

FIRE MANAGEMENT PLAN

FOR

BEAR RIVER MIGRATORY BIRD REFUGE Brigham City, Utah

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I. INTRODUCTION

The Refuge was established by a special act of Congress on April 23, 1928 because of concern about wildlife habitat loss and waterfowl mortality due to botulism. The Presidential Proclamation, Public Law 304 of the 70th Congress called "for the establishment of a suitable refuge and feeding, and breeding grounds for migratory wild fowl". This act required approval of the state of Utah.

The establishment of a National Wildlife Refuge carries with it a commitment to manage resources to accomplish established purposes. Refuge management supports fish, wildlife, land, water, and people to provide biologically diverse and healthy ecosystems. Threatened and endangered species, migratory birds, resident wildlife, public use and education, and cultural resources all contribute to this diversity.

The Refuge is intensively managed, including the use of technology, as well as ecologically sound management practices, to attain biologically diverse and healthy ecosystems to provide for the protection, enhancement, and management of nationally significant wetlands for wildlife, public use, and other wetland values.

This Fire Management Plan (FMP) is written to help achieve resource management goals and objectives as defined in the Bear River Migratory Bird Refuge (MBR) Comprehensive Management Plan, approved by Regional Director, Region 6, April 15, 1997. This plan also updates the 1983 Fire Management Plan.

U.S. Fish and Wildlife 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 operations, including non-activity fuels management to reduce risks to public safety and to restore and sustain ecosystem health.

This Fire Management Plan describes fire management programs, activities and methods that will be undertaken by the U.S. Fish and Wildlife Service in meeting the wildfire suppression objectives and fire management strategies which utilize prescribed fire to attain the habitat environmental effects of the proposed fire management program in relation to refuge resources, the local environment as well as impacts to the public, adjacent landowners and surrounding communities.

II. COMPLIANCE WITH FISH AND WILDLIFE SERVICE POLICY

- A.** The U.S. Fish and Wildlife Service (Service) policy requires that all refuges with burnable vegetation develop a Fire Management Plan that details 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 Bear River MBR.
- B.** The Fire Management Plan is one of several step down management plans developed from the approved Comprehensive Management Plan identifying the specific actions to be taken to achieve Refuge objectives within the next 15 years and other land management plans.
- C.** This plan meets National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) compliance. An environmental assessment (EA) addressing the fire management program was completed in 1983 and is on file. An Environmental Assessment was also prepared in 1991 to evaluate possible actions for preserving and managing the wetland habitat on Bear River MBR and to consider additional wetlands for protection of environmental, wildlife, and recreational values (Appendix O). It also addressed the use of wildland fire as a habitat management tool, determined how and where fire will be used on the Refuge, and established fire management guidance for future managers (1991 EA, Appendix A, Page 17).

Finding of No Significant Impact signed, 9-16-91, by U.S. Fish and Wildlife Service Regional Director (Galen Buterbaugh), Region 6, is based upon the analysis in the Restoration and Expansion of Bear River MBR Environmental Assessments (EA). The Regional Director finds that the preferred alternative will not have a significant impact on the human environment and therefore concludes that no Environmental Impact Statement is necessary.

The Regional Directors rationale for this finding follows:

1. Threatened and endangered species will benefit.
2. The current loss of wildlife benefits on the Refuge over the last several years will be reversed.
3. Additional fresh water marsh habitat will be protected.
4. The ability to manage water within smaller marsh units will allow reduction in and control of botulism outbreaks..
5. The local and regional economy will benefit.
6. The adverse impacts on biological and physical resources will be minor and short-term.

D. This Fire Management Plan tiers off a land management plan that address the use of fire as a management tool and has been through the NEPA process, therefore an EA will not be completed for this plan. In addition, 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 and prescribed fire are both categorically excluded, as outlined in 516 DM 2 Appendix 1.

E. Authorities for Implementing This Plan are Found in:

1. Protection Act of September 20, 1922 (42 Stat. 857; 16 USC 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
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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 fire fighting 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.
7. U.S. Fish and Wildlife Service Fire Management Handbook (December 28, 2000). Provides general planning and operational guidance for fire management programs in the 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).

III. DESCRIPTION OF REFUGE

A. General Description

The Refuge is located in Box Elder County, 15 miles west of Brigham City, in Northwestern Utah. The Refuge is on the north end of the Great Salt Lake at the mouth of the Bear River. It encompasses most of the valley floor between the Wellsville Range on the east and the Promontory range on the west (**Figure 1**).

The Bear River delta has long been considered one of the most valuable waterbird and wetland areas in the state. Migratory waterfowl, shorebirds, and other waterbirds, as well as resident wildlife depend on the Refuge as a production, feeding, wintering, or staging area.

Figure 1. Map Showing General Location of Refuge



Containing over 41,000 acres of wetlands, the refuge serves a vital role in the Bear River Delta Ecosystem. The Refuge currently encompasses 74,000 acres (**Figure 2**), but land purchases, as approved by the 1991 Environmental Assessment, and presently underway will increase the size of the refuge to 103,200 acres. The proposed increase will include 21,309 acres protected under easement.

1. Climate

The climate is typified by moderate spring and fall seasons, short, cold winters, and hot dry summers. Temperatures average 45 to 50 degrees fahrenheit but can vary from -20 to 103 degrees. Humidity is generally low averaging between 20 to 30 percent. Annual average precipitation at the western end of the refuge is 12.2 inches, while the average on the eastern end is 19.4 inches. Average snowfall is 35 inches. Most precipitation occurs in winter and spring. April and May are normally the wettest months and midsummer is driest. Winds are moderate with strong gusty winds present during summer thunderstorms. The average growing season is 160 days. Snowfall in the surrounding mountains is the source of the Bear River which provides the water, not only for the Refuge, but for the agricultural operations in the valley (**Appendix A**).

2. Topography

Topography is very flat, with a gradient fall of approximately one foot per mile to the south. Refuge lands are part of the floor of ancient Lake Bonneville. Maximum natural elevation on the Refuge occurs in the northwest corner where knolls raise to an elevation of about 4215 feet above sea level. Most of the Refuge is near the 4202 foot level. Mounds, or knolls are common in the northwest portion of the Refuge

3. Vegetation

Over one hundred and thirty species of plants have been identified on the Bear River Migratory Bird Refuge. Many of these plants are native, or indigenous to this area while others are introduced. Vegetation on the refuge is divided into wetland plants and upland plants. **Appendix B** provides a list of common plants on the refuge.

Figure 2. Map Showing Bear River Migratory Bird Refuge



4. **Wildlife**

The Refuge and surrounding areas are used by large numbers of shorebirds, ducks, geese, swans, ibis, and numerous other species of birds. It has long been recognized as an area of prime importance to the nation's waterbirds and in 1991 was designated along with other Great Salt Lake marshes as a Western Hemispheric Shorebird Reserve.

Two threatened species utilize the Refuge, the bald eagle and peregrine falcon. Four species of birds are "species of special management concern"; burrowing owl, white-faced ibis, ferruginous hawk, and black tern. Extremely rare sightings of single whooping crane (endangered) and harlequin ducks (candidate) have occurred during migration, but the Refuge generally does not support suitable habitat for these species. Although not within the current range of the trumpeter swan, the Refuge may become important for this species in the future.

Two hundred eight species of birds regularly visit the Refuge. Sixty-two are known to nest and another 17 species of accidental or extremely rare occurrence have been recorded (**Appendix C**). Many mammals common just outside the Refuge are rare in the marshlands habitat. Thirty-one different species are documented as using the Refuge (**Appendix D**). The most prominent mammal species include muskrat, red fox, badger, striped skunk, and various rodents. Only five species of reptiles and amphibians have been documented on the Refuge (**Appendix E**). The fishery associated with the Refuge is warm water with low numbers of game fish.

5. **Water Resources**

The main source of water for the Refuge comes from the Bear River which begins as melted snow in Utah's Uintah Mountains and flows to Wyoming and Idaho and eventually winds back into Utah. Water is managed on the main refuge by a system of dikes. The original Refuge had five 5,000 acre impoundments, but work had begun in the late 1970's to sub-impound the larger units. Completion of all sub-impoundments will allow managers to manage smaller units more efficiently than larger units. How the water is actually managed is dictated by river flows that vary greatly depending on the time of year. Water in grassland areas is provided by runoff from adjacent lands,

springs, streams, wells, and underwater drains. Original landowners used these areas mainly for cattle grazing and water sources were used for irrigation purposes. Landowners were able to manage water in these areas by using irrigation ditches and headgates. Some of the existing ditches may be utilized in managing habitat on the Refuge grasslands.

6. Endangered or Threatened Species

The Refuge is used by bald eagles as foraging habitat in the early spring and fall. These birds roost in the Willard Canyon area of the Wellsville Mountains a few miles east of the Refuge and fly daily to the Refuge to feed. As many as 250 eagles have used the Refuge and immediate area.

Peregrine falcons are regularly seen during migration periods and are known to nest in hawk boxes on the Bear River Club just north of the Refuge.

Species of special management concern known to use the Refuge include ferruginous hawk, black tern, loggerhead shrike, and white-faced ibis. Long-billed curlew was a candidate species, but was removed from the list in 1994.

7. Cultural Resources

An archaeological survey report completed in 1989, revealed that the Refuge contained a few archaeological sites. The Refuge accounts for seven percent of the total sites recorded in the area.

8. Air Resources

Air quality tends to be dictated by prevailing wind patterns. In the Refuge area both surface and upper level winds are moderate to strong and generally from the west-southwest. Long-term wind patterns, combined with atmospheric stability and mixing height influence transport of pollutants and explain rare inversion events. Air quality is generally very good with low ambient concentrations of pollutants. State and Federal pollutant concentration standards indicate acceptable levels.

9. Soils

Soils within the Refuge and proposed area in Box Elder County have been completely inventoried, and detailed soil mapping is available. Soils on the Refuge are broken into fresh water marsh soils, mudflat soils, and upland soils.

Fresh water marsh soils are a type of soil found in natural depressions and impounded units. These soils are on nearly level valley plains and along stream flood plains, where seasonal runoff accumulates and no surface drainage outlet is available. Marsh soils are usually covered with water throughout the year, but still have a water table within 12 inches of the surface when not covered. Texture of the marsh soils is silty clay loam to fine sandy loam.

Mudflat soils are poorly drained, strongly saline soils that consist of the Playas-Saltair Association. These soils are found on nearly level lake plains or basins that are subject to repeated salt water flooding and salinization by evaporation of accumulated salt water. Mudflat soils are usually smooth, crusted with salt, and patterned by cracks when dry. These soils are also strongly calcareous and have a silty clay, silty clay loam, or silt loam texture.

Upland soils are rarely or seasonally covered with water. Soils on the grassland part of the Refuge include Cudahy silt loam, Logan silty clay loam, Roshe Springs silt loam, woods Cross silt clay loam, Saltair-Logan association, Gooch silt loam, Placeritos silt loam, Lasil silt loam, Payson silt loam, and Airport silt loam. These areas were used mainly for native pasture and were also hayed. Soils in land proposed for easements include Lewiston fine sandy loam and are used mainly for irrigated crops such as corn, alfalfa, and small grains.

10. Facilities

The only facilities on Refuge property currently include a visitor kiosk, comfort station, pavilion, and boat launches. The public is only allowed to use certain launches during waterfowl hunting season. Future refuge facilities would include a full-staffed visitor or education center, refuge offices, and refuge maintenance buildings. Also, there are outstanding easements for power lines, telephone lines and natural gas pipelines.

The Refuge currently provides opportunities for the public to enjoy hunting, wildlife-oriented recreation, and environmental education programs. With addition of a visitor center and nature trails, public use will more than likely increase. This increase in public use can also increase the number of human caused wildfire

B. Fire Environment and History on Bear River Migratory Bird Refuge

1. Fuel Types

Fuel Model 1 - grass. This includes saltgrass, sedges spikerushes, alkali sacaton, cheatgrass, foxtail barley, and bulbous bluegrass.

Fuel Model 3 - grass w/ open shrub. Fuel model 3 consists of bulrushes, *Phragmites*, cattail, and tall grasses such tall wheat grass, great basin wildrye and reed canary grass.

2. Fire History

As a natural evolutionary force, fire has not played a major role in the environment of Bear River Refuge for many years, if indeed, it ever did. Wildfire has never been a problem due primarily to lack of burnable vegetation, caused by the many natural fire breaks on the Refuge (open water, mud flats, dike roads) In fact, wildfire history is virtually non-existent. Records for the past 38 years indicate one lightning fire which burned about 20 acres of grassland outside the refuge's western boundary before encroaching on about one acre of Refuge land. This fire occurred in 1960. In 1966, a lightning strike started a small fire (1/2 acre) in the marsh of Unit 3 (**Figure 3**) but burned itself out as it was naturally confined in a small area surrounded on three sides by mudflats. Another fire of less than one acre occurred on neighboring land in 1977 was controlled by Refuge staff just outside the entrance gate. From these indications, 1 1/2 acres burned in 36 years, wildfire is not expected to be a factor.

C. The Role of Fire on Bear River Migratory Bird Refuge - Fire Effects

1. Vegetation and Fuels

Grasslands are burned primarily to manipulate vegetation and enhance biological productivity and diversity of specific organisms. The use of fire will help us reach wildlife management objectives. Fire will be used to retard invasion of undesirable

Figure 3. Map Showing Unit 3



species and open up overgrown areas, rehabilitate grasslands, and reduce vegetative litter.

Fire will be an important wetland management tool, especially in areas where marsh vegetation has become rank and is of little value to many marsh birds. Dormant season burning may be used to remove accumulation of emergent vegetation such as bulrushes, phragmites, and cattail to improve nesting for marsh bird species. The few fires that were conducted on the refuge were to remove accumulations of emergent vegetation that were rarely used by wildlife.

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. This will maintain nesting and feeding sites for many bird species.

2. Wildlife

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 that the Refuge used fire as a tool was to remove excessive litter that was of little use to nesting birds. Fire did not benefit nesting birds the first growing season but Refuge staff did notice that fire did increase ibis use in the burned areas.

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 reneest 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 moisture content of vegetation, the more smoke. Smoke effect 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 in the Refuge area is usually very good. The presence of smoke must be expected from any type of burn, but because the Refuge plans to keep fire size down, smoke will not be an air quality problem. Visibility along Interstate 15, located adjacent to the eastern boundary of the Refuge, may be temporarily affected by smoke if wind conditions change following ignition of a prescribed burn.

No permits are required by the State of Utah but state air quality regulations must be adhered to. The State of Utah maintains a Memorandum of Agreement with the Forest Service and Bureau of Land Management for prescribed burn emission but has not included the Fish and Wildlife Service. They are in the process of revising and updating regulations and plan to include all land management agencies.

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 microflora and microfauna, especially in wet soils. Additionally, there is a loss of residue to build organic matter.

Since only small acreage will be burned at any one time, and since the fire is not expected to completely denude the soil of vegetation, the Refuge expects to see little wind erosion following prescribed fires. The chance of water erosion exists to some degree after burning the sides of the dikes. Heavy rain following a burn could cause some problems where gravel slopes to the canal banks. This is not considered a great risk however, as heavy rains are infrequent for the area.

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

As stated earlier, the fire management program will be guided by the Comprehensive Management Plan and the Environmental Assessment (EA) for restoration and expansion of Bear River Migratory Bird Refuge, both which reference the use of wildland fire to achieve resource management objectives that include:

A. General

The following considerations influenced the development of the Refuge's fire management goals and objectives.

1. Fire is an essential part of Bear River MBR program.
2. Uncontrolled wildfire has the potential for negative impacts on and off the Refuge.
3. Positive or negative effects of prescribed fire on vegetation, and wildlife depend on burning conditions and species involved.
4. Use of "light hand on the land" concept to minimize resource damage.
5. Rapid rates of spread and fire suppression response time can pose suppression problems and increase the likelihood of escape onto adjacent lands.

B. Fire Management Goals for Bear River MBR

1. Protect, restore, and maintain wetland and upland habitats to provide for the life requirements of waterfowl and other migratory birds.
2. Protect endangered species and their habitats.
- D. Optimize the diversity of naturally occurring plants and animals.
- E. Provide opportunities for public recreation and appreciation of our natural heritage.

A complete listing of Refuge goals and objects can be found in planning documents.

C. Fire Management Objectives for Bear River MBR

Fire management objectives (standards) are used in the planning process to guide in determining what fire management responses and activities are necessary to achieve land management objectives.

1. Firefighter and public safety is the priority objective of the program. All Fire Management activities will reflect this commitment.
 2. To protect life, property, resources, real property, and private property from those fires which start on Refuge lands.
 3. Safely suppress all wildland fires using strategies and tactics
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appropriate to safety considerations, values to be protected, and in accordance with Service policy.

4. To remove accumulations of mulch and dead plant material to improve cover, feeding, pairing, and loafing areas for birds by treating 1000 acres annually.
5. Minimize the cost and impact of suppression activities.
6. To invigorate desirable marsh, grass, forb, and shrub species and improve nutrition of vegetation to be used by wildlife by treating 1000 acres annually.
7. To create a 50:50 water/marsh vegetation mix which creates desirable edge for waterfowl
8. Educate the public regarding the role of prescribed fire within the Refuge.
9. Manage wildland fire to achieve identified management goals.
10. Develop and implement a process to ensure the collection, analysis and application of high quality fire management information needed for sound management decisions.
11. Prevent unplanned human-caused ignitions.
12. Restore and rehabilitate resources lost or damaged by fire or suppression activities.
13. Manage all wildland fire using the Incident Command System.

V. FIRE MANAGEMENT STRATEGIES

A. General

It is the intention of the U.S. Fish and Wildlife Service to continue to suppress all wildfire occurring within Bear River MBR. Prescribed fire will be utilized under controlled conditions and defined weather variables. The Service will implement its fire management activity through Mutual Aid Agreements with local fire districts.

B. Fire Management Strategies

Bear River MBR will utilize the appropriate management response concept when suppressing all wildland fires. Actions taken will be commensurate with values at risk. Strategies employing a range of suppression options will be considered. Resource benefit will not be a factor when selecting an appropriate management response.

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

1. All wildfire will be suppressed using an appropriate management response. 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 structures and cultural resources. It may be necessary to employ an indirect strategy utilizing existing control barriers, such as roads, within close proximity of the fire, followed by a burnout operation (Table 1).
 2. Prescribed fire will be used to manipulate degenerated grasslands, help open up wetlands, and as a tool for hazard fuel reduction to compliment resource management objectives.
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Table 1: Appropriate Management Response

Situation	Strategy	Tactic
<ol style="list-style-type: none"> 1. Wildland Fire on Refuge lands which does not threaten life, natural or cultural resources or property values. 	<p>Restrict the fire within defined boundaries established either prior to the fire or during the fire.</p>	<ol style="list-style-type: none"> 1. Holding at natural and manmade barriers. 2. Burning Out. 3. Observe and patrol.
<ol style="list-style-type: none"> 1. Wildland fire on Service property with low values to be protected. 2. Wildland fire burning on to Service lands. 3. Escaped prescribed fire entering another unit to be burned. 	<p>Take suppression action, as needed, which can reasonably be expected to check the spread of the fire under prevailing conditions.</p>	<ol style="list-style-type: none"> 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.
<ol style="list-style-type: none"> 1. Wildland fire that threatens 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. 	<p>Aggressively suppress the fire using direct or indirect attack methods, holding the fire to the fewest acres burned as possible.</p>	<ol style="list-style-type: none"> 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.

3. Suppress all unplanned ignitions in a safe and cost effective manner consistent with resources and values to be protected.

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.

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. Develop Memorandums of Understanding (MOU) with local fire suppression agencies to provide for suppression support.

C. Constraints

1. Smoke management must be carefully considered for any prescribed burn and will be addressed in all prescribed burn plans.
2. All fires occurring on the Refuge will have suppression resources on them until mopped-up and declared safe to demobilize.
3. The use of heavy equipment (dozers, etc.) in and around critical areas except in life threatening situations must have approval of the Project Leader or his/her designee.
- F. The use of prescribed fire must be conducted in a cost effective manner.
- G. 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

1. Grassy areas could, if ignited, spread beyond the refuge staff's ability to control the fire. Consequently, MOUs must be maintained
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with local rural fire districts so that assistance can be sought in the event the refuge staff cannot contain the wildfire.

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

E. Effects of Fire Management

The Refuge is located near a major metropolitan area, and as a result fire management activities have the potential to impact a number of people. Examples include smoke management concerns due to the proximity of a major Interstate highway and local communities, temporary restrictions of access due to prescribed or wildland fire activities, possible impacts to hunters or birders, and the threat of a wildland fire leaving the Refuge or burning on to the Refuge. Many of these issues can be mitigated through proper planning and public notification.

1. Brigham City Corporation and Box Elder County Sheriffs Department will report any wildland fires on Service lands and on neighboring lands that could potentially escape onto the Refuge.
2. The Refuge will assist in wildland fire suppression on lands surrounding the Refuge when requested by the fire department and deemed practical by the Project Leader.

VI. FIRE MANAGEMENT UNITS (FMUs)

Bear River MBR (**Figure 2**) will be considered as one Fire Management Unit (FMU). Wildfire occurring on the Refuge will be initially attacked by refuge employees utilizing refuge fire suppression equipment.

A. Strategies

1. 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.
 2. Main method of controlling wildfire will be direct attack. The use of existing barriers to set backfires will be used to control fires where direct attack is not feasible.
-

3. Qualified Refuge employees will be used to fight fire. In the event that initial attack and backup forces are needed for extinguishment of a fire, the Rural Fire Department will respond to a call from the refuge.
4. Whenever wildfire is reported on the Refuge, each employee at the fire scene must take immediate action and do the following:
 - (a.) Warn or evacuate people who may be in danger.
 - (b.) Suppress the fire, if possible or call for necessary backup.
 - (c.) Try to prevent fire from spreading until help arrives.See section XIII. For further guidance.
5. Fires will be completely suppressed.

B. Safety Consideration

1. Public traffic will be prevented from accessing the area.
 2. Weather will be watched carefully, especially in unstable conditions when fire behavior can be extreme. Suppression crew must be kept apprised of weather conditions and potential fire behavior.
 3. Crews will be briefed on expected fire weather, fire behavior, communications, escape routes, safety zones and lookouts.
 4. Suppression personnel will be required to wear personal protective equipment (PPE)
 5. Alert sheriff or state police if fire or smoke approach county roads, highways, or the freeway.
 6. Suppression crews will maintain in communication between themselves and dispatch.
 7. Take extra precautions for fires burning directly under power lines where the potential exists for electricity to arc to the ground in heavy smoke.
-

VII. FIRE MANAGEMENT RESPONSIBILITIES

A. Personnel

The safety of fire fighters 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 fireline 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.

Position needs of the Fire Management program for both preparedness and prescribed fire at Bear River MBR are found in **Table 2**. Wildland fire assignments are made on the basis of individual qualifications and position requirements (**Appendix F**).

Table 2. Fire Management Organization

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

B. Refuge Staff Responsibilities

1. The **Project Leader** of Bear River MBR is the primary line officer responsible for all aspects of the fire management program. He/she is responsible for; overall safety and occupational health program and ensures all refuge operations are conducted in a safe manner, approves the fire management plan, approves prescribed burn plans after technical review by the Zone FMO, makes fire assignments, when qualified acts as Incident Commander on wildfire and Burn Boss on prescribed fire, and makes any necessary media contact. Also, the Refuge manager ensures that the fire management program is carried out in accordance with Fish and Wildlife Service policies, regulations and guidelines.
-

2. Bear River MBR does not have a dedicated Fire Management Staff. Fire Management responsibilities fall under the direction of the **Refuge Operations Specialist**. Primary wildland fire management responsibilities are:
 - a. to provide initial attack fire suppression capability and ensure all wildland wildfire receive some type of initial attack response.
 - b. conduct prescribed fire activities in support of refuge habitat management programs.
 - c. establish appropriate fire related agreements/contracts and ensure they are reviewed and updated on an annual basis.
 - d. monitor results of wildland and prescribed fires to assure they are meeting established objectives.
 - e. update fire management and associated plans (dispatch, training, etc.).
 - f. continue to develop "red-carded" firefighters for prescribed and wildland fire, trained and equipped to accomplish the objectives of the fire management program.
 - g. assure fire equipment in a ready state.
 - h. annually administer the "Fitness Test" and ensure only those who have passed may participate in wildland fire management activities.
 - i. ensure that employees are physically able to safely accomplish their assigned work.
 - j. ensure sufficient collateral duty firefighters meeting Service standards are available for initial attack and prescribed burns.
 - k. provide and enforce the use of personal protective equipment.
 3. The **Refuge maintenance staff** will be responsible for the proper maintenance and repair of firefighting equipment and vehicles.
-

4. The **clerk** will see that records of names, addresses and telephone numbers of additional fire suppression resources are kept up to date and readily available. The position will also act as dispatcher during prescribed fire and suppression activities.



C. Fire Cooperators and Interagency Coordination

Although wildfire on the Refuge is a rare occurrence, the need for fire cooperation and interagency coordination is very important in situations in the event that wildfire occurs on Bear River Refuge. A MOU will be maintained with the local and county fire departments so that assistance can be sought during a wildfire (**Appendix H**). Bear River MBR (U.S. Fish & Wildlife Service) was included in a Cooperative Fire Protection Agreement for the State of Utah (**Appendix I**) in 1995. Agencies included in the Fire Protection Agreement include:

1. U.S.D.I., Bureau of Land Management (Utah)
2. National Park Service (Rocky Mountain Region)
3. Bureau of Indian Affairs (Phoenix Area Office)
4. Bureau of Indian Affairs (Albuquerque Area Office)
5. Bureau of Indian Affairs (Navajo Area Office)
6. U.S. Fish & Wildlife Service (Mountain Prairie Region)
7. U.S.D.A. Forest Service (Intermountain Region)
8. Utah Division of Sovereign Lands and Forestry

Along with other land management agencies, the Service has adopted the National Interagency Incident Management System (NIIMS) Wildland and Prescribed Fire Qualifications 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 and department. All personnel participating in prescribed fire management activities must meet Service fitness and training standards.

VIII. WILDLAND FIRE PROGRAM

A. Fire Prevention

Fire prevention on the refuge 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 and PPE 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.

B. Fire Season

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

C. Fire Behavior

Because a large part of the Refuge is either open water or mudflats, wildfire is basically non-existent on the Refuge and prescribed burning has been used primarily on dikes. The Refuge does not have any records of fires in marshes where the Refuge now lies.

However, there is some potential for severe fire behavior especially on the Grassland Habitat Unit on the east side of the Refuge and in other areas during drought or low water years. 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 (lightening and visitors) are common. Fuels on Bear River Refuge can be classified as either fuel model 1 or fuel model 3 (**Figure 4**).

1. Fuel Model 1 Grass

This is described as short, fine grasses with some shrubs such as greasewood and sagebrush mixed in. Grasses that fit this description on Bear River MBR include saltgrass, alkali sacaton, cheatgrass, foxtail barley, and bulbous bluegrass. Rate of spread of 78 chains/hour with flame lengths of 4 feet are possible under moderate conditions.

2. Fuel Model 3 Grass

Describes areas dominated by coarse grass or grasslike vegetation averaging 3 feet in height. This includes cured stands of emergent vegetation, tall wheat grass, reed canary grass, and patches of great basin wildrye. Rate of spread of 104 chains/hour with flame lengths of 12 feet are possible under moderate

conditions. Severe



Figure 4. Map Showing fuels on Bear River Migratory Bird Refuge



fire behavior may also result from accumulations of marsh vegetation. Vegetation such as bulrushes and cattail create a large fuel load. According to some of the Refuge records, fires burned slowly when they were ignited early in the morning when humidities and fuel moisture were high, but increased in speed and intensity as humidity and moisture decreased.

D. Preparedness

1. Training and Qualifications

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. 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.

a. Training

The Regional Office will pay for all 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 supervisory approval and an estimated cost of training, travel and per diem (travel authorization) prior to the commencement of training.
2. Other than certain national level courses, training is approved by the Zone FMO.
3. Upon completion of the training, a copy of the Certificate of Completion and a copy of the travel voucher are sent to the Fire Program Assistant 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 Denominators. 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 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, and informed consent form, and safety considerations. A trained and qualified American Red Cross Responder (or equivalent) who can recognize symptoms of physical distress and appropriate first aid procedures must be on site during the test.

Wildland fire fitness tests shall not be administered to anyone who has 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 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 the 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 wildland or prescribed fire positions are required to have an annual physical examination before taking the test.

2. Annual Refuge Fire Management Activities

There are a number of fire management activities that must be performed throughout the calendar year (**Table 3**). Activities should be completed prior to the end of the month that is indicated.

Table 3: Monthly Refuge Fire Management Activities

Activity	1	2	3	4	5	6	7	8	9	10	11	12
Update Interagency Fire Agreements /MOUs	x											
Winterize Fire Equipment										x		

Inventory Fire Equipment		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									

Sample Live Fuel Moisture

x

x

x

1. **Emergency Preparedness**

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 basis throughout the year. All are available on the Internet at <http://www.boi.noaa.gov/fwweb/fwoutlook.htm>. The Refuge fire staff can also contact the Salt Lake Interagency Fire Center at (801-908-1900) 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 (**Appendix L**).

Large scale fire suppression activities 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 extreme periods of drought or high fire danger.

The Refuge is in the Eastern Great Basin Area. During National and Regional PLANNING Levels IV and V, it is necessary to receive approval from the Regional Fire Management Officer and the concurrence of the Eastern Great Basin Area Coordination Group to conduct prescribed burns during PL IV and the National Coordination Group PL V.

4. **Emergency Presuppression and Severity Funding**

Severity funding is different from Emergency Presuppression funding. Emergency Presuppression funds 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 events 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 requirements 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.

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 Refuge Manager and when no other alternatives exist. All equipment will be stored at Refuge headquarters. A list of tools and other equipment needed for fire management activities can be found in **(Appendix M)**.

1. Personnel

A listing of required positions for wildfire management activities can be found in **Section VII, Table 2**. Current staffing status can be found in **(Appendix F)**.

F. Suppression

As spelled out in the Fire Management Unit all wildfire will be aggressively and completely suppressed with minimum acreage burned as the goal. Service policy requires the Refuge to utilize the Incident Command System (ICS) with firefighters meeting NWCG qualification requirements for fires occurring on Service property and mutual aid fires. Resources responding from rural fire departments or Cooperating agencies to Service fires must meet the standards of their department or agency.

G. Mop up Standards and Emergency Stabilization and Rehabilitation

The IC will be responsible for mop-up and mitigation of suppression actions taken 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:

- G All trash will be removed.
- G Firelines will be refilled and waterbars added if needed
- G Hazardous trees and snags cut and the stumps cut flush
- G Disked firelines should be compacted as soon as possible to preserve the living

root stock of natives grasses

- G 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:

- G **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 completing emergency stabilization activities may be completed after the fire is declared out.
- G **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 use 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

GESR Plans. In order to be funded, ESR Plans must meet resource management objectives and be approved by the Project Leader and the Regional Director.

H. Records and Reports

A fire report (DI-1202) will be filled out by the refuge and 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. A formal review will be conducted on all serious injuries and losses of significant resources.

I. Detection

The Refuge depends mainly on refuge personnel and to a smaller extent refuge neighbors and visitors to report wildfires. The step-up plan (**Appendix L**) 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.

J. Initial Reporting and Dispatching

All Fires occurring within or adjacent to (within two miles) the Refuge will be reported to Bear River MBR headquarters. The person receiving the report will be responsible for implementing the Fire Dispatch Plan (**Appendix N**) 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 not be required to stay on duty if the fire occurs outside Refuge radio coverage but the dispatcher must notify the County Fire Dispatch that a dispatcher is not on duty at the Refuge before leaving.

Requests for assistance by cooperators on fires not threatening the

Refuge must be made to the Refuge Manager or designee. Only qualified and properly equipped resources meeting NWCG standards will be dispatched off of the Refuge.

IX. PRESCRIBED FIRE MANAGEMENT

The approved Prescribed Fire Plan constitutes the authority to burn, pending approval of all required documents. No one has the authority to burn without an approved plan or in a manner not in compliance with the approved plan. Prescribed burning plan conditions established in the plan are firm limits. Actions taken in compliance with the approved Prescribed Fire Plan will be fully supported, but personnel will be held accountable for actions taken which are not in compliance with the approved plan. Prescribed burns will not be conducted if the proposed burn is out of prescription. Also, after a prescribed burn is ignited and later becomes out of prescription, it will be extinguished.

The appropriate authorities, such as; the State of Utah, County Sheriff's Office, and responsible fire departments will always be notified by the Burn Boss prior to any prescribed burning. Also, private landowners adjacent to the proposed burn will be notified. The required notifications will be included in each burn plan.

A. Primary Objectives of the Prescribed Fire Plan

1. Resource Management

- a. Improvement of waterfowl habitat.
- b. Maintain suitable resting, feeding, and nesting for migratory birds.
- c. Removal of dead vegetation that hinders new growth.
- d. Release nutrients to enrich the soil.
- e. Promote the establishment of desirable forbs in monotypic stands of saltgrass to enhance both food and cover conditions.

2. Hazardous Fuel Reduction

Prescribed burns will be conducted within or near Refuge development zones, sensitive resources, and boundary area to reduce the risk from wildfire damage. To the greatest extent

possible, hazard reduction prescribed fires will only be used when

they compliment resource management objectives.

B. Purpose

Controlled burning may be effectively used to remove accumulations of mulch and dead plant materials which inhibit early spring plant growth. Fire may also help create greater plant diversity. Fire may invigorate some grass plants and woody shrubs and result in more vigorous regrowth of marsh plants.

C. Selection of Treatment Areas

Areas to be burned will be selected based on habitat improvement needs. Each area must be examined closely to determine its present condition, the desired changed condition, and if fire is the method to make the change. Various research data on burning is available to determine fire effects on individual plant species and general habitats. Bear River has about 10% of its habitat that lends itself to burning. Much of this acreage would only be burnable during draw down situations in water units. The most appropriate reason for burning is to rejuvenate stagnated vegetation by reducing litter, creating openings and recycling nutrients. A combination of burning and ground preparation may be used in establishing grass plantings on dikes. The control of woody vegetation and noxious weeds in favor of more desirable plant species is also a possibility. Each situation must be examined for its own merits with the following criteria being used:

1. What is the purpose or expected results?
2. Will fire produce those results or are there other methods to be considered?
3. What are the undesirable impacts of burning?
4. Do benefits of manipulation outweigh undesirable impacts?
5. Can the treatment area be burned considering site location, personnel and equipment on hand?
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.

D. Evaluation of Treatment Areas

The best way to monitor a prescribed burn is to document conditions before, during and after the fire. Items to consider include; vegetative transect, photo points, burning plan, weather monitoring and other pertinent data the day of the fire. If the objective is to alter vegetation composition, robel readings and species make-up are important data. The establishment of photo points will provide physical evidence to support data. The burn plan is as important as the burn itself if the objectives are to be reached. The compiling of data will give a total burn picture to build experience and correct mistakes.

E. Treatment Specifications

The specific treatment for each burn will be formulated in the prescribed burn plan. In addition, robel pole readings and vegetative transect to determine plant species makeup and frequency may be used.

F. Safety

Safety of service personnel is of the utmost priority when conducting prescribed burns. Safety is promoted through proper training, providing a safe work environment, and supplying all necessary safety equipment and personal protective equipment (PPE) as outlined in the Fish and Wildlife Fire Management Handbook..

G. Responsibilities and Planning

The Refuge Manager is responsible for identifying units or areas in need of treatment, and for developing resource and treatment objectives for those units/areas based on refuge resource management goals 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, manipulation, etc.) which will be considered.

Should prescribed fire be selected as the preferred treatment alone or in some combination with other treatments the Refuge Manager will develop a burn prescription and plan which will accomplish the desired objectives. All planned ignitions will be accomplished using qualified personnel.

Contingency planning will be part of the planning process and the following essential elements will be addressed in the Contingency Section of each prescribed burn plan.

- G Clearly defined trigger points.
- G Identity of those having the authority to activate the contingency plan.
- G Special instructions for reporting an escaped fire or a slop-over.
- G A listing of those who are to be notified when the contingency actions are being implemented.
- G The location of values or resources requiring protection and a established a priority for providing protection.
- G The initial action to be used to suppress the wildland fire, including the organizational structure, strategies, tactics, additional resources, health and safety concerns
- G Containment opportunities outside of the burn unit (i.e. fuel breaks, roads, and other areas).
- G Contingency elements required to be on-site during the prescribed burn operation.

Determining when to implement the contingency plan or declare a prescribed fire a wildfire will vary with every situation. The actual trigger points will be identified in each burn plan. The following trigger points have been identified for consideration when developing a prescribed burn plan:

- G When resources on hand are having difficulty suppressing slop-overs.
- G When a slop-over threatens private property, cultural resources, structures and other resource values.
- G When the fire behavior exceeds the prescription parameters.

Preparation of prescribed burn units will be handled on an individual basis with the site preparation identified in the burn plan for that particular unit. Prescribed burns can be conducted at any time of year depending on resource objectives and prescription; however, the normal prescribed fire season begins on March 1 and ends on May 1, due to nesting birds in the area. Fall burning may begin July 15 and end on October 31.

The Refuge will be ready to assist local fire departments in the suppression of wildland fires during high fire danger periods. The Service has the primary suppression responsibilities in the event that wildland fire encroaches on Refuge lands from adjacent properties.

H. Limits

1. Bear River MBR is located in the Eastern Great Basin. Prescribed fires cannot be ignited when the Eastern Great Basin is in a fire danger Preparedness Level V and/ or the National Preparedness

level is V, without the approval of the Eastern Great Basin
Coordination Group.



2. In addition, because of the Refuge's proximity to Interstate 15 population and air quality/smoke management issues are a concern. Prescribed fires that are within **one mile** of Interstate 15 will not be ignited when the weather forecast call for winds from the West.
3. Prescribed fire activities will not be initiated when the Palmer Drought Index and /or the Keetch-Byram Drought Index indicates severe drought conditions in Northern Utah. These indexes will be utilized along with on site determinations such as relative humidity, wind speed and direction, and fuel moisture.
4. Prescribed burn plans will not be implemented unless the contingency forces identified in the plan are available.

I. Complexity

Prescribed fires on the Refuge 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, if not all, will be of low complexity with individual criteria, such as air quality, smoke management, fuel types, etc., addressed in the burn plan.

J. Potential Impacts

Environmental impacts of the prescribed fire program have been discussed in previous sections of this Fire Management Plan. Air quality issues will be addressed in Section X.

The public is generally very supportive of the Refuge and management activities. Any escaped wildland fires and burning during the month of October when hunting season is open could result in public opposition to prescribed burning activities. The Refuge receives around 75,000 visitors annually. Approximately 15,000 waterfowl hunters visit the refuge each fall. Negative impacts to the local economy could result if habitat conditions decline resulting in decreases in migratory bird populations. The number of visitors traveling to the area could decrease; thus, reducing income for the local economy.

The Refuge will work cooperatively with all local authorities to ensure prescribed burning activities are carried out safely with minimal impacts to the local community. The following authorities will be notified prior to prescribed burning activities: Utah Department of Transportation, Utah

Highway Patrol, Box Elder County Sheriffs Department, and the Box Elder News Journal.

K. Reporting and Documentation

Individual prescribed burn plans will be the primary document used to record prescribed fire information. Burn plans document personnel, costs, fire behavior, weather, and burn critique information. Prescribed burns will also be documented on DI-1202's and submitted to the Zone FMO for input into FMIS within 10 working 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. Additionally, smoke can have serious health and safety effects which must be considered during planning and approval processes. 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 U.S. Fish and Wildlife Service agreed to comply with the stipulations of the Utah Smoke Management Plan which was signed on September 9, 1999 **(Appendix G.)**. The State of Utah requires all Federal agencies that conduct prescribed burning activities to submit a series of forms to the Smoke Management Coordinator. The reasons for these forms is to mitigate the impacts of public health, safety, and visibility. The following forms and a SASEM run are to be submitted by specific dates as follows to:

Greg Zschaechner
Division of Air Quality
(801) 536-0085 (fax)
or

Forms can be submitted online at www.utahsmp.net. Click on the Forms Icon.
*SASEM run should also be submitted to the Smoke Management Program Coordinator prior to the planned ignition.



Table 4. Utah Smoke Management Forms

Form Number	Form Name	Date / Time Due
Form 1a-X00-X49 Form 1b-X50-X99	Project Number Project Name	1/1 to 3/1 of burn year Optional (recommended)
Form 2	Utah annual burn schedule	Before 3/15/of burn year
Form 3	Pre-burn information	Due 2 weeks prior to earliest burn
Form 4	Burn / Request and Reporting Non Completion	2 business prior to desired burn day
Form 5	Daily Emissions Report	By 0800 the morning after burning more than 50 acres
Form 6	Hourly Plume Observation	Optional
Form 7	Correction	As needed by January 6 after burn year

XI. FIRE RESEARCH/MONITORING

The refuge will continue collecting data and monitoring the success or failure of their burns to assure they accomplish 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 Refuge's plants and animals, needs to be better understood. Through research 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 behavior data will be collected on all fires occurring on Bear River MBR. 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 local law enforcement agency. Public safety considerations will be included as part of burn plans.

The greatest threat to public safety from refuge fires is to people off refuge. The main concern is from smoke drifting across Interstate Highway 15, reducing visibility and causing automobile accidents.

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 Refuge'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. Wildfire history shows the Refuge has experienced only two wildfire on Refuge lands over the past 38 years, therefore, very little information will be shared with the public concerning wildland fire suppression.

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 refuge.
2. Attendance at local volunteer fire department meetings
3. Include prescribed fire message in interpretive publications.
4. Personal contacts with bystanders during prescribed burns.

5. Press releases

XIV. ARCHEOLOGICAL/CULTURAL/HISTORIC RESOURCES

Because wetlands in this area supported a large number of plants and animals, they were used greatly by prehistoric peoples. Historical records from Spanish expeditions also indicate that these wetlands were used by Shoshone, Ute, Blackfoot, and Flathead Indians (Simms and Stuart, 1989). The Utah Division of State History lists forty-three archeological sites on the Refuge. Twenty-seven of these sites have been described and five sites have been excavated. The lower Bear River area is listed on the National Register of Historic Places, due to cultural remains.

Siltation caused by refuge dikes and ponds has kept many sites buried. For this reason there is little concern of fire disturbing and sites.

All fire management activities will be in compliance with Section 106 of the National Historic Preservation Act of 1996, as amended.

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 once a year by the individual on the refuge with fire responsibility to maintain the integrity of the plan. Amendments to the fire management plan itself will be made as needed by sending them to the Regional Office. 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 without involvement of the Regional Office.

A. Wildfire

All wildland fires will be critique by the Incident Commander. The Regional Fire Management Coordinator will conduct formal critiques in the event of the following:

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

B. Prescribed Fire

Prescribed fires will be critique by the Burn Boss and documented in the

prescribed burn plan. The Regional Fire Management Coordinator will conduct formal critiques in the event of:

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

XVI. CONSULTATION AND COORDINATION

Various sources were consulted in obtaining and compiling data for the Fire Management Environmental Assessment (EA). Much information was obtained from several reports and papers relating to various aspects of fire management, a list of which is included as part of the EA.

During development of the EA several employees of other agencies and organizations were contacted for input and ideas relating to fire management at Bear River Refuge. Those contacted are listed in the EA

XVII. FIRE EQUIPMENT and NORMAL UNIT STRENGTH (NUS)

Bear River Refuge Normal Unit Strength (NUS) Recommendation and fire equipment needs (**Appendix M**).

XVIII. APPENDICES

- A. Climatic Conditions 1938-1997
 - B. Common Plants of Bear River Migratory Bird Refuge
 - C. Birds of Bear River Migratory Bird Refuge
 - D. Mammals of Bear River Migratory Bird Refuge
 - E. Reptiles and Amphibians of Bear River Migratory Bird Refuge
 - F. Employee Fire Management Qualifications
 - B. Utah Smoke Management Plan
 - H. Memorandum of Understanding with Brigham City Corporation
 - I. Cooperative Fire Protection Agreement
 - J. Wildland Firefighter Fitness Testing
 - A. Physical Activity Readiness Questionnaire
 - B. Step-Up Plan
 - C. Normal Unit Strength
 - D. Fire Dispatch Plan
 - A. 1991 FONSI
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Appendix F. Employee Fire Management Qualifications

Position	Name	Qualifications	Fitness Level
Refuge Manager	Al Trout	FFT2	
Asst Refuge Mgr.	Steve Hicks	RXB2	
ROS (Operations)	Troy Littrell	FFT2	
Private Lands Coordinator	Karl Fleming	FFT1, FFT2	
Biologist	Vickie Roy	FFT2	
Biologist	Karen Lindsey	FFT2	
Equip. Operator	Rich Iwanski	FFT2	
Equip. Operator	Bryan Woodward	FFT2	
Equip. Operator	Doug Hadley	FFT2	
Equip. Operator	Rod Jacobson		
Refuge Officer	Rob Hirschboeck	FFT2	
Admin. Assistant	Ann BUII		

APPENDIX G - Memorandum of Understanding

APPENDIX K

STEP-UP PLAN

The Step-up plan will guide fire preparedness operations and use of emergency preparedness funding. The plan utilizes RAWS data from Muddy Creek, Wyoming, a remote weather station which is located in the vicinity of the Refuge and is known to have similar weather patterns*.

NFDRS Fuel Model T, Muddy Creek, WY RAWS

PREPAREDNESS ACTION	BURNING INDEX				
	0-7	8-16	17-33	34-59	60+
Maintain Radio Contact	X	X	X	X	X
Maintain Response Time of: (minutes)	60	60	45	20	20



Fire-ready engine at Refuge Headquarters	X	X	X	X	X
Carry PPE while on duty, wear nomex and boots			X	X	X
Water tender on standby			X	X	X
Tour of duty changed at Manager's discretion			X	X	X
Monitor BLM fire frequency				X	X

Detection patrol conditional				X	X
Refuge fire ban conditional				X	
Refuge fire ban mandatory					X

During the Memorial Day, Independence Day and Labor Day holidays move up to the next burning index break point because of the increased risk of human caused ignitions.

If burning index is 50 or greater and lightning is forecast, move up to next burning index break-point because of increased risk of lightning ignitions.

* Muddy Creek RAWS indices are based on estimated values from the Rawlins Interagency Dispatch Center. As information from the Muddy Creek Raws is refined and corrected, burning index break points will be adjusted accordingly.

APPENDIX K - Step-Up Plan

Appendix L

NORMAL UNIT STRENGTH

Presently, the Refuge does not have an authorized Normal Unit Strength (NUS) of equipment and supplies required to maintain the fire management program. The following is the recommended minimum

Item	Year Purchased	Percent of Fire Funding	Have	GVW	Need	GVW
Engine Module(s) heavy (500-1000 gal) medium (200-400 gal) light (50-150 gal)		100	1			
Slip-on unit(s)					1	
Water Tender(s)						
Portable Pump(s) Standard float-a-pump					1	
Power Saw(s)						
Mower(s)						
Tractor(s)						
Grader(s)						
Plow Unit/Disk						
ATV(s)					1	
Other List truck for pumper					1	

Other Equipment Available for Fire Suppression or Prescribed Fire Operations Not Fire Funded
John Deere 2355 Farm Tractor
John Deere 410C Backhoe
CAT 12G Motor Grader
CAT D-6 Dozer
CAT D-4 Dozer

Use the table to list capital equipment used for preparedness and initial attack or for prescribed fire activities funded wholly or in part by fire.

Radios are listed on a separate inventory

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.)

Appendix L (Continuation) - Fire Equipment

- Pickup truck capable of carrying a 250 gallon pumper unit (12,000 GVW)
- 250 gallon portable pumper unit
- 4 ea. Flappers
- 2 ea. McCleods
- 5 ea. Backpack pumps (fedco)
- 5 ea. Drip torches
- 5 ea. Pulaskies
- 5 ea. Shovels
- 15 ea. Fire pants (various sizes)
- 15 ea. Fire shirts (Various sizes)
- 10 pairs Leather gloves
- 10 ea. Goggles
- 10 ea. Ear plugs
- 10 ea. Hard hats and liners
- 10 ea. Fire shelter & case
- 10 ea. Canteen 1 quart w/cover
- 3 ea Hand held radios

Each firefighter is required to have the following personal safety equipment supplied from the Refuge cache:

Hard Hat	Goggles
Leather Gloves	Fire Shelter
8' High Leather Boots(employ.)	Nomex Fire Pants
Nomex Fire Shirt	Ear plugs

APPENDIX M - Fire Dispatch Plan

