firefighter seasons, or to provide additional resources.

Severity funding is different from Emergency Presuppression funding as the latter are used to fund activities during short-term weather events and increased human activity that increase the fire danger beyond what is normal. Severity funding is requested to prepare for abnormally extreme fire potential caused by unusual climate or weather event such as extended drought. Severity funds and emergency presuppression funds may be used to rent or preposition additional initial attack equipment, augment existing fire suppression personnel, and meet other requirement of the Step-up Plan.

Emergency Presuppression and Severity funds will be requested in accordance with the guidance provided in the Service's Fire Management Planning Handbook. As a general guide, Severity funding will be requested if a severe drought is indicated by a Palmer Drought Index reading of -4.0 or greater or a Keetch-Byram Drought Index of 300 or greater **and** a long-range forecast calling for below average precipitation and/or above average temperatures. Drought will be tracked by indices located at: http://www.boi.noaa.gov/fwxweb/fwoutlook.htm

G. Detection

The Refuge relies on neighbors, visitors, cooperators, and staff to detect and report fires. In addition, the Step-up plan provides for increased patrols by Refuge personnel during periods of very high and extreme fire danger.

There may be occasions when unqualified personnel discover a wildland fire. When this occurs, the employee should report the fire and request assistance before taking action to suppress or slow the spread of the fire. If the fire poses an imminent threat to human life, the employee may take appropriate action to protect that life before requesting assistance. The unqualified personnel will be relieved from direct on-line suppression duty or reassigned to non-fireline duty when qualified initial attack forces arrive.

H. Suppression

Initial attack firefighters are shared by the Bison Range NWR, Lost Trail NWR and the Wetland FMU, but most fire-qualified employees are stationed at the Bison Range. As conditions warrant, the engines and staff can be repositioned to the area with the highest potential for wildfire occurrence.

Annual Operating Plans are maintained with the Charlo/Moiese Fire District, Smith Valley Volunteer Fire Department, Montana Department of Natural Resources and Conservation, and Bigfork and Somers Volunteer Fire Department for wildfire suppression (Appendix F). An Annual Operating Plan (AOP) is also maintained with the Bureau of Indian Affairs/Confederated Salish & Kootenai Tribes Flathead Agency (Appendix G) and the Bigfork Ranger District -Flathead National Forest (Appendix H).

! Charlo/Moiese VFD has primary responsibility for assisting on small wildfires on WPA's and Ninepipe NWR.

! The Bureau of Indian Affairs/Confederated Salish and Kootenai Tribes are primary backup on fires at the National Bison Range and at Pablo NWR.

! Smith Valley VFD has primary responsibility for all fire suppression action on Smith Lake and Batavia Waterfowl Production Areas (WPA).

! The USDA Forest Service, Bigfork Ranger District, agrees to take primary responsibility for all wildland fire suppression efforts on land adjacent to Swan River National Wildlife Refuge Lands.

! The AOP between the Service and the Bigfork VFD and Somers VFD is maintained for the purpose of providing adequate fire prevention, fire protection and fire suppression for Swan River NWR, Flathead WPA and Blasdel WPA as located within each department's jurisdictional fire control area.

1. General

Service policy requires the Refuge to utilize the ICS system and firefighters meeting NWCG and Service qualifications for fires occurring on Refuge property. All suppression efforts will be directed towards safeguarding life and property while protecting the Refuge's resources and

other values at risk from harm.

All fires occurring on the Refuge and staffed with Service employees will be supervised by a qualified incident commander (IC). If a qualified IC is not available, one will be ordered through the Flathead Interagency Dispatch Center. Until the IC arrives, the highest qualified firefighter will assume the duties of the IC until relieved by a qualified IC or the fire is suppressed. The IC will be responsible for:

< Providing a size-up of the fire to dispatch as soon as possible.
< Using guidance found in the fire Management Plan or in the Delegation of Authority, determine the strategy and tactics to be used.
< Determine the resources needed for the fire.
< Brief assigned resources on the strategy and tactics to be used, expected fire behavior, historic weather and fire behavior patterns, impacts of drought, live fuel moisture, escape routes and safety zones, and radio frequencies to be used.
< Advising dispatch of resource needs on the fire.
< Managing all aspects of the incident until relieved or the fire is suppressed.

The IC will receive general suppression strategy from the Fire Management Plan, but appropriate tactics used to suppress the fire will be up to the IC to implement. Minimum impact suppression tactics should be used whenever possible.

Upon arriving at the scene, all resources, including mutual aid resources, will report to the IC (either in person or by radio) prior to deploying to the fire. Mutual aid forces will be first priority for release from the fire. Procedures outlined in the dispatch section and elsewhere in this plan will be used to acquire Service and Interagency fire personnel and resources. If individuals arrive at a fire to assist but are not members of a fire department or qualified for any type of fire suppression they are not to be used as firefighters. If additional firefighters are needed they will be ordered through the Flathead Interagency Dispatch Center. Appropriate procedures will be used to acquire them.

2. Initial Reporting and Dispatching

All fires occurring within or adjacent to the Refuge are to be reported to Bison Range headquarters. **The person receiving the report will be responsible for implementing the Fire Dispatch Plan (Appendix M) and assume duties of Fire Dispatcher until relieved or released.**

For local fires, the **Fire Dispatcher** will stay on duty until: (1) all Refuge resources return; (2) relieved by another dispatcher; or (3) advised by IC that he/she can leave.

The **Fire Dispatcher** will be responsible for coordinating the filling and delivery of any resource orders made by the IC for all operational and logistical needs, including engines, aircraft, tools, supplies, and meals. The IC will place all resource orders through the Dispatcher, and specify what is needed, when it is needed, and where it is needed. The Dispatcher will promptly determine if the resource orders can be filled or procured

locally and notify the IC. **If a resource order can not be filled locally, the Dispatcher will place the order with the Flathead Interagency Dispatch Center (406-758-5260).** The Zone FMO, stationed at the Northern Rockies Interagency Coordination Center may be available to assist with ordering resources from outside the area.

Requests for assistance by cooperators on fires not threatening the Refuge must be approved by the Project Leader or designee. Only qualified and properly equipped resources meeting NWCG standards will be dispatched to fires occurring off of the Refuge.

3. Communications

Appendix N contains a listing of communication frequencies commonly used and Appendix O contains a listing of Fire Cooperators for the National Bison Range Complex.

4. Initial Attack

All fires occurring on the Refuge and staffed with Service employees will be supervised by the highest qualified firefighter on the scene. This individual will act as the Initial Attack Incident Commander (ICT4). The IC will be responsible for all management aspects of the fire. If a qualified IC is not available, one will be ordered through the Flathead Interagency Dispatch Center. All resources will report to the IC (either in person or by radio) prior to deploying to the fire and upon arrival to the fire. The IC will be responsible for: (1) providing a size-up of the fire to dispatch as soon as possible; (2) determining the resources needed for the fire; and (3) advising dispatch of resource needs on the fire; (4) briefing firefighters about strategy and tactics, weather condition, expected fire behavior and LCES; and (5) taking appropriate suppression action.

The IC will receive general suppression strategy from the Fire Management Plan, but appropriate tactics used to suppress the fire will be up to the IC to implement. **Minimum impact suppression tactics (MIST)** will be used whenever possible.

5. Escaped Fires/Extended Attack

Whenever it appears a fire will escape initial attack efforts, leave Service lands, or when fire complexity exceeds the capabilities of command or operations, the IC will take appropriate, proactive actions to ensure additional resources are ordered. The IC, through dispatch or other means, will notify the Zone FMO of the situation. The Zone FMO may assist the Project Leader in completing a Wildland Fire Situation Analysis (WFSA) (Appendix C) and Delegation of Authority (Appendix I).

< **6. Mop up Standards and Emergency Stabilization and Rehabilitation**

The IC will be responsible for mop-up and mitigating suppression impacts incurred on Refuge fires. The mop-up standards established in the Fireline Handbook will be followed. Refuge fires will be patrolled or monitored until declared out.

Prior to releasing all firefighters from a wildland fire the following actions will be taken:
All trash will be removed.

Firelines will be refilled and waterbars added if needed.

Hazardous trees and snags cut and the stumps cut flush.

Overturned sod resulting from plowing must be rolled back with a grader or by hand and compacted to preserve native grass root stock.

Other emergency stabilization and emergency rehabilitation measures may be taken in accordance with Chapter 5 of the Fire Management Handbook. Briefly:

Emergency stabilization is the use of appropriate emergency stabilization techniques in order to protect public safety and stabilize and prevent further degradation of cultural and natural resources in the perimeter of the burned area and downstream impact areas from erosion and invasion of undesirable species. The Incident Commander may initiate Emergency Stabilization actions before the fire is demobilized, as delegated by the Agency Administrator, but emergency stabilization activities may be completed after the fire is declared out.

Rehabilitation is the use of appropriate rehabilitation techniques to improve natural resources as stipulated in approved refuge management plans and the repair or replacement of minor facilities damaged by the fire. Total "rehabilitation" of a burned area is not within the scope of the Emergency Rehabilitation funding. Emergency Rehabilitation funding can be used to begin the rehabilitation process if other funding is committed to continue the rehabilitation throughout the life of the project (beyond the initial 3 years of Emergency Rehabilitation funding). Major facilities are repaired or replaced through supplemental appropriations of other funding.

Because of the emergency nature of the fire event, the emergency stabilization section of the **Emergency Stabilization and Rehabilitation Plan** (ESR Plan) must be developed expeditiously and is frequently developed by a local unit or designated burned area ESR team. The rehabilitation section of the ESR Plan is not considered an emergency, and is developed as other refuge land use plans. The refuge manager is responsible for preparing all ESR Plans. In order to be funded, ESR plans must meet resource management objectives and be approved by the Project Leader and Regional Director.

I. Records and Reports

The incident commander (IC) on a wildland fire or the prescribed fire burn boss

on a prescribed burn will be responsible for the completion of a DI-1202 Fire Report as well as Crew Time Reports for all personnel assigned to an incident and return these reports to the Deputy Leader within 3 days of the fire being declared out. The IC or burn boss should include a list of all expenses and/or items lost on the fire and a list of personnel assignments on the DI-1202. The Deputy Project Leader will ensure this data is submitted to the Zone FMO for input into the Fire Management Information System (FMIS) within 10 days of the fire being declared out. The narrative portion of the DI-1202 will address the specifics of the fire, actions taken and outcomes from those actions. The Zone FMO will return the DI-1202 to the Refuge for their permanent files. A formal review will be conducted on all serious injuries and losses of significant resources.

IX. PRESCRIBED FIRE PROGRAM

A. Program Overview

The Refuge will use prescribed fire as a tool in two management areas - resource management and hazardous fuel reduction. Resource management prescribed burning will be used to restore, create, and/or maintain a diversity of plant communities in order to restore and perpetuate native plant and wildlife species. The Refuge may use hazard fuel reduction prescribed burns either alone or in combination with mechanical means within or near Refuge developments, sensitive resources, and boundary areas to reduce the risk from wildfire damage. To the greatest extent possible, hazard fuel reduction prescribed fires will only be used when they compliment resource management objectives and can be completed in a cost effective manner.

B. Prescribed Fire Goals and Objectives

1. The goals of resource management prescribed fire are:

< Reintroduce wildland fire after a long absence to the ecosystem.
< Restore and invigorate native grass species by periodically reducing dead vegetation that hinders new growth.
< Maintain and rejuvenate suitable resting, feeding, and nesting for waterfowl and other migratory birds.
< Promote the establishment of desirable forbs in monotypic stands of grasses to enhance both food and cover conditions.
< Rejuvenate decadent stands of vegetation.
< Improve forest health by decreasing stand density and fuel accumulations
< Reduce and control of invasive species.
< Encourage higher spring soil temperatures, increase soil microbial activity, and break down mineral nutrients so they are available to plants

Achieving many of the goals will require repeated burn cycles for an indefinite length of time. Burn frequency will vary from annually to more that 10 years depending on management objectives, historic fire frequency, prevailing weather and fuel conditions, and funding.

2. Prescribed Fire Objectives

Utilize prescribed fire when it will be a useful tool in achieving refuge wildlife and habitat objectives. On average, treat 2,000 acres annually, as outlined below:

< Restore 1,500 acres of grasslands annually.
< Treat 500 acres of decadent cattails and associated vegetation annually.
< Treat 300 acres of ponderosa pine and Douglas fir annually.
< Reduce accumulations of hazardous ladder fuels on 200 acres annually.

3. Limits

< The use of earth moving equipment for line building activities on the Refuge will not be permitted without the approval of the Project Leader.
< Prescribed burns will not be conducted when the Keetch-Byram Drought Index exceeds 300 or the Palmer Drought Index is in the "extreme drought" (Greater than -4)
< The Refuge will not ignite prescribed fires when adjacent jurisdictions or the States of Montana or Idaho have instituted burning bans.
< Multiple burns will not be conducted when adequate staffing is not available to adequately respond to an escape.
< All actions will be in accordance with Service policy.

4. Effects

Vegetative fire effects for species important to this Refuge complex include:

Idaho fescue - considered a fire sensitive species that can be severely damaged with summer or fall fires especially in areas with less than 14 inches of precipitation. If burned in the spring with good soil moisture it may be protected from fire damage (before growing season starts). Late September and October are also good times to burn.

Rough fescue - well adapted to periodic burning but not during the growing season unless the culms are large diameter and heavy litter is present, which is usually not the case at the Refuge.

Bluebunch wheat grass - proximity of shrubby fuels can effect potential survival of this species (lots of shrubby areas on NBR).

C. Burn Season

The spring burn season, in a dry year, can begin in early March and run through April. In the fall, the burn season extends from mid-September through November.

D. Complexity

Prescribed fires on the Complex may vary from low to moderate complexity as determined by the Fish and Wildlife Service Complexity Analysis found in the

Fire Management Handbook. Most prescribed fires on the wetland properties will be of low complexity with individual criteria, such as air quality, smoke management, fuel types, etc., addressed in the burn plan. Conditions at the National Bison Range may increase the complexity of prescribed burns conducted there. Some of the conditions include moderate slopes; 1hr, 10hr, 100hr and 1000hr fuels; old growth timber on the Range that must be protected; and the presence of ladder fuels in the form of dog hair thickets of Douglas fir must be considered.

E. Potential Impacts

The entire Flathead Valley is subject to prolonged periods of temperature inversions during the period November through March. It is anticipated that the Service will be conducting prescribed burns during that period of time, and smoke from Service ignited prescribed fires may impact local highways or neighboring communities when unforseen weather conditions and temperature inversions cause smoke to hang in the valleys for a day or more.

Nearly all WPAs and Refuges in the Complex have one or more significant wildland-urban interface issue. An escaped prescribed burn or wildfire leaving Service lands and burning onto adjacent property has the potential to damage houses and outbuildings or negatively impact other property. This is especially true near Kalispell. Conversely, a wildland fire escaping Service lands at Lost Trail NWR, for example, could negatively impact timber resources on Plum Creek Timber Company lands and Montana State School lands.

While they are currently at risk from wildfire, a stand of old growth ponderosa pine on the Bison Range should not be impacted by prescribed fire. Substantial planning and research should establish the best way to burn near these trees without causing damage to the crowns or roots of these important environmental resources. Some of these trees may have significant sociological value as well. At least four of them have scaring that may indicate cultural use by Native Americans as sacred trees. This action will afford these trees as well as the entire stand better protection.

Grasses burned by prescribed fire could be an economic loss to ranchers who have grazed or hayed the public lands in the past. On the other hand, managing fuels on Service lands are expected to decrease the likelihood that a wildland fire would leave Service lands and impact agricultural operations on neighboring lands.

Overall, the community is expected to benefit from the fire management program. These benefits range from the improved management of weeds and grasslands on all Service lands to the reduced possibility of a catastrophic fire occurring in the wildland-urban interface. Better grassland management will have a positive impact on increased wildlife productivity, which will contribute to the economic and social well-being of the community.

F. Planning

Usually planned burns will be conducted in the spring and fall. The Project Leader is responsible for 1) identifying units or areas in need of habitat modification. 2) insuring Refuge resource management goals and objectives are reviewed for target condition of habitat and 3) determining which tools can most

efficiently accomplish habitat target and objectives. The Burn Boss is responsible for determining if prescribed fire can be utilized to meet the treatment objectives.

Prescribed fire is just one of a combination of tools (fire, grazing, mowing, thinning and other mechanical forms of manipulation, etc.) which will be considered. Should prescribed fire be selected as the preferred treatment alone or in combination with some other treatments, a burn prescription and plan will be developed which will accomplish the desired objectives. All planned ignitions will be accomplished using qualified personnel.
Areas to be burned will be selected based on definitive habitat management needs or to reduce fuel loading. Each area must be examined closely to determine its present condition, the desired condition, and if fire is the method to make the change. Various research data on burning are available to determine fire effects on individual plant species and general habitats. The control of woody vegetation and noxious weeds in favor of more desirable plant species is also a possibility. Each situation must be examined using the following:

1. What is the purpose or expected result?
2. Do data support whether fire will produce those results or are there other methods?
3. What are the undesirable impacts of burning and can they be mitigated?
4. Do benefits of manipulation outweigh undesirable impacts?
5. Can the treatment area be burned considering site location, personnel and available equipment?
6. Can the burn be done in a safe and timely manner?

The prescribed burn plan will contain all details regarding each individual burn site.

Contingency planning is an integral part of the prescribed fire planning process, and begins with the first visit to the burn unit. It is important to identify in advance, circumstances or conditions that may require the implementation of the contingency plan. Each prescribed burn plan will include a section that thoroughly addresses the actions to be taken in the event a prescribed burn must be suppressed or managed as a wildfire.

The contingency plan will identify:

< The individual(s) who has the authority to activate the contingency plan.
< Clearly defined conditions (“trigger points”) that indicate the contingency plan should be activated.
< A listing of those to be notified or contacted.
< Who assumes the duties of the Incident Commander and what are the roles of others.
< The location of values at risk and other resources requiring protection
< The preferred strategies and tactics
< The location of containment lines or natural fuel breaks outside the burn unit.
< The location of water refill points, staged equipment, etc.
< Contingency forces (Type, number, location).

A prescribed burn will not be implemented unless all contingency forces are confirmed as being on-site or in standby status, as specified in the plan.

G. Preparation and Implementation

Preparation of prescribed burn units will be handled on an individual basis with site preparation standards identified in the burn plan for that unit.

Preparation of fire breaks or other site work may begin at any time after a decision has been made to conduct a burn in a specific area. The Project Leader will assign qualified individuals to conduct the work.

Staff and cooperators who are to work on the burn should be notified of the burn schedule at least two weeks prior to the burn to ensure that they plan their work and leave accordingly.

The week prior to the burn, all engines, tools, supplies, drip torches, and other items should be checked to assure that things are ready and in good working order. On the day prior to the burn date, the Burn Boss should inspect tools and equipment to be used so that unexpected shortages do not show up on the burn day and delay or prevent the planned burn activity. The public will also be notified in advance of any scheduled burn. A list of contacts will be developed for the prescribed burn plan.

H. Monitoring and Evaluation

1. Introduction

Past monitoring and evaluation of prescribed fires has been limited due to funding and staffing limitations. Pre-burn evaluation was limited to general photographs and/or qualitative evaluation of fuel conditions and green up conditions. Burn day evaluations documented weather (many times not on site) and limited documentation of fire behavior. Subjective measurements (visual) such as the percent of fuel consumed were also made. Post burn evaluation was limited to subjective qualitative estimates of species response and effectiveness in achieving objectives.

Fire monitoring protocols for the Region or Service will be used at the National Bison Range Complex (Appendix P). When the fire management program proposed by this plan is fully funded, a more quantitative monitoring program will be implemented. Protocols will be established to determine if burn objectives are being met and long term monitoring will be conducted to determine vegetation responses.

For the Bison Range two of the most obvious ecological and beneficial impacts of fire are the maintenance of the prairie by halting encroachment of trees and the creation and maintenance of wildlife habitat diversity within the prairie and timbered environments. Another important natural role of fire is its positive affect on the nutrient cycle by releasing nutrients from old vegetation growth back to the soil.

2. First Order Fire Effects Monitoring Program

a. **Environmental Conditions** will be recorded at the site periodically prior to ignition and hourly during the burn. Conditions to be evaluated include Air Temperature, RH, and Wind speed and direction.

b. **Fuel moisture(s)** will be measured or estimated using tables, charts, or other prediction system (BEHAVE).

c. **Fire Behavior** such as flame length and rates of spread will be recorded.

d. **Post fire effects** will be measured or estimated. These effects include scorch height, percent of area burned, percent of fuel consumed - based on fuel (time-lag) classification, amount of duff removed, etc.

I. Reporting and Documentation

Individual prescribed burn plans will be the primary document used to record prescribed fire information such as personnel, costs, fire behavior, weather, and burn critique information. Prescribed burns will also be documented on DI-1202's (Fire Reports) and submitted to the Zone FMO within 10 days after completion of the project.

X. AIR QUALITY/SMOKE MANAGEMENT GUIDELINES.

Visibility and clean air are primary natural resource values. The protection of these resources must be given full consideration in fire management planning and operations. Smoke from wildland fires is a recognized health concern for firefighters. Incident commanders and burn bosses must plan to minimize exposure to heavy smoke by incorporating the recommendations outlined in the publication Health Hazards of Smoke (Sharkey 1997).

In general, air quality of the area is good. The management of smoke will be incorporated into the planning of prescribed fires, and, to the extent possible, in the suppression of wildfire. The State of Montana has a permitting system for open field burning at certain times of the year. All prescribed burning must comply with state air pollution regulations (Appendix R).

XI. FIRE RESEARCH/MONITORING

The refuge will collect data and monitor the success or failure of their burns to assure they accomplish habitat objectives. Evaluation of the results can be made by use of Robel measurements and photographs, both before and after. Weather conditions are recorded and will be utilized to establish future successful/ideal burning results.

The effects of fire on the Complex's plants and animals needs to be better understood. Through establishing well defined habitat objectives, monitoring a fire and careful application of fire, data collected can provide managers with a better understanding of the natural ecological effects of fire, and the information needed to refine prescriptions to meet resource objectives. Fire management planning and research will be conducted on an interagency bases with involvement of all partners when appropriate.

Fire behavior data will be collected on all fires occurring on Bison Range Complex. This data, along with any information gathered through research studies, will be used to improve the effectiveness of the fire management program

XII. PUBLIC SAFETY

Public safety is a major factor in designing and conducting refuge operations. This is especially true with prescribed burns and wildfire. All employees must think of safety in all aspects of the fire management program.

Firefighter and public safety will always take precedence over property and resource protection during any fire management activity. For public safety, the fire scene will remain clear of unauthorized people. The responsibility for managing public safety lies with the Incident Commander (IC) or Burn Boss for wildland fire. Public safety considerations will be included as part of burn plans.

The greatest threat to public safety from Complex prescribed fires is to people off refuge. The main concern is from smoke drifting across Highways 212, 200, 2 and 93, reducing visibility and causing automobile accidents. During wildfires, the local law enforcement agency having jurisdiction is responsible for managing traffic hazards from smoke. Wildfire cause the same concerns but can also be a threat to visitors that could become trapped by a fast moving fire. Specific mitigation actions will be spelled out in suppression plans on prescribed burn plans. The local law enforcement agency having jurisdiction will maintain order at the scene and enforce evacuation orders. Service personnel may assist with the evacuation process in cooperation with the law enforcement officer in charge.

XIII. PUBLIC INFORMATION AND EDUCATION

Informing the public is an important part of the fire management program and the Fish and Wildlife Service mission. Information and education are critical to gaining public support for the Complex's fire management programs. There are several different aspects to this task.

A. Wildland Fire Suppression

During wildfire the IC is responsible for providing fire information to the public. Also, the public must be kept apprized of burning conditions and the potential of wildfire occurrence. The IC may delegate this responsibility to a Public Information Officer (PIO), Fire Information Officer (FIO), or other qualified individual.

B. Prescribed Fire

Prescribed fire public information will be dealt with as part of the prescribed fire plan. Informing the public is a vital component of the prescribed fire program. Areas that have been burned will present opportunities for the public to actually see the effects of fires, and offer staff members an opportunity to explain the purpose of the burns to the public. The following can be used to promote the prescribed fire program to the public:

1. Talk to local schools and students and groups that visit the complex.
2. Attendance at local volunteer fire department meetings
3. Include prescribed fire message in interpretive publications.
4. Personal contacts with bystanders during prescribed burns.

XIV. CULTURAL RESOURCES

Fire Management activities at the Refuge will be implemented in accordance with the regulations and directions governing the protection of cultural resources as outlined in Departmental Manual Part 519, Code of Federal Regulations (36 CFR 800), the Archeological Resources Protection Act of 1979, as amended, and the Archeological and Historic Preservation Act of 1974. All fire management activities will be in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended.

A "Cultural Resource Overview of Western Montana Management Properties" was prepared for the Service by the Confederation Salish and Kootenai Tribal Preservation Office in February 2000. Properties included National Bison Range, Ninepipe National Wildlife Refuge, Pablo National Wildlife Refuge and Lost Trail National Wildlife Refuge. This document references several cultural resource inventories that have been completed and their results. A copy of this document is on file at the National Bison Range HQ, the Denver Regional Office (Refuges/Cultural Resource) and the Tribal Preservation office.

Specific surveys or reconnaissance include the Barnier survey of 1969. The findings are in an article in Archaeology in Montana (Barnier, 1971). Very little was found on what are now U.S. Fish and Wildlife Service properties. Sites include several circular rock structures interpreted to be probable vision quest areas or eagle catching pits.

Table 5 provides a listing of previously recorded and newly identified cultural resource sites on the NBR. In addition a single newly identified site, the Pleasant Valley Ranch complex, is included for the Lost Trail NWR. No cultural resources are currently recorded on the Pablo or Ninepipe National Wildlife Refuges. A discussion of known cultural resources on the NBR is presented in the overview document prepared by the Tribal Preservation Office.

Table 5. Cultural Resources Documented on the National Bison Range

Site Reference	Site Type	Township/Range	Section(s)	National Register Eligibility
24LA100	Historic Road	T18N-R20W	29, 30, 31	Eligible
24LA219	Talus Pit	T18N-R20W	18	Undetermined
24LA501	Campsite	T19N-R21W	27	Undetermined
24LA502	Lithic Scatter	T19N-R21W	36	Undetermined
24SA404	Talus Pits	T18N-R21W	24	Undetermined
SKP-SA-6	Rock Cairn	T18N-R21W	12	Undetermined
SKP-SA-127	Historic Fire Lookout	T18N-R20W T18N-R21W	18 13	Undetermined
SKP-SA-129	Historic Road	T18N-R21W	13	Undetermined
SKP-SA-128	Rock Cairn	T18N-R21W	24	Undetermined
SKP-LA-66	Stone clusters	T19N-R21W	26	Undetermined

Table 5. Cultural Resources Documented on the National Bison Range				
SKP-SA-130	Stone Monument	T19N-R21W	27	Undetermined
SKP-SA-126	Possible Campsite	T18N-R21W	25	Undetermined

Currently wildfires are suppressed. However, historical evidence demonstrates that natural and artificial fires were regular events in the mixed grass prairie where the majority of the cultural resources are known to exist. In recent years, fire suppression has resulted in a steady buildup of grassland and riparian fuel loads, colonization of disturbed soils by invading plant species, and natural vegetative growth, increasing the chances of an uncontrolled wildfire that could potentially endanger the Refuge's cultural resources as well as surrounding private property. Although over 20 years of fire ecology research allows ecologists to predict impacts on biotic communities, the possible impacts of prescribed burning (and wildfires) on archeological resources are not well known. Research conducted in North Dakota indicated that fire-related impacts to buried artifacts are negligible, but effects on surface-exposed artifacts will be significant, depending on artifact type and size (Seabloom et al 1991).

Impacts to archeological resources by fire resources vary. The four basic sources of damage are (1) fire intensity, (2) duration of heat, (3) heat penetration into soil, and (4) suppression actions. Of the four, the most significant threat is from equipment during line construction for prescribed fires or wildfire holding actions (Anderson 1983).

The following actions will be taken to protect archeological and cultural resources:

< Files and records of cultural resources should be consulted by the staff when planning prescribed burns, developing pre-attack plans, and performing other preparedness actions. The potential for adverse impacts to cultural resources will be evaluated prior to prescribed burning and in the selection of fire suppression strategies during wildfires.

< The Regional Archeologist will be contacted during the development phase of the burn plan writing process when cultural resources are suspected or known to exist in the project area.

< The Montana State Historic Preservation Officer (SHPO) will be contacted by the Regional Archeologist when it is known a planned management action may impact archeological or cultural resources. The SHPO has 30-days to respond. The Refuge will follow any programmatic archeological/cultural resources management plan that may be implemented in the future.

< Low impact wildfire suppression tactics (cold-trailing, use of foam/wet-water/water, use of natural and manmade barriers, change in vegetation, mowing, etc.) will be used to the fullest extent possible. Line construction for prescribed fire activities will follow the same principle. Maps indicating the known location of significant cultural

resources will be consulted prior to laying out burn units, and whenever possible, before constructing fireline to halt the spread of a wildfire.

< Prescriptions for management of ignited prescribed fires will take into account the presence of known cultural sites. Cooler fires with short residence time will be used in areas containing known cultural sites, whenever possible.

< Known surface sites will be marked, protected, and excluded from the burn, if possible. Foam will not be used in areas known to harbor surface artifacts.

< The use of mechanized equipment within the refuge must be approved by the Project Leader on a fire by fire basis, and the use these resources will be considered in the approval process for any planned management actions. When the use of heavy equipment is authorized, its use will be monitored

< The location of sites discovered as the result of fire management activities will be reported by the Project Leader to the Regional Archeologist.

< Rehabilitation plans will address cultural resources and will be reviewed by the Regional Archeologist.

XV. ANNUAL FIRE PLAN REVIEW

The fire management plan will be updated as major policy decisions and land acquisitions are made. At a minimum, this plan will be reviewed annually by the Deputy Project Leader. Amendments, other than minor pen-and-ink changes, to the fire management plan will be forwarded to the Regional Office for review and approval. Minor changes to the appendices, such as personnel changes, can be made at the Refuge and attached to the plan during this yearly review process. A copy will be sent to the Regional Fire Management Coordinator. The Deputy Project Leader will also review and coordinate any necessary revisions to local Annual Operating Plans on an annual basis.

A. Wildfire Critique and Review

All wildland fires will be critiqued by the Incident Commander. The Zone Fire Management Officer will conduct formal critiques in the event of the following:

1. Significant injury, accident or fatality
2. Significant property or resource damage
3. Significant safety concerns are raised.
4. Extended attack

B. Prescribed Fire

Prescribed fires will be critiqued by the Burn Boss and documented in the prescribed burn plan. The Zone FMO will conduct formal critiques in the event of:

1. Significant injury, accident or fatality
2. An escaped prescribed fire occurs
3. Significant safety concerns are raised
4. Smoke management problems occur

XVI. CONSULTATION AND COORDINATION

Consultation and coordination for the 1986 Environment Assessment and proposed Prescribed Fire Plan were carried out with the following agencies and organizations:

Bureau of Indian Affairs (Fire Control)
Confederated Salish and Kootenai Tribes
Lee Metcalf National Wildlife Refuge
Montana Division of Forestry (Missoula)
Montana Department of Fish, Wildlife and Parks (Region 1)
U.S. Forest Service (Lolo National Forest)
U.S. Forest Service (Flathead National Forest)

The Fire Management Plan will be made available to the agencies listed above and to those that have expressed an interest or may be utilized for assistance under an Agreement or Annual Operating Plan.

XVII. LITERATURE CITED

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SHEPPARD, G AND FARNSWORTH, A 1997. Fire Suppression in Threatened, Endangered, and Sensitive Species Habitat. Proceedings - fire Effects on Range and Endangered Species and Habitats Conference, Nov 13 - 16, 1995. Coeur d' Alene, Idaho. Wildlife Forever & Washington Foundation for the Environment. 337-340p. Fairfield, Washington.

APPENDIX R: MONTANA SMOKE MANAGEMENT GUIDELINE

APPENDIX S: NORMAL UNIT STRENGTH

Normal Unit Strength (NUS) is the amount of non-capitalized fire fighting equipment needed by a refuge to meet 70 percent of suppression needs. The Refuge maintains a 10-person cache.

Table 1: Equipment

Item	Year Purchased	percent of Fire Funding	Have	GVW	Need	GVW
Engine Modules Heavy (500-1000 gallon) Medium (200-400 gallon) Light (50 - 150 gallon)			3			
Slip-on Unit(s)						
Water Tender(s)						
Portable Pump(s) Standard Flot-a-pump						
Power saw(s)						
Mower(s)						
Tractor(s)						
ATV(s)						
Grader(s)						

Plow Unit/Disk						
Other (List)						

Other Equipment Available for Fire Suppression or Prescribed Fire operations **Not Fire Funded**	Use the table to the left to list capital equipment used for preparedness and initial attack or for prescribed fire activities funded wholly or in part by fire.
	In the above table, Indicate the year purchased, if known, and the percent of fire funding (e.g.: The station purchased a tractor. Fire paid 25% and the station secured other funding for the remainder. Radios are listed on a separate inventory

Table 2: Supplies and PPE

Item	Quantity	
	Need	Have
Hose, lightweight, lined 1.5" x 100'	9	
Hose, lightweight, lined 1" x 100'	9	
1" NH gated wye	2	
1.5" NH gated wye	2	
1.5" nozzle	2	
1" Forester nozzle	4	
Hydrant wrench, spanner	2	
Hose clamp	2	
flapper	6	5
Pulaski w/sheath	3	7
Shovel w/sheath	6	7
McCleods	2	5
Combi tool	6	0
Drip Torch	2	5
Fusees	1 Case	
Safety Can: 3 Gallon	2	
Foam	15 gallons	
Backpack Pump	6	7
Canteen, 1 Quart	2	10
Belt Weather Kit	2	2
Hard Hat	12	10
Goggles	12	10
Headlamps	12	
Fire Shelter w/Liner	12	10
Line Pack w/harness	12	10
Water Bottle	48	10
Ear Plugs	12 pks	10 ea.
Leather Gloves, Assorted sizes	24 pr	10 pr
Sleeping Bags	10	
Pearsonal Gear Pak (Red Bag)	12	

Personal First Aid Kit	12	
Nomex Shirts Small Medium Large X-Large	Enter Desired Number should have 18 pr (Men & Women)	20
Nomex Pants - Men's 28x30 32x30 32x34 34x30 34x32 34x34 36x30 36x32 36x34 38x34 40x34		20
Nomex Pants - Women's Size 10 Size 12 Size 14 Size 16		